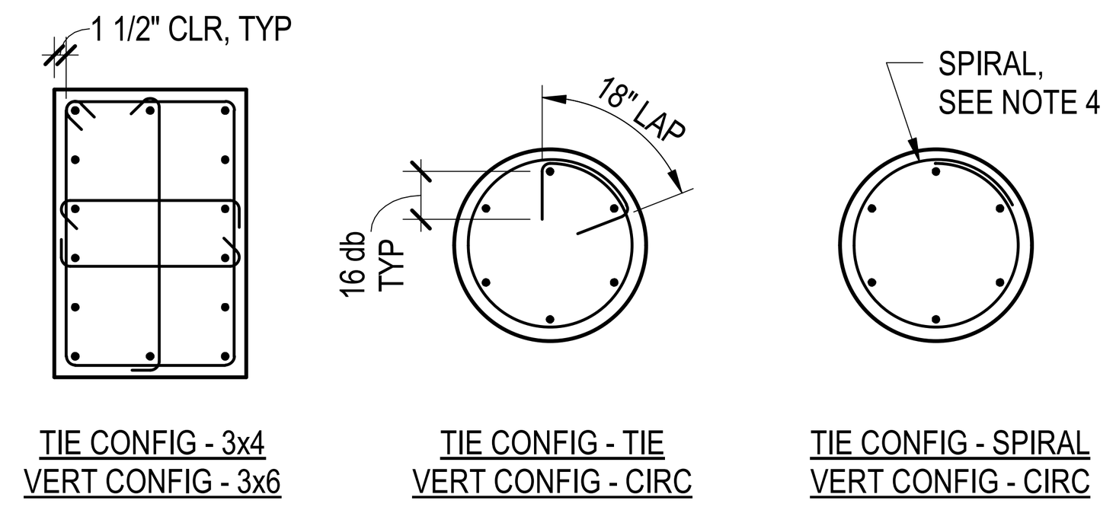
CONCRETE COLUMN TYPE SCHEDULE							
TYPE	LONGIT Fy	TRANSV Fy	VERT REINF	TIE CONFIG	VERT CONFIG	LOC 1 TIES	LOC 2 TIES
1	60	80	(12) #9	3x5 (s)	3x5	#4 @ 4 1/2"	#5 @ 4"
2	60	80	(16) #8	5x5	5x5	#4 @ 6"	#5 @ 5 1/2"
3	60	80	(8) #8	3x3	3x3	#4 @ 5 1/2"	#5 @ 4 1/2"
4	60	80	(12) #7	3x5 (s)	3x5	#4 @ 4 1/2"	#5 @ 4 1/2"
5	60	80	(10) #7	3x4	3x4	#4 @ 4 1/2"	#5 @ 4 1/2"
6	60	80	(12) #7	4x4 (s)	4x4	#4 @ 5"	#5 @ 5"
7	60	80	(14) #9	3x6 (s)	3x6	#4 @ 5"	#5 @ 5"
8	60	80	(12) #7	2x6 (s)	2x6	#4 @ 3"	#5 @ 3"
10	60	80	(14) #9	4x5	4x5	#4 @ 5 1/2"	#5 @ 5 1/2"
11	60	80	(14) #10	3x6 (s)	3x6	#4 @ 4 1/2"	#5 @ 4"
12	60	80	(16) #8	2x8 (s)	2x8	#4 @ 3"	#5 @ 3"
13	60	80	(20) #8	5x7	5x7	#4 @ 6"	#5 @ 6"
14	60	80	(14) #11	3x6 (s)	3x6	#4 @ 4 1/2"	#5 @ 4"
15	60	80	(10) #8	3x4	3x4	#4 @ 5"	#5 @ 5"
16	60	80	(18) #9	2x9 (s)	2x9	#4 @ 3"	#5 @ 3"

NOTES:

1. TYPICAL CROSSTIES SHALL HAVE A 135 DEGREE HOOK AT ONE END AND A 90 DEGREE HOOK AT THE OTHER END UNLESS NOTED OTHERWISE. AT CONTRACTOR'S OPTION, 135 DEGREE HOOKS MAY BE REPLACED WITH 180 DEGREE HOOKS AND 90 DEGREE HOOKS MAY BE REPLACED WITH 135 OR 180 DEGREE HOOKS.
2. CROSSTIES WITH 90 DEGREE HOOKS SHALL HAVE THE CONSECUTIVE CROSSTIES ALTERNATED END FOR END ALONG THE LONGITUDINAL REINFORCEMENT.
3. CIRCULAR TIES SHALL ALTERNATE POSITION OF LAPS 180 DEGREES EVERY OTHER HOOP.
4. REFER TO "TYPICAL CONCRETE COLUMN SPIRAL REINFORCING" FOR ADDITIONAL DETAILING REQUIRMENTS.



SAMPLE CONFIGURATIONS

TIE CONFIGURATION KEY:

3x4(s)
- 135° HOOK REQD AT EA END OF CROSSTIES, WHERE OCCURS
- LONG SIDE TIE COUNT
- SHORT SIDE TIE COUNT

VERTICAL REINF CONFIGURATION KEY:

3x4
- LONG SIDE VERTICAL BAR COUNT
- SHORT SIDE VERTICAL BAR COUNT

1 CONCRETE COLUMN TYPES

CONCRETE COLUMN SCHEDULE KEY:

24"x24" [1]
- COLUMN TYPE
- COLUMN SIZE

NOTES:

1. SEE THE FOLLOWING ACCOMPANYING DETAILS:

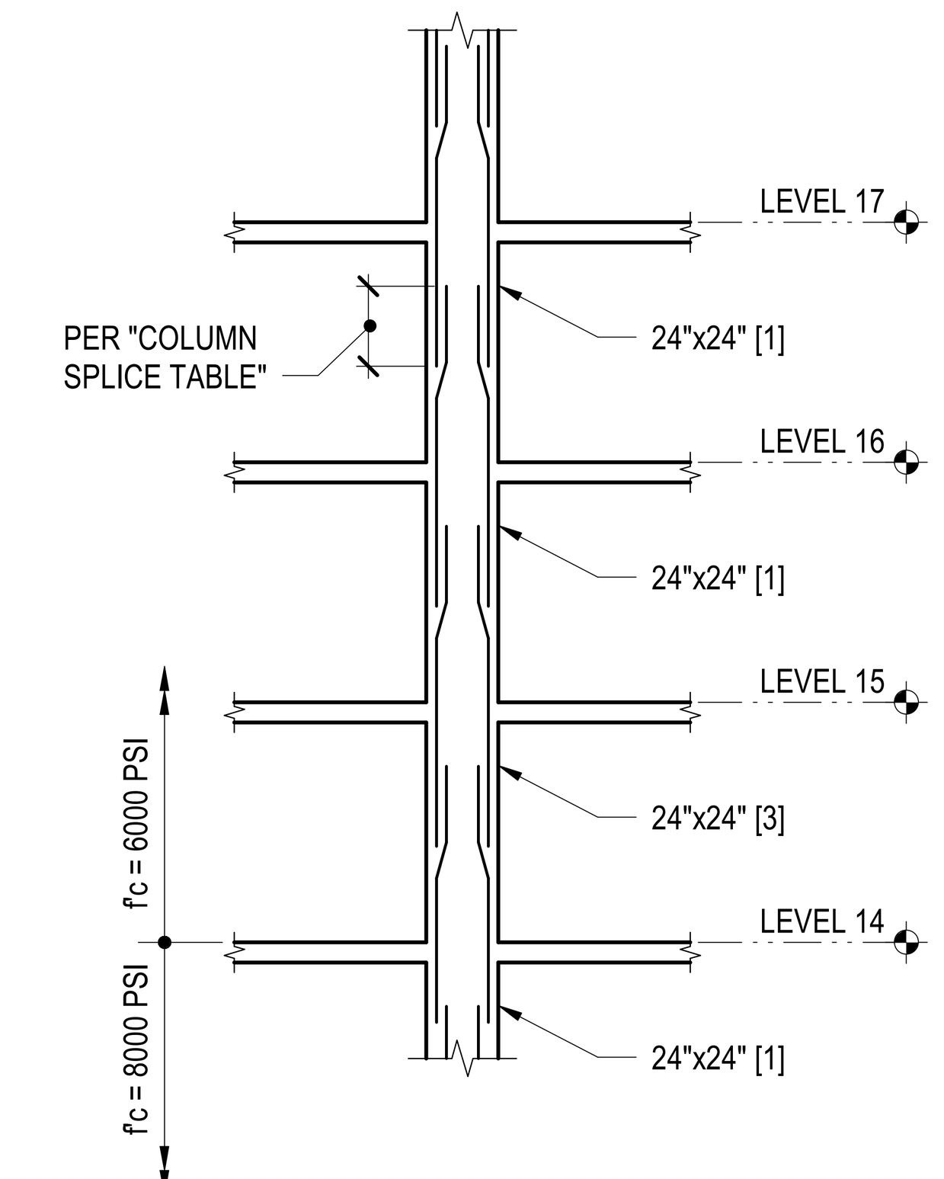
   "TYPICAL CONCRETE COLUMN"
   "TYPICAL CONCRETE COLUMN BASE DOWELS"
   "CONCRETE COLUMN TYPES"

2. VERTICAL REINFORCEMENT SPLICE LENGTHS ARE PER THE "TYPICAL COLUMN SPLICE TABLE" .

COLUMN SIZE, TYPE & SPLICE LENGTH

CONCRETE COLUMN SCHEDULE			
	COLUMN MARK	C1	C2
f'c = 6,000 PSI	LEVEL 20		
	LEVEL 19		
	LEVEL 18		
	LEVEL 17		24"x24" [1]
	LEVEL 16	24"x24" [1]	
	LEVEL 15	24"x24" [3]	
f'c = 8,000 PSI	LEVEL 14		
	LEVEL 13		
	LEVEL 12	24"x24" [1]	
	LEVEL 11		
	LEVEL 10		
	LEVEL 9		
	LEVEL 8	24"x30" [1]	30"x30" [2]

EXAMPLE PARTIAL CONCRETE COLUMN SCHEDULE



EXAMPLE PARTIAL ELEVATION

3 CONCRETE COLUMN SCHEDULE NOTES AND SAMPLE COLUMN SPECIFICATIONS

TOWER A CONCRETE COLUMN SCHEDULE (f'c = 6,000 PSI)	AC1	AC2	AC3	AC4	AC5	AC6	AC7	AC8	AC9	AC10
LEVEL 6		18"x32" [1]								
LEVEL 5								18"x32" [4]	18"x32" [1]	
LEVEL 4										
LEVEL 3			18"x32" [4]		18"x32" [5]	24"x24" [3]	24"x24" [3]			18"x32" [5]
LEVEL 2	24"x24" [3]	18"x32" [5]	32"x32" [2]		32"x32" [2]	24"x54" [7]	24"x32" [15]			
LEVEL 1								18"x32" [5]		
LEVEL P2	24"x24" [6]	18"x32" [4]	18"x32" [1]	12"x60" [8]	18"x32" [4]	24"x24" [6]	24"x24" [6]		18"x32" [5]	
FOUNDATION										

TOWER A CONCRETE COLUMN SCHEDULE (f'c = 6,000 PSI)	AC11	AC12	AC13	AC14	AC15	AC16	AC17	AC18	AC19
LEVEL 6									
LEVEL 5									
LEVEL 4									
LEVEL 3								24"x24" [3]	
LEVEL 2						24"x24" [3]		24"x32" [3]	24"x24" [3]
LEVEL 1	24"x24" [3]	18"x32" [5]		18"x32" [5]	24"x24" [3]		12"x60" [8]		
LEVEL P2	24"x24" [6]	18"x32" [4]	24"x24" [3]					24"x24" [6]	24"x24" [6]
FOUNDATION									

6 TOWER A CONCRETE COLUMN SCHEDULE

TOWER B CONCRETE COLUMN SCHEDULE (f'c = 6,000 PSI)	BC1	BC2	BC3	BC4	BC5	BC6	BC7	BC8	BC9	BC10
LEVEL 7					18"x32" [1]					
LEVEL 6										
LEVEL 5										
LEVEL 4			18"x32" [5]							
LEVEL 3		18"x32" [5]	32"x40" [10]	24"x24" [3]		24"x24" [3]		24"x24" [3]		18"x32" [5]
LEVEL 2		32"x32" [2]			18"x32" [5]	24"x54" [7]		32"x32" [2]		32"x41" [10]
LEVEL 1	18"x32" [5]								18"x32" [5]	
LEVEL P1	18"x32" [4]		18"x32" [4]	24"x24" [6]	18"x32" [4]	24"x24" [6]		24"x24" [6]		
LEVEL P2		18"x32" [4]					12"x60" [8]		18"x32" [4]	18"x32" [4]
FOUNDATION										

TOWER B CONCRETE COLUMN SCHEDULE (f'c = 6,000 PSI)	BC11	BC12	BC13	BC14	BC15	BC16	BC17	BC18	BC19	BC20
LEVEL 7										
LEVEL 6										
LEVEL 5										
LEVEL 4										
LEVEL 3	18"x32" [5]	18"x32" [5]	18"x32" [5]	18"x32" [5]						
LEVEL 2	18"x32" [4]	32"x32" [2]	32"x42" [10]	32"x32" [2]						24"x24" [3]
LEVEL 1										
LEVEL P1		12"x60" [16]	12"x60" [12]	12"x60" [12]	12"x60" [8]	18"x32" [5]	24"x24" [3]	24"x24" [6]	18"x32" [5]	
LEVEL P2										
FOUNDATION										

11 TOWER B CONCRETE COLUMN SCHEDULE

TOWER C CONCRETE COLUMN SCHEDULE (f'c = 6,000 PSI)	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13
LEVEL 8	18"x32" [11]			18"x32" [11]			18"x32" [11]			18"x32" [14]			
LEVEL 7													
LEVEL 6													
LEVEL 5													
LEVEL 4							18"x32" [5]						
LEVEL 3		12"x48" [12]		18"x32" [5]	12"x48" [12]							18"x24" [4]	
LEVEL 2		30"x48" [13]		32"x32" [2]							18"x32" [5]		
LEVEL 1	18"x32" [5]	18"x32" [4]	24"x24" [6]	18"x32" [1]	18"x36" [4]	18"x24" [4]	18"x32" [4]	18"x32" [5]	18"x32" [5]	18"x32" [5]			24"x24" [6]
FOUNDATION													

16 TOWER C CONCRETE COLUMN SCHEDULE

DAVID C. FIELDS REGISTERED 12385783-2203 PROFESSIONAL STRUCTURAL ENGINEER STATE OF UTAH

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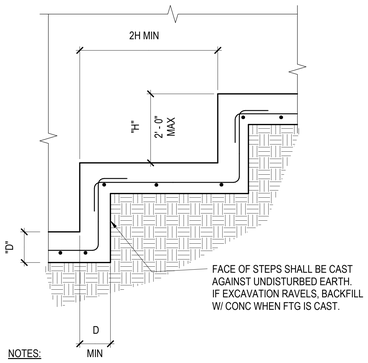
revisions:

no.	date		by
1	11/18/2022	IFC	

CONSTRUCTION DOCUMENTS
11/18/2022

COLUMN SCHEDULES

S4.00



NOTES:

1. SEE "TYPICAL WALL FOOTING" DETAIL FOR ADDITIONAL INFORMATION.

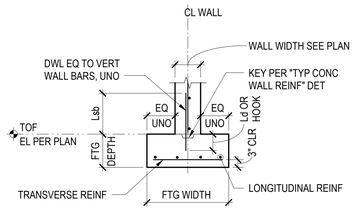
1 TYPICAL STEPPED WALL FOOTING

COLUMN FOOTING SCHEDULE				
MARK	SIZE	DEPTH	REINFORCING EACH WAY BOTTOM	REMARKS
F1	6' - 0"x6' - 0"	2' - 6"	#8 @ 12"	#5 @ 6" EW TOP REINF
F2	10' - 0"x10' - 0"	2' - 0"	(10) #7	
F3	12' - 0"x12' - 0"	2' - 0"	(12) #8	
F4	7' - 0"x7' - 0"	2' - 6"	(7) #7	
F5	12' - 0"x12' - 0"	2' - 6"	(12) #8	
F6	15' - 0"x15' - 0"	2' - 9"	(15) #8	

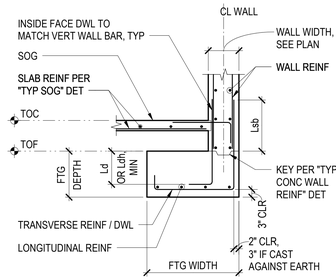
NOTES:

1. SEE TYPICAL COLUMN FOOTING DETAILS.

6 COLUMN FOOTING SCHEDULE



"T" TYPE WALL FOOTING



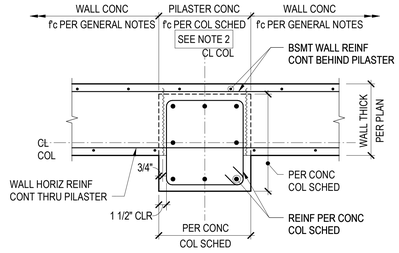
"L" TYPE WALL FOOTING

WALL FOOTING SCHEDULE					
MARK	WIDTH	DEPTH	LONGITUDINAL REINFORCING	TRANSVERSE REINFORCING	REMARKS
WF1	3' - 4"	2' - 0"	(5) #6	#6 @ 12"	L-SHAPED FOOTING
WF2	1' - 6"	1' - 0"	(3) #5	#5 @ 12"	T-SHAPED FOOTING

NOTES:

1. SEE "TYPICAL COLUMN FOOTING" DETAIL FOR EXCAVATION INFORMATION.
2. LAP SPLICE LONGITUDINAL REINFORCEMENT Lsb.
3. SEE "WALL FOOTING SCHEDULE" FOR DIMENSIONS AND REINFORCEMENT UNLESS NOTED OTHERWISE.

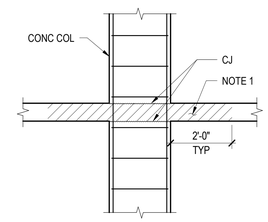
7 TYPICAL WALL FOOTING



NOTES:

1. CENTERLINES OF PILASTER AND COLUMN ABOVE COINCIDE UNLESS NOTED OTHERWISE ON PLAN.
2. CONCRETE AT PILASTER TO BE CAST IN PLACE. SHOTCRETE NOT PERMITTED AT PILASTER.

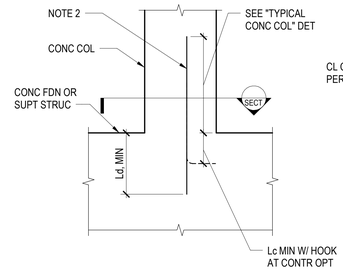
8 TYPICAL PILASTER



NOTES:

1. WHERE THE COLUMN CONCRETE f'c IS GREATER THAN 1.4 TIMES THE SLAB CONCRETE f'c, PUDDLE CONCRETE WITH f'c EQUAL TO OR GREATER THAN THE COLUMN CONCRETE f'c WITHIN THE HATCHED AREA.

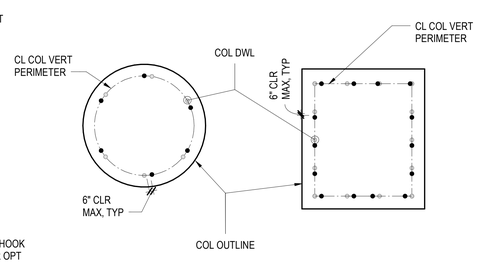
5 TYPICAL CONCRETE PLACEMENT AT COLUMN TO SLAB JOINT



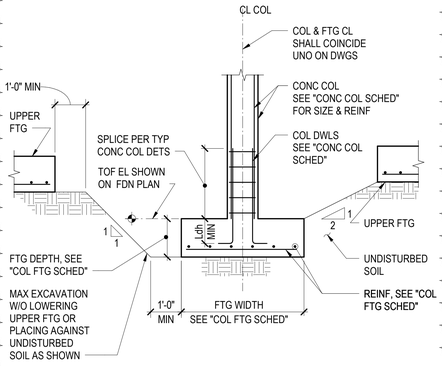
NOTES:

1. THIS DETAIL IS APPLICALBE AT ALL CONCRETE COLUMN BASE LOCATIONS UNLESS NOTED OTHERWISE.
2. DOWEL SIZE AND QUANTITY TO MATCH VERTICAL REINFORCEMENT.

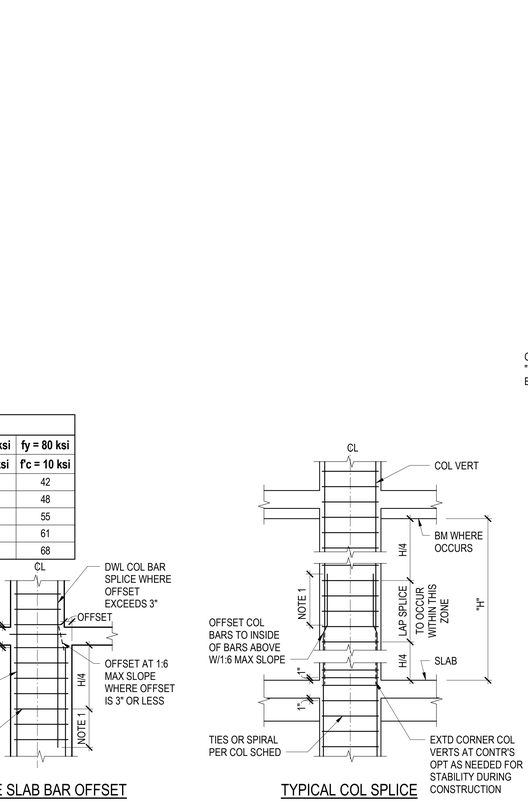
9 TYPICAL CONCRETE COLUMN BASE DOWELS



SECTION



11 TYPICAL CONCRETE COLUMN FOOTING



NOTES:

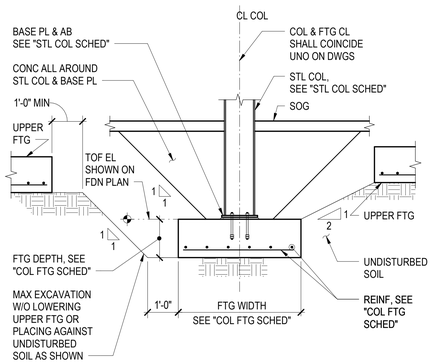
1. SEE "COLUMN COLUMN SCHEDULE" FOR COLUMN SIZE AND REINFORCING CONFIGURATION TYPE.
2. COLUMN VERTICAL REINFORCING SHALL BE SPECIAL DUCTILE QUALITY. SEE "GENERAL NOTES."
3. SEE "CONCRETE COLUMN TYPE SCHEDULE" UNDER "LOC 1 TIES" FOR TIE SIZE, SPACING, AND REINFORCING CONFIGURATION. REINFORCING CONFIGURATION TYPE IS NOTED IN [ ].
4. FOR H/6, MAXIMUM COLUMN DIMENSION, OR 18 INCHES (WHICHEVER IS GREATER), SEE "COLUMN TYPE SCHEDULE" UNDER "LOC 2 TIES" FOR TIE SIZE, SPACING, AND REINFORCING CONFIGURATION. REINFORCING CONFIGURATION TYPE IS NOTED IN [ ].
5. PROVIDE "LOC 2 TIES" THROUGHOUT THE BEAM AND SLAB DEPTH, EXCEPT THAT THE TIE SPACING MAY BE INCREASED TO 6" WHERE BEAMS FRAME INTO FOUR SIDES OF COLUMN FOR THE DEPTH OF THE MOST SHALLOW BEAM.
6. AT CONTRACTOR'S OPTION, COLUMN VERTICAL BARS MAY BE EXTENDED UP ADDITIONAL FLOOR LEVELS WITHOUT SPLICING BETWEEN FLOORS.
7. PLACE HORIZONTAL HOOKS DIRECTLY BELOW TOP BARS OF BEAMS OR SLABS. SPLAY HOOKS AS NECESSARY TO RELIEVE BAR CONGESTION. AT CONTRACTOR'S OPTION, HOOKS MAY BE PLACED TOWARD THE INSIDE OF THE COLUMN.
8. UNLESS NOTED OTHERWISE, COLUMN CONSTRUCTION JOINTS SHALL BE AT THE UNDERSIDE OF FLOOR SLABS, BEAMS, OR GIRDERS, AND AT THE TOPS OF FOOTINGS OR FLOOR SLABS. BEAMS, GIRDERS, BRACKETS, COLUMNS CAPITALS, HAUNCHES, AND DROP PANELS SHALL BE PLACED AT THE SAME TIME AS SLABS.

19 TYPICAL CONCRETE COLUMN

NOTES:

1. USE THIS DETAIL WHEN NOTED "SPIRAL" IN THE "CONCRETE COLUMN TYPE SCHEDULE."
2. SEE "CONCRETE COLUMN SCHEDULE" FOR COLUMN SIZE AND REINFORCING CONFIGURATION TYPE.
3. SPIRALS SHALL BE CONTINUOUS FROM TOP OF SLAB OR FOOTING TO SLAB OR BEAM SOFFIT ABOVE.
4. EXTEND SPIRALS CONTINUOUSLY THROUGHOUT THE BEAM AND SLAB DEPTH OR PROVIDE CIRCULAR TIES AT SIZE AND SPACING TO MATCH SPIRAL SIZE AND PITCH. THE TIE SPACING MAY BE INCREASED TO 6" WHERE BEAMS FRAME INTO FOUR SIDES OF THE COLUMN FOR THE DEPTH OF THE MOST SHALLOW BEAM.
5. AT CONTRACTOR'S OPTION, COLUMN VERTICAL BARS MAY BE EXTENDED UP ADDITIONAL FLOOR LEVELS WITHOUT SPLICING BETWEEN FLOORS.
6. PLACE HORIZONTAL HOOKS DIRECTLY BELOW TOP BARS OF BEAMS OR SLABS. SPLAY HOOKS AS NECESSARY TO RELIEVE BAR CONGESTION. AT CONTRACTOR'S OPTION, HOOKS MAY BE PLACED TOWARD THE INSIDE OF THE COLUMN.
7. UNLESS NOTED OTHERWISE, COLUMN CONSTRUCTION JOINTS SHALL BE AT THE UNDERSIDE OF FLOOR SLABS, BEAMS, OR GIRDERS, AND AT THE TOPS OF FOOTINGS OR FLOOR SLABS. BEAMS, GIRDERS, BRACKETS, COLUMNS CAPITALS, HAUNCHES, AND DROP PANELS SHALL BE PLACED AT THE SAME TIME AS SLABS.

20 TYP CONCRETE COLUMN SPIRAL REINFORCING

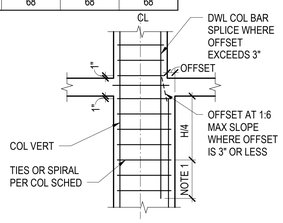


16 TYPICAL STEEL COLUMN FOOTING

TYPICAL COLUMN SPLICE TABLE (INCHES)						
BAR SIZE	fy = 60 ksi f'c = 6 ksi	fy = 60 ksi f'c = 8 ksi	fy = 60 ksi f'c = 10 ksi	fy = 80 ksi f'c = 6 ksi	fy = 80 ksi f'c = 8 ksi	fy = 80 ksi f'c = 10 ksi
#7	27	27	27	42	42	42
#8	31	31	31	48	48	48
#9	35	35	35	55	55	55
#10	39	39	39	61	61	61
#11	43	43	43	68	68	68

NOTES:

1. SEE "TYPICAL COLUMN SPLICE TABLE" FOR SPLICE LENGTH UNLESS NOTED OTHERWISE.
2. CLEAR DISTANCE BETWEEN THE TWO LAP SPLICE BARS AND ADJACENT BARS SHALL BE NOT LESS THAN 1.5 TIMES THE BAR DIA, NOR 1 1/2 INCHES
3. IF OFFSET IN VERTICAL BARS OCCURS OUTSIDE THE HORIZONTAL FRAMING, PROVIDE ADDITIONAL SET OF TIES AT OFFSET LOCATION.



ABOVE SLAB BAR OFFSET

TYPICAL COL SPLICE

17 TYPICAL CONCRETE COLUMN REINFORCING SPLICE

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date 11/18/2022

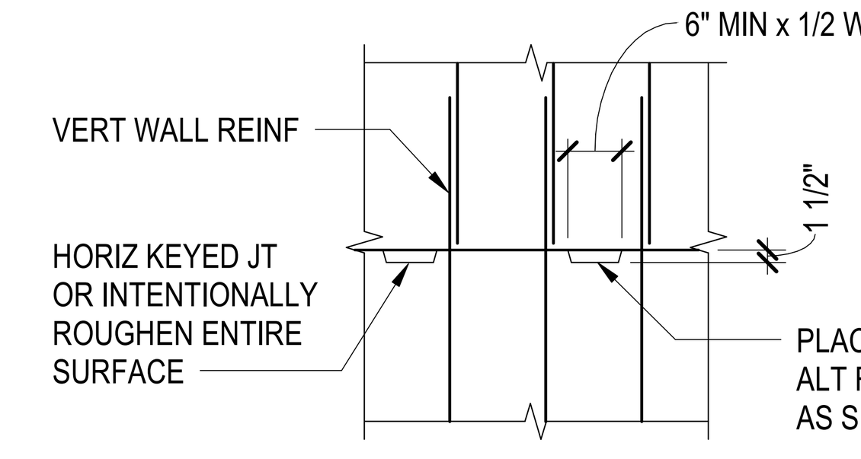
revisions:

no.	date	by
1	11/18/2022	IFC

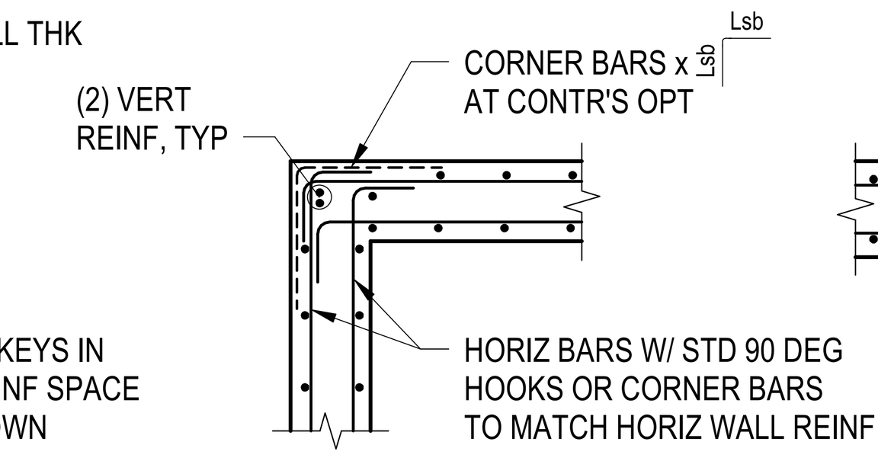
CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL CONCRETE COLUMN DETAILS

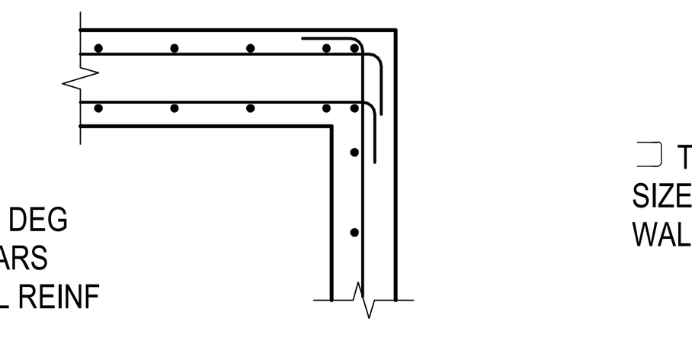
S4.01



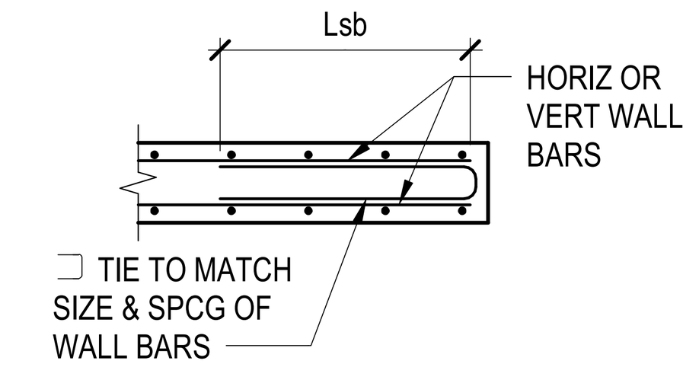
HORIZONTAL JOINT ELEVATION



WALL CORNER



WALL CORNER OF SINGLE & DOUBLE LAYER REINFORCING



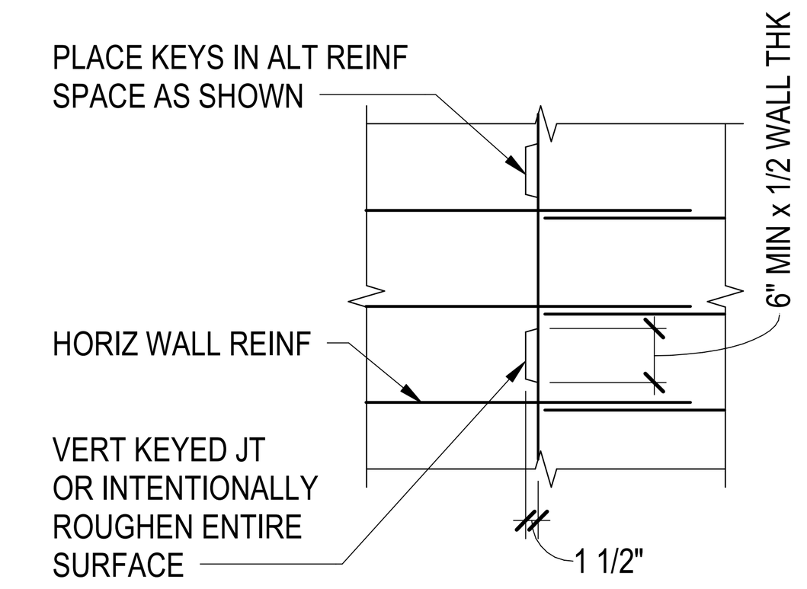
WALL END

NOTES:

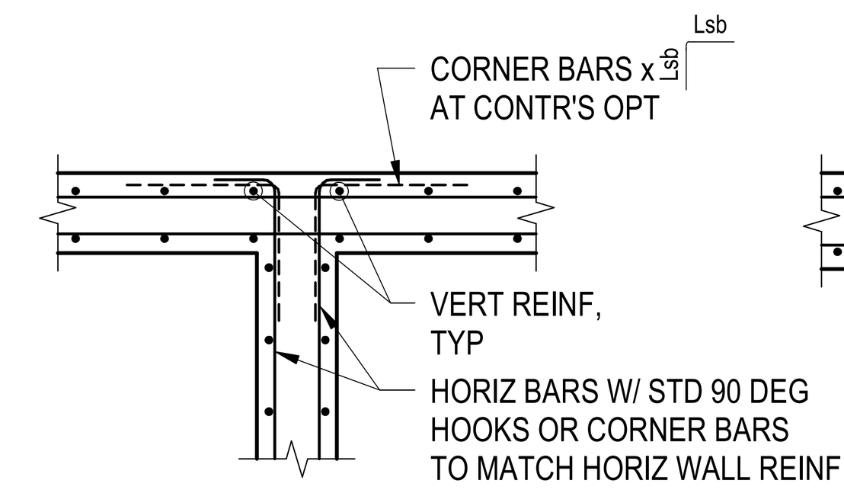
1. UNLESS NOTED OR SHOWN OTHERWISE, ALL WALLS ARE TO BE REINFORCED WITH MINIMUM REINFORCEMENT AS SHOWN IN THE FOLLOWING TABLE:

MINIMUM WALL REINFORCEMENT			
WALL THICKNESS	HORIZONTAL BARS	VERTICAL BARS	LOCATION
6" & UNDER	#4 @ 12"	#4 @ 12"	CENTERLINE
OVER 6-8"	#5 @ 15"	#5 @ 15"	CENTERLINE
OVER 8-10"	#5 @ 12"	#5 @ 12"	CENTERLINE
OVER 10-12"	#4 @ 12"	#4 @ 12"	EACH FACE
OVER 12-14"	#5 @ 18"	#5 @ 18"	EACH FACE
OVER 14-16"	#5 @ 15	#5 @ 15"	EACH FACE
OVER 16-20"	#5 @ 12"	#5 @ 12"	EACH FACE
OVER 20-24"	#5 @ 10"	#5 @ 10"	EACH FACE

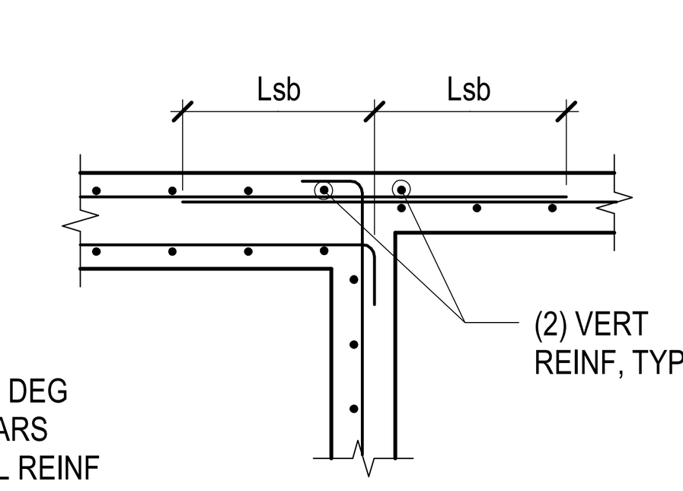
2. LAP VERTICAL WALL REINFORCING Lsb AND HORIZONTAL WALL REINFORCING Lsbt AT SPLICES.
3. ALL VERTICAL REINFORCING IN CONCRETE WALLS SHALL BE CONTINUOUS FROM STRUCTURAL FLOOR TO STRUCTURAL FLOOR, OR FROM FOOTING TO FIRST STRUCTURAL FLOOR ABOVE UNLESS NOTED OTHERWISE.
4. START HORIZONTAL AND VERTICAL BARS 1 INCH CLEAR OF EDGE OF OPENINGS. SPACE REINFORCING BARS AT EQUAL SPACES NOT TO EXCEED REQUIRED SPACING.
5. SMALL WALL SECTION DETAILS APPLY BOTH IN HORIZONTAL AND VERTICAL DIRECTIONS.
6. WALL DETAILS APPLY TO FOUNDATION AND MISC CONCRETE WALLS SHOWN ON THE STRUCTURAL DRAWINGS. FOR APPLICATION TO OTHER WALLS, CONTACT THE ENGINEER FOR APPROVAL.



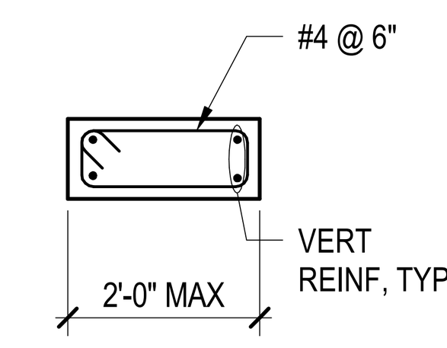
VERTICAL JOINT ELEVATION



WALL INTERSECTION



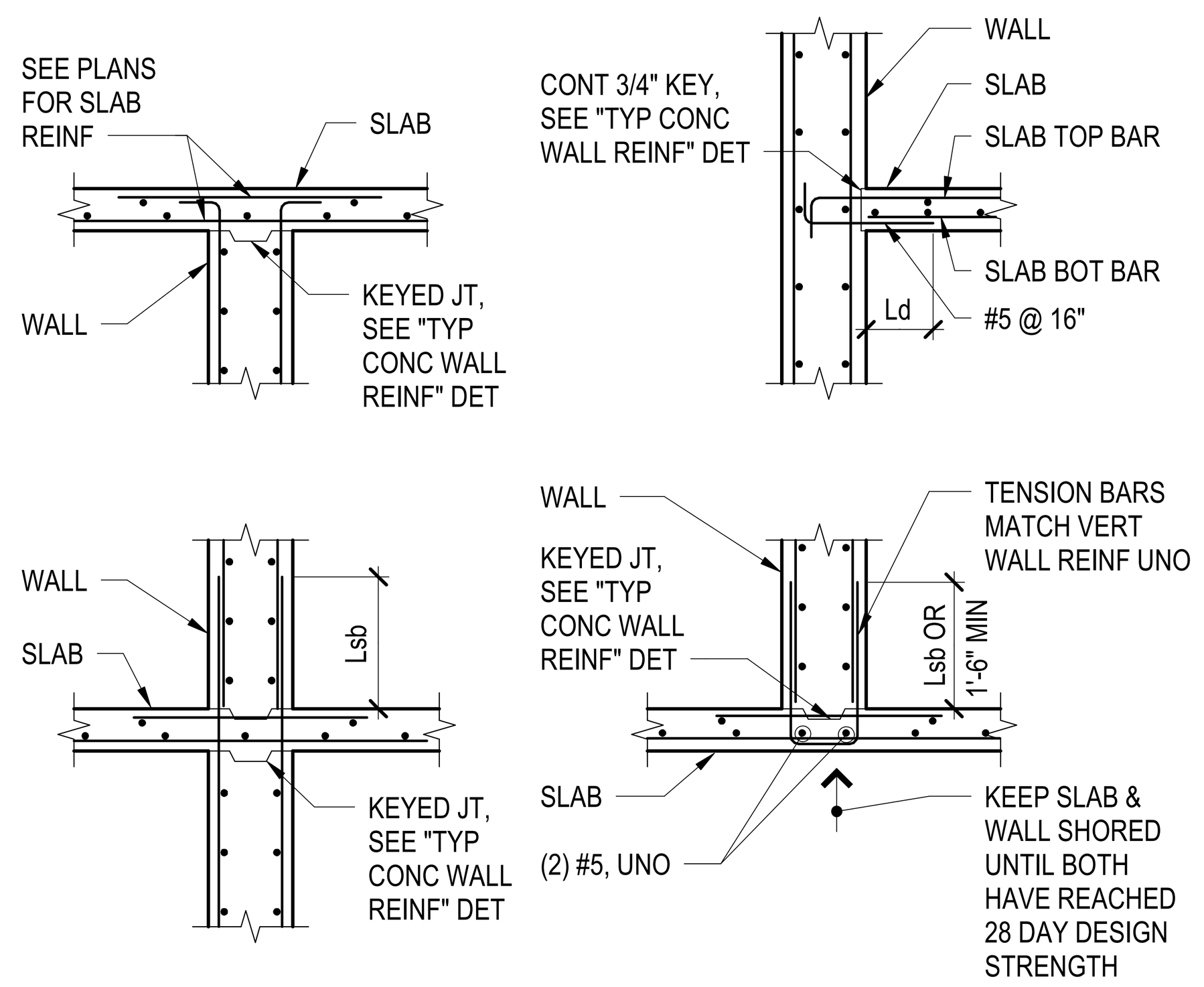
WALL INTERSECTION OF SINGLE & DOUBLE LAYER REINFORCING



SMALL WALL SECTION

SEE NOTE 5

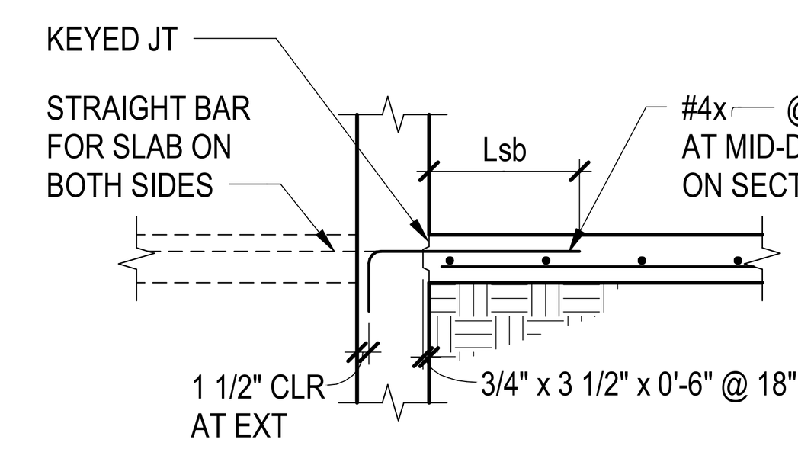
3 TYPICAL CONCRETE WALL REINFORCING



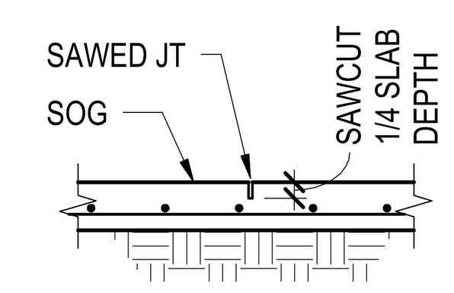
7 TYPICAL CONCRETE REINFORCING AT INTERSECTION OF SLABS AND WALLS

NOTES:

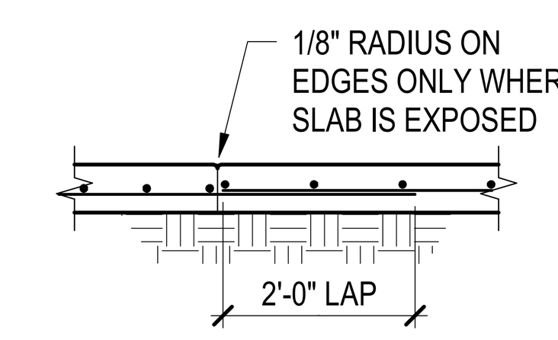
1. SLAB ON GRADE IS 5 INCHES THICK UNLESS NOTED OTHERWISE.
2. LOCATE CONSTRUCTION JOINTS UNDER PARTITIONS OR ON COLUMN LINES. PROVIDE CONTROL JOINTS ON ALL COLUMN LINES AND AT A MAXIMUM SPACING OF 30 x SLAB THICKNESS EACH WAY IN BETWEEN. PROVIDE CONTROL JOINTS AT ALL RE-ENTRANT CORNERS. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO ARCHITECT FOR REVIEW.
3. SAWED JOINTS SHALL BE MADE AS SOON AS THE CONTROL JOINT CAN BE CUT WITHOUT EDGES RAVELING AND WITHIN 24 HOURS OF SLAB PLACEMENT. SAWED JOINTS SHALL BE FILLED WITH SEALANT AS COORDINATED WITH THE ARCHITECT.
4. LOCATE REINFORCING AT MID-DEPTH OF SLAB UNO.
5. TYPICAL SLAB REINFORCING:
   4" - 6" SLAB: #4 @ 18" EACH WAY
   GREATER THAN 6" SLAB: #5 @ 18" EACH WAY BOT
   #4 @ 18" EACH WAY TOP



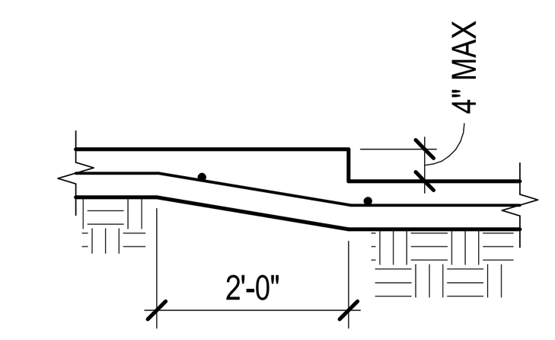
ADJACENT TO WALL



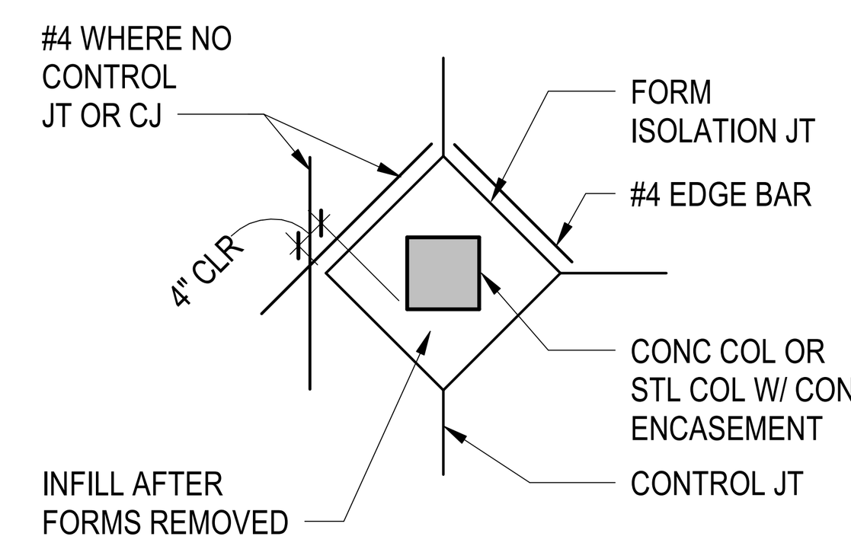
CONTROL JOINT



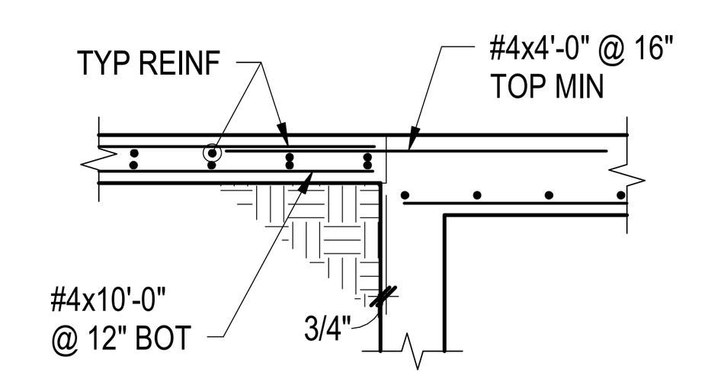
CONSTRUCTION JOINT



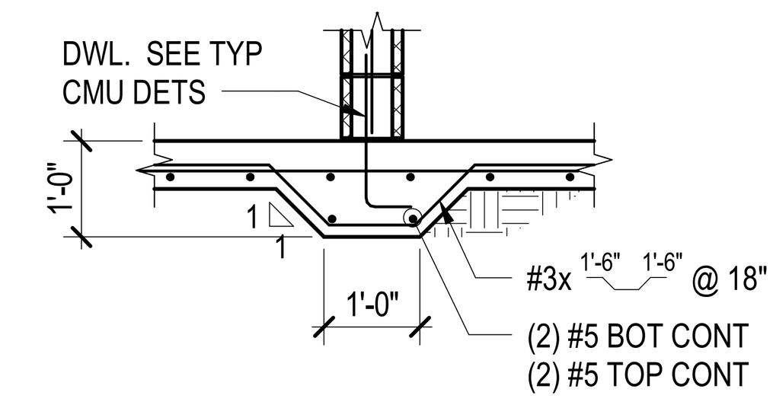
MINOR STEP



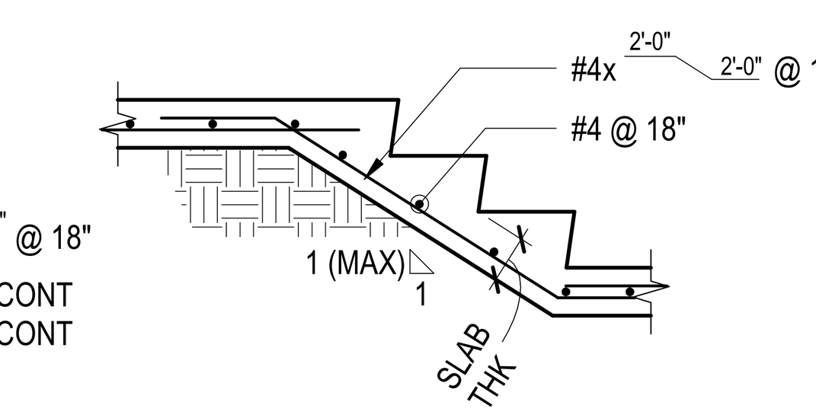
ISOLATION JOINT AT COLUMN



ADJACENT TO STRUCTURAL SLAB

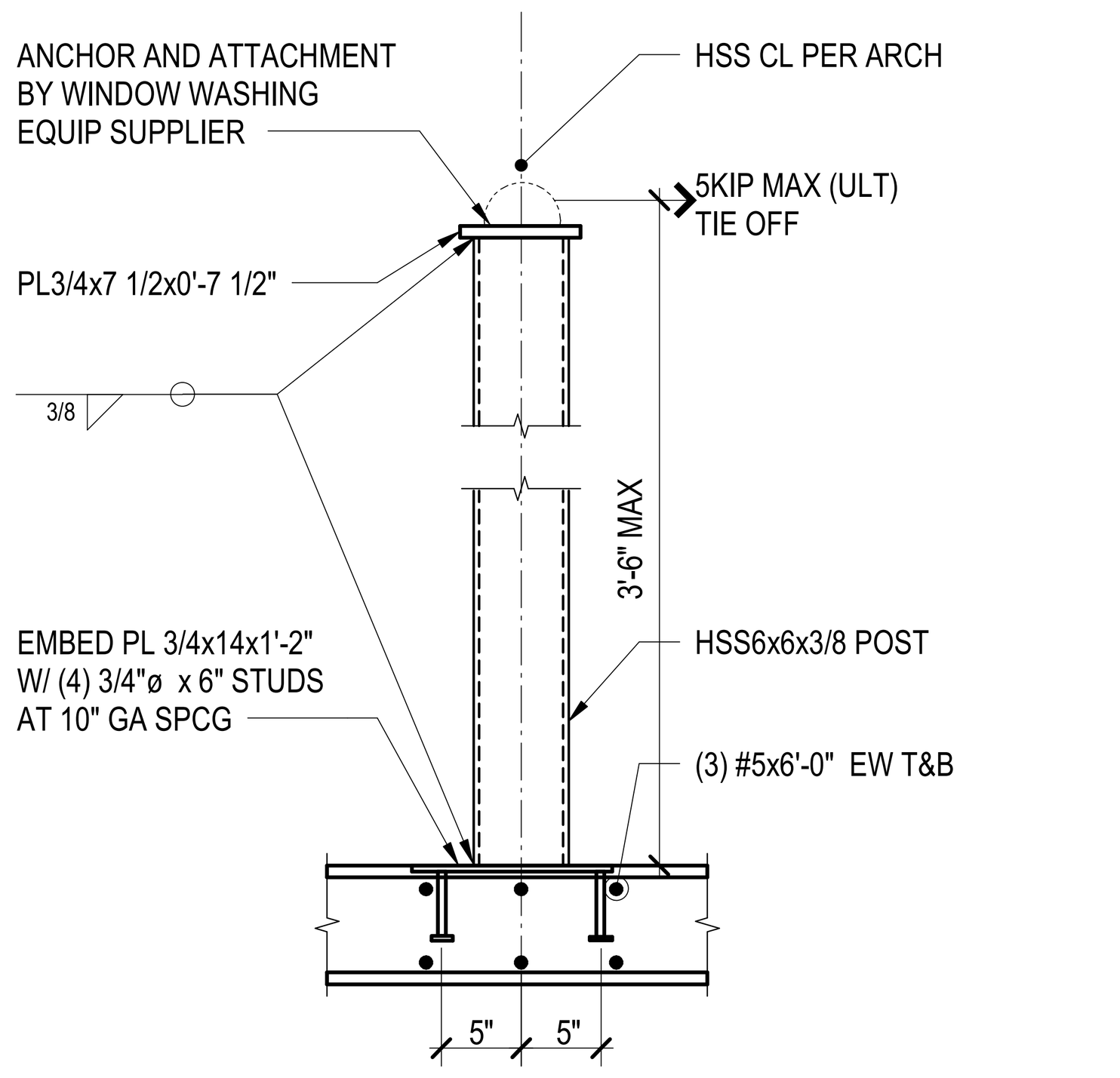


SUPPORTING CMU

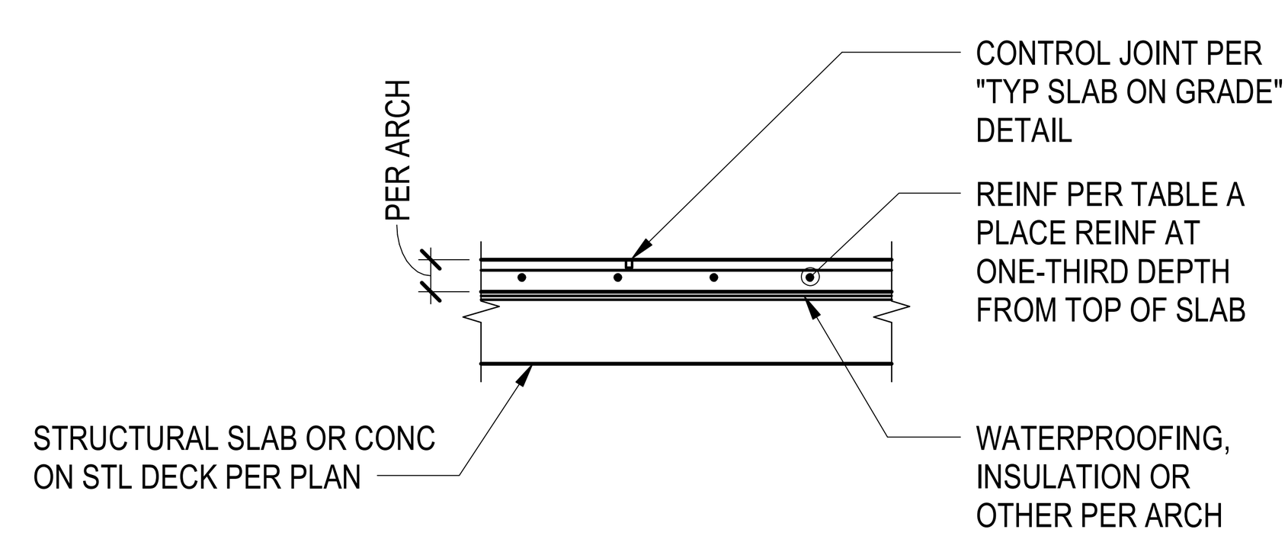


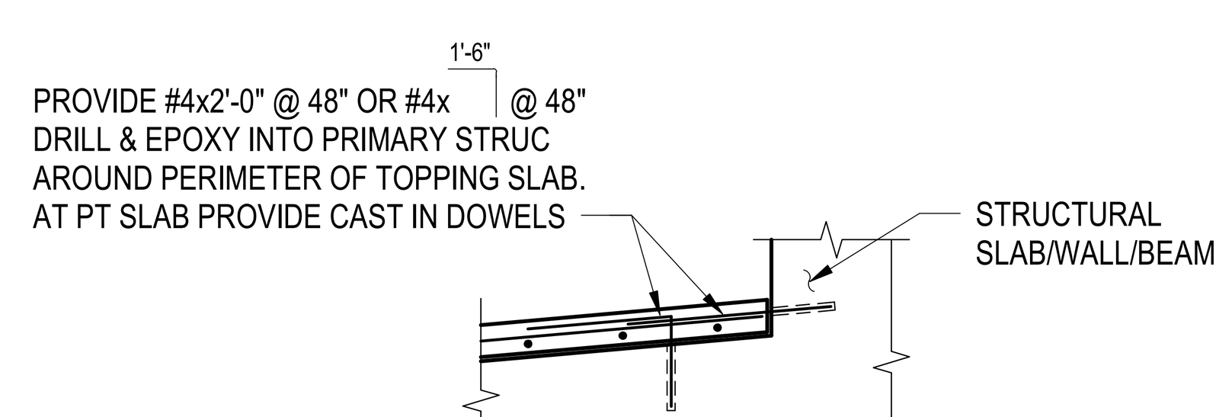
STEPS ON GRADE

8 TYPICAL SLAB ON GRADE

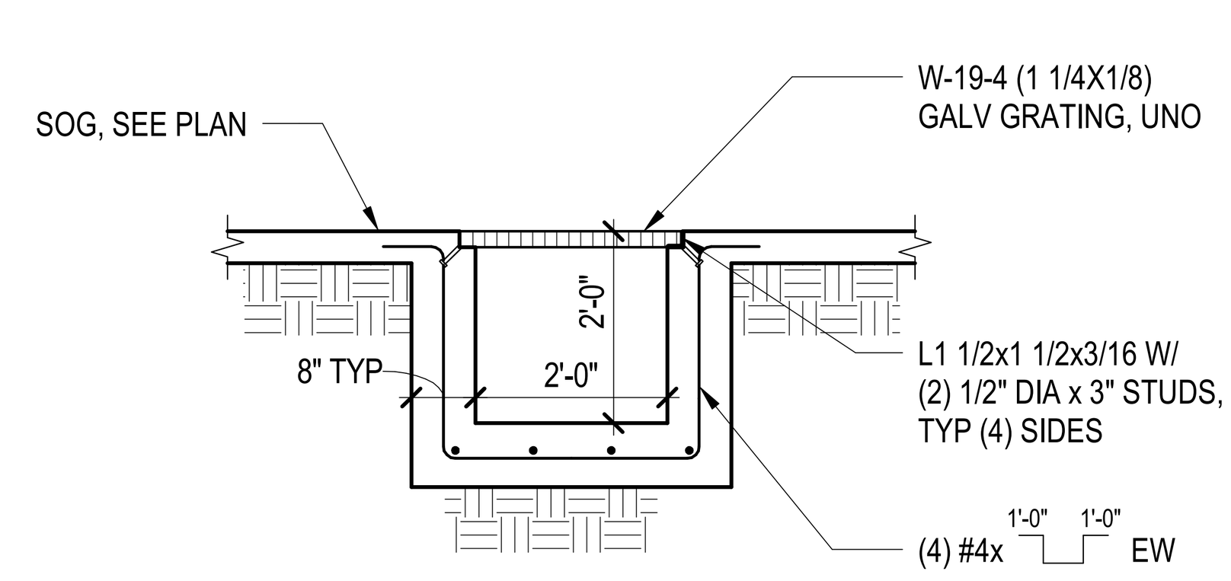


11 TYPICAL FALL ARREST POST

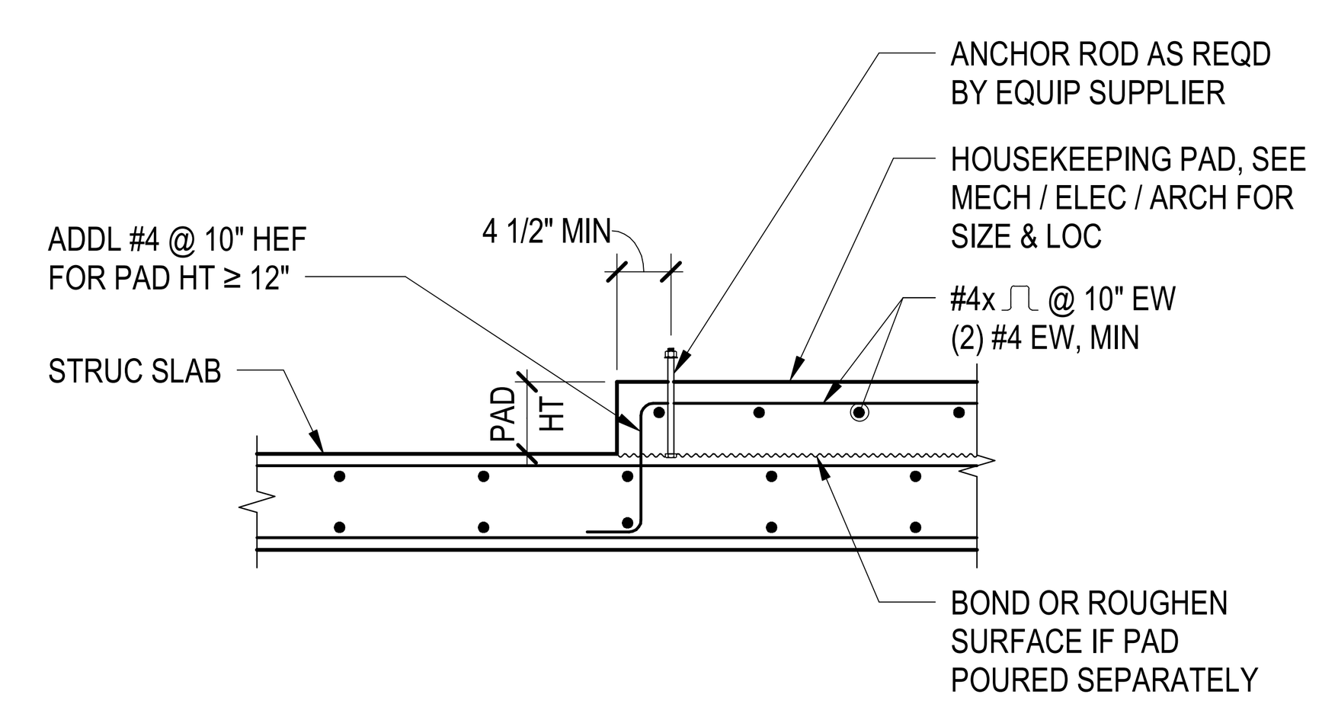




PERIMETER



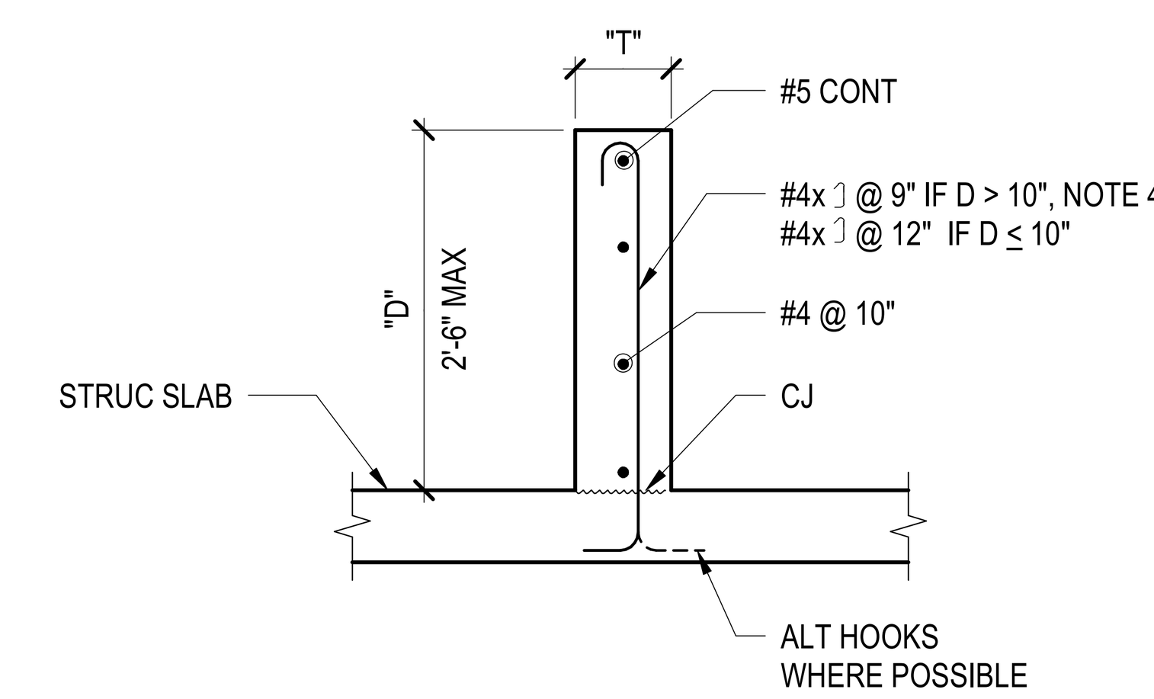
13 TYPICAL SUMP PIT



NOTES:

1. HOUSEKEEPING PADS ON SLAB-ON-GRADE AND COMPOSITE SLABS SIMILAR.

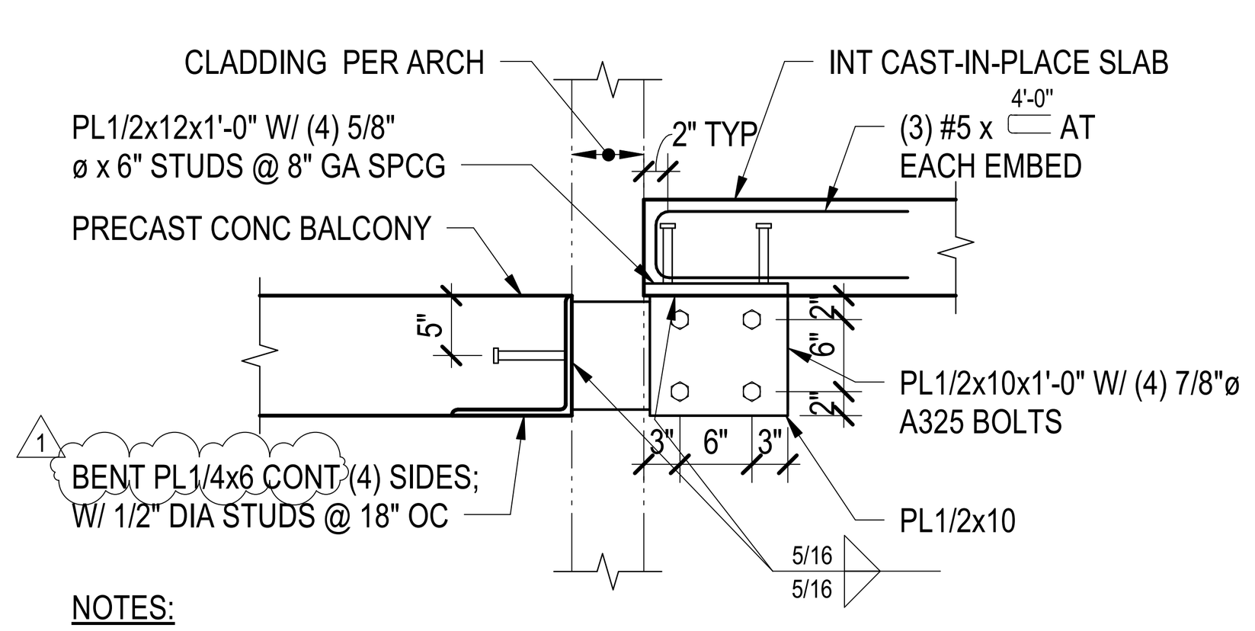
14 TYPICAL HOUSEKEEPING PAD



NOTES:

1. T = 6" MINIMUM OR 10" MAXIMUM. IF T > 10", SEE "TYPICAL HOUSEKEEPING PAD" DETAIL.
2. SEE ARCHITECTURAL FOR T AND D DIMENSIONS AND CURB LOCATIONS.
3. CONCRETE CURBS ON SLAB-ON-GRADE AND FORMED SLABS ARE SIMILAR.

15 TYPICAL CONCRETE CURB



NOTES:

1. CONNECTION TO BE PROVIDED AT 4'-0" MAX SPACING. MINIMUM OF (2) CONNECTIONS PER BALCONY EDGE. FIRST CONNECTION TO OCCUR NO MORE THAN 12" FROM ANY EDGE OF BALCONY SLAB.

16 TYPICAL PRECAST BALCONY CONNECTION

TABLE A	
THICKNESS (IN)	MINIMUM REINFORCING
2	#3 @ 12" EW OR WWR 6X6 - W2.5XW2.5
3	#3 @ 12" EW OR WWR 6X6 - W3.5XW3.5
4	#3 @ 12" EW OR WWR 6X6 - W4.5XW4.5
5	#3 @ 12" EW OR WWR 6X6 - W5.5XW5.5
6	#4 @ 12" EW OR WWR 6X6 - W6.5XW6.5
7	#4 @ 12" EW OR WWR 6X6 - W8XW8
8	#4 @ 12" EW OR WWR 6X6 - W9XW9

NOTES:

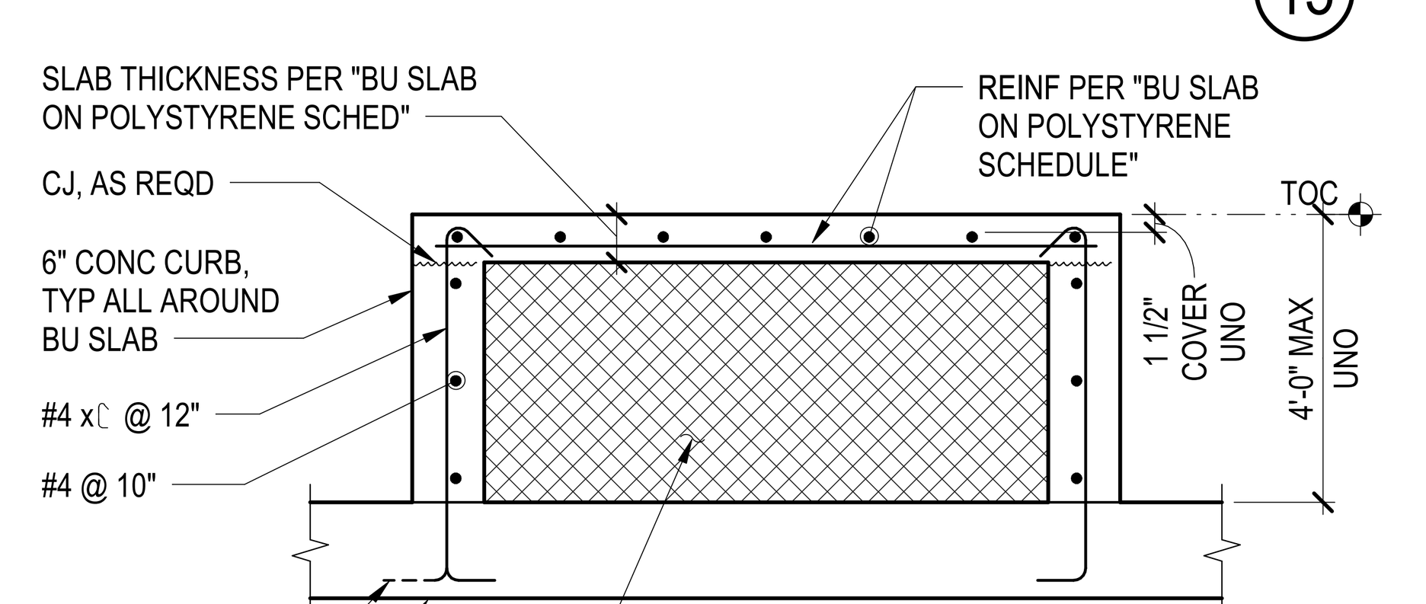
1. SEE "TYPICAL SLAB ON GRADE" DETAILS FOR ADDITIONAL INFORMATION.
2. AT CONTRACTORS OPTION, AT DEPRESSED AREAS, ACCEPTABLE TO PROVIDE CONCRETE TOPPING OF MINIMUM THICKNESS REQUIRED PER ARCHITECTURAL (4" MIN) ON POLYSTYRENE PER "TYPICAL BUILT-UP SLAB ON POLYSTYRENE".

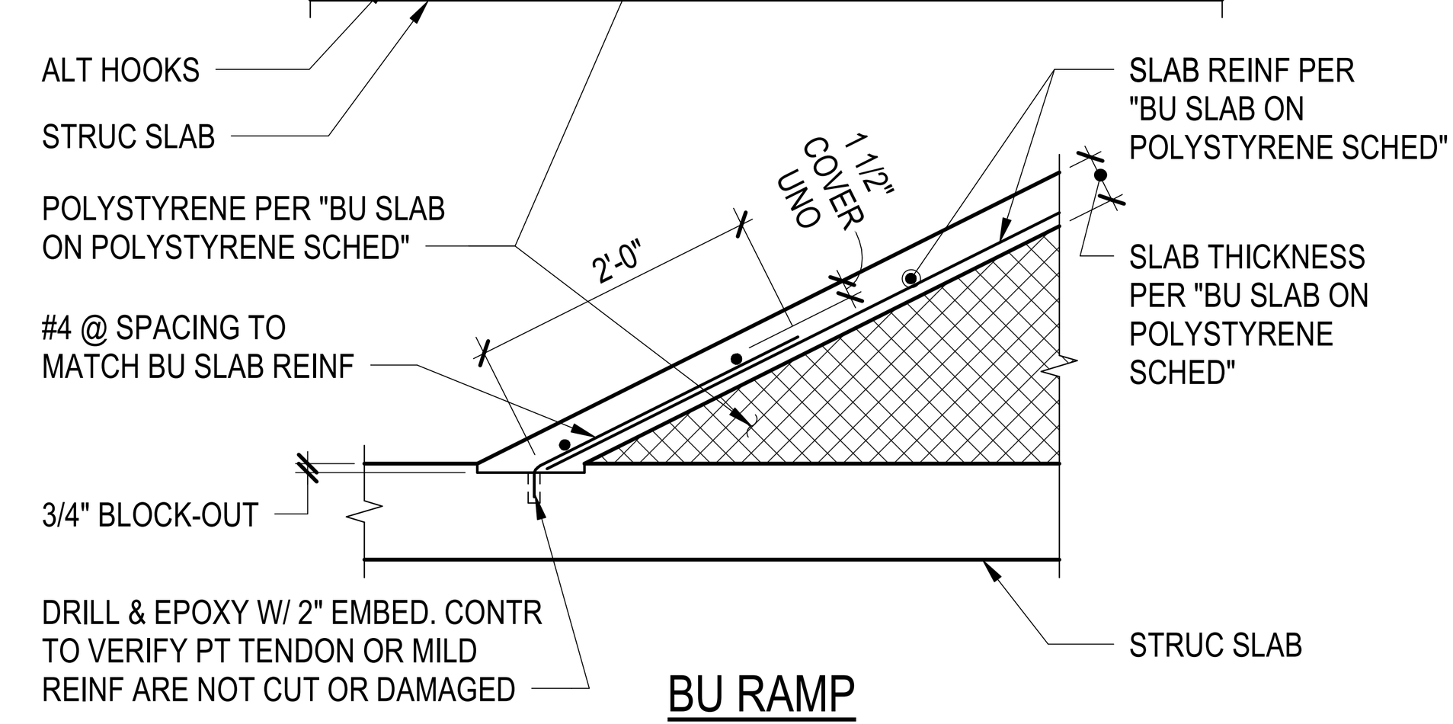
17 TYPICAL TOPPING SLAB

BUILT-UP SLAB ON POLYSTYRENE SCHEDULE				
TYPE	SLAB THICKNESS (INCH)	REINFORCEMENT	POLYSTYRENE STRENGTH - NOTE 1	REMARKS
1A	4	#4 @ 12" EW	3.6 PSI @ 1%	TYP UNO
1V	6	#5 @ 12" EW	7.3 PSI @ 1%	PROVIDE AT ALL AREAS SUBJECT TO VEHICLE LOADS

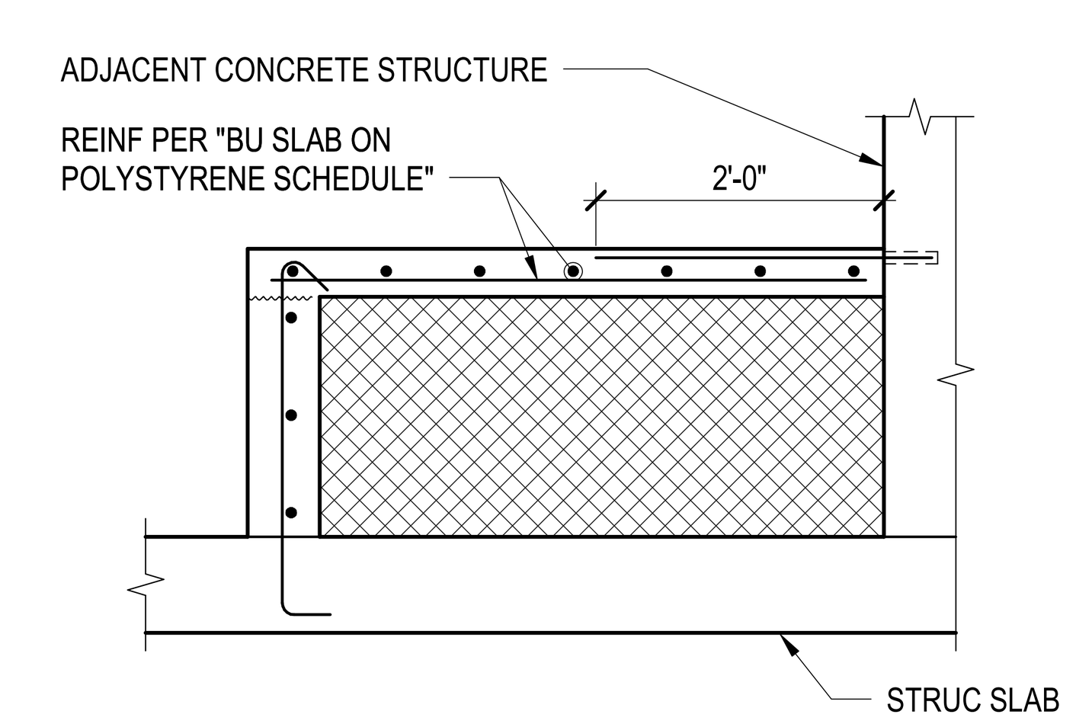
NOTES:

1. RIGID CELLULAR POLYSTYRENE WITH MINIMUM COMPRESSIVE RESISTANCE INDICATED AT 1% DEFORMATION CONFORMING TO ASTM D6817 OR ASTM C578 OR APPROVED EQUIVALENT.
2. PROVIDE 3/4" DEEP SAWCUT CONTROL JOINTS AT MAXIMUM SPACING OF 30 TIMES THE SLAB THICKNESS ON CENTER EACH WAY. PROVIDE CONTROL JOINTS AT ALL RE-ENTRANT CORNERS. CONTRACTOR SHALL SUBMIT A JOINTING PLAN TO THE ARCHITECT FOR REVIEW.
3. FOR MECHANICAL EQUIPMENT EXCEEDING 1000 POUNDS SUPPORTED ON THE SLAB, CONTACT THE ENGINEER FOR APPROVAL.
4. BUILT-UP SLAB AND CURB MINIMUM f'c = 4000 PSI.



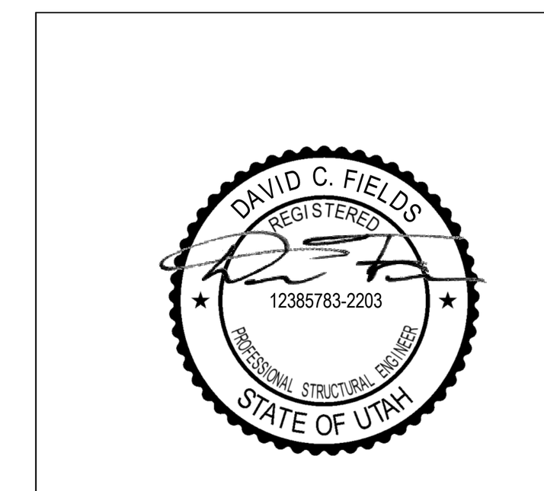


BU RAMP



BU SLAB AT ADJACENT STRUCTURE

18 TYPICAL BUILT-UP SLAB ON POLYSTYRENE



Reserved for permit stamp

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project manager
drawn by
checked by
job no. 20052
date 11/18/2022

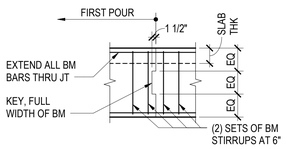
revisions:

no.	date		by
1	11/18/2022	IFC	

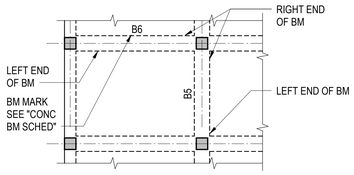
CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL CONCRETE DETAILS

S4.02



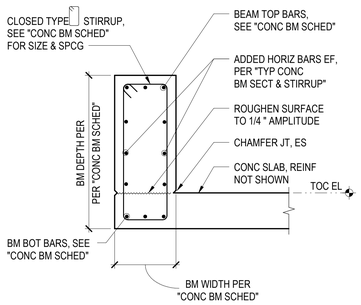
BEAM CONSTRUCTION JOINT



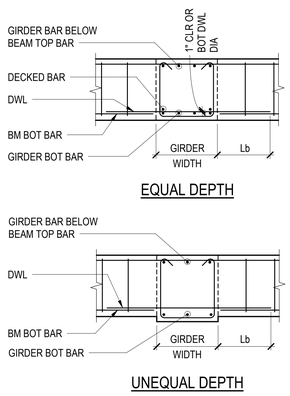
PLAN OF BEAMS

BEAM REINFORCING ELEVATION

11 TYPICAL CONCRETE BEAM



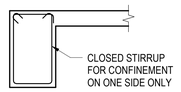
16 TYPICAL CONCRETE UPTURNED BEAM



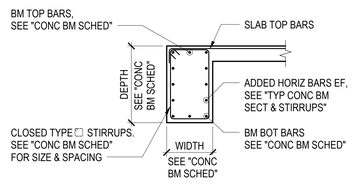
EQUAL DEPTH

UNEQUAL DEPTH

17 TYP CONC BM AND GIRDER INTERSECTION



ALTERNATE



18 TYPICAL CONCRETE EDGE BEAM

NOTES:

1. AT CONTRACTOR'S OPTION, WHERE REQUIRED TO RELIEVE BAR CONGESTION, NOT MORE THAN 50 PERCENT OF THE AREA OF THE STRAIGHT BOTTOM BARS MAY BE TERMINATED AS SHOWN UNLESS NOTED OTHERWISE.
2. BEAM SCHEDULES DO NOT INDICATE REQUIREMENTS FOR ARRANGING BARS. THE CONTRACTOR SHALL DETAIL AND PLACE REINFORCING STEEL IN A SINGLE LAYER WHENEVER POSSIBLE. A SECOND LAYER MAY BE USED ONLY WHERE REQUIRED TO PROVIDE PROPER CLEARANCES BETWEEN BARS IN A LAYER AND WHERE REQUIRED IN ORDER TO PROPERLY CLEAR COLUMN VERTICALS AND SIMILAR REINFORCING.
3. EITHER 90 OR 180 DEGREE STANDARD HOOK BARS MAY BE USED FOR LONGITUDINAL BARS.
4. WHERE TOP BARS ARE INDICATED AS CONTINUOUS AND RUN OVER 60 FEET IN LENGTH, BARS MAY BE LAPPED Ld IN THE MIDDLE THIRD OF THE BEAM SPAN UNLESS NOTED OTHERWI SE. CONTINUOUS TOP BARS SHALL NOT BE LAPPED IN THE SPAN ADJACENT TO A CANTILEVER, UNLESS NOTED OTHERWISE. WHERE BOTTOM BARS ARE SHOWN AS CONTINUOUS AND RUN IN EXCESS OF 60 FEET, A LAP SPLICE MAY BE USED EQUAL TO Lsb AND SHALL BE OUTSIDE THE MIDDLE THIRD OF THE BEAM SPAN. SIDE BAR SPLICES MAY BE MADE WHERE CONVENIENT.
5. LOCATE ALL CONSTRUCTION JOINTS WITHIN THE MIDDLE THIRD OF SPAN. JOINTS SHALL BE OFFSET AT A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF INTERSECTING BEAMS. SUBMIT LOCATION OF ALL CONSTRUCTION JOINTS TO ENGINEER FOR REVIEW AND ACCEPTANCE BEFORE FORMING.
6. ALL BARS IN SAME LAYER UNLESS NOTED OTHERWISE.

3 TYPICAL CONCRETE BEAM NOTES

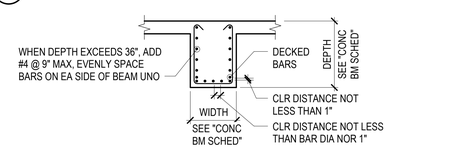
CONCRETE BEAM SCHEDULE

MARK	SIZE (WIDTHxDEPTH)	CAMBER	BOTTOM BARS	TOP BARS LEFT	TOP BARS CONTINUOUS	TOP BARS RIGHT	STIRRUPS LEFT	STIRRUPS CONTINUOUS	STIRRUPS RIGHT	REMARKS
B1	12"x18"		(2) #7	(2) #7	(2) #7	(2) #7		#4 @ 6" [2C]		
B2	24"x24"		(3) #8		(7) #8			#5 @ 9" [2C]		
B3	24"x24"		(4) #8	(4) #8	(3) #8	(4) #8		#5 @ 9" [2C]	1	
B5	24"x22" MIN		(3) #8		(9) #9			#5 @ 9" [2C]		SEE SECTION PER PLAN FOR DEPTH
B6	24"x26 1/2"		(3) #8	(5) #9	(4) #9	(5) #9		#5 @ 9" [2C]		SEE SECTION PER PLAN FOR DEPTH
B7	24"x24"		(3) #8		(10) #9			#5 @ 9" [3C]		
B8	24"x24"		(8) #10	(5) #10	(5) #10	(5) #10		#6 @ 5" [3C]		
B9	30"x24"		(4) #7		(7) #9			#5 @ 9" [3C]		ADD (2) #4 SIDE BAR EA SIDE
B10	30"x24"	1	(4) #7		(7) #9			#5 @ 9" [3C]	1	ADD (3) #4 SIDE BAR EA SIDE
B12	30"x22" MIN		(4) #7		(9) #10			#5 @ 9" [3C]		ADD (2) #4 SIDE BAR EA SIDE - SEE SECTION PER PLAN FOR DEPTH
B13	30"x26 1/2"		(5) #7		(10) #10			#5 @ 9" [3C]		ADD (2) #4 SIDE BAR EA SIDE - SEE SECTION PER PLAN FOR DEPTH
B16	30"x24"		(4) #7		(6) #8			#5 @ 6" [3C]		ADD (3) #5 SIDE BAR EA SIDE
B17	30"x24"		(4) #7		(9) #8			#4 @ 9" [4C]		ADD (3) #4 SIDE BAR EA SIDE
B21	30"x22" MIN	1	(4) #7		(10) #10			#6 @ 6" [3C]		ADD (2) #4 SIDE BAR EA SIDE - SEE SECTION PER PLAN FOR DEPTH
B22	30"x26 1/2"		(6) #8		(10) #10			#6 @ 6" [3C]		ADD (2) #4 SIDE BAR EA SIDE - SEE SECTION PER PLAN FOR DEPTH
B23	30"x26 1/2"		(4) #7		(8) #9			#5 @ 8" [3C]		ADD (2) #4 SIDE BAR EA SIDE - SEE SECTION PER PLAN FOR DEPTH
B26	30"x30"		(3) #7		(4) #7			#5 @ 9" [3C]		
B27	30"x30"		(3) #7		(4) #7			#6 @ 6" [2C]		
B28	18"x24"		(3) #7		(3) #7			#5 @ 5" [2C]		
B29	30"x24"		(4) #7		(6) #8			#5 @ 9" [2C]		
B30	30"x24"		(4) #7		(9) #8			#5 @ 10" [2C]		
B33	24"x32"		(4) #8		(3) #7			#5 @ 14" [2C]		
B34	24"x24"		(4) #8		(4) #8			#5 @ 10" [2C]		
B35	24"x24"		(5) #8		(5) #8			#5 @ 10" [2C]		
B37	18"x32"		(3) #7		(3) #7			#5 @ 5" [2C]		
B38	24"x32"		(4) #7		(4) #8			#5 @ 14" [2C]		
B39	24"x32"		(4) #8		(4) #8			#5 @ 9" [3C]		
B40	24"x32"		(6) #9		(4) #8			#5 @ 9" [3C]		
B41	34"x30"		(6) #8		(6) #8			#5 @ 9" [3C]		
B42	32"x32"		(4) #9		(4) #9			#4 @ 14" [4C]		
B44	24"x48"		(3) #7		(3) #7	1		#4 @ 14" [3C]		
B45	24"x48"		(3) #8		(3) #8			#4 @ 14" [3C]		
B46	24"x32"		(3) #8		(3) #8			#4 @ 14" [3C]		
B47	24"x32"		(3) #9		(5) #9			#4 @ 14" [3C]		
B48	24"x50"		(3) #8		(3) #9			#4 @ 14" [3C]		
B49	24"x32"		(3) #9		(3) #9			#4 @ 14" [3C]		
B50	12"x39"		(3) #7		(3) #7			#4 @ 14" [3C]		
B51	18"x32"		(4) #8		(4) #8			#4 @ 10 [4C]		
B52	32"x72"	1	(14) #11	(3) #10	(4) #10	(3) #10		#5 @ 6" [4C]		
B53	18"x36"		(4) #8	(2) #8	(3) #8	(2) #8		#5 @ 12" [2C]		
B54	24"x32"		(3) #7		(3) #7			#4 @ 14" [3C]	1	
B56	18"x37"		(3) #9		(3) #9			#4 @ 14" [3C]		
B57	24"x32"		(3) #9		(3) #9			#4 @ 14" [3C]		
B58	30"x36"		(4) #9	(3) #7	(4) #9	(3) #7	(13) #5 @ 6" [4C]	#5@ 14" [4C]	(13) #5 @ 6" [3C]	
B59	24"x62"		(4) #9		(4) #9			#4 @ 12" [4C]		
B61	24"x39"		(6) #10		(6) #8			#4 @ 14" [4C]		
B62	24"x74"		(3) #8		(3) #8			#4 @ 14" [3C]		
B63	24"x72"		(5) #11		(5) #11			#4 @ 14" [3C]		
B64	32"x72"		(8) #11		(8) #11			#5 @ 8" [4C]		
B65	24"x60"		(6) #11		(6) #9			#5 @ 14" [4C]		
B66	24"x74"		(5) #11		(5) #11			#4 @ 14" [3C]		
B67	24"x26"		(3) #8		(3) #8			#4 @ 14" [3C]		
B68	24"x62"		(4) #9		(4) #9			#4 @ 14" [4C]		
B69	30 1/2"x48"		(4) #11		(4) #11			#4 @ 14" [4C]		
B71	40"x42"		(11) #18	(6) #11	(6) #11	(6) #11		#6 @ 4" [4C]		
B72	60"x42"		(14) #11		(8) #9			#5 @ 6" [7C]		
B73	38 1/2"x24"									SEE DETAIL 18/S5.05 1
B74	24"x67"									
B75	36"x30"		(5) #8		(6) #10			#6 @ 6" [5C]		

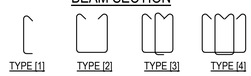
NOTES:

1. SEE "TYPICAL CONCRETE BEAM" DETAIL.
2. [ ] DENOTES TYPE OF REINFORCING CONFIGURATION. SEE "TYPICAL CONCRETE BEAM SECTION AND STIRRUPS" DETAIL FOR STIRRUP TYPE.

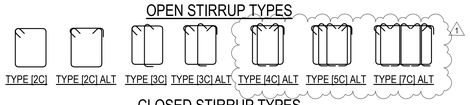
13 CONCRETE BEAM SCHEDULE



BEAM SECTION



OPEN STIRRUP TYPES



CLOSED STIRRUP TYPES

NOTES:

1. [ ] DENOTES TYPE OF STIRRUP REINFORCING CONFIGURATION. SEE "CONCRETE BEAM SCHEDULE."

19 TYP CONC BEAM SECTION AND STIRRUPS

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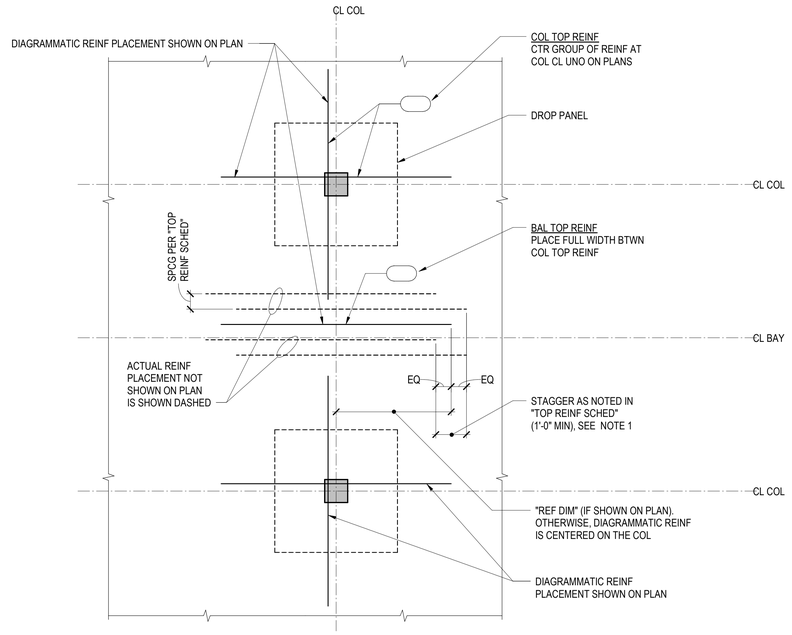
TYPICAL CONCRETE BEAM DETAILS AND SCHEDULE

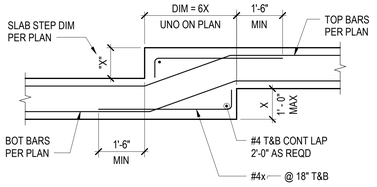
S4.03



NOTES:

1. STAGGERED CONDITION APPLIES TO ALL TOP BARS EXCEPT HOOKED BARS AT SLAB EDGES.

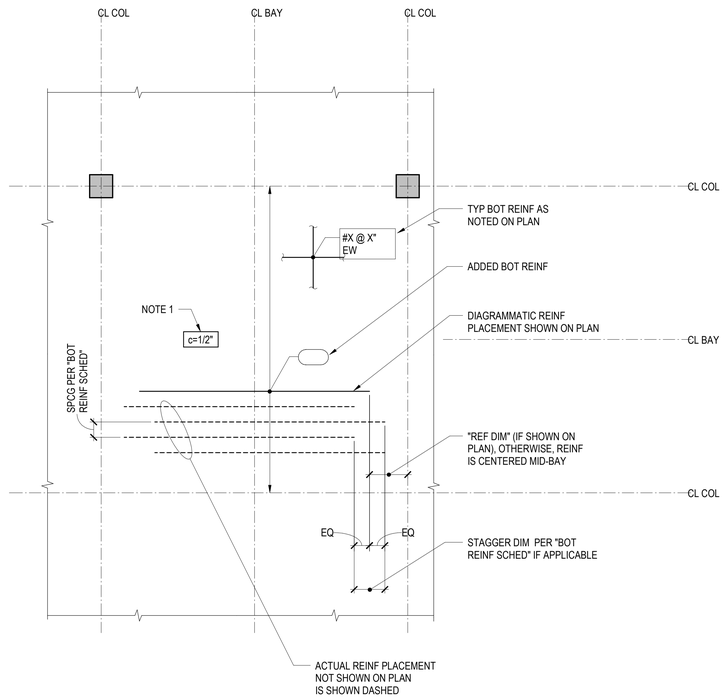
9 TYPICAL MILD SLAB TOP REINFORCING PLACEMENT



NOTES:

1. THIS DETAIL ONLY APPLIES TO MILD REINFORCED SLABS.

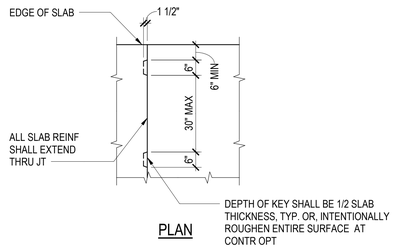
13 TYPICAL MILD SLAB STEP REINFORCING



NOTES:

1. WHEN NO EXTENT LINES EXIST AT MILD SLAB CAMBER, A SINGLE HIGH POINT AT MID-BAY IS INDICATED. THE SURROUNDING SLAB SLOPES AWAY TOWARD THE ADJACENT COLUMNS OR WALLS.

19 TYPICAL MILD SLAB BOTTOM REINFORCING PLACEMENT

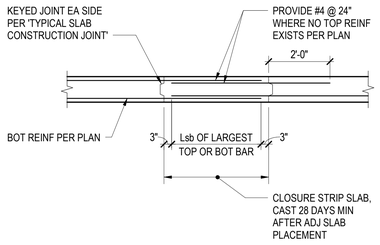


PLAN

NOTES:

1. LOCATE ALL CONSTRUCTION JOINTS WITHIN THE MIDDLE THIRD OF THE SPAN. SUBMIT LOCATIONS OF ALL CONSTRUCTION JOINTS TO ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO FORMING.
2. PROVIDE #4x5'-0" @ 24" CENTERED ACROSS CONSTRUCTION JOINT AT LOCATIONS WHERE TOP SLAB REINFORCING IS NOT SPECIFIED PER PLAN.

17 TYPICAL SLAB CONSTRUCTION JOINT



NOTES:

1. SHORE SLAB UNTIL CLOSURE STRIP REACHES 28 DAY DESIGN STRENGTH.
2. REINFORCING IN OPPOSITE DIRECTION IS PER PLANS.

18 TYPICAL MILD SLAB CLOSURE STRIP

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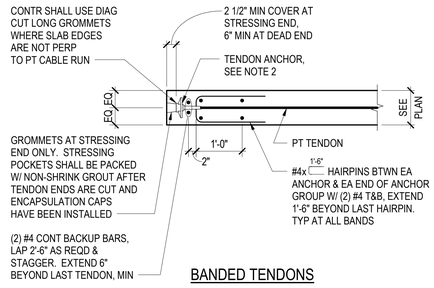
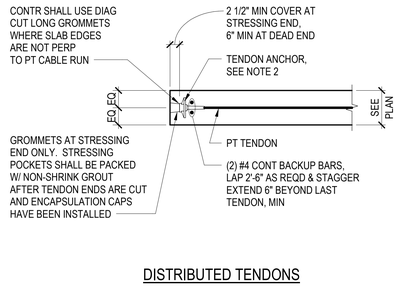
TYPICAL MILD SLAB DETAILS

S4.04



BANDED TENDONS

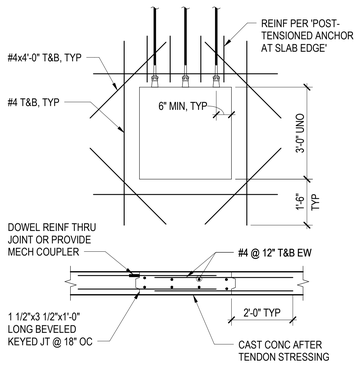


DISTRIBUTED TENDONS

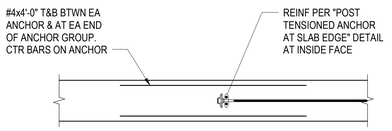
NOTES:

1. BANDED TENDON DETAIL APPLIES FOR GROUPS OF FOUR OR MORE TENDONS WHERE ANCHOR SPACING IS LESS THAN 12 INCHES.
2. PLACE ANCHORS VERTICALLY IN SLABS GREATER THAN OR EQUAL TO 7 INCHES THICK. PLACE ANCHORS HORIZONTALLY FOR SLABS LESS THAN 7 INCHES THICK.

1 TYPICAL POST-TENSIONED ANCHOR AT SLAB EDGE



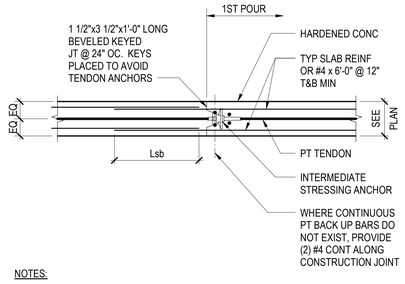
6 TYPICAL STRESSING BLOCKOUT



NOTES:

1. ACCEPTABLE FOR BAR PROVIDED ON PLAN TO SATISFY NOTED REINFORCEMENT REQUIREMENTS.

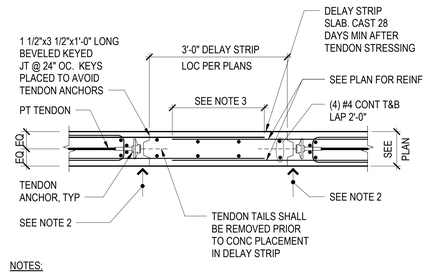
11 TYP PT ANCHOR AWAY FROM SLAB EDGE



NOTES:

1. CONTRACTOR TO SUBMIT LOCATIONS OF CONSTRUCTION JOINTS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
2. SEE "TYPICAL POST-TENSION ANCHOR AT SLAB EDGE" DETAIL FOR ADDITIONAL REINFORCING AT ANCHOR.

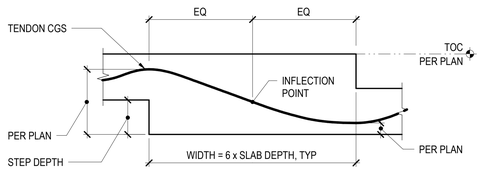
7 TYP POST-TENSIONED SLAB CONST JOINT



NOTES:

1. SEE "TYPICAL POST-TENSION ANCHOR AT SLAB EDGE" DETAIL FOR ADDITIONAL REINFORCING AT ANCHOR.
2. SHORE SLAB UNTIL DELAY STRIP HAS REACHED 28 DAY DESIGN STRENGTH.
3. LAP SPLICE Lsb UNLESS NOTED OTHERWISE. WHERE LAP CANNOT BE ACHIEVED, PROVIDE BAR COUPLERS THAT REMAIN UNFASTENED UNTIL JUST PRIOR TO CASTING OF CLOSURE STRIP.

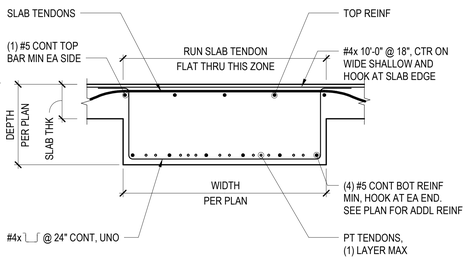
12 TYPICAL POST-TENSIONED DELAY STRIP



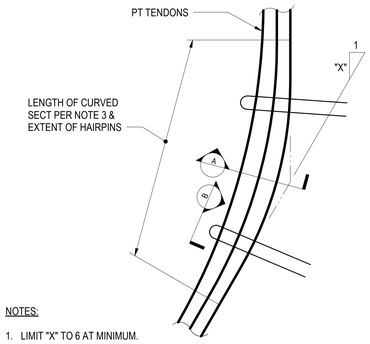
NOTES:

1. SEE "TYPICAL MILD SLAB STEP REINFORCING" FOR REINFORCEMENT AT STEP, NOT SHOWN HERE.

17 TYPICAL PT SLAB STEP



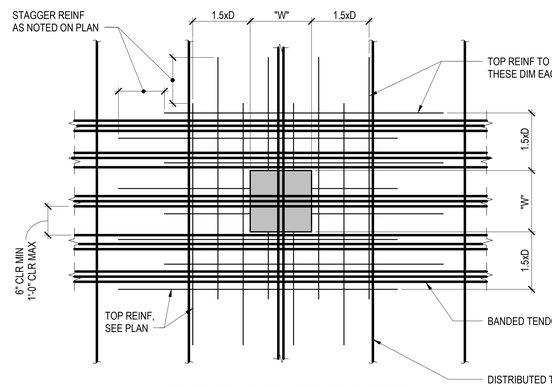
18 TYPICAL PT WIDE SHALLOW



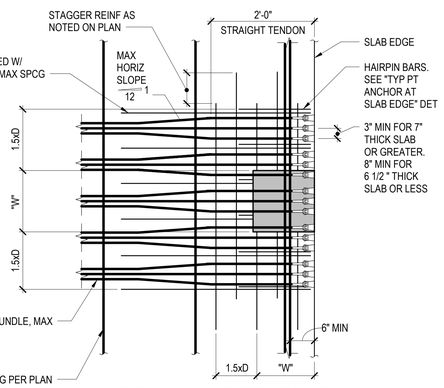
NOTES:

1. LIMIT "X" TO 6 AT MINIMUM.
2. WHERE "X" IS 12 OR GREATER, NO HAIRPINS ARE REQUIRED.
3. MINIMUM LENGTH OF CURVED SECTION IS EQUAL TO 20/X (IN FEET).

19 TYPICAL SKEWED TENDON REINFORCEMENT



REINFORCING AT INTERIOR SUPPORT

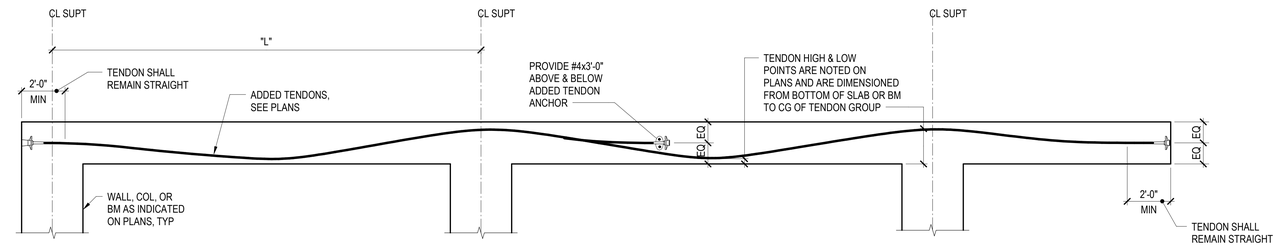


REINFORCING AT EXTERIOR SUPPORT

NOTES:

1. A MINIMUM OF TWO TENDONS ARE TO PASS DIRECTLY OVER COLUMN WITHIN COLUMN VERTICAL REINFORCING EACH WAY.
2. LEGEND:
   W =COLUMN WIDTH
   D = DEPTH OF SLAB OR DEPTH OF SLAB PLUS DROP PANEL.

3 TYPICAL POST-TENSIONED REINFORCING AT SUPPORT FOR TWO-WAY SLABS

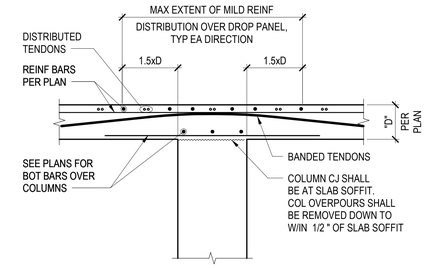


EXTERIOR SUPPORT | EXTERIOR SPAN | INTERIOR SUPPORT | INTERIOR SPAN | CANTILEVERED SLAB

NOTES:

1. SEE PLANS FOR TENDON LAYOUT.
2. TENDON LOW POINTS ARE LOCATED MIDWAY BETWEEN HIGH POINTS UNLESS NOTED OTHERWISE.
3. DRAPE TENDON IN PARABOLIC PROFILE BETWEEN LOW AND HIGH POINTS.
4. DROP PANELS, WHERE THEY OCCUR, ARE NOT SHOWN FOR CLARITY.

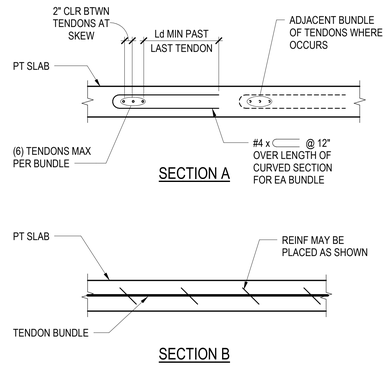
8 TYPICAL POST-TENSIONED TENDON PROFILE



NOTES:

1. SLAB SHEAR REINFORCING NOT SHOWN.

15 TYPICAL COLUMN / SLAB INTERSECTION



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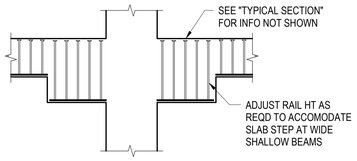
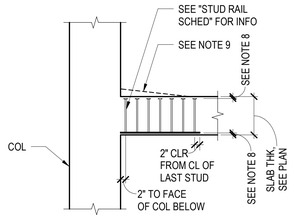
TYPICAL POST-TENSIONED SLAB DETAILS

S4.05

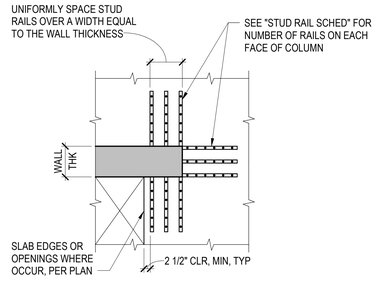


SECTION AT WIDE SHALLOW BEAMS



SECTION

2 TYPICAL STUD RAIL SECTION



7 TYPICAL SLAB SHEAR REINFORCEMENT AT WALLS

NOTES:

1. SEE PLANS FOR LOCATIONS WHERE SLAB SHEAR REINFORCING IS REQUIRED.
2. SLAB SHEAR REINFORCEMENT SHALL CONFORM TO ASTM A1044.
3. ALL STUD RAILS SHALL BE CLEARLY MARKED WITH BRIGHT PAINT TO INDICATE STUD RAIL TYPE.
4. COORDINATE PLACEMENT WITH POST-TENSIONED TENDONS AND ANCHORAGES. PROVIDE POSITIVE MEANS TO KEEP REINFORCEMENT IN PLACE DURING CONCRETE PLACEMENT.
5. NUMBER OF RAILS PER COLUMN SIDE IS PER "STUD RAIL SCHEDULE."
6. PLACE OUTER STUD RAILS FLUSH WITH CORNERS OF COLUMN UNLESS NOTED OTHERWISE. EQUALLY SPACE RAILS ON EACH FACE OF COLUMN.
7. SEE PLANS FOR REINFORCING THROUGH COLUMNS, TYPICAL.
8. STUD RAIL CLEAR COVER MATCHES ADJACENT SLAB REINFORCING, TOP AND BOTTOM, REFER TO "GENERAL NOTES."
9. WHERE TOP OF SLAB SLOPES (REFER TO PLANS), DETERMINE STUD HEIGHT BASED ON MINIMUM SLAB THICKNESS OVER THE LENGTH OF THE RAIL. ALL STUDS ON A SINGLE RAIL SHALL HAVE THE SAME HEIGHT.
10. WHERE SLAB EDGE IS NOT FLUSH WITH COLUMN FACE, SEE "TYPICAL TRIMMED STUD RAIL" DETAIL.
11. AT BALCONIES OR SLAB DEPRESSIONS, SEE "TYPICAL SLAB STEP STUD RAIL LAYOUT" DETAIL.

8 TYPICAL STUD RAIL NOTES

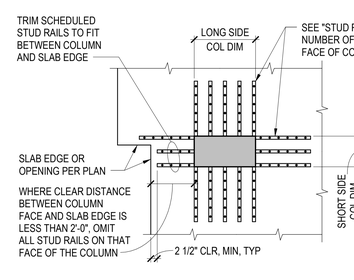
STUD RAIL SCHEDULE

MARK	COLUMN LONG SIDE NUMBER OF RAILS	COLUMN SHORT SIDE NUMBER OF RAILS	STUD DIAMETER (IN)	STUD SPACING (IN)	NUMBER OF STUDS PER RAIL	POST-TENSIONED SLAB INTEGRITY BARS PER SIDE		REMARKS
						LONG DIMENSION	SHORT DIMENSION	
R1	3	3	1/2	3	11	(5) #5x7'-6"	(5) #5x7'-6"	
R2	4	3	1/2	3	11	(4) #5x7'-6"	(3) #5x7'-6"	
R3	6	2	1/2	3	11	(7) #5x10'-0"	(3) #5x10'-0"	
R4	3	3	1/2	3	14	(4) #5x7'-6"	(4) #5x7'-6"	
R5	3	3	1/2	3	17	(4) #5x7'-6"	(4) #5x7'-6"	
R6	4	3	1/2	3	25	(4) #5x7'-6"	(3) #5x7'-6"	
R7	3	3	1/2	3	14	(5) #5x7'-6"	(5) #5x7'-6"	
R8	4	3	1/2	3	15	(4) #5x7'-6"	(3) #5x7'-6"	
R9	4	3	1/2	3	19	(7) #5x10'-0"	(6) #5x10'-0"	
R10	5	3	1/2	3	19	(7) #5x10'-0"	(6) #5x10'-0"	
R11	4	4	1/2	3	25	(7)#5x10'-0"	(6)#5x10'-0"	
R12	6	2	1/2	3	19	(7) #5x10'-0"	(5) #5x10'-0"	
R13	3	3	1/2	3	22	(5) #5x7'-6"	(5) #5x7'-6"	
R14	4	4	1/2	3	17	(7) #5x10'-0"	(7) #5x10'-0"	
R16	4	4	1/2	4	11			
R17	11	4	1/2	4	11			
R18	5	3	1/2	3	19			
R19	6	4	1/2	3	17	(8) #5x10'-0"	(8) #5x10'-0"	

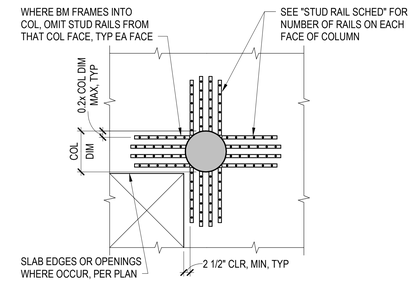
NOTES:

1. SEE TYPICAL SLAB SHEAR REINFORCEMENT DETAILS.

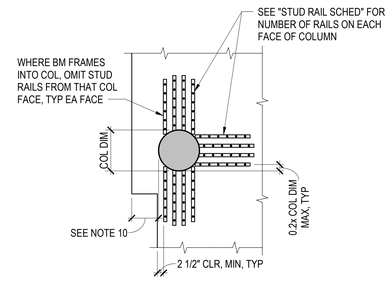
9 STUD RAIL SCHEDULE



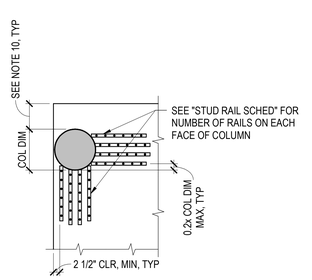
12 TYPICAL TRIMMED STUD RAIL



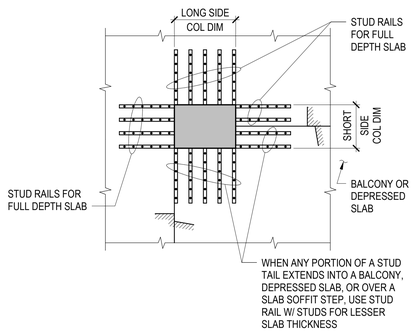
13 TYPICAL SLAB SHEAR REINFORCEMENT AT ROUND INTERIOR COLUMN



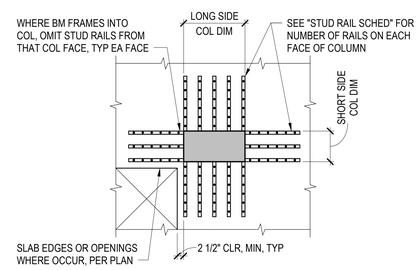
14 TYPICAL SLAB SHEAR REINFORCEMENT AT ROUND EDGE COLUMN



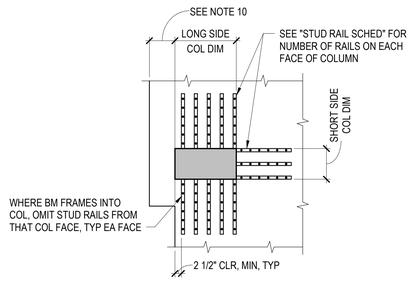
15 TYPICAL SLAB SHEAR REINFORCEMENT AT ROUND CORNER COLUMN



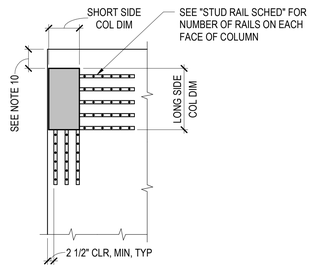
17 TYPICAL SLAB STEP STUD RAIL LAYOUT



18 TYPICAL SLAB SHEAR REINFORCEMENT AT RECTANGULAR INTERIOR COLUMN



19 TYPICAL SLAB SHEAR REINFORCEMENT RECTANGULAR EDGE COLUMN



20 TYPICAL SLAB SHEAR REINFORCEMENT AT RECTANGULAR CORNER COLUMN

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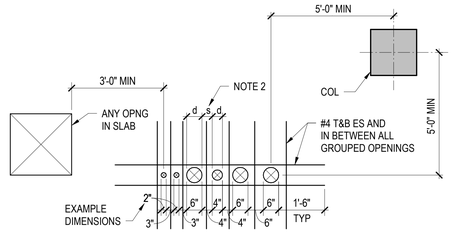
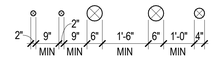
TYPICAL STUD RAIL DETAILS AND SCHEDULE

S4.06



GROUPED OPENINGS IN SLAB

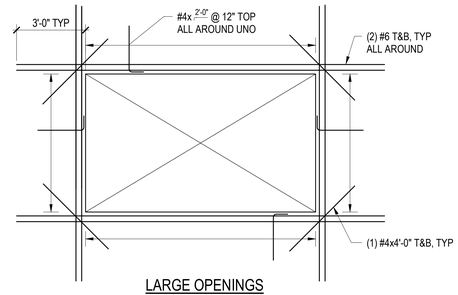


NON-GROUPED OPENINGS IN SLAB

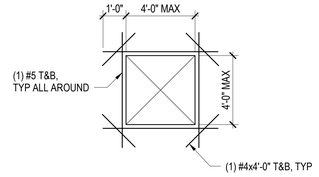
NOTES:

1. ADDED REINFORCING SHOWN APPLIES TO GROUPS OF OPENINGS 12" OR SMALLER. GROUPED OPENINGS ARE DEFINED BY MULTIPLE OPENINGS THAT ARE LOCATED WITHIN THREE TIMES THE DIAMETER OF SMALLER ADJACENT OPENING CLEAR APART, OR A MINIMUM OF 9-INCHES.
2. "s" MUST BE GREATER THAN OR EQUAL TO THE SMALLEST "d" (OPENING) DIMENSION OF ADJACENT SLEEVES. "s" IS EQUAL TO OR GREATER THAN 3-INCHES IN ALL CASES.
3. SEE THE "TYPICAL POST-TENSION CONCRETE SLAB DETAILS" FOR OTHER TENDON PLACEMENT AND REINFORCING REQUIREMENTS.
4. OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED FOR REVIEW AT THE SAME TIME AS SLAB SHOP DRAWINGS. REINFORCING OTHER THAN THAT SHOWN MAY BE REQUIRED.
5. WHERE A TENDON MUST PASS BETWEEN OPENINGS, "s," AT THAT LOCATION, SHALL BE INCREASED TO 6-INCH MINIMUM.
6. WHERE THESE CONDITIONS CANNOT BE MET, SUBMIT TO STRUCTURAL ENGINEER FOR REVIEW.

4 TYPICAL ADDED REINFORCEMENT AT GROUPED OPENINGS IN SLAB



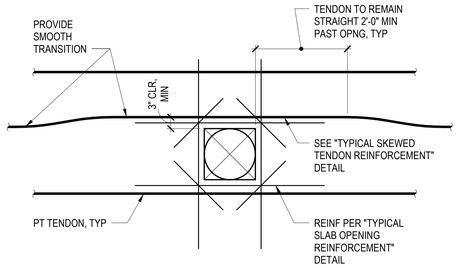
LARGE OPENINGS



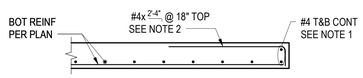
SMALL OPENINGS

NOTES:

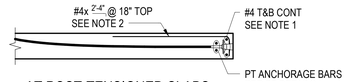
1. LARGE OPENING DETAIL APPLIES AT ALL SLAB OPENINGS WITH ANY SIDE GREATER THAN 4'-0" IN WIDTH.
2. WHERE OPENING IS FLUSH WITH WALL OR BEAM BELOW, REINFORCING MAY BE EXCLUDED ON THAT SIDE OF THE OPENING.
3. HOOK INTERRUPTED REINFORCING.



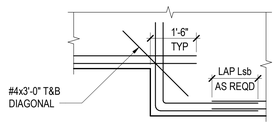
8 TYPICAL TENDON CURVATURE AT OPENING



AT MILD REINFORCED SLABS



AT POST-TENSIONED SLABS

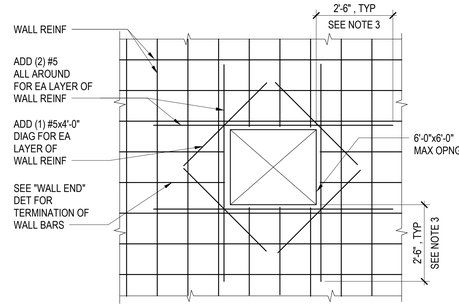


CONTINUOUS BARS AT CORNERS

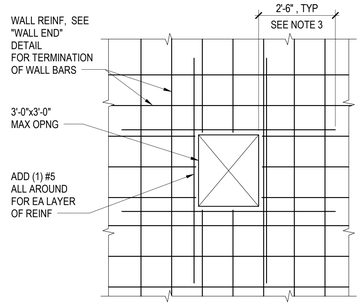
NOTES:

1. PROVIDE #4 TOP AND BOTTOM CONTINUOUS BARS AT ALL SLAB EDGES.
2. FOR LOCATIONS WITH HOOKED TOP BAR PERPENDICULAR TO SLAB EDGE PROVIDED ON PLANS, THIS BAR MAY BE OMITTED.

9 TYPICAL SLAB OPENING REINFORCEMENT



LARGE OPENING

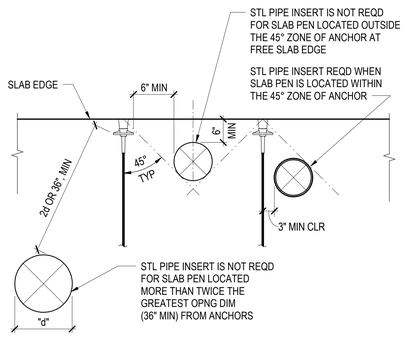


SMALL OPENING

NOTES:

1. OMIT ADDED REINFORCEMENT NOTED ABOVE WHEN SPECIAL REINFORCEMENT, INDICATED ON PLANS OR DETAILS, EXCEEDS THIS REINFORCEMENT.
2. CONTRACTOR SHALL VERIFY ALL OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS WITH THE STRUCTURAL ENGINEER BEFORE PLACEMENT.
3. WHEN EDGE OF CONCRETE CLOSE TO OPENING WILL NOT ALLOW THIS LENGTH, CONSULT STRUCTURAL ENGINEER BEFORE CONSTRUCTION.

13 TYPICAL EDGE OF SLAB



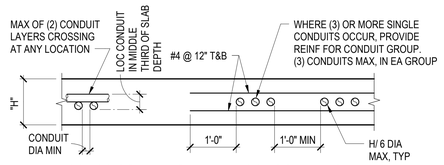
NOTES:

1. SEE "TYPICAL ADDED REINFORCEMENT AT GROUPED OPENINGS IN SLAB" FOR ADDITIONAL SLAB PENETRATION CRITERIA, REINFORCEMENT, AND SUBMITTAL REQUIREMENTS.

14 TYPICAL CONCRETE WALL OPENING REINFORCEMENT

NOTES:

1. DO NOT PLACE CONDUIT WITHIN 4'-0" OF COLUMN FACE OR THROUGH SLAB SHEAR REINFORCING STUD RAILS.
2. KEEP CONDUIT AT LEAST 2'-0" AWAY FROM POST-TENSIONED TENDON ANCHORAGE .
3. MAINTAIN A MINIMUM HORIZONTAL CLEARANCE FROM PARALLEL PT TENDONS OF 1'-0" AND A MINIMUM VERTICAL CLEARANCE OF ONE INCH FROM PT TENDONS BEING CROSSED.
4. CONGESTED AREAS OF CONDUIT THAT DO NOT MEET THIS CRITERIA SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ADDITIONAL REINFORCEMENT MAY BE NECESSARY.
5. DO NOT TIE CONDUIT DIRECTLY TO REINFORCEMENT PARALLEL TO CONDUIT. PROVIDE MINIMUM db, BUT NOT LESS THAN ONE INCH CLEAR BETWEEN CONDUIT AND REINFORCEMENT.
6. HORIZONTAL OR VERTICAL CONDUIT SHALL NOT BE PLACED IN CONCRETE COLUMNS OR WALLS WITHOUT PRIOR APPROVAL OF STRUCTURAL ENGINEER.



(1) - (2) CONDUITS (3)+ CONDUITS

18 TYP SLAB PENETRATION AT PT ANCHORS

19 TYPICAL CONDUIT PLACEMENT CRITERIA

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1	11/18/2022 IFC	

CONSTRUCTION DOCUMENTS
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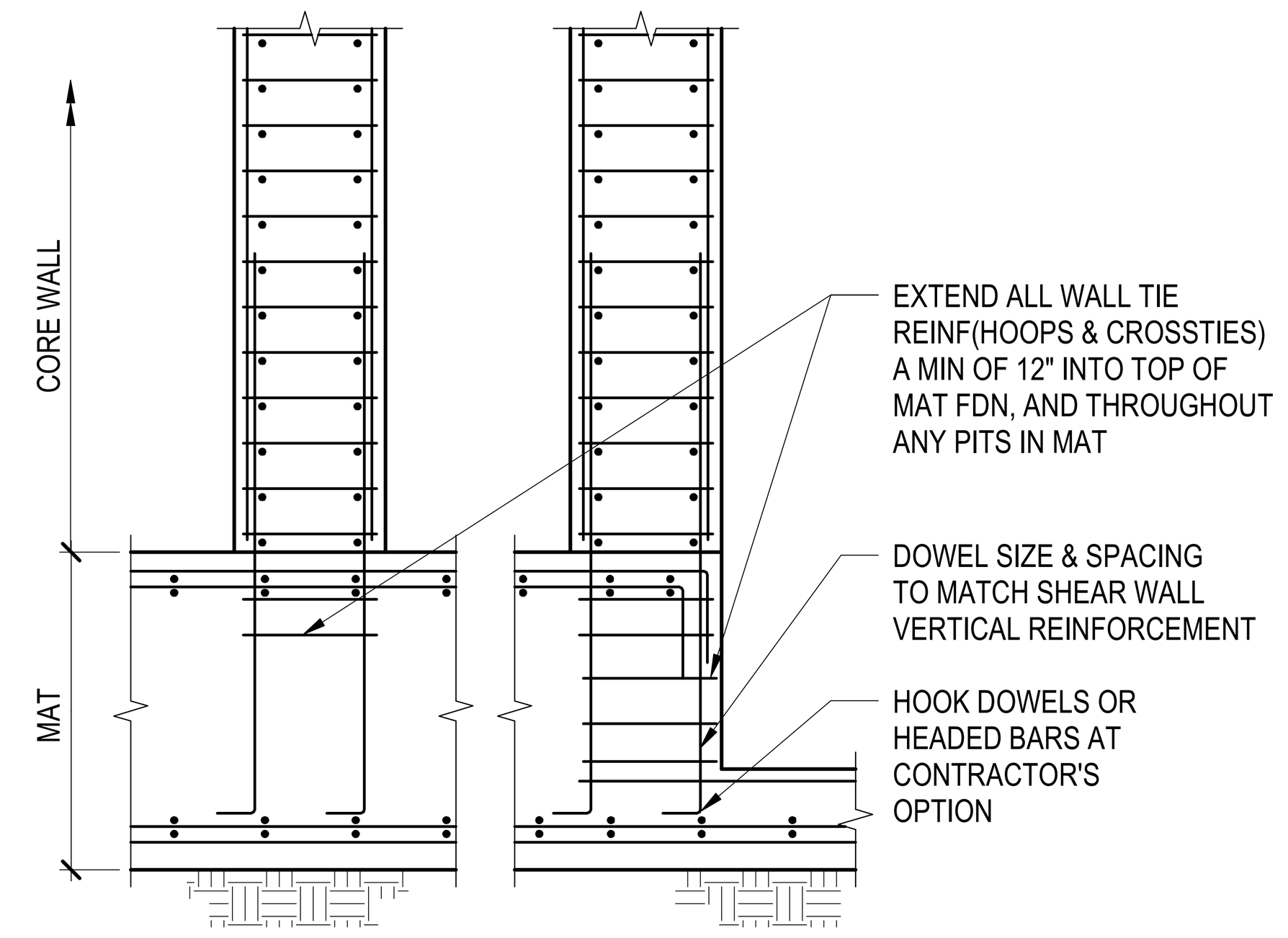
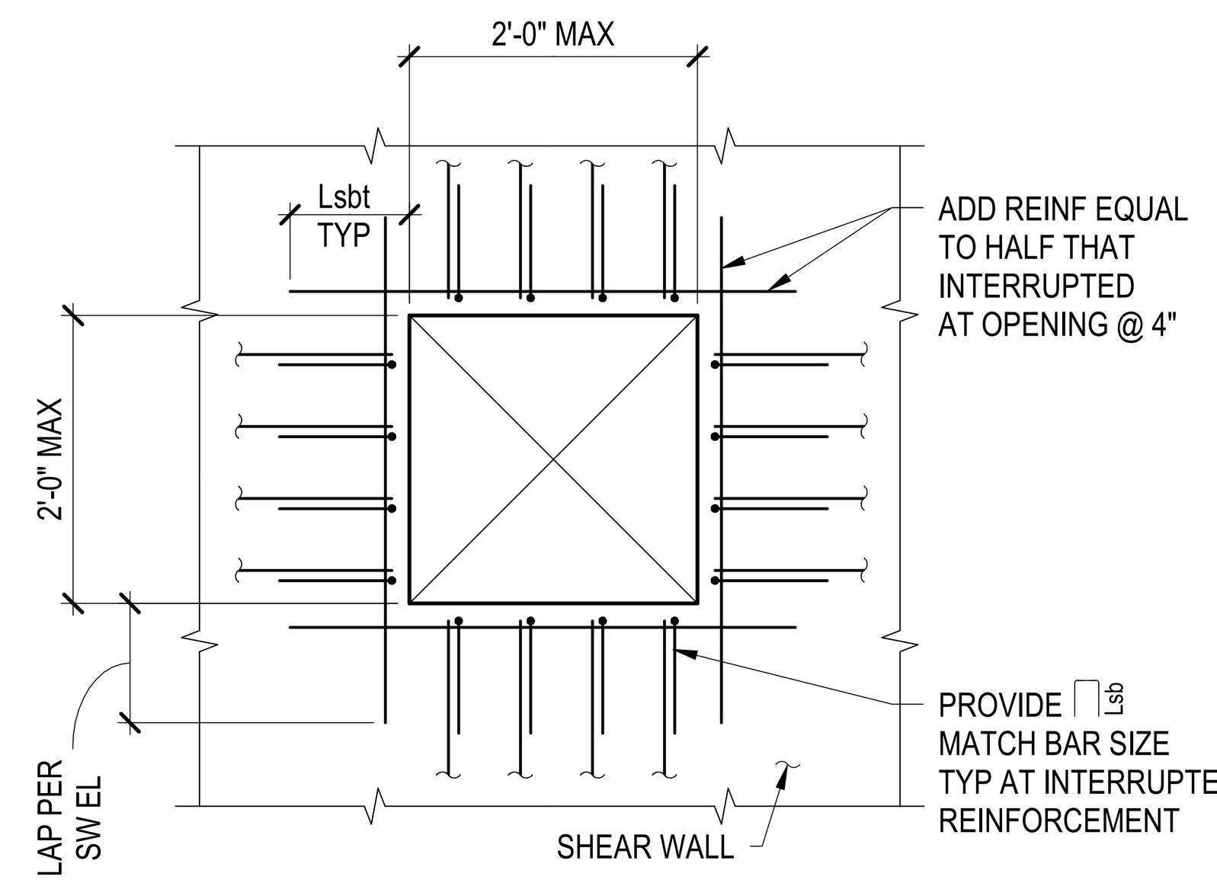
TYPICAL OPENINGS AND EMBEDMENTS IN CONCRETE

S4.07



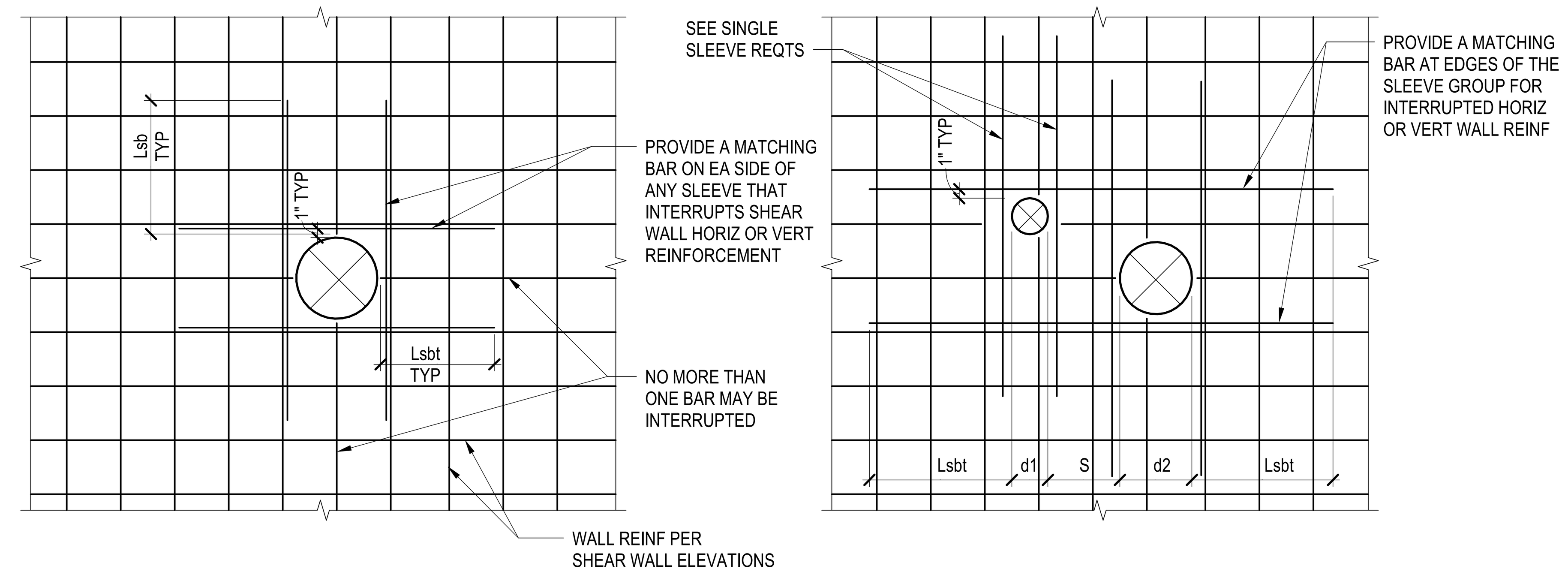
1 TYPICAL SHEAR WALL DOWEL



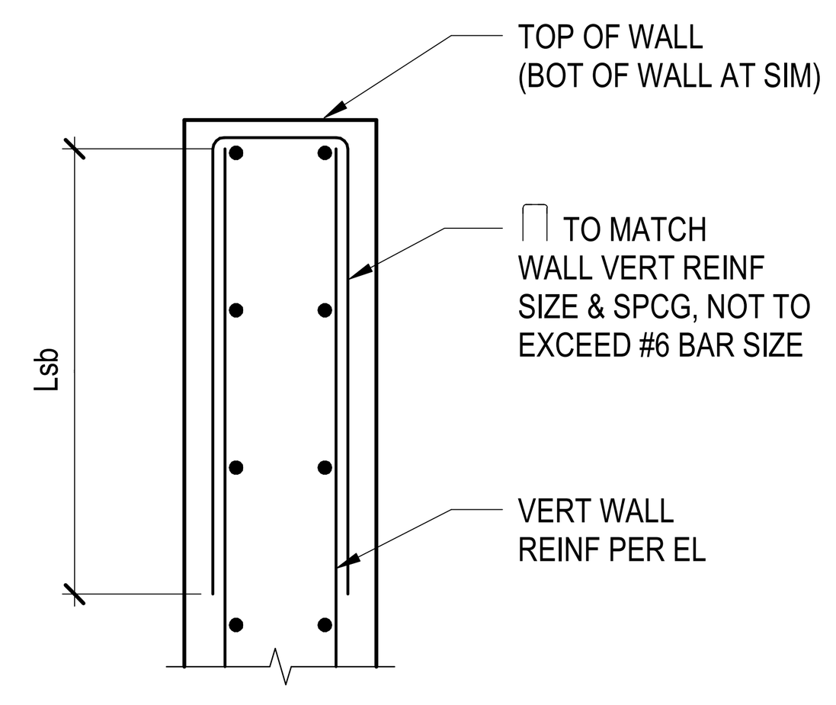
2 TYPICAL SMALL SHEAR WALL OPENING

NOTES:

1. MULTIPLE SLEEVES CONFIGURATION IS SHOWN FOR INTERRUPTED FIELD HORIZONTAL REINFORCEMENT. DETAIL IS SIMILAR FOR INTERRUPTED FIELD VERTICAL REINFORCEMENT. NO COUPLING BEAM REINFORCEMENT MAY BE INTERRUPTED BY SLEEVES.
2. DETAIL APPLIES FOR SLEEVES UP TO 12" DIAMETER. ALL SLEEVES TO BE MINIMUM 4'-0" FROM EDGE OF SHEAR WALLS.
3. "S" SHALL BE EQUAL OR GREATER THAN THE GREATER OF d1, d2, OR 3". IF REQUIRED LAYOUT CANNOT CONFORM TO THESE REQUIREMENTS, CONSIDER GROUPING AS ONE COMBINED OPENING AND REFER TO THE "TYPICAL SMALL SHEAR WALL OPENING" DETAIL.
4. ALL SLEEVES NOTES SHOWN ON SHEAR WALL ELEVATIONS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL.



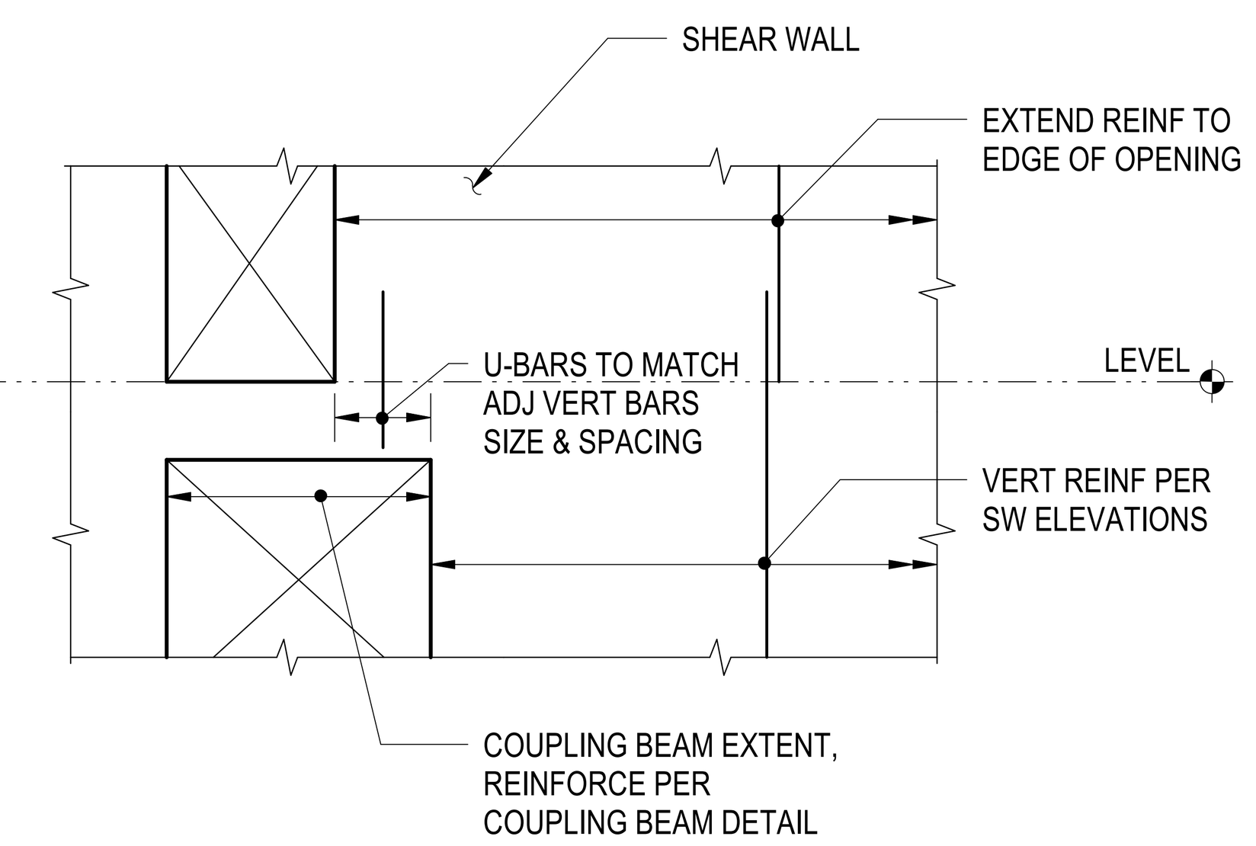
3 TYPICAL SLEEVE PLACEMENT REQUIREMENTS IN SHEAR WALLS



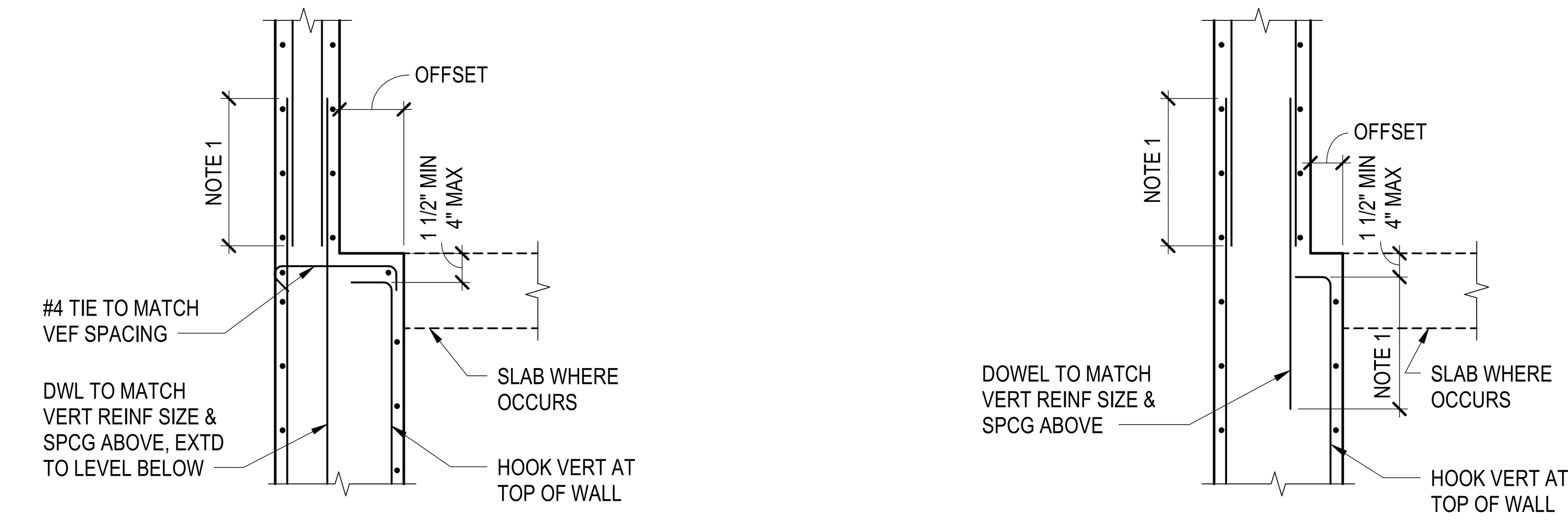
NOTES:

1. SEE "SHEAR WALL SECTIONS" FOR FURTHER REQUIREMENTS.

A TYP SHEAR WALL EDGE REINFORCEMENT



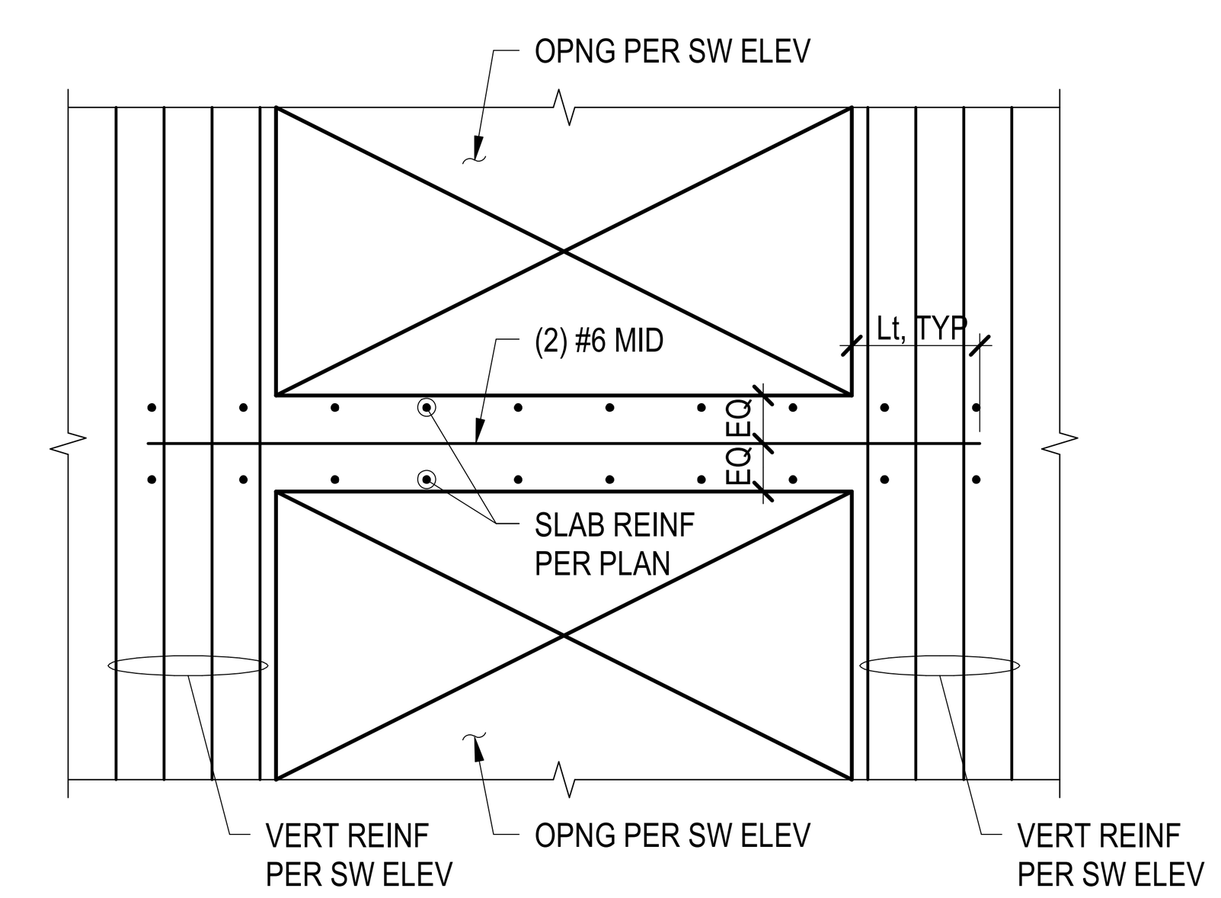
8 TYPICAL CONC WALL OPENING TRANSITION



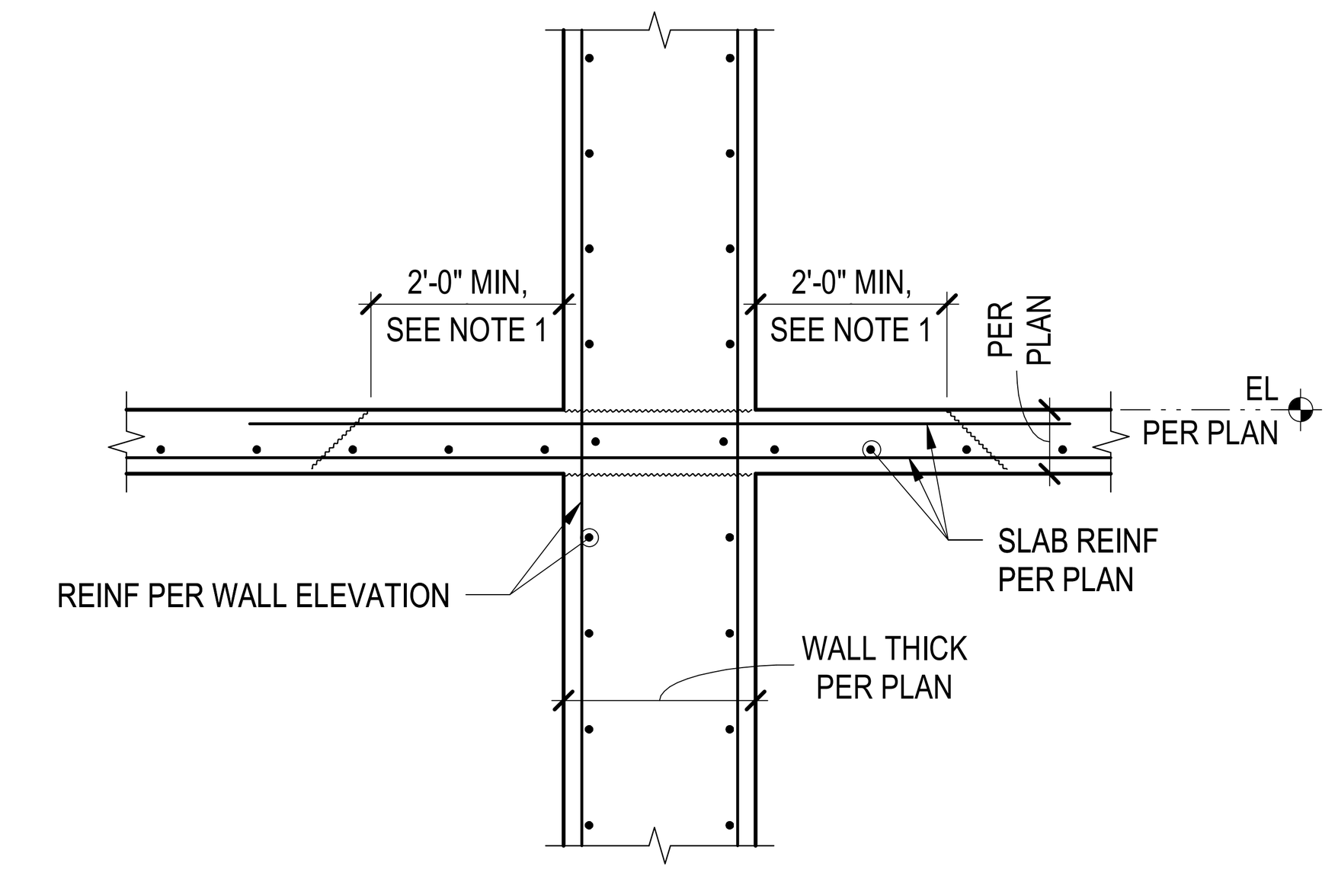
NOTES:

1. SEE THE SHEAR WALL REINFORCEMENT NOTES FOR LAP LENGTH.
2. SEE PLAN AND WALL ELEVATIONS FOR ADDITIONAL INFORMATION.

9 TYPICAL REINFORCEMENT AT WALL THICKNESS CHANGE



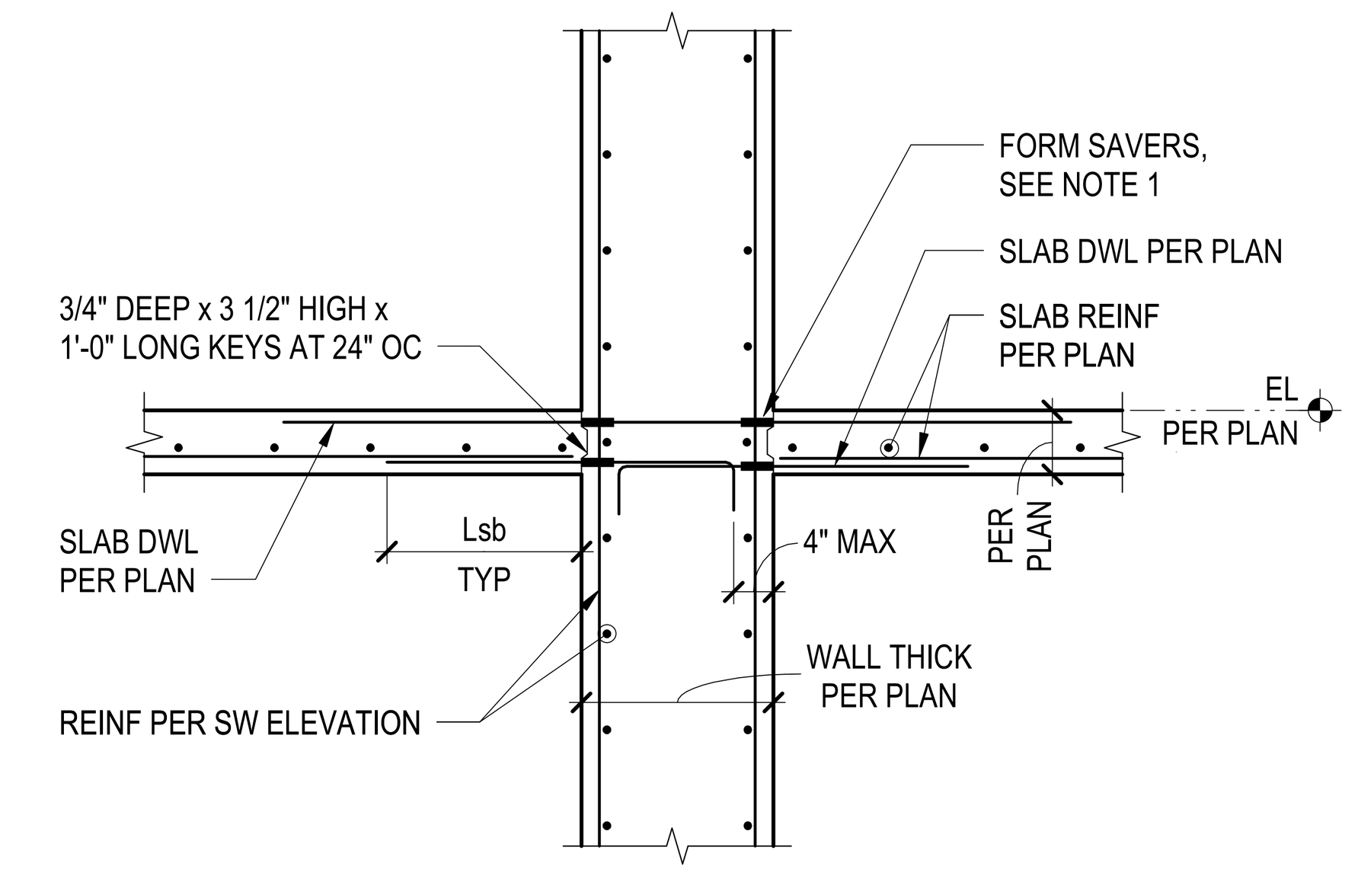
13 TYP SLAB WITHOUT COUPLING BEAM AT STACKED WALL OPENINGS



NOTES:

1. WHERE SHEAR WALL f'c EXCEEDS SLAB f'c, PROVIDE SLAB CONCRETE WITH f'c TO MATCH AT ALL SHEAR WALL TO SLAB JOINTS. THE REMAINING FLOOR SLAB CONCRETE SHALL BE PLACED WHILE THE HIGHER STRENGTH CONCRETE IS STILL PLASTIC AND THE REGION SHALL BE ADEQUATELY VIBRATED TO PROVIDE PROPER INTEGRATION.

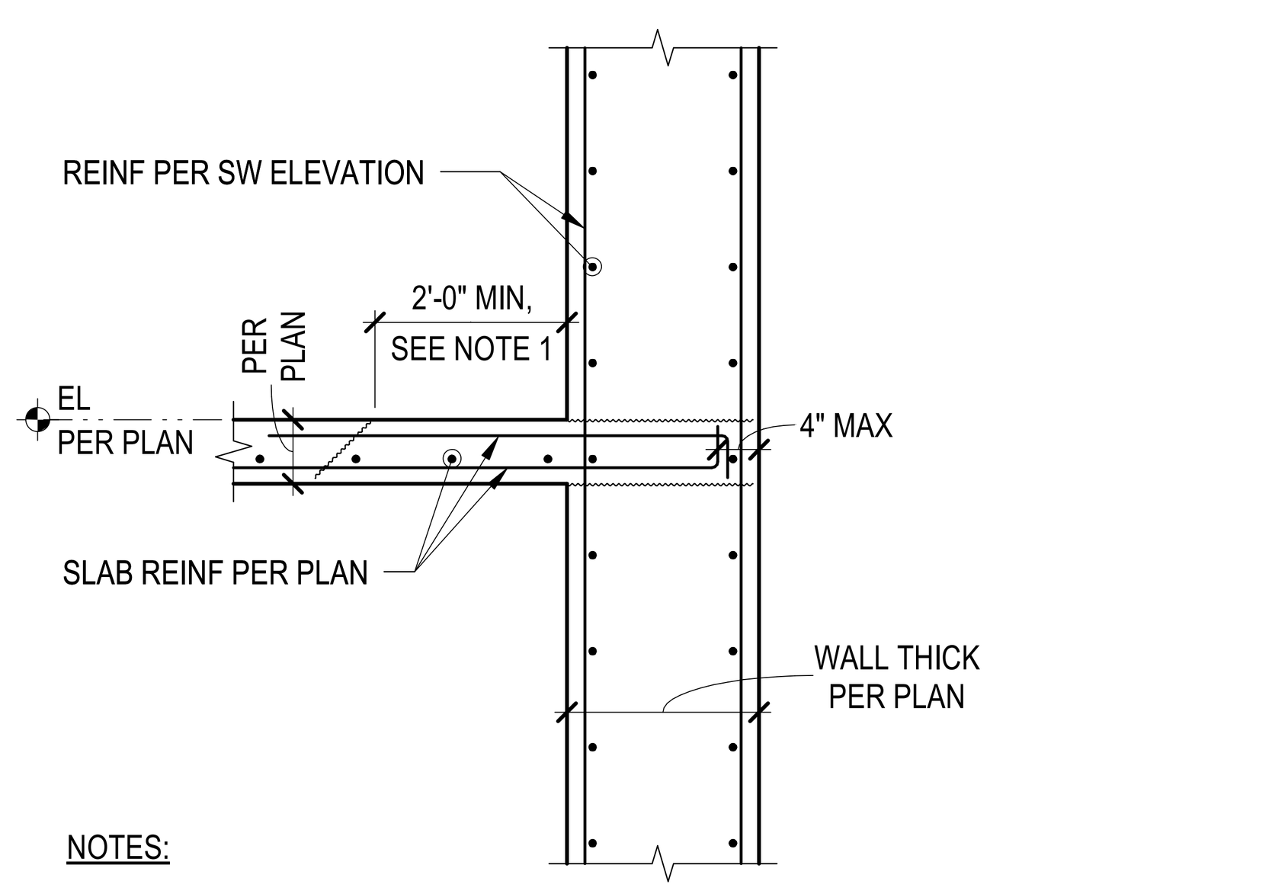
14 TYP SHEAR WALL TO CONTINUOUS SLAB



NOTES:

1. FORM SAVERS TO BE AT EACH END OF STRAIGHT BAR, OR AT CONTRACTOR'S OPTION, ACCEPTABLE TO PROVIDE HOOKS EACH SIDE IN LIEU OF STRAIGHT BAR.

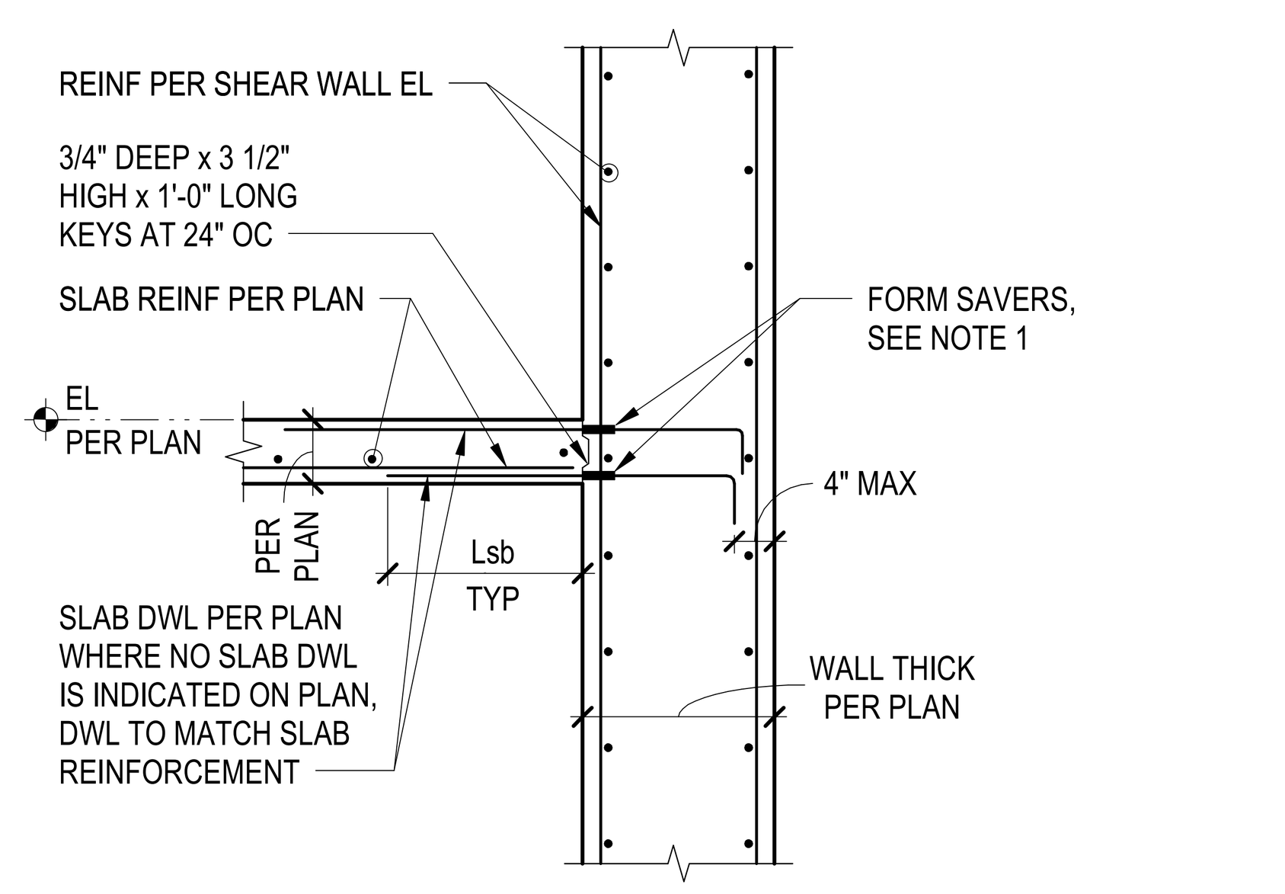
15 TYP JUMP-FORMED SW TO CONT SLAB



NOTES:

1. WHERE SHEAR WALL f'c EXCEEDS SLAB f'c, PROVIDE SLAB CONCRETE WITH f'c TO MATCH AT ALL SHEAR WALL TO SLAB JOINTS. THE REMAINING FLOOR SLAB CONCRETE SHALL BE PLACED WHILE THE HIGHER STRENGTH CONCRETE IS STILL PLASTIC AND THE REGION SHALL BE ADEQUATELY VIBRATED TO PROVIDE PROPER INTEGRATION.

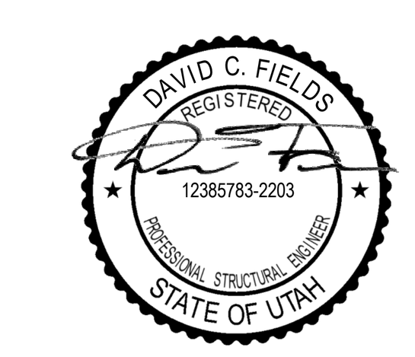
19 TYPICAL SHEAR WALL TO SLAB AT OPENING



NOTES:

1. FORM SAVERS SHALL HAVE Ld STRAIGHT EMBED OR HOOK WITH Ldh EMBED WHERE WALL THICKNESS WILL NOT ALLOW FULL Ld DISTANCE.

20 TYP JUMP-FORMED SW TO SLAB AT OPNG



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project manager
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checked by
job no. 20052
date 11/18/2022

revisions:

no.	date		by
1	11/18/2022	IFC	

CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL SHEAR WALL DETAILS

S4.08

EMBED TABLE 1: UNCONFINED CONDITION / GRADE 60					
BAR SIZE	EMBED LENGTH (IN)				
	NORMAL WEIGHT CONCRETE, f'c (PSI)				
	6,000	7,000	8,000	9,000	≥ 10,000
#5	19	18	17	16	15
#6	23	21	20	19	18
#7	37	34	32	30	28
#8	48	44	41	39	37
#9	61	56	53	50	47
#10	77	71	66	63	59
#11	94	87	82	77	73

1 EMBED TABLE 1

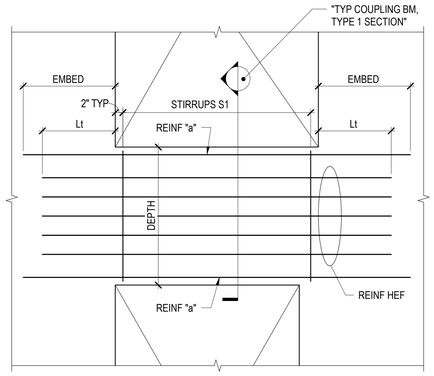
EMBED TABLE 2: CONFINED CONDITION / GRADE 60					
BAR SIZE	EMBED LENGTH (IN)				
	NORMAL WEIGHT CONCRETE, f'c (PSI)				
	6,000	7,000	8,000	9,000	≥ 10,000
#5	19	18	17	16	15
#6	23	21	20	19	18
#7	34	31	29	27	26
#8	42	39	37	35	33
#9	54	50	47	44	42
#10	68	63	59	56	53
#11	84	77	72	68	65

2 EMBED TABLE 2

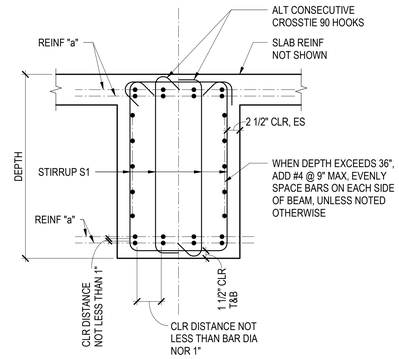
NOTES:

1. CONCRETE STRENGTH OF ALL COUPLING BEAMS SHALL BE THE SAME AS THAT OF ADJACENT WALLS AT THAT LEVEL.
2. IF EMBED LENGTH OF BAR "a" CANNOT BE ACHIEVED DUE TO EDGE OF CORE WALL, PROVIDE 1.25"Ldt LENGTH BEYOND EDGE OF OPENING AND USE A HEADED BAR.
3. EMBED = LENGTH FROM "EMBED TABLE 1" OR "EMBED TABLE 2" AS SPECIFIED IN THE "COUPLING BEAM LONGITUDINAL REINFORCEMENT SCHEDULE."

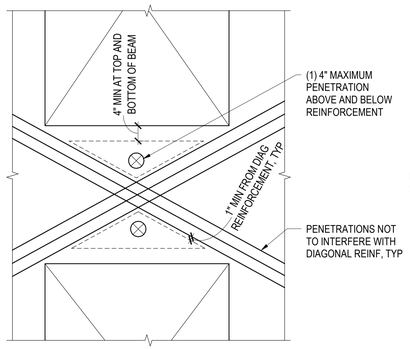
3 GENERAL NOTES FOR COUPLING BEAMS



4 TYPICAL COUPLING BEAM, TYPE 1



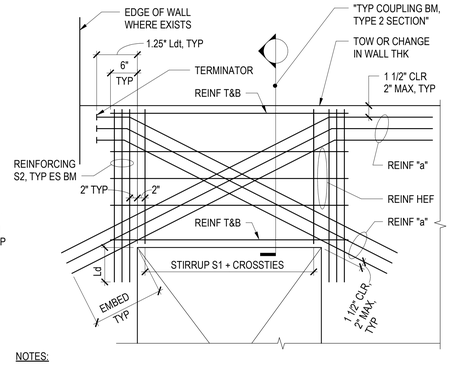
5 TYPICAL COUPLING BEAM,TYPE 1 SECTION



NOTES:

1. REFERENCE TYPICAL COUPLING BEAM TYPE 2 AND 3 FOR REINFORCEMENT LAYOUT

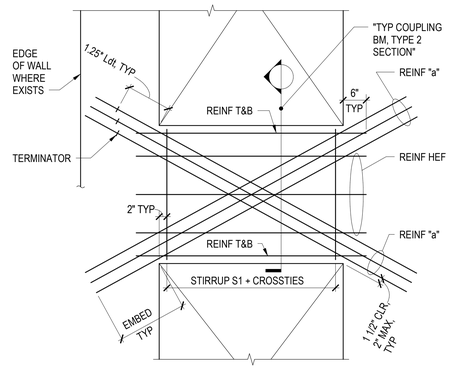
7 TYPICAL COUPLING BEAM PENETRATIONS, TYPE 2 & 3



NOTES:

1. SEE SECTION FOR REINFORCEMENT NOT SHOWN.

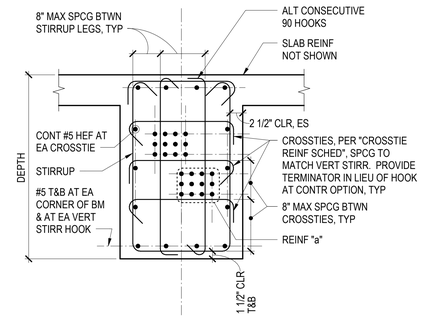
8 TYPICAL COUPLING BEAM, TYPE 3



NOTES:

1. SEE SECTION FOR REINFORCEMENT NOT SHOWN.

9 TYPICAL COUPLING BEAM, TYPE 2



10 TYPICAL COUPLING BEAM, TYPE 2 SECTION

CROSSTIE REINFORCEMENT SCHEDULE		
MAX BEAM DEPTH (IN)	CROSSTIES	
	f'c=6 KSI	f'c=8 KSI
26"	(3) #5	(3) #5
100"	(12) #5	(12) #5
110"	(13) #5	(13) #5
120"	(18) #5	(15) #5
1		

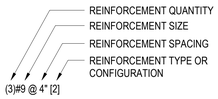
COUPLING BEAM LONGITUDINAL REINFORCEMENT SCHEDULE						
MARK	TYPE	CONFIGURATION DIM (HxW) (IN)	REINF "a"	REINFORCEMENT S2	EMBED TABLE	REMARKS
1	1		(3) #8		TABLE 1	
2	3	4x6	(6) #9 [32]	(6) #5 [4]	TABLE 1	
3	3	4x6	(6) #8 [32]	(5) #5 [3]	TABLE 1	

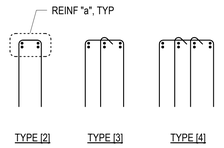
COUPLING BEAM VERTICAL REINFORCEMENT SCHEDULE		
MARK	STIRRUPS S1	REMARKS
A	#5 @ 4" [3]	
B	#5 @ 4" [4]	

REINFORCEMENT "a" CONFIGURATION TYPES

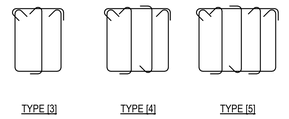
NOTES:

1. DEPTH OF COUPLING BEAMS PER "SHEAR WALL ELEVATIONS." COUPLING BEAM WIDTH MATCHES ADJACENT SHEAR WALLS.
2. ALTERNATE CONSECUTIVE CROSSTIES END FOR END.
3. LONGITUDINAL REINFORCEMENT SHALL BE SPECIAL DUCTILE QUALITY. SEE "GENERAL NOTES" FOR CRITERIA.
4. REINFORCEMENT CALLOUT NOMENCLATURE IS AS FOLLOWS:





REINFORCEMENT S2 CONFIGURATION TYPES



STIRRUP S1 CONFIGURATION TYPES

18 COUPLING BEAM REINFORCEMENT SCHEDULE

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revisions:

no.	date	by
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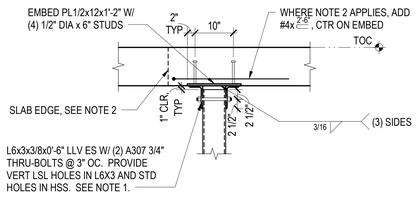
11/18/2022

TYPICAL COUPLING BEAM DETAILS AND SCHEDULES

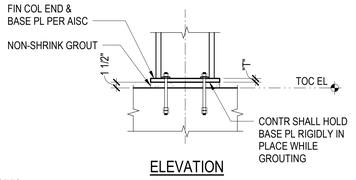
S4.09



NOTES:

1. WHERE NOTE APPLIES, BOLT TO BE CENTERED IN SLOTTED HOLE IN ANGLE. NUTS TO BE FINGER TIGHT. DAMAGE THREADS OF BOLT TO PREVENT BACK-OFF OF NUT.
2. PROVIDE U-BAR REINFORCEMENT PERPENDICULAR TO SLAB EDGE WHERE EMBED IS LOCATED 6" OR LESS FROM ADJACENT OPENING OR SLAB EDGE.

1 TYPICAL HSS POST TOP SLIP CONNECTION



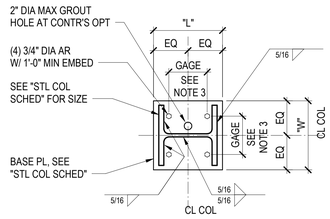
ELEVATION

NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND PLATE WASHER SHALL BE SIZED PER "AISC MANUAL - TABLE 14-2", UNLESS NOTED OTHERWISE.
3. ANCHOR ROD GAGE SHALL BE AS FOLLOWS:
   W10: 5 INCHES
   W12: 6 INCHES
   W14: 8 INCHES

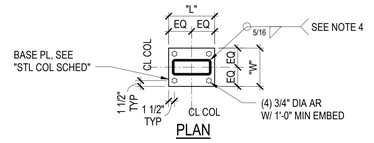
CONTRACTOR TO COORDINATE ANCHOR ROD GAGE WITH CONCRETE REINFORCING.

2 TYPICAL COLUMN BASE PLATE, TYPE 1

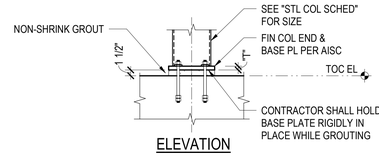


PLAN

TYPE 6 STIFFENER PLATE TABLE				
COLUMN SIZE	BOLT SIZE (IN)	BOLT GRADE	T1 (IN)	W1 (IN)
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-



PLAN



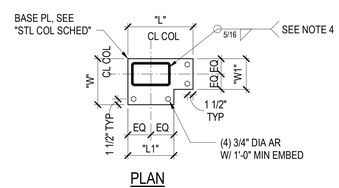
ELEVATION

NOTES:

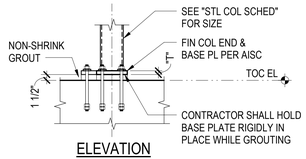
1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND WASHER DIAMETER SHALL BE SIZED PER "AISC MANUAL-TABLE 14-2" UNLESS NOTED OTHERWISE.
3. DIMENSION "L" IS PARALLEL TO WIDE FACE OF HSS UNLESS NOTED OTHERWISE.
4. WHERE EDGE OF BASE PLATE IS LESS THAN 9/16 INCH FROM THE FACE OF THE HSS, PROVIDE A PARTIAL PENETRATION GROOVE WELD OF THE HSS TO THE BASE PLATE IN LIEU OF FILLET WELD ON THAT FACE OF THE HSS. GROOVE WELD SIZE SHALL BE THE THICKNESS OF THE HSS WALL OR 5/16 INCH, WHICHEVER IS LESS.

4 TYPICAL COLUMN BASE PLATE, TYPE 4

TYPE 5 BASE PLATE SCHEDULE		
COLUMN SIZE	W1 (IN)	L1 (IN)
-	-	-
-	-	-
-	-	-
-	-	-



PLAN



ELEVATION

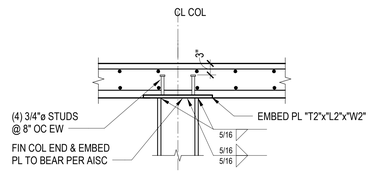
NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND WASHER DIAMETER SHALL BE SIZED PER "AISC MANUAL-TABLE 14-2" UNLESS NOTED OTHERWISE.
3. DIMENSION "L" IS PARALLEL TO WIDE FACE OF HSS UNLESS NOTED OTHERWISE.
4. WHERE EDGE OF BASE PLATE IS LESS THAN 9/16 INCH FROM THE FACE OF THE HSS, PROVIDE A PARTIAL PENETRATION GROOVE WELD OF THE HSS TO THE BASE PLATE IN LIEU OF FILLET WELD ON THAT FACE OF THE HSS. GROOVE WELD SIZE SHALL BE THE THICKNESS OF THE HSS WALL OR 5/16 INCH, WHICHEVER IS LESS.

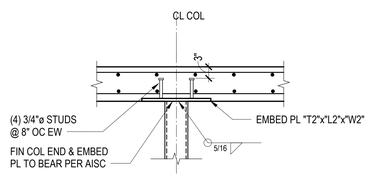
9 TYPICAL COLUMN BASE PLATE, TYPE 5

STEEL COLUMN SLAB PLATE SCHEDULE						
TYPE	BASE PLATE			EMBED PLATE		
	T1	L1	W1	T2	L2	W2
1	-	-	-	3/4	18	1'-6"
2	-	-	-	1	18	1'-6"
3	-	-	-	1 1/4	18	1'-6"
4	-	-	-	1 1/2	18	2'-0"
5	3/4	12	1'-0"	3/4	18	1'-6"
6	3/4	12	1'-0"	1 1/4	18	1'-6"
7	3/4	12	1'-0"	1	18	1'-6"
8	3/4	12	1'-2"	1 1/4	18	1'-6"
9	3/4	12	1'-0"	1 1/2	18	1'-6"
10	1	12	1'-2"	1 1/4	18	1'-6"
11	1	12	1'-2"	1 1/2	18	1'-6"
12	1	14	1'-4"	1 1/4	18	1'-6"
13	1	14	1'-4"	1 1/2	18	1'-6"
14	1	6	1'-2"	1	18	1'-6"
15	1	6	1'-2"	1 1/4	18	1'-6"
16	1 1/4	14	1'-4"	1 1/2	18	1'-6"
17	1 1/4	6	1'-2"	1 1/4	18	1'-6"
18	1 1/4	6	1'-6"	1 1/4	18	1'-6"
19	1 1/4	6	1'-6"	1 1/2	18	1'-6"
20	1 1/4	6	1'-6"	1 1/2	18	1'-8"
21	1 1/4	6	1'-6"	1 1/2	18	2'-0"
22	1 1/2	14	1'-4"	1 3/4	18	1'-8"
23	1 1/2	6	1'-8"	1 1/2	18	1'-8"
24	1 1/2	6	1'-8"	1 1/2	18	2'-0"
25	1 1/2	6	2'-0"	1 1/2	18	2'-0"
26	1 1/2	6	2'-0"	1 1/2	18	2'-2"
27	1 1/2	6	2'-0"	1 3/4	18	2'-0"
28	1 1/2	8	2'-2"	1 1/2	18	1'-6"
29	1 1/2	8	2'-2"	1 1/2	18	2'-2"
30	1 1/2	15	1'-7"	1 1/2	18	1'-6"
31	1 1/2	15	1'-7"	1 3/4	18	1'-6"

6 STEEL COLUMN SLAB PLATE SCHEDULE



CONNECTION AT WF COL

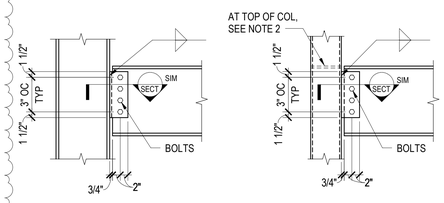


CONNECTION AT WF COL

NOTES:

1. SEE STEEL COLUMN SLAB PLATE SCHEDULE FOR PLATE DIMENSIONS.

7 TYPICAL BASE PLATE, TYPE 6



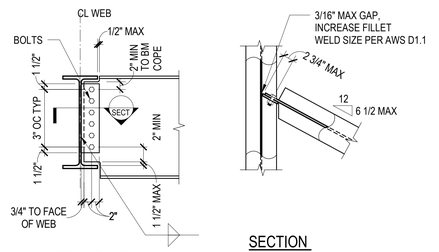
BEAM TO COLUMN FLANGE

BEAM TO HSS OR PIPE COLUMN

NOTES:

1. SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
2. AT TOP OF HSS OR PIPE COLUMN, PROVIDE 1/2 INCH CAP PLATE WITH 5/16 INCH FILLET WELD ALL AROUND. IF BEAM IS SHOWN RUNNING OVER TOP OF COLUMN ON PLAN, SEE "TYPICAL BASE PLATE, TYPE 6" DETAIL.

13 TYPICAL BEAM TO BEAM / BEAM TO COLUMN CONNECTION



BEAM TO BEAM

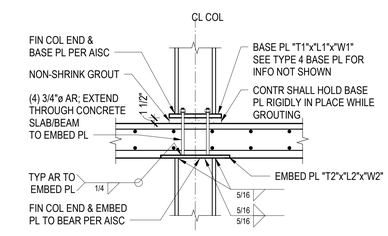
SECTION (SKEWED BEAMS)

TABLE A		
WIDE-FLANGE BEAM DEPTH	NUMBER OF BOLTS REQUIRED	MAXIMUM REACTION (KIPS)
W10	2	27
W12, W14	3	40
W16, W18	4	65
W21	5	91
W24	6	124
W27	7	150
W30 - W44	8	175

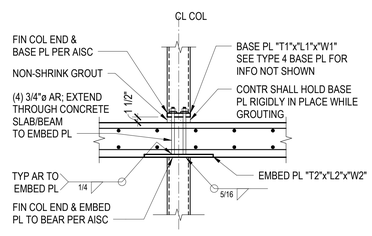
NOTES BELOW APPLY TO ALL TYPICAL CONNECTIONS UNLESS NOTED OTHERWISE:

1. SEE PLANS FOR BEAM SIZE. UNLESS NOTED OTHERWISE, PROVIDE THE NUMBER OF 7/8 INCH DIAMETER GRADE A325 BOLTS SHOWN IN "TABLE A" BASED ON THE BEAM DEPTH.
2. SHEAR TAB PLATES SHALL BE GRADE 50 MATERIAL, AND BE 1/4 INCH THICK WITH 3/16 INCH WELD EACH SIDE FOR (2) BOLTS, 5/16 INCH THICK WITH 1/4 INCH WELD EACH SIDE FOR (3) BOLTS TO (5) BOLTS, AND 3/8 INCH THICK WITH 1/4 INCH WELD EACH SIDE FOR (6) BOLTS OR MORE.
3. BEAMS AND SHEAR TAB PLATES SHALL HAVE STANDARD ROUND HOLES (STD) UNLESS NOTED OTHERWISE. AT CONTRACTOR'S OPTION, HOLES IN SHEAR TAB PLATES MAY BE HORIZONTAL SHORT-SLOTTED HOLES.
4. WHEN CONDITIONS VARY FROM THOSE SHOWN IN THE TYPICAL DETAIL, DESIGN CONNECTIONS ACCORDING TO THE AISC MANUAL OF STEEL CONSTRUCTION.

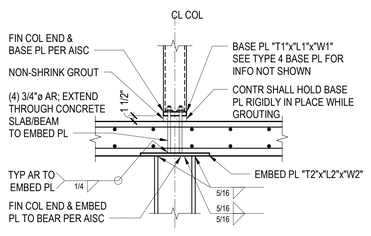
15 GENERAL NOTES FOR STEEL CONNECTIONS



CONNECTION AT WF COL



CONNECTION AT HSS COL

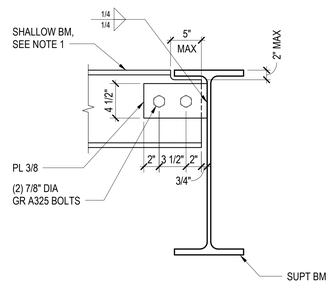


CONNECTION AT HSS COL ABOVE WITH WF COL BELOW

NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND PLATE WASHER SHALL BE SIZED PER "AISC MANUAL -TABLE 14-2", UNLESS NOTED OTHERWISE.
3. SEE STEEL COLUMN SLAB PLATE SCHEDULE FOR PLATE DIMENSIONS.
4. WHERE COLUMN ABOVE IS WIDE FLANGE, ANCHOR ROD GAGE SHALL BE AS FOLLOWS:
   W10: 5 INCHES
   W12: 6 INCHES
   W14: 8 INCHES
5. WHERE COLUMN ABOVE IS HSS AND WHERE EDGE OF BASE PLATE IS LESS THAN 9/16 INCH FROM THE FACE OF THE HSS, PROVIDE A PARTIAL PENETRATION GROOVE WELD OF THE HSS TO THE BASE PLATE IN LIEU OF FILLET WELD ON THAT FACE OF THE HSS. GROOVE WELD SIZE SHALL BE THE THICKNESS OF THE HSS WALL OR 5/16 INCH, WHICHEVER IS LESS.

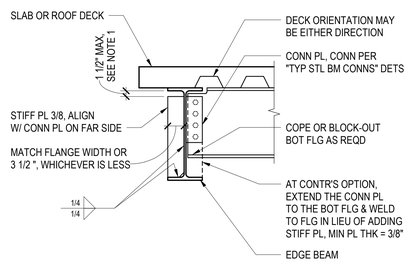
17 TYPICAL STEEL COLUMN SUPPORTING CONCRETE FRAMING



NOTES:

1. THIS DETAIL SHALL BE USED ONLY FOR BEAMS UP TO 8 INCHES DEEP AND WEIGHING AT LEAST 8 LB/FT. SEE "TYPICAL BEAM TO BEAM / BEAM TO COLUMN CONNECTION" FOR DEEPER BEAMS.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.

19 TYPICAL SHALLOW BEAM CONNECTION



NOTES:

1. AT LOCATIONS WHERE A CONCRETE SLAB DOES NOT EXIST AT EDGE BEAM, THE STIFFENER PLATE OR CONNECTION PLATE SHALL BE EXTENDED TO FULL DEPTH AND WELDED ON THREE SIDES.
2. THIS DETAIL APPLIES AT ALL EDGE OF SLAB CONDITIONS.

20 TYPICAL STEEL EDGE BEAM STIFFENER

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principal architect
project manager
drawn by
checked by
job no. 20052
date 11/18/2022

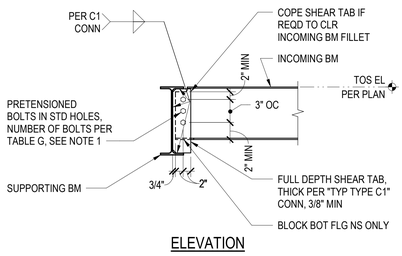
revisions:

no.	date	by
1	11/18/2022	IFC

CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL STEEL DETAILS

S4.11



ELEVATION

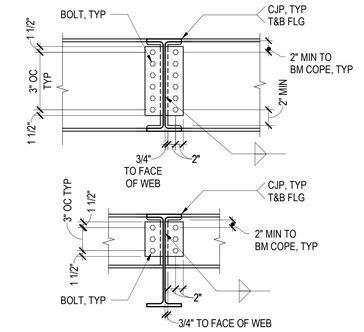
NOTES:

1. SEE "TYPICAL TYPE C1" FOR BOLT SIZE AND TYPE, WELD SIZE, PLATE THICKNESS, AND COPE REQUIREMENTS.
2. THIS CONNECTION SHALL ONLY BE USED WHEN SPECIFICALLY CALLED OUT ON PLAN OR IN A DETAIL.
3. BEAM SIZE IS SHALLOWER OF INCOMING AND SUPPORTING BEAM.

3 TYPICAL STEEL CONNECTION, TYPE C30

3/4" = 1'-0"

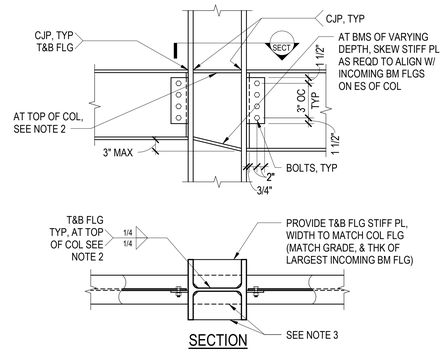
TABLE G	
BM SIZE (NOTE 3)	**MINIMUM NUMBER OF BOLTS**
W10	2
W12, W14	3
W16	4
W18	5
W21	6
W24	7
W27	8
W30	9
W33, W36	10
W40	11
W44	12



NOTES:

1. SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
2. THIS DETAIL APPLIES ONLY FOR BEAMS OF EQUAL DEPTH EACH SIDE OF SUPPORTING BEAM.

5 TYP BEAM TO BEAM MOMENT CONNECTION

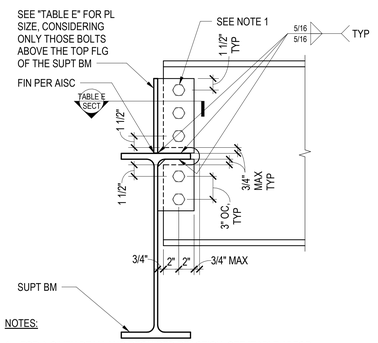


SECTION

NOTES:

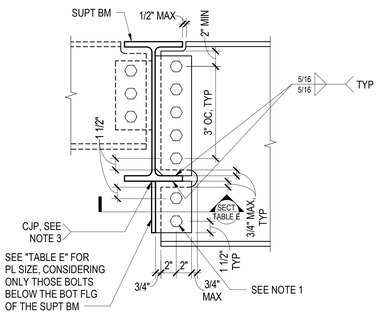
1. SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
2. AT TOP OF COLUMN, PROVIDE 1/4 INCH PJP WELD IN LIEU OF TOP SIDE FILLET WELD OR, AT CONTRACTOR'S OPTION, A SINGLE CAP PLATE MAY BE USED IN LIEU OF TWO STIFFENER PLATES. USE 5/16 INCH ONE SIDED FILLET WELD FOR CAP PLATE TO EACH COLUMN FLANGE AND EACH SIDE OF COLUMN WEB.
3. AT CONTRACTOR'S OPTION, WIDTH OF STIFFENER PLATES MAY BE REDUCED TO MATCH LARGEST INCOMING BEAM FLANGE IF NO OTHER INCOMING CONNECTIONS OCCUR AT A GIVEN BEAM -TO-COLUMN CONNECTION.

9 TYPICAL BM TO COL FLANGE MOMENT CONN



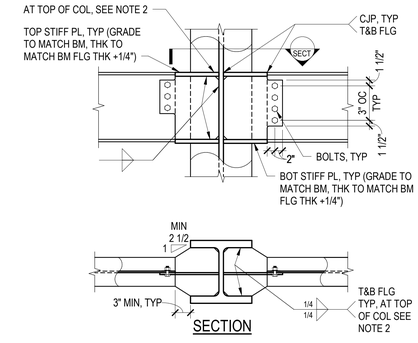
NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" FOR BOLT SIZE AND TYPE, TOTAL NUMBER OF BOLTS, AND MAXIMUM COPE LENGTH.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.



3. CONTRACTOR SHALL PERFORM ULTRASONIC TESTING AND INSPECTION OF SUPPORT BEAM BOTTOM FLANGE PER SPECIFICATION FOR WELDED CONNECTIONS.

12 TYPICAL TYPE C21 - BEAM FLANGE INTERSECTING BEAM WEB



SECTION

NOTES:

1. SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
2. AT TOP OF COLUMN, PROVIDE 1/4 INCH PJP WELD IN LIEU OF TOP SIDE FILLET WELD OR, AT CONTRACTOR'S OPTION, A SINGLE CAP PLATE MAY BE USED IN LIEU OF TWO STIFFENER PLATES. USE 5/16 INCH ONE SIDED FILLET WELD FOR CAP PLATE TO EACH COLUMN FLANGE AND EACH SIDE OF COLUMN WEB.
3. THIS DETAIL APPLIES ONLY FOR BEAMS OF EQUAL DEPTH EACH SIDE OF COLUMN.

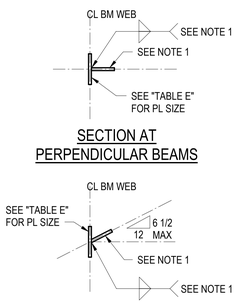
14 TYPICAL BEAM TO COLUMN WEB MOMENT CONNECTION

TABLE E				
7/8" DIA GR A325 BOLTS				
NUMBER OF BOLTS	**PL THICKNESS (IN)**	**PL LENGTH (IN)**	**NOMINAL WEB THICKNESS (IN)**	**STIFF PL THICKNESS (IN)**
2-4	5/8	7	0.31	3/8
5-6	3/4	8	0.44	3/8
7-8	3/4	9	0.50	1/2
9-10	7/8	9	0.61	5/8
11-12	1	10	0.64	5/8
1" DIA GR A490 BOLTS				
NUMBER OF BOLTS	**PL THICKNESS (IN)**	**PL LENGTH (IN)**	**NOMINAL WEB THICKNESS (IN)**	**STIFF PL THICKNESS (IN)**
2-4	5/8	7	0.31	3/8
5-6	3/4	9	0.48	1/2
7-8	7/8	10	0.57	5/8
9-10	1	10	0.65	3/4
11-12	1	10	0.72	1

NOTES:

1. VERTICAL PLATE THICKNESS AND WELD SIZE SHALL BE PER "TABLE A" OR "TABLE B", WHICHEVER IS APPLICABLE.
2. PLATE LENGTH SHALL BE DETERMINED PER "TABLE E" BY THE GREATEST NUMBER OF BOLTS REQUIRED FOR EITHER INCOMING BEAM CONNECTION.

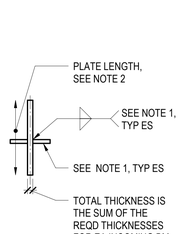
16 TABLE E



SECTION AT
PERPENDICULAR BEAMS

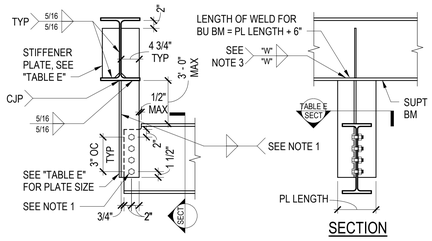
SECTION AT
SKEWED BEAMS

3. WHERE SUPPORT BEAM WEB THICKNESS EXCEEDS NOMINAL WEB THICKNESS IN "TABLE E", STIFFENER PLATES MAY BE OMITTED.



SECTION AT
INCOMING BEAM BOTH SIDES

18 TYP TYPE C23 - BEAM TO DEPRESSED BM CONN

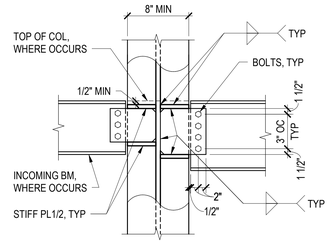


SECTION

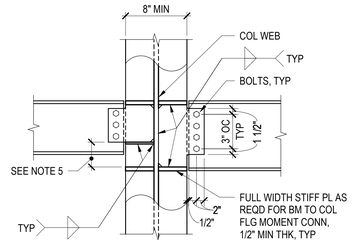
NOTES:

1. FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" FOR BOLT SIZE AND TYPE, NUMBER OF BOLTS, AND MAXIMUM COPE LENGTH.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
3. PROVIDE FILLET WELD AT BUILT-UP BEAMS. WELD SIZE "W" SHALL BE 0.75tw, WHERE "tw" IS THE SUPPORT BEAM WEB THICKNESS.
4. CONTRACTOR SHALL PERFORM ULTRASONIC TESTING AND INSPECTION OF SUPPORT BEAM BOTTOM FLANGE PER SPECIFICATION FOR WELDED CONNECTIONS.

19 TYPICAL BEAM TO COLUMN WEB SHEAR CONNECTION



TYPICAL CONDITION



CONDITION AT INCOMING BEAM TO COLUMN
FLANGE MOMENT CONNECTION

NOTES:

1. SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
2. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
3. BEAMS MAY BE SKEWED UP TO 30 DEGREES.
4. THIS DETAIL SHALL BE USED WITH W10, W12, AND W14 COLUMNS ONLY.
5. WHEN DIMENSION SHOWN IS 6 INCHES OR LESS, EXTEND VERTICAL PLATE TO LOWER STIFFENER. WHEN DIMENSION SHOWN IS GREATER THAN 6 INCHES PROVIDE ADDITIONAL STIFFENER PLATE PL1/2 AT BOTTOM OF VERTICAL PLATE.

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checked by
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date 11/18/2022

revisions:

no.	date	by
1	11/18/2022	IFC

CONSTRUCTION DOCUMENTS
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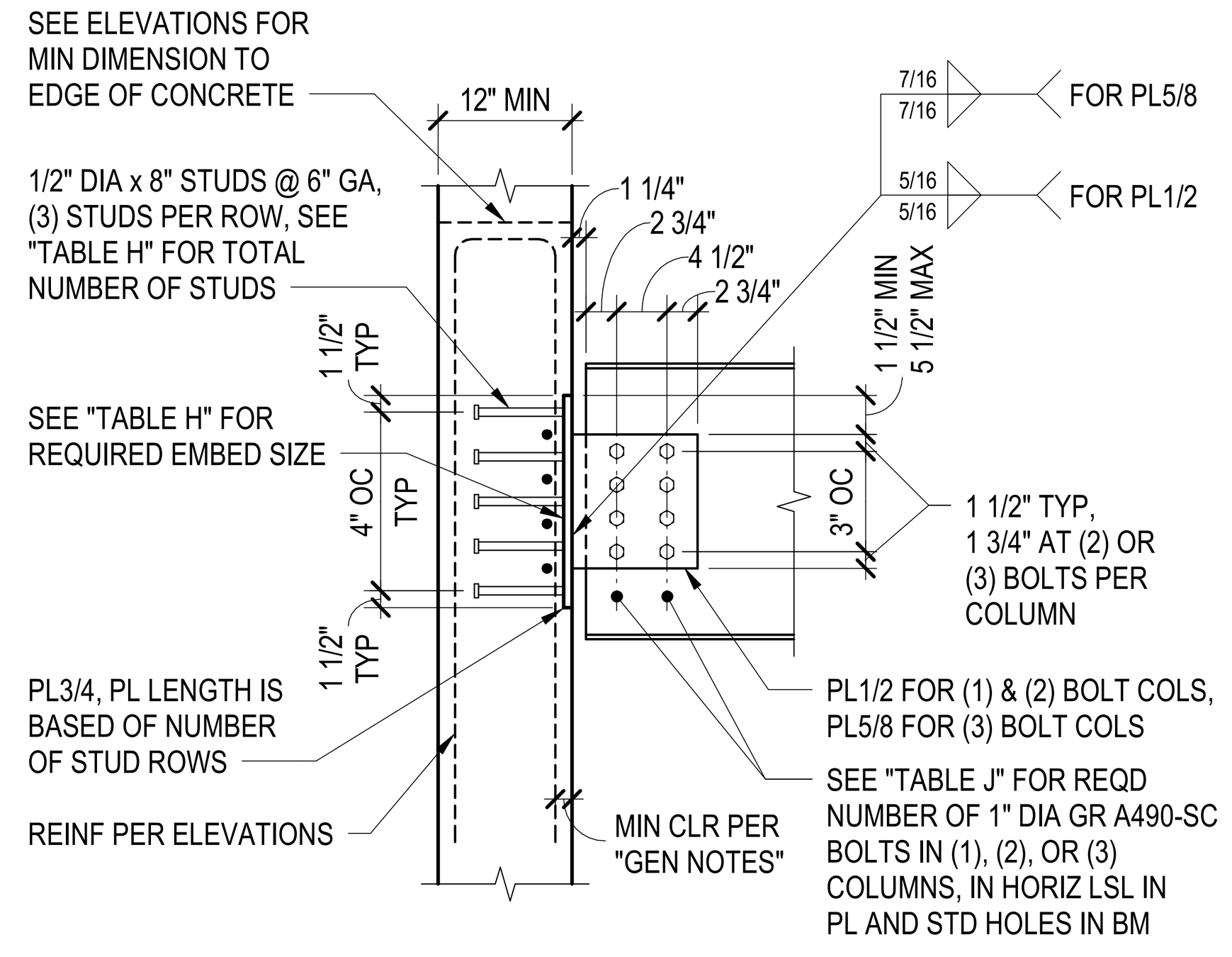
TYPICAL STEEL DETAILS

S4.12



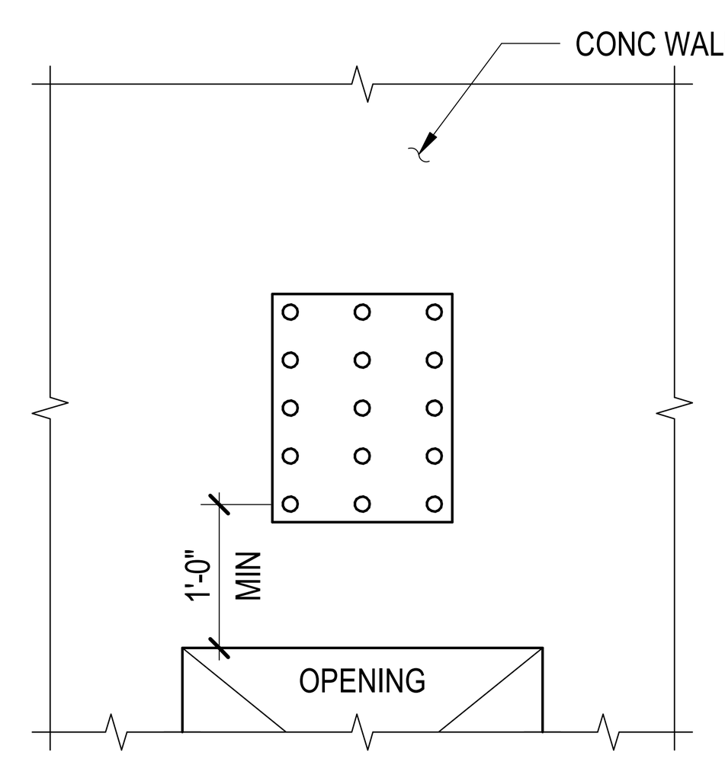
SECTION

TABLE H							
TOTAL NUMBER OF STUDS	MAXIMUM REACTION (KIPS)						
	f'c = 4,000 PSI	f'c = 5,000 PSI	f'c = 6,000 PSI	f'c = 7,000 PSI	f'c = 8,000 PSI	f'c = 9,000 PSI	f'c = 10,000 PSI
9	47	52	58	62	66	71	74
12	55	61	67	72	77	82	87
15	62	70	76	83	88	94	99
18	70	78	86	93	99	105	111
21	78	87	95	103	110	117	123
24	86	96	105	113	121	129	136
27	93	104	114	124	132	140	148
30	101	113	124	134	143	152	160
33	109	122	133	144	154	163	172
36	117	130	143	154	165	175	185
39	124	139	152	165	176	187	197

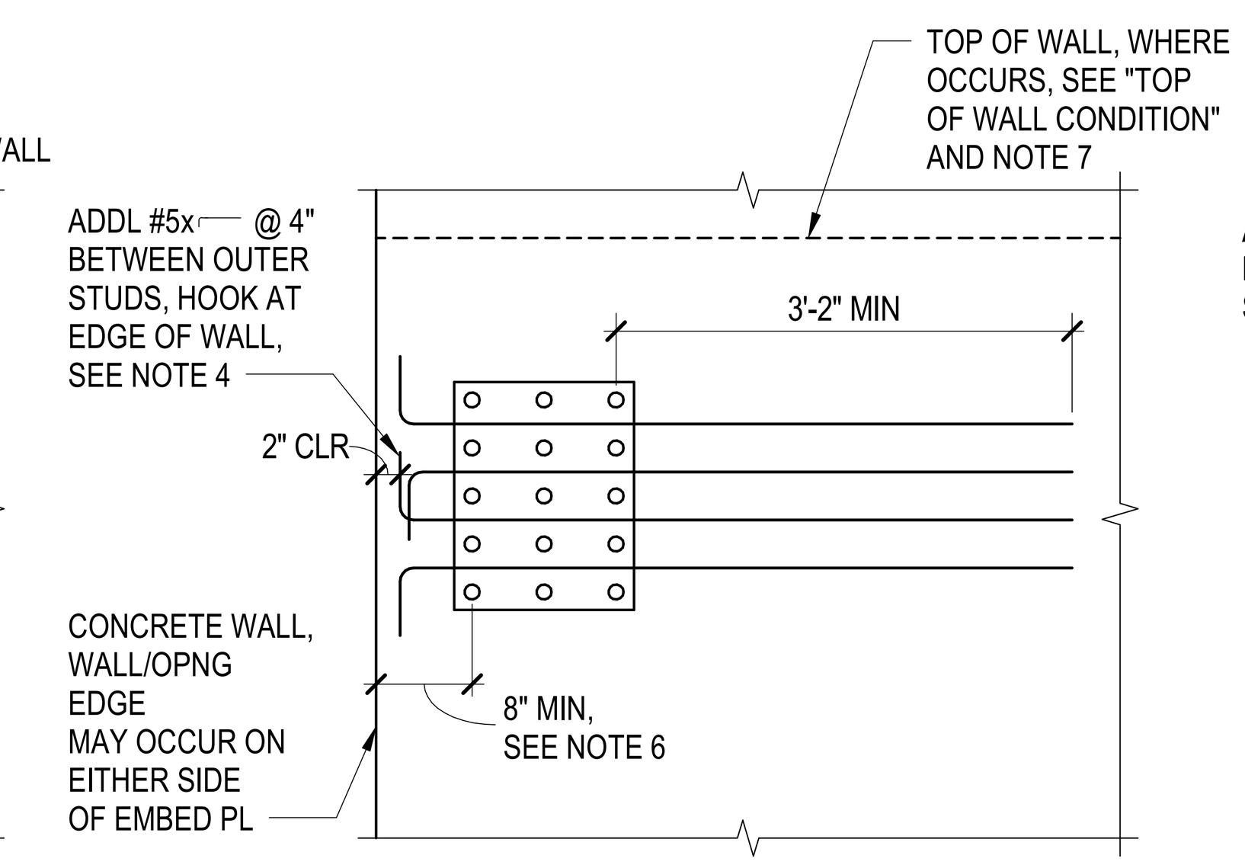
TABLE J			
NUMBER OF BOLTS PER COLUMN	MAXIMUM REACTION (KIPS)		
	(1) BOLT COLUMN	(2) BOLT COLUMNS	(3) BOLT COLUMNS
2	9	19	30
3	18	33	49
4	31	53	71
5	46	75	101
6	62	100	132
7	78	128	167
8	95	158	204
9	112	189	245
10	128	221	288
11	144	253	333
12	160	286	379

NOTES:

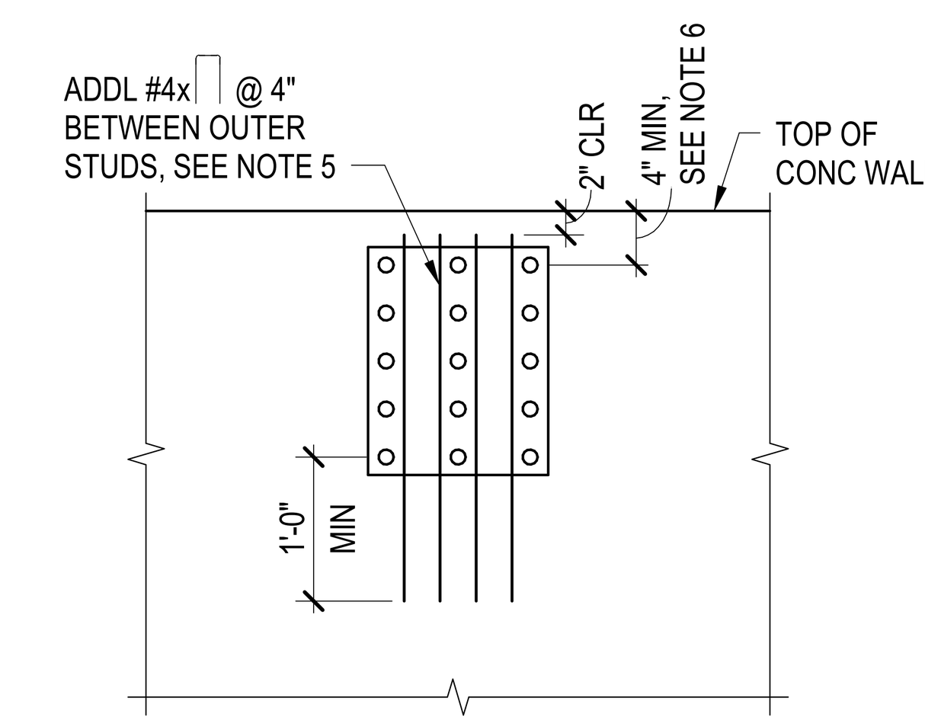
1. EMBED AND SHEAR TAB SHALL BE SIZED FOR THE REACTION SHOWN ON PLAN. CONTRACTOR SHALL VERIFY THAT SELECTED EMBED SIZE IS ADEQUATE TO RECEIVE SHEAR TAB.
2. DO NOT COPE STEEL BEAM FLANGES.
3. MINIMUM NUMBER OF BOLT ROWS SHALL CONFORM TO THE REQUIREMENTS OF "GENERAL NOTES FOR STEEL CONNECTIONS."
4. ADDITIONAL HORIZONTAL REINFORCEMENT MAY BE OMITTED WHERE DISTANCE FROM WALL EDGE TO CLOSEST STUD IS 2'-0" OR GREATER, OR WHERE WALL HORIZONTAL REINFORCEMENT HAS A MAXIMUM SPACING OF 8" OC FOR #4 AND #5 BARS OR 12" OC FOR #6 BARS AND GREATER.
5. ADDITIONAL VERTICAL REINFORCEMENT MAY BE OMITTED WHERE DISTANCE FROM WALL EDGE TO CLOSEST STUD IS 1'-0" OR GREATER.
6. WHEN AN EMBED HAS (21) OR MORE STUDS AND ALL STUDS ARE 12" OR GREATER FROM ANY VERTICAL AND HORIZONTAL WALL EDGES, EMBED CAPACITIES IN "TABLE H" MAY BE INCREASED BY 40%.
7. WHERE ANY STUD ON AN EMBED IS LESS THAN 12" FROM BOTH A VERTICAL AND A HORIZONTAL WALL EDGE, REDUCE EMBED CAPACITIES IN "TABLE H" BY 25%.
8. WHERE A STEEL BEAM FRAMES INTO THE END OF A WALL LESS THAN 32" THICK OR INTO THE FACE OF A COLUMN LESS THAN 32" WIDE, SEE "TYPICAL TYPE C25" DETAIL.
9. WHERE A STEEL BEAM FRAMES INTO A CONCRETE BEAM OR A CONCRETE COUPLING BEAM, SEE "TYPICAL TYPE C26" DETAIL.
10. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.



FIELD OF WALL CONDITION



EDGE OF WALL CONDITION

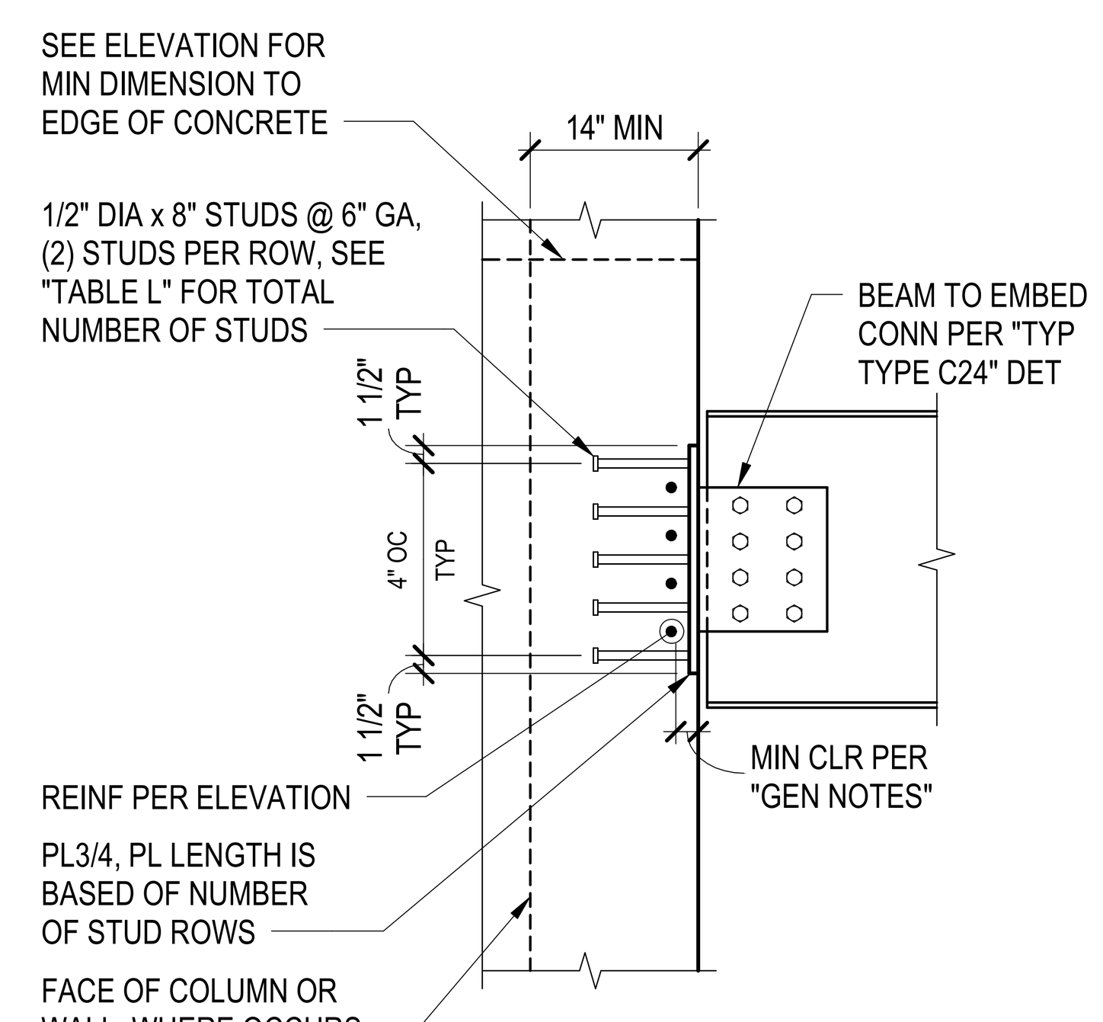


TOP OF WALL CONDITION

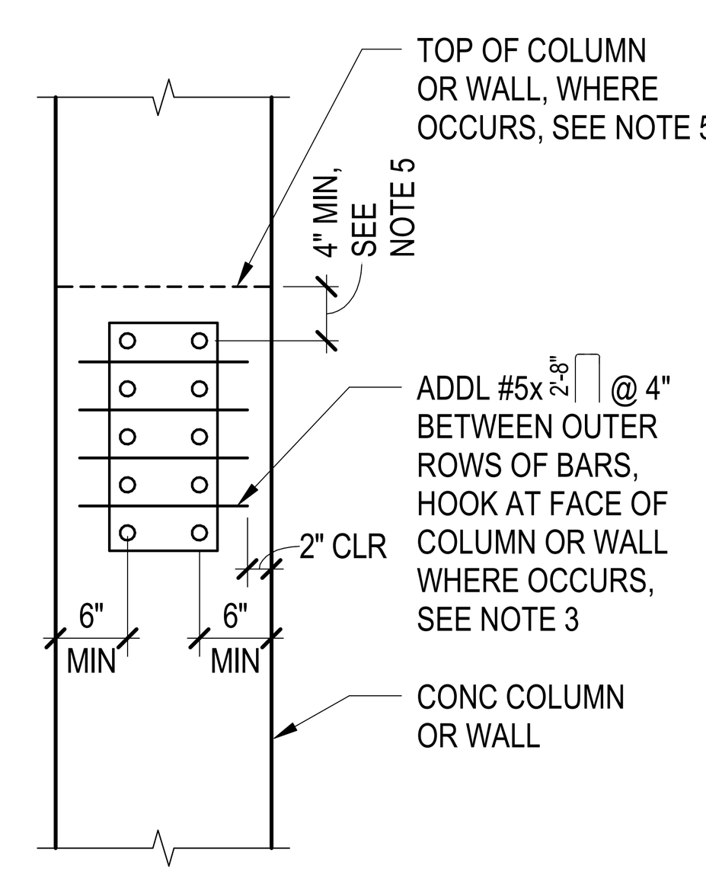
8 TYPICAL TYPE C24 - STEEL CONNECTION TO CONCRETE WALL

NOTES:

1. EMBED AND SHEAR TAB SHALL BE SIZED FOR THE REACTION SHOWN ON PLAN. CONTRACTOR SHALL VERIFY THAT SELECTED EMBED SIZE IS ADEQUATE TO RECEIVE SHEAR TAB.
2. DO NOT COPE STEEL BEAM FLANGES.
3. ADDITIONAL HORIZONTAL U-BAR REINFORCEMENT MAY BE OMITTED WHERE DISTANCE FROM WALL EDGE TO CLOSEST STUD IS 2'-0" OR GREATER, OR WHERE WALL HORIZONTAL REINFORCEMENT HAS A MAXIMUM SPACING OF 8" OC FOR #4 AND #5 BARS OR 12" OC FOR #6 BARS AND GREATER.
4. WHERE THE REACTION SHOWN ON PLAN EXCEEDS THE VALUES SHOWN IN "TABLE L", SEE "TYPICAL TYPE C27" DETAIL.
5. WHERE TOP ROW OF STUDS IS LESS THAN 12" FROM TOP OF WALL OR COLUMN, REDUCE EMBED CAPACITIES IN "TABLE L" BY 30%.
6. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.



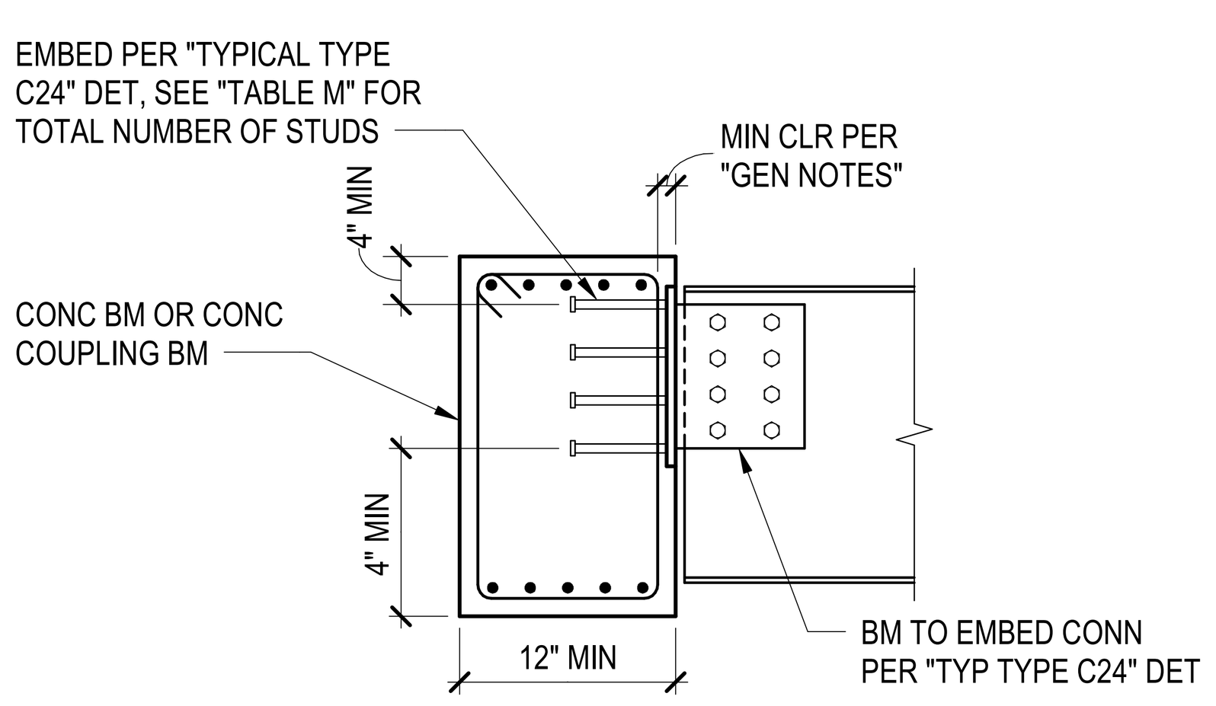
SECTION



ELEVATION

TABLE L							
TOTAL NUMBER OF STUDS	MAXIMUM REACTION (KIPS)						
	f'c = 4,000 PSI	f'c = 5,000 PSI	f'c = 6,000 PSI	f'c = 7,000 PSI	f'c = 8,000 PSI	f'c = 9,000 PSI	f'c = 10,000 PSI
6	42	47	49	49	49	49	49
8	47	53	58	63	66	66	66
10	52	59	64	69	74	79	82
12	58	64	71	76	82	87	91
14	63	70	77	83	89	94	99
16	68	76	83	90	96	102	108
18	73	82	90	97	104	110	116
20	78	88	96	104	111	118	124
22	83	93	102	110	118	125	132
24	89	99	109	117	125	133	140
26	94	105	115	124	133	141	149

13 TYPICAL TYPE C25 - STEEL CONNECTION TO CONCRETE COLUMN OR END OF WALL



SECTION

NOTES:

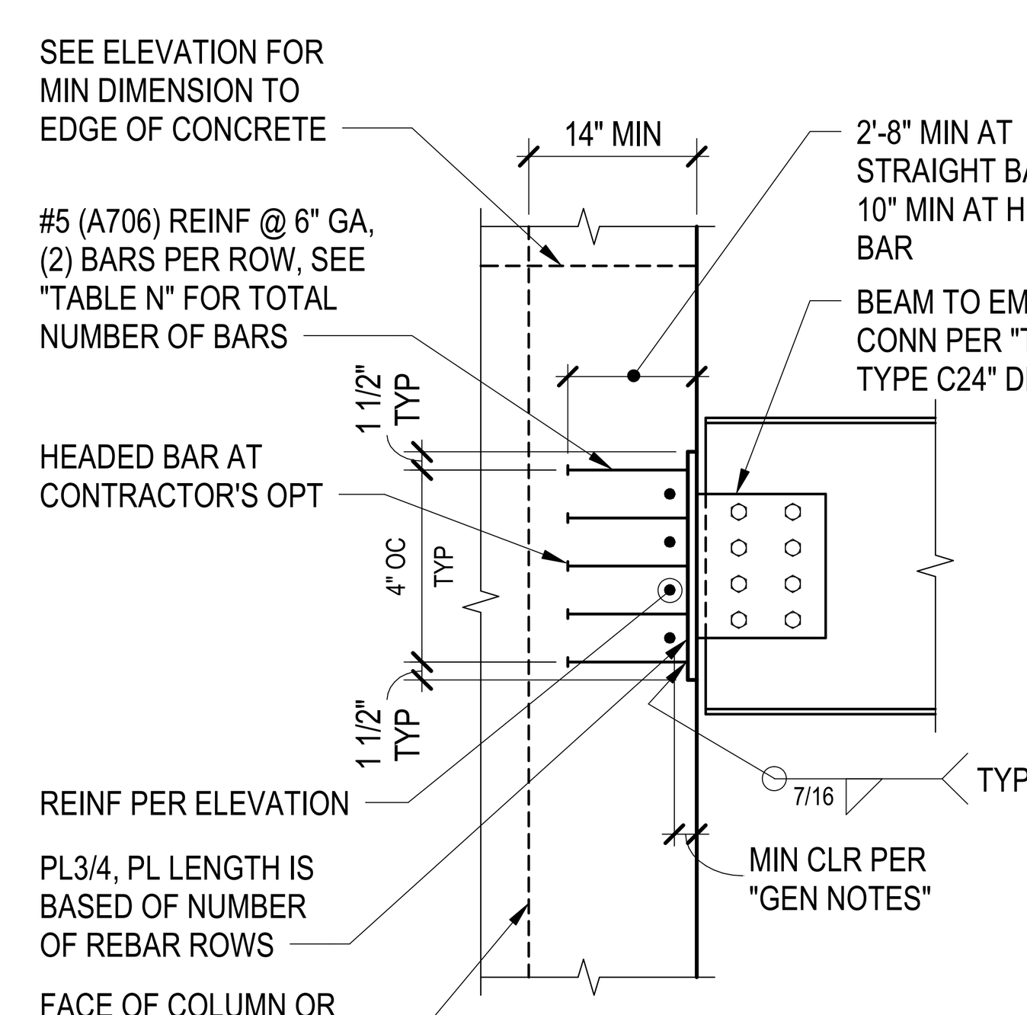
1. EMBED AND SHEAR TAB SHALL BE SIZED FOR THE REACTION SHOWN ON PLAN. CONTRACTOR SHALL VERIFY THAT SELECTED EMBED SIZE IS ADEQUATE TO RECEIVE SHEAR TAB.
2. DO NOT COPE STEEL BEAM FLANGES.
3. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.

TABLE M							
TOTAL NUMBER OF STUDS	MAXIMUM REACTION (KIPS)						
	f'c = 4,000 PSI	f'c = 5,000 PSI	f'c = 6,000 PSI	f'c = 7,000 PSI	f'c = 8,000 PSI	f'c = 9,000 PSI	f'c = 10,000 PSI
9	22	24	27	29	31	33	34
12	27	30	33	36	39	41	43
15	33	37	40	43	46	49	52
18	38	43	47	51	54	57	61
21	44	49	54	58	62	66	69
24	49	55	60	65	70	74	78
27	55	61	67	73	78	82	87
30	60	67	74	80	85	91	96
33	66	74	81	87	93	99	104
36	71	80	87	94	101	107	113
39	77	86	94	102	109	115	122

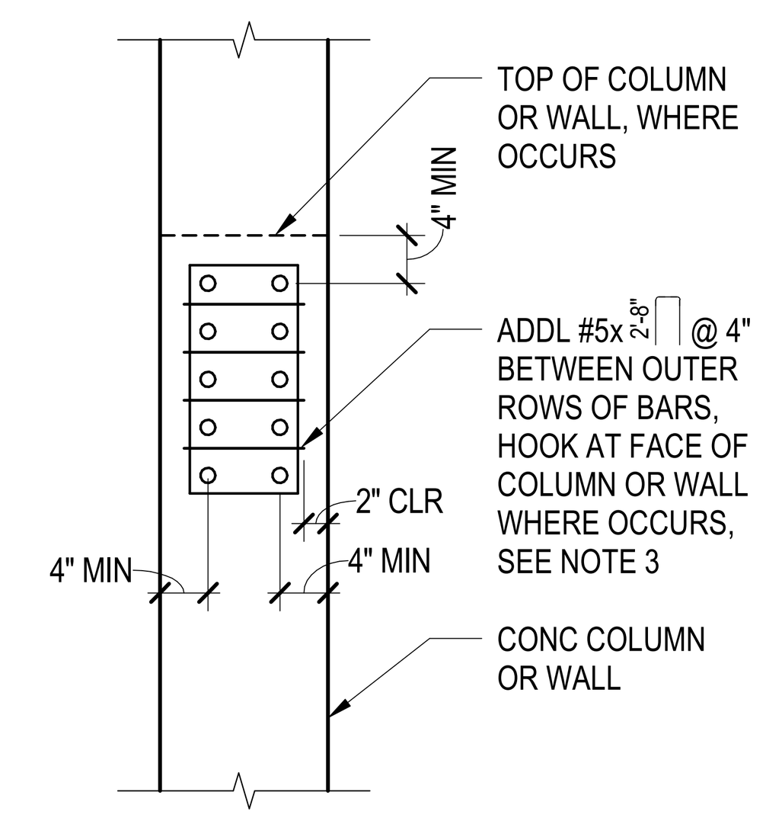
16 TYPICAL TYPE C26 - STEEL CONNECTION TO CONCRETE BEAM

NOTES:

1. EMBED AND SHEAR TAB SHALL BE SIZED FOR THE REACTION SHOWN ON PLAN. CONTRACTOR SHALL VERIFY THAT SELECTED EMBED SIZE IS ADEQUATE TO RECEIVE SHEAR TAB.
2. DO NOT COPE STEEL BEAM FLANGES.
3. ADDITIONAL HORIZONTAL U-BAR REINFORCEMENT MAY BE OMITTED WHERE DISTANCE FROM WALL EDGE TO CLOSEST STUD IS 2'-0" OR GREATER, OR WHERE WALL HORIZONTAL REINFORCEMENT HAS A MAXIMUM SPACING OF 8" OC FOR #4 AND #5 BARS OR 12" OC FOR #6 BARS AND GREATER.
4. ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.



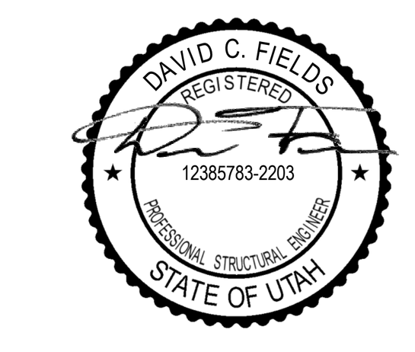
SECTION



ELEVATION

TABLE N	
TOTAL NUMBER OF #5 BARS	MAXIMUM REACTION (KIPS)
6	48
8	67
10	86
12	105
14	124
16	144
18	163
20	182
22	201
24	220
26	240

18 TYPICAL TYPE C27 - HEAVY STEEL CONNECTION TO CONCRETE COLUMN OR WALL



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date 11/18/2022

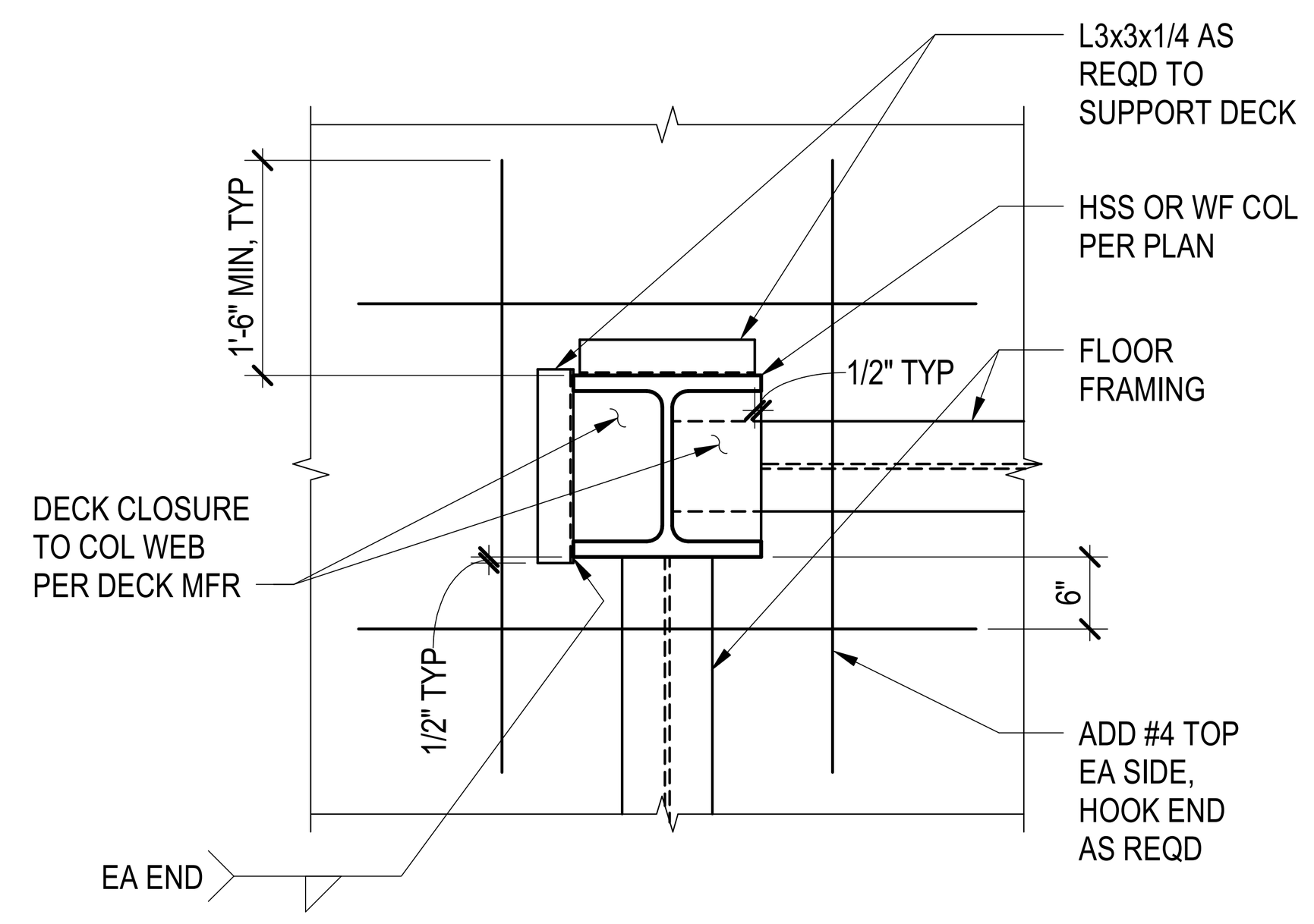
revisions:

1 11/18/2022 IFC
no. date by

CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL STEEL BEAM CONNECTIONS TO CONCRETE

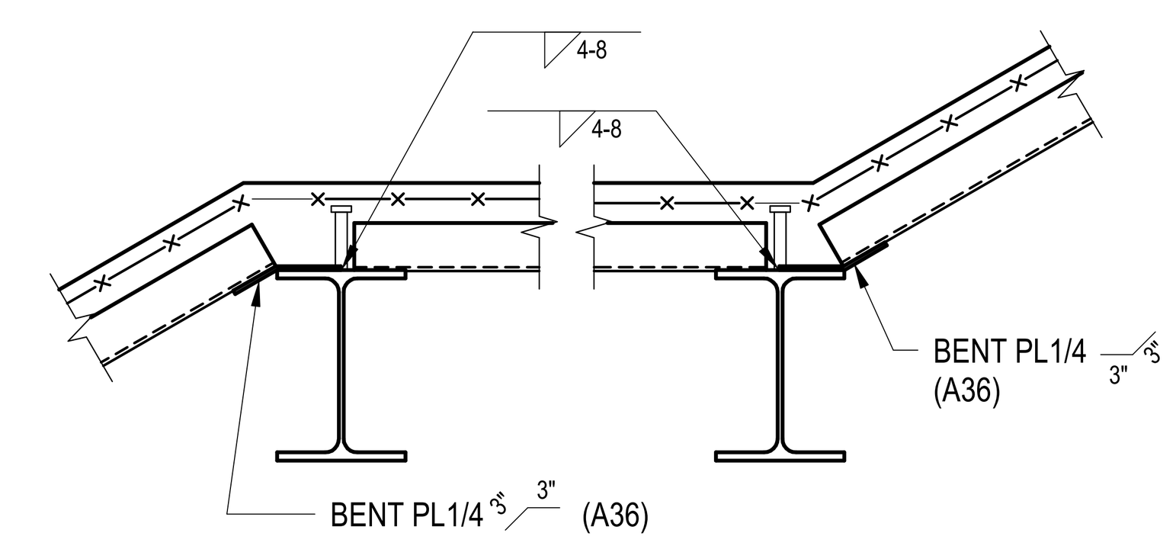
S4.13



NOTES:

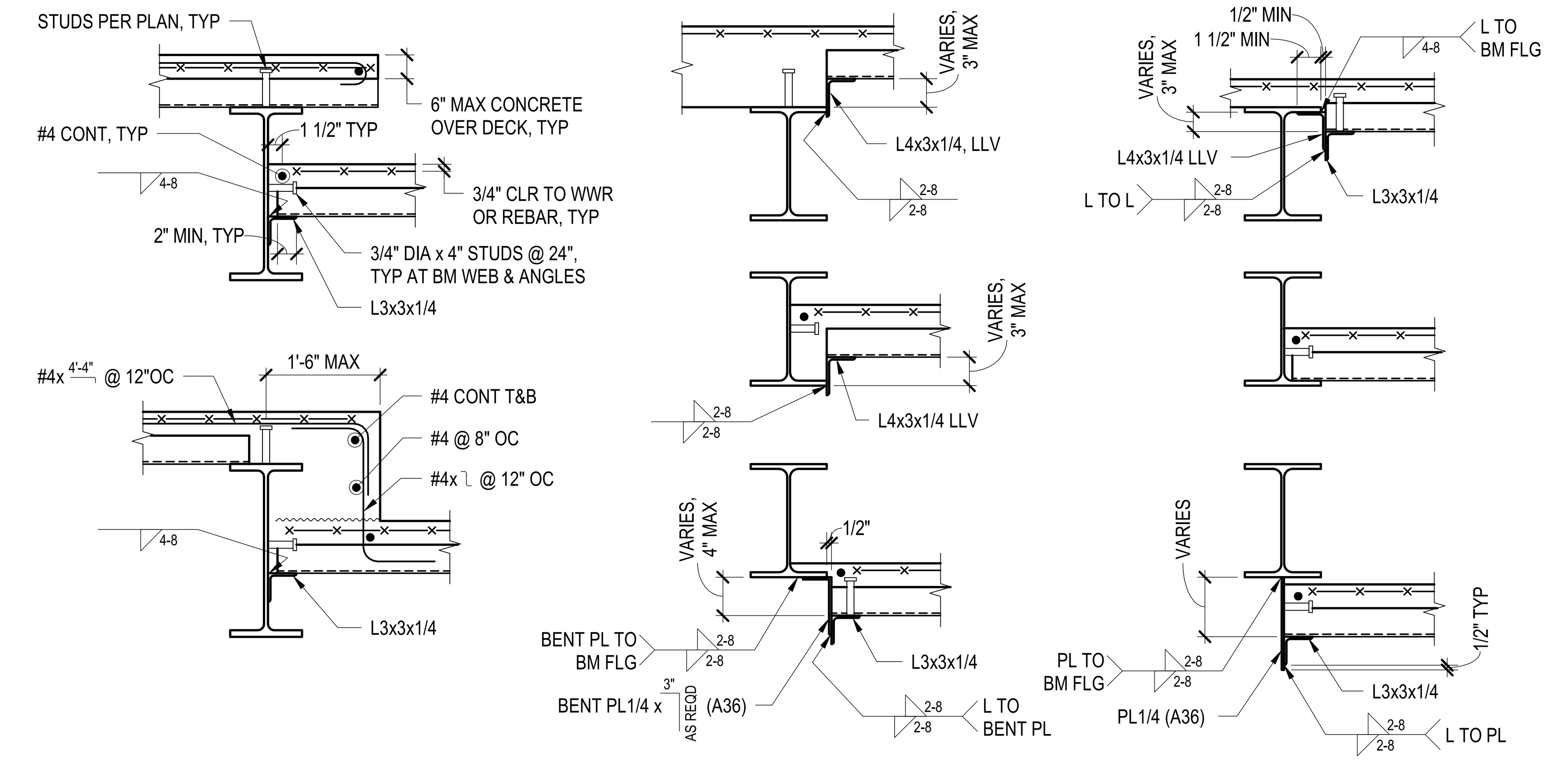
1. SEE "TYPICAL DECK EDGE CONDITIONS" FOR DECK EDGE SUPPORT AT COLUMNS.

2 TYP DECK SUPPORT AND REINF AT COLS



NOTES:

1. STUDS ARE TYPICALLY 3/4 INCH DIAMETER AT 24 INCHES ON CENTER MAXIMUM, UNLESS NOTED OTHERWISE.
2. AT ALL ANGLES AND WEBS LESS THAN OR EQUAL TO 1/4 INCH THICK, USE 1/2 INCH DIAMETER x 4 INCH STUDS AT 12 INCHES ON CENTER.
3. DECK SPANS EITHER DIRECTION, SEE PLANS.
4. ROOF DECK SIMILAR.



3 TYPICAL DECK SUPPORT DETAILS

NOTES:

1. SHEAR STUD PLACEMENT TO BEAM IS PER TYPICAL DETAIL. COORDINATE DECK AND STEEL FRAMING PLACEMENT. WHERE DECK LOW FLUTE DOES NOT ALIGN WITH BEAM FLANGE BELOW, PROVIDE LOCAL MODIFICATION TO DECK TO FACILITATE SHEAR STUD PLACEMENT. SIMILARLY MODIFY SUPPORT CONDITIONS WHEN DECK IS SKEWED TO THE BEAMS AS REQUIRED TO ALLOW FOR PLACEMENT OF STUDS IN ACCORDANCE WITH THE TYPICAL DETAIL.
2. ALL OPENINGS IN SLAB OR ROOF DECKS SHALL BE COORDINATED, FRAMED, AND REINFORCED PER THE TYPICAL DETAILS. DO NOT CUT DECK UNTIL FRAMING IS PLACEDAND CONCRETE IS CURED AS NOTED.
3. CONDUIT IN SLAB ON DECK IS PERMITTED ONLY WHEN FULLY SATISFYING THE REQUIREMENTS OF THE TYPICAL CONDUIT IN SLAB ON STEEL DECK DETAIL. WHEN CONDUIT VERTICALLY RUNS INTO THE SLAB, IT IS TO BE TREATED AS A DECK OPENING AND REINFORCED AS REQUIRED PER THE TYPICAL DETAILS.
4. JOINTING OF SLABS ON DECK SHALL BE PER THE TYPICAL DETAILS AND SATISFY THE REQUIREMENTS OF THE GENERAL NOTES.
5. SUPPORT ALL DECK AT FRAMING, COLUMNS, AND WALLS PER THE TYPICAL DETAILS. DISCONTINUOUS TOP OF COLUMNS SUPPORTING SLAB OR ROOF DECK SHALL HAVE A 3/8" CAP PLATES SUITABLY SIZED TO SUPPORT THE DECK UNLESS OTHERWISE SHOWN.
6. ROOF DECK EDGE CONDITIONS SHALL BE PER THE TYPICAL DETAILS. AT ROOF DECK EDGE CONDITIONS WHERE PLATE IS NOT REQUIRED TO SUPPORT EXTENT OF ARCHITECTURAL ROOFING, EXTERIOR CLADDING SYSTEMS, OR OTHER ARCHITECTURAL FEATURES IT, MAY BE OMITTED. CONTRACTOR TO COORDINATE.
7. SLAB ON DECK EDGE CONDITIONS SHALL BE PER THE TYPICAL DECK EDGE CONDITIONS DETAIL. AT SLAB EDGE CONDITIONS WHERE RAILING, EXTERIOR CLADDING, OR OTHER ARCHITECTURAL FEATURES REQUIRE A PLATE EDGE, SEE "TYPICAL DECK EDGE AT EXTERIOR CLADDING OR RAILING" DETAIL. CONTRACTOR TO COORDINATE.
8. CONTRACTOR TO COORDINATE SLAB ON DECK EDGE CONDITIONS WITH ELEVATOR AND DOCK LEVELER SILLS DETAIL WHERE OCCURS. REFER TO "TYPICAL ELEVATOR AND DOCK LEVELER SILL" DETAIL FOR REQUIREMENTS.

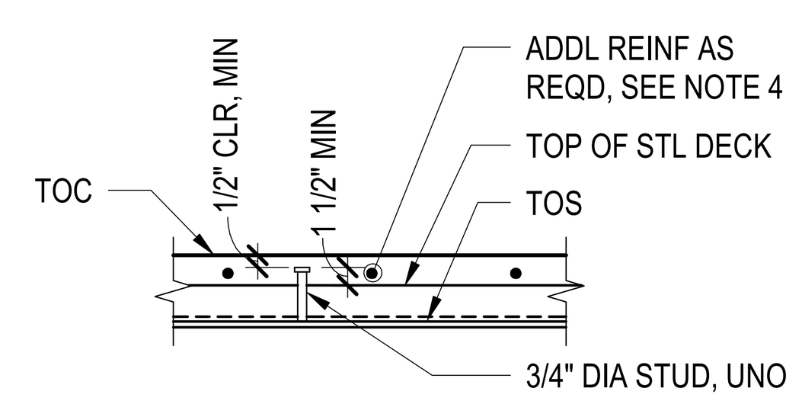
6 STEEL DECK NOTES

NOTES:

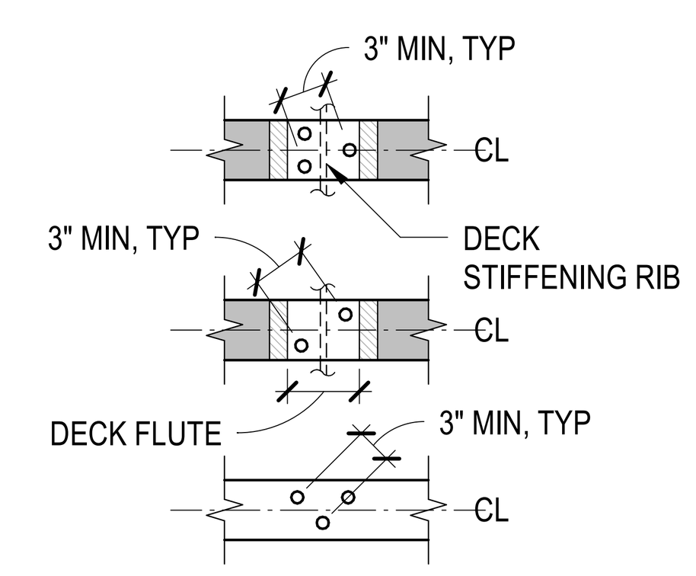
1. SEE PLAN FOR REQUIRED NUMBER OF STUDS. SEE "GENERAL NOTES" FOR MINIMUM NUMBER OF STUDS AND MINIMUM STEEL COMPOSITE DECK TO STEEL BEAMS FASTENING REQUIREMENTS.
2. UNLESS NOTED OTHERWISE, STUDS ARE TO BE SPACED AS SHOWN IN THIS DETAIL AND PLACED SYMMETRICALLY ABOUT THE BEAM CENTERLINE AXIS. IF REQUIRED SPACING IS NOT POSSIBLE DUE TO DECK CONFIGURATION, THE STRUCTURAL ENGINEER SHALL BE NOTIFIED.
3. FOR CANTILEVER SPANS, STUDS SHALL BE PLACED IN ONE ROW ALONG THE BEAM CENTERLINE AXIS AT A MAXIMUM SPACING OF 2'-0". STUDS PLACED ON THE CANTILEVER SPAN ARE NOT INCLUDED IN THE NUMBER OF STUDS SHOWN ON PLAN.
4. WHERE WELDED WIRE REINFORCING IS USED AS SLAB REINFORCEMENT, ADDITIONAL REINFORCEMENT SHALL BE PLACED PERPENDICULAR TO THE BEAM, ACROSS THE BEAM AND CANTILEVERED SPANS AS FOLLOWS:

   < 3 STUDS / FT - ADD NONE
   3 OR MORE STUDS / FT - ADD #4x5'-0" @ 12"

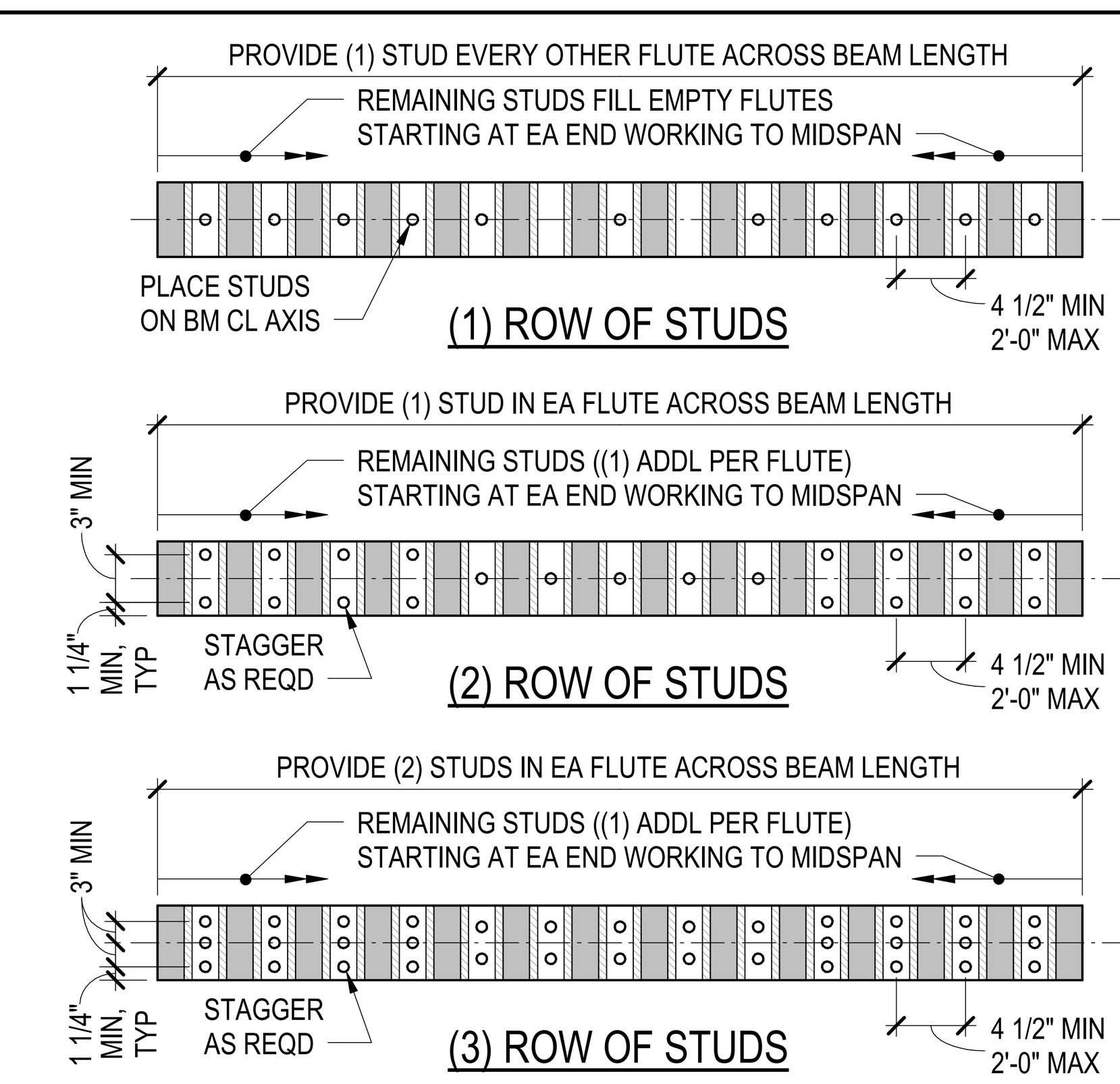
5. FOR BEAMS WEIGHING LESS THAN OR EQUAL TO 16 LBS/FT, STUDS SHALL BE PLACED ONLY ON THE CENTERLINE OF THE BEAM.



TYPICAL STUD

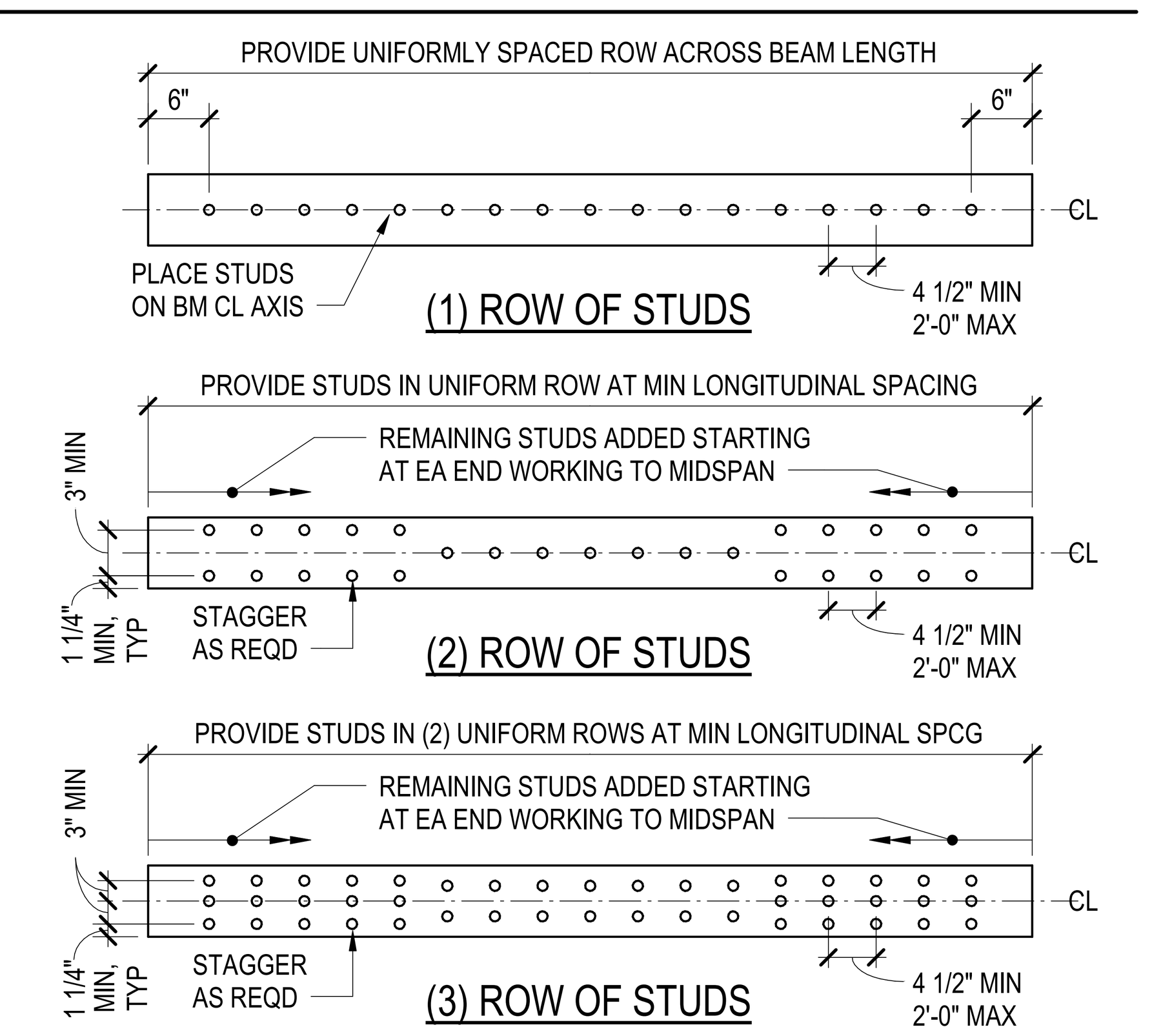


STAGGER DETAILS (USE AS REQUIRED)



DECK FLUTES PERPENDICULAR TO BEAM

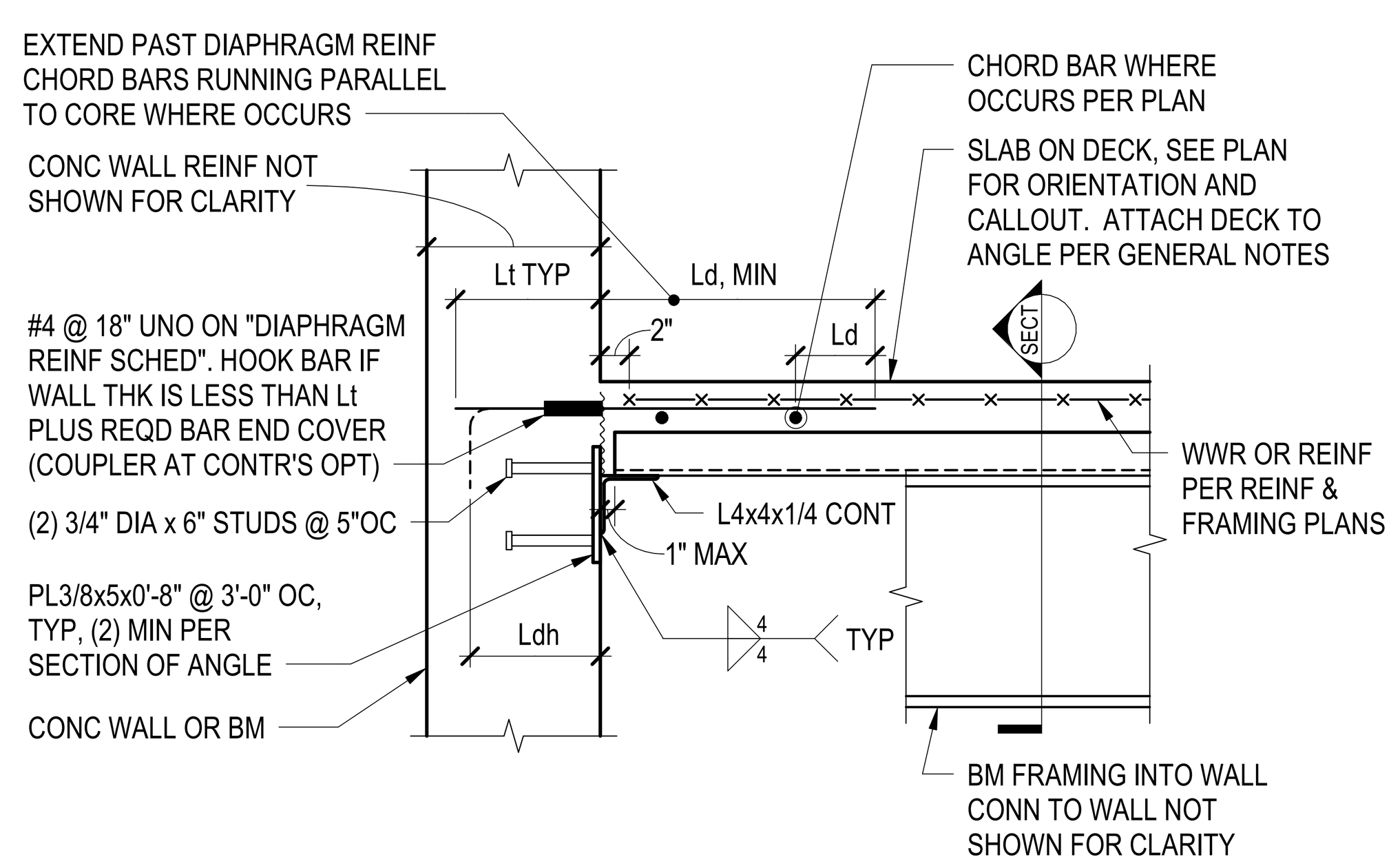
NUMBER OF ROWS = # STUDS / FEET OF BEAM LENGTH, ROUNDED UP
DETERMINE STUD LAYOUT WITH FIRST STUD IN FLUTE CLOSEST TO BEAM ENDS



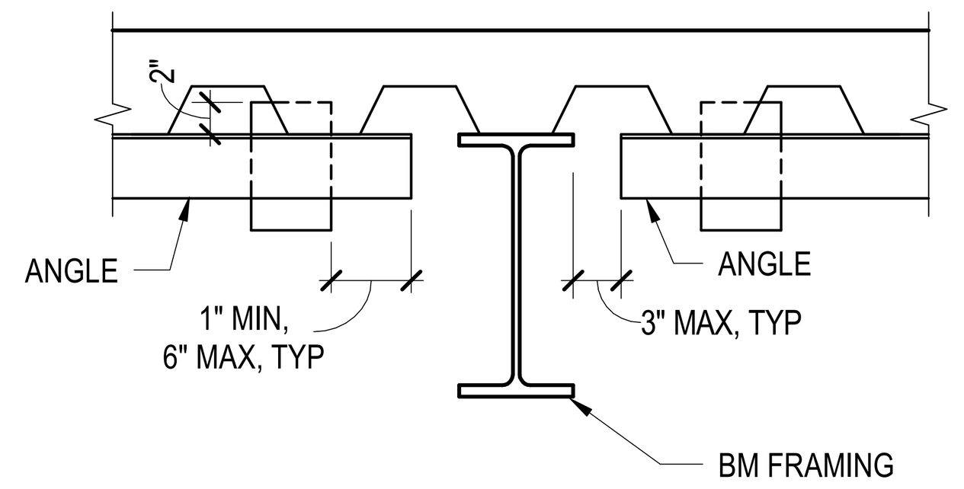
DECK FLUTES PARALLEL TO BEAM

NUMBER OF ROWS = (0.375 x # STUDS) / FEET OF BEAM LENGTH, ROUNDED UP
DETERMINE STUD LAYOUT WITH FIRST STUD PLACED 6" FROM BEAM ENDS

7 TYPICAL SHEAR STUD PLACEMENT AND ADDED REINFORCING



CAST-IN-PLACE OPTION



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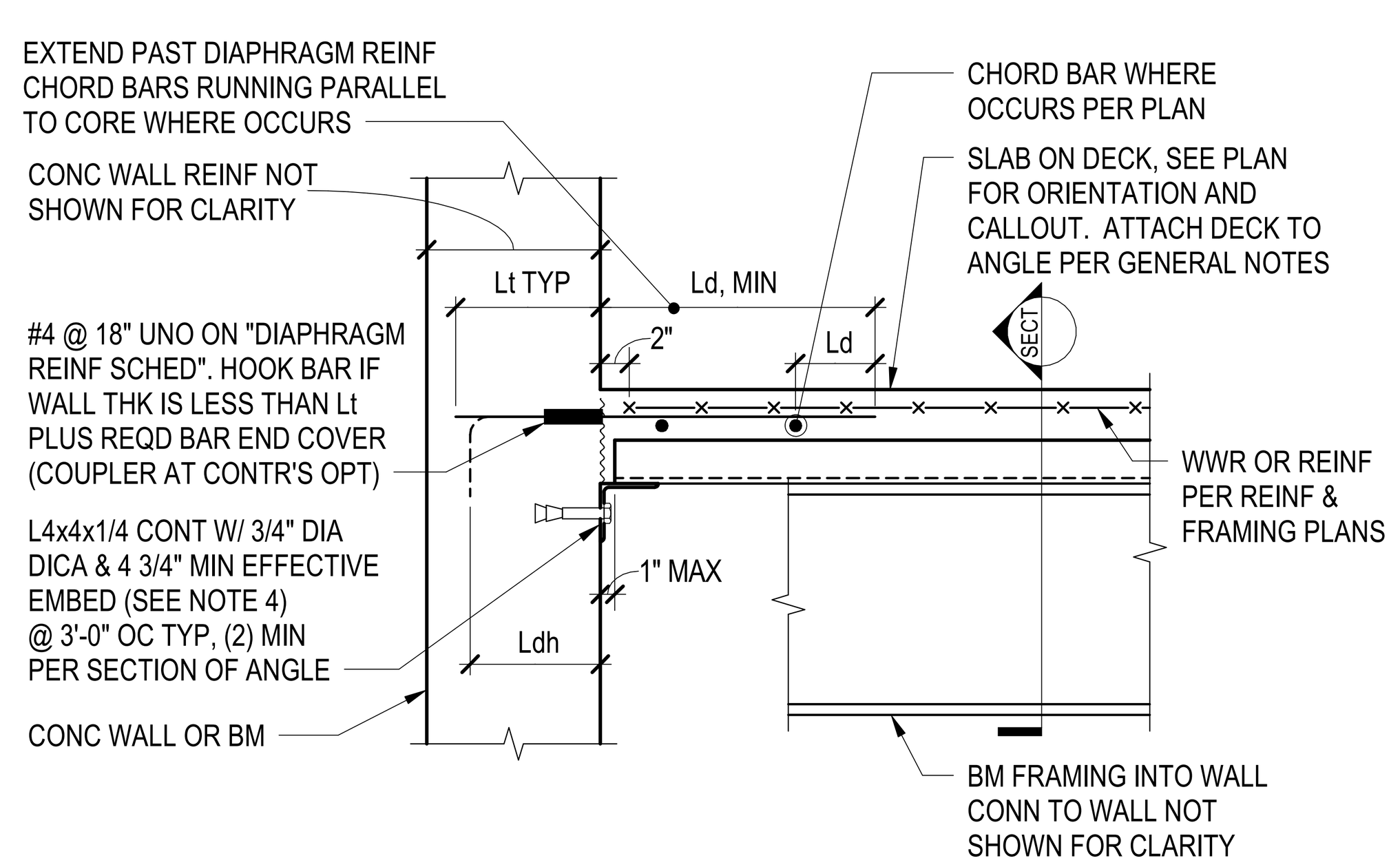
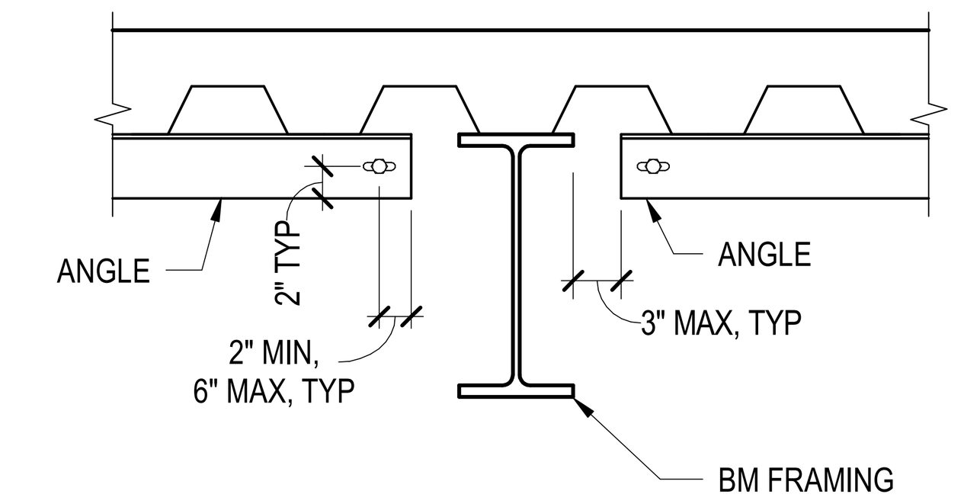


POST-INSTALLED OPTION



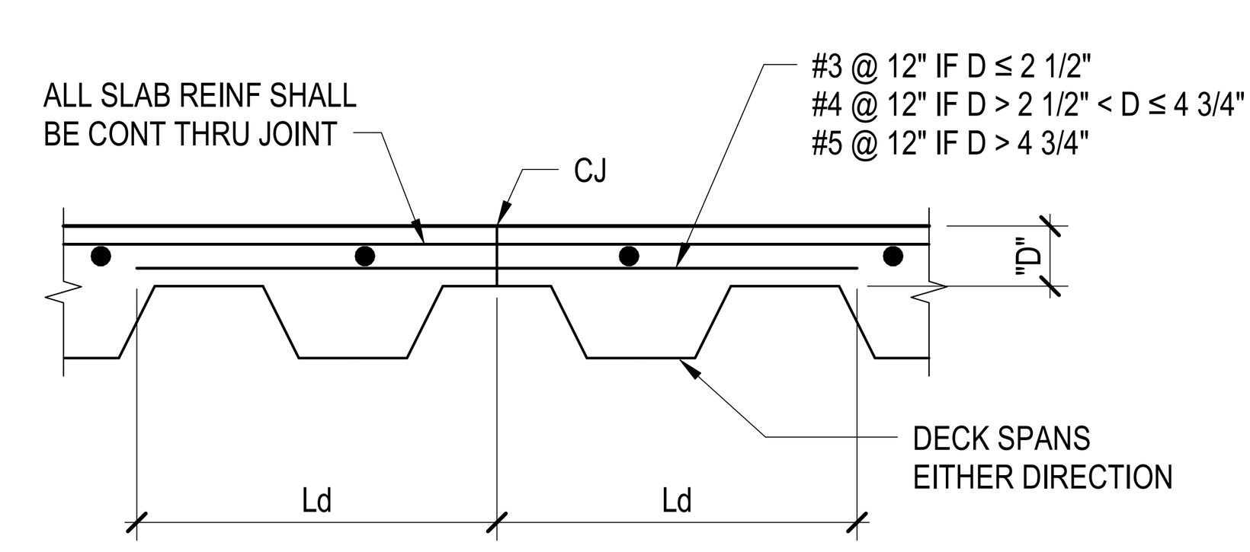
SECTION

NOTES:

1. ROOF DECK IS SIMILAR.
2. CONTRACTOR TO COORDINATE REINF AND ANCHOR / EMBED PLACEMENT.
3. AT CONTRACTOR'S OPTION, FOR DECK PARALLEL TO WALL CONDITION, IT IS ACCEPTABLE TO SHORE DECK AT EDGES UNTIL CONCRETE REACHES DESIGN COMPRESSIVE STRENGTH IN LIEU OF PROVIDING L4x4 AND DICAS / EMBEDS. PROVIDE JOINT KEY PER GENERAL NOTES.
4. ANCHORS SHALL BE HILTI KWIK BOLT TZ, SIMPSON STRONG TIE STB2, OR APPROVED EQUAL. PROVIDE HORIZONTAL LSL HOLES IN L4x4.

DIAPHRAGM REINF SCHEDULE		
LOCATION	BAR TYPE	SPACING
-	-	-

16 TYPICAL DECK SUPPORT AT CONCRETE



NOTES:

1. SUBMIT LOCATIONS OF ALL CONSTRUCTION JOINTS TO ENGINEER FOR REVIEW AND ACCEPTANCE BEFORE FORMING.
2. REFER TO GENERAL NOTES FOR CONSTRUCTION JOINT LOCATION REQUIREMENTS.

13 TYP SLAB ON DECK CONSTRUCTION JOINT

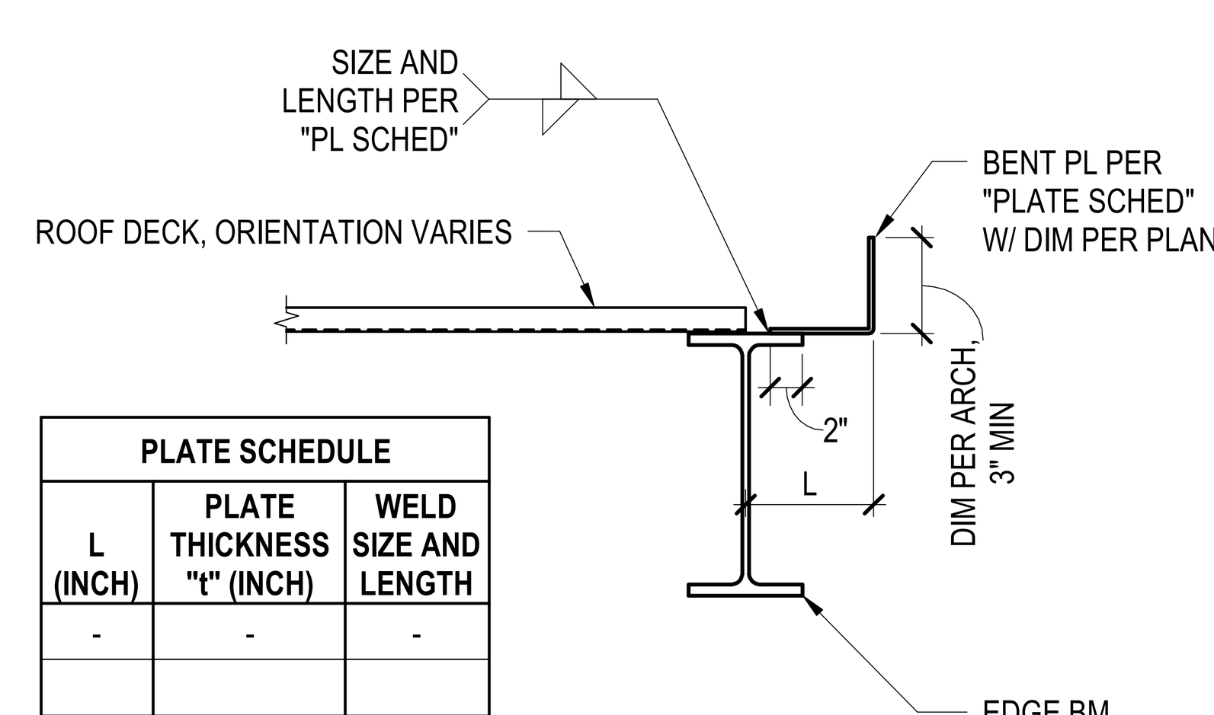
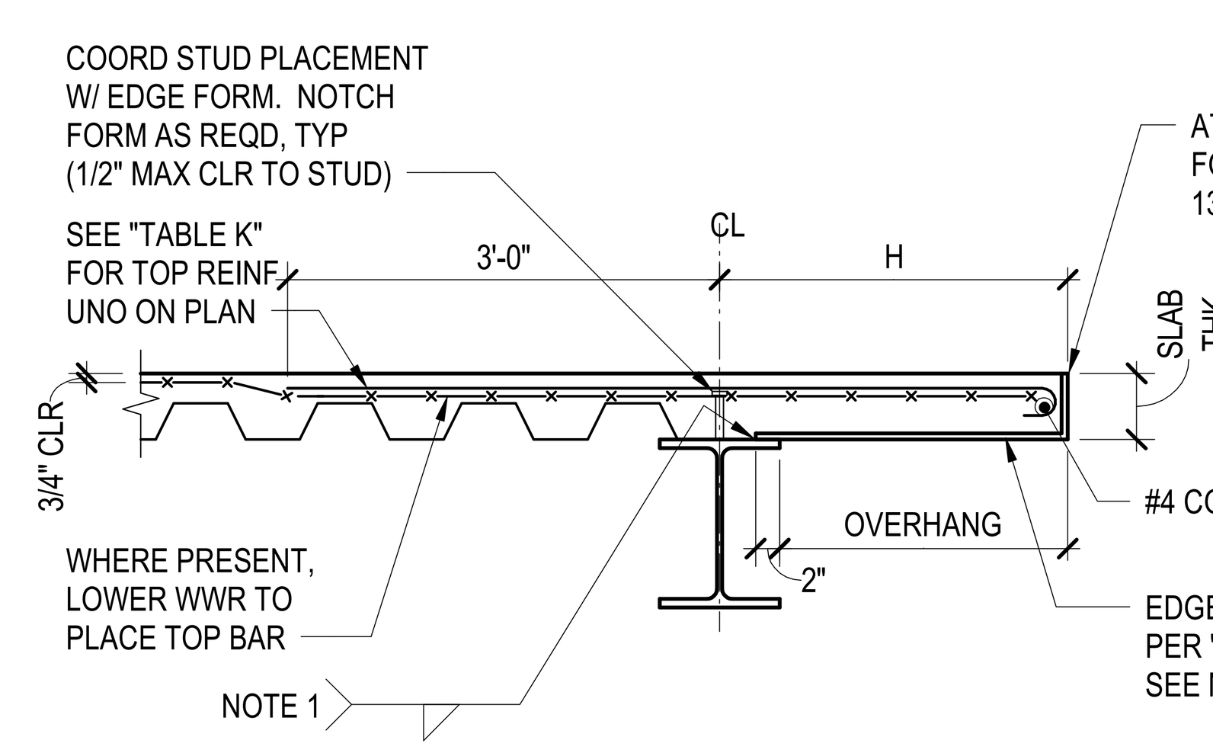


PLATE SCHEDULE		
L (INCH)	PLATE THICKNESS "t" (INCH)	WELD SIZE AND LENGTH
-	-	-

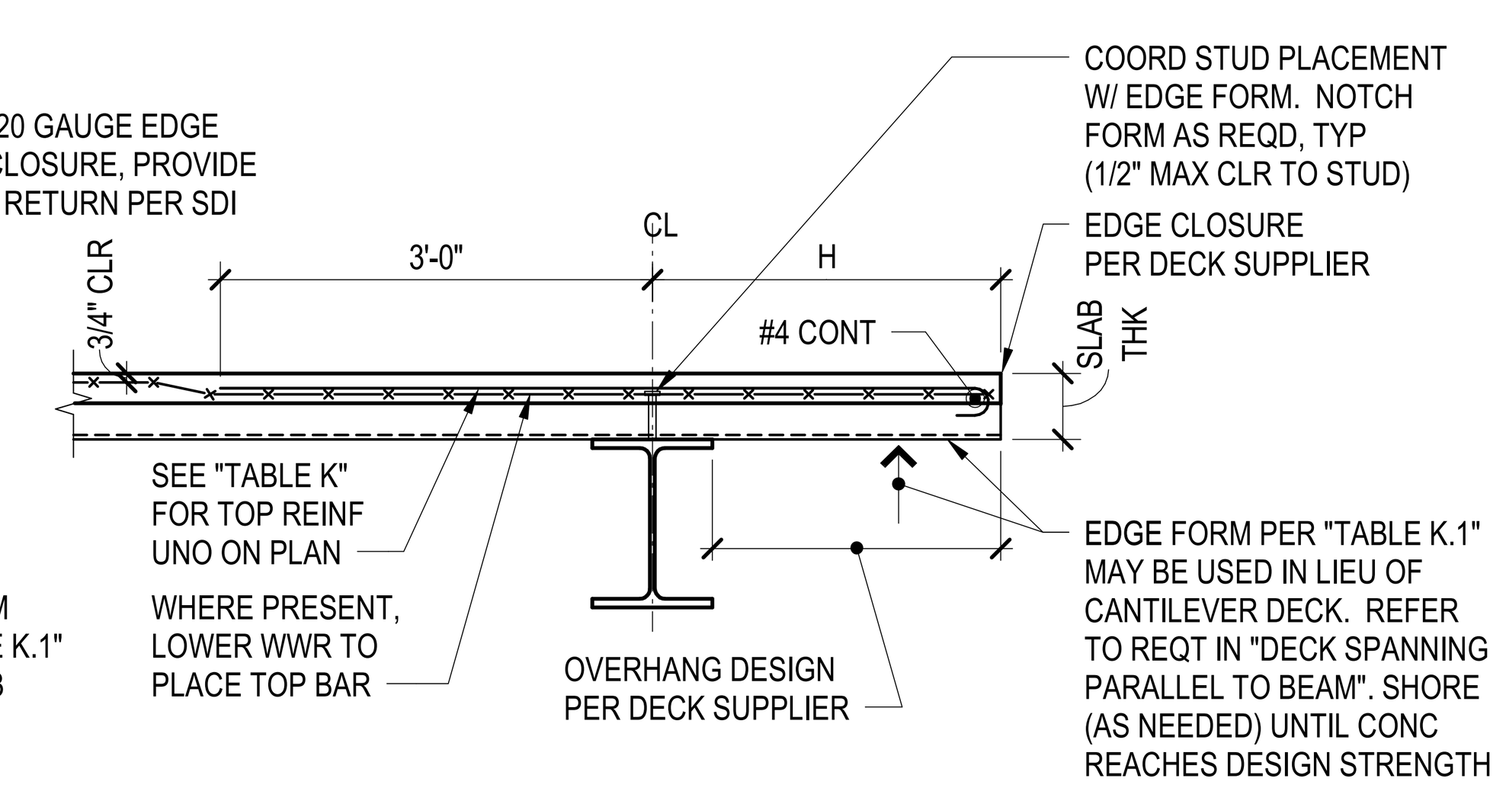
NOTES:

1. FIELD INSTALL BENT PLATE WHERE REQUIRED TO SATISFY ARCHITECTURAL TOLERANCES.
2. PROVIDE PJP 1/4 (E) MIN WELD AT VERTICAL LEG TO SPLICE BENT PLATES, TYP. FOR PL THICKNESS LESS THAN 3/8", PROVIDE PJP 1/8 (E) MIN. GRIND SMOOTH AT ARCHITECTURALLY EXPOSED CONDITIONS.

18 TYPICAL ROOF DECK EDGE



DECK SPANNING PARALLEL TO BEAM



DECK SPANNING PERPENDICULAR TO BEAM

TABLE K	
H	REINFORCING
0" TO 9"	-
OVER 9" TO 1'-4"	#4 @ 18"
OVER 1'-4" TO 2'-0"	#4 @ 12"
OVER 2'-0" TO 2'-6"	#4 @ 8"

TABLE K.1

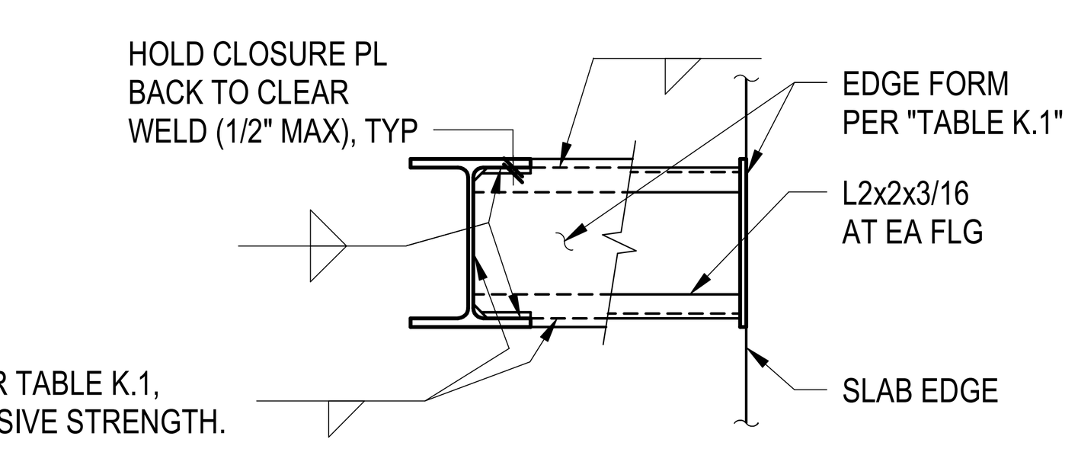
MAX SLAB THICKNESS (IN)	SLAB EDGE CLOSURE PLATE GAUGE / THICKNESS AT DECK PARALLEL TO BEAM — OVERHANG (IN) 0	1	2	3	4	5	6	7	8	9	10	11	12	14	16	18
4	20	20	20	18	16	16	16	14	14	12	12	10	10	3/16	3/16	1/4
4.5	20	20	20	18	16	16	16	14	12	12	12	10	3/16	3/16	1/4	1/4
5	20	20	18	18	16	16	14	14	12	12	10	10	3/16	3/16	1/4	1/4
5.5	20	18	18	16	16	14	14	12	12	12	10	10	3/16	3/16	1/4	1/4
6	20	18	16	16	14	14	12	12	12	12	10	10	3/16	3/16	1/4	1/4
6.5	18	16	16	14	14	12	12	12	12	10	10	3/16	3/16	3/16	1/4	5/16
7	18	16	14	14	12	12	12	12	10	10	10	3/16	3/16	1/4	1/4	5/16
7.5	16	14	14	12	12	12	12	10	10	10	3/16	3/16	3/16	1/4	1/4	5/16
8	16	14	12	12	12	12	10	10	10	3/16	3/16	3/16	3/16	1/4	1/4	5/16

NOTES:

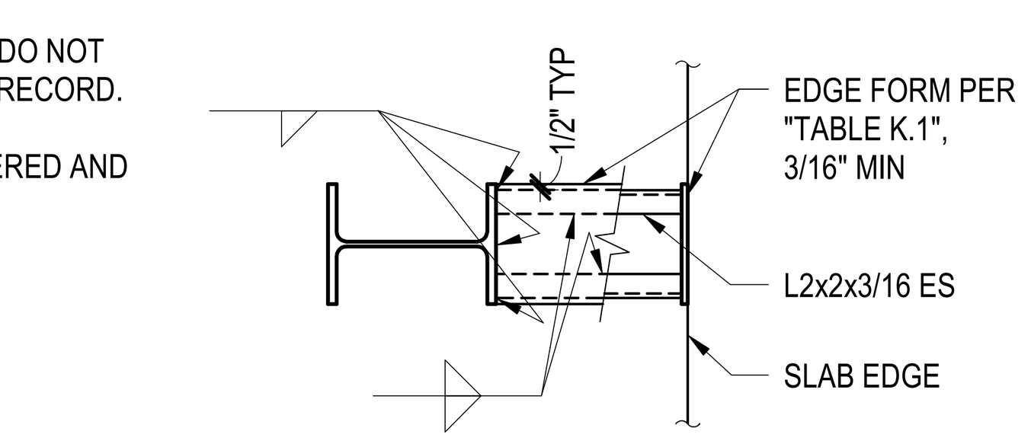
1. WELDING SHALL BE AS FOLLOWS:

MATERIAL	WELD SIZE x LENGTH AT SPACING
GAUGE METAL	1/8 "x 1 1/2" @ 12" OC (1" MIN EA PIECE END)
PLATES	3/16 "x 2" @ 12" OC (2" MIN EA PIECE END)

2. MATERIALS ARE TO BE AS FOLLOWS:
   18 GAUGE AND LIGHTER - ASTM A653 - F_y = 33 KSI MINIMUM.
   16 GAUGE AND HEAVIER - ASTM A653 - F_y = 50 KSI MINIMUM.
   AT CONTRACTOR'S OPTION, ASTM A36 (F_y=36 KSI MIN) MAY BE USED FOR PLATES.
3. FOR CONDITIONS WHERE SLAB EDGE EXCEEDS 18 INCH OVERHANG OR SLAB THICKNESS EXCEEDS MAX PER TABLE K.1, PROVIDE 1/4 INCH PLATE EDGE FORM AND SHORE THE EDGE UNTIL CONCRETE REACHES 28 DAY COMPRESSIVE STRENGTH.
4. AT CONTRACTOR'S OPTION, ALTERNATE METHODS OF PROVIDING EDGE CONSTRUCTION MAY BE USED AS DESIGNED BY THE CONTRACTOR. PROVIDE SHORING AND FRAMING MATERIALS AS REQUIRED.
5. THE SLAB EDGE CLOSURE PLATE IS ONLY DESIGNED TO SUPPORT WET CONCRETE AND CONSTRUCTION LOAD. DO NOT USE THE PLATE TO DIRECTLY SUPPORT CLADDING LOADS WITHOUT PRIOR APPROVAL FROM THE ENGINEER OF RECORD.
6. AT CORNER COLUMNS, USE BOTH "TYPICAL EDGE CONDITION AT COLUMN" DETAILS. EDGE FORM SHALL BE MITERED AND WELDED.
7. AT BLOCKOUTS FOR CLADDING CONNECTIONS, EDGE REINFORCING IS TO BE CONTINUOUS.
8. AT RECESS CONDITIONS, EDGE PLATE HEIGHT TO MATCH THE SLAB HEIGHT AT RECESS.
9. FOR ELEVATOR AND DOCK LEVELER SILLS SEE "TYPICAL ELEVATOR AND DOCK LEVELER SILL" DETAIL.
10. CONSTRUCTION LOAD AT EDGE FORM SHALL NOT EXCEED 20 PSF.
11. SEE "TYPICAL EXTENDED SLAB ON DECK EDGE" DETAIL.



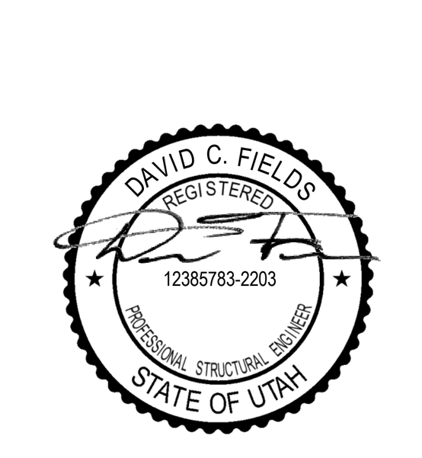
COLUMN WITH WEB PARALLEL



COLUMN WITH WEB PERPENDICULAR

TYPICAL EDGE CONDITION AT COLUMN
SEE NOTE 6

19 TYPICAL DECK EDGE CONDITIONS



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date 11/18/2022

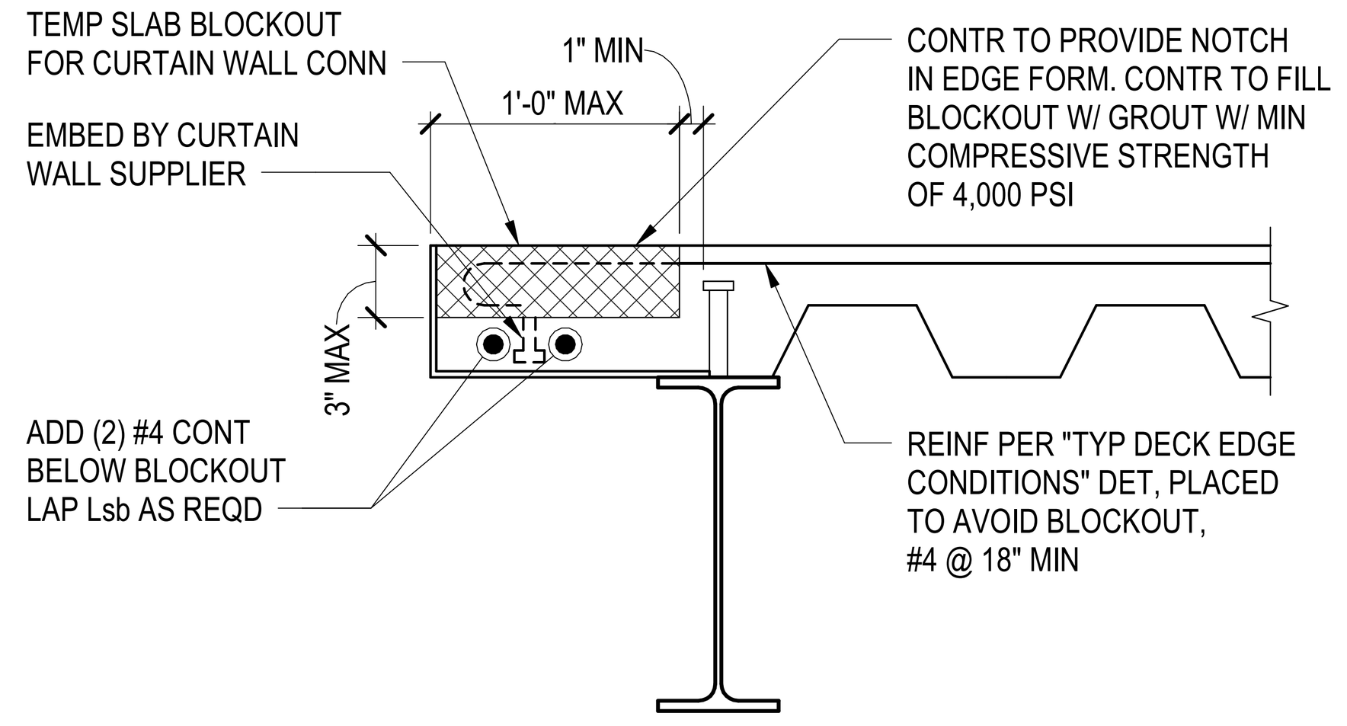
revisions:

1 11/18/2022 IFC
no. date by

CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL STEEL DECK DETAILS

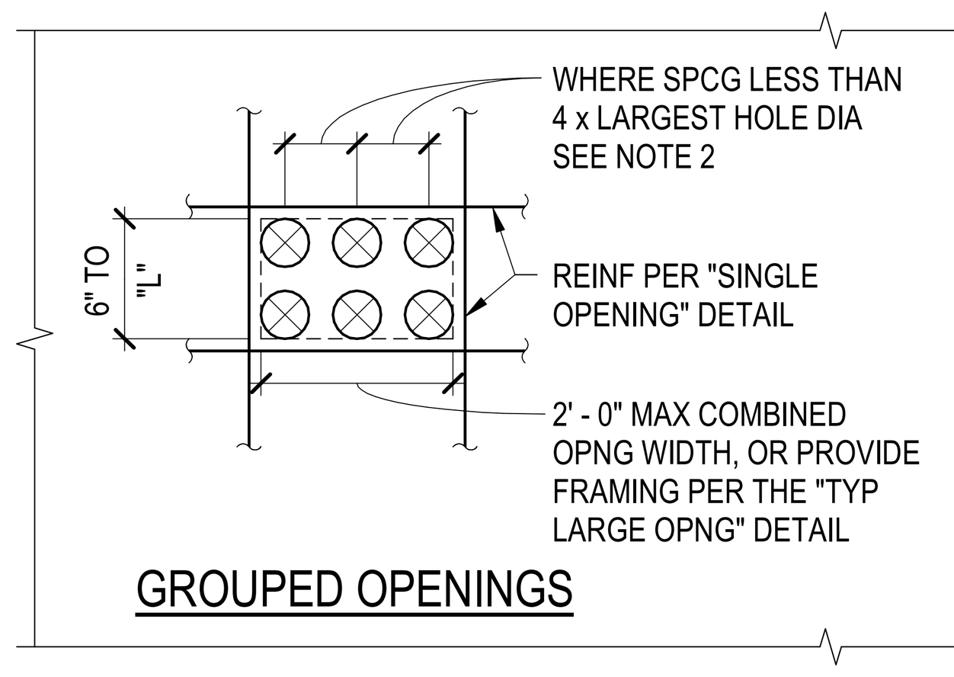
S4.14

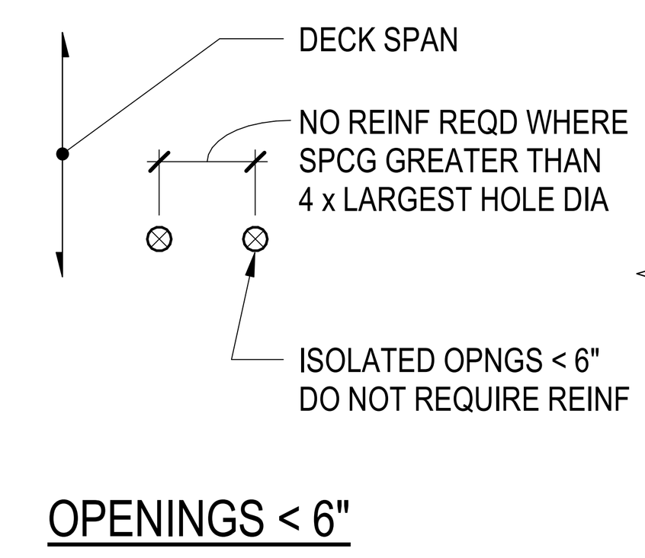


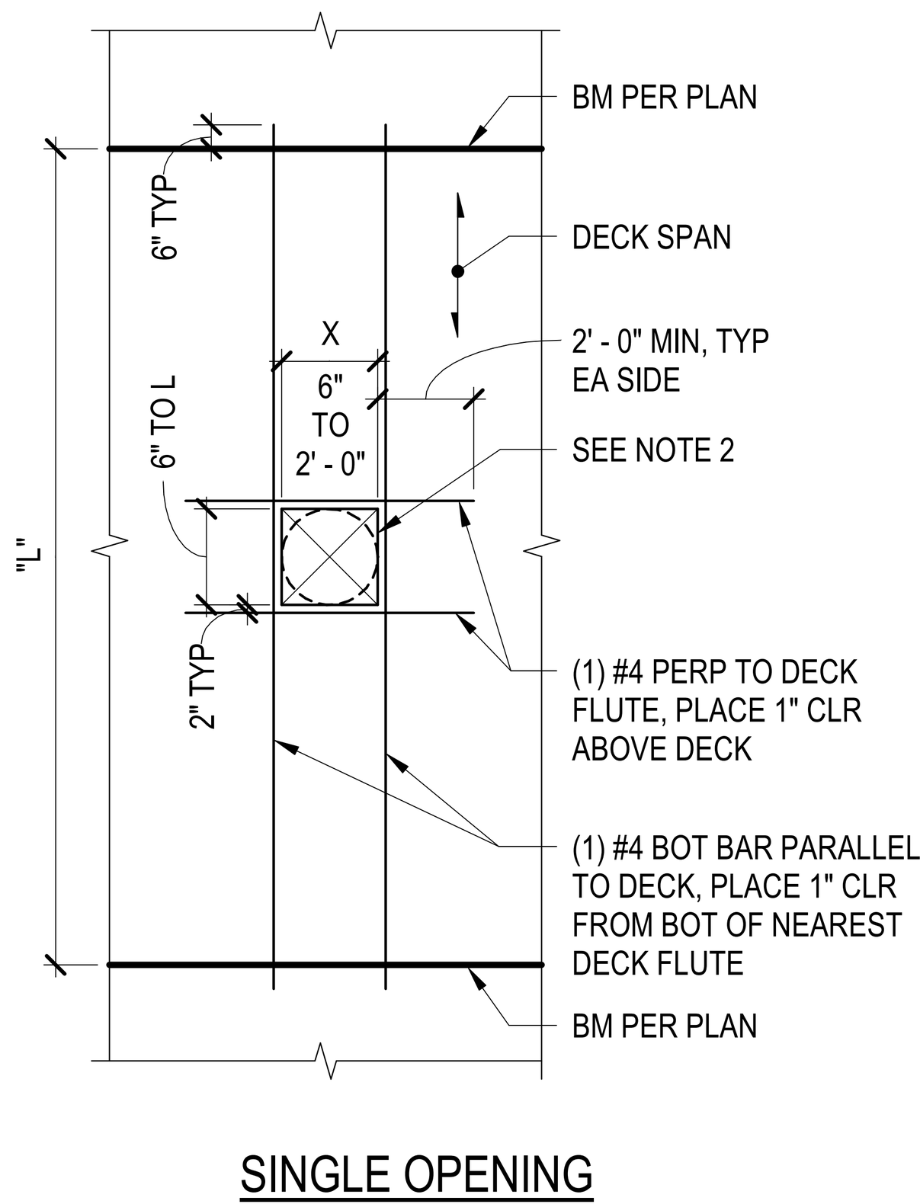
NOTES:

1. SEE "TYPICAL DECK EDGE CONDITIONS" DETAIL FOR INFORMATION NOT SHOWN.

1 TYPICAL CURTAIN WALL CONNECTION



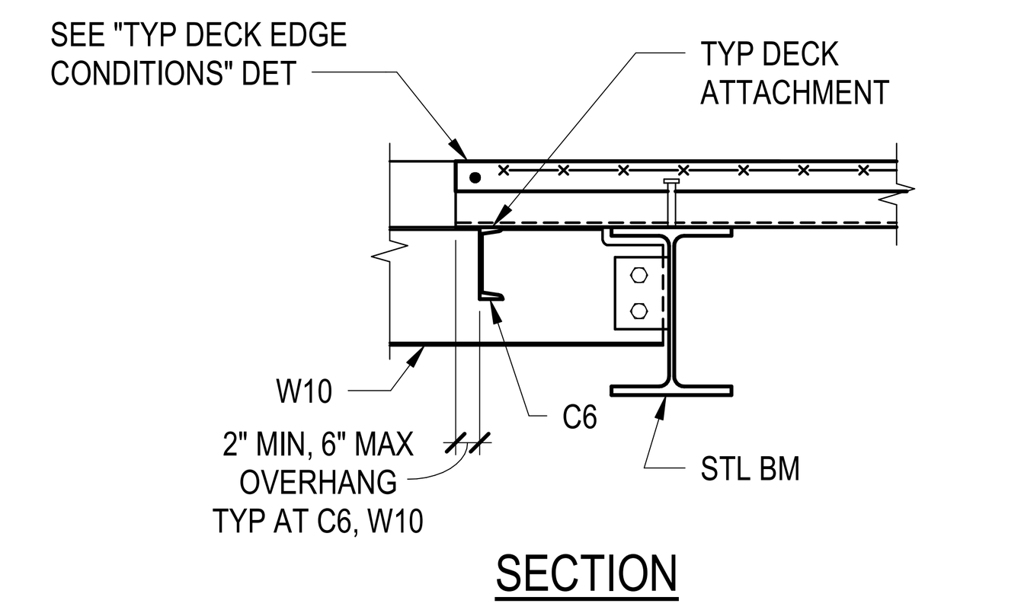




NOTES:

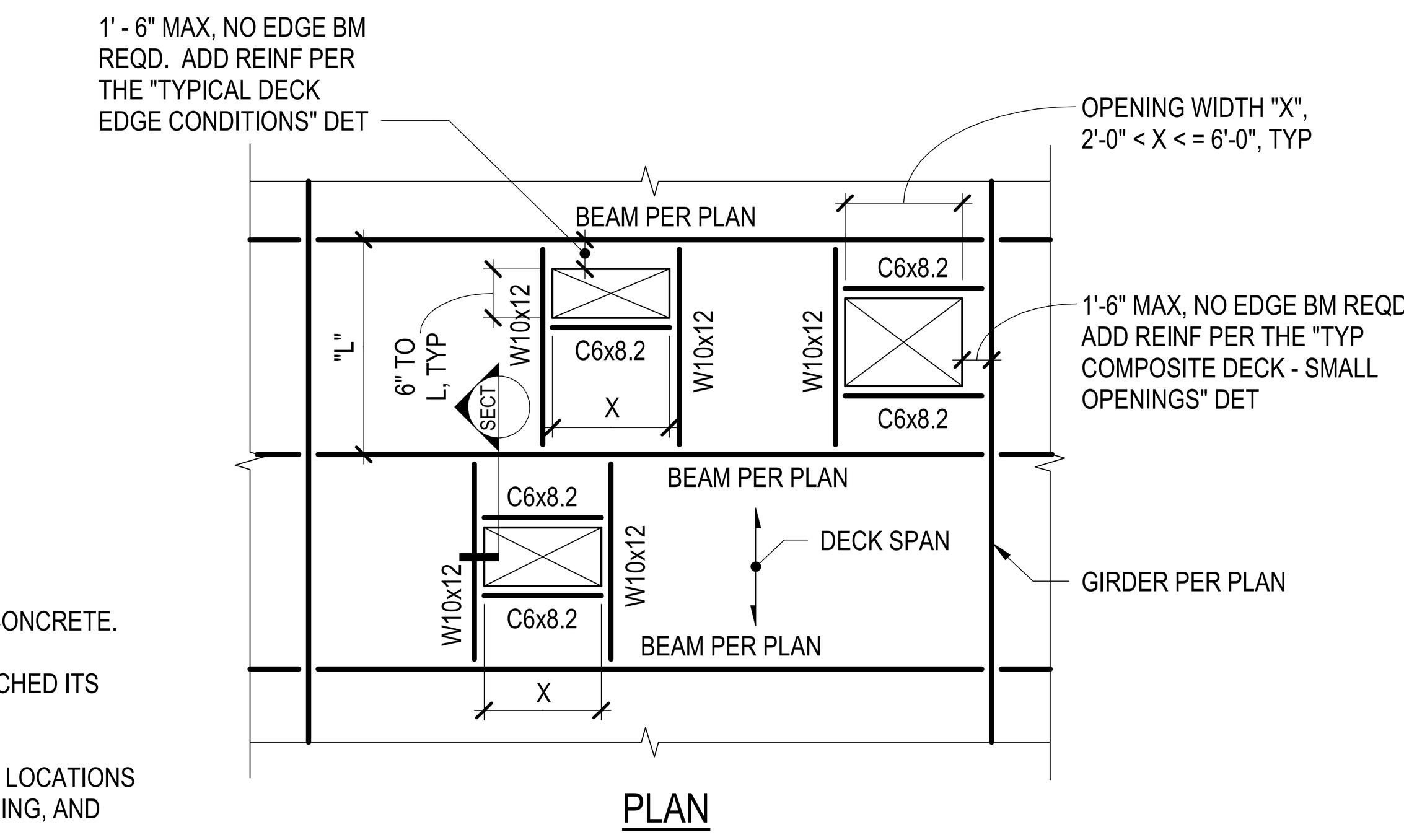
1. BLOCK OUT OPENING BEFORE PLACING CONCRETE.
2. REMOVE BLOCKOUT AND CUT DECK AFTER CONCRETE HAS REACHED ITS DESIGN STRENGTH.
3. SMALL OPENINGS WHERE NOTED REQUIRE A MINIMUM CENTER-TO-CENTER SPACING FROM ADJACENT SMALL OPENINGS OF FOUR TIMES THE MAXIMUM OPENING DIMENSION. IF THIS SPACING REQUIREMENT CANNOT BE ACHIEVED, THE GROUP SHALL BE REINFORCED AS IF ONE COMBINED OPENING OR PENETRATION.
4. THE CONTRACTOR SHALL COORDINATE ALL OPENING SIZES AND LOCATIONS WITH THE ARCHITECTURAL DRAWINGS AND MECH, ELEC, PLUMBING, AND OTHER TRADES.
5. WHERE OPENING WIDTH "X" IS GREATER THAN 2'-0", REFER TO THE "TYPICAL COMPOSITE FLOOR DECK - FRAMED OPENINGS" DETAIL.

2 TYPICAL COMPOSITE DECK - SMALL OPENINGS (X ≤ 2'-0")

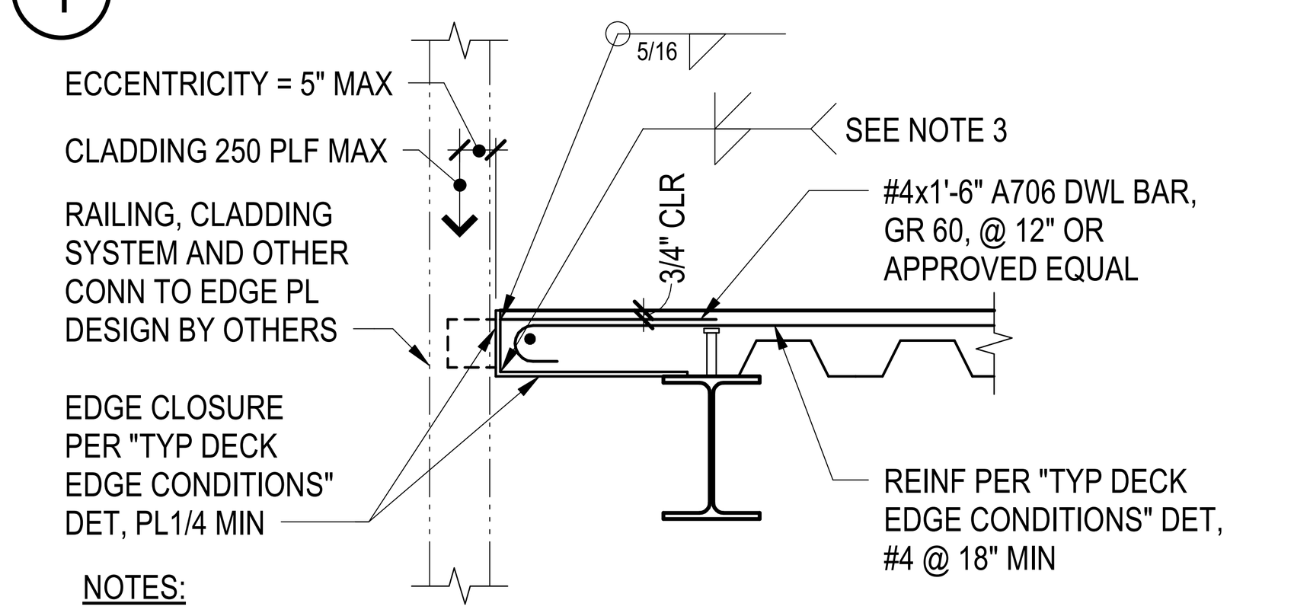


NOTES:

1. BLOCK OUT OPENING AND INSTALL FRAMING BEFORE PLACING CONCRETE.
2. REMOVE BLOCKOUT AND CUT DECK AFTER CONCRETE HAS REACHED ITS DESIGN STRENGTH.
3. THE CONTRACTOR SHALL COORDINATE ALL OPENING SIZES AND LOCATIONS WITH THE ARCHITECTURAL DRAWINGS AND MECH, ELEC, PLUMBING, AND OTHER TRADES.
4. WHERE OPENING WIDTH "X" IS 2'-0" OR LESS, REFER TO THE "TYPICAL COMPOSITE FLOOR DECK - SMALL OPENING" DETAIL.

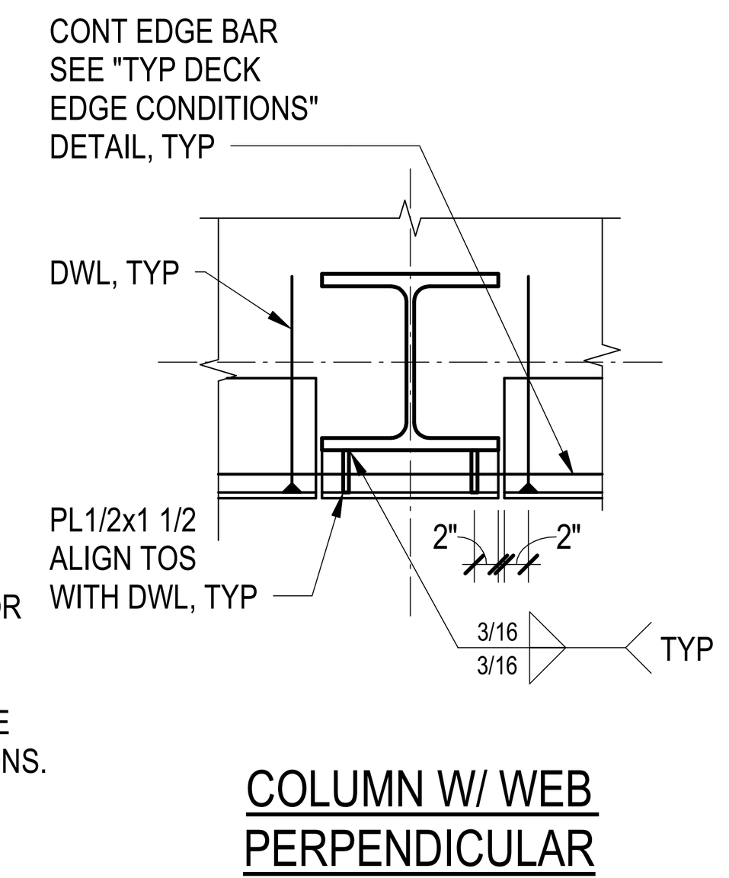


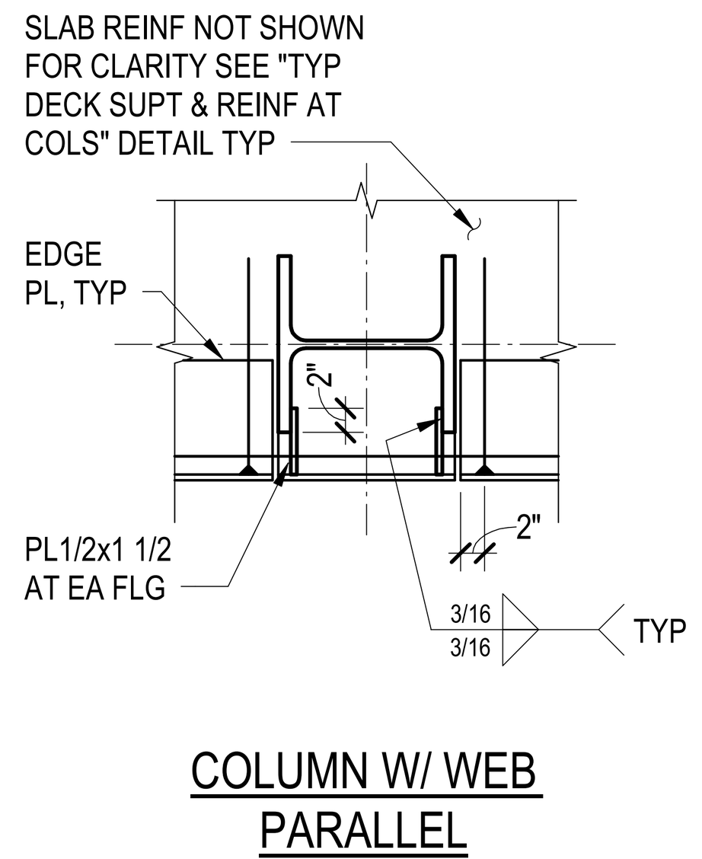
4 TYPICAL COMPOSITE DECK - FRAMED OPENINGS (2'-0" < X ≤ 6'-0")



NOTES:

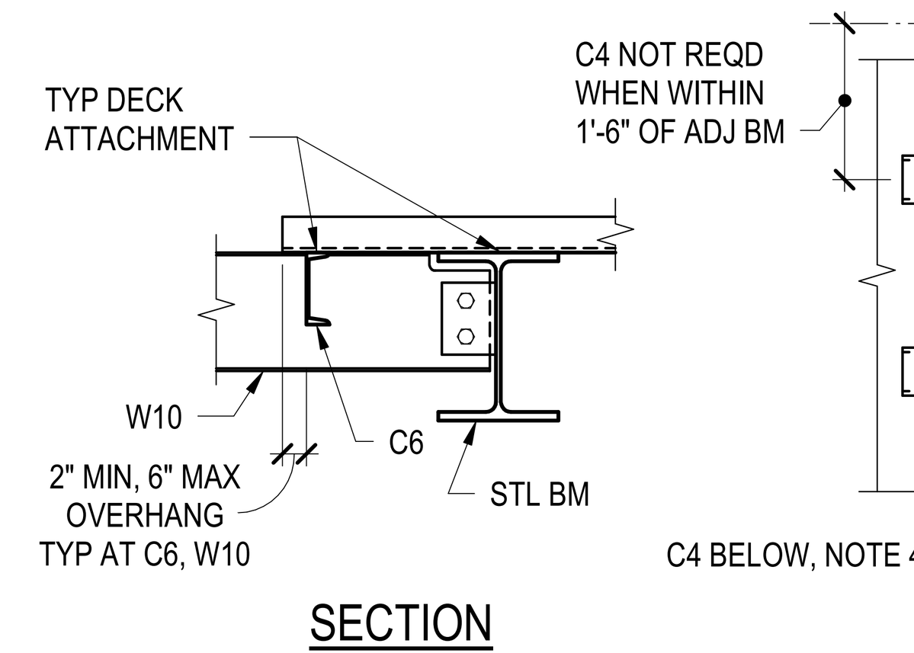
1. SEE "TYPICAL DECK EDGE CONDITIONS" DETAIL FOR INFORMATION NOT SHOWN.
2. PROVIDE BENT PLATE AT EXTERIOR WHEREVER REQUIRED TO SUPPORT EXTERIOR CLADDING.
3. AT CONTRACTOR'S OPTION, FABRICATE EDGE PLATE FROM TWO PIECES OF PLATE AND WELD. GRIND SMOOTH TO MATCH BENT PLATE AT EXPOSED PLATE CONDITIONS.
4. EXTERIOR SLAB EDGE SHALL NOT VERTICALLY SUPPORT PRECAST.
5. CLADDING LOAD MAGNITUDES AND LOCATIONS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW PRIOR TO FABRICATION. BASED ON REVIEW, ADJUSTMENT TO THIS DETAIL MAY BE REQUIRED.
6. AT RAILING ATTACHMENT, PROVIDE 1/2" BENT PLATE. REDUCE DOWEL AND SLAB EDGE REINFORCING SPACING TO 6".

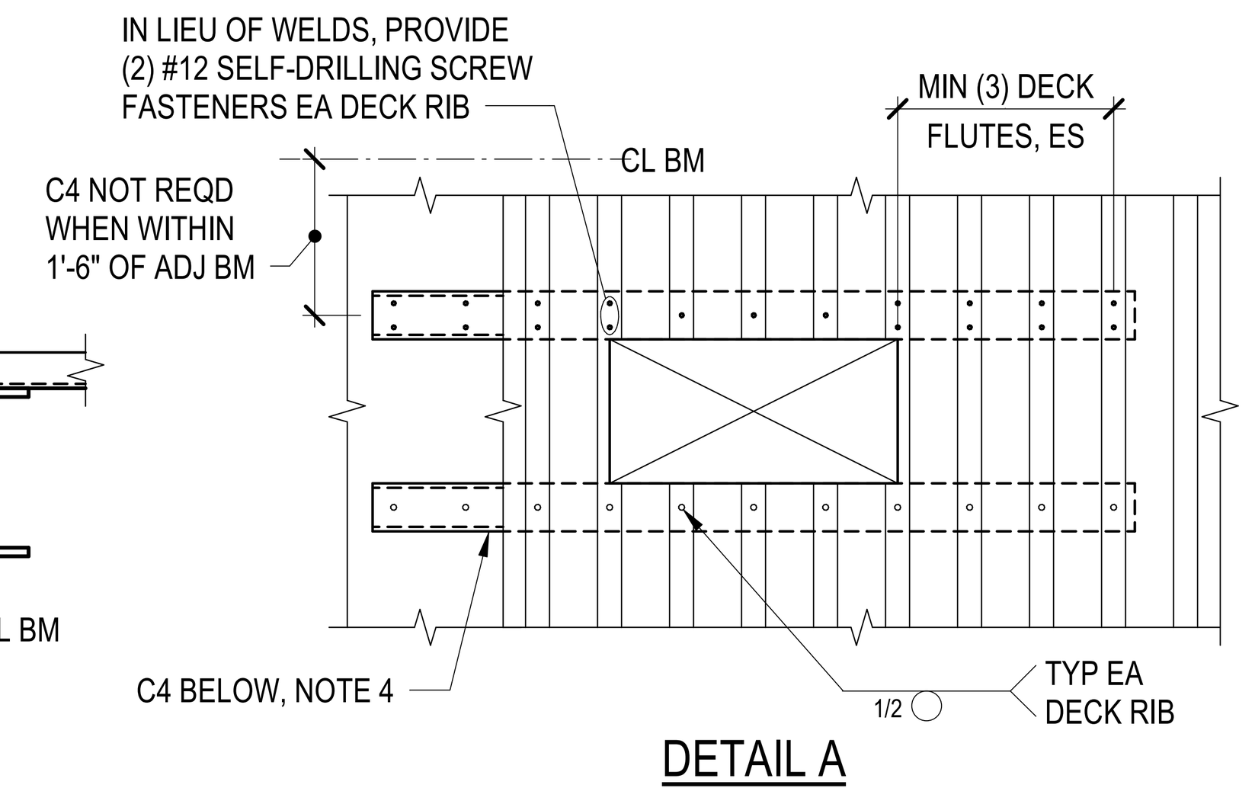


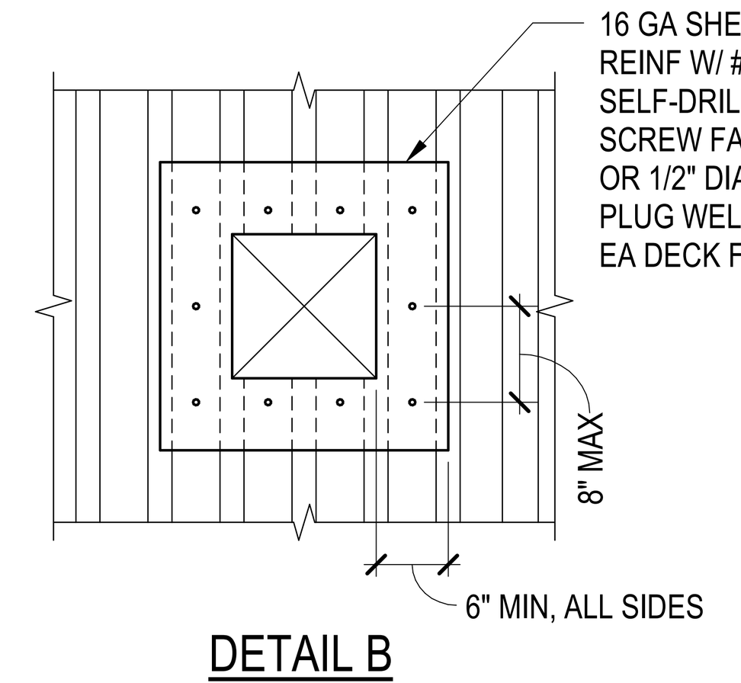


TYPICAL EDGE CONDITION AT COLUMN

6 TYPICAL DECK EDGE AT EXTERIOR CLADDING OR RAILING

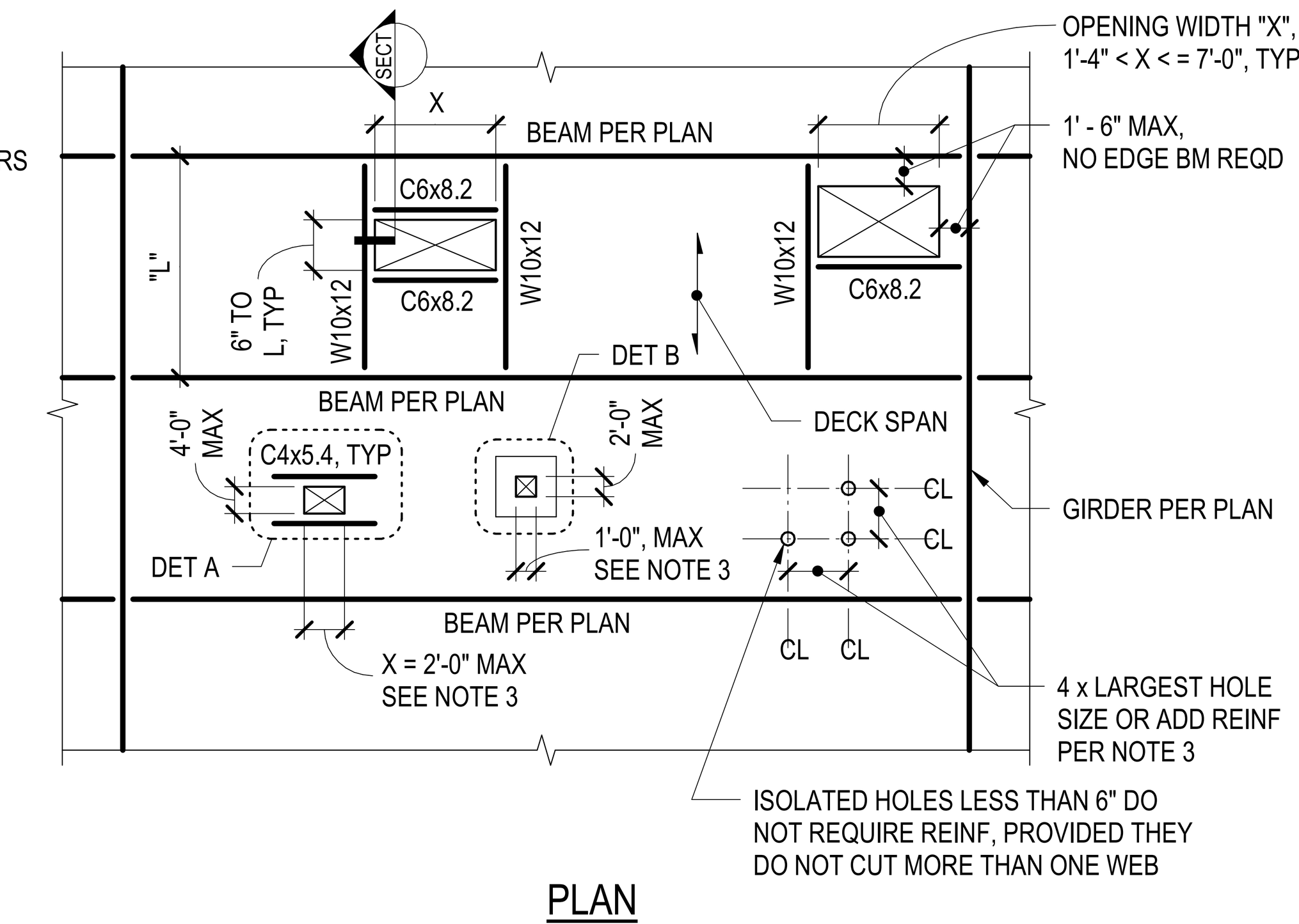




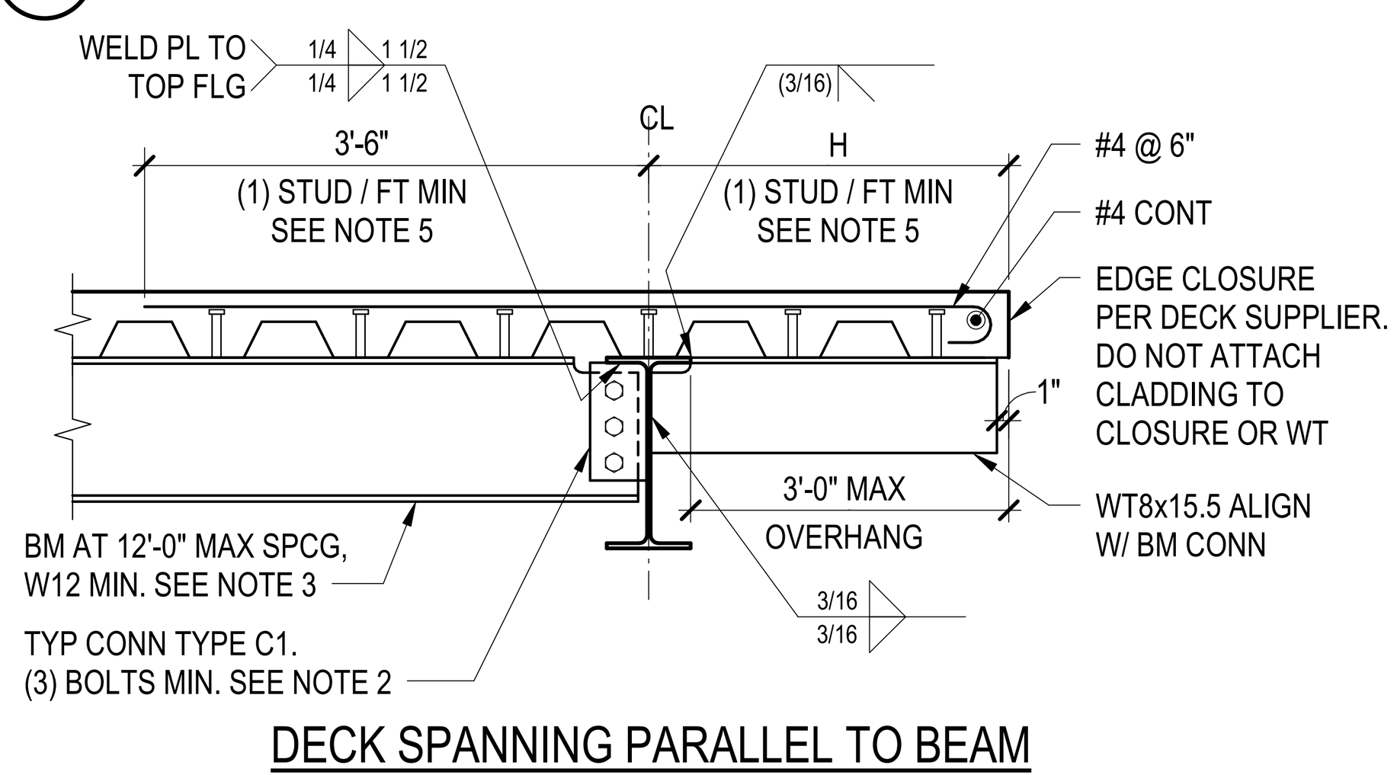


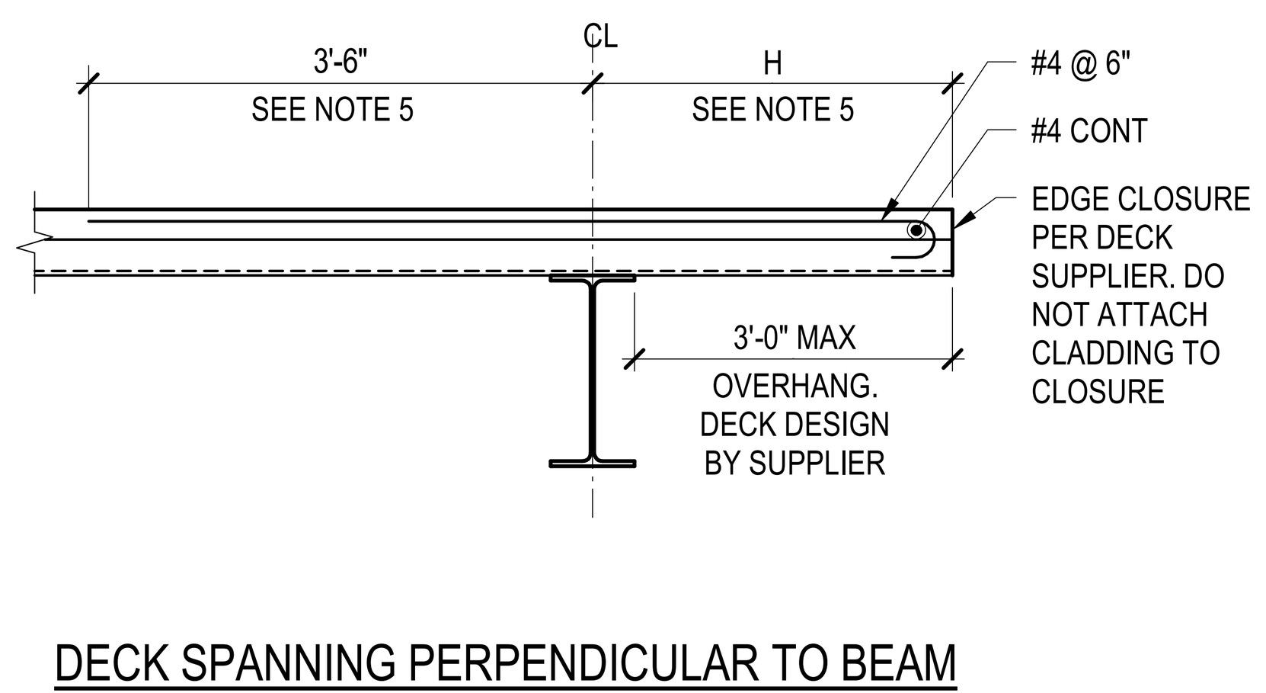
NOTES:

1. INSTALL INFILL FRAMING OR DECK REINFORCEMENT BEFORE CUTTING HOLES OR OPENINGS.
2. THE CONTRACTOR SHALL COORDINATE ALL OPENING SIZES AND LOCATIONS WITH THE ARCHITECTURAL DRAWINGS AND MECH, ELEC, PLUMBING, AND OTHER TRADES.
3. SMALL OPENINGS WHERE NOTED REQUIRE A MINIMUM ON-CENTER SPACING FROM ADJACENT OPENINGS OF FOUR TIMES THE MAXIMUM OPENING DIMENSION. WHERE THE REQUIRED OPENING LAYOUT CANNOT CONFORM TO THESE REQUIREMENTS, PROVIDE DECK REINFORCEMENT OR INFILL FRAMING AS IF THE GROUP WAS ONE COMBINED LARGE OPENING.
4. WITH ARCHITECT APPROVAL, THE CONTRACTOR MAY OPT TO INSTALL CHANNELS ON TOP OF DECK WITH EQUIVALENT ARC PLUG WELDS OR SCREW FASTENERS.



8 TYPICAL ROOF DECK OPENINGS (X ≤ 7'-0")





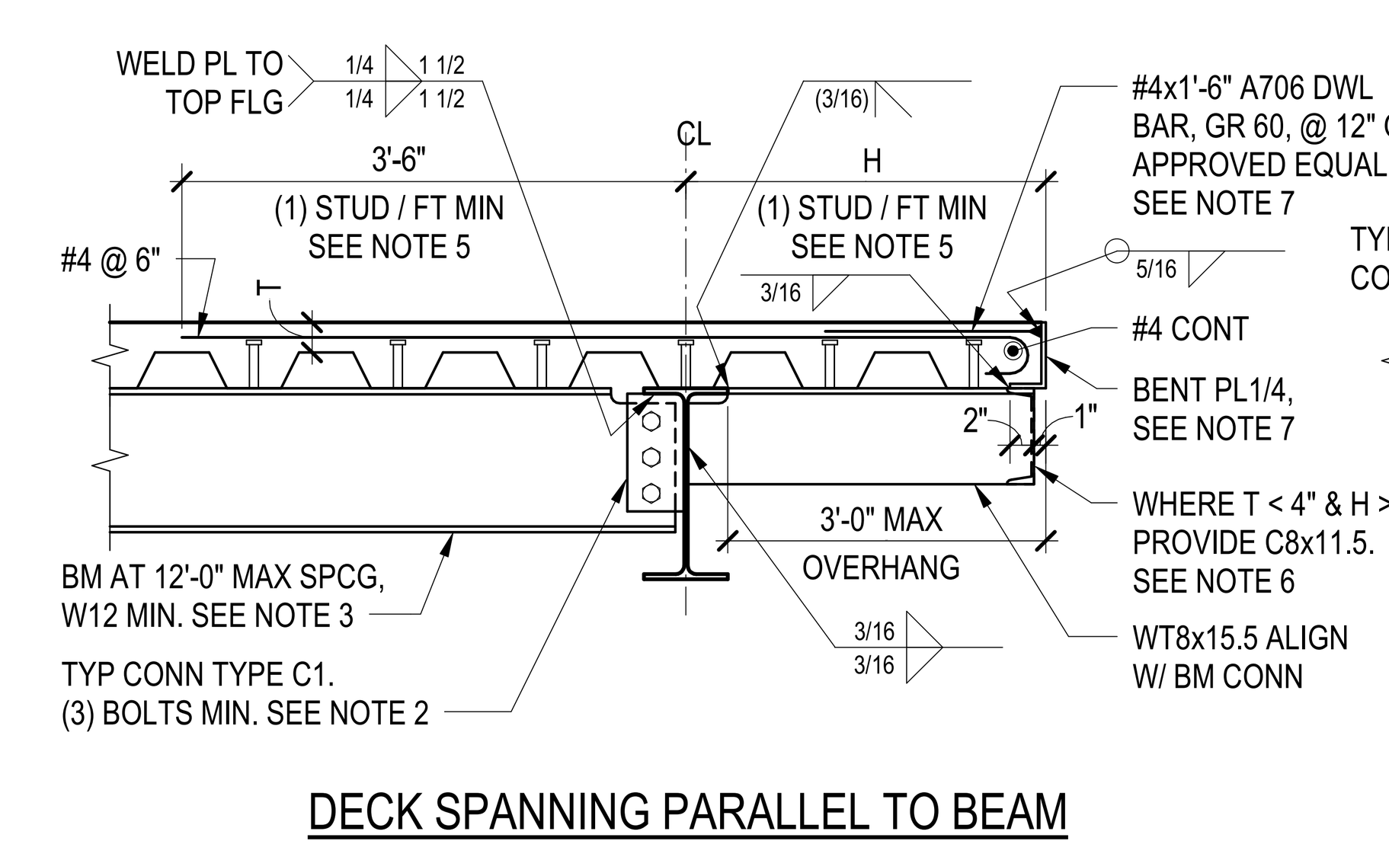
NOTES:

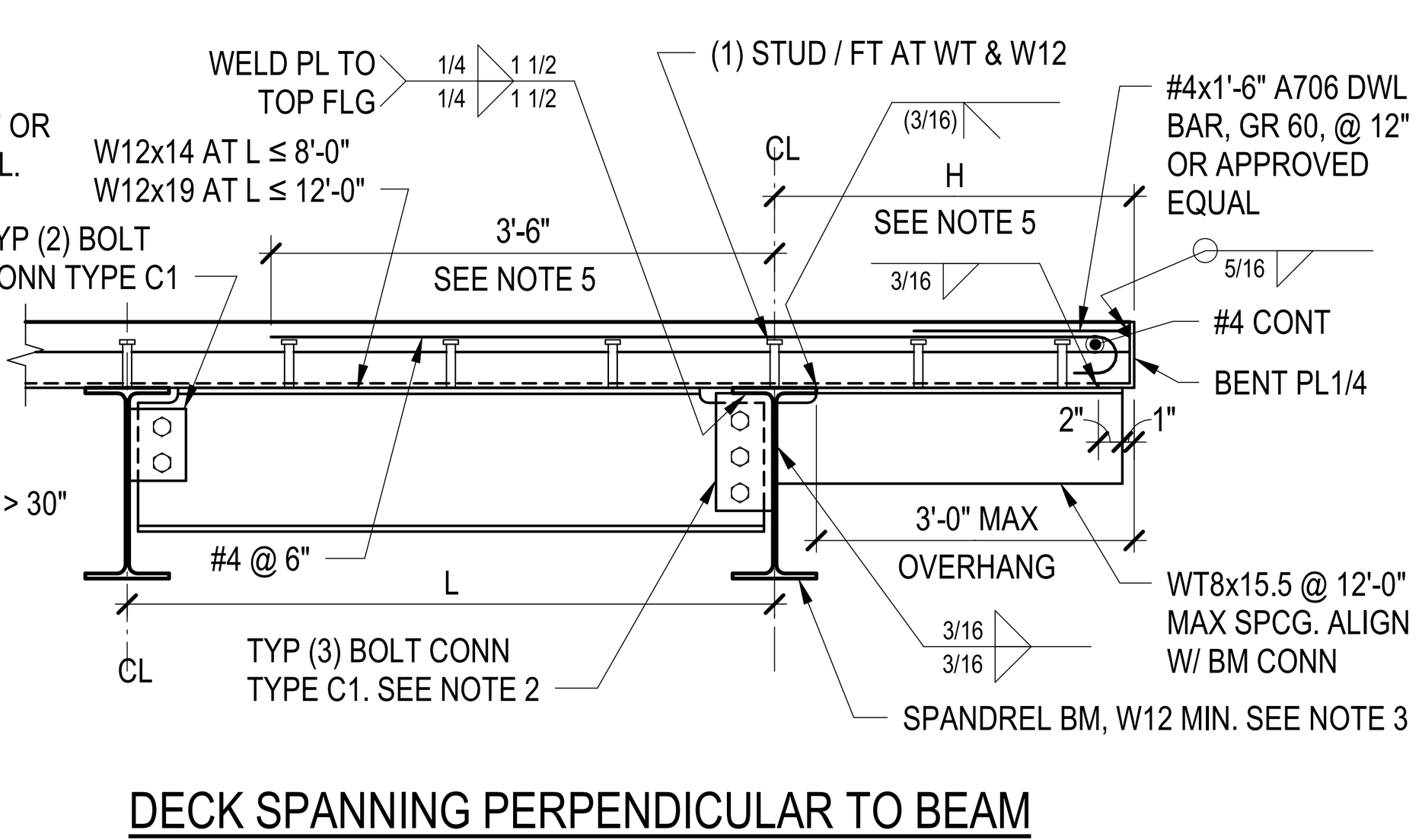
1. SEE "TYPICAL DECK EDGE CONDITIONS" DETAIL FOR INFORMATION NOT SHOWN.
2. SEE "TYPICAL TYPE C1 - SINGLE PLATE SHEAR CONNECTION" DETAIL FOR BOLTS, PLATE AND WELDS. HOLES SHALL BE STANDARD ROUND HOLES (STD).
3. IF BACKSPAN OR SPANDREL BEAM ARE LESS THAN W12, NOTIFY ENGINEER OF RECORD FOR REVIEW.
4. AT COLUMN WELD WT OUTRIGGER TO COLUMN WITH ALL-AROUND 3/16" FILLET WELD.
5. WHERE CLADDING IS SUPPORTED AT EDGE, NO SLAB OPENINGS LARGER THAN 1'-0" WIDE AT OVERHANG AND FIRST 3'-6" OF BACK-SPAN. IF NOT MET, NOTIFY ENGINEER OF RECORD FOR REVIEW AND APPROVAL.

11 TYPICAL EXTENDED DECK EDGE (1'-6" < OVERHANG ≤ 3'-0")

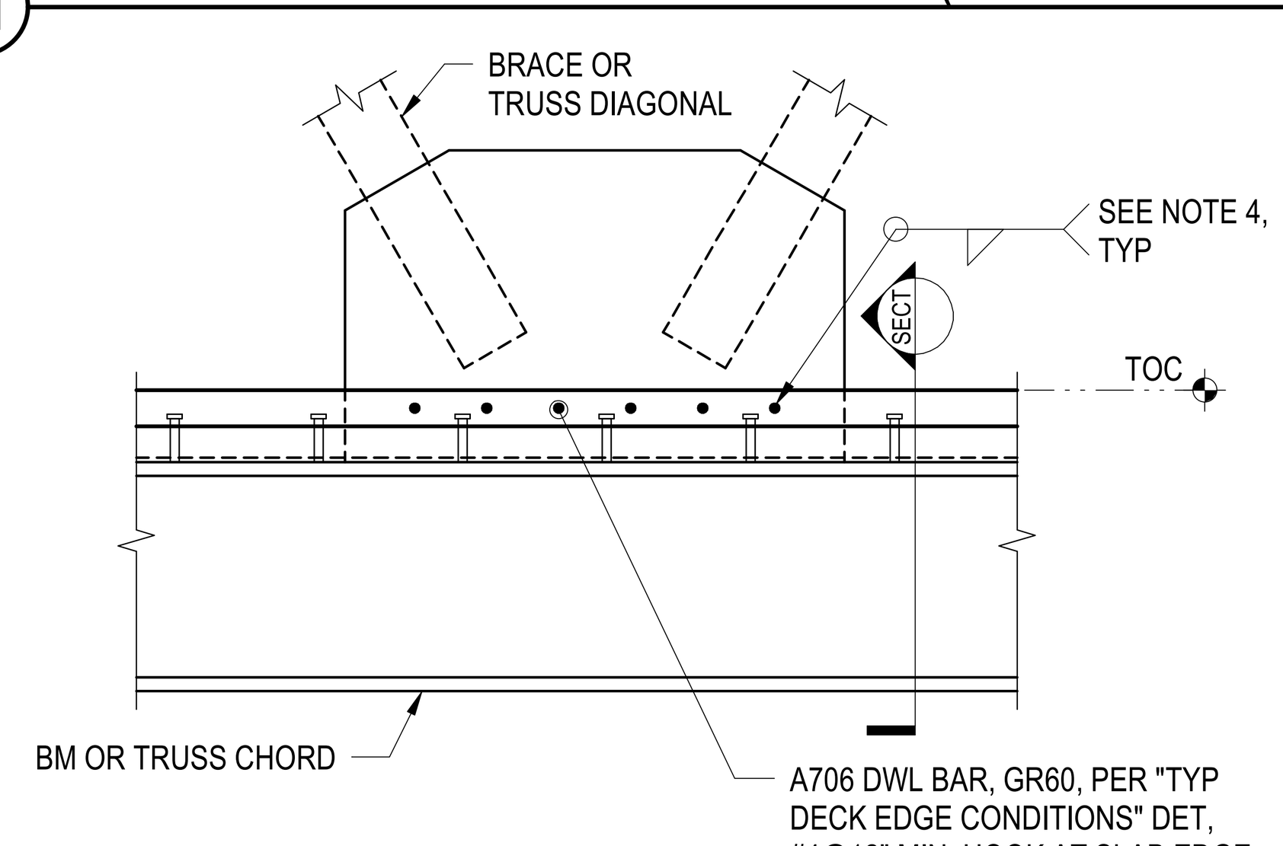
NOTES:

1. SEE "TYPICAL DECK EDGE AT EXTERIOR CLADDING OR RAILING" DETAIL FOR INFORMATION NOT SHOWN.
2. SEE "TYPICAL TYPE C1 - SINGLE PLATE SHEAR CONNECTION" DETAIL FOR BOLTS, PLATE AND WELDS. HOLES SHALL BE STANDARD ROUND HOLES (STD).
3. IF BACKSPAN OR SPANDREL BEAM ARE LESS THAN W12, NOTIFY ENGINEER OF RECORD FOR REVIEW.
4. AT COLUMN WELD WT OUTRIGGER TO COLUMN WITH ALL-AROUND 3/16" FILLET WELD.
5. WHERE CLADDING IS SUPPORTED AT EDGE, NO SLAB OPENINGS LARGER THAN 1'-0" WIDE AT OVERHANG AND FIRST 3'-6" OF BACK-SPAN. IF NOT MET, NOTIFY ENGINEER OF RECORD FOR REVIEW AND APPROVAL.
6. WELD BENT PLATE TO CHANNEL WITH FILLET WELD 3/16" x 2" @ 12". PROVIDE "TYPICAL TYPE C11 - SHALLOW BEAM CONN" AT ENDS.
7. AT RAILING ATTACHMENT, PROVIDE 1/2" BENT PLATE AND REDUCE DOWEL SPACING TO 6".



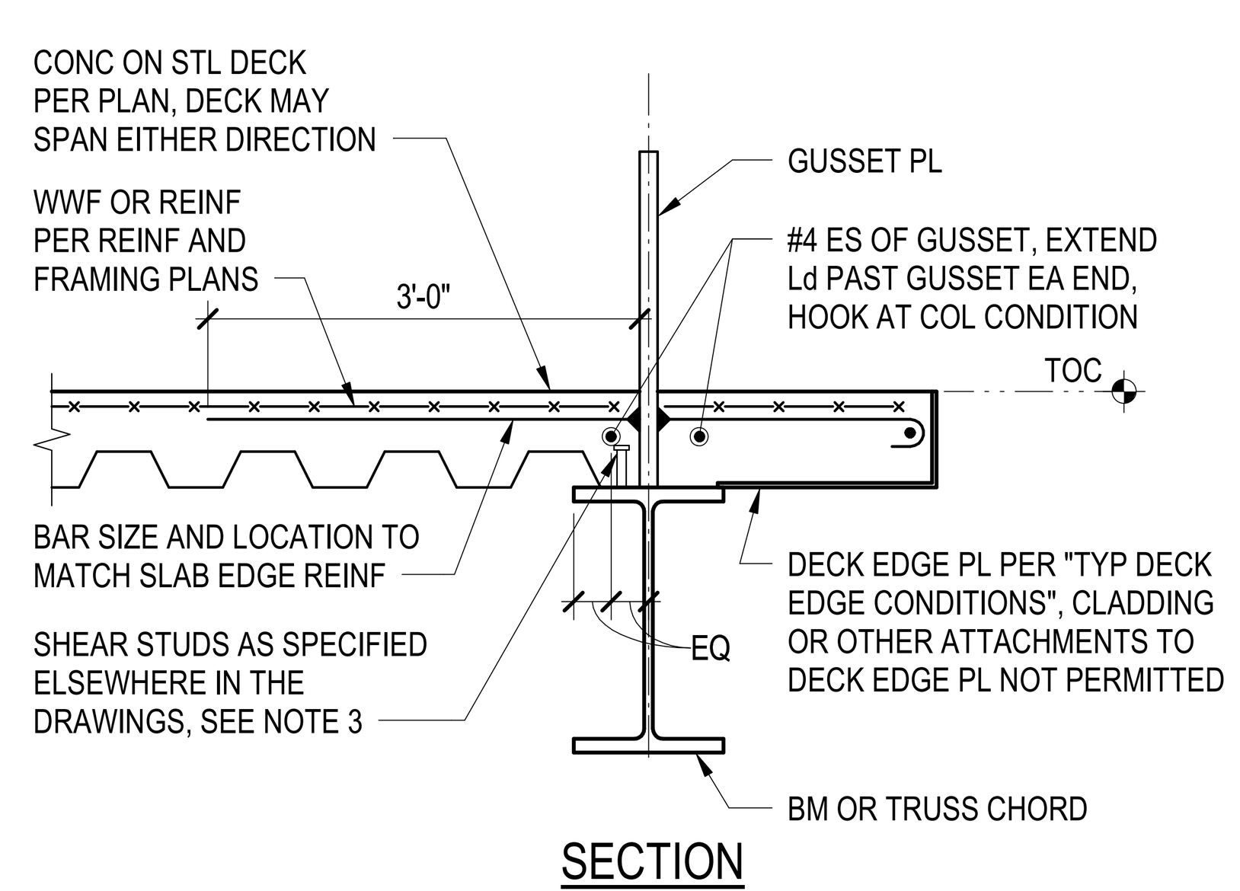


13 TYPICAL EXTENDED DECK EDGE AT EXTERIOR CLADDING OR RAILING (1'-6" < OVERHANG ≤ 3'-0")



NOTES:

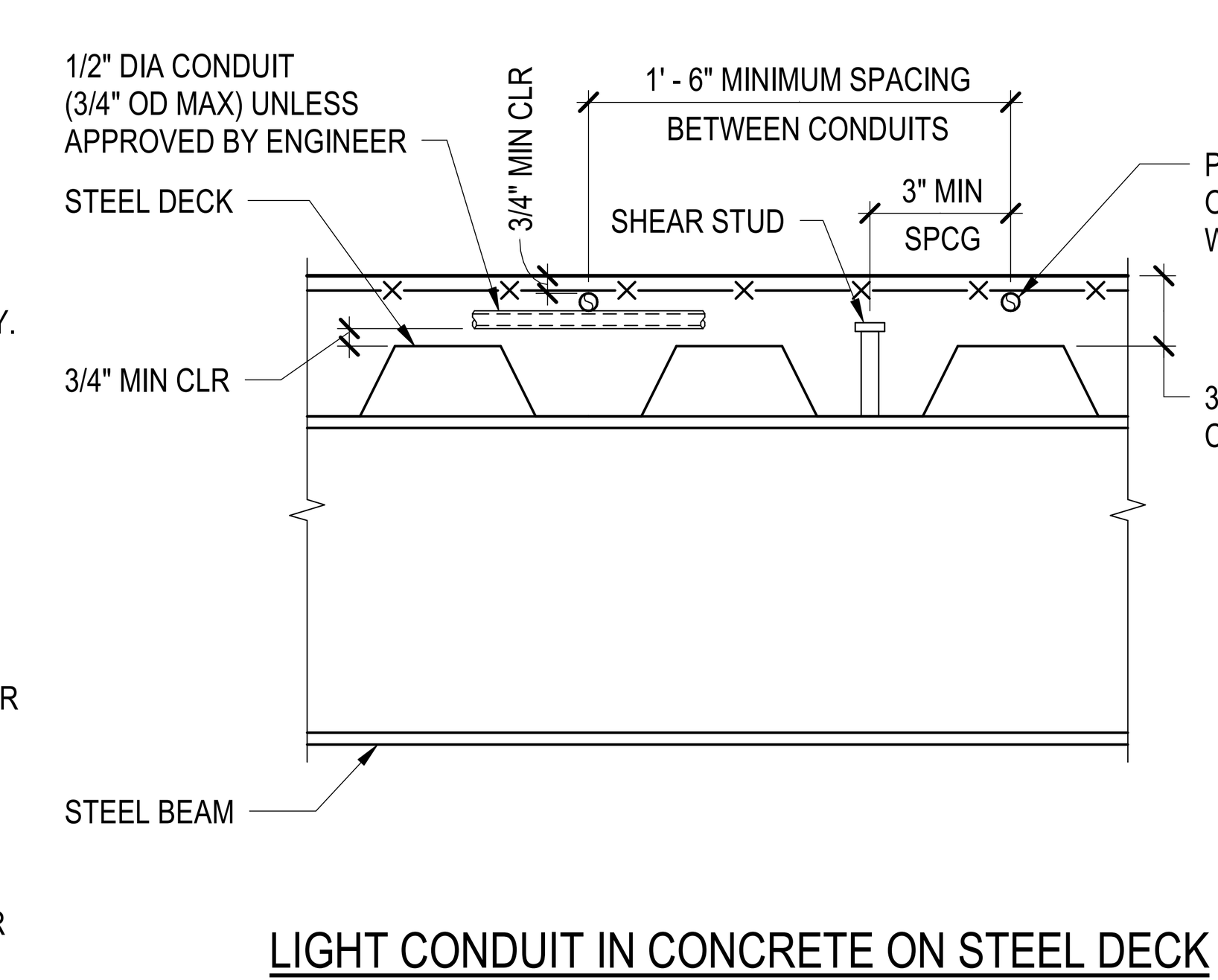
1. SIMILAR AT GUSSET TO COLUMN CONNECTIONS.
2. SEE "TYPICAL DECK EDGE CONDITIONS" DETAIL FOR ADDITIONAL INFORMATION.
3. AT GUSSET, LOCATE STUDS ON OPPOSITE SIDE OF GUSSET PLATE FROM DECK EDGE. WHERE WELDING ACCESS IS PRECLUDED BY CONNECTION GEOMETRY, STUDS SHALL BE UNIFORMLY DISTRIBUTED ON EACH SIDE OF GUSSET PLATE.
4. WELD SIZE SHALL BE 5/16" FOR #4 BARS AND 7/16" FOR #5 BARS.

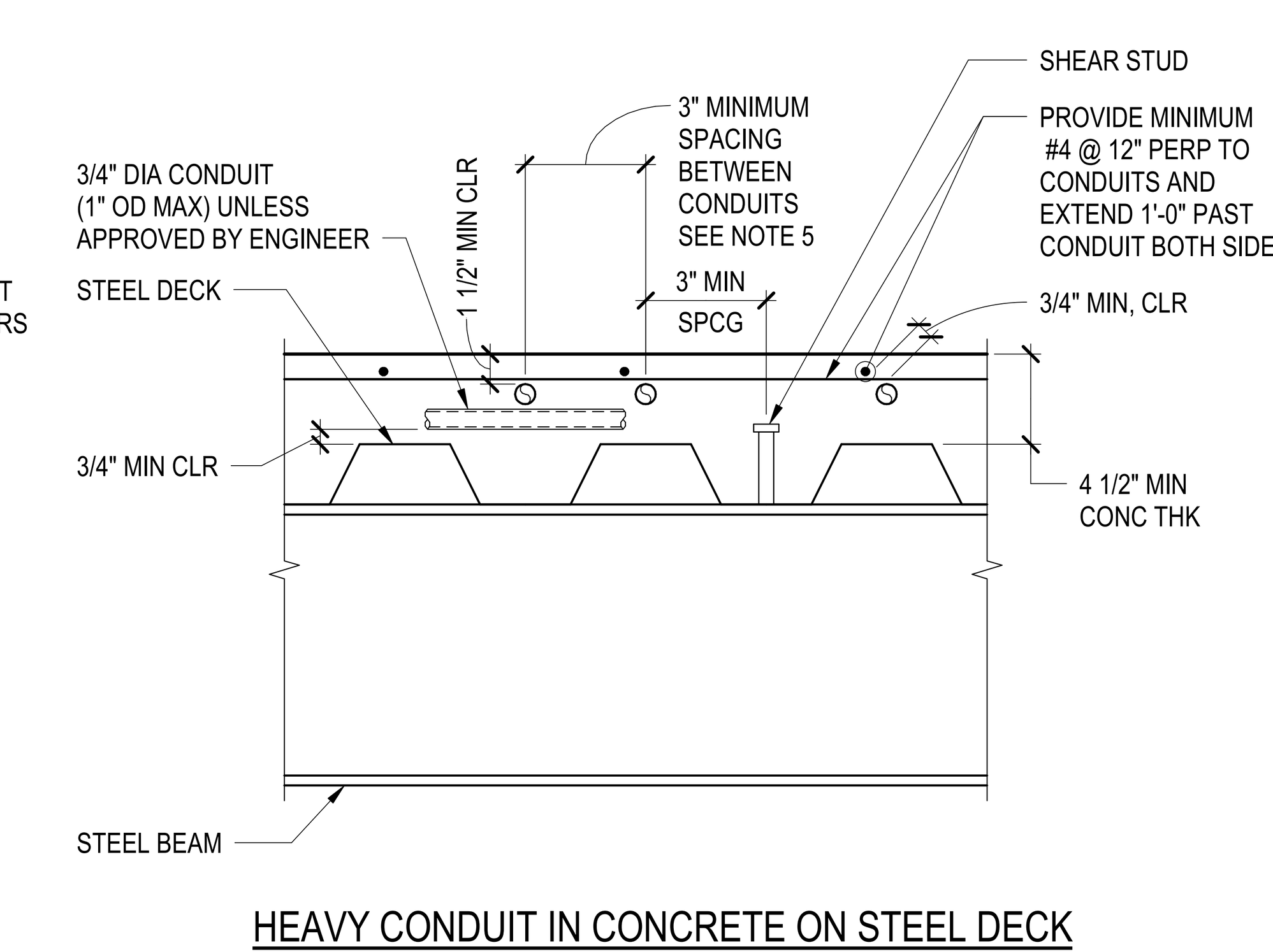


16 TYPICAL SLAB EDGE AT GUSSET PLATE

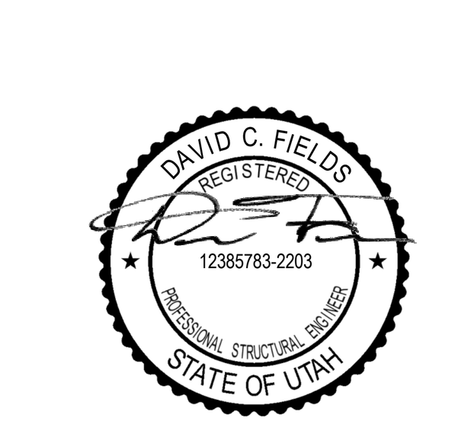
NOTES:

1. REINFORCEMENT TAKES PRECEDENCE OVER CONDUIT. DO NOT RAISE, LOWER OR MOVE REINFORCEMENT TO ACCOMMODATE CONDUIT.
2. LOCATE CONDUITS IN CONCRETE THICKNESS ABOVE THE DECK FLUTES ONLY. CHAIR CONDUIT OFF DECK TO PROVIDE MINIMUM SPECIFIED CLEAR COVER.
3. ROUTE CONDUIT UNDER THE DECK OR IN OTHER LOCATIONS IF SLAB THICKNESS OR SPACING REQUIREMENTS CANNOT BE MET.
4. CONDUIT LAYOUT SHALL BE COORDINATED BY THE CONTRACTOR WITH MEP, ARCH AND OTHER TRADES. CONTRACTOR TO SUBMIT CONDUIT LAYOUT TO ENGINEER FOR REVIEW AND APPROVAL.
5. THE MAXIMUM NUMBER OF CONDUITS IN A GROUP IS (10). PROVIDE 3'-0" CLEAR MINIMUM BETWEEN GROUPS OF CONDUITS.
6. DENSE CLUSTERS OF CONDUITS, WHERE MINIMUM SPACING CANNOT BE MET, TO BE TREATED AND REINFORCED AS OPENINGS.
7. PLACE TRANSVERSE CONDUITS RUNNING OVER COMPOSITE BEAMS IN OUTER THIRD OF BEAM SPANS.
8. MINIMUM ANGLE BETWEEN CONDUITS AT CROSSOVERS SHALL BE 45 DEGREES.





18 TYPICAL CONDUIT IN SLAB ON STEEL DECK



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project manager
drawn by
checked by
job no. 20052
date 11/18/2022

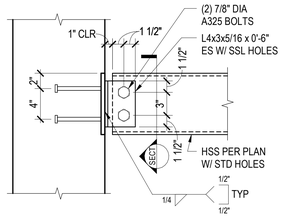
revisions:

no.	date		by
1	11/18/2022	IFC	

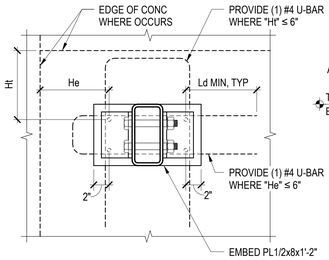
CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL STEEL DECK DETAILS

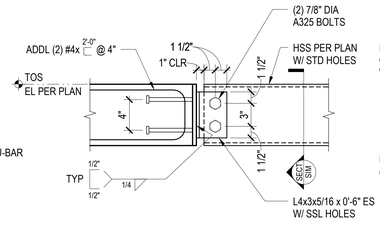
S4.15



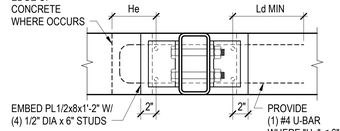
AT CONCRETE WALL



SECTION AT
CONCRETE WALL

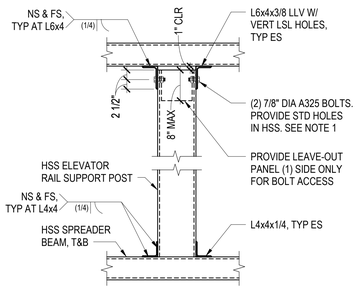


AT CONCRETE SLAB

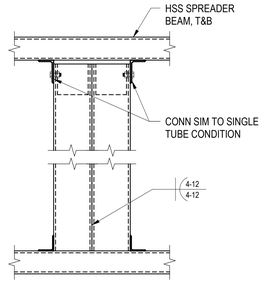


SECTION AT
CONCRETE SLAB

3 TYPICAL ELEVATOR SPREADER BEAM CONNECTION



SINGLE TUBE

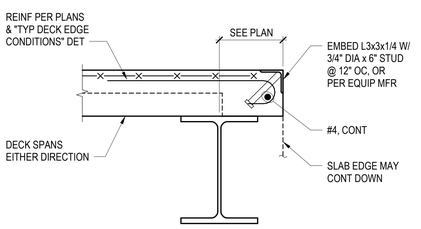


DOUBLE TUBE

NOTES:

1. WHERE NOTE APPLIES, BOLT TO BE CENTERED IN SLOTTED HOLE IN ANGLE. NUTS TO BE FINGER TIGHT. DAMAGE THREADS OF BOLT TO PREVENT BACK-OFF OF NUT.

9 TYP ELEVATOR AND DOCK LEVELER SILL



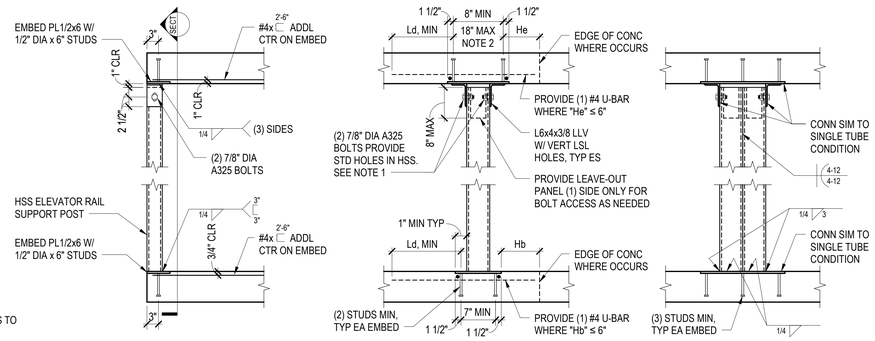
10 ELEVATOR RAIL SUPPORT POST SCHEDULE

ELEVATOR RAIL SUPPORT POST SCHEDULE	
MARK	**POST SIZE**
R1	HSS8x4x1/4
R2	HSS12x4x5/16
R3	HSS14x4x1/2
R4	HSS16x4x5/16
R5	HSS16x4x1/2

NOTES:

1. SEE TYPICAL ELEVATOR RAIL SUPPORT POST DETAILS FOR MORE INFORMATION.

7 TYPICAL ELEVATOR RAIL SUPPORT POST TO SPREADER BEAM



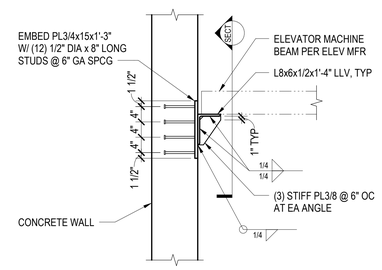
SINGLE TUBE

DOUBLE TUBE

SECTION

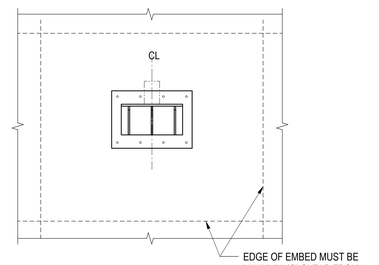
NOTES:

1. WHERE NOTE APPLIES, BOLT TO BE CENTERED IN SLOTTED HOLE IN ANGLE. NUTS TO BE FINGER TIGHT. DAMAGE THREADS OF BOLT TO PREVENT BACK-OFF OF NUT.
2. CONTRACTOR TO COORDINATE STUD SPACING WHERE ELEVATOR RAIL SUPPORT POSTS STACK ON ADJACENT LEVELS TO AVOID CONFLICTING STUD LOCATIONS. PROVIDE MINIMUM 2" OC SPACING BETWEEN STUDS.



NOTE:

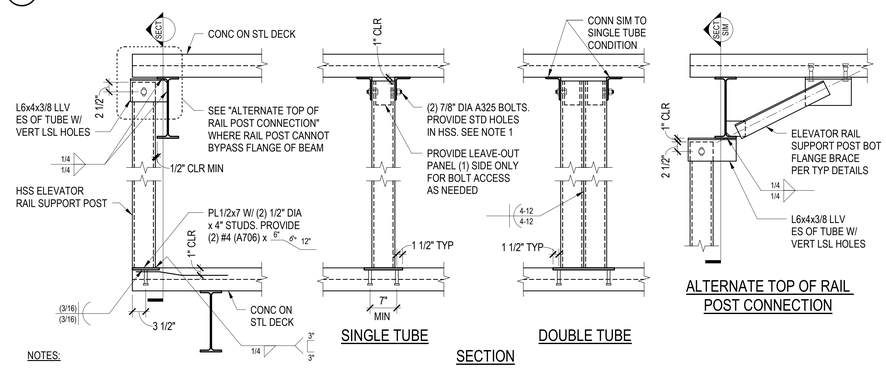
1. COORDINATE LOCATION OF EMBEDS AND ANGLES WITH ELEVATOR MANUFACTURER.
2. CONNECTION ABOVE HAS BEEN DESIGNED FOR MAXIMUM ULTIMATE REACTION OF 40 KIPS.



SECTION

11 TYPICAL ELEVATOR RAIL SUPPORT POST TO CONCRETE SLAB

14 TYPICAL ELEVATOR MACHINE BEAM LEDGER



ALTERNATE TOP OF RAIL
POST CONNECTION

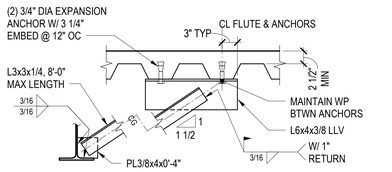
SINGLE TUBE

DOUBLE TUBE

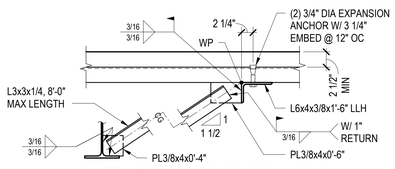
SECTION

NOTES:

1. WHERE NOTE APPLIES, BOLT TO BE CENTERED IN SLOTTED HOLE IN ANGLE.
NUTS TO BE FINGER TIGHT. DAMAGE THREADS OF BOLT TO PREVENT BACK-OFF OF NUT.



BRACE PERPENDICULAR TO DECK



BRACE PARALLEL TO DECK

18 ELEVATOR RAIL SUPPORT POST BOTTOM FLANGE BRACING

19 TYPICAL ELEVATOR RAIL SUPPORT POST TO STEEL FRAMING

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12385783-2203
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date 11/18/2022

revisions:

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CONSTRUCTION DOCUMENTS

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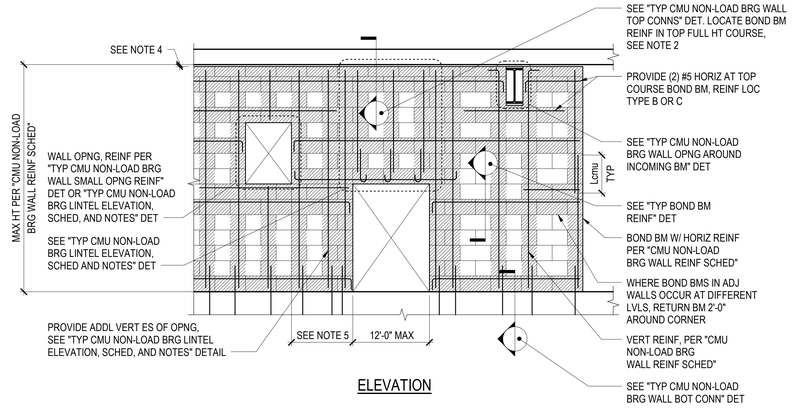
TYPICAL STEEL DETAILS

S4.16



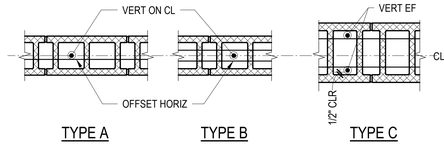
ELEVATION

CMU NON-LOAD BEARING WALL REINFORCEMENT SCHEDULE

NOMINAL WALL THICKNESS (IN)	HORIZONTAL REINF		VERTICAL REINF		BAR LOCATION TYPE	MAXIMUM WALL HEIGHT (FT)	REMARKS
	BOND BEAM REINF	MAX SPCG (IN)	REINF	MAX SPCG (IN)			
8"	(1) #5	48	(1) #5	48	A	13'-0"	TYPE B BAR LOCATION AT TOP AND BOTTOM OF WALL
8"	(1) #5	48	(1) #5	32	A	15'-0"	TYPE B BAR LOCATION AT TOP AND BOTTOM OF WALL
8"	(1) #5	48	(1) #5	24	A	18'-0"	TYPE B BAR LOCATION AT TOP AND BOTTOM OF WALL
12"	(2) #5	48	(2) #5	48	C	17'-0"	
12"	(2) #5	48	(2) #5	24	C	22'-0"	

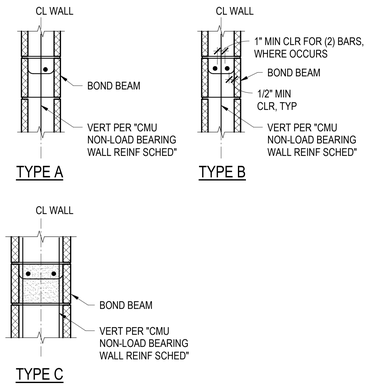
NOTES:

1. GROUT SOLID ONLY THOSE CELLS THAT CONTAIN REINFORCEMENT OR EMBEDDED ITEMS. PRIOR TO CONSTRUCTION, CONTRACTOR TO COORDINATE LOCATIONS WHERE POST INSTALLED CONNECTIONS TO WALLS WILL BE REQUIRED AND FULLY GROUT CELLS AS NEEDED FOR CONNECTIONS.
2. GROUT TOP COURSE SOLID. WHERE TOP COURSE IS NOT FULL BLOCK HEIGHT, GROUT COURSE BELOW SOLID AS WELL.
3. AT CONTRACTORS OPTION, IN PLACE OF WIRE JOINT REINFORCEMENT PROVIDE HORIZONTAL STEEL REINFORCEMENT IN A FULLY GROUTED BOND BEAM AT A MAXIMUM VERTICAL SPACING OF 96 INCHES. AT 8-INCH NOMINAL BLOCKS PROVIDE (1) #4 HORIZONTAL BAR TYPE A BAR LOCATION. AT 12-INCH NOMINAL BLOCKS PROVIDE (2) #4 HORIZONTAL BARS TYPE C BAR LOCATION.
4. PROVIDE 1 INCH CLEAR MINIMUM, 1 1/2-INCHES CLEAR MAXIMUM BETWEEN TOP OF WALL AND BOTTOM OF PLATE, DECK, OR FIREPROOFING ON BEAMS.
5. MINIMUM SPACING BETWEEN TWO DOOR OPENINGS AND SMALL OPENINGS REQUIRED BY ARCHITECTURAL AND MEP IS 5'-4". MINIMUM SPACING BETWEEN OPENINGS AND ENDS OF WALLS IS 2'-8". CONTRACTOR SHALL SUBMIT CONDITIONS NOT MEETING THIS REQUIREMENT FOR ENGINEER TO REVIEW.
6. CONTRACTOR TO COORDINATE AND SUBMIT CMU WALL ELEVATIONS SHOWING ALL OPENINGS TO BE BUILT IN A GIVEN WALL (ARCH AND MEP) FOR ENGINEER OF RECORD TO REVIEW PRIOR TO WALL CONSTRUCTION.

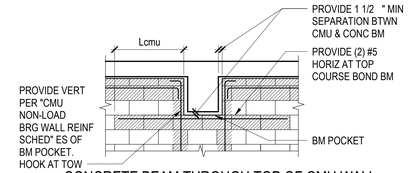


BAR LOCATION TYPES

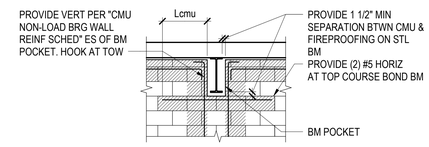
6 TYPICAL CMU NON-LOAD BEARING WALL ELEVATION, SCHEDULE AND NOTES



11 TYPICAL CMU BOND BEAM REINFORCING

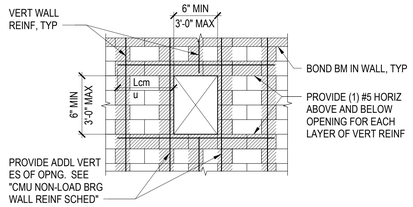


CONCRETE BEAM THROUGH TOP OF CMU WALL



STEEL BEAM THROUGH TOP OF CMU WALL

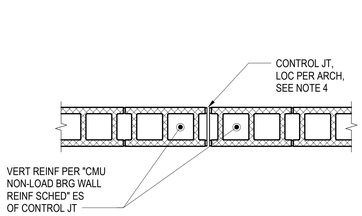
3 TYPICAL CMU NON-LOAD BEARING WALL OPENING AROUND INCOMING BEAM



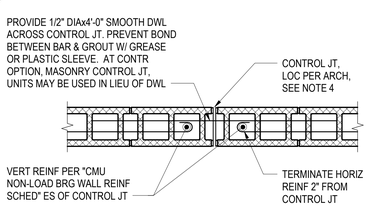
NOTES:

1. SEE "TYPICAL CMU NON-LOAD BEARING WALL ELEVATION, SCHEDULE, AND NOTES" FOR ADDITIONAL INFORMATION.
2. CONDUITS AND PIPES SHALL BE PLACED THROUGH SLEEVES OR BLOCK OUTS PROVIDED DURING WALL CONSTRUCTION.
3. WALL OPENINGS SHALL BE A MINIMUM OF 1'-6" ABOVE ANY DOOR OR WINDOW OPENINGS AND SPACED AT LEAST THREE TIMES THE LARGEST OPENING.
4. WALL PENETRATIONS LESS THAT 6-INCH DIAMETER OR 6-INCH SQUARE THAT DO NOT DISRUPT REINFORCEMENT AND ARE SPACED AT LEAST 2'-0" APART DO NOT REQUIRE ADDITIONAL TRIM REINFORCEMENT.
5. CONTRACTOR TO COORDINATE AND SUBMIT CMU WALL ELEVATIONS SHOWING ALL OPENINGS TO BE BUILT IN A GIVEN WALL (ARCH AND MEP) FOR ENGINEER OF RECORD TO REVIEW PRIOR TO WALL CONSTRUCTION.

8 TYPICAL CMU NON-LOAD BEARING WALL SMALL OPENING REINFORCING



COURSES WITHOUT HORIZONTAL REINF

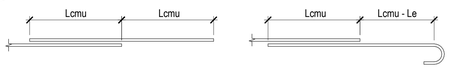


COURSES WITH HORIZONTAL REINF

NOTES:

1. CONTROL JOINT SHALL BE CONSTRUCTED AS CONTINUOUS VERTICAL HEAD JOINTS USING FULL AND HALF MASONRY UNITS.
2. MORTAR SHALL BE RAKED BACK 3/4-INCH AND FILLED WITH SEALANT PER ARCHITECTURAL DRAWINGS.
3. LOCATION OF CONTROL JOINTS ARE SHOWN ON ARCHITECTURAL DRAWINGS. CONTROL JOINTS SHALL NOT OCCUR WITHIN 2'-8" OF WALL OPENINGS. REFER TO THE NATIONAL CONCRETE MASONRY ASSOCIATION TEK 10-2C "CONTROL JOINTS FOR CONCRETE MASONRY WALLS - EMPIRICAL METHOD" FOR RECOMMENDED CONTROL JOINT SPACING AND LOCATIONS.
4. ADDITIONAL PREFORMED GASKETS OR JOINT FILLINGS REQUIRED FOR FIRE RATED WALLS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND ADDITIONAL REQUIREMENTS.

12 TYPICAL CMU CONTROL JOINT



STRAIGHT BAR DEVELOPMENT & SPLICE

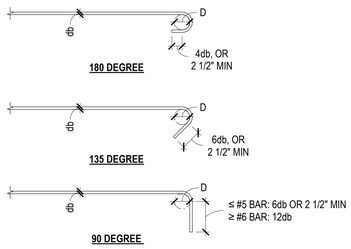
SPLICE AT HOOKED REINFORCEMENT

Lcmu, f'm = 1,900	
BAR SIZE	LENGTH (IN)
#3	17
#4	30
#5	45
#6	54
#7	63
#8	72
#9	82

STRAIGHT REINFORCEMENT DEVELOPMENT & LAP LENGTH

Le, f'm = 1,900	
BAR SIZE	LENGTH (IN)
#3	5
#4	7
#5	9
#6	10
#7	12
#8	13
#9	15

HOOKED REINFORCEMENT EQUIVALENT EMBEDMENT LENGTH

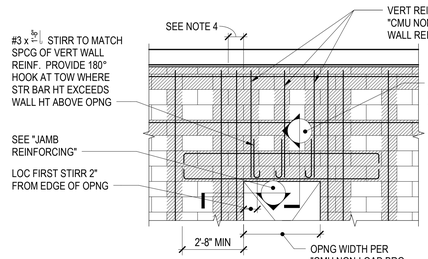


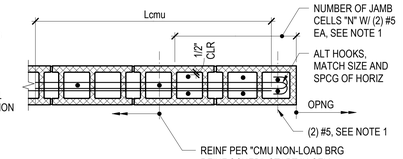
HOOK DEVELOPMENT

NOTES:

1. FOR EPOXY COATED BARS, INCREASE THE ABOVE EMBEDMENT LENGTHS BY 20 PERCENT.
2. FULL DEVELOPMENT LENGTH FOR HOOKED REINFORCING BAR IS Lcmu - Le.

17 CMU REINFORCING DEVELOPMENT AND SPLICE LENGTH TABLES

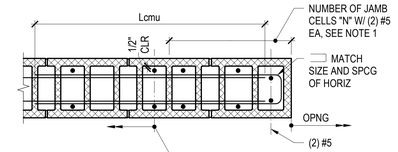




NOTES:

1. AT WALL HEIGHTS NOT EXCEEDING 13'-0", PROVIDE ONE #5 VERTICAL JAMB BAR, LOCATION TYPE A PER "TYPICAL CMU NON-LOAD BERING WALL ELEVATION, SCHEDULE AND NOTES", IN PLACE OF TWO #5 BARS INDICATED.

8" MASONRY WALL



12" MASONRY WALL

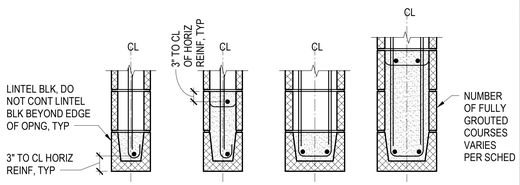
JAMB REINFORCING

CMU NON-LOAD BEARING LINTEL REINFORCEMENT SCHEDULE

NOMINAL WALL THICKNESS (IN)	MAX OPENING WIDTH (FEET)	BOTTOM HORIZONTAL REINFORCING	TOP HORIZONTAL REINFORCING	NUMBER OF COURSES	LINTEL BAR LOCATION TYPE	NUMBER OF JAMB REINFORCING CELLS "N"
8"	4'-0"	(1) #5	-	1	A-1	2
8"	8'-0"	(1) #5	(1) #5	2	A-2	3
8"	12"-0"	(1) #5	(1) #5	3	A-2	4
12"	4'-0"	(2) #5	-	1	C-1	2
12"	8'-0"	(2) #5	(2) #5	2	C-2	3
12"	12'-0"	(2) #5	(2) #5	3	C-2	4

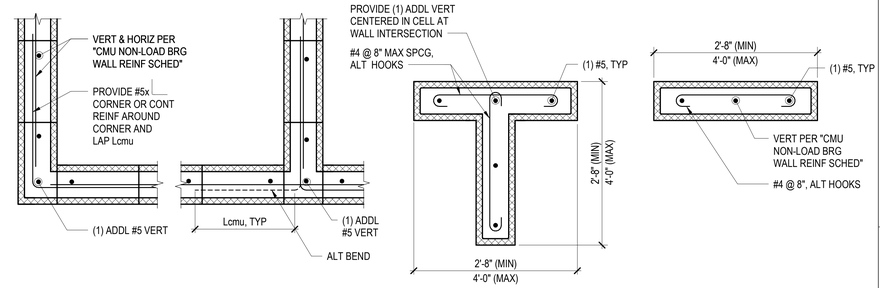
NOTES:

1. PROVIDE (1) COURSE BOND BEAM AT SILL CONDITIONS BELOW OPENINGS WITH (2) #5 HORIZONTALS. AT OPENINGS 10 FT WIDE OR GREATER, IF THE SILL IS MORE THAN 5 FT ABOVE THE SUPPORTING LEVEL, PROVIDE (2) COURSE BOND BEAM WITH (2) #5 HORIZONTALS IN EACH COURSE.
2. SEE "TYPICAL CMU NON-LOAD BEARING WALL ELEVATION, SCHEDULE, AND NOTES FOR MORE INFORMATION.
3. CONTACT ENGINEER IF HEIGHT OF WALL ABOVE OPENING IS LESS THAN NUMBER OF COURSES CALLED FOR IN LINTEL REINFORCEMENT SCHEDULE.
4. PROVIDE TOP OF WALL CONNECTION PER "TYP CMU NON-LOAD BEARING WALL TOP CONNECTIONS" WITHIN 8 INCHES OF OPENING. FOR WALLS GREATER THAN 18'-0" TALL WITH OPENINGS GREATER THAN 4'-0", PROVIDE TWO TOP OF WALL CONNECTIONS WITHIN JAMB REINFORCEMENT WIDTH.
5. CONTRACTOR TO COORDINATE AND SUBMIT CMU WALL ELEVATIONS SHOWING ALL OPENINGS TO BE BUILT IN A GIVEN WALL (ARCH AND MEP) FOR ENGINEER OF RECORD TO REVIEW PRIOR TO WALL CONSTRUCTION.



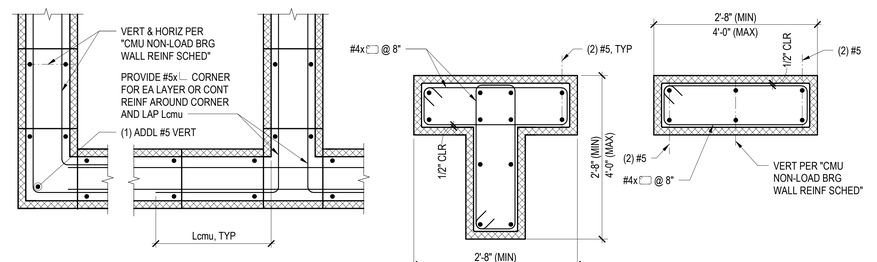
LINTEL BAR LOCATION TYPES

9 TYPICAL CMU NON-LOAD BEARING WALL LARGE OPENING LINTEL AND JAMB REINFORCING



CORNER INTERSECTION SHORT INTERSECTING WALLS SHORT WALL

8" MASONRY WALL



CORNER INTERSECTION SHORT INTERSECTING WALLS SHORT WALL

12" MASONRY WALL

NOTES:

1. BLOCK WEBS NOT SHOWN FOR CLARITY.
2. VERTICAL JAMB REINFORCEMENT WHERE REQUIRED BY "TYPICAL CMU NON-LOAD BEARING LINTEL ELEVATION, SCHEDULE AND NOTES" SHALL REPLACE TYPICAL "SHORT WALL" AND "SHORT INTERSECTING WALLS" VERTICAL REINFORCEMENT.

19 TYPICAL CMU NON-LOAD BEARING WALL REINFORCING AT CORNERS, INTERSECTIONS, AND SHORT WALLS

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project: SOMMET BLANC - ABC
DEER VALLEY, UTAH

principal architect
project manager
drawn by
checked by
job no. 20052
date 11/18/2022

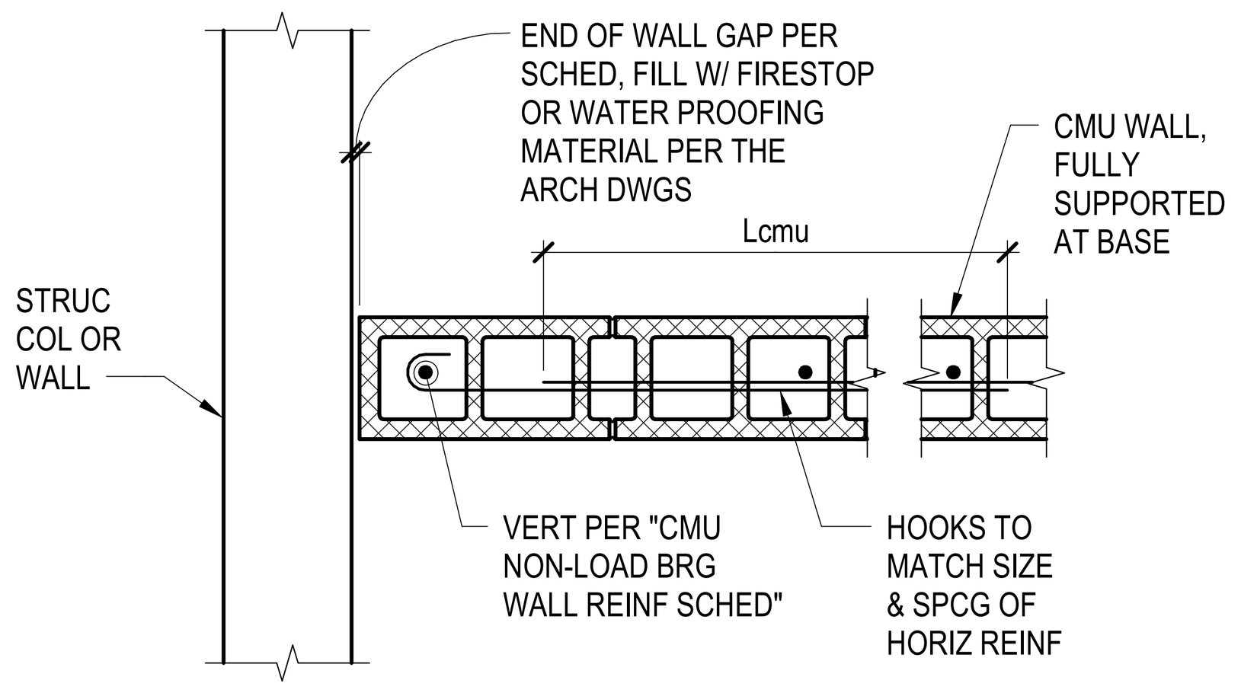
revisions:

no.	date	by
1	11/18/2022 IFC	

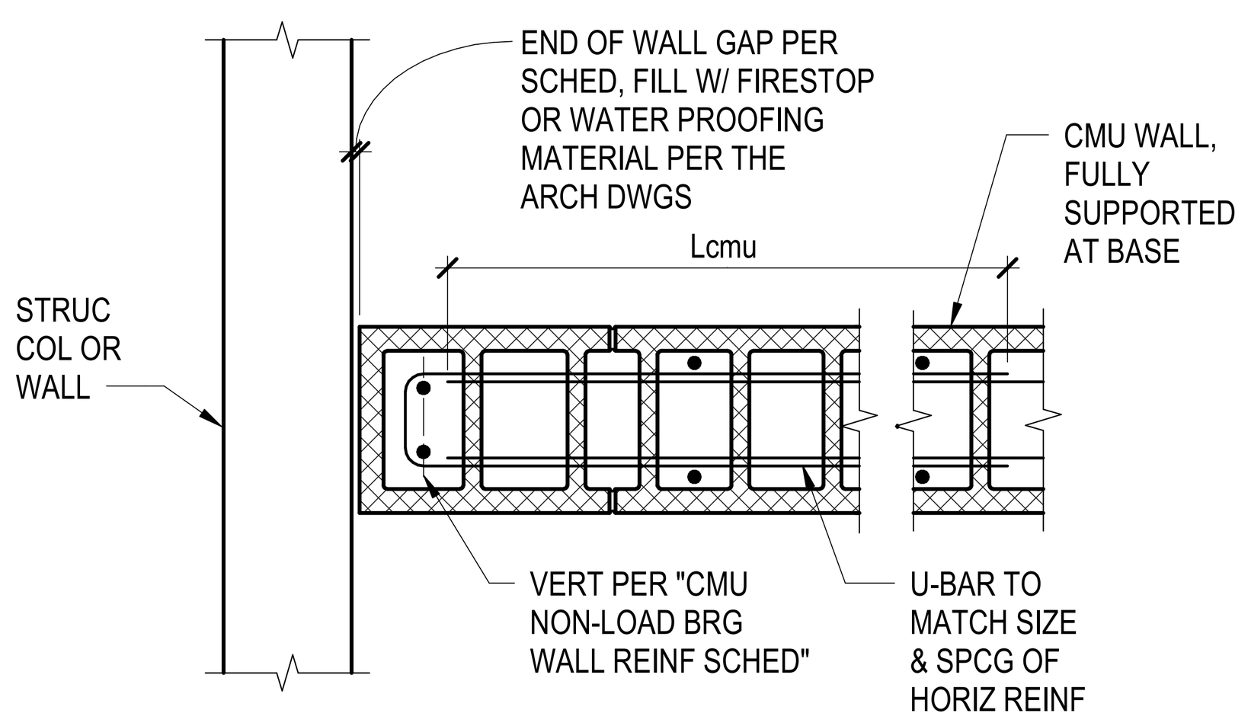
CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL NON-LOAD BEARING CMU WALL DETAILS

S4.21



8" MASONRY WALL



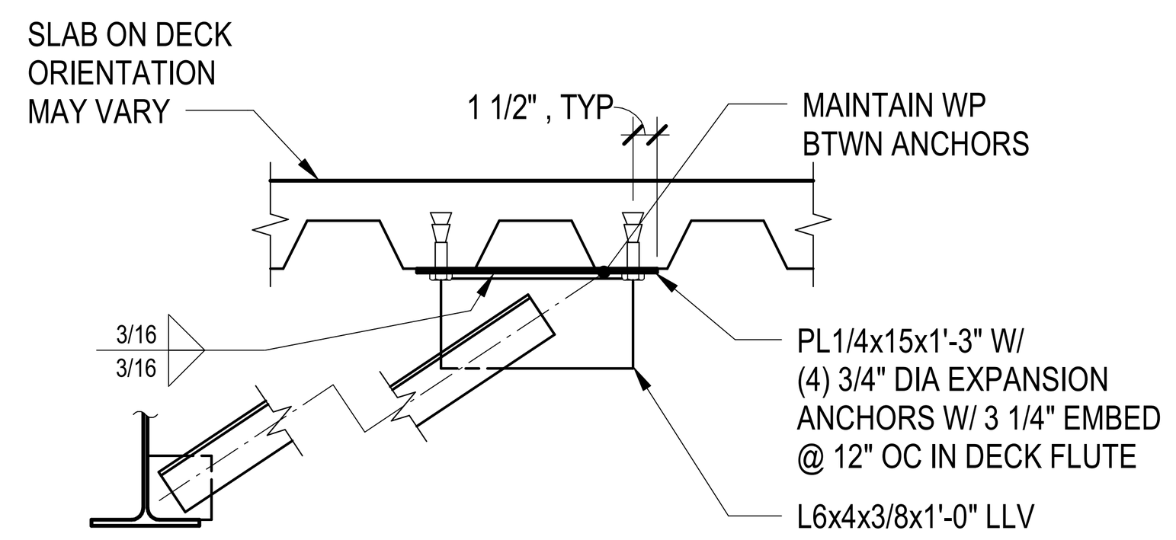
12" MASONRY WALL

END OF WALL ABUTTING TO STRUCTURE, GAP SCHEDULE	
WALL LOCATION	GAP
BELOW GRADE	1"
LEVEL 1	1 1/2"
LEVEL 1 AT AB CONNECTOR	2 1/2"

NOTES:

1. DETAIL IS NOT APPLICABLE WHERE OPENINGS ARE WITHIN 2'-8" OF THE END OF WALL. CONTRACTOR SHALL SUBMIT CONDITIONS WITH OPENINGS FOR ENGINEER TO REVIEW.
2. WHERE A GAP IS NOT SCHEDULED, PROVIDE A GAP AND FLEXIBLE FILLER MATERIAL CAPABLE OF ACCOMMODATING BUILDING STORY DRIFTS AS NOTED IN THE "GENERAL NOTES".

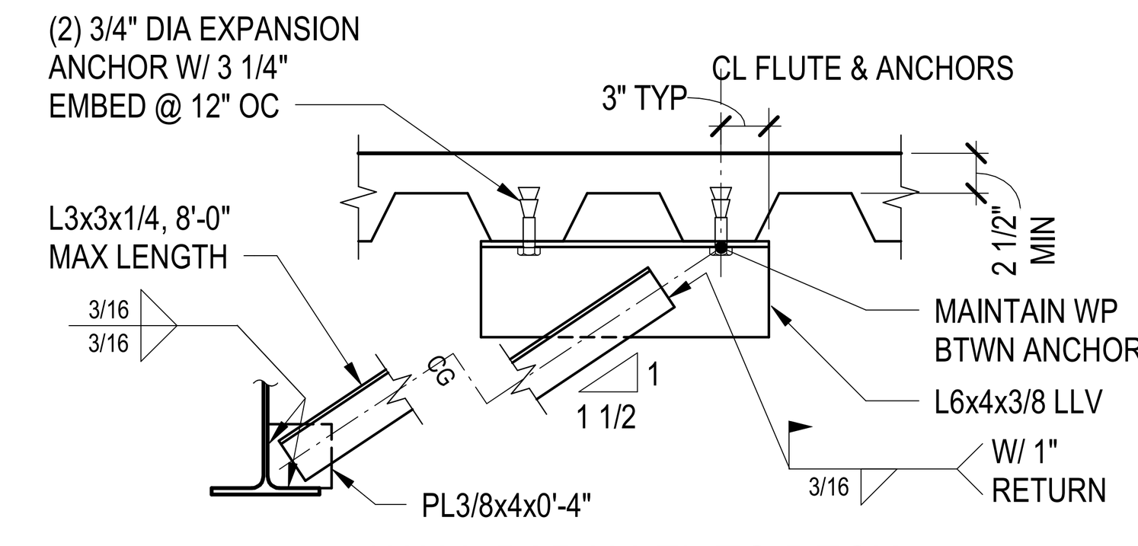
6 TYPICAL NON-LOAD BEARING CMU WALL ABUTTING STRUCTURAL ELEMENTS



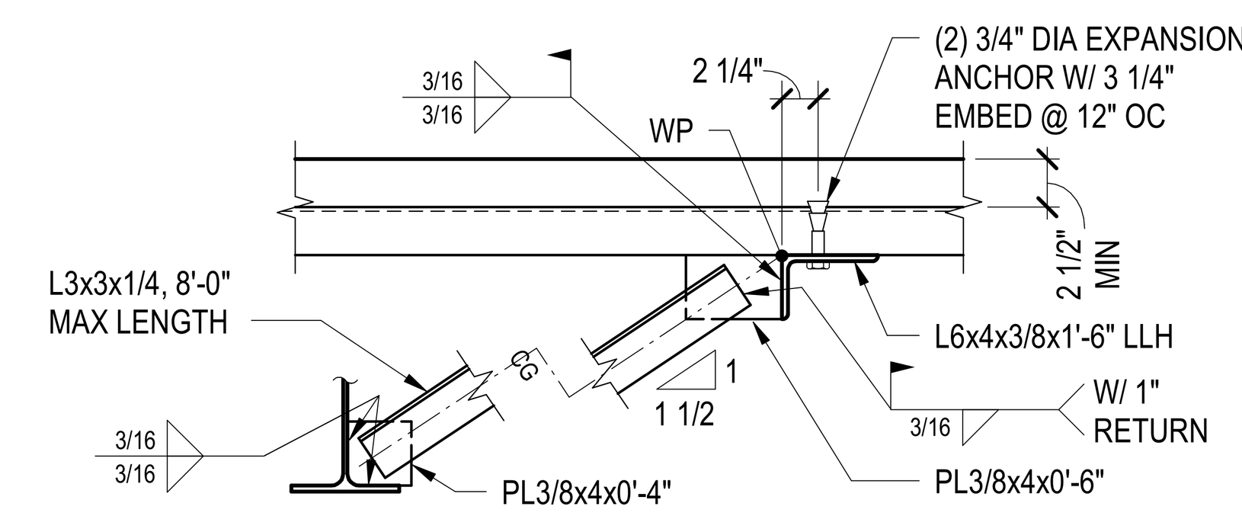
NOTES:

1. SEE WALL PARALLEL TO DECK CONDITION FOR ADDITIONAL INFORMATION.

BRACE AT EXTERIOR WALL



WALL PARALLEL TO DECK



WALL PERPENDICULAR TO DECK

2 TYPICAL CMU BRACE TO UNDERSIDE OF CONCRETE ON STEEL DECK

TOP OF WALL CONNECTION SPACING SCHEDULE			
MAXIMUM WALL THICKNESS	MAXIMUM WALL HEIGHT	TOP CONNECTION SPACING "S1"	TOP CONNECTION SPACING "S2"
8"	18'-0"	4'-0"	4'-0"
12"	13'-0"	4'-0"	4'-0"
12"	17'-0"	3'-0"	4'-0"
12"	22'-0"	2'-0"	3'-0"

NOTES:

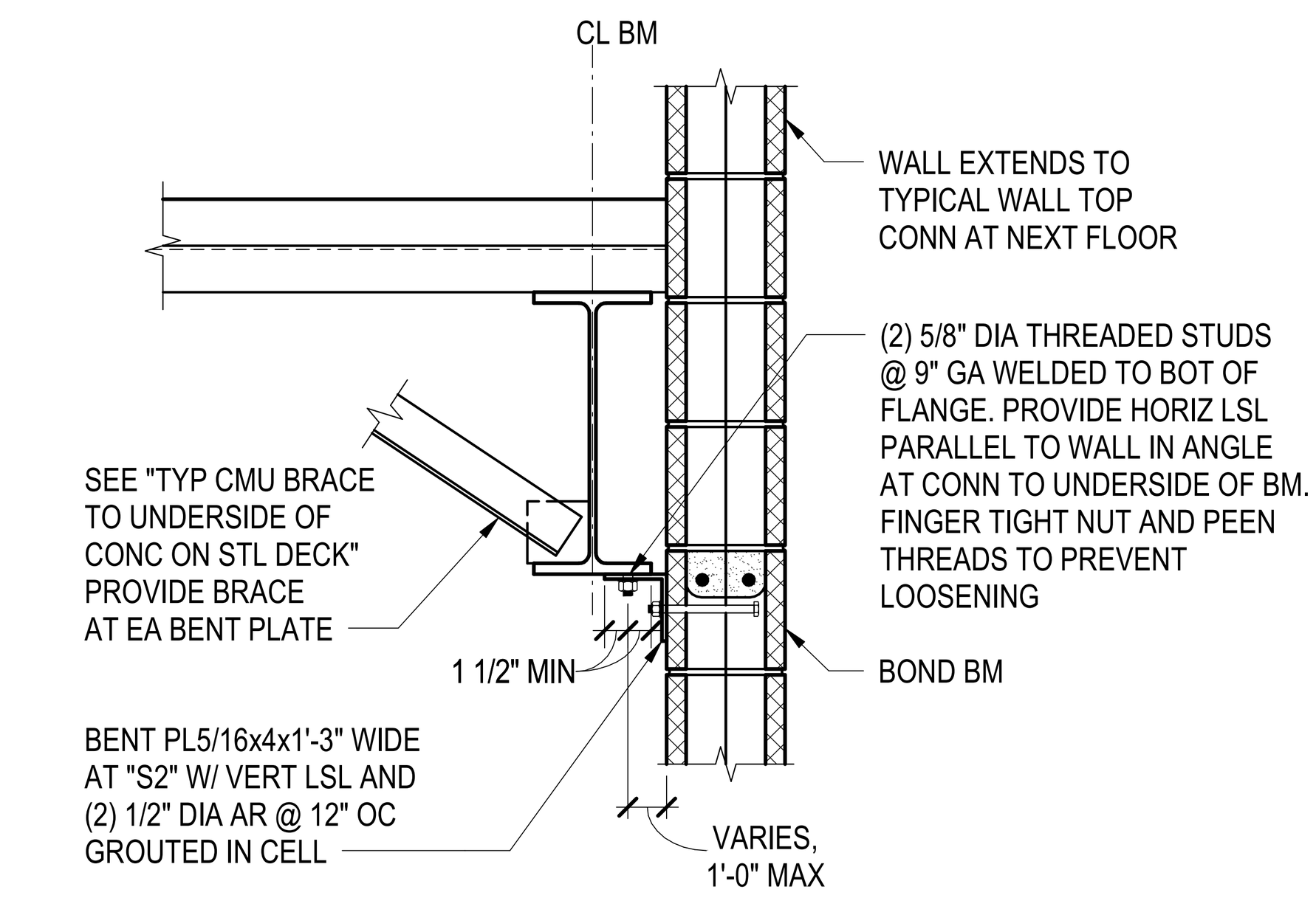
1. SPACING "S1" AND "S2" SHALL NOT EXCEED 4'-0".
2. SEE NOTE 4 OF "TYPICAL CMU NON-LOAD BEARING WALL LARGE OPENING LINTEL AND JAMB REINFORCING" DETAIL FOR TOP OF WALL CONNECTION REQUIREMENTS AT EDGES OF LARGE OPENINGS.

4 TOP OF WALL CONNECTION SPACING SCHEDULE

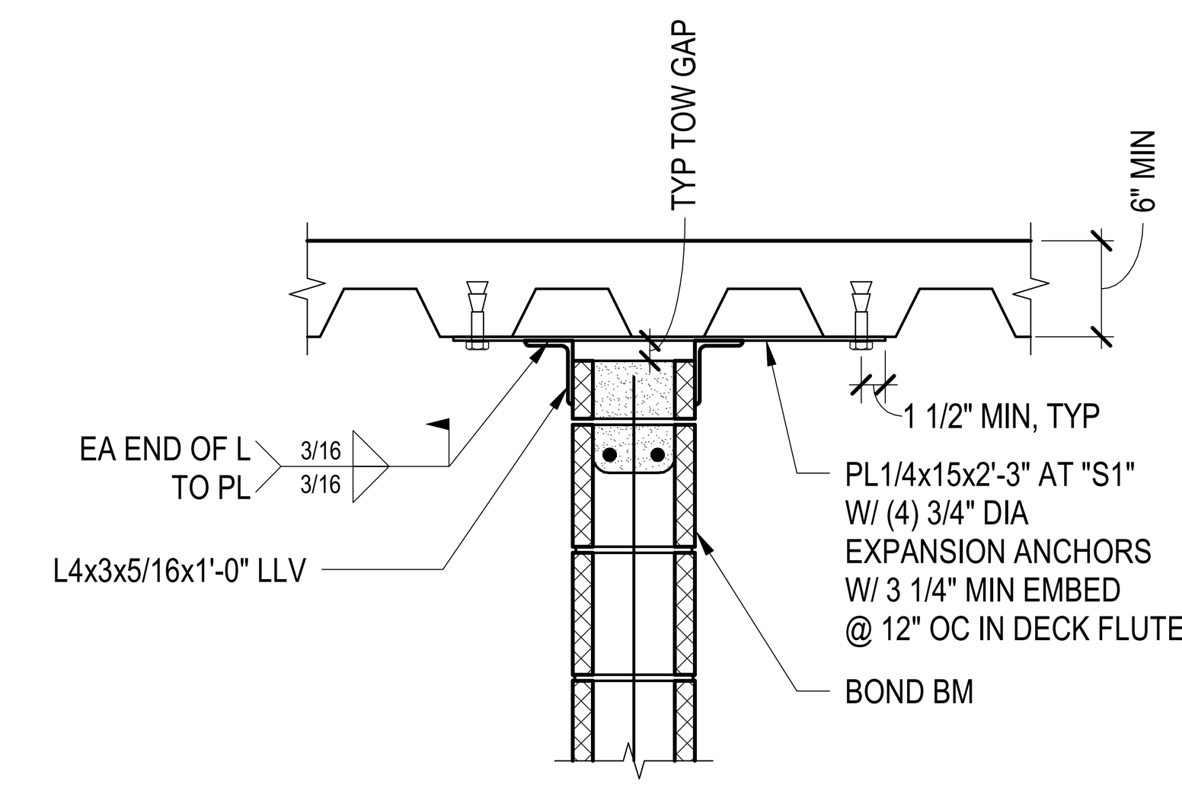
NOTES:

1. SEE "TYPICAL CMU NON-LOAD BEARING WALL ELEVATION, SCHEDULE AND NOTES" FOR TYPICAL TOP OF WALL GAP.
2. WHERE FIREPROOF, ACOUSTIC, OR OTHER FILLER IS REQUIRED PER ARCHITECTURE, PROVIDE FILLER WITH MINIMUM 50 PERCENT COMPRESSIBILITY.
3. FIREPROOFING REMOVED OR DAMAGED BY INSTALLATION OF TOP OF WALL CONNECTIONS SHALL BE REPLACED.
4. SEE "TOP OF WALL CONNECTION SPACING SCHEDULE" FOR SPACING REQUIREMENTS "S1" AND "S2".
5. TYPICAL EXPANSION ANCHOR SHALL BE HILTI KWIK BOLT TZ OR APPROVED EQUIVALENT.
6. AT CONTRACTORS OPTION, ALTERNATE TOP OF WALL CONNECTIONS PROVIDING EQUIVALENT OUT OF PLANE SUPPORT AND ALLOWING VERTICAL AND IN PLANE MOVEMENT OF THE STRUCTURE RELATIVE TO THE WALL MAY BE SUBSTITUTED. THE CONTRACTOR SHALL SUBMIT ALL PROPOSED ALTERNATE TYPICAL DETAILS WITH RELATED CALCULATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO SHOP DRAWING PRODUCTION AND FIELD USE.

5 TOP OF WALL CONN GENERAL NOTES



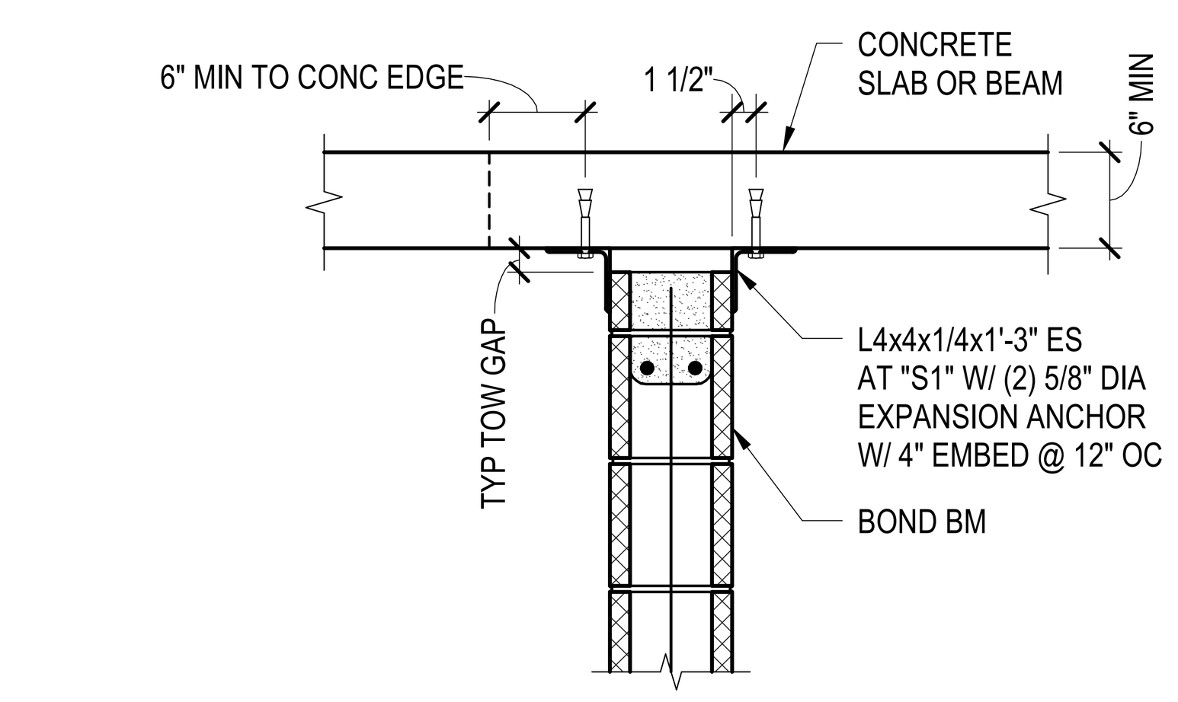
CONTINUOUS WALL PARALLEL TO WF BEAM



NOTES:

1. EXPANSION ANCHORS TO BE LOCATED MINIMUM 6" FROM EDGE OF CONCRETE IN ANY DIRECTION.

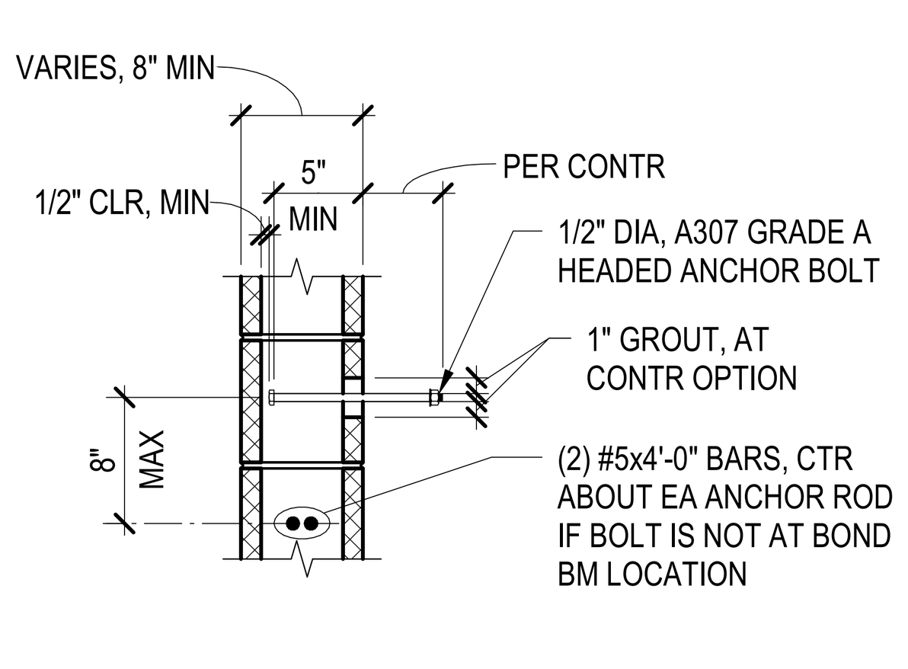
STEEL DECK PARALLEL TO WALL



NOTES:

1. THIS DETAIL IS NOT TO BE USED AT POST-TENSIONED SLABS OR AT POST-TENSIONED BEAMS NEAR TENDON LOW POINTS.

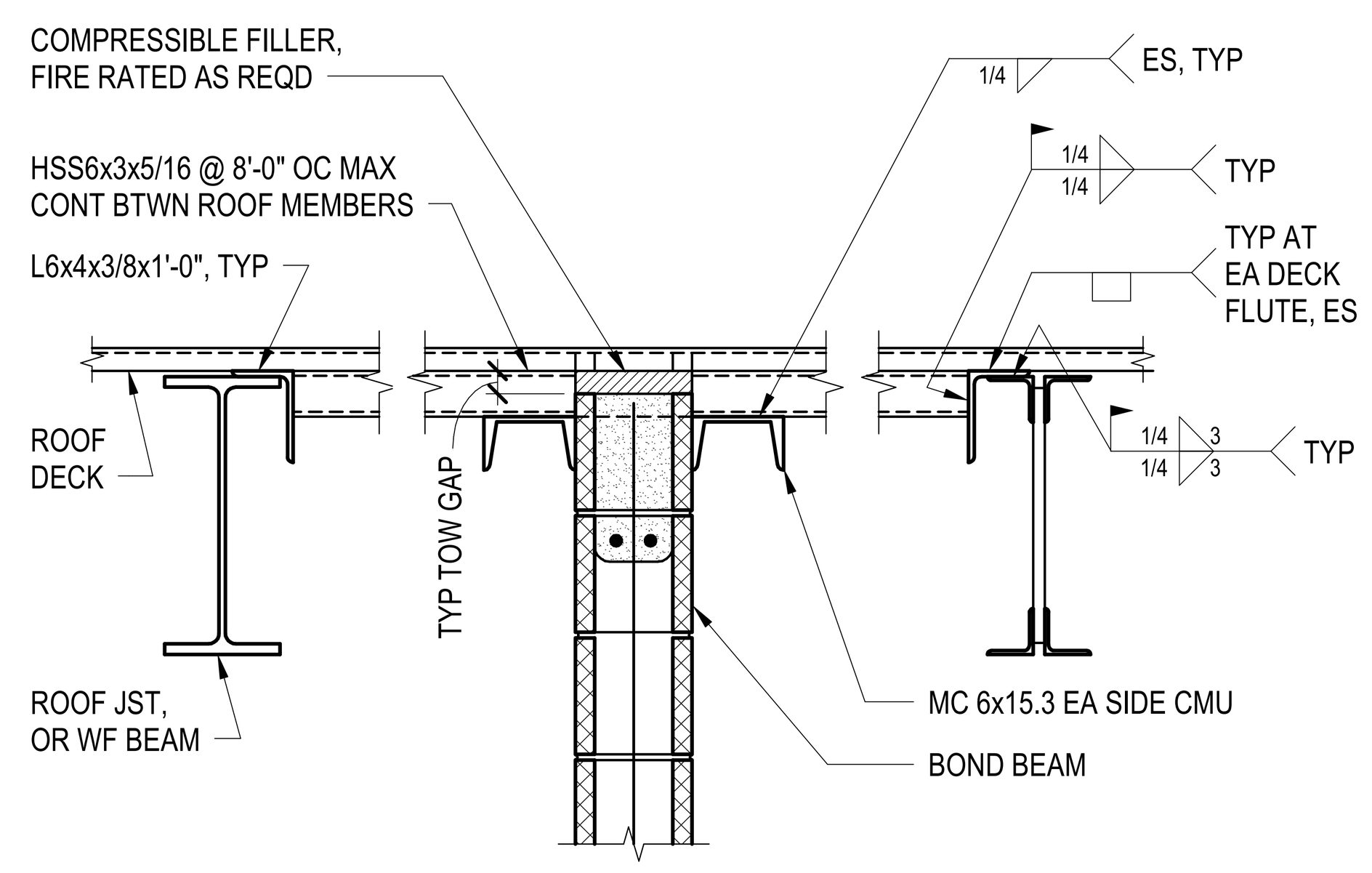
WALL AT CONCRETE SLAB OR BEAM



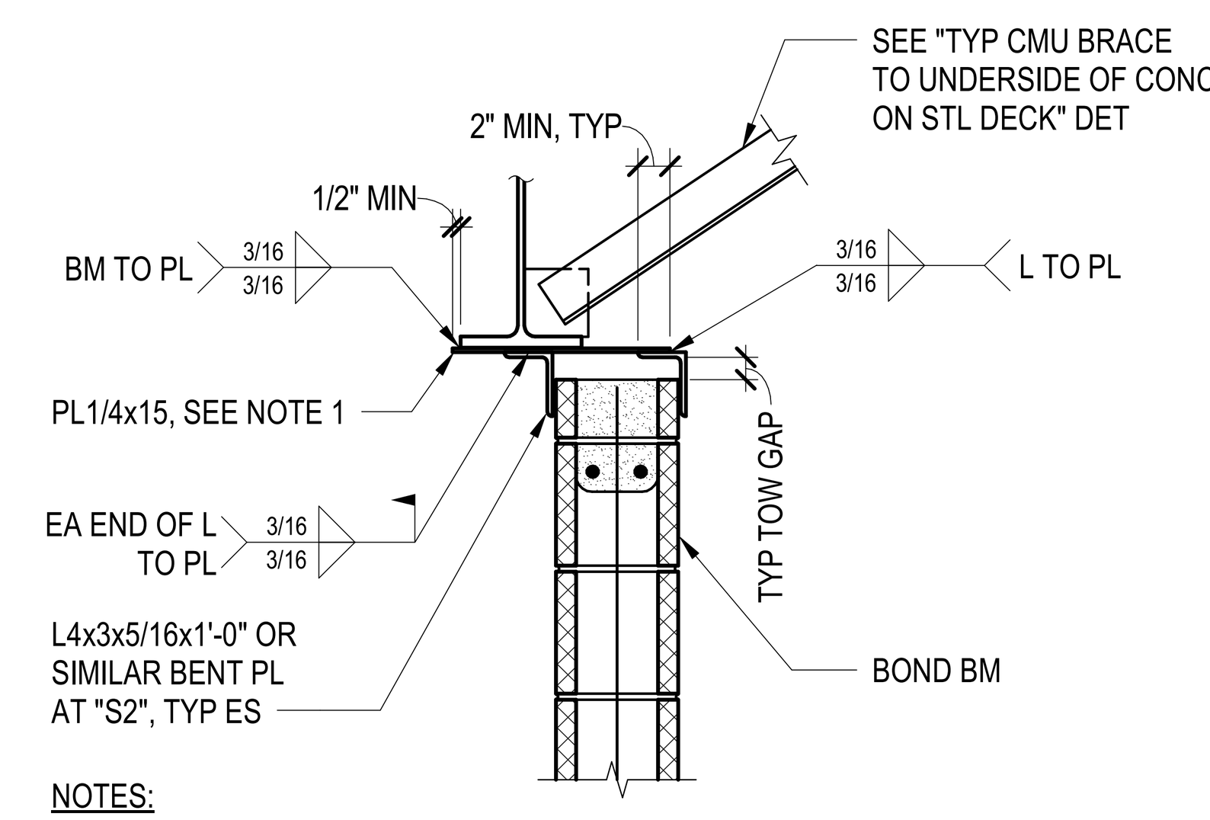
NOTES:

1. MAKE BAR CONTINUOUS WHERE BOLTS ARE SPACEDAT 24" OR LESS. EXTEND 1'-0" PAST LAST BOLT.

11 TYPICAL ANCHOR BOLT AT CMU WALL



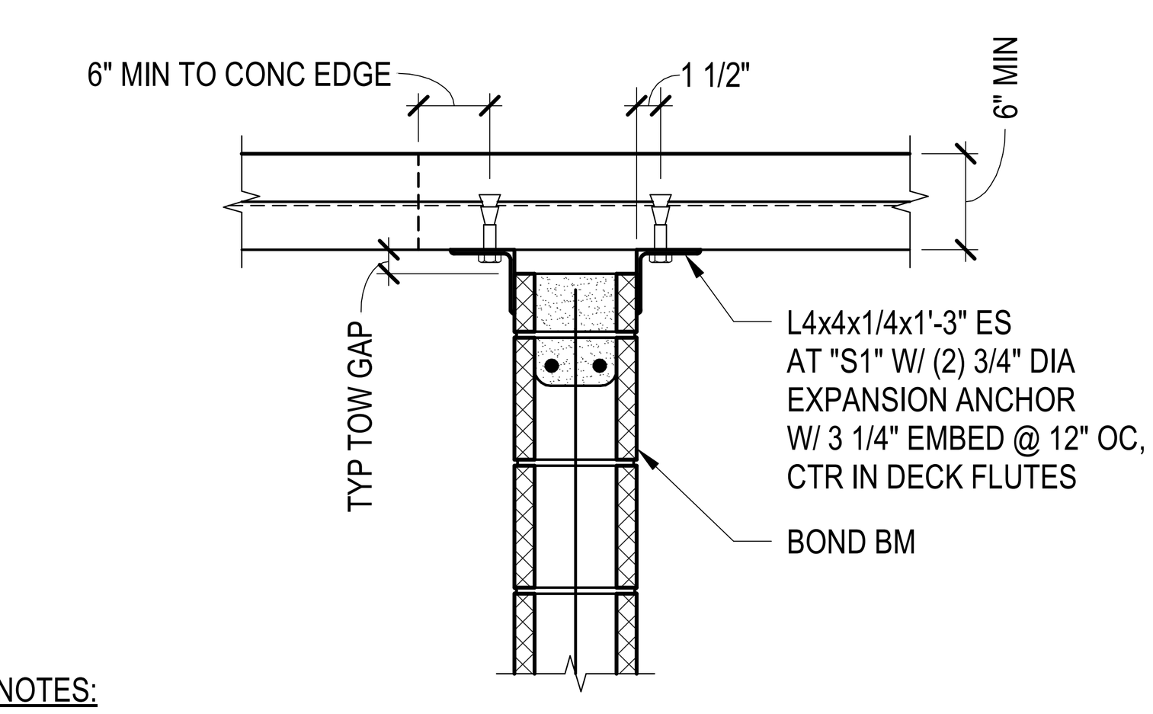
WALL PERPENDICULAR TO STEEL ROOF DECK



NOTES:

1. AT CONTRACTORS OPTION, PROVIDE CONTINUOUS BENT PLATE OVER FAR EDGE OF WALL SIMILAR TO "WALL AT CONCRETE SLAB EDGE"

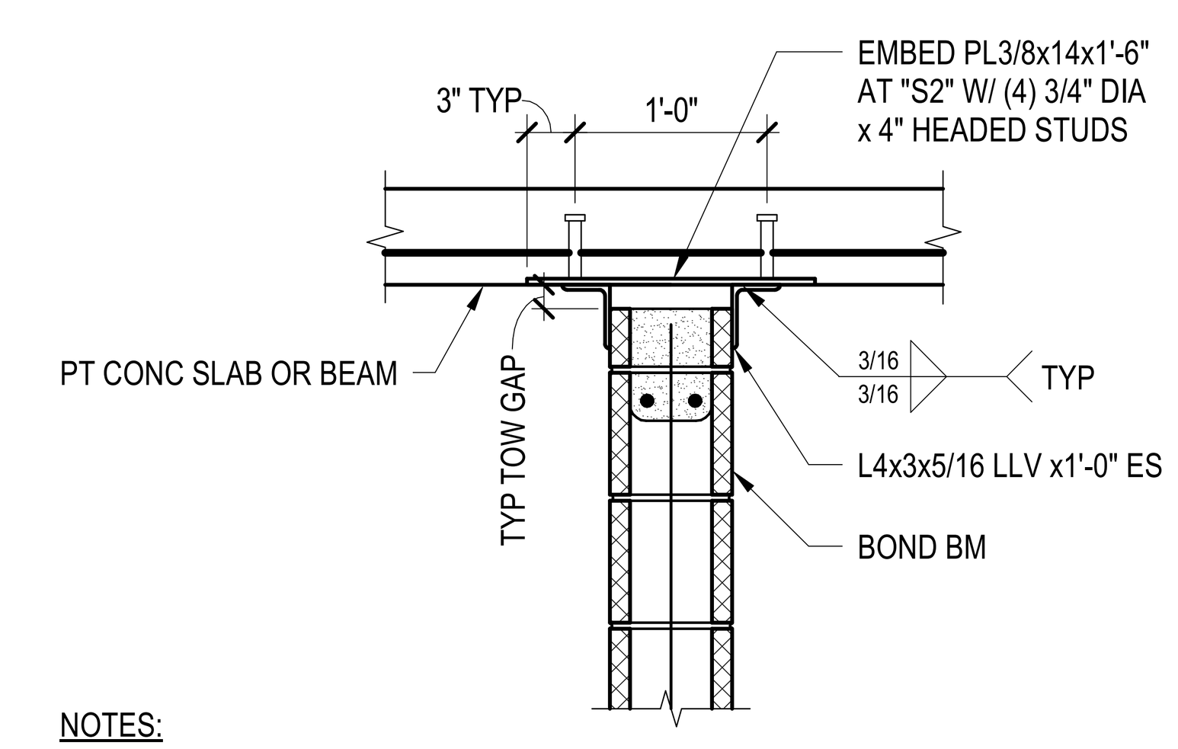
WALL OFFSET FROM STEEL BEAM



NOTES:

1. AT EXTERIOR WALLS, PROVIDE CONNECTION SIMILAR TO "STEEL DECK AT PARALLEL WALL" WITH PL1/4 AND (4) 3/4" DIA EXPANSION ANCHORS.

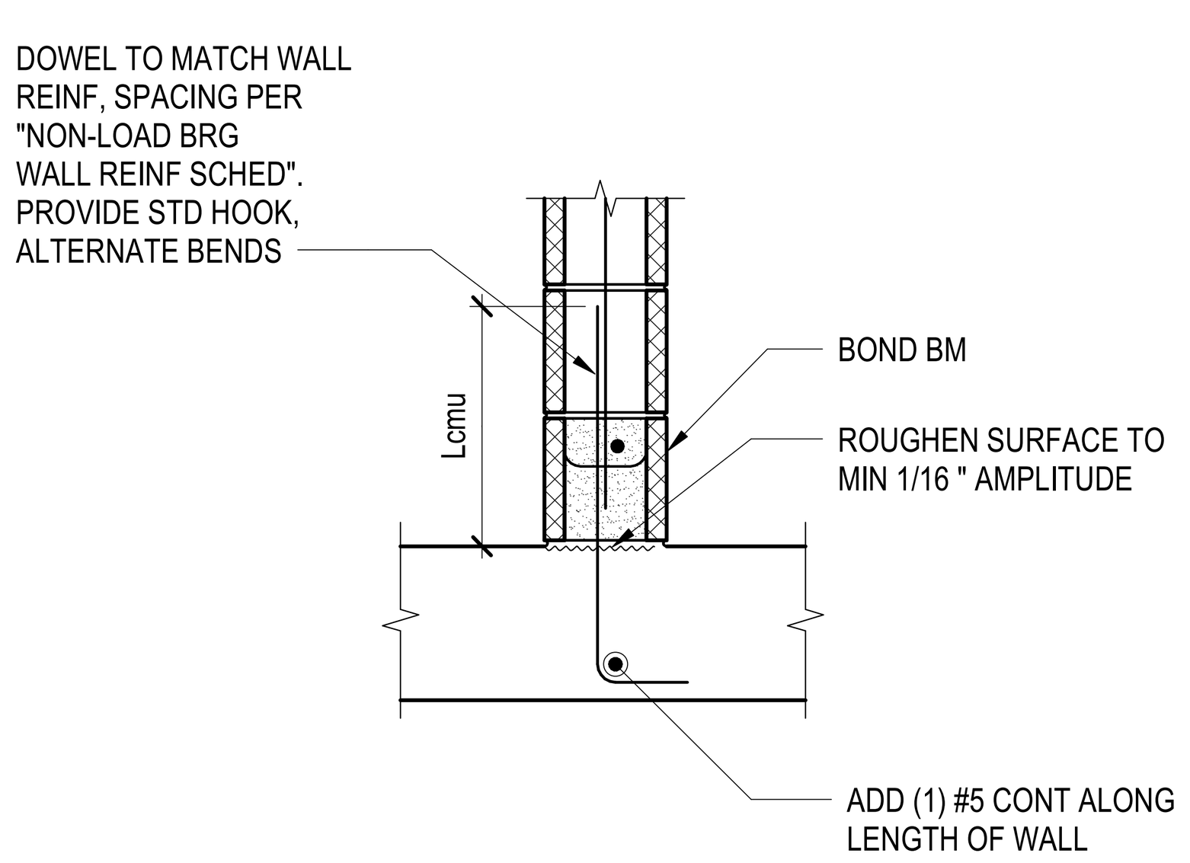
STEEL DECK PERPENDICULAR TO WALL



NOTES:

1. AT CONTRACTORS OPTION, THIS DETAIL CAN BE USED AT MILD CONCRETE SLABS OR BEAMS.

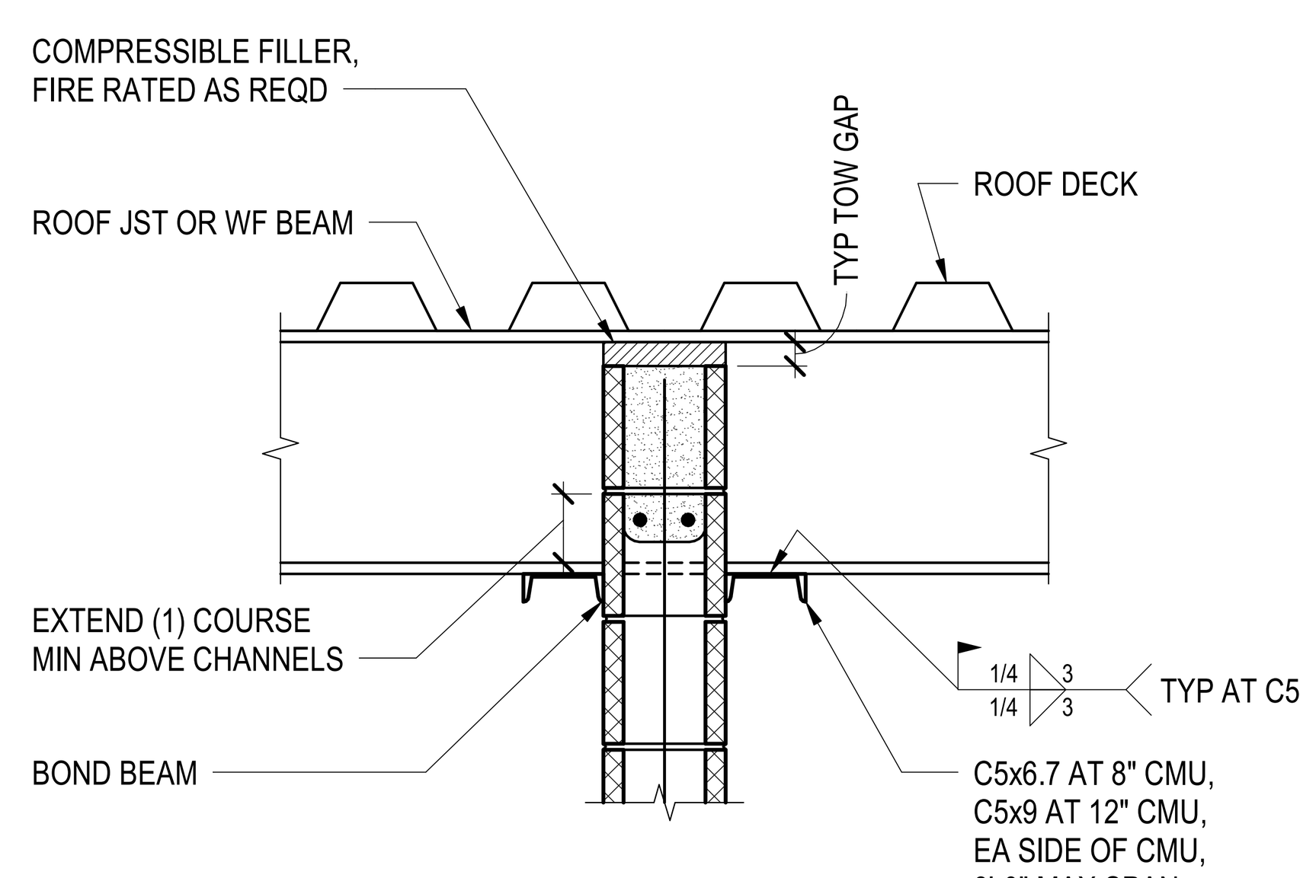
WALL AT POST-TENSIONED CONCRETE SLAB OR BEAM



NOTES:

1. DOWEL SPACING TO MATCH VERTICAL REINFORCING.

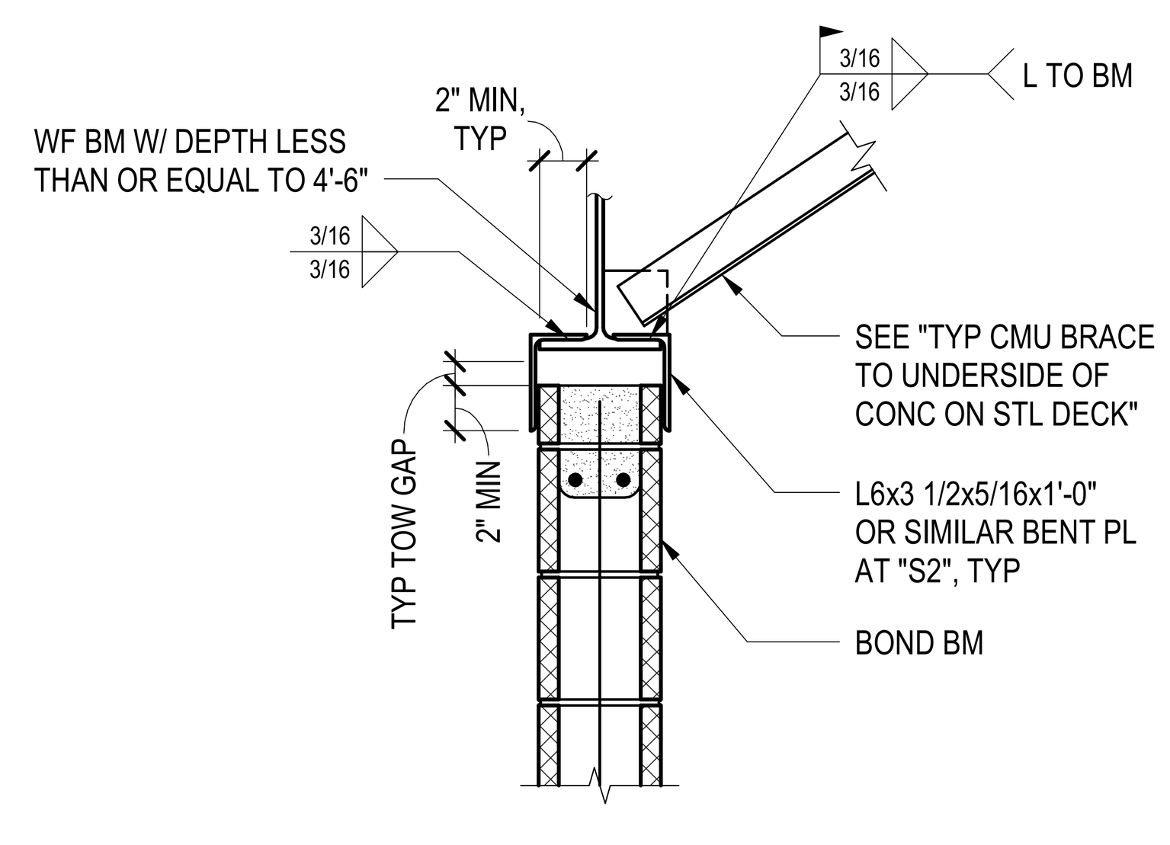
16 TYPICAL CMU NON-LOAD BEARING WALL BOTTOM CONNECTION



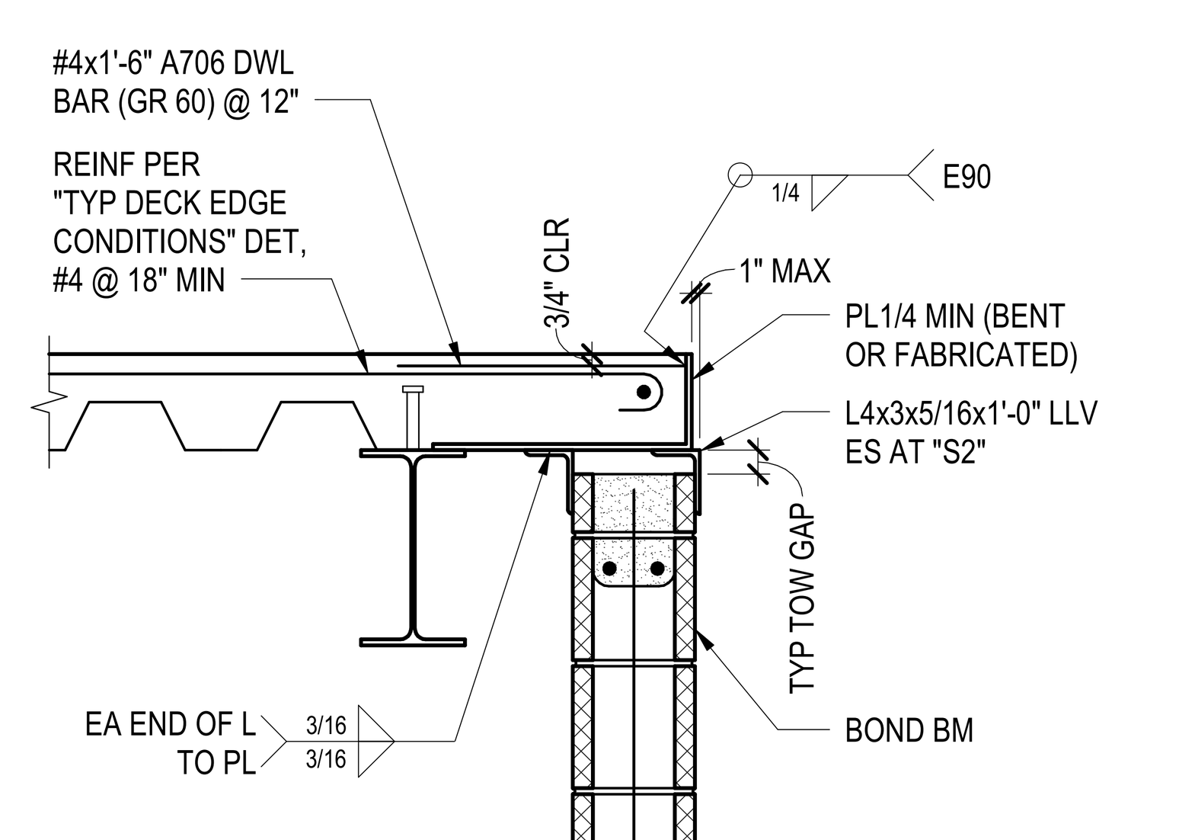
NOTES:

1. SEE "TYPICAL CMU NON-LOAD BEARING WALL OPENING AROUND INCOMING BEAM".

WALL PARALLEL TO STEEL ROOF DECK



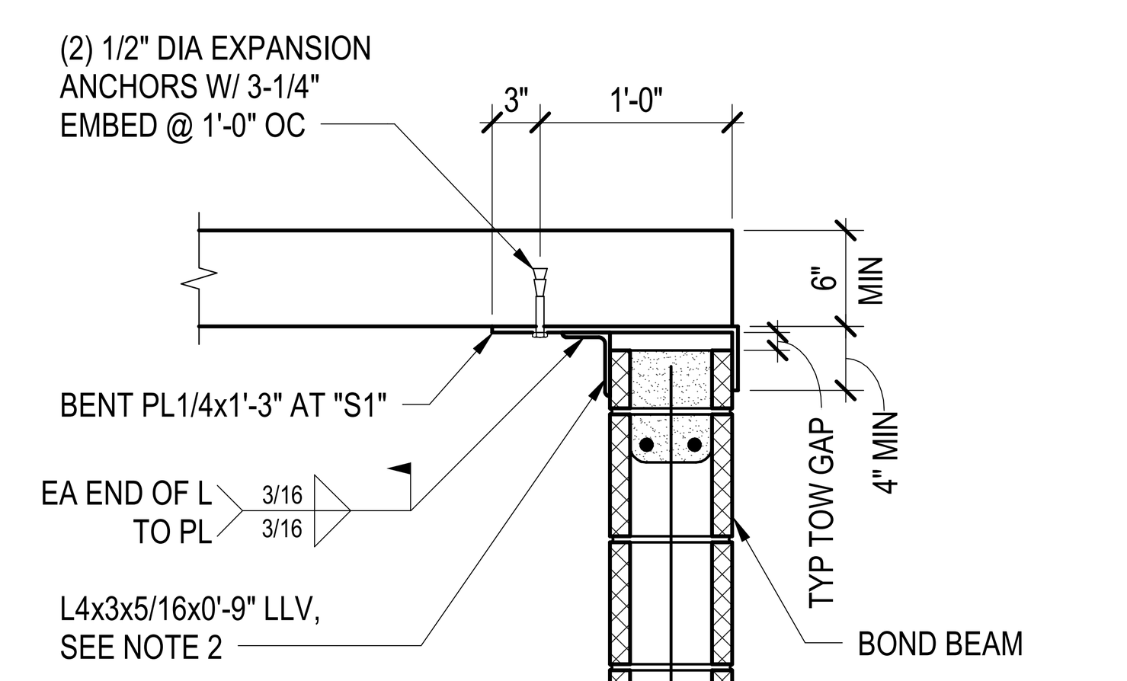
WALL CENTERED ON STEEL BEAM



NOTES:

1. SEE "TYPICAL DECK EDGE CONDITIONS" DETAIL FOR INFORMATION NOT SHOWN.
2. THIS DETAIL IS NOT TO BE USED WITH GAUGE METAL EDGE PLATES.

WALL AT UNDERSIDE OF CONCRETE ON STEEL DECK EDGE

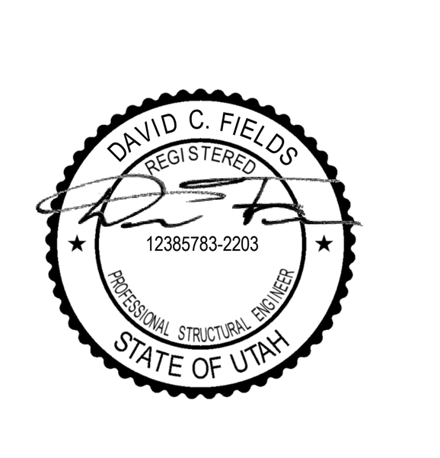


NOTES:

1. AT CONTRACTORS OPTION, PROVIDE FLAT PLATE WITH TWO WELDED ANGLES SIMILAR TO "WALL OFFSET FROM STEEL BEAM"
2. AT NOMINAL WALL THICKNESS GREATER THAN 8", CENTER ANGLE BETWEEN EXPANSION ANCHORS.

WALL AT CONCRETE SLAB EDGE

17 TYPICAL CMU NON-LOAD BEARING WALL TOP CONNECTIONS



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SOMMET BLANC - ABC
DEER VALLEY, UTAH

MAGNUSSON KLEMENCIC ASSOCIATES
Structural + Civil Engineers
Seattle Chicago
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principal architect
project manager
drawn by
checked by
job no. 20052
date 11/18/2022

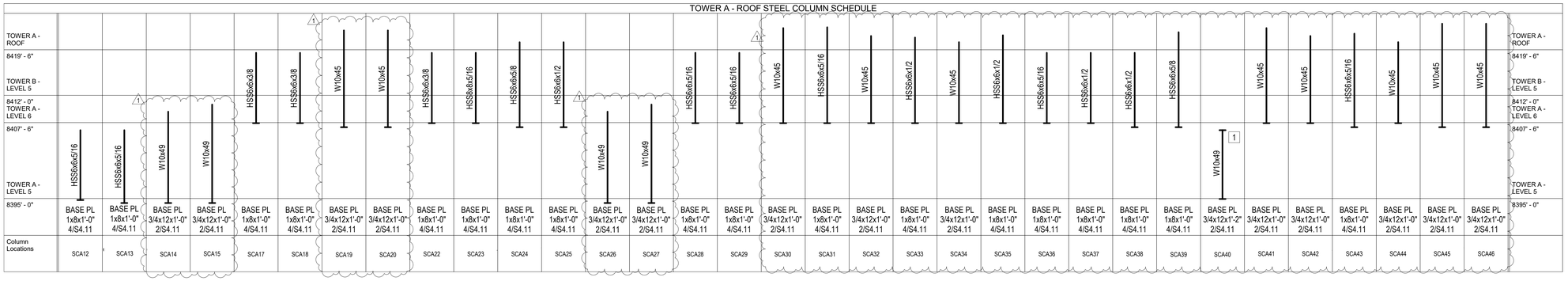
revisions:

no.	date		by
1	11/18/2022	IFC	

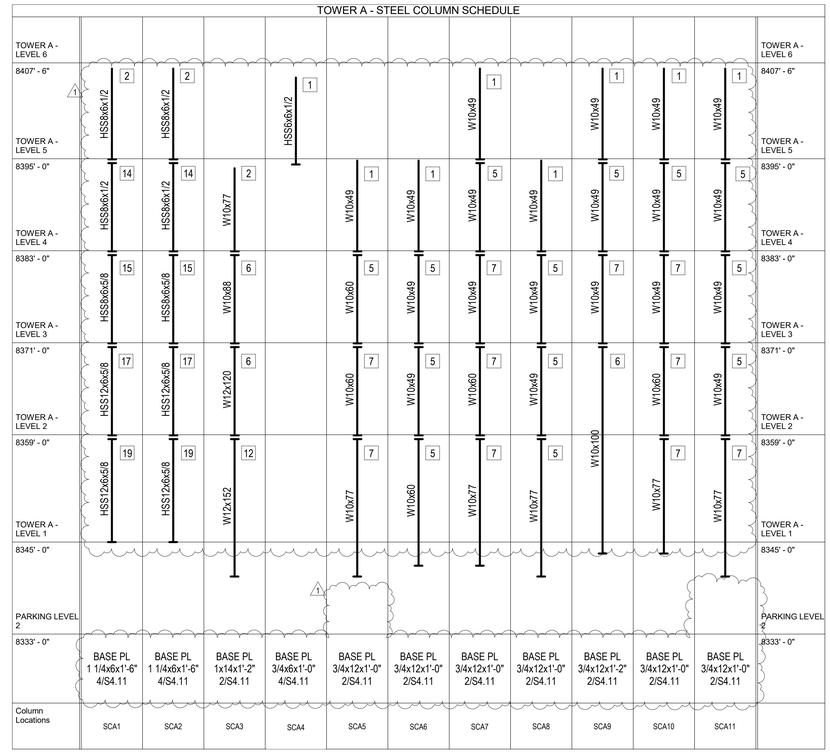
CONSTRUCTION DOCUMENTS
11/18/2022

TYPICAL NON-LOAD BEARING CMU WALL DETAILS

S4.22



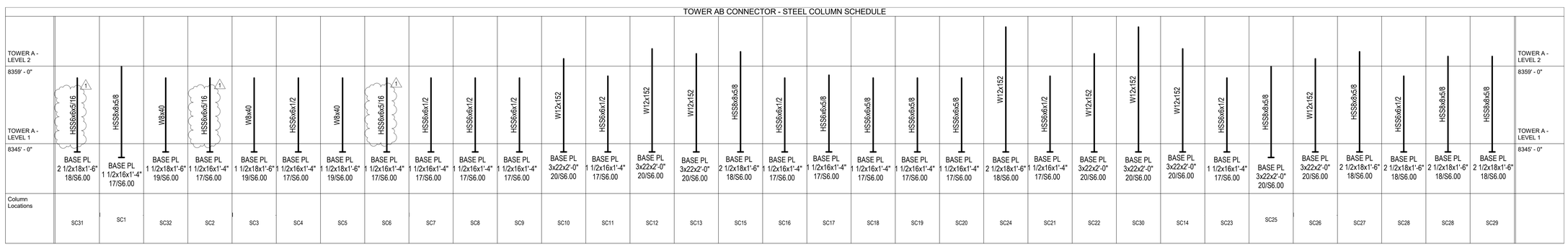
TOWER A - ROOF STEEL COLUMN SCHEDULE



NOTES:

1. BASE PLATES SHALL HAVE Fy = 50 KSI, UNLESS NOTED OTHERWISE.
2. [X] INDICATES CONNECTION OF STEEL COLUMN TO CONCRETE SLAB. SEE "TYPICAL TOP OF STEEL COLUMN SUPPORTING CONCRETE FRAMING" DETAIL, "TYPICAL STEEL COLUMN SUPPORTING CONCRETE FRAMING" DETAIL, AND "STEEL COLUMN SLAB PLATE SCHEDULE" ON S4.11

TOWER A - STEEL COLUMN SCHEDULE



TOWER AB CONNECTOR - STEEL COLUMN SCHEDULE

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TOWER A STEEL COLUMN SCHEDULE

S4.A.10

TOWER B - ROOF STEEL COLUMN SCHEDULE

TOWER B - ROOF																													TOWER B - ROOF
8448' - 9" TOWER B - LEVEL 7	W10x45	HSS6x6x5/8	HSS6x6x5/8	W10x45	W10x45	HSS6x6x5/16	HSS6x6x5/8	HSS6x6x5/8	HSS6x6x5/16	W10x45	HSS6x6x5/16	W10x49	HSS6x6x5/16	W10x49	W10x45	W10x45	W10x49	W10x49	HSS6x6x5/8	HSS6x6x5/8	HSS6x6x5/8	HSS4x4x1/2	HSS4x4x1/2	HSS6x6x5/8	HSS6x6x5/8	HSS6x6x5/16	HSS6x6x5/16	HSS6x6x5/8	8448' - 9" TOWER B - LEVEL 7
8436' - 6"		BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	8436' - 6"
Column Locations	SCB1A	SCB11	SCB13	SCB14	SCB15	SCB15A	SCB16	SCB18	SCB19A	SCB19	SCB17	SCB20	SCB12	SCB21	SCB22	SCB23	SCB24	SCB25	SCB46	SCB47	SCB26	SCB27	SCB28	SCB29	SCB30	SCB31	SCB32	SCB33	

TOWER B - ROOF STEEL COLUMN SCHEDULE

TOWER B - ROOF														TOWER B - ROOF
8448' - 9" TOWER B - LEVEL 7	HSS6x6x3/8	HSS6x6x5/16	HSS6x6x1/4	HSS6x6x3/8	HSS6x6x5/16	W10x45	W10x45	W10x45	W10x45	W10x45	W10x45	W10x45	HSS4x4x1/2	8448' - 9" TOWER B - LEVEL 7
8436' - 6"	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 1x8x1'-0" 4/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 1x8x1'-0" 4/S4.11	8436' - 6"
Column Locations	SCB34	SCB35	SCB48	SCB37	SCB49	SCB40	SCB36	SCB38	SCB41	SCB39	SCB42	SCB43	SCB44	SCB45	

TOWER B - ROOF STEEL COLUMN SCHEDULE

TOWER B - STEEL COLUMN SCHEDULE

TOWER B - LEVEL 7										TOWER B - LEVEL 7
8436' - 6" TOWER B - LEVEL 6	W10x49 1	HSS8x6x1/2 1	HSS8x6x1/2 1	W10x49 1	W10x49 1	W10x49 1	W10x49 1	W10x49 1	W10x49 1	W10x77 2	8436' - 6" TOWER B - LEVEL 6
8424' - 0" TOWER B - LEVEL 5	W10x49 7	HSS8x6x1/2 14	HSS8x6x1/2 14	W10x49 5	W10x49 5	W10x49 5	W10x49 5	W10x49 5	W10x49 5	W10x112 6	8424' - 0" TOWER B - LEVEL 5
8412' - 0" TOWER B - LEVEL 4	W10x49 7	HSS12x6x1/2 15	HSS12x6x1/2 15	W10x49 7	W10x49 5	W10x49 7	W10x49 5	W10x49 5	W10x49 7	W12x120 8	8412' - 0" TOWER B - LEVEL 4
8400' - 0" TOWER B - LEVEL 3	W10x60 7	HSS12x6x1/2 18	HSS12x6x1/2 18	W10x60 7	W10x49 5	W10x60 7	W10x49 5	W10x49 7	W10x60 7	W12x152 16	8400' - 0" TOWER B - LEVEL 3
8388' - 0" TOWER B - LEVEL 2	W10x77 7	HSS12x6x5/8 18	HSS12x6x5/8 18	W10x68 6	W10x60 7	W10x68 7	W10x49 5	W10x60 7	W10x77 6	W12x152 16	8388' - 0" TOWER B - LEVEL 2
8376' - 0" TOWER B - LEVEL 1	W12x136 7	HSS14x6x5/8 18	HSS14x6x5/8 18	W10x112 6	W10x77 7	W10x112 6	W10x60 5	W10x88 7	W10x112 6	W12x170 16	8376' - 0" TOWER B - LEVEL 1
8357' - 0" PARKING LEVEL 1	HSS14x6x5/8 23										8357' - 0" PARKING LEVEL 1
8345' - 0" PARKING LEVEL 2											8345' - 0" PARKING LEVEL 2
8333' - 0"	BASE PL 1 1/4x14x1'-3" 2/S4.11	BASE PL 1 1/2x6x1'-8" 4/S4.11	BASE PL 1 1/2x6x1'-8" 4/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-2" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-0" 2/S4.11	BASE PL 3/4x12x1'-2" 2/S4.11	BASE PL 1 1/2x14x1'-4" 2/S4.11	8333' - 0"
Column Locations	SCB1	SCB2	SCB3	SCB4	SCB5	SCB6	SCB7	SCB8	SCB9	SCB10	

1 NOTES:

1. BASE PLATES SHALL HAVE Fy = 50 KSI, UNLESS NOTED OTHERWISE.
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TOWER B - STEEL COLUMN SCHEDULE

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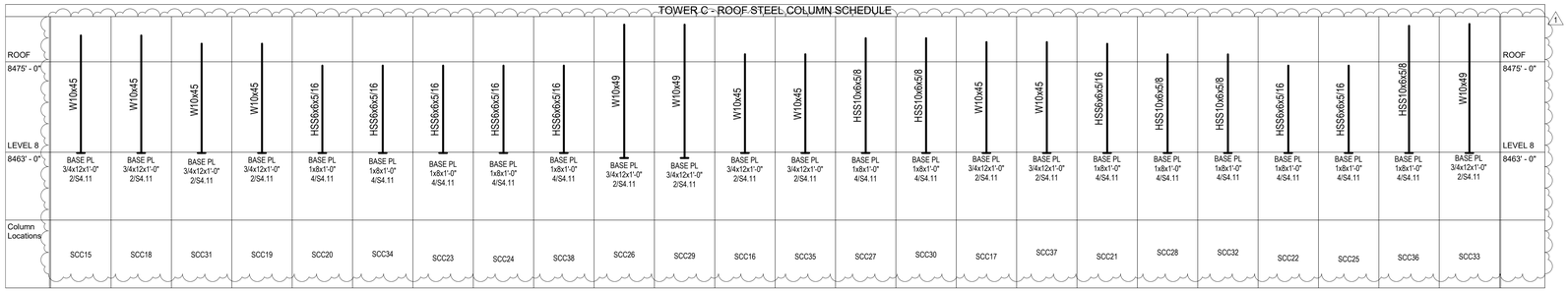
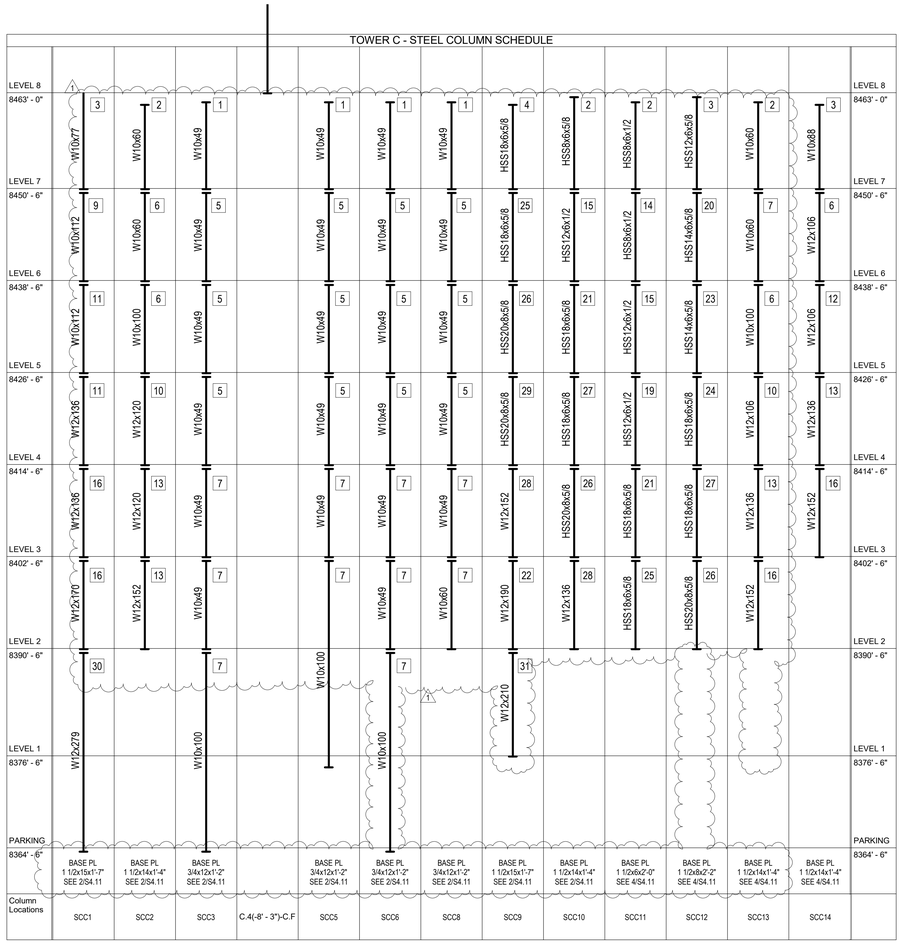
TOWER B STEEL COLUMN SCHEDULE

S4.B.10



TOWER C - ROOF STEEL COLUMN SCHEDULE



NOTES:

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2. [X] INDICATES CONNECTION OF STEEL COLUMN TO CONCRETE SLAB. SEE "TYPICAL TOP OF STEEL COLUMN SUPPORTING CONCRETE FRAMING" DETAIL, "TYPICAL STEEL COLUMN SUPPORTING CONCRETE FRAMING" DETAIL, AND "STEEL COLUMN SLAB PLATE SCHEDULE" ON S4.11

TOWER C - STEEL COLUMN SCHEDULE

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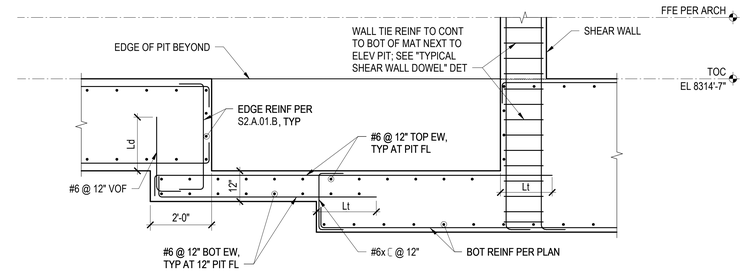
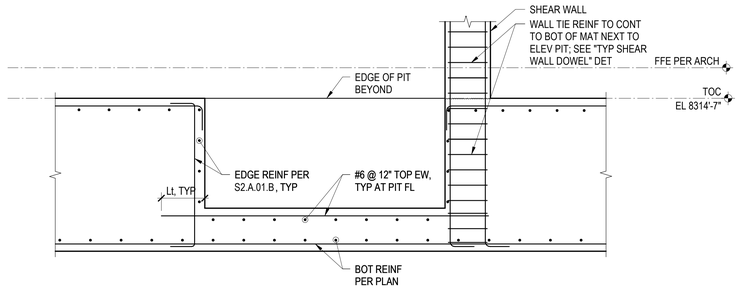
TOWER C STEEL COLUMN SCHEDULE

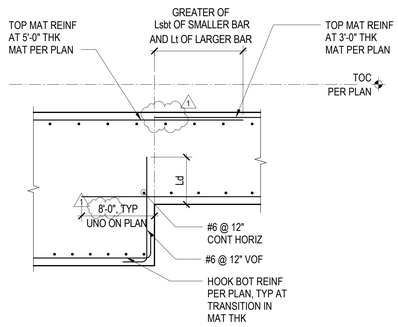
S4.C.10



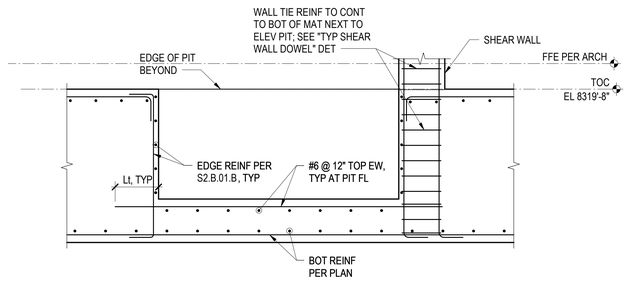
4 SECTION
1/2" = 1'-0"



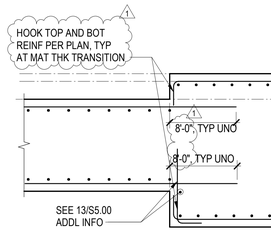
9 SECTION
1/2" = 1'-0"



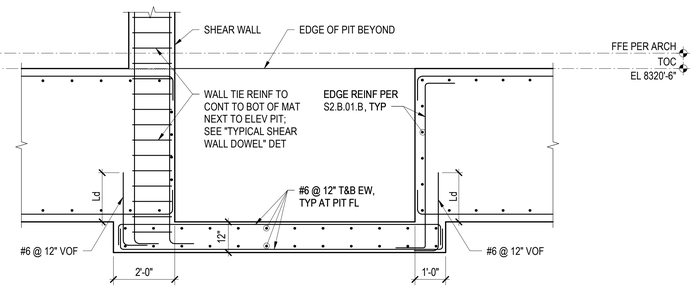
13 SECTION
1/2" = 1'-0"



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



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



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

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TOWER A & B CONCRETE SECTIONS AND DETAILS

S5.00

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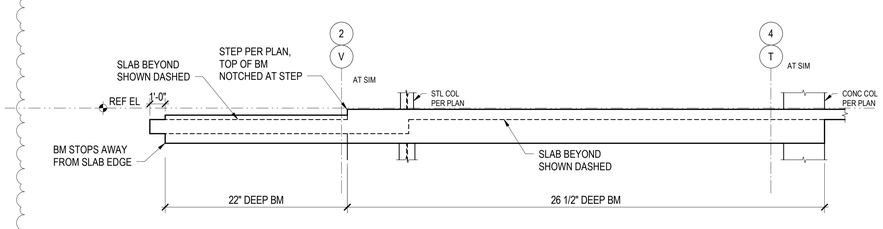
NOTES:

PT NOT SHOWN FOR CLARITY. SLAB REINF NOT SHOWN FOR CLARITY.

1 14 SECTION
1/4" = 1'-0"



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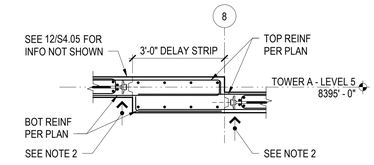
18 SECTION
1/4" = 1'-0"



NOTES:

1. SEE "TYPICAL POST-TENSIONED DELAY STRIP" FOR INFORMATION NOT SHOWN.
2. SHORE SLAB UNTIL DELAY STRIP HAS REACHED 28 DAY DESIGN STRENGTH.
3. LAP SPLICE Lsb UNLESS NOTED OTHERWISE. WHERE LAP CANNOT BE ACHIEVED, PROVIDE BAR COUPLERS THAT REMAIN UNFASTENED UNTIL JUST PRIOR TO CASTING OF CLOSURE STRIP.

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

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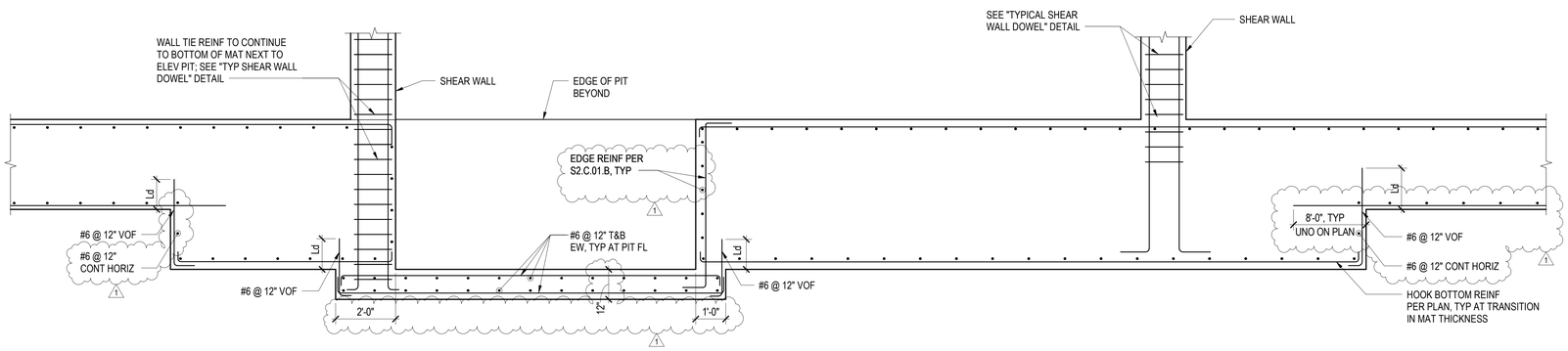
CONSTRUCTION DOCUMENTS

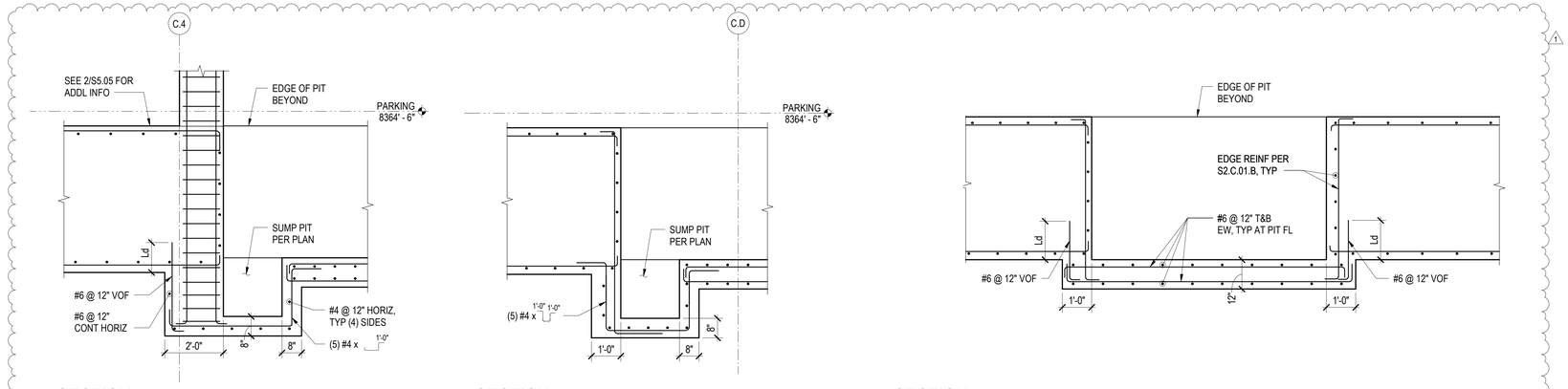
11/18/2022

TOWER A & B CONCRETE SECTIONS AND DETAILS

S5.01 1



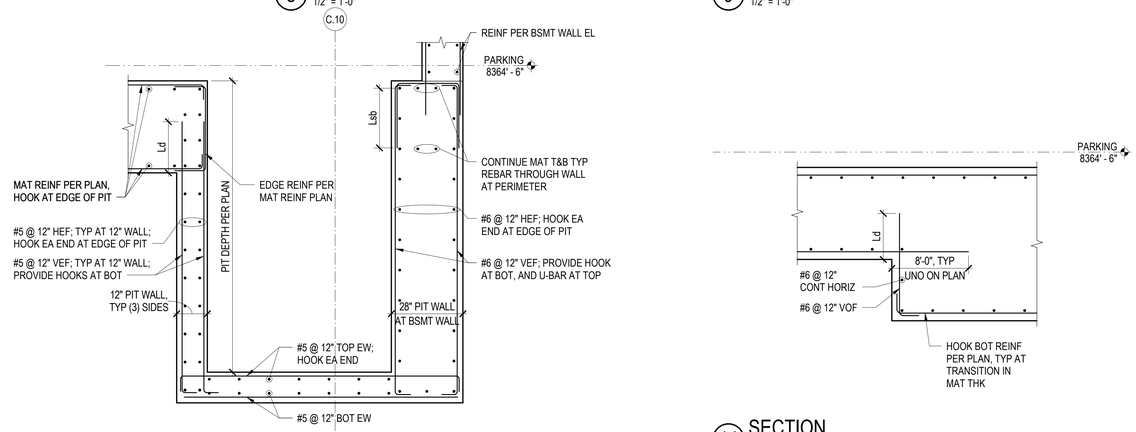
2 SECTION
1/2" = 1'-0"



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

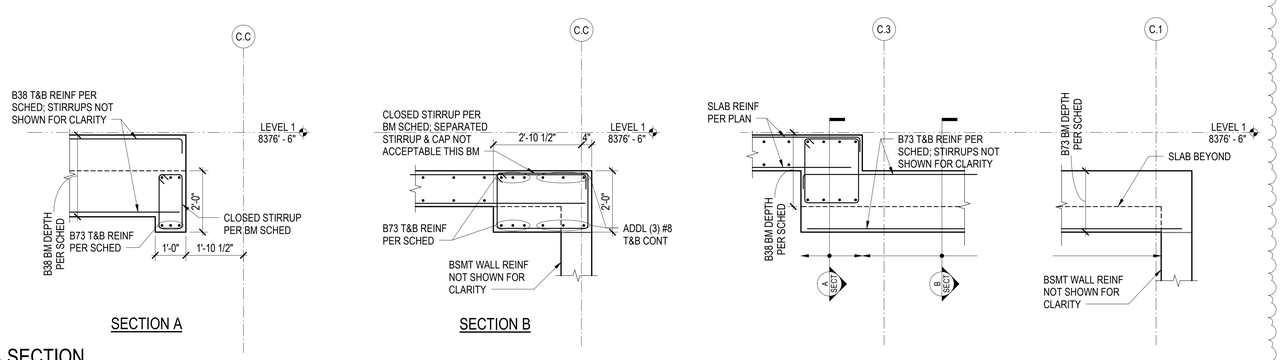
8 SECTION
1/2" = 1'-0"

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



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

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



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

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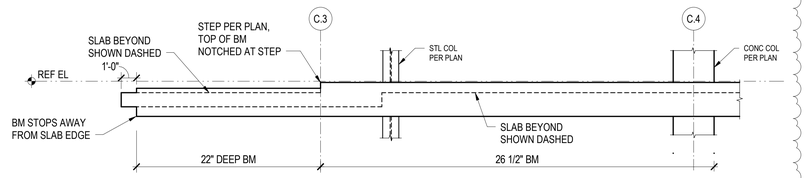
TOWER C
CONCRETE SECTIONS AND DETAILS

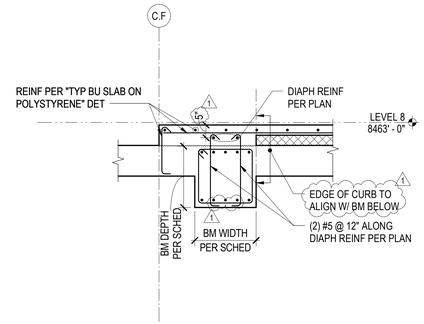
S5.05



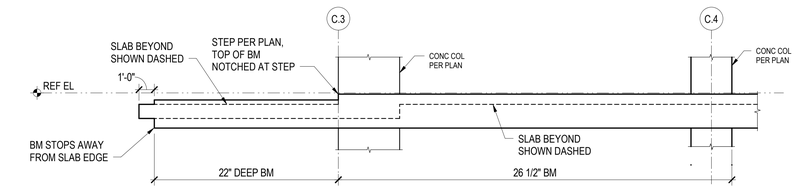
NOTES:

PT NOT SHOWN FOR CLARITY. SLAB REINF NOT SHOWN FOR CLARITY.

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



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



NOTES:

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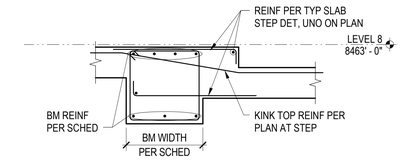
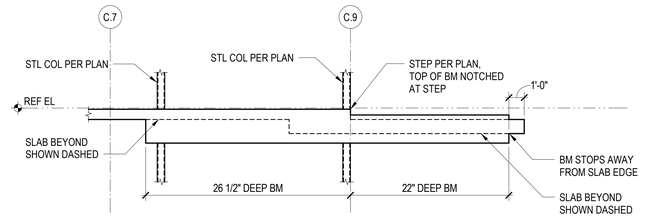
8 SECTION
1/4" = 1'-0"



NOTES:

1. PT TENDONS NOT SHOWN FOR CLARITY.

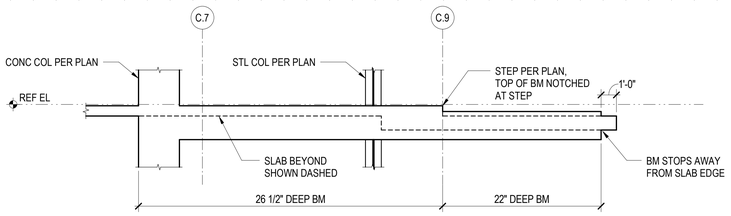
10 SECTION
1/2" = 1'-0"



NOTES:

PT NOT SHOWN FOR CLARITY. SLAB REINF NOT SHOWN FOR CLARITY.

14 SECTION
1/4" = 1'-0"



NOTES:

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1/4" = 1'-0"

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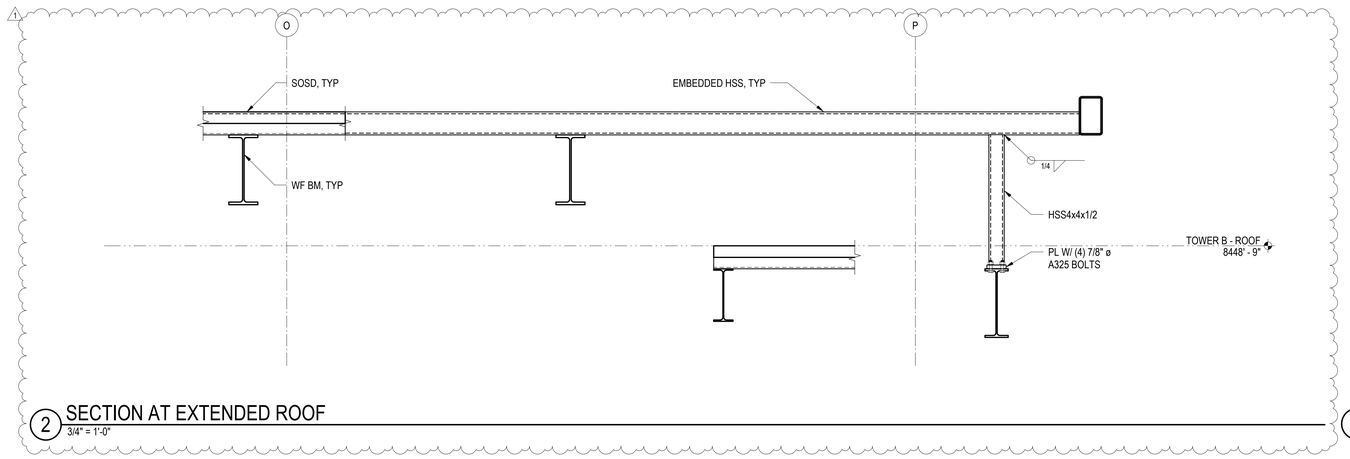
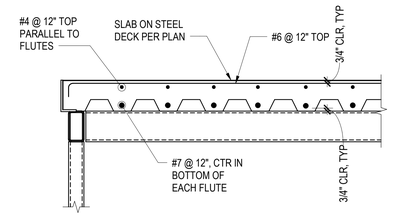
TOWER C
CONCRETE
SECTIONS AND
DETAILS

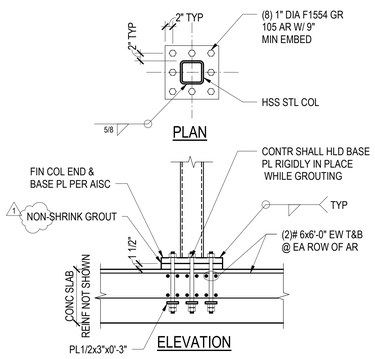
S5.06



2 SECTION AT EXTENDED ROOF
3/4" = 1'-0"



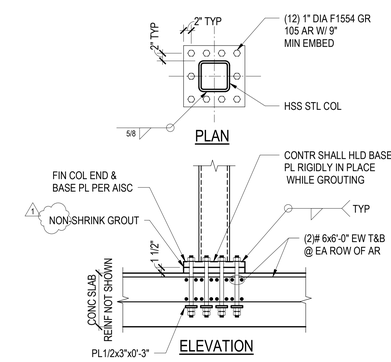
5 SECTION
3/4" = 1'-0"



NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND PLATE WASHER SHALL BE SIZED PER " AISC MANUAL. TABLE 14-2", UNLESS NOTED OTHERWISE.

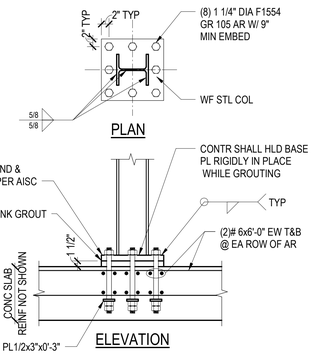
17 BASE PLATE AT SMALL HSS IN CONNECTOR
3/4" = 1'-0"



NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND PLATE WASHER SHALL BE SIZED PER " AISC MANUAL. TABLE 14-2", UNLESS NOTED OTHERWISE.

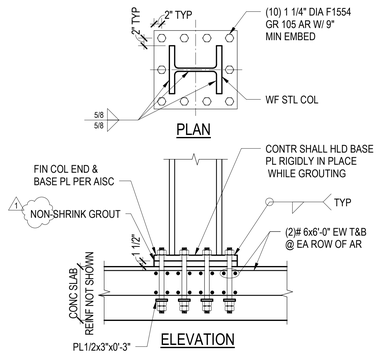
18 BASE PLATE AT LARGE HSS IN CONNECTOR
3/4" = 1'-0"



NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND PLATE WASHER SHALL BE SIZED PER " AISC MANUAL. TABLE 14-2", UNLESS NOTED OTHERWISE.

19 BASE PLATE AT SMALL WF IN CONNECTOR
3/4" = 1'-0"



NOTES:

1. TIGHTEN ANCHOR RODS SNUG TIGHT AND SCORE ROD THREADS TO PREVENT LOOSENING.
2. BASE PLATE HOLE DIAMETER AND PLATE WASHER SHALL BE SIZED PER " AISC MANUAL. TABLE 14-2", UNLESS NOTED OTHERWISE.
3. WHERE BAR LENGTH CANNOT BE ACHIEVED DUE TO SLAB EDGE, HOOK REINFORCING.

20 BASE PLATE AT LARGE WF IN CONNECTOR
3/4" = 1'-0"

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date 11/18/2022

revisions:

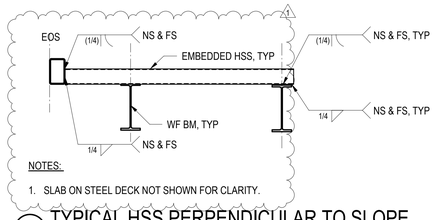
no.	date	by
1	11/18/2022 IFC	

CONSTRUCTION
DOCUMENTS

11/18/2022

TOWER A & B
STEEL SECTIONS
AND DETAILS

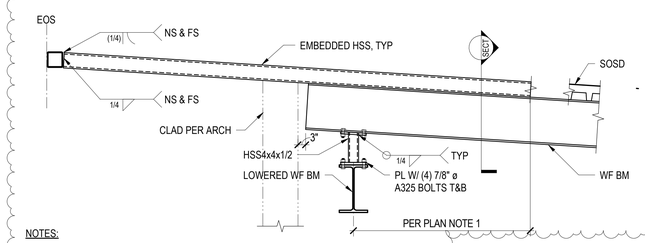
S6.00



NOTES:

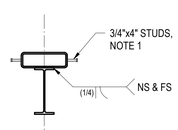
1. SLAB ON STEEL DECK NOT SHOWN FOR CLARITY.

2 TYPICAL HSS PERPENDICULAR TO SLOPE
1/2" = 1'-0"



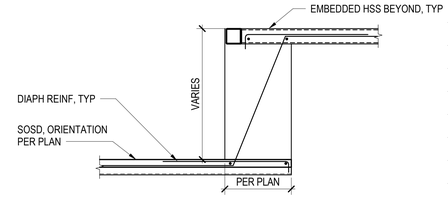
NOTES:

1. WHERE EMBEDDED HSS OVERLAPS WITH WF BEAM, PLEASE PLACE STUDS CALLED OUT ON PLAN FOR WF BEAM ON THE SIDES OF THE EMBEDDED HSS. WHEREVER THIS OCCURS, THERE SHALL BE ONE STUD AT EACH SIDE OF THE EMBEDDED HSS.
2. ORIENTATION OF WELD MAY VARY DEPENDING ON RELATIVE WIDTH OF THE EMBEDDED HSS AND THE WF BEAM.



SECTION

3 TYPICAL CANOPY HSS PARALLEL TO SLOPE
1/2" = 1'-0"



NOTES:

1. REFER TO CONNECTION TYPE C23 AT INCOMING BEAM.
2. PLATE HEIGHT WILL VARY ALONG THE LENGTH OF THE SLOPING WIDE FLANGE STEEL BEAM.
3. CONTINUOUSLY BUTT WELD PLATE TO PLATES PER "TABLE E" WHEREVER THERE IS AN INCOMING BEAM.

5 TYPICAL CANOPY SLOPED BEAM
1/2" = 1'-0"

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revisions:

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1	11/18/2022	IFC

CONSTRUCTION DOCUMENTS

11/18/2022

TOWER C STEEL SECTIONS AND DETAILS

S6.05