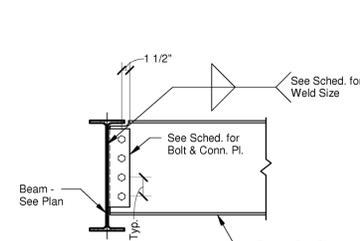
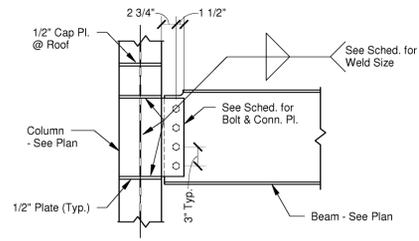
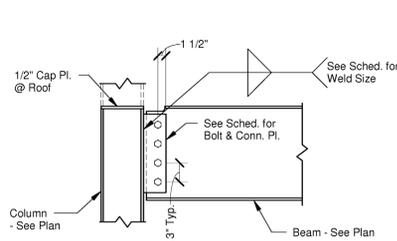


TYP. CONN. SCHEDULE				
BEAM SIZE	CONN. PL. THK.	CONN. PL. WELD	NO. OF BOLTS	A325-N BOLT SIZE
W8	1/4"	3/16"	2	7/8" Ø
W10	1/4"	3/16"	2	7/8" Ø
W12	3/8"	1/4"	3	7/8" Ø
W14	3/8"	1/4"	3	7/8" Ø
W16	1/2"	3/8"	4	1" Ø
W18	1/2"	3/8"	5	1" Ø

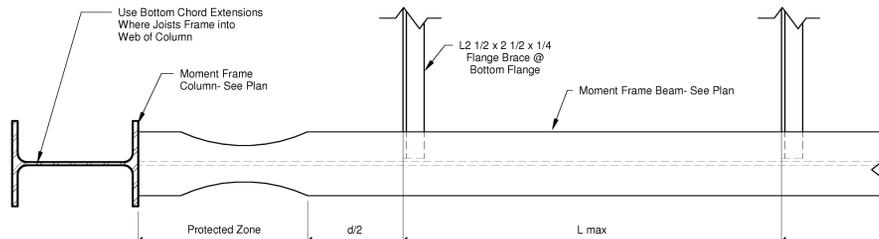
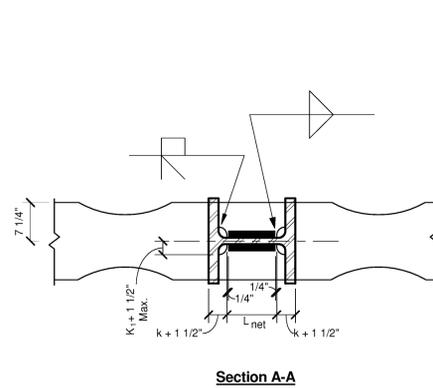
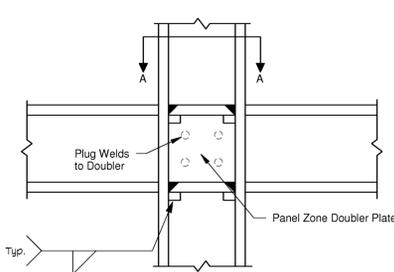


1 Typ. Connection Schedule
3/4" = 1'-0"

2 Connection @ Column Flange
3/4" = 1'-0"

3 Connection @ Column Web
3/4" = 1'-0"

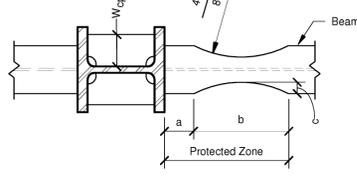
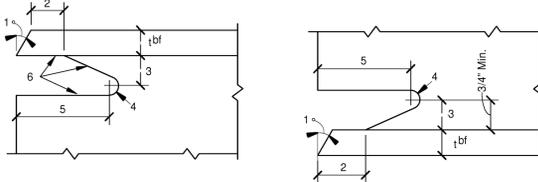
4 Beam to Beam Connection
3/4" = 1'-0"



Moment Frame Beam	d (inches)	L max (ft)	Protected Zone
W14x38	13.8	5'-0"	13.0"
W14x48	14.1	5'-6"	13.0"

5 Continuity Plates
3/4" = 1'-0"

6 Flange Bracing (Moment Frames)
1 1/2" = 1'-0"



Access Hole Type	1	2	3	4	5
Degrees	Inches	Inches	Inches	Inches	Inches
A		1/2	1/2		1 1/4
B		1/2	3/4		1 1/2
C		3/4	1		2 1/2
D		1	1 1/4		3 1/2
E		1 1/4	1 1/2		4 1/2
F		1 1/2	1 3/4		5 1/2
G		1 3/4	2		6 1/2
H	30	2	2 1/4	1/2	7 1/2
I		2 1/4	2 1/2		8 1/2
J		2 1/2	2 3/4		9 1/2
K		3	3		11
L		3 1/4	3 1/2		12 1/2
M		3 3/4	4		14
N		4	4 1/4		15

Shape	Access Hole Type
W24x62	B
W24x55	A or B
W21x50	A or B
W21x44	A or B
W18x40	A or B
W18x35	A or B
W16x31	A or B
W14x53	B
W14x48	B
W12x50	B
W12x45	A or B
W12x19	A or B
W10x30	A or B

7 Workable Seismic Weld Access Hole Configurations
3/4" = 1'-0"

8 Moment Frame Systems Detail
3/4" = 1'-0"

9 SMF Beam / Column Schedule
3/4" = 1'-0"

Beam	Column	a	b	c	tcp	Wcp	Panel Zone Doubler Plate	L _{NET}
W14x38	W14x74	3.5"	9.25"	0.75"	1/2"	4 3/4"	3/8"	8.04"
W14x48	W14x74	4"	9"	0.875"	5/8"	4 3/4"	3/8"	8.04"

Panel Zone Doubler Plate to Be Welded to One Side of Column Web Only.

Joint	Column	Beam	Stiffeners Plate	Web Doubler Plate
11E	W14x74	W14x48	5/8"	1/2"
11G	W14x74	W14x48	5/8"	1 5/8"
11M	W14x74	W14x48	5/8"	1/2"
10D	W14x74	W14x48	5/8"	1/2"
10M	W14x74	W14x48	5/8"	1/2"
9D	W14x74	W14x48	5/8"	1/2"
9M	W14x74	W14x48	5/8"	1/2"
8D	W14x74	W14x48	5/8"	1/2"
8M	W14x74	W14x48	5/8"	1/2"
7D	W14x74	W14x48	5/8"	1/2"
7M	W14x74	W14x48	5/8"	1/2"
6D	W14x74	W14x48	5/8"	1/2"
6G	W14x74	W14x48	5/8"	1 5/8"
6M	W14x74	W14x48	5/8"	1/2"
4F	W14x74	W14x38	1/2"	1/4"
4H	W14x74	W14x38	1/2"	1/4"
4K	W14x74	W14x38	1/2"	1/4"
4N	W14x74	W14x38	1/2"	1/2"
3F	W14x74	W14x38	1/2"	1/4"
3N	W14x74	W14x38	1/2"	1/4"
2H	W14x74	W14x38	1/2"	1/4"
2L	W14x74	W14x38	1/2"	1/2"

Demand Critical Welds (Moment Frames)

Where welds are designated as demand critical, they shall be made with a filler capable of providing a minimum Charpy V-Notch (CVN) toughness of 20 ft-lb at -20 degrees F as determined by the appropriate AWS classification test method or manufacturer certification, and 40 ft-lb at 70 degrees F as determined by Appendix X of AISC 341-05 or other approved method, when the steel frame is normally enclosed and maintained at a temperature of 50 degrees F or higher. For structures with service temperatures lower than 50 degrees F, the qualification temperature for Appendix X of AISC 341-05 shall be 20 degrees F above the lowest anticipated service temperature, or at a lower temperature.

SMWV electrodes classified in AWS A5.1 as E7018 or E7018-X. SMAW electrodes classified in AWS A5.5 as E7018-C3L or E8018-C3, and GMAW solid electrodes are exempted from production lot testing when the CVN toughness of the electrode equals or exceeds 20 ft-lb at a temperature not exceeding -20 degrees F as determined by AWS classification test methods. The manufacturer's certificate of compliance shall be considered sufficient evidence of meeting this requirement.

Welds required to be demand critical include the following CJP groove welds at moment frames:

1. Welds of beam flanges to columns.
2. Welds of single plate shear connections to columns.
3. Welds of beam webs to columns.
4. Column splice welds including column bases.

Shop Drawing Notes

- Shop Drawings Shall Include the Following Items, as Applicable:
- (1) Designation of the Members and Connections That are Part of the Special Moment Frames
 - (2) Connection Material Specifications
 - (3) Locations of Demand Critical Shop Welds
 - (4) Locations and Dimensions of Protected Zones
 - (5) Gusset Plates Drawn to Scale When They are Detailed to Accommodate Inelastic Rotation
 - (6) Welding Requirements as Specified in Appendix W, Section W2.2 of AISC 341-05.

Erection Drawing Notes

- Erection Drawings Shall Include the Following Items, as Applicable:
- (1) Designation of the Members and Connections That are Part of Special Moment Frames
 - (2) Field Connection Material Specifications and Sizes
 - (3) Locations of Demand Critical Field Welds
 - (4) Locations and Dimensions of Protected Zones
 - (5) Locations of Pretensioned Bolts
 - (6) Field Welding Requirements as Specified in Appendix W, Section W2.3 of AISC 341-05.

Protected Zones (Moment Frames)

1. Within the protected zone, discontinuities created by fabrication or erection operations, such as tack welds, erection aids, air-arc gouging and thermal cutting shall be repaired. Notify and consult with the Engineer of Record for proper repair procedure.
2. Welded shear studs and decking attachments that penetrate the beam flange shall not be placed on beam flanges within the protected zone. Decking arc spot welds as required to secure decking shall be permitted.
3. Welded, bolted, screwed or shot-in attachments for perimeter edge angles, exterior facades, partitions, duct work, piping, or other construction shall not be placed within the protected zone.

Fabrication of Flange Cuts (Moment Frames)

The reduced beam section shall be made using thermal cutting to produce a smooth curve. The maximum surface roughness of the thermally cut surface shall be 500 microinches (13 microns) in accordance with ANSI B46.1, as measured using AWS C4.1-77 Sample 4 or similar visual comparator. All transitions between the reduced beam section and the unmodified beam flange shall be rounded in the direction of the flange length to minimize notch effects due to abrupt transitions. Corners between the reduced section surface and the top and bottom of the flanges shall be ground to remove sharp edges, but a minimum chamfer or radius is not required.

Thermal cutting tolerances shall be plus or minus 1/4 in. (6mm) from the theoretical cut line. The beam effective flange width at any section shall have a tolerance of plus or minus 3/8 in. (10mm).

Gouges and notches that occur in the thermally cut RBS surface may be repaired by grinding if not more than 1/4 in. (6mm) deep. The gouged or notched area shall be faired by grinding so that a smooth transition exists, and the total length of the area ground for the transition shall be no less than five times the depth of the removed gouge on each side of the gouge. If a sharp notch exists, the area shall be inspected by MT after grinding to ensure that the entire depth of notch has been removed. Grinding that increases the depth of the RBS cut more than 1/4 in. (6mm) beyond the specified depth of cut is not permitted.

Gouges and notches that exceed 1/4 in. (6mm) in depth, but not to exceed 1/2 in. (12mm) in depth, and those notches and gouges where repair by grinding would increase the effective depth of the RBS cut beyond tolerance, may be required by welding. The notch or gouge shall be removed and ground to provide a smooth radius of not less than 1/4 in. in preparation for welding. The repair area shall be preheated to a temperature of 150 °F or the value specified in AWS D1.1 Table 3.2, whichever is greater, measured at the location of the weld repair.

Notches and gouges exceeding 1/2 in. (12mm) in depth shall be repaired only with a method approved by the engineer of record.



REVISIONS:

DATE:
Aug 28, 2012

DRAWN BY:
Author

SHEET TITLE:
Moment
Frame
Details

SHEET NO:

