

**CODE DATA:**

**ZONING INFORMATION**  
ZONING ORDINANCE: TALBOT COUNTY GENERAL COMMERCIAL OPERATIONS CENTER FOR CHOPTANK ELECTRIC COOPERATIVE  
ZONING DISTRICT: RENOVATION AND PARTIAL REPLACEMENT OF EXISTING ONE- AND 1.5 STORY STRUCTURE  
USE: 1118 SO. TALBOT ST., ST. MICHAELS

**SCOPE OF WORK:**

**STRUCTURE ADDRESS:**

**BUILDING CODE INFORMATION**  
BUILDING CODES: NFPA 101 LIFE SAFETY CODE  
2003 INTERNATIONAL BUILDING CODE  
MIXED, SEPARATED (IBC 302.2.2) BUSINESS - B & STORAGE S-2 COMMERCIAL TRUCK STORAGE

**OCCUPANCY CLASSIFICATION:**

**TYPE OF CONSTRUCTION:** TYPE 5B, COMBUSTIBLE

<b>BUILDING AREA:</b>	PERMITTED	PROPOSED
(LEVEL 1)	9,000 SF (FOR USE B)	8,075 INTERIOR SF
<b>TOTAL:</b>		8,075 INTERIOR SF

**BUILDING HEIGHT:**

NO. OF STORIES	PERMITTED	PROPOSED
BLDG. HEIGHT/ZONING	2	1
	40'	24'

**REQ'D SEPARATION OF OCCUPANCIES (HOURS) - (TABLE 302.3.2, IBC 2003):**  
BUSINESS (B) FROM S2 STORAGE: 2 HOURS (90-MINUTE LABEL DOORS)

**FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)**  
Type V-B (TABLE 601, IBC 2003)

Structural Frame	0 Hour
Ext. Bearing Walls	0 Hour
Nonbearing Walls (Ext & Int)	0 Hour
Interior Bearing Walls	0 Hour
Floor Construction	0 Hour
Roof Construction	0 Hour

**ALLOWABLE OCCUPANT LOAD** 68 (SEE LIFE SAFETY PLAN NOTES)

**NO. OF EXTERIOR EGRESS POINTS PROVIDED:** 6 (INCL. 3 EXIST'G)

**SPACES W/ ONE MEANS OF EGRESS (TABLE 1014.1, IBC 2003)**  
FOR B USE: MAX. OCC. LOAD = 50 FOR 1 EXIT; OCC. LOAD = 50, 2 EXITS REQ'D FOR S (STORAGE), MAX. OCC. LOAD = 30 FOR 1 EXIT.

**EGRESS DOOR SWINGS TO BE IN DIRECTION OF EGRESS TRAVEL IF OCC. LOAD >50.**  
**EXIT ACCESS TRAVEL DISTANCE (IBC 2003, TABLE 1015.1): 200' MAX.**

**FIRE PROTECTION PER NFPA:**  
AUTOMATIC SPRINKLER SYSTEMS: NOT REQ'D (IBC [F] 903.2.8)  
FIRE AREA < 12,000 S.F.; OCC. LOAD < 300; FIRE AREA IS ON LEVEL OF DISCHARGE; NOT REQ'D @ S2 FIRE AREA: <5,000 SF (IBC 2003, 903.2.9.1)

**MANUAL FIRE ALARM SYSTEM NOT REQ'D FOR OCCUPANCY <300 (IBC 2003, SECTION 907)**

**PORTABLE FIRE EXTINGUISHERS - PER NFPA 101 REQ'S.**

**INTERIOR WALL & CLG. FINISH REQ'S FOR GROUP B OCCUPANCY:**  
(TABLE 903.5, IBC 2003), FOR NON-SPRINKLERED:

**VERT EXITS & EXIT PASSAGEWAYS:** N/A  
**EXIT ACCESS CORRIDORS & OTHER EXITWAYS:** CLASS A ROOMS & ENCLOSED SPACES: CLASS C

**FOR STORAGE (S) OCCUPANCY, CLASS C FOR ROOMS & ENCLOSED SPACES.**

**NFPA INTERIOR FINISH REQ'S:**  
CARPET OR CARPET-LIKE MATL: COMPLY W/ ASTM D 2859 TEST FOR FLAMMABILITY (NFPA 101, 2006, 10.2.7.1)  
WALL & CLG. FINISHES: CLASS A, B OR C, CLASS A OR B IN EXIT CORRIDORS AND FRONT LOBBY (NFPA 101, 2006, 12.3.3.2, 12.3.3.3)

**EMERGENCY LIGHTING TO BE PROVIDED & MOUNT INTEGRALLY ON ILLUMINATED EXIT SIGNS. TO COMPLY W/ NFPA 101, 2006, SECTION 7.9. 90 MINUTE MINIMUM EMERGENCY POWER BACKUP TO ILLUMINATE EXIT SIGNS.**

**CODES COMPLIANCE:**

- Annotated Code of Maryland
- COMAR, Code of Maryland Regulations, latest edition.
- International Building Code, IBC 2003 edition as amended by COMAR 05.02.07.
- The National Electric Code, latest edition as required by Article 38A, 60.
- International Mechanical Code as amended by COMAR 09.15.05.
- The National Standard Plumbing Code as amended by COMAR 09.02.01.
- Energy Conservation based on portions of IBC concerning energy conservation standards.
- Fire Code based on COMAR 29.06.01 and Article 38A, Annotated Code of Md.
- Talbot County Zoning Ordinance and amendments, latest edition.

**ACCESSIBILITY INFORMATION**

**ACCESSIBLE MEANS OF EGRESS:**  
PER IBC 2003, 1007.1: NOT LESS THAN 1 ACCESSIBLE EGRESS FOR ALL ACCESSIBLE SPACES. HOWEVER: EXCEPTION 1: ACCESSIBLE MEANS OF EGRESS NOT REQUIRED IN ALTERATIONS TO EXIST'G BLDGS.

**TACTILE EXIT SIGNS REQUIRED AT EXITS, PER IBC 2003, 1011.3 / ICC A117.1**

**IF DRINKING FOUNTAINS ARE PROVIDED, 50% ARE TO BE ACCESSIBLE (MINIMUM OF 1).**

**ACCESSIBLE STORAGE:**  
COAT HOOKS IN WCs TO BE MOUNTED AT ACCESSIBLE HEIGHT.

**ACCESSIBLE WORK SURFACE TO BE PROVIDED AT BUILT-IN COUNTERS.**

**UNISEX TOILET AND BATHING (SHOWER) ROOMS TO BE PROVIDED WITH ALL ACCESSIBLE FIXTURES (SEE DETAIL DIAGRAMS).**

**INDEX OF ARCHITECTURAL DRAWINGS:**

- LANE ENGINEERING SITE/CIVIL PLANS
  - C1 COVER SHEET/LIFE SAFETY PLAN
  - A1.1 FOUNDATION PLAN
  - A1.1 FLOOR PLAN
  - A2.1 EXTERIOR ELEVATIONS - E & W
  - A2.2 EXTERIOR ELEVATIONS - N & S
  - A3.1 WALL SECTION DETAILS & PARTITION TYPES
  - A3.2 BUILDING CROSS SECTION
  - A3.3 WALL SECTION DETAILS
  - A4.1 DOOR & WINDOW TYPES
- STRUCTURAL DRAWINGS S1 - S15

**1 Life Safety Plan**  
Scale: 1/8" = 1'-0"

☼ Illuminated Exit Signs w/ Emergency lighting

**Choptank Electric Cooperative - Operations Facility**  
Renovation & Addition to Existing Structure  
1118 S. Talbot St., St. Michaels, MD. 21663

**C. H. BRITTON**

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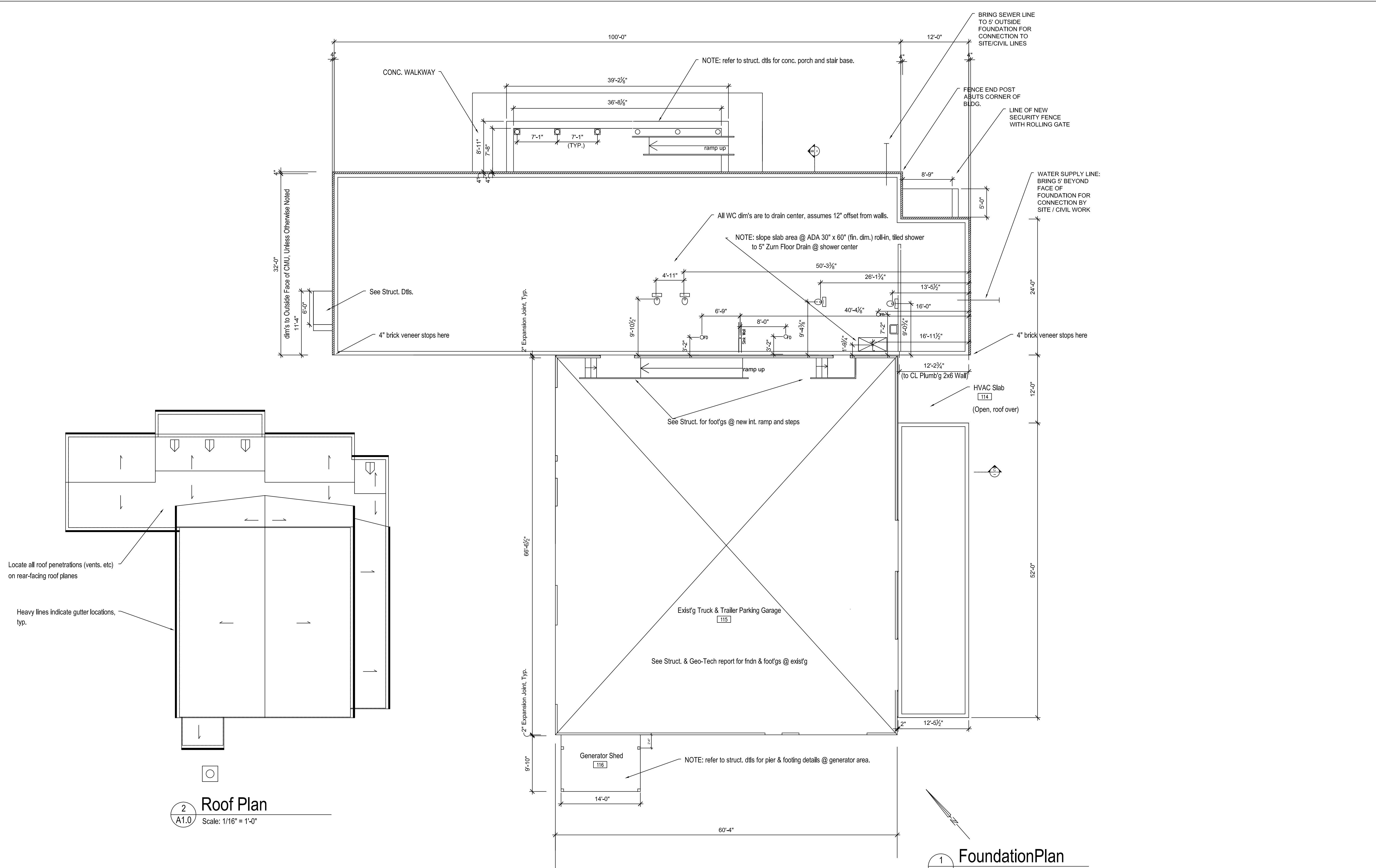
PO Box 751  
St. Michaels, MD 21663

Title: Life Safety Plan, Code & Project Data  
Date: Oct. 5, 2011  
Scale: As Noted

**C1**  
No.

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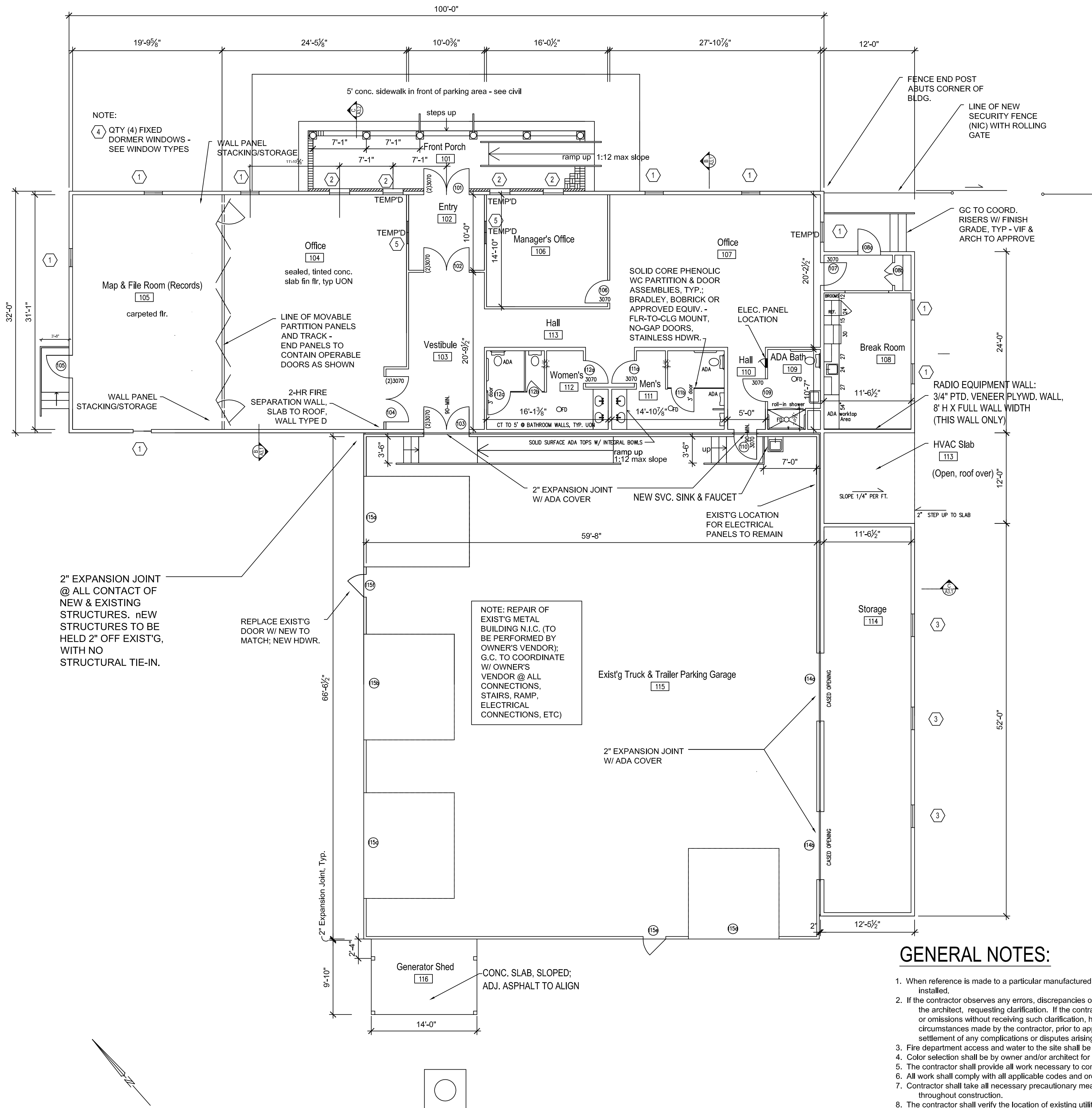
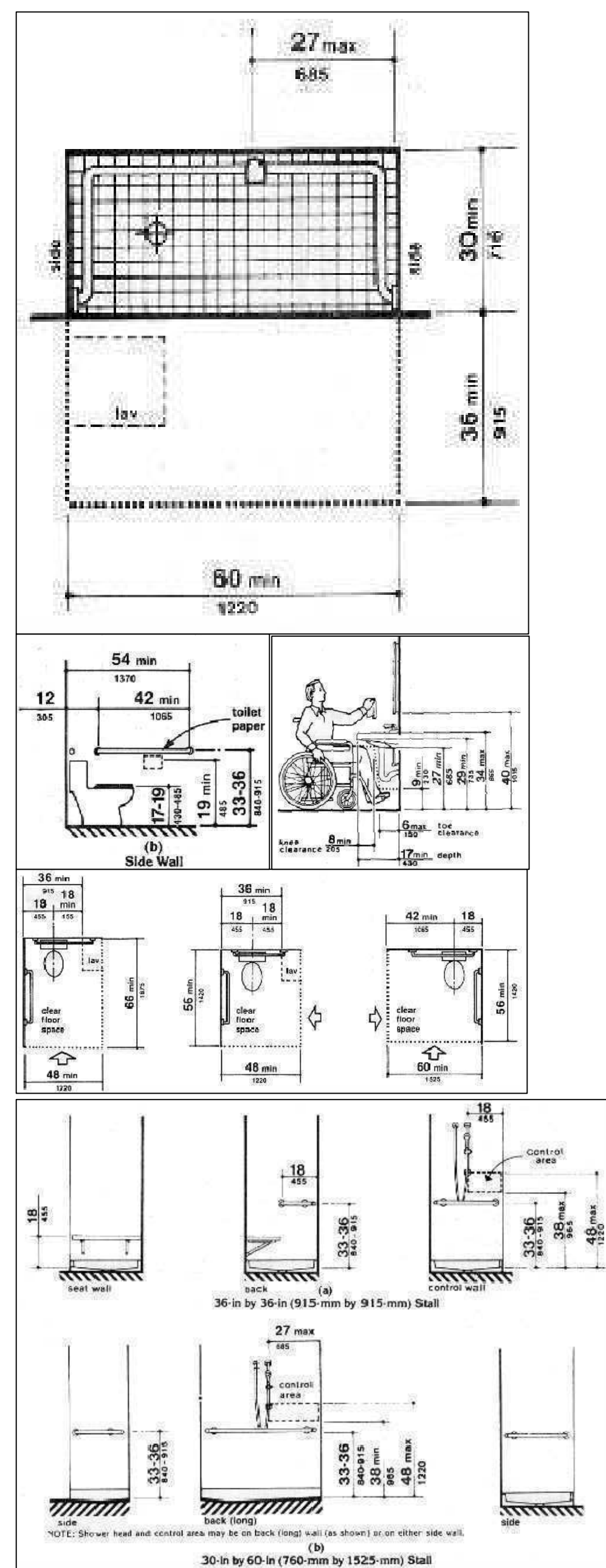
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 PO Box 751  
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Title:  
**Foundation & Roof Plans**  
 Date: Oct. 5, 2011  
 Scale: As Noted

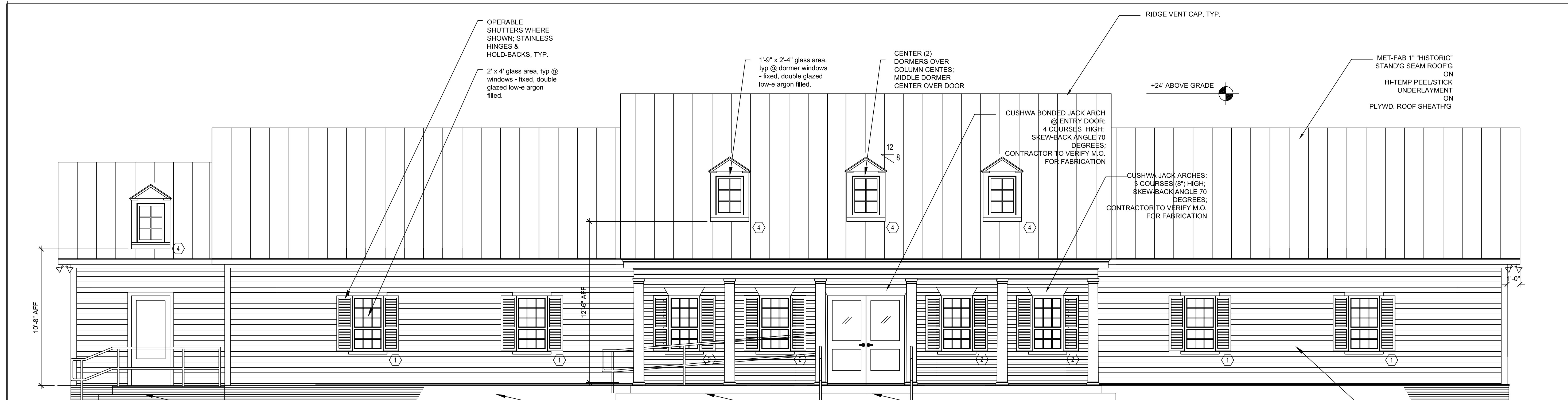
**A1.0**  
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1 east elevation  
A2.1 Scale: 1/4" = 1'-0"

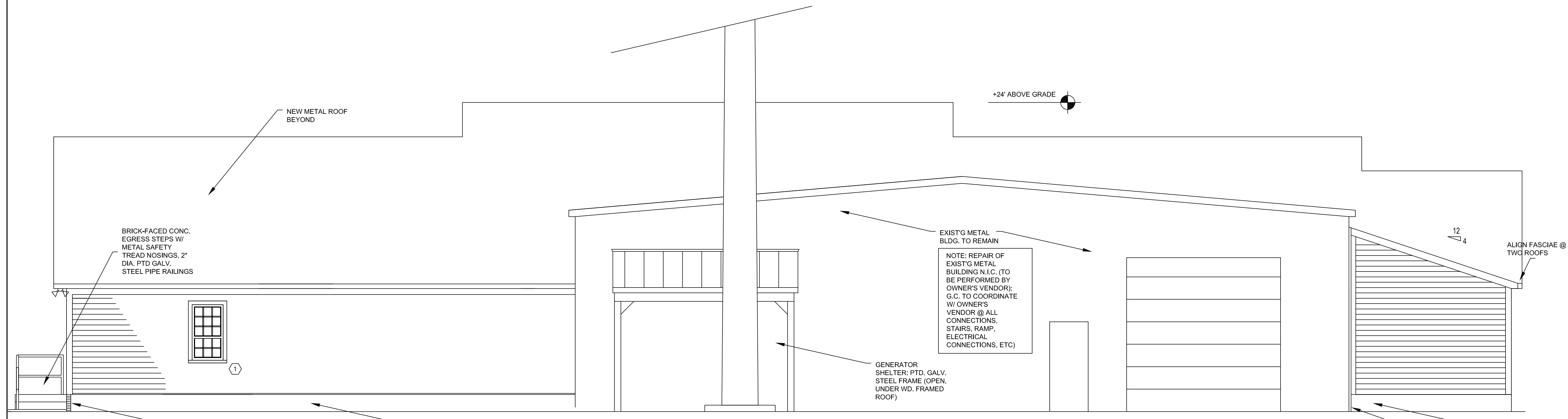
CONC STEPS W/ 4" BRICK FACE (SIDE) WALL; CONC STEPS W/ METAL SAFETY TREAD NOSINGS, TYP. @ EGRESS STEPS & INTERIOR CONCRETE STEPS

CUSHWA BRICK FACE @ FOUNDATION WALLS; SEE FNDN. PLAN & ELEV'S FOR EXTENT

CUSHWA BRICK PAVERS @ STEPS AND PORCH, W/ CONC. WHEELCHAIR RAMP; PTD. GALV. STEEL HANDRAILS @ RAMP & STEPS

BRICK NOSINGS: CUSHWA TR-2 TREADS; TR-2-X @ OUTSIDE CORNERS

PRE-FINISHED, 5" EXPOSURE HARDIE BOARD SIDING, INSTALLED ON 3/4" P.T. FURRING W/ "RAIN SCREEN" DETAILS



2 west elevation  
A2.1 Scale: 1/4" = 1'-0"

END OF BRICK VENEER @ CORNER

PARGED FNDN. WALL

NOTE: REPAIR OF EXIST'G METAL BUILDING N.I.C. (TO BE PERFORMED BY OWNER'S VENDOR); G.C. TO COORDINATE W/ OWNER'S VENDOR @ ALL CONNECTIONS, STAIRS, RAMP, ELECTRICAL CONNECTIONS, ETC)

GENERATOR SHELTER: PTD. GALV. STEEL FRAME (OPEN, UNDER WD. FRAMED ROOF)

2" EXPANSION JOINT, TYP. @ ALL NEW-TO-OLD ABUTMENTS

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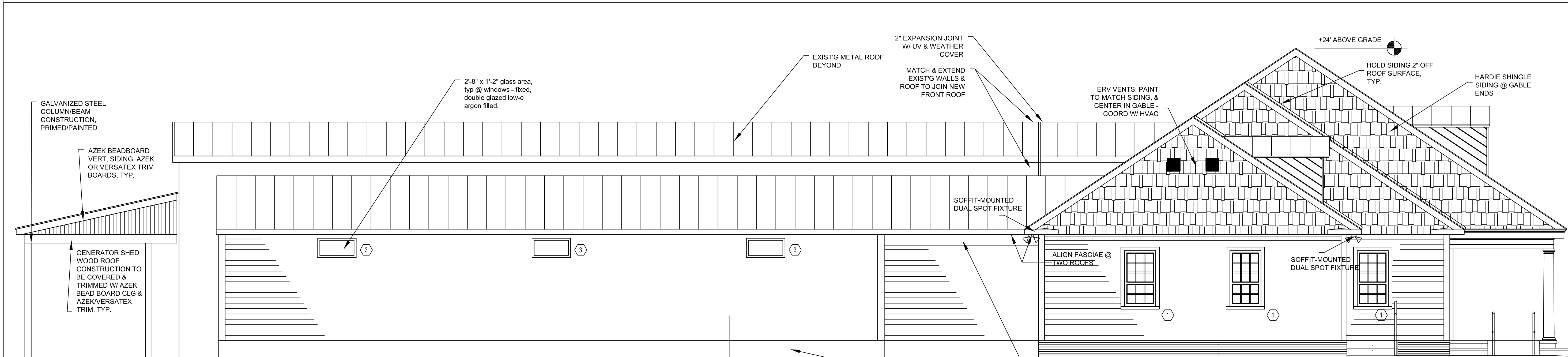
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Date: Oct. 5, 2011  
Scale: 1/4" = 1'-0"

**A2.1**  
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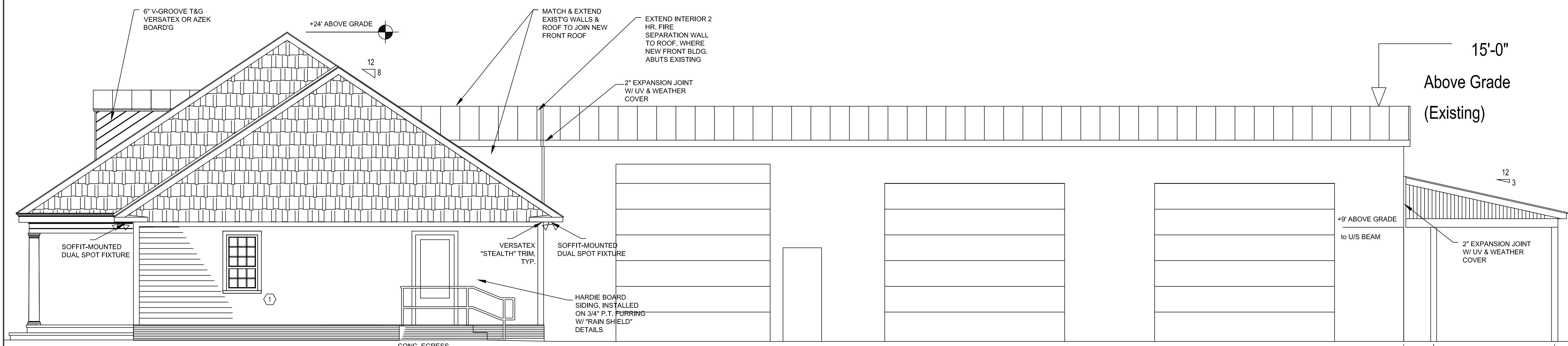
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1 south elevation  
Scale: 1/4" = 1'-0"



2 north elevation  
Scale: 1/4" = 1'-0"



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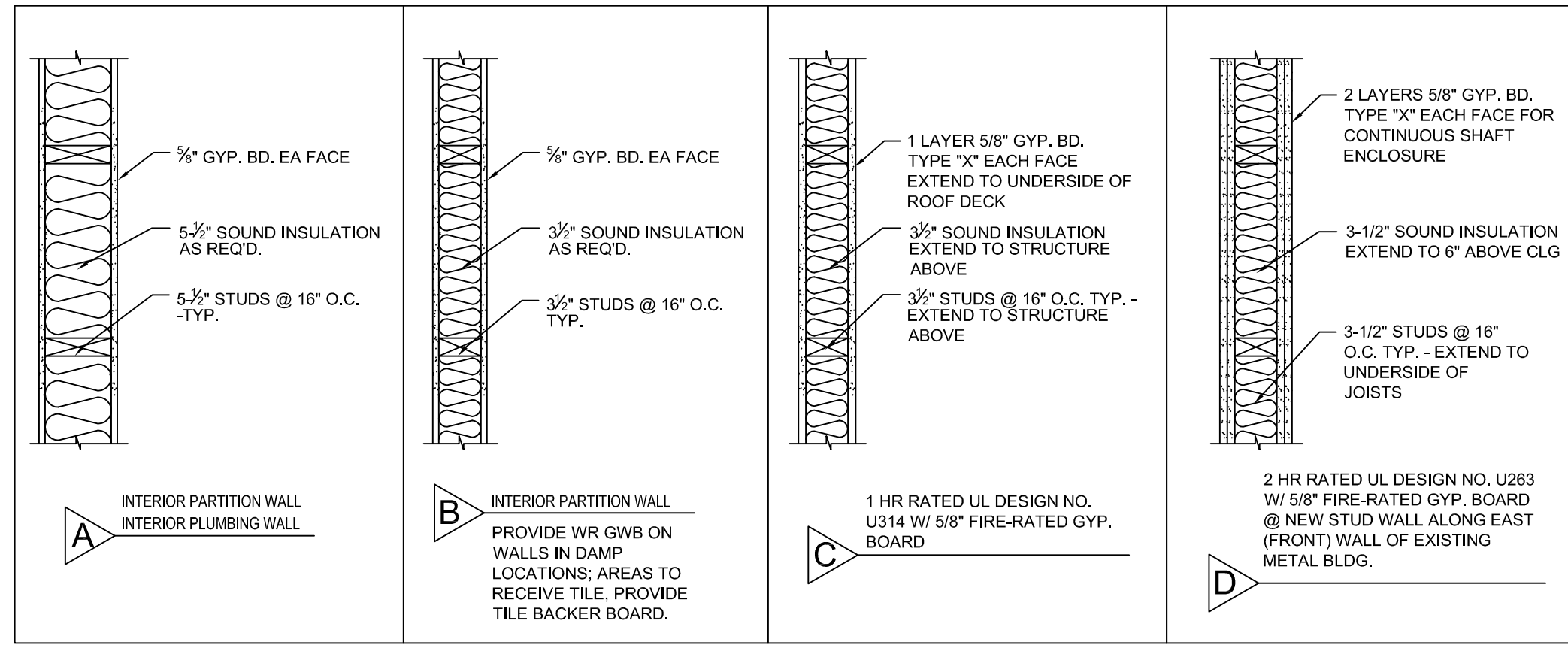
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Title:  
 North & South  
 Exterior  
 Elevations  
 Date: Oct. 5, 2011  
 Scale: 1/4" = 1'-0"

**A2.2**  
 No.

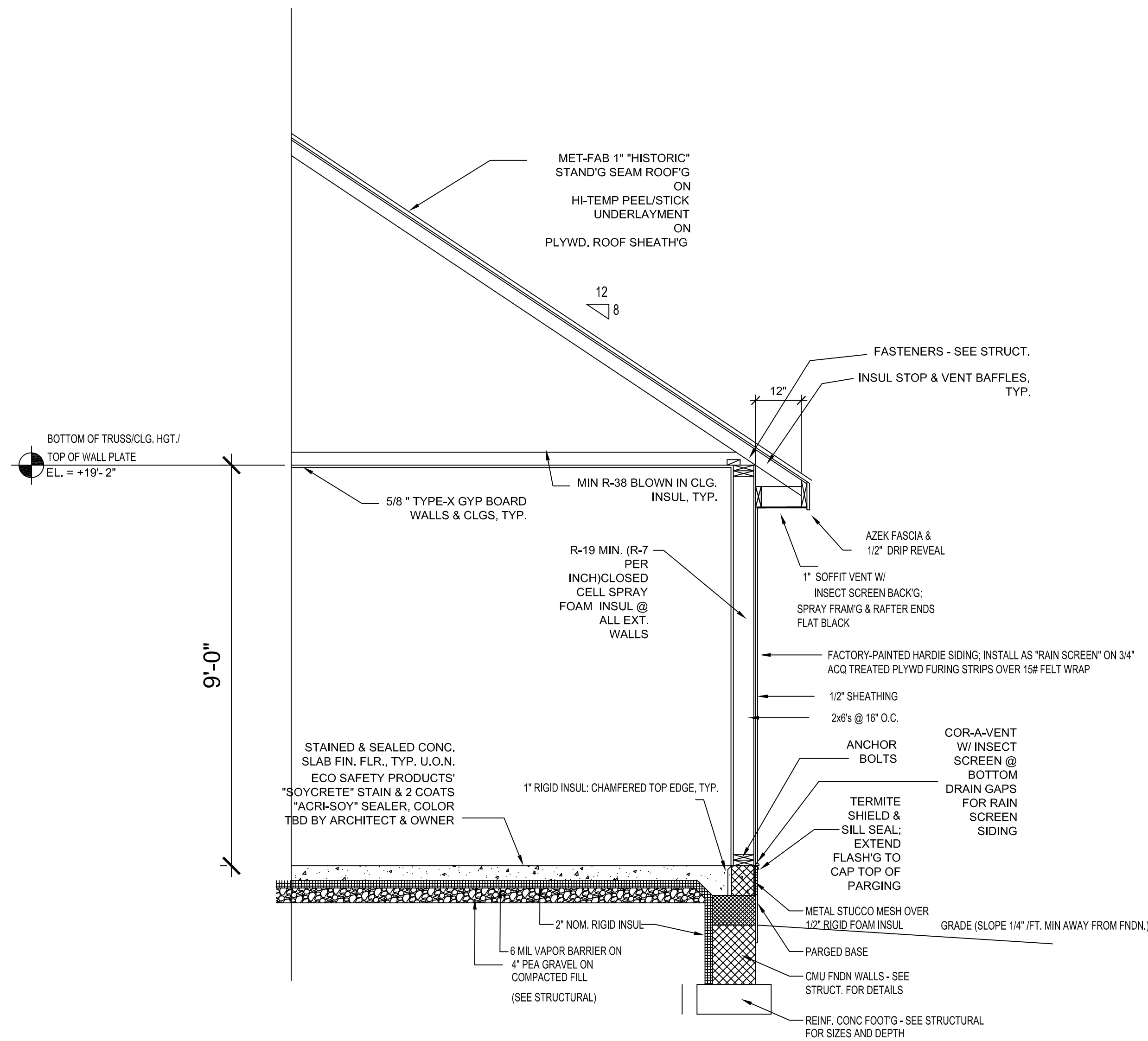
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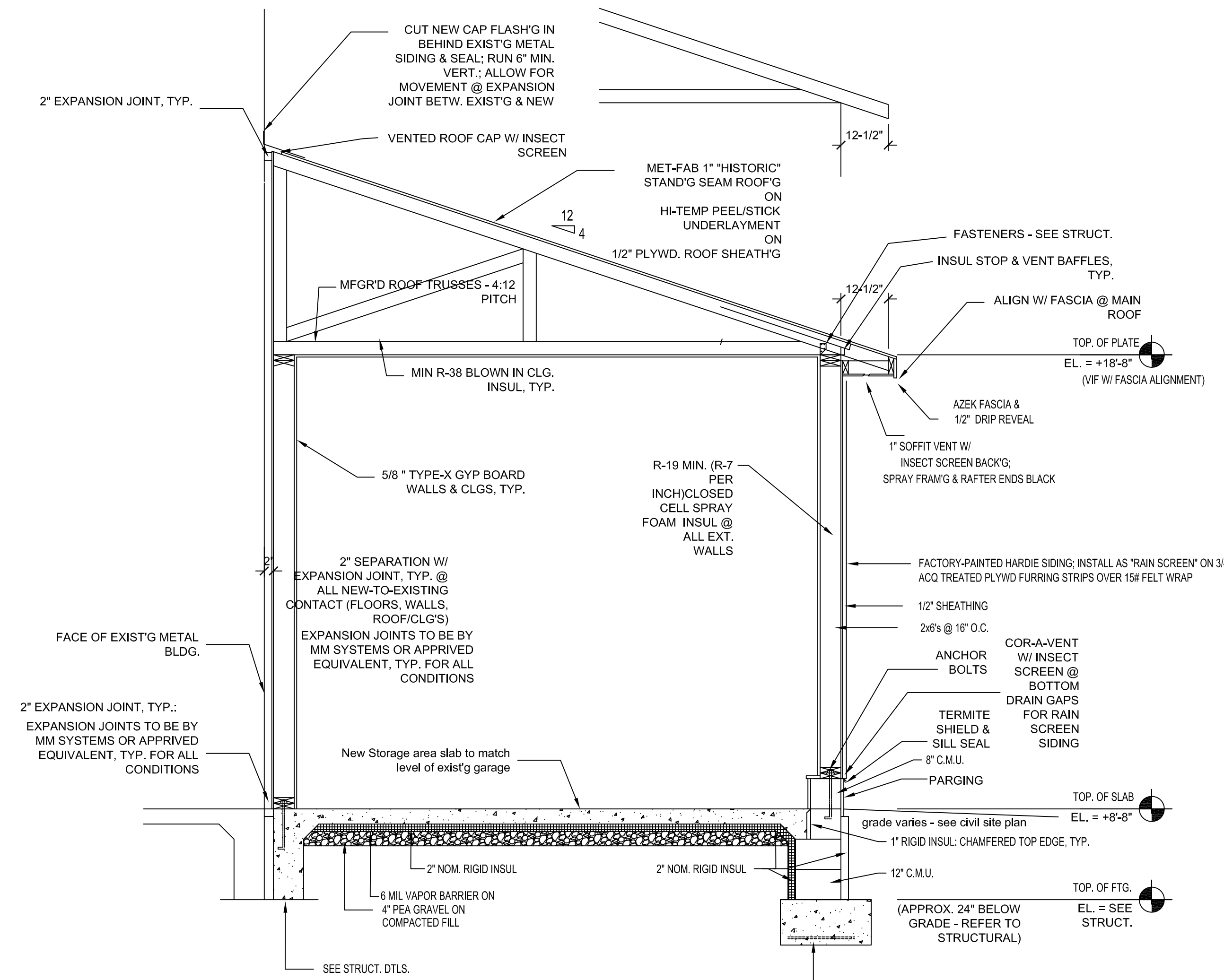


**Wall Types**

Scale: 1" = 1'-0"



**B** Wall Section B  
A3.1 Scale: 1/2" = 1'-0"



**C** Wall Section C  
A3.1 Scale: 1/2" = 1'-0"

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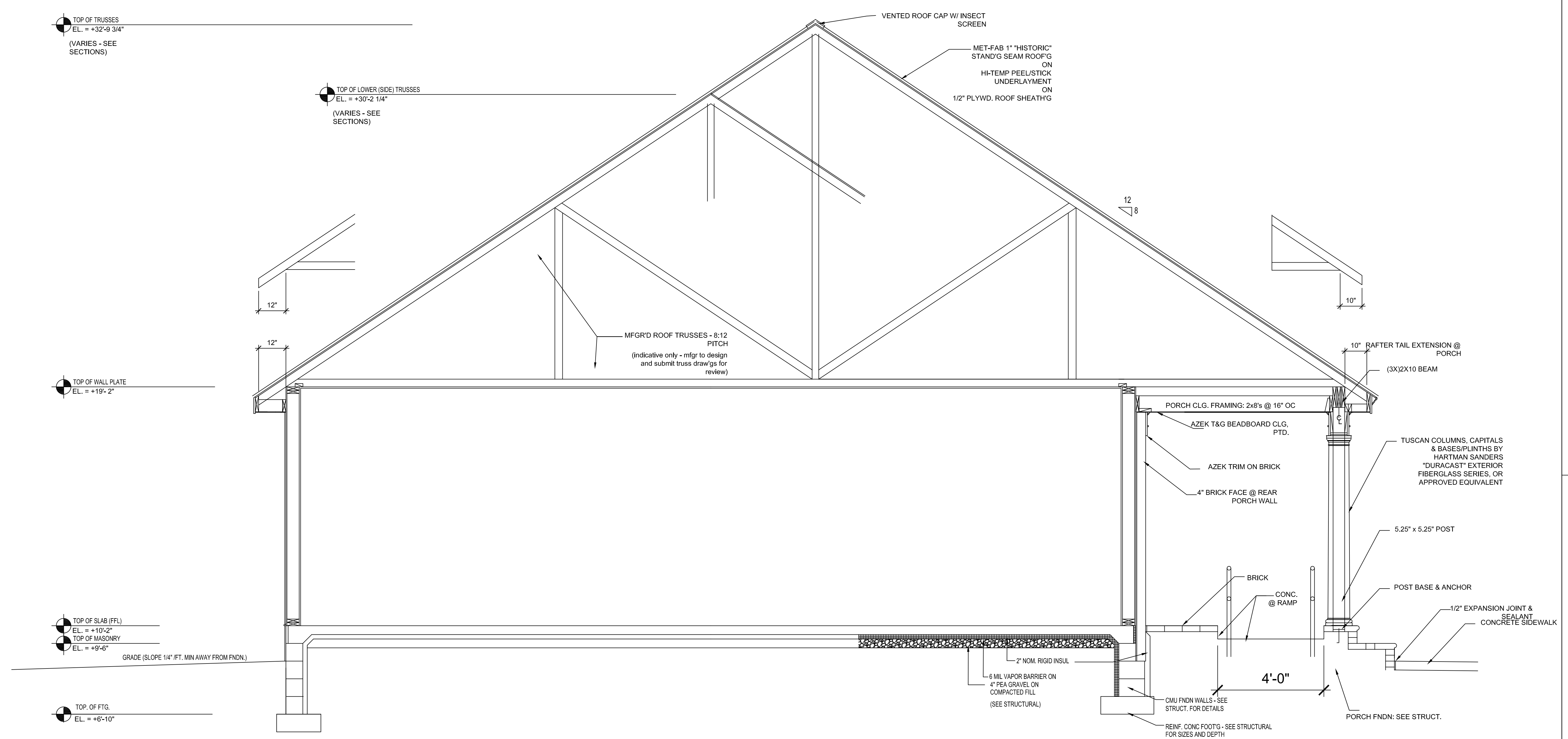
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Title:  
**Wall Section, Windows & Partition Dtls.**  
Date: Oct. 5, 2011  
Scale: 1/2" = 1'-0"

**A3.1**  
No.



TOP OF TRUSSES  
EL. = +32'-9 3/4"  
(VARIES - SEE SECTIONS)

TOP OF LOWER (SIDE) TRUSSES  
EL. = +30'-2 1/4"  
(VARIES - SEE SECTIONS)

TOP OF WALL PLATE  
EL. = +19'-2"

TOP OF SLAB (FFL)  
EL. = +10'-2"  
TOP OF MASONRY  
EL. = +9'-6"

TOP OF FTG.  
EL. = +6'-10"

GRADE (SLOPE 1/4" FT. MIN AWAY FROM FNDN.)

**A**  
**A3.2** Wall Section A  
Scale: 1/2" = 1'-0"

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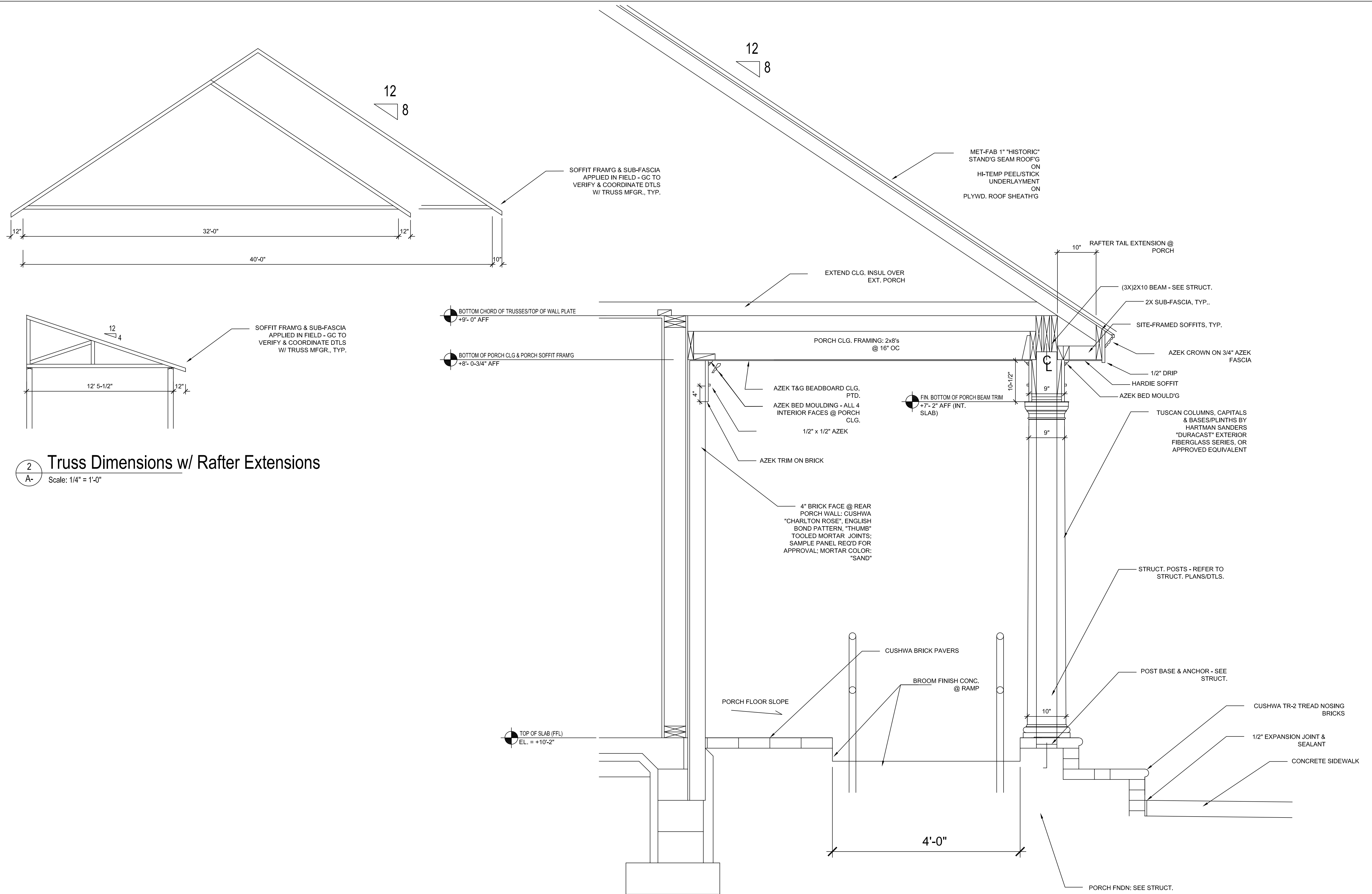
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Title:  
**Building Cross Section**  
Date: Oct. 5, 2011  
Scale: 1/2" = 1'-0"

**A3.2**  
No.

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Title: **Cross Section Dtl.**  
 Date: Oct. 5, 2011  
 Scale: 1/2" = 1'-0"

Bid Set - Not for Construction **A3.3**  
 No.

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Andersen 200 series sealed units, or approved equivalent

dim's shown are glass size

5/8" putty sdr bars w/ internal spacers

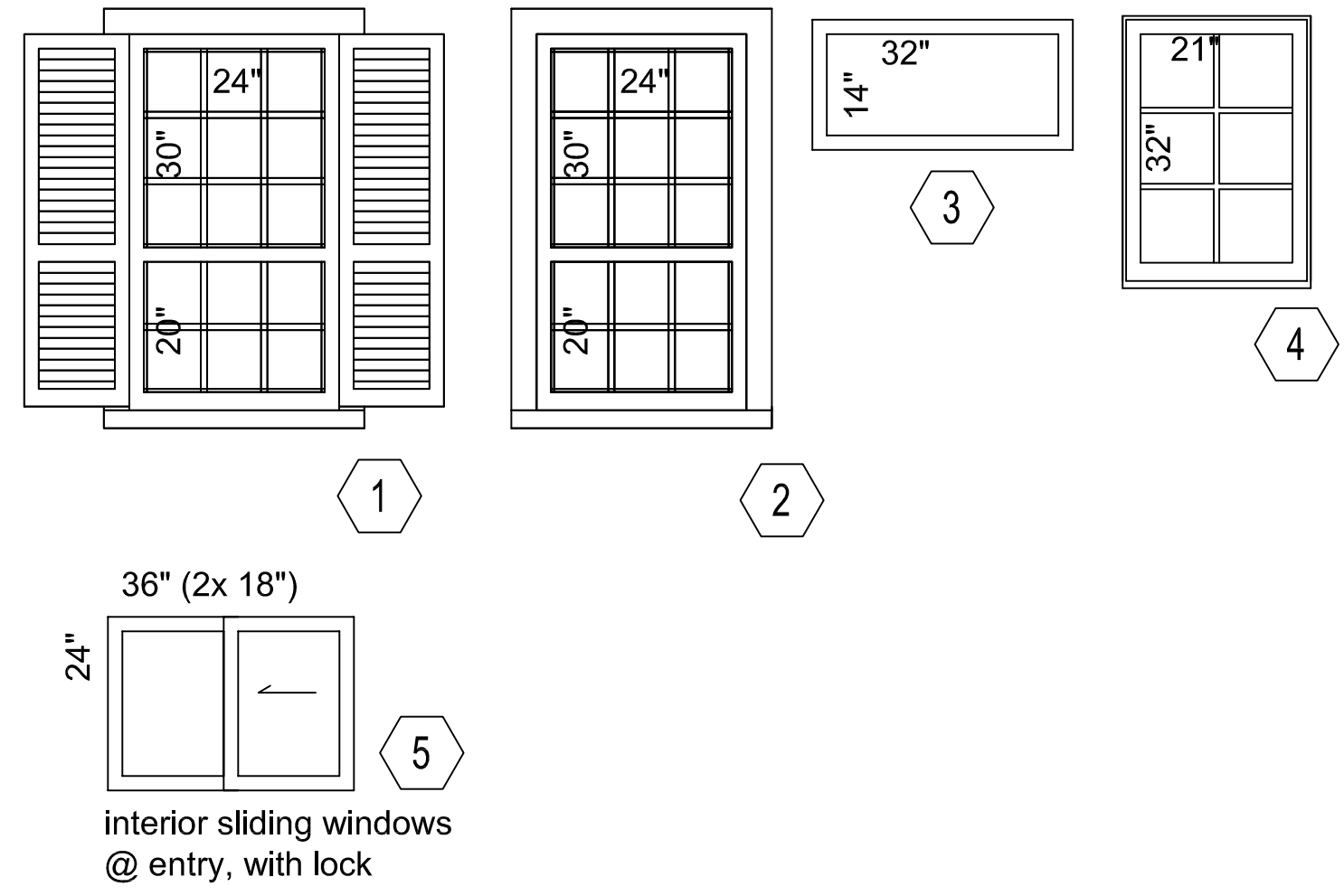
2" simulated check rail w/ internal spacers

clad exterior

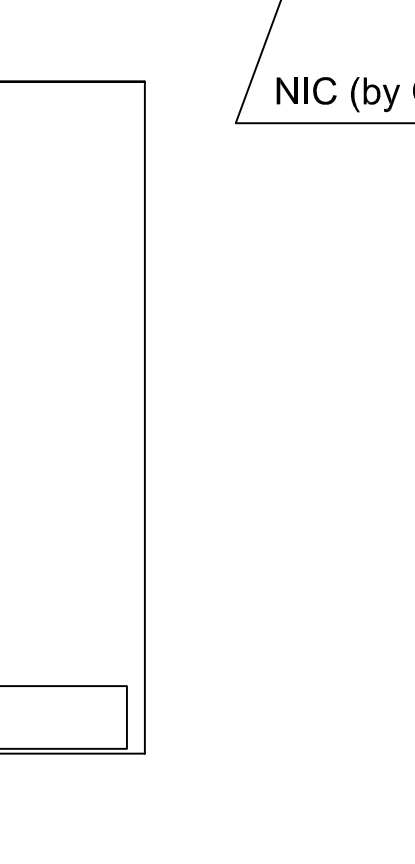
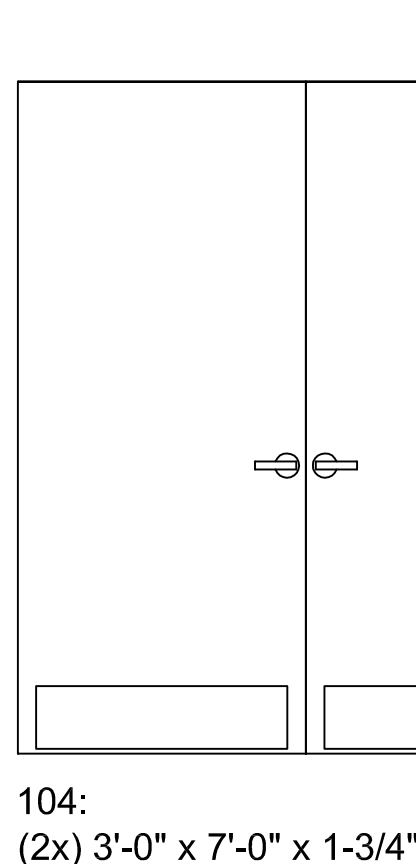
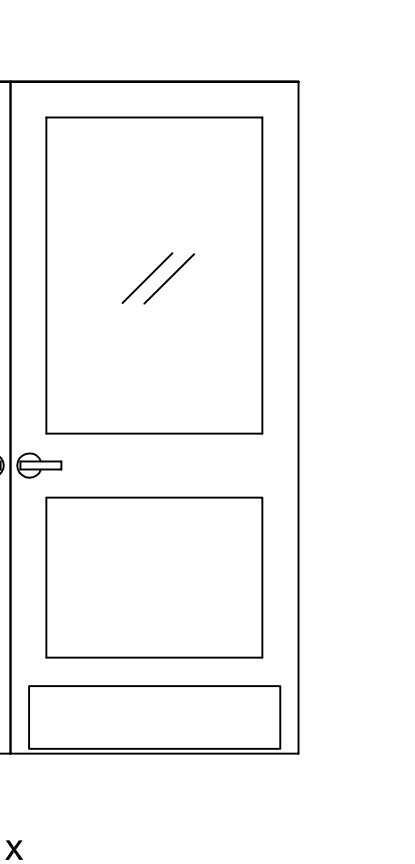
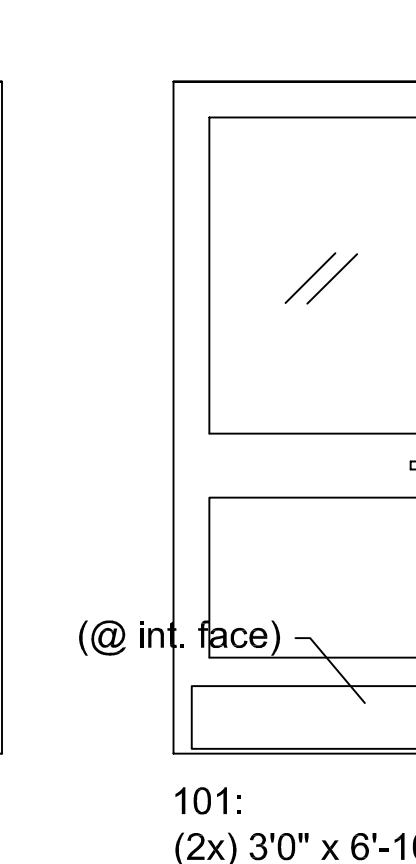
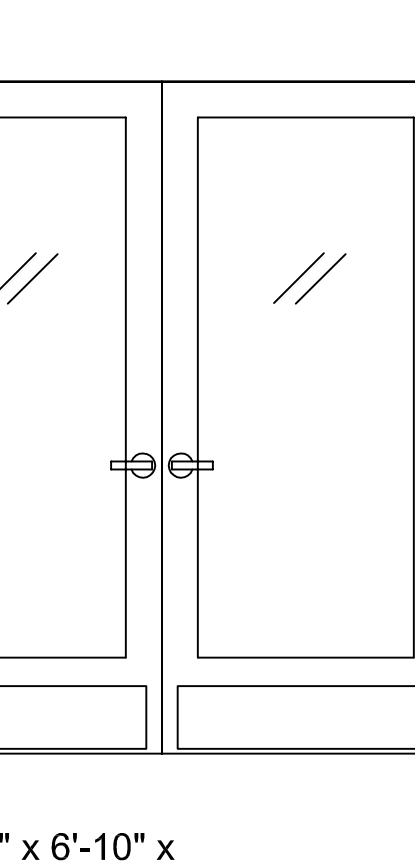
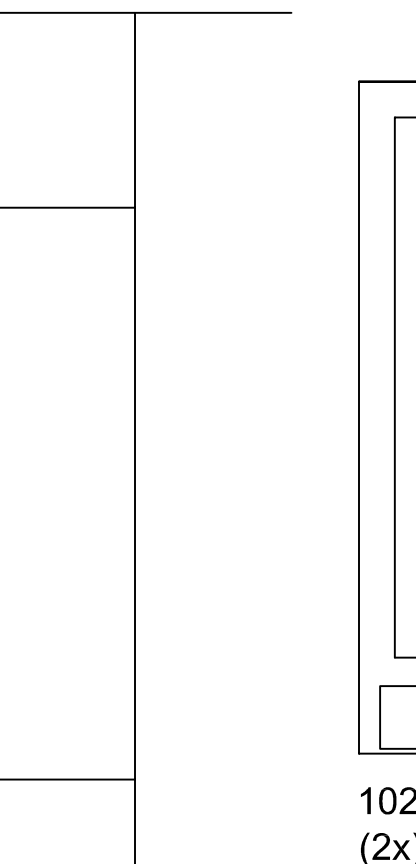
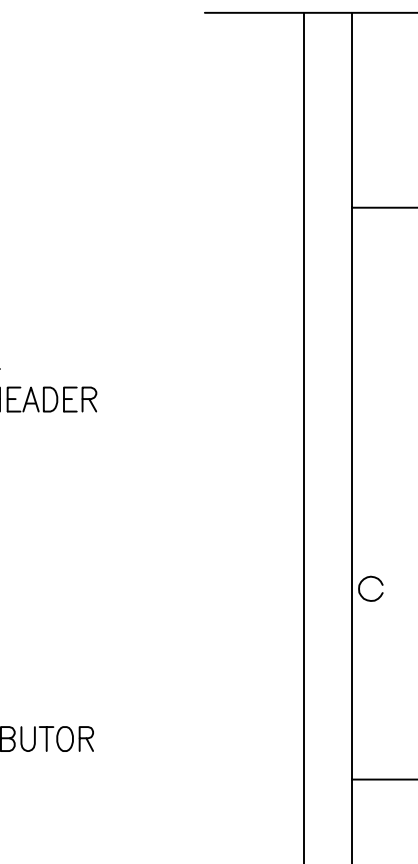
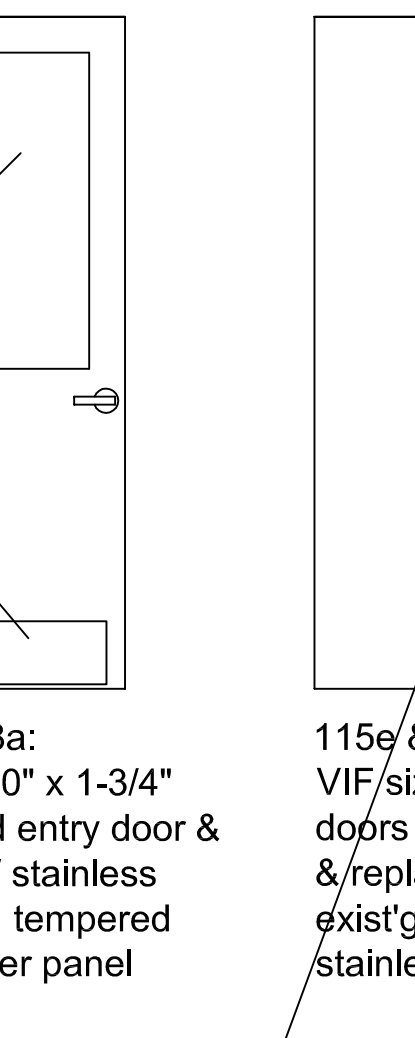
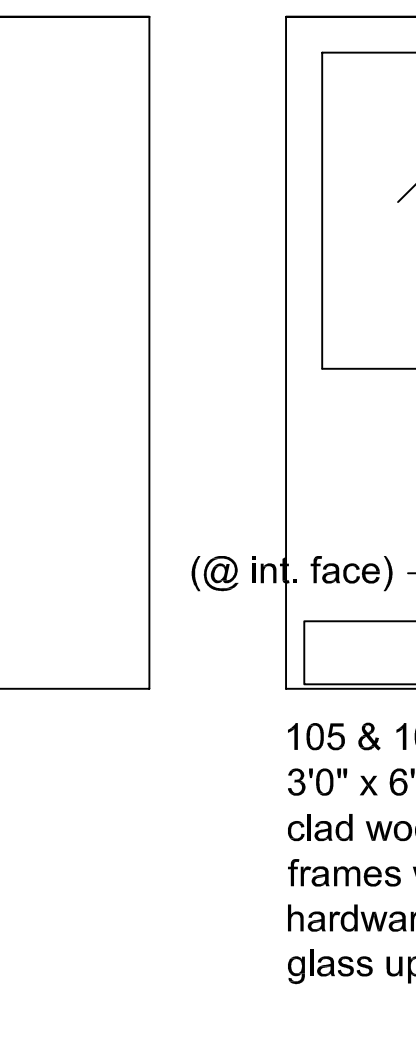
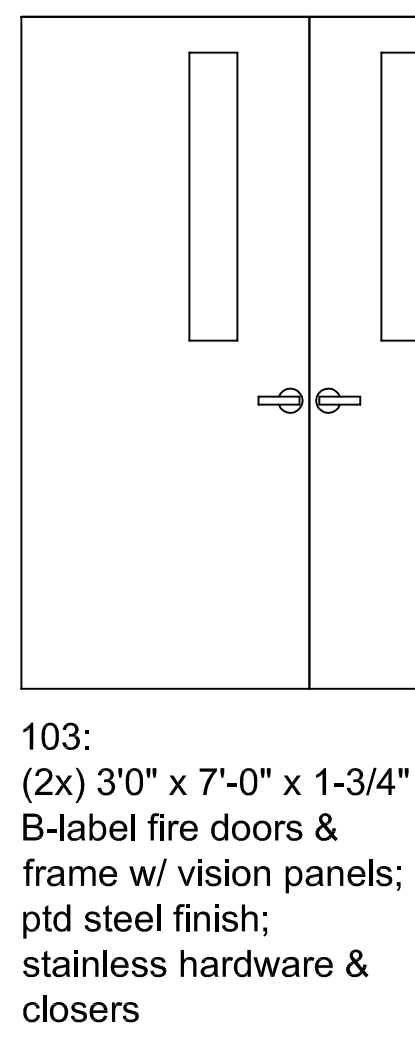
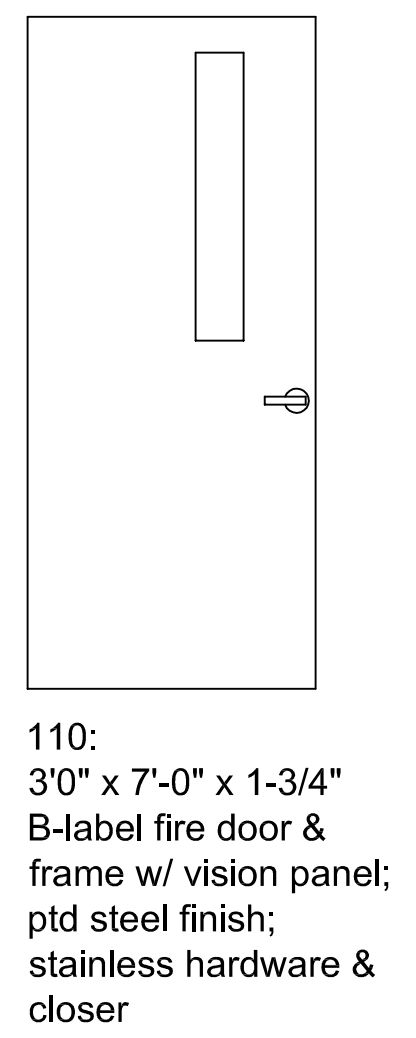
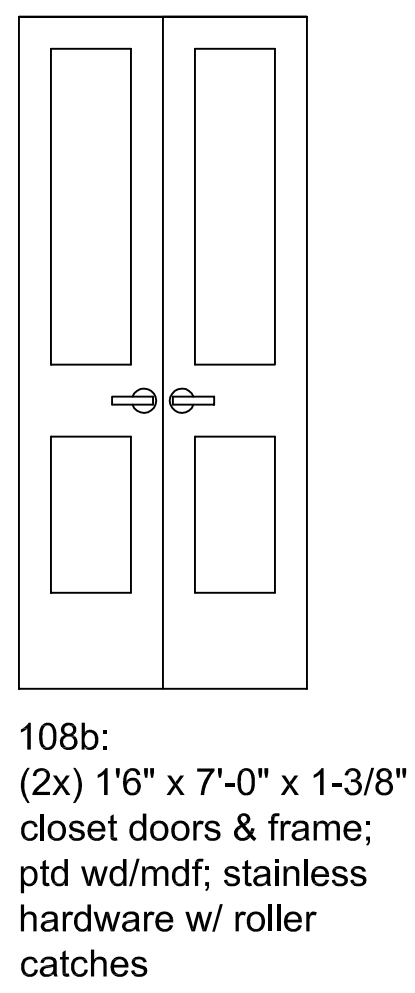
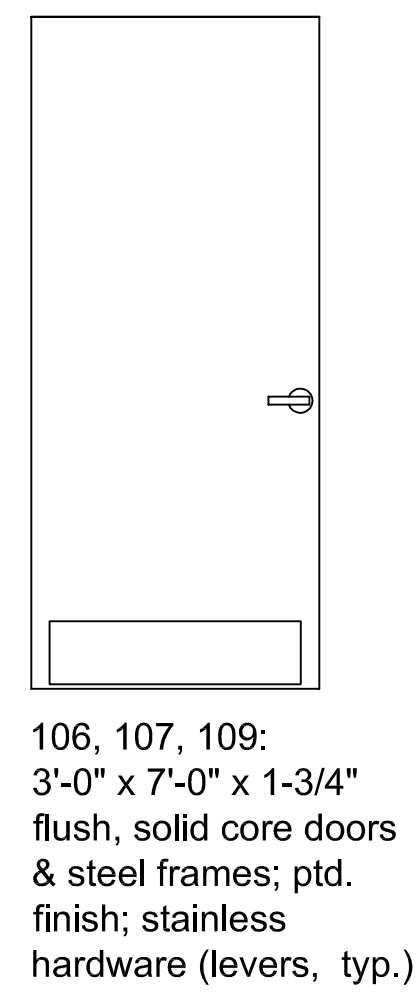
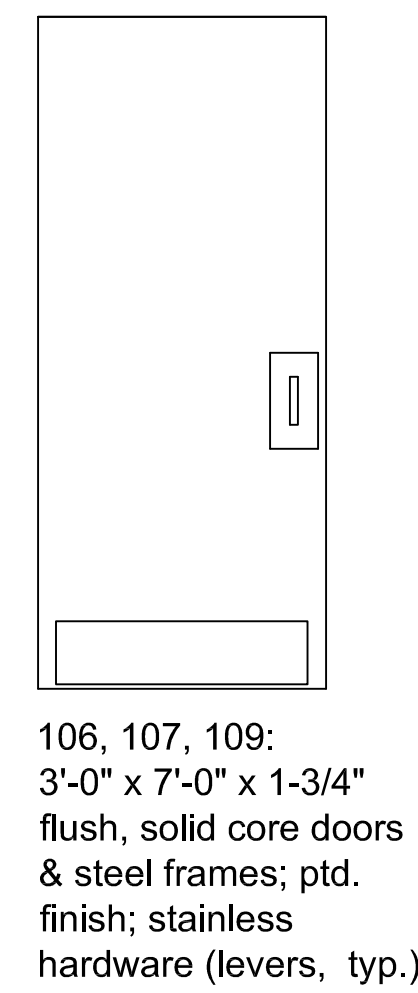
low-e argon double glazing, clear

confirm clad color & hwr finish options w/ owner

pre-painted wood interiors  
contractor to verify jamb depths

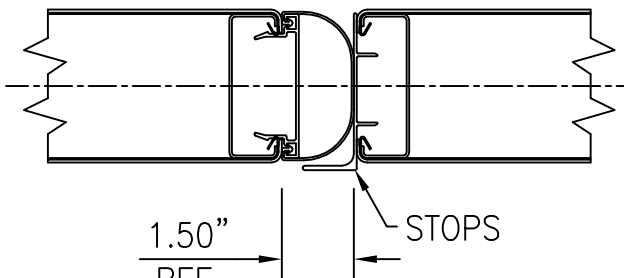


1 WindowTypes  
Scale: 1/2" = 1'-0"

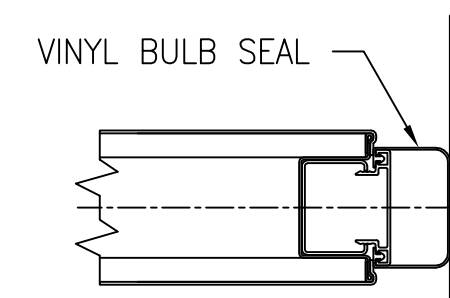


2 DoorTypes  
Scale: 1/2" = 1'-0"

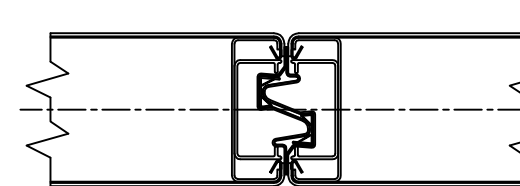
NIC (by Owner Vendor)



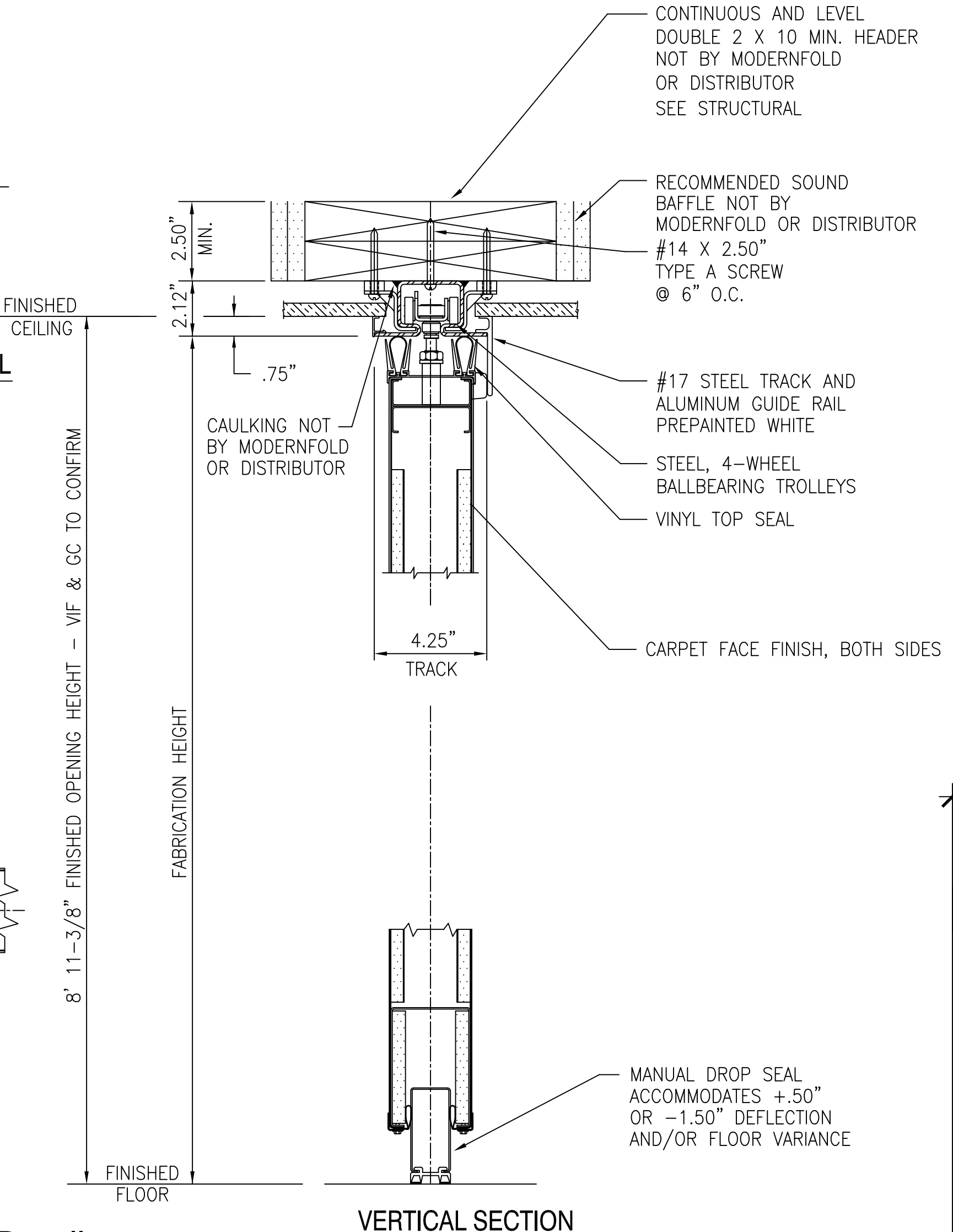
BULB SEAL CLOSURE DETAIL



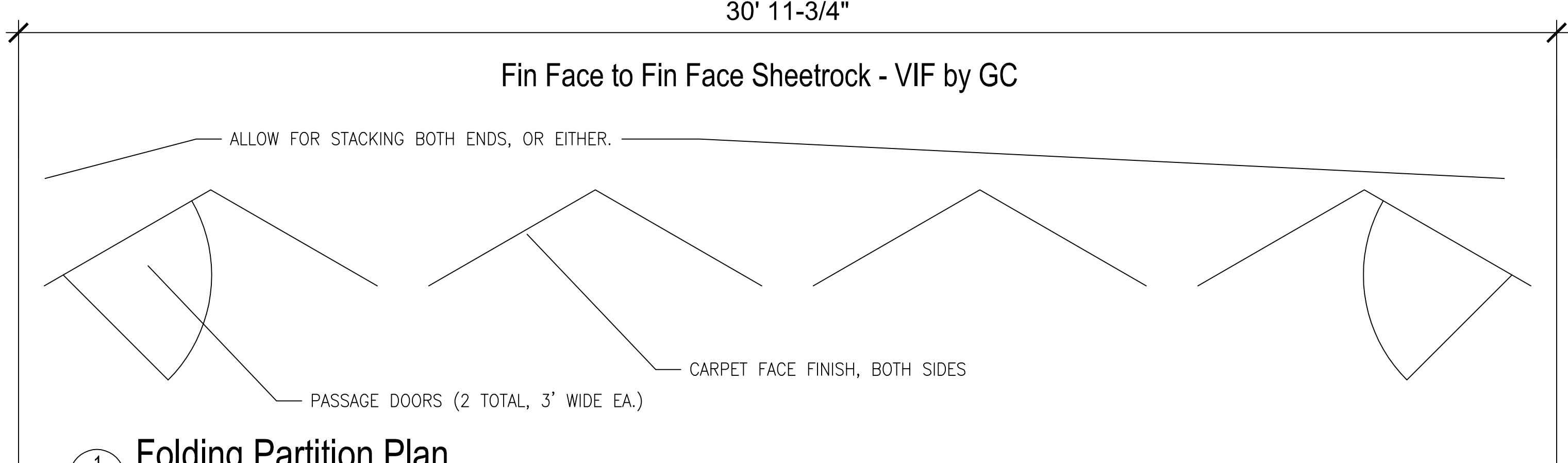
BULB SEAL



PANEL JOINT



VERTICAL SECTION



1 Folding Partition Plan  
Scale: 1/2" = 1'-0"

1 Folding Partition Details  
Scale: 3" = 1'-0"

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Title:  
Door & Window Types

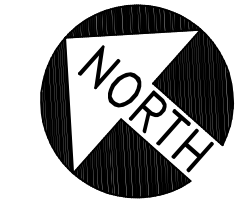
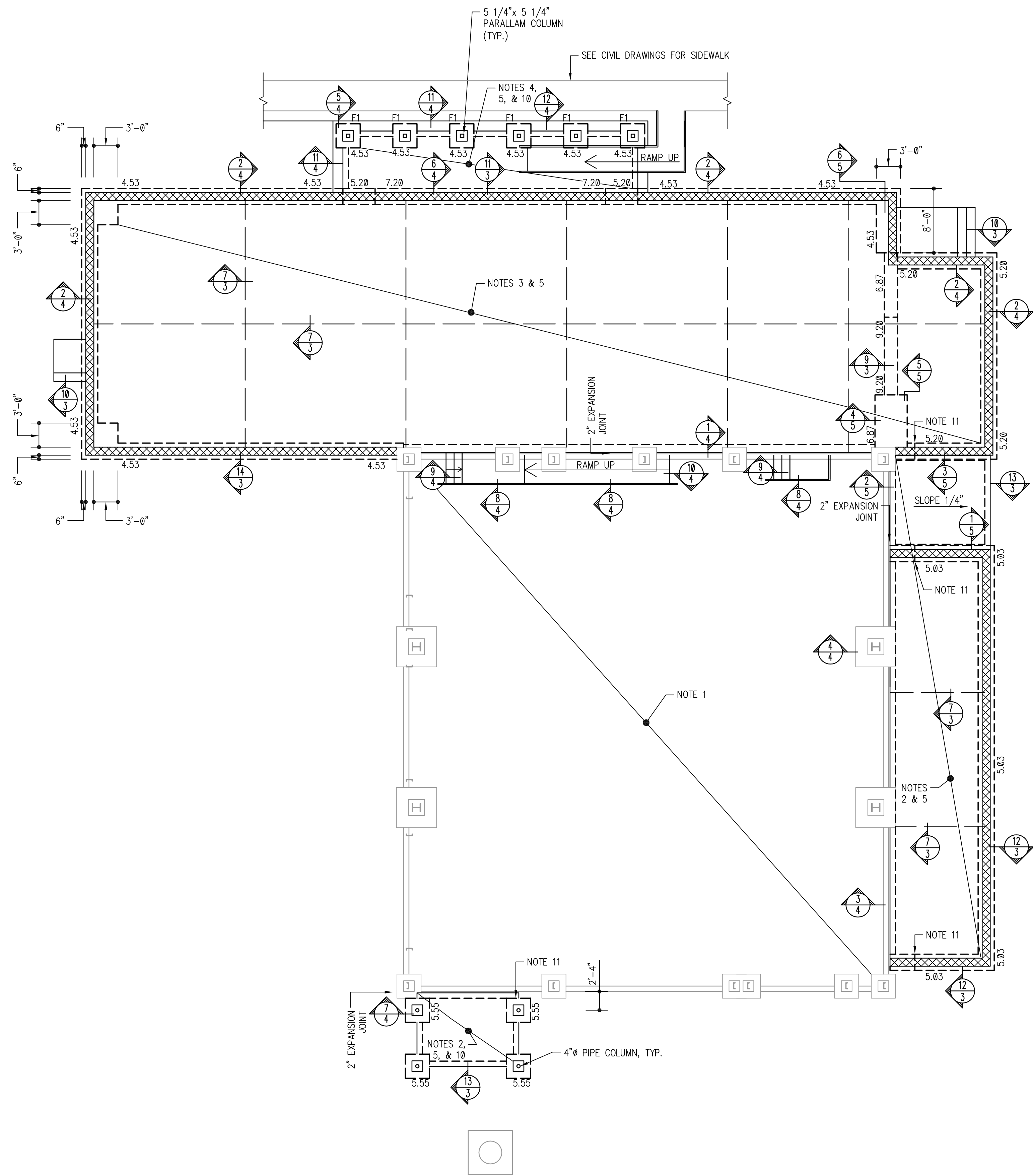
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**A4.1**  
No.

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FOUNDATION AND FIRST FLOOR FRAMING PLAN  
SCALE: 1/8" = 1'-0"

1. ELEVATION TOP OF EXISTING STRUCTURAL SLAB = 8.70
2. ELEVATION TOP OF NEW STRUCTURAL SLAB ON GRADE = 8.70
3. ELEVATION TOP OF NEW STRUCTURAL SLAB ON GRADE = 10.20
4. ELEVATION TOP OF NEW STRUCTURAL SLAB ON GRADE = 9.95
5. STRUCTURAL SLAB SHALL BE 5" CONCRETE SLAB ON GRADE (f<sub>c</sub> = 3000 PSI) REINFORCED WITH 6"x6"-W2.9/W2.9 WELDED WIRE FABRIC POURED OVER VAPOR BARRIER OVER 4" POROUS FILL.
6. ASSUMED SOIL BEARING VALUE = 2000 PSF BASED ON THE GEOTECHNICAL REPORT PREPARED BY JOHN D. HYNES AND ASSOCIATES, INC. DATED JULY 29, 2011.
7. WALL TYPES ARE NOTED THUS:  
 [Symbol: Dashed line] EXISTING CONCRETE WALL  
 [Symbol: Stippled area] NEW MASONRY WALL (ASTM-90)
8. ELEVATION BOTTOM OF FOOTING IS SHOWN ON PLAN.
9. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS & ELEVATIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION. INFORM ARCHITECT OF ANY DISCREPANCY PRIOR TO COMMENCING WORK.
10. ALL EXTERIOR CONCRETE SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI AND BE AIR ENTRAINED. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
11. STEP FOOTING AS REQUIRED TO MATCH EXISTING ELEVATION.

**MORABITO CONSULTANTS, INC.**  
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 SPARKS, MARYLAND 21152-9472  
 FAX (410) 467-4132  
 www.morabitoconsultants.com  
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PROFESSIONAL CERTIFICATION #11208  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland. License number: 12900  
 Expiration Date: 05/31/12

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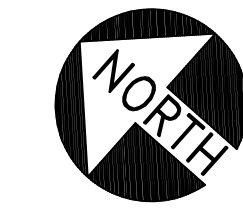
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Title: Foundation & First Floor Framing Plan  
 Date: October 5, 2011  
 Scale: 1/8" = 1'-0"

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S1

No.



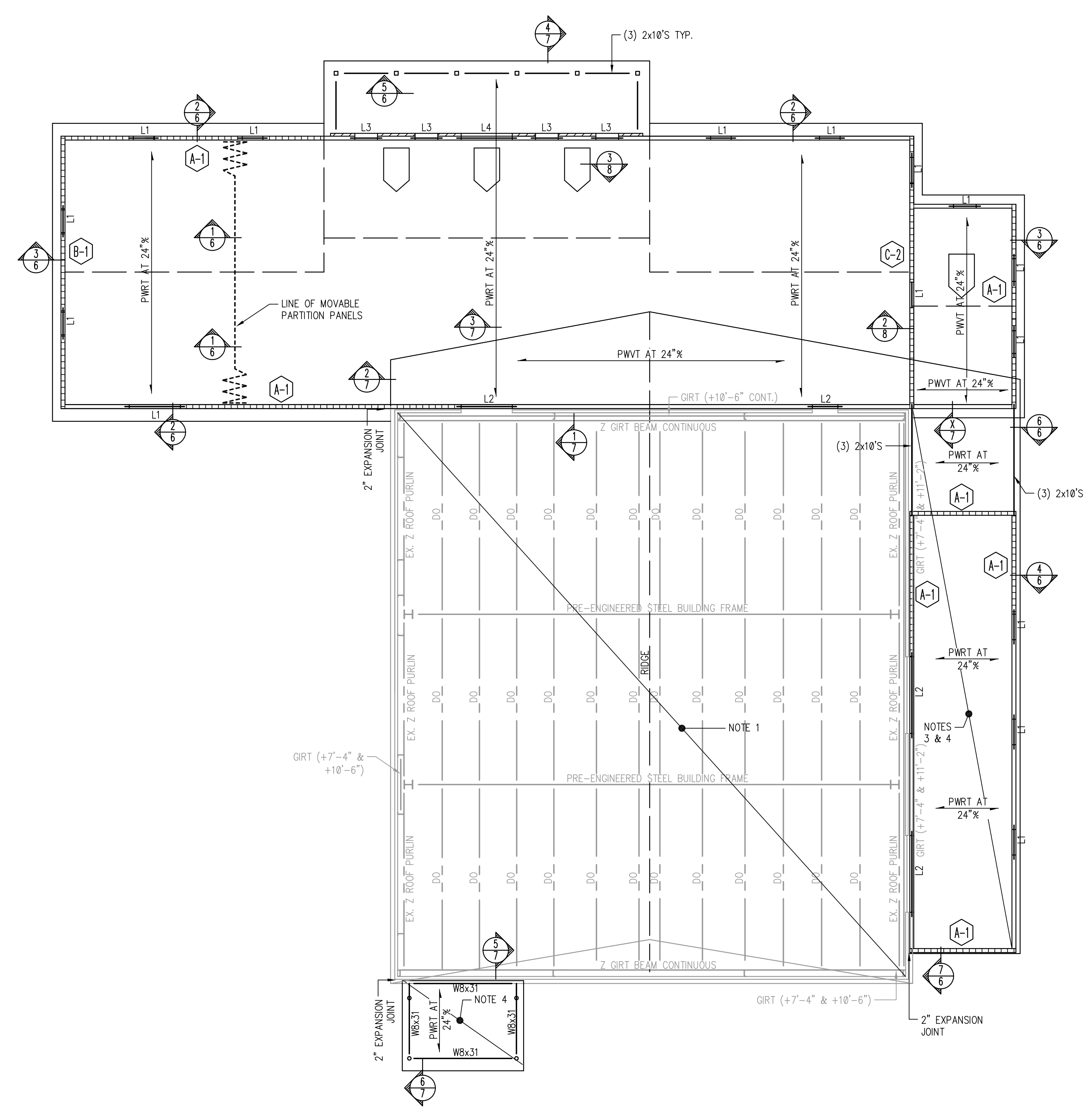
ROOF FRAMING PLAN  
SCALE: 1/8" = 1'-0"

- EXISTING PRE-ENGINEERED METAL BUILDING ROOF CONSISTS OF Z PURLINS SPACED AT 5'-0"± SUPPORTED BY PRE-ENGINEERED STEEL BUILDING FRAMES AS SHOWN.
- STRUCTURAL ROOF DECK OVER WOOD TRUSSES AND CONVENTIONAL WOOD FRAMING SHALL BE 5/8" EXTERIOR 32/16 EXPOSURE 1 APA RATED PLYWOOD WITH SHEATHING CLIPS AT MIDSPAN BETWEEN FRAMING UNLESS NOTED OTHERWISE.
- WHERE ROOF SHALL SUPPORT SOLAR PANELS: STRUCTURAL ROOF DECK OVER WOOD TRUSSES AND CONVENTIONAL WOOD FRAMING SHALL BE 3/4" EXTERIOR 32/16 EXPOSURE 1 APA RATED PLYWOOD WITH SHEATHING CLIPS AT MIDSPAN BETWEEN FRAMING.
- PRE-ENGINEERED WOOD TRUSSES SHALL BE DESIGNED FOR TOP CHORD LIVE LOAD OF 80 PSF AND DEAD LOAD OF 25 PSF.
- FOR WOOD TRUSS NOTES REFER TO DRAWING S-4 AND SPECIFICATIONS ON SHEETS S-11 THRU S-15 FOR ADDITIONAL REQUIREMENTS. CONTRACTOR TO COORDINATE WORKING POINTS AND PITCHED OF PREFABRICATED ROOF TRUSSES.
- WALL TYPES ARE INDICATED ON PLAN THUS:
- ALL WOOD STUDS SHALL BE 2x6'S AT 16"±
- ALL WOOD STUDS SHALL BE NO. 1/NO. 2 SPRUCE PINE FIR.
- PRE-ENGINEERED WOOD TRUSSES ARE NOTED ON PLAN THUS:
- ALL WOOD BEAMS EXPOSED TO WEATHER SHALL BE PRESSURE TREATED.
- ALL STRUCTURAL STEEL SHALL BE GALVANIZED.

LINTEL SCHEDULE			
MARK	MEMBER	TYPE	SUPPORT
L1	(3)-2" x 6" + (2)-1/2" PLYWOOD PLATES		(3) 2" x 6" EACH END (1) JACK STUD + (2) FULL HEIGHT
L2	(3)-2" x 10" + (2)-1/2" PLYWOOD PLATES		(3) 2" x 6" EACH END (1) JACK STUD + (2) FULL HEIGHT
L3	(3)-2" x 6" + (2)-1/2" PLYWOOD PLATES WITH 4" x 3 1/2" x 5/16" ANGLE AT BRICK		(3) 2" x 6" EACH END (1) JACK STUD + (2) FULL HEIGHT
L4	(3)-2" x 10" + (2)-1/2" PLYWOOD PLATES WITH 6" x 3 1/2" x 3/8" ANGLE AT BRICK		(3) 2" x 6" EACH END (1) JACK STUD + (2) FULL HEIGHT

LINTEL NOTES:

- FOR EXACT SIZE AND LOCATION OF WALL OPENINGS, SEE ARCHITECTURAL DRAWINGS.
- ALL STRUCTURAL STEEL IN CONTACT WITH MASONRY SHALL BE GALVANIZED.
- STRUCTURAL WOOD BEAMS AND LINTELS AND STUDS SHALL BE NO.1/ NO.2 SPRUCE-PINE-FIR WITH THE FOLLOWING MINIMUM PROPERTIES:  
 $E = 1,400,000$  PSI       $F_b = 875$  PSI       $F_{c1} = 425$  PSI  
 $F_v = 135$  PSI       $F_{c1v} = 1150$  PSI
- SECURE MULTIPLE JAMB STUDS TOGETHER WITH 16 PENNY NAILS AT 8"± STAGGERED EACH PLY.
- PROVIDE 1/2" CONTINUOUS PLYWOOD PLATES AT ALL WOOD BEAMS LOCATED IN STUD WALLS AS REQUIRED TO ACHIEVE DESIRED WALL THICKNESS.
- PLYWOOD PLATES AS NOTED IN LINTEL SCHEDULE SHALL BE CONTINUOUS FOR FULL LENGTH OF LINTEL.



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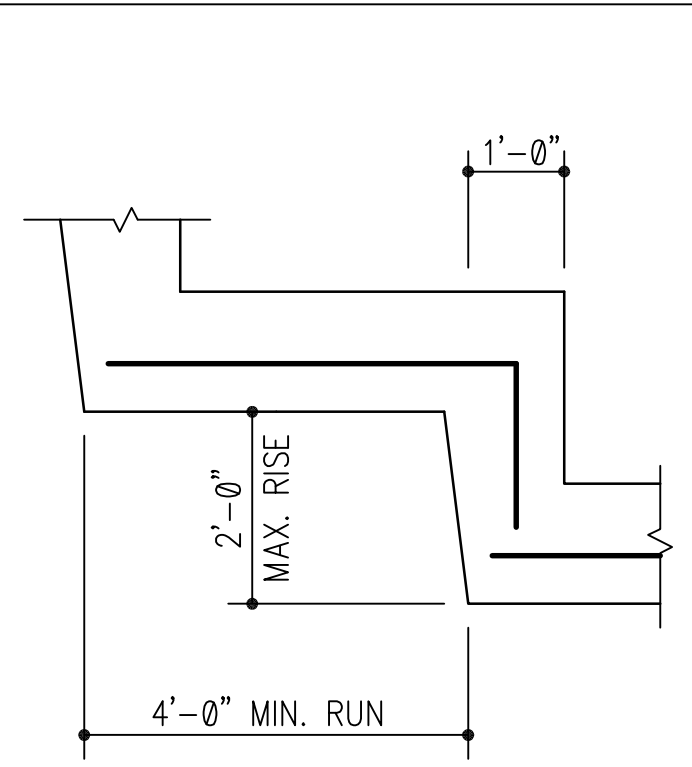
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Title:  
**Roof Framing Plan**  
 Date: October 5, 2011  
 Scale: 1/8" = 1'-0"

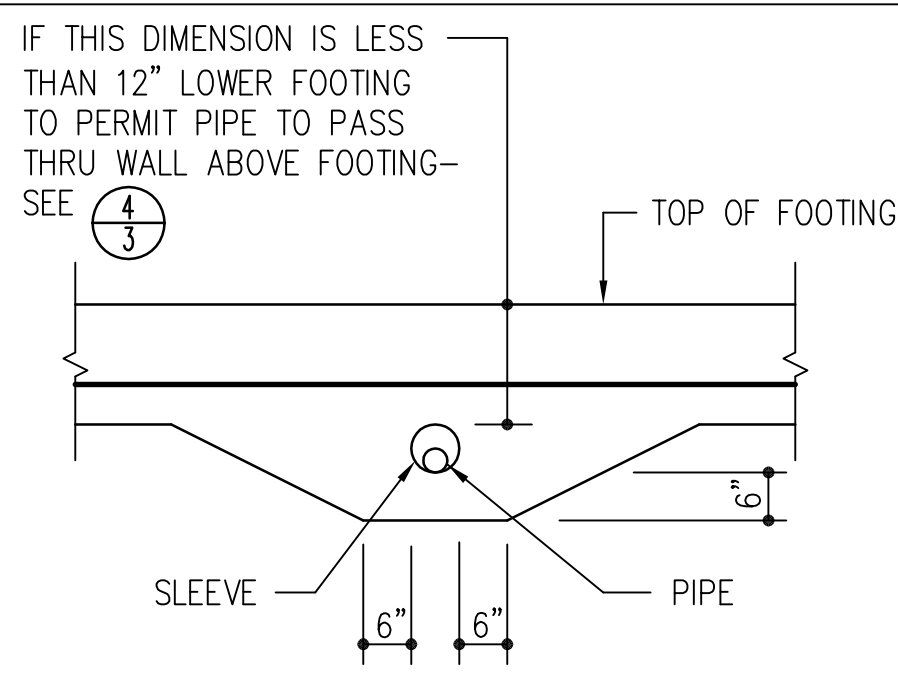
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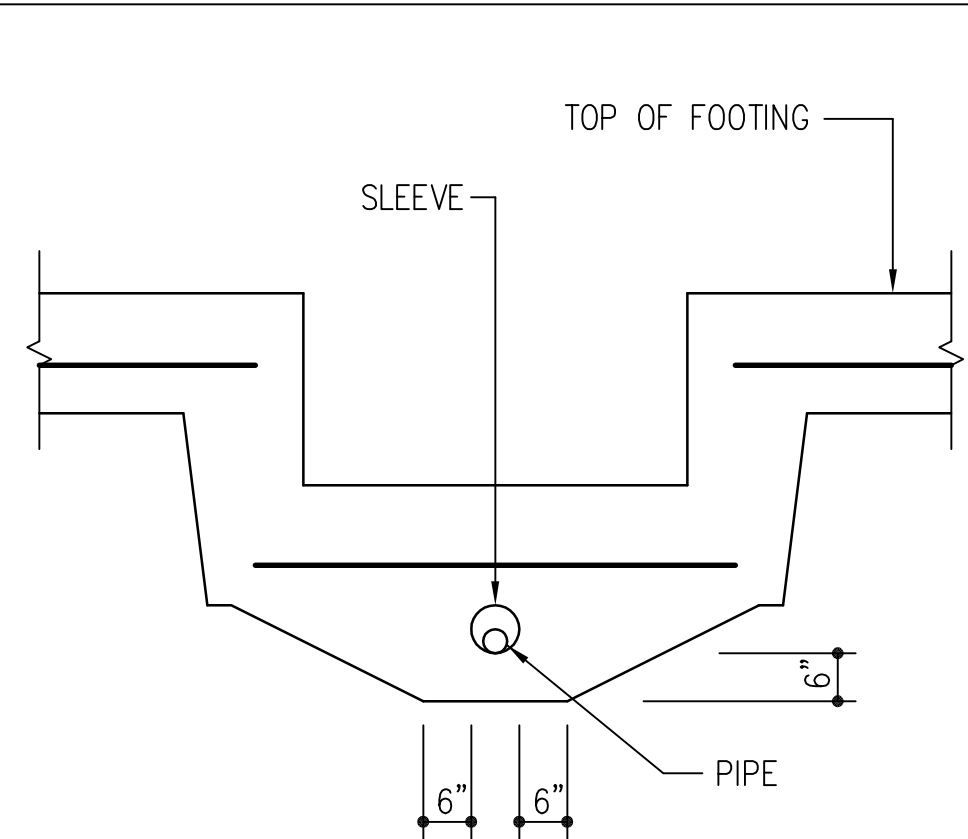
• SEE SECTION FOR SIZE OF REINF. BARS

① TYP. STEPPED FOOTING



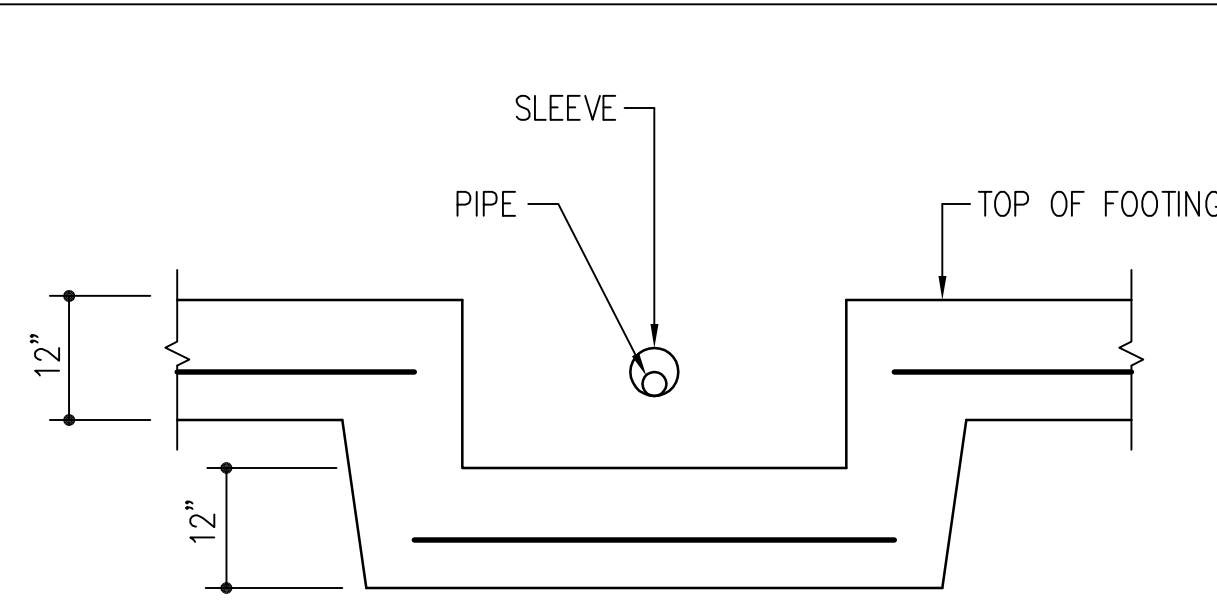
• WHEN PIPE IS MORE THAN 12" BELOW BOTTOM OF FOOTING SHOWN BY ELEVATIONS ON PLAN, STEP FOOTING DOWN TO PERMIT PIPE TO PASS DIRECTLY BELOW FOOTING - SEE ③

② TYPICAL PIPE THRU FOOTING



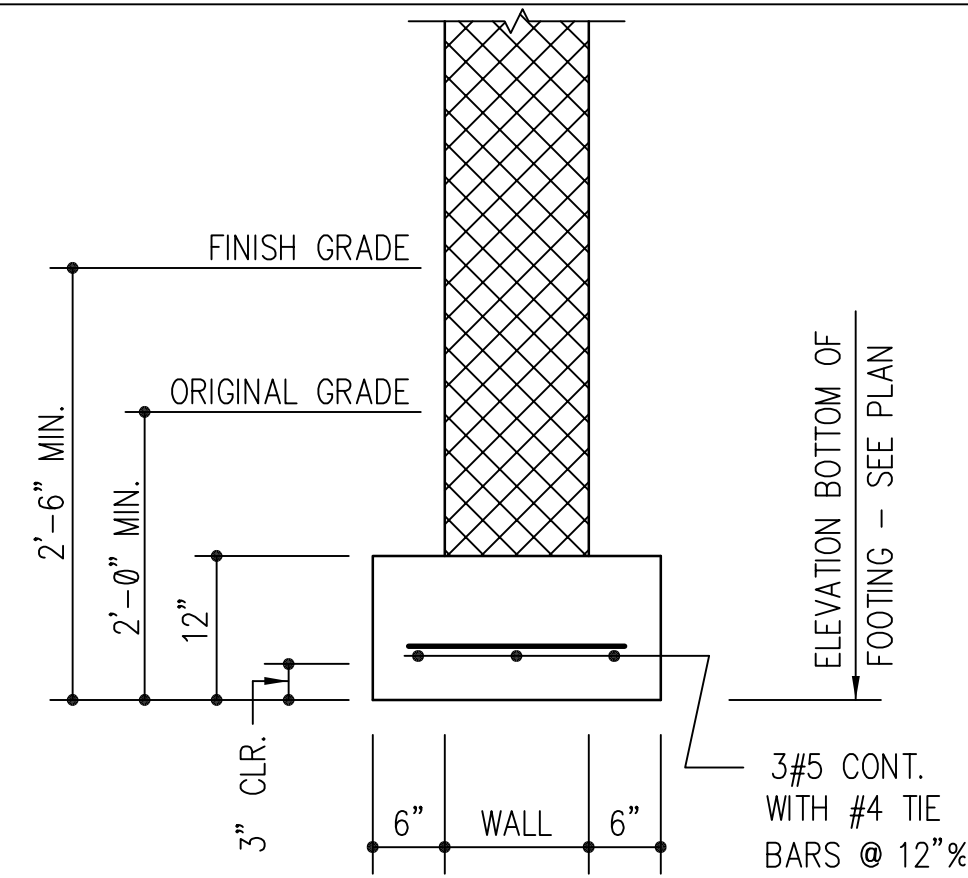
• STEP FOOTING DOWN AS REQUIRED IN ACCORDANCE WITH DETAIL ③

③ FOOTING STEPPED DOWN AT PIPE

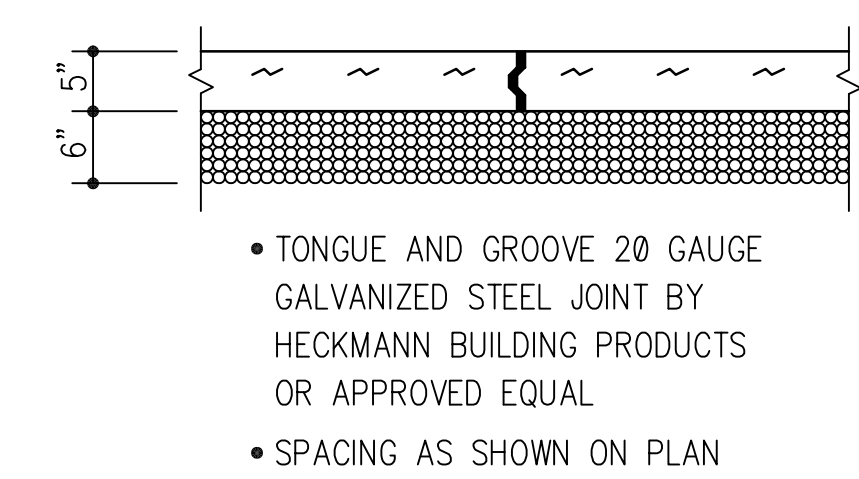


• STEP FOOTING DOWN AS REQUIRED IN ACCORDANCE WITH DETAIL ③

④ FOOTING STEPPED DOWN AT PIPE



⑤ TYP. MASONRY WALL FOOTING



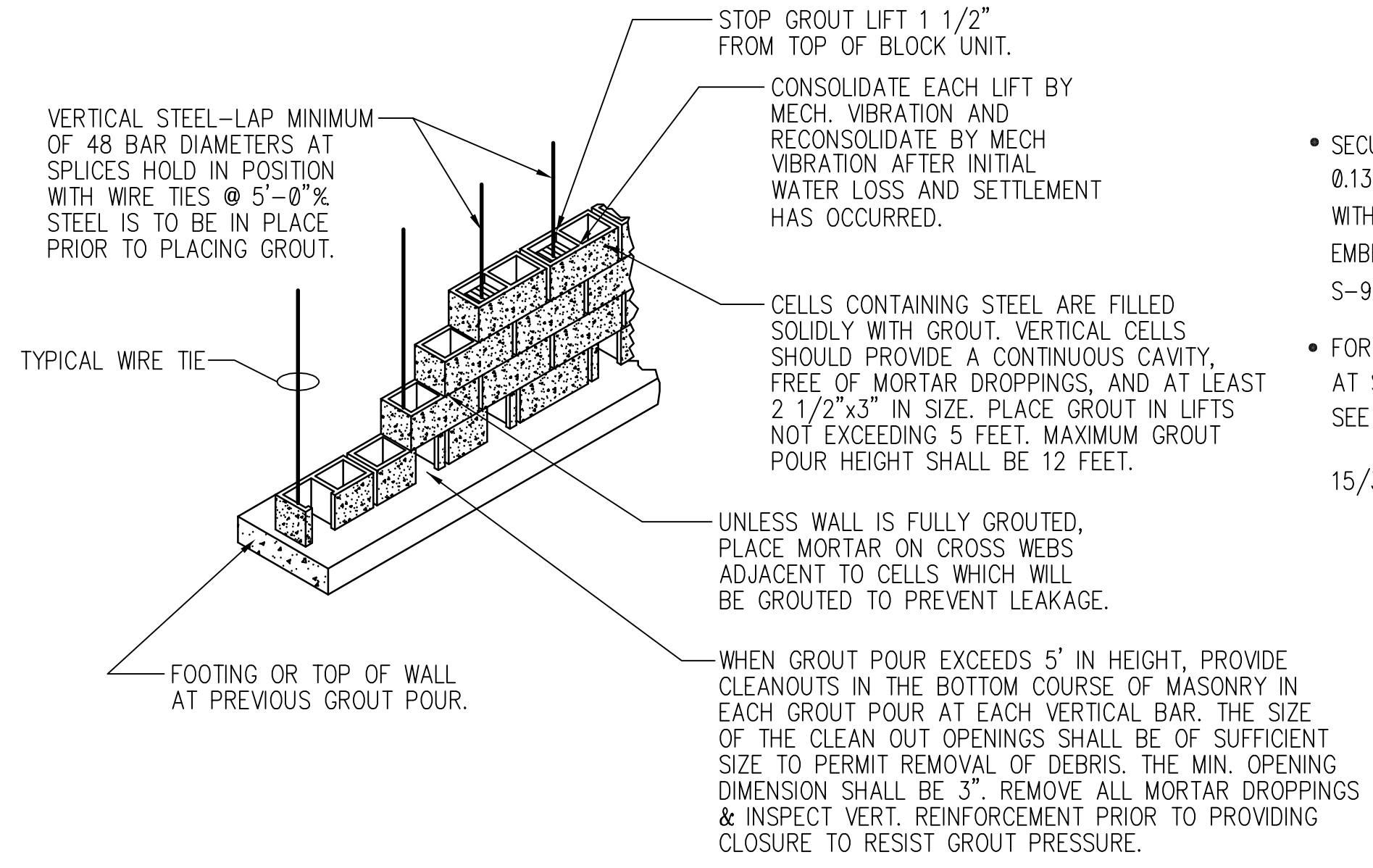
⑥ TYP. CONSTRUCTION JOINT IN SLAB ON GRADE

• FILL WITH JOINT SEALANT  
DEPTH = 1/4" SAWCUT OR SLAB THICKNESS  
1/4" SAWCUT OR PREFORMED INSERT

• ALL SAWCUTS SHALL BE MADE WITHIN 8 HOURS OF POURING SLAB

• MAXIMUM SPACING OF CONTROL JOINTS SHALL BE 18'-0"

• FOR LOCATION OF CONTROL JOINTS SEE ARCHITECTURAL DRAWINGS

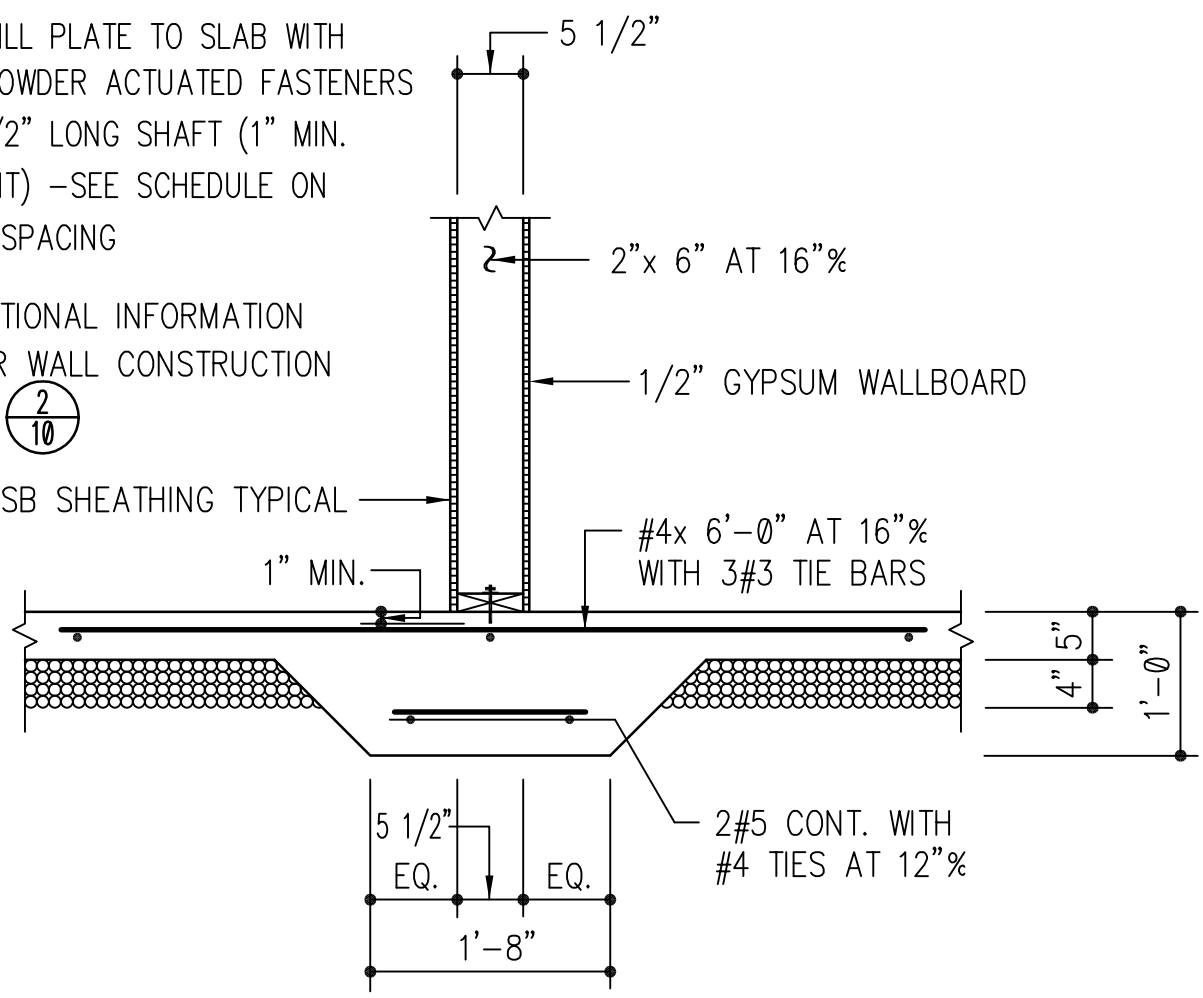


⑧ TYPICAL REINFORCED MASONRY CONSTRUCTION

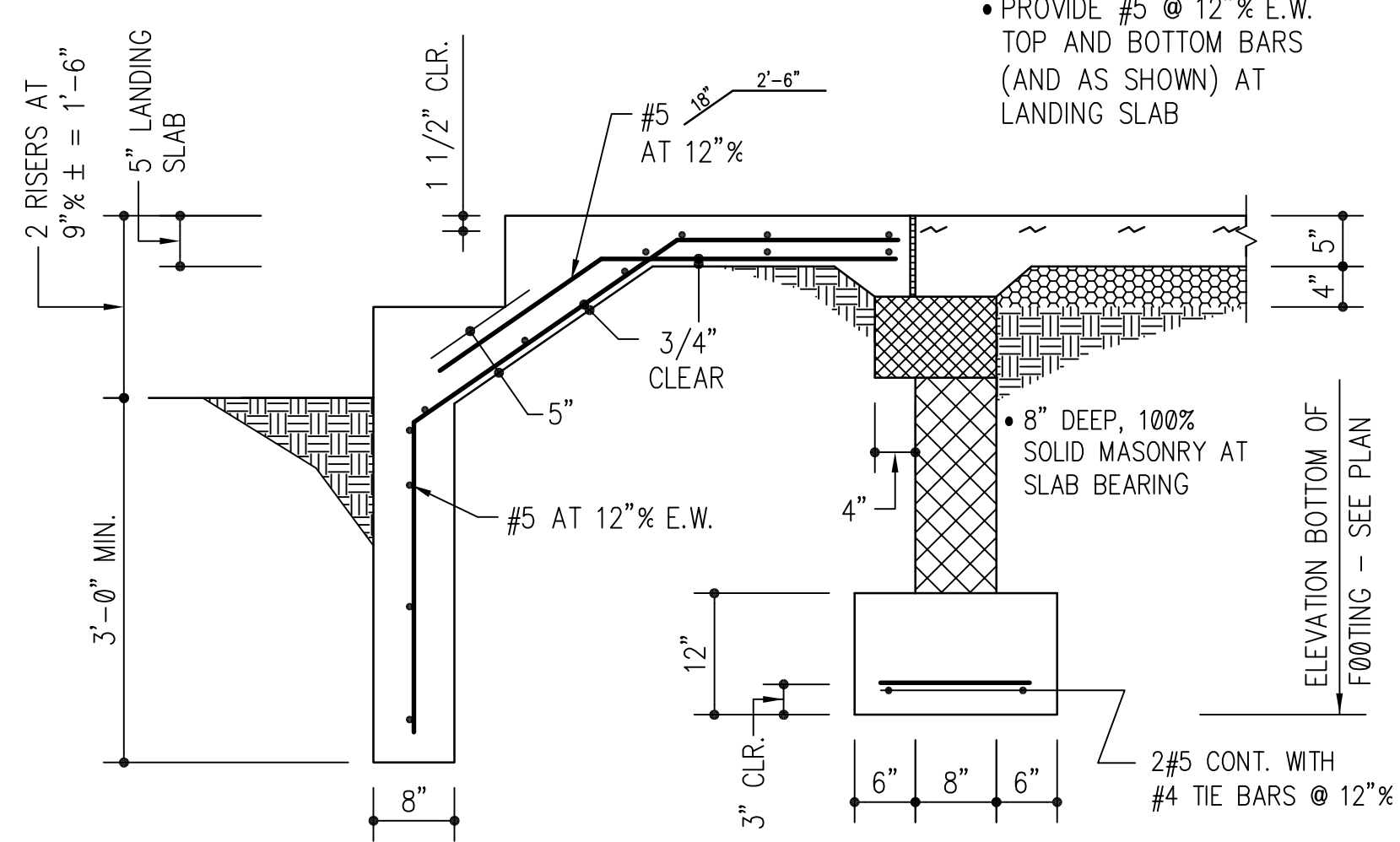
VERTICAL REINFORCING ONLY

• SECURE SILL PLATE TO SLAB WITH 0.138" Ø POWDER ACTUATED FASTENERS WITH 2 1/2" LONG SHAFT (1" MIN. EMBEDMENT) - SEE SCHEDULE ON S-9 FOR SPACING

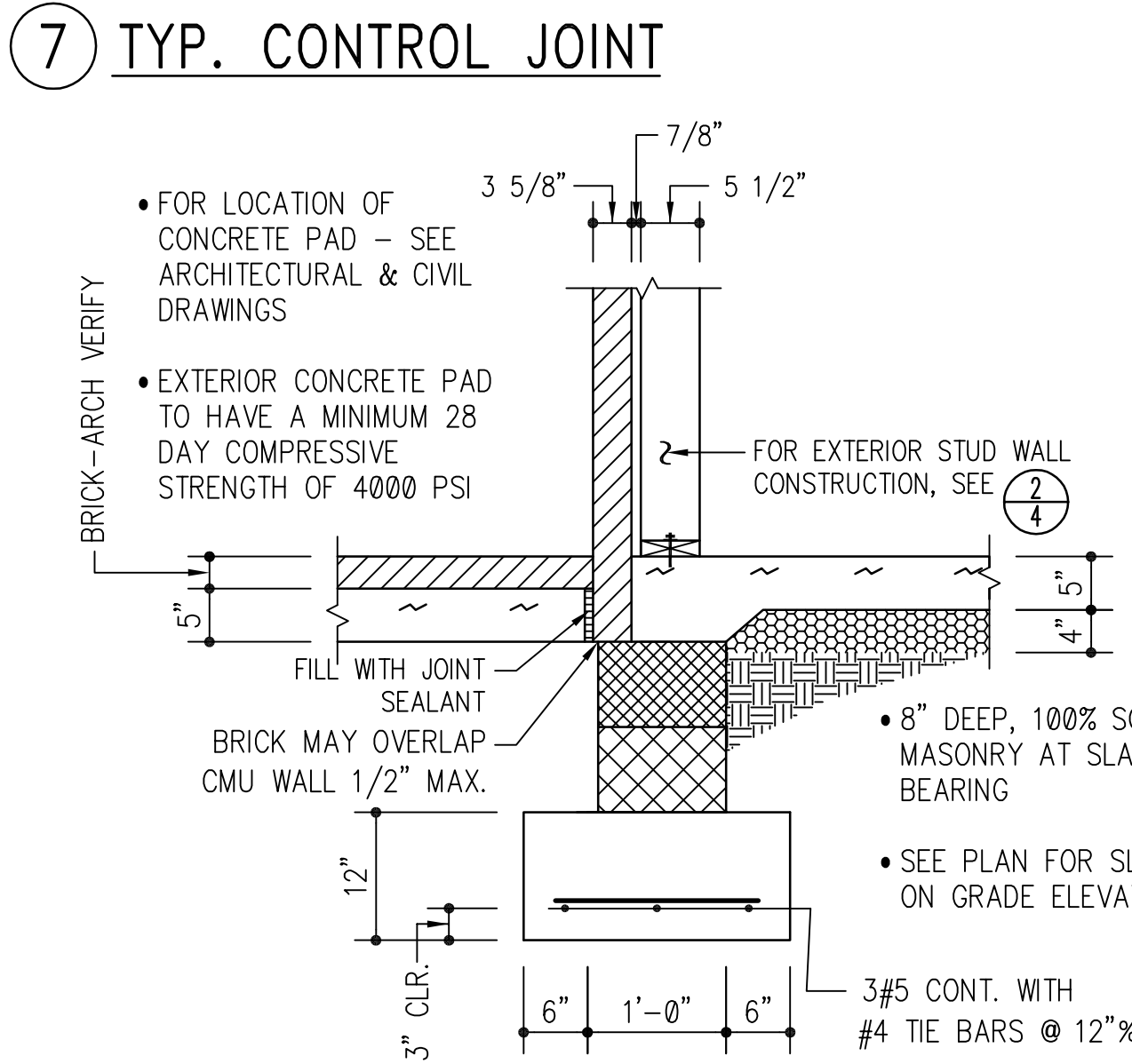
• FOR ADDITIONAL INFORMATION AT SHEAR WALL CONSTRUCTION SEE ⑩



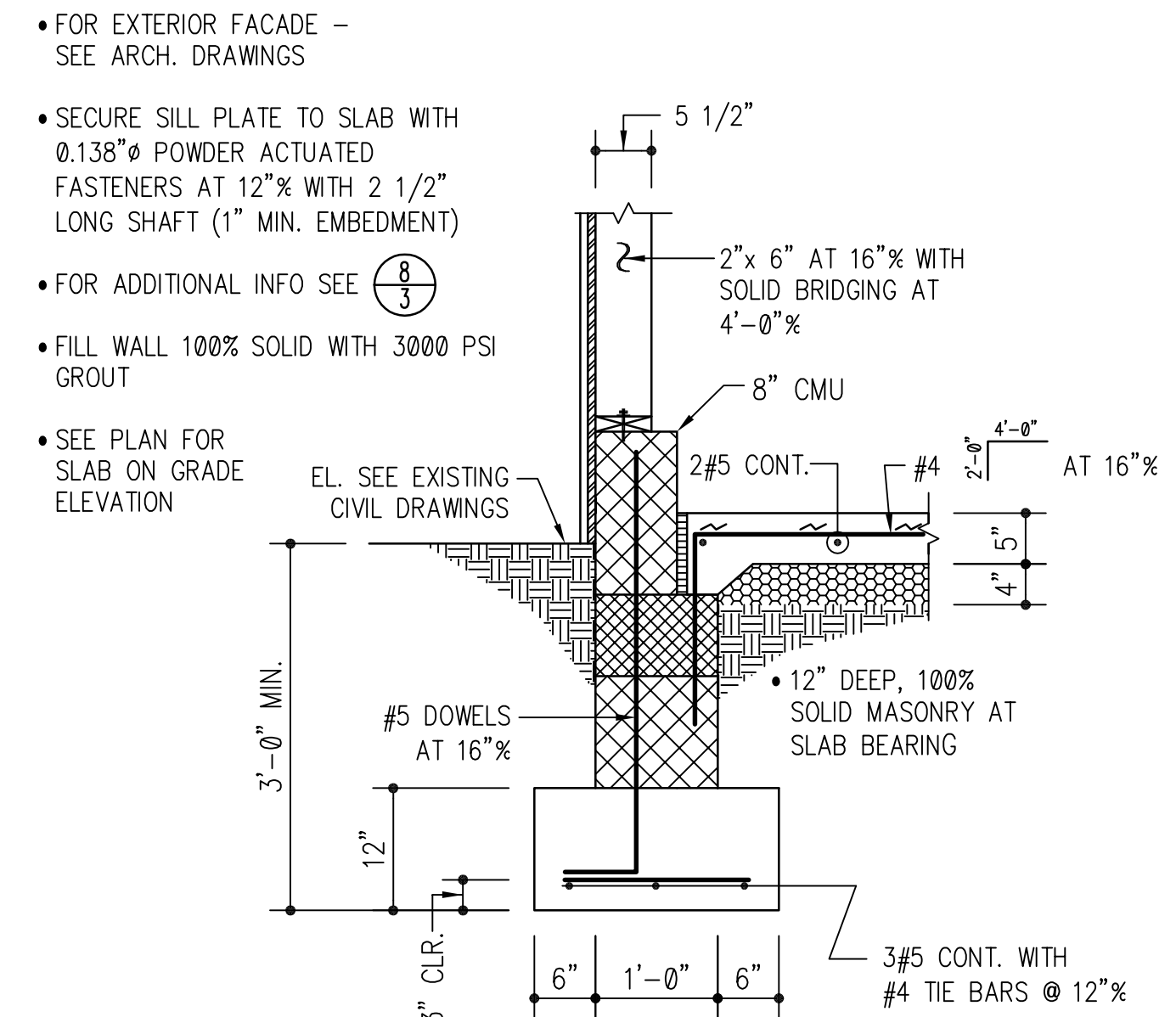
⑨ SHEAR WALL AT SLAB



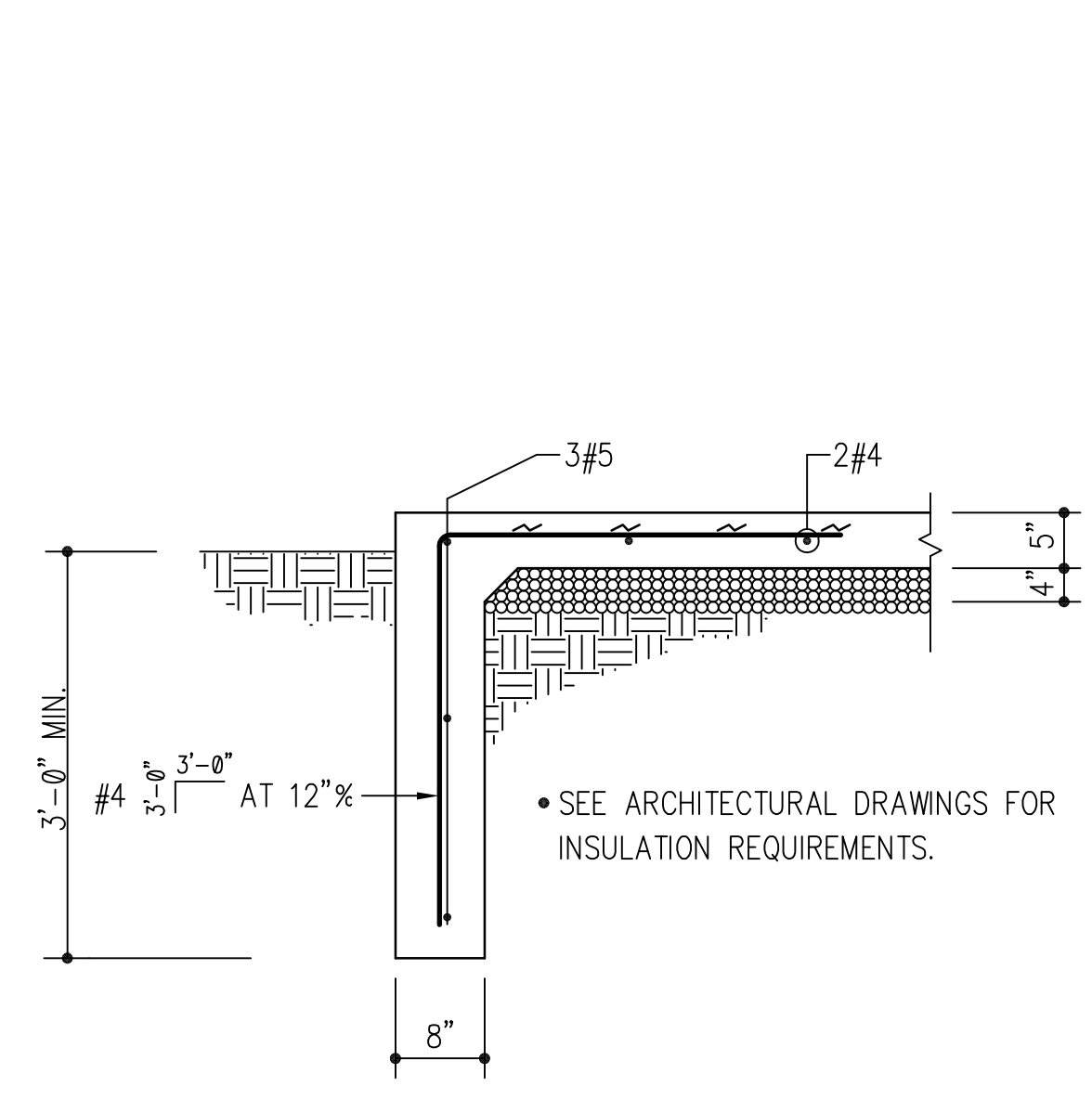
⑩ TYPICAL EXTERIOR STAIR DETAIL



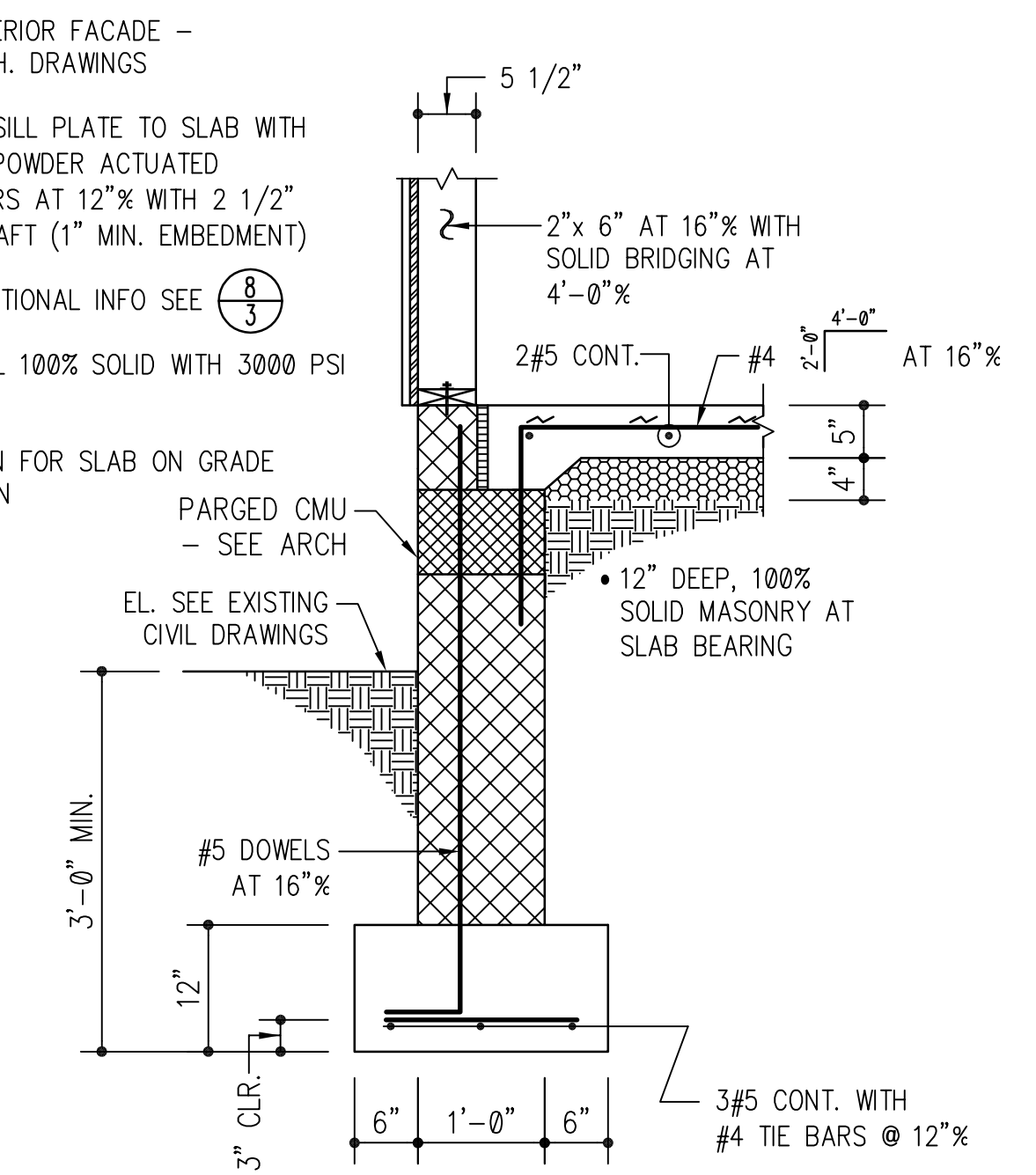
⑪ FOOTING AT PORCH



⑫ FOOTING AT ADDITION



⑬ TURN DOWN SLAB



⑭ FOOTING AT ADDITION

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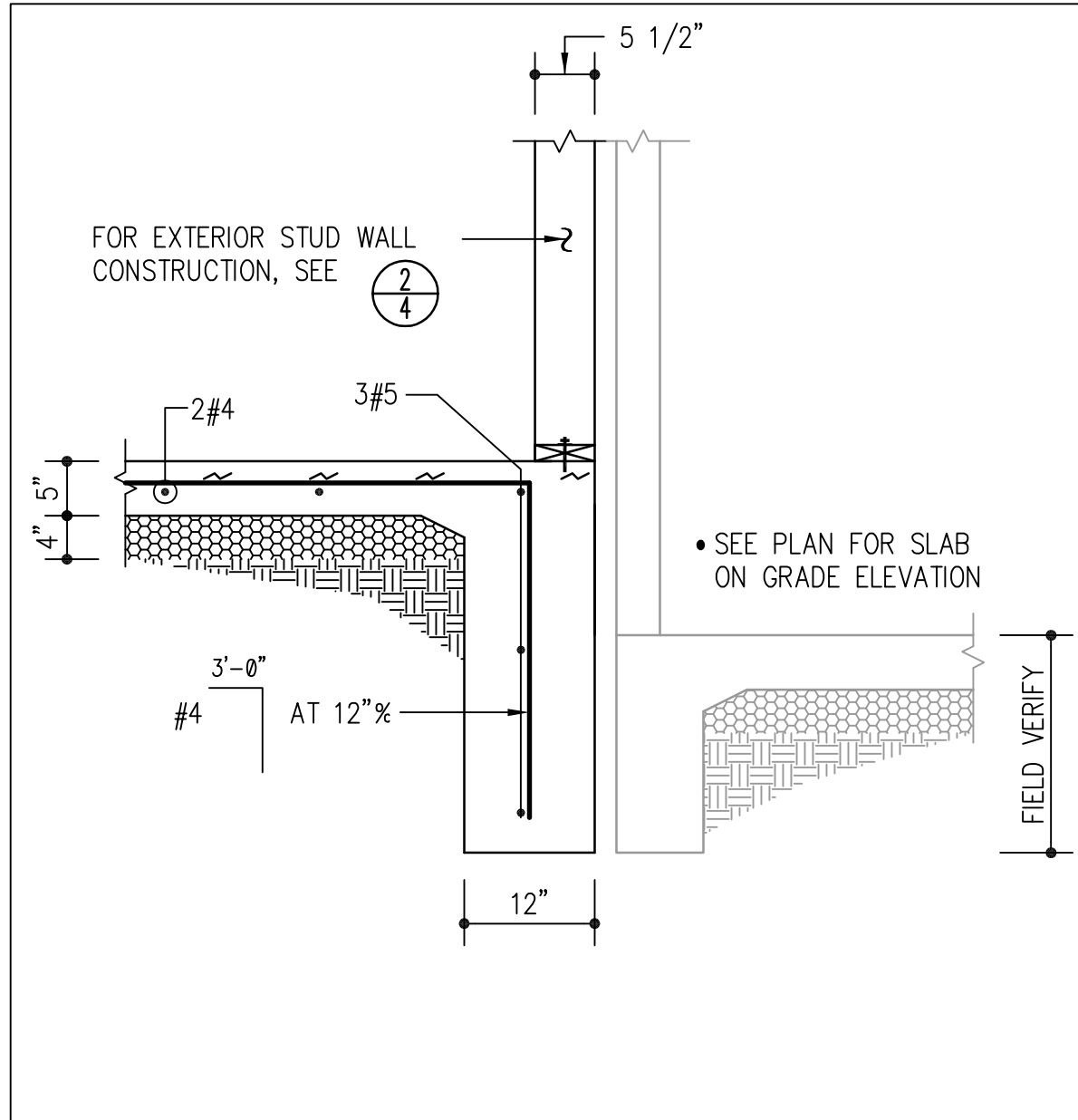
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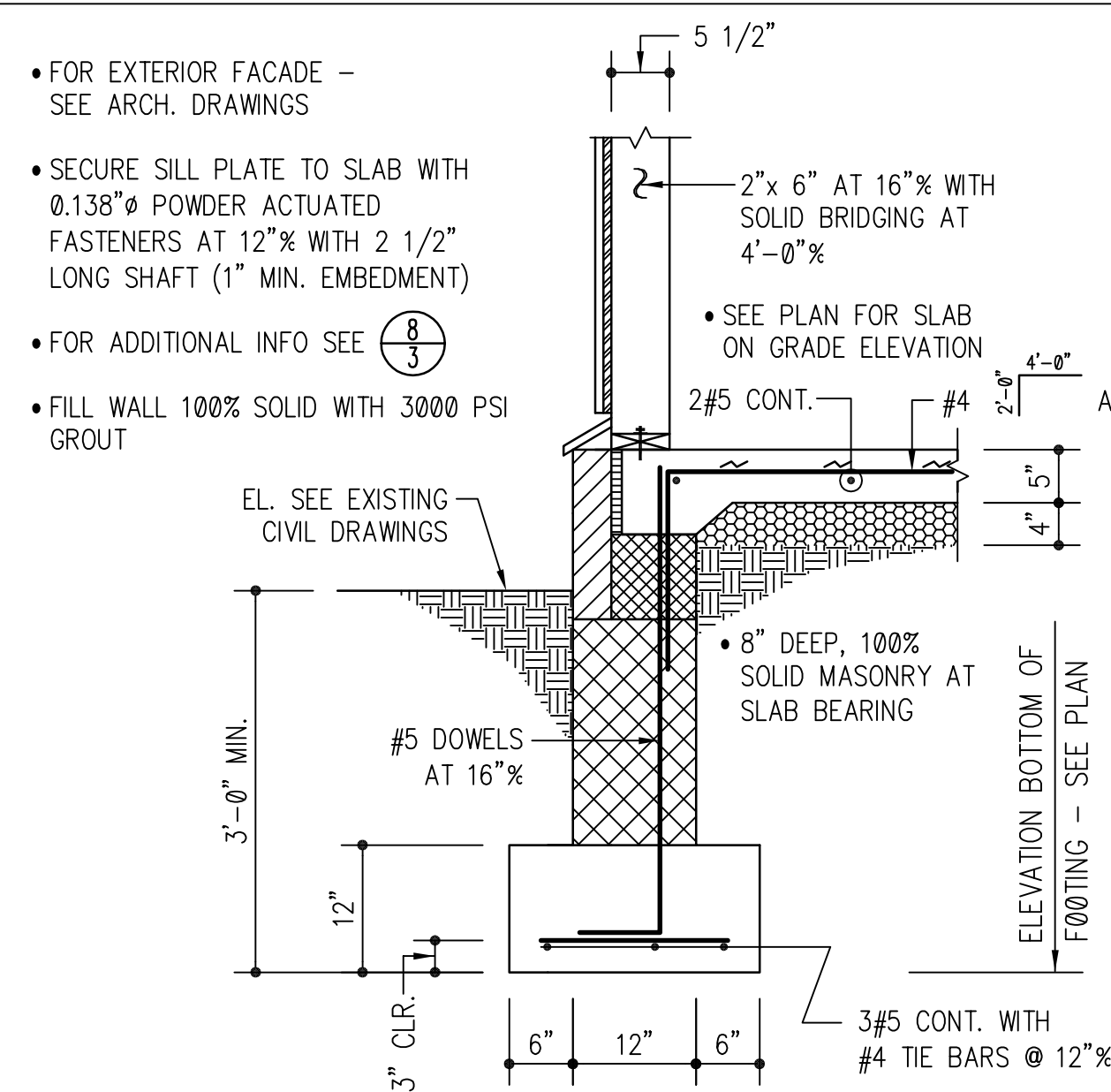
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No. **S3**

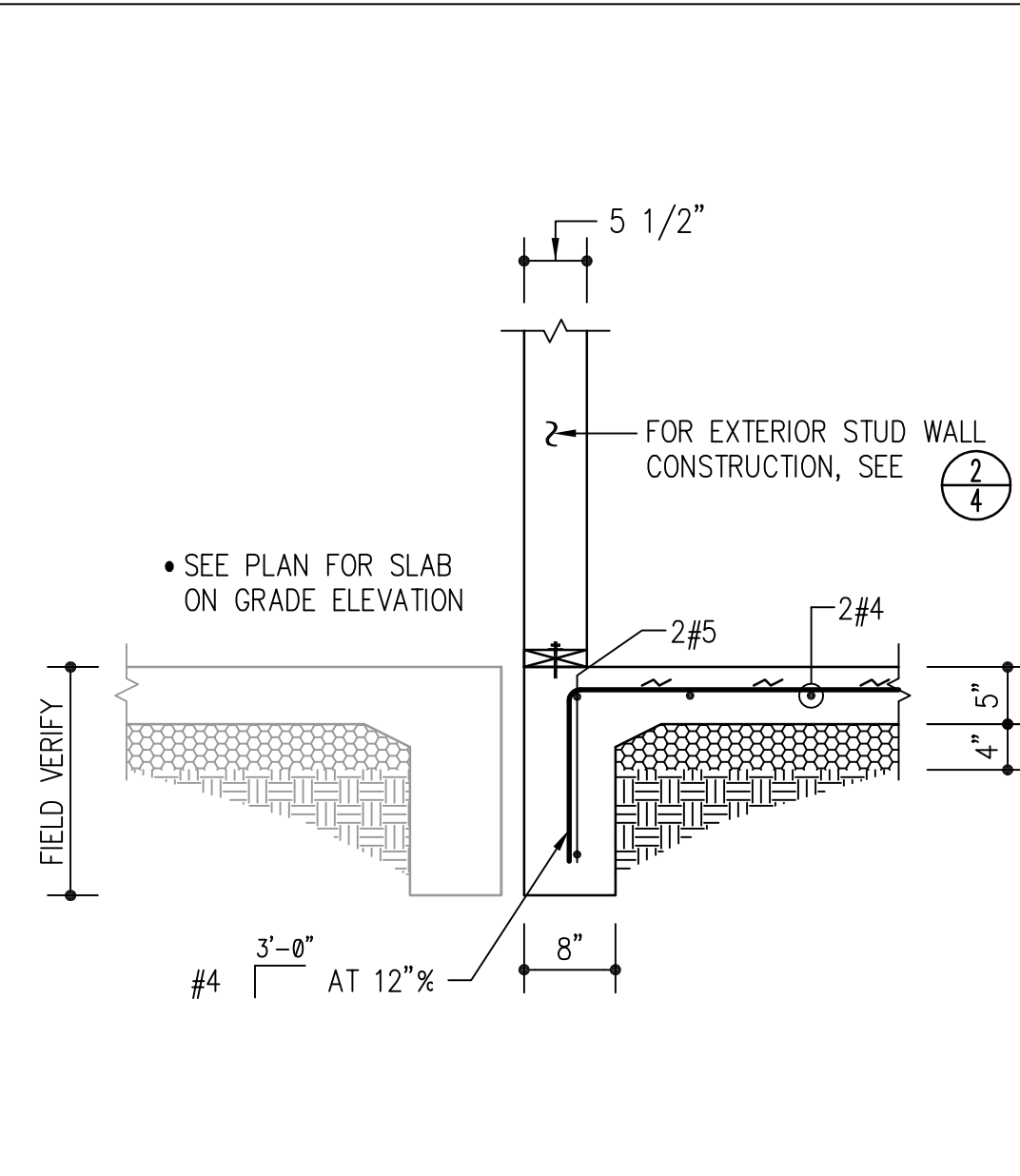
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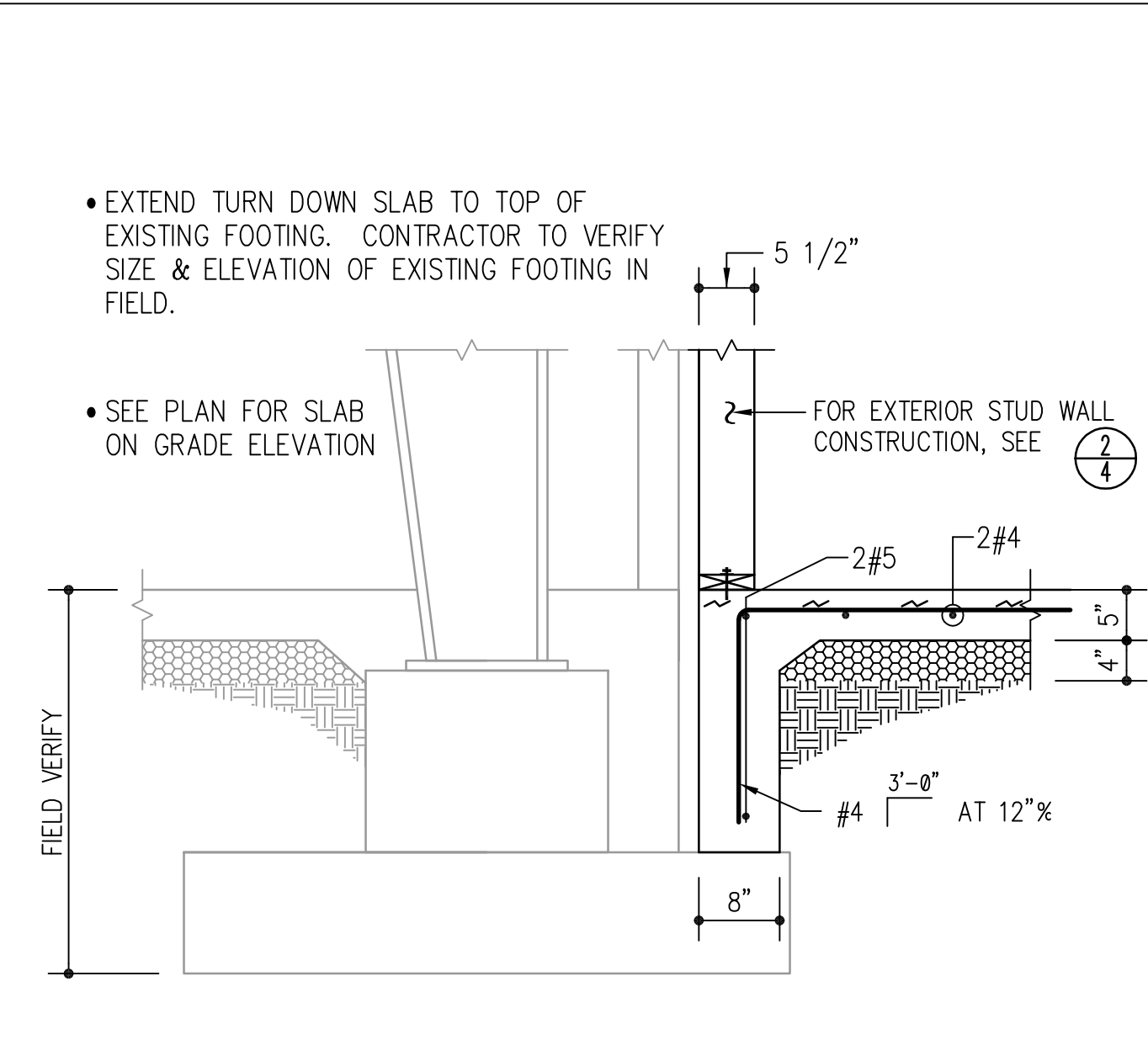
① TURNDOWN SLAB AT ADDITION



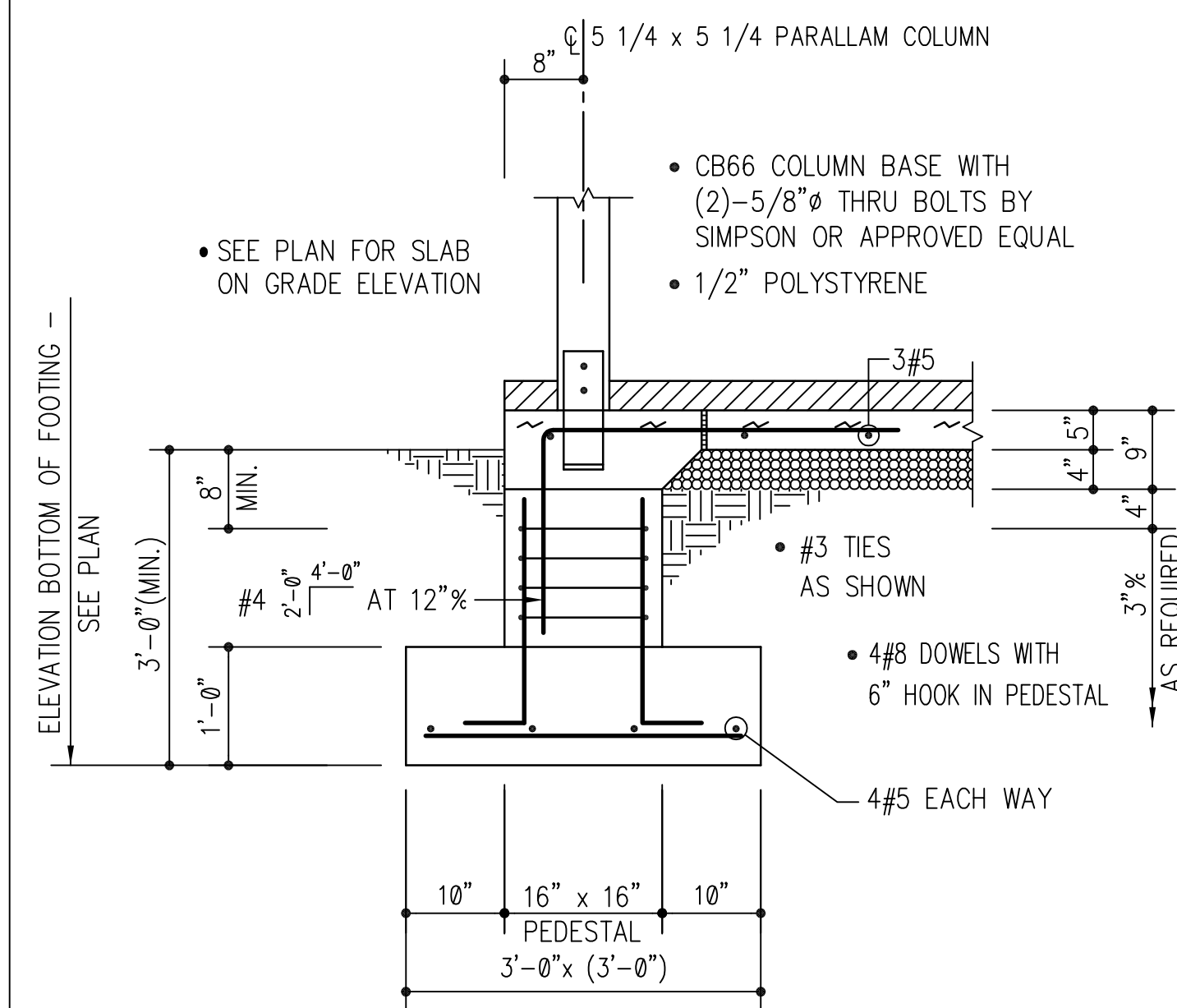
② FOOTING AT ADDITION



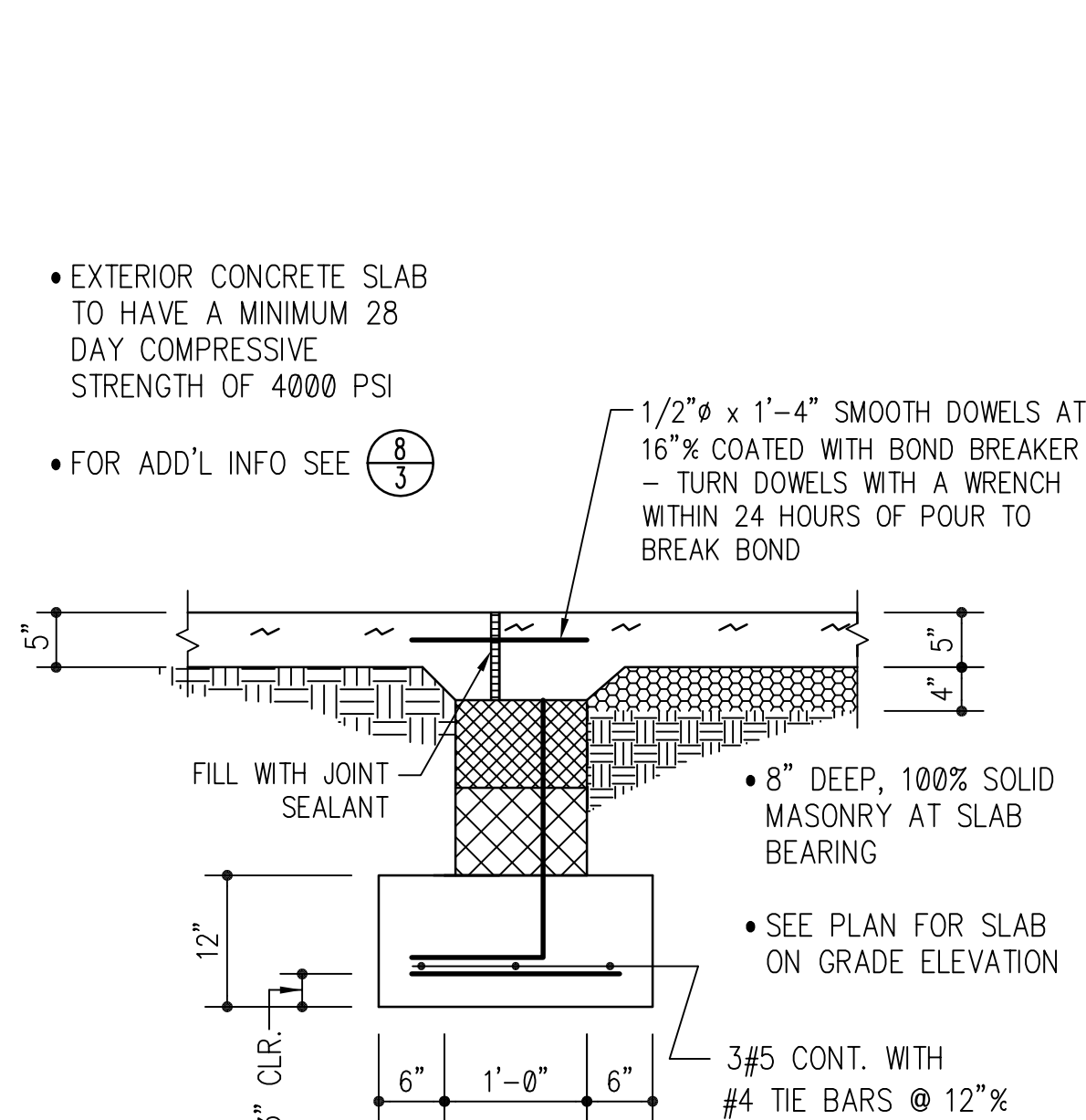
③ TURNDOWN SLAB AT ADDITION



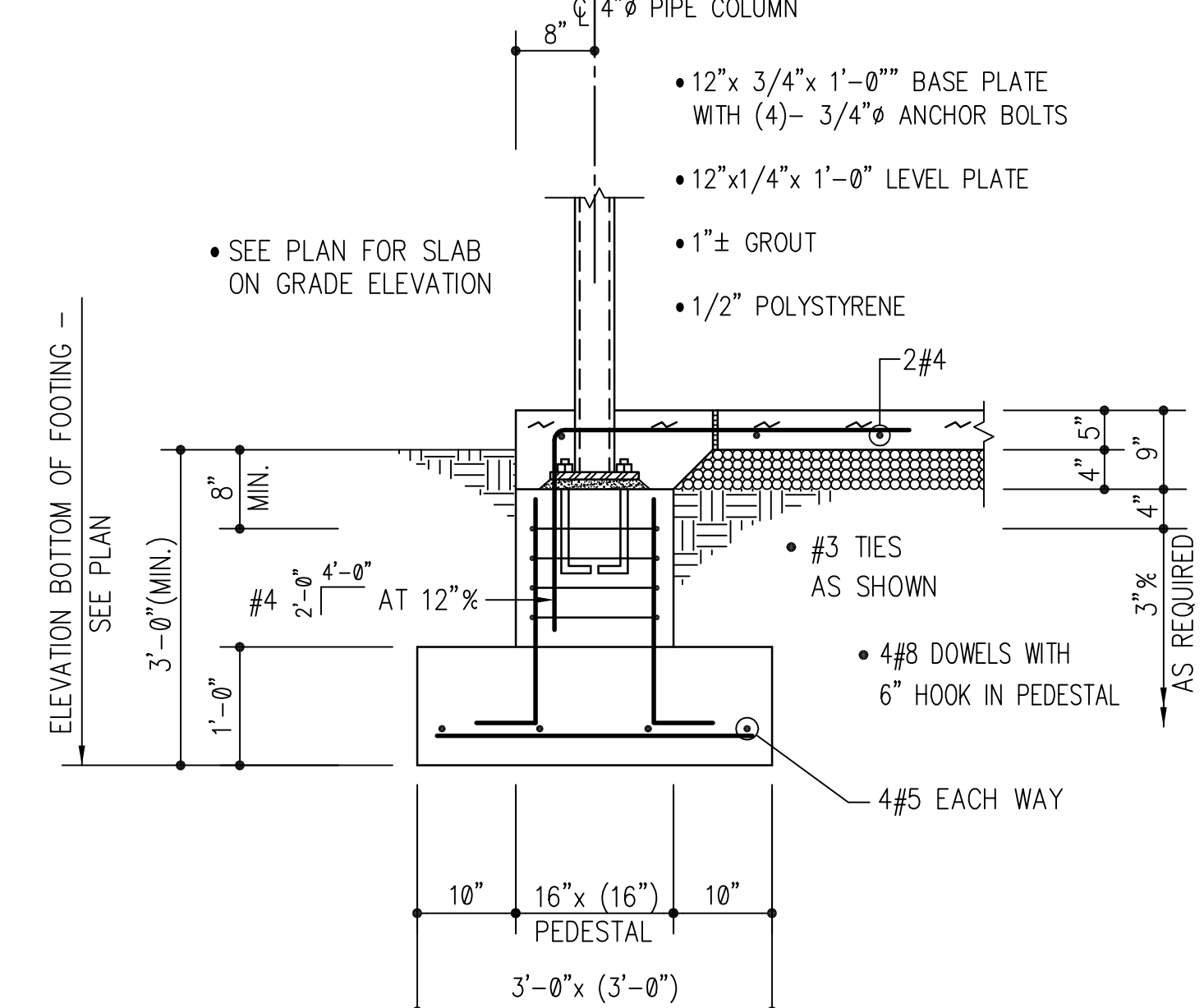
④ TURNDOWN SLAB AT EXISTING COLUMN



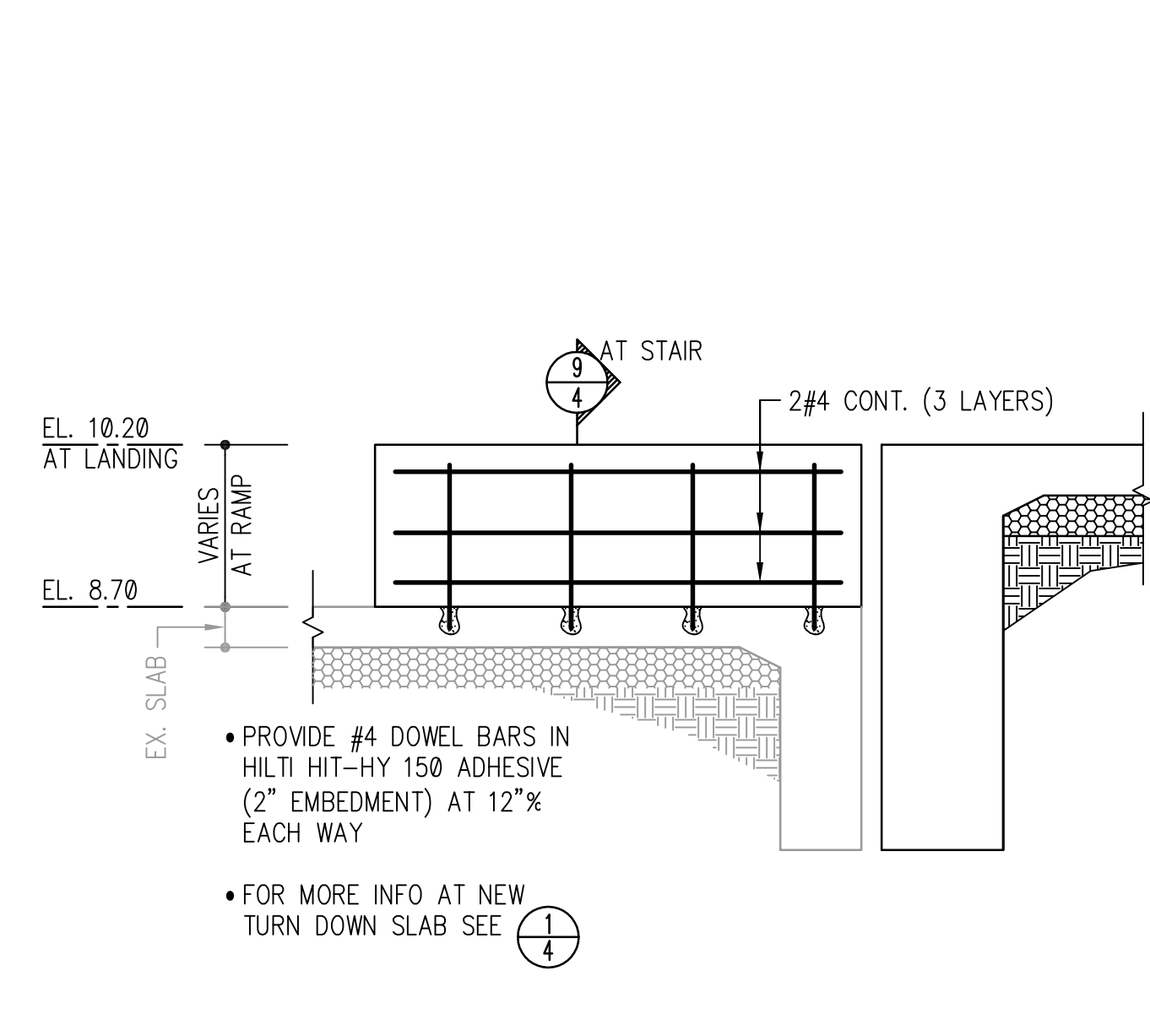
⑤ TYPICAL EXTERIOR COLUMN AT PORCH



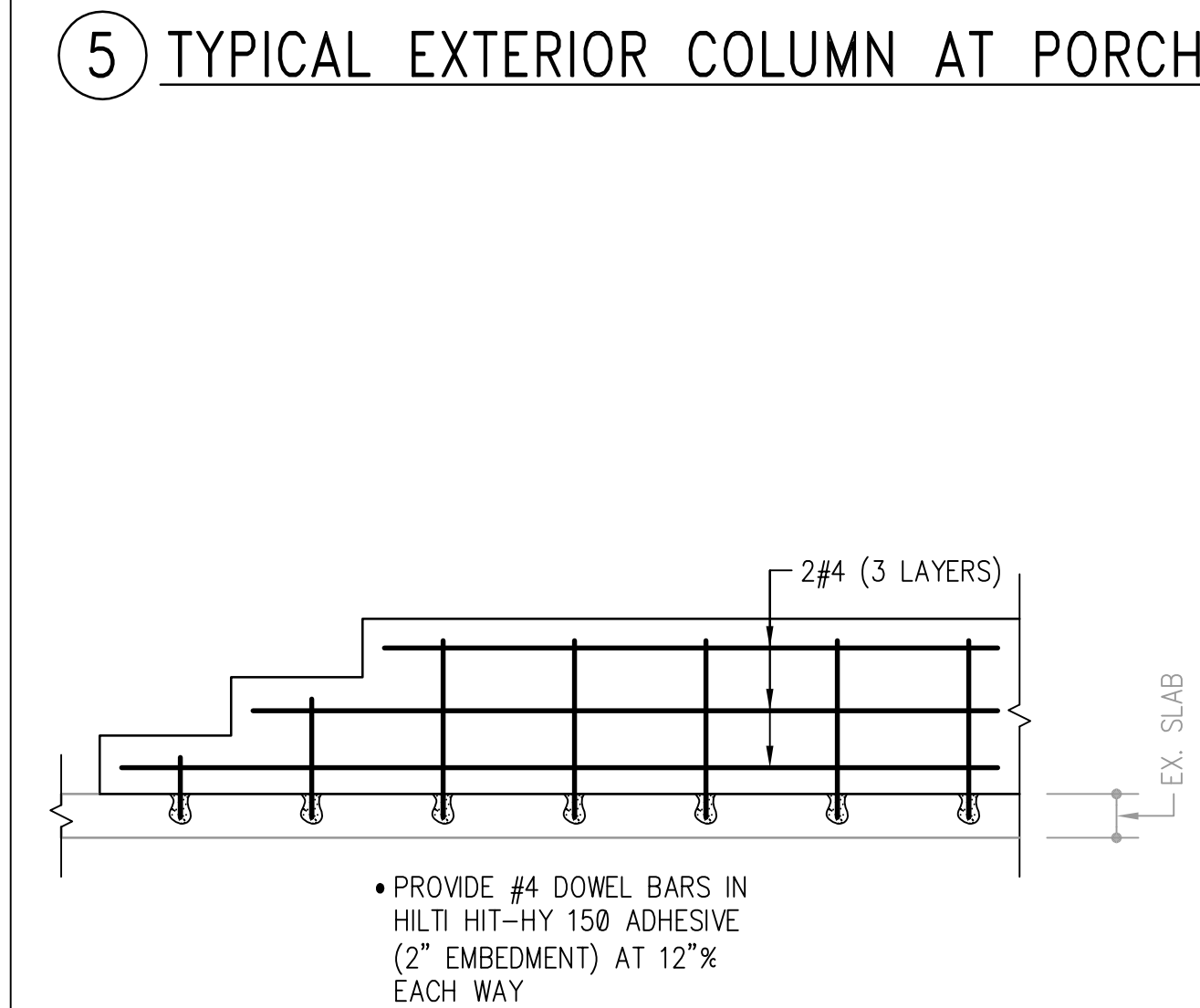
⑥ CONCRETE SLAB AT ENTRANCE



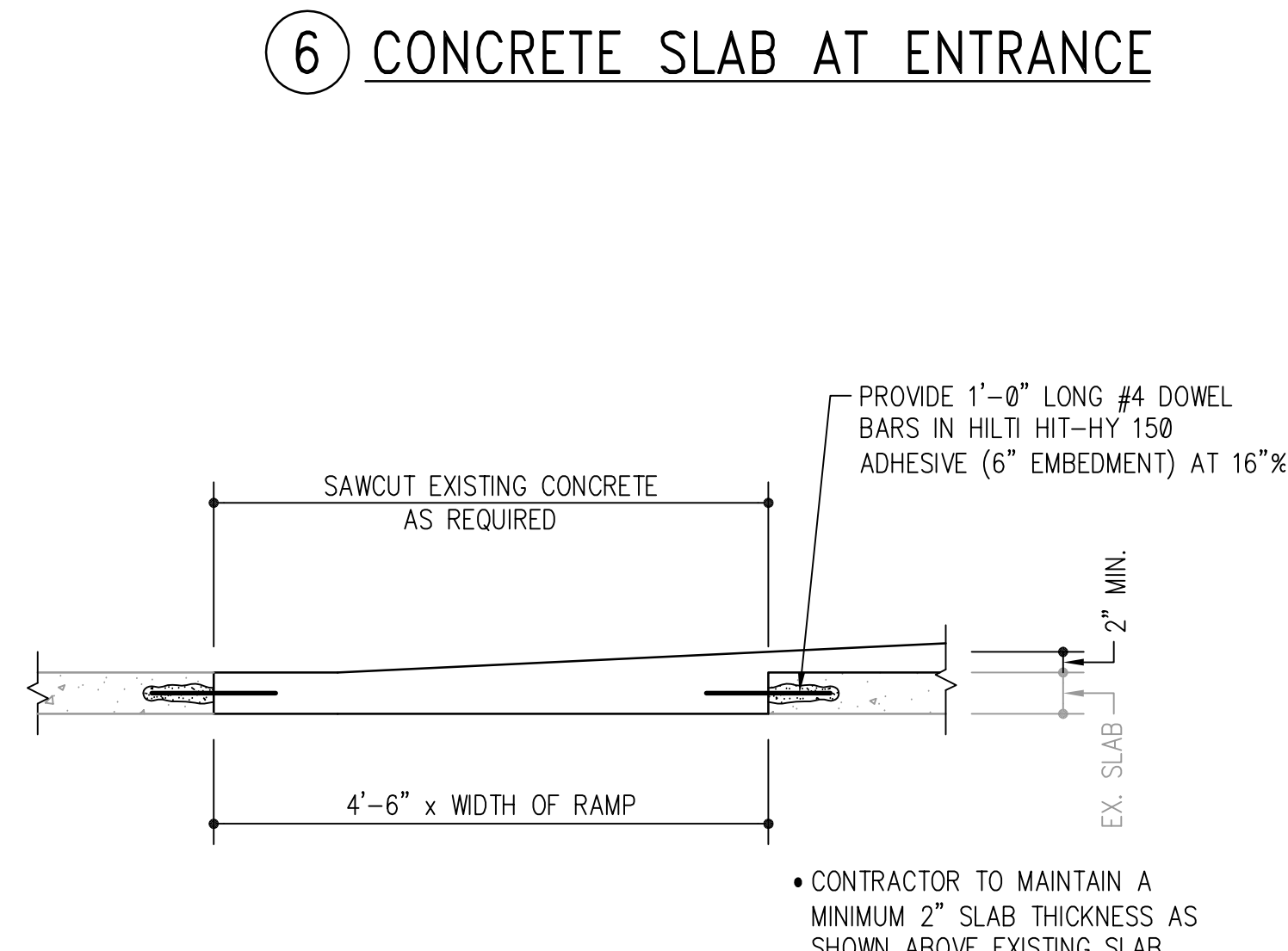
⑦ TYPICAL EXTERIOR COLUMN AT GENERATOR



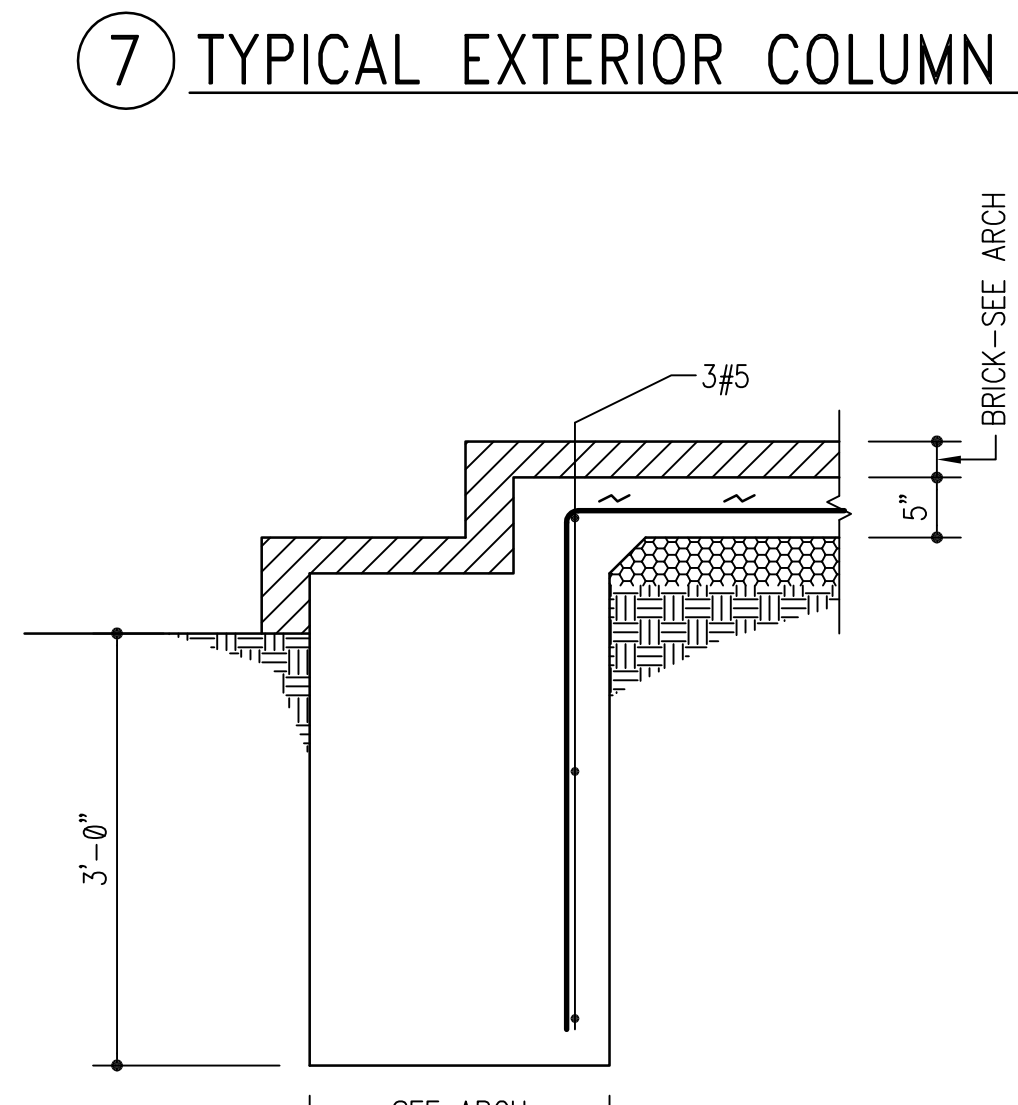
⑧ STAIR/RAMP AT EXISTING BUILDING



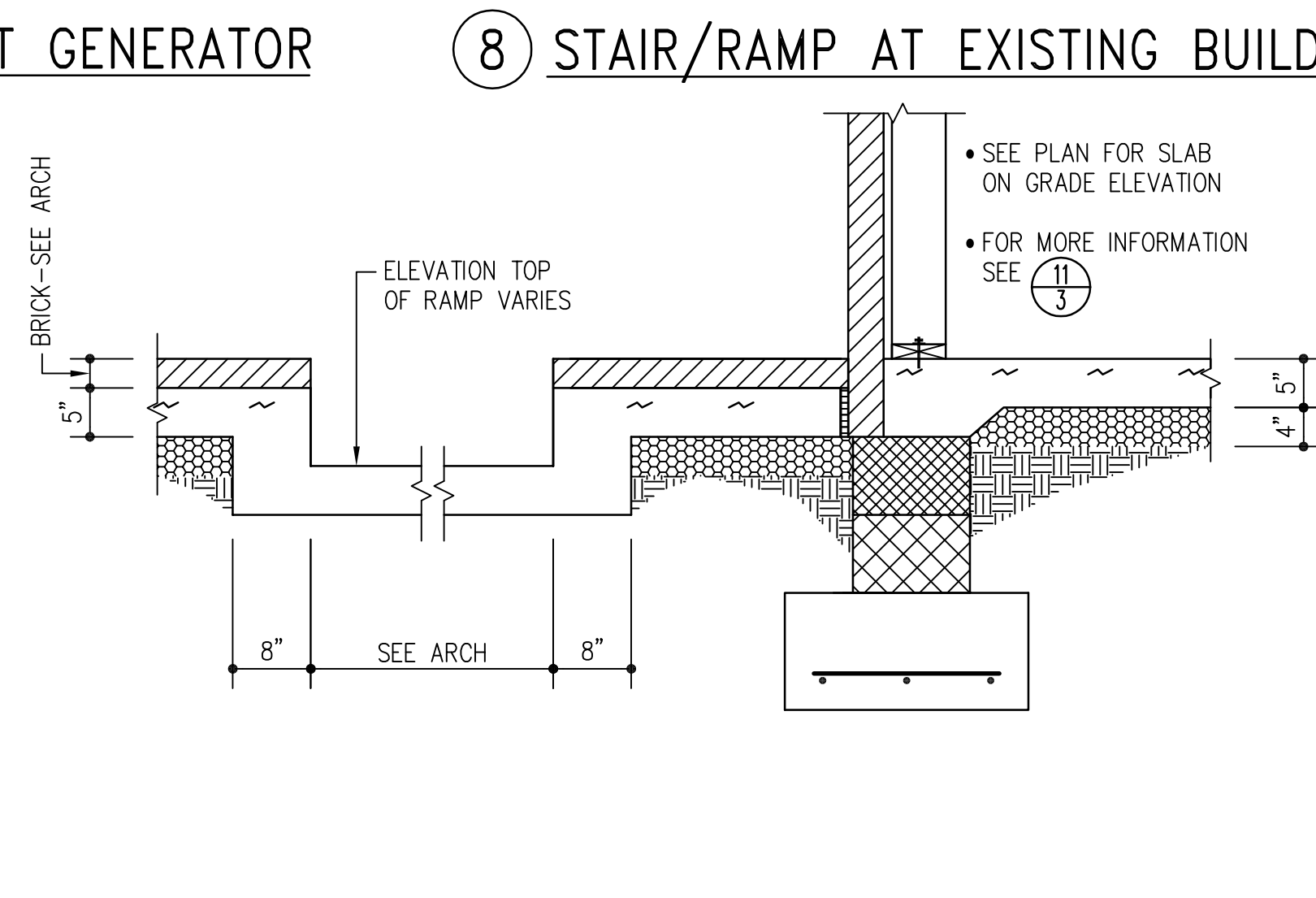
⑨ DETAIL AT STAIR



⑩ SAWCUT EXISTING SLAB AT NEW RAMP



⑪ STAIR AT PORCH



⑫ RAMP AT PORCH

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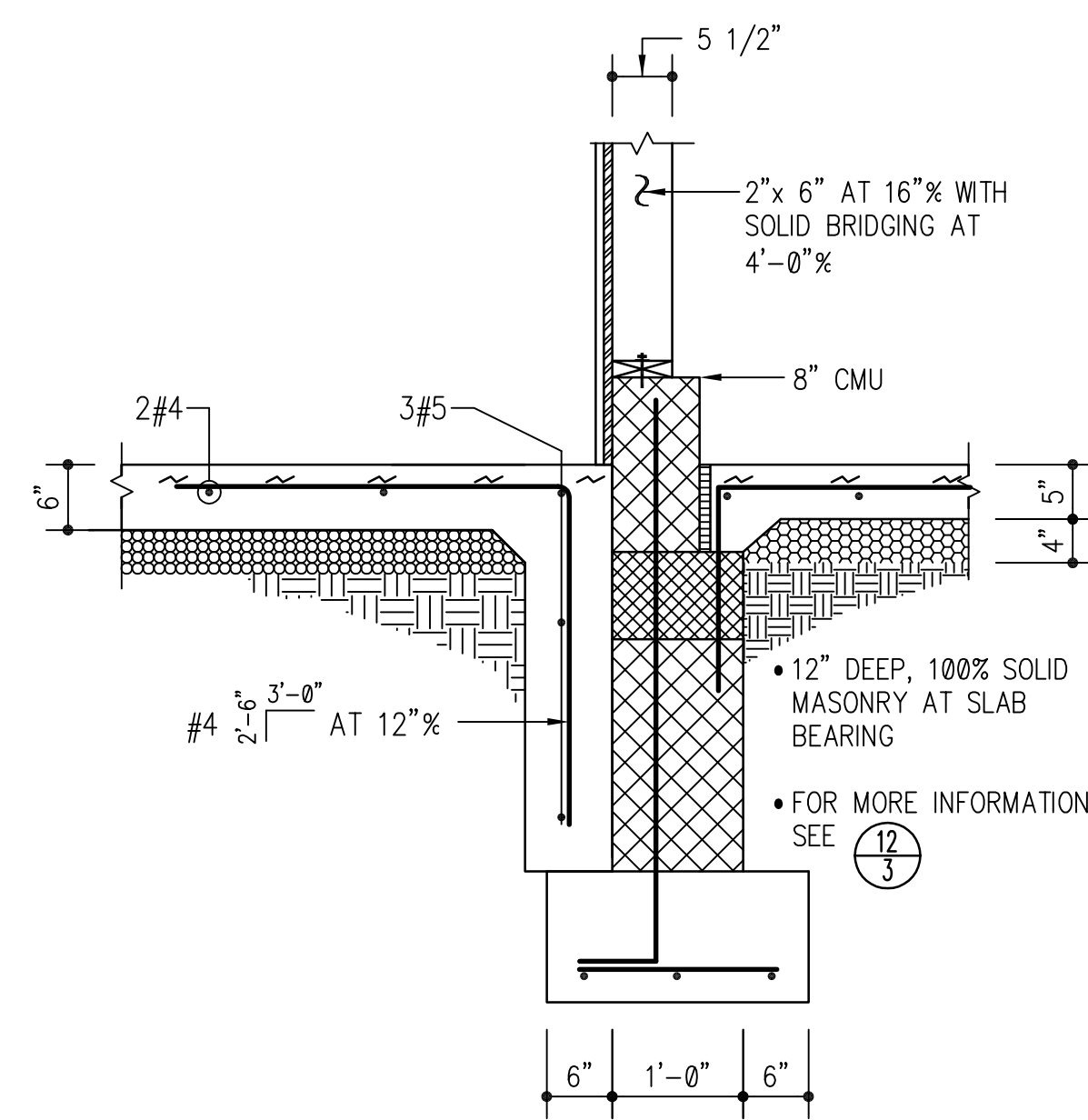
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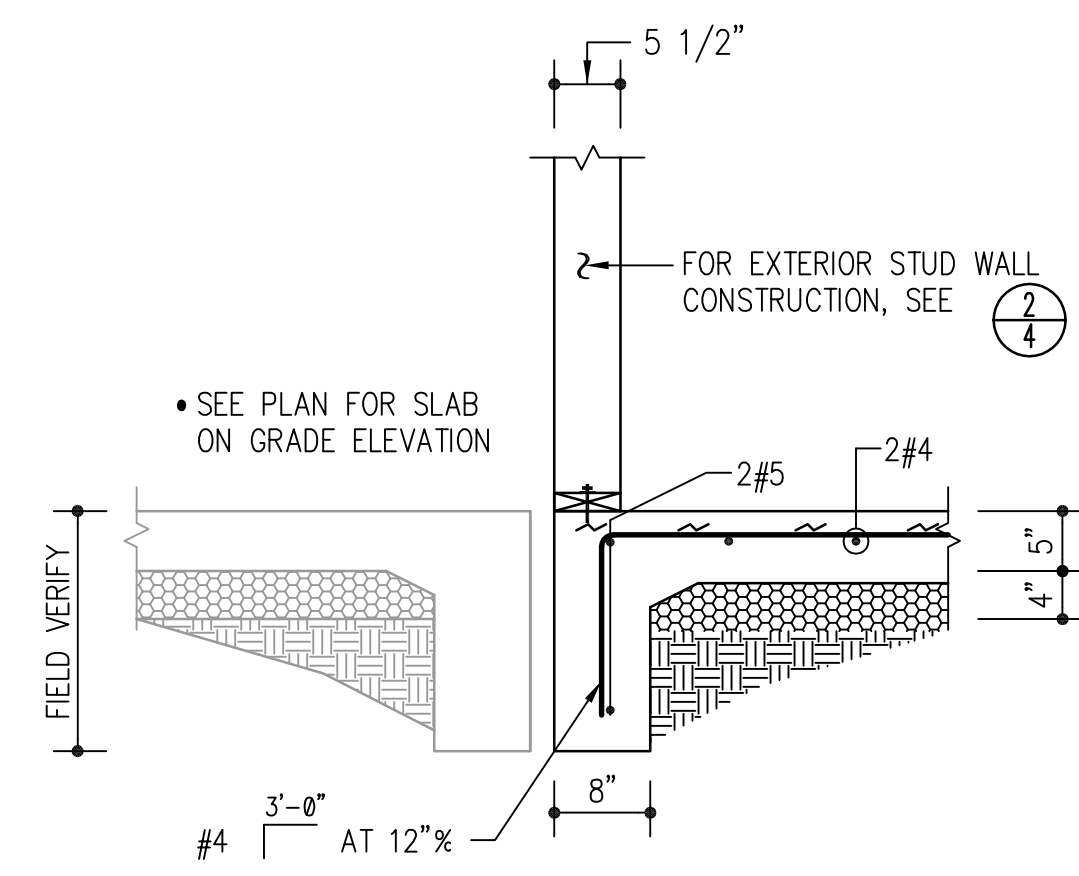
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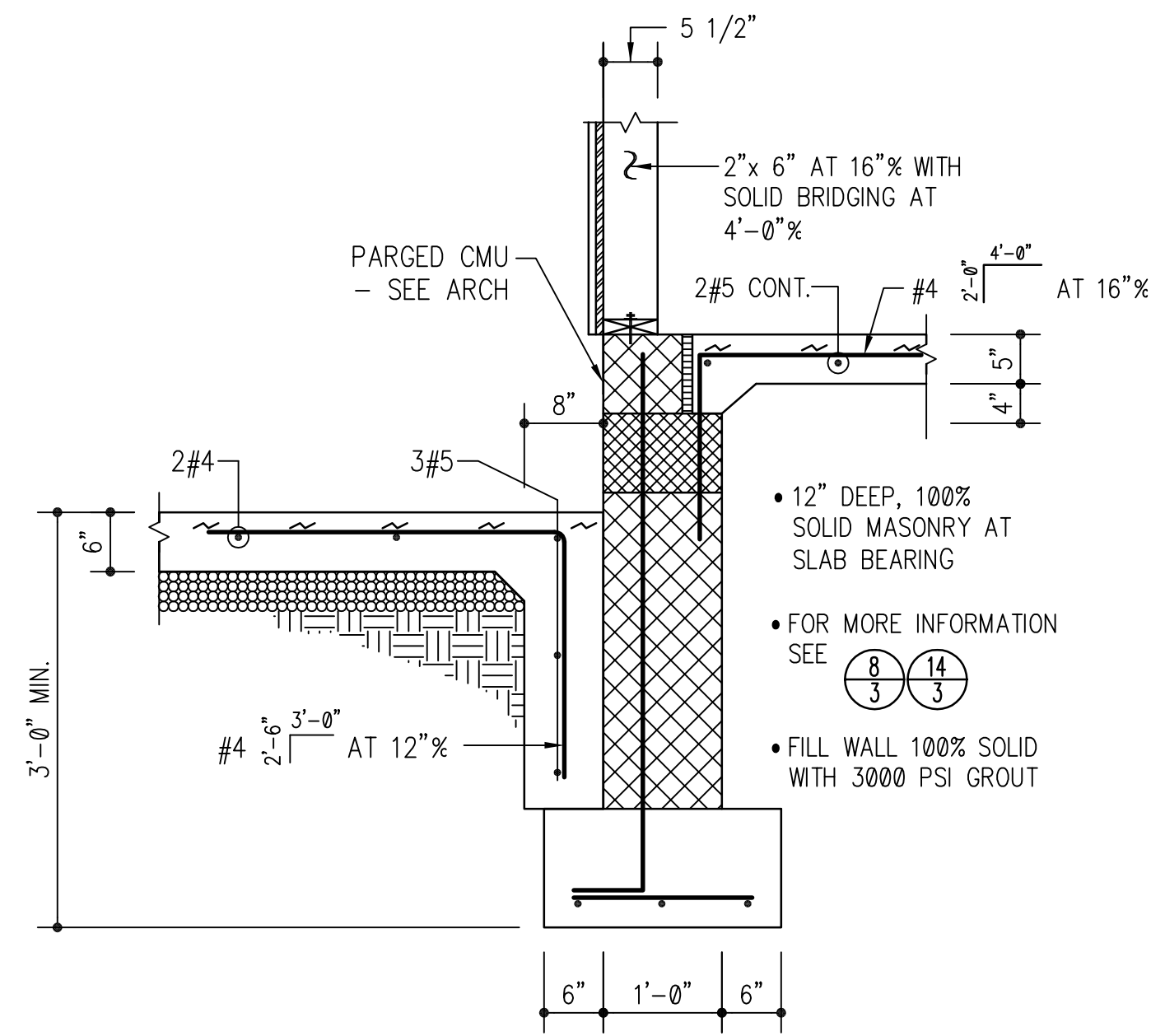




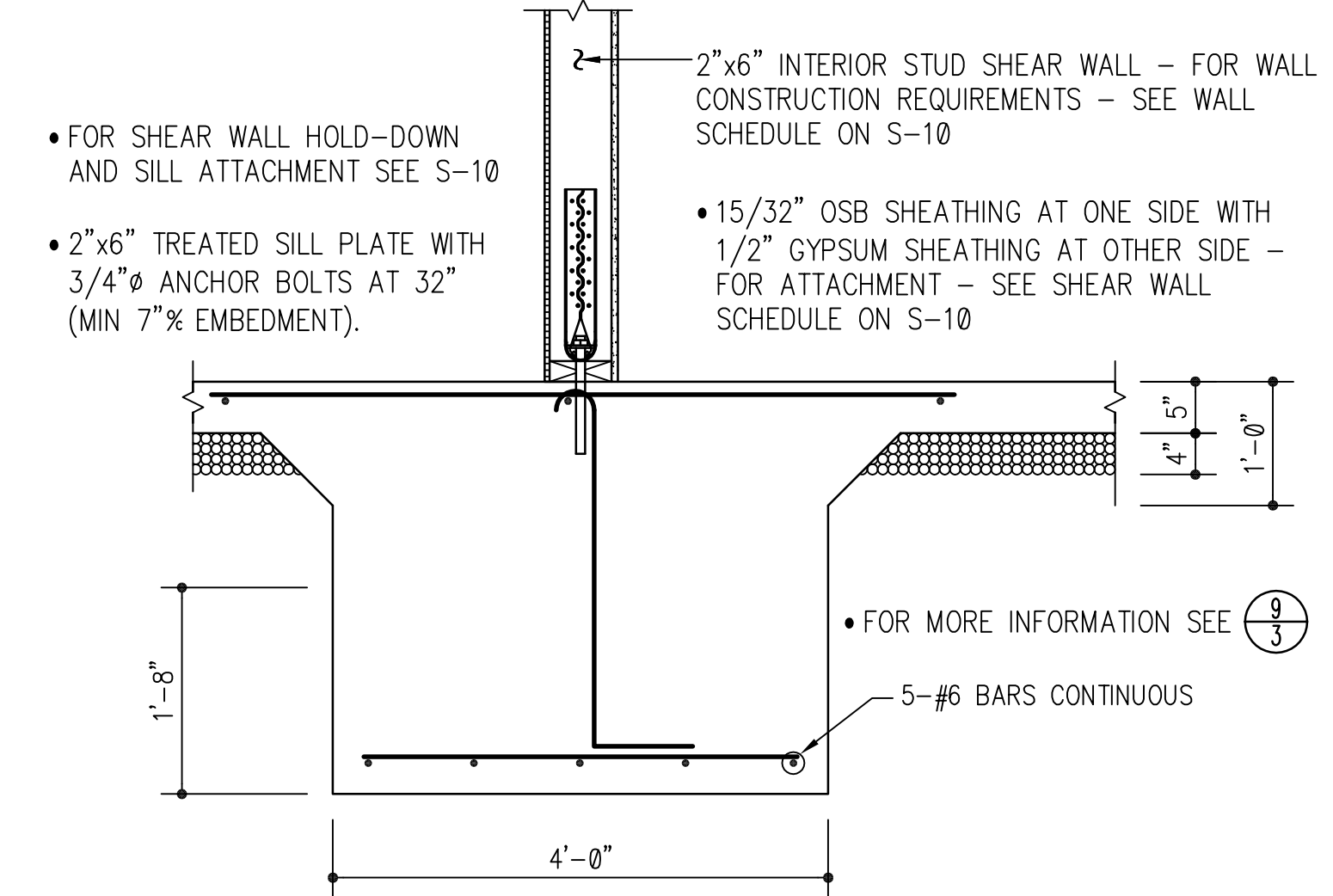
① TURN DOWN AT HVAC PAD



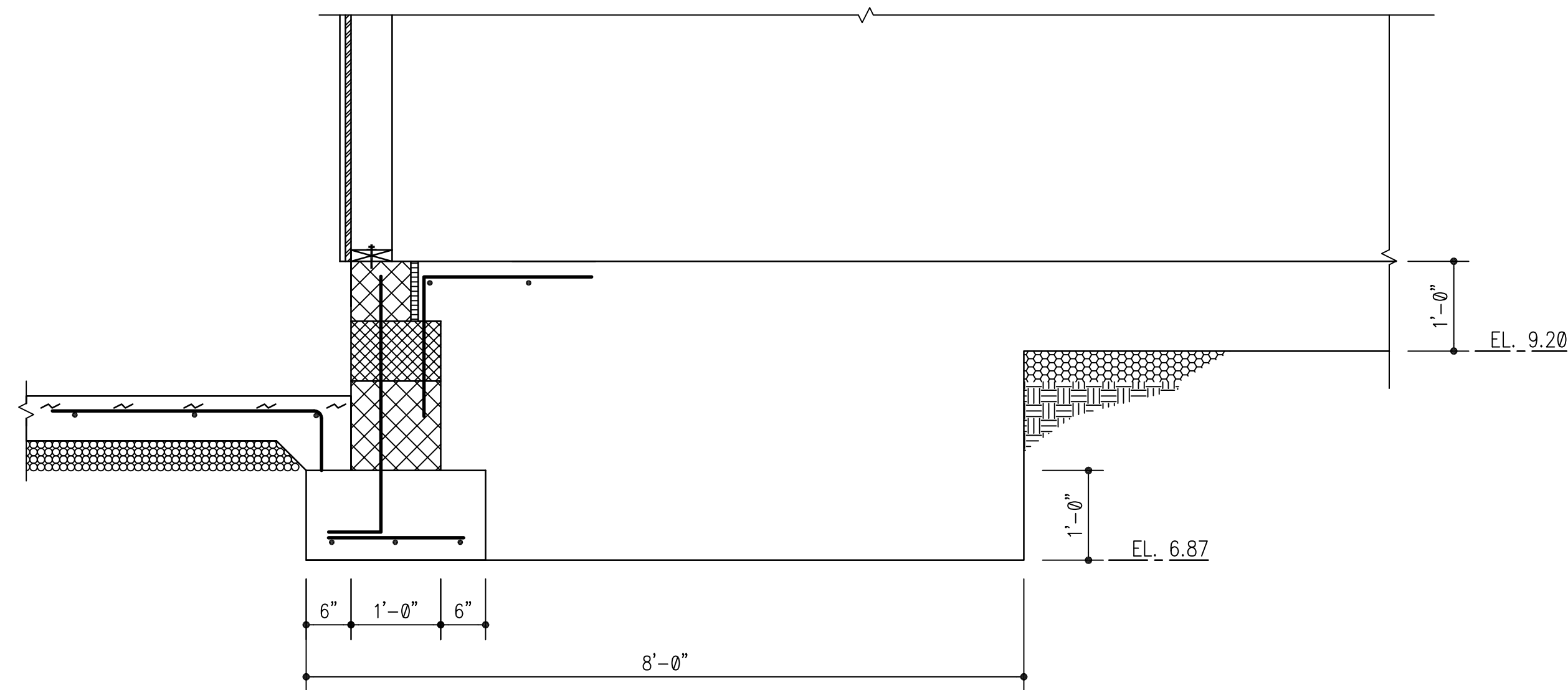
② TURNDOWN SLAB AT ADDITION



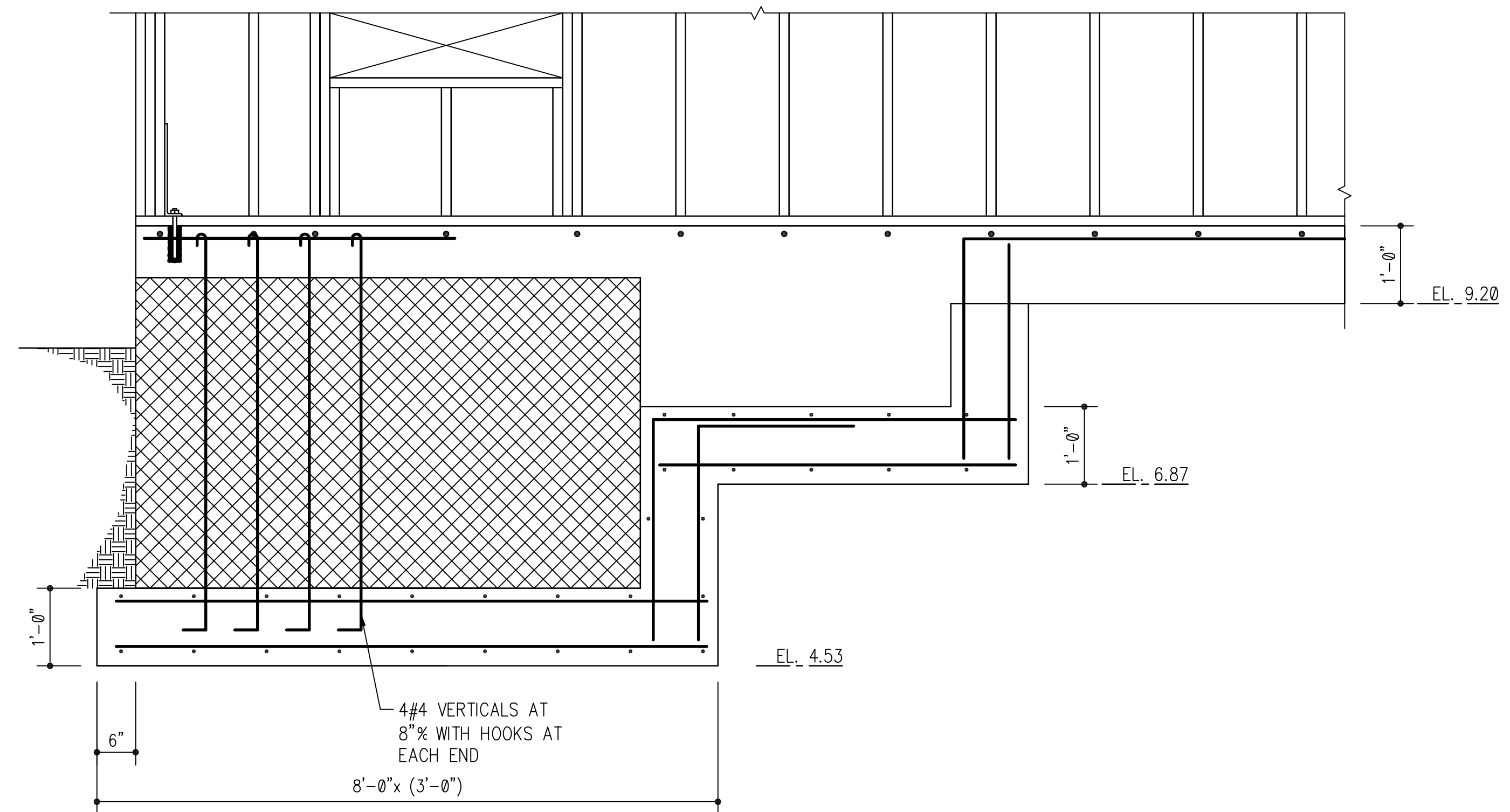
③ TURN DOWN AT HVAC PAD



④ INTERIOR SHEAR WALL HOLD-DOWN FOOTING



⑤ FOOTING AT INTERIOR SHEAR WALL



⑥ FOOTING AT INTERIOR SHEAR WALL

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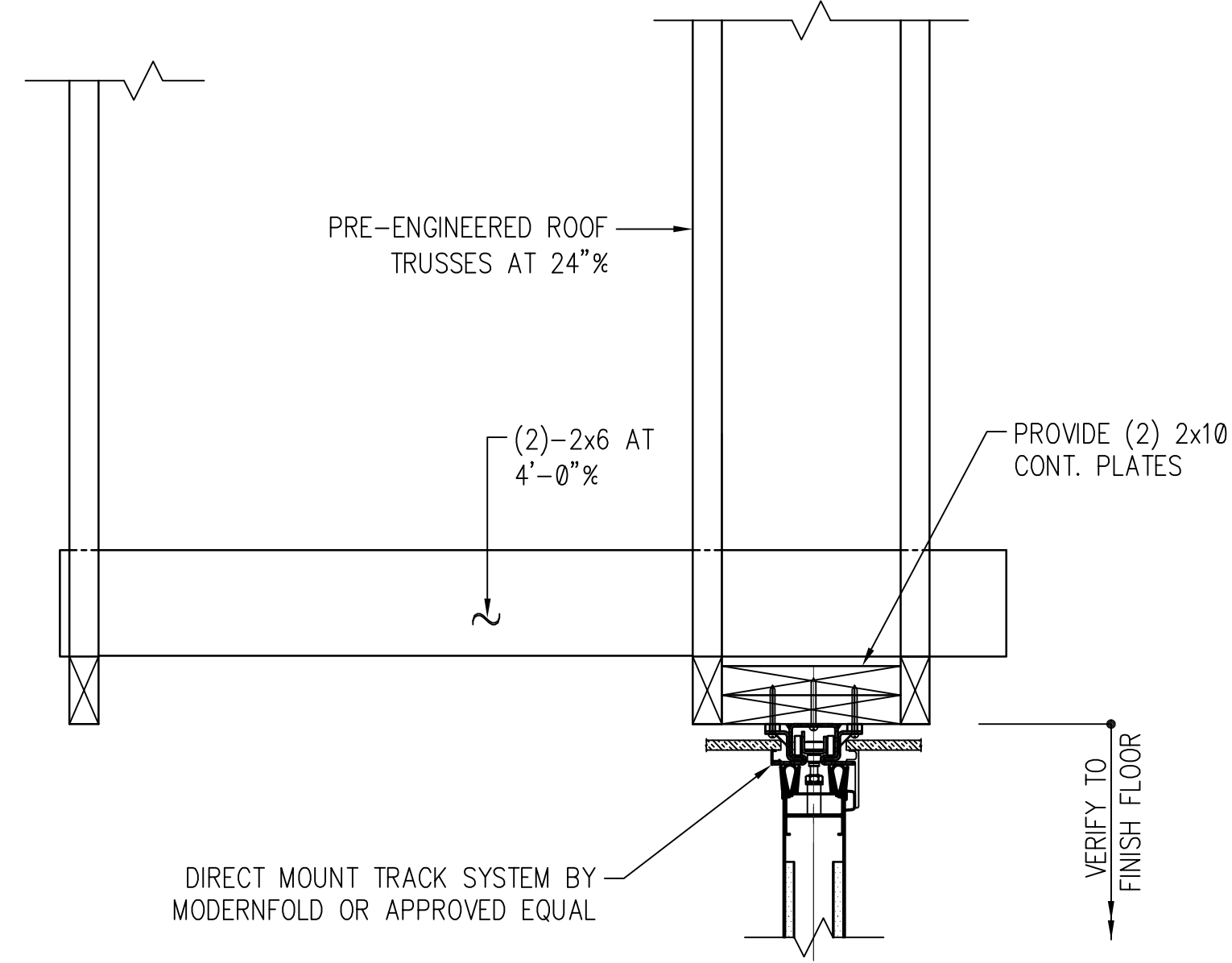
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**S5**  
 No.

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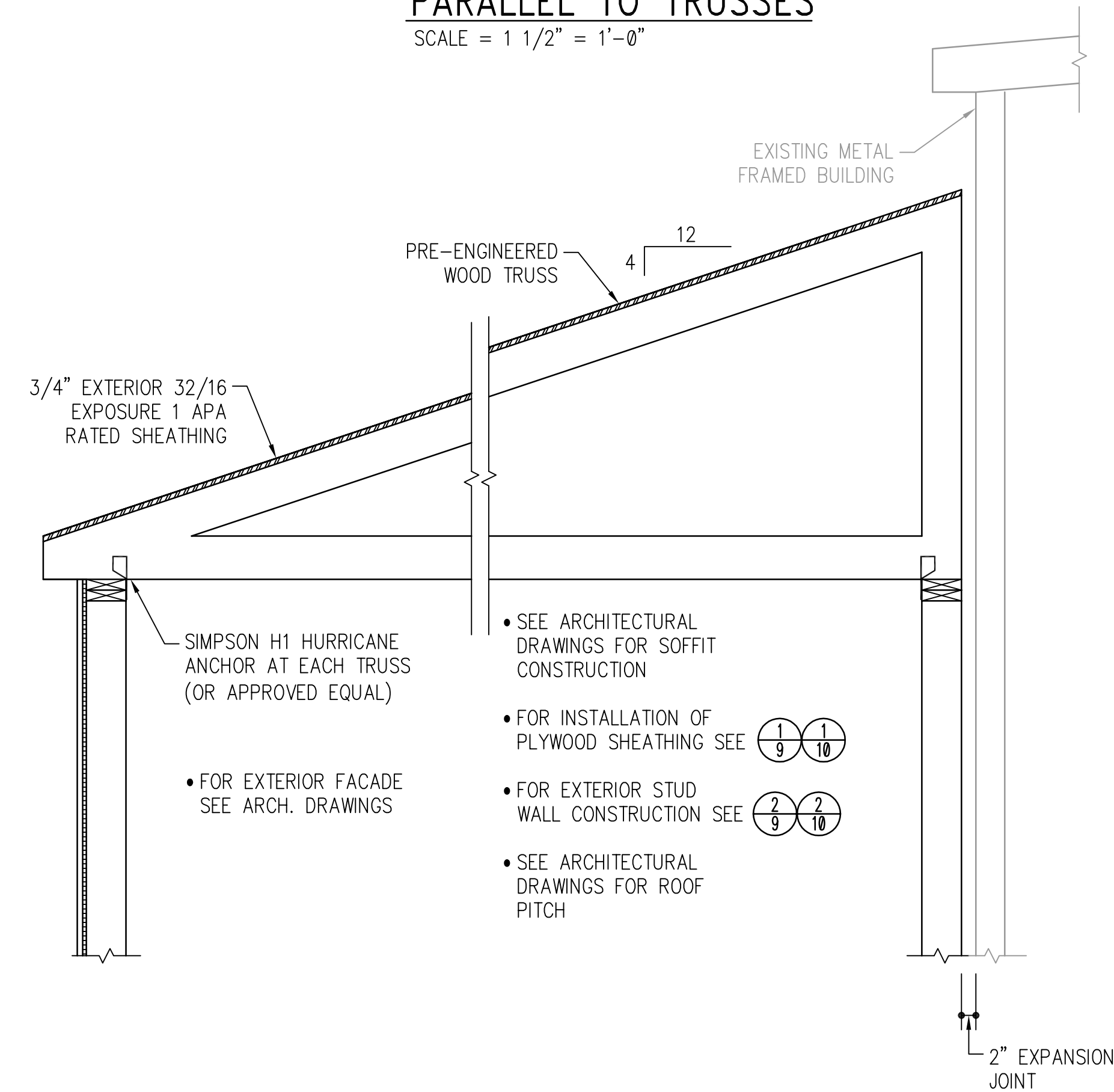


- TRUSSES SHALL BE DESIGNED FOR UNIFORM LOAD OF 120 PLF AND CONCENTRATED LOAD OF 4000 LBS AT STACKED END.
- WOOD TRUSS MANUFACTURER TO LIMIT TOTAL DEFLECTION TO 1/4"
- TRUSS MANUFACTURER SHALL PROVIDE ADDITIONAL TRUSSES AS REQUIRED TO SUPPORT FOLDING PARTITION
- FOLDING PARTITION STACKS AT BOTH ENDS. DESIGN TRUSSES ACCORDINGLY

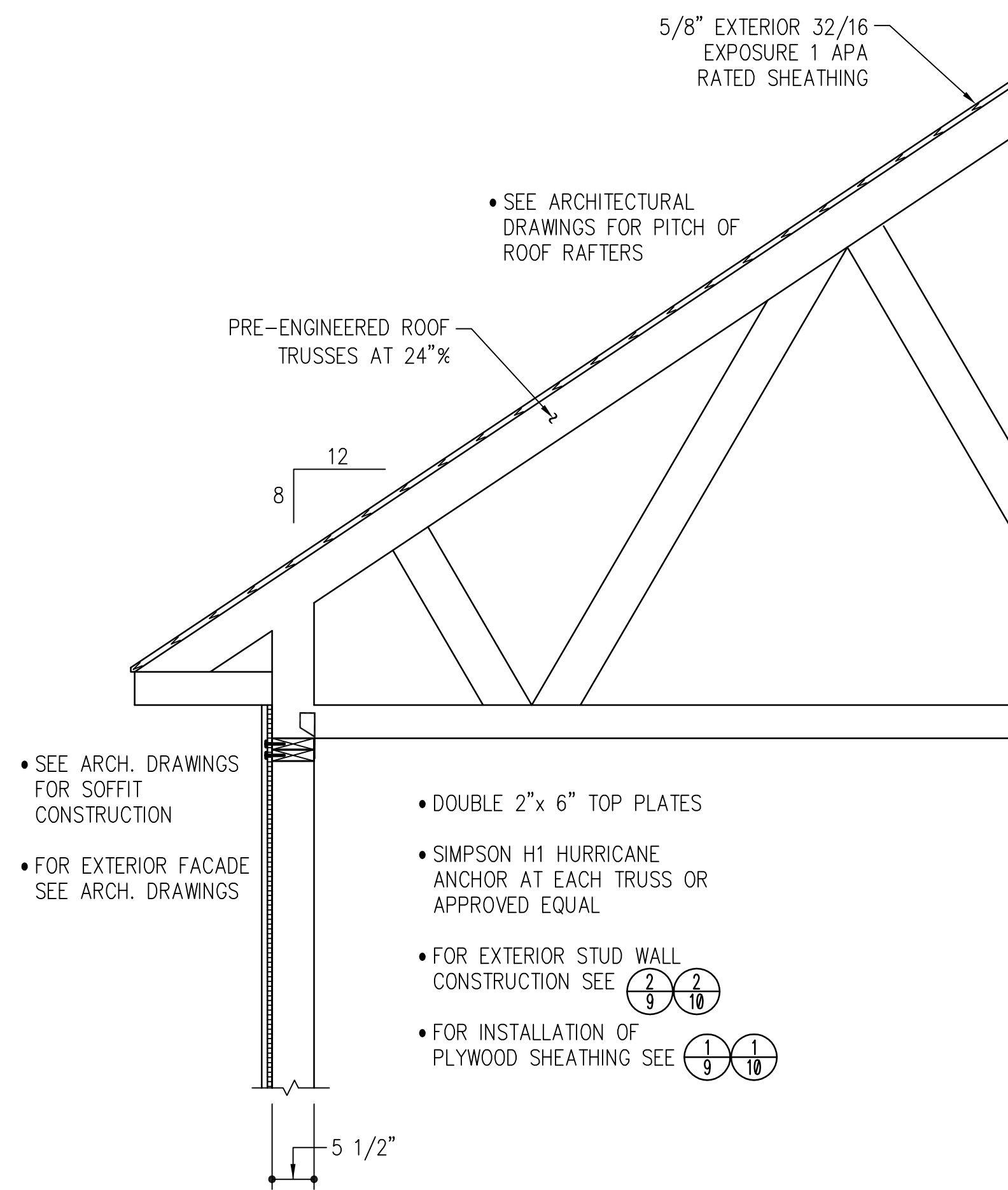


1 FOLDING PARTITION SUPPORT  
PARALLEL TO TRUSSES

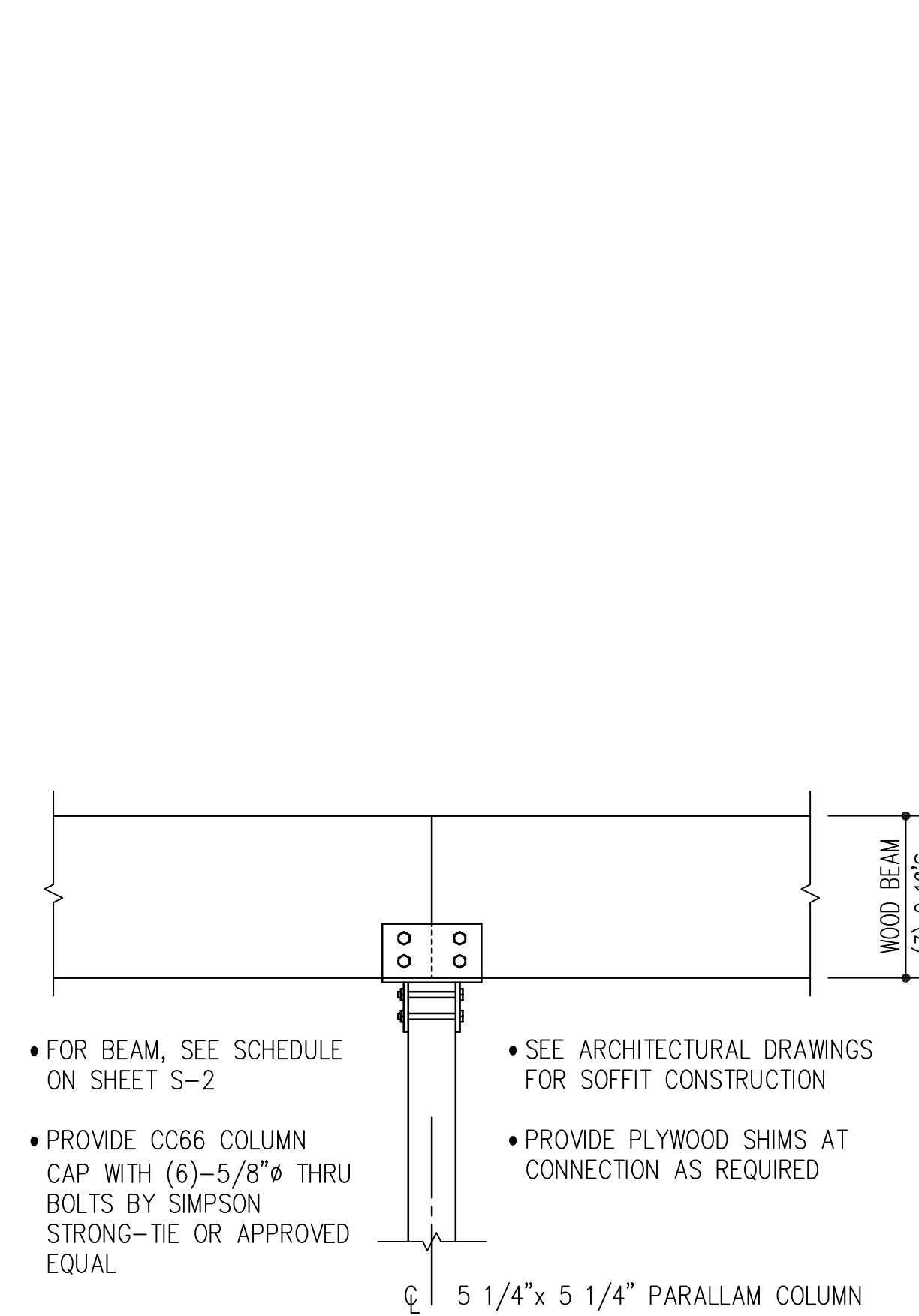
SCALE = 1 1/2" = 1'-0"



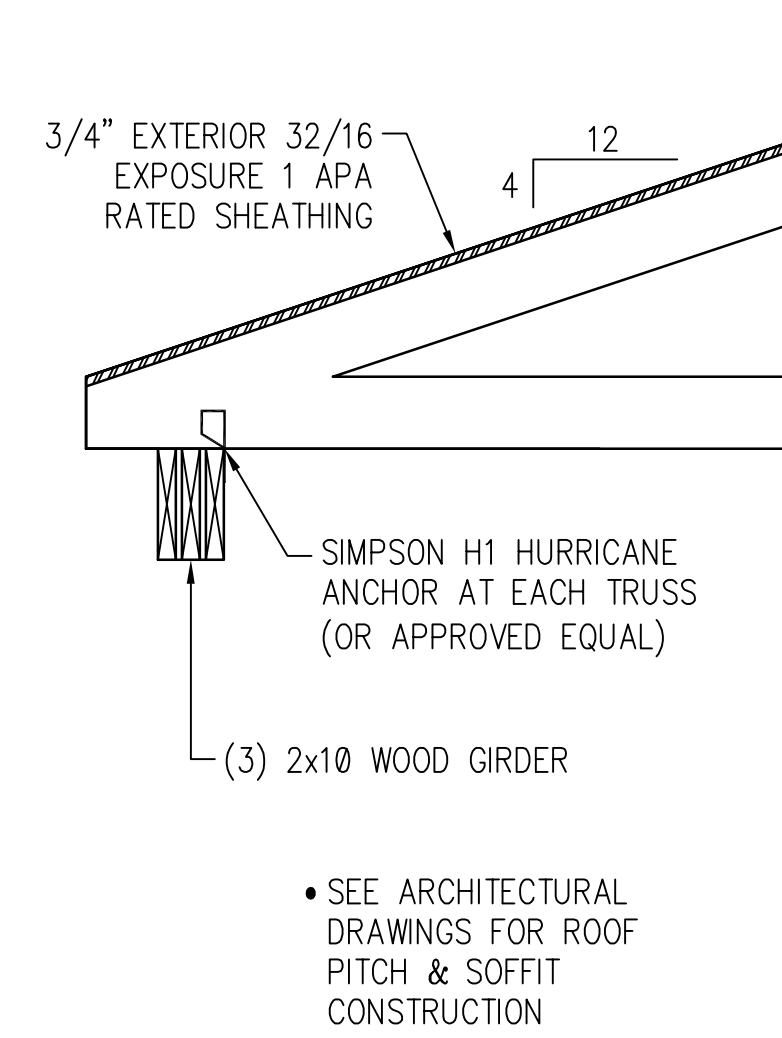
4 TRUSS BEARING AT STUD WALL



2 EXTERIOR WALL AT TRUSS BEARING



5 BEAM BEARING AT WOOD POST

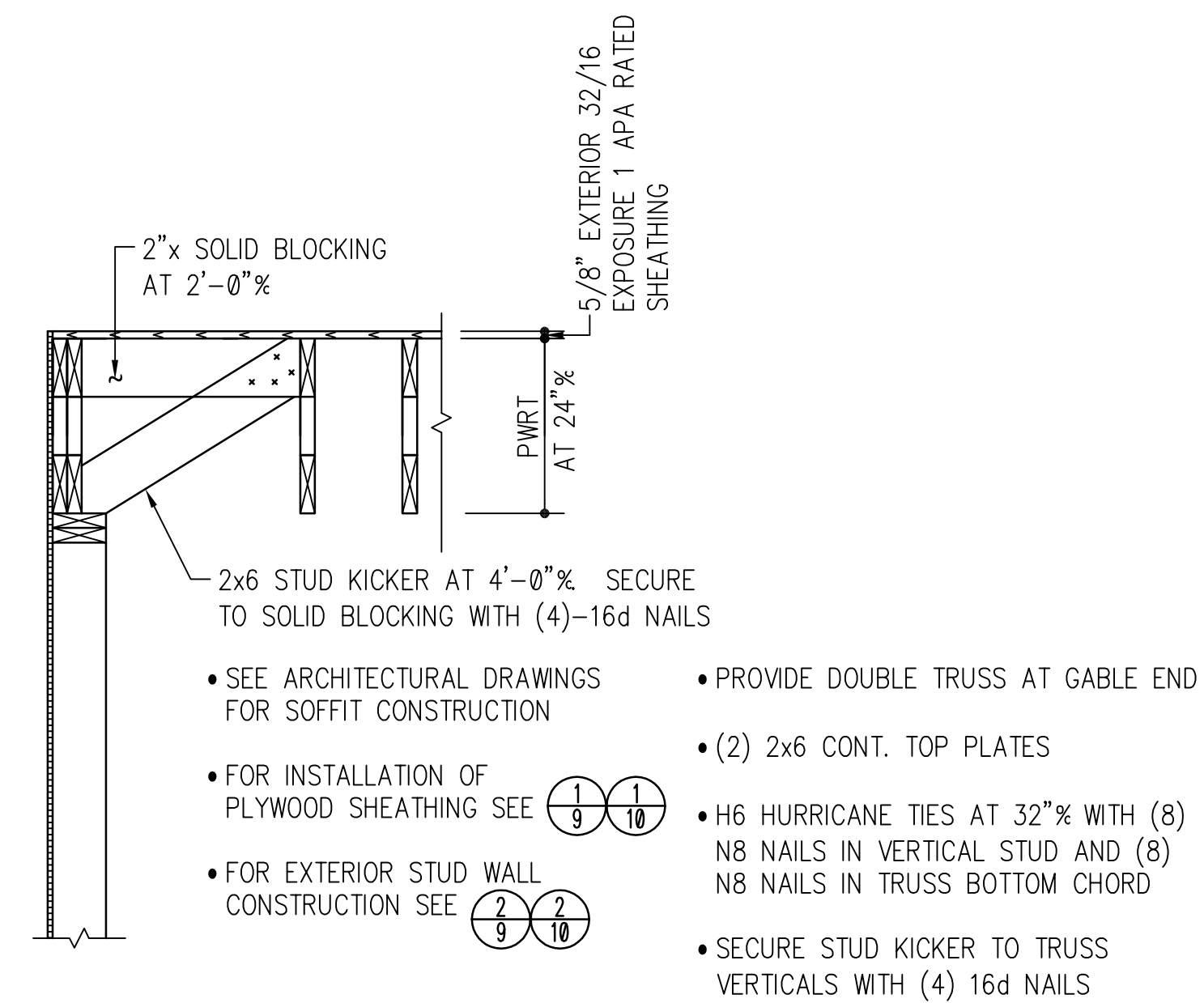


6 JOIST BEARING AT BEAM

- FOR EXTERIOR FACADE SEE ARCH. DRAWINGS
- SECURE LEDGER TO TRUSS WITH (2) 12d NAILS AT 12"Ø
- SECURE OUTRIGGER TO CONT. WOOD MEMBERS WITH (2) 12d NAILS EACH END
- SECURE STUD KICKER TO TRUSS VERTICALS WITH (4) 16d NAILS
- SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AT EXTERIOR WALL AND SOFFIT AND FASCIA CONSTRUCTION
- H6 HURRICANE TIES AT 32"Ø WITH (8) N8 NAILS IN VERTICAL STUD AND (8) N8 NAILS IN TRUSS BOTTOM CHORD

FOR EXTERIOR STUD WALL CONSTRUCTION - SEE (2/9, 2/10)

VERIFY 1'-0"± 5 1/2"



7 GABLE END

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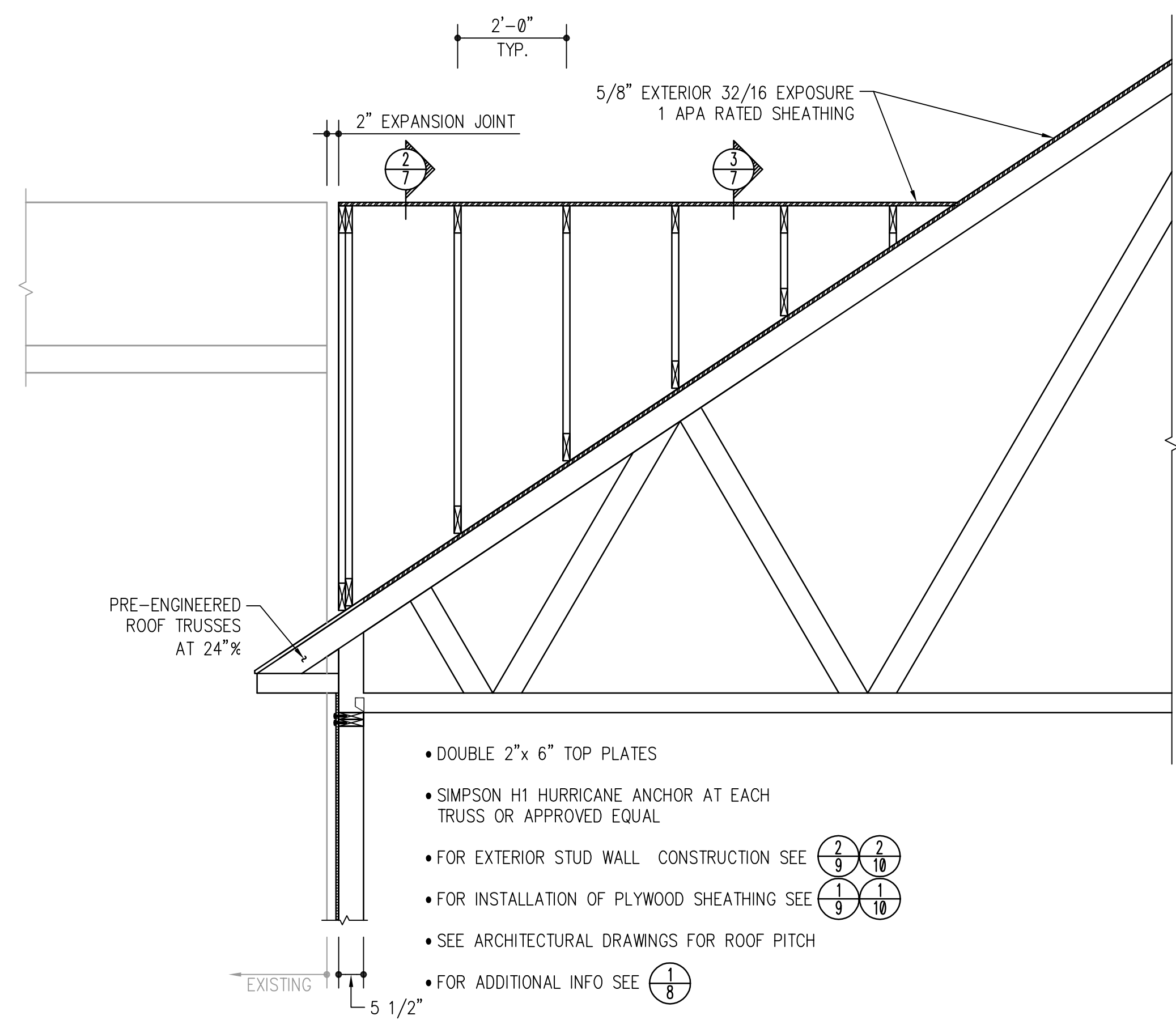
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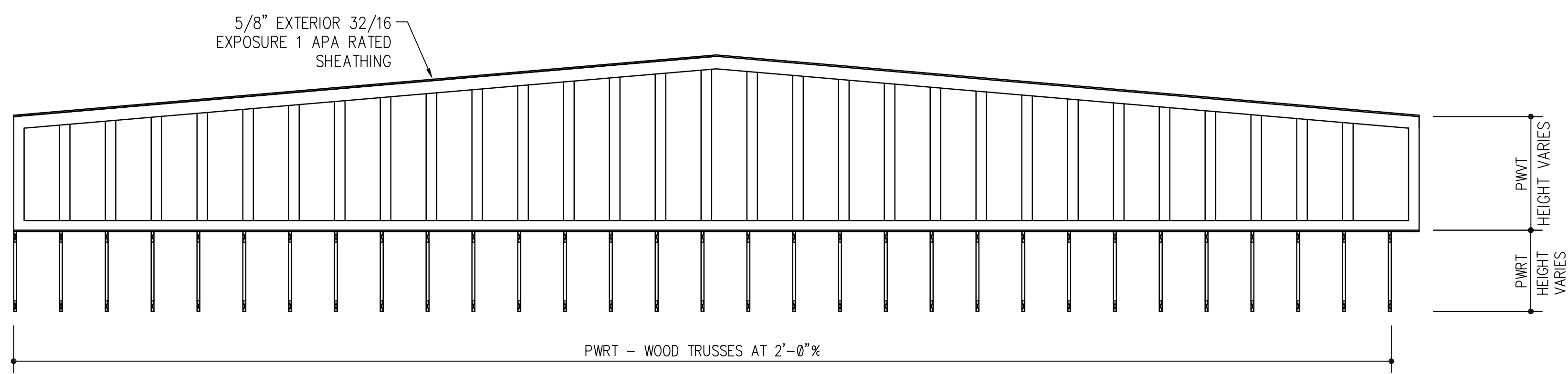
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**S6**  
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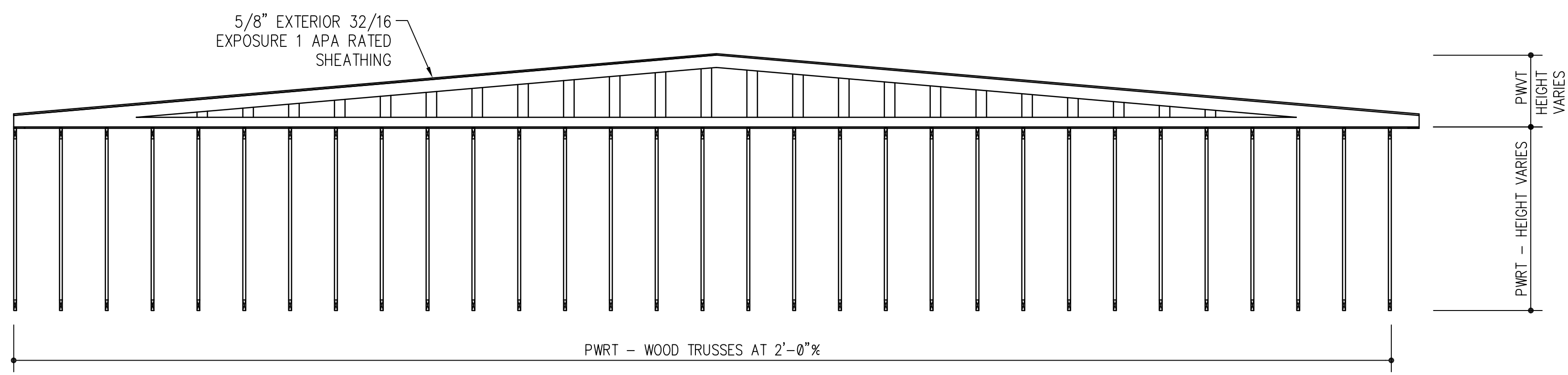
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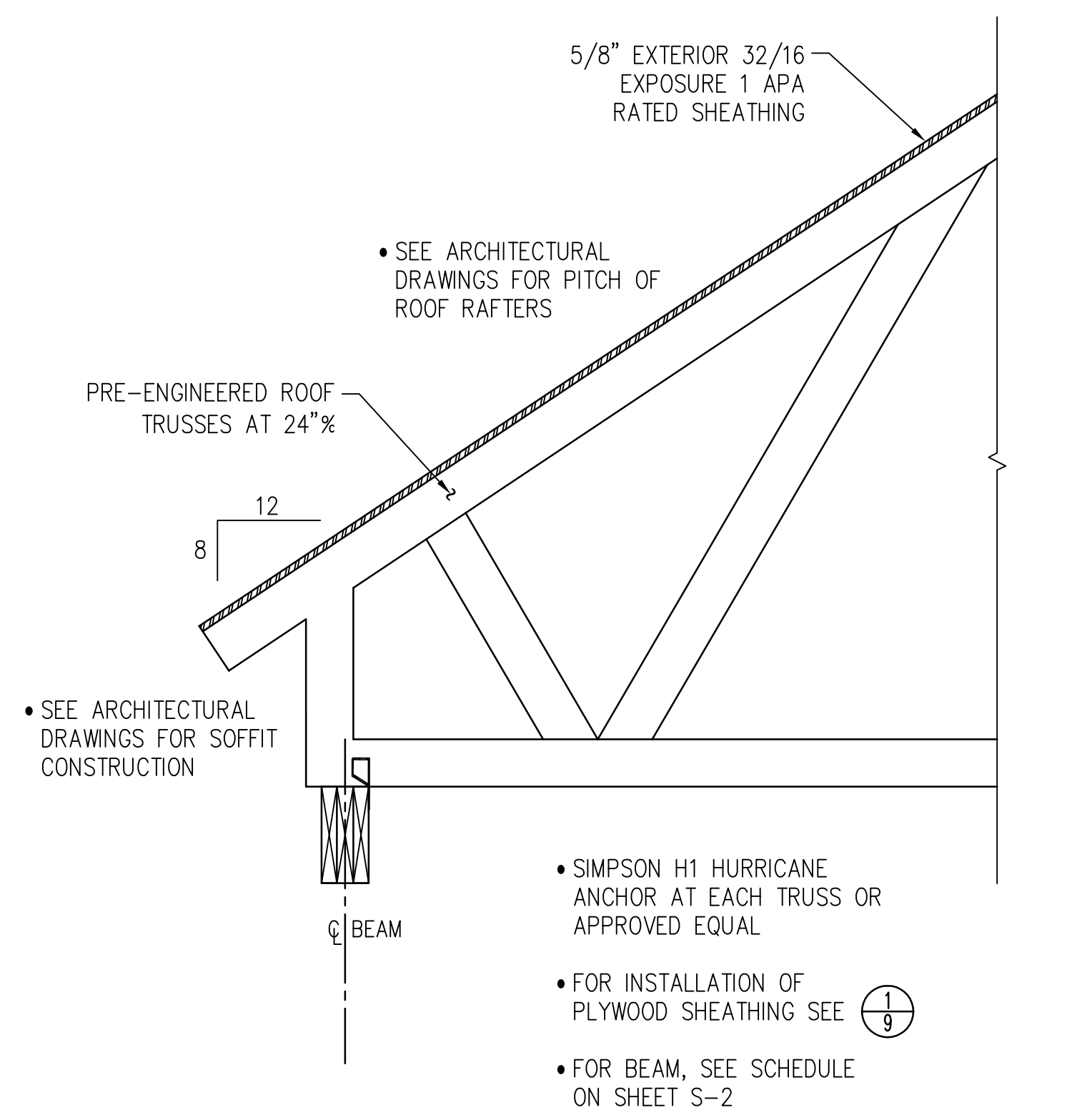
1 VALLEY TRUSS FRAMING OVER WOOD TRUSSES



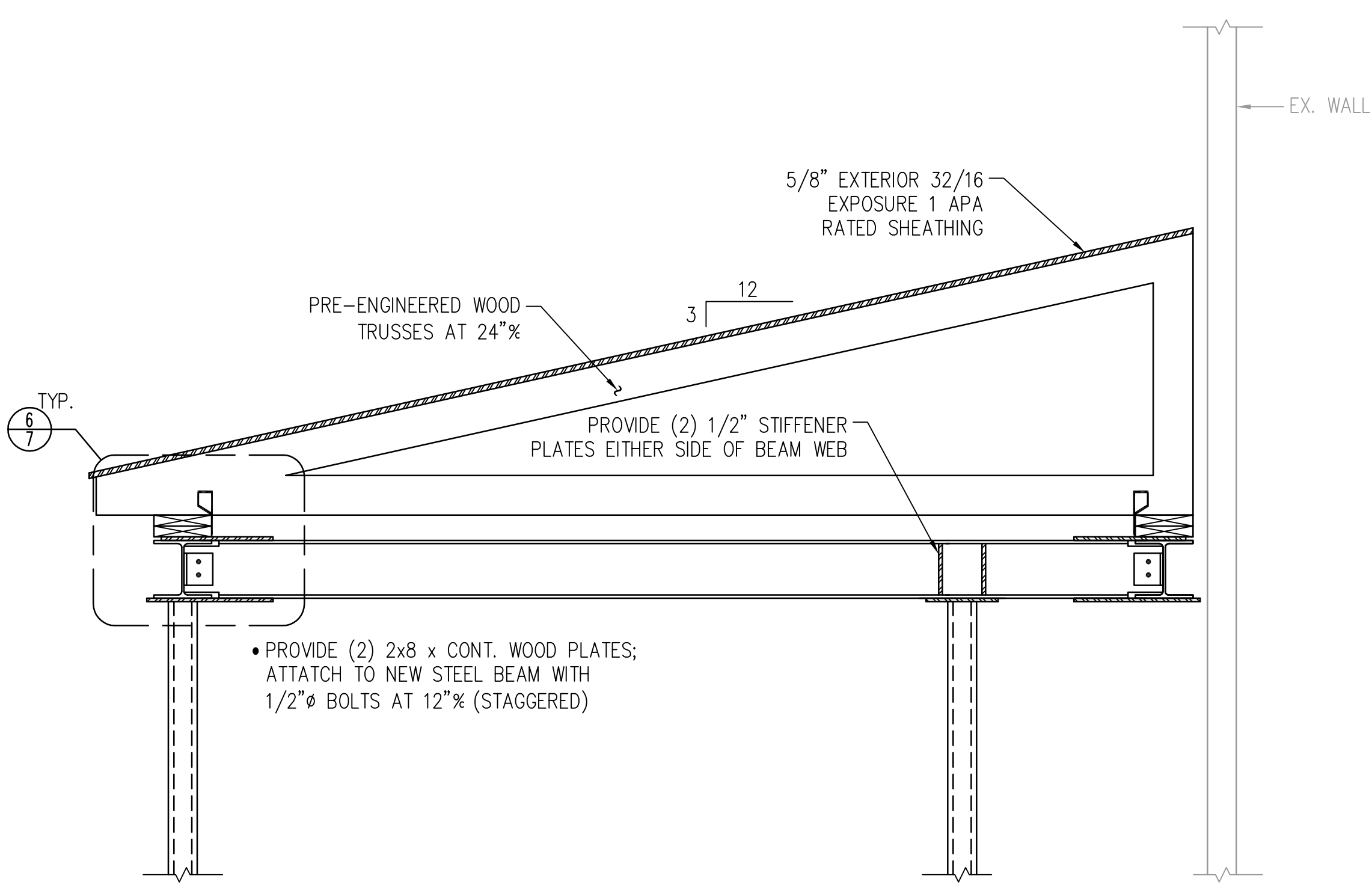
2 VALLEY TRUSS ELEVATION  
SCALE: 1/4" = 1'-0"



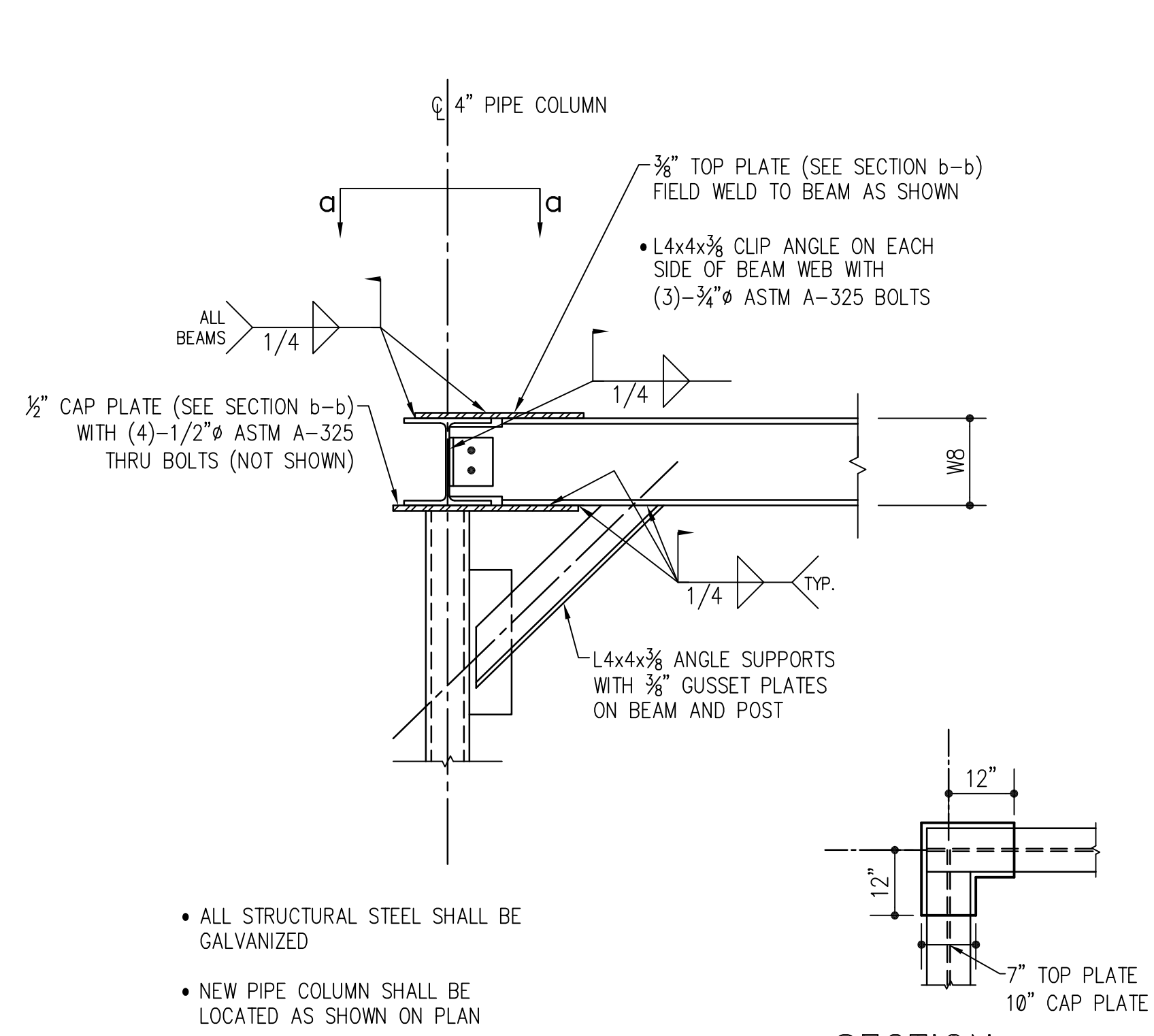
3 VALLEY TRUSS ELEVATION  
SCALE: 1/4" = 1'-0"



4 TRUSS BEARING AT BEAM



5 GENERATOR ROOF



6 CONNECTION AT PIPE COLUMN  
SCALE: 1" = 1'-0"

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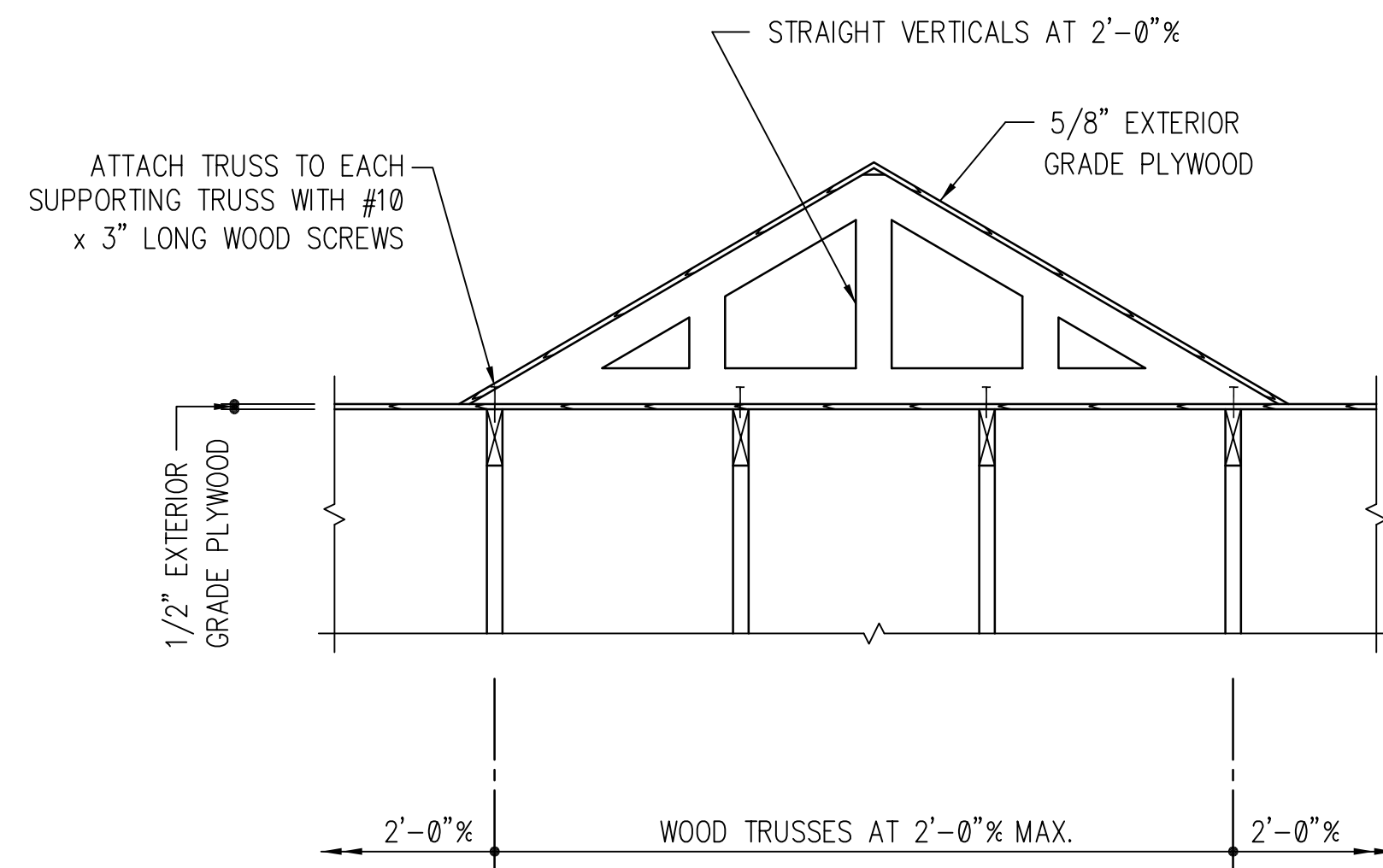
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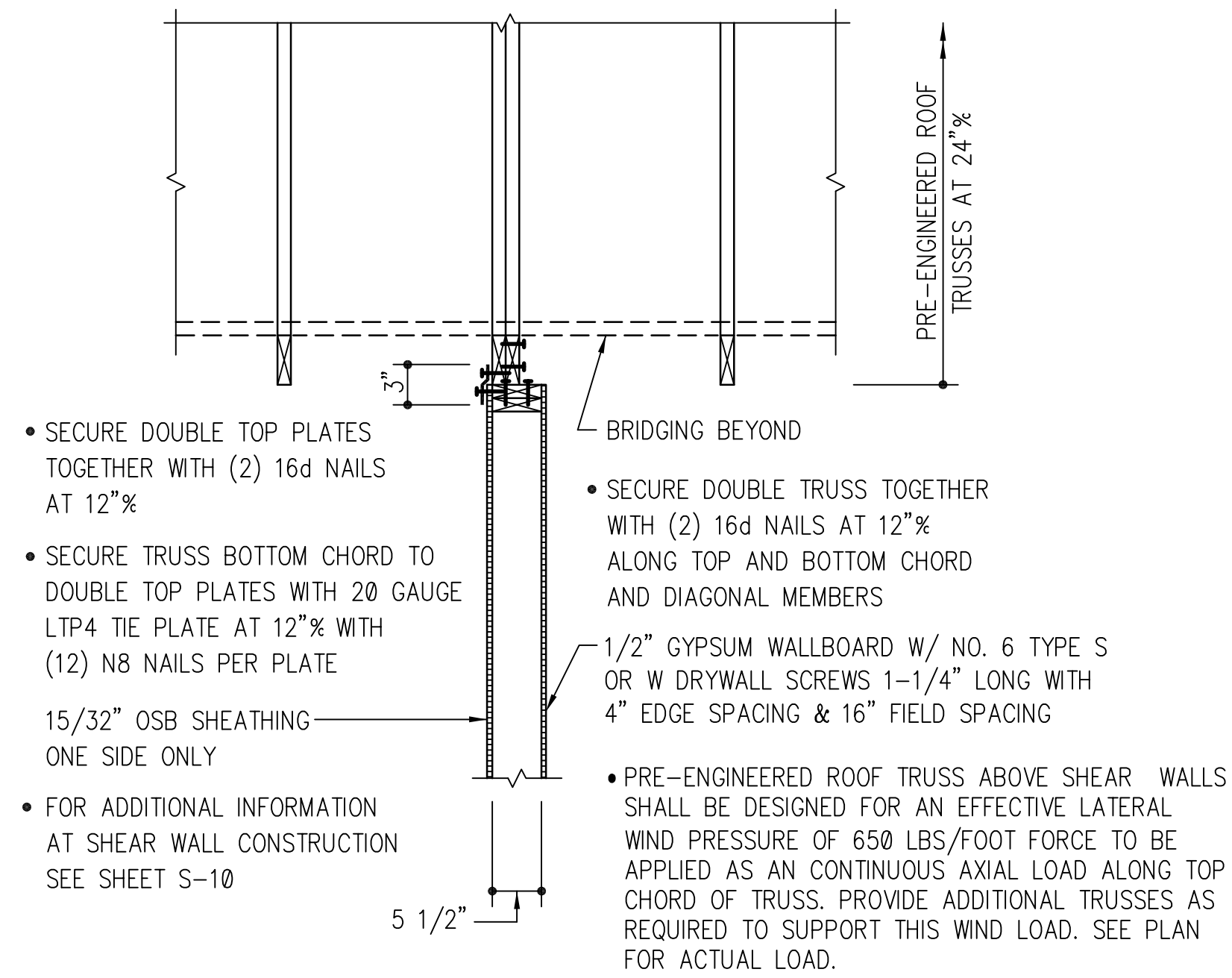
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No. **S7**

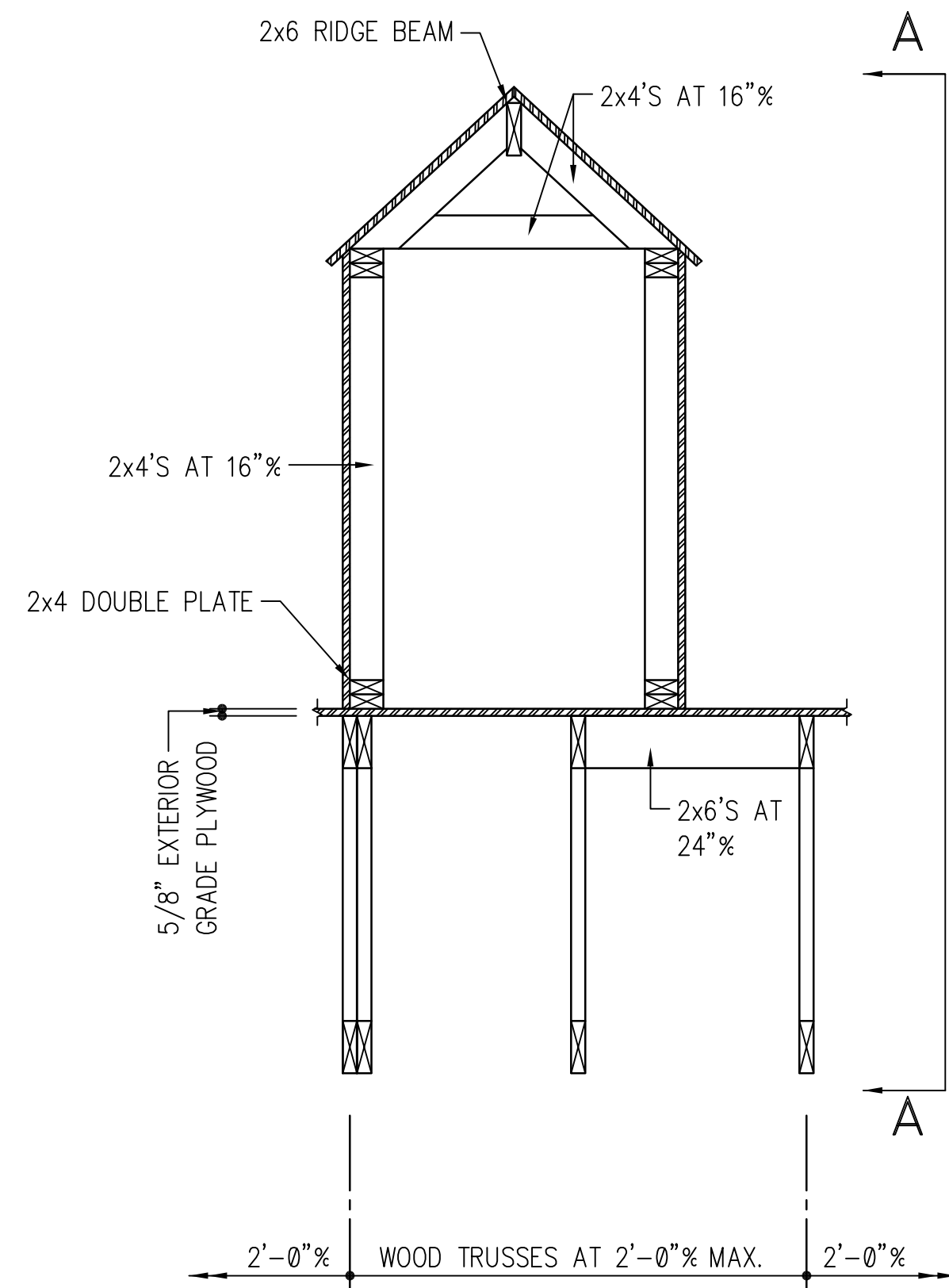
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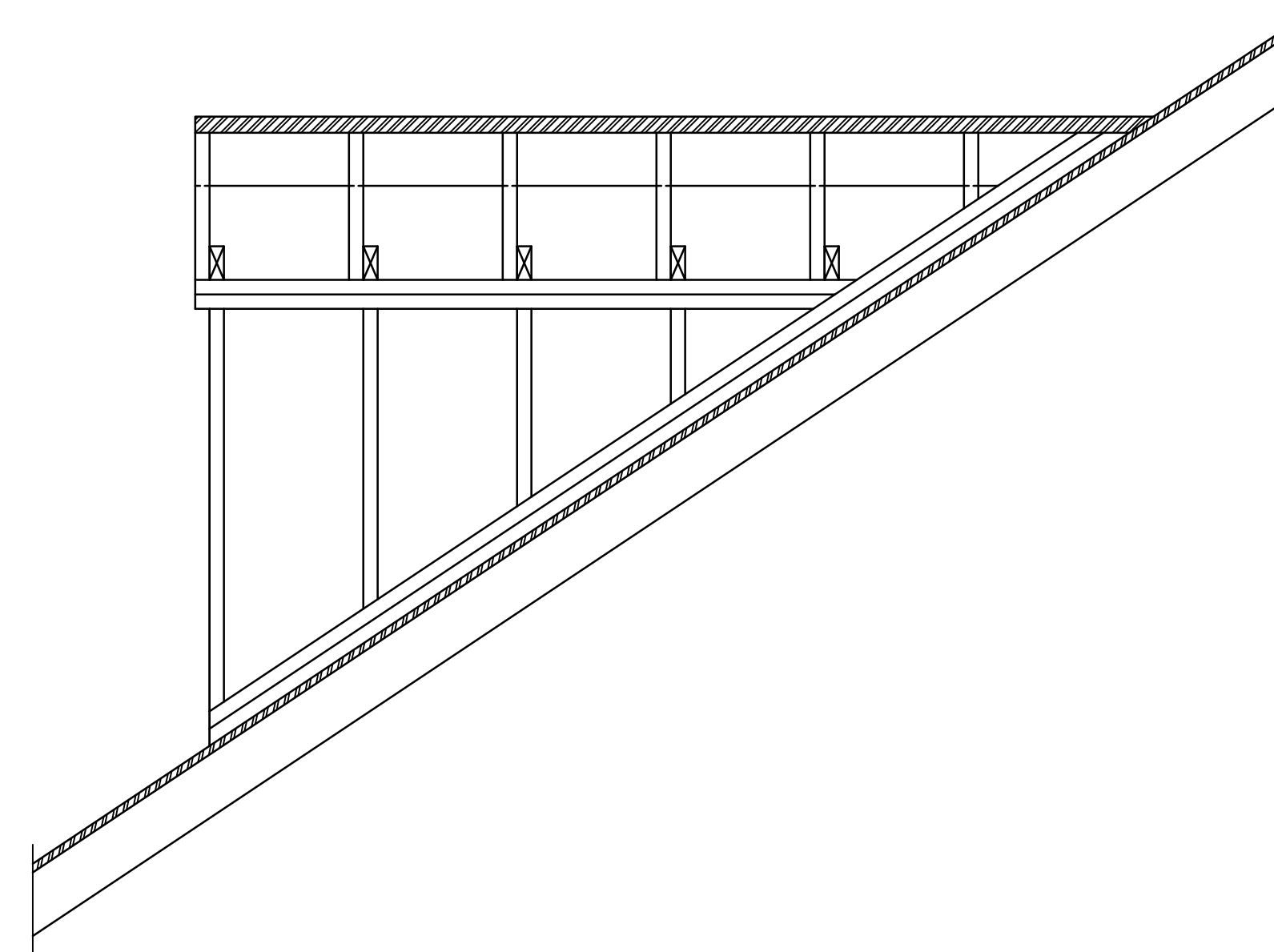
① TRUSS OVER TRUSS CONNECTION



② INTERIOR DEMISING SHEAR WALL AT ROOF TRUSSES



③ DORMER DETAIL



SECTION A-A

## TYPICAL WOOD CONNECTORS (U.N.O.)

SIMPSON STRONG-TIE CONNECTORS PRODUCTS

- 5 1/4" x 5 1/4" PARALLAM POST TO FOUNDATION: CB66 COLUMN BASE WITH (2)-5/8" THRU BOLTS BY SIMPSON OR APPROVED EQUAL.
- SOLE PLATE AT EXTERIOR WALL TO FOUNDATION CONNECTION. 3/4" ANCHOR BOLTS AT 32" AND 1'-0" MAXIMUM FROM EACH END OF PLATE SPLICE. PROVIDE 12" EMBEDMENT WITH 3" HOOKS.
- STUD TO ROOF JOIST, AND TRUSS: (1)-HI HURRICANE TIES WITH N8 NAILS IN ALL HOLES
- DOUBLE TOP PLATE TO 2" x 6" EXTERIOR WALL STUD: (2)-16d NAILS.

## WOOD TRUSS NOTES:

- PRE-ENGINEERED WOOD TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING UNIFORM LOADS IN POUNDS PER SQUARE FOOT. (UNO)
 

DEAD LOAD		LIVE LOAD	
A) TOP CHORD = 10	B) BOTTOM CHORD = 5	A) TOP CHORD = 30	B) BOTTOM CHORD = 0

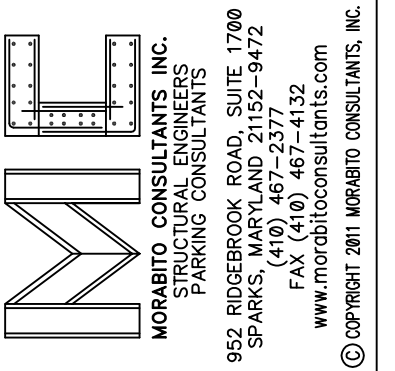
WHERE PRE-ENGINEERED WOOD TRUSSES SUPPORT SOLAR PANELS, TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING UNIFORM LOADS IN POUNDS PER SQUARE FOOT. REFER TO PLAN FOR LOCATIONS WHERE TRUSSES SUPPORT SOLAR PANELS.

DEAD LOAD		LIVE LOAD	
A) TOP CHORD = 25	B) BOTTOM CHORD = 5	A) TOP CHORD = 80	B) BOTTOM CHORD = 0

WIND LOAD: 100 MPH PER IBC 2009

IN ADDITION, ALL TRUSSES SHALL BE DESIGNED FOR SNOW DRIFT PER THE REQUIREMENTS OF IBC 2009. TRUSSES SHALL ALSO BE DESIGNED TO SUPPORT ALL MECHANICAL EQUIPMENT ON ROOF AND SUPPORT BY BOTTOM CHORD OF TRUSSES. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION. SEE DETAIL 1 ON S-5 FOR TRUSS DESIGN REQUIREMENTS AT FOLDING PARTITION.

- STRUCTURAL ROOF DECK OVER WOOD TRUSSES SHALL BE 5/8" EXTERIOR 32/16 EXPOSURE 1 APA RATED SHEATHING NAILED TO WOOD TRUSSES. SEE NOTE 2 FOR ROOF DECK INFORMATION AT SOLAR PANELS.
- WHERE ROOF DECK SHALL SUPPORT SOLAR PANELS: STRUCTURAL ROOF DECK OVER WOOD TRUSSES SHALL BE 3/4" EXTERIOR 32/16 EXPOSURE 1 APA RATED SHEATHING NAILED TO WOOD TRUSSES. SEE PLAN FOR LOCATION OF SOLAR PANELS.
- SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS ALONG WITH WORKING POINTS AND PITCHES OF PREFABRICATED ROOF TRUSSES. VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
- PROVIDE 2" x 6" CONTINUOUS BOTTOM CHORD BRIDGING AT 7'-0" MAXIMUM FOR ALL WOOD TRUSSES. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- TOP CHORD OF ALL WOOD TRUSSES SHALL BE DESIGNED FOR ALL AXIAL AND BENDING STRESSES.
- COORDINATE TRUSS WEB MEMBERS WITH MECHANICAL DUCTWORK AND MECHANICAL AND ELECTRICAL EQUIPMENT AND ARCHITECTURAL LOUVERS. THE WEB SPACING AS SHOWN IS FOR GENERAL CONCEPT ONLY AND MAY NOT REFLECT THE ACTUAL WEB SPACING. ALL COST ASSOCIATED WITH COORDINATION OF ROOF TRUSS WITH MECHANICAL REQUIREMENTS SHALL BE BORNE BY THE CONTRACTOR.
- IF SEPARATE OR PIGGY BACK TRUSSES ARE DEEMED NECESSARY BY THE CONTRACTOR DUE TO SHIPPING AND HANDLING, ANY COST SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- TRUSS BOTTOM CHORDS MAY NOT BE SHEATHED. DESIGN TRUSSES ACCORDINGLY, WITH BOTTOM CHORD LATERAL SUPPORT ONLY AT 2' x 4" CONTINUOUS BOTTOM CHORD BRACING.
- WOOD TRUSS ERECTOR SHALL INSTALL BRACING IN ACCORDANCE WITH "HANDLING INSTALLATION AND BRACING" (HB-91) ISSUED BY THE TRUSS PLATE INSTITUTE, INC.
- PROVIDE DOUBLE CABLE END ROOF TRUSSES WITH 2" x 4" VERTICALS AT 24" MAXIMUM AT ALL LOCATIONS WHERE SHEATHING IS ATTACHED DIRECTLY TO TRUSS.
- PRE-ENGINEERED ROOF TRUSS ABOVE SHEAR WALLS SHALL BE DESIGNED FOR AN EFFECTIVE LATERAL WIND PRESSURE OF 650 LBS./FOOT FORCE TO BE APPLIED AS AN CONTINUOUS AXIAL LOAD ALONG TOP CHORD OF TRUSS. PROVIDE ADDITIONAL TRUSSES AS REQUIRED TO SUPPORT THIS WIND LOAD.



**Choptank Electric Cooperative - Operations Facility**  
 1118 S. Talbot St., St. Michaels, MD. 21663  
 Renovation & Addition to Existing Structure

**C. H. BRITTON**  
 tel: 410.924.9027  
 fax: 800.385.7281  
 PO Box 751  
 St. Michaels, MD 21663

Title:  
**Framing Details**

Date: October 5, 2011  
 Scale: 3/4" = 1'-0"

**S8**

No.

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**NOTES:**

- STRUCTURAL WOOD STUDS SHALL BE NO.1/ NO.2 SPRUCE-PINE-FIR WITH A MAXIMUM WATER CONTENT OF 19% AND THE FOLLOWING MINIMUM PROPERTIES:  
 Fb = 875 PSI      Fc L = 425 PSI  
 Ft = 425 PSI      Fc II = 1150 PSI  
 Fv = 135 PSI      E = 1,400,000 PSI

**WOOD STUD WALL SCHEDULE**

LEVEL	LOCATION	
	INTERIOR BEARING/CORRIDOR WALL	EXTERIOR BEARING WALL
ROOF	2" x 6" AT 16"Ø	2" x 6" AT 16"Ø
FIRST		

**JAMB SCHEDULE**

WIDTH OF OPENING	2" x 6" STUDS	
	EXTERIOR WALL	INTERIOR WALL
0' - 0" TO 3' - 0"	1 FULL HEIGHT 2 BEARING STUDS	1 FULL HEIGHT 1 BEARING STUD
3' - 0" TO 6' - 0"	1 FULL HEIGHT 2 BEARING STUDS	1 FULL HEIGHT 2 BEARING STUD
6' - 0" TO 9' - 0"	2 FULL HEIGHT 3 BEARING STUDS	2 FULL HEIGHT 3 BEARING STUD
OVER 9' - 0"	3 FULL HEIGHT 4 BEARING STUDS	2 FULL HEIGHT 3 BEARING STUDS

**MORABITO CONSULTANTS INC.**  
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 www.morabitoconsultants.com  
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PROFESSIONAL CERTIFICATION #1128  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland.  
 License number: 1290  
 Expiration Date: 05/31/12

**Choptank Electric Cooperative - Operations Facility**  
 Renovation & Addition to Existing Structure  
 1118 S. Talbot St., St. Michaels, MD. 21663

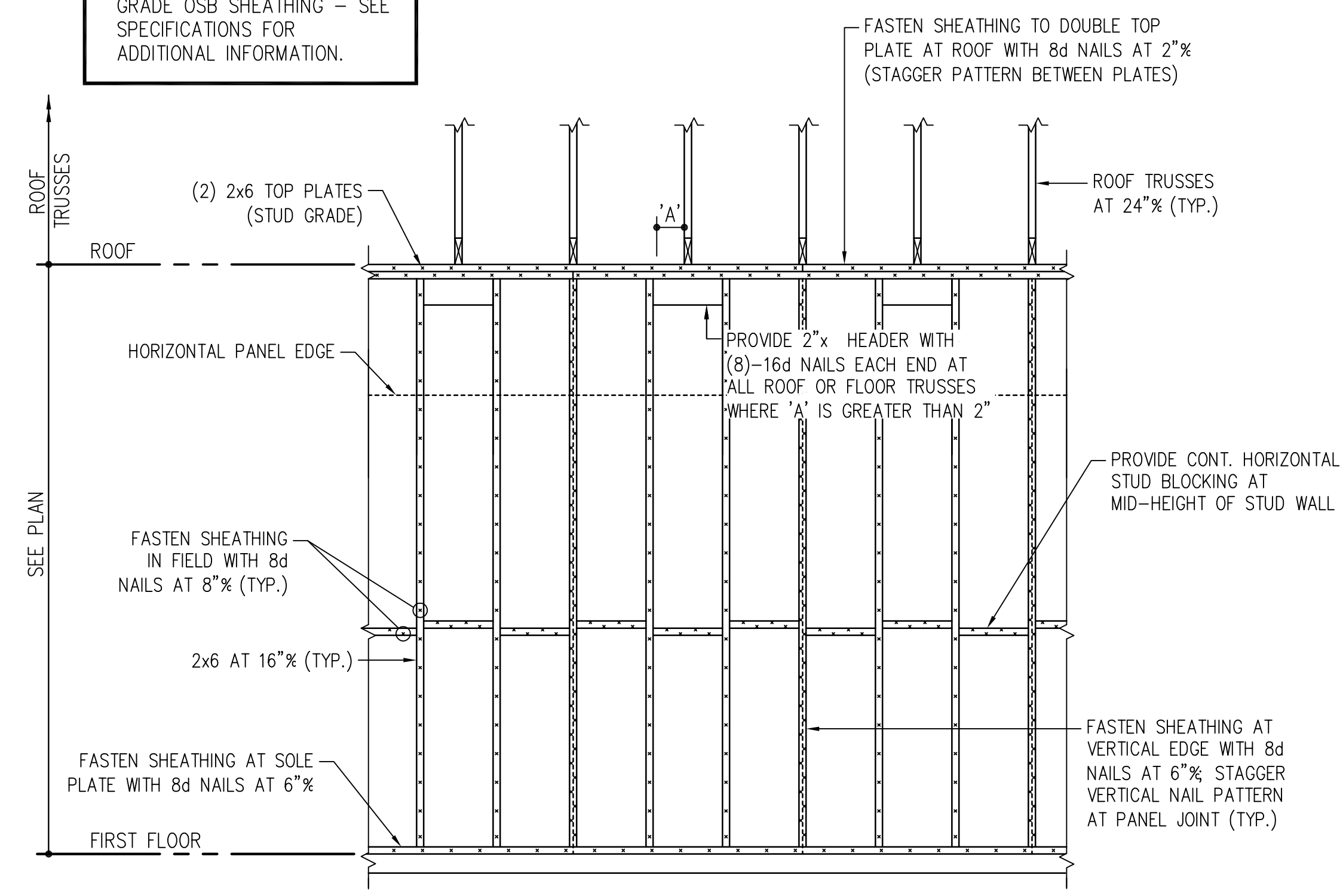
**C. H. BRITTON**  
 PO Box 751  
 St. Michaels, MD 21663  
 tel: 410.924.9027  
 fax: 800.385.7281

Title: **Bearing Wall Elevations**

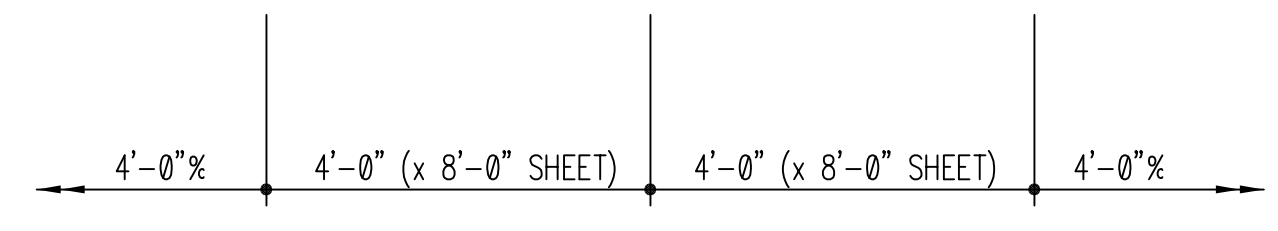
Date: October 5, 2011  
 Scale: As Noted

No. **S9**

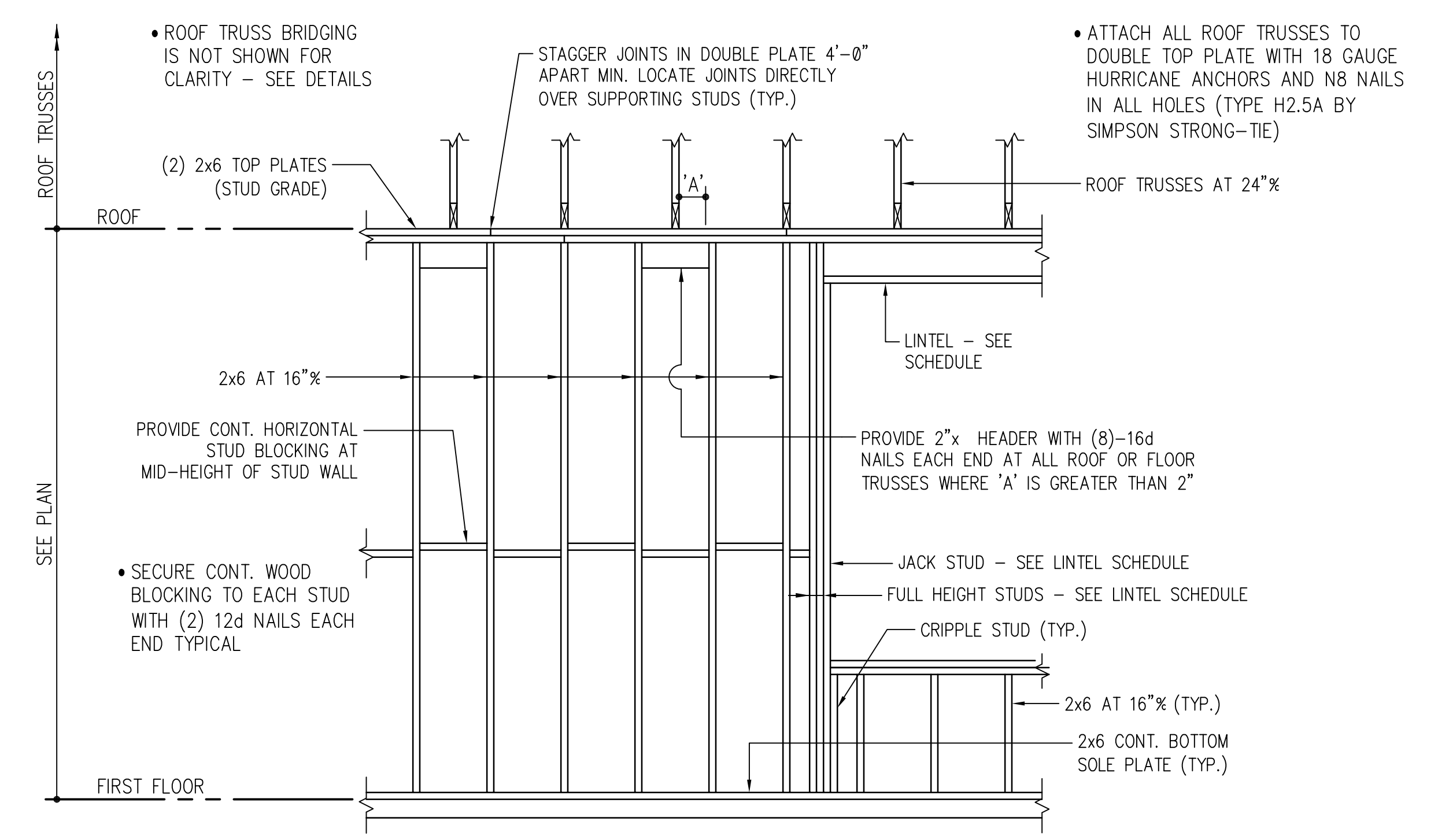
• ALL EXTERIOR WALL SHEATHING SHALL BE 7/16" EXTERIOR GRADE OSB SHEATHING - SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



• ALL SHEATHING FASTENED TO EXTERIOR STUD WALLS SHALL BE SECURED WITH 8d COMMON OR DEFORMED SHANK NAILS (NO SINKERS SHALL BE ALLOWED)



① TYPICAL EXTERIOR SHEATHING INSTALLATION - ELEVATION  
 SCALE: 1/2" = 1'-0"

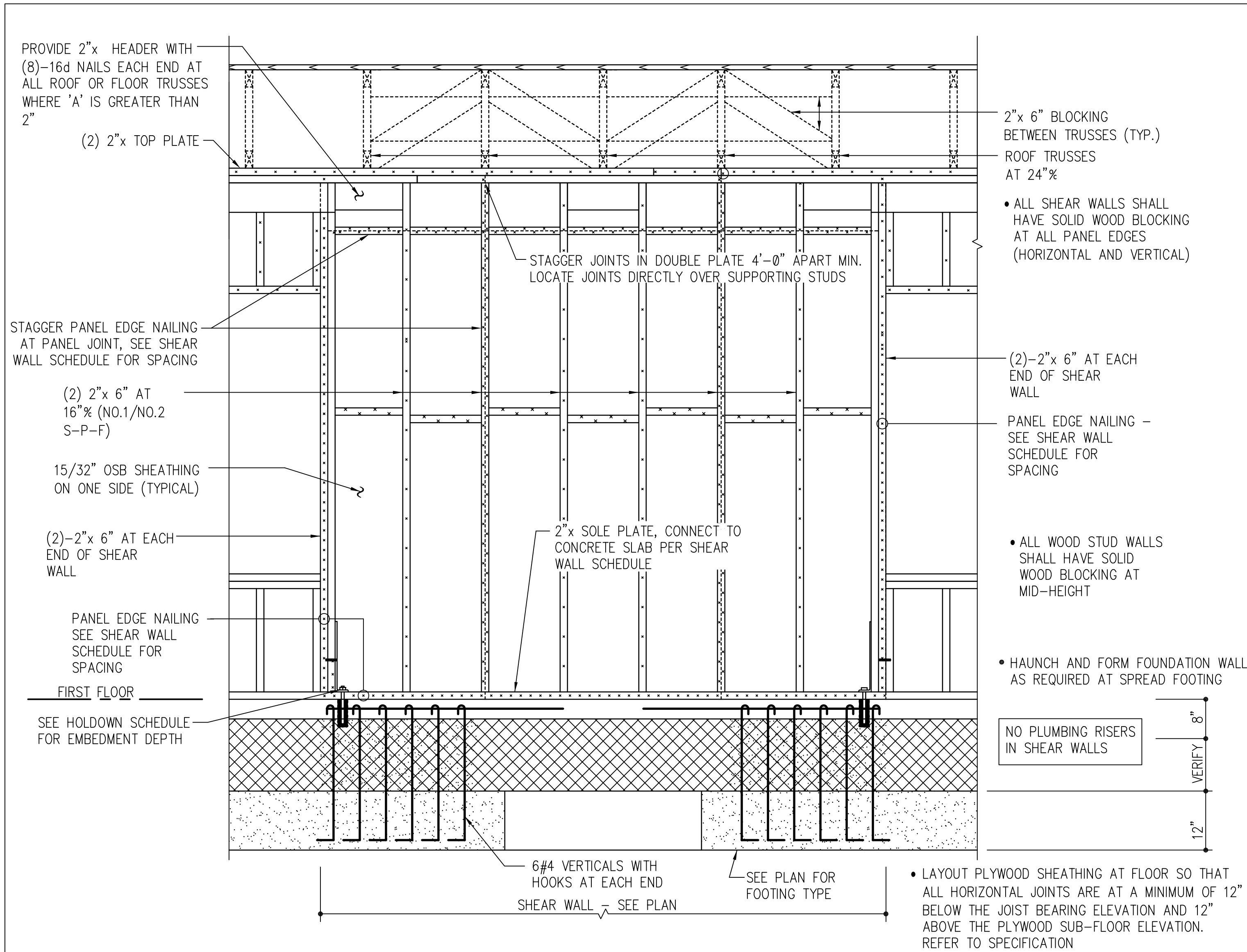


• OSB SHEATHING TO BE NAILED TO STUDS WITH 8d NAILS AT 4"Ø ALONG PANEL EDGES AND 6"Ø ALONG STUDS AND BLOCKING

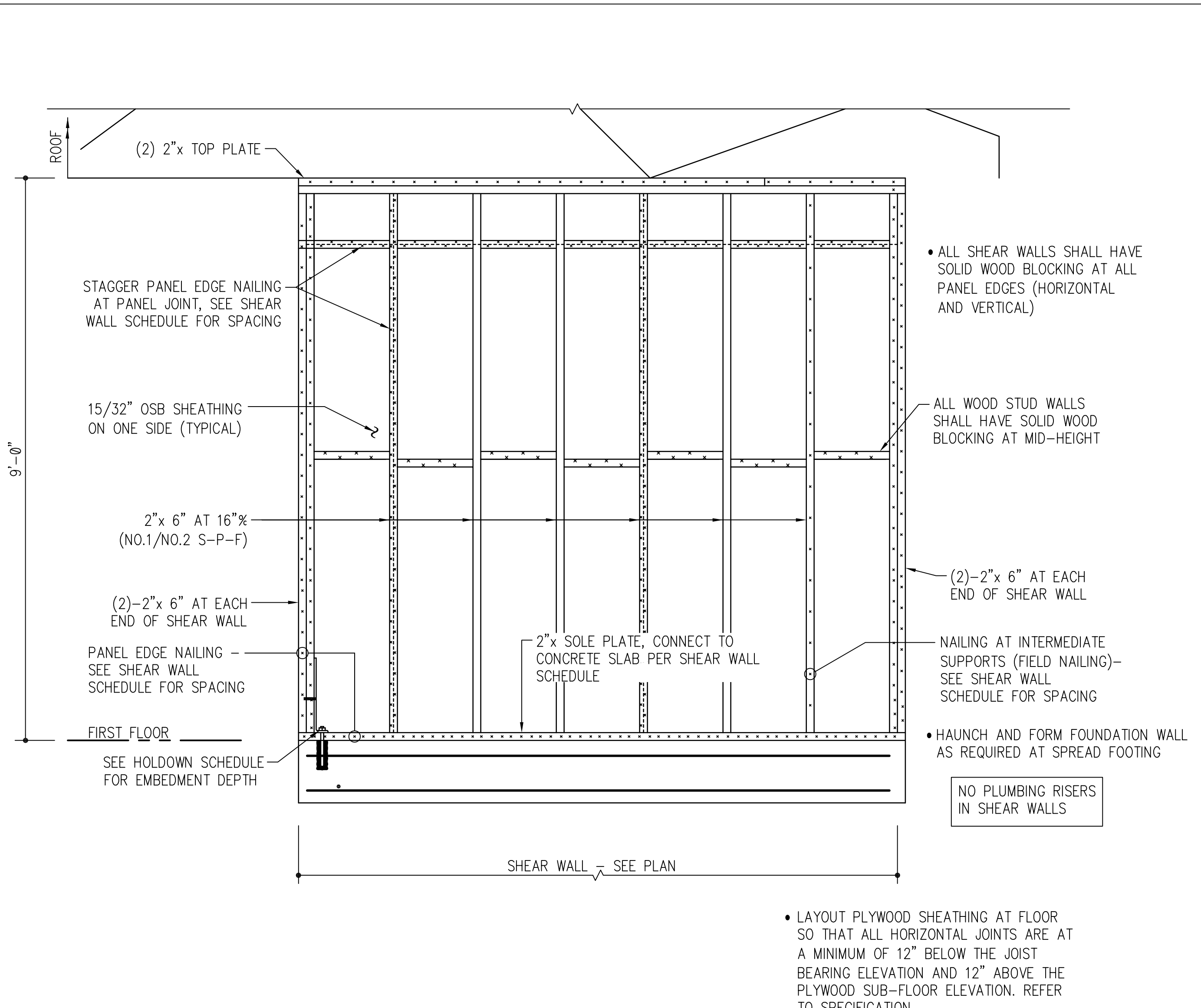
② TYPICAL EXTERIOR STUD BEARING WALL - ELEVATION  
 SCALE: 1/2" = 1'-0"

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① TYPICAL EXTERIOR SHEAR WALL - ELEVATION



② TYPICAL INTERIOR DEMISING SHEAR WALL - ELEVATION

WOOD SHEAR WALL SCHEDULE				
MARK	SHEATHING AND PANEL EDGE NAILING	BLOCKING CONNECTION	SILL PLATE ANCHORAGE	NAILING AT INTERMEDIATE SUPPORTS (FIELD NAILING)
A-B	15/32" OSB WITH 10d NAILS AT 6" %	16d NAILS AT 6" %	Ø.138" PAFx 2 1/2" LONG (1" MIN. EMBEDMENT) AT 7" %	10d NAILS AT 6" %
B-B	15/32" OSB WITH 10d NAILS AT 4" %	16d NAILS AT 4" %	Ø.138" PAFx 2 1/2" LONG (1" MIN. EMBEDMENT) AT 5" %	10d NAILS AT 6" %
C-B	15/32" OSB WITH 10d NAILS AT 3" %	16d NAILS AT 3" %	Ø.138" PAFx 2 1/2" LONG (1" MIN. EMBEDMENT) AT 4" %	10d NAILS AT 6" %

HOLDOWN SCHEDULE	
MARK	HOLDOWN ANCHORAGE TO CONCRETE SLAB (SEE 1 AND 2 ON S-8)
B-1	SIMPSON HD7B WITH (3) 3/4" STUD BOLTS IN DOUBLE STUDS AND 5/8" HILTI HY 15Ø INJECTION ADHESIVE ANCHORS (7 1/2" MIN. EMBEDMENT)
B-2	SIMPSON HD9B WITH (3) 7/8" STUD BOLTS IN TRIPLE STUDS AND 5/8" HILTI HY 15Ø INJECTION ADHESIVE ANCHORS (7 1/2" MIN. EMBEDMENT)

- WOOD SHEARWALL NOTES:**
- USE COMMON NAILS ONLY. NO SINKERS ALLOWED.
  - ALL HOLDOWN ANCHORS SHALL BE STRONG TIE OR APPROVED EQUAL AND SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS WITH APPROPRIATE FASTENERS IN ALL HOLES.
  - CONTRACTOR SHALL PROVIDE 1/2" GYPSUM WALLBOARD WITH NO. 6 TYPE S OR W DRYWALL SCREWS 1-1/4" LONG WITH 4" EDGE SPACING AND 16" FIELD SPACING.

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PROFESSIONAL CERTIFICATION #11208  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland.  
 License number: 16280  
 Expiration Date: 05/31/12

**Choptank Electric Cooperative - Operations Facility**  
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Title: Shear Wall Elevations  
 Date: October 5, 2011  
 Scale: 3/4" = 1'-0"

**S10**  
 No.

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SECTION 01250  
GENERAL REQUIREMENTS

PART 1 - GENERAL

1.0 CONTRACTOR RESPONSIBILITIES

- A. The structure is designed to be self-supporting and stable after the building is fully completed. It is solely the contractor's responsibility to determine erection procedures and sequence, and to ensure the stability of the building and its component parts, and the adequacy of temporary or incomplete connections, during erecting. This includes the addition of any shoring, sheeting, temporary guys, bracing or tiebacks that might be necessary. Such conditions are not shown on the drawings. If applied, they shall be removed as conditions permit and shall remain the contractor's property.
- B. The engineer has no expertise in, and takes no responsibility for, construction means and methods or jobsite safety during construction. Processing and/or approved submittals made by the contractor which may contain information related to construction methods of safety issues, or participation in meetings where such issues might be discussed, shall not be construed as voluntary assumption by the engineer or any responsibility of each contractor to follow all applicable safety codes and regulations during all phases of construction. The engineer is not engaged in, and does not supervise construction.

1.1 LINTELS

- A. All openings in new walls and partitions are to be provided with lintels. Lintels shall be stone, concrete, slag concrete, or structural steel.
- B. Provide 4" minimum end bearing for lintels in non-bearing partitions and 8" minimum end bearing for lintels in all exterior walls and bearing partitions, unless noted otherwise.
- C. For any opening not specifically shown, provide one (1) 4" x 3-1/2" x 5/16" (LLV) angle for each 4" of wall thickness for spans not exceeding 6'-0"; one (1) 6" x 3-1/2" x 5/16" (LLV) angle for each 4" of wall thickness for spans exceeding 6'-0" but less than 8'-0".
- D. Precast concrete lintels may only be utilized in non-bearing partitions. Precast concrete lintels shall have one (1) #4 top and bottom for each 4" of wall thickness for spans not exceeding 6'-0"; one (1) #5 top and bottom for each 4" of wall thickness for spans exceeding 6'-0" but less than 8'-0". All precast concrete lintels shall also be reinforced with #2 wire ties at 8" on center.
- E. See Architectural, Mechanical, Electrical and Structural Drawings for locations of lintels.
- F. Consult Structural Engineer for intel requirements for all new openings in existing walls.

1.2 SHOP DRAWINGS

- A. Shop drawings for all structural elements shown on the contract documents must be submitted by general contractor and reviewed by the Engineer.
- B. All Contractor modifications (including products submission) must be identified in writing as a proposed "as equal" changes at time of submission.
- C. If a Contractor or Owner fails to submit the shop drawings or fails to follow the above "as equal" procedure, the firm Morabito Consultants, Inc. will not be responsible for the structural certification and design of the project.
- D. Shop drawings are reviewed by the Engineer as a convenience to the Contractor and are not a contract document.

1.3 INSPECTION

- A. All work specified herein shall be inspected in accordance with the building code and all local ordinances. Inspection shall consist of visual observations of materials, equipment or construction work for the purpose of ascertaining that the work is in substantial conformance with the contract documents and with the design intent.
- B. The Contractor shall hire an experienced qualified inspector to perform all required inspection work.
- C. The Engineer will not perform the required inspection as part of this present contract with the Architect/Owner. Under this present contract, the Engineer may visit the site to ascertain general performance to the contract documents. However, such visits shall not be relied upon by others as acceptance of the work, nor should it be construed to relieve the Contractor in any way from his obligations and responsibilities under the construction contract. However, if desired, Morabito Consultants, Inc. may be hired under a separate contract to perform this inspection work.

1.4 EXISTING CONDITIONS

- A. Inasmuch as the remodeling and/or rehabilitation of an existing building requires that certain assumptions be made regarding existing conditions, and because some of these assumptions cannot be verified without expending great sums of additional money, or destroying otherwise adequate or serviceable portions of the building, the owner agrees that, except for negligence on the part of Morabito Consultants, the owner will hold harmless and indemnify Morabito Consultants for and against any and all claims, damages, awards, and costs of defense arising out of deficiencies in the original building structure.

1.5 OWNERSHIP OF DOCUMENTS

- A. The Contractor acknowledges these plans and specifications prepared by Morabito Consultants, Inc., as instruments of professional service. Nevertheless, the plans and specifications prepared under this agreement shall remain the property of Morabito Consultants, Inc. upon completion of the work. The Contractor agrees to hold harmless and indemnify Morabito Consultants, Inc., against all damages, claims, and losses, including defense costs, arising out of any reuse of the plans and specifications without the written authorization of Morabito Consultants, Inc.

1.6 DESIGN DATA:

- A. Governing Code: IBC 2009  
See Chapter 35 for version of Codes and Standards referenced in these documents.
- B. Material Properties:
  - fc' = 3,000 PSI (Footings, Slab on Grade, and Hambro Floor)
  - fc' = 4,000 PSI (Concrete Exposed to Weather U.N.O.)
  - fc' = 4,000 PSI (Retaining Walls & Related Footings)
  - fy = 60,000 PSI
  - Fy = 36,000 PSI/50,000 PSI/35,000 PSI
  - Fb = (See structural lumber)
- C. Live Loads:
  - Office = 40 PSF
  - Corridors = 100 PSF
  - Stairs = 100 PSF
  - Roof = 30 PSF + snow drift
- D. Dead Loads:
  - Partitions = 20 PSF
- E. Roof Snow Load per ASCE 7-05  
Ground Snow Load, Pg= 25 PSF  
Snow Exposure Factor, Ce = 0.9

Snow Load Importance Factor, I = 1.0  
Thermal Factor, Ct = 1.0  
Flat Roof Snow Load, Pf = 20 PSF

F. Wind Load per ASCE 7-05

Basic Wind Speed, V = 100 MPH  
Wind Importance Factor, I = 1.0  
Building Category II  
Exposure = 'B'  
Internal Pressure Coefficient GCp1 = ±0.18  
Components and Cladding = ±19.5 PSF (Exterior Walls)  
Components and Cladding = ±24.1 PSF (Wall Corners)

G. Earthquake Load per IBC 2009

Seismic Use Group II  
Maximum Spectral Response Ss = 0.145g S1 = 0.048g  
Damped Design Spectral Response SDS = 0.155 SD1 = 0.077

Seismic Importance Factor, Ie = 1  
Occupancy Category = II  
Site Class E  
Seismic Design Category B  
Seismic Force Resisting System = Light Framed Walls With Shear Panels of all Other Materials: R = 2.0  
Seismic Response Coefficient, Cs = 0.12085  
Design Base Shear, V = 8.7kN  
Equivalent Lateral Force Procedure

SECTION 02300  
EARTHWORK

PART 1 - GENERAL

1.0 WORK INCLUDED

- A. Earthwork includes areas below building foundations, below concrete slabs on grade, below paved areas and grading of all unpaved area in the site.

1.1 DEFINITIONS

- A. Rock Excavation: Natural geological formations which defy removal by adequate equipment shall be considered a change in the scope of work and paid for by the Owner.
- B. Earth Excavation: Anything not classified as rock including as example: soils, gravels, stones, boulders, vegetation, debris, and unsuitable materials.
- C. Unsuitable Materials: All excavated materials; debris, man made or fabricated materials, concrete spoil, organic, soft, expansive, or unstable matter; all shall be disposed of as herein specified.
- D. Removal and disposal of unsuitable material above the subgrade elevation and placement of approved specific fill material (from on or off the site) above the subgrade elevation as directed by the Soils Engineer shall be considered a part of the work.
- E. Removal and disposal of unsuitable material approved below the subgrade elevation and placement of approved specific fill material (from on or off the site) below the subgrade elevation as directed by the Soils Engineer shall be considered a change in the scope of work.
- F. Soils Engineer or Inspection Agency: An Agency and its designated representatives who monitor and approve all earthwork operations described herein.
- G. Subgrade: The finished elevation of the earth immediately below all slabs, paving, footings, walls, etc., except the subgrade elevation shall not be higher than 12" below the existing elev. elevation at the start of the project.
- H. Subgrade for Utility Construction: Underside of barrel of pipe, or underside of any cradle or bedding if noted on drawings, or referenced in applicable local government specifications. For pipe drains and miscellaneous structures encased in concrete or on concrete, stone and/or gravel cradle, subgrade is lowest outside surface of encasement or cradle.

1.2 QUALITY ASSURANCE

- A. Reference Standards:
  1. American Association of State Highway and Transportation Officials (AASHTO).
  2. American Society for Testing and Materials (ASTM).
  3. Maryland Department of Transportation, State Highway Administration "Standard Specifications for Materials and Construction," as amended to date (M.S.H.A. as hereinafter referred). Delete references to "Method of Measurement" and "Basis of Payment."
- B. Existing Conditions: Accept the site in the condition which it exists at the time of the award of the contract and perform all work to the grades indicated.
- C. Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.
- D. Subsurface Conditions: See Geotechnical Engineering Report prepared by Hillis-Carnes Engineering Associates dated Feb 20, 2008 for test boring data and other requirements.

PART 2 - PRODUCTS

2.0 FILL AND BACKFILL

- A. Compact Fill:
  1. Compacted fill and backfill shall be free of deleterious matter such as frozen materials, organics, wood, debris, or rock larger than 4" in diameter and be classified ML, SP, SW, SM, SC, GP, GC, GM, or GW per ASTM D-2487.
  2. The minimum dry unit weight shall not be less than 105 PCF maximum dry density as determined by ASTM D-1557, modified proctor.
  3. All fill and backfill materials shall be obtained from on site or from off site sources and shall be approved by the Geotechnical Engineer prior to placement.
- B. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with a least 90 percent passing a 1 1/4 inch sieve and not more than 12 percent passing a No. 200 sieve.
- C. Drainage fill:
  1. Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100% passing of 1-1/2" sieve and not more than 5% passing a No. 8 sieve. Aggregate shall meet MSHA Specification for No. 6 aggregate. Provide by Contractor from off-site source.
    - a. Locations: All concrete slab on grade areas.
  2. For foundation drainage, use aggregate meeting MSHA specification for No. 8 aggregate.
    - a. Locations: Drainage fill behind basement walls and retaining walls.

D. Stone Base Course:

- 1. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, reclaimed concrete, and natural or crushed sand. Provide by contractor from off site sources.
  - a. Locations: All vehicular traffic areas.

E. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; AASHTO M-43, size No. 17.

2.1 FILL AND BACKFILL FOR UTILITIES

- A. Backfill: Earth removed from the trench provided that in the opinion of Soils Engineer such excavated material is suitable for backfilling.
- B. Should the excavated material be considered unsatisfactory for backfilling, the Contractor shall remove and dispose of such unsatisfactory material and substitute, in lieu thereof, suitable material obtained from elsewhere on or off the site.

PART 3 - EXECUTION

3.0 EXCAVATION: Excavation consists of removal and disposal of material encountered when establishing required finish grade elevations.

- A. Unauthorized Excavations:
  1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be at Contractor's expense.
  2. Additional Excavation: When excavation has reached required subgrade elevations, notify Soils Engineer who will make an inspection of conditions.
    1. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated materials as directed by Architect.
    2. Removal of unsuitable material below the subgrade elevation and its replacement as directed will be paid by the Owner on basis of contract conditions relative to change in work.
  3. Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of materials excavated.
  4. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross-braces, in good serviceable condition.
  5. Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
- F. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
- G. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.
- H. Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed with ample working room.
  1. Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.
  2. Where rock is encountered, carry excavation 6" below required elevation and backfill with a 6" layer of crushed stone or gravel prior to installation of pipe.
  3. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
  4. Backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing. Concrete is specified in Division 3.
  5. Do not backfill trenches until tests and inspections have been made and backfilling authorized by Architect. Use care in backfilling to avoid damage or displacement of pipe systems.

I. Earthwork Quantities:

1. Contractor shall be responsible for determining earthwork quantities for the completion of the work.

3.1 COMPACTION

- A. General: Control soil compaction during construction providing percentage of dry density specified for each area classification.
- B. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of the maximum dry density which is determined in accordance with ASTM D\_1557 or in accordance with ASTM D\_2049 for soils which will not exhibit a well-defined moisture-density relationship.
- C. Structural and Roadway Areas and utility trenches - 95% of the maximum dry density.
- D. Lawn areas outside the designated structural fill limits - 90% of the maximum dry density.
- E. Moisture Control: Obtaining a uniformly high degree of compaction requires close control over the moisture content of the material being placed in the fills and backfill. The soils used in fill and backfill shall be brought to within 3% of optimum moisture at no additional cost to the Owner.

3.2 BACKFILL AND FILL

- A. General: Place acceptable soil material in layers not more than 8" in thickness to required subgrade elevations, for each area classification listed below. Each layer shall be compacted to the requirements of Section 3.3B.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
  1. Structural and Roadway Areas and utility trenches - 95% of the maximum dry density.
  2. Lawn areas outside the designated structural fill limits - 90% of the maximum dry density.
- C. Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth, for material compacted by heavy compaction equipment and not more than 4" in loose depth for material compacted by hand-operated tampers.

3.3 ROUGH GRADING

- A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surfaces with specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades. In fill areas, sloped surfaces steeper than 5 horizontal to 1 vertical shall be benched so that fill materials will be placed on a level surface. All fill subgrades shall be observed by the Geotechnical Engineer.
- B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:
  1. Grading Surface or Fill Under Building Slabs: Grade smooth and even, free of

voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of .02" when tested with a 10' straightedge.

3.4 FOUNDATIONS-SPREAD FOOTINGS

- A. Bottom of all footings shall be a minimum of 2'-0" below original grade or placed in approved compacted fill. Bottom of all exterior footings shall be a minimum of 3'-0" below finished grade.
- B. A soil bearing capacity of 2000 PSF was used in the foundation, and must be field verified by a Registered Geotechnical Engineer. If soil of this bearing capacity is not encountered at the elevations indicated on the contract drawings, footings shall be lowered or increased in size as directed by the Structural Engineer.

3.5 BUILDING SLAB BASE COURSE

- A. General: Slab base course consists of placement of drainage fill and stone base course material, in layers of indicated thickness, over subgrade surface to support concrete building slabs.
- B. Paving: Place slab base course on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compaction material during placement operations.
- C. Any ruts or soft yielding spots which may occur or any areas having inadequate compaction or deviations from the requirements set forth herein shall be corrected by removing and adding uniformly graded crushed stone or by loosening crushed gravel, reshaping and recompacting. The subgrade shall have a uniform density throughout its entire depth and width and shall be approved by the Architect prior to pouring any concrete.
- D. Following this preparation, the subgrade shall be protected from damage from heavy loads or equipment. The contractor shall at all times keep the subgrade drained. No concrete shall be deposited upon a frozen subgrade nor, until the subgrade has been approved by the Architect. Immediately in advance of placing concrete, the subgrade shall be sprinkled with as much water as it can readily absorb.

3.6 FINISH GRADING

- A. Verify surfaces are to the prescribed subgrades, within tolerances and properly compacted.
- B. Remove mounds or ridges, gullies and depressions and perform other necessary repairs.
- C. Tilage: After the areas to be topsoiled have been approved for proper subgrade, the surface shall be loosened and made friable by cross-discing or other satisfactory methods, to a depth of at least 2" to permit bonding of topsoil to the subgrade. Remove stones and debris 1" or more in any dimension from the surface of the subgrade.

3.7 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Removal from Owner's Property: Remove waste materials including trash, debris, and unacceptable and excess excavated material and dispose off Owner's property.

3.8 FIELD QUALITY CONTROL

- A. Quality Control Testing During Construction: Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed.
- B. Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least one (1) test to verify required design bearing capacities. Subsequent evaluation and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Architect.
- C. Settlement monitoring points shall be installed in all structural fill greater than 8 feet high placed within the footprint of the new buildings as directed by the geotechnical engineers. Monitoring of this settlement shall be performed using settlement plates placed on the original ground with associated monuments placed on the completed surface of the fill. Plates shall be monitored (using survey stations) at least 2 times per week for a minimum of 5 weeks. Building foundations shall not commence until the newly placed fill has stopped settling.
- D. Costs of testing and inspection shall be borne by the Contractor.
- E. Final Report: Prior to final payment to the Contractor, a written report by soils Testing Agency evaluating all work performed during the course of the project and stating any deviations from the specifications related to his scope of services (and their related impact on the final construction) shall have been received.

SECTION 03100  
CONCRETE FORMWORK

PART 1 - GENERAL

- 1.0 WORK INCLUDED
  - A. Job-Built Formwork, Prefabricated Forms, Form Ties and Accessories; Design; Construction and removal of forms, including shoring, bracing, cribbing, and screeds.

1.1 QUALITY ASSURANCE

- A. References: Comply with the following minimum standards:
  1. ACI-347 Recommended Practice for Concrete Formwork.
  2. ACI-318 Building Code Requirements for Reinforced Concrete.
  3. ACI-301 Specification for Structural Concrete for Buildings.
  4. ACI-117 Standard Specifications for Tolerances for Concrete Construction and Materials.
  5. ASTM E-1155 Standard Method for Determining Floor Flatness & Levelness Using the F-Number System.

PART 2 - PRODUCTS

- 2.0 FORM MATERIALS
  - A. Lumber: Western Wood Products or Southern Forest Products grading. Common or Utility grades for non-exposed surfaces. Structural or Construction grades for whalers, braces and supports.
  - B. Plywood: US Product Standard PA-1 "B-B (Concrete Form) Plywood" Class I, exterior grade or better, milled oiled and edge sealed, with each piece bearing legible inspection trademark.

- 2.1 ACCESSORIES: Furnish hairpin clips, bands, clamps, braces, adjustable shoring jacks, fasteners, form ties, etc., necessary to execute installation of formwork.

No aluminum devices or fasteners (including nails) will be permitted.

PART 3 - EXECUTION

- 3.0 DESIGN: Formwork and its supports shall carry adequately all liquid concrete, men, and equipment, in absolute safety under loads imposed during construction.

3.1 TOLERANCES: ACI-347 paragraphs 3.3 and 3.4, and ACI 117 will be considered absolute maximum, unless otherwise indicated.

- 3.2 CONSTRUCTION: Construct forms to slopes, lines and dimensions shown, plumb and straight and sufficiently tight to prevent leakage; securely brace and shore forms to prevent displacement and to safely support construction loads. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts and other features required in work

3.3 BUILT-IN EMBEDDED ITEMS: Provide for installation of fastening devices required for attachment of other work. Properly locate in cooperation with other trades; secure and maintain in position before concrete is poured.

3.4 LINES AND LEVELS: Check the lines and levels of the completed formwork for all exposed columns, grade beams, walls, etc., before concrete is placed. Make whatever corrections or adjustments to the formwork to correct any deviations which exceed specified tolerances allowed.

3.5 FORM REMOVAL: Remove forms in accordance with ACI 301, Paragraph 4.5, ACI Building Code Requirements for Reinforced Concrete No. 318, Chapter 6, Section 6.2. Removal strength of concrete for stripping shall be determined in accordance with ACI 301, Paragraph 4.7.

SECTION 03150  
CONCRETE ACCESSORIES

PART 1 - GENERAL

- 1.0 WORK INCLUDED: Construction joints, expansion joints and control joints.

1.1 SUBMITTALS

- A. Manufacturers' Literature: Indicate compliance with product specifications.

PART 2 - PRODUCTS

- 2.0 EXPANSION JOINT FILLERS
  - A. Expanded Polystyrene: Closed-Cell extruded polystyrene with high density skin per ASTM D 3575.

2.1 CONTROL JOINTS

- A. Metal Load Transferring Type: 24 gauge galvanized steel, (ASTM A-525), shaped to form a continuous tongue and groove load transferring key between concrete slabs, punched for doweling, including stakes, splice plates and removable 1/8" plastic cap.
- B. Sawcut control joints made with a wet saw.
- C. Joint formed with 2 x 6 lumber and containing smooth steel dowels.

2.2 DOVETAIL ANCHOR SLOTS

- A. Continuous vertical "V" shaped, 16 gauge hot dipped galvanized concrete insert for attachment of masonry veneer. Space inserts at 24" on center horizontally wherever masonry veneer exists at concrete walls.
- B. Masonry tie shall be 1" wide by 16 gauge hot dipped galvanized corrugated tie with a dovetail end, spaced at 16" on center vertically wherever masonry veneer exists at concrete walls. Embed ties a minimum of 2.5" into the masonry.

2.3 WATERSTOPS

- A. Waterstops for horizontal concrete joints shall be a flexible coiled strip of butyl rubber and swellable clay waterproofing joint compound that swells with water contact to form a long lasting compression seal, and shall conform to the Swelstop Waterstop manufactured by Greenstreak or approved equal.
  1. Locations: All horizontal joints in below grade walls enclosing habitable areas.
- B. Waterstops for vertical concrete joints shall be made of plasticized polyvinyl material and shall conform to the Labyrinth Waterstop, type 790 (3 ribs) manufactured by Greenstreak or approved equal.
  1. Locations: All vertical joints in below grade walls enclosing habitable areas.
- C. Waterstops for vertical concrete joints subjected to expansion and shear movement shall be made of plasticized polyvinyl material and shall conform to the Dumbell with Center Bulb Waterstop, type 754 manufactured by Greenstreak, or approved equal.
  1. Locations: All vertical joints subjected to exposed and shear movement in below grade walls enclosing habitable areas.

2.4 VAPOR RETARDER

- A. Provide vapor retarder cover over prepared base material where needed to prevent rapid escape of moisture into subbase and where indicated. Use only materials which are resistant to decay when tested in accordance with ANSI/ASTM E\_154, as follows:
  1. Polyethylene sheet not less than 10 mils thick.

PART 3 - EXECUTION

- 3.0 JOINT ARRANGEMENTS
  - A. Location Criteria: Locate as to least impair the strength of the structure, and at locations coincident with designed structural and architectural features (specifically column lines). Maximum horizontal dimensions of a single unit of placement, 40" in a straight line (except footings).

3.1 CONSTRUCTION JOINTS

- A. Framed Concrete Slab Surfaces: Roughen joint surfaces with a chipping hammer or by another approved method which will remove laitance, loose particles or aggregate, or damaged concrete. After the surface of the joint has been cleaned of dust, chips, or other foreign material, the existing

- concrete shall be soaked with potable water to a saturated-surface dry condition immediately prior to placing the next lift of concrete.
- B. Slab On Grade Construction Joints: Establish longitudinal and transverse control joints. With elevations checked by instrument stretch line over entire length. Drive stakes 2 ft. on center and attached screw to stakes. Provide lateral support where used as a bulkhead. Place dowels in knock-outs.
- C. Wall Construction Joints: Attach tongue and groove formed bulkhead to formwork. Accurately place all required doweling and waterstops.

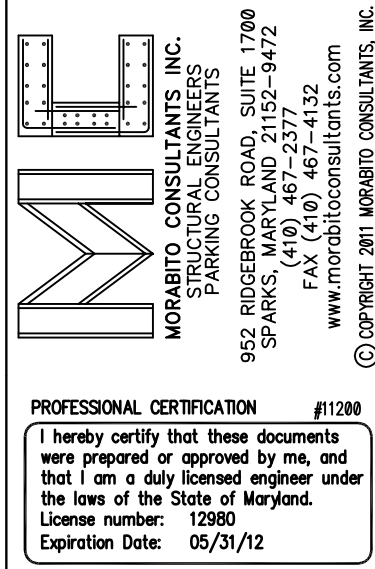
3.2 EXPANSION JOINTS

- A. Exposed slabs: Place joint filler 1/2" below the finished surface of the slab and extend to the bottom of the slab. The joint between the top of the filler and the finished slab shall be filled with a joint sealer.
- B. Exposed Walls: Place joint filler about 1/2" below the finished surface of the wall and extend to the back of the wall.

3.3 CONTROL JOINTS

- A. Concrete Slabs and Walls: Install control joints in slabs on grade, walls and sidewalks as indicated on the drawings, or if not shown, locate joints at 20'-0" o.c. maximum spacing for slabs on grade and concrete walls and at 5'-0" o.c. for exterior sidewalks.
- B. Type and Size: Concrete slabs shall have 1/8" wide sawcut joints or preformed removable inserts. Both joints must be installed 1/4 of the slab depth below the top surface within 8 hours of pouring slab. Concrete walls shall have 1 inch deep minimum chamfer strips installed on the inside and outside of the wall.

3.4 JOINT SEALANTS: See Section 07900.



Choptank Electric Cooperative - Operations Facility  
Renovation & Addition  
to Existing Structure  
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Title:  
Specifications

Date: October 5, 2011  
Scale: As Noted

S11  
No.

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SECTION 03200  
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Steel reinforcing bars, ties, dowels and welded wire fabric, miscellaneous reinforcement and accessories.

1.2 QUALITY ASSURANCE

- A. References: Conform to and perform work in accordance with the current editions of:
1. Local and State Building Codes.
  2. "Building Code Requirements for Reinforced Concrete", ACI 318.
  3. "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ACI 315, and CRSI 63 and CRSI 65.
  4. Specifications for Structural Concrete Buildings ACI 301.

1.3 SUBMITTALS

A. Shop Drawings: Show plan layouts (including dimensioned slab openings), elevation drawings, bending, splicing, sizes, spacing and details of all reinforcing and accessories.

B. Reports and Results: From inspection and testing as soon as determination is made.

PART 2 - PRODUCTS

2.1 REINFORCING: Manufacture and deform in accordance with ANSI/ASTM A-615, except all reinforcing to be welded shall conform to ASTM A-706. All rebar shall consist of domestic manufacture billet steel of clean, new stock.

A. All Bars: Use Grade 60 (yield) min. 60,000 psi.

2.2 WELDED WIRE FABRIC: Manufacture in accordance with ANSI/ASTM A185.

A. Unless otherwise specified in the contract documents, provide 6"x 6"W.2.9 / W2.9 W.W.F., Grade 65 (yield) min. 65,000 psi.

2.3 ACCESSORIES: Provide all spacers, chairs, bolsters, ties and other devices necessary to properly place, space, support and maintain reinforcement in locations. Provide in accordance with ACI\_315. No aluminum inserts or accessories will be permitted.

2.4 FABRICATION: Shop fabrication according to approved shop drawings. All fabrication of bars performed in a shop, with field fabrication done only where unavoidable, and approved.

PART 3 - EXECUTION

3.1 INTENT: All concrete shall be reinforced. For conditions not specifically shown or detailed, framing and reinforcement shall be provided in a manner consistent with other similar details or conditions shown on the drawings. Prior to work under these conditions, notify the Architect for confirmation.

3.2 PREPARATION

A. Clean bars of loose mill scale, rust, oil, and all coatings that will destroy or reduce the bond before placing, and again before concrete is placed.

3.3 PLACEMENT OF REINFORCEMENT: Accurately place in positions and spacing shown. Securely support and fasten to prevent displacement before or during concrete placement. Place reinforcing steel, bar supports, and splice devices, in accordance with CRSI Manual of Standard Practice, latest edition; ACI 315 and ACI 318.

A. Support: Use approved accessories to hold reinforcement at proper distances from surrounding surfaces, with minimum coverage as indicated. Tying reinforcing steel with wire to nails in forms or using wood spacers is not permitted.

B. Placement: Place main reinforcing steel so as to provide 3" minimum cover for foundations poured on earth, 2" minimum cover for beams and columns, 3/4" minimum cover for slabs and 1-1/2" for all rebar in exposed concrete (except as otherwise detailed).

C. Spacing: In no case shall the clear distance between bars be less than 1 inch, nor less than 1 1/2 times the maximum size of coarse aggregate in the concrete, unless specifically indicated as banded.

D. Field Adjustments: Move concrete reinforcing steel as necessary to avoid interference with other reinforcing steel, other embedded items; however prior to placing concrete, bars moved more than tolerances herein shall be inspected and approved.

E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

F. Minimum Rebar and Dowel Extent: Provide minimum temperature reinforcing in all walls and slabs where no reinforcing is shown or noted.

G. Minimum Placement: All reinforcing steel must be in place, wired, and inspected, before depositing concrete.

3.4 FASTENING INTERSECTIONS: Wire tie reinforcement together at all points where bars cross. Splice as indicated. Welding or tack welding of reinforcement bars to other bars or to plates, angles, etc. is prohibited. Work shall be performed in accordance with CRSI Recommendations.

3.5 LAP SPLICES: Lap bars as scheduled on drawings and securely tie with wire at frequent intervals. Stagger so that adjacent splices will be apart with care taken to maintain proper clearance, between parallel bars and between bars and forms. Make lap splices in a manner to provide laps consistent with structural drawings, and CRSI.

3.6 DOWELS: Install with a template to hold bars in the proper position, placed as located on the drawings. Dowels shall be of the diameter size indicated in various sections with lengths equivalent to twice that required for the indicated spliced. One\_half of the length shall be embedded with the required splice length exposed for attachment.

3.7 INSPECTION

A. Inspect concrete and masonry reinforcement as indicated in ACI 301.

B. Inspect reinforcing size, quantity, strength, position (location), and arrangement. Concrete and masonry reinforcement includes welded wire fabric and mild reinforcing bars.

C. Submit daily reports indicating conformance and exceptions of concrete operation to contract documents.

D. Final Report and Certification: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project. A discussion of all deviations from the contract documents and specifications, with their related impact on the final construction, shall be described in detail. The engineer of record shall review this final report, and recommend corrective measures (as deemed necessary) that must be made prior to final acceptance of the work. Prior to final payment, a written report certifying that the work meets the requirements of the contract documents, specifications, and all governing agencies shall be prepared, submitted, and approved by the Architect.

SECTION 03300  
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.0 WORK INCLUDED

A. Cast\_in\_place concrete including preparation, conveying, placement, leveling, finishing, hardening, sealing, curing, bonding, jointing, cutting, patching and grouting.

B. Specific elements include foundations, walls, slabs, columns, etc.

1.1 REFERENCES

A. American Concrete Institute (ACI): The following constitute part of this specification. Reference to Portland Cement shall mean type and color specified.

1. 318 - Building Code Requirement for Reinforced Concrete.
2. 306 - Recommended Practice for Cold Weather Concreting.
3. 305 - Recommended Practice for Hot Weather Concreting.
4. 211.1 - Recommended Practice for Selecting Proportions/Normal Weight Concrete.
5. 304 - Recommended Practice for Measuring, Mixing and Placing Concrete.
6. 301 - Specification for Structural Concrete for Buildings.
7. 311 - Recommended Practice for Concrete Inspection.
8. 302.1 - Guide for Concrete Floor and Slab Construction.
9. 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.

B. American Society of Testing and Materials (ASTM):

1. C-150 - Portland Cement
2. C-309 - Liquid Membrane - Forming Compounds for Curing Concrete
3. C-979 - Specifications for Pigments for Integrally Colored Concrete.
4. E-1155 - Standard Method for Determining Floor Flatness & Levelness Using the F-Number System.

1.2 SUBMITTALS

A. Mix Designs: All classes of concrete include aggregate gradation and actual proportioning.

B. Testing and Inspection Reports:

1. Results of compression cylinders and grout cubes.
2. Test Reports: Indicating strength and density of furnished product.
3. Inspection reports: Certifying rebar, and weld wire fabric placement, etc. (See Section 4.0 - Inspection and Testing).

PART 2 - PRODUCTS

2.0 CEMENT

A. Portland Cement: ASTM C-150, Type I (unless otherwise approved by the Structural Engineer). Use one (1) brand of cement throughout project unless otherwise acceptable to the Architect.

B. Fly Ash: ASTM C-618, Type C or Type F.

C. Blended Hydraulic Cement: ASTM C595, excluding Types S and SA.

D. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 120

2.1 FINE AGGREGATE

A. Sand: ASTM C\_33. Clean, hard, natural sand, or manufactured sand, or a combination of both.

2.2 COARSE AGGREGATE

A. Normal Weight Concrete: ASTM C\_33, ACI\_211.1, ACI\_304.1. Aggregate shall have similar color characteristics of sand and cement.

B. Grout for Masonry: ASTM C484; maximum size of aggregate shall be 3/8" but not more than 3/4" of the clear distance between the inside block face and the reinforcing bar.

2.3 WATER

A. Clean and free from deleterious amounts of acids, alkalis or organic materials.

2.4 ADMIXTURES

A. Modifiers: To accelerate the hardening of the concrete or to produce higher than normal strength at early periods; will not be permitted unless specifically approved. Do not use any admixture which will affect the concrete color. Do not use admixtures without written approval and strict quality control.

B. Water-Reducing Admixtures: ANSI/ASTM C\_494, Type A, and contain not more than 0.05% chloride ions.

C. Accelerating Admixtures: ANSI/ASTM C\_494, Type C, A non-corrosive, non-chloride set accelerating admixture that accelerates cement hydration resulting in shortened setting times and increased early age strengths, especially in cooler temperatures. Admixture shall not contain not more than 0.05% chloride ions.

D. Water-Reducing and Retarding Admixtures: ASTM C\_494, Type D.

E. High Range Water-Reducing Admixture (Super Plasticizer): ASTM C\_494, Type F or Type G and contain not more than 0.05% chloride ions.

F. Air Entraining Admixture: ASTM C\_260; Air Content 6% +/- 1%.

G. Calcium Chloride or admixture containing more than 0.05% chloride ions are not permitted.

2.5 BONDING AGENTS

A. Presoak existing concrete surface to a saturated surface dry condition immediately prior to pouring of adjacent concrete slab sections.

2.6 CURING MATERIALS

A. Curing Compound: Liquid-Type membrane-forming; ASTM C-309, Type I, Class A. Moisture loss not more than 0.055 GR/SQ.CM. when applied at 200 SQ. FT./GAL. Curing compound shall be certified compatibility with approved surface sealing agents, mastics, adhesives, finishes and deferred bonding, is required, before compound may be used where subsequent finishes are indicated. Place curing compound on all concrete walls, slabs, beams, stairs and columns of the building prior to and immediately after removal of forms.

2.7 SURFACE TREATMENTS

A. Sealing Compound: Liquid-Type, membrane forming; ASTM C-309, Type I, Class A. Place on all interior concrete floor slabs, stairs and concrete walls left exposed at the completion of the project.

2.9 CONCRETE MIXES

A. Compressive Strengths: Minimum concrete 28 day compressive strengths are as follows:

1. 3000 psi; 517 lbs. cement per cu. yd. minimum W/C ratio, 0.56 maximum. (All concrete except as otherwise noted.)
2. 4000 psi; 517 lbs. cement per cu. yd. minimum; W/C ratio, 0.45 maximum. (All exterior concrete.)

B. Mix Design: Proportion by the procedure described in ACI 318. All concrete; ready\_mixed; mixed and transported in accordance with ASTM C\_94, Alternate No. 1 or No. 2 and ACI 304.

C. Mixing: After introduction of water to the cement and aggregates, concrete which has been mixed longer than 1-1/2 hours or 300 revolutions, shall not be placed. In no case shall concrete be used that has been mixed so long that the initial set of the concrete shall occur sooner than 15 minutes after placement.

D. Slumps: ACI 301, paragraph 3. Proportion and design mixes to result in concrete slump at point of placement as follows:

1. Ramps, slabs, and sloping surfaces: Not more than 3".
2. Reinforced foundation systems: Not less than 1" and not more than 3".
3. Concrete containing HRWR admixture (super plasticizer): Not more than 8" after addition of HRWR to verified 2" - 3" slump concrete.
4. Other Concrete: Not more than 4".

E. Dry Density: Structural Normal Weight Concrete: 148 lbs/cf maximum.

2.10 MASONRY GROUT MIX

A. Compressive Strengths: Minimum 28 day compressive strength shall be 3000 psi; standard weight; 5.5 bags (94 lbs.)/c.f. w/c = 0.60 maximum for all masonry grout.

B. Mix Design: Proportion per the requirements of ASTM C476-83 - "Standard Specification for Grout for Masonry" ready mixed and transported in accordance with ASTM C-94, alternate No. 1 and ACI 304.

C. Mixing: After introduction of water to the cement and aggregates, concrete which has been mixed longer than 1-1/2 hours should not be placed. Because of its high slump, ready mix grout shall be continuously agitated after mixing until placement. In no case shall concrete be used that has been mixed so long that the initial set of the concrete shall occur sooner than 15 minutes after placement.

D. Slump: Water may be introduced at the plant to produce a maximum slump of 6". Additional water may be added at the job site immediately prior to placement to produce a maximum slump of 11".

PART 3 - EXECUTION

3.0 CONVEYING AND PLACING

A. Reference Standard: In accordance with requirements of Building Code Requirements for Reinforced Concrete, ACI 318, Chapter 5: Mixing and Placing Concrete, Section 5.3, Conveying, and Section 5A, Depositing, and as modified herein.

B. Wood Runways: Provide for wheeled equipment for transporting concrete. Do not displace the resteel or vapor barrier.

C. Conveying: Rapidly handle from mixer to forms and deposit as nearly as possible in its final position to avoid segregation due to rehandling or flowing. Do not permit concrete during passage from mixer to final positioning to come in contact with aluminum surfaces.

D. Placement: Place concrete of required thickness, compact, level and screed to proper levels to receive finishes specified. Do not deposit partially hardened or retempered concrete. Do not place concrete contaminated by foreign matter.

3.1 CONSOLIDATION: ACI 301, paragraph 8.3.4

A. Compacting: Thoroughly tamp and spade fresh concrete to insure flow into all parts of forms and around reinforcement. Use caution when using vibrators and hand spades to prevent any injury to working face of forms, or any movement of the reinforcement.

3.2 LEVELING AND SCREEDING

A. All top surfaces of poured concrete shall be worked smooth and level. Do not sprinkle dry cement or mixture of cement and sand directly on the surface of the concrete to absorb moisture or to stiffen mix. Surfaces shall be brought to a finish level, free from defects, blemishes, ripples, trowel marks and other irregularities, including foot prints and other depressions which may be cause for rejection.

B. Levels and Lines: Establish and check levels and lines by instrument, and from time to time during pours. Finally check lines and levels, again by instrument, after straight edging and screeding. Correct any settlement and/or other irregularities greater than the allowable tolerances.

C. Floor slabs on grade shall be finished to the following requirements:

1. The F-numbers which shall apply to the whole floor shall be a flatness Ff = 30 or higher, and a levelness Fl = 25 or higher.
2. The minimum local F-numbers which shall apply to the floor area bound by construction and/or control joints shall be a flatness Ff = 22 or higher, and a levelness Fl = 19 or higher.

D. The minimum local F-numbers for elevated concrete slab floor areas bound by a structural bay shall be a flatness Ff = 22 or higher, and a levelness not to exceed 3/8 inch within any structural bay.

E. Exterior concrete stairs shall have the treads and landings sloped approximately 1/8" per 12" to assure that no water rests on a riser or the landings.

3.3 FINISHING

A. Reference Standard: All concrete finishes shall be specified designating in ACI 301, Section 5.3.4.2, except as modified herein.

B. Interior floor slabs shall have a smooth trowel finish.

C. Exterior floor slabs shall have a broom or belt finish.

3.4 SURFACING CURING

A. Application: Apply liquid-type combination curing compound as soon as new concrete is hard enough to support applicator's weight and as soon after final troweling as possible, in such a manner as to prevent marring or damaging troweled surface. Apply in strict accordance with the manufacturer's recommendations, and with the initial application done under the direct supervision of the manufacturer's representative.

3.5 SURFACE SEALING

A. Sealing Compound Application: The sealing and dustproofing application should be applied when all trades are completed and structure is ready for occupancy. Surface must be free of any dust, dirt, and other foreign matter. Use power tools and/or strippers to remove any incompatible sealers or coatings. Cleanse as required. Apply 2 coats, both at full strength to seal and dustproof the concrete. Allow first coat to dry overnight prior to application of second coat.

3.6 NONCONFORMING STRENGTH:

A. If strength of laboratory control cylinders at 7 or 28 days for any portion of the work falls below required strengths, the Structural Engineer has the right to order a change in proportions for the remaining work, and/or may order additional restoring and moist-curing of the sections in question.

B. At his discretion, the Structural Engineer has the right to require tests in accordance with ASTM C-42 (cored cylinders) or order load tests on portions of buildings so affected.

C. Perform all changes and tests as noted above and/or other required corrective measures as directed by the Structural Engineer at no expense to the Owner, regardless of test results, the structural Engineer is the sole interpreter of additional tests and his judgment is final.

3.7 RESPONSIBILITY

A. The Contractor shall employ and pay for services of an independent Testing Laboratory, and an Inspection Agency, acceptable to the Structural Engineer to perform the specified tests and inspection. (ACI 301, Chapter 16, Section 1602 (a) and (b)).

3.8 CONTRACTOR'S DUTIES

A. Storage: Provide suitable storage facilities at the job site for test cylinders.

B. Additional Costs: Pay all costs for curing, drilling, additional testing, remedies and corrections of work which does not meet strength and other requirements of the Contract Documents and/or if failure to perform required duties.

C. Other Test Cylinders: For other than compressive strength, such as to determine when forms may be stripped, shall be paid for by the Contractor requesting same.

3.9 INSPECTION & TESTING:

A. GENERAL: Field and laboratory testing of poured in place concrete and masonry grout generally consists of the following:

1. Slump Tests: Consistency shall be determined at the project site by means of slump test in accordance with C\_143. Results of slump test shall appear on the test reports. Slump tests shall be made at the same time as test cylinders are made and when so directed by the Structural Engineer.
2. Compression Tests: Each test consists of 4 concrete test cylinders or 4 grout samples broken under compression. Two (2) cylinders/samples shall be broken 7 days after making; and two (2) cylinders/samples shall be broken at 28 days.
3. Air Content: When required, air content test shall be performed per ASTM C-173 (volumetric method for normal weight concrete) or ASTM C\_231 (pressure method for normal weight concrete).

B. TESTING LABORATORY DUTIES

1. Furnish all materials for making concrete test cylinders and grout cubes.
2. At test intervals, immediately transport concrete test cylinders, and masonry grout samples to the Test Laboratory.

C. INSPECTION AGENCY DUTIES

1. Assign qualified personnel to be on site at all times when operations are scheduled. The Contractor shall note that no concrete operations shall be permitted in their absence.
2. Perform slump tests for all concrete, and masonry grout, and air content tests as specified above. Forward results of these tests to Testing Laboratory for incorporation into laboratory test reports.
3. Make concrete test cylinders and masonry grout cubes in molds provided by Testing Laboratory.
4. Site inspection of poured in placed concrete shall include, but is not limited to the following:
  - a. Insure rebar and welded wire fabric is not displaced during placement of concrete.
  - b. Rebar location in columns, beams, slabs, footings, walls, etc.
  - c. Masonry grouting operation.
  - d. Slab curing procedures.
  - e. Submit daily reports outlining conformance and exceptions of concrete operation to contract documents.

D. FINAL CERTIFICATION: Prior to final payment to the Contractor, a written report by the Inspection Agency evaluating all work performed during the course of the project and stating any deviations from the contract documents and specifications related to his scope of services (and their related impact on the final construction), shall have been received.

SECTION 04100

MORTAR

PART 1 - GENERAL

1.1 REFERENCES

A. American Society of Testing and Materials (ASTM):

- ASTM C 144 - Aggregate for Masonry Mortar
- ASTM C 150 - Portland Cement
- ASTM C 207 - Hydrated Lime for Masonry Purposes
- ASTM C 404 - Aggregates for Masonry Grout

B. International Masonry Industry All-Weather Council (IMI):

- IMI Recommended Practice and Guide Spec. for Cold Weather Masonry Construction

C. Brick Institute of America (BIA):

- BIA Series 8 (M-1) Portland Cement-Lime Mortar for Brick Masonry
- BIA Technical Note 7, 7A through 7F - Moisture Resistance of Brick Masonry

1.2 ENVIRONMENTAL REQUIREMENTS

A. Temperature: Ambient Air 40 Degrees F and above, including 72 hours after placement.

B. Cold Weather Requirements: (Below 40 Degrees F) Comply with BIA, IA and IMI except as noted herein.

PART 2 - PRODUCTS

2.1 MATERIALS - WATER

A. Potable and Clean: Free from oil, acid, alkalis, salts and organic materials.

2.2 MATERIALS - CEMENT

A. Portland Cement: ASTM C 150, Type I.

2.3 MATERIALS - LIME

A. Hydrated Lime: ASTM C 207, Type S, double hydrated, non-air entrained containing not more than 8 percent of unhydrated oxides.

2.4 MATERIALS - AGGREGATE

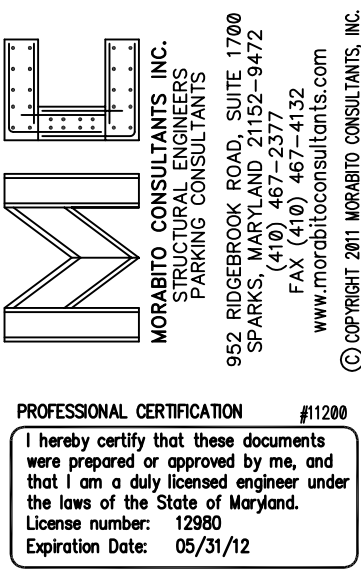
A. Aggregate for Mortar: ASTM C 144 (washed)

2.5 MATERIALS - ADMIXTURES

A. Accelerators and Retarders: (Not Permitted) Do not use salts or chemicals in the mortar which may lower the freezing point, accelerate hardening or produce high early strength.

2.6 GROUT

A. Grout Fill: ASTM C 476, 3000 psi - compressive strength. See Specification Section 03300 for additional requirements.



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Renovation & Addition  
to Existing Structure  
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Title:  
Specifications

Date: October 5, 2011  
Scale: As Noted

S12

No.

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PART 3 – EXECUTION

3.1 MORTAR MIXING

- A. Proportioning: Carefully control and accurately maintain mixing proportions as specified below during entire Work. (Shows are not acceptable measure)

MORTAR TYPE	PARTS BY VOLUME		
	PORTLAND CEMENT	TYPE S HYDRATED LIME	AGGREGATE, MEASURED IN A DAMP, LOOSE CONDITION
N	1	1	4-1/2 TO 6
S	1	1/2	3-1/2 TO 4-1/2

- B. Mixing: Mix for at least 5 minutes. Use within 2 hours of initial mix.  
1. Mortar for laying new masonry units shall be used within 2 hours of initial mix.  
2. Pre-hydrated mortar shall be used within 1-1/2 hours after water is added to bring the mortar to a workable consistency.  
C. Premature Set:  
1. Retemper mortar only as permitted by reference standards.  
2. Retempering pre-hydrated mortar shall only be allowed once.

3.2 MORTAR TYPES: Use the following mortar types at locations indicated:

- A. Type S Mortar: (Minimum compressive strength 1800 psi)  
1. Locations: Hollow masonry piers, load bearing masonry, reinforced masonry, exterior walls and cavity walls. Fill cores solid two courses under structural members where brick or 100 percent solid masonry units are not indicated.  
B. Type N Mortar: (Minimum compressive strength 1300 psi)  
1. Locations: All other non-load bearing masonry.

3.3 TESTING

- A. Compressive strength test for grout used in masonry. See Specification Section 03300.

SECTION 04150

MASONRY ACCESSORIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Joint Reinforcement  
B. Anchors and Ties  
C. Veneer Wall Ties  
D. Control Joints including Control Joint Shear Keys; Flex Joint Fillers; and Forming Open Type Expansion and Control Joints.

1.2 REFERENCES

- A. American Society of Testing and Materials (ASTM):  
• ASTM C 153 Zinc-Coating (Hot-Dip) on Iron and Steel Hardware  
• ASTM C 641 Zinc-Coated (Galvanized) Carbon Steel Wire  
• ASTM A 276 Stainless Steel Bars and Shapes (Type 304)

PART 2 – PRODUCTS

2.1 HORIZONTAL JOINT REINFORCEMENT

- A. Ladder Type Standard-Duty: Steel wire conforming to ASTM A 153, Class B-2, #9 gauge deformed longitudinal wires electrically welded to a continuous #9 gauge perpendicular cross wire to form a ladder with welded contacts across 16 inches apart maximum, galvanized after fabrication. Size: Width 2 inches (7/8-1 1/8 inch) less than the nominal wall thickness. Furnish in sections 10 feet long.  
1. Multi Wythe Composite Masonry: 3 longitudinal rods.  
2. Corners: Factory fabricated L-shaped units, short leg at least 30 inches long. Same type, size and design as above.  
3. Wall Intersections: Factory fabricated T-shaped units, 30 inches x 30 inches. Same type, size and design as above.

2.2 BRICK VENEER WALL TIES

- A. Self Drilling Anchor and Tie: Patented anchor with metal barrel/eye and self drilling interchangeable threaded screws appropriate for steel studs, structural steel, concrete and masonry back-up. Include 3/4 inch sealing washer at sheathing and flashing. Fabricate wire ties of 5 gauge ASTM A 82 steel wire, galvanized with minimum 0.90 ounce of zinc; length to provide minimum 2-1/2 inch embedment in masonry.  
1. Manufacturer: National Wire Products – Posi-Tie System – NWS/DNWTIC

2.3 MISCELLANEOUS ANCHORS AND TIES

- A. Dovetail Anchors: "ERADO" metal 14 ga., 1" width and suitable length for anchoring furring or facing to exterior and interior concrete walls and columns and also masonry walls abutting columns installed. Space 1"-4" max. vertically. Anchor slots are provided and spaced horizontally under Section 03300, Cast-In-Place Concrete.

2.4 CONTROL JOINT SHEAR KEYS – REGULAR TYPE

- A. Extruded Rubber Type: Oil and solvent resistant rubber or synthetic rubber ASTM D 2000, Type 2AA-805; Hardness 80 Durometer per ASTM D 2240; Flexure, Pass ASTM D 735 after exposure to -40 degrees F; Cross shape, 5/8 inch thick shear section with 5/16 inch thick flanges to fit Sash Block joint flanges, one inch.  
1. Manufacturers:  
• Dur-O-Wall – Rapid Control Joint  
• AA Wire Products, Co. – TiteWall AA-1000  
• Jim Taylor, Inc. – Ty-Wal

2.5 FLEXIBLE JOINT FILLERS

- A. Non-Bituminous Sheet: Closed cell elastic sponge rubber ASTM D 1752, Type 1; Size 1 inch less width than masonry units; 1/2 inch thick for 3/8 inch joints.  
1. Manufacturers:  
• Rubatex Mfg. Co. – Bond Tex 941  
• W.R. Meadows, Inc. – Sealant  
B. Non-metallic Expansion Joint Strips: Premolded filler strips complying with ASTM D 1056, Type 2 (closed cell), Class A (cellular rubber and rubber-like materials with specific resistance to petroleum base oils), Grade 1 (compression-deflection range of 2-5 psi), compressible up to 35 percent, of width and thickness indicated, formulated from neoprene or urethane.

2.6 BOND BREAKER STRIPS: Asphalt-saturated organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

2.7 WEEP HOLES

- A. 3/8-inch diameter by 8 inches long rope wicks in vertical joints, extending up to top of flashing in cavity.

2.8 REINFORCING BAR POSITIONERS:

- A. Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142 inch steel wire, hot dipped galvanized after fabrication.

B. Protection: Protect brick against chipping, breakage, staining (mud, grease, rust, etc.) and other damage. Do not use bricks showing damage.

1.5 ENVIRONMENTAL CONDITIONS

- A. Cold Weather: Refer to Section 04100, Mortar, Article 1.46.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Avoid, where possible, placing thru-wall flashing, anchors, ties, inserts and other items in bed joints to receive joint reinforcement. Supervise placement of anchors and supports by other trades to assure coordination and compliance with requirements.  
B. Layout control joints for brick and block walls at maximum 30 feet on center and other locations per BIA #18 and block at 3 times the height of wall and other locations based on NCMA #53, table 4. Establish plumb lines, and separate walls and partitions for full thickness and height. Symmetrically arrange joints which are not dimensioned. Form joints to uniform 3/8-inch width unless otherwise indicated.

3.2 INSTALLATION – HORIZONTAL JOINT REINFORCEMENT

- A. Ladder Type: Fully embed longitudinal side rods in mortar for the entire length with a minimum cover of 5/8 inch on exterior side of wall and 1/2 inch at other locations. Lap sections a minimum of 6 inches. Lapping at corners and intersections will not be permitted.  
1. Continuous Locations: Install 16 inch vertical intervals; above and below openings; at all exterior walls; interior walls noted; at parapets and free standing interior walls extending more than 3 courses above last lateral support.  
2. Masonry Openings: Place joint reinforcement two horizontal joints 8 inches apart, immediately above lintels and below sills. Extend at least 24 inches beyond both jambs where possible.  
3. Prefab Corner and Wall Intersection Units: Install at respective corners and wall intersections within joints specified for horizontal joint reinforcing. Fabricated pieces are not acceptable.

3.3 INSTALLATION – VENEER ANCHORS

- A. Self Drilling Anchor and Tie:  
1. Strike chalk lines to locate position of each anchor. Install anchors in accordance with manufacturer's instructions using special tools.  
2. Locations: 16 inch vertical centers and 16 inch horizontal centers.  
3. Ties: Attach ties through anchors so that the eye is positioned at bend in tie. Securely embed ties in mortar joints of masonry.  
4. All mortar penetrations shall be patched using pre-hydrated mortar as specified in specification section 04100

3.4 INSTALLATION – CONTROL JOINT SHEAR KEYS – REGULAR TYPE

- A. Set control joint into groove of sash block.  
B. Lay-up well snugly to control joint.  
C. Form for structurally sound lateral stability.  
D. Maintain remainder of space clear of mortar and debris.

3.5 INSTALLATION – FLEXIBLE JOINT FILLERS – SHEET TYPES

- A. Maintain a minimum 1/4" side isolation space between masonry and concrete or metal elements. Keep joint free of mortar or other rigid material so as to permit differential movement.  
B. Lay wall using flush end stretcher and half stretcher units. Construct joint to allow recess of proper depth and width for bond breaker, joint filler, and sealants.  
C. Install joint filler in maximum lengths and minimum joints. Set joint filler to provide 25 percent compression.  
D. Install sealant system per Specification Section 07920.

3.6 FORMING OPEN TYPE EXPANSION AND CONTROL JOINTS

- A. Locate joints per paragraph 3.1 above. Symmetrically arrange joints which are not dimensioned. Terminate walls and partitions for full width and height to permit differential movement.  
B. Install sealant system per Specification Section 07920.

3.7 WEEP HOLE INSTALLATION

- A. Install plastic weep holes along flashing courses at 24" on center maximum, taking care to assure that the weep ends remain clear of debris.

3.8 TESTING AND INSPECTION

- A. See Sections 04100 and 04200 for project requirements.

SECTION 04200

UNIT MASONRY

PART 1 – GENERAL

1.1 QUALITY ASSURANCE

- A. Source Quality Control: Obtain each type masonry unit from only one manufacturer. Each type unit shall be uniform in texture and color for the entire Project, unless specified otherwise.  
B. Brick Source Quality Control: Test units in accordance with ASTM C-67. Compressive strength; Absorption; Freeze-Thaw; Initial Rate of Absorption (suction); Efflorescence; Size and Warpage.  
C. Source Quality Control: Perform tests for specific properties.  
1. Compressive Strength: ASTM C-140.

1.2 REFERENCES

- A. American Society of Testing and Materials (ASTM):  
• ASTM C-55 – Concrete Building Brick  
• ASTM C-62 – Building Brick (Solid Masonry Units from Clay or Shale)  
• ASTM C-90 – Load-Bearing Concrete Masonry Units  
• ASTM C-140 – Sampling and Testing Concrete Masonry Units  
• ASTM C-216 – Facing Brick (Solid Masonry Units from Clay or Shale)  
B. Brick Institute of America (BIA) "Technical Notes":  
• BIA 20 Clean Brick Masonry  
• BIA 21 Series, Cavity Walls  
• BIA 28 Series, Brick Veneers  
C. National Concrete Masonry Associates (NCMA):  
• NCMA Design and Construction of Load-Bearing Concrete Masonry  
• NCMA Tek Notes

1.3 SUBMITTALS

- A. Sample Panels: Erect three sample panels (4 feet x 4 feet) for selection of face brick and proposed mortar colors. Back-up material optional.  
B. Brick Samples: Strap of 5 units for each type. Show maximum variation of color and texture. Provide bricks for field sample panels and mock-ups.  
C. Certification: Compliance with product referenced standards.  
D. Test Reports: Results of tests for physical properties.  
E. Block Samples: Each type unit. Show maximum variation in color and texture. Provide blocks for field sample panels and mock-ups.

1.4 PRODUCT HANDLING

- A. Storage: Stack brick on wood pallets located on a well-drained area of the site. During freezing weather, protect brick stacks with a heavy watertight covering securely weighted or tied in place.

- B. Protection: Protect brick against chipping, breakage, staining (mud, grease, rust, etc.) and other damage. Do not use bricks showing damage.

PART 2 – PRODUCTS

2.1 FACING BRICK: ASTM C-216, Solid Clay

- A. Percent Solid: 100 percent  
B. Weathering Index and Compressive Strength: Grade SW, 5800 psi; f<sub>m</sub>=2000 psi.  
C. Type: FBS  
D. Size: Modular; 3-5/8 inches thick x 2-1/4 inches high x 7-5/8" long.  
E. Color and Texture: Match existing adjacent brick to remain.

2.2 LOAD BEARING AND NON-LOAD BLOCK: ASTM C-90 (Both hollow and solid units)

- A. Grade N, 1900 psi (avg. 3) compressive strength; based on net cross sectional area; f<sub>m</sub>=1500 psi (load bearing); f<sub>m</sub>=1000 psi (non-load bearing);  
B. Normal Weight: 125 pcf or more; Light Weight of slag or pumice, less than 105 pcf for fire resistance ratings indicated.  
C. Solid masonry may be 75% solid unless otherwise noted.  
D. Shrinkage control and curing, Type I: Moisture controlled, auto cured or air dried 28 days.  
E. Cells: Optional  
F. Size: Thickness as indicated on drawings; and special shapes; Modular Block Face: 7-5/8 inches x 15 5/8 inches  
G. Color and Texture: Fine grain, uniform light gray.  
H. Location:  
1. Load Bearing Block: All exterior walls, and interior elevator and stair walls beyond both jambs where possible.  
2. Non-Load Bearing Block: All interior single story partition walls.

2.3 CONCRETE BRICK: ASTM C-55 (100 percent solid)

- A. Grade N, 3500 psi (avg. 3) compressive strength, f<sub>m</sub>=2000 psi; Normal Weight: 125 lbs./cf or more  
B. Shrinkage control and curing: Type I: Moisture controlled, auto cured or air dried 28 days.  
C. Size: Thickness as indicated on drawings, and special shapes.  
D. Color and Texture: To match adjacent units.  
E. Locations: Caps, Sops and structural bearing courses.

2.4 SPECIAL SHAPES – CONCRETE BLOCK

- A. Grade, Type, Color and Texture: Same as hollow and solid load bearing units.  
B. Shapes: As required to minimize field cutting and eliminate patching, piecing out and make-shift transitions or joints; and as indicated on drawing. Bullnose block at all exposed external corners, unless noted otherwise. Jamb units.  
C. Special Use: Sash Block, use with preformed control joint material.

2.5 PRE-CAST MASONRY UNITELS

- A. Expanded shale aggregate to match adjacent masonry.  
B. Size: 7-5/8 inches in height by same thickness as wall or partition.  
C. Construction: Reinforced with one (1) 5/8 inch diameter hooked rebar in top and bottom for each 4 inches of wall thickness, or as indicated on the drawings. Length to provide 8 inches of bearing at each end.  
D. Location: Used only when concealed in interior non-load bearing walls.

2.6 CLEANING COMPOUNDS – BRICK

- A. Masonry Detergent:  
1. Manufacturer: Process Solvent Co. – Sure Klean 600 or VanaTrol  
B. Other solutions required for cleaning in accordance with BIA #20 and NCMA – Tek #45 subject to review by the Architect.

PART 3 – EXECUTION

3.1 PREPARATION AND PROTECTION

- A. Protection of Other Work: Protect against defacement or other damage resulting from masonry construction.  
B. Protection of this Work: Cover the top (and one foot down each side) of exposed walls and partitions (except when the masons are actually working on them) with strong, nonstaining, waterproof paper, sheet plastic, or tarpaulins, fastened down to prevent blowing. When masons are not at work, turn scaffold boards back to prevent splashing and staining. Brace walls to prevent damage by winds, backfilling, or other loads.  
C. Cutting: Use a carbideum saw in order to insure true, sharp corners neatly. Use full units wherever possible.  
D. Joining: Where fresh masonry joins partially or totally cured masonry, remove any loose masonry units or mortar and clean exposed surfaces of cured masonry to obtain good bond with new work.  
E. Bracing and Shoring: All walls shall be provided with temporary bracing and shoring as required to maintain their stability during construction. Bracing shall remain in place until roof and/or deck has been completely installed.

3.2 TOLERANCES FOR MASONRY

- A. Variation from plumb, level and linear lines from established position:  
1. In any 10 feet of length +1/4 inch  
2. In any column bay or store +1/4 inch  
3. Maximum for the entire length or height +1/2 inch  
B. Variation in the sizes of wall openings -0 inch + 1/4 inch  
C. Variation in location of wall openings +1/4 inch

3.3 WORKMANSHIP

- A. Joints: Lay masonry units with full head and bed mortar including cross webs on beds which are clean and properly wetted. Make exposed joints uniform in width. Tool joints neat without mortar spread on unit faces.  
B. Lay masonry accurately spaced, level, square, plumb, and true. Assure uniform color in successive courses. Lay exterior masonry from outside scaffolding.  
C. Bond masonry wythes to back-up with joint reinforcement, anchors and ties. Bond intersections and corners with masonry units of interlocking alternate course.  
D. Exposed surfaces: Clean, true, flat, even textured surfaces, free from chips or other defects in faces, edges or corners of units. Maintain flat plane where finishes will butt walls.  
E. Height: Extend from the top of the structural floor to the bottom surface of the deck construction above, unless otherwise indicated. Non-bearing partitions: Wedge with small pieces of insulation material and grout.  
F. Alignment: All cells of block shall be filled solid at change in wall thickness, at floor and structure lines and where shown on the drawings.  
G. Discontinuous Work: When necessary to temporarily discontinue the work, masonry units shall be stepped back for joining when work resumes. Tooling may be resorted to only when specifically approved. Before resuming work, loose mortar shall be removed and the exposed joint shall be thoroughly cleaned.

3.4 MULTI-WYTHE MASONRY

- A. Storage: Stack brick on wood pallets located on a well-drained area of the site. During freezing weather, protect brick stacks with a heavy watertight covering securely weighted or tied in place.

3.5 VENEER AND CAVITY WALLS

- A. Maintain uniform cavity width, keep cavities free of mortar and droppings. Use plumb boards as work progresses.

3.6 WEEP HOLES

- A. Form weep holes at 24 inch on center along two courses directly above flashing.  
B. Stagger weep holes in each course and omit mortar in vertical joints.  
C. Form weep holes by placing 3/8 inch diameter by 8 inches long rope wicks in vertical joints, extending up to top of flashing in cavity or use 3/8 inch o.d. x 4 inch long medium density polyethylene tubes.

3.7 BRICK PATTERN

- A. Running Bond: Vertical joints centered on the units in the course below. Locations: Unless otherwise indicated.

3.8 BRICK COURSING: Minor variation to meet dimensions

- A. Standard: 6 units for each 16 inches of height.  
B. Sequence: Where necessary to build portions of a wall to a higher level than adjacent portions, rock back 1/2 stretcher in each course. Tooling will not be permitted. Use bats only for closures.

3.9 BRICK JOINTS

- A. Tooled Courses: Brush joints lightly after tooling where exposed to view.  
B. Joints: Lay mortar bed joints full, do not furrow. Butter brick end with sufficient mortar to fill the head joints and shove in place; do not slush head joints. Where adjustment is required after mortar has begun to harden, replace the hardened mortar with fresh mortar.

3.10 BEARING WALLS AND BEARING COURSES

- A. Provide a minimum of 3 courses of solid brick or one (1) course of 100% solid block under wall bearing ends of all pilasters and sills, the full width of the wall, unless noted.  
B. Use solid load bearing units. Do not use filled hollow units, lightweight units, and cinder bricks in bearing courses.  
C. In bearing walls, provide solid brick or 100% block extending 6" beyond wall opening the full wall thickness down to the floor, unless noted.  
D. All portions of bearing walls having a horizontal cross section of 4 sq. ft. or less shall be of solid masonry down to footings.

3.11 BLOCK PATTERN: NCMA-TEK #57

- A. Running Bond: Vertical joints centered on the units above and below, unless otherwise indicated.

3.12 BLOCK COURSING

- A. One unit and one joint for each 8 inch height.  
B. Racking: Where necessary to build portions of wall to a high level than adjacent portions, rock back 1/2 stretcher in each course. Tooling will not be permitted.  
C. Cutting: Perform with power tools in such a manner as to provide straight and true edges. Do not use chipped or broken blocks.

3.13 BLOCK JOINTS

- A. Hollow Masonry units: Full mortar coverage on horizontal and vertical face shells; webs also shall be bedded in all courses and webs shall line up with webs of course below.  
B. Solid Units: Full head and bed joints.  
C. Tooled Concave: Brush joints lightly after tooling where exposed to view.  
D. Flush: Tool head and leave flush where flush units are not exposed to view and where indicated for application of coatings (over 30 mils dry).

3.14 CONTROL JOINTS FOR BRICK AND BLOCK WALLS

- A. See Section 04150, paragraph 3.1.

3.15 MASONRY GROUT

- A. Areas to be grouted shall be cleaned of mortar droppings and other debris and clean out holes shored or closed with masonry units to contain the grout.  
B. Grout shall be placed by hand bucket, concrete hopper, or grout pump.  
C. Each lift of grout shall be consolidated after water has left but before plasticity is lost. Consolidation shall be accomplished by mechanically vibrating to insure complete filling of the grout space. When consolidating successive lifts of plastic grout, the top of the vibrator shall penetrate the preceding lift approximately 10 inches to ensure grout continuity in the wall section. Trowel blade shall not be used for consolidation of grout.  
D. If grouting operation is stopped for one hour or longer, the grout placement shall be stopped in a manner to provide a 1-1/2 inch keyway below the top of the masonry unit.  
E. Grout holes shall be formed in slab, spandrel beams and other in-place overhead construction. Holes shall be located over spaces to be grouted and shall be in sufficient numbers and spaced as required to insure that the space to be grouted shall be completely filled. If the space to be grouted is larger than two bricks in thickness, the space may be filled with clay or shale bricks or concrete bricks and grout. Bricks so placed shall have not less than 3/4 inch of grout around each brick.  
F. Walls to be grouted shall be adequately shored or braced to prevent shifting, buckling or blowouts.  
G. After grouting operations are completed the faces of clean out holes shall be patched to closely match the surrounding surfaces.  
H. Hollow unit masonry to be grouted by the low lift method shall be constructed and grouted in lifts not exceeding 4 feet.  
I. Double wythe masonry collar joints to be grouted by the low-lift method shall be constructed and grouted in lifts not exceeding 8 inches. Slushing with mortar will not be permitted.

3.16 BUILT-IN WORK

- A. Coordination: Consult other trades and make provisions that will permit the installation of work in a manner to avoid cutting and patching. Drill, cut fit and chase Masonry work for the installation of work of other trades.  
B. Reinforcement: Build in joint reinforcement, anchors and ties indicated.  
C. Electrical work: Where electric units, outlet and switch boxes occur, grind and cut walls before building-in services. Build electrical conduit into walls and partitions by threading through voids in units. Coordinate work with electrical section.

3.17 LINTELS

- A. Set steel lintels to exact lines and levels and properly embedded for secure anchorage.  
B. Provide precast concrete lintels where openings occur in interior non-load bearing walls where steel lintels are not indicated.

3.18 METAL FRAMES

- A. Lay masonry to frames, built-in anchors, grout full.

3.19 WALL FLASHING:

- A. Provide sloping mortar wash for support of wall flashing and to direct water to the exterior.  
B. Install flashing in accordance with BIA Technical Notes #7, (applicable regardless of masonry unit type). Support flashing on mortar bed. Form flashing around obstructions. Form end dams at termination (Fig. 21). Lap joints 6 inches and seal with adhesive or lock seam. Extend flashing 8 inches beyond lintels and sills.

- C. Extend flashing within wall, upward minimum 8 inches (past floor line) and seal to back-up.  
D. Ensure top linear edge is lapped or incorporated into backing materials.  
E. All framed walls seal flashing to sheathing and lap vapor/air retarder or felt over flashing a minimum of 6 inches. If retarder or felt is not required, lap 6 inches behind sheathing and seal to back.  
F. All masonry back-up, turn upper edge into mortar joint of backing, minimum 1/2 wythe.  
G. Place 3 inches of pea gravel over flashing in cavities to prevent mortar droppings from clogging drainage.

3.20 REPAIR AND POINTING

- A. Repair: Remove defective masonry units (including loose, chipped, broken, stained and units which do not match adjoining units as intended). Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.  
B. Pointing: Enlarge any voids or holes (except weep holes) and completely fill with mortar. Point-up joints to provide a neat, uniform appearance.

3.21 INSPECTION

- A. Comply with inspection requirements of Section 01400, Quality Requirements.  
B. Review submitted portions and test reports for conformance with Contract Documents.  
C. Inspect placement of masonry reinforcement including vertical rebars in columns and walls.  
D. Inspect placement of joint reinforcement, anchors, ties, and accessories.  
E. Verify plumbness of walls and other tolerances specified.  
F. Inspect placement of grout fill in walls and columns.  
G. Submit daily inspection reports certifying compliance with requirements of Contract Documents.  
H. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project. A discussion of all deviations from the contract documents and specifications, with their related impact on the final construction, shall be described in detail. The engineer of record shall review this final report, and recommend corrective measures (as deemed necessary) that must be made prior to final acceptance of the work. Prior to final payment, a written report certifying that the work meets the requirements of the contract documents, specifications, and all governing agencies shall be prepared, submitted, and approved by the Architect.

3.22 CLEANING

- A. Clean exposed masonry. Dry brush at the end of each day's work; Remove mortar spots and droppings.  
B. Clean mortar from joints, forming expansion or receiving sealants.  
C. Before closing up any pipe, duct or similar inaccessible spaces or shafts with masonry, remove rubbish and sweep out the area to be enclosed.

3.23 CLEANING BRICK

- A. Sample Area: Clean approximately 20 square feet of face brick where directed, and obtain approval thereon before proceeding further. Accurately record location of approved clean area.  
B. Protection: Before using cleaning agents, completely mask all adjacent metal (doors, windows, frames, lintels, louvers, etc.) and finished surfaces subject to corrosion or other damage.  
C. Method: Thoroughly wet brick with clear water and clean from the top down by scrubbing with fiber brushes and solution, followed immediately by a thorough clear water rinse. Remove efflorescence in accord with BIA #20 and as directed by the brick manufacturer, during one year period.

3.24 CLEANING CONCRETE BLOCK

- A. General Cleaning: Clean all misplaced mortar, dirt, stains and foreign matter from concrete masonry surfaces to be painted or to remain exposed.  
B. Remove stains per NCMA-TEK #45.  
C. Materials and Methods: Optional with the Contractor, provided they produce acceptable results, and are not harmful to the masonry or adjacent construction; acid cleaning solutions not permitted.  
D. Sample Area: Initially clean approximately 20 square feet of concrete masonry where directed and obtain approval.  
E. Efflorescence: If it develops on the masonry, remove in accordance with directions of the concrete masonry manufacturer.

SECTION 05120

STRUCTURAL STEEL

PART 1 – GENERAL

1.0 QUALITY ASSURANCE

- A. Tolerances: Unless otherwise noted on drawings or specified, provide structural steel work in accordance with the following minimum tolerances:  
1. Fabrication Tolerances: In accordance with requirements of AISC Specifications.  
2. Erection Tolerances: Maximum deviation from plumb level and alignment shall not exceed AISC Specifications.  
B. Inspection: All tests and inspections required for shop and field quality control shall be performed by an inspection agency.  
C. Welders: Certified and qualified in accordance with requirements of the American Welding Society, for the particular materials and methods being used. The welder's certification papers shall be available on the first trip by the inspector.  
D. Welding Materials and Methods: For fabrication and erection shall be in accordance with the requirements of the American Welding Society.  
E. Codes and Standards: Comply with provisions of following, except as otherwise indicated:  
1. AISC Code of Standard Practice for Steel Buildings and Bridges".  
2. AISC "Specifications for the Design, Fabrications, and Erection of Structural Steel for Buildings", including "Commentary" and Supplements thereto as issued.  
3. AISC "Specifications for Structural Joints using ASTM A-325 or A-490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.  
4. American Welding Society (AWS) D1.1 "Structural Welding Code – Steel".  
5. ASTM A-6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".

1.1 REFERENCES

- A. American Society for Testing and Materials (ASTM).  
B. American Institute of Steel Construction (AISC): "Manual of Steel Construction"  
1. Load and Resistance Factor Design (LRFD) – Third Edition.  
C. Steel Structures Paint Council (SSPC): "Steel Structures Paint Manual, Volume 1 and Volume 2, Systems and Specifications, by Steel Structures Painting Council.

Issued for Bid - Not for Construction

Title: Specifications

Date: October 5, 2011  
Scale: As Noted

No. S13

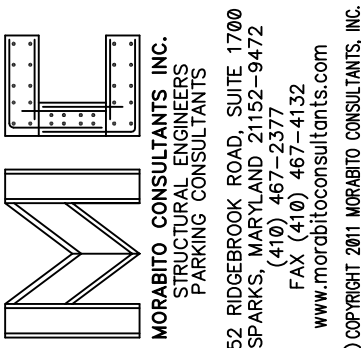
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PROFESSIONAL CERTIFICATION #1208  
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland.  
License number: 1208  
Expiration Date: 05/31/12

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**C. H. BRITTON**

**Issued for Bid - Not for Construction**

Title: Specifications  
Date: October 5, 2011  
Scale: As Noted

**S14**  
No.

1.2 SUBMITTALS  
A. Shop Drawings: Submit prior to commencing any fabrication of structural metal. Show dimensions, connections with adjoining materials and construction, finishes, welds, bolts, and fasteners. Detail anchoring of all fabrication or erection accessories required. Show field welds, cuts, holes and fasteners. Verify all dimensions and correlate with adjoining construction and materials. Indicate size, type and grade of all members.  
B. Corrections or revisions to the shop drawings required to coordinate them with the contract documents and other shop drawings shall be made at no additional cost. Please note that the Contract Documents in CAD format will not be made available to the contractor for their use in the preparation of the shop drawings, unless a release is signed, and a fee is paid for each cadd file requested.  
C. All steel connection design shall be completed by a design professional hired by the contractor, and satisfy the load requirements specified in the contract documents. Prior to submission of steel shop drawings, the steel fabricator shall submit sample calculations (prepared by a registered structural engineer) for all typical beam to beam and beam to column connections which are proposed to be used on this project. After these typical calculations and connections are accepted, the fabricator shall prepare and submit the shop drawings for this project. Only these typical sample calculations are required to be sealed by a registered structural engineer. The material necessary for the fabrication of all connections shall be the responsibility of the contractor.

PART 2 - PRODUCTS  
2.0 MATERIALS  
A. Plates, Angles, Channels, Bars, and rolled S, M, and HP shapes: ASTM A\_36.  
B. Rolled Wide Flange Shapes: ASTM A-992, Grade 50.  
C. Cold-Formed Steel Tubing: ASTM A\_500, Grade B.  
D. Steel Pipe: ASTM A\_53, Type E or S, Grade B.  
E. Anchor Bolts: ASTM F1554, grade 36.  
F. High-Strength Bolts and Nuts: ASTM\_325, and A\_490.  
G. Electrodes for Welding: Comply with AWS Code.  
H. Structural Steel Primer Paint: Use one (1) of the following:  
1. No. 769 Grey Primer manufactured by Rust-Oleum Corporation.  
2. No. 769 Grey Primer manufactured by Inneac Company.  
I. Structural Steel Protective Coating: All structural steel exposed to the weather or embedded in exterior walls shall be hot-dip galvanized in accordance with ASTM A123-84. Products are subject to compliance with requirements, provide a Type D, Non-metallic grout.  
2.1 FABRICATION  
A. General: Fabricate items of structural steel in accordance with AISC Specifications and as indicated on the final shop drawings. Properly mark and matchmark all materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling.  
B. Permanent Field Connections: High-strength bolts, for use in permanent slip-critical or bearing type connections with threads in shear planes, shall conform to ASTM A\_325.  
1. Shear web connections: "Double angle connections" as described in Table 10-1, 10-2, & 10-3 of AISC Steel Construction Manual, LRFD Third Edition, with shop welds and permanent field high strength bolts.  
2. Single angle connections may be used in the webs of beams, provided that the connection is designed for the eccentric load, except as otherwise noted on the drawings.  
3. Connections: Made with at least 3/4" diameter high strength bolts in slip-critical, pre-tension, or snug-tightened connections with threads in shear planes. All high-strength bolts shall be installed in accordance with Section 8.1 for snug-tightened connections, and section 8.2 for pre-tensioned and slip-critical connections of the AISC Specifications for Structural Joints Using ASTM A\_325 or A\_490 bolts, as approved by the Research Council on Structural Connections dated 06/23/2000. At all slip-critical connections, faying surfaces shall meet the requirements of section 3.2.2. All pre-tensioned bolts shall be twist-off type tension control bolt assemblies.  
4. Unless otherwise specified in the contract documents, all beam, joist, gird and column connections shall be as follows:  
a. Beam to Beam Connections: Snug-tightened joints.  
b. Beam to Column Connections: Snug-tensioned joints.  
c. Joist and Joist Girder to Column Connections: Snug-tensioned joints.  
d. Connections Subjected to Stress Reversal Conditions (Braced Frames, Moment Frames, etc.):  
1) Bolts in Standard Holes: Pre-tensioned joints.  
2) Bolts in Oversized or Slotted Holes: Slip-critical joints.  
5. All shear connections shall develop the end reaction (Ultimate LRFD Load)  $\phi W_c/2L$ , where " $\phi W_c$ " is the uniform load constant in kip-foot, and where "L" is the span in feet, as shown in the tables "Uniform Load Constants for Beams" (laterally supported) for given shape and steel specified, LRFD Manual 3rd Edition, unless otherwise specified.  
6. The shear connection capacity for composite steel beams shall be determined by multiplying the beam reaction computed per the method described in Paragraph 2.2.C.4 above by 1.75 for all interior beams and 1.25 for exterior span/ends beams.  
7. All seated beam connections shall be designed so that the stiffener is clear of the finished ceiling and column encasement. The width of the stiffened seat shall not exceed 9". Beam web stiffeners shall be added as necessary to satisfy web yielding and web crippling code requirements.  
C. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for the passage of other work through steel framing members as indicated. Provide threaded nuts welded to framing, and other specialty items as shown to receive other work.

2.2 SHOP PAINTING  
A. General: Shop paint all structural steel work, except members or portions of members to be embedded in concrete, mortar, or sprayed on fireproofing. Paint embedded steel on exposed portions and initial 2" of embedded areas only.  
B. Surface Preparation: After inspection and before shipping, clean steel work to be painted. Remove loose rust, loose mill scale and spatter, slag or flux deposits. Comply with Steel Structures Painting Council (SSPC) SP-1, SP-2, and SP-3.  
C. Application:  
1. Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide a uniform minimum dry film thickness of 2.0 mils. Use painting methods which will result in full coverage of joints, corners, edges, and all exposed surfaces.  
2. Immediately after surface preparation, apply the hot-dip galvanizing in accordance with ASTM A123-84 of the coating weight required by Table 1 to provide a uniform mil dry film thickness of 3.4 mils. Use galvanizing methods which will result in full coverage of joints, corners, edges and all exposed surfaces.

SECTION 05500  
MISCELLANEOUS METALS  
PART 1 - GENERAL  
3.1 SHOP AND FIELD WELDING  
A. Welding: Where structural joints are made by welding, the details of all joints, the technique of welding employed, the appearance and quality of welds made and the methods used in correcting defective work shall conform to requirements of the AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings and the Structural Welding Code D1.1 of the American Welding Society. In addition welds shall be made only by operators who have been previously qualified by tests as prescribed in the Standard Qualification Procedure of the American Welding Society, to perform the type of work required. The Contractor shall pay all costs for the qualification of welders. All welding equipment shall be direct current reverse polarity type.  
3.2 INSPECTION AND TESTING  
A. Field Inspection: The Contractor shall employ an inspection agency approved by the Structural Engineer to inspect the erected steel in the field. This inspection shall include alignment, position of member, bolting, welding, painting, etc. The inspection agency shall also submit to the Structural Engineer, prior to the Contractor's request for payment for the erected steel, certified reports showing results of these inspections.  
B. Costs: The cost of all the tests and inspections are to be borne by the Contractor.  
C. Field Inspection shall include, but is not limited to:  
1. Examination of mill certificates in reference to material being fabricated.  
2. All welding procedures including certification of welders and electrode identification.  
3. All shop connections.  
4. Shop preparation for built welds.  
5. Location of all clips, seals, holes and other accessories.  
6. Type and quality of shop paint and painting.  
7. See that all steel is properly stored and protected.  
8. Vertical and horizontal alignment of all beams and columns before and after welding.  
9. Temporary guying of building.  
10. All joints, prior to welding, for required clearances and preparation.  
11. Type of material and equipment used to make connections.  
12. Preheat requirements due to type of steel and weather conditions.  
13. All welded and bolted field connections.  
14. Check field top-up painting prior to covering by architectural materials.  
15. Inspection shall mark all connections when they are finally approved.  
16. Welding of steel floor deck.  
17. Welding of steel roof deck.  
18. Perform visual inspection of all welds.  
D. Reports:  
1. Mill certificates shall be reviewed and approved by the Inspection Agency and Structural Engineer prior to fabrication.  
2. Certified field reports, indicating that the steel as erected meets all of the requirements of the Contract Documents, shall be submitted to the Structural Engineer prior to starting of other work preventing access for any possible repairs.

3.0 ERECTION  
A. General: Comply with the AISC Specifications and Code of Standard Practice, and as herein specified. Maintain work in a safe and stable condition during erection.  
B. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.  
C. Setting Leveling Plates:  
1. Clean concrete bearing surfaces and roughen to improve bond. Clean the bottom surface of leveling plates.  
2. Set loose leveling plates for structural members on wedges or other adjusting devices.  
3. Tighten anchor bolts after the plates have been positioned and leveled to proper elevation. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the base plate prior to packing with grout.  
4. Pack grout solidly between bearing surfaces and bases or plates to provide for no voids remaining. Finish top surfaces, protect insolated materials, and allow to cure.  
D. Field Assembly: Set structural members to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.  
E. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of the shop paint, and paint all exposed areas with the same material as used for shop painting. Apply by brush or spray to provide the minimum dry film thickness as previously specified.

4. RELATED DOCUMENTS  
A. Drawings and General Provisions of the Contract, including AISC Specifications, Supplementary Conditions and Division 1 Specification Sections apply to this section.  
4.1 RELATED DOCUMENTS  
A. Drawings and General Provisions of the Contract, including AISC Specifications, Supplementary Conditions and Division 1 Specification Sections apply to this section.  
4.2 SECTION INCLUDES  
A. Miscellaneous metal fabrications.  
B. Accessories such as fasteners, shims, and miscellaneous rough hardware.  
C. Anchor bolts.  
D. Framing and supports.  
E. Plates and anchors.  
F. Metal stairs of pan type to receive concrete fill.  
G. Fabricated metal rails.  
H. Pipe guards.  
I. Pipe bollards.  
4.3 PRODUCTS FURNISHED BUT INSTALLED UNDER OTHER SECTIONS  
A. Anchorage, sleeves, lintels and frames set in masonry or concrete.  
4.4 RELATED SECTIONS  
A. Section 03300, Cast-In-Place Concrete  
B. Section 04200, Unit Masonry  
C. Section 06100, Rough Carpentry  
4.5 QUALITY ASSURANCE  
A. Welders Qualifications: Qualified in accord with the American Welding Society (AWS).  
B. Design stairs to support minimum live load of 100 lbs. per square foot, with maximum deflection L/360. The entire assembly design shall be per OSHA. Provide closures and fittings for open end shapes.  
C. Design railings to withstand minimum loads required by the IBC 2000 Building Code. Comply with OSHA requirements and local codes (e.g. height, spacing and clearances).  
D. Design Data: Engineered Drawings of metal stairs and railing with seal of Professional Engineer registered in the State of Maryland.  
4.6 REFERENCES  
A. American Society for Testing and Materials (ASTM):  
B. American Welding Society (AWS):  
• AWS A 2.2 - Welding Symbols  
• AWS D 1.1 - Structural Welding Code - Steel  
C. National Association of Architectural Metal Manufacturers (NAAMM):  
• ANSI/NAAMM 521 - Pipe Railing Manual.  
• ANSI/NAAMM 510 - Metal Stair Manual.  
D. OSHA - Occupations Safety and Health Administration  
• OSHA 29CFR 1910.23 Guarding Floor and Wall Openings and Holes  
E. Steel Structures Painting Council (SSPC):  
• SSPC SP-1 - Specification for Solvent Cleaning  
• SSPC SP-2 - Specification for Hand Tool Cleaning  
• SSPC SP-3 - Specification for Power Tool Cleaning  
4.7 SUBMITTALS  
A. Shop Drawings: Indicate the following:  
1. Materials, sizes, finishes, hardware, fittings, details and respective locations.  
2. Indicate shop and field welds, using symbols in accord with AWS A 2.2.  
3. Requirements for connection with other work, with pertinent details.  
4. Separation of dissimilar materials with method and materials proposed for each different condition.  
5. Layout or setting drawings, templates, and directions required for coordination or incorporation in other work.  
6. Details of anchor bolts, sleeves and embedded items.  
B. Product Data: Catalog descriptions of manufactured items.  
1. Fasteners, paints, coatings and isolation materials.  
C. Samples: Materials or items proposed for use, if requested.

4.8 PROJECT CONDITIONS  
A. Verify field measurements and fabricate to job conditions.  
B. Before starting work, examine other work on which this Work is dependent for satisfactory workmanship and fit.  
PART 2 - PRODUCTS  
2.1 MATERIALS - CARBON STEEL INCLUDING GALVANIZED STOCK  
A. Carbon Steel Shapes, Plates and Bars: General Requirements ASTM A 6; Structural Steel (36 KSI yield) ASTM A 36, and ASTM A992.  
B. Galvanized Steel Sheet and Strip: ASTM A 653, General Requirements; Commercial Quality, ASTM A 526, Hot dipped galvanized with G-90 coating.  
C. Carbon Steel Pipe: Seamless and Welded, ASTM A 53, Seamless Type S, Minimum yield strength 35 KSI.  
D. Carbon Steel Tube: Round, Square or Rectangular, Cold Formed Seamless, ASTM A 500; or Hot Formed Seamless, ASTM A 501.  
E. Carbon Steel and Iron Castings: Gray Iron, ASTM A 48, Class 30B.  
2.2 FINISHES - METAL GALVANIZING FOR STEEL COMPONENTS  
A. Locations: Carbon steel items exposed to exterior (including shell angles).  
B. Prepare galvanized surfaces in accordance with ASTM D 2892. Remove loose scale, rust, grease, oil, moisture and other contaminants in accordance with SSPC SP-1 and SSPC SP-2.  
C. Hot Dip Galvanizing: Control quality in accord with ASTM A 382; prevention of warpage and distortion in accord with ASTM A 384. After welded fabrication and prior to assembly ASTM A 386; Loose or fabricated shapes, plates, bars in accord with ASTM A 123; Iron and steel hardware in accord with ASTM A 153.  
2.3 FINISHES - METAL - SHOP PRIME FOR STEEL COMPONENTS  
A. Locations: Carbon steel, except portions of members to be embedded in concrete or mortar and contact surfaces which are to be welded or high strength bolted. Painted embedded steel on exposed portions and initial 2 inches of embedded areas only.  
B. Primer: Compatible with and acceptable to manufacturers of subsequent finishes. Lacquer resistant universal primer.  
2.4 ACCESSORIES - METAL FASTENERS - NUTS AND BOLTS  
A. Carbon steel bolts, nuts, and washers: Externally threaded standard fasteners, ASTM A 325, harden steel washers, ASTM F 436; Galvanized ASTM A 153, for use at exterior locations

and with galvanized metals.  
B. Zinc Coating: Fasteners in exterior assemblies or exterior welds.  
C. Stainless Steel Bolts, Nuts, & Washers: ASTM A-276, Type 316  
D. Anchor Bolts: ASTM F1554, 36 ksi, Carbon Steel; include plate washers and double nuts Minimum of 1/2 inch bolts, 16 inches long, with 2 inch bent hook.  
E. Adhesive anchors: Stainless steel anchor rod conforming to ASTM F 553, with hit HLT 150 epoxy adhesive by Hilti or approved equal.  
2.5 ACCESSORIES - ALUMINUM PIPE AND TUBE RAILING  
A. Extruded Bar and Tube: ASTM B 221, alloy 6063 T5/T52  
B. Extruded Structural Pipe and Tube: ASTM B 429, alloy 6063 T5/T52  
C. Draw-Seamless Tube: ASTM B210, alloy 6061, T832  
D. Plate and Sheet: ASTM B 209, alloy 6061 T6  
E. Die and Hand Forgings: ASTM B 247, alloy 6061 T6  
F. Castings: ASTM B26, alloy A356 T6  
G. Finish: Color anodized  
2.6 ACCESSORIES - STEEL PIPE AND TUBE RAILING  
A. Steel Pipe, Black Finish: ASTM A53  
B. Steel Plates, Shapes and Bars: ASTM A 36  
C. Finish: Primed  
2.7 ACCESSORIES - METAL FITTINGS FOR STEEL RAILINGS  
A. Manufacturer:  
• Julius Blum  
B. Wall Brackets: Malleable Iron; Model #386  
C. End Flanges: Malleable Iron; Model #911.  
D. End Caps: Malleable Iron; Flush with hemispherical end and integral alignment sleeves; Model #936.  
E. Splice Lock Sleeves: (Field Splices) Pressure lock with set screw tightening; Model #923.  
2.8 FABRICATION - METAL FABRICATIONS - MISCELLANEOUS  
A. Obtain and verify field dimensions for accurate fabrication and alignment.  
B. Shape work accurately and to details with clean, sharply defined profiles and square corners. Cut, drill, punch and fit for installation and to accommodate attached work. Provide slotted holes for adjustments of field connections. Finish surfaces smooth unless otherwise specified.  
C. Joints and Seams to be strong and rigid as adjoining sections. Miter corners. Make exposed joints close fitting and where least conspicuous. Where exposed to the weather, form joints and seams to exclude water. Full weld joints and seams and grind smooth unless otherwise indicated.  
D. Connections, Fastenings and Accessories: Design and size of compatible materials to safely sustain and withstand stresses and strains to which they will be subjected. Conceal where practicable, otherwise match color and finish of adjacent finished surfaces. Full weld connections unless otherwise indicated.  
E. Isolate dissimilar materials at contact surfaces. Use heavy coat of bituminous paint, or isolate the items with non-absorbent and nonstaining tape, gasket, or sealant.  
F. Anchors: Provide 1/8 inch x 1 inch x 8 inch straps with ends turned 2 inches or equivalent shear stud for embedment in Masonry or Concrete. Provide 1/2 inch diameter threaded studs of appropriate length for attachments. Space anchors 8 inches from end and not more than 24 inches apart welded to back of frames.  
2.9 FABRICATION - METAL FRAMING AND SUPPORTS  
A. Materials: Carbon steel shapes, galvanized and shop primed  
B. Form with holes slotted for adjustment and for attachments  
C. Provide with fasteners and anchors for anchorage in place and for attachment of other work.  
2.10 FABRICATION - METAL LINTELS, SHELF ANGLES, BEAMS, PLATES AND ANCHORS.  
A. Locations: Over masonry openings, including doors, windows, ductwork, unless other types of support are indicated.  
B. Materials: Carbon steel shapes, galvanized  
C. Size: Openings (up to 6 feet) except as otherwise detailed: One angle 4 inches x 3 - 1/2 inches x 5/16 inch for each 4 inches of wall thickness. Openings greater than 6 feet, as shown of the Drawings. Bearing: 8 inches minimum for spans up to 6 feet and 12 inches for spans greater. Provide bearing plates and anchors for beam lintels.  
2.11 FABRICATION - METAL STAIRS - GENERAL  
A. Design stairs in accordance with ANSI/NAAMM AMP 510 to support minimum live load of 100 lbs. per square foot plus dead load, with maximum deflection L/360. Riser design per OSHA. Provide closures and fittings for open end shapes.  
B. Materials: Carbon steel shapes; hot-dip galvanized for exterior and shop prime all.  
C. Stringers: Fabricate stringers of structural channels, tubes, plates or a combination. Provide closures for exposed ends of stringers.  
D. Supports: Provide necessary support, anchors, fastenings, steel shapes, struts, metal framing, hangers, columns, clips, brackets, bearing plates and other components for support of stairs and platforms.  
E. Connections: Make joints true and tight. Welding pieces together with continuous weld, grind smooth where exposed. Fabricate so bolts and other fastenings do not appear  
2.12 FABRICATION - METAL STAIRS - PAN TYPE TO RECEIVE CONCRETE FILL  
A. Platforms: Perimeter steel channel headers, flanges to extend out. Provide channel partins maximum 2 feet on center. Provide perimeter screed angles.  
B. Risers, Subreads, Subplatforms: Form metal pans of 12 gauge (0.1046 inch thick) structural quality carbon steel sheets (ASTM A 570, Grade). Shape pans to configurations shown, with steel angle supporting brackets welded to stringer. Secure metal pans to brackets.  
2.13 FABRICATION - METAL RAILS - WELDED STEEL PIPE  
A. Design railings in accordance with ANSI/NAAMM 521 to withstand loads not less than required by Building Codes. OSHA 29 CFR 1910.23 and ASTM D 985. Comply with OSHA requirements and local codes (eg. Height, spacing and clearances)  
B. Materials: 1 - 1/2 inch OD steel pipe. After fabrication, hot-dip galvanize with concealed relief vents, exterior rails and prime paint all carbon steel rails and panels.  
C. Form runs and transitions without kink or wrinkle

and with galvanized metals.  
B. Zinc Coating: Fasteners in exterior assemblies or exterior welds.  
C. Stainless Steel Bolts, Nuts, & Washers: ASTM A-276, Type 316  
D. Anchor Bolts: ASTM F1554, 36 ksi, Carbon Steel; include plate washers and double nuts Minimum of 1/2 inch bolts, 16 inches long, with 2 inch bent hook.  
E. Adhesive anchors: Stainless steel anchor rod conforming to ASTM F 553, with hit HLT 150 epoxy adhesive by Hilti or approved equal.  
2.5 ACCESSORIES - ALUMINUM PIPE AND TUBE RAILING  
A. Extruded Bar and Tube: ASTM B 221, alloy 6063 T5/T52  
B. Extruded Structural Pipe and Tube: ASTM B 429, alloy 6063 T5/T52  
C. Draw-Seamless Tube: ASTM B210, alloy 6061, T832  
D. Plate and Sheet: ASTM B 209, alloy 6061 T6  
E. Die and Hand Forgings: ASTM B 247, alloy 6061 T6  
F. Castings: ASTM B26, alloy A356 T6  
G. Finish: Color anodized  
2.6 ACCESSORIES - STEEL PIPE AND TUBE RAILING  
A. Steel Pipe, Black Finish: ASTM A53  
B. Steel Plates, Shapes and Bars: ASTM A 36  
C. Finish: Primed  
2.7 ACCESSORIES - METAL FITTINGS FOR STEEL RAILINGS  
A. Manufacturer:  
• Julius Blum  
B. Wall Brackets: Malleable Iron; Model #386  
C. End Flanges: Malleable Iron; Model #911.  
D. End Caps: Malleable Iron; Flush with hemispherical end and integral alignment sleeves; Model #936.  
E. Splice Lock Sleeves: (Field Splices) Pressure lock with set screw tightening; Model #923.  
2.8 FABRICATION - METAL FABRICATIONS - MISCELLANEOUS  
A. Obtain and verify field dimensions for accurate fabrication and alignment.  
B. Shape work accurately and to details with clean, sharply defined profiles and square corners. Cut, drill, punch and fit for installation and to accommodate attached work. Provide slotted holes for adjustments of field connections. Finish surfaces smooth unless otherwise specified.  
C. Joints and Seams to be strong and rigid as adjoining sections. Miter corners. Make exposed joints close fitting and where least conspicuous. Where exposed to the weather, form joints and seams to exclude water. Full weld joints and seams and grind smooth unless otherwise indicated.  
D. Connections, Fastenings and Accessories: Design and size of compatible materials to safely sustain and withstand stresses and strains to which they will be subjected. Conceal where practicable, otherwise match color and finish of adjacent finished surfaces. Full weld connections unless otherwise indicated.  
E. Isolate dissimilar materials at contact surfaces. Use heavy coat of bituminous paint, or isolate the items with non-absorbent and nonstaining tape, gasket, or sealant.  
F. Anchors: Provide 1/8 inch x 1 inch x 8 inch straps with ends turned 2 inches or equivalent shear stud for embedment in Masonry or Concrete. Provide 1/2 inch diameter threaded studs of appropriate length for attachments. Space anchors 8 inches from end and not more than 24 inches apart welded to back of frames.  
2.9 FABRICATION - METAL FRAMING AND SUPPORTS  
A. Materials: Carbon steel shapes, galvanized and shop primed  
B. Form with holes slotted for adjustment and for attachments  
C. Provide with fasteners and anchors for anchorage in place and for attachment of other work.  
2.10 FABRICATION - METAL LINTELS, SHELF ANGLES, BEAMS, PLATES AND ANCHORS.  
A. Locations: Over masonry openings, including doors, windows, ductwork, unless other types of support are indicated.  
B. Materials: Carbon steel shapes, galvanized  
C. Size: Openings (up to 6 feet) except as otherwise detailed: One angle 4 inches x 3 - 1/2 inches x 5/16 inch for each 4 inches of wall thickness. Openings greater than 6 feet, as shown of the Drawings. Bearing: 8 inches minimum for spans up to 6 feet and 12 inches for spans greater. Provide bearing plates and anchors for beam lintels.  
2.11 FABRICATION - METAL STAIRS - GENERAL  
A. Design stairs in accordance with ANSI/NAAMM AMP 510 to support minimum live load of 100 lbs. per square foot plus dead load, with maximum deflection L/360. Riser design per OSHA. Provide closures and fittings for open end shapes.  
B. Materials: Carbon steel shapes; hot-dip galvanized for exterior and shop prime all.  
C. Stringers: Fabricate stringers of structural channels, tubes, plates or a combination. Provide closures for exposed ends of stringers.  
D. Supports: Provide necessary support, anchors, fastenings, steel shapes, struts, metal framing, hangers, columns, clips, brackets, bearing plates and other components for support of stairs and platforms.  
E. Connections: Make joints true and tight. Welding pieces together with continuous weld, grind smooth where exposed. Fabricate so bolts and other fastenings do not appear  
2.12 FABRICATION - METAL STAIRS - PAN TYPE TO RECEIVE CONCRETE FILL  
A. Platforms: Perimeter steel channel headers, flanges to extend out. Provide channel partins maximum 2 feet on center. Provide perimeter screed angles.  
B. Risers, Subreads, Subplatforms: Form metal pans of 12 gauge (0.1046 inch thick) structural quality carbon steel sheets (ASTM A 570, Grade). Shape pans to configurations shown, with steel angle supporting brackets welded to stringer. Secure metal pans to brackets.  
2.13 FABRICATION - METAL RAILS - WELDED STEEL PIPE  
A. Design railings in accordance with ANSI/NAAMM 521 to withstand loads not less than required by Building Codes. OSHA 29 CFR 1910.23 and ASTM D 985. Comply with OSHA requirements and local codes (eg. Height, spacing and clearances)  
B. Materials: 1 - 1/2 inch OD steel pipe. After fabrication, hot-dip galvanize with concealed relief vents, exterior rails and prime paint all carbon steel rails and panels.  
C. Form runs and transitions without kink or wrinkle

with galvanized metals.  
B. Zinc Coating: Fasteners in exterior assemblies or exterior welds.  
C. Stainless Steel Bolts, Nuts, & Washers: ASTM A-276, Type 316  
D. Anchor Bolts: ASTM F1554, 36 ksi, Carbon Steel; include plate washers and double nuts Minimum of 1/2 inch bolts, 16 inches long, with 2 inch bent hook.  
E. Adhesive anchors: Stainless steel anchor rod conforming to ASTM F 553, with hit HLT 150 epoxy adhesive by Hilti or approved equal.  
2.5 ACCESSORIES - ALUMINUM PIPE AND TUBE RAILING  
A. Extruded Bar and Tube: ASTM B 221, alloy 6063 T5/T52  
B. Extruded Structural Pipe and Tube: ASTM B 429, alloy 6063 T5/T52  
C. Draw-Seamless Tube: ASTM B210, alloy 6061, T832  
D. Plate and Sheet: ASTM B 209, alloy 6061 T6  
E. Die and Hand Forgings: ASTM B 247, alloy 6061 T6  
F. Castings: ASTM B26, alloy A356 T6  
G. Finish: Color anodized  
2.6 ACCESSORIES - STEEL PIPE AND TUBE RAILING  
A. Steel Pipe, Black Finish: ASTM A53  
B. Steel Plates, Shapes and Bars: ASTM A 36  
C. Finish: Primed  
2.7 ACCESSORIES - METAL FITTINGS FOR STEEL RAILINGS  
A. Manufacturer:  
• Julius Blum  
B. Wall Brackets: Malleable Iron; Model #386  
C. End Flanges: Malleable Iron; Model #911.  
D. End Caps: Malleable Iron; Flush with hemispherical end and integral alignment sleeves; Model #936.  
E. Splice Lock Sleeves: (Field Splices) Pressure lock with set screw tightening; Model #923.  
2.8 FABRICATION - METAL FABRICATIONS - MISCELLANEOUS  
A. Obtain and verify field dimensions for accurate fabrication and alignment.  
B. Shape work accurately and to details with clean, sharply defined profiles and square corners. Cut, drill, punch and fit for installation and to accommodate attached work. Provide slotted holes for adjustments of field connections. Finish surfaces smooth unless otherwise specified.  
C. Joints and Seams to be strong and rigid as adjoining sections. Miter corners. Make exposed joints close fitting and where least conspicuous. Where exposed to the weather, form joints and seams to exclude water. Full weld joints and seams and grind smooth unless otherwise indicated.  
D. Connections, Fastenings and Accessories: Design and size of compatible materials to safely sustain and withstand stresses and strains to which they will be subjected. Conceal where practicable, otherwise match color and finish of adjacent finished surfaces. Full weld connections unless otherwise indicated.  
E. Isolate dissimilar materials at contact surfaces. Use heavy coat of bituminous paint, or isolate the items with non-absorbent and nonstaining tape, gasket, or sealant.  
F. Anchors: Provide 1/8 inch x 1 inch x 8 inch straps with ends turned 2 inches or equivalent shear stud for embedment in Masonry or Concrete. Provide 1/2 inch diameter threaded studs of appropriate length for attachments. Space anchors 8 inches from end and not more than 24 inches apart welded to back of frames.  
2.9 FABRICATION - METAL FRAMING AND SUPPORTS  
A. Materials: Carbon steel shapes, galvanized and shop primed  
B. Form with holes slotted for adjustment and for attachments  
C. Provide with fasteners and anchors for anchorage in place and for attachment of other work.  
2.10 FABRICATION - METAL LINTELS, SHELF ANGLES, BEAMS, PLATES AND ANCHORS.  
A. Locations: Over masonry openings, including doors, windows, ductwork, unless other types of support are indicated.  
B. Materials: Carbon steel shapes, galvanized  
C. Size: Openings (up to 6 feet) except as otherwise detailed: One angle 4 inches x 3 - 1/2 inches x 5/16 inch for each 4 inches of wall thickness. Openings greater than 6 feet, as shown of the Drawings. Bearing: 8 inches minimum for spans up to 6 feet and 12 inches for spans greater. Provide bearing plates and anchors for beam lintels.  
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B. Materials: Carbon steel shapes; hot-dip galvanized for exterior and shop prime all.  
C. Stringers: Fabricate stringers of structural channels, tubes, plates or a combination. Provide closures for exposed ends of stringers.  
D. Supports: Provide necessary support, anchors, fastenings, steel shapes, struts, metal framing, hangers, columns, clips, brackets, bearing plates and other components for support of stairs and platforms.  
E. Connections: Make joints true and tight. Welding pieces together with continuous weld, grind smooth where exposed. Fabricate so bolts and other fastenings do not appear  
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B. Materials: 1 - 1/2 inch OD steel pipe. After fabrication, hot-dip galvanize with concealed relief vents, exterior rails and prime paint all carbon steel rails and panels.  
C. Form runs and transitions without kink or wrinkle

with galvanized metals.  
B. Zinc Coating: Fasteners in exterior assemblies or exterior welds.  
C. Stainless Steel Bolts, Nuts, & Washers: ASTM A-276, Type 316  
D. Anchor Bolts: ASTM F1554, 36 ksi, Carbon Steel; include plate washers and double nuts Minimum of 1/2 inch bolts, 16 inches long, with 2 inch bent hook.  
E. Adhesive anchors: Stainless steel anchor rod conforming to ASTM F 553, with hit HLT 150 epoxy adhesive by Hilti or approved equal.  
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C. Draw-Seamless Tube: ASTM B210, alloy 6061, T832  
D. Plate and Sheet: ASTM B 209, alloy 6061 T6  
E. Die and Hand Forgings: ASTM B 247, alloy 6061 T6  
F. Castings: ASTM B26, alloy A356 T6  
G. Finish: Color anodized  
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A. Steel Pipe, Black Finish: ASTM A53  
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B. Wall Brackets: Malleable Iron; Model #386  
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D. End Caps: Malleable Iron; Flush with hemispherical end and integral alignment sleeves; Model #936.  
E. Splice Lock Sleeves: (Field Splices) Pressure lock with set screw tightening; Model #923.  
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A. Obtain and verify field dimensions for accurate fabrication and alignment.  
B. Shape work accurately and to details with clean, sharply defined profiles and square corners. Cut, drill, punch and fit for installation and to accommodate attached work. Provide slotted holes for adjustments of field connections. Finish surfaces smooth unless otherwise specified.  
C. Joints and Seams to be strong and rigid as adjoining sections. Miter corners. Make exposed joints close fitting and where least conspicuous. Where exposed to the weather, form joints and seams to exclude water. Full weld joints and seams and grind smooth unless otherwise indicated.  
D. Connections, Fastenings and Accessories: Design and size of compatible materials to safely sustain and withstand stresses and strains to which they will be subjected. Conceal where practicable, otherwise match color and finish of adjacent finished surfaces. Full weld connections unless otherwise indicated.  
E. Isolate dissimilar materials at contact surfaces. Use heavy coat of bituminous paint, or isolate the items with non-absorbent and nonstaining tape, gasket, or sealant.  
F. Anchors: Provide 1/8 inch x 1 inch x 8 inch straps with ends turned 2 inches or equivalent shear stud for embedment in Masonry or Concrete. Provide 1/2 inch diameter threaded studs of appropriate length for attachments. Space anchors 8 inches from end and not more than 24 inches apart welded to back of frames.  
2.9 FABRICATION - METAL FRAMING AND SUPPORTS  
A. Materials: Carbon steel shapes, galvanized and shop primed  
B. Form with holes slotted for adjustment and for attachments  
C. Provide with fasteners and anchors for anchorage in place and for attachment of other work.  
2.10 FABRICATION - METAL LINTELS, SHELF ANGLES, BEAMS, PLATES AND ANCHORS.  
A. Locations: Over masonry openings, including doors, windows, ductwork, unless other types of support are indicated.  
B. Materials: Carbon steel shapes, galvanized  
C. Size: Openings (up to 6 feet) except as otherwise detailed: One angle 4 inches x 3 - 1/2 inches x 5/16 inch for each 4 inches of wall thickness. Openings greater than 6 feet, as shown of the Drawings. Bearing: 8 inches minimum for spans up to 6 feet and 12 inches for spans greater. Provide bearing plates and anchors for beam lintels.  
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C. Form runs and transitions without kink or wrinkle

with galvanized metals.  
B. Zinc Coating: Fasteners in exterior assemblies or exterior welds.  
C. Stainless Steel Bolts, Nuts, & Washers: ASTM A-276, Type 316  
D. Anchor Bolts: ASTM F1554, 36 ksi, Carbon Steel; include plate washers and double nuts Minimum of 1/2 inch bolts, 16 inches long, with 2 inch bent hook.  
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D. Plate and Sheet: ASTM B 209, alloy 6061 T6  
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E. Isolate dissimilar materials at contact surfaces. Use heavy coat of bituminous paint, or isolate the items with non-absorbent and nonstaining tape, gasket, or sealant.  
F. Anchors: Provide 1/8 inch x 1 inch x 8 inch straps with ends turned 2 inches or equivalent shear stud for embedment in Masonry or Concrete. Provide 1/2 inch diameter threaded studs of appropriate length for attachments. Space anchors 8 inches from end and not more than 24 inches apart welded to back of frames.  
2.9 FABRICATION - METAL FRAMING AND SUPPORTS  
A. Materials: Carbon steel shapes, galvanized and shop primed  
B. Form with holes slotted for adjustment and for attachments  
C. Provide with fasteners and anchors for anchorage in place and for attachment of other work.  
2.10 FABRICATION - METAL LINTELS, SHELF ANGLES, BEAMS, PLATES AND ANCHORS.  
A. Locations: Over masonry openings, including doors, windows, ductwork, unless other types of support are indicated.  
B. Materials: Carbon steel shapes, galvanized  
C. Size: Openings (up to 6 feet) except as otherwise detailed: One angle 4 inches x 3 - 1/2 inches x 5/16 inch for each 4 inches of wall thickness. Openings greater than 6 feet, as shown of the Drawings. Bearing: 8 inches minimum for spans up to 6 feet and 12 inches for spans greater. Provide bearing plates and anchors for beam lintels.



PART 3 – EXECUTION

3.0 PREPARATION – FRAMING

- A. Notches: Do not notch in end quarter or middle quarter of joists or rafters, and do not exceed 1/6 of depth of member for depth of notches in top or bottom of joists. Limit length of notches to 1/3 of depth of member.
- B. Holes: Do not bore holes closer than 2" from top or bottom of joists or rafters, and limit diameter to 1/3 of depth of member.

3.1 INSTALLATION – ANCHORING AND FASTENING

- A. Securely attach wood products, to each other and to other materials, as indicated and as recommended by published standards.
- B. Make tight connections between members.
- C. Install fasteners without splitting of wood; pre-drill pilot holes for sizes larger than 1/8".
- D. Do not hammer threaded fasteners; tighten without lubrication.
- E. Install load carrying components with appropriate devices. Set fasteners flush with surface, counter bore screws, nuts and bolts.
- F. Nail or screw plywood in accord with APA publication E38A.

3.2 INSTALLATION – WOOD FRAMING

- A. Set accurately, plumb, level, and rigidly secured. Frame openings and comply with the NFPA Manual for House Framing. Cut, join and tightly fit framing around other work. Do not splice structural members between supports unless otherwise detailed.
- B. Anchor and nails in accord with the following Publications except where modified by other portions of this specification.
  1. National Evaluation Report No. NER-272 for pneumatic or mechanical driven staples, P-Nails, and allied fasteners.
  2. Published requirements of manufacturer of metal framing anchors.
  3. Table 1 – Recommended Nailing Schedule of NFPA Manual for House Framing.
  4. "Table 2304.9.1 – Fastening Schedule" of the International Building Code.

3.3 INSTALLATION – STUD FRAMING: Including bulkheads and soffits

- A. Studs:
  1. Layout partition or wall on level deck.
  2. Set wide face of stud perpendicular to face of wall or partition.
  3. End nail studs through bottom and top plate.
  4. Erect walls complete with headers and jamb studs.
- B. Plates: Provide plates 2" thick and of same width as studs.
- C. Bottom Plates: Fasten bottom plate to deck near each end of partition or wall and at not more than 4' on center between ends. Anchor to wood with nails or lag bolts.
- D. Single Top Plate: Permitted for non-load bearing interior partitions.
- E. Double\_Top Plates: Face nail upper top plate to lower top plate, over lap top plates at corners and intersections, stagger joints between plates.
- F. Corners and Intersection: Construct with minimum 3 studs 2" thick, providing bearing surface for wall finishes.
- G. Ends of Partitions Abutting Other Walls: Secure with fasteners located near each end of stud and maximum 4\_feet on center.
- H. Openings: Frame with addition of jack studs (plus additional stud for openings wider than 6") and double header members of thickness equal to width of studs. Set headers on edge and support on jack studs.
- I. Gables: Frame gable end walls with studs cut to fit and toe nail to top plates of wall framing.

3.4 INSTALLATION – FLOOR FRAMING

- A. Joints: Install with crown edge up and support ends of each member with not less than 1-1/2" of bearing on wood or metal and not less than 3" of bearing on masonry.
- B. Double Joists/Trusses: Provide beneath non-load bearing partitions separated by solid blocking equal to width of studs above.
- C. Headers and Trimmers: Provide at openings and interruption of framing; double headers and trimmers where load bearing and/or where span of header exceeds 4'.
- D. Ends of Joists and Headers: Lap from opposite sides of beams, girders or bearing walls not less than 4" and securely tie opposing members together.
  1. Bearing on Wood: Attach to bearing members by toe nailing or metal connectors.
- E. Blocking between joists: Provide solid blocking under jamb studs at openings. Provide cross blocking for partitions parallel between joists. Support members at ends with solid blocking (unless nailed to a header or band member) and between members crossing over bearing point.
- F. Bridging: Bridge between joists where nominal depth to thickness ratio exceeds 4:
  1. Provide bridging as required by code, but minimum one (1) center row bridging for spans over 10', and rows 8' on center for spans over 16'.

3.5 INSTALLATION – ROOF FRAMING

- A. Ridge: Provide ridge of same thickness as rafters and 2" deeper. Set plumb, level and straight for full length of roof.
- B. Rafters: Notch and bevel ends to fit wall plates ridge or jack rafters. Toe nail or use framing anchors. Where rafters abut at ridge end nail through ridge. Place opposing rafters directly opposite each other and nail to ridge member.
- C. Collar Beams: Provide between every pair of rafters. Locate below ridge member, at ceiling height. Cut ends to fit slope and nail to rafters.
- D. Valleys: Provide valley rafters. Bevel ends of jack rafters

- for full bearing against valley rafter.
- E. Hips: Provide hip rafters same thickness as regular rafters and 2X deeper. Bevel ends of jack rafters for full bearing against hip rafters.
- F. Bridging: Bridge between joists where nominal depth to thickness ratio exceeds 4:
  1. Provide bridging as required by code, but minimum one center row bridging for spans over 10', and rows 8' on center for spans over 16'.

3.6 INSTALLATION – PROTECTION OF FRAMING – BRACING

- A. Temporarily brace framing to maintain alignment, sustain winds and construction loads.
- B. Leave bracing in place until lateral stability is achieved with other design elements.
- C. Remove temporarily bracing when no longer required.

3.7 INSTALLATION – PLYWOOD SUBFLOOR – UNDERLAYMENT : GLOUED AND NAILED

- A. Install panels with face grain perpendicular to framing and continuous over two (2) or more spans. Center end joints on framing and offset end joints of adjacent side panels.
- B. Fit edge and end joints together with an allowance for expansion and contraction. Nail 6" on center at panel edges and 8" on center at intermediate supports.
- C. Use deformed\_shank 8d nails, for panels up to 3/4" thick, 10d common nails may be substituted if supports are well seasoned.

3.8 INSTALLATION – PLYWOOD ROOF SHEATHING: NAILED ONLY

- A. Install with face grain across supports, using panels continuous over two (2) or more spans with end joints between panels staggered and located over center of supports.
- B. Nail: 6" on center along panel ends and 10" on center at intermediate supports for spans less than 48", using 8d common nails for panels 1/2" or less.
- C. Provide support at unsupported long edges with "Plyclips" or wood blocking.

3.9 INSTALLATION – STRUCTURAL USE PANELS OSB (0-2) WALLS

- A. Layout OSB Board at floors so that all horizontal joints are a minimum of 12" below the truss bearing elevation and 12" above the plywood subfloor elevation.
  - B. Provide blocking in all shear walls at unsupported edges of OSB Board sheathing.
  - C. All exterior edges and interior studs of OSB Shear Walls shall be nailed per the schedule and details on the drawings.
  - D. All exterior edges of OSB Board shall be nailed using 8d nails at 6" on center.
  - E. All internal studs of OSB Board shall be nailed using 8d nails at 8" on center.
- 3.10 INSTALLATION – ROUGH CARPENTRY HARDWARE
- A. Where edges of the roof plywood abut one another, use plywood sheathing clips at 16" on center.
  - B. Where wood joists frame into beams, use 16 gauge standard joist hangers and 10d nails.
  - C. All roof trusses with overhangs, all floor joists/trusses in exterior balconies, everywhere first floors and decks are elevated above the perimeter grade elevations and all other horizontal surfaces exposed to wind uplift shall be secured to the building framing with 16 gauge hurricane anchors and 8 nails.

3.11 INSPECTION

- A. The Contractor shall employ and pay for the services of an independent inspection Agency, acceptable to the Structural Engineer, to perform a field review of the installation of the structural wood framing.
- B. Field inspection shall include but is not limited to the following:
  1. Size, species and spacing of all stud bearing walls, floor joists and roof rafters.
  2. Alignment of all roof, floor and wall framing.
  3. Installation of all headers, jamps, lintels and other framing at openings.
  4. Bridging and blocking installation between trusses, rafters and stud members.
  5. All connections between individual framing members including beam to beam, joist to beam, beam to column and truss to beam/wall. These connections include nailing of plywood to framing members as well as installation of hurricane anchors, steel plate connections and other framing details.
  6. Installation of all structural use panels and gypsum sheathing at shearwalls.
- C. Prior to final payment, a written report certifying that the wood framing meets the requirements of the contract documents, specifications, and all governing agencies shall be prepared, submitted, and approved by the Architect and Structural Engineer.
- D. See spec section 06170 for additional requirements.

SECTION 06170 PREFABRICATED STRUCTURAL WOOD

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Engineered and Fabricated wood trusses.

1.2 DEFINITIONS

- A. Definition: Fabricated wood trusses include planar structural units consisting of metal plate connected members which are fabricated from dimensional lumber and which have been cut and assembled prior to delivery to the job site. Types of fabricated wood trusses include:
  1. Cable-shaped trusses.
  2. Monopitch trusses
  3. Floor Trusses

1.3 QUALITY ASSURANCE

- A. Truss Plate Institute (TPI)
  1. Design Specification for Metal Plate Connected Wood Trusses.
  2. Temporary Bracing of Metal Plate Connected Wood Trusses: Publication DSB.
  3. Handling, Installing and Bracing of Metal Plate Connected Wood Trusses: Publication HB
- B. Wood Structural Design Standard: National Design Specification for Wood Construction published by N.F.P.A.
- C. Grading of Lumber: Provide lumber graded by a recognized agency, with rules and service complying with requirements of American Lumber Standards Committee and PS 20. Use only lumber pieces which bear inspection service's grade mark, unless otherwise indicated. (Remove mark during fabrication if necessary).
- D. Truss Fabrication Standard: Quality Control Manual published by TPI.
- E. Fabricator's Qualifications: Minimum of 3 years experience in successful fabrication of trusses comparable to type indicated for this project. The truss manufacturer shall be a member of TPI Inplant Inspection Program or other third party inspection program.
- F. Grade Marks: Identify lumber and plywood by official grade mark.

1.4 REGULATORY REQUIREMENTS

- A. Design and fabricate Wood Trusses under direct supervision of a Professional Engineer experienced in the design of structures, registered in the State of Maryland.
- B. Conform to IBC Code and References.

1.5 REFERENCES: Comply with the applicable requirements

- A. National Bureau of Standards (NBS):
  1. NBS PS\_20 American Softwood Lumber Standard
- B. American Forest and Paper Association
  1. AFPA T03 Span Tables for Joists and Rafters
  2. AFPA T05 Wood Structural Design Data
  3. AFPA T11 Manual for Wood Frame Construction
  4. AFPA T90 National Design Specifications for Wood Construction
- C. National Lumber Grades Authority (NLGA), A Canadian Agency
- D. Truss Plate Institute (TPI):
  1. TPI and Commentary, National Design Standard for Metal Plate Connected Wood Truss Construction.
  2. TPI HB, Handling, Installing and Bracing Metal Plate Connected Wood Trusses.
  3. TPI BWT, Commentary and Recommendations for Bracing Wood Trusses.
  4. TPI DSB, Temporary Bracing of Metal Plate Connected Wood Trusses.
- E. American Society for Testing and Materials (ASTM)
  1. ASTM D-2559-Adhesive used to laminate the veneer of LVL's & PSL's.

1.6 SUBMITTALS

- A. Designing and Engineering Data:
  1. Indicate lumber species and stress grades.
  2. Provide drawings showing configurations, pitch, span and location of trusses.
  3. Provide large scale details of metal connectors at joints and installation anchorages.
  4. Include stress diagrams and engineering calculations.
  5. Include the name and seal of the Professional Engineer (designing the trusses and stairs) on each sheet.
  6. Provide drawings showing risers, treads, member sizes, connectors, etc of all prefabricated stairs and handrails with associated calculations.
- B. Certification:
  1. Indicate products comply with material requirements.
  2. Written certification that truss manufacturer is a member of the TPI Inplant Inspection Program or other third party inspection program.
  3. Written certification that the trusses as fabricated and erected are in complete compliance with the contract drawings and specifications and quality manufacturing standards of TPI.

1.7 PRODUCT HANDLING, DELIVERY AND STORAGE

- A. Handle and store trusses, LVL's and PSL's with care, and in accordance with manufacturer's instructions and TPI recommendations to avoid damage from bending, overturning or other cause for which truss is not designed to resist or endure.
- B. Time delivery and erection of trusses, LVL's and PSL's to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses and LVL's.
- C. Protect from moisture and warpage.

PART 2 – PRODUCTS

2.1 DESIGN LOADS

- A. All floor and roof trusses shall be designed for the following minimum superimposed live and dead loads beyond the self

weight of the structure.

1. Roof Trusses:

- Top Chord:
  - Live Load = 30 psf
  - Drifting Snow per IBC Code
  - Dead Load = 20 psf
  - Dead Load of all mechanical equipment and piping shown on the contract drawings.
  - Wind Load = 90 mph per IBC Code
- Bottom Chord:
  - Attic Live Load = 20 psf
  - Dead Load = 5 psf
  - Dead Load of all mechanical equipment and piping shown on the contract drawings.

- 2. All floor trusses shall be designed so that the maximum live load deflection is less than the span in inches divided by 400 (L/400). All roof trusses shall be designed so that the maximum live load deflection is less than the span in inches divided by 360 (L/360) or 1X whichever is less.

2.4 ACCESSORIES: FASTENERS, METAL CONNECTOR PLATES, AND ANCHORAGES

- A. Connector Plate Material: Metal complying with following requirements, unless otherwise indicated; not less than "0.035" thick, coated thickness (Contractors option if more than one metal indicated).
  1. Galvanized Steel Sheet: ANSI/ASTM A 653, Grade A, Coating G60.
  2. Electrolytic Zinc Coated Steel Sheet: ANSI/ASTM A 591, Coating Class C, with minimum structural quality equivalent to ANSI/ASTM A 653, Grade A.
- B. Fasteners and Anchorages: Provide size, type, material and finish indicated, complying applicable Federal Specifications for nails, screws, bolts, nuts and washers and anchoring devices.

2.5 FABRICATION: WOOD TRUSSES

- A. Cut truss members to accurate lengths, angles and sizes to produce close fitting joints with proper wood\_to\_wood bearing in assembled units.
- B. Fabricate metal connector plates to proper size, configuration, thickness and anchorage details required for type of joint designed.
- C. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly. Position members to produce design camber indicated.
- D. Connect truss members by means of metal connector plates accurately located and securely fastened to wood members.
- E. The Contractor shall submit written verification that wood truss industry documents DSB, HB and BWT have been received, reviewed, and incorporated into this project prior to truss installation. All bracing and related components required by these documents which are not shown on the contract documents shall be added to the project at no change in contract price.

PART 3 – EXECUTION

3.1 INSTALLATION: WOOD TRUSSES

- A. Erect trusses in accord with recommendations of manufacturer and TPI HB. Set with webs vertical (plumb) and parallel to each other, located at design spacings indicated.
- B. Hoist units in place by means of proper lifting equipment suited to sizes and types of trusses required, applied at proper lift points as recommended by fabricator, exercising care not to damage truss members or joints by out\_of\_plane bending or other causes.
- C. Temporarily brace trusses in accordance with TPI DSB and TPI BWT to maintain trusses plumb, parallel and in proper location, until permanent bracing is installed.
- D. Anchor trusses securely at bearing points to comply with design and details indicated.
- E. Install permanent bracing and related components to enable trusses to maintain design (including lateral loads) and spacing, withstand live and dead loads, per HB-91.
- F. Provide 2x6 "strong backs" bracing perpendicular to truss span, not to exceed 7'-0" on center, secured to truss web with 2-10d nails. Where "strong backs" are cut for ductwork, provide additional bracing.
- G. Do not cut or remove truss members.

3.5 INSPECTION

- A. The Owner shall employ and pay for the services of an independent inspection Agency, acceptable to the Structural Engineer, to perform a field review of the installation of the prefabricated wood trusses, LVL's, and PSL's.
- B. Field Inspection shall include but is not limited to the following:
  1. Size, species and layout of all chords and diagonals of the individual wood trusses including all gangnail plate installation.
  2. Inspection of trusses to assure that they have not been mishandled during shipping and erection.
  3. Installation of all permanent and temporary bridging, strut bracing, and stiffbacks required by the contract documents and truss shop drawings.
  4. Size, species and layout of all LVL and PSL units.
  5. Inspection of LVL and PSL units to assure that they have not been mishandled during shipping and erection.
  6. Installation of all permanent connections required by the contract documents and shop drawings.
  7. All other fabrication and erection requirements as stipulated by the Truss Plate Institute.

stipulated by the Truss Plate Institute.

- C. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project. A discussion of all deviations from the contract documents and specifications, with their related impact on the final construction, shall be described in detail. The engineer of record shall review this final report, and recommend corrective measures (as deemed necessary) that must be made prior to final acceptance of the work. Prior to final payment, a written report certifying that the work meets the requirements of the contract documents, specifications, and all governing agencies shall be prepared, submitted, and approved by the Architect.
- D. See spec section 06100 for additional requirements.

SECTION 07900

JOINT SEALANTS

PART 2 – PRODUCTS

2.0 JOINT SEALANTS

- A. Epoxidized polyurethane joint sealant: ASTM C-920, Type S, single component, Grade NS, Class 25, (FS TT-S-00230C, Type II, Class A), movement capability 25 percent extension, 25 percent compression.

1. Manufacturers:

- Tremco – Dymeric
- Pecora Corp. – Dynatrol II
- Sika Chemical Co. – Sikaflex IA
- BASF Chemical Company – Sonalastic NP-1

- 2. Locations: All joints 1" or less in width and not to receive paint except as otherwise indicated.

- B. Non-sag, multi-component, polyurethane joint sealant, ASTM C-920, Type M, two component, Grade NS, Class 25, (FS TT-S-00227E, Type II, Class A), with "Shore A" hardness 25 ±.5 when cured; service temperature range of minus 20 degrees F to plus 100 degrees F, movement capability 25 percent extension, 25 percent compression .

1. Manufacturers:

- Tremco – Dymeric 240
- Pecora Corp. – Dynatrad
- Sika Chemical Co. – Sikaflex 2C-NS
- BASF Chemical Company – Sonalastic NP-2

- 2. Locations: Vertical joints not exceeding 2".
- C. Self-Leveling, multi-component, polyurethane joint sealant, ASTM C-920, Type M, two component, Grade SL, Class 25, (FS TT-S-00227E, Type II, Class A), with "Shore A" hardness 40 ±.5 when cured; service temperature range of minus 20 degrees F to plus 100 degrees F, movement capability 25 percent extension, 25 percent compression .

1. Manufacturers:

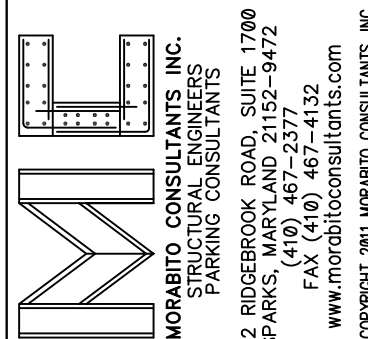
- Tremco – Dymeric 240
- Pecora Corp. – Dynatrad
- Sika Chemical Co. – Sikaflex 2C-SL
- BASF Chemical Company – Sonalastic SL-2

- 2. Locations: Horizontal joints not exceeding 2".

PART 3 – EXECUTION

3.0 JOINT SEALANTS

- A. The surfaces to receive the sealant shall be cleaned of any loose materials, dirt, dust, laitance, etc. Cleaning shall be done by power wire brushing followed by blasting with oil-free compressed air. No cleaning solvents shall be used.
- B. Install extensible epoxy sealant flush with the edges of the adjacent concrete and install polyurethane sealant 1/8" below edges of the adjacent concrete per the manufacturer's recommendations. In areas where the joints have been overfilled, remove excess while still fluid or remove after hardening by grinding.
- C. Follow manufacturer's recommendations covering the proper method of curing the sealant. Prevent any contact with sealant before it has cured.
- D. Make test applications to insure that proper adhesion is being attained. If not, determine what additional steps are needed to provide it.
- E. Following the completion of the work, the Architect shall inspect the joints. Where the smoothness of the joint is determined to be unsatisfactory, the contractor shall grind down the surface of the joint to make it acceptable.



PROFESSIONAL CERTIFICATION #1208  
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed engineer under the laws of the State of Maryland.  
License number: 10290  
Expiration Date: 05/31/12

Choptank Electric Cooperative - Operations Facility  
Renovation & Addition  
to Existing Structure

1118 S. Talbot St., St. Michaels, MD. 21663

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Title:  
Specifications

Date: October 5, 2011  
Scale: As Noted

S15

No.

Issued for Bid - Not for Construction