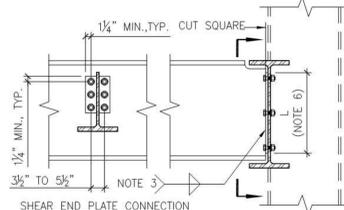


SINGLE PLATE CONNECTION

NOTES:

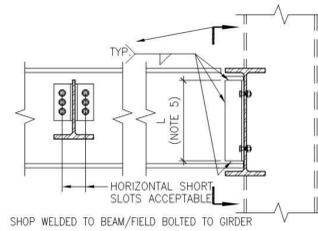
- DESIGN MODEL: AISC STEEL CONSTRUCTION MANUAL 13TH EDITION, SECTION 10.
- TREAT COLUMN FLANGES AND GIRDERS WITH SINGLE PLATE CONNECTIONS ON OPPOSITE SIDES WITHIN 6" AS RIGID ELEMENTS.
- TREAT ALL OTHER GIRDER WEBS AS FLEXIBLE ELEMENTS.
- PLATE MATERIAL: ASTM A36 STEEL, MIN.
- MINIMUM WELD SIZE = 3/8 X PLATE THICKNESS WITH E70XX ELECTRODES.
- L = GREATER THAN 0.5 X BEAM "T" DIMENSION.
- MAXIMUM PLATE THICKNESS = BOLT 1/2 + 1/8" OR WEB THICKNESS.
- DO NOT USE AT COLUMN WEBS.



SHEAR END PLATE CONNECTION

NOTES:

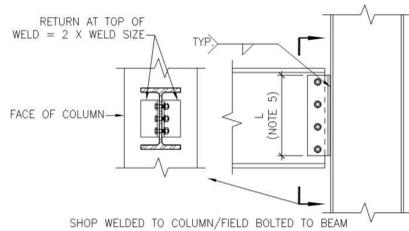
- DETAIL SIMILAR AT COLUMN FLANGE OR COLUMN WEB.
- END PLATE THICKNESS RANGE: FROM 1/4" TO 3/8" INCLUSIVE.
- DO NOT RETURN WELD ACROSS THICKNESS OF BEAM WEB.
- END PLATE MATERIAL: ASTM A36, MIN.
- DO NOT USE ON CAMBERED BEAMS.
- L = GREATER THAN 0.5 X BEAM "T" DIMENSION.



DOUBLE ANGLE CONNECTION TO BEAM OR COLUMN

NOTES:

- DETAIL SIMILAR AT CONNECTION TO COLUMN FLANGE OR COLUMN WEB.
- BOLTED - BOLTED ALTERNATES ACCEPTABLE.
- MAXIMUM ANGLE THICKNESS: 3/8".
- NEGLECT WELD RETURNS AT TOP OF ANGLES IN STRENGTH CALCULATIONS.
- L = GREATER THAN 0.5 X BEAM "T" DIMENSION.



DOUBLE ANGLE CONNECTION TO COLUMN OR BEAM

NOTES:

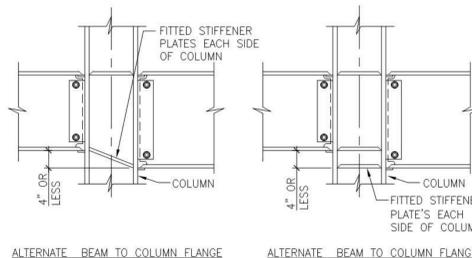
- DETAIL SIMILAR AT CONNECTION TO COLUMN FLANGE OR COLUMN WEB.
- BOLTED - BOLTED ALTERNATES ACCEPTABLE.
- MAXIMUM ANGLE THICKNESS: 3/8".
- NEGLECT WELD RETURNS AT TOP OF ANGLES IN STRENGTH CALCULATIONS.
- L = GREATER THAN 0.5 X BEAM "T" DIMENSION.

GENERAL NOTES:

- MINIMUM BOLT SIZE IS 3/4" A325, U.O.N.
- PRETENSION BOLTS CONNECTING TO COLUMNS, SNUG TIGHTEN ALL OTHER BOLTS.
- REINFORCE WEBS AS REQUIRED BY COPIES, WEB CUTS, ETC.
- ALTERNATE CONNECTION TYPES, SUCH AS SINGLE ANGLE, TEE, SEATED CONNECTIONS, ETC. MAY BE ACCEPTABLE UNDER CERTAIN CIRCUMSTANCES. REVIEW WITH ENGINEER.
- DETAIL CONNECTIONS IN CONFORMANCE WITH THE REQUIREMENTS OF "29 CFR PART 1926, SUBPART R - STEEL ERECTION".
- GRIND COPES FOR GROUP 4 AND 5 SECTIONS PER THE AISC LRFD SPECIFICATION SECTION J1.6.
- TYPICAL CONNECTION: BOLTED-BOLTED FULL DEPTH DOUBLE ANGLE CONNECTIONS ON SUPPORTING MEMBER WITH 3/8" THICK ANGLES AND 3/8" MIN. A325 BOLTS. BOLTED-WELDED ALTERNATE CONNECTION WITH 3/8" FILLET WELDS ACCEPTABLE. AT CHANNELS AND SKEWED CONNECTION TO COLUMNS, USE FULL DEPTH 3/8" SINGLE PLATE CONNECTION WITH 3/8" FILLET WELDS AND 3/4" A325 BOLTS.

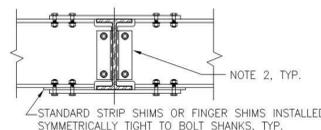
1 STANDARD WIDE FLANGE BEAM SHEAR CONNECTIONS

N.T.S.

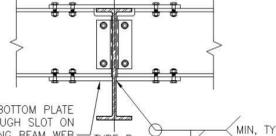


2 GRAVITY STRONG AXIS BEAM-TO-COLUMN MOMENT CONNECTION DETAIL

N.T.S.



ALTERNATE BEAM TO COLUMN FLANGE

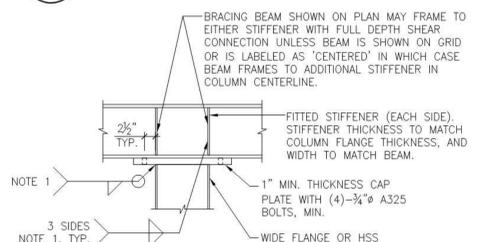


ALTERNATE BEAM TO COLUMN FLANGE

4 BEAM-TO-BEAM MOMENT CONNECTION

3/4" = 1'-0"

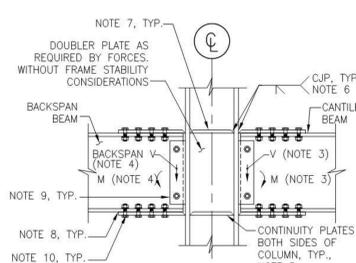
- NOTES:**
- PROVIDE FLANGE PLATE THICKNESS WITHIN 1/8" OF CANTILEVER BEAM FLANGE THICKNESS AND 6-BOLT 3/4" A325 CONNECTION ON EACH END OF FLANGE PLATE. FOR ELEMENTS INDICATED WITH A "T" ON PLAN, USE 4-BOLT ARRAY AT EACH SIDE OF PLATE.
 - FULL DEPTH DOUBLE ANGLE CONNECTION PER TYPICAL DETAILS.
 - ALL BOLTS ARE SLIP CRITICAL.
 - FIELD WELDED FLANGE PLATE ALTERNATES ACCEPTABLE.
 - DETAIL SHIMS AND/OR FILLERS PER AISC LRFD SPECIFICATION SECTION J6.
 - PROVIDE DECK SUPPORT AS REQUIRED. DECK SUPPORT BY OVERSIZE TOP FLANGE FILLER PLATE IS ACCEPTABLE IF IT HAS A 1/2" MIN. THICKNESS AND IT EXTENDS A MINIMUM OF 3" BEYOND THE BEAM FLANGES.
 - PROVIDE DECK SUPPORT ANGLES ON FOUR SIDES OF MOMENT CONNECTION.



- NOTES:**
- MINIMUM WELD SIZE PER MINIMUM SIZE OF FILLET WELD DETAIL, BUT NOT LESS THAN 1/4".
 - CJP BETWEEN BEARING PLATE AND SUPPORTED BEAM.
 - FULLY TENSION ALL BOLTS.

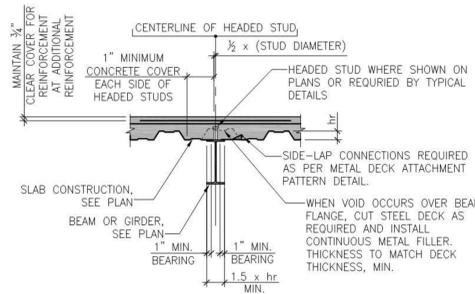
7 BEAM OVER COLUMN DETAIL

N.T.S.



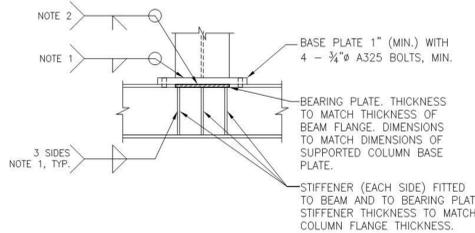
8 ALTERNATIVE GRAVITY CANTILEVER WIDE FLANGE BEAM CONNECTION

N.T.S.

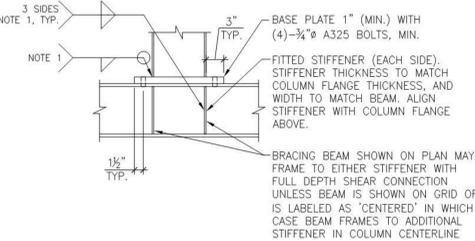


3 STEEL DECK PARALLEL TO STEEL SUPPORT

N.T.S.



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

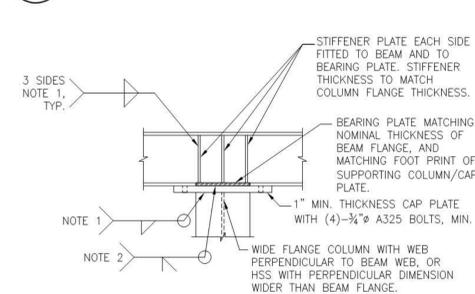


WIDE FLANGE COLUMN WITH WEB PARALLEL TO BEAM WEB (OR HSS COLUMN)

- NOTES:**
- MINIMUM WELD SIZE PER MINIMUM SIZE OF FILLET WELD DETAIL, BUT NOT LESS THAN 1/4".
 - CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM.
 - FULLY TENSION ALL BOLTS.
 - SLAB CONSTRUCTION NOT SHOWN FOR CLARITY, SEE PLANS.

5 COLUMN OVER BEAM DETAIL

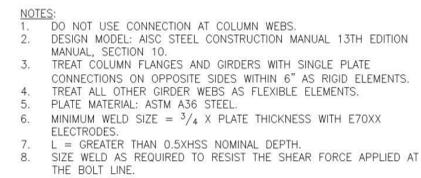
N.T.S.



- NOTES:**
- DETAIL IS SIMILAR FOR COLUMN ON WEAK AXIS.
 - CONNECTION FORCES ARE THE GREATER OF THOSE SHOWN ON PLAN AND ON NOTES 3 AND 4.
 - CANTILEVER CONNECTION FORCES: M = 80% OF FLEXURAL STRENGTH OF THE CANTILEVER BEAM DEFINED AS F_y TIMES THE PLASTIC MODULUS OF THE SECTION V = 50% OF THE SHEAR STRENGTH OF THE CANTILEVER BEAM DEFINED AS 0.6 X F_y X D X T_w
 - BACKSPAN CONNECTION FORCES: M = SAME AS CANTILEVER SPAN V = PER "BEAM SHEAR REACTION TABLE AND CONNECTION NOTES"
 - MATCH CONTINUITY PLATE WIDTH AND THICKNESS WITH CONTACT AREA OF CONNECTION FLANGE PLATES. SLOPE BOTTOM PLATES FOR UP TO 4" DIFFERENCE IN BEAM NOMINAL DEPTHS. USE TWO BOTTOM CONTINUITY PLATES FOR GREATER DIFFERENCE IN DEPTH.
 - CONNECTION SHOWN AS A SINGLE BEVEL EDGE PREPARATION, DOUBLE BEVEL EDGE PREPARATION AT FABRICATOR'S DISCRETION.
 - PJP OR FILLET WELD AS REQUIRED TO TRANSFER FLANGE PLATE FORCES TO COLUMN WEB.
 - FULL CONTACT FILLER PLATES AS REQUIRED.
 - SHEAR CONNECTION ON FULL DEPTH SINGLE PLATE AT CANTILEVER END AND ON CONNECTION DESIGNED PER THE STANDARD WIDE FLANGE BEAM SHEAR CONNECTIONS TYPICAL DETAIL AT THE BACKSPAN END.
 - BOLTED MOMENT CONNECTION AT CANTILEVER AND BACKSPAN EXCEPT WHERE BACKSPAN IS MOMENT CONNECTED AT BOTH ENDS AS PART OF A MOMENT FRAME.
 - ALL BOLTS DESIGNED AS PRETENSIONED, 7/8" A325 MIN. BOLTS.

6 STANDARD HSS BEAM SHEAR CONNECTIONS

N.T.S.



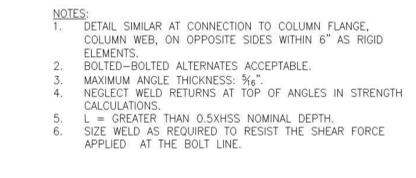
SINGLE PLATE HSS TO COLUMN CONNECTION

NOTES:

- DO NOT USE CONNECTION AT COLUMN WEBS.
- DESIGN MODEL: AISC STEEL CONSTRUCTION MANUAL 13TH EDITION MANUAL, SECTION 10.
- TREAT COLUMN FLANGES AND GIRDERS WITH SINGLE PLATE CONNECTIONS ON OPPOSITE SIDES WITHIN 6" AS RIGID ELEMENTS.
- TREAT ALL OTHER GIRDER WEBS AS FLEXIBLE ELEMENTS.
- PLATE MATERIAL: ASTM A36 STEEL.
- MINIMUM WELD SIZE = 3/4 X PLATE THICKNESS WITH E70XX ELECTRODES.
- L = GREATER THAN 0.5X HSS NOMINAL DEPTH.
- SIZE WELD AS REQUIRED TO RESIST THE SHEAR FORCE APPLIED AT THE BOLT LINE.

GENERAL HSS CONNECTION NOTES:

- MINIMUM BOLT SIZE IS 3/4" A325, U.O.N.
- PRETENSION ALL BOLTS.
- SEE DETAILS AND SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR CONNECTIONS.
- DETAIL CONNECTIONS IN CONFORMANCE WITH THE REQUIREMENTS OF "29 CFR PART 1926, SUBPART R - STEEL ERECTION".
- DO NOT USE WHERE HORIZONTAL OUT-OF-PLANE SHEAR REACTIONS ARE INDICATED.



DOUBLE ANGLE HSS TO COLUMN OR BEAM CONNECTION

NOTES:

- DETAIL SIMILAR AT CONNECTION TO COLUMN FLANGE, COLUMN WEB, ON OPPOSITE SIDES WITHIN 6" AS RIGID ELEMENTS.
- BOLTED-BOLTED ALTERNATES ACCEPTABLE.
- MAXIMUM ANGLE THICKNESS: 3/8".
- NEGLECT WELD RETURNS AT TOP OF ANGLES IN STRENGTH CALCULATIONS.
- L = GREATER THAN 0.5X HSS NOMINAL DEPTH.
- SIZE WELD AS REQUIRED TO RESIST THE SHEAR FORCE APPLIED AT THE BOLT LINE.

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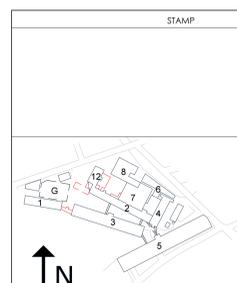
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REVISIONS		
NUMBER	DESCRIPTION	DATE



DATE: 10/19/2015
SCALE: 1/8" = 1'-0"
DRAWN BY: MAT
PROJECT NUMBER: SAR15A.00
DRAWING TITLE: STEEL TYPICAL DETAILS (1 OF 2)
DRAWING NUMBER: S-020