MOMENT CONNECTION TO DEVELOP CAPACITY SHOWN ON PLAN. . SHEAR CONNECTION TO DEVELOP THE FACTORED REACTION LISTED IN THE SCHEDULE. INSTALL ALL BOLTS SNUG TIGHT PRIOR TO FIRST TORQUING. TENSION BOLTS FULLY PRIOR TO WELDING. 4. EDGE PREPARATION OF CONTINUITY PLATES AT FABRICATORS DISCRETION. BACK GOUGE ROOT PASS OF

SEE TYP. DETAIL FOR WELD ACCESS HOLE DETAIL (TYP)-WELDED `CONTINUOUSLY NOTE 5, TYP. SHEAR PLATE REMOVE BACKING STIFFENER AT BAR AFTER WELDING ONE - SIDED BOTT. FLANGE CONNECTION FLANGE WIDTH IS 3" LESS FROM EDGE OF THAN STIFF. PLATE WIDTH FITTED STIFF. PLATE EACH SIDE OF - PROVIDE BACKUP COLUMN. 1/4" THICKER THAN BEAM STIFF. TOP & BOTTOM FLANGE. TYP. TOP & BOTTOM.—— FOR ONE SIDED MOMENT CONN.

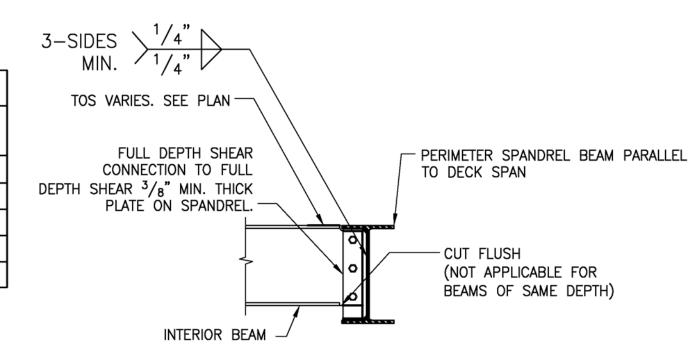
. MOMENT CONNECTION TO DEVELOP THE OF THE BEAM SHOWN ON PLAN . SHEAR CONNECTION TO DEVELOP FACTORED REACTION LISTED IN THE SCHEDULE INSTALL ALL BOLTS SNUG TIGHT PRIOR TO FIRST TORQUING. TENSION BOLTS FULLY PRIOR TO WELDING. 4. EDGE PREPARATION OF CONTINUITY PLATES AT FABRICATOR'S DISCRETION. BACK GOUGE ROOT PASS OF DOUBLE BEVEL GROOVE WELDS.

. BEVEL AS REQUIRED BY AWS D1.1 FOR SELECTED GROOVE WELD PROCEDURE. 2. LARGER OF T_F OR 1/2" (TOLERANCE: PLUS 1/2 T_F , OR MINUS 1/4 T_F) 3. 3/4 T_F TO T_F, 3/4" MINIMUM (TOLERANCE: $\pm 1/4$ ") 4. 3/8" MINIMUM RADIUS (TOLERANCE: PLUS NOT LIMITED, OR MINUS 0) 5. 3 T_F (TOLERANCE: $\pm 1/2$ ") 6. 25 MAXIMUM AS-BUILT ANGLE AFTER TOLERANCES

WELD ACCESS HOLE DETAILS

TYPICAL BEAM-TO-COLUMN GRAVITY MOMENT CONNECTION DETAIL (WEAK AXIS)

MINIMUM SIZE OF FILLET WELDS TABLE MATERIAL THICKNESS OF THINNER MINIMUM SIZE OF FILLET PART JOINED (IN.) WELD^a (IN.) UP TO 1/4 INCLUSIVE OVER 1/4 TO 1/2 OVER ½ TO ¾ OVER 3/4 ^q LEG DIMENSION OF FILLET WELDS. SINGLE-PASS WELDS MUST BE USED

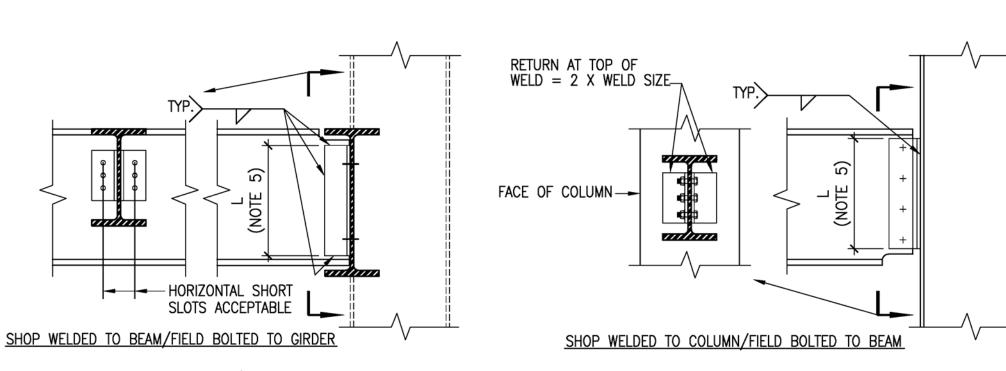


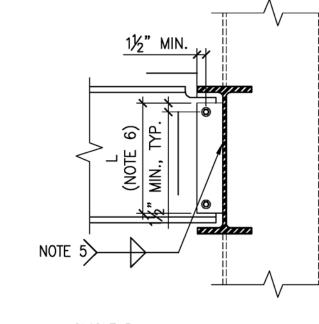
PLAN VIEW OF COLUMN -3/8" FULL DEPTH STIFFENERS AT TOP & BOTTOM OF CONNECTING PLATE (SEE NOTE 3) BEAM WEB -- BENT PLATE OR ANGLE AS REQUIRED <u>PLAN VIEW</u>

) WELDED CONNECTION AT CONTRACTOR'S OPTION IS ACCEPTABLE. FULLY TENSIONED BOLTED CONNECTION. FOR BEAMS PARALLEL TO COLUMN FLANGE, DIRECT WEB-TO-FLANGE CONNECTION IS ACCEPTABLE IF IT CAN DEVELOP REQUIRED STRENGTH. CAN USE ONE PAIR OF STIFFENERS ON CONNECTION SIDE OF COLUMN AT LEVEL OF BEAM FLANGES.

WELD TABLE N.T.S.

TYPICAL OFFSET BEAM CONNECTION TO COLUMN FLANGE 3/4" = 1'-0"





DOUBLE ANGLE CONNECTION TO BEAM OR COLUMN DETAIL SIMILAR AT CONNECTION TO COLUMN FLANGE OR COLUMN WEB. BOLTED — BOLTED ALTERNATES ACCEPTABLE. MAXIMUM ANGLE THICKNESS: 5/8". 4. NEGLECT WELD RETURNS AT TOP OF ANGLES IN STRENGTH CALCULATIONS. 5. L = GREATER THAN 0.5 X BEAM "T" DIMENSION.

SINGLE PLATE CONNECTION

 $3^{1}/2$ " to $5^{1}/2$ " NOTE 3 1. DESIGN MODEL: MANUAL OF STEEL CONSTRUCTION, 13TH EDITION.

2. TREAT COLUMN FLANGES AND GIRDERS WITH SHEAR TABS ON OPPOSITE SIDES WITHIN 6" AS RIGID ELEMENTS. TREAT ALL OTHER GIRDER WEBS AS FLEXIBLE ELEMENTS

4. PLATE MATERIAL : ASTM A36 STEEL. i. MINIMUM WELD SIZE = 3/4 X PLATE THICKNESS WITH E70XX ELECTRODES. 6. $L = GREATER THAN 0.5 \acute{X} BEAM "T" DIMENSION.$. MAXIMUM PLATE THICKNESS = BOLT $\emptyset/2 + 1/16$ ". 8. DO NOT USE AT COLUMN WEBS.

SHEAR END PLATE CONNECTION DETAIL SIMILAR AT COLUMN FLANGE OR COLUMN WEB. 2. END PLATE THICKNESS RANGE: FROM ¼" TO ¾" INCLUSIVE DO NOT RETURN WELD ACROSS THICKNESS OF BEAM WEB. END PLATE MATERIAL: ASTM A36 DO NOT USE ON CAMBERED BEAMS.

1¼" MIN.,TYP. CUT SQUARE—

6. L = GREATER THAN 0.5 X BEAM "T" DIMENSION.

. DESIGN CONNECTIONS FOR THE GREATER OF THE FORCES SHOWN ON PLAN OR THE FORCES. SHOWN ON THE BEAM SHEAR REACTION TABLE.

3. FULLY TENSION ALL BOLTS. 4. REINFORCE WEBS AS REQUIRED BY COPES, WEB CUTS, ETC. 5. ALTERNATE CONNECTION TYPES, SUCH AS SINGLE ANGLE, TEE, SEATED CONNECTIONS, ETC. MAY BE ACCEPTABLE UNDER CERTAIN CIRCUMSTANCES. REVIEW WITH SER.

6. SEE DETAILS & SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR CONNECTIONS. 7. DETAIL CONNECTIONS IN CONFORMANCE WITH THE REQUIREMENTS OF "29 CFR PART 1926,

SUBPART R - STEEL ERECTION". 8. GRIND COPES FOR GROUP 4 AND 5 SECTIONS PER THE AISC LRFD SPECIFICATION SECTION J1.6.

STANDARD BEAM SHEAR CONNECTIONS

2. MINIMUM BOLT SIZE IS 3/4"ø A325. U.O.N.

MINIMUM FACTORED FACTORED (LOAD) NUMBER OF TENSILE FORCE REACTION (KIPS) BOLTS (SEE NOTE 1) (SEE NOTE 6) NOTE 7) W10x26 AND LIGHTER W10x30 AND HEAVIER W12x22 AND LIGHTER W12x26 AND HEAVIER W14x26 AND LIGHTER W14x30 AND HEAVIER W16x31 AND LIGHTER W16x36 AND HEAVIER 4.3 W18x46 AND LIGHTER 43 64 W18x50 AND HEAVIER 54 W21x57 AND LIGHTER 43 W21x62 AND LIGHTER W21x68 AND HEAVIER 105 W24x55 AND LIGHTER W24x62 AND HEAVIER 105 W27x94 AND LIGHTER W27x102 AND HEAVIER 140 94 W30x99 AND LIGHTER W30x108 AND HEAVIER 114 14 C10/C12

BEAM SHEAR REACTION TABLE (UON)

HORIZONTAL

LOADS IN THIS TABLE HAVE BEEN FACTORED IN ACCORDANCE WITH SECTION 2.3 OF ASCE 7-05.

SEE GENERAL NOTES FOR ADDITIONAL INFORMATION. BEAM REACTIONS SHOWN ON PLAN TAKE PRECEDENT OVER THOSE SHOWN IN THIS TABLE. FOR THOSE SHOWN ON PLAN, PROVIDE A HORIZONTAL FACTORED TENSILE FORCE EQUAL TO 3/4 THE VERTICAL FACTORED LOAD UON. VERTICAL AND HORIZONTAL LOADS NEED NOT BE ASSUMED TO ACT CONCURRENTLY. SEE DETAILS AND SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR

CONNECTIONS. FIELD WELDED CONNECTIONS MAY BE USED IN LIEU OF BOLTED CONNECTIONS AT CONTRACTOR'S OPTION, HOWEVER, SHOP DRAWINGS FOR ALL FIELD WELDED CONNECTIONS MUST BE SUBMITTED AND APPROVED BY THE EOR PRIOR TO BEGINNING FABRICATION.

USE 34" A325N BOLTS (MIN). FOR COMPLIANCE WITH STRUCTURAL INTEGRITY REQUIREMENTS OF 2009 IBC 1614.3.2.2, CONNECTIONS SHALL HAVE MINIMUM HORIZONTAL AXIAL TENSILE STRENGTH INDICATED. VERTICAL REACTION AND HORIZONTAL TENSILE FORCE NEED NOT ACT CONCURRENTLY.

BEAM SHEAR REACTION TABLE

3/4" = 1'-0"

PERKINS +WILL

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Bean 2 Roof

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Addition

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Revisions

ISSUE DATE

Job # C140135461(MMC)/152168.000

TYPICAL STEEL

Sheet Information

12 APRIL 2013

DETAILS

Sheet

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SEE TYP. DETAIL FOR WELD

DOUBLE BEVEL GROOVE WELDS.

TYPICAL BEAM-TO-COLUMN GRAVITY MOMENT CONNECTION DETAIL (STRONG AXIS) SIM. AT TOP OF COLUMN

N.T.S.

- BASE PLATE 1" (MIN.) WITH $4 - \frac{3}{4}$ "ø A325 BOLTS, MIN.

-FITTED STIFFENER (EACH SIDE).

STIFFENER THICKNESS TO MATCH

COLUMN FLANGE THICKNESS. ALIGN

STIFFENER WITH COLUMN FLANGE ABOVE.

-BRACING BEAM SHOWN ON PLAN MAY

UNLESS BEAM IS SHOWN ON GRID OR

IS LABELED AS 'CENTERED' IN WHICH

CASE BEAM FRAMES TO ADDITIONAL

STIFFENER IN COLUMN CENTERLINE

BASE PLATE 1" (MIN.) WITH

 $4 - \frac{3}{4}$ "ø A325 BOLTS, MIN.

-BEARING PLATE. THICKNESS

DIMENSIONS OF SUPPORTED

DIMENSIONS TO MATCH

COLUMN BASE PLATE.

-STIFFENER (EACH SIDE)

BEARING PLATE

WIDE FLANGE COLUMN WITH

WEB PERPENDICULAR TO BEAM WEB

(OR HSS COLUMN WITH PERPENDICULAR

DIMENSION WIDER THAN BEAM FLANGE)

MINIMUM WELD SIZE PER WELD TABLE TYP. DETAIL.

CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM.

4. SLAB CONSTRUCTION NOT SHOWN FOR CLARITY, SEE PLANS.

FITTED TO BEAM AND TO

TO MATCH OF BEAM FLANGE.

FRAME TO EITHER STIFFENER WITH

FULL DEPTH SHEAR CONNECTION

TYPICAL BEAM FRAMING TO SPANDREL

BRACING BEAM SHOWN ON PLAN MAY FRAME TO EITHER STIFFENER WITH FULL DEPTH SHEAR CONNECTION UNLESS BEAM IS SHOWN ON GRID OR IS LABELED AS 'CENTERED' IN WHICH CASE BEAM FRAMES TO ADDITIONAL STIFFENER IN COLUMN CENTERLINE -FITTED STIFFENER (EACH SIDE). STIFFENER THICKNESS TO MATCH COLUMN FLANGE THICKNESS. ALIGN STIFFENER WITH COLUMN FLANGE BELOW ─ CAP PLATE 1" (MIN.) WITH $4 - \frac{3}{4}$ "ø A325 BOLTS, MIN.

WIDE FLANGE COLUMN WITH WEB PARALLEL TO BEAM WEE (OR HSS COLUMN) -STIFFENER PLATE (EACH SIDE) FITTED TO BEAM AND TO BEARING PLATE 3 SIDES NOTE 1, TYP. -BEARING PLATE. THICKNESS TO MATCH THICKNESS OF BEAM FLANGE, DIMENSIONS TO MATCH DIMENSIONS OF SUPPORTING COLUMN CAP PLATE CAP PLATE 1" (MIN.) WITH $4 - \frac{3}{4}$ "ø A325 BOLTS, MIN.

> **WIDE FLANGE COLUMN WITH** WEB PERPENDICULAR TO BEAM WEB (OR HSS COLUMN WITH PERPENDICULAR DIMENSION WIDER THAN BEAM FLANGE)

MINIMUM WELD SIZE PER WELD TABLE TYP. DETAIL. CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM. FULLY TENSION ALL BOLTS.

4. SLAB CONSTRUCTION NOT SHOWN FOR CLARITY, SEE PLANS.

STANDARD BEAM OVER COLUMN DETAIL 3/4"=1'-0"

NOTE 2 >

COLUMN OVER BEAM DETAIL

. FULLY TENSION ALL BOLTS.

WIDE FLANGE COLUMN WITH

WEB PARALLEL TO BEAM WEB

(OR HSS COLUMN)

3/4"=1'-0"

3/4" = 1'-0"

S00-20

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