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<td>Structure Type C, D, E, or F Foundation at 45” Concrete Barrier</td>
</tr>
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<td>Structure Type G, H, or I Foundation at 45” Concrete Barrier</td>
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</tr>
<tr>
<td>22</td>
<td>Structure Type G, H, or I Foundation, 36” Height</td>
</tr>
</tbody>
</table>
NOTES:

1. See Standard Drawing E 802-SCLS-03 for panel dimensions and member sizes.

2. Maximum deviation of a chord from a straight line shall be 1/8".


6. See Standard Drawings E 802-SCLS-14, -17, and -20 for foundation details.


8. See Standard Drawing E 802-SCLS-10 for wire outlet detail.

LEGEND:

a - Chord
b - Vertical and Vertical Diagonal
c - Column
### DOUBLE ARM PANEL DIMENSIONS

<table>
<thead>
<tr>
<th>SPAN (FT.)</th>
<th>NO. OF PANELS</th>
<th>PANEL LENGTH (FT.)</th>
<th>VARIABLE END DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>10'</td>
<td>2</td>
<td>4'-0&quot;</td>
<td>0'-3&quot;</td>
</tr>
<tr>
<td>11'</td>
<td>3</td>
<td>3'-0&quot;</td>
<td>0'-3&quot;</td>
</tr>
<tr>
<td>12'</td>
<td>3</td>
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<td>0'-6&quot;</td>
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<td>3</td>
<td>3'-6&quot;</td>
<td>0'-9&quot;</td>
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<tr>
<td>14'</td>
<td>3</td>
<td>4'-0&quot;</td>
<td>0'-3&quot;</td>
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<tr>
<td>15'</td>
<td>3</td>
<td>4'-3&quot;</td>
<td>0'-6&quot;</td>
</tr>
<tr>
<td>16'</td>
<td>4</td>
<td>3'-6&quot;</td>
<td>0'-3&quot;</td>
</tr>
<tr>
<td>17'</td>
<td>4</td>
<td>3'-9&quot;</td>
<td>0'-3&quot;</td>
</tr>
<tr>
<td>18'</td>
<td>4</td>
<td>4'-0&quot;</td>
<td>0'-3&quot;</td>
</tr>
<tr>
<td>19'</td>
<td>4</td>
<td>4'-3&quot;</td>
<td>0'-3&quot;</td>
</tr>
<tr>
<td>20'</td>
<td>4</td>
<td>4'-6&quot;</td>
<td>0'-3&quot;</td>
</tr>
</tbody>
</table>

### DOUBLE ARM MEMBER SIZES

<table>
<thead>
<tr>
<th>STR. TYPE</th>
<th>MAX SPAN (FT.)</th>
<th>MAX SIGN AREA (FT.)</th>
<th>MAX MOUNTING HEIGHT (FT.)</th>
<th>CHORD a</th>
<th>VERTICAL/VERTICAL DIAGONAL b</th>
<th>COLUMN c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DIA. (IN.)</td>
<td>WALL THICK. (IN.)</td>
<td>DIA. (IN.)</td>
</tr>
<tr>
<td>A</td>
<td>10</td>
<td>180</td>
<td>24</td>
<td>7 5/8</td>
<td>0.500</td>
<td>4 1/2</td>
</tr>
<tr>
<td>B</td>
<td>15</td>
<td>280</td>
<td>24</td>
<td>10 3/4</td>
<td>0.593</td>
<td>5 9/16</td>
</tr>
<tr>
<td>C</td>
<td>20</td>
<td>360</td>
<td>24</td>
<td>14</td>
<td>0.593</td>
<td>6 5/8</td>
</tr>
</tbody>
</table>

**NOTES:**

1. All panels on the double arm shall be the same length. The minimum panel length is 3'-0" and the maximum is 4'-6".
2. See Standard Drawing E 802-SCLS-04 for connections, weld details, and required camber.
3. For base plate and anchor bolt details see Standard Drawing E 802-SCLS-12.
4. See Standard Drawings E 802-SCLS-14, -17, and -20 for foundation details.
5. All member diameters shown are outside diameters.
6. Double arm chord shape shall be octagonal tubular with 0.14 in./ft. taper, maximum diameter shown in table.

**OCTAGON TUBULAR SHAPE**
NOTES:
1. See Standard Drawing E 802-SCLS-03 for panel dimensions and member sizes.
2. Vertical diagonals shall be placed for minimum offset from the panel point such that the offset shall provide a 3/4" minimum to 1 1/2" maximum clearance between each diagonal and vertical member, and to provide clearance for U-bolt connections to signs.
3. For variable end dimension, see table of panel dimensions on Standard Drawing E 802-SCLS-03.
4. See Standard Drawing E 802-SCLS-05 for flange plate and chord plate details.

INDIANA DEPARTMENT OF TRANSPORTATION
SIGN CANTILEVER STRUCTURE
DOUBLE ARM CONNECTIONS, WELD DETAILS,
CHORD END PLATE DETAILS, AND CAMBER
SEPTEMBER 2013
STANDARD DRAWING NO. E 802-SCLS-04

DOUBLE ARM

<table>
<thead>
<tr>
<th>STR. TYPE</th>
<th>LENGTH</th>
<th>CAMBER AT END (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10'-0&quot;</td>
<td>0.375</td>
</tr>
<tr>
<td>B</td>
<td>15'-0&quot;</td>
<td>0.750</td>
</tr>
<tr>
<td>C</td>
<td>20'-0&quot;</td>
<td>1.000</td>
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</table>

VERTICAL DIAGONAL

VERTICAL (b)

CHORD (a)

CHORD END PLATE

CHORD END PLATE (Typ.)

See detail this sheet.

ENDING PLATE (Typ.)

See detail this sheet.

CAMBER DIAGRAM

Camber at End (See table)

E 802-SCLS-05

INDIANA DEPARTMENT OF TRANSPORTATION
SIGN CANTILEVER STRUCTURE
DOUBLE ARM CONNECTIONS, WELD DETAILS,
CHORD END PLATE DETAILS, AND CAMBER
SEPTEMBER 2013
STANDARD DRAWING NO. E 802-SCLS-04

DOUBLE ARM

<table>
<thead>
<tr>
<th>STR. TYPE</th>
<th>LENGTH</th>
<th>CAMBER AT END (IN.)</th>
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<tbody>
<tr>
<td>A</td>
<td>10'-0&quot;</td>
<td>0.375</td>
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<tr>
<td>B</td>
<td>15'-0&quot;</td>
<td>0.750</td>
</tr>
<tr>
<td>C</td>
<td>20'-0&quot;</td>
<td>1.000</td>
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</table>

VERTICAL DIAGONAL

VERTICAL (b)

CHORD (a)

CHORD END PLATE

CHORD END PLATE (Typ.)

See detail this sheet.

ENDING PLATE (Typ.)

See detail this sheet.
SECTION G-G

Top Cap - Steel Column

Plate 3/8" x 3". Bend to outside dia. of column + 1/8".

1/2" Dia. Bolt w/Hex Nuts and Curved Washer (Typ.)

Tack weld nut in 2 places

J-Hook

NOTES:

1. J-hook shall consist of 3/8" dia. bars constructed as shown, and spot-welded to inside of the columns.

2. Cap bolts used to attach top cap of columns shall be located to miss J-hook.
NOTES:
1. See Standard Drawing E 802-SCLS-08 for panel dimensions and member sizes.
2. Maximum deviation of a chord from a straight line shall be 1/8".
3. See Standard Drawings E 802-SCLS-09 through -11 for quadri-chord arm connection, weld details, chord end plate details, and camber.
7. See Standard Drawing E 802-SCLS-10 for wire outlet detail.

LEGEND:
- a - Chord
- b - Interior members: Verticals and vertical diagonals in front and back faces, and horizontals and horizontal diagonals in top and bottom faces of arm.
- c - Column

INDIANA DEPARTMENT OF TRANSPORTATION
SIGN CANTILEVER STRUCTURE
QUADRI-CHORD
PLAN AND ELEVATION
SEPTEMBER 2013
## PANEL DIMENSIONS

<table>
<thead>
<tr>
<th>SPAN</th>
<th>NO. OF PANELS</th>
<th>PANEL LENGTH</th>
<th>VARIABLE END DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>21'</td>
<td>5</td>
<td>3'-9&quot;</td>
<td>0'-6&quot;</td>
</tr>
<tr>
<td>22'</td>
<td>5</td>
<td>3'-9&quot;</td>
<td>1'-6&quot;</td>
</tr>
<tr>
<td>23'</td>
<td>5</td>
<td>4'-0&quot;</td>
<td>1'-3&quot;</td>
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<td>24'</td>
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<td>4'-3&quot;</td>
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<td>29'</td>
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<tr>
<td>35'</td>
<td>7</td>
<td>4'-6&quot;</td>
<td>1'-9&quot;</td>
</tr>
</tbody>
</table>

## QUADRI-CHORD MEMBER SIZES

<table>
<thead>
<tr>
<th>STR. TYPE</th>
<th>MAX SPAN (FT.)</th>
<th>MAX SIGN AREA (FT.)</th>
<th>MAX MOUNTING HEIGHT (FT.)</th>
<th>⑤ CHORD a DIAMETER (IN.)</th>
<th>WALL THICK. (IN.)</th>
<th>VERT./HORIZ./DIAG. b DIAMETER (IN.)</th>
<th>WALL THICK. (IN.)</th>
<th>COLUMN c DIAMETER (IN.)</th>
<th>WALL THICK. (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>25</td>
<td>300</td>
<td>24</td>
<td>5/8/16</td>
<td>0.258</td>
<td>2/7/8</td>
<td>0.203</td>
<td>24</td>
<td>0.562</td>
</tr>
<tr>
<td>E</td>
<td>30</td>
<td>300</td>
<td>24</td>
<td>5/8/16</td>
<td>0.258</td>
<td>2/7/8</td>
<td>0.203</td>
<td>24</td>
<td>0.562</td>
</tr>
<tr>
<td>F</td>
<td>35</td>
<td>300</td>
<td>24</td>
<td>5/8/16</td>
<td>0.375</td>
<td>2/7/8</td>
<td>0.276</td>
<td>24</td>
<td>0.688</td>
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<td>24</td>
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<td>0.968</td>
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<td>5/8/16</td>
<td>0.375</td>
<td>2/7/8</td>
<td>0.276</td>
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<td>0.968</td>
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<tr>
<td>I</td>
<td>35</td>
<td>400</td>
<td>24</td>
<td>5/8/16</td>
<td>0.375</td>
<td>2/7/8</td>
<td>0.276</td>
<td>24</td>
<td>0.968</td>
</tr>
</tbody>
</table>

### NOTES:

1. All panels in a structure shall be the same length. The minimum panel length is 3'-9" and the maximum is 4'-6".
2. See Standard Drawing E 802-SCLS-09 for connections, weld details, and required camber.
3. For base plate, anchor bolt, and metal skirt details see Standard Drawing E 802-SCLS-12.
4. All member diameters shown are outside diameters.
5. Quadri-chord arm chord shape shall be circular with constant diameter.
IN  FIG. 3.2.  

NOTES:

1. See Standard Drawing E 802-SCLS-10 and -11 for quadri-chord arm connection to column details.

2. See Standard Drawing E 802-SCLS-08 for panel dimensions and member sizes.

3. Vertical diagonals shall be placed for minimum offset from the panel point such that the offset shall provide a 3 4" minimum to 1 1/2" maximum clearance between each diagonal and vertical member, and to provide clearance for U-bolt connections to signs.

4. For variable end dimension, see table on Standard Drawing E 802-SCLS-08.

QUADRI-CHORD ARM

CAMBER DIAGRAM

CHORD END PLATE DETAILS

END VIEW

SECTION J-J

CHORD END PLATE DETAILS

QUADRI-CHORD ARM DETAILS, WELD DETAILS, CHORD END PLATE DETAILS, AND CAMBER

STATE OF

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE

QUADRI-CHORD CONNECTIONS

QUADRI-CHORD ARM

CAMBER AT END (IN.)

STR.

LENGTH

D

25'-0"

1.750

E

30'-0"

2.625

F

35'-0"

3.500

G

45'-0"

1.250

H

30'-0"

2.000

I

35'-0"

3.000

STATE OF

IN  NDIANA

DESIGN STANDARDS ENGINEER

DATE

CHIEF ENGINEER

DATE

No. 60020657

STATEMENT OF

PROFESSIONAL ENGINEER

DATE

/\ Alfredo B. Hanza

DATE

/\ Mark A. Miller

DATE
1/4 round edges. Drill 1" dia. hole in member and 3/4" inside dia. hole in member, Coupling welded into 1" Column (c) Chord (b) or Inside Wall of Column (c)

NOTES:
1. Grind top of bottom plate if required to fully seat lower chord plate. Repair damaged galvanizing before assembly.
2. Orient pipe toward sign. Hole diameter in column shall equal outside pipe diameter + 1/8".
3. After tightening lower connection bolts, fill gap with non-hardening silicone caulk suitable for exterior exposure.
ABOVE UPPER CHORDS
PLAN VIEW - TOP OF COLUMN

Spacing
Low
er Bolt
Spacing
Low
er Bolt
1'-9" 1'-9"
3'-0" 3'-6 9/16"

Upper Chord (a)
Horizontal (b)
Vertical (b) (Typ.)
Upper Chord (a)

Washers, 1" Dia. (Typ.)
Bolt with Nuts and
( Typ.)
Vertical (b)
Horizontal (b)

SECTION L-L
Handhole Opening in Cap Plate
See Detail H
Upper Chord (a)
\( \varnothing \) 2 Bolts
Per Side
\( \varnothing \) 3 Bolts
Per Side
1'-2"
1'-1"
1'-0"
3 1/2"
2 1/2"

8 - 1/4" - 20 stainless steel screws, tap holes in cap plate

\( \varnothing \) Column and Collar
Cover, 1/4" Plate, 1'-2" Dia.
Upper Chord (a)
Cap Plate,
1" x 2'-10" x 3'-6 9/16"

Stiffener (Typ.)
Collar Plate
Column

DETAIL G
Cap Plate,
1" x 2'-10" x 3'-6 9/16"
Top of Column
O.D. of Column 1"
I.D. of Collar 1"

Stiffener
5/8" x 3 1/2" x 8 1/2"
1/2" 1/2"
5/8"
7/8"

Chamfer on inside of collar to facilitate field assembly, 3/16" - 45°.

CONTOURED WASHER

DETAIL H
Cap Plate,
1" x 2'-10" x 3'-6 9/16"
Top Of Column

Stiffener, 5/8" Thickness
Contoured Washers (Typ.)

\( \varnothing \) Bolt
Bottom Of Collar Plate

NOTES:
1. After galvanizing, collar inside diameter shall equal outside diameter of galvanized column plus 1/8" ± 1/16". Maximum gap between column and collar shall be 1/8" before tightening bolts.
2. Optional full penetration weld in collar may be made at two locations, 180° apart. X-ray or ultrasonic test (UT) 100%.
3. See Standard Drawing E 802-SCLS-08 for dimensions and member sizes.
**BASE PLATE DIMENSIONS**

<table>
<thead>
<tr>
<th>COLUMN DIAMETER</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>18&quot;</td>
<td>3'-0&quot;</td>
<td>2'-3&quot;</td>
<td>2'-7&quot;</td>
</tr>
<tr>
<td>20&quot;</td>
<td>3'-2&quot;</td>
<td>2'-5&quot;</td>
<td>2'-9&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
<td>3'-6&quot;</td>
<td>2'-9&quot;</td>
<td>3'-1&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**

1. Minimum length which shall be galvanized. Entire bolt may be galvanized at contractor's option.
2. Provide uncoated nut at bottom of anchor plate. Deform thread or use chemical thread lock to secure.
3. Use continuous backer ring, 5/16" x 2" minimum. Tack weld only in root area of final weld.
4. Anchor bolt nuts shall be tightened against the base plate by turning the nut a minimum of 1/6 turn from snug tight condition.
5. See Standard Drawings E 802-SCLS-03 and -08 for column wall thickness.
6. UT - Ultrasonic Testing, 25% of entire column to base plate weld. MT - Magnetic Particle Testing, 25% or 1 side of 4 stiffeners.

**ANCHOR AND POSITIONING PLATE**

- **Steel Plate, 1/2" Thickness**
- **Hole in Base Plate, 8" Dia.**
- **Base Plate, 8" Dia.**
- **Hole in Base Plate, 2 1/8" Dia. (Typ.)**

**SKIRT DETAIL**

- **Metal Skirt, Height 5"**
- **Stiffener Plate, 3/4 x 10 x 8 (Typ.)**
- **Hole in Base Plate, 2 1/4" Dia. (Typ.)**

**ANCHOR BOLT DETAIL**

- **Anchor Plate**
- **Bolt, 2" Dia.**
- **Positioning Plate**
- **Top of Concrete Foundation**

**DETAIL K**

- **BASE PLATE WELD**
- **Seal weld**
- **Backer Ring**

**DETAIL I**

- **Stud Bolt, 5/16" Dia. (Typ.)**
- **See Detail I**

**DETAIL J**

- **Stud Holes, 3/8 x 2" Slots**
- **3/8" x 2" Slots**

**PLAN**

- **SECTION M-M**
- **Thread, 8" U.N.C. (Typ.)**
- **Steel Plate, 1/2" Thickness**

**SIGN CANTILEVER STRUCTURE**

DOUBLE ARM AND QUADRI-CHORD BASE PLATE, ANCHOR BOLT, AND METAL SKIRT DETAILS

SEPTEMBER 2014

INDIANA DEPARTMENT OF TRANSPORTATION

STANDARD DRAWING NO.  E 802-SCLS-12

/s/ Alfredo B. Hanza  12/02/13  
DESIGN STANDARDS ENGINEER  DATE

/s/ Mark A. Miller  12/05/13  
CHIEF ENGINEER  DATE

No. 60020657  STATE OF INDIANA
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 _____

1. Drill and tap for 1/4-20 screws. Chase thread after galvanizing.

2. Holes, 5/16" Dia. (Typ.)

3. Flat Bar Frame, 3/4" x 2" (Typ.)

4. I.D. Tag (Dimensions vary)

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**INeANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE**

**DOUBLE ARM AND QUADRI-CHORD COLUMN HANDHOLE AND I.D. TAG DETAILS**

**SEPTEMBER 2013**

**STANDARD DRAWING NO.** E 802-SCLS-13

/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER  DATE

/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER  DATE
NOTES:
2. See Standard Drawing E 802-SCLS-12 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.

BILL OF MATERIALS

<table>
<thead>
<tr>
<th>EPOXY-COATED REINFORCING BARS</th>
<th>MARK OR SIZE</th>
<th>NO. OF BARS</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9</td>
<td>18</td>
<td>23'-0&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>4</td>
<td>5'-2&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td>2</td>
<td>6'-10&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#9</td>
<td>8</td>
<td>11'-8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total #5</td>
<td></td>
<td>281 LBS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONCRETE, CLASS A

| Pour A | 9.3 CY | 3'   |
| Pour B | 3.0 CY | 3'-5"|
| Total Concrete, Class A        | 12.3 CY | 6'   |

MISCELLANEOUS

| Surface Seal                   | 5.9 SYS |

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE TYPE A OR B
FOUNDATION AT 33" CONCRETE BARRIER

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-14

/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE
**NOTES:**

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCLS-12 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.

**BILL OF MATERIALS**

<table>
<thead>
<tr>
<th>EPOXY-COATED REINFORCING BARS</th>
<th>MARK OR SIZE</th>
<th>NO. OF BARS</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total #9</td>
<td>#9</td>
<td>18</td>
<td>27'-0&quot;</td>
<td>1652 LBS</td>
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<tr>
<td>501</td>
<td>6</td>
<td>5'-6&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>502</td>
<td>12</td>
<td>3'-4&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>12</td>
<td>5'-9&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>2</td>
<td>6'-10&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>505</td>
<td>8</td>
<td>11'-8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>4</td>
<td>5'-2&quot;</td>
<td></td>
<td>281 LBS</td>
</tr>
<tr>
<td>Total #5</td>
<td></td>
<td>25</td>
<td>12'-0&quot;</td>
<td>200 LBS</td>
</tr>
<tr>
<td>Total Epoxy-Coated Reinforcing Bars</td>
<td></td>
<td></td>
<td></td>
<td>2133 LBS</td>
</tr>
</tbody>
</table>

**CONCRETE, CLASS A**

- Pour A: 11.2 CYS
- Pour B: 3.0 CYS
- Total Concrete, Class A: 14.2 CYS

**MISCELLANEOUS**
- Surface Seal: 5.9 SYS

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE TYPE C, D, E, OR F FOUNDATION AT 33" CONCRETE BARRIER**

**SEPTEMBER 2013**

**STANDARD DRAWING NO.** E 802-SCLS-15
**BIL** OF MATERIALS

**EPOXY-COATED REINFORC**ING BARS

<table>
<thead>
<tr>
<th>MARK OR SIZE</th>
<th>NO. OF BARS</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9</td>
<td>18</td>
<td>33'-0&quot;</td>
<td>2020 LBS</td>
</tr>
<tr>
<td>#5</td>
<td>4</td>
<td>5'-2&quot;</td>
<td>281 LBS</td>
</tr>
<tr>
<td>#8</td>
<td>12</td>
<td>6'-10&quot;</td>
<td>248 LBS</td>
</tr>
<tr>
<td>Total #9</td>
<td>18</td>
<td>33'-0&quot;</td>
<td>2020 LBS</td>
</tr>
<tr>
<td>Total #5</td>
<td>4</td>
<td>5'-2&quot;</td>
<td>281 LBS</td>
</tr>
<tr>
<td>Total #8</td>
<td>12</td>
<td>6'-10&quot;</td>
<td>248 LBS</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>34</strong></td>
<td><strong>36'-0&quot;</strong></td>
<td><strong>469 LBS</strong></td>
</tr>
</tbody>
</table>

**CONCRETE, CLASS A**

- Pour A: 14.0 CYS
- Pour B: 3.0 CYS
- Total Concrete, Class A: 17.0 CYS

**MISCELLANEOUS**

- Surface Seal: 5.9 SYS

---

**NOTES:**
2. See Standard Drawing E 802-SCLS-12 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.

---

**SECTION P-P**

- Construction Joint Type A (Optional)
- Drilled Shaft, 4'-0" Dia. (Typ.)
- 3" Circled (Typ.)
- #5 (Bottom)
- 505 @ 9" (4 Each Face)
- Anchor Plate ②
- Drilled Shaft, 4'-0" Dia. (Typ.)
- Positioning Plate ②
- Pavement Surface
- Epoxy-Coated Reinforcing Bars

**ELEVATION**

- 4 - ③ Two Steel Conduits, 2" Dia.
- 2 - 504
- 8 - 505 (4 Each Face) ①
- 12 - 502 (6 Each Face)
- 12 - 503 (6 Each Face)
- ② Conduit Extension, 9"
- 4 - #5 x 5'-2"
- Pavement Surface
- Approved Clamps for Grounding
- Copper Weld Ground Rod 5/8" Ø x 10'-0"

**PLAN**

- ③ Two Steel Conduits, 2" Dia.
- 2 - 504
- 8 - 505 (4 Each Face) ①
- 12 - 502 (6 Each Face)
- 12 - 503 (6 Each Face)
- ② Conduit Extension, 9"
- 4 - #5 x 5'-2"
- Pavement Surface
- Approved Clamps for Grounding
- Copper Weld Ground Rod 5/8" Ø x 10'-0"

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE TYPE G, H, OR I FOUNDATION AT 33" CONCRETE BARRIER**

**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-SCLS-16**

**/s/ Alfredo B. Hanza** 03/26/13
**Design Standards Engineer**

**/s/ Mark A. Miller** 03/27/13
**Chief Engineer**

**No. 60020657**
**State of Indiana**
**Professional Engineer**
### Notes:
1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCLS-12 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.

#### Bill of Materials

<table>
<thead>
<tr>
<th>Bars</th>
<th>No. of</th>
<th>Length</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy-Coated Rebar.</td>
<td>10</td>
<td>5'-8&quot;</td>
<td>401 LBS</td>
</tr>
<tr>
<td>Total #5</td>
<td>21</td>
<td>12'-0&quot;</td>
<td>322 LBS</td>
</tr>
<tr>
<td>Total Epoxy-Coated Rebar.</td>
<td>18</td>
<td>23'-0&quot;</td>
<td>1408 LBS</td>
</tr>
</tbody>
</table>

#### Concrete, Class A
- Pour A: 9.3 CYS
- Pour B: 4.0 CYS
- Total Concrete, Class A: 13.3 CYS

#### Miscellaneous
- Surface Seal: 7.1 SYS

---

**SECTION Q-Q**

- **Pavement Surface**
- **Concrete, Class A**
  - Total Concrete, Class A: 1898 LBS

---

**Plan**

- **Drilled Shaft, 4'-0" Dia. (Typ.)**
- **Positioning Plate (2)**
- **Anchor Plate (2)**

---

**Elevation**

- **Conduit Placement Limit**
- **509 @ 9" (5 Each Face)**
- **505 @ 9" (5 Each Face)**

---

**Notations**

- 60020657
- E802-SCLS-17
- September 2013
- Alfredo B. Hanza
- Mark A. Miller
1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCLS-12 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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE TYPE C, D, E, OR F FOUNDATION AT 45" CONCRETE BARRIER

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-18

INSTRUCTIONS:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCLS-12 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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE TYPE C, D, E, OR F FOUNDATION AT 45" CONCRETE BARRIER

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-18

INSTRUCTIONS:

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCLS-12 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.
**EPOXY-COATED REINFORCING BARS**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>MARK OR</th>
<th>NO. OF</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9</td>
<td>18</td>
<td>33'-0&quot;</td>
<td>2020 LBS</td>
<td></td>
</tr>
<tr>
<td>505</td>
<td>10</td>
<td>11'-8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>506</td>
<td>6</td>
<td>5'-8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>507</td>
<td>12</td>
<td>4'-4&quot;</td>
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<td></td>
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<tr>
<td>508</td>
<td>12</td>
<td>5'-11&quot;</td>
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<td></td>
</tr>
<tr>
<td>509</td>
<td>2</td>
<td>7'-0&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>4</td>
<td>5'-2&quot;</td>
<td>322 LBS</td>
<td></td>
</tr>
<tr>
<td>Total #5</td>
<td>31</td>
<td>12'-0&quot;</td>
<td>248 LBS</td>
<td></td>
</tr>
<tr>
<td>Total Epoxy-Coated Reinforcing Bars</td>
<td></td>
<td></td>
<td>2698 LBS</td>
<td></td>
</tr>
</tbody>
</table>

**CONCRETE, CLASS A**

- Pour A: 13.9 CYS
- Pour B: 4.0 CYS
- Total Concrete, Class A: 17.9 CYS

**MISCELLANEOUS**

- Surface Seal: 7.1 SY

**NOTES:**

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCLS-12 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.

**ELEVATION**

- 3'-6" Drilled Shaft, 4'-0" Dia. (Typ.)
- 3" Clr. 3' @ 1'-0"
- Pavement Surface
- Positioning Plate
- Construction Joint Type A (Optional)
- 10 - 505 @ 9" (Each Face)
- Anchor Plate
- Drilled Shaft, 4'-0" Dia. (Typ.)
- 3'-10" Spa. @ 1'-0"
- 5'-6" Spa. @ 1'-0"

**PLAN**

- 8" Ø Drill Shaft
- 4'-6" Ø Drilled Shaft
- 18' - #9 x 33'-0"
- 8" Ø Limit for Conduit Placement
- 507 X 4'-4"
- 508 X 5'-11"
- 509 X 7'-0"
- 505 X 11'-8"
- 506 X 5'-8"

**SECTION S-S**

- 5'-6" Dia. Drilled Shaft
- 3'-10" Dia. Drilled Shaft
- 3'-8" Dia. Drilled Shaft
- #5 Copper Wire in 1" Dia. Conduit
- 4'-5" Dia. Drilled Shaft
- 5/8" Ø x 10'-0" Ground Rod
- Copper Weld Ground Rod

**INSTRUCTIONS:**

- Surface Seal top and sides of barrier railing to the pavement surface.
- Thread and cap both ends of steel conduit.
- See Standard Drawing E 602-SCLS-12 for anchor and positioning plate and anchor bolt details.
- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- Surface seal top and sides of barrier railing to the pavement surface.

**STATE OF INDIANA DEPARTMENT OF TRANSPORTATION**

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE TYPE G, H, OR I FOUNDATION AT 45" CONCRETE BARRIER**

**SEPTMBER 2013**

**STANDARD DRAWING NO.**

E 802-SCLS-19

**SIGN CANTILEVER STRUCTURE TYPE G, H, OR I FOUNDATION AT 45" CONCRETE BARRIER**

**E 802-SCLS-19**

**CONSTRUCTION JOURNAL**

- Chief Engineer: Alfredo B. Hanza
- Design Standards Engineer: Mark A. Miller

**STATE OF INDIANA**

**DATE**

02/05/13

03/27/13

**DESIGN STANDARDS ENGINEER**

**CHIEF ENGINEER**
NOTES:

1. See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.
2. Thread and cap both ends of steel conduit.
3. Surface seal top and sides of foundation to the ground surface.

**BILL OF MATERIALS**

<table>
<thead>
<tr>
<th>MARK OR SIZE</th>
<th>NO. OF</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9</td>
<td>18</td>
<td>22'-9&quot;</td>
<td>1392 LBS</td>
</tr>
<tr>
<td>401</td>
<td>24</td>
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<td>192 LBS</td>
</tr>
<tr>
<td>Total #9</td>
<td></td>
<td></td>
<td>1584 LBS</td>
</tr>
<tr>
<td>#6 Copper Wire in 1&quot; Dia. Conduit</td>
<td>Grounding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground Line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilled Shaft, 4'-0&quot; Dia. (Typ.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 - 401 @ 1'-0&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduit Extension, 9&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Epoxy-Coated Reinforcing Bars</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MISCELLANEOUS**

- Concrete, Class A: 10.7 CYS
- Surface Seal: 4.3 CYS

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE TYPE A OR B FOUNDATION, 36" HEIGHT**

**SEPTEMBER 2013**

**STANDARD DRAWING NO.** E 802-SCLS-20

**/s/ Alfredo B. Hanza** 02/05/13

**/s/ Mark A. Miller** 03/27/13

**CHIEF ENGINEER** **DATE**
NOTES:

1. See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.

2. Thread and cap both ends of steel conduit.

3. Surface seal top and sides of foundation to the ground surface.

### BILL OF MATERIALS

<table>
<thead>
<tr>
<th>MARK OR SIZE</th>
<th>NO. OF BARS</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
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<td>26'-9&quot;</td>
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</tr>
<tr>
<td></td>
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<td>4'-0&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5/8&quot; Ø x 10'-0&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**MISCELLANEOUS**

- Concrete, Class A: 12.6 CYS
- Surface Seal: 4.3 SYS

**EPOXY-COATED REINFORCING BARS**

<table>
<thead>
<tr>
<th>MARK OR SIZE</th>
<th>NO. OF BARS</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2'-0&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2&quot; Dia.</td>
<td></td>
</tr>
</tbody>
</table>

**CONDUIT**

- Two Steel Conduits, 2" Dia.
- 3" Clr. (Typ.)
- 3" Clr. (Typ.)
- 401 (Typ.)

**GROUNDING**

- #6 Copper Wire in 1" Dia. Conduit
- Ground Line
- Traffic Side
- 3'-0"

**APPROVED CLAMPS FOR GROUNDING**

- Grounding

**CONSTRUCTION**

- Drilled Shaft, 4'-0" Dia. (Typ.)
- 4'Ø Drilled Shaft
- 18 - #9 x 26'-9"
**EPOXY-COATED REINFORCING BARS**

**BILL OF MATERIALS**

### EPOXY-COATED REINFORCING BARS

<table>
<thead>
<tr>
<th>MARK OR SIZE</th>
<th>NO. OF BARS</th>
<th>LENGTH</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9</td>
<td>18</td>
<td>32'-9&quot;</td>
<td>2004 LBS</td>
</tr>
<tr>
<td>#9 Total</td>
<td>18</td>
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<td>2004 LBS</td>
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<tr>
<td>#9 Total</td>
<td></td>
<td>32'-9&quot;</td>
<td>2004 LBS</td>
</tr>
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</table>

**MISCELLANEOUS**

- Concrete, Class A: 15.4 CY
- Surface Seal: 4.3 CVS

**NOTES:**

1. See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.
2. Thread and cap both ends of steel conduit.
3. Surface seal top and sides of foundation to the ground surface.

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE TYPE G, H, OR I FOUNDATION, 36" HEIGHT**

**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-SCLS-22**

//Alfredo B. Hanza 02/05/13

//Mark A. Miller 03/27/13

**DESIGN STANDARDS ENGINEER DATE**

**CHIEF ENGINEER DATE**