


**REVIEWED**  
03/13/2024  
*PWW*  
Planning &  
Development  
D.O.A.

PLAN  
NORTH



0 5' 10'



Reviewer	Agency	Date
Bleakley, Neil T	PE-B	07/19/2024
Walker, James J	Fire Reviewer	04/02/2024
Smith, Keri A	ERM Reviewer	09/30/2024
ePZB Approval Data		

B-2023-049030-0000

- SHEET NOTES:
- FOR SLAB CONTROL JOINTS REFER TO C/S-501
  - FOR EXPANSION JOINTS REFER TO A4/S-501



**C&S**  
COMPANIES®

C&S Engineers, Inc.  
605 E. Robinson Street, Suite 210  
Orlando, Florida 32801  
Phone: 407-422-1118  
Fax: 407-841-9149  
FL. L.B. No. 7513  
COA No. 7602  
www.cscos.com



ATLANTIC AVIATION FLORIDA, INC.  
PBI HANGARS - PHASE 1

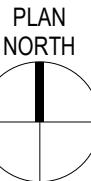
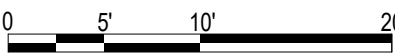
1	2/20/24	PBZ Comments
MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO:	K98.002.001	
DATE:	OCTOBER 2023	
DRAWN BY:	B. WARNER, PE	
DESIGNED BY:	B. WARNER, PE	
CHECKED BY:	K. STEGMEIER II, PE	
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION		

STRUCTURAL SLAB  
JOINT PLAN - HANGAR J

S102A

A1 SLAB JOINT PLAN - HANGAR J

SCALE: 3/32" = 1'-0"



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PALM BEACH, FLORIDA

ATLANTIC AVIATION FLORIDA, INC.

PBI HANGARS - PHASE 1

PALM BEACH INTERNATIONAL AIRPORT

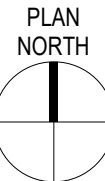
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STRUCTURAL SLAB  
JOINT PLAN - HANGAR  
K

S102B

A1 SLAB JOINT PLAN - HANGAR K

SCALE: 3/32" = 1'-0"



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D.O.A.

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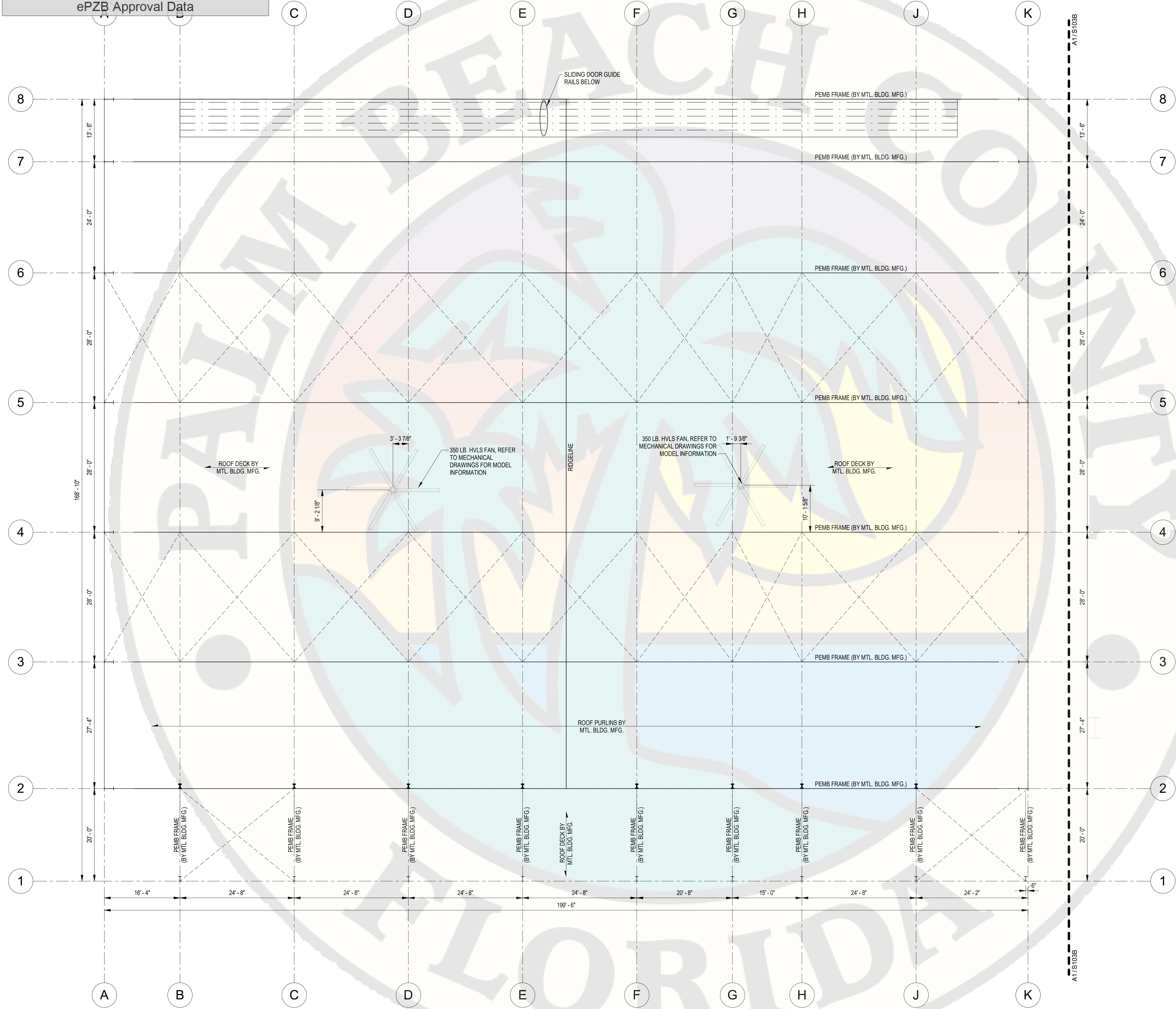
PBI HANGARS - PHASE 1

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ROOF FRAMING PLAN -  
HANGAR J

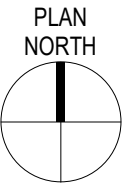
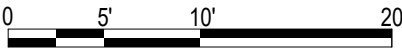
S103A



UNDER  
REVIEW  
11/01/2023  
GS  
Planning &  
Development  
D.O.A.

A1 ROOF FRAMING PLAN - HANGAR J

SCALE: 3/32" = 1'-0"





INSTRON LAP SPUCE LENGTH CHART				
CLASS B				
F'c=4000psi				
TOP BARS		OTHER BARS		
CASE 1	CASE 2	CASE 1	CASE 2	
24	36	19	28	
32	48	25	37	
40	60	31	47	
48	72	37	56	
70	106	54	81	
80	121	62	93	
91	136	70	105	
102	153	79	118	
113	170	87	131	

BAR SIZE	TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2
#3	24	36	19	28
#4	32	48	25	37
#5	40	60	31	47
#6	48	72	37	56
#7	70	106	54	81
#8	80	121	62	93
#9	91	136	70	106
#10	102	153	79	118
#11	113	170	87	131

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

BEAMS OR COLUMNS	CASE 1	COVER AT LEAST 1 d <sub>b</sub> AND c-c. SPACING AT LEAST 2 d <sub>b</sub>
	CASE 2	COVER LESS THAN 1 d <sub>b</sub> AND c-c. SPACING LESS THAN 2 d <sub>b</sub>
ALL OTHERS	CASE 1	COVER AT LEAST 1 d <sub>b</sub> AND c-c. SPACING AT LEAST 3 d <sub>b</sub>
	CASE 2	COVER LESS THAN 1 d <sub>b</sub> AND c-c. SPACING LESS THAN 3 d <sub>b</sub>

4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
5. FOR LIGHTWEIGHT AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.
6. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED VALUES BY ONE OF THE FOLLOWING FACTORS:

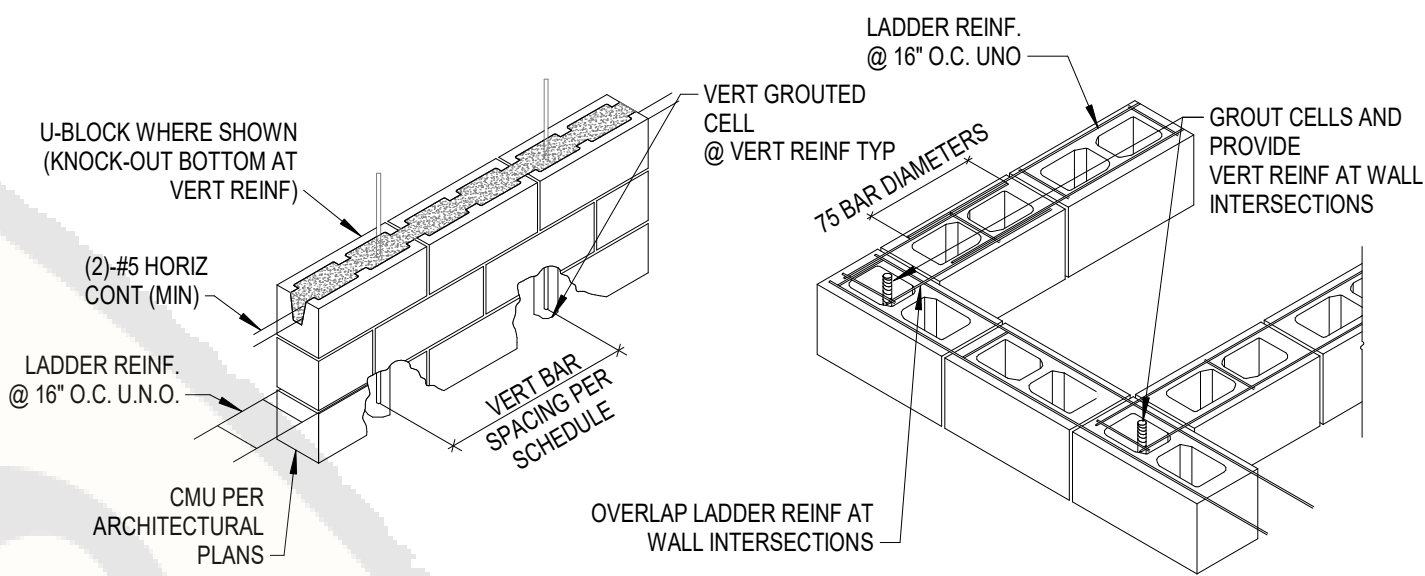
CONCRETE COVER AND SPACING	TOP BARS	OTHER BARS
COVER < 3d <sub>b</sub> OR C.-C. SPACING < 7d <sub>b</sub>	1.7	1.50
COVER > 3d <sub>b</sub> AND C.-C. SPACING > 7d <sub>b</sub>	1.6	1.20

MINIMUM CMU REINFORCING SCHEDULE			
WALL THICKNESS	WALL HEIGHT	VERTICAL REIF	HORIZ REINF
		EXTERIOR WALL	EXTERIOR WALL
4"	<= 6'-0"	#5 @ 48" OC	LADDER REINF @ 16" O.C.
8"	<= 6'-0"	#5 @ 48" OC	

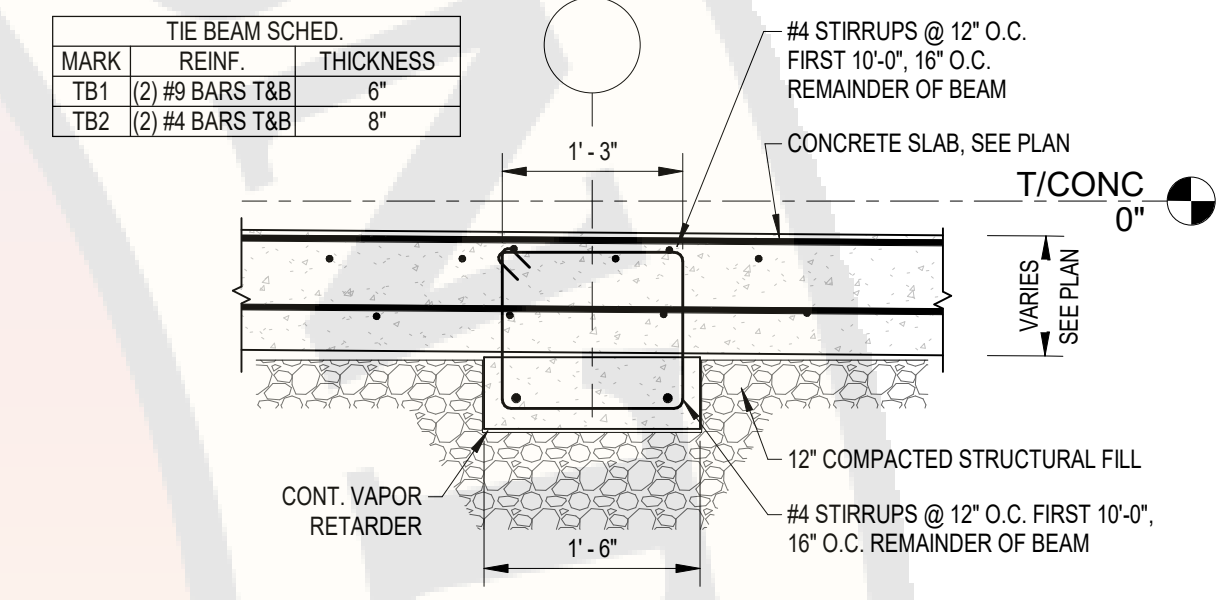
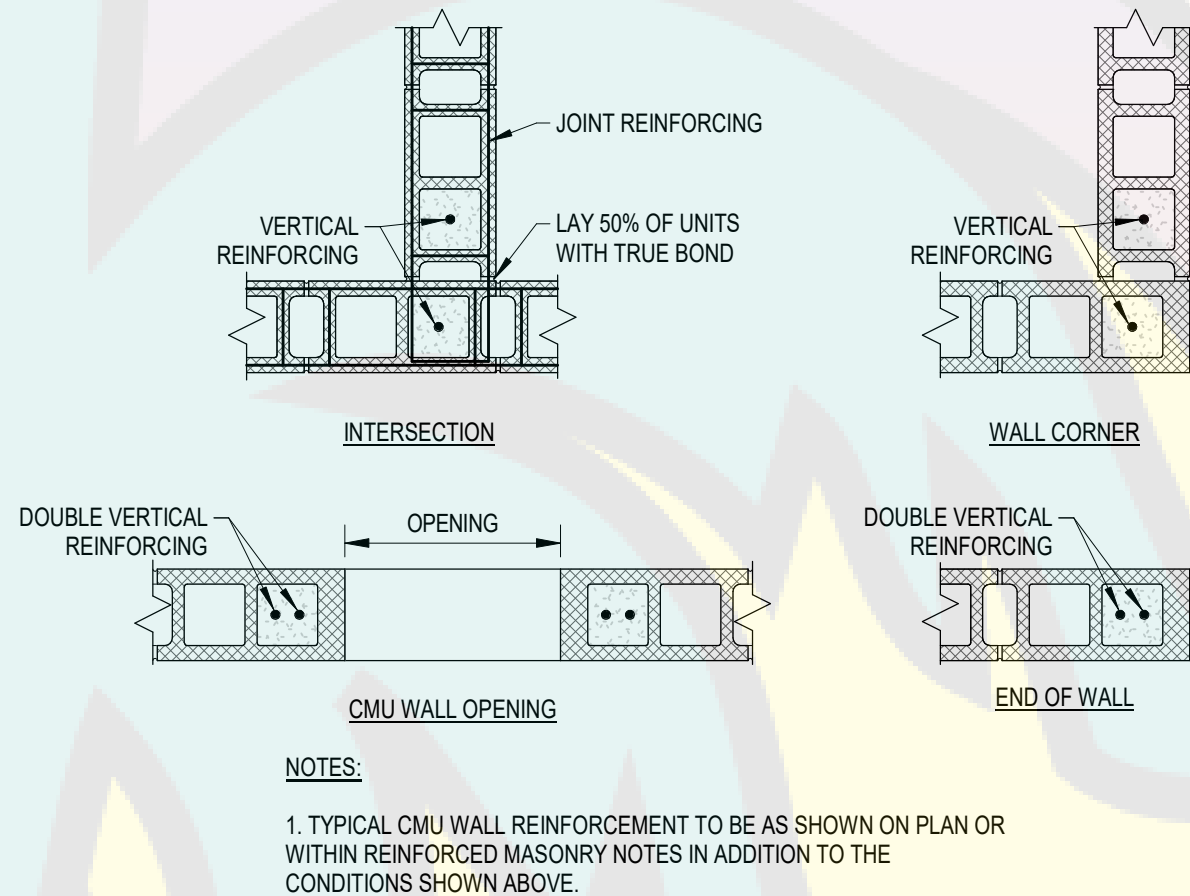
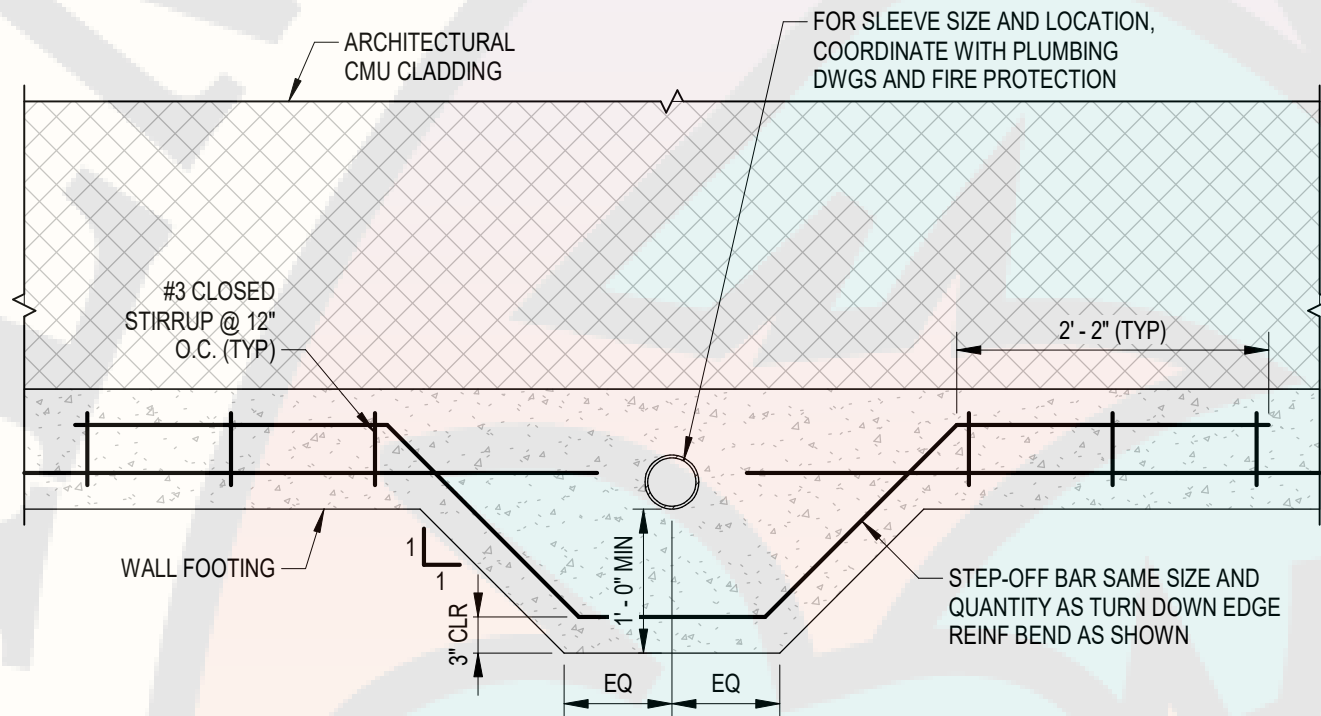
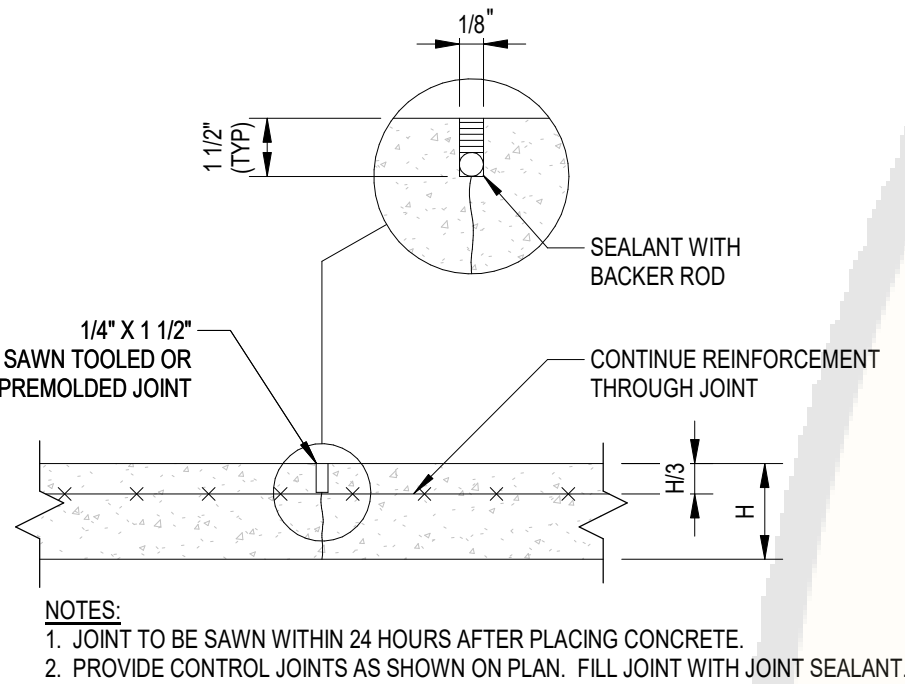
WALL THICKNESS	WALL HEIGHT	OPENING WIDTH	EXTERIOR WALL REINF
4"	<= 6'-0"	< 4'-0"	1 EA #5 EF
		<= 10'-0"	1 EA #5 EF
8"	<= 6'-0"	< 4'-0"	1 EA #5 EF
		<= 10'-0"	1 EA #5 EF

1. WALL HEIGHT IS THE DISTANCE FROM BOTTOM OF MASONRY WALL TO THE LOCATION OF THE TOP LATERAL SUPPORT.
2. WHERE BARS ARE CALLED OUT EACH FACE (EF), BARS SHALL BE PLACED IN A DOUBLE CURTAIN W/ ONE BAR TOWARD EACH FACE OF THE WALL. OTHERWISE BARS SHALL BE CENTERED IN THE WALL.
3. IN ADDITION TO THE SCHEDULED REINFORCEMENT, WALLS SHALL HAVE A CONTINUOUS BOND BEAM W/ AT LEAST 1 EA #5 BARS AT OR NEAR THE TOP OF THE HEIGHT INDICATED IN NOTE #1 OR DOUBLE THE DISTANCE FROM THE LATERAL SUPPORT TO THE TOP OF THE WALL.

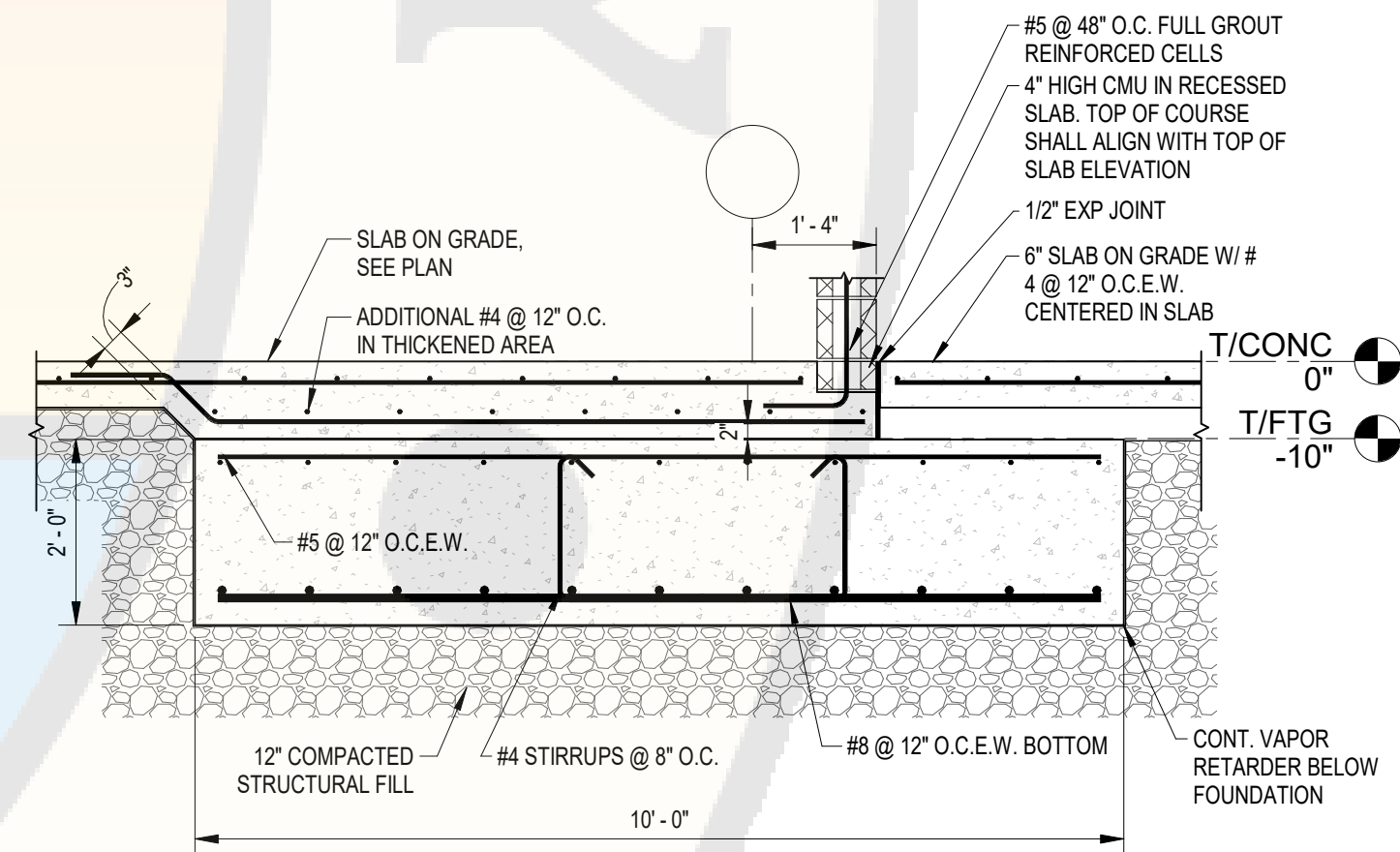
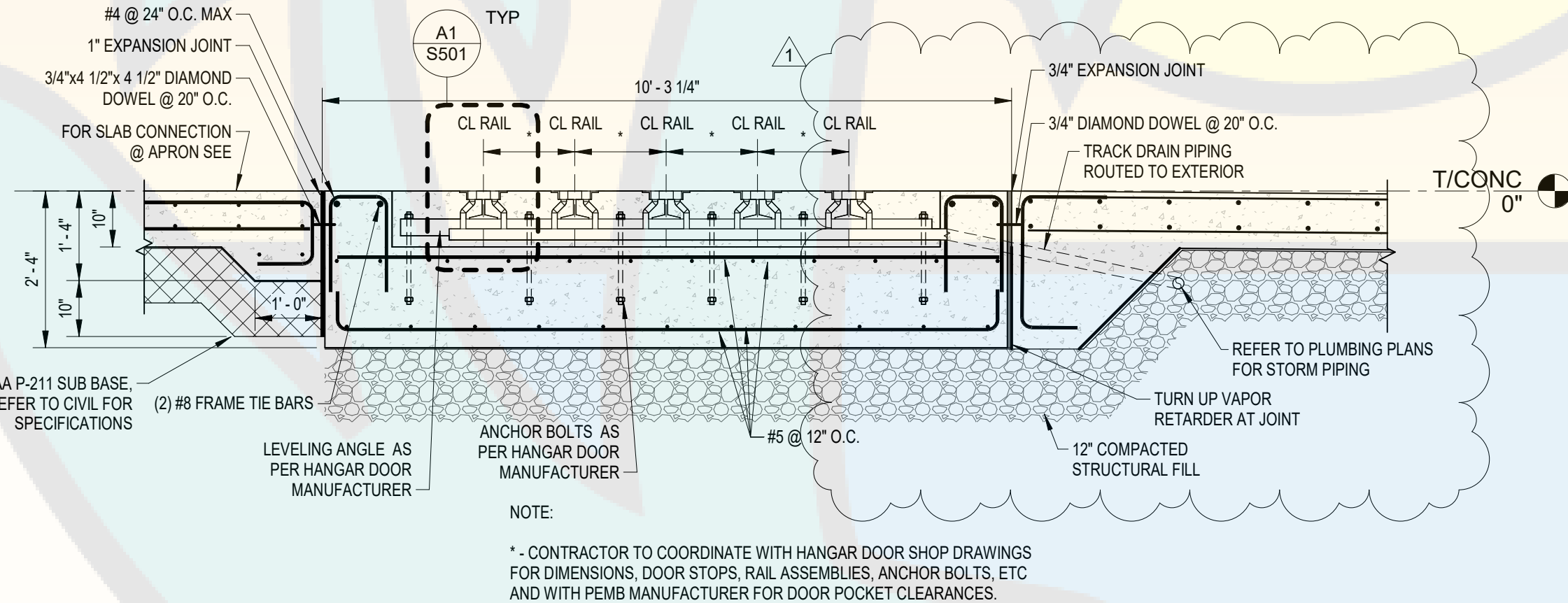
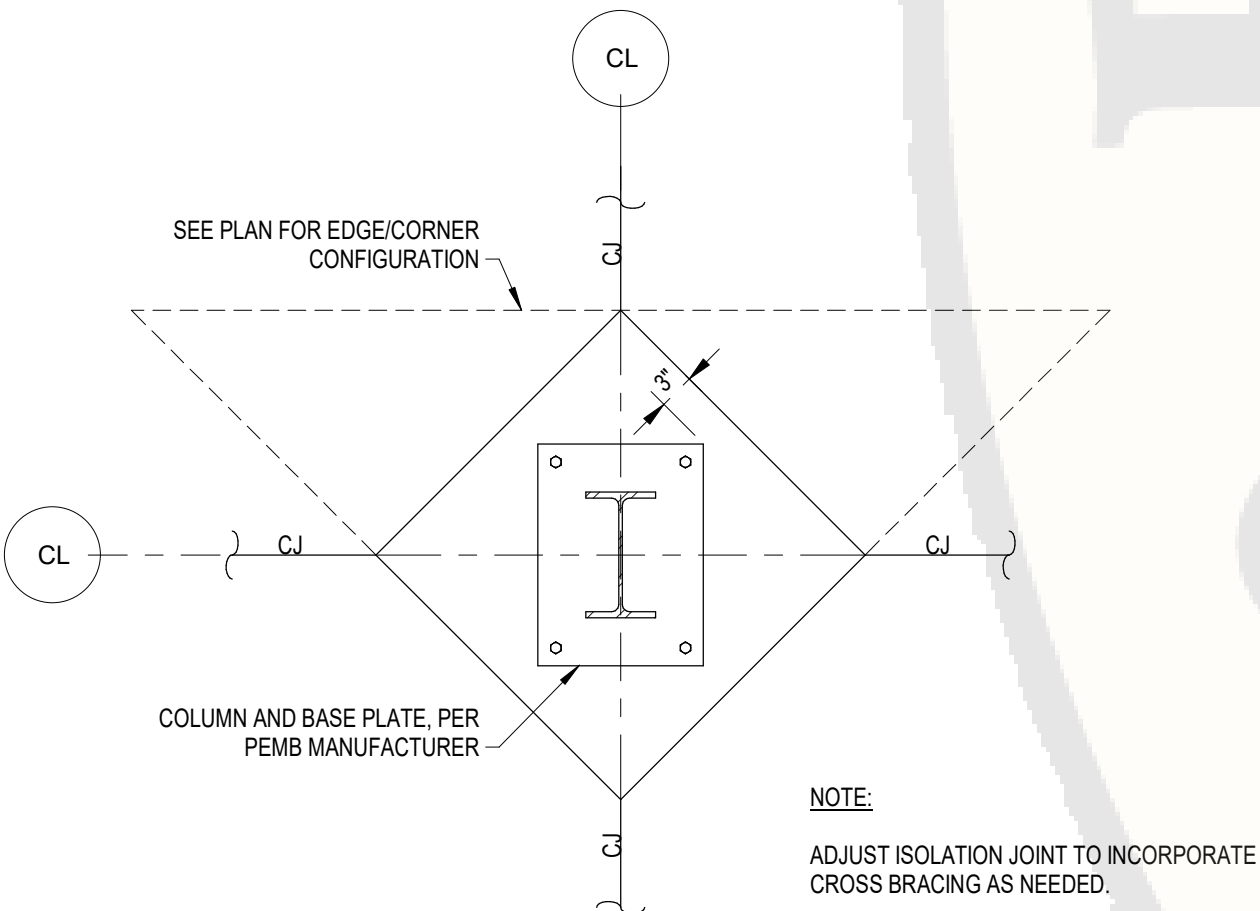
BAR SIZE	8" CMU
	SINGLE REINF
3	19"
4	24"
5	30"
6	36"



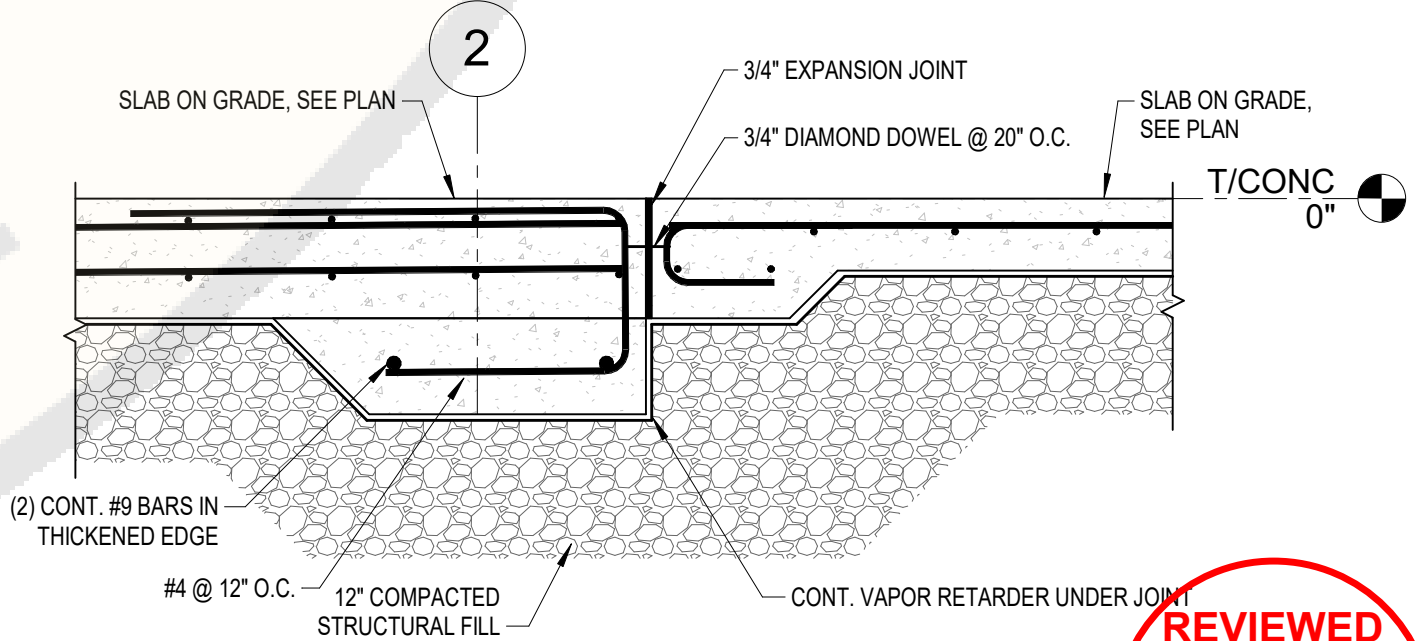
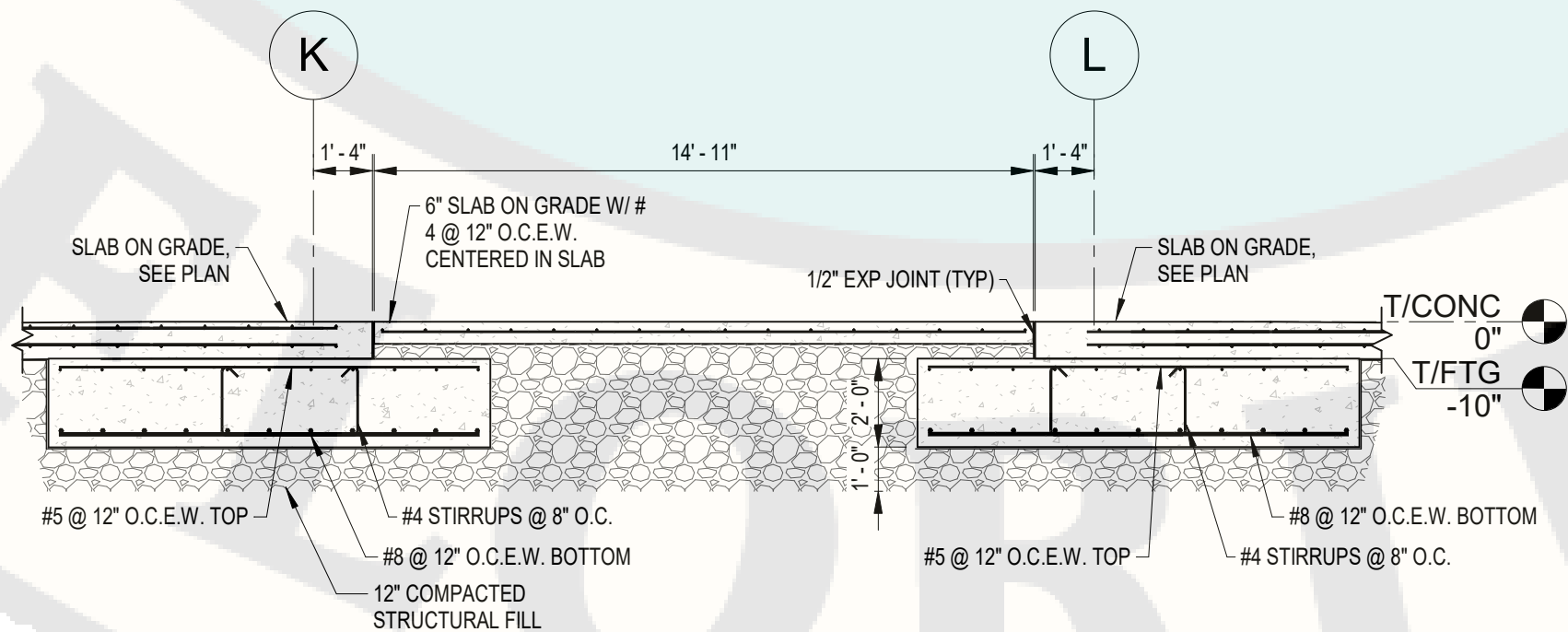
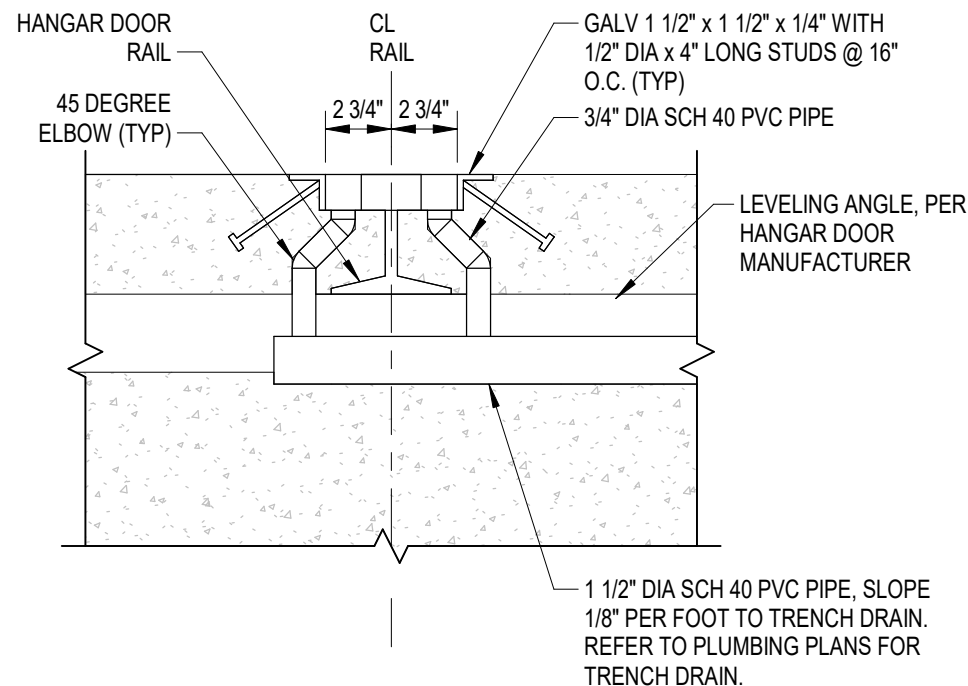
**D4** **TYPICAL CMU REINFORCING DETAIL**  
SCALE: 1/2" = 1'-0"



## C4 TYPICAL CONCRETE TIE BEAM DETAIL



**B4 THICKENED SLAB @ OFFICE SLAB**  
SCALE: 1/2" = 1'-0"



**A4** **TYPICAL SLAB TRANSITION DETAIL**  
SCALE: 3/4" = 1'-0"

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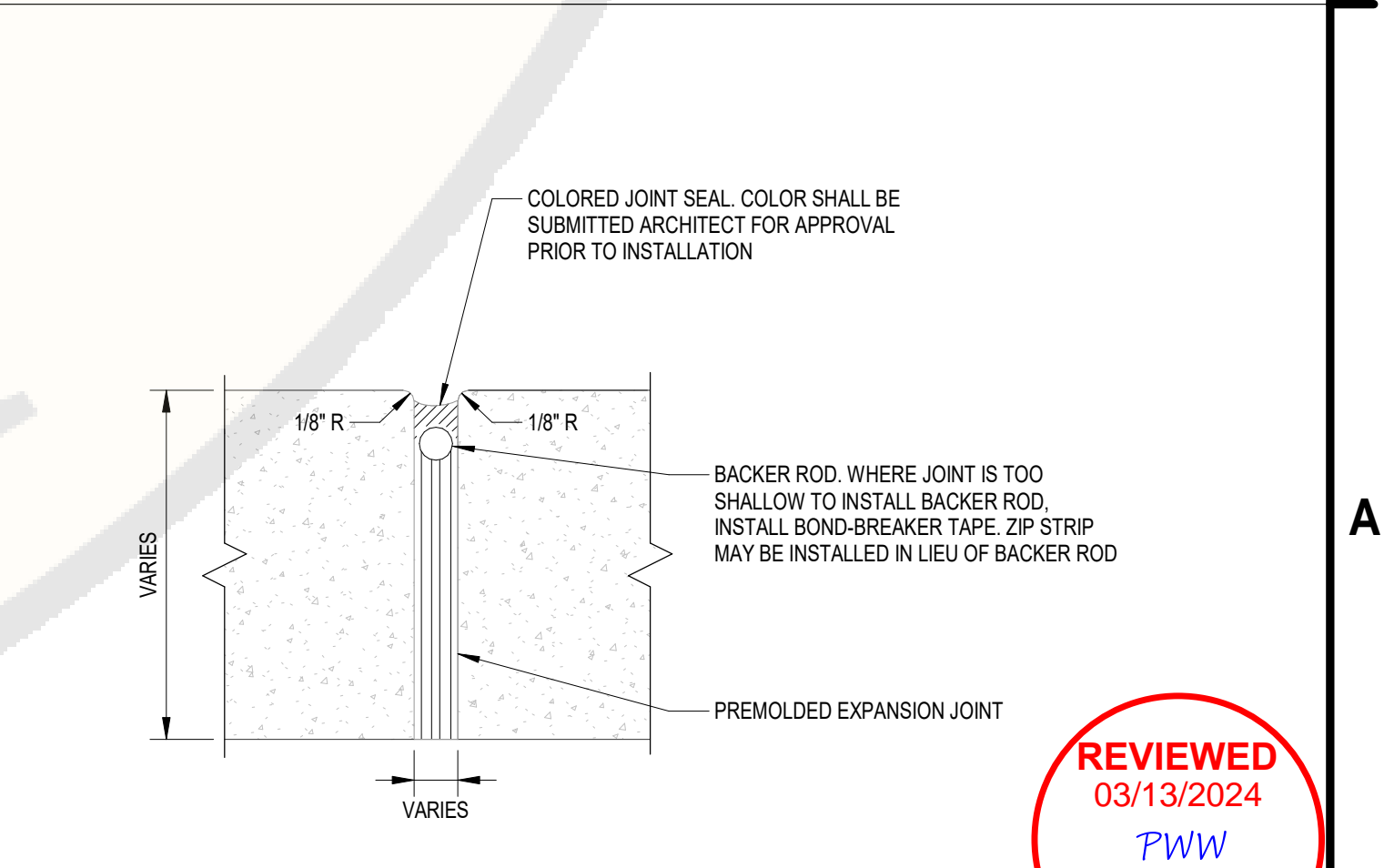
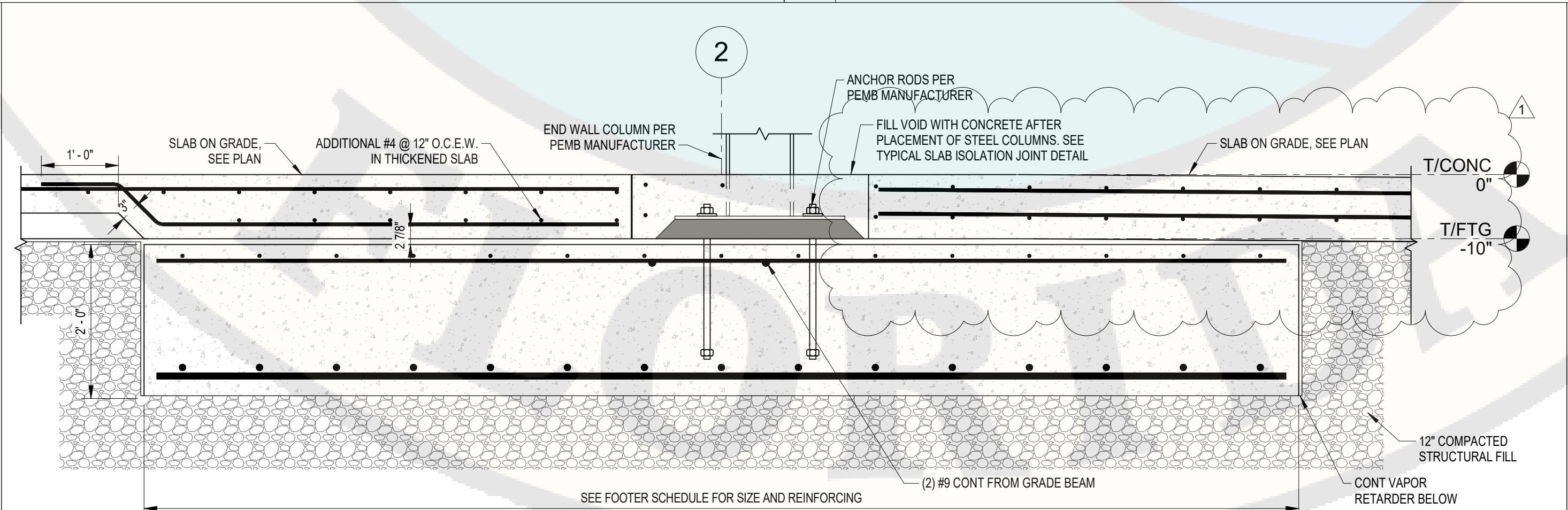
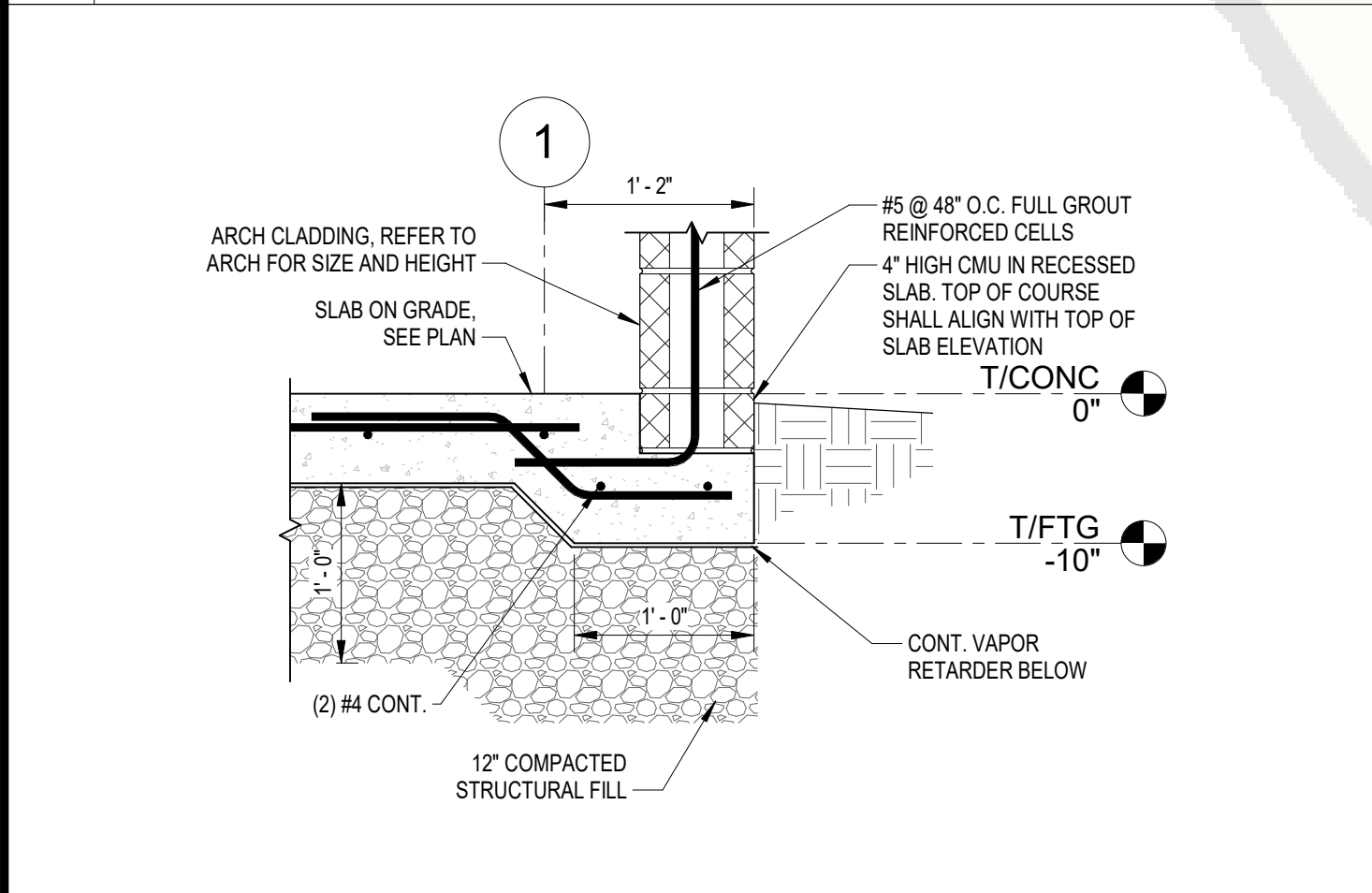
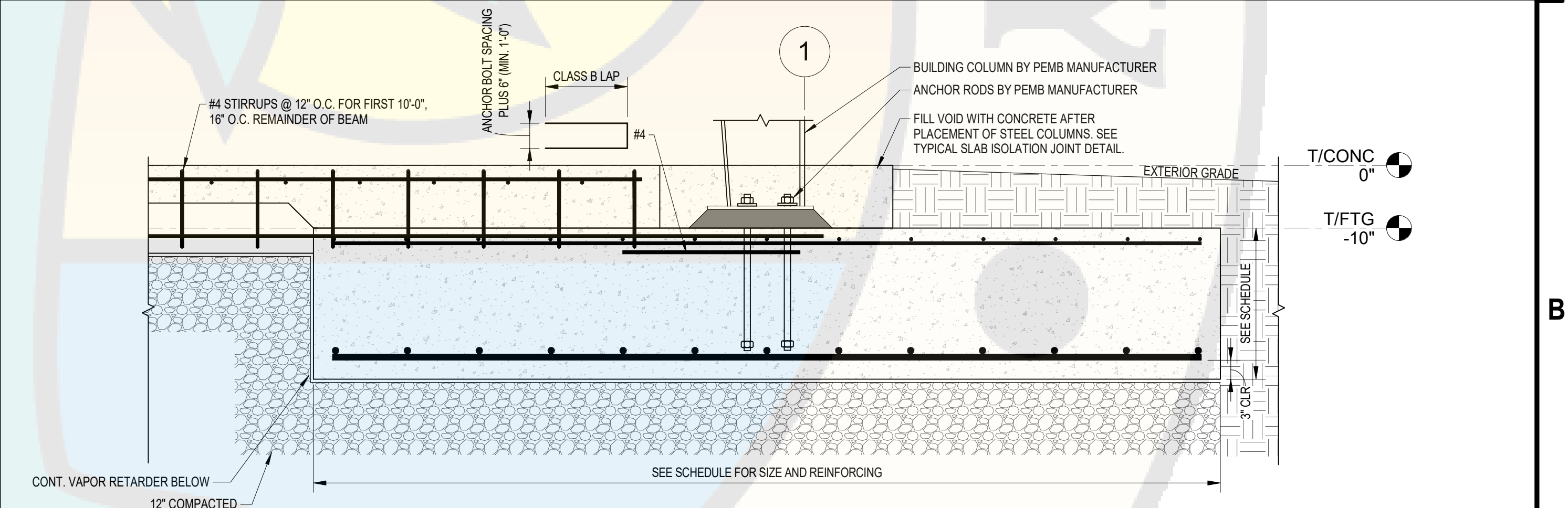
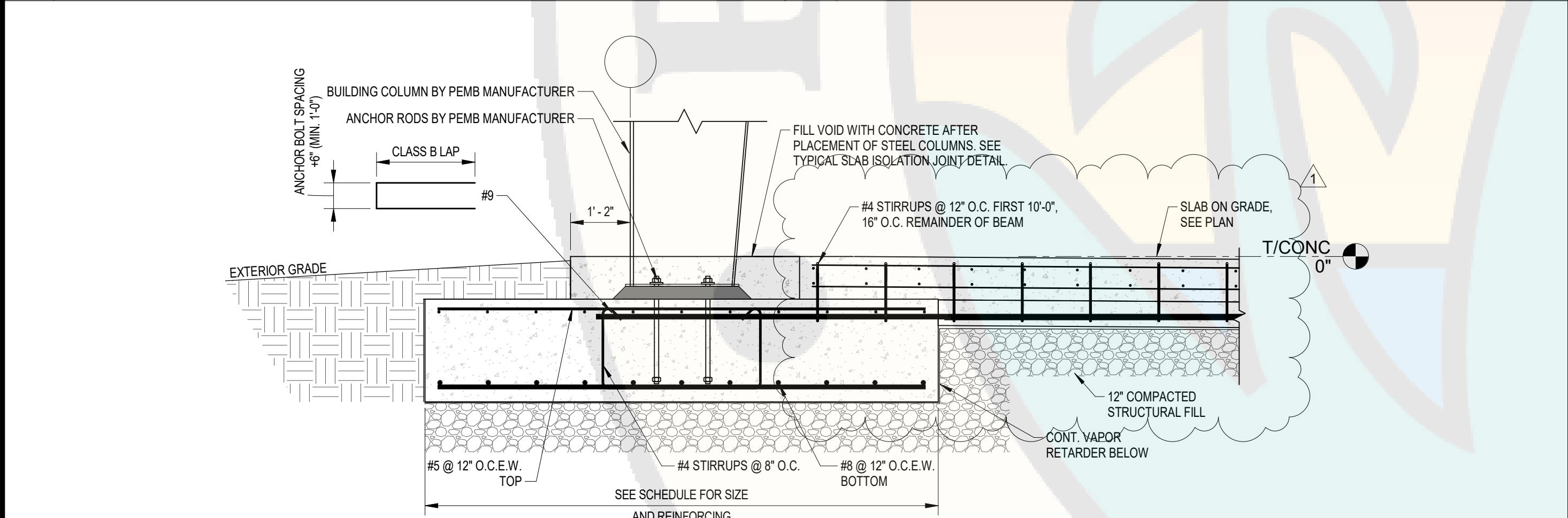
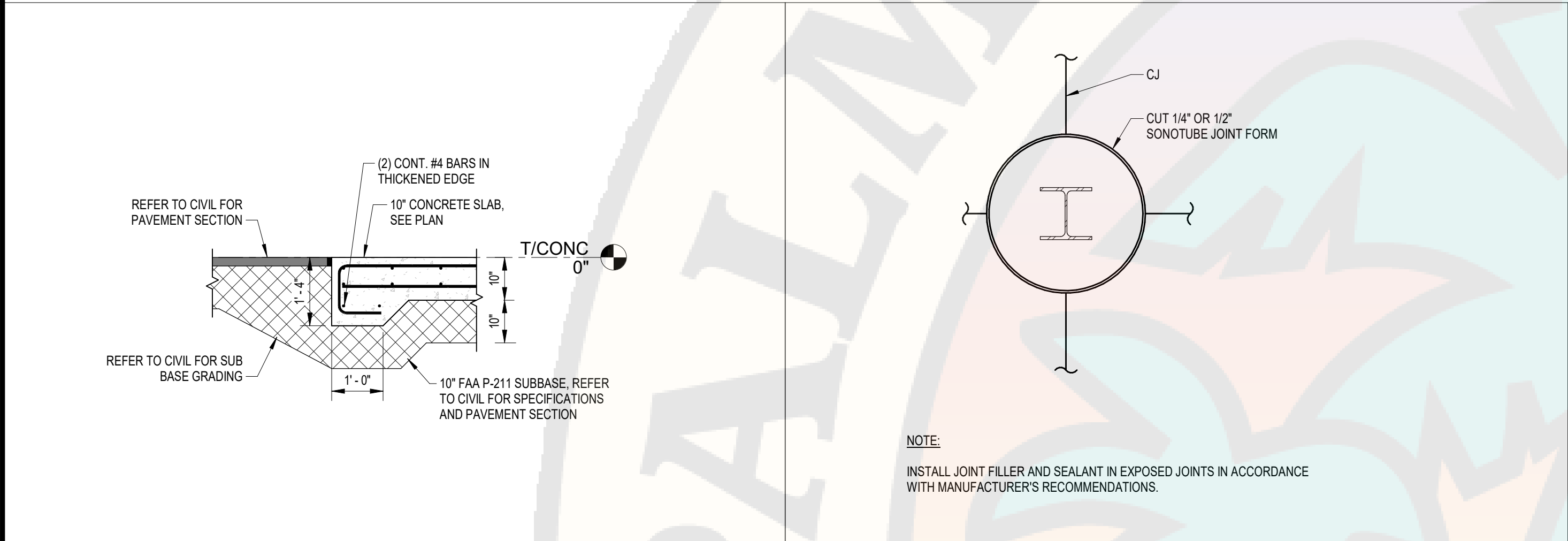
ATLANTIC AVIATION FLORIDA, INC.  
PBI HANGARS - PHASE 1

PALM BEACH INTERNATIONAL AIRPORT

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STRUCTURAL DETAILS

S502



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