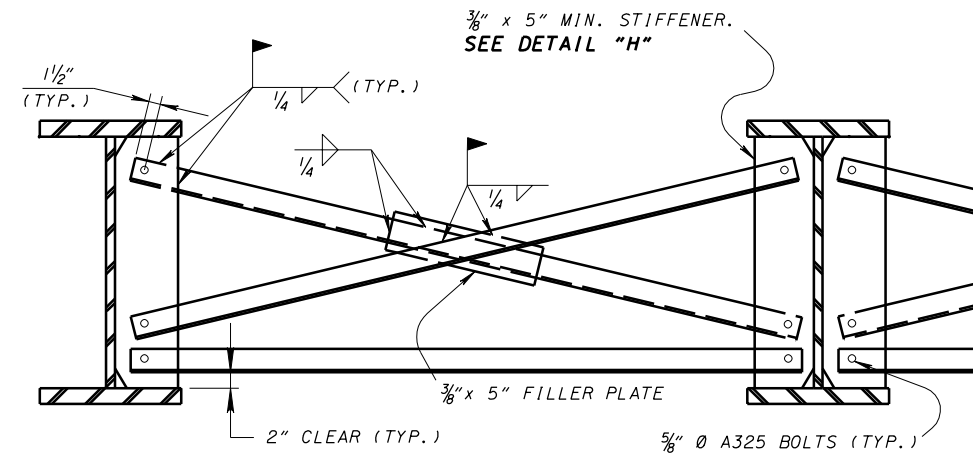


TYPE 1: INTERMEDIATE WELDED CROSSFRAME DETAILS

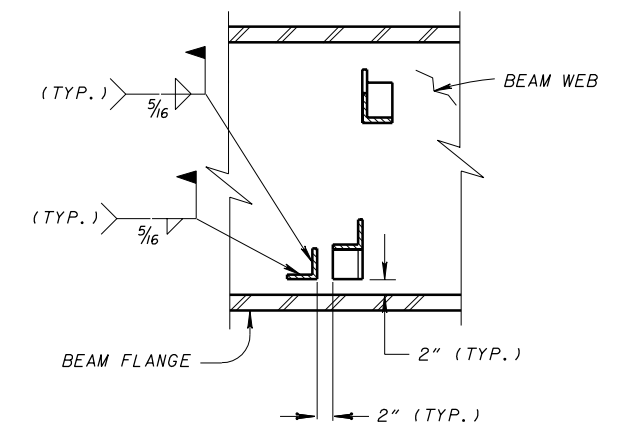
FOR ROLLED BEAM BRIDGES
AASHTO CASE 11 ONLY

☐ MATCH CROSSFRAME LEGS TO EACH SIDE OF THE WEB.

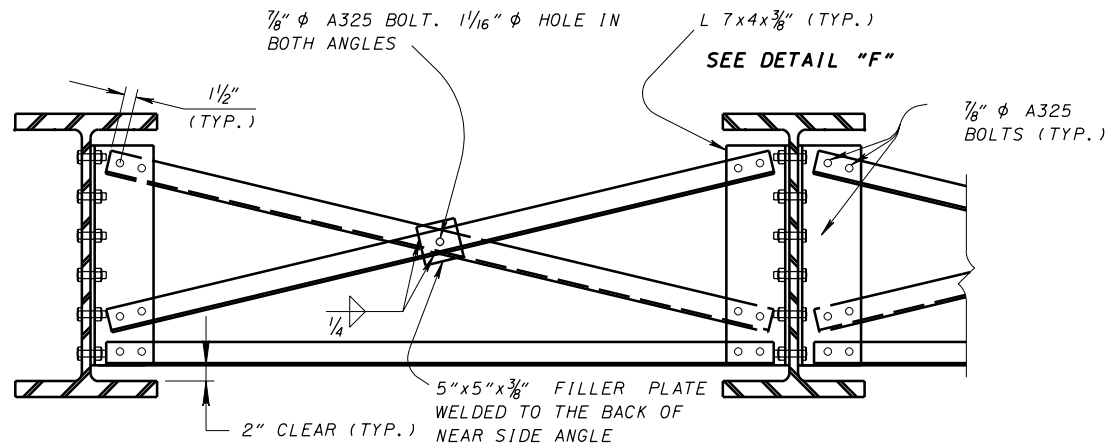


TYPE 3 INTERMEDIATE WELDED CROSSFRAME DETAILS

FOR GIRDER BRIDGES AND AASHTO CASE 1 ROLLED BEAM BRIDGES

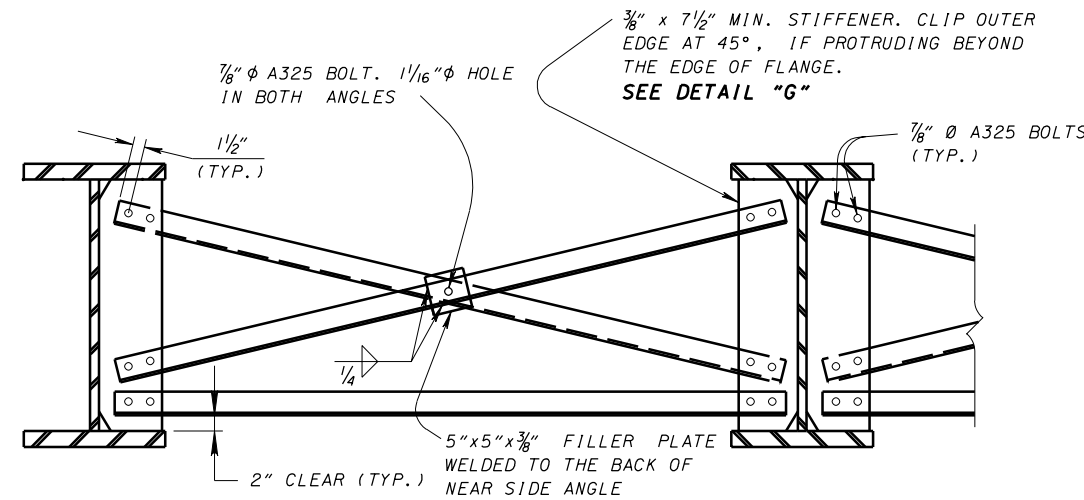


SECTION A-A



TYPE 2: INTERMEDIATE BOLTED CROSSFRAME DETAILS

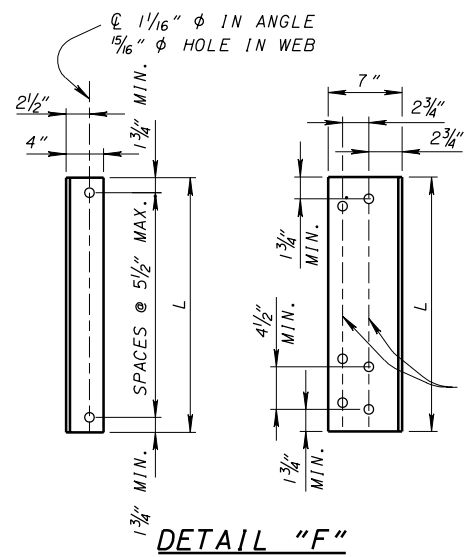
FOR ROLLED BEAM BRIDGES
AASHTO CASE 1 OR CASE 11



TYPE 4 INTERMEDIATE BOLTED CROSSFRAME DETAILS

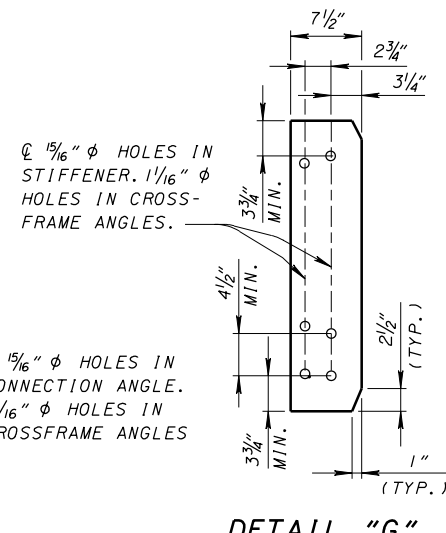
FOR GIRDER BRIDGES AND AASHTO CASE 1 ROLLED BEAM BRIDGES

INTERMEDIATE CROSSFRAME ANGLE SIZE	
DEPTH OF BEAM/GIRDER	MINIMUM SIZE ANGLE
$D < 48$ INCH	L3 x 3 x 5/16"
48 INCH $< D < 52$ INCH	L3 1/2 x 3 1/2 x 3/8"
52 INCH $< D < 60$ INCH	L4 x 4 x 3/8"



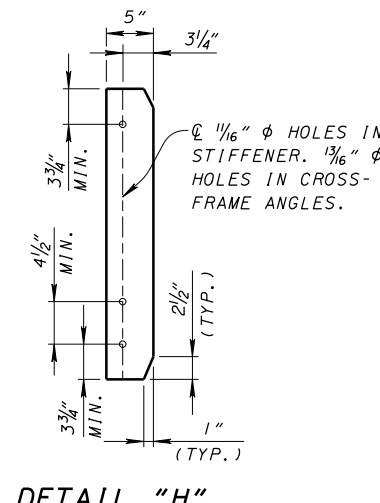
DETAIL "F"

$L = [D - (2 \times T_f) - 4]$
WHERE:
L = LENGTH (INCH)
D = DEPTH OF ROLLED BEAM (INCH)
 T_f = THICKNESS OF FLANGE (INCH)



DETAIL "G"

SEE SHEET 2 / 3 FOR STIFFENER WELDS.



DETAIL "H"

INTERMEDIATE CROSSFRAME NOTES:

GENERAL: THESE STANDARD CROSSFRAMES ARE LIMITED TO TANGENT STEEL MEMBERS WITH DEAD LOAD DEFLECTIONS BETWEEN ADJACENT MEMBERS LESS THAN OR EQUAL TO 1/2 INCH. REFER TO THE BRIDGE DESIGN MANUAL FOR THE MODIFICATIONS REQUIRED WHEN THESE LIMITATIONS ARE NOT MET.

CROSSFRAMES SHALL BE PERPENDICULAR TO BEAMS/GIRDERS AND BE IN A LINE ACROSS THE TOTAL WIDTH OF THE STRUCTURE.

THE FABRICATOR SHALL CHECK LONGITUDINAL CROSSFRAME SPACING SO THAT INTERFERENCE WITH BOLTED SPLICES, ANCHOR BOLTS, COMPLETE PENETRATION WEB OR FLANGE WELDED SPLICES AND BEARING STIFFENERS CAN BE AVOIDED. SPACING SHALL BE ADJUSTED TO PROVIDE AT LEAST SIX (6) INCHES OF LONGITUDINAL CLEARANCE. THE FABRICATOR MAY ADJUST CROSSFRAME SPACES UP TO A MAXIMUM OF 25'-0" CENTER TO CENTER UNLESS THE CONTRACT CRITERIA/DRAWINGS SHOW OTHERWISE.

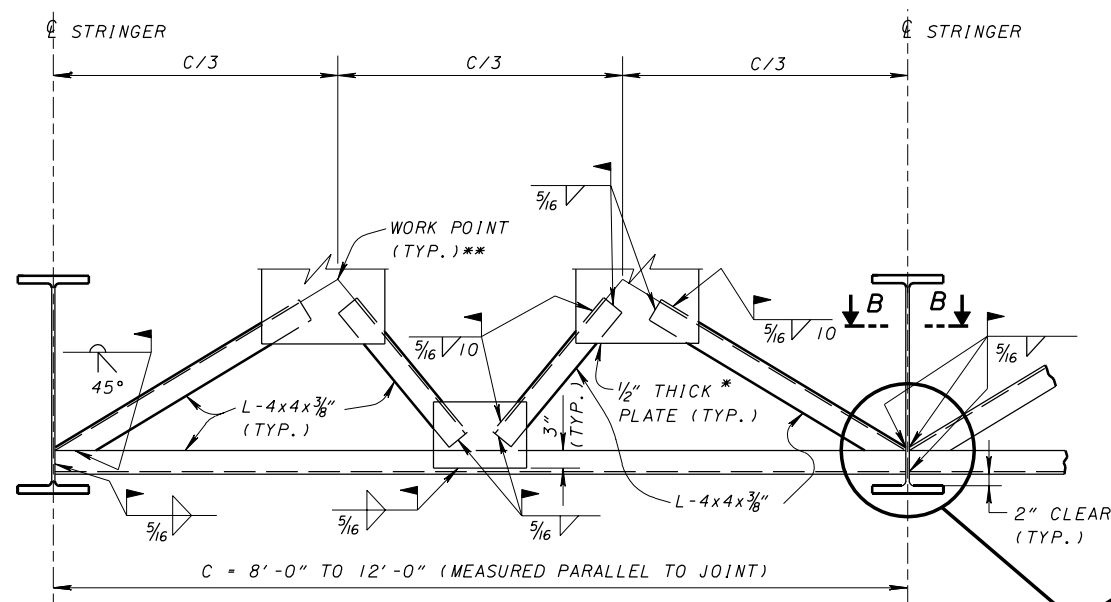
IF INTERFERENCE WITH BOLTED SPLICES CAN NOT BE AVOIDED, AN ANGLE CONNECTION TO THE WEB SPLICE, SIMILAR TO "DETAIL F", SHALL BE PROVIDED.

FOR COMPLETELY SHOP PAINTED, METALIZED OR GALVANIZED SYSTEMS, A TYPE 2 OR TYPE 4 CROSSFRAME SHALL BE USED.

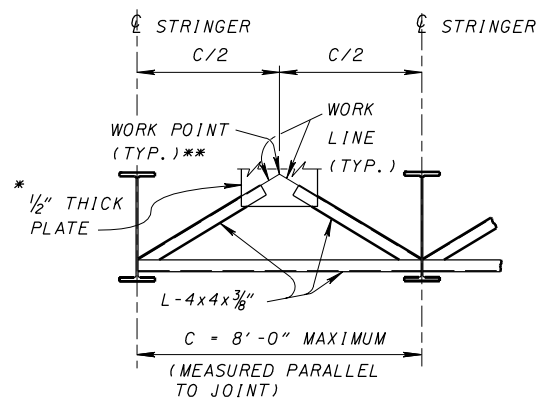
AT THE OPTION OF THE CONTRACTOR, TYPE 2 CROSSFRAMES CAN BE USED IN LIEU OF TYPE 1 CROSSFRAMES AND TYPE 4 CROSSFRAMES CAN BE USED IN LIEU OF TYPE 3 CROSSFRAMES.

MATERIAL: ALL INTERMEDIATE CROSSFRAME MATERIAL SHALL BE A709 GRADE 36, 50 OR 50W. THE TYPE AND GRADE SHALL BE THE SAME AS THAT SPECIFIED FOR THE SUPERSTRUCTURE MAIN STEEL.

FASTENERS: ALL BOLTS SHALL BE A325. FOR GALVANIZED, METALIZED AND PAINTED STEEL, TYPE 1 GALVANIZED BOLTS SHALL BE USED. FOR BARE A709 GRADE 50W STEEL, TYPE 3 BOLTS SHALL BE USED. EACH ANCHOR ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO (2) WASHERS, TIGHTENED ACCORDING TO 513.



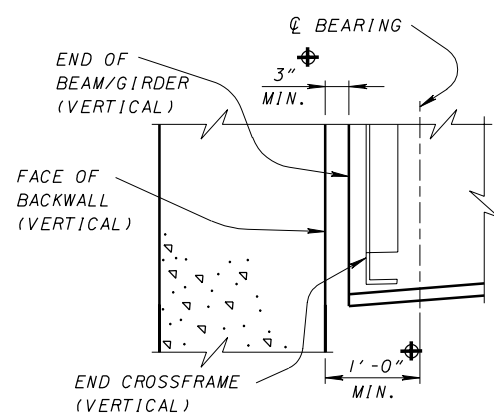
NOTE: THE WELDING SYMBOLS SHOWN ABOVE ARE TYPICAL FOR ALL SIMILAR LOCATIONS OF THIS END CROSSFRAME. THE WELDED ATTACHMENT DETAILS AND TYPICAL DIMENSIONS SHOWN ARE TYPICAL FOR THE CROSSFRAMES DETAILED BELOW.



END CROSSFRAME DETAILS

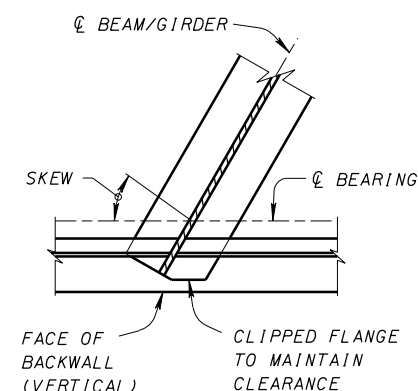
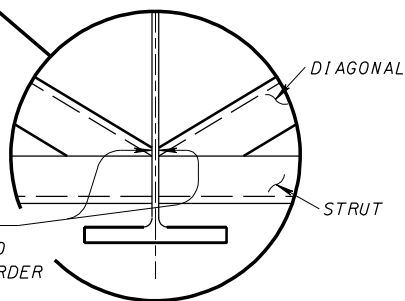
* - THE 1/2" THICK PLATE IS PART OF THE EXPANSION JOINT SYSTEM. SEE THE APPROPRIATE EXPANSION JOINT STANDARD BRIDGE DRAWING FOR DETAILS INCLUDING MATERIAL AND COATING REQUIREMENTS.

** - THE WORK LINE SHALL BE THE INSIDE FACE OF THE PROTRUDING ANGLE LEG EXTENDED AS SHOWN. THE WORK POINT SHALL BE AT THE INTERSECTION OF THESE LINES

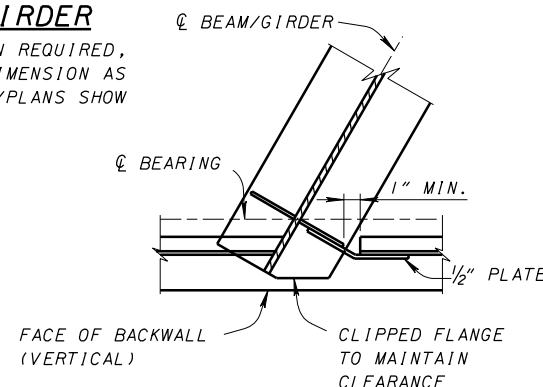


ELEVATION OF BEAM/GIRDER

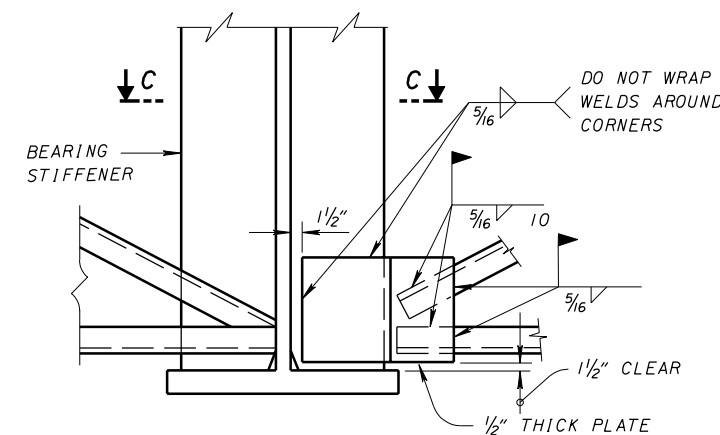
DESIGNER TO ESTABLISH DIMENSION REQUIRED, MEASURED NORMAL TO BACKWALL. DIMENSION AS ABOVE UNLESS CONTRACT CRITERIA/PLANS SHOW OTHERWISE.



SECTION B-B



SECTION C-C



BEAM/GIRDER END

END CROSSFRAME FOR SKEWED BRIDGES WHERE BEARING STIFFENERS INTERFERE WITH END CROSSFRAMES.

END CROSSFRAME NOTES:

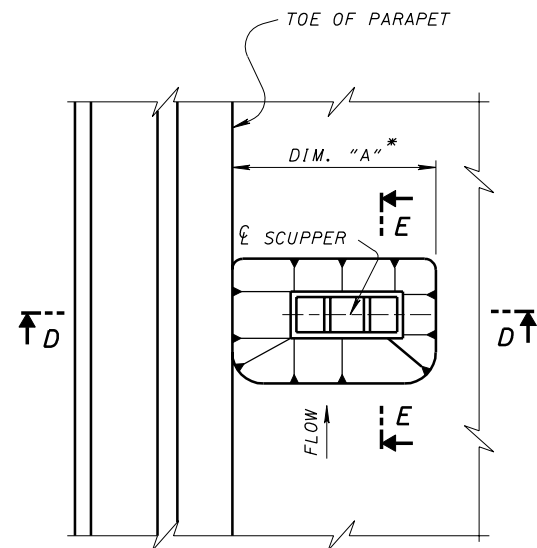
MATERIAL: ALL END CROSSFRAME MATERIAL SHALL BE A709 GRADE 50 EXCEPT WHEN THE SUPERSTRUCTURE MAIN STEEL IS A709 GRADE 50W, THEN THE END CROSSFRAME MATERIAL SHALL ALSO BE A709 GRADE 50W.

BEAM/GIRDER ENDS: FOR STRUCTURES ON GRADE, THE BEAM/GIRDER ENDS SHALL BE FABRICATED TO BE VERTICAL AFTER ERECTION. A THREE (3) INCH MINIMUM CLEARANCE AT 60° F SHALL BE MAINTAINED BETWEEN THE VERTICAL ENDS OF THE BEAMS/GIRDERS AND THE VERTICAL FACE OF THE BACKWALL UNLESS THE CONTRACT CRITERIA/PLANS SHOW OTHERWISE.

WORK POINTS: WORK POINTS SHALL BE COORDINATED BETWEEN EXPANSION JOINT AND STRUCTURAL STEEL SUPPLIERS TO ASSURE FIT UP AT ALL DESIGN LOCATIONS.

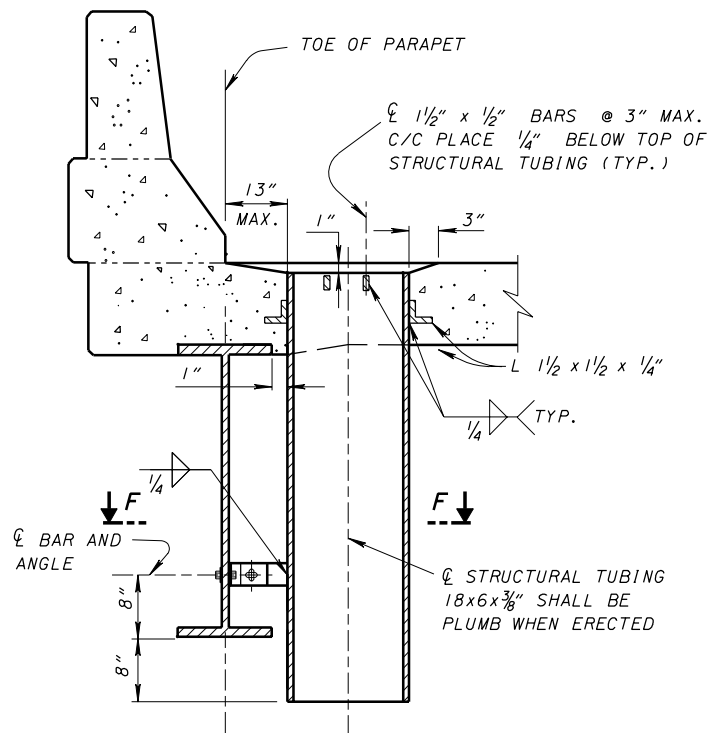
STIFFENER NOTES:

NOTES FOR STIFFENER DETAILS: INSTALL STIFFENERS ACCORDING TO 513. UNLESS THE CONTRACT DOCUMENTS REQUIRE LARGER WELDS, PROVIDE A 1/4" WELD WHEN THE THICKER PLATE IS 3/4" OR LESS AND A 5/16" WELD WHEN THE THICKER PLATE IS GREATER THAN 3/4".

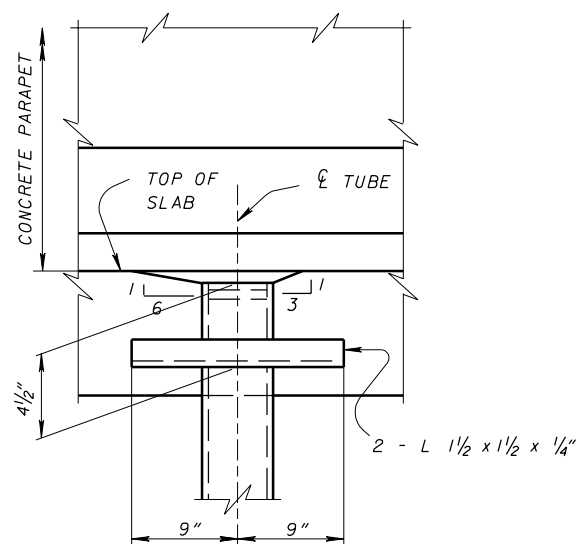


PLAN

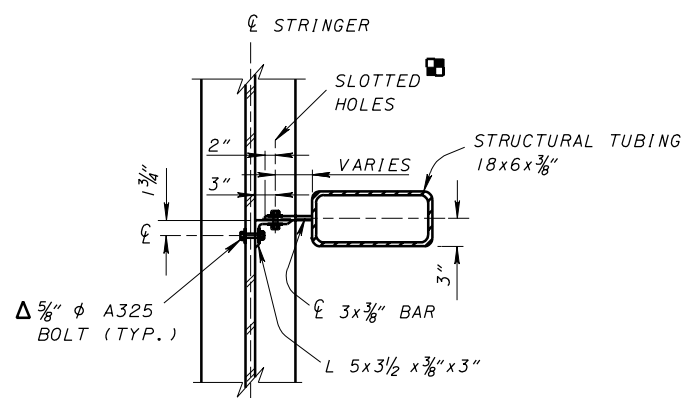
* - DIMENSION "A" SHALL NOT EXTEND BEYOND THE LIMITS OF THE SHOULDER (SHALL NOT FALL IN THE TRAFFIC LANE)



SECTION D-D



SECTION E-E



SECTION F-F

■ - SEE FASTENER NOTE 1.
 Δ - SEE FASTENER NOTE 2.

SCUPPER NOTES:

GENERAL: THE DESIGNER SHALL SHOW THE LOCATION OF THE SCUPPERS IN A PLAN VIEW OF THE BRIDGE DECK ON THE CONTRACT DOCUMENTS.

SUPPLEMENTAL REINFORCEMENT: REINFORCE THE CONCRETE DECK AT THE TWO SCUPPER CORNERS OPPOSITE THE CURB LINE WITH ONE #4 BAR, 3'-0" LONG ORIENTED AT 45° TO THE LONG AXIS OF THE SCUPPER AND LOCATED JUST BELOW THE TRANSVERSE BARS IN THE TOP MAT OF STEEL.

MATERIAL: FURNISH STRUCTURAL STEEL TUBING ACCORDING TO 707.10. TOUGHNESS TESTING IN ACCORDANCE WITH ASTM E436 IS NOT REQUIRED. ALL OTHER MATERIAL SHALL BE ASTM A709 GRADE 36, 50 OR 50W. GALVANIZE SUPPORT ANGLES, BARS, BOLTS, NUTS AND WASHERS IN ACCORDANCE WITH 711.02

DECK CROWN/SUPERELEVATION: CUT THE TOP OF THE STEEL TUBING SQUARE FOR CROSS SLOPES 1/2" PER FOOT AND LESS. CUT THE TOP OF THE TUBING PARALLEL TO THE DECK SURFACE FOR CROSS SLOPES GREATER THAN 1/2" PER FOOT.

FASTENER NOTES:

1. THE SIZE OF THE SLOTTED HOLES SHALL BE 1/16" x 1 9/16". THE SLOT SHALL BE HORIZONTAL IN THE 3" x 3/8" BAR AND VERTICAL IN THE ANGLE. BOLTS SHALL BE 5/8" DIAMETER A325 TYPE 1, GALVANIZED, WITH HEX NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513.
2. THE BOLTS SHALL BE 5/8" DIAMETER A325 TYPE 1 GALVANIZED FOR GALVANIZED, METALIZED OR PAINTED STRUCTURES OR A325 TYPE 3 FOR BARE WEATHERING STEEL STRUCTURES. EACH ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513. FOR WEATHERING STEEL STRUCTURES, PROVIDE A 3 1/2" x 3 1/2" x 1/8" PREFORMED BEARING PAD, 711.21, WITH A 1/16" DIAMETER HOLE, BETWEEN THE BEAM WEB AND THE ANGLE. AFTER THE DECK CONCRETE HAS BEEN POURED, FIELD DRILL THE 1/16" DIAMETER HOLE IN THE WEB.

BASIS OF PAYMENT: THE DEPARTMENT WILL PAY FOR THE SUPPLEMENTAL REINFORCEMENT DESCRIBED ABOVE SEPARATELY UNDER ITEM 509.

DESIGN AGENCY	OFFICE OF STRUCTURAL ENGINEERING	
	STATE OF OHIO DEPARTMENT OF TRANSPORTATION	DATE 2-12-97
DESIGNED	JCR	ADMINISTRATOR
REVISIONS	04-20-01 07-19-02	ADMINISTRATOR
CHECKED	JS	ADMINISTRATOR
REVIEWED	WTL	ADMINISTRATOR
GENERAL STEEL DETAILS		GSD-1-96
STANDARD	3	3