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NOTES:
1. Maximum deviation of any chord from a straight line shall be 1/8".
2. All butterfly structure members are steel.
5. See Standard Drawing E 802-SCSB-05 for wire outlet detail.
8. See Standard Drawing E 802-SCSB-06 for base plate, anchor bolt, and metal skirt details.

LEGEND:
a - Chord Member
b - Interior Member
   VerticaIs and Vertical Diagonals in Front and Back Faces, and
   Horizontals and Horizontal Diagonals in Top and Bottom Faces
   of Quadri-Chord Arm
c - Column

INDIANA DEPARTMENT OF TRANSPORTATION
SIGN CANTILEVER STRUCTURE BUTTERFLY
PLAN, ELEVATION, MEMBER SIZE, AND CAMBER
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-02

MEMBER SIZES

<table>
<thead>
<tr>
<th>MAX SPAN L/2 (FT)</th>
<th>MAX SIGN AREA (SF)</th>
<th>CHORD a</th>
<th>VERT./HORIZ./DIAG. b</th>
<th>COLUMN c</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>400</td>
<td>5.563</td>
<td>0.375</td>
<td>2.875</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.276</td>
<td>24,000</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.688</td>
<td></td>
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</table>

Shop Camber at End: 3/8" Measured Without Dead Load Deflection

Splicing Flange (Typ.)
See Note 3 on Standard Drawing E 802-SCSB-03.

STATE OF INDIANA
PROFESSIONAL ENGINEER

No. 60020657

/s/ Alfredo B. Hanza 09/20/13
DESIGN STANDARDS ENGINEER DATE
/s/ Mark A. Miller 09/26/13
CHIEF ENGINEER DATE

Drilled Shaft Foundation (6)
Anchor Bolt (Typ.) 2 Total per Structure
Chord Member
Anchor Bolt (Typ.) 2 Total per Structure
Sign (Typ.) Locate at center of every other panel and one at column.
Wire Outlet (Typ.)
Foundation Drilled Shaft (6)

Pavement Top of
Metal Skirt Galvanized
Elevation Low Structure

17'-6" Min. Clearance
3'-10"
5'-0"
12'-6"
12'-6"

SIDE ELEVATION A-A

CHIR HOLE

CAMBER DIAGRAM

MAX. MOUNTING HEIGHT = 21'-9"
HANDHOLE (7)

/
NOTES:


2. Diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a 3/4" minimum to 1 1/2" maximum clearance between any diagonal and any vertical member, and to provide clearance for U-bolt connections of signs.

3. Splicing flanges shall be attached to each arm unit with the arm shop-assembled to camber shown. Arm units shall be in proper alignment and flange surfaces shall be shop-bolted into full contact before welding. Sufficient external welds or tacks shall be made to secure flanges until remaining welds are made after disassembly. Adjacent flanges shall be "match marked" to insure proper field assembly.

4. Toe edge of diagonal member shall be cut back to facilitate throat thickness per AWS D1.1, Figure 3.2.

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE BUTTERFLY**

**QUADRI-CHORD AND FLANGE DETAILS**

**SEPTEMBER 2014**

**STANDARD DRAWING NO.** E 802-SCSB-03
1. Connection bolts in collar and bolts at lower chord connection must be high strength with matching locknuts. Connection bolts shall each have two (2) stainless steel flat washers. Bolts, contoured washers, and locknuts shall be galvanized.

2. After galvanizing, collar inside diameter shall equal outside diameter of galvanized column plus 1/8" (±1/16`). Maximum gap between column and collar at any location shall be 1/8 before tightening bolts.

3. Optional full-penetration weld in collar may be made at two (2) locations 180° apart. X-ray or UT 100%. See Standard Drawing E 802-SCSB-03 for flange details.


Notes:
NOTES:

1. Grind top plate if required to fully seat lower chord plate. Repair damaged galvanizing before assembly.

2. After tightening lower connection bolts, fill gap with non-hardening silicone caulk suitable for exterior exposure.

3. Connection bolts in collar and bolts at lower chord connection must have two (2) stainless steel flat washers. Bolts, contoured washers, and locknuts shall be galvanized.

4. Orient pipe toward sign. Hole diameter in column shall equal outside pipe diameter + 1/8".

5. See Standard Drawing E 802-SCSB-03 for flange details.
NOTES:

1. Utilize temporary positioning plate and leveling nuts or other engineer-approved methods to maintain anchor bolt alignment during concrete placement. Positioning plate and associated nuts shall be removed upon completion of the foundation.

2. Protect threads during concreting with tape, sleeves, or other means.

3. 1'-6" is the minimum length which shall be galvanized. Entire bolt may be galvanized at contractor's option.

4. Provide uncoated nut at bottom of anchor plate. Deform thread or use chemical thread lock to secure.

5. Use continuous backer ring, 1/4" x 1" minimum. Tack weld only in root area of final weld.

6. Anchor bolt nuts shall be tightened against the base plate by turning the nut a minimum of 1/6 turn from snug tight condition.

7. UT - Ultrasonic Testing, 25% of entire column to base plate weld. MT - Magnetic Particle Testing, 25% or 1 side of 4 stiffeners.

BASE PLATE, ANCHOR BOLT, AND SIGN CANTILEVER STRUCTURE BUTTERFLY BASE PLATE, ANCHOR BOLT, AND METAL SKIRT DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY
BASE PLATE, ANCHOR BOLT, AND METAL SKIRT DETAILS

SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-06
NOTES:

1. In lieu of fabricated handhole frame as shown, frame may be cut from 2" plate with rolling direction vertical.

2. See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post shall be placed on far side of support directly opposite center of handhole.


4. I.D. tag is a 1/8" stainless steel plate with the following information stamped in 1/2" black letters:

   - Manufacturer
   - Drawing/Order #
   - Contract #
   - Structure Type
   - Fabrication Date
   - Arm Length
   - Pole Mounting Height

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**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE BUTTERFLY**

**HANDHOLE AND I.D. TAG DETAILS**

**SEPTEMBER 2014**

**STANDARD DRAWING NO.**

**E 802-SCSB-07**

/s/ Alfredo B. Hanza 09/20/13

DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/26/13

CHIEF ENGINEER DATE
NOTES:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

2. See Standard Drawing E 802-SCSB-06 for anchor and positioning plate and anchor bolt details.

3. Thread and cap both ends of steel conduit.

4. Surface seal top and sides of barrier railing to the pavement surface.
NOTES:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.

2. See Standard Drawing E 802-SCSB-06 for anchor and positioning plate and anchor bolt details.

3. Thread and cap both ends of steel conduit.

4. Surface seal top and sides of barrier railing to the pavement surface.