

SIGN TRUSS SUPPORT NOTES:

OVERHEAD SIGN TRUSS SUPPORT BRACKETS ARE DESIGNED FOR 33 LB/FT² WIND PRESSURE ON SUPPORT MEMBERS AND SIGNS. THE MAXIMUM ALLOWABLE TOTAL SIGN AREA IS 760 FT² FOR A 50-FT SPAN SOST-II STANDARD TRUSS WITH THE CENTROID OF THE TOTAL SIGN AREA CENTERED BOTH VERTICALLY AND HORIZONTALLY ON THE HORIZONTAL SPACE TRUSS.

STRUCTURAL STEEL FOR SIGN TRUSS SUPPORT (SHAPES, PLATES AND BARS) SHALL COMPLY WITH ASTM A709, GRADE 50W.

FOR SIGN TRUSS DETAILS AND NOTES, SEE IOWA DOT MODIFIED STANDARD SOST-II DESIGN PLANS IN PROJECT IM-080-6(399)239--13-52.

ALL FIELD CONNECTIONS ARE TO BE BOLTED USING "HIGH STRENGTH FASTENERS." UNLESS OTHERWISE NOTED. ALL OPEN HOLES ARE TO BE $\frac{15}{16}$ "^Φ AND BOLTS ARE TO BE $\frac{7}{8}$ "^Φ.

CHARPY V-NOTCH TOUGHNESS REQUIREMENTS IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 4152.02 SHALL APPLY TO SIGN TRUSS SUPPORT BRACKETS, SPREADER BEAMS, MC18'S, AND SPLICE PLATES.

COMPRESSIBLE-WASHER-TYPE DIRECT TENSION INDICATORS SHALL BE INSTALLED TO PROVE THE BOLT TENSION. THE DIRECT TENSION INDICATORS (DTI'S) SHALL BE SUPPLIED IN ACCORDANCE WITH ASTM F959-02 EXCEPT FOR THE COMPRESSIVE STRENGTH WHICH IS NON-STANDARD. THE DTI'S SHALL BE ZINC COATED. THE DTI SUPPLIER SHALL PROVIDE INSPECTION AND ACCEPTANCE CRITERIA TO INSTALL THE BOLTS TO THE PRETENSION SPECIFIED. AT A MINIMUM, INSPECTION AND ACCEPTANCE SHALL BE ACCOMPLISHED THROUGH THE USE OF FEELER GAUGES TO MEASURE THE COMPRESSED GAPS IN THE INSTALLED DTI'S.

THE DTI SUPPLIER SHALL PROVIDE A TEST REPORT FOR ESTABLISHING THE INSPECTION AND ACCEPTANCE CRITERIA. AT A MINIMUM, THE DTI SUPPLIER SHALL TEST AN ADDITIONAL 5 DTI'S UNDER HARDENED FLAT WASHERS, SIMILAR TO THOSE THAT WILL BE USED IN PRODUCTION, AT A LOAD OF 75 KIPS IN ORDER TO DETERMINE THE INSPECTION AND ACCEPTANCE CRITERIA.

THREE ADDITIONAL DTI'S, FROM THE SAME LOT, AND HARDENED WASHERS SHALL BE SUPPLIED TO THE STATE'S OFFICE OF CONSTRUCTION AND MATERIALS.

ANCHOR BOLT NUT TIGHTENING PROCEDURE:

1. THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE NUTS WITHOUT PAUSE OR DELAY. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR.
2. PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES SHALL NOT BE USED.
3. BASE PLATE, SPREADER BEAM, ANCHOR PLATE, ANCHOR BOLTS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.
4. PRIOR TO ANCHOR BOLT INSTALLATION, APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS AND WASHERS.
5. THE CONTRACTOR SHALL INSTALL THE ANCHOR BOLTS TO A PRETENSION OF BETWEEN 70 AND 80 KIPS. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE OF THE BOLT PATTERN, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.
6. LUBRICATE, PLACE AND TIGHTEN THE BOTTOM JAM NUTS TO SNUG TIGHT. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAMETER BUT NOT LESS THAN 18 INCHES. APPLY FORCE AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING.
7. PLACEMENT OF BASE PLATE NUTS WILL BE COMPLETED BY OTHERS IN A FUTURE CONTRACT.

ANCHOR BOLT NOTES:

EIGHT ANCHOR BOLTS WITH ASSOCIATED NUTS (6 PER BOLT), WASHERS (4 PER BOLT), AND DTI WASHERS (1 PER BOLT) ARE REQUIRED FOR EACH OF FOUR SIGN TRUSS SUPPORT BRACKETS.

ALL NUTS AND WASHERS DIRECTLY ABOVE AND BELOW THE SIGN TRUSS BASE PLATES SHALL BE PROVIDED IN THIS CONTRACT AND GIVEN TO THE STATE OF IOWA FOR STORAGE AND FUTURE USE. THESE NUTS AND WASHERS, ALONG WITH THE SIGN TRUSS (INCLUDING THE BASE PLATES), WILL BE INSTALLED BY OTHERS IN A FUTURE CONTRACT.

ALL ANCHOR BOLT MATERIALS AND GALVANIZING SHALL BE IN ACCORDANCE WITH ARTICLE 4187.01, C, 3 OF THE STANDARD SPECIFICATIONS. ANCHOR BOLTS SHALL BE ASTM F1554, GRADE 105, S4 (-20°F).

BENDING OR WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED.

STRUCTURAL ALIGNMENT / TOLERANCE NOTES:

THE PRECISE INSTALLATION AND ALIGNMENT OF THE OVERHEAD SIGN TRUSS SUPPORTS SHALL BE CONSIDERED ESSENTIAL. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER SHOWING THAT THE VARIOUS COMPONENTS HAVE BEEN MEASURED AND ARE LOCATED WITHIN THE TOLERANCES LISTED BELOW.

THE SPREADER BEAMS SHALL BE ACCURATELY LOCATED, WITH THE CENTER OF THE TWO ANCHOR BOLT GROUPS NOT MORE THAN 1 INCH FROM THE PLAN LOCATION IN THE DIRECTION PARALLEL WITH AND PERPENDICULAR TO THE OVERHEAD TRUSS.

THE SPREADER BEAMS SHALL BE PARALLEL, WITH THE DISTANCES ALONG THE OVERHEAD TRUSS BETWEEN ANCHOR BOLT GROUPS DIFFERING BY NOT MORE THAN 1 INCH, WHEN COMPARING THE FRONT AND REAR ANCHOR BOLT GROUPS.

ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY WITH CENTERS OF ADJACENT GROUPS IN THE SPREADER BEAM WITHIN $\frac{3}{16}$ INCH OF THE PLAN DISTANCE APART.

ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF THE SPREADER BEAM WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

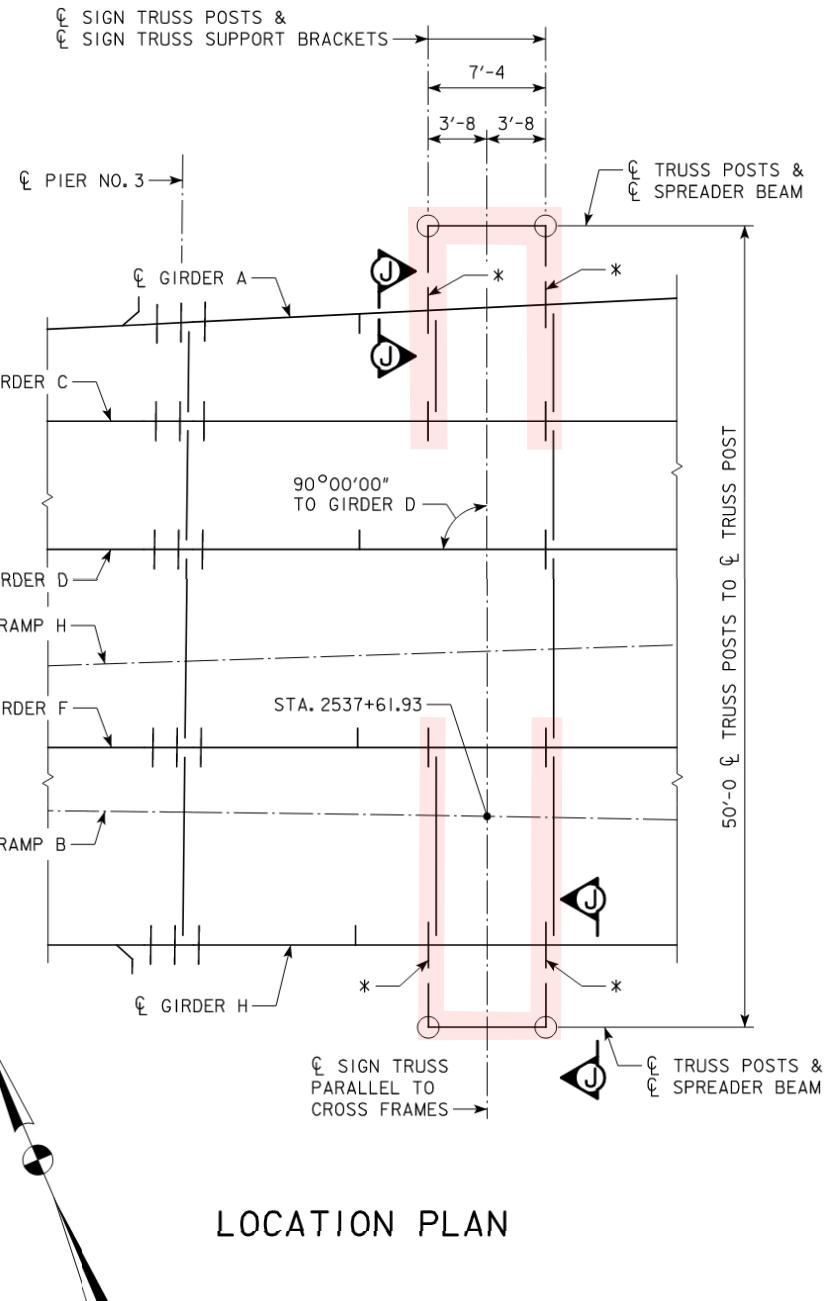
SPECIFICATIONS:

DESIGN: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS 5TH ED, SERIES OF 2009 WITH INTERIMS AND AASHTO LRFD 7TH ED, SERIES OF 2016 EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS 5TH ED, SERIES OF 2009 WITH INTERIMS AND AASHTO LRFD 7TH ED, SERIES OF 2016.



LOCATION PLAN

NOTES:
FOR VIEW J-J, SEE DESIGN SHEET 66.
* $\frac{3}{4}$ " x $10\frac{5}{8}$ " STIFFENERS SHALL BE ORIENTATED VERTICAL IN FINAL CONDITION.

NOTES:

1.

Unit Test Instruction for the Design-to-Construction Data Exchange		
No.	Date	Issue / Revision Notes
1	11/07/23	
Unit Test Description		Unit Test / Sheet No.
Level 1 Sign Light Support 01		
Drawn By DHC	Reviewed By CDC	

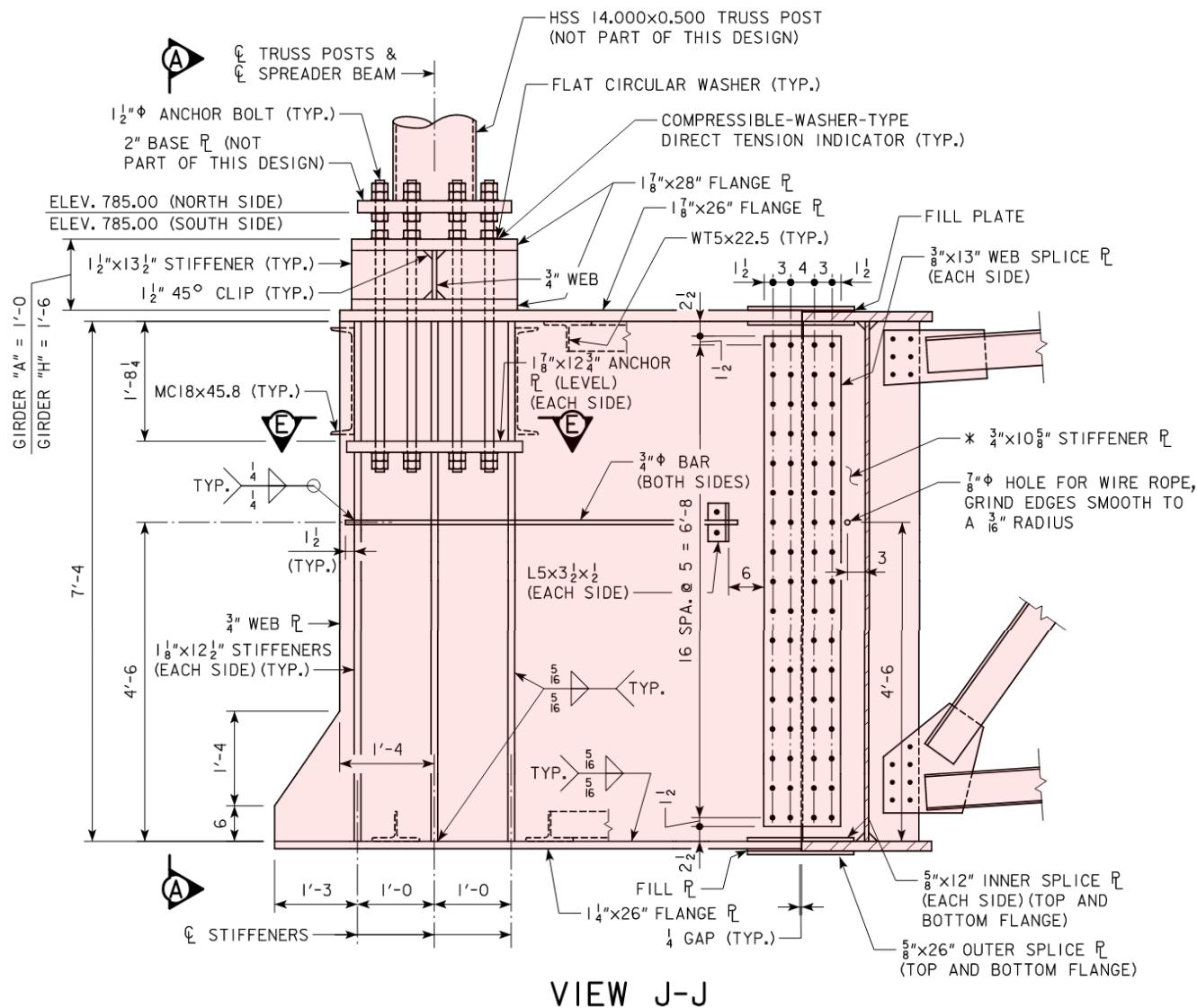
BIM FOR BRIDGES AND STRUCTURES TFP-5(372)

HDR

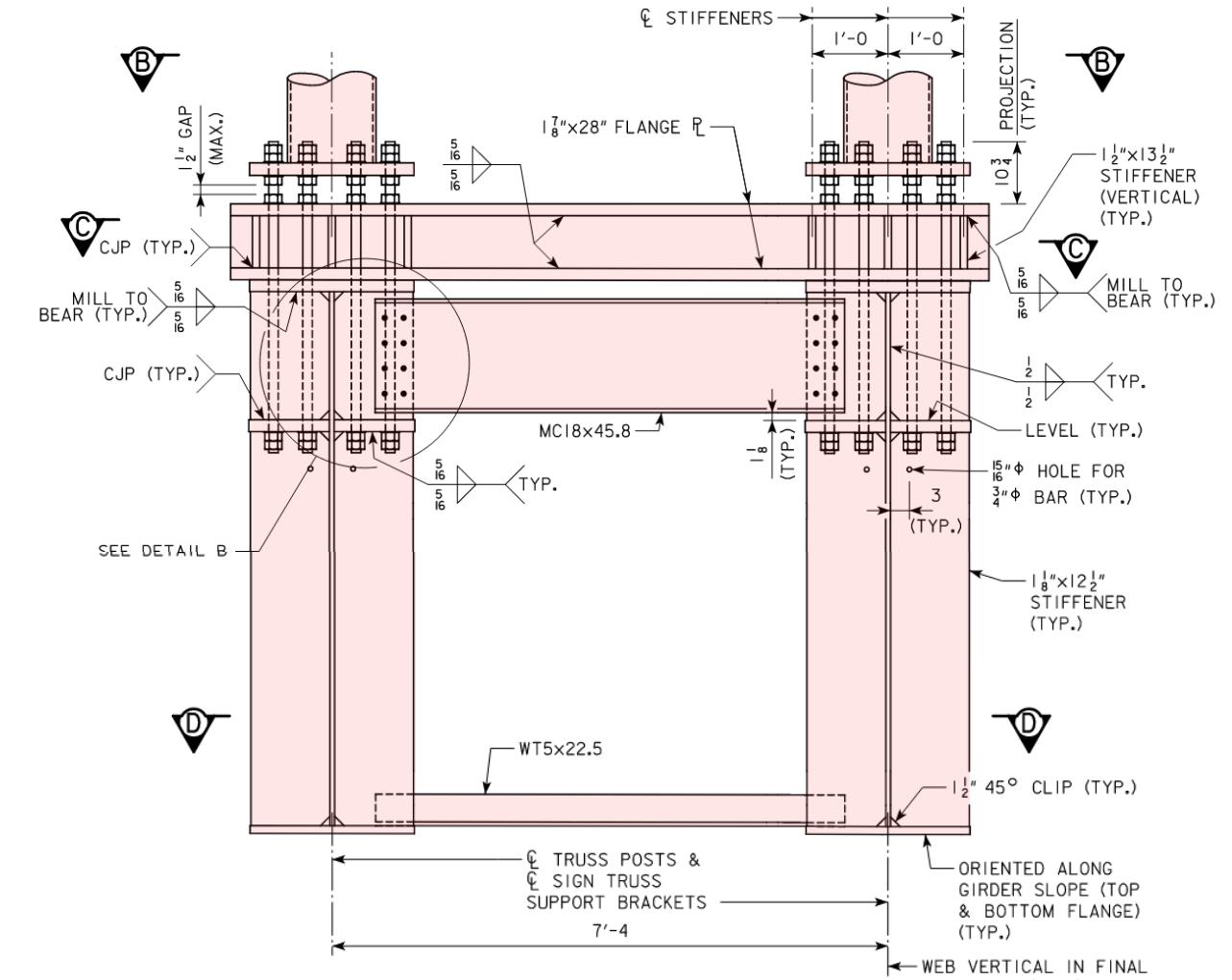
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SignLightSupport01 / 01



VIEW J-J



VIEW A-A
(UPPER WT NOT SHOWN)

NOTES:
FOR NOTES, SEE DESIGN SHEET 65.
FOR SECTIONS B-B, C-C & D-D, SEE DESIGN SHEET 67.
FOR 2 1/2" BAR CONNECTION DETAIL, DETAIL B, AND SECTION E-E,
SEE DESIGN SHEET 68.
CJP - COMPLETE JOINT PENETRATION GROOVE WELD.
* 3/4" x 10 5/8" STIFFENERS SHALL BE ORIENTATED VERTICAL IN
FINAL CONDITION.
FOR LOCATION OF SIGN TRUSS SUPPORT, SEE DESIGN SHEET 42.

NOTES:

1. Weld details shown for information only.

Unit Test Instruction for the Design-to-Construction Data Exchange		
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1	12/22/23	.
No.	Date	Issue / Revision Notes
Unit Test Description		Unit Test / Sheet No.
Level 1 Sign Light Support 01		
Drawn By	Reviewed By	
DHC	CDC	

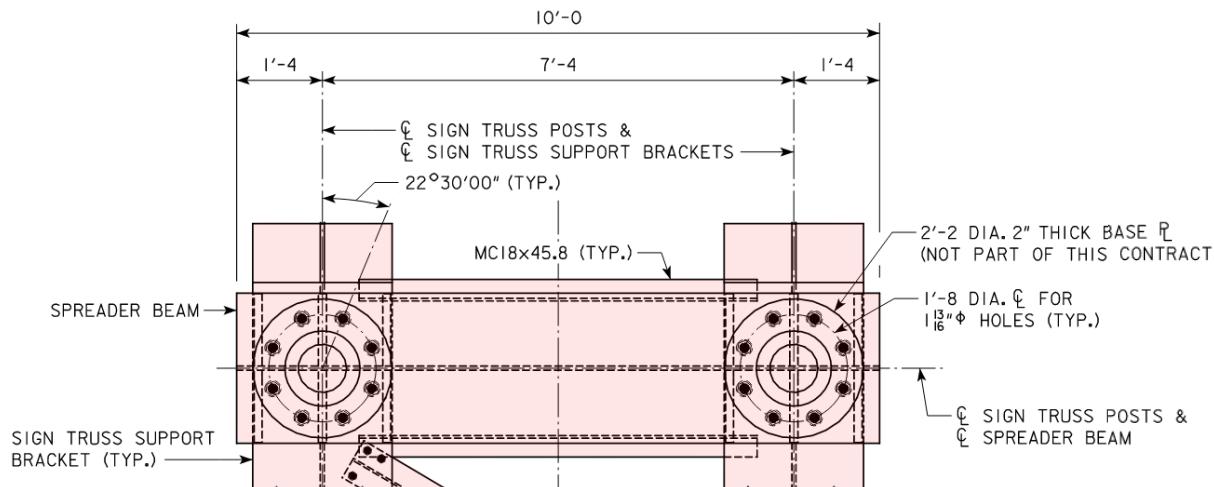
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FOR BRIDGES
AND STRUCTURES
TPF-5(372)

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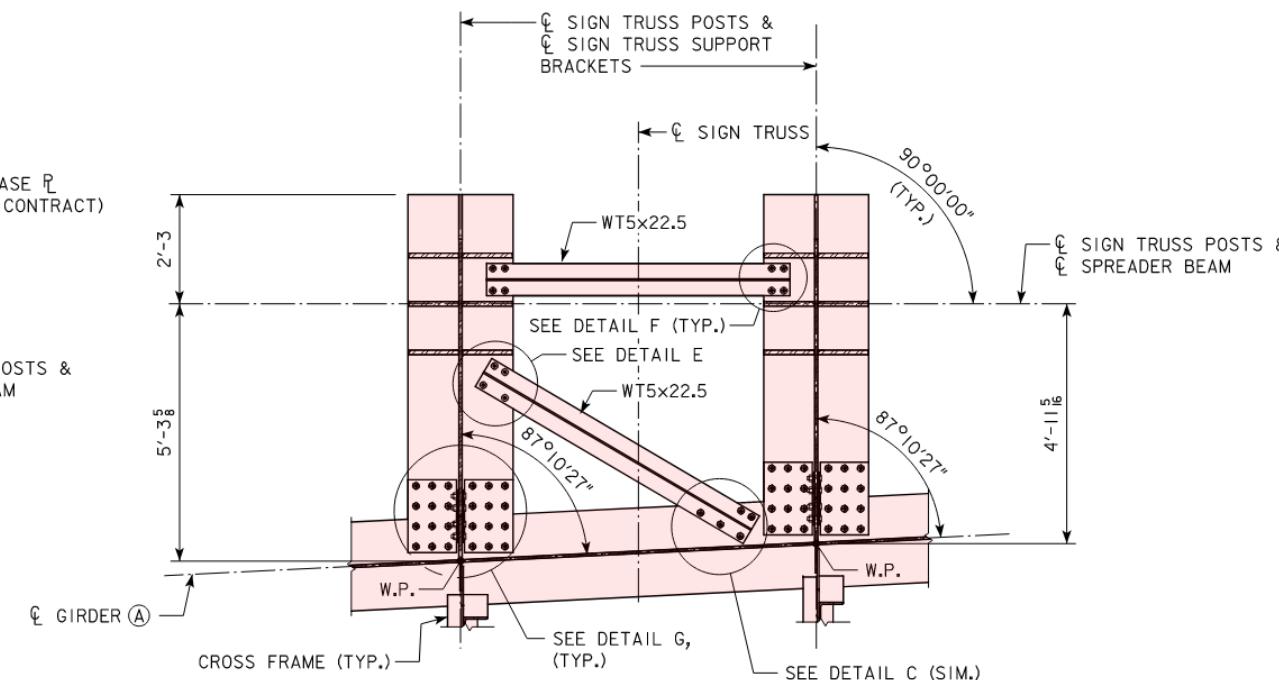
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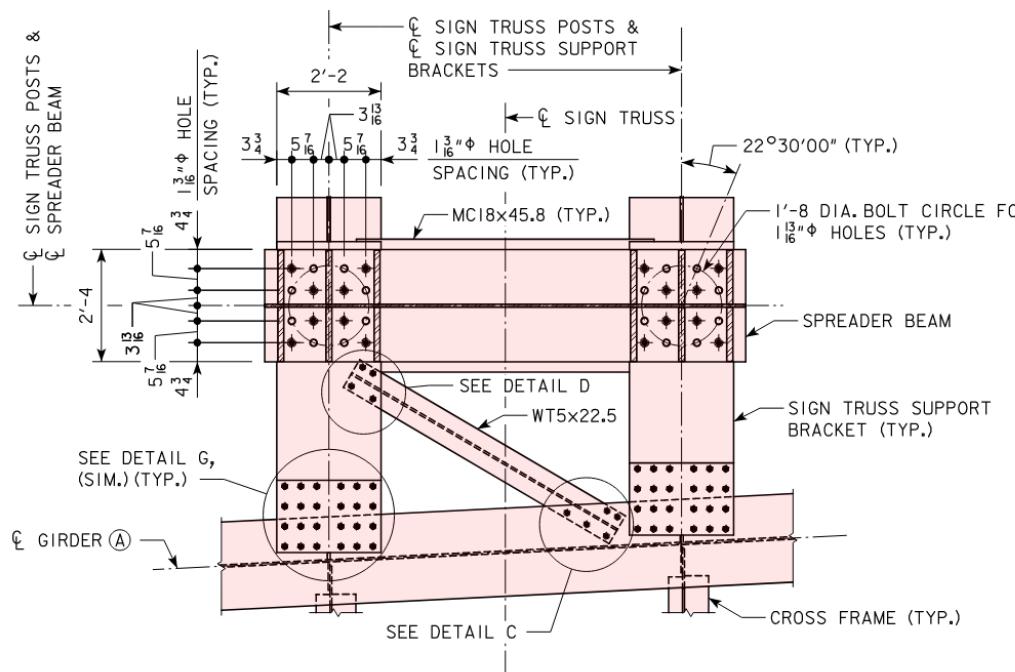
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SECTION B-B



SECTION D-D
(GIRDER A)

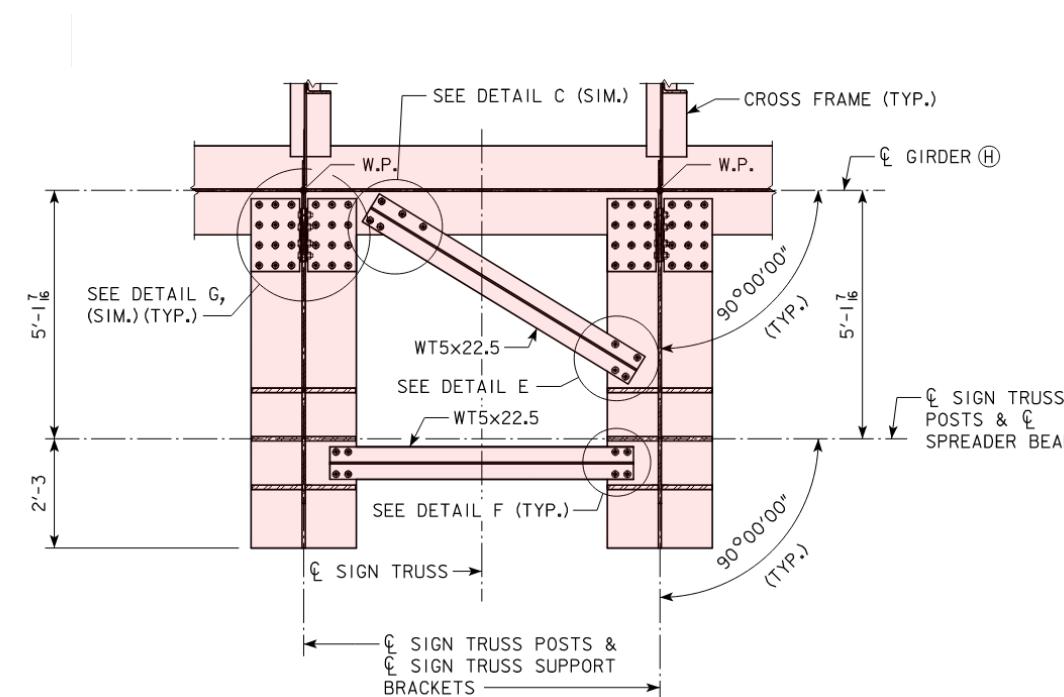


SECTION C-C
(GIRDER A SHOWN, GIRDERS H SIMILAR)

SECTION C-C LEGEND:
 • $1\frac{3}{16}$ " HOLES FOR $1\frac{1}{2}$ " ANCHOR BOLTS
 • $1\frac{3}{16}$ " HOLES FOR $1\frac{1}{8}$ " "HIGH TENSILE STRENGTH BOLTS"

NOTES:

1.



SECTION D-D
(GIRDER H)

Unit Test Instruction for the
Design-to-Construction Data Exchange

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1	12/22/23	.

No. Date Issue / Revision Notes

Unit Test Description

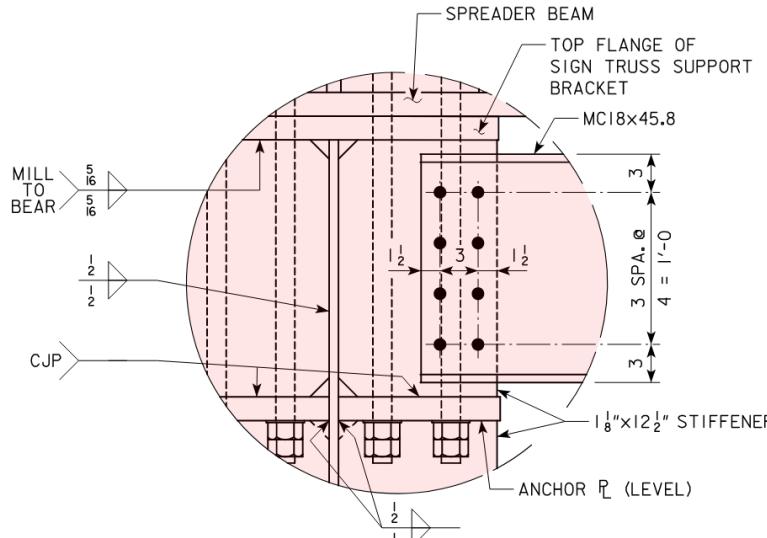
Level 1 Sign Light Support 01

Drawn By DHC	Reviewed By CDC
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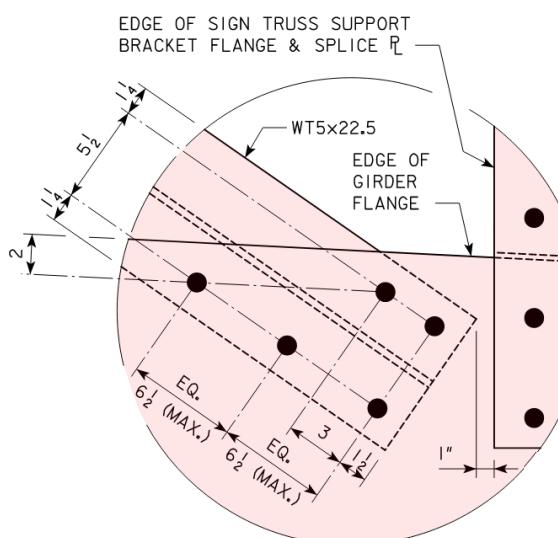


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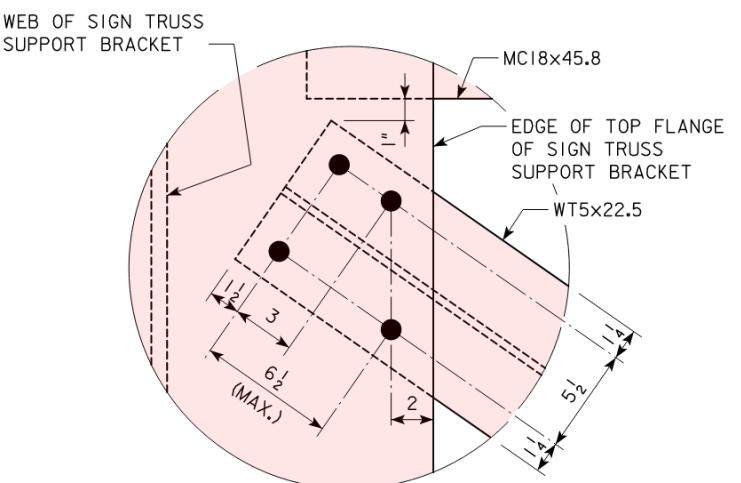
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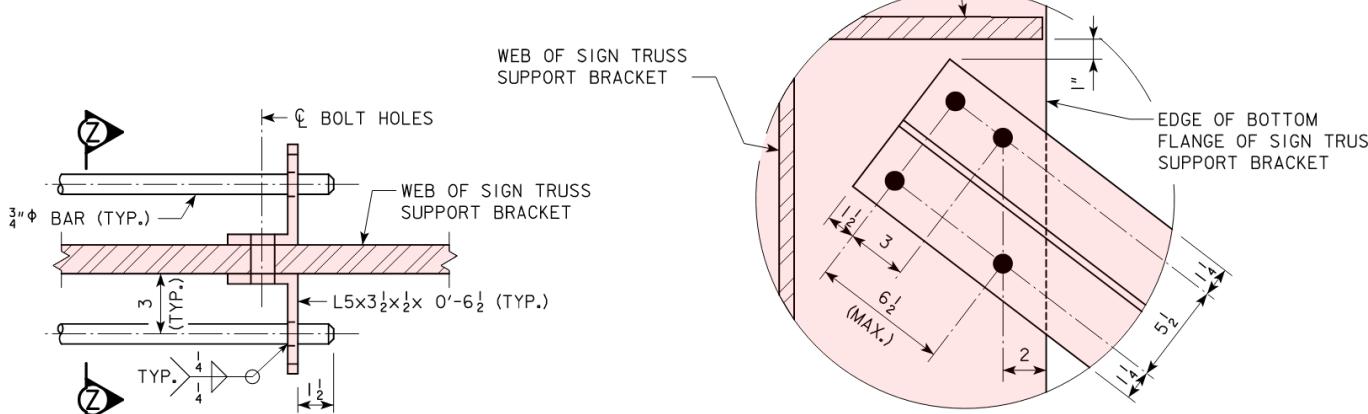
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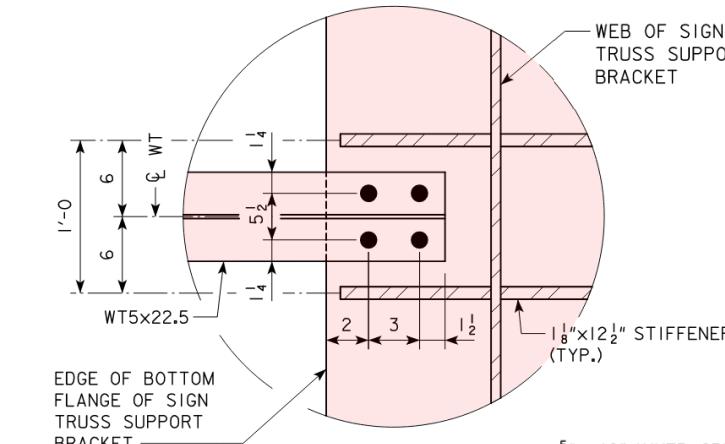
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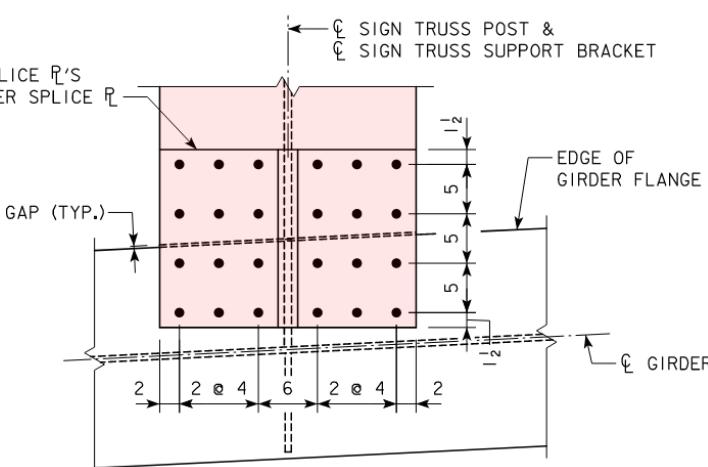
DETAIL D



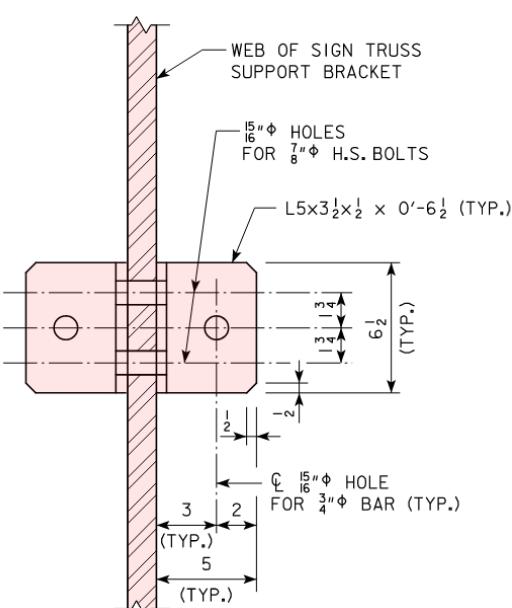
DETAIL E



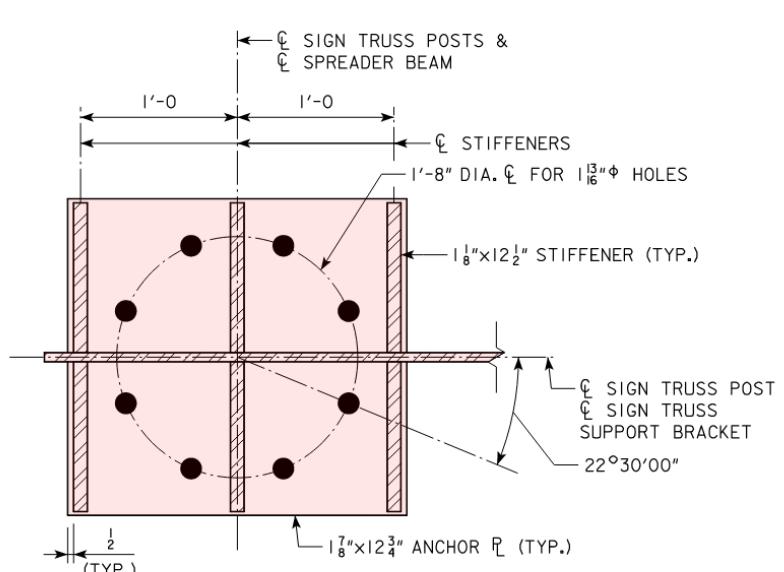
DETAIL



DETAIL G
WEB SPLICING NOT SHOWN
TOM FLANGE SPLICE SHOWN,
FLANGE SPLICE SIMILAR.



SECTION Z-Z



SECTION E-E
(CHANNELS NOT SHOWN)

Unit Test Instruction for the Design-to-Construction Data Exchange		
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1	12/22/23	.
No.	Date	Issue / Revision Notes
Unit Test Description		Unit Test / Sheet No.
Level 1 Sign Light Support 01		L1-Br03
Drawn By DHC	Reviewed By CDC	SignLightSupport01 / 04

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