1. DESIGN CRITERIA ARE BASED ON “STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNS.” THE MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DELAWARE DEPARTMENT OF HIGHWAYS AND TRANSPORTATION 2016 STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS FOR THIS PROJECT.

2. BREAKAWAY POST SHALL CONFORM TO AASHTO M998, ASTM A41 AND BE GALVANIZED IN ACCORDANCE WITH AASHTO M998, ASTM A41, CLASS 'B' CONCRETE WITH ULTIMATE COMPRESSION STRENGTH f_c = 3,000 PSI. SHALL BE USED IN ALL FOOTING REINFORCEMENTS SHALL CONFORM TO AASHTO M998.

3. AN AUGER SHALL BE USED TO UL THROUGH THE SOIL UP TO THE DESIRED DEPTH OF FOUNDATION. REINFORCED CONCRETE SHALL BE PLACED ON FOOTING FOR 1' TO ALLOW THE CENTER OF FIELD FLANGE, COMPLETE CONTACT WITH THE CONCRETE. THE CONCRETE SHALL BE PLACED IN ONE LAYER OF 6"THICKNESS AND LEVELLED WITH A TOOL TO ENSURE ALL SURFACES ARE LEVEL.

4. MAXIMUM PROJECTION ABOVE GROUND LINE FOR FOOTING OR ANCHOR PLATE SHALL BE LIMITED TO 4". WHERE NECESSARY, A PORTION OF CONCRETE IN THE FOUNDATION SHALL BE CHAMFERED PARALLEL TO THE EARTH'S SLOPE IN ORDER TO MINIMIZE FOOTING PROJECTION ABOVE GROUND.

5. COMPLETE DETAILS OF BREAKAWAY COUPLINGS, ANCHOR PLATES, AND BOLTS SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE BRIDGE ENGINEER.

6. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT SITE CRASH TESTING REPORTS INCLUDING SATISFACTORY PERFORMANCE OF THE BREAKAWAY MECHANISM WITH BREAKAWAY COUPLINGS AND FUSE PLATES UNDER THE FOLLOWING CONDITIONS:

   a. WEIGHT OF VEHICLE = 1800 LBS. OR EQUIVALENT
   b. RANGE OF SPEED AT IMPACT = 20 MPH TO 60 MPH
   c. MAXIMUM CHANGE OF VELOCITY = 10 FPS
   d. ORIENTATION OF SIGN FACES

7. ALL DIMENSIONS AFFECTED BY THE GEOMETRICS OF THE EXISTING STRUCTURE ARE TO BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE ANY CONSTRUCTION IS DONE AND BEFORE ANY STRUCTURAL STEEL IS ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS.

8. ALL STRUCTURAL STEEL SHALL BE CALIBRATED TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, AND MEET THE REQUIREMENTS OF THE ENGINEER AND THE CONTRACTOR. ALL STRUCTURAL STEEL THAT IS TO BE FABRICATED AFTER FABRICATION, AS NOTED, SHALL BE ASSEMBLED AND CALIBRATED TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, UNLESS OTHERWISE NOTED.

9. ALL DIMENSIONS TO BE CALIBRATED ARE TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, AND MEET THE REQUIREMENTS OF THE ENGINEER AND THE CONTRACTOR. ALL STRUCTURAL STEEL THAT IS TO BE FABRICATED AFTER FABRICATION, AS NOTED, SHALL BE ASSEMBLED AND CALIBRATED TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, UNLESS OTHERWISE NOTED.

10. ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS.

11. ALL STRUCTURAL STEEL SHALL BE CALIBRATED TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, AND MEET THE REQUIREMENTS OF THE ENGINEER AND THE CONTRACTOR. ALL STRUCTURAL STEEL THAT IS TO BE FABRICATED AFTER FABRICATION, AS NOTED, SHALL BE ASSEMBLED AND CALIBRATED TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, UNLESS OTHERWISE NOTED.

12. ORIENTATION OF SIGN FACES

   a. VERTICAL ALIGNMENT
   b. HORIZONTAL ALIGNMENT (SEE DIAGRAM ABOVE)
   c. GALVANIZED STEEL POSTS SHALL BE ASSEMBLED AND CALIBRATED TO MEET THE REQUIREMENTS OF AASHTO M998, ASTM A36, UNLESS OTHERWISE NOTED.

13. POSITIONING OF SIGNS AT GORES AND RAMP SEPARATIONS IS REFERRED TO THE NORMAL EDGE OF THE MAINLINE ROADWAY.
**Extruded Aluminum Details**

**Sign Panel Dimensions**

- **Exposed Surface**
  - EXCEPT AS NOTED
  - WALL THICKNESS 0.078" (1.25")

- **Insert Detail A**

**NOTES**

1. **Aluminum Panels** may have square corners or notched corners as shown. No other type corners are acceptable.

2. Alternate dimensions indicated in parentheses are acceptable.

**Extruded Aluminum Details**

**Border Detail**

**Detail of Edge Strip**

- **Stainless or Aluminum Size** 
  - 6.000" x 1/2" SLOTTED PAN HEAD SCREWS AT 2" C.C. ON 1/2" RHETS

- **Note:**
  - EDGE STRIP SHALL BE PLACED ON BOTH SIDES OF ALL EXTRUDED PANEL SHELVES.

**Extruded Aluminum Details**

**Vertical Support Attachment**

**Typical**

- **Post Clip Bolt**

- **Detail of a Blind Rivet**
  - FOR CUTOUT LETTERS

**NOTES**

1. **Vertical Supports** are to be continuous to entire height of sign, including exit panel, where applicable.

2. On modifications, non-continuous supports will be permitted. Splice double shall extend a min. distance of W NOTED above, spliced sections "W" to "X" or more shall have a W x 3 or equal section attached to full height of sign.

3. All supports shall be post clipped at 12" intervals. The bottom part of the spliced support shall be attached with at least two 12" post clips.

**Use Double Clips Every 12" for All Extruded Sign Installations**

**Typical**

- **Vertical Support Attachments**
  - **Not to Scale**
  - **Typical**
  - **Detail of a Blind Rivet**

**UNOFFICIAL WEBSITE COPY**
GAL v. STEEL POST
Y11" x ¼"
SLOTTED HOLES SHALL BE DRILLED OR PUNCHED 12· O.C. THE ENDS OF PANEL (SEE DETAIL B-1)

POST CLIP

1/4 BOLT WITH LOCK NUT & WASHER

SECTION C-C

1/4 BOLT CONNECTED TO 7/8" CONDUIT ALONG BOTTOM TRUSS CHORD

SIGN FACE

S-90

SECTION A-A

BOLT INTERIOR SLOTS ON A STAGGERED ALTERNATE BASIS
FIRST SLOTS IN FROM BOTH EDGES ARE BOLTED

8211, ALLOY 2024-T4, 6061-T6
FLAT WASHERS, 8209, ALLOY 2024-T4
RIVETS, 8211, ALLOY 2017-T4
POST CLIPS, 8108, ALLOY 3003-T6

DETAIL A

NOTE, 7/8" DIA. CONDUIT SHALL BE ATTACHED TO BOTTOM CHORD OF TRUSS SPAN USING CONDUIT CLAMPS SPACED AT 3'-0" ON CENTER.

SIGN LUMINAIRES MOUNTING FOR EXISTING STRUCTURES

DETAIL A

NOT TO SCALE

DETAIL B

NOTE, 7/8" DIA. CONDUIT SHALL BE ATTACHED TO BOTTOM CHORD OF TRUSS SPAN USING CONDUIT CLAMPS SPACED AT 3'-0" ON CENTER.

SECTION B-B

EXTRUDED ASSEMBLY AND ATTACHMENT DETAILS

SIGN FACE CONNECTIONS TO SIGN LIGHTING SYSTEM
NOT TO SCALE

EXTRUDED ASSEMBLY

AND ATTACHMENT DETAILS

DETAIL B

NOT TO SCALE

SIGN LUMINAIRES MOUNTING FOR EXISTING STRUCTURES

NOTE, 7/8" DIA. CONDUIT SHALL BE ATTACHED TO BOTTOM CHORD OF TRUSS SPAN USING CONDUIT CLAMPS SPACED AT 3'-0" ON CENTER.
**Sheet Aluminum Sign Panel**

- **Wood Post**
- **Extruded Aluminum Sign Panel**

- **Bolt Placement** (16") Center to Center

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**Extruded Aluminum Sign Panel**

- **Wood Post**
- **Backfilled Material**

- **Post Clip at 12" C.C. (1TP)**

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**TYPICAL FOUNDATION FOR WOOD SUPPORTS**

- **Wood Post**
- **Treated Wooden Post**
- **Hole Dia., Holes**
  - 4"x4"
  - 6"x6" 2"
  - 6"x8" 2"

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**WOOD POST MODIFICATIONS FOR BREAKAWAY FEATURE**

- **Offset to Sign Edge**
  - "I-Beam Traffic Barrier" 6" from Rail Face
  - "3-Stripe Cable" 1/2"
  - "Concrete Jersey Barrier" 2" from Face
  - "Barrier Cap" 2" MIN (6" MAX, PREFERABLE)
General Notes for Selection of Sign Support Posts

1. Determine values of \( W \), \( H \), and \( L \) as indicated in sketches 'A' or 'B'.
2. For selection of posts, enter tables with values of \( W \), \( H \), and \( L \).
3. For a sign between those values of \( W \), \( H \), and \( L \), use next highest foot value.
4. All post sizes shown in upright lettering are A36 steel. All post sizes shown in slanted lettering with a crosshatched background are A44 or A572, grade 30 steel.
5. Use the longest post to select all the post sizes.
6. No more than 2 posts may be erected within any 1-foot path, the total combined weight of all posts within a 1-foot path should not exceed 55 Lbs.
7. No more than 2 posts may be erected within any 5-foot path, the total combined weight of all posts within a 5-foot path should not exceed 550 Lbs. below the sign range.

Post Selection Example

For a sign where:
\[ W = 15' \text{ or } 16' \]
\[ H = 10' \text{ or } 11' \]
\[ L = 18' \text{ or } 20' \]
Two No. 5A36 steel posts are required.
The bracket number is stamped on the bracket.
2. Bolt the brackets to post, then place post and connected bracket to breakaway coupling.
3. For footing and anchor details, see sheet No. 6.
4. All bolts to be tightened in accordance with the manufacturer's specifications.
5. Transo Industries or approved equal.

Notes:
1. 7/8" brocket number is stumped on the bracket.
2. Bolt the brackets to post, then place post and connected bracket to breakaway coupling.
3. For footing and anchor details, see sheet No. 6.
4. All bolts to be tightened in accordance with the manufacturer's specifications.
5. Transo Industries or approved equal.

Front View
Post Hinge Detail
Horizontally

Bracket Detail
Scale: N.T.S.
Note: Do not place torque across neck portion of coupling.

Type B - Breakaway
Coupling Detail
Scale: N.T.S.
Note: Use 1/8 UNC - 2B

Plan View

Shim Detail
Scale: N.T.S.
Note: Use 1/4 or 5/32 gauge, heat treated 70-72 Rockwell.
GENERAL NOTES:
1. SPECIFICATIONS:
   DELAWARE DEPARTMENT OF TRANSPORTATION - STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1996, INCLUDING ALL SUPPLEMENTS.
   AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE SPECIFICATIONS, AUGUST 1996.
   ENGINEER MAY DESIGN SUPERIOR MATERIALS AND DETAILS.
   ONLY STEEL WELDING ELECTRODES DESCRIPTIONS DATED 2002 AND LATER SHALL BE USED.
   STEEL WELDS SHALL MEET MINIMUM REQUIREMENTS OF A WELDING CODE.

2. MATERIALS:
   ALL PREFABRICATED SQUARE TUBING SHALL MEET ASTM A500 GRADE C WITH A MINIMUM YIELD STRENGTH OF 50 KSI.
   ALL MISCELLANEOUS PLATE MATERIAL FOR BASE PLATES SHALL MEET ASTM A709 GRADE 50 WITH A MINIMUM YIELD STRENGTH OF 50 KSI.
   ANCHOR BOLTS SHALL MEET ASTM A709 GRADE 50 WITH A MINIMUM YIELD STRENGTH OF 50 KSI AND BE HOT-DIPPED GALVANIZED. WELDING TO HIGH STRENGTH ANCHOR BOLTS WILL NOT BE PERMITTED.
   WELDING TO HIGH STRENGTH ANCHOR BOLTS WILL BE PERMITTED, USE SPECIAL PRE-RELATED.

3. CONTRACTOR SHALL SUBMIT FOR APPROVAL AN ADHESIVE ANCHOR BOLT SYSTEM CAPABLE OF PROVIDING THE FOLLOWING UNFACTORED LOAD CAPACITY.

   a. TENSION: 4,000 LBS/BOLT MIN.
   b. SHEAR: 0.7 kips/BOLT MIN.
   c. MINIMUM NUMBER OF BOLTS, DIAMETER AND EMBEDMENT DEPTHS SHOWN ON THE PLAN SHALL BE MAINTAINED.

4. CONTRACTOR SHALL SUBMIT FOR APPROVAL AN ADHESIVE ANCHOR BOLT SYSTEM CAPABLE OF PROVIDING THE FOLLOWING UNFACTORED LOAD CAPACITY.

   a. TENSION: 4,000 LBS/BOLT MIN.
   b. SHEAR: 0.7 kips/BOLT MIN.
   c. MINIMUM NUMBER OF BOLTS, DIAMETER AND EMBEDMENT DEPTHS SHOWN ON THE PLAN SHALL BE MAINTAINED.

5. CONTRACTOR SHALL SUBMIT FOR APPROVAL AN ADHESIVE ANCHOR BOLT SYSTEM CAPABLE OF PROVIDING THE FOLLOWING UNFACTORED LOAD CAPACITY.

   a. TENSION: 4,000 LBS/BOLT MIN.
   b. SHEAR: 0.7 kips/BOLT MIN.
   c. MINIMUM NUMBER OF BOLTS, DIAMETER AND EMBEDMENT DEPTHS SHOWN ON THE PLAN SHALL BE MAINTAINED.

P.C.C. SAFETY BARRIER SIGN CONNECTION

SECTION A-A
NOT TO SCALE

SECTION B-B
NOT TO SCALE

DETAIL A
NOT TO SCALE