

Handbook of Structural Details

Abbreviated - First Edition

PDF Format

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By

Atallah Sayegh, P.E.

Axiom Solutions, LLC

www.axiomcpl.com/structural/index.php

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Introduction:

This Abbreviated First Edition Handbook of Structural Details in PDF format is provided to you at no cost by SEL – Structural Engineering Library online portal. This Handbook includes only a partial list of details of what is available online. All structural details in this Handbook have corresponding AutoCAD DWG format drawings that can be purchased online or by membership subscription. You can view all access options here: www.axiomcpl.com/access.php

Over 100 AutoCAD DWG samples and zip files samples are also available and can be downloaded directly by following this link:

www.axiomcpl.com/structural/downloads/sel-download.php

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Drawings Format:

All drawings in this handbook are in PDF format and correspond to AutoCAD drawings in the SEL Library. All drawings in the SEL Library work with AutoCAD/AutoCAD LT 2000 and up which are completely editable and scalable with layers, colors and linetypes.

Disclaimer:

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Handbook of Structural Details For Buildings

First Edition

August 20, 2013

By: Atallah Sayegh, P.E.

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Structural Notes & Schedules

GENERAL NOTES:

All notes hereafter are typically applicable unless otherwise noted on plans, sections or details.

GENERAL:

- GN1. All work shall be in accordance with the [2009] International Building Code.
- GN2. The structure has been designed for the in-service loads only. Contractor shall provide and maintain any temporary bracing, shoring, guying and other methods in order to prevent excessive stresses and hold structural elements true and in place during construction. These provisions shall remain in place at all stages of construction until sufficient permanent members are constructed to insure the safety, stability and integrity of the structure.
- GN3. The shoring and temporary bracing design is the complete responsibility of the Contractor. Temporary bracing and shoring for walls, columns, slabs, beams, girders and trusses shall be adequate to carry the total weight of the structural system and any temporary construction loads to be imposed on the structural system.
- GN4. All work shall be performed without any damage to adjacent retained work. Adequate protection of areas nearby work against dust, dirt and debris accumulation shall be the responsibility of the Contractor and shall be maintained at all times during construction.
- GN5. General Contractor shall review and stamp all shop drawings before submittal for approval and verify their compliance with the Contract Documents.
- GN6. The Contractor shall submit detailed shop drawings for all the structural components of the building including, but not limited to, steel elements, steel joists, steel girders, deck, trusses, reinforcement, anchor bolts, and concrete mix designs. All shop drawings shall be in compliance with the construction documents and specifications.
- GN7. The Contractor shall submit one reproducible set and two copies for review. Shop drawings will be checked for general conformity with the design concept and general compliance with the Contract Documents. The engineer assumes no responsibility for exactness or correctness of quantities, dimensions, details, sequencing or construction means, methods or procedures.
- GN8. The Contractor shall submit product data for proprietary material and items, including forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, and others when requested by the Architect or Structural Engineer.
- GN9. The fabricator shall clearly highlight any changes made in shop drawings which do not comply with the design drawings. Any changes must be approved by the Structural Engineer prior to fabrication.
- GN10. The Contractor shall verify all dimensions and elevations with the architectural plans before starting work.
- GN11. All existing dimensions and elevations shall be verified by the Contractor prior to starting work.
- GN12. See architectural plans for exact dimensions for openings in walls and in roof and floor systems, and exact dimensions and locations for any recessed slab areas. All discrepancies shall be reviewed and verified by the Architect.
- GN13. Openings in the structure are indicated on the contract documents. Refer to the architectural, mechanical, electrical, and plumbing drawings for sleeves, curbs, inserts, etc. not indicated on the structural drawings. Openings in slabs with a maximum side dimension or diameter of 10 inches or less shall not require additional framing or reinforcement, unless noted otherwise. The location of sleeves or openings in structural members shall be approved by the Structural Engineer.
- GN14. Verify all mechanical opening sizes, locations and unit weights with mechanical contractor.
- GN15. The Contractor shall relocate all mechanical piping, ducts, equipment, electrical conduits, wiring and plumbing as indicated which interfere with the proposed construction. Service shall be maintained to all equipment that is served by mechanical, electrical or plumbing conduit being relocated.
- GN16. The Mechanical Contractor shall notify the Structural Engineer of any mechanical unit supported by the structure with unit weight greater than what is shown on the structural drawings and for any other unit not shown on the structural drawings whose unit weight is greater than [---] pounds.
- GN17. The Mechanical Contractor shall verify that all mechanical units supported by the steel framing are capable of spanning the distance between framing supports as shown on the structural drawings. The Mechanical Contractor shall provide any additional framing support as required for each specific unit.
- GN18. Contractor shall verify all mechanical opening sizes and locations and unit weights with the Mechanical Contractor.
- GN19. Contractor shall verify that all hangers and other supports for mechanical, electrical, or plumbing systems, on steel joists, are located at the intersection of the chord and web members. Concentrated loads in excess of [---] pounds must be approved by the Structural Engineer.
- GN20. Splicing of structural steel members where not detailed on the contract documents is strictly prohibited without the prior approval of the Structural Engineer as to location, type of splice and connection to be made. The Contractor shall be responsible for the coordination of such splices.
- GN21. No openings shall be placed in beam or column webs or flanges without Structural Engineer's approval.

GENERAL NOTES

SCALE: 1=1

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NS01.1-02
V1.1

General Structural Notes

DESIGN LOADS:

- DL1. Building Code:
2009 International Building Code
- DL2. Floor Live Loads:
- | | |
|---------------------------------------|---------|
| Classrooms | 40 psf |
| Offices | 50 psf |
| Partitions | 20 psf |
| Balconies (fixed seating) | 50 psf |
| Balconies (movable seating) | 100 psf |
| Corridors and Public areas | 100 psf |
| Stairs | 100 psf |
| Computer Rooms | 100 psf |
| Mechanical Rooms | 125 psf |
| Storage (light) | 125 psf |
| Storage (heavy). | 250 psf |
| Library (reading rooms) | 60 psf |
| Library (stack rooms) | 125 psf |
| Floor Dead Loads | -- psf |
- DL3. Roof Live Load: -- psf
Roof Dead Load: -- psf
- DL4. Roof Snow Load:
- | | |
|--------------------------------------------------|--------|
| Ground Snow Load (P_g): | -- psf |
| Flat-roof Snow Load (P_f): | -- psf |
| Snow Exposure Factor (C_e): | 1.0 |
| Snow Load Importance Factor (I_s): | 1.1 |
| Thermal Factor (C_t): | 1.0 |
- DL5. Wind loads:
- | | |
|--------------------------------------------------------|------------|
| Basic Wind Speed (V_{3s}): | 90 mph |
| Importance Factor (I_w): | 1.15 |
| Building Category: | II |
| Exposure: | C |
| Design Wind Pressure (MWFRS): | -- psf |
| Design Wind Pressure (Walls): | -- psf |
| Internal Pressure Coefficient (GC_{pi}): | ± 0.18 |
- DL6. Seismic:
- | | |
|-------------------------------------------------------|--------------------------------|
| Seismic Use Group: | II |
| Spectral Response Coefficient (S_{DS}): | 0.000 |
| Spectral Response Coefficient (S_{D1}): | 0.000 |
| Seismic Design Category: | C |
| Site Class: | D |
| Importance Factor (I_E): | 1.25 |
| Basic Seismic Force Resisting System: | Reinforced Masonry Shear Walls |
| Response Modification Coefficient (R): | 0.0 |
| Design Base Shear (V): | 0.000W |
| Analysis Procedure: | Equivalent Lateral Force |
- DL7. Soil Information:
- | | |
|-------------------------------------------|--------------------------|
| Allowable net bearing pressure: | ---- psf (Columns) |
| Allowable net bearing pressure: | ---- psf (Wall Footings) |
| Unit weight of soil: | --- pcf |
| Lateral earth pressure coeff.: | --- |
| Equivalent fluid pressure: | -- pcf |

DESIGN LOADS

SCALE: 1=1

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Design Loads

FOUNDATION/SLAB PLAN NOTES:

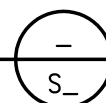
1. SEE SHEET (S_) FOR GENERAL NOTES.
2. SEE SHEET (S_) FOR FOUNDATION AND SLAB DETAILS.
3. SEE SHEET (S_) FOR FOOTINGS AND COLUMN SCHEDULE.
4. FINISH FLOOR ELEVATION IS (X'-X") ALL ELEVATIONS ARE DIMENSIONED ABOVE OR BELOW THIS ELEVATION.
5. TOP OF EXTERIOR FOOTING ELEVATION = (X'-X") U.N.O.
6. TOP OF INTERIOR FOOTING ELEVATION = (X'-X") U.N.O.
7. TOP OF CONCRETE PIER ELEVATION = (X'-X") U.N.O.
8. WF- DENOTES WALL FOOTING, SEE PLAN AND WALL FOOTING SCHEDULE ON SHEET (S_).
9. C- DENOTES COLUMN, SEE PLAN AND COLUMN SCHEDULE ON SHEET (S_).
10. F- DENOTES SPREAD FOOTING, SEE PLAN AND FOOTING SCHEDULE ON SHEET (S_).
11. P- DENOTES CONCRETE PIER, SEE PLAN AND PIER SCHEDULE ON SHEET (S_).
12. SEE SITE AND CIVIL PLANS FOR ALL FINAL GRADE ELEVATIONS AND ALL EXTERIOR CONCRETE SIDEWALKS.
13. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND LOCATIONS OF ANY SLAB RECESSES.
14. SEE GEOTECHNICAL REPORT FOR ALL REQUIREMENTS FOR UNDER SLAB PREPARATION.
15. SEE GEOTECHNICAL REPORT FOR ESTIMATED UNDERCUTTING, BACKFILLING AND STRUCTURAL COMPACTED FILL REQUIREMENTS. FOOTINGS TO BEAR ON STIFF NATURAL SOILS OR STRUCTURAL COMPACTED FILL AS DESCRIBED IN SOIL REPORT. FOR GRADE ELEVATIONS, SEE SITE PLAN.
16. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR REQUIREMENTS, DIMENSIONS AND EXACT LOCATIONS OF FLOOR DRAINS, TRENCHES, PUMPS, AND EQUIPMENT INCLUDING ANCHORING SYSTEMS, AND HOUSEKEEPING CONCRETE PADS. CONTRACTOR TO COORDINATE ALL OF THE ABOVE ITEMS WITH MECHANICAL AND ELECTRICAL.
17. B.L.E. = BRICK LEDGE ELEVATION. B.L.E. = (X'-X") U.N.O.
18. ALL MASONRY WALL ON SLABS SHALL HAVE THICKENED SLABS, SEE SECTION () ON SHEET (S_).

FOUNDATION/SLAB PLAN NOTES

SCALE: 1=1

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NS02.1-01

V1.1



AUGER CAST PILE SCHEDULE

PILE MARK	PILE DIAMETER	DESIGN LENGTH	VERTICAL PILE STEEL	CENTER BAR	TIES	REMARKS
P12	12"	X'-X"	4-#X	1-#X	#X AT XX" O.C.	-
P14	14"	X'-X"	4-#X	1-#X	#X AT XX" O.C.	
P16	16"	X'-X"	6-#X	1-#X	#X AT XX" O.C.	
P18	18"	X'-X"	6-#X	1-#X	#X AT XX" O.C.	
P20	20"	X'-X"	8-#X	1-#X	#X AT XX" O.C.	
P24	24"	X'-X"	8-#X	1-#X	#X AT XX" O.C.	
P30	30"	X'-X"	8-#X	1-#X	#X AT XX" O.C.	
P36	36"	X'-X"	12-#X	1-#X	#X AT XX" O.C.	

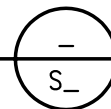
NOTES:

AUGER CAST PILE SCHEDULE

SCALE: 1=1

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NS04.1-02
V1.1



[Auger Cast Pile Schedule](#)

CONCRETE COLUMN SCHEDULE

MARK	DETAIL	SIZE		VERT. BARS	TIES			REMARKS
		WIDTH	DEPTH		SIZE	SPACING	TYPE	
CC12X12	-/S-	12"	12"	4-#X	#X	@ XX" o.c.	X	
CC14X14		14"	14"	4-#X	#X	@ XX" o.c.		
CC16X16		16"	16"	4-#X	#X	@ XX" o.c.		
CC18X18		18"	18"	4-#X	#X	@ XX" o.c.		
CC20X20		20"	20"	8-#X	#X	@ XX" o.c.		
CC22X22		22"	22"	8-#X	#X	@ XX" o.c.		
CC24X24		24"	24"	8-#X	#X	@ XX" o.c.		
CC26X26		26"	26"	8-#X	#X	@ XX" o.c.		
CC28X28		28"	28"	8-#X	#X	@ XX" o.c.		
CC30X30		30"	30"	12-#X	#X	@ XX" o.c.		

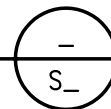
NOTES:

CONCRETE COLUMN SCHEDULE

SCALE: 1=1

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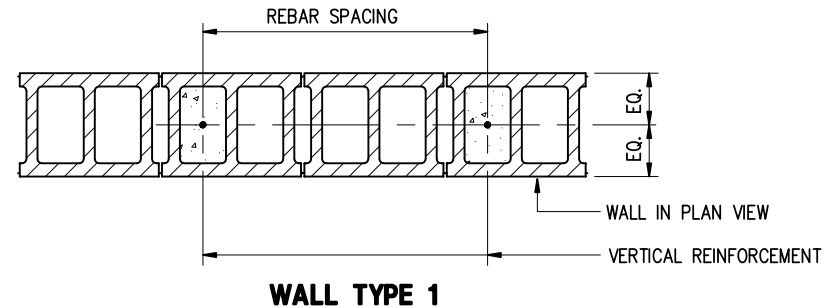
[Concrete Column Schedule](#)

MASONRY WALL SCHEDULE

WALL MARK	CMU WALL THICKNESS	VERTICAL REINFORCING		TYPE	REMARKS
		SIZE	SPACING		
MW1	8"	#X	@ 16" o.c.	1	
MW2	8"	#X	@ 24" o.c.	1	
MW3	8"	#X	@ 32" o.c.	1	
MW4	8"	#X	@ 40" o.c.	1	
MW5	8"	#X	@ 48" o.c.	1	
MW6	12"	#X	@ 16" o.c.	1	
MW7	12"	#X	@ 24" o.c.	1	
MW8	12"	#X	@ 32" o.c.	1	

NOTES:

1. SP – INDICATES MASONRY WALLS WHICH REQUIRE SPECIAL MASONRY INSPECTION.
2. ALL REINFORCED WALLS TO HAVE BOND BEAMS AT FLOOR LINES, ROOF LINES, AT TOP OF WALLS AND AT TOP OF PARAPETS.
3. SEE STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIRED HORIZONTAL JOINT REINFORCING, BOND BEAMS AND ADDITIONAL VERTICAL REINFORCEMENT.
4. PROVIDE DOWELS WITH HOOKS INTO FOUNDATION AT ALL VERTICAL REINFORCEMENT. DOWELS TO MATCH VERTICALS IN SIZE AND SPACING.
5. ALL CELLS CONTAINING VERTICAL REINFORCEMENT SHALL BE SOLID GROUTED FULL HEIGHT.



SINGLY REINFORCED WALLS

MASONRY WALL SCHEDULE

SCALE: 1=1

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NS06.1-02
V1.1



STEEL COLUMN SCHEDULE

MARK	BOTTOM OF BASE PL.	BASE PLATE	DETAIL	COLUMN SIZE	REMARKS
C1	X'-X"	_ " x _ " x _'-_ "	BP_	W_x_	(X)-X/X" DIA. A.B.'s x X'-X"
C2			BP_	W_x_	
C3			BP_	W_x_	
C4			BP_	W_x_	
C5			BP_	W_x_	
C6			BP_	HSS_x_x_	
C7			BP_	HSS_x_x_	
C8			BP_	HSS_x_x_	
C9			BP_	HSS_x_x_	
C10			BP_	HSS_x_x_	

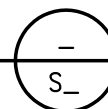
NOTES:

STEEL COLUMN SCHEDULE

SCALE: 1=1

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NS07.1-01

V1.1



[Steel Column Schedule](#)

WOOD BEAM SCHEDULE

MARK	BEAM SIZE	TYPE	BEAM ELEVATION	REMARKS
WB1	(2)-2x8	X	X'-X"	
WB2	(3)-2x8			
WB3	(2)-2x10			
WB4	(3)-2x10			
WB5	(4)-2x10			
WB6	(2)-2x12			
WB7	(3)-2x12			
WB8	(4)-2x12			
WB9	(2)-1 3/4" x 9 1/2" LVL			
WB10	(3)-1 3/4" x 9 1/2" LVL			
WB11	(2)-1 3/4" x 11 7/8" LVL			
WB12	(3)-1 3/4" x 11 7/8" LVL			
WB13	(2)-1 3/4" x 14" LVL			
WB14	(3)-1 3/4" x 14" LVL			
WB15	(4)-1 3/4" x 14" LVL			
WB16	(2)-1 3/4" x 16" LVL			
WB17	(3)-1 3/4" x 16" LVL			
WB18	(4)-1 3/4" x 16" LVL			
WB19	(2)-1 3/4" x 18" LVL			
WB20	(3)-1 3/4" x 18" LVL			
WB21	(4)-1 3/4" x 18" LVL			

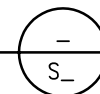
NOTES:

WOOD BEAM SCHEDULE

SCALE: 1=1

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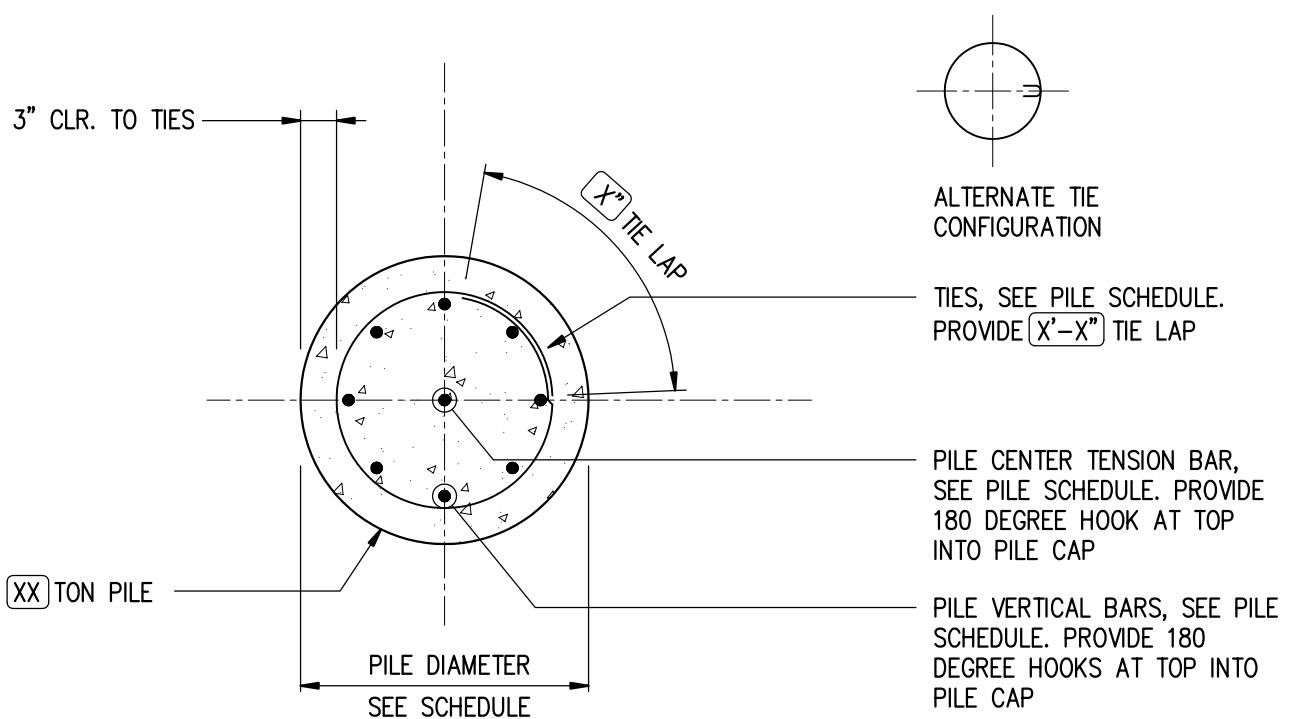


NS08.1-02
V1.1



Wood Beam Schedule

Deep Foundation Details

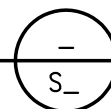


GENERAL AUGER CAST PILE

SCALE: 3/4" = 1'-0"

Disclaimer note

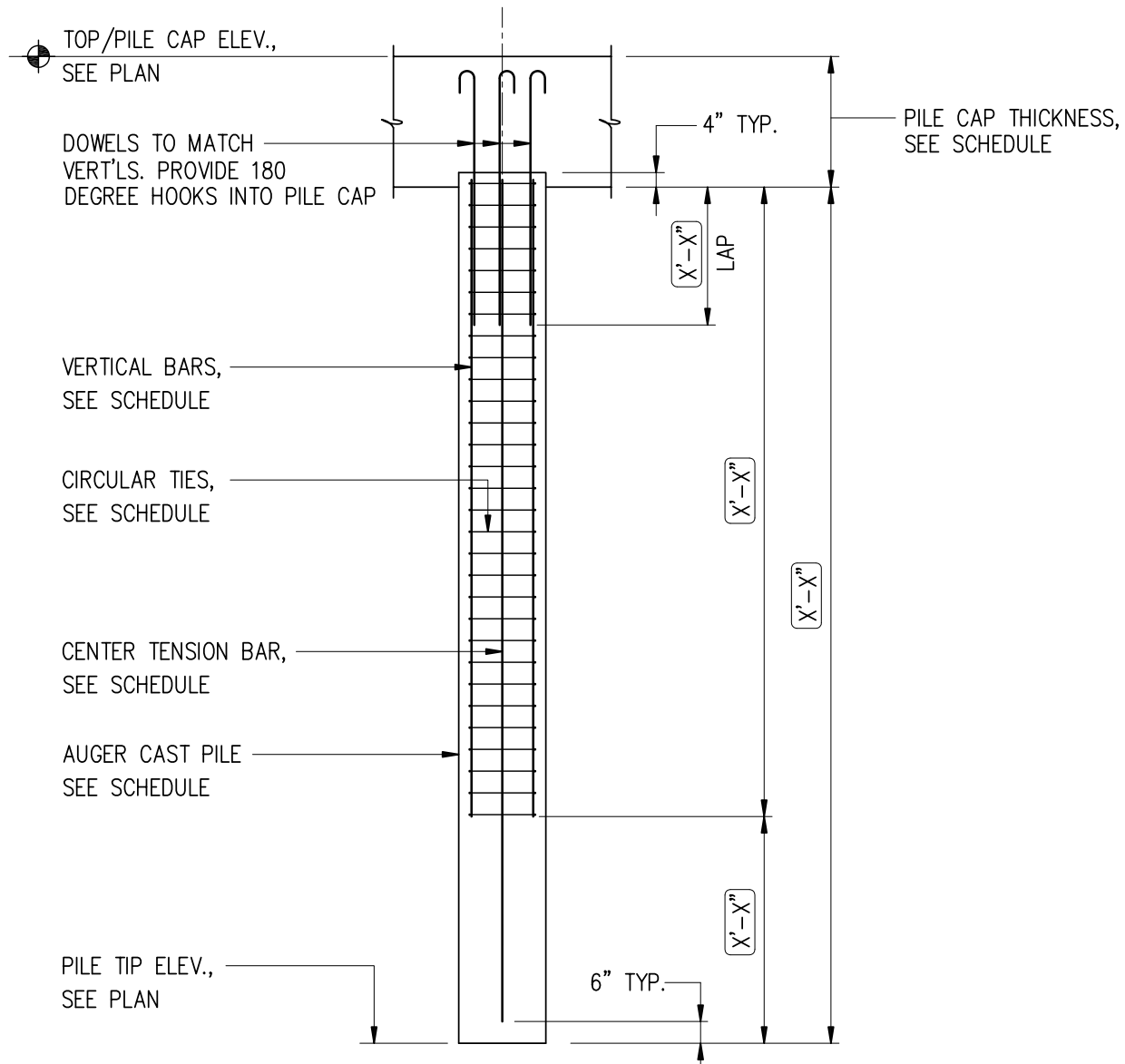
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FD01.1-01
V1.1



Auger Cast Pile Detail

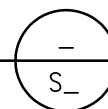


GENERAL AUGER CAST PILE PROFILE

SCALE: 1/4" = 1'-0"

Disclaimer note

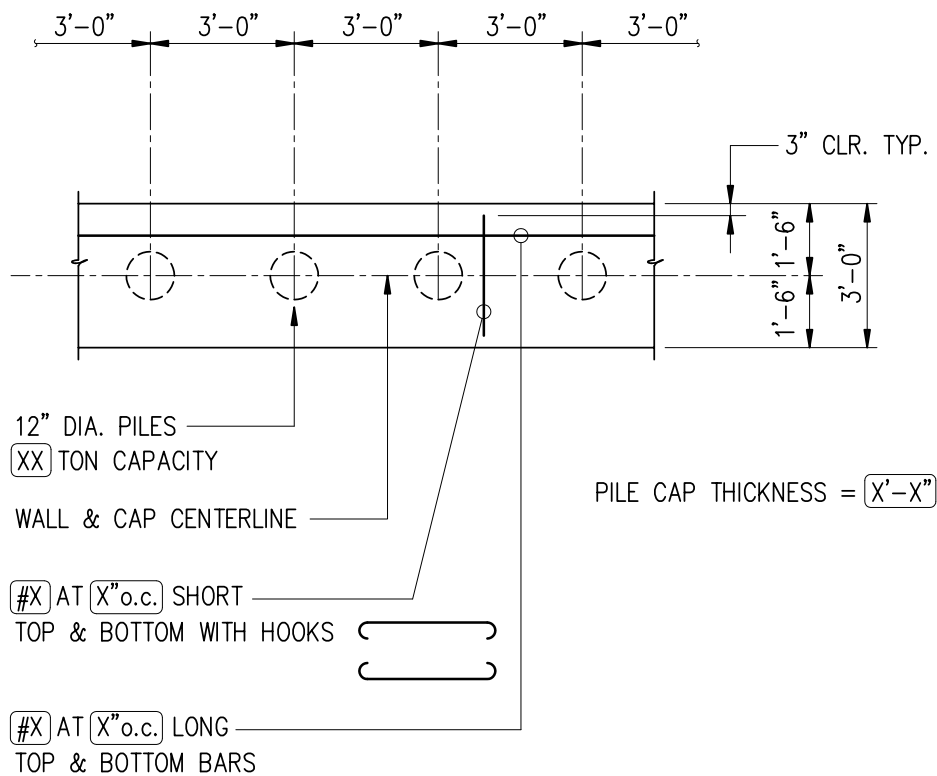
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FD01.2-01
V1.1



Auger Cast Pile Profile

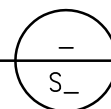


WALL LINE PILE CAP - 12" DIA. @ 3xd

SCALE: 1/4" = 1'-0"

Disclaimer note

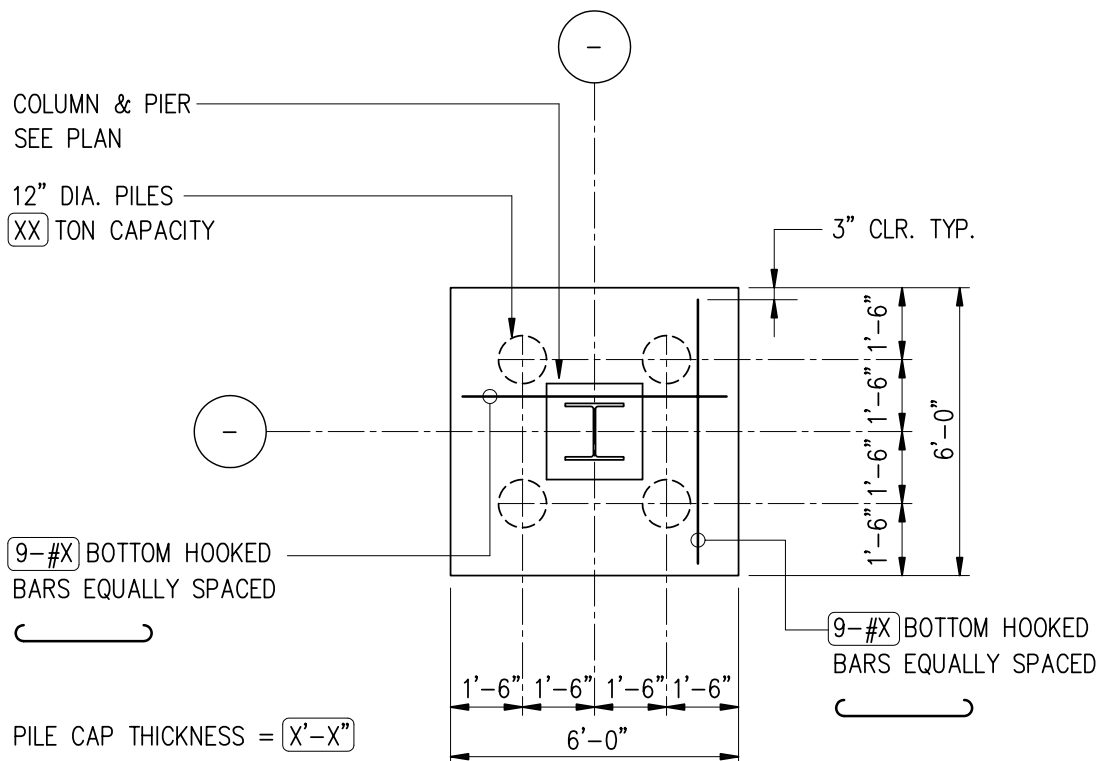
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FD02.1-01
V1.1



[Wall Line Pile Cap With 12" Diameter Piles](#)

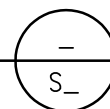


PC4 - 12" DIAMETER PILES @ 3Xd

SCALE: 1/4" = 1'-0"

Disclaimer note

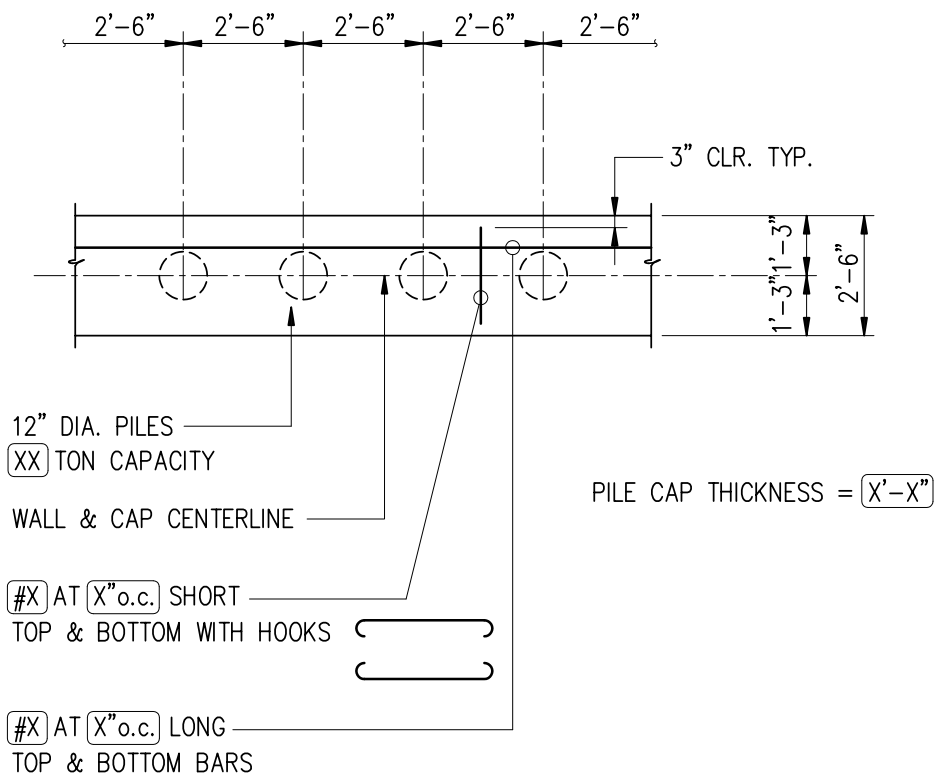
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FD02.1-06
V1.1



PC4 Pile Cap With 12" Diameter Piles

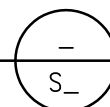


WALL LINE PILE CAP - 12" DIA. @ 2.5xd

SCALE: 1/4" = 1'-0"

Disclaimer note

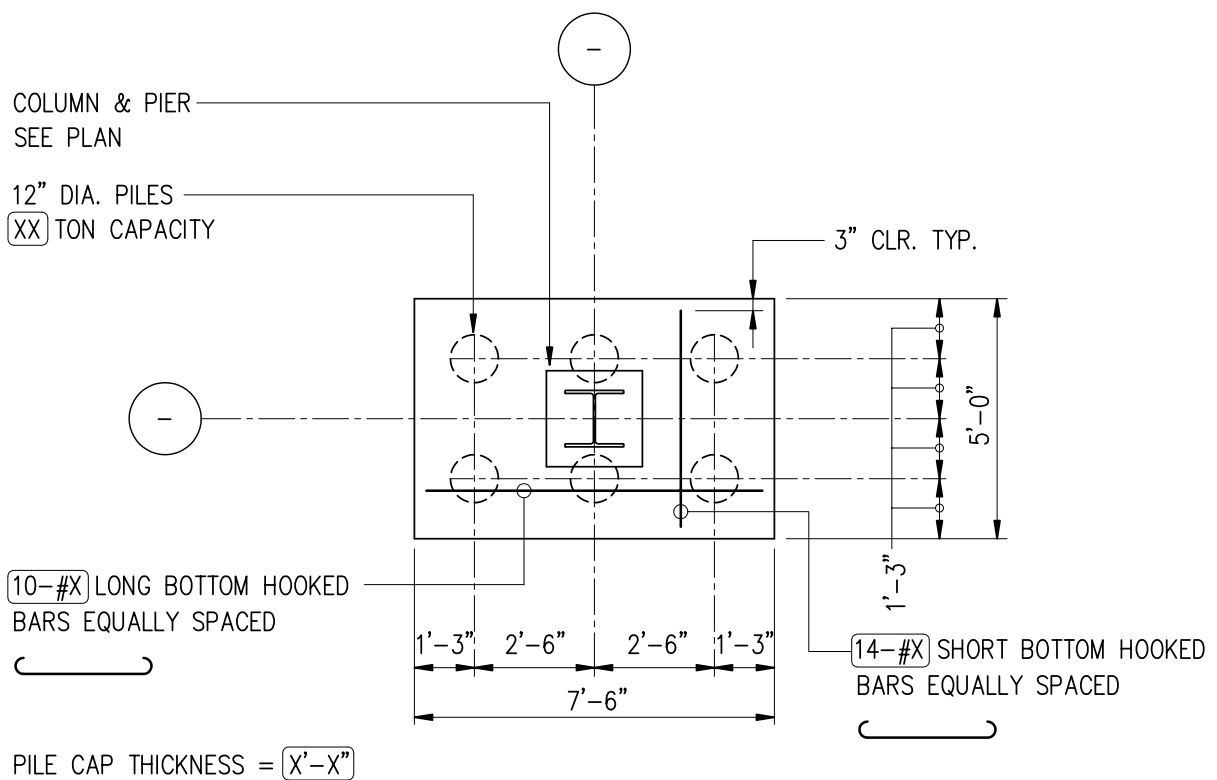
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FD03.1-01
V1.1



[Wall Line Pile Cap With 12" Diameter Piles](#)

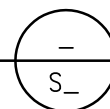


PC6 - 12" DIAMETER PILES @ 2.5Xd

SCALE: 1/4" = 1'-0"

Disclaimer note

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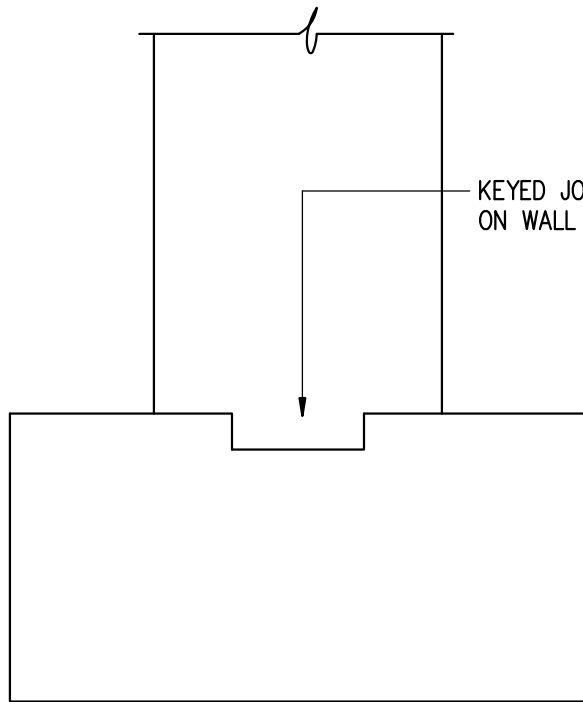


FD03.1-08
V1.1

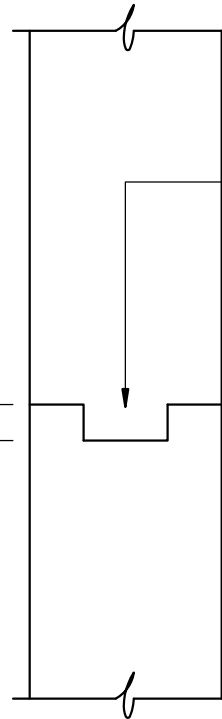
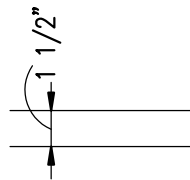


PC6 Pile Cap With 12" Diameter Piles

General Foundation Details



KEYED JOINT CENTERED
ON WALL AND FOOTING



KEYED JOINT
CENTERED ON WALL

JOINT AT FOOTING

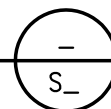
JOINT IN WALL

TYPICAL RECESSED KEYED JOINTS

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

Disclaimer note

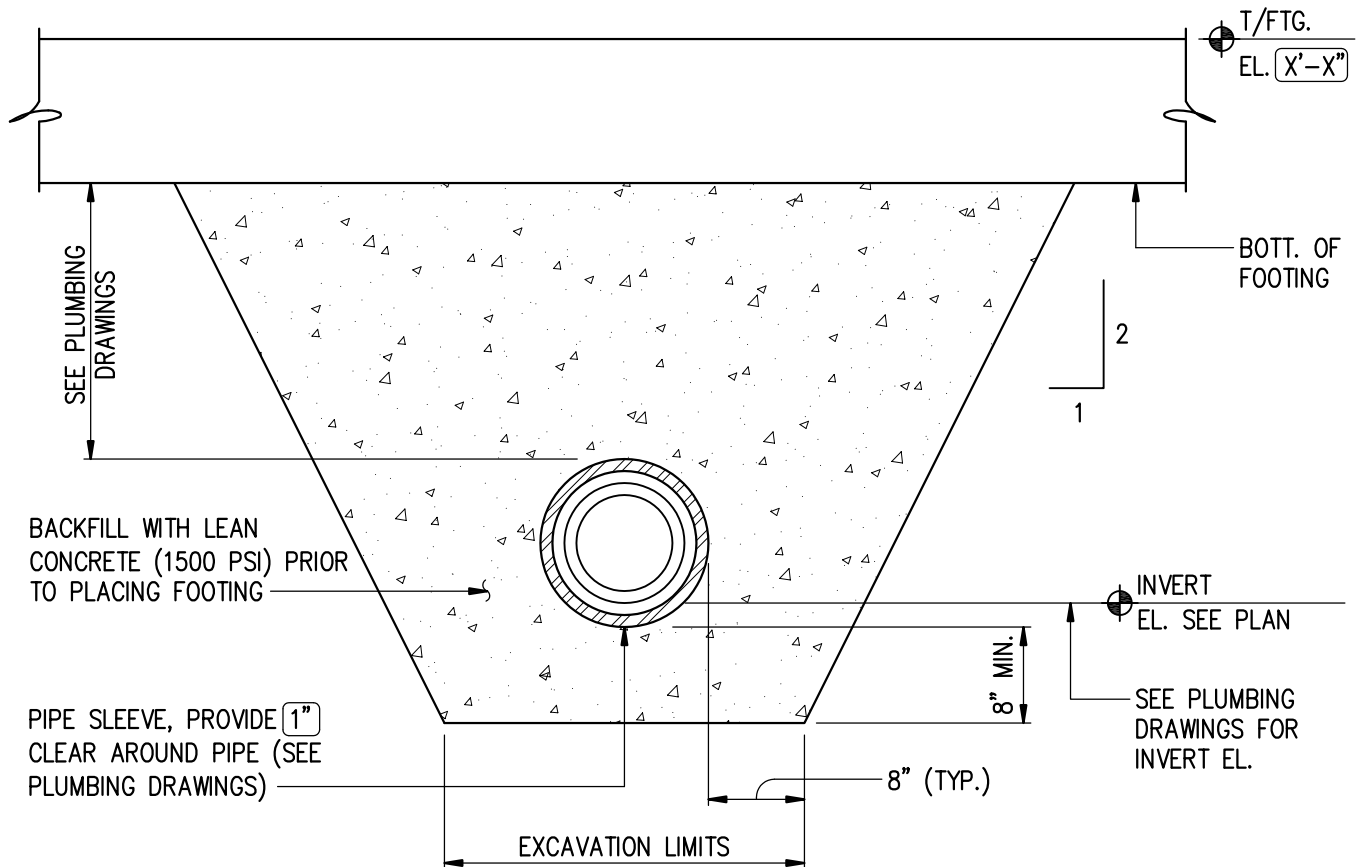
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FG01.1-01
V1.1



[Typical Recessed Keyed Joints](#)



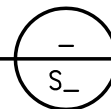
NO PIPES SHALL BE ALLOWED TO PASS THRU OR UNDER COLUMN FOOTINGS. ALL PIPES SHALL BE INSTALLED AWAY FROM COLUMN FOOTINGS AND PRIOR TO CONSTRUCTION OF WALL FOOTING.

TYPICAL PIPE BACKFILL AT FOOTING

SCALE: 3/4" = 1'-0"

Disclaimer note

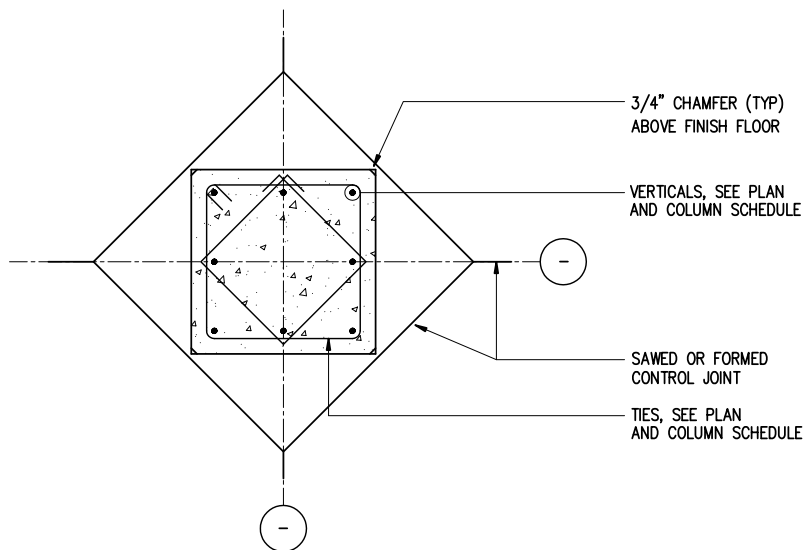
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FG01.5-01
V1.1

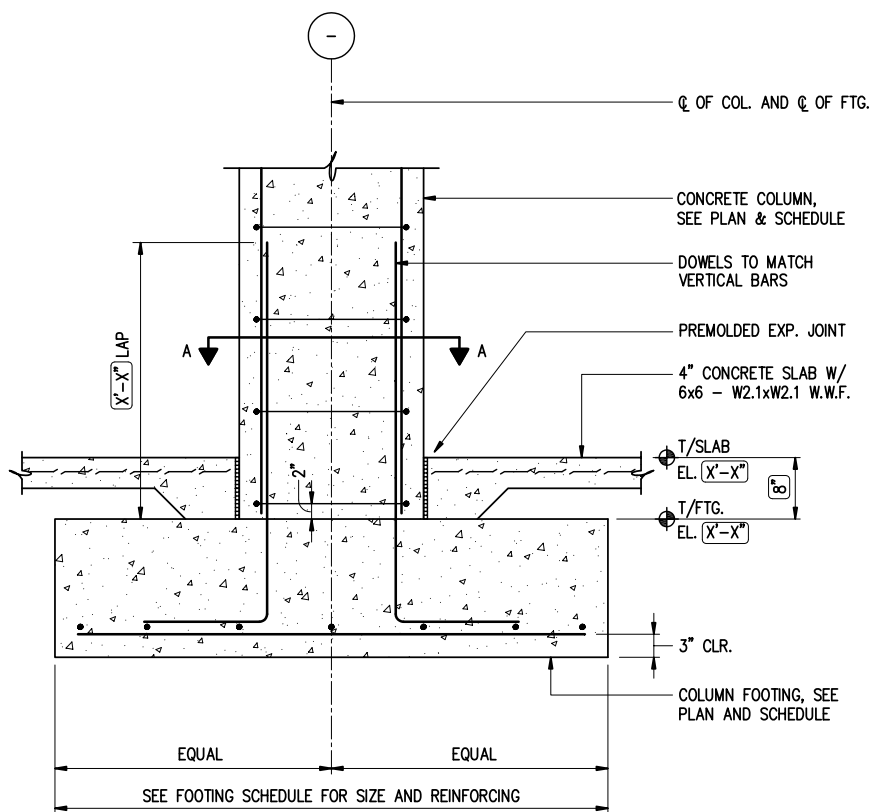


Typical Pipe Backfill At Footing



SECTION A-A

3/4" = 1'-0"



SEE SOIL REPORT FOR PROPER PREPARATION AND COMPACTION UNDER SLAB AND/OR FOOTING

FOOTING AT CONCRETE COLUMN

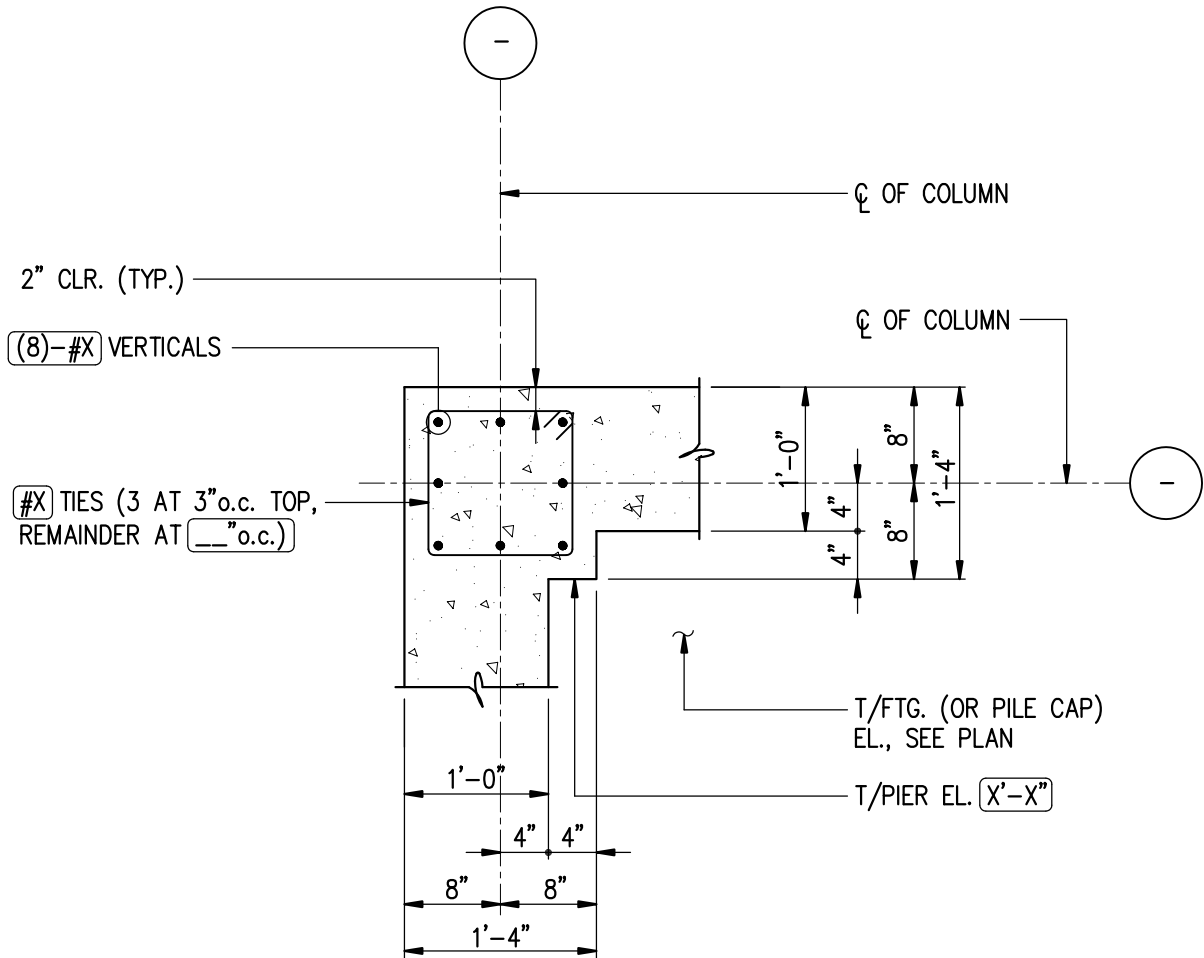
SCALE: 3/4" = 1'-0"

Disclaimer note

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FG02.0-02
V1.1

Footing At Concrete Column

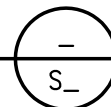


DETAIL AT COLUMN PIER P-

SCALE: 3/4" = 1'-0"

Disclaimer note

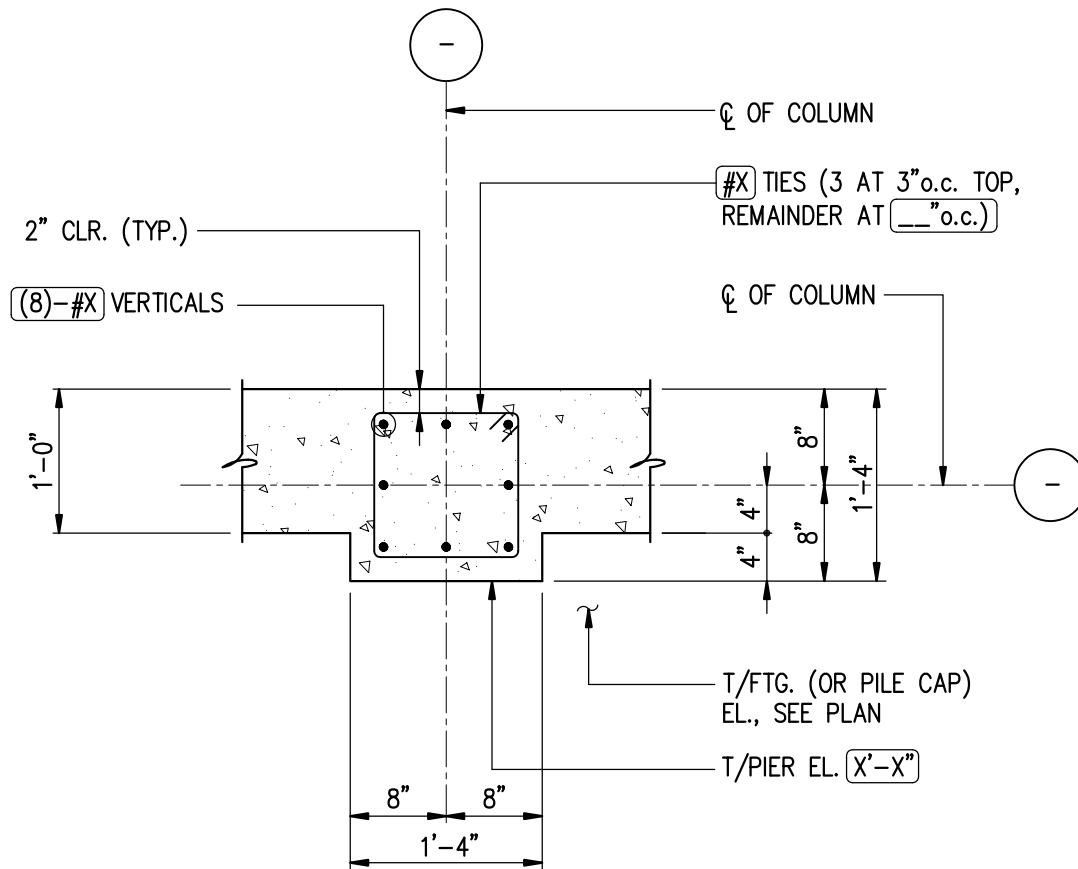
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FG04.0-01
V1.1



Detail At Corner Column Pier

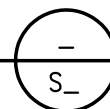


DETAIL AT COLUMN PIER P-

SCALE: 3/4" = 1'-0"

Disclaimer note

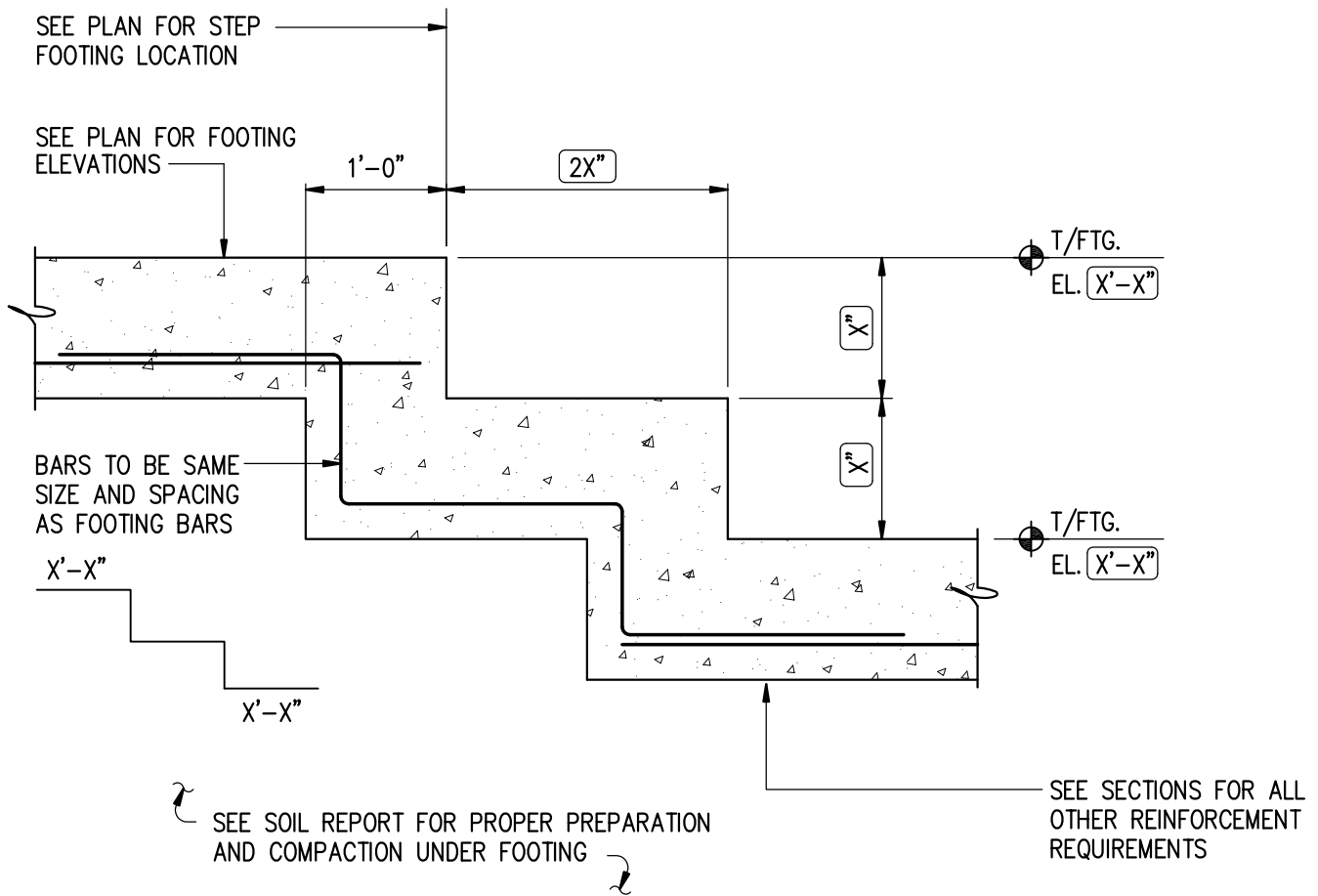
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FG04.0-02
V1.2



[Detail At Middle Column Pier](#)

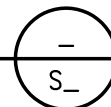


STEP FOOTING DETAIL

SCALE: 3/4" = 1'-0"

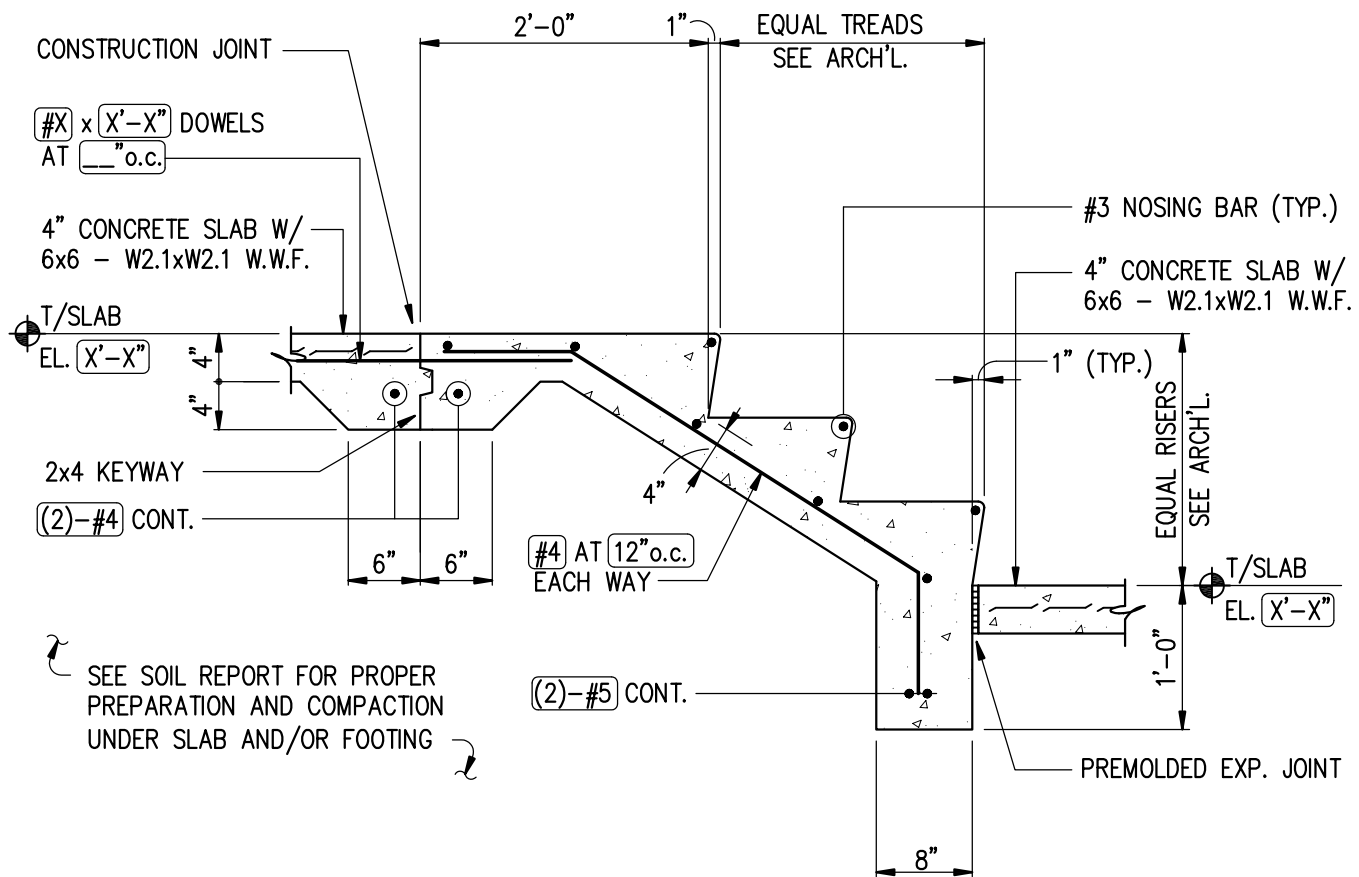
Disclaimer note

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FG05.1-02	
V1.1	

[Step Footing Detail](#)

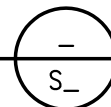


TYPICAL INTERIOR STAIRS

SCALE: $3/4" = 1'-0"$

Disclaimer note

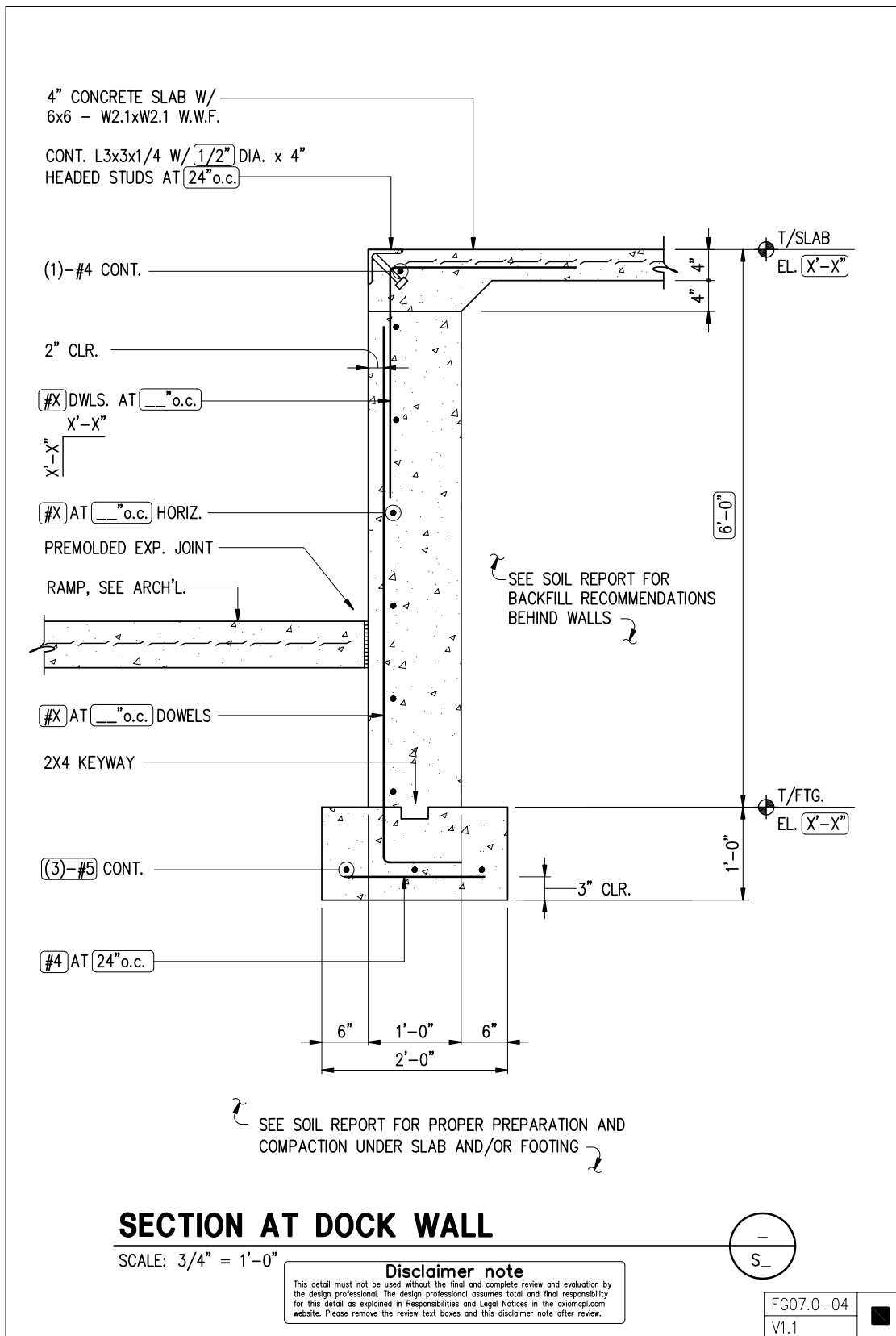
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



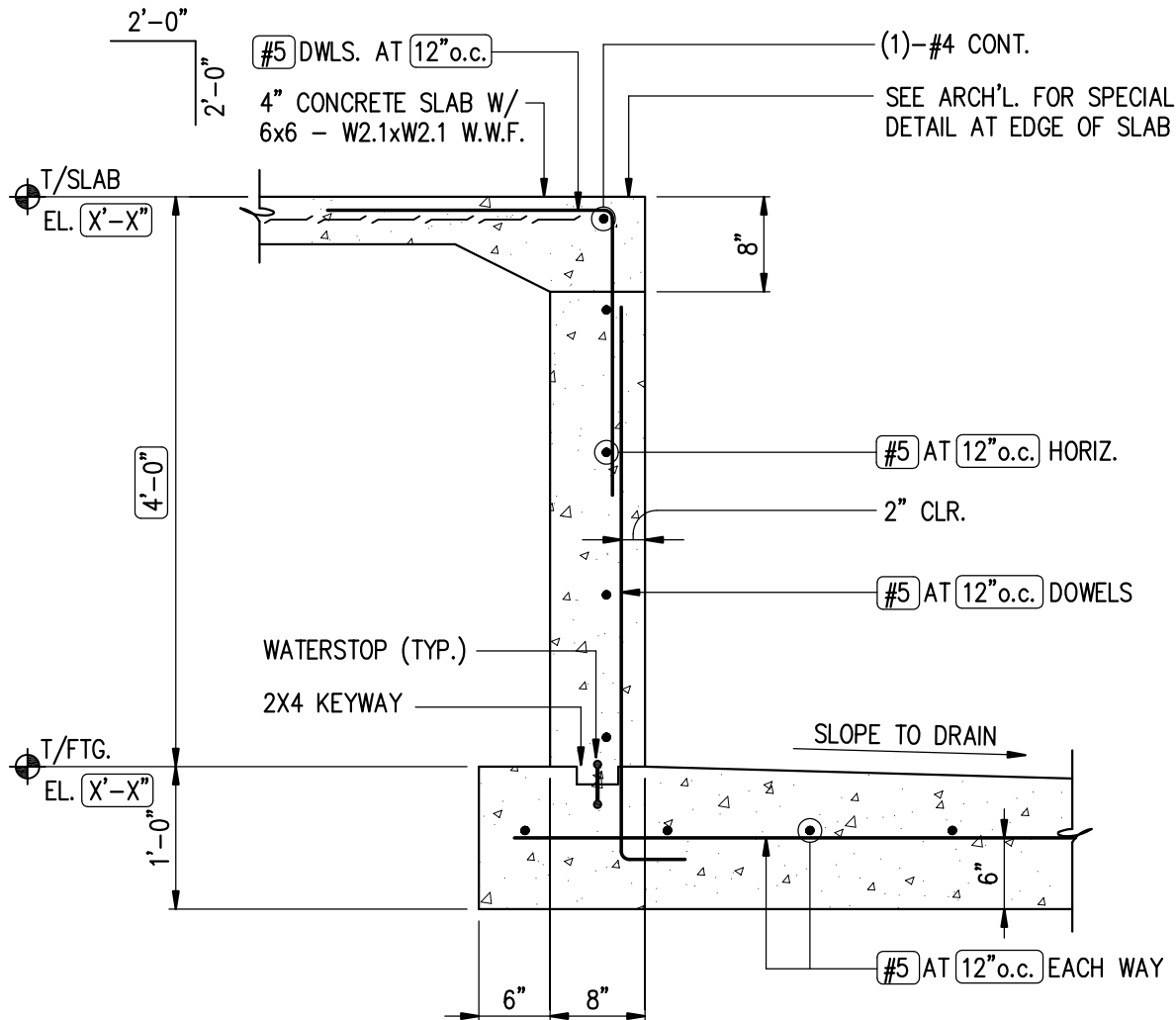
FG06.1-02
V1.1



Typical Interior Stairs Detail



Section At Dock Wall



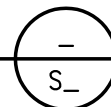
SEE SOIL REPORT FOR PROPER PREPARATION AND
COMPACTION UNDER SLAB AND/OR FOOTING

SECTION AT ELEVATOR PIT

SCALE: 3/4" = 1'-0"

Disclaimer note

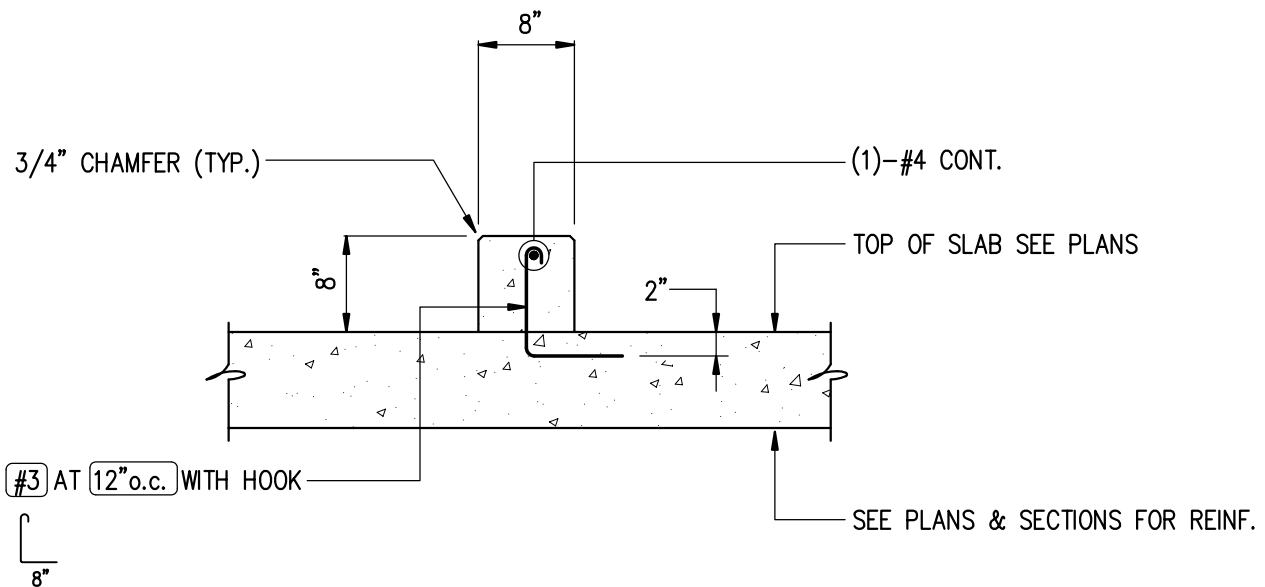
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FG09.0-01
V1.1



Section At Elevator Pit

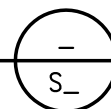


SECTION AT CURB

SCALE: 3/4" = 1'-0"

Disclaimer note

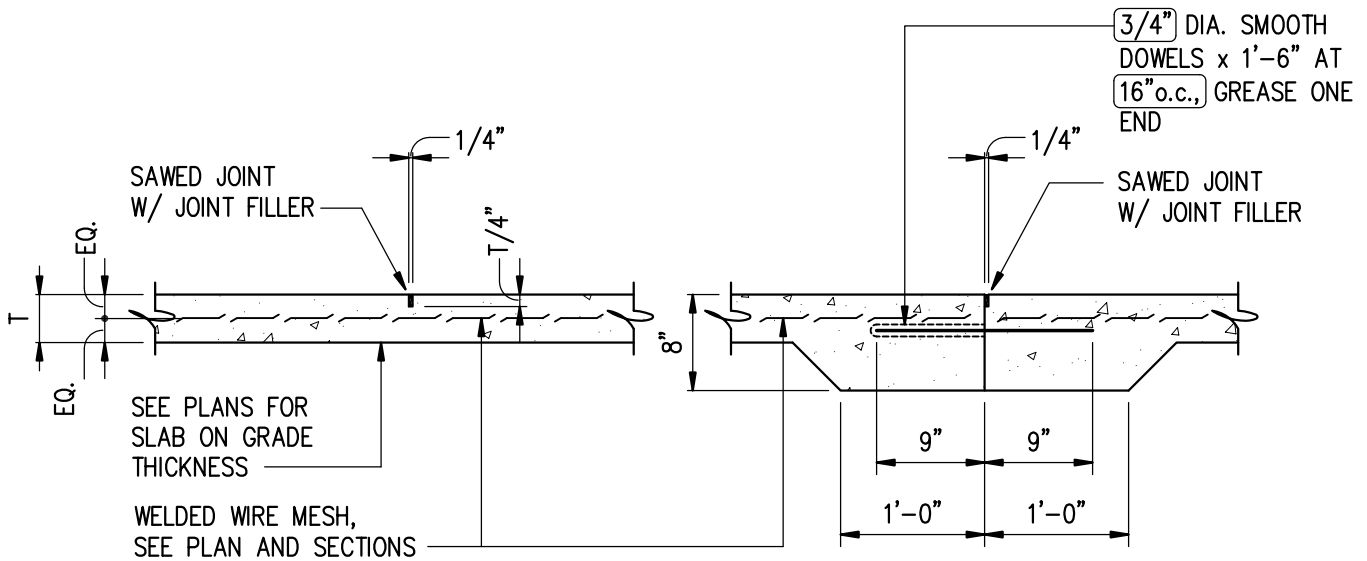
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FG10.1-02
V1.1



Section At Concrete Curb



CONTROL JOINT

CONSTRUCTION JOINT

NOTES:

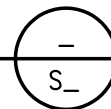
1. JOINTS TO BE PLACED TO FORM APPROXIMATE SQUARE PANELS.
2. JOINTS FOR INTERIOR SLABS ON GRADE WITH WELDED WIRE MESH.
3. SEE SOIL REPORT FOR PROPER PREPARATION AND COMPACTION UNDER SLAB.

TYPICAL SLAB JOINT DETAILS

SCALE: 3/4" = 1'-0"

Disclaimer note

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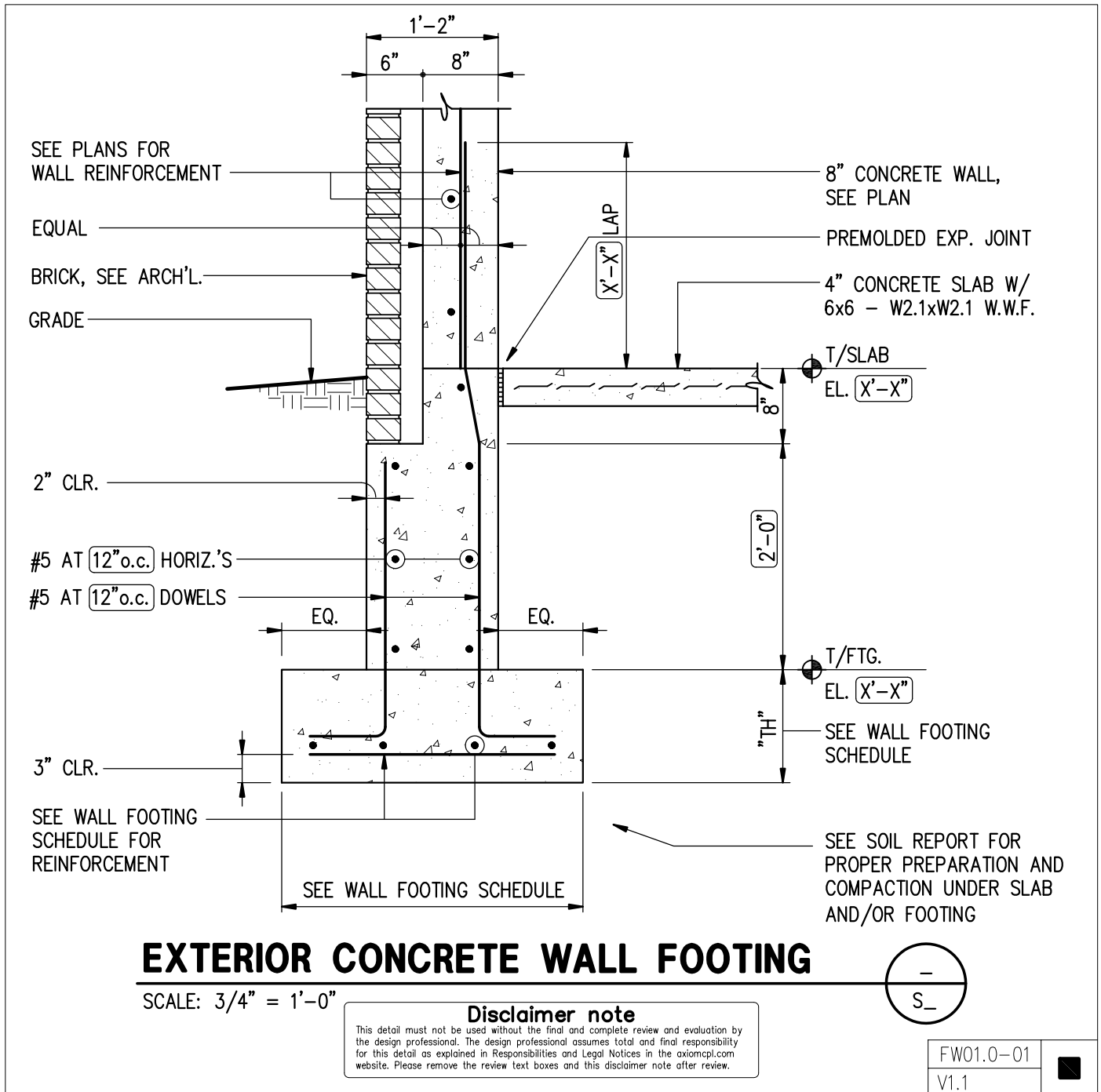
FG12.0-02

V1.1

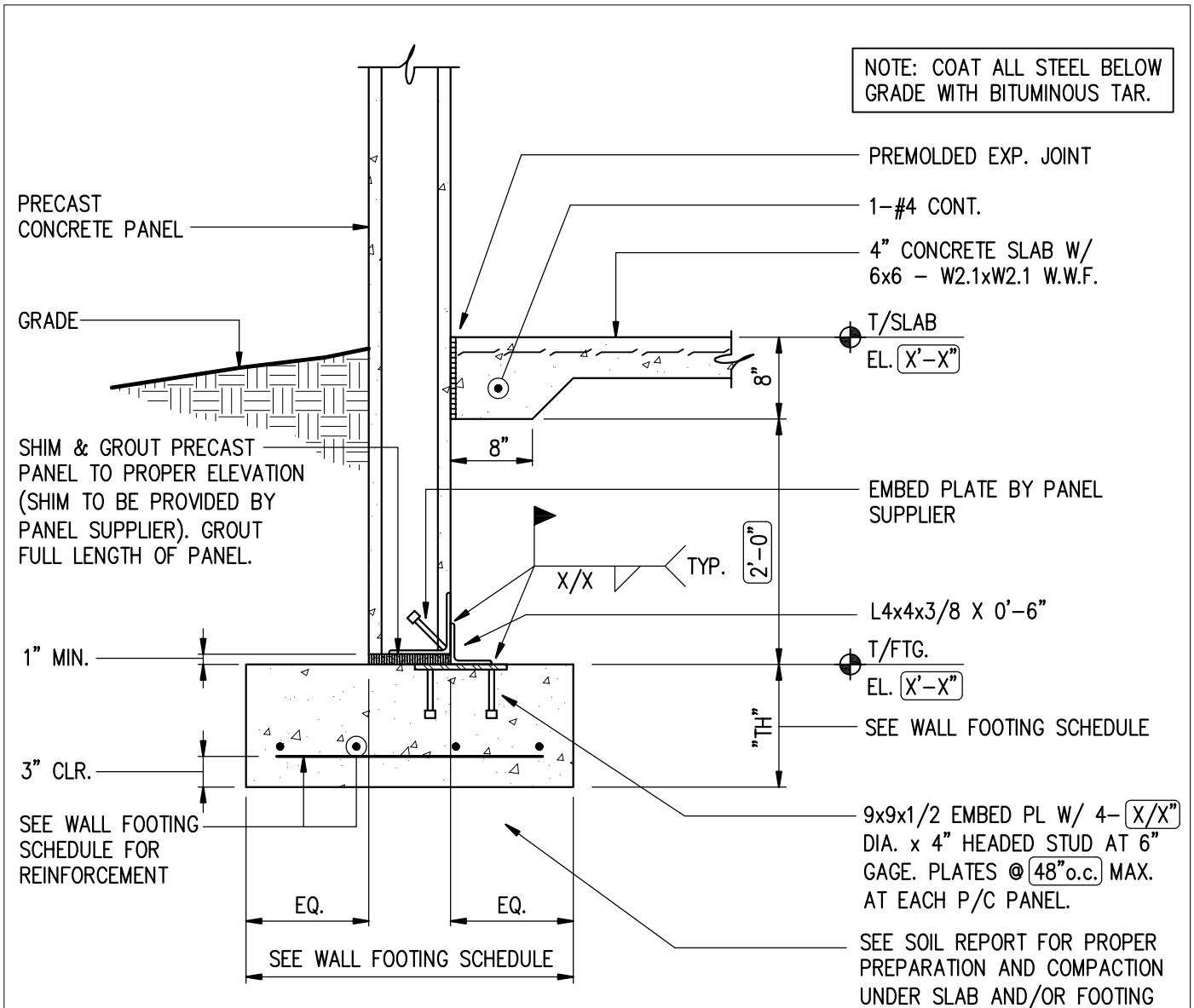


Typical Slab Joint Details

Wall Footing Details



Exterior Concrete Wall Footing

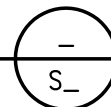


PRECAST CONCRETE WALL FOOTING

SCALE: 3/4" = 1'-0"

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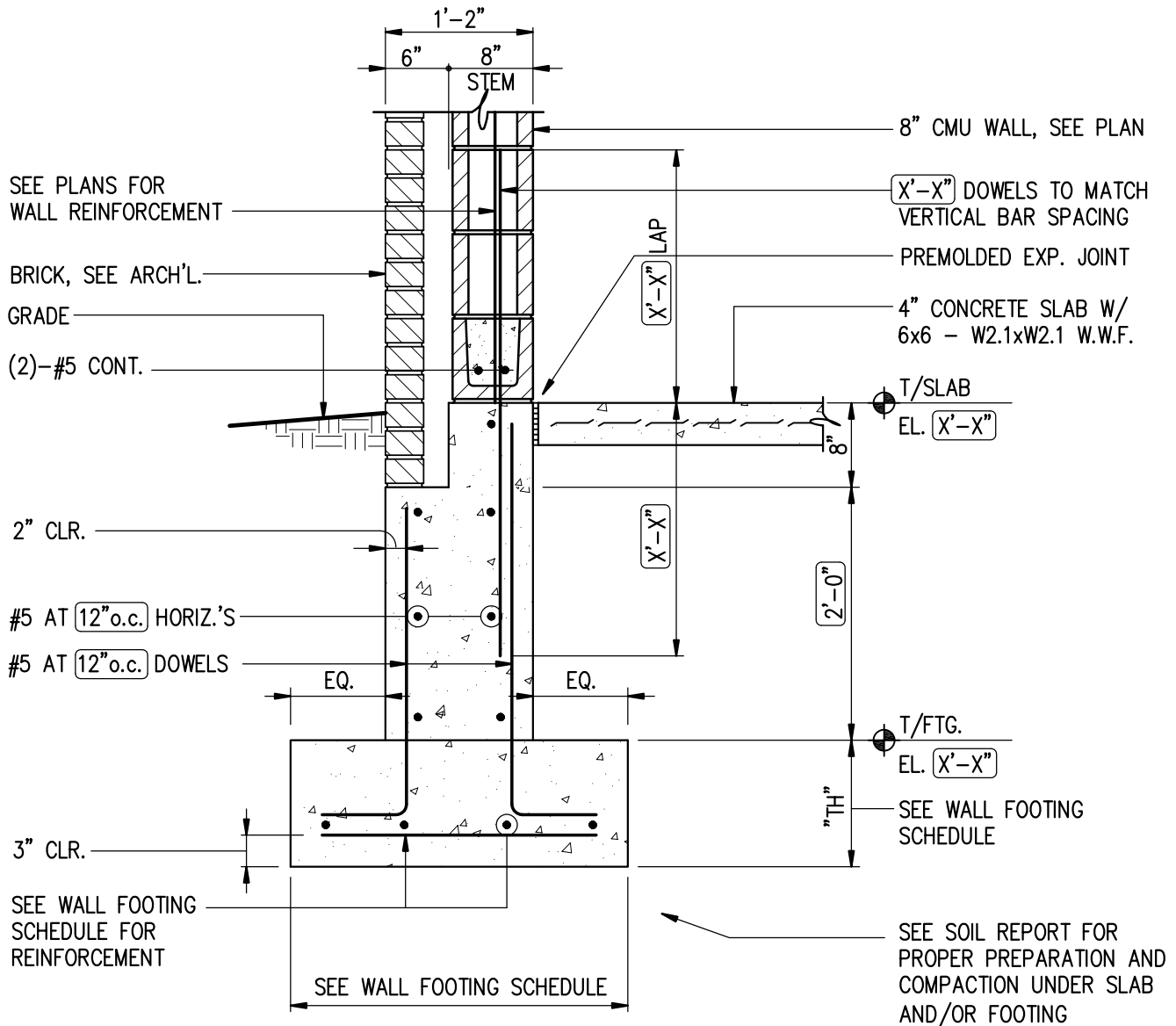


FW02.0-01

V1.1



Exterior Precast Concrete Wall Footing

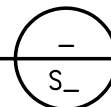


EXTERIOR MASONRY WALL FOOTING

SCALE: 3/4" = 1'-0"

Disclaimer note

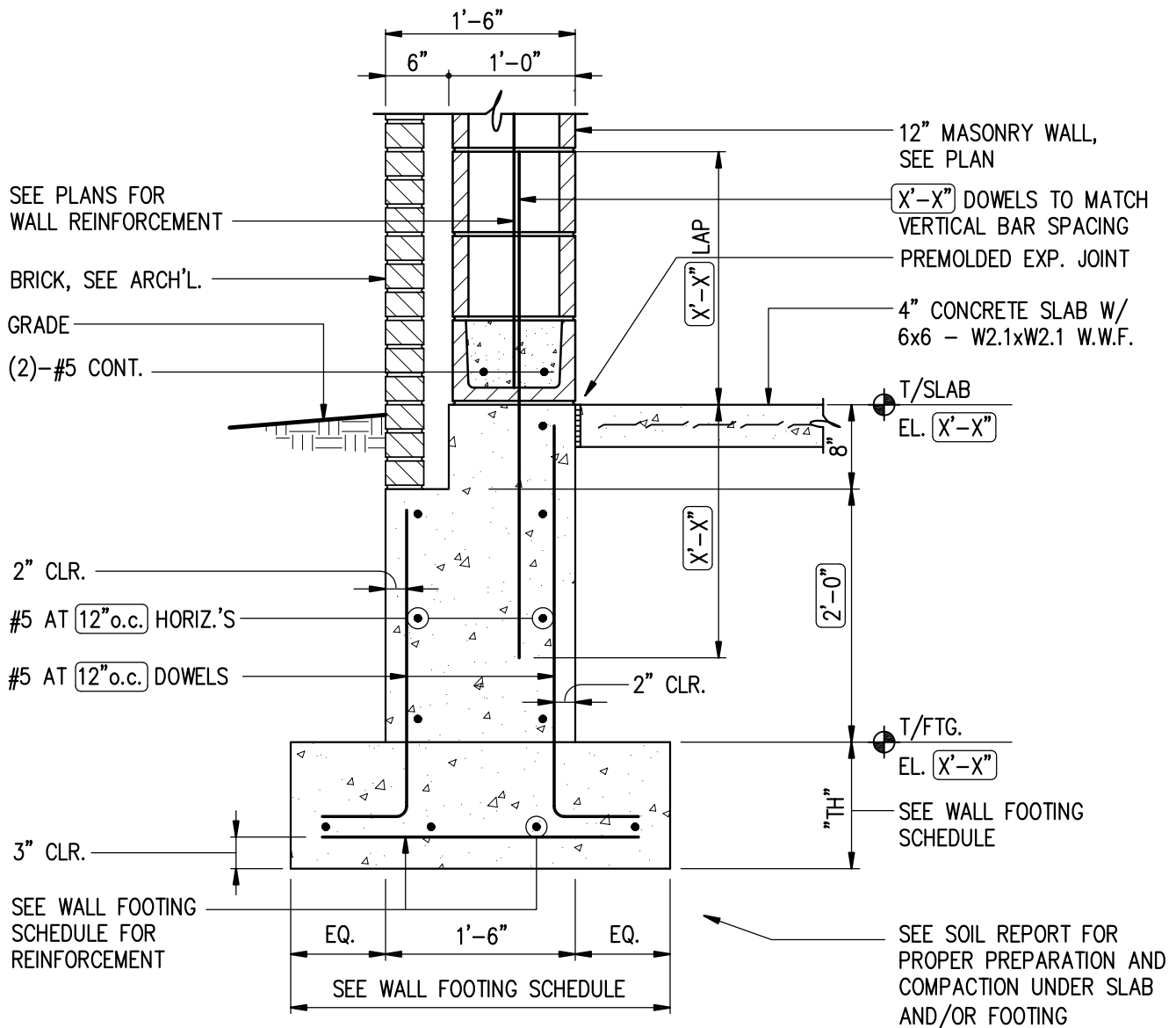
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FW03.0-01
V1.1



Exterior Masonry Wall Footing

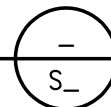


EXTERIOR MASONRY WALL FOOTING

SCALE: 3/4" = 1'-0"

Disclaimer note

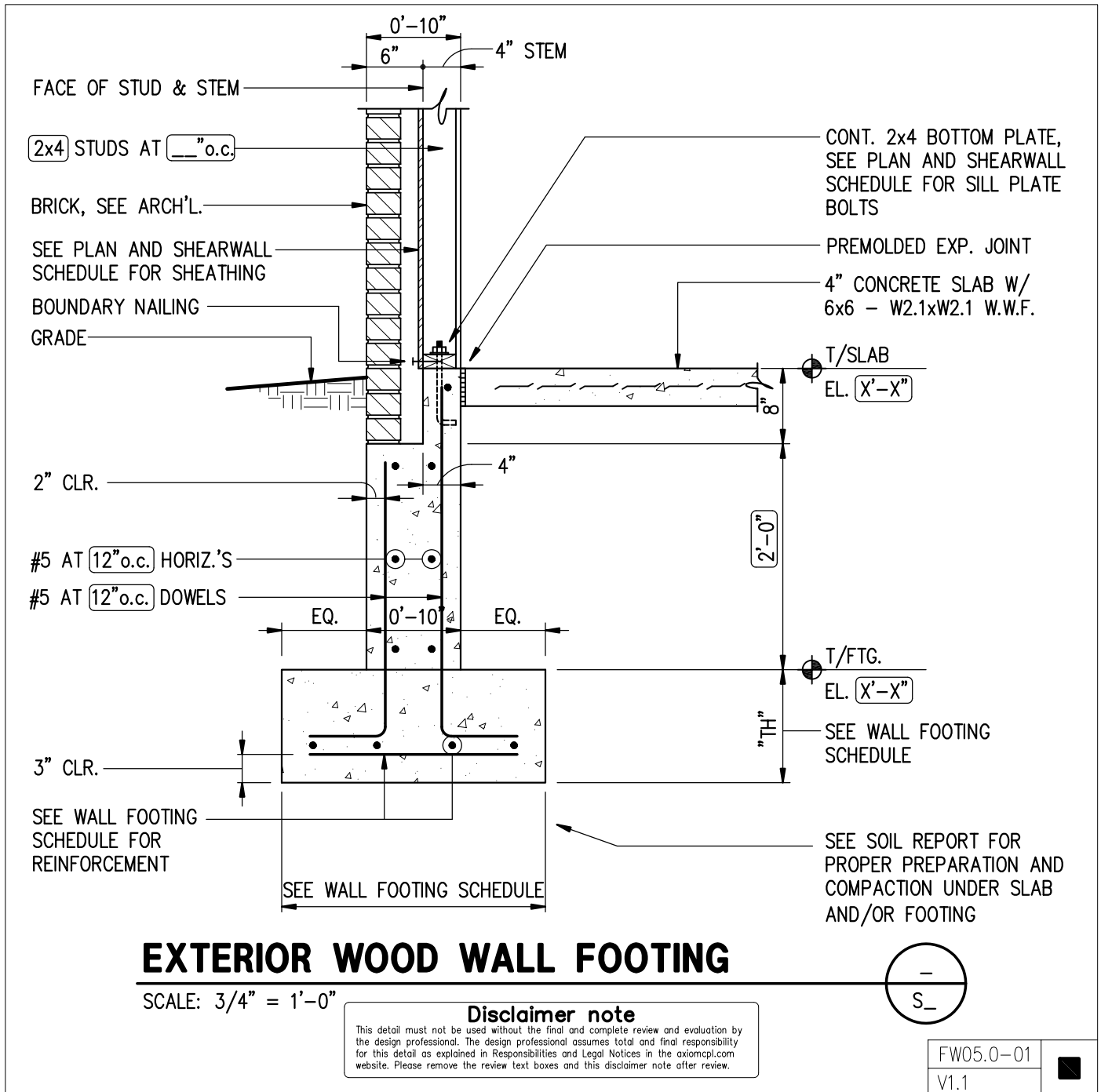
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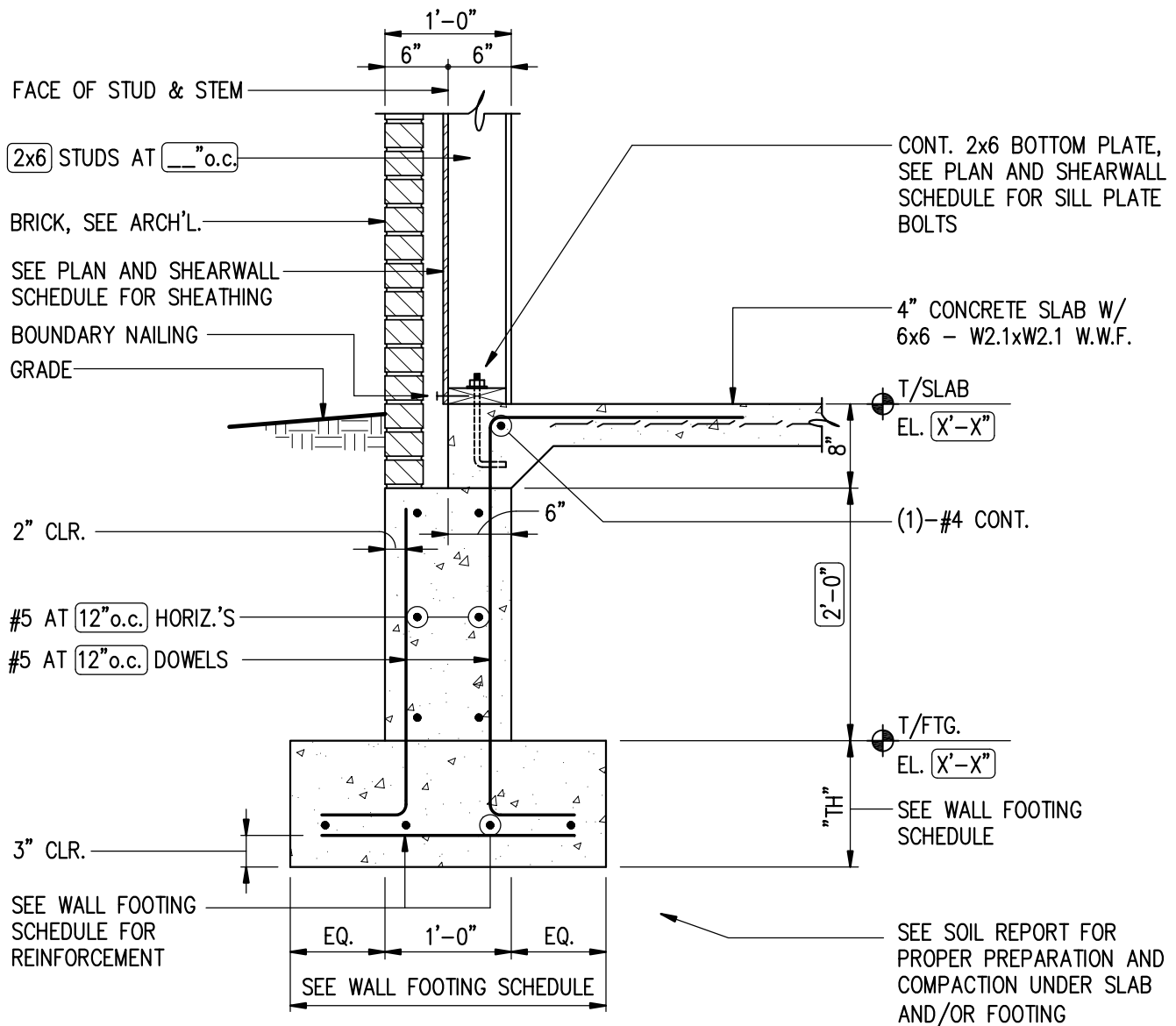
FW03.3-01
V1.1



Exterior Masonry Wall Footing



Exterior Wood Stud Wall Footing

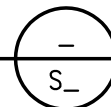


EXTERIOR WOOD WALL FOOTING

SCALE: 3/4" = 1'-0"

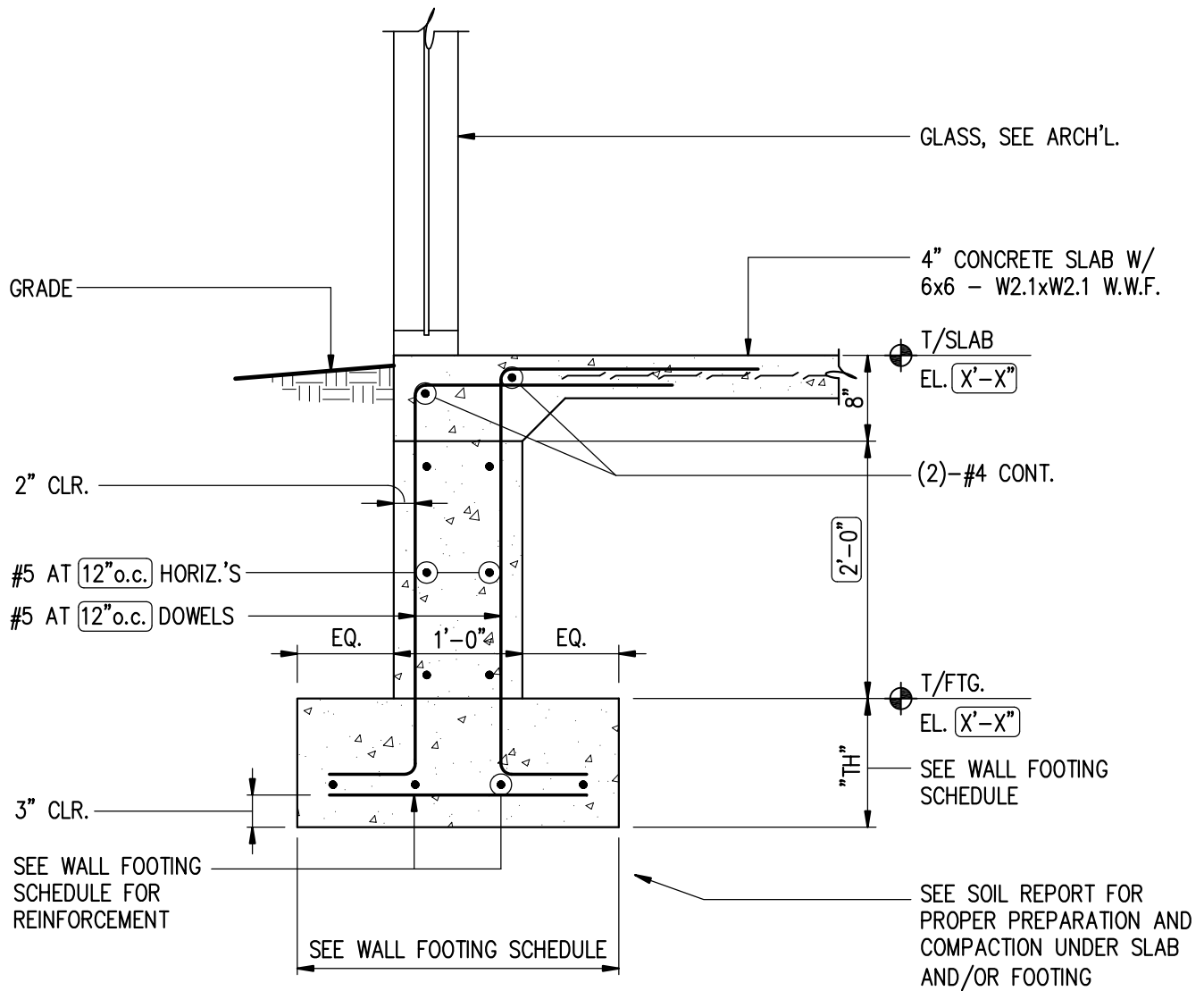
Disclaimer note

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FW05.3-02
V1.1

Exterior Wood Stud Wall Footing

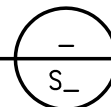


EXTERIOR WALL FOOTING

SCALE: 3/4" = 1'-0"

Disclaimer note

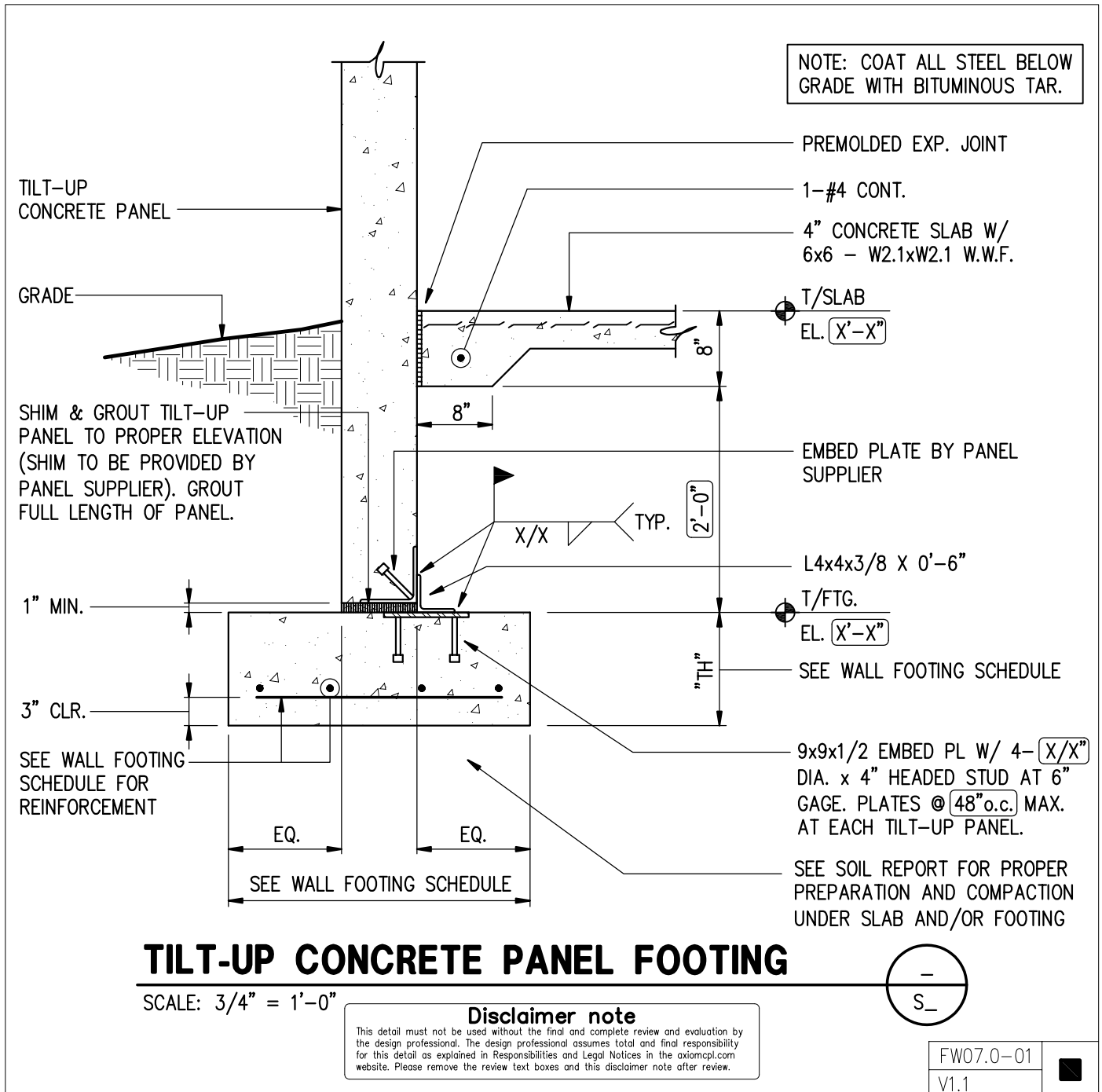
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FW06.0-01
V1.1

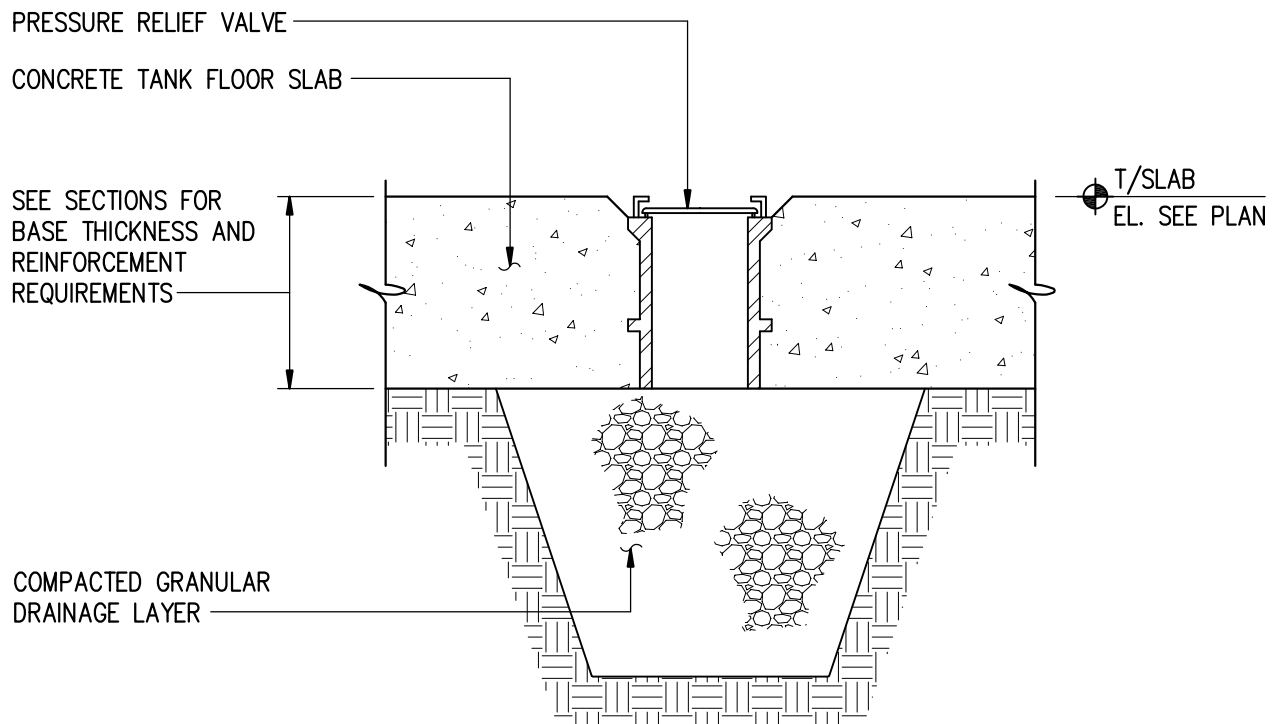


Exterior Glass Wall Footing



Exterior Tilt-up Concrete Wall Footing

Civil / Industrial Foundation Details

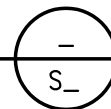


PRESSURE RELIEF VALVE IN SLAB

SCALE: 3/4" = 1'-0"

Disclaimer note

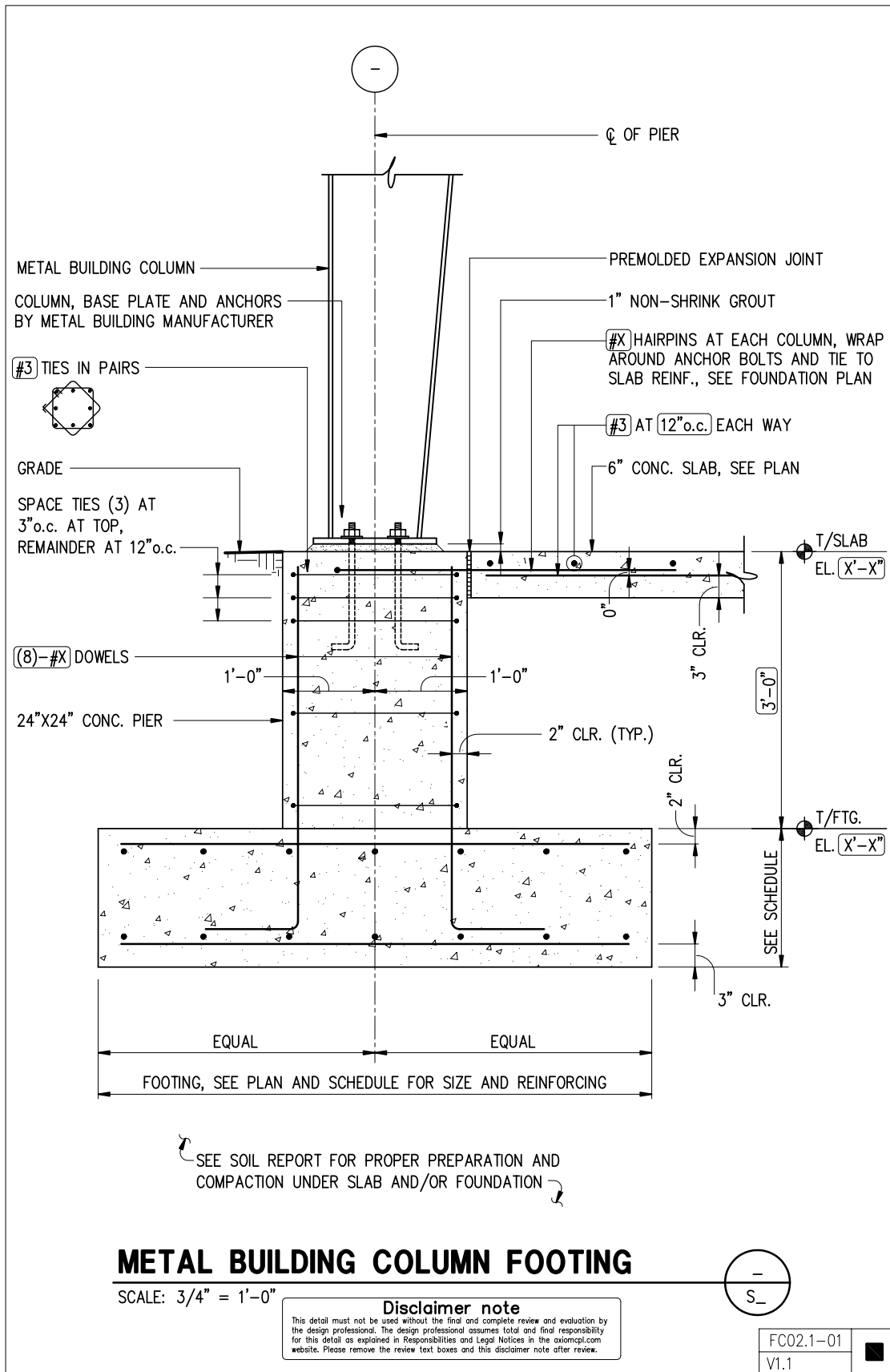
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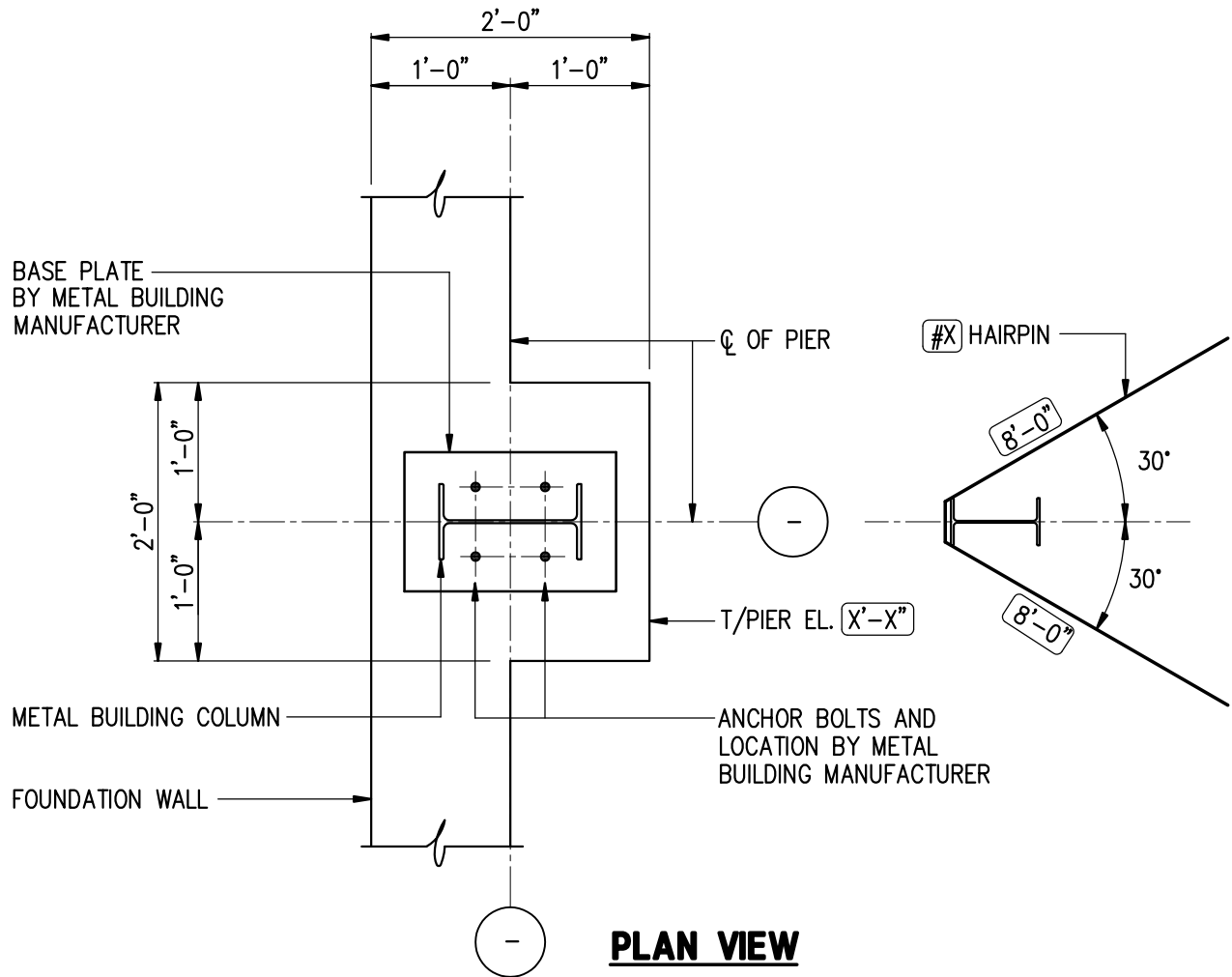
FC01.5-01
V1.1



[Pressure Relief Valve In Slab Detail](#)



Metal Building Column Footing

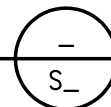


METAL BUILDING COLUMN PIER

SCALE: $\frac{3}{4}" = 1'-0"$

Disclaimer note

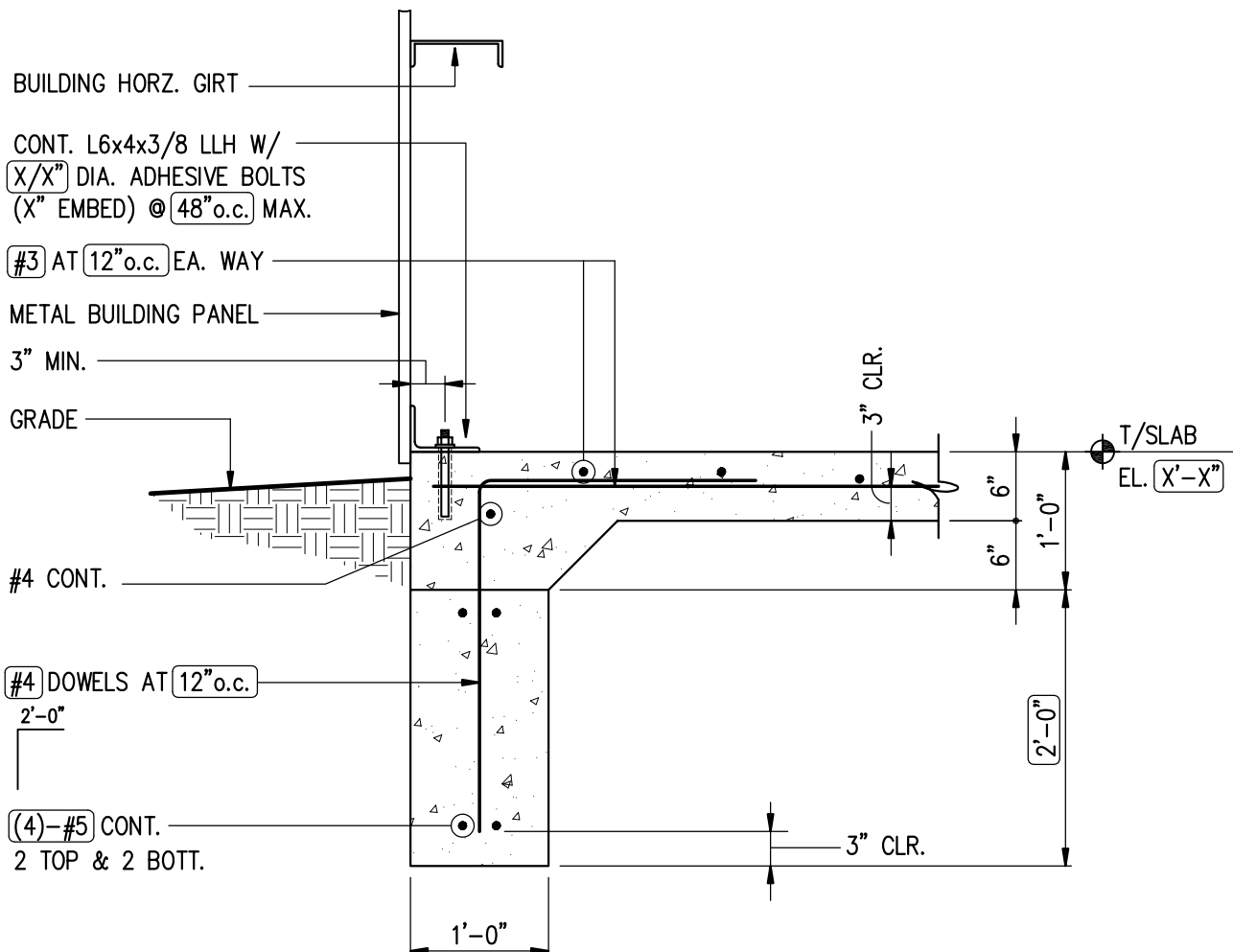
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FC02.1-02
V1.1



[Metal Building Column Pier](#)



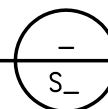
SEE SOIL REPORT FOR PROPER PREPARATION AND
 COMPACTION UNDER SLAB AND/OR FOUNDATION

METAL BUILDING FOUNDATION WALL

SCALE: 3/4" = 1'-0"

Disclaimer note

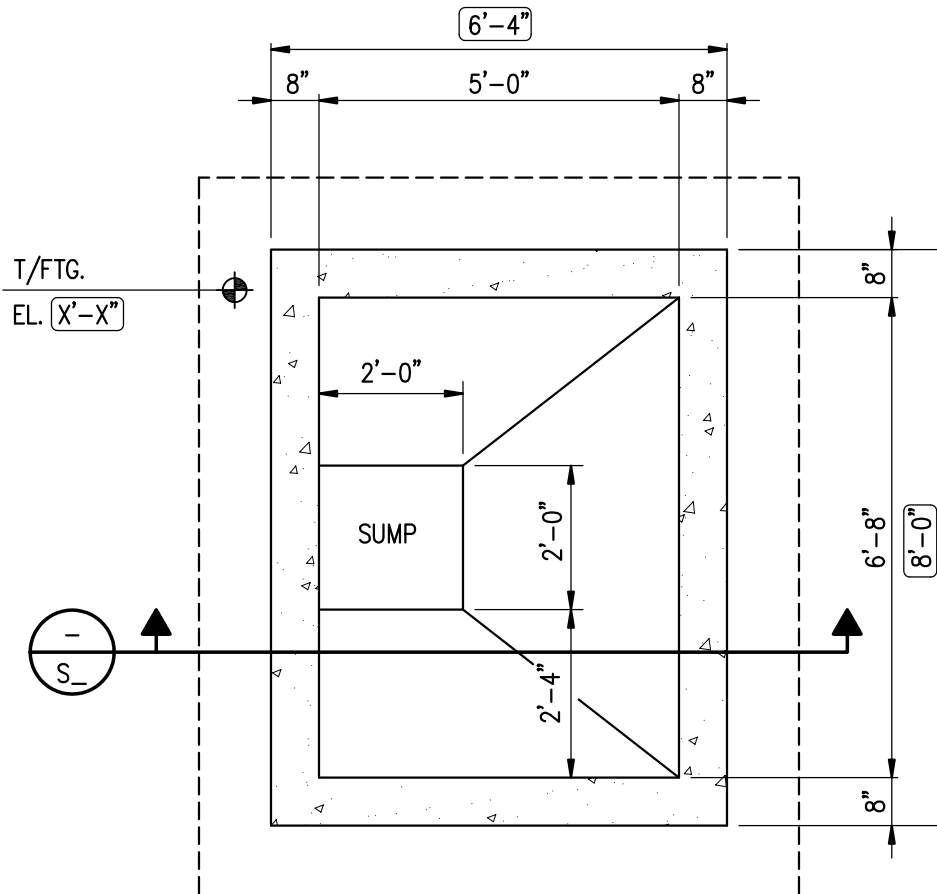
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FC02.1-03
 V1.1



Metal Building Foundation Wall Detail

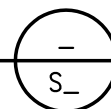


BOX STRUCTURE FOUNDATION PLAN

SCALE: $\frac{3}{8}" = 1'-0"$

Disclaimer note

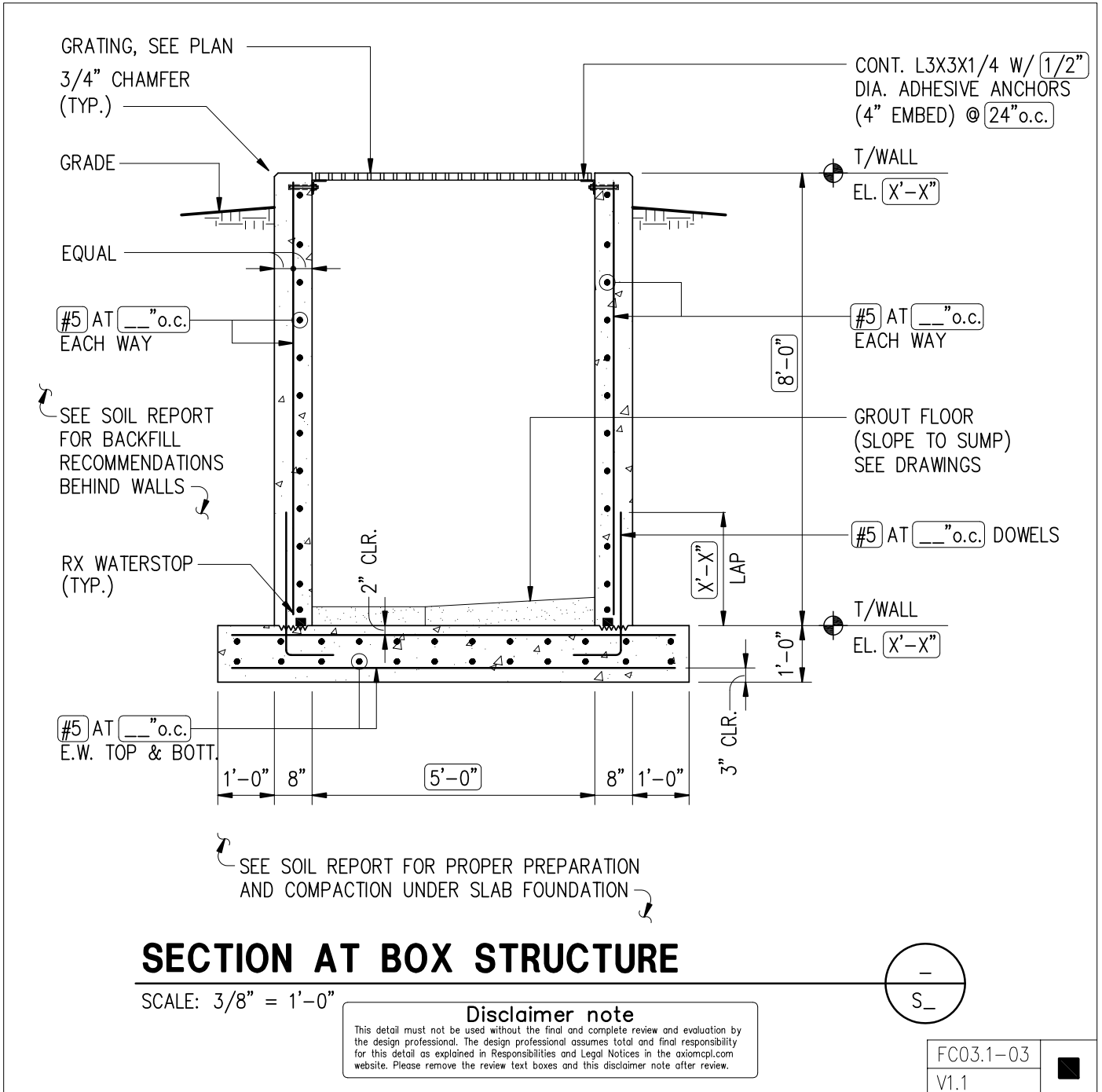
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



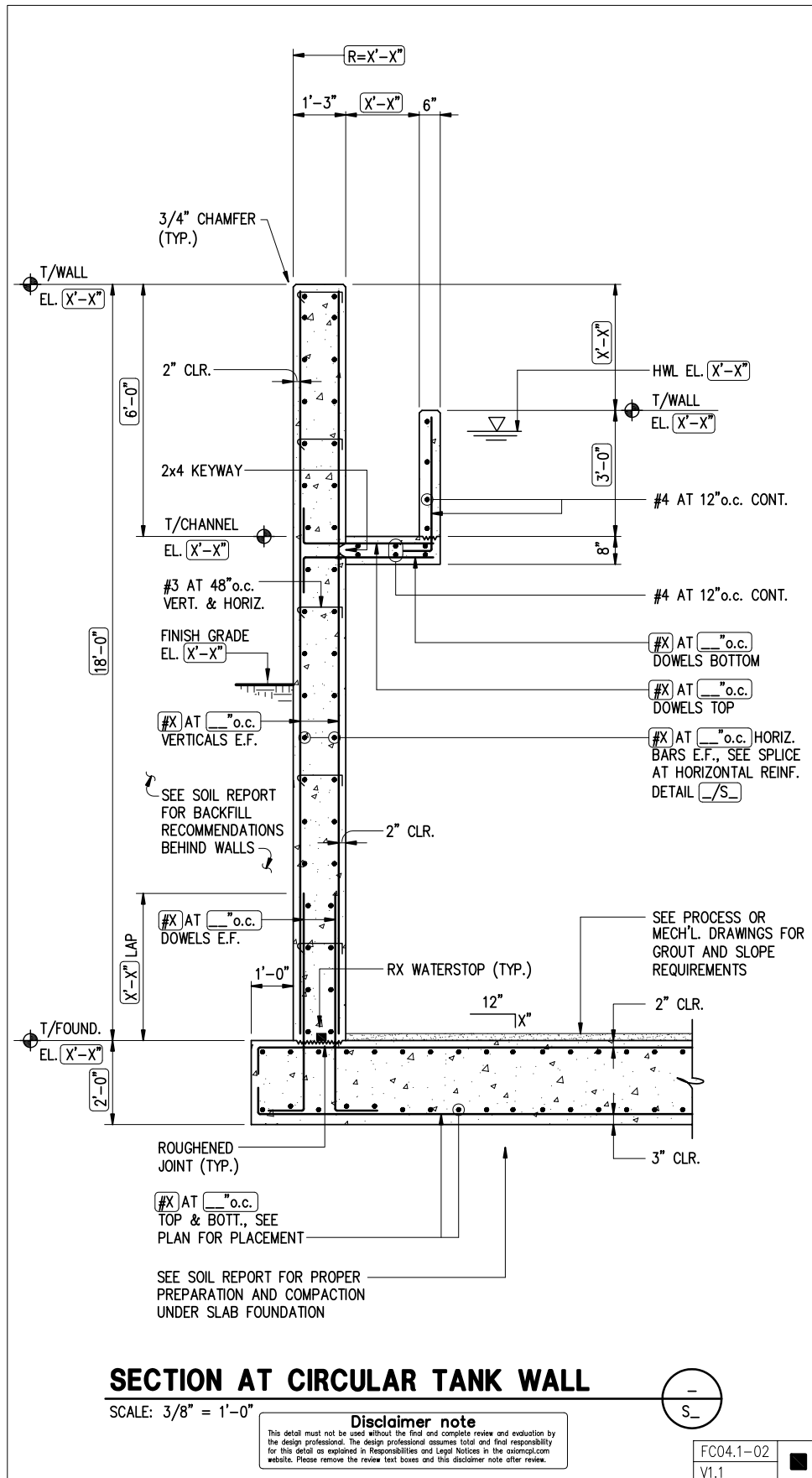
FC03.1-01
V1.1



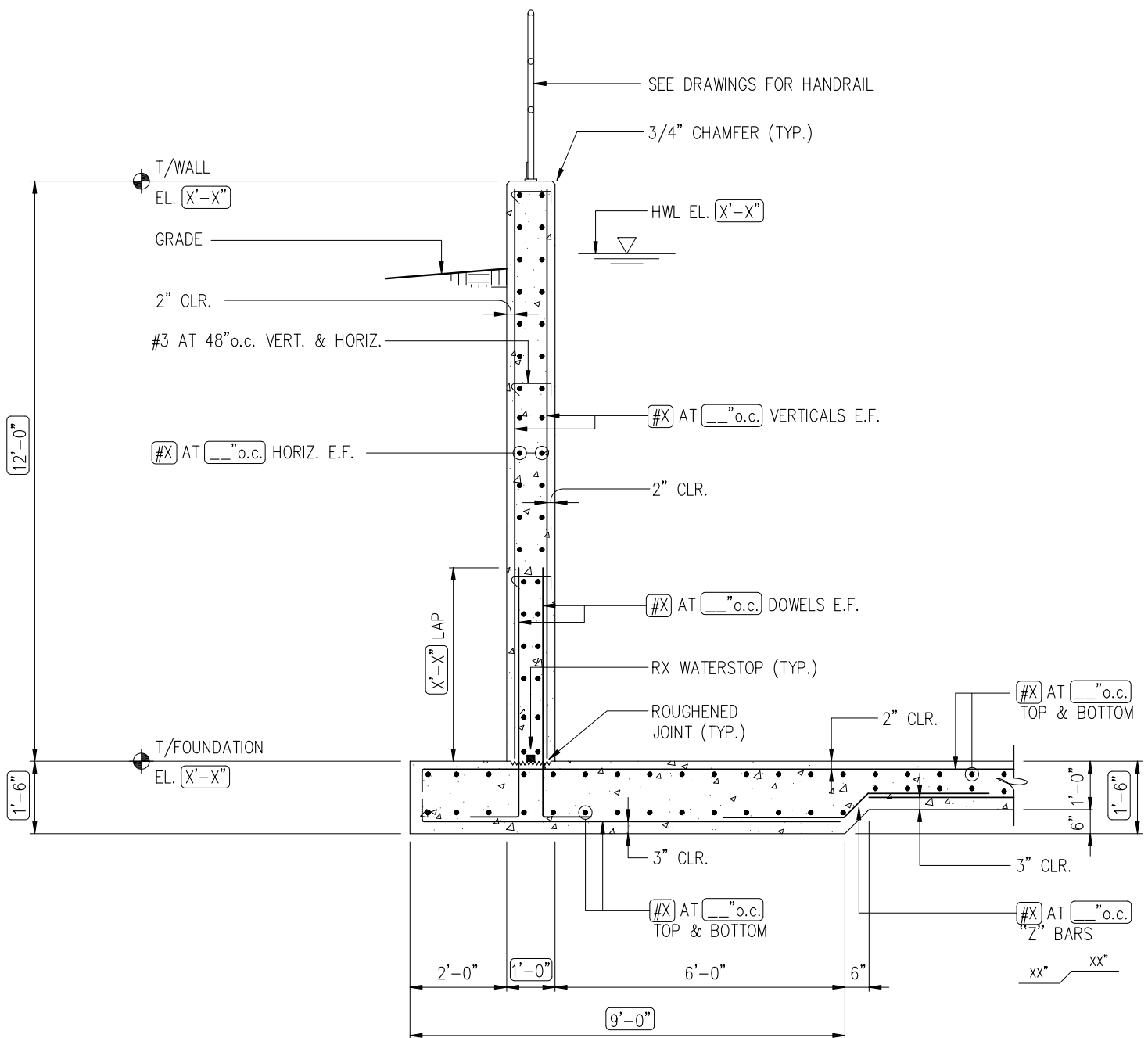
Box Structure Foundation Plan



Box Structure Wall Section



Circular Tank Wall Section



SEE SOIL REPORT FOR PROPER PREPARATION
AND COMPACTION UNDER SLAB FOUNDATION

SECTION AT TANK EXTERIOR WALL

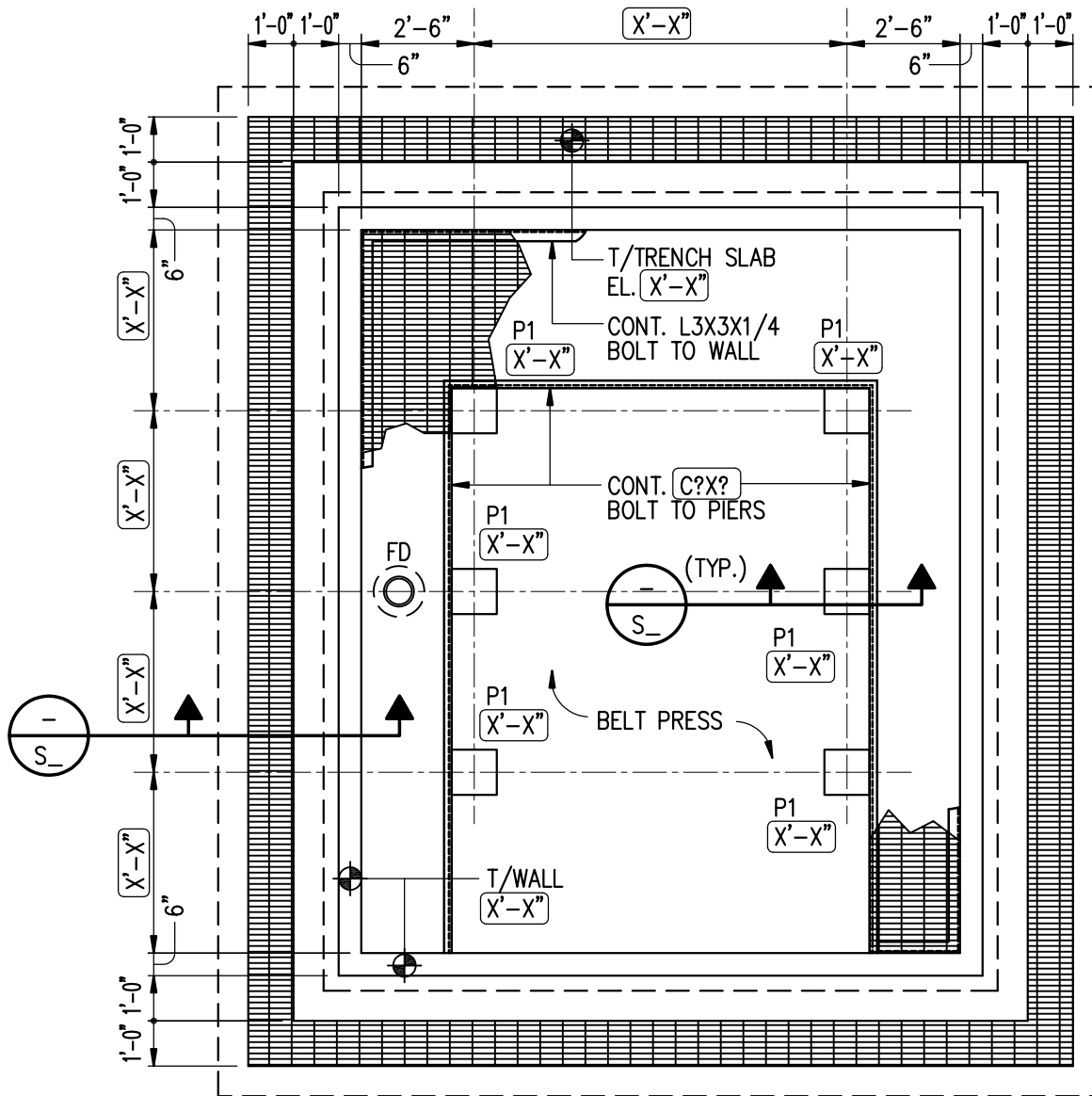
SCALE: 3/8" = 1'-0"

Disclaimer note

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FC05.1-01	
V1.1	



BELT PRESS FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

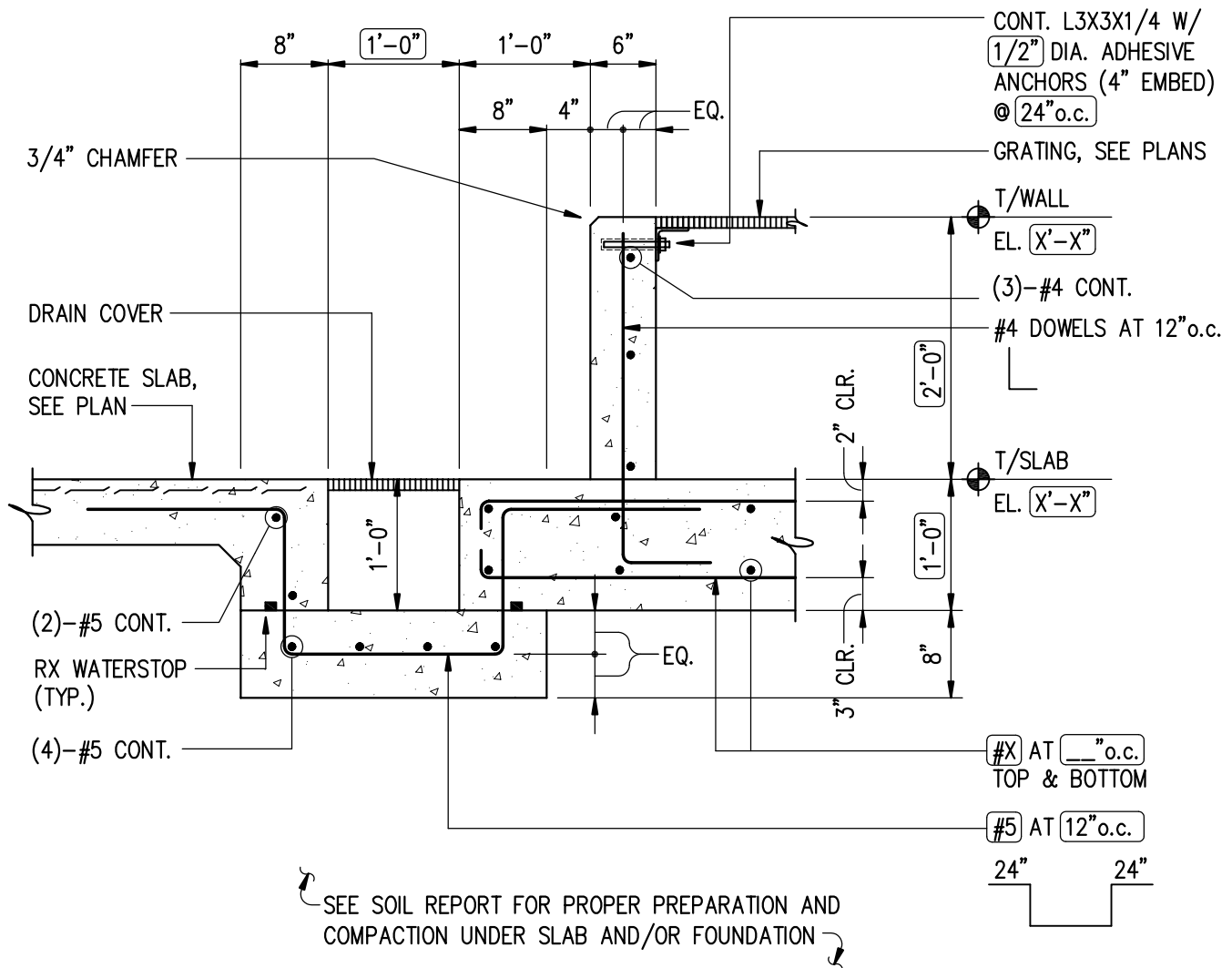
Disclaimer note

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FC07.1-01

V1.1

[Belt Press Foundation Plan](#)

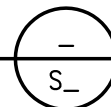


SECTION AT BELT PRESS

SCALE: 3/4" = 1'-0"

Disclaimer note

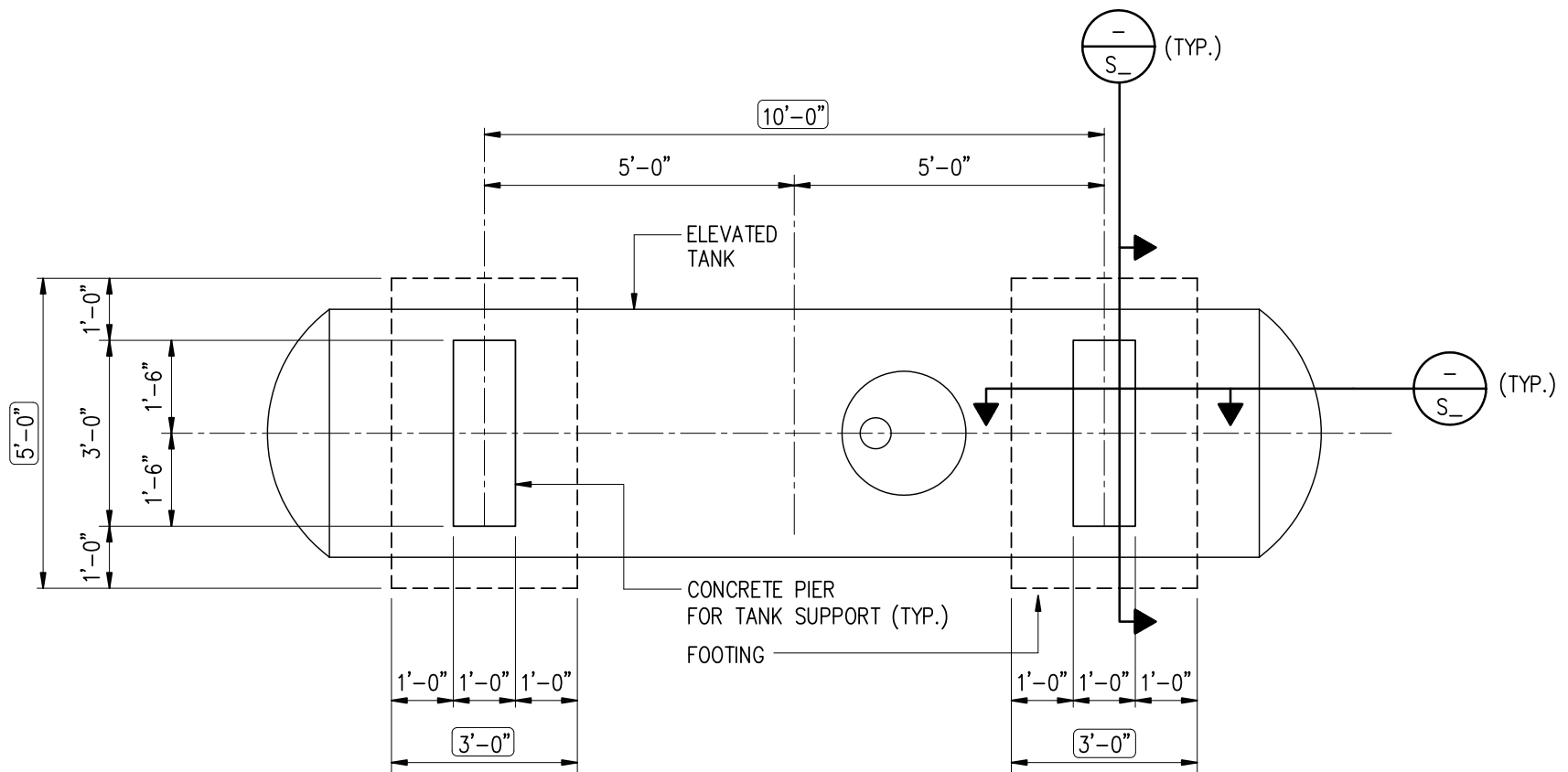
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FC07.1-02
V1.1



Belt Press Wall Section

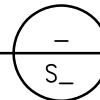


ELEVATED TANK FOUNDATION PLAN

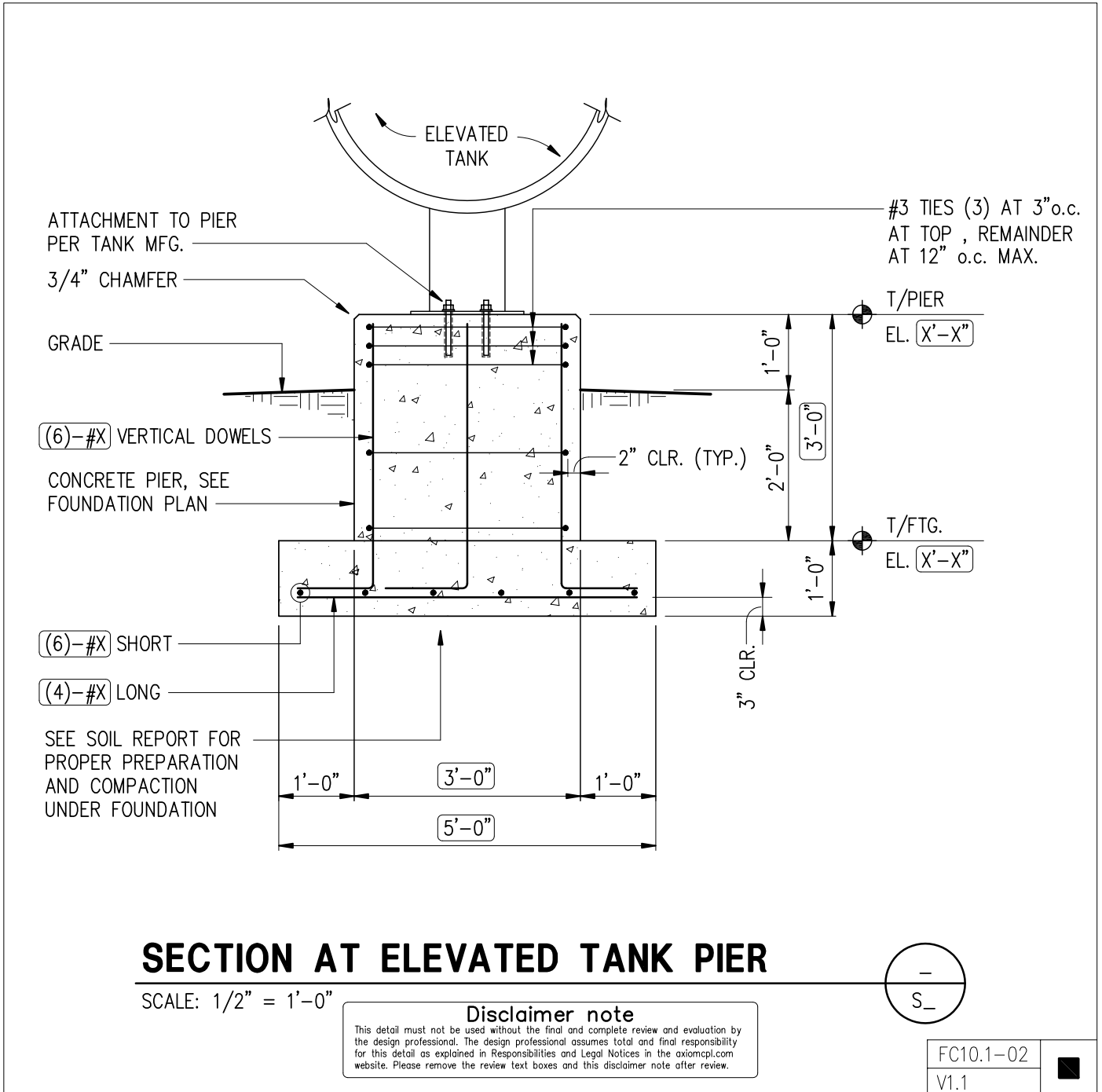
SCALE: $\frac{3}{8}" = 1'-0"$

Disclaimer note

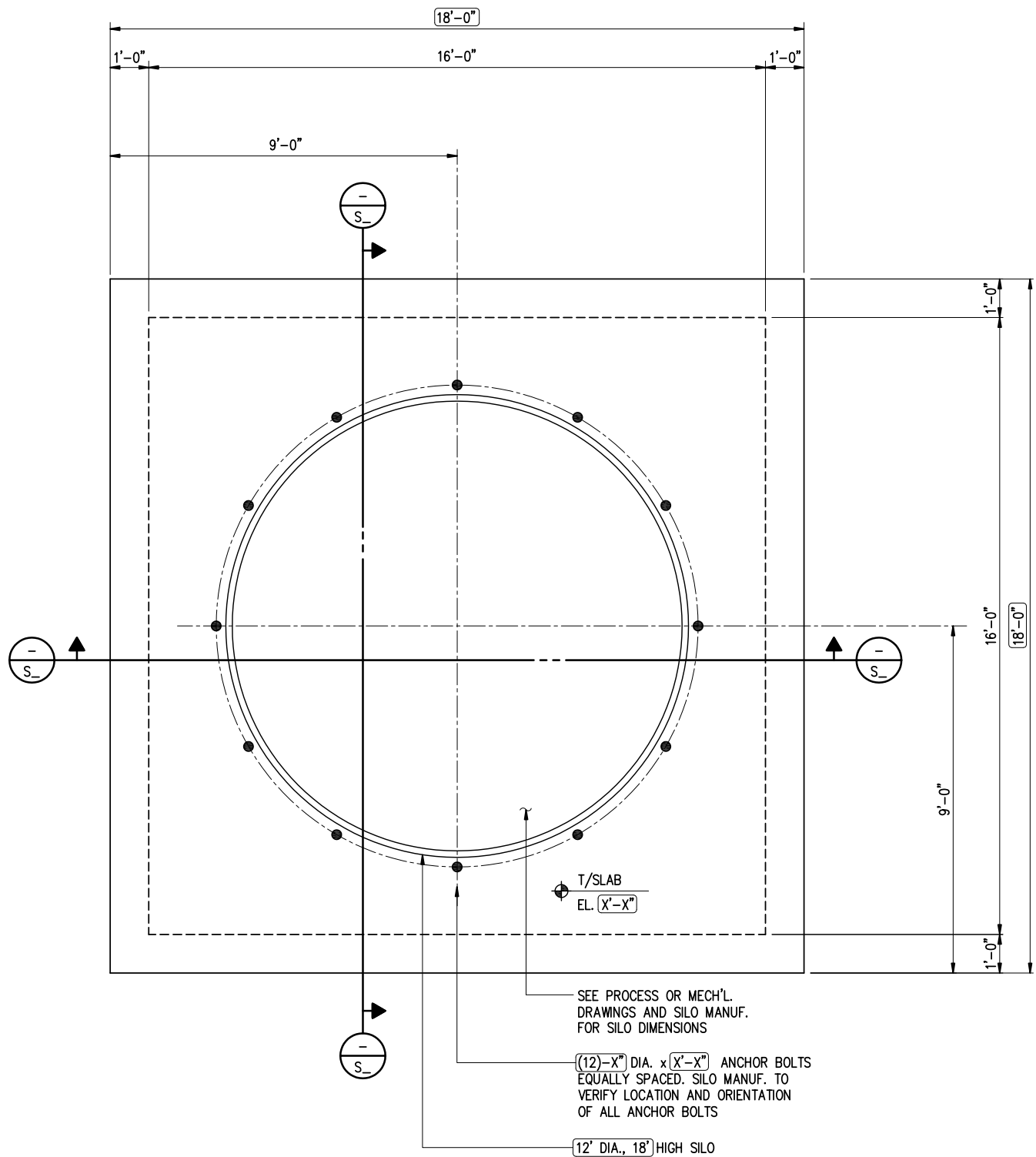
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



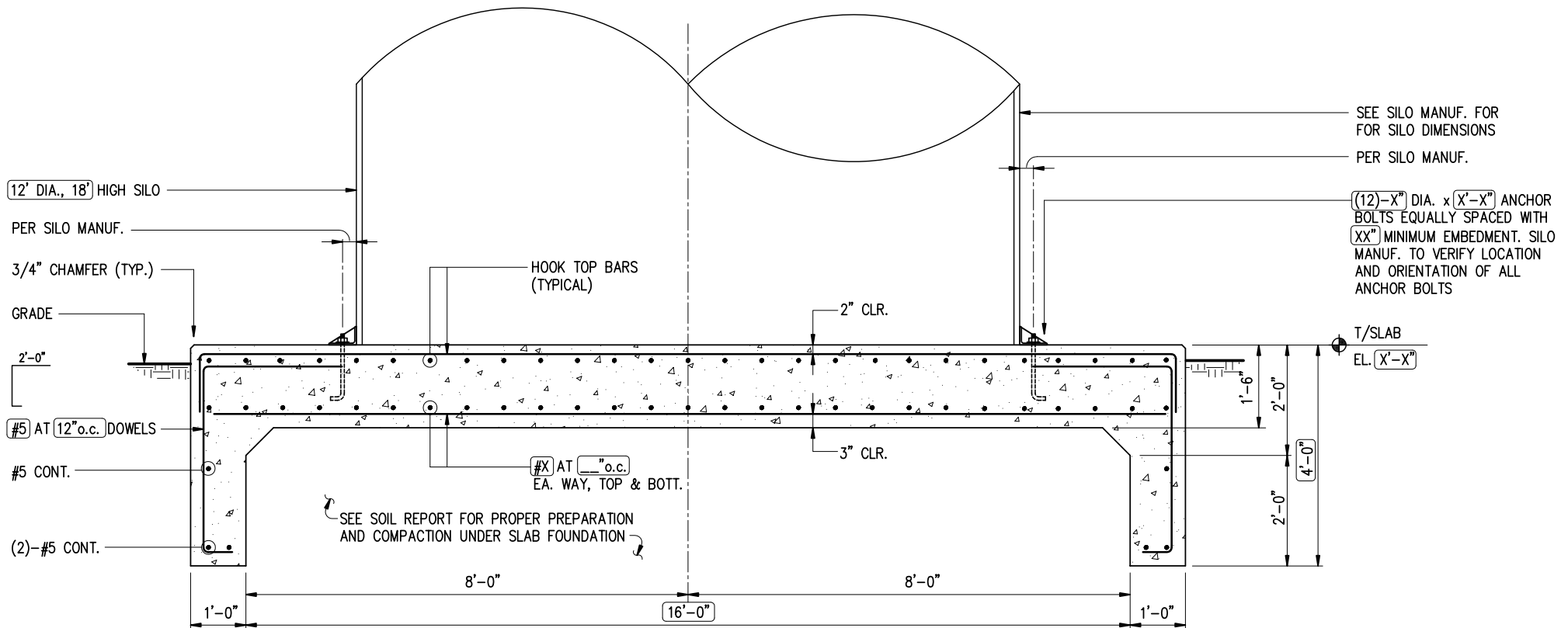
FC10.1-01	■
V1.1	



Section At Elevated Tank Pier



Silo Foundation Plan



SECTION AT SILO FOUNDATION

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

Disclaimer note

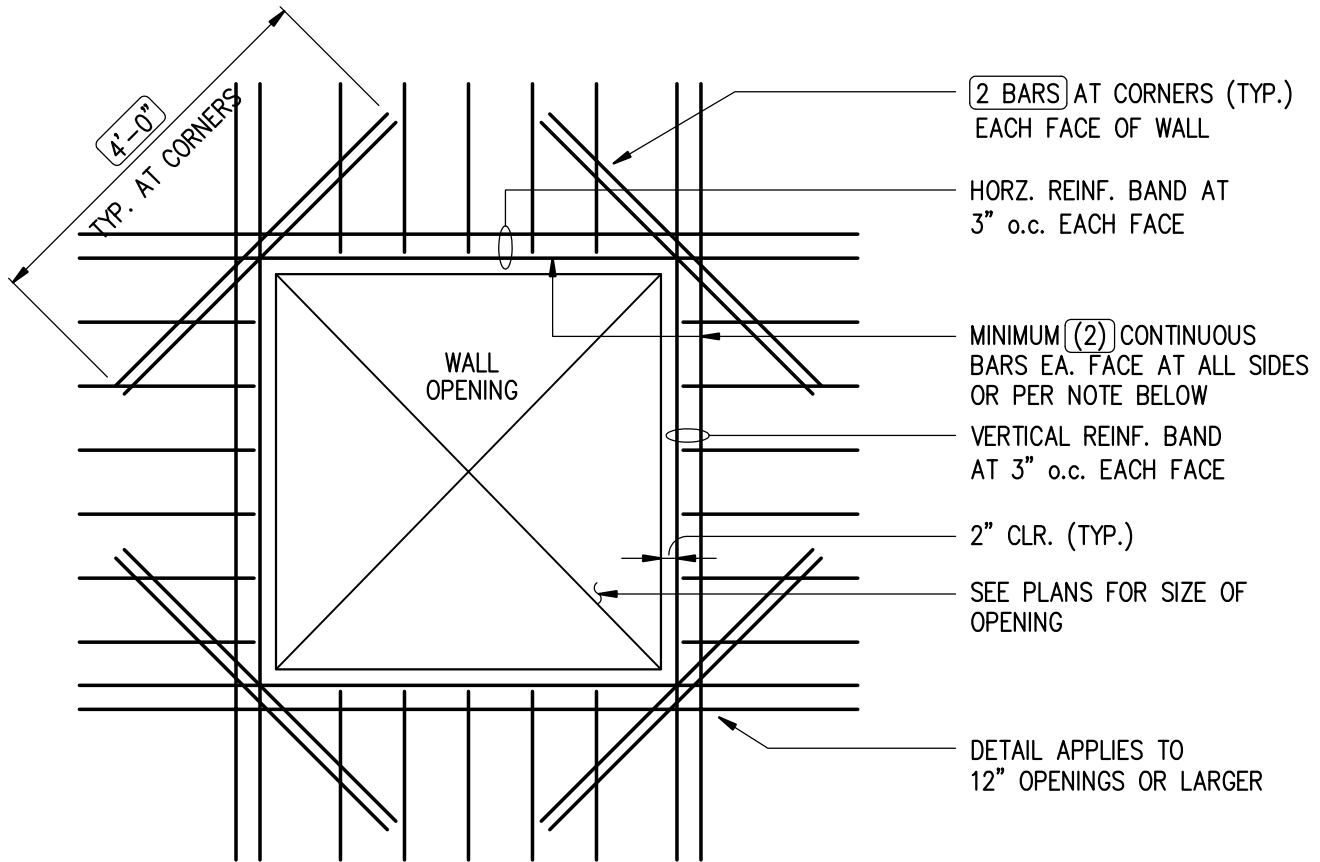
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



FC11.1-02
V1.1

Section At Silo Foundation

Structural Concrete Details



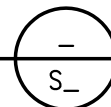
NOTE: AT OPENINGS WHERE REINFORCING IS INTERRUPTED ADD 1/2 OF INTERRUPTED VERTICAL BARS (FULL HEIGHT) ON EACH SIDE OF OPENING IN PLACE OF THE (2) MINIMUM BARS INDICATED. ADD 1/2 OF INTERRUPTED HORIZONTAL REINFORCING (FULL LENGTH) TO TOP AND BOTTOM OF OPENING.

TYPICAL WALL OPENING DETAIL

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

Disclaimer note

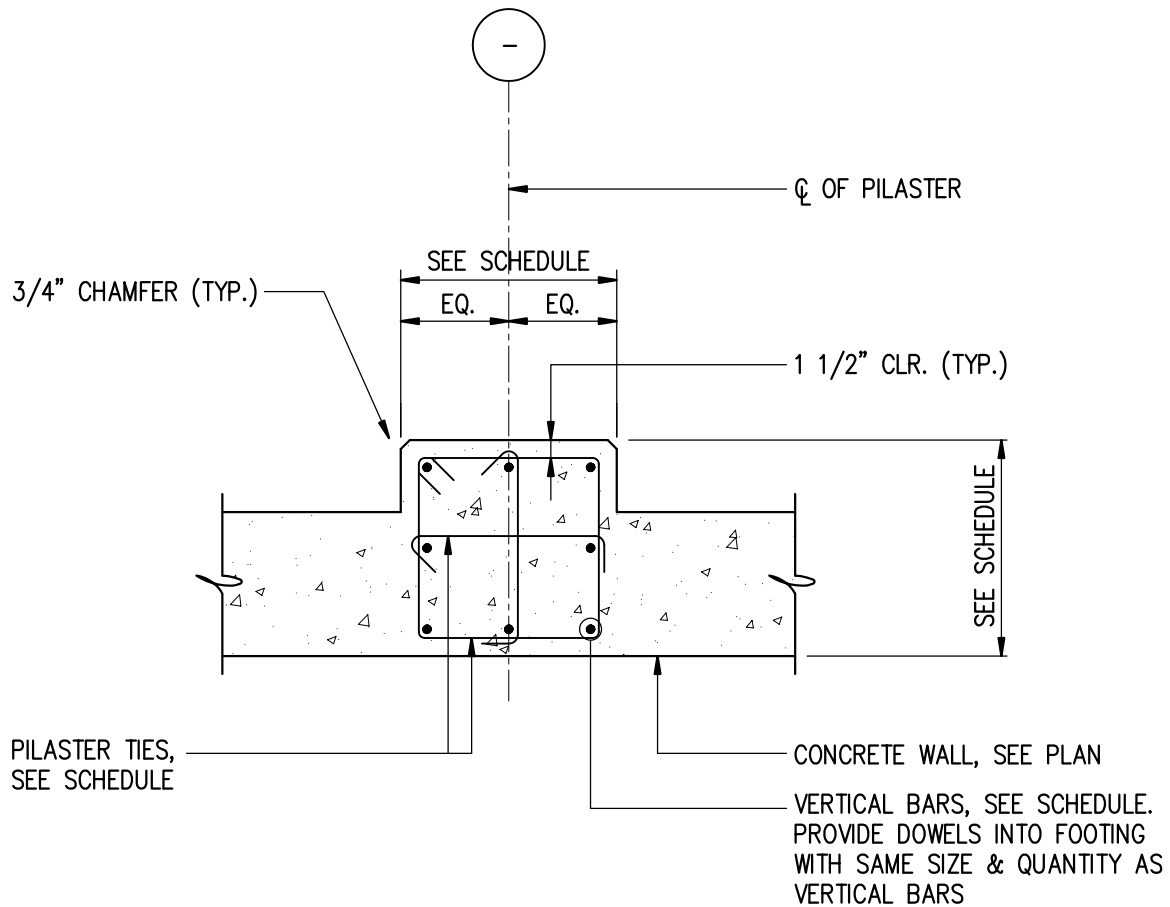
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CD01.1-01
V1.1



[Typical Concrete Wall Opening Detail](#)



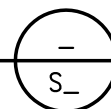
NOTE: CONTINUE WALL REINFORCING THRU PILASTER

GENERAL WALL PILASTER DETAIL

SCALE: 3/4" = 1'-0"

Disclaimer note

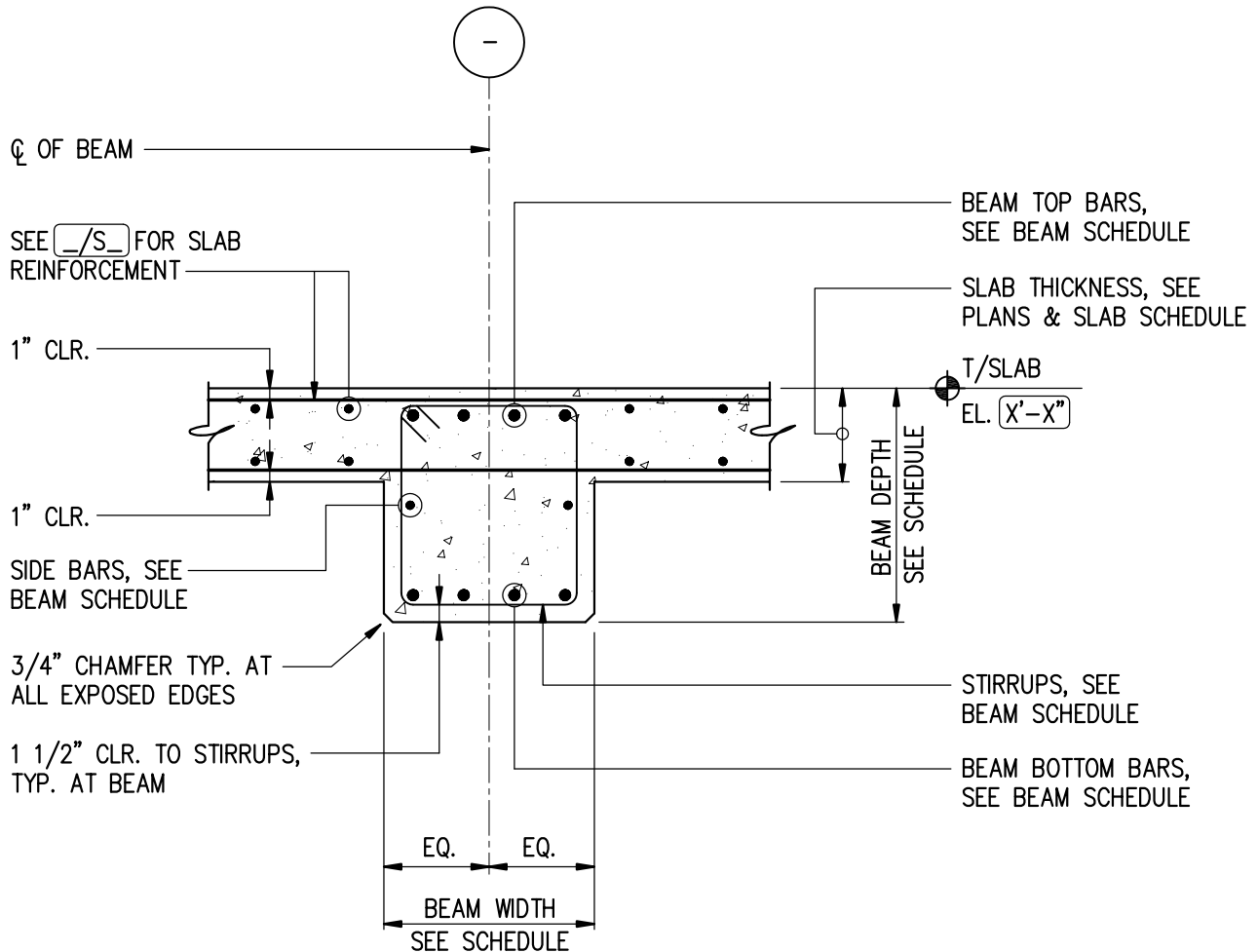
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CD02.1-01
V1.1



Concrete Wall Pilaster Detail

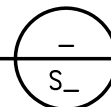


GENERAL CONCRETE BEAM SECTION

SCALE: 3/4" = 1'-0"

Disclaimer note

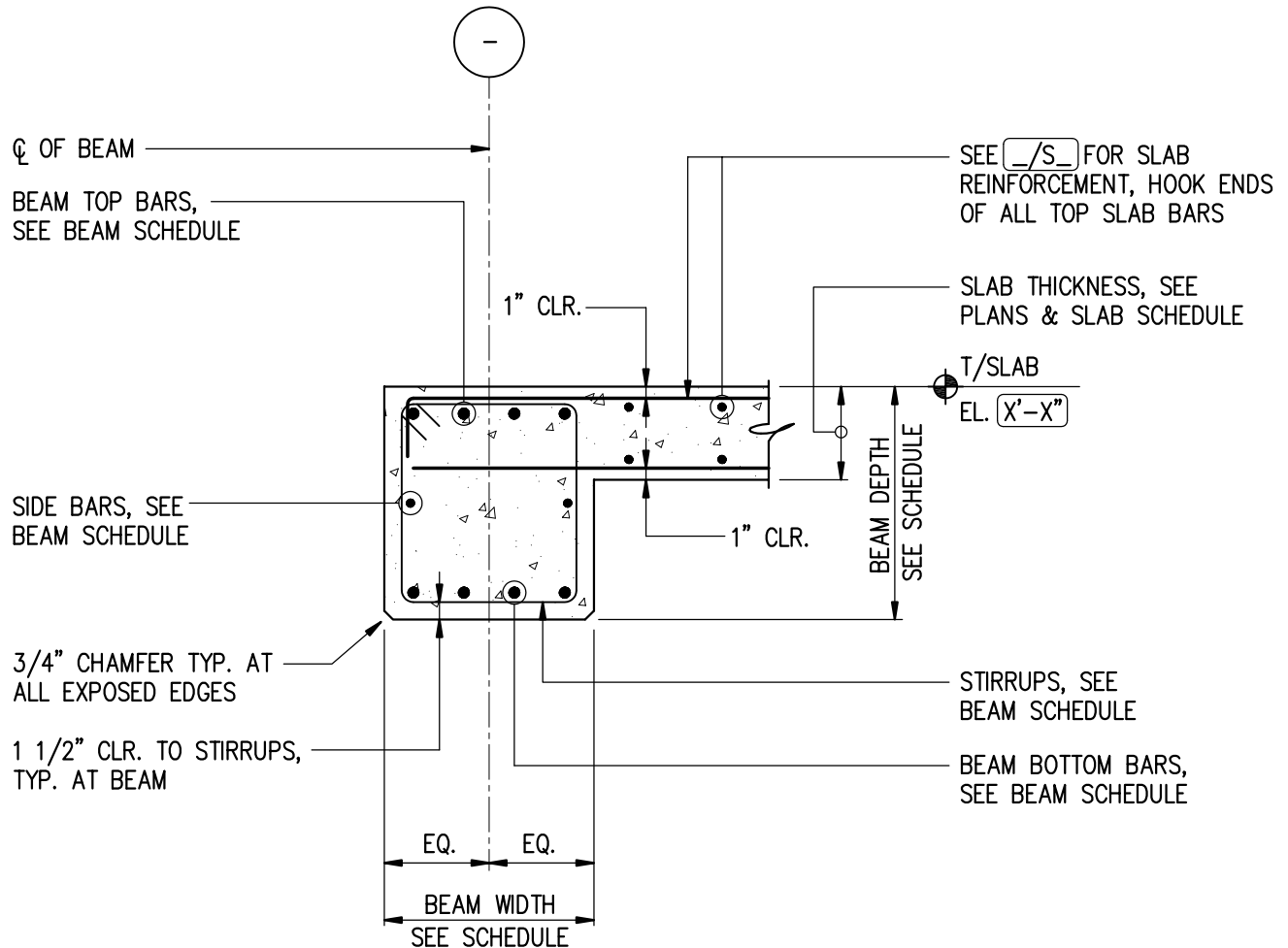
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CD03.1-01
V1.1



Concrete Beam Section

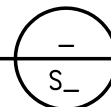


GENERAL CONCRETE EDGE BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

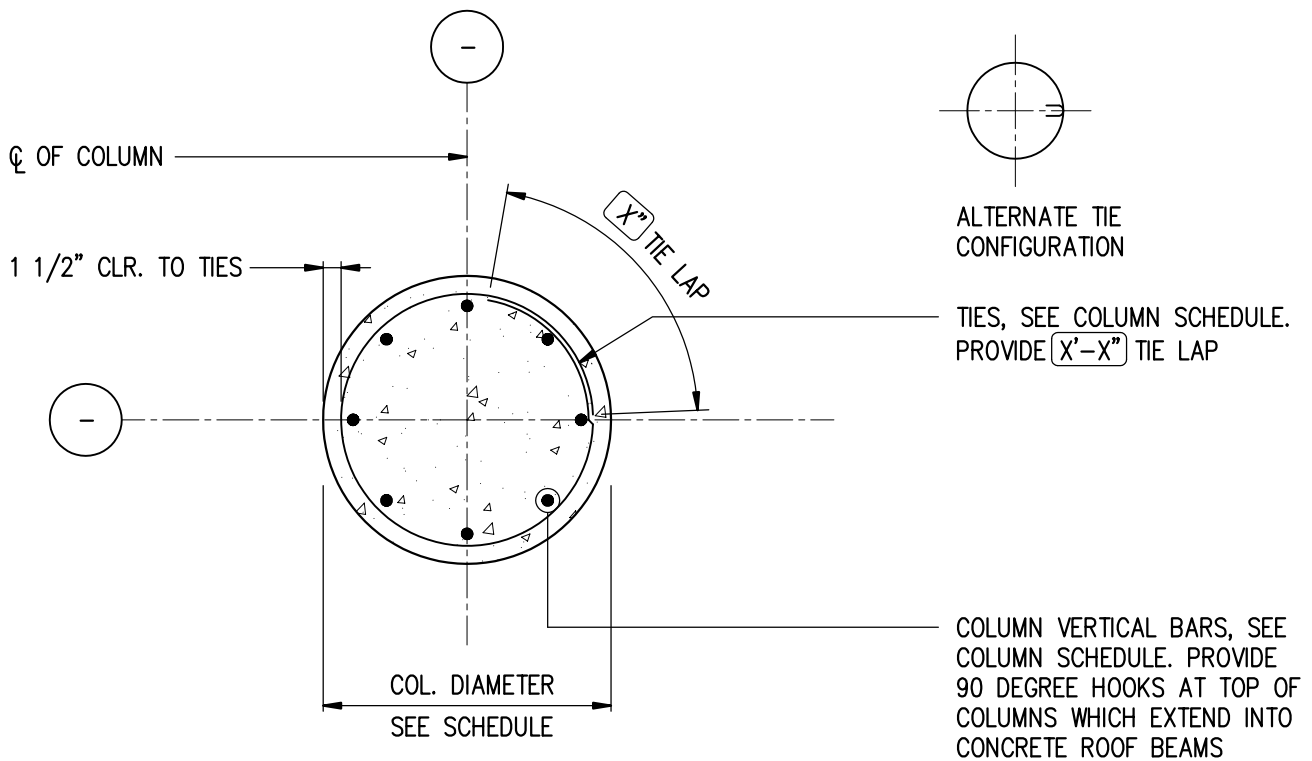
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CD04.1-01
V1.1



Concrete Edge Beam Section

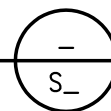


GENERAL ROUND CONCRETE COLUMN

SCALE: 3/4" = 1'-0"

Disclaimer note

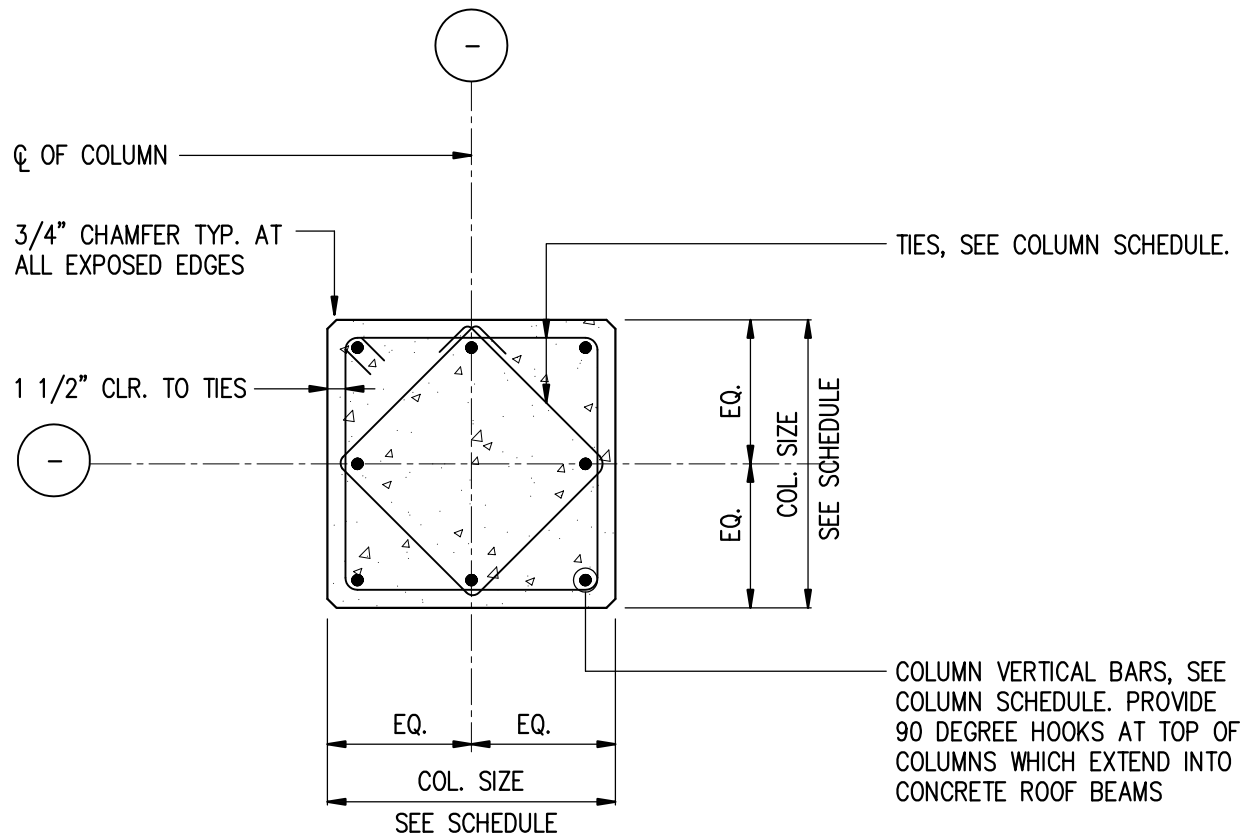
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CD15.1-01
V1.1



Round Concrete Column Detail

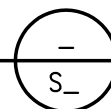


GENERAL SQUARE CONCRETE COLUMN

SCALE: 3/4" = 1'-0"

Disclaimer note

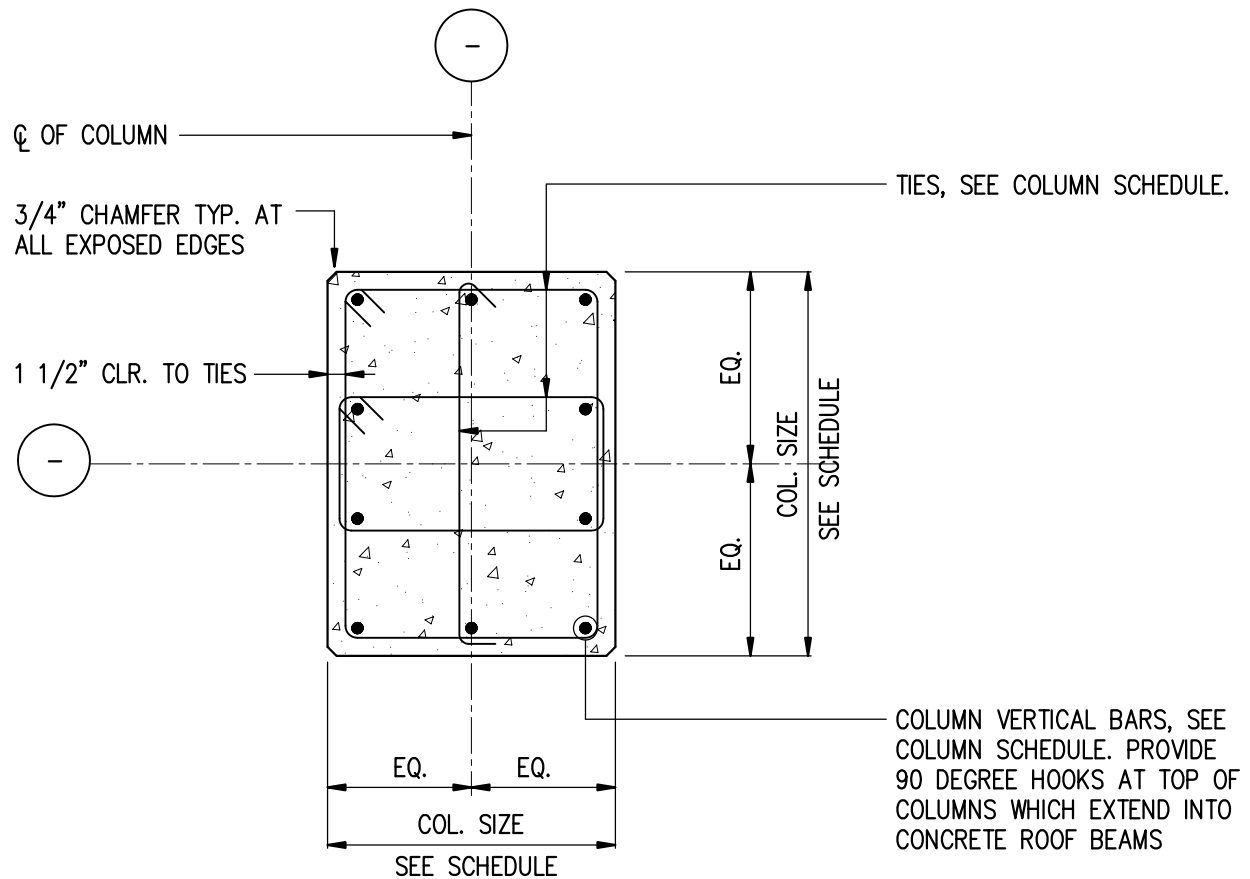
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CD16.1-01
V1.1



Square Concrete Column Detail

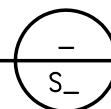


GENERAL RECT. CONCRETE COLUMN

SCALE: 3/4" = 1'-0"

Disclaimer note

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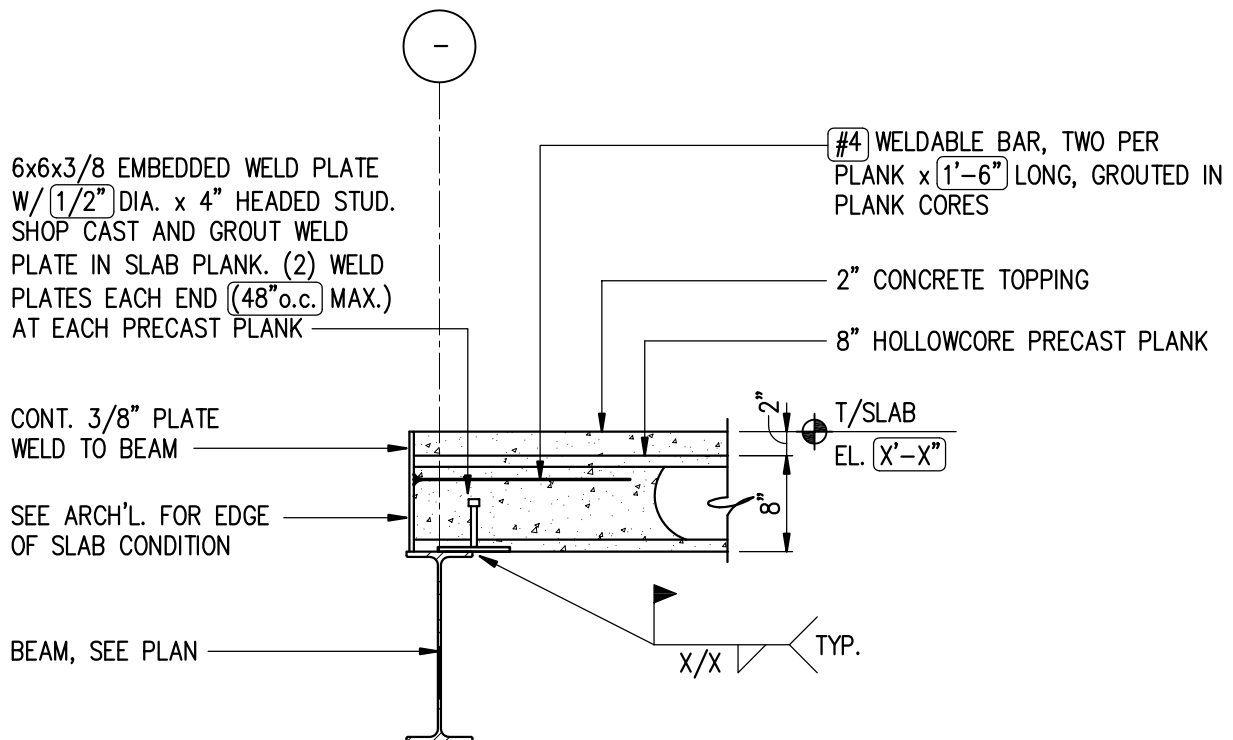


CD17.1-01
V1.1



Rectangular Concrete Column Detail

Structural Precast Details

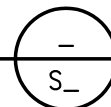


PRECAST PLANK BEARING ON BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

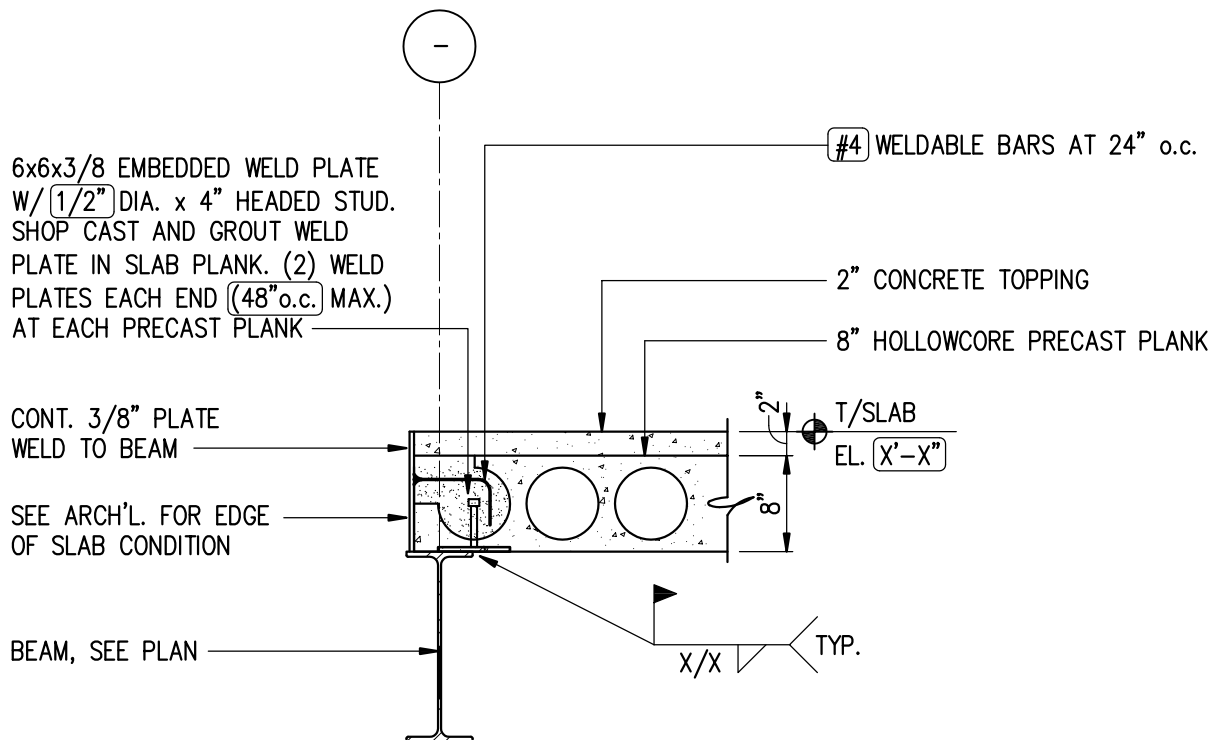
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CP01.1-03
V1.1



Precast Plank Bearing On Steel Beam

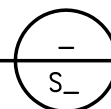


PRECAST PLANK BEARING ON BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

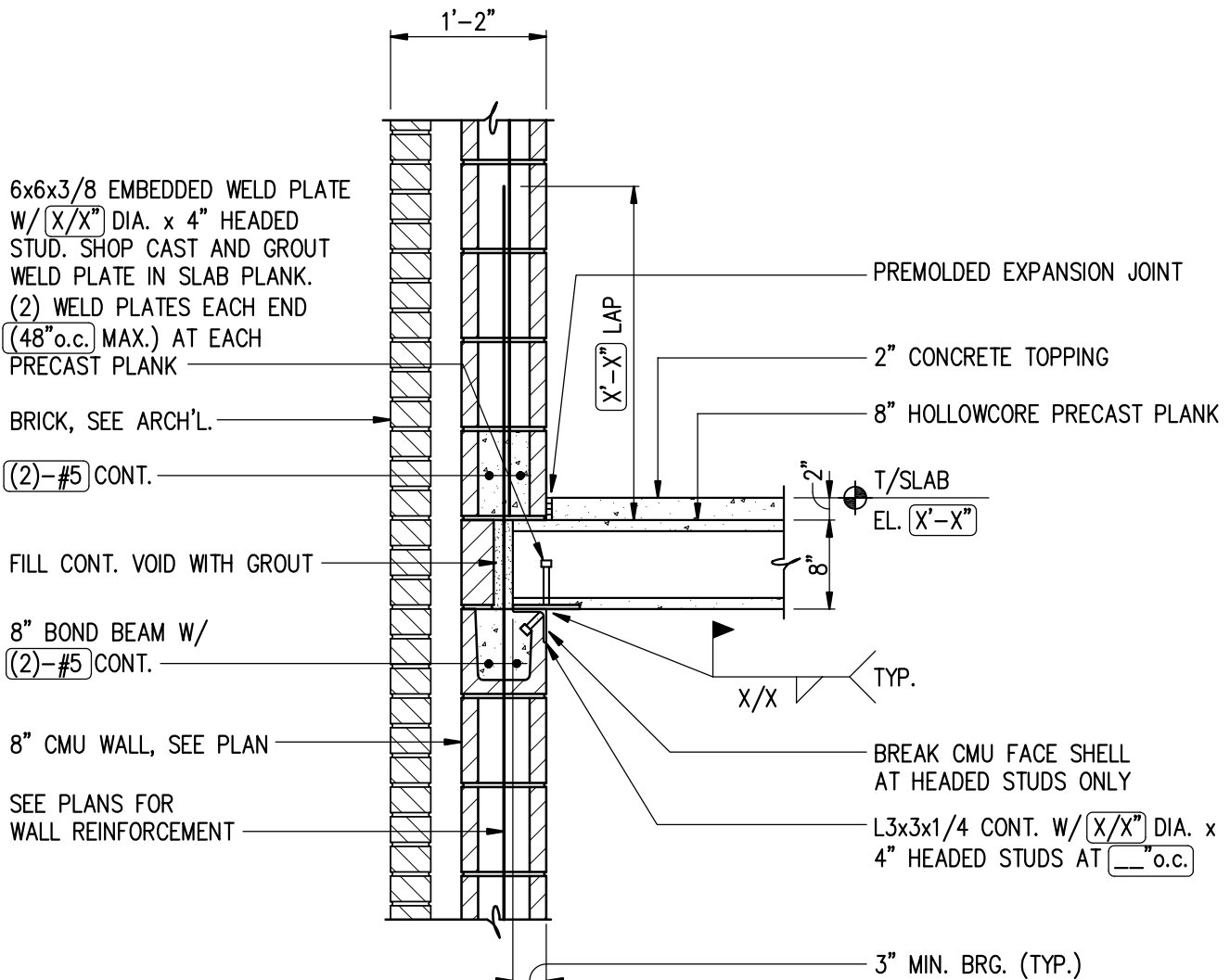
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CP01.1-04	
V1.1	



Precast Plank Bearing At Steel Beam

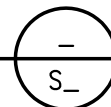


EXTERIOR WALL AT FLOOR

SCALE: 3/4" = 1'-0"

Disclaimer note

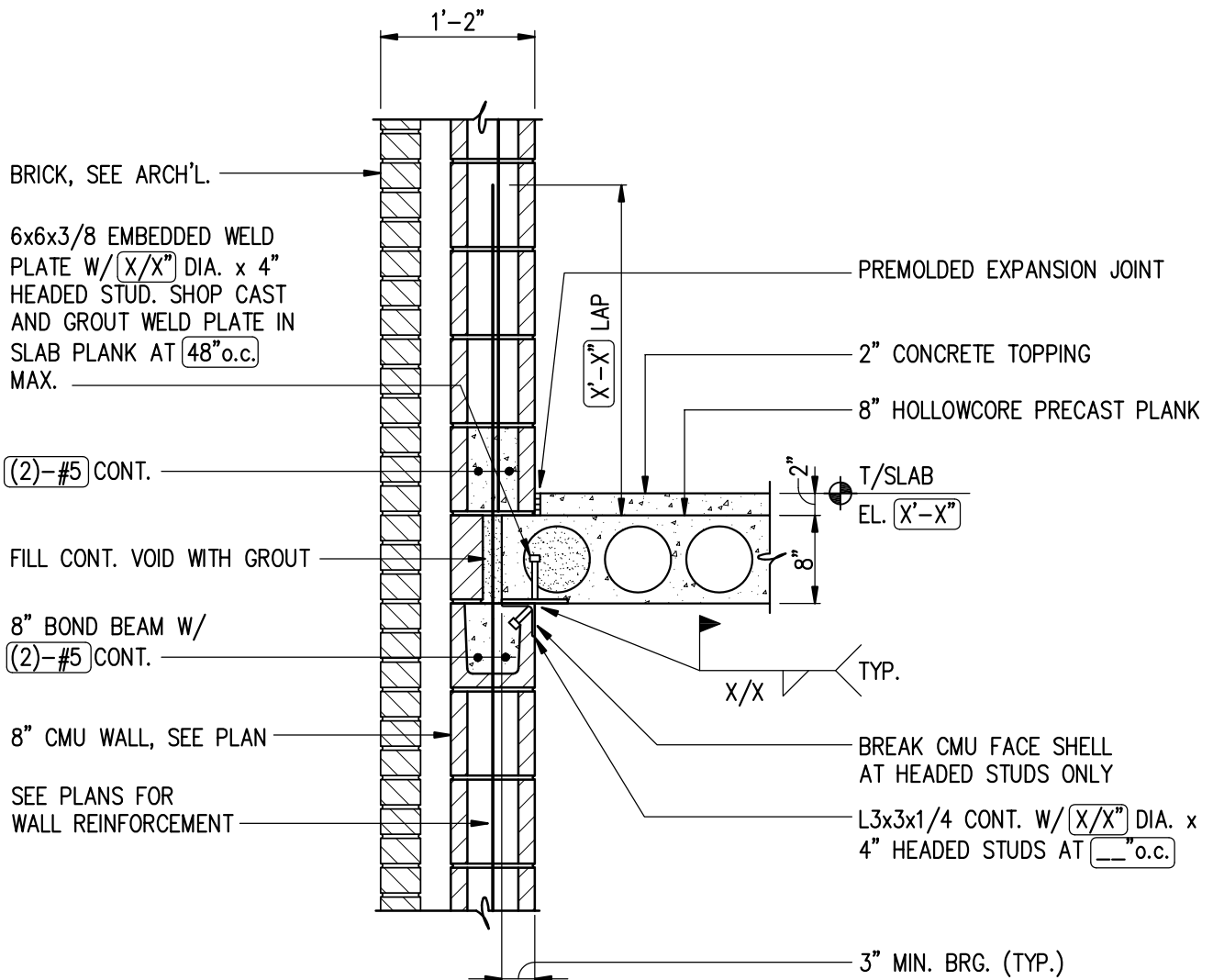
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CP02.0-01
V1.1



Precast Plank Bearing On Masonry Wall At Floor

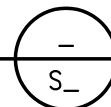


EXTERIOR WALL AT FLOOR

SCALE: 3/4" = 1'-0"

Disclaimer note

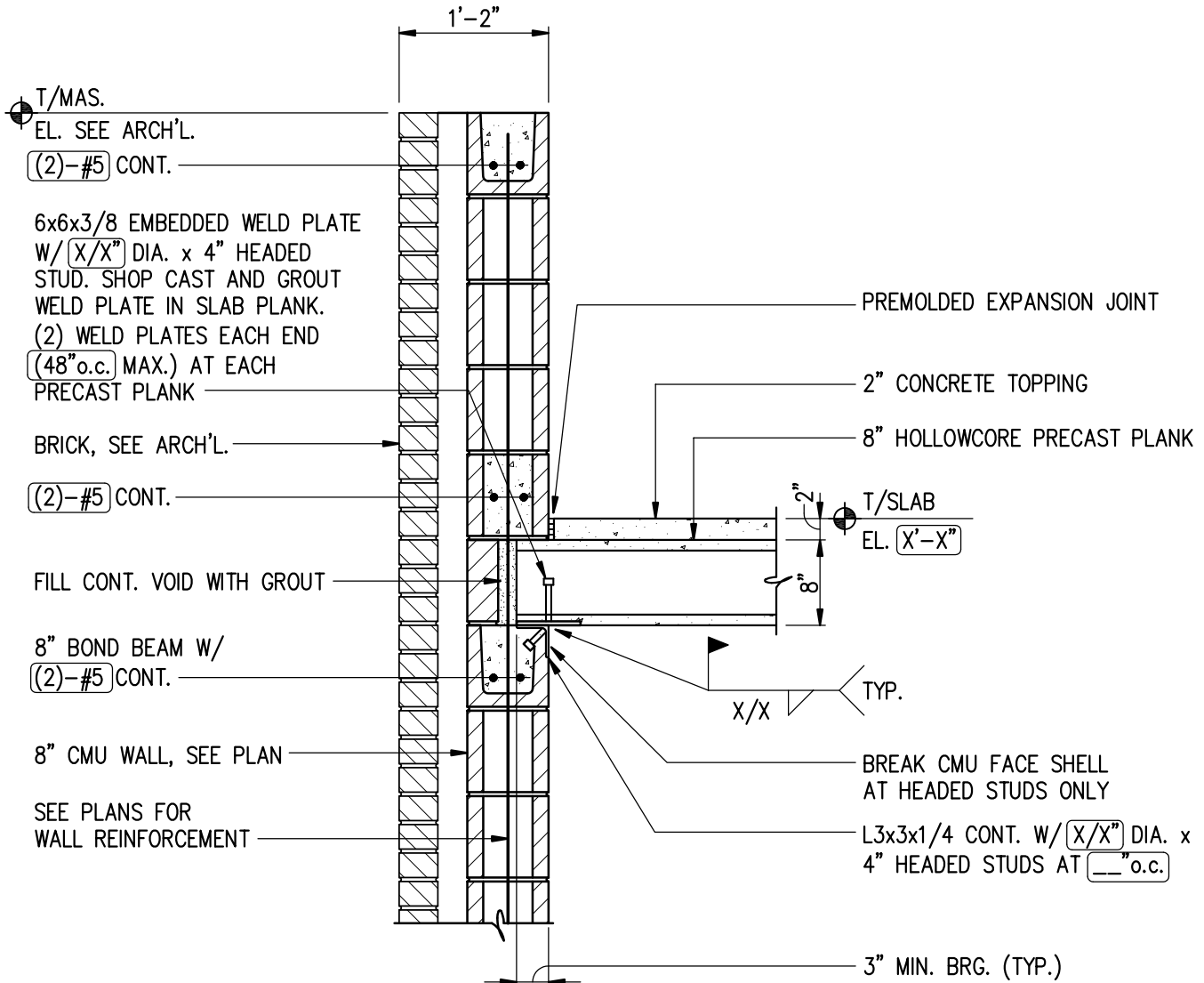
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CP02.0-02
V1.1



Precast Plank Bearing At Masonry Wall At Floor

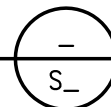


EXTERIOR WALL AT ROOF PARAPET

SCALE: 3/4" = 1'-0"

Disclaimer note

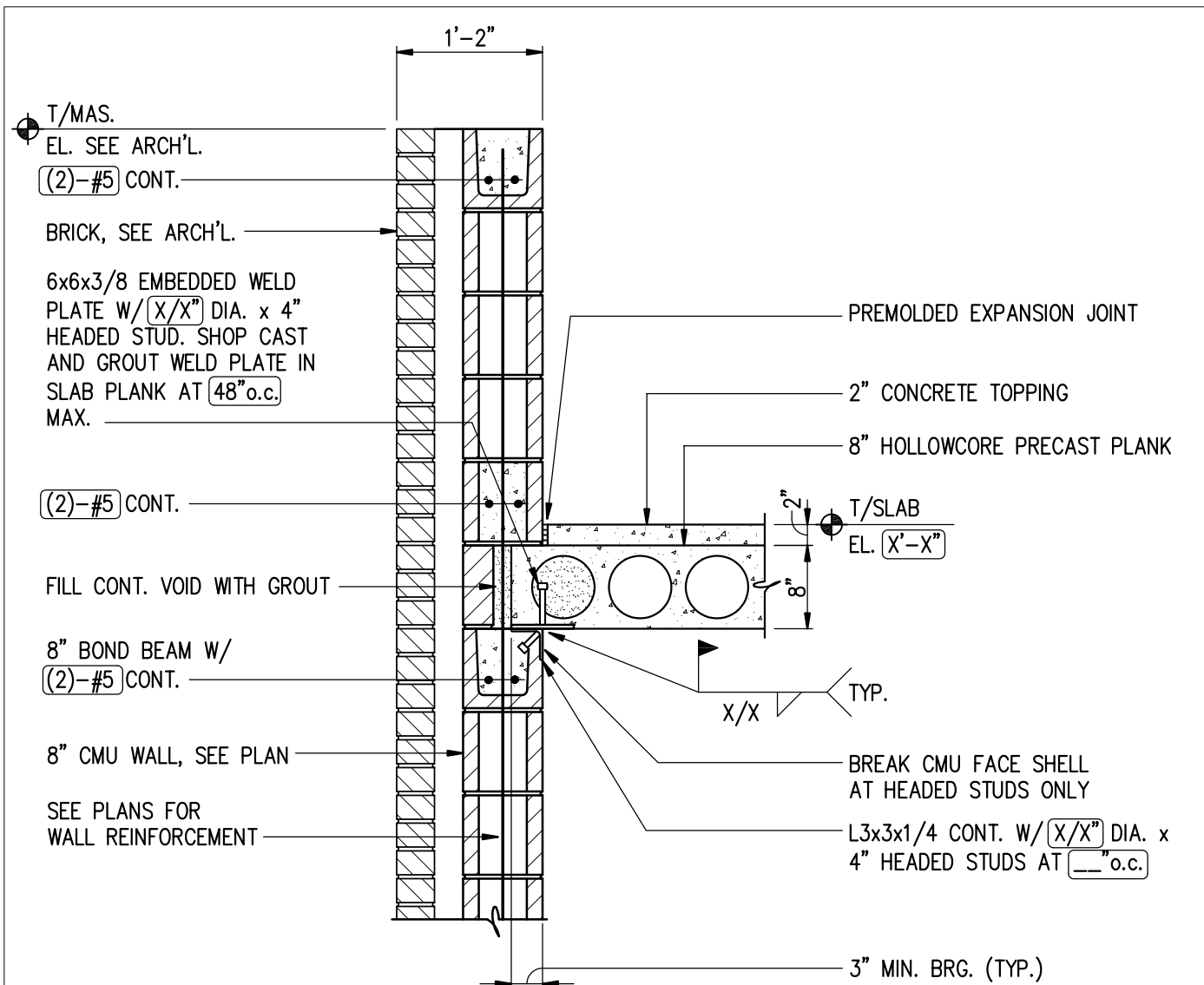
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



CP03.0-01
V1.1



Precast Plank Bearing On Masonry Wall At Roof

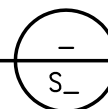


EXTERIOR WALL AT ROOF PARAPET

SCALE: 3/4" = 1'-0"

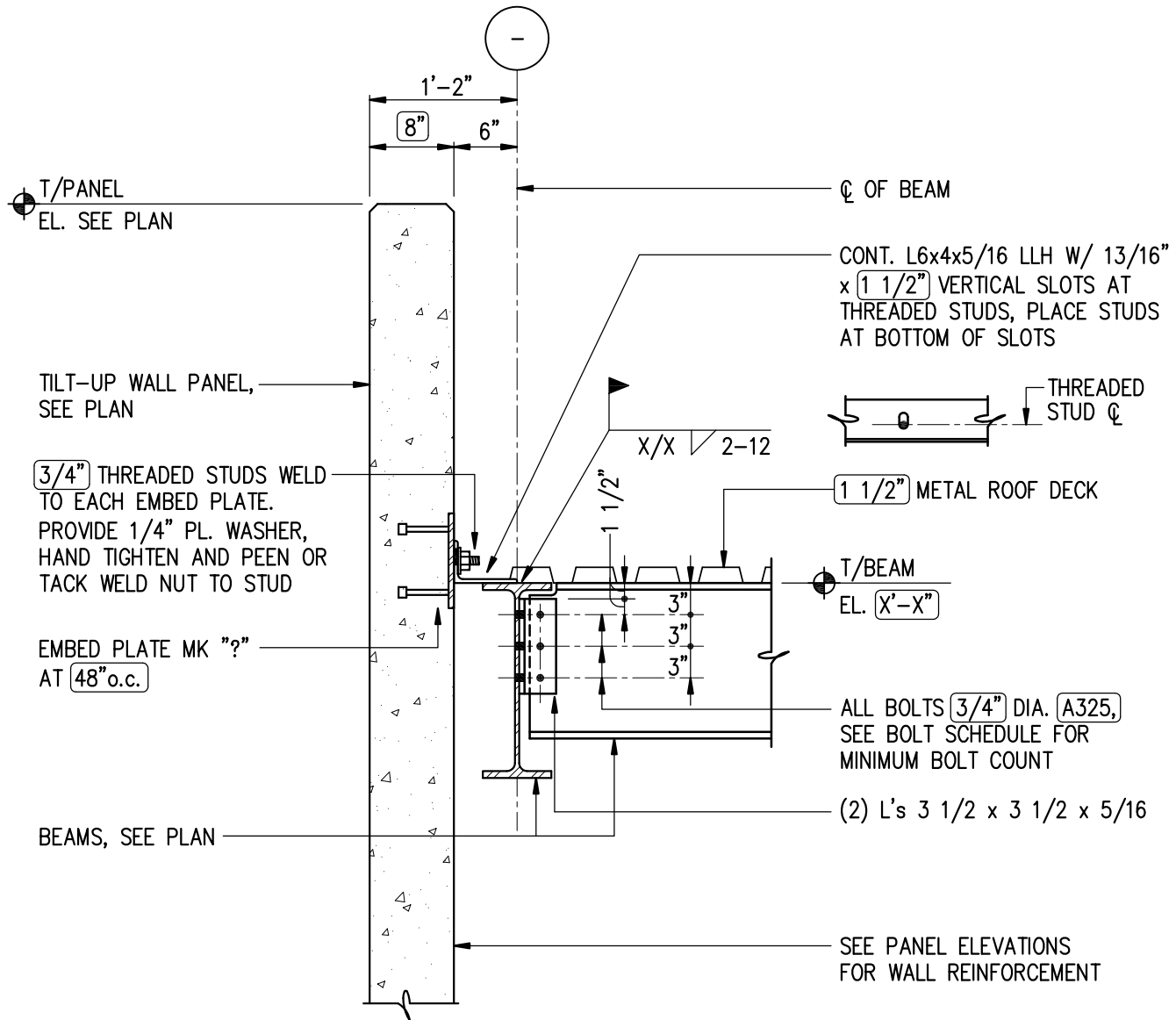
Disclaimer note

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CP03.0-02
V1.1

Precast Plank Bearing At Masonry Wall At Roof

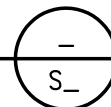


EXTERIOR WALL AT ROOF BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

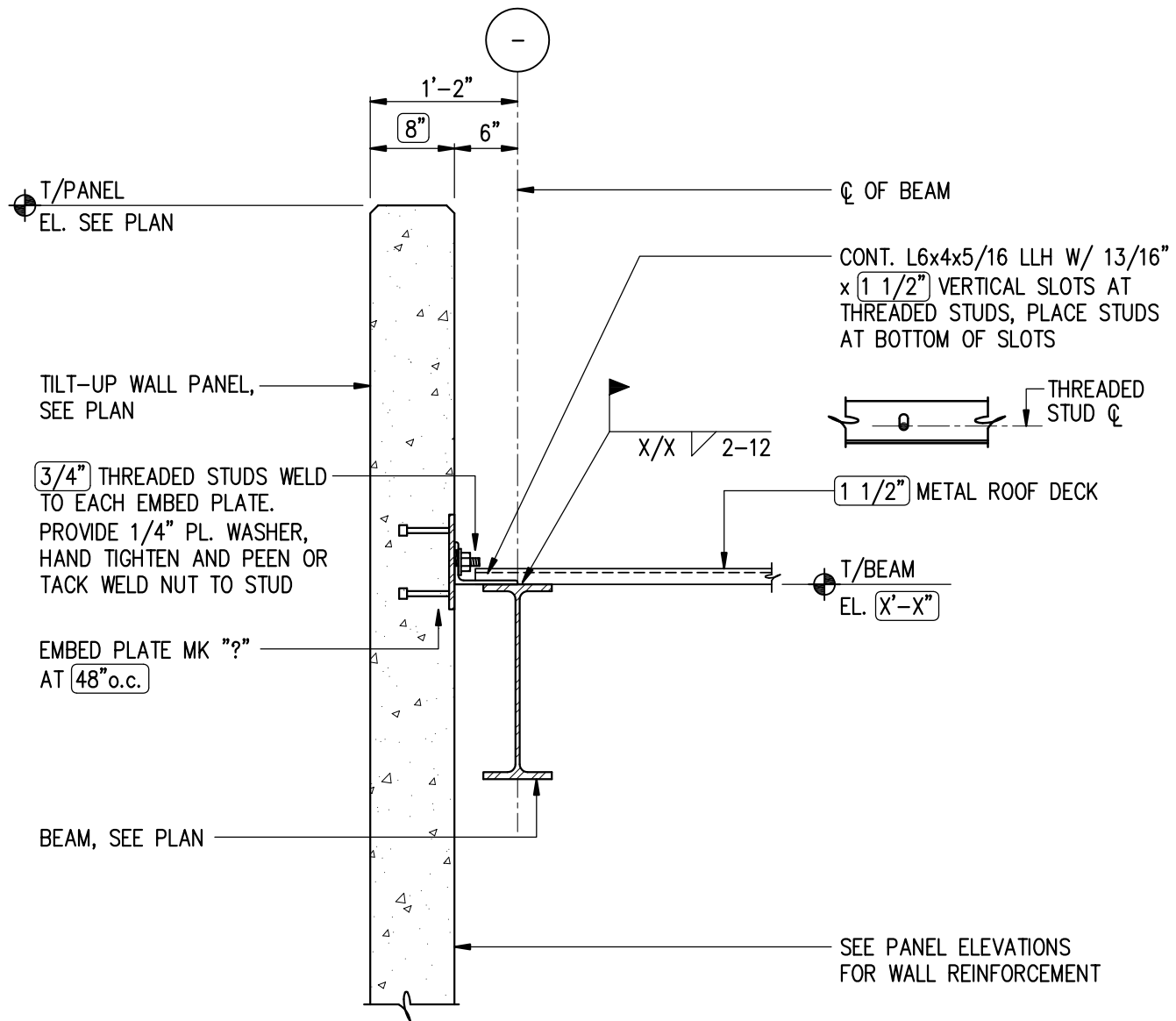
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CP04.1-01
V1.1



Tilt-up Panel At Roof Beam

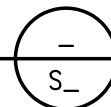


EXTERIOR WALL AT ROOF BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

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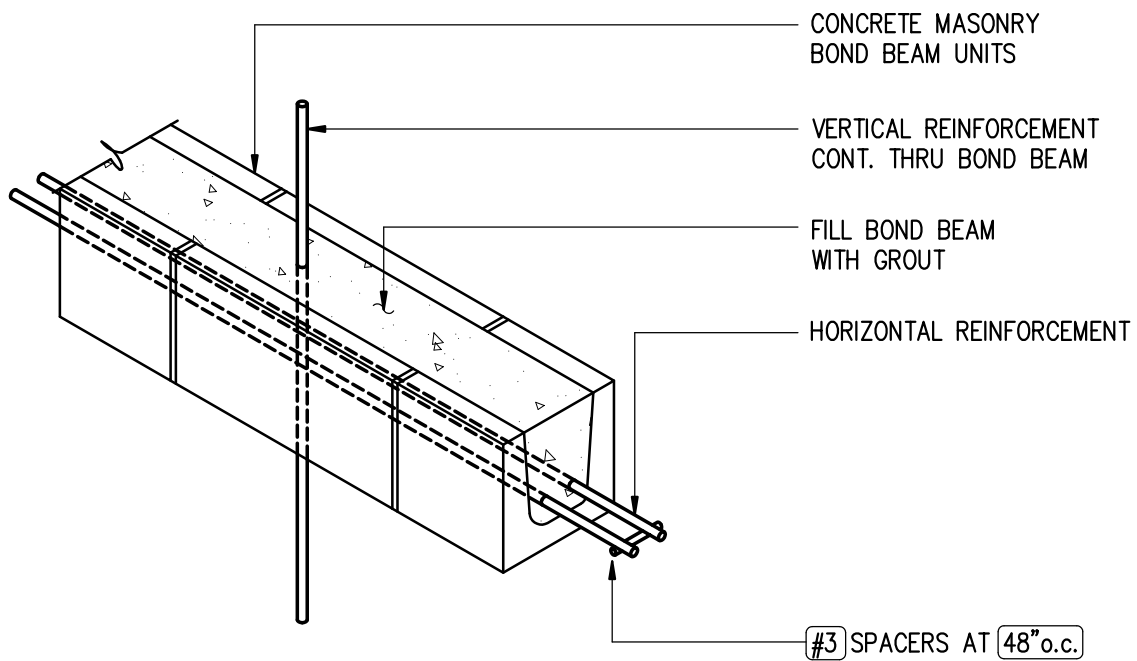


CP04.1-02
V1.1



Tilt-up Panel At Roof Beam

Structural Masonry Details

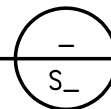


TYPICAL MASONRY BOND BEAM

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

Disclaimer note

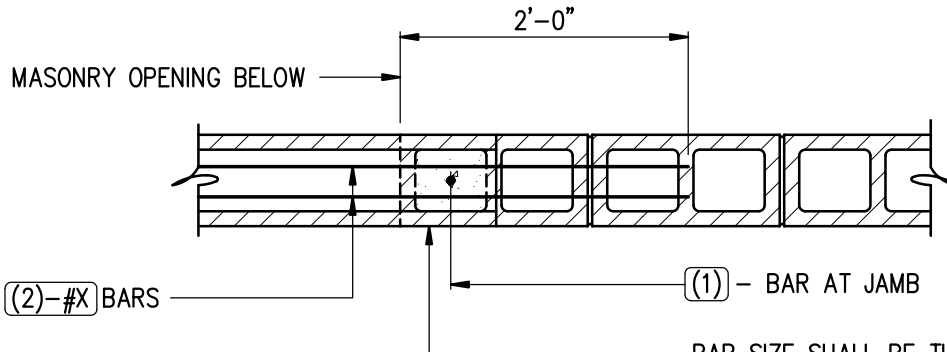
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MA01.1-02
V1.1

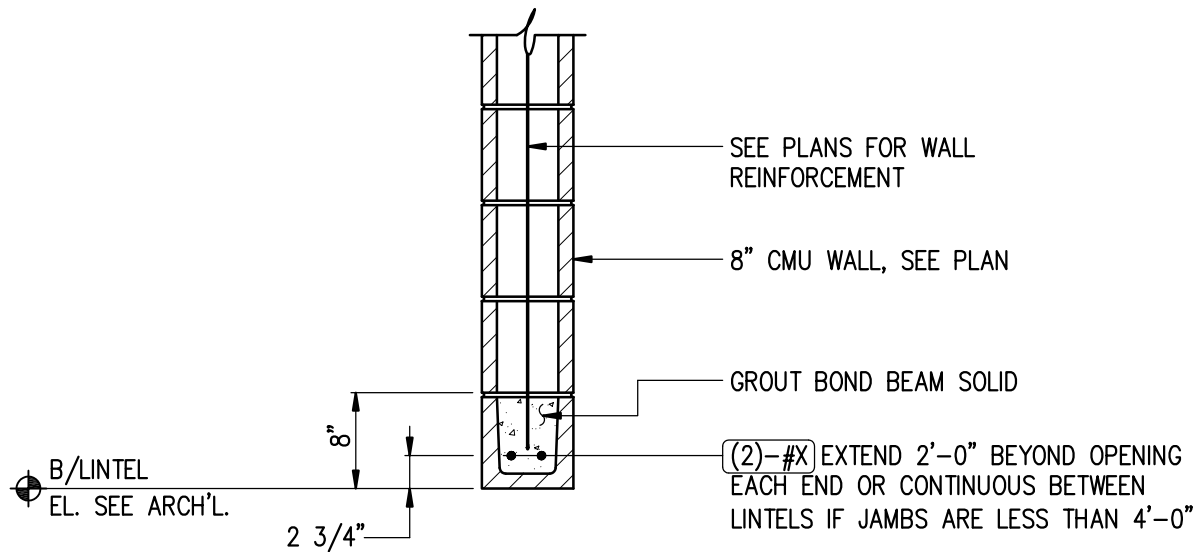


[Typical Masonry Bond Beam Detail](#)



PLAN

BAR SIZE SHALL BE THE SAME AS WALL VERTICALS, BUT NOT LESS THAN #5. BARS ARE CONTINUOUS PAST LINTEL IN SOLID GROUTED CELLS FULL HEIGHT OF WALL



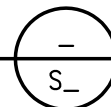
SECTION

8" DEEP MASONRY LINTEL DETAIL

SCALE: $\frac{3}{4}" = 1'-0"$

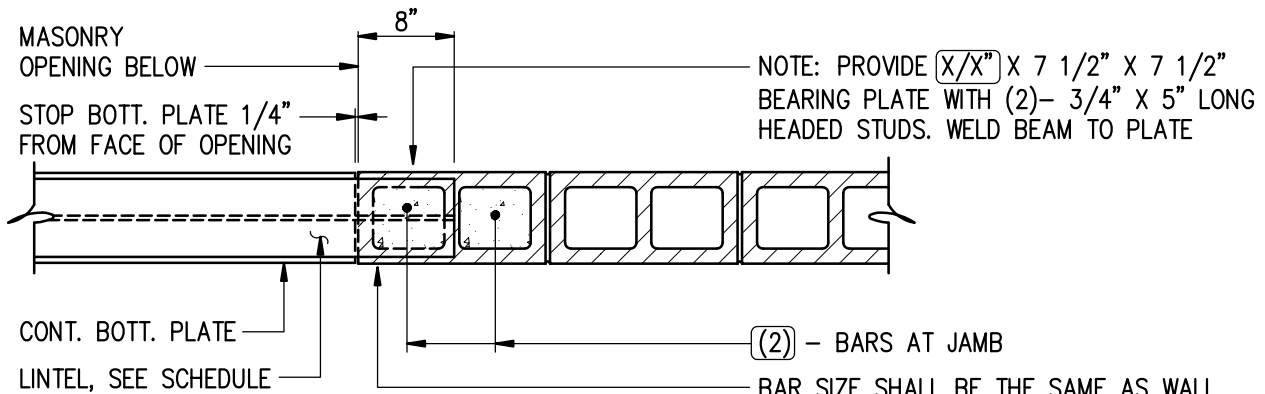
Disclaimer note

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MA02.1-01	
V1.1	

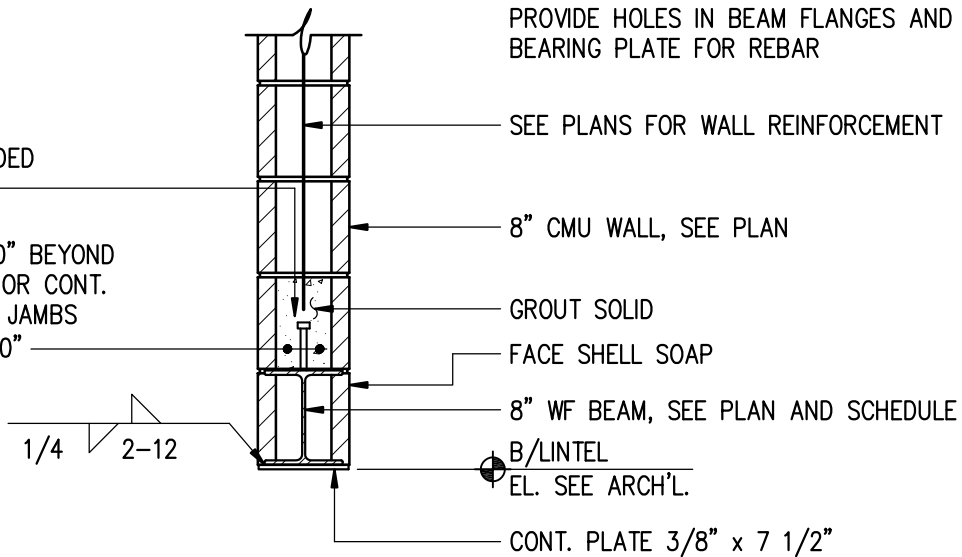
[Masonry Lintel Detail](#)



PLAN

1/2" DIA. x 4" HEADED
STUDS AT 24" o.c.

(2)-#5 EXTEND 2'-0" BEYOND
OPENING EACH END OR CONT.
BETWEEN LINTELS IF JAMBS
ARE LESS THAN 4'-0"



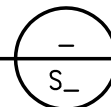
SECTION

SECTION AT WIDE FLANGE LINTEL

SCALE: 3/4" = 1'-0"

Disclaimer note

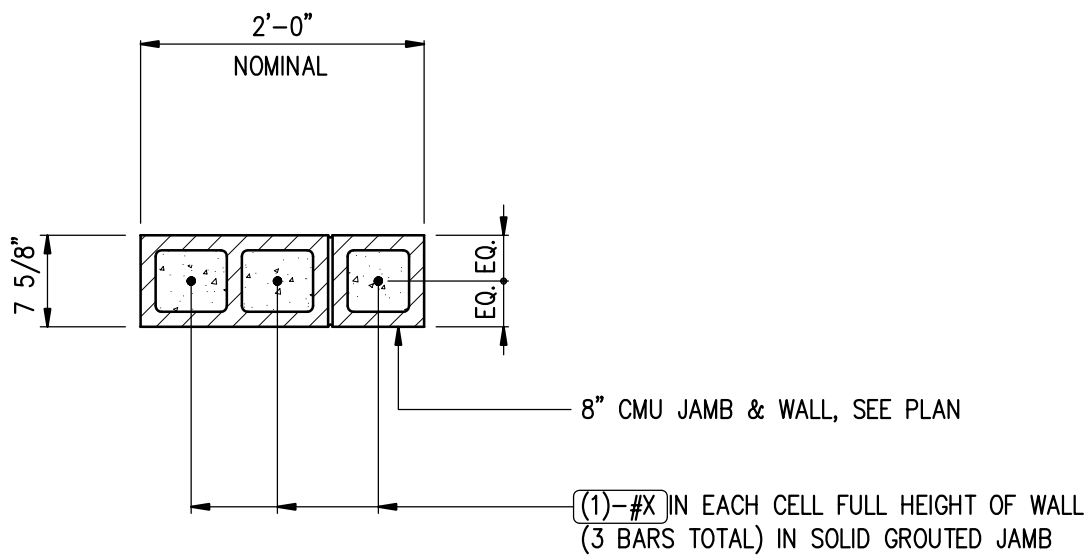
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MA03.0-01
V1.1



Wide Flange Steel Beam Lintel Detail

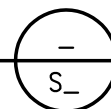


24" MASONRY JAMB REINFORCING

SCALE: 3/4" = 1'-0"

Disclaimer note

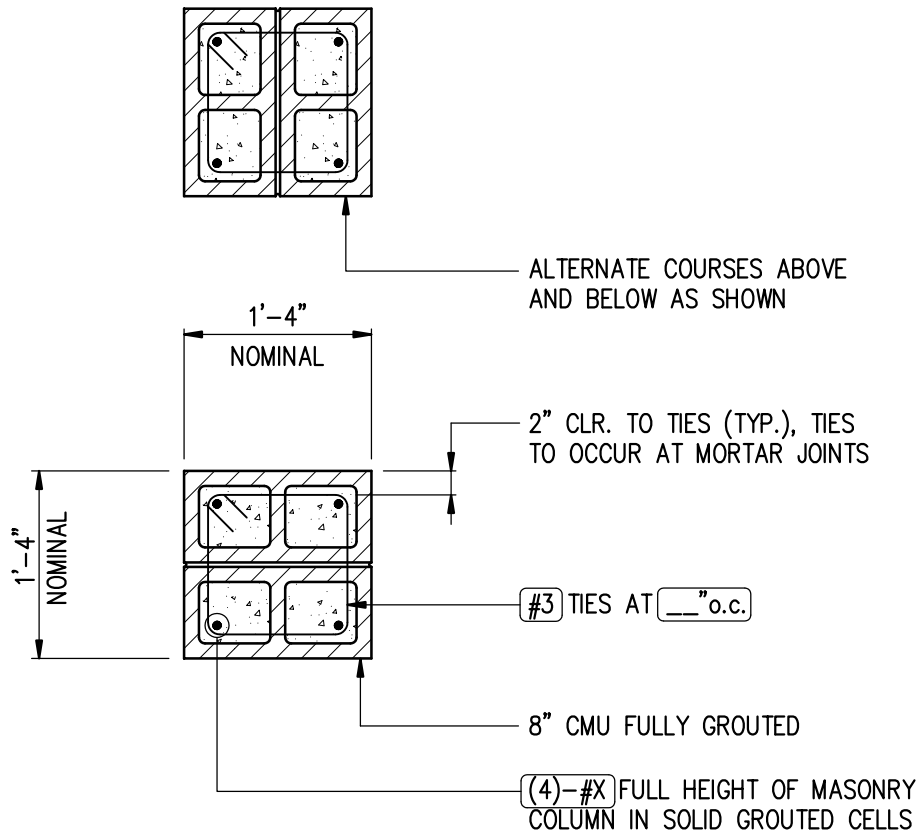
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



MA04.0-02
V1.1



[Masonry Jamb Reinforcing Detail](#)

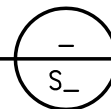


16X16 MASONRY COLUMN REINFORCING

SCALE: 3/4" = 1'-0"

Disclaimer note

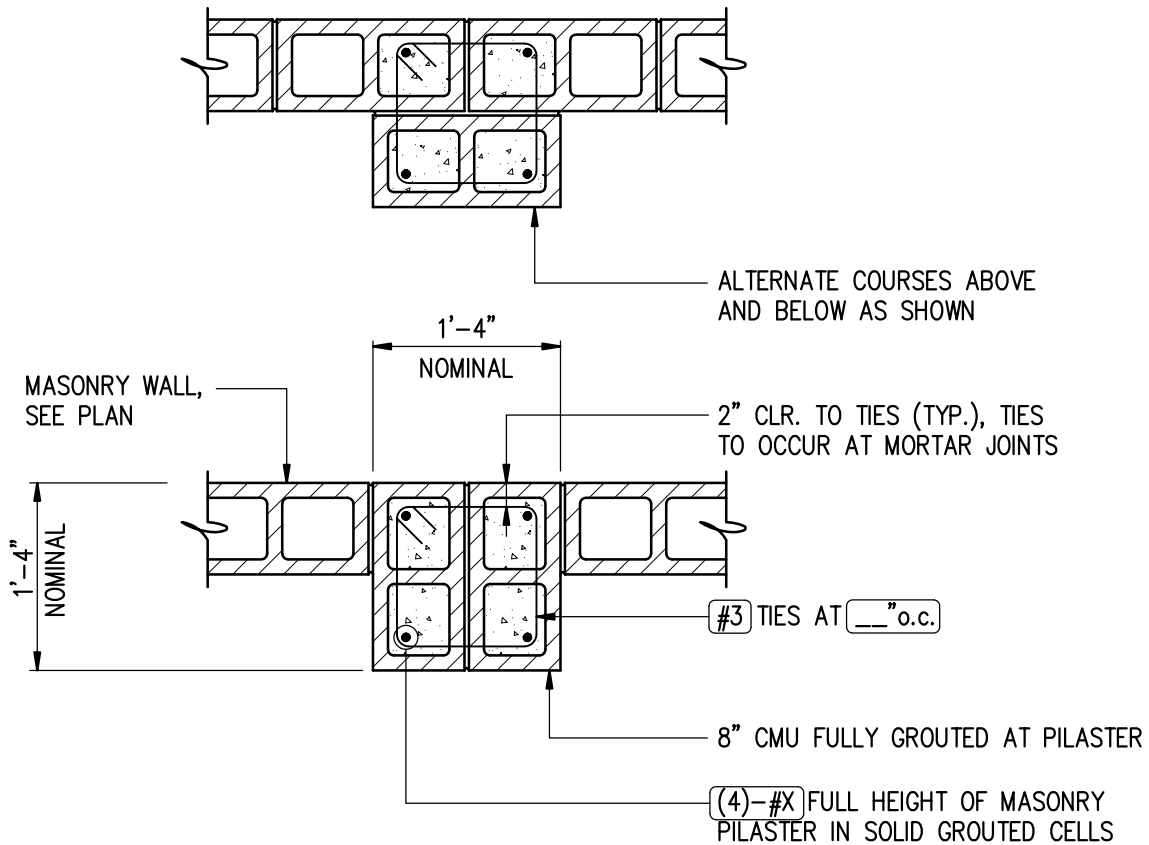
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



MA05.1-01
V1.1



[Masonry Column Reinforcing Detail](#)

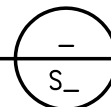


16X16 MASONRY PILASTER REINFORCING

SCALE: 3/4" = 1'-0"

Disclaimer note

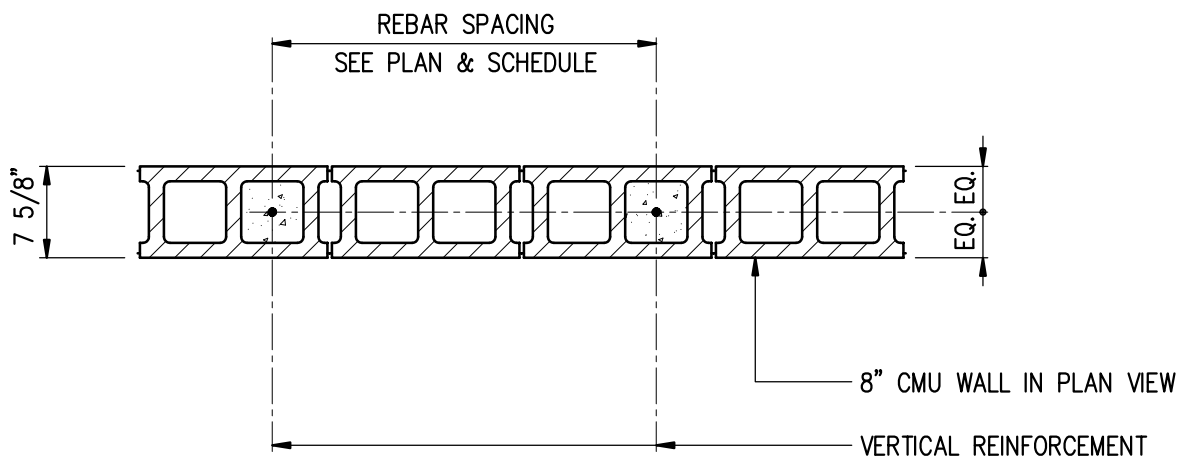
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



MA06.1-01
V1.1



Masonry Pilaster Reinforcing Detail



NOTES:

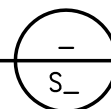
1. SEE STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIRED HORIZONTAL JOINT REINFORCING, BOND BEAMS AND ADDITIONAL VERTICAL REINFORCEMENT.
2. PROVIDE DOWELS WITH HOOKS INTO FOUNDATION AT ALL VERTICAL REINFORCEMENT. DOWELS TO MATCH VERTICALS IN SIZE AND SPACING.
3. ALL CELLS CONTAINING VERTICAL REINFORCEMENT SHALL BE SOLID GROUTED FULL HEIGHT.

8" MASONRY WALL REINFORCING

SCALE: 3/4" = 1'-0"

Disclaimer note

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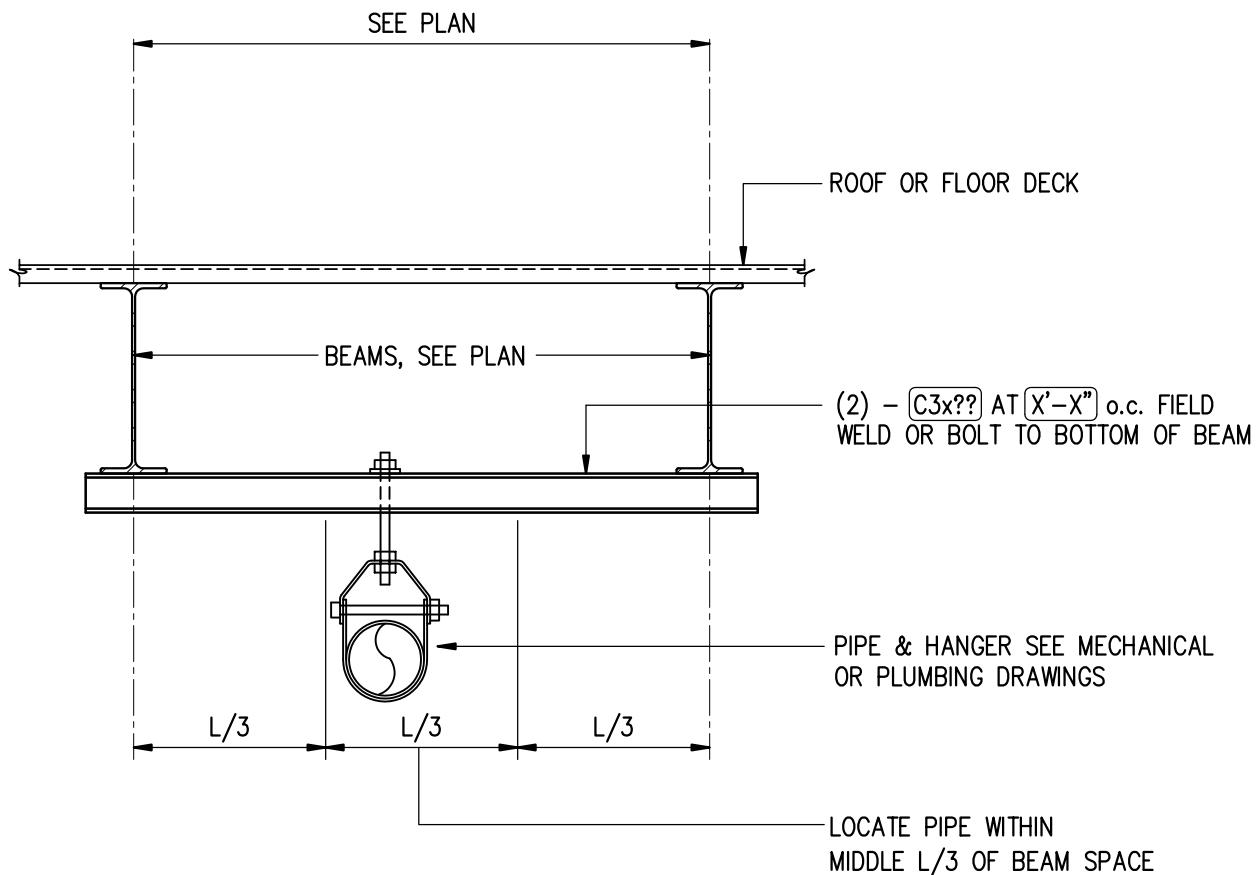


MA07.0-01
V1.1



[Masonry Wall Reinforcing Detail](#)

Structural Steel Details



NOTE:

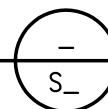
THIS DETAIL APPLIES FOR ONE PIPE 6" TO 12". WHEN HANGING MULTIPLE PIPES VERIFY WITH ARCHITECT AND STRUCTURAL ENGINEER. FOR PIPES 5" AND SMALLER UNISTRUT MAY BE USED. SUBMIT SPECIFICATIONS FOR REVIEW.

PIPE HANGER DETAIL AT BEAMS

SCALE: 3/4" = 1'-0"

Disclaimer note

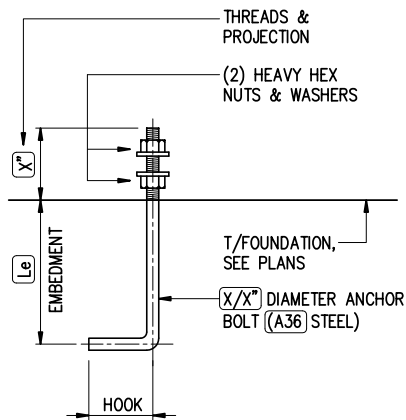
This detail must not be used without the final and complete review and evaluation by the design professional. The design professional assumes total and final responsibility for this detail as explained in Responsibilities and Legal Notices in the axiomcpl.com website. Please remove the review text boxes and this disclaimer note after review.



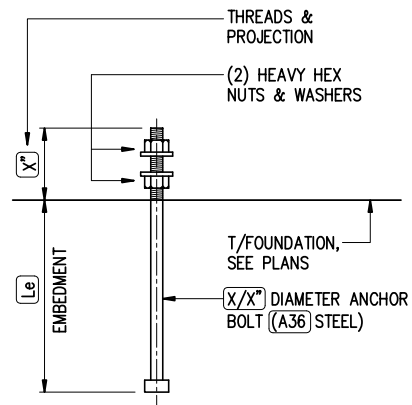
ST01.1-01
V1.1



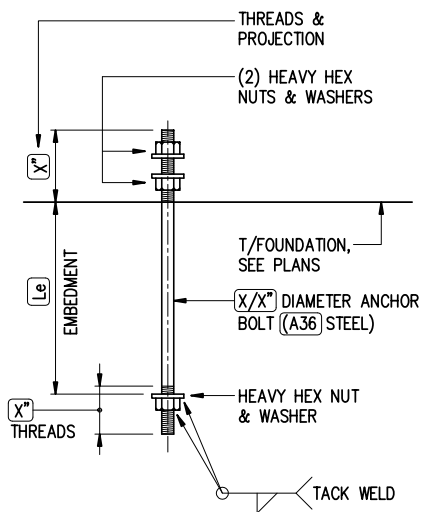
Pipe Hanger Detail At Beams



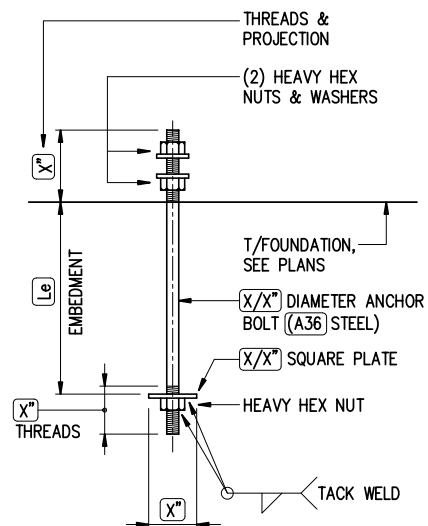
WITH HOOK



HEADED



WITH NUT



WITH PLATE

GENERAL ANCHOR BOLT DETAIL

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

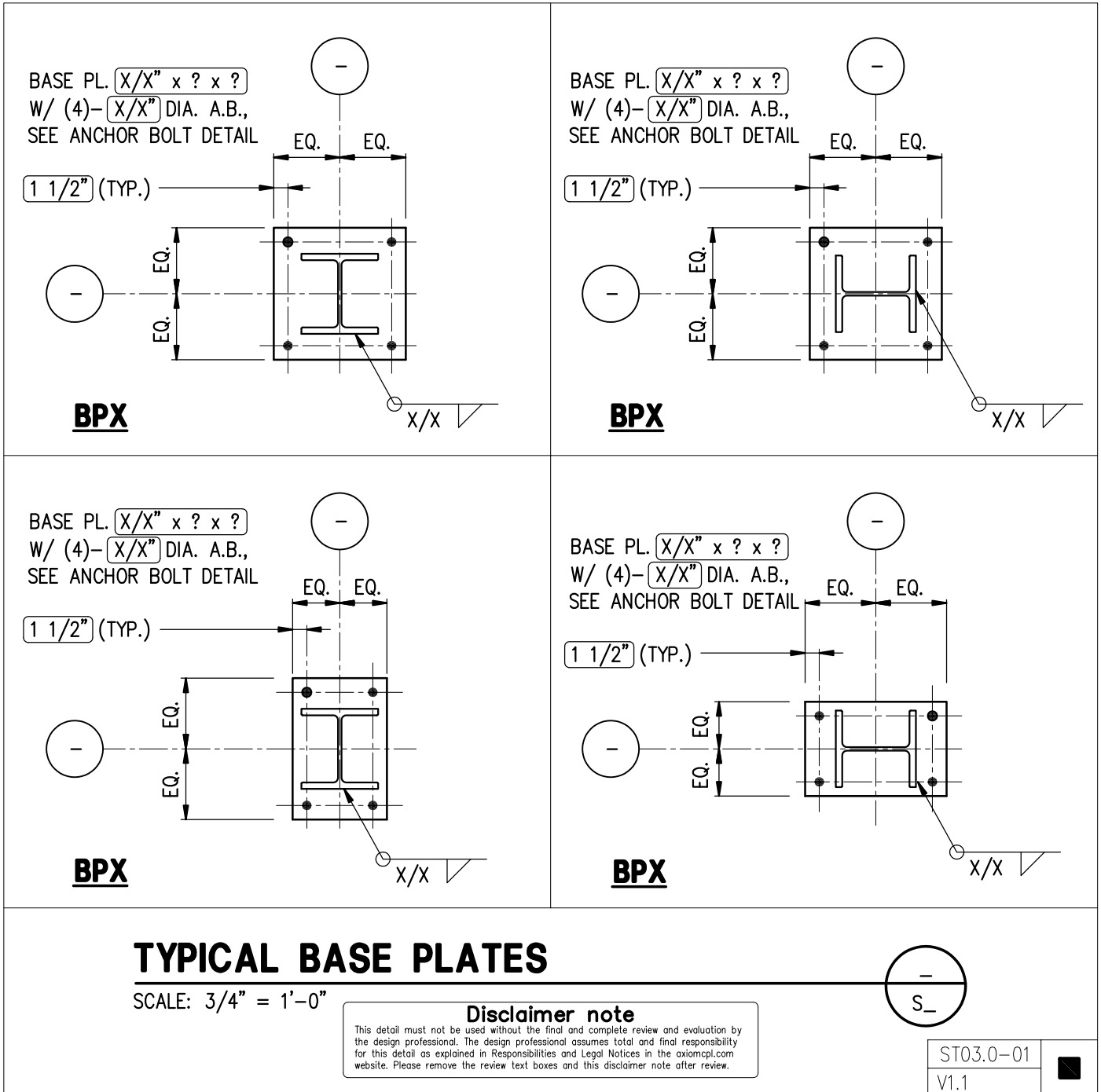
Disclaimer note

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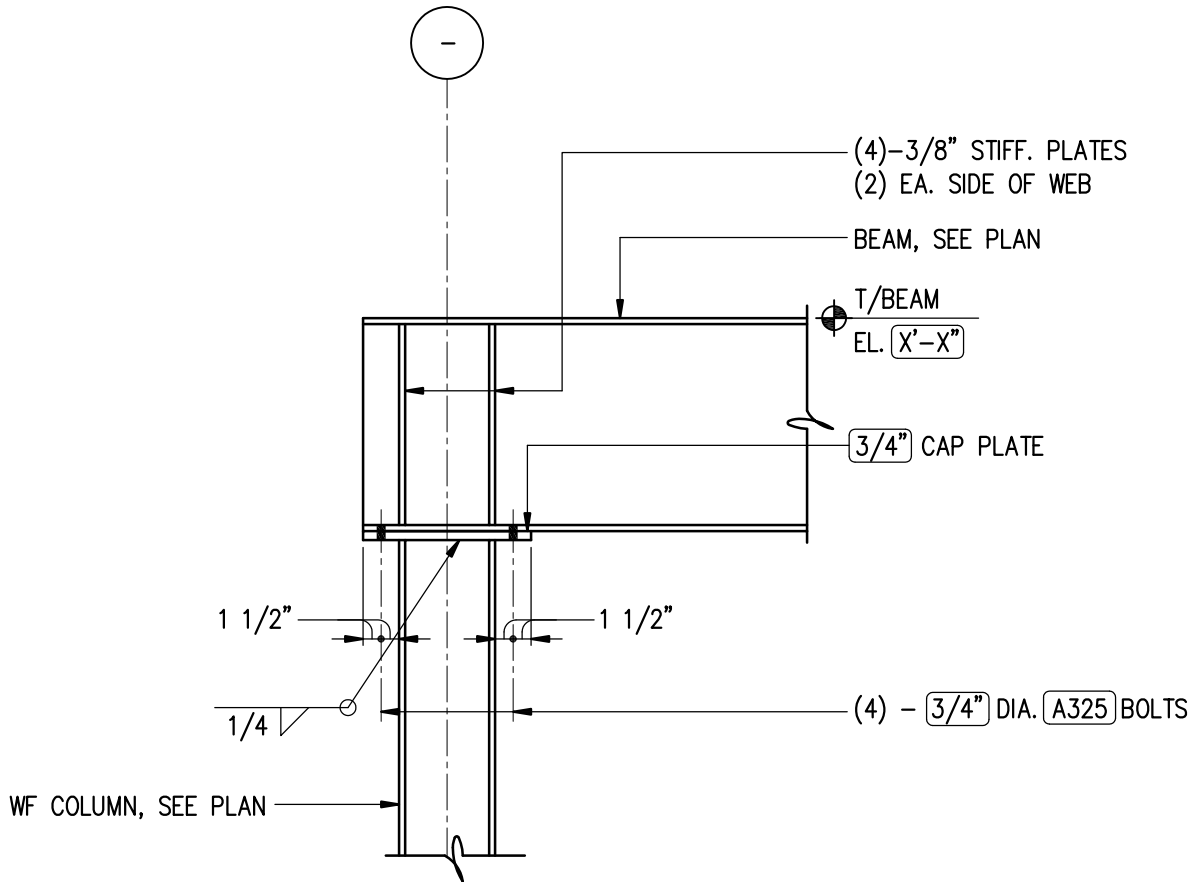


ST02.1-01
V1.2

Anchor Bolt Details



Wide Flange Columns Base Plates



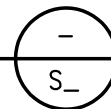
NOTE: PURLINS, JOISTS AND/OR DECK NOT SHOWN FOR CLARITY

BEAM TO COLUMN END CONNECTION

SCALE: 3/4" = 1'-0"

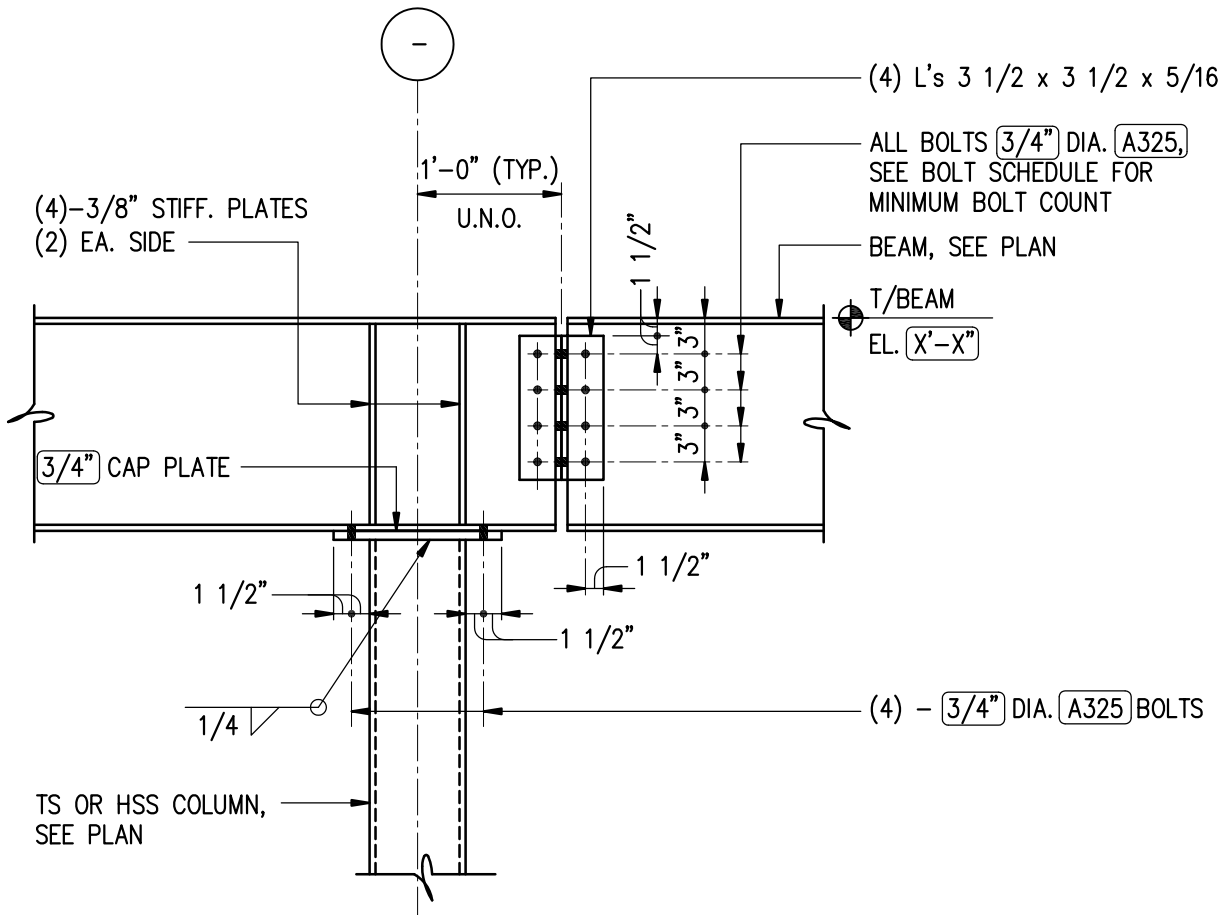
Disclaimer note

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ST04.1-01	■
V1.1	

[Steel Beam To Column End Connection](#)



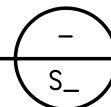
NOTE: PURLINS, JOISTS AND/OR DECK NOT SHOWN FOR CLARITY

BEAM SPLICE CONNECTION

SCALE: 3/4" = 1'-0"

Disclaimer note

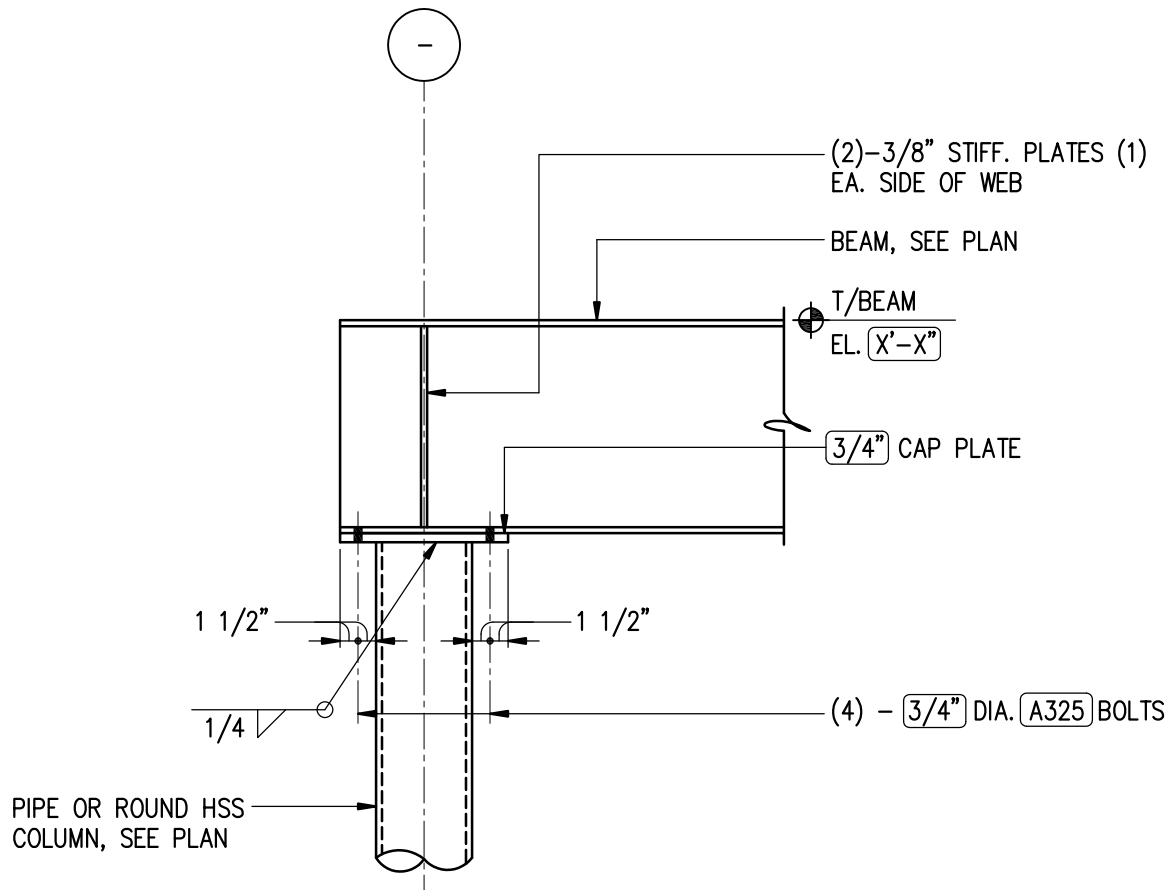
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ST19.1-05
V1.1



Steel Beam To Column And Splice Connection



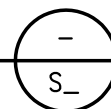
NOTE: PURLINS, JOISTS AND/OR DECK NOT SHOWN FOR CLARITY

BEAM TO COLUMN END CONNECTION

SCALE: 3/4" = 1'-0"

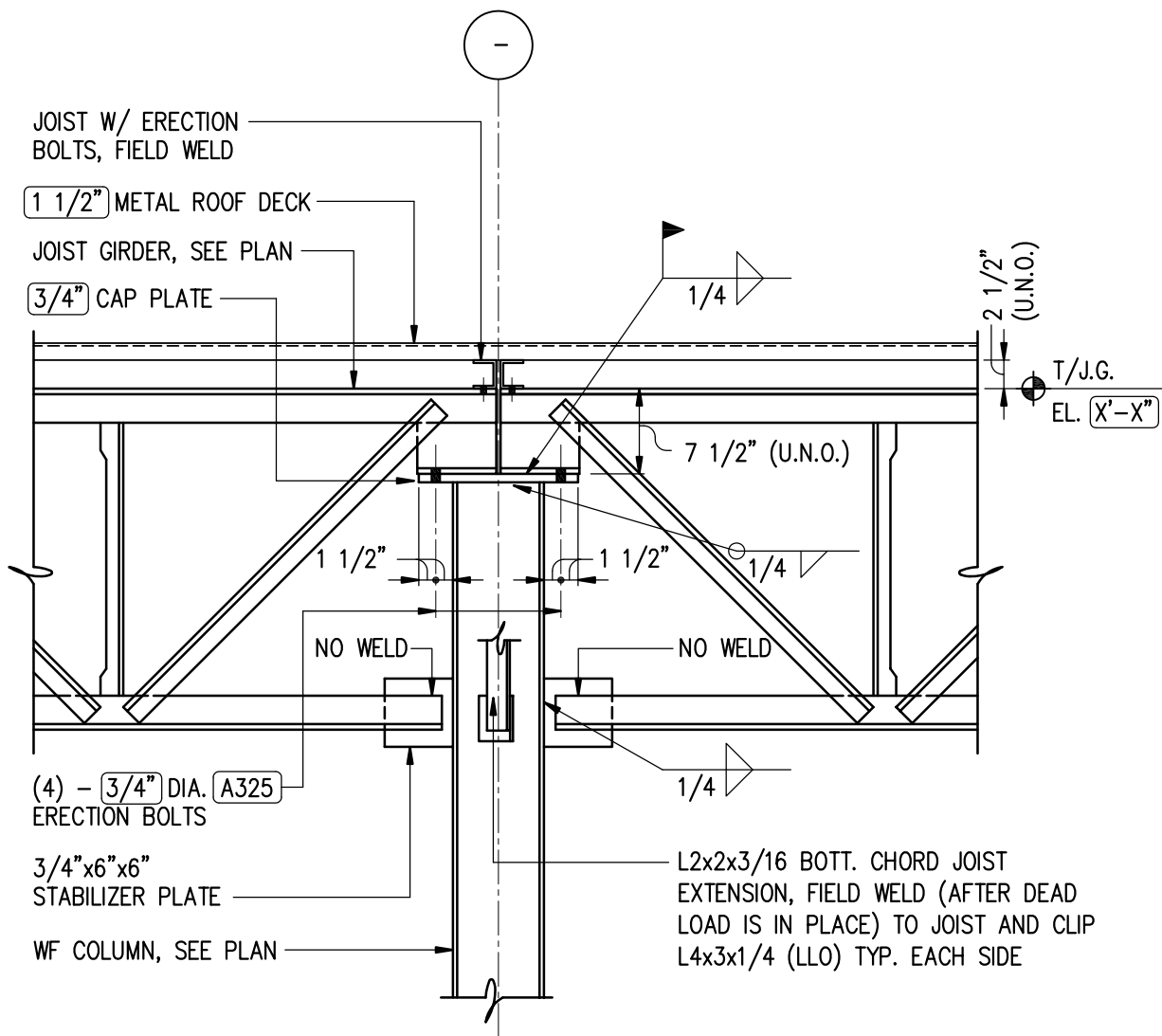
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ST20.1-01	■
V1.1	

Steel Beam To Column End Connection



JOIST GIRDER TO COLUMN CONNECTION

SCALE: 3/4" = 1'-0"

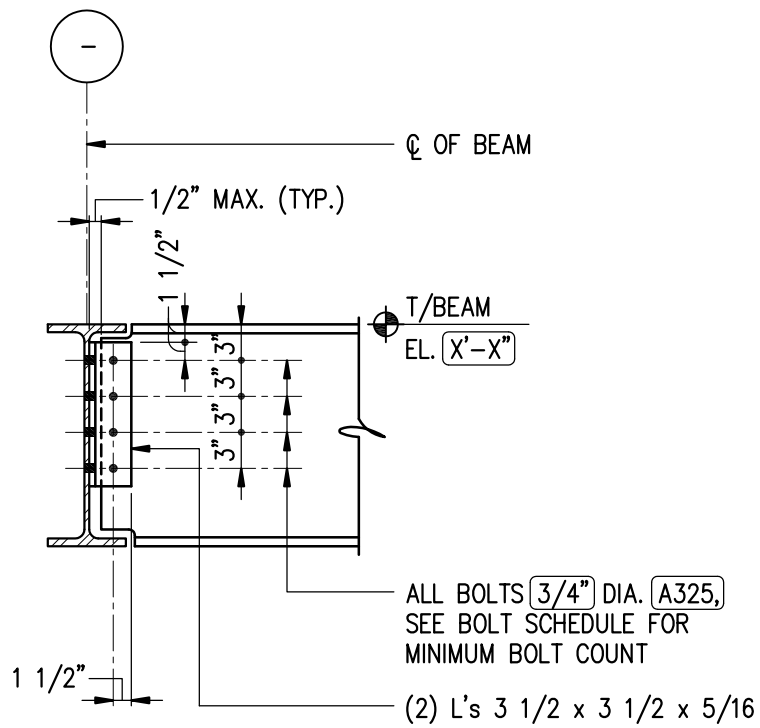
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ST17.0-01

V1.1

[Steel Joist Girder To Column Connection](#)

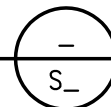


BEAM TO BEAM CONNECTION

SCALE: 3/4" = 1'-0"

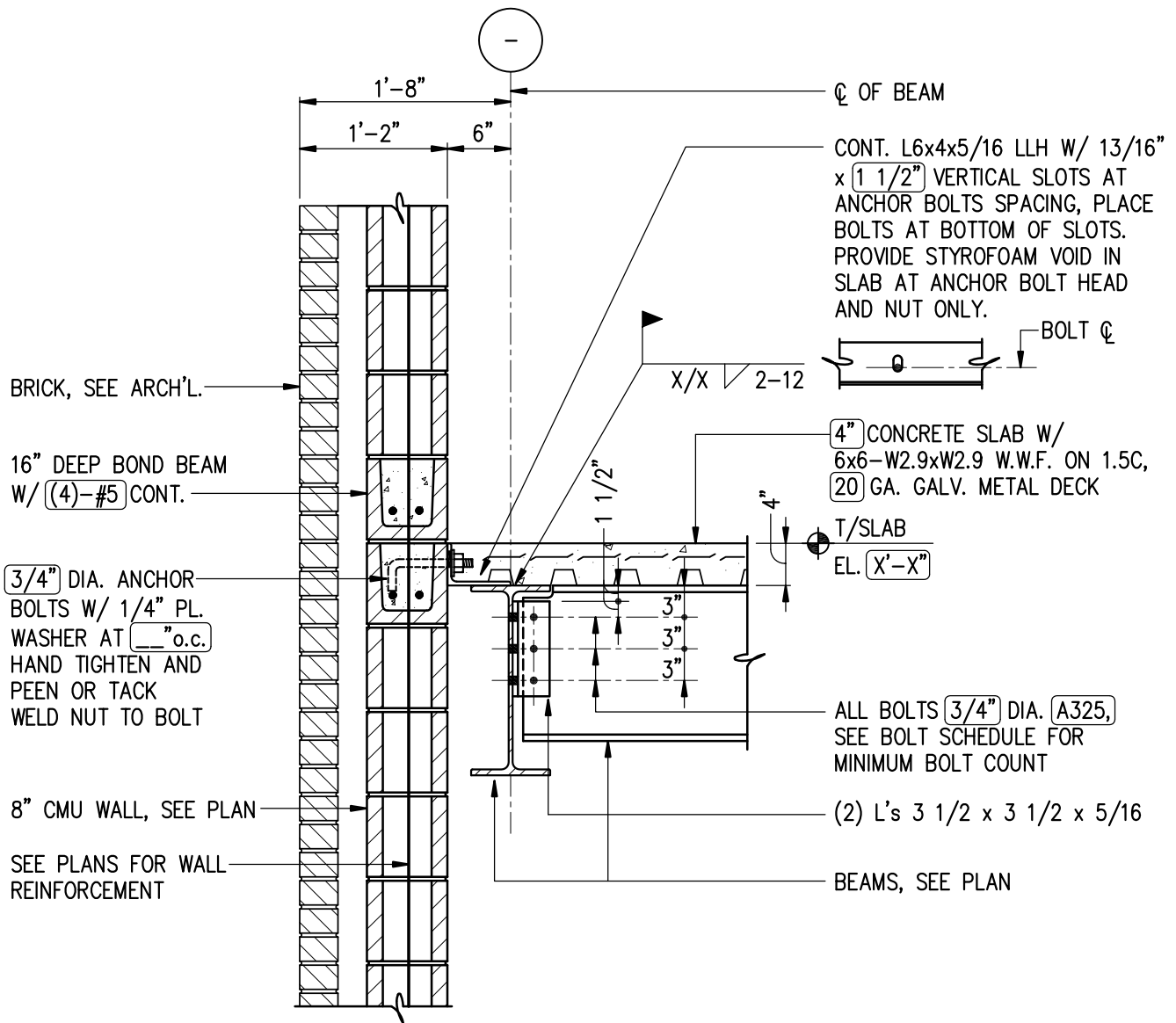
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ST05.1-02	■
V1.1	

Steel Beam To Beam Connection

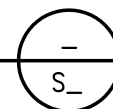


EXTERIOR WALL AT FLOOR BEAM

SCALE: 3/4" = 1'-0"

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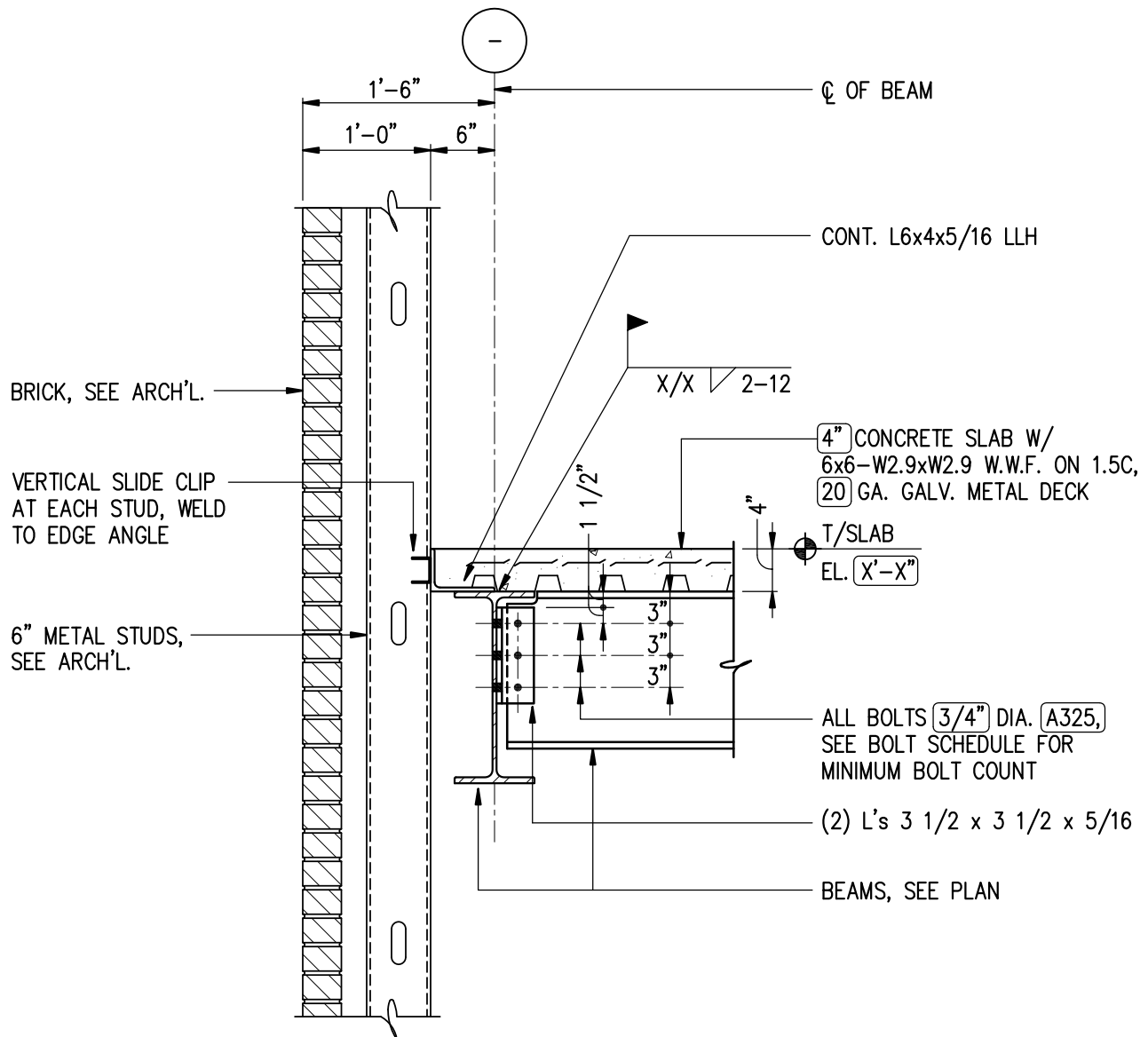


ST08.5-01

V1.1



Exterior Masonry Wall At Floor Beam

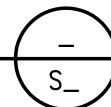


EXTERIOR WALL AT FLOOR BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

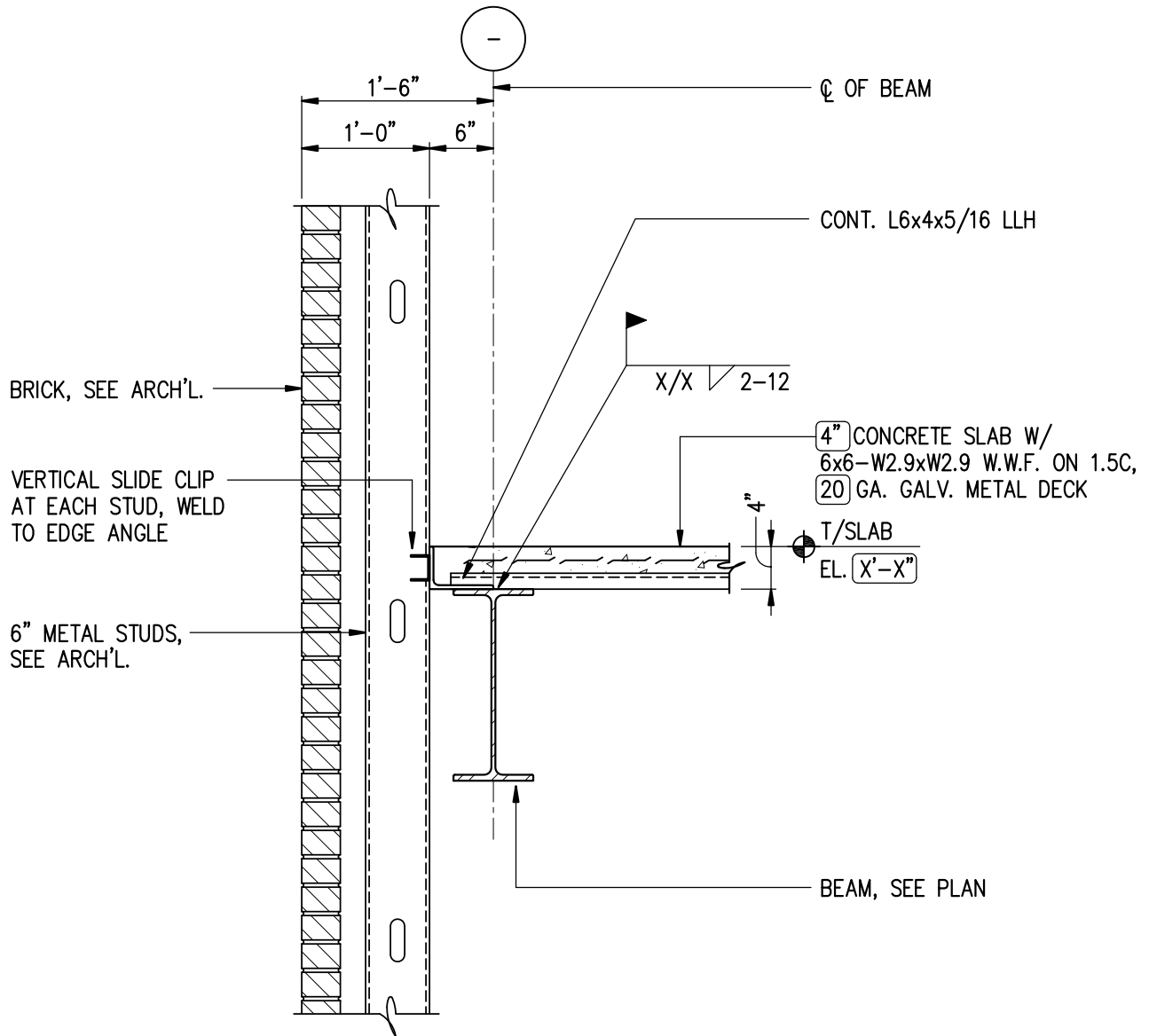
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ST08.10-01
V1.1



[Exterior Metal Stud Wall At Floor Beam](#)

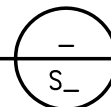


EXTERIOR WALL AT FLOOR BEAM

SCALE: $\frac{3}{4}" = 1'-0"$

Disclaimer note

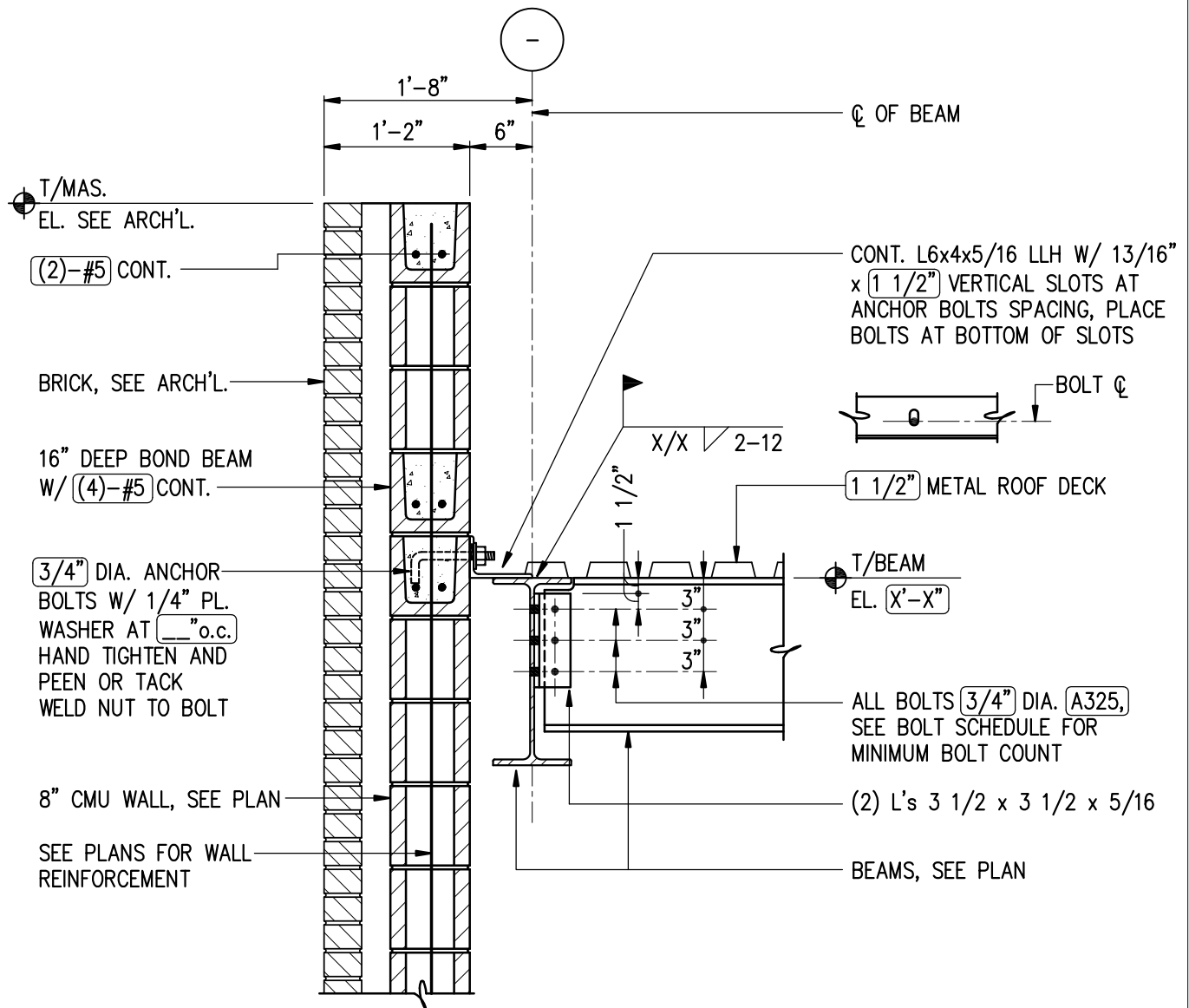
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ST08.10-02
V1.1



Exterior Metal Stud Wall At Floor Beam

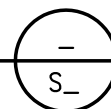


EXTERIOR WALL AT ROOF BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

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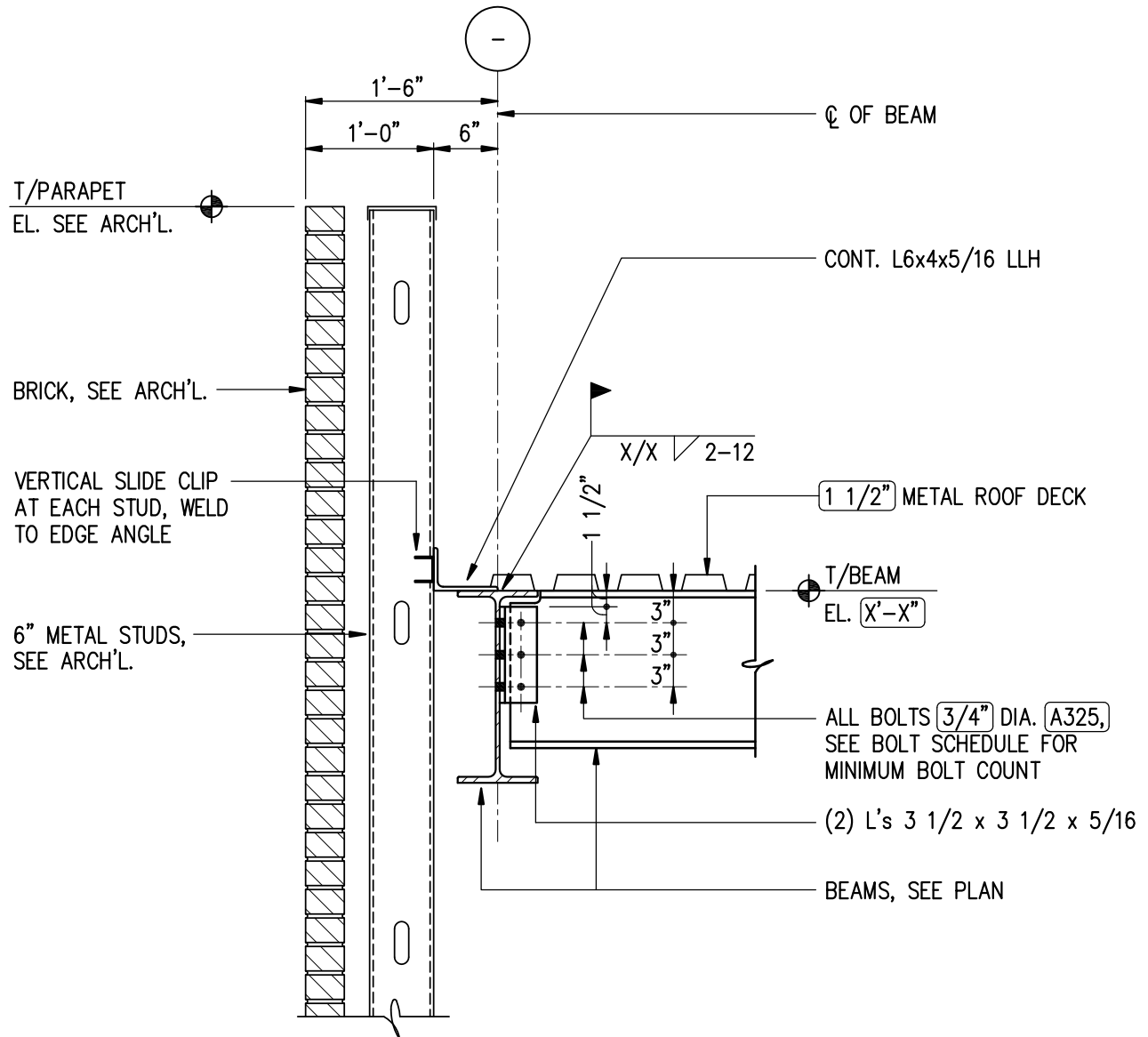


ST09.5-01

V1.1



Exterior Masonry Wall At Roof Beam

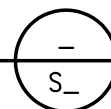


EXTERIOR WALL AT ROOF BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

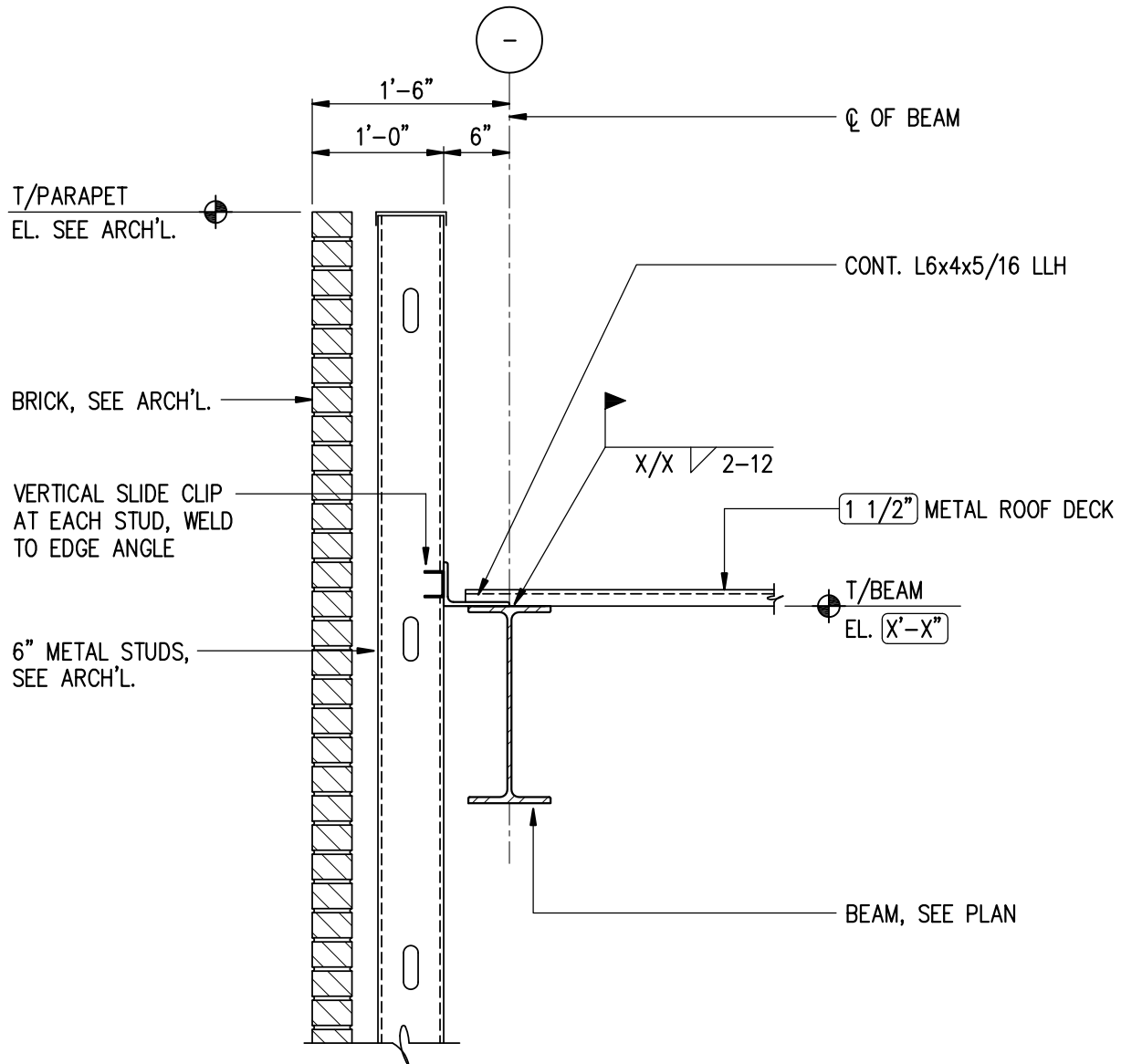
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ST09.10-01
V1.1



Exterior Metal Stud Wall At Roof Beam

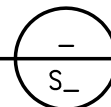


EXTERIOR WALL AT ROOF BEAM

SCALE: 3/4" = 1'-0"

Disclaimer note

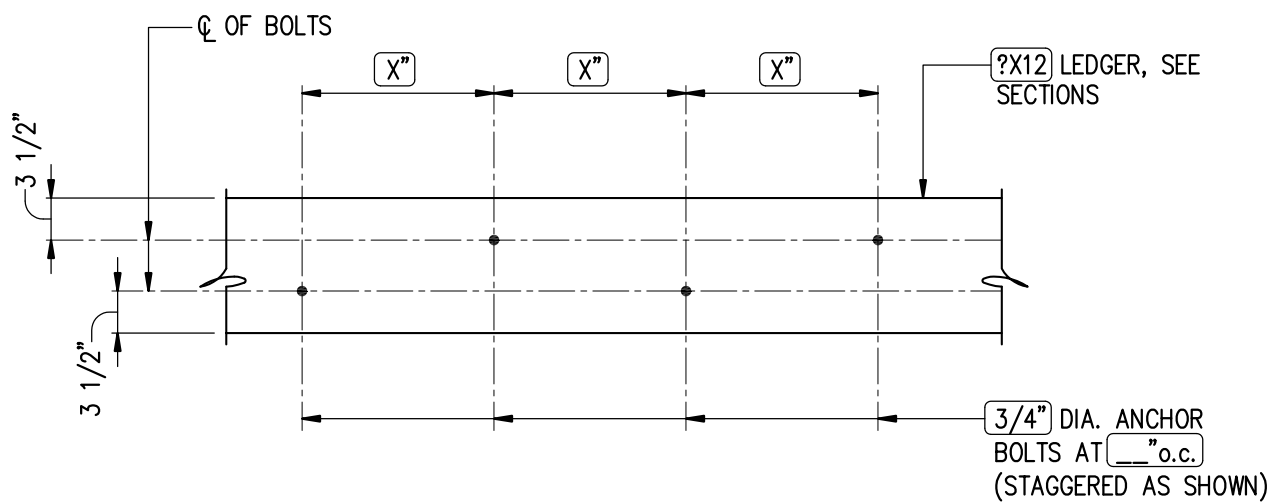
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ST09.10-02	■
V1.1	

Exterior Metal Stud Wall At Roof Beam

Structural Wood/Timber Details

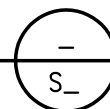


LEDGER DETAIL AT MASONRY WALL

SCALE: $\frac{3}{4}" = 1'-0"$

Disclaimer note

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WD01.1-03
V1.1



Wood Ledger Detail At Masonry Wall

PROVIDE FILLER SHIM AT
BEAM AS REQUIRED

SIMPSON "ECC" (OR APPROVED
EQUAL) AT END COLUMNS

MULTIPLE 2X'S OR LAMINATED
VENEER LUMBER BEAM, SEE PLAN

T/BEAM
EL. $X'-X''$

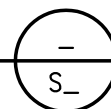
TIMBER POST, SEE
PLAN FOR SIZE

BEAM TO POST CONNECTION

SCALE: $3/4" = 1'-0"$

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WD02.1-02
V1.1



Wood Beam To Post Connection

PROVIDE FILLER SHIM AT
BEAM AS REQUIRED

SIMPSON "CC" (OR APPROVED
EQUAL) AT MIDDLE COLUMNS

MULTIPLE 2X'S OR LAMINATED
VENEER LUMBER BEAM, SEE PLAN

T/BEAM
EL. "X'-X"

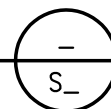
TIMBER POST, SEE
PLAN FOR SIZE

BEAM TO POST CONNECTION

SCALE: 3/4" = 1'-0"

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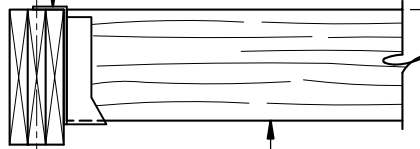
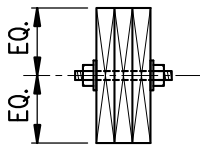


WD02.1-05	
V1.1	

Wood Beam To Post Connection

SIMPSON HANGER OR APPROVED
EQUAL WITH TOP FLANGE
(BEAM REACTION = #)

(3)-2x12 BEAM, SEE PLAN
PROVIDE (1/2") DIA. THRU BOLTS
AT 24" o.c. ALONG BEAM LENGTH
AT BEAMS WITH THREE PLYS AS
SHOWN BELOW



T/BEAM
EL. X'-X"

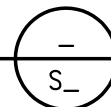
(X)-2x10 BEAM,
SEE PLAN

BEAM TO BEAM CONNECTION

SCALE: 3/4" = 1'-0"

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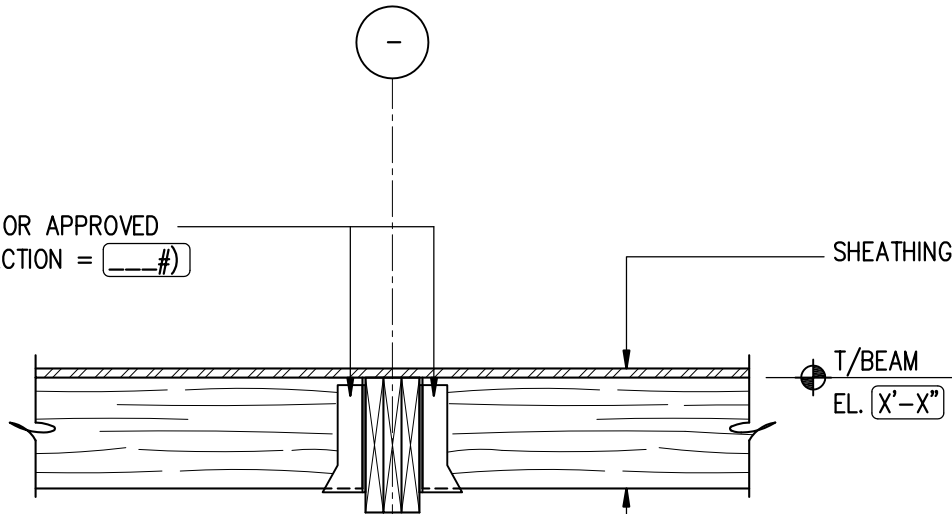
WD15.1-02
V1.1



Wood Beam To Beam Connection

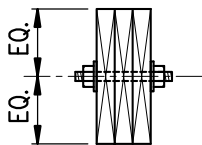
SIMPSON HANGER OR APPROVED
EQUAL (JOIST REACTION =)

SHEATHING, SEE PLAN



(3)-2x12 BEAM, SEE PLAN
PROVIDE $\frac{1}{2}$ " DIA. THRU BOLTS
AT 24" o.c. ALONG BEAM LENGTH
AT BEAMS WITH THREE PLIES AS
SHOWN BELOW

2x JOIST, SEE PLAN

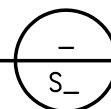


2X JOIST TO BEAM CONNECTION

SCALE: $\frac{3}{4}$ " = 1'-0"

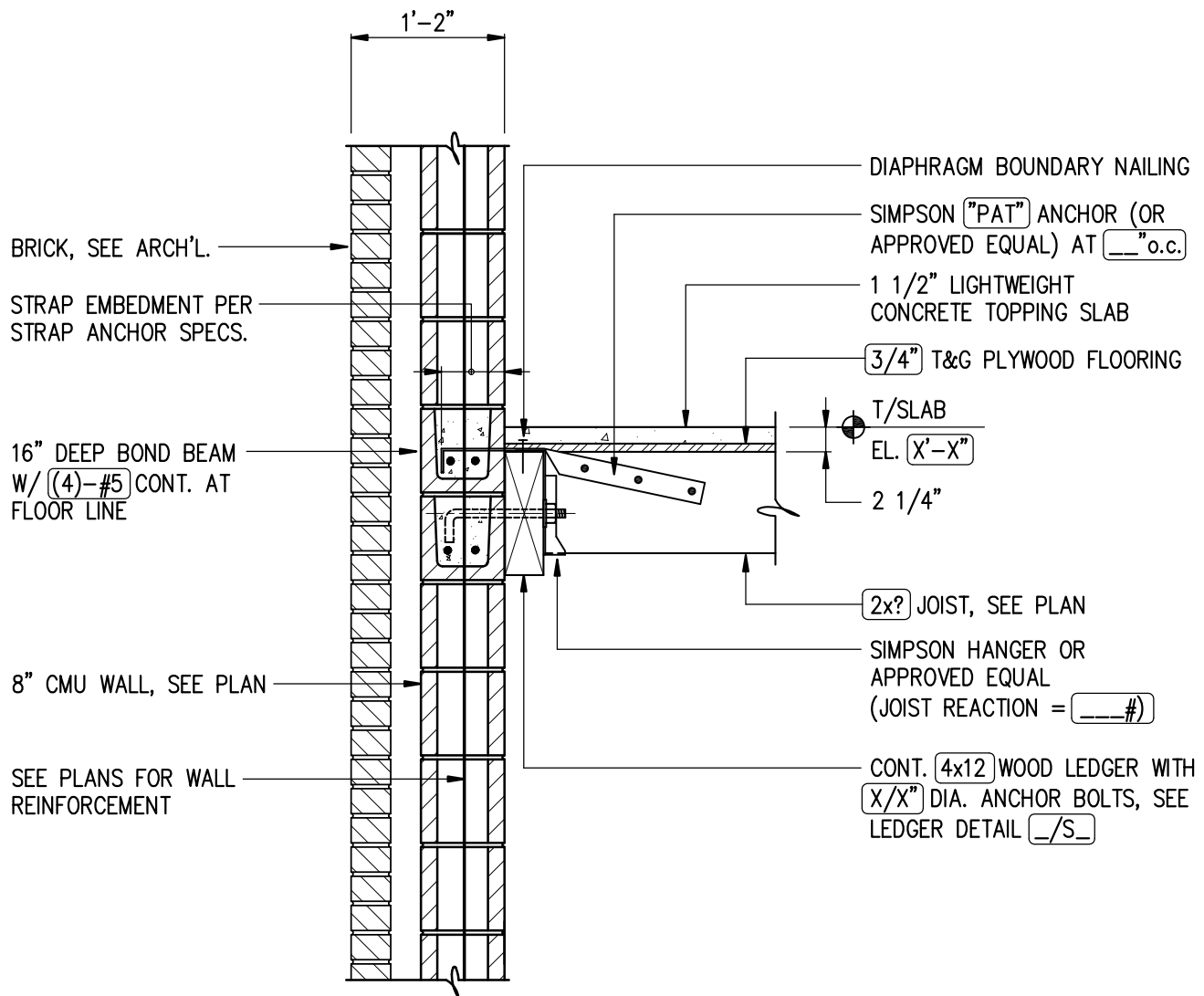
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WD16.1-03	
V1.1	

[Wood Joists To Beam Connection](#)

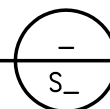


EXTERIOR MASONRY WALL AT FLOOR

SCALE: 3/4" = 1'-0"

Disclaimer note

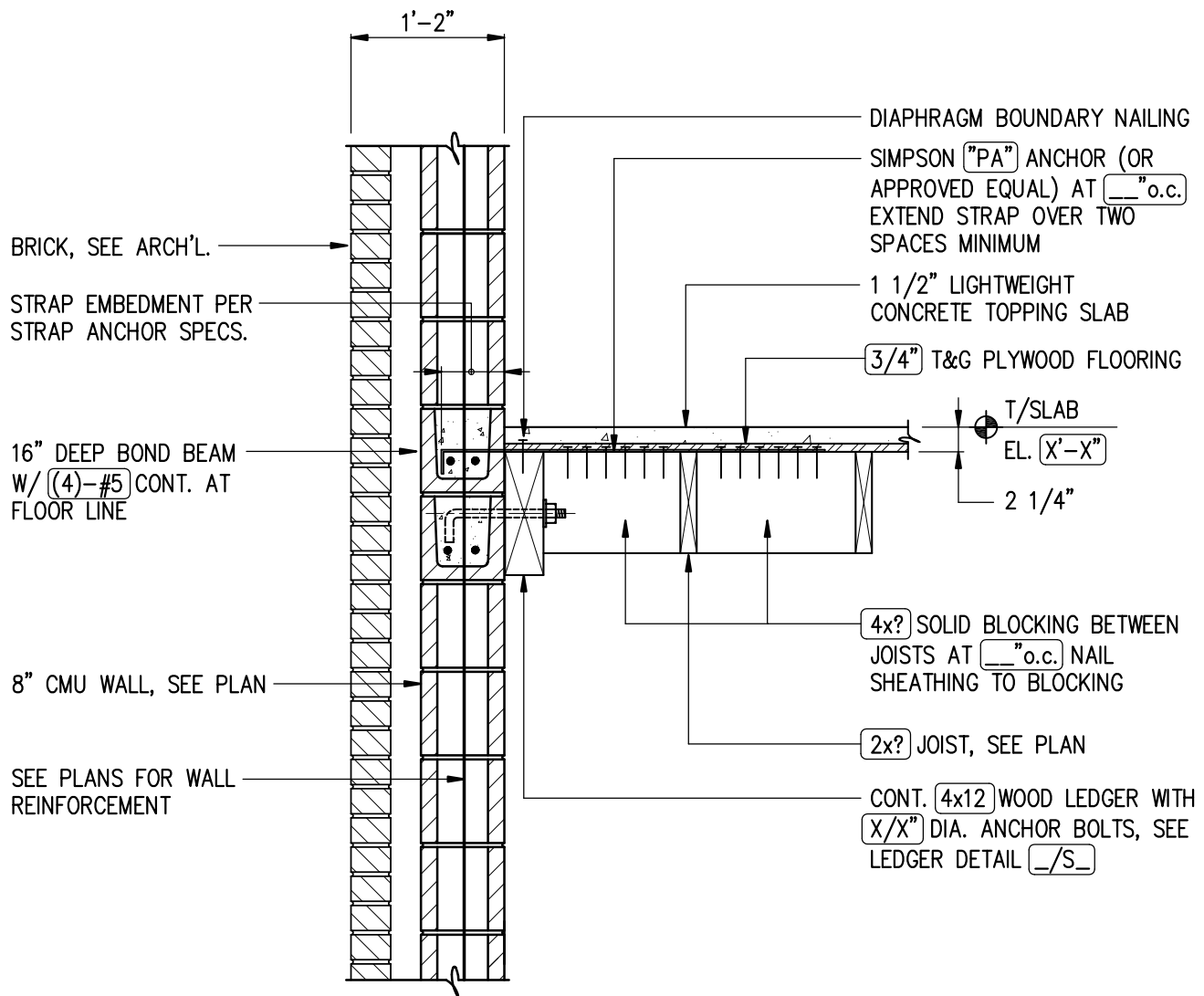
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WD04.0-01
V1.1



[Exterior Masonry Wall At Wood Floor](#)

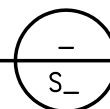


EXTERIOR MASONRY WALL AT FLOOR

SCALE: 3/4" = 1'-0"

Disclaimer note

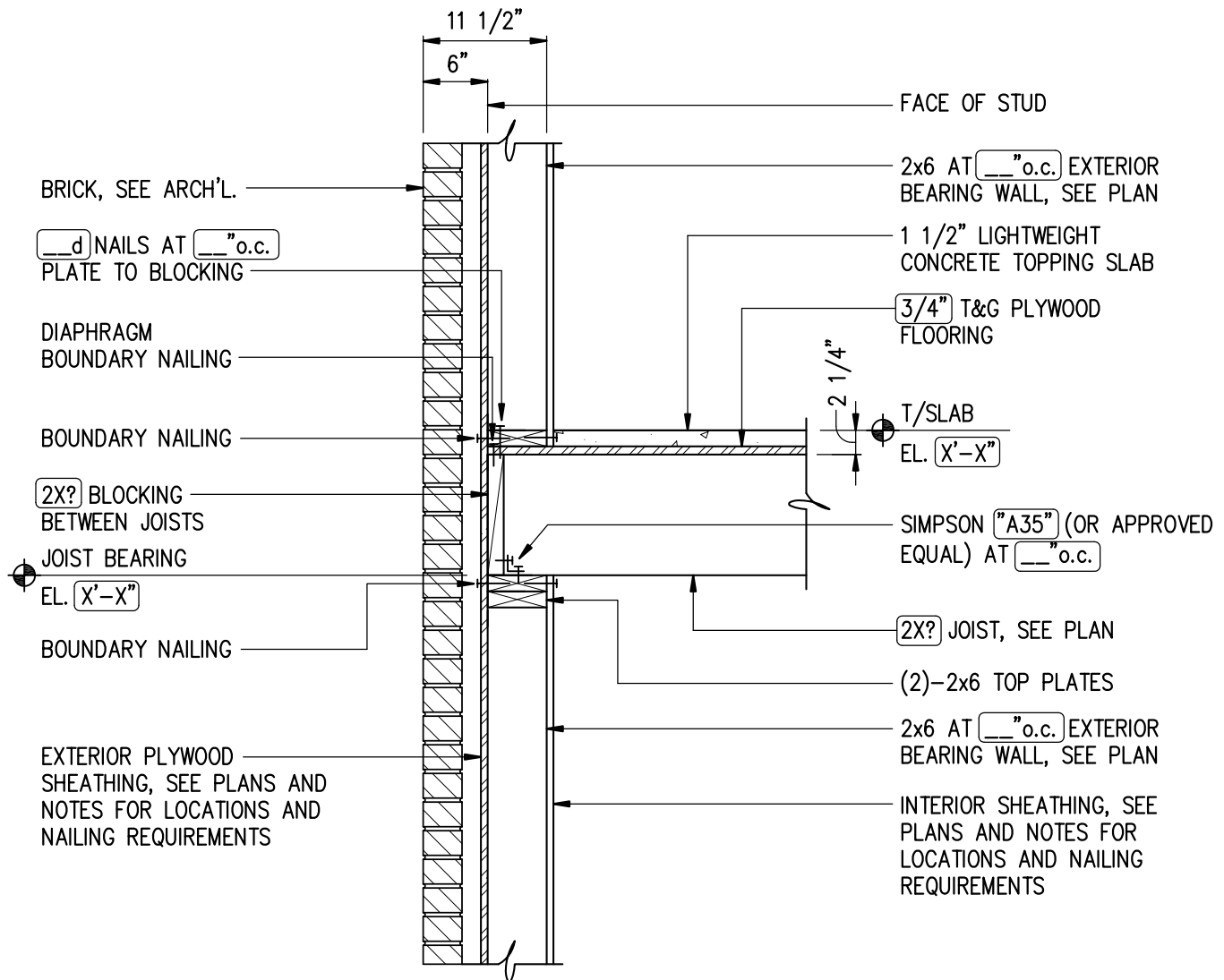
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WD04.0-02
V1.1



[Exterior Masonry Wall At Wood Floor](#)

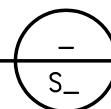


EXTERIOR WOOD STUD WALL AT FLOOR

SCALE: 3/4" = 1'-0"

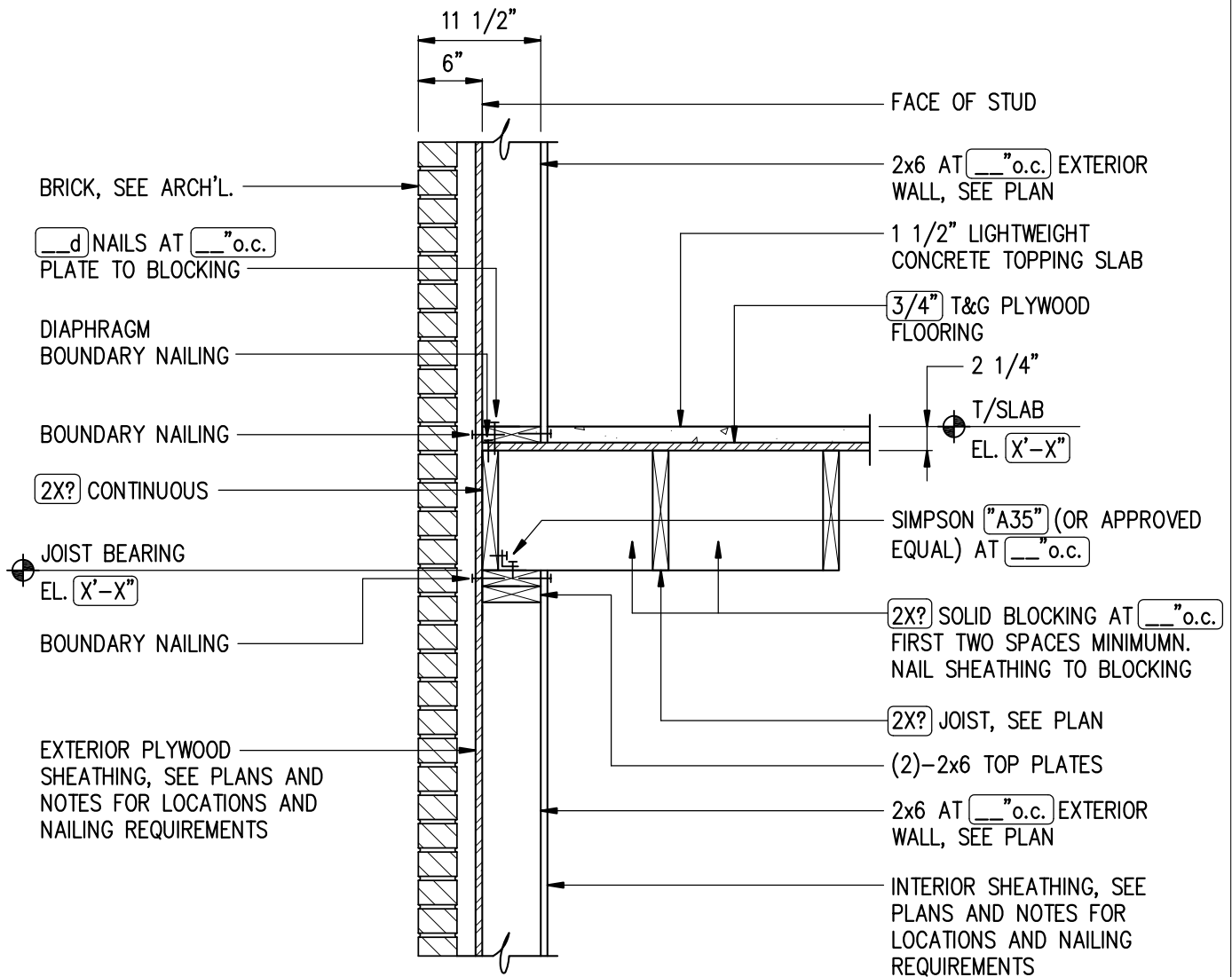
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WD05.3-01
V1.1

Exterior Wood Stud Wall At Wood Floor

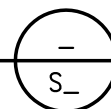


EXTERIOR WOOD STUD WALL AT FLOOR

SCALE: 3/4" = 1'-0"

Disclaimer note

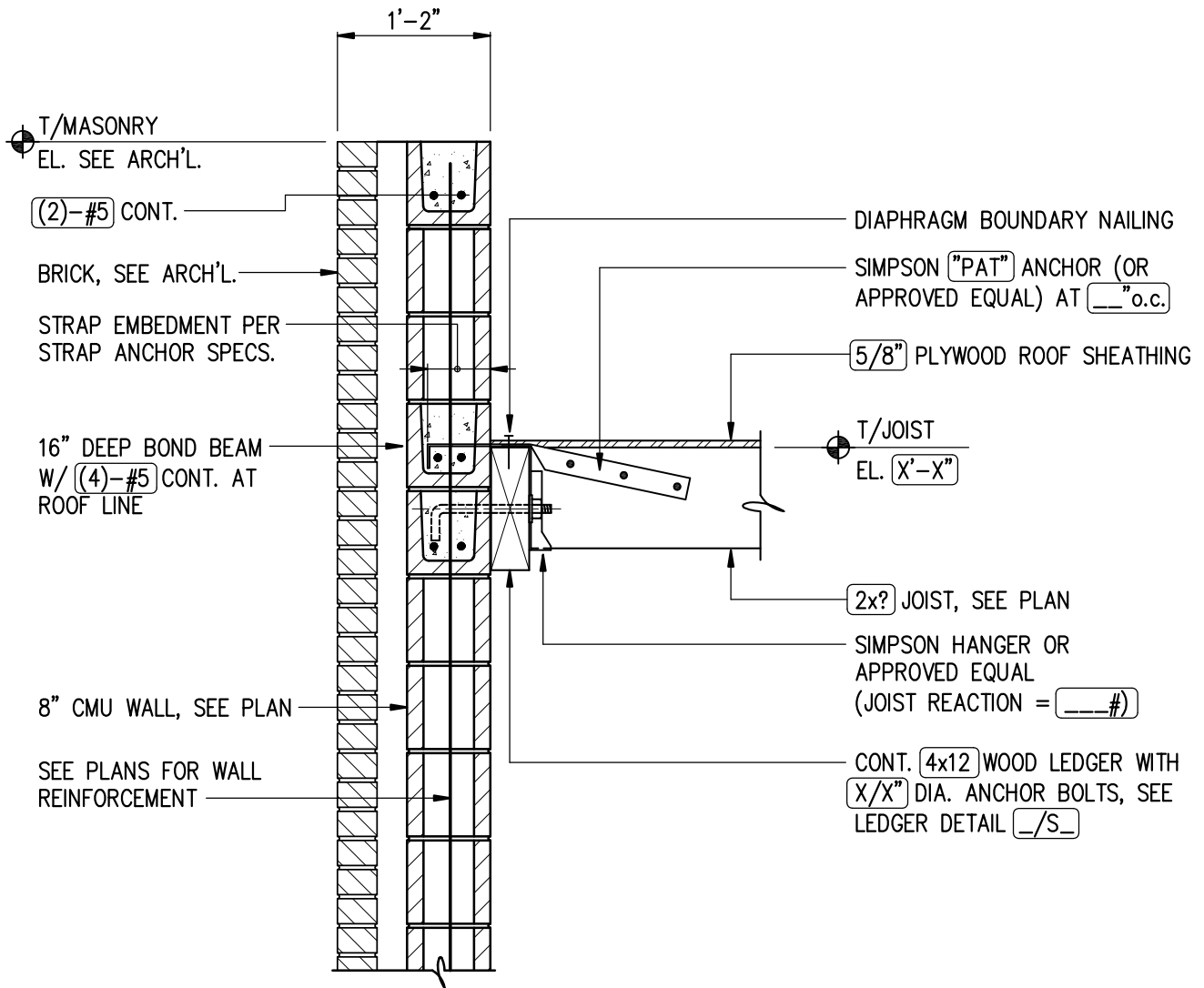
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WD05.3-03
V1.1



[Exterior Wood Stud Wall At Wood Floor](#)

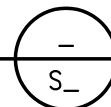


EXTERIOR WALL AT ROOF PARAPET

SCALE: 3/4" = 1'-0"

Disclaimer note

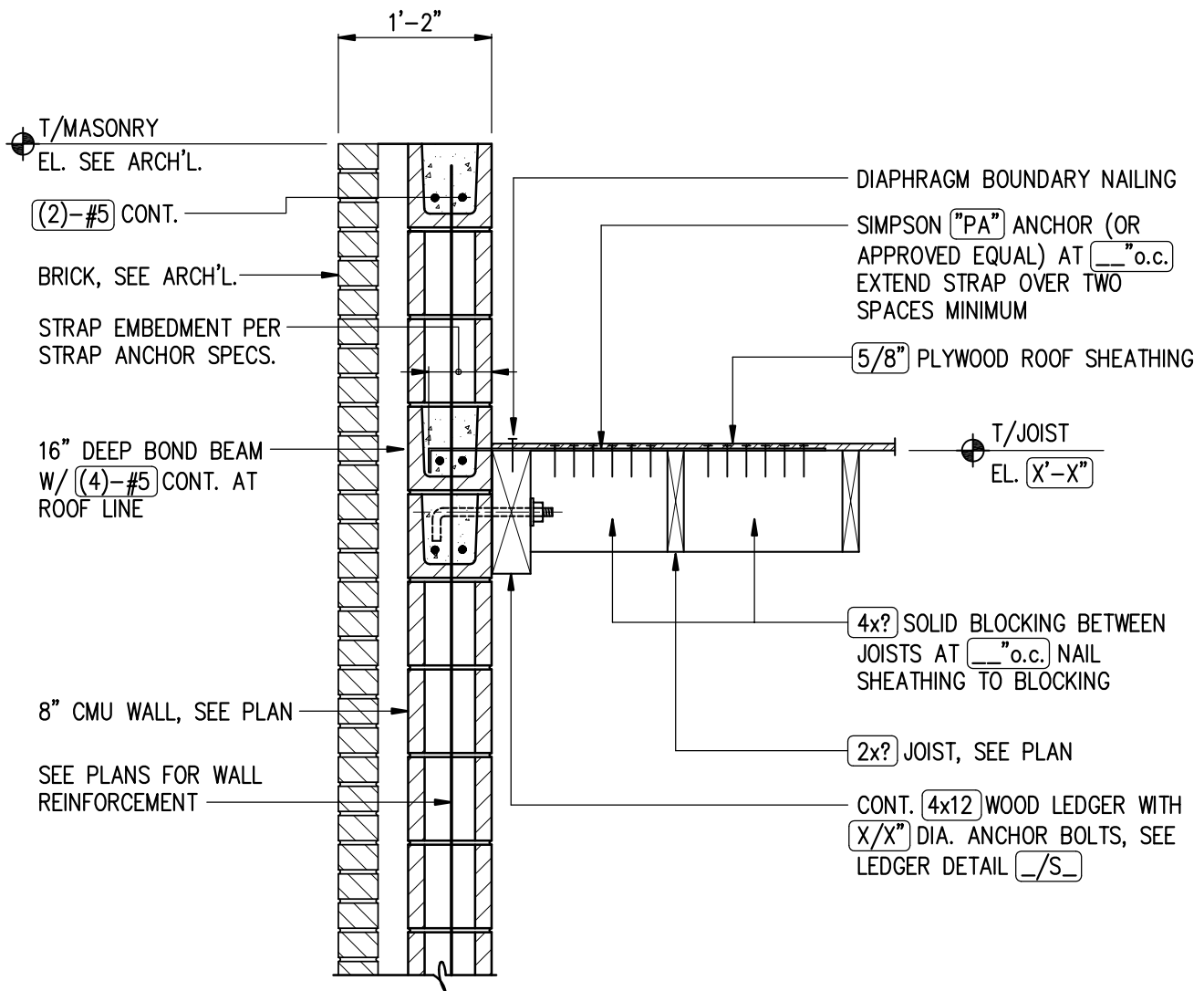
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WD07.0-01
V1.1



Exterior Masonry Wall At Wood Roof

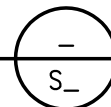


EXTERIOR WALL AT ROOF PARAPET

SCALE: 3/4" = 1'-0"

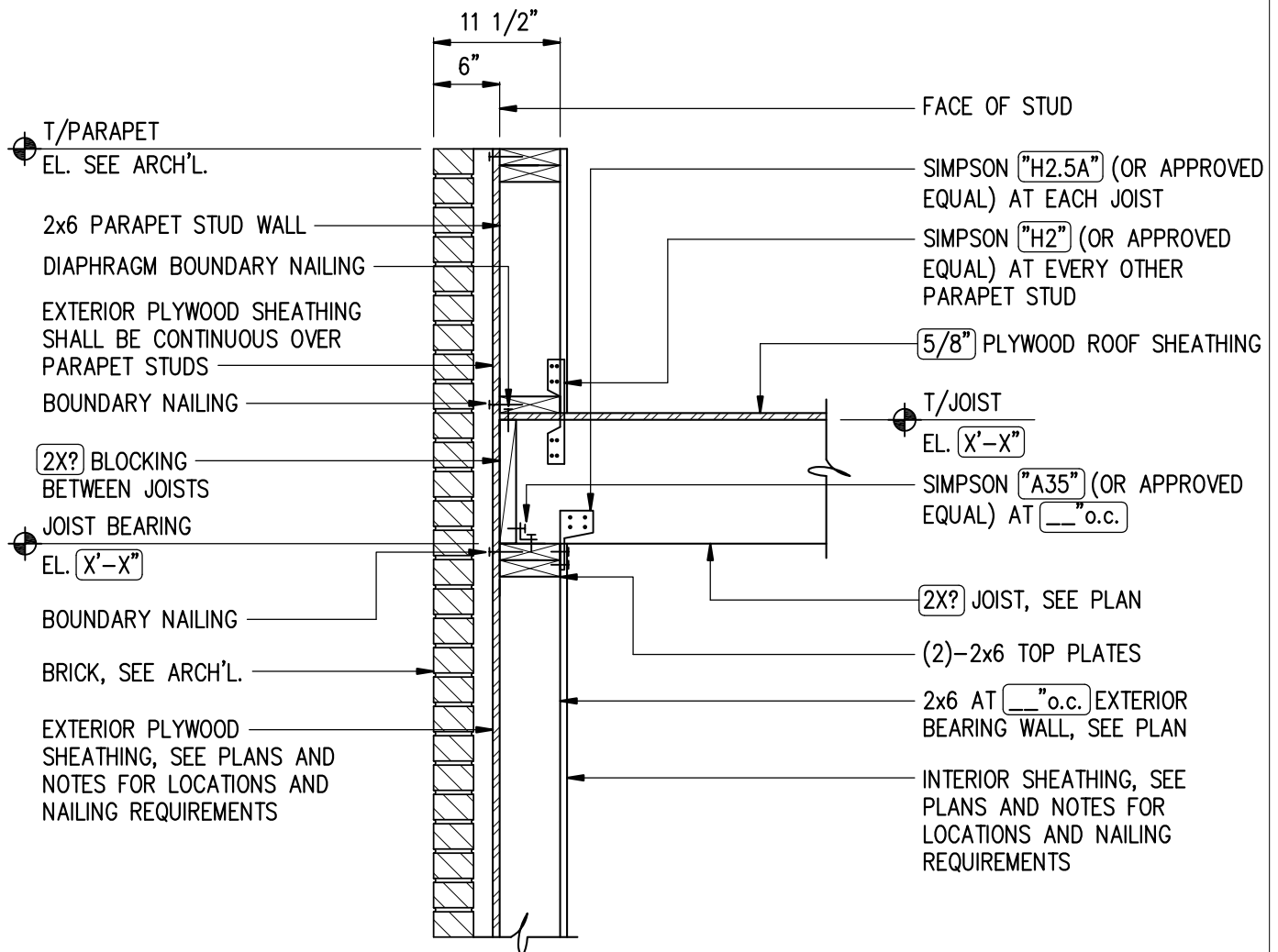
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WD07.0-02
V1.1

Exterior Masonry Wall At Wood Roof

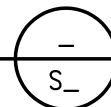


EXTERIOR WALL AT ROOF PARAPET

SCALE: 3/4" = 1'-0"

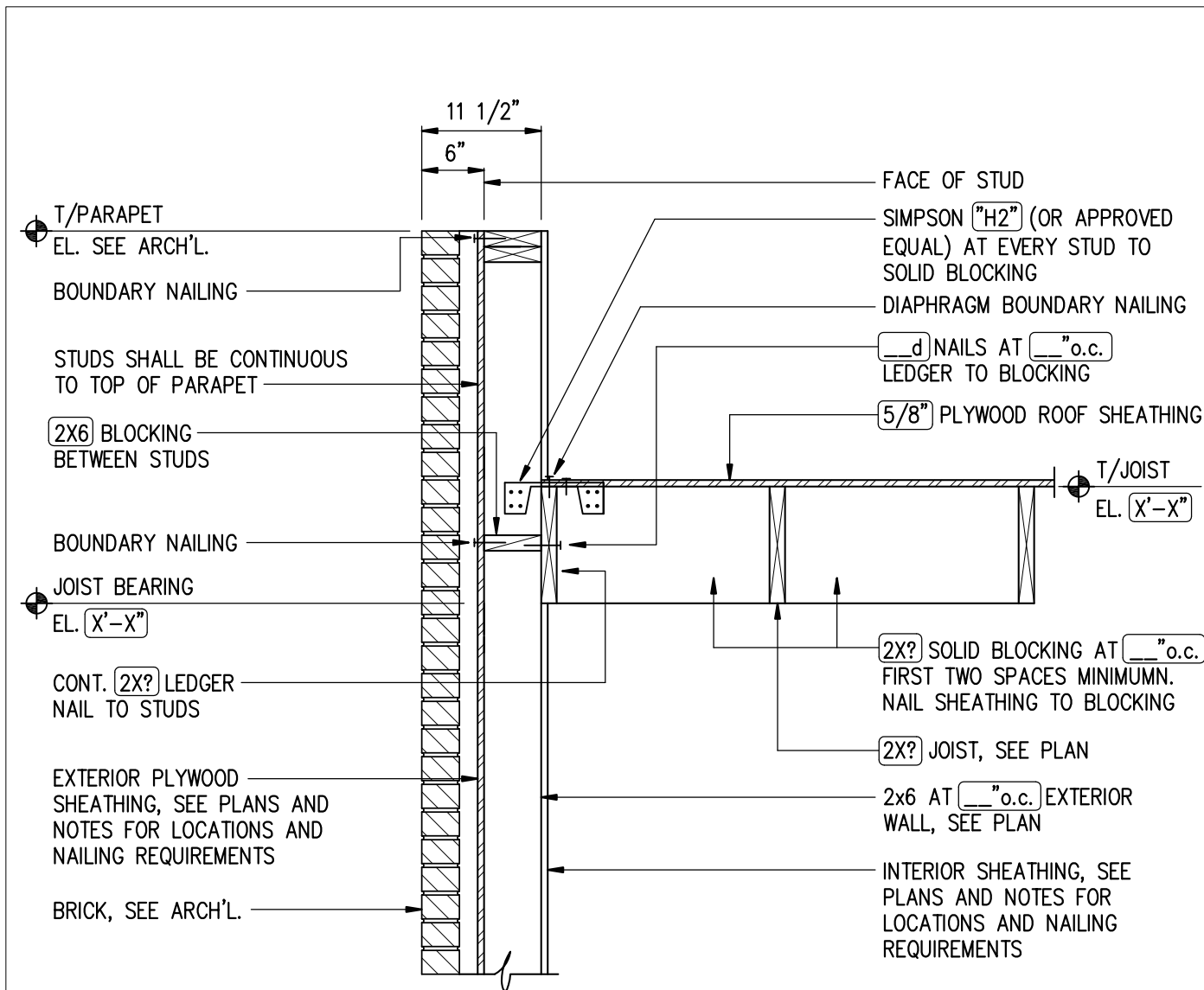
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WD08.3-01
V1.1

[Exterior Wood Stud Wall At Wood Roof](#)

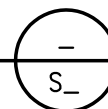


EXTERIOR WALL AT ROOF PARAPET

SCALE: 3/4" = 1'-0"

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WD08.3-03
V1.1

Exterior Wood Stud Wall At Wood Roof

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By: Atallah Sayegh, P.E.

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