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checked by \_\_\_\_\_  
job no. 20052  
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2 04/08/2024 IFC SET 1 OF 3  
1 11/18/2022 95% CD  
no. date by

ISSUED FOR CONSTRUCTION  
SET 1 OF 3

04/08/2024

TYPICAL STEEL DETAILS

**S4.12**

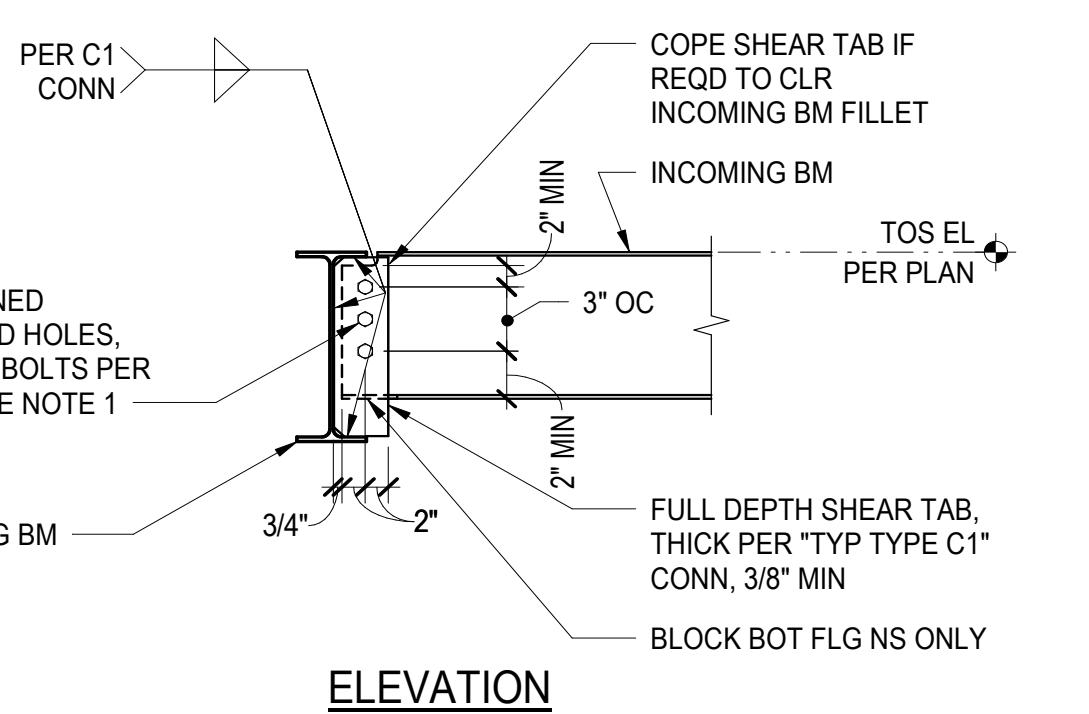
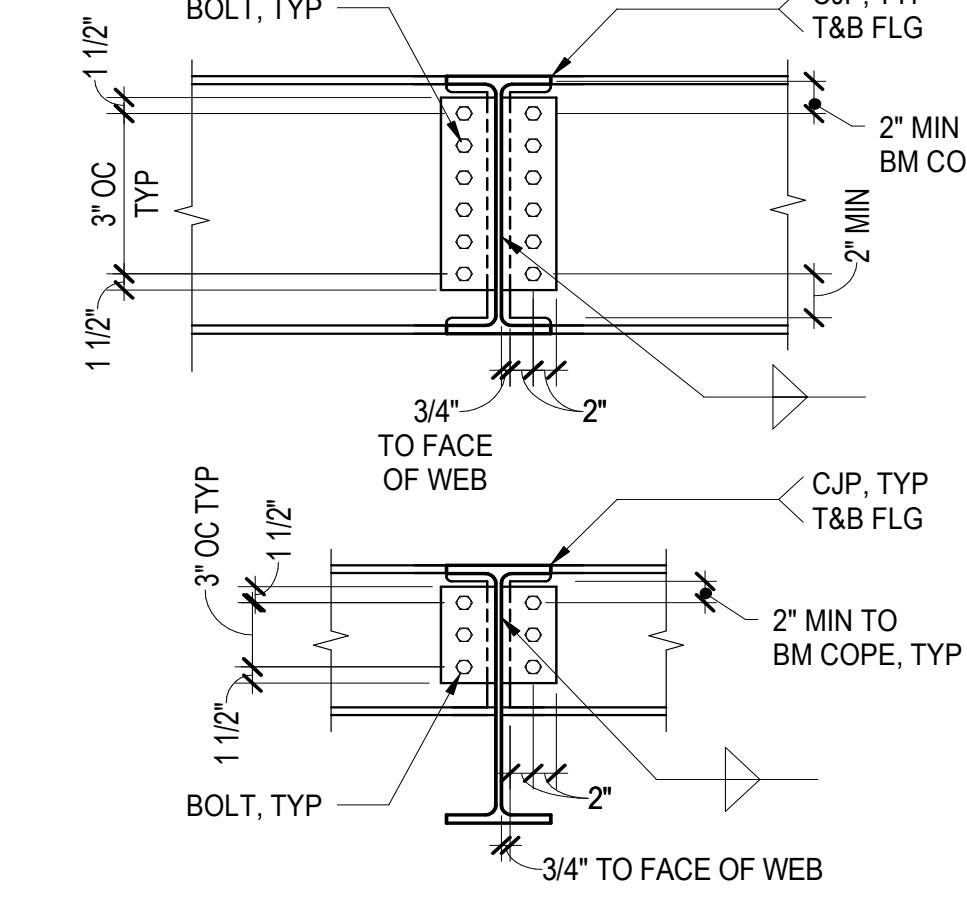


TABLE G	
BM SIZE (NOTE 3)	MINIMUM NUMBER OF BOLTS
W10	2
W12, W14	3
W16	4
W18	5
W21	6
W24	7
W27	8
W30	9
W33, W36	10
W40	11
W44	12

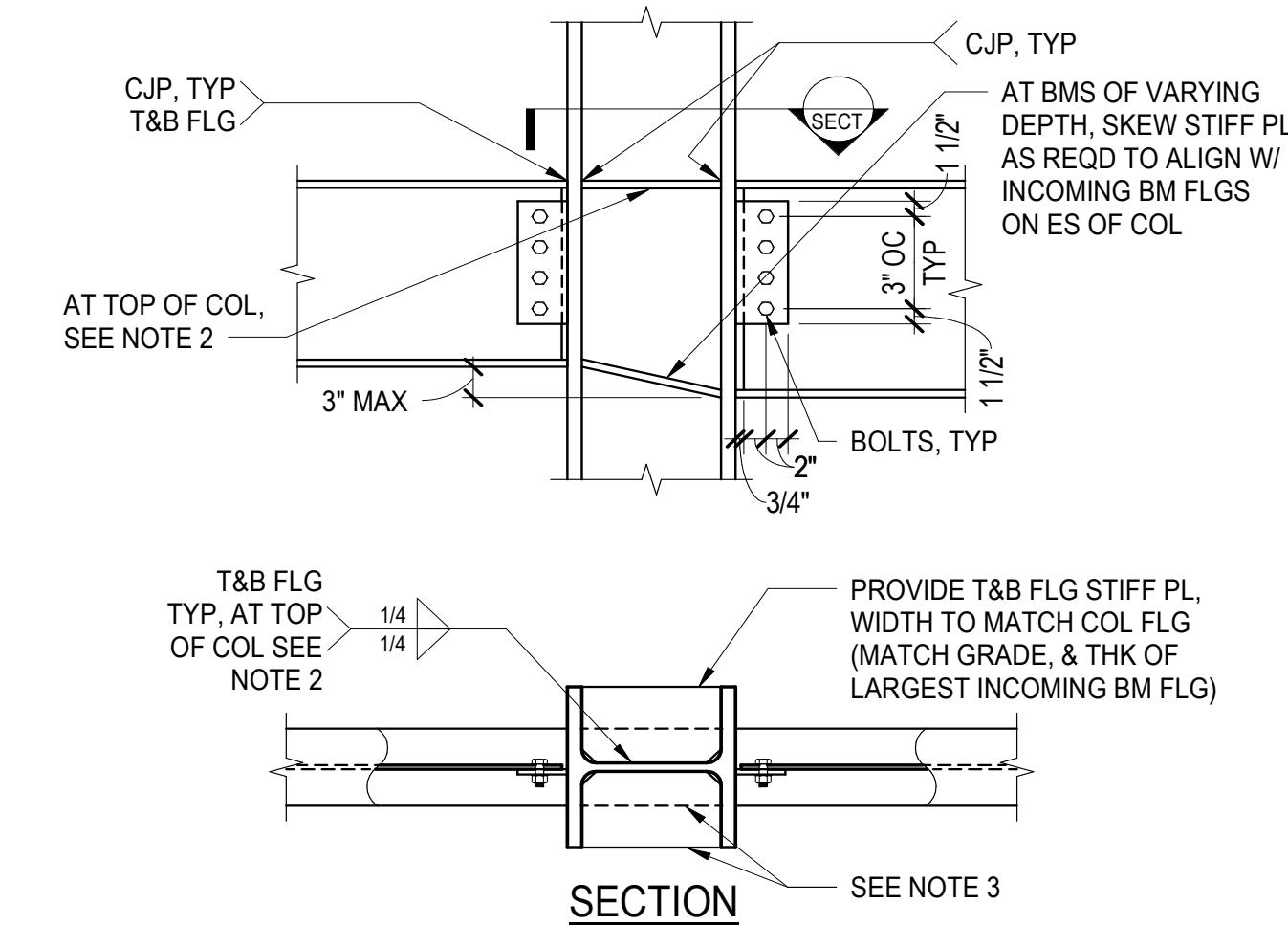
- NOTES:
- SEE "TYPICAL TYPE C1" FOR BOLT SIZE AND TYPE, WELD SIZE, PLATE THICKNESS, AND COPE REQUIREMENTS.
  - THIS CONNECTION SHALL ONLY BE USED WHEN SPECIFICALLY CALLED OUT ON PLAN OR IN A DETAIL.
  - BEAM SIZE IS SHALLOWER OF INCOMING AND SUPPORTING BEAM.

③ TYPICAL STEEL CONNECTION, TYPE C30



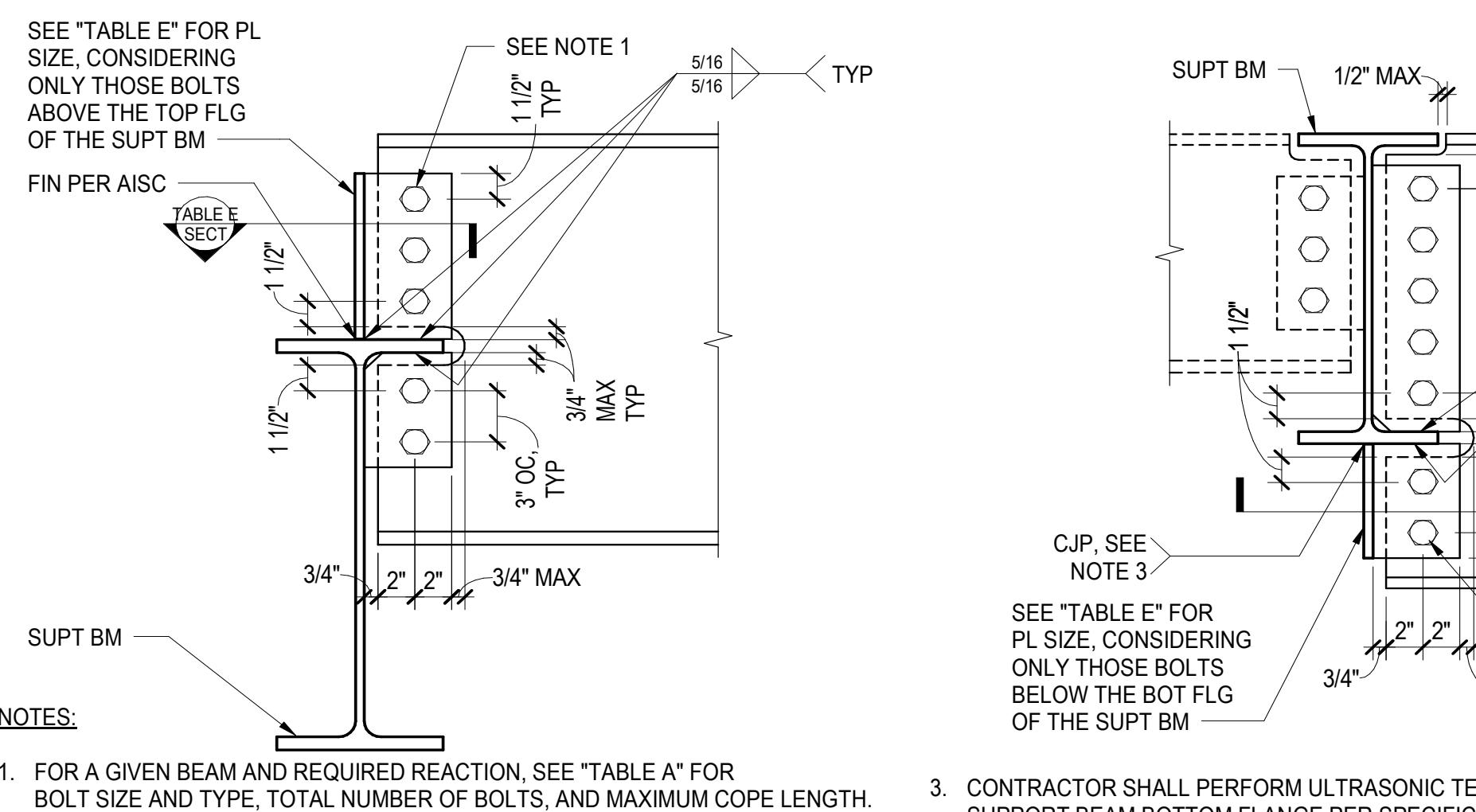
- NOTES:
- SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
  - THIS DETAIL APPLIES ONLY FOR BEAMS OF EQUAL DEPTH EACH SIDE OF SUPPORTING BEAM.

⑤ TYP BEAM TO BEAM MOMENT CONNECTION



- NOTES:
- SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
  - AT TOP OF COLUMN, PROVIDE 1/4 INCH PIP 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.
  - 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.

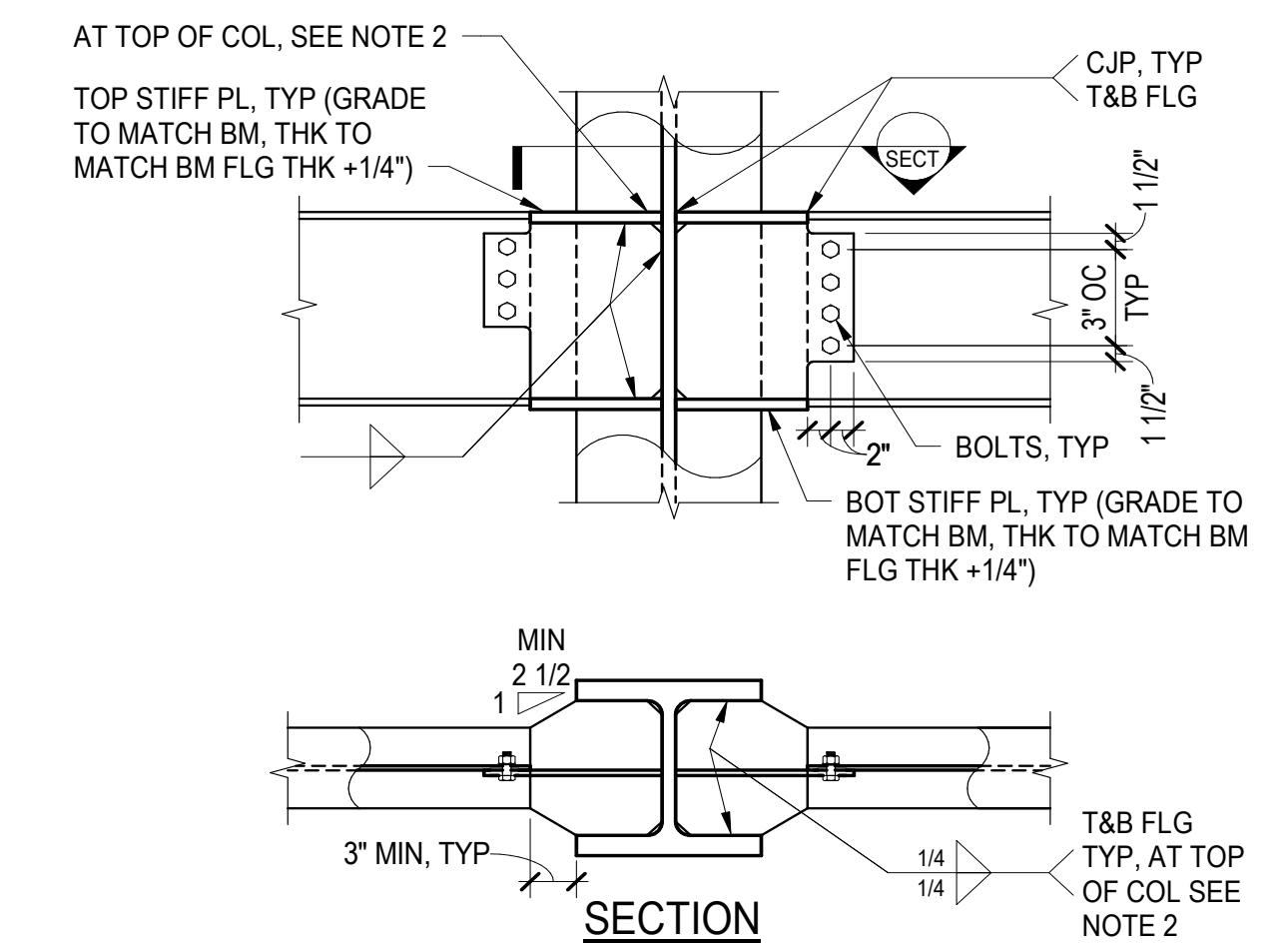
⑨ TYPICAL BM TO COL FLANGE MOMENT CONN



⑫ TYPICAL TYPE C21 - BEAM FLANGE INTERSECTING BEAM WEB

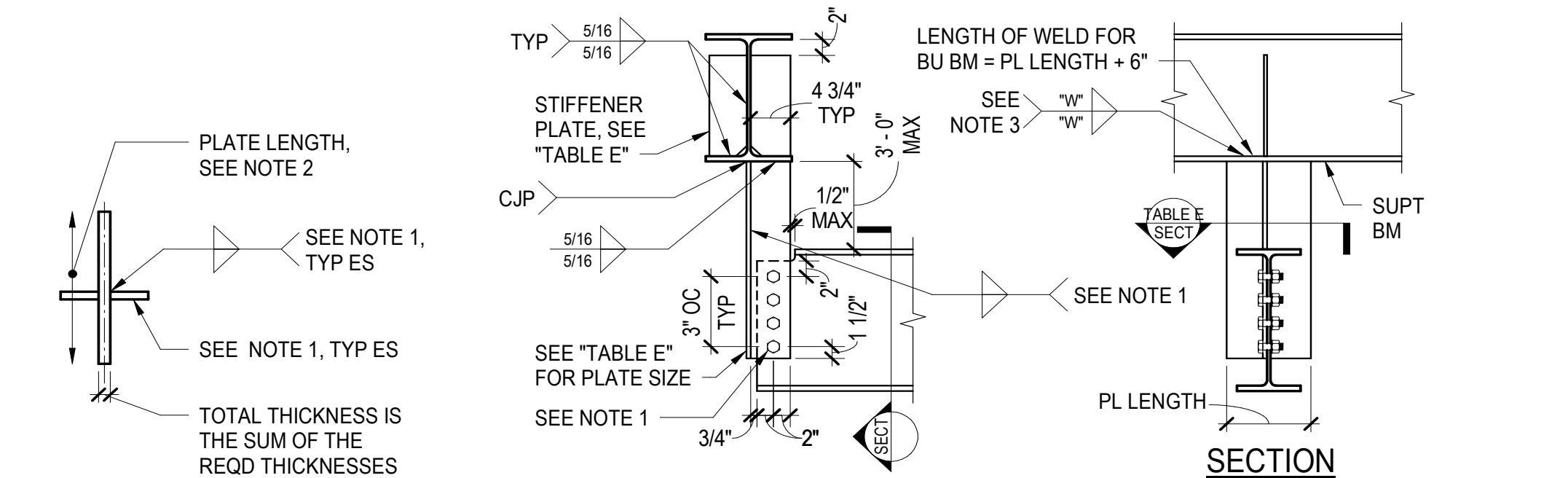
- NOTES:
- FOR A GIVEN BEAM AND REQUIRED REACTION, SEE "TABLE A" FOR BOLT SIZE AND TYPE, TOTAL NUMBER OF BOLTS, AND MAXIMUM COPE LENGTH.
  - ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
  - CONTRACTOR SHALL PERFORM ULTRASONIC TESTING AND INSPECTION OF SUPPORT BEAM BOTTOM FLANGE PER SPECIFICATION FOR WELDED CONNECTIONS.

⑭ TYPICAL BEAM TO COLUMN WEB MOMENT CONNECTION



- NOTES:
- SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
  - AT TOP OF COLUMN, PROVIDE 1/4 INCH PIP 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.
  - THIS DETAIL APPLIES ONLY FOR BEAMS OF EQUAL DEPTH EACH SIDE OF COLUMN.

⑬ TYPICAL BEAM TO DEPRESSED BM CONN



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

- NOTES:
- SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
  - ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
  - BEAMS MAY BE SKewed UP TO 30 DEGREES.
  - THIS DETAIL SHALL BE USED WITH W10, W12, AND W14 COLUMNS ONLY.

⑯ TYPICAL BEAM TO COLUMN WEB SHEAR 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:
- VERTICAL PLATE THICKNESS AND WELD SIZE SHALL BE PER "TABLE A" OR "TABLE B", WHICHEVER IS APPROPRIATE.
  - PLATE LENGTH SHALL BE DETERMINED PER "TABLE E" BY THE GREATEST NUMBER OF BOLTS REQUIRED FOR EITHER INCOMING BEAM CONNECTION.
  - WHERE SUPPORT BEAM WEB THICKNESS EXCEEDS NOMINAL WEB THICKNESS IN "TABLE E", STIFFENER PLATES MAY BE OMITTED.

⑯ TABLE E

- NOTES:
- SEE "TABLE E" FOR PL SIZE, CONSIDERING ONLY THOSE BOLTS ABOVE THE TOP PLATE OF THE SUPT BM.
  - SEE "TABLE E" FOR PL SIZE, CONSIDERING ONLY THOSE BOLTS BELOW THE BOT PLATE OF THE SUPT BM.
  - CONTRACTOR SHALL PERFORM ULTRASONIC TESTING AND INSPECTION OF SUPPORT BEAM BOTTOM FLANGE PER SPECIFICATION FOR WELDED CONNECTIONS.

SECTION AT PERPENDICULAR BEAMS

SECTION AT INCOMING BEAM BOTH SIDES

SECTION AT SKEWED BEAMS

SECTION AT INCOMING BEAM BOTH SIDES

- NOTES:
- SEE "GENERAL NOTES FOR STEEL CONNECTIONS" FOR ADDITIONAL INFORMATION.
  - ALL PLATES SHALL HAVE Fy = 50 KSI MINIMUM.
  - BEAMS MAY BE SKewed UP TO 30 DEGREES.
  - THIS DETAIL SHALL BE USED WITH W10, W12, AND W14 COLUMNS ONLY.

⑯ TYPICAL BEAM TO DEPRESSED BM CONN

⑯ TYPICAL BEAM TO DEPRESSED BM CONN

- NOTES:
- 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.

CONDITION AT INCOMING BEAM TO COLUMN FLANGE MOMENT CONNECTION

FLANGE MOMENT CONNECTION

FULL WIDTH STIFF PL AS RECD FOR BM TO COL FLG MOMENT CONN, 1/2 MIN THK, TYP

SEE NOTE 5

TOP COL, WHERE OCCURS

INCOMING BM, WHERE OCCURS

STIFF PL 1/2, TYP

1/2 MIN

8" MIN

COL WEB

BOLTS, TYP

1/2" MIN

3" OC

1/2" MIN

1/