<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>SUBJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Index</td>
</tr>
<tr>
<td>2</td>
<td>Pole Dimensions and Details</td>
</tr>
<tr>
<td>3</td>
<td>Arm Dimensions and Details</td>
</tr>
<tr>
<td>4</td>
<td>Base Plate and Pole Top Cover Details</td>
</tr>
<tr>
<td>5</td>
<td>Arm Connection Details</td>
</tr>
<tr>
<td>6</td>
<td>Handhole and I.D. Tag Details</td>
</tr>
<tr>
<td>7</td>
<td>Loading Diagrams</td>
</tr>
<tr>
<td>8</td>
<td>Foundation, Drilled Shaft Type E, for Dual Arms 35' or Less</td>
</tr>
<tr>
<td>9</td>
<td>Foundation, Drilled Shaft Type F, for Dual Arms Greater Than 35' to 45'</td>
</tr>
</tbody>
</table>
NOTES:

1. This structure is a dual arm cantilever design for traffic signals. Cantilever arms can be positioned at 20° to 180° to each other.


5. A minimum of 25% of the pole to base plate welds shall be ultrasonically tested (UT).

6. Pole and arms may be octagonal or circular shaped and shall have a 0.14 in./ft taper. All member diameters shown are outside diameter.


Splice
See Detail B.
Optional Splice
See Detail B. (2)

INDIANA DEPARTMENT OF TRANSPORTATION
SIGNAL DUAL ARM CANTILEVERS
ARM DIMENSIONS AND DETAILS
SEPTEMBER 2013

SIGNAL DUAL ARM CANTILEVER DATA

<table>
<thead>
<tr>
<th>ARM LENGTH L (FT.)</th>
<th>ARM DIAMETER AT POLE (IN.)</th>
<th>ARM WALL THICKNESS (IN.)</th>
<th>ARM RISE R (IN.)</th>
<th>CABLE INLETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>14</td>
<td>5/16</td>
<td>7 1/2</td>
<td>A, B</td>
</tr>
<tr>
<td>20</td>
<td>14</td>
<td>5/16</td>
<td>10</td>
<td>A, B</td>
</tr>
<tr>
<td>25</td>
<td>14</td>
<td>5/16</td>
<td>12 1/2</td>
<td>A, B</td>
</tr>
<tr>
<td>30</td>
<td>14</td>
<td>5/16</td>
<td>15</td>
<td>A, B</td>
</tr>
<tr>
<td>35</td>
<td>14</td>
<td>5/16</td>
<td>17 1/2</td>
<td>A, B, C</td>
</tr>
<tr>
<td>40</td>
<td>17</td>
<td>5/16</td>
<td>20</td>
<td>A, B, C</td>
</tr>
<tr>
<td>45</td>
<td>17</td>
<td>5/16</td>
<td>22 1/2</td>
<td>A, B, C</td>
</tr>
</tbody>
</table>

NOTES:

1. Upper signal arm can be oriented 20° to 180° from lower signal arm. The dimensions and details shall be as shown on this drawing.

2. Optional splices can be used for greater than 40' mast arms. The splice shall be located a minimum of 30' from the pole. The end extension section of the arm shall have a wall thickness of 3/16" or greater. Field assembly to achieve a snug tight joint (min. overlap not less than 3 times the inside radius of the end section).

3. Arm rise is measured in the undeflected position without vertical loads on the arm.


6. If seam welds are used, the weld location shall be along the bottom for the arms, and on the side of pole as shown. All pole and arm seam welds shall be 100% ultrasonically tested.

7. Number of cable inlets depends on arm L (see table on this sheet). The inlet diameter shall be 1 3/4" with rubber grommet (typ.).
### BASE PLATE DATA

<table>
<thead>
<tr>
<th>POLE DIAMETER (IN.)</th>
<th>PLATE DIMENSIONS A X B (IN. X IN.)</th>
<th>ANCHOR BOLTS CIRCLE C (IN.)</th>
<th>PLATE THICKNESS D (IN.)</th>
<th>BOLT HOLE DIAMETER E (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>26 x 26</td>
<td>25</td>
<td>2 1/4</td>
<td>2 9/16</td>
</tr>
<tr>
<td>24</td>
<td>30 x 30</td>
<td>31</td>
<td>2 1/2</td>
<td>2 13/16</td>
</tr>
</tbody>
</table>

### NOTES:

1. Anchor bolt circle shall allow clearance for the anchor bolt washers. Cutting or trimming of the washers will not be allowed.
2. See Standard Drawing E 805-SDAC-02 for handhole locations.

- **SECTION B-B**
  - **BASE PLATE**
  - 4" Radius
  - 12" Ø Hole with Rubber Grommet
  - Outside Pole Diameter

- **SECTION C-C**
  - **HANDHOLE B**
  - 3/8" x 3"
  - Bend to outside dia.
  - of column + 1/8"

- **CABLE J-HOOK**
  - Top of End-Support Column, Cap Not Shown
  - 3/8" J-Hook
  - Spot Weld

---

**INFORMATION:**

- **STATE OF**
- **INDIANA DEPARTMENT OF TRANSPORTATION**
- **SIGNAL DUAL ARM CANTILEVERS**
- **BASE PLATE AND POLE TOP COVER DETAILS**
- **SEPTEMBER 2013**

---

**STANDARD DRAWING NO.**

- E 805-SDAC-04

---

**SIGNATURES:**

- **DESIGN STANDARDS ENGINEER**
  - Alfredo B. Hanza
  - 02/05/13

- **CHIEF ENGINEER**
  - Mark A. Miller
  - 03/27/13
### Table of Plates and Bolts for Signal Dual Arm Cantilever

<table>
<thead>
<tr>
<th>ARM LENGTH (FT)</th>
<th>FLANGE PLATE A X B (IN.)</th>
<th>BOLT PATTERN C X D (IN. X IN.)</th>
<th>RING STIFFENER W &amp; GUSSET PLATE THICKNESS T (IN.)</th>
<th>FLANGE PLATE THICKNESS T (IN.)</th>
<th>BOLT DIAMETER (IN.)</th>
<th>BOLT LENGTH (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 to 35</td>
<td>22 x 22</td>
<td>17 1/2 x 17 1/2</td>
<td>3/8</td>
<td>1 1/2</td>
<td>1 1/4</td>
<td>5</td>
</tr>
<tr>
<td>&gt; 35 to 45</td>
<td>26 x 26</td>
<td>21 1/2 x 21 1/2</td>
<td>1/2</td>
<td>2</td>
<td>1 1/2</td>
<td>6</td>
</tr>
</tbody>
</table>

**NOTES:**


2. The required signal arm rise shall be built into the gusset plate at the angle X. The angle X is described as arc tan R/L, where R is the arm rise and L is the arm length. Both R and L vary and are listed in the Signal Dual Arm Cantilever Data table on Standard Drawing E 805-SDAC-03.

### Detail C

**ARM WELD**

**ELEVATION**

**SECTION D-D**

**SECTION E-E**

**Signal Arm Connection Detail**

**Elevation of Gusset Plate**

**Top of Gusset Plate**

**Indiana Department of Transportation**

**Signal Dual Arm Cantilevers Arm Connection Details**

**September 2013**

**Standard Drawing No.** E 805-SDAC-05

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

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

**No. 60020657**

**State of** INDIANA

**Audited** PROFESSIONAL ENGINEER

**IN INDIANA**
1. Handhole A to be used at the base of the pole. Handhole B to be used at all other locations.

2. In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).


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
- Pole Mounting Height

Notes:

1. Drill and tap for 4 screws, 3/8" - 20 Chase thread after galvanizing.

2. 1"X 3" Flat Bar Frame

3. 1/2"-13 Hole (Typ.)

4. I.D. Tag (Dimensions vary)

5. Pole Dia.

6. 1/2" x 1" SS Hex Cap Screw with 1/2" SS Flat Washer (Typ.)

7. Grounding Clamp

Partial Elevation

At Handhole A

Indiana Department of Transportation

Signal Dual Arm Cantilevers
Handhole and I.D. Tag Details

September 2013

Standard Drawing No. E 805-SDAC-06

60020657

Design Standards Engineer

Chief Engineer

Alfredo B. Hanza

Mark A. Miller

02/05/13

03/27/13
SIGNAL AND SIGN LOADING INFORMATION TABLE

<table>
<thead>
<tr>
<th>DEVICE</th>
<th>DESCRIPTION</th>
<th>DEVICE AREA (SQ FT)</th>
<th>WEIGHT (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12&quot; - 5 section signal head with backplates</td>
<td>14.5</td>
<td>69</td>
</tr>
<tr>
<td>B</td>
<td>36&quot; x 30&quot; regulatory sign</td>
<td>7.5</td>
<td>19</td>
</tr>
<tr>
<td>C</td>
<td>12&quot; - 3 section signal head with backplates</td>
<td>10.1</td>
<td>55</td>
</tr>
<tr>
<td>D</td>
<td>18&quot; x 11'-0&quot; street name sign</td>
<td>16.5</td>
<td>41</td>
</tr>
</tbody>
</table>

NOTES:
1. The arms and pole are designed for the loading conditions shown. For arm lengths shorter than 35', the loading shall not exceed the loading shown for the 35' arm length.
2. Foundation Type E is designed for arm length of 35' or less. See Standard Drawing E 805-SDAC-08.
3. Foundation Type F is designed for arm length of greater than 35' to 45'. See Standard Drawing E 805-SDAC-09.
4. Both arms can be loaded as shown in loading diagrams.
NOTES:
1. The Type E foundations are to be used for 35' dual arm structures and cohesive soil with minimum $Q_u = 750 \text{ lb/ft}$ or sand with minimum friction angle $30^\circ$.
2. A tooled line or other permanent marking shall be provided on the top of the foundation to indicate the direction of the conduits' exit ends.
3. 2 1/2" minimum clearance to weld at pole. Anchor bolt circle shall allow clearance for the anchor bolt washers. Cutting or trimming of the washers will not be allowed.
4. The foundation shall be poured monolithically and shall have no construction joint.

### BILL OF MATERIALS

<table>
<thead>
<tr>
<th>REINFORCING BARS</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>MARK OR SIZE</td>
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<tr>
<td>#7</td>
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<td>401</td>
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<tr>
<td>Total #7</td>
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<tr>
<td>Total #4</td>
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**CONCRETE**
- Concrete, Class A: 7.5 CY

### INDIANA DEPARTMENT OF TRANSPORTATION

**SIGNAL DUAL ARM CANTILEVERS**
- FOUNDATION, DRILLED SHAFT TYPE E
- FOR DUAL ARMS 35' OR LESS
- SEPTEMBER 2013

**STANDARD DRAWING NO.** E 805-SDAC-08

- Design Standards Engineer: Alfredo B. Hanza
  - Date: 02/05/13
- Chief Engineer: Mark A. Miller
  - Date: 03/27/13
NOTES:

1. The Type E foundations are to be used for 35° dual arm structures and cohesive soil with minimum Qc = 750 lb/ft or sand with minimum friction angle 30°.

2. A tool line or other permanent marking shall be provided on the top of the foundation to indicate the direction of the conduits' exit ends.

3. 2 1/2" minimum clearance to weld at pole. Anchor bolt circle shall allow clearance for the anchor bolt washers. Cutting or trimming of the washers will not be allowed.

4. The foundation shall be poured monolithically and shall have no construction joint.


INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS
FOUNDATION, DRILLED SHAFT TYPE F
FOR DUAL ARMS GREATER THAN 35° TO 45°
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-09

BILL OF MATERIALS

<table>
<thead>
<tr>
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<td>MARK OR SIZE</td>
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<td>402</td>
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<tr>
<td>Total #4</td>
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<td>Total Reinforcing Bars</td>
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CONCRETE

Concrete, Class A 10.7 CVS

IN D  NIA  R  E  A  R  M  EN  T  O  F  T  R A N  S  PA  R T  I  O  N  S