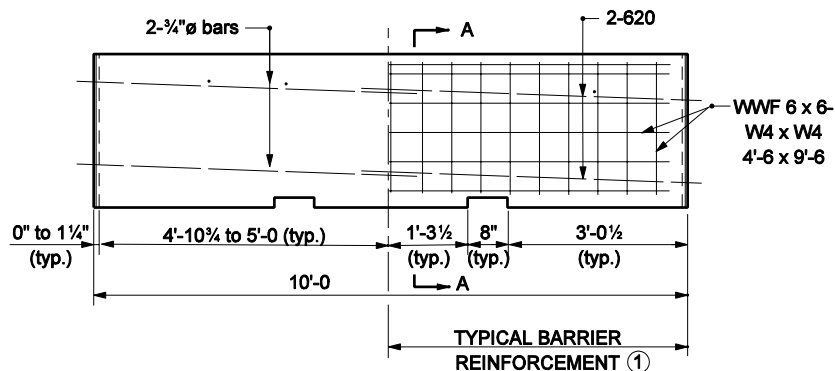


TABLE NO. 2	
CONSTRUCTION ZONE SPEED	TAPER FLARE RATE <sup>④</sup>
55 mph	16 : 1
50 mph	14 : 1
45 mph	13 : 1
40 mph	11 : 1
≤ 35 mph	10 : 1

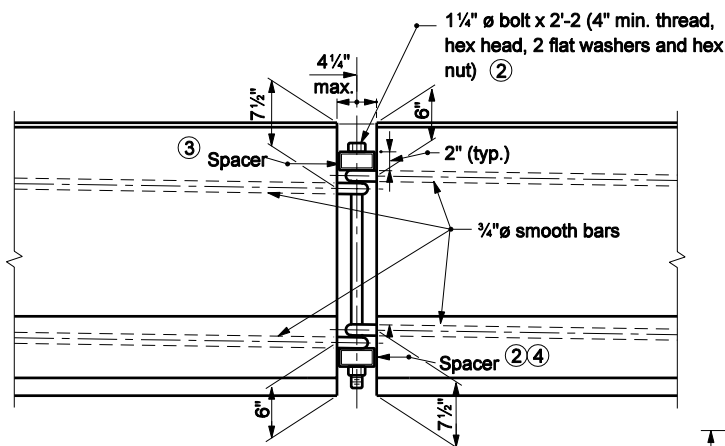
#### NOTES :

1. The dimensions of the lifting slots are subject to adjustment as necessary to accommodate handling equipment.
2. Maximum barrier taper rate flares for lane closures for legal posted speed are shown in Table No.2.
3. For additional connection details, see Standard Drawing E 801-TCCB-02.
- ④ Where site conditons prohibit the use of these flare rates then flare rates may range from 10:1 to 6:1

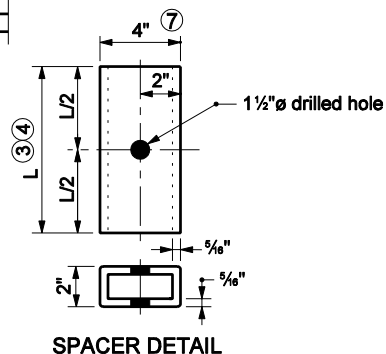
INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CONCRETE BARRIER DIMENSIONS	
SEPTEMBER 2004	
STANDARD DRAWING NO. E 801-TCCB-01	
	/s/ Richard L. VanCleave 9-01-05 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-01-05 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



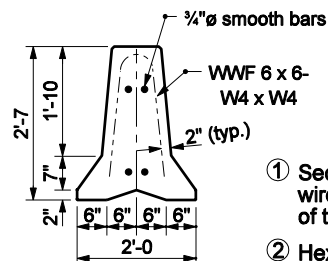
**REINFORCEMENT DETAILS**



**FRONT VIEW  
CONNECTION DETAIL**



**SPACER DETAIL**



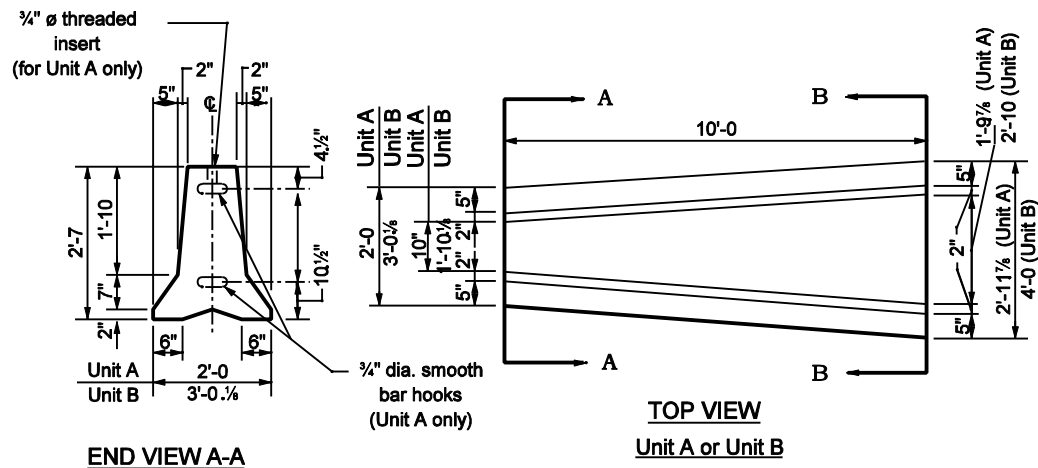
**SECTION A-A ①**

**NOTES :**

- ① Section A-A shows reinforcement with welded wire fabric. The WWF may be bent to the shape of the wall.
- ② Hex nut may be tack welded to bottom spacer to facilitate installation and removal. Bolts shall be torqued only to tight condition. Clearance between the spacer and the ends of the barrier shall permit angular deflection at the joints to permit flare rate 11 : 1 or flatter.
- ③ Top spacer TS 4" x 2" x  $\frac{5}{16}$ " x 10" long
- ④ Bottom spacer TS 4" x 2" x  $\frac{5}{16}$ " x 1'-4" long
- 5 Where necessary to meet short radius curving alignment, the shorter top spacer (10") may be substituted for the standard bottom spacer (16").
- 6 For additional connection details see Standard Drawing E 801-TCCB-01.
- ⑦ Where very short radius curving alignment is encountered, spacers may be TS 3" x 2" x  $\frac{1}{4}$ " x the appropriate length as shown above.
- ⑧ In lieu of the connection detail shown, the J-J Hook temporary barrier connection of Easi-Set Industries as described in FHWA acceptance letter B-52 of March 26, 1999 may be used.

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CONCRETE BARRIER DETAILS	
MARCH 2005	
STANDARD DRAWING NO. E 801-TCCB-02	
	/s/ Richard L. VanCleave 3-01-05 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 3-01-05 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

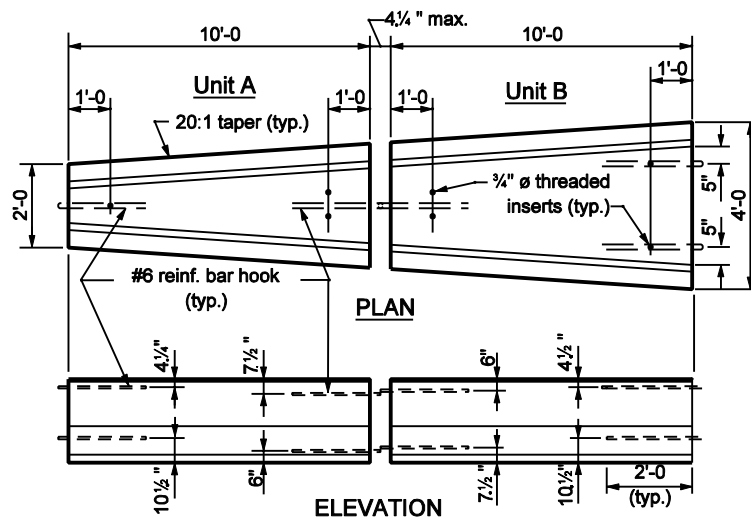




#### DOUBLE TAPER END SECTION

#### NOTES :

1. For connection details see Standard Drawing E 801-TCCB-02.
2. For details of barrier anchorage see Standard Drawing E 801-TCCB-04.
3. Extreme ends of the double taper end assembly require a 1 1/4"  $\phi$  bolt x 2'-3 1/2" (4" min. thread, hex head and hex nut) for connecting to adjacent temporary concrete barriers.
4. For details of connection between Units A and B, see Standard Drawing E 801-TCCB-02.



#### DOUBLE TAPER END SECTION ASSEMBLY

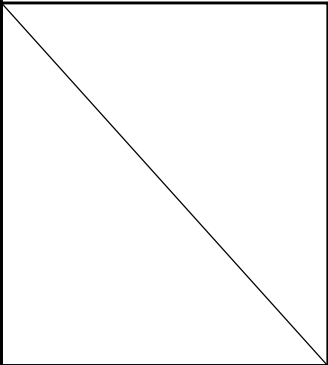
(Showing location of inserts and bar hooks)

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CONCRETE BARRIER DOUBLE TAPER END SECTION	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCCB-03	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

The version of the drawing dated September 2002 has been deleted.

For contracts let on or after May 1, 2015 anchored temporary concrete barrier shall meet the appropriate Test Level 2 or 3 NCHRP 350 or MASH crash test standards and have an FHWA Eligibility Letter for Roadside Safety Hardware.

This revision affects pay items for Temporary Traffic Barrier Type 1 Anchored, Type 2 Anchored, and Type 3 Anchored.

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CONCRETE BARRIEIR ANCHORAGE	
STANDARD DRAWING NO. E 801-TCCB-04	
	DESIGN STANDARDS ENGINEER _____ DATE _____
	CHIEF ENGINEER _____ DATE _____

# NOTES

1. See Standard Drawings E801-TCCO-02 and E 801-TCLG-01 for additional general notes and legend.
2. See Standard Drawing E 801-TCCO-02 for Entrance Detail.
3. See Standard Drawing E 801-TCCO-03 for Exit Detail.
4. See Standard Drawing E 801-TCDV-03 for the required length of taper section for channelizing devices for construction zone speed limits less than 55 MPH.

## 5 Appropriate channelizing devices:

- a. For freeways - temporary concrete barrier-  
(see Standard Drawings E 801-TCCB-01 thru-04)
- b. For non-freeways - cones or tubular markers  
(see Standard Drawing E 801-TCDV-01)

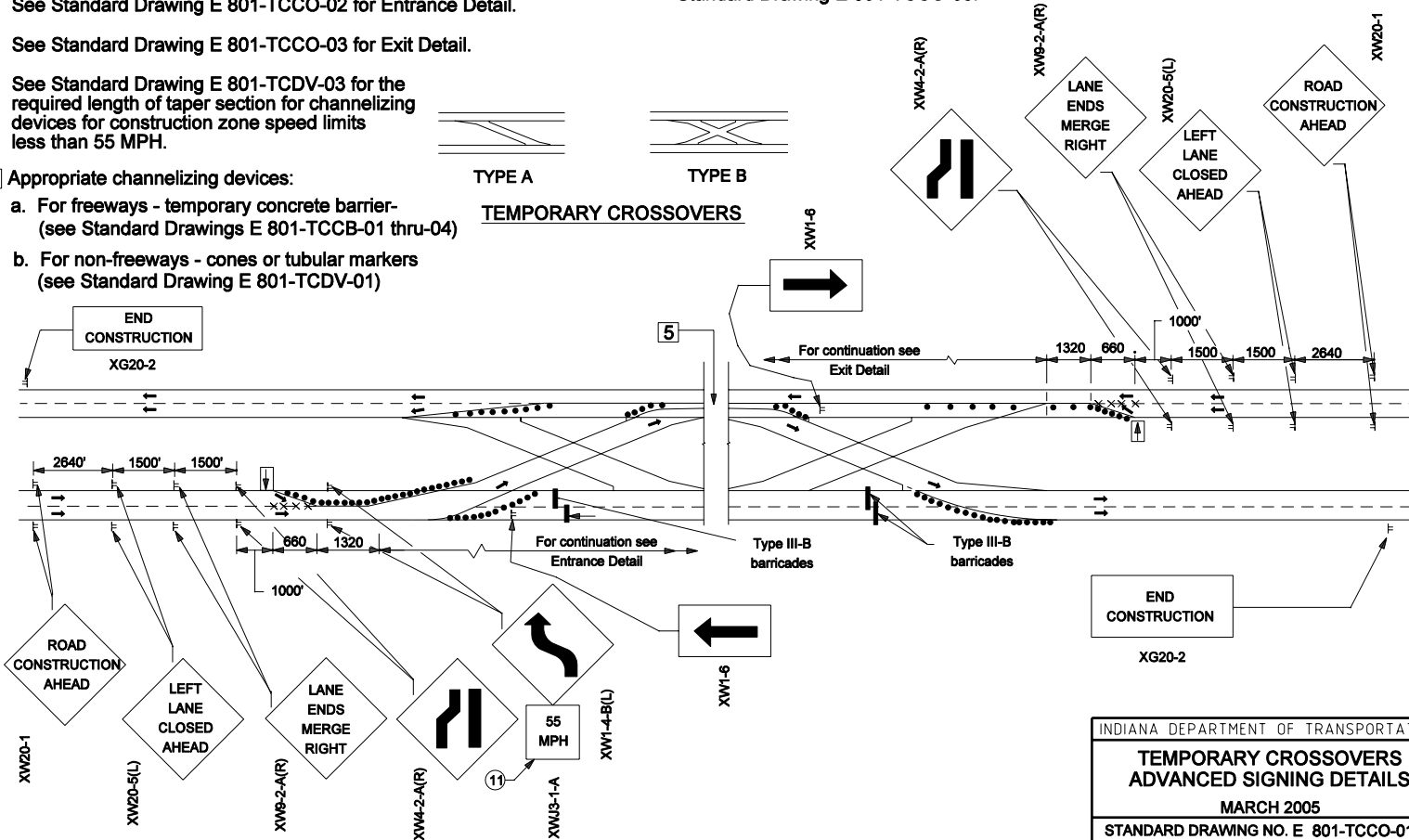
## TEMPORARY CROSSOVERS



TYPE A

TYPE B

6. Area of Type A crossovers are shown on Standard Drawing E 801-TCLG-01 and area of Type B crossover is shown on Standard Drawing E 801-TCCO-05.



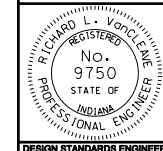
## ADVANCE AND ENDING SIGNING DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

## TEMPORARY CROSSOVERS ADVANCED SIGNING DETAILS

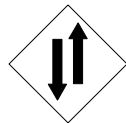
MARCH 2005

STANDARD DRAWING NO. E 801-TCCO-01

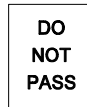


/s/ Richard L. VanCleave 3-01-05  
DESIGN STANDARDS ENGINEER DATE

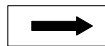
/s/ Richard K. Smutzer 3-01-05  
CHIEF HIGHWAY ENGINEER DATE



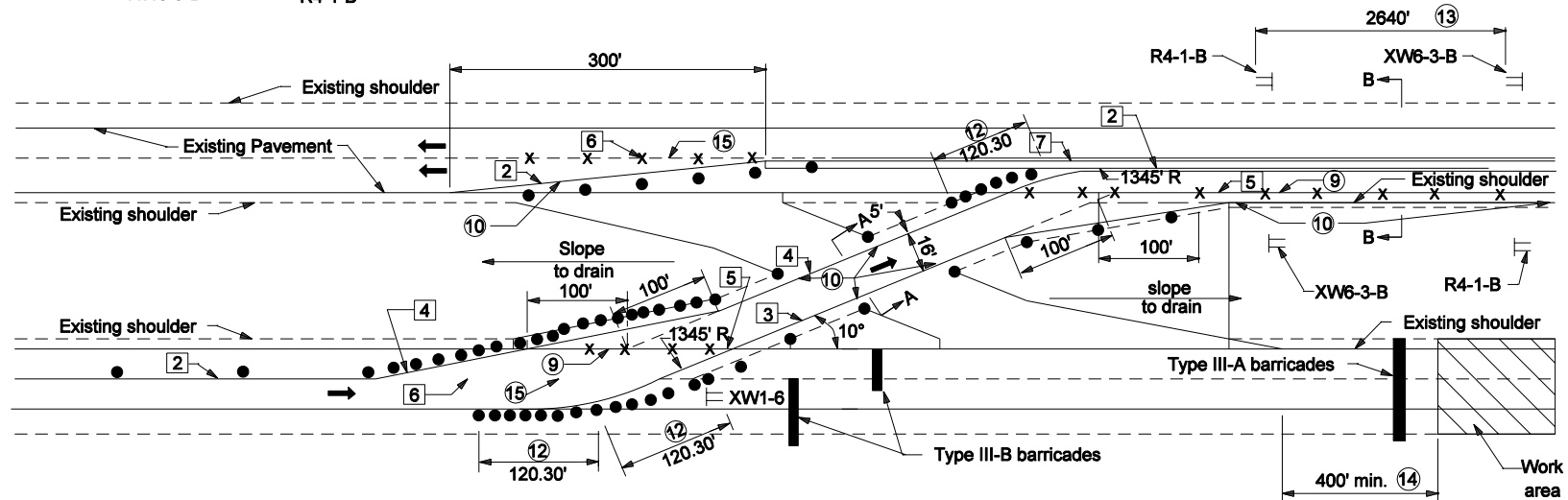
XW6-3-B



R4-1-B



XW1-6



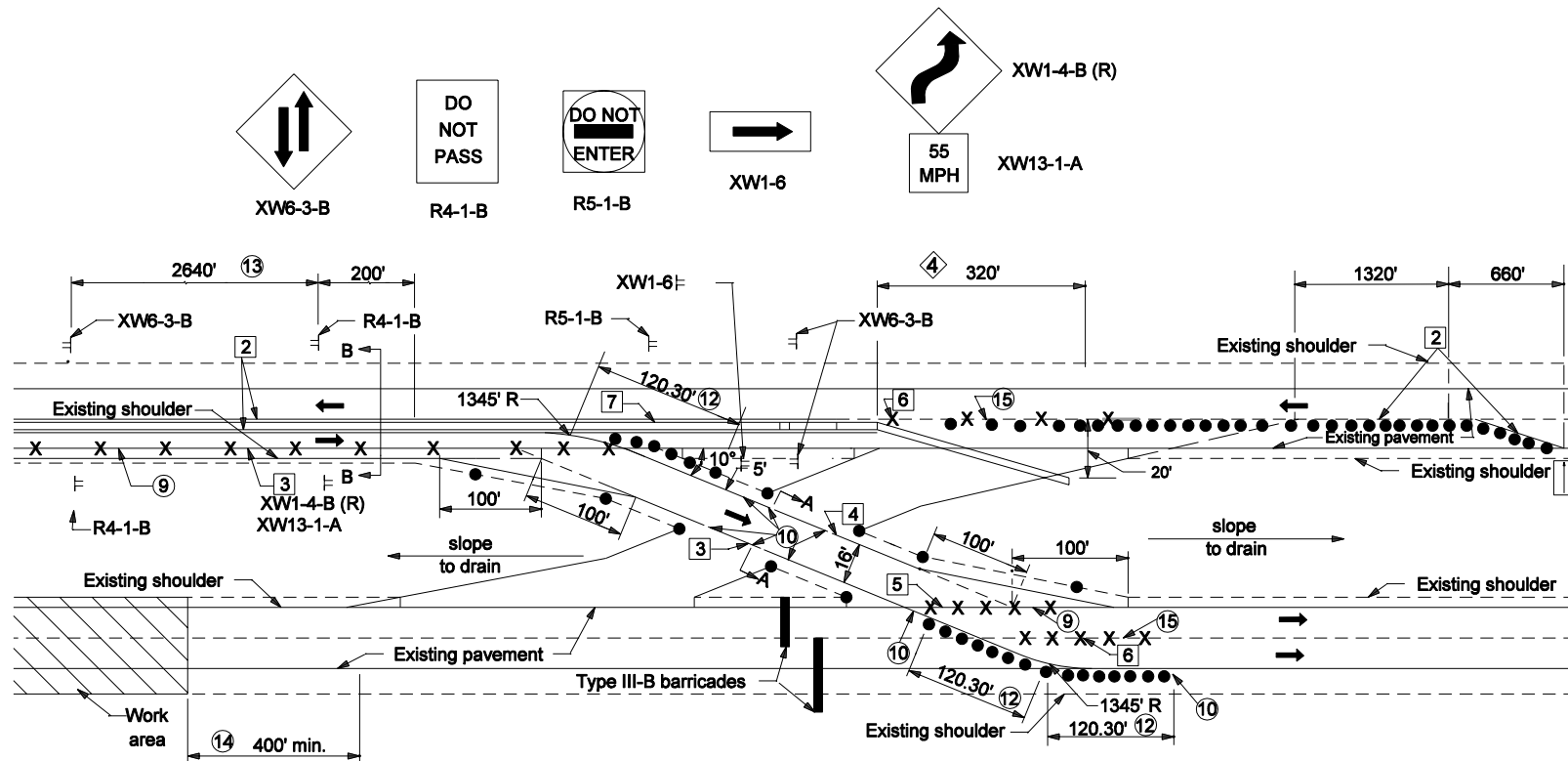
#### NOTES:

1. Signs XW6-3-B and R4-1-B shall be used only with temporary channelizing devices.
2. See Standard Drawing E 801-TCCO-07 for Sections, A-A, B-B.
3. See Standard Drawings E 801-TCDV-04 thru E 801-TCDV-07 for barricade and construction sign mounting information.
4. For channelization devices see Standard Drawing E 801-TCDV-01.
5. See Standard Drawing E 801-TCDV-03 for required length of taper section for channelizing devices when construction zone speed limits are less than 55 MPH.
6. See Standard Drawing E 801-TCLG-01 for General Notes and additional Legend Symbols

#### LEGEND

- 1 Temporary Pavement Marking, White, 4"
- 2 Temporary Pavement Marking, Yellow, 4"
- 3 Temporary Pavement Marking, White, 8"
- 4 Temporary Pavement Marking, Yellow, 8"
- 5 Line, Solid Yellow, 4", Remove
- 6 Line, Broken White, 4" Remove
- 7 Temporary Concrete Barrier - Freeways  
Channelizing Devices - Non-Freeway Multi-lane  
Divided Roadways.

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CROSSOVERS ENTRANCE DETAIL	
MARCH 2006	
STANDARD DRAWING NO. E 801-TCCO-02	
	/s/ Richard L. VanCleave DESIGN STANDARDS ENGINEER 3-01-06 DATE
	/s/ Richard K. Smutzer CHIEF HIGHWAY ENGINEER 3-01-06 DATE



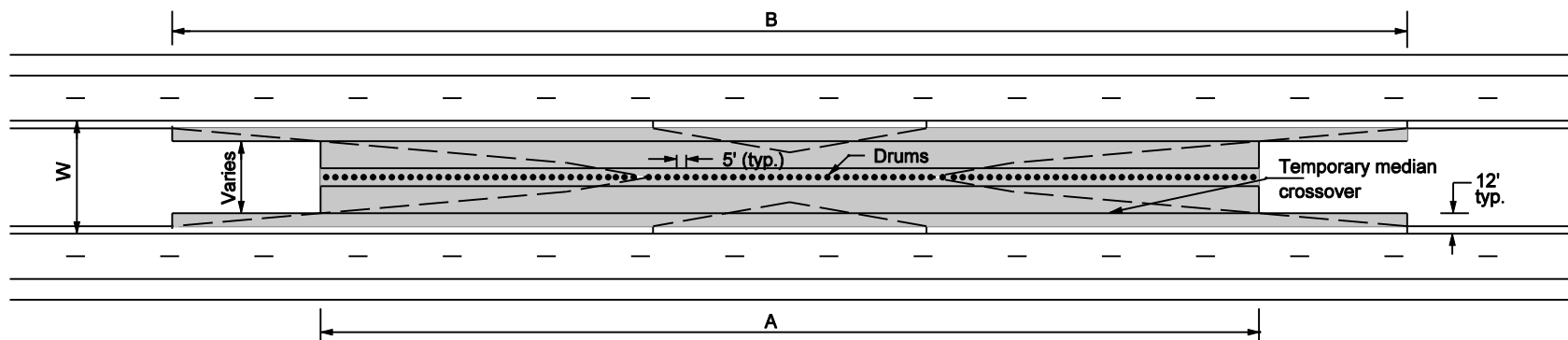
# **NOTES**

1. Signs XW6-3-B and R4-1-B shall be used only with temporary channelizing devices.
2. See Standard Drawing E 801-TCCO-07 for Sections, A-A, B-B.
3. See Standard Drawing E 801-TCDV-03 for required length of taper section for channelizing devices for construction zone speed limits less than 55 MPH.
4. Taper required when channelizing device is temporary concrete barrier, see Standard Drawing E 801-TCCB-01.
5. See Standard Drawing E 801-TCCO-02 for ☐ Legend.
6. See Standard Drawing E 801-TCLG-01 for General Notes and additional Legend Symbols.

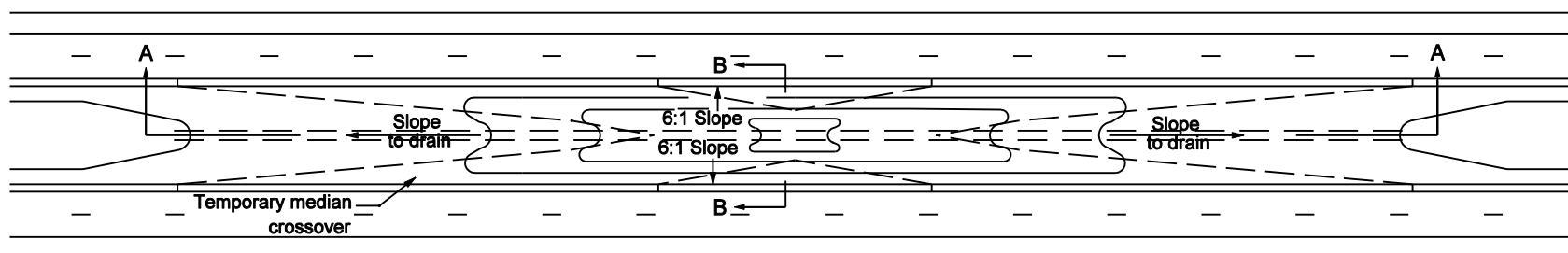
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TEMPORARY CROSSOVERS EXIT DETAIL</b>	
MARCH 2006	
STANDARD DRAWING NO. E 801-TCCO-03	
	/s/ Richard L. VanCleave DESIGN STANDARDS ENGINEER 3-01-06 DATE
	/s/ Richard K. Smutzer CHIEF HIGHWAY ENGINEER 3-01-06 DATE

# **NOTES**

1. See Standard Drawing E 801-TCCO-06 for Sections A-A and B-B.
2. Pave to drain.



**PAVING LIMITS AND DRUM CLOSURE**



**EARTH COVER CLOSURE**

**TYPE B CROSS OVER**

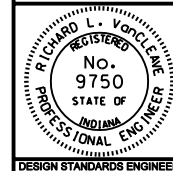
Median Width W Feet	Dimension A Feet	Dimension B Feet	Area of Paving strips SQ. Yards
60	564	833	4310
50	505	774	3380
40	449	719	2605
36	427	696	2326
30	390	659	1930
26	371	640	1750

INDIANA DEPARTMENT OF TRANSPORTATION

**TEMPORARY CROSSOVER TYPE B  
PAVING AND CLOSURE LAYOUT**

SEPTEMBER 2003

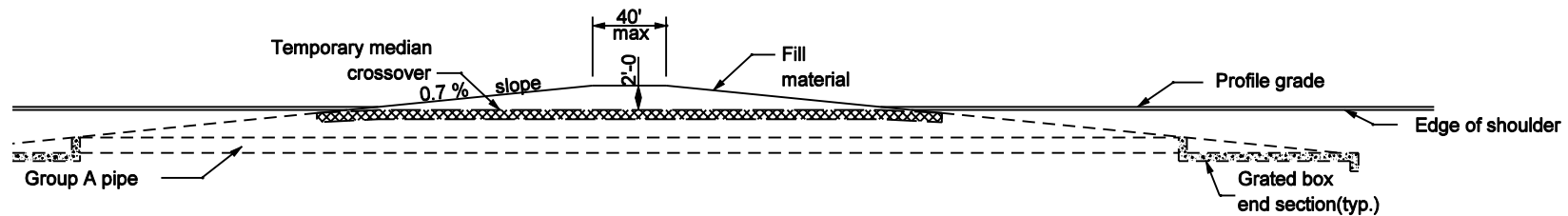
STANDARD DRAWING NO. E 801-TCCO-05



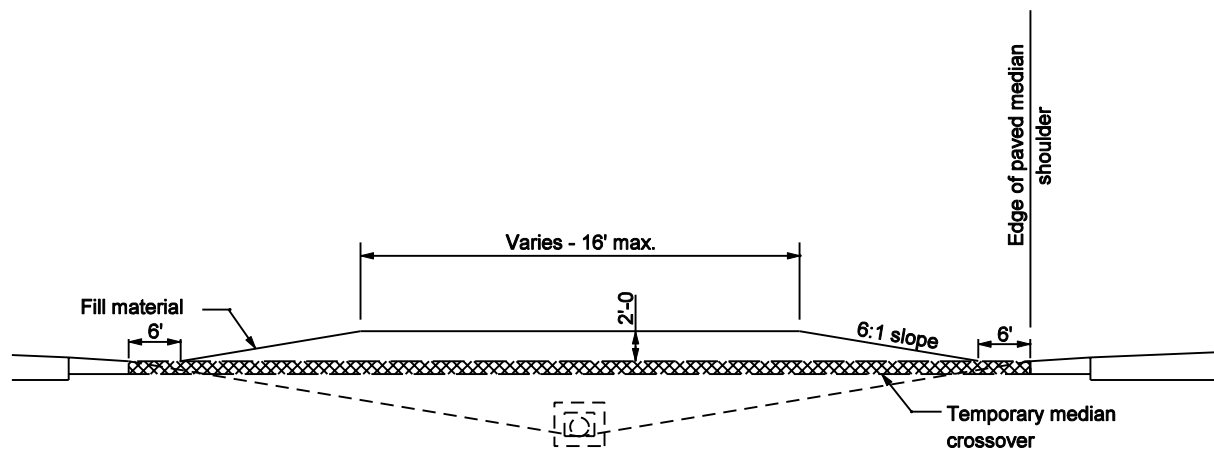
/s/ Richard L. VanCleave 9-02-03  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-02-03  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



**SECTION A-A**



**SECTION B-B**

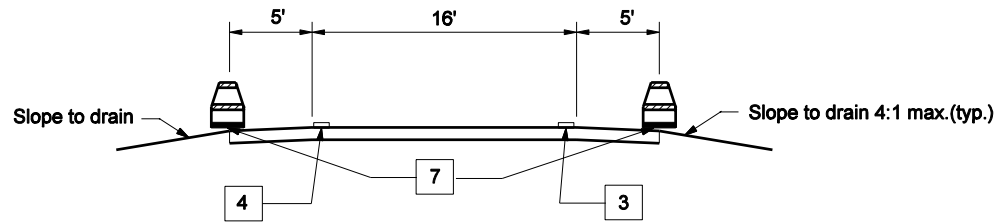
**NOTES**

1. See Standard Drawing E 801-TCCO-05 for temporary crossover paving and closure layout.

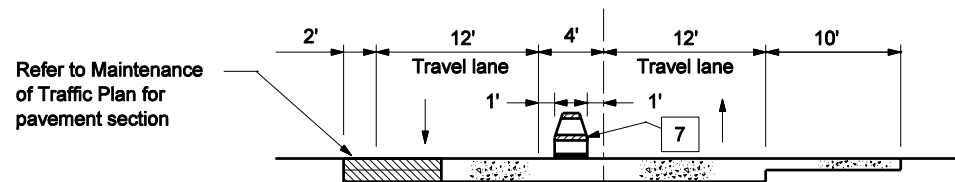
INDIANA DEPARTMENT OF TRANSPORTATION	
CLOSURE OF TEMPORARY CROSSOVER	
SEPTEMBER 2003	
STANDARD DRAWING NO. E 801-TCCO-06	
	/s/ Richard L. VanCleave DESIGN STANDARDS ENGINEER 9-02-03 DATE
	/s/ Richard K. Smutzer CHIEF HIGHWAY ENGINEER 9-02-03 DATE
DESIGN STANDARDS ENGINEER	

**GENERAL NOTES:**

1. See Standard Drawing E 801-TCCO-02 for Legend

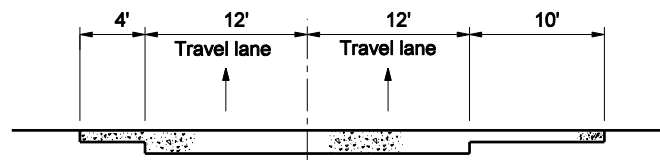


**SECTION A-A**



**TRAFFIC MAINTENANCE SECTION**

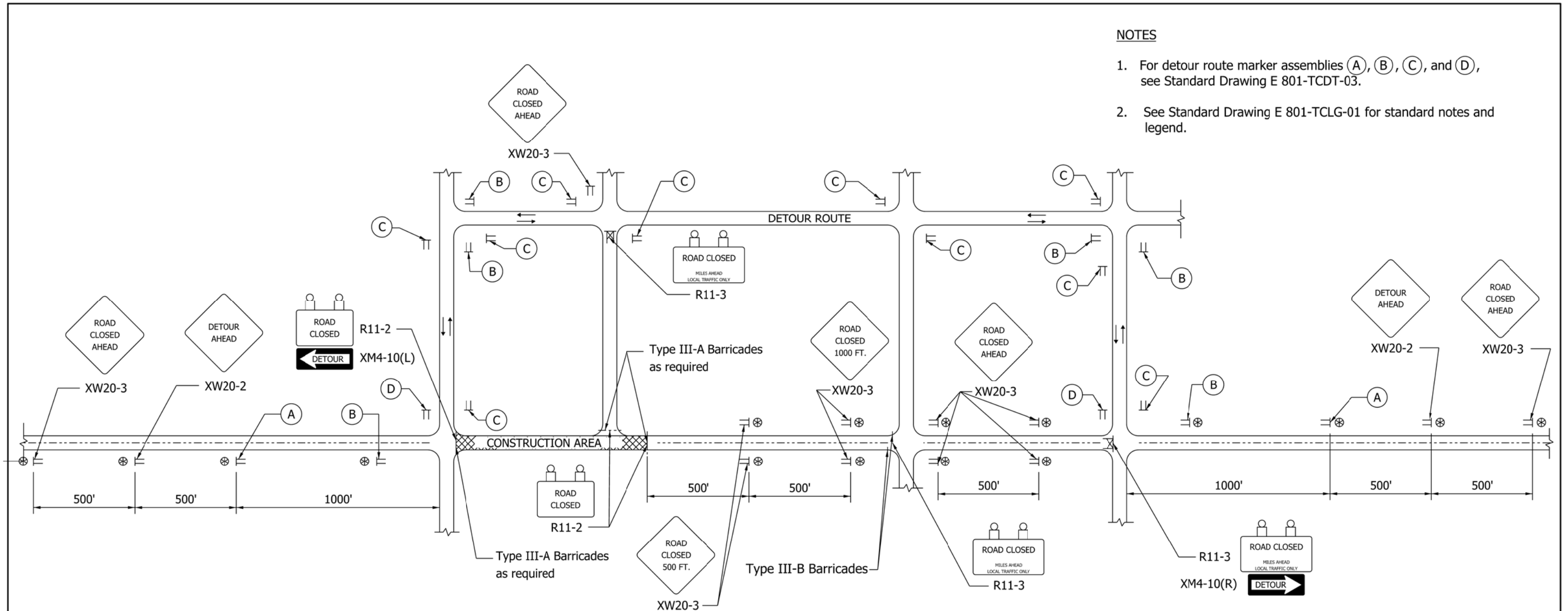
**SECTION B-B**



**PRE CONSTRUCTION SECTION**


INDIANA DEPARTMENT OF TRANSPORTATION			
TEMPORARY CROSSOVER TYPICAL SECTIONS			
MARCH 2006			
STANDARD DRAWING NO. E 801-TCCO-07			
	/s/ Richard L. VanCleave	3-01-06	DATE
	DESIGN STANDARDS ENGINEER		
	/s/ Richard K. Smutzer	3-01-06	DATE
	CHIEF HIGHWAY ENGINEER		

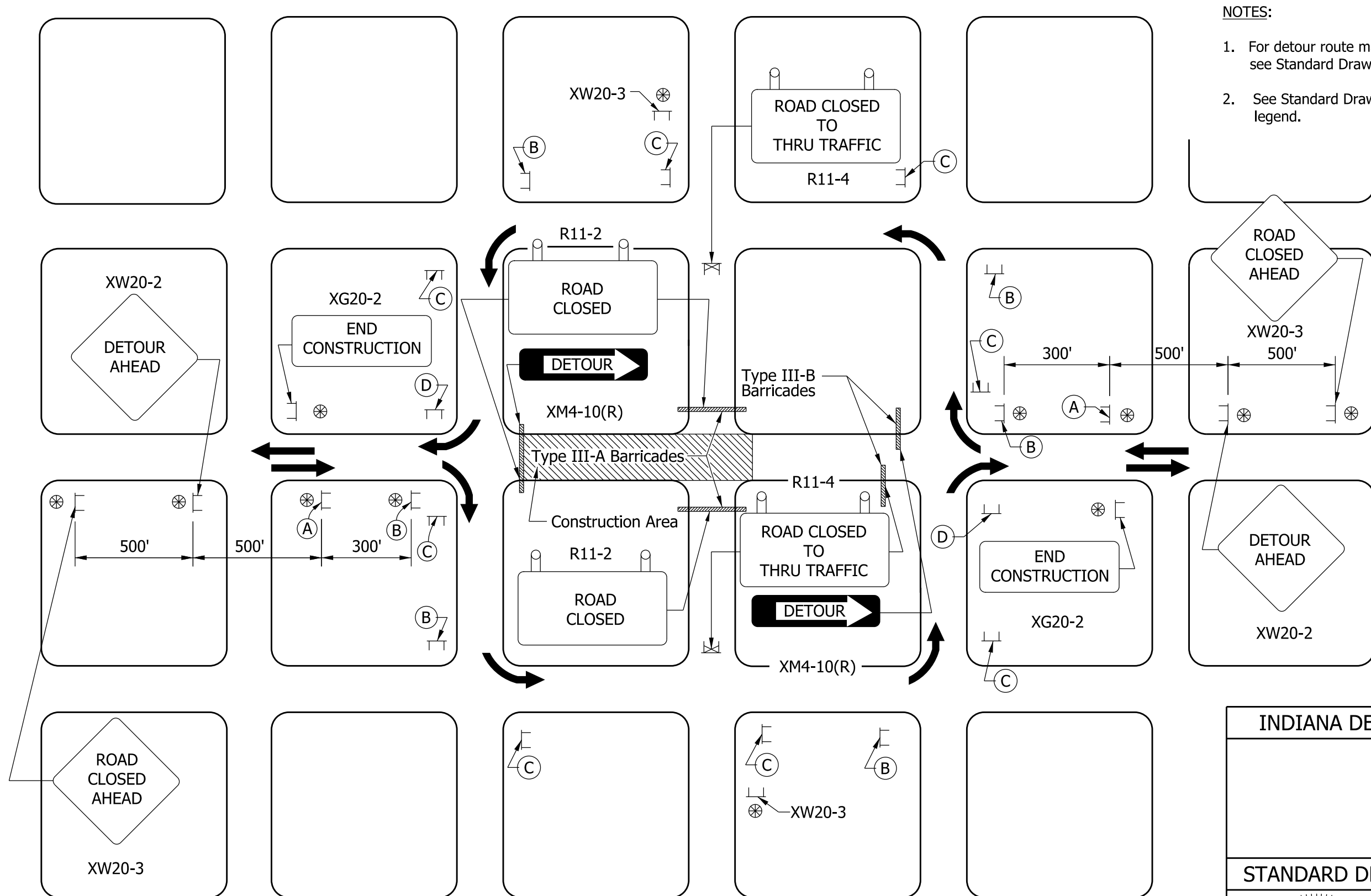




- NOTES
- 1. For detour route marker assemblies (A), (B), (C), and (D), see Standard Drawing E 801-TCDDT-03.
  - 2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

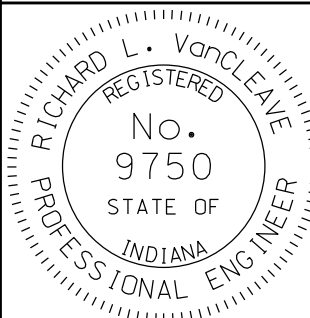
TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR A RURAL DETOUR

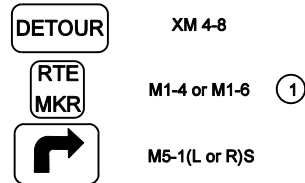
INDIANA DEPARTMENT OF TRANSPORTATION			
RURAL DETOUR			
SEPTEMBER 2011			
STANDARD DRAWING NO.		E 801-TCDDT-01	
	/s/ Richard L. VanCleave		09/01/11
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Mark A. Miller		09/01/11
	CHIEF HIGHWAY ENGINEER		DATE
DESIGN STANDARDS ENGINEER			



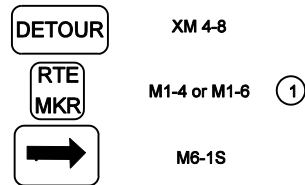
- NOTES:
1. For detour route marker assemblies (A), (B), (C), and (D), see Standard Drawing E 801-TCDT-03.
  2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

TYPICAL APPLICATIONS OF TRAFFIC DEVICES FOR AN URBAN DETOUR

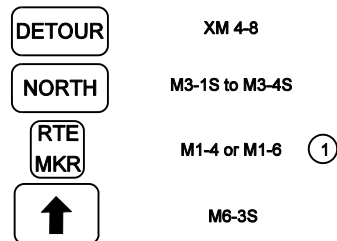
INDIANA DEPARTMENT OF TRANSPORTATION	
URBAN DETOUR	
SEPTEMBER 2011	
STANDARD DRAWING NO. E 801-TCDT-02	
	/s/ Richard L. VanCleave 09/01/11
	DESIGN STANDARDS ENGINEER DATE
	/s/ Mark A. Miller 09/01/11
DESIGN STANDARDS ENGINEER	CHIEF HIGHWAY ENGINEER DATE



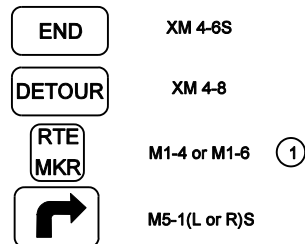
(A) **ADVANCE TURN DETOUR  
ROUTE MARKER ASSEMBLY**



(B) **DIRECTIONAL DETOUR ROUTE  
MARKER ASSEMBLY**



(C) **CONFIRMING DETOUR ROUTE  
MARKER ASSEMBLY**

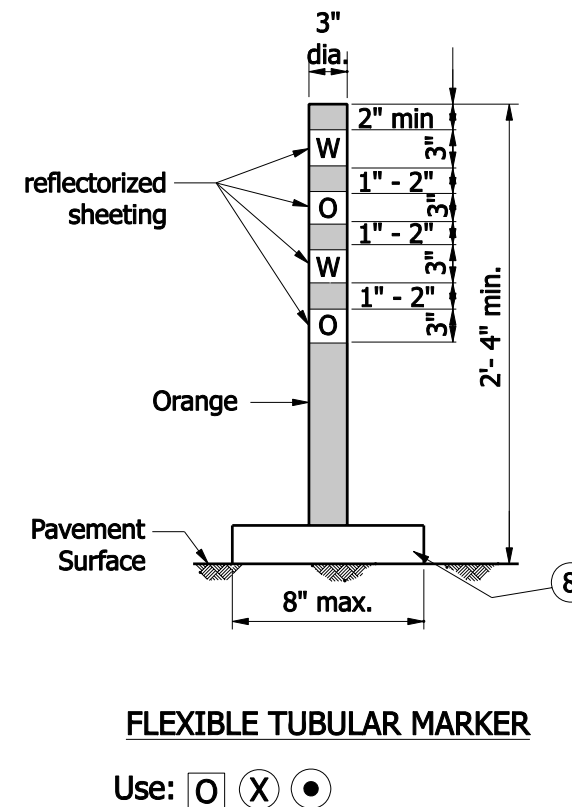
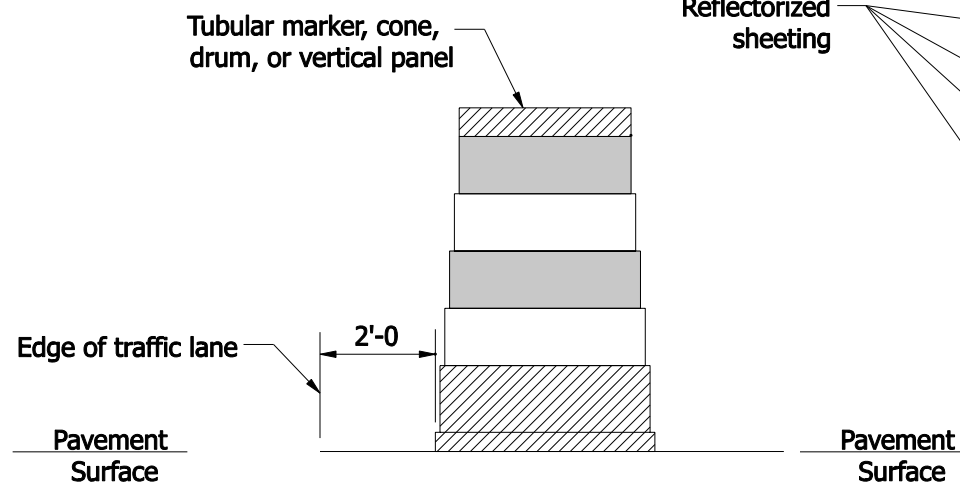
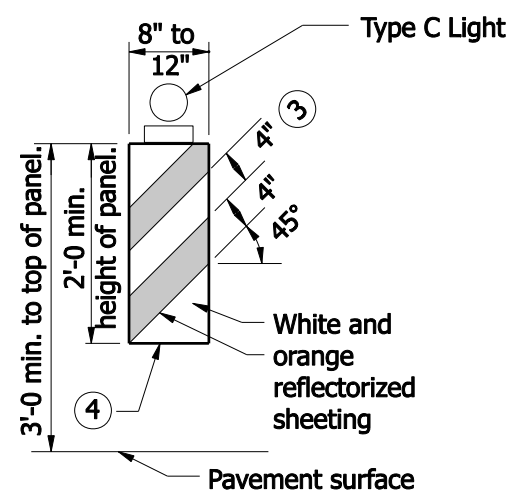
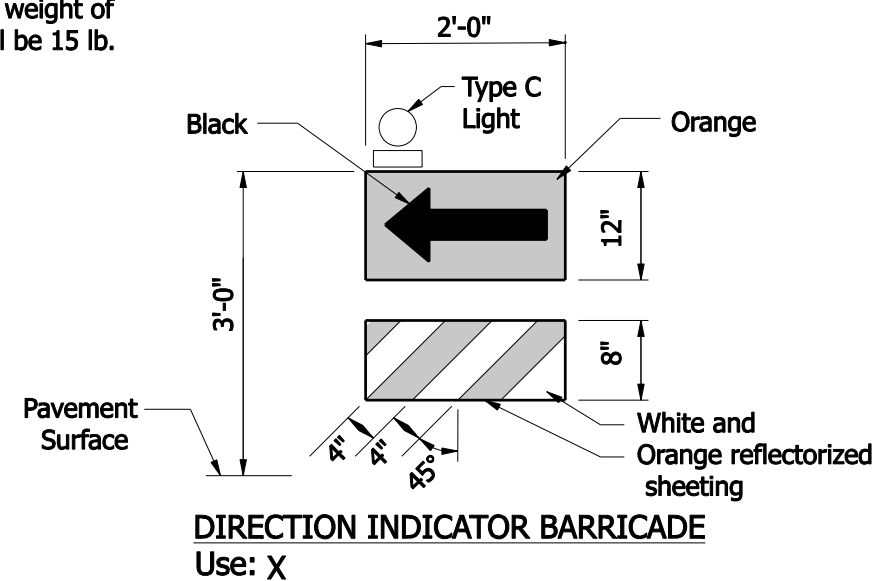
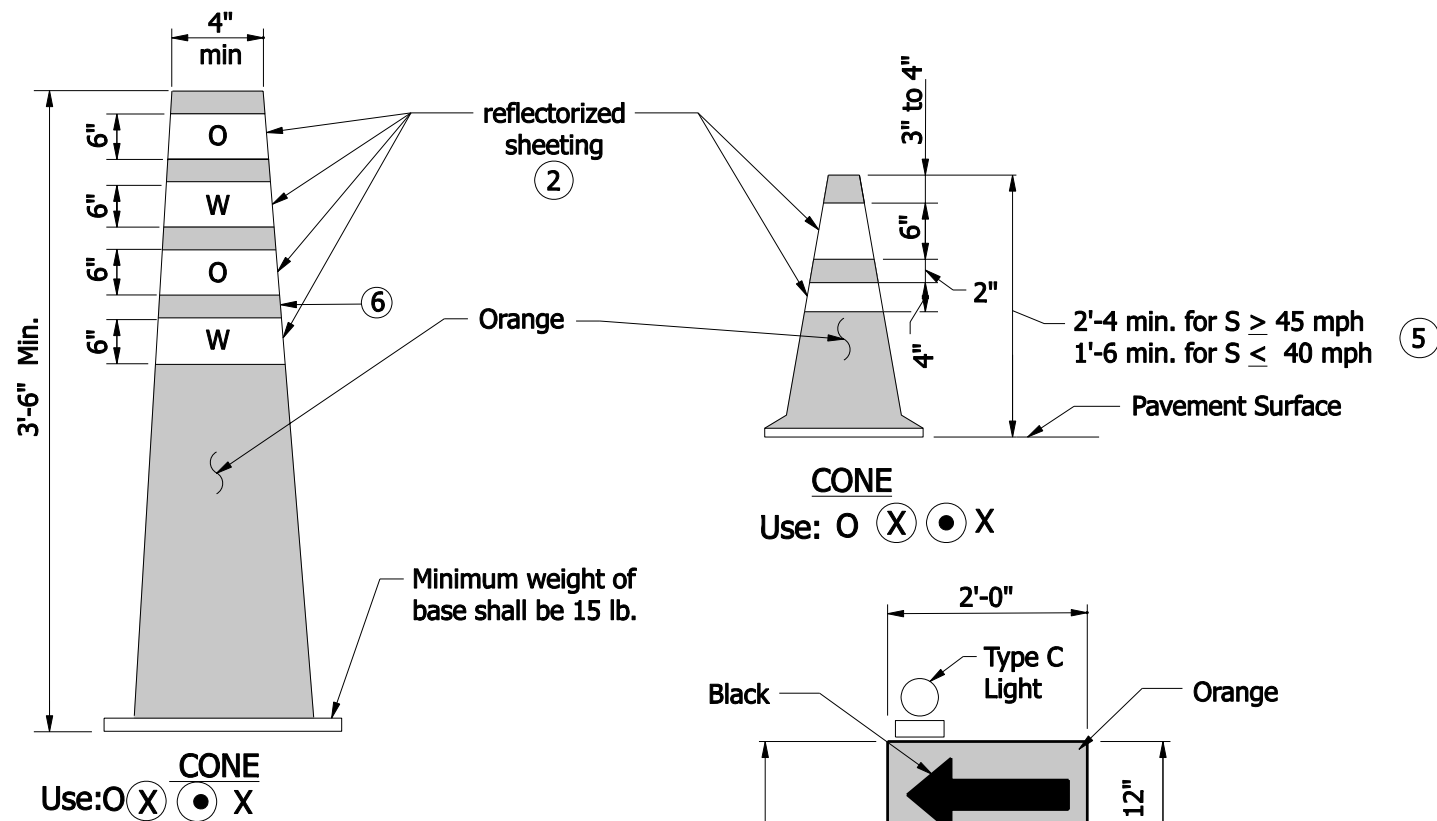


(D) **END DETOUR ROUTE  
MARKER ASSEMBLY**

**GENERAL NOTES**

- ① For an un-numbered route, a street name sign or county road name or number sign shall be used in lieu of the route marker in detour route marker assembly.
- (A) Advance turn detour route marker assemblies shall be located as shown, or after the last cross street prior to the beginning of the detour, as directed.
- (B) Directional detour route marker assemblies shall be located 100 ft to 200 ft in advance of all required turns within the detour limits.
- (C) Confirming detour route marker assemblies shall be located 200 ft past all major intersections, as directed, and shall be spaced a maximum of 3 mi on a rural detour or 0.5 mi on an urban detour on each leg of such detours. Confirming detour route marker assemblies shall be placed after a required turn when directed.
- (D) End detour route marker assemblies shall be located at the point at which traffic is returned to the original route. The advance turn marker (M5-1) shall be included in the assembly when traffic is required to turn to access the original route.

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>DETOUR ROUTE MARKER ASSEMBLIES</b>	
MARCH 2003	
STANDARD DRAWING NO. E 801-TCDDT-03	
	/s/ Richard L. VanCleave      3-03-03 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      3-03-03 CHIEF HIGHWAY ENGINEER      DATE



## GENERAL NOTES

- For additional notes and legends see Standard Drawing E 801-TCLG-01 or E 801-TCDV-02.
- A Type C warning light will be required on tapers where there is a reduction in the number of lanes and a flashing arrow sign is used..

W = White Reflective Sheetting

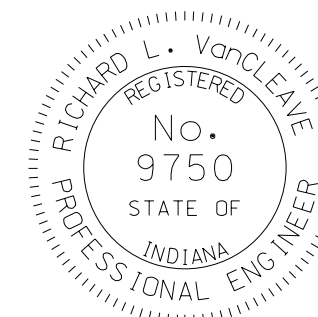
O = Orange Reflective Sheetting

INDIANA DEPARTMENT OF TRANSPORTATION

CHANNELIZING  
DEVICES

SEPTEMBER 2007

STANDARD DRAWING NO. E 801-TCDV-01

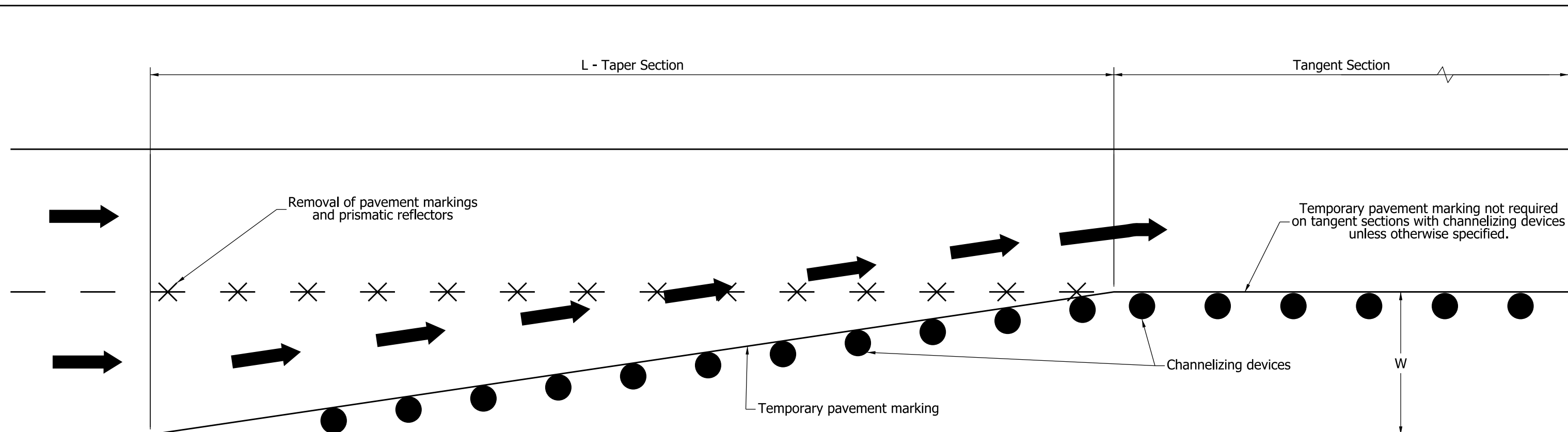


DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/04/07  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/04/07  
CHIEF HIGHWAY ENGINEER DATE





### LEGEND

L - Minimum length of taper in feet.

S - Posted speed limit prior to the construction zone in mph.

W - Width of offset in feet.

S	L			
MPH	W = 9	W = 10	W = 11	W = 12
20	60	70	70	80
25	90	100	120	130
30	140	150	170	180
35 & 40	180 & 240	200 & 270	220 & 300	250 & 320
45	400	450	500	540
50	450	500	550	600
55	500	550	610	660
65	590	650	720	780

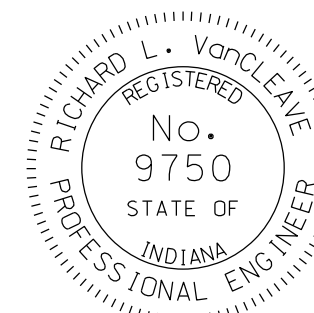
The values of L for speeds of 45 mph or greater are based on the equation  $L = W \times S$ . The values for speeds of less than 40 mph or lower are based on the equation  $L = W \times S^2/60$ . For both equations, L and W are in feet and S is mph. These equations are taken from the MUTCD. The taper lengths used in the field, may be either the values provided in the table or calculated values from the equations. For offset widths other than those used in the table, the taper lengths shall be calculated based on the equations.

INDIANA DEPARTMENT OF TRANSPORTATION

MERGING OR SHIFTING TAPER

SEPTEMBER 2009

STANDARD DRAWING NO. E 801-TCDV-03



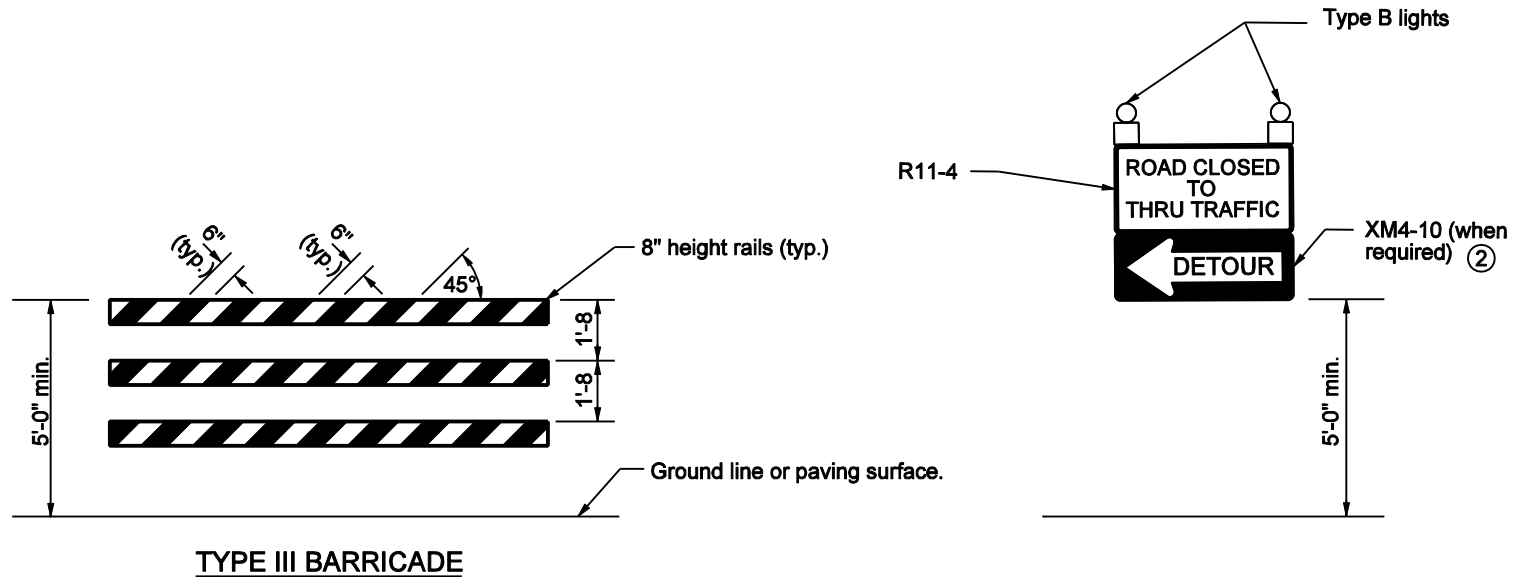
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/09  
DESIGN STANDARDS ENGINEER DATE

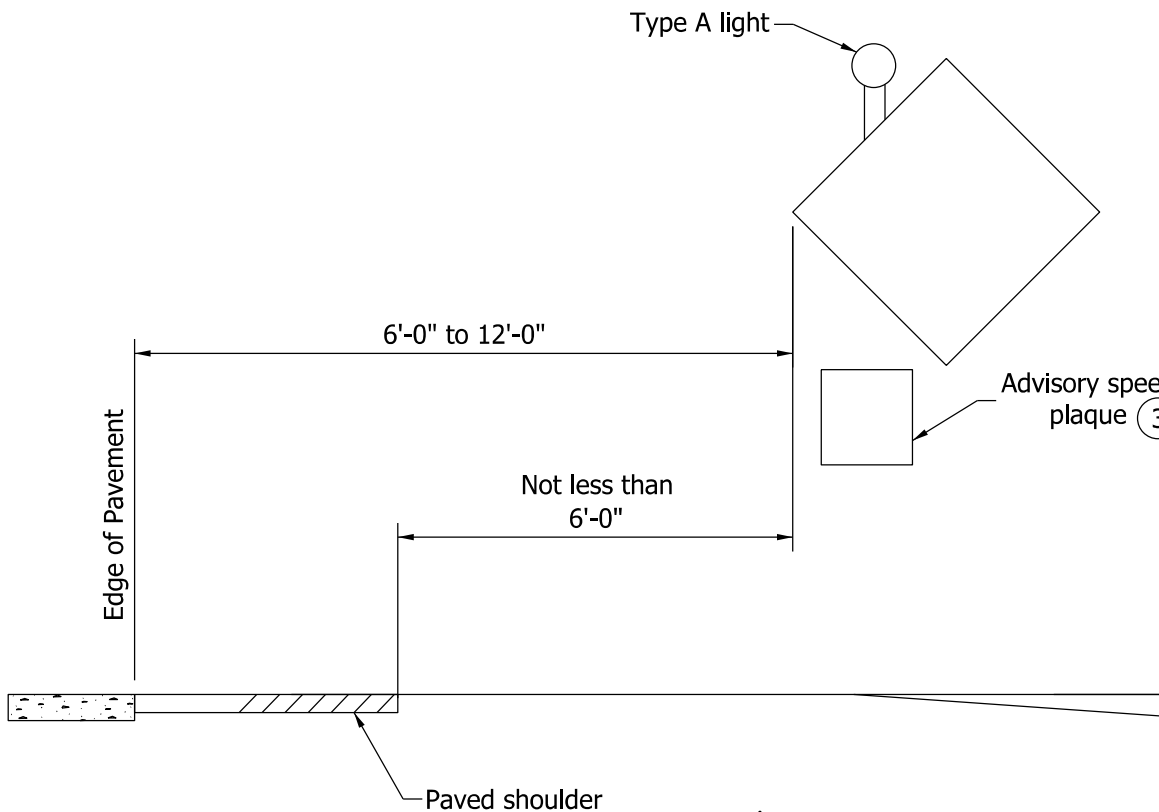
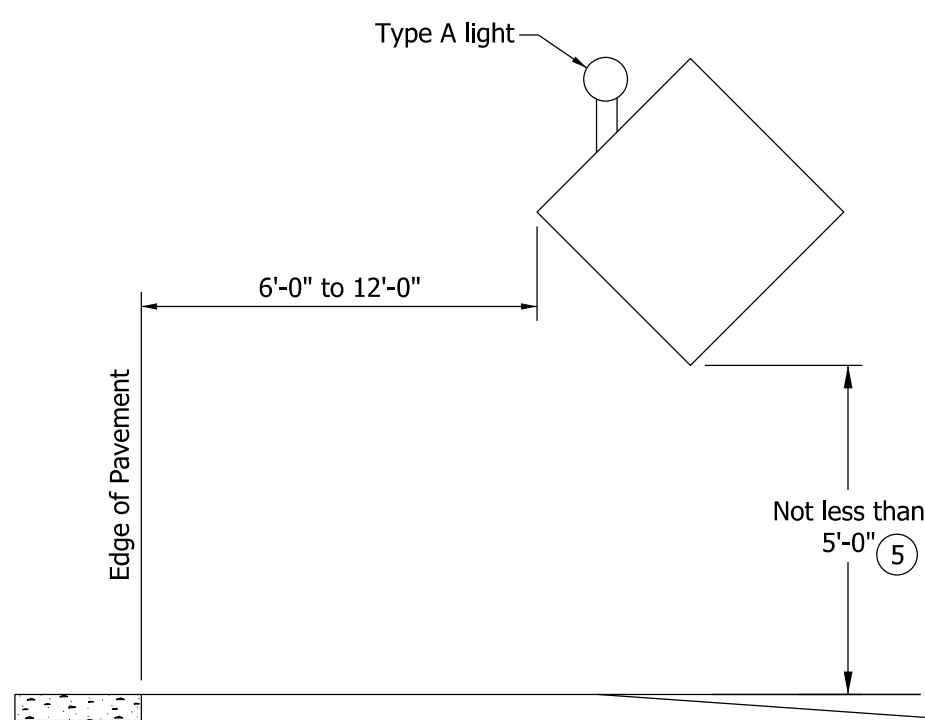
/s/ Mark A. Miller 09/01/09  
CHIEF HIGHWAY ENGINEER DATE

### General Notes

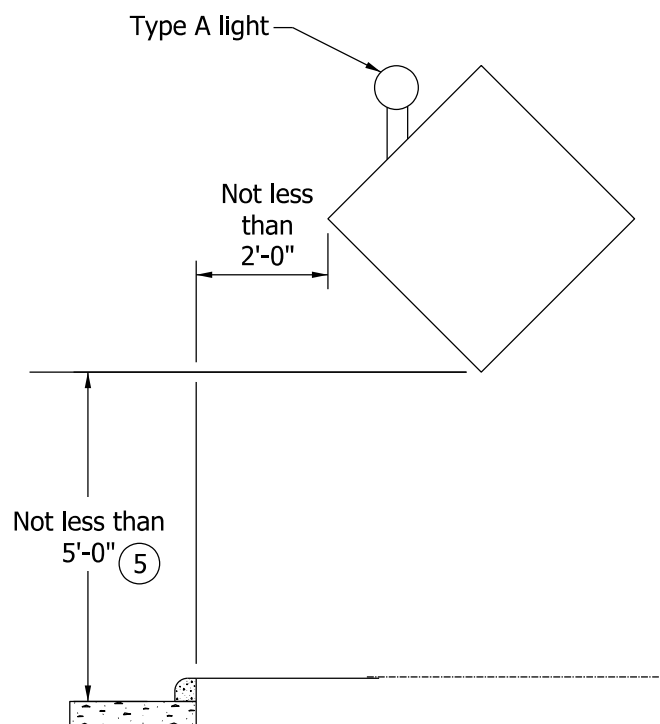
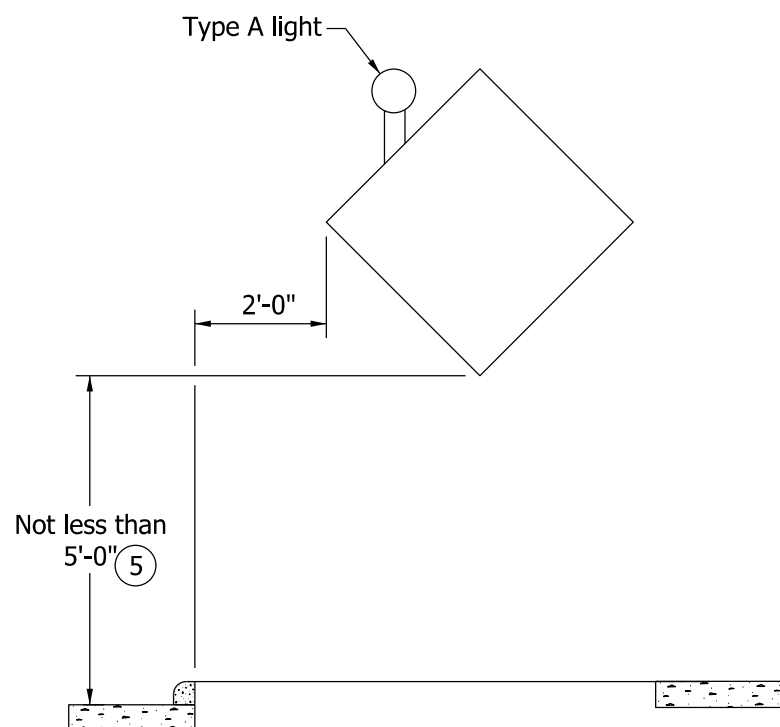
1. Barricades lights, signs, and supports shall meet NCHRP 350 crash evaluation criteria.
- ② The Detour Arrow sign shall be used only when a detour route has been signed.



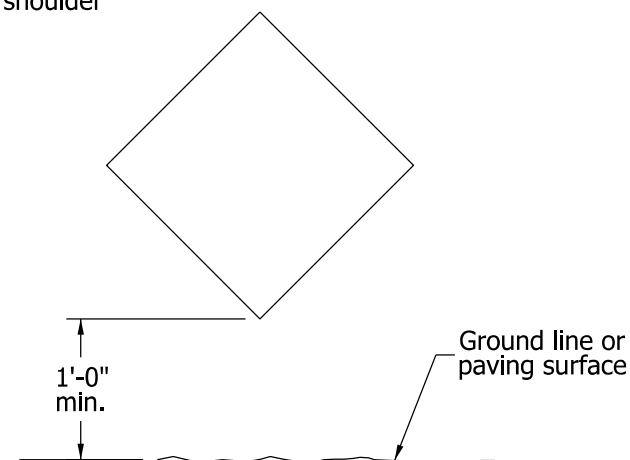
INDIANA DEPARTMENT OF TRANSPORTATION	
TYPE III BARRICADE	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCDV-04	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE



UN-CURBED ROADWAY



CURBED ROADWAY



TEMPORARY MOUNTED  
CONSTRUCTION SIGN

NOTES:

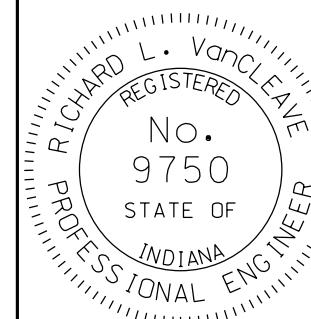
1. See Standard Drawing E 801-TCSN-11 for additional notes.
- ② Signs, lights, and supports shall satisfy NCHRP 350 crash evaluation criteria.
- ③ An advisory speed plaque, required to be placed with another construction sign, may be mounted on the post closest to the roadway at a height not less than 4 ft above the edge of pavement adjacent to the sign. The bottom of the construction warning sign shall not be lower than the top of the advisory speed plaque.
4. Type A warning light required on all construction signs.
- ⑤ In urban area or on Interstate route, mounting height shall not be less than 7 ft.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPICAL CONSTRUCTION  
SIGNS MOUNTING

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCDV-05



DETAILS PLACED IN THIS FORMAT 09/04/12

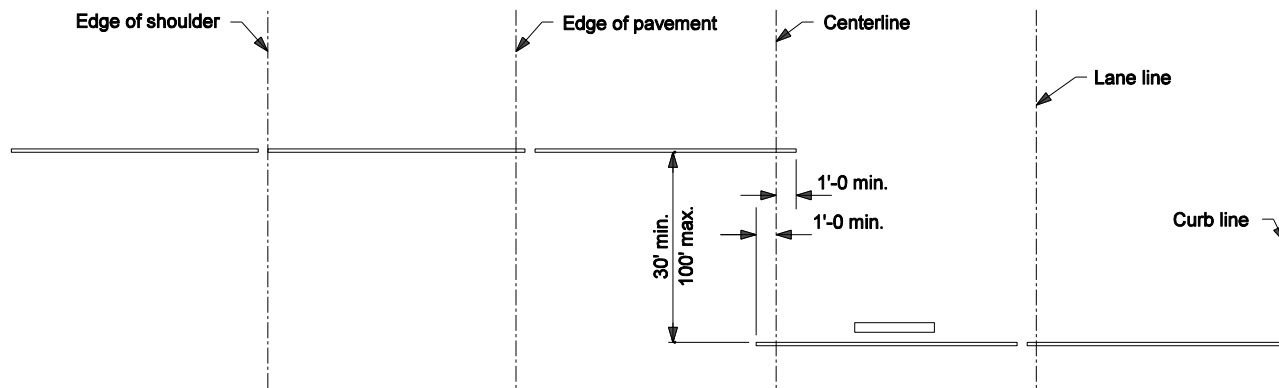
/s/ *Richard L. VanCleave* 09/04/12

SUPERVISOR, ROADWAY STANDARDS DATE

/s/ *Mark A. Miller* 09/04/12

CHIEF ENGINEER DATE

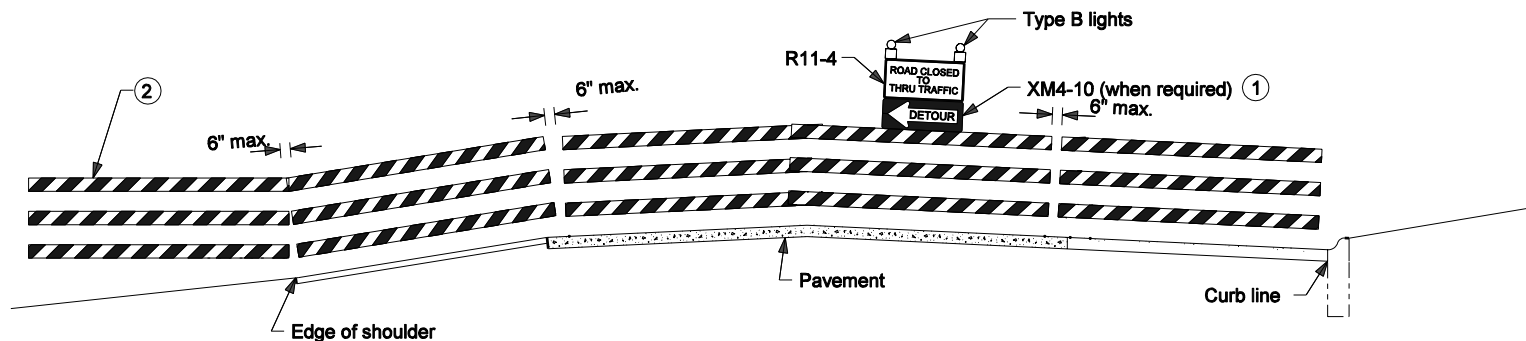




(HALF PLAN WITH SHOULDER SECTION)

PLAN VIEW

(HALF PLAN WITH CURB SECTION)



(HALF ELEVATION WITH SHOULDER SECTION)

ELEVATION

(HALF ELEVATION WITH CURB SECTION)

### TYPICAL APPLICATIONS OF TYPE III BARRICADES ROAD CLOSED TO THRU TRAFFIC

#### GENERAL NOTES

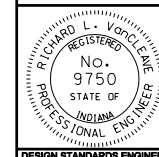
1. The Detour Arrow sign shall be used only when a detour route has been signed.
2. Barricades shall be supported on driven posts in areas outside of the pavement or sidewalk, where side slopes are 3 to 1 or flatter.
3. See standard drawing E 801-TCDV-04 for sign use and mounting information.
4. Barricades and supports shall meet NCHRP 350 crash evaluation criteria.
5. See Note 4 on Standard Drawing E 801-TCSN-11 for post depth.

INDIANA DEPARTMENT OF TRANSPORTATION

#### TYPE III BARRICADE TYPICAL APPLICATION

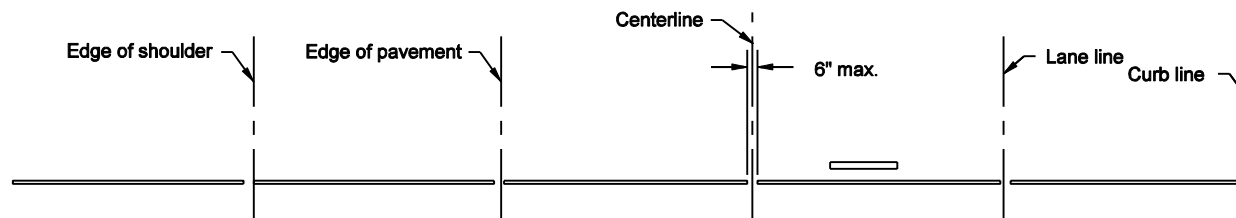
MARCH 2005

STANDARD DRAWING NO. E 801-TCDV-06



/s/ Richard L. VanCleave 3-01-05  
DESIGN STANDARDS ENGINEER DATE

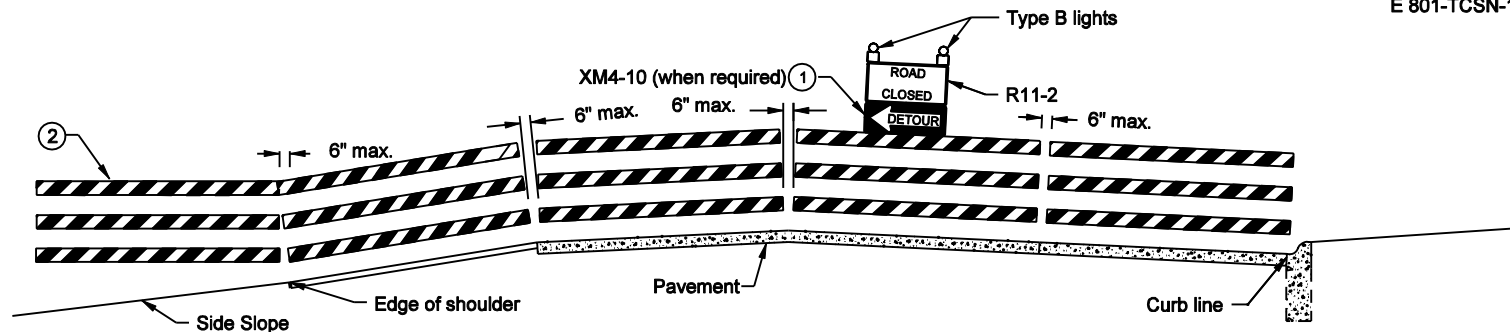
/s/ Richard K. Smutzer 3-01-05  
CHIEF HIGHWAY ENGINEER DATE



(HALF PLAN WITH SHOULDER SECTION)

(HALF PLAN WITH CURB SECTION)

### PLAN VIEW



(HALF ELEVATION WITH SHOULDER SECTION)

(HALF ELEVATION WITH CURB SECTION)

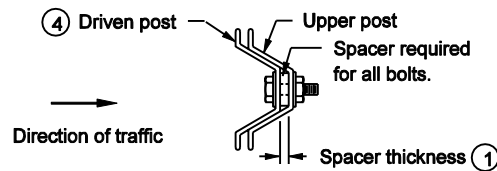
### ELEVATION

#### TYPICAL APPLICATIONS OF TYPE III BARRICADES ROAD CLOSED TO ALL TRAFFIC

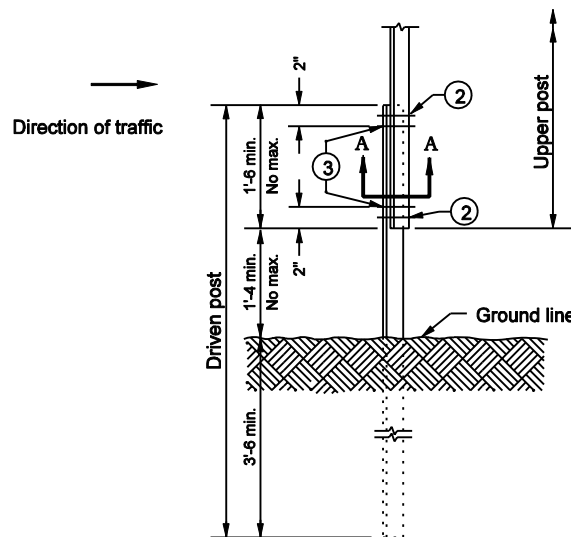
#### GENERAL NOTES

- ① The Detour Arrow sign shall be used only when a detour route has been signed.
- ② Barricades shall be supported on driven posts in areas outside of the pavement or sidewalk, where side slopes are 3 to 1 or flatter.
3. See standard drawing E 801-TCDV-04 for sign use and mounting information.
4. Barricades and supports shall meet NCHRP 350 crash evaluation criteria.
4. See Note 5 on Standard Drawing E 801-TCSN-11 for post depth.

INDIANA DEPARTMENT OF TRANSPORTATION	
TYPE III BARRICADE TYPICAL APPLICATIONS	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCDV-07	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



**SECTION "A-A"**



**ELEVATION**

**U CHANNEL STEEL POST SPLICE**

**GENERAL NOTES**

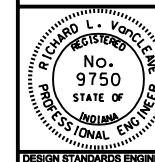
- ① The spacer thickness shall be  $\frac{1}{8}$  in. less than the gap between the posts when positioned in the unbolted configuration.
- ② The exterior bolt, spacer, washer, and nut shall be installed in a prepunched hole within the first 2 in. of the end of the lapped post section.
- ③ The interior bolt, spacer, washer, and nut shall be installed in a prepunched hole within the first 2 in. of the exterior bolts. The maximum spacing between the interior bolts shall be 1'-6 . If the length of the post lap is increased such that this 1'-6 maximum is exceeded, then additional interior bolts shall be installed such that the maximum space between adjacent interior bolts does not exceed the 1'-6 limit.
- ④ The driven post shall always be mounted in front of the upper post with respect to adjacent oncoming traffic, regardless of the direction the sign is facing,
5. The bolts shown shall be  $\frac{5}{8}$ " x 2".

INDIANA DEPARTMENT OF TRANSPORTATION

**U CHANNEL STEEL  
POST SPLICE DETAIL**

SEPTEMBER 2002

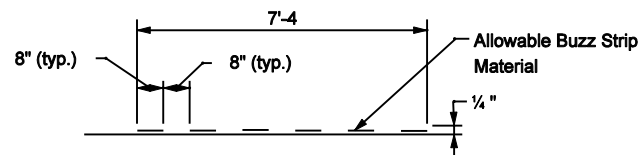
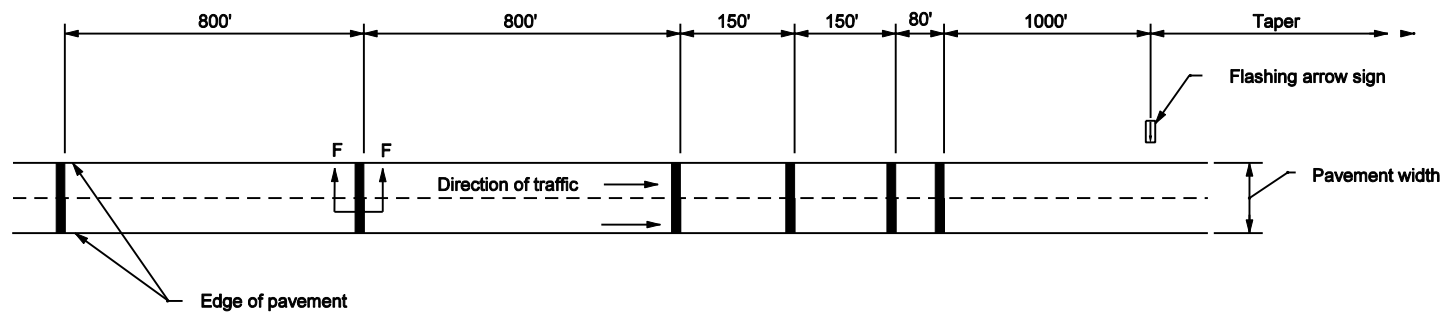
STANDARD DRAWING NO. E 801-TCDV-08



/s/ Richard L. VanCleave 9-03-02  
DESIGN STANDARDS ENGINEER DATE

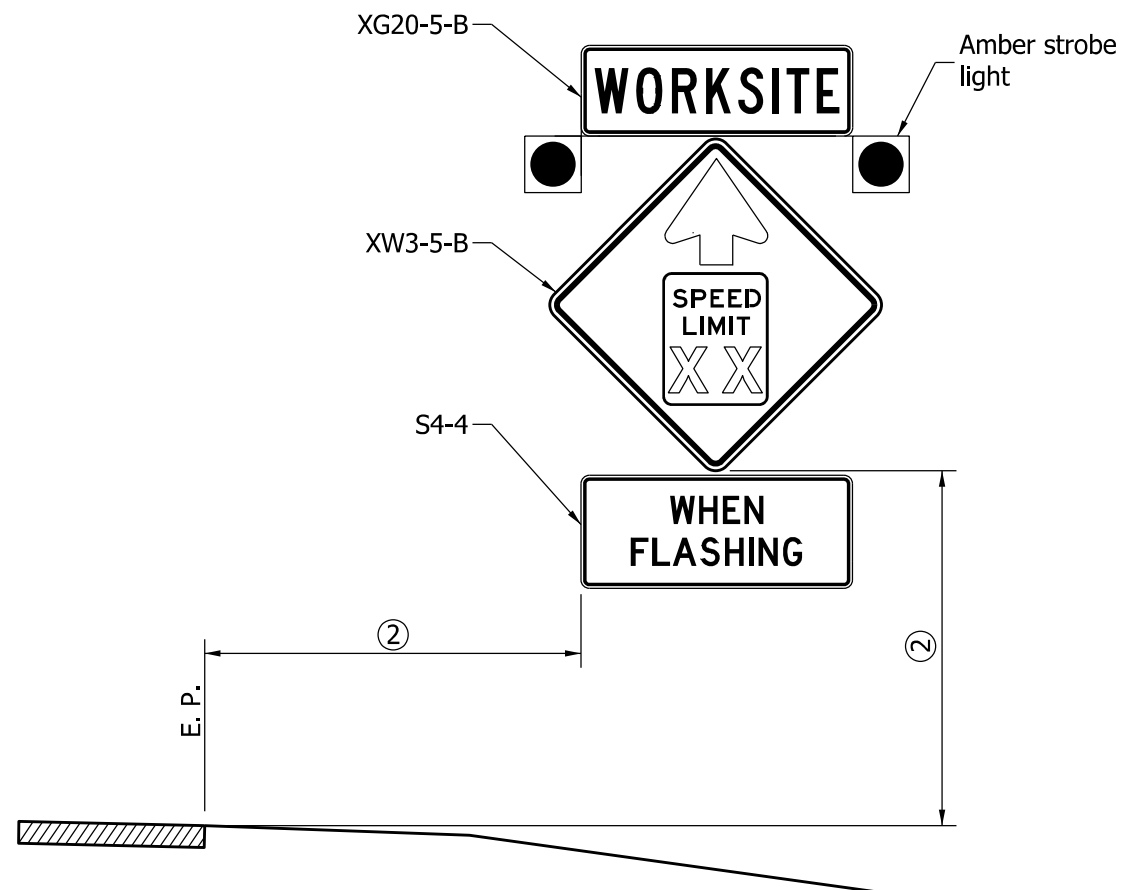
/s/ Richard K. Smutzer 9-03-02  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

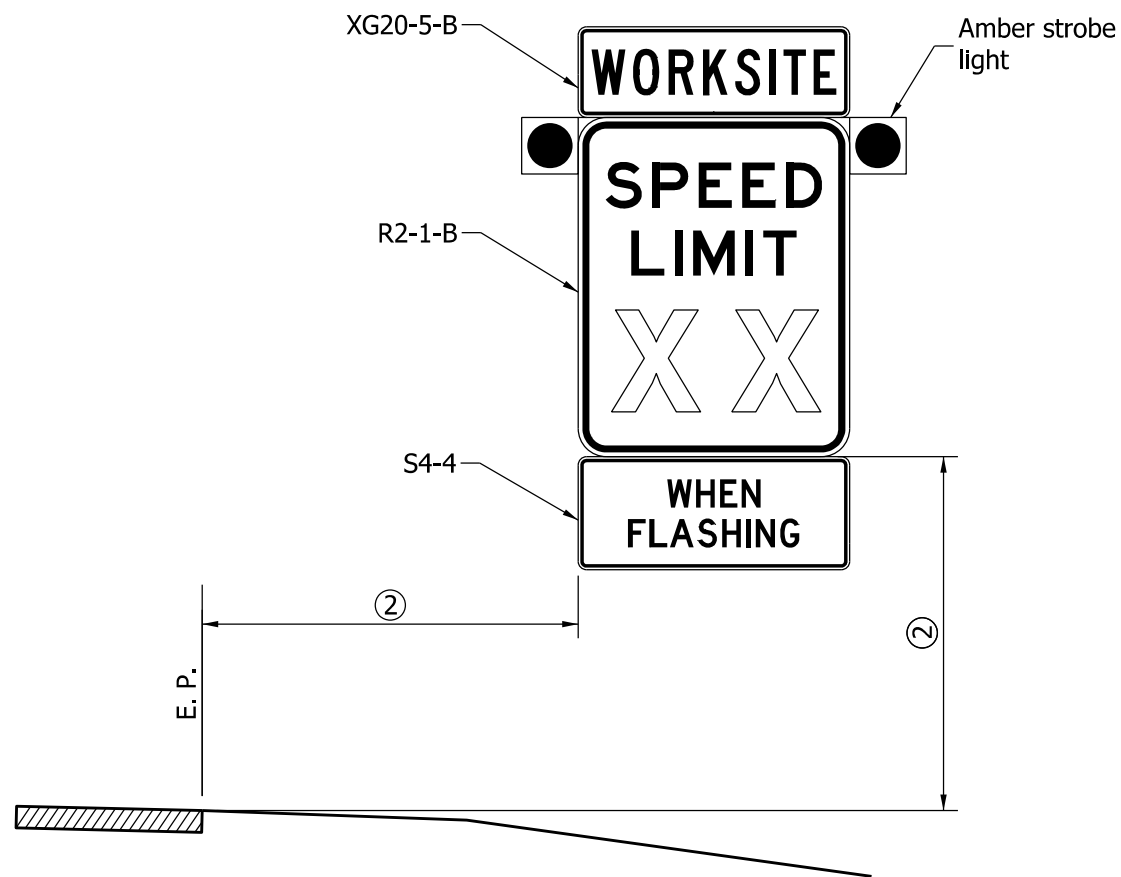


**SECTION F-F**  
(Typ.)

INDIANA DEPARTMENT OF TRANSPORTATION			
BUZZ STRIP INSTALLATION			
MARCH 2003			
STANDARD DRAWING NO. E 801-TCDV-09			
	/s/ Richard L. VanCleave	3-03-03	DATE
	DESIGN STANDARDS ENGINEER		
	/s/ Richard K. Smutzer	3-03-03	DATE
	CHIEF HIGHWAY ENGINEER		
DESIGN STANDARDS ENGINEER			



REDUCED SPEED ADVANCE  
WARNING SIGN ASSEMBLY



WORKSITE SPEED LIMIT  
SIGN ASSEMBLY

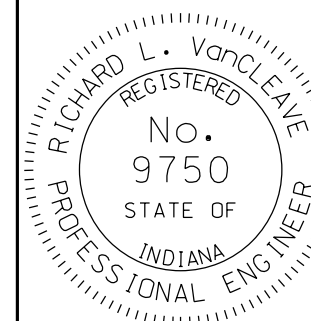
**NOTES:**

1. If not trailer mounted, signs and supports shall satisfy NCHRP 350 crash evaluation criteria.
2. See Standard Drawing 801-TCDV-05 for lateral and vertical placement.
3. Advance warning sign speed limit shall match that on worksite speed limit sign.
4. The worksite speed limit shall be at least 10 mph below the posted speed limit for the roadway under construction.
5. Sign series shown is for freeway or expressway application.

INDIANA DEPARTMENT OF TRANSPORTATION

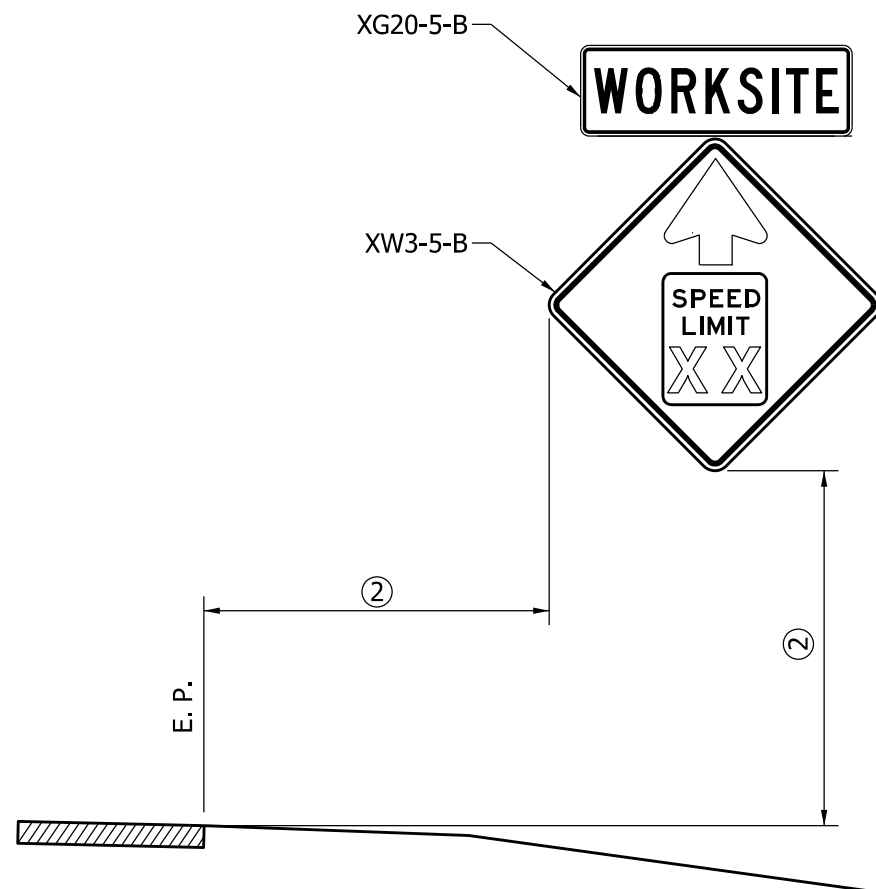
WORKSITE SPEED LIMIT SIGN ASSEMBLY  
FOR INTERMITTENT USE  
(When Workers Present)  
SEPTEMBER 2012

STANDARD DRAWING NO. E 801-TCDV-10

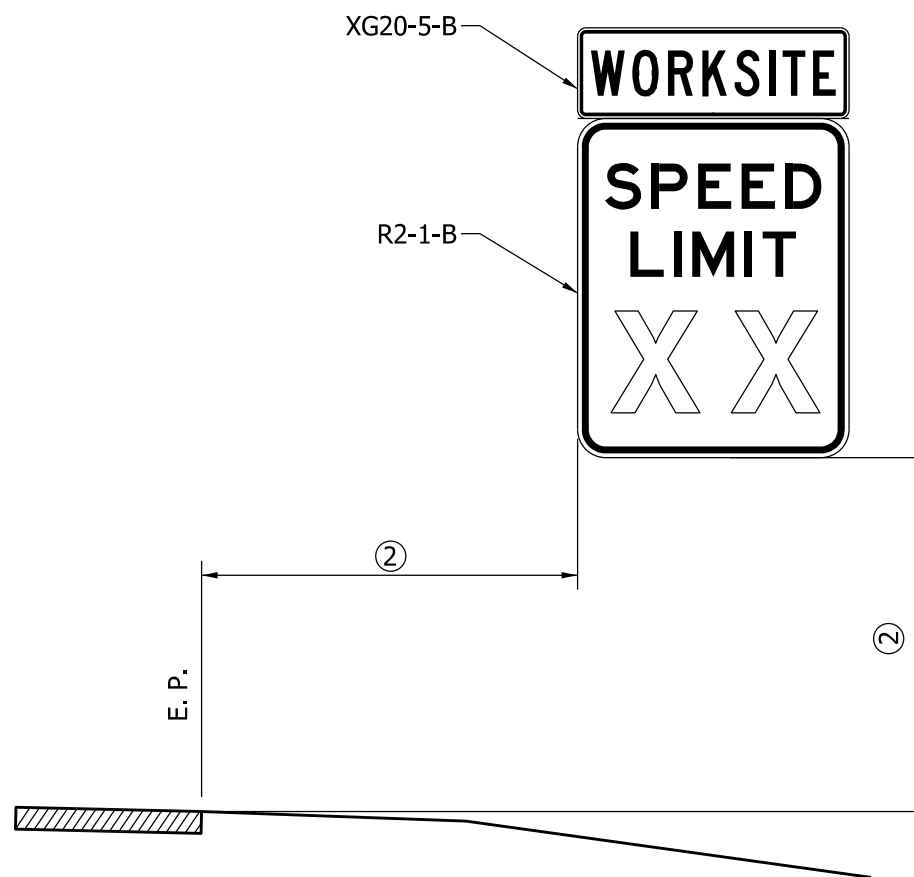


*/s/ Richard L. VanCleave* 09/04/12  
SUPERVISOR, ROADWAY STANDARDS DATE

*/s/ Mark A. Miller* 09/04/12  
CHIEF ENGINEER DATE



REDUCED SPEED ADVANCE  
WARNING SIGN ASSEMBLY



WORKSITE SPEED LIMIT  
SIGN ASSEMBLY

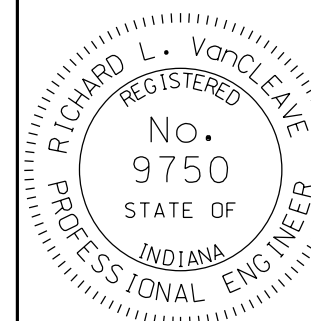
**NOTES:**

1. If not trailer mounted, signs and supports shall satisfy NCHRP 350 crash evaluation criteria.
- ② See Standard Drawing 801-TCDV-05 for lateral and vertical placement.
3. Advance warning sign speed limit shall match that on worksite speed limit sign.
4. The worksite speed limit shall be at least 10 mph below the posted speed limit for the roadway under construction.
5. Sign series shown is for freeway or expressway application.

INDIANA DEPARTMENT OF TRANSPORTATION

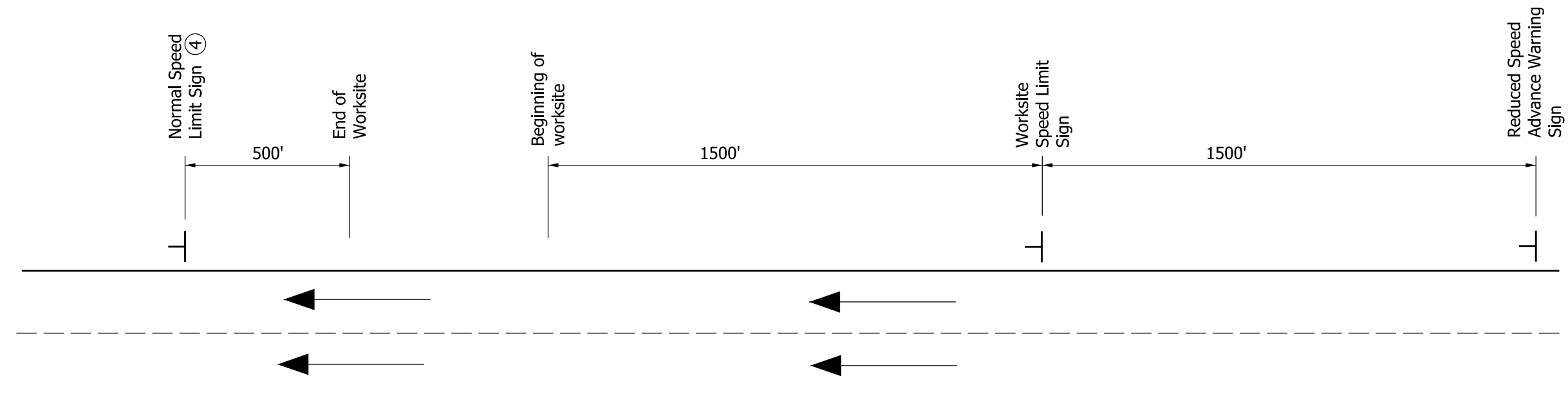
WORKSITE SPEED LIMIT  
SIGN ASSEMBLY  
(For Continuous Use)  
SEPTEMBER 2012

STANDARD DRAWING NO. E 801-TCDV-11




/s/ Richard L. VanCleave 09/04/12  
SUPERVISOR, ROADWAY STANDARDS DATE

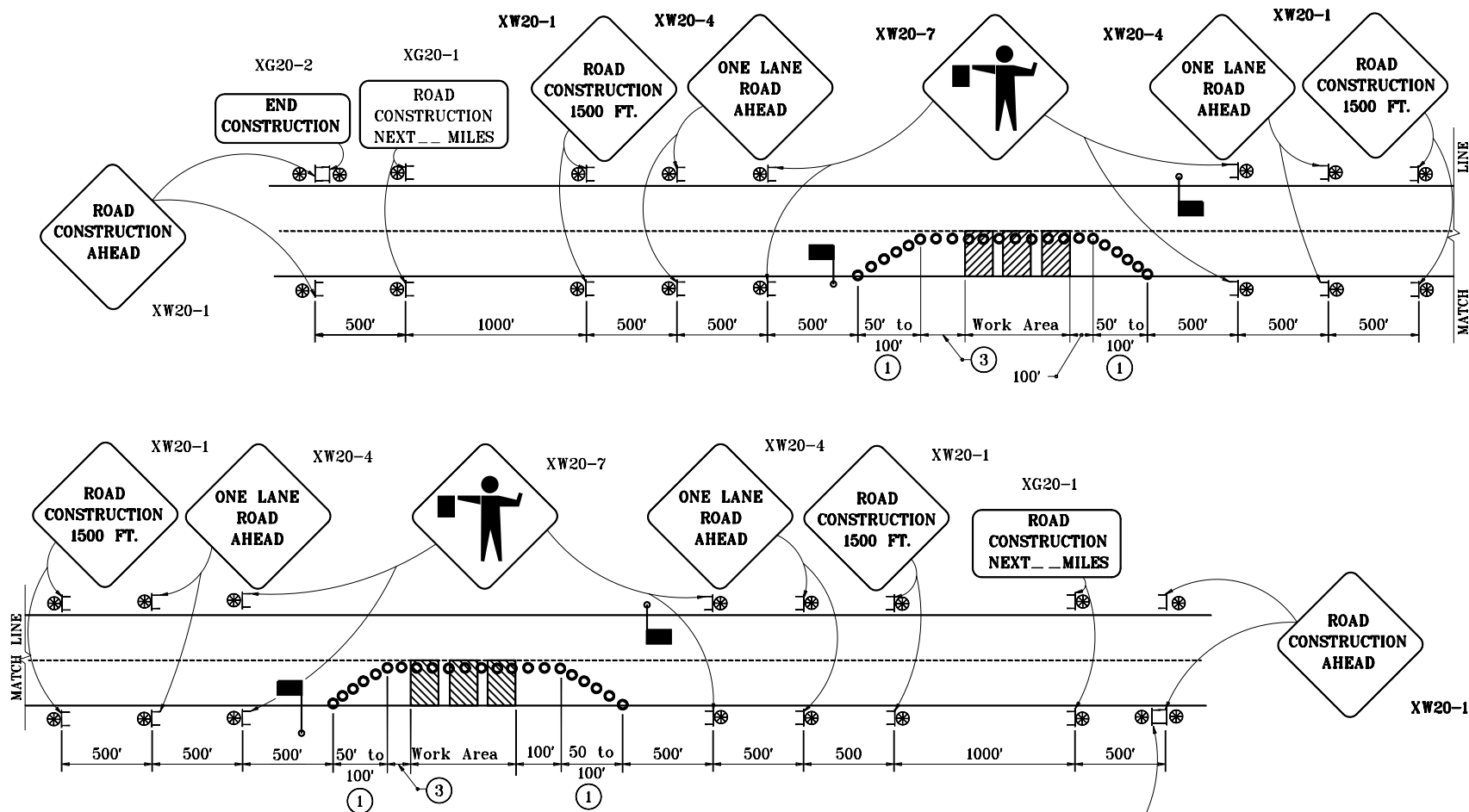
/s/ Mark A. Miller 09/04/12  
CHIEF ENGINEER DATE



**NOTES:**

- 1. Worksite speed limit sign assemblies shall be placed on both sides of the roadway only where all travel lanes approaching the construction site are open to traffic traveling in the same direction.
- 2. Worksite speed limit sign assemblies shall be placed 500 ft beyond each crossroad or the last entrance ramp for each interchange, at 2-mile intervals throughout the worksite, or adjacent to the existing normal speed limit signs.
- 3. See Standard Drawings E 801-TCDV-10 and -11 for additional notes on assembly requirements.
- ④ For a rural Interstate route application, a truck speed limit sign shall be used and placed immediately to the right of the normal speed limit sign.

INDIANA DEPARTMENT OF TRANSPORTATION			
WORKSITE SPEED LIMIT SIGN ASSEMBLY LONGITUDINAL PLACEMENT SEPTEMBER 2012			
STANDARD DRAWING NO.		E 801-TCDV-12	
	/s/ <i>Richard L. VanCleave</i>		09/04/12
	SUPERVISOR, ROADWAY STANDARDS		DATE
	/s/ <i>Mark A. Miller</i>		09/04/12
	CHIEF ENGINEER		DATE



**TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES  
FOR SINGLE LANE TWO-WAY TRAFFIC WITH FLAGGER**

**GENERAL NOTES**

- ① Spacing of drums at this location shall be 10 ft for a 50 ft taper or 20 ft for a 100 ft taper.
2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.
- ③ Longitudinal buffer length. See Standard Drawing E 801-TCF0-03 for table this dimension.

**END  
CONSTRUCTION**

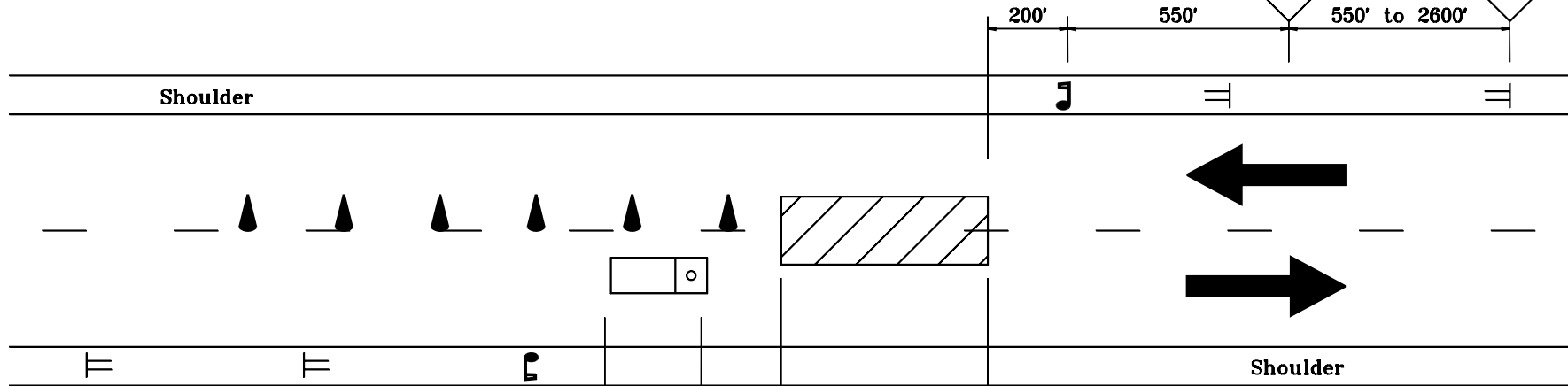
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>FLAGGER OPERATIONS</b>	
SEPTEMBER 1997	
<b>STANDARD DRAWING NO. E 801-TCF0-01</b>	
DETAILS PLACED IN THIS FORMAT 11-15-99	
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	ORIGINALLY APPROVED 9-01-97







# 2 LANE 2 WAY HIGHWAY

XW20-7a-A ①

XW20-1 ①



## LEGEND

-  Flagger
-  Cone
-  Truck with Strobe Flashing Light
-  Work zone

## GENERAL NOTES

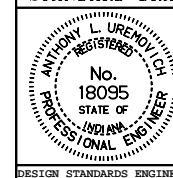
- ① Additional signs may be required for the moving operation so as to maintain proper sign spacing.

INDIANA DEPARTMENT OF TRANSPORTATION

## MAINTENANCE OF TRAFFIC FOR MOVING OPERATION

MAY 2000

STANDARD DRAWING NO. E 801-TCF0-02

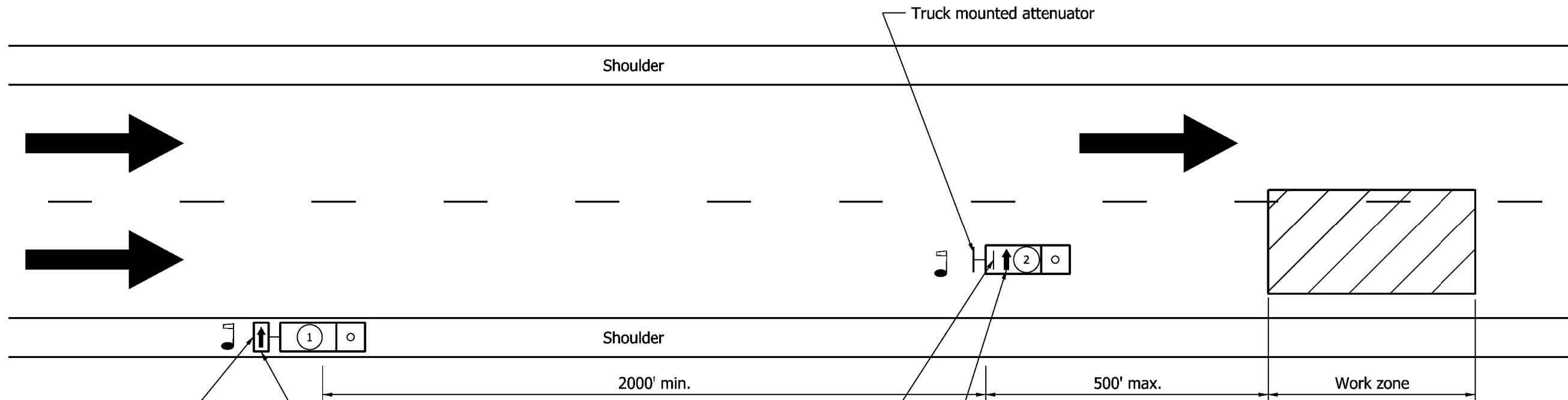


/s/ Anthony L. Uremovich 5-01-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 5-01-00  
CHIEF HIGHWAY ENGINEER DATE

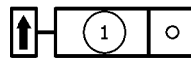
DESIGN STANDARDS ENGINEER

MULTI-LANE DIVIDED HIGHWAY

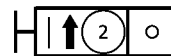


LEGEND

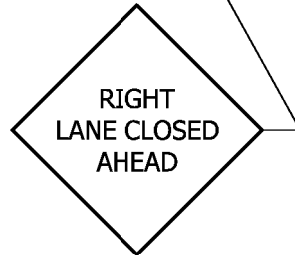
Flagger



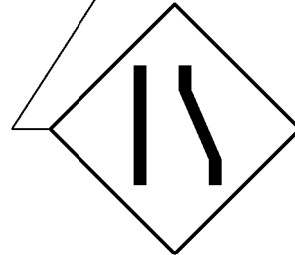
Truck which may be a pick-up



Truck which shall be 24,000 lb or greater gross vehicular weight



XW20-5  
(R or L)  
Mounted to bottom  
of flashing arrow sign



XWA-2  
(R or L)  
Mounted on rear  
of truck

GENERAL NOTES

1. Flagger shall be used while trucks are stopped.
2. Strobe lights will be require on all vehicles.
3. Distances shown are approximate and may be adjusted as directed.
4. Truck mounted attenuator shall be designed to attenuator impacts by a pickup truck of 4400 lbs. gross vehicular weight at 60 mph.

LONGITUDINAL BUFFER LENGTH SHOWN  
ON STANDARD DRAWING E 801-TCFO-01

Posted Speed Limit, mph	Length, ft
30 or lower	80
35	115
40	180
45	230
50	280
55	350
60	410
65	500

INDIANA DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC FOR  
REFLECTOR REPLACEMENT

SEPTEMBER 2009

STANDARD DRAWING NO. E 801-TCFO-03



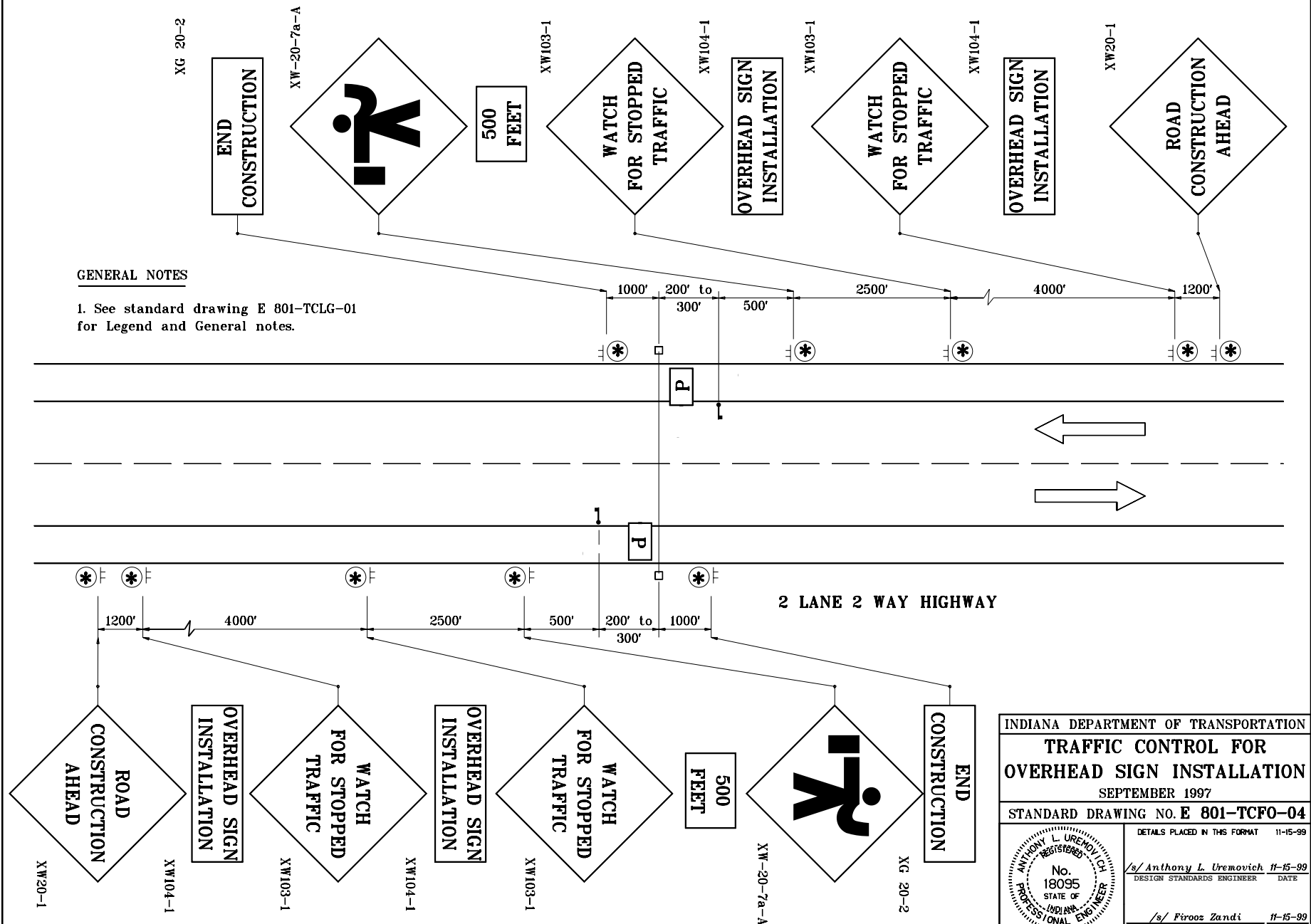
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/09  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09  
CHIEF HIGHWAY ENGINEER DATE

# GENERAL NOTES

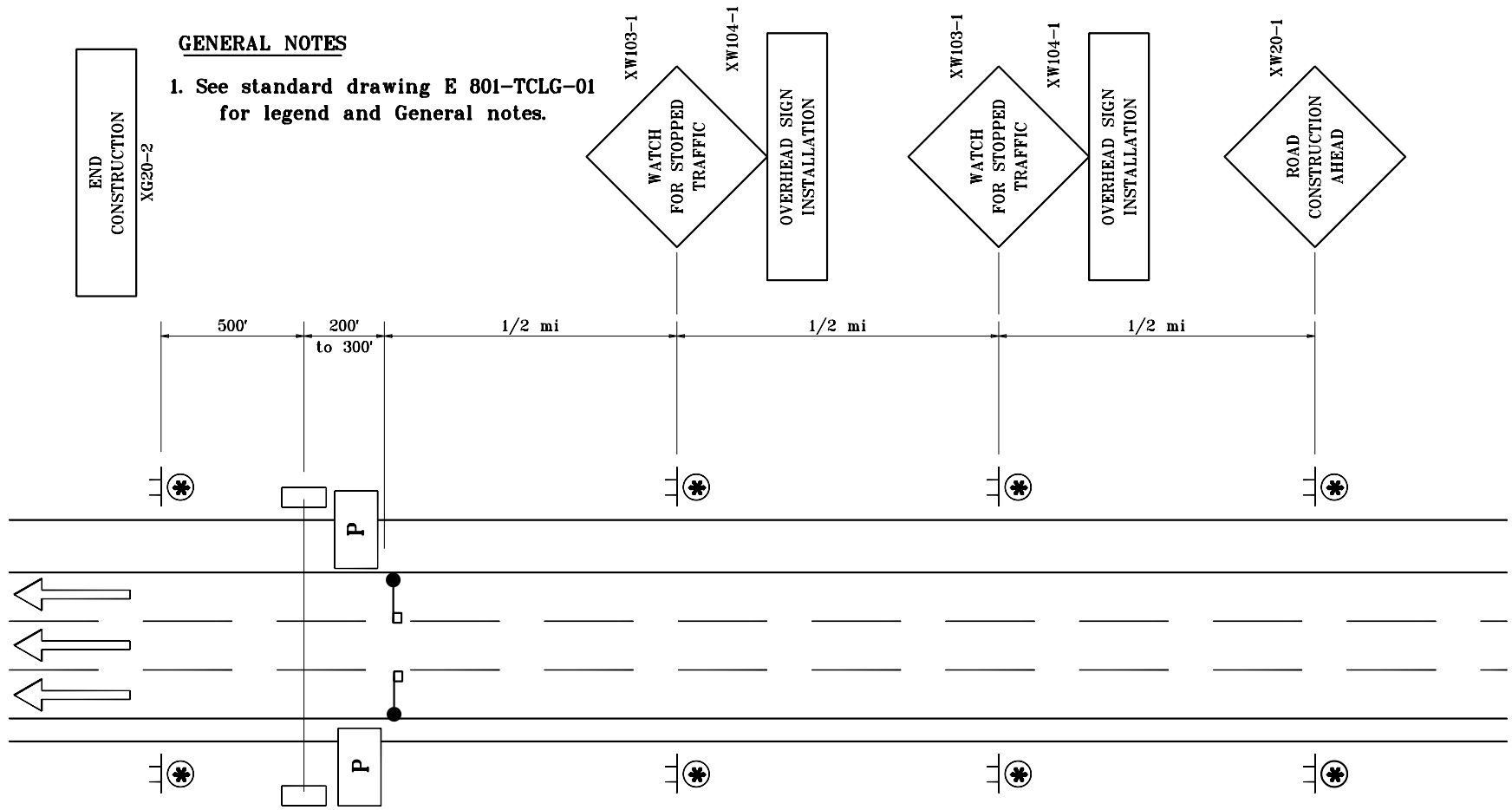
1. See standard drawing E 801-TCLG-01 for Legend and General notes.



INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL FOR OVERHEAD SIGN INSTALLATION	
SEPTEMBER 1997	
STANDARD DRAWING NO. E 801-TCF0-04	
DETAILS PLACED IN THIS FORMAT 11-15-99	
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	ORIGINALLY APPROVED 9-01-97

# **GENERAL NOTES**

1. See standard drawing E 801-TCLG-01 for legend and General notes.

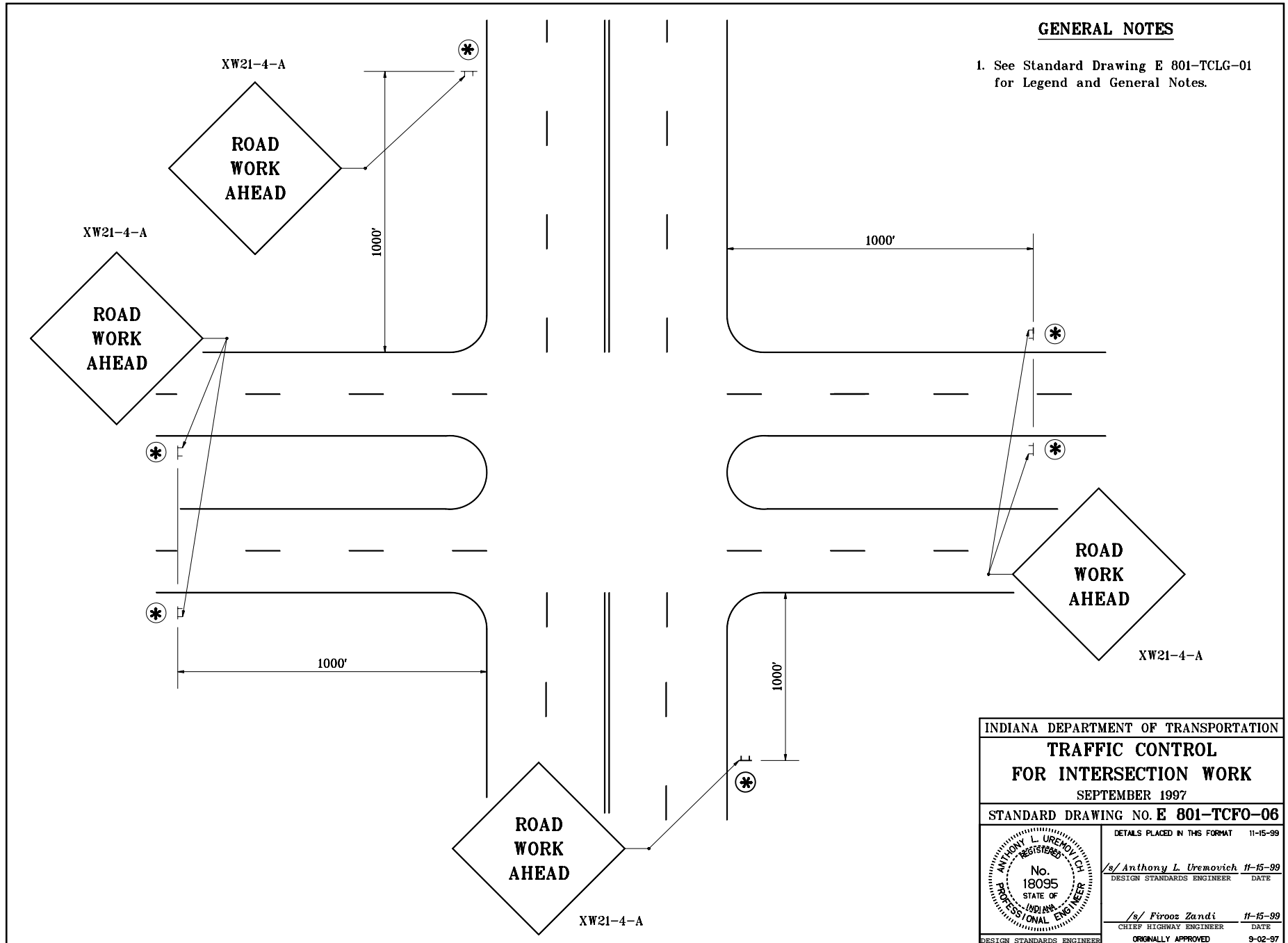


**MULTI-LANE DIVIDED HIGHWAY**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TRAFFIC CONTROL FOR OVERHEAD INSTALLATION</b>	
SEPTEMBER 1997	
<b>STANDARD DRAWING NO. E 801-TCFO-05</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 9-01-97

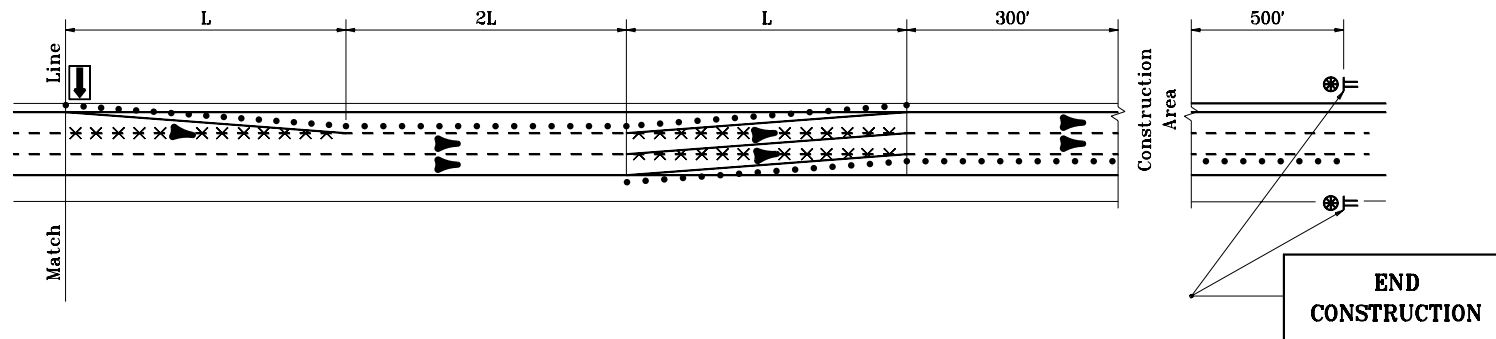
# **GENERAL NOTES**

1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.



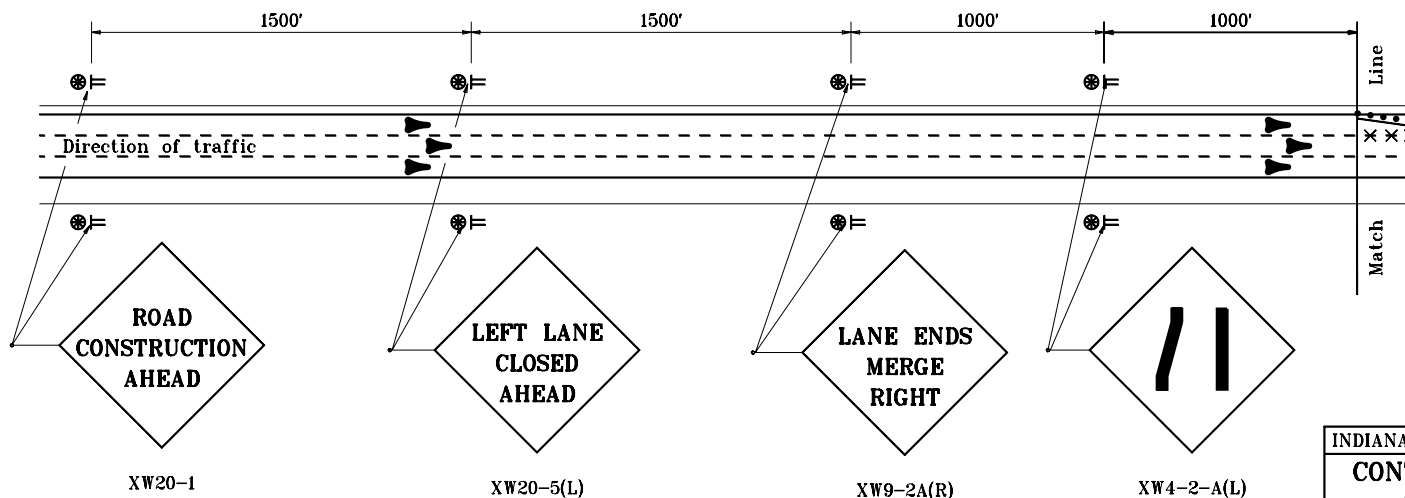
INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL FOR INTERSECTION WORK SEPTEMBER 1997	
STANDARD DRAWING NO. E 801-TCF0-06	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 9-02-97





**TYPICAL APPLICATION ON 6 - LANE DIVIDED HIGHWAY WHERE RIGHT LANE IS CLOSED**

XG20-2



**GENERAL NOTES**

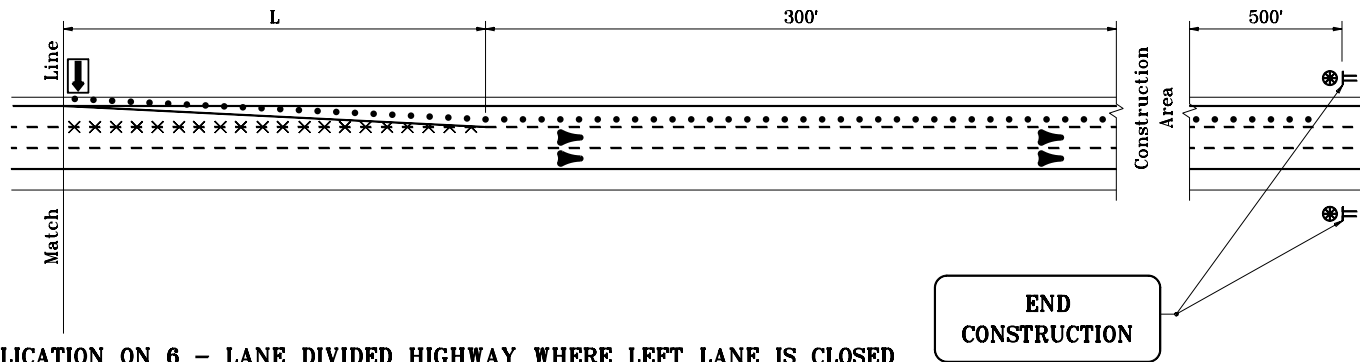
1. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

**TYPICAL ADVANCE SIGNING**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>CONTINUOUS LANE CLOSURES</b>	
<b>RIGHT LANE CLOSED</b>	
MAY 1997	
<b>STANDARD DRAWING NO. E 801-TCLC-02</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 5-01-97

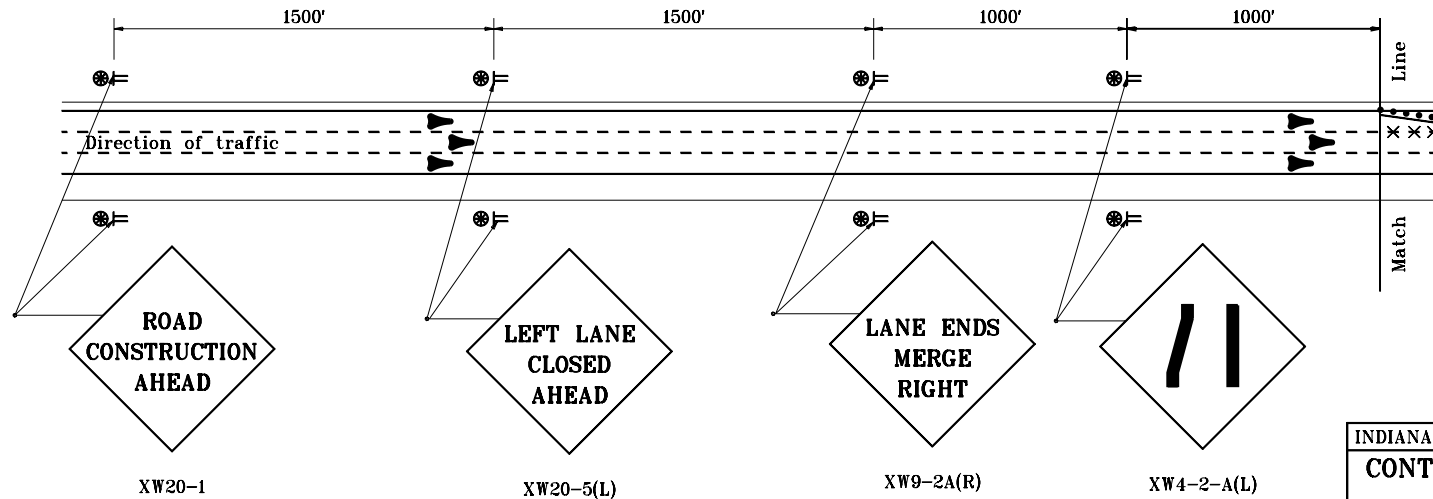






**TYPICAL APPLICATION ON 6 - LANE DIVIDED HIGHWAY WHERE LEFT LANE IS CLOSED**

XG20-2

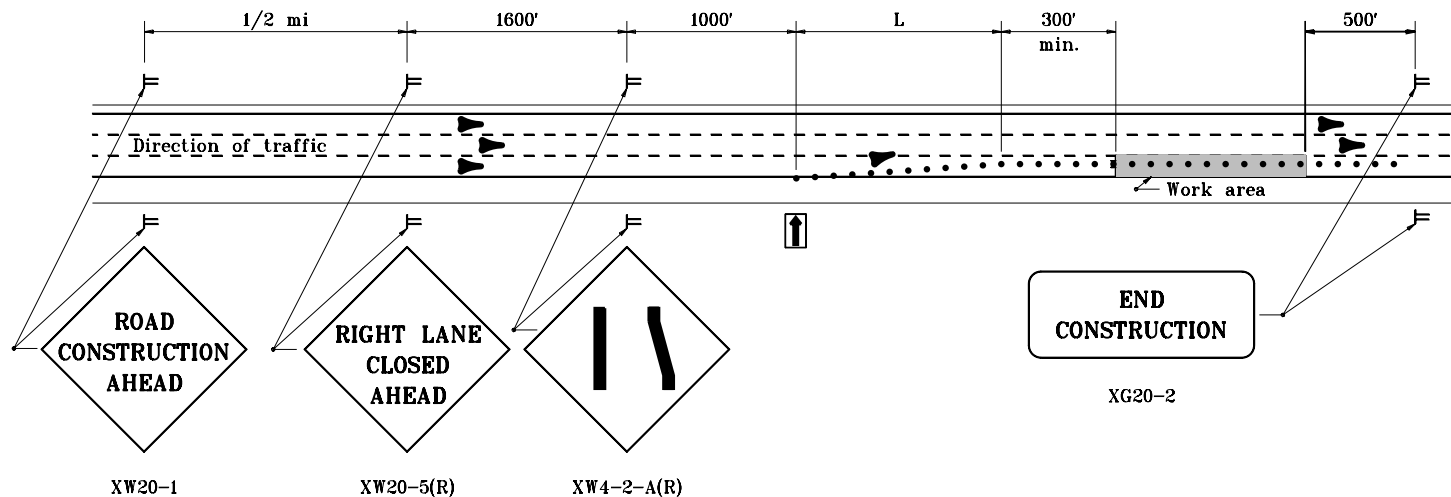


**TYPICAL ADVANCE SIGNING**

**GENERAL NOTES**

1. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

INDIANA DEPARTMENT OF TRANSPORTATION	
CONTINUOUS LANE CLOSURES	
LEFT LANE CLOSED	
JANUARY 2000	
STANDARD DRAWING NO. E 801-TCLC-04	
	/s/ Anthony L. Uremovich 5-01-97 DESIGN STANDARDS ENGINEER DATE
	/s/ Donald W. Lucas 5-01-97 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



# TYPICAL APPLICATION ON 6 - LANE DIVIDED HIGHWAY WHERE RIGHT LANE IS CLOSED

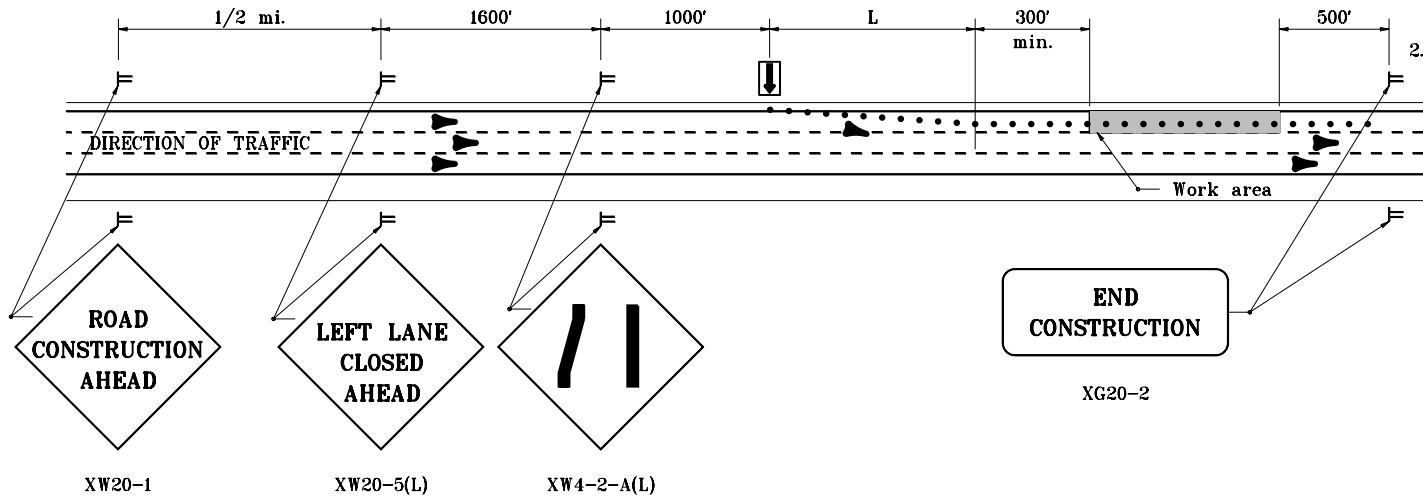
## GENERAL NOTES

1. All lanes are to be open after daylight working hours.
2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

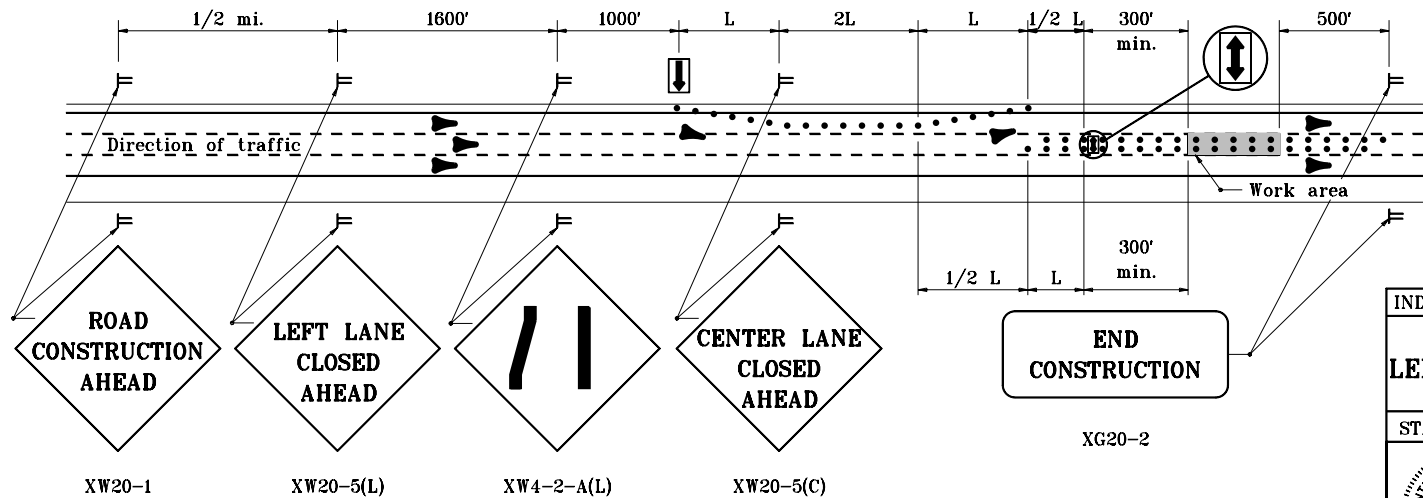
INDIANA DEPARTMENT OF TRANSPORTATION	
DAYLIGHT LANE CLOSURES	
RIGHT LANE CLOSED	
MAY 1997	
STANDARD DRAWING NO. E 801-TCLC-05	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 5-01-97

## GENERAL NOTES

1. All lanes are to be open after daylight working hours.
2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.



## TYPICAL APPLICATION ON 6 - LANE DIVIDED HIGHWAY WHERE LEFT LANE IS CLOSED



## TYPICAL APPLICATION ON 6 - LANE DIVIDED HIGHWAY WHERE CENTER LANE IS CLOSED

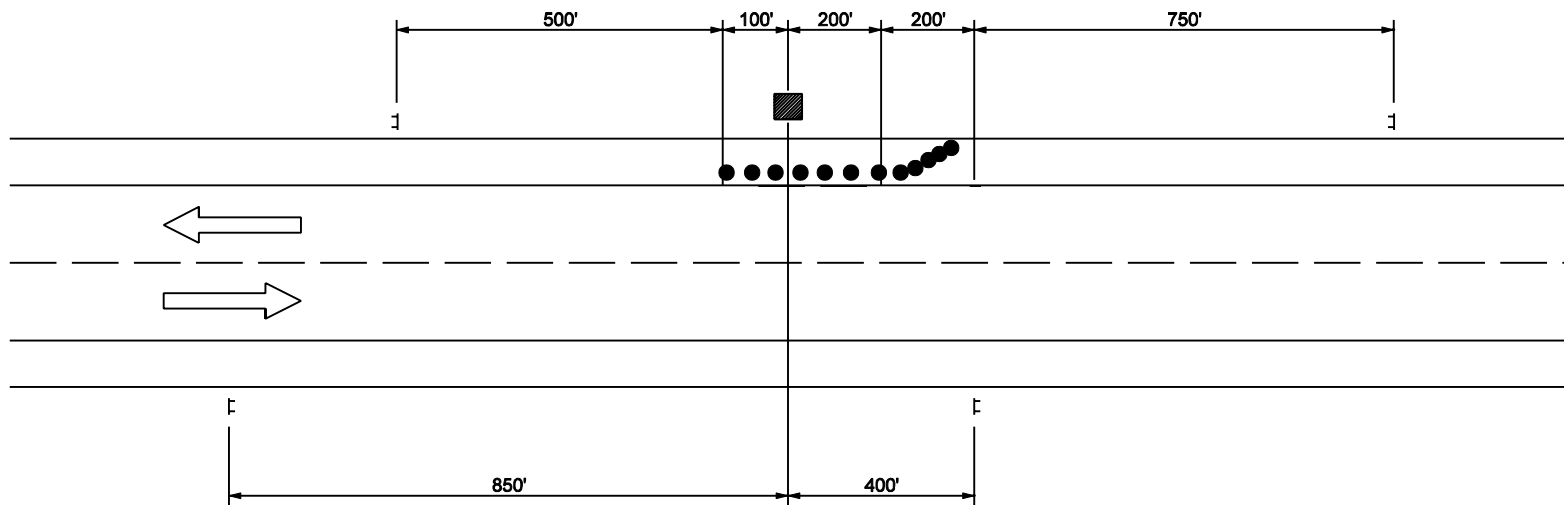
INDIANA DEPARTMENT OF TRANSPORTATION	
DAYLIGHT LANE CLOSURES	
LEFT OR CENTER LANE CLOSED	
MAY 1997	
STANDARD DRAWING NO. E 801-TCLC-06	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 5-01-97

**GENERAL NOTES**

1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.

END  
CONSTRUCTION  
XG20-2

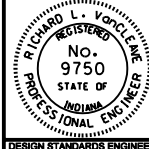
SHOULDER  
WORK  
XW21-5-A



SHOULDER  
WORK  
XW21-5-A

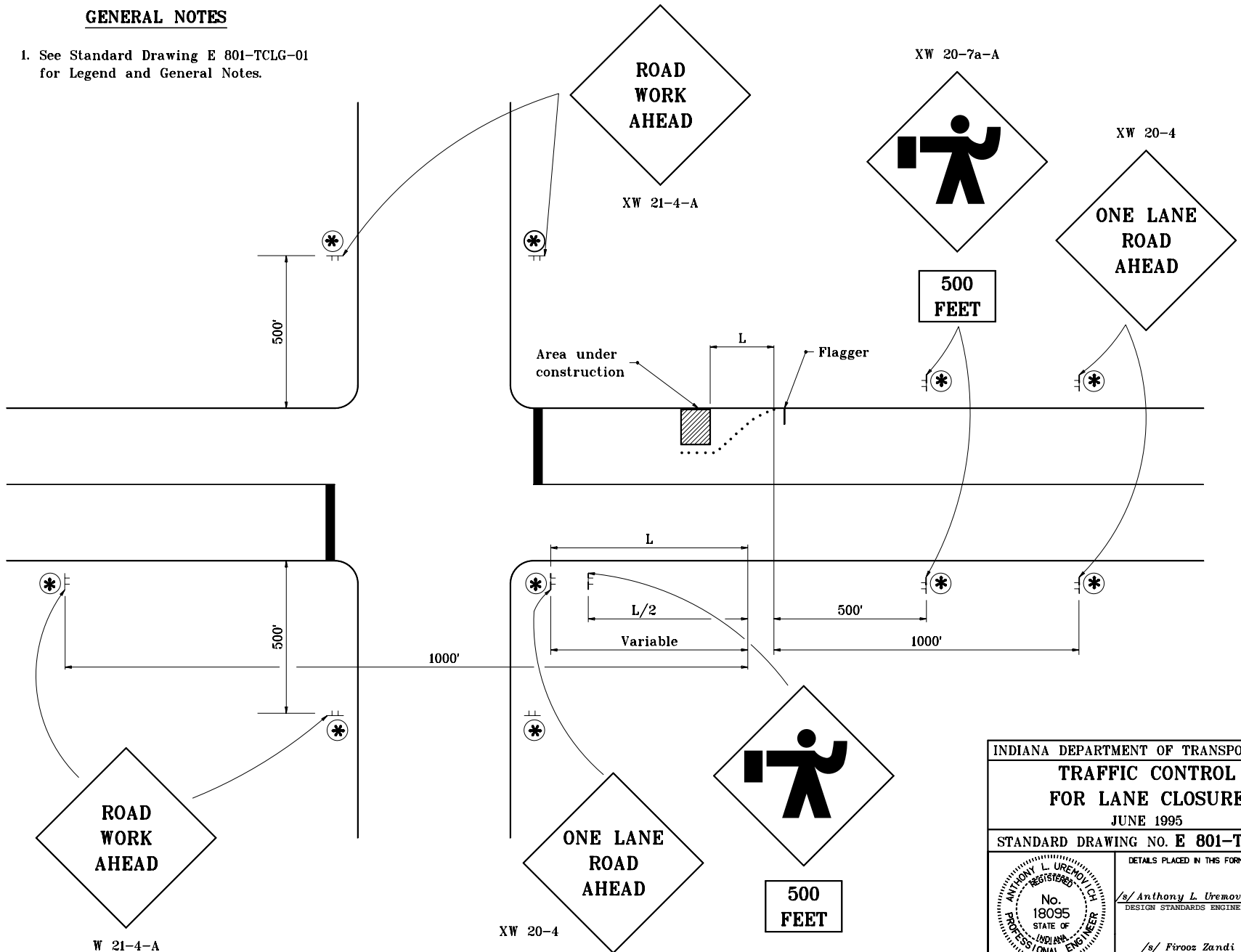
END  
CONSTRUCTION  
XG20-2

**2 LANE 2 WAY HIGHWAY**

INDIANA DEPARTMENT OF TRANSPORTATION									
TRAFFIC CONTROL FOR SHOULDER WORK									
SEPTEMBER 2002									
STANDARD DRAWING NO. E 801-TCLC-07									
	<table border="1"><tr><td>/s/ Richard L. VanCleave</td><td>9-03-02</td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td>/s/ Richard K. Smutzer</td><td>9-03-02</td></tr><tr><td>CHIEF HIGHWAY ENGINEER</td><td>DATE</td></tr></table>	/s/ Richard L. VanCleave	9-03-02	DESIGN STANDARDS ENGINEER	DATE	/s/ Richard K. Smutzer	9-03-02	CHIEF HIGHWAY ENGINEER	DATE
/s/ Richard L. VanCleave	9-03-02								
DESIGN STANDARDS ENGINEER	DATE								
/s/ Richard K. Smutzer	9-03-02								
CHIEF HIGHWAY ENGINEER	DATE								

## GENERAL NOTES

1. See Standard Drawing E 801-TCLG-01  
for Legend and General Notes.



INDIANA DEPARTMENT OF TRANSPORTATION

## TRAFFIC CONTROL FOR LANE CLOSURE

JUNE 1995

STANDARD DRAWING NO. E 801-TCLC-08

DETAILS PLACED IN THIS FORMAT	11-15-99
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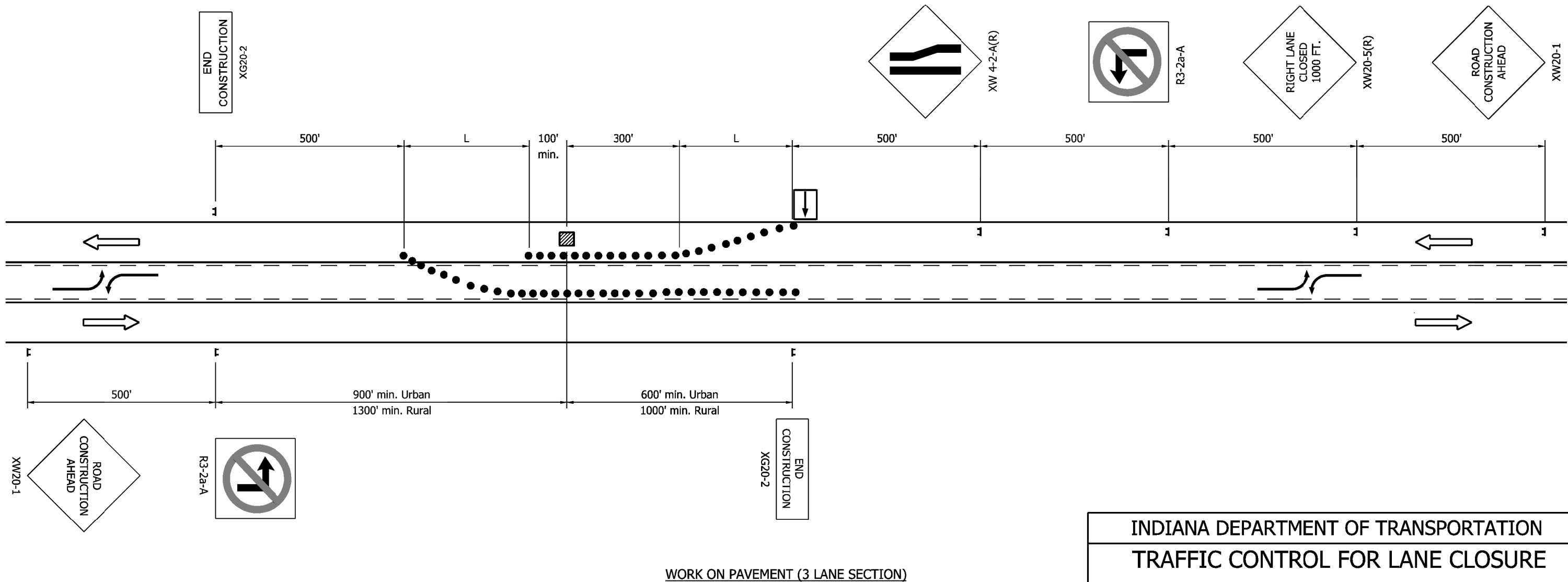
/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE


/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED	7-03-95
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NOTES

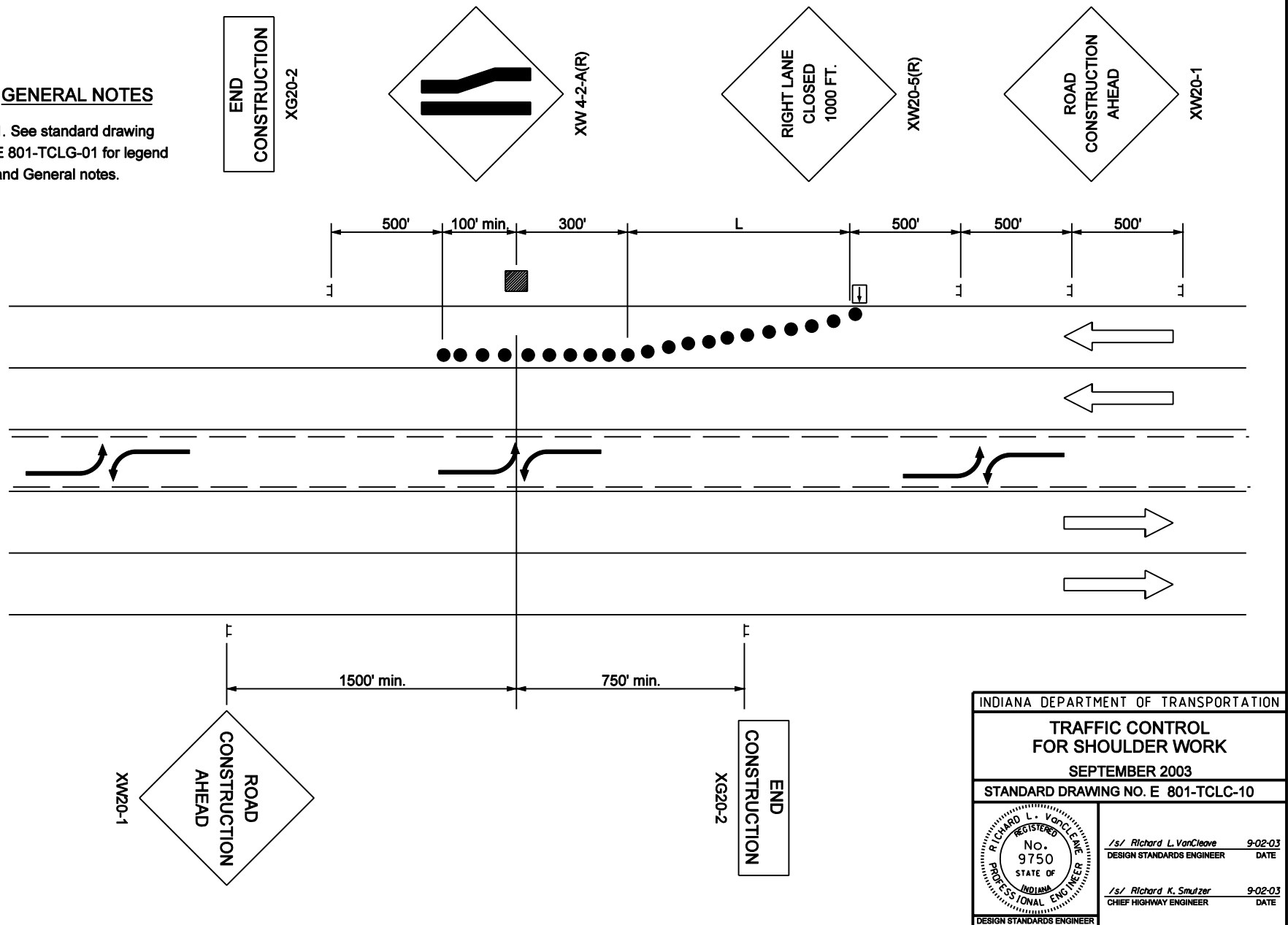
1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.



INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL FOR LANE CLOSURE	
SEPTEMBER 2009	
STANDARD DRAWING NO. E 801-TCLC-09	
	<div><div><div>/s/ Richard L. VanCleave</div><div>DESIGN STANDARDS ENGINEER</div></div><div><div>09/01/09</div><div>DATE</div></div></div> <div><div><div>/s/ Mark A. Miller</div><div>CHIEF HIGHWAY ENGINEER</div></div><div><div>09/01/09</div><div>DATE</div></div></div>
DESIGN STANDARDS ENGINEER	

## GENERAL NOTES

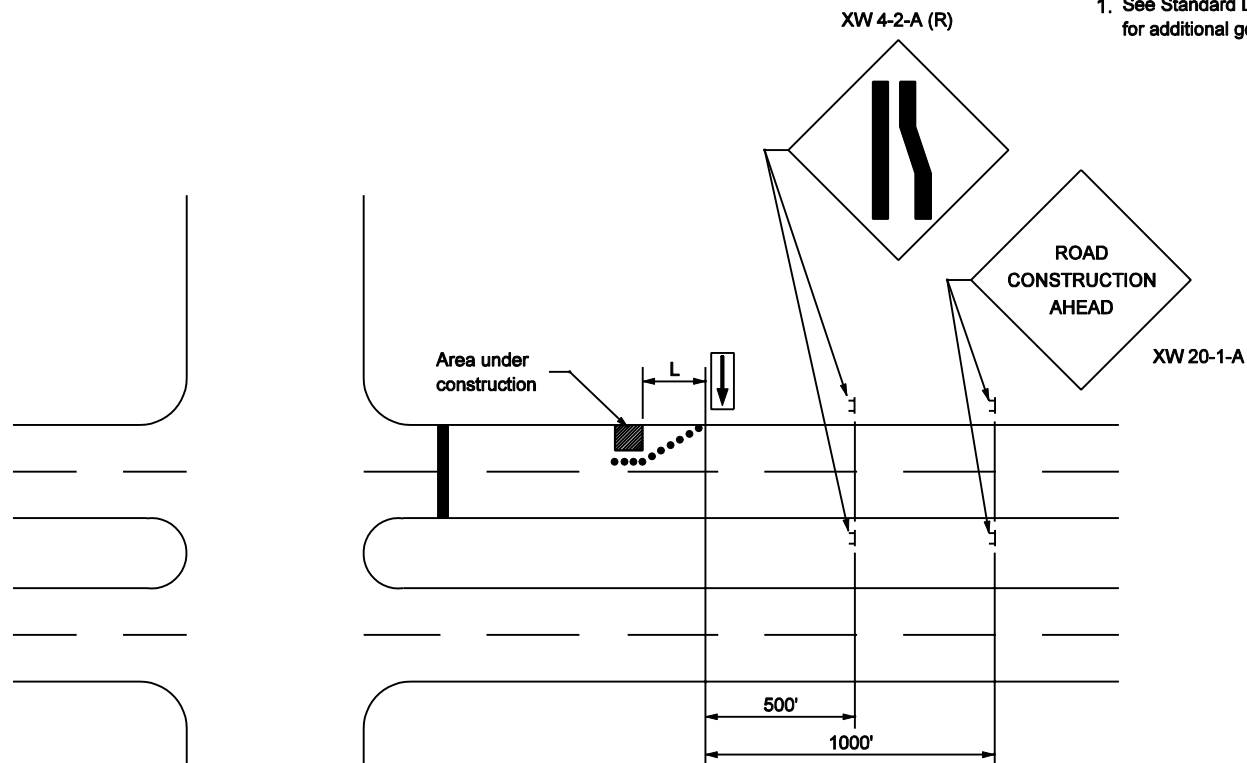
1. See standard drawing E 801-TCLG-01 for legend and General notes.



INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL FOR SHOULDER WORK	
SEPTEMBER 2003	
STANDARD DRAWING NO. E 801-TCLC-10	
	/s/ Richard L. VanCleave 9-02-03 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-02-03 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

## GENERAL NOTES

1. See Standard Drawing E 801-TCLG-01 for additional general notes.

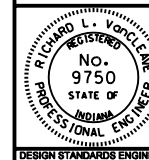


INDIANA DEPARTMENT OF TRANSPORTATION

### TRAFFIC CONTROL FOR LANE CLOSURE

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCLC-11



/s/ Richard L. VanCleave 9-03-02  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-03-02  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

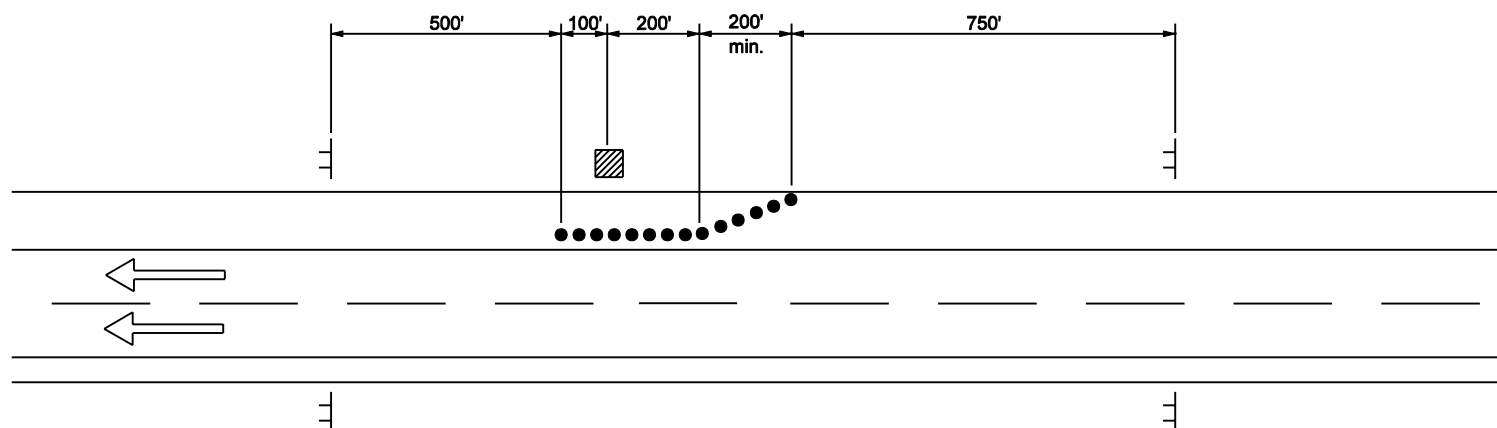


END  
CONSTRUCTION  
XG20-2


SHOULDER  
WORK  
AHEAD  
XW21-5-A

### GENERAL NOTES

1. See standard drawing E 801-TCLG-01 for legend and General Notes.

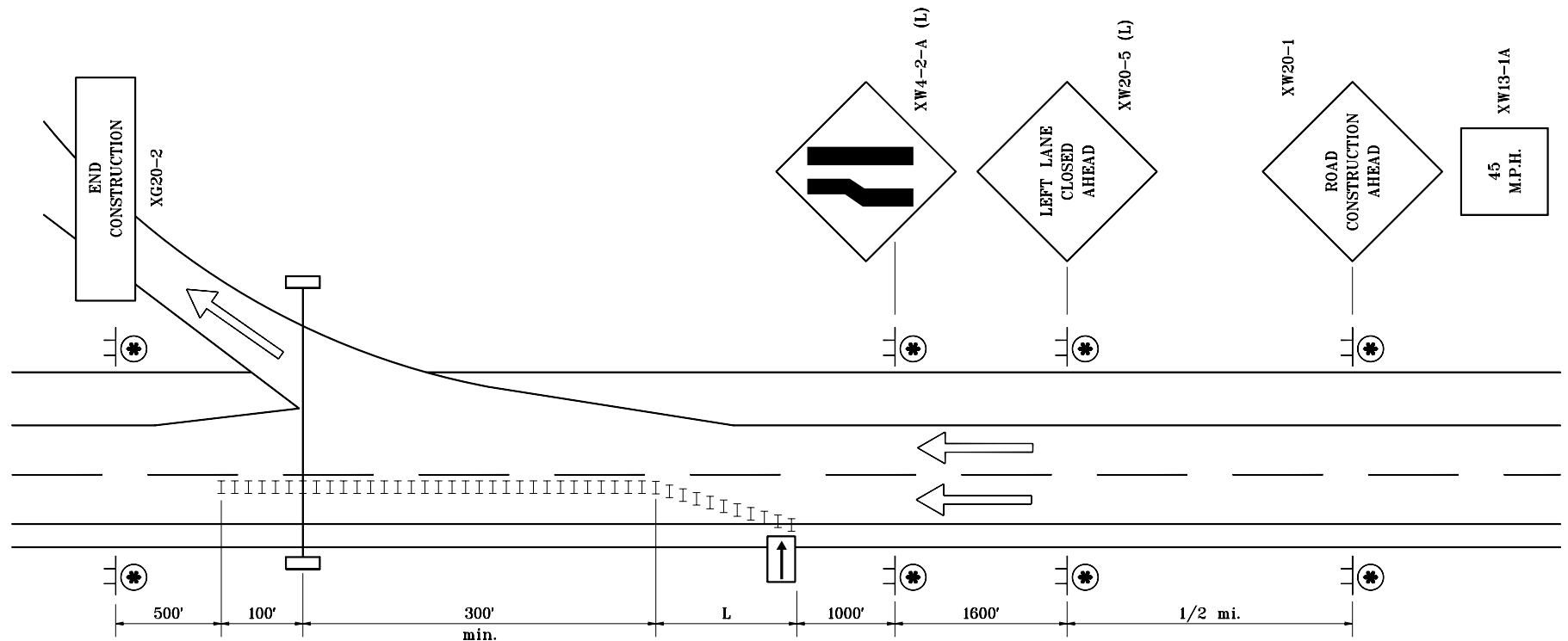


MULTI-LANE DIVIDED HIGHWAY

INDIANA DEPARTMENT OF TRANSPORTATION									
TRAFFIC CONTROL FOR SHOULDER WORK									
SEPTEMBER 2002									
STANDARD DRAWING NO. E 801-TCLC-12									
	<table><tr><td>/s/ Richard L. VanCleave</td><td>9-03-02</td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td>/s/ Richard K. Smutzer</td><td>9-03-02</td></tr><tr><td>CHIEF HIGHWAY ENGINEER</td><td>DATE</td></tr></table>	/s/ Richard L. VanCleave	9-03-02	DESIGN STANDARDS ENGINEER	DATE	/s/ Richard K. Smutzer	9-03-02	CHIEF HIGHWAY ENGINEER	DATE
/s/ Richard L. VanCleave	9-03-02								
DESIGN STANDARDS ENGINEER	DATE								
/s/ Richard K. Smutzer	9-03-02								
CHIEF HIGHWAY ENGINEER	DATE								
DESIGN STANDARDS ENGINEER									

# GENERAL NOTES

1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.



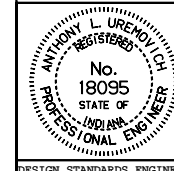
MULTI-LANE DIVIDED HIGHWAY

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR  
OVERHEAD SIGN INSTALLATION

JUNE 1995

STANDARD DRAWING NO. E 801-TCLC-13



DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

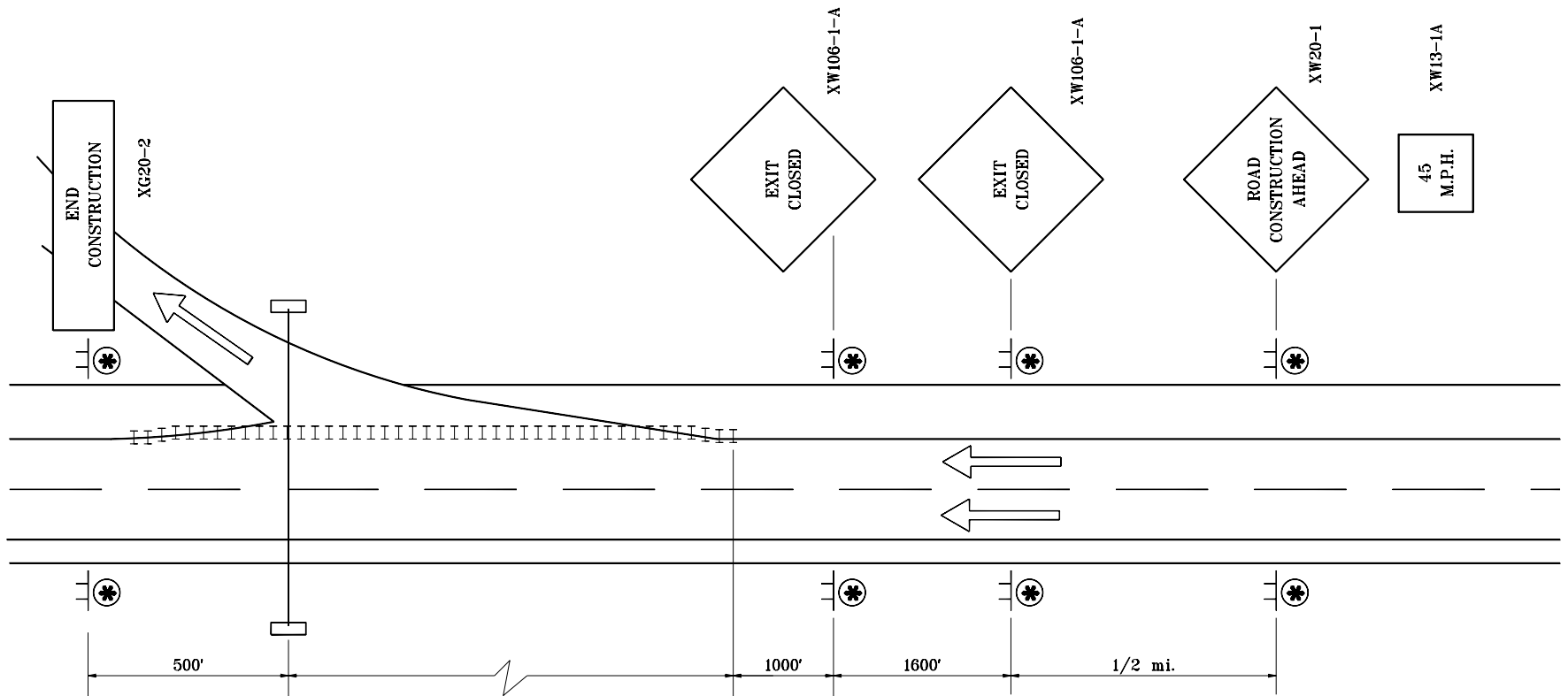
/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 7-03-95

# GENERAL NOTES

1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.



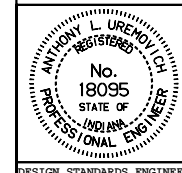
**MULTI-LANE DIVIDED HIGHWAY,  
LONG-TERM CLOSURE**

INDIANA DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL FOR  
OVERHEAD SIGN INSTALLATION**

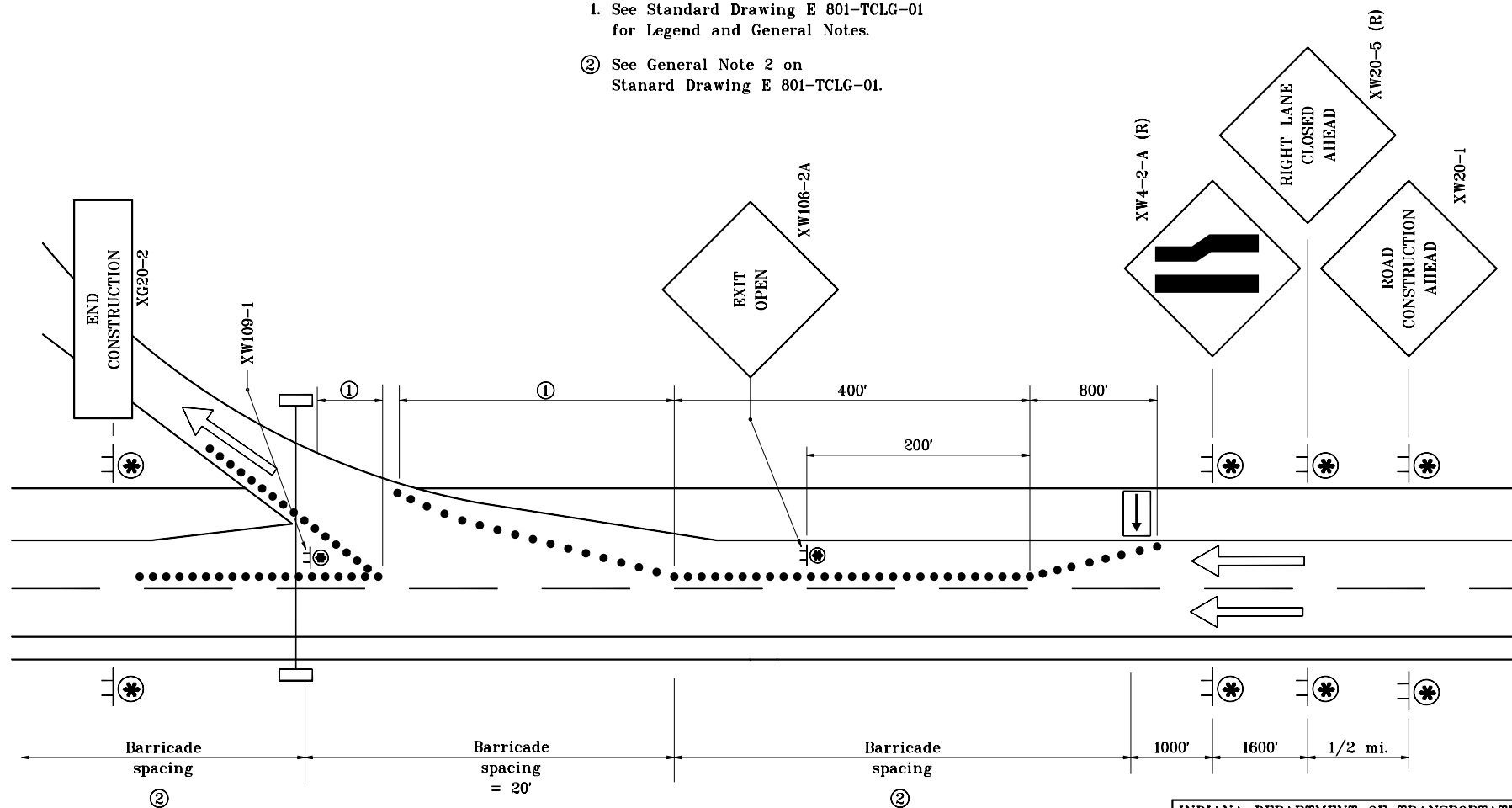
JUNE 1995

STANDARD DRAWING NO. E 801-TCLC-14



DETAILS PLACED IN THIS FORMAT		11-15-99
/s/ Anthony L. Uremovich	11-15-99	
DESIGN STANDARDS ENGINEER	DATE	
/s/ Firooz Zandi	11-15-99	
CHIEF HIGHWAY ENGINEER	DATE	
ORIGINALLY APPROVED	7-03-95	

1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.
- ② See General Note 2 on Stanard Drawing E 801-TCLG-01.



# INDIANA DEPARTMENT OF TRANSPORTATION

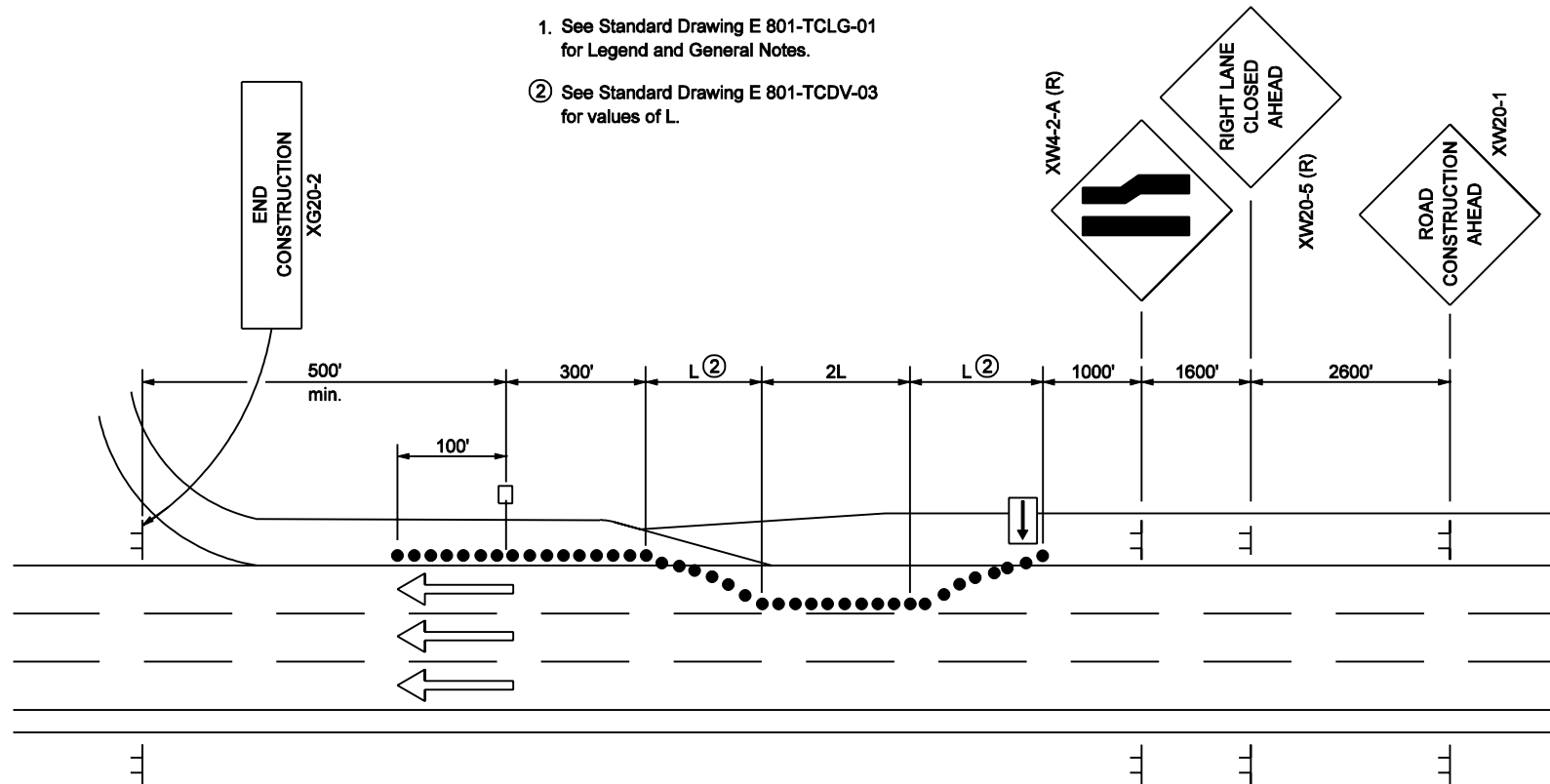
## TRAFFIC CONTROL FOR OVERHEAD SIGN INSTALLATION

MAY 1998

### STANDARD DRAWING NO. E 801-TCLC-15

### GENERAL NOTES

1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.
- ② See Standard Drawing E 801-TCDV-03 for values of L.



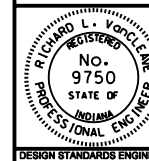
**MULTI-LANE DIVIDED HIGHWAY**

INDIANA DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL  
FOR LANE CLOSURE**

SEPTEMBER 2002

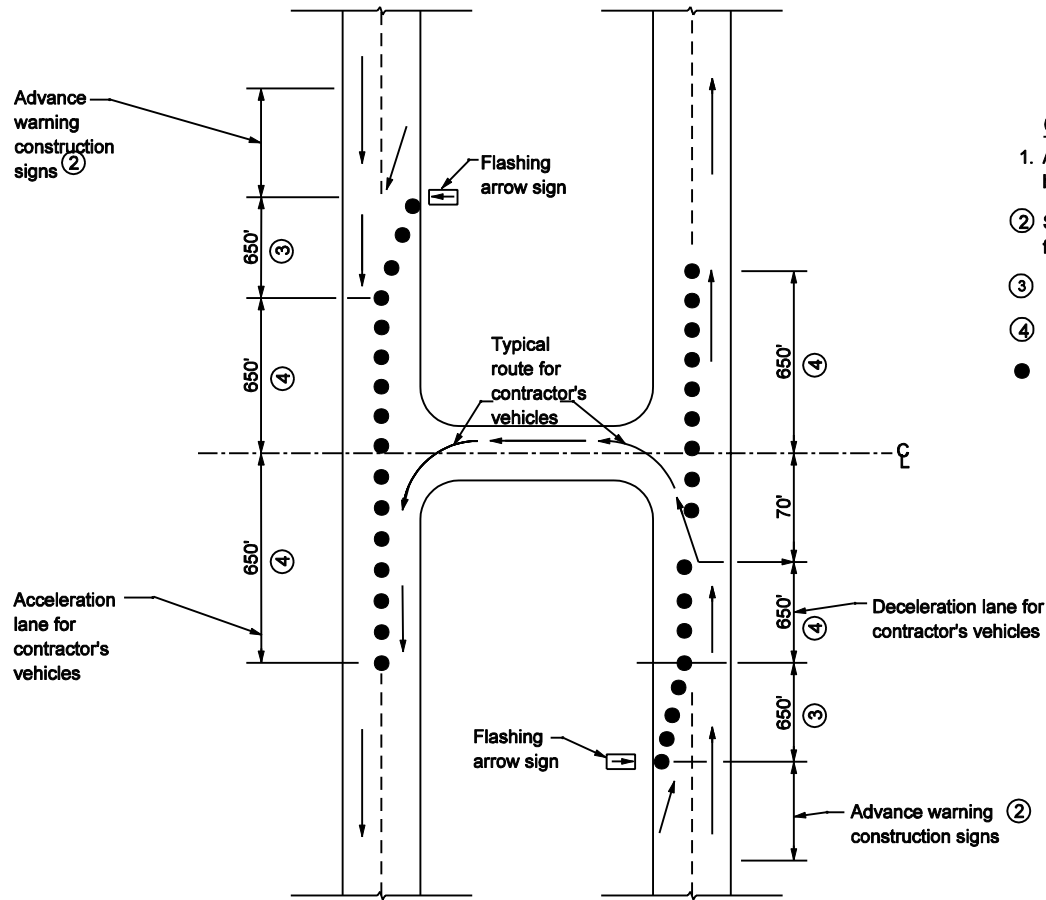
STANDARD DRAWING NO. E 801-TCLC-16



/s/ Richard L. VanCleave 9-03-02  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-03-02  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



### GENERAL NOTES













1. All dimensions not shown shall be field determined.
- ② See Standard Drawing E-801-TCLC-11 for placement of construction signs.
- ③ Maximum spacing shall be 50 ft.
- ④ Maximum spacing shall be 100 ft.
- = Channelizing Device

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY U-TURN FOR CONTRACTOR'S VEHICLES	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCLC-17	
	/s/ Richard L. VanCleave      9-03-02 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      9-03-02 CHIEF HIGHWAY ENGINEER      DATE


## GENERAL NOTES

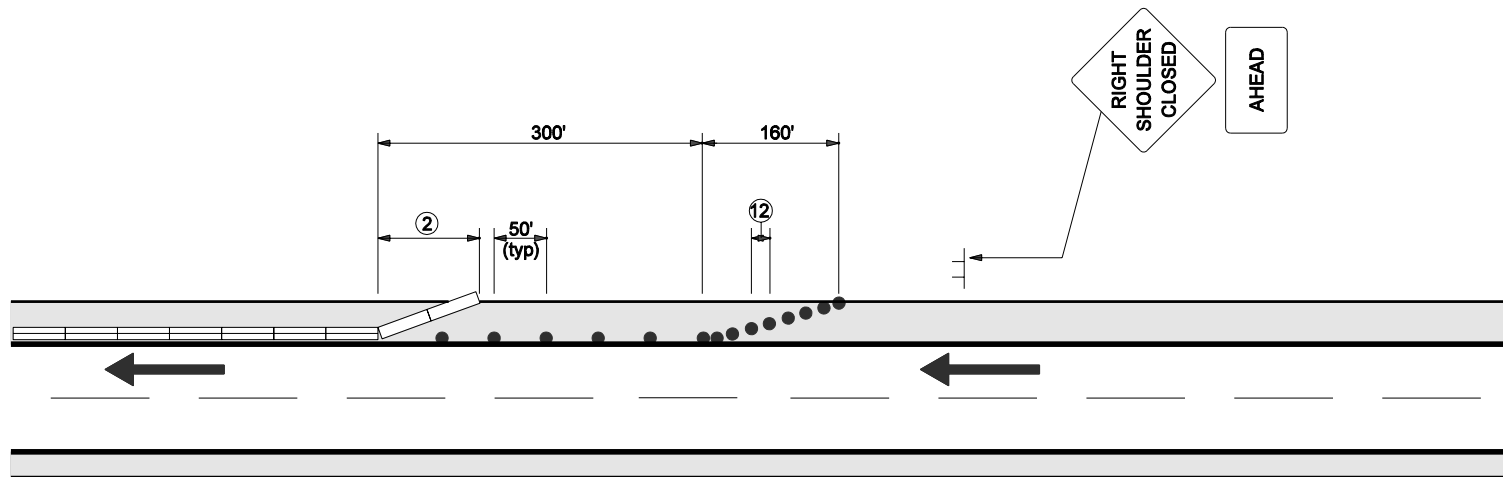
- ① Distances shown are typical except minimum distances may be varied based on field conditions.
2. The spacing of channelizing devices on tangents shall be as follows:
  - a. Where the posted speed limit is 50 m.p.h. or greater, the spacing shall be 100 ft.
  - b. Where the posted speed limit is less than or equal to 45 m.p.h., the spacing shall be 50 ft.
3. The spacing of channelizing devices on tapers shall be numerically equal in feet to the posted speed limit in mph.
4. The flashing arrow sign shall not be placed on a sidewalk. The flashing arrow sign shall be placed at a distance of L/3 from the beginning of the taper.
5. For temporary lane closures during daylight hours, cones or tubular markers may be used in lieu of drums.
6. Temporary pavement markings will not be required for temporary daylight lane closures.
7. Minimum pavement section for 1000 trucks per day or less shall consist of 165 #/syd of HMA Surface, on 330 #/syd of HMA Intermediate, on 935 #/syd of HMA Base, on 8 in subgrade treatment. If the truck count for the crossover is greater than 1000 trucks per day, the required pavement section will be provided elsewhere in the plans.
8. Temporary highway illumination, when specified, shall be as detailed elsewhere in the plans.
- ⑨ Once the crossovers have been removed, this line shall be re-stripped yellow, if the pavement is to again be used for one-way traffic.
- ⑩ For Temporary Crossover Type B, this line shall be removed when the traffic pattern is switched.
- ⑪ The advisory speed plate will not be required when the existing posted speed limit is less than 55 mph.
- ⑫ Spacing of channelizing devices at this location shall be 20 ft.
- ⑬ The "Two-Way Traffic" (XW6-3B) and "Do Not Pass" (R4-1-B) signs shall alternate every 2640 ft throughout the two-lane two-way operation.
- ⑭ For a bridge contract, this distance may be adjusted by the Engineer as required. However, it shall be as close to the minimum as possible.
- ⑮ Once the crossovers have been removed, this line shall be restriped broken white, if the pavement is to again be used for one way traffic.

## LEGEND

	Flagger		Temporary Pavement Marking
	Work area		Removal of pavement markings and prismatic reflectors
	Flashing arrow sign		Typical Sign Standard (Road Closure Sign Assembly)
	Channelizing device		Type III-A or Type III-B Barricades as required
	Police car (optional)		Double Headed Flashing Arrow Sign
	Construction sign and supports		Direction of Traffic
W = Width of offset			

SURFACE AREA OF ONE TYPE A TEMPORARY CROSSOVER SYS	
MEDIAN WIDTH, ft	TYPE A
60	1208
50	1041
40	880
36	814
30	713
26	648





INDIANA DEPARTMENT OF TRANSPORTATION											
<b>TRAFFIC CONTROL LEGEND AND GENERAL NOTES</b>											
<b>MARCH 2006</b>											
<b>STANDARD DRAWING NO. E 801-TCLG-01</b>											
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black; width: 80%;">/s/ Richard L. VanCleave</td> <td style="border-bottom: 1px solid black; width: 20%;">3-01-06</td> </tr> <tr> <td style="font-size: small;">DESIGN STANDARDS ENGINEER</td> <td style="font-size: small;">DATE</td> </tr> <tr> <td colspan="2" style="border-top: 1px solid black; padding-top: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black; width: 80%;">/s/ Richard K. Smutzer</td> <td style="border-bottom: 1px solid black; width: 20%;">3-01-06</td> </tr> <tr> <td style="font-size: small;">CHIEF HIGHWAY ENGINEER</td> <td style="font-size: small;">DATE</td> </tr> </table> </td> </tr> </table>	/s/ Richard L. VanCleave	3-01-06	DESIGN STANDARDS ENGINEER	DATE	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black; width: 80%;">/s/ Richard K. Smutzer</td> <td style="border-bottom: 1px solid black; width: 20%;">3-01-06</td> </tr> <tr> <td style="font-size: small;">CHIEF HIGHWAY ENGINEER</td> <td style="font-size: small;">DATE</td> </tr> </table>		/s/ Richard K. Smutzer	3-01-06	CHIEF HIGHWAY ENGINEER	DATE
/s/ Richard L. VanCleave	3-01-06										
DESIGN STANDARDS ENGINEER	DATE										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black; width: 80%;">/s/ Richard K. Smutzer</td> <td style="border-bottom: 1px solid black; width: 20%;">3-01-06</td> </tr> <tr> <td style="font-size: small;">CHIEF HIGHWAY ENGINEER</td> <td style="font-size: small;">DATE</td> </tr> </table>		/s/ Richard K. Smutzer	3-01-06	CHIEF HIGHWAY ENGINEER	DATE						
/s/ Richard K. Smutzer	3-01-06										
CHIEF HIGHWAY ENGINEER	DATE										
DESIGN STANDARDS ENGINEER											



## NOTES

1. All other applicable traffic control devices shall be utilized where appropriate in addition to those devices shown hereon.
- ② Flared temporary barrier or approved end treatment-flare rate 12:1 desirable.
3. For general notes see Standard Drawing E-801-TCLG-01.
4. Individual channelizing devices may be temporarily relocated or removed, as necessary, to allow access to the construction site by construction vehicles or access to residences or businesses. Tangent area openings shall not exceed 100 feet. Flare area openings shall not exceed 60 feet.

## LEGEND

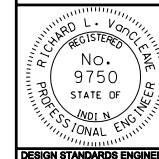
-  — Temporary Traffic Barrier
-  — Drums
-  — Sign
-  — Direction of traffic

INDIANA DEPARTMENT OF TRANSPORTATION

## TRAFFIC CONTROL SHOULDER CLOSURE

MARCH 2006

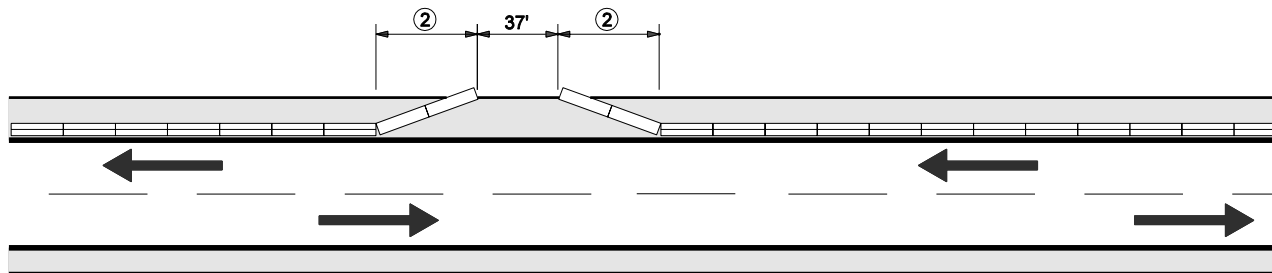
STANDARD DRAWING NO. E 801-TCSC-01



/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE







### NOTES

1. All other applicable traffic control devices shall be utilized where appropriate in addition to those devices shown hereon.
- ② Flared temporary barrier or approved end treatment-flare rate 12:1 desirable.
3. For general notes see Standard Drawing E-801-TCLG-01.

### LEGEND

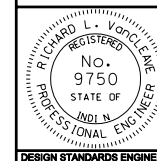
-  — Temporary Traffic Barrier  
 — Direction of traffic

### TWO-WAY-UNDIVIDED

INDIANA DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL  
SHOULDER CLOSURE  
LOCAL ACCESS  
MARCH 2006**

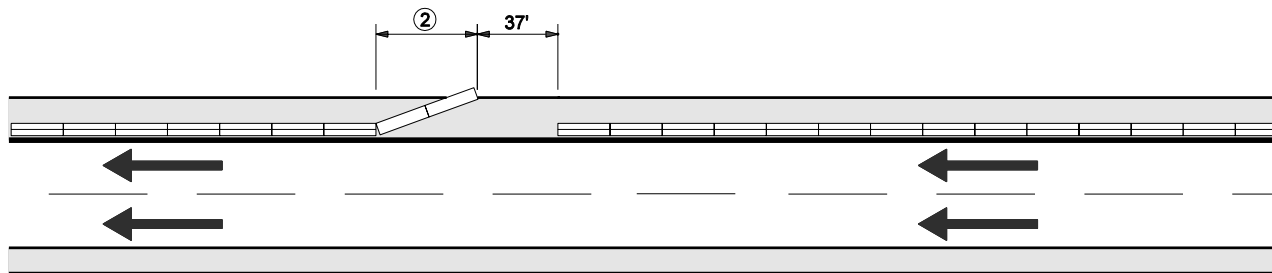
**STANDARD DRAWING NO. E 801-TCSC-02**



/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE



DESIGN STANDARDS ENGINEER



### NOTES

1. All other applicable traffic control devices shall be utilized where appropriate in addition to those devices shown hereon.
- ② Flared temporary barrier or approved end treatment-flare rate 12:1 desirable.
3. For general notes see Standard Drawing E-801-TCLG-01.

### LEGEND

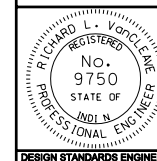
-  — Temporary Barrier  
 — Direction of traffic

### MULTI-LANE-DIVIDED

INDIANA DEPARTMENT OF TRANSPORTATION

**TRAFFIC CONTROL  
SHOULDER CLOSURE  
LOCAL ACCESS  
MARCH 2006**

**STANDARD DRAWING NO. E 801-TCSC-03**



/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



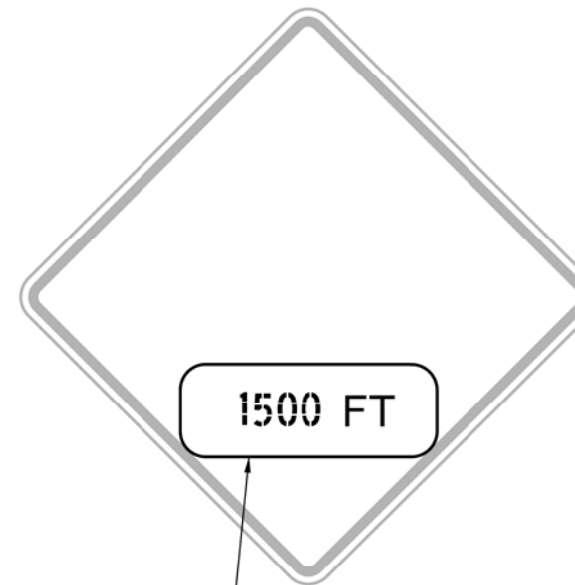
XW20-1  
XW20-1-A (10)



XW20-2 (10)



XW20-3 (10)



W16-2 (3)



XW20-4 (10)



XW21-3-A (10)  
(9)



XW21-4-A (10)

**NOTES:**

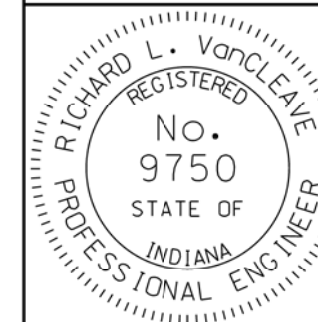
1. Sign XW21-3-A shall be placed as directed where road machinery is operating on or across pavement open to traffic.
2. See Standard Drawing E 801-TCSN-11 for additional general notes.
- ③ A 28 in. x 10 in. metal plate, covered with federal orange reflective material with black numerals designating predetermined distance, may be attached over the word "AHEAD" to more specifically locate the subject hazard.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL  
SIGNS

SEPTEMBER 2010

STANDARD DRAWING NO. E 801-TCSN-01



DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10  
CHIEF HIGHWAY ENGINEER DATE

# GENERAL NOTES

1. See Standard Drawing E 801-TCSN-11 for additional general notes.



XW21-6-A

9



XW21-2  
XW21-2-A

9

1



XW20-7

9

10



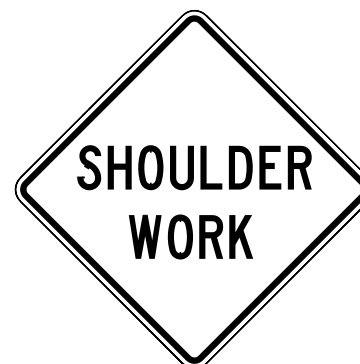
XW21-1

9



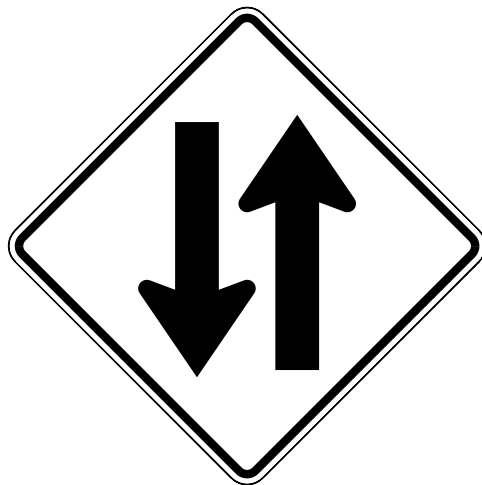
XW20-5 (R,L, or C)

10

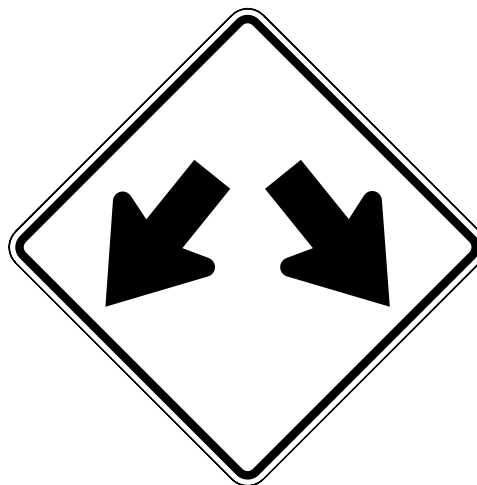


XW21-5-A

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL SIGNS	
SEPTEMBER 1997	
STANDARD DRAWING NO. E 801-TCSN-02	
	DETAILS PLACED IN THIS FORMAT 11-15-99  /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE  /s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 9-02-97



XW6-3-B



XW12-1-C



XM4-9 (R or L)  
XM4-9-B (R or L)

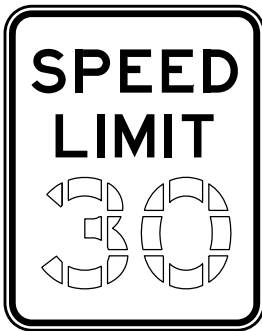


XM4-10 (R or L)

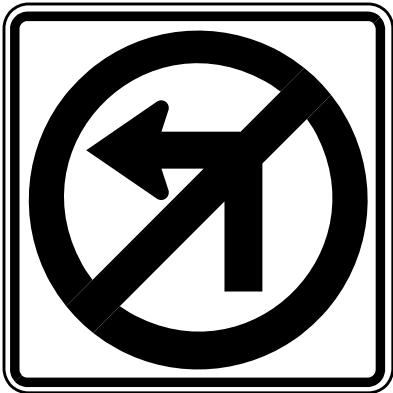
# **GENERAL NOTES**

1. See Standard Drawing E 801-TCSN-11 for additional general notes.

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL SIGNS JUNE 1995	
STANDARD DRAWING NO. E 801-TCSN-03	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 7-03-95



R2-1  
R2-1-B ①



R3-2a  
R3-2c ①



R11-2



R12-1  
R12-1-A ①



R6-1 (R or L)



R6-2-A (R or L)



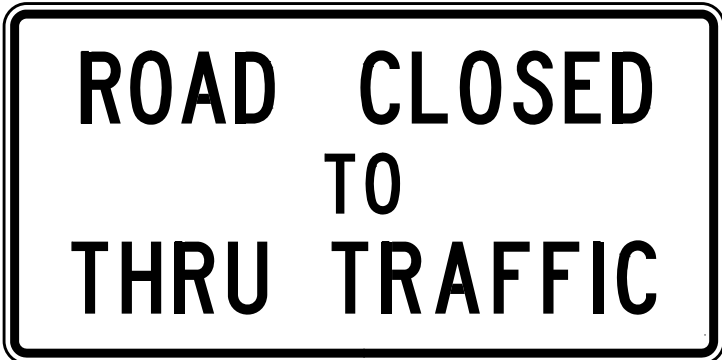
R11-3



R5-1-A  
R5-1-B ①



R4-1  
R4-1-B ①

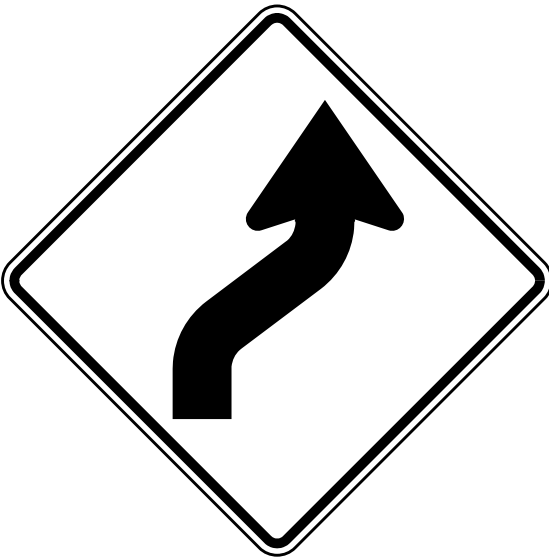


R11-4

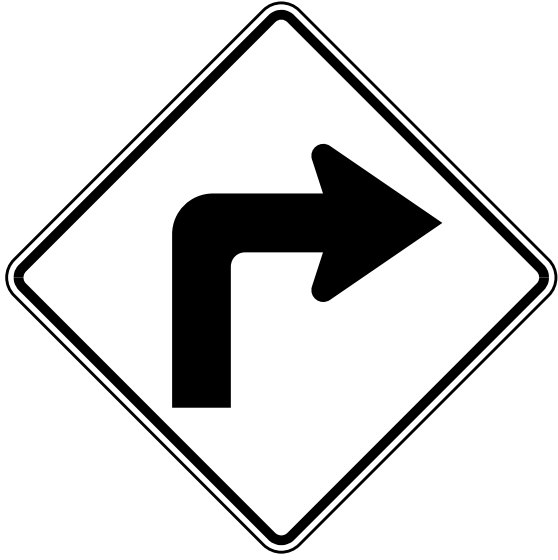
NOTES:

1. Signs R11-2, R11-3, R11-4, R5-1-A and R5-1-B shall be prismatic reflective sheeting background.
2. See Standard Drawing E 801-TCSN-11 for additional general notes.

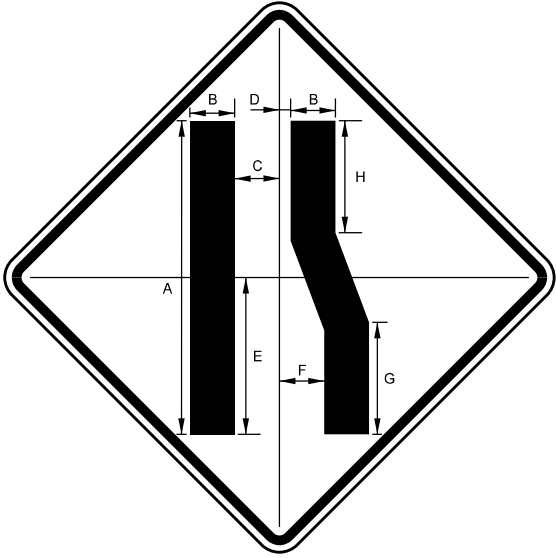
INDIANA DEPARTMENT OF TRANSPORTATION		
TRAFFIC CONTROL SIGNS		
SEPTEMBER 2010		
STANDARD DRAWING NO.		E 801-TCSN-04
	/s/ <i>Richard L. VanCleave</i>	09/01/10
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	09/01/10
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		



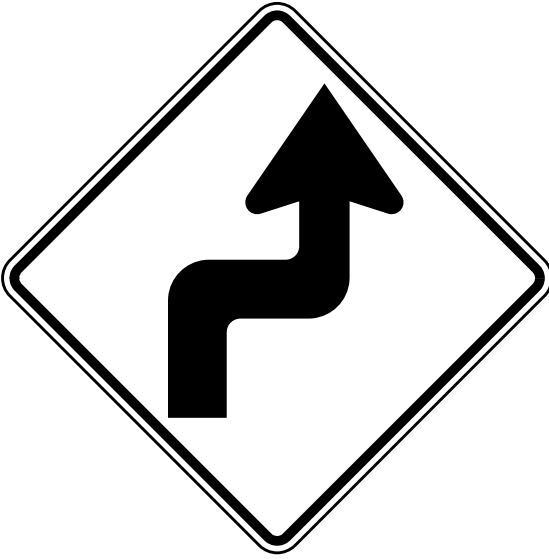
XW1-4-A (R or L)  
XW1-4-B (R or L) ①



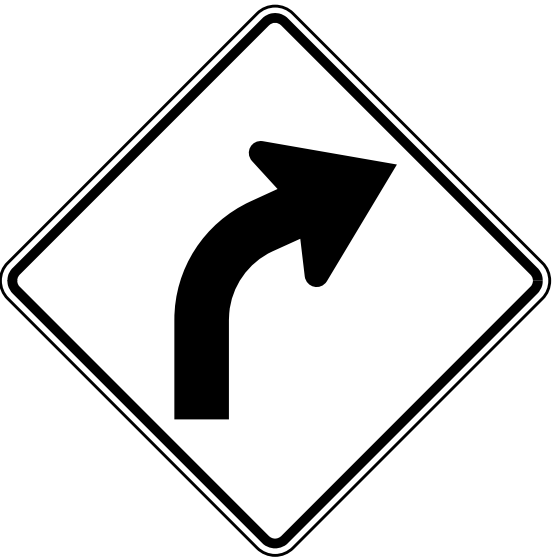
XW1-1-A (R or L)  
XW1-1-B (R or L) ①



XW4-2 (R or L)  
XW4-2-A (R or L) ①



XW1-3-A (R or L)  
XW1-3-B (R or L) ①



XW1-2-A (R or L)  
XW1-2-B (R or L) ①

**NOTE:**

① See Standard Drawing E 801-TCSN-11 for additional general notes.

LANE ENDS		
	XW4-2	XW4-2-A
A	28	37
B	4	5 5/16
C	4	5 1/16
D	1	1 3/8
E	14	16 5/8
F	4	5 5/16
G	10	13 5/16
H	10	13 5/16

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL  
SIGNS

SEPTEMBER 2010

STANDARD DRAWING NO. E 801-TCSN-05

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave

09/01/10

DESIGN STANDARDS ENGINEER

DATE

/s/ Mark A. Miller

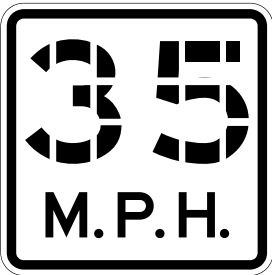
09/01/10

CHIEF HIGHWAY ENGINEER

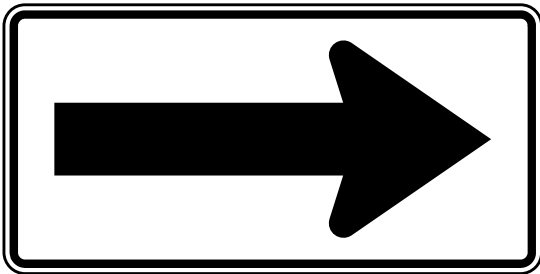
DATE

NOTE:

① See Standard Drawing E 801-TCSN-11 for additional general notes.



XW13-1-A  
(To be used below a  
warning sign only.)



XW1-6  
XW1-6-A ①

INDIANA DEPARTMENT OF TRANSPORTATION		
TRAFFIC CONTROL SIGNS		
SEPTEMBER 2011		
STANDARD DRAWING NO.		E 801-TCSN-06
	/s/ <i>Richard L. VanCleave</i>	09/01/11
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	09/01/11
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		



XW3-5



XW3-5a



XW6-2a-A  
XW6-2a-B ①



XW8-3-A





XW8-2-A  
XW8-2-B (1)



XW8-6-A  
XW8-6-B (1)



XW8-1-A  
XW8-1-B (1)




XW8-4-A  
XW8-4-B (1)

- GENERAL NOTES**
1. See Standard Drawing E 801-TCSN-11 for additional general notes.



XW9-2-A (R or L)

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL SIGNS	
JUNE 1995	
STANDARD DRAWING NO. E 801-TCSN-07	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 7-03-95



XW105-1-A



XW109-1



XW20-1a



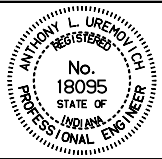
XW106-2-A



XW106-1-A

#### GENERAL NOTES

1. See Standard Drawing E 801-TCSN-11 for additional general notes.

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL SIGNS	
JUNE 1995	
STANDARD DRAWING NO. <b>E 801-TCSN-08</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ <i>Anthony L. Uremovich</i> 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ <i>Fiروز Zandi</i> 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 7-03-95



XW9-1-A (R or L)  
XW9-1-B (R or L) ①



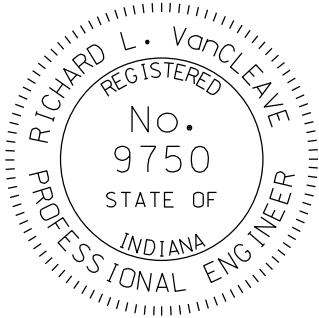
XW103-1



XW104-1  
To be used below an  
XW103-1 Sign only.

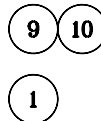
NOTE:

- ① See Standard Drawing E 801-TCSN-11 for additional general notes.

INDIANA DEPARTMENT OF TRANSPORTATION		
TRAFFIC CONTROL SIGNS		
SEPTEMBER 2010		
STANDARD DRAWING NO.		E 801-TCSN-09
	<i>/s/ Richard L. VanCleave</i> 09/01/10	
	DESIGN STANDARDS ENGINEER	DATE
	<i>/s/ Mark A. Miller</i> 09/01/10	
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		



XW101-1  
XW101-1-A



XW102-1  
XW102-1-A



XW108-1  
XW108-1-A




# GENERAL NOTES

1. See Standard Drawing E 801-TCSN-11 for additional general notes.

INDIANA DEPARTMENT OF TRANSPORTATION		
<b>TRAFFIC CONTROL SIGNS</b>		
JUNE 1995		
<b>STANDARD DRAWING NO. E 801-TCSN-10</b>		
	DETAILS PLACED IN THIS FORMAT 11-15-99	
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE	
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE	
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 7-03-95	

GENERAL NOTES:

- ① This sign shall be used on expressways, freeways, and other roadways with design speeds of 50 mph. or more.
- 2. The minimum vertical and horizontal clearances for construction signs shall be as on Standard Drawing E 801-TCDV-05.
- 3. The minimum horizontal clearance for construction signs on curbed roadway sections shall be 2'-0" from the face of the curb to the near edge of the sign.
- 4. The minimum depth for wood or steel posts shall be 4 ft.
- 5. See Standard Drawing E 801-TCDV-08 for U-Channel Steel Post Splice Detail.
- ⑨ This sign shall be removed, covered, or turned to face away from the roadway during non-working hours.
- ⑩ This sign may be ordered to read "500 FT", "1000 FT", or "1500 FT" in place of the word "Ahead". Such signs may be used in place of, or in conjunction with, the indicated sign.

INDIANA DEPARTMENT OF TRANSPORTATION		
CONSTRUCTION SIGNS GENERAL NOTES  SEPTEMBER 2010		
STANDARD DRAWING NO.      E 801-TCSN-11		
	<i>/s/ Richard L. VanCleave</i>	<i>09/01/10</i>
	DESIGN STANDARDS ENGINEER	DATE
	<i>/s/ Mark A. Miller</i>	<i>09/01/10</i>
DESIGN STANDARDS ENGINEER	CHIEF HIGHWAY ENGINEER	DATE

SIGN NUMBER	SIGN MESSAGE	POST DESIGN		SIGN SIZE	SIGN COLOR		BORDER WIDTH	MARGIN WIDTH	LETTER HEIGHT SERIES-LINE 1	LETTER HEIGHT SERIES-LINE 2	LETTER HEIGHT SERIES-LINE 3	WORD OR LINE ①	PCT. ①	ARROW SIZE		CORNER RADIUS	NUMBER OF POSTS	
		4 x 4 WOOD	STEEL		BACKGROUND	COPY								HEAD	SHAFT		ONE	TWO
XG20-1	"Road Construction Next ____ Miles"	*	B	60 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C	6 - Series C					2 1/4		X
XG20-2	"End Construction"	*	B	60 x 24	Orange	Black	1/2	3/8	6 - Series C	6 - Series C						1 1/2		X
XG20-2a	"End Road Work"	*	B	48 x 18	Orange	Black	1/2	3/8	6 - Series C	6 - Series C						1 1/2		X
XG20-4	"Pilot Car Follow Me"	--	--	36 x 18	Orange	Black	1/2	3/8	5 - Series C	5 - Series C						1 1/2		
XG20-5	(Route number or) "Lane Closed" __ (date)	*	B	48 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C	6 - Series C					2 1/4		X
XG20-5-B	"Worksite" plate	---	---	48 x 16	Orange	Black	1/2	3/8	8 - Series C							1 1/2	----	----
XW20-6	"Lane Restrictions On Or After *** ** 2007	*	B	60 x 30	Orange	Black	3/4	1/2	5 - Series C	5 - Series C	4 - Series C					1 7/8		X
XW20-6a	"Lane Restrictions On Or After *** ** 2007	*	B	72 x 36	Orange	Black	7/8	5/8	6 - Series C	6 - Series C	5 - Series C					2 1/4		X
XM4-9 (R or L)	"Detour" (above black arrow)	*	A	30 x 24	Orange	Black	1/2	3/8	5 - Series D			"Detour"		7 x 8	11 x 3 1/2	1 1/2		X
XM4-9-B (R or L)	"Detour" (above black arrow)	*	B	60 x 48	Orange	Black	1 1/4	3/8	10 - Series D			"Detour"		14 3/4 x 16	21 3/4 x 7	3		X
XM4-10 (R or L)	"Detour" (inside orange arrow)	*	B	48 x 18	Black & Orange	Black	----	3/8	6 - Series D					12 x 13 3/8	29 3/4 x 8	1 1/2		X
XW1-1-A (R or L)	(Turn symbol)	*	A	36 x 36	Orange	Black	3/4	1/2						10 5/8 x 12	5 1/4	2 1/4		X
XW1-1-B (R or L)	(Turn symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4						14 1/8 x 16	7	3		X
XW1-2-A (R or L)	(Curve symbol)	*	A	36 x 36	Orange	Black	3/4	1/2						10 5/8 x 12	5 1/4	2 1/4		X
XW1-2-B (R or L)	(Curve symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4						14 1/8 x 16	7	3		X
XW1-3-A (R or L)	(Reverse turn symbol)	*	A	36 x 36	Orange	Black	3/4	1/2						10 5/8 x 12	5 1/4	2 1/4		X
XW1-3-B (R or L)	(Reverse turn symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4						14 1/8 x 16	7	3		X
XW1-4-A (R or L)	(Reverse curve symbol)	*	A	36 x 36	Orange	Black	3/4	1/2						10 5/8 x 12	5 1/4	2 1/4		X
XW1-4-B (R or L)	(Reverse curve symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4						14 1/8 x 16	7	3		X
XW1-6	(Single headed arrow)	*	B	48 x 24	Orange	Black	3/4	3/4						13 1/8 x 15	26 x 6 1/2	1 1/2		X
XW1-6-A	(Single headed arrow)	*	B	60 x 30	Orange	Black	3/4	1/2						16 3/8 x 18	32 1/2 x 8	2 1/4		X
XW4-2 (R or L)	(Lane ends merge ____ symbol)	*	A	36 x 36	Orange	Black	3/4	1/2	See Standard Sheet 3A Detours							2 1/4		X
XW4-2-A (R or L)	(Lane ends merge ____ symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4	See Standard Sheet 3A Detours							1 1/2		X
XW6-2a-A	(Divided highway ends symbol)	*	A	36 x 36	Orange	Black	3/4	1/2	5 - Series D	5 - Series D	5 - Series D					2 1/4		X
XW6-2a-B	(Divided highway ends symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series D	7 - Series D	7 - Series D					3		X
XW3-5-A	Arrow - "Speed Limit ____"	*	A	36 x 36	Orange	Black	7/8	5/8	3 - Series E	3 - Series E	12 - C					2 1/4		X
XW3-5-B	Arrow - "Speed Limit ____"	*	B	48 x 48	Orange	Black	1 1/4	3/4	4 - Series E	4 - Series E	15 C					3		X
XW3-5a-A	" ____ - MPH - Speed Zone Ahead"	*	A	36 x 36	Orange	Black	7/8	5/8	5 - Series C	5 - Series C	5 - Series C					2 1/2		X
XW3-5a-B	" ____ - MPH - Speed Zone Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series C	7 - Series C	7 - Series C					3		X

\*Wood post permitted.

NOTES:

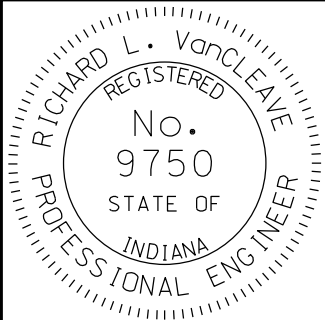
- ① Spacing between letters of this word or line shall be reduced by this percentage as shown in the FHWA document, Standard Highway Signs.
2. See Standard Drawing E 801-TCSN-11 for additional general notes.
3. All dimensions are in inches.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN DESIGN DETAILS  
(Sheet 1 of 2)

SEPTEMBER 2011

STANDARD DRAWING NO. E 801-TCSN-12



/s/ Richard L. VanCleave 09/01/11

DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/11

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

SIGN NUMBER	SIGN MESSAGE	POST DESIGN		SIGN SIZE	SIGN COLOR		BORDER WIDTH	MARGIN WIDTH	LETTER HEIGHT SERIES-LINE 1	LETTER HEIGHT SERIES-LINE 2	LETTER HEIGHT SERIES-LINE 3	WORD OR LINE ①	PCT. ①	ARROW SIZE		CORNER RADIUS	NUMBER OF POSTS	
		4 x 4 WOOD	STEEL		BACKGROUND	COPY								HEAD	SHAFT		ONE	TWO
XW6-3-B	(Two way traffic symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4						11 5/8 x 13 3/4	23 1/2 x 6	3		X
XW8-1-A	"Bump"	*	A	36 x 36	Orange	Black	3/4	1/2	10 - Series D							2 1/4		X
XW8-1-B	"Bump"	*	B	48 x 48	Orange	Black	1 1/4	3/4	12 - Series D							3		X
XW8-2-A	"Dip"	*	A	36 x 36	Orange	Black	3/4	1/2	10 - Series E							2 1/4		X
XW8-2-B	"Dip"	*	B	48 x 48	Orange	Black	1 1/4	3/4	12 - Series E							3		X
XW8-3-A	"Pavement Ends"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C						2 1/4		X
XW8-4-A	"Soft Shoulder"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C						2 1/4		X
XW8-4-B	"Soft Shoulder"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series C	8 - Series C						3		X
XW8-6-A	"Truck Crossing"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C						2 1/4		X
XW8-6-B	"Truck Crossing"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series C	8 - Series C						3		X
XW9-1-A (R or L)	" ____ Lane Ends"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series D	6 - Series D	6 - Series D					2 1/4		X
XW9-1-B (R or L)	" ____ Lane Ends"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series D	8 - Series D	8 - Series D					3		X
XW9-2-A (R or L)	"Lane Ends Merge ____"	*	B	48 x 48	Orange	Black	1 1/4	3/4	6 - Series C	8 - Series D	8 - Series D					2 1/4		X
XW12-1-C	(Double headed arrow)	*	B	48 x 48	Orange	Black	1 1/4	3/4						12 1/2 x 15	12 x 5 1/4	3		X
XW13-1-A	" ____ MPH" (Advisory speed plate)	*	A	24 x 24	Orange	Black	1/2	3/8	10 - Series E	4 - Series E						1 1/2	----	----
XW20-1	"Road Construction Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series C	7 - Series C	7 - Series C	"Construction"	25			3		X
XW20-1-A	"Road Construction Ahead"	*	B	60 x 60	Orange	Black	1 1/2	1	8 - Series C	8 - Series C	8 - Series C	"Construction"	25			95		X
XW20-1a	"Road Repairs Next ____ Miles"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series C	8 - Series C	6 - Series C					3		X
XW20-2	"Detour Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series D	8 - Series D		"Detour"	25			3		X
XW20-3	"Road Closed Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series D	7 - Series D	7 - Series D					3		X
XW20-4	"One Lane Road Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series C	7 - Series C	7 - Series C					3		X
XW20-5 (R, C, or L)	" ____ Lane Closed Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	6 - Series C	6 - Series C	6 - Series C		2			3		X
XW20-7a-A	(Flagger symbol)	*	B	48 x 48	Orange	Black	1 1/4	3/4								1 1/2		X
XW21-1a	(Workers symbol)	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series D							2 1/4		X
XW21-2	"Fresh Oil"	*	A	30 x 30	Orange	Black	3/4	3/8	6 - Series D	6 - Series D		"Fresh"	2/4			1 7/8	X	
XW21-2-A	"Fresh Oil"	*	A	36 x 36	Orange	Black	3/4	1/2	7 - Series D	7 - Series D		"Fresh"	3/4			2 1/4		X
XW21-3-A	"Road Machinery Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series D	7 - Series D	7 - Series D	"Machinery"	25			3		X
XW21-4-A	"Road Work Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series D	7 - Series D	7 - Series D					3		X
XW21-5-A	"Shoulder Work"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C		"Shoulder"	1			2 1/4		X
XW21-6-A	"Survey Crew"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C						2 1/4		X

\*Wood post permitted.

NOTES:


- ① Spacing between letters of this word or line shall be reduced by this percentage as shown in the FHWA document, Standard Highway Signs.
2. See Standard Drawing E 801-TCSN-11 for additional general notes.
3. All dimensions are in inches.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN DESIGN DETAILS  
(sheet 2 of 2)

SEPTEMBER 2011

STANDARD DRAWING NO. E 801-TCSN-12A



DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave09/01/11

DESIGN STANDARDS ENGINEERDATE

/s/ Mark A. Miller09/01/11

CHIEF HIGHWAY ENGINEERDATE

SIGN NUMBER	SIGN MESSAGE	POST DESIGN		SIGN SIZE	SIGN COLOR		BORDER WIDTH	MARGIN WIDTH	LETTER HEIGHT SERIES-LINE 1	LETTER HEIGHT SERIES-LINE 2	LETTER HEIGHT SERIES-LINE 3	LETTER HEIGHT SERIES-LINE 4	ARROW SIZE		CORNER RADIUS	NO. OF POSTS	
		4 x 4 WOOD	STEEL		BACKGROUND	COPY							HEAD	SHAFT		ONE	TWO
XW101-1	"Mowing Crews Ahead"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C	6 - Series C				2 1/4		X
XW101-1-A	"Mowing Crews Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series C	8 - Series C	8 - Series C				3		X
XW102-1	"Mowing Crews Next ____ Miles"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C	4 - Series C	4 - Series C			2 1/4		X
XW102-1-A	"Mowing Crews Next ____ Miles"	*	B	48 x 48	Orange	Black	1 1/4	3/4	8 - Series C	8 - Series C	6 - Series C	6 - Series C			3		X
XW103-1	"Watch For Stopped Traffic"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series C	7 - Series C	7 - Series C				3		X
XW104-1	"Overhead Sign Installation"	*	B	60 x 24	Orange	Black	1/2	3/8	6 - Series C	6 - Series C					1 1/2		X
XW105-1-A	"Right Lane Exit Open"	*	B	48 x 48	Orange	Black	1 1/4	3/4	6 - Series C	6 - Series C					3		X
XW106-1-A	"Exit Closed"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series C	7 - Series C					3		X
XW106-2-A	"Exit Open"	*	B	48 x 48	Orange	Black	1 1/4	3/4	7 - Series C	7 - Series C					3		X
XW108-1	"Utility Work Ahead"	*	A	36 x 36	Orange	Black	3/4	1/2	6 - Series D	6 - Series D	6 - Series D				2 1/4		X
XW108-1-A	"Utility Work Ahead"	*	B	48 x 48	Orange	Black	1 1/4	3/4	6 - Series C	6 - Series C	6 - Series C				3		X
XW109-1	"Exit" (above black arrow)	*	B	48 x 48	Orange	Black	1 1/4	3/4	12 - Series D						3		X
R2-1	"Speed limit _____"	*	A	24 x 30	White	Black	1/2	3/8	4 - Series E	4 - Series E	10 - Series E				1 1/2	X	
R2-1-B	"Speed limit _____"	*	B	48 x 60	White	Black	1 1/4	3/4	8 - Series E	8 - Series E	16 - Series E				3		X
R3-2-A (R or L)	(No ____ turn symbol)	*	A	30 x 30	White	Black	3/4	3/8							2	X	
R3-2-C (R of L)	(No ____ turn symbol)	*	B	48 x 48	White	Black	1 1/4	3/4							3		X
R4-1	"Do Not Pass"	*	A	24 x 30	White	Black	1/2	3/8	6 - Series D	6 - Series D	5 - Series D				1 7/8	X	
R4-1-B	"Do Not Pass"	*	B	48 x 60	White	Black	1 1/4	3/4	10 - Series D	10 - Series D	10 - Series D				3		X
R5-1-A	"Do Not Enter" (inside symbol)	*	A	36 x 36	Red	White	Radius 17 1/2		5 - Series D	6 x 30 Bar	5 - Series D				2 1/4		X
R5-1-B	"Do Not Enter" (inside symbol)	*	B	48 x 48	Red	White	Radius 23 1/2		6 - Series D	8 x 40 Bar	6 - Series D				3		X
R6-1 (R or L)	"One Way" (inside white arrow)	*	A	36 x 36	Black & White	Black	----	3/8	4 - Series D				7 1/2 x 8 1/2	22 1/4 x 5 1/4	1 1/2		X
R6-2-A (R or L)	"One Way" (above black arrow)	*	A	24 x 30	White	Black	1/2	3/8	6 - Series D	6 - Series D			5 1/4 x 6	8 x 2 1/4	1 1/2	X	
R11-2	"Road Closed"	*	B	48 x 30	White	Black	3/4	3/8	8 - Series D	8 - Series D					1 7/8		X
R11-3	"Road Closed ____ Miles Ahead "Local Traffic Only"	*	B	60 x 30	White	Black	3/4	3/8	6 - Series C	5 - Series C	4 - Series C				1 7/8		X
R11-4	"Road Closed To Thru Traffic"	*	B	60 x 30	White	Black	3/4	3/8	6 - Series C	5 - Series C	6 - Series C				1 7/8		X
R12-1	"Weight Limit ____ Tons"	*	A	24 x 30	White	Black	1/2	3/8	4 - Series D	4 - Series D	5 - Series E	5 - Series D			1 1/2	X	
R12-1-A	"Weight Limit ____ Tons"	----	B	36 x 48	White	Black	3/4	1/2	6 - Series D	6 - Series D	8 - Series E	10 - Series D			2 1/4		X
S 4-4	"When Flashing" plaque	*	----	48 x 20	White	Black	1/2	3/8	5 - Series D	5 - Series D					1 1/2	----	----
R2-Y12	"End Work Site Speed Limit"	*	A	24 x 36	White	Black	1/2	3/8	4 - Series D	4 - Series D	4 - Series D	4 - Series D			1 1/2	X	
R2-Y12-B	"End Work Site Speed Limit"	*	B	36 x 54	White	Black	1 1/4	3/4	6 - Series D	6 - Series D	6 - Series D	6 - Series D			3		X

\* Wood post permitted.

NOTES:

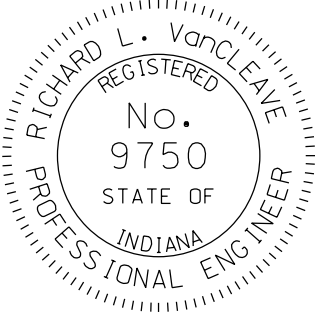
1. See Standard Drawing E 801-TCSN-11 for General Notes.
2. All dimensions are in inches.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN DESIGN DETAILS

SEPTEMBER 2012

STANDARD DRAWING NO. E 801-TCSN-13



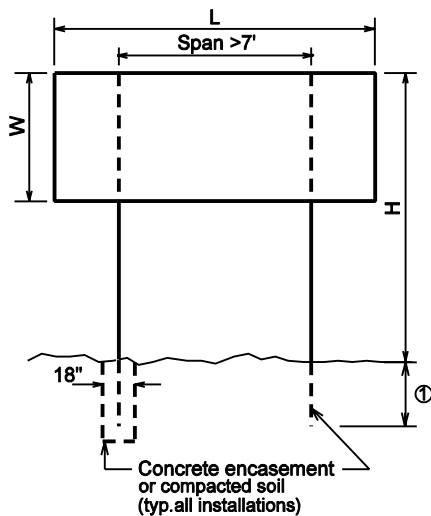
/s/ Richard L. VanCleave09/04/12

SUPERVISOR, ROADWAY STANDARDSDATE

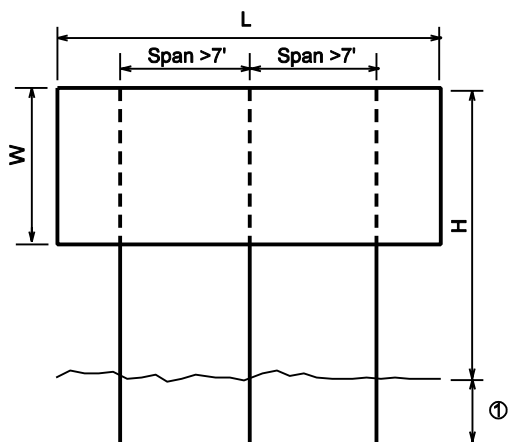
/s/ Mark A. Miller09/04/12

CHIEF ENGINEERDATE

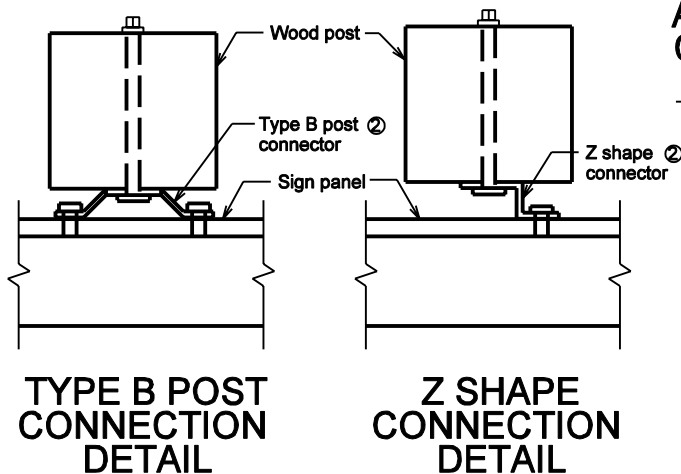
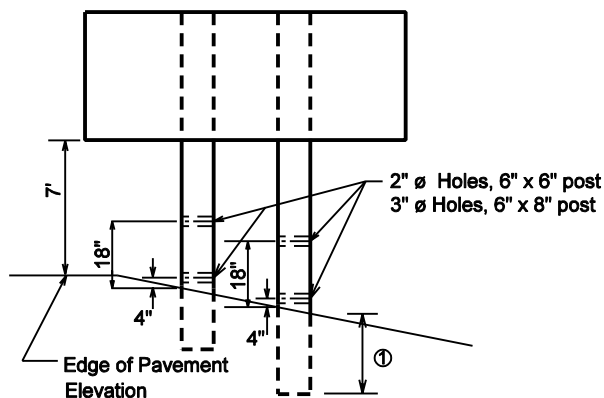




**2 - Post Installation**



**3 - Post Installation**

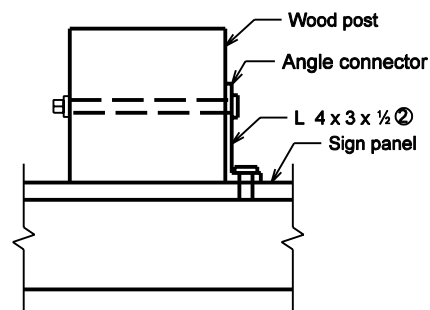


**TYPE B POST CONNECTION DETAIL**

**Z SHAPE CONNECTION DETAIL**

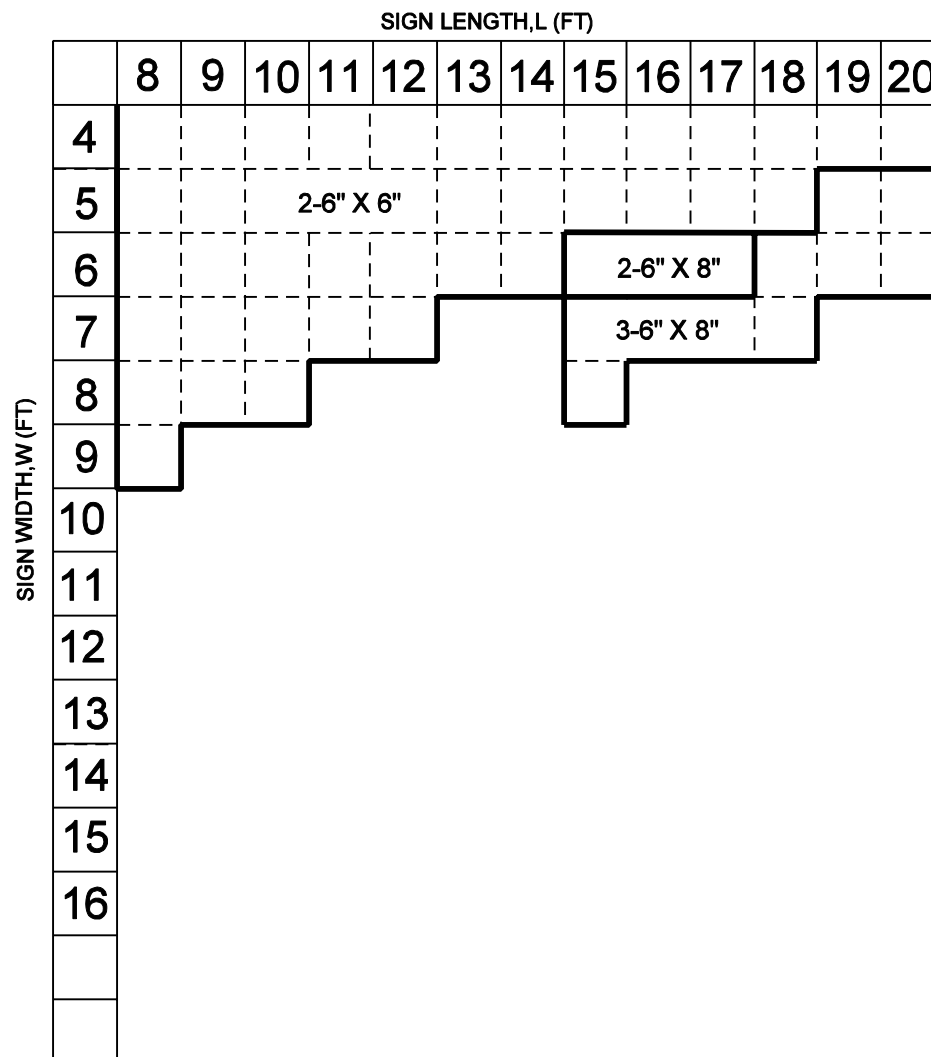
**NOTES**

- ① This dimension is  $H/10 + 3$  feet or a minimum of 5 feet.
- ② The length of each of these pieces equals  $W$ .
3. See standard drawing E 801-TCSN-15 for post size and number of posts required.



**ANGLE SHAPE CONNECTION DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY PANEL SIGN BREAK-AWAY POST INSTALLATION	
MARCH 2002	
STANDARD DRAWING NO. E 801-TCSN-14	
	/s/ Richard L. VanCleave DESIGN STANDARDS ENGINEER DATE 3-01-02
	/s/ Richard K. Smutzer CHIEF HIGHWAY ENGINEER DATE 3-01-02



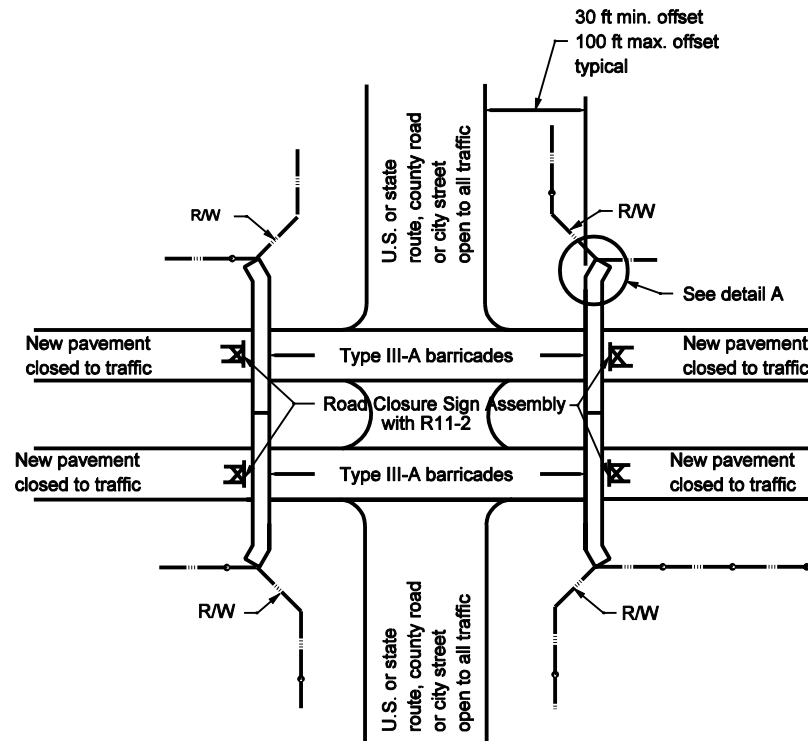
**NOTES:**

No more than one post can be located in a 7 foot wide path.

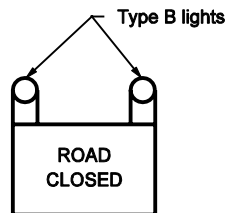
INDIANA DEPARTMENT OF TRANSPORTATION	
WOOD POST DESIGN FOR TEMPORARY PANEL SIGNS	
MARCH 2002	
STANDARD DRAWING NO. E 801-TCSN-15	
	/s/ Richard L. VanCleave      3-01-02 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      3-01-02 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	

## GENERAL NOTES

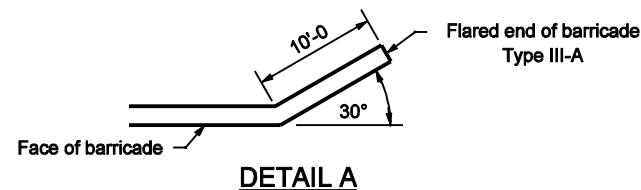
1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



### TEMPORARY CLOSURE OF BOTH NEW LANES OF PAVEMENT OF A DUAL LANE FACILITY



R 11-2

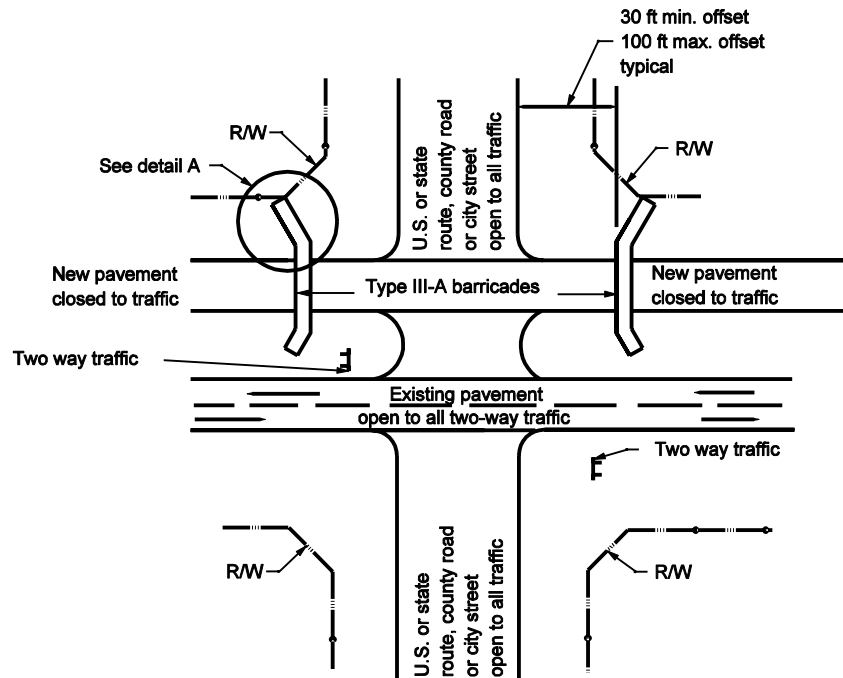


DETAIL A

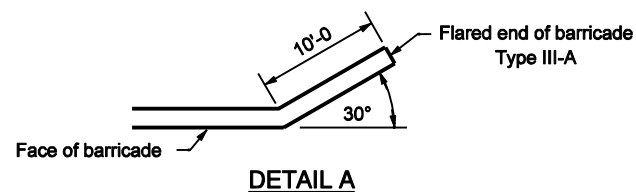
INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CLOSURES	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-01	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

## GENERAL NOTES

1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



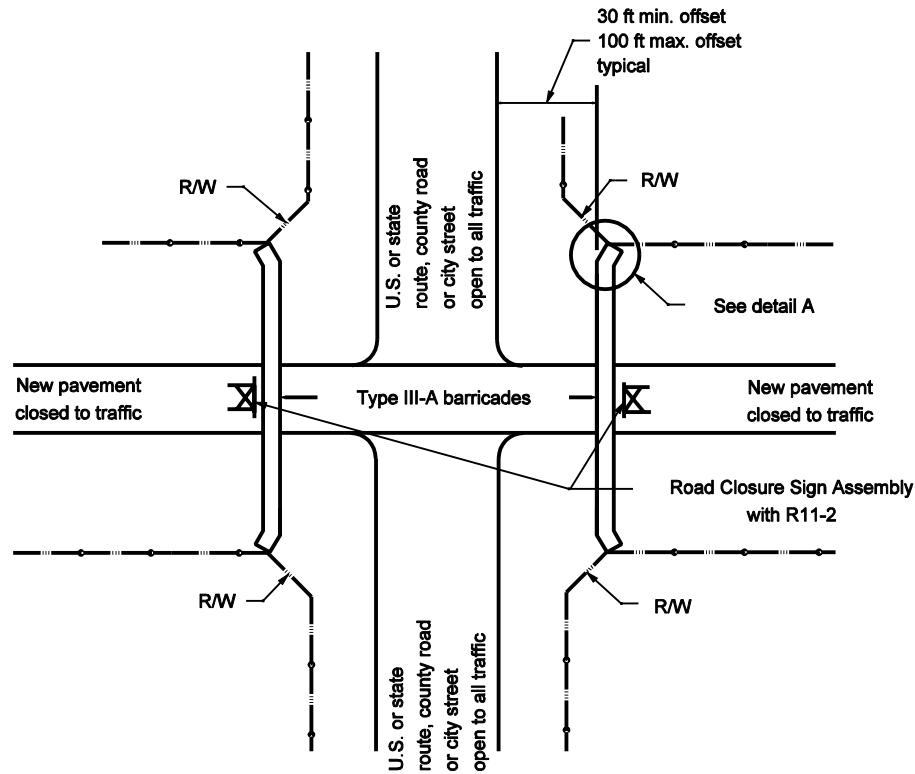
**TEMPORARY CLOSURE OF ONE NEW  
LANE OF PAVEMENT OF A DUAL  
LANE FACILITY**



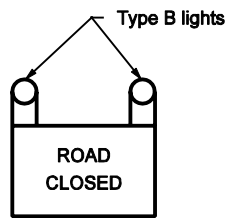
INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CLOSURES	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-02	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

# GENERAL NOTES

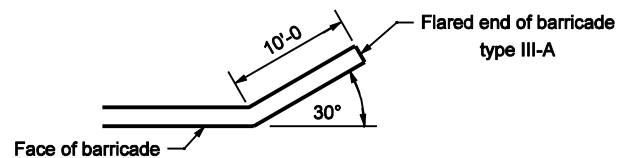
1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



TEMPORARY CLOSURE OF NEW PAVEMENT



R 11-2

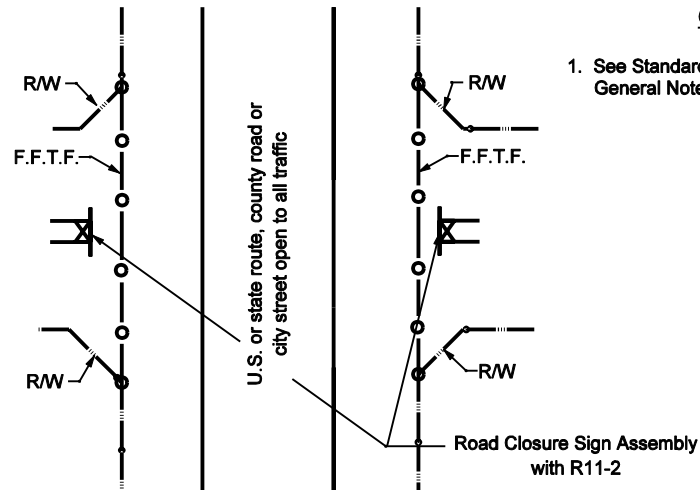


DETAIL A

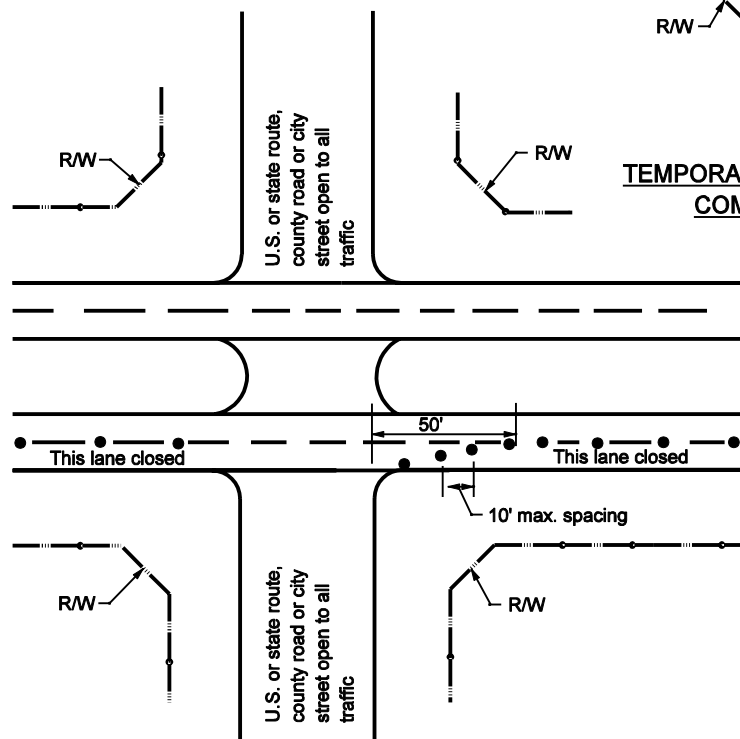
INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CLOSURES	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-03	
	/s/ Richard L. VanCleave      9-03-02 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      9-03-02 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	

# GENERAL NOTES

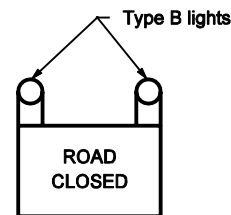
1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



## TEMPORARY CLOSURE FOR PROJECT FOLLOWING COMPLETION OF GRADING CONTRACT



## TEMPORARY CLOSURE OF A SINGLE LANE OF A DUAL LANE FACILITY

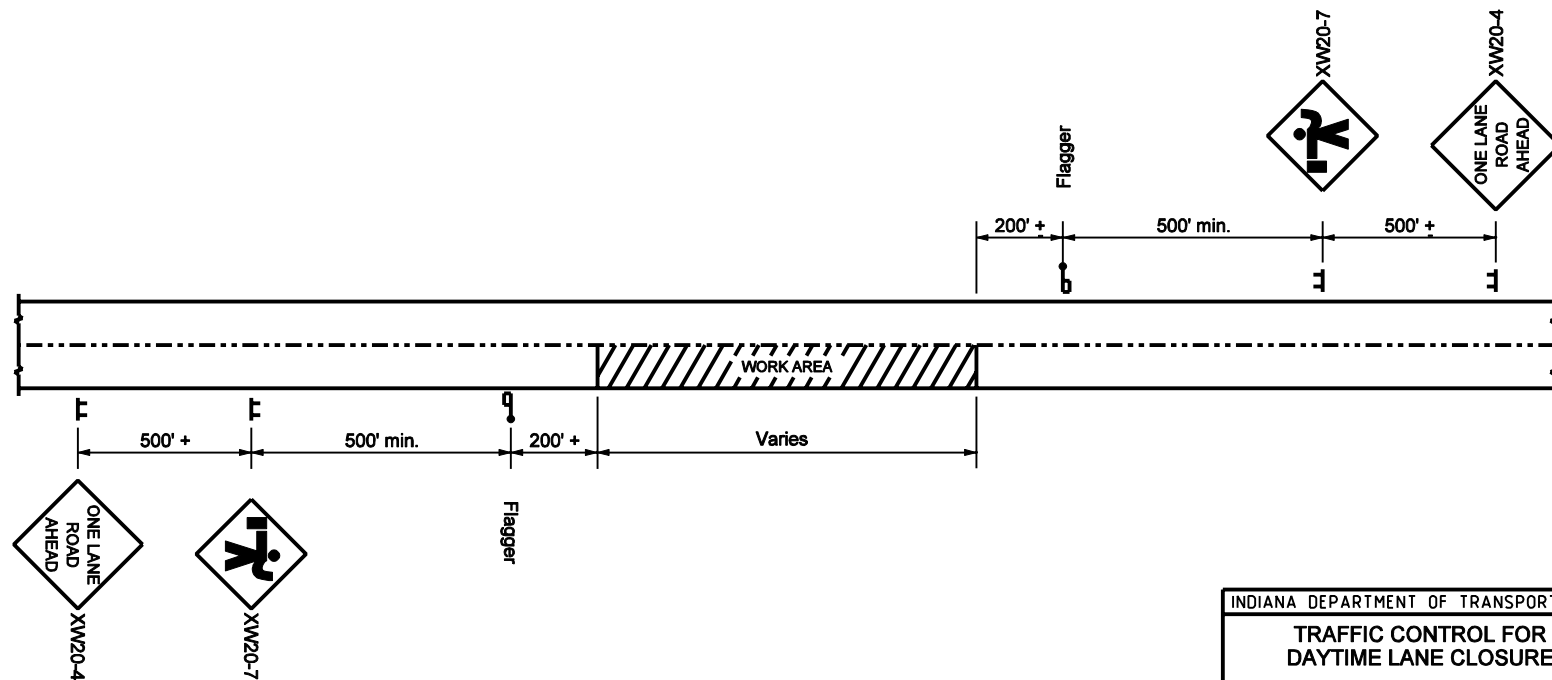


R 11-2

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CLOSURES	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-04	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

**NOTES:**

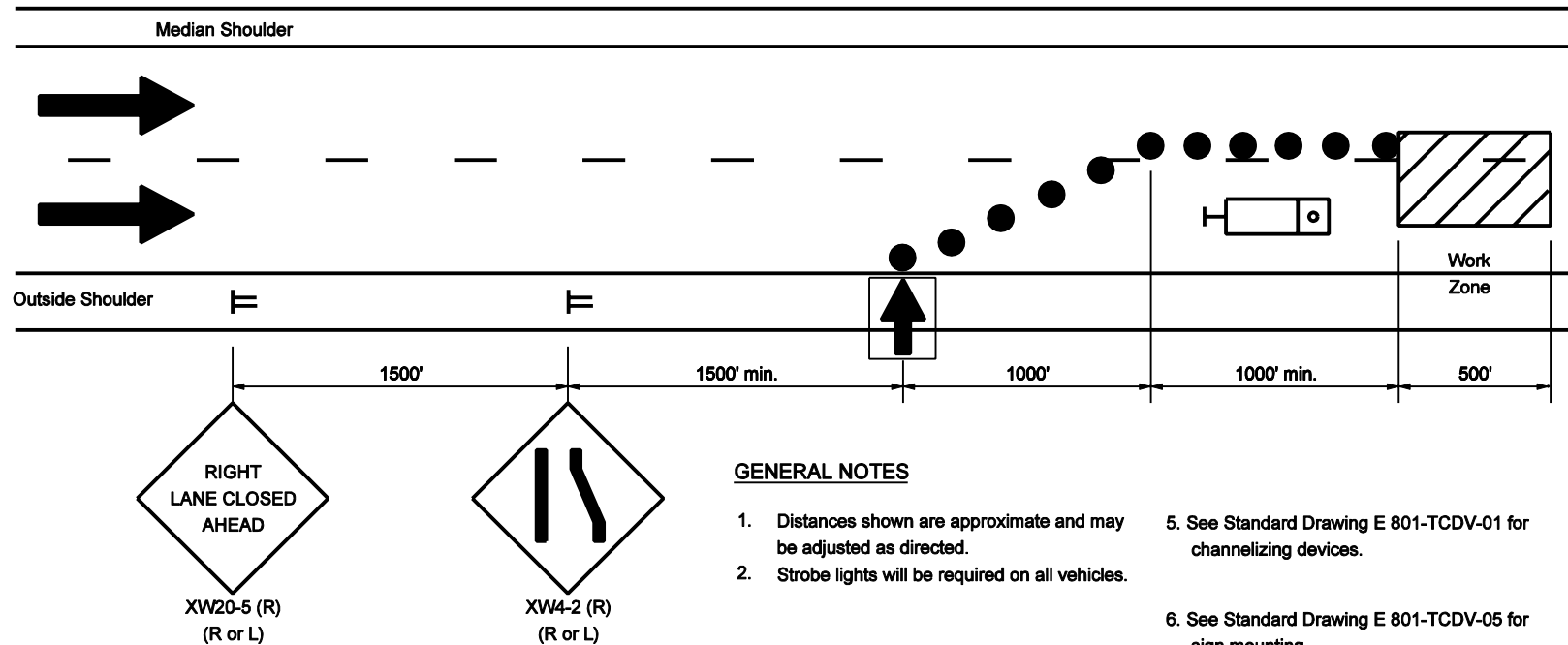
1. See Standard Drawing E 801-TCLG-01 for Legend and General Notes.
2. See Standard Drawing E 801-TCDV-05 for sign mounting.



**TWO-LANE ROADWAY, TWO WAY TRAFFIC**

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL FOR DAYTIME LANE CLOSURE	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-05	
	/s/ Richard L. VanCleave      9-03-02 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      9-03-02 CHIEF HIGHWAY ENGINEER      DATE




# MULTI-LANE DIVIDED HIGHWAY

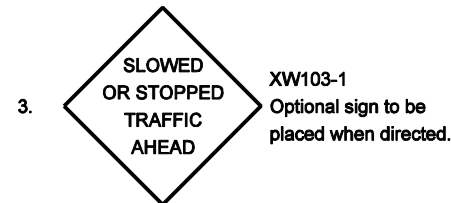


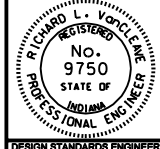
## GENERAL NOTES

1. Distances shown are approximate and may be adjusted as directed.
2. Strobe lights will be required on all vehicles.
3. See Standard Drawing E 801-TCDV-01 for channelizing devices.
4. Lane closure length shall be a maximum of 3 mi. as directed by Engineer to meet field conditions.
5. See Standard Drawing E 801-TCDV-05 for sign mounting.
6. See Standard Drawing E 801-TCDV-05 for sign mounting.

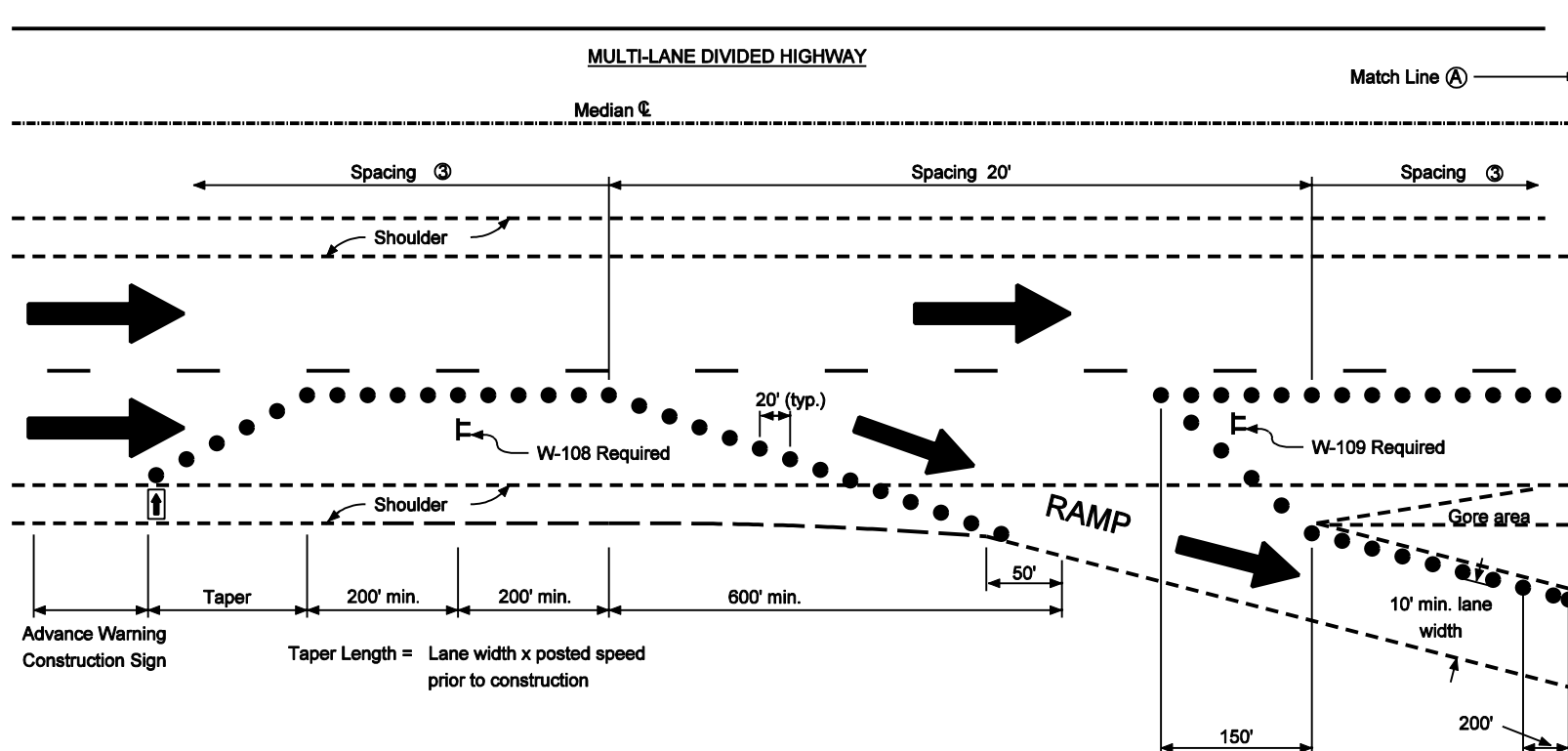
## LEGEND

-  Flashing Arrow Sign
-  Truck of 24,000 lb gross vehicular weight with truck mounted attenuator
-  Channelizing device



INDIANA DEPARTMENT OF TRANSPORTATION	
MAINTENANCE OF TRAFFIC FOR RPM CASTING INSTALLATION	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-06	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE





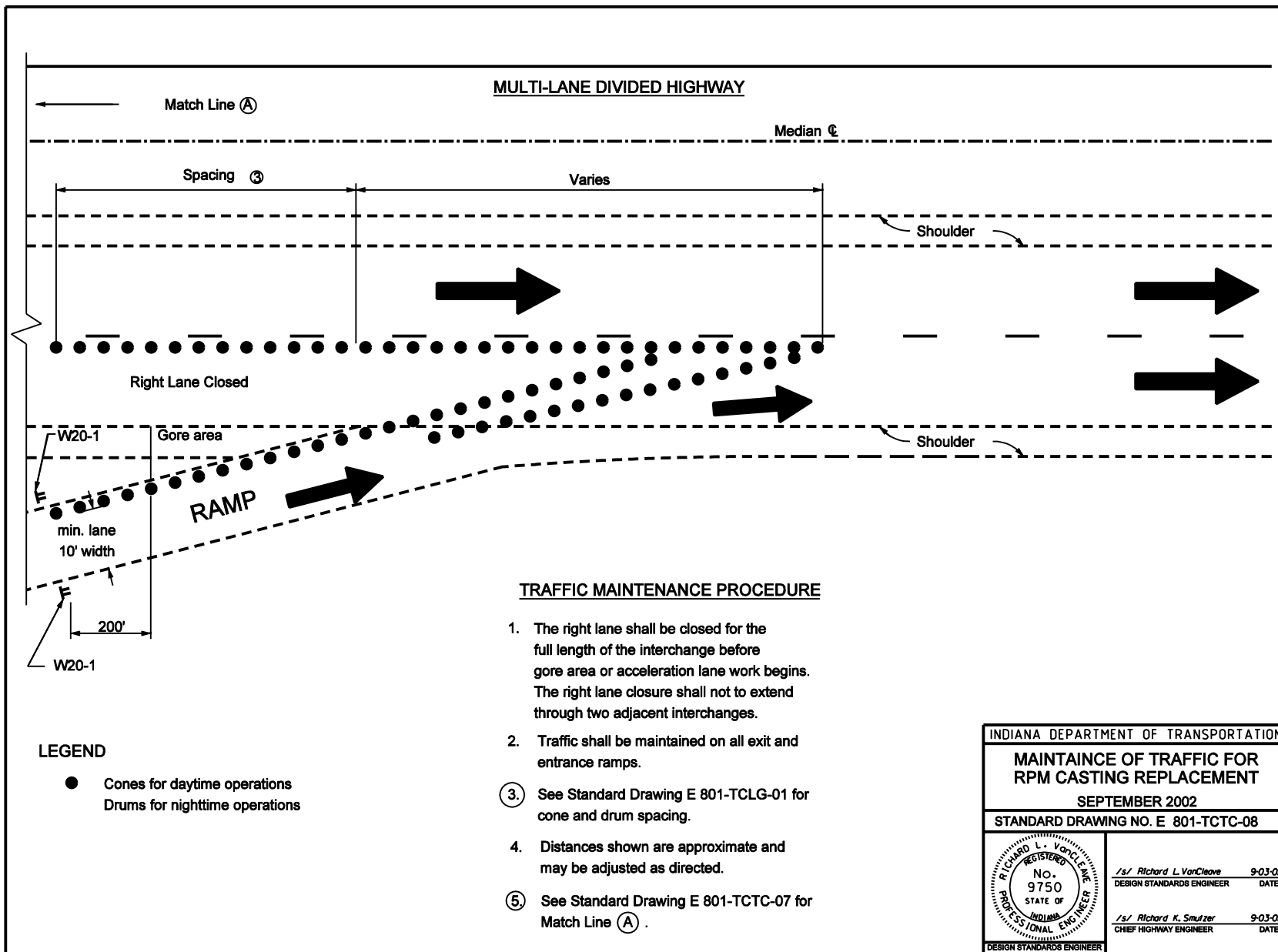
#### LEGEND

- Cones for daytime operations
- Drums for nighttime operations
- ⬅ Flashing arrow sign

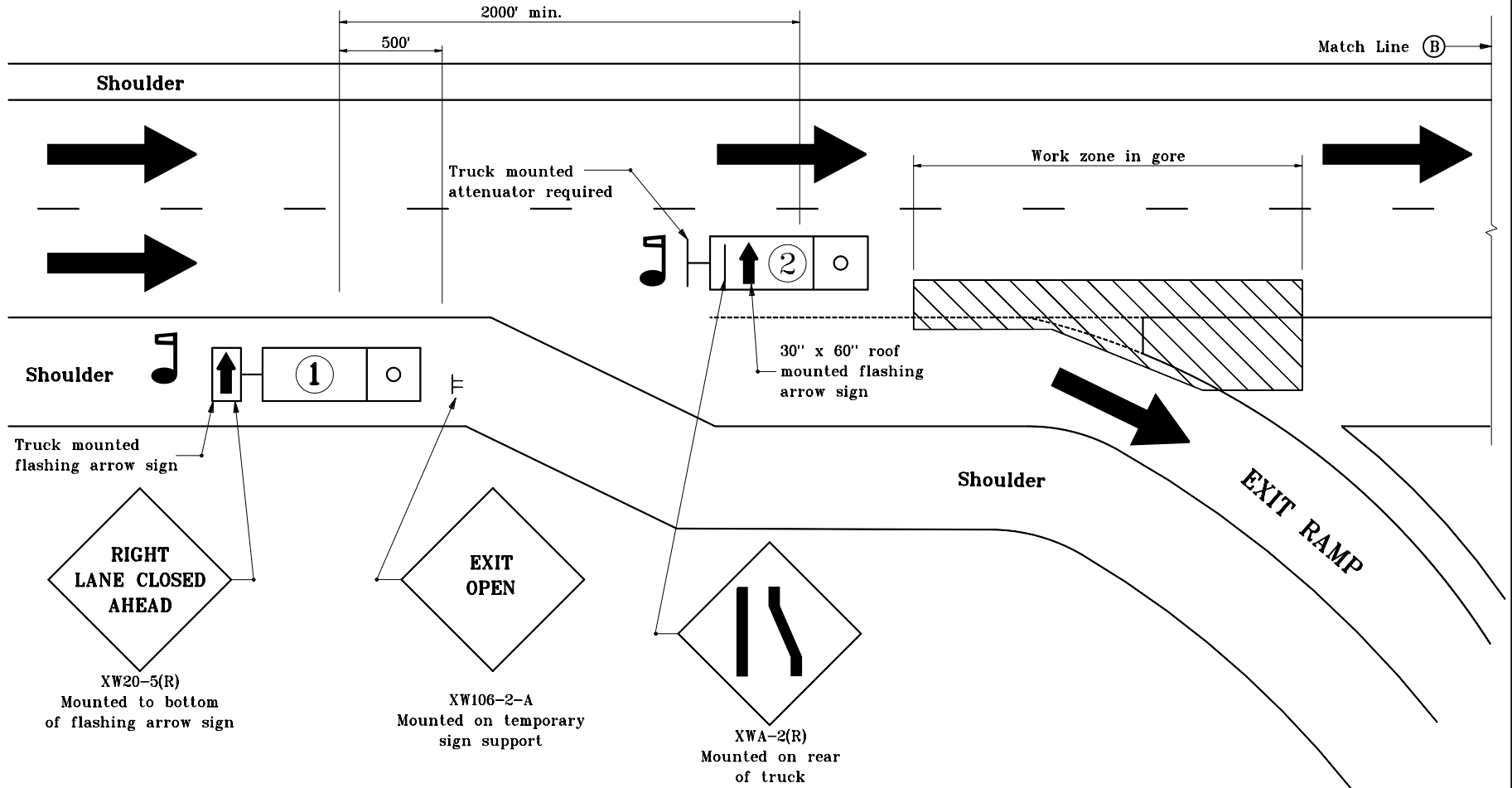
#### TRAFFIC MAINTENANCE PROCEDURE

1. The right lane shall be closed for the full length of the interchange before deceleration lane and/or gore area work begins.
2. Traffic shall be maintained on all exit and entrance ramps.
- ③ See Standard Drawing E 801-TCLG-01 for cone and drum spacing.
4. Distances shown are approximate and may be adjusted as directed.
- ⑤ See Standard Drawing E 801-TCTC-08 for Match Line (A).

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>MAINTENANCE OF TRAFFIC FOR RPM CASTING REPLACEMENT</b>	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 801-TCTC-07	
	/s/ Richard L. VanCleave      9-03-02 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      9-03-02 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	



# MULTI-LANE DIVIDED HIGHWAY



## GENERAL NOTES

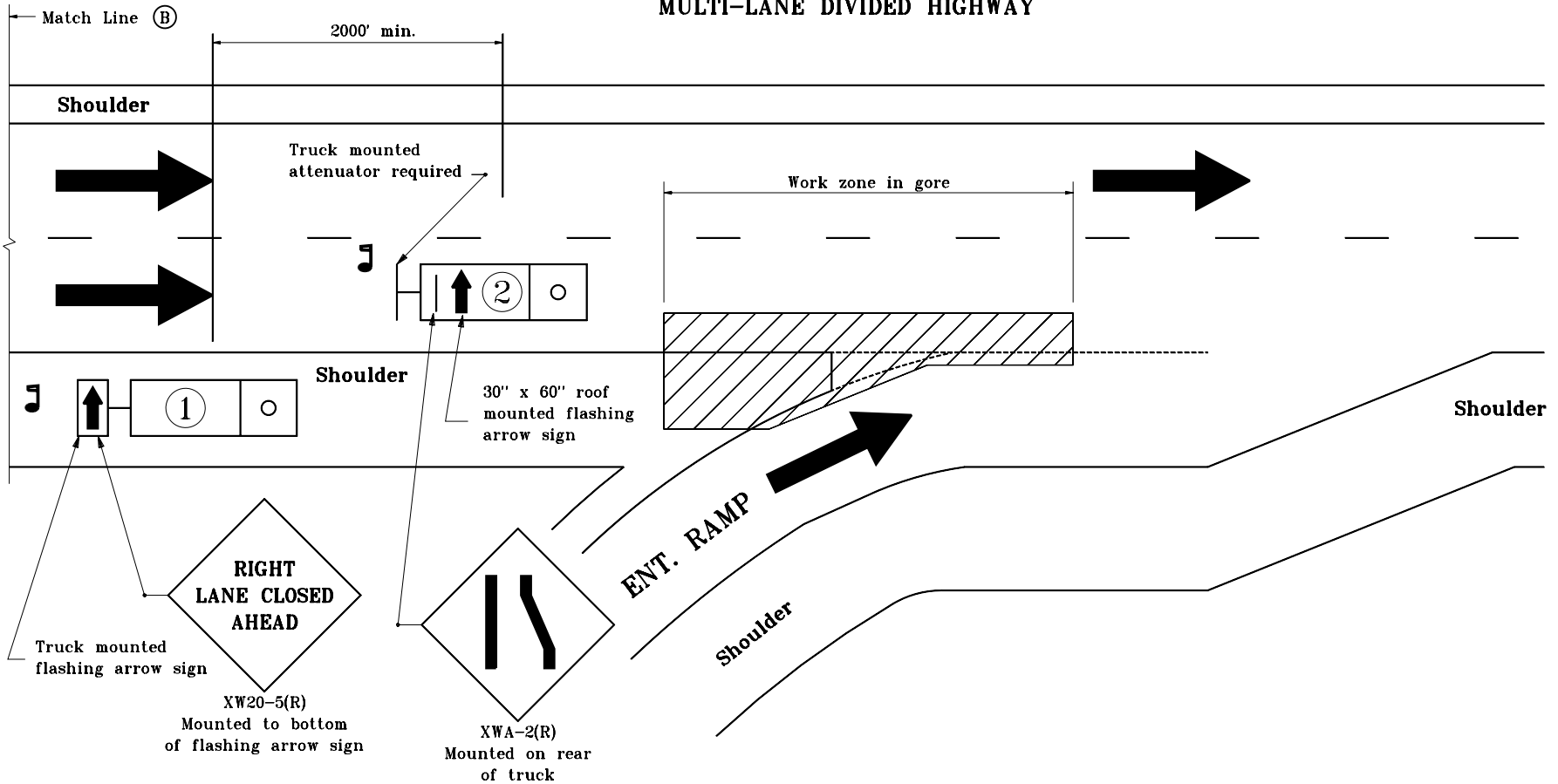
1. Flaggers shall be used while trucks are stopped.
2. Strobe lights shall be used on all vehicles.
3. Distances shown are approximate and may be adjusted as directed.

## LEGEND

- Flagger
- Truck which may be a pickup
- Truck which shall be 24,000 lb GVW or greater

INDIANA DEPARTMENT OF TRANSPORTATION	
MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT	
MAY 2000	
STANDARD DRAWING NO. E 801-TCTC-09	
	/s/ Anthony L. Uremovich 5-01-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 5-01-00 CHIEF HIGHWAY ENGINEER DATE

# MULTI-LANE DIVIDED HIGHWAY



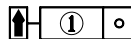
## GENERAL NOTES

1. Flaggers shall be used while trucks are stopped.
2. Strobe lights shall be used on all vehicles.
3. Distances shown are approximate and may be adjusted as directed.

## LEGEND



Flagger



Truck which may be a pickup

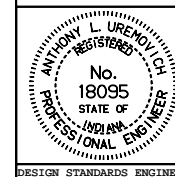


Truck which shall be 24,000 lb GVM or greater

INDIANA DEPARTMENT OF TRANSPORTATION  
MAINTENANCE OF TRAFFIC FOR  
RPM REFLECTOR REPLACEMENT

MAY 2000

STANDARD DRAWING NO. E 801-TCTC-10

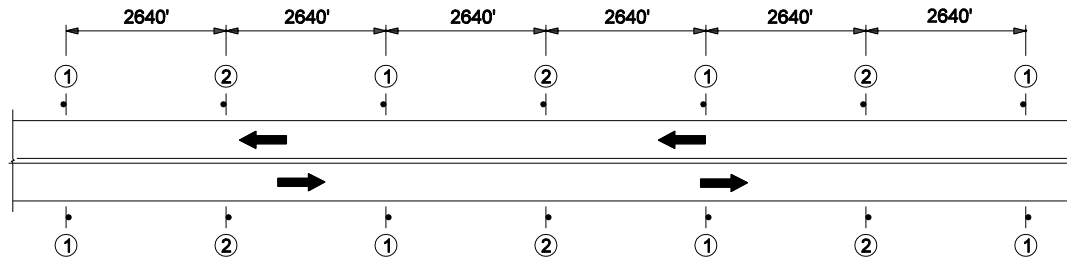


/s/ Anthony L. Uremovich 5-01-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 5-01-00  
CHIEF HIGHWAY ENGINEER DATE

### GENERAL NOTES:

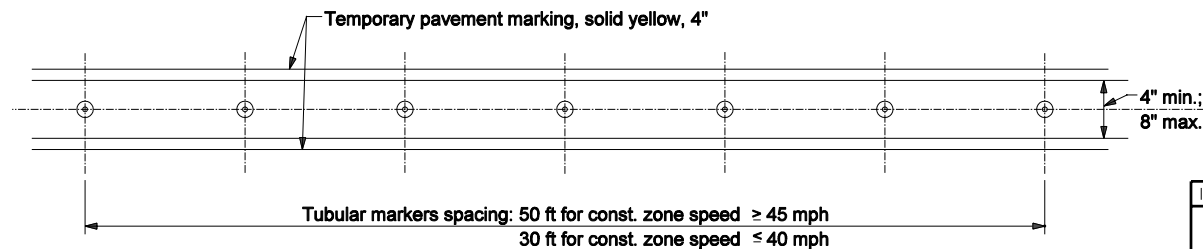
1. Signing pattern typical both sides of roadway, for each direction of travel.
2. See Standard Drawing E 801-TCDV-01 for tubular marker details.



**CONSTRUCTION SIGNS LOCATION DETAIL**

### LEGEND

- ① R4-1-B "Do Not Pass"
- ② XW6-3 two-way traffic symbol
- Tubular markers



**TUBULAR MARKERS ALONG CENTERLINE OF PAVEMENT LAYOUT**

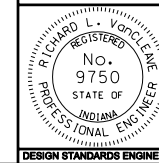
**TWO LANE, TWO WAY  
OPPOSING TRAFFIC**

INDIANA DEPARTMENT OF TRANSPORTATION

**TUBULAR MARKER  
DELINEATION**

**MARCH 2006**

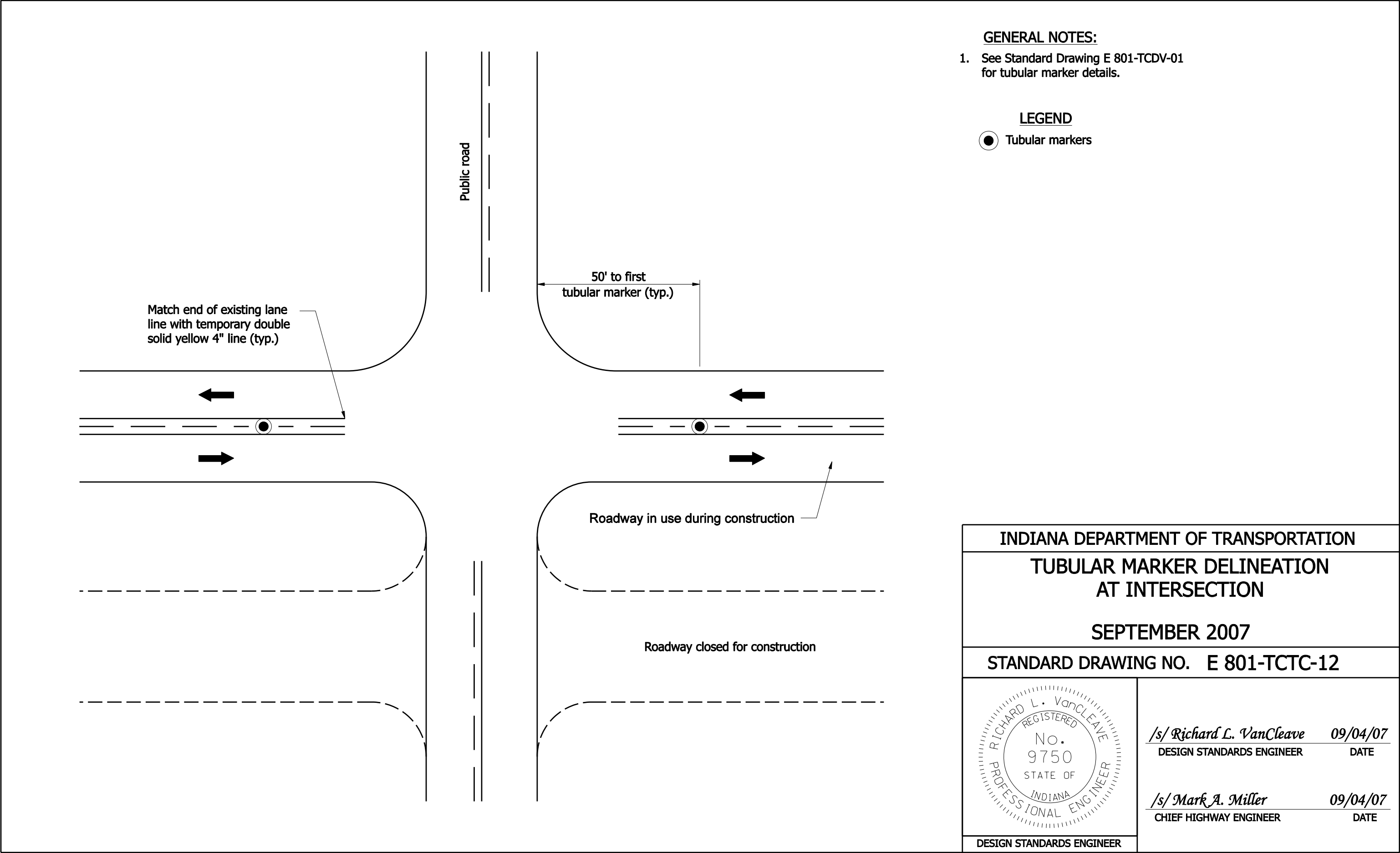
**STANDARD DRAWING NO. E 801-TCTC-11**



/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



## GENERAL NOTES :

- ① Shoulder cross slope in superelevated section shall be as follows:

Where the high side is on the outside of the curve:

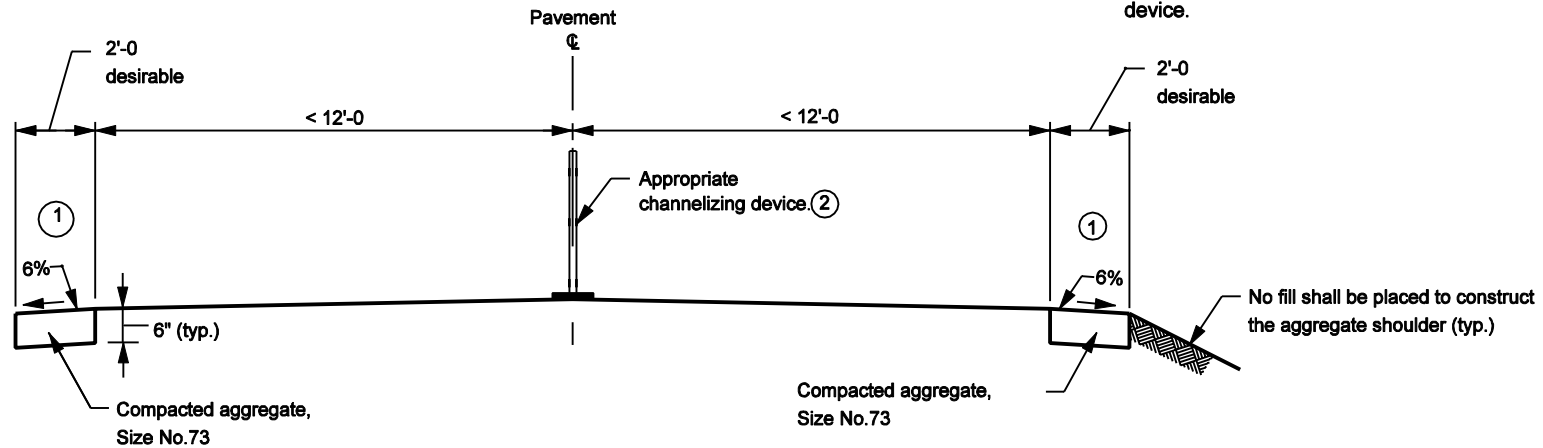
4% ▽ for horizontal curve radius  $R \geq 3820$  ft

2% ▽ for  $2870 \text{ ft} \leq R \leq 3820$  ft

Where the high side of the superelevated pavement is on the median side of the curve; maintain adjacent travel lane's superelevation transition rate or superelevation rate.

The low side of a superelevated pavement shall maintain the adjacent travel lane's superelevation transition rate or superelevation rate.

- ② See Standard Drawing 801-TCDV-01 for channelizing device.

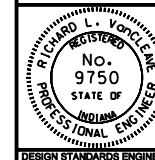


INDIANA DEPARTMENT OF TRANSPORTATION

### TEMPORARY SHOULDER FOR TRAFFIC MAINTENANCE

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCTS-01

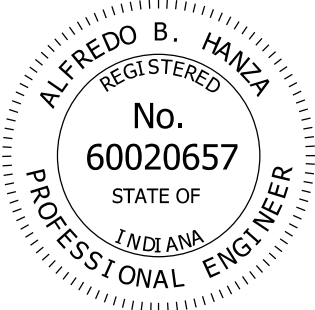


/s/ Richard L. VanCleave 9-03-02  
DESIGN STANDARDS ENGINEER DATE

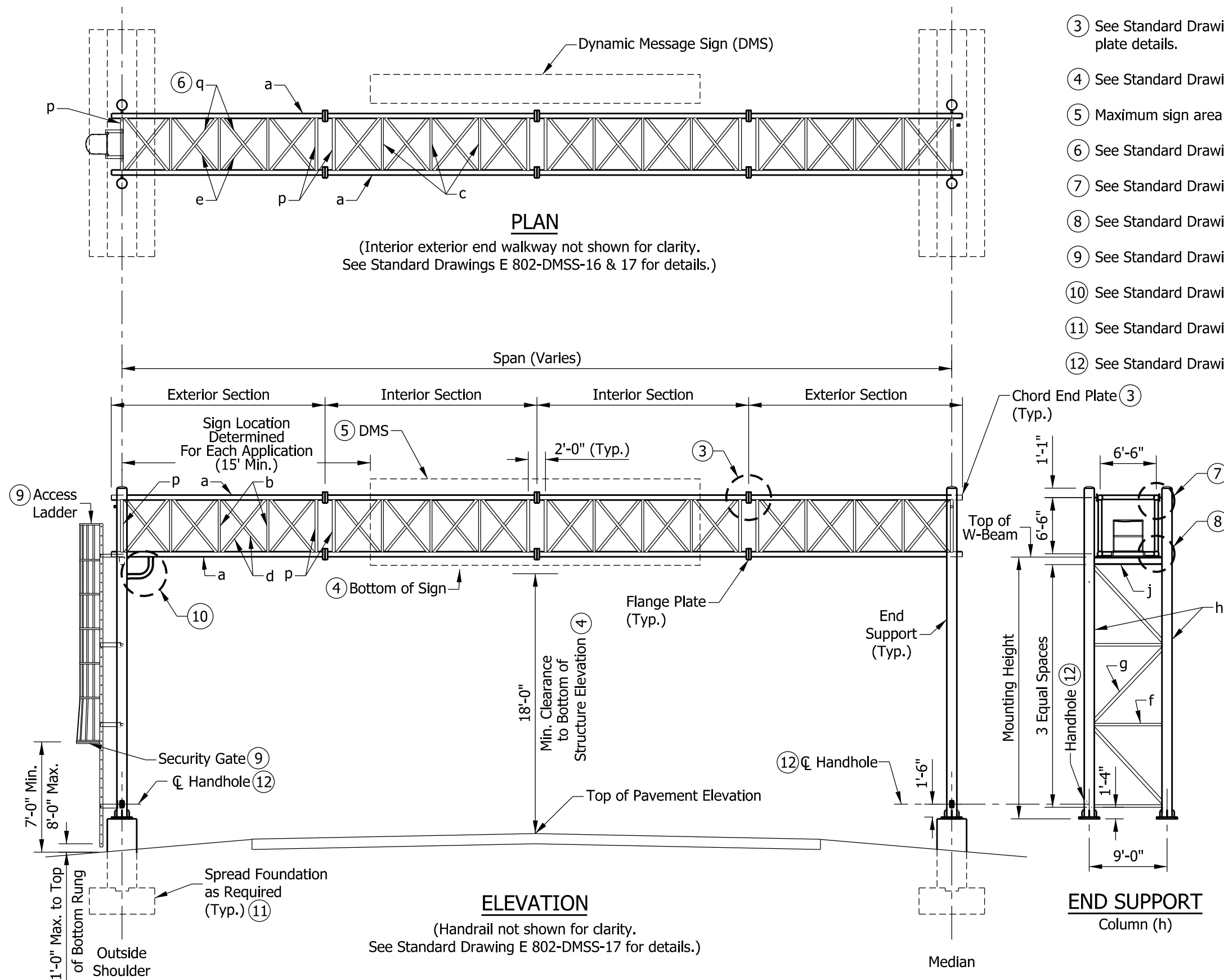
/s/ Richard K. Smutzer 9-03-02  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

INDEX	
SHEET NO.	SUBJECT
1	Index
2	Plan & Elevation
3	Truss Sections, Member Size Table
4	Table of Dimensions, Spans 34' thru 81'
5	Table of Dimensions, Spans 82' thru 130' & Camber
6	Chord Connections and Weld Details
7	Flange & Chord End Plate Details
8	End Support Upper Chord Connection Details
9	End Support Lower Chord Connection Details
10	End Support Base Plate and I.D. Tag Details
11	End Support Handhole, Top Cap, and J-Hook Details
12	Anchor Plates, Anchor Bolts, and Metal Skirt Details
13	Ladder Details
14	Ladder Details
15	Security Gate Details
16	Walkway Grating Details
17	Walkway Grating Details
18	Walkway Grating Details
19	Wiring Layout Details
20	Spread Foundation at 33" Concrete Barrier Wall
21	Spread Foundation at 45" Concrete Barrier Wall
22	Spread Foundation at Median or Shoulder, 36" Height
23	Spread Foundations Quantities

INDIANA DEPARTMENT OF TRANSPORTATION									
DYNAMIC MESSAGE SIGN STRUCTURE DRAWING INDEX									
SEPTEMBER 2013									
STANDARD DRAWING NO.      E 802-DMSS-01									
	<table><tr><td><i>/s/ Alfredo B. Hanza</i></td><td><i>02/05/13</i></td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td><i>/s/ Mark A. Miller</i></td><td><i>03/27/13</i></td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								





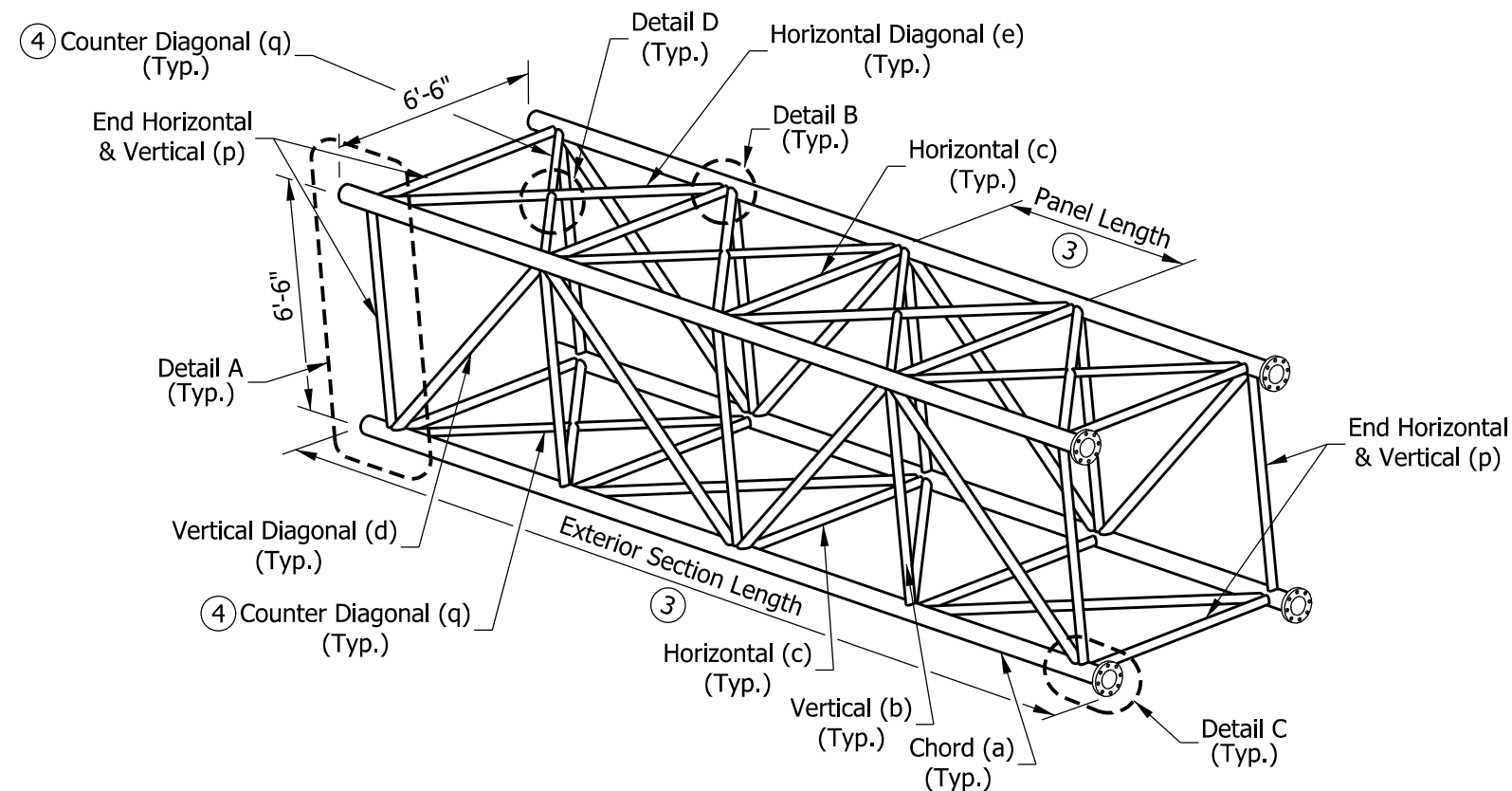
NOTES:

1. See Standard Drawings E 802-DMSS-03 for isometric view and table with member sizes.
2. Max. deviation of any chord from a straight line in any section shall be 1/8 in. Box truss to be max. of 3/8 in. out of a straight line over the entire length of the structure in the vertical plane.
3. See Standard Drawings E 802-DMSS-06 and -07 for chord connection welds, flange, and chord end plate details.
4. See Standard Drawing E 802-DMSS-16 for the bottom of structure elevation and grating details.
5. Maximum sign area is 300 sq. ft.
6. See Standard Drawing E 802-DMSS-03 for counter diagonals on exterior truss sections.
7. See Standard Drawing E 802-DMSS-08 for upper chord connections details.
8. See Standard Drawing E 802-DMSS-09 for lower chord connections details.
9. See Standard Drawing E 802-DMSS-13, -14, and -15 for access ladder and security gate details.
10. See Standard Drawing E 802-DMSS-19 for wiring layout and wire-outlet details.
11. See Standard Drawings E 802-DMSS-20 through -23 for spread foundation details.
12. See Standard Drawing E 802-DMSS-11 for handhole detail.

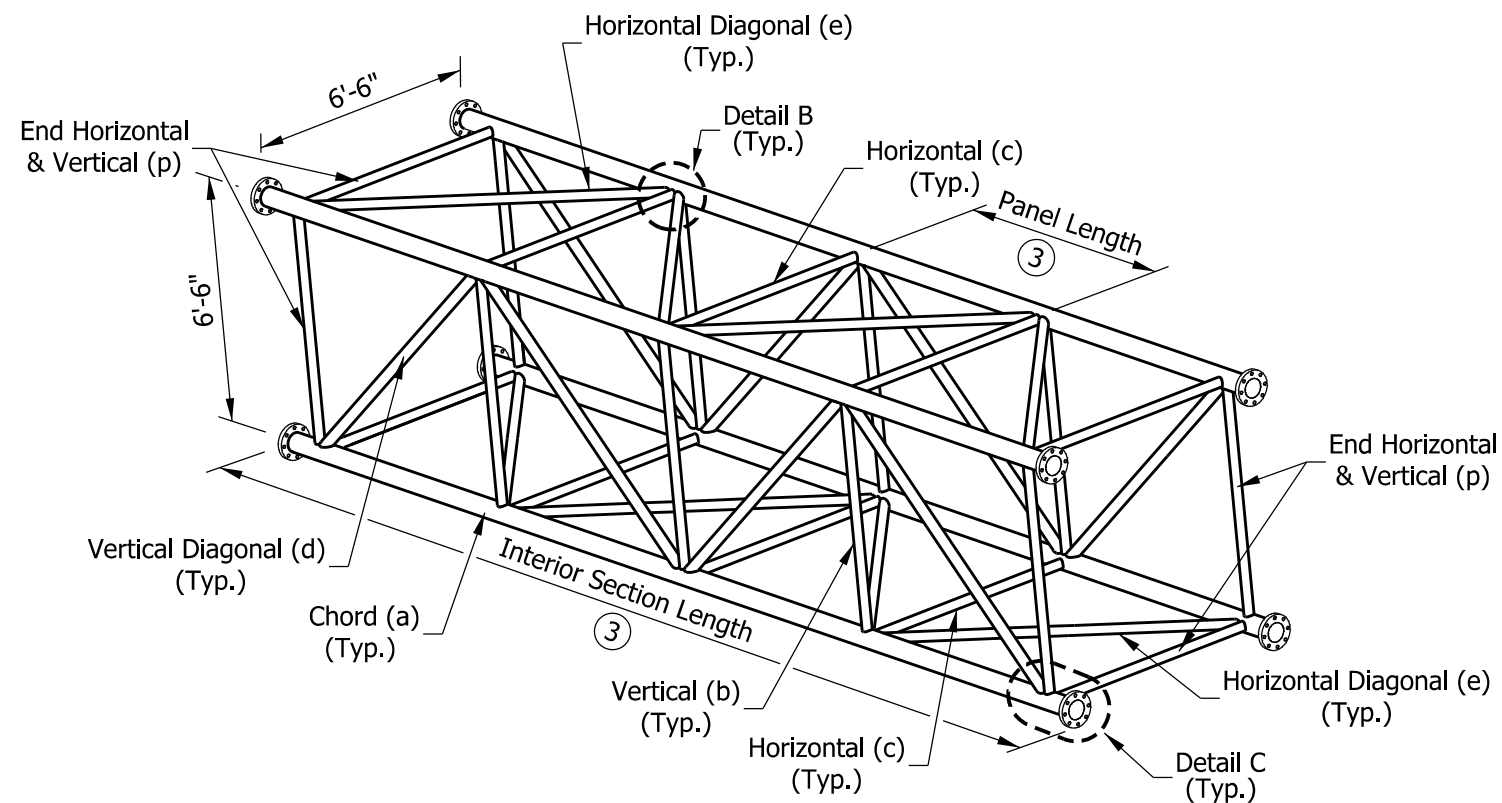
LEGEND

- | TRUSS MEMBERS (ALUMINUM)          | END SUPPORT MEMBERS (STEEL) |
|-----------------------------------|-----------------------------|
| a - Chords                        | f - Horizontals             |
| b - Verticals                     | g - Diagonals               |
| c - Horizontals                   | h - Columns                 |
| d - Vertical Diagonals            | j - W-Beam                  |
| e - Horizontal Diagonals          |                             |
| p - End Verticals and Horizontals |                             |
| q - Counter Diagonals             |                             |

INDIANA DEPARTMENT OF TRANSPORTATION		
DYNAMIC MESSAGE SIGN STRUCTURE PLAN & ELEVATION		
SEPTEMBER 2013		
STANDARD DRAWING NO. E 802-DMSS-02		
	/s/ Alfredo B. Hanza	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE



**TYPICAL EXTERIOR TRUSS SECTION**



**TYPICAL INTERIOR TRUSS SECTION**

**NOTES:**

1. See Standard Drawing E 802-DMSS-06 for Details A through D.
2. Truss members to be aluminum. End support members to be steel. Steel pipe diameters shown in table are nominal pipe sizes.
3. Number of panels and sections varies. See Standard Drawing E 802-DMSS-04 and -05 for recommended dimensions.
4. Counter Diagonal (q) shall be provided in exterior sections at the top of each panel and at the bottom of end panel only as shown. It is not required in interior sections.
5. See Standard Drawing E 802-DMSS-02 for end support members.

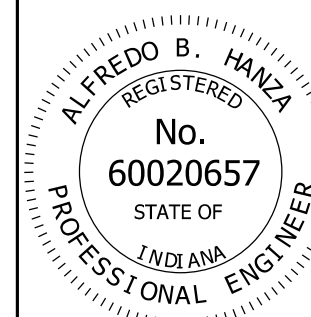
MAX. SPAN = 130 ft.    MAX. SIGN AREA = 300 sq. ft. MAX. MOUNTING HEIGHT = 24'-6"		
ALUMINUM TRUSS MEMBERS		
MEMBER	MARK	O.D. (IN.) x WALL THK. (IN.)
CHORD	a	7 x 0.375
VERTICAL	b	3 x 0.250
HORIZONTAL	c	4 x 0.250
VERTICAL DIAGONAL	d	3.5 x 0.500
HORIZONTAL DIAGONAL	e	4 x 0.500
END VERTICAL and HORIZONTAL	p	4 x 0.375
COUNTER DIAGONAL (SEE NOTE 4)	q	2.5 x 0.500
STEEL END-SUPPORT MEMBERS		
COLUMN	h	14 x 0.375
HORIZONTAL	f	3.5 x 0.216
DIAGONAL	g	4.5 x 0.438
W-BEAM	j	W10 x 68

**INDIANA DEPARTMENT OF TRANSPORTATION**

**DYNAMIC MESSAGE SIGN STRUCTURE  
TRUSS SECTIONS, MEMBER SIZE TABLE**

**SEPTEMBER 2013**

**STANDARD DRAWING NO.    E 802-DMSS-03**



/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE

DIMENSIONS FOR DYNAMIC MESSAGE SIGN STRUCTURES (34' THRU 81')									
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
34	1	6	6"	5'-6"	35'-6"	0			
35	1	6	6"	5'-8"	36'-6"	0			
36	2	3	6"	5'-6"	18'-9"	0			
37	2	3	6"	5'-8"	19'-3"	0			
38	2	3	6"	5'-10"	19'-9"	0			
39	2	3	6"	6'-0"	20'-3"	0			
40	2	3	6"	6'-2"	20'-9"	0			
41	2	3	6"	6'-4"	21'-3"	0			
42	2	3	6"	6'-6"	21'-9"	0			
43	2	4	6"	5'-0"	22'-3"	0			
44	2	4	6"	5'-1 1/2"	22'-9"	0			
45	2	4	6"	5'-3"	23'-3"	0			
46	2	4	6"	5'-4 1/2"	23'-9"	0			
47	2	4	6"	5'-6"	24'-3"	0			
48	2	4	6"	5'-7 1/2"	24'-9"	0			
49	2	4	6"	5'-9"	25'-3"	0			
50	2	4	6"	5'-10 1/2"	25'-9"	0			
51	2	4	6"	6'-0"	26'-3"	0			
52	2	4	6"	6'-1 1/2"	26'-9"	0			
53	2	4	6"	6'-3"	27'-3"	0			
54	2	4	6"	6'-4 1/2"	27'-9"	0			
55	2	4	6"	6'-6"	28'-3"	0			
56	2	5	5 1/4"	5'-3 3/4"	28'-9"	0			
57	2	5	6 1/4"	5'-4 3/4"	29'-3"	0			
58	2	5	6"	5'-6"	29'-9"	0			
59	2	5	5 3/4"	5'-7 1/4"	30'-3"	0			
60	2	5	5 1/2"	5'- 8 1/2"	30'-9"	0			
61	2	5	6 1/2"	5'-9 1/2"	31'-3"	0			
62	2	5	6 1/4"	5'-10 3/4"	31'-9"	0			
63	2	5	6"	6'-0"	32'-3"	0			
64	2	5	5 3/4"	6'-1 1/4"	32'-9"	0			
65	2	5	5 1/2"	6'-2 1/2"	33'-3"	0			
66	2	5	5 1/4"	6'-3 3/4"	33'-9"	0			
67	2	5	5"	6'-5"	34'-3"	0			
68	2	5	6"	6'-6"	34'-9"	0			
69	2	4	6"	5'-4"	23'-7"	1	4	5'-4"	23'-4"
70	2	4	6"	5'-5"	23'-11"	1	4	5'-5"	23'-8"
71	2	4	6"	5'-6"	24'-3"	1	4	5'-6"	24'-0"
72	2	4	6"	5'-7"	24'-7"	1	4	5'-7"	24'-4"
73	2	4	6"	5'-8"	24'-11"	1	4	5'-8"	24'-8"
74	2	4	6"	5"-9"	25'-3"	1	4	5"-9"	25'-0"
75	2	4	6"	5'-10"	25'-7"	1	4	5'-10"	25'-4"
76	2	4	6"	5'-11"	25'-11"	1	4	5'-11"	25'-8"
77	2	4	6"	6'-0"	26'-3"	1	4	6'-0"	26'-0"
78	2	4	6"	6'-1"	26'-7"	1	4	6'-1"	26'-4"
79	2	4	6"	6'-2"	26'-11"	1	4	6'-2"	26'-8"
80	2	4	6"	6'-3"	27'-3"	1	4	6'-3"	27'-0"
81	2	4	6"	6'-4"	27'-7"	1	4	6'-4"	27'-4"

- NOTES:
- The table of dimensions for a dynamic message sign structure is divided and put on two Standard Drawings E 802-DMSS-04 and -05. the table shows dimensions with all sections requirements accounted for.
  - All panels on a truss shall be the same length. The minimum panel length for all trusses is 5'-0" and the maximum is 6'-6".
  - A single interior section in a truss shall have an even number of panels to maintain the pattern of the vertical diagonals.
  - Use minimum number of sections for each truss, keeping the maximum section length at 35'-6".
  - See Standard Drawing E 802-DMSS-05 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
TABLE OF DIMENSIONS  
SPANS 34' THRU 81'  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-04

ALFREDO B. HANZA  
REGISTERED  
No.  
60020657  
STATE OF  
INDIANA  
PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza02/05/13

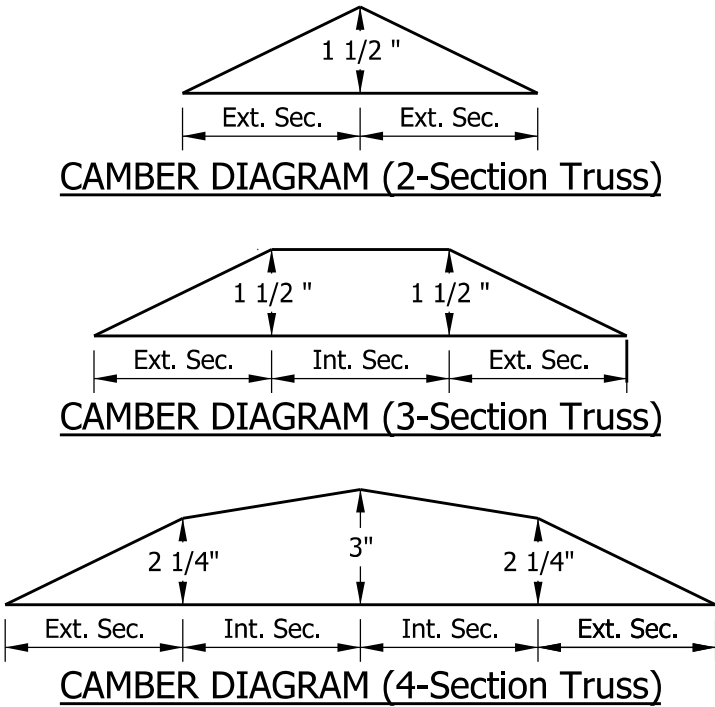
DESIGN STANDARDS ENGINEERDATE

/s/ Mark A. Miller03/27/13

CHIEF ENGINEERDATE

DIMENSIONS FOR DYNAMIC MESSAGE SIGN STRUCTURES (82' THRU 130')									
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	1	4	6'-6"	28'-0"
84	2	5	5 3/4"	5'-7 3/4"	30'-5 1/2"	1	4	5'-7 3/4"	24'-7"
85	2	5	6 1/2"	5'-8 1/2"	30'-10"	1	4	5'-8 1/2"	24'-10"
86	2	5	5 1/2"	5'-9 1/2"	31'-2"	1	4	5'-9 1/2"	25'-2"
87	2	5	6 1/4"	5'-10 1/4"	31'-6 1/2"	1	4	5'-10 1/4"	25'-5"
88	2	5	7"	5'-11"	31'-11"	1	4	5'-11"	25'-8"
89	2	5	6"	6'-0"	32'-3"	1	4	6'-0"	26'-0"
90	2	5	5"	6'-1"	32'-7"	1	4	6'-1"	26'-4"
91	2	5	5 3/4"	6'-1 3/4"	32'-11 1/2"	1	4	6'-1 3/4"	26'-7"
92	2	5	6 1/2"	6'-2 1/2"	33'-4"	1	4	6'-2 1/2"	26'-10"
93	2	5	5 1/2"	6'-3 1/2"	33'-8"	1	4	6'-3 1/2"	27'-2"
94	2	5	6 1/4"	6'-4 1/4"	34'-0 1/2"	1	4	6'-4 1/4"	27'-5"
95	2	5	5 1/4"	6'-5 1/4"	34'-4 1/2"	1	4	6'-5 1/4"	27'-9"
96	2	5	6"	6'-6"	34'-9"	1	4	6'-6"	28'-0"
97	2	4	6"	5'-7 1/2"	24'-9"	2	4	5'-7 1/2"	24'-6"
98	2	4	6"	5'-8 1/4"	25'-0"	2	4	5'-8 1/4"	24'-9"
99	2	4	6"	5'-9"	25'-3"	2	4	5'-9"	25'-0"
100	2	4	6"	5'-9 3/4"	25'-6"	2	4	5'-9 3/4"	25'-3"
101	2	4	6"	5'-10 1/2"	25'-9"	2	4	5'-10 1/2"	25'-6"
102	2	4	6"	5'-11 1/4"	26'-0"	2	4	5'-11 1/4"	25'-9"
103	2	4	6"	6'-0"	26'-3"	2	4	6'-0"	26'-0"
104	2	4	6"	6'-0 3/4"	26'-6"	2	4	6'-0 3/4"	26'-3"
105	2	4	6"	6'-1 1/2"	26'-9"	2	4	6'-1 1/2"	26'-6"
106	2	4	6"	6'-2 1/4"	27'-0"	2	4	6'-2 1/4"	26'-9"
107	2	4	6"	6'-3"	27'-3"	2	4	6'-3"	27'-0"
108	2	4	6"	6'-3 3/4"	27'-6"	2	4	6'-3 3/4"	27'-3"
109	2	4	6"	6'-4 1/2"	27'-9"	2	4	6'-4 1/2"	27'-6"
110	2	4	6"	6'-5 1/4"	28'-0"	2	4	6'-5 1/4"	27'-9"
111	2	4	6"	6'-6"	28'-3"	2	4	6'-6"	28'-0"
112	2	5	6"	5'-3"	28'-6"	2	5	5'-3"	28'-3"
113	2	5	7"	5'-3 1/2"	28'-9 1/2"	2	5	5'-3 1/2"	28'-5 1/2"
114	2	5	5 1/2"	5'-4 1/4"	28'-11 3/4"	2	5	5'-4 1/4"	28'-9 1/4"
115	2	5	6 1/2"	5'-4 3/4"	29'-3 1/4"	2	5	5'-4 3/4"	28'-11 3/4"
116	2	5	5"	5'-5 1/2"	29'-5 1/2"	2	5	5'-5 1/2"	29'-3 1/2"
117	2	5	6"	5'-6"	29'-9"	2	5	5'-6"	29'-6"
118	2	5	5"	5'-6 1/2"	29'-10 1/2"	2	5	5'-6 1/2"	29'-8 1/2"
119	2	5	5 1/2"	5'-7 1/4"	30'-2 3/4"	2	5	5'-7 1/4"	30'-0 1/4"
120	2	5	6 1/2"	5'-7 3/4"	30'-6 1/4"	2	5	5'-7 3/4"	30'-2 3/4"
121	2	5	5"	5'-8 1/2"	30'-8 1/2"	2	5	5'-8 1/2"	30'-6 1/2"
122	2	5	6"	5'-9"	31'-0"	2	5	5'-9"	30'-9"
123	2	5	7"	5'-9 1/2"	31'-3 1/2"	2	5	5'-9 1/2"	30'-11 1/2"
124	2	5	5 1/2"	5'-10 1/4"	31'-5 3/4"	2	5	5'-10 1/4"	31'-3 1/4"
125	2	5	6 1/2"	5'-10 3/4"	31'-9 1/4"	2	5	5'-10 3/4"	31'-5 3/4"
126	2	5	5"	5'-11 1/2"	31' -11 1/2"	2	5	5'-11 1/2"	31'-9 1/2"
127	2	5	6"	6'-0"	32'-3"	2	5	6'-0"	32'-0"
128	2	5	7"	6'-0 1/2"	32'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/2"
129	2	5	5 1/2"	6'-1 1/4"	32'-8 3/4"	2	5	6'-1 1/4"	32'-6 1/4"
130	2	5	6 1/2"	6'-1 3/4"	33'-0 1/4"	2	5	6'-1 3/4"	32'-8 3/4"

- NOTES:
1. Camber diagrams to build truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
2. See Standard Drawing E 805-DMSS-04 for additional notes.



INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
TABLE OF DIMENSIONS  
SPANS 82' THRU 130' & CAMBER  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-05

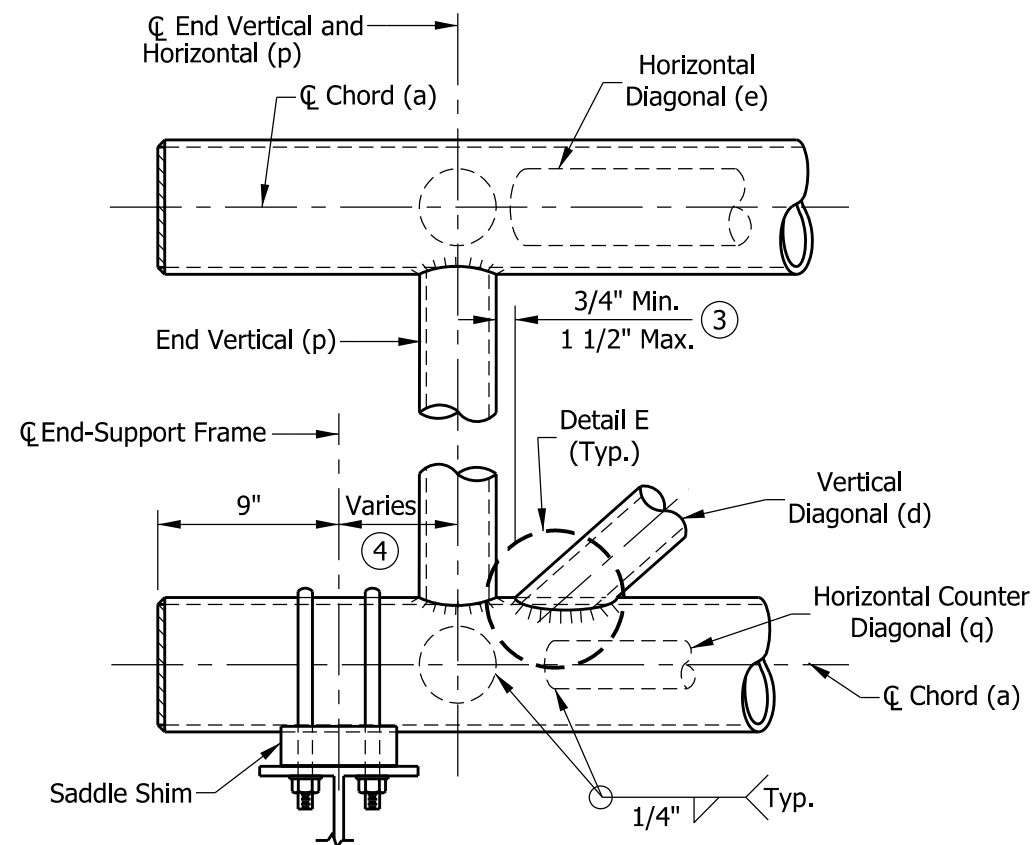
ALFREDO B. HANZA  
REGISTERED  
No. 60020657  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza02/05/13

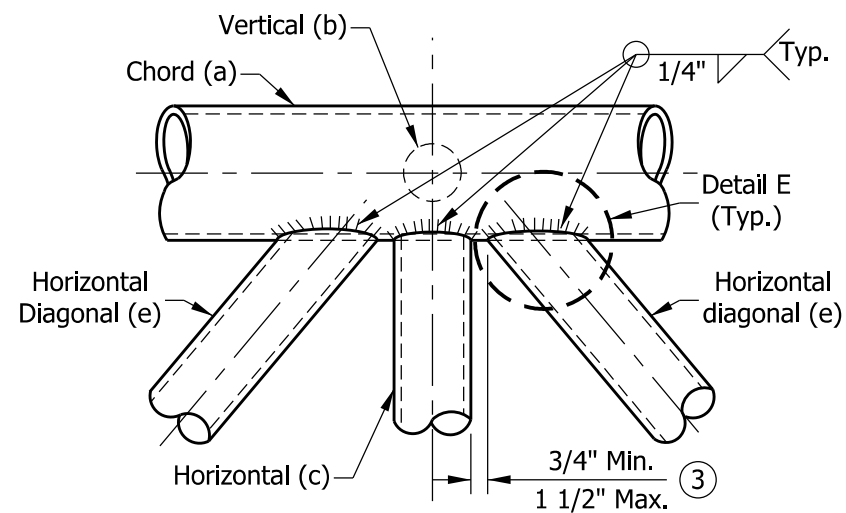
DESIGN STANDARDS ENGINEERDATE

/s/ Mark A. Miller03/27/13

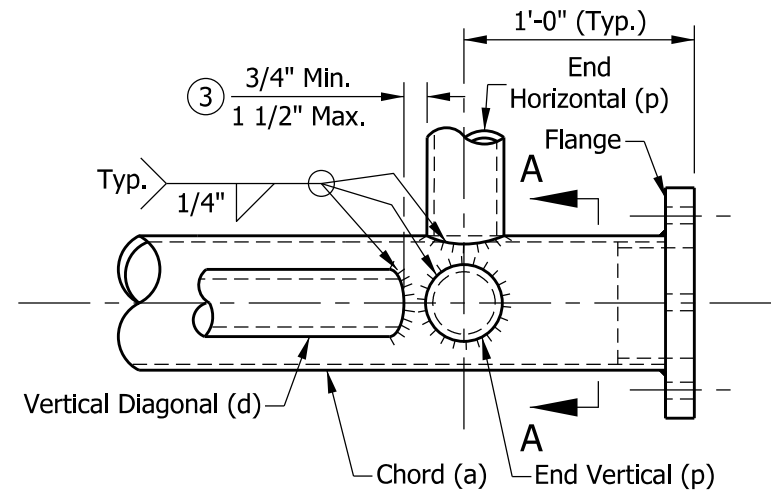
CHIEF ENGINEERDATE



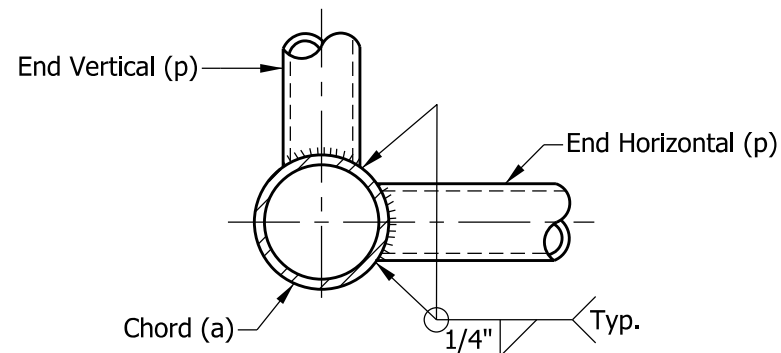
**DETAIL A**  
**EXTERIOR SECTION AT END-SUPPORT**



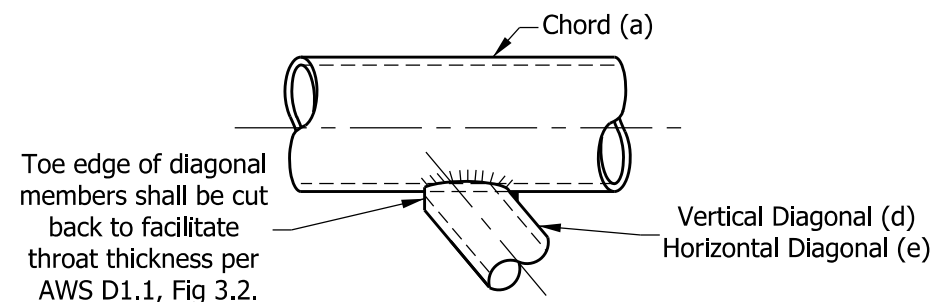
**DETAIL B**  
**TYPICAL PANEL CONNECTION**  
**PLAN VIEW**



**DETAIL C**  
**CHORD AT FLANGE CONNECTION**  
**PLAN VIEW**



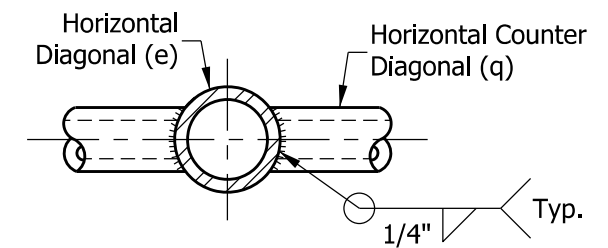
**SECTION A-A**  
**TYPICAL JOINT DETAILS**



**DETAIL E**

**NOTES:**

1. All bracing members shall be machined to provide a snug fit to the chord along the entire edge of bracing members before welding.
2. See Standard Drawing E 802-DMSS-03 for member locations and sizes.
3. Vertical and horizontal 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 horizontal or vertical member; and provide clearance for U-bolt connection for signs.
4. For variable end dimension, Standard Drawings E 802-DMSS-04 and -05.



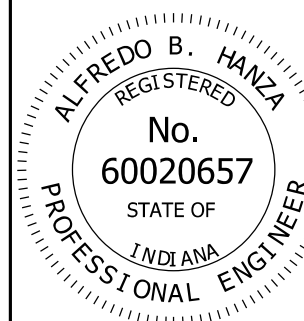
**DETAIL D**

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
CHORD CONNECTIONS AND WELD DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-06

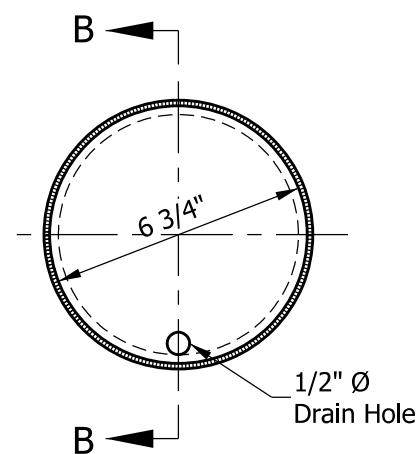


/s/ Alfredo B. Hanza 02/05/13

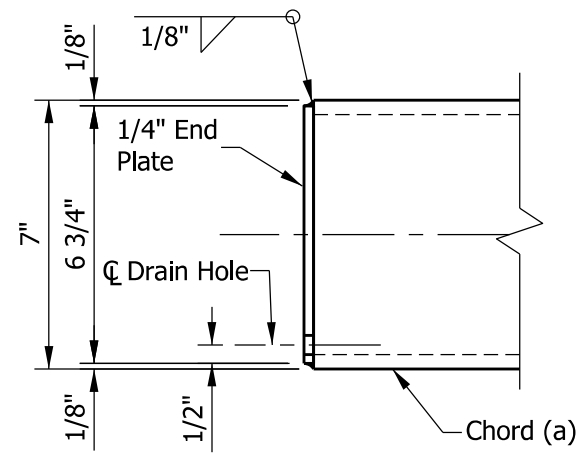
DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

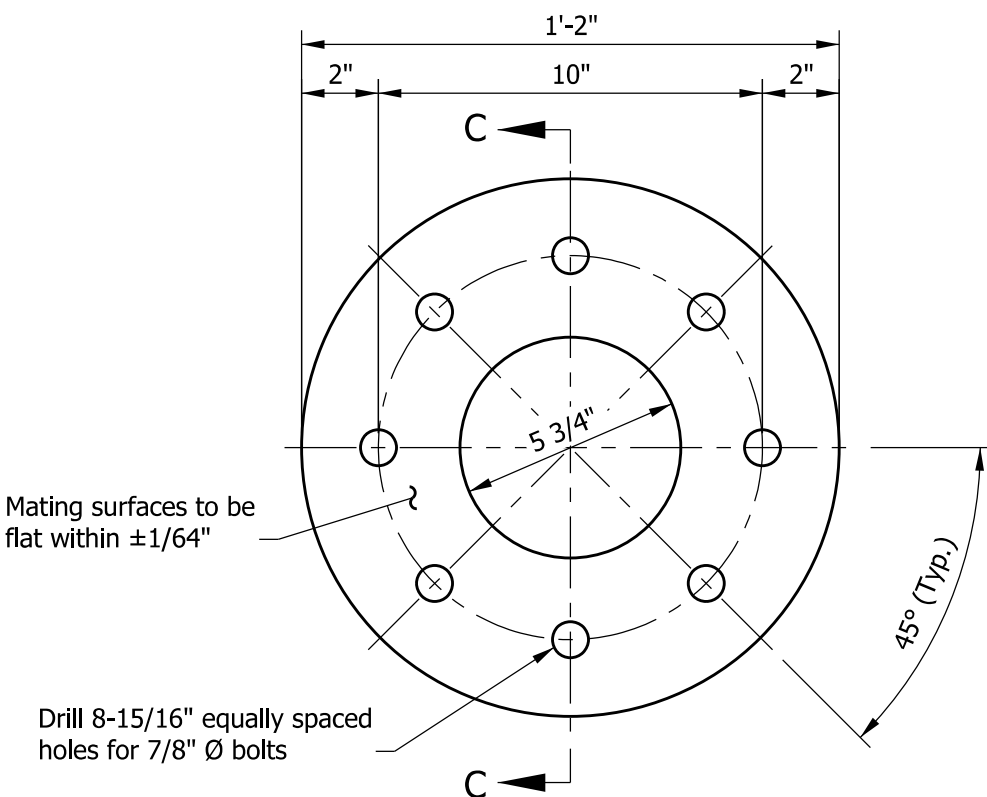


END VIEW

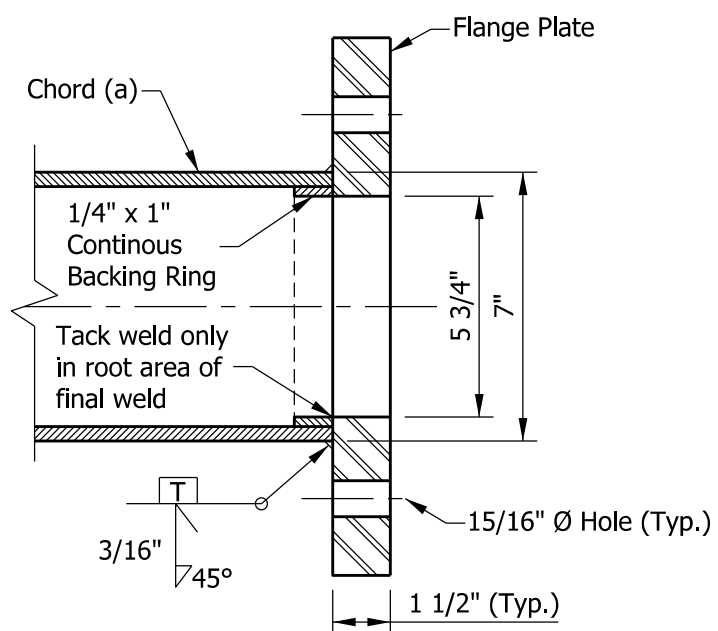


SECTION B-B

CHORD END PLATE DETAILS



END VIEW



SECTION C-C

FLANGE PLATE DETAILS

NOTE:

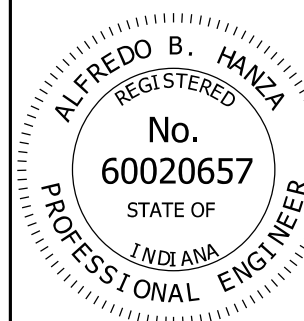
1. See Standard Drawing E 802-DMSS-02 for chord flange locations.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
FLANGE & CHORD END PLATE DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-07



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

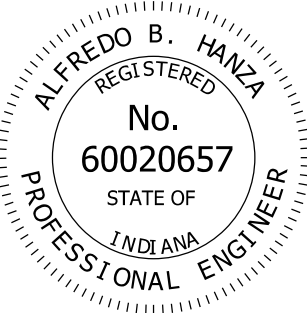
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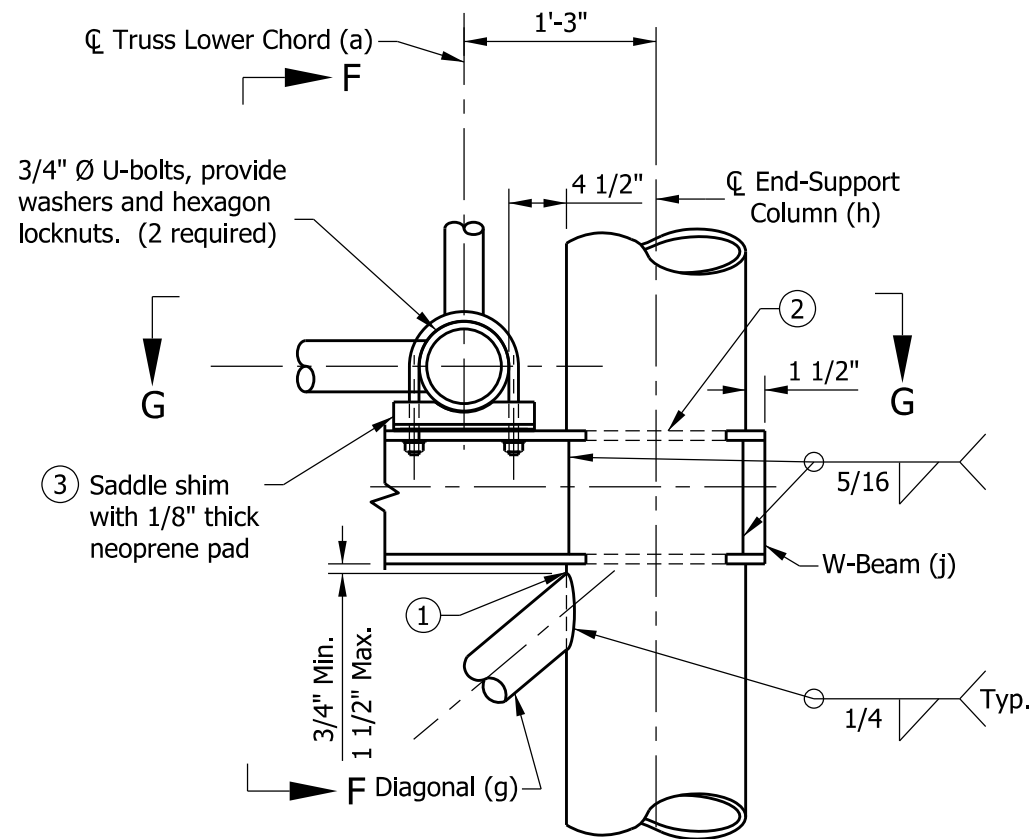
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE

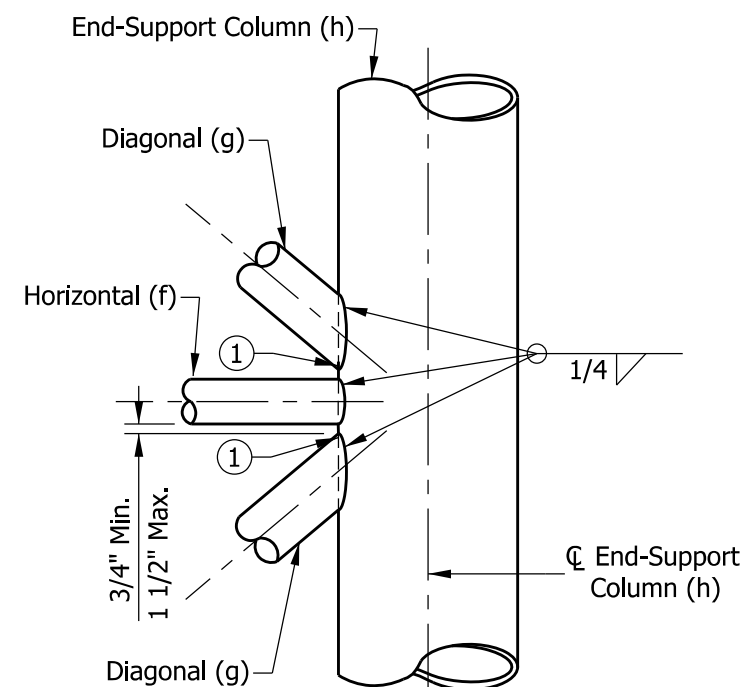


- ① Provide isolation from steel-dissimilar metal as required.
2. All spacer assembly material to be steel.

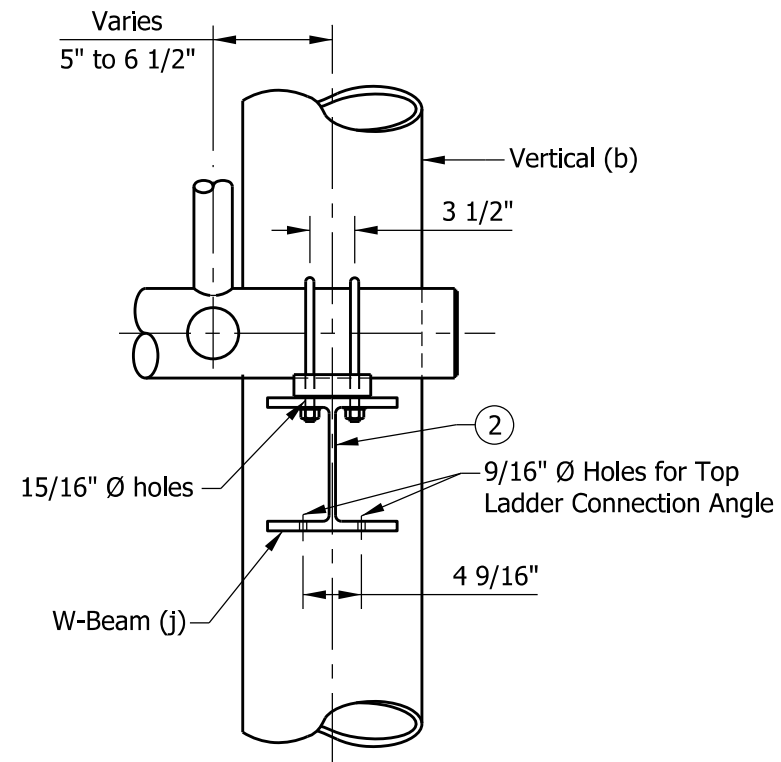
INDIANA DEPARTMENT OF TRANSPORTATION									
DYNAMIC MESSAGE SIGN STRUCTURE END SUPPORT UPPER CHORD CONNECTION DETAILS SEPTEMBER 2013									
STANDARD DRAWING NO.      E 802-DMSS-08									
	<table border="1"> <tr> <td><i>/s/ Alfredo B. Hanza</i></td> <td><i>02/05/13</i></td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td><i>/s/ Mark A. Miller</i></td> <td><i>03/27/13</i></td> </tr> <tr> <td>CHIEF ENGINEER</td> <td>DATE</td> </tr> </table>	<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								



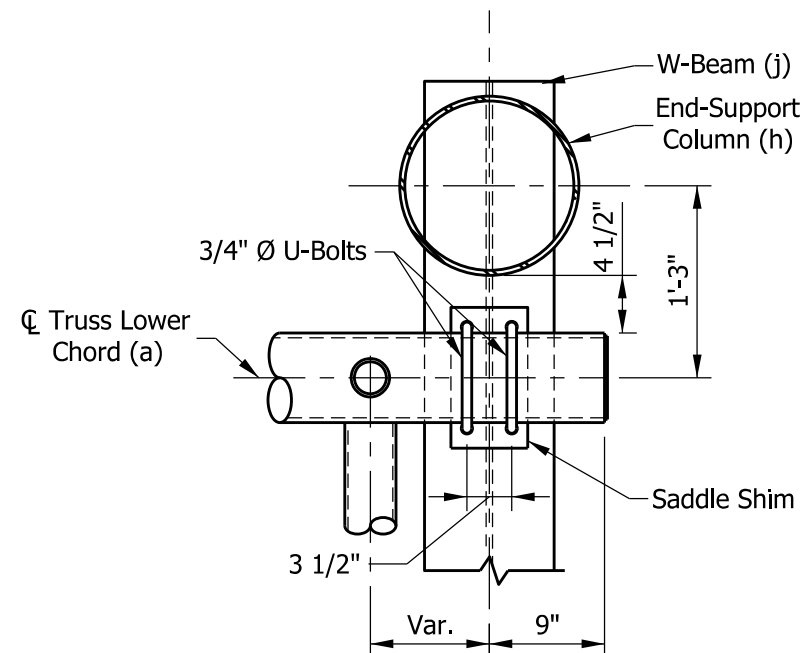
**LOWER CHORD CONNECTION DETAIL**



**ELEVATION (END SUPPORT)  
TYPICAL BRACING MEMBERS CONNECTION**



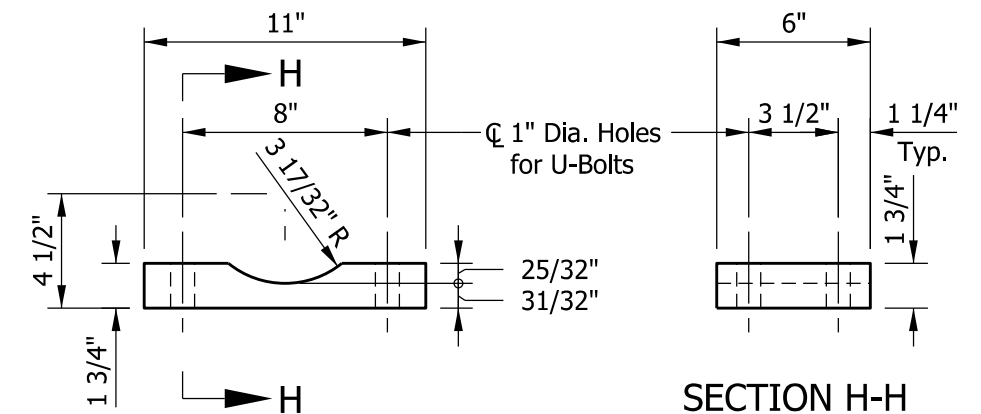
**SECTION F-F**



**SECTION G-G**

**NOTES:**

- ① Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-DMSS-06 for toe-edge Detail E.
- ② Cut holes in end support columns for W-beams to pass through. Holes to have 1/8" maximum clearance to W-beam. Holes in opposite sides of column to be checked for proper alignment prior to cutting.
- ③ Provide neoprene pads at all chord-to-W-beam bearing surfaces.
4. See Standard Drawing E 802-DMSS-03 for end-support member sizes.

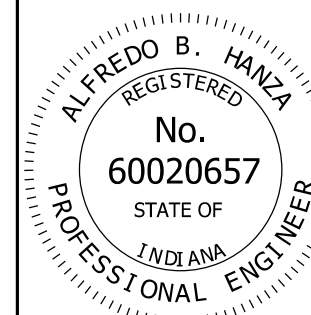


**SADDLE SHIM DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
END-SUPPORT  
LOWER CHORD CONNECTION DETAILS  
SEPTEMBER 2013

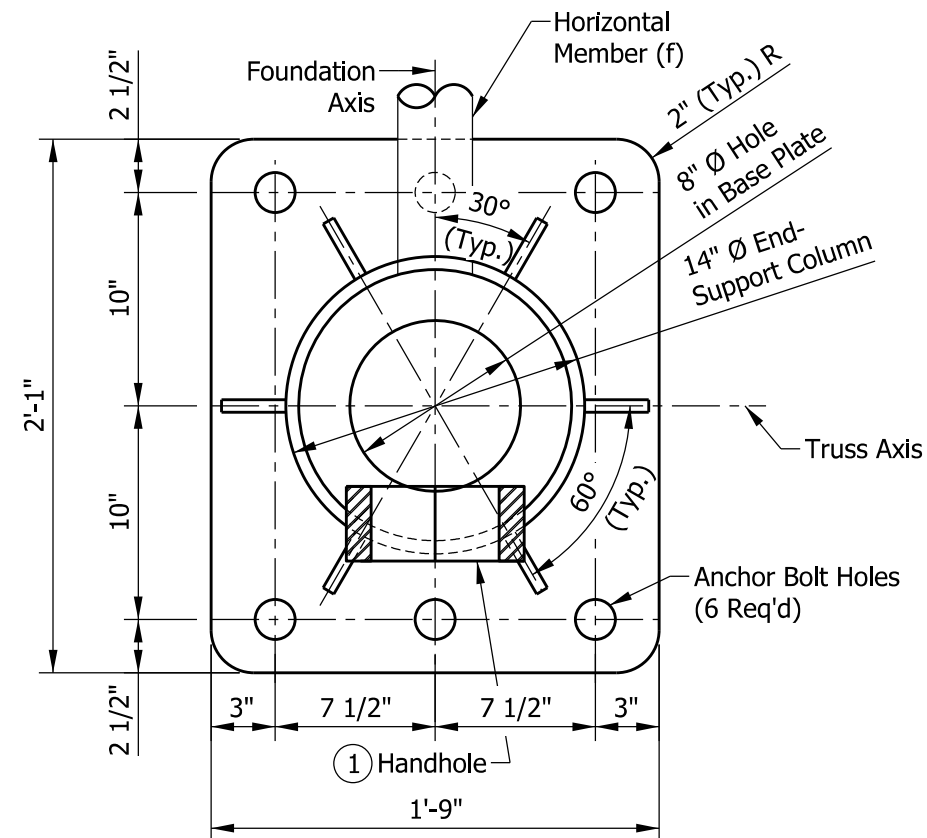
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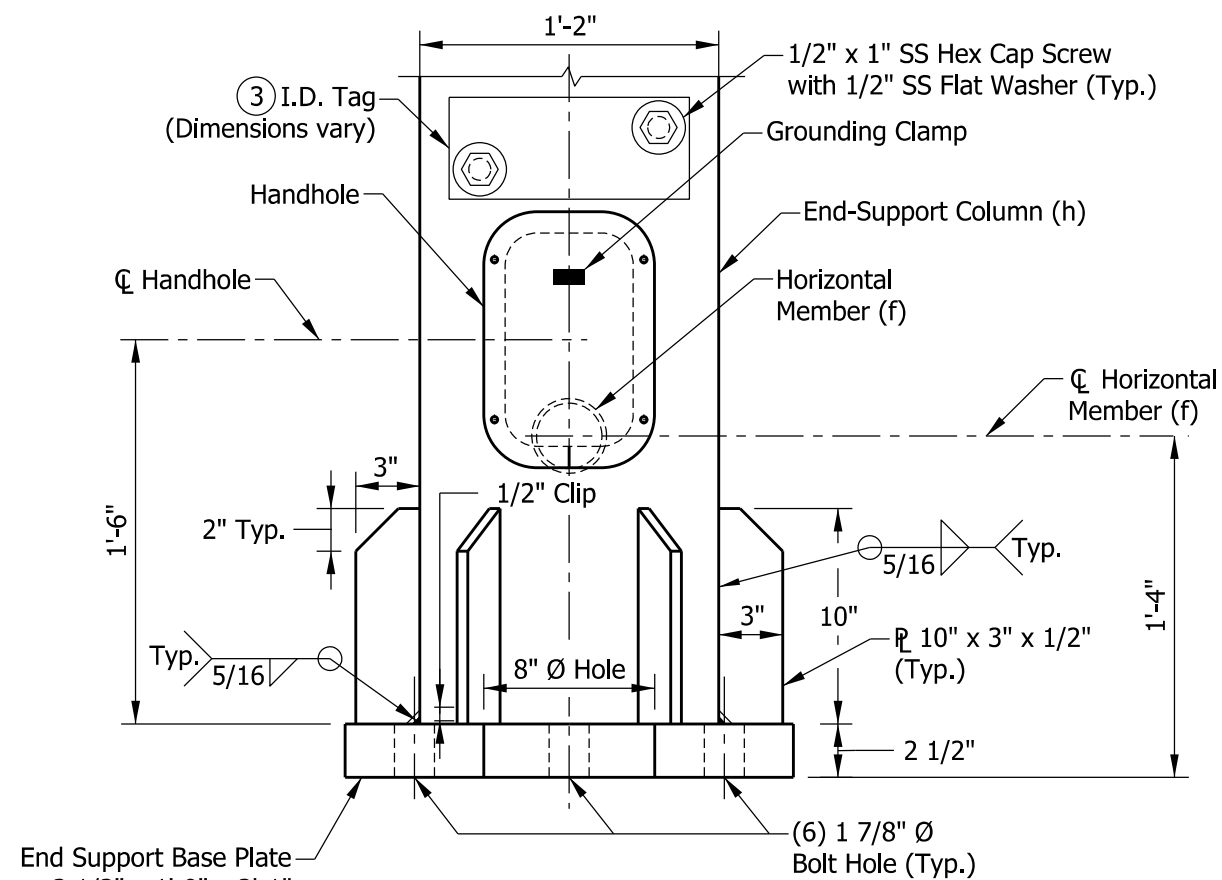
/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

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





**TYPE B-14 BASE PLATE**



**ELEVATION**

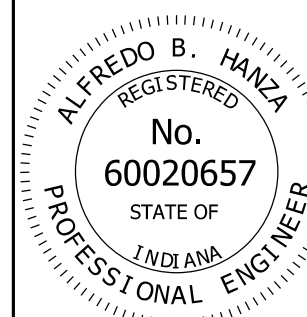
**NOTES:**

- ① See Standard Drawing E 802-DMSS-11 for handhole details.
2. See Standard Drawing E 802-DMSS-12 for anchor bolts and skirt details.
- ③ 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 \_\_\_\_\_, Structure Length \_\_\_\_\_  
 End Support Mounting Height \_\_\_\_\_
4. Each end support requires one I.D. tag.

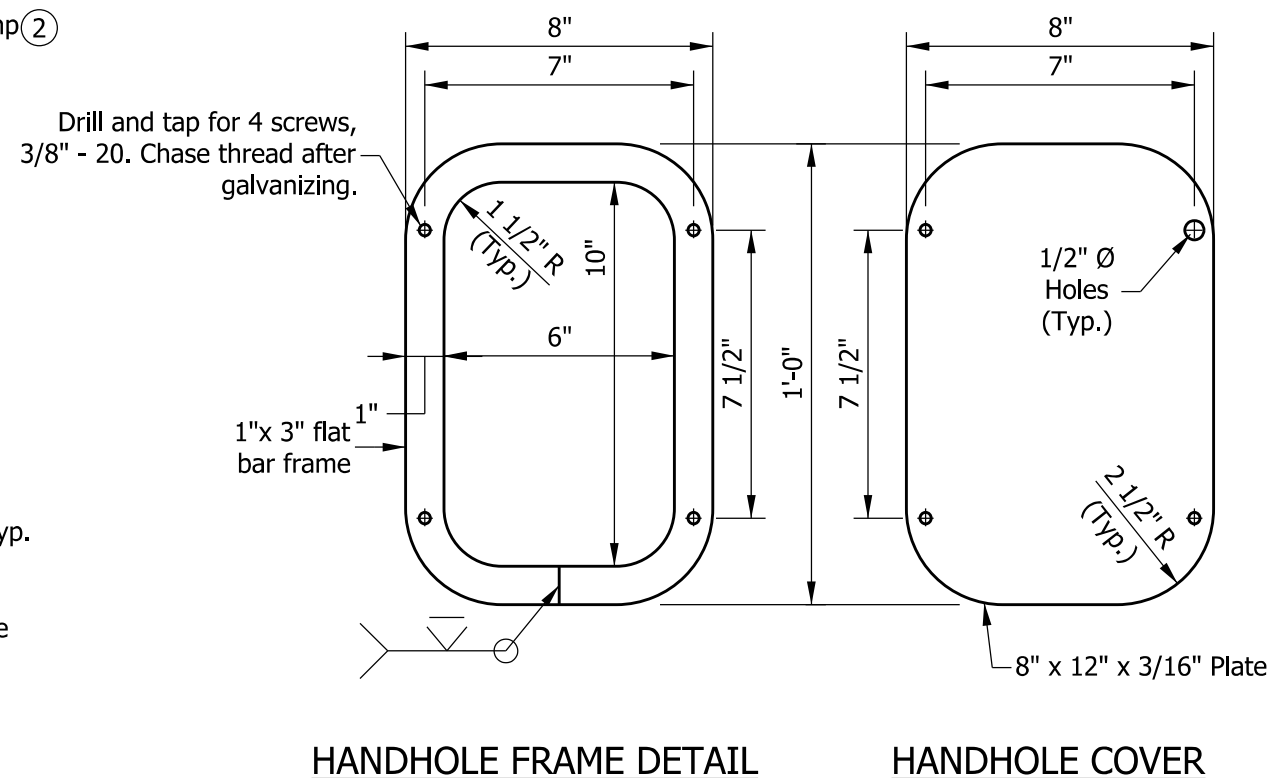
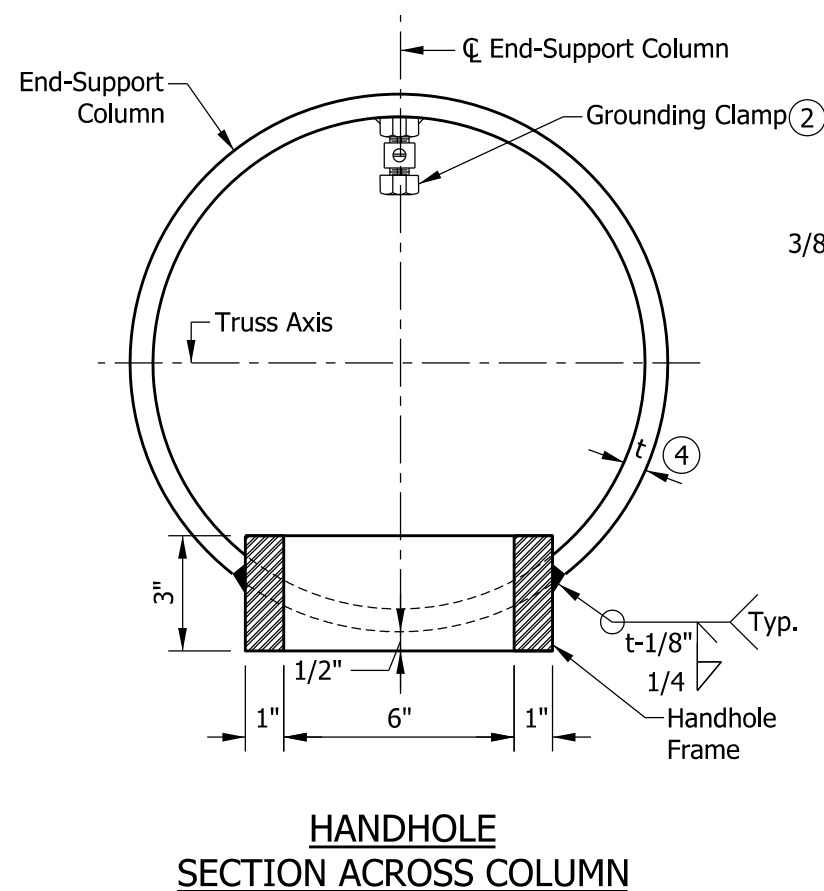
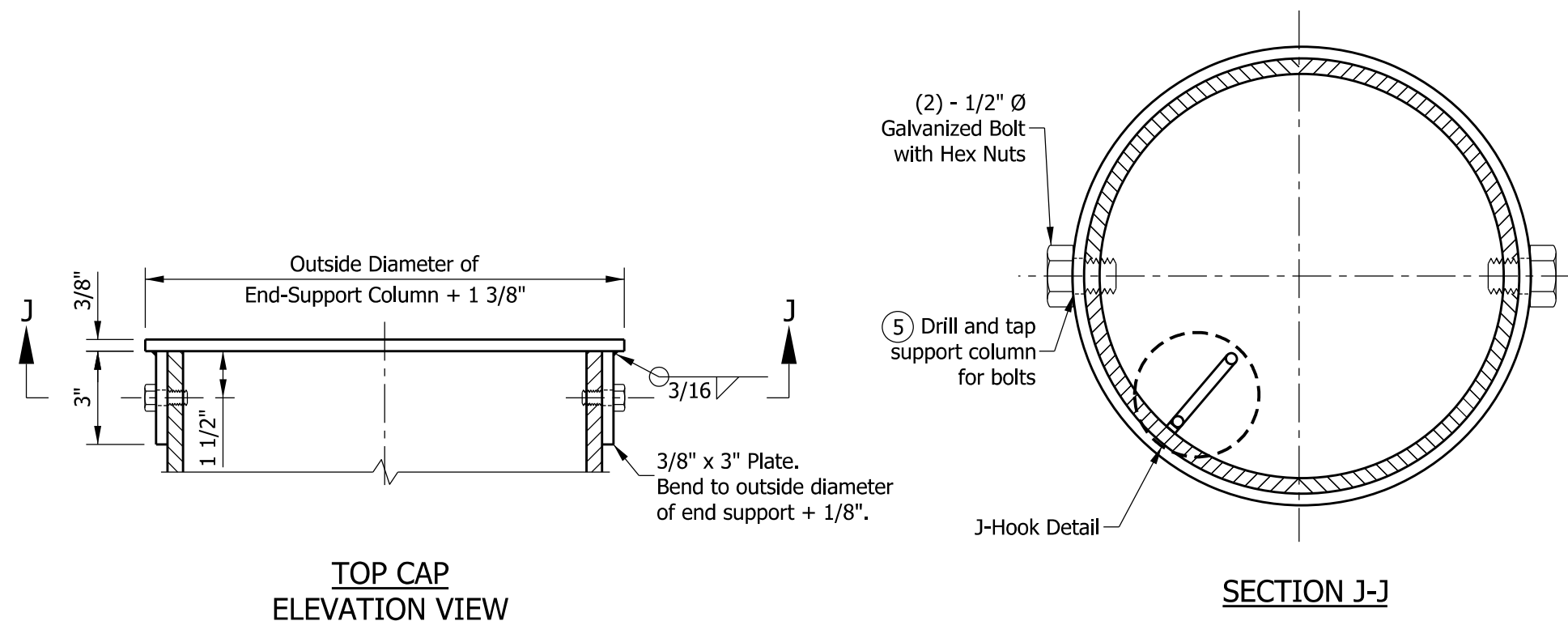
**INDIANA DEPARTMENT OF TRANSPORTATION**

**DYNAMIC MESSAGE SIGN STRUCTURE  
END SUPPORT  
BASE PLATE AND I.D. TAG DETAILS  
SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-DMSS-10**

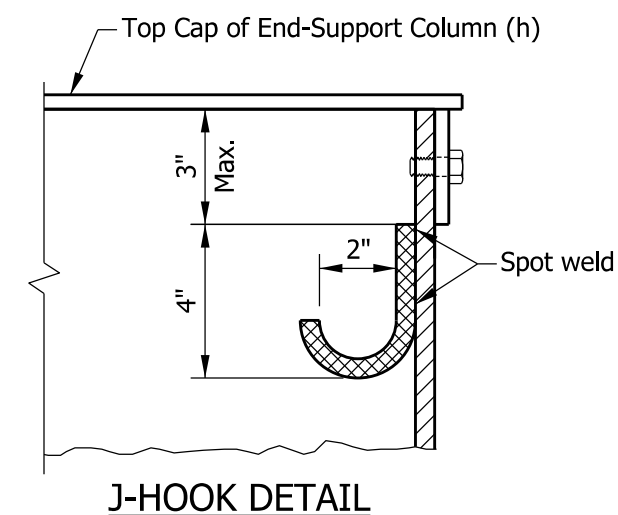


/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



# NOTES:

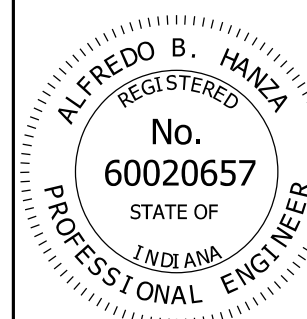
1. In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
- 2 See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawing E 802-DMSS-10 for handhole locations.
- 4 See Standard Drawing E 802-DMSS-03 for thicknesses of end-support column.
- 5 Bolts shall be located to miss J-hook.
6. One handhole required on each end support.



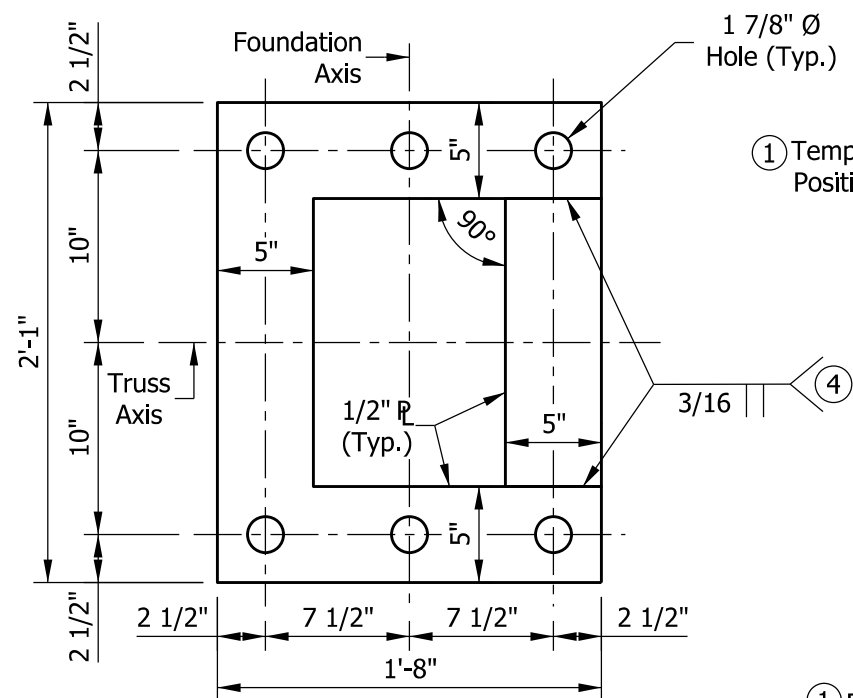
INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
END SUPPORT HANDHOLE, TOP CAP,  
AND J-HOOK DETAILS  
SEPTEMBER 2013

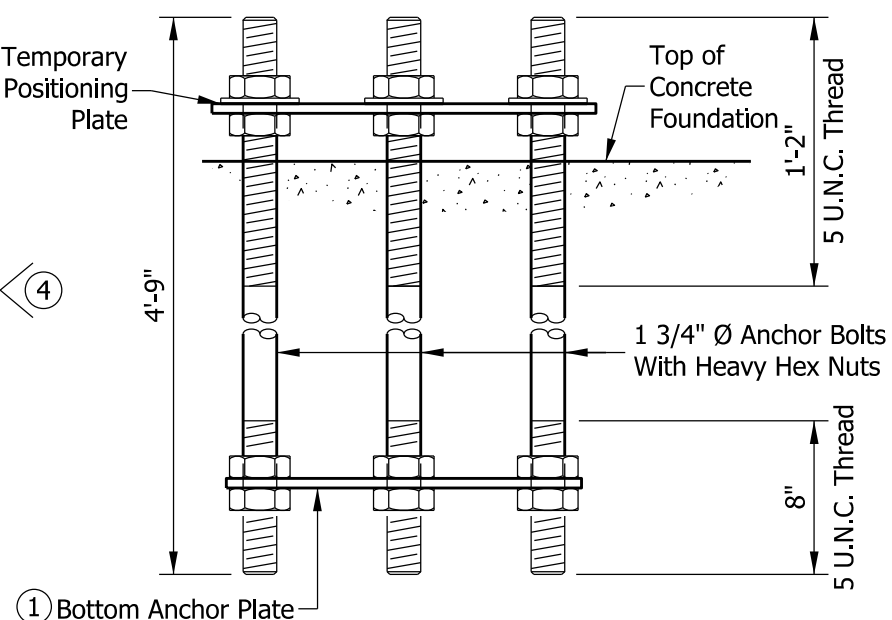
STANDARD DRAWING NO. E 802-DMSS-11



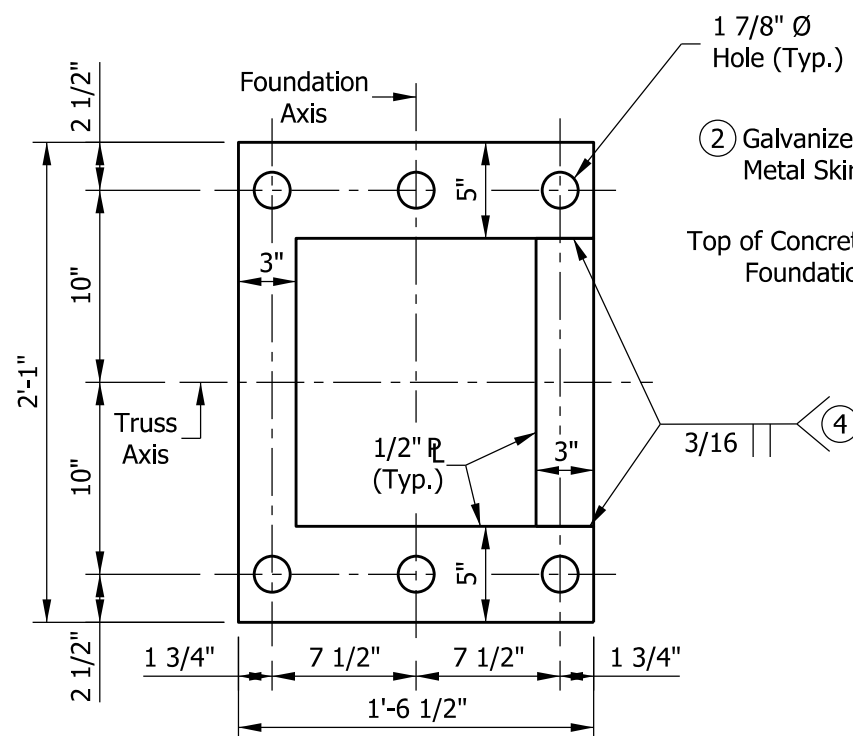
/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



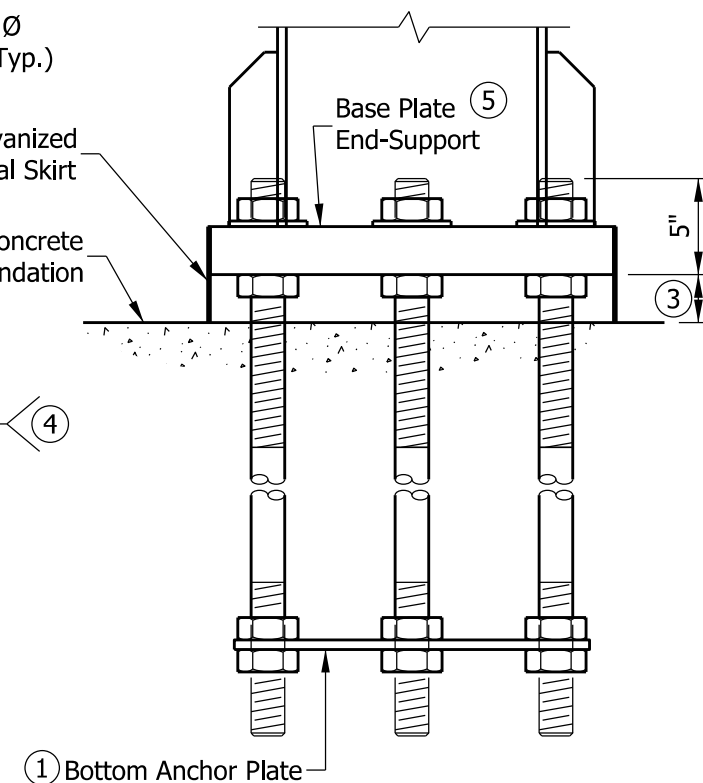
**TEMPORARY POSITIONING PLATE**



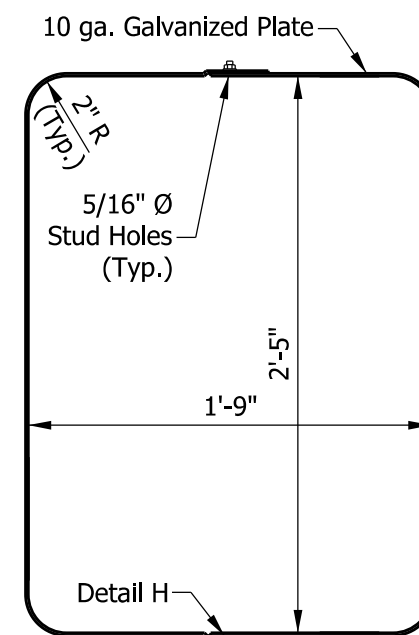
**ANCHOR BOLT DETAILS  
BEFORE CONCRETE PLACEMENT**



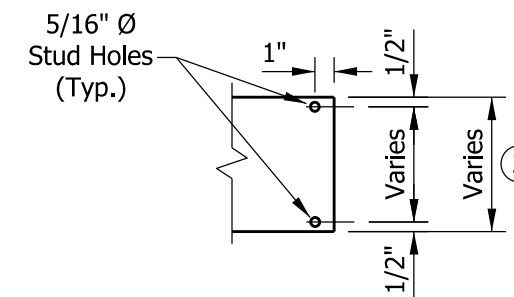
**BOTTOM ANCHOR PLATE**



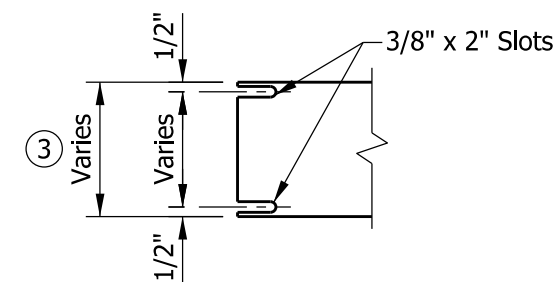
**ANCHOR BOLT DETAILS  
AFTER CONCRETE PLACEMENT**



**METAL SKIRT DETAIL**



**DETAIL G**



**DETAIL H**

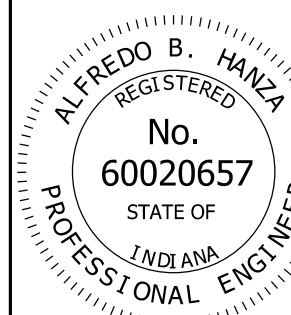
**NOTES:**

- ① Use temporary positioning plate and bottom anchor plate for all foundations. Temporary positioning plate should be removed after placing concrete.
- ② Secure galvanized metal skirt to base plate after erection as shown in skirt detail.
- ③ Minimum base plate gap is 2 1/2" and can be increased up to 5 1/2". Metal skirt width shall be at least 1 1/2" more than the actual gap.
- ④ Contractor has the option to use four separate bars. Weld to maintain angles and shapes as shown.
- ⑤ For base plate of end-support, see Standard Drawing E 802-DMSS-10.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
ANCHOR PLATES, ANCHOR BOLTS,  
AND METAL SKIRT DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-12

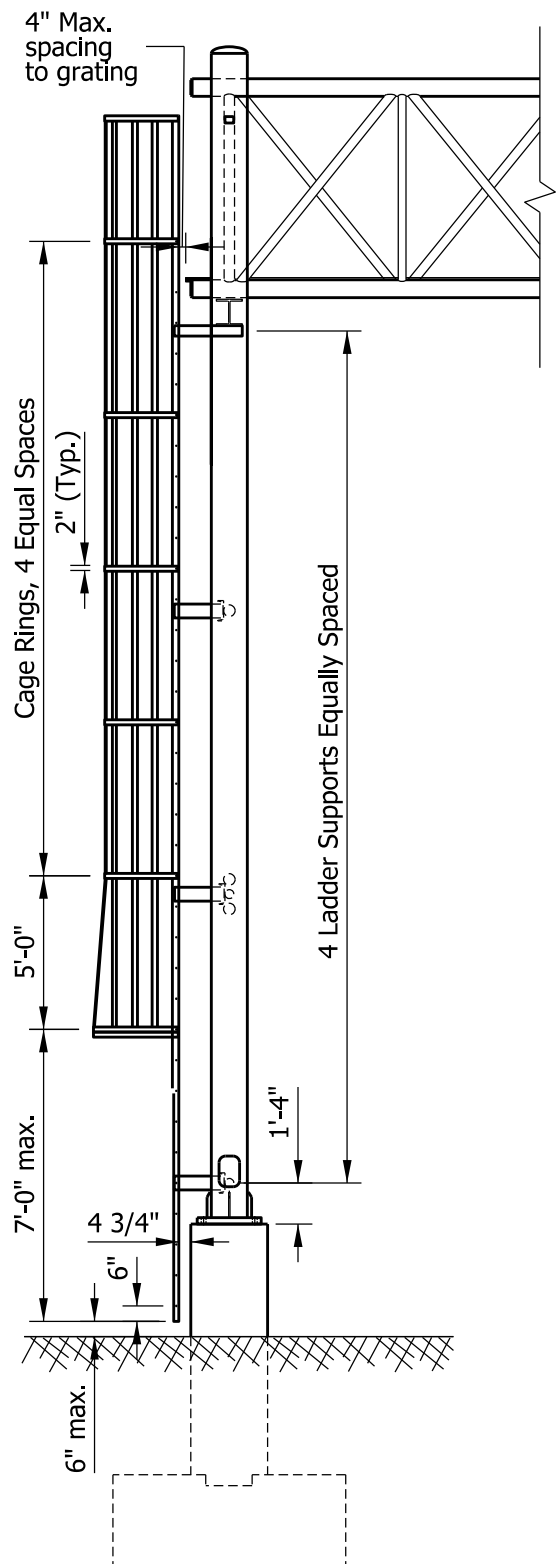


/s/ Alfredo B. Hanza 02/05/13

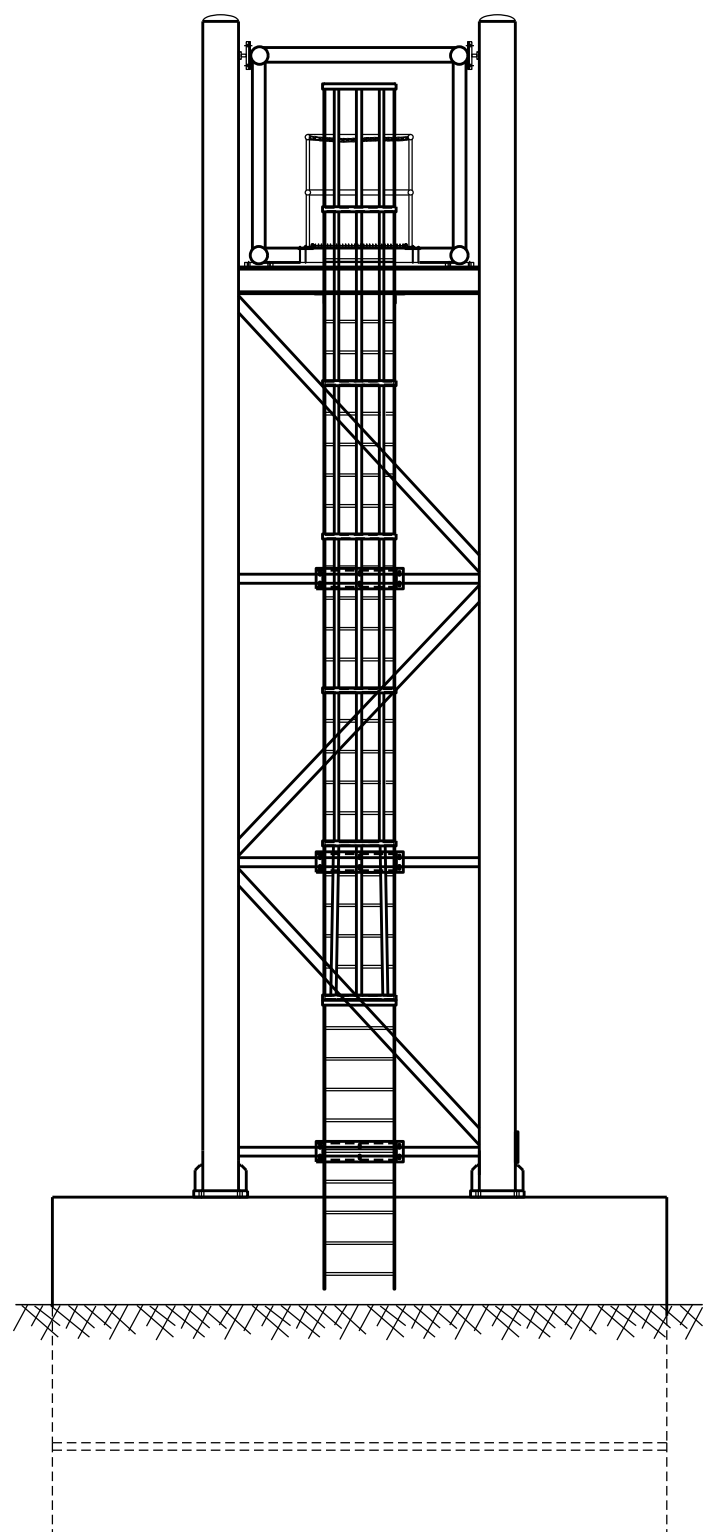
DESIGN STANDARDS ENGINEER DATE

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

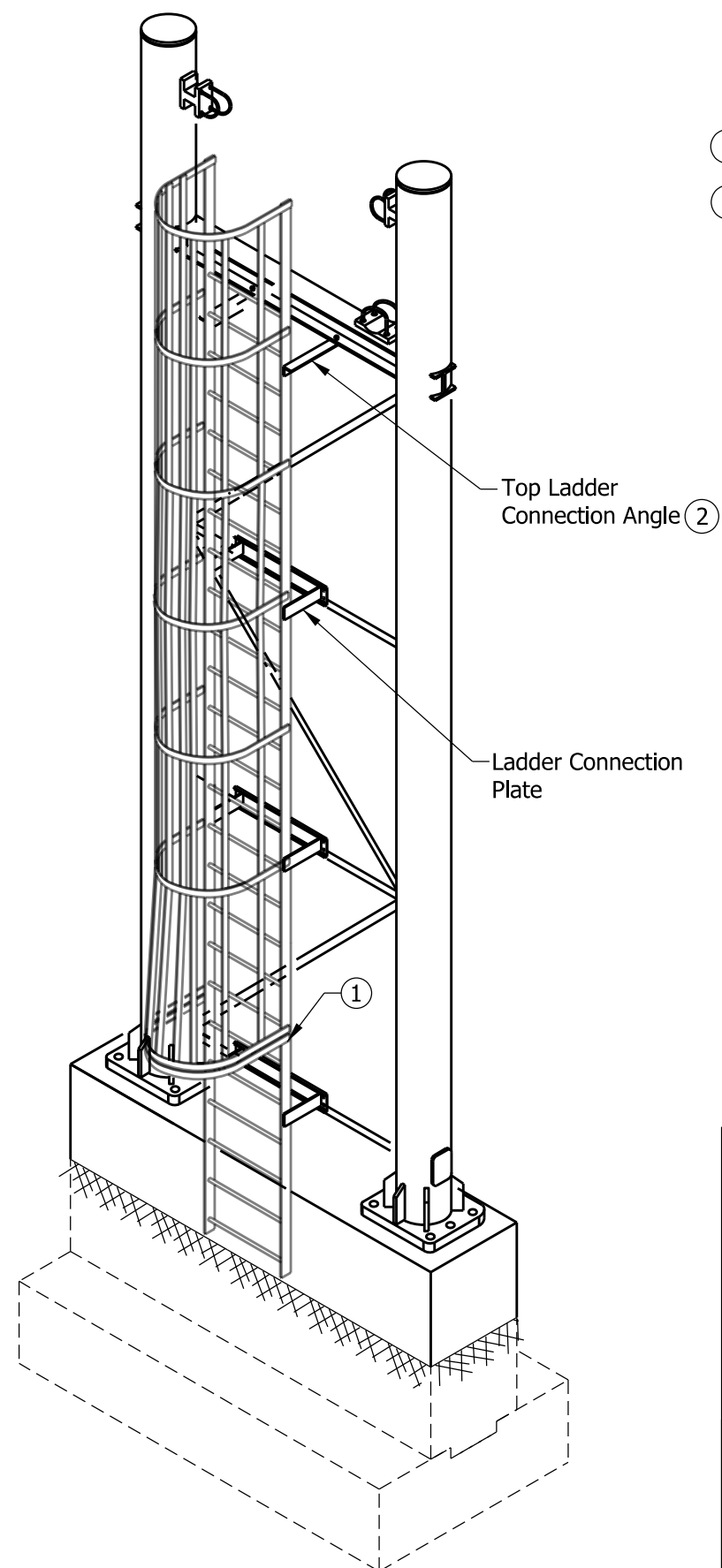
CHIEF ENGINEER DATE



**SIDE VIEW**

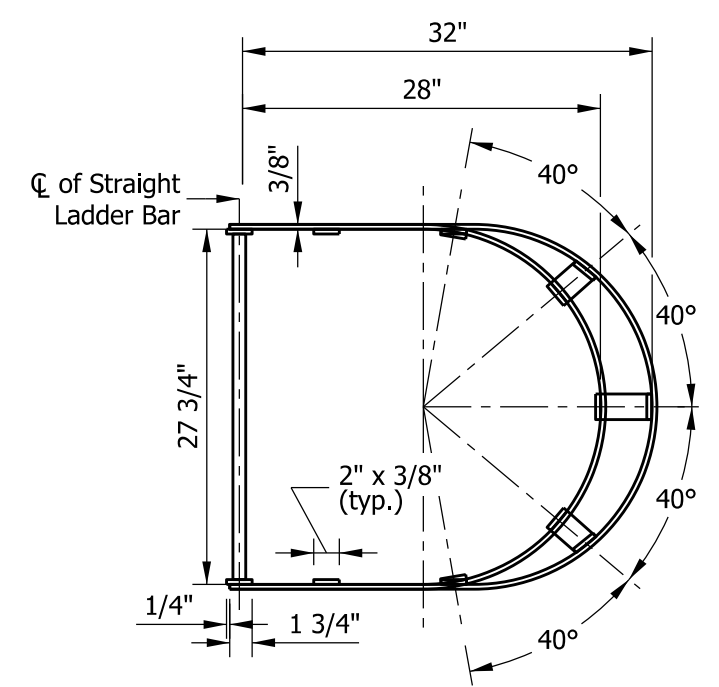


**FRONT VIEW OF  
LADDER AND CAGE**



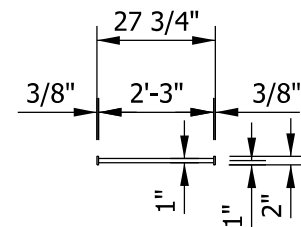
**NOTES:**

- ① See Standard Drawing E 802-DMSS-15 for security gate details.
- ② See Standard Drawing E 802-DMSS-14 for ladder details.

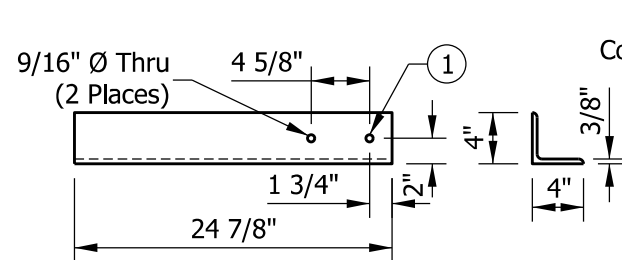


**TOP VIEW OF  
LADDER AND CAGE**

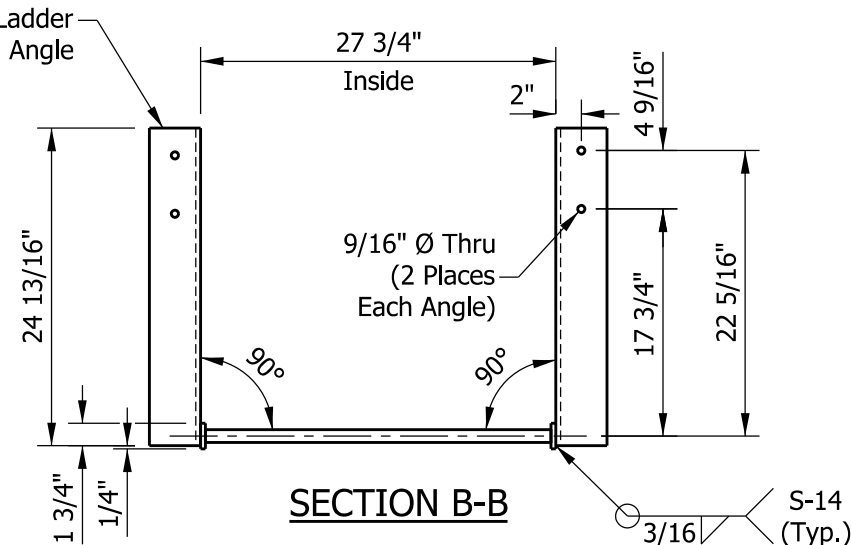
INDIANA DEPARTMENT OF TRANSPORTATION		
DYNAMIC MESSAGE SIGN STRUCTURE LADDER DETAILS		
SEPTEMBER 2013		
STANDARD DRAWING NO.		E 802-DMSS-13
	/s/ Alfredo B. Hanza	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE



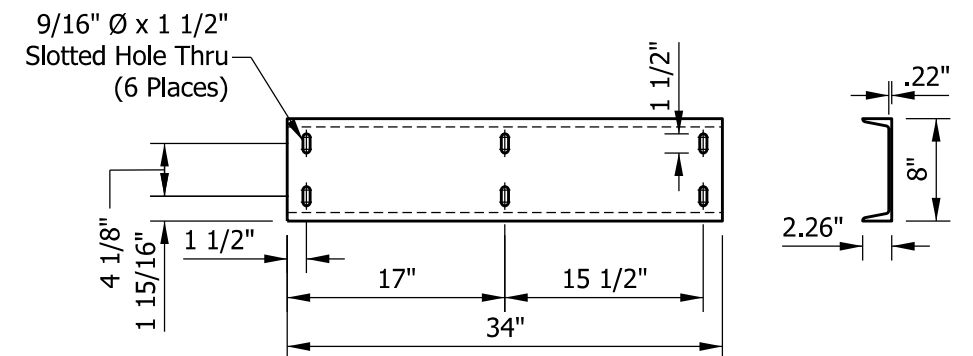
**TOP VIEW OF  
LADDER**



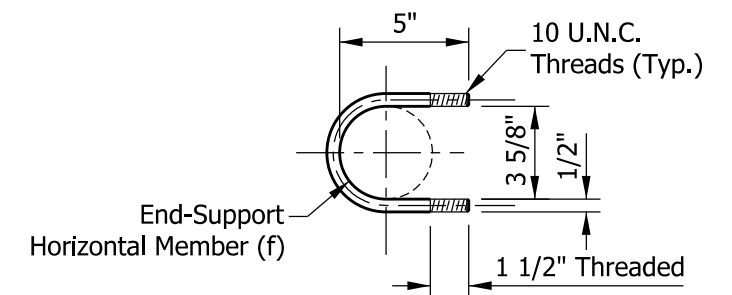
**TOP LADDER CONNECTION ANGLE**



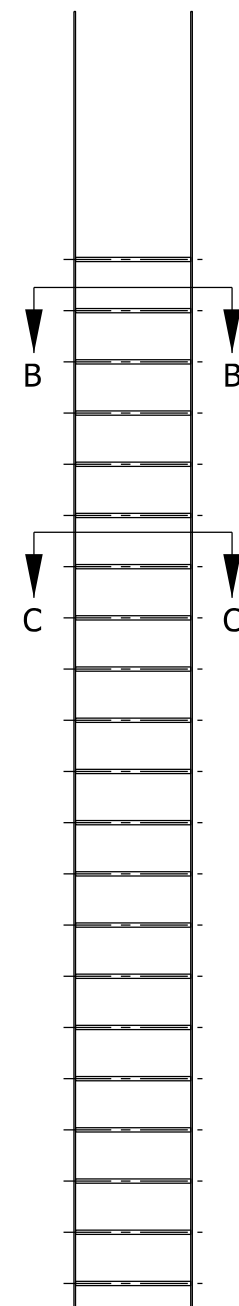
**SECTION B-B**



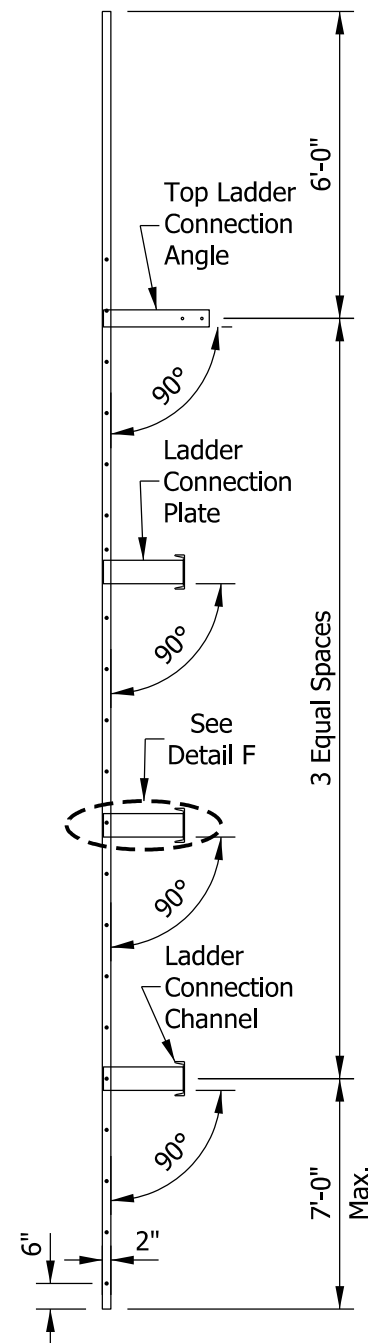
**LADDER CONNECTION CHANNEL**



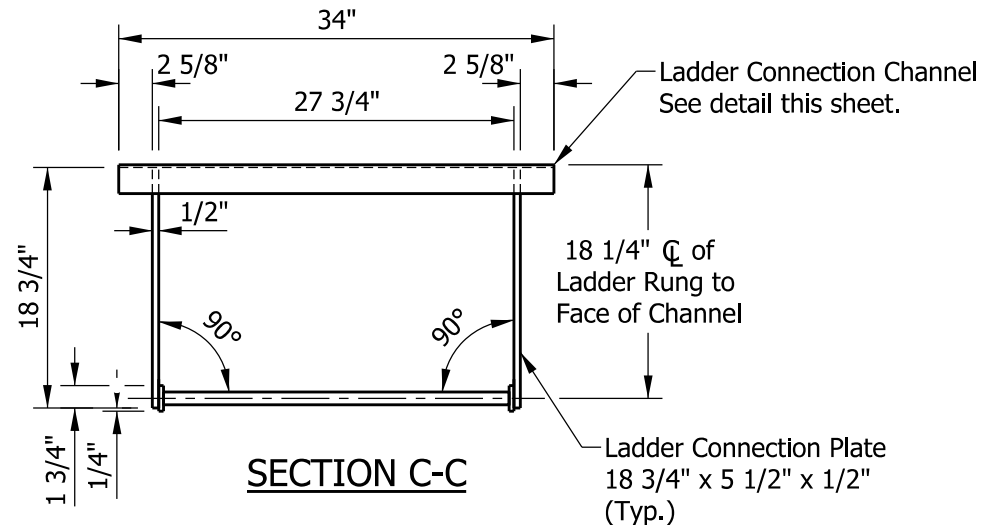
**1/2" DIA. STAINLESS STEEL U-BOLT DETAIL  
(Used for ladder connection channel)**



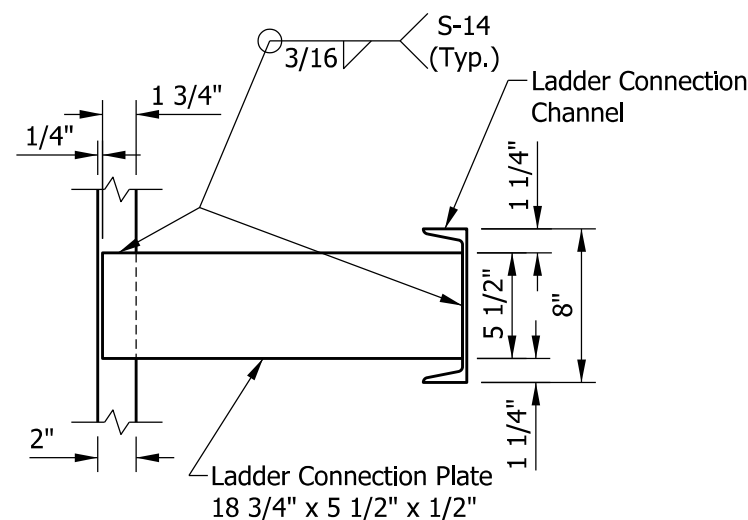
**FRONT VIEW OF  
LADDER**



**SIDE VIEW OF  
LADDER AND CAGE**



**SECTION C-C**

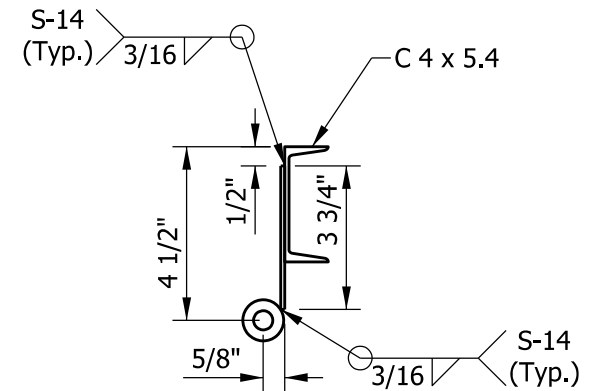
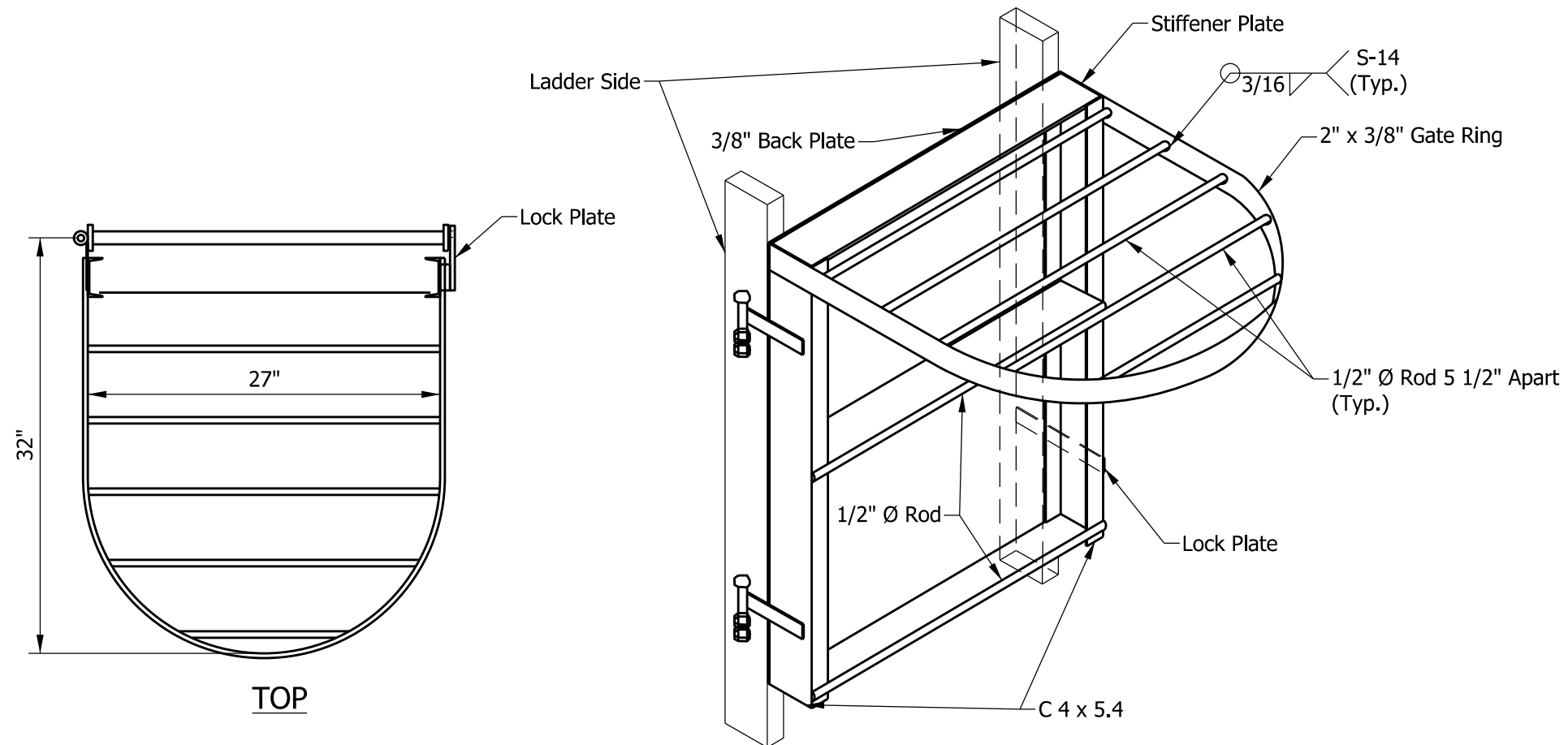


**DETAIL F**

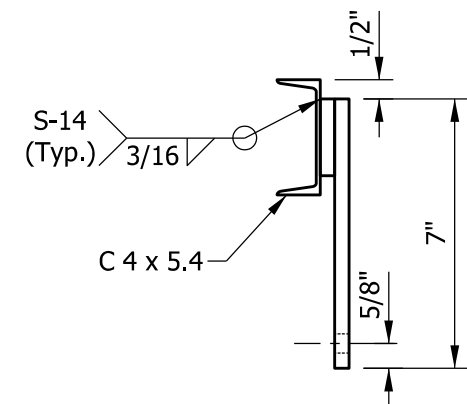
**NOTE:**

- ① (1) A-325 bolts 1/2" x 2" on each side of the W-beam with (1) flat washer and (1) lock nut.

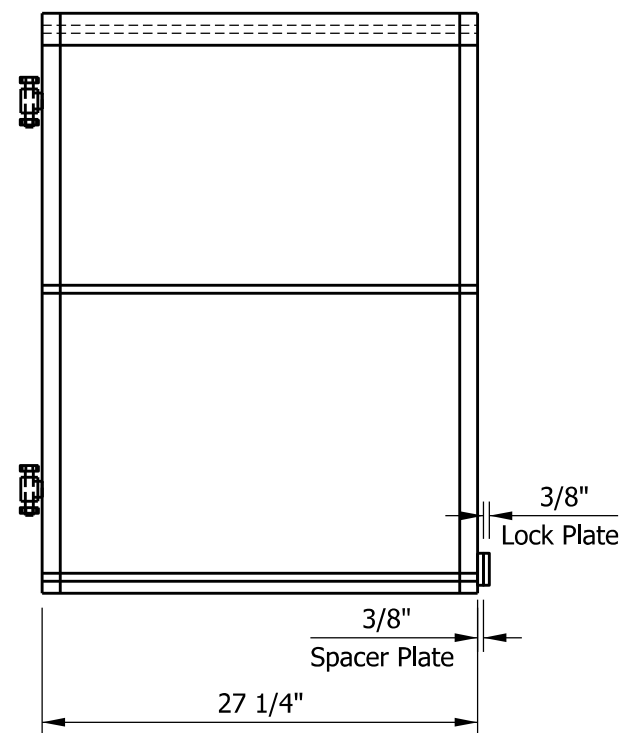
INDIANA DEPARTMENT OF TRANSPORTATION			
DYNAMIC MESSAGE SIGN STRUCTURE LADDER DETAILS			
SEPTEMBER 2013			
STANDARD DRAWING NO.		E 802-DMSS-14	
	/s/ <i>Alfredo B. Hanza</i>		02/05/13
	DESIGN STANDARDS ENGINEER		DATE
	/s/ <i>Mark A. Miller</i>		03/27/13
	CHIEF ENGINEER		DATE



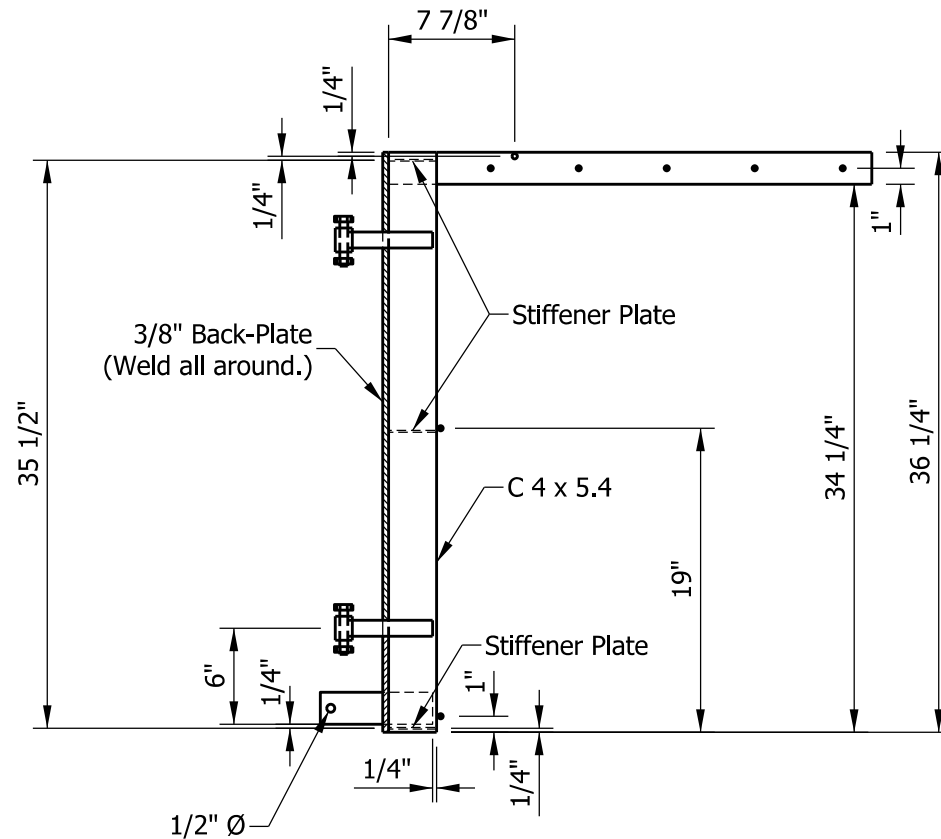
**HINGE**



**GATE LOCK**

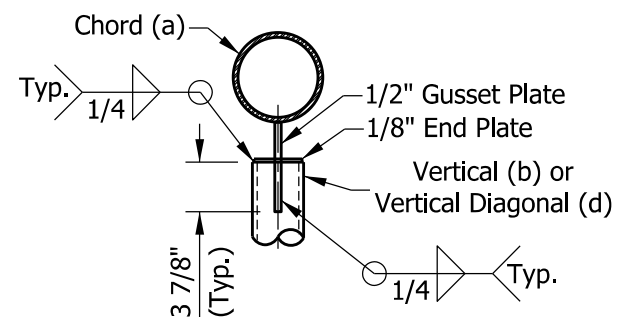
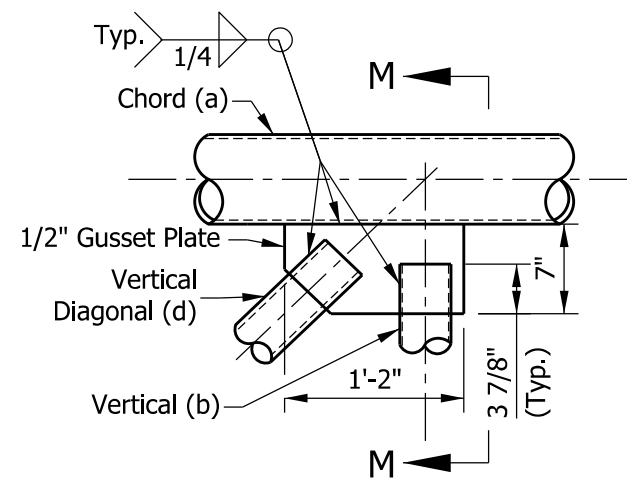
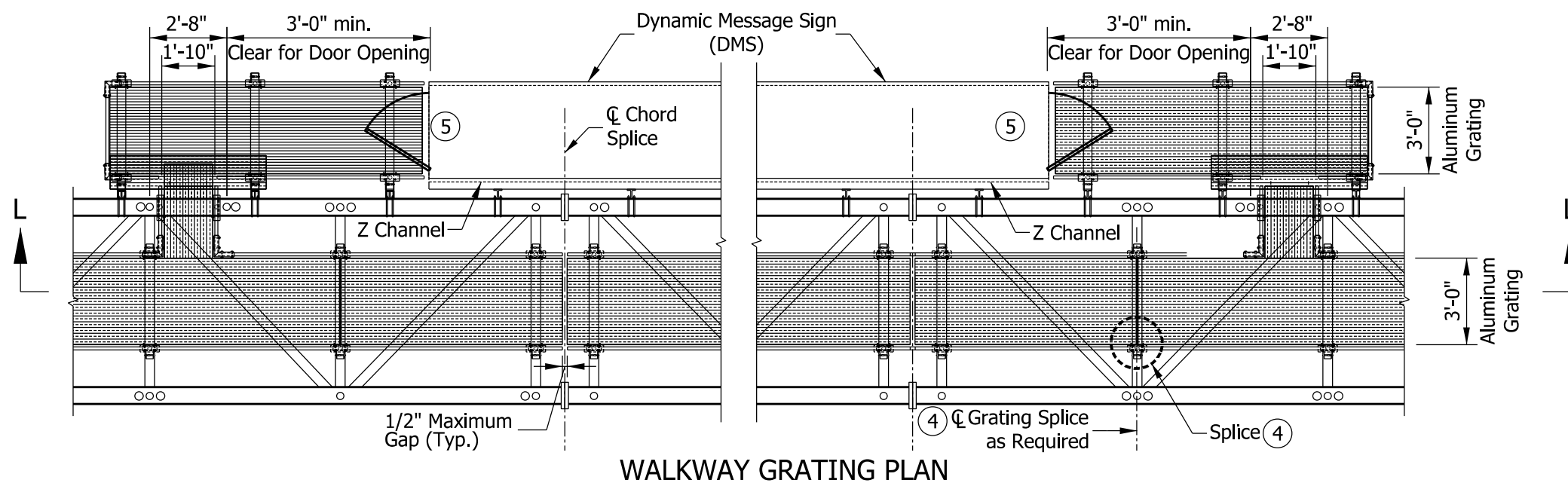
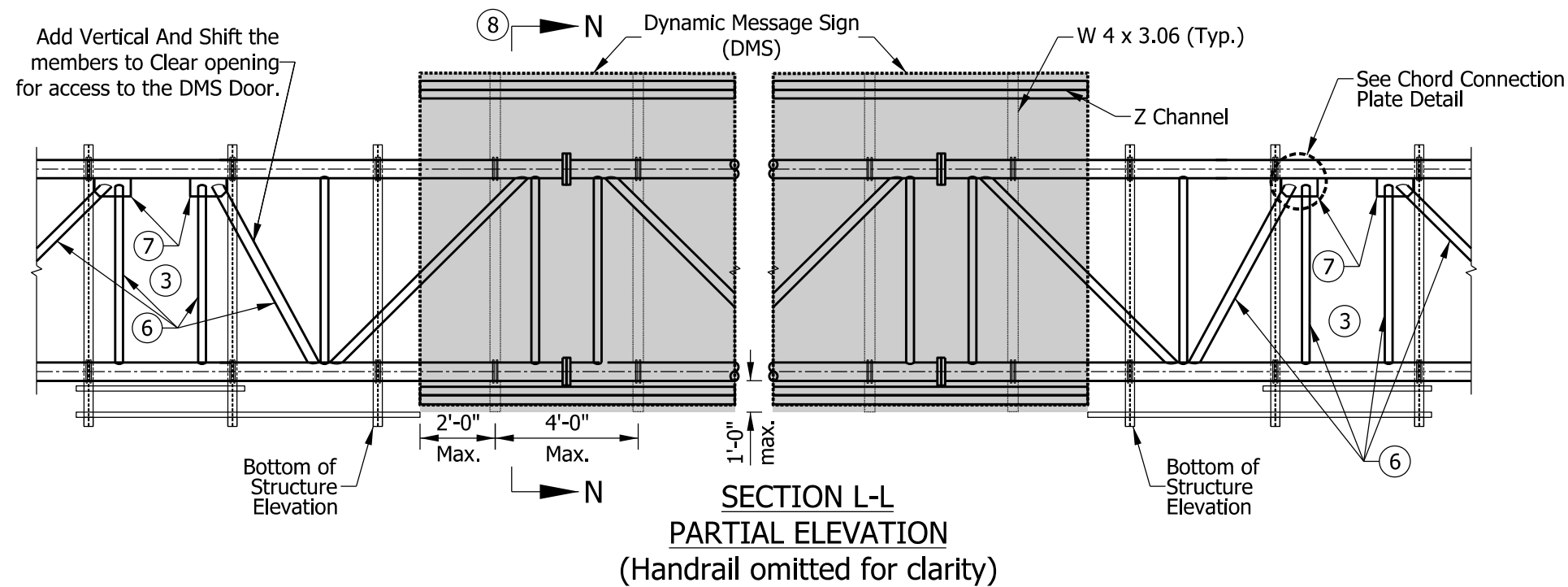


**FRONT**



**SIDE**

INDIANA DEPARTMENT OF TRANSPORTATION		
DYNAMIC MESSAGE SIGN STRUCTURE SECURITY GATE DETAILS		
SEPTEMBER 2013		
STANDARD DRAWING NO.		E 802-DMSS-15
	/s/ Alfredo B. Hanza	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE



## NOTES:

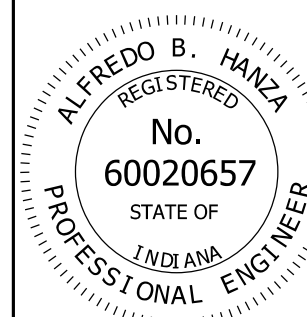
- Interior walkway gratings are extruded I-bars 2" x 1/4" at 1 3/16" center-to-center. Crossbar shall have a maximum gap of 4". Moment of inertia  $I_x = 1.382 \text{ in}^4$ . A different grating of equal strength may be used upon approval.
- Interior walkway grating shall run the full length center to center of end support truss members plus 9" at each end.
- The contractor shall coordinate with the fabricator to determine which truss panel is to be modified to allow opening for access to the DMS door.
- Interior walkway gratings can be spliced on center of any horizontal truss members as needed. See Standard Drawing E 802-DMSS-18 for typical grating splice detail.
- The contractor shall coordinate with sign manufacturer so floor inside DMS is one comfortable step to the exterior grating.
- Truss vertical and diagonal members on each side of the DMS access door shall be aluminum with 4.0" diameter and a minimum wall thickness of 0.500".
- Install gusset plates at vertical and diagonal intersection on each side of the opening for access to DMS door.
- See Standard Drawing E 802-DMSS-17 for Section N-N.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
WALKWAY GRATING DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-16



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

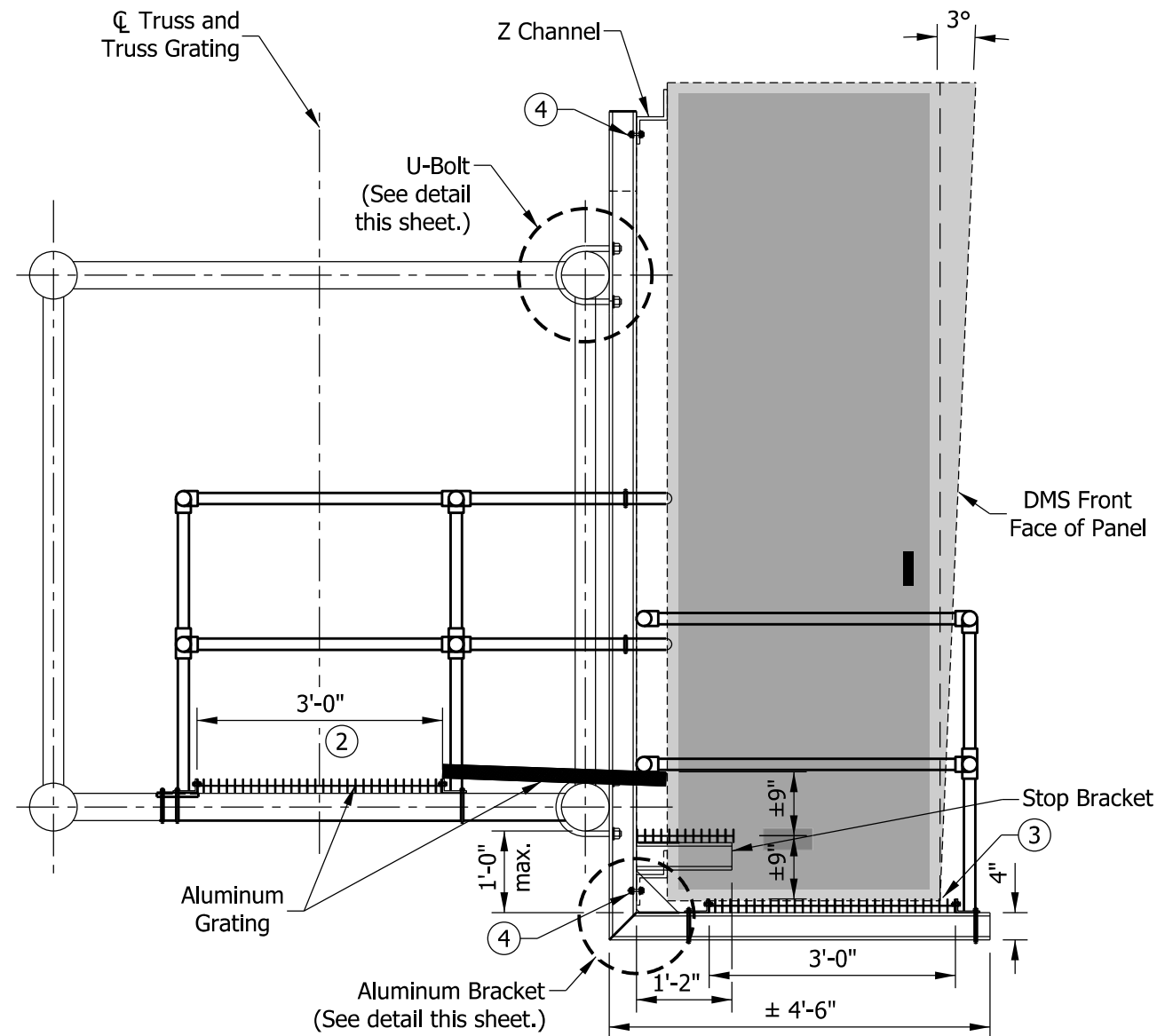
DESIGN STANDARDS ENGINEER DATE

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

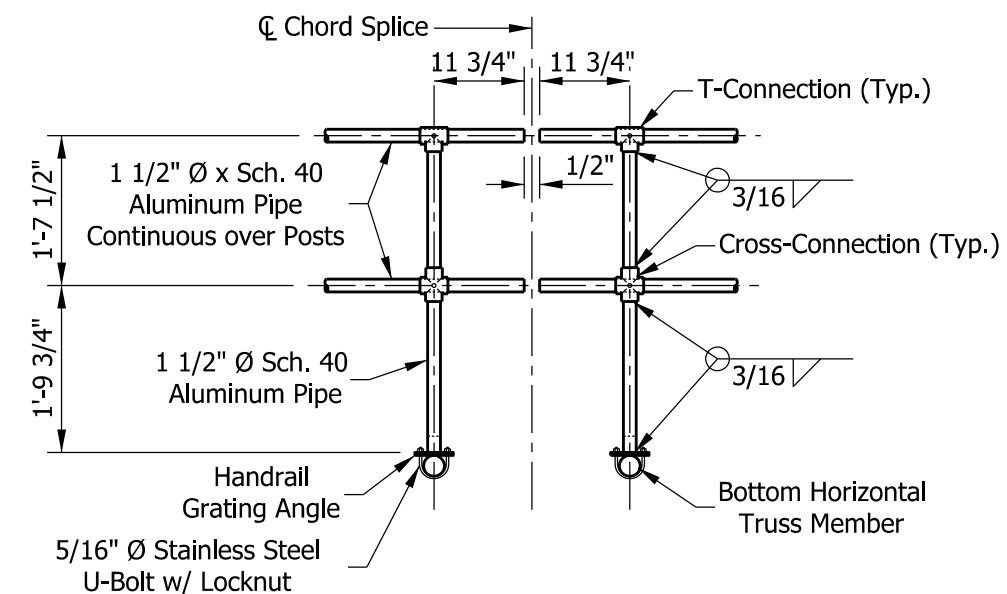
CHIEF ENGINEER DATE

**NOTES:**

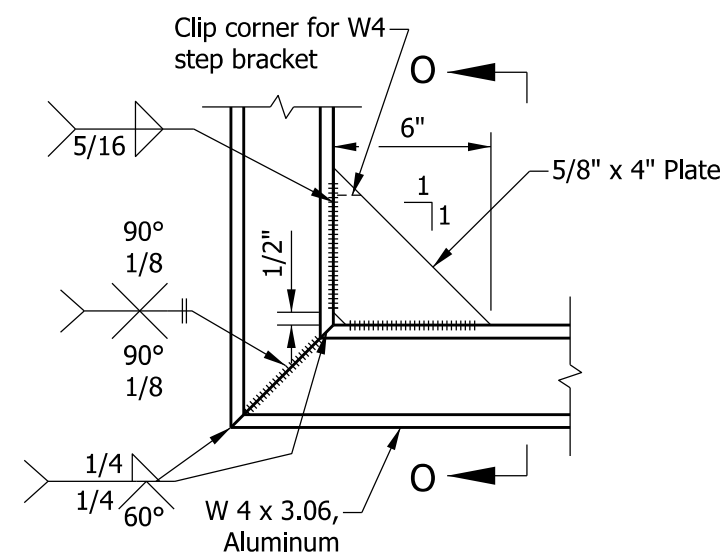
1. The front face of the DMS shall be tilted at 3° toward approaching traffic. If the DMS is not built with the front face tilted appropriately, a block shall be placed on the top of the back face to obtain the 3° tilt.
- 2 The walkway grating width is nominal and may vary  $\pm 1/2"$  based on available standard widths.
- 3 The bottom of the DMS door shall open without obstruction from the grating.
- 4 (1) A-325 bolt  $1/2" \times 2"$  on each side of the WF (A-N) 4 x 3.06 aluminum bracket web with (1) flat washer and (1) lock nut.  
5. (2) flat washers, (2) lock washers, and (2) lock nuts per U-bolt; 4 required per bracket.



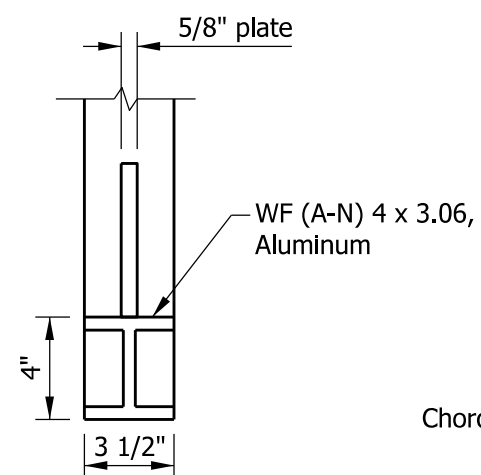
**SECTION N-N**



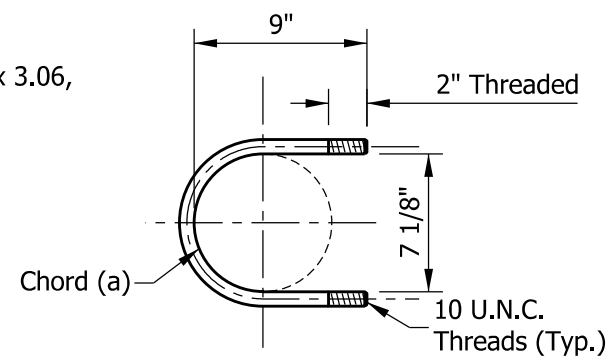
**TYPICAL HANDRAIL DETAIL**



**ALUMINUM BRACKET DETAIL**



**SECTION O-O**



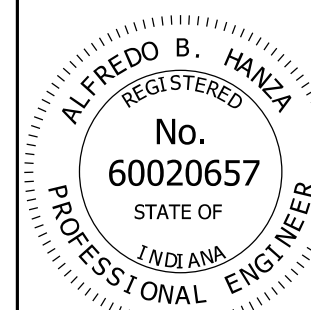
**1/2" DIA. STAINLESS STEEL U-BOLT DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
WALKWAY GRATING DETAILS

SEPTEMBER 2013

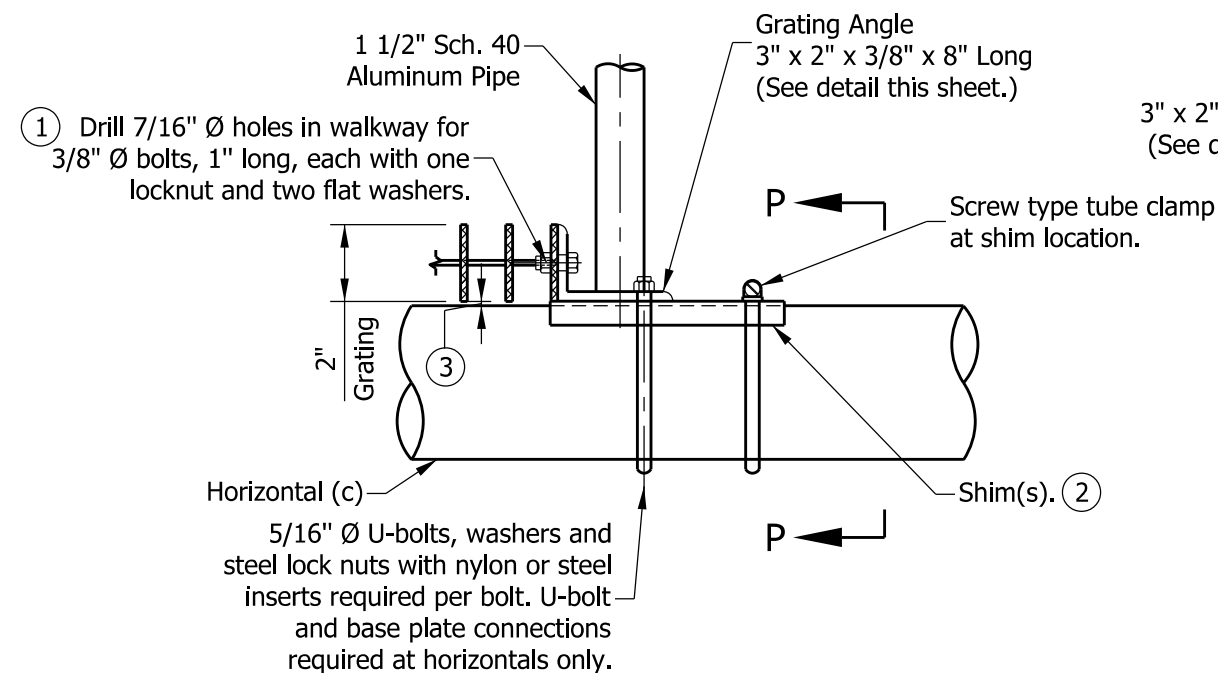
STANDARD DRAWING NO. E 802-DMSS-17



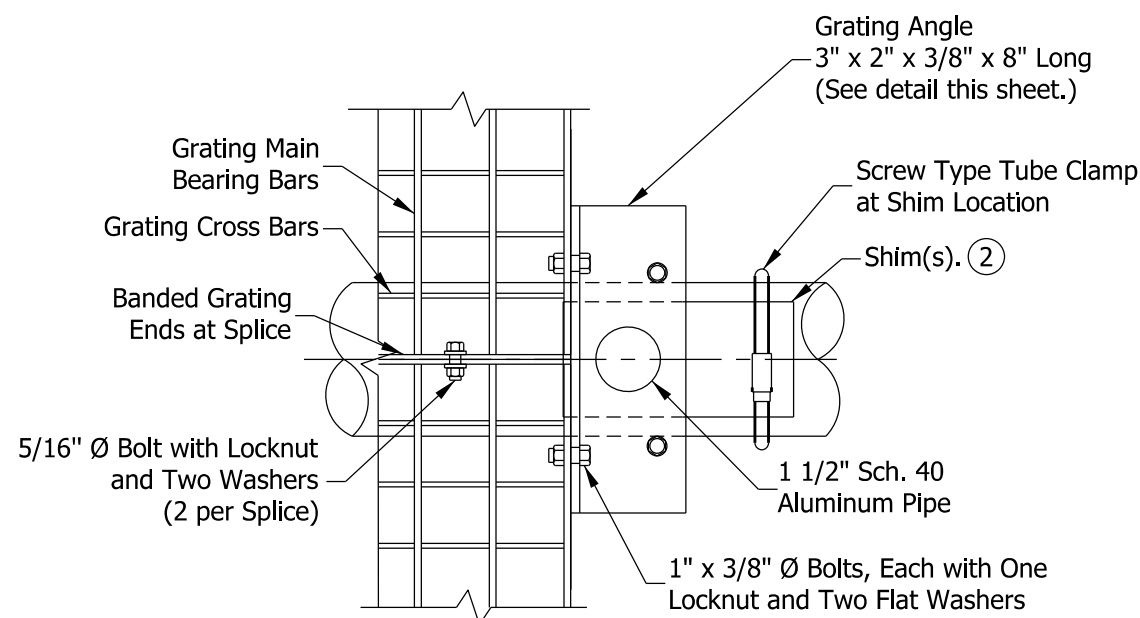
/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

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

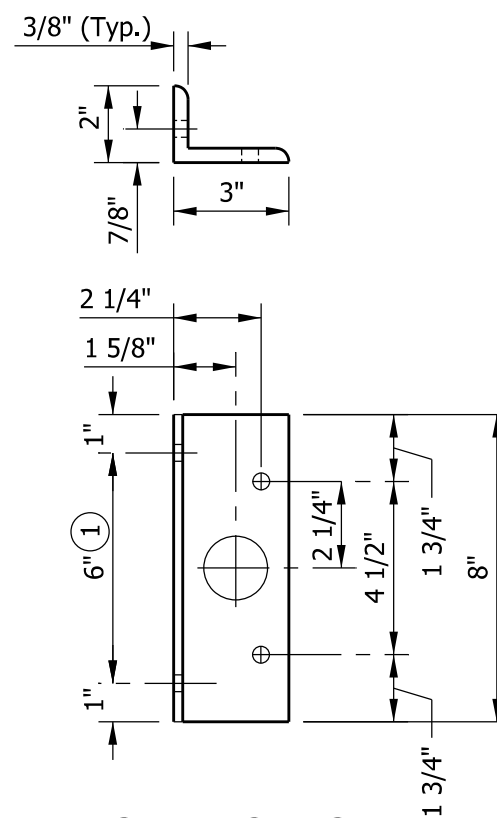
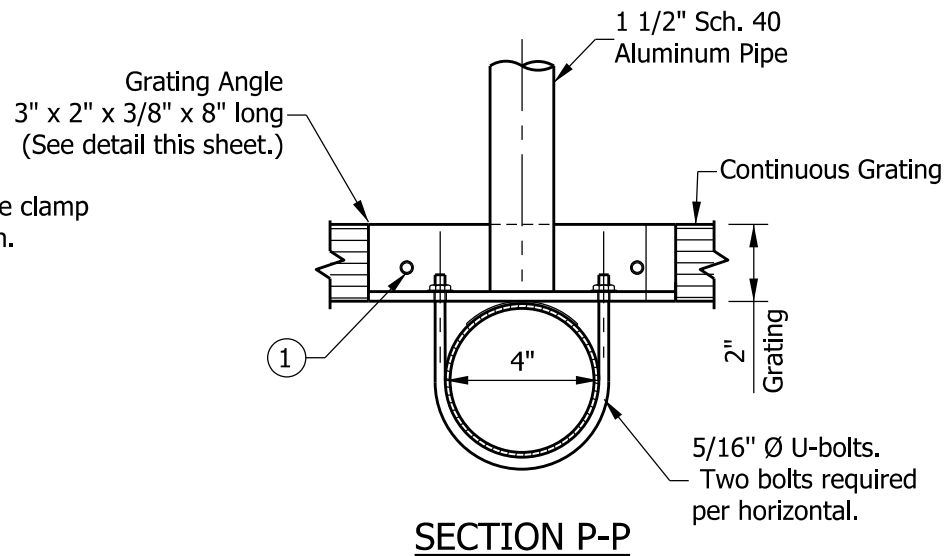




**GRATING SUPPORT DETAIL**

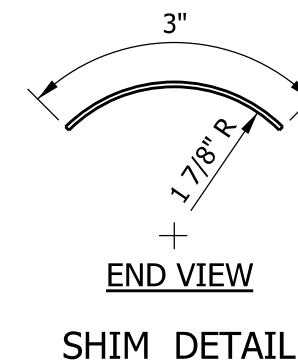
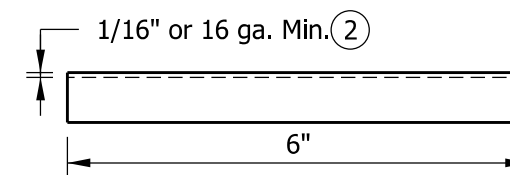


**GRATING SPLICE DETAIL**



**NOTES:**

- ① Drilling of holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
- ② Shims may be placed as shown if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
- ③ Tube-to-grating gap may vary from 0" to 1/2" max. to align walkway and to allow for camber.

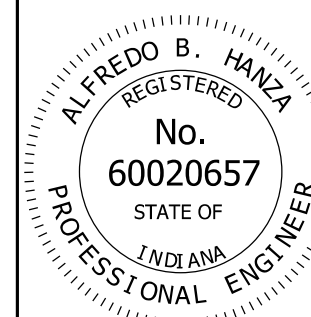


INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
WALKWAY GRATING DETAILS

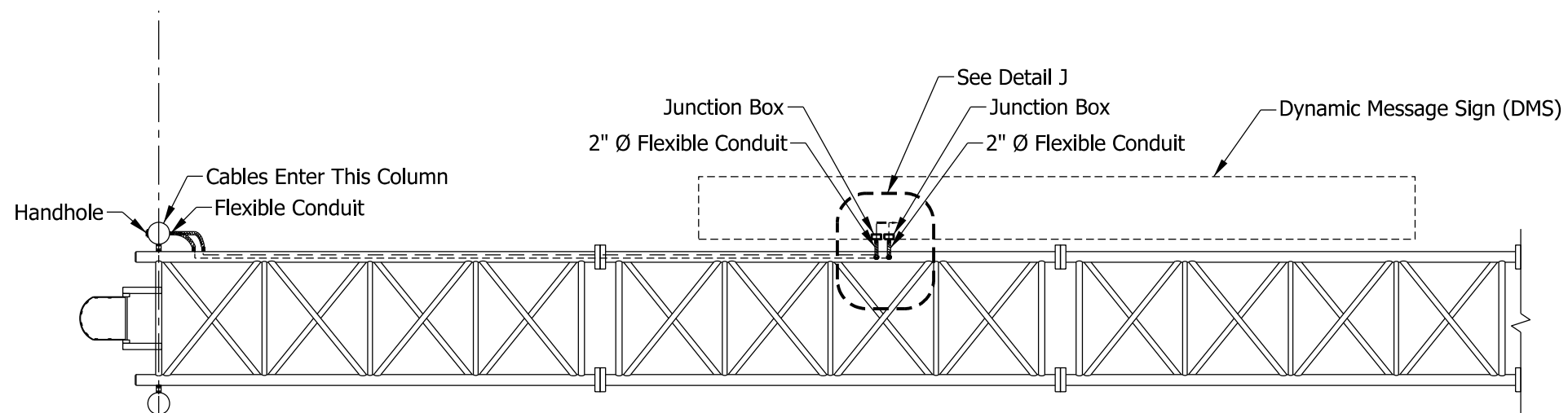
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-18

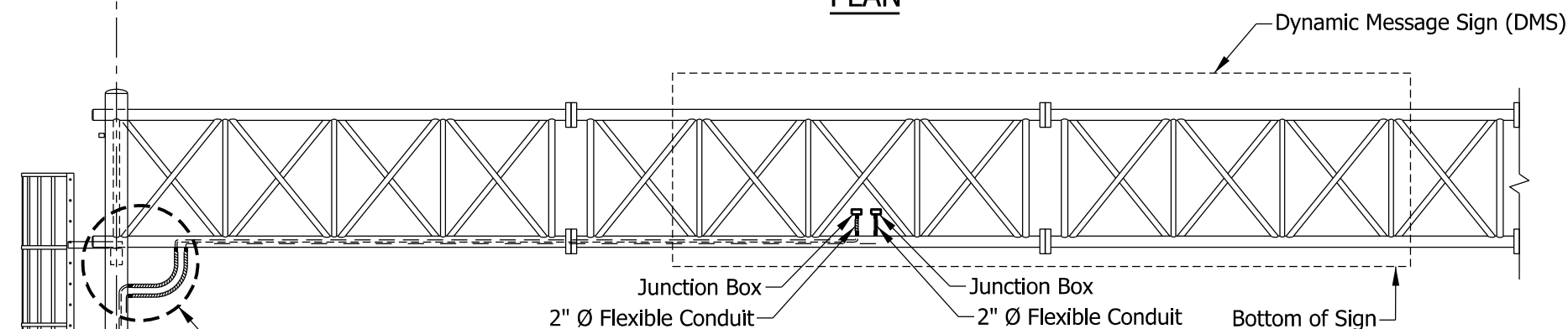


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

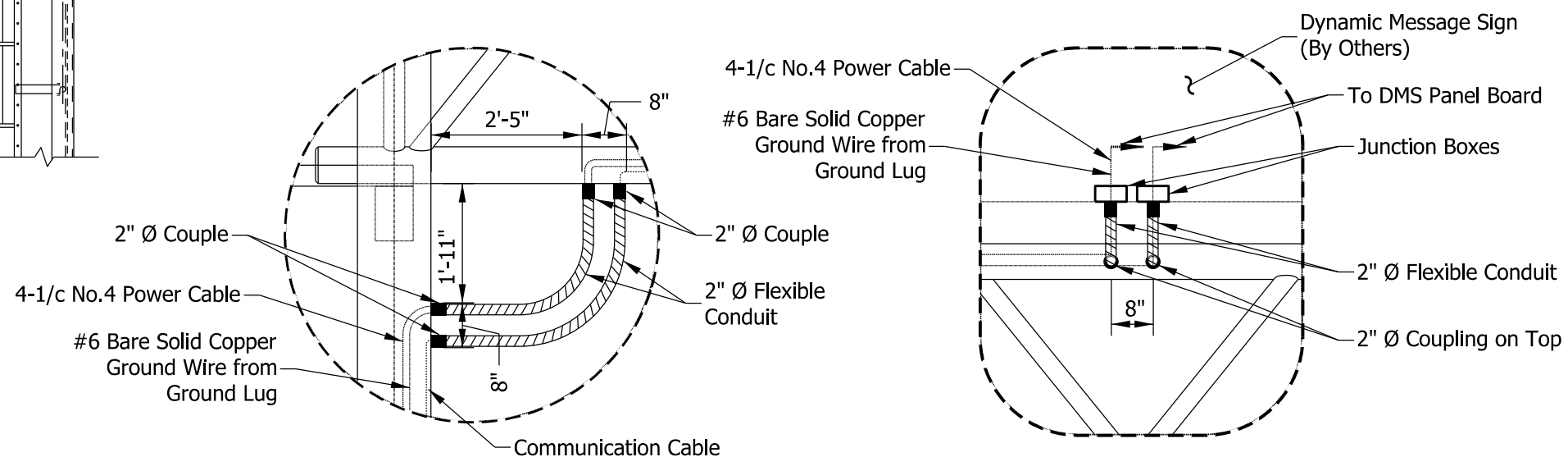
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



**PLAN**



**FRONT ELEVATION**

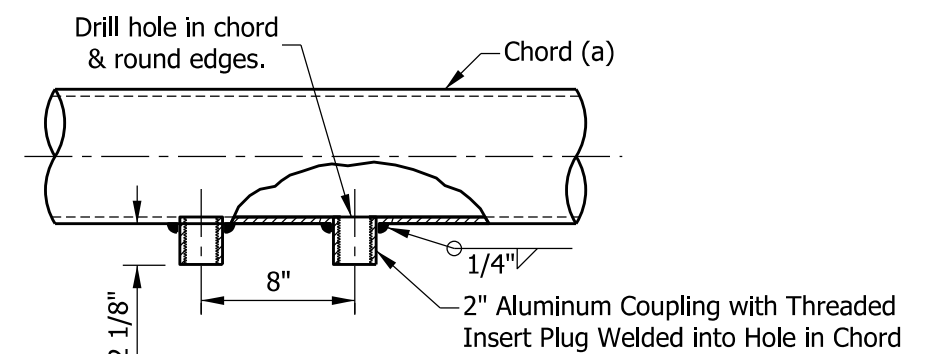


**DETAIL I**

**DETAIL J**

**NOTES:**

1. Cables shall be laid out as shown or as otherwise directed.
2. It is the Contractor's responsibility to coordinate locations of cable access with manufacturers.
3. Wire outlets shall be composed of aluminum on the chord and steel on the end support and shall have threaded-insert plug.



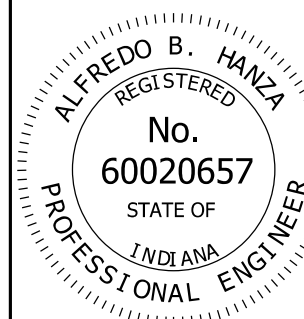
**WIRE OUTLET DETAIL  
PLAN VIEW**

INDIANA DEPARTMENT OF TRANSPORTATION

**DYNAMIC MESSAGE SIGN STRUCTURE  
WIRING LAYOUT DETAILS**

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-19

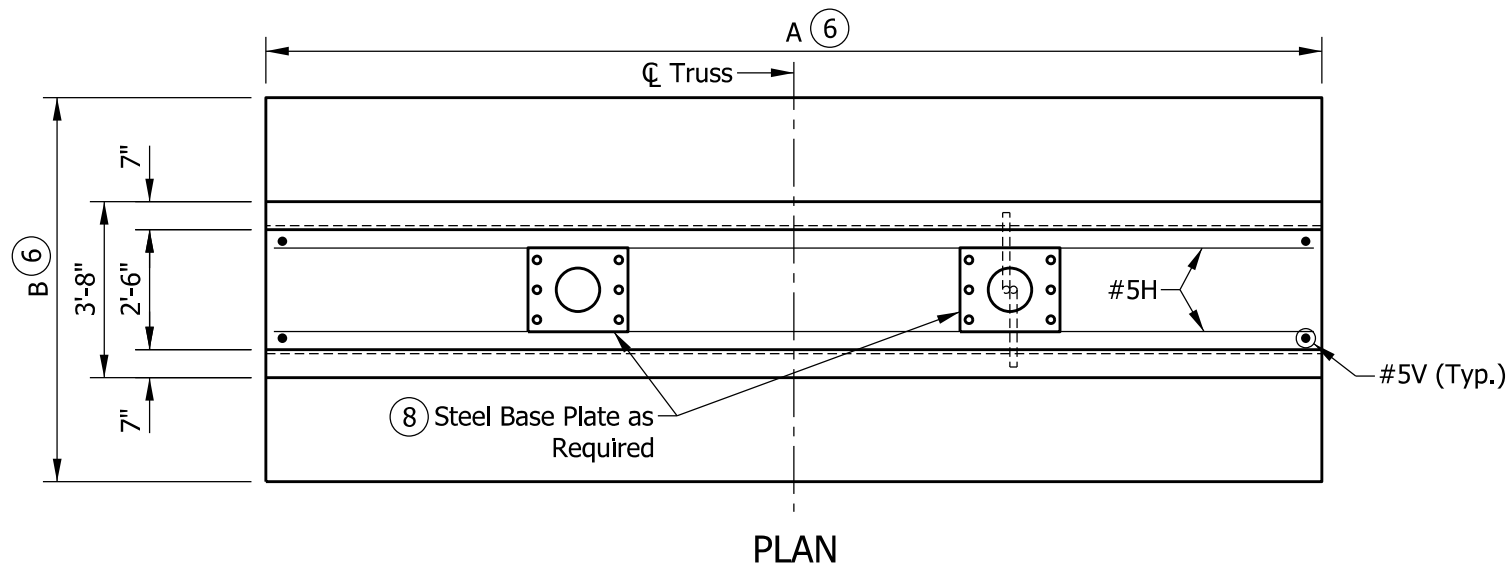
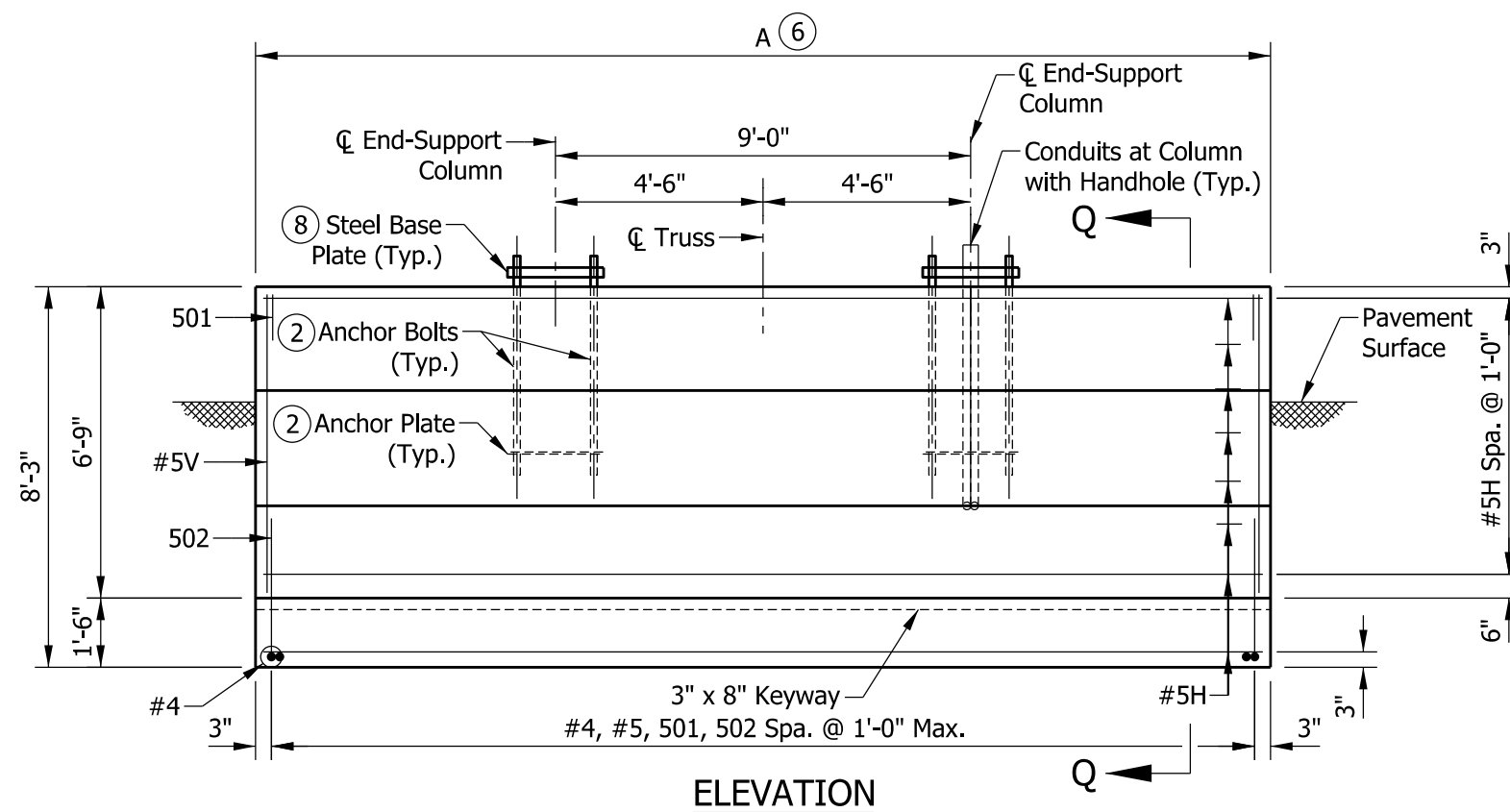


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

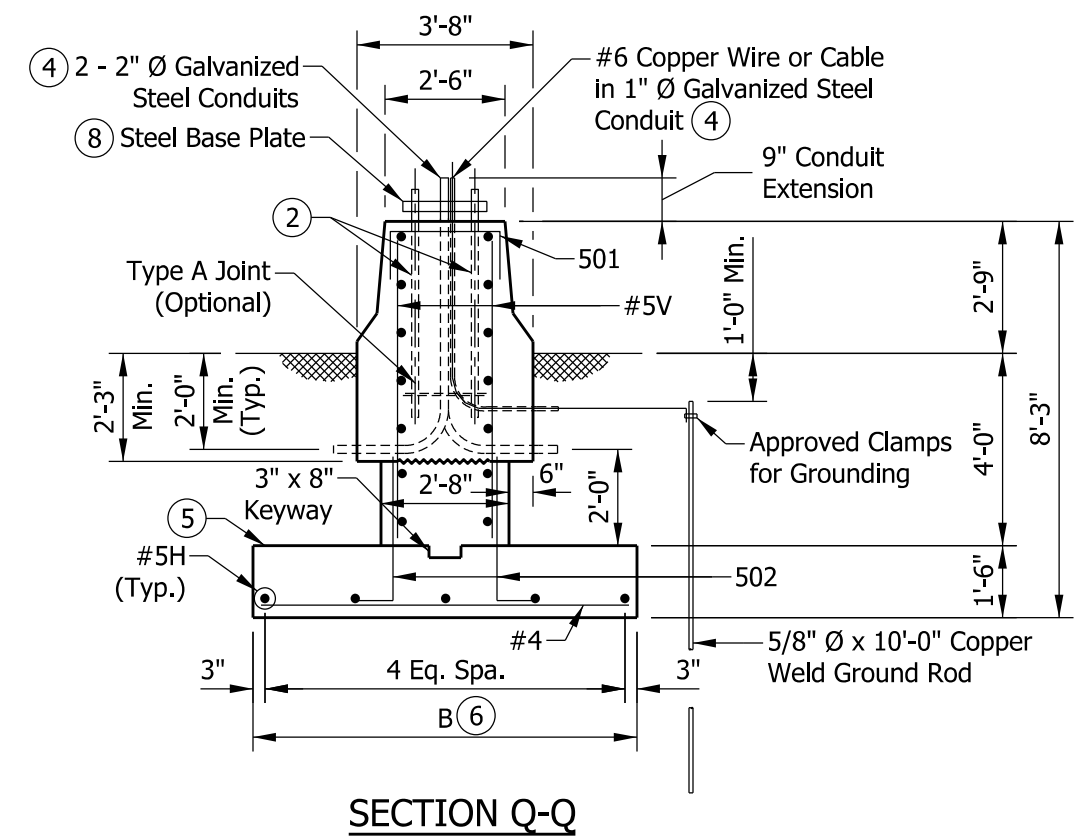
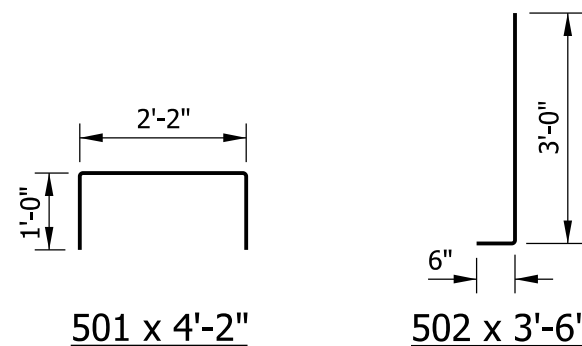
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE



**NOTES:**

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- ② See Standard Drawing E 802-DMSS-12 for anchor bolt and anchor plate details.
3. Surface seal top and sides of barrier railing to the pavement surface.
- ④ Thread and cap both ends of steel conduit.
- ⑤ Top of foundation shall be level.
- ⑥ For variable dimensions, reinforcing schedule, and estimated quantities, see Standard Drawing E 802-DMSS-23.
7. Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.
- ⑧ See Standard Drawing E 802-DMSS-10 for base plate details.



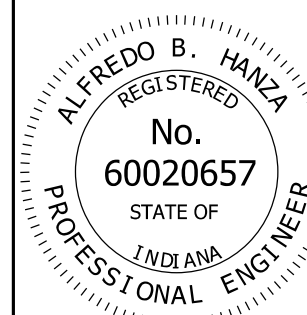
**LEGEND:**

- H = Horizontal  
V = Vertical

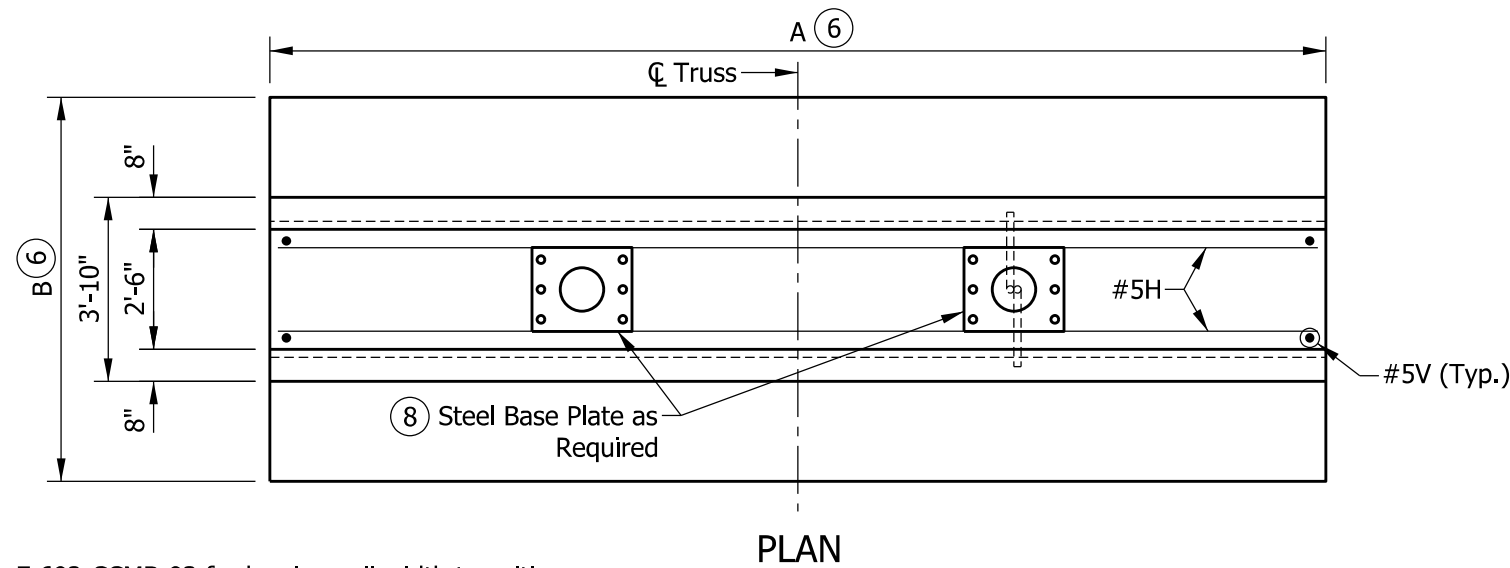
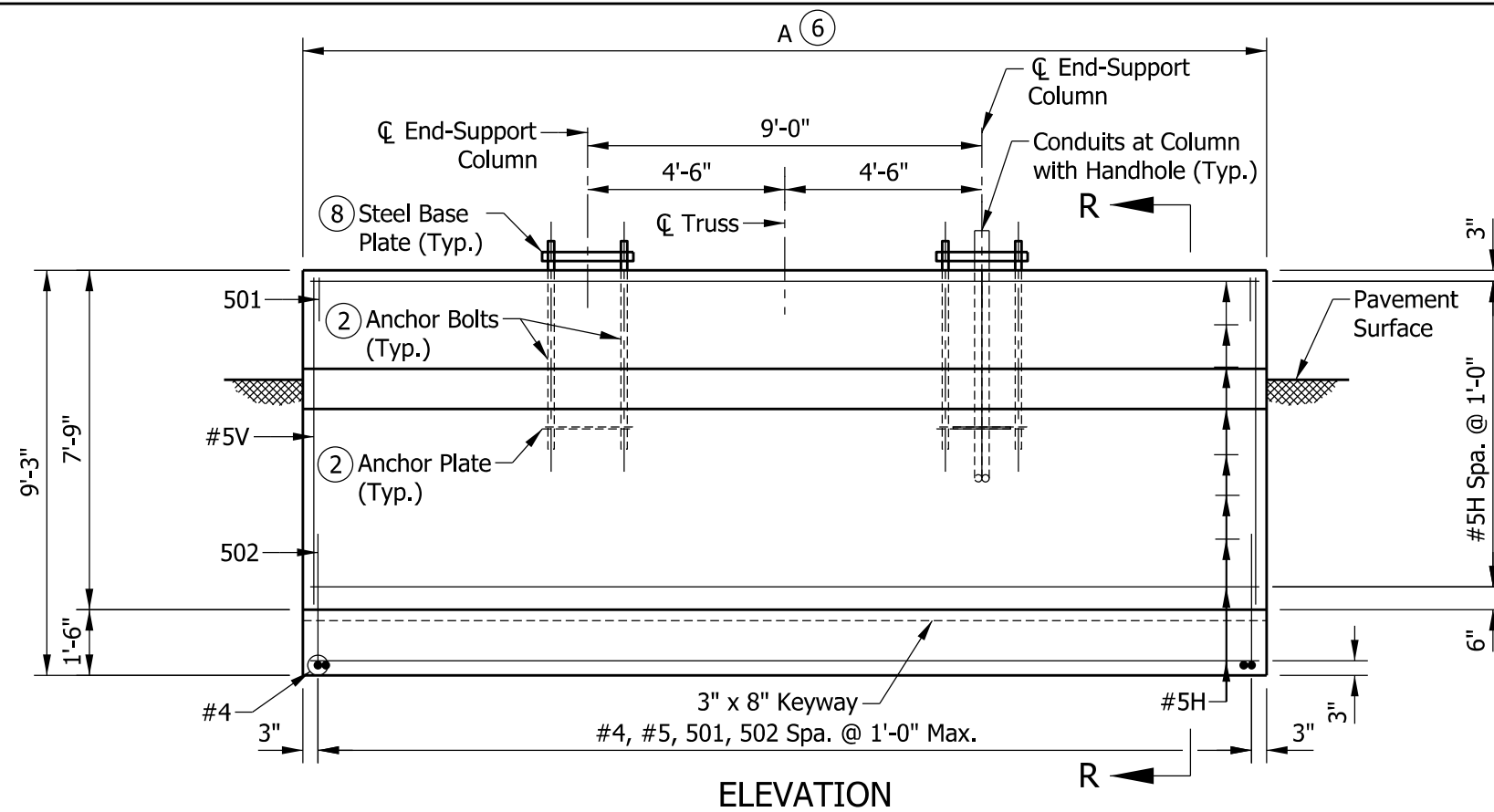
INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
SPREAD FOUNDATION  
AT 33" CONCRETE BARRIER WALL  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-20

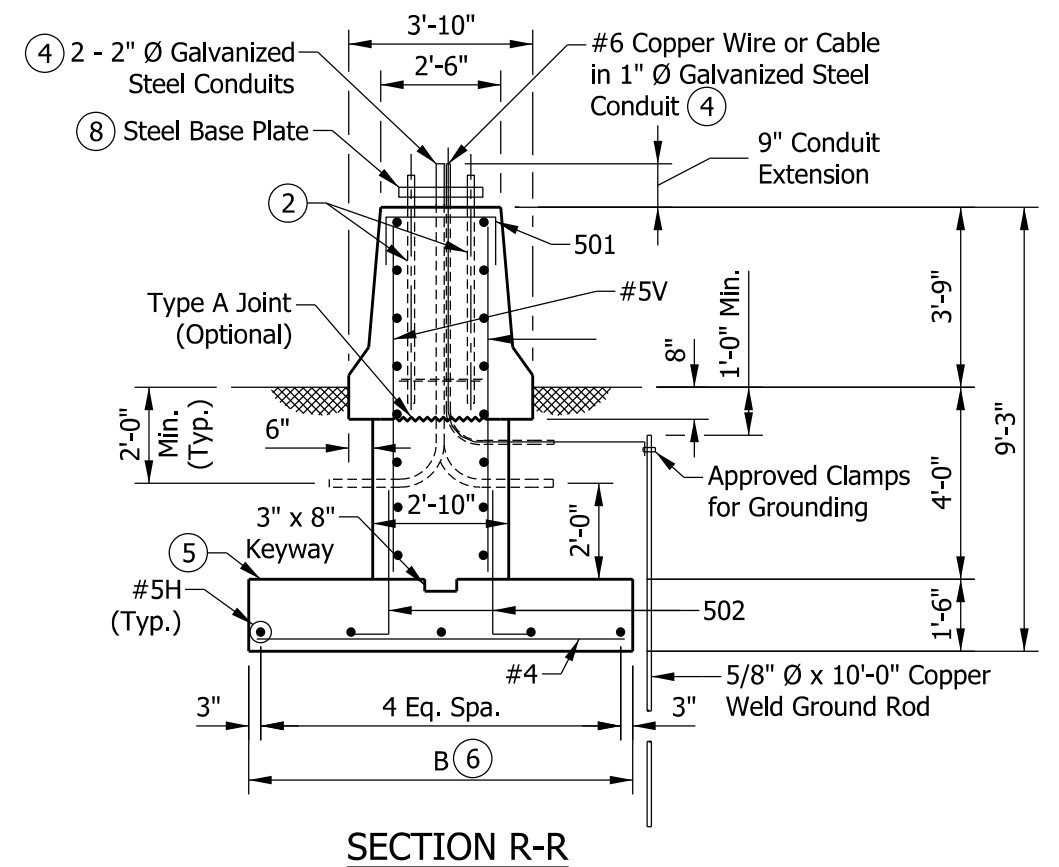
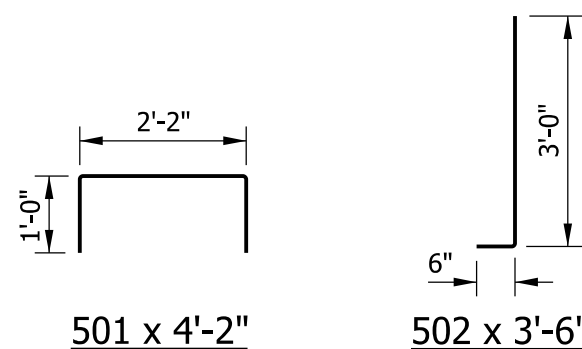


/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



**NOTES:**

1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- ② See Standard Drawing E 802-DMSS-12 for anchor bolt and anchor plate details.
3. Surface seal top and sides of barrier railing to the pavement surface.
- ④ Thread and cap both ends of steel conduit.
- ⑤ Top of foundation shall be level.
- ⑥ For variable dimensions, reinforcing schedule, and estimated quantities, see Standard Drawing E 802-DMSS-23.
7. Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.
- ⑧ See Standard Drawing E 802-DMSS-10 for base plate details.



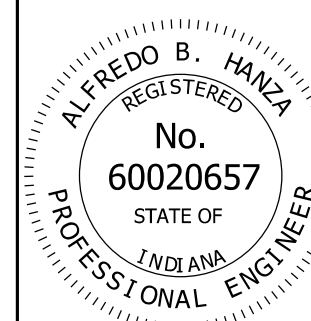
**LEGEND:**

- H = Horizontal  
V = Vertical

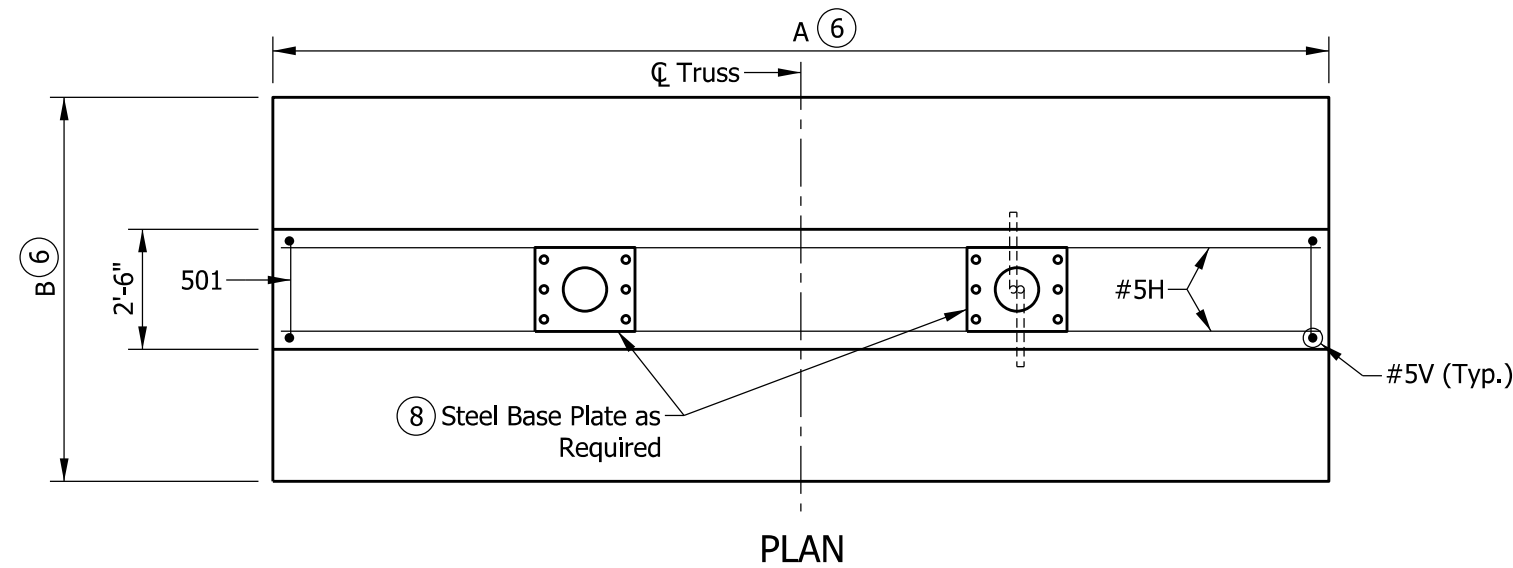
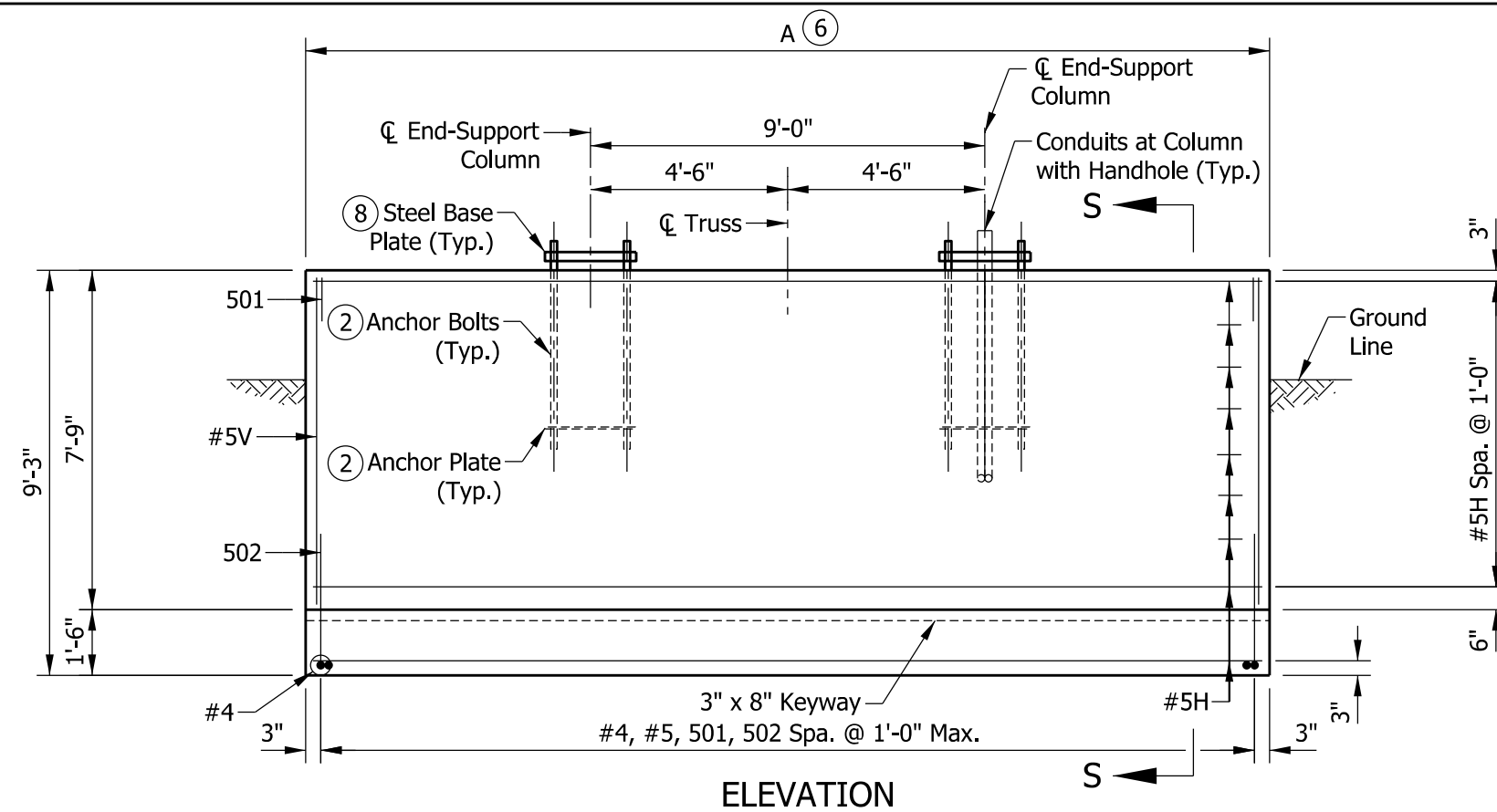
**INDIANA DEPARTMENT OF TRANSPORTATION**

**DYNAMIC MESSAGE SIGN STRUCTURE  
SPREAD FOUNDATION  
AT 45" CONCRETE BARRIER WALL  
SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-DMSS-21**

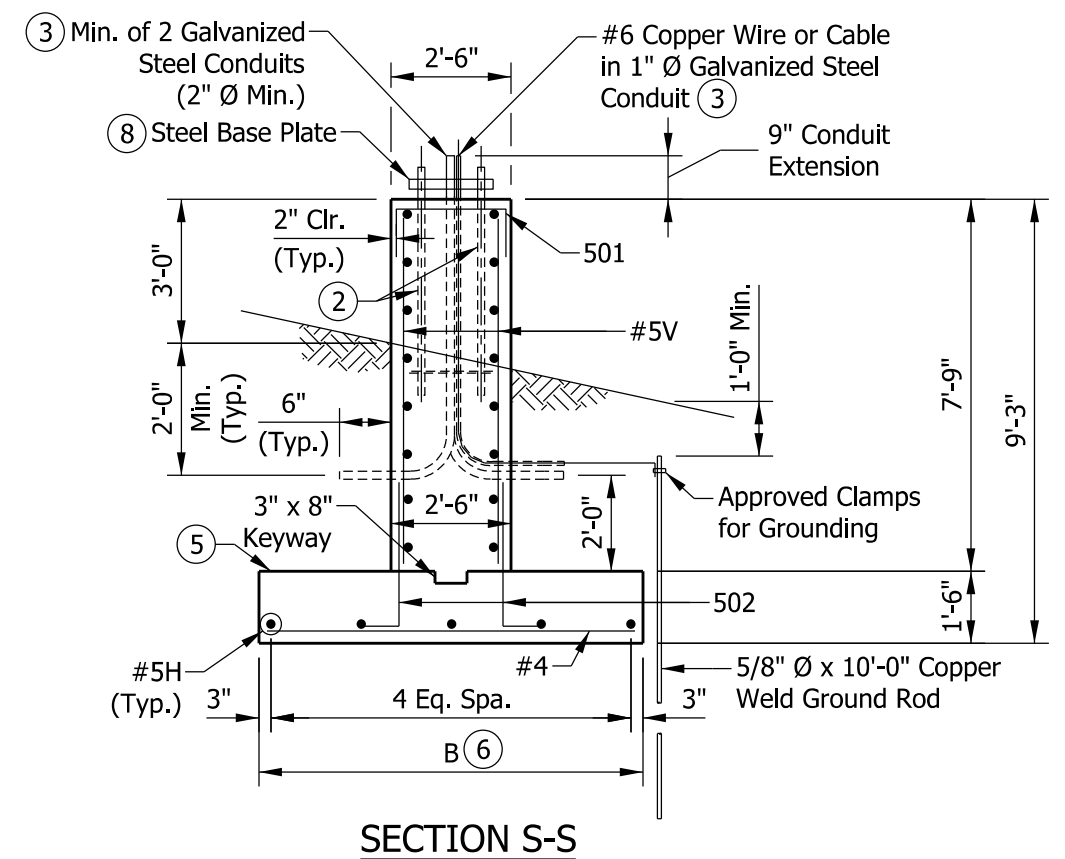
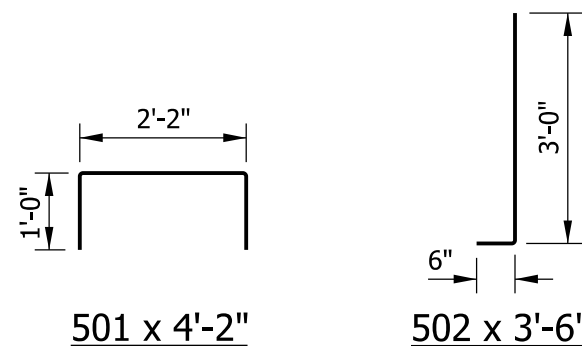


/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



# NOTES:

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-DMSS-12 for anchor bolt and anchor plate details.
- Surface seal top and sides of barrier railing to the pavement surface.
- Thread and cap both ends of steel conduit.
- Top of foundation shall be level.
- For variable dimensions, reinforcing schedule, and estimated quantities, see Standard Drawing E 802-DMSS-23.
- Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.
- See Standard Drawing E 802-DMSS-10 for base plate details.



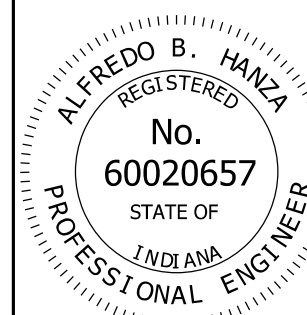
# LEGEND:

- H = Horizontal  
V = Vertical

## INDIANA DEPARTMENT OF TRANSPORTATION

## DYNAMIC MESSAGE SIGN STRUCTURE SPREAD FOUNDATION AT MEDIAN OR SHOULDER, 36" HEIGHT SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-22



/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE

TABLE 1: SPREAD FOUNDATIONS FOR DYNAMIC MESSAGE OVERHEAD SIGN STRUCTURE				
MAX. SIGN AREA (SFT)	ALLOWABLE GROSS SOIL BEARING PRESSURE (PSF)	FOOTING DIMENSION		TYPE OF BARRIER
		LENGTH, A (FT)	WIDTH, B (FT)	
300	1500 - 2499	26'	7'	33", 45" or 36" Median/Shoulder
	2500 - 3499	22'	5'	33", 45" or 36" Median/Shoulder
	> 3499	20'	5'	33", 45" or 36" Median/Shoulder

TABLE 2: SPREAD FOUNDATIONS DIMENSIONS AND BILL OF MATERIALS															
FOOTING DIMENSION		TYPE OF BARRIER	#4		#5H		#5V		501		502		TOTAL EPOXY COATED REINFORCING BARS (LBS)	CONCRETE CLASS A (CYS)	SURFACE SEAL (SYS)
A (FT)	B (FT)		NO. BARS	LENGTH	NO. BARS	LENGTH	NO. BARS	LENGTH	NO. BARS	LENGTH	NO. BARS	LENGTH			
26'	7'	33" Concrete Barrier	27	6'-8"	19	25'-8"	54	6'-6"	27	4'-2"	54	3'-6"	1309	27.9	23.9
		45" Concrete Barrier	27	6'-8"	21	25'-8"	54	7'-6"	27	4'-2"	54	3'-6"	1418	30.9	29.7
		36" Median or Shoulder Barrier	27	6'-8"	21	25'-8"	54	7'-6"	27	4'-2"	54	3'-6"	1418	28.8	24.6
22'	5'	33" Concrete Barrier	23	4'-8"	19	21'-8"	46	6'-6"	23	4'-2"	46	3'-6"	1081	21.2	20.2
		45" Concrete Barrier	23	4'-8"	21	21'-8"	46	7'-6"	23	4'-2"	46	3'-6"	1175	23.7	25.1
		36" Median or Shoulder Barrier	23	4'-8"	21	21'-8"	46	7'-6"	23	4'-2"	46	3'-6"	1175	21.9	20.8
20'	5'	33" Concrete Barrier	21	4'-8"	19	19'-8"	42	6'-6"	21	4'-2"	42	3'-6"	984	19.3	18.4
		45" Concrete Barrier	21	4'-8"	21	19'-8"	42	7'-6"	21	4'-2"	42	3'-6"	1069	21.6	22.9
		36" Median or Shoulder Barrier	21	4'-8"	21	19'-8"	42	7'-6"	21	4'-2"	42	3'-6"	1069	19.9	18.9

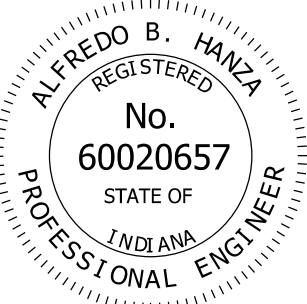
NOTES:

- Geotechnical recommendations for Allowable Gross Soil Bearing Pressure shall be obtained to determine footing size and reinforcement shown in Tables 1 and 2.
- If Allowable Gross Soil Bearing Pressure is less than 1500 psf, a drilled shaft or other special foundation shall be used.
- See Standard Drawings E 802-DMSS-20 through -22 for locations of dimensions and reinforcing bars.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE  
 SPREAD FOUNDATIONS QUANTITIES  
  
 SEPTEMBER 2013

STANDARD DRAWING NO.      E 802-DMSS-23



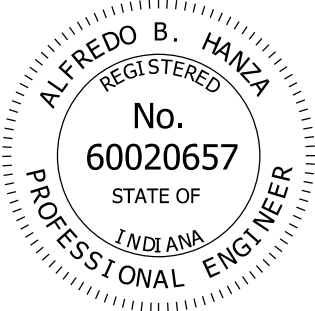
/s/ *Alfredo B. Hanza*      02/05/13

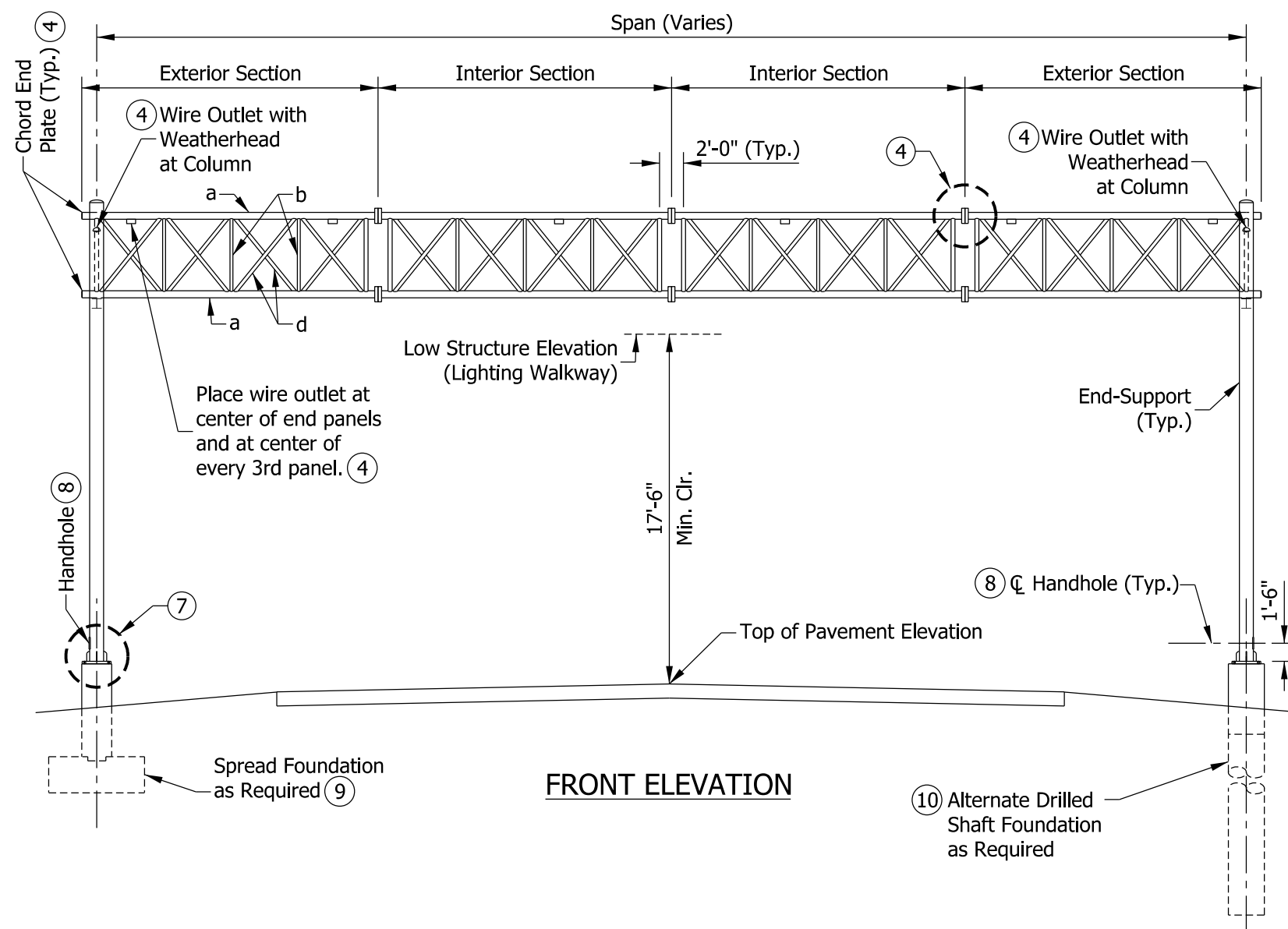
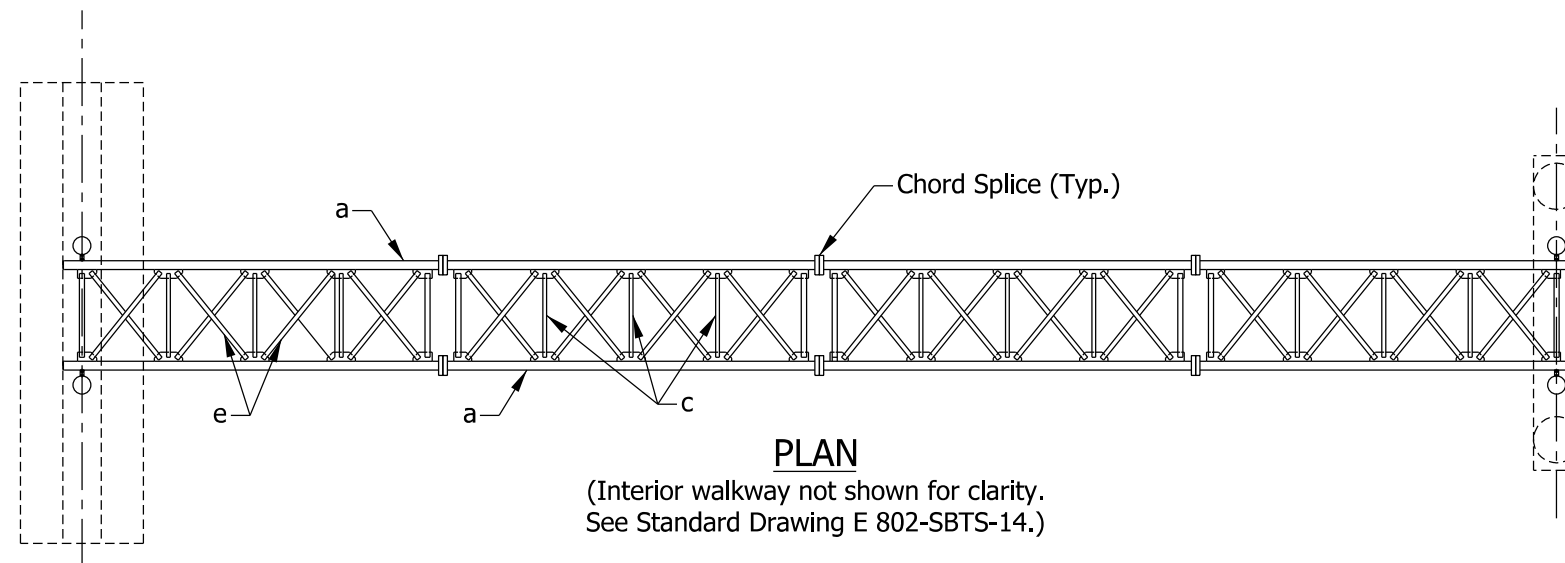
DESIGN STANDARDS ENGINEER      DATE

/s/ *Mark A. Miller*      03/27/13

CHIEF ENGINEER      DATE

INDEX	
SHEET NO.	SUBJECT
1	Index
2	Plan & Elevation
3	Truss Sections, Table with Member Sizes
4	Table of Dimensions, Spans 34' thru 81'
5	Table of Dimensions, Spans 82' thru 130' and Camber
6	Chord Connections and Weld Details
7	Flange, Chord End Plate, and Wire Outlet Details
8	Upper Chord Connection Details
9	Lower Chord Connection Details
10	End Support Lower Chord Connections, Alternate HSS Beam Details
11	End Support Base Plate and I.D. Tag Details
12	End Support Top Cap, Handhole, and J-Hook Details
13	End Support Anchor Bolt and Metal Skirt Details
14	Interior Walkway Grating Details
15	Interior Walkway Grating Details
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17	Lighting Walkway
18	Lighting Walkway Profile
19	Lighting Walkway and Handrail Assembly
20	Lighting Walkway, Handrail Hinge, and Grating Details
21	Lighting Walkway Fixture Mount Details
22	Spread Foundation at 33" Concrete Barrier Wall
23	Spread Foundation at 45" Concrete Barrier Wall
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25	Spread Foundations Quantities
26	Alternate Drilled Shaft Foundation at 33" Concrete Barrier Wall
27	Alternate Drilled Shaft Foundation at 45" Concrete Barrier Wall
28	Alternate Drilled Shaft Foundation for Median or Shoulder, 36" Height
29	Alternate Drilled Shaft Foundations Quantities

INDIANA DEPARTMENT OF TRANSPORTATION									
SIGN BOX TRUSS STRUCTURE DRAWING INDEX									
SEPTEMBER 2013									
STANDARD DRAWING NO. E 802-SBTS-01									
	<table><tr><td><i>/s/ Alfredo B. Hanza</i></td><td><i>02/05/13</i></td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td><i>/s/ Mark A. Miller</i></td><td><i>03/27/13</i></td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								



## NOTES:

1. See Standard Drawing E 802-SBTS-03 for member sizes.
2. Maximum deviation of any chord from a straight line in any section shall be 1/8" for box truss to be a maximum of 3/8" out of a straight line over the entire length of the structure in the vertical plane.
3. All truss members are aluminum. End-support members are steel. Walkways, bearing elements, and wire outlet are aluminum.
- ④ See Standard Drawing E 802-SBTS-07 for connection flange, chord end plate, and wire outlet details.
- ⑤ See Standard Drawing E 802-SBTS-08 for upper chord connection details and E 802-SBTS-12 for top cap, handhole, and J-hook details.
- ⑥ See Standard Drawing E 802-SBTS-09 for lower chord connection details. See Standard Drawing E 802-SBTS-10 for alternate HSS beam and saddle shim detail.
- ⑦ See Standard Drawing E 802-SBTS-11 for base plate detail and E 802-SBTS-13 for anchor bolts and skirt details.
- ⑧ See Standard Drawing E 802-SBTS-12 for handhole detail.
- ⑨ See Standard Drawings E 802-SBTS-22 through -25 for spread foundations.
- ⑩ See Standard Drawings E 802-SBTS-26 through -29 for alternate drilled shaft foundations.

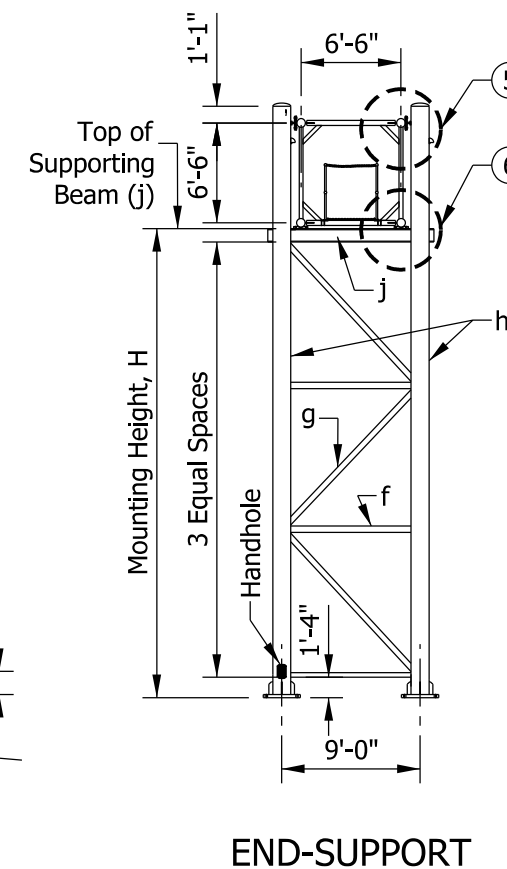
## LEGEND

### TRUSS MEMBERS

- a - Chords
- b - Verticals
- c - Horizontals
- d - Vertical Diagonals
- e - Horizontal Diagonals

### END-SUPPORT MEMBERS

- h - Columns
- f - Horizontals
- g - Diagonals
- j - Supporting Beam

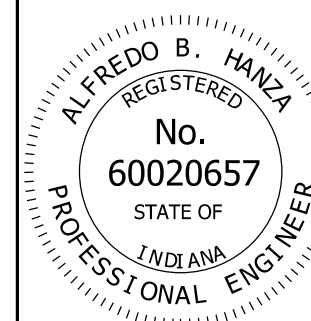


## INDIANA DEPARTMENT OF TRANSPORTATION

### SIGN BOX TRUSS STRUCTURE PLAN & ELEVATION

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-02



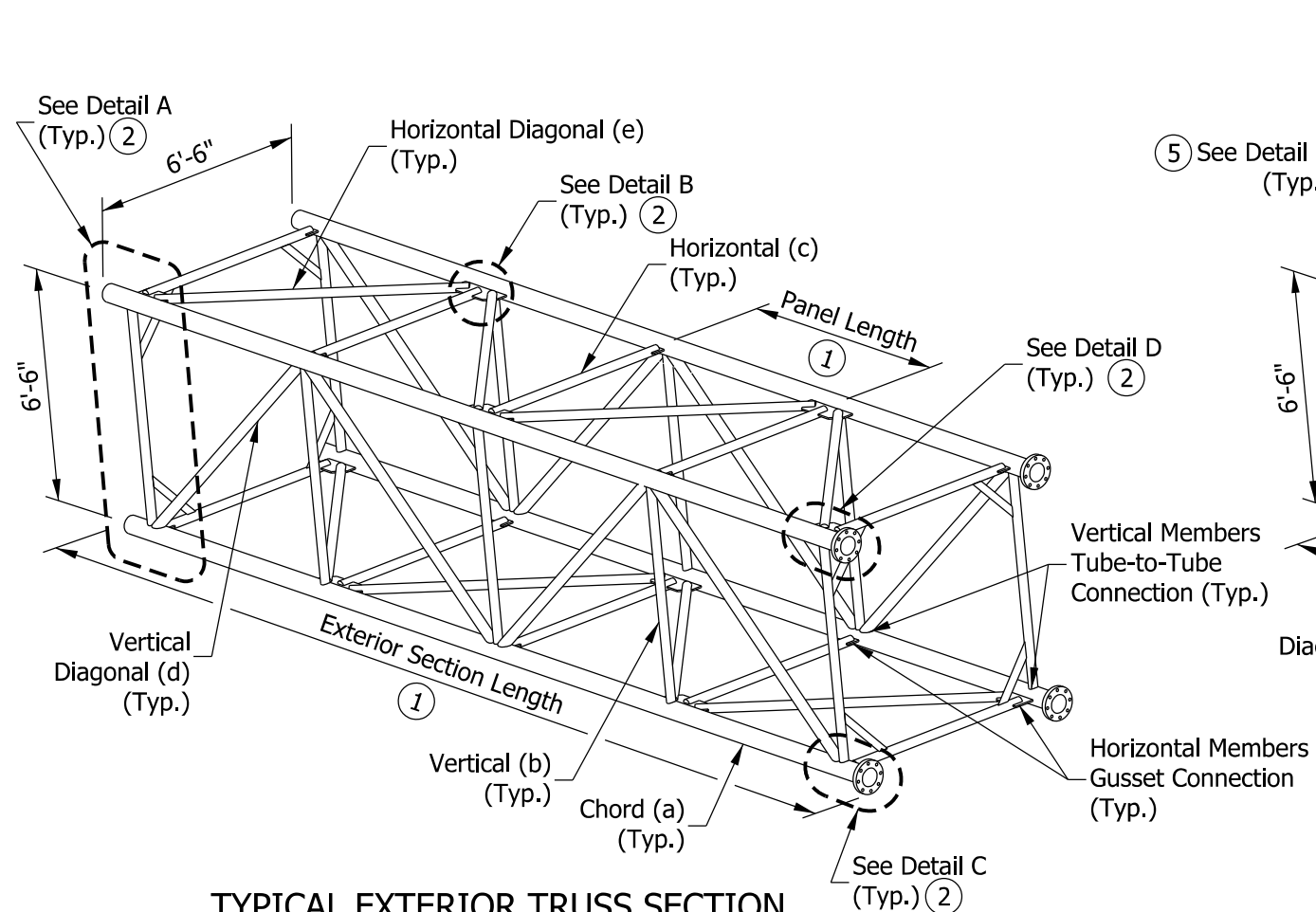
/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

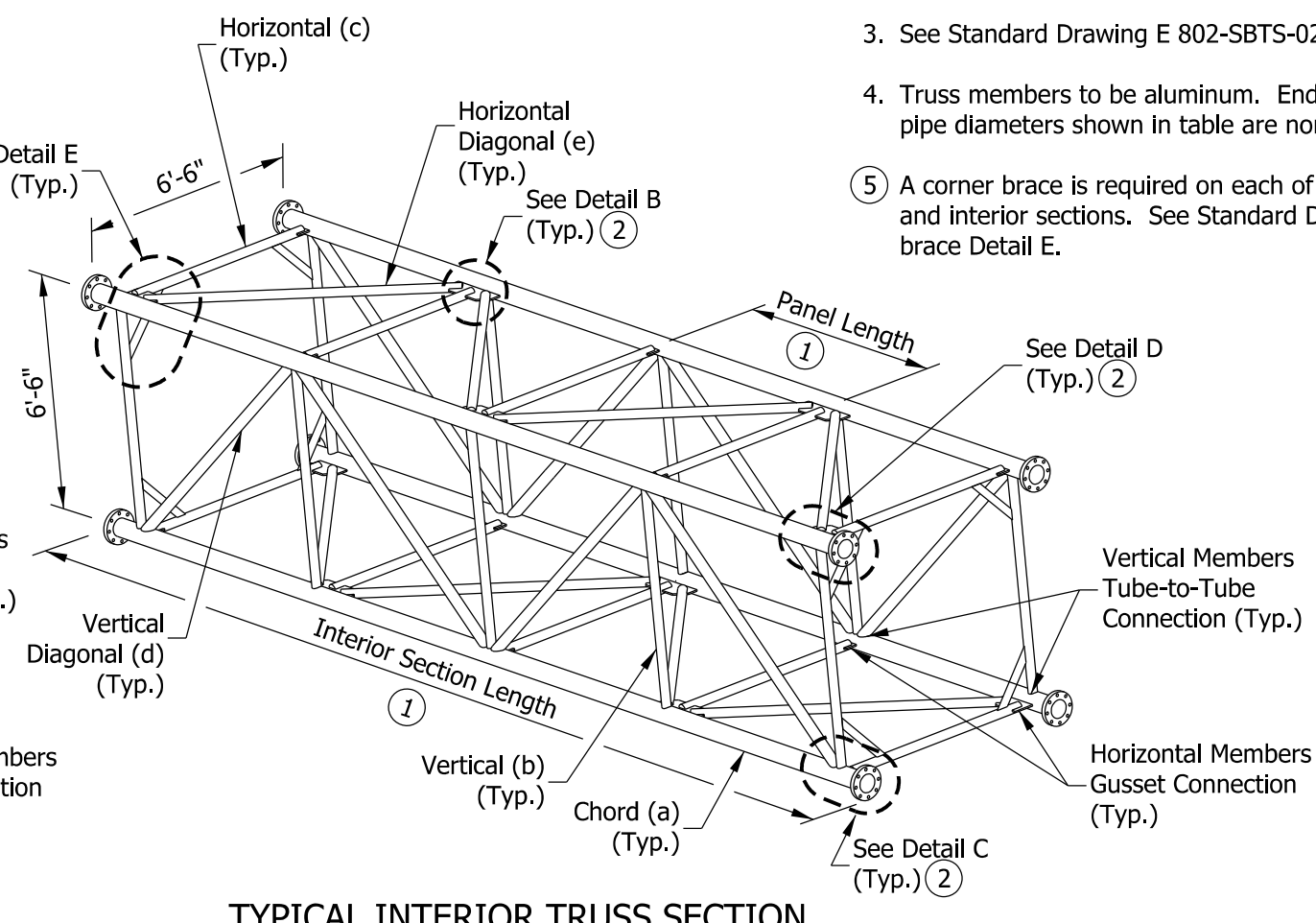
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE





TYPICAL EXTERIOR TRUSS SECTION



TYPICAL INTERIOR TRUSS SECTION

NOTES:

- ① Number of panels and sections varies. See table on Standard Drawing E 802-SBTS-04 and -05 for recommended dimensions.
- ② See Standard Drawing E 802-SBTS-06 for welded connections and Details A through F.
3. See Standard Drawing E 802-SBTS-02 for Legend.
4. Truss members to be aluminum. End-support members to be steel. Steel pipe diameters shown in table are nominal pipe size.
- ⑤ A corner brace is required on each of the eight external corners of exterior and interior sections. See Standard Drawing E 802-SBTS-06 for corner brace Detail E.

TRUSS TYPE	MAX. SIGN AREA	MAX. SPAN	MAX. MOUNTING HEIGHT	TRUSS MEMBERS, ALUMINUM										END-SUPPORT MEMBERS, STEEL							
				CHORD		VERTICAL		HORIZONTAL		VERTICAL DIAGONAL		HORIZONTAL DIAGONAL		HORIZONTAL		DIAGONAL		COLUMN		SUPPORTING BEAM	
				a		b		c		d		e		f		g		h		j	
	SQ. FT.	FT.	FT.	DIA. IN.	THK IN.	DIA. IN.	THK IN.	DIA. IN.	THK IN.	DIA. IN.	THK IN.	DIA. IN.	THK IN.	DIA. IN.	THK IN.	DIA. IN.	THK IN.	DIA. IN.	THK IN.		
A	500	130	28'-6"	6.00	0.250	2.50	0.250	4.00	0.188	3.00	0.375	4.00	0.375	5.00	0.375	5.00	0.375	14.00	0.500	W 8 x 58 or HSS 8" x 8" x 1/2"	
B	700	100	28'-6"	6.50	0.375	3.00	0.375	4.00	0.188	3.00	0.500	4.00	0.375	5.00	0.375	7.00	0.375	14.00	0.500		
C		130	28'-6"	7.00	0.375	3.00	0.375	4.00	0.188	3.00	0.500	4.00	0.500	5.00	0.375	8.00	0.500	14.00	0.593		
D	900	100	28'-6"	7.00	0.375	3.00	0.375	4.00	0.188	3.00	0.500	4.00	0.500	5.00	0.375	8.00	0.500	18.00	0.500	W 10 x 68 or HSS 10" x 10" x 1/2"	
E		130	28'-6"	7.00	0.500	3.00	0.375	4.00	0.250	3.00	0.500	4.00	0.500	5.00	0.375	8.00	0.593	18.00	0.562		

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
TRUSS SECTIONS IN ISOMETRIC VIEWS,  
TABLE WITH MEMBER SIZES  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-03

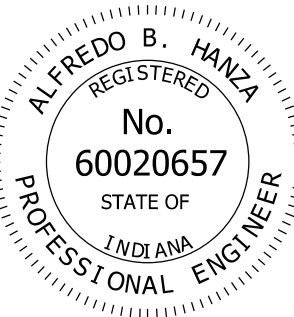
ALFREDO B. HANZA  
REGISTERED  
No. 60020657  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

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

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

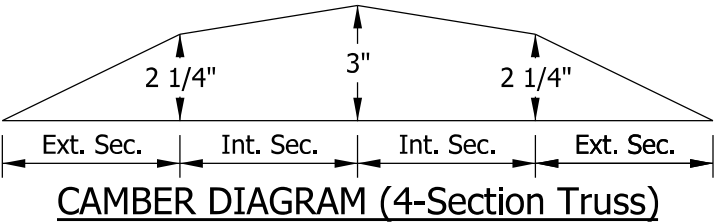
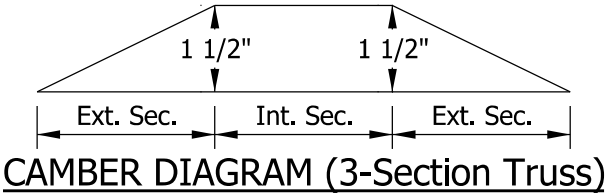
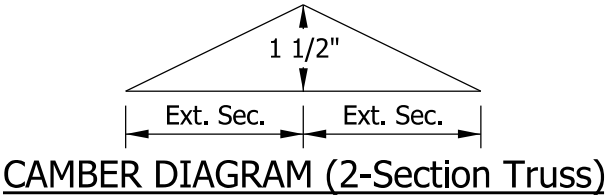
DIMENSIONS FOR SIGN BOX TRUSSES (34' THRU 81')									
SPAN SPAN-TRUSS LENGTH, (FT)	EXTERIOR SECTIONS					INTERIOR SECTIONS			
	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
34	1	6	6"	5'-6"	35'-6"	0			
35	1	6	6"	5'-8"	36'-6"	0			
36	2	3	6"	5'-6"	18'-9"	0			
37	2	3	6"	5'-8"	19'-3"	0			
38	2	3	6"	5'-10"	19'-9"	0			
39	2	3	6"	6'-0"	20'-3"	0			
40	2	3	6"	6'-2"	20'-9"	0			
41	2	3	6"	6'-4"	21'-3"	0			
42	2	3	6"	6'-6"	21'-9"	0			
43	2	4	6"	5'-0"	22'-3"	0			
44	2	4	6"	5'-1 1/2"	22'-9"	0			
45	2	4	6"	5'-3"	23'-3"	0			
46	2	4	6"	5'-4 1/2"	23'-9"	0			
47	2	4	6"	5'-6"	24'-3"	0			
48	2	4	6"	5'-7 1/2"	24'-9"	0			
49	2	4	6"	5'-9"	25'-3"	0			
50	2	4	6"	5'-10 1/2"	25'-9"	0			
51	2	4	6"	6'-0"	26'-3"	0			
52	2	4	6"	6'-1 1/2"	26'-9"	0			
53	2	4	6"	6'-3"	27'-3"	0			
54	2	4	6"	6'-4 1/2"	27'-9"	0			
55	2	4	6"	6'-6"	28'-3"	0			
56	2	5	5 1/4"	5'-3 3/4"	28'-9"	0			
57	2	5	6 1/4"	5'-4 3/4"	29'-3"	0			
58	2	5	6"	5'-6"	29'-9"	0			
59	2	5	5 3/4"	5'-7 1/4"	30'-3"	0			
60	2	5	5 1/2"	5'- 8 1/2"	30'-9"	0			
61	2	5	6 1/2"	5'-9 1/2"	31'-3"	0			
62	2	5	6 1/4"	5'-10 3/4"	31'-9"	0			
63	2	5	6"	6'-0"	32'-3"	0			
64	2	5	5 3/4"	6'-1 1/4"	32'-9"	0			
65	2	5	5 1/2"	6'-2 1/2"	33'-3"	0			
66	2	5	5 1/4"	6'-3 3/4"	33'-9"	0			
67	2	5	6 1/4"	6'-4 3/4"	34'-3"	0			
68	2	5	6"	6'-6"	34'-9"	0			
69	2	4	6"	5'-4"	23'-7"	1	4	5'-4"	23'-4"
70	2	4	6"	5'-5"	23'-11"	1	4	5'-5"	23'-8"
71	2	4	6"	5'-6"	24'-3"	1	4	5'-6"	24'-0"
72	2	4	6"	5'-7"	24'-7"	1	4	5'-7"	24'-4"
73	2	4	6"	5'-8"	24'-11"	1	4	5'-8"	24'-8"
74	2	4	6"	5"-9"	25'-3"	1	4	5"-9"	25'-0"
75	2	4	6"	5'-10"	25'-7"	1	4	5'-10"	25'-4"
76	2	4	6"	5'-11"	25'-11"	1	4	5'-11"	25'-8"
77	2	4	6"	6'-0"	26'-3"	1	4	6'-0"	26'-0"
78	2	4	6"	6'-1 "	26'-7"	1	4	6'-1 "	26'-4"
79	2	4	6"	6'-2"	26'-11"	1	4	6'-2"	26'-8"
80	2	4	6"	6'-3"	27'-3"	1	4	6'-3"	27'-0"
81	2	4	6"	6'-4"	27'-7"	1	4	6'-4"	27'-4"

- NOTES:
1. All panels on a truss shall be the same length. The minimum panel length is 5'-0" and the maximum is 6'-6".
  2. A single interior section in a truss shall have an even number of panels to maintain the pattern of the vertical diagonals.
  3. Use minimum number of sections for each box truss structure, while maintaining the maximum section length at 36'-6".
  4. See Standard Drawing E 802-SBTS-05 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE TABLE OF DIMENSIONS SPANS 34' THRU 81' SEPTEMBER 2013	
STANDARD DRAWING NO. E 802-SBTS-04	
	<div>/s/ <i>Alfredo B. Hanza</i> 02/05/13</div> <div>DESIGN STANDARDS ENGINEER DATE</div> <div>/s/ <i>Mark A. Miller</i> 03/27/13</div> <div>CHIEF ENGINEER DATE</div>

DIMENSIONS FOR SIGN BOX TRUSSES (82' THRU 130')									
SPAN SPAN-TRUSS LENGTH, (FT)	EXTERIOR SECTIONS					INTERIOR SECTIONS			
	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	1	4	6'-6"	28'-0"
84	2	5	5 3/4"	5'-7 3/4"	30'-5 1/2"	1	4	5'-7 3/4"	24'-7"
85	2	5	6 1/2"	5'-8 1/2"	30'-10"	1	4	5'-8 1/2"	24'-10"
86	2	5	5 1/2"	5'-9 1/2"	31'-2"	1	4	5'-9 1/2"	25'-2"
87	2	5	6 1/4"	5'-10 1/4"	31'-6 1/2"	1	4	5'-10 1/4"	25'-5"
88	2	5	7"	5'-11"	31'-11"	1	4	5'-11"	25'-8"
89	2	5	6"	6'-0"	32'-3"	1	4	6'-0"	26'-0"
90	2	5	6 3/4"	6'-0 3/4"	32'-7 1/2"	1	4	6'-0 3/4"	26'-3"
91	2	5	5 3/4"	6'-1 3/4"	32'-11 1/2"	1	4	6'-1 3/4"	26'-7"
92	2	5	6 1/2"	6'-2 1/2"	33'-4"	1	4	6'-2 1/2"	26'-10"
93	2	5	5 1/2"	6'-3 1/2"	33'-8"	1	4	6'-3 1/2"	27'-2"
94	2	5	6 1/4"	6'-4 1/4"	34'-1/2"	1	4	6'-4 1/4"	27'-5"
95	2	5	5 1/4"	6'-5 1/4"	34'-4 1/2"	1	4	6'-5 1/4"	27'-9"
96	2	5	6"	6'-6"	34'-9"	1	4	6'-6"	28'-0"
97	2	4	6"	5'-7 1/2"	24'-9"	2	4	5'-7 1/2"	24'-6"
98	2	4	6"	5'-8 1/4"	25'-0"	2	4	5'-8 1/4"	24'-9"
99	2	4	6"	5'-9"	25'-3"	2	4	5'-9"	25'-0"
100	2	4	6"	5'-9 3/4"	25'-6"	2	4	5'-9 3/4"	25'-3"
101	2	4	6"	5'-10 1/2"	25'-9"	2	4	5'-10 1/2"	25'-6"
102	2	4	6"	5'-11 1/4"	26'-0"	2	4	5'-11 1/4"	25'-9"
103	2	4	6"	6'-0"	26'-3"	2	4	6'-0"	26'-0"
104	2	4	6"	6'-0 3/4"	26'-6"	2	4	6'-0 3/4"	26'-3"
105	2	4	6"	6'-1 1/2"	26'-9"	2	4	6'-1 1/2"	26'-6"
106	2	4	6"	6'-2 1/4"	27'-0"	2	4	6'-2 1/4"	26'-9"
107	2	4	6"	6'-3"	27'-3"	2	4	6'-3"	27'-0"
108	2	4	6"	6'-3 3/4"	27'-6"	2	4	6'-3 3/4"	27'-3"
109	2	4	6"	6'-4 1/2"	27'-9"	2	4	6'-4 1/2"	27'-6"
110	2	4	6"	6'-5 1/4"	28'-0"	2	4	6'-5 1/4"	27'-9"
111	2	4	6"	6'-6"	28'-3"	2	4	6'-6"	28'-0"
112	2	5	6"	5'-3"	28'-6"	2	5	5'-3"	28'-3"
113	2	5	7"	5'-3 1/2"	28'-9 1/2"	2	5	5'-3 1/2"	28'-5 1/2"
114	2	5	5 1/2"	5'-4 1/4"	28'-11 3/4"	2	5	5'-4 1/4"	28'-9 1/4"
115	2	5	6 1/2"	5'-4 3/4"	29'-3 1/4"	2	5	5'-4 3/4"	28'-11 3/4"
116	2	5	7 1/2"	5'-5 1/4"	29'-6 3/4"	2	5	5'-5 1/4"	29'-2 1/4"
117	2	5	6"	5'-6"	29'-9"	2	5	5'-6"	29'-6"
118	2	5	7"	5'-6 1/2"	30'-0 1/2"	2	5	5'-6 1/2"	29'-8 1/2"
119	2	5	5 1/2"	5'-7 1/4"	30'-2 3/4"	2	5	5'-7 1/4"	30'-1/4"
120	2	5	6 1/2"	5'-7 3/4"	30'-6 1/4"	2	5	5'-7 3/4"	30'-2 3/4"
121	2	5	7 1/2"	5'-8 1/4"	30'-9 3/4"	2	5	5'-8 1/4"	30'-5 1/4"
122	2	5	6"	5'-9"	31'-0"	2	5	5'-9"	30'-9"
123	2	5	7"	5'-9 1/2"	31'-3 1/2"	2	5	5'-9 1/2"	30'-11 1/2"
124	2	5	5 1/2"	5'-10 1/4"	31'-5 3/4"	2	5	5'-10 1/4"	31'-3 1/4"
125	2	5	6 1/2"	5'-10 3/4"	31'-9 1/4"	2	5	5'-10 3/4"	31'-5 3/4"
126	2	5	7 1/2"	5'-11 1/4"	32'-0 3/4"	2	5	5'-11 1/4"	31'-8 1/4"
127	2	5	6"	6'-0"	32'-3"	2	5	6'-0"	32'-0"
128	2	5	7"	6'-0 1/2"	32'-6 1/2"	2	5	6'-0 1/2"	32'-2 1/2"
129	2	5	5 1/2"	6'-1 1/4"	32'-8 3/4"	2	5	6'-1 1/4"	32'-6 1/4"
130	2	5	6 1/2"	6'-1 3/4"	33'-1/4"	2	5	6'-1 3/4"	32'-8 3/4"

- NOTES:
1. Camber diagrams for truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
2. See Standard Drawing E 802-SBTS-04 for additional notes.



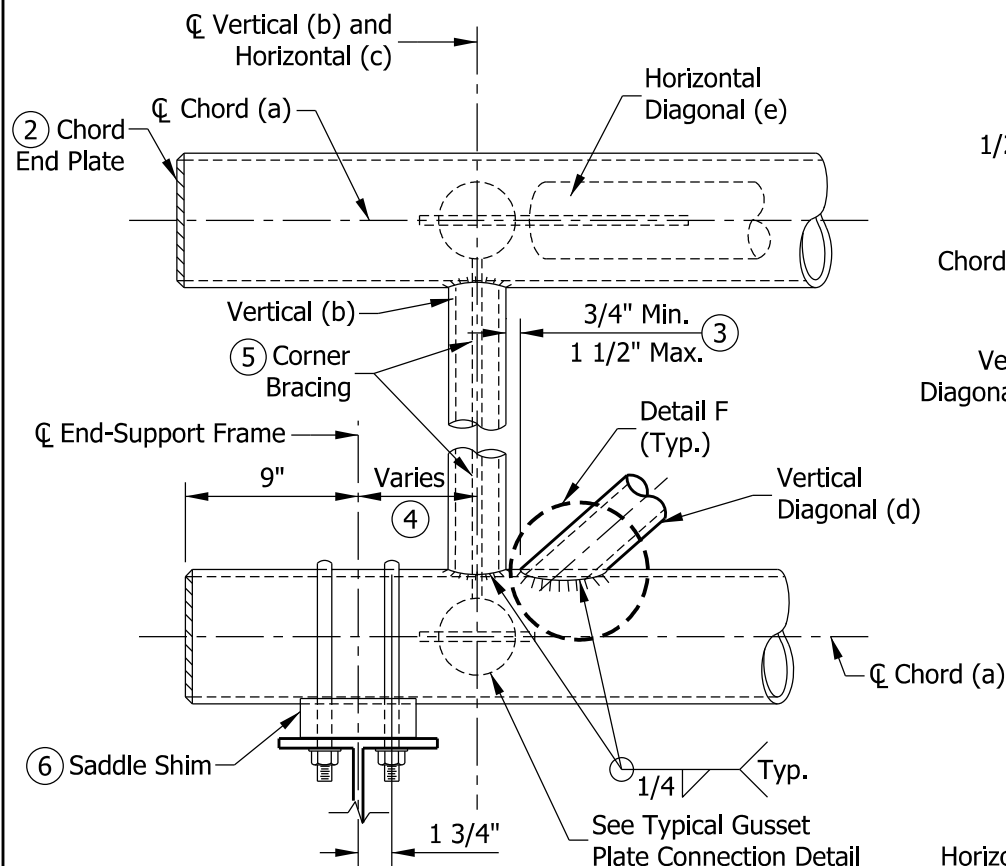
INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
TABLE OF DIMENSIONS  
SPANS 82' THRU 130' AND CAMBER  
SEPTEMBER 2013

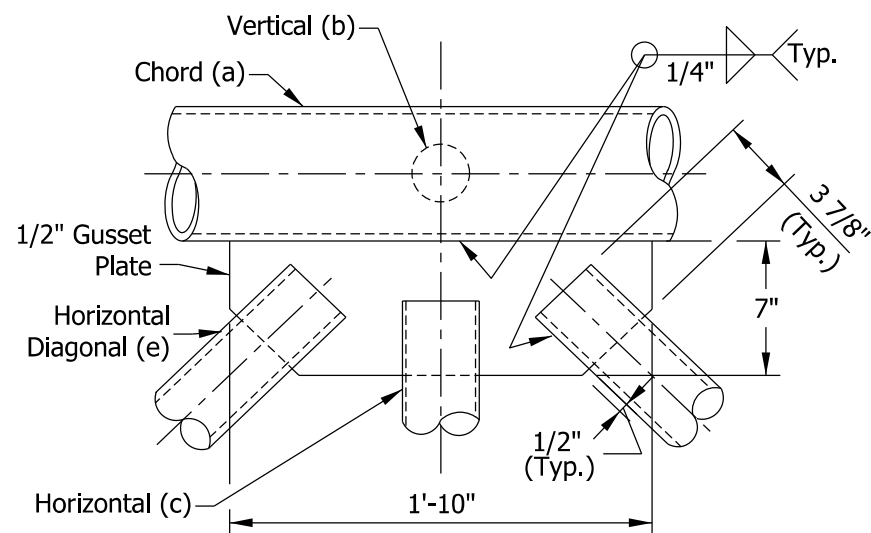
STANDARD DRAWING NO. E 802-SBTS-05

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60020657  
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PROFESSIONAL ENGINEER

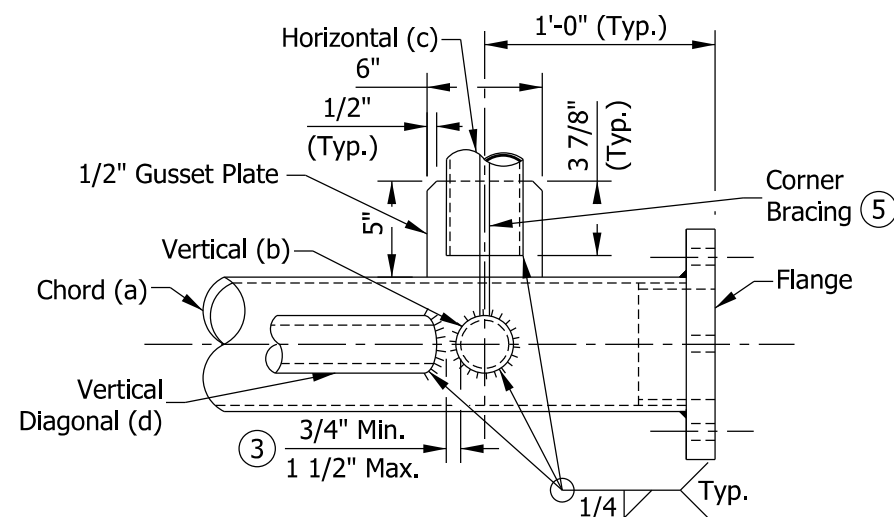
/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE  
  
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



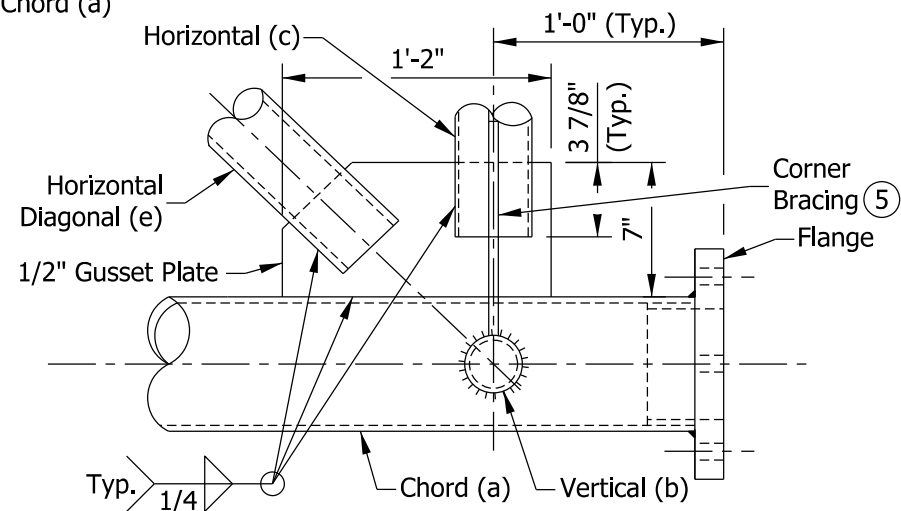
**DETAIL A**  
**EXTERIOR SECTION AT END SUPPORT**



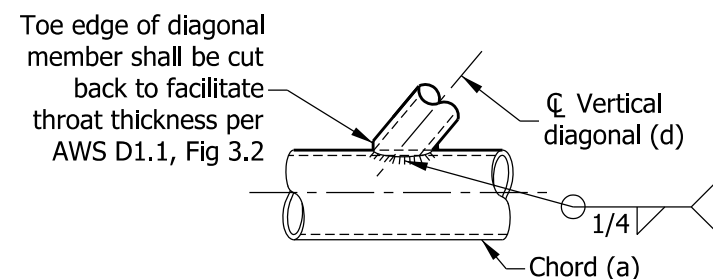
**DETAIL B**  
**TYPICAL PANEL CONNECTION**  
**PLAN VIEW**



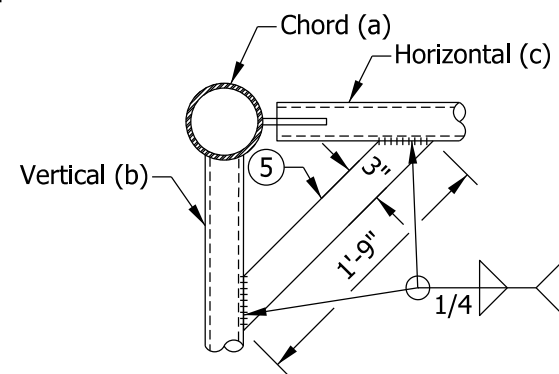
**DETAIL C**  
**CHORD AT FLANGE CONNECTION**  
**PLAN VIEW**



**DETAIL D**  
**CHORD AT FLANGE CONNECTION**  
**PLAN VIEW**



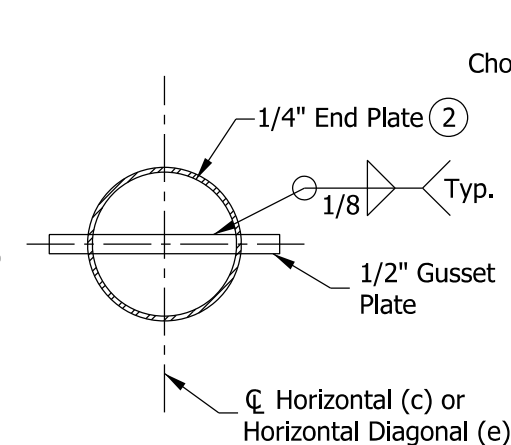
**DETAIL F**



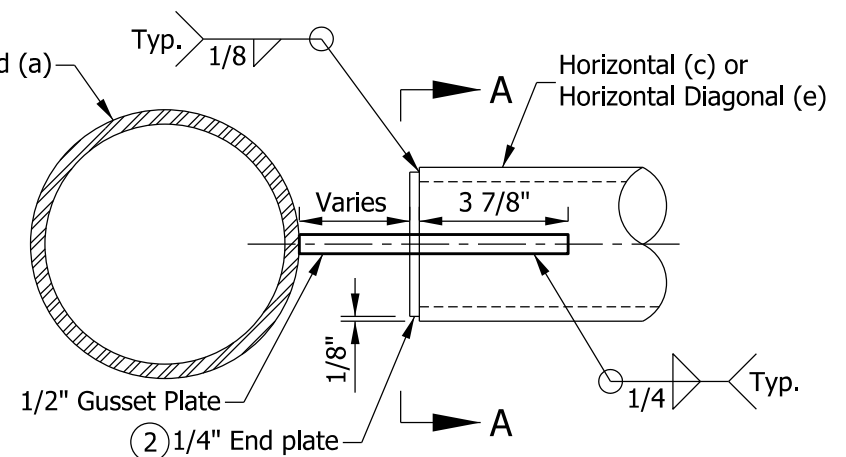
**DETAIL E**  
**TYPICAL CORNER BRACING**

**NOTES:**

1. All bracing members shall be machined to provide a snug fit to the chord along the entire edge of bracing member before welding. See Standard Drawing E 802-SBTS-02 and -03 for member locations.
2. End plate at horizontal (c) and horizontal diagonal (e) may be welded as one piece and slotted or welded as two pieces after slotting the member. See Standard Drawing E 802-SBTS-07 for chord end plate details.
3. Vertical and horizontal diagonals shall be fabricated for minimum offset from the panel point offset to provide a 3/4" minimum to 1 1/2" maximum clearance between any diagonal and any horizontal or vertical member.
4. For variable end dimension, see Standard Drawings E 802-SBTS-04 and -05.
5. See Standard Drawing E 802-SBTS-03 for corner bracing locations. Each brace member to be 3" x 1'-9" x 1/2" and placed at 45° to vertical.
6. See Standard Drawing E 802-SBTS-09 or -10 for saddle shim detail.



**SECTION A-A**



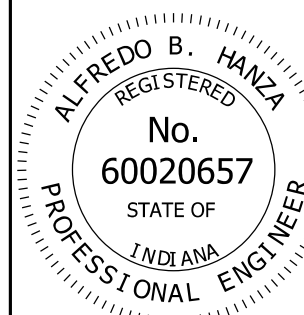
**TYPICAL GUSSET PLATE CONNECTION DETAIL**  
**ELEVATION VIEW**

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
CHORD CONNECTIONS AND WELD DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-06

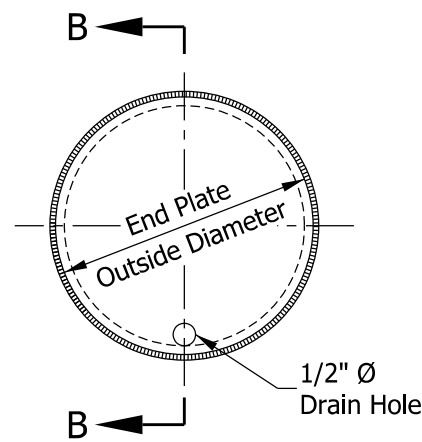


/s/ Alfredo B. Hanza 02/05/13

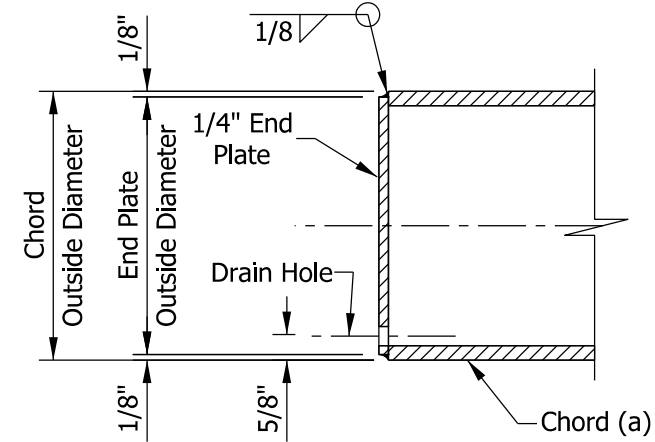
DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

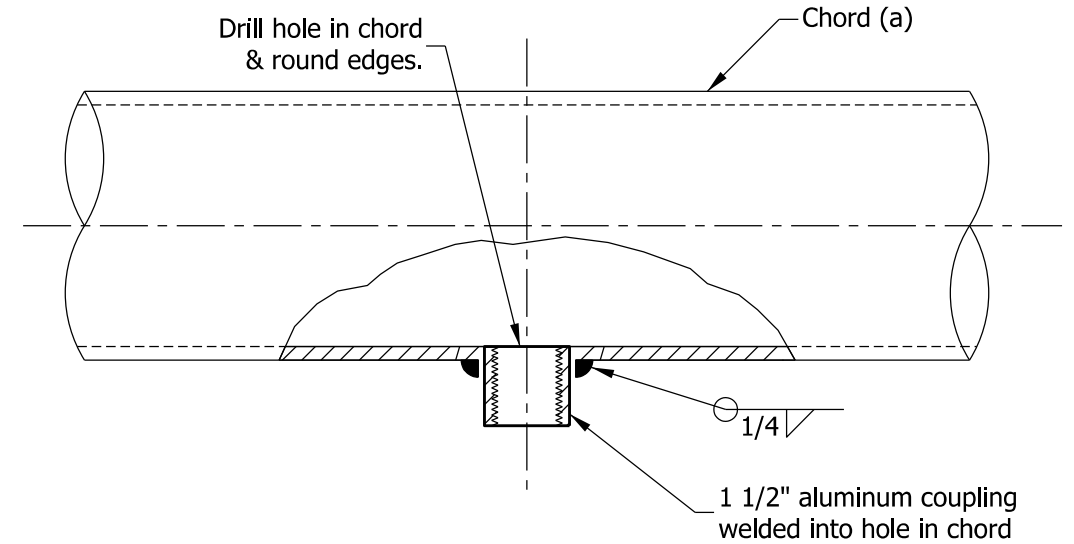


**END VIEW**

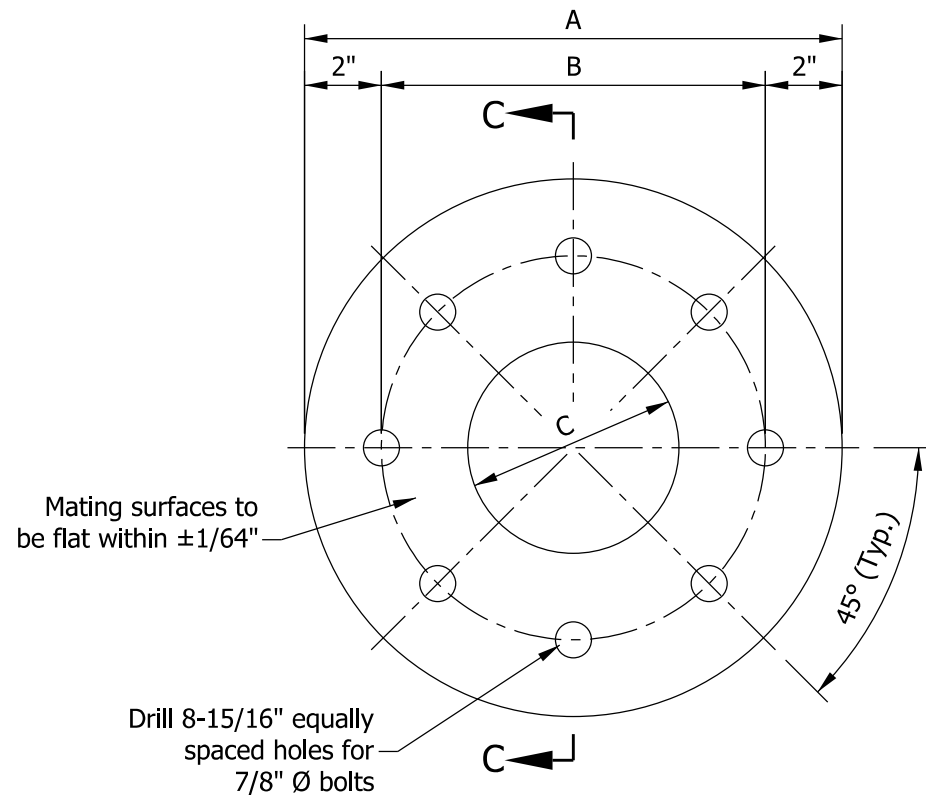


**SECTION B-B**

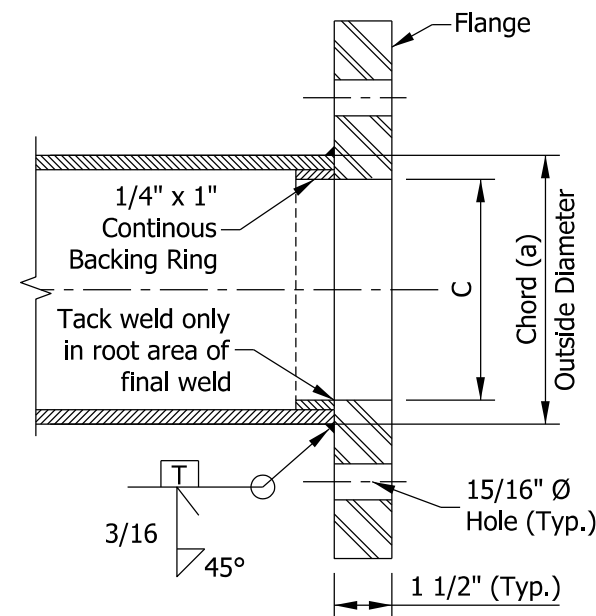
**CHORD END PLATE DETAILS**



**WIRE OUTLET DETAIL**



**END VIEW**



**SECTION C-C**

**FLANGE DETAILS**

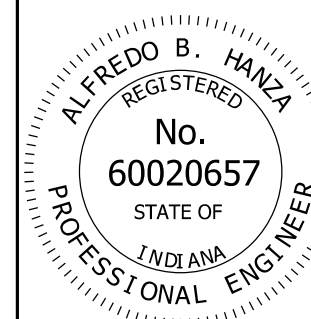
TABLE OF FLANGE DIMENSIONS				
TRUSS CHORD O.D. x THK.	BOLT SIZE	DIMENSION		
		A	B	C
6" x 1/4"	7/8"	13"	9"	5"
6 1/2" x 3/8"	7/8"	14"	10"	5 1/4"
7" x 3/8"	7/8"	14"	10"	5 3/4"
7" x 1/2"	7/8"	14"	10"	5 1/2"

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN BOX TRUSS STRUCTURE  
FLANGE, CHORD END PLATE, AND WIRE  
OUTLET DETAILS**

**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-SBTS-07**



*/s/ Alfredo B. Hanza* 03/26/13

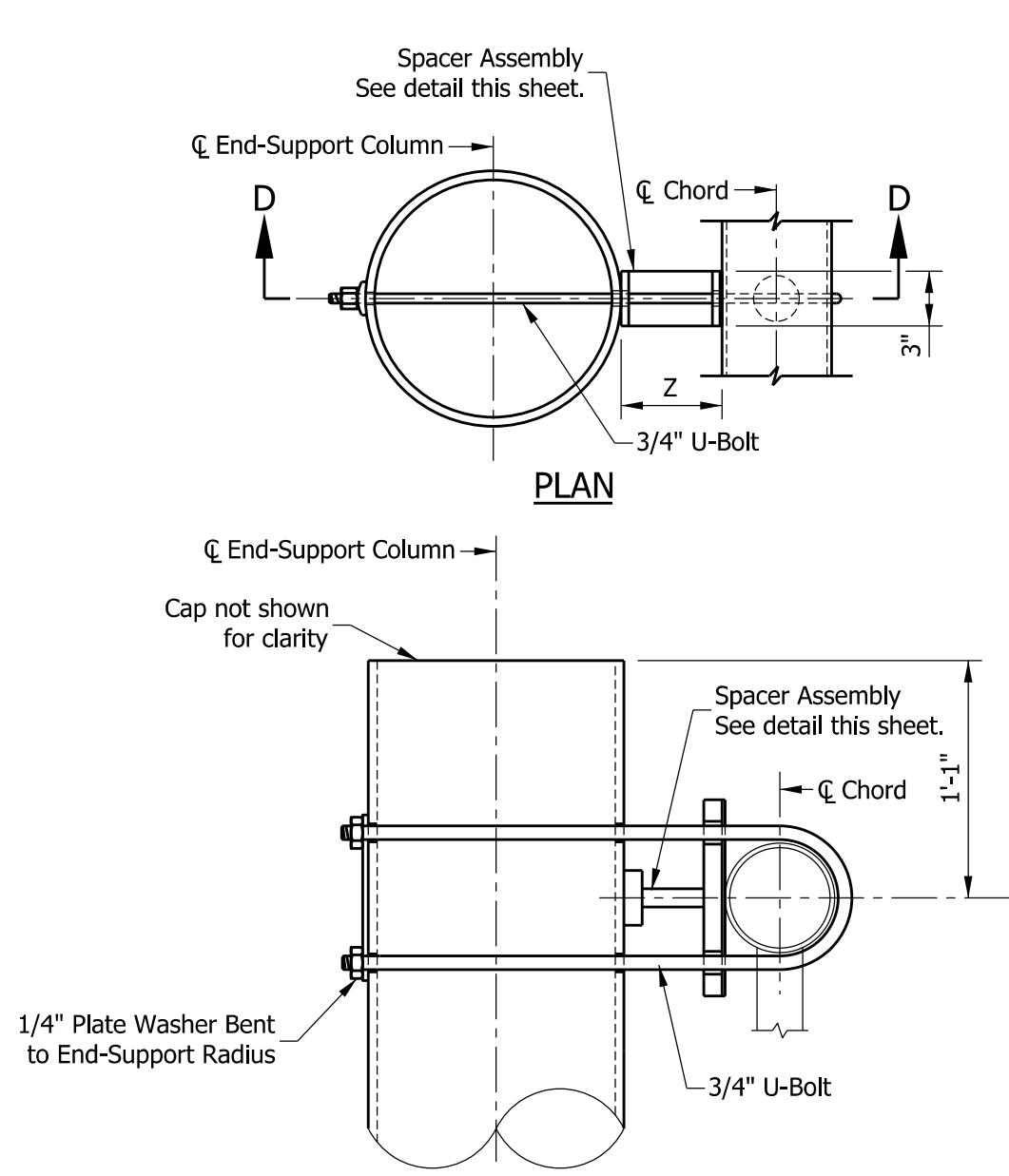
DESIGN STANDARDS ENGINEER DATE

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

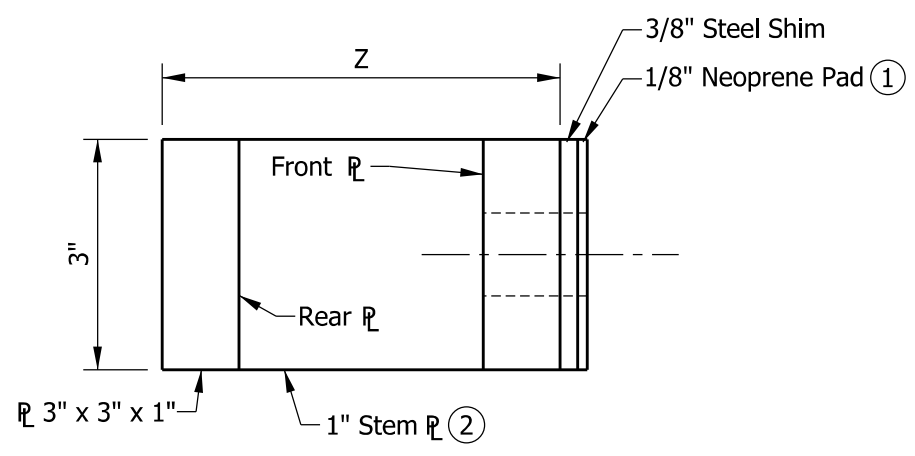
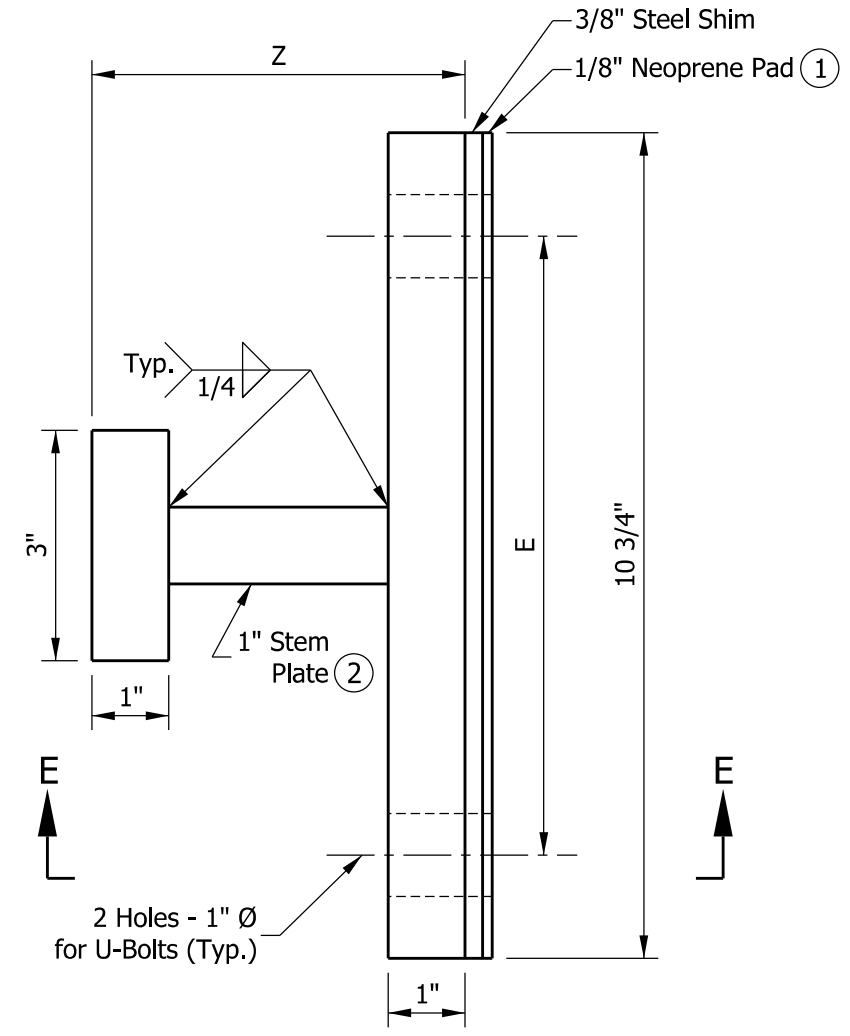
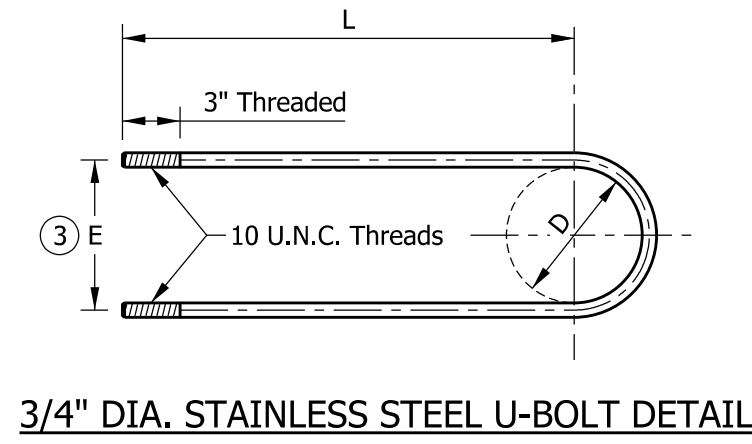
CHIEF ENGINEER DATE

- NOTES:**
- ① Provide isolation from steel-dissimilar metal as required.
  - ② For trusses type D or E, the 1" stem plate is not required. Fillet weld front and rear plates together.
  - ③ Dimension E is equal to the diameter of chord (a) plus 1".

SPACER ASSEMBLY DIMENSIONS						
TRUSS TYPE	END-SUPPORT COLUMN SIZE (h)	CHORD (a)	Ø OF U-BOLT BEND	E	Z	L
	O.D. IN.	O.D. IN.	(D) IN.	IN.	IN.	IN.
A	14	6	6 1/16	7	4 1/2	24
B	14	6 1/2	6 9/16	7 1/2	4 1/4	24
C	14	7	7 1/16	8	4	24
D	18	7	7 1/16	8	2	26
E	18	7	7 1/16	8	2	26



**SECTION D-D**  
**UPPER CHORD CONNECTION DETAILS**



INDIANA DEPARTMENT OF TRANSPORTATION

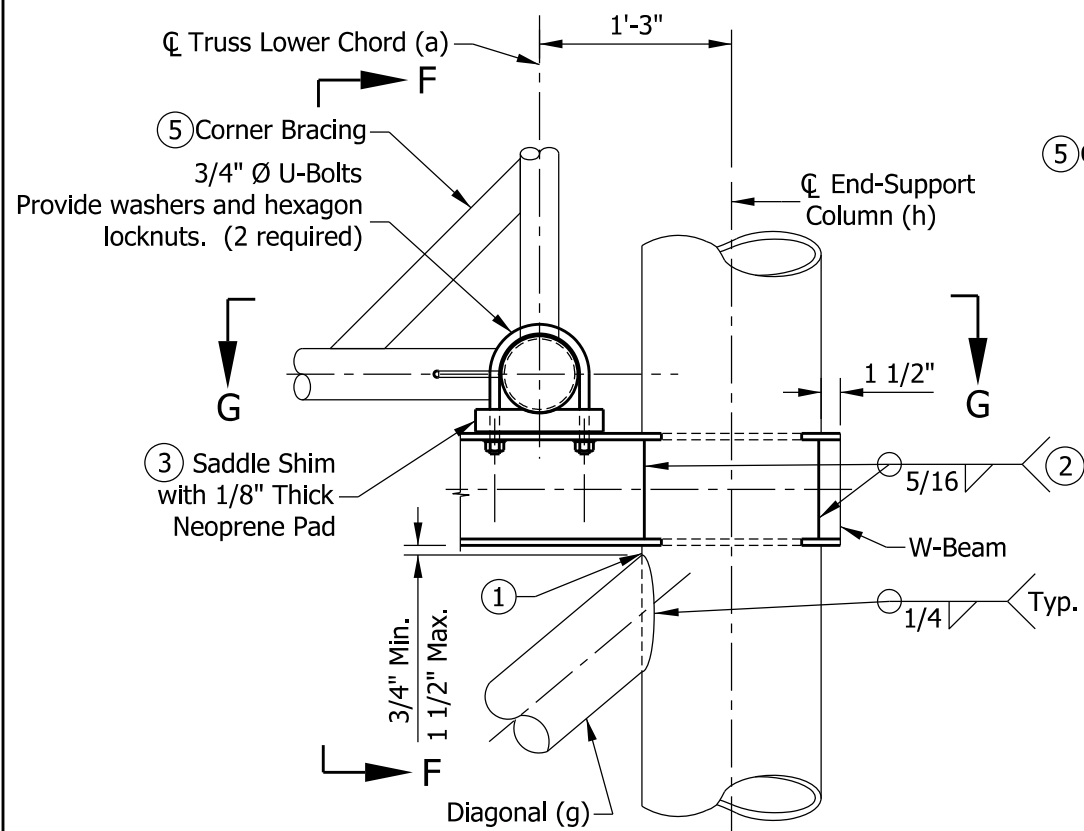
SIGN BOX TRUSS STRUCTURE  
END-SUPPORT  
UPPER CHORD CONNECTION DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-08

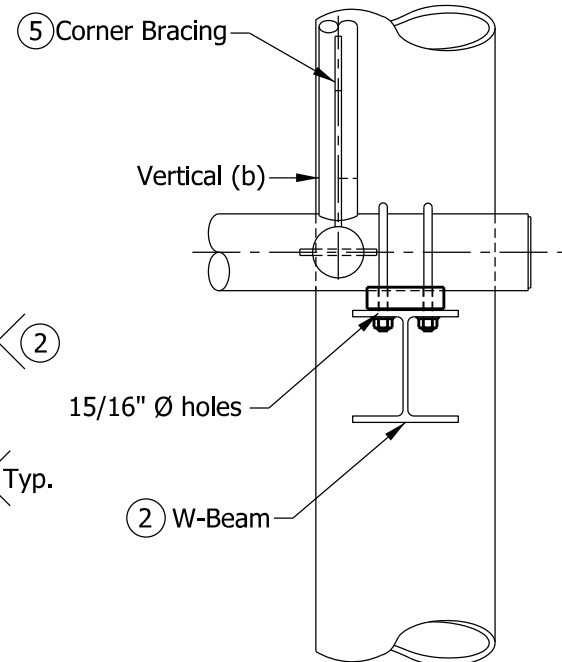
ALFREDO B. HANZA  
REGISTERED  
No. 60020657  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

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

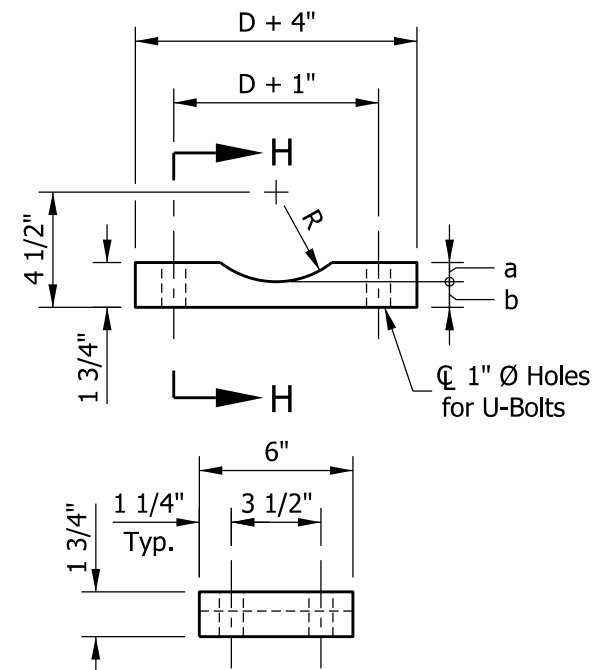
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



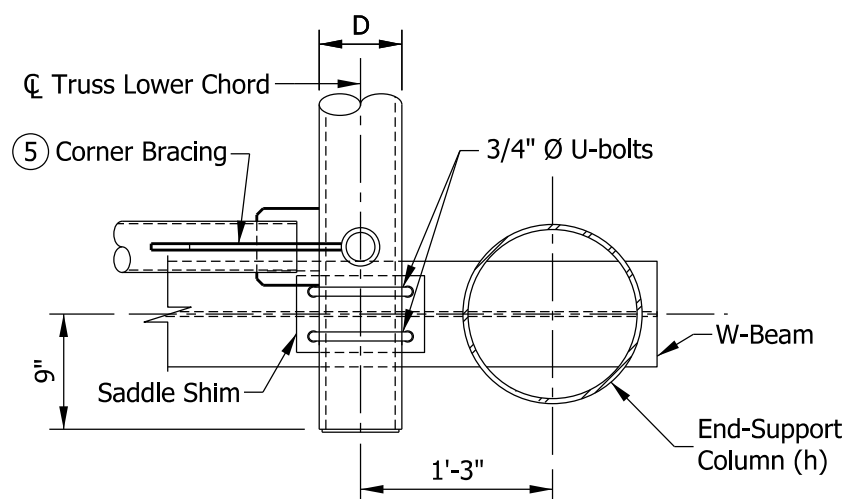
**LOWER CHORD CONNECTION DETAIL**



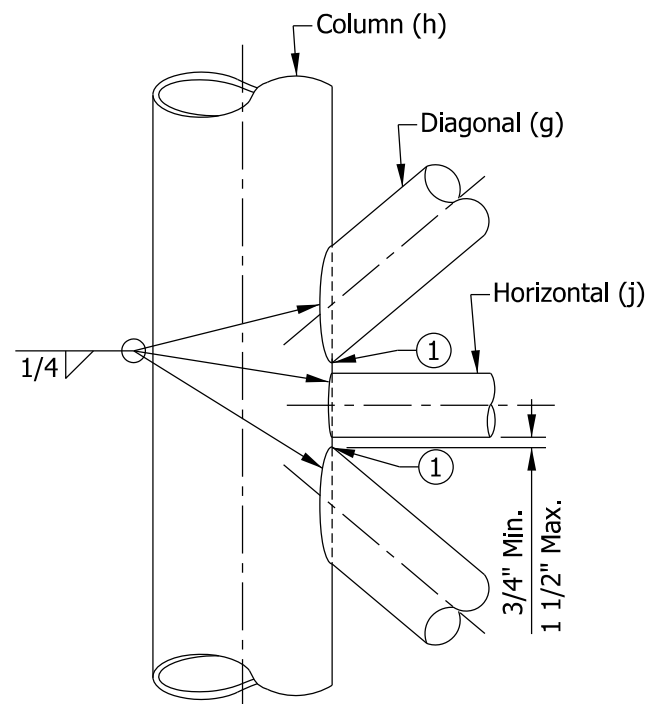
**SECTION F-F**



**SECTION H-H  
SADDLE SHIM DETAIL**



**SECTION G-G**



**ELEVATION (END-SUPPORT)  
TYPICAL BRACING MEMBERS CONNECTION**

**NOTES:**

- 1 Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-SBTS-06 Detail F for toe-edge detail.
- 2 Cut holes in end support columns for W-beams to pass through. Holes to have 1/8" maximum clearance to W-beam. Holes in opposite sides of column to be checked for proper alignment prior to cutting.
- 3 Provide neoprene pads at all chord-to-W-beam bearing surfaces.
4. See Standard Drawing E 802-SBTS-03 for end-support member sizes.
- 5 A corner brace is required on each of the eight external corners of exterior and interior sections. Each brace shall be 1'-9" x 3" x 1/2". See Standard Drawing E 802-SBTS-06 for angle bracing Detail E.
6. See Standard Drawing E 802-SBTS-10 for HSS square-beam as an alternate to truss supporting W-beam.

D	a	b
6"	9/32"	1 15/32"
6 1/2"	17/32"	1 7/32"
7"	25/32"	31/32"

$$R = D/2 + 1/32"$$

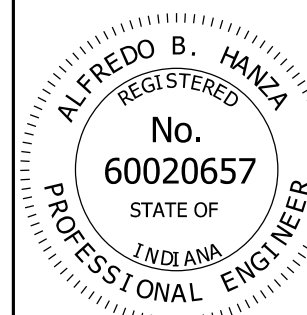
$$R + b = 4 1/2"$$

$$D = \text{Outside Diameter of Chord(a).}$$

**INDIANA DEPARTMENT OF TRANSPORTATION**

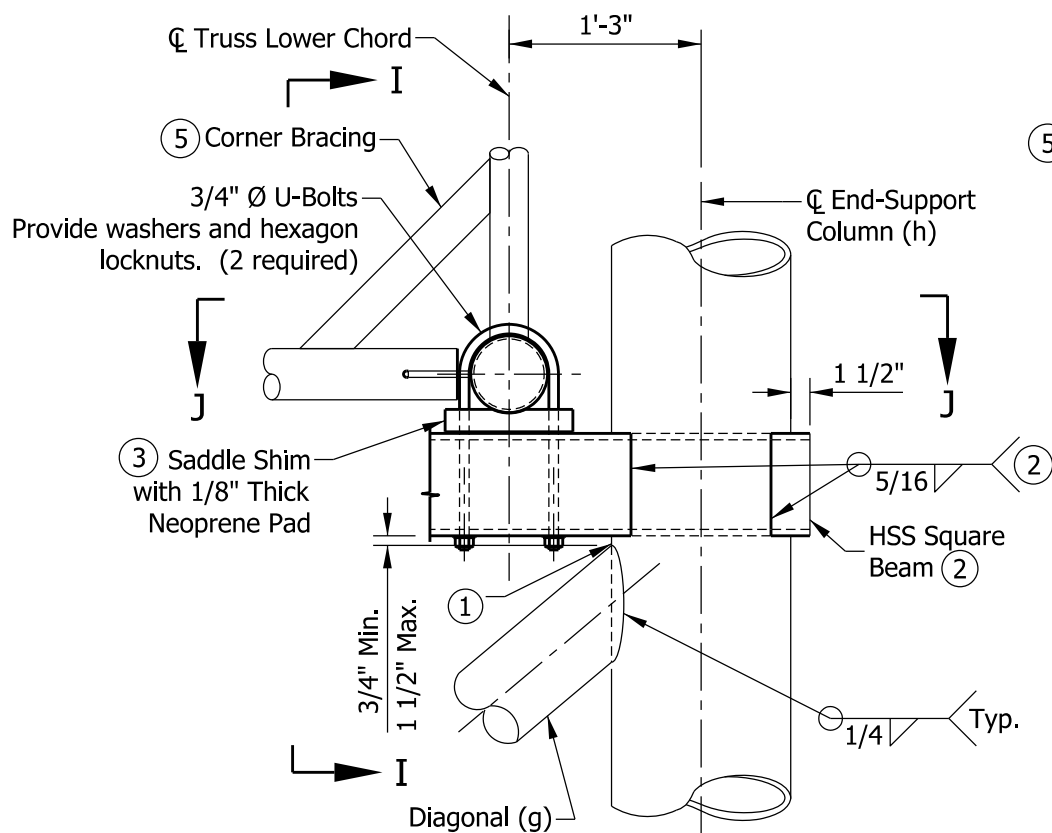
**SIGN BOX TRUSS STRUCTURE  
END-SUPPORT LOWER CHORD  
CONNECTION DETAILS  
SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-SBTS-09**

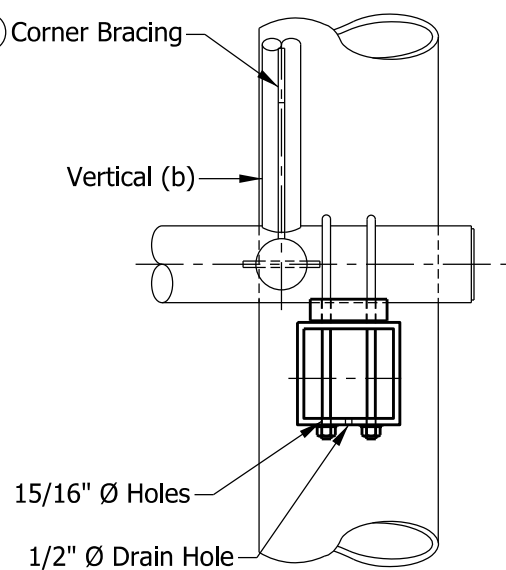


/s/ *Alfredo B. Hanza* 02/05/13  
DESIGN STANDARDS ENGINEER DATE

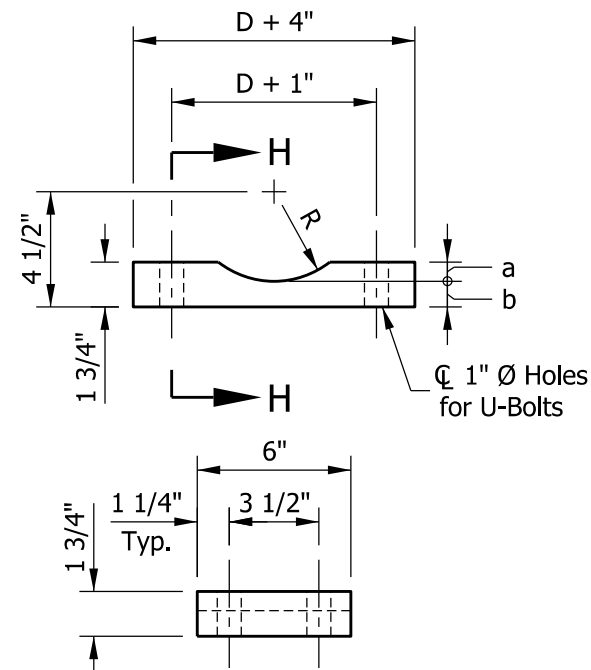
/s/ *Mark A. Miller* 03/27/13  
CHIEF ENGINEER DATE



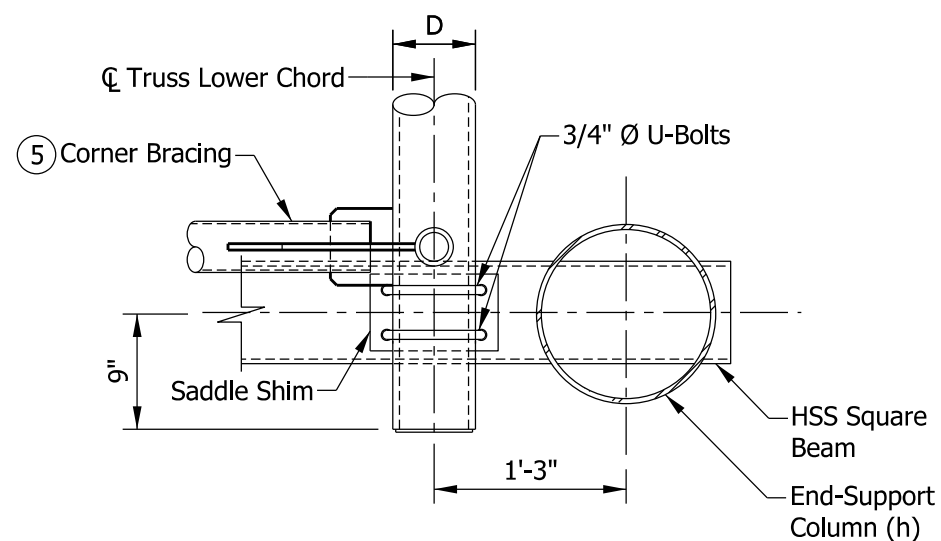
**LOWER CHORD CONNECTION DETAIL**



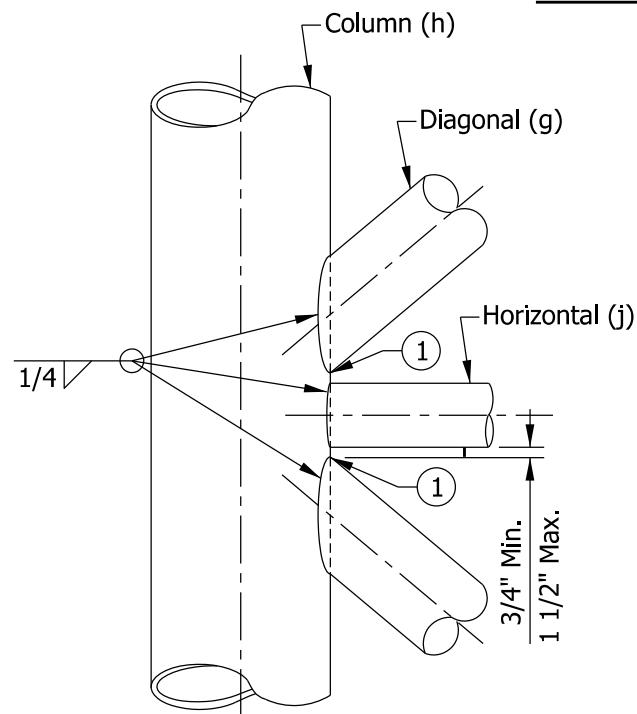
**SECTION I-I**



**SECTION H-H  
SADDLE SHIM DETAIL**



**SECTION J-J**



**ELEVATION (END-SUPPORT)  
TYPICAL BRACING MEMBERS CONNECTION**

**NOTES:**

- ① Toe edge of diagonal member shall be cut back to facilitate throat thickness. See Standard Drawing E 802-SBTS-06 Detail F for toe-edge detail.
- ② Cut holes in end support columns for square beams to pass through. Holes to have 1/8" maximum clearance to square beam. Holes in opposite sides of column to be checked for proper alignment prior to cutting.
- ③ Provide neoprene pads at all chord-to-square-beam bearing surfaces.
4. See Standard Drawing E 802-SBTS-03 for end support member sizes.
- ⑤ A corner brace is required on each of the eight external corners of exterior and interior sections. Each brace shall be 1'-9" x 3" x 1/2". See Standard Drawing E 802-SBTS-06 for angle bracing Detail E.

D	a	b
6"	9/32"	1 15/32"
6 1/2"	17/32"	1 7/32"
7"	25/32"	31/32"

$$R = D/2 + 1/32"$$

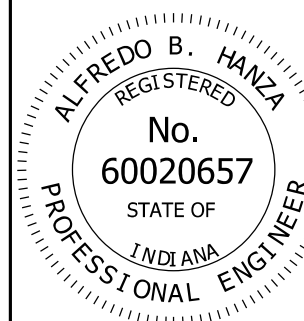
$$R + b = 4 1/2"$$

$$D = \text{Outside Diameter of Chord(a)}.$$

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN BOX TRUSS STRUCTURE  
END SUPPORT LOWER CHORD  
CONNECTION DETAILS, ALTERNATE HSS BEAM  
SEPTEMBER 2013**

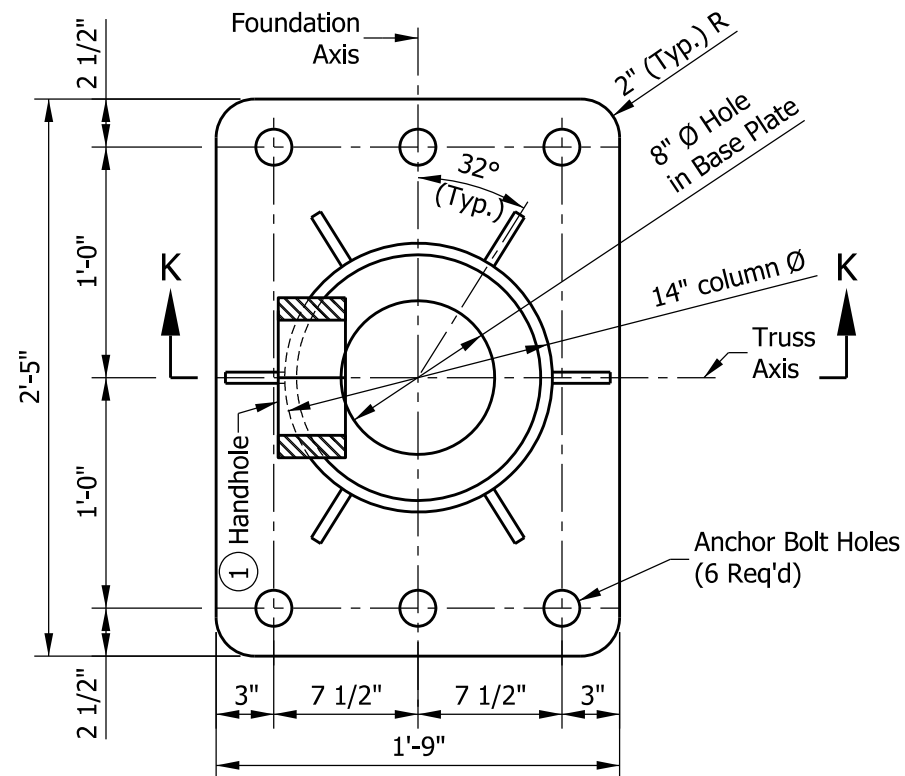
**STANDARD DRAWING NO. E 802-SBTS-10**



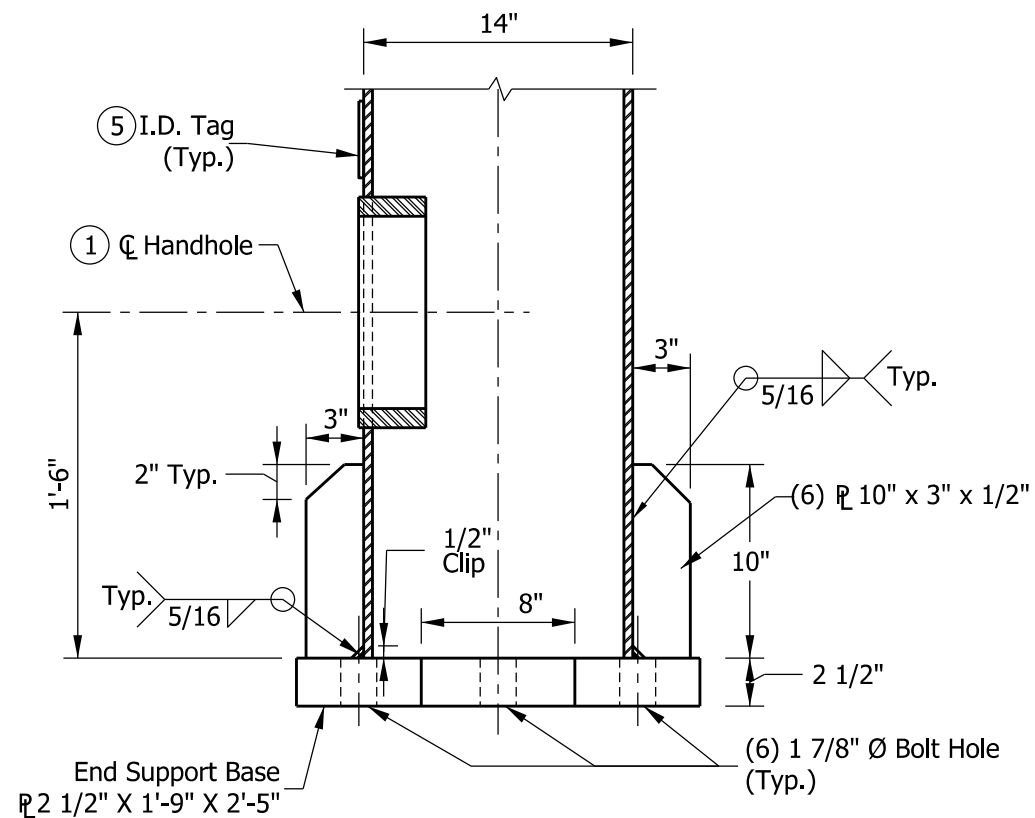
/s/ *Alfredo B. Hanza* 02/05/13  
DESIGN STANDARDS ENGINEER DATE

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

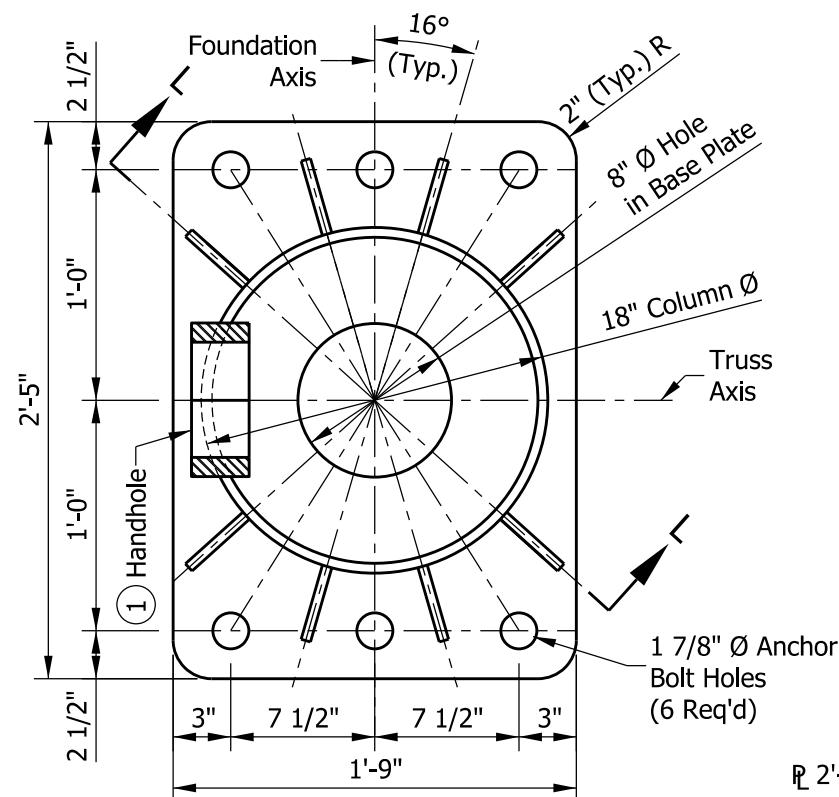




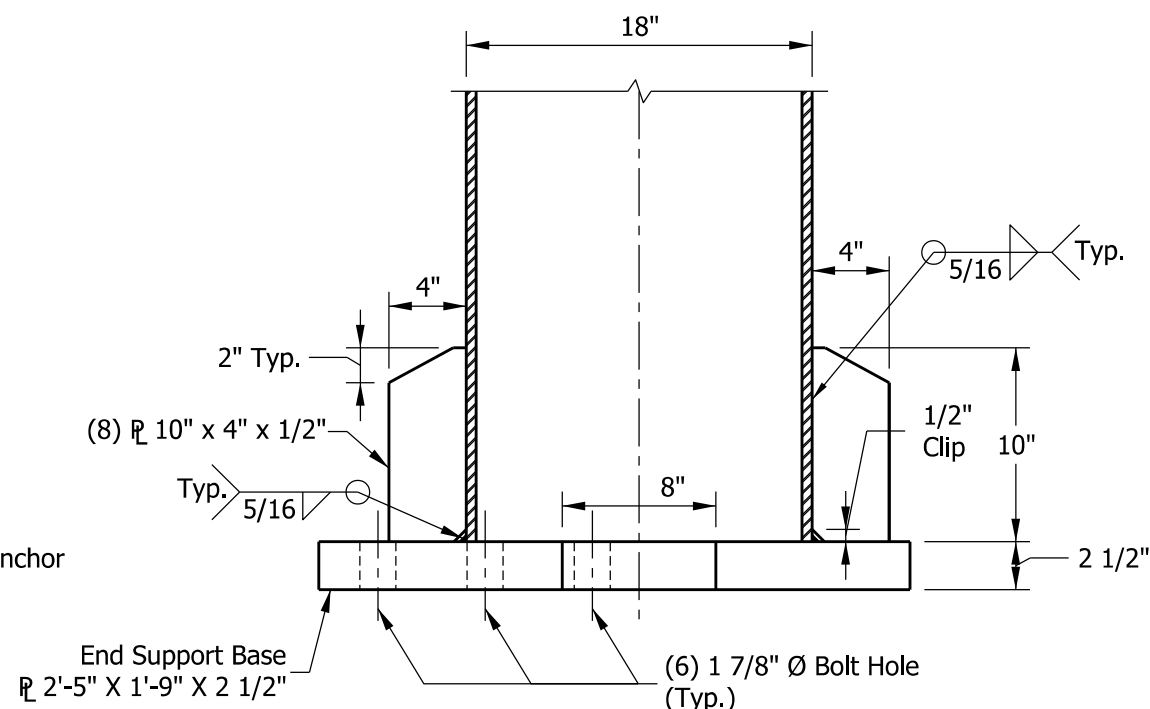
TYPE B-14 BASE PLATE



SECTION K-K



TYPE B-18 BASE PLATE

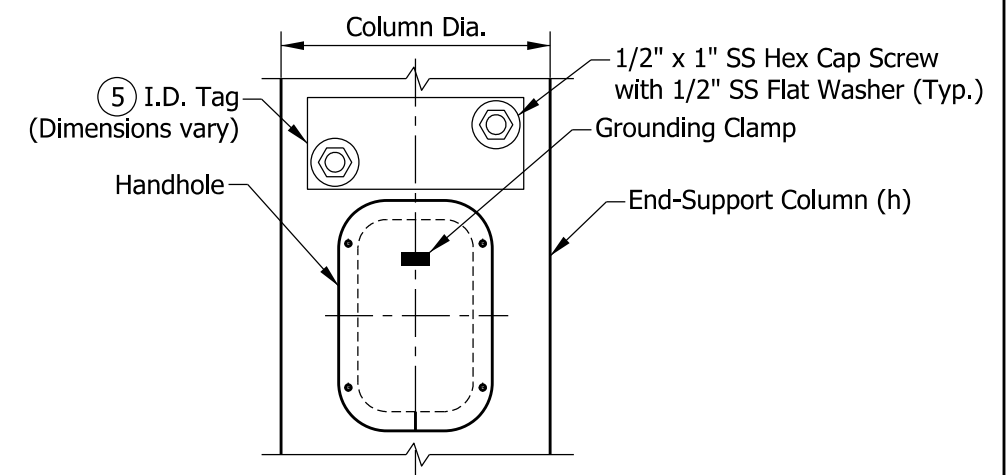


SECTION L-L

## NOTES:

- See Standard Drawing E 802-SBTS-12 for handhole details.
- Use Type B-14 base plate for end-support column having diameter of 14". Use Type B-18 base plate for end-support column having diameter of 18".
- See Standard Drawing E 802-SBTS-13 for anchor bolt and metal skirt details.
- Each end support shall have one handhole at the column base (h). Handhole shall be placed on the column nearest to the sign.
- I.D. tag is required on each end-support column. 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 \_\_\_\_\_, Structure Length \_\_\_\_\_  
End Support Mounting Height \_\_\_\_\_

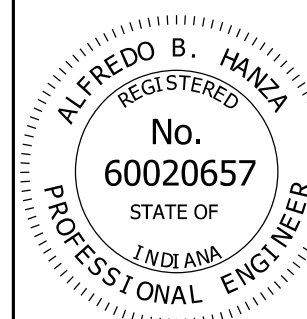


ELEVATION  
VIEW FROM HANDHOLE SIDE

INDIANA DEPARTMENT OF TRANSPORTATION

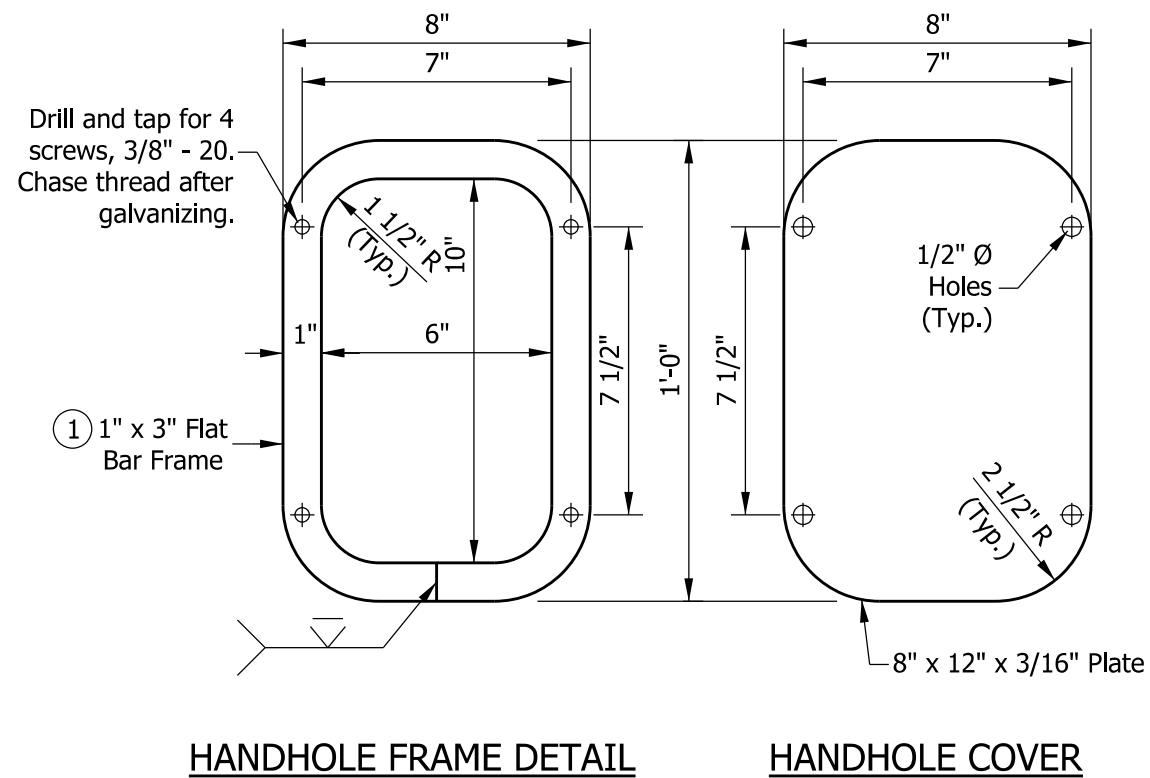
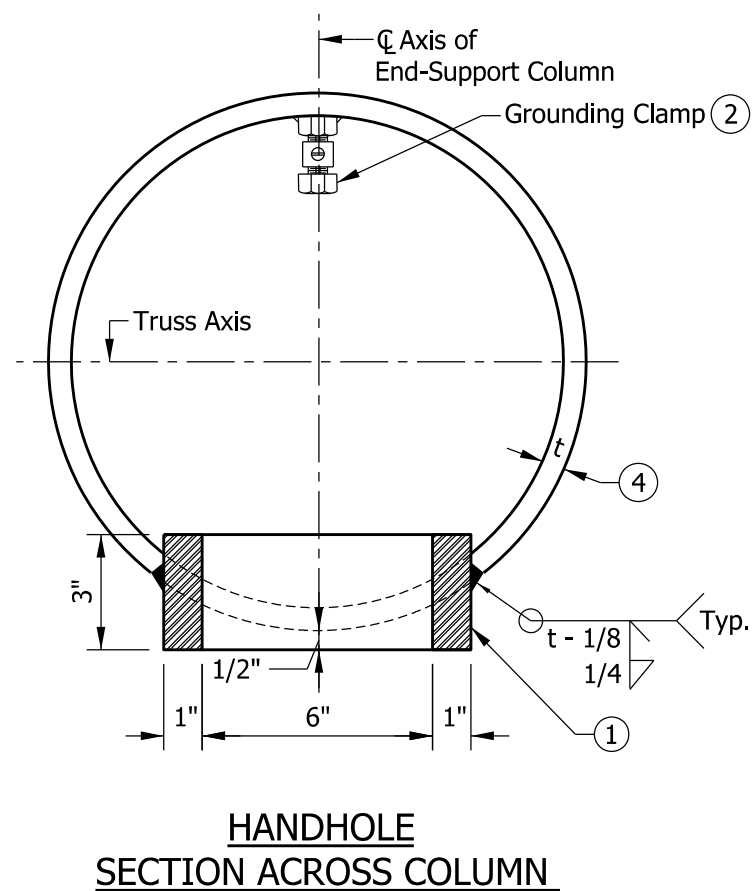
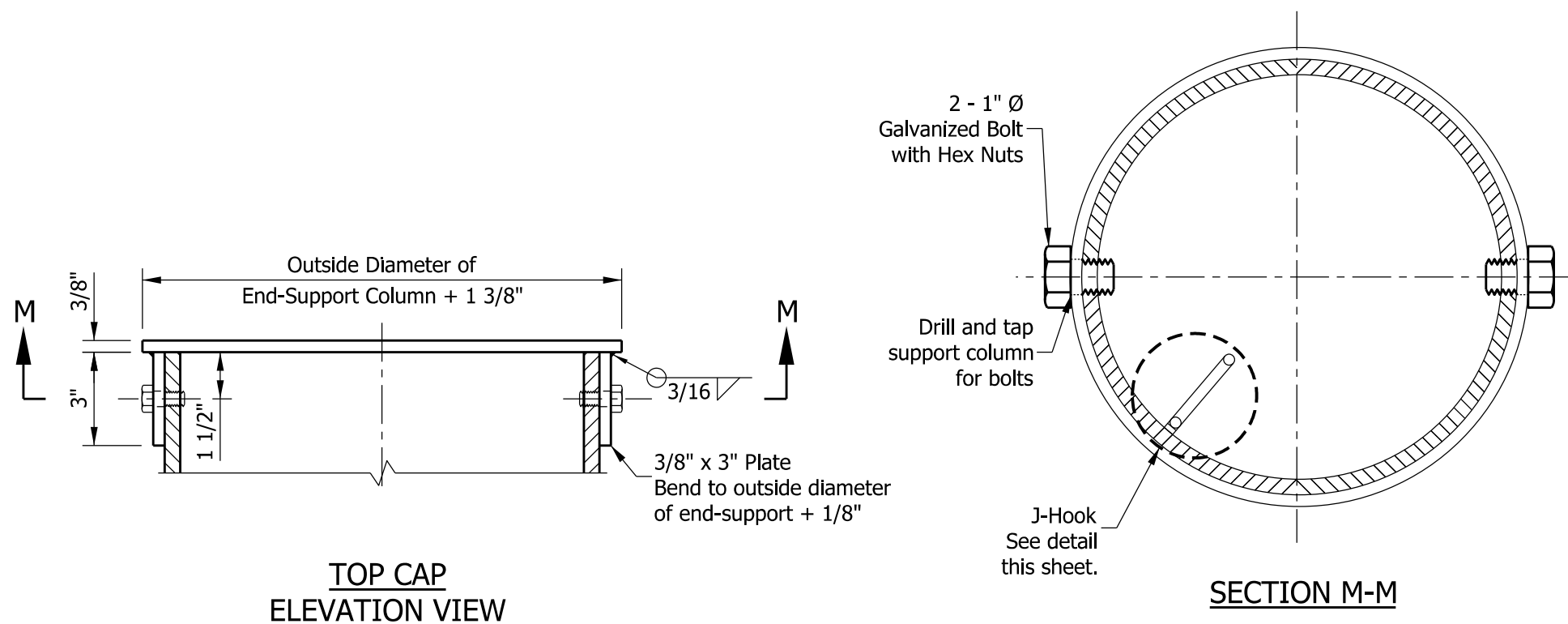
SIGN BOX TRUSS STRUCTURE  
END SUPPORT  
BASE PLATE AND I.D. TAG DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-11



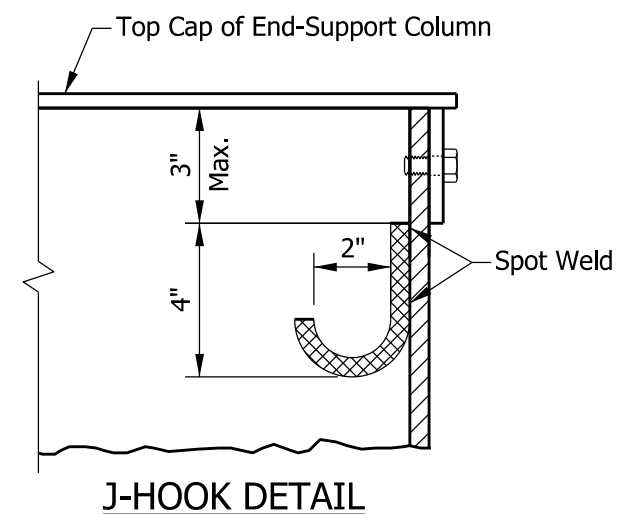
/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

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



# NOTES:

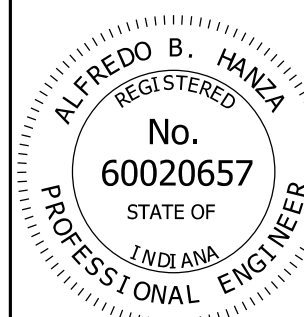
- ① In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
- ② See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawing E 802-SBTS-02 and 10 for handhole locations.
- ④ See Standard Drawing E 802-SBTS-03 for thicknesses of end-support columns (h).



INDIANA DEPARTMENT OF TRANSPORTATION

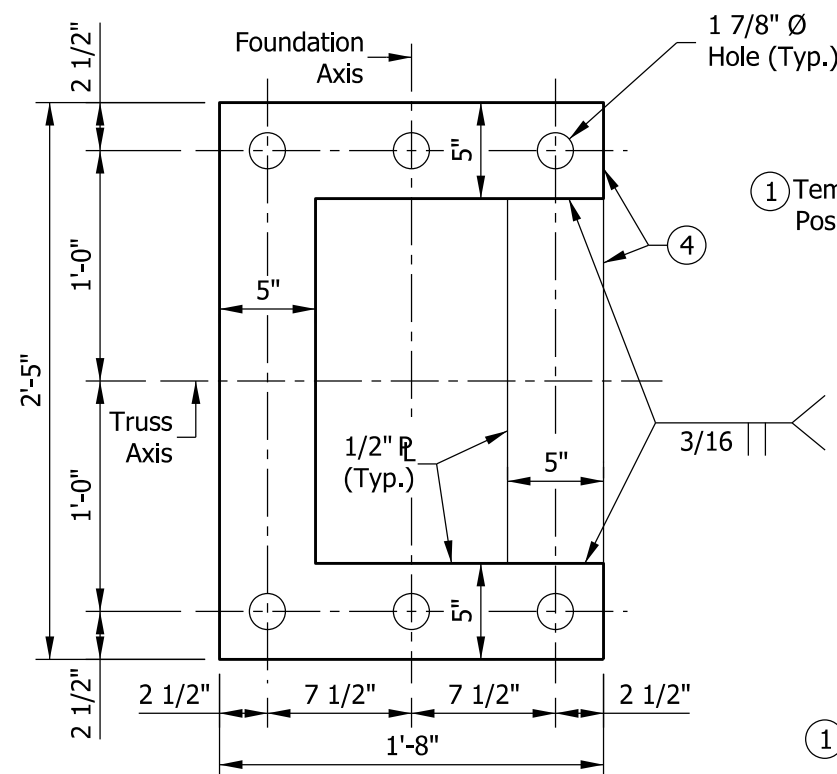
SIGN BOX TRUSS STRUCTURE  
END-SUPPORT  
TOP-CAP, HANDHOLE, AND J-HOOK DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-12

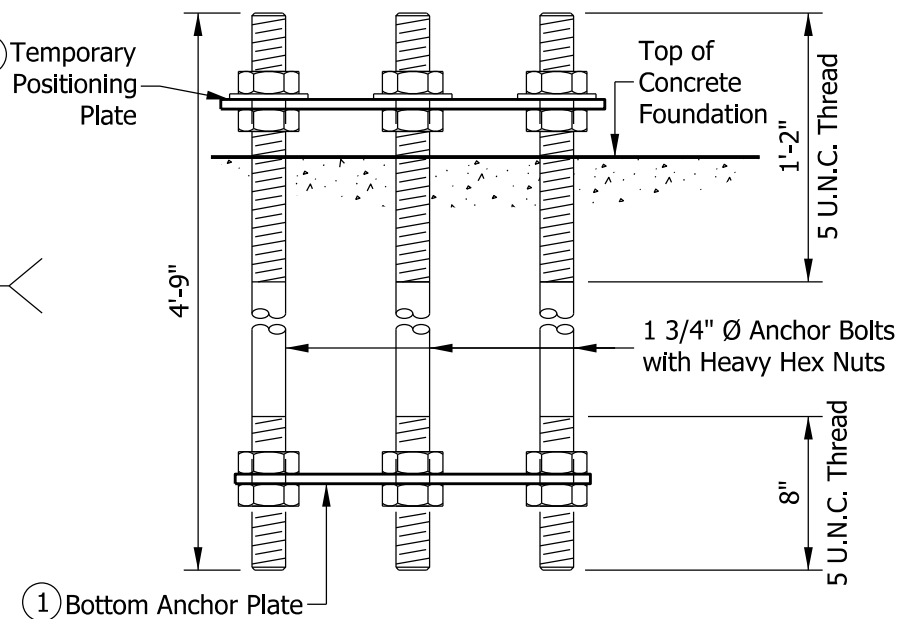


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

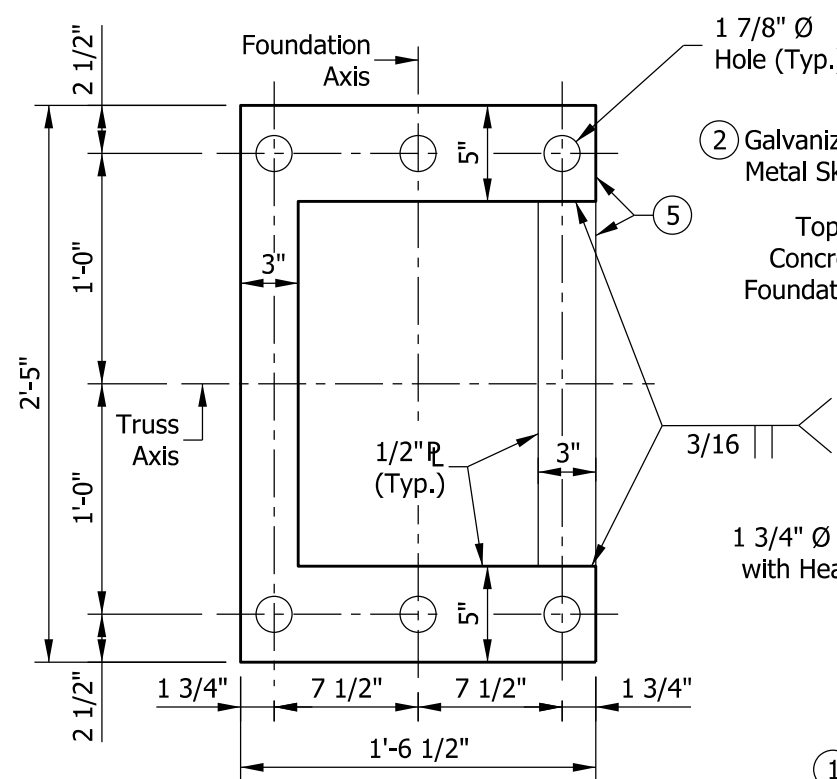
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



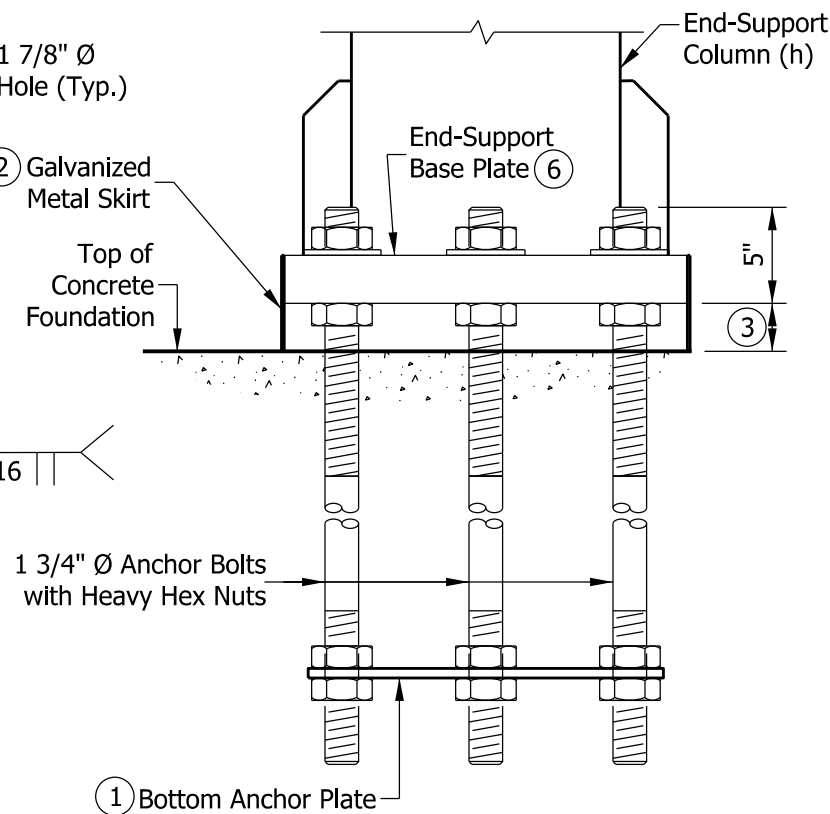
**TEMPORARY POSITIONING PLATE**



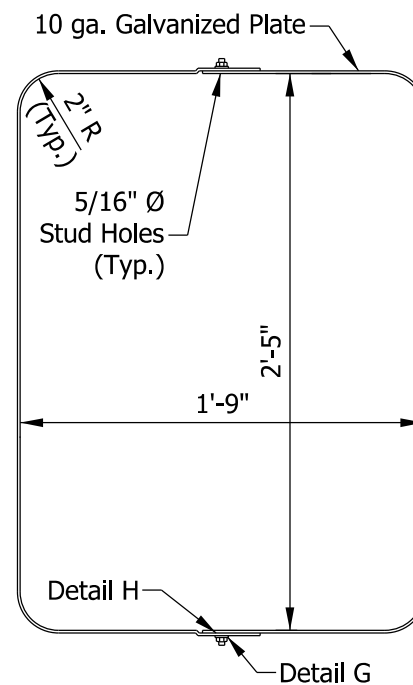
**ANCHOR BOLT DETAILS  
BEFORE CONCRETE PLACEMENT**



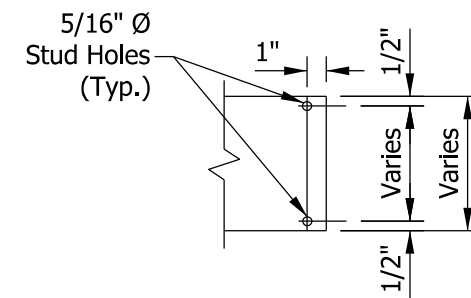
**BOTTOM ANCHOR PLATE**



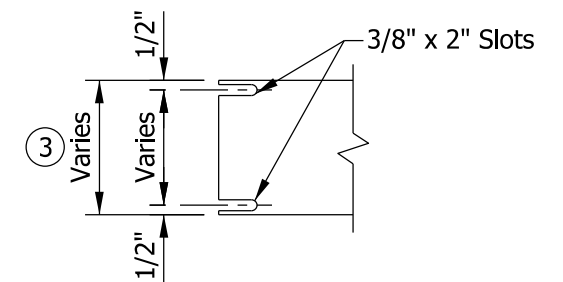
**ANCHOR BOLT DETAILS  
AFTER CONCRETE PLACEMENT**



**METAL SKIRT DETAIL**



**DETAIL G**



**DETAIL H**

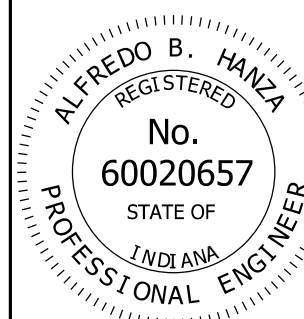
**NOTES:**

- ① Use temporary positioning plate and bottom anchor plate for all foundations. Temporary positioning plate should be removed after placing concrete.
- ② Secure galvanized metal skirt to base plate after erection as shown in skirt detail.
- ③ Minimum base plate gap is 2 1/2" and can be increased up to 5 1/2". Metal skirt width shall be at least 1 1/2" more than the actual gap.
- ④ May use four separate 5" plates welded together to maintain angles and shape as shown.
- ⑤ May use two separate 3" and two separate 5" plates welded together to maintain angles and shape as shown.
- ⑥ See Standard Drawing E 802-SBTS-11 for end-support base plate details.

INDIANA DEPARTMENT OF TRANSPORTATION

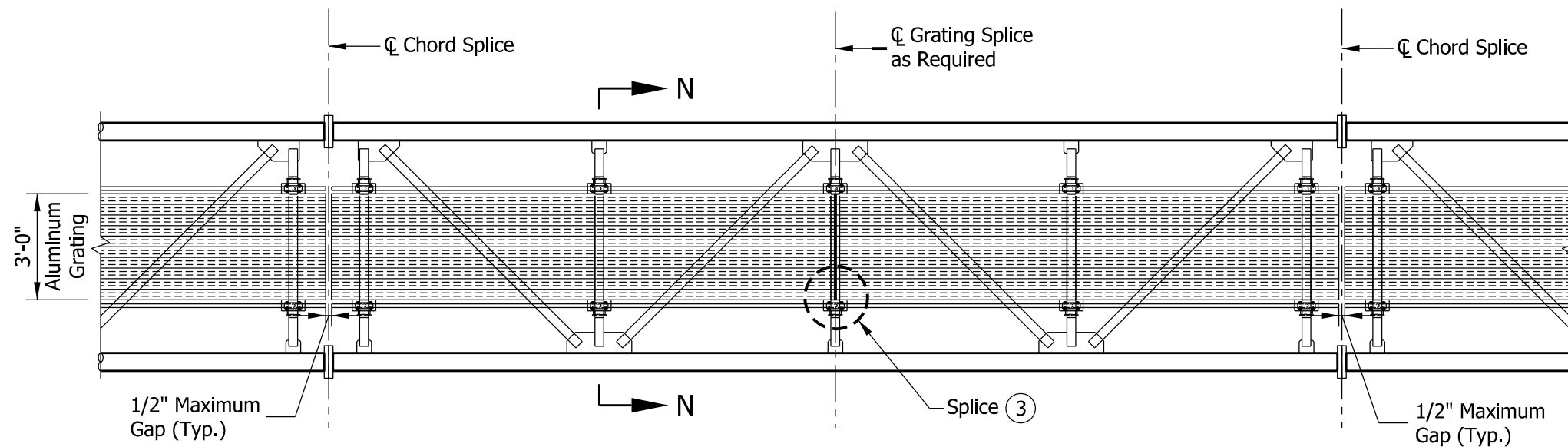
SIGN BOX TRUSS STRUCTURE  
END-SUPPORT  
ANCHOR BOLT AND METAL SKIRT DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-13



/s/ Alfredo B. Hanza 03/26/13  
DESIGN STANDARDS ENGINEER DATE

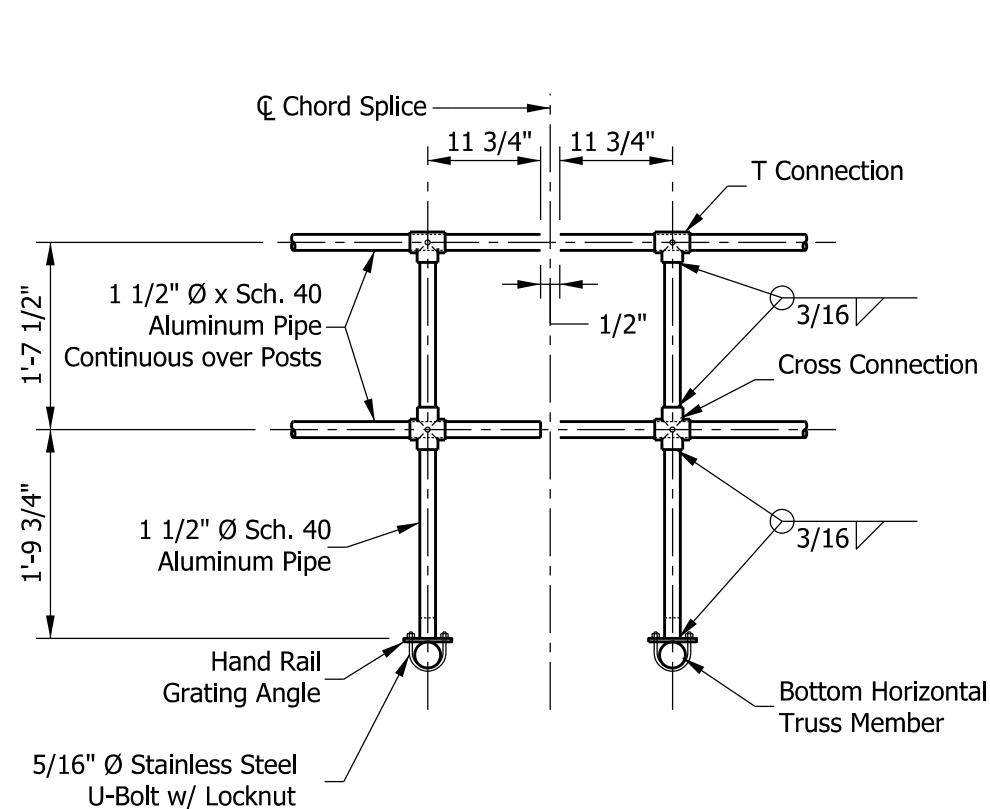
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



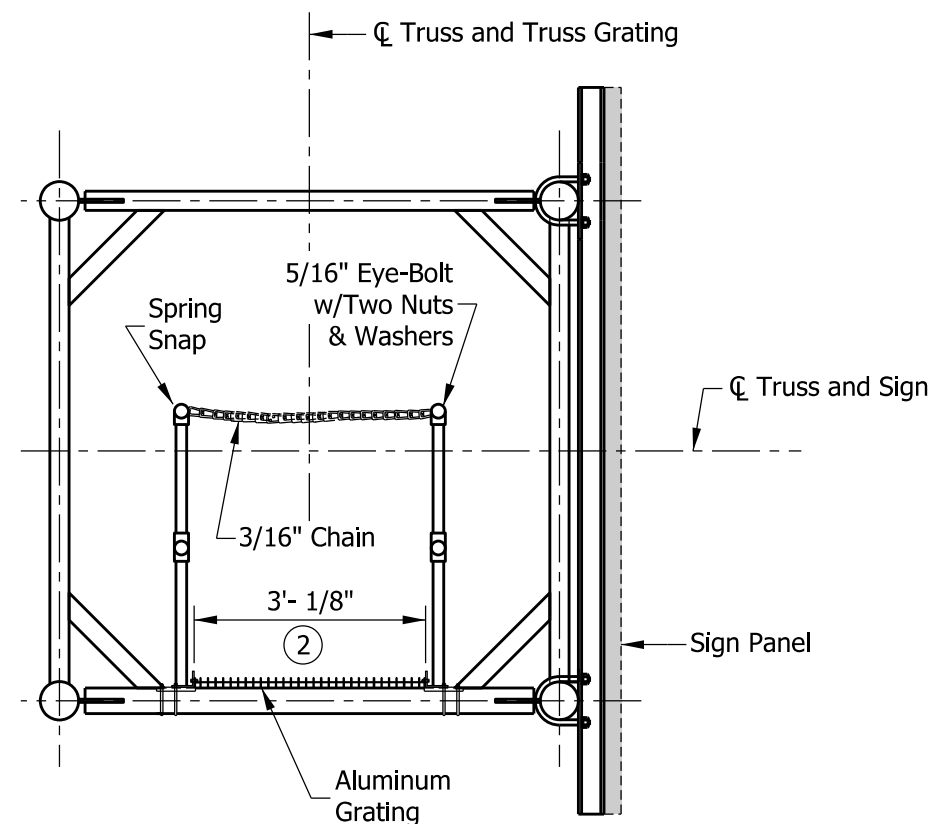
**WALKWAY GRATING PLAN**

**NOTES:**

1. Interior walkway gratings shall be extruded I-bars 2" x 1/4" x 1 3/16" center-to-center. Cross bars shall have a maximum gap of 4". Moment of Inertia,  $I_x = 1.382 \text{ in}^4$ . A different grating of equal strength may be used upon approval.
- 2 Walkway grating width is nominal and may vary  $\pm 1/2"$  based on available standard widths.
- 3 Interior walkway gratings can be spliced on center of any horizontal truss member as needed. See Standard Drawing E 802-SBTS-15 for typical interior walkway grating splice detail.
4. Interior walkway grating shall run the full length, center-to-center, of end-support truss members plus 9" at each end.



**TYPICAL HANDRAIL DETAIL**



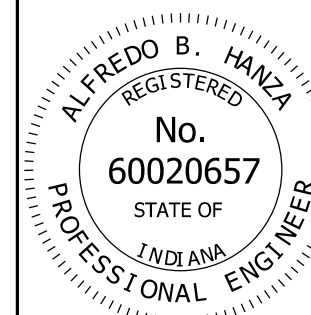
**SECTION N-N**

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
INTERIOR WALKWAY GRATING DETAILS

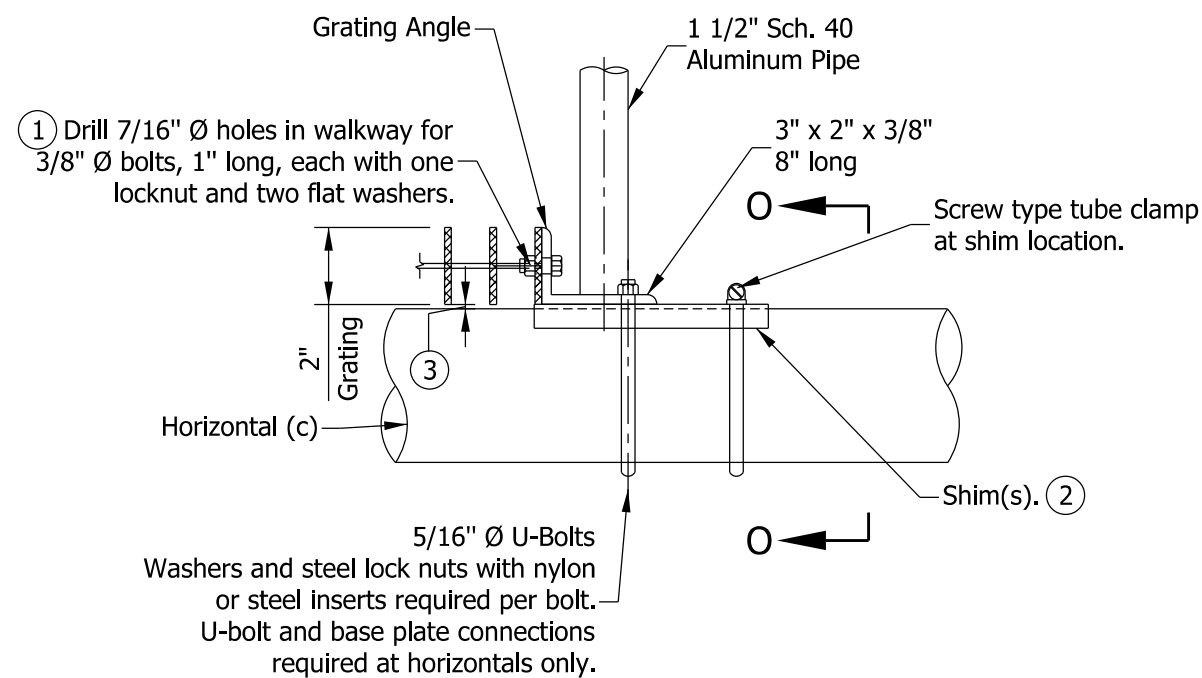
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-14

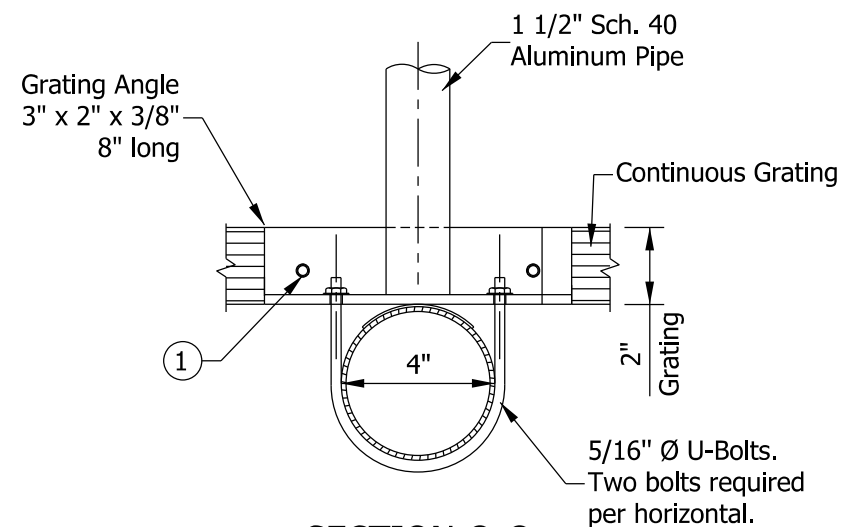


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

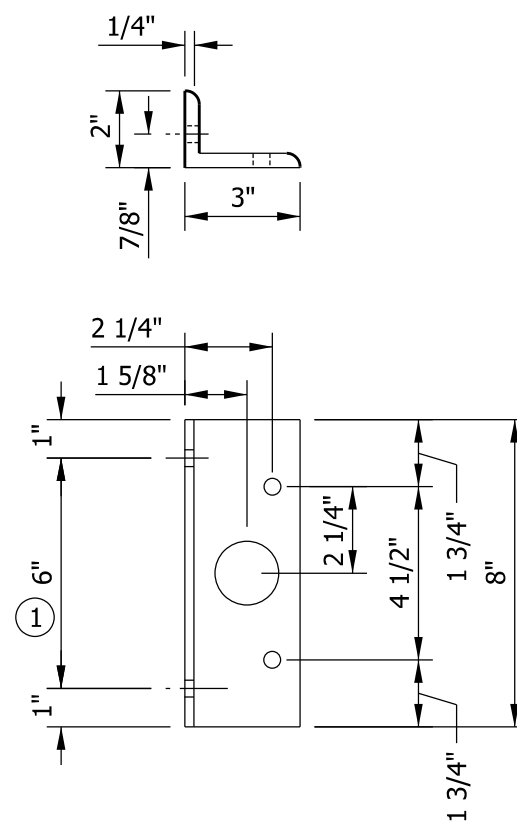
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



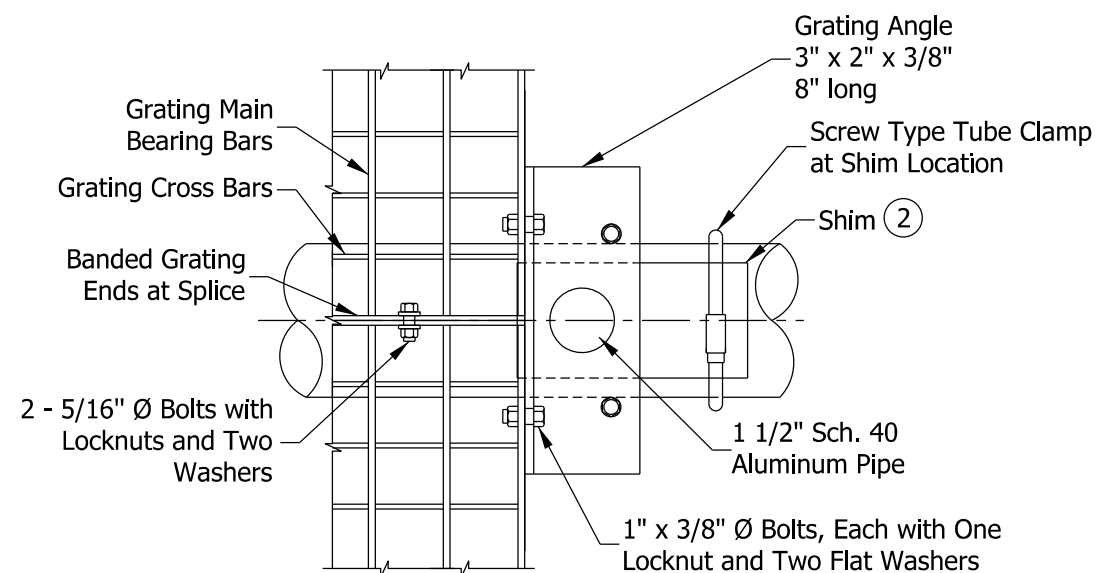
**GRATING SUPPORT DETAIL**



**SECTION O-O**



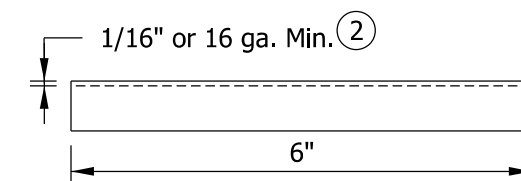
**GRATING ANGLE**



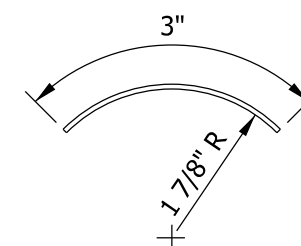
**GRATING SPLICE DETAIL**

**NOTES:**

- ① Drilling of holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.
- ② Shims may be placed as shown, if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.
- ③ Tube-to-grating gap may vary from 0 to 1/2" max. to align walkway, allow for camber.



**ELEVATION**



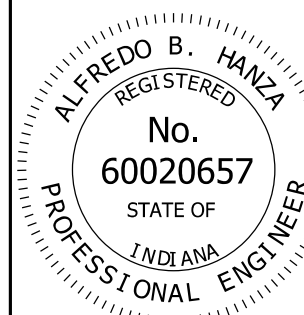
**END VIEW  
SHIM DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
INTERIOR WALKWAY GRATING DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-15



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

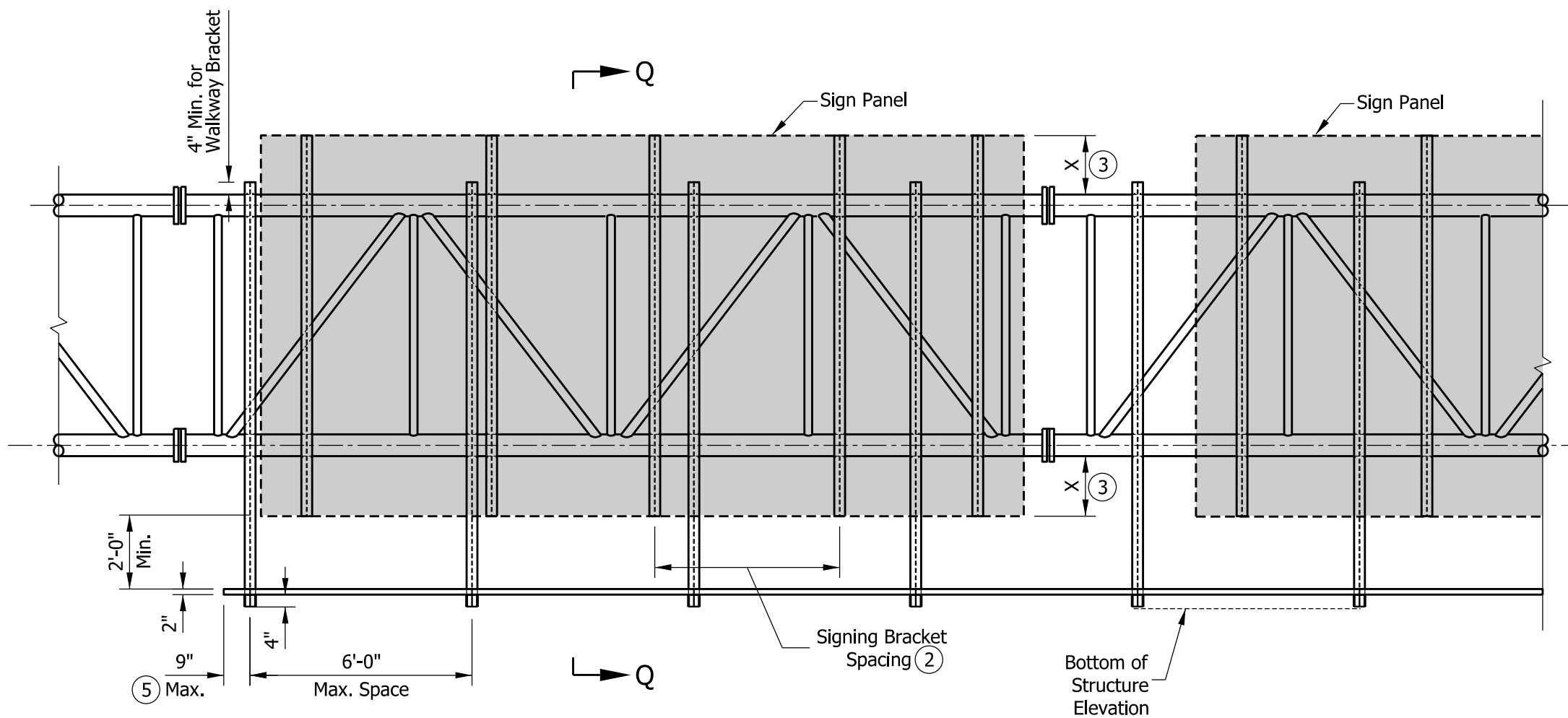
DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

NOTES:

- 1. For location and data for sign panels, see plan details cross section.
- 2 Signs > 7' in height, bracket spacing 5' max.  
Signs ≤ 7' in height, bracket spacing 7' max.
- 3 Dimension X depends on the height of the sign. Sign is to be centered vertically on truss.
- 4. See Standard Drawing E 802-SBTS-17 for Plan, and E 802-SBTS-18 for Section Q-Q.
- 5 Sign shall be installed on truss with independent brackets WF (A-N) 4 x 3.06. Lighting walkway may be extended to comply with the 9" maximum unsupported grating.



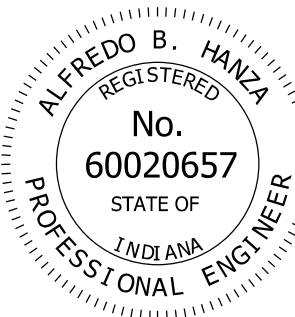
TYPICAL FRONT ELEVATION  
(Lights & handrail omitted for clarity)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
LIGHTING WALKWAY

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-16

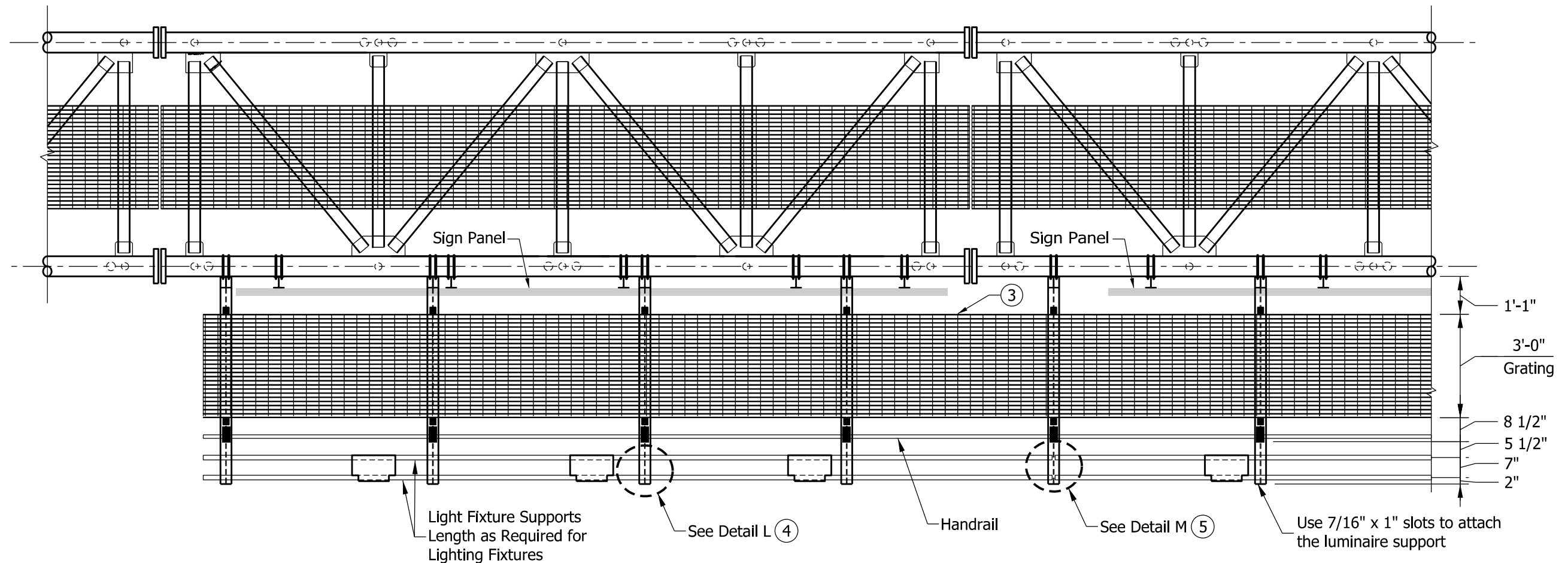


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

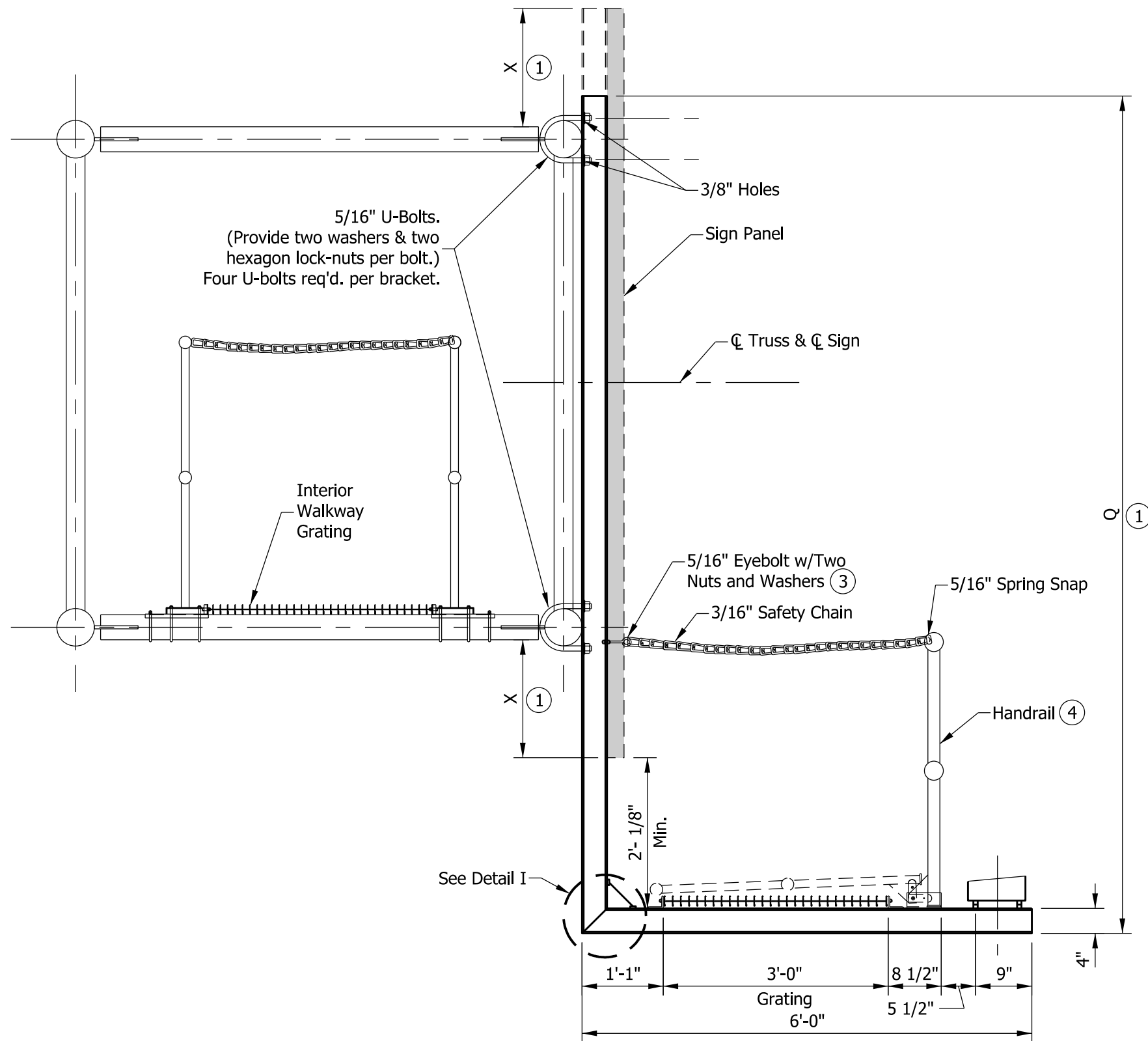


PLAN

**NOTES:**

1. Handrail and grating shall span a minimum of 3 brackets.
2. Grating splice located on center of L-bracket only. See Standard Drawing E 802-SBTS-21, Detail M.
- ③ Lighting walkway gratings are extruded I-bars 2" x 1/4" spaced at 1 3/16" center-to-center. Cross bars shall have a maximum gap of 4". Moment of Inertia,  $I_x = 1.382 \text{ in}^4$ . A different grating of equal strength may be used upon approval.
- ④ See Standard Drawing E 802-SBTS-21, Detail L.
- ⑤ See Standard Drawing E 802-SBTS-21, Detail M.

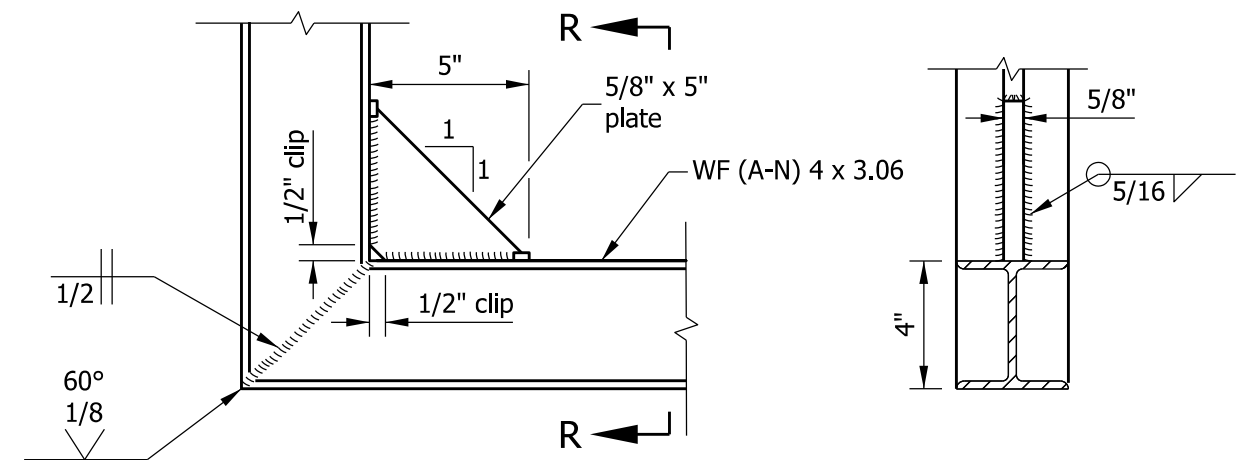
INDIANA DEPARTMENT OF TRANSPORTATION			
SIGN BOX TRUSS STRUCTURE LIGHTING WALKWAY			
SEPTEMBER 2013			
STANDARD DRAWING NO.		E 802-SBTS-17	
	/s/ Alfredo B. Hanza		02/05/13
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Mark A. Miller		03/27/13
	CHIEF ENGINEER		DATE



**SECTION Q-Q**

**NOTES:**

1. Dimensions X and Q to be determined by Contractor to fit signs.
2. Sign panel shall be placed symmetrically about centerline of truss.
- ③ Eyebolt shall be attached to web of bracket at approximate elevation of upper handrail pipe.
- ④ See Standard Drawing E 802-SBTS-19 for handrail details.



**DETAIL I**

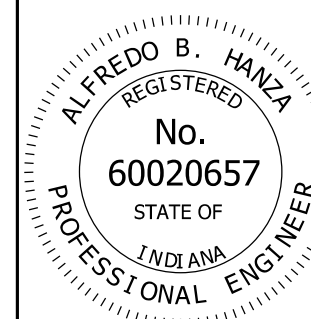
**SECTION R-R**

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
LIGHTING WALKWAY PROFILE

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-18



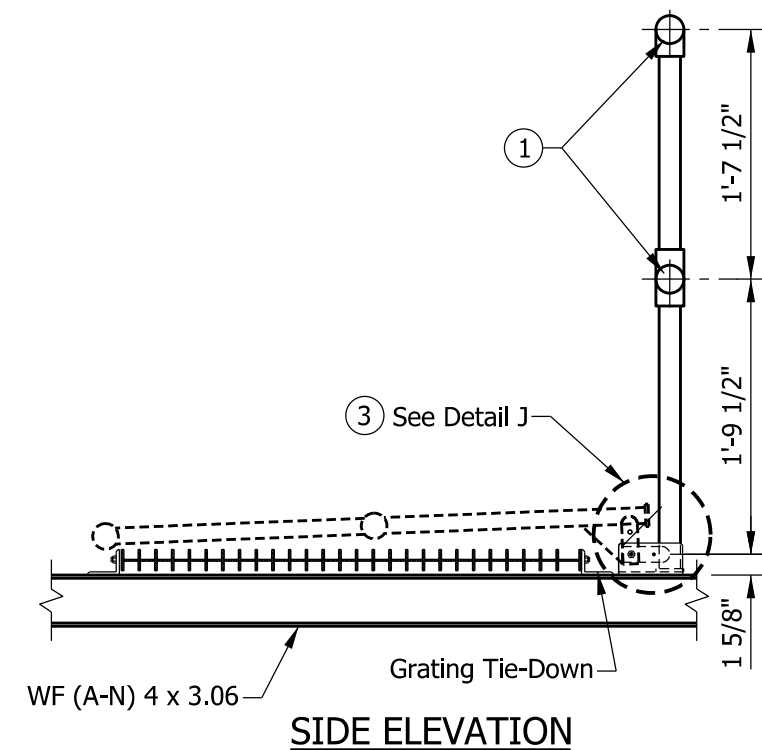
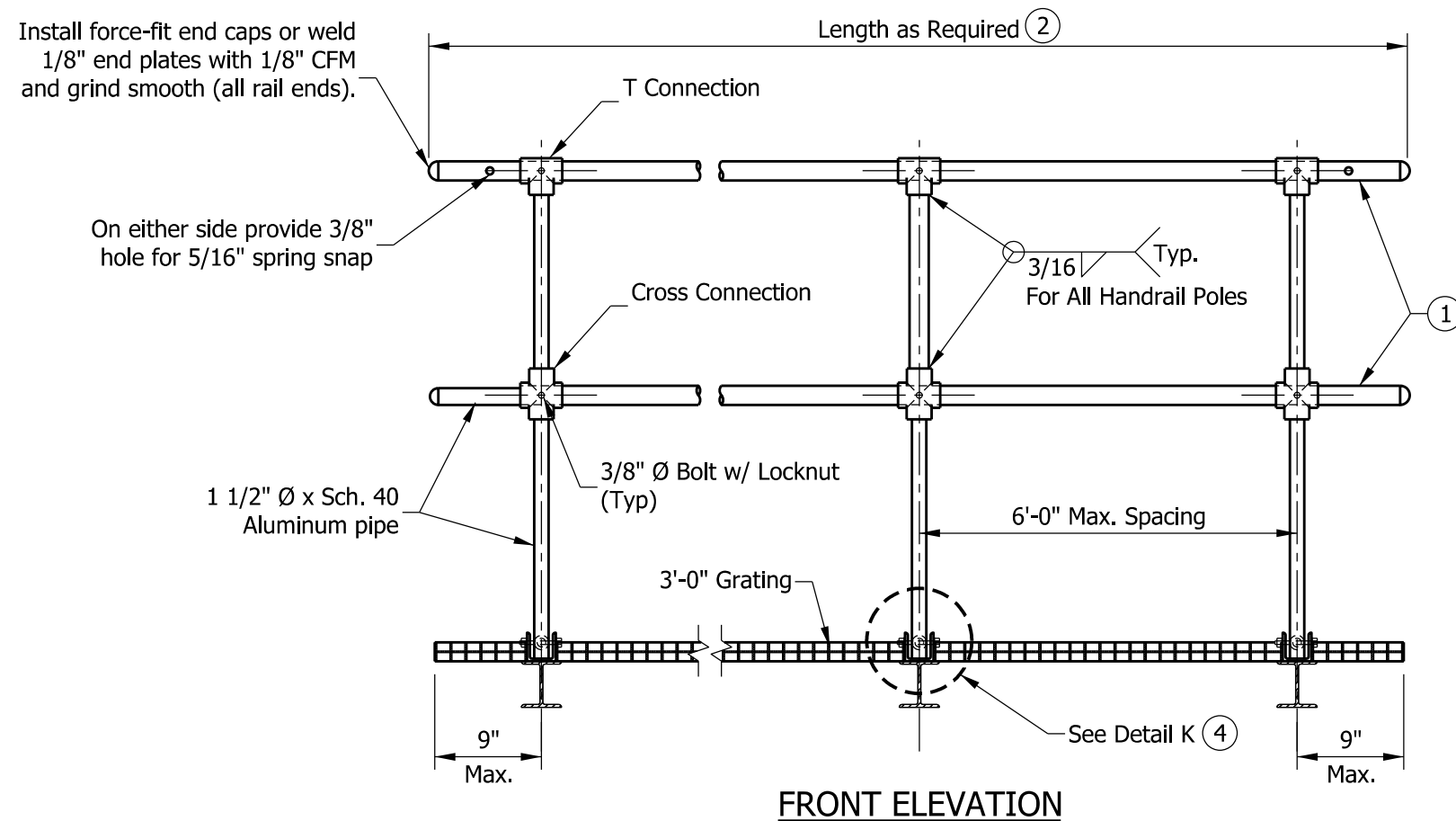
/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE





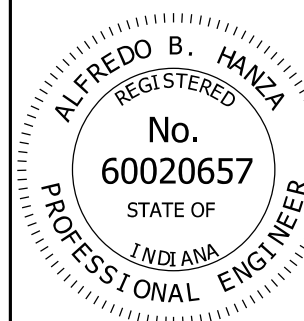
#### NOTES:

- (1) Horizontal rail member shall be continuous through fitting. Manufacturer shall provide 7/16" holes for fitting 3/8" bolt. Field drill 7/16" hole in horizontal rail member. Attach handrail with 3/8" bolt, washer, and locknut.
- (2) Rail and grating shall span a minimum of three brackets.
- (3) See Standard Drawing E 802-SBTS-20 for Detail J.
- (4) See Standard Drawing E 802-SBTS-20 for Detail K.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
LIGHTING WALKWAY AND  
HANDRAIL ASSEMBLY  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-19

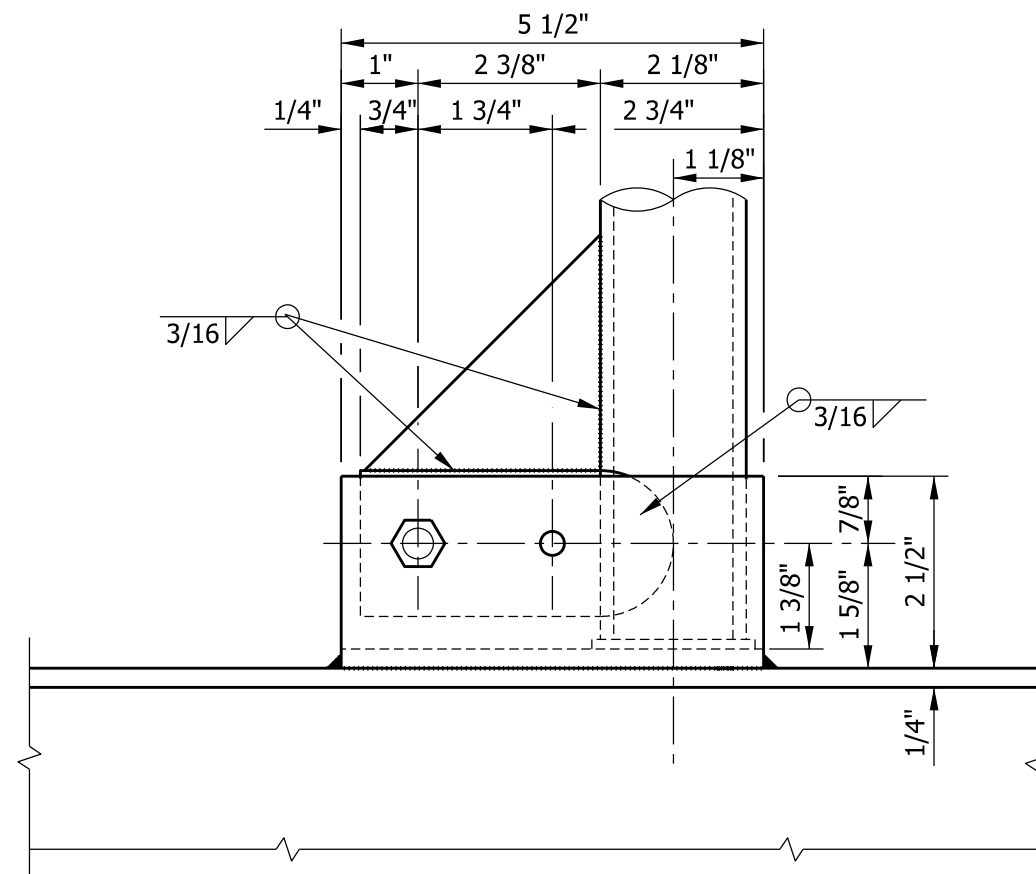


/s/ Alfredo B. Hanza 02/05/13

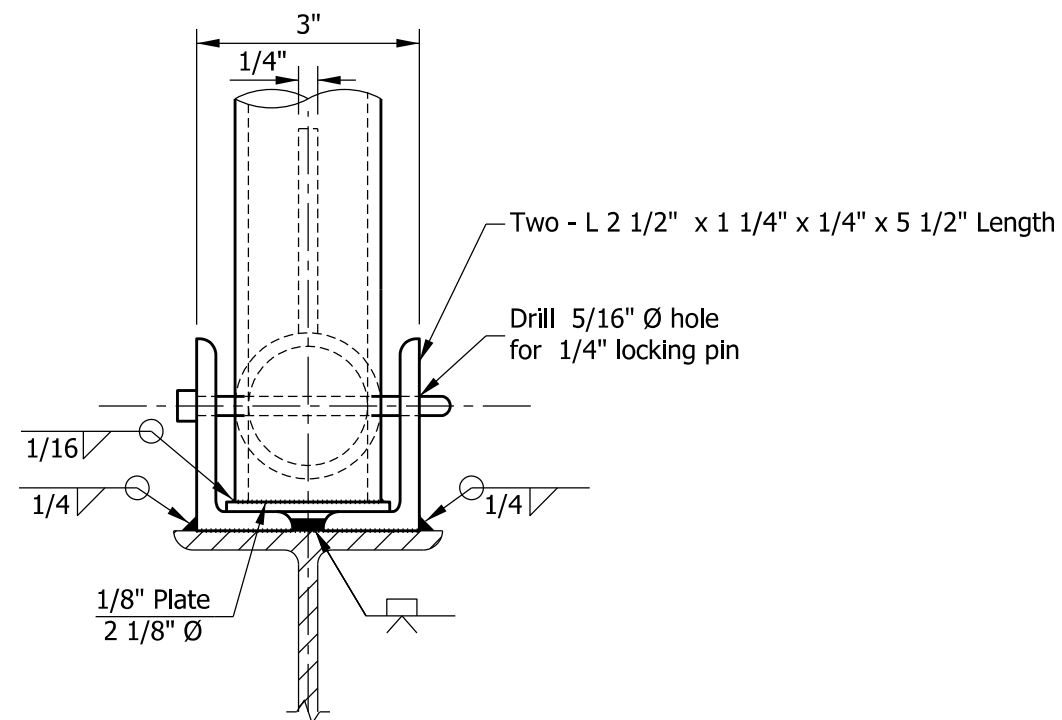
DESIGN STANDARDS ENGINEER DATE

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

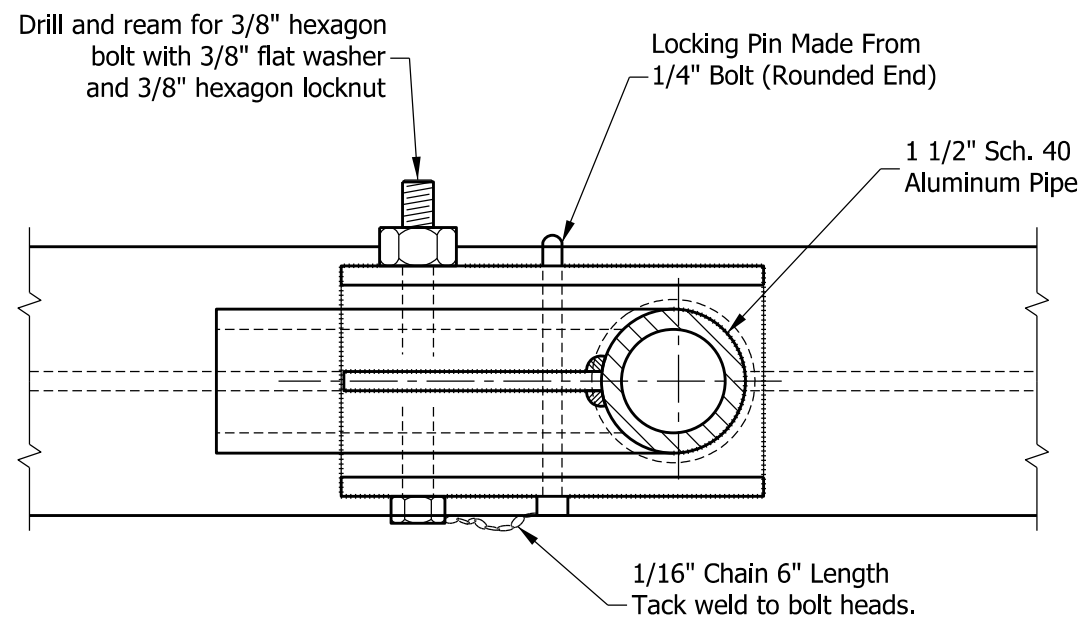
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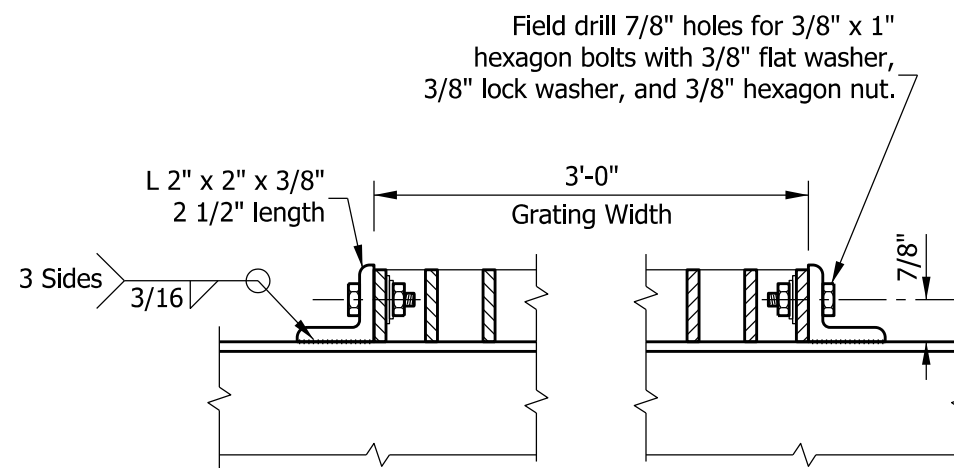
**DETAIL J**  
**SIDE ELEVATION**



**DETAIL K**  
**FRONT ELEVATION**



**PLAN**  
**DETAILS OF HANDRAIL HINGE**

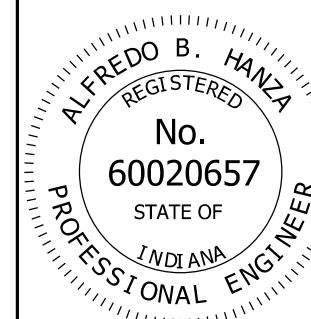


**GRATING TIE DOWN**  
(Two req'd per walkway bracket)

INDIANA DEPARTMENT OF TRANSPORTATION

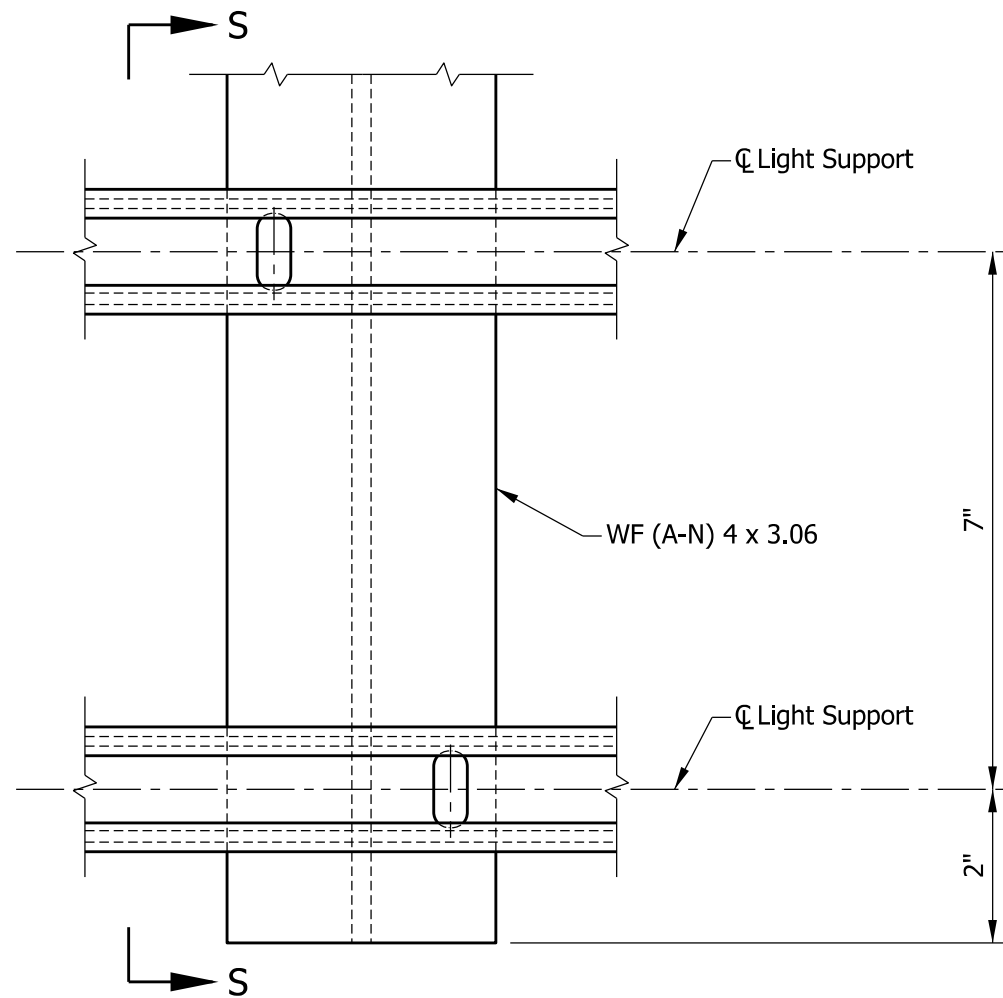
SIGN BOX TRUSS STRUCTURE  
LIGHTING WALKWAY, HANDRAIL HINGE, AND  
GRATING DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-20

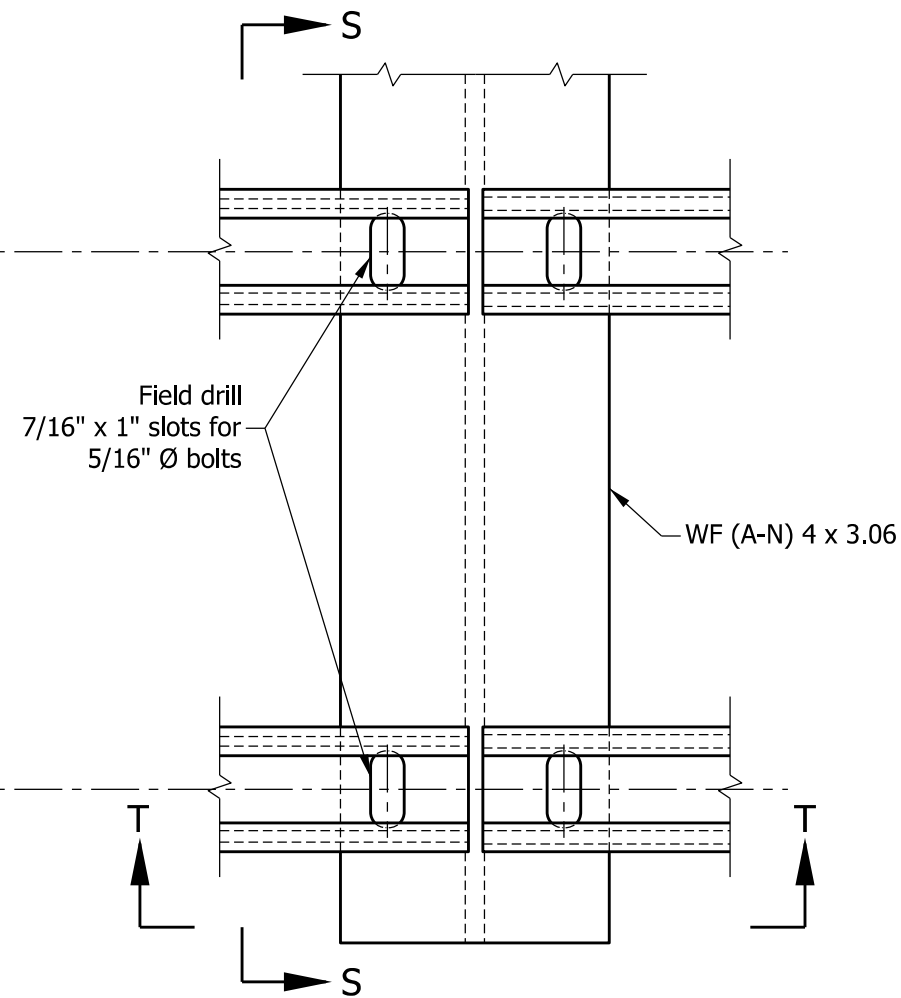


/s/ Alfredo B. Hanza 03/26/13  
DESIGN STANDARDS ENGINEER DATE

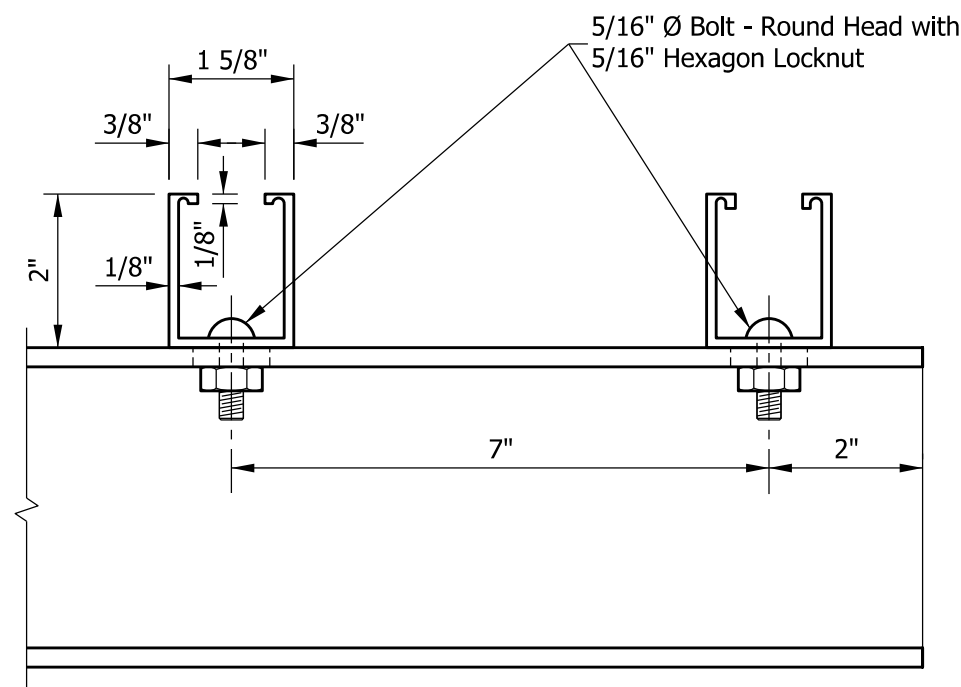
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



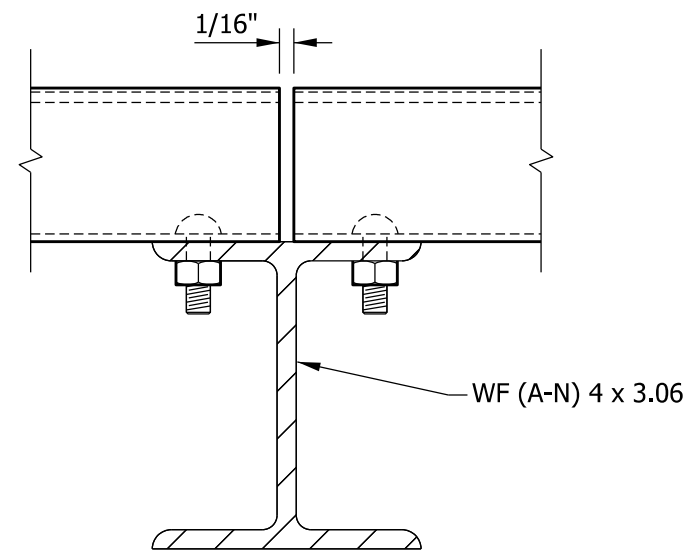
DETAIL L



DETAIL M

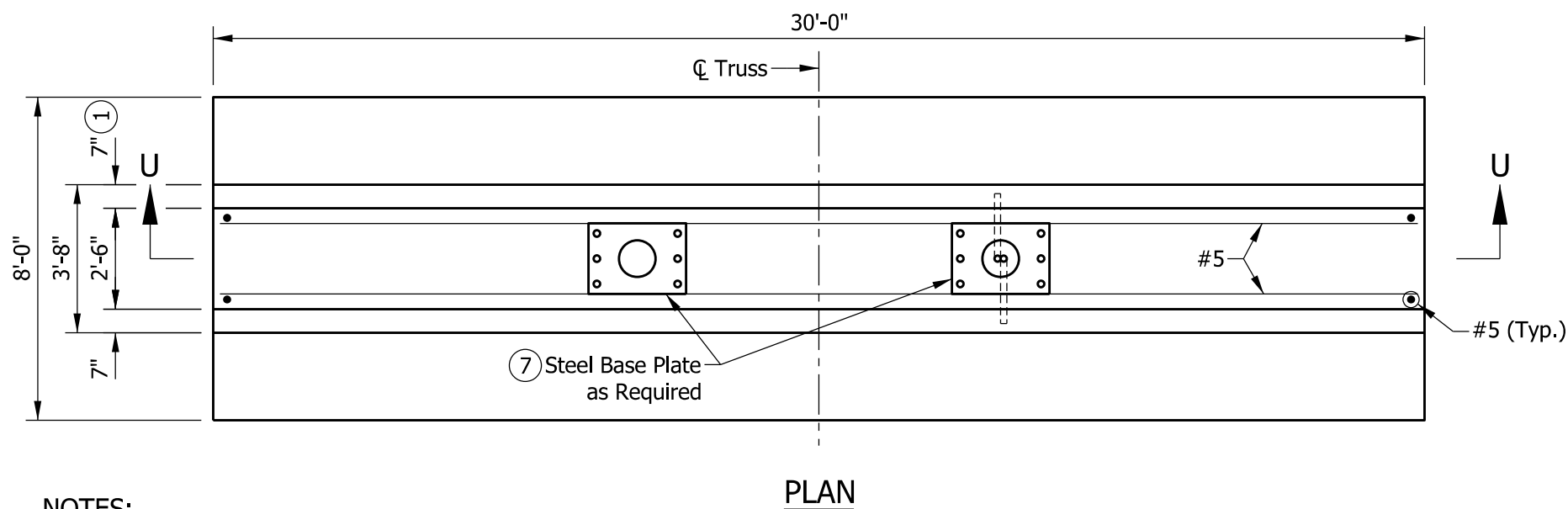
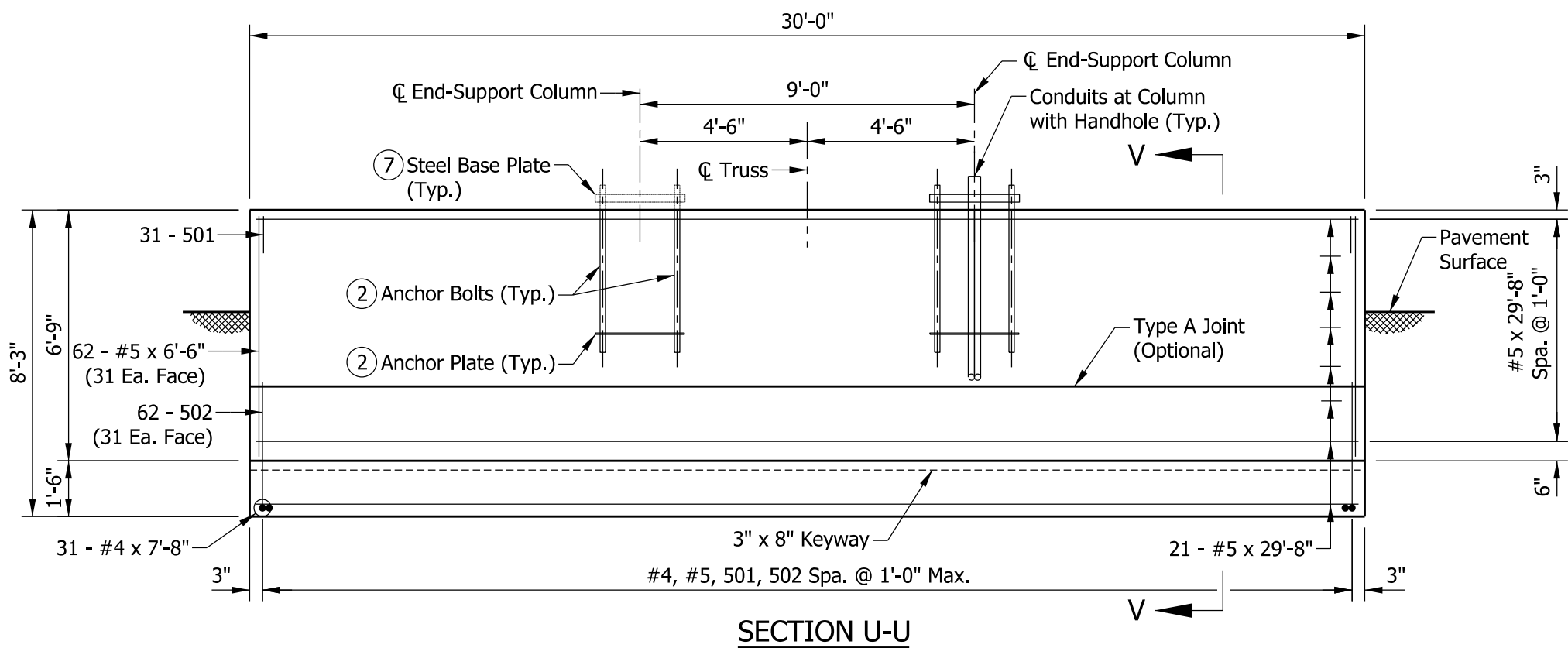


SECTION S-S



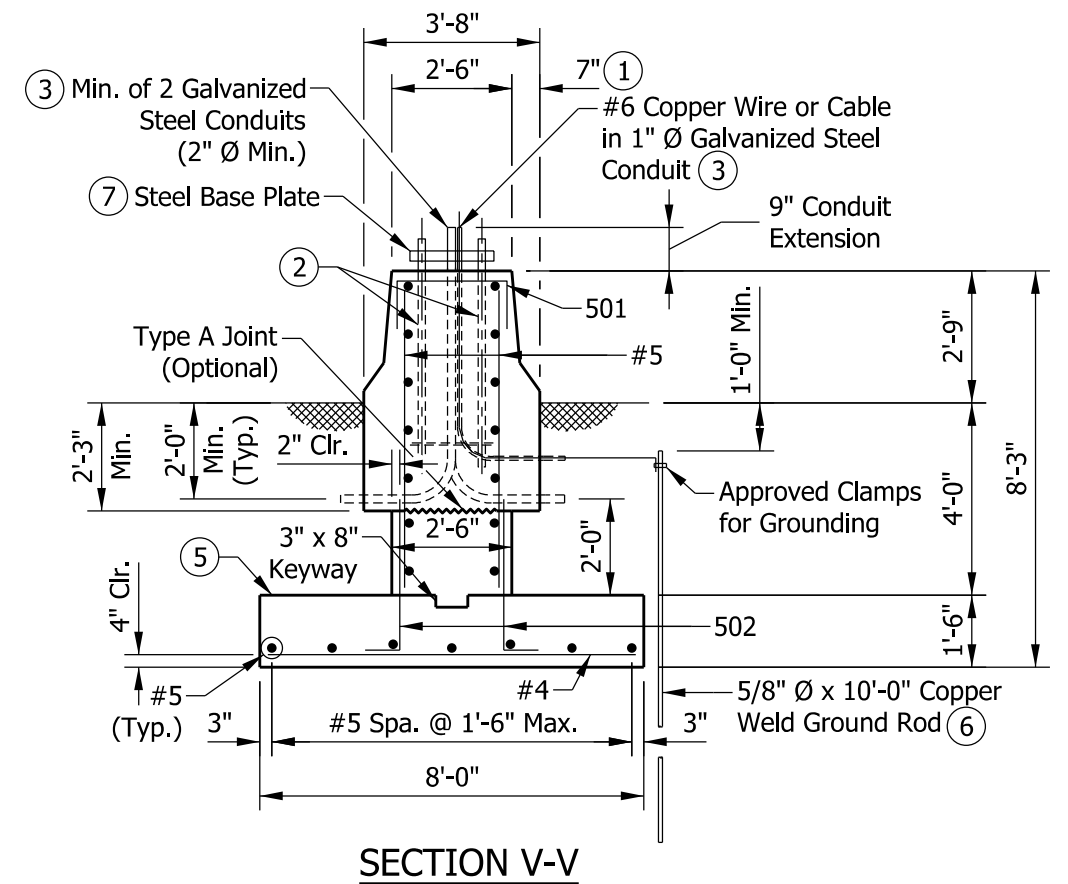
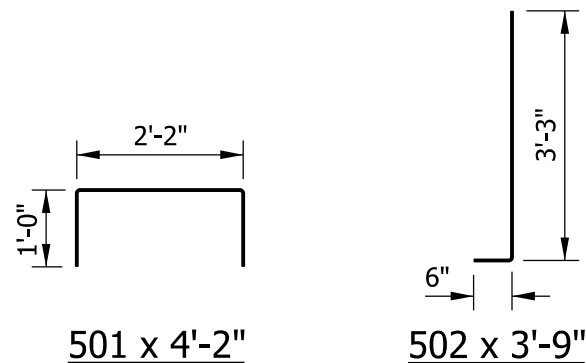
SECTION T-T

INDIANA DEPARTMENT OF TRANSPORTATION		
SIGN BOX TRUSS STRUCTURE LIGHTING WALKWAY FIXTURE MOUNT DETAILS SEPTEMBER 2013		
STANDARD DRAWING NO.		E 802-SBTS-21
	/s/ <i>Alfredo B. Hanza</i>	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	03/27/13
	CHIEF ENGINEER	DATE



#### NOTES:

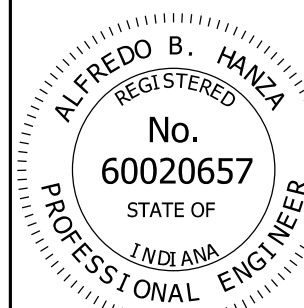
- ① See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- ② See Standard Drawing E 802-SBTS-13 for anchor bolt and anchor plate details.
- ③ Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-25 for quantities.
- ⑤ Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.
- ⑥ Only one ground rod per structure is required.
- ⑦ See Standard Drawing E 802-SBTS-11 for base plate detail.



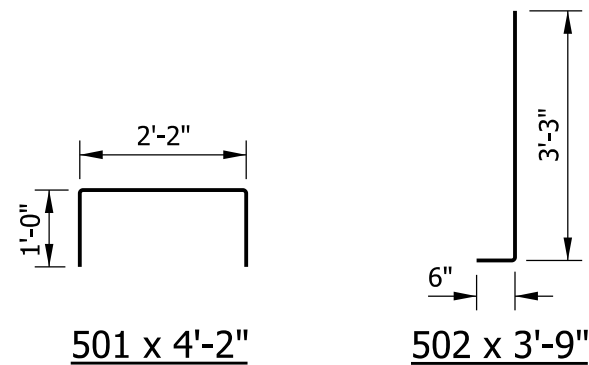
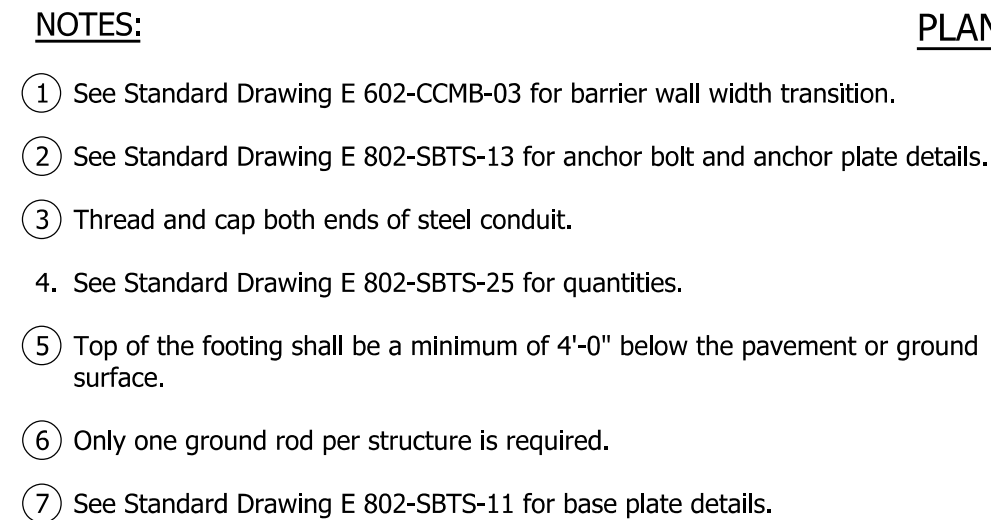
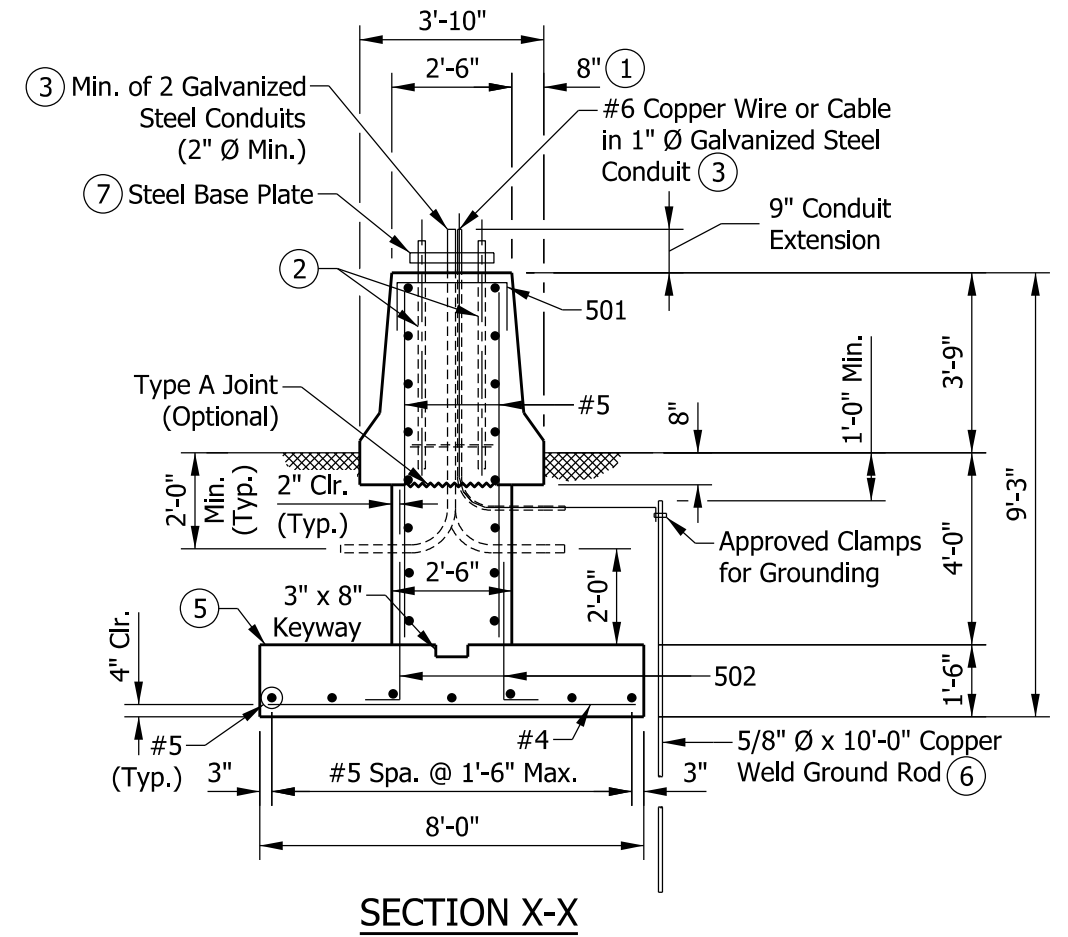
INDIANA DEPARTMENT OF TRANSPORTATION


SIGN BOX TRUSS STRUCTURE  
SPREAD FOUNDATION  
AT 33" CONCRETE BARRIER WALL  
SEPTEMBER 2013

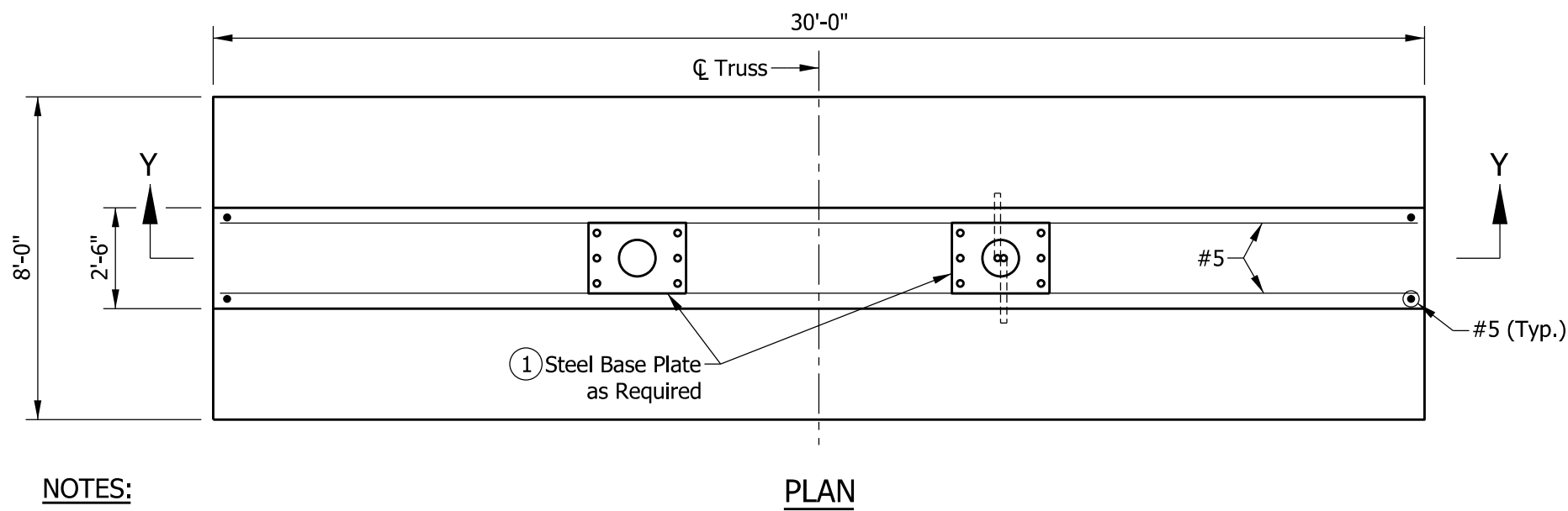
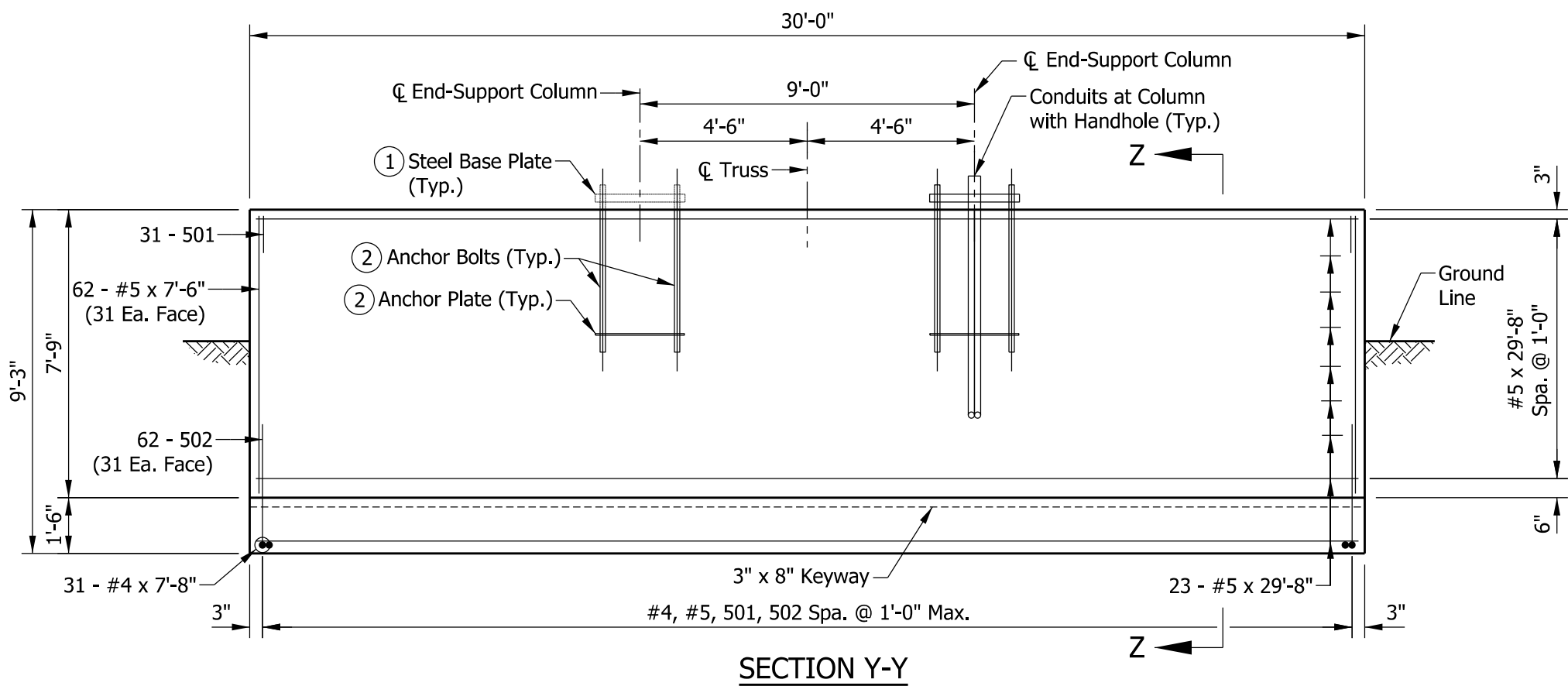
STANDARD DRAWING NO. E 802-SBTS-22



/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE

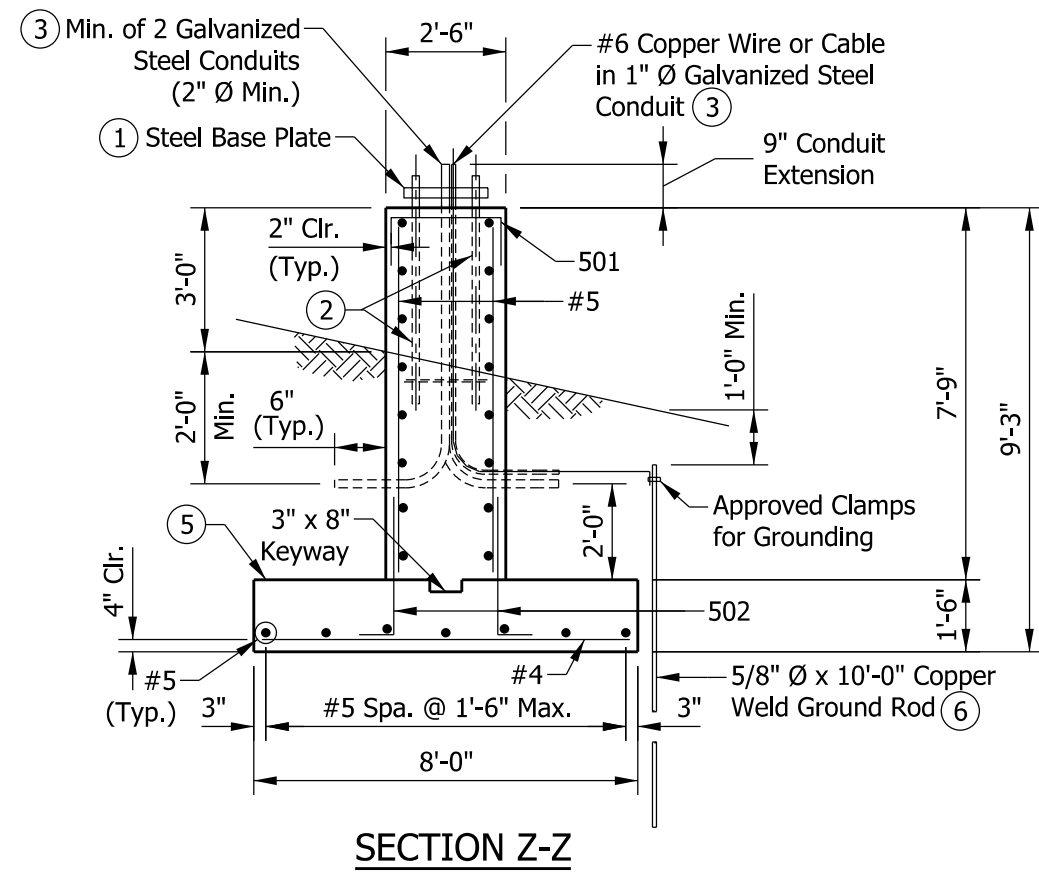
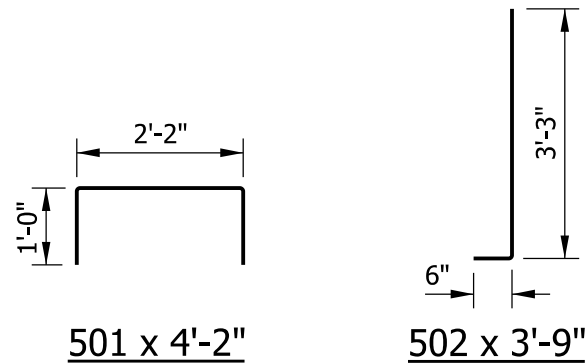


INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN BOX TRUSS STRUCTURE SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL SEPTEMBER 2013	
STANDARD DRAWING NO. E 802-SBTS-23	
	<div> <div> <div>/s/ Alfredo B. Hanza</div> <div>02/05/13</div> </div> <div> <div>DESIGN STANDARDS ENGINEER</div> <div>DATE</div> </div> </div> <div> <div> <div>/s/ Mark A. Miller</div> <div>03/27/13</div> </div> <div> <div>CHIEF ENGINEER</div> <div>DATE</div> </div> </div>



**NOTES:**

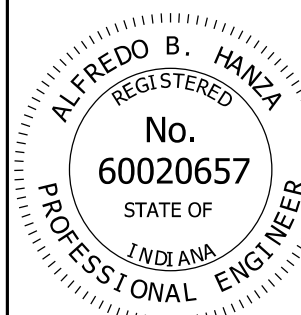
- ① See Standard Drawing E 802-SBTS-11 for base plate details.
- ② See Standard Drawing E 802-SBTS-13 for anchor bolt and anchor plate details.
- ③ Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-25 for quantities.
- ⑤ Top of the footing shall be a minimum of 4'-0" below the pavement or ground surface.
- ⑥ Only one ground rod per structure is required.



INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
SPREAD FOUNDATION  
FOR MEDIAN OR SHOULDER, 36" HEIGHT  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-24



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

DESIGN STANDARDS ENGINEER DATE

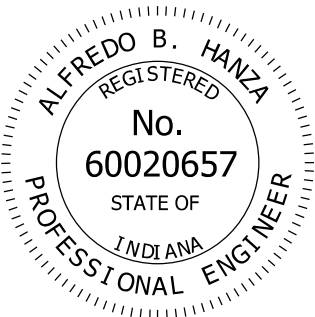
/s/ Mark A. Miller 03/27/13

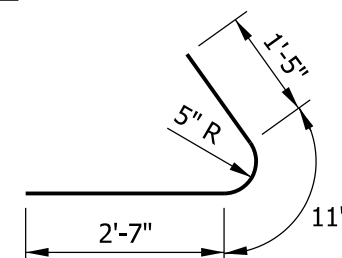
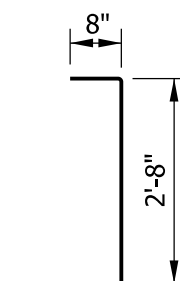
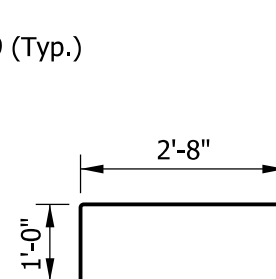
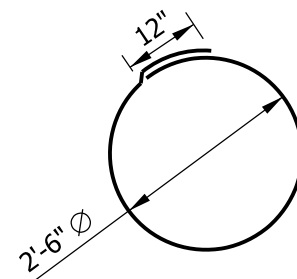
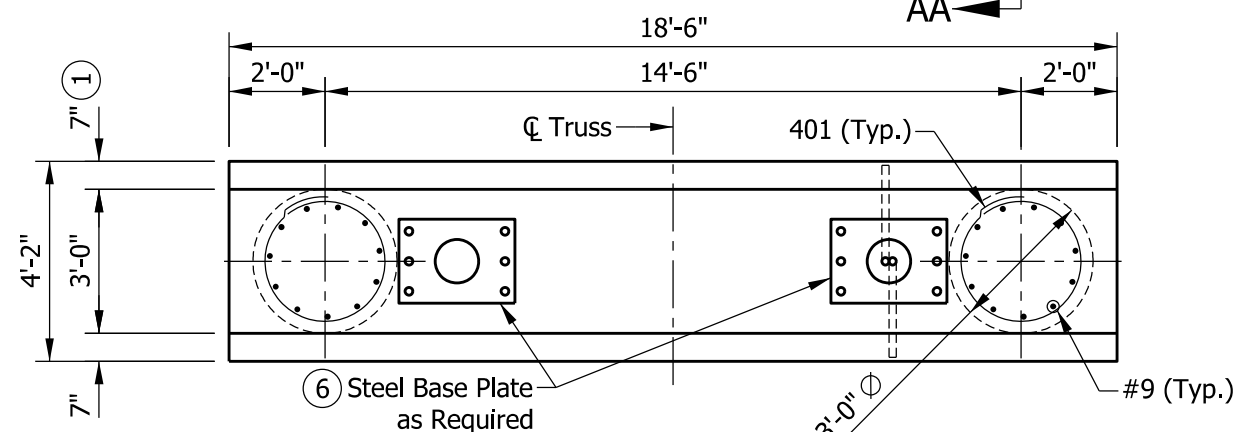
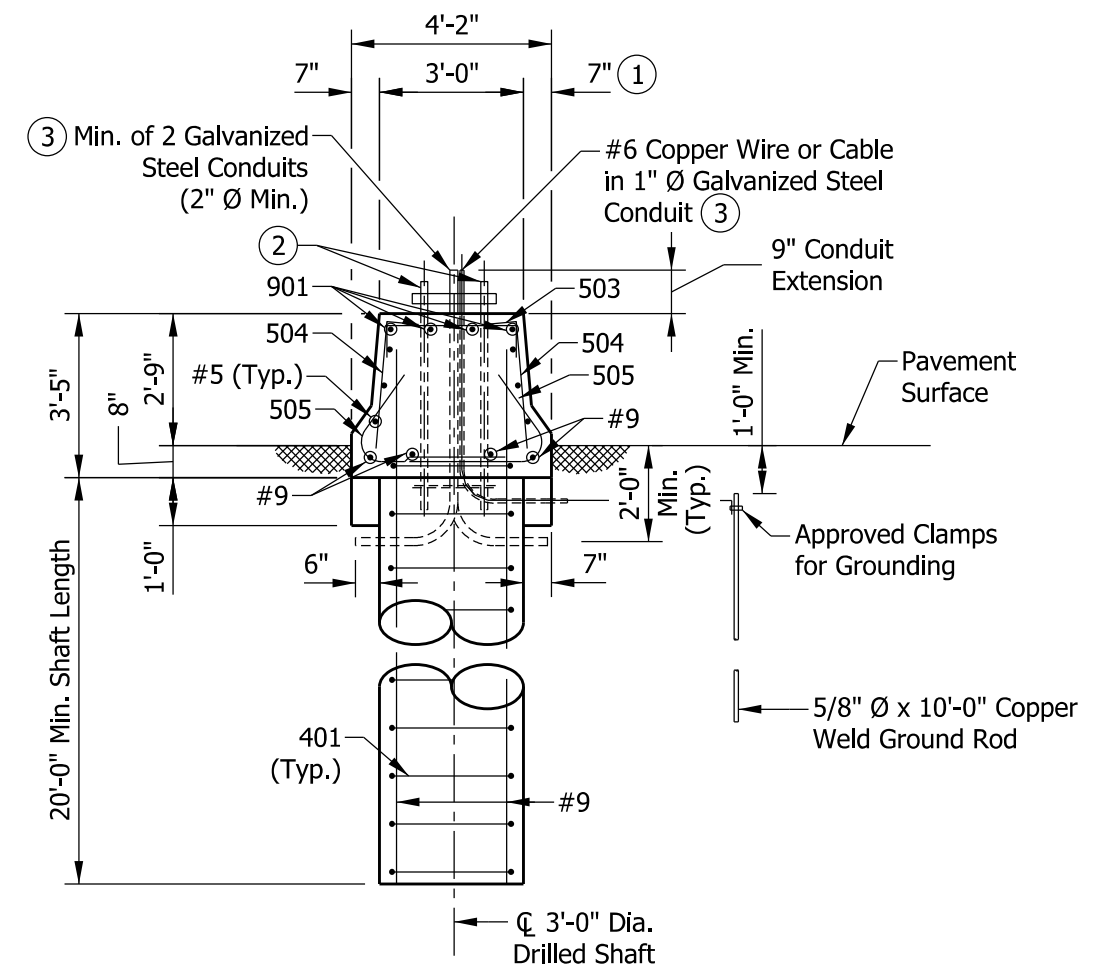
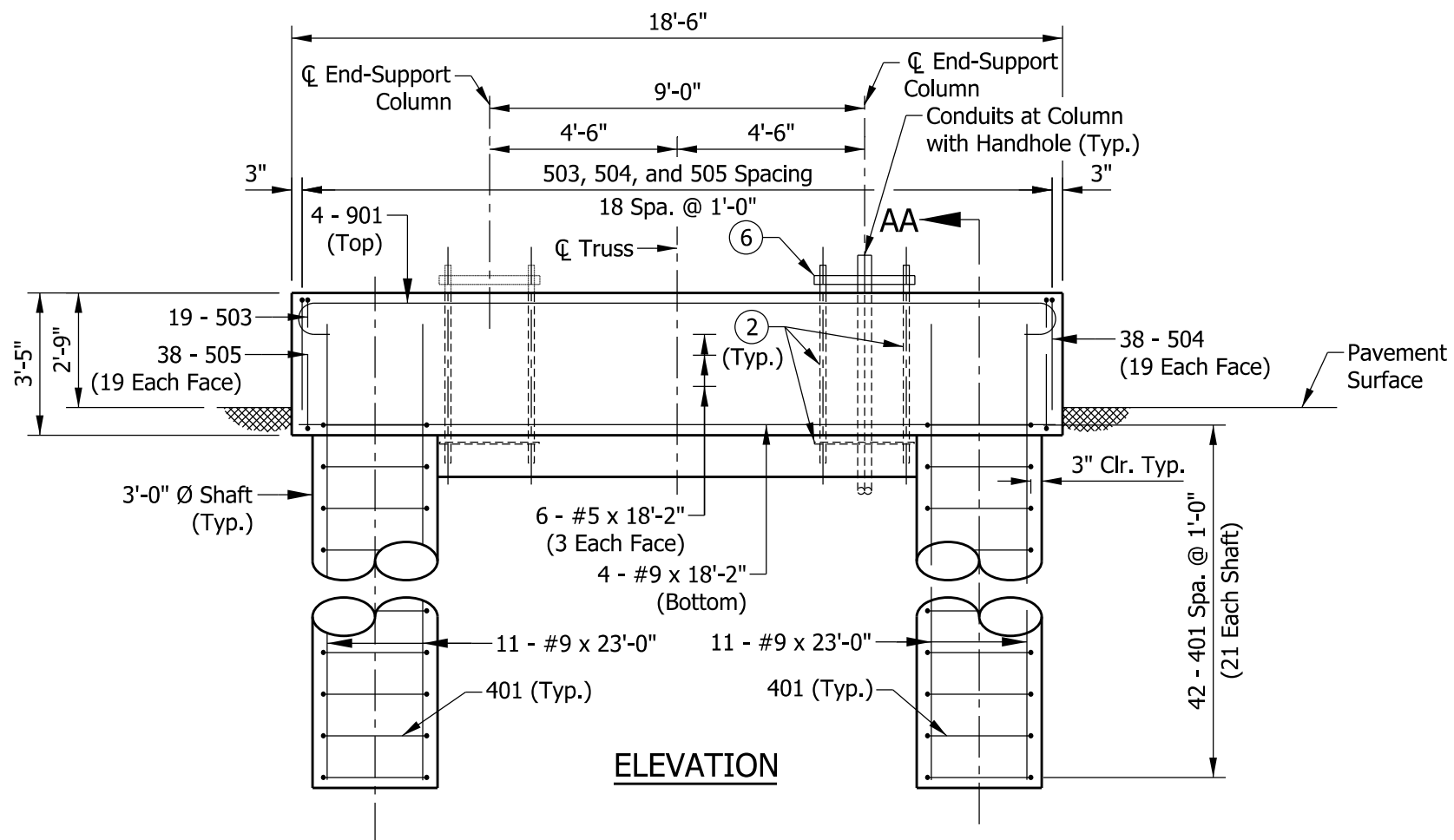
CHIEF ENGINEER DATE

SPREAD FOUNDATION AT 33" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	31	4'-2"	
502	62	3'-9"	
#5	62	6'-6"	
#5	21	29'-8"	
Total #5			1447 LBS
#4	31	7'-8"	
Total #4			159 LBS
Total Epoxy-Coated Reinforcing Bars			1606 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			35.8 CYS
MISCELLANEOUS			
Surface Seal			27.6 SYS

SPREAD FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	31	4'-2"	
502	62	3'-9"	
#5	62	7'-6"	
#5	23	29'-8"	
Total #5			1574 LBS
#4	31	7'-8"	
Total #4			159 LBS
Total Epoxy-Coated Reinforcing Bars			1733 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			37.6 CYS
MISCELLANEOUS			
Surface Seal			34.3 SYS

SPREAD FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	31	4'-2"	
502	62	3'-9"	
#5	62	7'-6"	
#5	23	29'-8"	
Total #5			1574 LBS
#4	31	7'-8"	
Total #4			159 LBS
Total Epoxy-Coated Reinforcing Bars			1733 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			34.9 CYS
MISCELLANEOUS			
Surface Seal			28.3 SYS

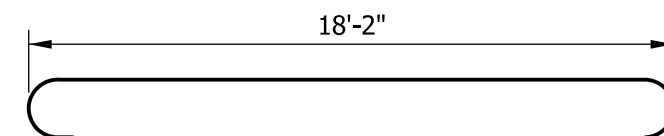
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STANDARD DRAWING NO.      E 802-SBTS-25									
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<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								



503 x 4'-8"

504 x 3'-4"

505 x 4'-11"



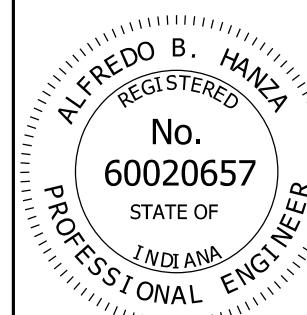
**NOTES:**

- ① See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- ② See Standard Drawing E 802-SBTS-13 for anchor bolt and anchor plate details.
- ③ Thread and cap both ends of steel conduit.
4. See Standard Drawing E 802-SBTS-29 for quantities.
5. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
- ⑥ See Standard Drawing E 802-SBTS-11 for base plate details.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
ALTERNATE DRILLED SHAFT FOUNDATION  
AT 33" CONCRETE BARRIER WALL  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-26



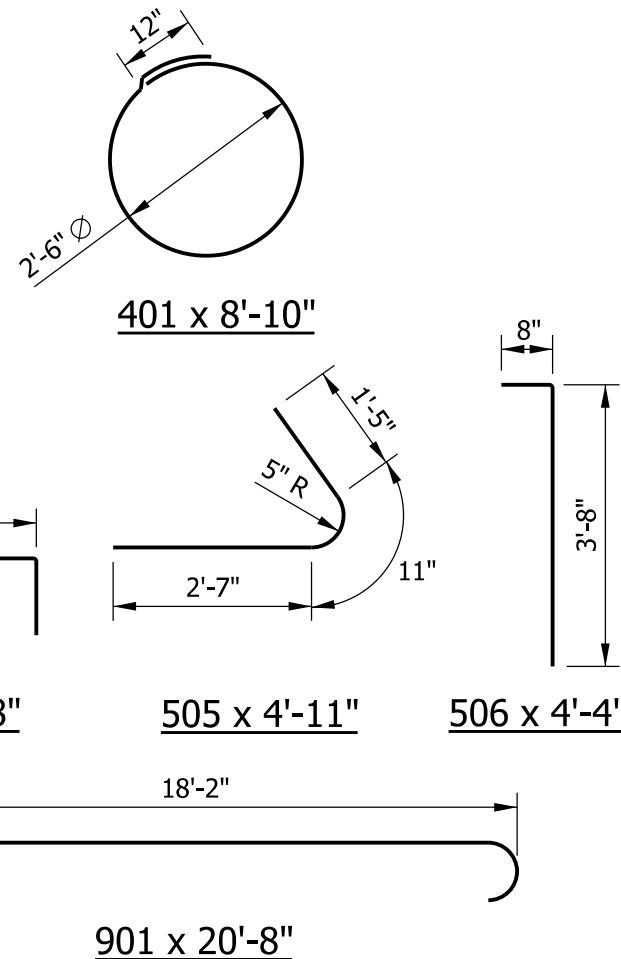
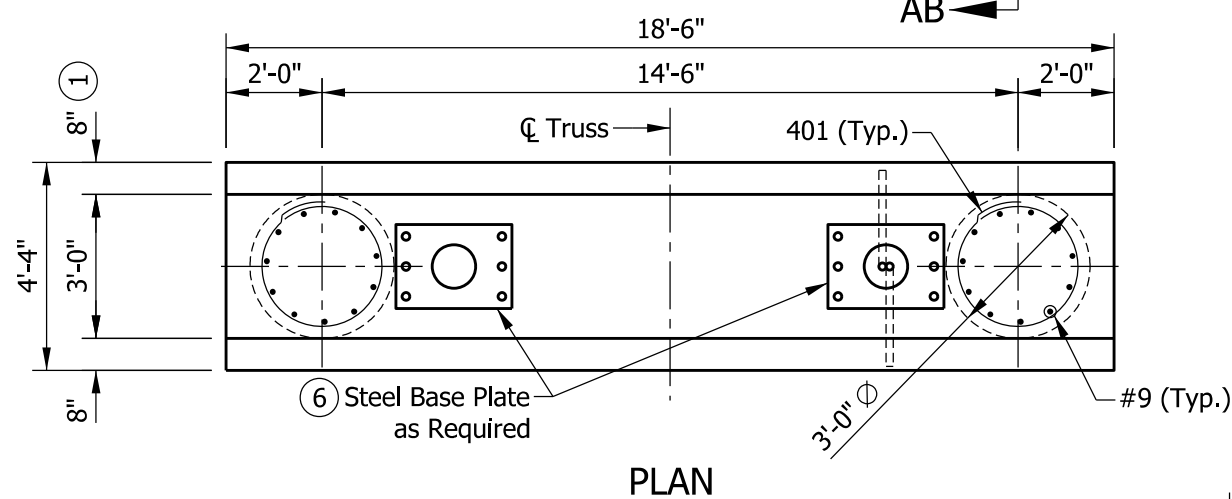
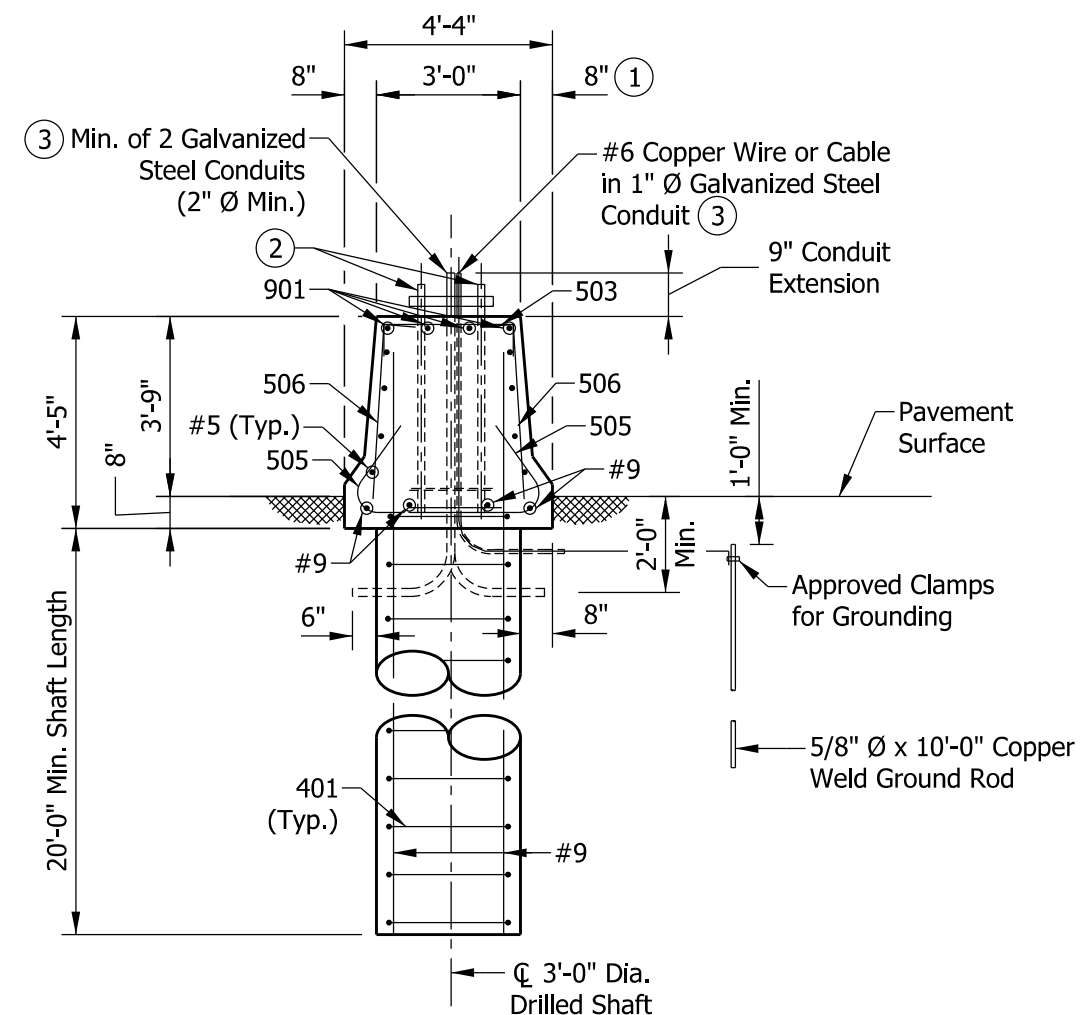
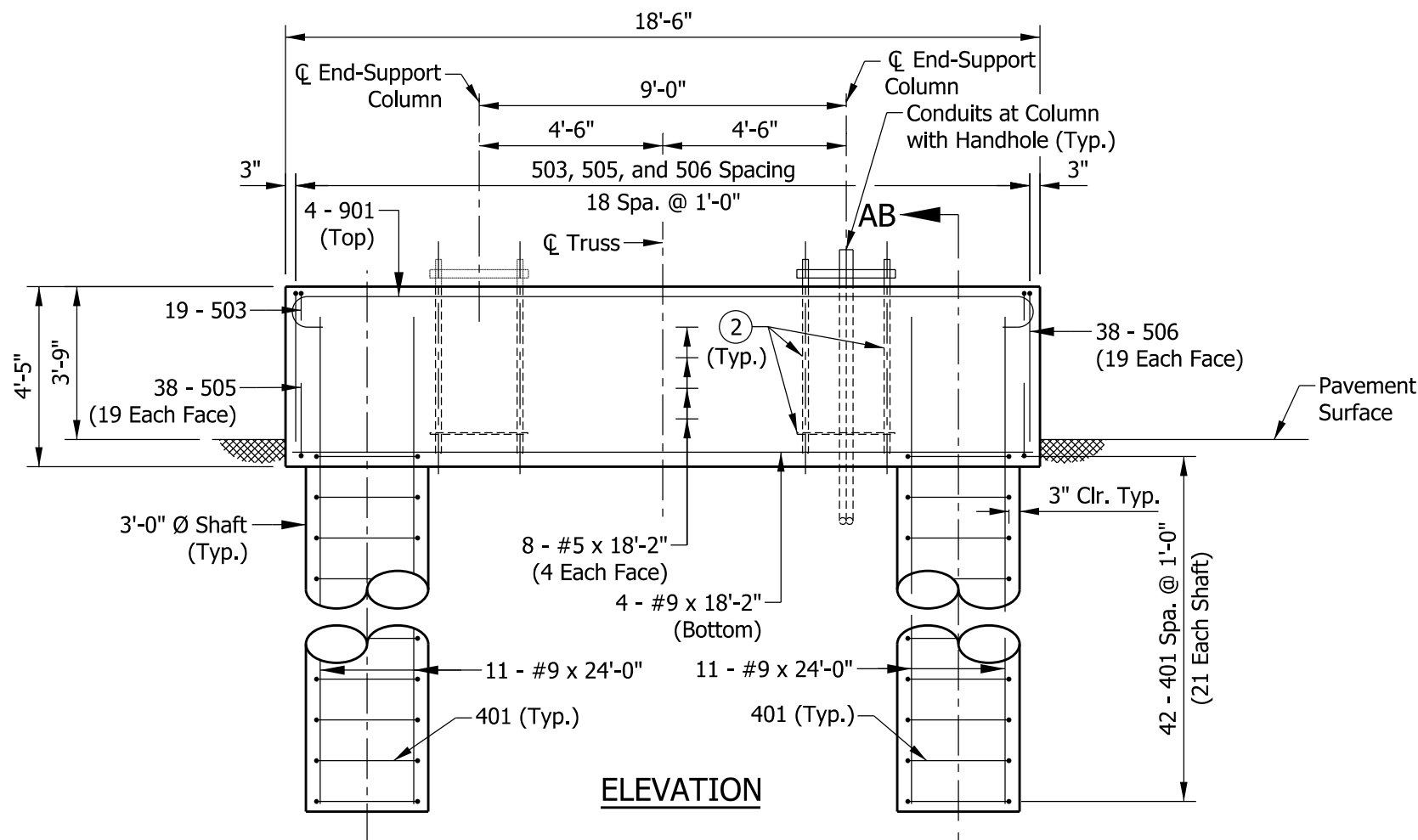
/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

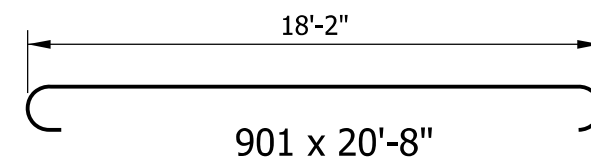
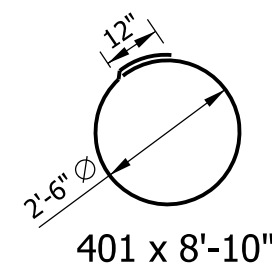
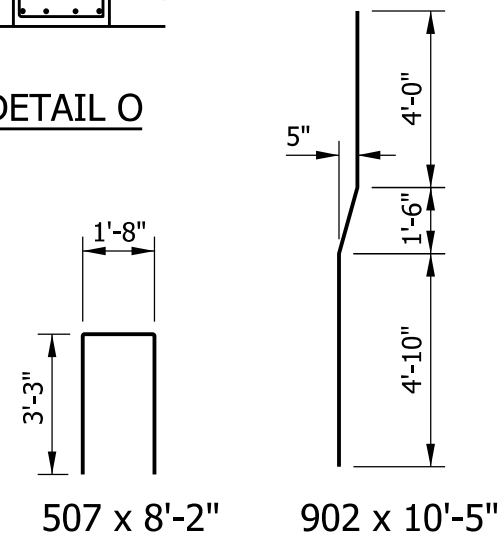
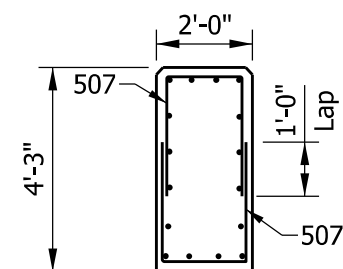
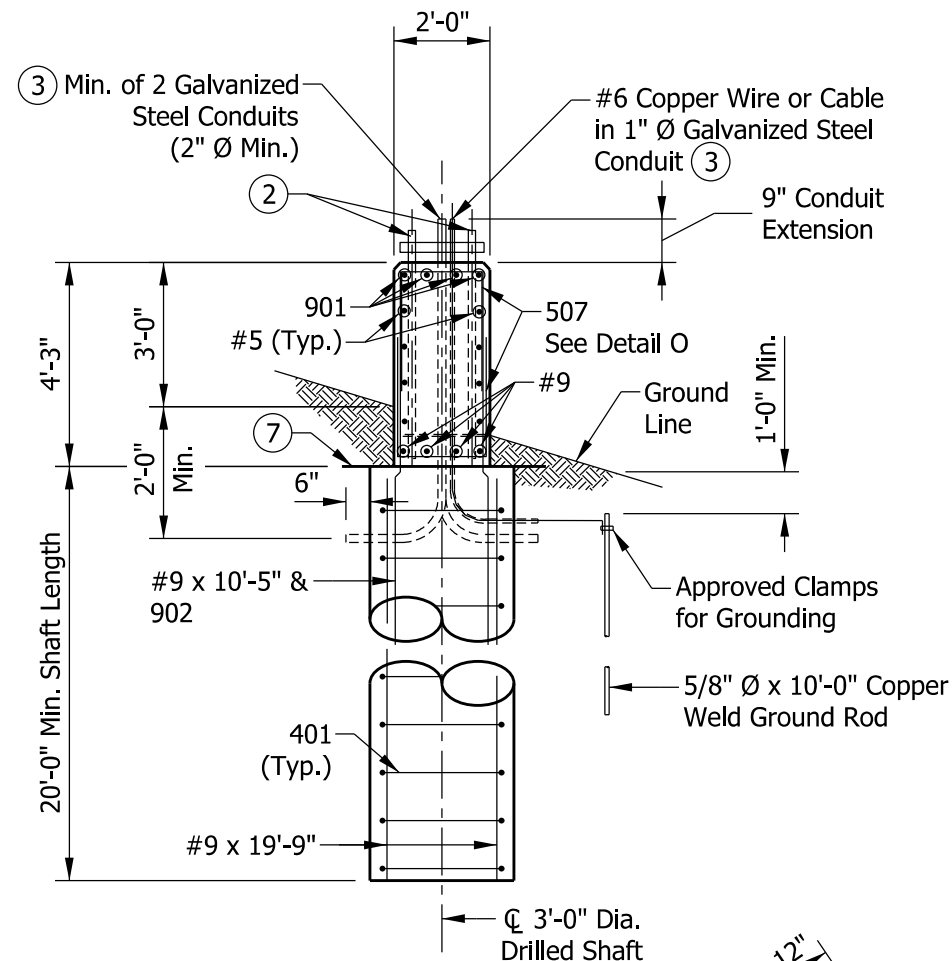
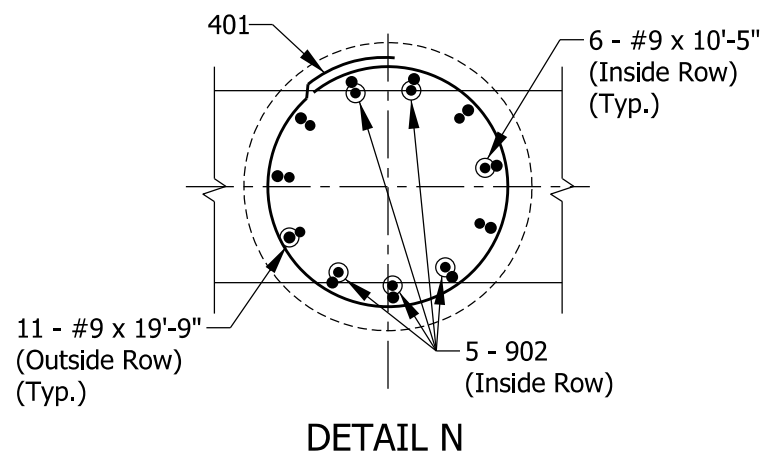
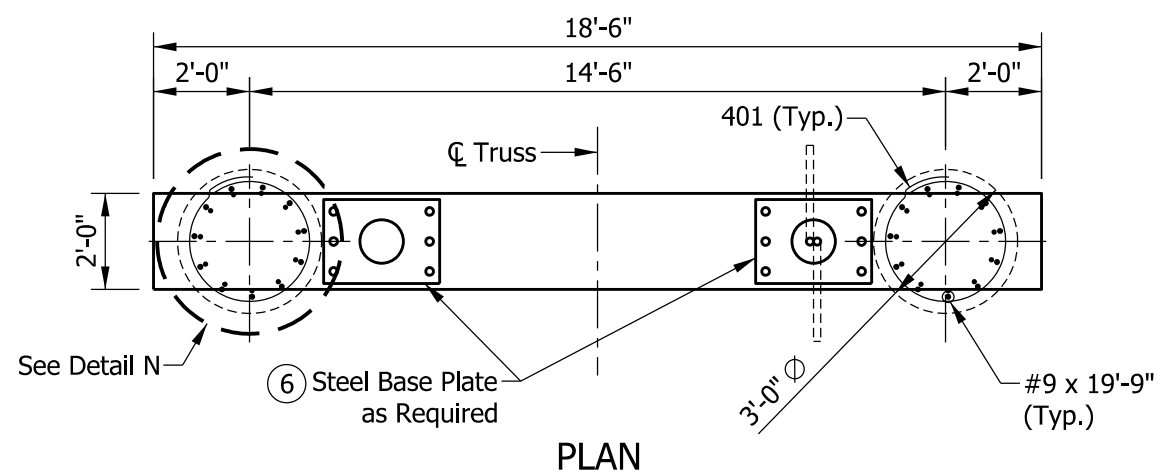
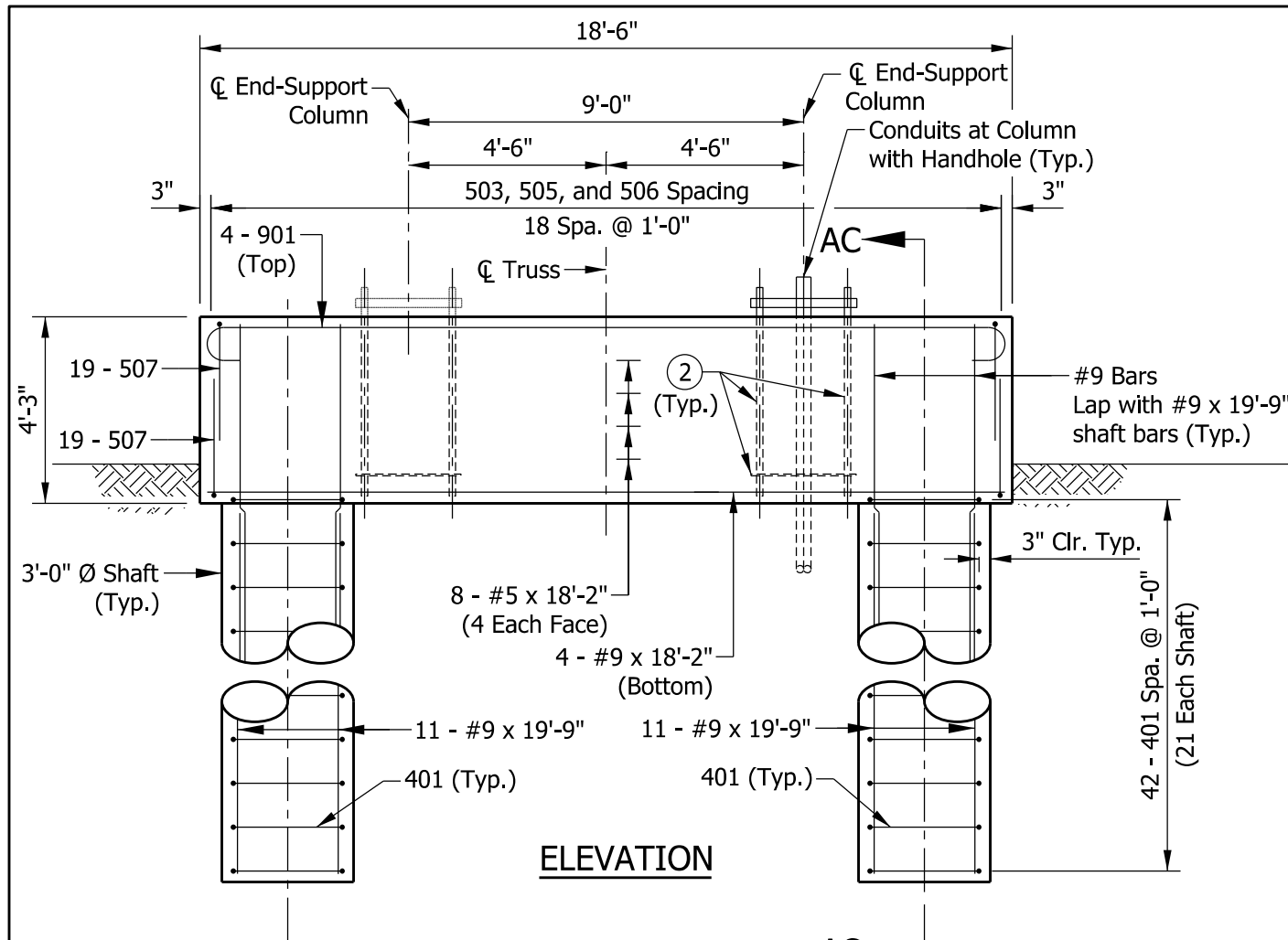




# **NOTES:**

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-SBTS-13 for anchor bolt and anchor plate details.
- Thread and cap both ends of steel conduit.
- See Standard Drawing E 802-SBTS-29 for quantities.
- See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
- See Standard Drawing E 802-SBTS-11 for base plate details.

INDIANA DEPARTMENT OF TRANSPORTATION		
SIGN BOX TRUSS STRUCTURE ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL SEPTEMBER 2013		
STANDARD DRAWING NO. E 802-SBTS-27		
	/s/ Alfredo B. Hanza	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE



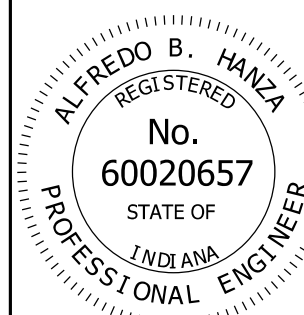
#### NOTES:

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-SBTS-13 for anchor bolt and anchor plate details.
- Thread and cap both ends of steel conduit.
- See Standard Drawing E 802-SBTS-29 for quantities.
- See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
- See Standard Drawing E 802-SBTS-11 for base plate details.
- Top of foundation shall be level.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE  
ALTERNATE DRILLED SHAFT FOUNDATION  
FOR MEDIAN OR SHOULDER, 36" HEIGHT  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-28




/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE


ALTERNATE DRILLED SHAFT FOUNDATION AT 33" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
#9	4	18'-2"	
#9	22	23'-0"	
Total #9			2249 LBS
503	19	4'-8"	
504	38	3'-4"	
505	38	4'-11"	
#5	6	18'-2"	
Total #5			533 LBS
401	42	8'-10"	
Total #4			248 LBS
Total Epoxy-Coated Reinforcing Bars			3030 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			20.0 CYS
MISCELLANEOUS			
Surface Seal			17.6 SYS

ALTERNATE DRILLED SHAFT FOUNDATION AT 45" CONCRETE BARRIER WALL			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
#9	4	18'-2"	
#9	22	24'-0"	
Total #9			2323 LBS
503	19	4'-8"	
505	38	4'-11"	
506	38	4'-4"	
#5	8	18'-2"	
Total #5			611 LBS
401	42	8'-10"	
Total #4			248 LBS
Total Epoxy-Coated Reinforcing Bars			3182 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			20.8 CYS
MISCELLANEOUS			
Surface Seal			21.7 SYS

ALTERNATE DRILLED SHAFT FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	4	20'-8"	
902	10	10'-5"	
#9	4	18'-2"	
#9	12	10'-5"	
#9	22	19'-9"	
Total #9			2785 LBS
507	38	8'-2"	
#5	8	18'-2"	
Total #5			475 LBS
401	42	8'-10"	
Total #4			248 LBS
Total Epoxy-Coated Reinforcing Bars			3508 LBS
CONCRETE, CLASS A			
Total Concrete, Class A			16.3 CYS
MISCELLANEOUS			
Surface Seal			21.6 SYS

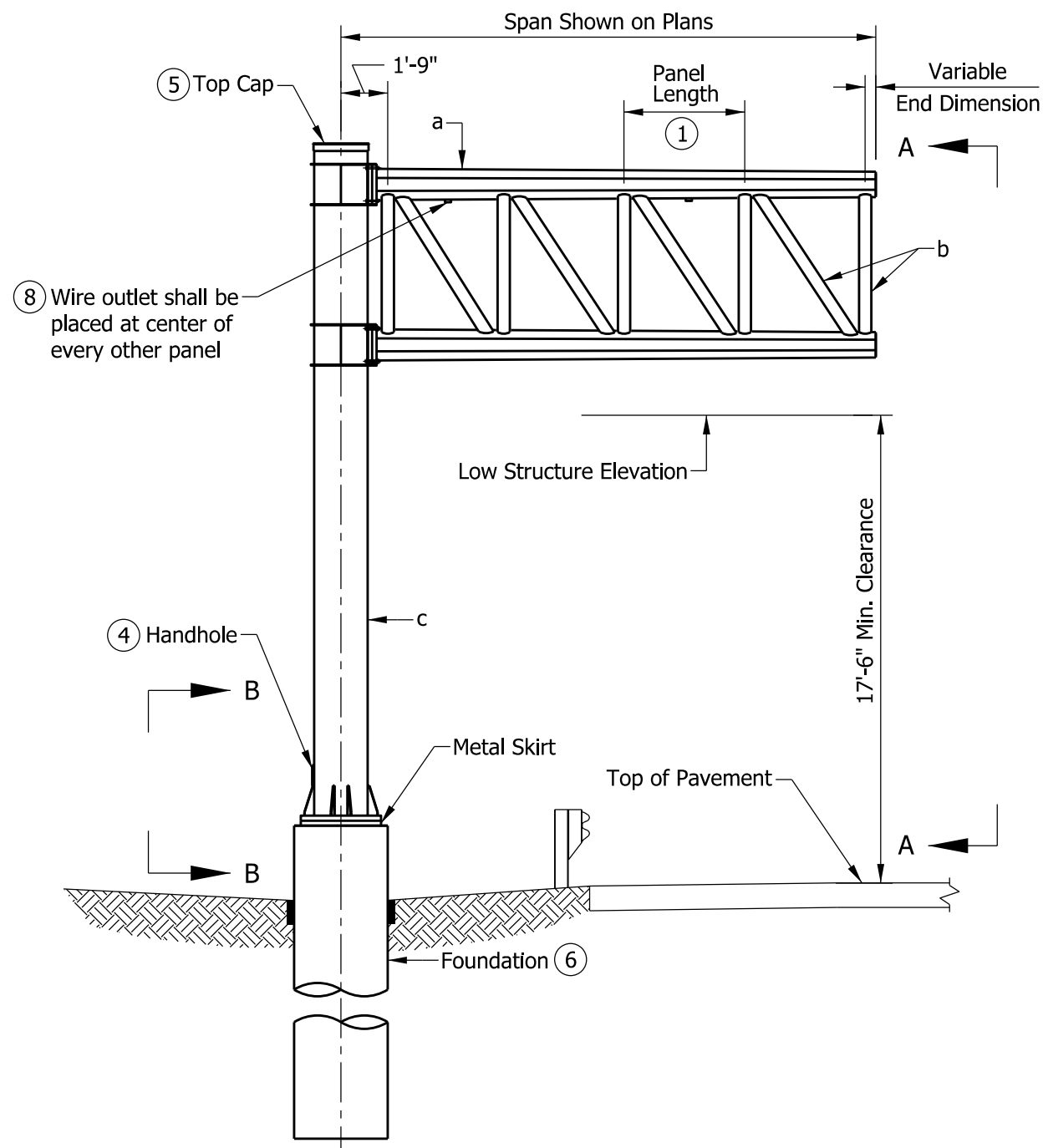
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/s/ <i>Alfredo B. Hanza</i>	02/05/13								
DESIGN STANDARDS ENGINEER	DATE								
/s/ <i>Mark A. Miller</i>	03/27/13								
CHIEF ENGINEER	DATE								

INDEX	
SHEET NO.	SUBJECT
1	Index
2	Double Arm Plan and Elevation
3	Double Arm Panel Dimensions and Member Sizes
4	Double Arm Connections, Weld Details, Chord End Plate Details, and Camber
5	Double Arm Connection to Column Details
6	Double Arm Column Top Cap and Cable J-Hook
7	Quadri-Chord Plan and Elevation
8	Quadri-Chord Panel Dimensions and Member Sizes
9	Quadri-Chord Connections, Weld Details, Chord End Plate Details, and Camber
10	Quadri-Chord Lower Arm Connection to Column and Wire Outlet Detail
11	Quadri-Chord Upper Arm Connection to Column
12	Double Arm and Quadri-Chord Base Plate, Anchor Bolt, and Metal Skirt Details
13	Double Arm and Quadri-Chord Column Handhole and I.D. Tag Details
14	Structure Type A or B Foundation at 33" Concrete Barrier
15	Structure Type C, D, E, or F Foundation at 33" Concrete Barrier
16	Structure Type G, H, or I Foundation at 33" Concrete Barrier
17	Structure Type A or B Foundation at 45" Concrete Barrier
18	Structure Type C, D, E, or F Foundation at 45" Concrete Barrier
19	Structure Type G, H, or I Foundation at 45" Concrete Barrier
20	Structure Type A or B Foundation, 36" Height
21	Structure Type C, D, E, or F Foundation, 36" Height
22	Structure Type G, H, or I Foundation, 36" Height

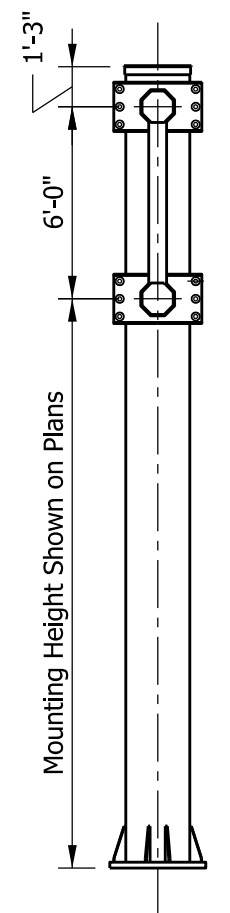
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SIGN CANTILEVER STRUCTURE DRAWING INDEX									
SEPTEMBER 2013									
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<i>/s/ Alfredo B. Hanza</i>	<i>03/25/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								



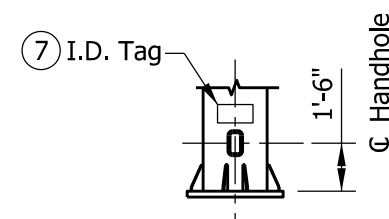
PLAN



FRONT ELEVATION



ELEVATION  
A-A



ELEVATION  
B-B

**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".
- ③ See Standard Drawing E 802-SCLS-05 for connection to column details.
- ④ See Standard Drawing E 802-SCLS-13 for handhole detail.
- ⑤ See Standard Drawing E 802-SCLS-06 for top cap and cable J-hook detail.
- ⑥ See Standard Drawings E 802-SCLS-14, -17, and -20 for foundation details.
- ⑦ See Standard Drawing E 802-SCLS-13 for I.D. tag detail.
- ⑧ See Standard Drawing E 802-SCLS-10 for wire outlet detail.

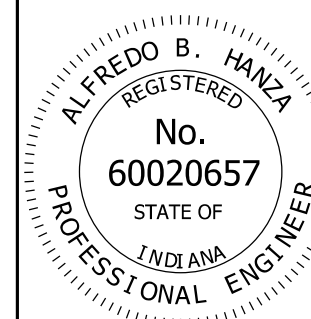
**LEGEND:**

- a - Chord  
b - Vertical and Vertical Diagonal  
c - Column

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE  
DOUBLE ARM  
PLAN AND ELEVATION  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-02

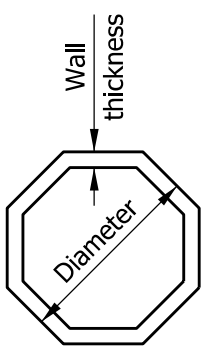


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

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

DOUBLE ARM PANEL DIMENSIONS			
SPAN	NO. OF PANELS	PANEL LENGTH	VARIABLE END DIMENSION
10'	2	4'-0"	0'-3"
11'	3	3'-0"	0'-3"
12'	3	3'-3"	0'-6"
13'	3	3'-6"	0'-9"
14'	3	4'-0"	0'-3"
15'	3	4'-3"	0'-6"
16'	4	3'-6"	0'-3"
17'	4	3'-9"	0'-3"
18'	4	4'-0"	0'-3"
19'	4	4'-3"	0'-3"
20'	4	4'-6"	0'-3"

- 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

DOUBLE ARM MEMBER SIZES									
STR. TYPE	MAX SPAN (FT.)	MAX SIGN AREA (FT.)	MAX MOUNTING HEIGHT (FT.)	⑥ CHORD a		VERTICAL/VERTICAL DIAGONAL b		COLUMN c	
				DIAMETER (IN.)	WALL THICK. (IN.)	DIAMETER (IN.)	WALL THICK. (IN.)	DIAMETER (IN.)	WALL THICK. (IN.)
A	10	180	24	7 5/8	0.500	4 1/2	0.337	18	0.750
B	15	280	24	10 3/4	0.593	5 9/16	0.500	20	0.812
C	20	380	24	14	0.593	6 5/8	0.719	24	0.968

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE  
DOUBLE ARM  
PANEL DIMENSIONS AND MEMBER SIZES  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-03

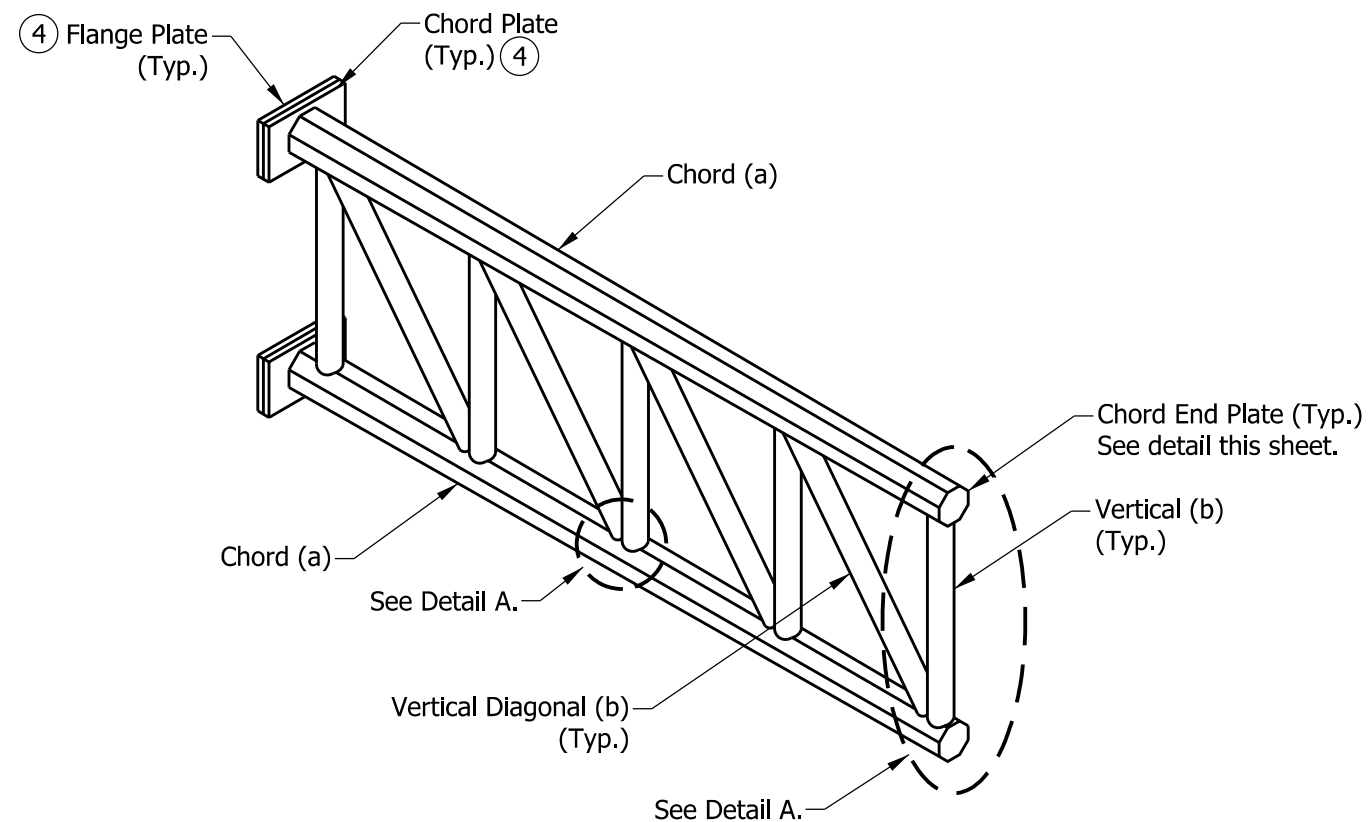
ALFREDO B. HANZA  
REGISTERED  
No. 60020657  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza02/05/13

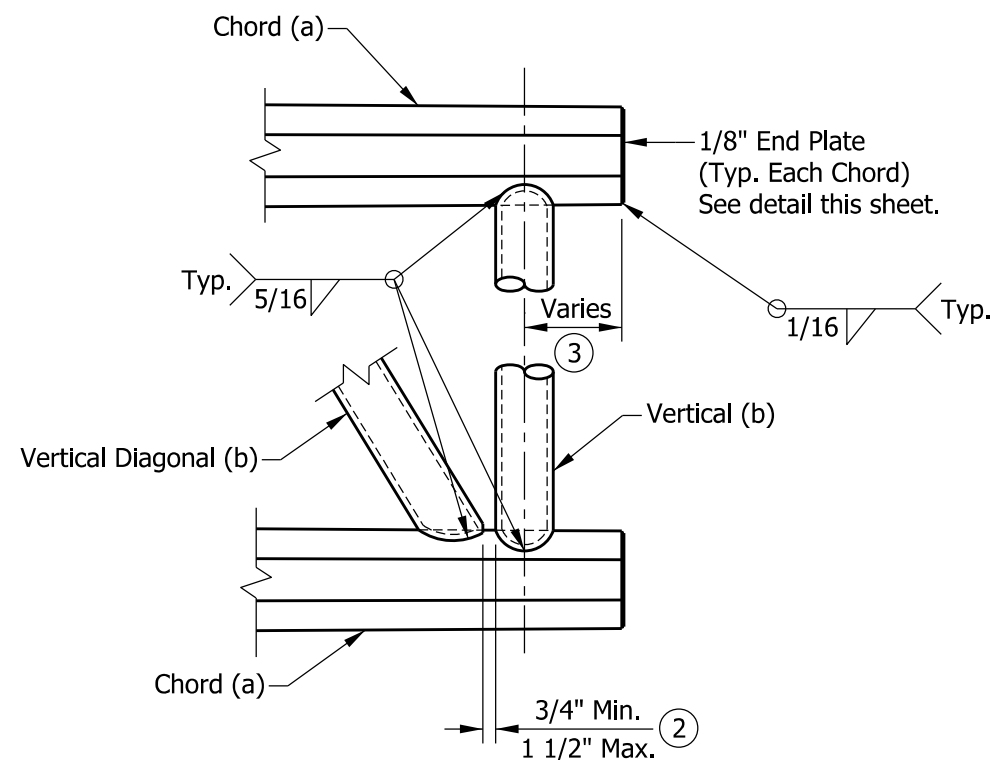
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/s/ Mark A. Miller03/27/13

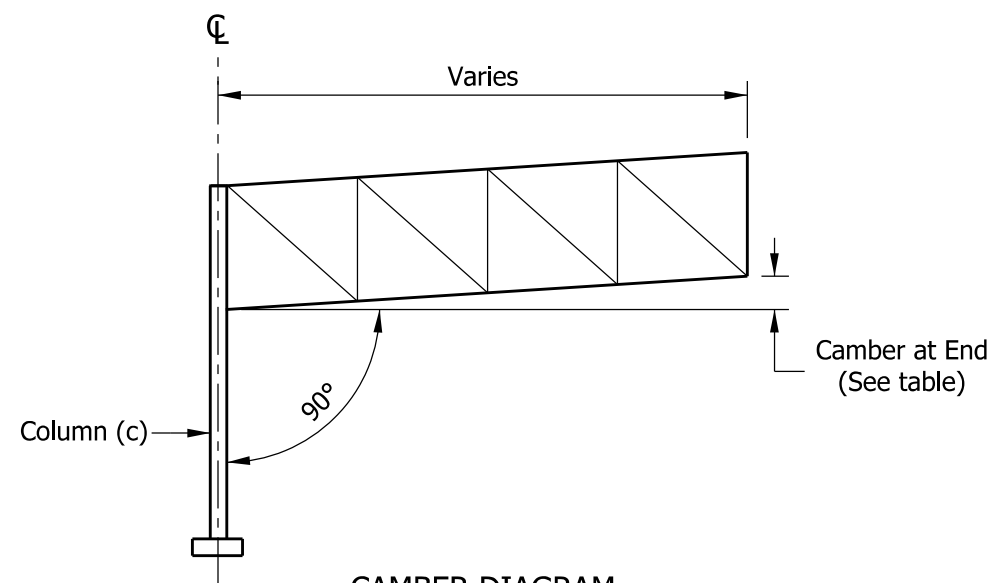
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**DOUBLE ARM**



**DETAIL A**

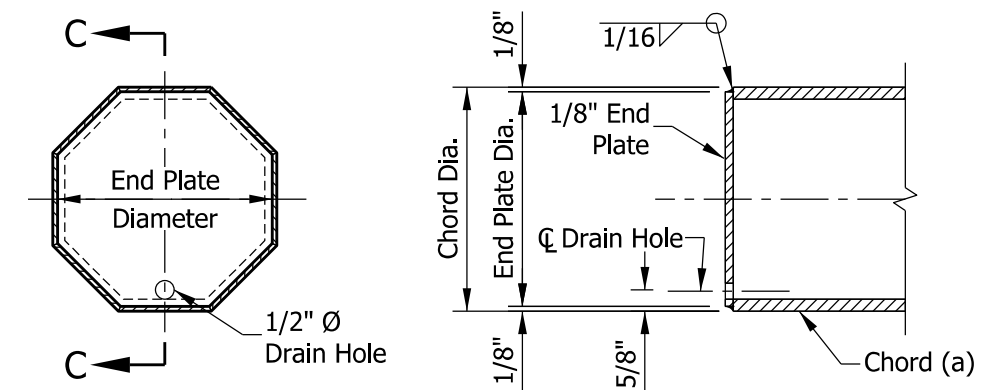


**CAMBER DIAGRAM**

DOUBLE ARM		
STR. TYPE	LENGTH	CAMBER AT END (IN.)
A	10'-0"	0.375
B	15'-0"	0.750
C	20'-0"	1.000

**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.



**END VIEW**

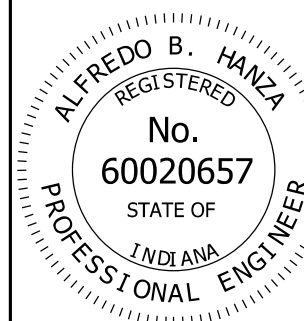
**SECTION C-C**

**CHORD END PLATE DETAILS**

INDIANA DEPARTMENT OF TRANSPORTATION

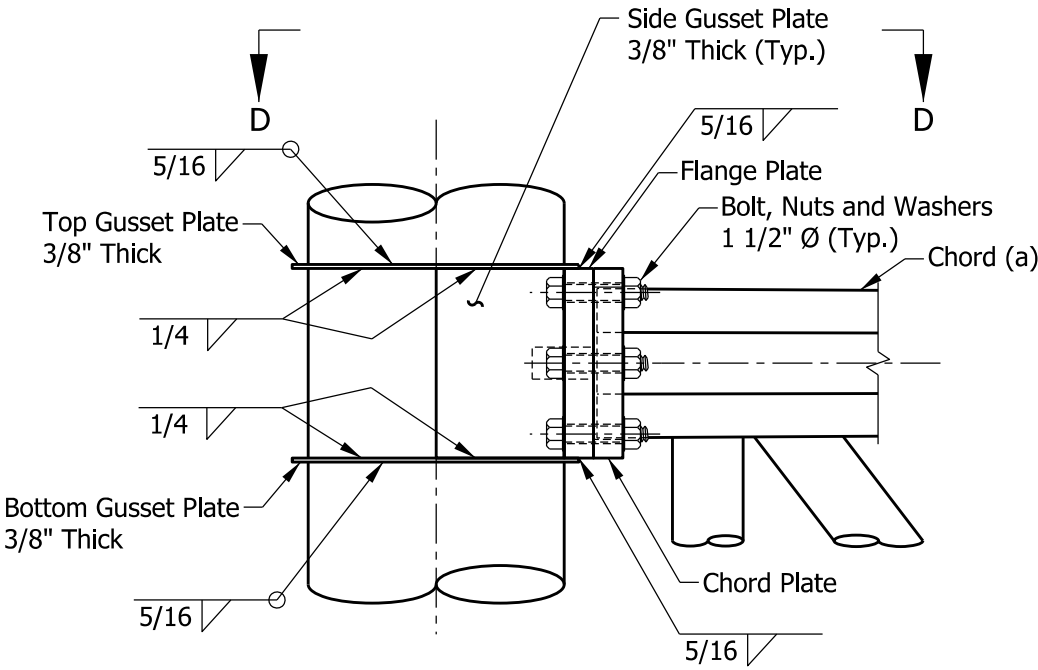
SIGN CANTILEVER STRUCTURE  
DOUBLE ARM CONNECTIONS, WELD DETAILS,  
CHORD END PLATE DETAILS, AND CAMBER  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-04

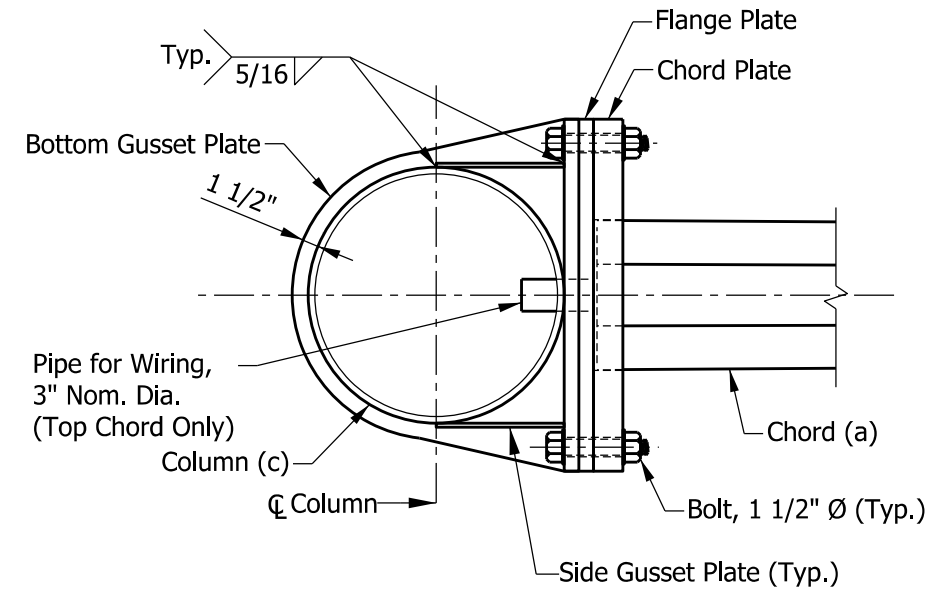


/s/ *Alfredo B. Hanza* 02/05/13  
DESIGN STANDARDS ENGINEER DATE

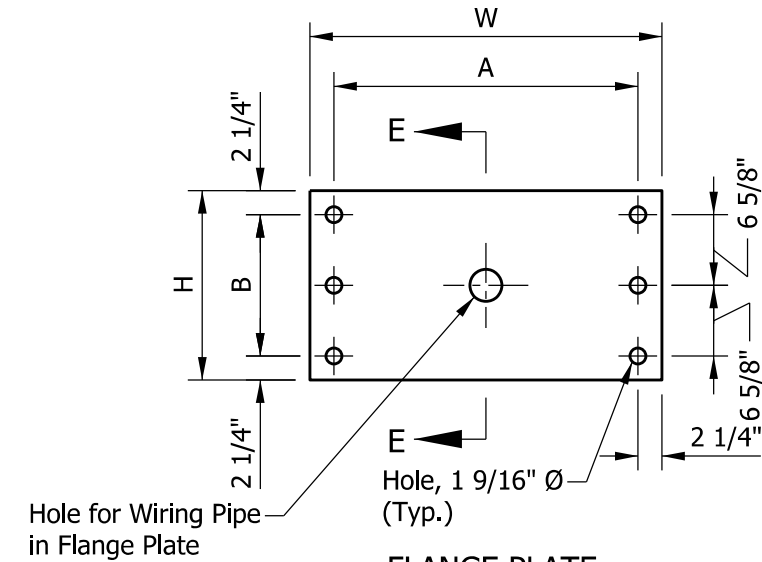
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CHIEF ENGINEER DATE



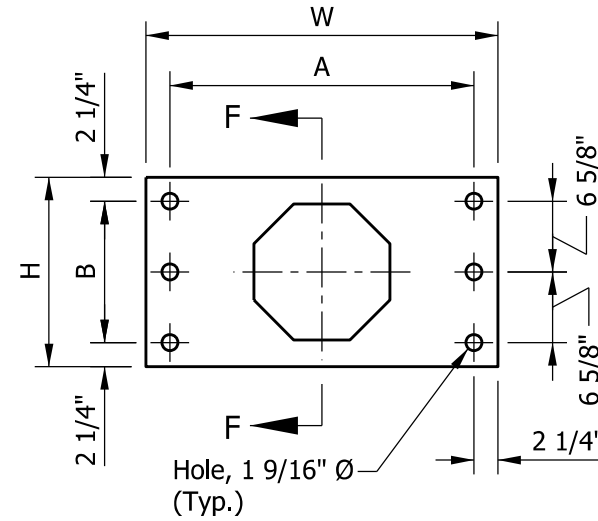
DOUBLE ARM TRUSS CONNECTION  
ELEVATION



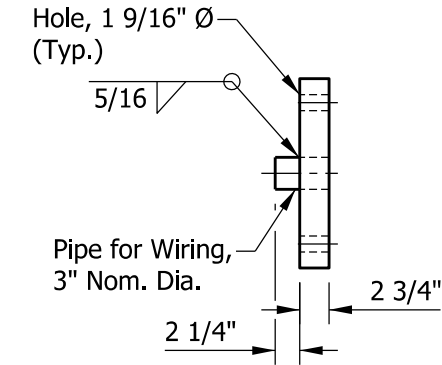
SECTION D-D



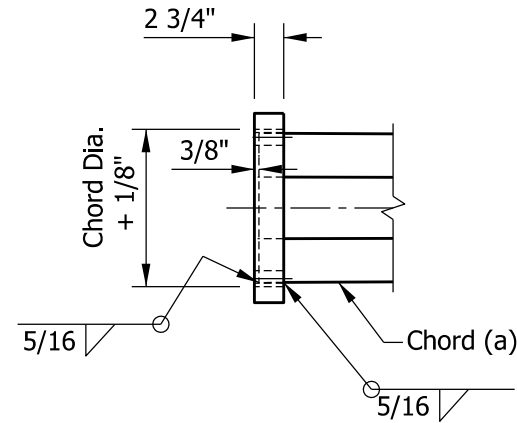
FLANGE PLATE



CHORD PLATE



SECTION E-E



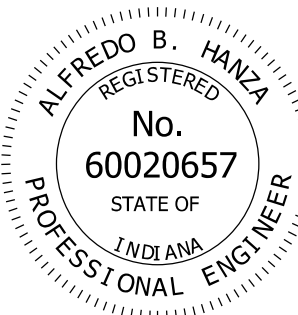
SECTION F-F

PLATE DIMENSIONS					
COLUMN DIAMETER	CHORD DIAMETER	W	H	A	B
18"	7 5/8"	2'-3"	1'-2"	1'-10 1/2"	9 1/2"
20"	10 3/4"	2'-5"	1'-5"	2'-0 1/2"	1'-0 1/2"
24"	14"	2'-9"	1'-6"	2'-4 1/2"	1'-1 1/2"

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE  
DOUBLE ARM  
CONNECTION TO COLUMN DETAILS  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-05



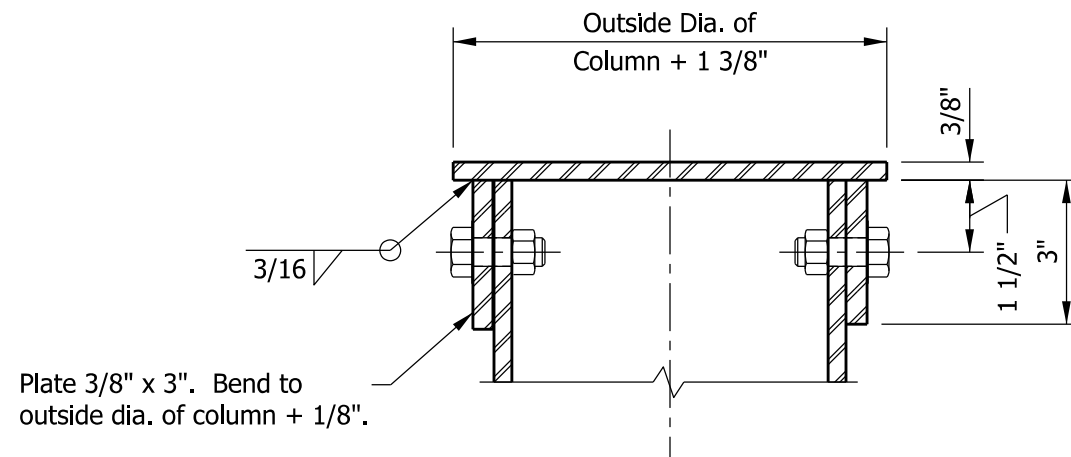
/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

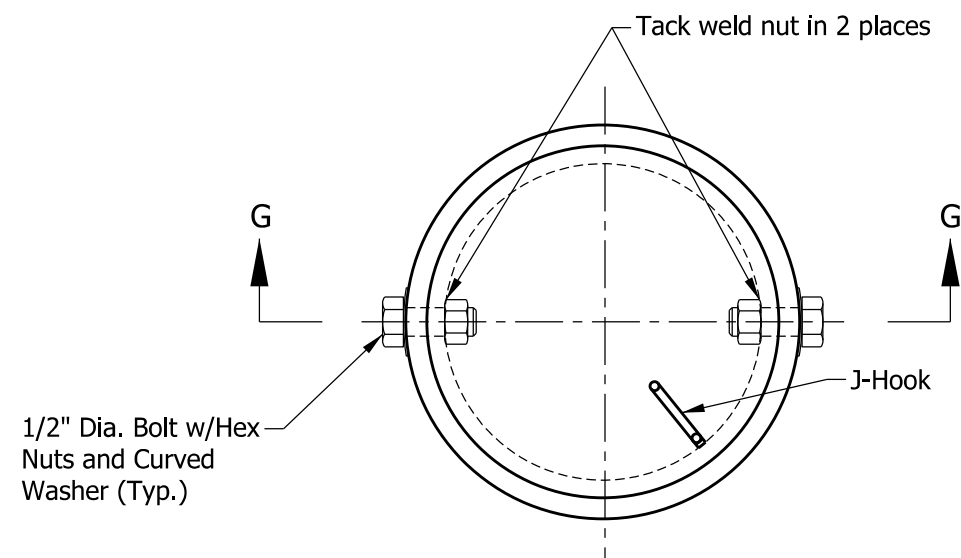
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE

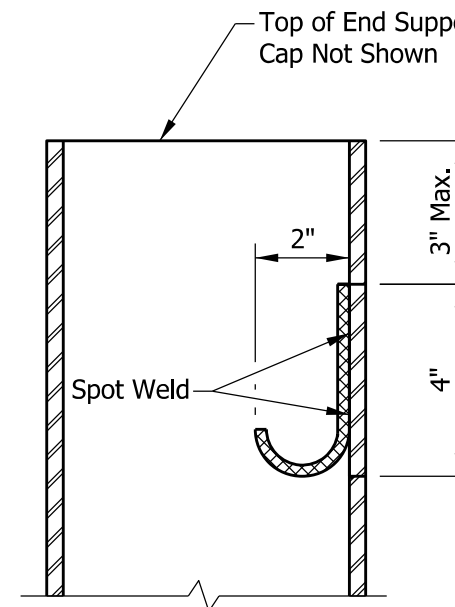




**SECTION G-G**



**PLAN  
TOP CAP - STEEL COLUMN**



**CABLE J-HOOK**

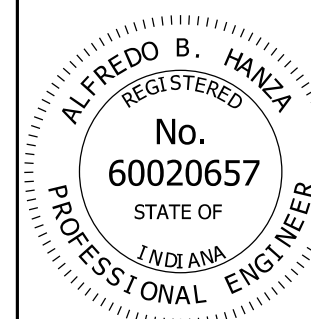
**NOTES:**

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.

INDIANA DEPARTMENT OF TRANSPORTATION

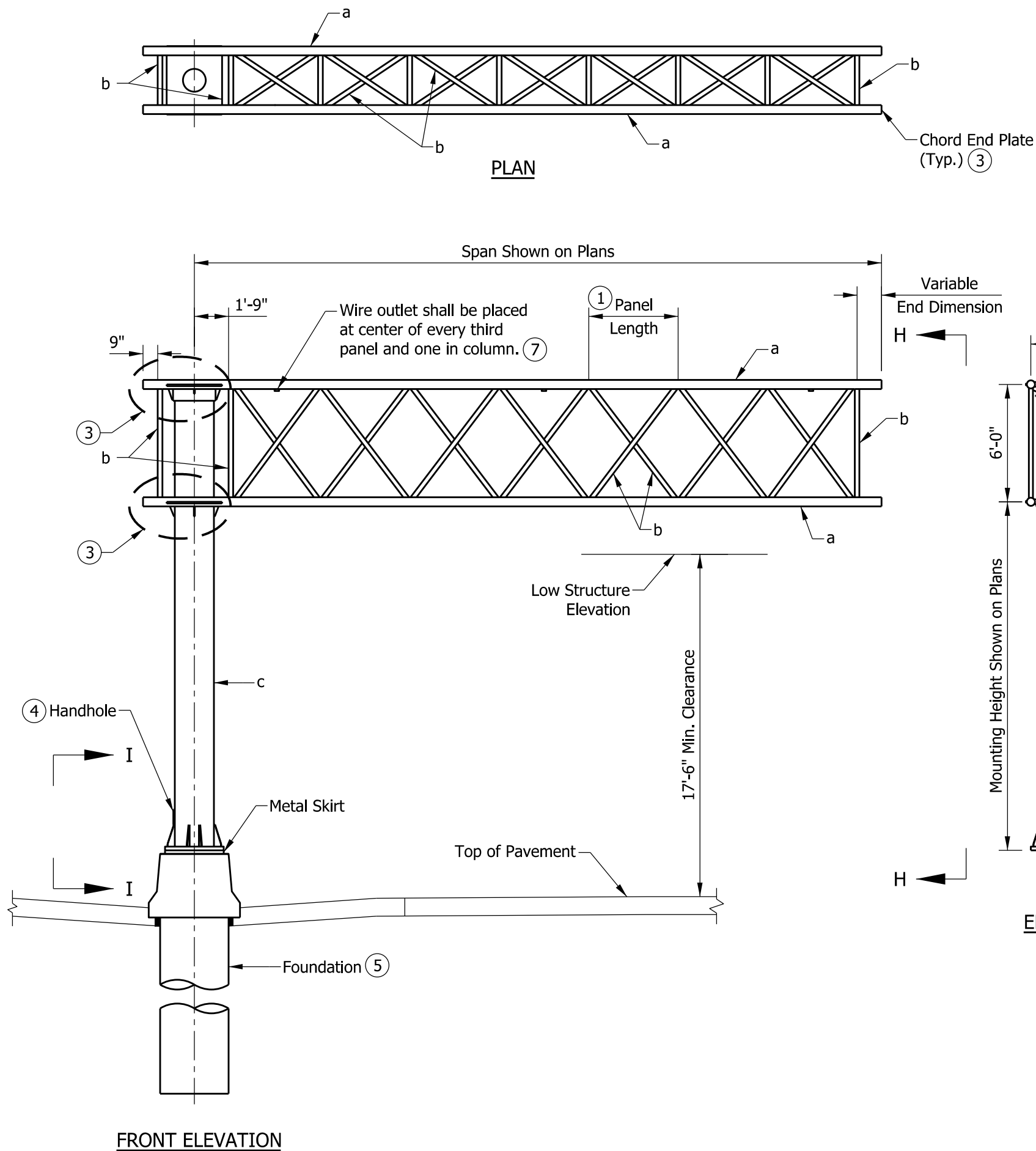
SIGN CANTILEVER STRUCTURE  
DOUBLE ARM COLUMN TOP CAP  
AND CABLE J-HOOK  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-06



/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 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.
- (4) See Standard Drawing E 802-SCLS-13 for handhole detail.
- (5) See Standard Drawings E 802-SCLS-15, -16, -18, -19, -21, and -22 for foundation details.
- (6) See Standard Drawing E 802-SCLS-13 for I.D. tag detail.
- (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		
STANDARD DRAWING NO.		E 802-SCLS-07
	/s/ Alfredo B. Hanza	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE

PANEL DIMENSIONS			
SPAN	NO. OF PANELS	PANEL LENGTH	VARIABLE END DIMENSION
21'	5	3'-9"	0'-6"
22'	5	3'-9"	1'-6"
23'	5	4'-0"	1'-3"
24'	5	4'-3"	1'-0"
25'	5	4'-6"	0'-9"
26'	6	3'-9"	1'-9"
27'	6	4'-0"	1'-3"
28'	6	4'-3"	0'-9"
29'	6	4'-3"	1'-9"
30'	6	4'-6"	1'-3"
31'	7	4'-0"	1'-3"
32'	7	4'-3"	0'-6"
33'	7	4'-3"	1'-6"
34'	7	4'-6"	0'-9"
35'	7	4'-6"	1'-9"

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.

QUADRI-CHORD MEMBER SIZES									
STR. TYPE	MAX SPAN (FT.)	MAX SIGN AREA (FT.)	MAX MOUNTING HEIGHT (FT.)	5 CHORD a		VERT./HORIZ./DIAG. b		COLUMN c	
				DIAMETER (IN.)	WALL THICK. (IN.)	DIAMETER (IN.)	WALL THICK. (IN.)	DIAMETER (IN.)	WALL THICK. (IN.)
D	25	300	24	5 9/16	0.258	2 7/8	0.203	24	0.562
E	30	300	24	5 9/16	0.258	2 7/8	0.203	24	0.562
F	35	300	24	5 9/16	0.375	2 7/8	0.276	24	0.688
G	25	400	24	5 9/16	0.375	2 7/8	0.276	24	0.968
H	30	400	24	5 9/16	0.375	2 7/8	0.276	24	0.968
I	35	400	24	5 9/16	0.375	2 7/8	0.276	24	0.968

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE  
QUADRI-CHORD  
PANEL DIMENSIONS AND MEMBER SIZES  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-08

ALFREDO B. HANZA

REGISTERED

No.

60020657

STATE OF

INDIANA

PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza

DESIGN STANDARDS ENGINEER

02/05/13

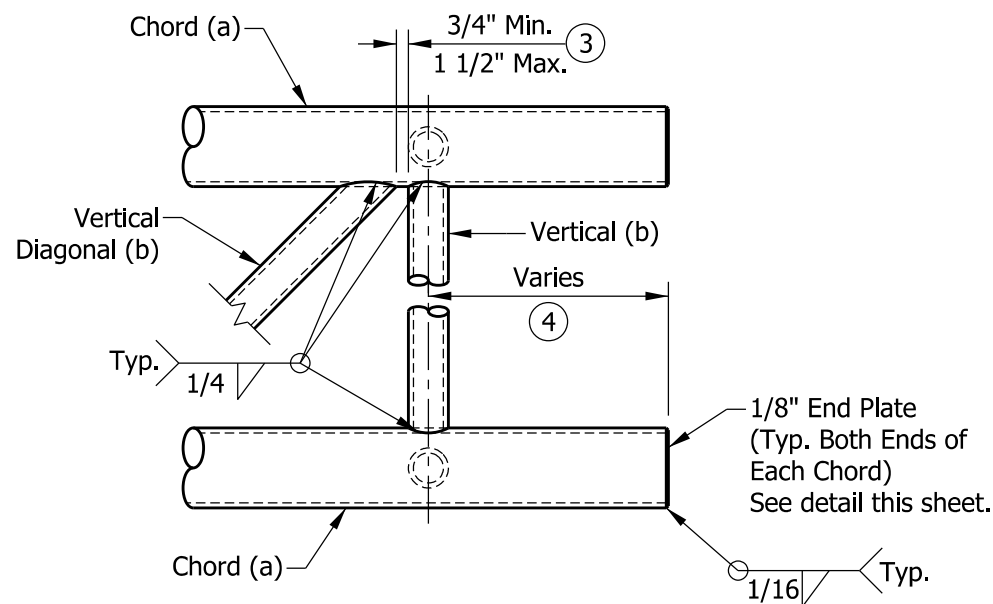
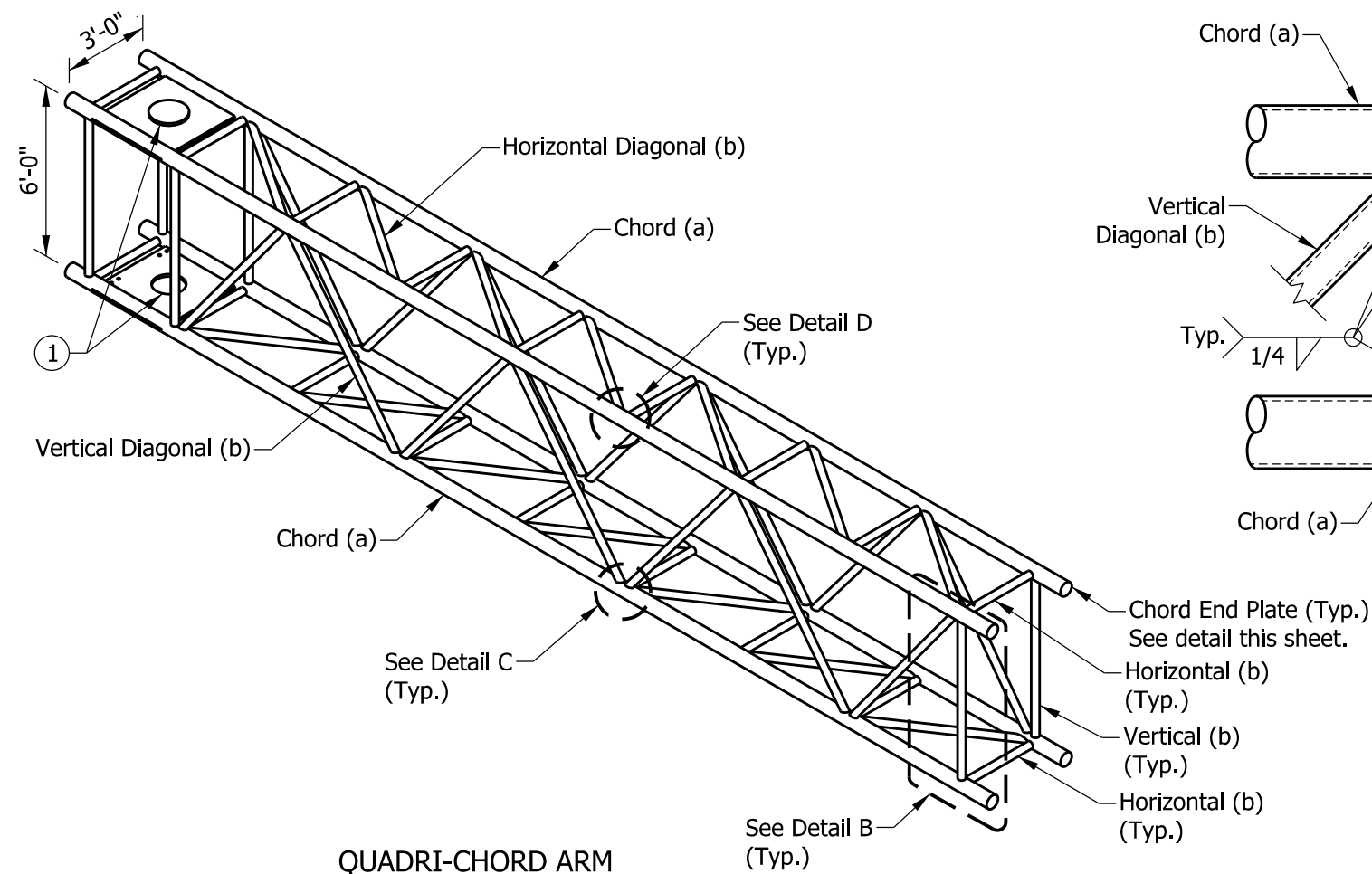
DATE

/s/ Mark A. Miller

CHIEF ENGINEER

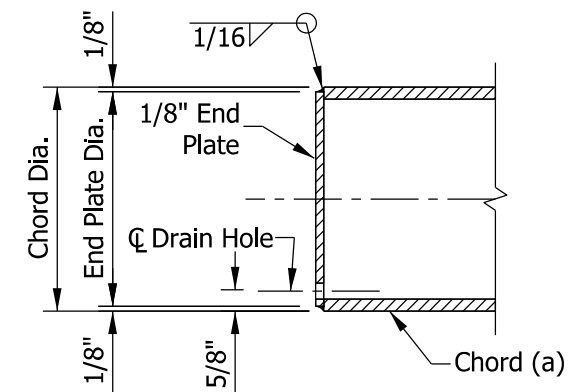
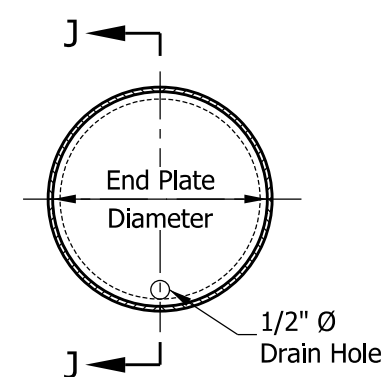
03/27/13

DATE

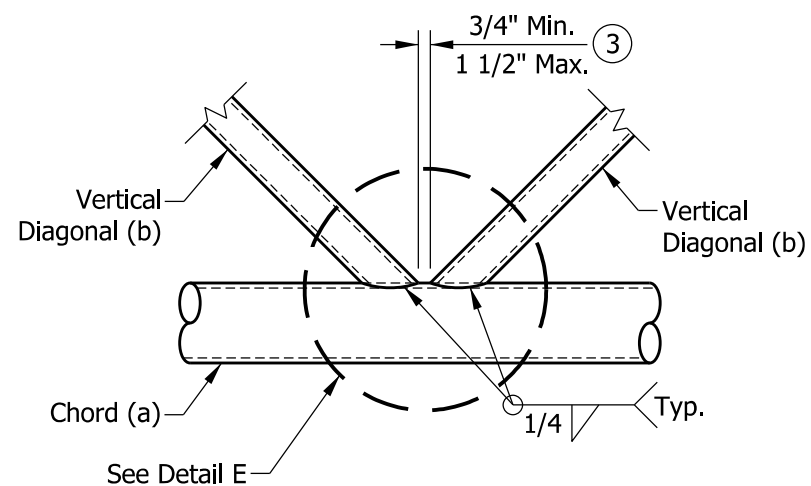


**NOTES:**

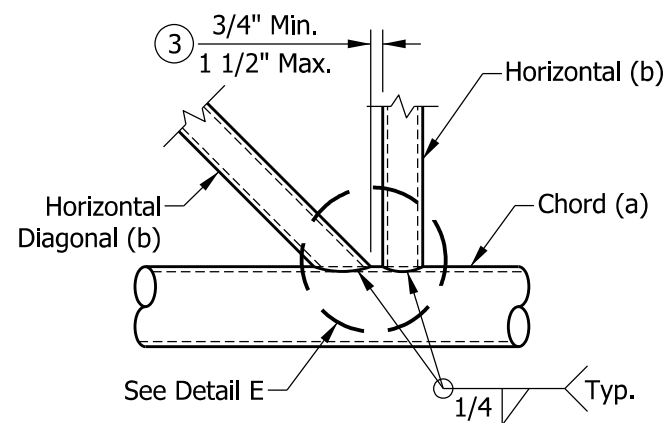
- ① See Standard Drawing E 802-SCLS-10 and -11 for quadri-chord arm connection to column details.
2. See Standard Drawing E 802-SCLS-08 for panel dimensions and member sizes.
- ③ Vertical diagonals shall be placed for minimum offset from the panel point such that the offset shall provide a 3/4" minimum 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.



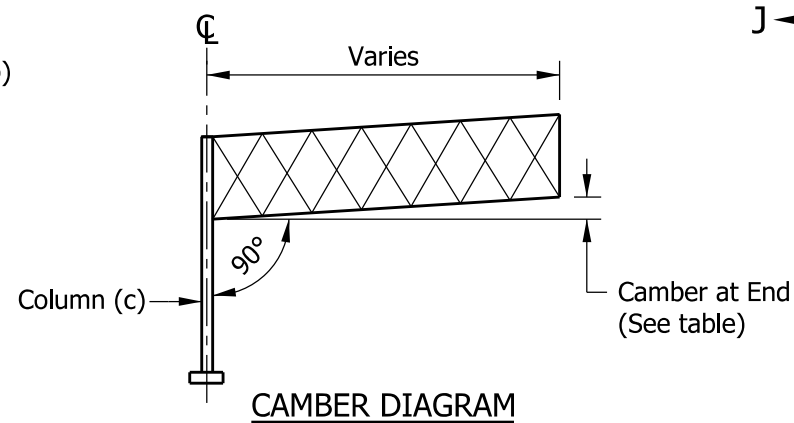
**CHORD END PLATE DETAILS**



**TYPICAL PANEL CONNECTION**

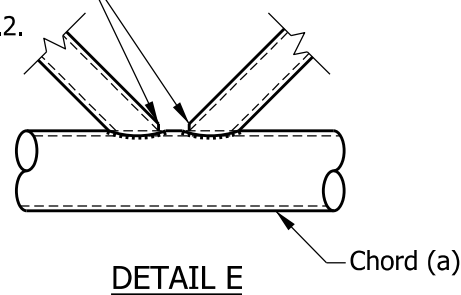


**TYPICAL PANEL CONNECTION**



QUADRI-CHORD ARM		
STR. TYPE	LENGTH	CAMBER AT END (IN.)
D	25'-0"	1.750
E	30'-0"	2.625
F	35'-0"	3.500
G	25'-0"	1.250
H	30'-0"	2.000
I	35'-0"	3.000

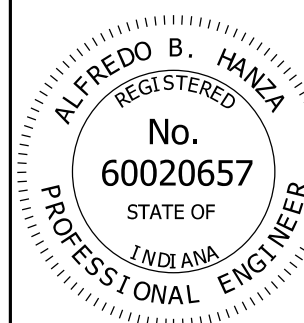
Top edge of diagonal member shall be cut back to facilitate throat thickness per AWS D.1, Fig. 3.2.



**INDIANA DEPARTMENT OF TRANSPORTATION**

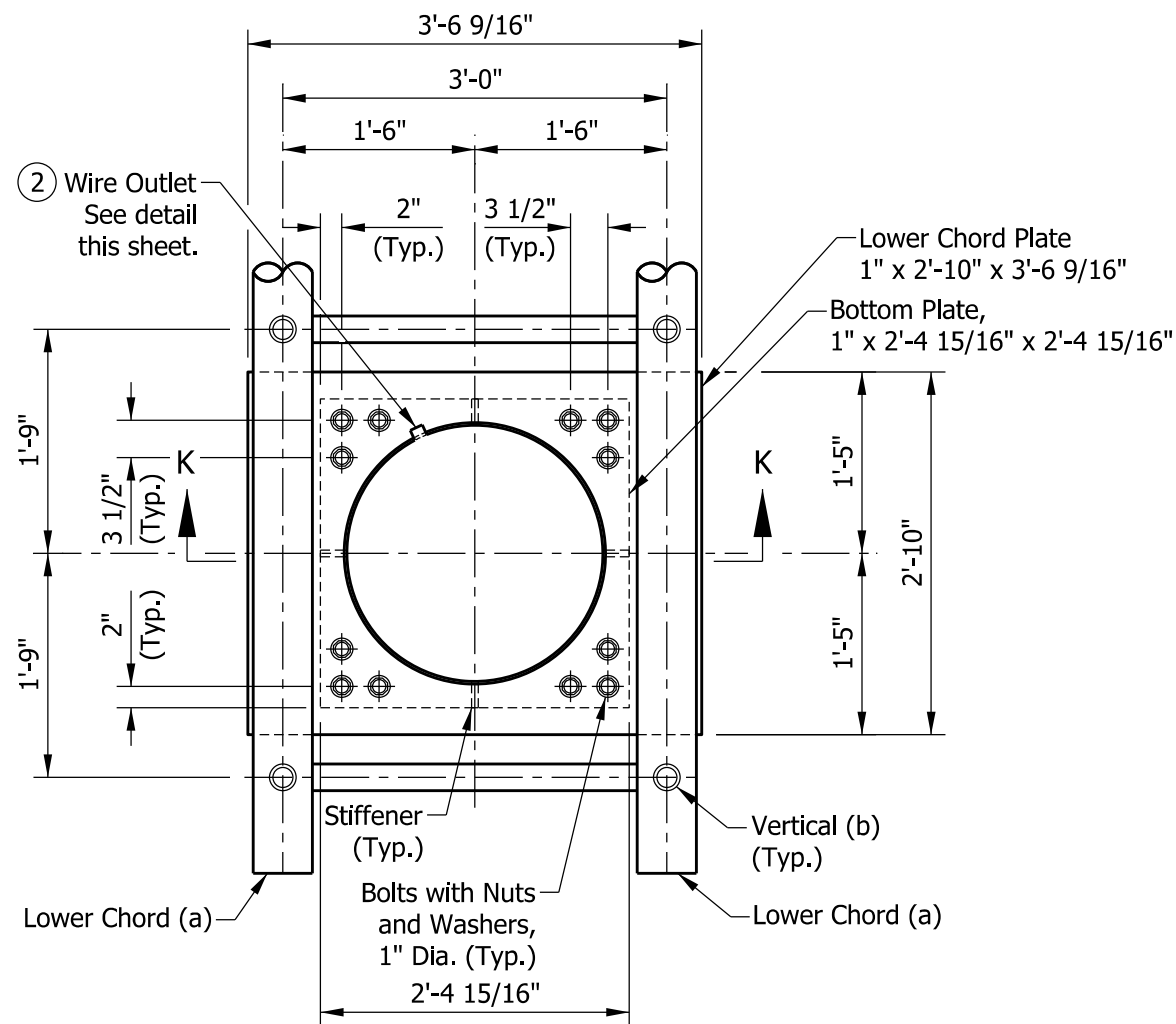
**SIGN CANTILEVER STRUCTURE  
QUADRI-CHORD CONNECTIONS, WELD DETAILS,  
CHORD END PLATE DETAILS, AND CAMBER  
SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-SCLS-09**

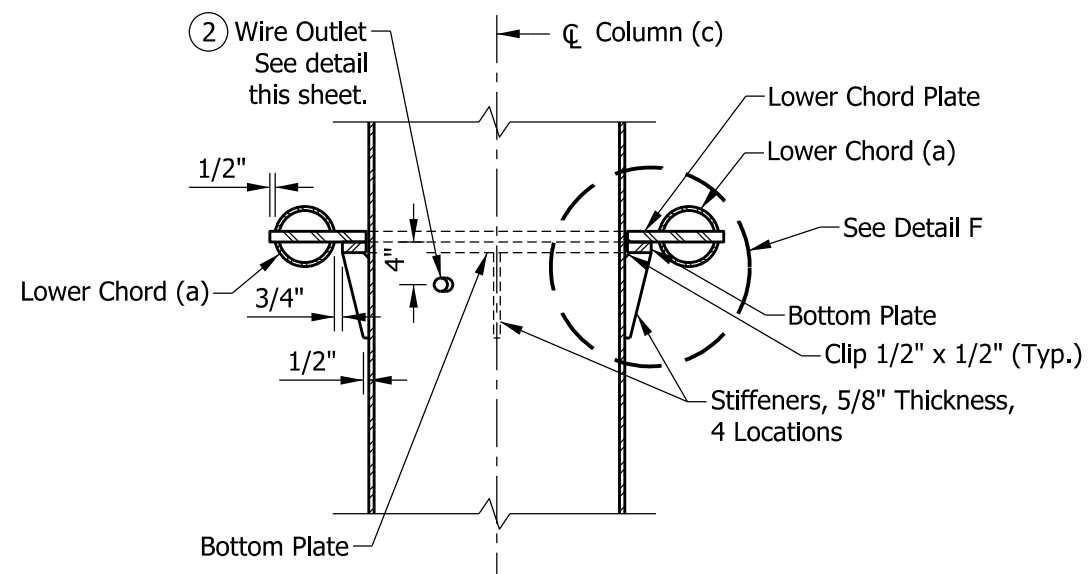


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

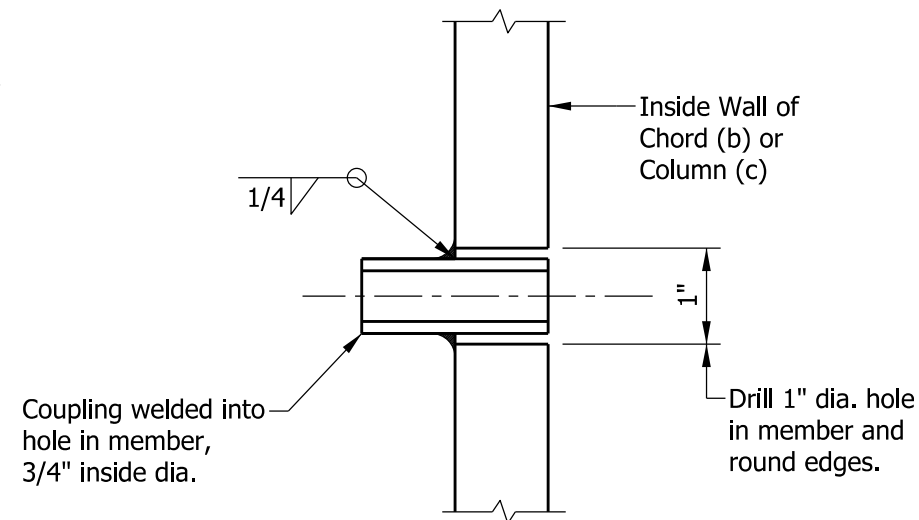
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



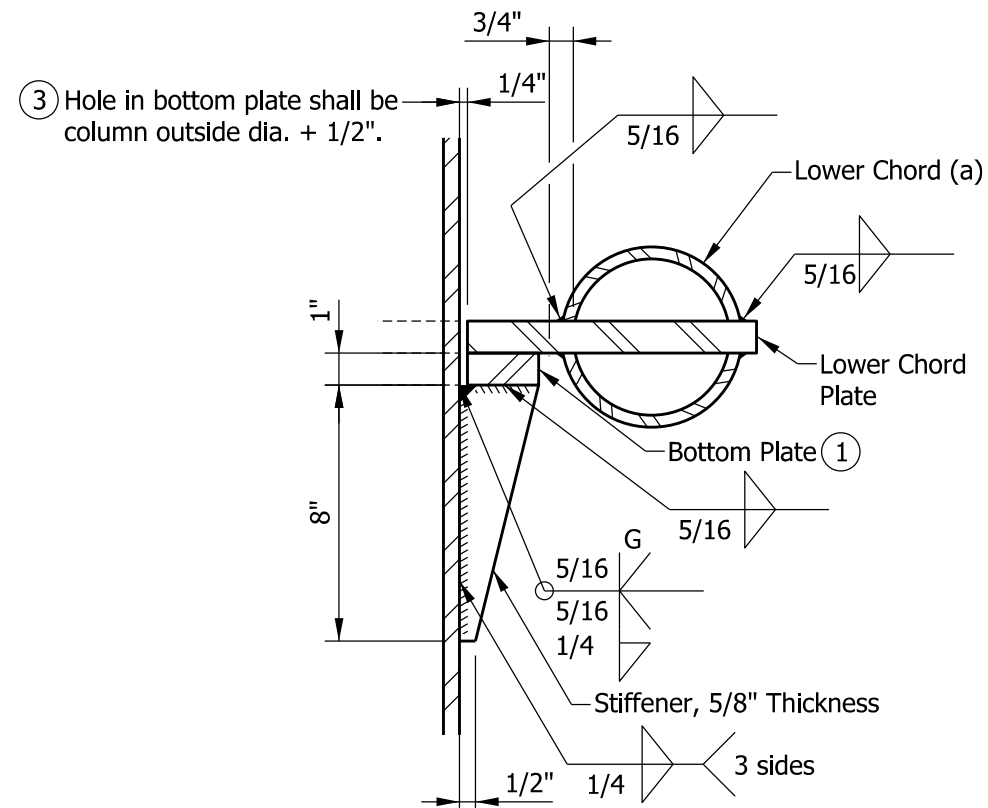
PLAN VIEW THROUGH COLUMN ABOVE LOWER CHORDS



SECTION K-K



TYPICAL WIRE OUTLET



DETAIL F

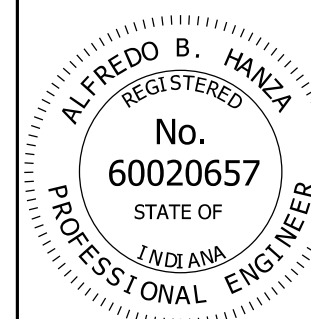
NOTES:

- 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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE  
QUADRI-CHORD LOWER ARM CONNECTION  
TO COLUMN AND WIRE OUTLET DETAIL  
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-10



/s/ Alfredo B. Hanza 03/25/13

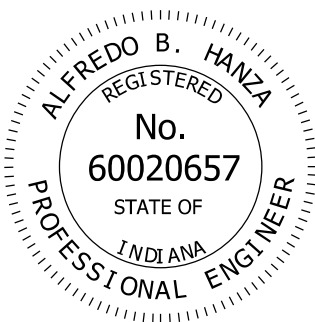
DESIGN STANDARDS ENGINEER DATE

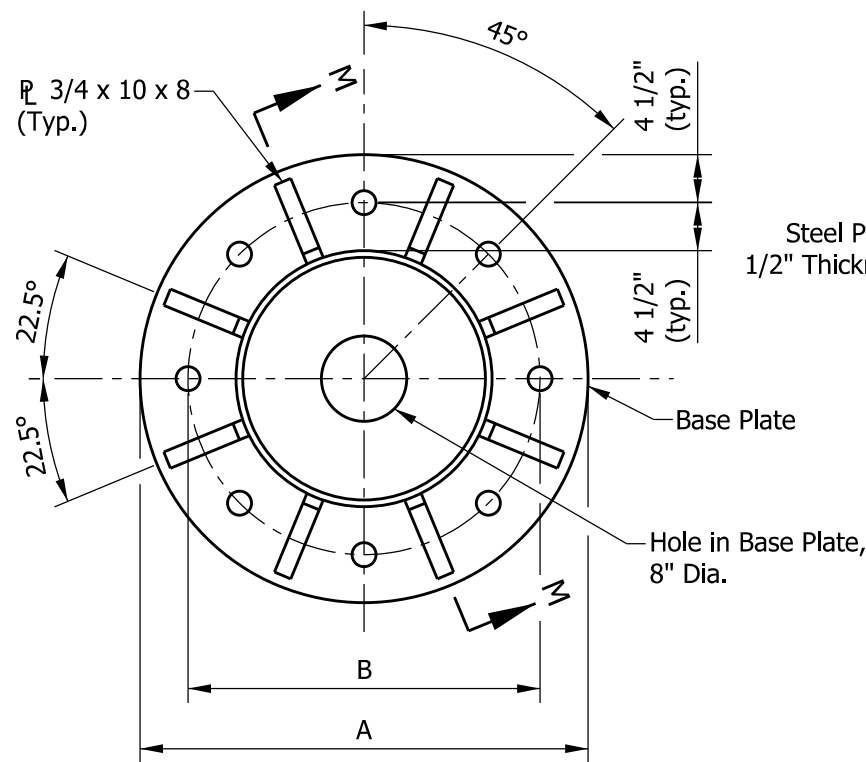
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE

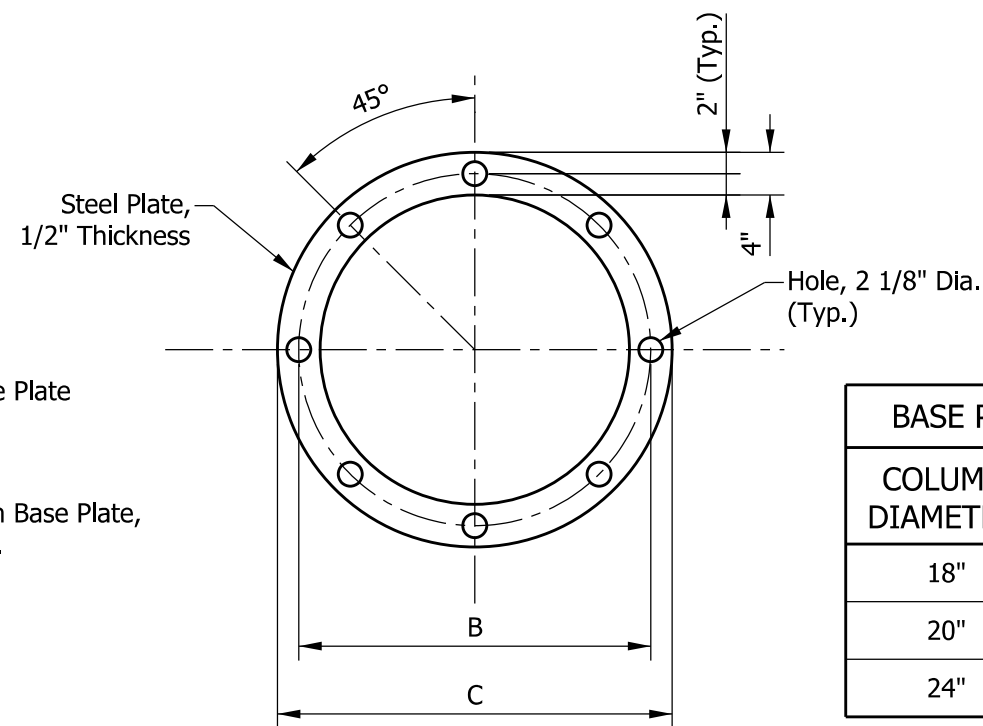


- ① After galvanizing, collar inside diameter shall equal outside diameter of galvanized column plus  $1/8" \pm 1/16"$ . Maximum gap between column and collar shall be  $1/8"$  before tightening bolts.
- ② Optional full penetration weld in collar may be made at two locations,  $180^\circ$  apart. X-ray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

INDIANA DEPARTMENT OF TRANSPORTATION									
SIGN CANTILEVER STRUCTURE QUADRI-CHORD UPPER ARM CONNECTION TO COLUMN SEPTEMBER 2013									
STANDARD DRAWING NO.      E 802-SCLS-11									
	<table><tr><td><i>/s/ Alfredo B. Hanza</i></td><td><i>03/26/13</i></td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td><i>/s/ Mark A. Miller</i></td><td><i>03/27/13</i></td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	<i>/s/ Alfredo B. Hanza</i>	<i>03/26/13</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	<i>03/26/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								

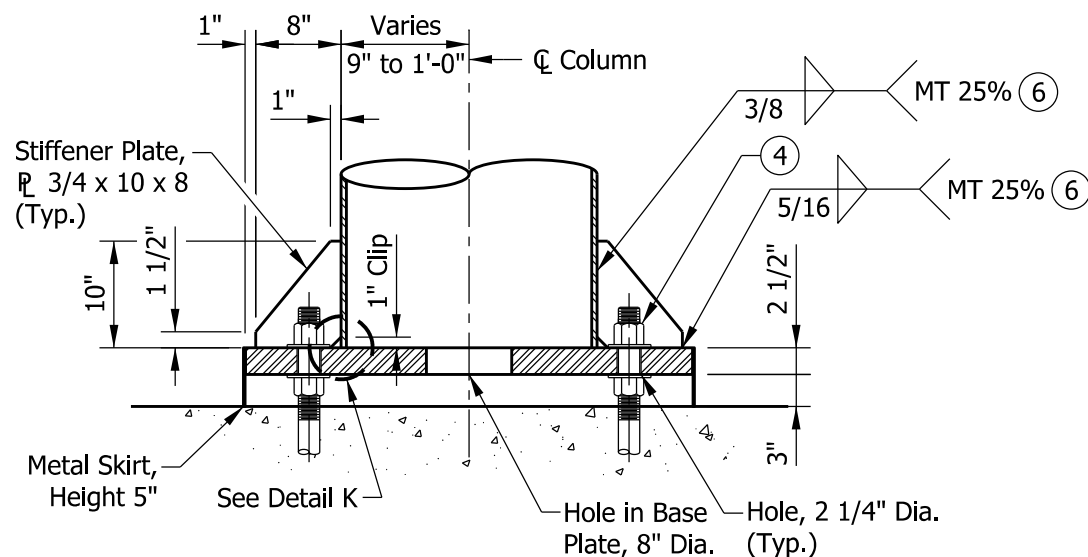


PLAN

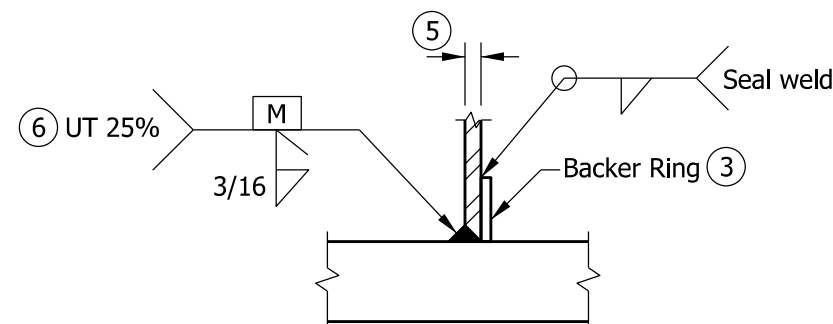


ANCHOR AND POSITIONING PLATE

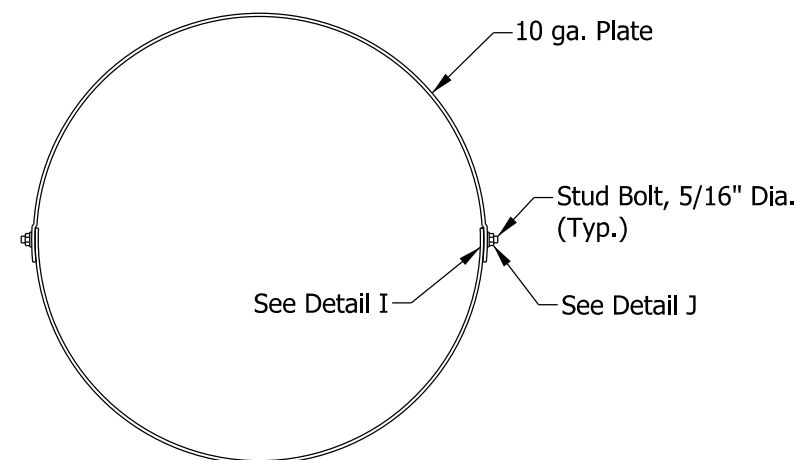
BASE PLATE DIMENSIONS			
COLUMN DIAMETER	A	B	C
18"	3'-0"	2'-3"	2'-7"
20"	3'-2"	2'-5"	2'-9"
24"	3'-6"	2'-9"	3'-1"



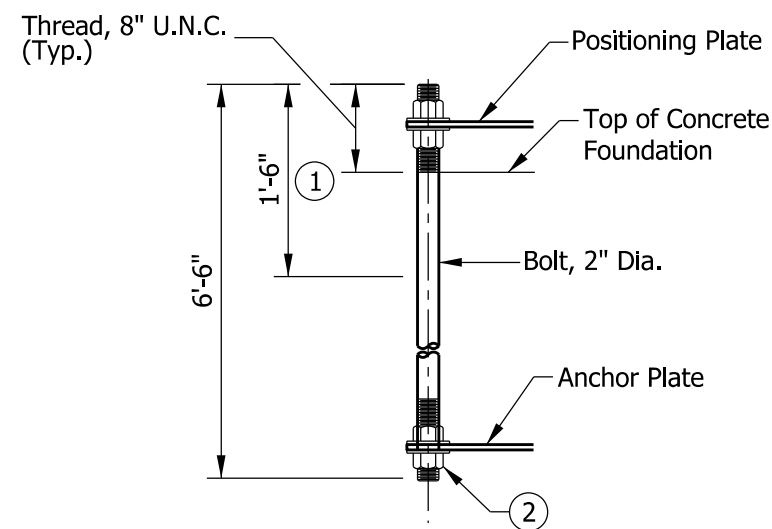
SECTION M-M



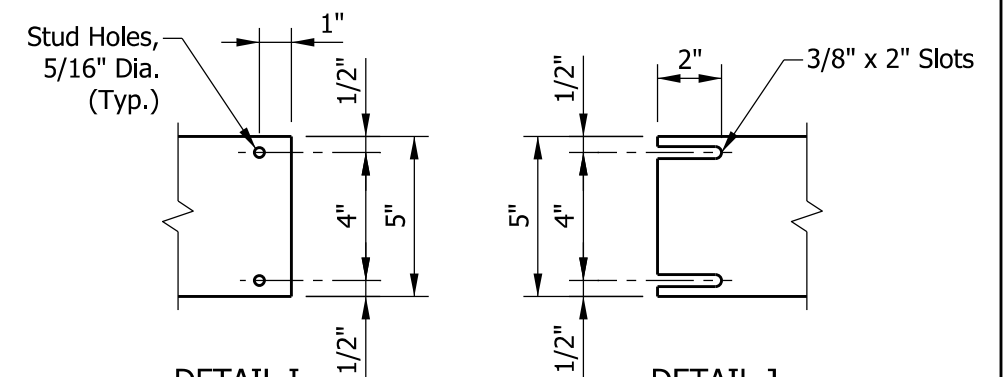
DETAIL K  
BASE PLATE WELD



SKIRT DETAIL



ANCHOR BOLT DETAIL



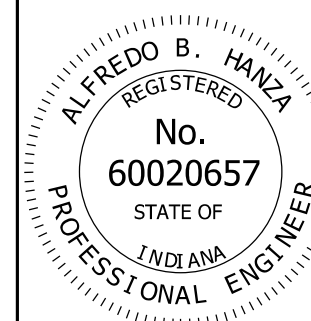
## NOTES:

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

## INDIANA DEPARTMENT OF TRANSPORTATION

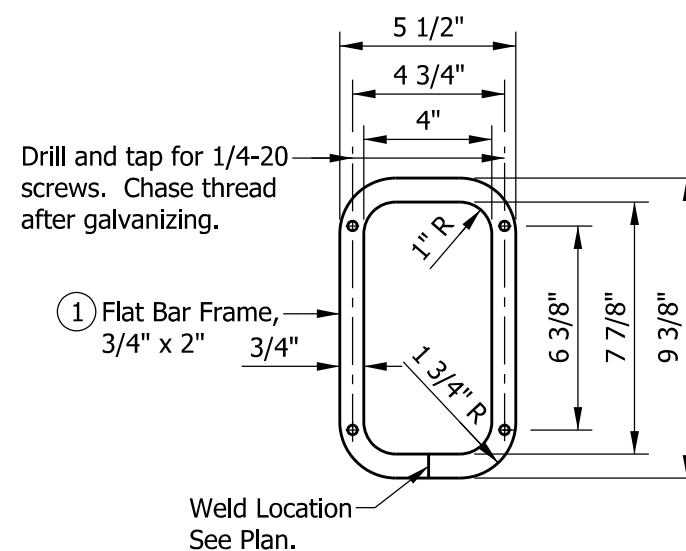
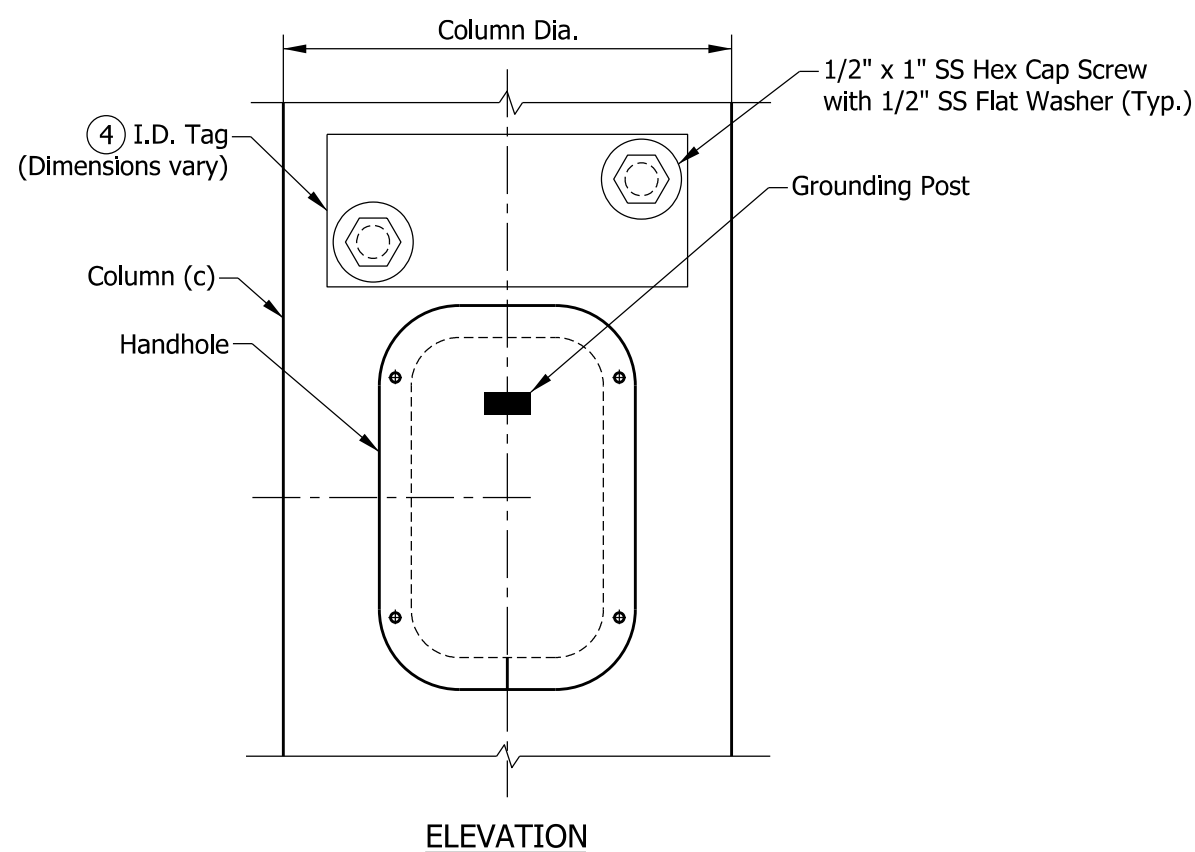
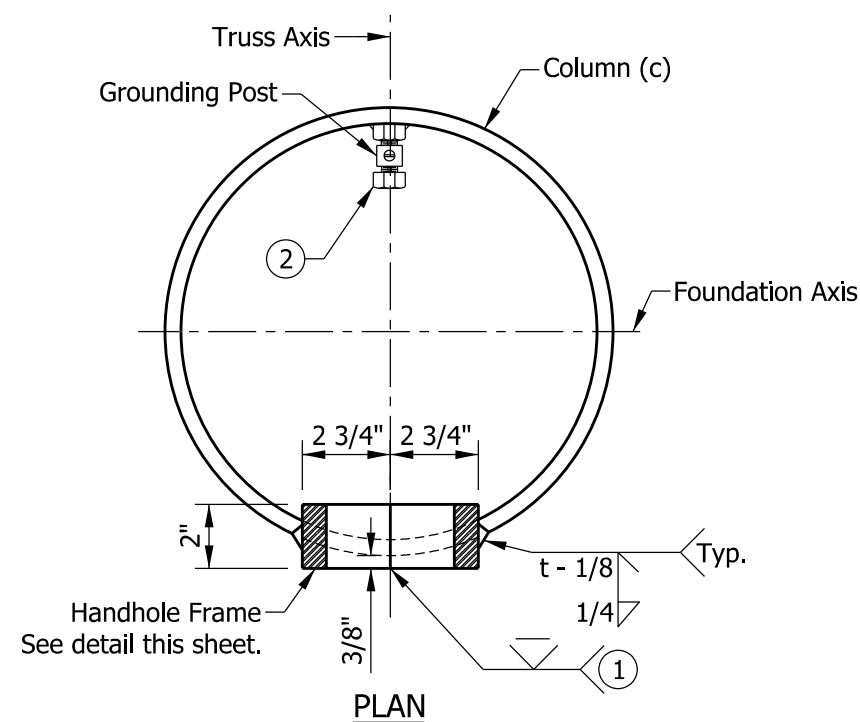
### SIGN CANTILEVER STRUCTURE DOUBLE ARM AND QUADRI-CHORD BASE PLATE, ANCHOR BOLT, AND METAL SKIRT DETAILS SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCLS-12

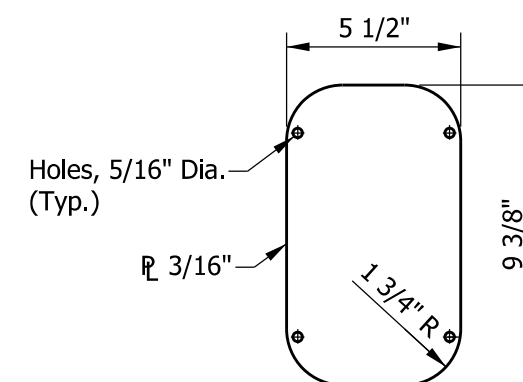


/s/ Alfredo B. Hanza 12/02/13  
DESIGN STANDARDS ENGINEER DATE

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



**HANDHOLE FRAME**



**HANDHOLE COVER**

**NOTES:**

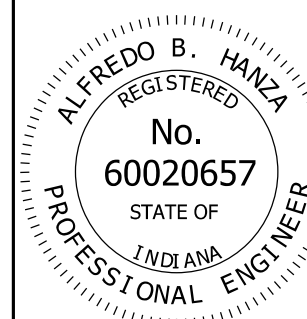
- (1) In lieu of fabricated handhole frame as shown, frame may be cut from 2" plate with rolling direction vertical.
- (2) See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post shall be placed on far side of support directly opposite center of handhole.
3. See Standard Drawings E 802-SCLS-02 and -07 for handhole locations.
- (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 \_\_\_\_\_

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE  
 DOUBLE ARM AND QUADRI-CHORD  
 COLUMN HANDHOLE AND I.D. TAG DETAILS  
 SEPTEMBER 2013**

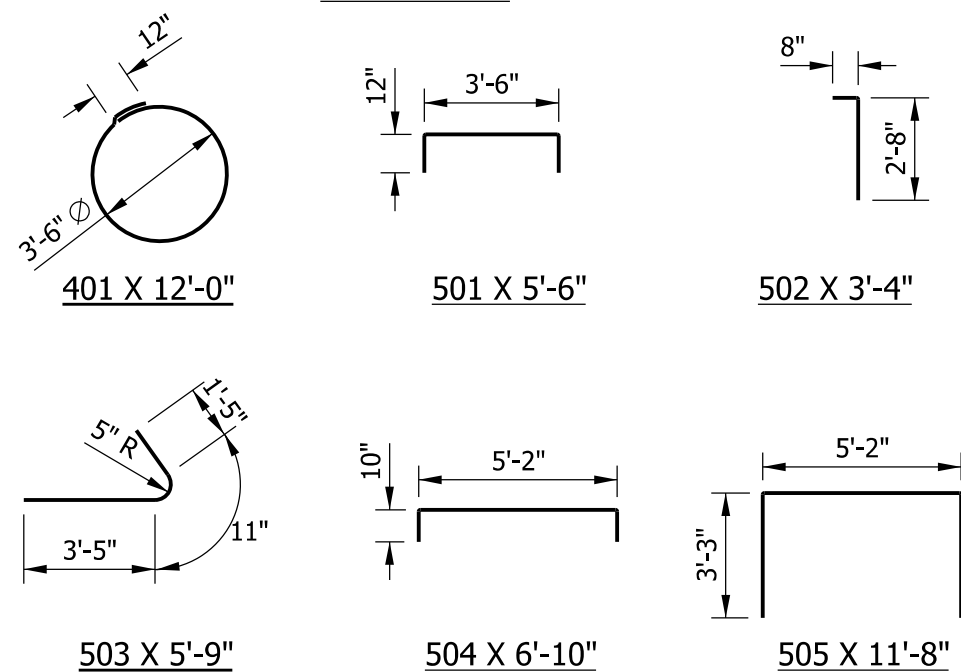
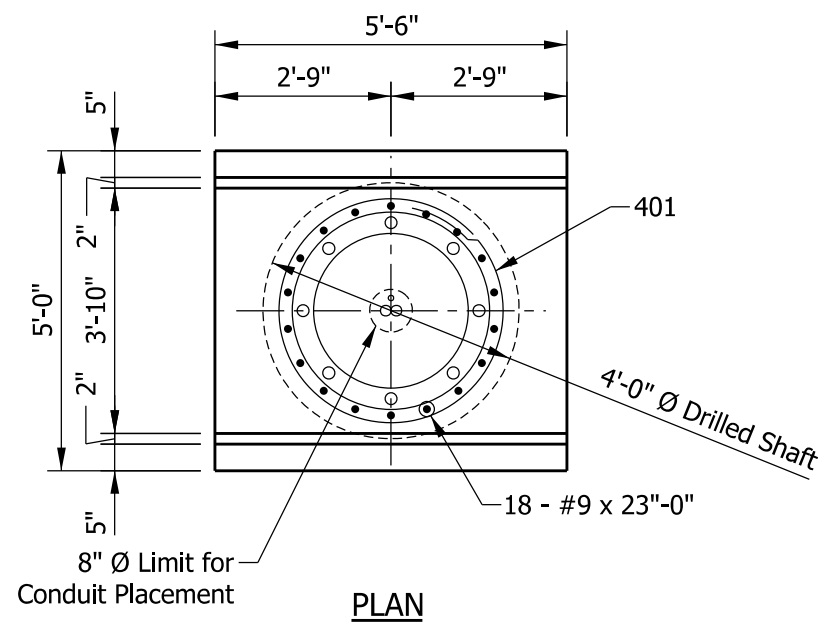
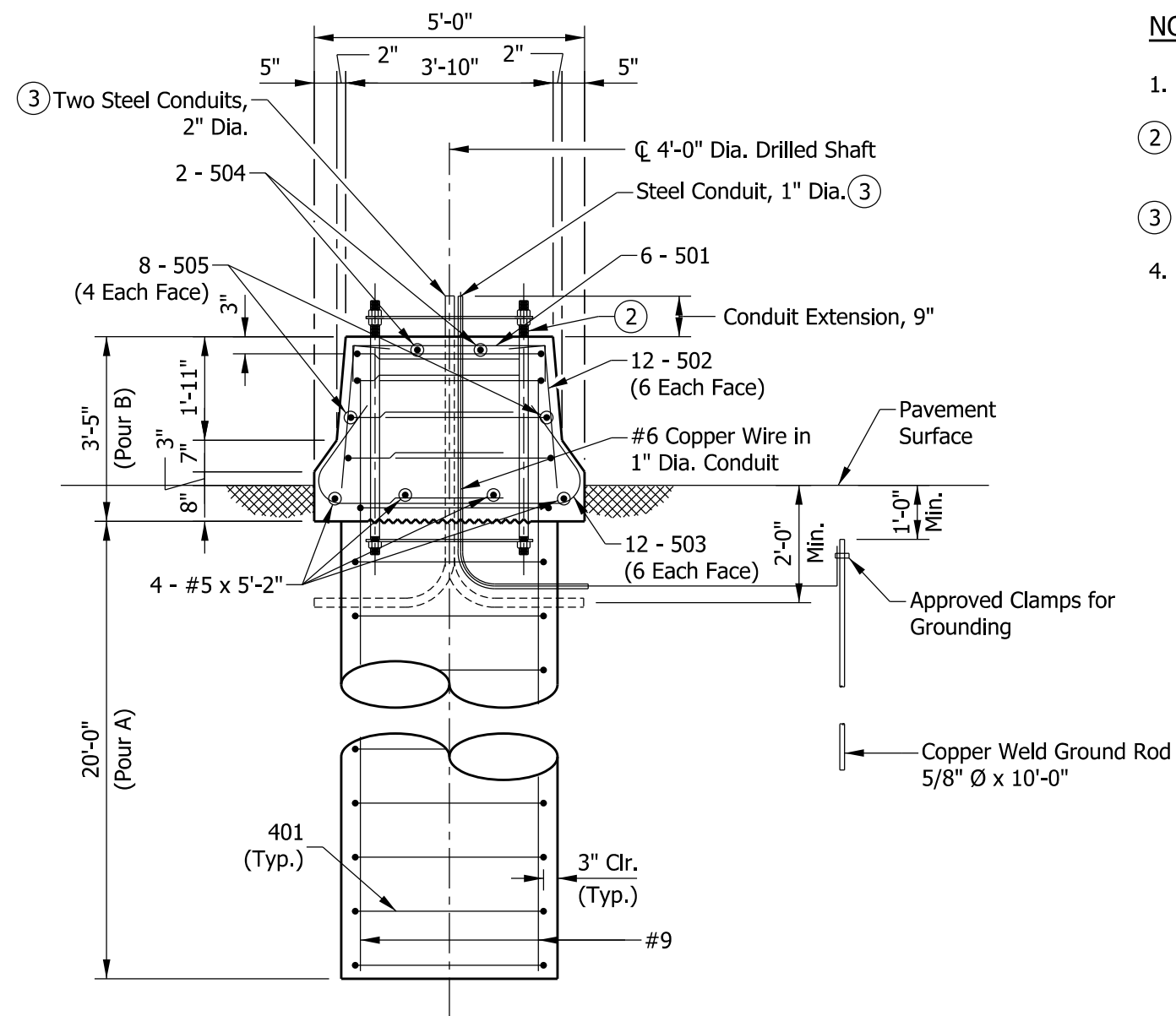
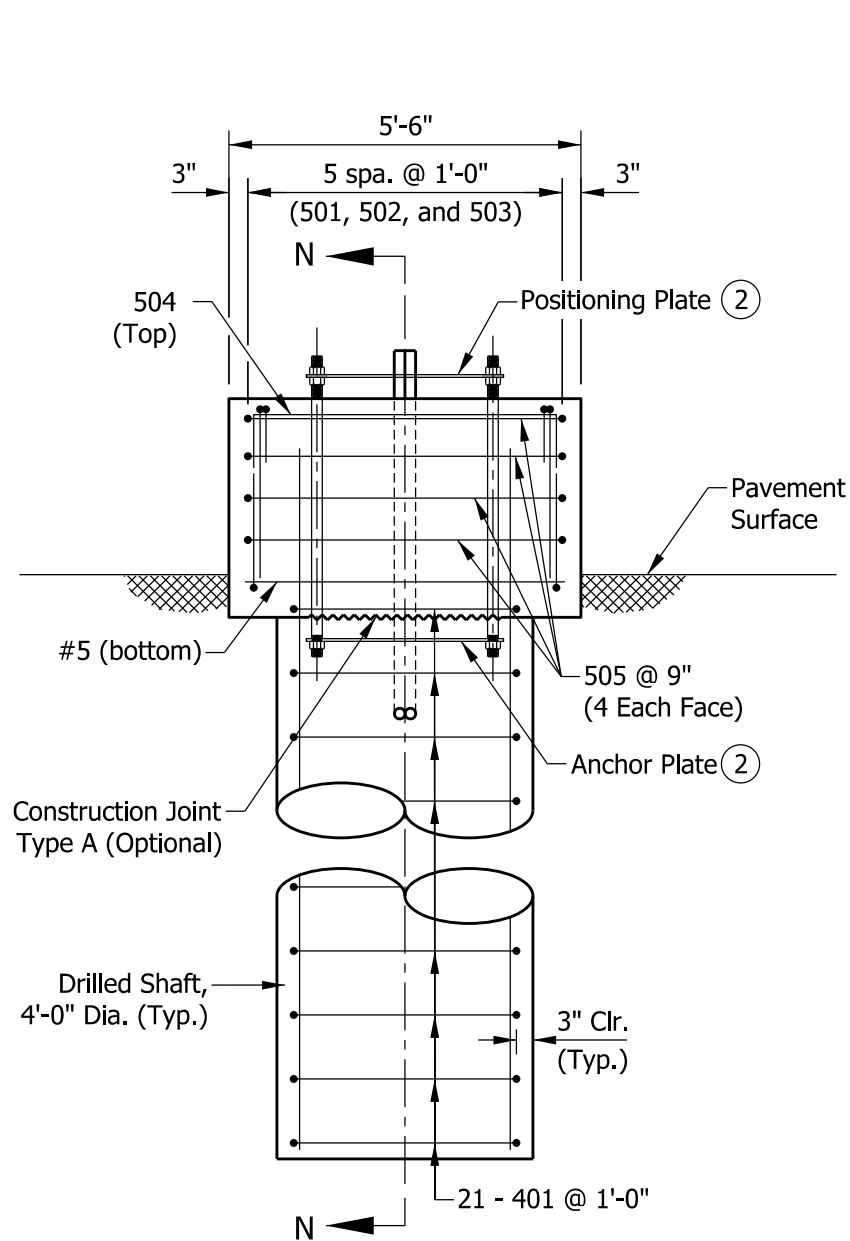
**STANDARD DRAWING NO. E 802-SCLS-13**



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

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





## NOTES:

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.
- Thread and cap both ends of steel conduit.
- Surface seal top and sides of barrier railing to the pavement surface.

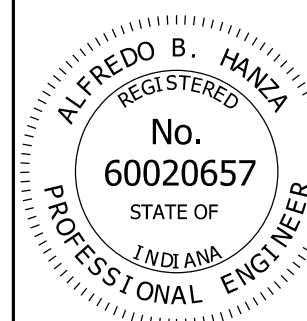
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	23'-0"	
Total #9			1408 LBS
501	6	5'-6"	
502	12	3'-4"	
503	12	5'-9"	
504	2	6'-10"	
505	8	11'-8"	
#5	4	5'-2"	
Total #5			281 LBS
401	21	12'-0"	
Total #4			168 LBS
Total Epoxy-Coated Reinforcing Bars			1857 LBS
CONCRETE, CLASS A			
Pour A			9.3 CYS
Pour B			3.0 CYS
Total Concrete, Class A			12.3 CYS
MISCELLANEOUS			
Surface Seal			5.9 SYS

## INDIANA DEPARTMENT OF TRANSPORTATION

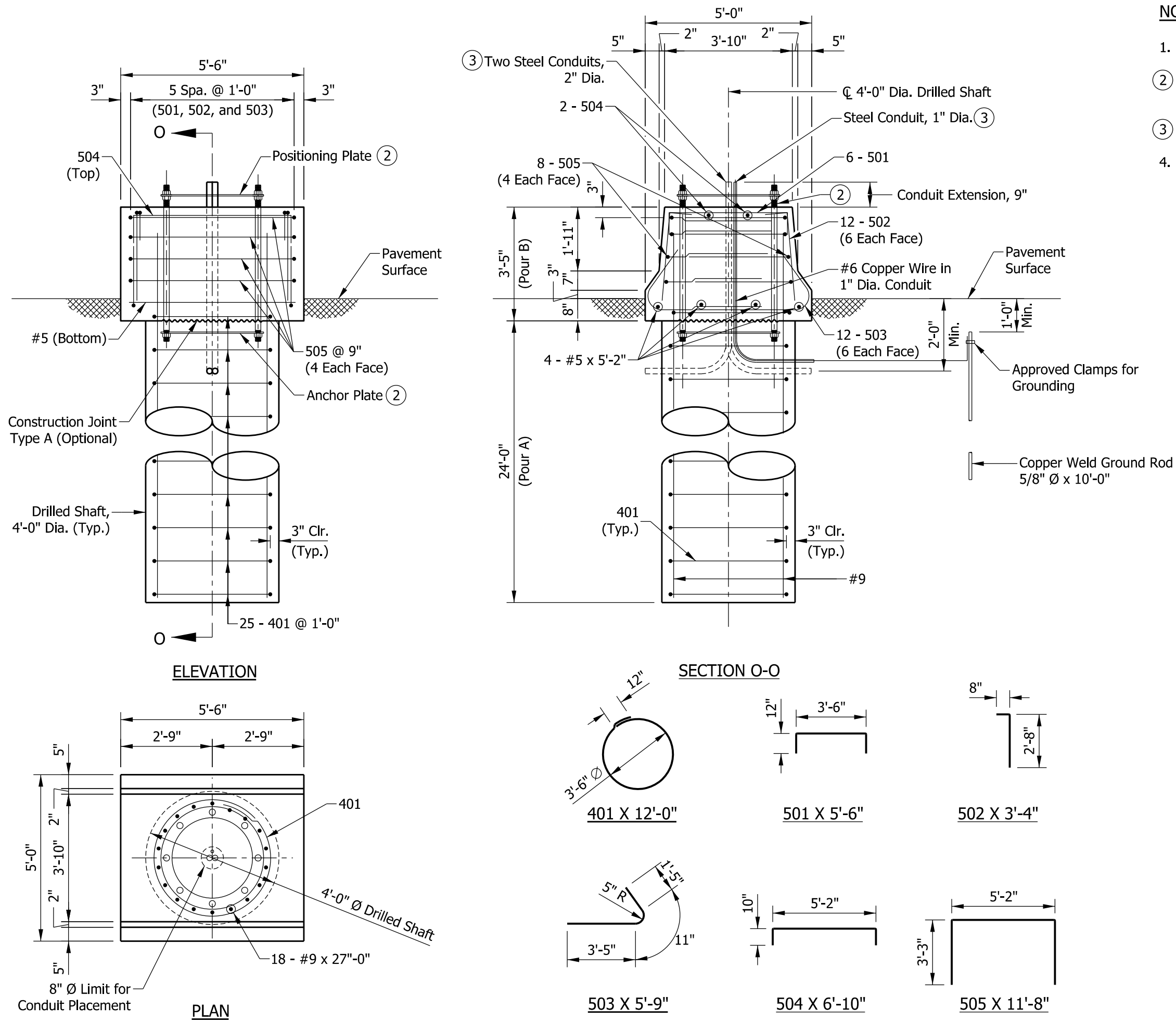
### SIGN CANTILEVER STRUCTURE TYPE A OR B FOUNDATION AT 33" CONCRETE BARRIER

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.

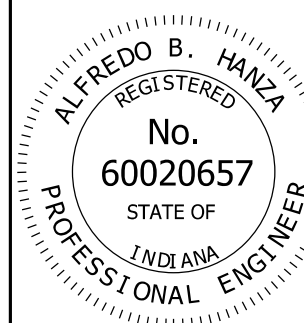
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	27'-0"	
Total #9			1652 LBS
501	6	5'-6"	
502	12	3'-4"	
503	12	5'-9"	
504	2	6'-10"	
505	8	11'-8"	
#5	4	5'-2"	
Total #5			281 LBS
401	25	12'-0"	
Total #4			200 LBS
Total Epoxy-Coated Reinforcing Bars			2133 LBS
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**

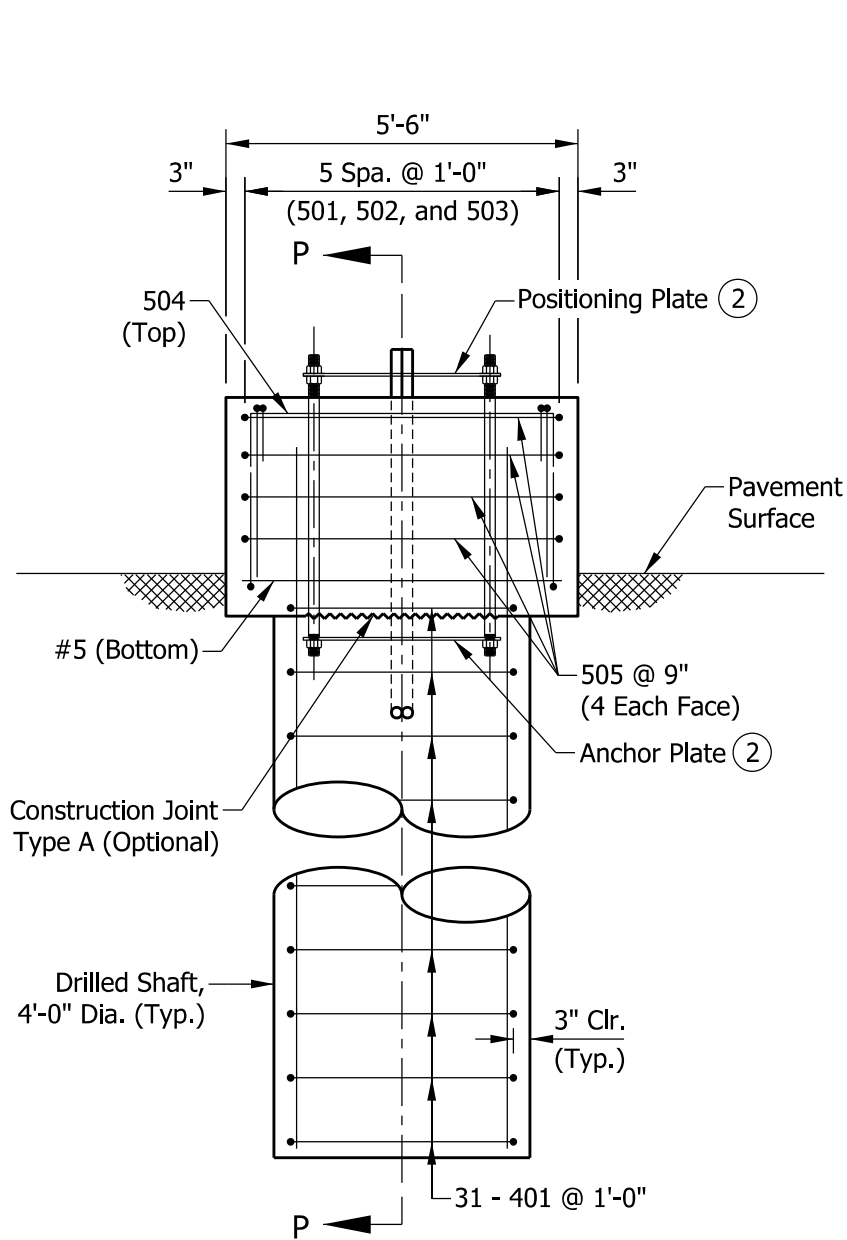
**SIGN CANTILEVER STRUCTURE TYPE C, D, E, OR F  
FOUNDATION AT 33" CONCRETE BARRIER**

**SEPTEMBER 2013**

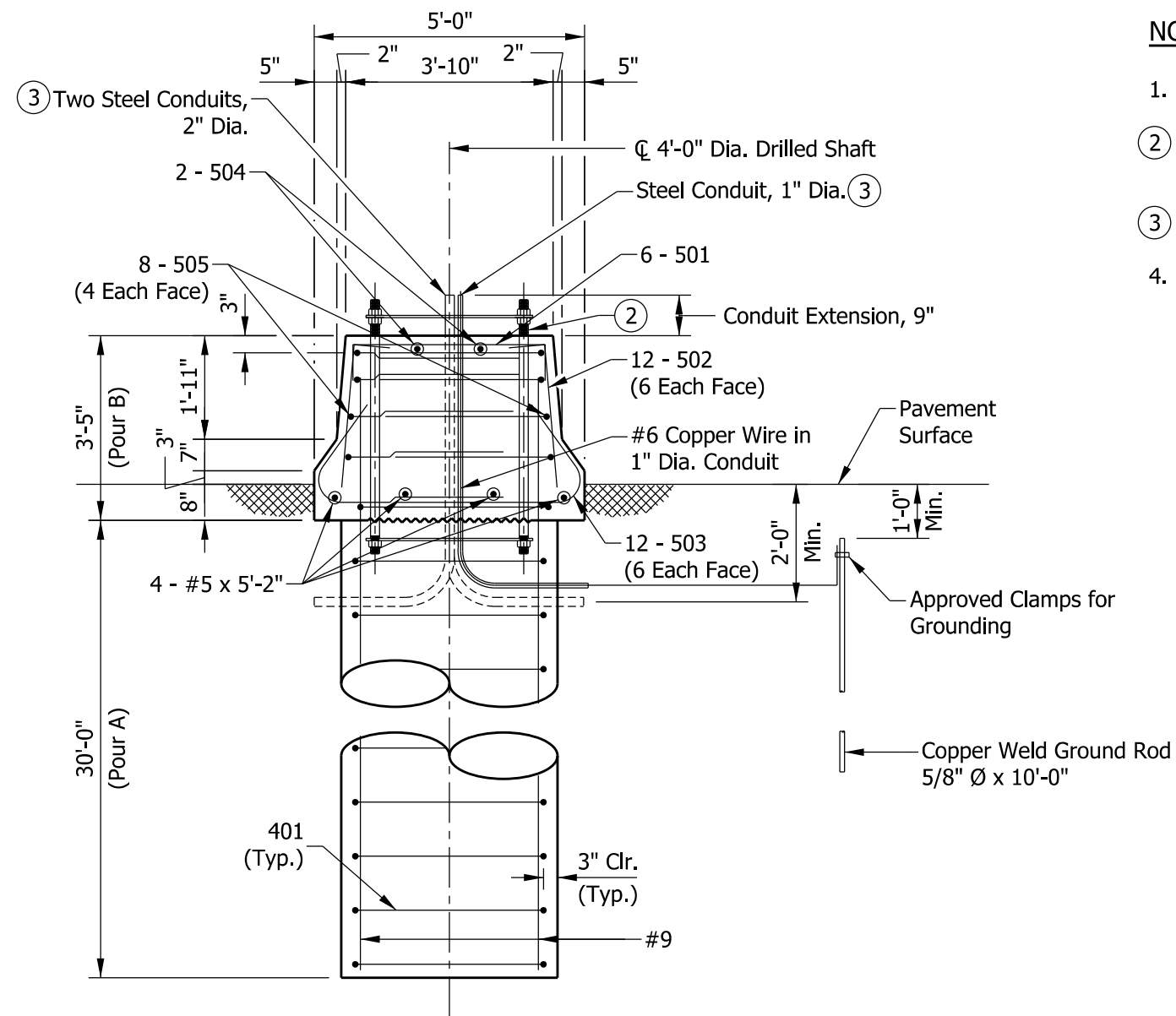
**STANDARD DRAWING NO. E 802-SCLS-15**



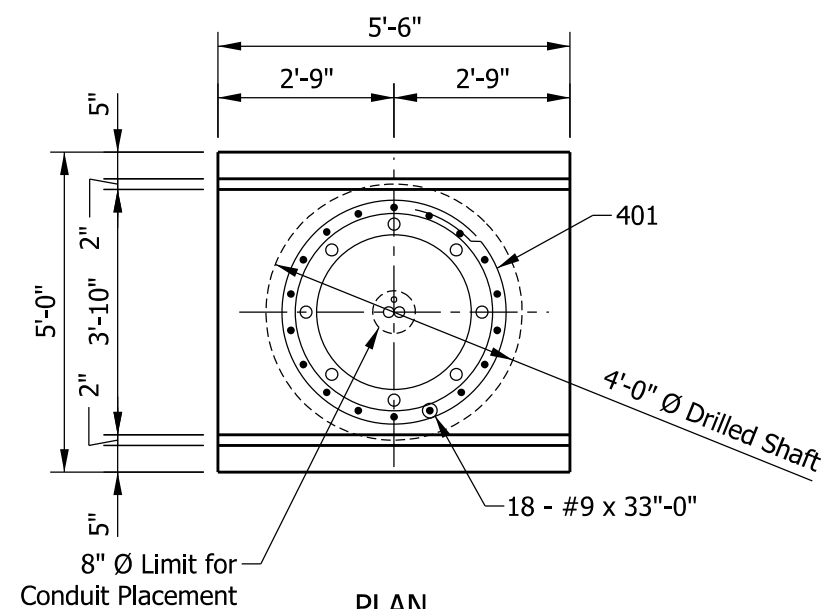
/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



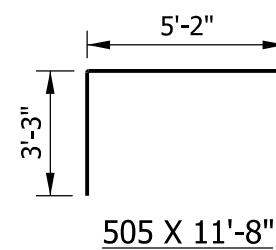
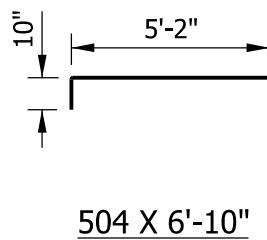
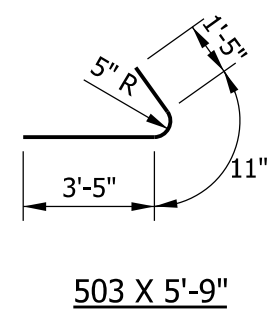
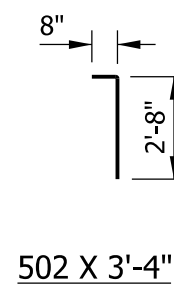
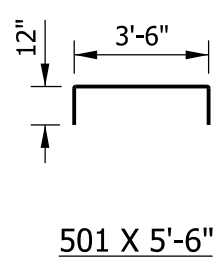
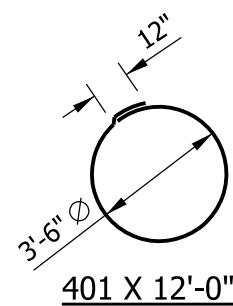
ELEVATION



SECTION P-P



PLAN



NOTES:

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.
- Thread and cap both ends of steel conduit.
- Surface seal top and sides of barrier railing to the pavement surface.

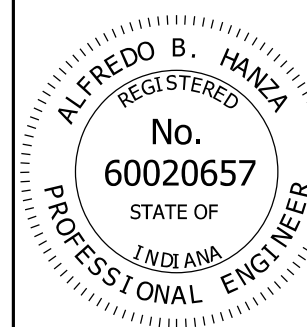
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	33'-0"	
Total #9			2020 LBS
501	6	5'-6"	
502	12	3'-4"	
503	12	5'-9"	
504	2	6'-10"	
505	8	11'-8"	
#5	4	5'-2"	
Total #5			281 LBS
401	31	12'-0"	
Total #4			248 LBS
Total Epoxy-Coated Reinforcing Bars			2549 LBS
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

INDIANA DEPARTMENT OF TRANSPORTATION

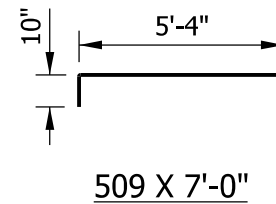
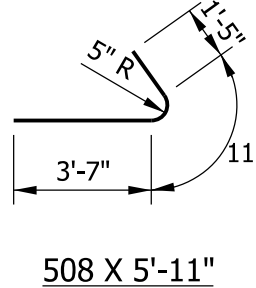
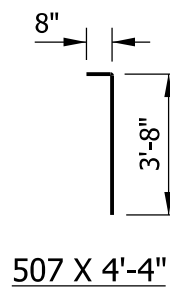
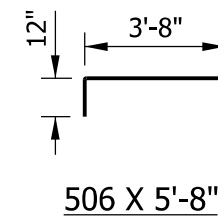
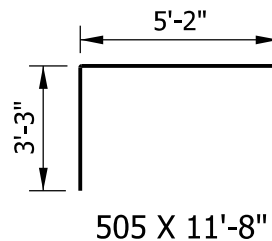
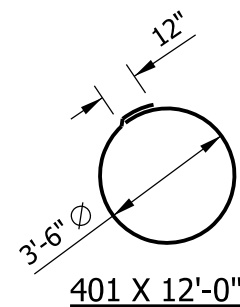
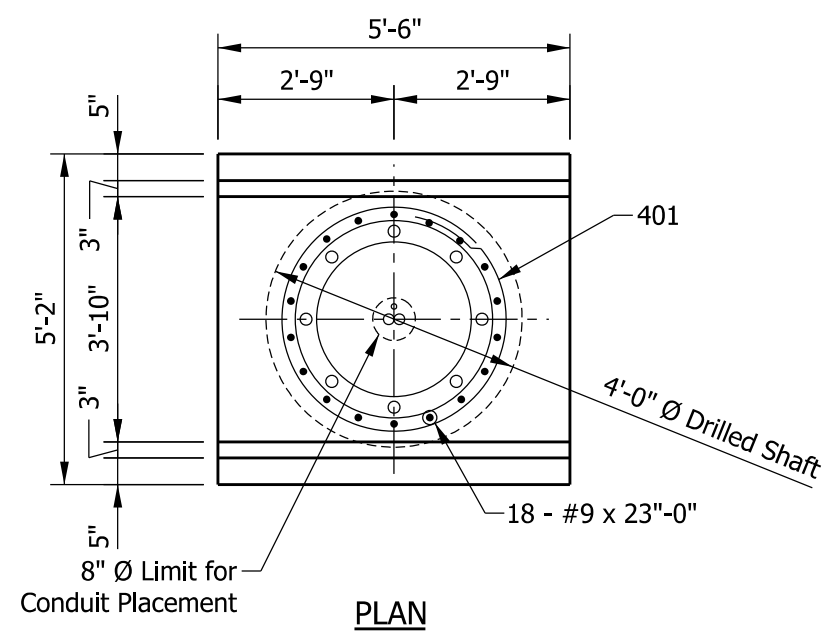
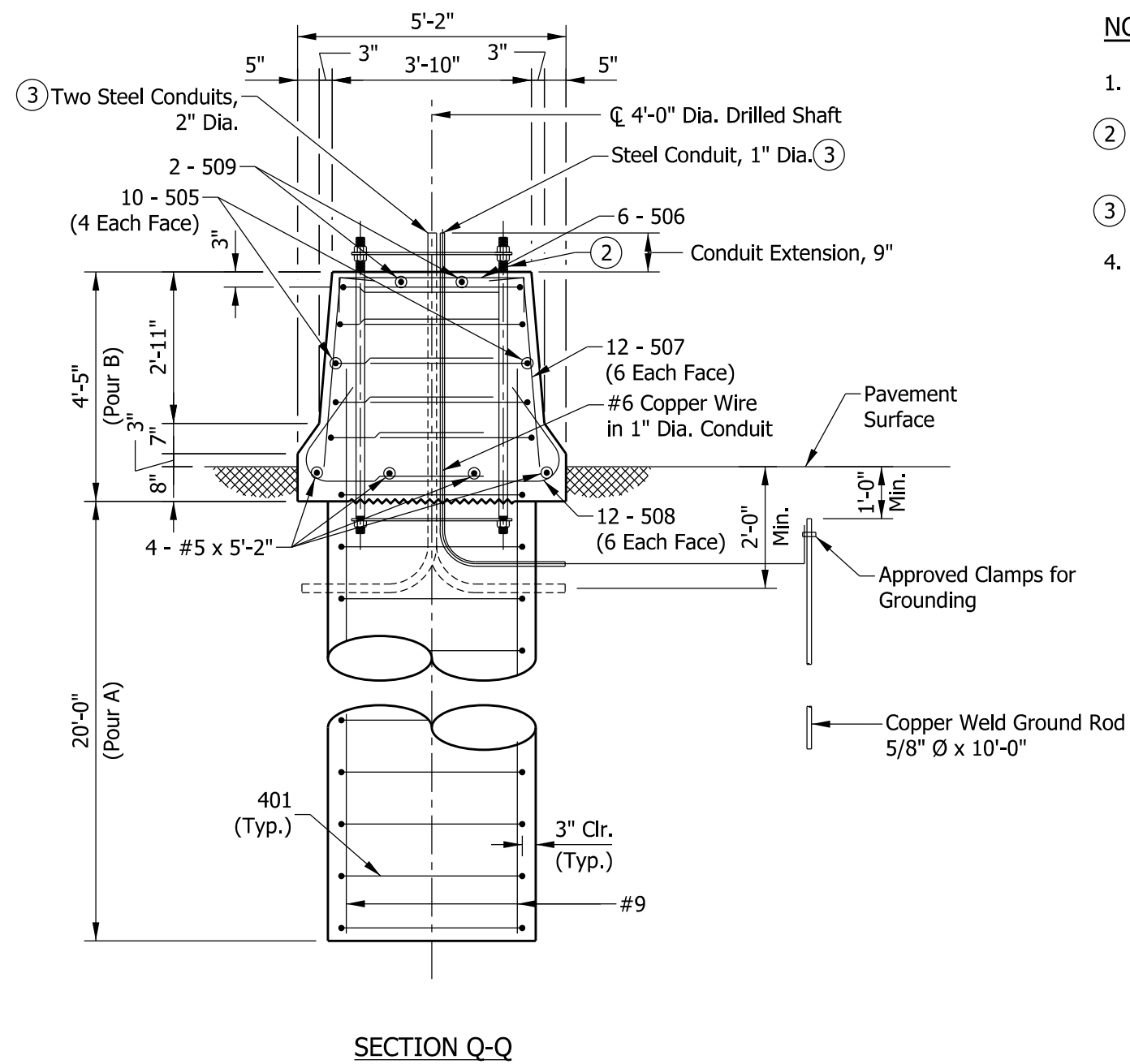
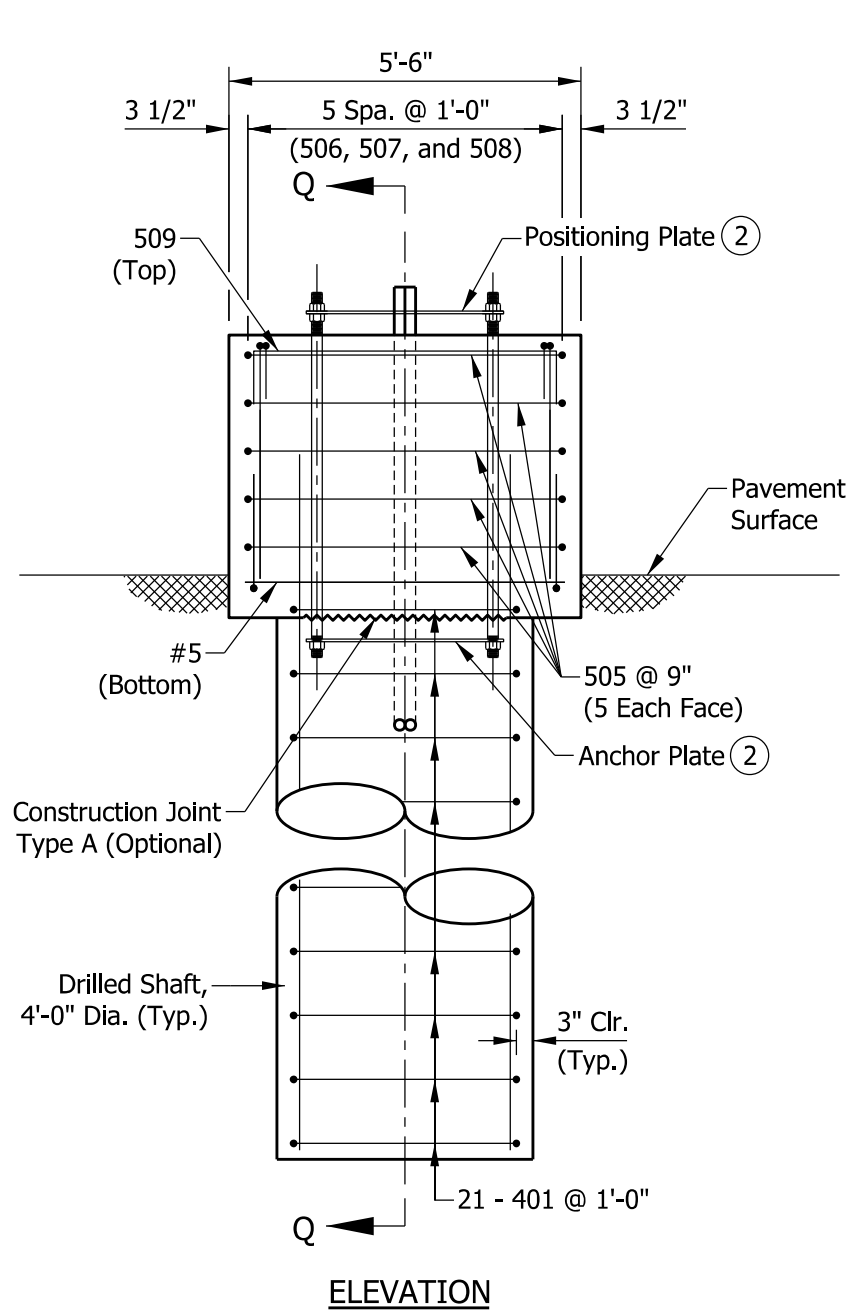
SIGN CANTILEVER STRUCTURE TYPE G, H, OR I  
FOUNDATION AT 33" CONCRETE BARRIER

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-16



/s/ Alfredo B. Hanza	03/26/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



## NOTES:

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.
- Thread and cap both ends of steel conduit.
- Surface seal top and sides of barrier railing to the pavement surface.

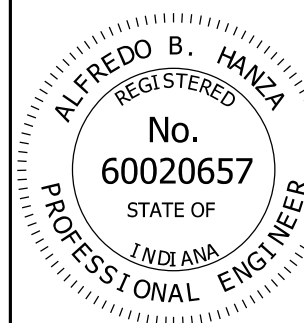
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	23'-0"	
Total #9			1408 LBS
505	10	11'-8"	
506	6	5'-8"	
507	12	4'-4"	
508	12	5'-11"	
509	2	7'-0"	
#5	4	5'-2"	
Total #5			322 LBS
401	21	12'-0"	
Total #4			168 LBS
Total Epoxy-Coated Reinforcing Bars			1898 LBS
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

## INDIANA DEPARTMENT OF TRANSPORTATION

### SIGN CANTILEVER STRUCTURE TYPE A OR B FOUNDATION AT 45" CONCRETE BARRIER

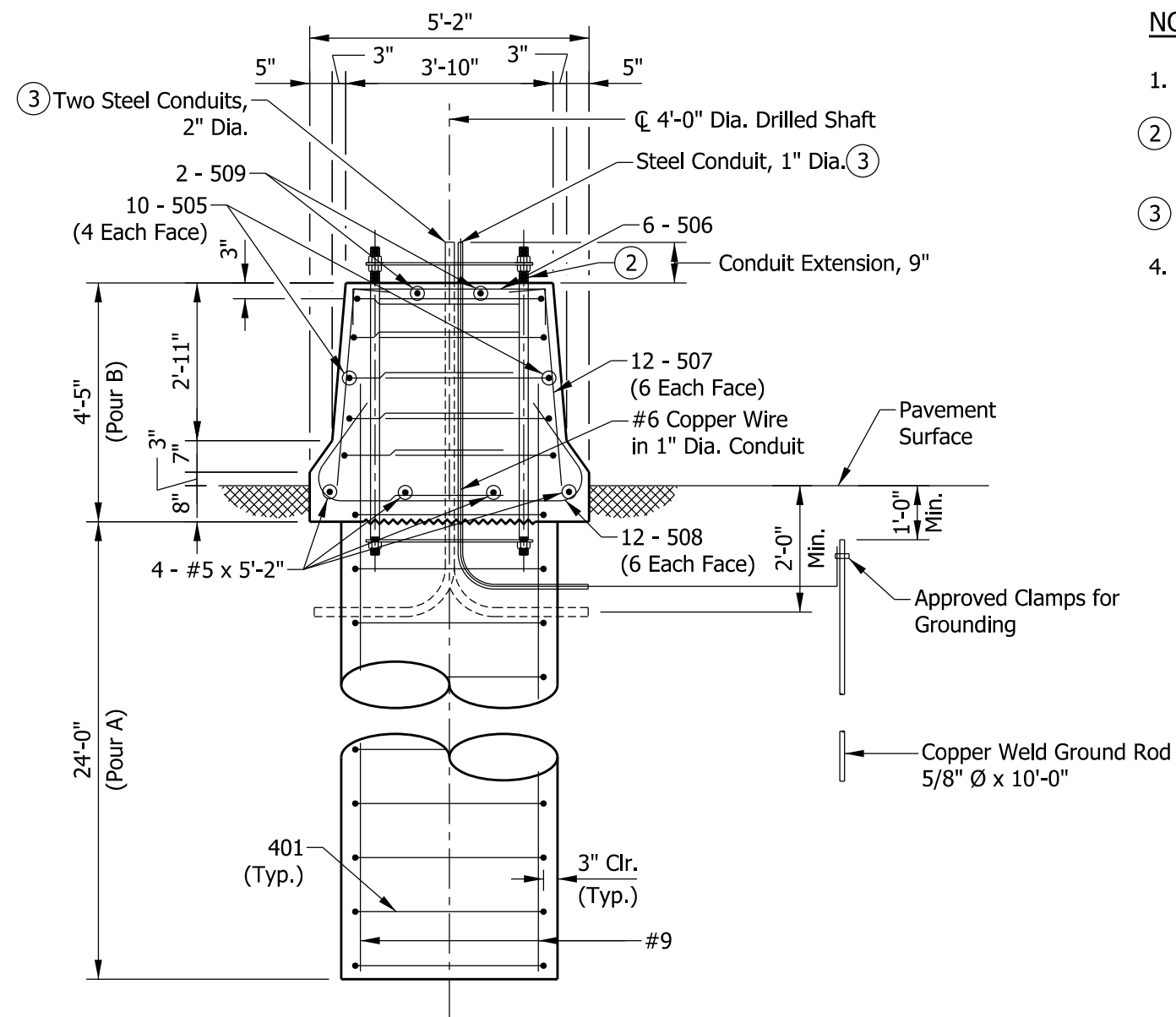
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-17

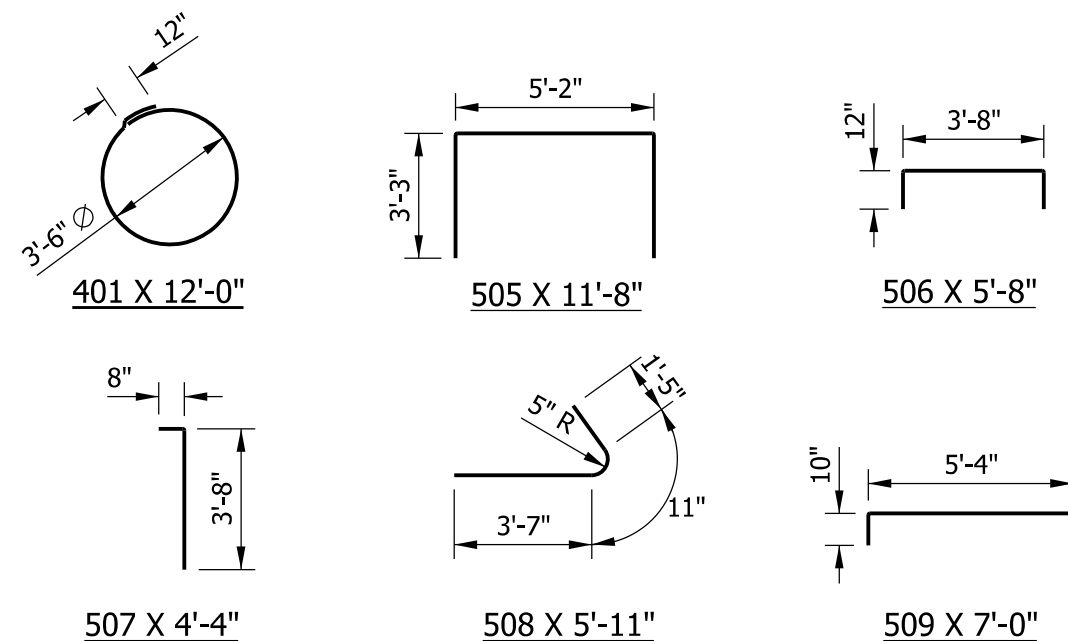


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE


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

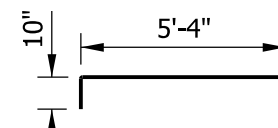
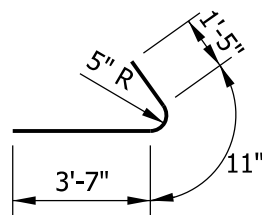
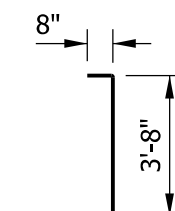
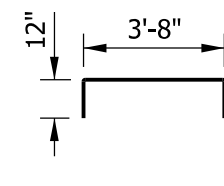
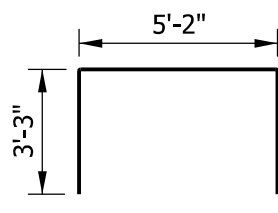
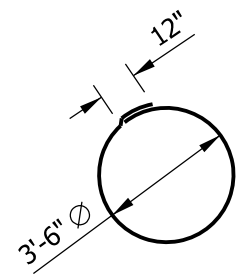
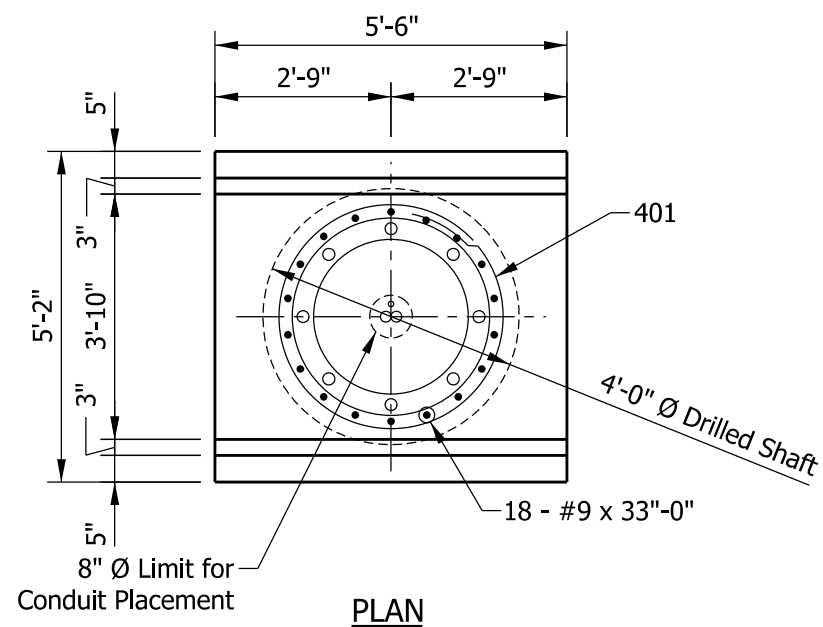
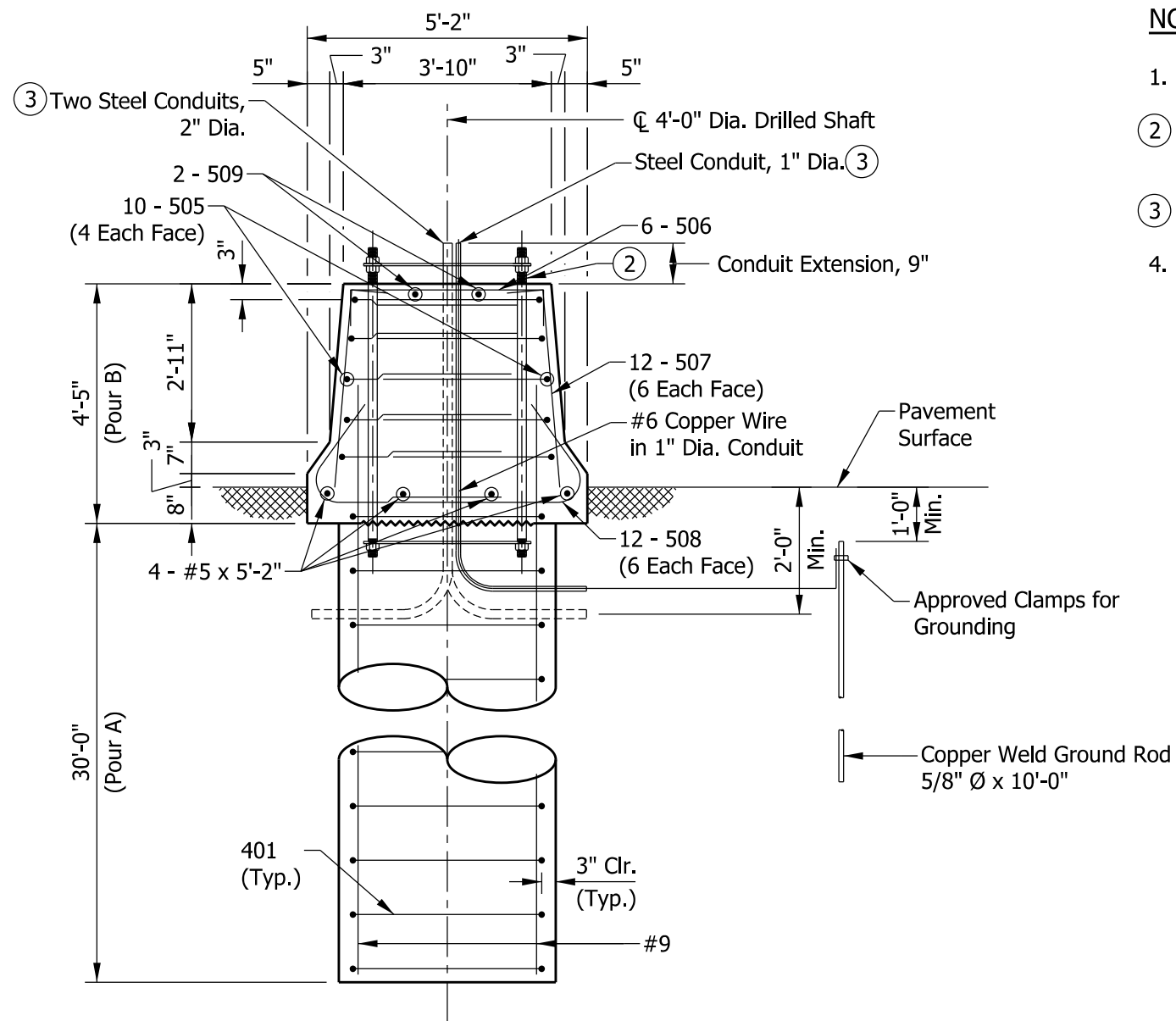
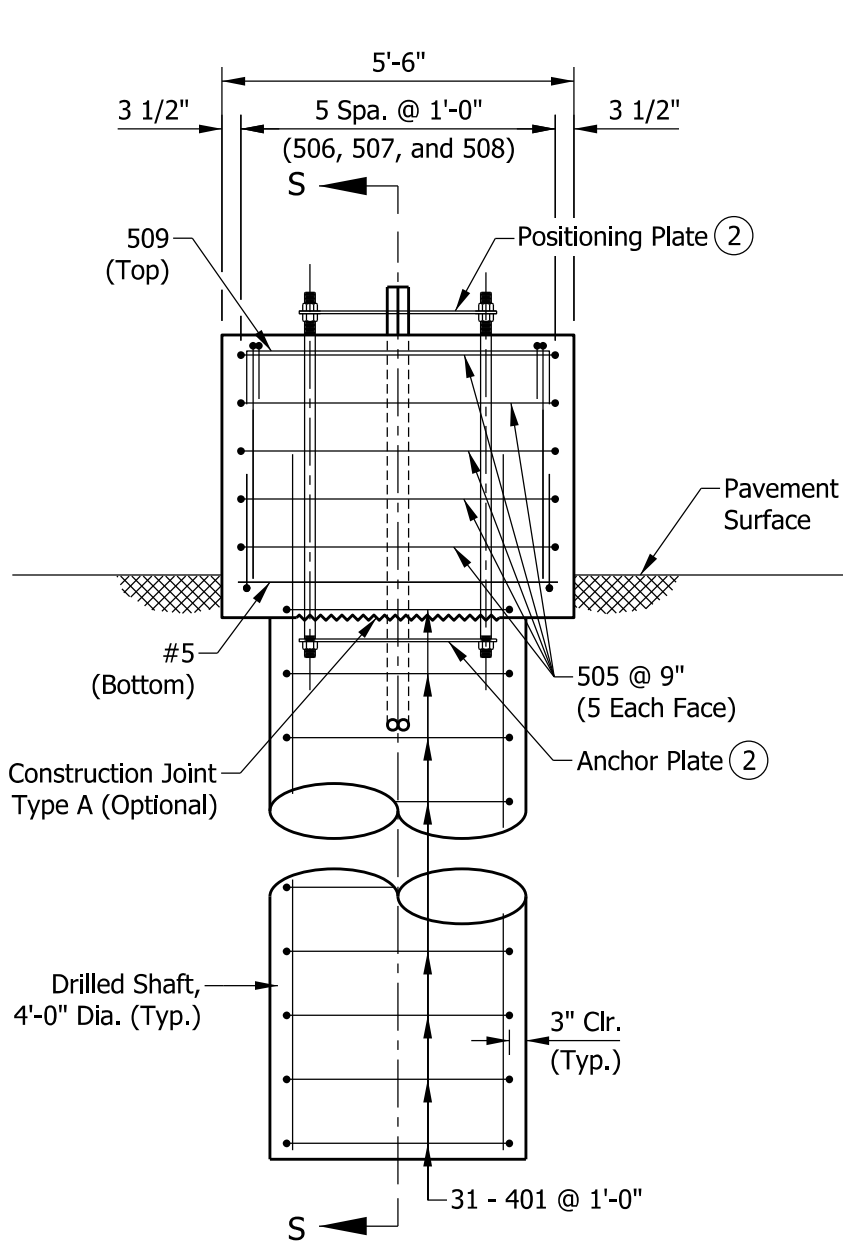


SECTION R-R



BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	27'-0"	
Total #9			1652 LBS
505	10	11'-8"	
506	6	5'-8"	
507	12	4'-4"	
508	12	5'-11"	
509	2	7'-0"	
#5	4	5'-2"	
Total #5			322 LBS
401	25	12'-0"	
Total #4			200 LBS
Total Epoxy-Coated Reinforcing Bars			1848 LBS
CONCRETE, CLASS A			
Pour A			11.2 CYS
Pour B			4.0 CYS
Total Concrete, Class A			15.2 CYS
MISCELLANEOUS			
Surface Seal			7.1 SYS

	<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>
	DESIGN STANDARDS ENGINEER	DATE
	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>
	CHIEF ENGINEER	DATE



## NOTES:

- See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
- See Standard Drawing E 802-SCLS-12 for anchor and positioning plate and anchor bolt details.
- Thread and cap both ends of steel conduit.
- Surface seal top and sides of barrier railing to the pavement surface.

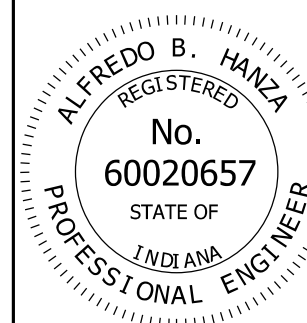
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	33'-0"	
Total #9			2020 LBS
505	10	11'-8"	
506	6	5'-8"	
507	12	4'-4"	
508	12	5'-11"	
509	2	7'-0"	
#5	4	5'-2"	
Total #5			322 LBS
401	31	12'-0"	
Total #4			248 LBS
Total Epoxy-Coated Reinforcing Bars			2698 LBS
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 SYS

## INDIANA DEPARTMENT OF TRANSPORTATION

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

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-19

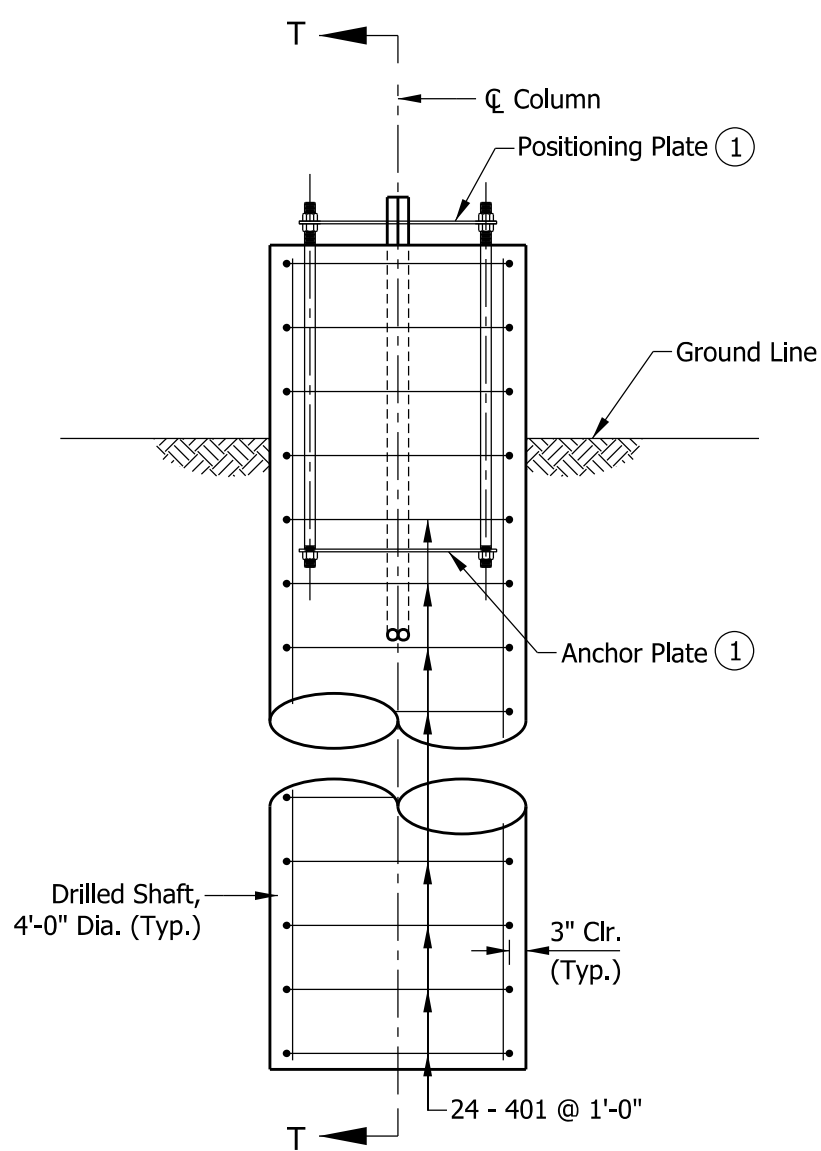


/s/ Alfredo B. Hanza 02/05/13

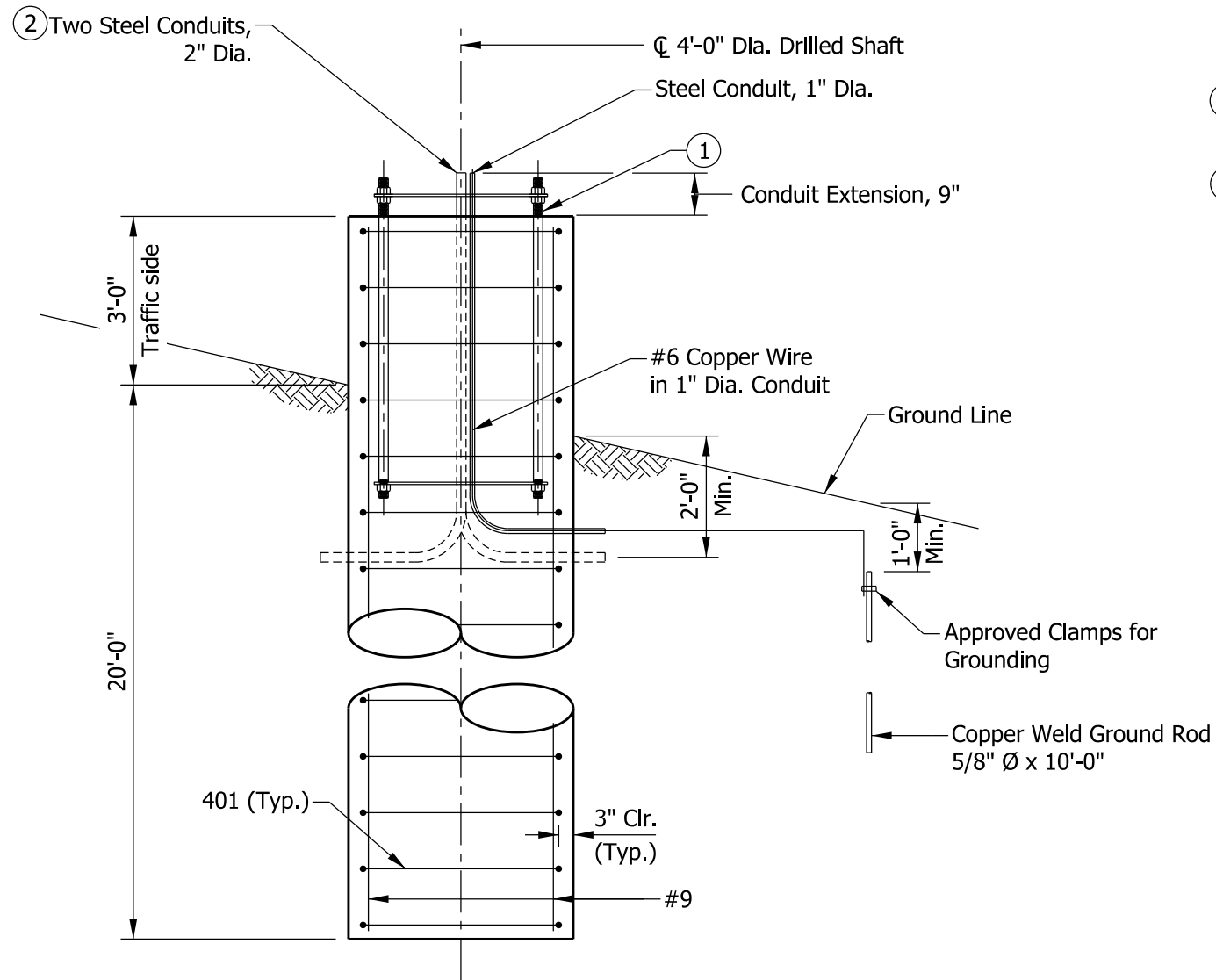
DESIGN STANDARDS ENGINEER DATE

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

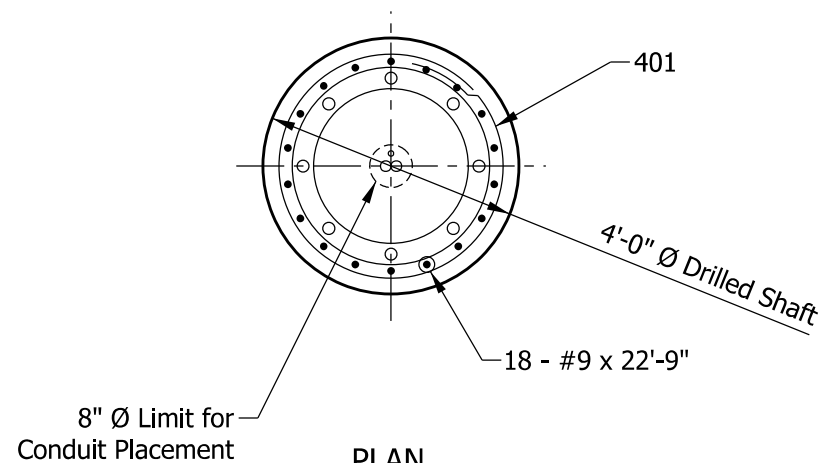
CHIEF ENGINEER DATE



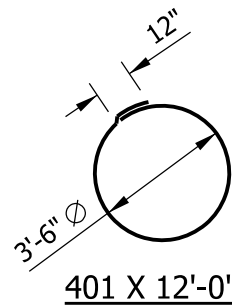
**ELEVATION**



**SECTION T-T**



**PLAN**



**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.

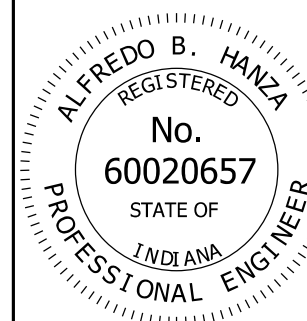
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	22'-9"	
Total #9			1392 LBS
401	24	12'-0"	
Total #4			192 LBS
Total Epoxy-Coated Reinforcing Bars			1584 LBS
MISCELLANEOUS			
Concrete, Class A			10.7 CYS
Surface Seal			4.3 SYS

**INDIANA DEPARTMENT OF TRANSPORTATION**

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

**SEPTEMBER 2013**

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

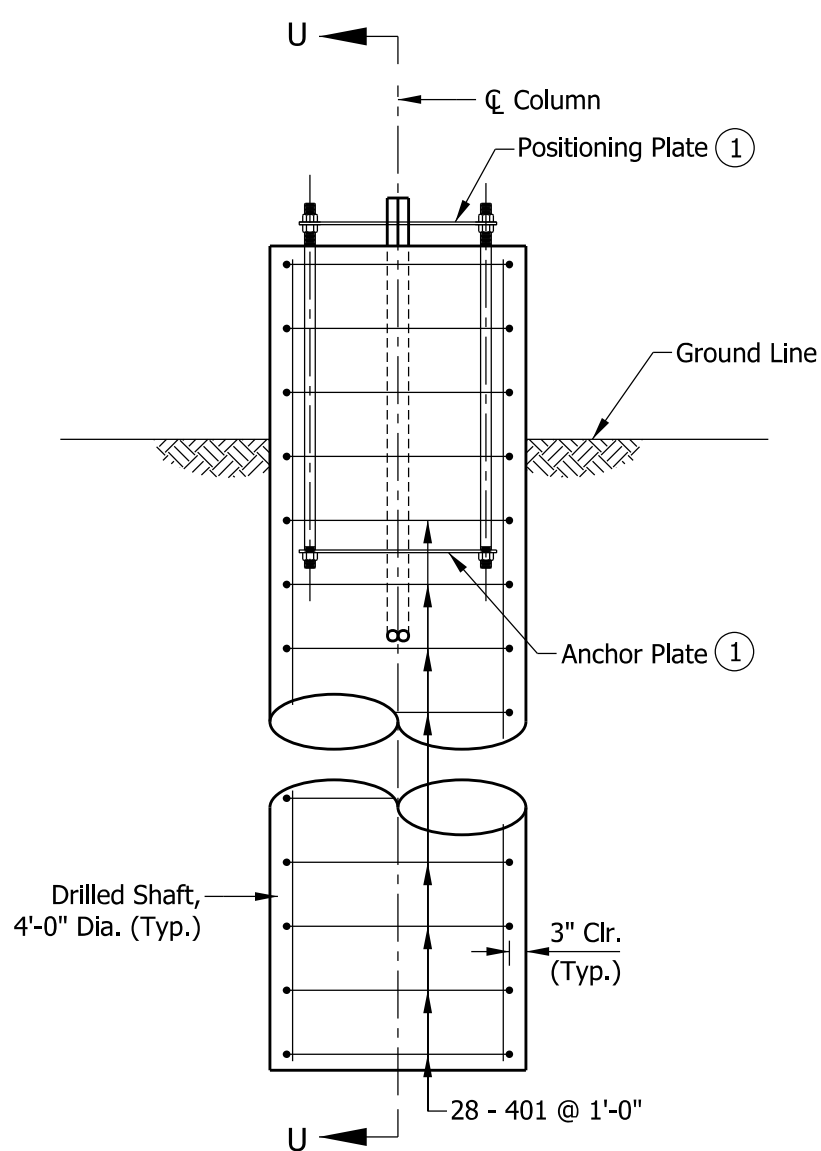


/s/ Alfredo B. Hanza 02/05/13

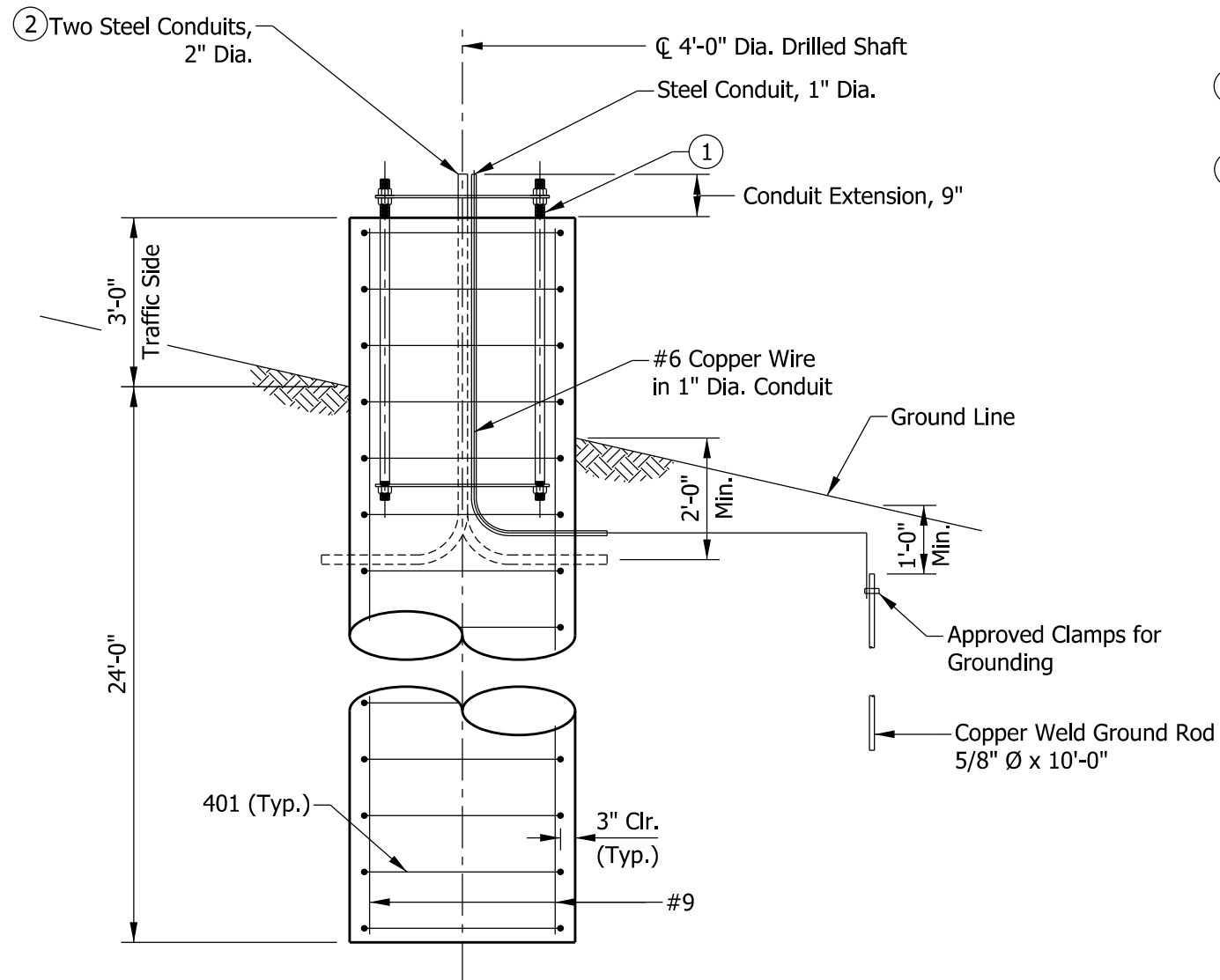
DESIGN STANDARDS ENGINEER DATE

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

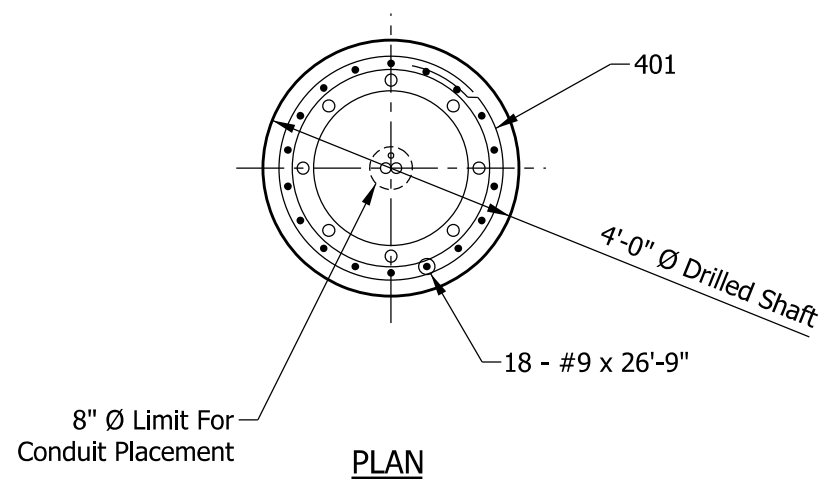
CHIEF ENGINEER DATE



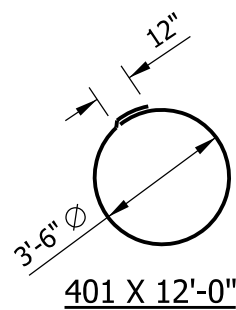
**ELEVATION**



**SECTION U-U**



**PLAN**



**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.

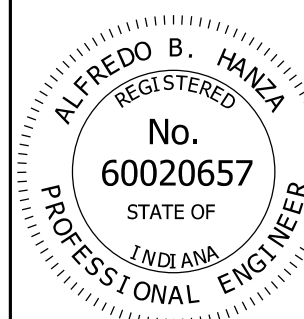
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	26'-9"	
Total #9			1637 LBS
401	28	12'-0"	
Total #4			224 LBS
Total Epoxy-Coated Reinforcing Bars			1861 LBS
MISCELLANEOUS			
Concrete, Class A			12.6 CYS
Surface Seal			4.3 SYS

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE TYPE C, D, E, OR F  
FOUNDATION, 36" HEIGHT**

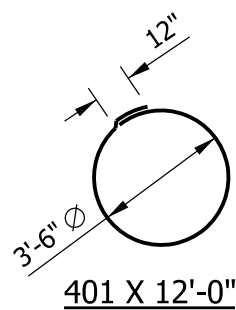
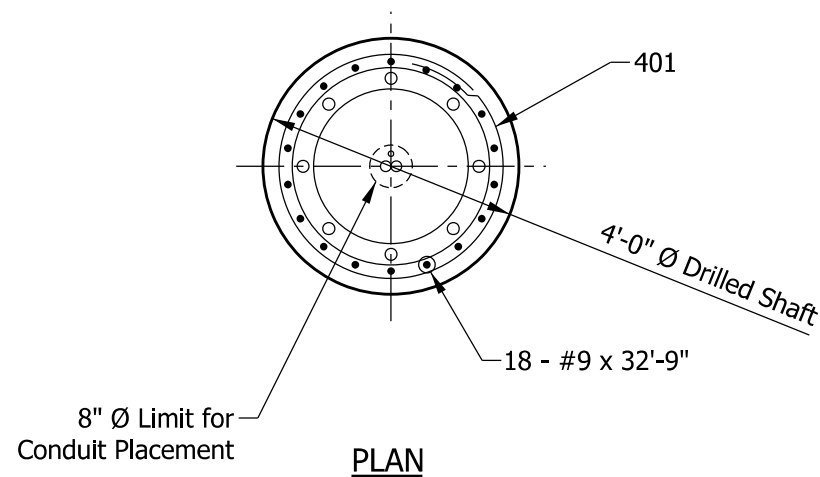
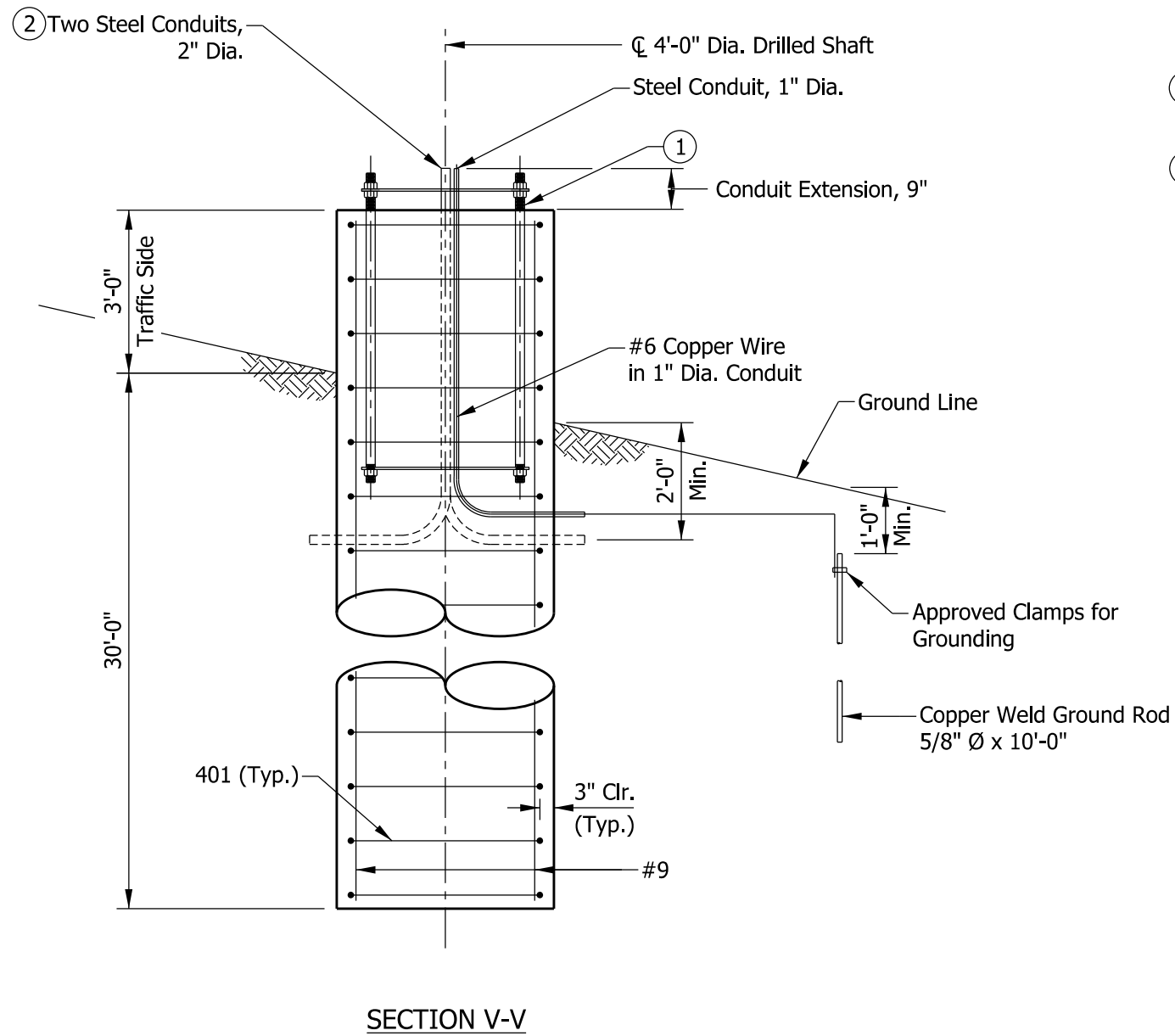
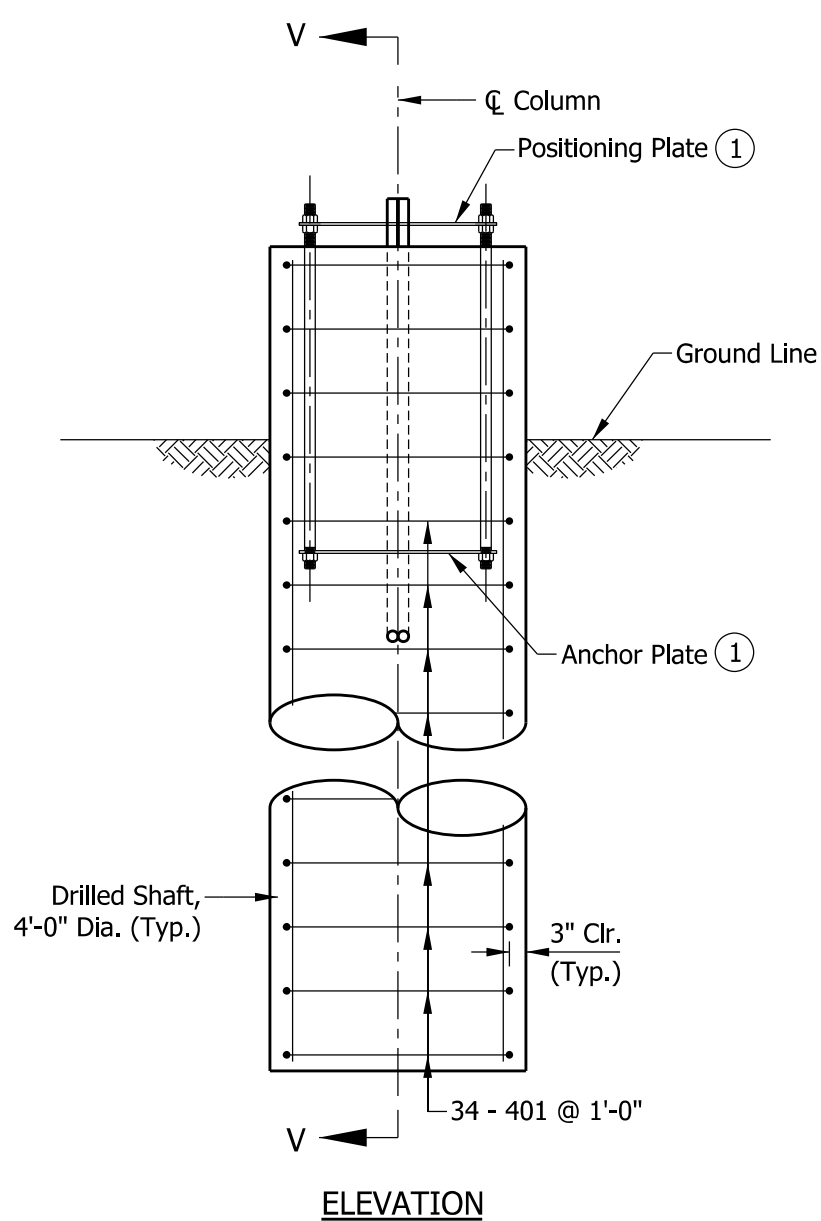
**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 802-SCLS-21**



/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 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.

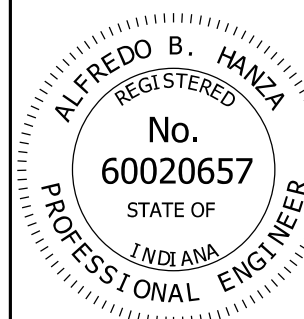
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	32'-9"	
Total #9			2004 LBS
401	34	12'-0"	
Total #4			273 LBS
Total Epoxy-Coated Reinforcing Bars			2277 LBS
MISCELLANEOUS			
Concrete, Class A			15.4 CYS
Surface Seal			4.3 SYS

INDIANA DEPARTMENT OF TRANSPORTATION

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

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-22



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

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

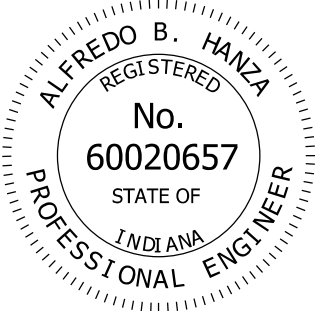
INDEX	
SHEET NO.	SUBJECT
1	Drawing Index
2	Plan, Elevation, Member Sizes, and Camber
3	Quadri-Chord and Flange Details
4	Upper Chords Connection Details
5	Lower Chords Connection and Wire Outlet Details
6	Base Plate, Anchor Bolt, and Metal Skirt Details
7	Handhole and I.D. Tag Details
8	Foundation at 33" Concrete Barrier
9	Foundation at 45" Concrete Barrier

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY  
DRAWING INDEX

SEPTEMBER 2014

STANDARD DRAWING NO.     E 802-SCSB-01



/s/ *Alfredo B. Hanza*

DESIGN STANDARDS ENGINEER

09/20/13

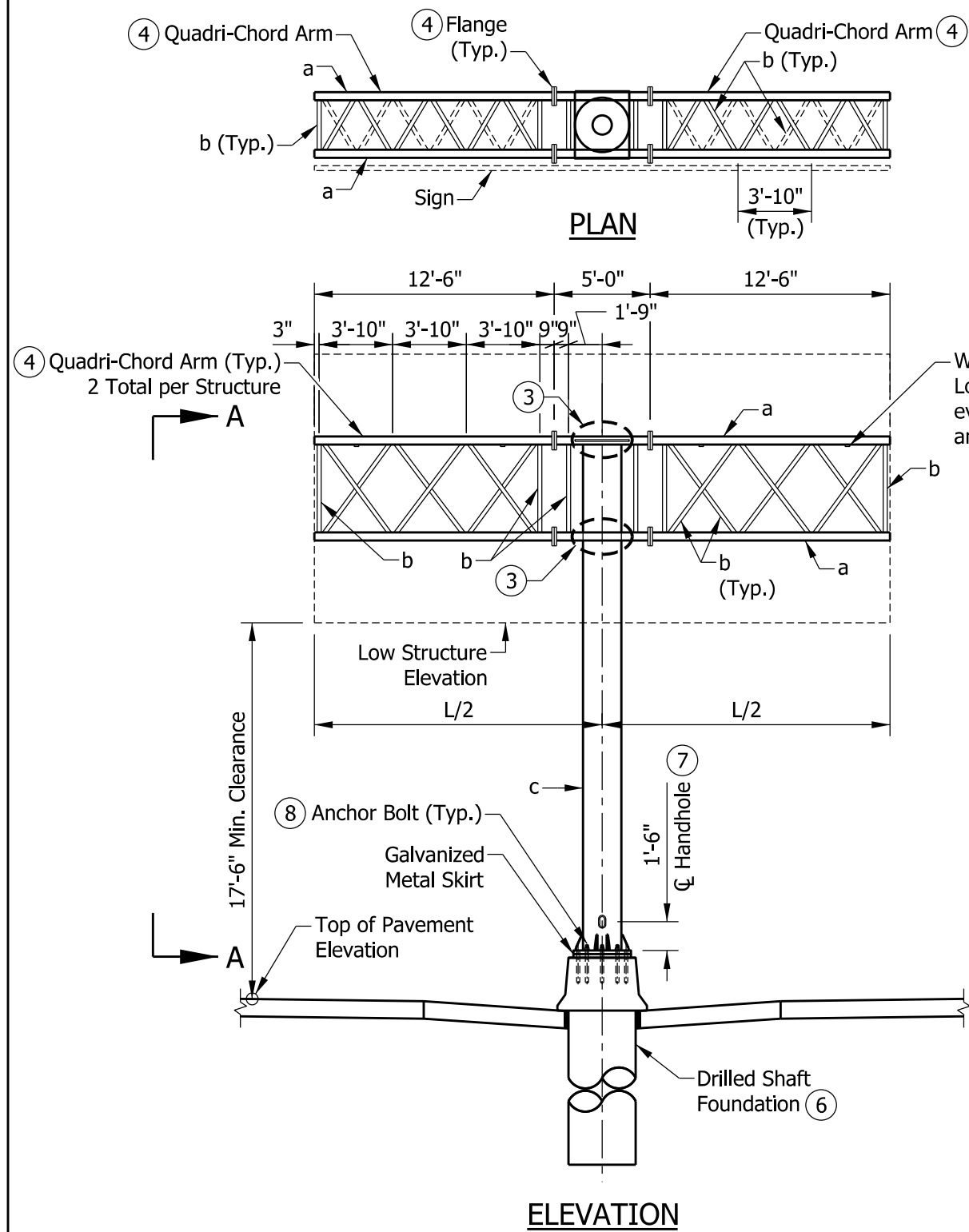
DATE

/s/ *Mark A. Miller*

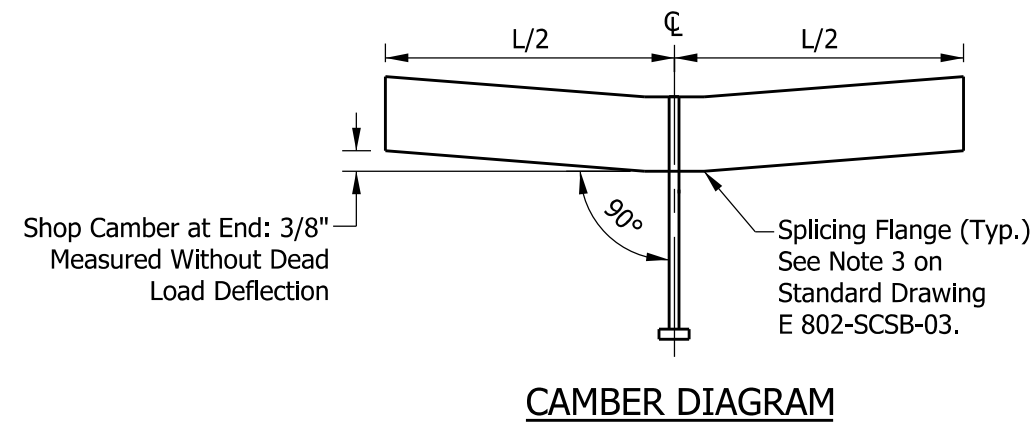
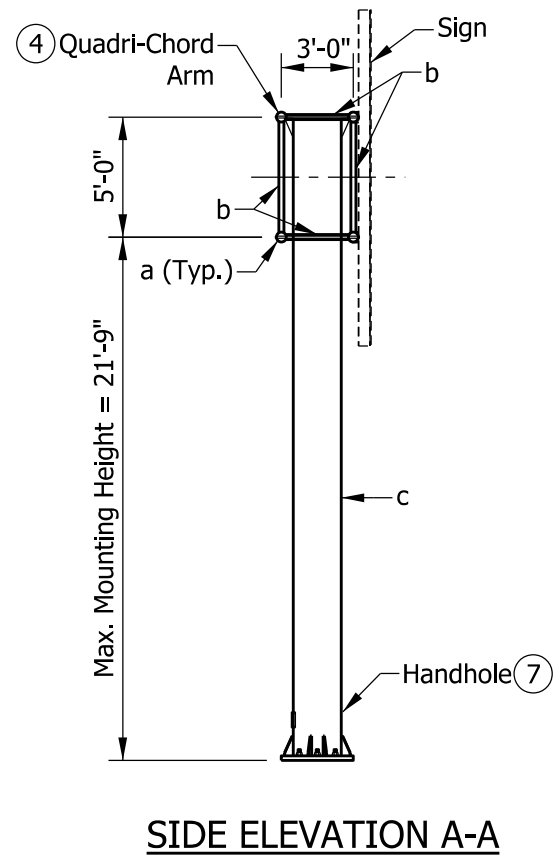
CHIEF ENGINEER

09/26/13

DATE



MEMBER SIZES							
MAX SPAN L/2 (FT)	MAX SIGN AREA (SF)	CHORD a		VERT./HORIZ./DIAG. b		COLUMN c	
		O.D. (IN.)	WALL THICK. (IN.)	O.D. (IN.)	WALL THICK. (IN.)	O.D. (IN.)	WALL THICK. (IN.)
15	400	5.563	0.375	2.875	0.276	24.000	0.688



- NOTES:**
- Maximum deviation of any chord from a straight line shall be 1/8".
  - All butterfly structure members are steel.
  - See Standard Drawings E 802-SCSB-04 and -05 for upper and lower chord connection details.
  - See Standard Drawing E 802-SCSB-03 for quadri-chord and flange details.
  - See Standard Drawing E 802-SCSB-05 for wire outlet detail.
  - See Standard Drawings E 802-SCSB-08 and -09 for foundation details.
  - See Standard Drawing E 802-SCSB-07 for handhole and I.D. tag details.
  - See Standard Drawing E 802-SCSB-06 for base plate, anchor bolt, and metal skirt details.

- LEGEND:**
- a - Chord Member
  - b - Interior Member  
Verticals 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

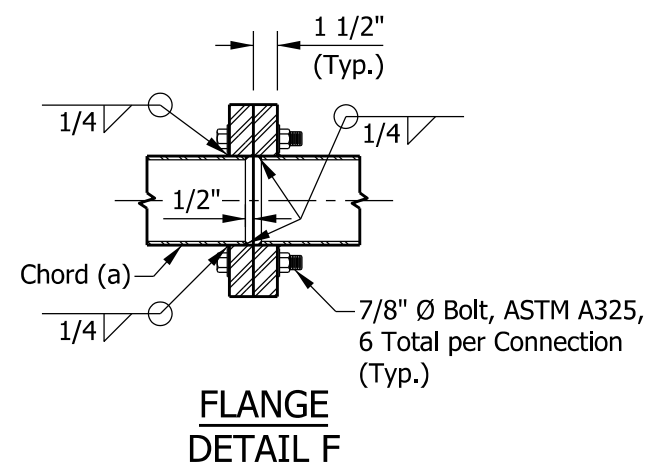
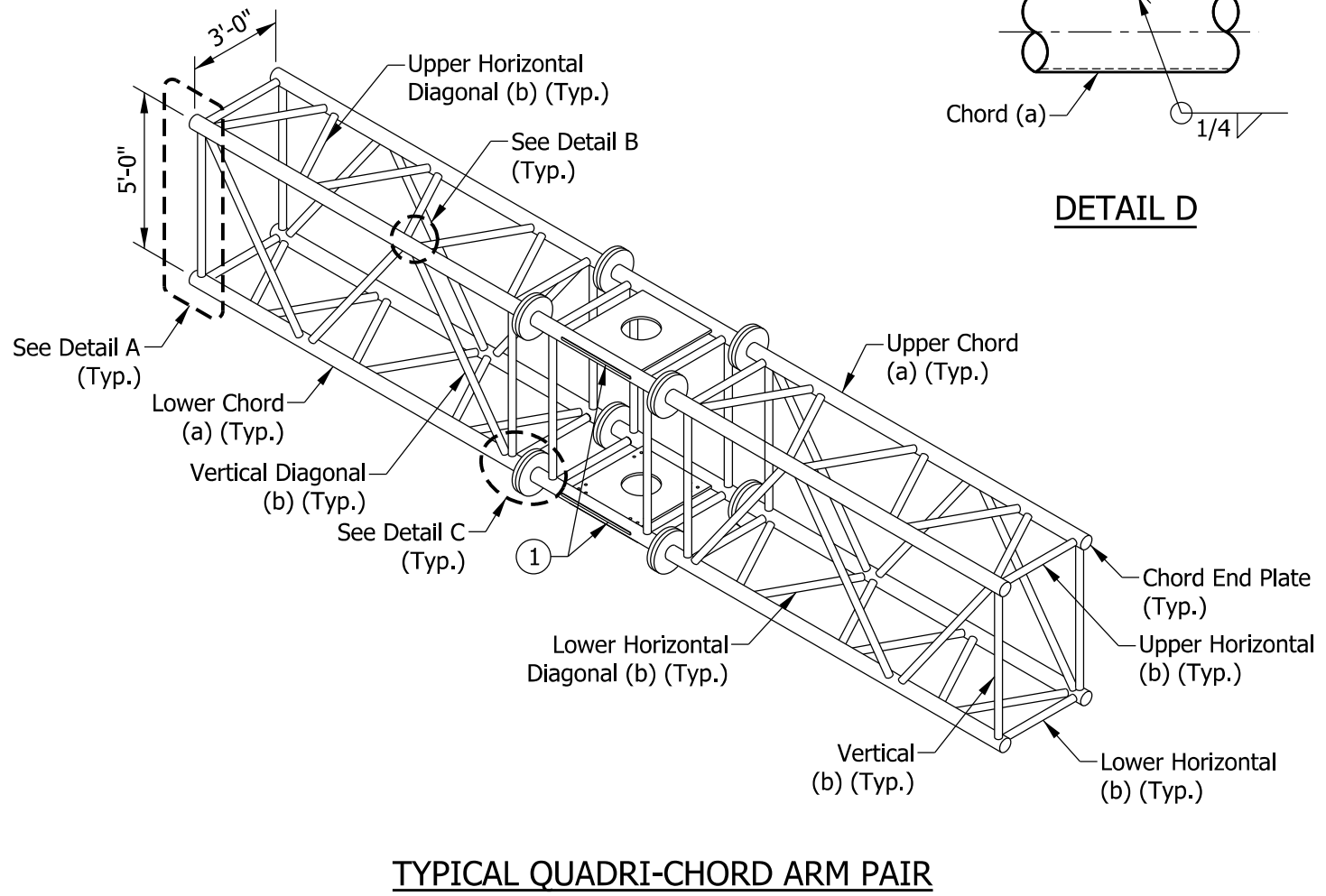
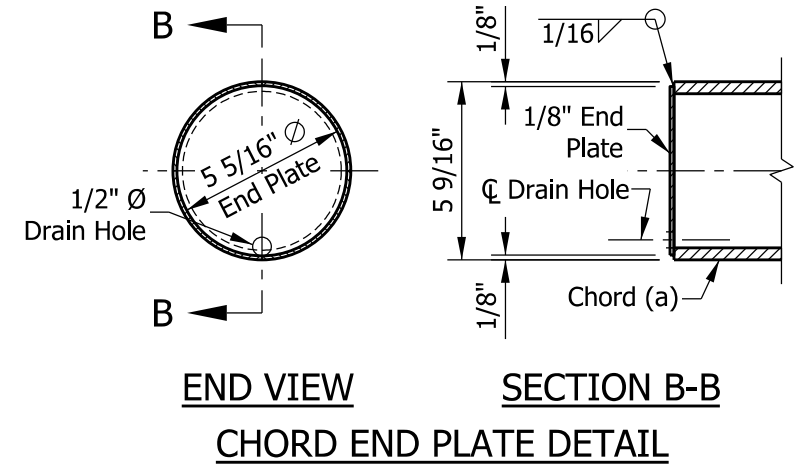
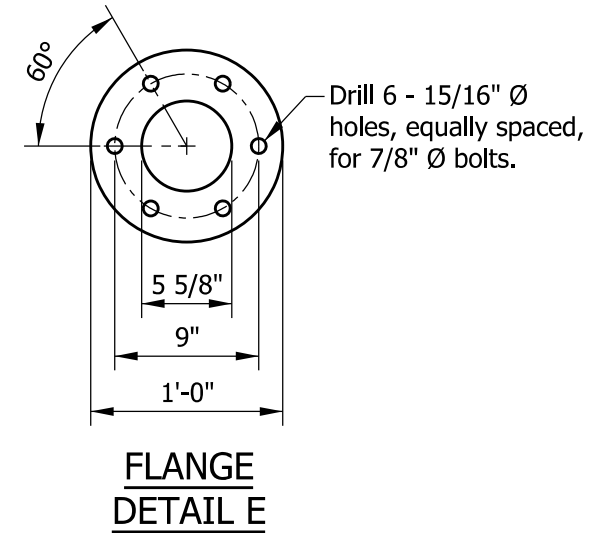
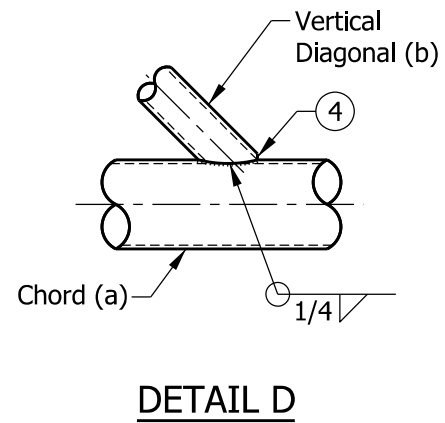
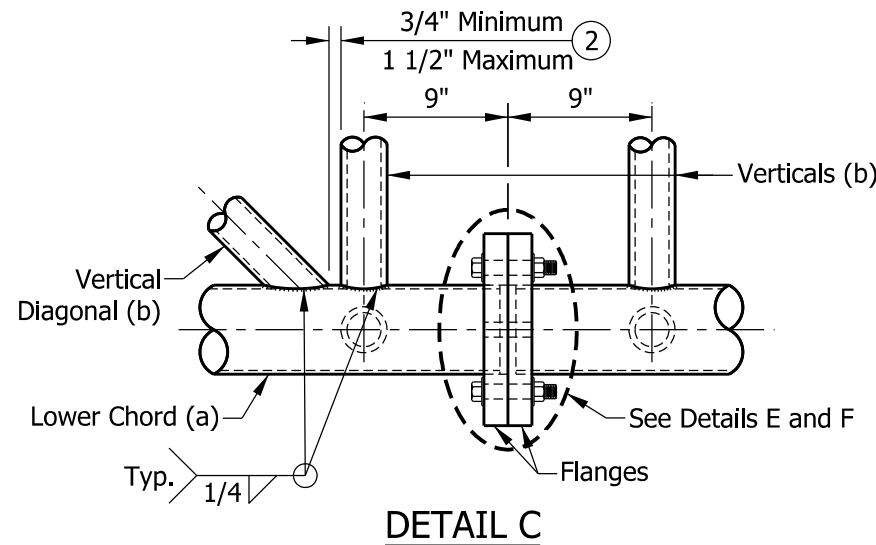
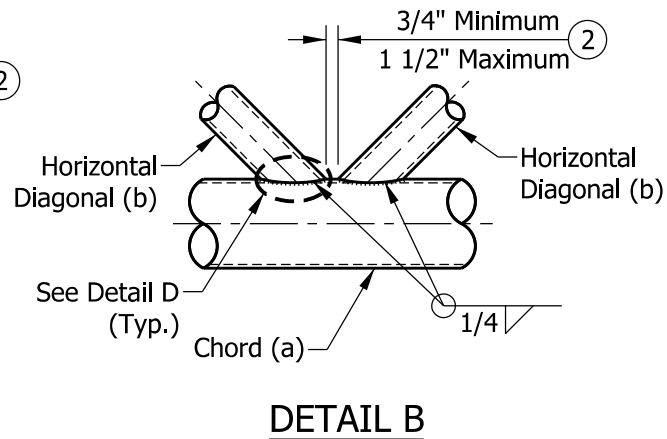
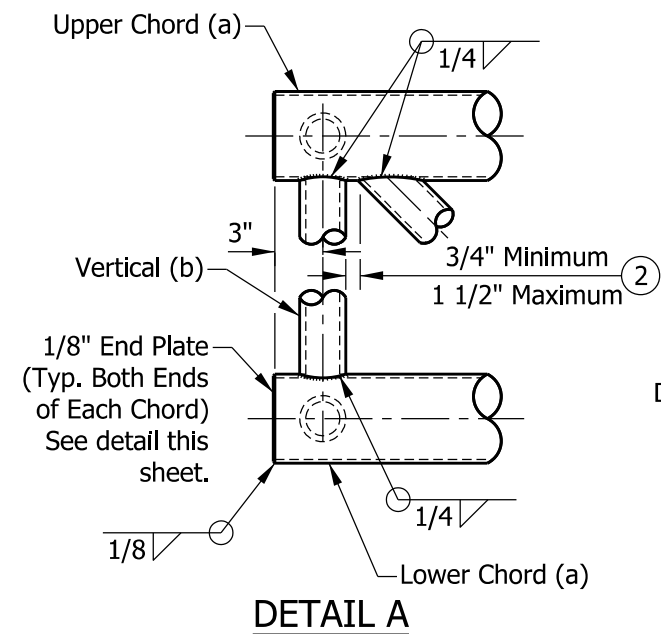
SIGN CANTILEVER STRUCTURE BUTTERFLY  
PLAN, ELEVATION, MEMBER SIZE, AND CAMBER

SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-02

/s/ Alfredo B. Hanza 09/20/13  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/26/13  
CHIEF ENGINEER DATE



## NOTES:

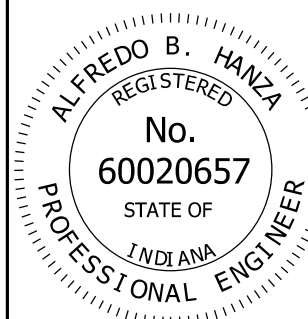
- ① See Standard Drawings E 802-SCSB-04 and -05 for upper and lower chords connection details.
- ② Diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a 3/4" minimum to 1 1/2" maximum clearance between any diagonal and any vertical 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

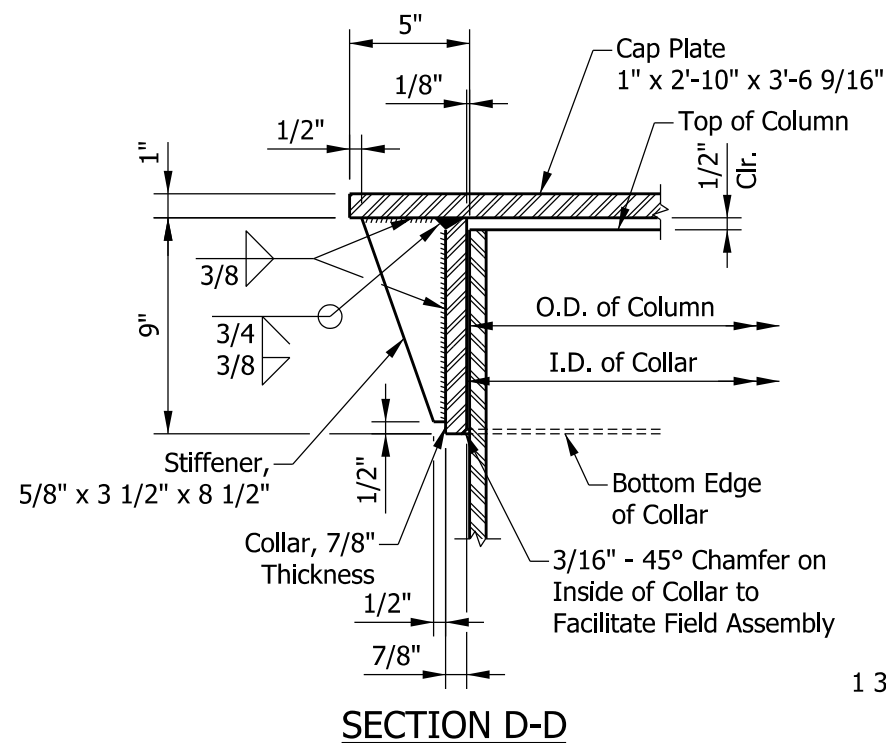
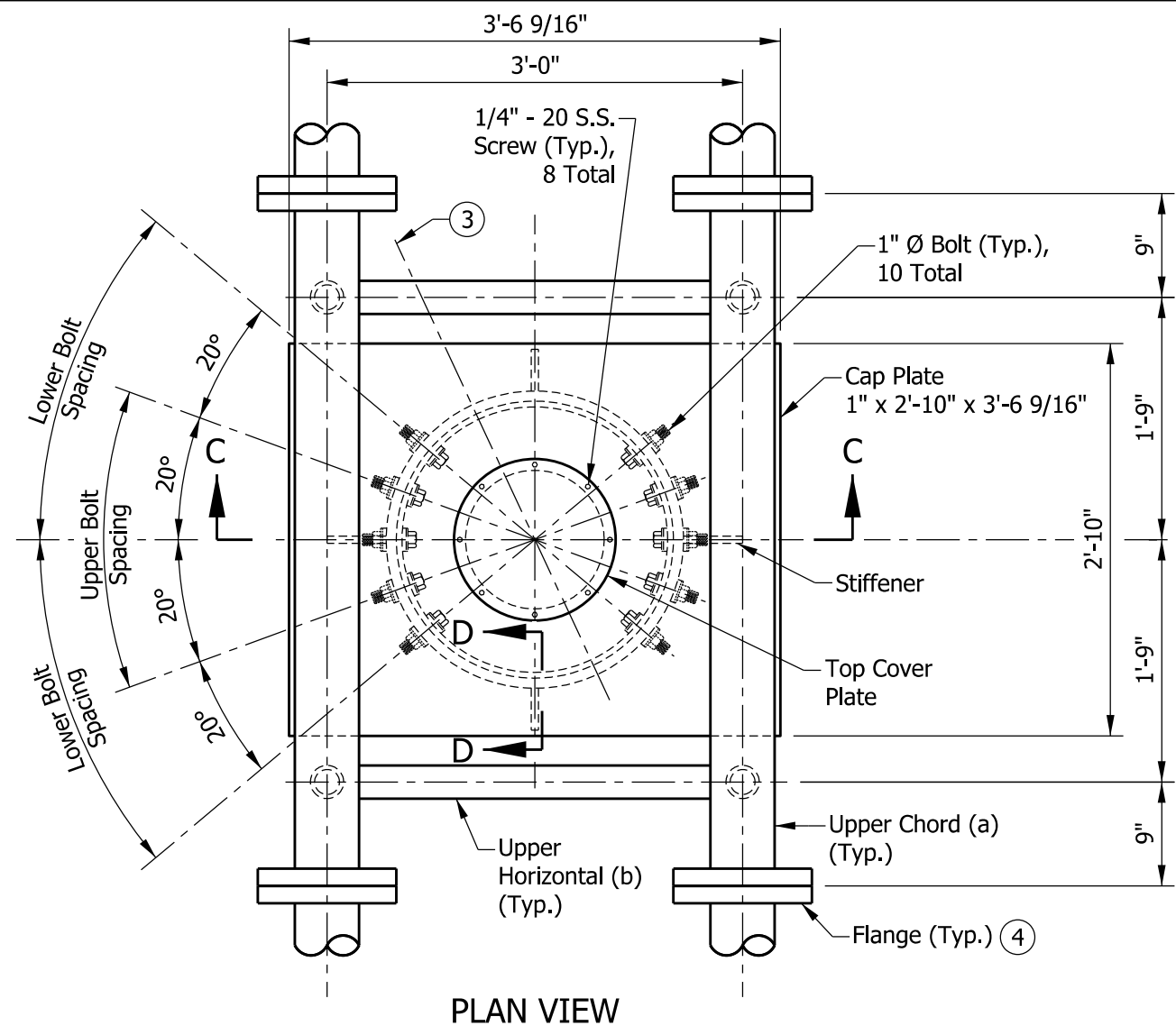
SIGN CANTILEVER STRUCTURE BUTTERFLY  
QUADRI-CHORD AND FLANGE DETAILS

SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-03

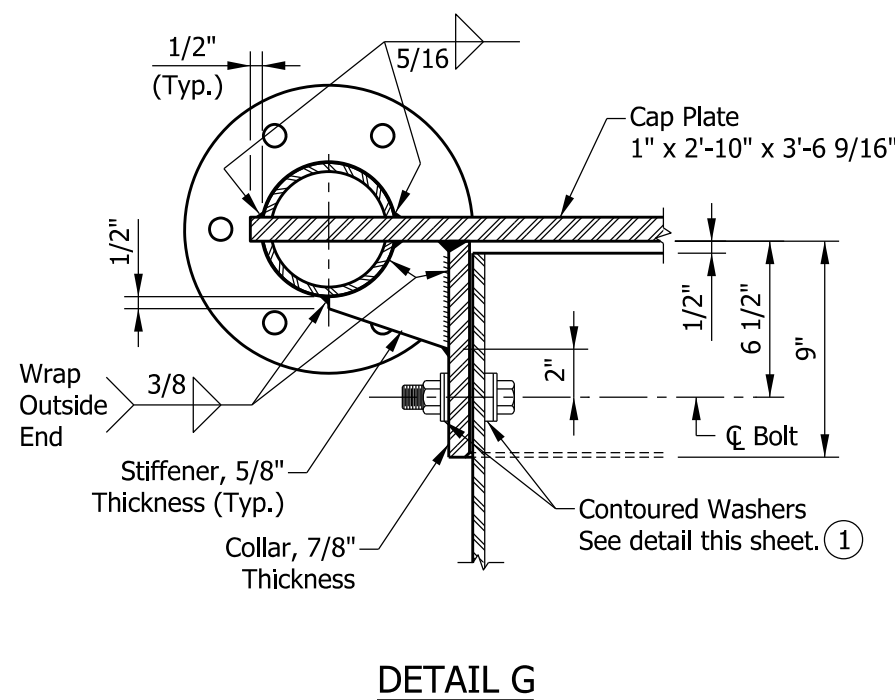
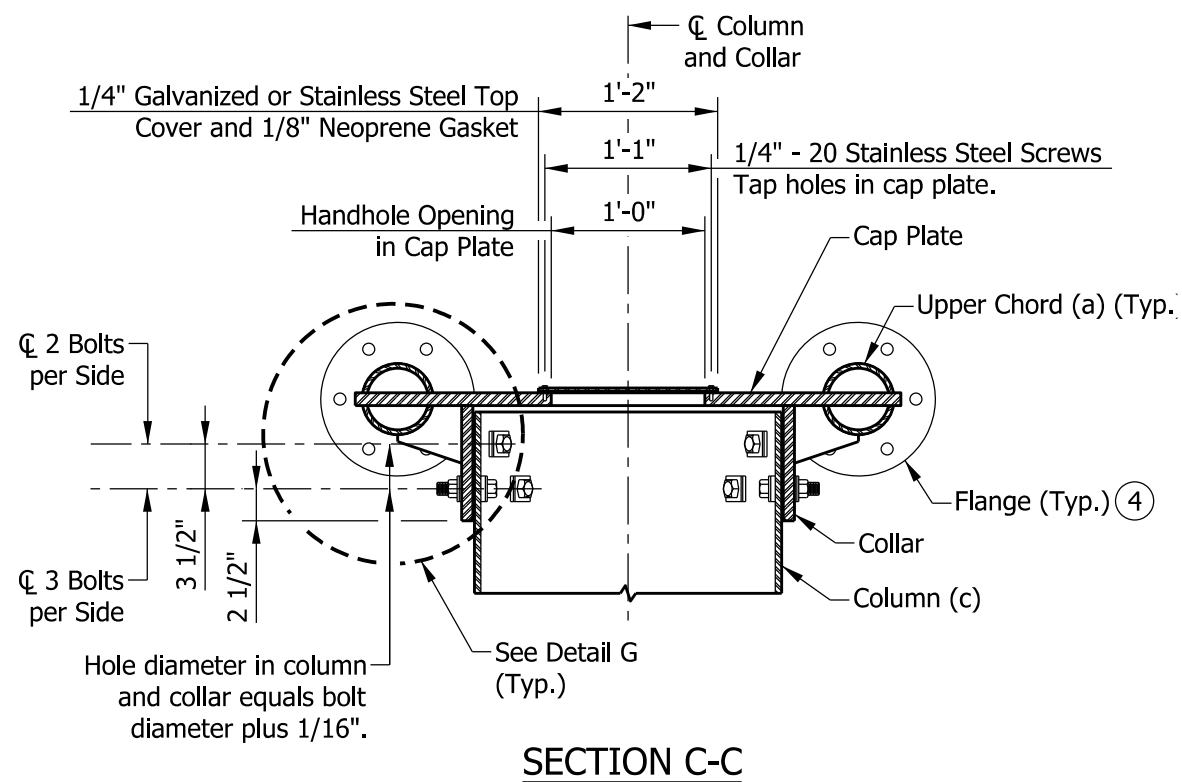
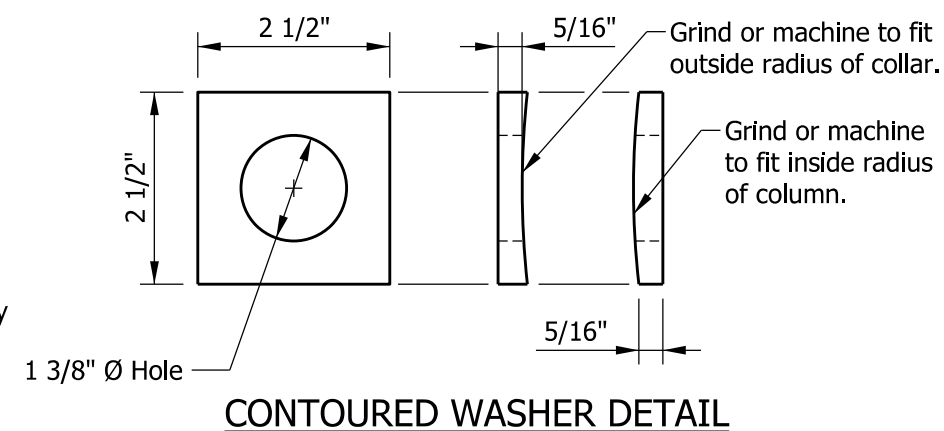


/s/ Alfredo B. Hanza	09/20/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	09/26/13
CHIEF ENGINEER	DATE



### NOTES:

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" ( $\pm 1/16"$ ). 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%.
- ④ See Standard Drawing E 802-SCSB-03 for flange details.

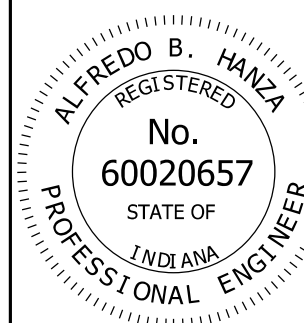


INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY  
UPPER CHORDS CONNECTION

SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-04

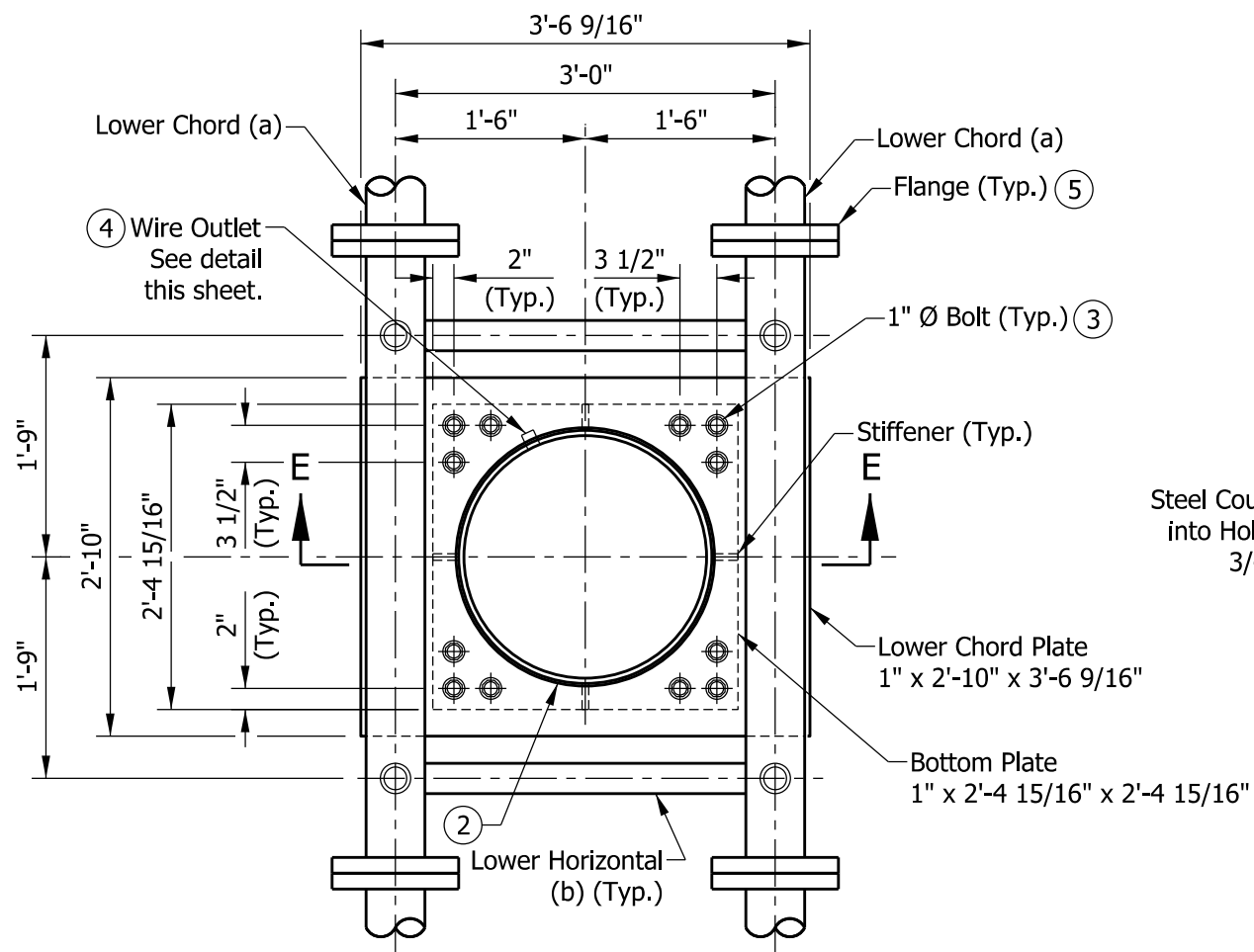


/s/ Alfredo B. Hanza 09/20/13

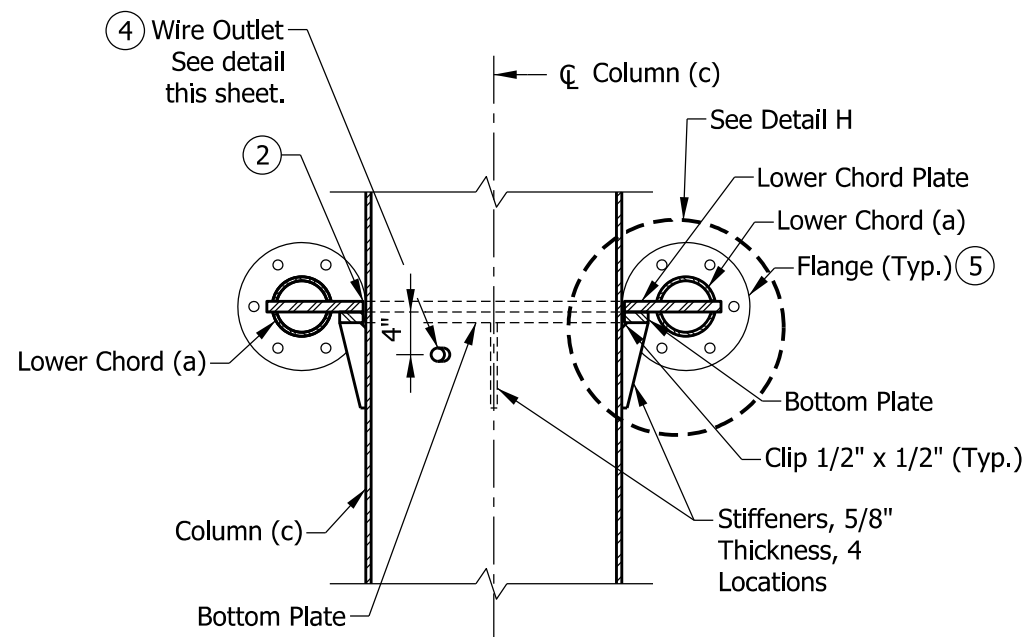
DESIGN STANDARDS ENGINEER DATE

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

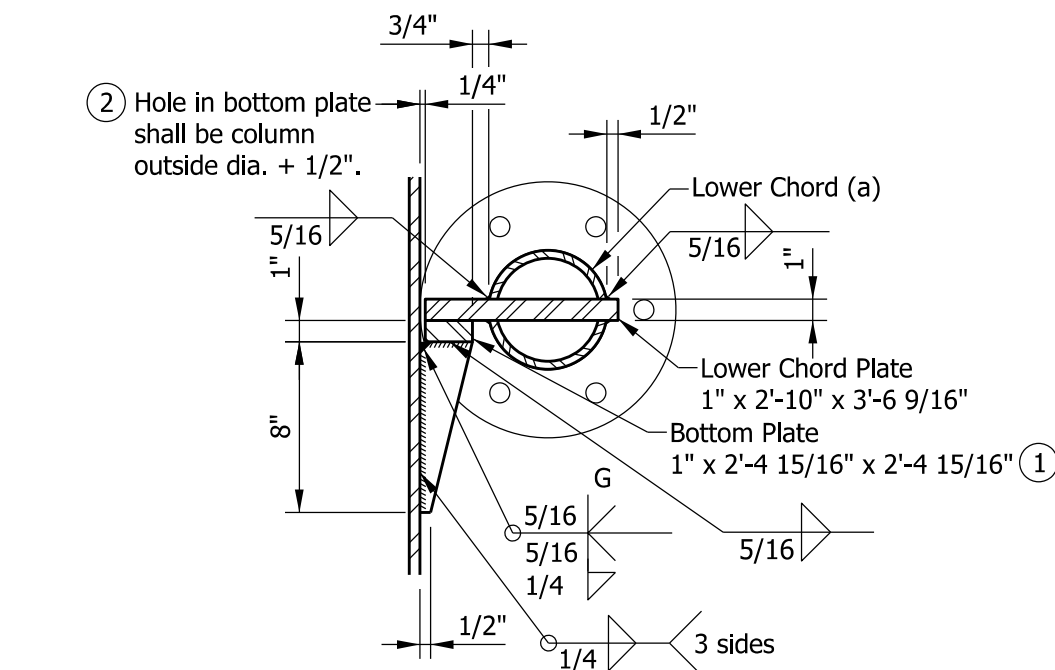
CHIEF ENGINEER DATE



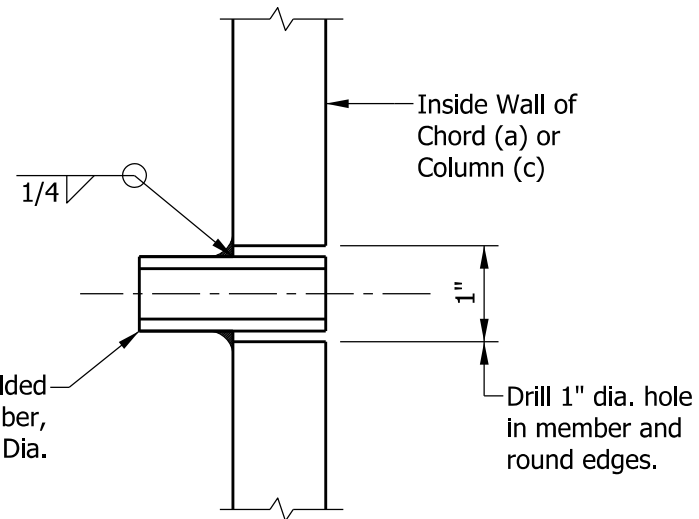
**PLAN SECTION THROUGH COLUMN ABOVE LOWER CHORDS**



**SECTION E-E**



**DETAIL H**



**WIRE OUTLET**

**NOTES:**

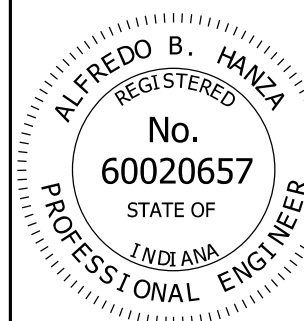
- ① Grind top plate if required to fully seat lower chord plate. Repair damaged galvanizing before assembly.
- ② After tightening lower connection bolts, fill gap with non-hardening silicone caulk suitable for exterior exposure.
- ③ Connection bolts in collar and bolts at lower chord connection must 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.
- 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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY  
LOWER CHORDS CONNECTION  
AND WIRE OUTLET DETAIL

SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-05

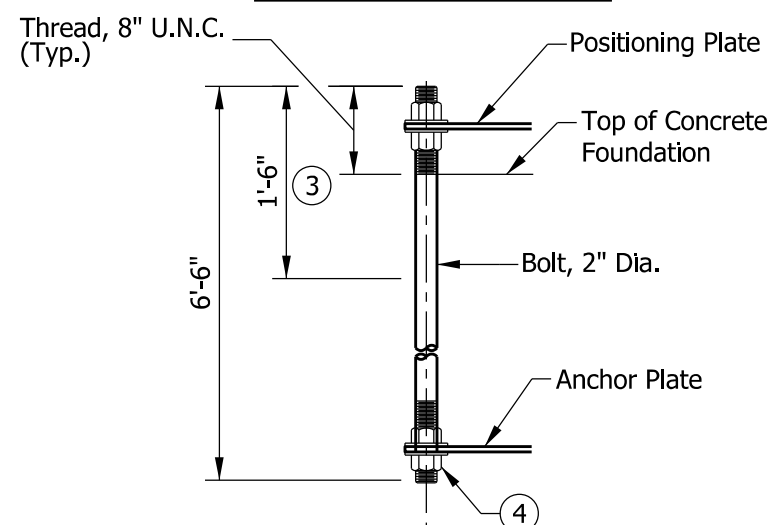
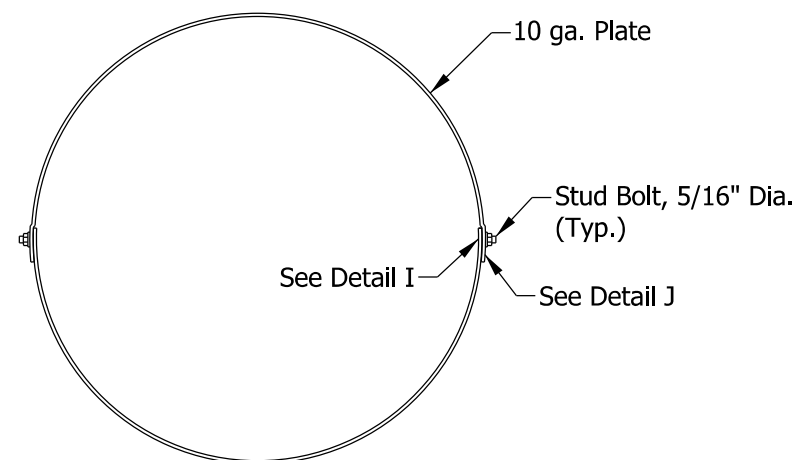
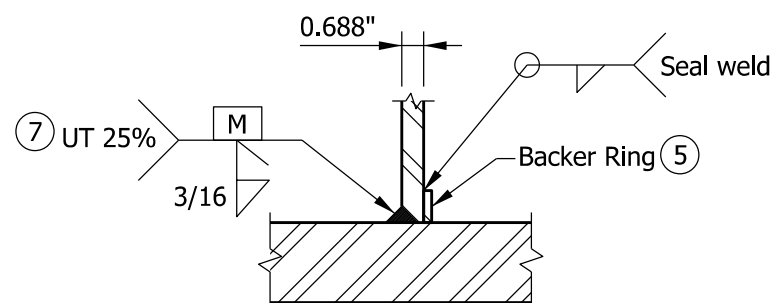
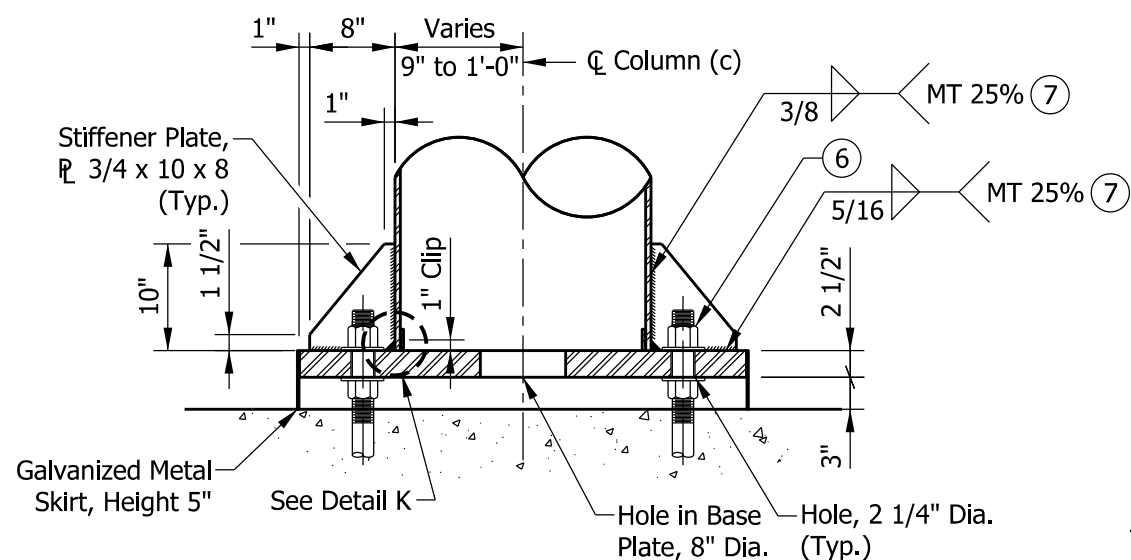
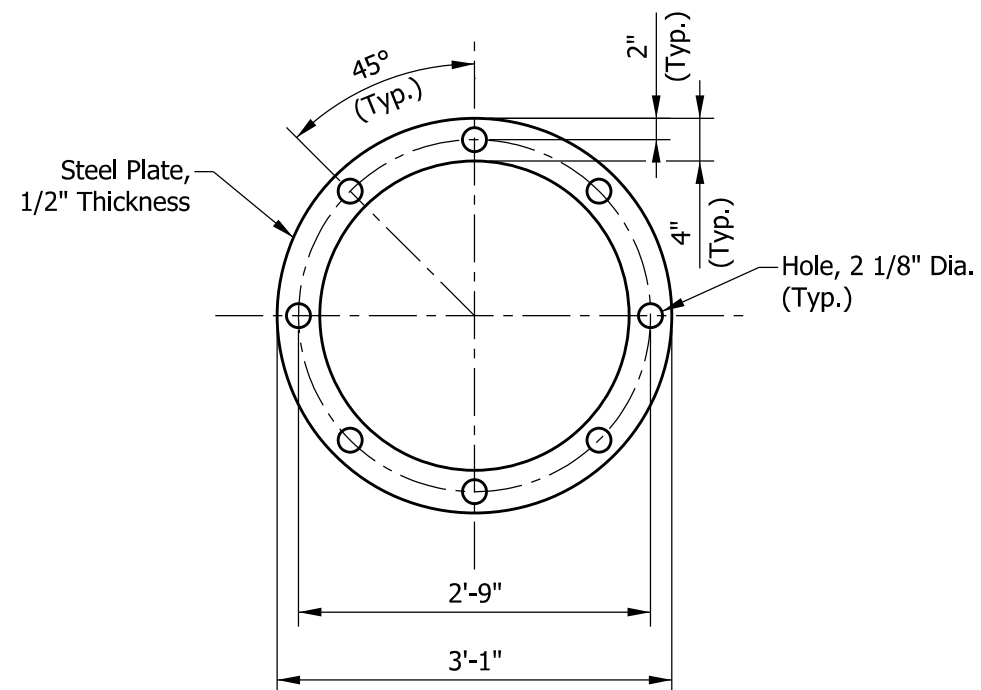
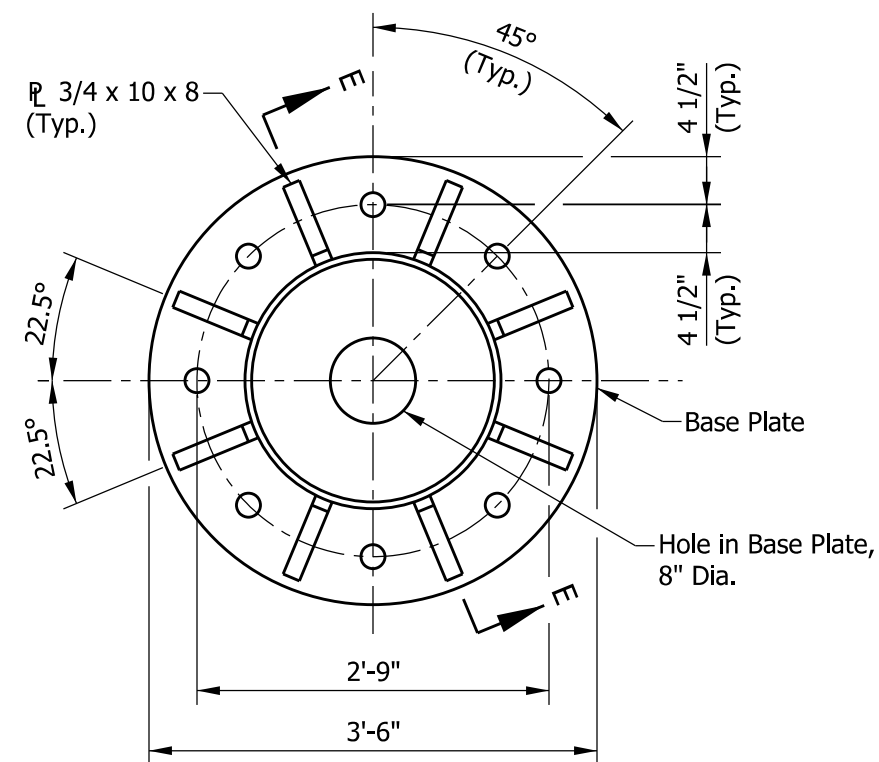


/s/ Alfredo B. Hanza 09/25/13

DESIGN STANDARDS ENGINEER DATE

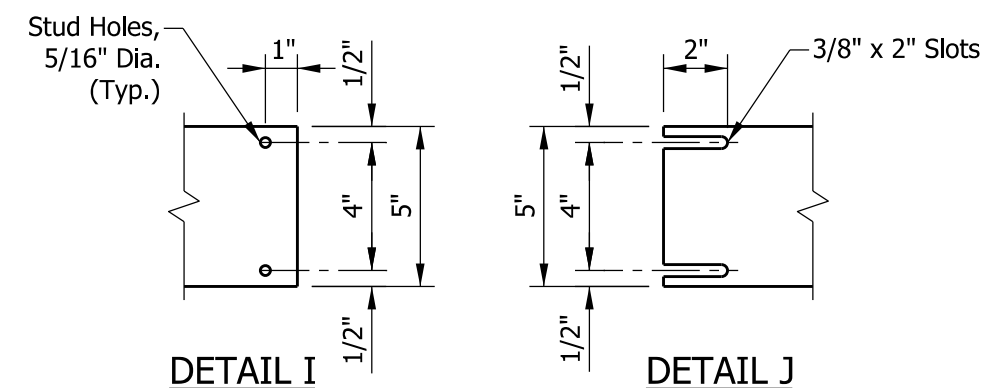
/s/ Mark A. Miller 09/26/13

CHIEF ENGINEER DATE



- 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.

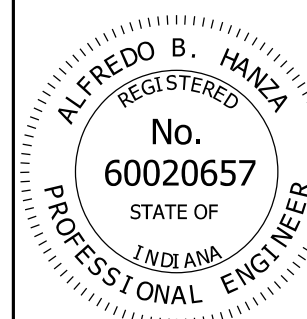


INDIANA DEPARTMENT OF TRANSPORTATION

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

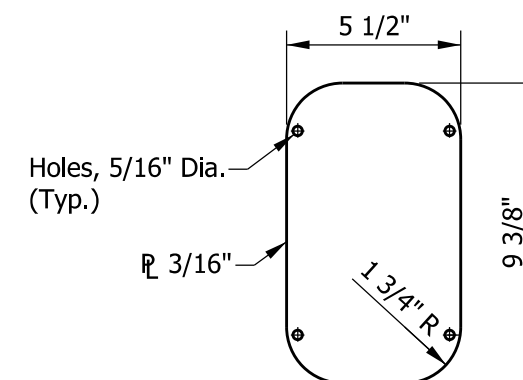
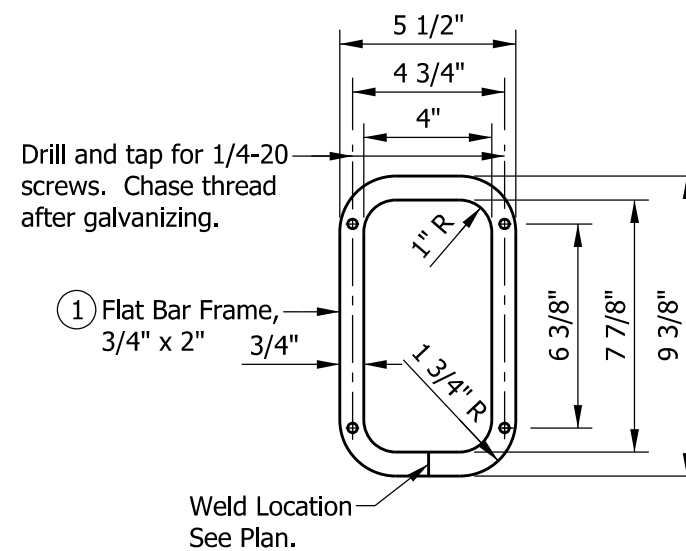
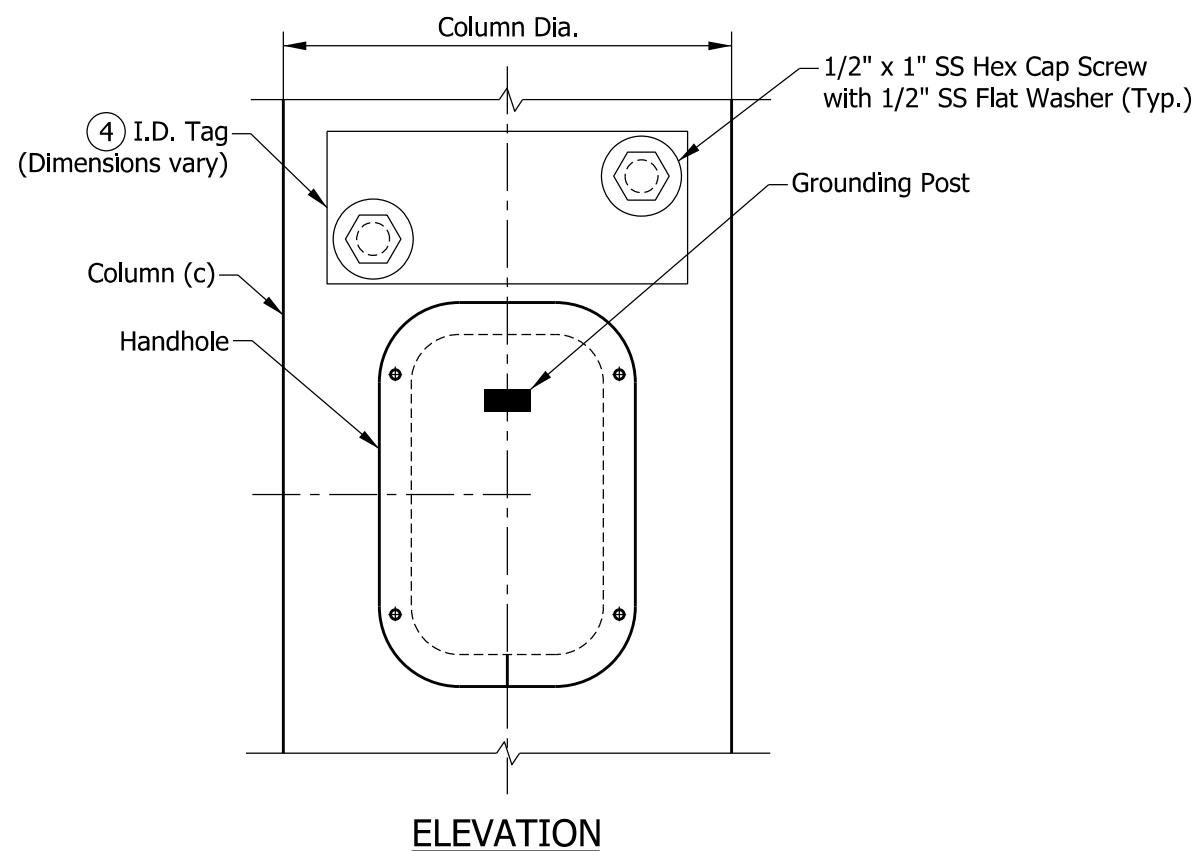
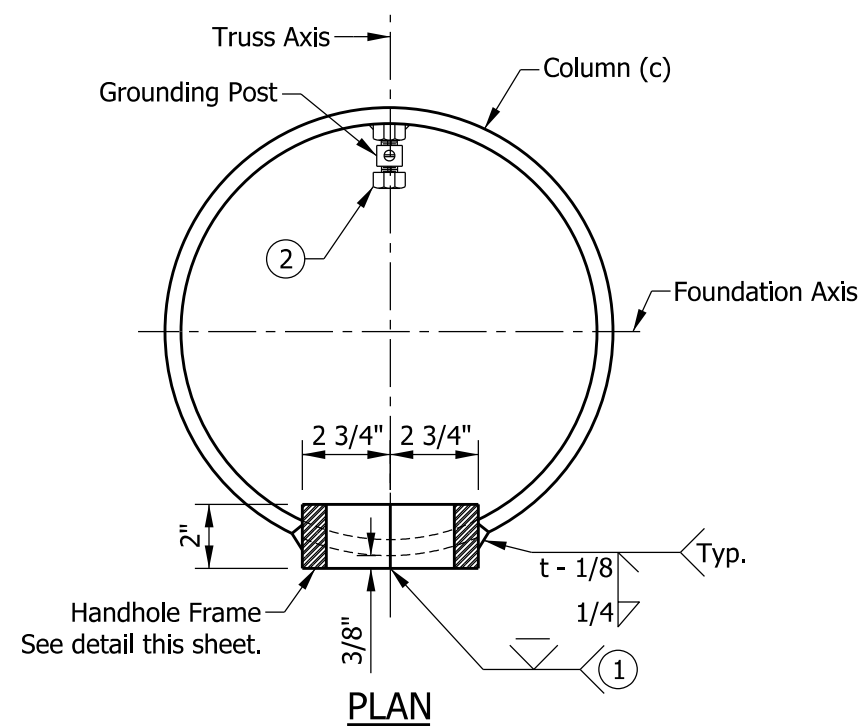
SEPTEMBER 2014

STANDARD DRAWING NO.	E 802-SCSB-06
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/s/ Alfredo B. Hanza	09/20/13
DESIGN STANDARDS ENGINEER	DATE

/s/ Mark A. Miller	09/26/13
CHIEF ENGINEER	DATE



## 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.
3. See Standard Drawing E 802-SCSB-02 for handhole location.
- (4) I.D. tag is a 1/8" stainless steel plate with the following information stamped in 1/2" black letters:

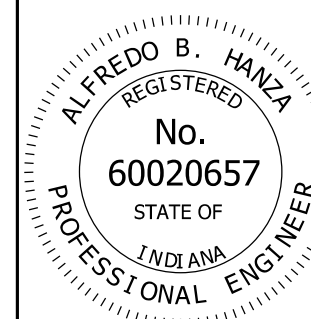
Manufacturer \_\_\_\_\_, Drawing/Order # \_\_\_\_\_  
 Contract # \_\_\_\_\_, Structure Type \_\_\_\_\_  
 Fabrication Date \_\_\_\_\_, Arm Length \_\_\_\_\_  
 Pole Mounting Height \_\_\_\_\_

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY  
HANDHOLE AND I.D. TAG DETAILS

SEPTEMBER 2014

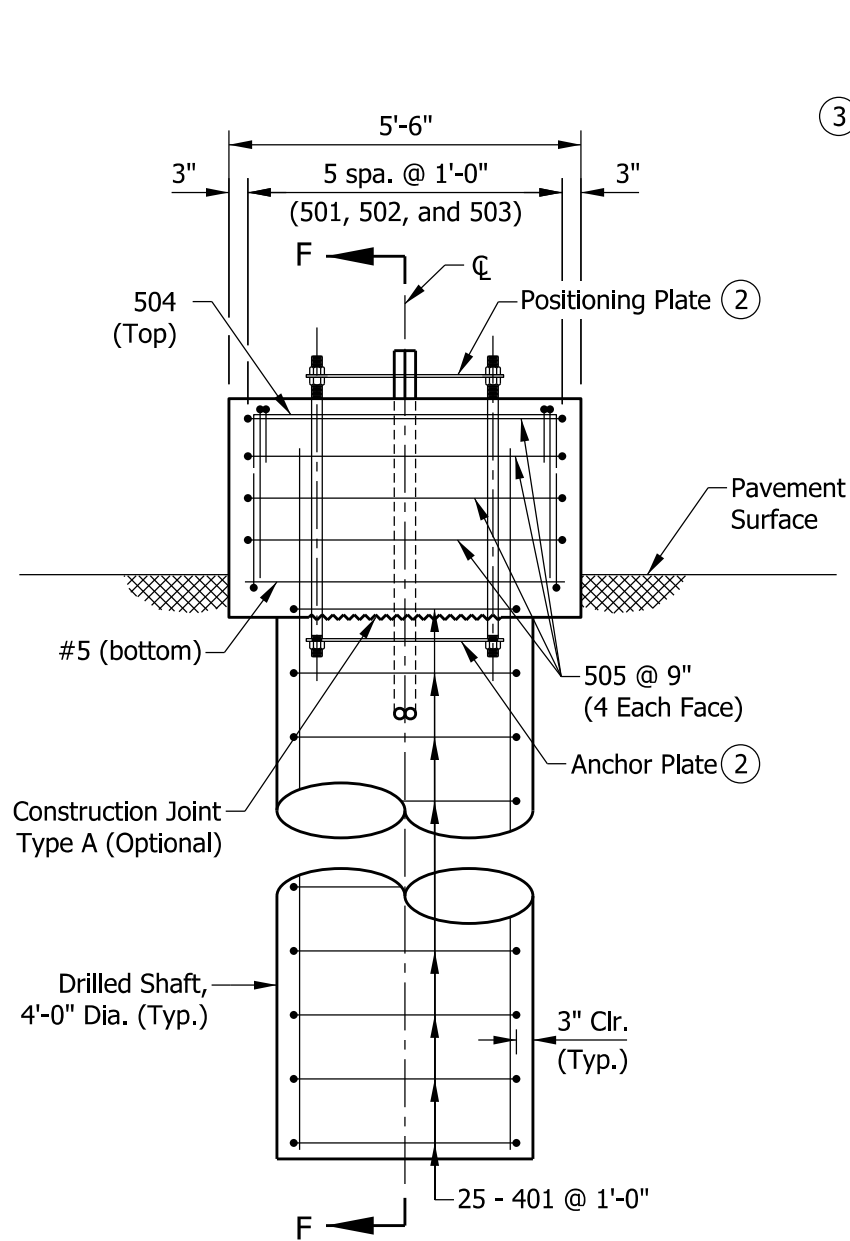
STANDARD DRAWING NO. E 802-SCSB-07



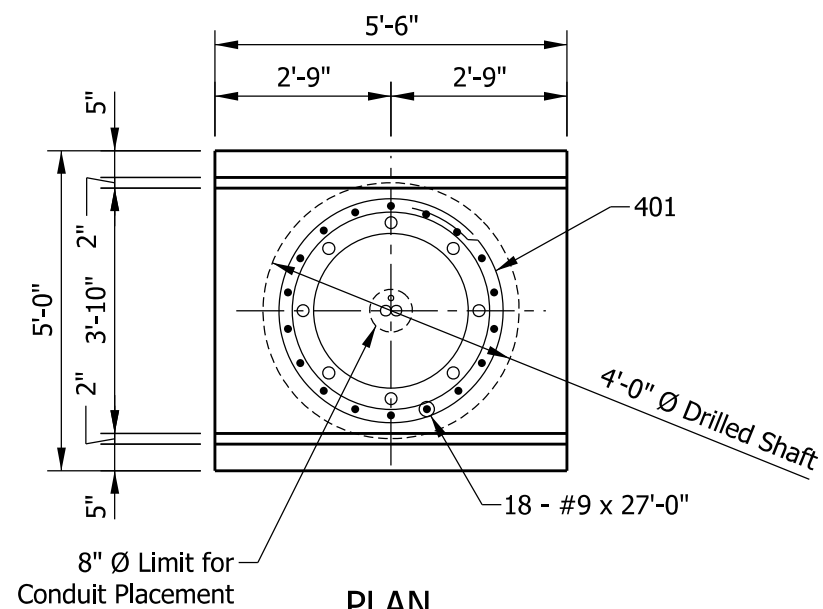
/s/ Alfredo B. Hanza 09/20/13  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/26/13  
CHIEF ENGINEER DATE

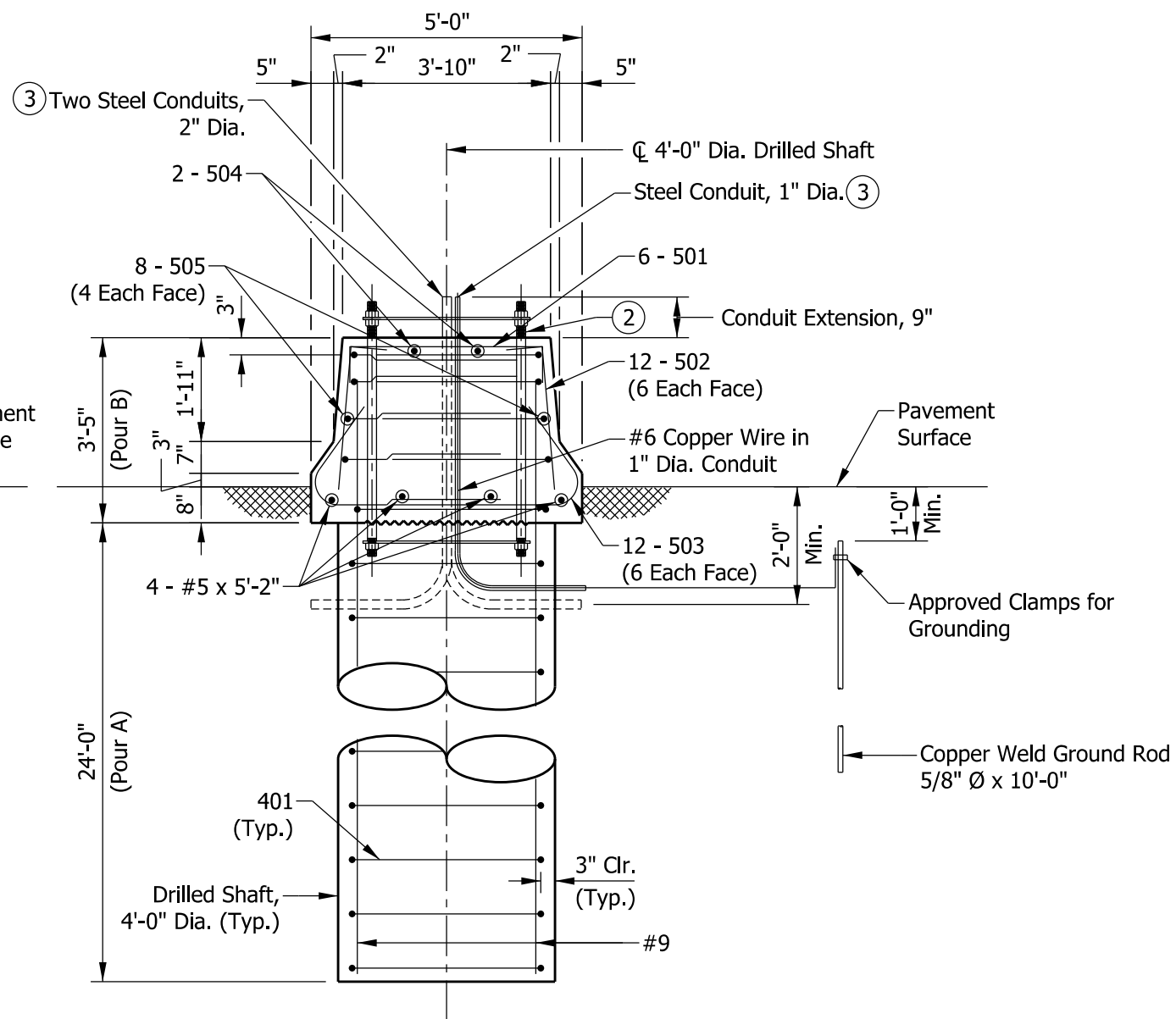




**ELEVATION**



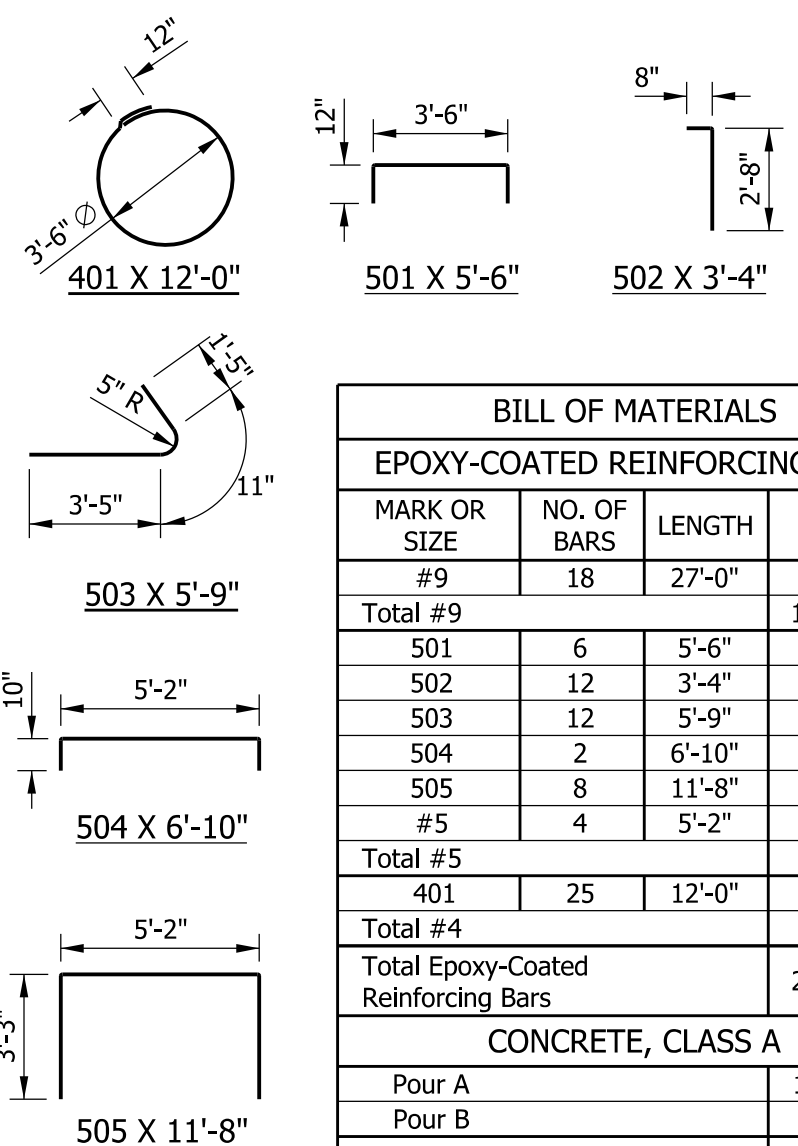
**PLAN**



**SECTION F-F**

**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.



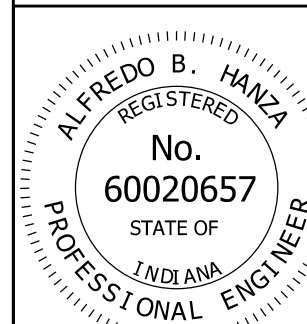
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	27'-0"	
Total #9			1652 LBS
501	6	5'-6"	
502	12	3'-4"	
503	12	5'-9"	
504	2	6'-10"	
505	8	11'-8"	
#5	4	5'-2"	
Total #5			281 LBS
401	25	12'-0"	
Total #4			200 LBS
Total Epoxy-Coated Reinforcing Bars			2133 LBS
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**

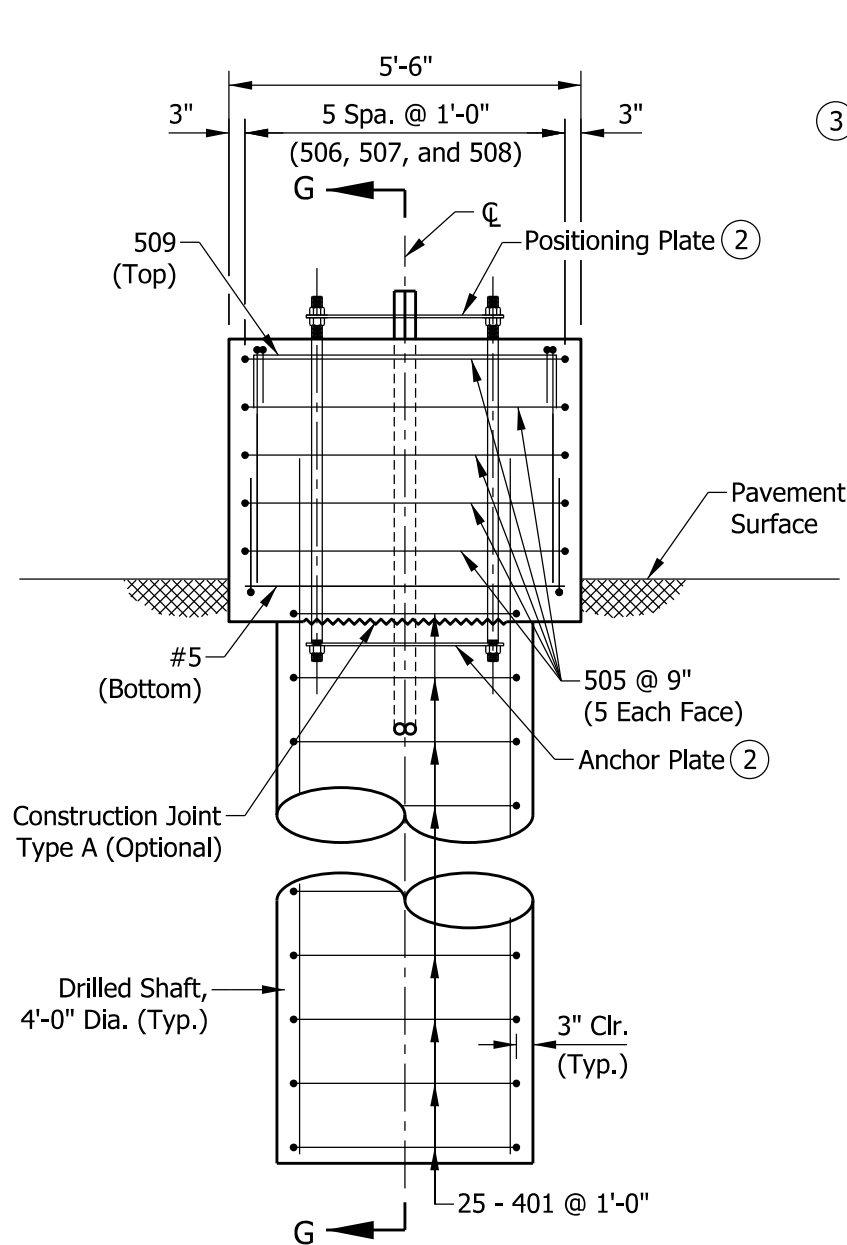
**SIGN CANTILEVER STRUCTURE BUTTERFLY FOUNDATION AT 33" CONCRETE BARRIER**

**SEPTEMBER 2014**

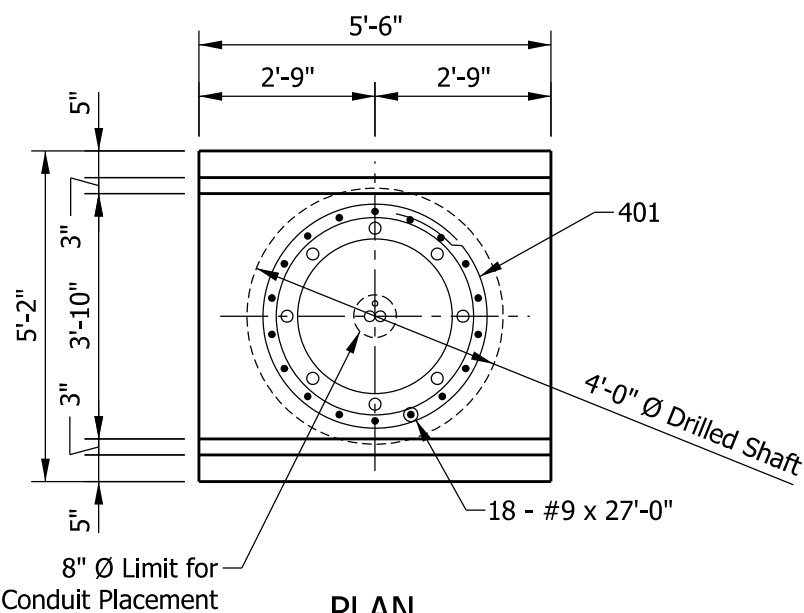
**STANDARD DRAWING NO. E 802-SCSB-08**



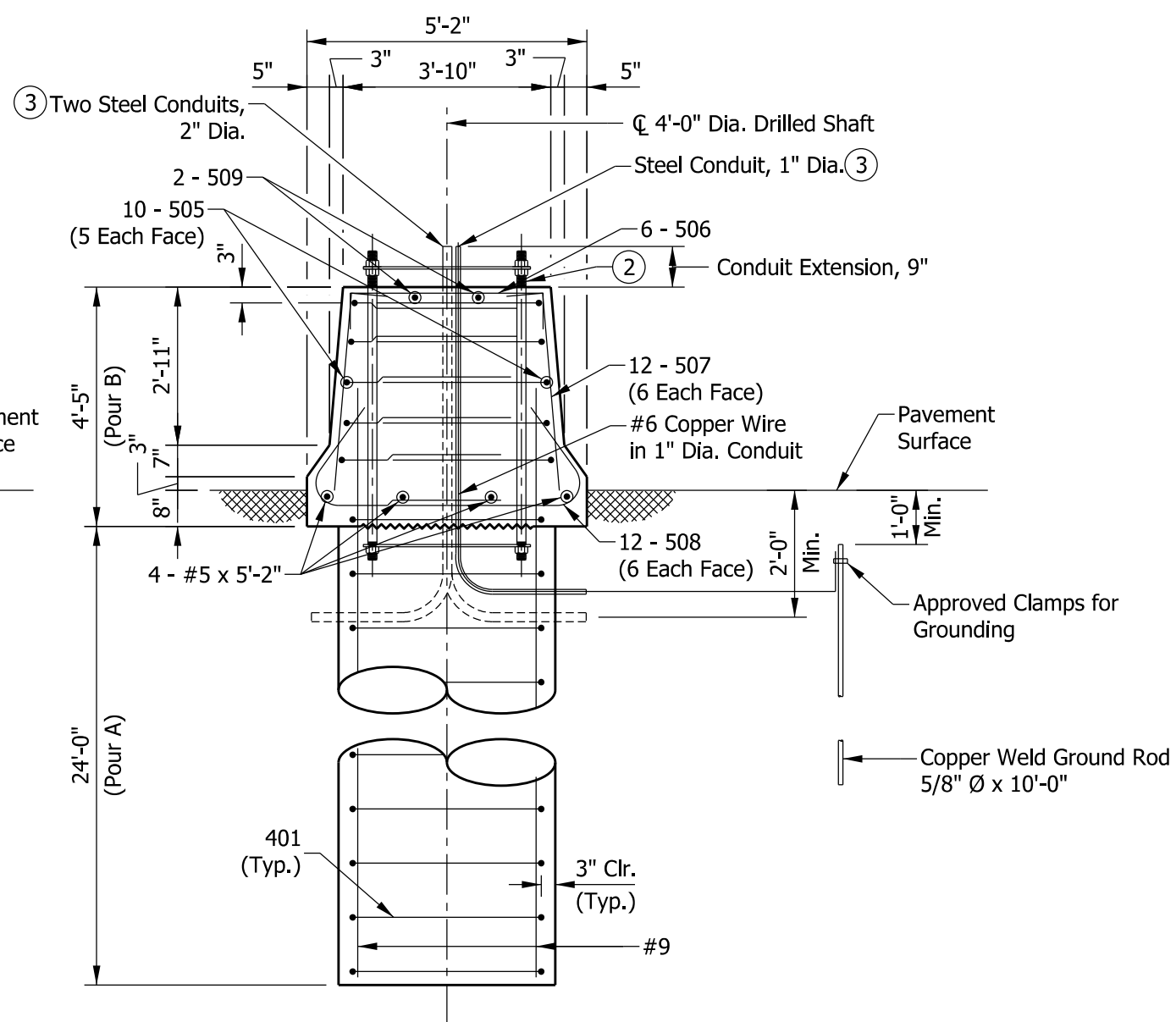
/s/ Alfredo B. Hanza	09/20/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	09/26/13
CHIEF ENGINEER	DATE



**ELEVATION**



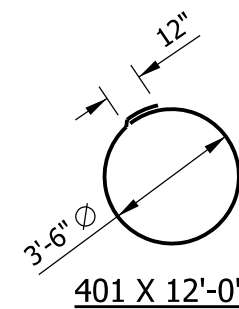
**PLAN**



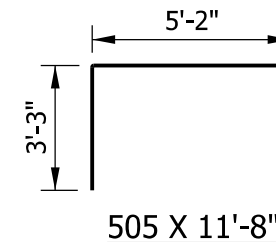
**SECTION G-G**

**NOTES:**

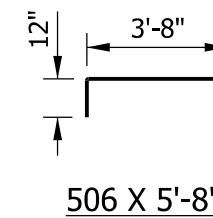
1. See Standard Drawing E 602-CCMB-03 for barrier wall width transition.
2. See Standard Drawing E 802-SCSB-06 for anchor and positioning plate and anchor bolt details.
3. Thread and cap both ends of steel conduit.
4. Surface seal top and sides of barrier railing to the pavement surface.



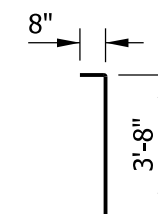
**401 X 12'-0"**



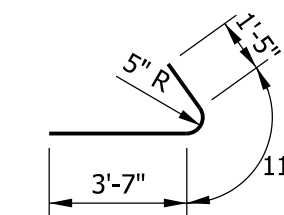
**505 X 11'-8"**



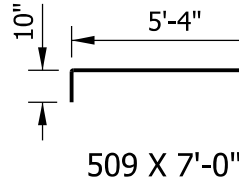
**506 X 5'-8"**



**507 X 4'-4"**



**508 X 5'-11"**



**509 X 7'-0"**

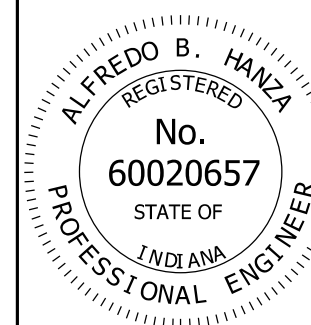
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	27'-0"	
Total #9			1652 LBS
505	10	11'-8"	
506	6	5'-8"	
507	12	4'-4"	
508	12	5'-11"	
509	2	7'-0"	
#5	4	5'-2"	
Total #5			322 LBS
401	25	12'-0"	
Total #4			200 LBS
Total Epoxy-Coated Reinforcing Bars			2174 LBS
CONCRETE, CLASS A			
Pour A			11.2 CYS
Pour B			4.0 CYS
Total Concrete, Class A			15.2 CYS
MISCELLANEOUS			
Surface Seal			7.1 SYS

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGN CANTILEVER STRUCTURE BUTTERFLY FOUNDATION AT 45" CONCRETE BARRIER**

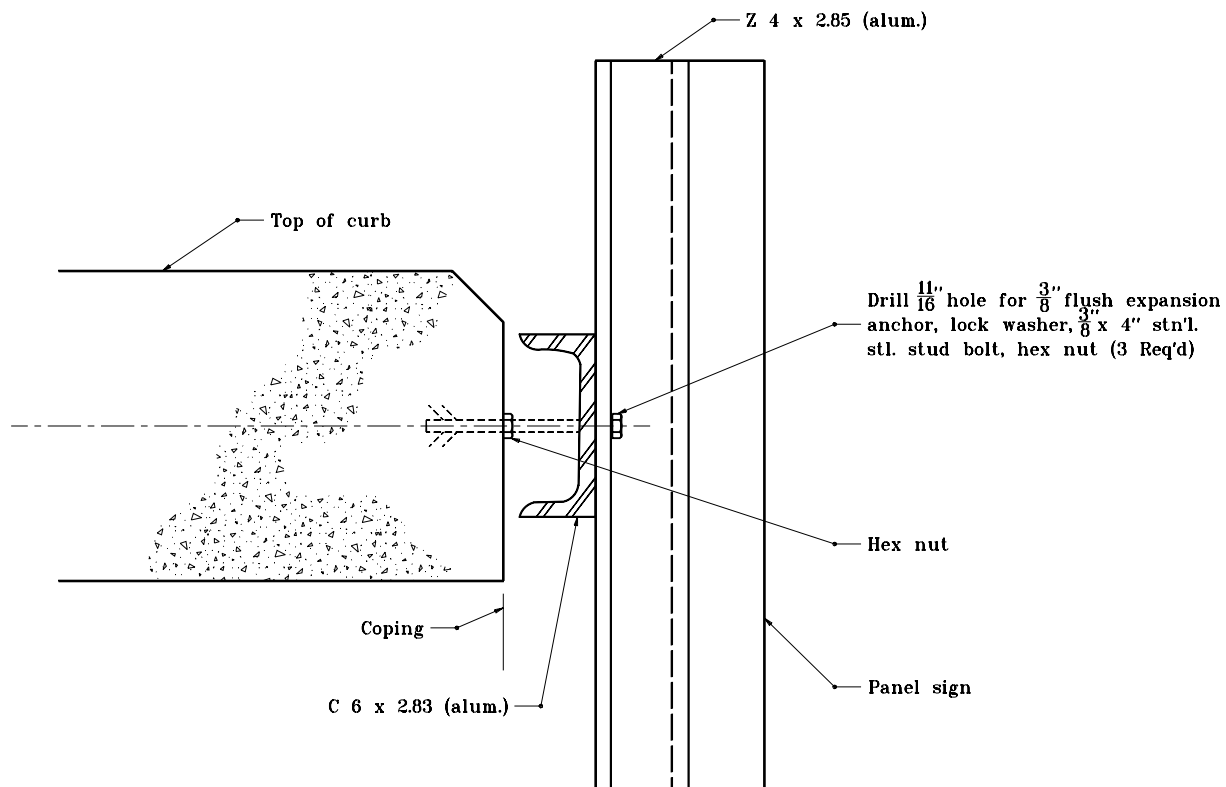
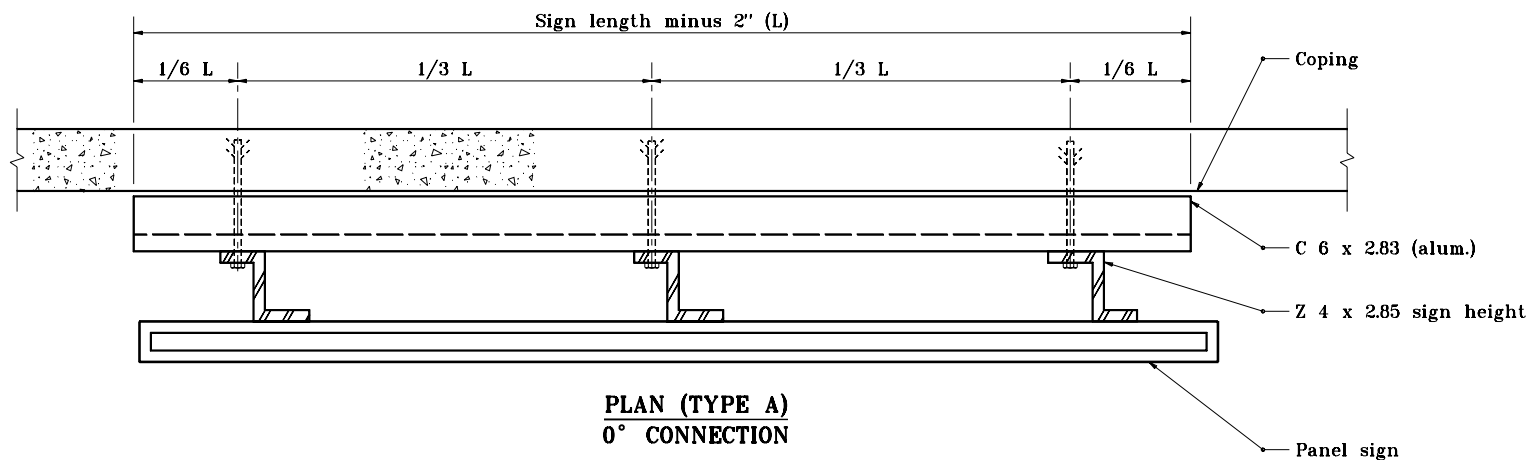
**SEPTEMBER 2014**

**STANDARD DRAWING NO. E 802-SCSB-09**

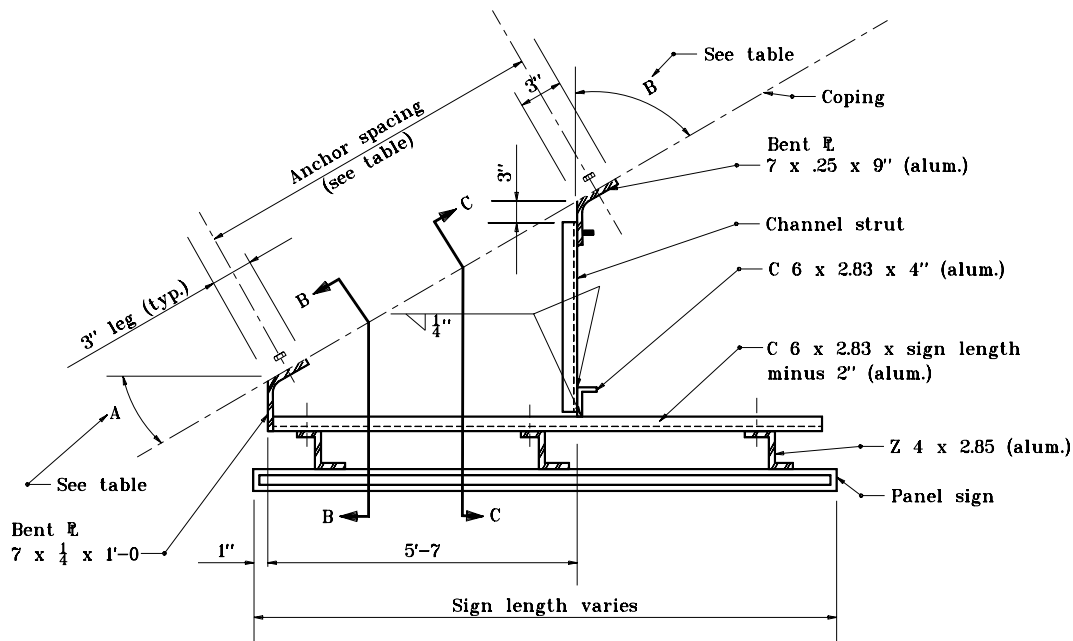


/s/ *Alfredo B. Hanza* 09/20/13  
DESIGN STANDARDS ENGINEER DATE

/s/ *Mark A. Miller* 09/26/13  
CHIEF ENGINEER DATE



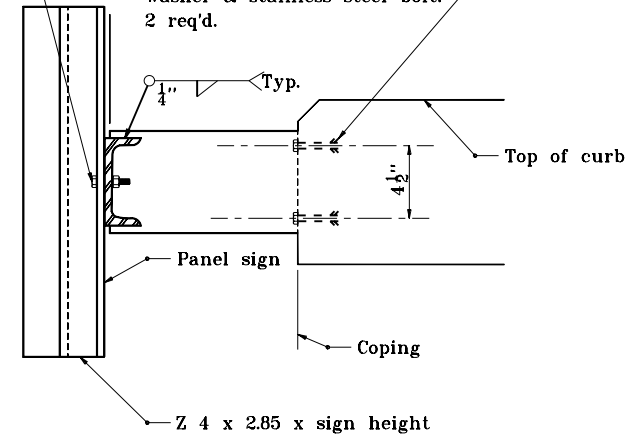
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>BRIDGE BRACKET ASSY. FOR CROSSROAD SIGNING</b>	
SEPTEMBER 2001	
<b>STANDARD DRAWING NO. E 802-SNBB-01</b>	
	/s/ Anthony L. Uremovich 9-04-01 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 9-04-01 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



**PLAN (TYPE A)**  
**10°, 20°, 30°, & 40° CONNECTIONS**

Drill  $\frac{7}{16}$ " hole for  $\frac{3}{8}$ " bolt, lock washer & hex nut (3) required

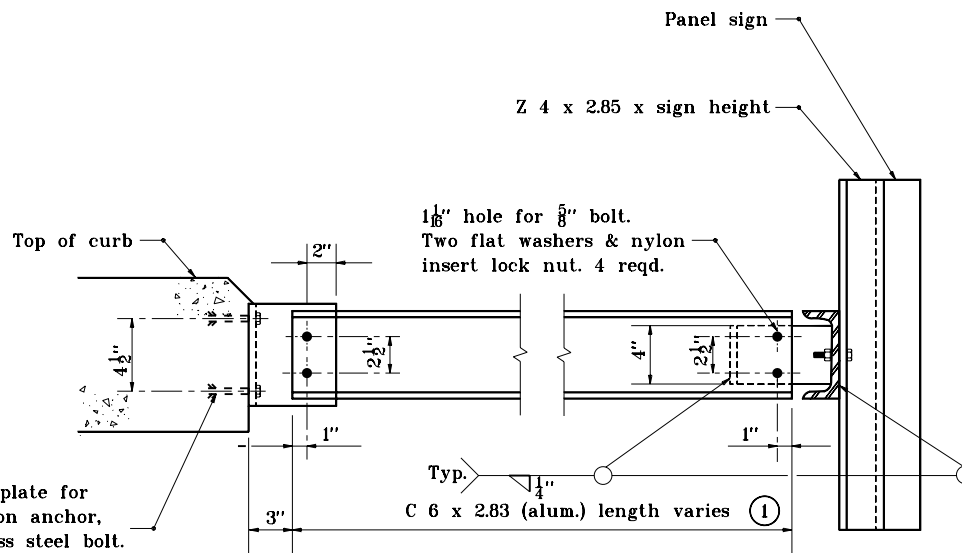
Drill  $\frac{7}{16}$ " hole in plate for  $\frac{3}{8}$ " flush expansion anchor, washer & stainless steel bolt. 2 req'd.



**SECTION B-B**

**GENERAL NOTES**

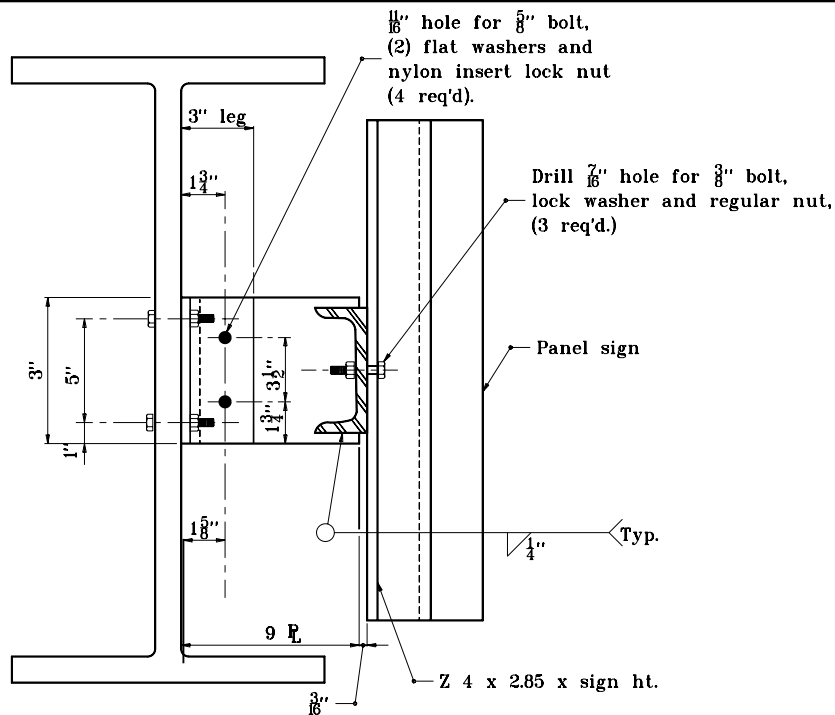
- ① See Standard Drawing E 802-SNBB-05 for table.



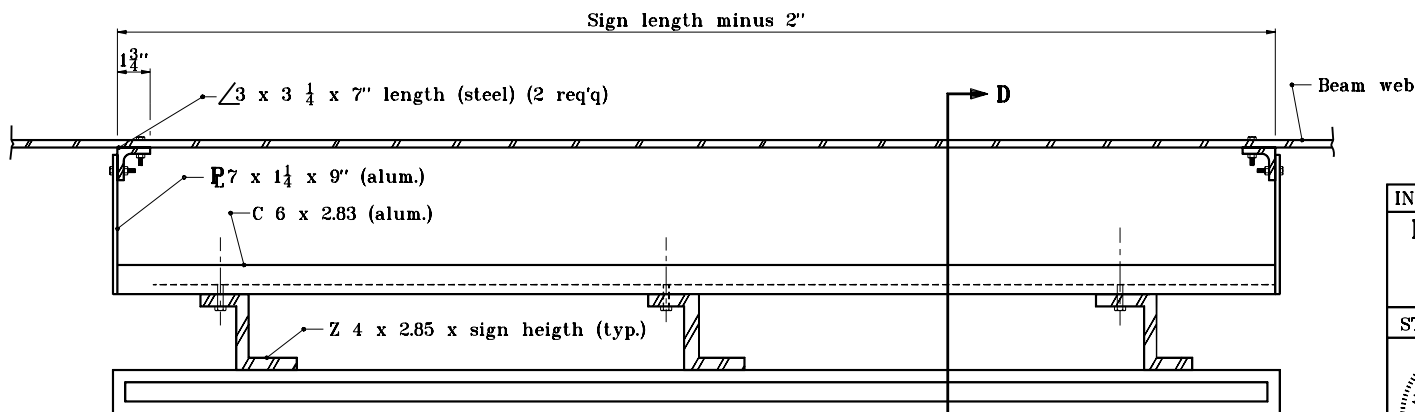
**SECTION C-C**

Drill  $\frac{7}{16}$ " hole in plate for  $\frac{3}{8}$ " flush expansion anchor, washer & stainless steel bolt. 2 req'd.

INDIANA DEPARTMENT OF TRANSPORTATION	
BRIDGE BRACKET ASSY. FOR CROSSROAD SIGNING	
SEPTEMBER 2001	
STANDARD DRAWING NO. E 802-SNBB-02	
	/s/ Anthony L. Uremovich 9-04-01 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 9-04-01 CHIEF HIGHWAY ENGINEER DATE

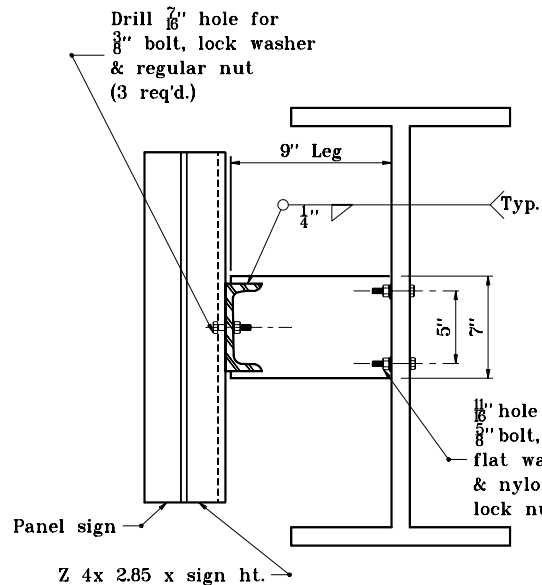


**SECTION D-D**



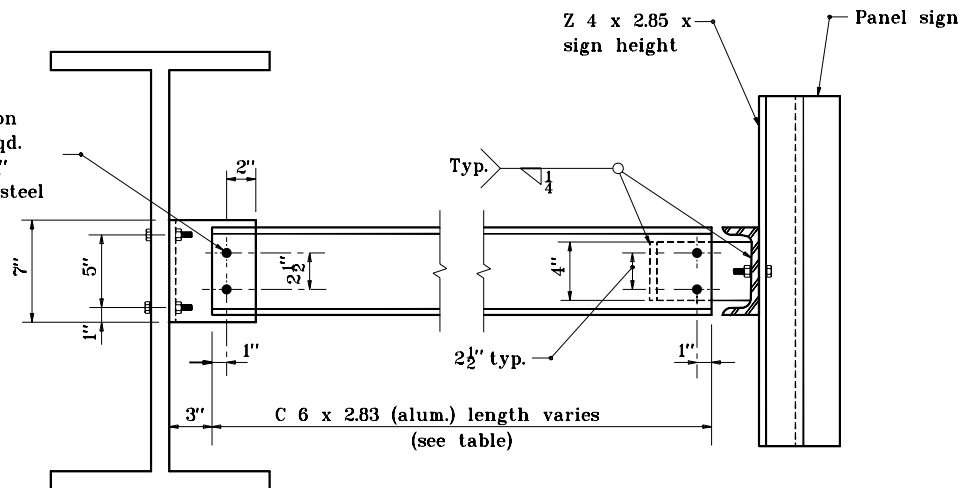
**PLAN (TYPE B)  
0° CONNECTION**

INDIANA DEPARTMENT OF TRANSPORTATION		
<b>BRIDGE BRACKET ASSY. FOR CROSS-ROAD SIGNING</b>		
SEPTEMBER 2001		
STANDARD DRAWING NO. <b>E 802-SNBB-03</b>		
	/s/ Anthony L. Uremovich 9-04-01	
	DESIGN STANDARDS ENGINEER	DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 9-04-01	
	CHIEF HIGHWAY ENGINEER	DATE

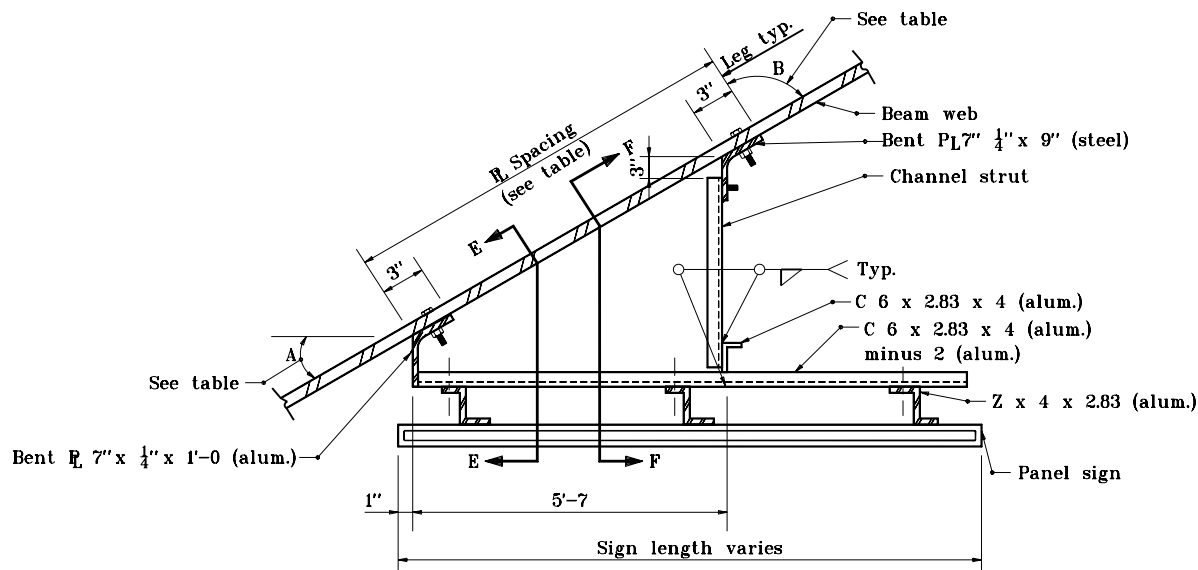


**SECTION E-E**

$\frac{11}{16}$ " hole for  $\frac{5}{8}$ " Bolt  
(2)- flat washers & nylon insert lock nut. (4)- req'd. place plastic material,  $\frac{1}{16}$ " min. thickness between steel & aluminum surfaces.



**SECTION F-F**



**PLAN (TYPE B)**

**10°, 20°, 30°, & 40° Connections**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>BRIDGE BRACKET ASSY. FOR CROSSROAD SIGNING</b>	
SEPTEMBER 2001	
<b>STANDARD DRAWING NO. E 802-SNBB-04</b>	
	/s/ Anthony L. Uremovich 9-04-01 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 9-04-01 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

**TYPE A & B BRIDGE CONNECTION TABLE**

SKEW	CONNECTION (ANGLE A)	ANGLE B	CHANNEL STRUT LENGTH	ANCHOR SPACING	PLATE SPACING
0° – 10°	0°	———	—————	—————	—————
10° – 20°	10°	80°	C 6 x 2.83 x 1'-4 $\frac{3}{4}$ "	5'-6	5'-11
20° – 30°	20°	70°	C 6 x 2.83 x 2'-5 $\frac{1}{2}$ "	5'-11 $\frac{1}{2}$ "	6'-2 $\frac{1}{2}$ "
30° – 40°	30°	60°	C 6 x 2.83 x 3'-7 $\frac{1}{2}$ "	6'-5 $\frac{1}{2}$ "	6'-8 $\frac{1}{2}$ "
40° – 50°	40°	50°	C 6 x 2.83 x 5'-1 $\frac{1}{4}$ "	7'-3 $\frac{3}{4}$ "	7'-6 $\frac{1}{2}$ "

**GENERAL NOTES**

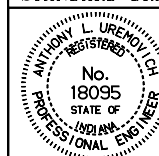
- Bottom edge of sign shall be horizontal when erected and shall be a minimum of 1'-6 above the bridge beam flange at all points.
- All  $\frac{3}{8}$ " bolts used with  $\frac{3}{8}$ " expansion anchors shall be 1 in. long ( $\pm 0$  ") and shall engage expansion anchors of 1 1/2 times the bolt dia. or 9 threads minimum except for Type A 0° connections to bridge fascia. The contractor may use either type A or B.

INDIANA DEPARTMENT OF TRANSPORTATION

**BRIDGE BRACKET ASSY. FOR  
CROSSROAD SIGNING**

SEPTEMBER 2001

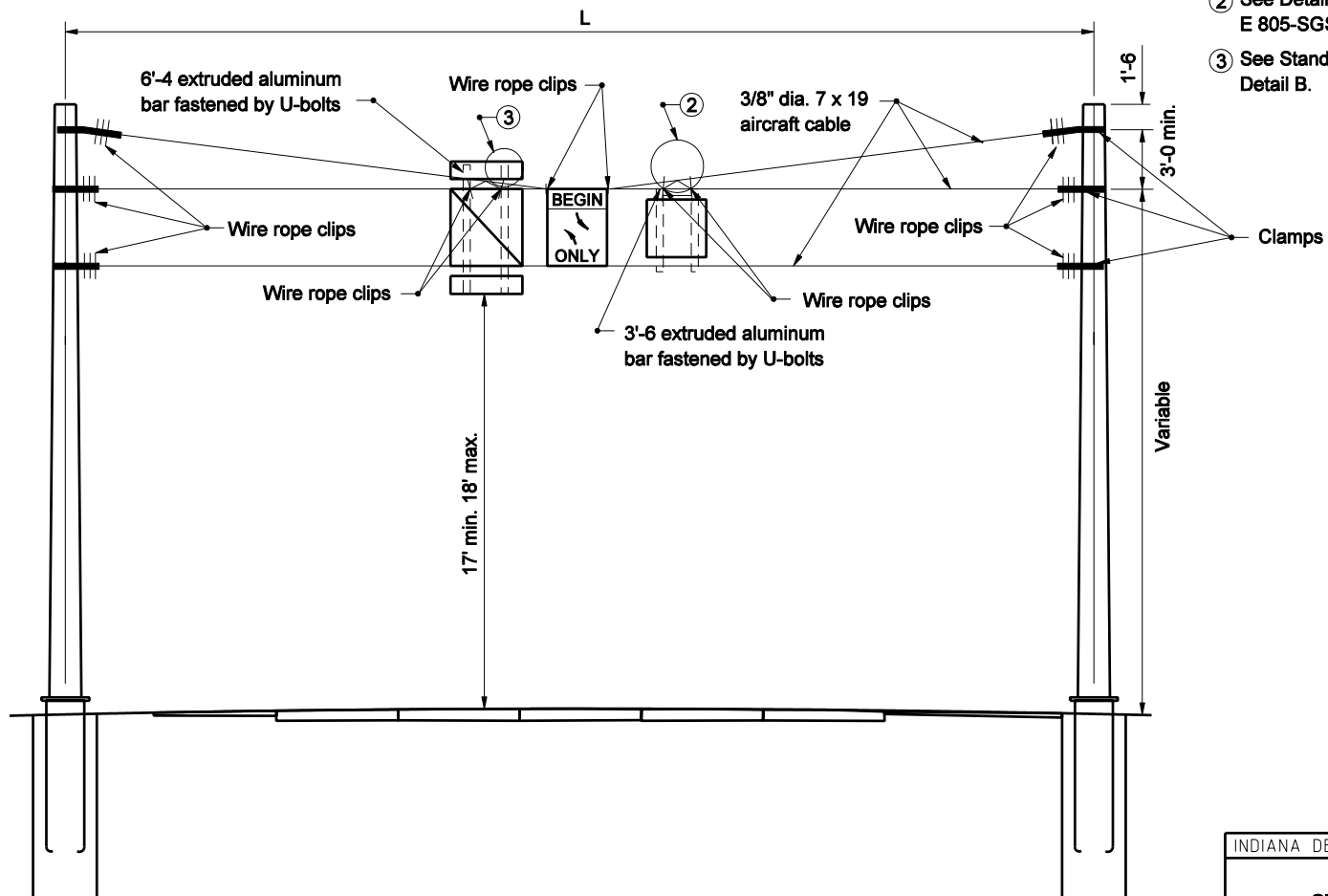
**STANDARD DRAWING NO. E 802-SNBB-05**



/s/ Anthony L. Uremovich 9-04-01  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 9-04-01  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

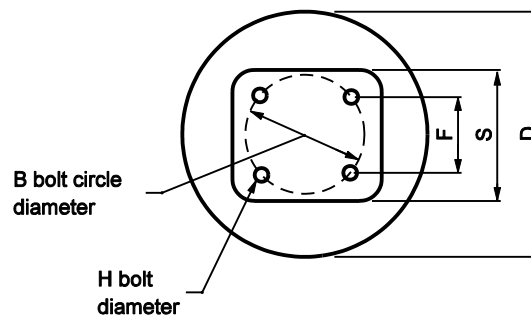
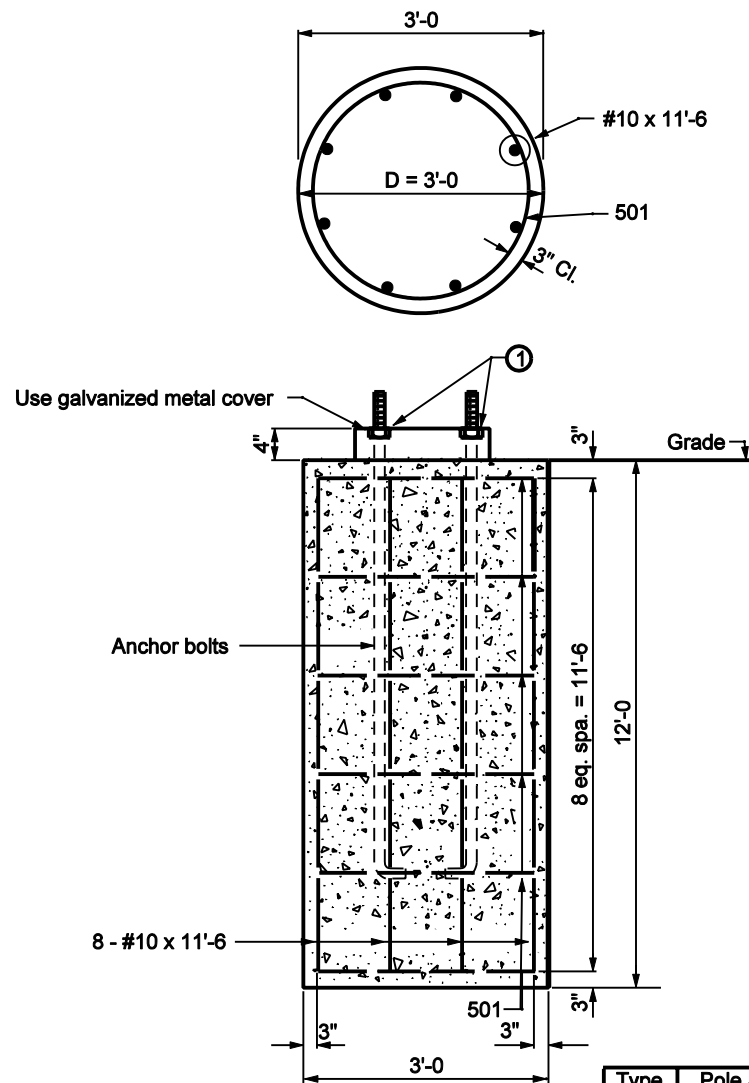


#### GENERAL NOTES

1. Sign centered over appropriate lane unless otherwise shown on cross section.
- ② See Detail A on Standard Drawing E 805-SGSC-04
- ③ See Standard Drawing E 802-SNCS-03 Detail B.

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>CABLE SPAN SIGN STRUCTURE DETAILS</b>	
SEPTEMBER 2005	
STANDARD DRAWING NO. E 802-SNCS-01	
	/s/ Anthony L. Uremovich 9-01-05 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 9-01-05 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	





Type	Pole Size	Gauge	D	B	F	H	P	R	S	T	Anchor bolts
IV	12" x 24 ft	0	36"	16"	11"	2"	3"	3"	17"	2"	1" x 7'-6
	14" x 26 ft	0	36"	20"	14"	2"	4"	4"	20"	2"	2" x 8'-0
	15" x 30 ft	0	36"	22"	15"	2"	4"	4"	23"	2"	2" x 8'-0

## GENERAL NOTES

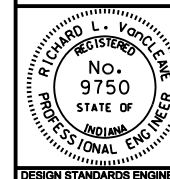
- ① Square nut under base plate for plumbing or raking pole.

INDIANA DEPARTMENT OF TRANSPORTATION

## CABLE SPAN SIGN FOUNDATION DETAILS

MARCH 2003

STANDARD DRAWING NO. E 802-SNCS-02



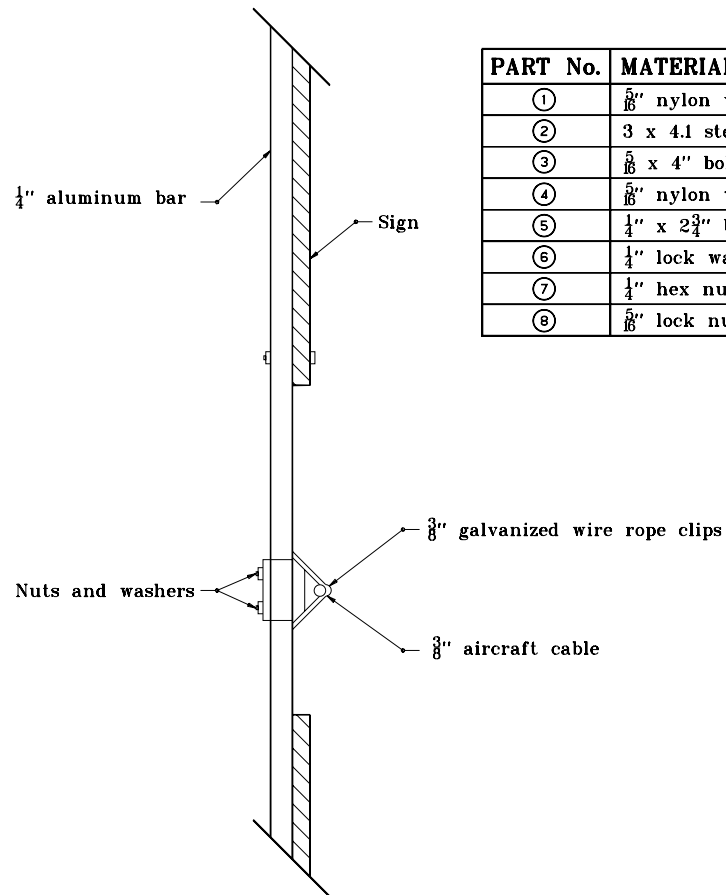
/s/ Richard L. VanCleave 3-03-03  
DESIGN STANDARDS ENGINEER DATE


/s/ Richard K. Smutzer 3-03-03  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



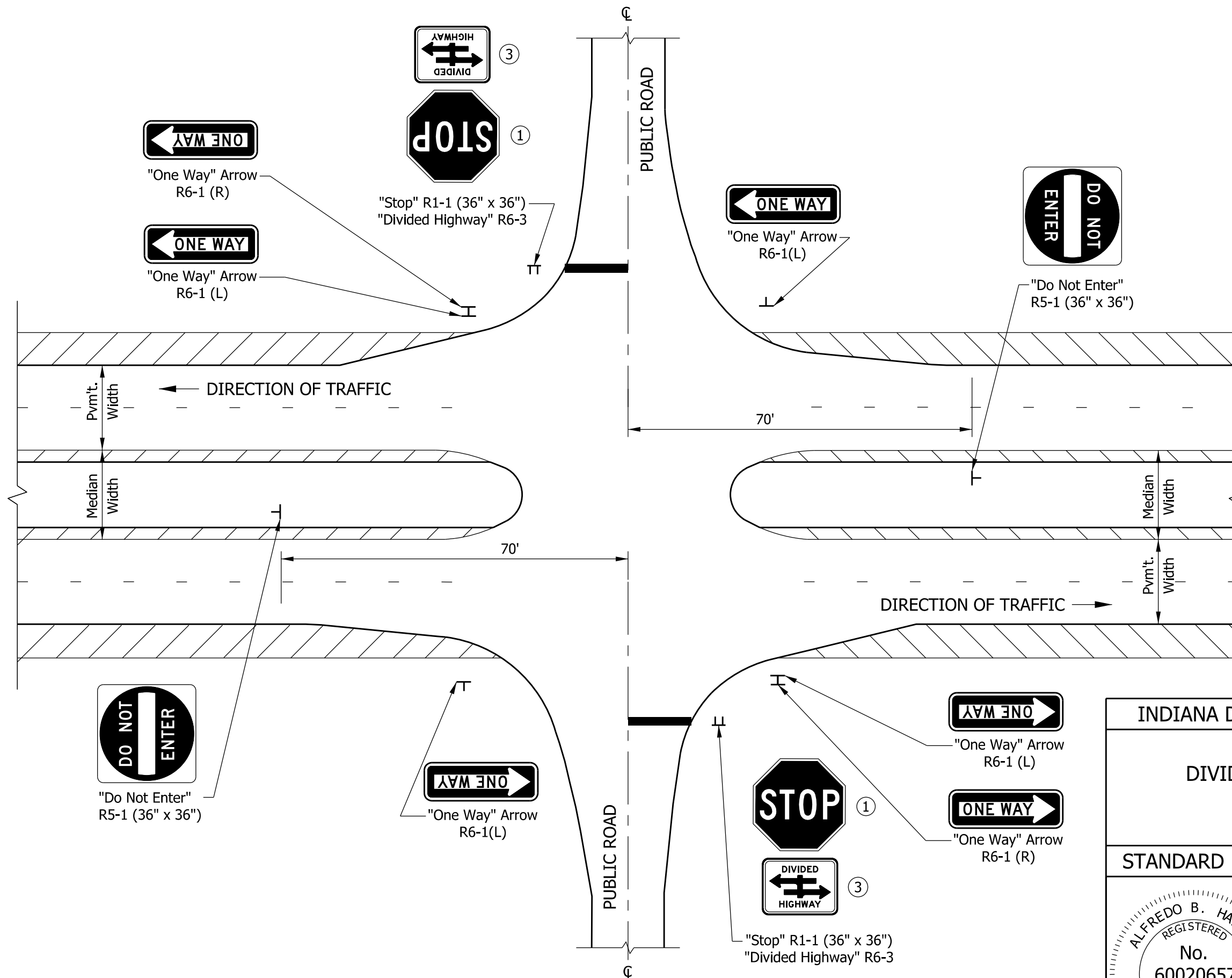
PART No.	MATERIAL DESCRIPTION
①	$\frac{5}{8}$ " nylon washer
②	3 x 4.1 steel channel
③	$\frac{5}{8}$ x 4" bolt
④	$\frac{5}{8}$ " nylon washer
⑤	$\frac{1}{4}$ " x 2 $\frac{3}{4}$ " U bolt
⑥	$\frac{1}{4}$ " lock washer
⑦	$\frac{1}{4}$ " hex nut
⑧	$\frac{5}{8}$ " lock nut



INDIANA DEPARTMENT OF TRANSPORTATION	
CABLE SPAN SIGN STRUCTURE DETAILS	
SEPTEMBER 2001	
STANDARD DRAWING NO. <b>E 802-SNCS-03</b>	
	<i>/s/ Anthony L. Uremovich 9-04-01</i> DESIGN STANDARDS ENGINEER      DATE
	<i>/s/ Firooz Zandi 9-04-01</i> CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	

# NOTES:

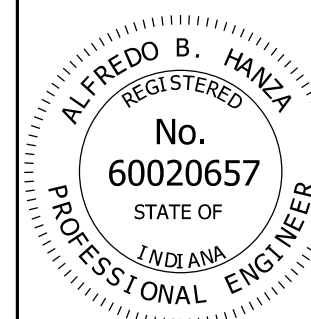
- ① "Stop Ahead" sign may be required if there is determined to be poor observation of the "Stop" sign. See plans for locations.
2. This drawing shall apply to intersections with or without turn lanes.
- ③ R6-3a shall be used in place of R6-3 at T-intersection.



INDIANA DEPARTMENT OF TRANSPORTATION

SIGN PLACEMENT  
DIVIDED HIGHWAY INTERSECTION  
MEDIAN WIDTH < 30 FT  
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SNDH-01

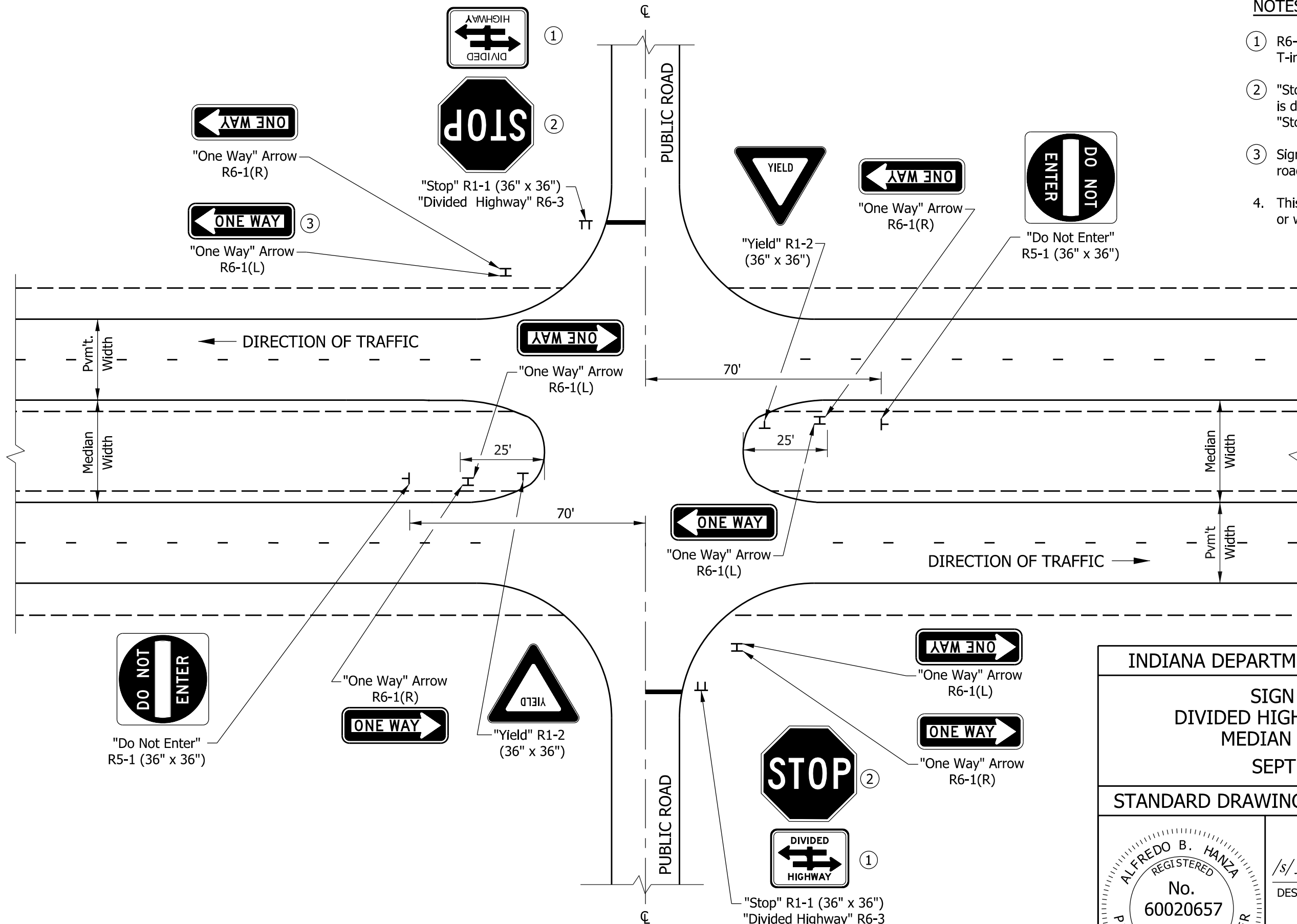


/s/ Alfredo B. Hanza 03/28/14

DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/31/14

CHIEF ENGINEER DATE



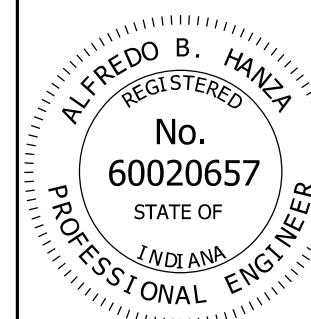
# NOTES:

- R6-3a shall be used in place of R6-3 at T-intersection.
- "Stop Ahead" sign may be required if there is determined to be poor observation of the "Stop" sign. See plans for locations.
- Sign shall be placed on centerline of public road approach for T-intersection.
- This drawing shall apply to intersection with or without turn lanes.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN PLACEMENT  
DIVIDED HIGHWAY INTERSECTION  
MEDIAN WIDTH  $\geq$  30 FT  
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SNDH-02

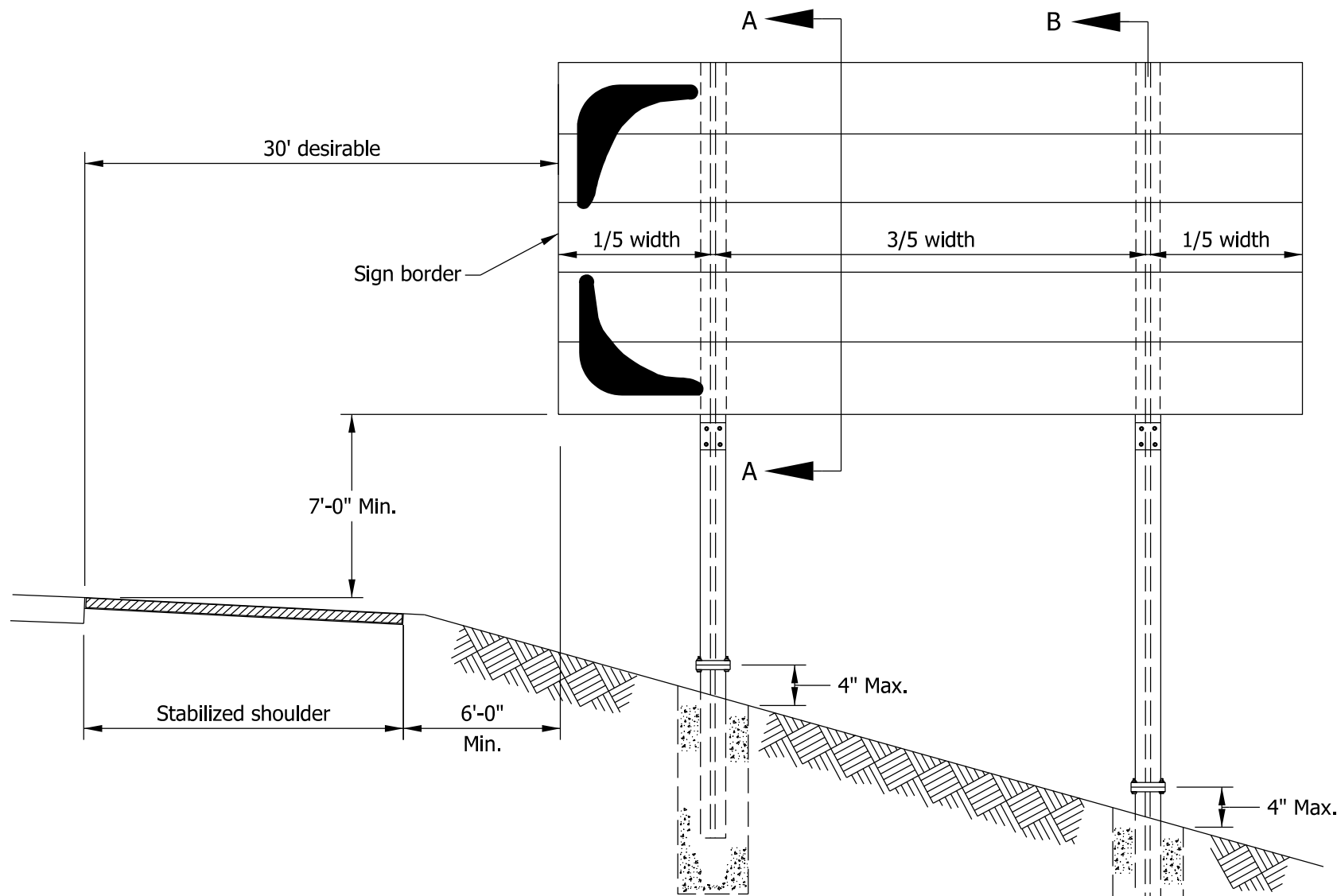


/s/ Alfredo B. Hanza 03/28/14

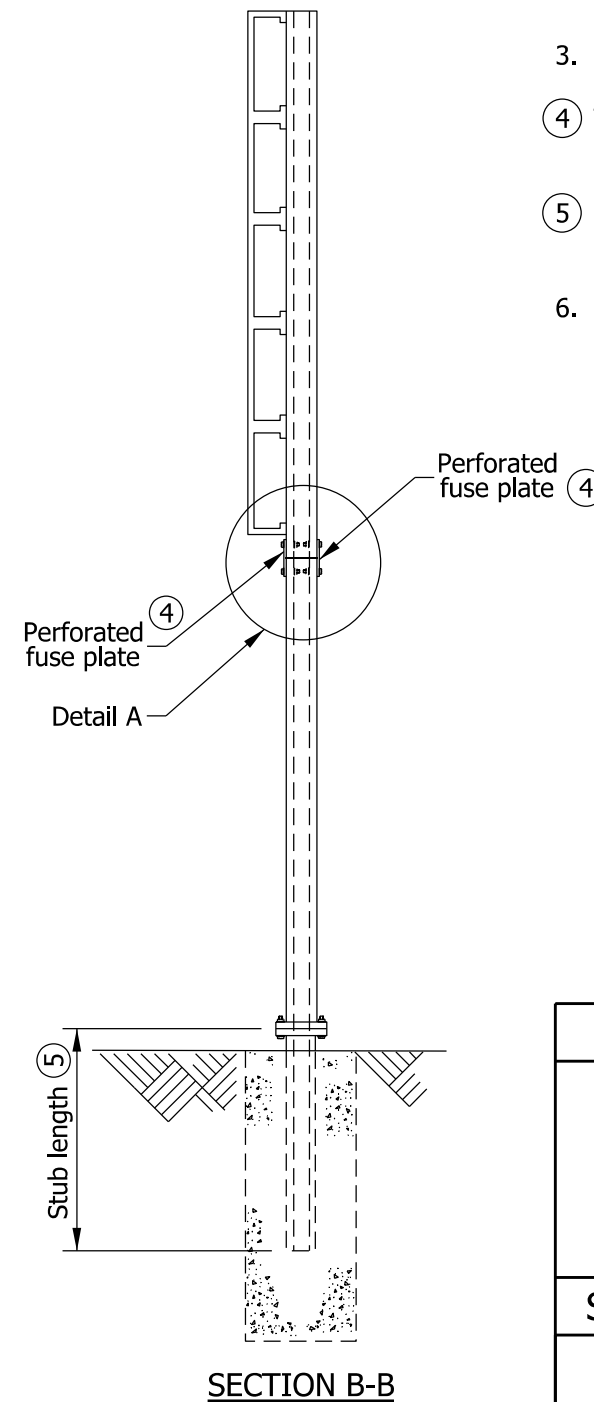
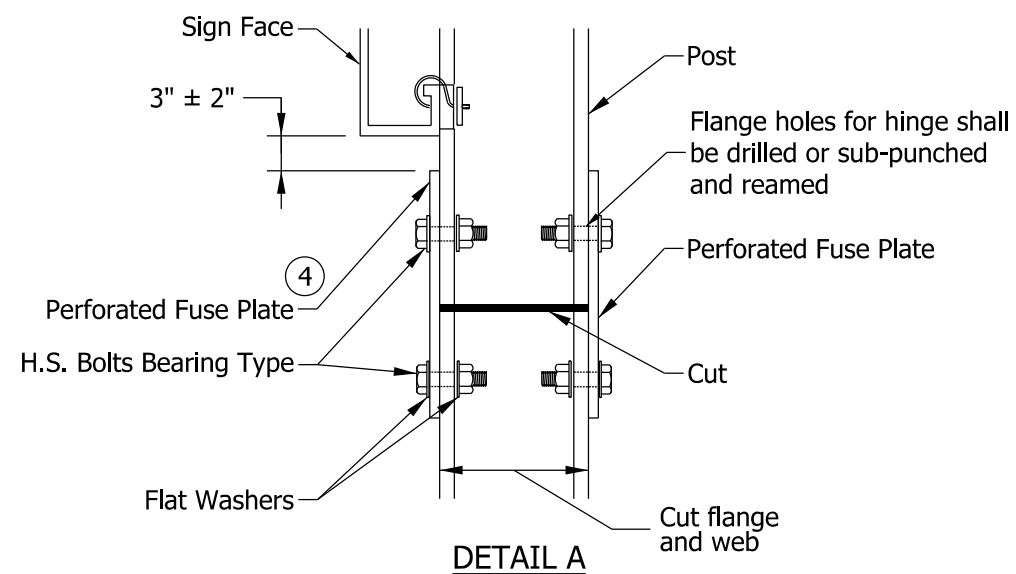
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/31/14

CHIEF ENGINEER DATE



**SIGN PLACEMENT**  
Double Support Sign (Large)



**NOTES:**

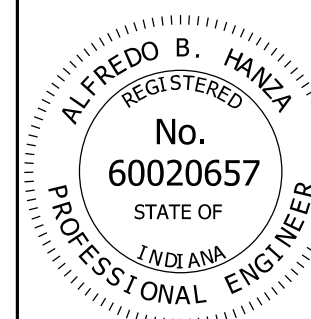
1. No more than one W10 x 19 or larger post can be used in a 7'-0" path. No more than two W8 x 18 or smaller posts can be used in a 7'-0" path.
2. For 3 post installation, the edge of sign to post is 1/6 width of sign and 1/3 width of sign between posts.
3. See Standard Drawing E 802-SNGP-04 for base plate details.
- ④ The distance from the top of the fuse plate to the bottom of the sign shall be the same for all posts.
- ⑤ See Standard Drawing E 802-SNGP-07 for required stub length.
6. See Standard Drawing E 802-SNGP-03 for Section A-A.

INDIANA DEPARTMENT OF TRANSPORTATION

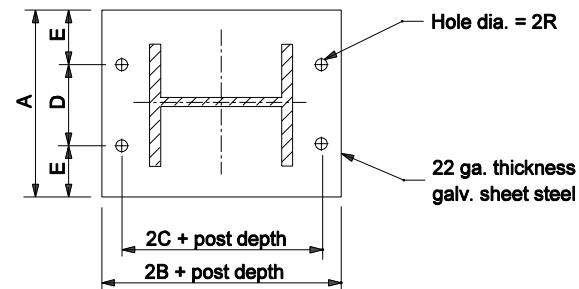
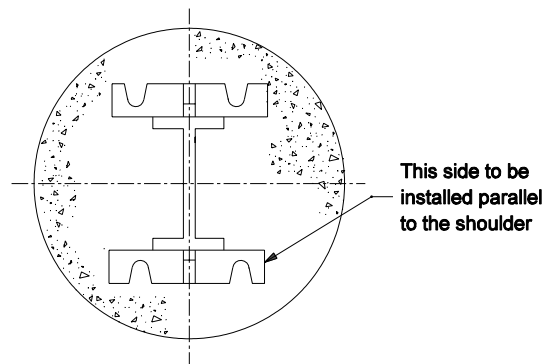
SIGN PLACEMENT

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SNGP-01



/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



### KEEPER PLATE

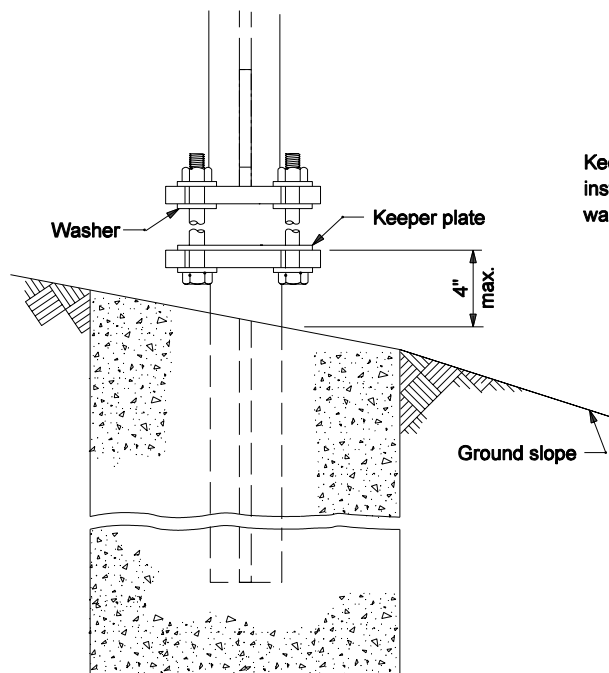
### PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

Assemble post to stub with bolts. One flat washer on each bolt shall be placed between the top of the keeper plate and bottom of the top base plate. Shim as required to plumb post.

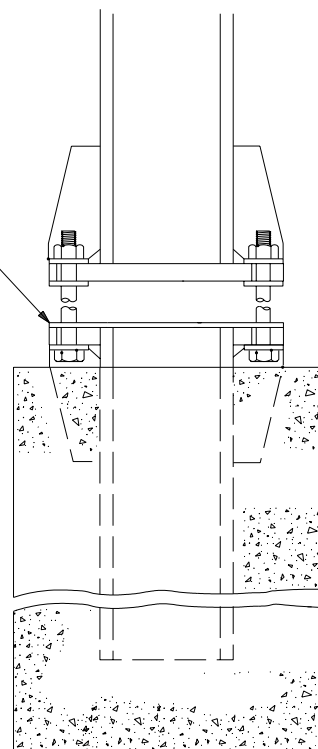
Tighten all bolts the maximum possible with 12" to 25" wrench to bed washers and shims and to clean bolt threads, then loosen each bolt in turn and retighten bolts in a systematic order to the prescribed torque. See table on Standard Drawing E 802-SNGP-05 for dimensions.

Burr threads at junction with nuts using a center punch to prevent nut loosening.

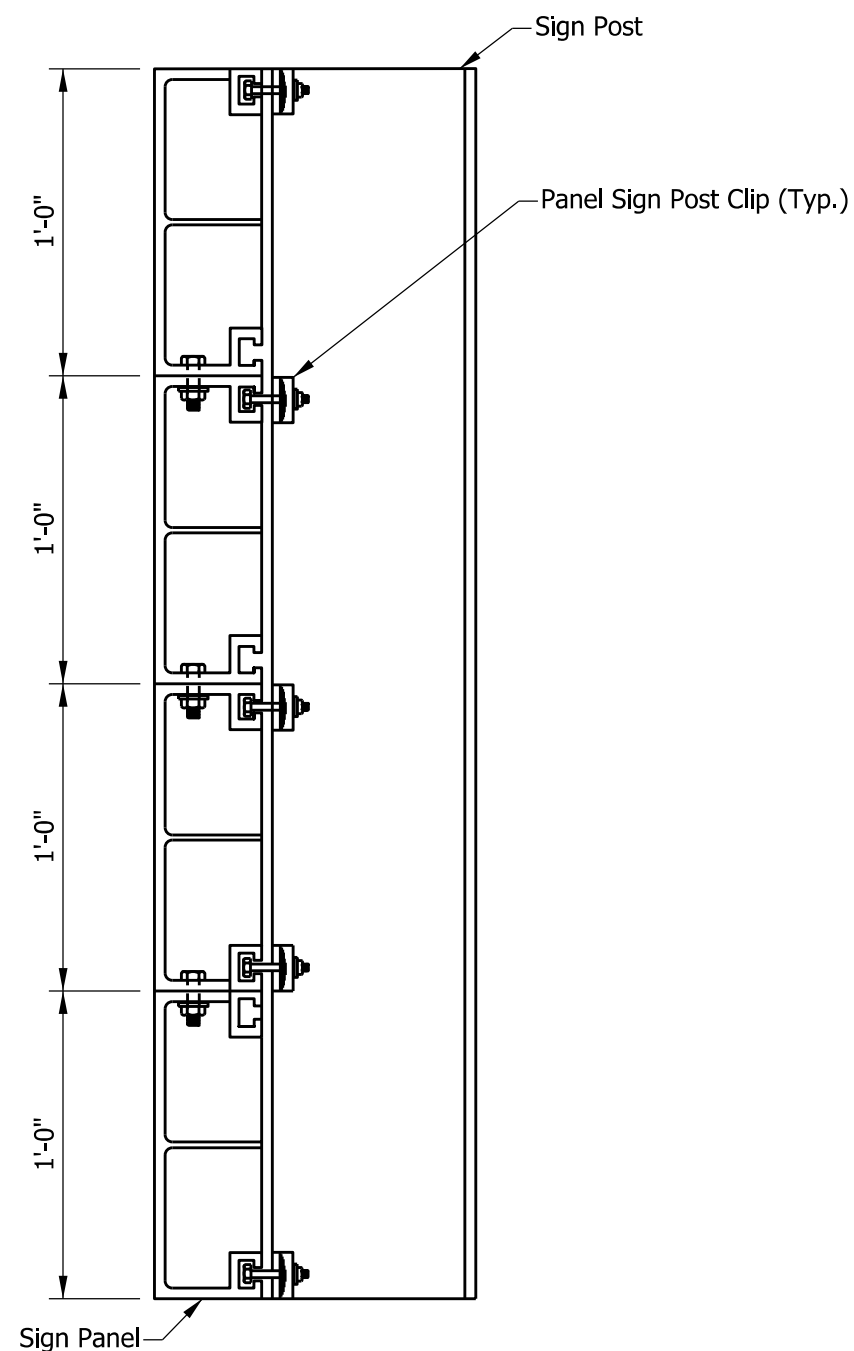
Stubs shall be plumb and base plate shall be leveled and physically held level until the concrete sets.



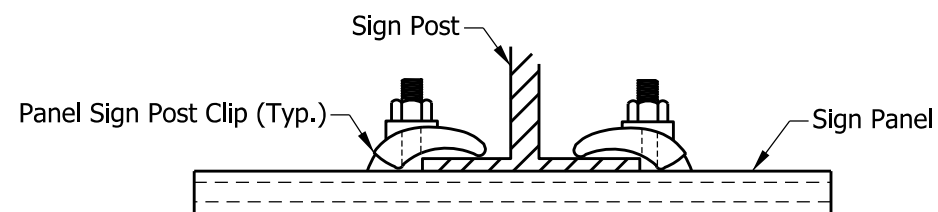
Keeper plate, install below washer



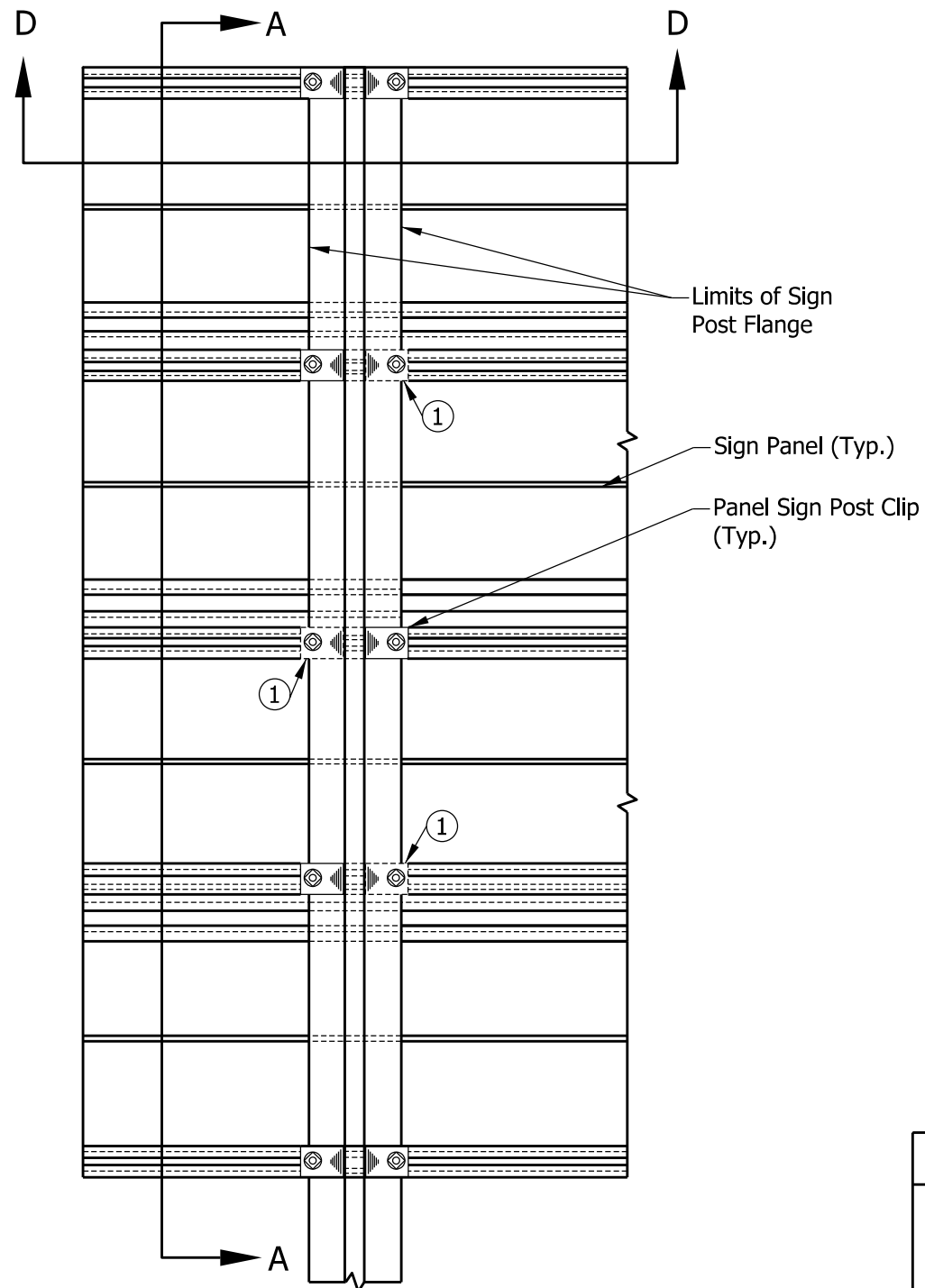
INDIANA DEPARTMENT OF TRANSPORTATION	
WIDE FLANGE SIGN SUPPORT BASE	
March 2004	
STANDARD DRAWING NO. E 802-SNGP-02	
	/s/ Richard L. VanCleave DESIGN STANDARDS ENGINEER
	3-01-04 DATE
	/s/ Richard K. Smutzer CHIEF HIGHWAY ENGINEER
	3-01-04 DATE



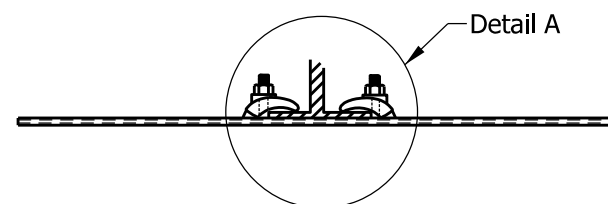
SECTION A-A



DETAIL A



ELEVATION  
(View from Back of Sign)



SECTION D-D

NOTES:

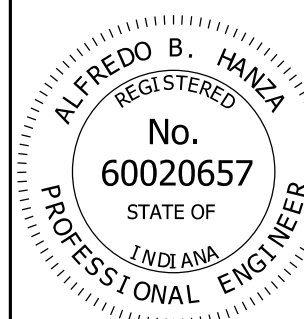
- ① Required for sign width greater than 24'.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN PLAN DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SNGP-03

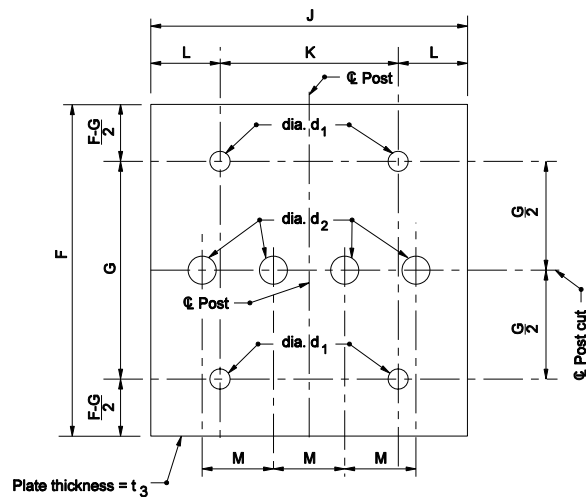


/s/ Alfredo B. Hanza 02/05/13

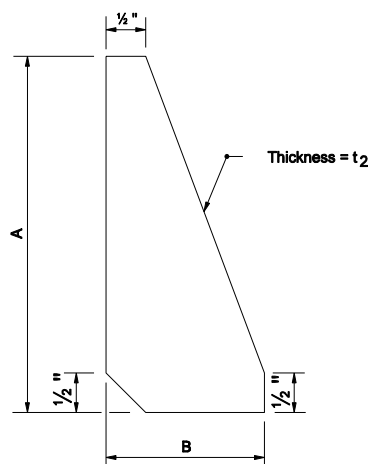
DESIGN STANDARDS ENGINEER DATE

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

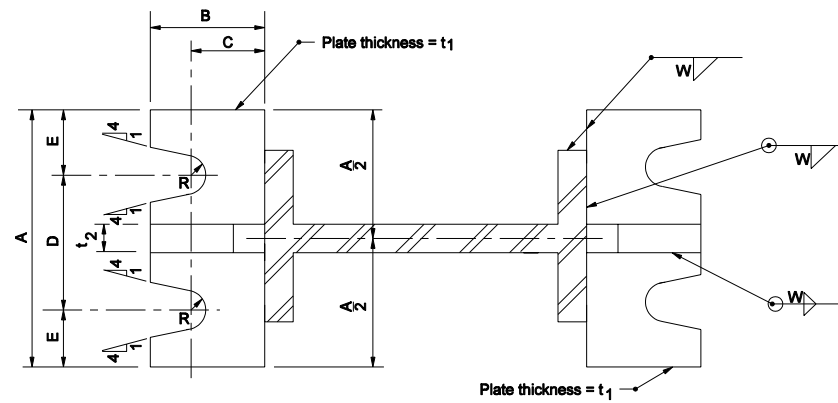
CHIEF ENGINEER DATE



PERFORATED FUSE PLATE DETAIL (3)



STIFFENER PLATE DETAIL

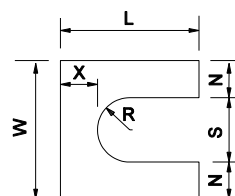


BASE PLATE DETAIL

Notes:

1. See table on Standard Drawing E 802-SNGP-05 for dimensions and weight of stiffener plate and base plate.
2. See table on Standard Drawing E 802-SNGP-06 for dimensions and weight of preforated fuse plate.
- ③ Use H.S. bolts with hex head, & hex nut, one flat washer under each bolt head and beveled or flat washer (where required) under nut.
4. Dimensional tolerances excluding the thickness for shims is  $\pm 1/32$ ".

SHIM DETAIL						
BOLT DIAMETER	L	W	N	R	S	X
1/2" to 3/4"	1 3/4"	1 3/4"	15/32"	13/32"	13/16"	15/32"
1"	2"	2"	3/8"	5/8"	1 1/4"	15/32"



Furnish 2-0.012  $\pm$  thick and 2-0.03  $\pm$  thick shims per post.

SHIM DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN DETAILS	
SEPTEMBER 2004	
STANDARD DRAWING NO. E 802-SNGP-04	
	/s/ Richard L. VanCleave 9-01-04 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-01-04 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



**BASE PLATE & STIFFENER PLATE DATA TABLE**

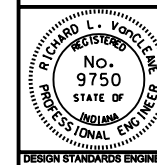
Post Size	Bolt Size	Torque in. - lb	Wt. of 4 Plates (One Post) ,lb	Wt. of 4 Stiffeners (One Post) ,lb	A	B	C	D	E	R	d4	t <sub>1</sub>	t <sub>2</sub>	W
W6 x 9	½" Ø x 2 ¼"	140	5.10	3.33	4 ½"	2"	1 ⅝"	2 ½"	1"	9/23"	1 ⅜"	½"	½"	⅜"
W8 x 10	⅝" Ø x 2 ½"	300	6.38	4.07	5"	2 ¼"	1 ½"	2 ⅞"	1 ¼"	11/32"	1 ½"	"	"	"
W8 x 13	¾" Ø x 3"	500	12.6	7.97	6"	2 ½"	"	3 ⅝"	1 ⅞"	13/32"	1 ¾"	¾"	¾"	¼"
W8 x 15		"	"	"	"	"	"	"	"	"	"	"	"	"
W8 x 18		"	"	"	"	"	"	"	"	"	"	"	"	⅝"
W10 x 19	1" Ø x 3 ¼"	700	14.04	8.66	"	2 ¾"	1 ½"	3 ⅝"	1 ⅜"	17/32"	2 ¼"	¾"	¾"	⅝"

INDIANA DEPARTMENT OF TRANSPORTATION

**SIGN DATA TABLES**

**SEPTEMBER 2002**

**STANDARD DRAWING NO. E 802-SNGP-05**



/s/ Richard L. VanCleave 9-03-02  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-03-02  
CHIEF HIGHWAY ENGINEER DATE


DESIGN STANDARDS ENGINEER

PERFORATED FUSE PLATE DATA TABLE												
Post Size	BOLT SIZE	Wt. of Plate* (One Post), lb	F	G	J	K	L	M	d <sub>1</sub>	d <sub>2</sub>	t <sub>3</sub>	Bolt Tension, lbs
W6 x 9	1/2 " x 1 1/2 "	1.01	4 1/4 "	2"	4"	2 1/4 "	7/8 "	1"	9/16"	3/4 "	1/4 "	12000
W8 x 10	1/2 " x 1 1/2 "	1.01	4 1/4 "	2"	4"	2 1/4 "	7/8 "	1"	9/16"	3/4 "	1/4 "	12000
W8 x 13	1/2 " x 1 1/2 "	1.01	4 1/4 "	2"	4"	2 1/4 "	7/8 "	1"	9/16"	3/4 "	1/4 "	12000
W8 x 15	5/8 " x 2 1/4 "	1.72	5"	2 1/2 "	4"	2 1/4 "	7/8 "	1"	11/16 "	3/4 "	3/8 "	19000
W8 x 18	5/8 " x 2 1/4 "	2.27	5"	2 1/2 "	5 1/4 "	2 3/4 "	1 1/4 "	1 1/4 "	11/16 "	1 1/16 "	3/8 "	19000
W10 x 19	5/8 " x 2 1/4 "	1.72	5"	2 1/2 "	4"	2 1/4 "	7/8 "	1"	11/16 "	3/4 "	3/8 "	19000


\* Gross weight with holes deducted from weight. Incidental weights of bolts and washers are not included in plan quantities.

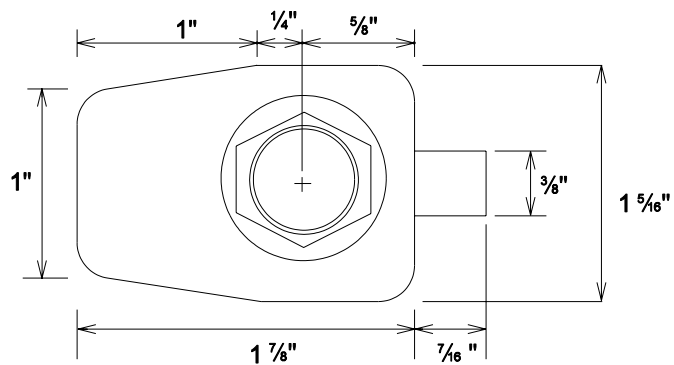
NOTES:

1. See Standard Drawing E 802-SNGP-01 through 07 for details and notes for posts, bolts, washers, etc.

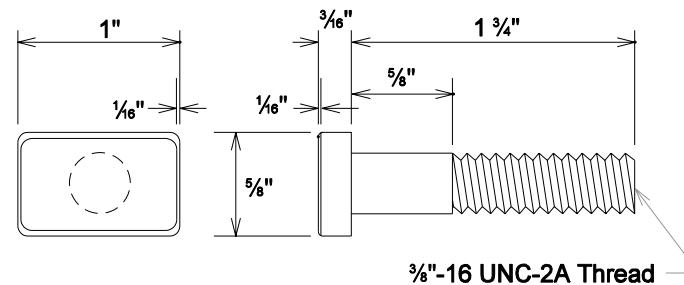
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN DATA TABLES	
SEPTEMBER 2008	
STANDARD DRAWING NO. E 802- SNGP-06	
	<div><div>/s/ <i>Richard L. VanCleave</i>09/02/08</div><div>DESIGN STANDARDS ENGINEERDATE</div><div>/s/ <i>Mark A. Miller</i>09/02/08</div><div>CHIEF HIGHWAY ENGINEERDATE</div></div>
DESIGN STANDARDS ENGINEER	

FOUNDATION DATA				
Type	Post Size	Stub Length	Dia.	Depth
VII	W6 x 9	2'-0	20"	5'
VIII	W8 x 10	2'-0	20"	5'
IX	W8 x 13	2'-0	20"	5'
X	W8 x 15	2'-6	24"	6'
XI	W8 x 18	2'-6	24"	6'
XII	W10 x 19	2'-6	24"	7'

INDIANA DEPARTMENT OF TRANSPORTATION									
<b>WIDE FLANGE SIGN POST SUPPORT FOUNDATION DATA</b>									
MARCH 2004									
STANDARD DRAWING NO. E 802-SNGP-07									
	<table> <tr> <td>/s/ Richard L. VanCleave</td> <td>3-01-04</td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td>/s/ Richard K. Smutzer</td> <td>3-01-04</td> </tr> <tr> <td>CHIEF HIGHWAY ENGINEER</td> <td>DATE</td> </tr> </table>	/s/ Richard L. VanCleave	3-01-04	DESIGN STANDARDS ENGINEER	DATE	/s/ Richard K. Smutzer	3-01-04	CHIEF HIGHWAY ENGINEER	DATE
/s/ Richard L. VanCleave	3-01-04								
DESIGN STANDARDS ENGINEER	DATE								
/s/ Richard K. Smutzer	3-01-04								
CHIEF HIGHWAY ENGINEER	DATE								
DESIGN STANDARDS ENGINEER									

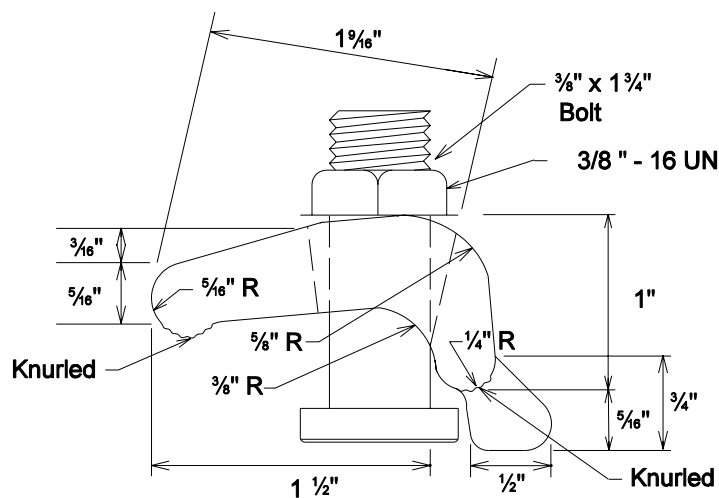


**PLAN VIEW**



**3/8"-16 UNC-2A Thread**

**SIDE VIEW**



**ELEVATION VIEW**

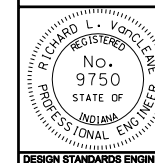
## POST CLIP BOLT

INDIANA DEPARTMENT OF TRANSPORTATION

**Panel Sign Post Clip**

**SEPTEMBER 2004**

**STANDARD DRAWING NO. E 802-SNGP-10A**



/s/ Richard L. VanCleave 9-01-04  
DESIGN STANDARDS ENGINEER DATE

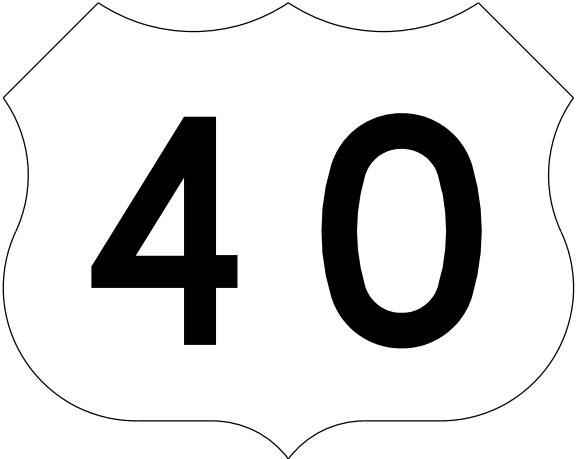
/s/ Richard K. Smutzer 9-01-04  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



WHITE BACKGROUND WITH BLACK BORDER AND NUMERALS

M1-4(I)



WHITE BACKGROUND WITH BLACK NUMERALS

M1-4(G)

(G) INDICATES SHIELD TO BE USED ON ALL GUIDE SIGNS AND DOES NOT REQUIRE BLACK BORDER

FOR INDEPENDENT USE ONLY

M1-4(I)					
12" NUMERALS		18" NUMERALS		24" NUMERALS	
2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS
24" x 24"	30" x 24"	36" x 36"	45" x 36"	48" x 48"	60" x 48"

FOR GUIDE SIGN USE

M1-4(G)					
12" NUMERALS		18" NUMERALS		24" NUMERALS	
2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS
24" x 24"	30" x 24"	36" x 36"	45" x 36"	48" x 48"	60" x 48"



M2-1(S)  
M2-1(I)



M4-5(I)  
M4-5(S)

(I) INDICATES WHITE LEGEND ON BLUE BACKGROUND (INTERSTATE)  
(S) INDICATES BLACK LEGEND ON SILVER BACKGROUND (STATE)

STATE	M2-1(S)	M2-1-(S)	M4-5(S)	M4-5-(S)
INTERSTATE	M2-1(I)	M2-1-(I)	M4-5(I)	M4-5-(I)
SHIELD SIZES	24" x 24" 30" x 24"	36" x 36" 45" x 36"	24" x 24" 30" x 24"	36" x 36" 45" x 36"
CORRESPONDING SIGN SIZE	21" x 15"	21" x 15"	24" x 21"	30" x 15"

INDIANA DEPARTMENT OF TRANSPORTATION

ROUTE MARKER DETAILS

SEPTEMBER 2010

STANDARD DRAWING NO. E 802-SNGS-01

DESIGN STANDARDS ENGINEER

/s/ *Richard L. VanCleave*

09/01/10

DESIGN STANDARDS ENGINEER

DATE

/s/ *Mark A. Miller*

09/01/10

CHIEF HIGHWAY ENGINEER

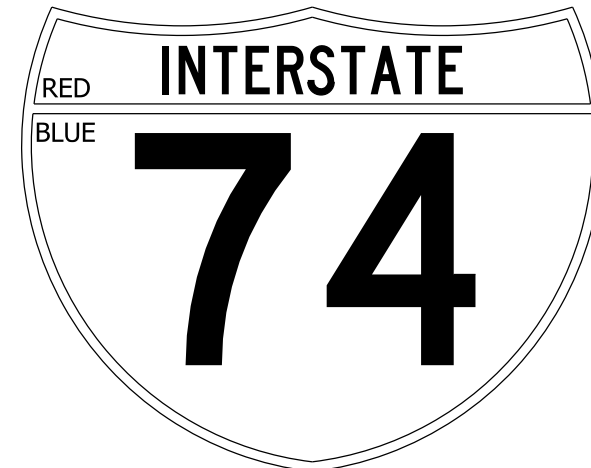
DATE



WHITE BACKGROUND WITH BLACK  
LETTERS, NUMERALS AND BORDER

## STATE ROUTE MARKER


M1-5					
12" NUMERALS		18" NUMERALS		24" NUMERALS	
2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS
24" x 24"	30" x 24"	36" x 36"	45" x 36"	48" x 48"	60" x 48"

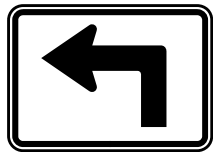


WHITE LETTERS, NUMERALS, AND BORDER

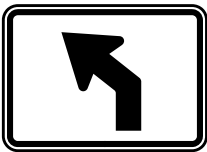
## INTERSTATE SHIELD

M1-1					
12" NUMERALS		18" NUMERALS		24" NUMERALS	
2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS	2 DIGITS	3 DIGITS
24" x 24"	30" x 24"	36" x 36"	45" x 36"	48" x 48"	60" x 48"

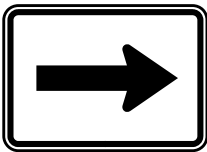
INDIANA DEPARTMENT OF TRANSPORTATION									
ROUTE MARKER DETAILS									
SEPTEMBER 2010									
STANDARD DRAWING NO.	E 802-SNGS-02								
	<table border="0"> <tr> <td><i>/s/ Richard L. VanCleave</i></td> <td><i>09/01/10</i></td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td><i>/s/ Mark A. Miller</i></td> <td><i>09/01/10</i></td> </tr> <tr> <td>CHIEF HIGHWAY ENGINEER</td> <td>DATE</td> </tr> </table>	<i>/s/ Richard L. VanCleave</i>	<i>09/01/10</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>09/01/10</i>	CHIEF HIGHWAY ENGINEER	DATE
<i>/s/ Richard L. VanCleave</i>	<i>09/01/10</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>09/01/10</i>								
CHIEF HIGHWAY ENGINEER	DATE								
DESIGN STANDARDS ENGINEER									



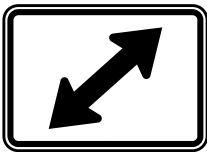
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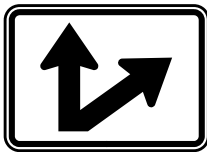
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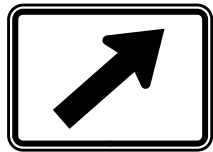
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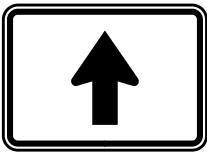
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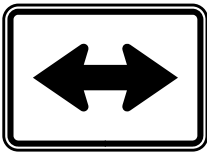
M6-7 (R or L) (I or S)



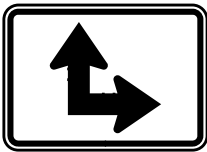
M6-2 (R or L) (I or S)



M6-3 (I or S)



M6-4 (I or S)



M6-6 (R or L) (I or S)

STATE	M5-1(S) M6-1(S) M6-3(S) M6-5(S) M6-7(S) M5-2(S) M6-2(S) M6-4(S) M6-6(S)			
INTERSTATE	M5-1(I) M6-1(I) M6-3(I) M6-5(I) M6-7(I) M5-2(I) M6-2(I) M6-4(I) M6-6(I)			
SHIELD SIZES	24" x 24" 30" x 24"		36" x 36" 45" x 36"	
CORRESPONDING SIGN SIZE	21" x 15"		21" x 15"	



M3-1 \*  
(S or I)



M3-2 \*  
(S or I)




M3-3 \*  
(S or I)



M3-4 \*  
(S or I)

\* Note: Make 1st letter 10% taller

STATE	M3-1(S) M3-2(S) M3-3(S) M3-4(S)			
INTERSTATE	M3-1(I) M3-2(I) M3-3(I) M3-4(I)			
SHIELD SIZES	24" x 24"	30" x 24"	36" x 36"	45" x 36"
CORRESPONDING SIGN SIZE	24" x 12"	30" x 15"	30" x 15"	30" x 15"

INDIANA DEPARTMENT OF TRANSPORTATION	
ROUTE MARKER DETAILS	
SEPTEMBER 2010	
STANDARD DRAWING NO.	E 802-SNGS-03
	<div><div>/s/ Richard L. VanCleave</div><div>DESIGN STANDARDS ENGINEER</div></div> <div><div>09/01/10</div><div>DATE</div></div>
DESIGN STANDARDS ENGINEER	<div><div>/s/ Mark A. Miller</div><div>CHIEF HIGHWAY ENGINEER</div></div> <div><div>09/01/10</div><div>DATE</div></div>

## GENERAL NOTES

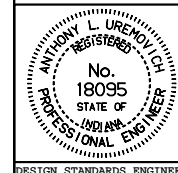
1. All series M(S) "JCT", cardinal directions, "TO", and arrows shall be white background with black legend and border.
2. All series M(I) "JCT", cardinal directions, "TO", and arrows shall be blue background with white legend and border.
3. Numerals sometimes cannot be accommodated within the space available. For this situation, the standard series D numeral may be reduced to series C. As a second choice, use the next smaller height commonly available.
4. For independent use of sheet signs, a nylon and metal washer shall be placed between each bolt head and the face of the metal sign. See Sign Bolt Detail on Std. Dwg. No. E 802-SNGS-07.
5. Visually space numbers about vertical centerline of shield.
6. Wherever white is specified herein as a color, it is understood to include silver-colored reflecting coatings or elements that reflect white light.
7. Fabrication details for the signs shown shall be found in the Standard Highway Signs booklet. Shop drawings will be supplied on all other signs not found in such booklet
8. For hole punch pattern see shop drawings.

INDIANA DEPARTMENT OF TRANSPORTATION

### ROUTE MARKER DETAILS

JANUARY 2000

STANDARD DRAWING NO. E 802-SNGS-04





/s/ Anthony L. Uremovich 3-01-95  
DESIGN STANDARDS ENGINEER DATE

/s/ Donald W. Lucas 3-01-95  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

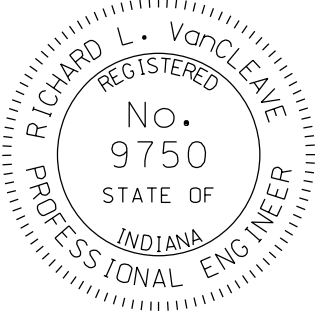


SIGN	REMARKS	BACKGROUND	COPY & BORDER
IGD, GD	Directional	S-3-H	B
IGDO, GD	Directional	S-3-H	B
IGI	Information	S-3-H	B
IGS	Services	S-4-H	B
IGS	Services	S-6-H	S-2-H
IGDO, GDO Special - Panel	Warning Panel	S-1-H	A
R1-1	Stop	S-5-H	S-2-H
R1-2	Yield	S-2-H	S-5-H
R1-3, R1-4	4-Way, All-Way	S-5-H	S-2-H
R2-3	Night Speed	0-1-H	S-2-H
R3-1, R3-2, R3-4	No Right, Left, or U Turns	S-2-H	S-5-H, 0-1-H
R5-1	Do Not Enter	S-5-H	S-2-H
R5-1a	Wrong Way	S-5-H	S-2-H
R5-2, R5-6	No Trucks, Bicycles	S-2-H	S-5-H, 0-1-H
R7-1, R7-4, R7-107, R7-201	No Parking (Urban)	S-2-H	S-5-H
R7-2a, R7-107a	No Parking (Urban)	S-2-H	S-5-H, 0-1-H
R7-5, R7-5a, R7-108	Restricted Parking	S-2-H	S-7-H
R7-8	Reserved Parking	S-2-H	S-7-H, S-6-H
R8-1, R8-1a, R8-2, R8-3, R8-3b, R8-3c, R8-8	No Parking (Rural)	S-2-H	S-5-H
R8-3a	No Parking (Rural)	S-2-H	S-5-H, 0-1-H
R9-3a, R9-4a	Pedestrian Signs	S-2-H	S-5-H, 0-1-H
All other regulatory signs		S-2-H	0-1-H
W3-1a, W3-2a	Stop & Yield Ahead	S-1-H	S-2-H, S-5-H, 0-1-H
W3-3	Signal Ahead	S-1-H	S-5-H S-7-H, 0-1-H
All other warning signs	Except Construction Signs, School Warning Signs, and Signs labeled as "FY"	S-1-H	0-1-H
Warning Signs labeled as "FY"		S-10-H	0-1-H
All School Warning Signs		S-11-H	0-1-H
M1-1	Interstate Shields	S-8-H	S-2-H
M1-2, M1-3	Business Shields	S-7-H	S-2-H
M1-4	U.S. Shields	S-2-H	0-1-H
M1-5	County Shields	S-4-H	S-1-H
M1-6	State Shields	S-2-H	0-1-H
M1-7	National Forest		S-2-H

KEY	
CODE	DESCRIPTION
0-1-H	Paint (Black) for use with prismatic reflective sheeting
S-1-H	Reflective sheeting (Yellow) prismatic
S-2-H	Reflective sheeting (Silver) prismatic
S-3-H	Reflective sheeting (Green) prismatic
S-4-H	Reflective sheeting (Blue) prismatic
S-5-H	Reflective sheeting (Silver with reverse screen transparent Red) prismatic
S-6-H	Reflective sheeting (Silver with reverse screen transparent Blue) prismatic
S-7-H	Reflective sheeting (Silver with reverse screen transparent Green) prismatic
S-8-H	Reflective sheeting (Silver with reverse screen transparent Red and Blue) prismatic
S-9-H	Reflective sheeting (Orange) prismatic
S-10-H	Reflective sheeting (Fluorescent Yellow), prismatic
S-11-H	Reflective sheeting (Fluorescent Yellow-Green), prismatic
A	Cut - Out letters which are painted black or as per specifications
B	Copy as per specifications
	Brown background with prismatic reflective sheeting

SIGN IDENTIFICATION CODES

- IGDO
- Interstate guide directional overhead
- IGD
- Interstate guide directional
- IGS
- Interstate guide service and rest area
- IGI
- Interstate guide information
- GDO
- Guide directional overhead
- GD
- Guide directional
- R
- Regulatory sign
- W
- Warning, construction, & maint. signs
- M
- Route markers and aux. markers for assemblies
- D
- Destination sign
- I
- Information

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN REFLECTORIZATION SCHEDULE	
SEPTEMBER 2012	
STANDARD DRAWING NO. E 802-SNGS-05	
	<div><div>/s/ Richard L. VanCleave</div><div>SUPERVISOR, ROADWAY STANDARDS</div><div>09/04/12</div><div>DATE</div></div> <div><div>/s/ Mark A. Miller</div><div>CHIEF ENGINEER</div><div>09/04/12</div><div>DATE</div></div>

SIGN	REMARKS	BACKGROUND	COPY & BORDER
M2-1 (I), M3-1 (I), M3-2 (I), M3-3 (I), M3-4 (I)	Auxiliary markers	S-6-H	S-2-H
M4-5 (I), M4-7 (I), M5-1 (I), M5-2 (I)	Auxiliary markers	S-6-H	S-2-H
M6-1 Through M6-7	Auxiliary markers	S-6-H	S-2-H
M4-5, M4-6, M4-6a	Auxiliary markers	S-7-H	S-2-H
M4-8, M4-9	Detour marker	S-9-H	O-1-H
all other marker Auxiliaries		S-2-H	O-1-H
D4-1	Parking	S-2-H	S-7-H
D5-5, D5-5a, D9-2, D9-6	Rest area & service	S-6-H	S-2-H
D7-2	Recreation area	△	S-2-H
All other destination signs		S-3-H	S-2-H
I-17, I-18, I-19		S-6-H	S-2-H
I-20, I-21		S-2-H	O-1-H
All other I-Signs		S-7-H	S-2-H
All construction signs		S-9-H	O-1-H
All maintenance signs		S-9-H	O-1-H


NOTE: Wherever white is specified herein as a color, it is understood to include silver-colored reflecting coatings or elements that reflect white light.

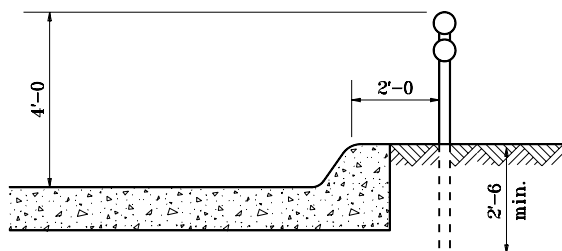
KEY

CODE	DESCRIPTION
0-1-H	Paint (Black) for use with prismatic reflective sheeting
S-1-H	Reflective sheeting (Yellow) prismatic
S-2-H	Reflective sheeting (Silver) prismatic
S-3-H	Reflective sheeting (Green) prismatic
S-4-H	Reflective sheeting (Blue) prismatic
S-5-H	Reflective sheeting (Silver with reverse screen transparent Red) prismatic
S-6-H	Reflective sheeting (Silver with reverse screen transparent Blue) prismatic
S-7-H	Reflective sheeting (Silver with reverse screen transparent Green) prismatic
S-8-H	Reflective sheeting (Silver with reverse screen transparent Red and Blue) prismatic
S-9-H	Reflective sheeting (Orange) prismatic
A	Cut - Out letters which are painted black or as per specifications
B	Copy as per specifications
△	Brown background with prismatic reflective sheeting

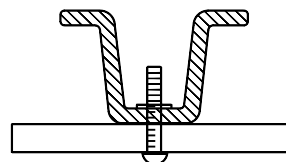
SIGN IDENTIFICATION CODES

- IGDO
- Interstate guide directional overhead
- IGD
- Interstate guide directional
- IGS
- Interstate guide service and rest area
- IGI
- Interstate guide information
- GDO
- Guide directional overhead
- GD
- Guide directional
- R
- Regulatory sign
- W
- Warning, construction, & maint. signs
- M
- Route markers and aux. markers for assemblies
- D
- Destination sign
- I
- Information

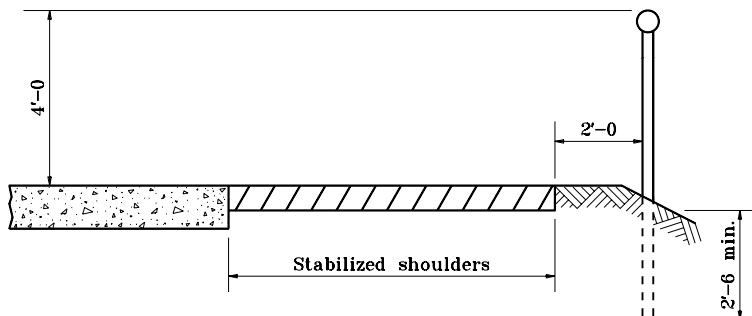
INDIANA DEPARTMENT OF TRANSPORTATION		
SIGN REFLECTORIZATION SCHEDULE		
SEPTEMBER 2010		
STANDARD DRAWING NO. E 802-SNGS-06		
	<div>/s/ Richard L. VanCleave09/01/10</div> <div>DESIGN STANDARDS ENGINEERDATE</div>	
	<div>/s/ Mark A. Miller09/01/10</div> <div>CHIEF HIGHWAY ENGINEERDATE</div>	
	DESIGN STANDARDS ENGINEER	



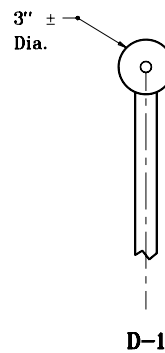
**UNMOUNTABLE CURB SECTION**



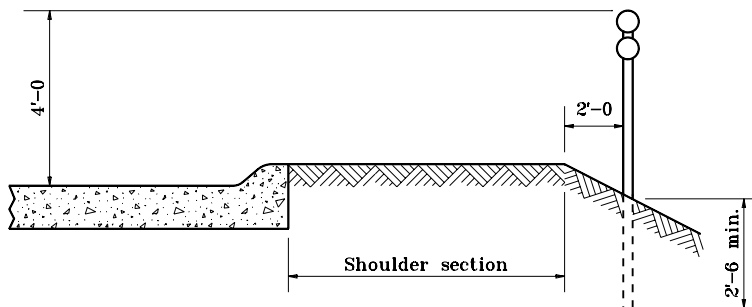
**MOUNTING DETAIL**



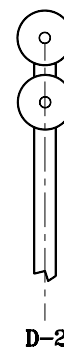
**SHOULDER SECTION**



**D-1**



**MOUNTABLE CURB SECTION**

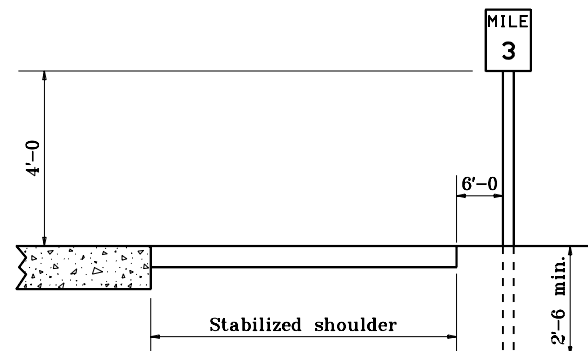


**D-2**

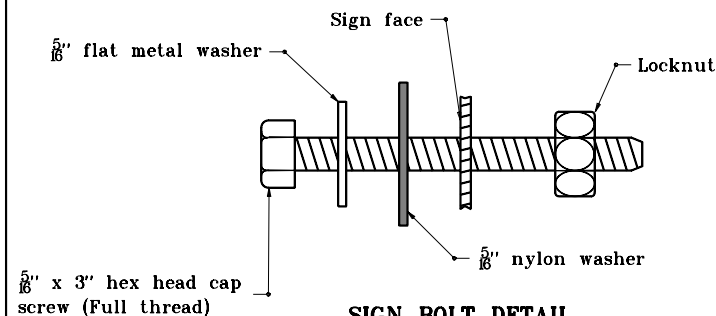
**DELINEATOR DETAILS**

**GENERAL NOTES**

1. Post to be type A flange posts.
2. Mileposts shall be installed in accordance with Interstate Sign Manual.



**TYPICAL MILE or REFERENCE POST**



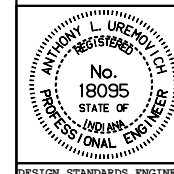
**SIGN BOLT DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION

**MISC. SIGN DETAILS**

MARCH 1995

STANDARD DRAWING NO. **E 802-SNGS-07**



DETAILS PLACED IN THIS FORMAT 11-15-99


/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

### GENERAL NOTES



1. Nut shall be tightened sufficiently so that the sign is held firmly against the post. However, there shall be no deformation of aluminum sheeting or twisting or damage to the reflective sheeting.
2. Signs shall be fastened to the posts with bolts, metal and nylon washers and locknut.
3. A nylon washer and a metal washer shall be placed between each bolt head and the face of the sign.
4. Flanged channel posts are as specified and as shown on the plans.
5. The sheet signs shall be punched or drilled for mounting such that the vertical hole spacing is in equal increments of millimeters.
6. See Std. Dwg. No. E 802-SNPL-02 for mounting height and lateral locations of signs.
7. Splicing of flanged channel post will not be permitted.
8. Bolt can either be stainless steel or galvanized steel bolt.

INDIANA DEPARTMENT OF TRANSPORTATION		
<b>MISC. SIGN DETAILS</b>		
<b>GENERAL NOTES</b>		
MAY 1999		
<b>STANDARD DRAWING NO. E 802-SNGS-08</b>		
	DETAILS PLACED IN THIS FORMAT 11-15-99	
	/s/ Anthony L. Uremovich 11-15-99	
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Firooz Zandi 11-15-99	
CHIEF HIGHWAY ENGINEER	DATE	
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED	5-03-99

MOUNTING WIDTH x HEIGHT ("W x H")	5 ft		6 ft		7 ft		8 ft	
	U CHANNEL	SQUARE POST	U CHANNEL	SQUARE POST	U CHANNEL	SQUARE POST	U CHANNEL	SQUARE POST
12 x 12, 12 x 6, 12 x 9 12 x 12, 12 x 18, 12 x 30	1-A	1-Type 1	1-A	1-Type 1	1-A	1-Type 1	1-A	1-Type 1
12 x 36	1-A		1-A		1-A		1-A	
18 x 6, 18 x 12, 18 x 18	1-A		1-A		1-A		1-A	
18 x 24	1-A		1-A		1-A		1-A	
18 x 30	1-A		1-A		1-A		1-A	
18 x 48	1-A		1-A		1-A		1-A	
24 x 12, 24 x 18, 24 x 24	1-A		1-A		1-A		1-A	
24 x 30	1-A		1-A		1-A		1-A	
24 x 36	1-A		1-A		1-A		1-A	
30 x 18	1-A		1-A		1-A		1-A	
30 x 24	1-A		1-A		1-A		1-A	
30 x 30	1-A		1-A		1-A		1-A	
30 x 36	1-A		1-A		1-A		1-A	
30 x 42	1-B		1-B		1-B		1-B	
30 x 48	1-B		1-B		1-B		1-B	
36 x 12	2-A		2-A		2-A		2-A	
36 x 18	2-A		2-A		2-A		2-A	
36 x 24	2-A		2-A		2-A		2-A	
36 x 36	2-A		2-A		2-A		2-A	
36 x 48	2-A		2-A		2-A		2-A	
42 x 18	2-A		2-A		2-A		2-B	
42 x 24	2-A		2-A		2-A		2-A	
42 x 30	2-A		2-A		2-A		2-A	
42 x 36	2-A		2-A		2-A		2-A	
48 x 16	2-A		2-A		2-A		2-A	
48 x 18	2-A		2-A		2-A		2-A	
48 x 24	2-A		2-A		2-A		2-A	
48 x 30	2-A		2-A		2-A		2-A	
48 x 36	2-A	2-Type 2	2-A	2-Type 2	2-A	2-Type 2	2-A	2-Type 2
48 x 48	2-A		2-B		2-B		2-B	
48 x 60	2-B		2-B		2-B		2-B	
60 x 24	2-A		2-A		2-A		2-A	
60 x 30	2-A		2-A		2-A		2-A	
60 x 36	2-A		2-A		2-B		2-B	
60 x 48	2-B		2-B		2-B		2-B	
72 x 24	2-A		2-A		2-A		2-A	
72 x 36	2-B		2-B		2-B		2-B	
90 x 36	2-B	2-Type 3	2-B	2-Type 3	2-B	2-Type 3	2-B	2-Type 3
120 x 36								

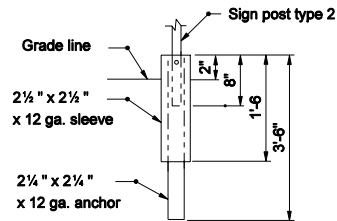
### GENERAL NOTES

1. See Standard Sheet E 802-SNGS-10 for square steel sign post installation details.
2. The type 1 post shall be 2¼ in. x 2¼ in. x 12 ga. wall thickness.
3. The type 2 post shall be 2 in. x 2 in. x 12 ga. wall thickness.
4. The type 3 post shall be 2½ in. x 2½ in. x 12 ga. wall thickness.

INDIANA DEPARTMENT OF TRANSPORTATION	
STEEL SIGN POSTS	
SEPTEMBER 2006	
STANDARD DRAWING NO. E 802-SNGS-09	
	<i>/s/ Richard L. VanCleave</i> 9-01-06 DESIGN STANDARDS ENGINEER DATE
	<i>/s/ Richard K. Smutzer</i> 9-01-06 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

### SQUARE POST

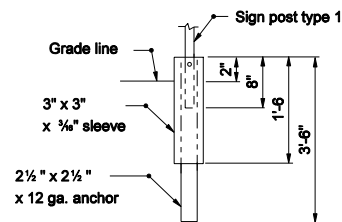
12 ga. Thickness



### REINFORCED ANCHOR BASE

### SQUARE POST

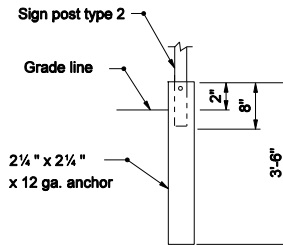
12 ga. Thickness



### REINFORCED ANCHOR BASE

### SQUARE POST

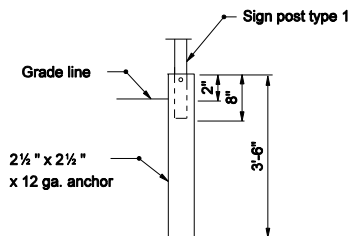
12 ga. Thickness



### UNREINFORCED ANCHOR BASE

### SQUARE POST

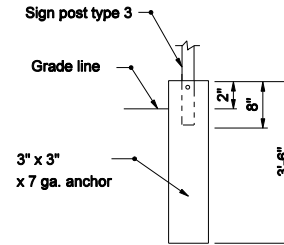
12 ga. Thickness



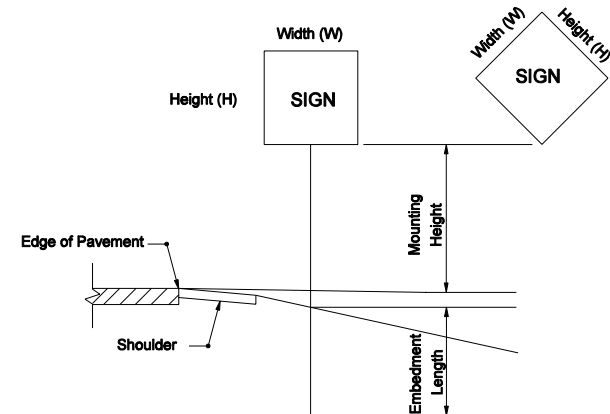
### UNREINFORCED ANCHOR BASE

### SQUARE POST

12 ga. Thickness



### UNREINFORCED ANCHOR BASE



### GENERAL NOTES:

- See Standard Drawing E-802-SNGS-09 for sign size and E802-SNPL-02 for mounting height table.

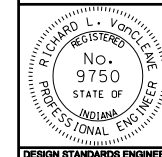
POST	TYPE	WALL THICKNESS	NO. OF POSTS PERMITTED IN 7 ft PATH	EMBEDMENT LENGTH
U-CHANNEL	A, B		1 OR 2	3'-6"
SQUARE	1	12 ga.	1	ANCHOR BASE
	2	12 ga.	1 OR 2	
	3	12 ga.	1	

INDIANA DEPARTMENT OF TRANSPORTATION

### STEEL SIGN POSTS

SEPTEMBER 2006

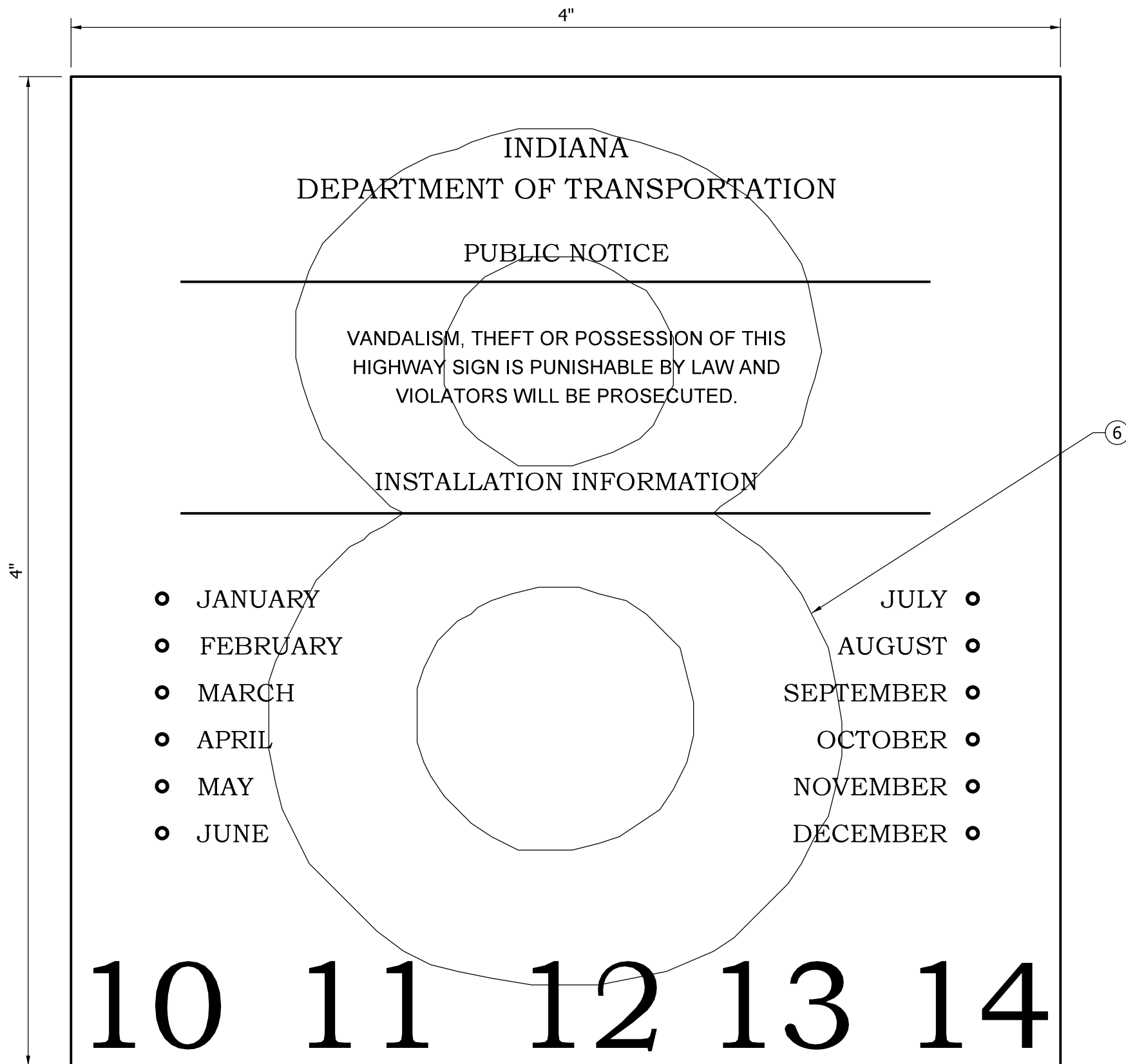
STANDARD DRAWING NO. E 802-SNGS-10




/s/ Richard L. VanCleave 9-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-01-06  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



- NOTES:**
- 1. Height of lettering shall be 1/8" to 1/4". The height of the dates along the bottom shall be 1/2".
  - 2. Copy shall be black on reflectorized white background
  - 3. The number of dates along the bottom need not be five, and the first date need not be 07. However, the installation date shall be shown.
  - 4. The month and year of installation shall be punched by a 1/4" minimum diameter hole.
  - 5. The overlay number to be of colored transparent sheeting to indicate the last digit of the year of installation.
  - ⑥ The decade of installation shall be indicated by color of transparent sheeting:
    - 2010 - 2019 Red
    - 2020 - 2029 Brown
    - 2030 - 2039 Orange

INDIANA DEPARTMENT OF TRANSPORTATION		
SIGN IDENTIFICATION MARKING		
SEPTEMBER 2010		
STANDARD DRAWING NO.		E 802-SNGS-11
	/s/ <i>Richard L. VanCleave</i>	09/01/10
	DESIGN STANDARDS ENGINEER	DATE
DESIGN STANDARDS ENGINEER	/s/ <i>Mark A. Miller</i>	09/01/10
	CHIEF HIGHWAY ENGINEER	DATE

# Wide Flange Post Selection Table

Sign Width (Feet) L

	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			

Sign Height (Feet) W

2 - W6 x 9

2 - W8 X 13



2 - W8 x 10

2 - W8 x 15

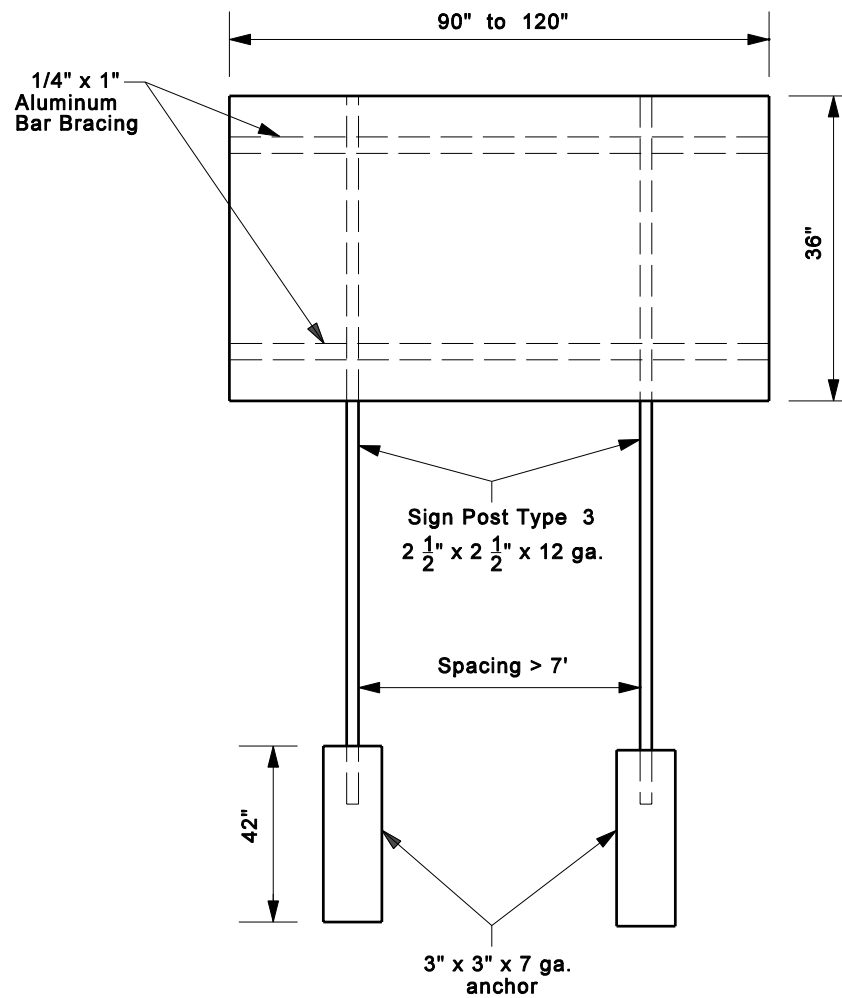
2 - W10 x 19

2 - W8 x 18

3 - W8 x 18

INDIANA DEPARTMENT OF TRANSPORTATION	
WIDE FLANGE POST SELECTION TABLE	
MARCH 2004	
STANDARD DRAWING NO. E 802-SNGS-12	
	/s/ Richard L. VanCleave      3-01-04 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      3-01-04 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	

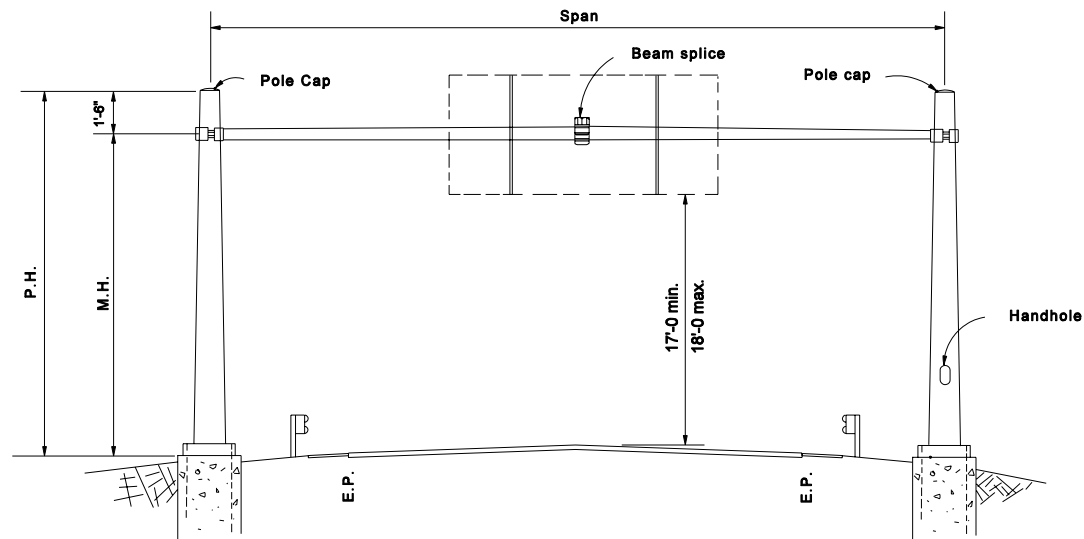




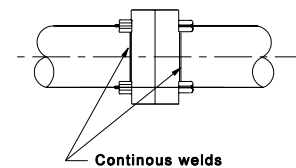
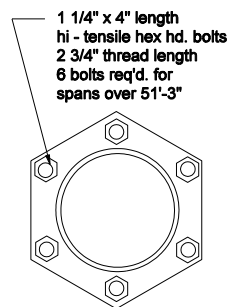
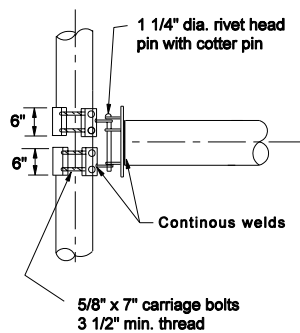
## NOTES

1. Maximum Sign Width 120", Height 36".

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>STEEL SIGN POSTS</b>	
SEPTEMBER 2006	
STANDARD DRAWING NO. E 802-SNGS-13	
	/s/ Richard L. VanCleave      9-01-06 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      9-01-06 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	



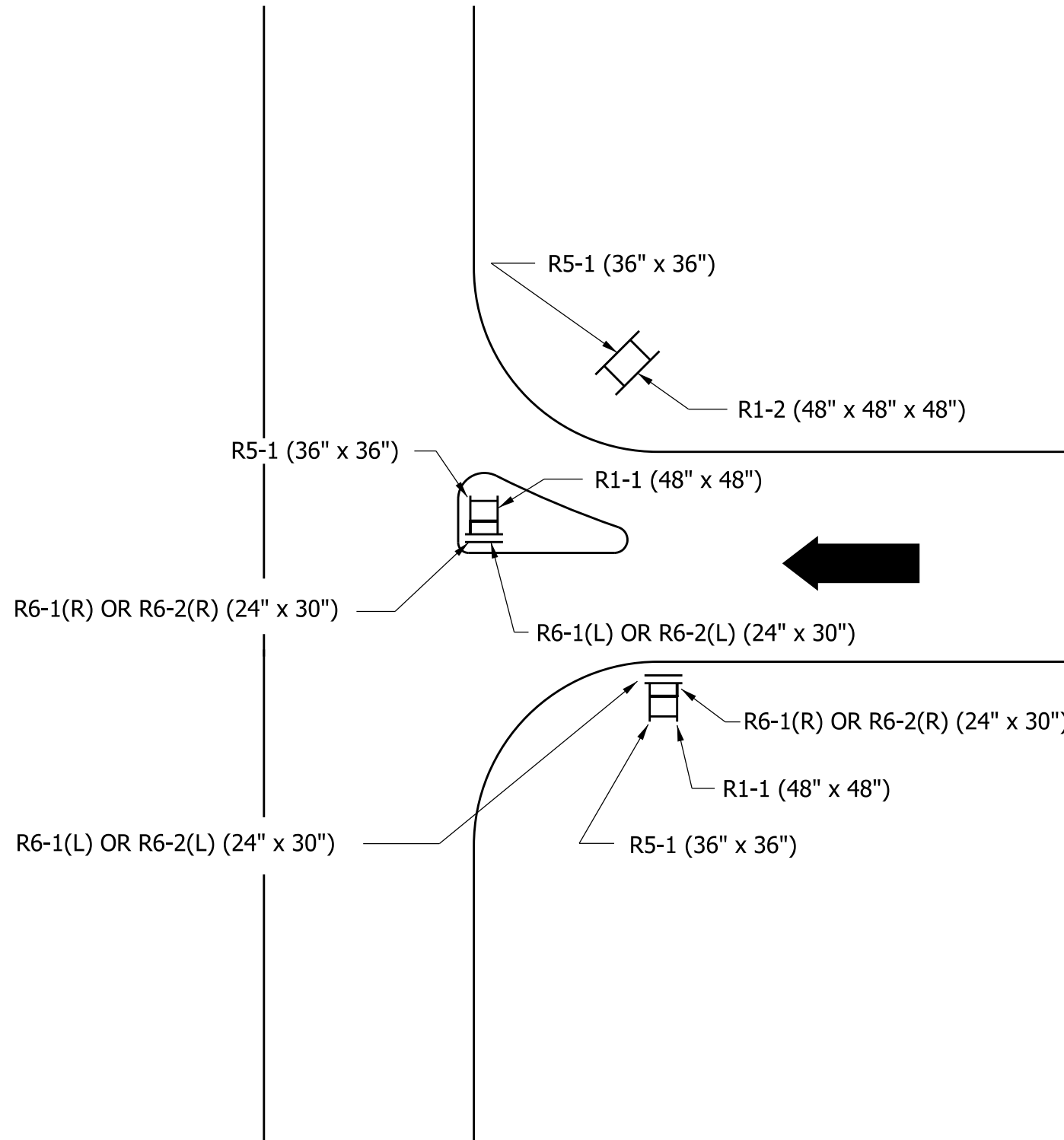
**OVERHEAD BRIDGE**




**BEAM SPLICE**

All Dimension are in mm unless otherwise specified

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>OVERHEAD SIGN BRIDGE SPANS</b>	
MARCH 2004	
STANDARD DRAWING NO. E 802-SNOB-01	
	/s/ Richard L. VanCleave 3-01-04 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 3-01-04 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	




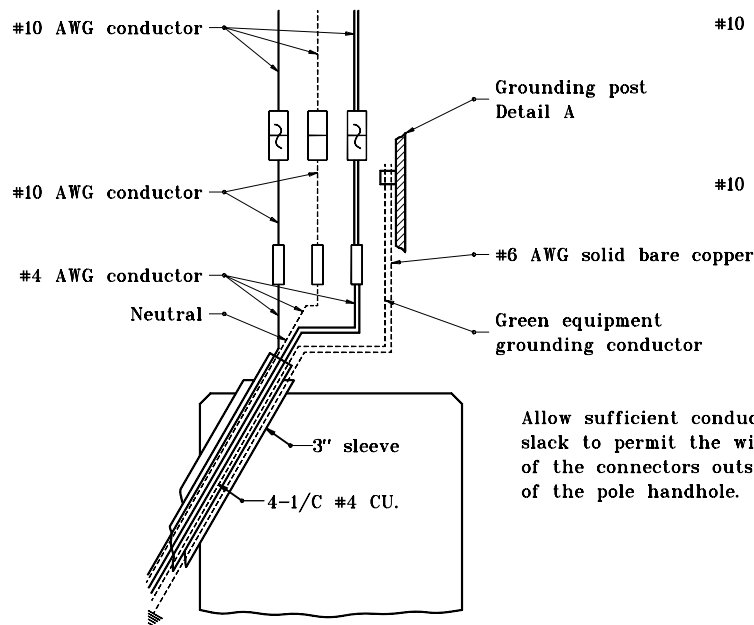
INDIANA DEPARTMENT OF TRANSPORTATION		
SIGN DETAILS TYPICAL LOCATION SEPTEMBER 2010		
STANDARD DRAWING NO.		E 802-SNPL-01
	/s/ <i>Richard L. VanCleave</i>	09/01/10
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	09/01/10
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		

TYPE OF ROADWAY CLEARANCE	INTERSTATE AND DIVIDED HIGHWAY WITH SHOULDER, RURAL & URBAN	DIVIDED HIGHWAY WITH CURB, RURAL & URBAN	NON-DIVIDED HIGHWAY, RURAL OR CITY STREET	NON-DIVIDED HIGHWAY, URBAN
VERTICAL: EDGE OF TRAVELED WAY PAVEMENT TO BOTTOM OF SIGN OR SIGNS	7 ft TO 7.5 ft ①	7 ft TO 7.5 ft ②	5 ft TO 5.5 ft ④, ②	7 ft TO 7.5 ft ②
HORIZONTAL: EDGE OF TRAVELED WAY PAVEMENT TO EDGE OF SIGN OR SIGNS	12 ft min. or 6 ft min. from the shoulder, whichever is greater	6 ft min. ③	12 ft min. or 6 ft min. from the shoulder, whichever is greater	12 ft min. or 6 ft min. from the shoulder, whichever is greater ③

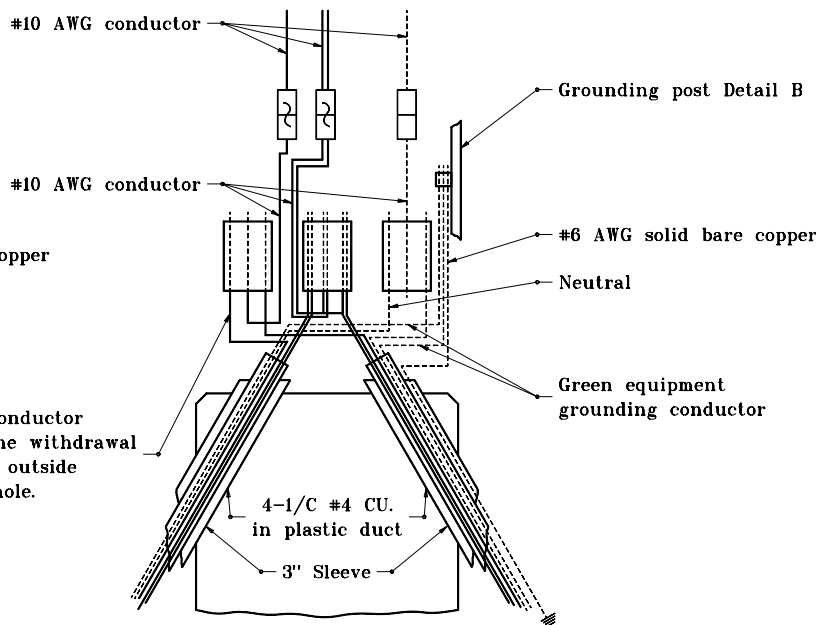
**NOTES:**

- ① If a secondary sign is mounted below another sign, the secondary sign shall be installed at least 5 ft. above the level of the pavement edge.
- ② The height to the bottom of a secondary sign mounted below another sign may be 1 ft. less than the height specified above.
- ③ In urban areas where lateral offsets are limited, a minimum lateral offset of 2 ft. may be used. A minimum offset of 1 ft. from the face of the curb may be used in urban areas where sidewalk width is limited or where existing poles are close to the curb.
- ④ Where parking or pedestrian movements occur on an expected recurring basis, the clearance to the bottom of the sign shall be at least 7 ft.

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>HORIZONTAL AND VERTICAL SHEET SIGN CLEARANCE</b>	
SEPTEMBER 2003	
STANDARD DRAWING NO. E 802-SNPL-02	
	/s/ Richard L. VanCleave      9-02-03 DESIGN STANDARDS ENGINEER      DATE
	/s/ Richard K. Smutzer      9-02-03 CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	



**OVERHEAD SIGN SERVICE DETAIL  
(UNDERGROUND CONNECTIONS)**



**GENERAL NOTES**

1. Breaker panel wiring to be used with bridge bracket sign illumination, or when lighting overhead sign is not part of a roadway lighting system.
2. Oxidation inhibitor shall be liberally applied to all surfaces that mate with a dissimilar material.

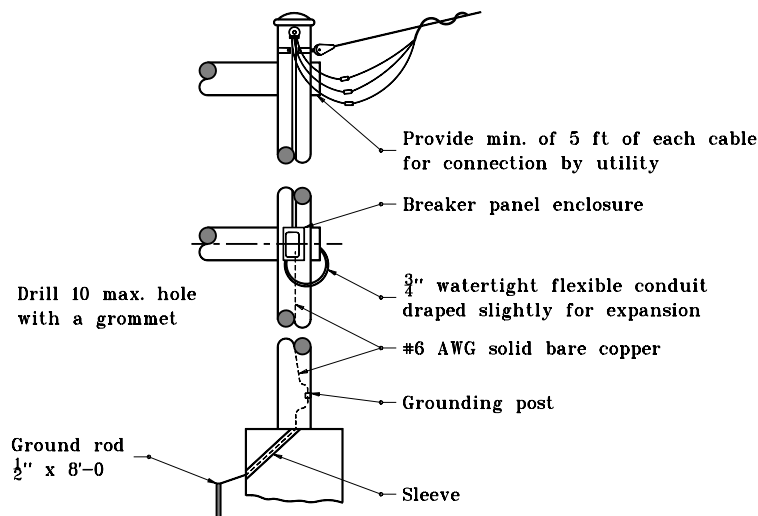
**LEGEND**

— Self insulated splicer (Insulating Link)

— Un-fused connector

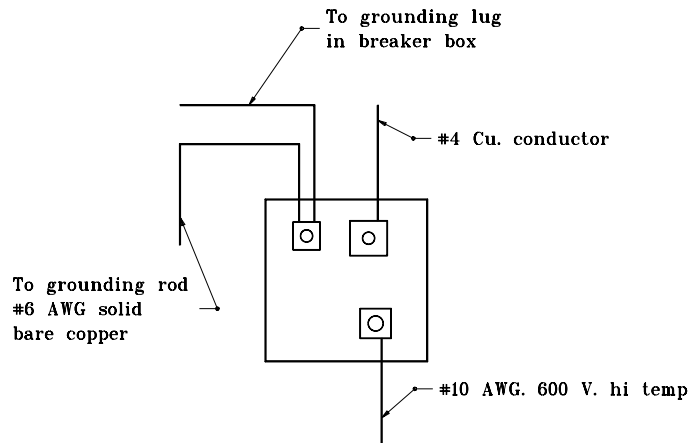
— Fused connector

— Compression connector

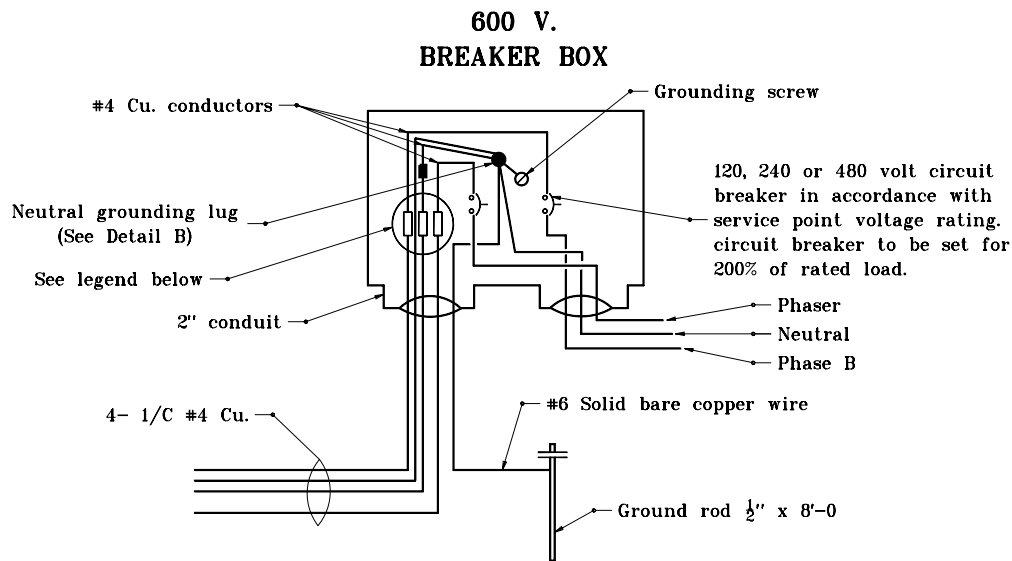


**OVERHEAD SIGN SERVICE DETAIL  
(AERIAL CONNECTION)**

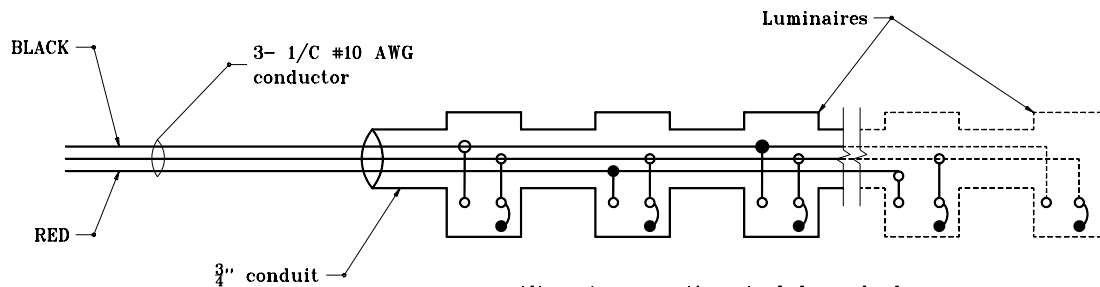
INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN WIRING DETAILS	
SEPTEMBER 2001	
STANDARD DRAWING NO. E 802-SNWR-01	
	/s/ Anthony L. Uremovich 9-04-01 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 9-04-01 CHIEF HIGHWAY ENGINEER DATE



**NEUTRAL GROUND LUG DETAIL B**



**BREAKER BOX WIRING DETAIL**



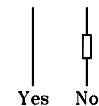
Alternate connections to balance load.  
(For connection to 120 V. or 240 V. phase to neutral)

**LUMINAIRE WIRING DETAIL**

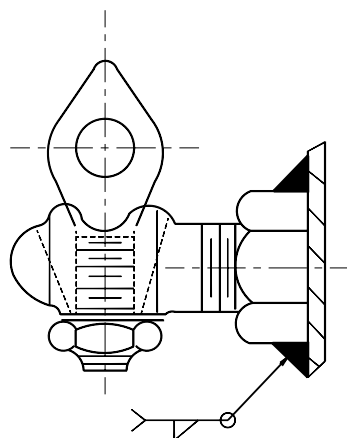
**GENERAL NOTES**

1. Breaker panel wiring to be used with bridge bracket sign illumination, or when lighting overhead sign is not a roadway lighting system.
2. Oxidation inhibitor shall be liberally applied to all surfaces that mate with a dissimilar material.

**LEGEND**

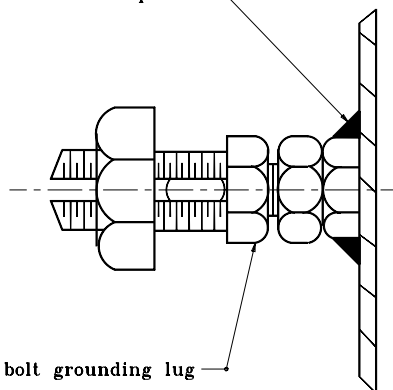


INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN WIRING DETAILS	
SEPTEMBER 2001	
STANDARD DRAWING NO.E 802-SNWR-02	
	/s/ Anthony L. Uremovich 9-04-01 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 9-04-01 CHIEF HIGHWAY ENGINEER DATE

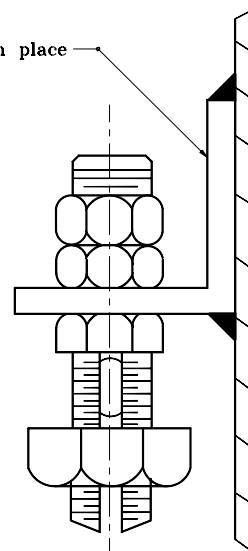


$\frac{1}{2}$ " - 13 UNC. in place

Split bolt grounding lug

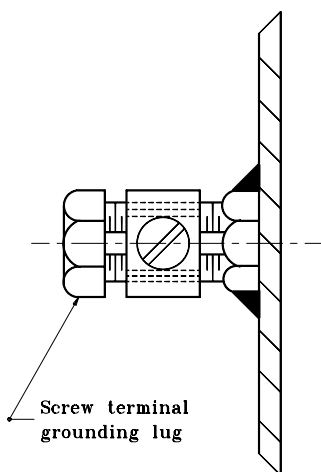


L Bracket in place



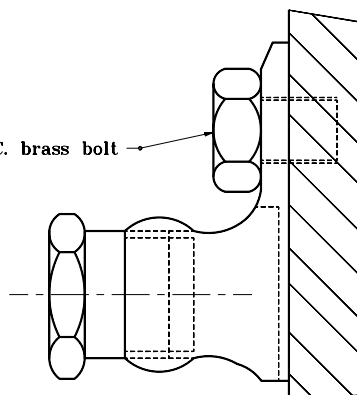
### GENERAL NOTES

1. Oxidation inhibitor shall be liberally applied to all surfaces that mate with a dissimilar material.



Screw terminal  
grounding lug

$\frac{1}{2}$ " - 13 UNC. brass bolt



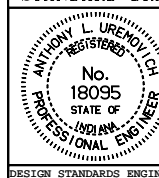
### ALTERNATIVE GROUNDING POSTS DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

### SIGN WIRING DETAILS

SEPTEMBER 2001

STANDARD DRAWING NO. **E 802-SNWR-03**



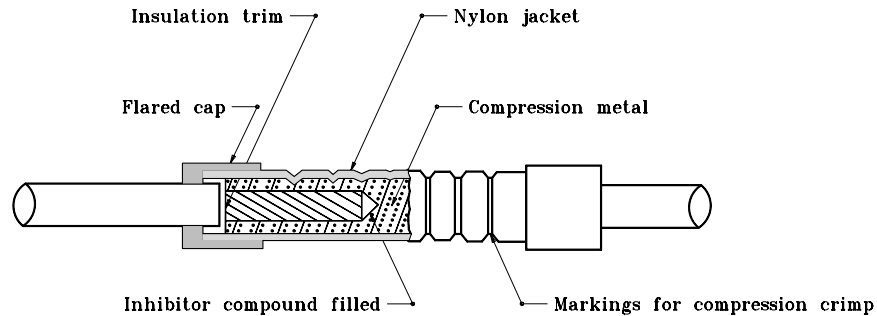
/s/ Anthony L. Uremovich 9-04-01  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 9-04-01  
CHIEF HIGHWAY ENGINEER DATE

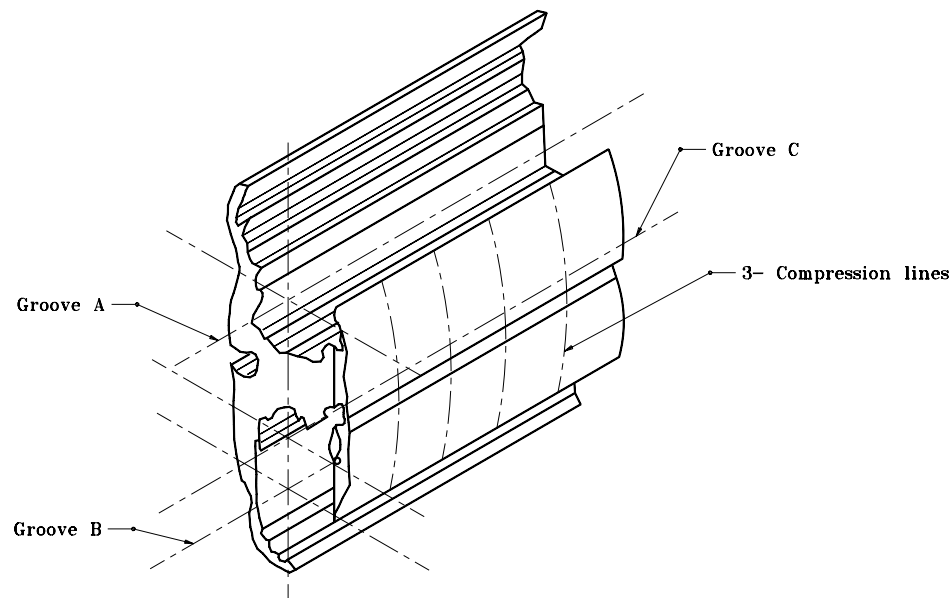
DESIGN STANDARDS ENGINEER

### GENERAL NOTES

1. Oxidation inhibitor shall be liberally applied to all surfaces that mate with a dissimilar material.
2. Grooves A & B to receive 1 #4 Cu. conductor.
3. Groove C to receive 1 #10 conductor.
4. Use of inhibiting compound is mandatory for all connections.
5. Multiple compression fitting shall be covered with snap-on fiber or plastic covers. Taping shall not be permitted.



### INSULATING LINK DETAIL



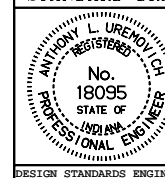
### MULTIPLE COMPRESSION FITTING DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

### **SIGN WIRING DETAILS**

SEPTEMBER 2001

STANDARD DRAWING NO. **E 802-SNWR-04**

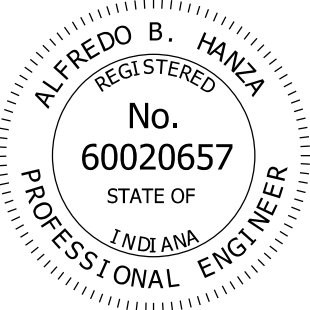


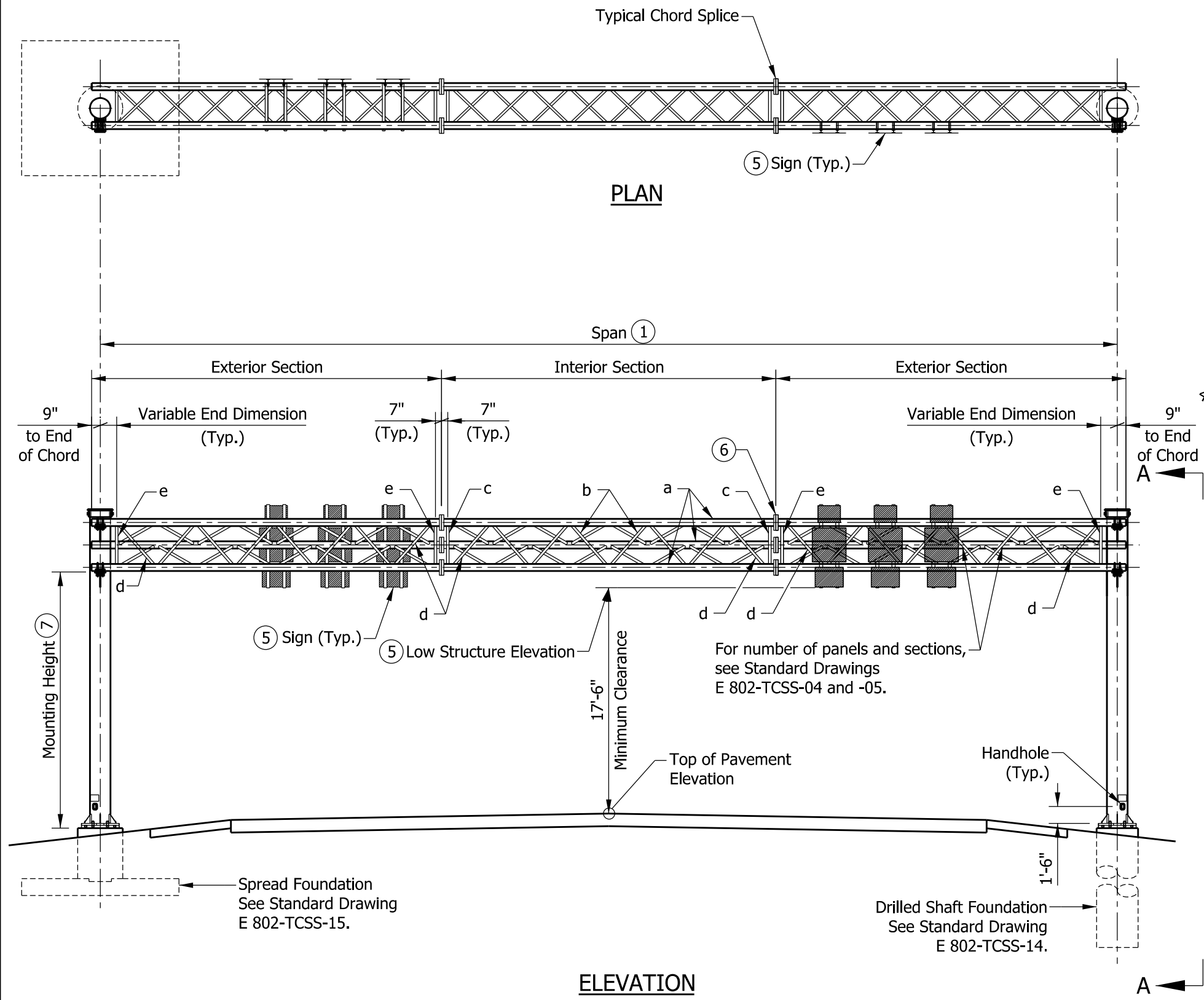
/s/ *Anthony L. Uremovich* 9-04-01  
DESIGN STANDARDS ENGINEER DATE

/s/ *Firooz Zandi* 9-04-01  
CHIEF HIGHWAY ENGINEER DATE



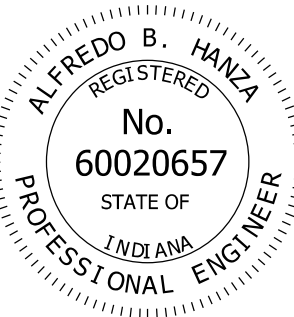
INDEX	
SHEET NO.	SUBJECT
1	Index
2	Plan & Elevation
3	Isometric Views
4	Panel Dimensions, Spans 36' thru 83'
5	Panel Dimensions, Spans 84' thru 130'
6	Member Sizes and Camber
7	Connection Details
8	Connection and Welding Details
9	Chord Flange Details
10	Top Cap and Chord End Plate Details
11	Sign Attachment Details
12	Base Plate, Anchor Bolt, and I.D. Tag Details
13	Handhole Details
14	Drilled Shaft Foundation
15	Spread Foundation

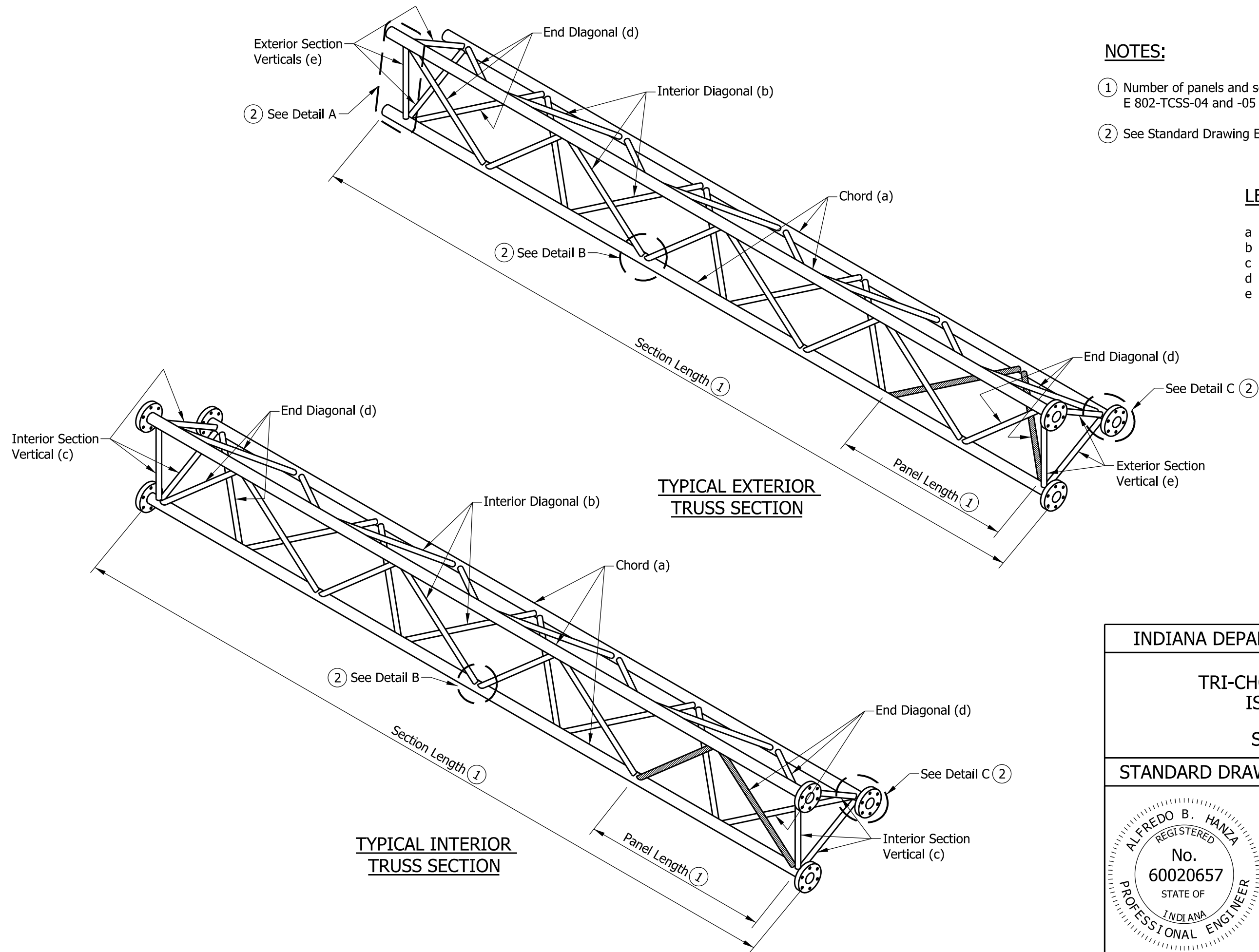
INDIANA DEPARTMENT OF TRANSPORTATION									
TRI-CHORD SIGN STRUCTURE DRAWING INDEX  SEPTEMBER 2013									
STANDARD DRAWING NO.      E 802-TCSS-01									
	<table><tr><td><i>/s/ Alfredo B. Hanza</i></td><td><i>02/22/13</i></td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td><i>/s/ Mark A. Miller</i></td><td><i>03/27/13</i></td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	<i>/s/ Alfredo B. Hanza</i>	<i>02/22/13</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	<i>02/22/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								



- NOTES:**
- ① Tri-chord truss structures are for various maximum sign areas and span lengths. See Standard Drawings E 802-TCSS-04 through -06 for panel dimensions, member sizes, and camber.
  - 2. Maximum deviation of any chord from a straight line in any section shall be less than 1/8". Maximum horizontal deviation over the entire length of the tri-chord truss shall be less than 3/8" from a straight line.
  - 3. See Standard Drawings E 802-TCSS-07 and -08 for connection and welding details.
  - 4. See Standard Drawing E 802-TCSS-12 for base plate, anchor bolt, and I.D. tag details.
  - ⑤ See Standard Drawing E 802-TCSS-11 for sign attachment details.
  - ⑥ See Standard Drawing E 802-TCSS-09 for chord flange details.
  - ⑦ Maximum mounting height is 23'-0".

- LEGEND:**
- a - Chord
  - b - Interior Diagonal
  - c - Interior Section Vertical
  - d - End Diagonal
  - e - Exterior Section Vertical
  - f - Column
  - g - W-Beam Supports

INDIANA DEPARTMENT OF TRANSPORTATION		
TRI-CHORD SIGN STRUCTURE PLAN AND ELEVATION		
SEPTEMBER 2013		
STANDARD DRAWING NO.		E 802-TCSS-02
		
	/s/ Alfredo B. Hanza	02/22/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE	



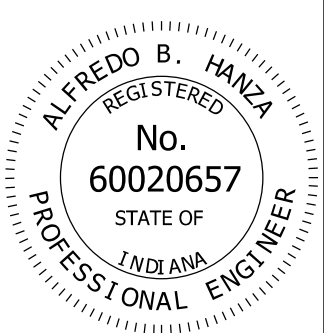
- NOTES:**
- ① Number of panels and sections varies. See Standard Drawings E 802-TCSS-04 and -05 for recommended dimensions.
  - ② See Standard Drawing E 802-TCSS-08 for Details A, B, and C.

- LEGEND:**
- a - Chord
  - b - Interior Diagonal
  - c - Interior Section Vertical
  - d - End Diagonal
  - e - Exterior Section Vertical

INDIANA DEPARTMENT OF TRANSPORTATION		
TRI-CHORD SIGN STRUCTURE ISOMETRIC VIEWS		
SEPTEMBER 2013		
STANDARD DRAWING NO.		E 802-TCSS-03
	/s/ Alfredo B. Hanza	02/22/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE

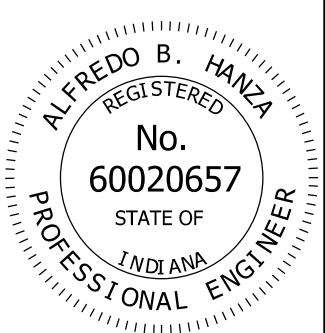
RECOMMENDED PANEL DIMENSIONS FOR TRI-CHORD (36' THROUGH 83')									
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH (FT)	NO. OF EXT. SEC.	NO. OF EXT. PANELS PER SEC.	VARIABLE END DIMENSION	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SEC.	NO. OF INT. PANELS PER SEC.	PANEL LENGTH	SECTION LENGTH
36	2	5	1'-2"	3'-3"	18'-9"				
37	2	5	1'-3"	3'-4"	19'-3"				
38	2	5	1'-4"	3'-5"	19'-9"				
39	2	5	1'-5"	3'-6"	20'-3"				
40	2	5	1'-6"	3'-7"	20'-9"				
41	2	5	1'-7"	3'-8"	21'-3"				
42	2	6	1'-5"	3'-2"	21'-9"				
43	2	6	1'-5"	3'-3"	22'-3"				
44	2	6	1'-5"	3'-4"	22'-9"				
45	2	6	1'-5"	3'-5"	23'-3"				
46	2	7	1'-5"	3'-0"	23'-9"				
47	2	7	1'-4"	3'-1"	24'-3"				
48	2	7	1'-6 1/2"	3'-1 1/2"	24'-9"				
49	2	7	1'-5 1/2"	3'-2 1/2"	25'-3"				
50	2	7	1'-4 1/2"	3'-3 1/2"	25'-9"				
51	2	7	1'-7"	3'-4"	26'-3"				
52	2	7	1'-6"	3'-5"	26'-9"				
53	2	7	1'-5"	3'-6"	27'-3"				
54	2	7	1'-4"	3'-7"	27'-9"				
55	2	7	1'-6 1/2"	3'-7 1/2"	28'-3"				
56	2	7	1'-5 1/2"	3'-8 1/2"	28'-9"				
57	2	7	1'-4 1/2"	3'-9 1/2"	29'-3"				
58	2	7	1'-7"	3'-10"	29'-9"				
59	2	6	1'-4"	3'-0"	20'-8"	1	6	3'-0"	19'-2"
60	2	6	1'-5 1/2"	3'-1/2"	21'-1/2"	1	6	3'-1/2"	19'-5"
61	2	6	1'-7"	3'-1"	21'-5"	1	6	3'-1"	19'-8"
62	2	6	1'-8 1/2"	3'-1 1/2"	21'-9 1/2"	1	6	3'-1 1/2"	19'-11"
63	2	6	1'-10"	3'-2"	22'-2"	1	6	3'-2"	20'-2"
64	2	6	1'-7"	3'-3"	22'-5"	1	6	3'-3"	20'-8"
65	2	6	1'-8 1/2"	3'-3 1/2"	22'-9 1/2"	1	6	3'-3 1/2"	20'-11"
66	2	6	1'-10"	3'-4"	23'-2"	1	6	3'-4"	21'-2"
67	2	6	1'-7"	3'-5"	23'-5"	1	6	3'-5"	21'-8"
68	2	6	1'-8 1/2"	3'-5 1/2"	23'-9 1/2"	1	6	3'-5 1/2"	21'-11"
69	2	6	1'-10"	3'-6"	24'-2"	1	6	3'-6"	22'-2"
70	2	6	1'-9"	3'-2 1/2"	22'-4"	1	8	3'-2 1/2"	26'-10"
71	2	6	1'-5"	3'-3 1/2"	22'-6"	1	8	3'-3 1/2"	27'-6"
72	2	6	1'-6"	3'-4"	22'-10"	1	8	3'-4"	27'-10"
73	2	6	1'-7"	3'-4 1/2"	23'-2"	1	8	3'-4 1/2"	28'-2"
74	2	6	1'-8"	3'-5"	23'-6"	1	8	3'-5"	28'-6"
75	2	6	1'-4"	3'-6"	23'-8"	1	8	3'-6"	29'-2"
76	2	6	1'-5"	3'-6 1/2"	24'-0"	1	8	3'-6 1/2"	29'-6"
77	2	6	1'-6"	3'-7"	24'-4"	1	8	3'-7"	29'-10"
78	2	6	1'-7"	3'-7 1/2"	24'-8"	1	8	3'-7 1/2"	30'-2"
79	2	6	1'-8"	3'-8"	25'-0"	1	8	3'-8"	30'-6"
80	2	6	1'-4"	3'-9"	25'-2"	1	8	3'-9"	31'-2"
81	2	6	1'-5"	3'-9 1/2"	25'-6"	1	8	3'-9 1/2"	31'-6"
82	2	6	1'-6"	3'-10"	25'-10"	1	8	3'-10"	31'-10"
83	2	6	1'-7"	3'-10 1/2"	26'-2"	1	8	3'-10 1/2"	32'-2"

- NOTES:**
- All panels on a truss shall be the same length. The minimum panel length is 3'-0" and the maximum is 4'-0".
  - A single interior unit shall have an even number of panels to maintain the pattern of the diagonals.
  - Use minimum number of sections for each truss. Keep the maximum section length at 35'-0".
  - See Standard Drawing E 802-TCSS-05 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION											
TRI-CHORD SIGN STRUCTURE PANEL DIMENSIONS SPANS 36' THRU 83' SEPTEMBER 2013											
STANDARD DRAWING NO. E 802-TCSS-04											
	<table><tr><td>/s/ Alfredo B. Hanza</td><td>02/22/13</td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td colspan="2"><hr/></td></tr><tr><td>/s/ Mark A. Miller</td><td>03/27/13</td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	/s/ Alfredo B. Hanza	02/22/13	DESIGN STANDARDS ENGINEER	DATE	<hr/>		/s/ Mark A. Miller	03/27/13	CHIEF ENGINEER	DATE
/s/ Alfredo B. Hanza	02/22/13										
DESIGN STANDARDS ENGINEER	DATE										
<hr/>											
/s/ Mark A. Miller	03/27/13										
CHIEF ENGINEER	DATE										

RECOMMENDED PANEL DIMENSIONS FOR TRI-CHORD (84' THROUGH 130')									
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH (FT)	NO. OF EXT. SEC.	NO. OF EXT. PANELS PER SEC.	VARIABLE END DIMENSION	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SEC.	NO. OF INT. PANELS PER SEC.	PANEL LENGTH	SECTION LENGTH
84	2	6	1'-8"	3'-11"	26'-6"	1	8	3'-11"	32'-6"
85	2	6	1'-9"	3'-11 1/2"	26'-10"	1	8	3'-11 1/2"	32'-10"
86	2	6	1'-10"	4'-0"	27'-2"	1	8	4'-0"	33'-2"
87	2	7	1'-6 1/2"	3'-8 1/2"	28'-10"	1	8	3'-8 1/2"	33'-10"
88	2	7	1'-7"	3'-9"	29'-2"	1	8	3'-9"	31'-2"
89	2	7	1'-7 1/2"	3'-9 1/2"	29'-6"	1	8	3'-9 1/2"	31'-6"
90	2	7	1'-8"	3'-10"	29'-10"	1	8	3'-10"	31'-10"
91	2	7	1'-8 1/2"	3'-10 1/2"	30'-2"	1	8	3'-10 1/2"	32'-2"
92	2	8	1'-8"	3'-8"	32'-4"	1	8	3'-5 1/2"	28'-10"
93	2	8	1'-8"	3'-8 1/2"	32'-8"	1	8	3'-6"	29'-2"
94	2	8	1'-8"	3'-9"	33'-0"	1	8	3'-6 1/2"	29'-6"
95	2	8	1'-8"	3'-9 1/2"	33'-4"	1	8	3'-7"	29'-10"
96	2	8	1'-8"	3'-10"	33'-8"	1	8	3'-7 1/2"	30'-2"
97	2	8	1'-8"	3'-10 1/2"	34'-0"	1	8	3'-8"	30'-6"
98	2	8	1'-8"	3'-11"	34'-4"	1	8	3'-8 1/2"	30'-10"
99	2	8	1'-8"	3'-11 1/2"	34'-8"	1	8	3'-9"	31'-2"
100	2	8	1'-8"	4'-0"	35'-0"	1	8	3'-9 1/2"	31'-6"
101	2	8	1'-10 1/2"	3'-1 1/2"	28'-2 1/2"	1	7	3'-1 1/2"	23'-1 1/2"
102	2	8	1'-9"	3'-2"	28'-5"	1	7	3'-2"	23'-4"
103	2	8	1'-7 1/2"	3'-2 1/2"	28'-7 1/2"	1	7	3'-2 1/2"	23'-7 1/2"
104	2	8	1'-6"	3'-3"	28'-10"	1	7	3'-3"	23'-11"
105	2	8	1'-4 1/2"	3'-3 1/2"	29'-0 1/2"	1	7	3'-3 1/2"	24'-2 1/2"
106	2	8	1'-10 1/2"	3'-3 1/2"	29'-6 1/2"	1	7	3'-3 1/2"	24'-2 1/2"
107	2	8	1'-9"	3'-3 1/2"	29'-9"	1	7	3'-4"	24'-6"
108	2	8	1'-7 1/2"	3'-4 1/2"	29'-11 1/2"	1	7	3'-4 1/2"	24'-9 1/2"
109	2	8	1'-6"	3'-5"	30'-2"	1	7	3'-5"	25'-1"
110	2	8	1'-8 1/4"	3'-5 1/4"	30'-6 1/4"	1	7	3'-5 1/4"	25'-2 3/4"
111	2	8	1'-10 1/2"	3'-5 1/2"	30'-5 1/4"	1	7	3'-5 1/2"	25'-4 1/2"
112	2	8	1'-9"	3'-6"	31'-1"	1	7	3'-6"	25'-8"
113	2	8	1'-7 1/2"	3'-6 1/2"	31'-3 1/2"	1	7	3'-6 1/2"	25'-11 1/2"
114	2	8	1'-6"	3'-7"	31'-6"	1	7	3'-7"	26'-3"
115	2	8	1'-8 1/4"	3'-7 1/4"	31'-10 1/4"	1	7	3'-7 1/4"	26'-4 3/4"
116	2	8	1'-10 1/2"	3'-7 1/2"	32'-2 1/2"	1	7	3'-7 1/2"	26'-6 1/2"
117	2	8	1'-9"	3'-8"	32'-5"	1	7	3'-8"	26'-10"
118	2	8	1'-7 1/2"	3'-8 1/2"	32'-7 1/2"	1	7	3'-8 1/2"	27'-1 1/2"
119	2	8	1'-6"	3'-9"	32'-10"	1	7	3'-9"	27'-5"
120	2	8	1'-8 1/4"	3'-9 1/4"	33'-2 1/4"	1	7	3'-9 1/4"	27'-6 3/4"
121	2	8	1'-10 1/2"	3'-9 1/2"	33'-6 1/2"	1	7	3'-9 1/2"	27'-8 1/2"
122	2	8	1'-9"	3'-10"	33'-9"	1	7	3'-10"	28'-0"
123	2	8	1'-9"	3'-5 1/2"	30'-9"	1	8	3'-9 1/2"	31'-6"
124	2	8	1'-11"	3'-5 1/2"	30'-11"	1	8	3'-10"	31'-10"
125	2	8	1'-9"	3'-6"	31'-1"	1	8	3'-10 1/2"	32'-2"
126	2	8	1'-7"	3'-6 1/2"	31'-3"	1	8	3'-11"	32'-6"
127	2	8	1'-9"	3'-7"	31'-9"	1	8	3'-11"	32'-6"
128	2	8	1'-11"	3'-7 1/2"	32'-3"	1	8	3'-11"	32'-6"
129	2	8	1'-9"	3'-8"	32'-5"	1	8	3'-11 1/2"	32'-10"
130	2	8	1'-7"	3'-8 1/2"	32'-7"	1	8	4'-0"	33'-2"

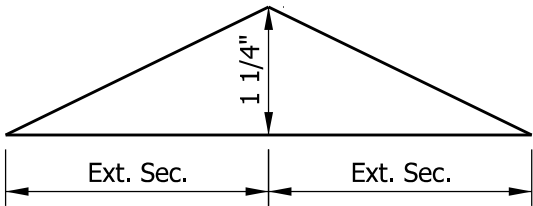
- NOTES:**
1. All panels on a truss shall be the same length. The minimum panel length is 3'-0" and the maximum is 4'-0".
  2. A single interior unit shall have an even number of panels to maintain the pattern of the diagonals.
  3. Use minimum number of sections for each truss. Keep the maximum section length at 35'-0".
  4. See Standard Drawing E 802-TCSS-05 for required camber.

INDIANA DEPARTMENT OF TRANSPORTATION									
TRI-CHORD SIGN STRUCTURE PANEL DIMENSIONS SPANS 84' THRU 130' SEPTEMBER 2013									
STANDARD DRAWING NO. E 802-TCSS-05									
	<table><tr><td><i>/s/ Alfredo B. Hanza</i></td><td>02/22/13</td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td><i>/s/ Mark A. Miller</i></td><td>03/27/13</td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	<i>/s/ Alfredo B. Hanza</i>	02/22/13	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	03/27/13	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	02/22/13								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	03/27/13								
CHIEF ENGINEER	DATE								

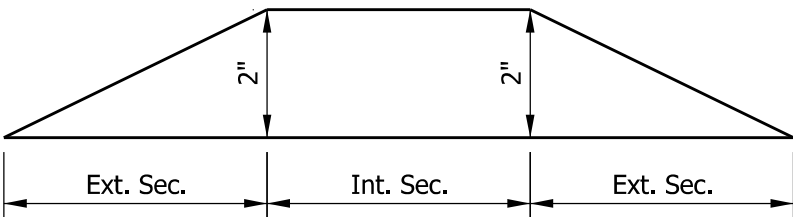
TRI-CHORD SIGN STRUCTURE MEMBER SIZES																
TRUSS TYPE	MAX SIGN AREA (SQ FT)	MAX MOUNTING HEIGHT, H	MAX SPAN (FT)	TRUSS MEMBERS										END SUPPORT MEMBERS		
				CHORD a		INT. DIAGONALS b		INT. SECTION VERT. c		END DIAGONALS d		EXT. SECTION VERT. e		COLUMN f		W-BEAM g
				DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	
A	120	23'-0"	80	5.563	0.375	1.900	0.145	1.900	0.200	2.875	0.276	1.900	0.145	18.000	0.562	W 12 x 35
B			100	5.563	0.375	2.375	0.218	1.900	0.200	2.875	0.375	2.375	0.218	18.000	0.562	W 12 x 35
C			130	5.563	0.500	2.375	0.218	1.900	0.200	2.875	0.375	2.375	0.218	20.000	0.500	W 12 x 58
D	240	23'-0"	80	5.563	0.625	2.375	0.343	1.900	0.200	2.875	0.552	2.375	0.343	18.000	0.750	W 12 x 35
E			100	5.563	0.625	2.375	0.343	1.900	0.200	2.875	0.552	2.375	0.343	20.000	0.812	W 12 x 35
F			130	6.625	0.562	2.375	0.343	1.900	0.200	3.500	0.437	2.375	0.343	22.000	0.875	W 12 x 58

LEGEND:

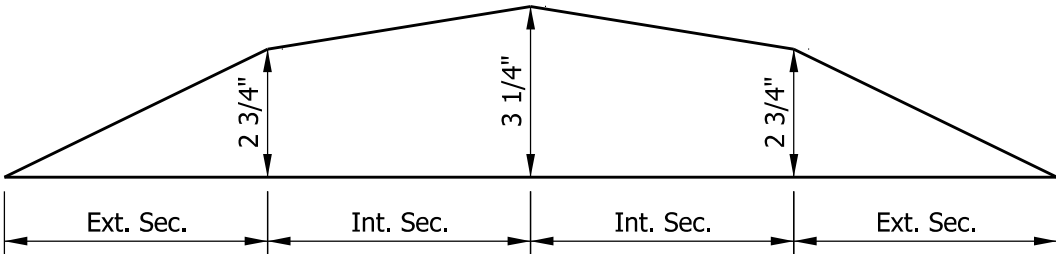
- a - Chord
- b - Interior Diagonal
- c - Interior Section Vertical
- d - End Diagonal
- e - Exterior Section Vertical
- f - Column
- g - W-Beam Support



CAMBER DIAGRAM (2-Section Truss)



CAMBER DIAGRAM (3-Section Truss)



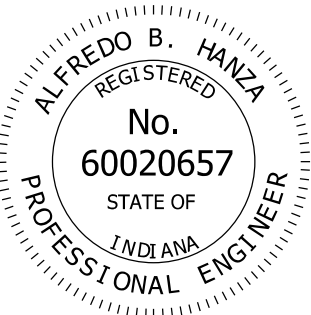
CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE  
MEMBER SIZES AND CAMBER

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-06

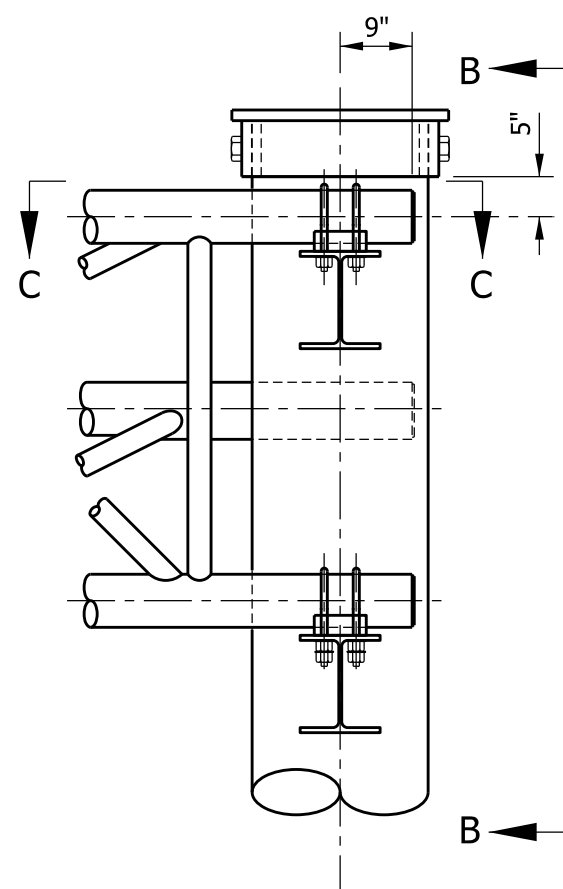


/s/ Alfredo B. Hanza 02/22/13

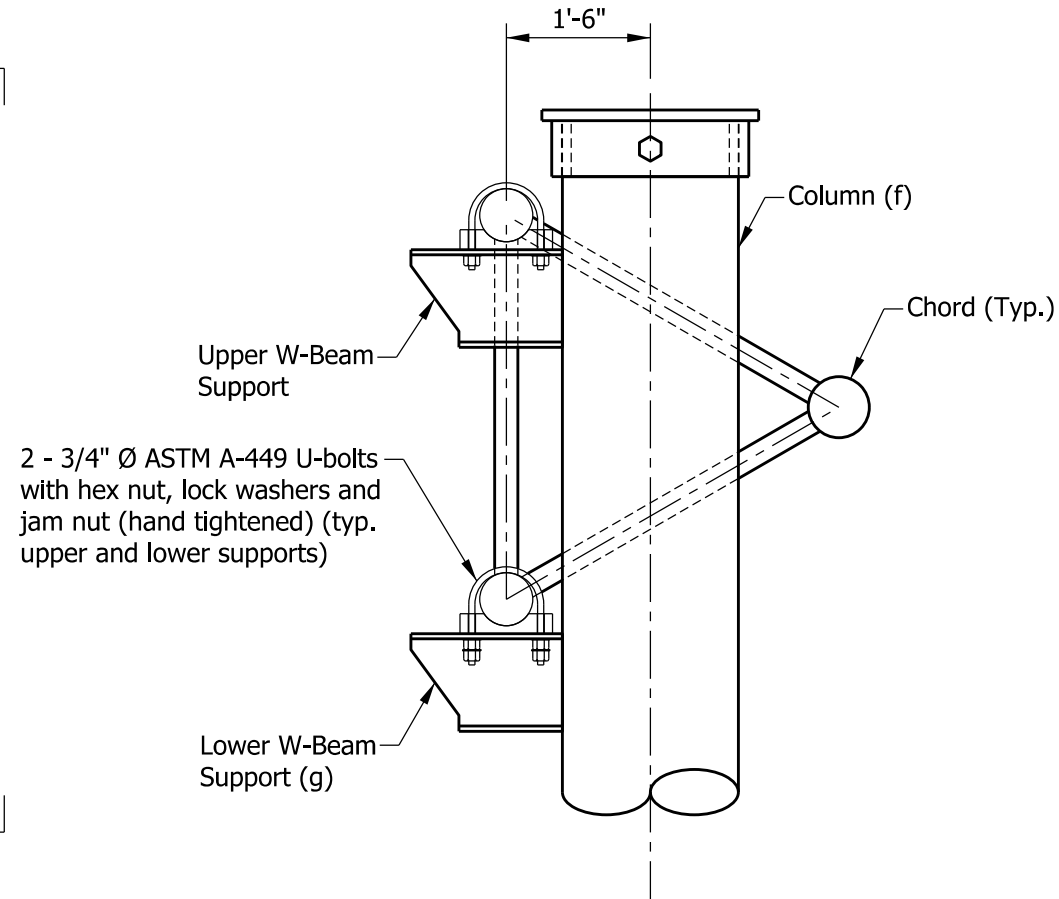
DESIGN STANDARDS ENGINEER DATE

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

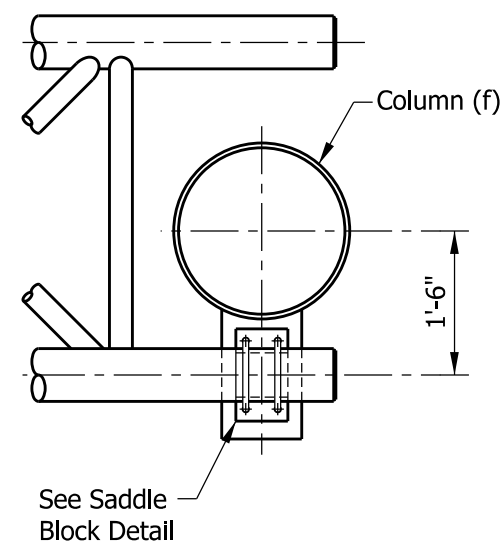
CHIEF ENGINEER DATE



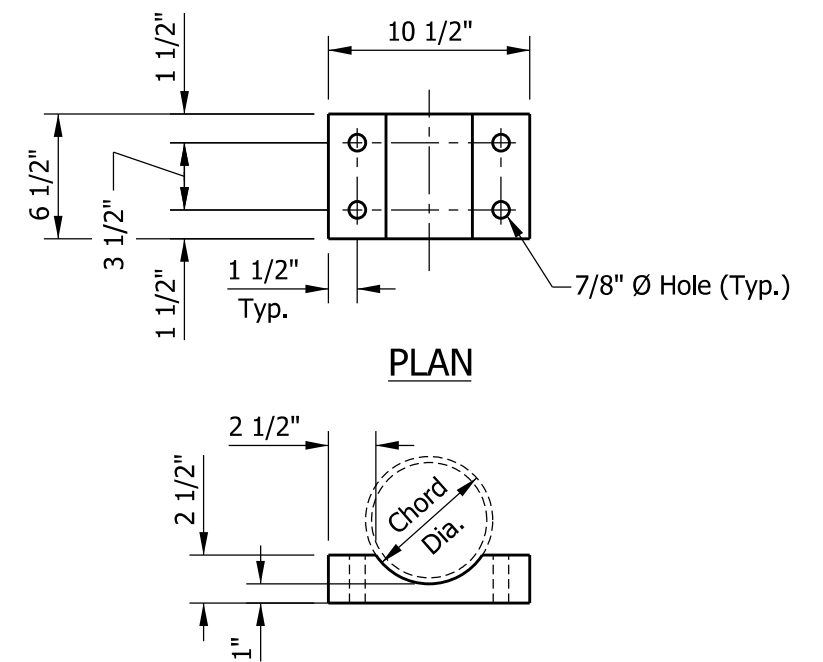
TRUSS SEAT DETAIL



VIEW B-B



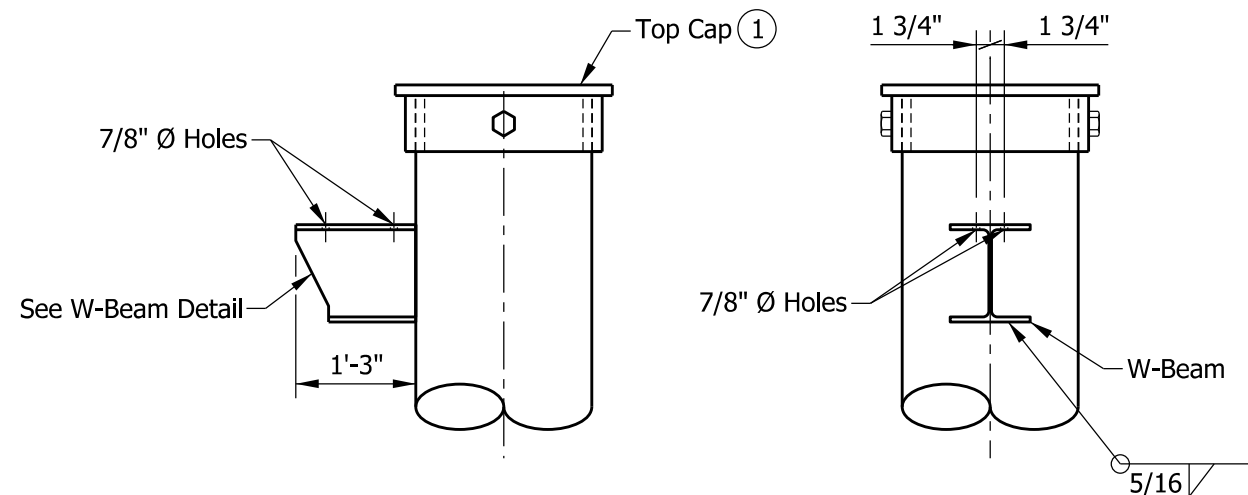
VIEW C-C



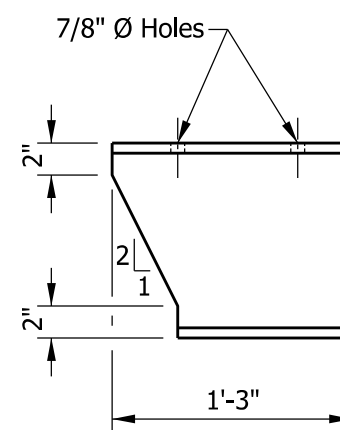
SADDLE BLOCK DETAIL

NOTE:

- ① See Standard Drawing E 802-TCSS-10 for top cap detail.



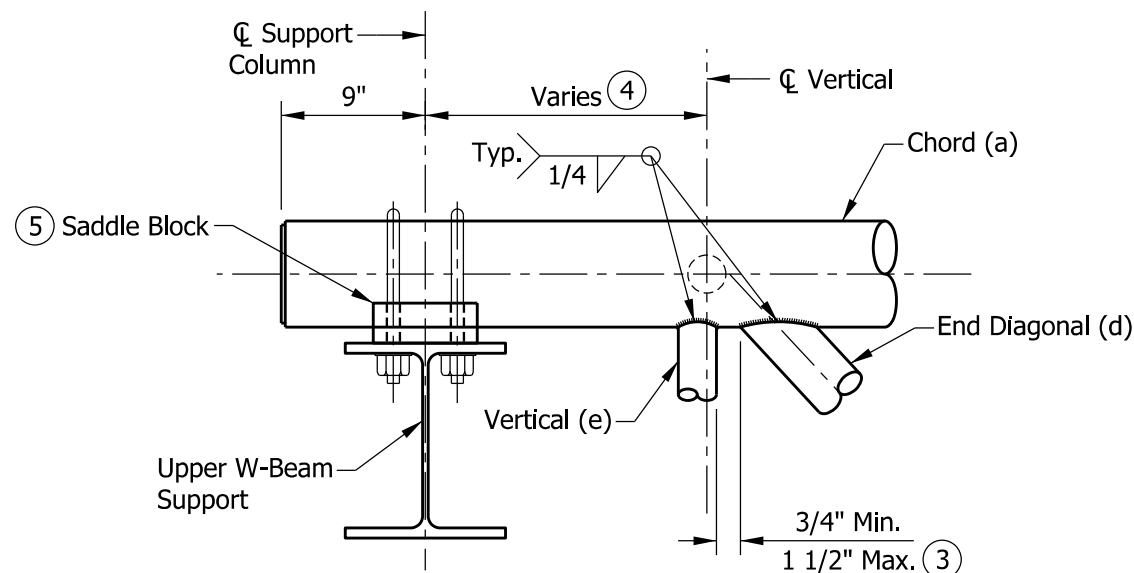
TRUSS SEAT DETAIL



W-BEAM DETAIL

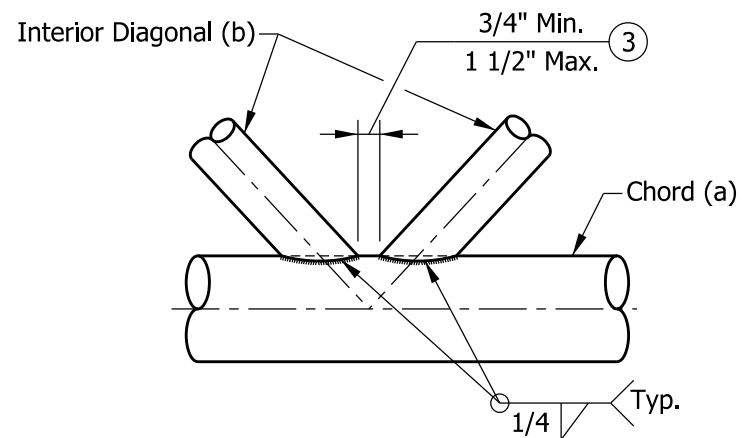
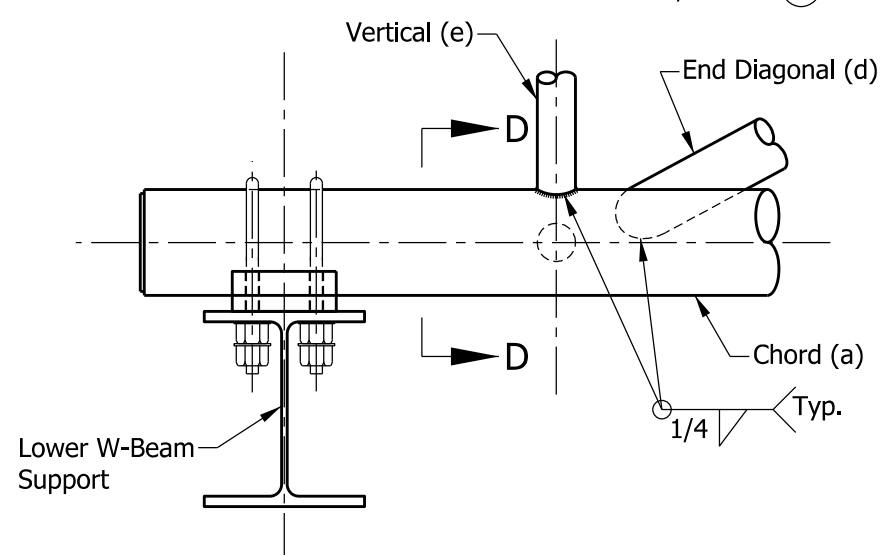
NOTE: Upper and lower W-beam details are the same.

INDIANA DEPARTMENT OF TRANSPORTATION			
TRI-CHORD SIGN STRUCTURE CONNECTION DETAILS			
SEPTEMBER 2013			
STANDARD DRAWING NO.		E 802-TCSS-07	
	/s/ Alfredo B. Hanza		02/22/13
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Mark A. Miller		03/27/13
	CHIEF ENGINEER		DATE



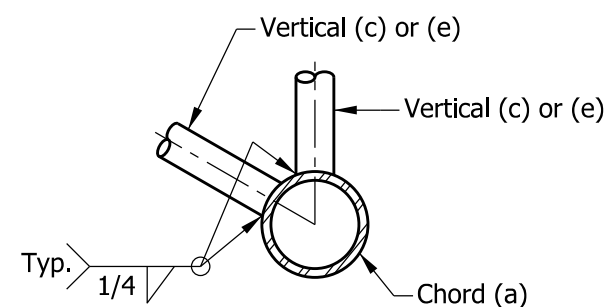
**DETAIL A**

**SUPPORT END DETAIL FOR EXTERIOR SECTION**



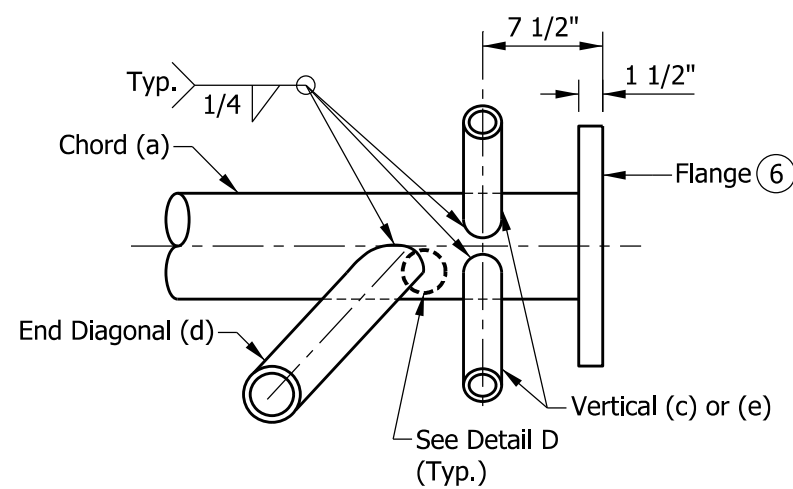
**DETAIL B**

**TYPICAL PANEL CONNECTION**



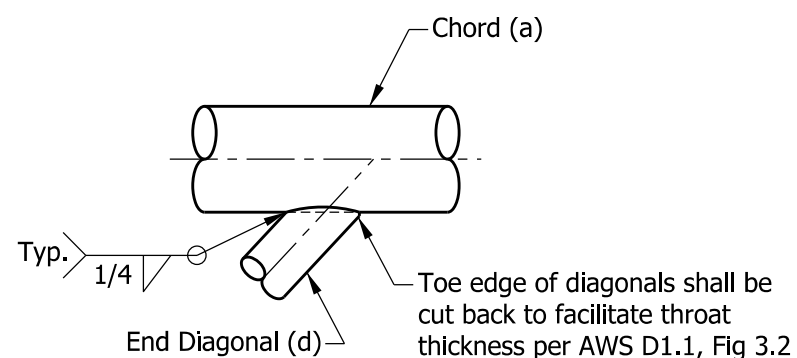
**SECTION D-D**

**TYPICAL JOINT DETAILS**



**DETAIL C**

**TYPICAL PANEL CONNECTION**



**DETAIL D**

**NOTES:**

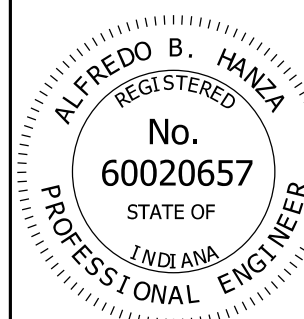
1. All bracing members shall be machined to provide a snug fit to the chord members along the entire edge of bracing members before welding.
2. See Standard Drawing E 802-TCSS-03 for member location and see Standard Drawing E 802-TCSS-06 for member sizes.
3. Vertical and horizontal diagonals shall be detailed for minimum offset from the panel point based on the following: offset shall provide a 3/4" minimum to 1 1/2" maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs.
4. Variable end dimension. See Standard Drawings E 802-TCSS-04 and -05 for table of recommended dimensions.
5. See Standard Drawing E 802-TCSS-07 for saddle block details.
6. See Standard Drawing E 802-TCSS-09 for chord flange details.

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE  
CONNECTION AND WELDING DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-08



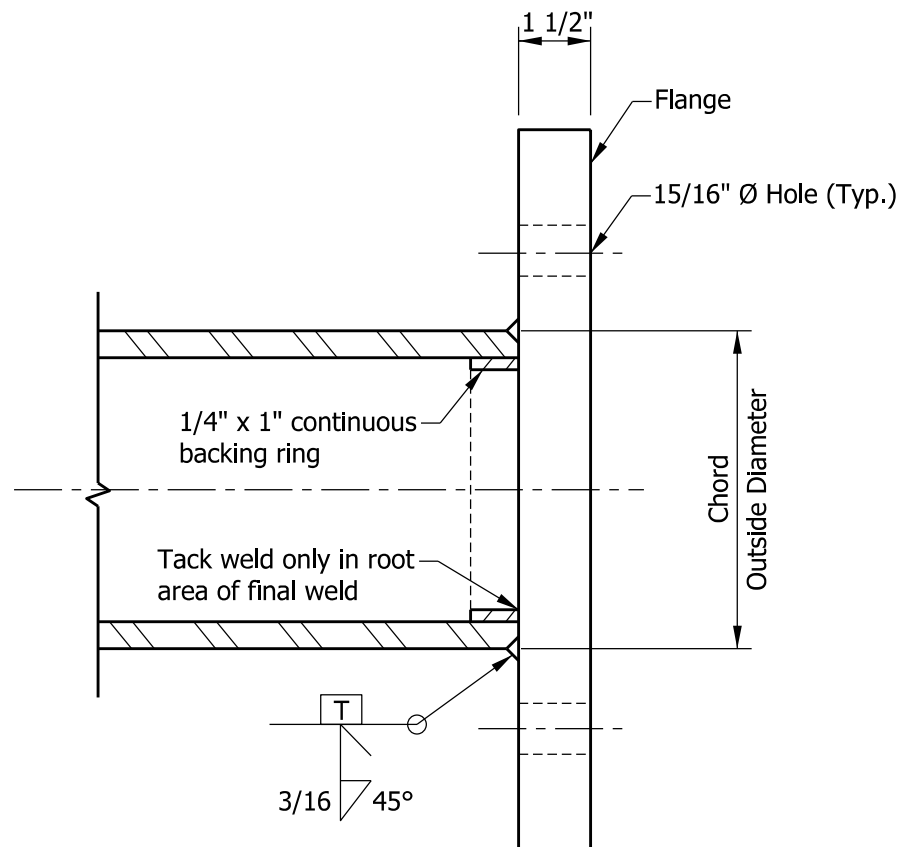
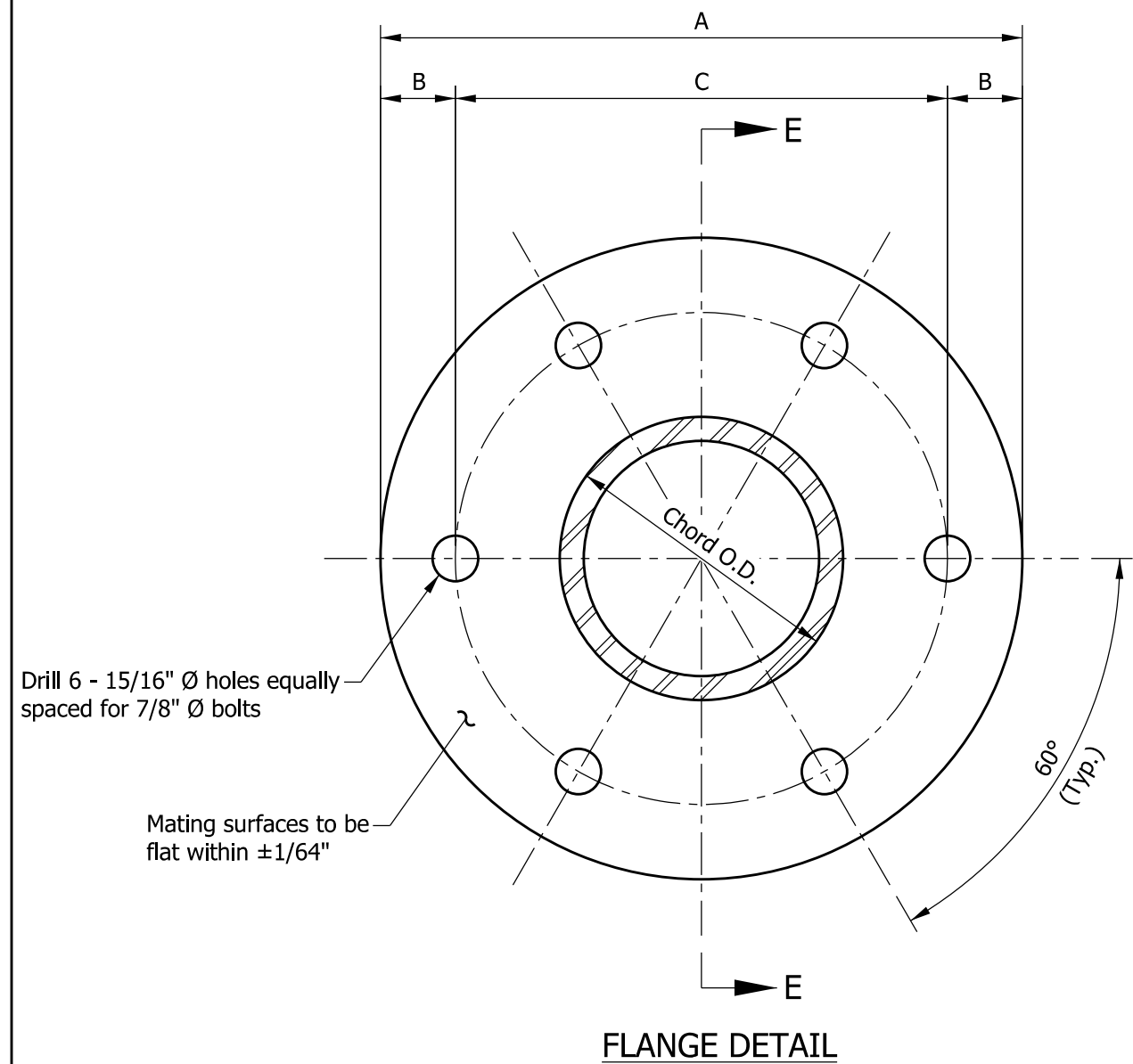
/s/ Alfredo B. Hanza 03/26/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE





### NOTES:

1. Mating surfaces to be flat within  $\pm 1/64"$ . Flange shall be given additional finish if necessary to ensure contact between plates.
2. Use Type I ASTM A325 bolts with matching lock nuts. Lock nuts shall have steel inserts.
3. Bolts and lock nuts shall be hot dip galvanized in accordance with AASHTO M 232.
4. Install high strength bolts in accordance with 711.65.

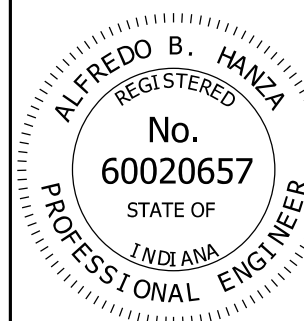
DIMENSION TABLE				
TRUSS CHORD O.D.	BOLT SIZE	A	B	C
6.625"	7/8"	14"	2"	10"
5.625"	7/8"	13"	2"	9"

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE  
CHORD FLANGE DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-09

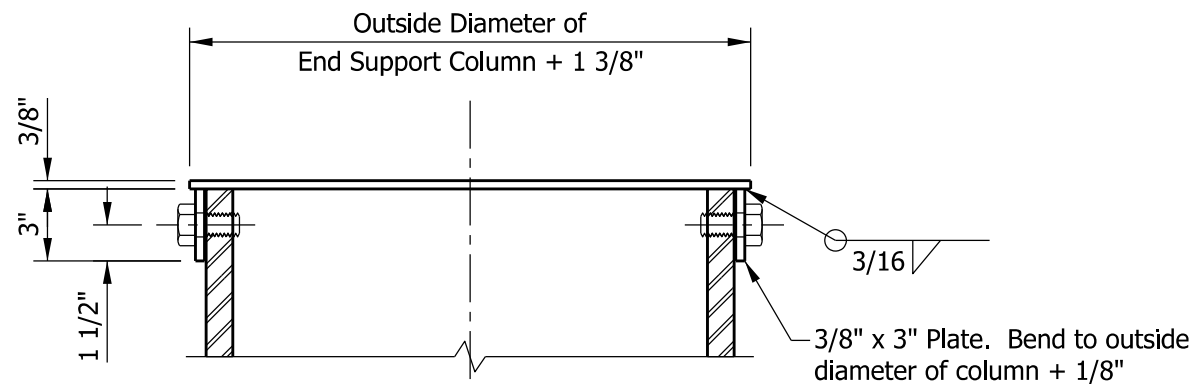


/s/ Alfredo B. Hanza 03/26/13

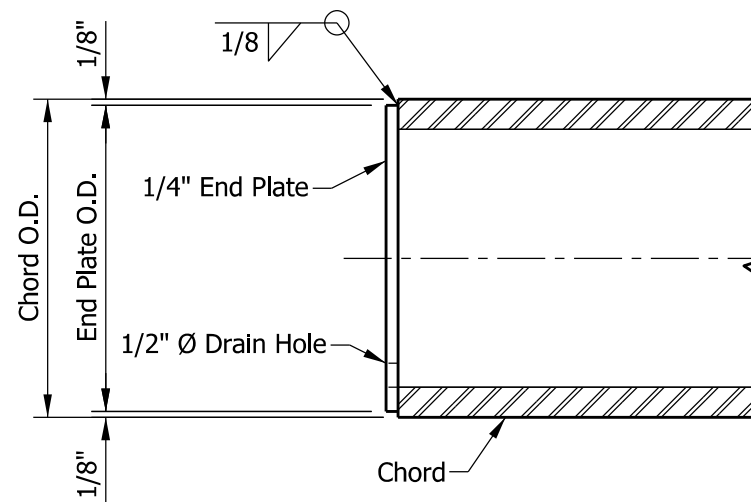
DESIGN STANDARDS ENGINEER DATE

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

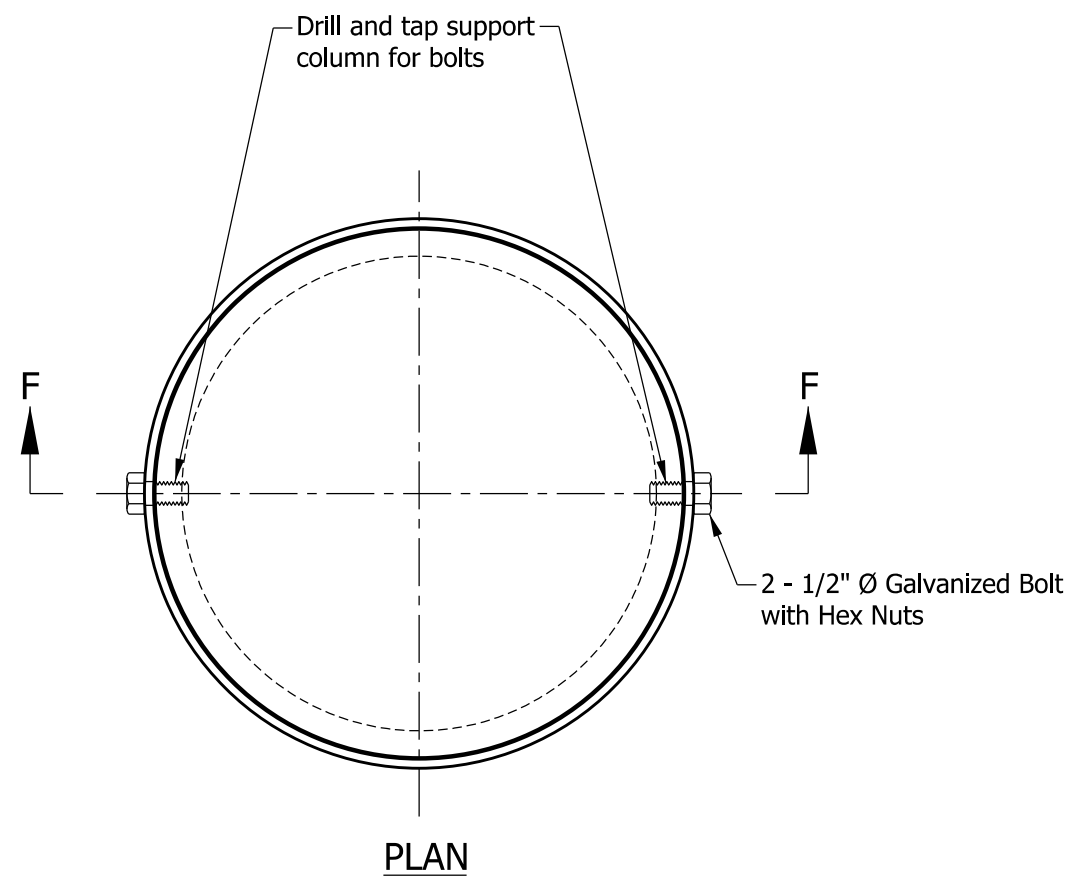
CHIEF ENGINEER DATE



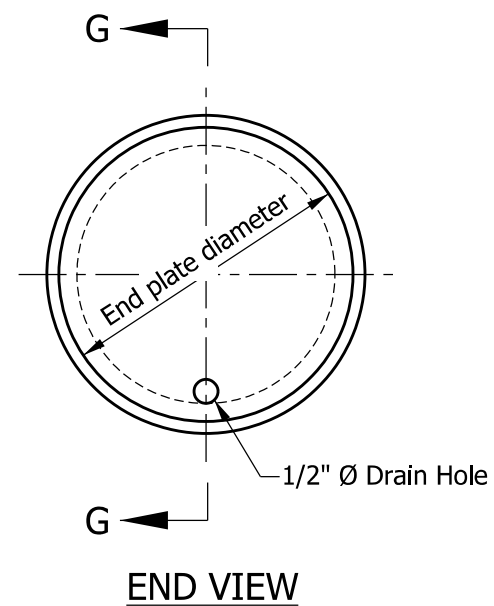
SECTION F-F



SECTION G-G



PLAN  
COLUMN TOP CAP DETAIL



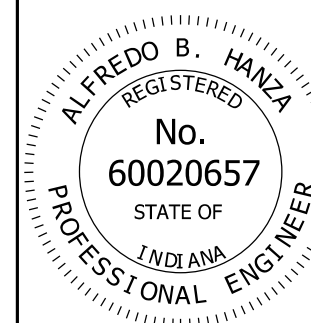
END VIEW  
CHORD END PLATE DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE  
TOP CAP AND CHORD END PLATE DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-10

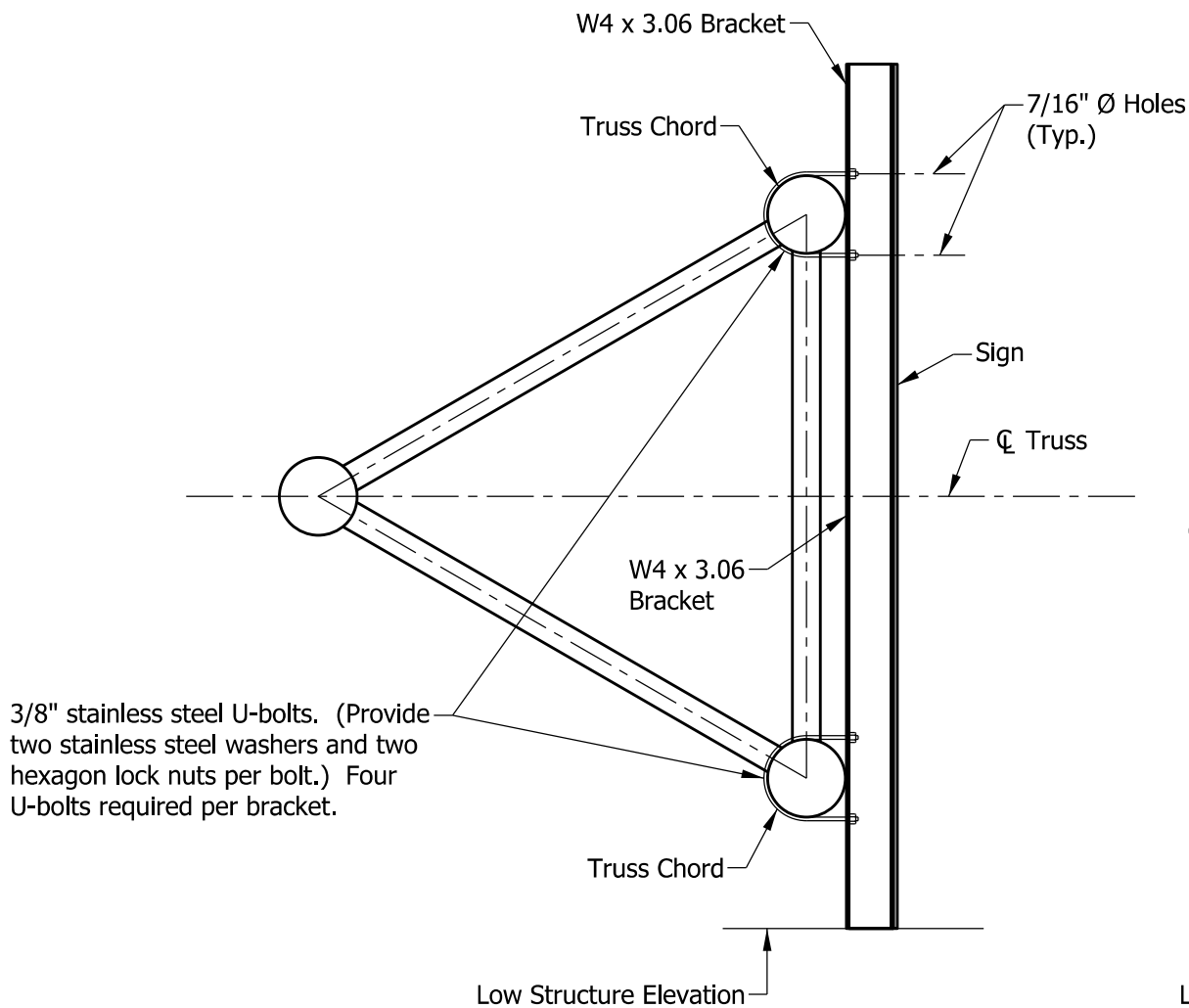


/s/ Alfredo B. Hanza 02/22/13  
DESIGN STANDARDS ENGINEER DATE

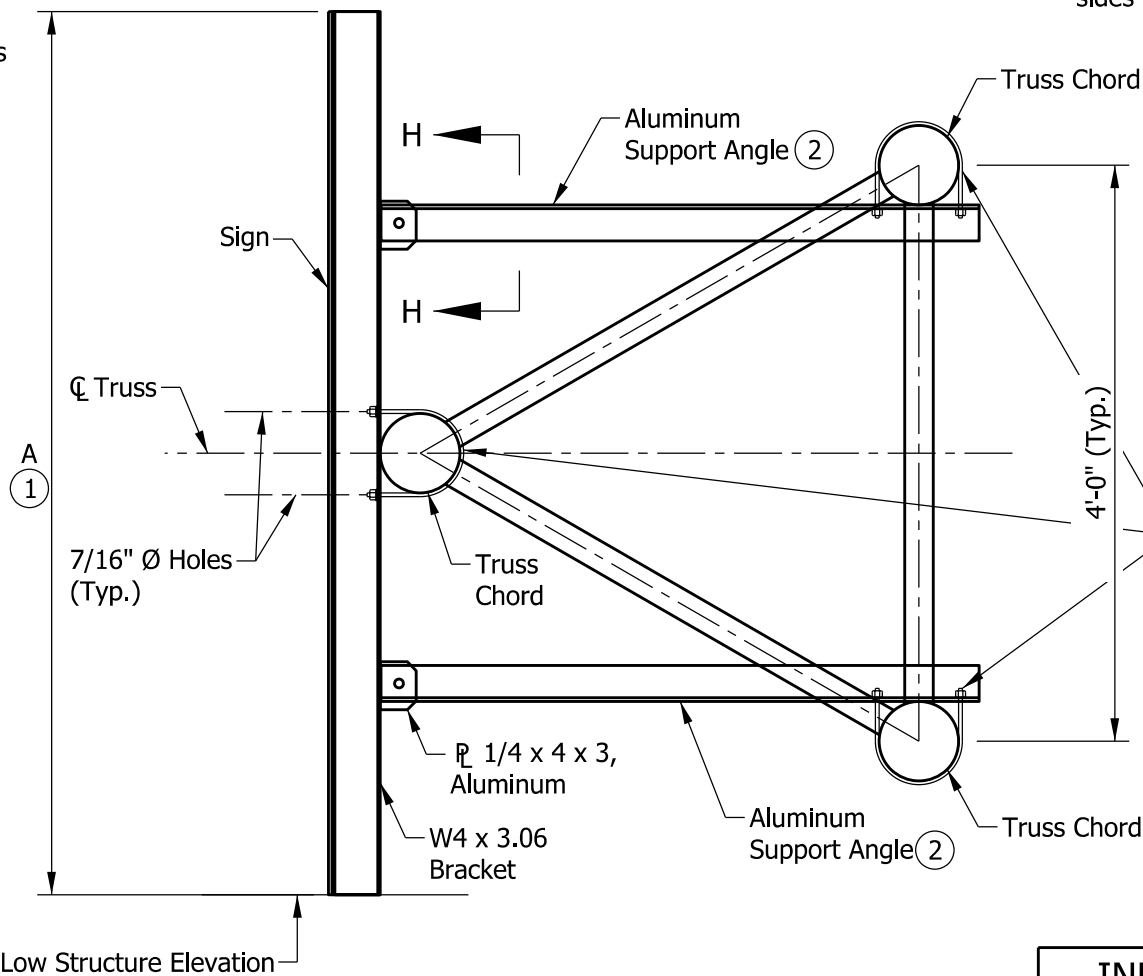
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE

NOTES:

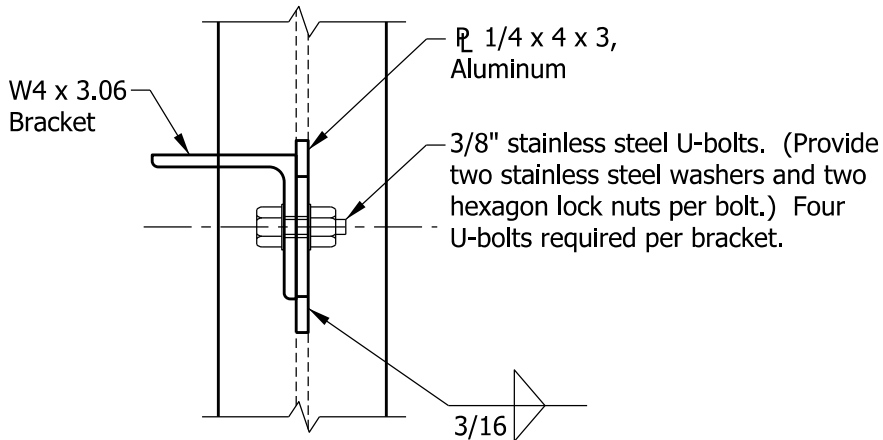
- ① Dimension A to be determined by Contractor to fit required signs.
- ② A minimum of two truss chord attachment points to be used for each bracket.
- 3. The chords shall be at the vertices of an equilateral triangle having sides of length 4'-0".



FRONT SIGN MOUNTING DETAIL

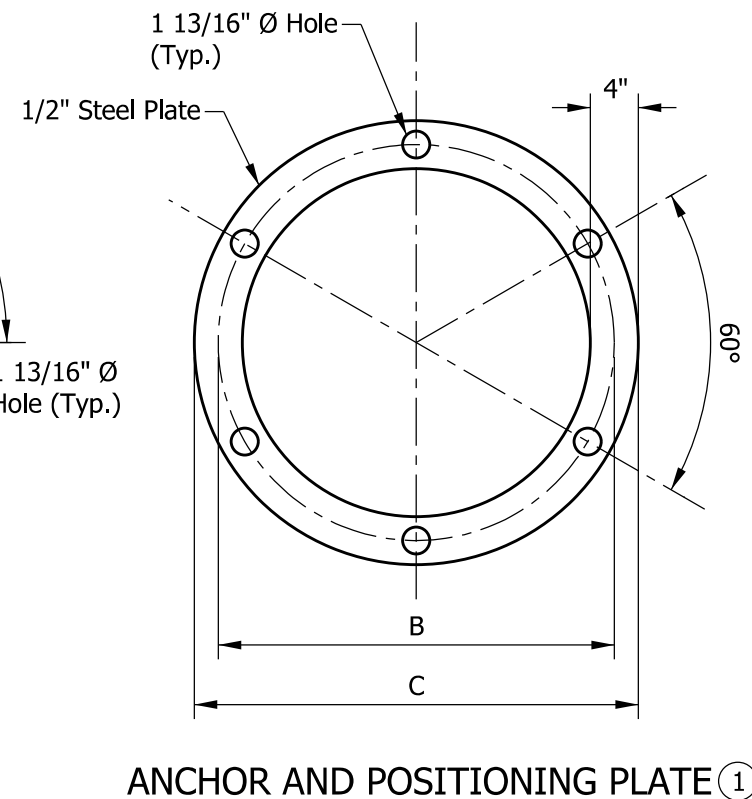
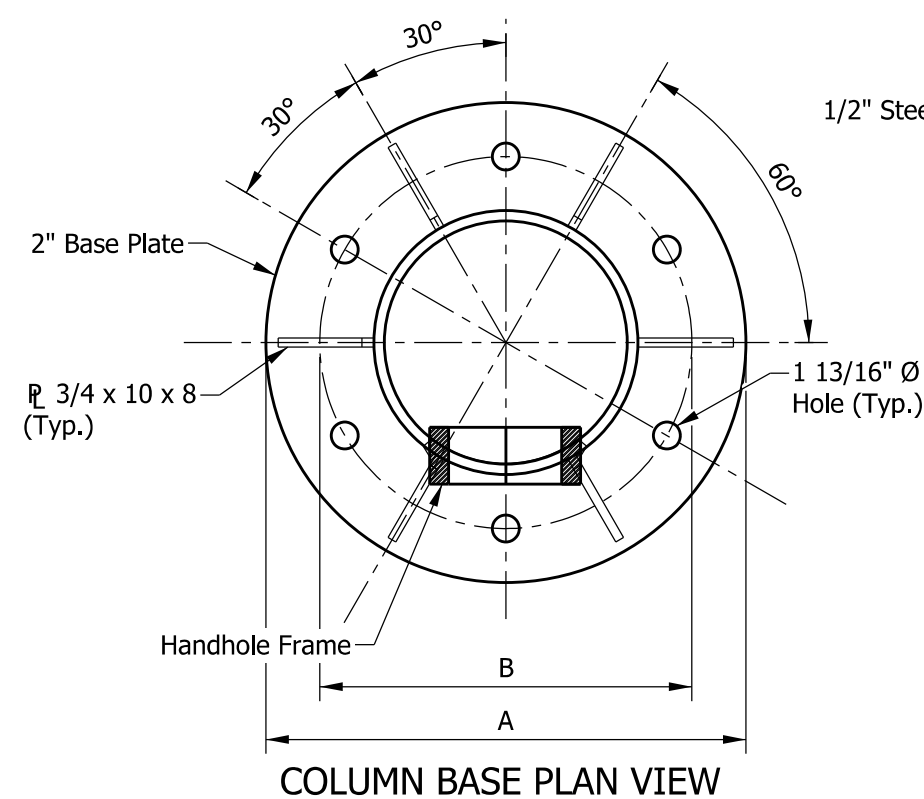


REAR SIGN MOUNTING DETAIL

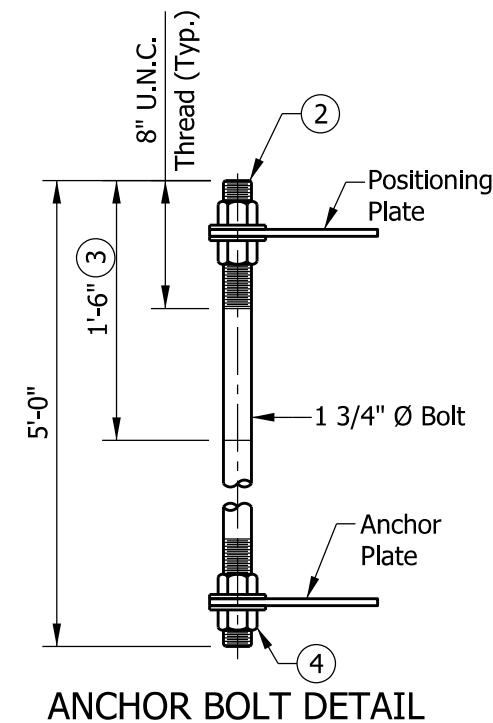


VIEW H-H

INDIANA DEPARTMENT OF TRANSPORTATION			
TRI-CHORD SIGN STRUCTURE SIGN ATTACHMENT DETAILS			
SEPTEMBER 2013			
STANDARD DRAWING NO.		E 802-TCSS-11	
	/s/ Alfredo B. Hanza	02/22/13	
	DESIGN STANDARDS ENGINEER	DATE	
	/s/ Mark A. Miller	03/27/13	
	CHIEF ENGINEER	DATE	



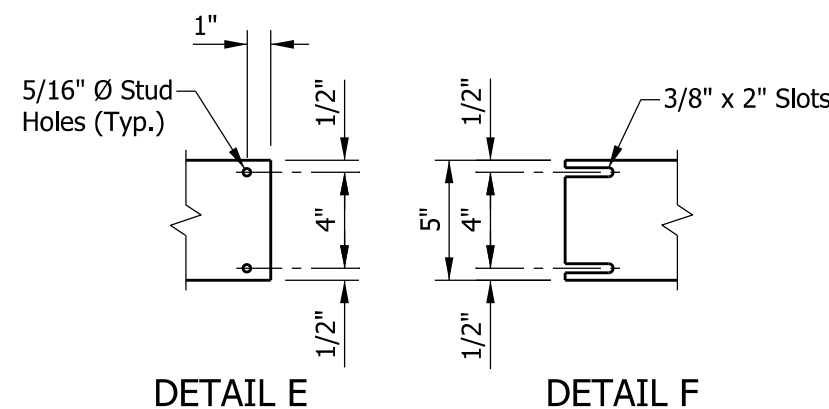
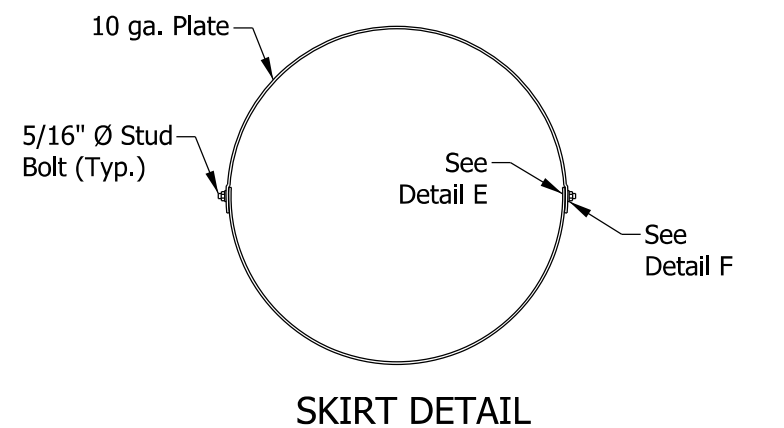
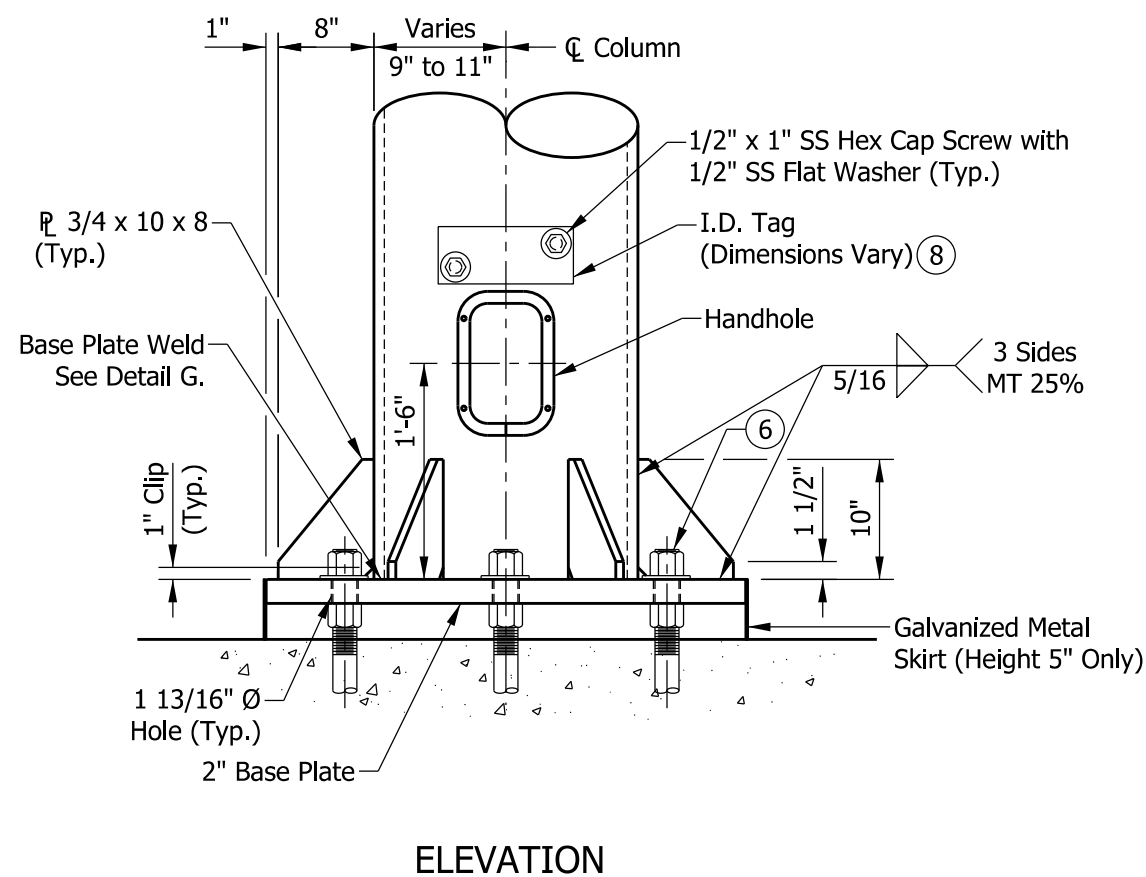
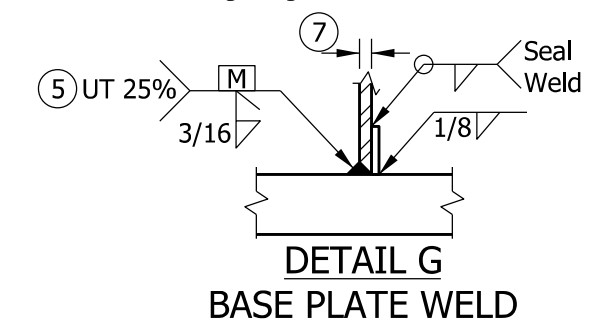
BASE PLATE DIMENSIONS			
COLUMN DIAMETER	A	B	C
18"	3'-0"	2'-3"	2'-7"
20"	3'-2"	2'-5"	2'-9"
22"	3'-4"	2'-7"	2'-11"



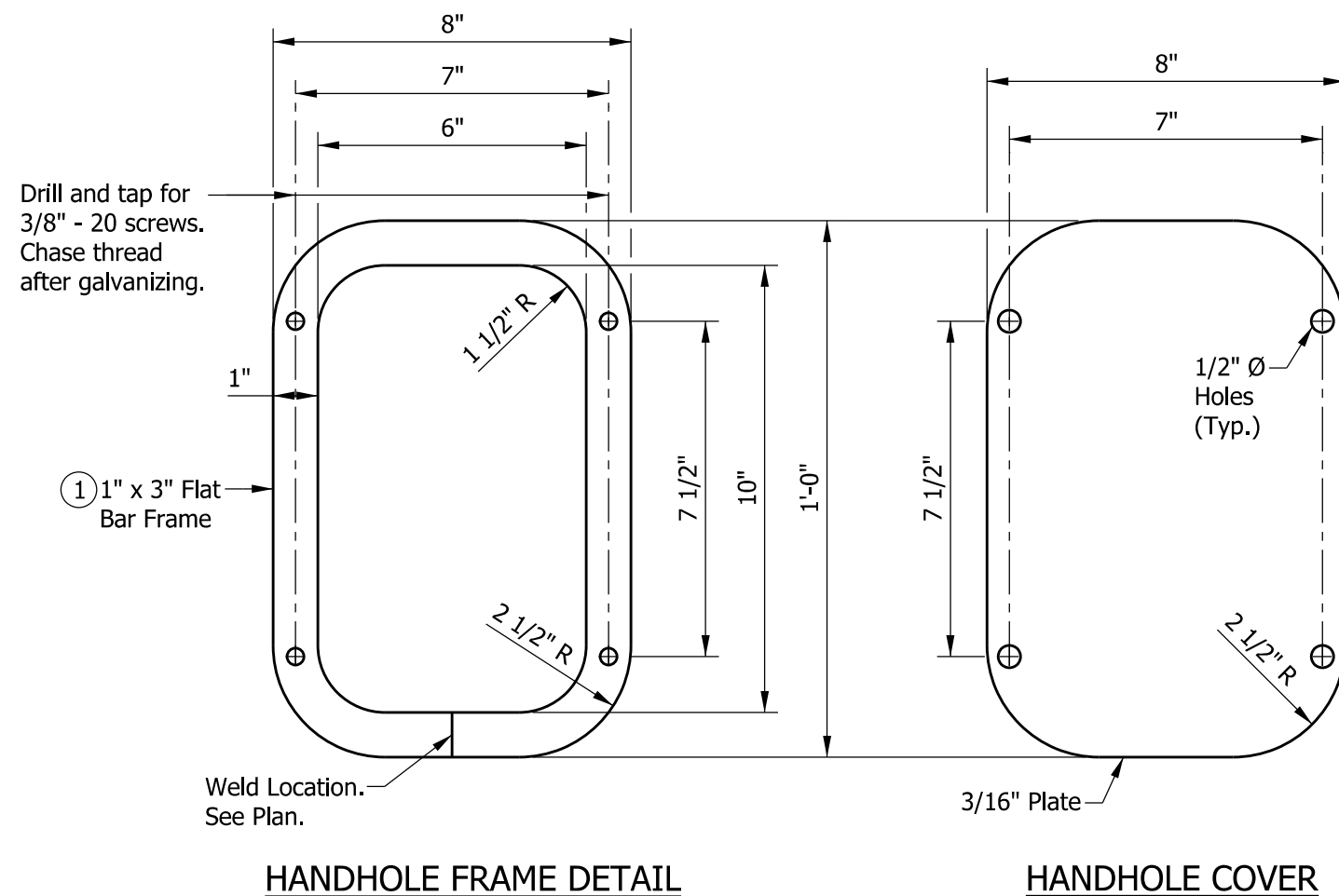
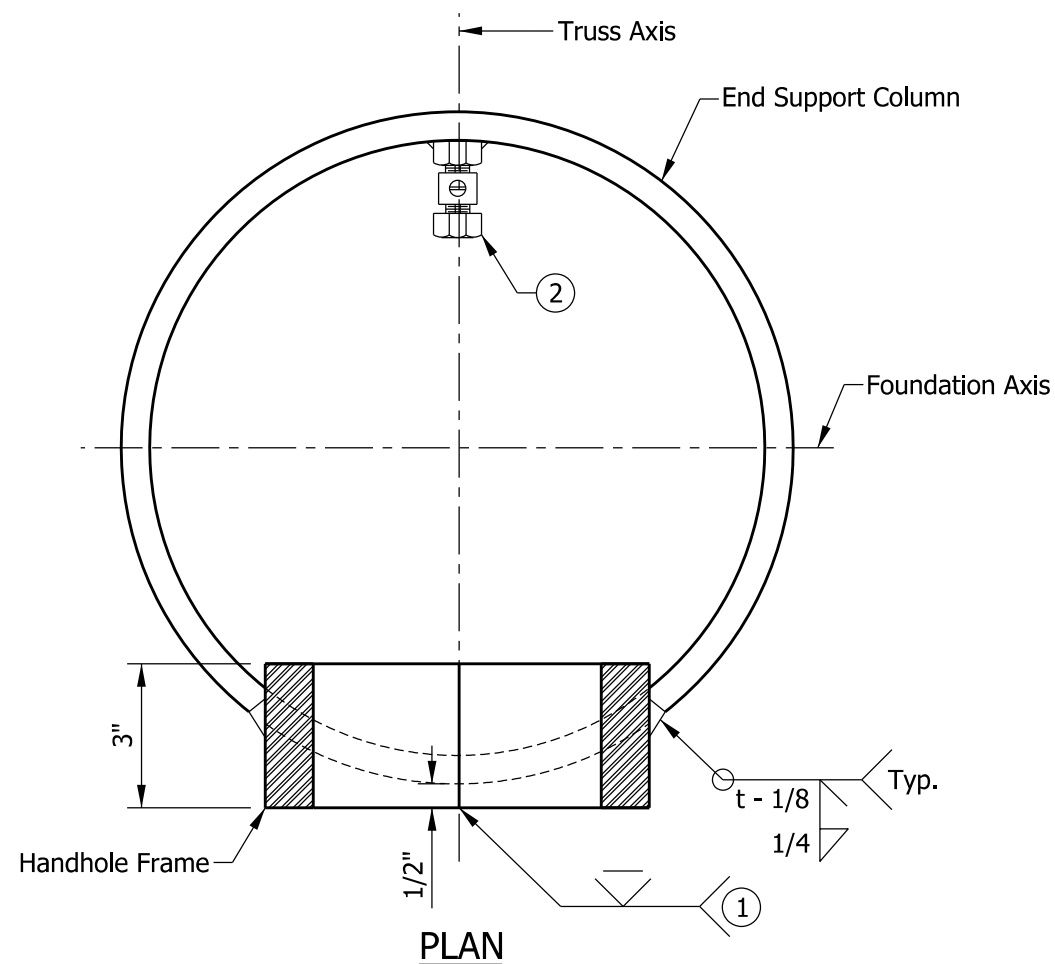
## NOTES:

- 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 minimum to 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 1/4" x 1" minimum continuous backer ring. Tack weld only in root area of final weld. See Detail G this page for base plate weld detail.
- ⑥ Anchor bolt nuts shall be tightened against the base plate by turning the nut 1/6 turn (minimum) from snug tight condition.
- ⑦ See Standard Drawing E 802-TCSS-06 for column wall thickness.
- ⑧ 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 \_\_\_\_\_, Structure Length \_\_\_\_\_  
 Column Mounting Height \_\_\_\_\_



INDIANA DEPARTMENT OF TRANSPORTATION		
TRI-CHORD SIGN STRUCTURE BASE PLATE, ANCHOR BOLT, AND I.D. TAG DETAILS SEPTEMBER 2013		
STANDARD DRAWING NO. E 802-TCSS-12		
	/s/ Alfredo B. Hanza	03/26/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE



## NOTES:

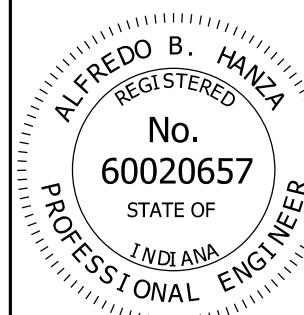
- ① In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
- ② Grounding clamp to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawing E 802-TCSS-12 for handhole locations.

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE  
HANDHOLE DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-13

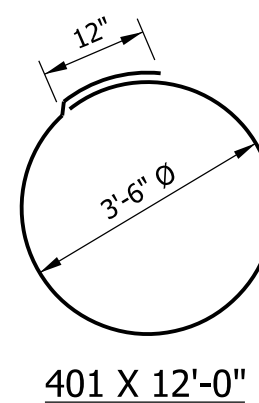
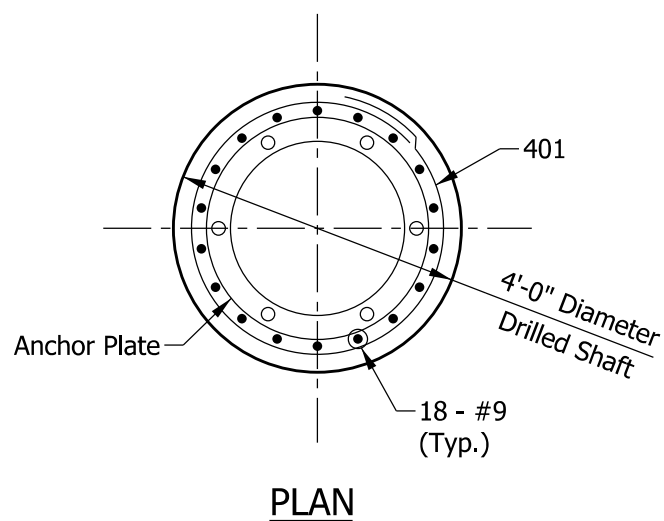
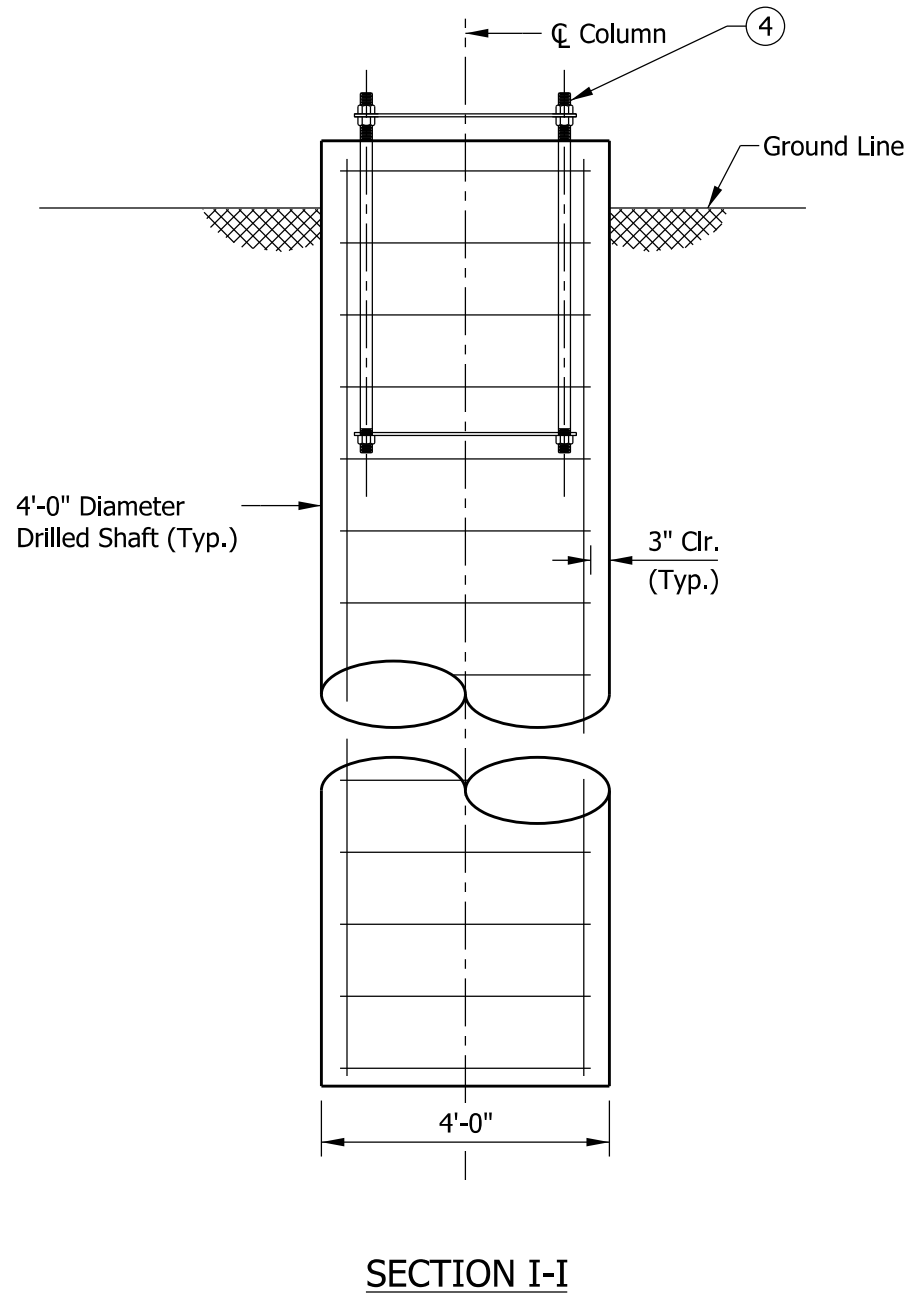
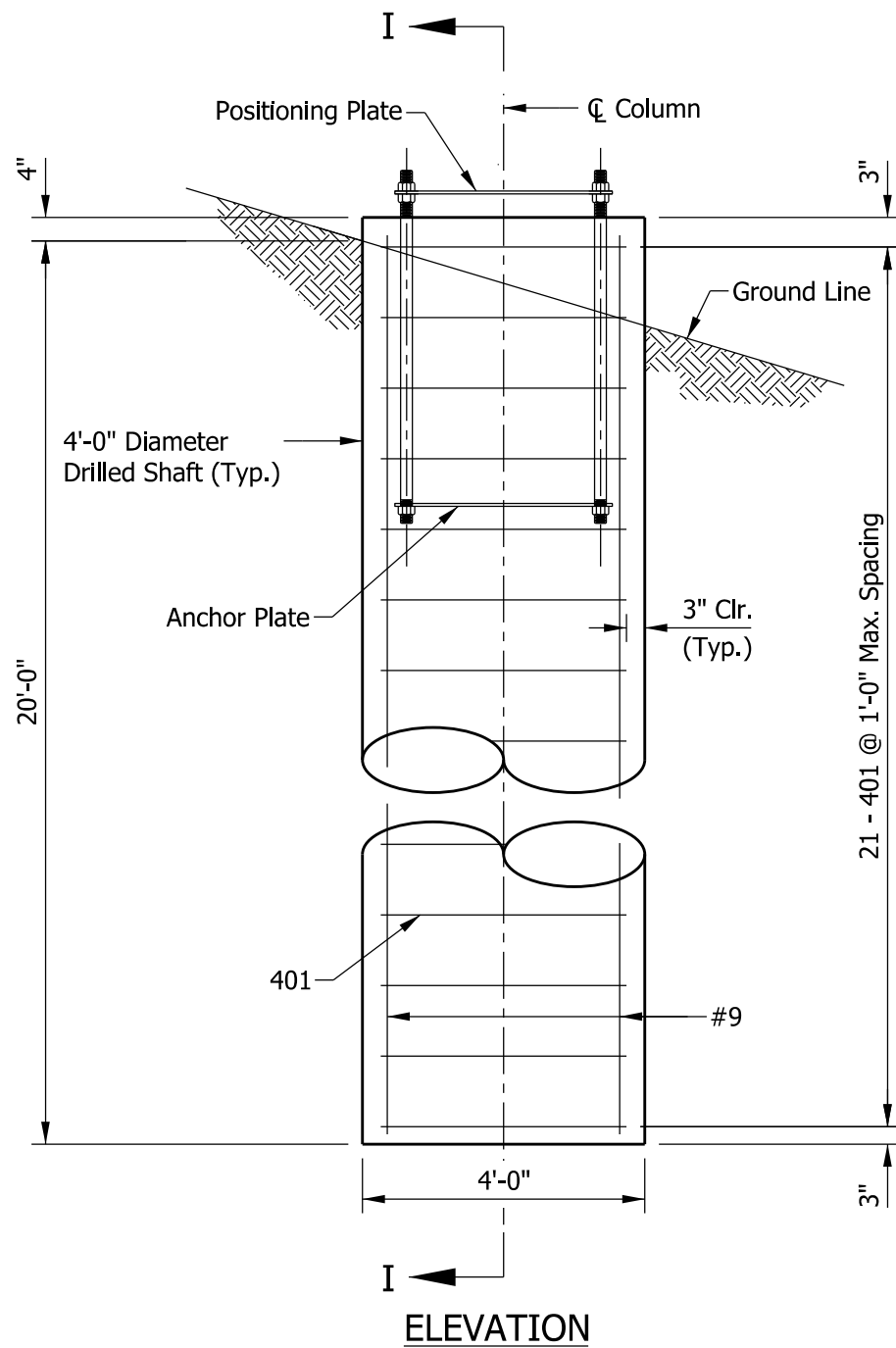


/s/ Alfredo B. Hanza 02/22/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

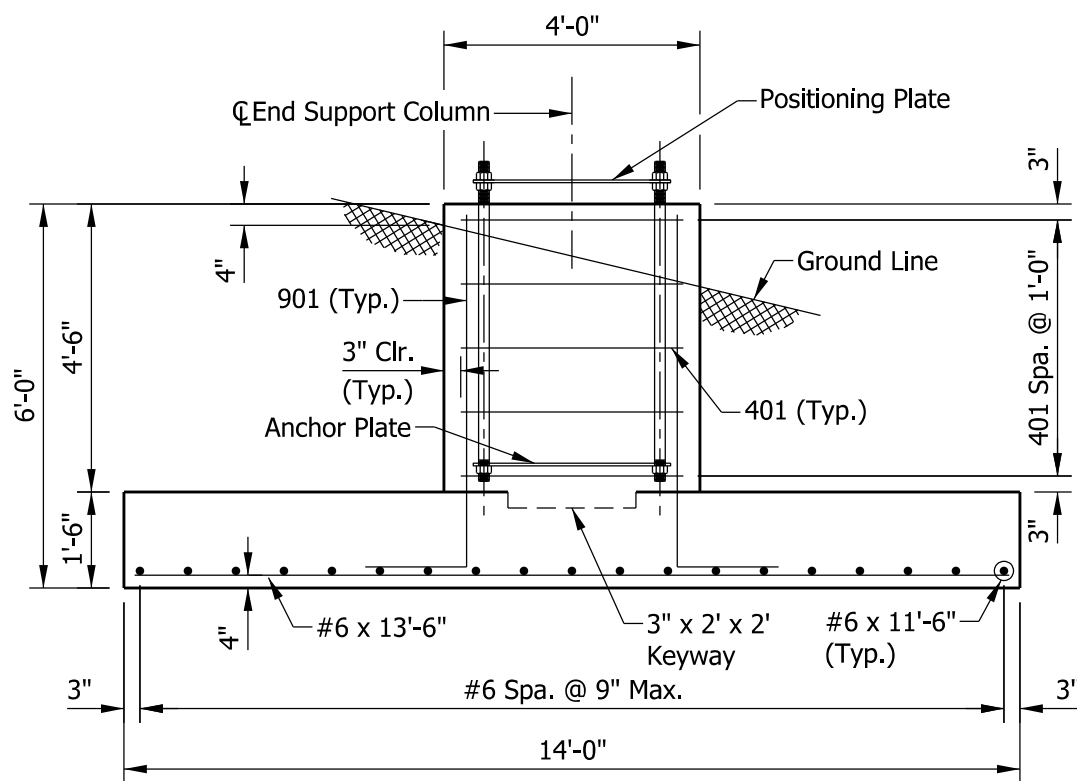


## NOTES:

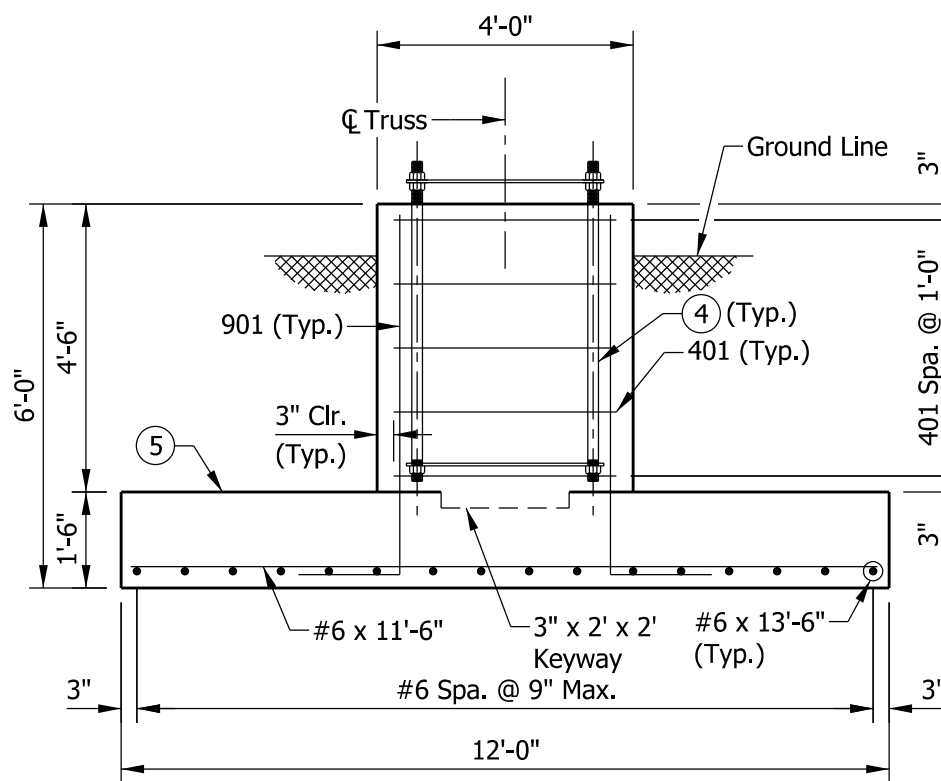
1. This standard foundation design is applicable for all tri-chord sign structures.
2. The design is based on clay soil with minimum unconfined shear strength of 750 psf or sandy soil with minimum friction angle of 30°.
3. All reinforcing bars to be epoxy coated.
- ④ See Standard Drawing E 802-TCSS-12 for anchor bolts.

BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	18	20'-0"	
Total #9			1224 LBS
#4	21	12'-0"	
Total #4			168 LBS
Total Epoxy-Coated Reinforcing Bars			1392 LBS
MISCELLANEOUS			
Concrete, Class A			9.5 CYS
Surface Seal			0.5 SYS

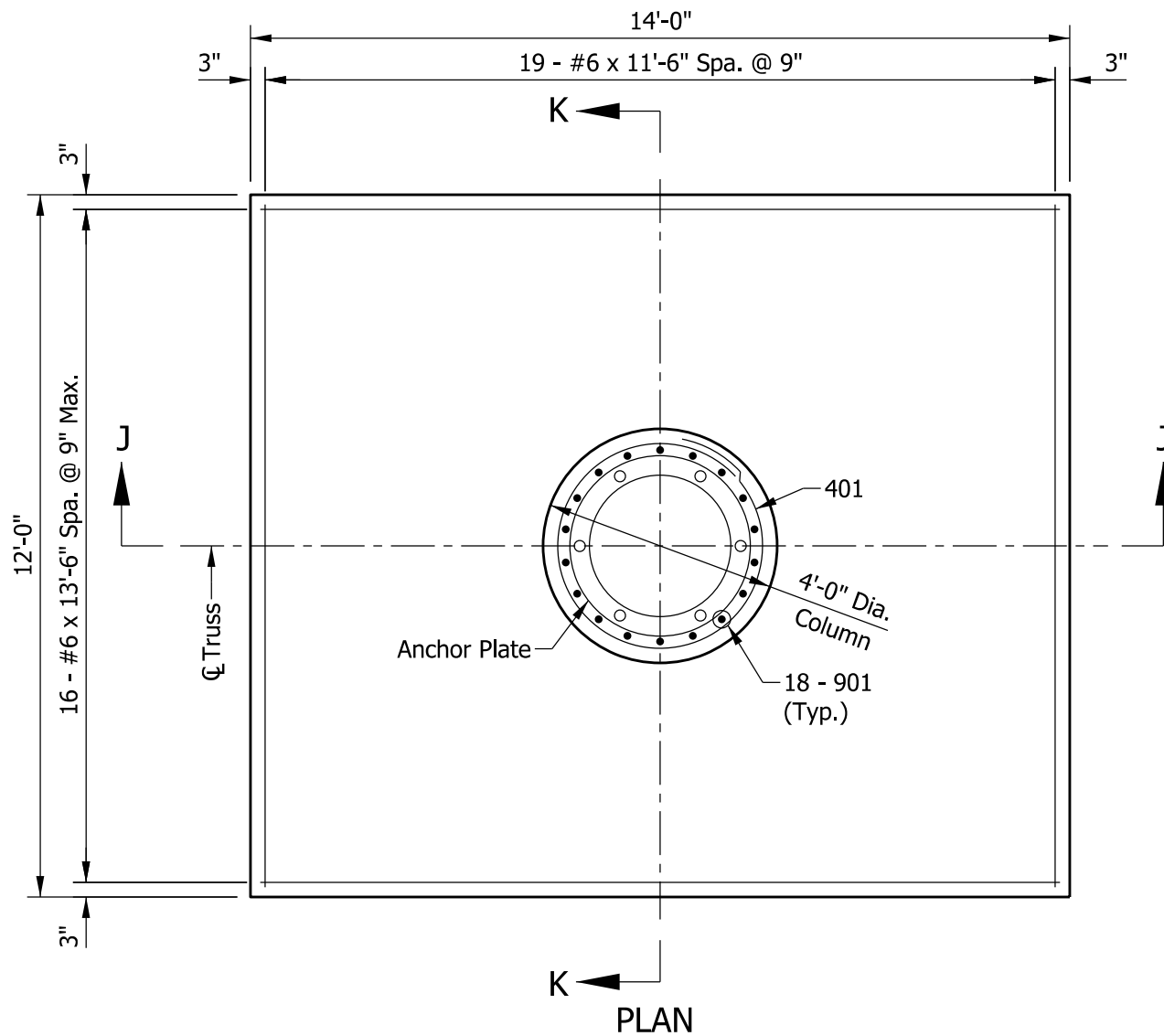
INDIANA DEPARTMENT OF TRANSPORTATION	
TRI-CHORD SIGN STRUCTURE DRILLED SHAFT FOUNDATION	
SEPTEMBER 2013	
STANDARD DRAWING NO.	E 802-TCSS-14
	/s/ <i>Alfredo B. Hanza</i> 02/22/13
	DESIGN STANDARDS ENGINEER DATE
	/s/ <i>Mark A. Miller</i> 03/27/13
	CHIEF ENGINEER DATE



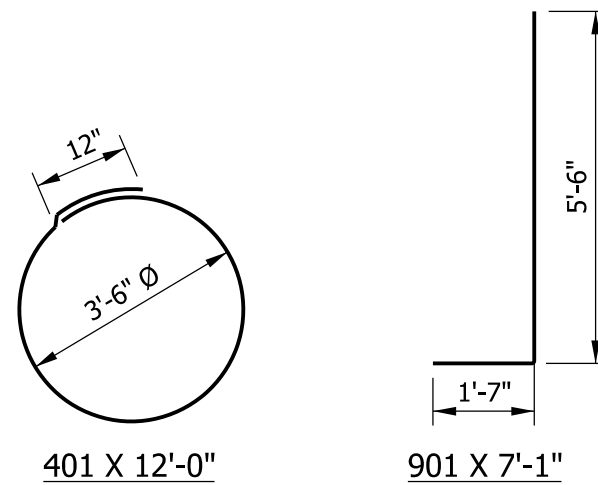
SECTION J-J



SECTION K-K



PLAN



## NOTES:

1. This standard foundation design is applicable for all tri-chord sign structures.
2. The design is based on allowable gross soil bearing pressure of 1500 psf.
3. All reinforcing bars to be epoxy coated.
- ④ See Standard Drawing E 802-TCSS-12 for anchor bolts.
- ⑤ Top of the footing shall be a minimum of 4'-0" below the pavement or ground line.

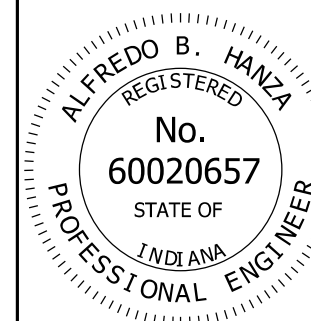
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
901	18	7'-1"	
Total #9			434 LBS
#6	19	11'-6"	
#6	16	13'-6"	
Total #6			652 LBS
401	5	12'-0"	
Total #4			40 LBS
Total Epoxy-Coated Reinforcing Bars			1126 LBS
MISCELLANEOUS			
Concrete, Class A			11.4 CYS
Surface Seal			0.5 SYS

## INDIANA DEPARTMENT OF TRANSPORTATION

### TRI-CHORD SIGN STRUCTURE SPREAD FOUNDATION

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-15



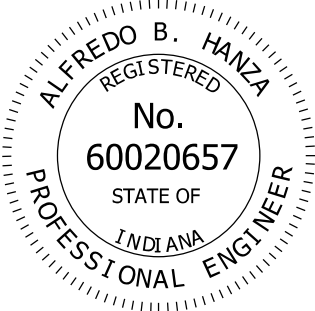
/s/ Alfredo B. Hanza	02/22/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE

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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS  
DRAWING INDEX  
  
SEPTEMBER 2013

STANDARD DRAWING NO.     E 805-SDAC-01



/s/ *Alfredo B. Hanza*

DESIGN STANDARDS ENGINEER

02/05/13

DATE

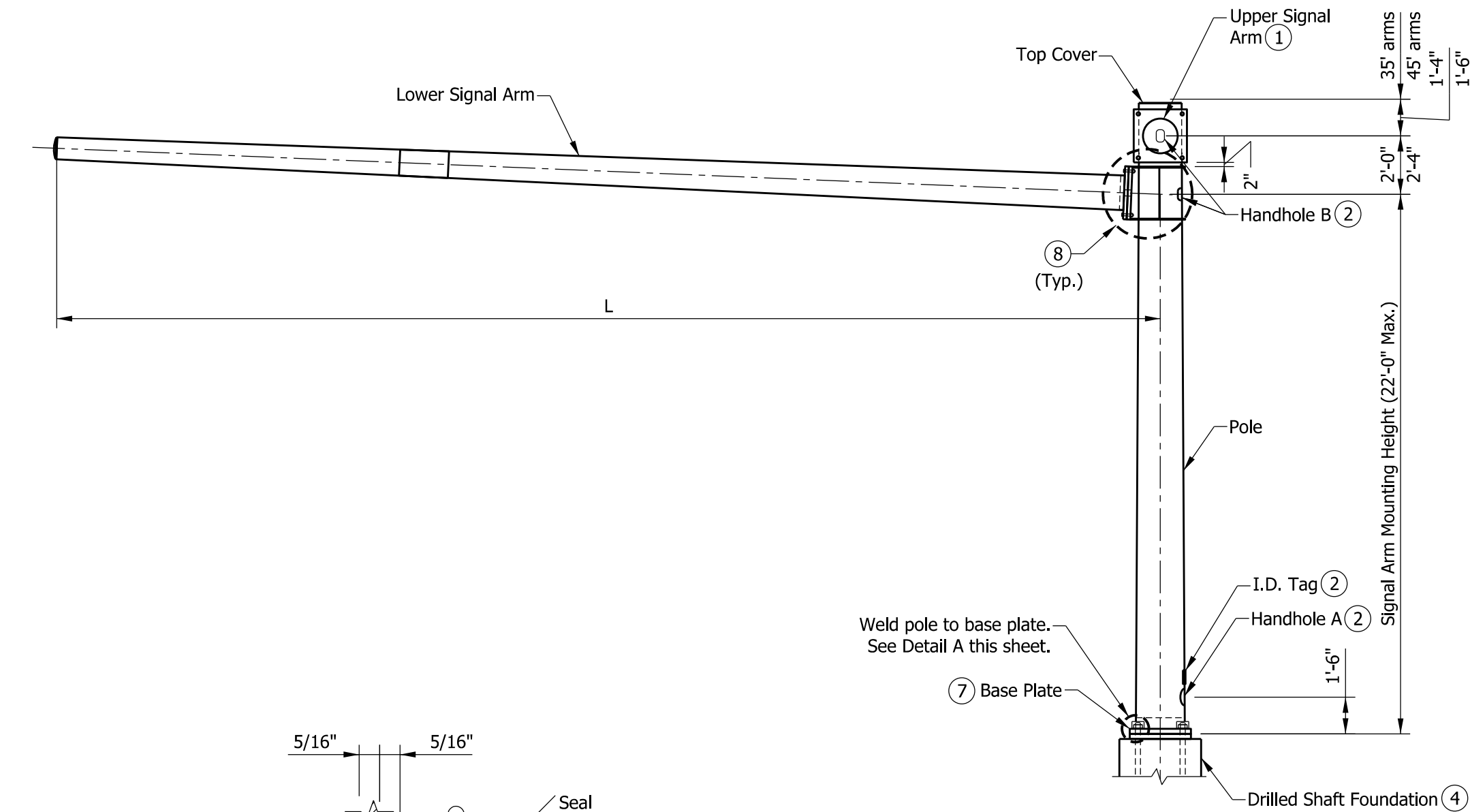
/s/ *Mark A. Miller*

CHIEF ENGINEER

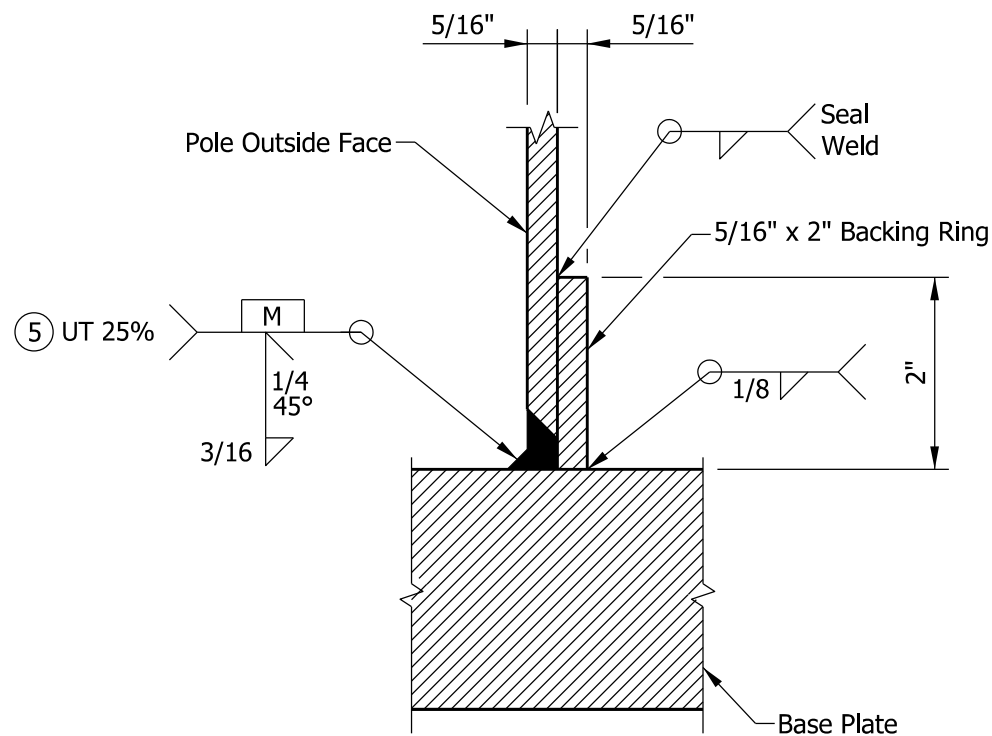
03/27/13

DATE





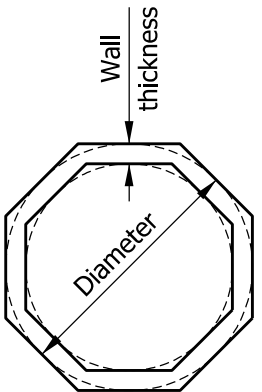
ELEVATION



POLE/BASE PLATE WELD  
DETAIL A

POLE DIMENSIONS (6)		
CANTILEVER ARM LENGTHS L (FT)	BASE DIAMETER (IN.)	WALL THICKNESS (IN.)
15' to 35'	18	5/16
> 35' to 45'	24	5/16

- 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.
  - (2) See Standard Drawing E 805-SDAC-06 for handhole and I.D. tag details.
  - 3. See Standard Drawings E 805-SGGR-01 through -03 for grounding details.
  - (4) See Standard Drawings E 805-SDAC-08 and -09 for foundation details.
  - (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.
  - (7) See Standard Drawing E 805-SDAC-04 for base plate details.
  - (8) See Standard Drawing E 805-SDAC-05 for arm connection details.



OCTAGON AND CIRCULAR  
TUBULAR SHAPE (6)

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS  
POLE DIMENSIONS AND DETAILS

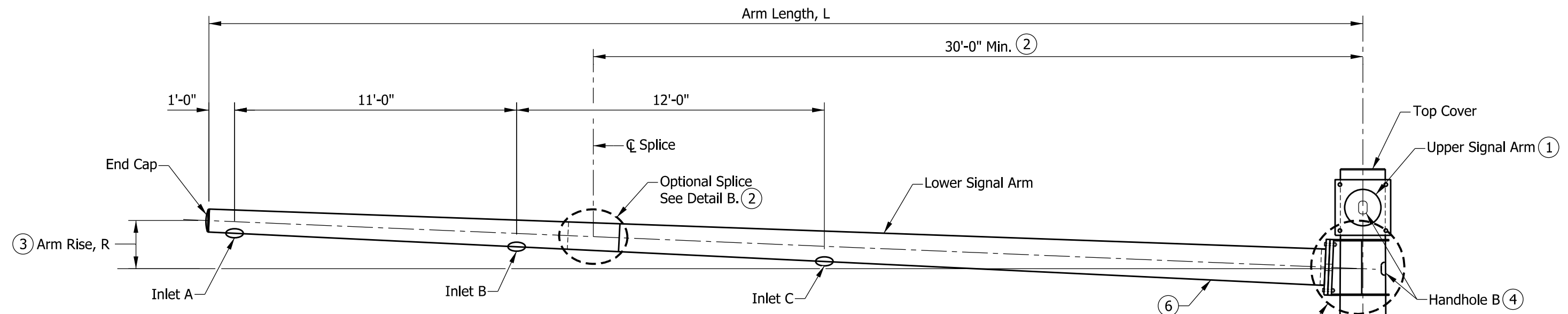
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-02

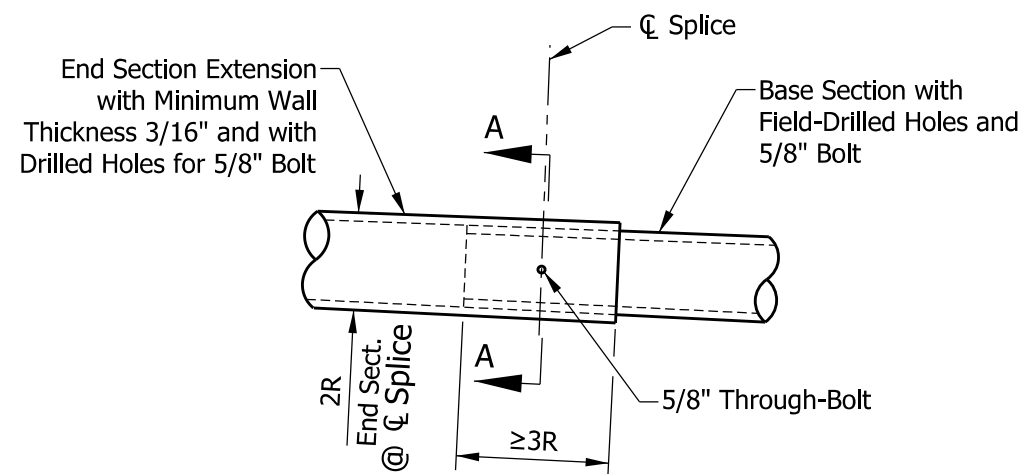
ALFREDO B. HANZA  
REGISTERED  
No. 60020657  
STATE OF INDIANA  
PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza02/05/13  
DESIGN STANDARDS ENGINEERDATE

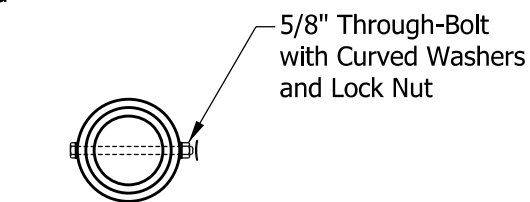
/s/ Mark A. Miller03/27/13  
CHIEF ENGINEERDATE



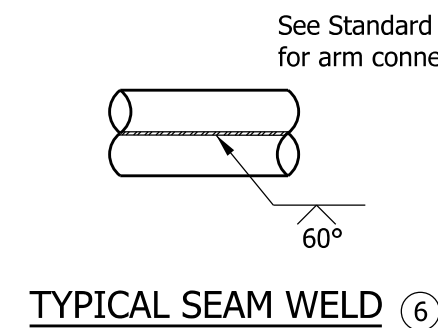
**ELEVATION**



**DETAIL B**



**SECTION A-A**



**TYPICAL SEAM WELD (6)**

**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.
- (4) See Standard Drawing E 805-SDAC-06 for handhole B details.
5. See Standard Drawing E 805-SDAC-07 for loading diagrams.
- (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.).

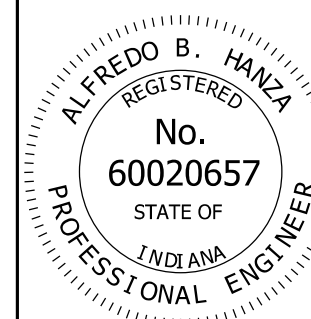
SIGNAL DUAL ARM CANTILEVER DATA				
ARM LENGTH L (FT.)	ARM DIAMETER AT POLE (IN.)	ARM WALL THICKNESS (IN.)	ARM RISE R (IN.) (3)	CABLE INLETS
15	14	5/16	7 1/2	A, B
20	14	5/16	10	A, B
25	14	5/16	12 1/2	A, B
30	14	5/16	15	A, B
35	14	5/16	17 1/2	A, B, C
40	17	5/16	20	A, B, C
45	17	5/16	22 1/2	A, B, C

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGNAL DUAL ARM CANTILEVERS  
ARM DIMENSIONS AND DETAILS**

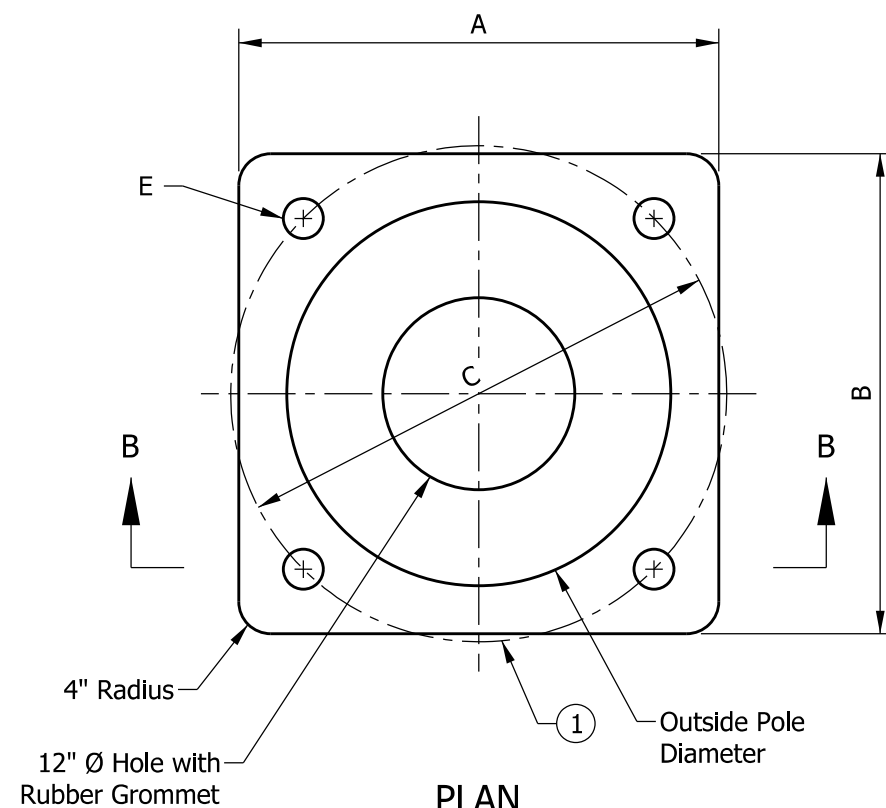
**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 805-SDAC-03**

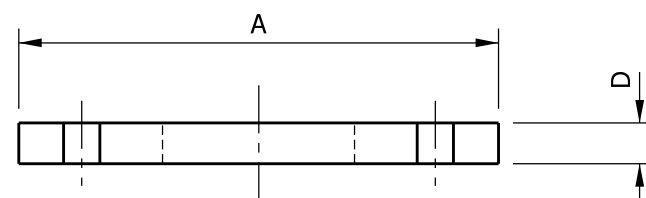


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

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

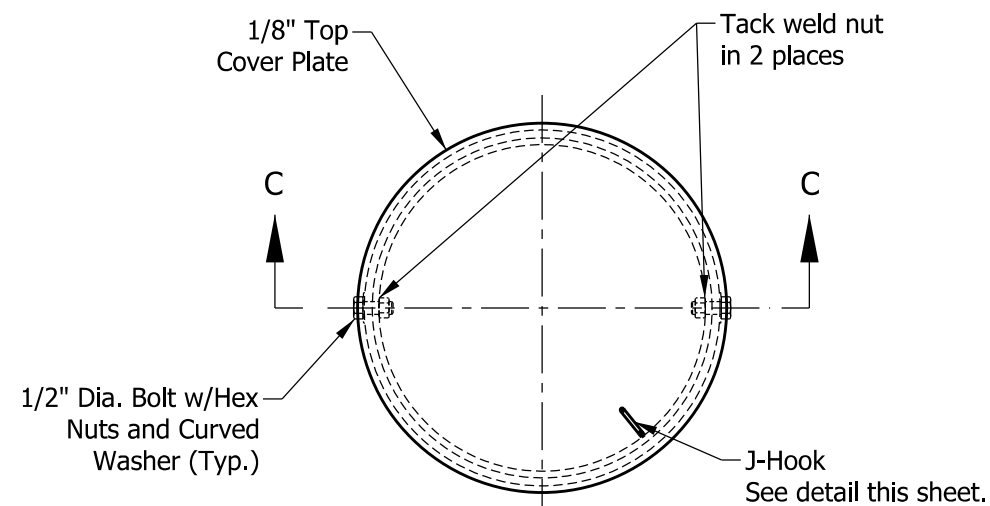


PLAN

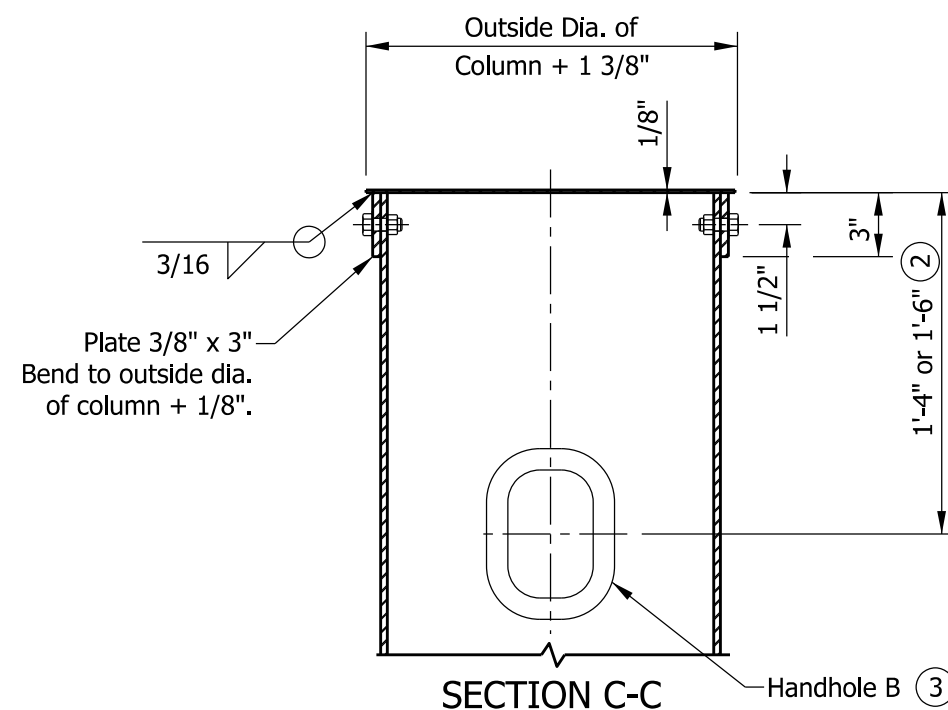


SECTION B-B  
BASE PLATE

BASE PLATE DATA				
POLE DIAMETER (IN.)	PLATE DIMENSIONS A X B (IN. X IN.)	ANCHOR BOLTS CIRCLE C (IN.)	PLATE THICKNESS D (IN.)	BOLT HOLE DIAMETER E (IN.)
18	26 x 26	25	2 1/4	2 9/16
24	30 x 30	31	2 1/2	2 13/16



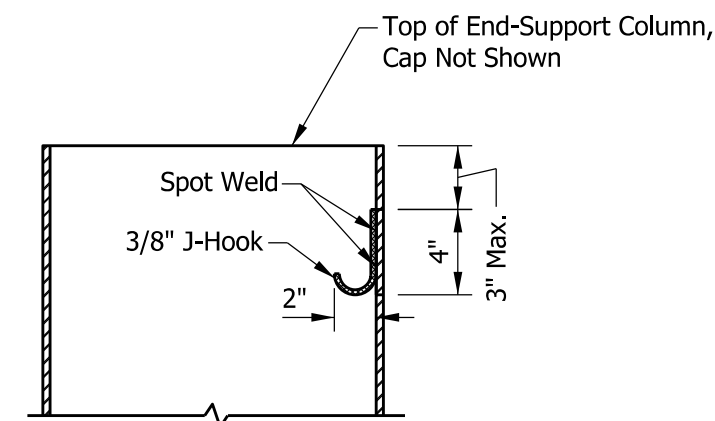
PLAN  
TOP COVER - STEEL COLUMN



SECTION C-C

# NOTES:

- Anchor bolt circle shall allow clearance for the anchor bolt washers. Cutting or trimming of the washers will not be allowed.
- See Standard Drawing E 805-SDAC-02 for handhole locations.
- See Standard Drawing E 805-SDAC-06 for handhole details.



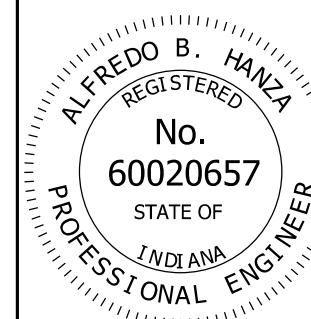
CABLE J-HOOK

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS  
BASE PLATE AND POLE TOP COVER DETAILS

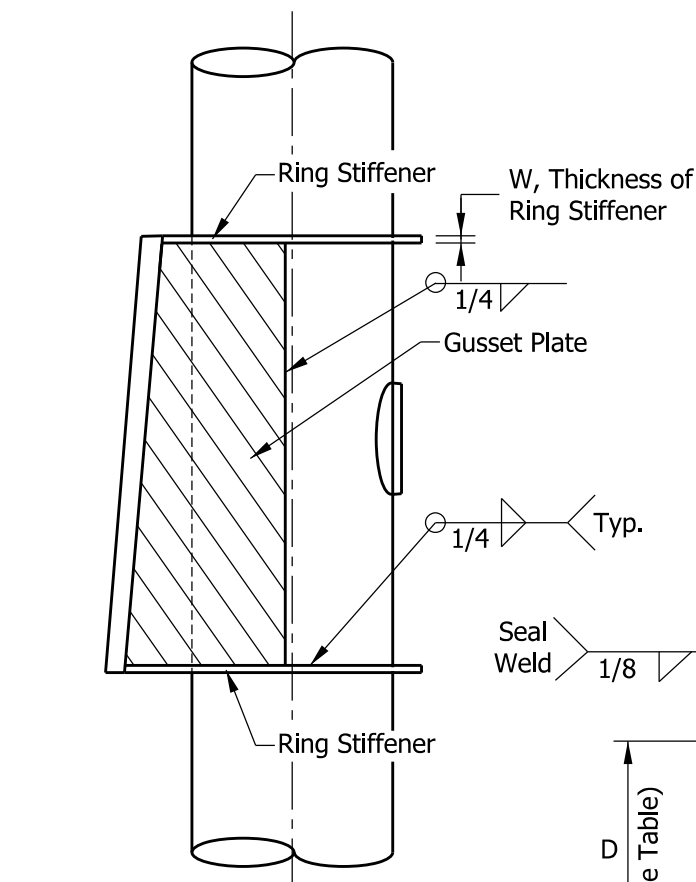
SEPTEMBER 2013

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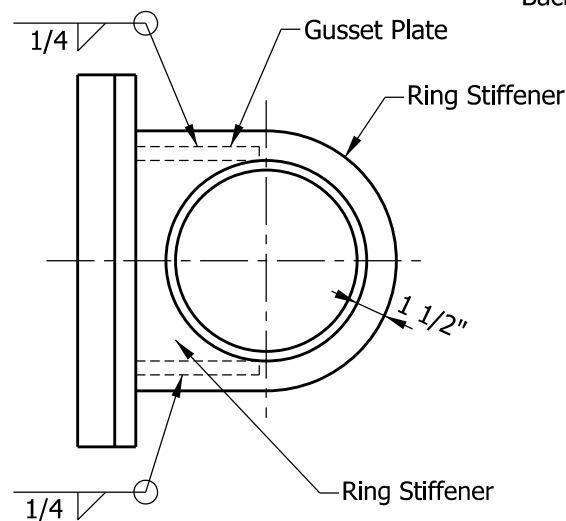


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

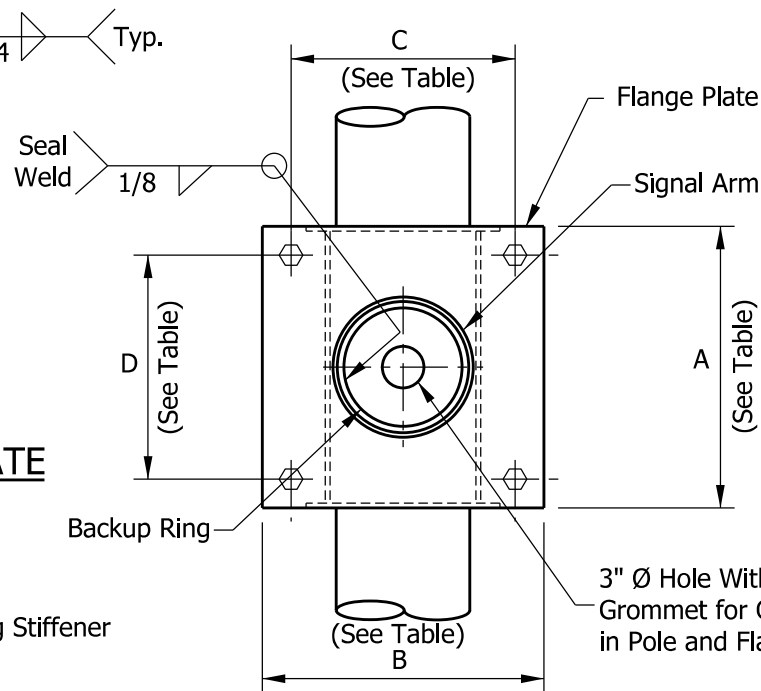
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



**ELEVATION OF GUSSET PLATE**

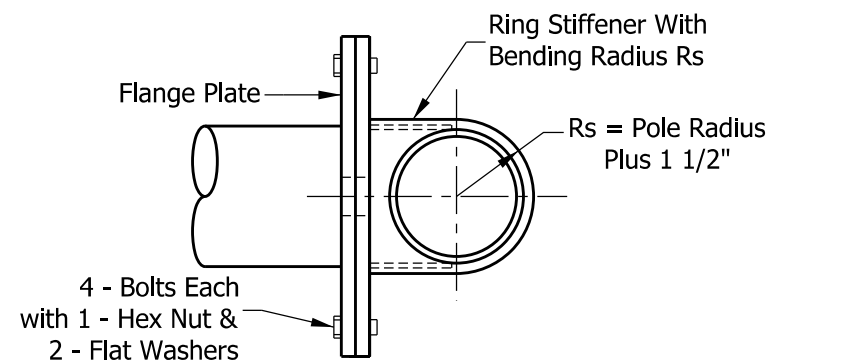


**TOP OF GUSSET PLATE**

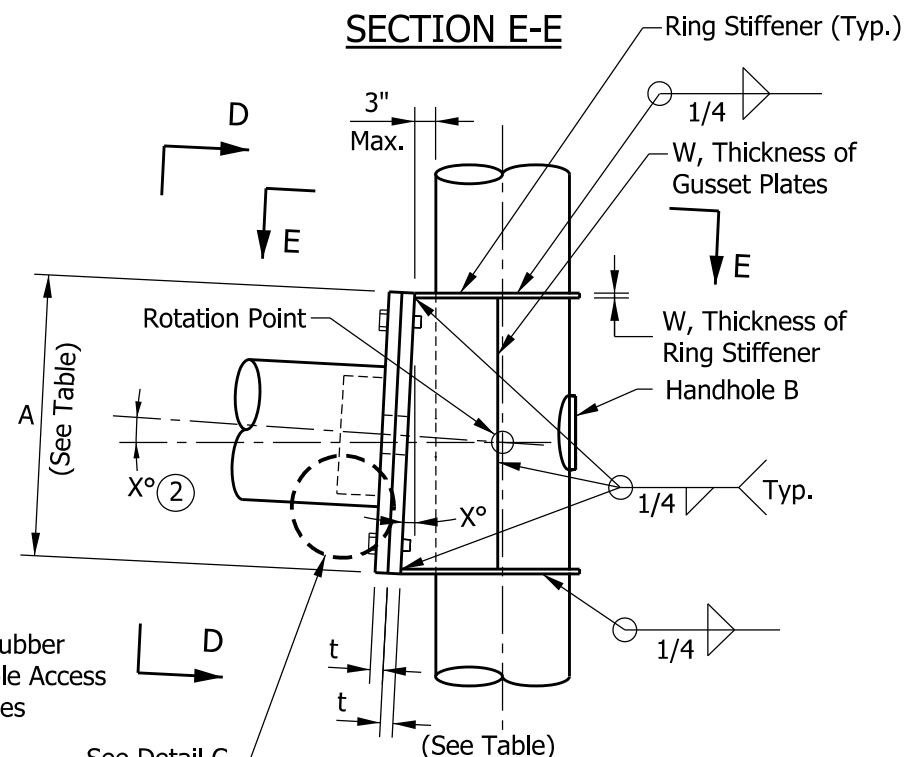


**SECTION D-D**

**SIGNAL ARM CONNECTION DETAIL**



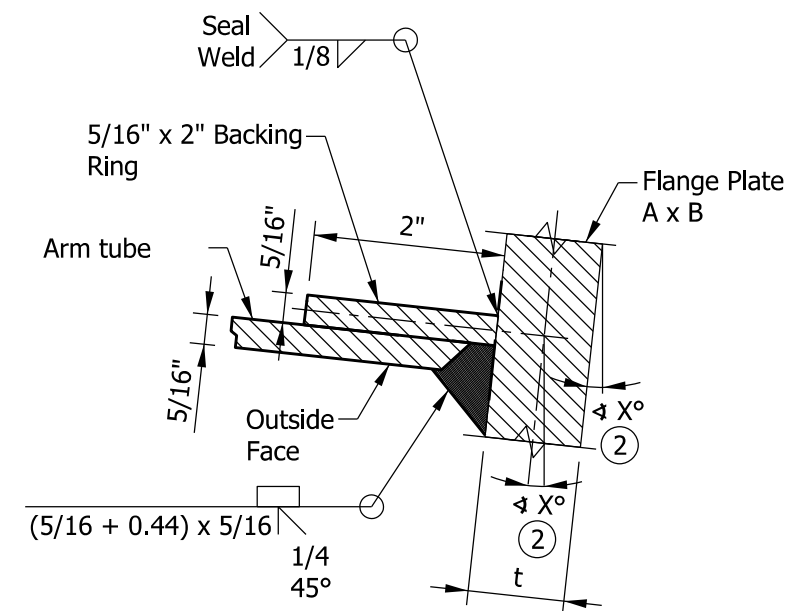
**SECTION E-E**



**ELEVATION**

**NOTES:**

1. See Standard Drawing E 805-SDAC-06 for Handhole B details.
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**

TABLE OF PLATES AND BOLTS FOR SIGNAL DUAL ARM CANTILEVER						
ARM LENGTH (FT)	FLANGE PLATE A X B (IN.)	BOLT PATTERN C X D (IN. X IN.)	RING STIFFENER & GUSSET PLATE THICKNESS W (IN.)	FLANGE PLATE THICKNESS t (IN.)	BOLT DIAMETER (IN.)	BOLT LENGTH (IN.)
15 to 35	22 x 22	17 1/2 x 17 1/2	3/8	1 1/2	1 1/4	5
> 35 to 45	26 x 26	21 1/2 x 21 1/2	1/2	2	1 1/2	6

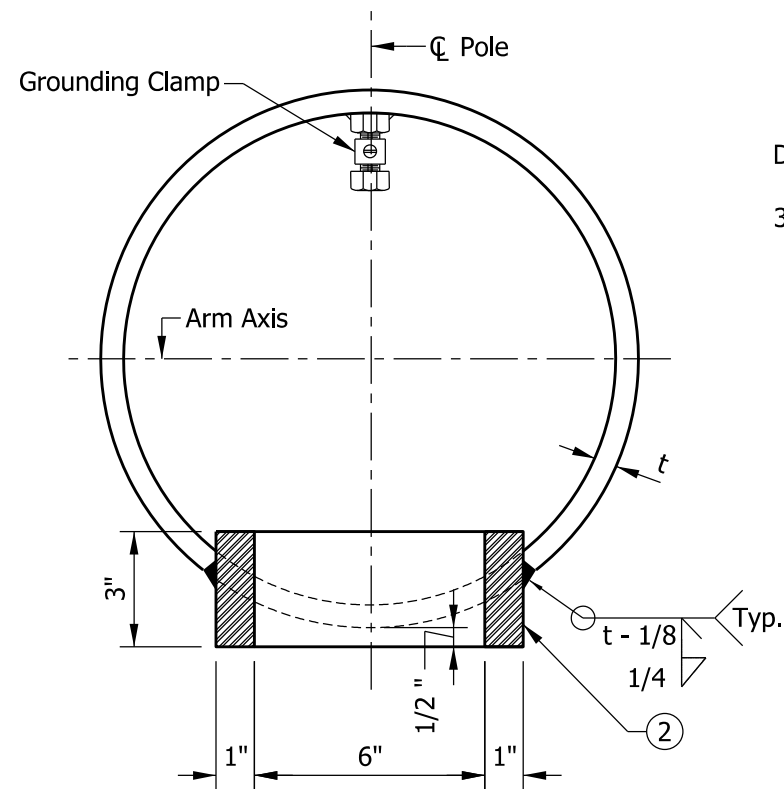
INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS  
ARM CONNECTION DETAILS

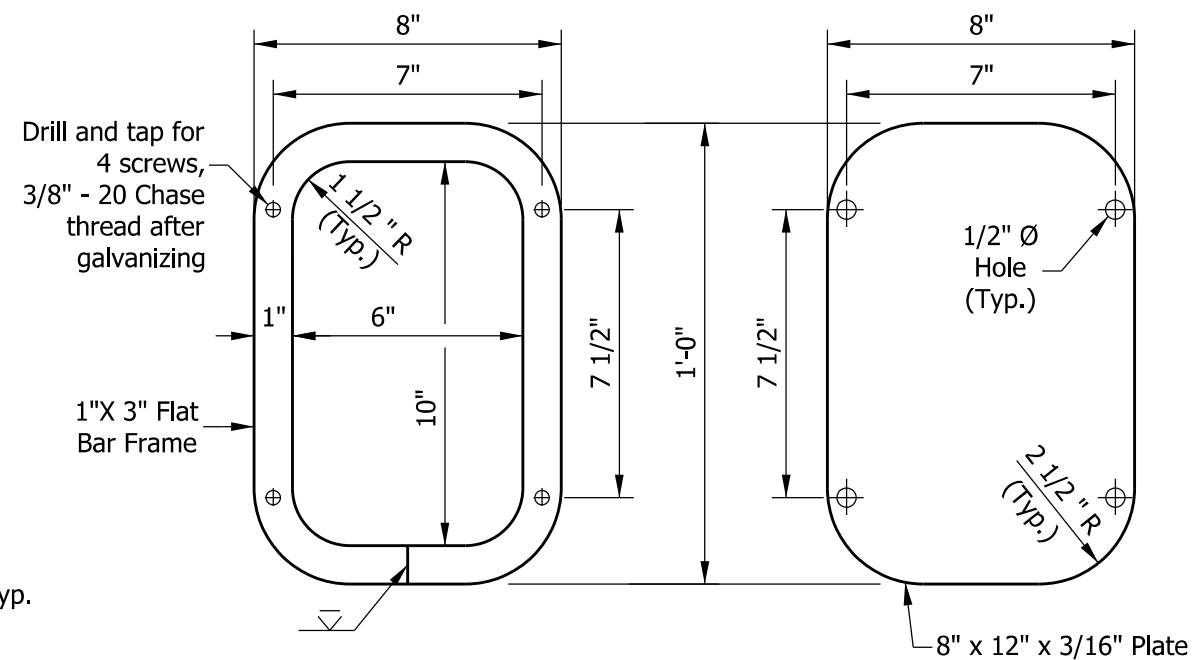
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-05

	/s/ Alfredo B. Hanza	02/05/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	03/27/13
	CHIEF ENGINEER	DATE



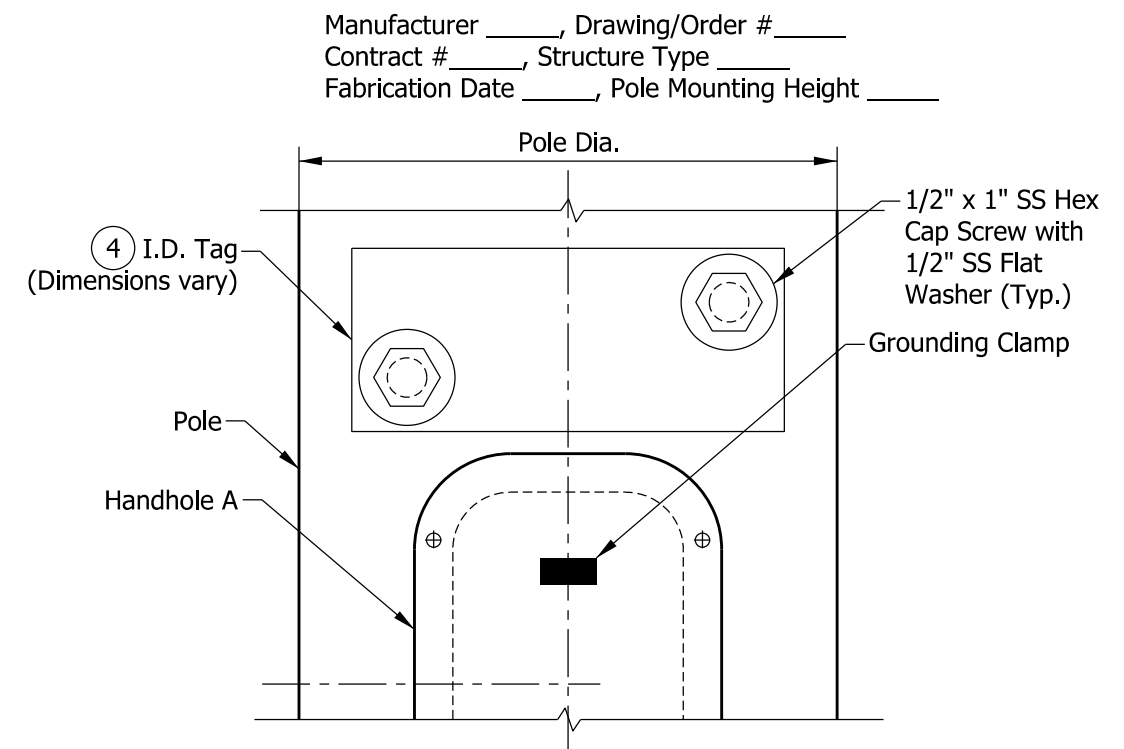
**HANDHOLE A**  
**SECTION ACROSS POLE**



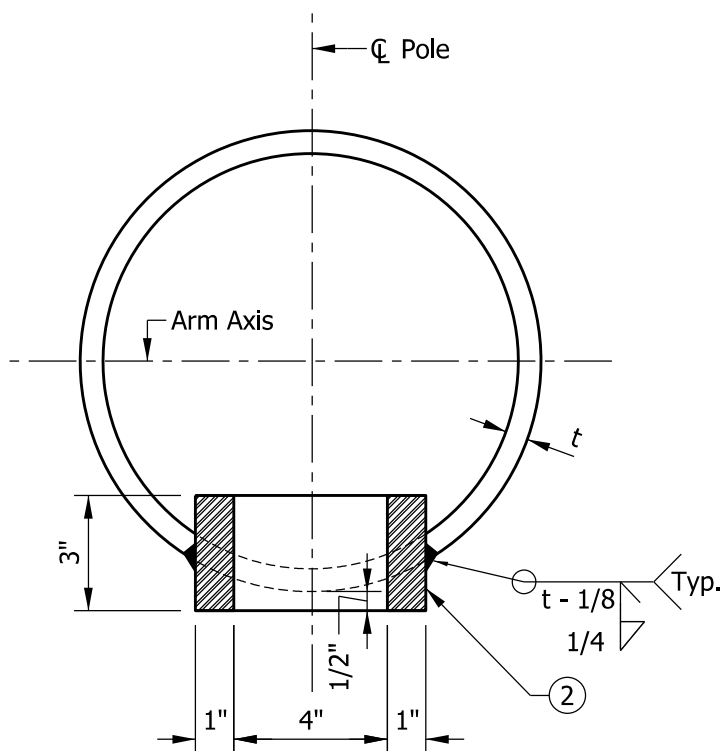
**FRAME DETAIL**

**COVER**

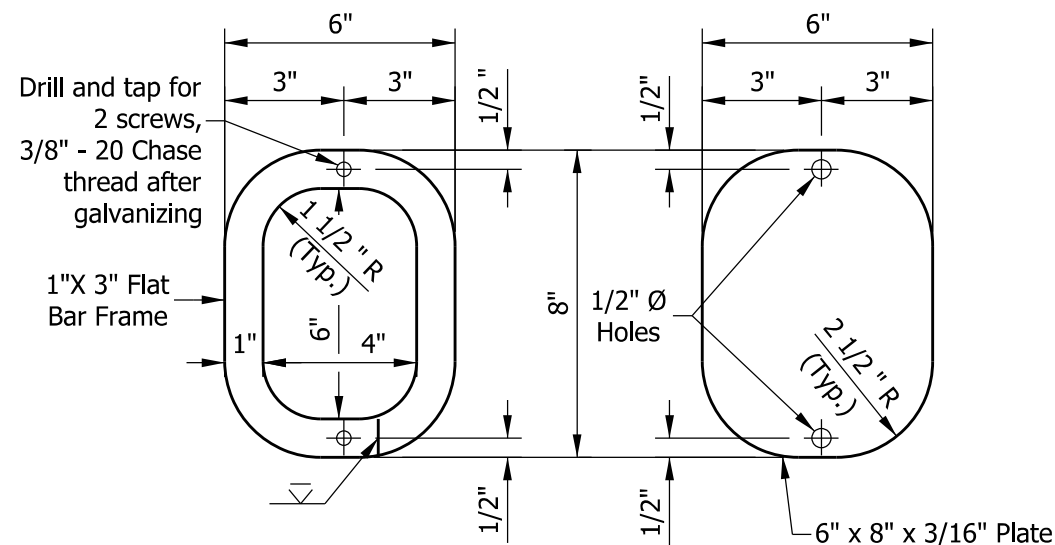
**HANDHOLE A**



**PARTIAL ELEVATION**  
**AT HANDHOLE A**



**HANDHOLE B**  
**SECTION ACROSS POLE**



**FRAME DETAIL**

**COVER**

**HANDHOLE B**

**NOTES:**

- Handhole A to be used at the base of the pole. Handhole B to be used at all other locations.
- In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
- See Standard Drawing E 805-SDAC-02 for handhole locations.
- I.D. tag is a 1/8" stainless steel plate with the following information stamped in 1/2" black letters:

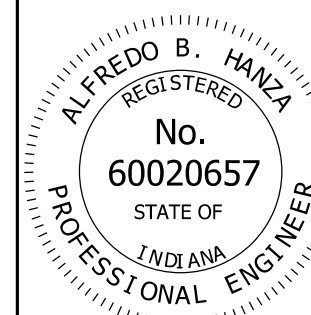
Manufacturer \_\_\_\_\_, Drawing/Order # \_\_\_\_\_  
Contract # \_\_\_\_\_, Structure Type \_\_\_\_\_  
Fabrication Date \_\_\_\_\_, Pole Mounting Height \_\_\_\_\_

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS  
HANDHOLE AND I.D. TAG DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-06

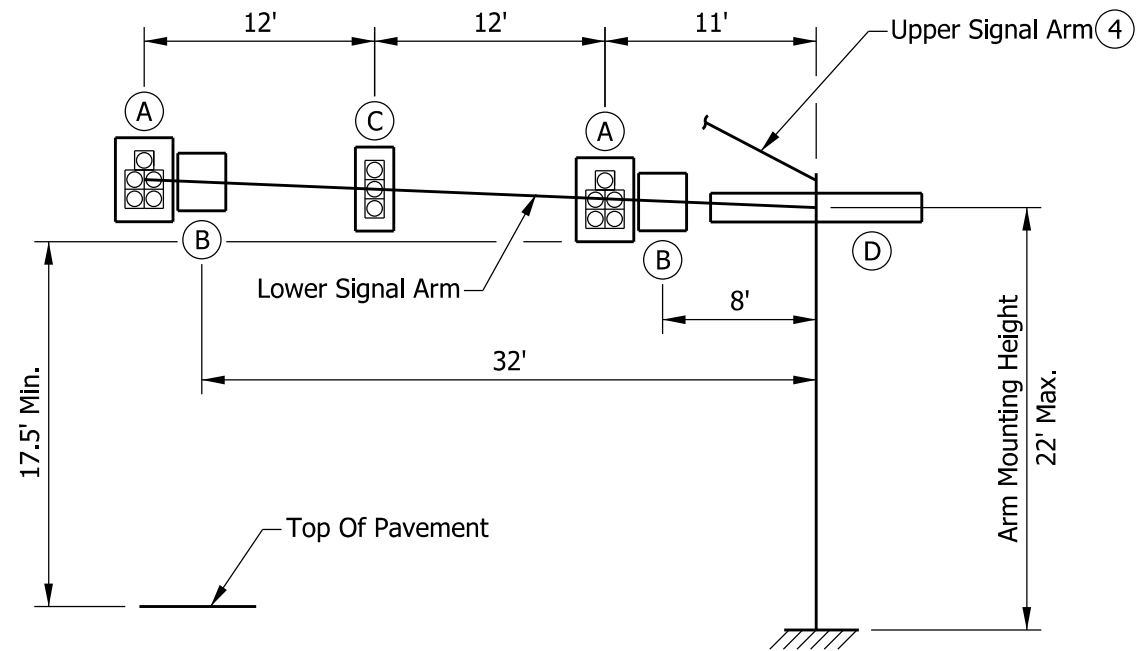


/s/ Alfredo B. Hanza 02/05/13

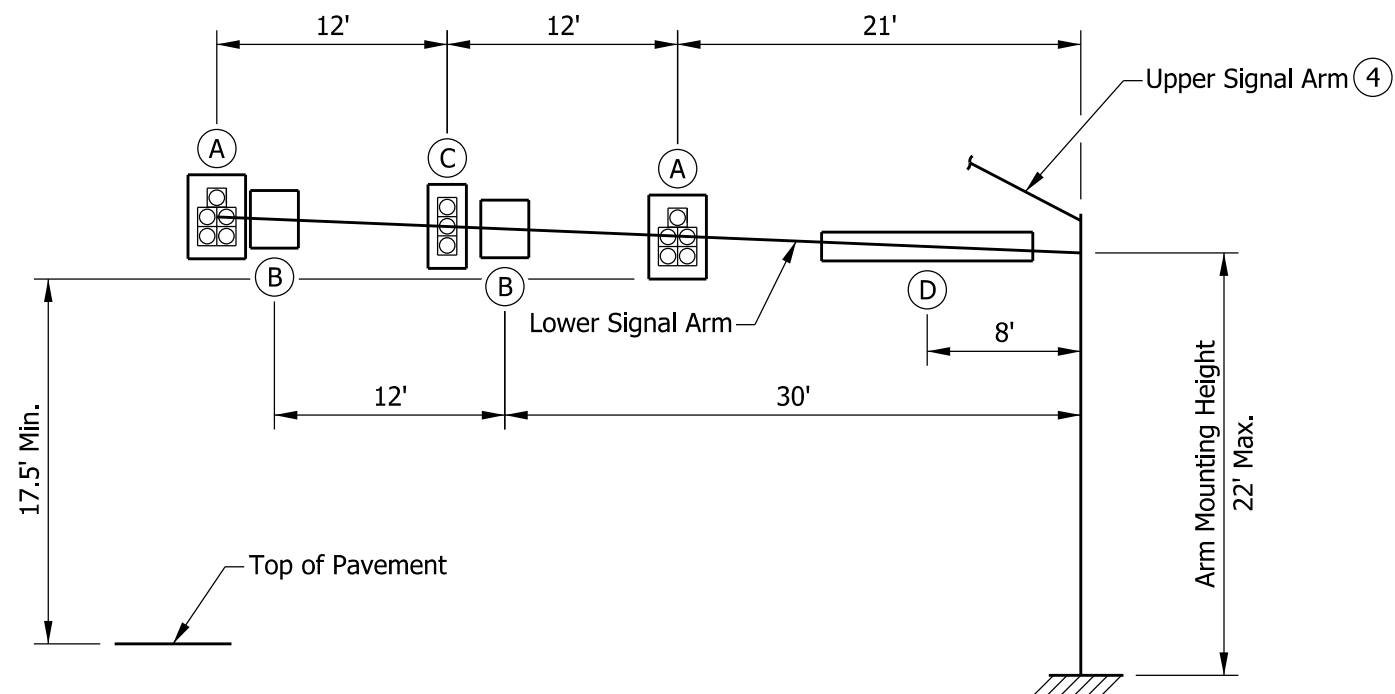
DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE



35' ARMS



45' ARMS

**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.

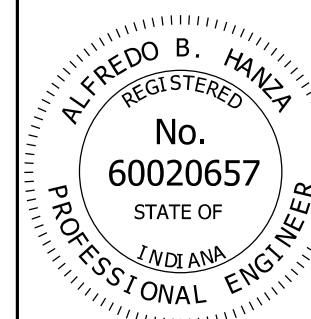
SIGNAL AND SIGN LOADING INFORMATION TABLE			
DEVICE	DESCRIPTION	DEVICE AREA (SQ FT)	WEIGHT (LBS)
①	12" - 5 section signal head with backplates	14.5	69
②	36" x 30" regulatory sign	7.5	19
③	12" - 3 section signal head with backplates	10.1	55
④	18" x 11'-0" street name sign	16.5	41

**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGNAL DUAL ARM CANTILEVERS  
LOADING DIAGRAMS**

**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 805-SDAC-07**

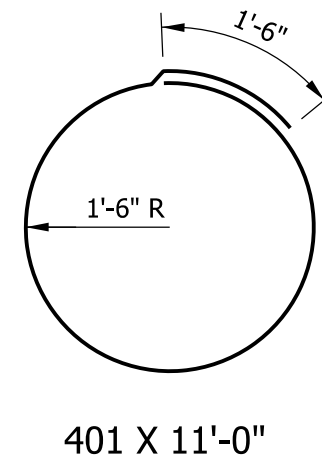
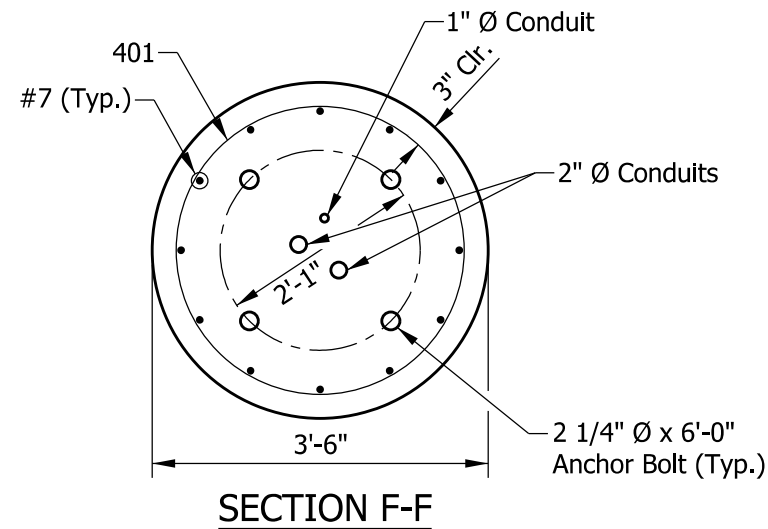
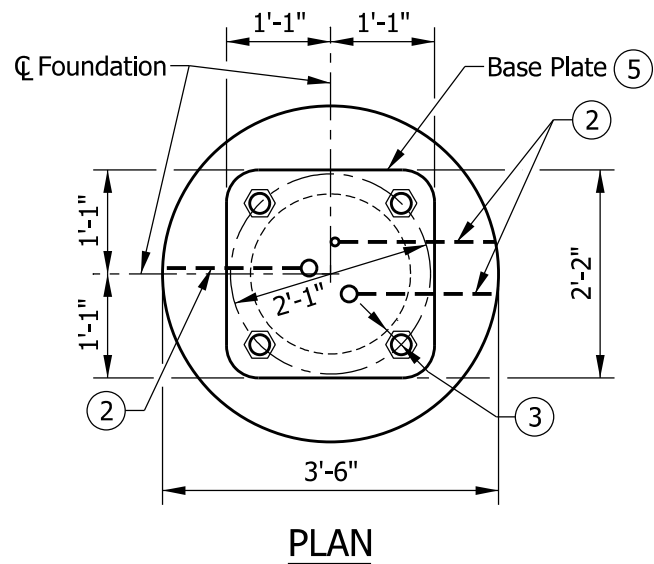


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

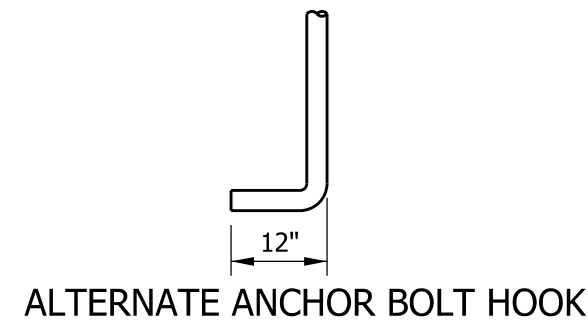
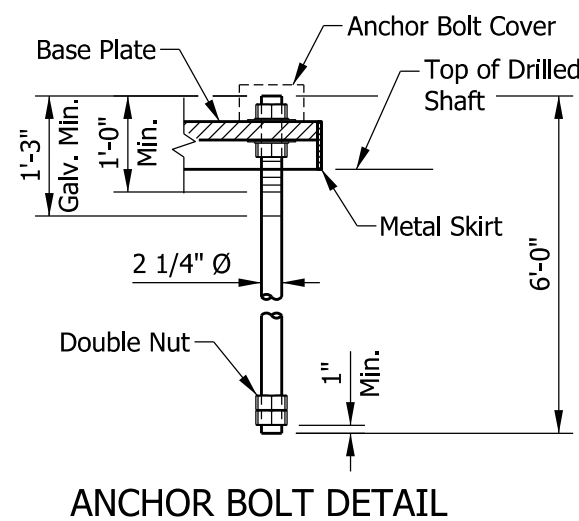
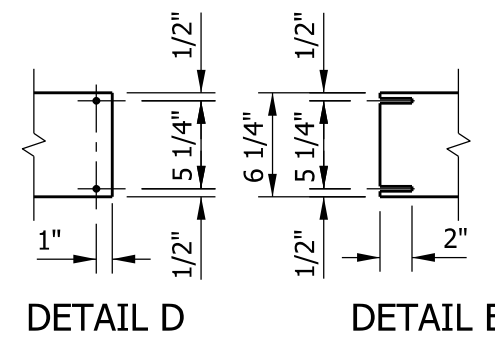
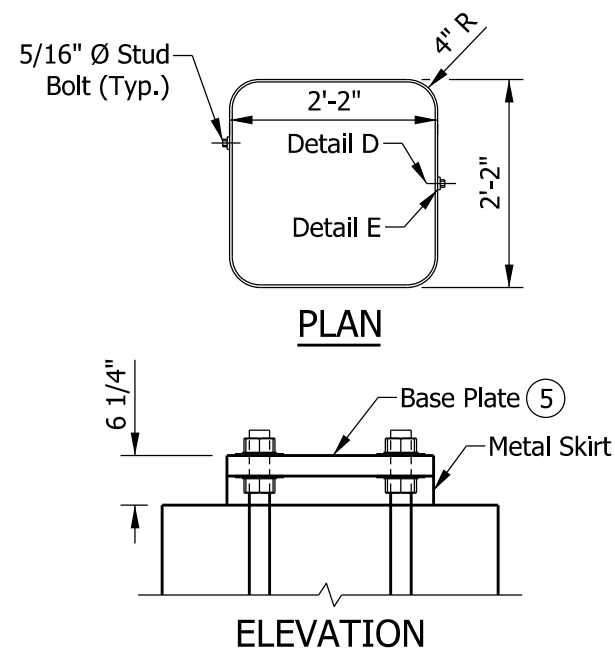
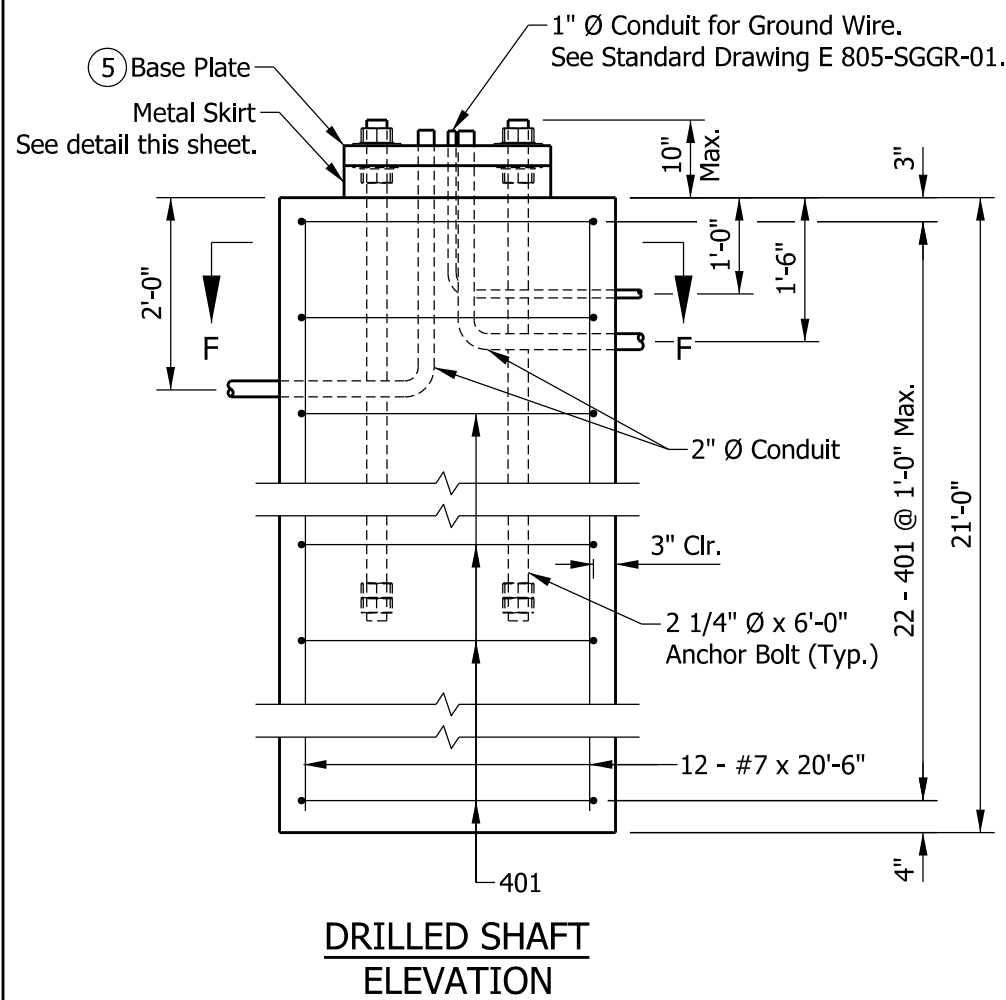
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE



### NOTES:

1. The Type E foundations are to be used for 35' dual arm structures and cohesive soil with minimum  $Q_u = 750$  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.
- 5 See Standard Drawing E 805-SDAC-04 for base plate details.

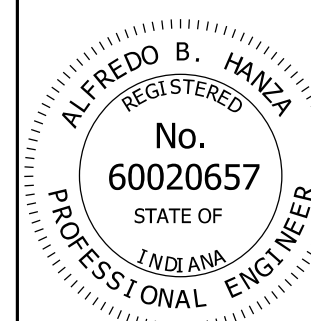


BILL OF MATERIALS			
REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#7	12	20'-6"	
Total #7			503 LBS
401	22	11'-0"	
Total #4			162 LBS
Total Reinforcing Bars			665 LBS
CONCRETE			
Concrete, Class A			7.5 CYS

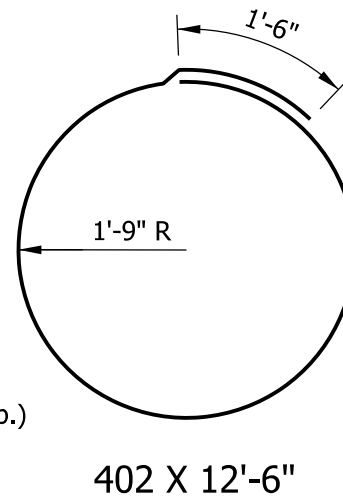
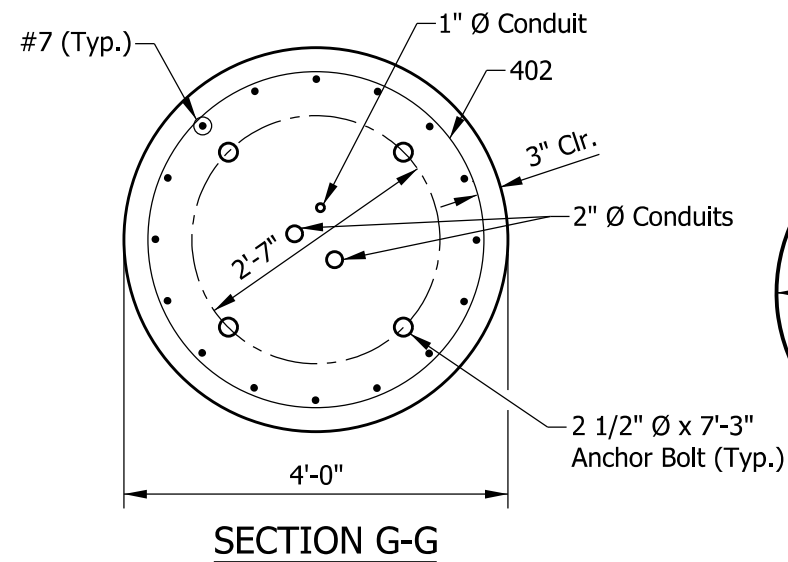
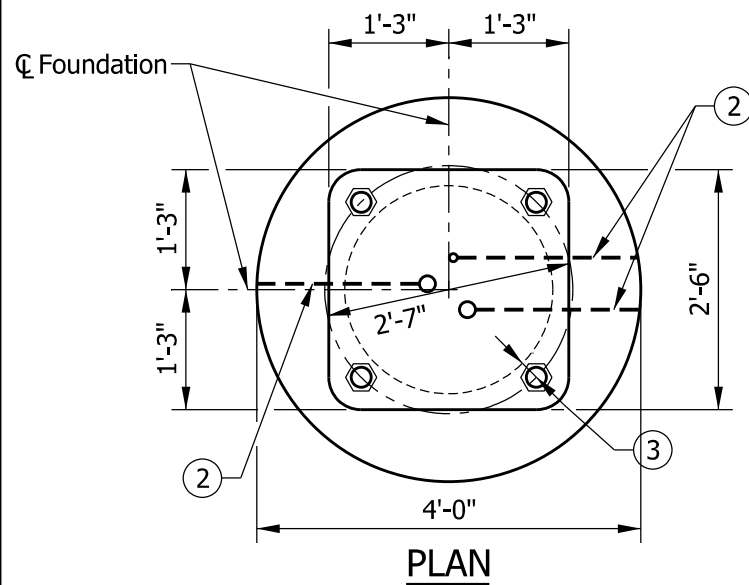
### INDIANA DEPARTMENT OF TRANSPORTATION

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

STANDARD DRAWING NO. E 805-SDAC-08

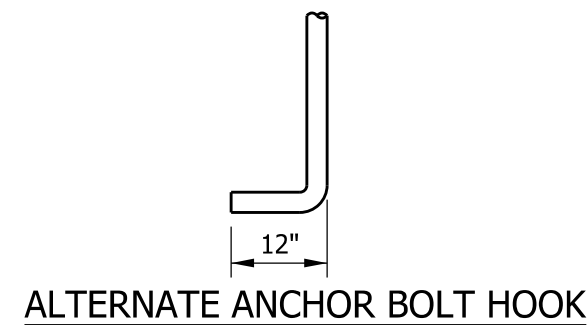
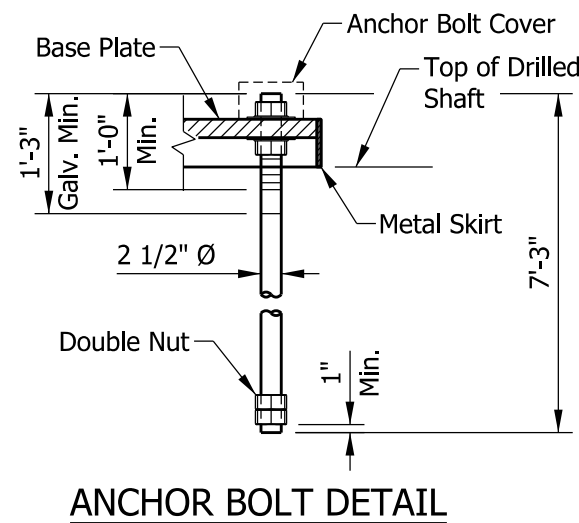
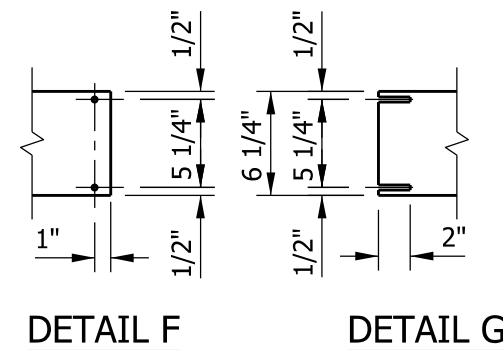
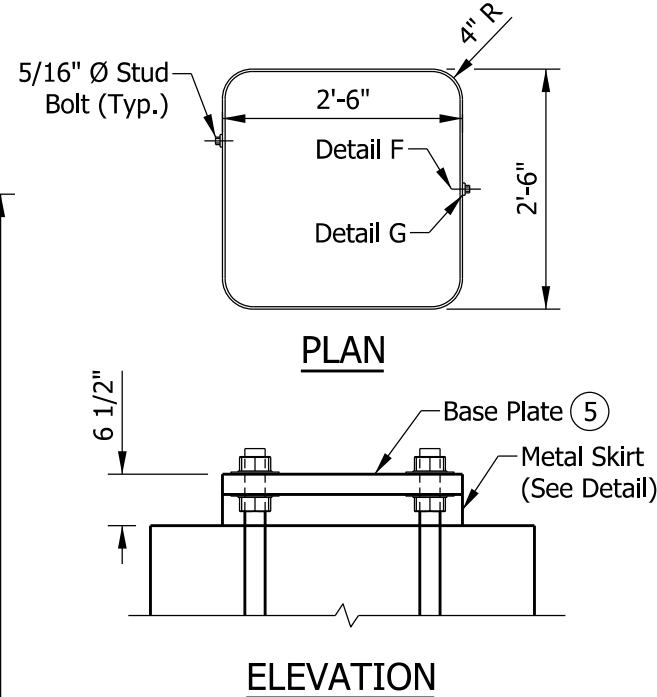
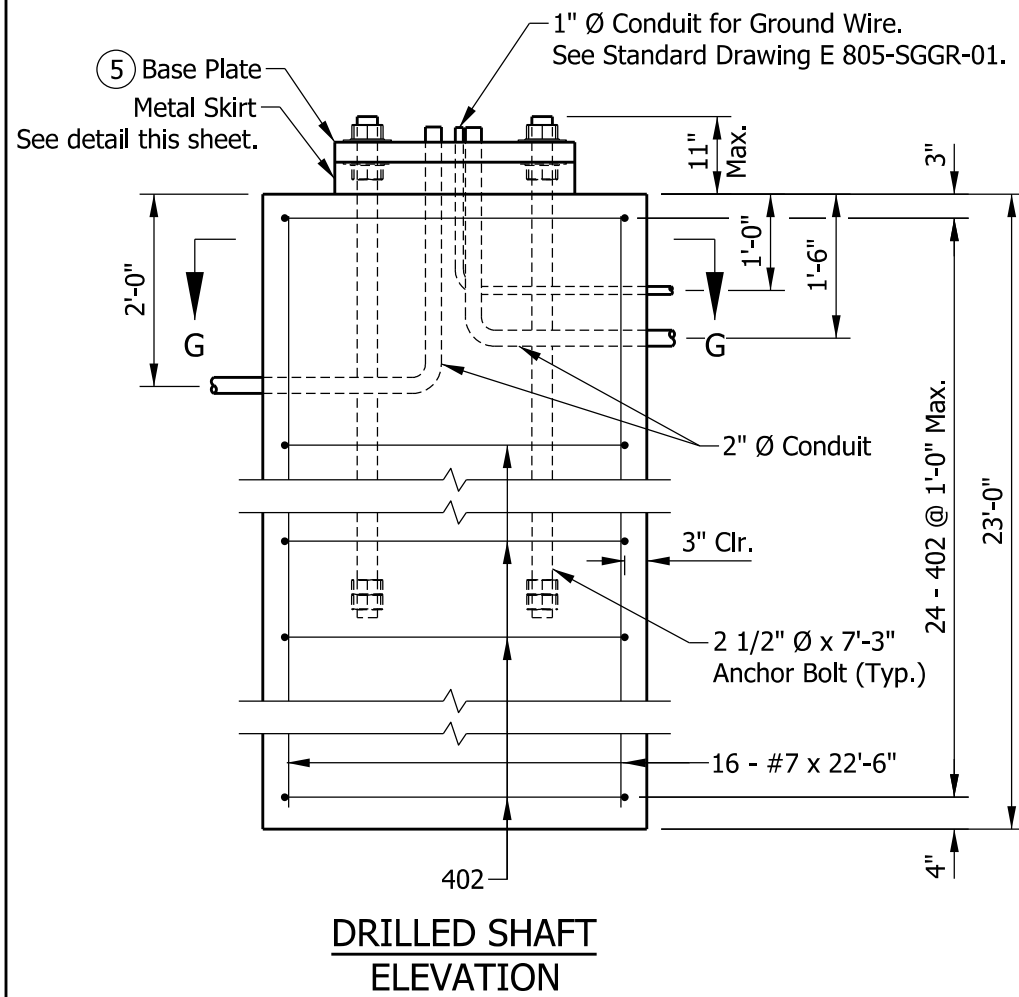


/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



#### NOTES:

- The Type E foundations are to be used for 35' dual arm structures and cohesive soil with minimum  $Q_u = 750$  lb/ft or sand with minimum friction angle  $30^\circ$ .
- 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.
- 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.
- The foundation shall be poured monolithically and shall have no construction joint.
- See Standard Drawing E 805-SDAC-04 for base plate details.

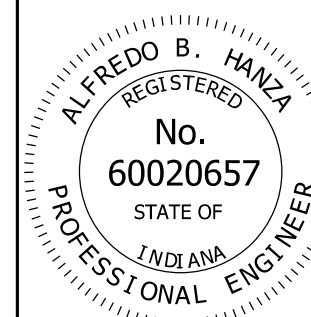


BILL OF MATERIALS			
REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#7	16	22'-6"	
Total #7			736 LBS
402	24	12'-6"	
Total #4			201 LBS
Total Reinforcing Bars			937 LBS
CONCRETE			
Concrete, Class A			10.7 CYS

#### INDIANA DEPARTMENT OF TRANSPORTATION

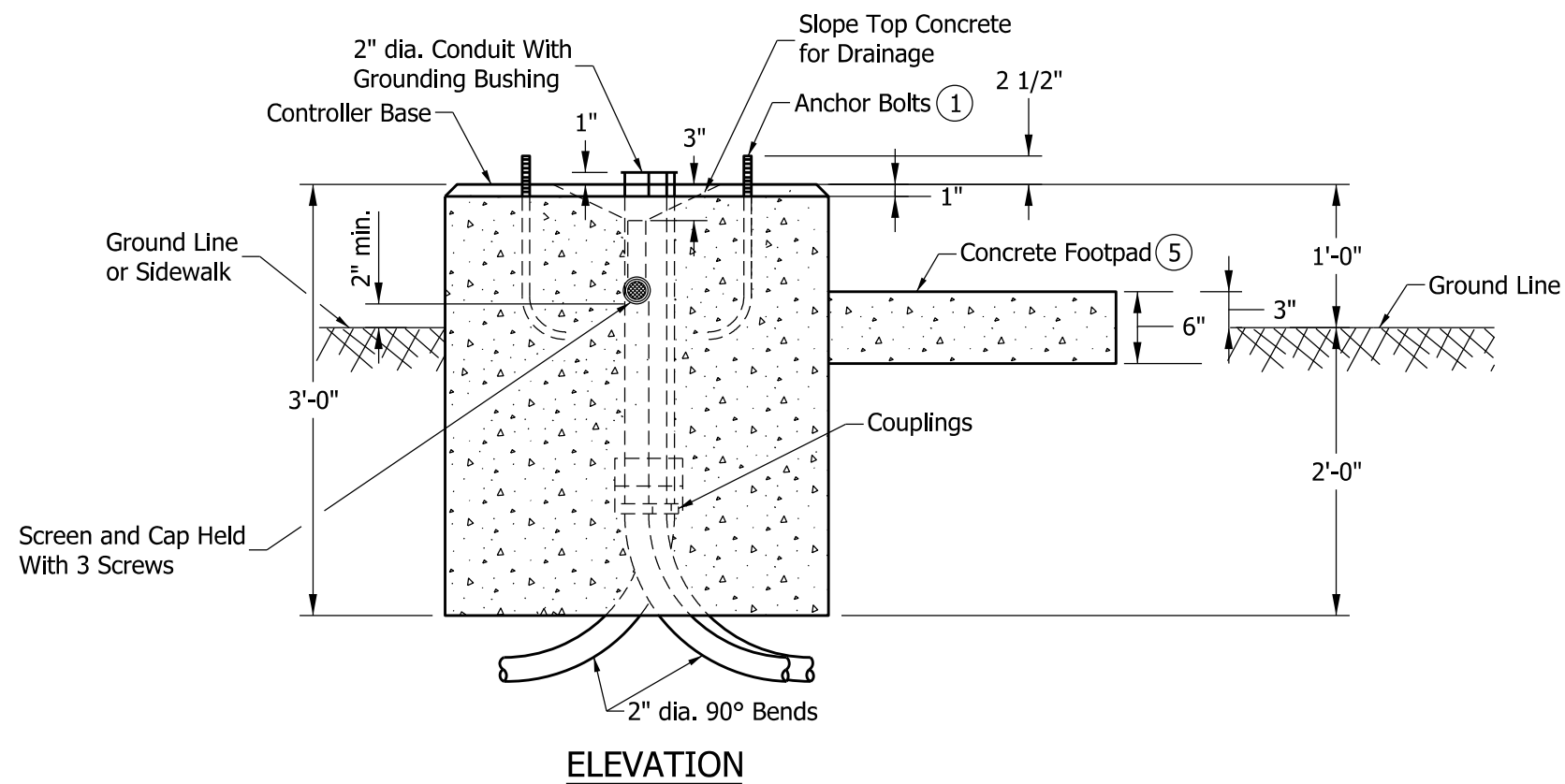
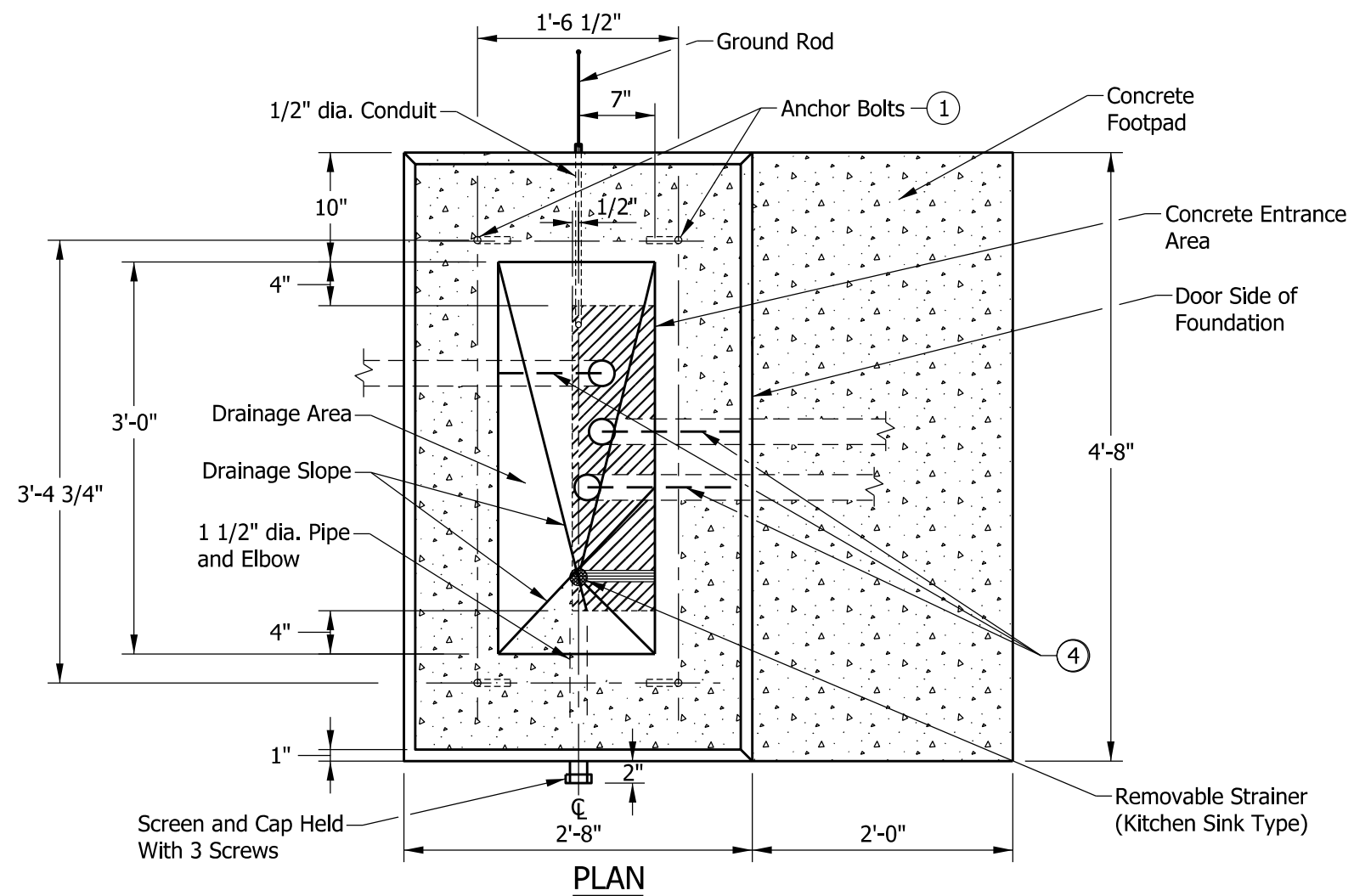
#### SIGNAL DUAL ARM CANTILEVERS FOUNDATION, DRILLED SHAFT TYPE F FOR DUAL ARMS GREATER THAN 35' TO 45' SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-09



/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE





### NOTES:

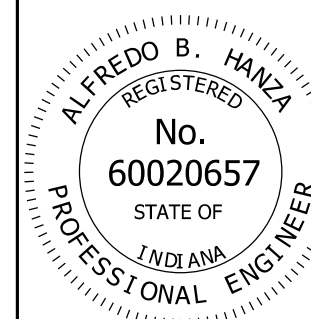
- ① See Standard Drawing E 805-SGPB-01 for anchor bolt details.
2. Install minimum 3 - 2" dia. conduits for each foundation.
3. Conduits not used shall be capped below grade. More inlets shall be installed as required on plans.
- ④ Make a permanent line on top of the concrete foundation indicating the direction of the 2" conduits' exit.
- ⑤ Concrete footpad shall be constructed of the same class concrete as the foundation.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL CONTROLLER CABINET FOUNDATION  
TYPE P-1

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-01

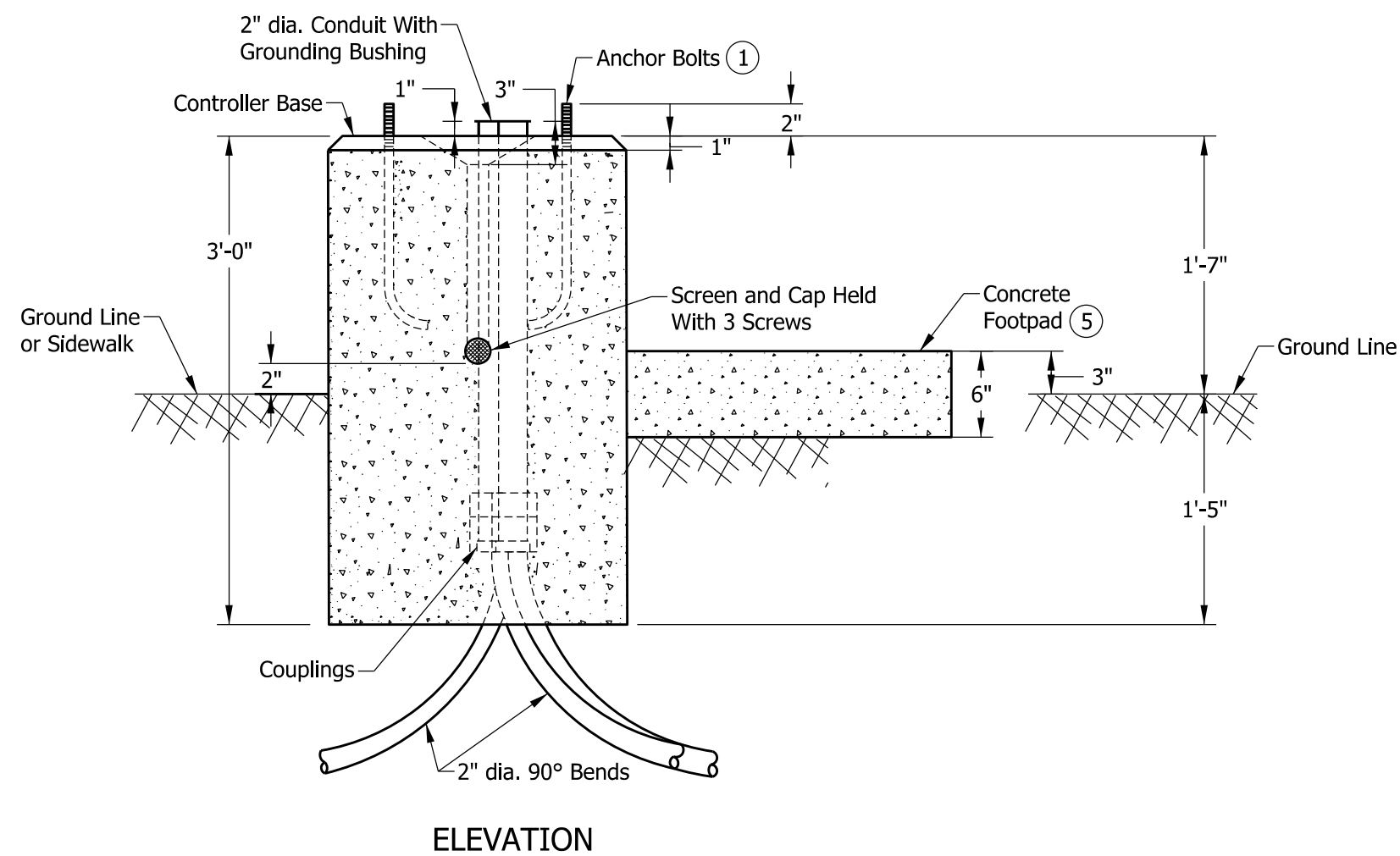
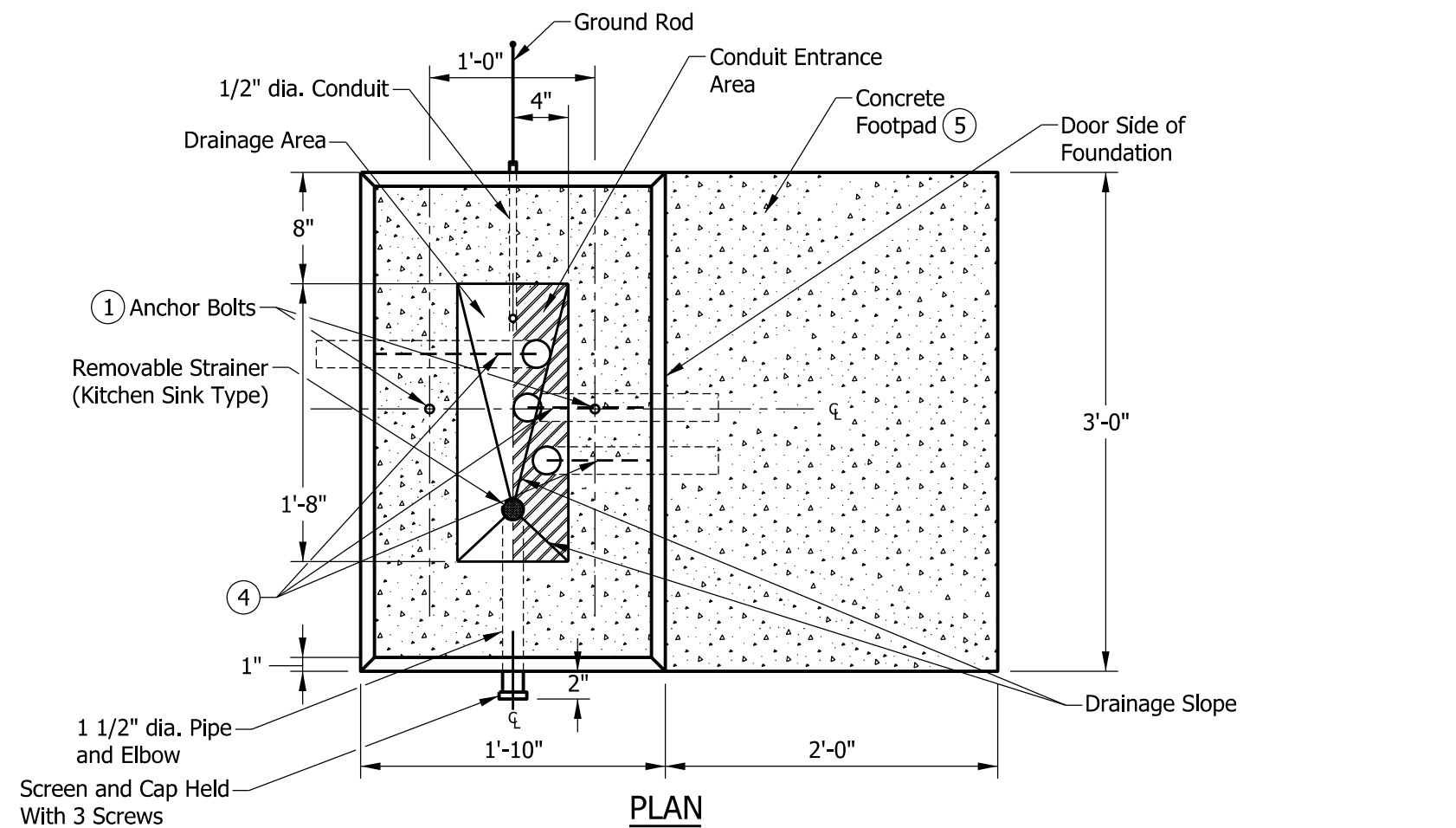


/s/ Alfredo B. Hanza 02/22/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE



# NOTES:

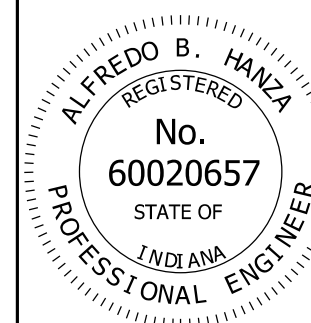
- See Standard Drawing E 805-SGPB-01 for anchor bolt details.
- Install minimum 3 - 2" dia. conduits for each foundation.
- Conduits not used shall be capped below grade. More inlets shall be installed as required on plans.
- Make a permanent line on top of the concrete foundation indicating the direction of the 2" conduits' exit.
- Concrete footpad shall be constructed of the same class concrete as the foundation.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL CONTROLLER CABINET FOUNDATION  
TYPE M

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-02

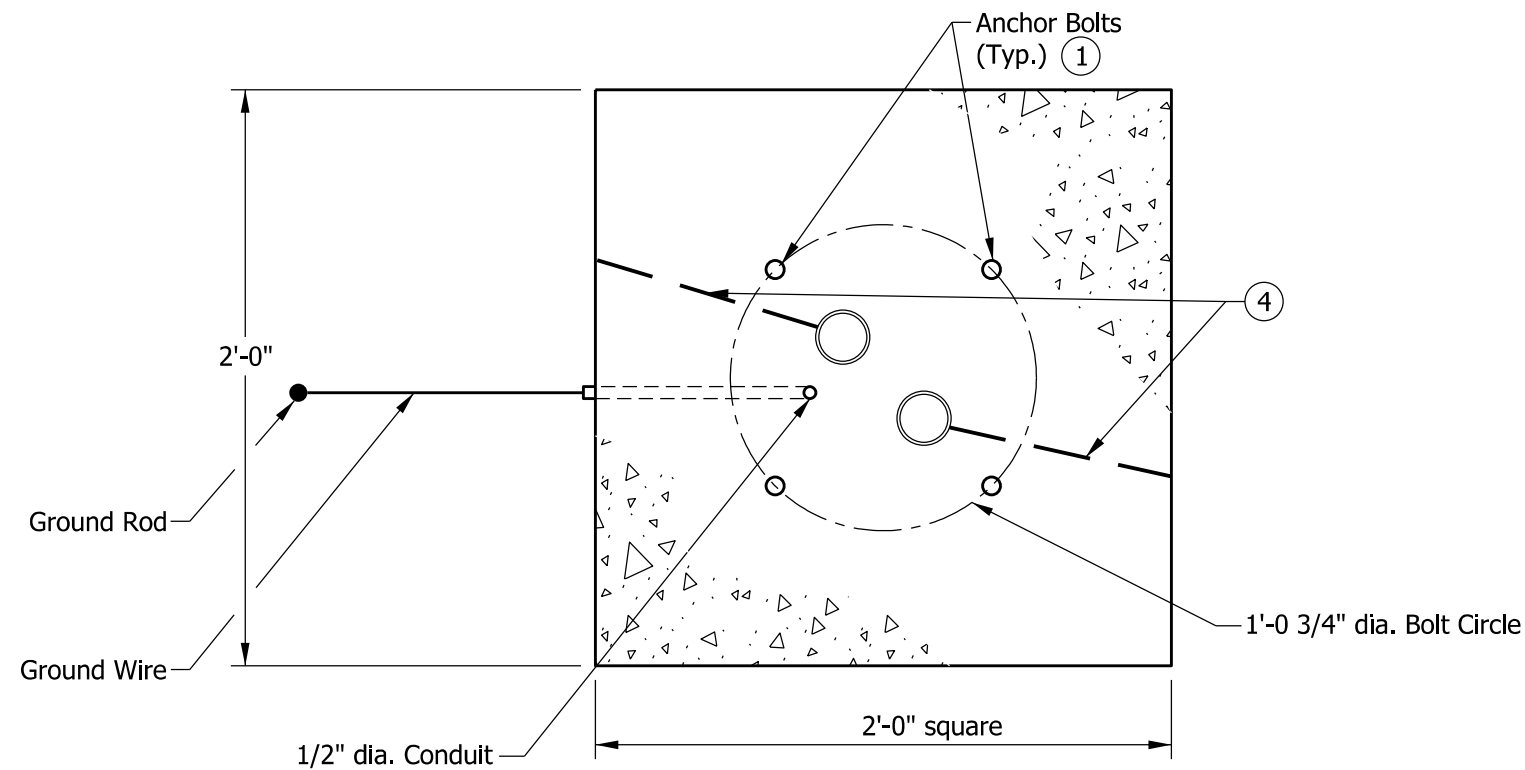


/s/ Alfredo B. Hanza 02/22/13

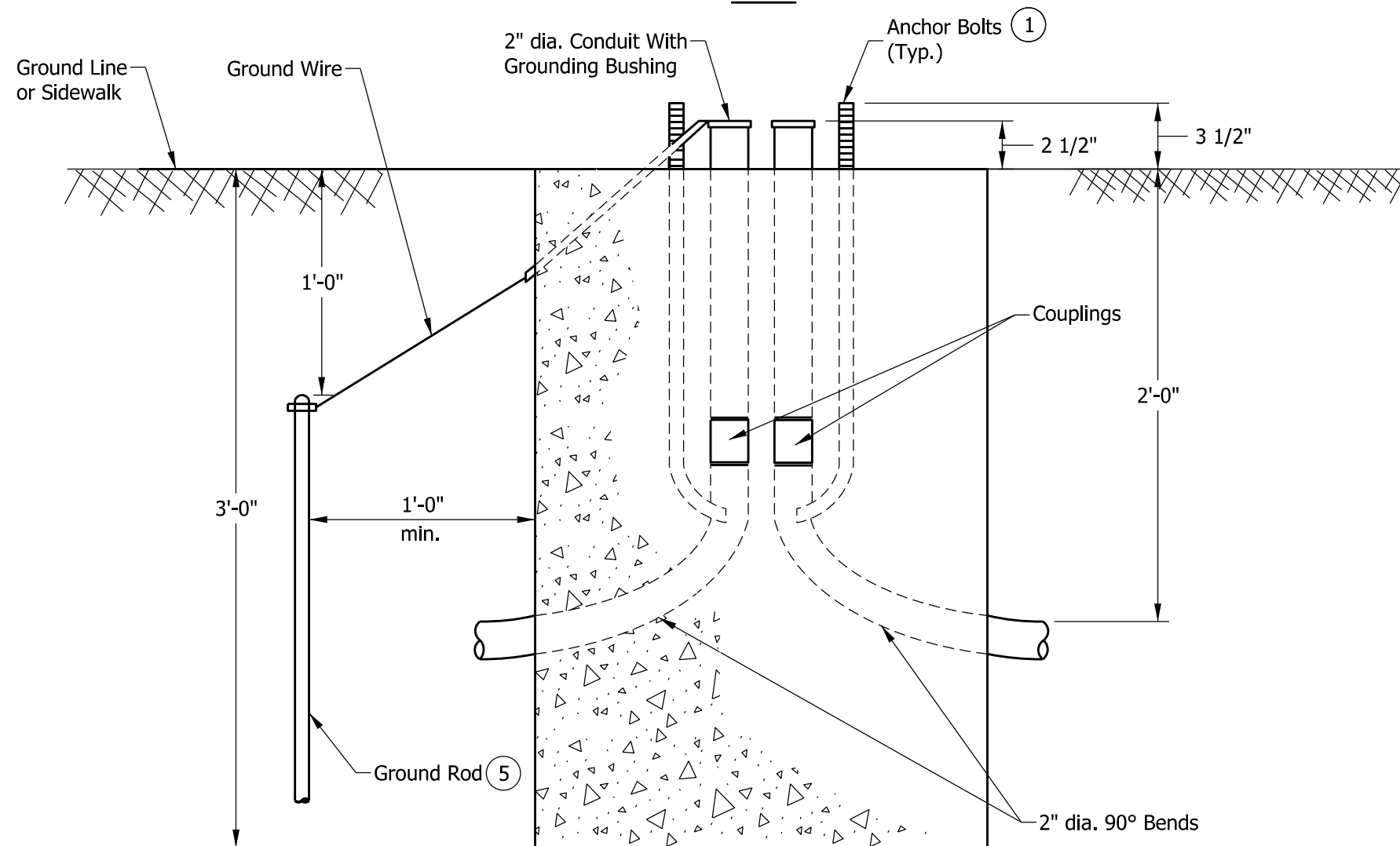
DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE



**PLAN**



**ELEVATION**

**GENERAL NOTES:**

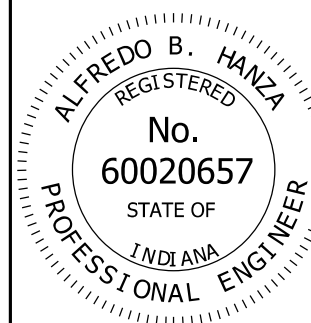
- ① See Standard Drawing E 805-SGPB-01 for anchor bolt details.
2. A minimum of two 2-in. dia. conduit inlets shall be installed for each foundation.
3. Conduit inlets not used shall be capped below grade. More inlets shall be installed as required on plans.
- ④ Make a permanent line on top of the concrete foundation indicating the direction of the 2-in. conduits' exit.
- ⑤ The ground rod has length 8 ft.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL PEDESTAL  
FOUNDATION TYPE A

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-03

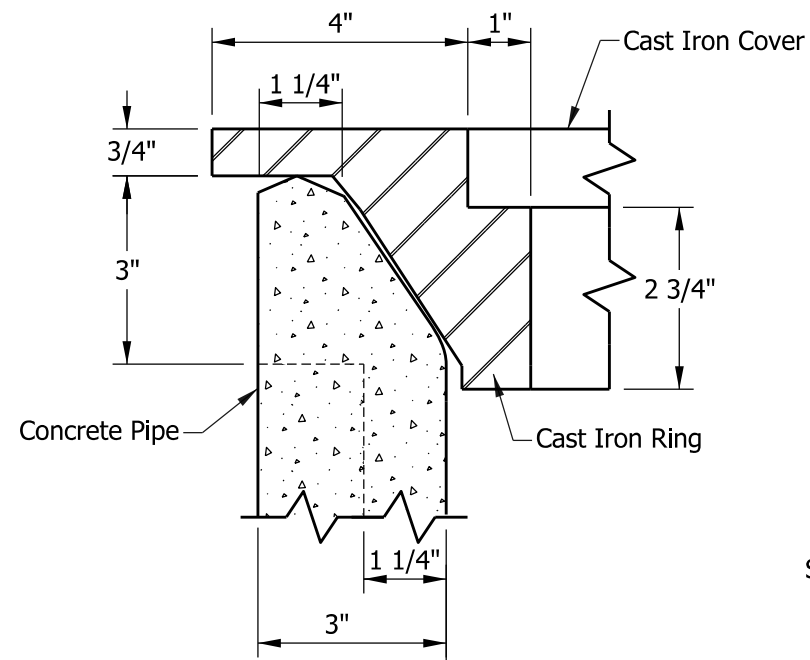


/s/ Alfredo B. Hanza 02/27/13

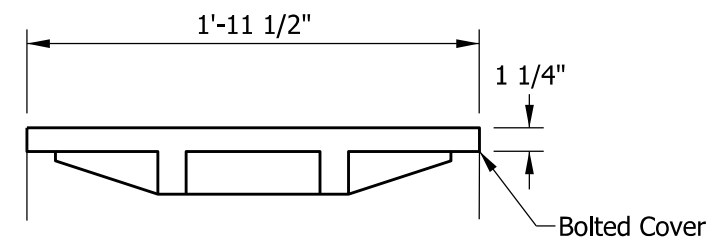
DESIGN STANDARDS ENGINEER DATE

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

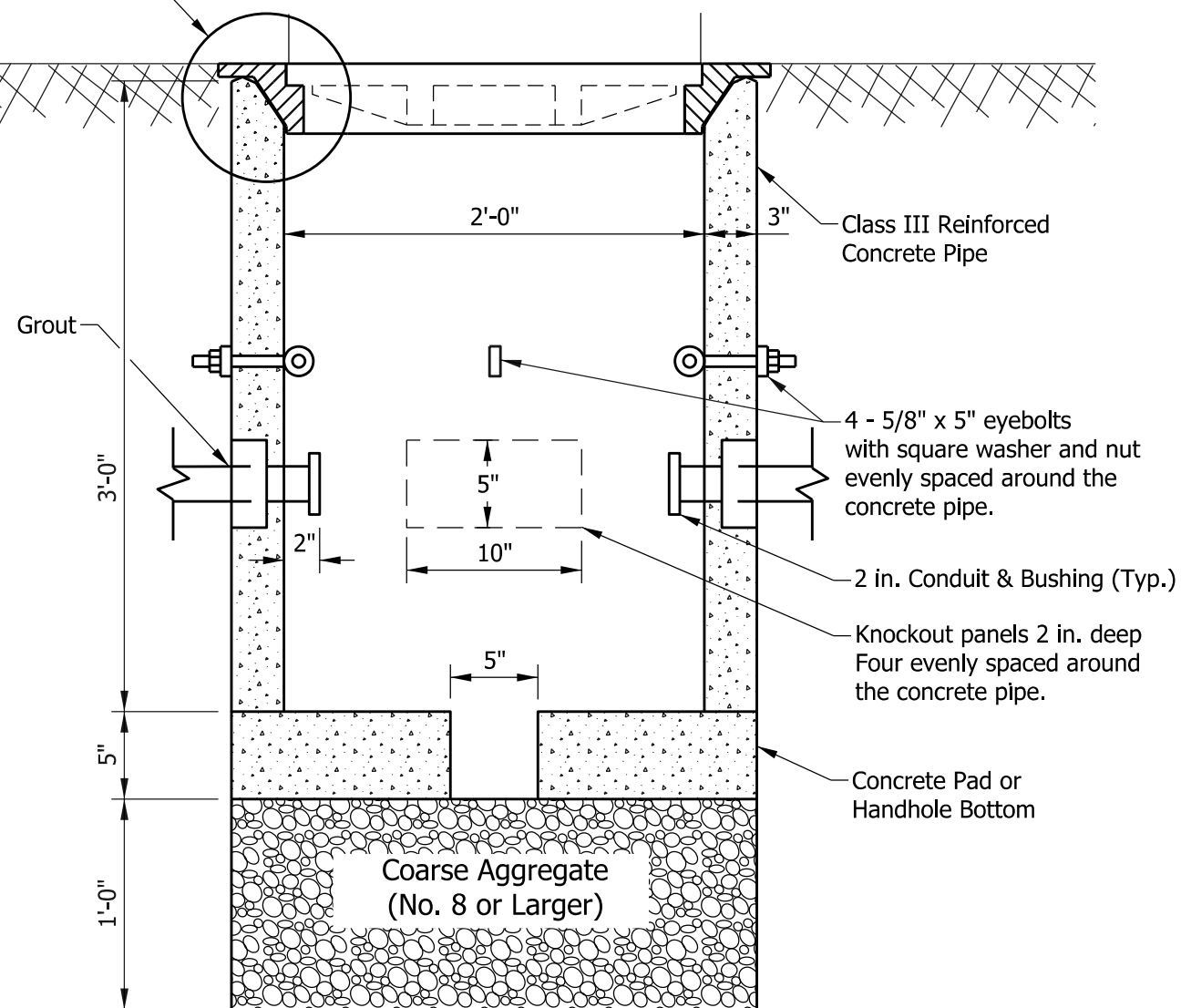
CHIEF ENGINEER DATE



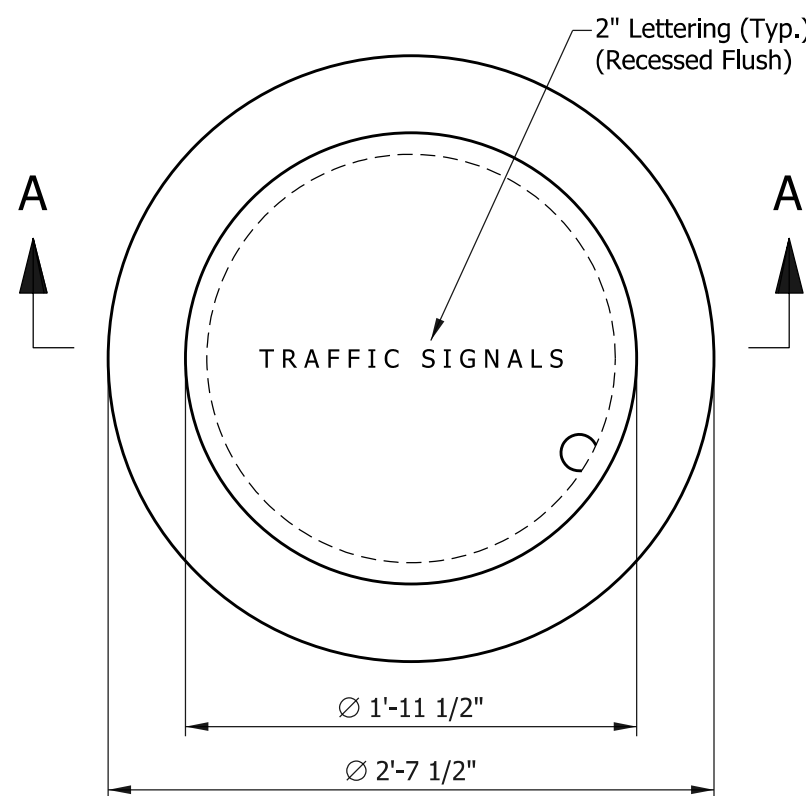
**DETAIL A**



See Detail A



**SECTION A-A**



**PLAN**

**NOTES:**

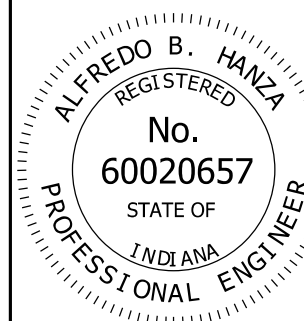
1. Approximate weight for cast iron ring and cover shall be 320 lb.
2. The ring and cover shall be secure. Attachment hardware shall be countersunk.
3. See Standard Drawing E 805-SGCF-06 for Signal Handhole, Type II, Polymer Concrete and cover.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL HANDHOLE, TYPE I  
CONCRETE

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-04

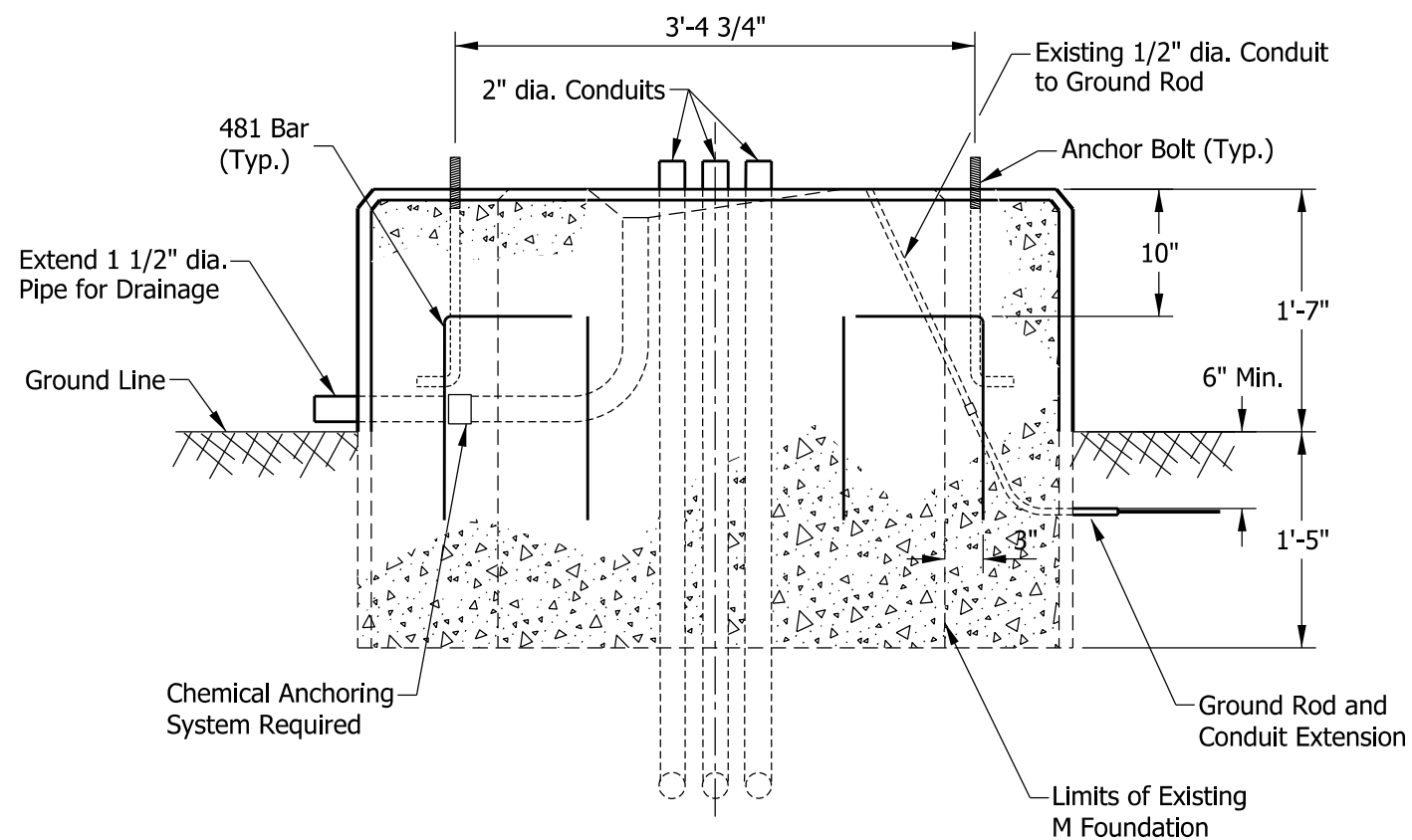


/s/ Alfredo B. Hanza 02/22/13

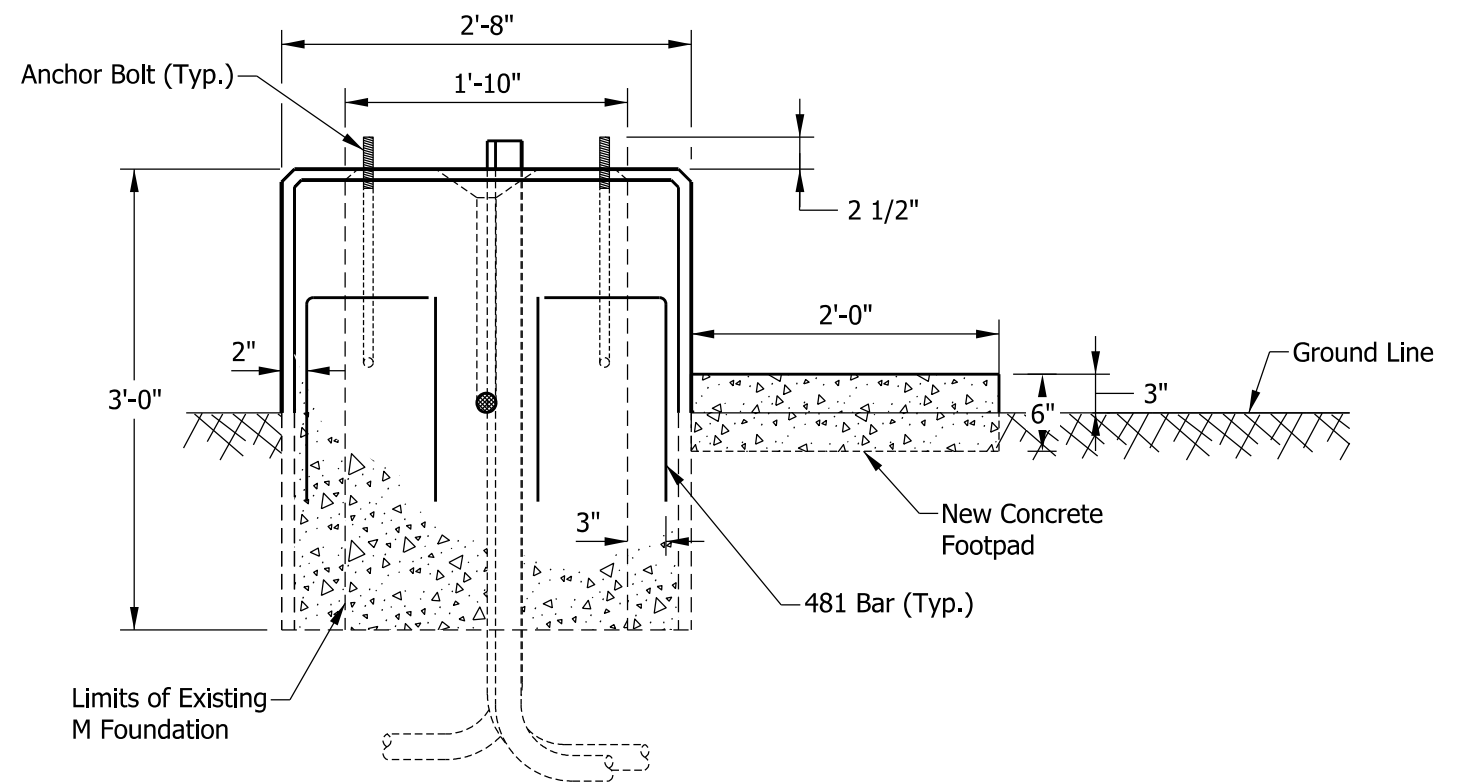
DESIGN STANDARDS ENGINEER DATE

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

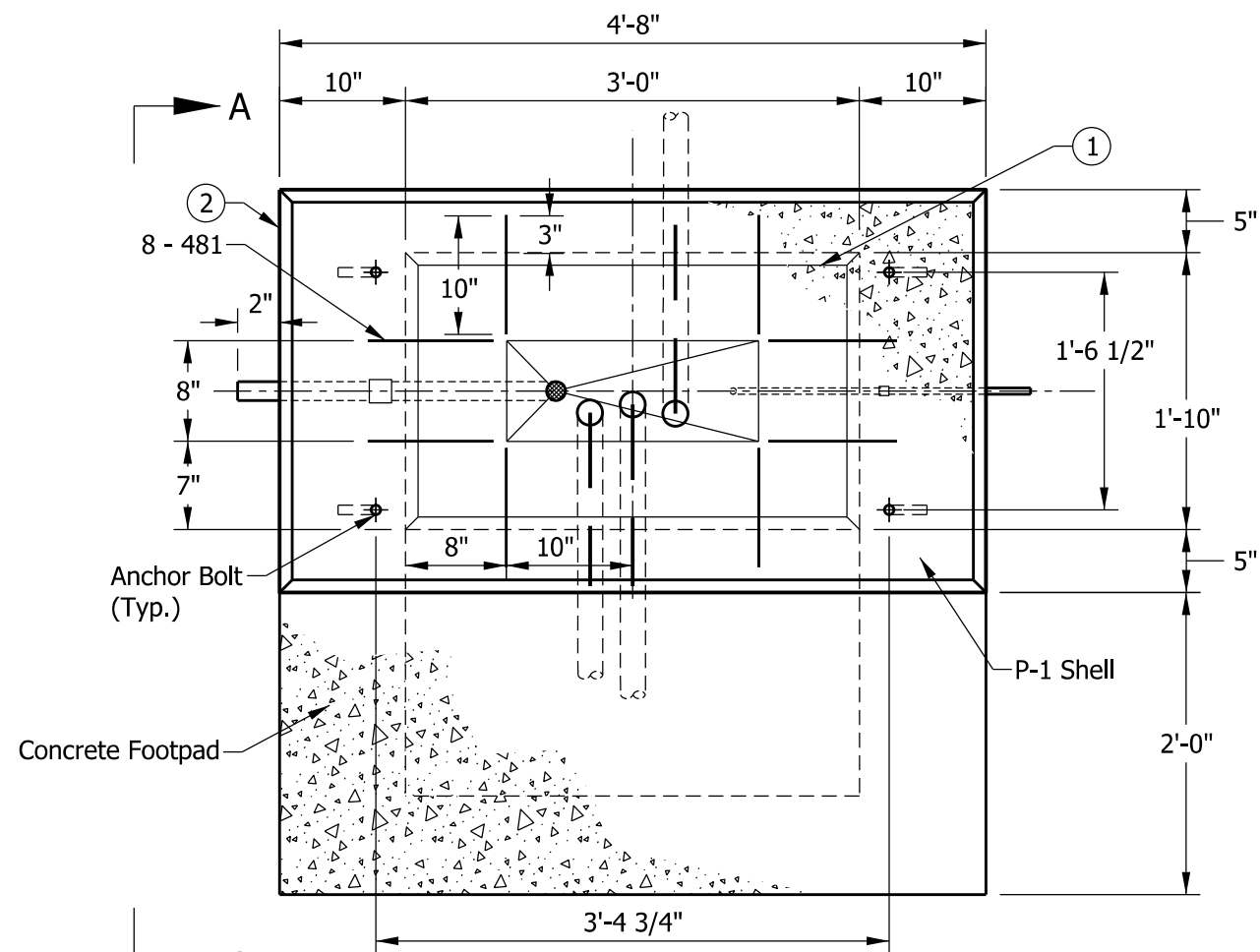
CHIEF ENGINEER DATE



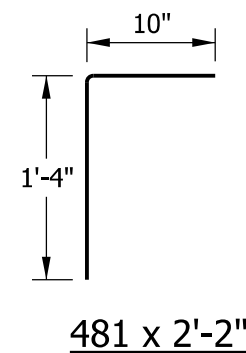
**FRONT VIEW**



**SIDE VIEW A-A**



**PLAN**



**NOTES:**

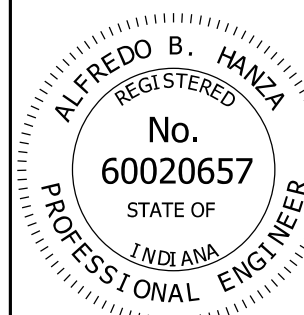
- ① See Standard Drawing E 805-SGCF-02 for Type M foundation details.
- ② See Standard Drawing E 805-SGCF-01 for Type P-1 foundation details.
3. Existing anchor bolts shall be cut at or below top of existing foundation.
4. See Standard Drawing E 805-SGCF-03 for General Notes.

INDIANA DEPARTMENT OF TRANSPORTATION

EXISTING M FOUNDATION  
MODIFIED TO P-1 FOUNDATION

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-05



/s/ Alfredo B. Hanza 02/28/13

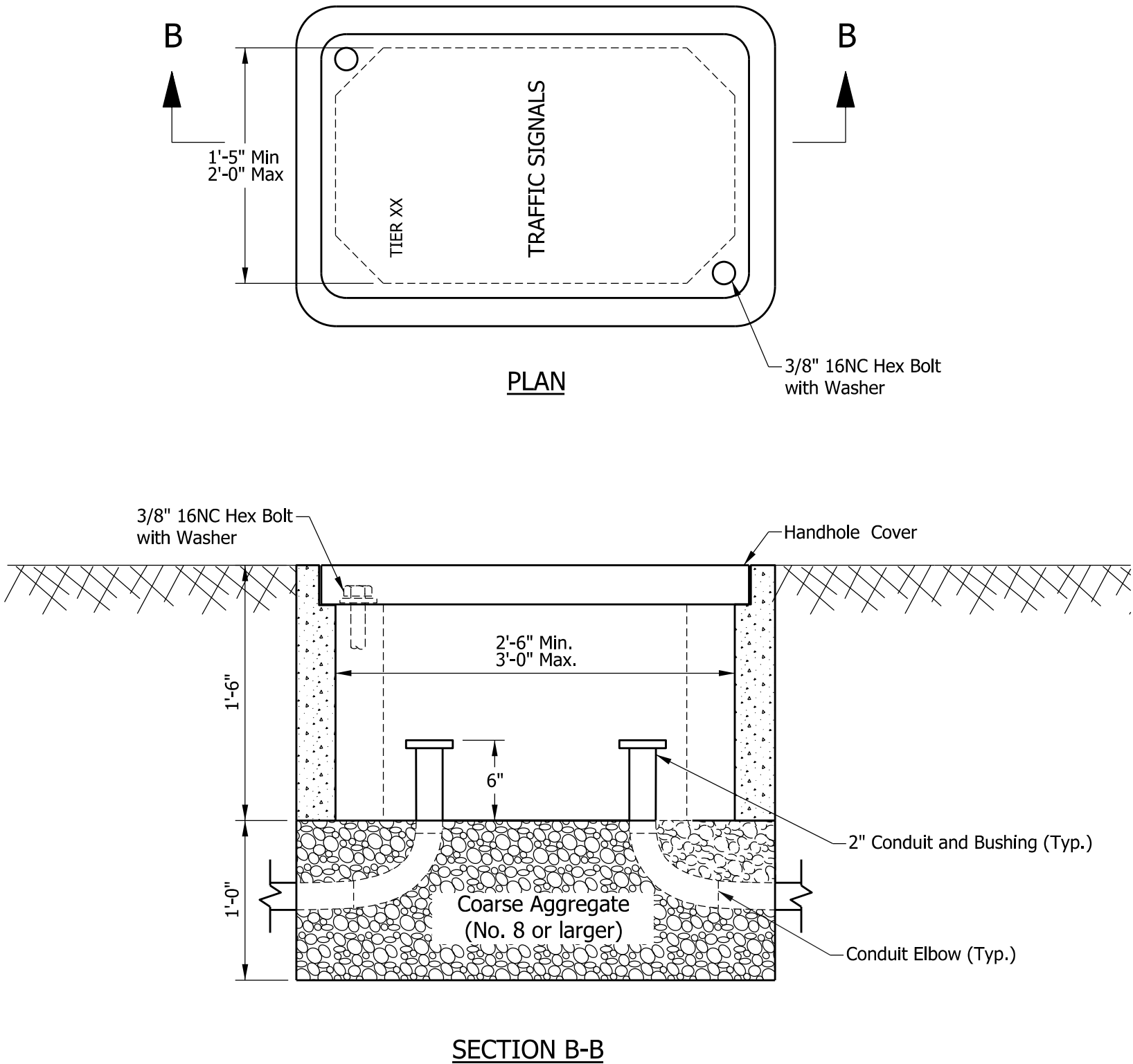
DESIGN STANDARDS ENGINEER DATE

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

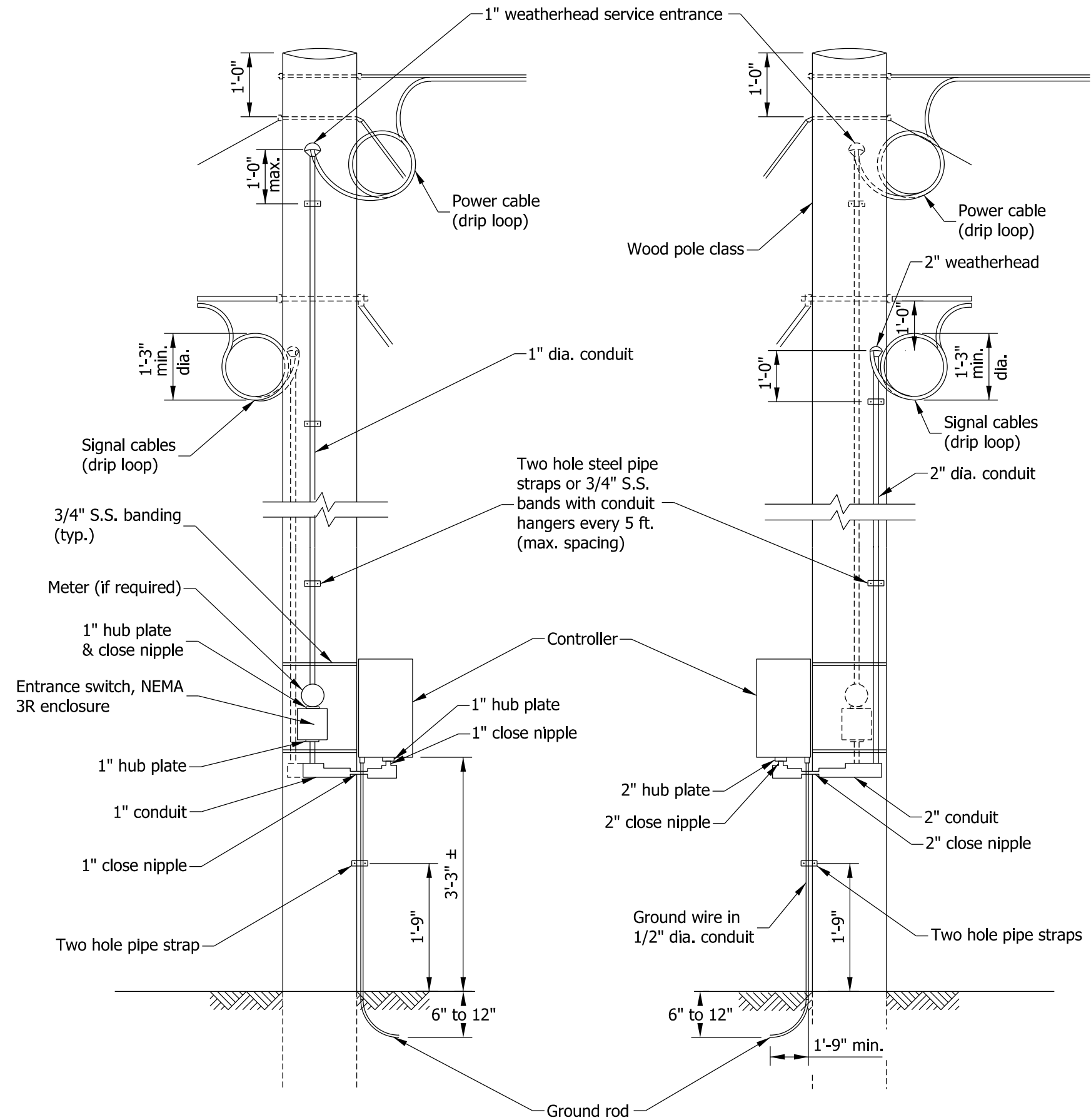
CHIEF ENGINEER DATE

NOTE:

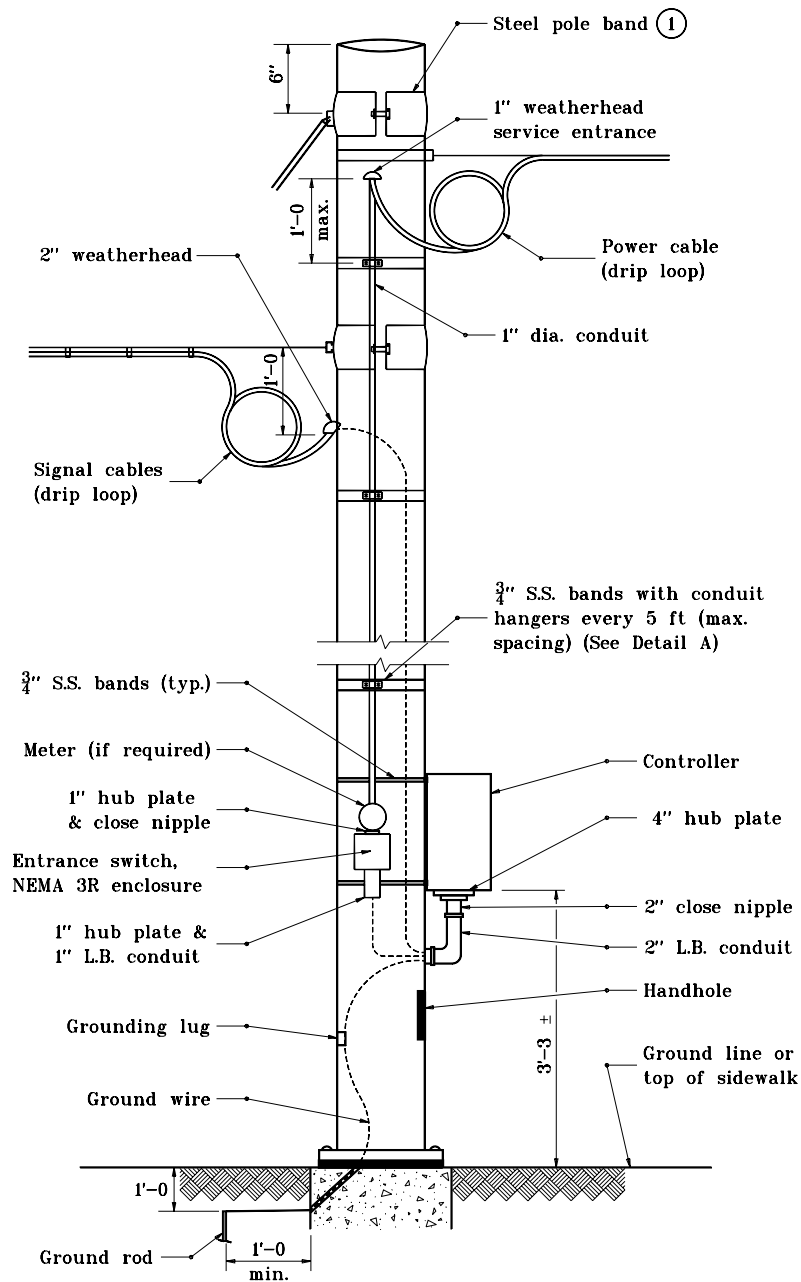
1. See Standard Drawing E 805-SGCF-04 for Signal Handhole, Type I, Concrete and cover.



INDIANA DEPARTMENT OF TRANSPORTATION		
SIGNAL HANDHOLE, TYPE II POLYMER CONCRETE		
SEPTEMBER 2013		
STANDARD DRAWING NO.		E 805-SGCF-06
	/s/ <i>Alfredo B. Hanza</i>	02/22/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	03/27/13
	CHIEF ENGINEER	DATE

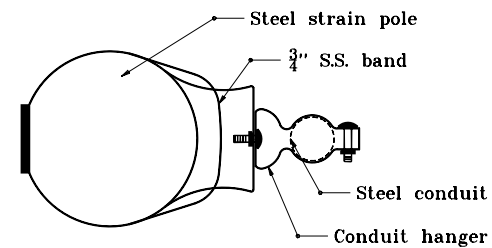


INDIANA DEPARTMENT OF TRANSPORTATION		
SIGNAL SERVICE & CONTROLLER MOUNTED ON WOOD POLE		
SEPTEMBER 2012		
STANDARD DRAWING NO.		E 805-SGCO-01
	/s/ <i>Richard L. VanCleave</i>	09/04/12
	SUPERVISOR, ROADWAY STANDARDS	DATE
	/s/ <i>Mark A. Miller</i>	09/04/12
	CHIEF ENGINEER	DATE



## GENERAL NOTES

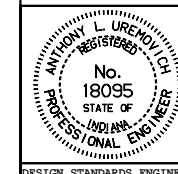
① See Standard Drawing E 805-SGSP-03 for details of bands.



**DETAIL A**

INDIANA DEPARTMENT OF TRANSPORTATION  
**SIGNAL SERVICE & CONTROLLER  
 MOUNTED ON STEEL POLE**  
 SEPTEMBER 1998

STANDARD DRAWING NO. **E 805-SGCO-02**



DETAILS PLACED IN THIS FORMAT 11-15-99

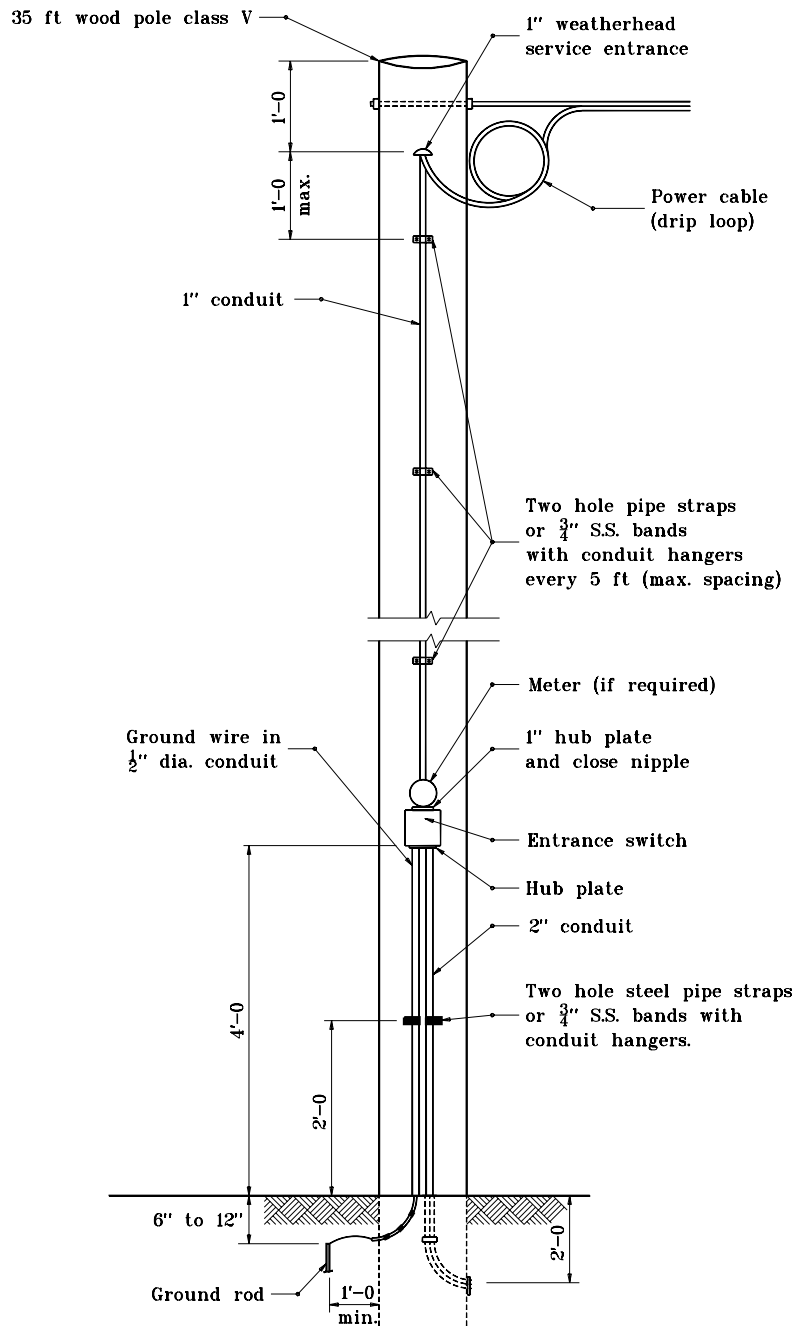
/s/ Anthony L. Uremovich 11-15-99  
 DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
 CHIEF HIGHWAY ENGINEER DATE

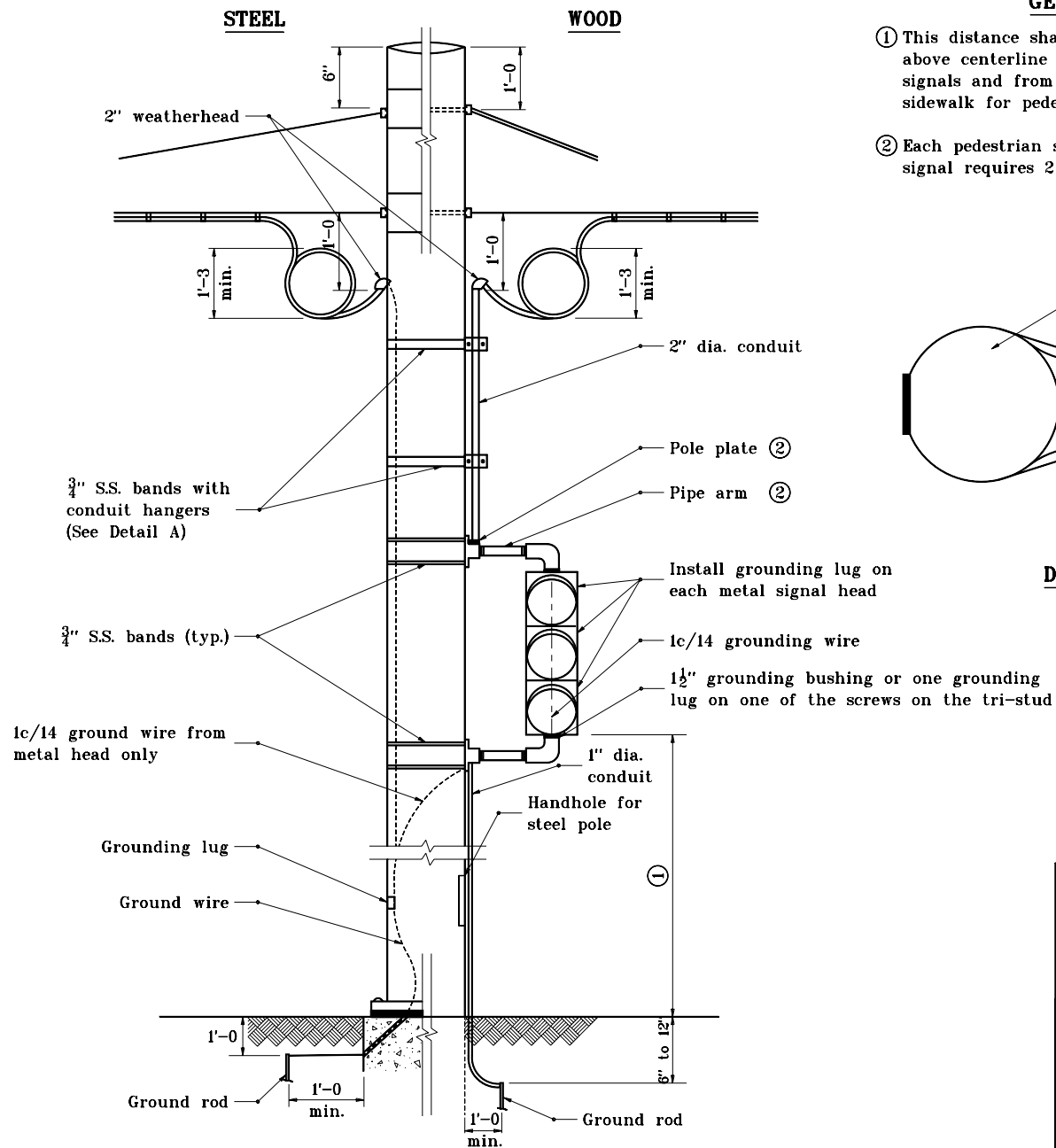
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98



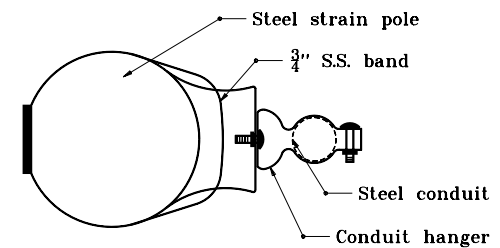


INDIANA DEPARTMENT OF TRANSPORTATION		
<b>SIGNAL SERVICE</b> <b>ON WOOD POLE</b> SEPTEMBER 1998		
STANDARD DRAWING NO. <b>E 805-SGC0-03</b>		
	DETAILS PLACED IN THIS FORMAT 11-15-99	
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE	
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE	
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 9-01-98	



## GENERAL NOTES

- ① This distance shall be from 10 ft to 15 ft above centerline of pavement for vehicular signals and from 7 ft to 10 ft above top of sidewalk for pedestrian signals.
- ② Each pedestrian signal and each vehicular signal requires 2 pole plates and 2 pipe arms.



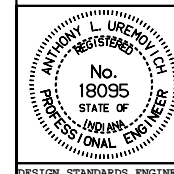
## DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

**SIGNAL INDICATION MOUNTED  
ON STEEL OR WOOD POLES**

SEPTEMBER 1998

STANDARD DRAWING NO. **E 805-SGC0-04**



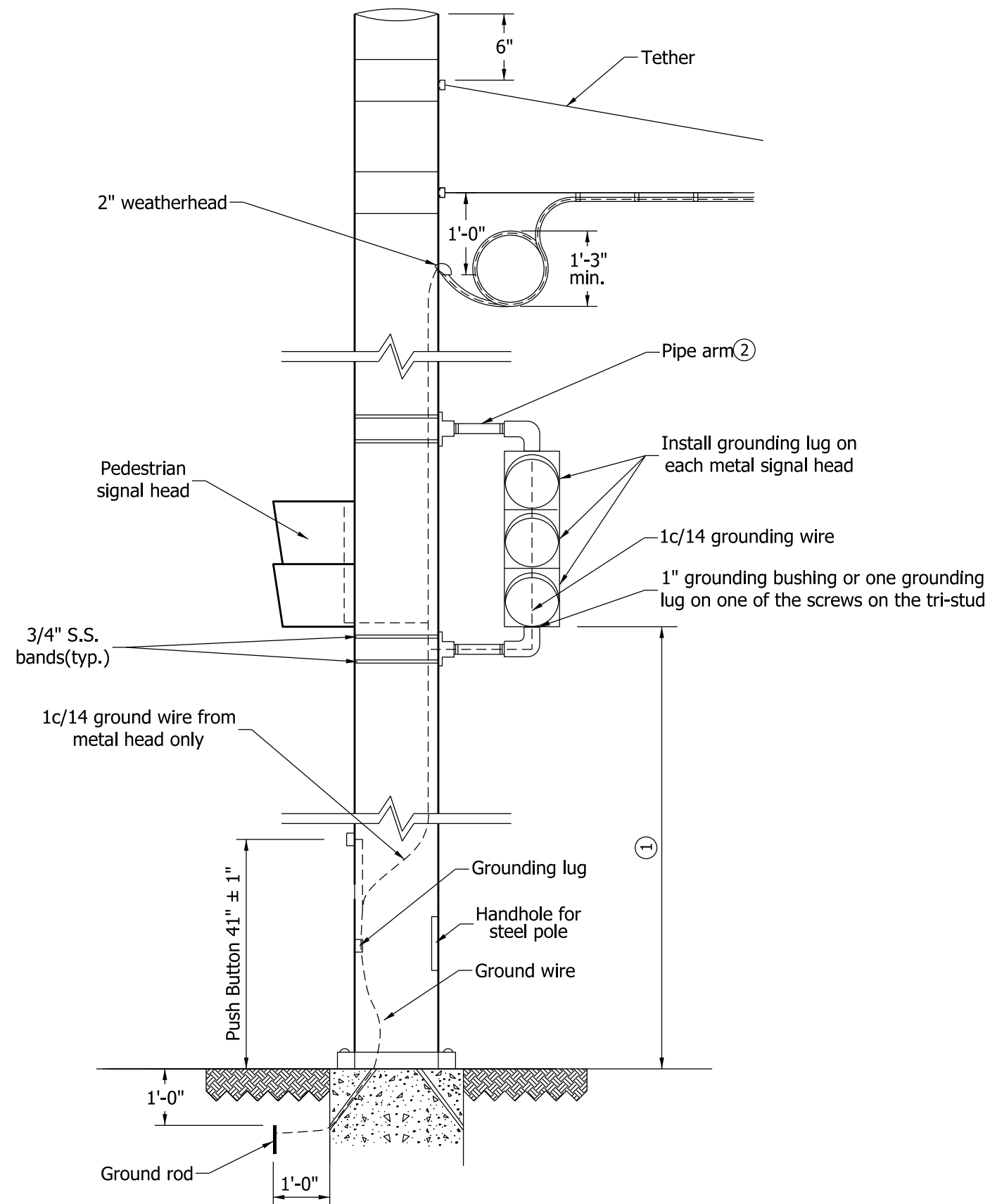
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98



# NOTES:

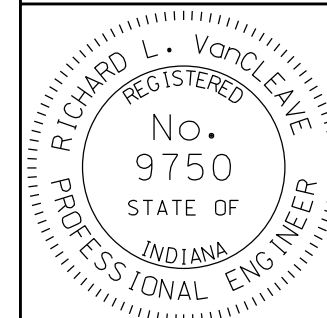
- ① This distance shall be from 10'-0" to 15'-0" above centerline of pavement for vehicular signals and from 7'-0" to 10'-0" above top of sidewalk for pedestrian signals.
- ② Each pedestrian signal and each vehicular signal requires 2 pole plates and 2 pipe arms.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL INDICATION MOUNTED  
ON STEEL POLE

SEPTEMBER 2010

STANDARD DRAWING NO. E 805-SGCO-04A



/s/ Richard L. Vancleave 09/01/10

DESIGN STANDARDS ENGINEER DATE

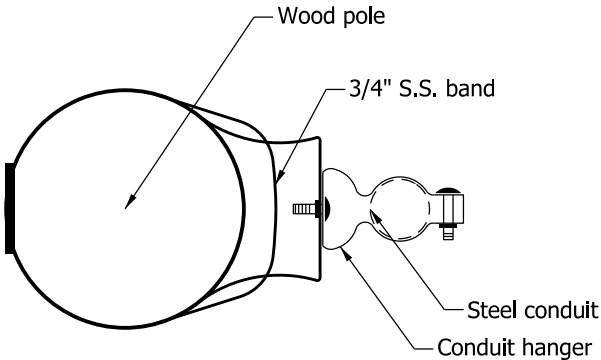
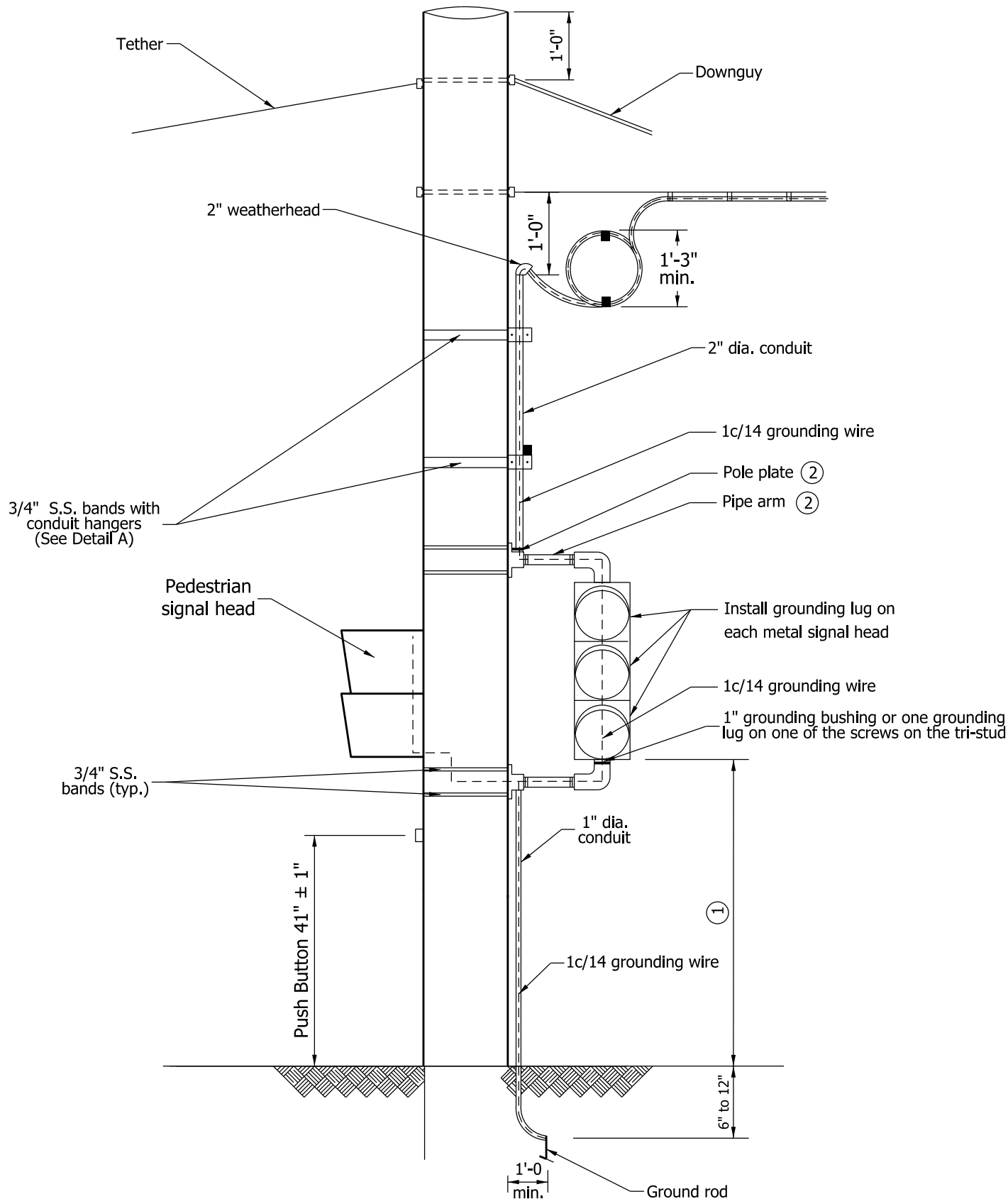
/s/ Mark A. Miller 09/01/10

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

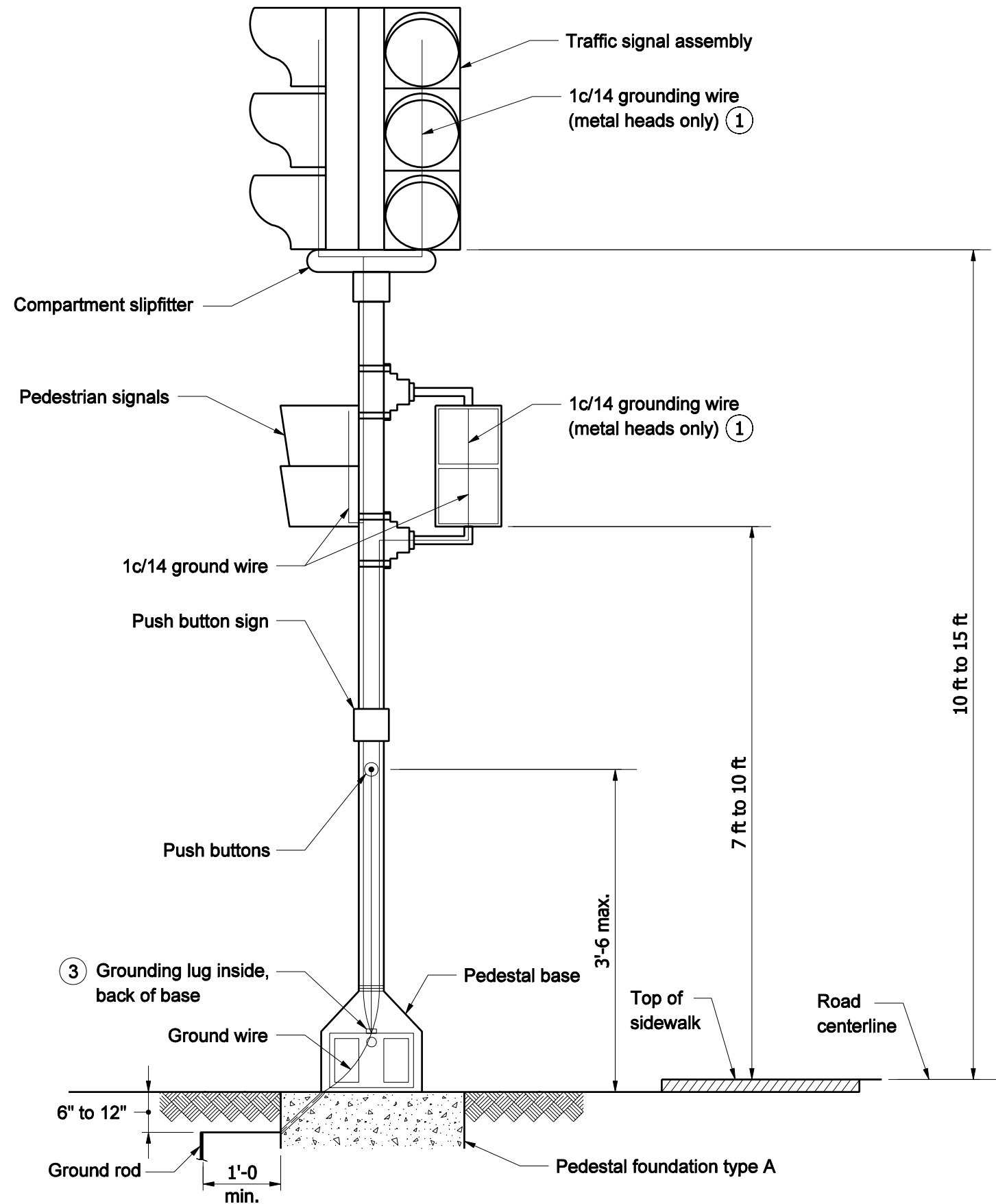
NOTES:

- ① This distance shall be from 10'-0" to 15'-0" above centerline of pavement for vehicular signals and from 7'-0" to 10'-0" above top of sidewalk for pedestrian signals.
- ② Each pedestrian signal and each vehicular signal requires 2 pole plates and 2 pipe arms.



DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION		
SIGNAL INDICATION MOUNTED ON WOOD POLES		
SEPTEMBER 2010		
STANDARD DRAWING NO.		E 805-SGCO-04B
	/s/ Richard L. Vancleave	09/01/10
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	09/01/10
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		



### GENERAL NOTES

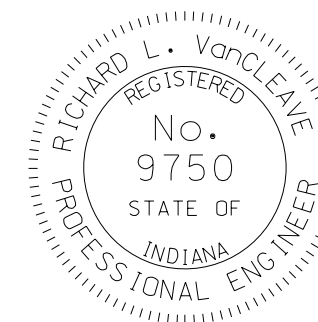
- ① On metal signal heads grounding wire shall connect each signal head and the bottom groundingbushing of the assembly to the grounding lug.
2. Single conductor (hookup) shall be used from slipfitterterminal block to signal indications.
- ③ See Standard Drawing E 805-SGGR-03 for grounding lug details.

INDIANA DEPARTMENT OF TRANSPORTATION

PEDESTAL MOUNTED  
SIGNAL INDICATIONS

SEPTEMBER 2007

STANDARD DRAWING NO. E 805-SGCO-05



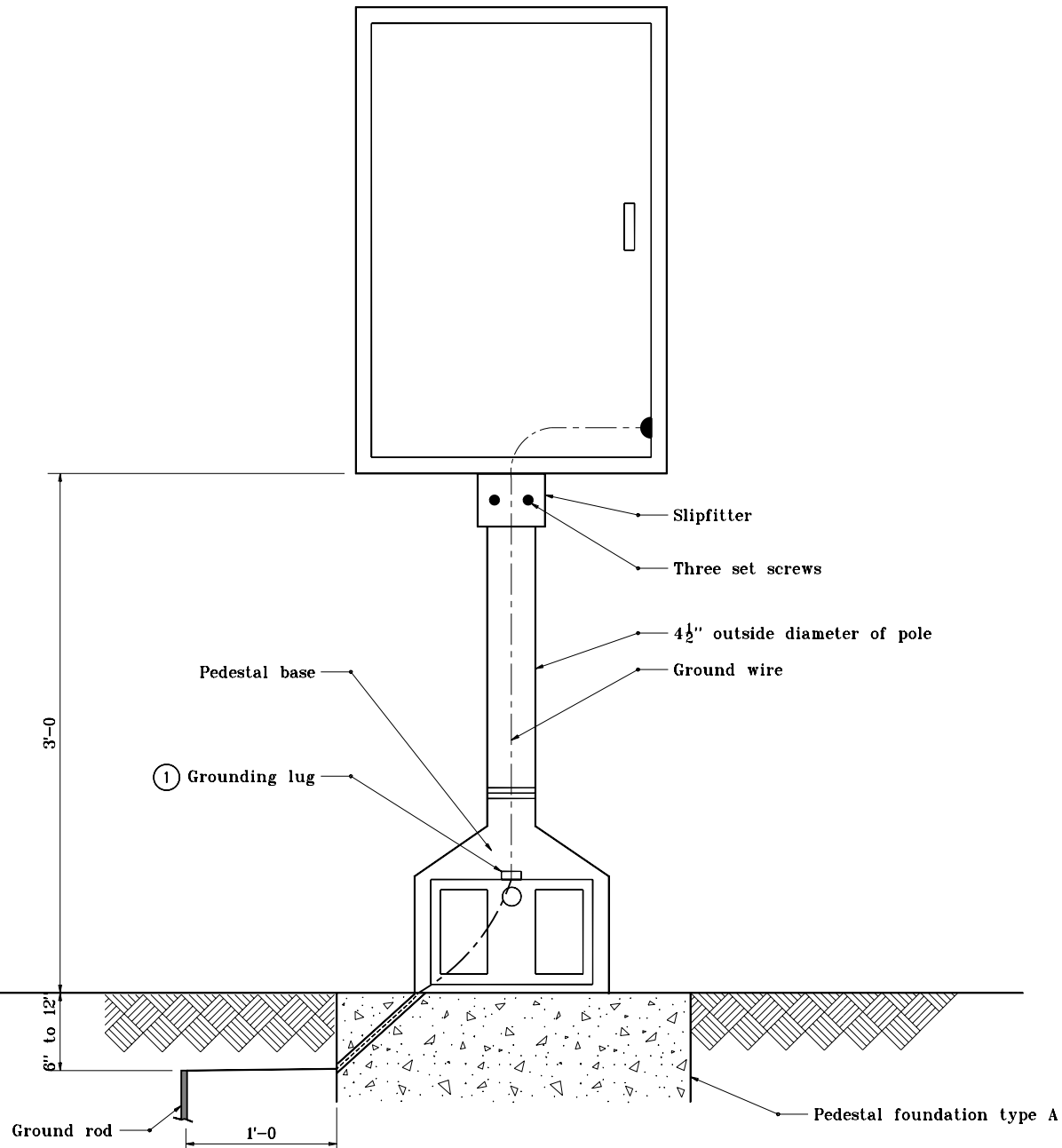
DESIGN STANDARDS ENGINEER

/s/ *Richard L. VanCleave* 09/04/07  
DESIGN STANDARDS ENGINEER DATE

/s/ *Mark A. Miller* 09/04/07  
CHIEF HIGHWAY ENGINEER DATE

# **GENERAL NOTES**

- See Standard Drawing E 805-SGGR-03 for grounding lug details.

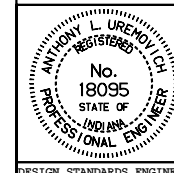


INDIANA DEPARTMENT OF TRANSPORTATION

## **CONTROLLER CABINET TYPE G ON PEDESTAL**

SEPTEMBER 1998

STANDARD DRAWING NO. **E 805-SGCC-06**



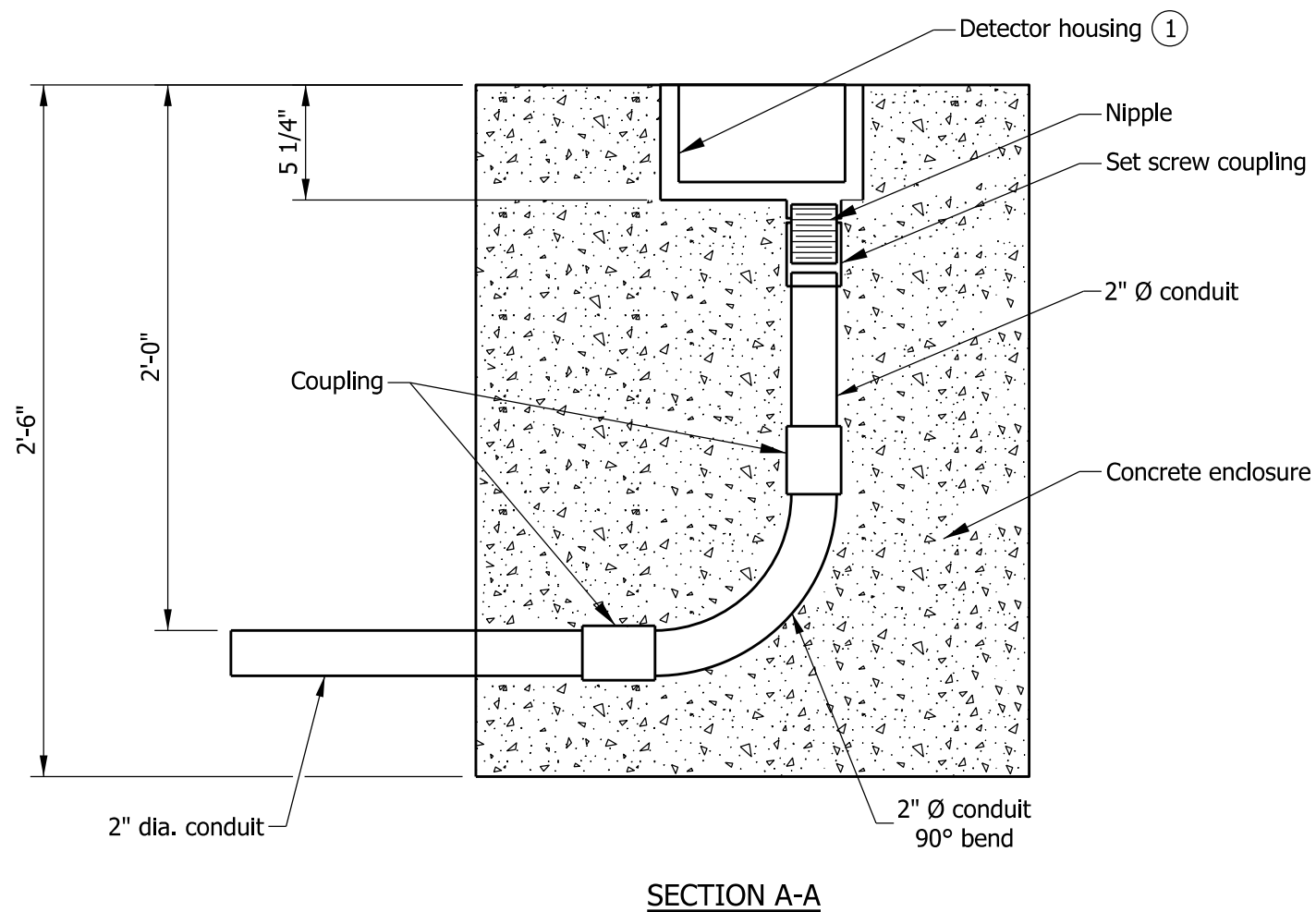
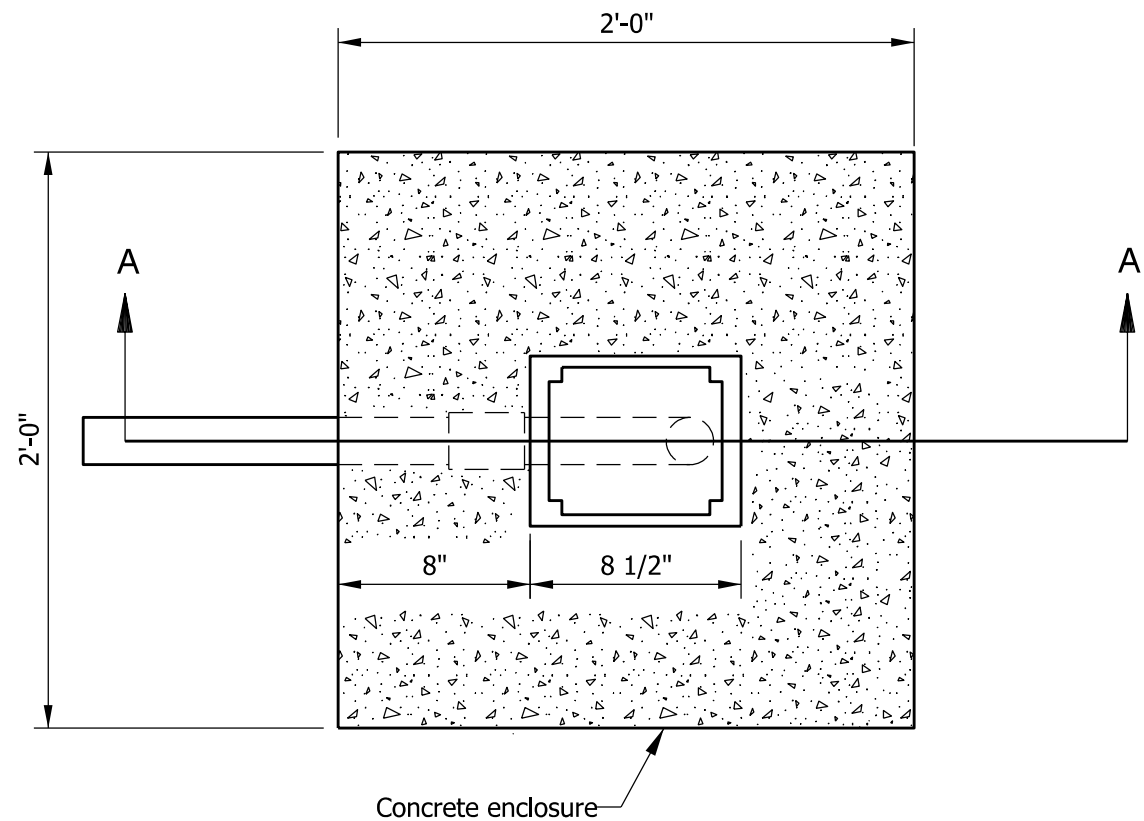
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

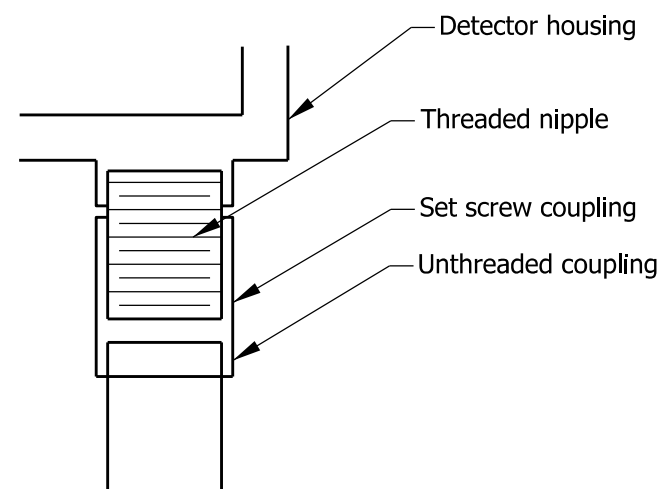
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98



# NOTE

- ① See Standard Drawing E 805-SGDH-02 for detector housing detail.



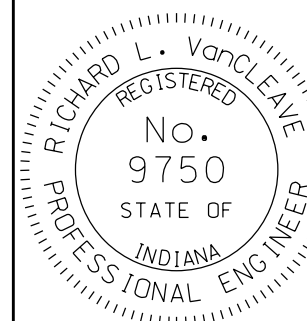
**DETECTOR HOUSING  
COUPLING DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL  
DETECTOR HOUSING

SEPTEMBER 2012

STANDARD DRAWING NO. E 805-SGDH-01

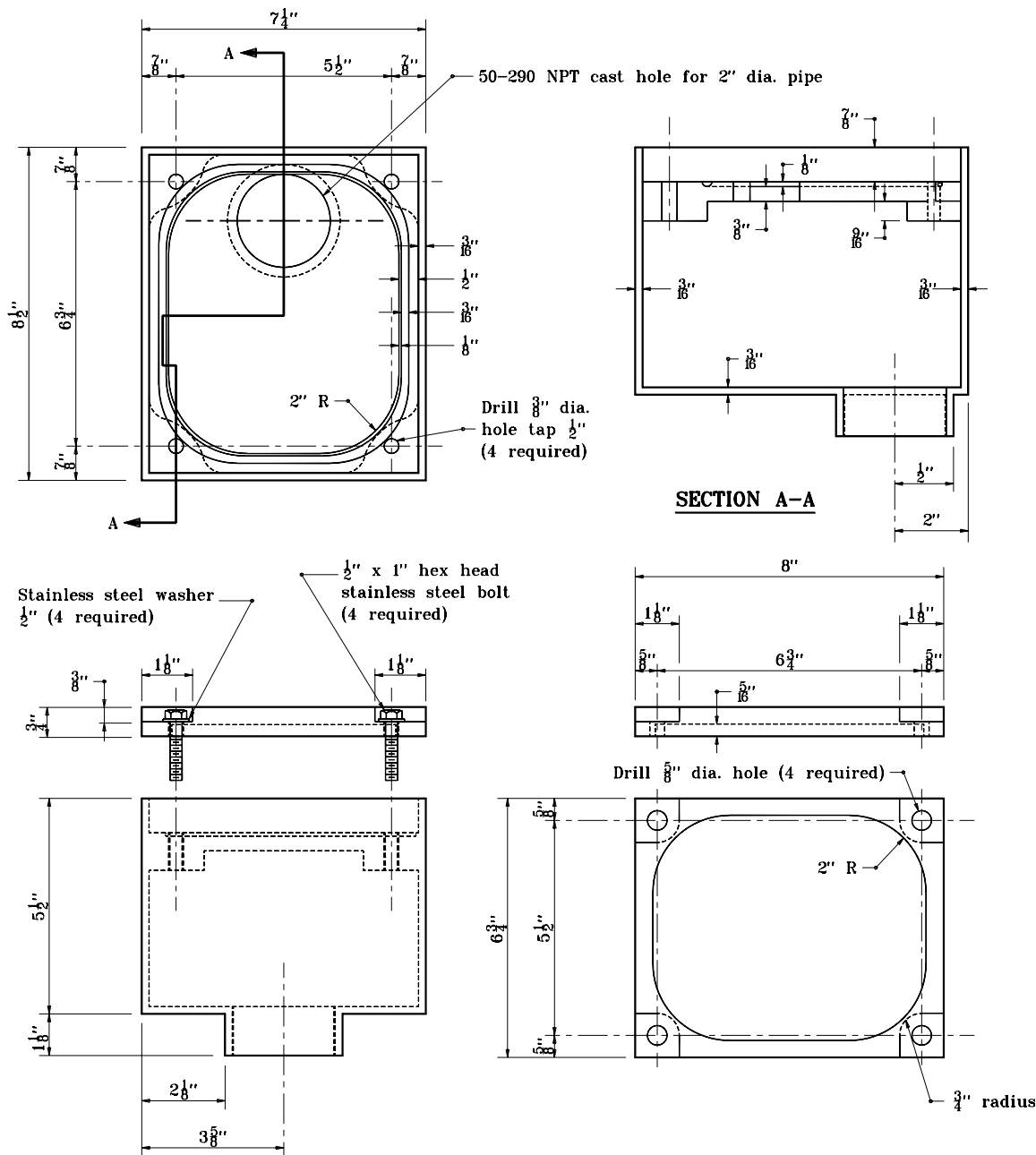


/s/ *Richard L. VanCleave* 09/04/12

SUPERVISOR, ROADWAY STANDARDS DATE

/s/ *Mark A. Miller* 09/04/12

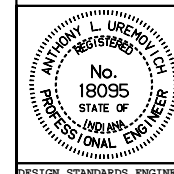
CHIEF ENGINEER DATE



INDIANA DEPARTMENT OF TRANSPORTATION

**DETAIL OF  
DETECTOR HOUSING**  
MAY 1998

STANDARD DRAWING NO. **E 805-SGDH-02**



DETAILS PLACED IN THIS FORMAT 11-15-99

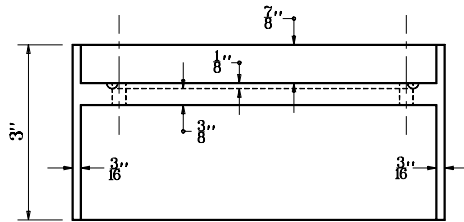
/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

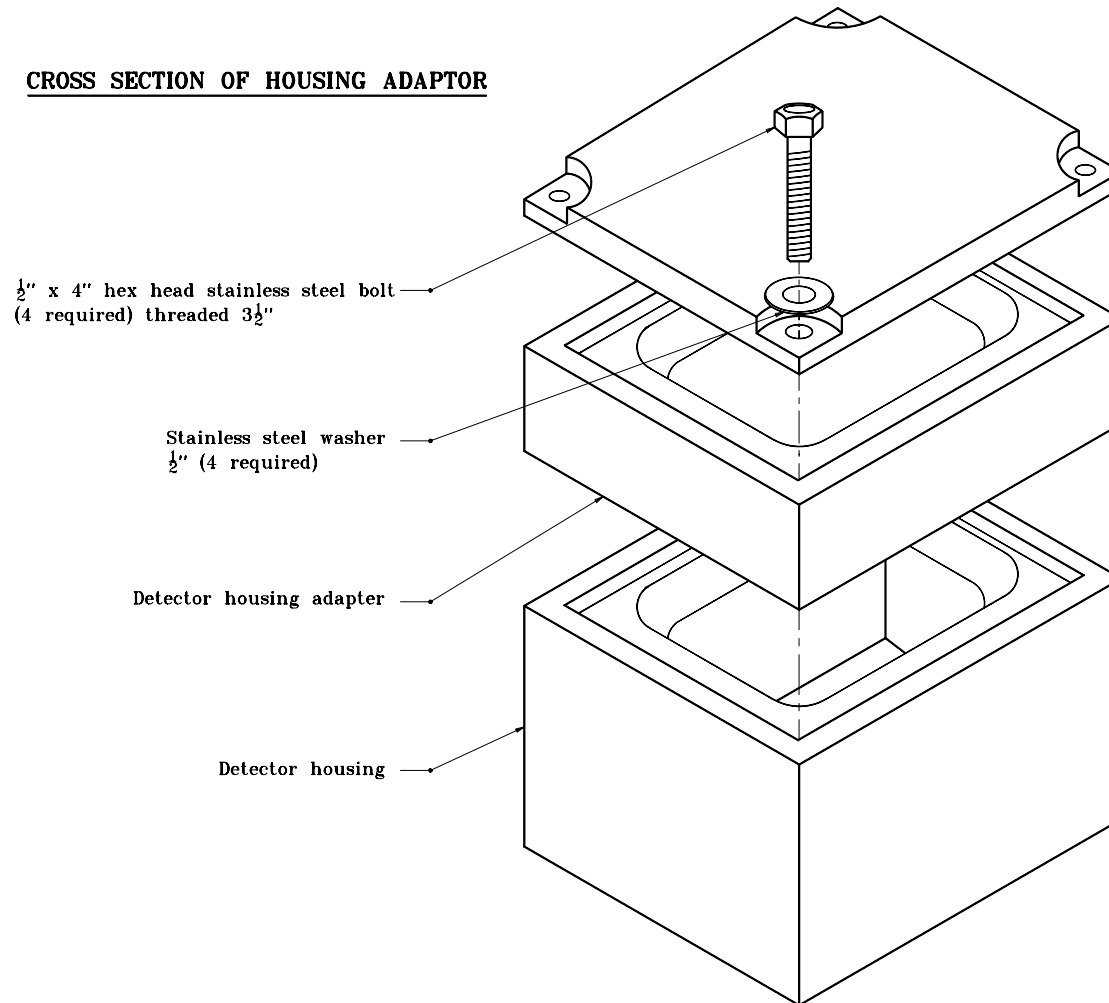
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 5-01-98





**CROSS SECTION OF HOUSING ADAPTOR**



1/2" x 4" hex head stainless steel bolt  
(4 required) threaded 3 1/2"

Stainless steel washer  
1/2" (4 required)

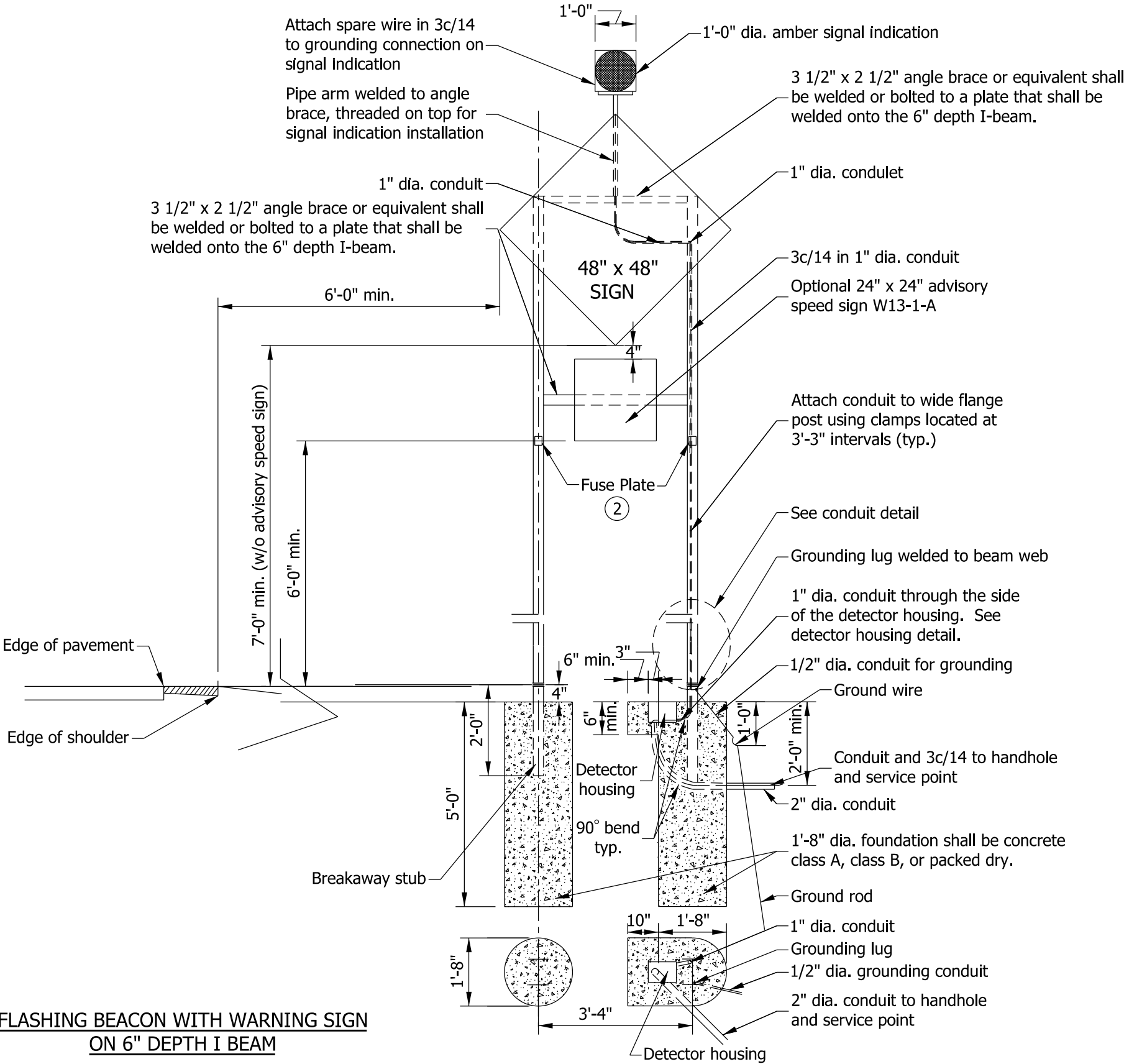
Detector housing adapter

Detector housing

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>DETAILS OF DETECTOR HOUSING ADAPTER</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 805-SGDH-03</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 3-01-95

NOTES

1. See Standard Drawing E 802-SNGP-01 through 10 for breakaway details and dimensions. Use post size W 6 x 9.
- ② The fuse plate shall be 6 in. below the lowest fastener of the sign.
3. See Standard Drawing E 805-SGFB-01A for conduit and detector housing details.



FLASHING BEACON WITH WARNING SIGN  
ON 6" DEPTH I BEAM

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON  
WITH WARNING SIGN

SEPTEMBER 2012

STANDARD DRAWING NO. E 805-SGFB-01

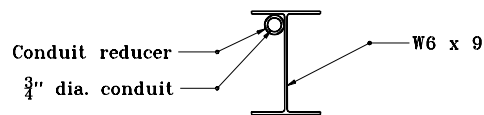


/s/ Richard L. VanCleave 09/04/12

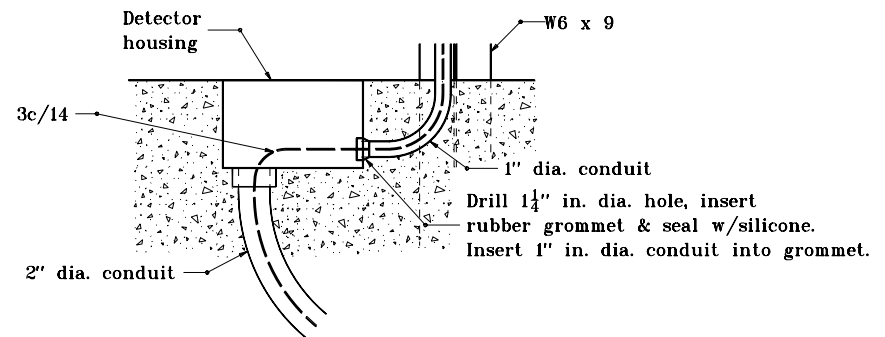
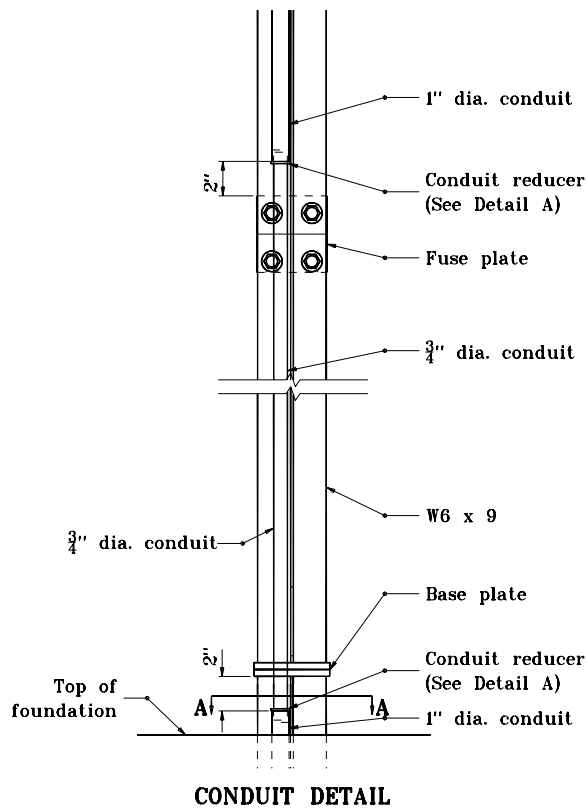
SUPERVISOR, ROADWAY STANDARDS DATE

/s/ Mark A. Miller 09/04/12

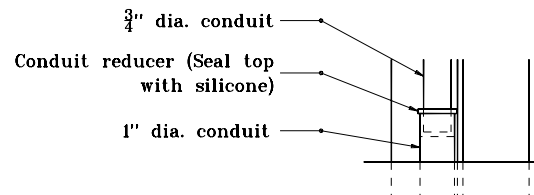
CHIEF ENGINEER DATE



**SECTION A-A**

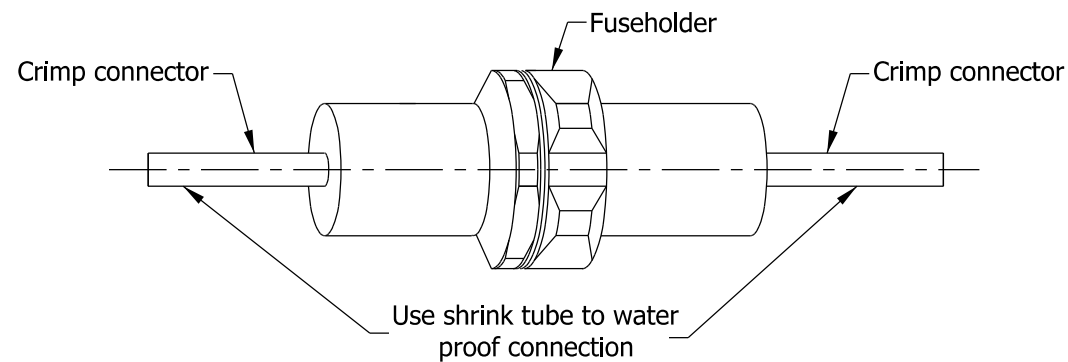


**DETECTOR HOUSING DETAIL**

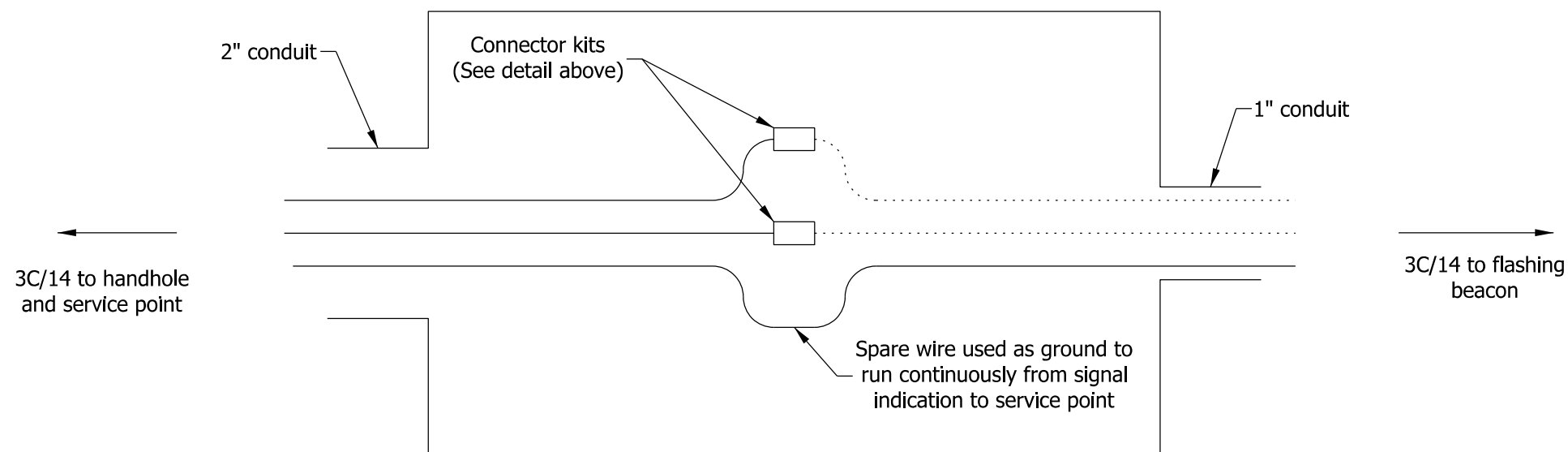


**DETAIL A**  
(INVERT FOR TOP CONDUIT JOINT)

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>FLASHING BEACON WITH WARNING SIGN DETAILS</b>	
SEPTEMBER 1998	
STANDARD DRAWING NOE 805-SGFB-01A	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE /s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 9-01-98

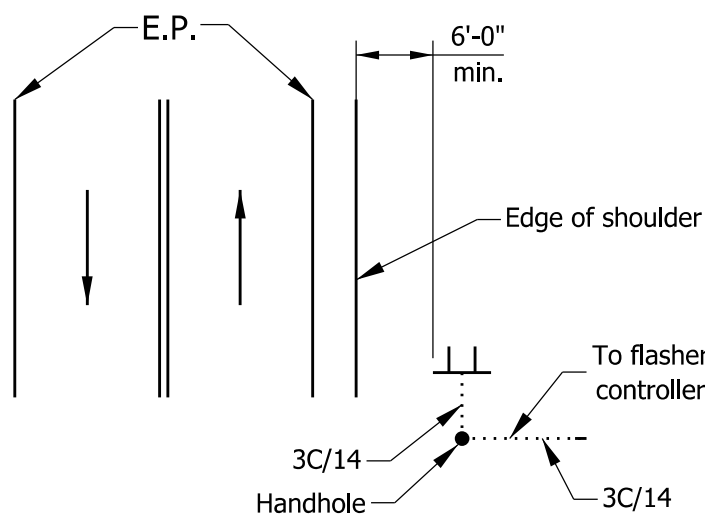


DISCONNECT CONNECTOR KIT  
TO BE USED IN DETECTOR HOUSING

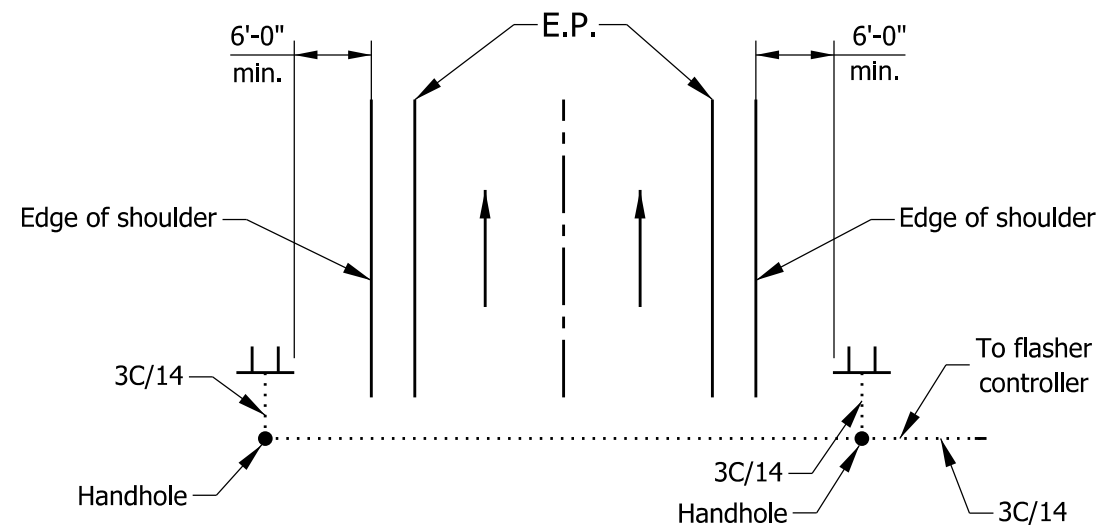


DETECTOR HOUSING CONNECTIONS DETAIL

SINGLE LANE ROADWAY



MULTI-LANE ROADWAY



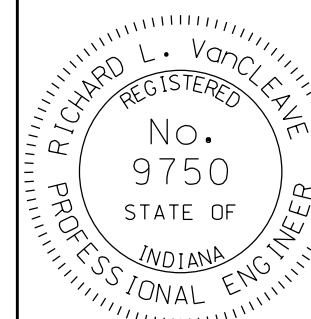
TYPICAL FLASHING BEACON CONFIGURATION

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON WITH  
WARNING SIGN DETAILS

SEPTEMBER 2012

STANDARD DRAWING NO. E 805-SGFB-02

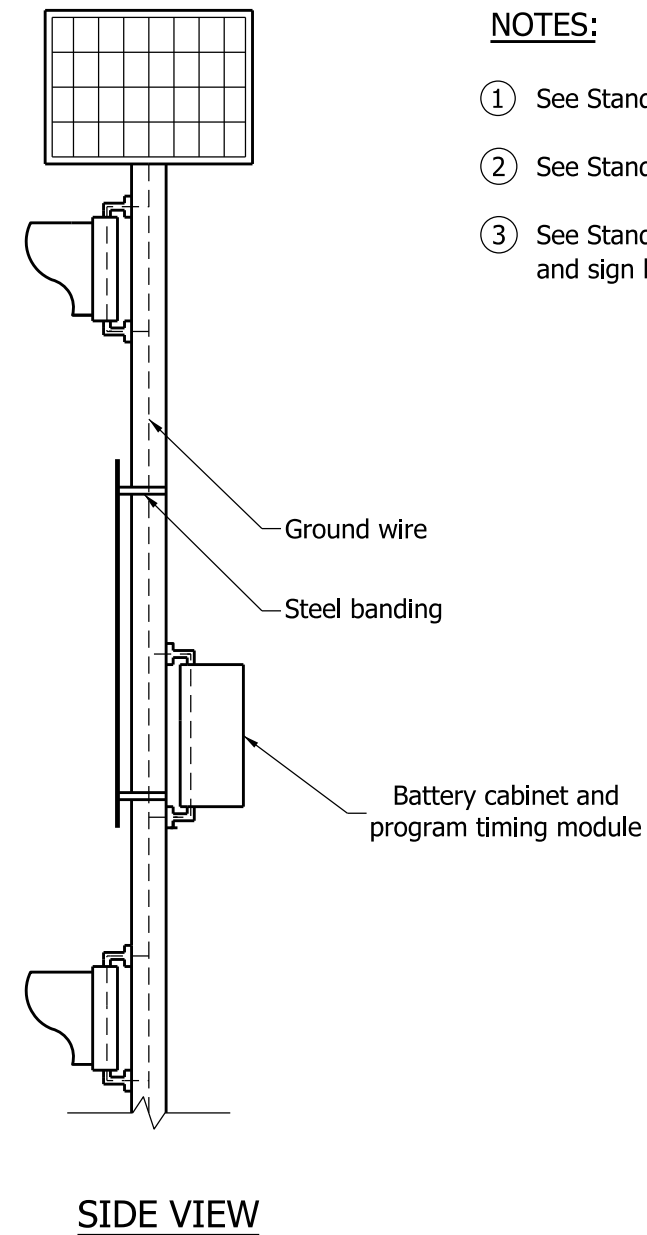
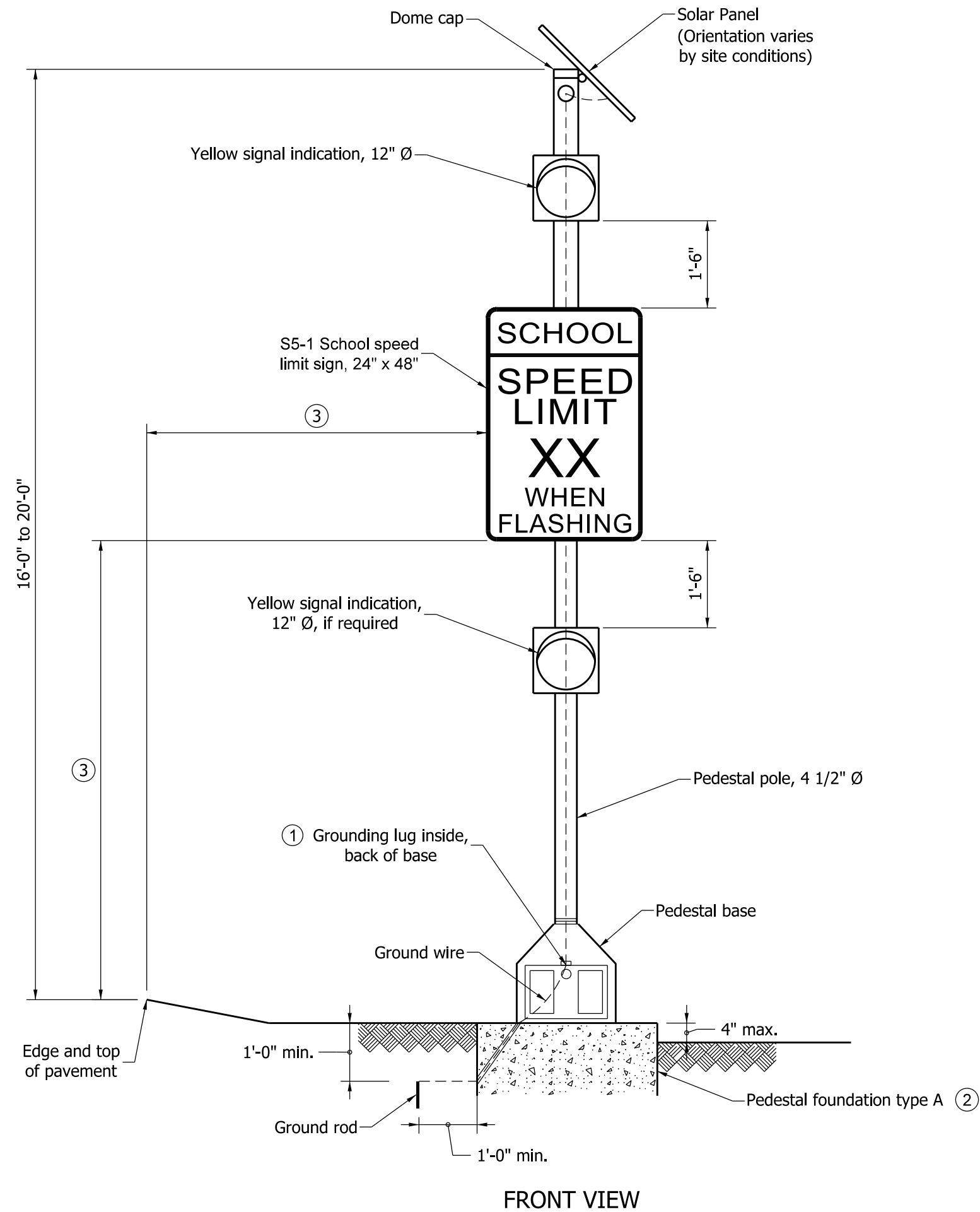


/s/ *Richard L. VanCleave* 09/04/12

SUPERVISOR, ROADWAY STANDARDS DATE

/s/ *Mark A. Miller* 09/04/12

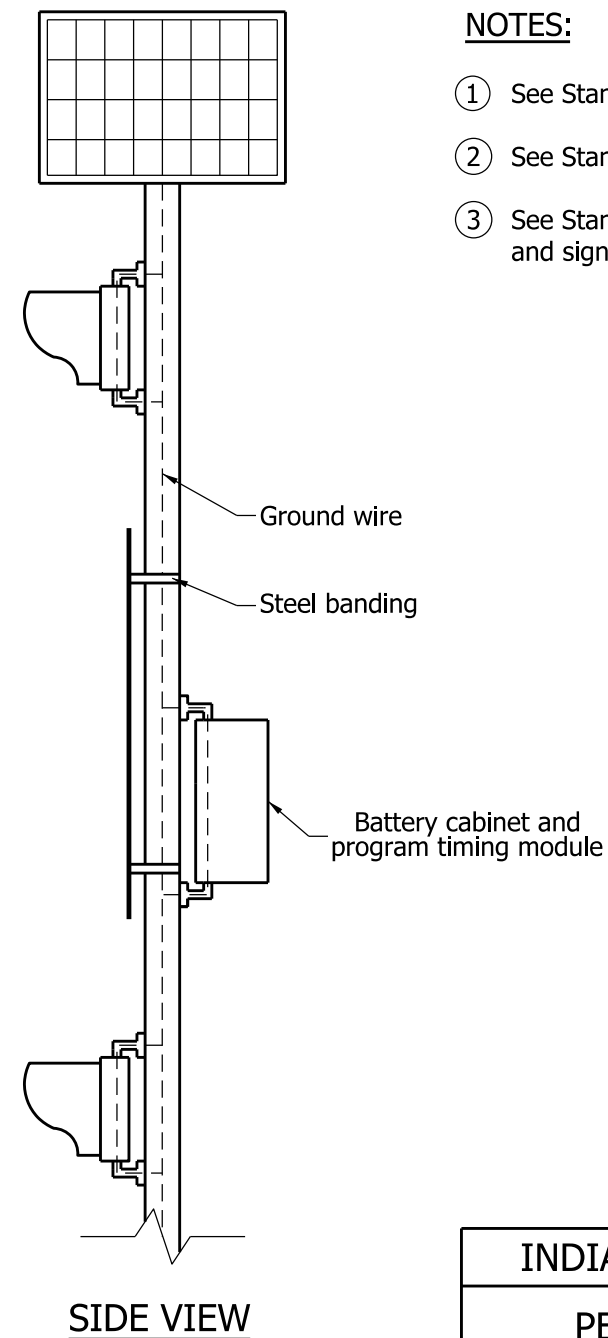
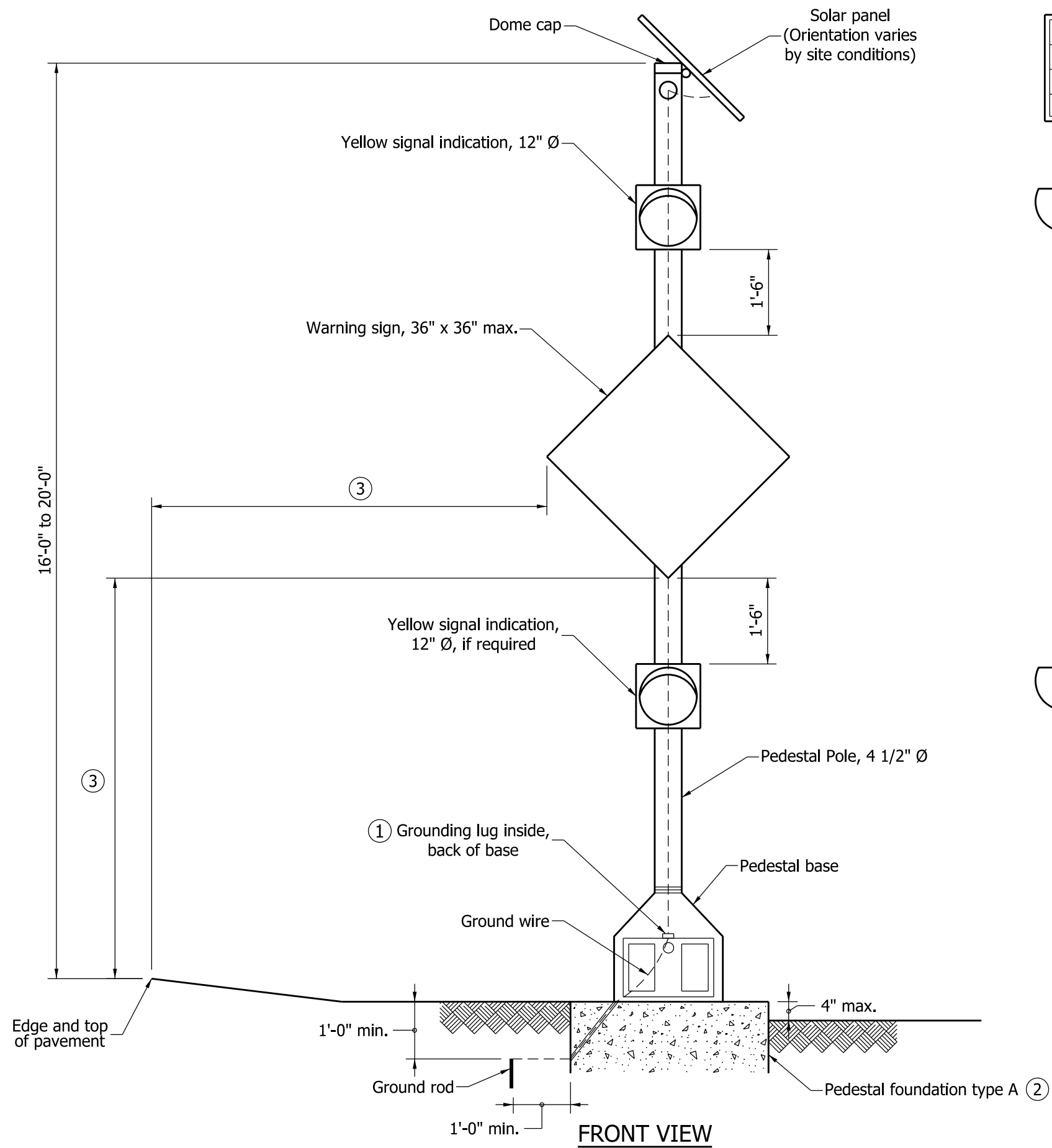
CHIEF ENGINEER DATE



# NOTES:

- ① See Standard Drawing E 805-SGGR-03 for grounding lug details.
- ② See Standard Drawing E 805-SGCF-03 for type A foundation details.
- ③ See Standard Drawing E 802-SNPL-02 for edge of pavement offset and sign height.

INDIANA DEPARTMENT OF TRANSPORTATION		
PEDESTAL MOUNTED SOLAR POWERED SCHOOL SPEED LIMIT FLASHING BEACON ASSEMBLY SEPTEMBER 2010		
STANDARD DRAWING NO.		E 805-SGFB-03
	/s/ <i>Richard L. VanCleave</i>	09/01/10
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	09/01/10
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		



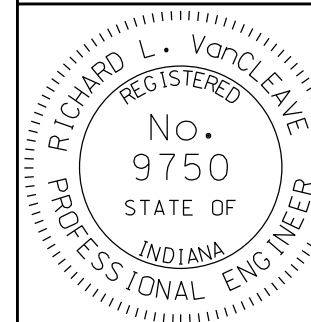
# **NOTES:**

- 1 See Standard Drawing E 805-SGGR-03 for grounding lug details.
- 2 See Standard Drawing E 805-SGCF-03 for type A foundation details.
- 3 See Standard Drawing E 802-SNPL-02 for edge of pavement offset and sign height.

INDIANA DEPARTMENT OF TRANSPORTATION

PEDESTAL MOUNTED SOLAR POWERED  
WARNING SIGN  
FLASHING BEACON ASSEMBLY  
SEPTEMBER 2010

STANDARD DRAWING NO. E 805-SGFB-04



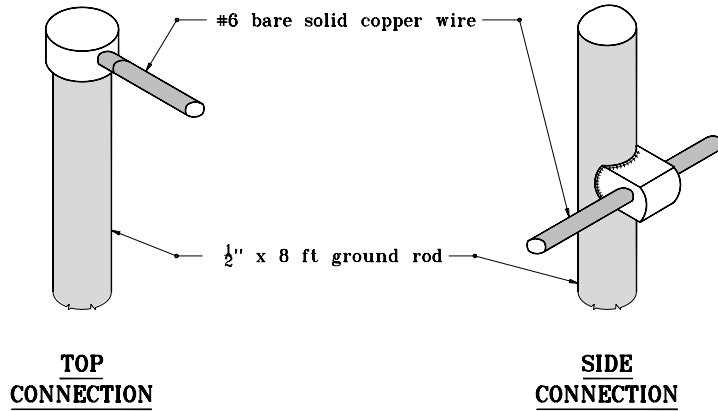
/s/ Richard L. VanCleave 09/01/10  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10  
CHIEF HIGHWAY ENGINEER DATE

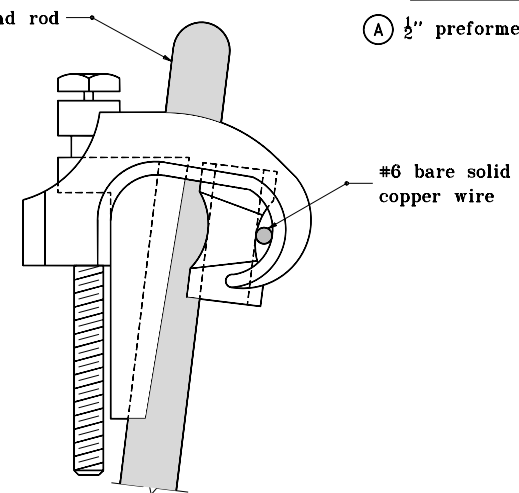
DESIGN STANDARDS ENGINEER

# GENERAL NOTES

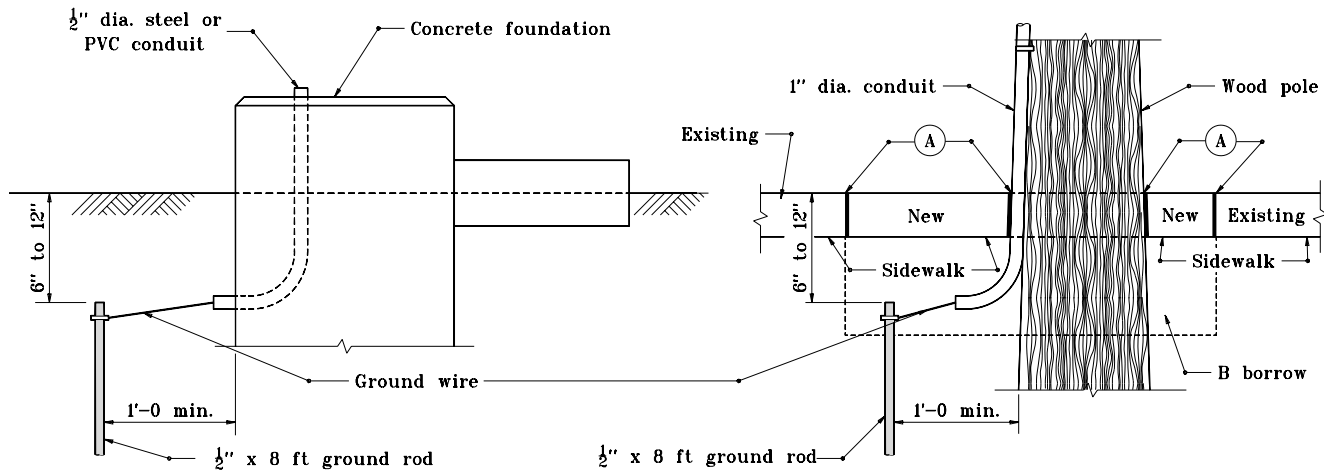
(A) 1/2" preformed joint



## THERMO WELD



## GROUND ROD CONNECTIONS

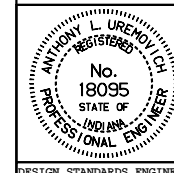


INDIANA DEPARTMENT OF TRANSPORTATION

## GROUND ROD

SEPTEMBER 1998

STANDARD DRAWING NO. **E 805-SGGR-01**



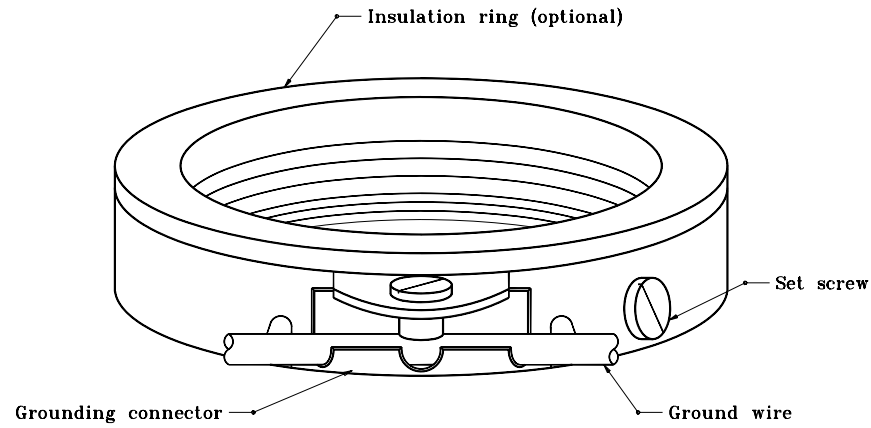
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98

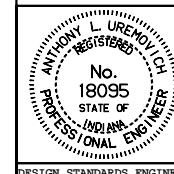


INDIANA DEPARTMENT OF TRANSPORTATION

**THREADED GROUNDING  
BUSHING**

SEPTEMBER 1998

STANDARD DRAWING NO.E 805-SGGR-02



DETAILS PLACED IN THIS FORMAT 11-15-99

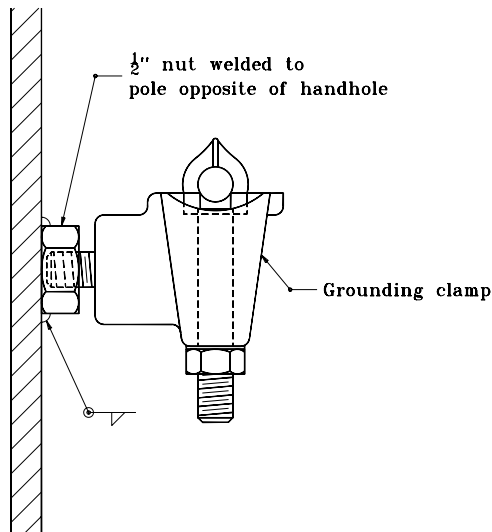
/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

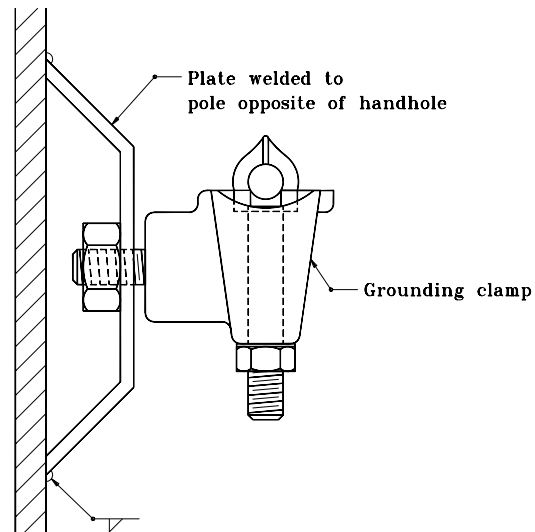
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98



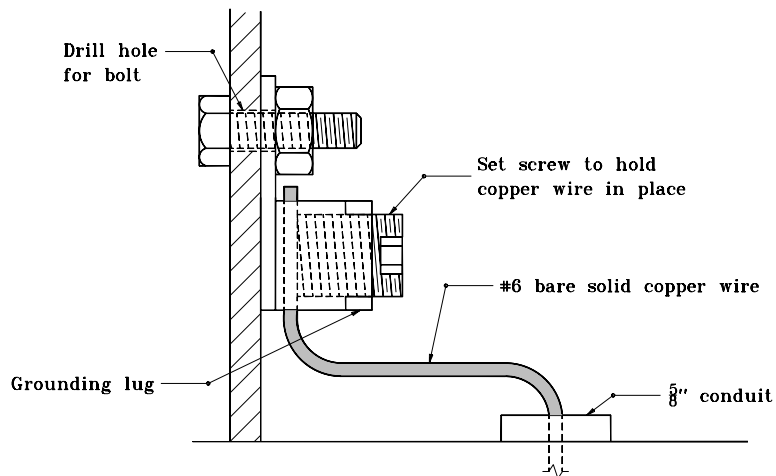


**ALUMINUM POLES**

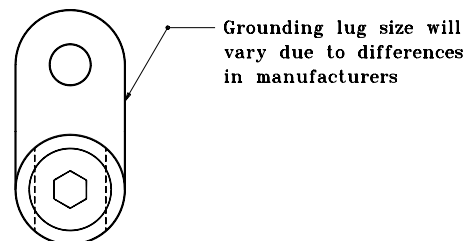


**STEEL POLES**

**GROUNDING POST DETAIL**

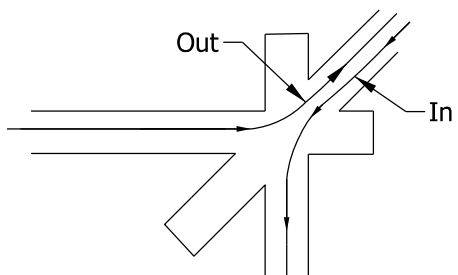
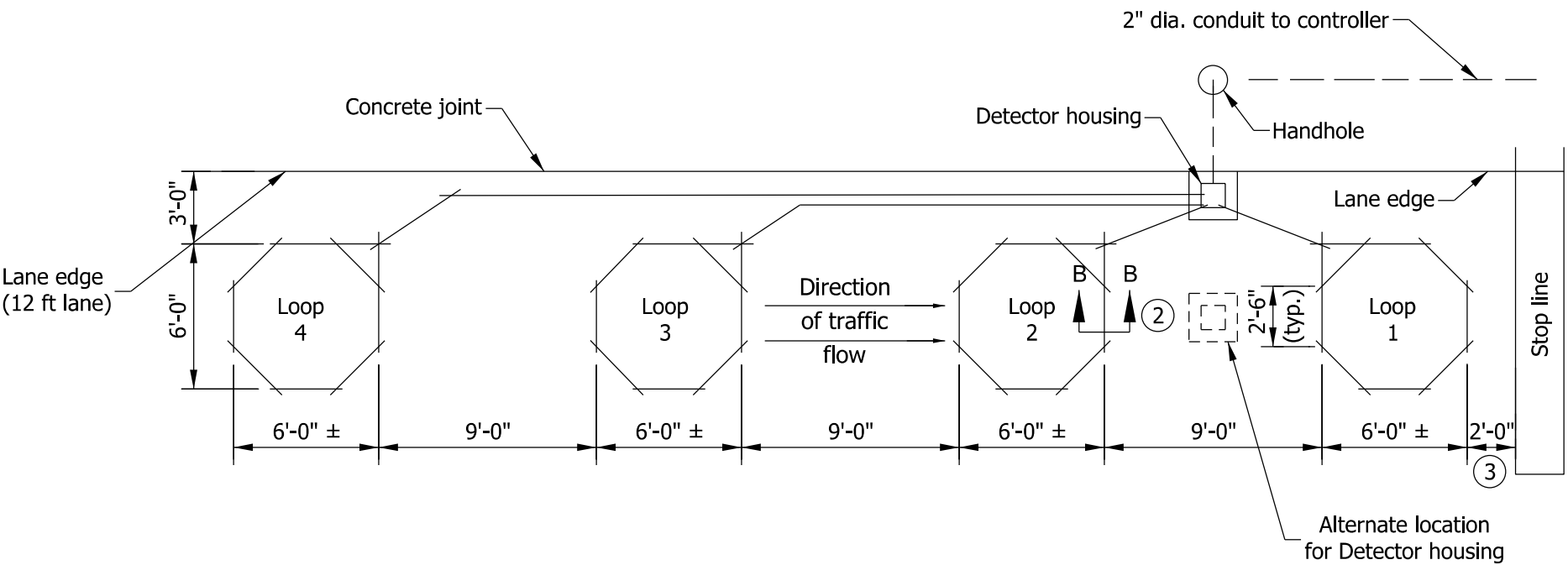


**GROUNDING LUG DETAIL  
(FIELD CONNECTION)**

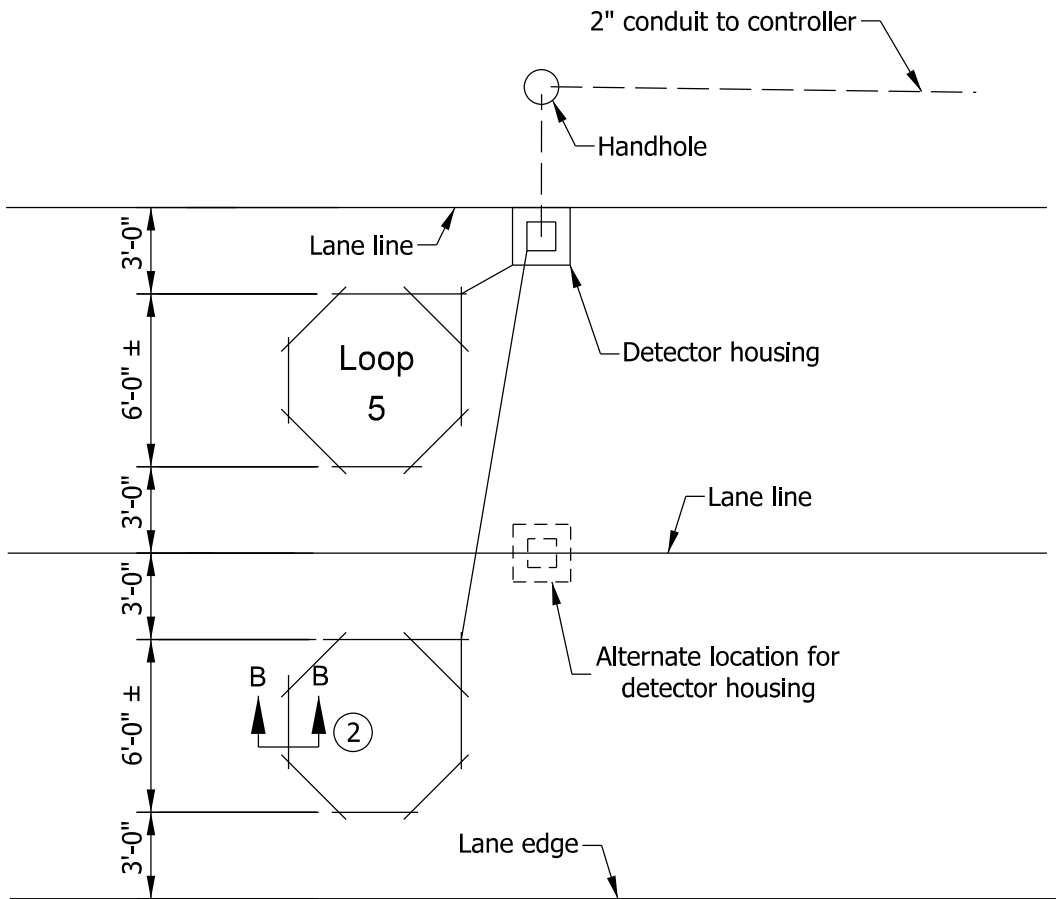


INDIANA DEPARTMENT OF TRANSPORTATION	
<b>GROUNDING DETAILS</b>	
MARCH 1995	
<b>STANDARD DRAWING NO. E 805-SGGR-03</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	ORIGINALLY APPROVED 3-01-95

TYPICAL LOOP DETECTION SAW-CUT PLAN (ONE LANE)



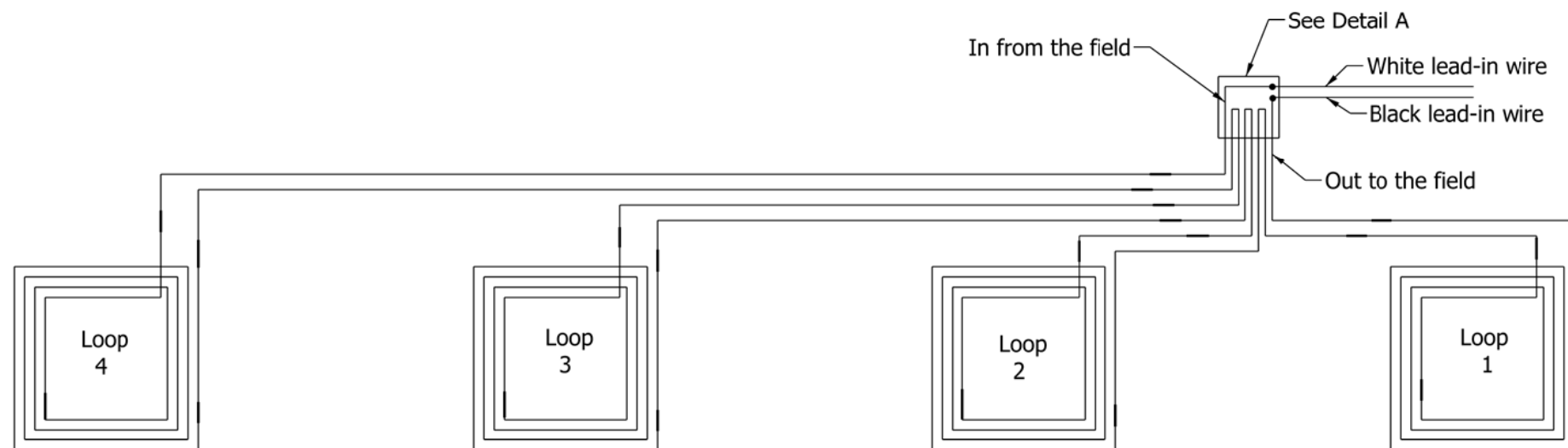
TYPICAL LOOP DETECTION (TWO LANES)



NOTES

1. Loop saw-cuts as shown on plan sheets are to be considered as schematic only. In the event of discrepancies, this detail shall govern.
- ② See Standard Drawing E 805-SGLI-02 for Section B-B.
- ③ This distance is typical depending on the intersection geometrics; a loop can be sawed in front of the stop line.

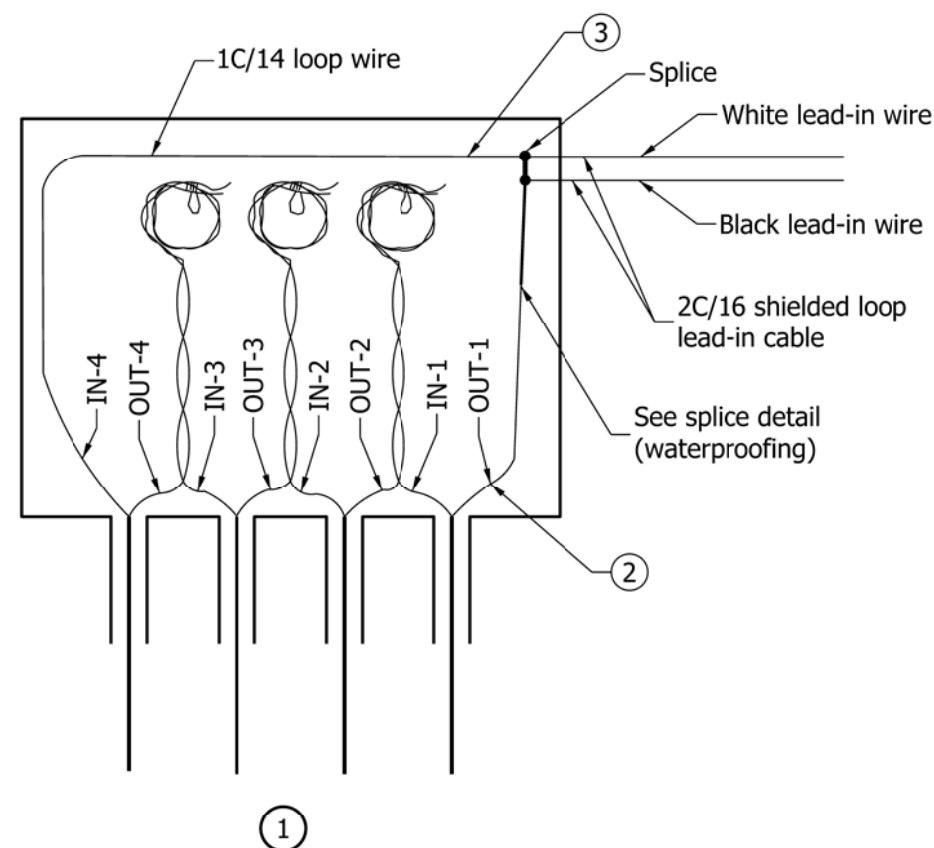
INDIANA DEPARTMENT OF TRANSPORTATION			
TRAFFIC SIGNAL LOOP INSTALLATION			
SEPTEMBER 2012			
STANDARD DRAWING NO.		E 805-SGLI-01	
	/s/ <i>Richard L. VanCleave</i>		09/04/12
	SUPERVISOR, ROADWAY STANDARDS		DATE
	/s/ <i>Mark A. Miller</i>		09/04/12
	CHIEF ENGINEER		DATE



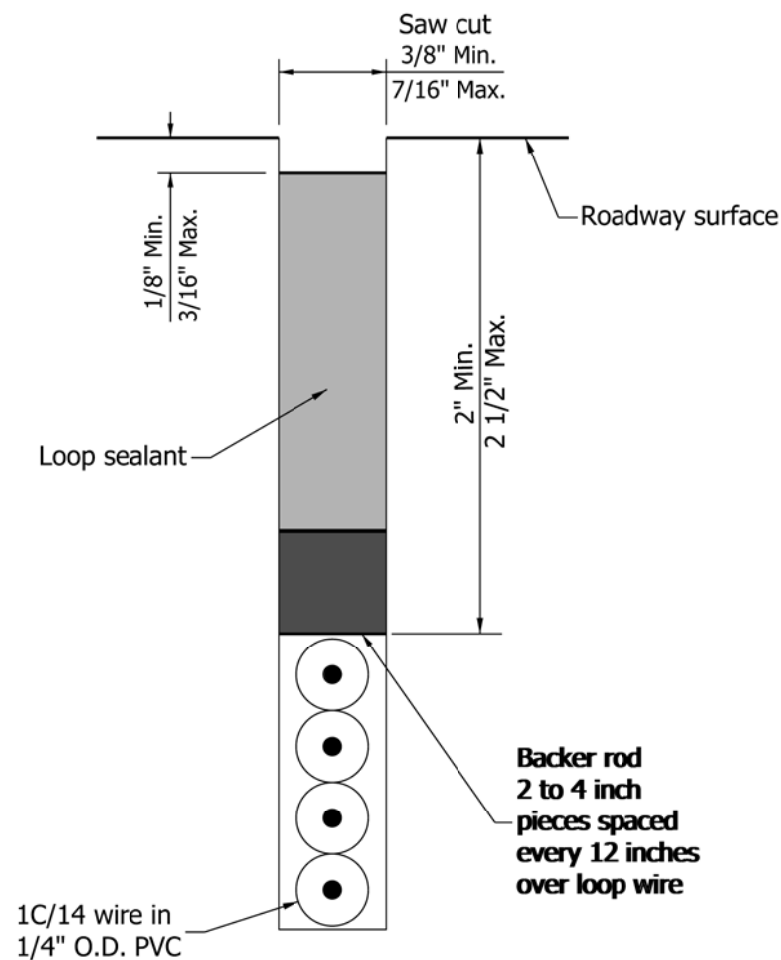
**LOOP WIRING DIAGRAM**

**NOTES:**

- ① Duct loop wires to be twisted around each other a minimum of 5 turns/ft then coiled and tied with self-locking strips.
- ② Loop wires to be tagged in or out as indicated.
- ③ See splice detail (waterproofing) on Standard Drawing E 805-SGLI-04.
4. The loop wire is continuously wound in the loop saw slot for the required number of turns.



**DETAIL A  
DETECTOR HOUSING WIRING**



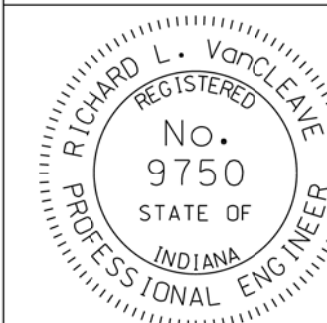
**LOOP SAW-CUT DETAIL  
SECTION B-B**

**INDIANA DEPARTMENT OF TRANSPORTATION**

**TRAFFIC SIGNAL  
LOOP INSTALLATION**

SEPTEMBER 2010

**STANDARD DRAWING NO. E 805-SGLI-02**

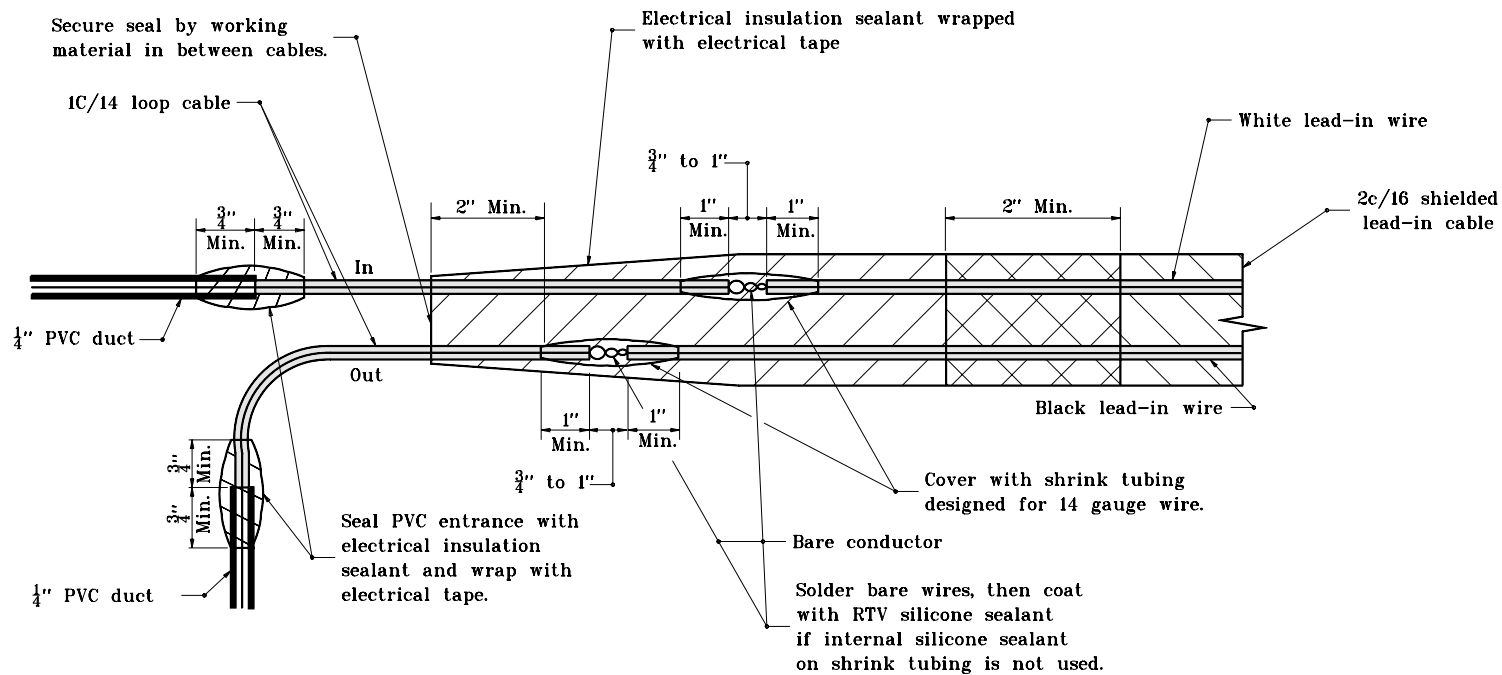


DESIGN STANDARDS ENGINEER

*/s/ Richard L. Vancleave* 09/01/10  
DESIGN STANDARDS ENGINEER DATE

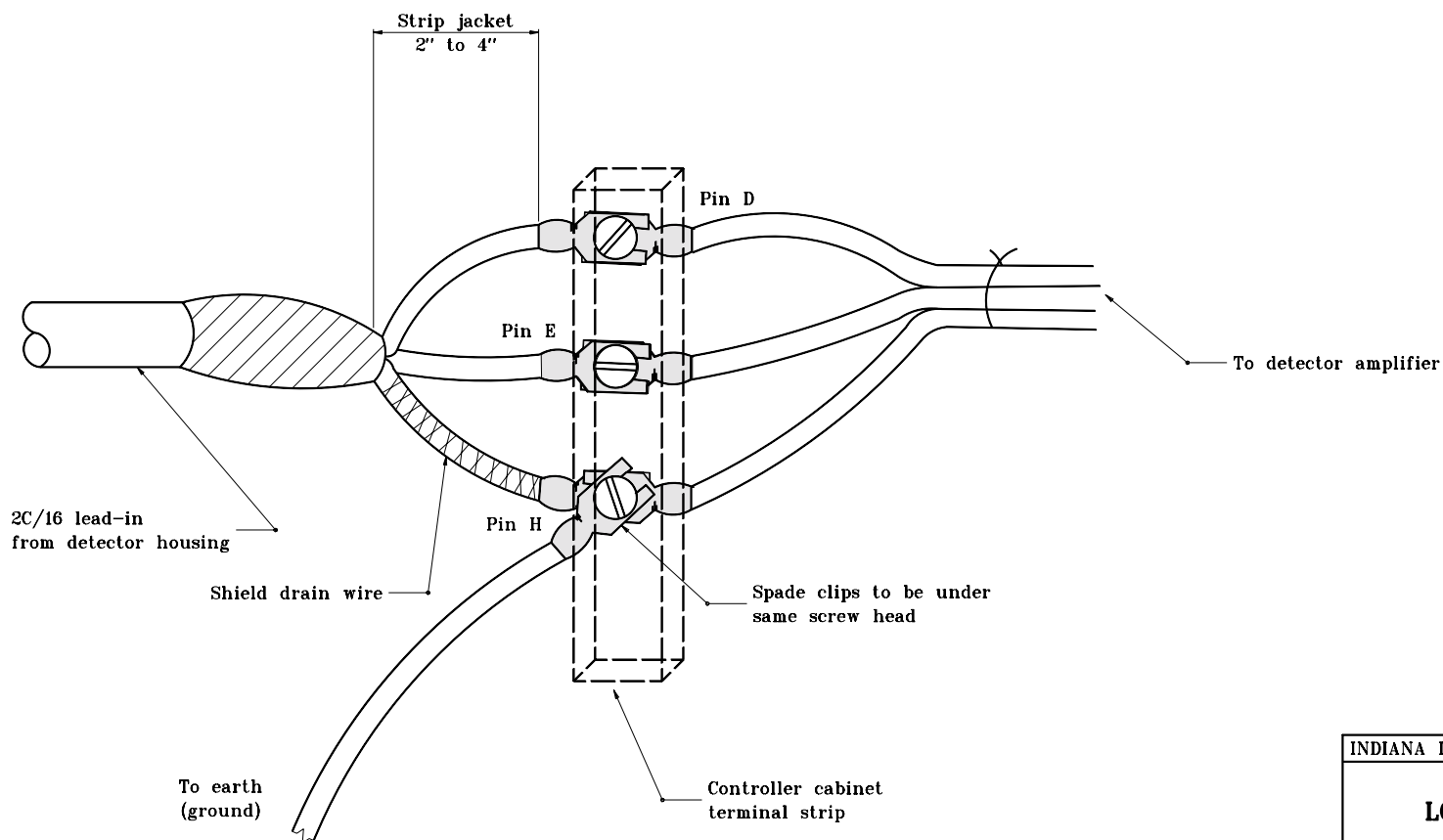
*/s/ Mark A. Miller* 09/01/10  
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED	3-01-95
---------------------	---------



**SPLICE DETAIL**

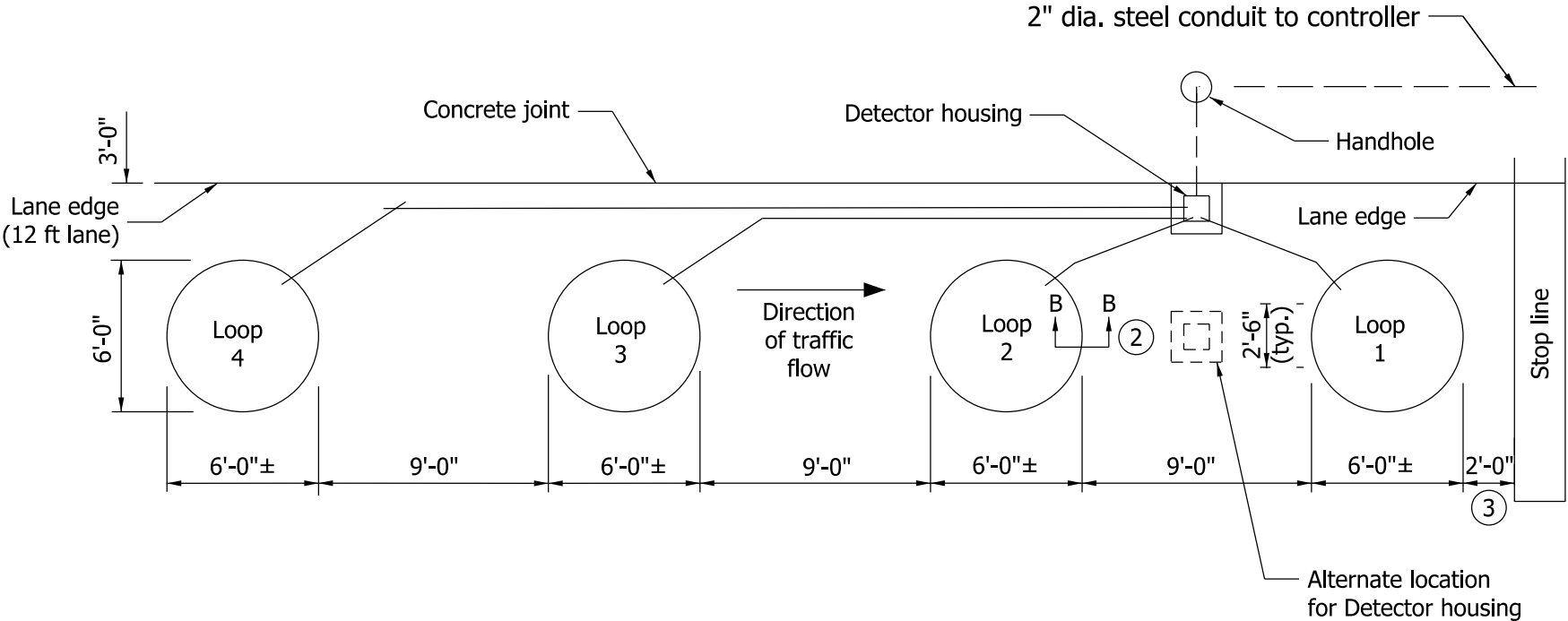
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TRAFFIC SIGNAL LOOP SPLICE</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 805-SGLI-04</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95



**LOOP LEAD-IN  
CONTROLLER CABINET CONNECTION DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TRAFFIC SIGNAL LOOP INSTALLATION</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 805-SGLI-05</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95

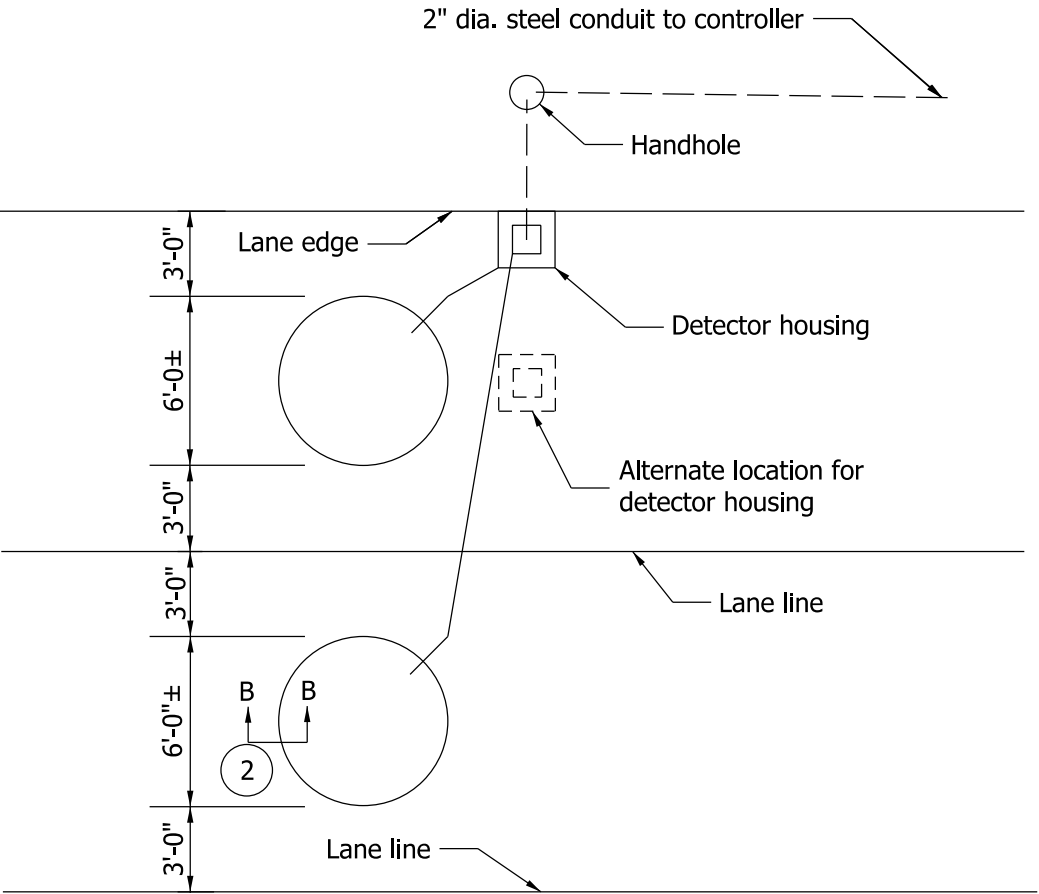
TYPICAL LOOP DETECTION SAW-CUT PLAN (ONE LANE)



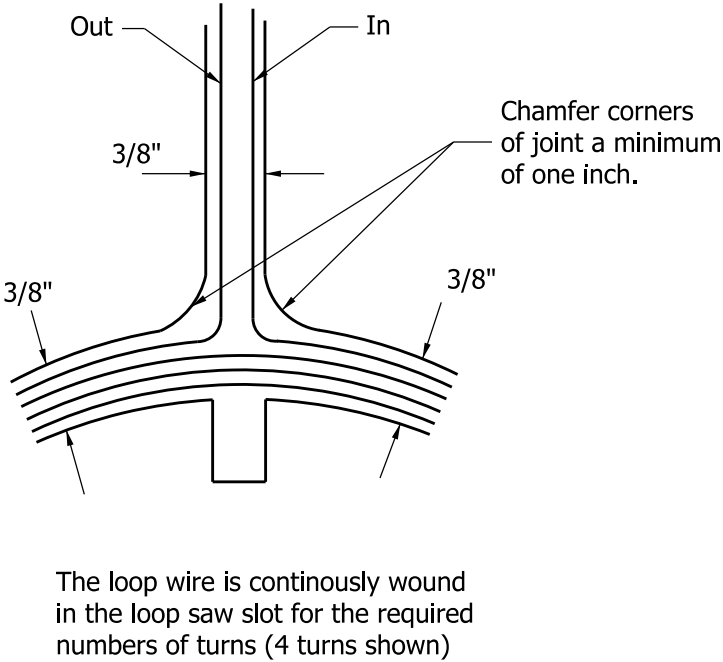
NOTES:

1. Loop saw-cuts as shown on the plans are to be considered as schematic only. In the event of discrepancies, this detail shall govern.
2. See Standard Drawing E 805-SGLI-02 for Section B-B.
3. This distance is typical depending on the intersection geometrics; a loop can be sawed in front of the stop line.
4. The loop(s) shall be centered transversely in the travel lane.
5. The saw slot for the line from the detector housing to the circular loop shall be approximately perpendicular to the tangent of the loop at the point of intersection.

TYPICAL LOOP DETECTION (TWO LANES)



DETAIL A  
DETECTOR HOUSING WIRING

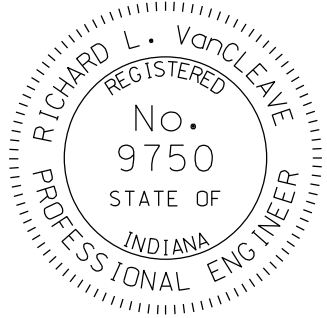


INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL  
LOOP INSTALLATION

SEPTEMBER 2011

STANDARD DRAWING NO. E 805-SGLI-06

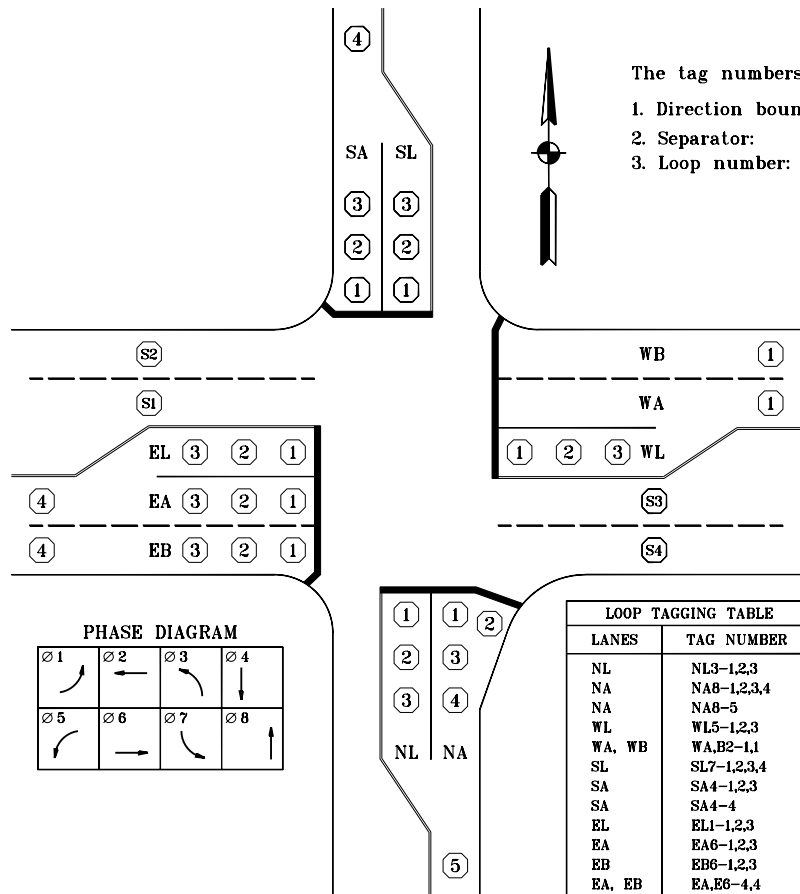


DESIGN STANDARDS ENGINEER

/s/ Richard L. Vancleave 09/01/11  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/11  
CHIEF HIGHWAY ENGINEER DATE

## LOOP TAGGING SYSTEM



Each loop lead-in cable (2C/16) shall be tagged according to the designation shown on the plans. The tag numbers for lead-in cable shall be assigned as follows:

- Direction bound: N, S, E, or W.
- Lane designation: L = Left turn.  
A = Through lane closest to centerline of roadway.  
B = Next lane out from centerline of roadway.  
Alphabet is continued to lane closest to edge of pavement.
- Phase number: 1 through 8.
- Separator: -
- Loop number: 1 = Loop closest to stop line.  
2 = Next loop away from stop line.  
Numbering is continued to loop farthest from stop line.

The tag numbers for system loops shall be assigned as follows:

- Direction bound and lane designation are the same as for lead-in cable.
- Separator: -
- Loop number: S1 is used for the southernmost approach.  
Numbering is continued in a clockwise direction beginning with S2.

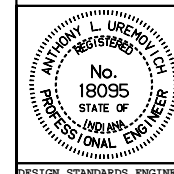
LOOP TAGGING TABLE	
LANES	TAG NUMBER
NL	NL3-1,2,3
NA	NA8-1,2,3,4
NA	NA8-5
WL	WL5-1,2,3
WA, WB	WA,B2-1,1
SL	SL7-1,2,3,4
SA	SA4-1,2,3
SA	SA4-4
EL	EL1-1,2,3
EA	EA6-1,2,3
EB	EB6-1,2,3
EA, EB	EA,EB-4,4
WA	WA-S1
WB	WB-S2
EA	EA-S3
EB	EB-S4

INDIANA DEPARTMENT OF TRANSPORTATION

## LOOP TAGGING SYSTEM

MARCH 1995

STANDARD DRAWING NO. E 805-SGLT-01



DETAILS PLACED IN THIS FORMAT 11-15-99

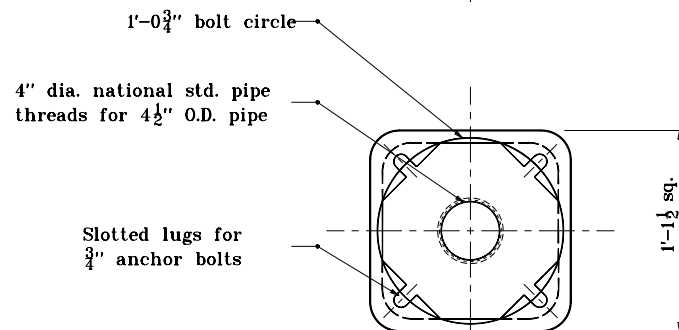
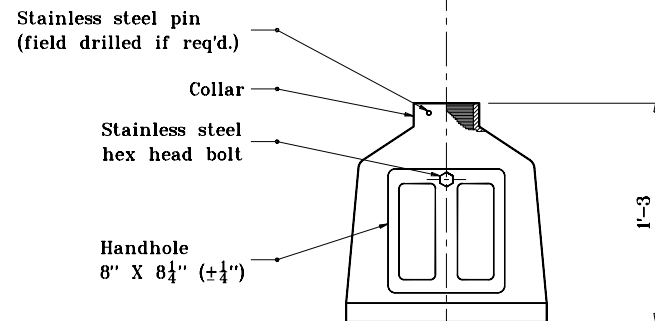
/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

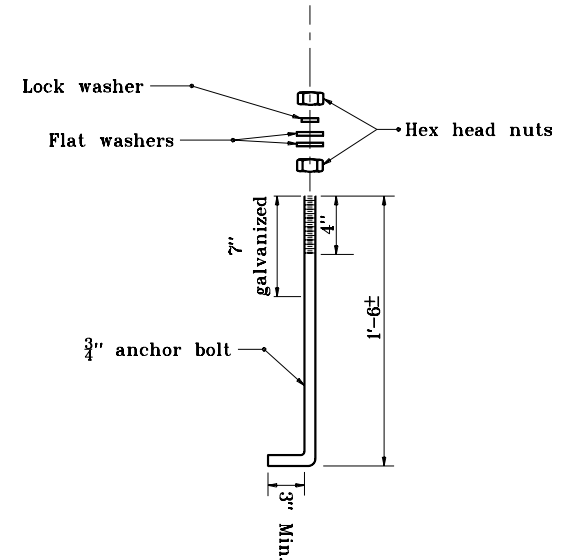
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 3-01-95





**BOTTOM VIEW**



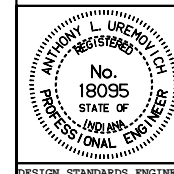
**ANCHOR BOLT FOR  
A, M, AND P-1  
FOUNDATIONS**

INDIANA DEPARTMENT OF TRANSPORTATION

**ANCHOR BOLTS AND  
PEDESTAL BASE**

SEPTEMBER 1998

STANDARD DRAWING NO. **E 805-SGPB-01**



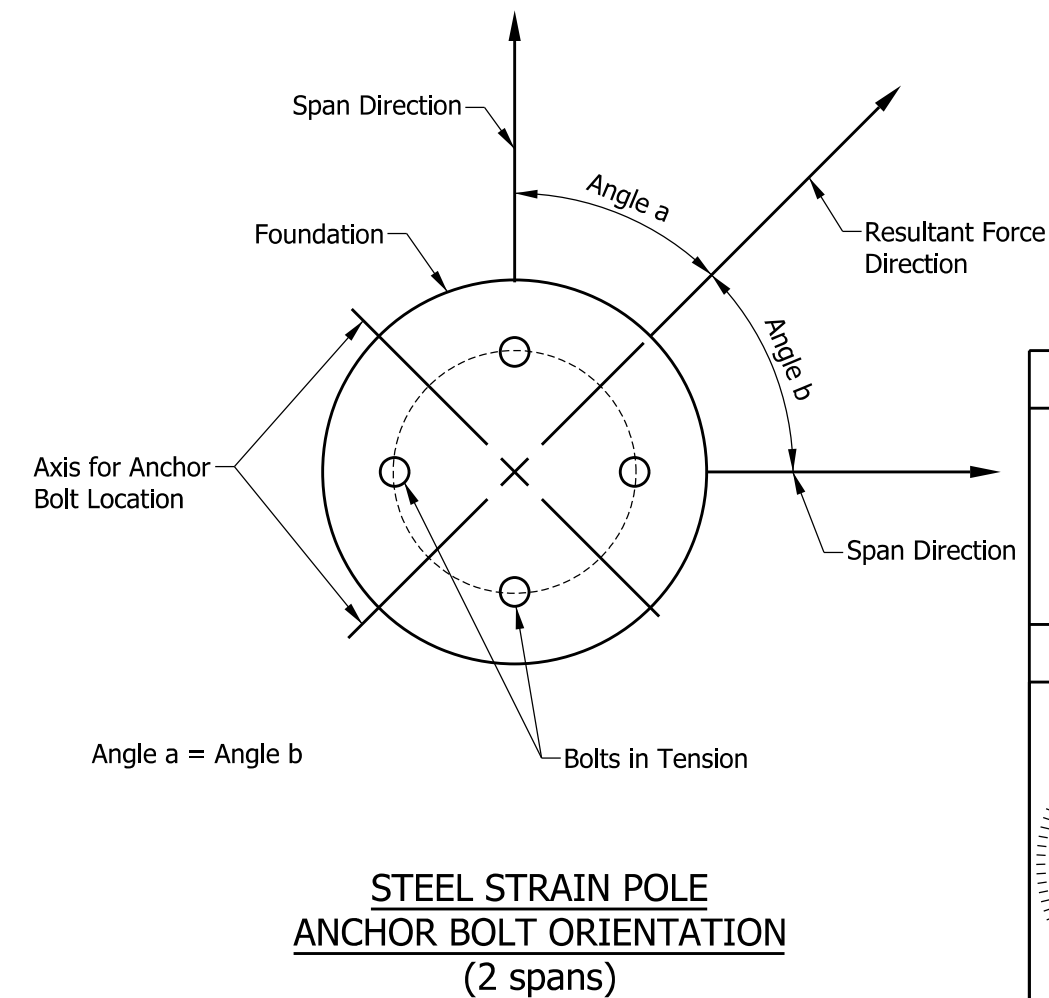
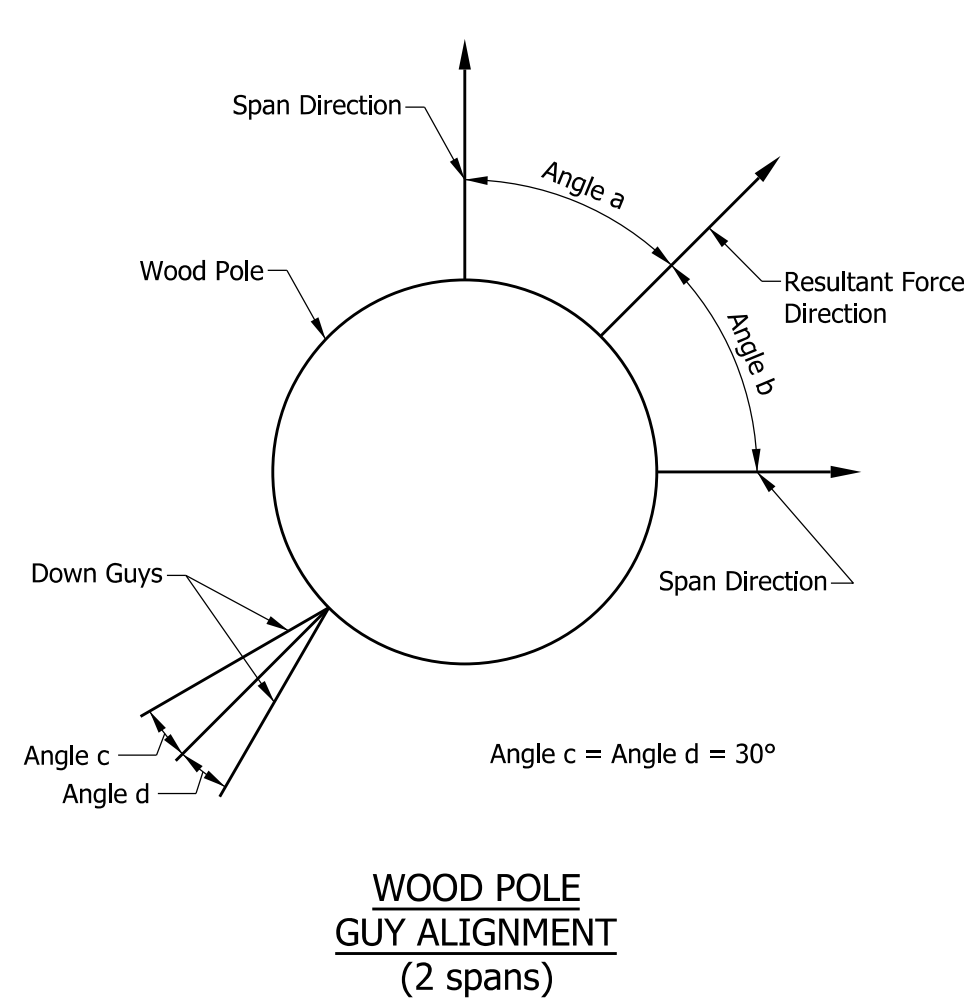
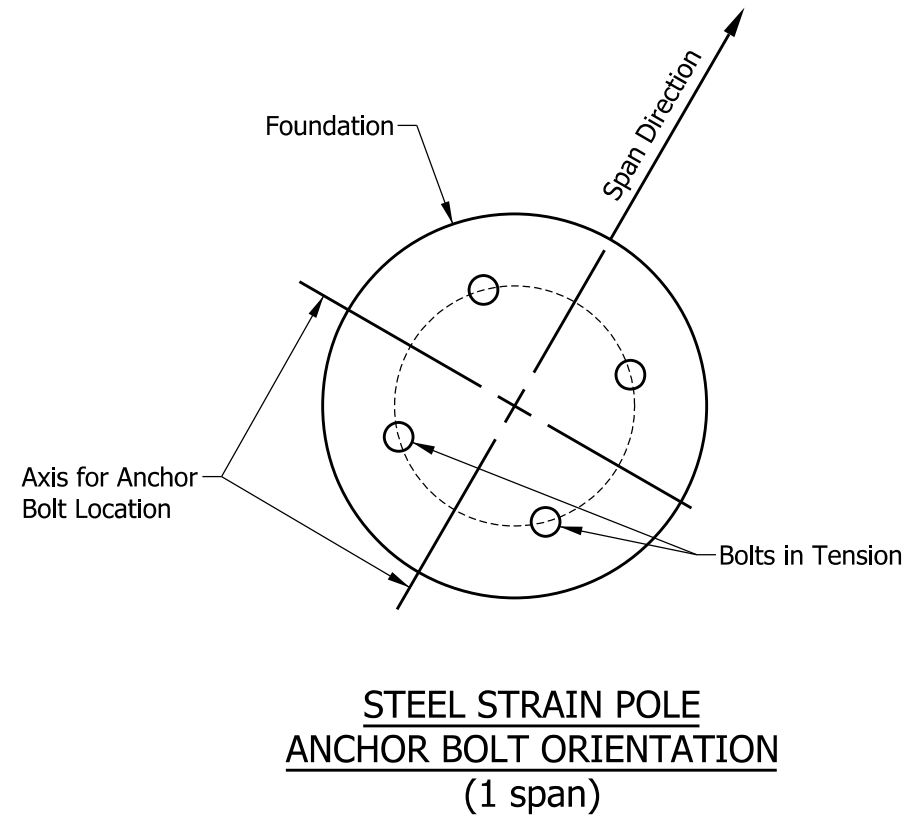
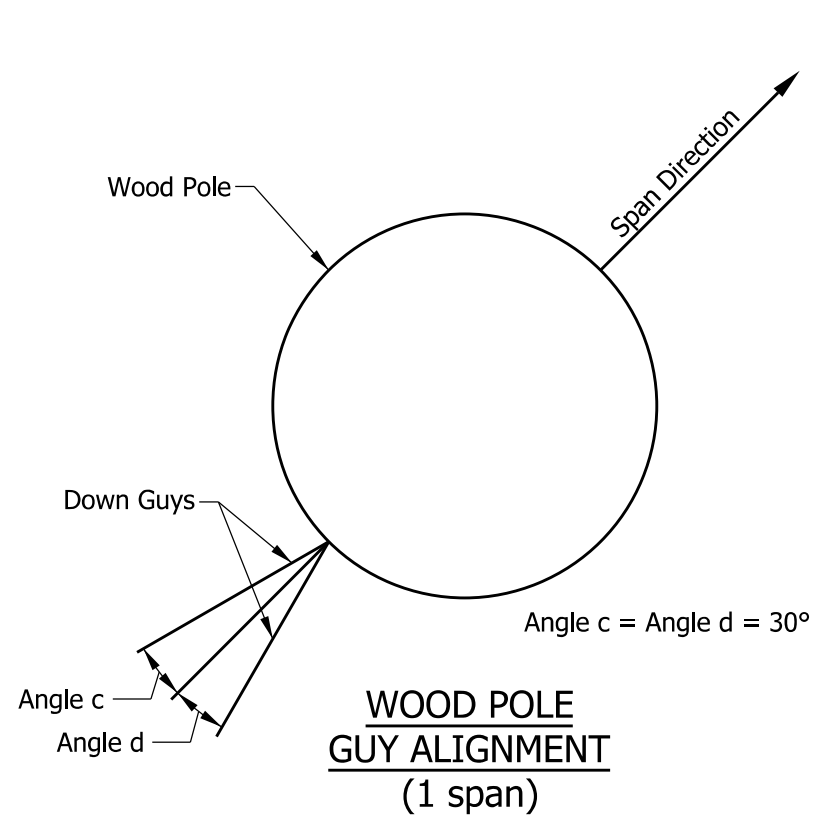
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

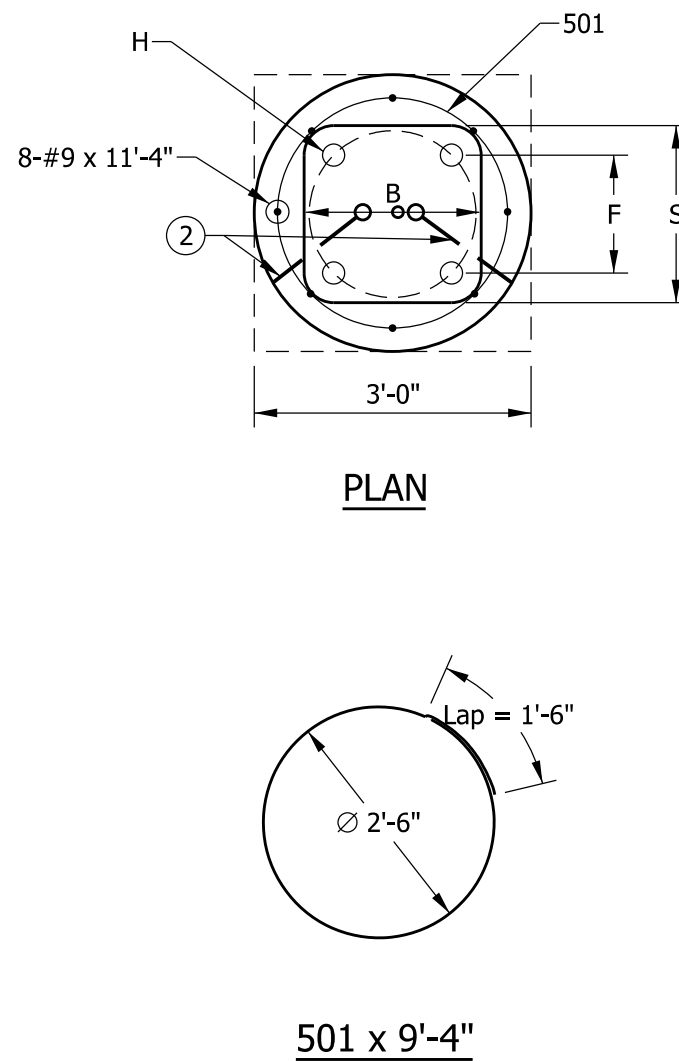
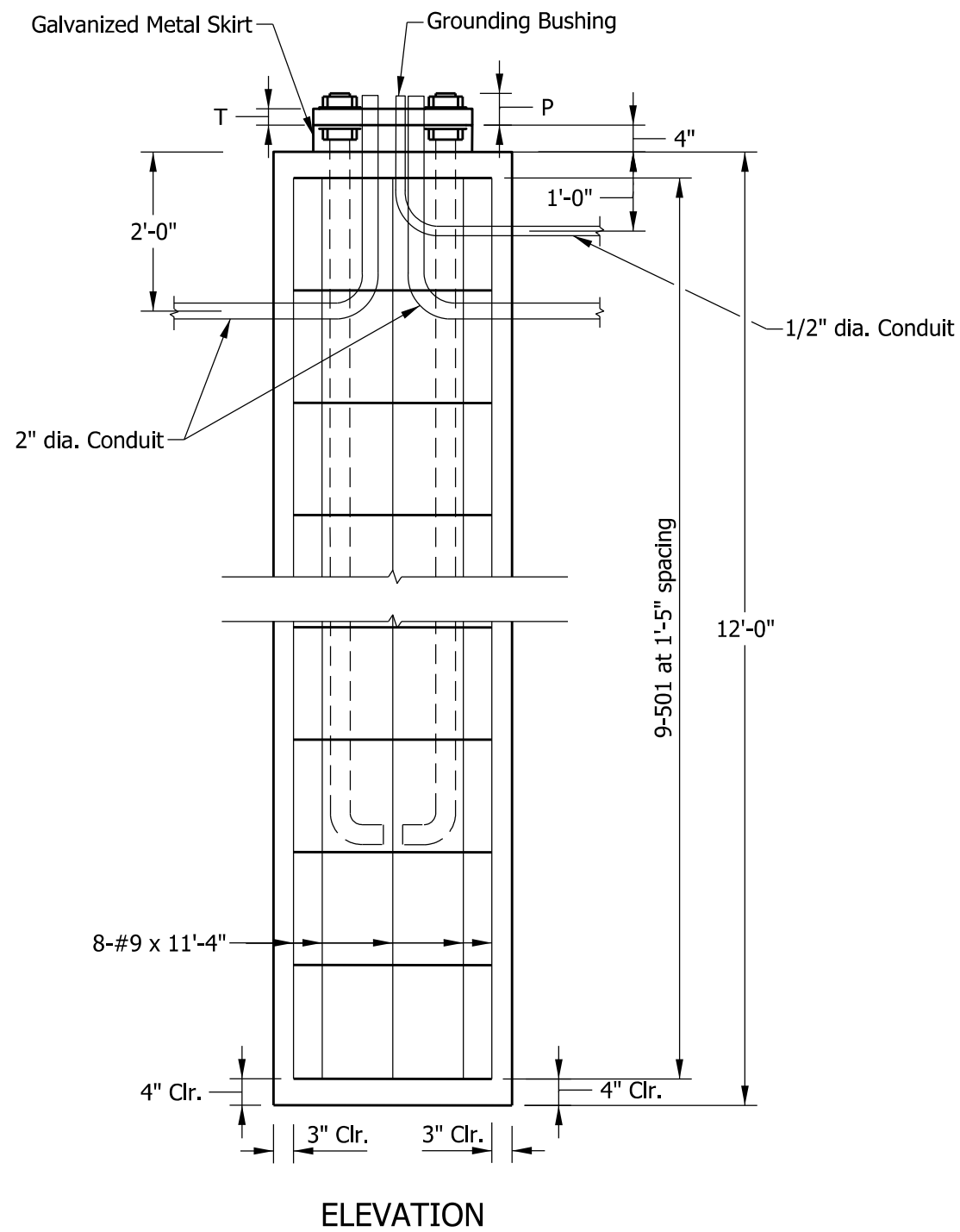
/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98



INDIANA DEPARTMENT OF TRANSPORTATION			
SIGNAL POLES GUY ALIGNMENT AND ANCHOR BOLT ORIENTATION SEPTEMBER 2013			
STANDARD DRAWING NO.		E 805-SGSC-01	
	/s/ <i>Alfredo B. Hanza</i>		02/27/13
	DESIGN STANDARDS ENGINEER		DATE
	/s/ <i>Mark A. Miller</i>		03/27/13
	CHIEF ENGINEER		DATE



## NOTES:

1. A minimum of 2 - 2-in. dia. conduit inlets shall be installed for each foundation.
2. Make a permanent line on top of the concrete foundation indicating the direction of each 2-in. conduit exit.

## BASE PLATE AND ANCHOR BOLT DATA

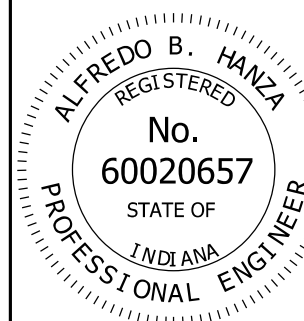
Anchor Bolts	B	F	H	P	S	T	Pole Size	Foundation
2 1/4" x 8'-0"	1'-10"	1'-3 1/2"	2 3/4"	4 3/4"	1'-11"	2 1/2"	1'-3" x 30' 1'-5" x 36'	3'-0" x 12'

## INDIANA DEPARTMENT OF TRANSPORTATION

## SIGNAL STRAIN POLE, STEEL, FOUNDATION DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGSC-02

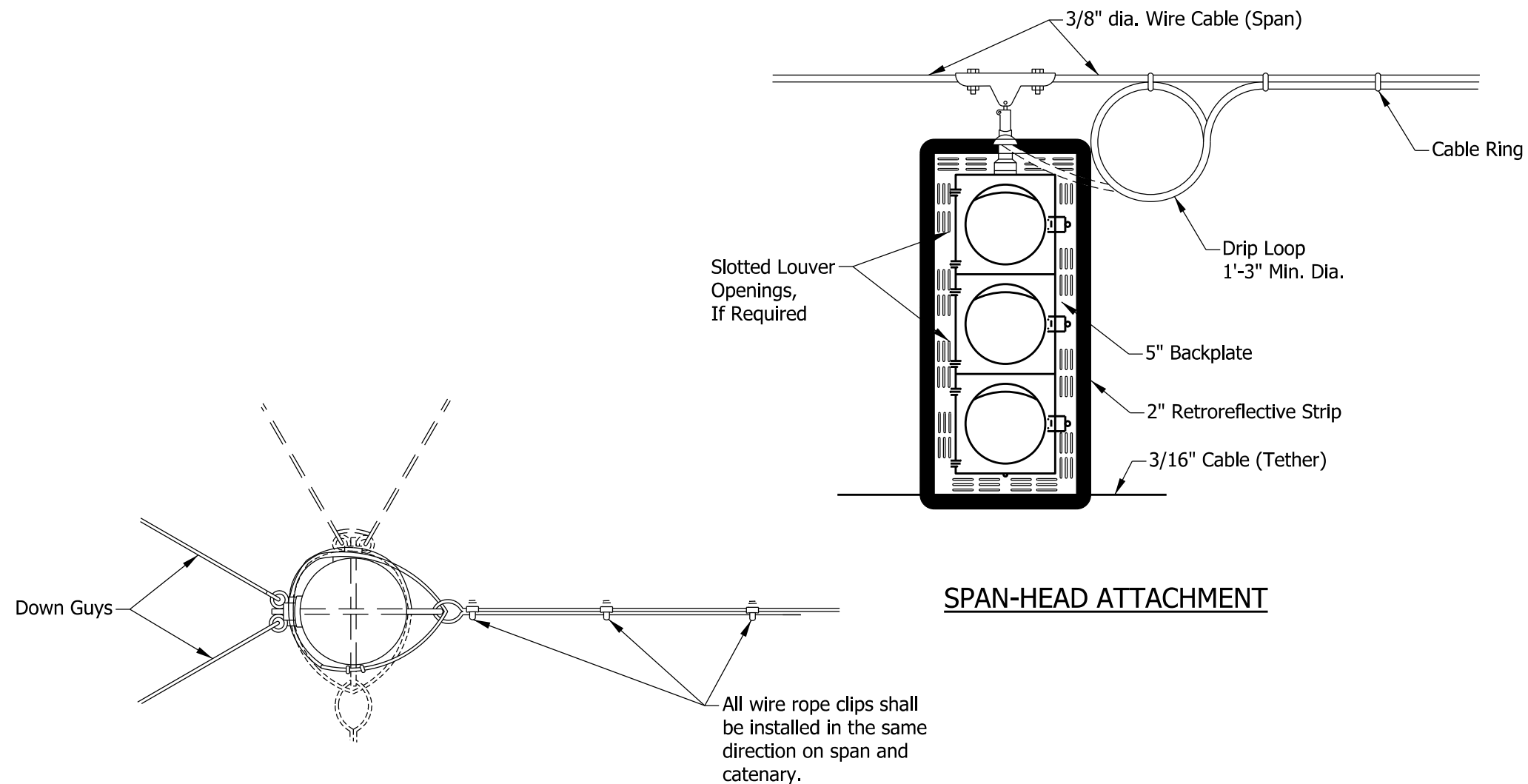


/s/ Alfredo B. Hanza 02/27/13

DESIGN STANDARDS ENGINEER DATE

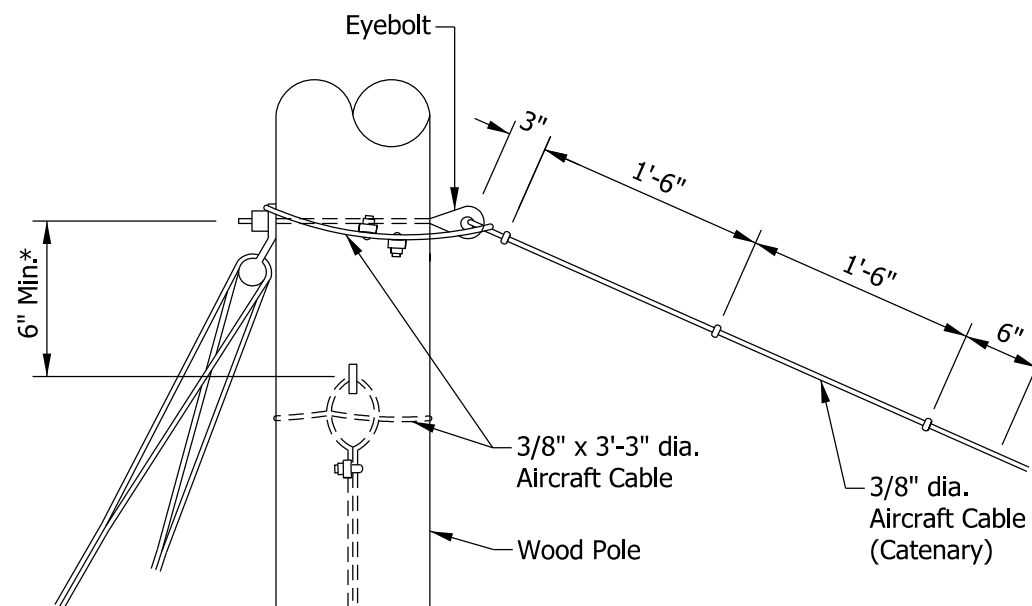
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE



**SPAN-HEAD ATTACHMENT**

**TOP VIEW**

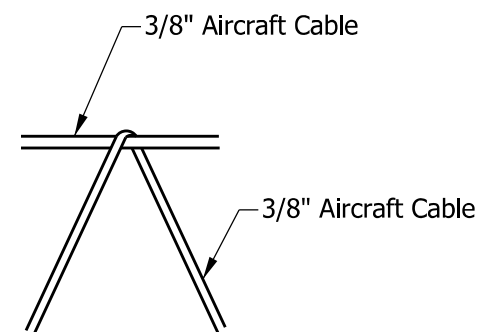
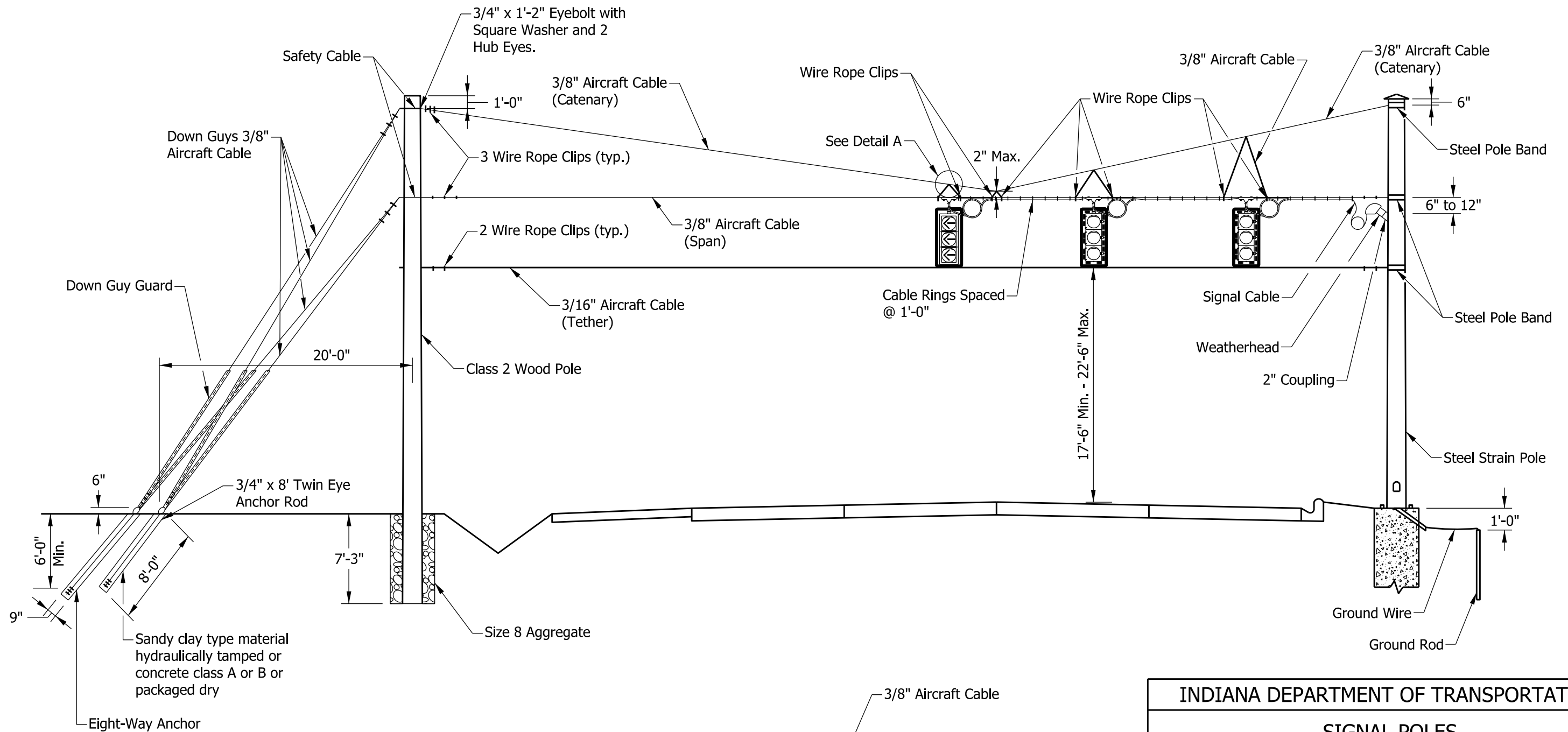


**SAFETY CABLE AND EYE BOLT DETAIL**

\* If more than one catenary is attached to pole.

- NOTES:**
1. Installation is the same for steel strain poles except pole bands will be used.
  2. Aircraft cable shall use a heavy closed wire rope thimble at contact with pole bands.

INDIANA DEPARTMENT OF TRANSPORTATION		
<p>SIGNAL CABLE SPAN AND CATENARY ATTACHMENT</p> <p>SEPTEMBER 2013</p>		
STANDARD DRAWING NO.		E 805-SGSC-03
	/s/ <i>Alfredo B. Hanza</i>	02/27/13
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	03/27/13
	CHIEF ENGINEER	DATE

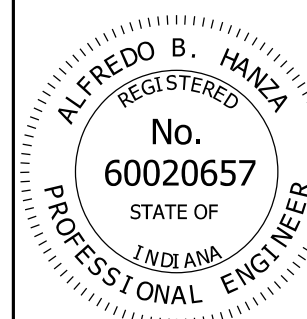


**DETAIL A**

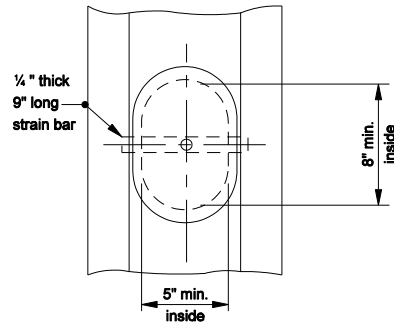
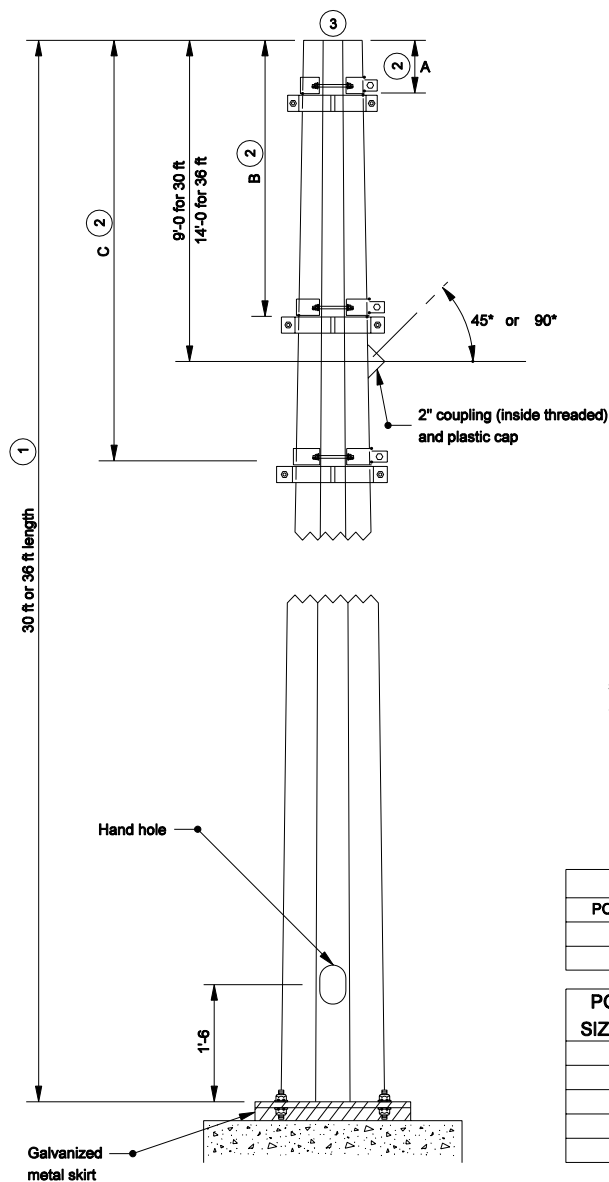
**INDIANA DEPARTMENT OF TRANSPORTATION**

**SIGNAL POLES  
SPAN, CATENARY  
& TETHER DETAIL  
SEPTEMBER 2013**

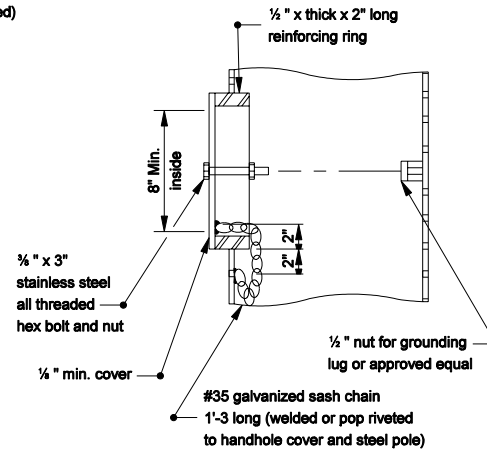
**STANDARD DRAWING NO. E 805-SGSC-04**



/s/ <i>Alfredo B. Hanza</i>	02/27/13
DESIGN STANDARDS ENGINEER	DATE
/s/ <i>Mark A. Miller</i>	03/27/13
CHIEF ENGINEER	DATE



HANDHOLE AND GROUNDING LUG



POLE BAND POSITION			
POLE LENGTH	A	B	C
30 ft	6"	8'-0	12'-0
36 ft	1'-0	13'-0	17'-0

POLE BAND SIZE NUMBER	O.D.(ACROSS POINTS) OF POLE (ROUND OR MULTISIDED)	
	MIN.	MAX.
12	11	1'-1
13	1'-1	1'-2
14	1'-2	1'-3
15	1'-3	1'-4

**GENERAL NOTES:**

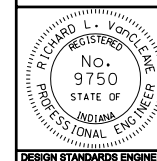
- 1 Taper pole 0.14 in. per foot of length.
- 2 Band position can be variable depending of minimum clearance requirement of tether the cable over the road, and the elevation of the top of the foundation relative to the top of the traveled roadway.
- 3 Design load of 8000 lb applied perpendicular to pole axis 1'-6 from top of pole.

INDIANA DEPARTMENT OF TRANSPORTATION

**30 ft. AND 36 ft. SIGNAL  
STEEL STRAIN POLES**

SEPTEMBER 2005

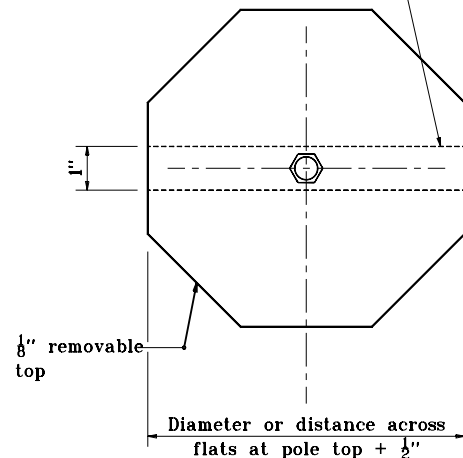
STANDARD DRAWING NO. E 805-SGSP-01



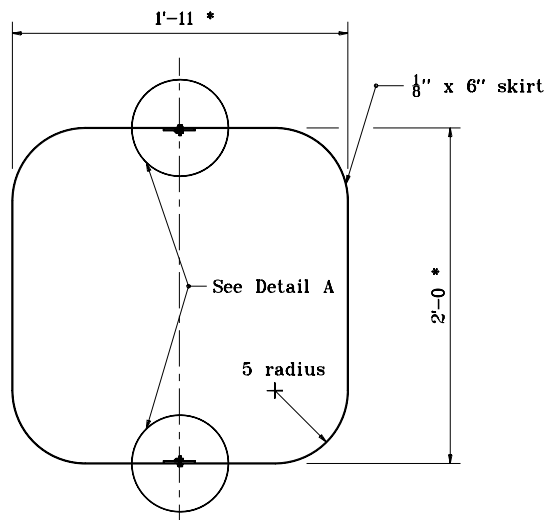
/s/ Richard L. VanCleave  
DESIGN STANDARDS ENGINEER  
9-01-05  
DATE

/s/ Richard K. Smutzer  
CHIEF HIGHWAY ENGINEER  
9-01-05  
DATE

Bar to be welded to inside of pole  
 $\frac{1}{4}$  in x 1 in. with  $\frac{3}{8}$  in.  
 $\frac{3}{8}$  threaded hole

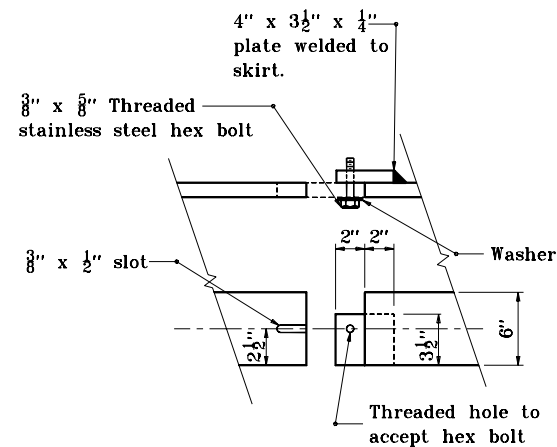
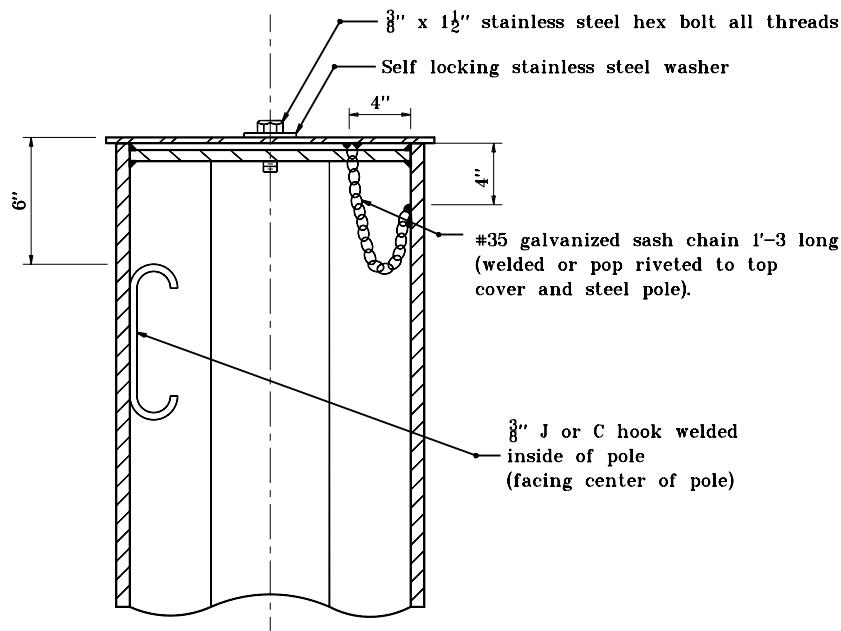


**TOP COVER**



\* Inside dimension

**METAL SKIRT (BASE PLATE)**



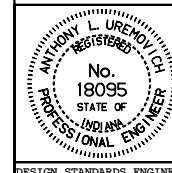
**DETAIL A**

INDIANA DEPARTMENT OF TRANSPORTATION

**TOP COVER AND METAL SKIRT  
OF SIGNAL STEEL STRAIN POLE**

MARCH 1995

STANDARD DRAWING NO. **E 805-SGSP-02**



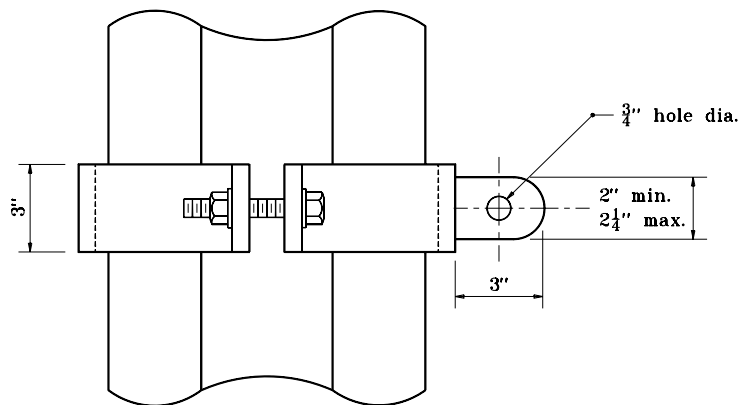
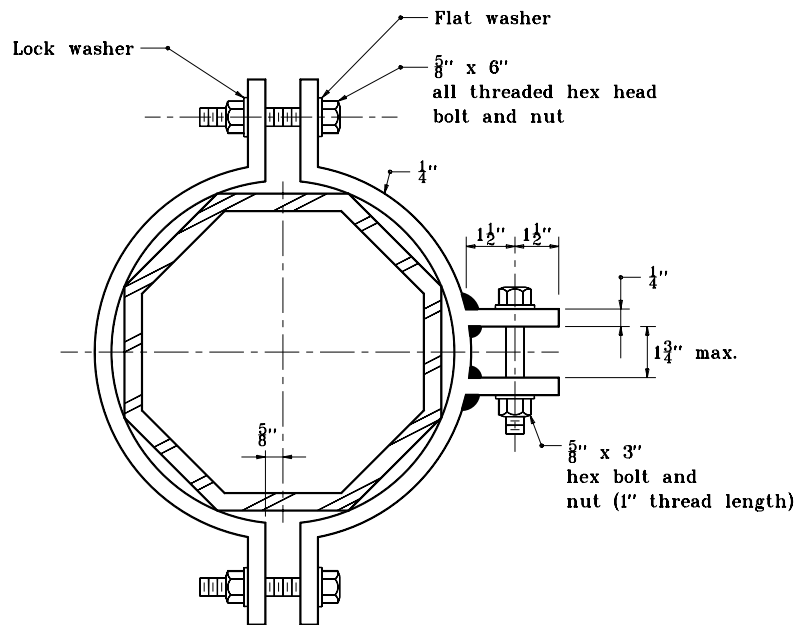
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 3-01-95

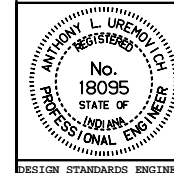


**REQUIRES TWO POLE BANDS AT EACH POSITION  
ON POLE (SIX BANDS PER POLE)**

INDIANA DEPARTMENT OF TRANSPORTATION

**POLE BAND FOR  
SIGNAL STEEL STRAIN POLE**  
SEPTEMBER 1998

**STANDARD DRAWING NO. E 805-SGSP-03**



DETAILS PLACED IN THIS FORMAT 11-15-99

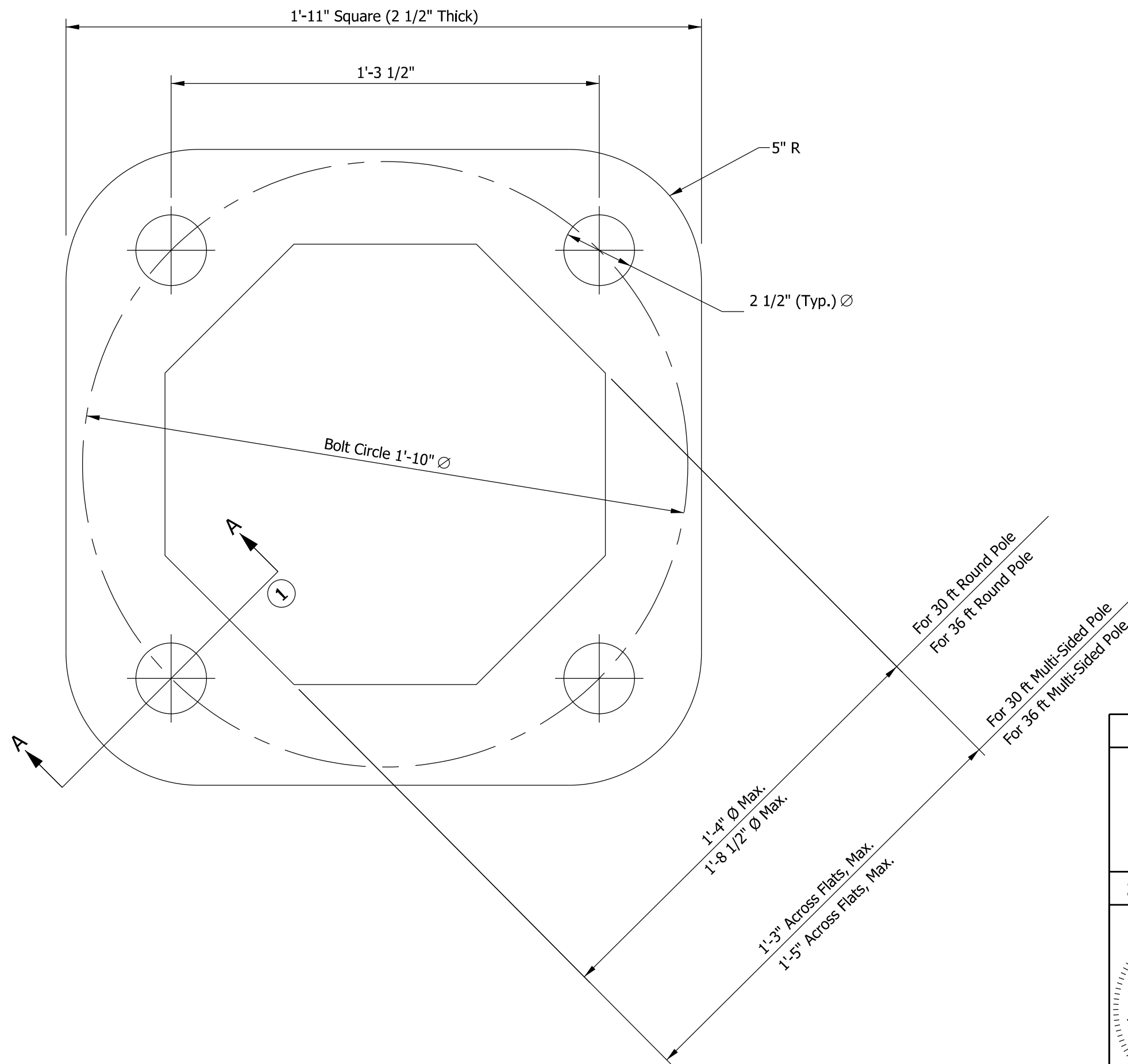
/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-98





**NOTES:**

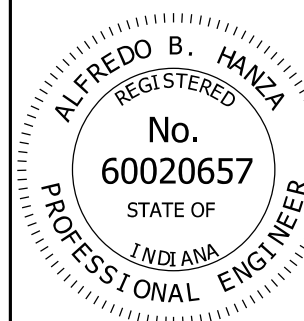
- ① See Standard Drawing E 805-SGSP-05 for Section A-A.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL STEEL STRAIN POLE  
BASE PLATE

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGSP-04

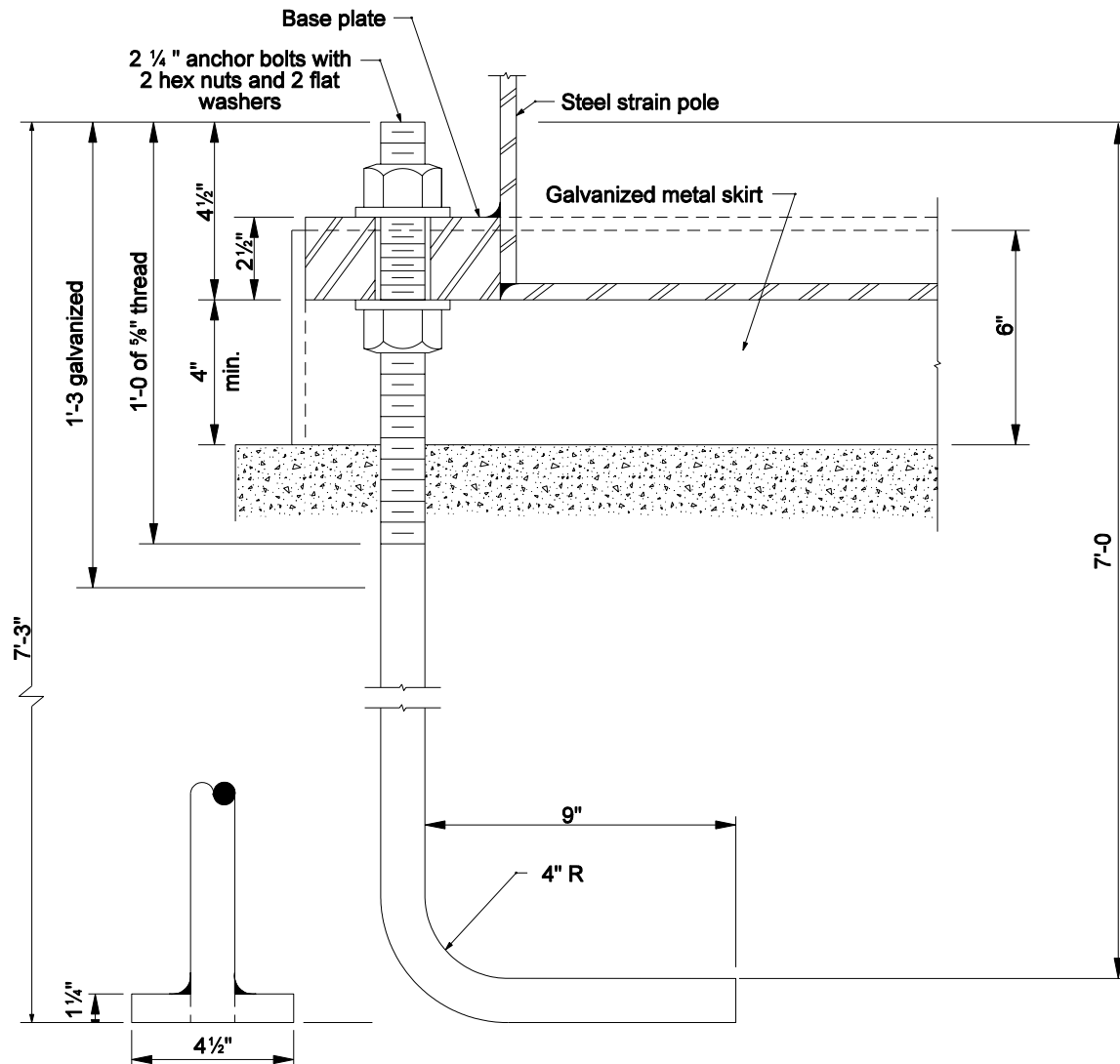


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE




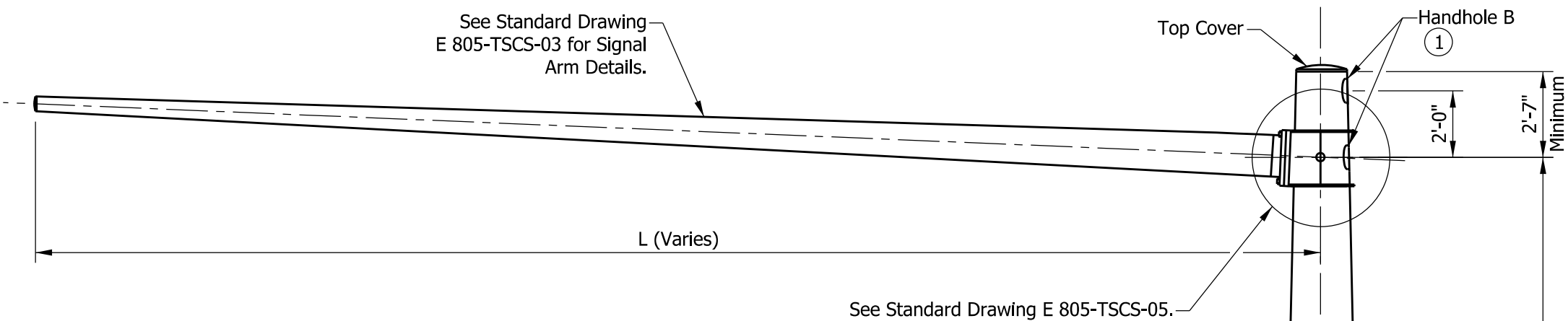
**ALTERNATIVE**  
1 1/4" x 4 1/2" square plate tapped  
& welded to anchor bolt

**SECTION A-A**

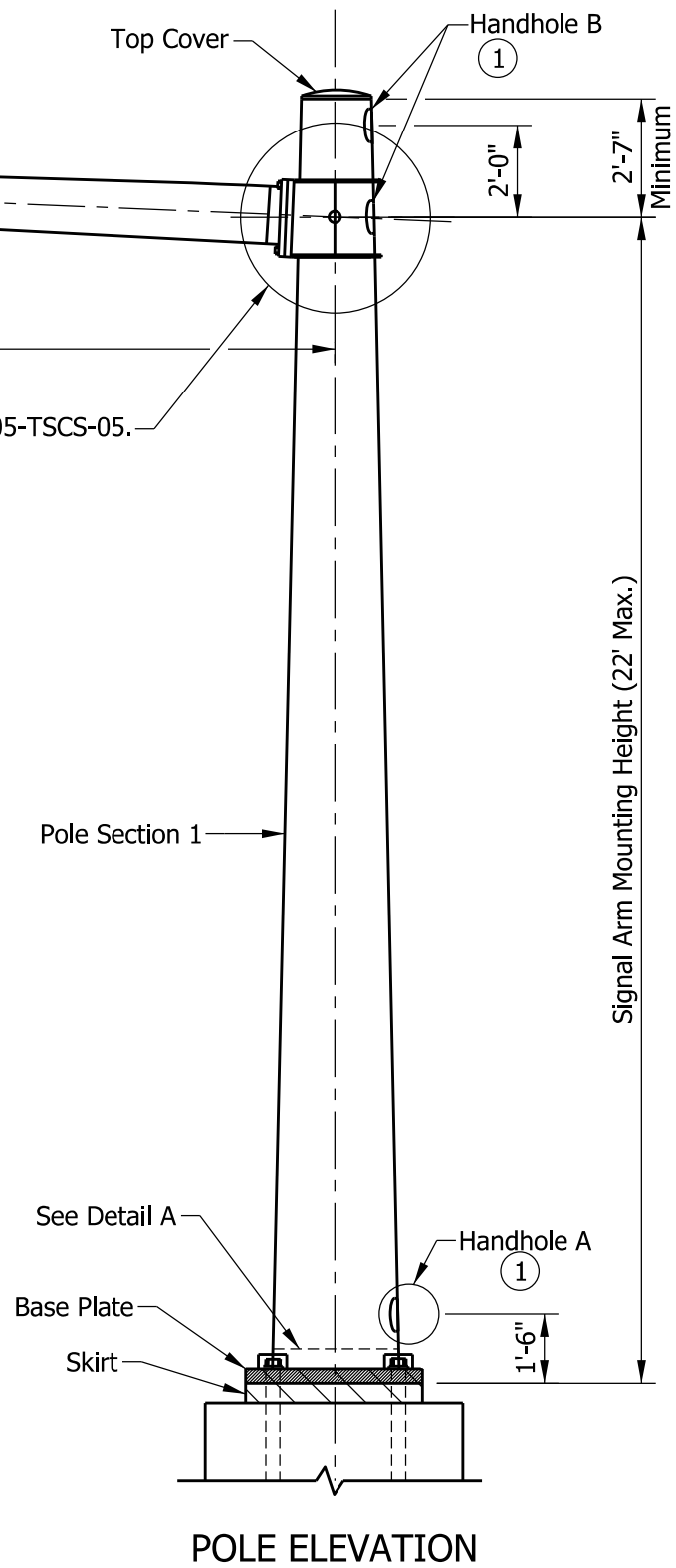
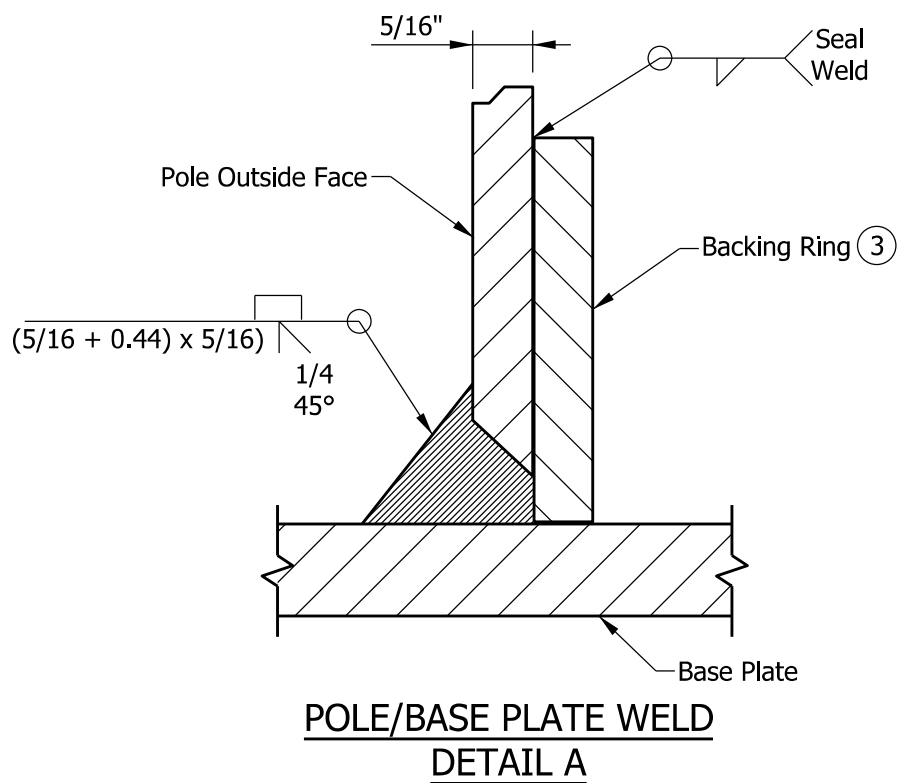
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>ANCHOR BOLT DETAIL FOR SIGNAL STEEL STRAIN POLES</b>	
MARCH 2004	
STANDARD DRAWING NO. E 805-SGSP-05	
	/s/ Richard L. VanCleave 3/01/04 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 3/01/04 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

INDEX	
SHEET NO.	SUBJECT
1	Drawing Index
2	Single Signal Arm Pole Elevation, Dimensions, and Base Plate Weld Detail
3	Signal Arm Dimensions & Details
4	Signal Arm Pole Base Plate, Bottom Splice Plates, and Pole Top Cover Details
5	Signal Arm Connection Details
6	Handhole Details
7	Placement of Signals and Signs, Loading for Arm of 35' or Less
8	Placement of Signals and Signs, Loading for Arm of Greater Than 35' to 60'
9	Combination Pole Elevation, Dimensions, and Base Plate Weld Detail
10	Combination Arm Dimensions & Details
11	Combination Arm Connection Details
12	Combination Pole Splice Details for Arms 35' or Less
13	Combination Pole Splice Details for Arm of Greater Than 35' to 60'
14	Combination Arm Loading for Arm of 35' or Less
15	Combination Arm Loading for Arm of Greater Than 35' to 60'
16	Drilled Shaft Foundation Type A for Arm of 35' or Less
17	Drilled Shaft Foundation Type B for Arm of Greater Than 35' to 60'
18	Spread Footing Foundation Type C for Arm of 35' or Less
19	Spread Footing Foundation Type D for Arm of Greater Than 35' to 60'

INDIANA DEPARTMENT OF TRANSPORTATION									
TRAFFIC SIGNAL CANTILEVER STRUCTURE DRAWING INDEX									
SEPTEMBER 2013									
STANDARD DRAWING NO.     E 805-TSCS-01									
	<table><tr><td><i>/s/ Alfredo B. Hanza</i></td><td><i>02/05/13</i></td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td><i>/s/ Mark A. Miller</i></td><td><i>03/27/13</i></td></tr><tr><td>CHIEF ENGINEER</td><td>DATE</td></tr></table>	<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>	DESIGN STANDARDS ENGINEER	DATE	<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>	CHIEF ENGINEER	DATE
<i>/s/ Alfredo B. Hanza</i>	<i>02/05/13</i>								
DESIGN STANDARDS ENGINEER	DATE								
<i>/s/ Mark A. Miller</i>	<i>03/27/13</i>								
CHIEF ENGINEER	DATE								



POLE DIMENSIONS		
CANTILEVER ARM LENGTH L	SECTION 1	
	BASE DIAMETER	WALL THICKNESS
15' to 35'	17"	5/16"
>35' to 60'	24"	5/16"



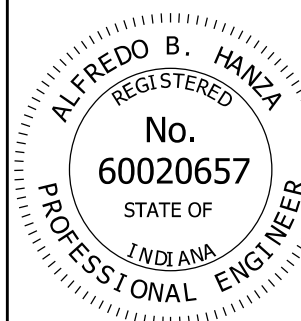
**NOTES:**

- 1 See Standard Drawing E 805-TSCS-06 for handhole details.
- 2 See Standard Drawing E 805-SGGR-01 to -03 for grounding details.
- 3 Use continuous backing ring, 5/16" x 2" minimum. Tack weld only in root area of final weld.

INDIANA DEPARTMENT OF TRANSPORTATION

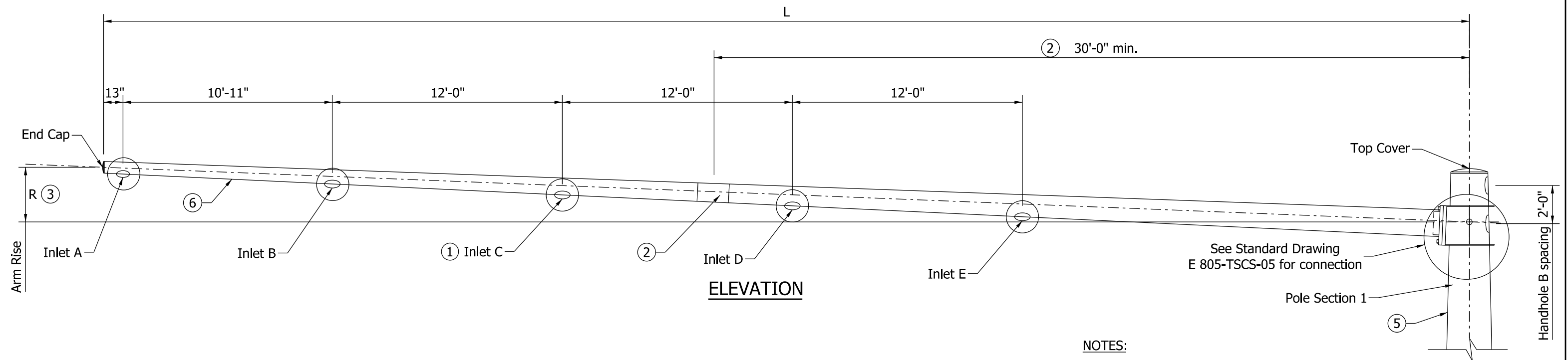
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SINGLE SIGNAL ARM POLE ELEVATION,  
DIMENSIONS, AND BASE PLATE WELD DETAIL  
SEPTEMBER 2014

STANDARD DRAWING NO. E 805-TSCS-02



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

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

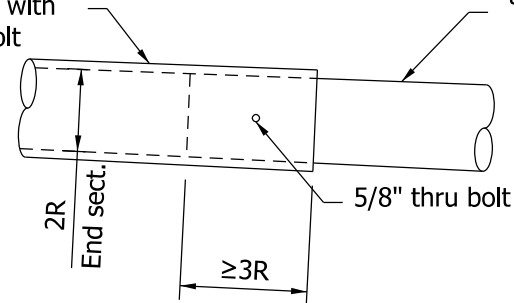


**ELEVATION**

**NOTES:**

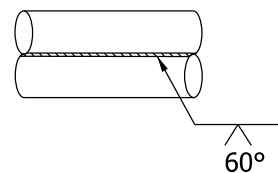
- ① Number of cable inlets depends on arm L (See Arm Dimensions Table). The inlet diameter shall be 1 3/4" with rubber grommet (Typ.)
- ② Optional splice can be used for arm length of greater than 40'. Field assembly shall achieve a snug tight joint, with minimum overlap not less than 1.5 times the inside dimension of the end section.
- ③ Arm rise R is measured in the undeflected position without vertical loads on the arm.
4. See Standard Drawings E 805-TSCS-07 and -08 for placement of signal and signs for each arm length.
- ⑤ If seam welds are used, the weld location for the arms shall be along the bottom, and on the side of pole as shown.

End section extension with wall thickness 3/16" min. and with drilled hole for 5/8" bolt



Base section with wall thickness 5/16" and field drilled hole for 5/8" bolt with curved washer and lock nut

**② OPTIONAL ARM SPLICE DETAIL**



**⑤ TYPICAL SEAM WELD**

**ARM DIMENSIONS TABLE**

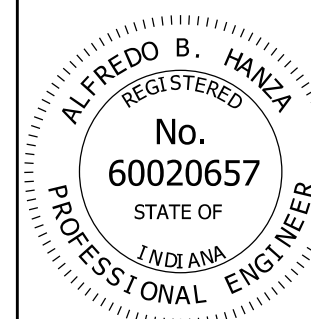
L (ft.)	ARM DIAMETER AT POLE	ARM WALL THICKNESS (in.)	R (in.)	CABLE INLETS
15	8"	5/16"	7 1/2"	A, B
20	10"	5/16"	10"	A, B
25	11"	5/16"	1'-0 1/2"	A, B
30	13"	5/16"	1'-3"	A, B
35	14"	5/16"	1'-5 1/2"	A, B, C
40	15"	5/16"	1'-8"	A, B, C
45	17"	5/16"	1'-10 1/2"	A, B, C
50	19"	5/16"	2'-1"	A, B, C, D
55	20"	5/16"	2'-3 1/2"	A, B, C, D
60	21"	5/16"	2'-6"	A, B, C, D, E

**INDIANA DEPARTMENT OF TRANSPORTATION**

**TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SIGNAL ARM DIMENSIONS & DETAILS**

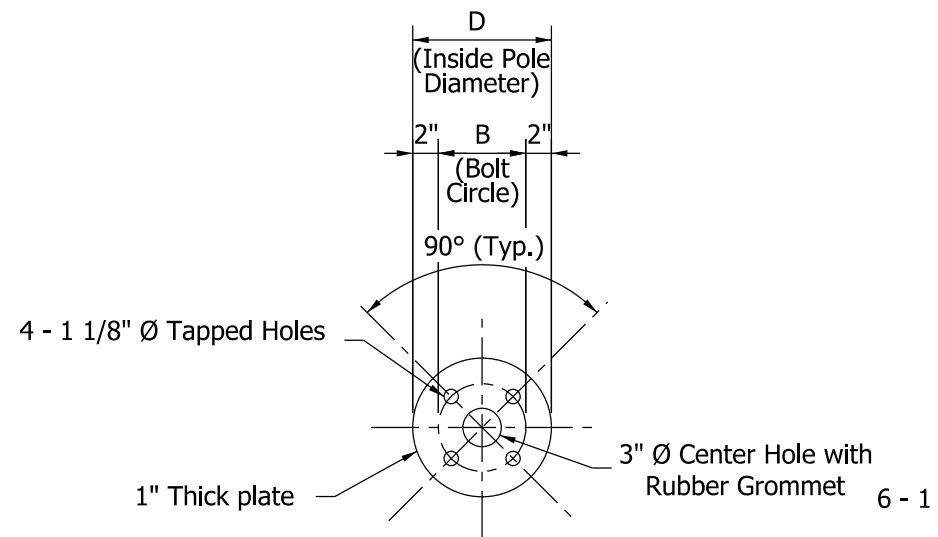
**SEPTEMBER 2013**

**STANDARD DRAWING NO. E 805-TSCS-03**

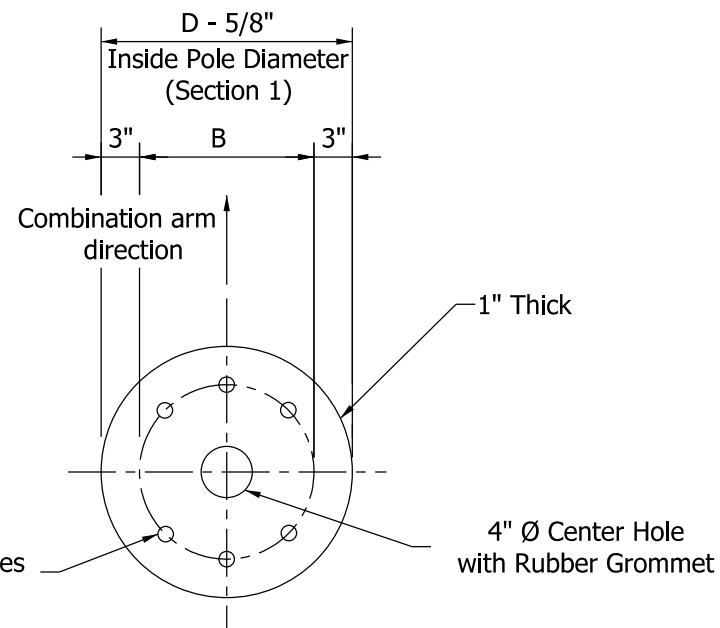


/s/ *Alfredo B. Hanza* 02/05/13  
DESIGN STANDARDS ENGINEER DATE

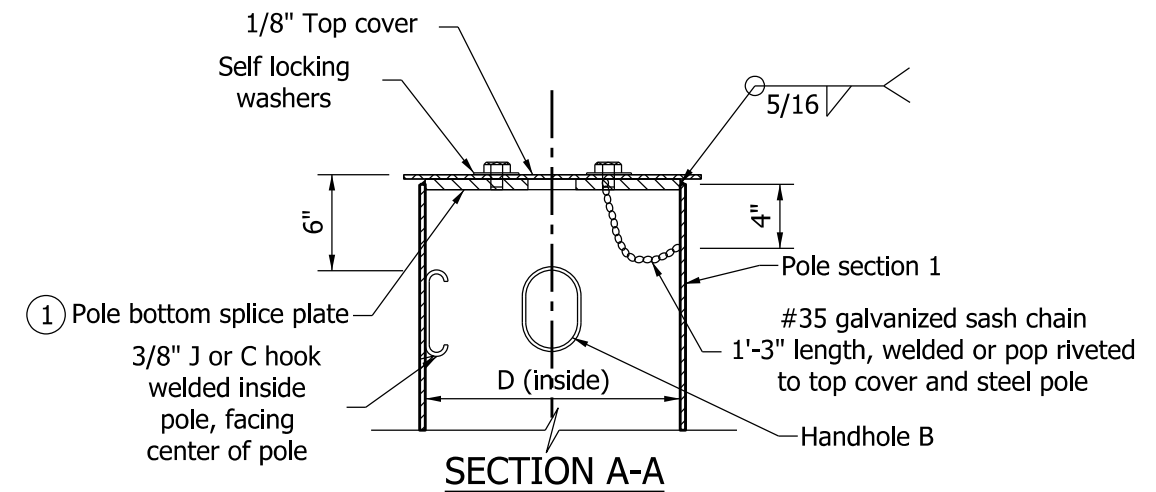
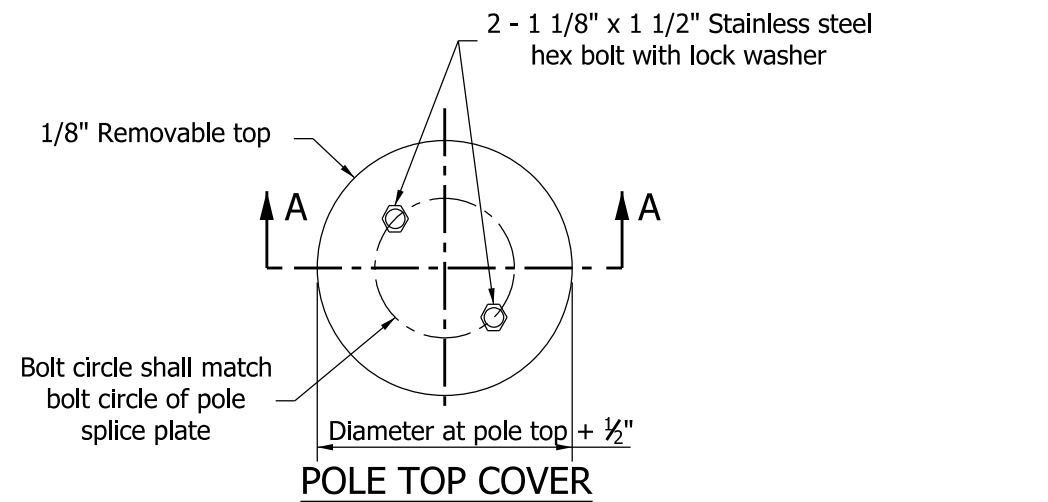
/s/ *Mark A. Miller* 03/27/13  
CHIEF ENGINEER DATE



① **BOTTOM SPLICE PLATE**  
(For Cantilever Arm Length of 35' or Less)

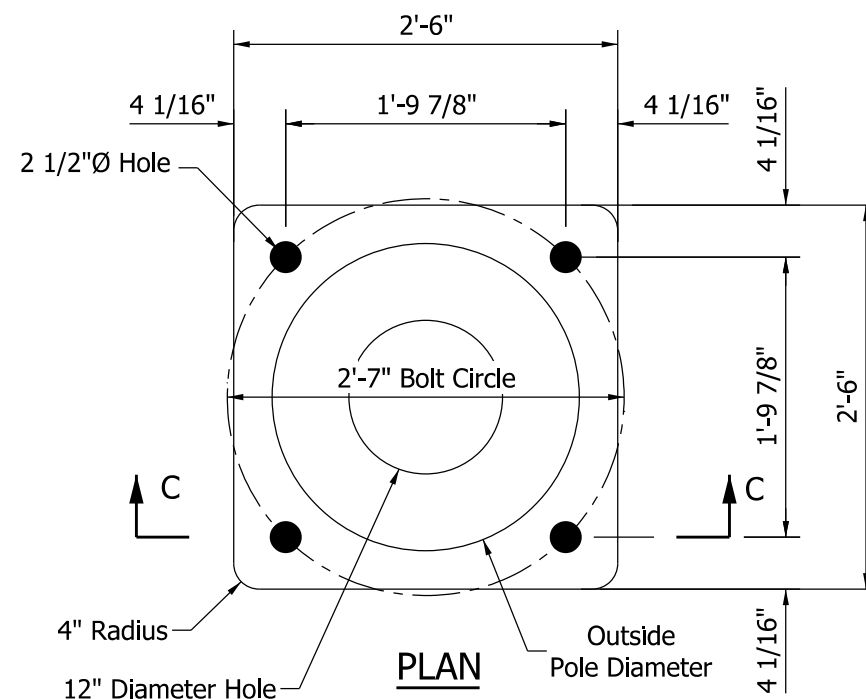
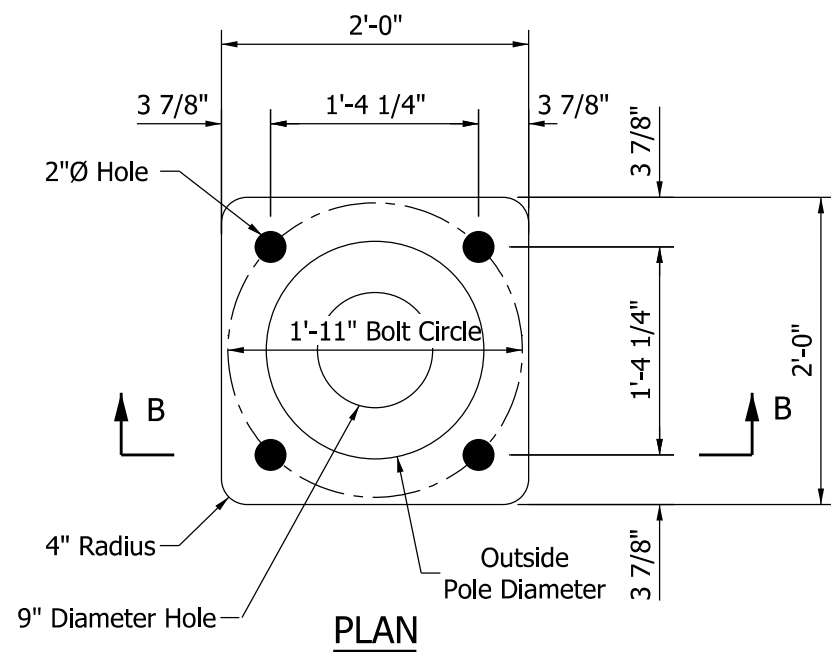


① **BOTTOM SPLICE PLATE**  
(For Cantilever Arm Length Greater Than 35' to 60')

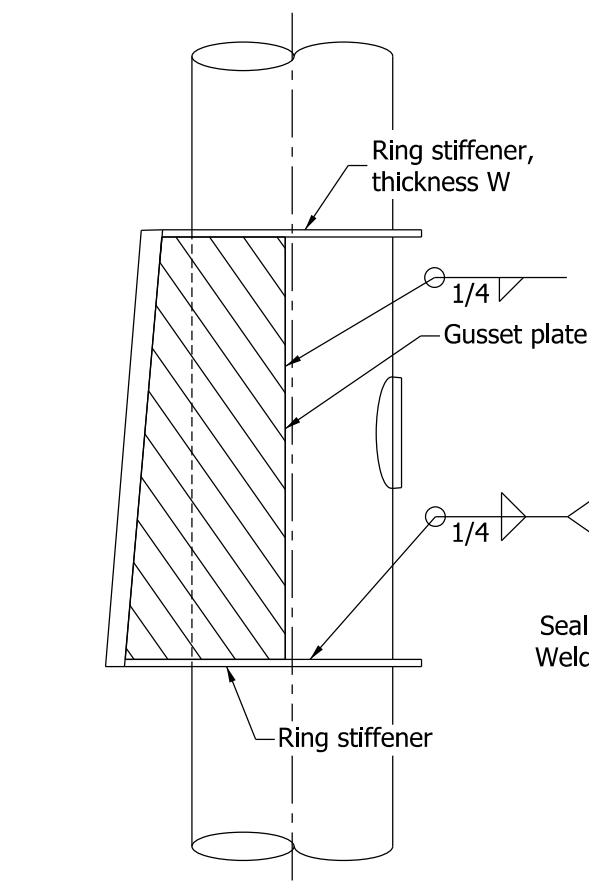


**NOTES:**

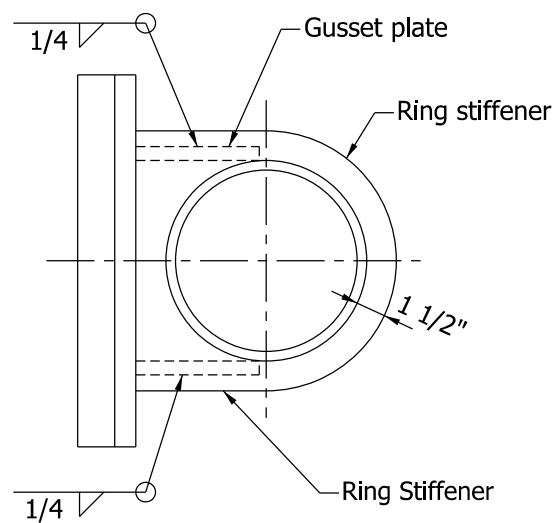
- ① See Standard Drawings E 805-TSCS-12 and -13 for bottom splice details.
2. Bolt circle shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.



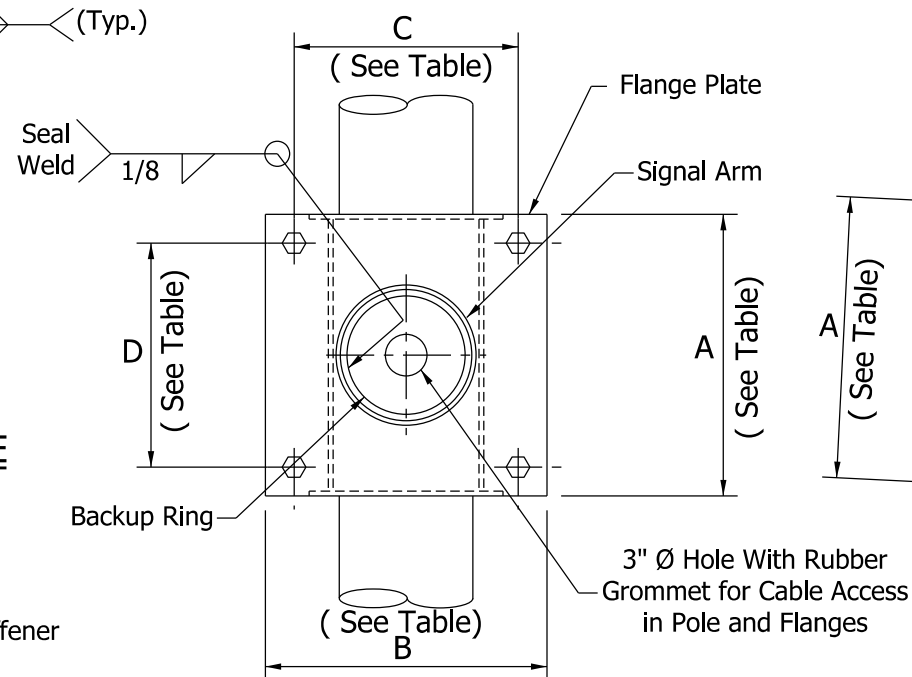
INDIANA DEPARTMENT OF TRANSPORTATION			
TRAFFIC SIGNAL CANTILEVER STRUCTURE SIGNAL ARM POLE BASE PLATE, BOTTOM SPLICE PLATES, AND POLE TOP COVER DETAILS SEPTEMBER 2013			
STANDARD DRAWING NO.		E 805-TSCS-04	
	/s/ Alfredo B. Hanza		03/26/13
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Mark A. Miller		03/27/13
	CHIEF ENGINEER		DATE



**ELEVATION OF GUSSET PLATE**



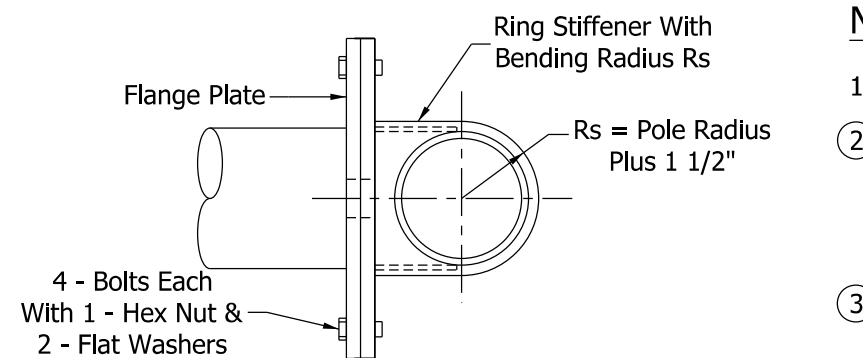
**TOP OF GUSSET PLATE**



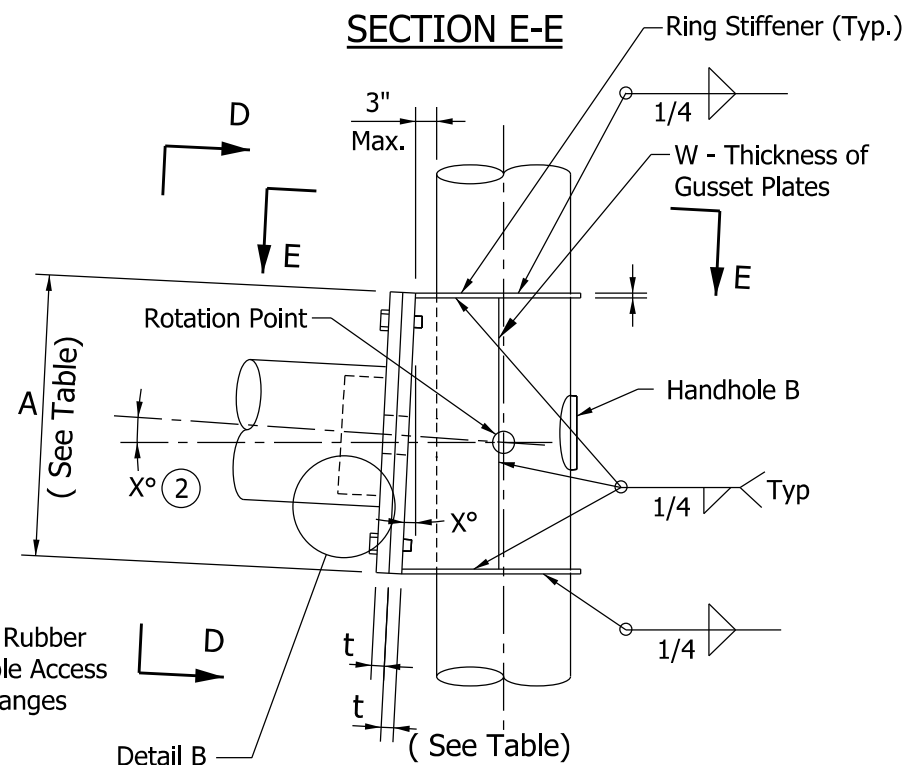
**SECTION D-D**

**SIGNAL ARM CONNECTION DETAIL**

PLATES AND BOLTS FOR SIGNAL SINGLE ARM CANTILEVER					
ARM LENGTH	FLANGE PLATE A x B	BOLT PATTERN C x D	RING STIFFNER GUSSET PLATE W	FLANGE PLATE THICKNESS t	BOLT
15' to 35'	22" x 22"	17 1/2" x 17 1/2"	3/8"	1 1/2"	1 1/8" - 7 UNC x 4 1/4" Long
>35' to 60'	33" x 33"	27 1/2" x 27 1/2"	1/2"	1 3/4"	1 1/2" - 6 UNC x 6 1/4" Long



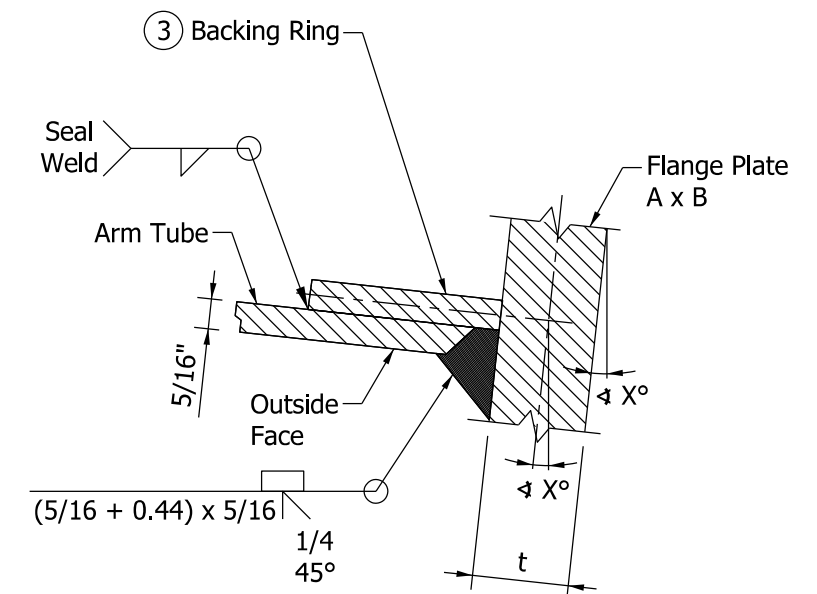
**SECTION E-E**



**ELEVATION**

**NOTES:**

1. See Standard Drawing E 805-TSCS-06 for Handhole B details.
- 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 Arm Dimension Table on Standard Drawing E 805-TSCS-03.
- 3 Use continuous backing ring, 5/16" x 2" minimum. Tack weld only in root area of final weld.



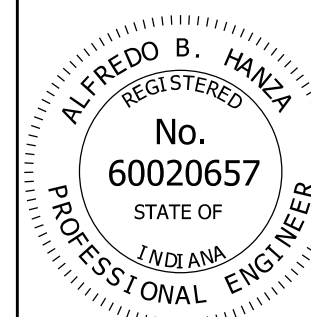
**DETAIL B - ARM WELD**

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SIGNAL ARM CONNECTION DETAILS

SEPTEMBER 2014

STANDARD DRAWING NO. E 805-TSCS-05

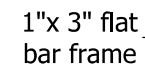


/s/ Alfredo B. Hanza 12/02/13

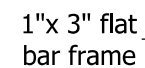
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 12/05/13

CHIEF ENGINEER DATE



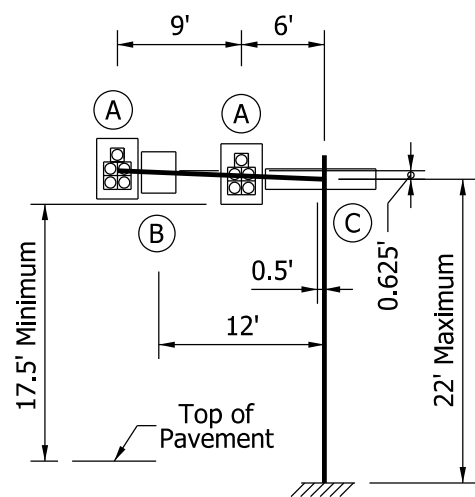
- 1 Handhole A shall be used at the base of the pole. Handhole B shall be used at all other locations.
- ② In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate with rolling direction vertical.
- 3 See Standard Drawings E 805-TSCS-02 and -09 for handhole locations.



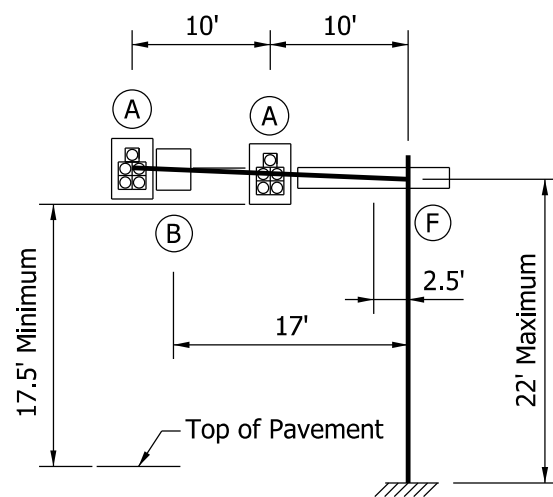
A circular professional engineer seal for Alfredo B. Hanza. The outer ring contains the text "ALFREDO B. HANZA" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by small tick marks. Inside this ring, the word "REGISTERED" is at the top. The center of the seal features the text "No. 60020657" in a large, bold font, with "STATE OF INDIANA" written below it.

CHIEF ENGINEER	DATE
----------------	------

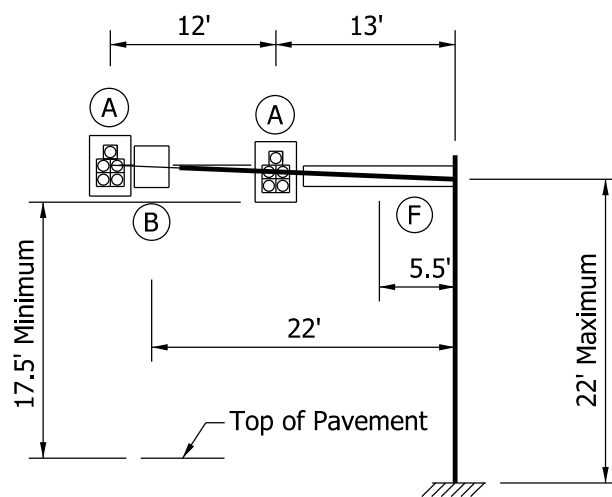




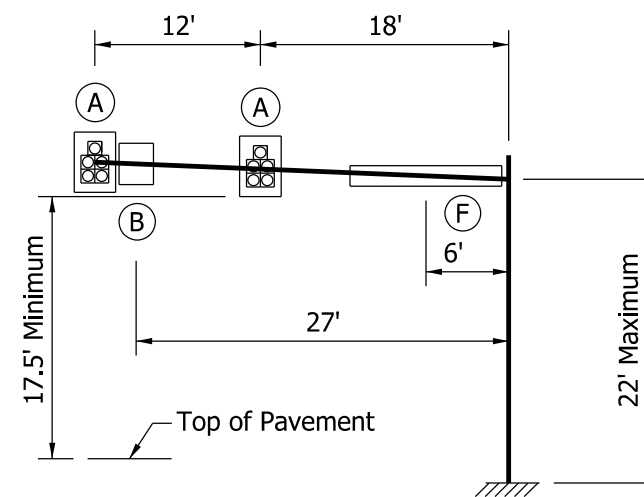
**15' ARM**



**20' ARM**



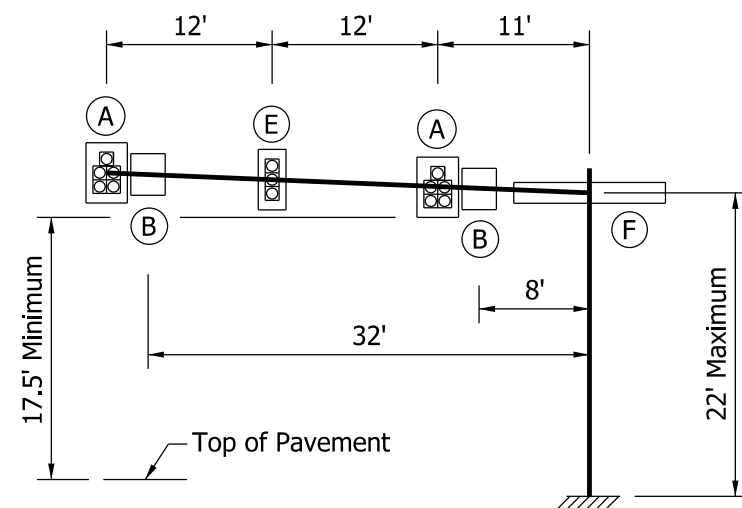
**25' ARM**



**30' ARM**

**NOTE:**

1. The structure arms and pole are designed for the above loading conditions. Foundation types A and C are designed for arms having length of 35 ft or less. See Standard Drawings E 805-TSCS-16 and -18 for foundation types A and C.



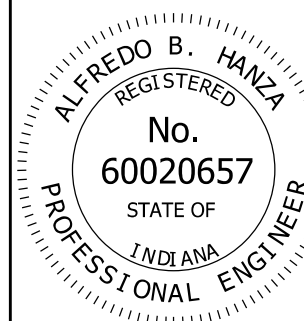
**35' ARM**

LEGEND	
Device	Description
(A)	12" - 5 Section Signal Head With Backplates
(B)	36" x 30" Regulatory Sign
(C)	18" x 96" Street Name Sign
(E)	12" - 3 Section Signal Head With Backplates
(F)	18" x 132" Street Name Sign

**INDIANA DEPARTMENT OF TRANSPORTATION**

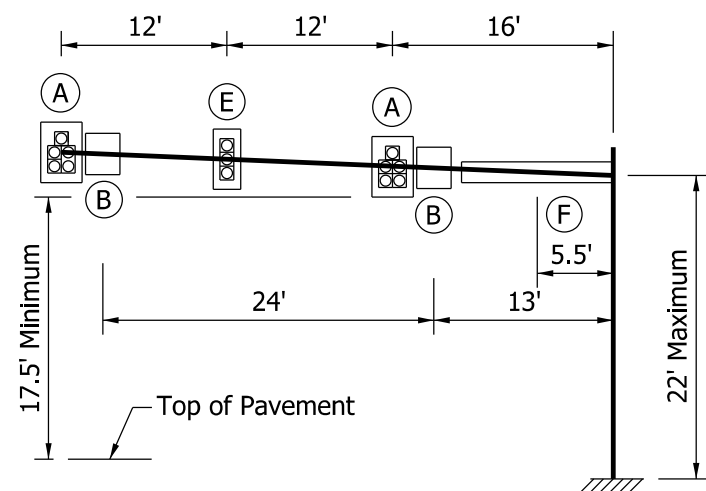
**TRAFFIC SIGNAL CANTILEVER STRUCTURE  
PLACEMENT OF SIGNALS AND SIGNS  
LOADING FOR ARM OF 35' OR LESS  
SEPTEMBER 2013**

**STANDARD DRAWING NO. E 805-TSCS-07**

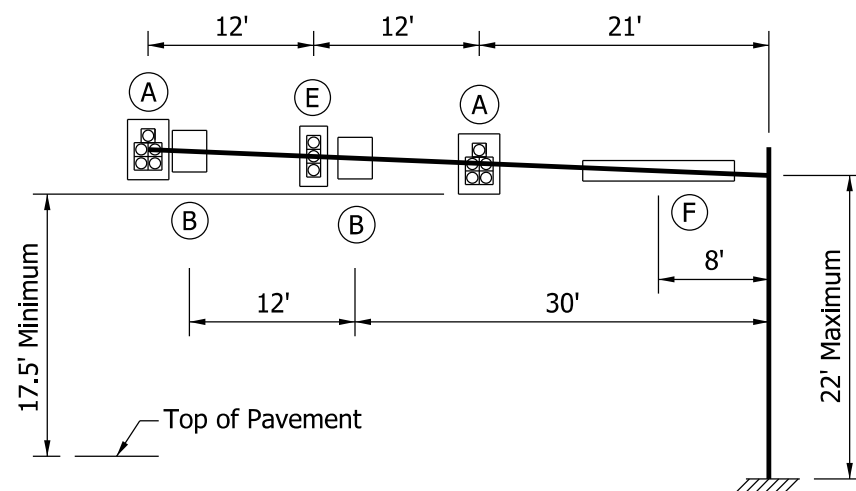


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

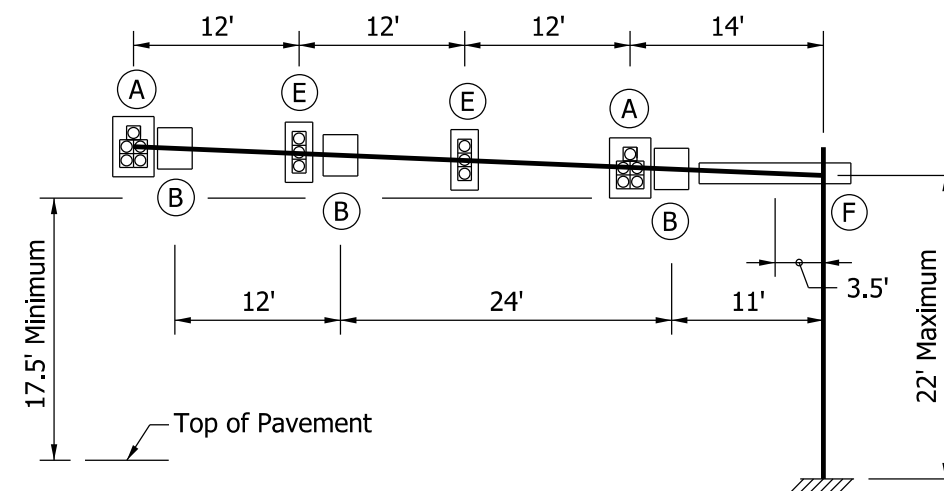
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



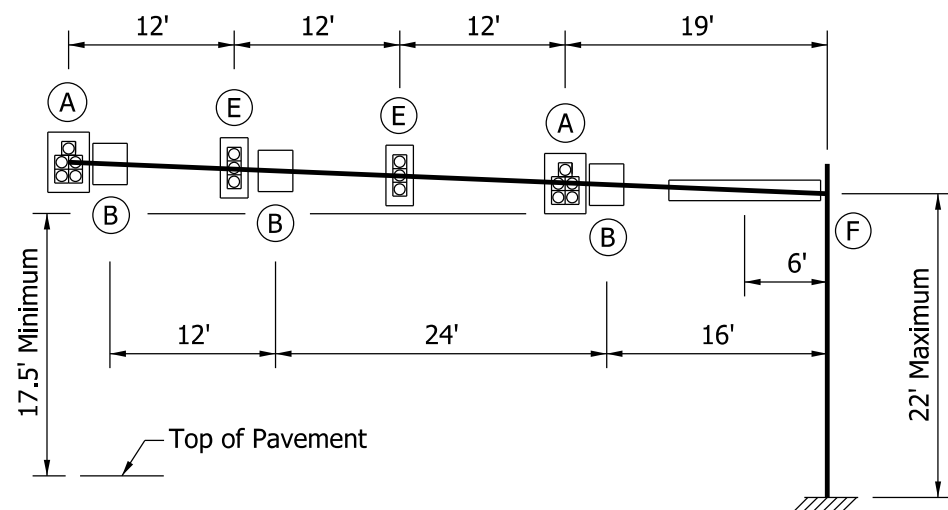
40' ARM



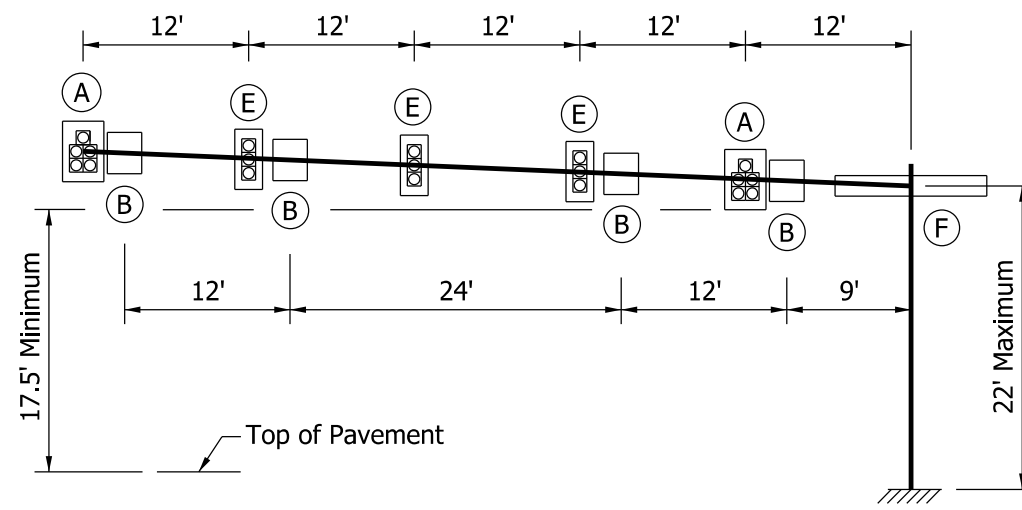
45' ARM



50' ARM



55' ARM

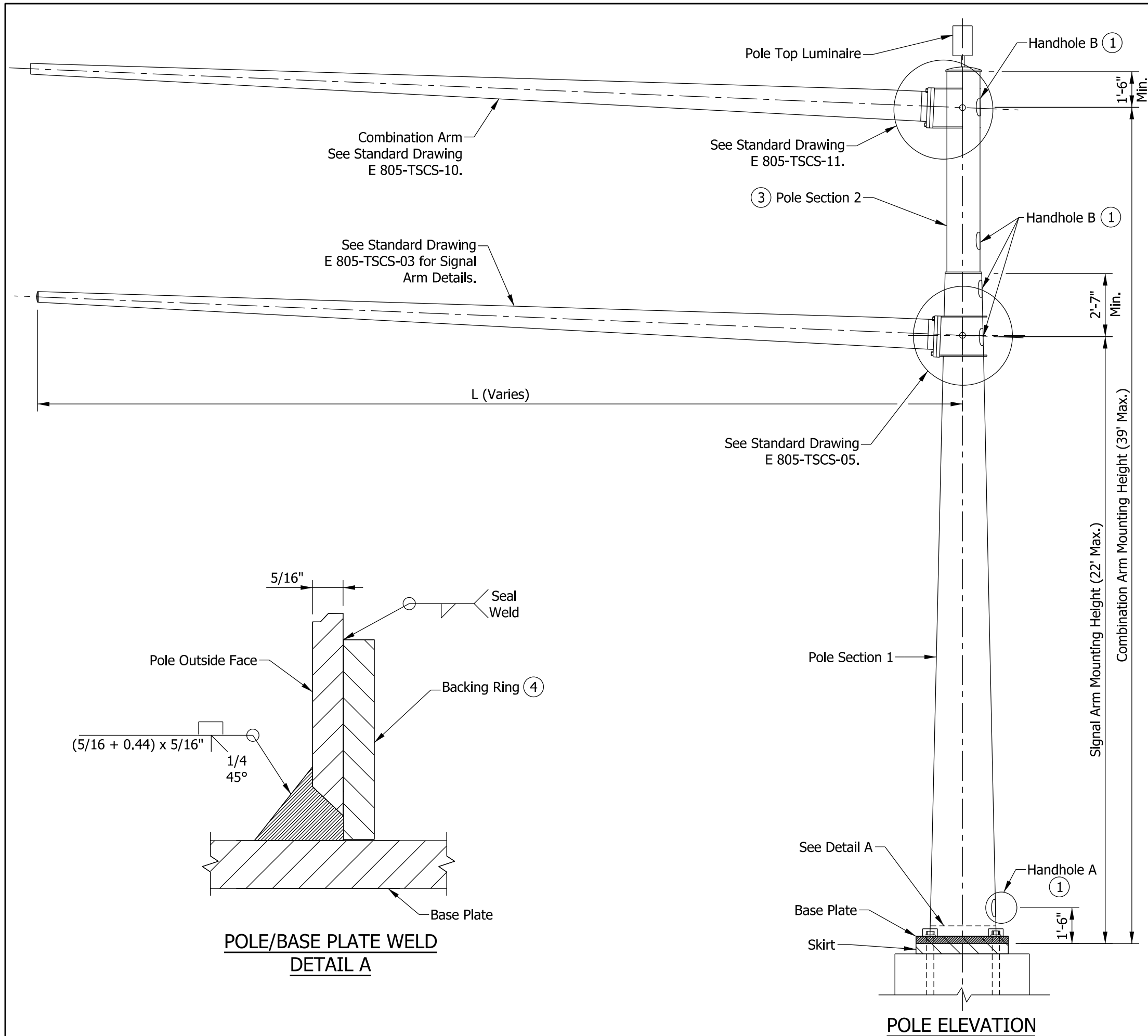


60' ARM

**NOTES:**

1. See Standard Drawing E 805-TSCS-07 for Legend.
2. The structure arms and pole are designed for the above loading conditions. Foundation types B and D are designed for arms having length of greater than 35 ft to 60 ft. See Standard Drawings E 805-TSCS-17 and -19 for foundation types B and D.

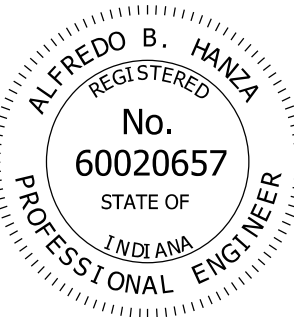
INDIANA DEPARTMENT OF TRANSPORTATION			
TRAFFIC SIGNAL CANTILEVER STRUCTURE PLACEMENT OF SIGNALS AND SIGNS LOADING FOR ARM OF GREATER THAN 35' TO 60' SEPTEMBER 2013			
STANDARD DRAWING NO.		E 805-TSCS-08	
	/s/ Alfredo B. Hanza		02/05/13
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Mark A. Miller		03/27/13
	CHIEF ENGINEER		DATE

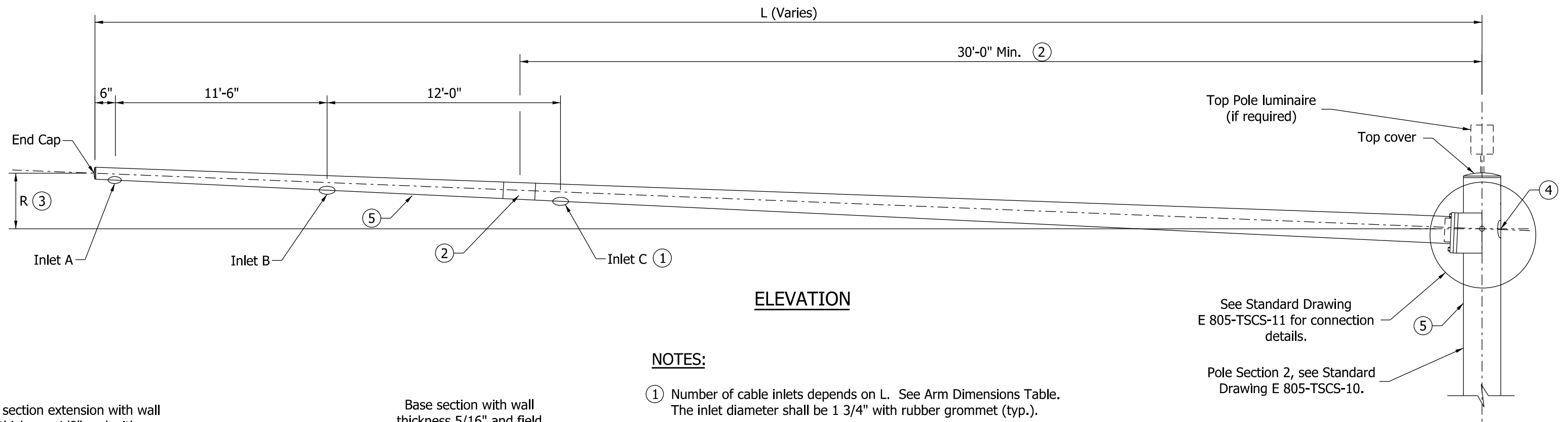


- NOTES:**
- (1) See Standard Drawing E 805-TSCS-06 for handhole details.
  - 2. See Standard Drawing E 805-SGGR-01 to -03 for grounding details.
  - (3) Base diameter of Pole Section 2 shall be equal to top diameter of Pole Section 1.
  - (4) Use continuous backing ring, 5/16" x 2" minimum. Tack weld only in root area of final weld.

**VERTICAL CLEARANCE CRITERIA:**  
Maintain 40'-0" minimum clearance from top of pavement to the camera lens.

POLE DIMENSIONS				
CANTILEVER ARM LENGTH L	POLE SECTION 1		POLE SECTION 2	
	BASE DIAMETER	WALL THICKNESS	BASE DIAMETER	WALL THICKNESS
15' to 35'	17"	5/16"	See Note (3)	1/8"
>35' to 60'	24"	5/16"	See Note (3)	1/8"

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC SIGNAL CANTILEVER STRUCTURE COMBINATION POLE ELEVATION, DIMENSIONS, AND BASE PLATE WELD DETAIL SEPTEMBER 2014	
STANDARD DRAWING NO.	E 805-TSCS-09
	<div><div>/s/ Alfredo B. Hanza12/02/13</div><div>DESIGN STANDARDS ENGINEERDATE</div><div>/s/ Mark A. Miller12/05/13</div><div>CHIEF ENGINEERDATE</div></div>

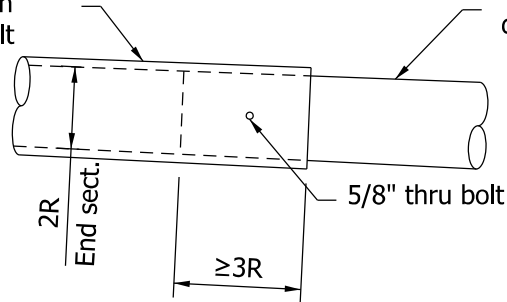


ELEVATION

NOTES:

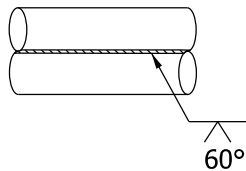
- (1) Number of cable inlets depends on L. See Arm Dimensions Table. The inlet diameter shall be 1 3/4" with rubber grommet (typ.).
- (2) Optional splice can be used for arm length of greater than 40 ft. Field assembly shall achieve a snug tight joint having overlap not less than 1.5 times the inside dimension of the end section.
- (3) Arm rise R is measured in the undeflected position without vertical loads on the arm.
- (4) See Standard Drawing E 805-TSCS-06 for handhole details.
- (5) If seam welds are used, the weld location for the arms shall be along the bottom, and on the side of the pole as shown.

End section extension with wall thickness 1/8" and with drilled hole for 5/8" bolt



Base section with wall thickness 5/16" and field drilled hole for 5/8" bolt with curved washer and lock nut

(2) OPTIONAL ARM SPLICE DETAIL



(5) TYPICAL SEAM WELD

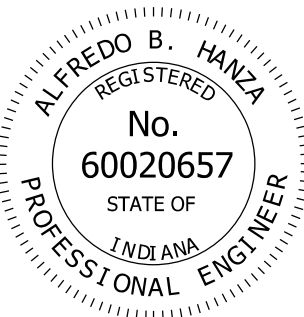
ARM DIMENSIONS TABLE				
L	ARM DIAMETER AT POLE	ARM WALL THICKNESS	R (3)	CABLE INLETS (1)
15'	5 1/2"	1/8"	7 1/2"	A
20'	5 1/2"	1/8"	10"	A
25'	7"	1/8"	1'-0 1/2"	A
30'	8"	1/8"	1'-3"	A, B
35'	8"	1/8"	1'-5 1/2"	A, B
40'	9"	1/8"	1'-8"	A, B, C
45'	10"	1/8"	1'-10 1/2"	A, B, C
50'	11"	1/8"	2'-1"	A, B, C
55'	11"	1/8"	2'-3 1/2"	A, B, C
60'	12"	1/8"	2'-6"	A, B, C

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION ARM DIMENSIONS & DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-10



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

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE

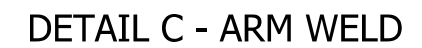


## COMBINATION ARM CONNECTION DETAIL

PLATES AND BOLTS FOR COMBINATION ARM CANTILEVER				
ARM LENGTH	FLANGE PLATE A x B	BOLT PATTERN C x D	FLANGE PLATE THICKNESS	BOLT
15' to 35'	20" x 20"	17" x 17"	1"	7/8" - 9 UNC x 3.5" Long
>35' to 60'	25" x 25"	22" x 22"	1"	7/8" - 9 UNC x 3.5" Long

NOTES:

1. See Standard Drawing E 805-TSCS-06 for handhole details.
- ② The required combination arm rise shall be built into the gusset plate at the angle X. The angle X is described as  $\arctan R/L$ , where R is the combination arm rise and L is the arm length. Both R and L vary and are listed in the Arm Dimensions Table on Standard Drawing E 805-TSCS-03.
- ③ Use continuous backing ring, 5/16" x 2" minimum. Tack weld only in root area of final weld.

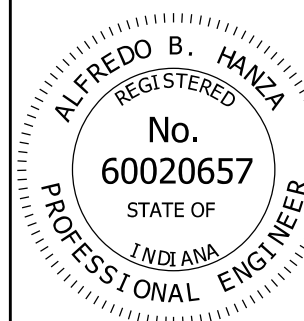


INDIANA DEPARTMENT OF TRANSPORTATION

## TRAFFIC SIGNAL CANTILEVER STRUCTURE COMBINATION ARM CONNECTION DETAILS

SEPTEMBER 2014

STANDARD DRAWING NO. E 805-TSCS-11

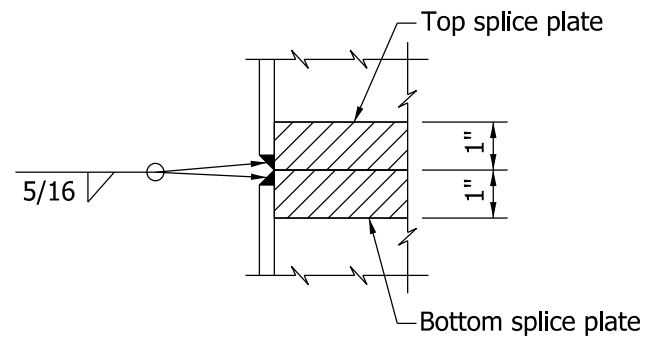


/s/ Alfredo B. Hanza 12/02/13

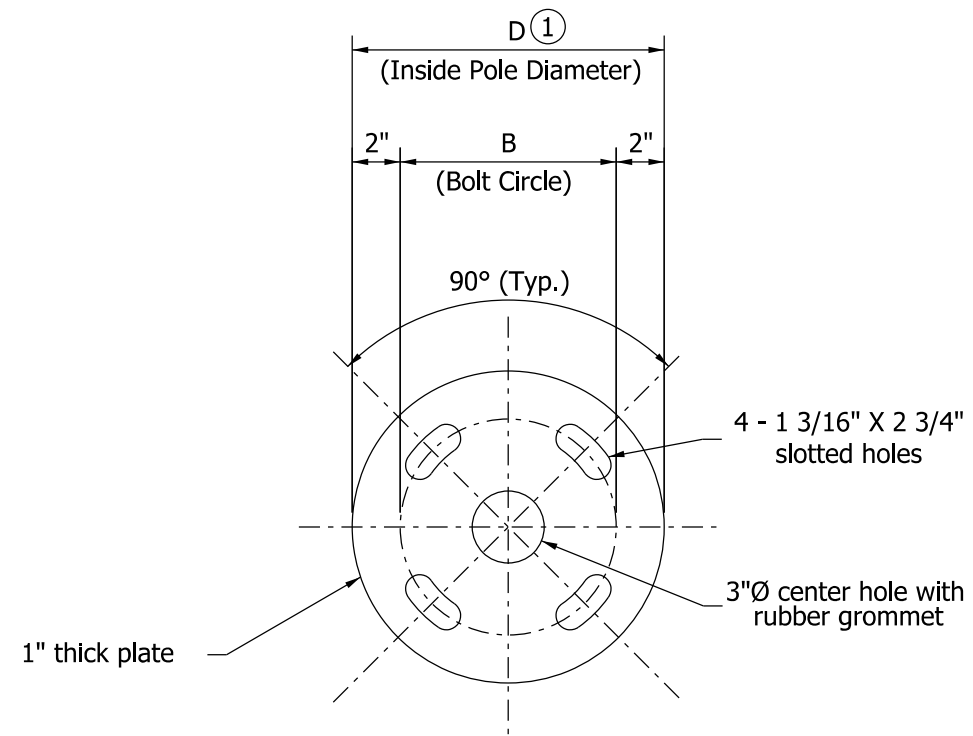
DESIGN STANDARDS ENGINEER	DATE
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/s/ Mark A. Miller 12/05/13

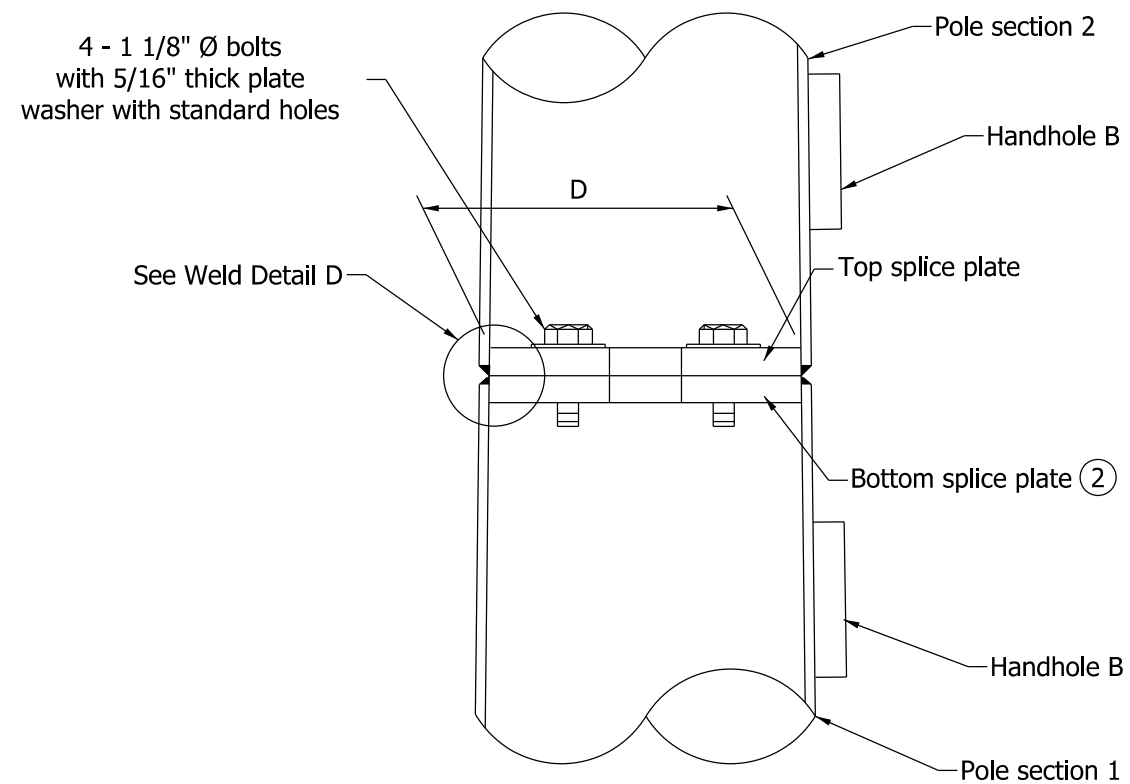
CHIEF ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_



**WELD DETAIL D**



**TOP SPLICE PLATE**



**ELEVATION**

**NOTES:**

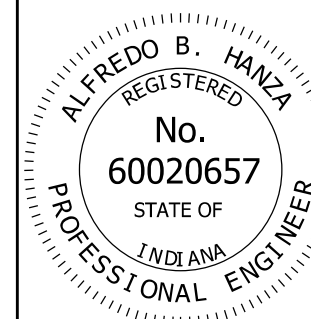
- ① See Standard Drawing E 805-TSCS-09 for pole dimensions.
- ② See Standard Drawings E 805-TSCS-04 and -13 for bottom splice plate details.
3. Diameter at the bottom of Pole Section 2 shall match the diameter at the top of Pole Section 1.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION POLE SPLICE DETAILS  
FOR ARMS 35' OR LESS

SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-12

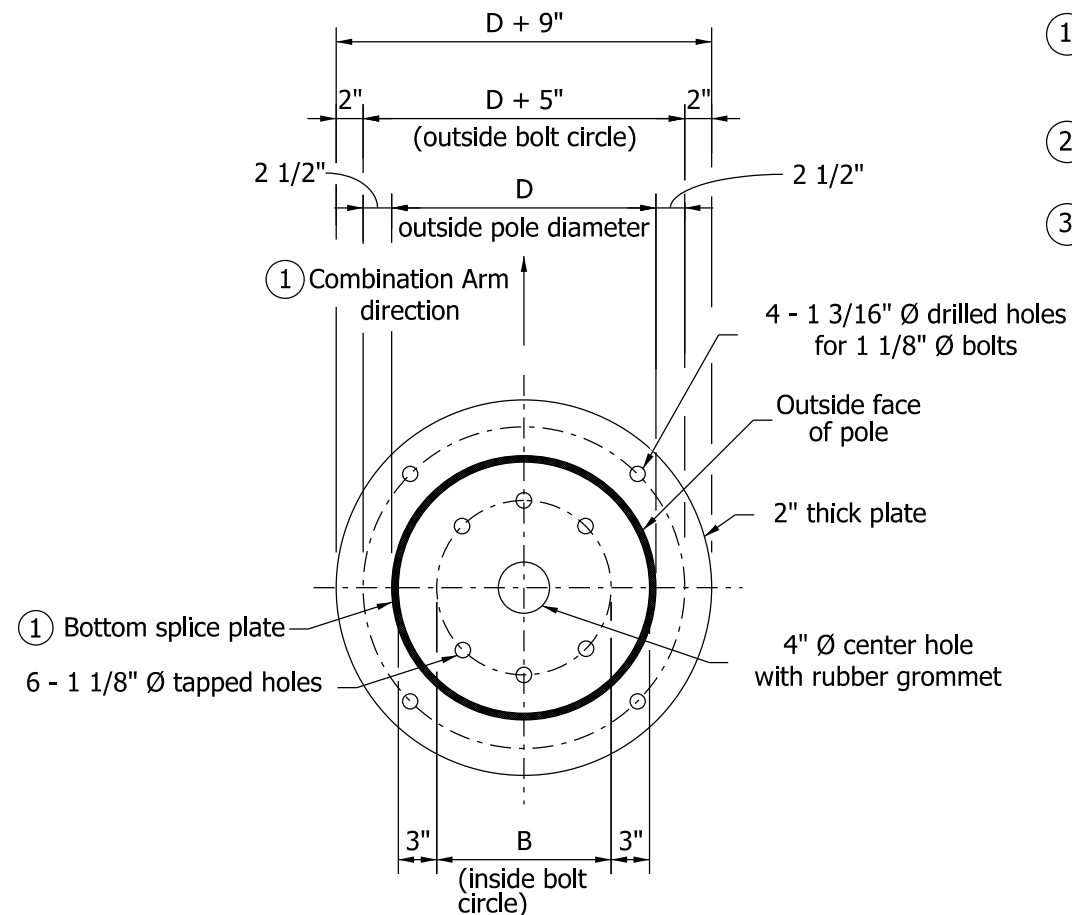
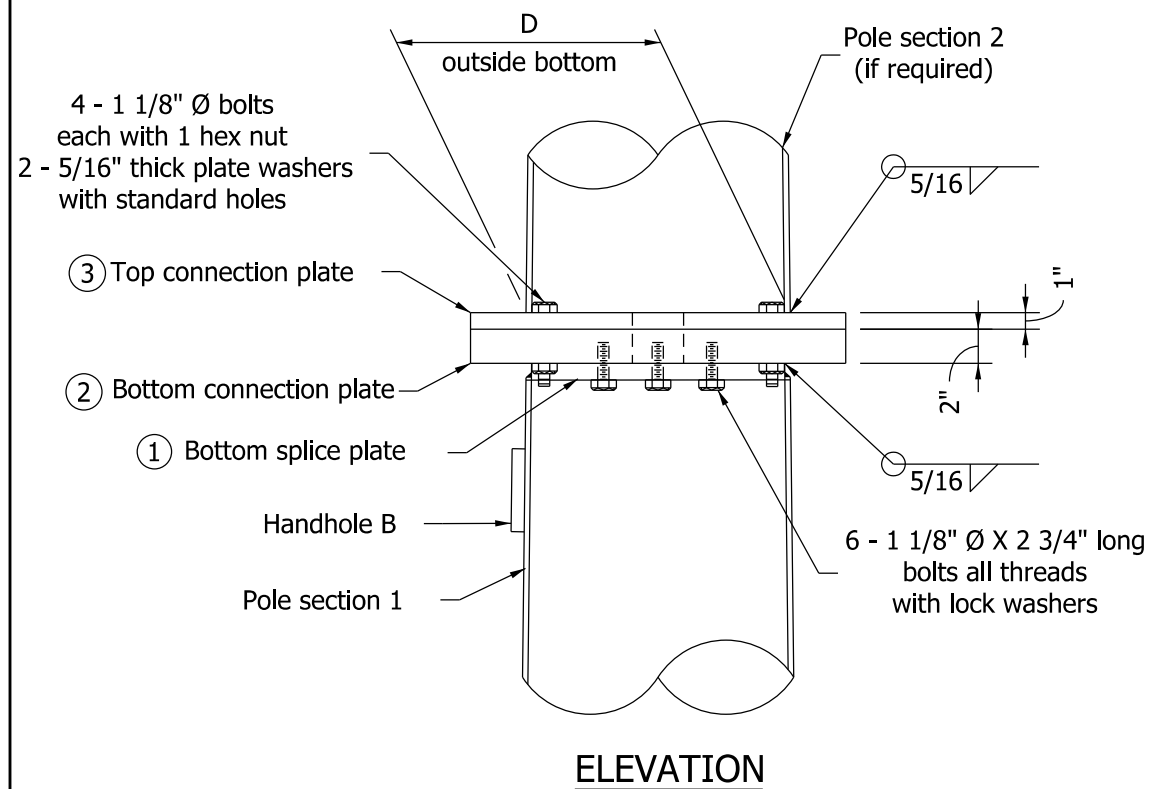
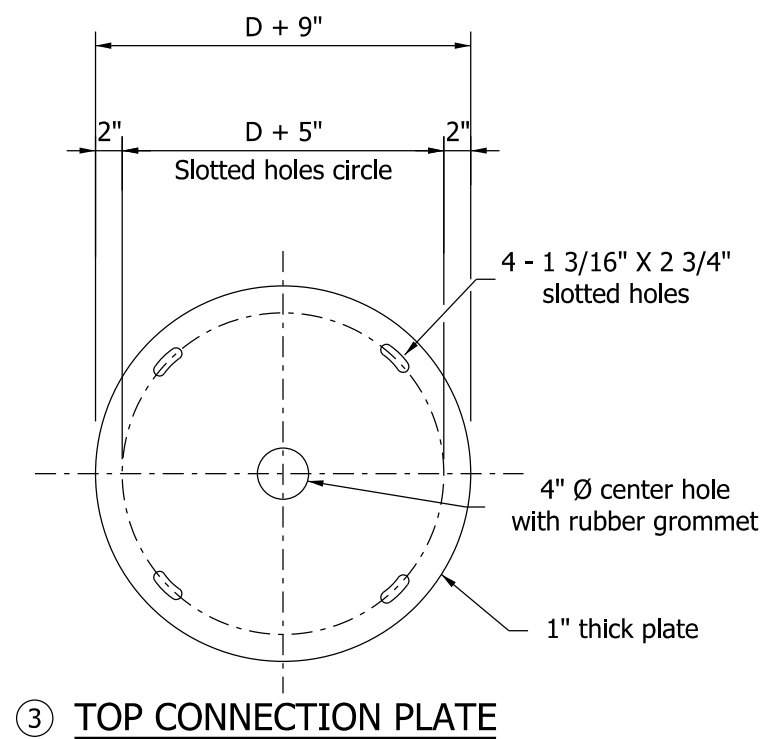


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE



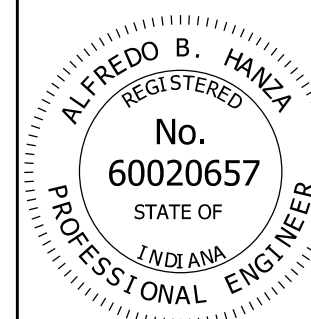
# NOTES:

- 1 Orient bottom splice and bottom connection plates with combination arm as shown on the bottom splice plate detail on Standard Drawings E 805-TSCS-04 and -12.
- 2 All plate dimensions shall be based upon the outside diameter  $D$  at the top of pole section 1.
- 3 Diameter at bottom of pole section 2 shall match the diameter at the top of pole section 1.

INDIANA DEPARTMENT OF TRANSPORTATION

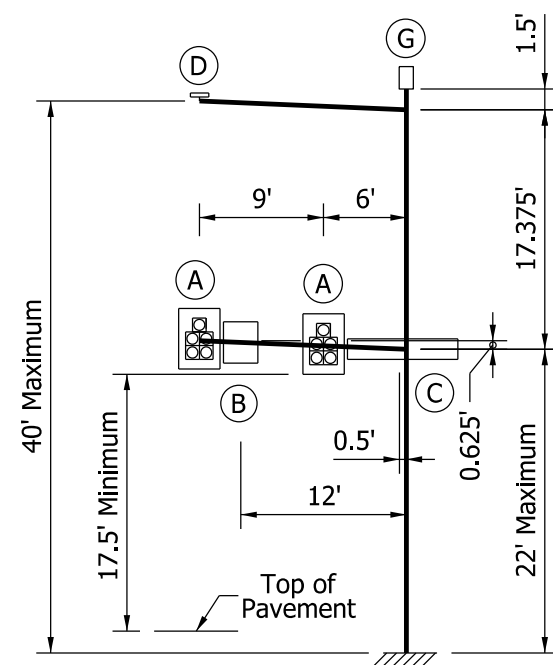
TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION POLE SPLICE DETAILS  
FOR ARM OF GREATER THAN 35' TO 60'  
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-13

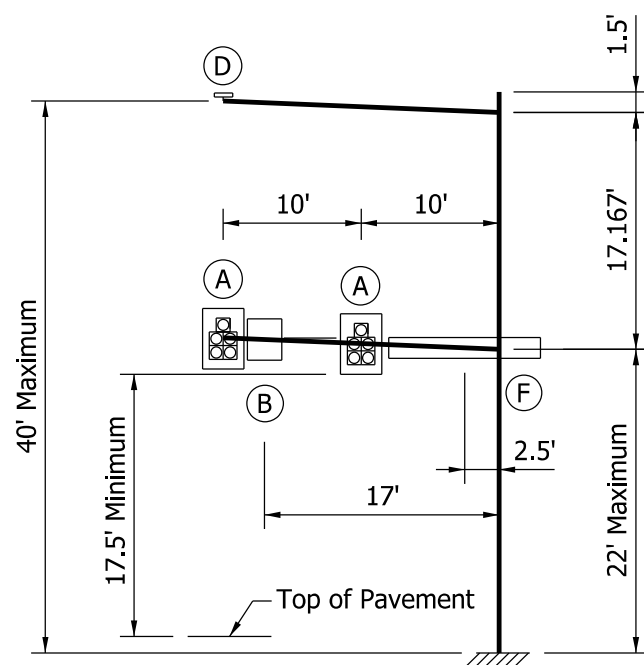


/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE

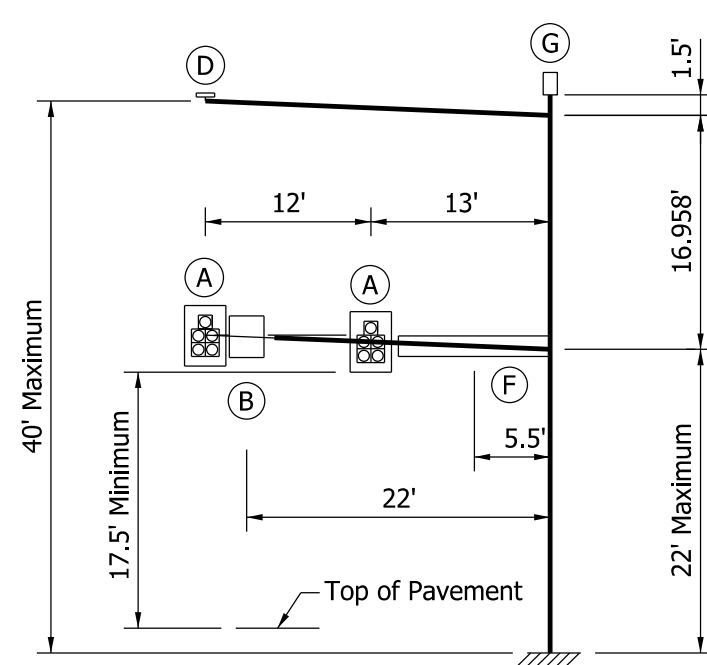
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



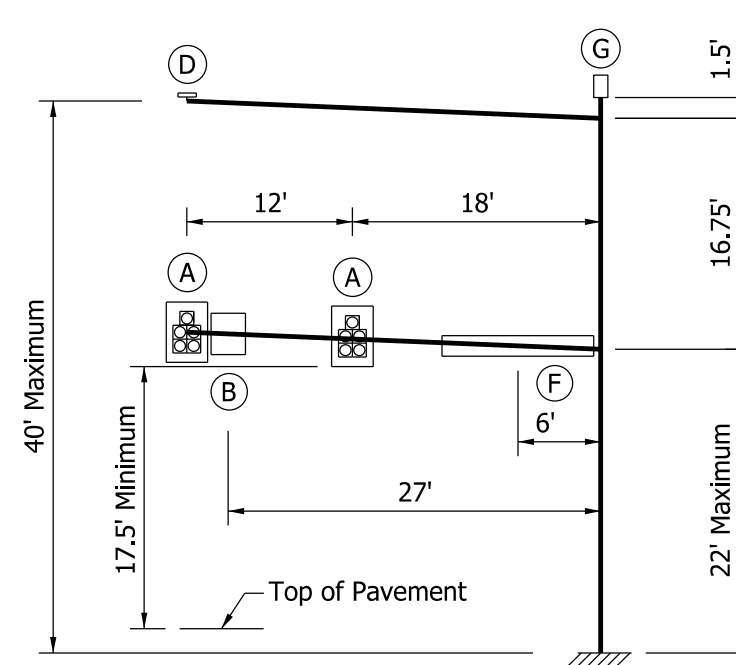
**15' ARM**



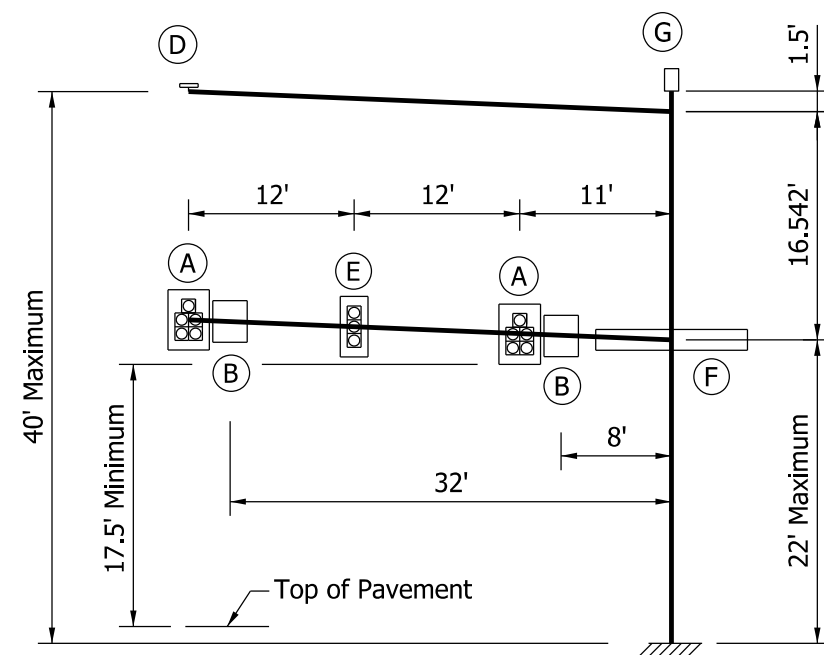
**20' ARM**



**25' ARM**



**30' ARM**



**35' ARM**

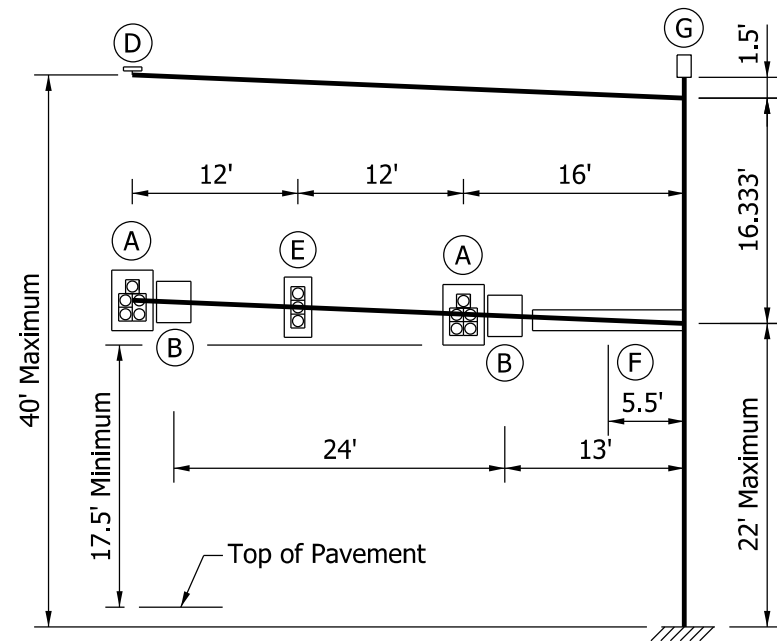
LEGEND	
DEVICE	DESCRIPTION
(A)	12" - 5 Section Signal Head With Backplates
(B)	36" x 30" Regulatory Sign
(C)	18" x 96" Street Name Sign
(D)	1 - Mounted Camera
(E)	12" - 3 Section Signal Head With Backplates
(F)	18" x 132" Street Name Sign
(G)	Top Pole Luminaire

**NOTE:**

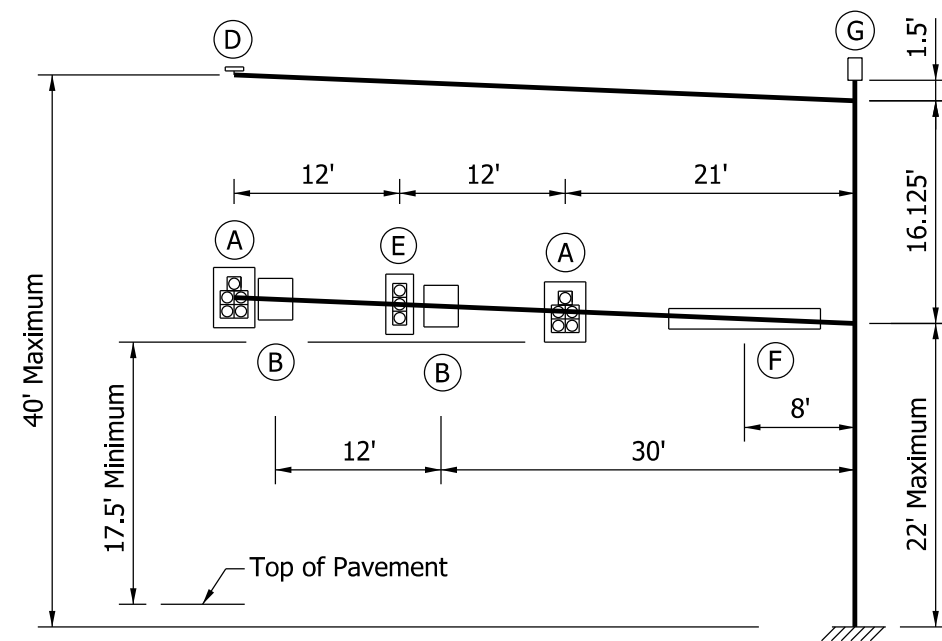
- The structure arms and pole are designed for the above loading conditions. Foundation types A and C are designed for arms having length of 35 ft or less. See Standard Drawings E 805-TSCS-16 and -18 for foundation types A and C.

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC SIGNAL CANTILEVER STRUCTURE COMBINATION ARM LOADING FOR ARM OF 35' OR LESS SEPTEMBER 2013	
STANDARD DRAWING NO.	E 805-TSCS-14
	<div> <div>/s/ Alfredo B. Hanza</div> <div>DESIGN STANDARDS ENGINEER</div> </div> <div> <div>02/05/13</div> <div>DATE</div> </div>
	<div> <div>/s/ Mark A. Miller</div> <div>CHIEF ENGINEER</div> </div> <div> <div>03/27/13</div> <div>DATE</div> </div>

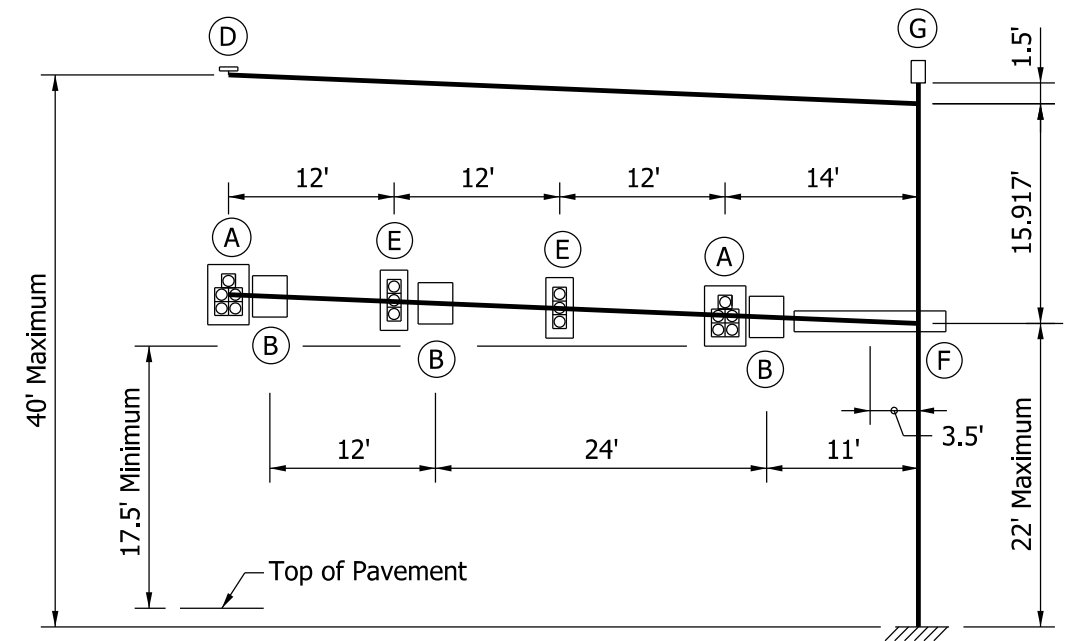




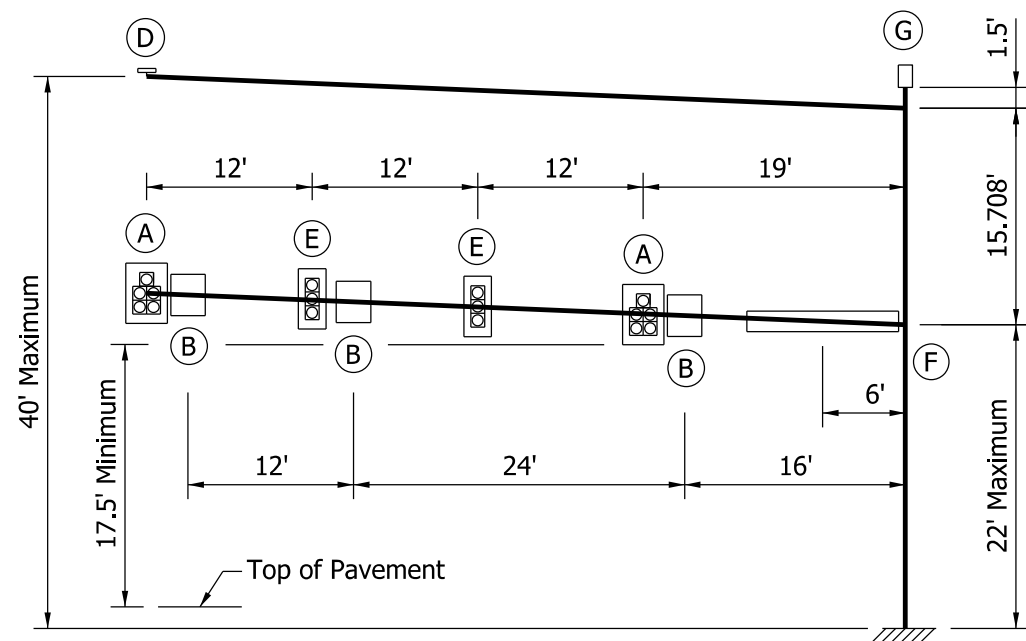
40' ARM



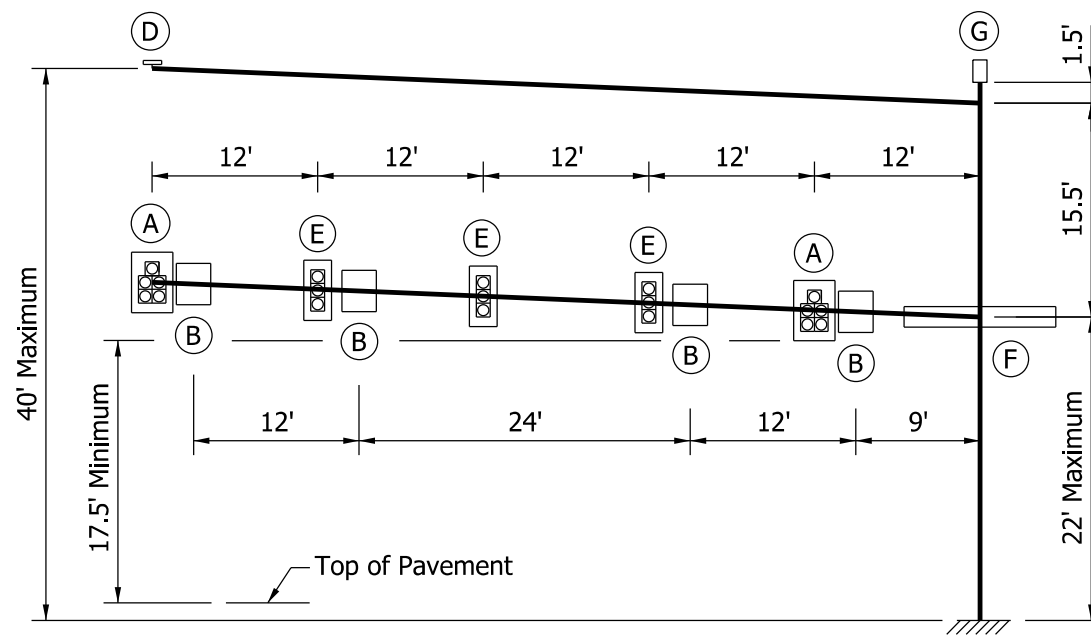
45' ARM



50' ARM



55' ARM



60' ARM

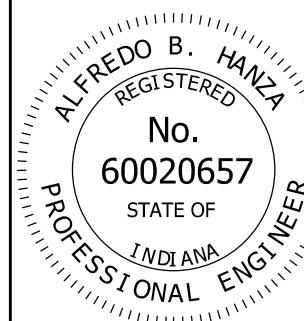
**NOTES:**

1. See Standard Drawing E 805-TSCS-14 for Legend.
2. The structure arms and pole are designed for the above loading conditions. Foundation types B and D are designed for arms having length of greater than 35 ft to 60 ft. See Standard Drawings E 805-TSCS-17 and -19 for foundation types B and D.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
COMBINATION ARM LOADING  
FOR ARM OF GREATER THAN 35' TO 60'  
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-15

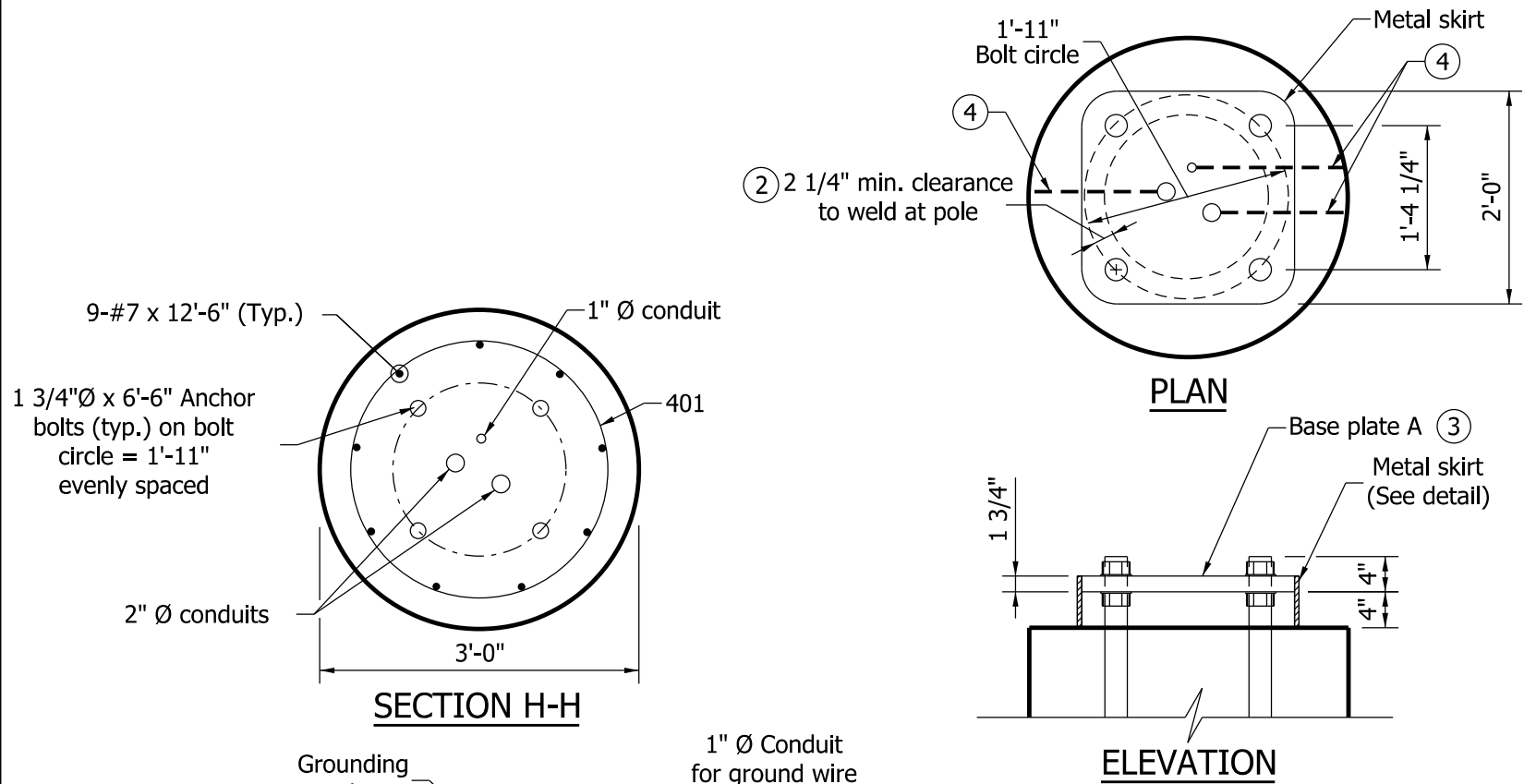


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

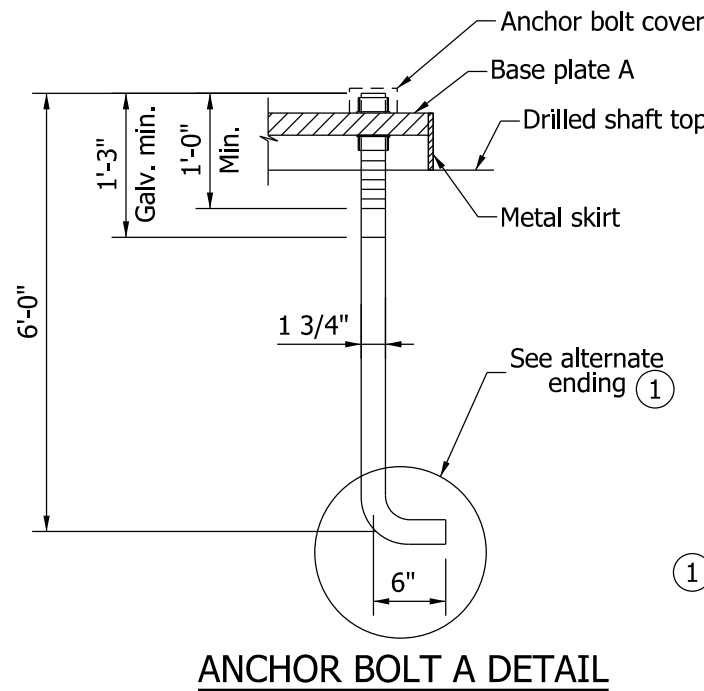
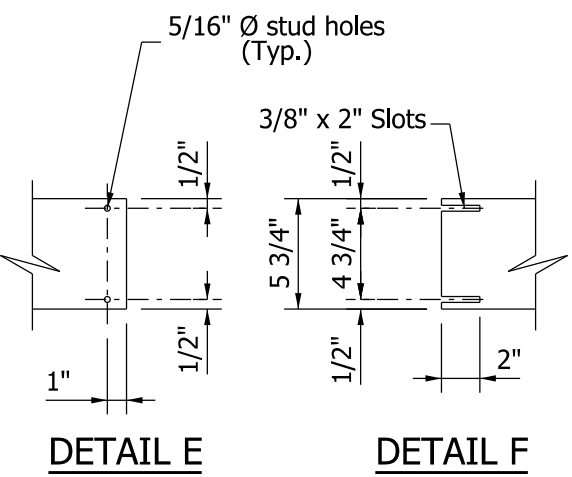
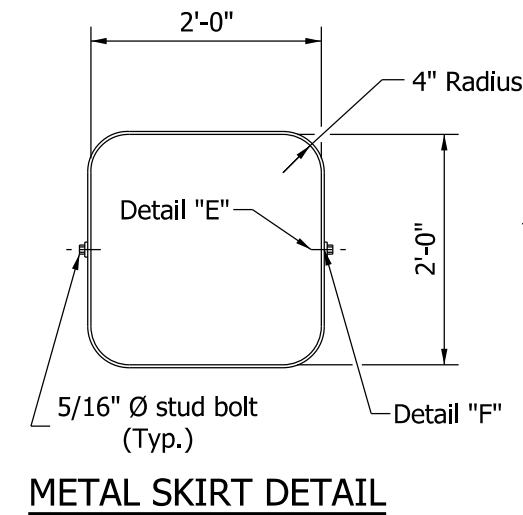
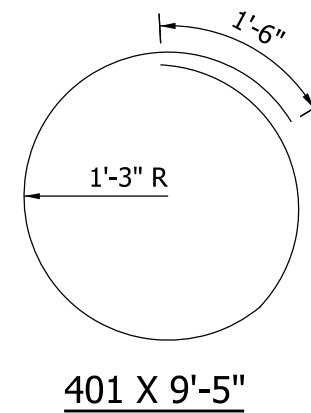
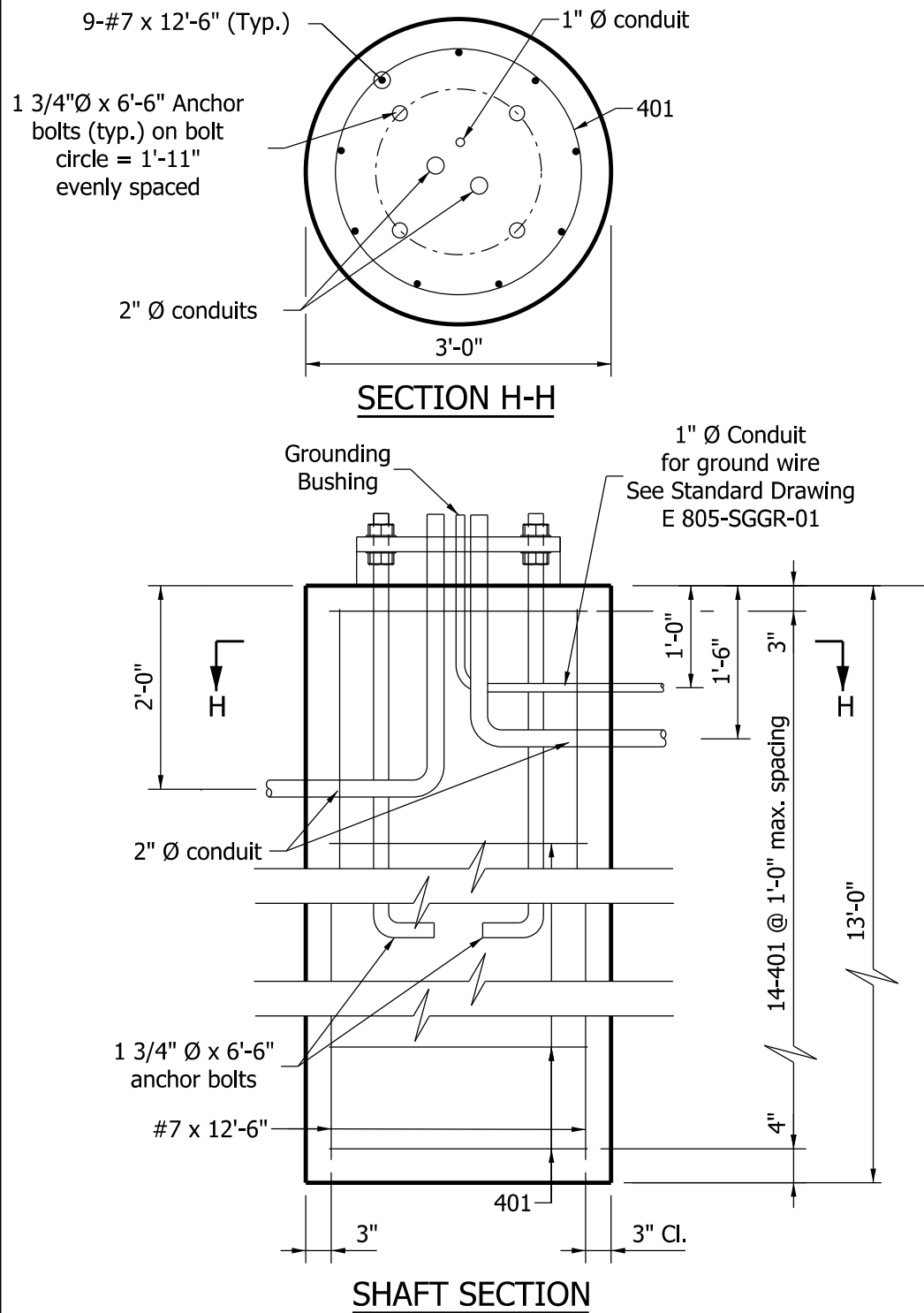
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE

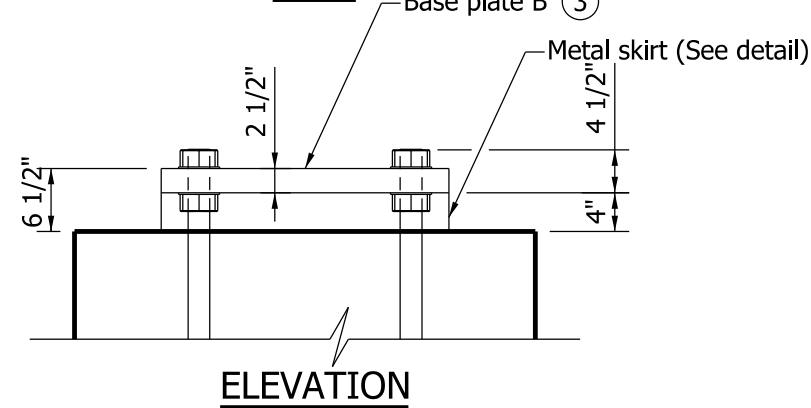
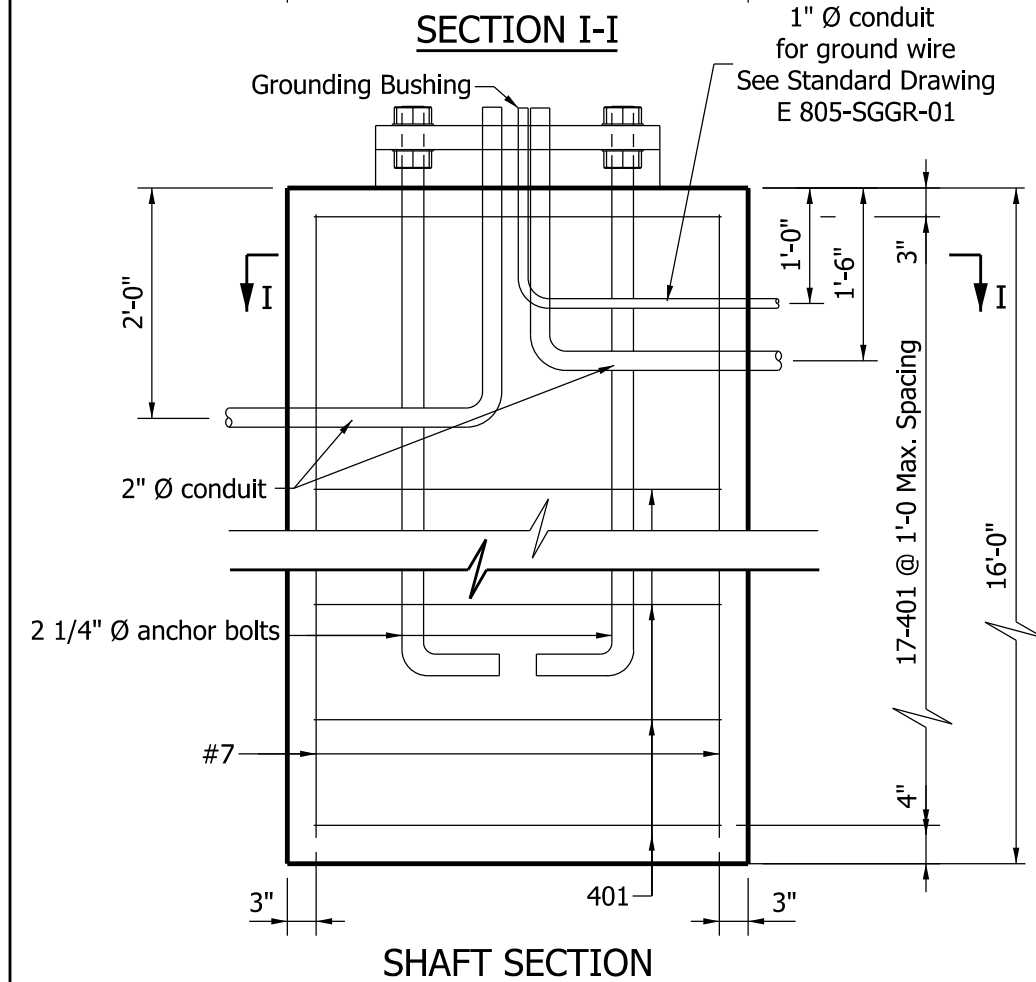
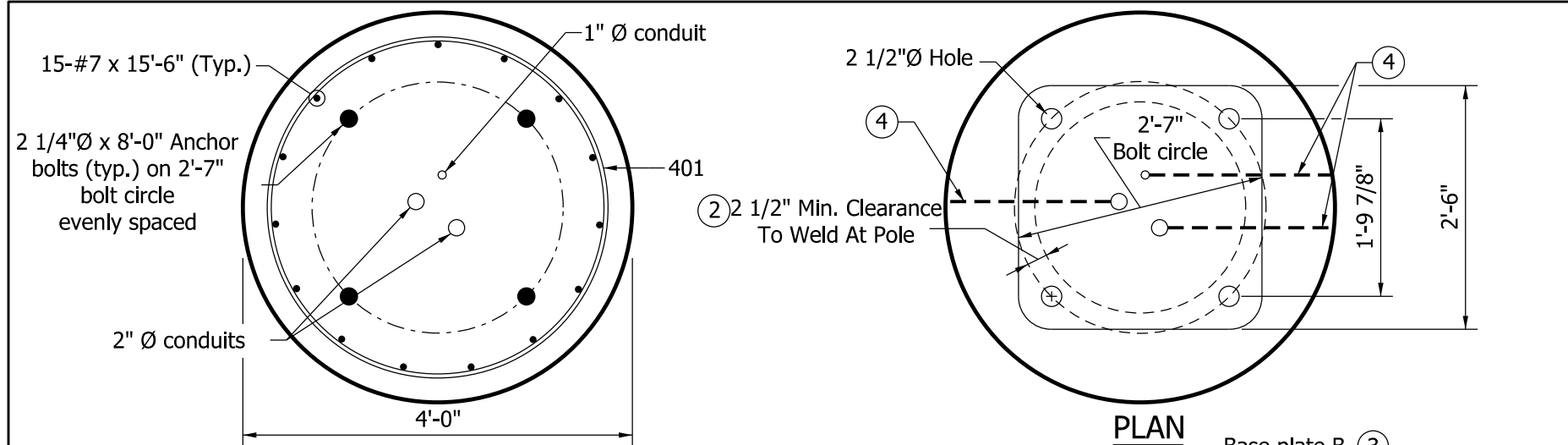


- NOTES:**
- 1 Alternate 6" x 6" x 1/2" square washer with hex nut welded to lower end may be substituted for bent anchor bolt.
  - 2 Bolt circle, b, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
  - 3 See Standard Drawing E 805-TSCS-04 for base plate A details.
  - 4 A tooled line or other type of permanent marking shall be provided on the top of the foundation to indicate the direction of the conduit.

BILL OF MATERIALS DRILLED SHAFT TYPE A			
REINFORCING BARS			
SIZE OR MARK	NUMBER OF BARS	LENGTH (ft.)	WEIGHT (lbs.)
#7	9	12'-6"	
Total #7			230
401	14	9'-5"	
Total #4			88
Total Reinforcing Bars			318
CONCRETE			
Concrete, Class A			3.4 CYS



INDIANA DEPARTMENT OF TRANSPORTATION									
TRAFFIC SIGNAL CANTILEVER STRUCTURE DRILLED SHAFT FOUNDATION TYPE A FOR ARM OF 35' OR LESS SEPTEMBER 2013									
STANDARD DRAWING NO.	E 805-TSCS-16								
	<table border="0"> <tr> <td>/s/ Alfredo B. Hanza</td> <td>02/05/13</td> </tr> <tr> <td>DESIGN STANDARDS ENGINEER</td> <td>DATE</td> </tr> <tr> <td>/s/ Mark A. Miller</td> <td>03/27/13</td> </tr> <tr> <td>CHIEF ENGINEER</td> <td>DATE</td> </tr> </table>	/s/ Alfredo B. Hanza	02/05/13	DESIGN STANDARDS ENGINEER	DATE	/s/ Mark A. Miller	03/27/13	CHIEF ENGINEER	DATE
/s/ Alfredo B. Hanza	02/05/13								
DESIGN STANDARDS ENGINEER	DATE								
/s/ Mark A. Miller	03/27/13								
CHIEF ENGINEER	DATE								



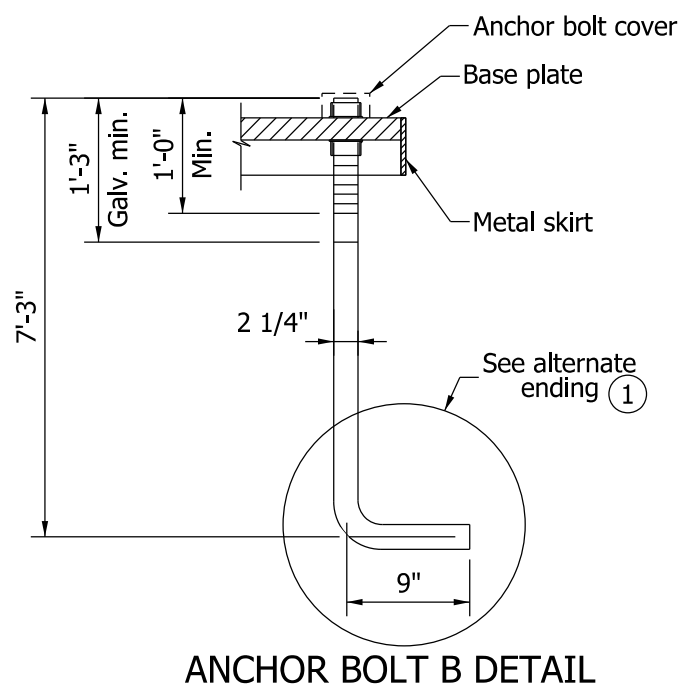
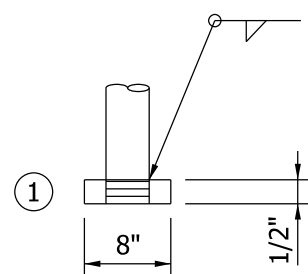
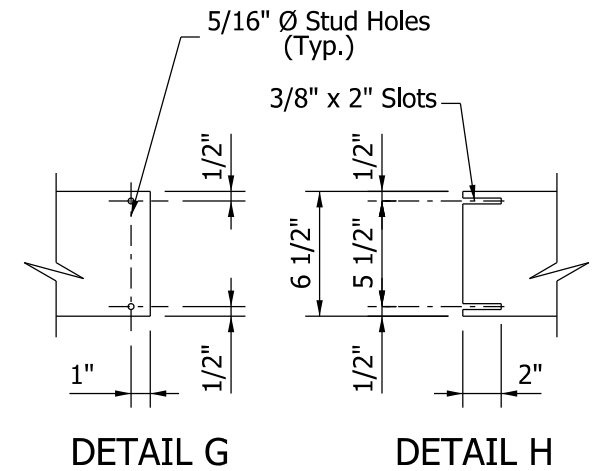
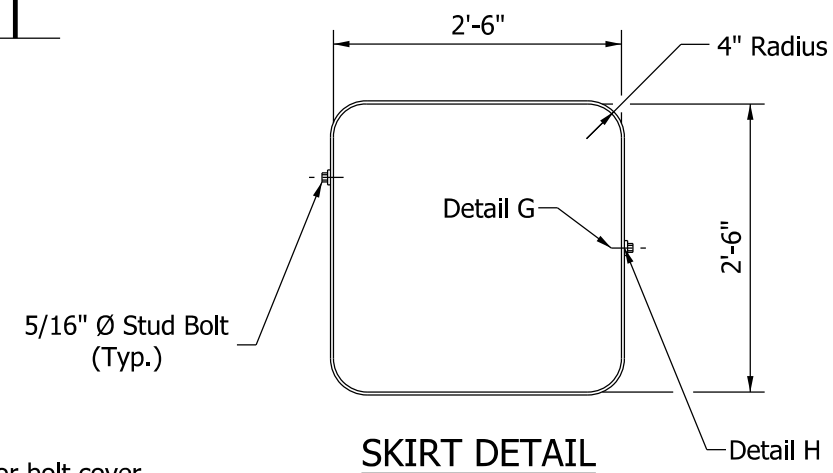
#### NOTES:

- ① Alternate 8" x 8" x 1/2" square plate tapped and welded to the anchor bolt may be substituted for bent anchor bolt.
- ② Bolt circle, b, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- ③ See Standard Drawing E 805-TSCS-04 for base plate B details.
- ④ A tooled line or other type of permanent marking shall be provided on the top of the foundation to indicate the direction of the conduits.

#### BILL OF MATERIALS DRILLED SHAFT TYPE B

##### REINFORCING BARS

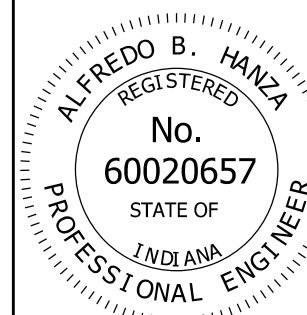
SIZE OR MARK	NUMBER OF BARS	LENGTH	WEIGHT (lbs.)
#7	15	15'-6"	
Total #7			475
401	17	12'-6"	
Total #4			142
Total Reinforcing Bars			617
CONCRETE			
Concrete, Class A			7.5 CYS



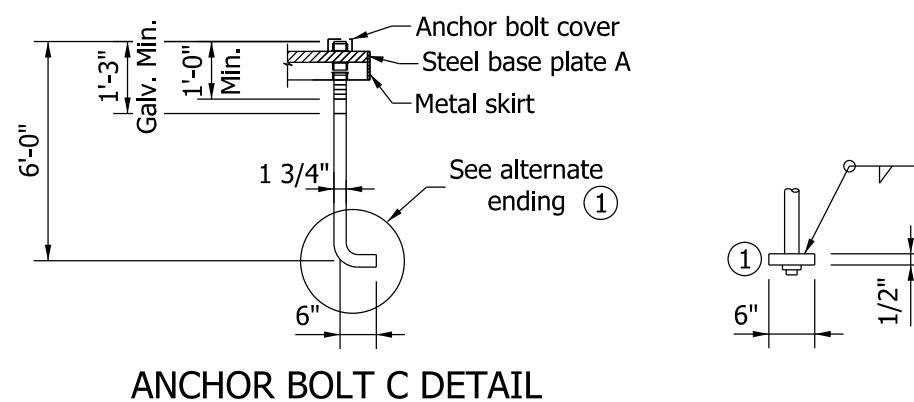
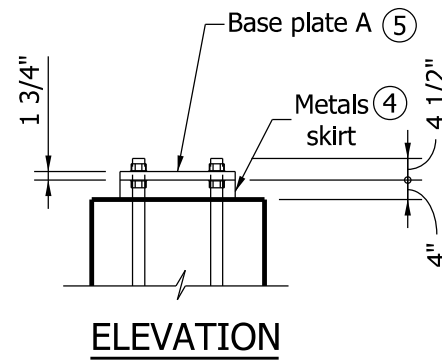
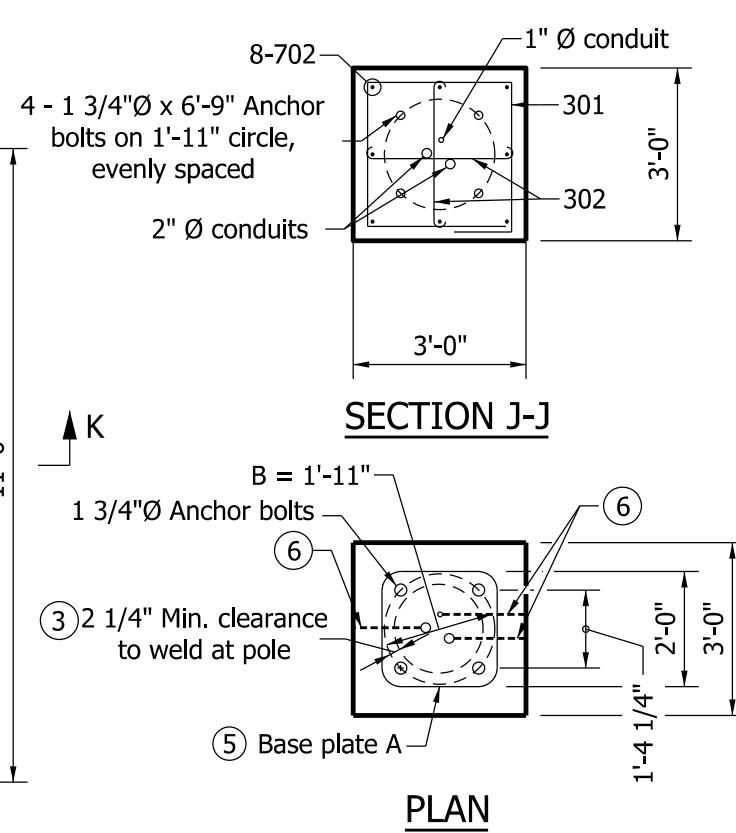
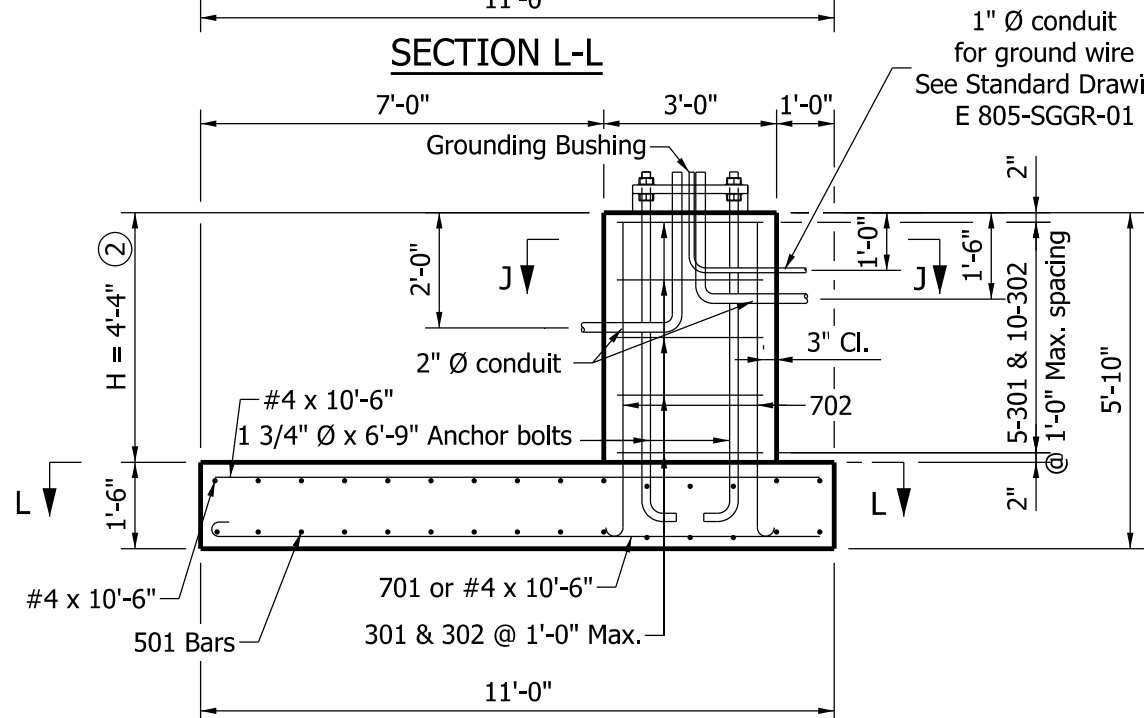
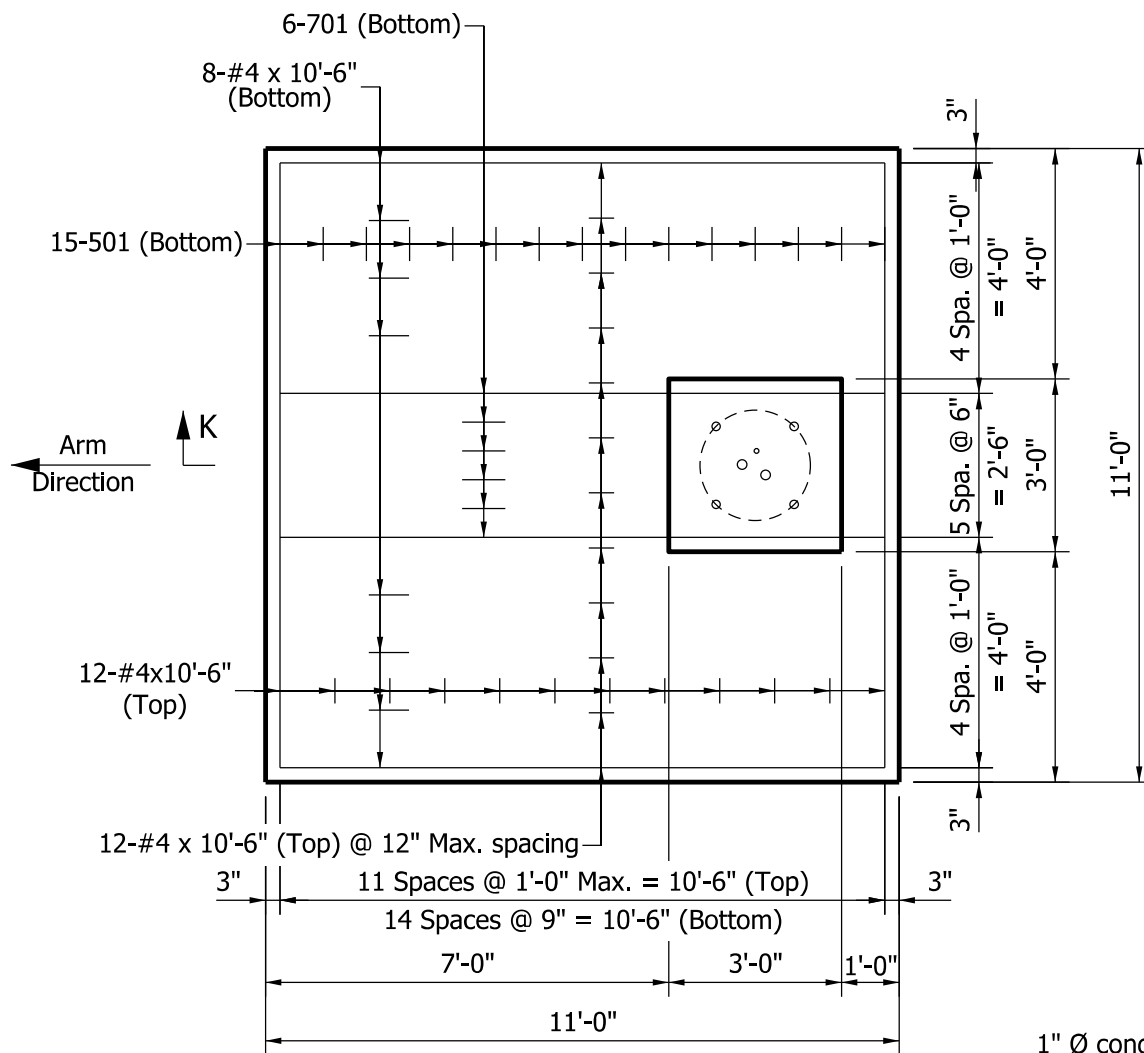
#### INDIANA DEPARTMENT OF TRANSPORTATION

#### TRAFFIC SIGNAL CANTILEVER STRUCTURE DRILLED SHAFT FOUNDATION TYPE B FOR ARM OF GREATER THAN 35' TO 60' SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-17



/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



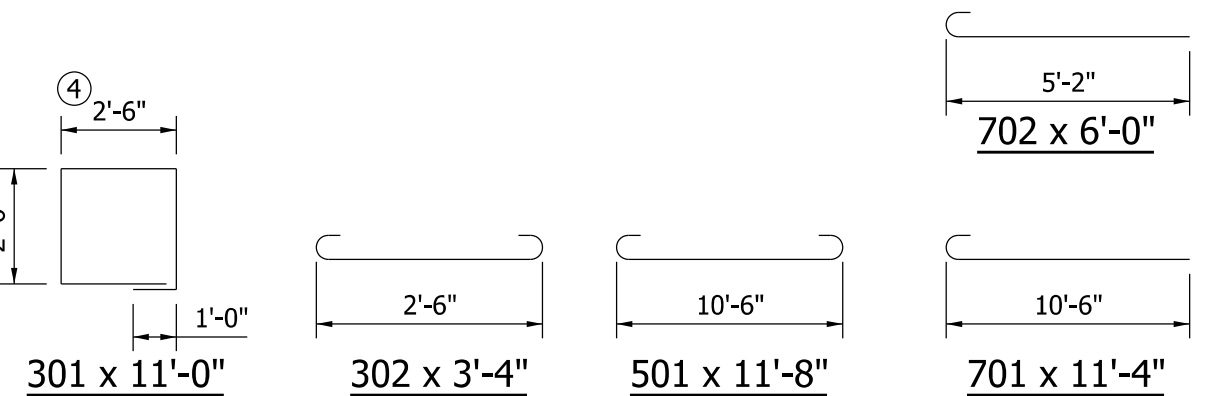
# NOTES:

- Alternate 6" x 6" x 1/2" square washer with hex nut welded to lower end may be substituted for the bend in the anchor bolt.
- Minimum H required is 4 ft. soil cover over the entire footing area.
- Bolt circle, B, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- See Standard Drawing E 805-TSCS-16 for metal skirt details.
- See Standard Drawing E 805-TSCS-04 for base plate A details.
- A tooled line or other type of permanent marking shall be provided on the top of the foundation to indicate the direction of the conduits.

## BILL OF MATERIALS SPREAD FOOTING TYPE C

### REINFORCING BARS

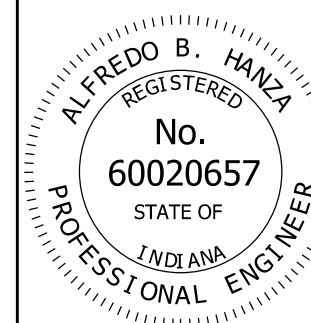
SIZE OR MARK	NUMBER OF BARS	LENGTH	WEIGHT (lbs.)
701	6	11'-4"	
702	8	6'-0"	
Total #7			237
501	15	11'-8"	
Total #5			183
#4	32	10'-6"	
Total #4			224
301	5	11'-0"	
302	10	3'-4"	
Total #3			33
Total Reinforcing Bars			677
CONCRETE			
Concrete, Class A			8.2 CYS



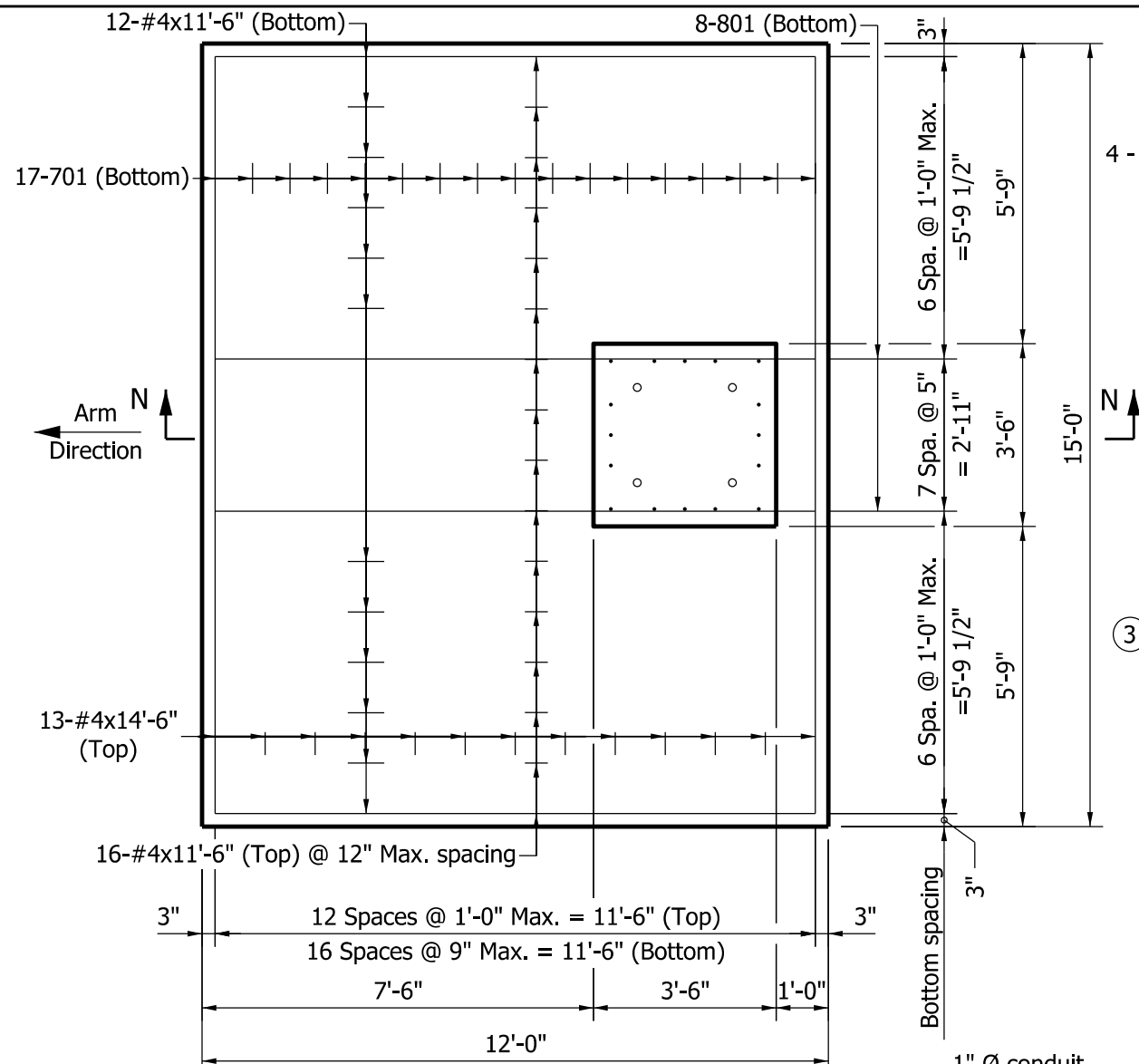
## INDIANA DEPARTMENT OF TRANSPORTATION

### TRAFFIC SIGNAL CANTILEVER STRUCTURE SPREAD FOOTING FOUNDATION TYPE C FOR ARM OF 35' OR LESS SEPTEMBER 2013

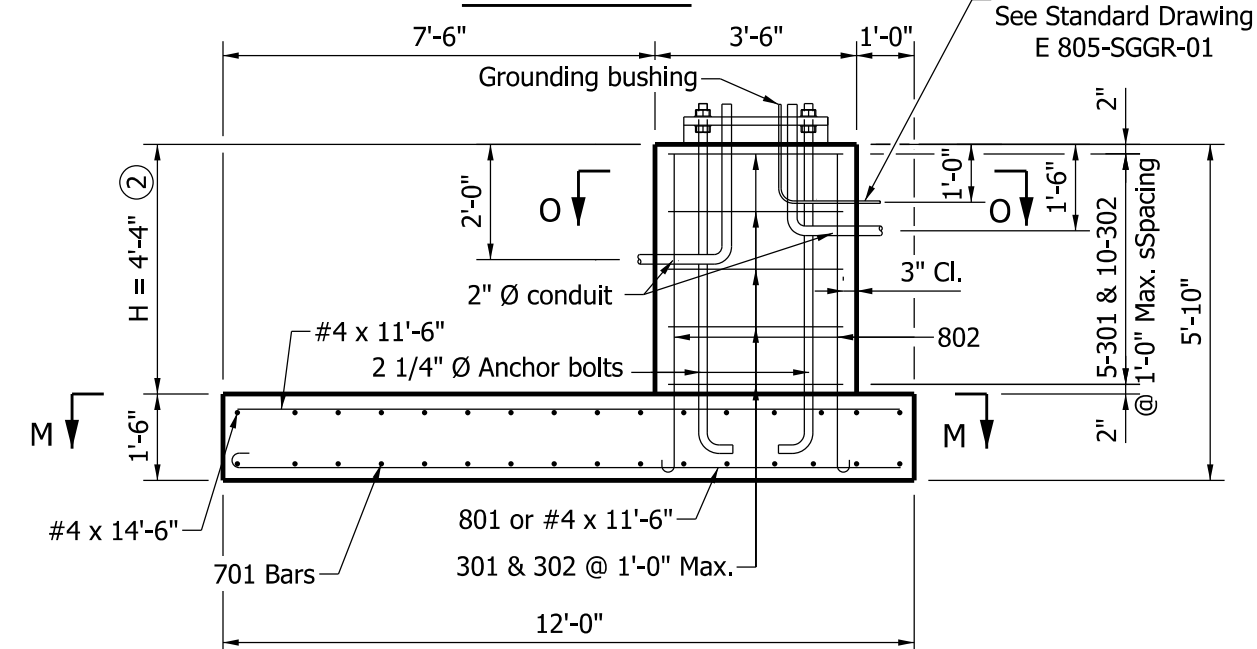
STANDARD DRAWING NO. E 805-TSCS-18



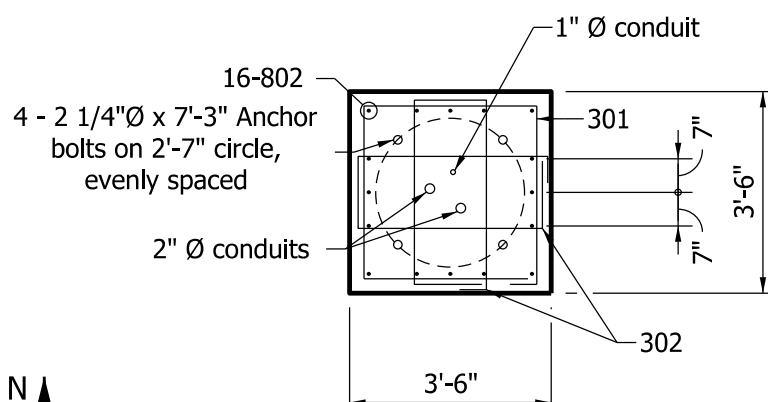
/s/ Alfredo B. Hanza 02/05/13  
DESIGN STANDARDS ENGINEER DATE  
/s/ Mark A. Miller 03/27/13  
CHIEF ENGINEER DATE



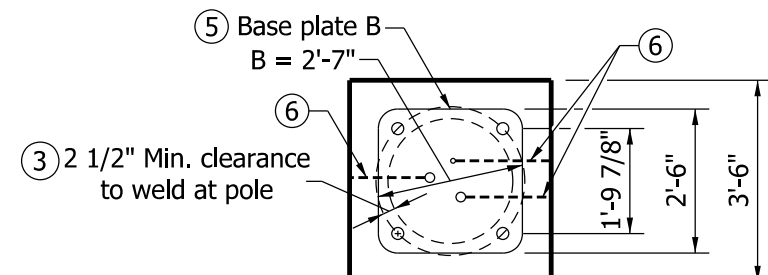
SECTION M-M



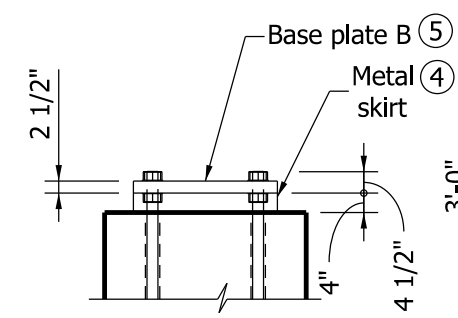
SECTION N-N



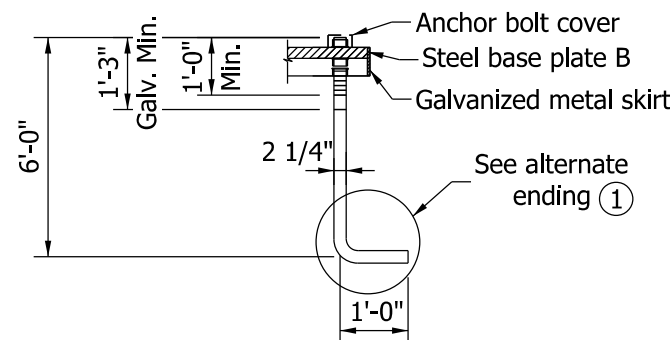
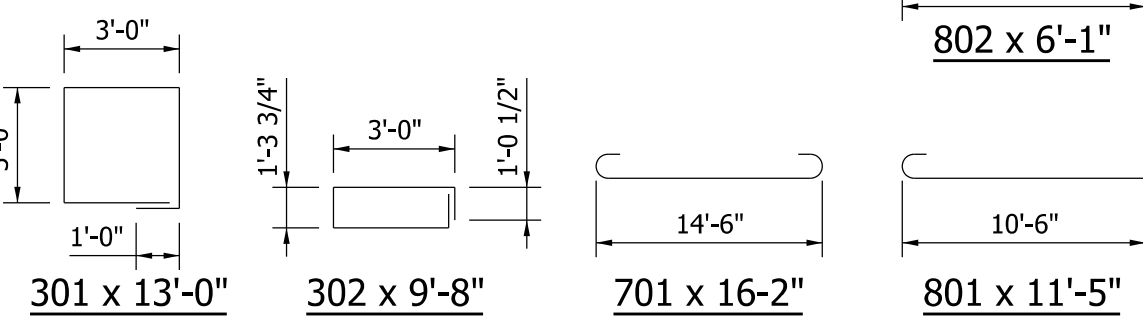
SECTION O-O



PLAN



ELEVATION



ANCHOR BOLT D DETAIL

NOTES:

- ① Alternate 8" x 8" x 1/2" square plate tapped and welded to anchor bolt may be substituted for the bent anchor bolt.
- ② Minimum H required is 4 ft. soil cover over the entire footing area.
- ③ Bolt circle, B, shall allow clearance for the plate washer. Cutting or trimming the washer will not be allowed.
- ④ See Standard Drawing E 805-TSCS-17 for metal skirt details.
- ⑤ See Standard Drawing E 805-TSCS-04 for base plate B details.
- ⑥ A tooled line or other type of permanent marking shall be provided on the top of the foundation to indicate the direction of the conduits.

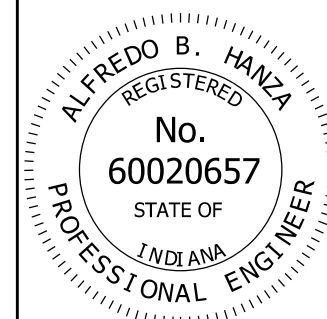
BILL OF MATERIALS  
SPREAD FOOTING  
TYPE D

REINFORCING BARS			
SIZE OR MARK	NUMBER OF BARS	LENGTH	WEIGHT (lbs.)
801	8	11'-5"	
802	16	6'-1"	
Total #8			504
701	17	16'-2"	
Total #7			562
#4	13	14'-6"	
#4	28	11'-6"	
Total #4			341
301	5	13'-0"	
302	10	9'-8"	
Total #3			61
Total Reinforcing Bars			1468
CONCRETE			
Concrete, Class A			12.0 CYS

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE  
SPREAD FOOTING FOUNDATION TYPE D  
FOR ARM OF GREATER THAN 35' TO 60'  
SEPTEMBER 2013

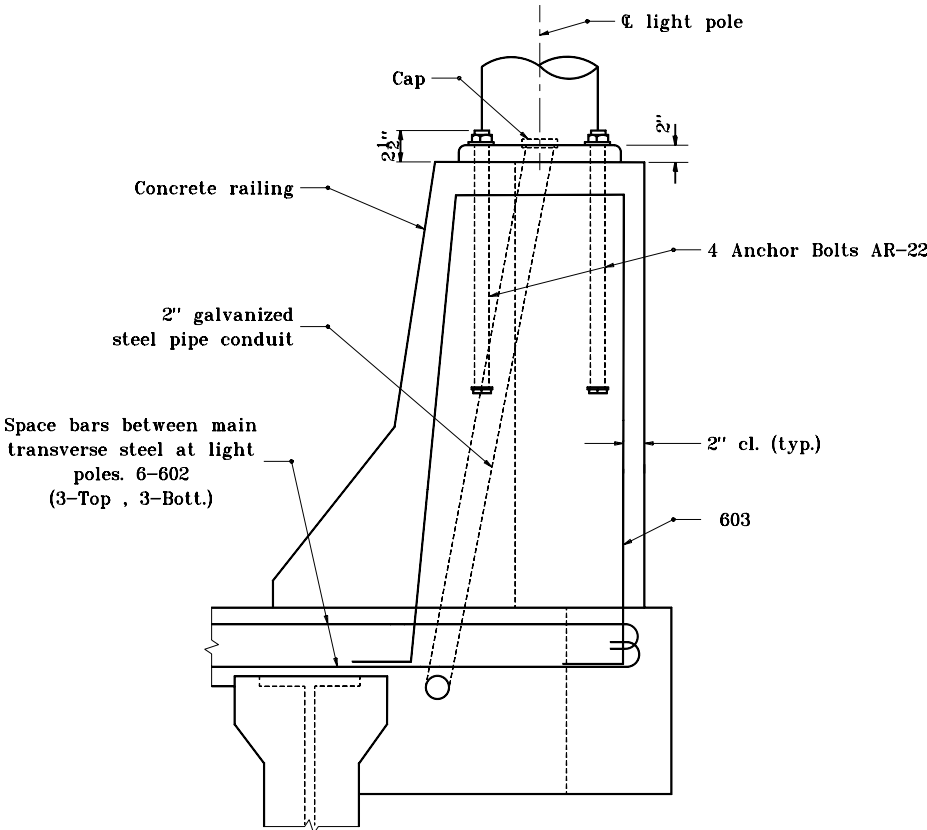
STANDARD DRAWING NO. E 805-TSCS-19



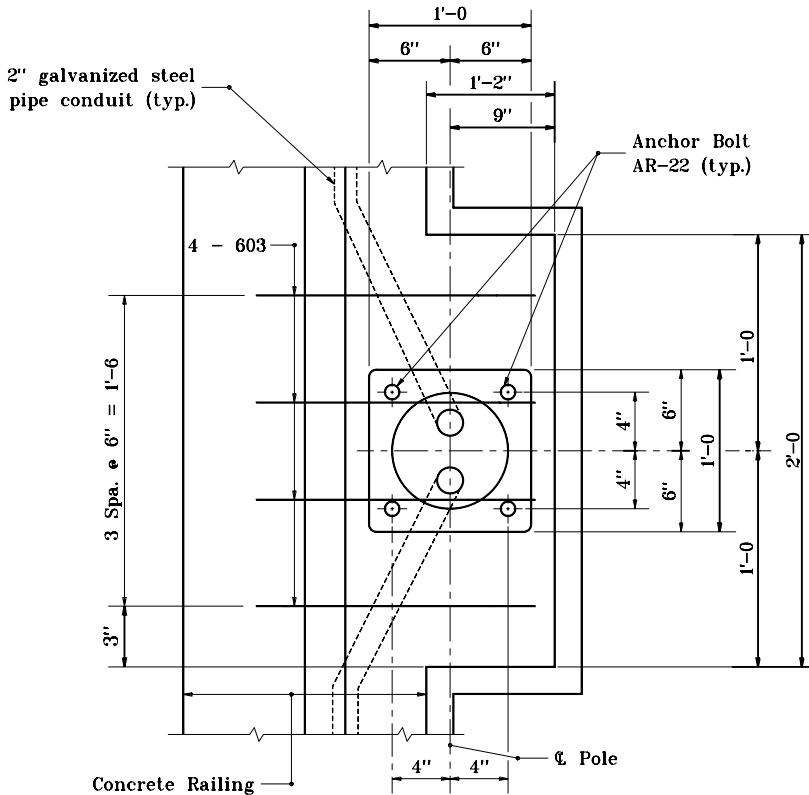
/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE

## GENERAL NOTES

1. See Standard Drawing E 807-BLIT-03 for bending diagrams.




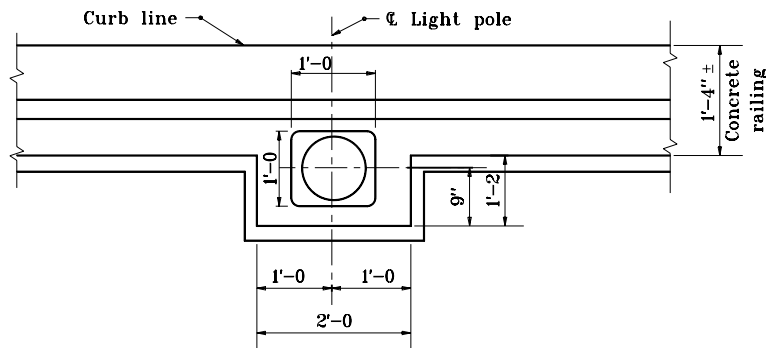
## SECTION



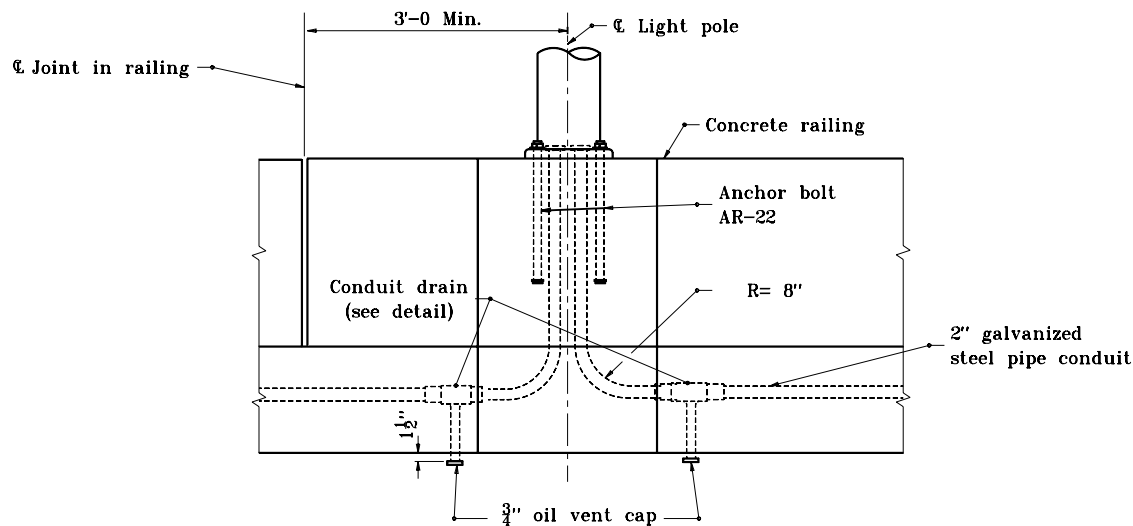
The bolt circle diameter is approximately  $11\frac{1}{2}$ ".

## PLAN

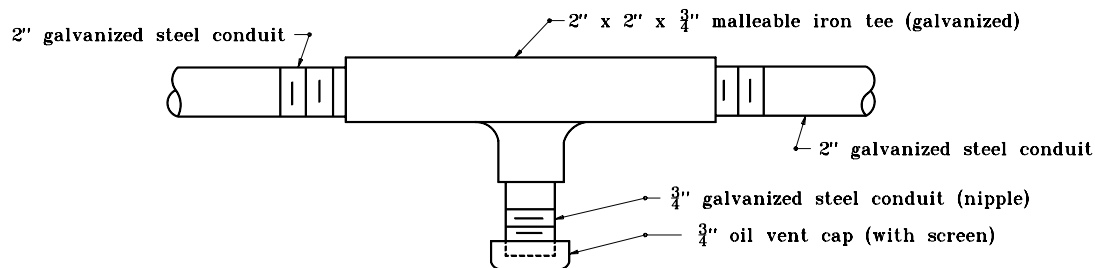
INDIANA DEPARTMENT OF TRANSPORTATION																	
<h1 style="margin: 0;">BRIDGE LIGHTING DETAILS</h1>																	
SEPTEMBER 1997																	
STANDARD DRAWING NO. <b>E 807-BLIT-01</b>																	
	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black; width: 60%;">DETAILS PLACED IN THIS FORMAT</td> <td style="width: 40%; text-align: right;">11-15-99</td> </tr> <tr> <td style="border-bottom: 1px solid black;">/s/ Anthony L. Uremovich</td> <td style="text-align: right;">11-15-99</td> </tr> <tr> <td style="border-bottom: 1px solid black;">DESIGN STANDARDS ENGINEER</td> <td style="text-align: right;">DATE</td> </tr> <tr> <td colspan="2" style="height: 20px;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">/s/ Firooz Zandi</td> <td style="text-align: right;">11-15-99</td> </tr> <tr> <td style="border-bottom: 1px solid black;">CHIEF HIGHWAY ENGINEER</td> <td style="text-align: right;">DATE</td> </tr> <tr> <td colspan="2" style="text-align: center; border-bottom: 1px solid black;">ORIGINALLY APPROVED</td> </tr> <tr> <td colspan="2" style="text-align: right;">9-01-97</td> </tr> </table>	DETAILS PLACED IN THIS FORMAT	11-15-99	/s/ Anthony L. Uremovich	11-15-99	DESIGN STANDARDS ENGINEER	DATE			/s/ Firooz Zandi	11-15-99	CHIEF HIGHWAY ENGINEER	DATE	ORIGINALLY APPROVED		9-01-97	
DETAILS PLACED IN THIS FORMAT	11-15-99																
/s/ Anthony L. Uremovich	11-15-99																
DESIGN STANDARDS ENGINEER	DATE																
/s/ Firooz Zandi	11-15-99																
CHIEF HIGHWAY ENGINEER	DATE																
ORIGINALLY APPROVED																	
9-01-97																	
DESIGN STANDARDS ENGINEER																	



**PLAN**

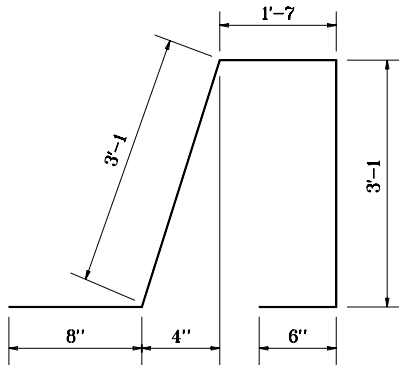


**TYPICAL ELEVATION**



**CONDUIT DRAIN DETAIL**

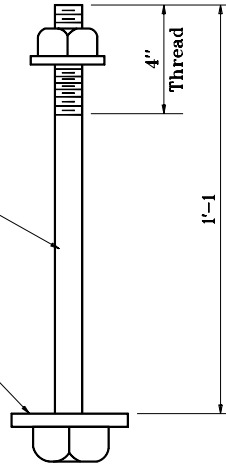
INDIANA DEPARTMENT OF TRANSPORTATION			
BRIDGE LIGHTING DETAILS			
SEPTEMBER 1994			
STANDARD DRAWING NO. E 807-BLIT-02			
	DETAILS PLACED IN THIS FORMAT		11-15-99
	/s/ Anthony L. Uremovich		11-15-99
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Firooz Zandi		11-15-99
DESIGN STANDARDS ENGINEER		CHIEF HIGHWAY ENGINEER	
ORIGINALLY APPROVED		DATE	
		9-30-94	



**603 x 8'-11**

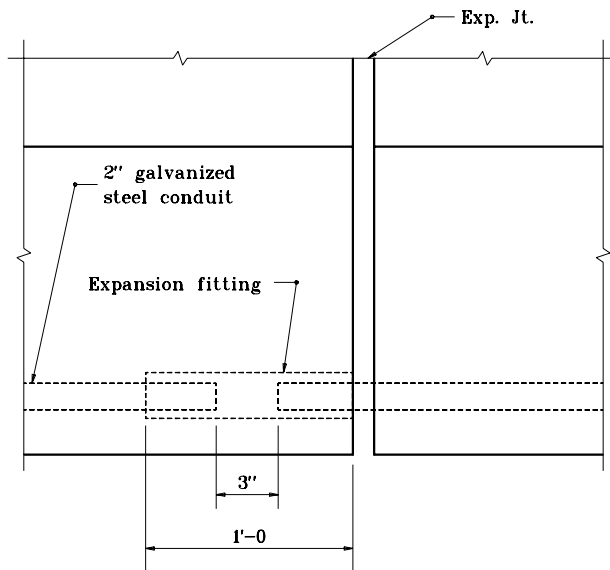
1" x 1'-1 bolt (with square head, hex nut & cut washer)

EL 4"x 4" x 1/4"

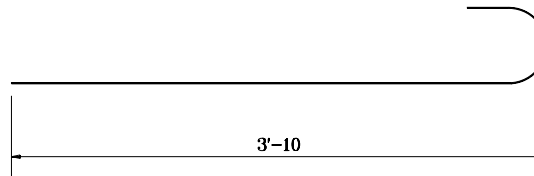


Galvanize thread, hex nut & cut washer.

**ANCHOR BOLT AR-22**



**EXPANSION SLEEVE**



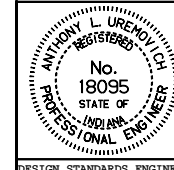
**602 x 4'-8**

INDIANA DEPARTMENT OF TRANSPORTATION

**BRIDGE LIGHTING DETAILS**

SEPTEMBER 1997

STANDARD DRAWING NO. **E 807-BLIT-03**



DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-97



GENERAL NOTES

1. See General Plan for location of light posts.
2. See Bill of Materials for reinforcing steel.
3. Ream and cap all ends.
4. Carry conduit 2'-0 beyond shoulder line.
5. Bars 602 and 603 shall be epoxy coated.
6. Mast arm shall be truss type.
7. Vertical contraction joints in the railing shall be located a minimum of 3'-0 from the centerline of the light pole.

INDIANA DEPARTMENT OF TRANSPORTATION

**BRIDGE LIGHTING DETAILS**

SEPTEMBER 1997

**STANDARD DRAWING NO. E 807-BLIT-04**



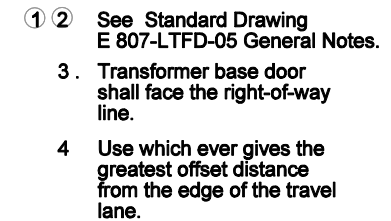
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

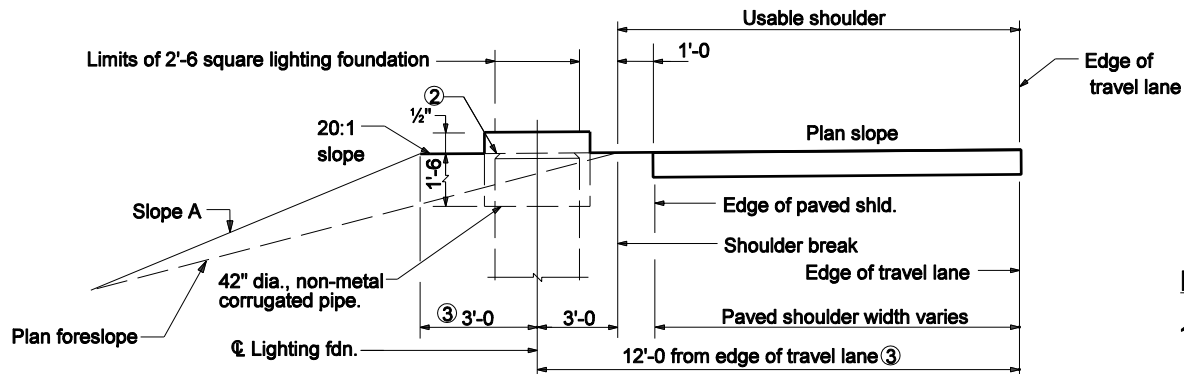
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-97

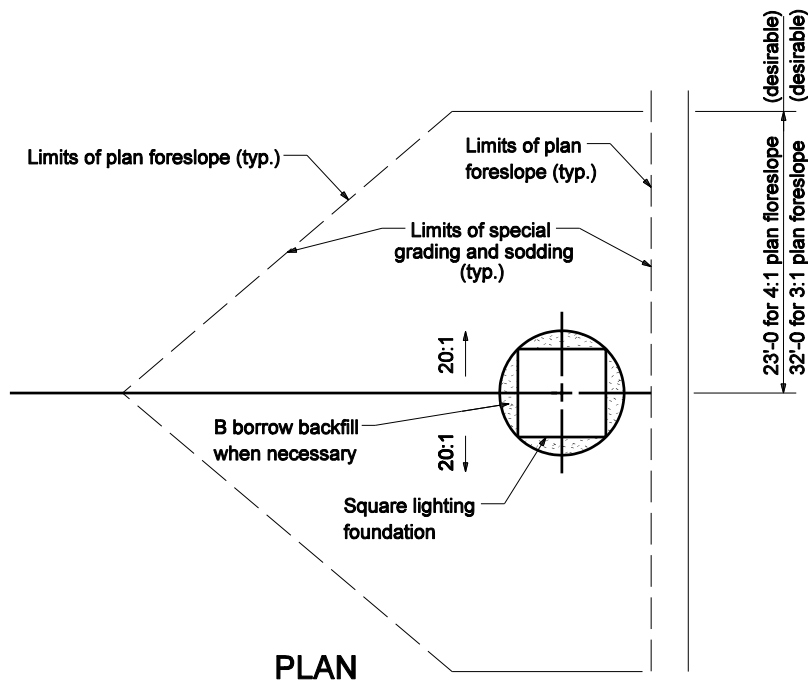


**ELEVATION, FILL SECTION, 6:1 OR 5:1 SLOPE, SQUARE FOUNDATION**





### ELEVATION 4:1 OR 3:1 SLOPE



#### Notes:

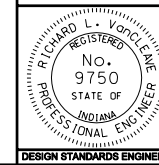
- Transformer base door shall face the right-of-way line.
- See Standard Drawing E 807-LTFD-05 for General Notes.
- Use whichever gives the greatest offset distance from the edge of the travel lane.

Plan foreslope	A
4:1	3:1 Desirable
3:1	2.5:1 Desirable

INDIANA DEPARTMENT OF TRANSPORTATION

**LIGHT STANDARD SQUARE  
FDN. TMT. FILL SECTION  
FORESLOPE 4:1 OR 3:1  
SEPTEMBER 2005**

STANDARD DRAWING NO. E 807-LTFD-03A

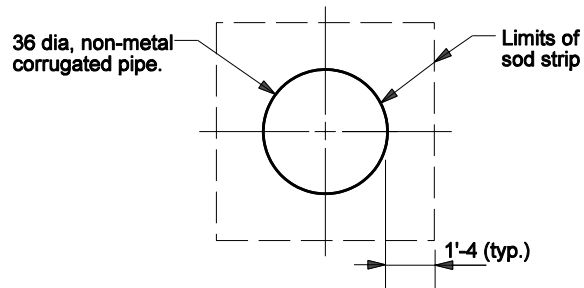


/s/ Richard L. VanCleave 9-01-05  
DESIGN STANDARDS ENGINEER DATE

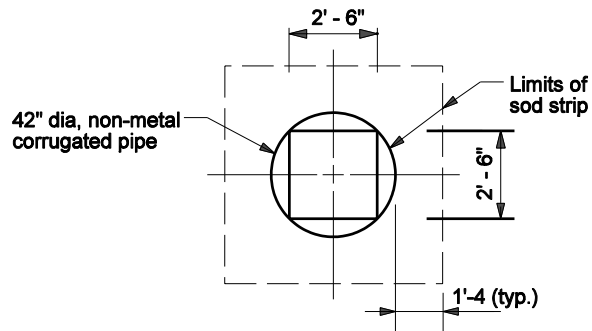
/s/ Richard K. Smutzer 9-01-05  
CHIEF HIGHWAY ENGINEER DATE

Diagram illustrating the foundation and shoulder details for a lighting fixture:

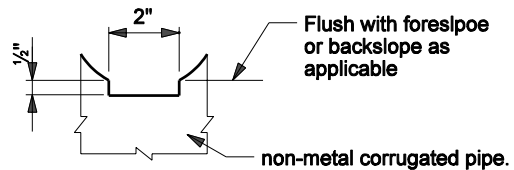
- Foundation:** Limits of 2'-6" square lighting foundation. Depth is 1'-6" min.
- Pipe:** 42" dia., non-metal corrugated pipe.
- Clearance:** 1/2" gap between pipe and foundation.
- Slopes:** Backslope varies; Slope and ditch vary.
- Shoulder:** Useable shoulder; Shoulder break; Paved shoulder width varies.
- Dimensions:** 10'-0" desirable; 1'-0" (width of shoulder break).
- Other Labels:** Top of fdn., Light standard, Edge of travel lane, Plan slope.



**PLAN, ROUND FOUNDATION**



**PLAN, SQUARE FOUNDATION**

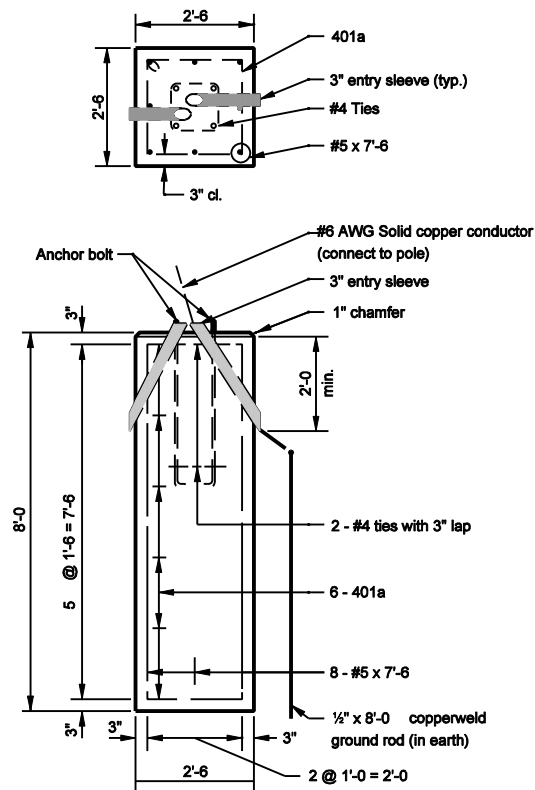


**DRAINAGE NOTCH**

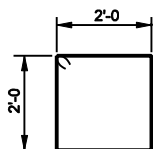
**Notes:**

1. Drainage notch shall follow the slope of the ground.

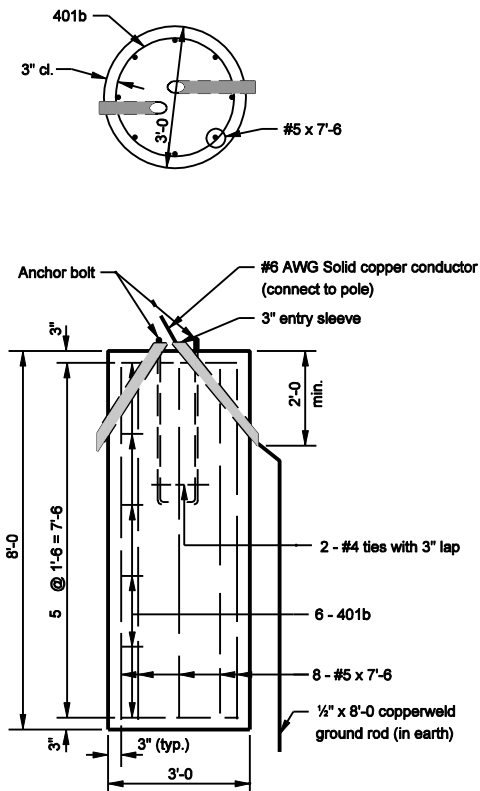
INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHT STANDARD FOUNDATION GRADING DETAILS	
SEPTEMBER 2005	
STANDARD DRAWING NO. E 807-LTFD-04A	
	/s/ Richard L. VanCleave 9-01-05 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-01-05 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



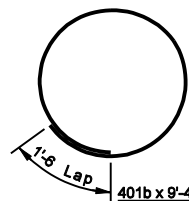
**SQUARE FOUNDATION DETAIL**



**401a x 8'-10**



**ROUND FOUNDATION DETAIL**



**401b x 9'-4**

### GENERAL NOTES

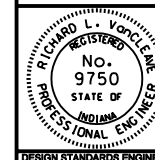
- ① Top of lighting foundation shall be flush with foreslope at this point.
- ② Base of chamfer at top of lighting foundation shall be flush with foreslope at this point.
3. See Standard Drawing E 801-LTFD-04A for plan views of pipe placement and sodding.
4. Low exposed end of pipe shall have drainage notch as shown on Standard Drawing E 807-LTFD-04A.
5. Arrows shall be engraved on top of foundation to indicate direction of cable duct run.

INDIANA DEPARTMENT OF TRANSPORTATION

**LIGHT FOUNDATION**

SEPTEMBER 2002

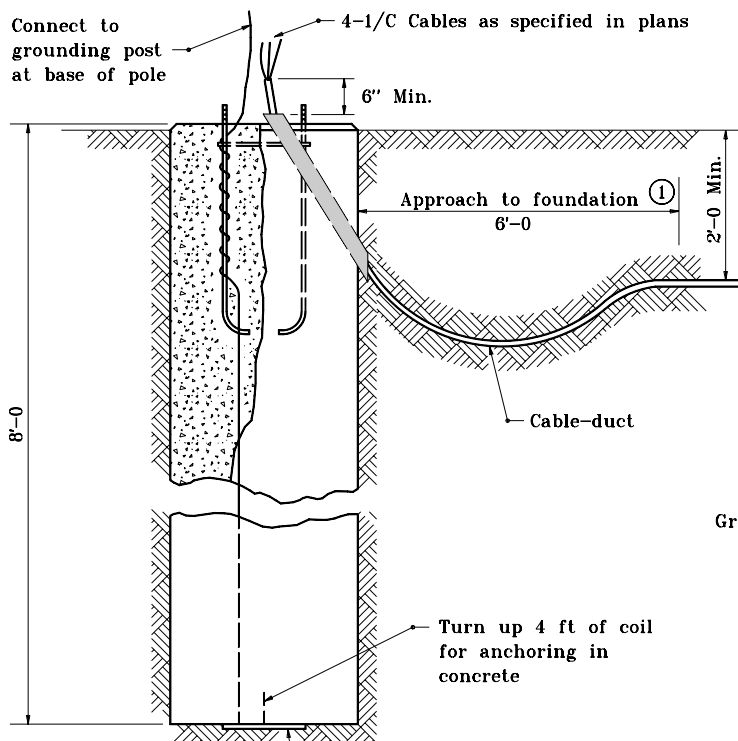
STANDARD DRAWING NO. E 807-LTFD-05



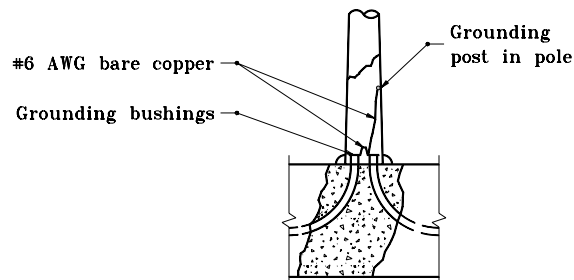
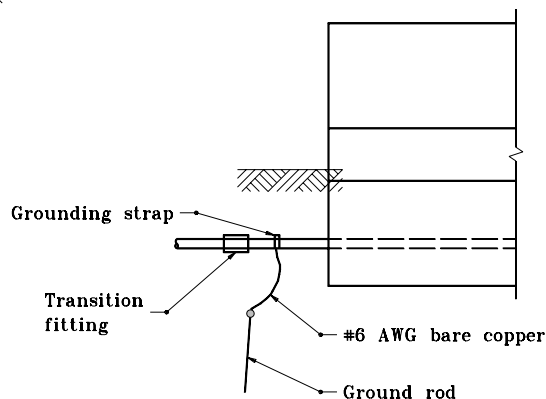
/s/ Richard L. VanCleave 9-03-02  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smulzer 9-03-02  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



**DETAIL OF COIL**



**BRIDGE GROUNDING**

**GENERAL NOTES**

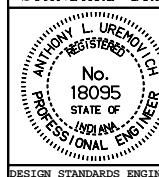
- ① The 6 ft approach to foundation shall be trenched.
2. Bottom of trench shall be graded so as to provided a smooth, uniform ramp to the entry sleeve of the foundation.
3. Each cable-duct shall have its own entry sleeve. There shall be at least two entry sleeves per footing.
4. Coil to be of #6 AWG copper approximately 15 ft long.
5. Place felt between concrete and coil to prevent bonding.
6. Coil method of grounding may be used with precast foundation.

INDIANA DEPARTMENT OF TRANSPORTATION

**LIGHT FOUNDATION**

SEPTEMBER 2000

STANDARD DRAWING NO. **E 807-LTFD-06**

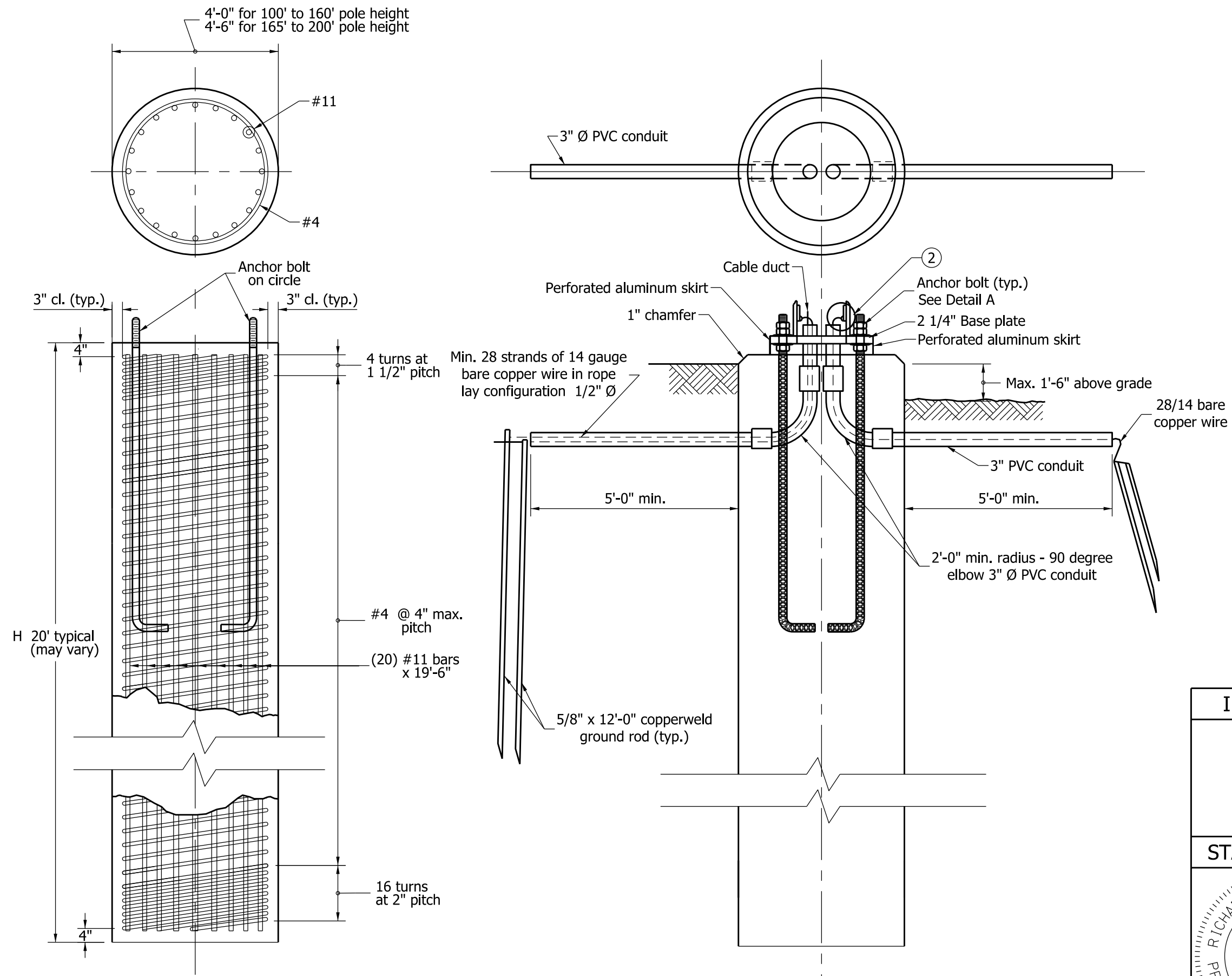


/s/ Anthony L. Uremovich 9-01-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 9-01-00  
CHIEF HIGHWAY ENGINEER DATE

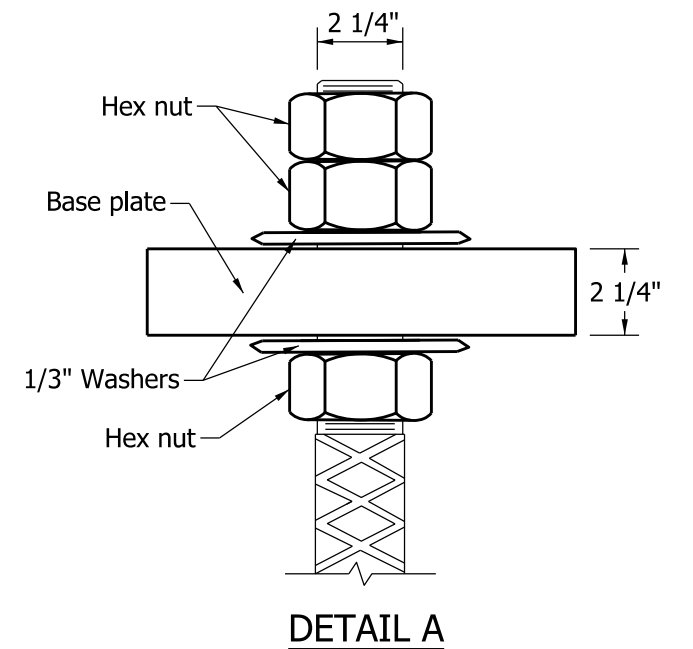
DESIGN STANDARDS ENGINEER





## NOTES:

1. An arrow or arrows shall be imprinted onto the top of the foundation to indicate the direction of the cable-duct run.
2. See Standard Drawing E807-LTLR-02 for details.

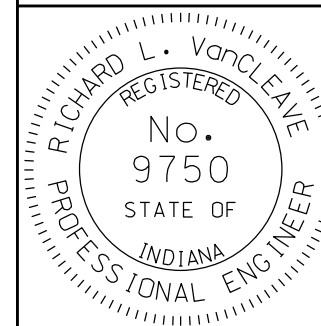


INDIANA DEPARTMENT OF TRANSPORTATION

HIGH MAST TOWER  
FOUNDATION

SEPTEMBER 2010

STANDARD DRAWING NO. E 807-LTFD-07



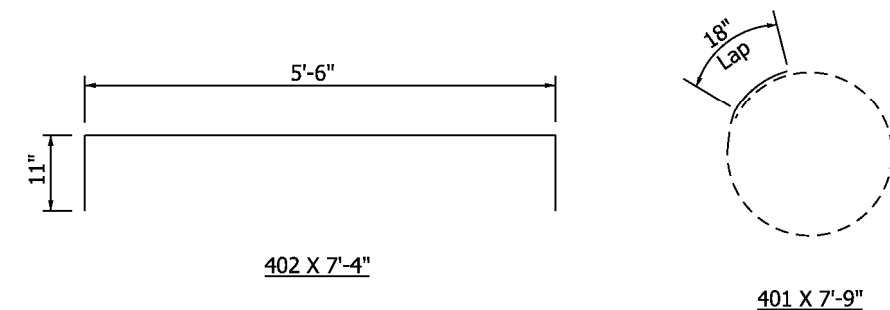
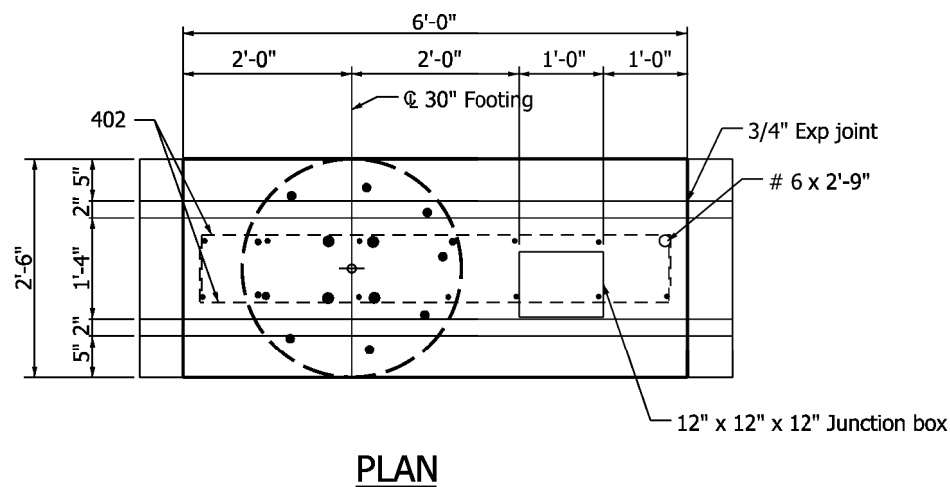
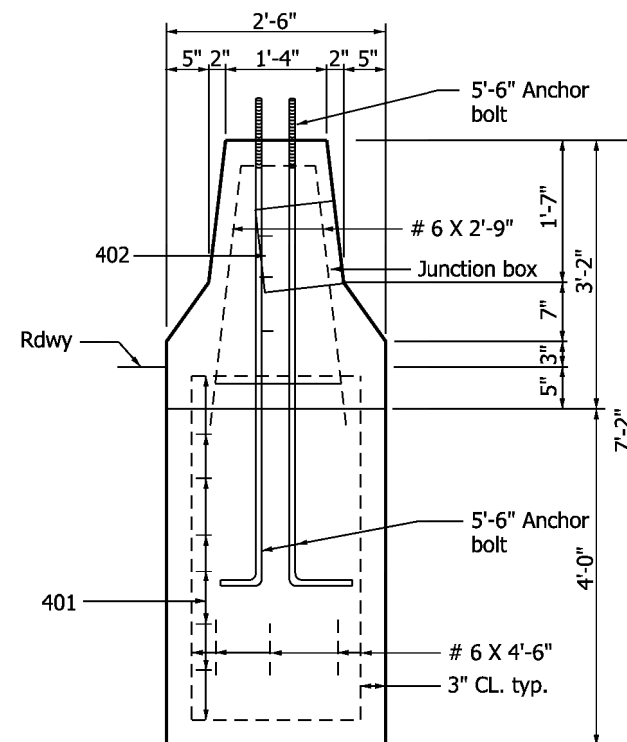
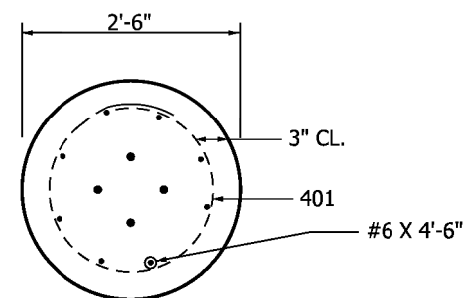
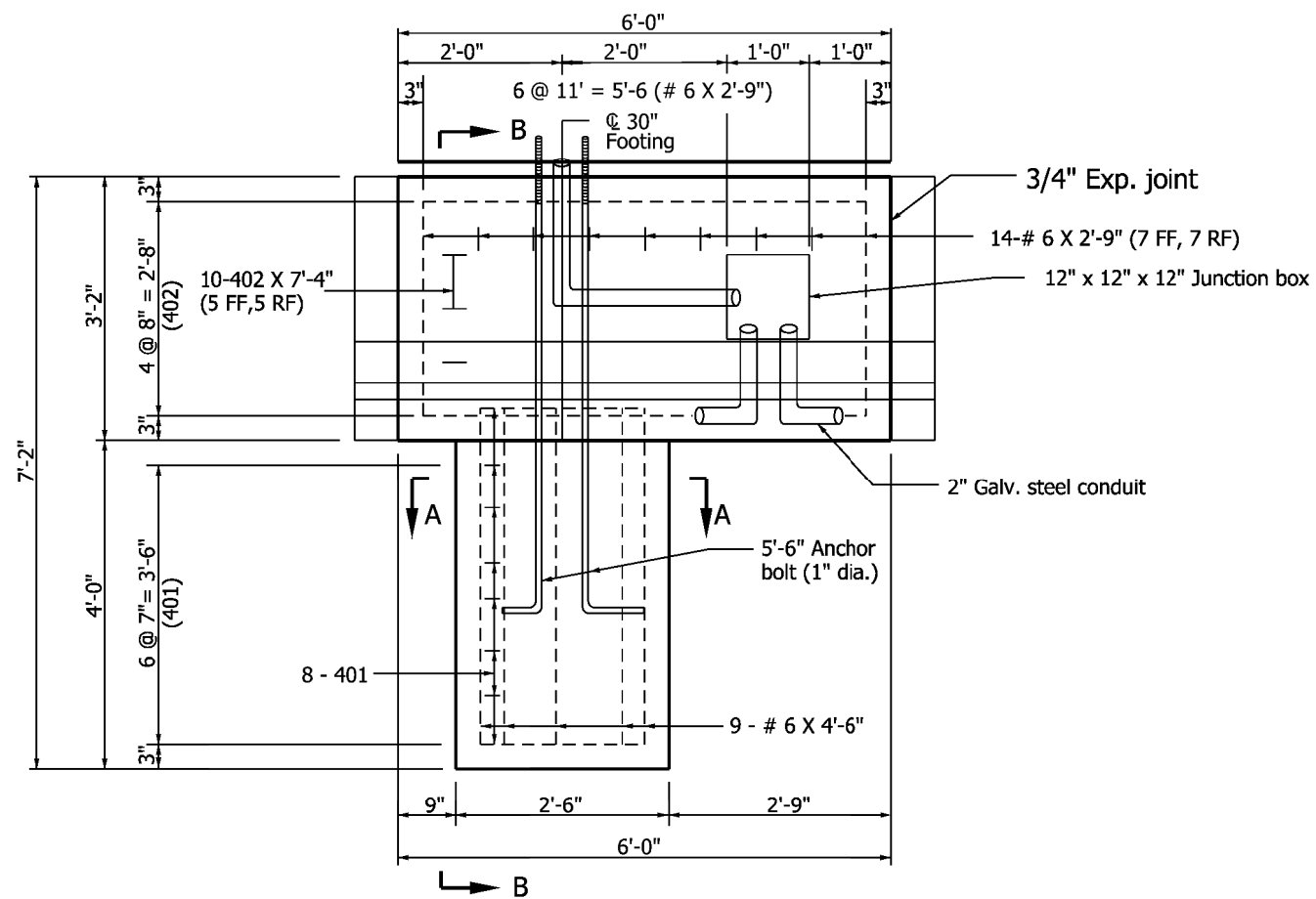
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10

DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10

CHIEF HIGHWAY ENGINEER DATE



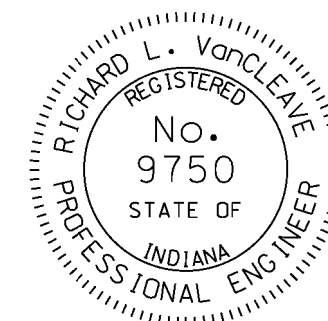
Notes:

1. The 2" galvanized steel conduit and junction box can be installed in the median shoulder. The junction box must be in front of the light foundation.
2. Field cut reinforcing bars to accomodate junction box.

INDIANA DEPARTMENT OF TRANSPORTATION

CONVENTIONAL LIGHT FOUNDATION  
FOR 33" CONCRETE MEDIAN WALL  
INSTALLATION  
SEPTEMBER 2009

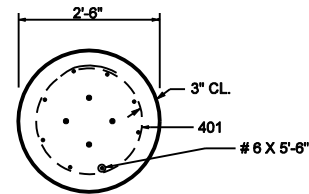
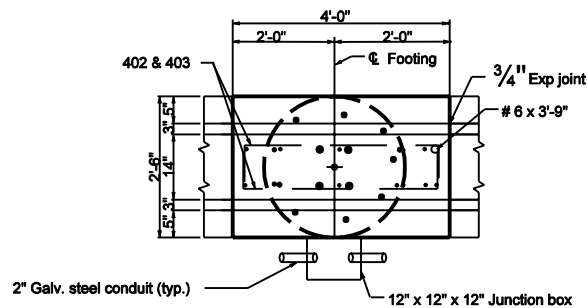
STANDARD DRAWING NO. E 807-LTFD-09



DESIGN STANDARDS ENGINEER

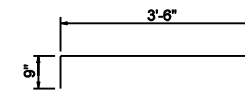
/s/ Richard L. VanCleave 09/01/09  
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09  
CHIEF HIGHWAY ENGINEER DATE

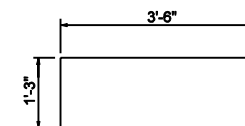


Notes:

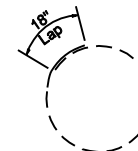
- Junction box shall meet the following specifications:
  - Material: Polymer concrete
  - Color: Concrete gray
  - Cover rating: 20,000 lbs.



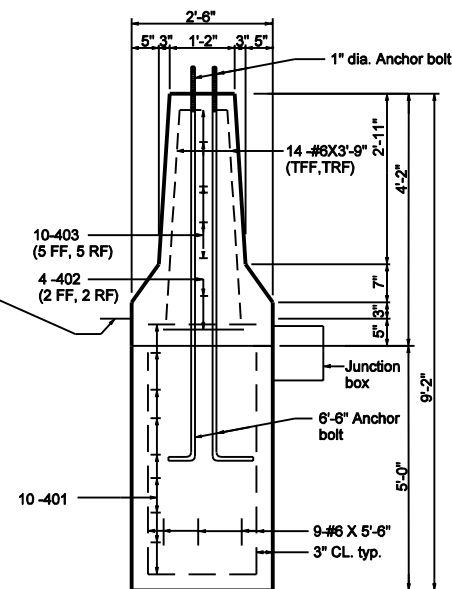
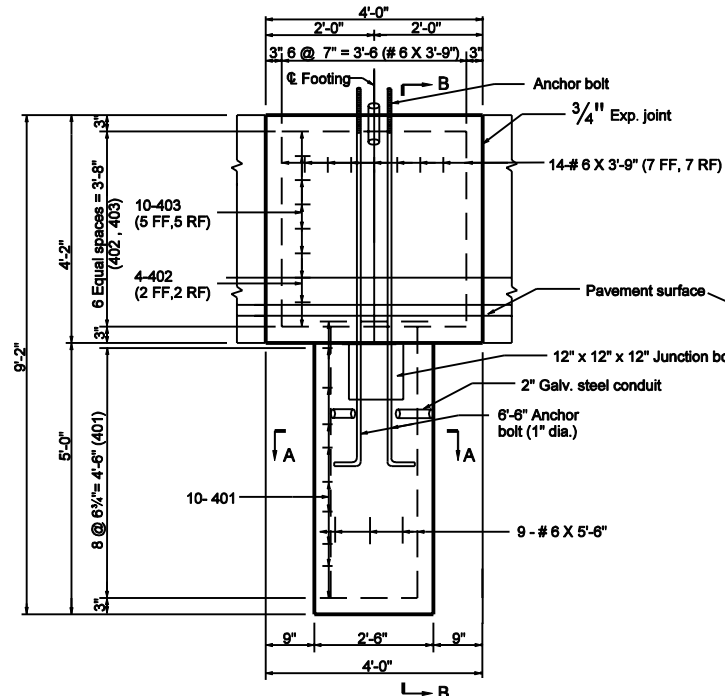
403 X 5'-0"



402 X 6'-0"

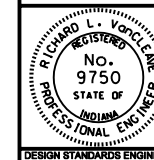


401 X 8'-10"

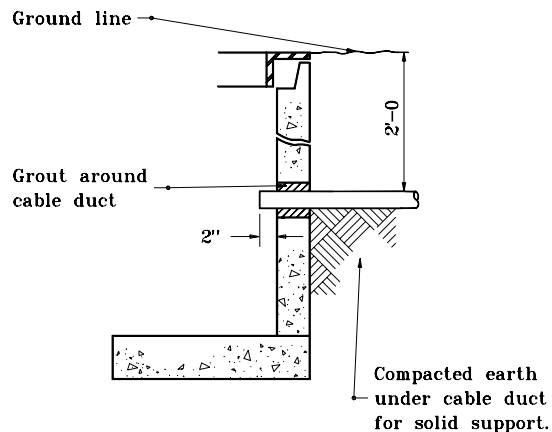
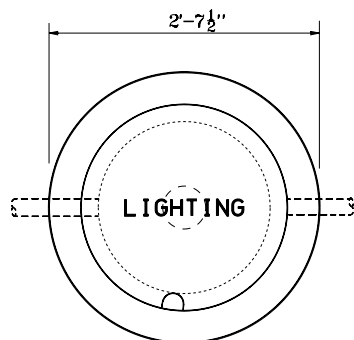


INDIANA DEPARTMENT OF TRANSPORTATION  
 CONVENTIONAL LIGHT FOUNDATION  
 FOR 45" CONCRETE MEDIAN WALL  
 INSTALLATION.  
 SEPTEMBER 2002

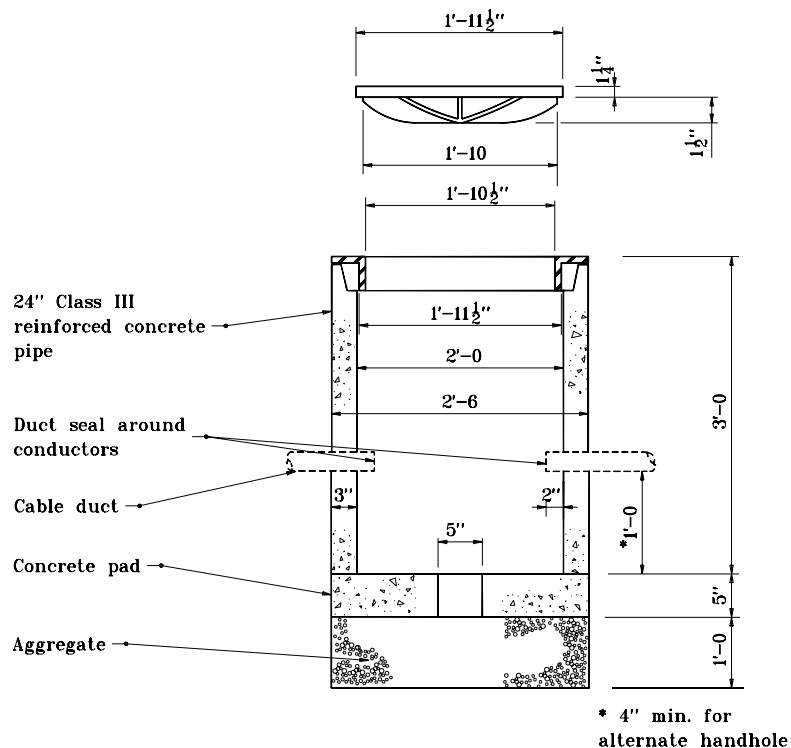
STANDARD DRAWING NO. E 807-LTFD-10



/s/ Richard L. VanCleave 9-03-02  
 DESIGN STANDARDS ENGINEER DATE  
 /s/ Richard K. Smutzer 9-03-02  
 CHIEF HIGHWAY ENGINEER DATE



### CABLE DUCT ENTERING HANDHOLE



### STREET & ALLEY TYPE HANDHOLE

### GENERAL NOTES

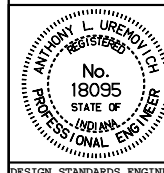
1. Alternate handhole minimum size shall be 1'-7 x 2'-6 x 1'-10 depth with 2 in. lid thickness.
2. Approximate weight for cast iron ring and cover shall be 320 lb.

INDIANA DEPARTMENT OF TRANSPORTATION

### LIGHT HANDHOLE DETAILS

MARCH 1995

STANDARD DRAWING NO. **E 807-LTHH-01**



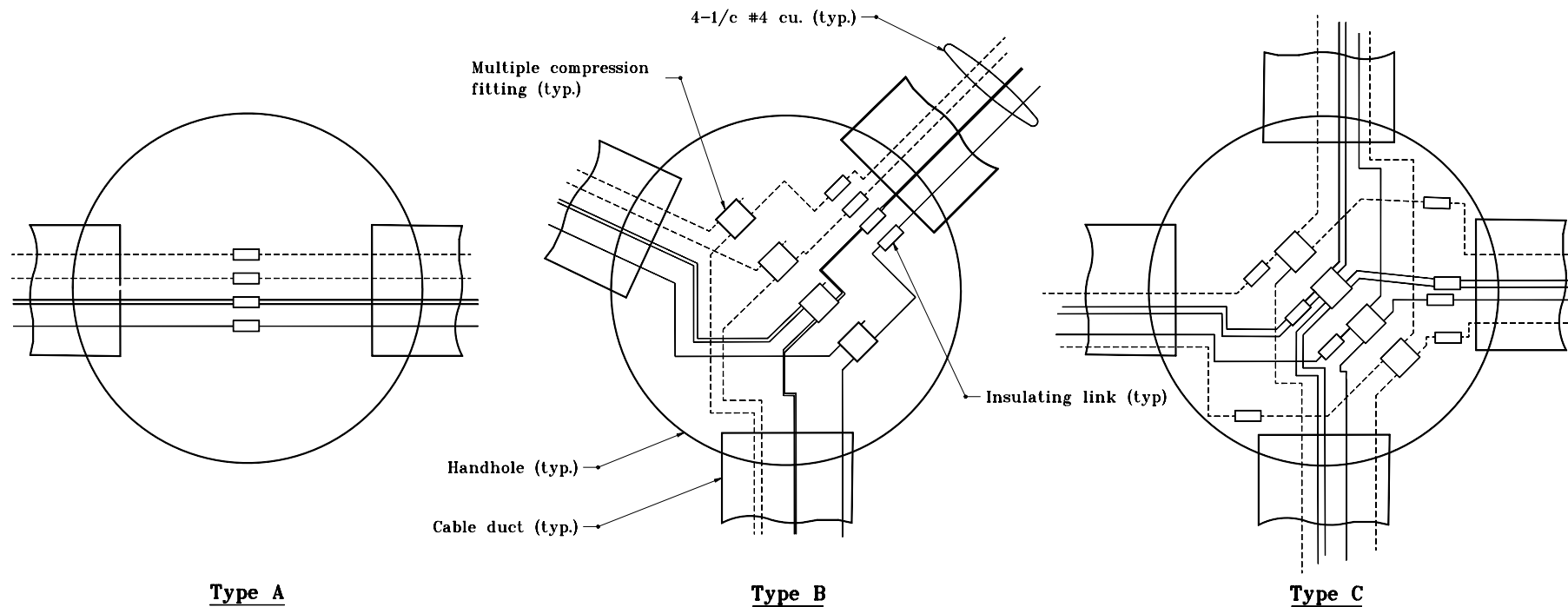
DETAILS PLACED IN THIS FORMAT 7-27-99

/s/ Anthony L. Uremovich 7-27-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 7-27-99  
CHIEF HIGHWAY ENGINEER DATE  
ORIGINALLY APPROVED 3-01-95

## GENERAL NOTES

1. For multiple compression fitting and insulating link details, see Standard Drawing No. E 803-SNWR-04.



Type A

Type B

Type C

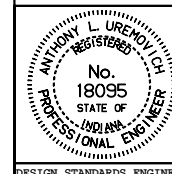
## HANDHOLE CONNECTION DIAGRAM

INDIANA DEPARTMENT OF TRANSPORTATION

## LIGHT HANDHOLE CONNECTIONS

MARCH 1995

STANDARD DRAWING NO. **E 807-LTHH-02**



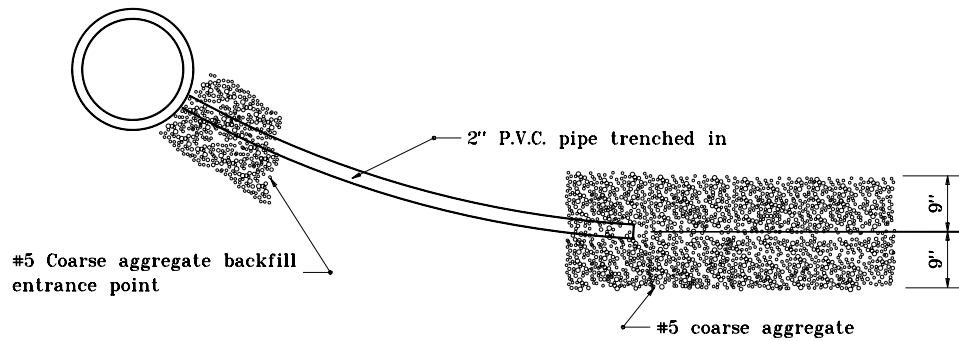
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

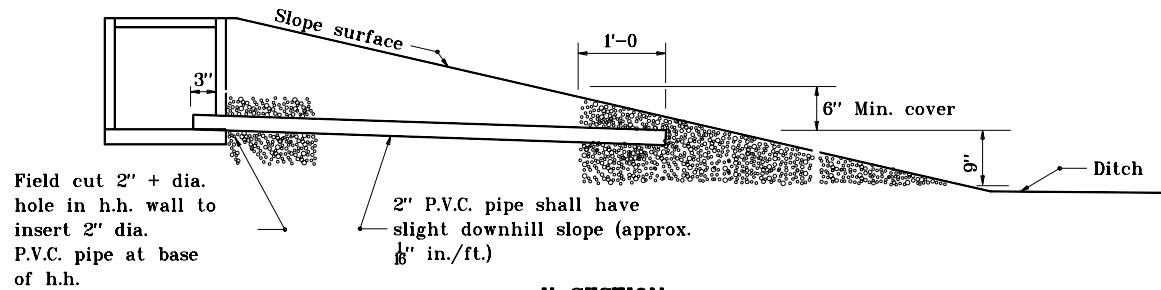
/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 3-01-95

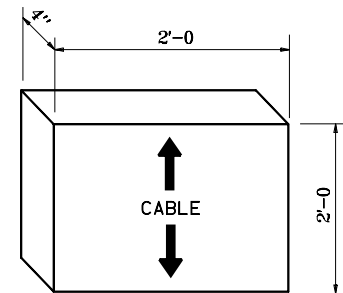


**PLAN VIEW**



**X-SECTION**

**HANDHOLE DRAIN DETAIL**



**CABLE MARKER**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>LIGHT HANDHOLE DRAIN &amp; CABLE MARKER</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 807-LTHH-03</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95



Power cable disconnected  
in tower

Junction box on luminaire  
ring in lowered position

Auxiliary luminaire  
connector

2P, 480 V, 30 A  
circuit breaker

Strain relief  
connectors

4/C #10 AWG Copper  
insulated electrical  
cable to junction box  
on luminaire ring

600 V 30 A rated  
electrical plug-moisture  
resistant

4/C #10 Flexible cable  
or 4-#10 strand wire  
in flexible conduit


Bonding plate

Multiple compression fitting

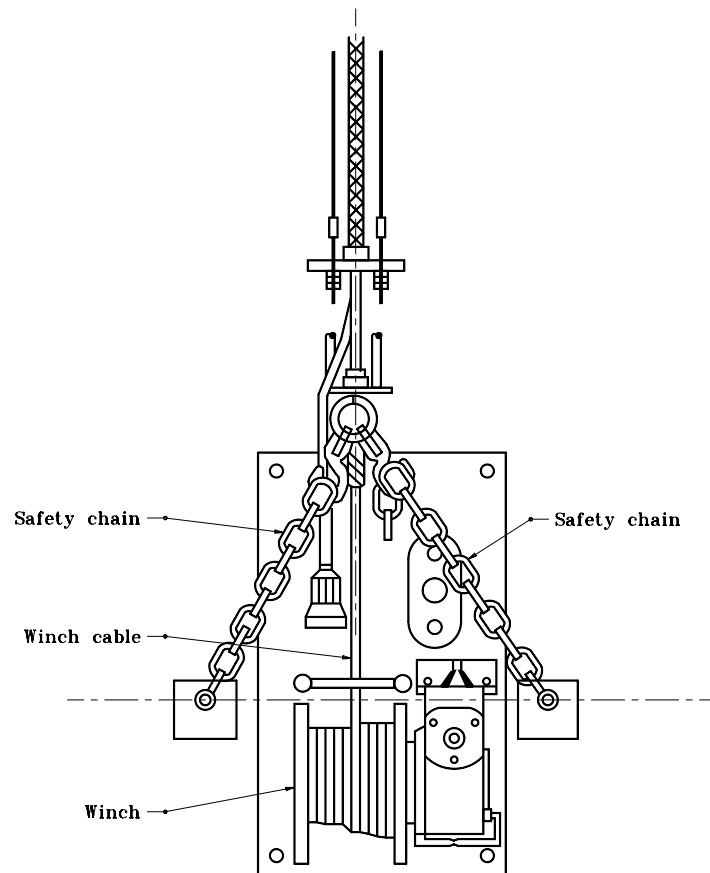
Insulating link

Ground

**DETAIL**

INDIANA DEPARTMENT OF TRANSPORTATION	
HIGHWAY ILLUMINATION TOWER BOTTOM LATCH	
MARCH 1995	
STANDARD DRAWING NO. E 807-LTHI-02	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95





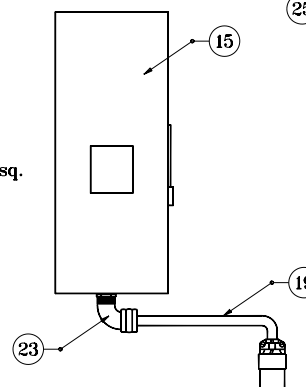
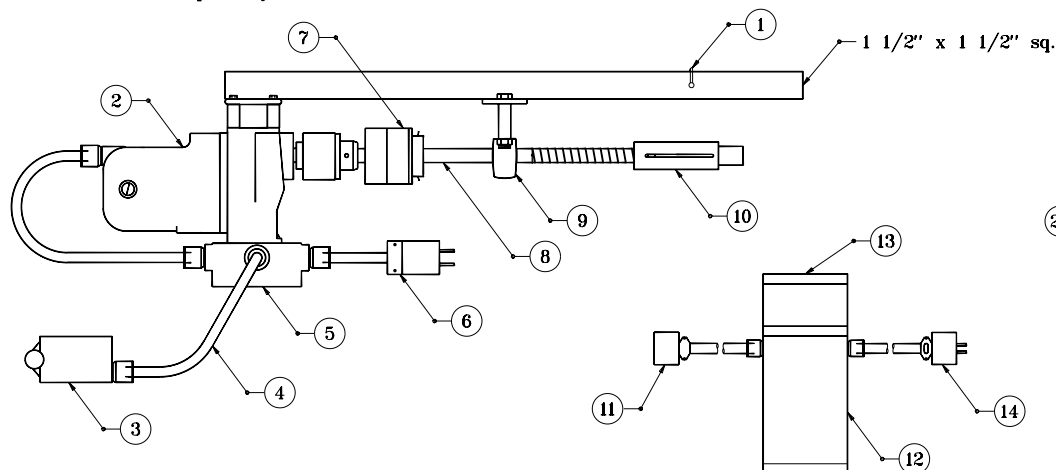
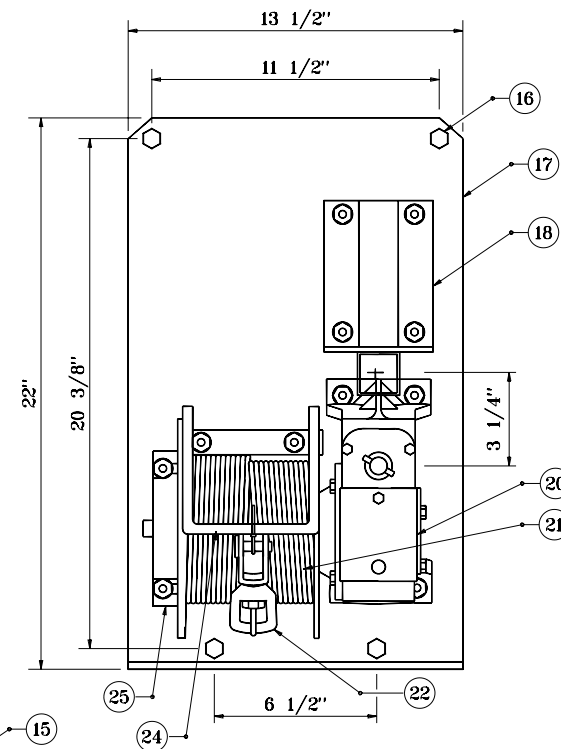
**BOTTOM LATCH**

INDIANA DEPARTMENT OF TRANSPORTATION	
HIGHWAY ILLUMINATION TOWER	
DETAILS – BOTTOM LATCH	
JANUARY 1999	
STANDARD DRAWING NO. E 807-LTHI-03	
	/s/ Anthony L. Uremovich 1-04-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Donald W. Lucas 1-04-99 CHIEF HIGHWAY ENGINEER DATE

Source Sheet: None

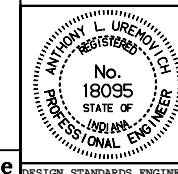
# ITEM DESCRIPTIONS

- ① Hitch pin
- ② 3/4" dia. reversible electric motor 120 V, 11.5 A, 350 RPM
- ③ Reversing drum switch
- ④ Control cord 20 ft. length
- ⑤ Wiring housing
- ⑥ Plug to mate to connector in pole base or transformer secondary
- ⑦ Torque limiter coupling
- ⑧ 3/4" dia. steel shaft
- ⑨ Ballbearing pillowblock
- ⑩ 5/8" hex socket crank shaft coupling
- ⑪ Connector to motor from 120 V transformer secondary
- ⑫ Stepdown transformer 120 V secondary, 1.5 kVA for 240 V, 277 V, & 480 V; 2.0 kVA for 208 V
- ⑬ 1/2" carry handle
- ⑭ Plug to connector in pole base from transformer primary
- ⑮ NEMA 4-circuit-breaker enclosure field mounted to pole handhole door
- ⑯ 1/2" dia. mounting bolt, 4 req'd.
- ⑰ 0.25 in. thick steel winch plate zinc electroplate finish
- ⑱ Power unit mounting bracket, 0.25 in. thick steel zinc electroplate finish
- ⑲ 5 ft. power supply cord and connector
- ⑳ Winch 30:1 gear ratio internal drag brake
- ㉑ 5/16" dia. 7 x 19 wire rope. Length is pole height + 6 ft. stainless steel
- ㉒ Forged steel swivel, 11,000 psi ultimate strength
- ㉓ Cord grip
- ㉔ Winch cable guard
- ㉕ Winch outboard support



INDIANA DEPARTMENT OF TRANSPORTATION  
**HIGHWAY ILLUMINATION TOWER**  
**DETAILS - BOTTOM LATCH**  
 JANUARY 1999

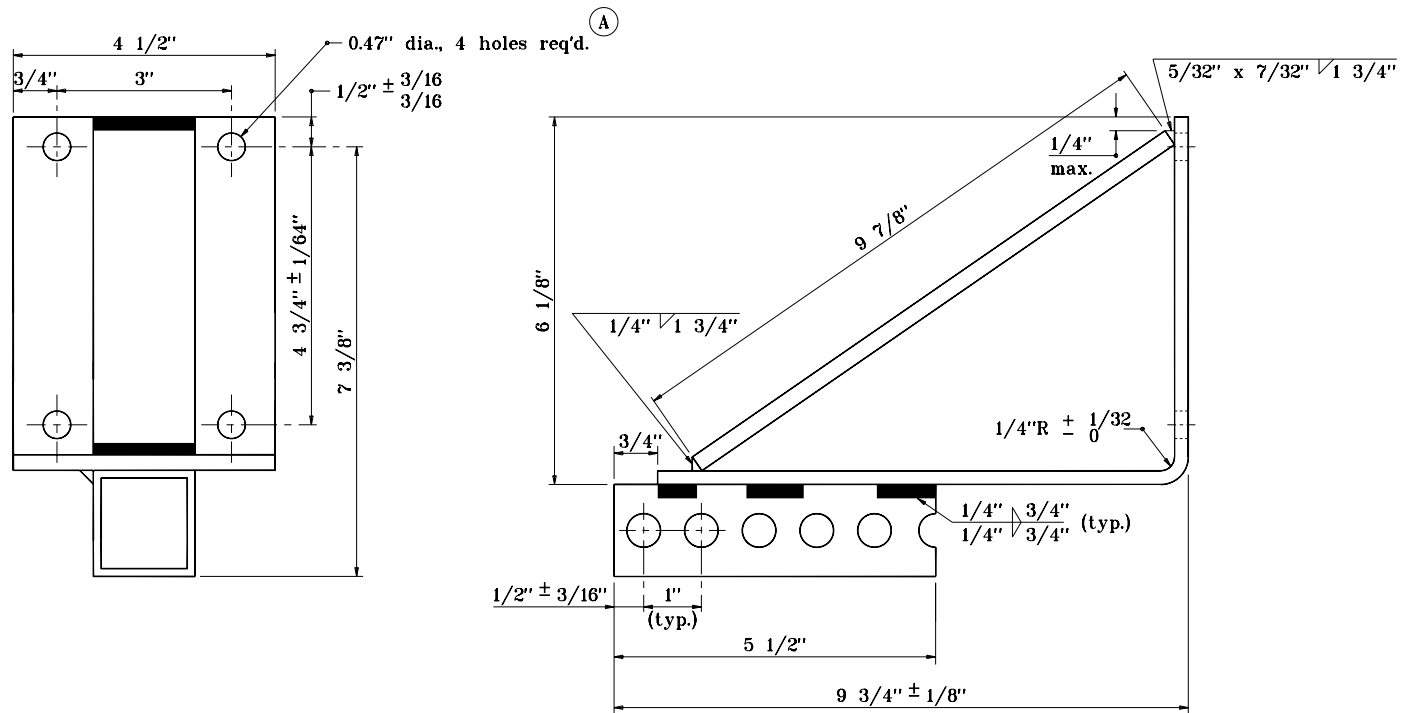
STANDARD DRAWING NOE 807-LTHI-03A



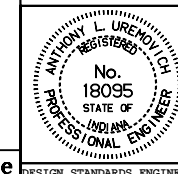
/s/ Anthony L. Uremovich 1-04-99  
 DESIGN STANDARDS ENGINEER DATE

/s/ Donald W. Lucas 1-04-99  
 CHIEF HIGHWAY ENGINEER DATE

Source Sheet: None



INDIANA DEPARTMENT OF TRANSPORTATION  
**HIGHWAY ILLUMINATION TOWER**  
**DETAILS - BOTTOM LATCH**  
 JANUARY 1999  
 STANDARD DRAWING NO. **E 807-LTHI-03B**



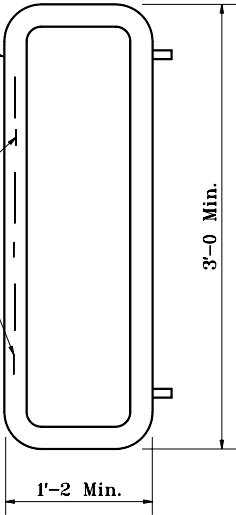
/s/ Anthony L. Uremovich 1-04-99  
 DESIGN STANDARDS ENGINEER DATE

/s/ Donald W. Lucas 1-04-99  
 CHIEF HIGHWAY ENGINEER DATE

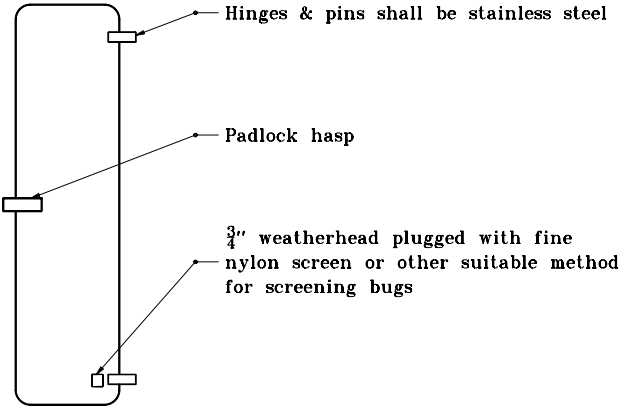
Source Sheet: None

Silicone or neoprene rubber gasket

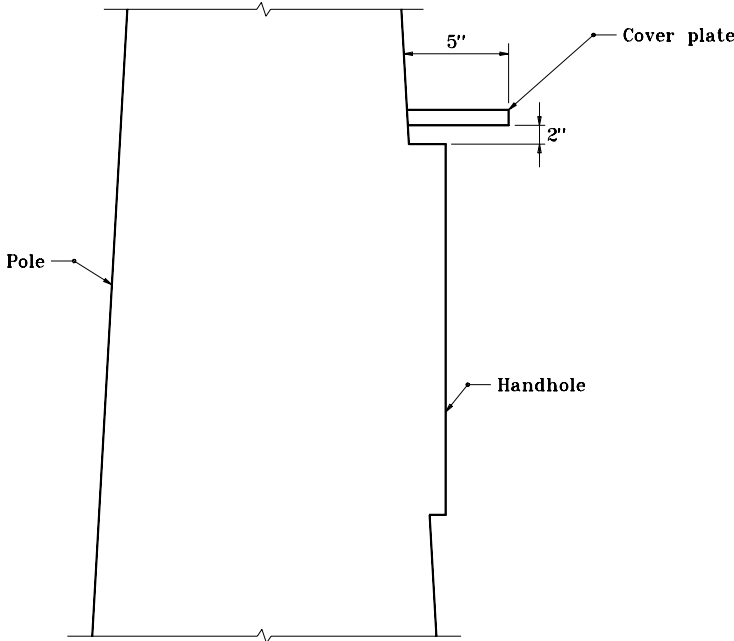
1/4" x 1" DP Drill & tap 2 places for stainless steel bolts for securing door shut



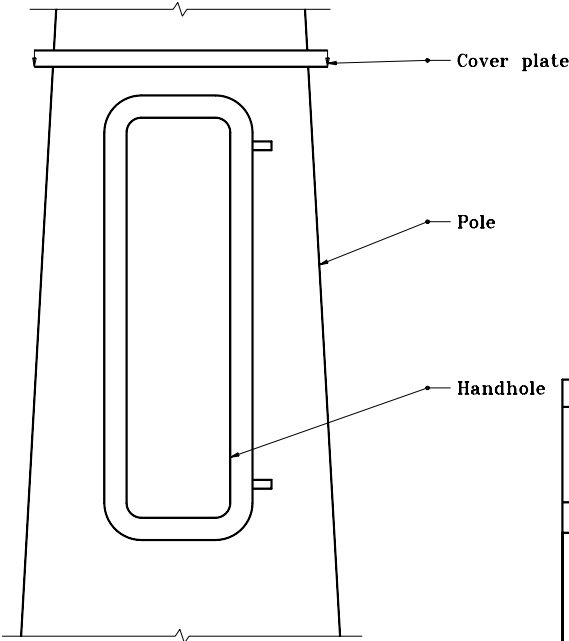
HANDHOLE FRAME DETAIL




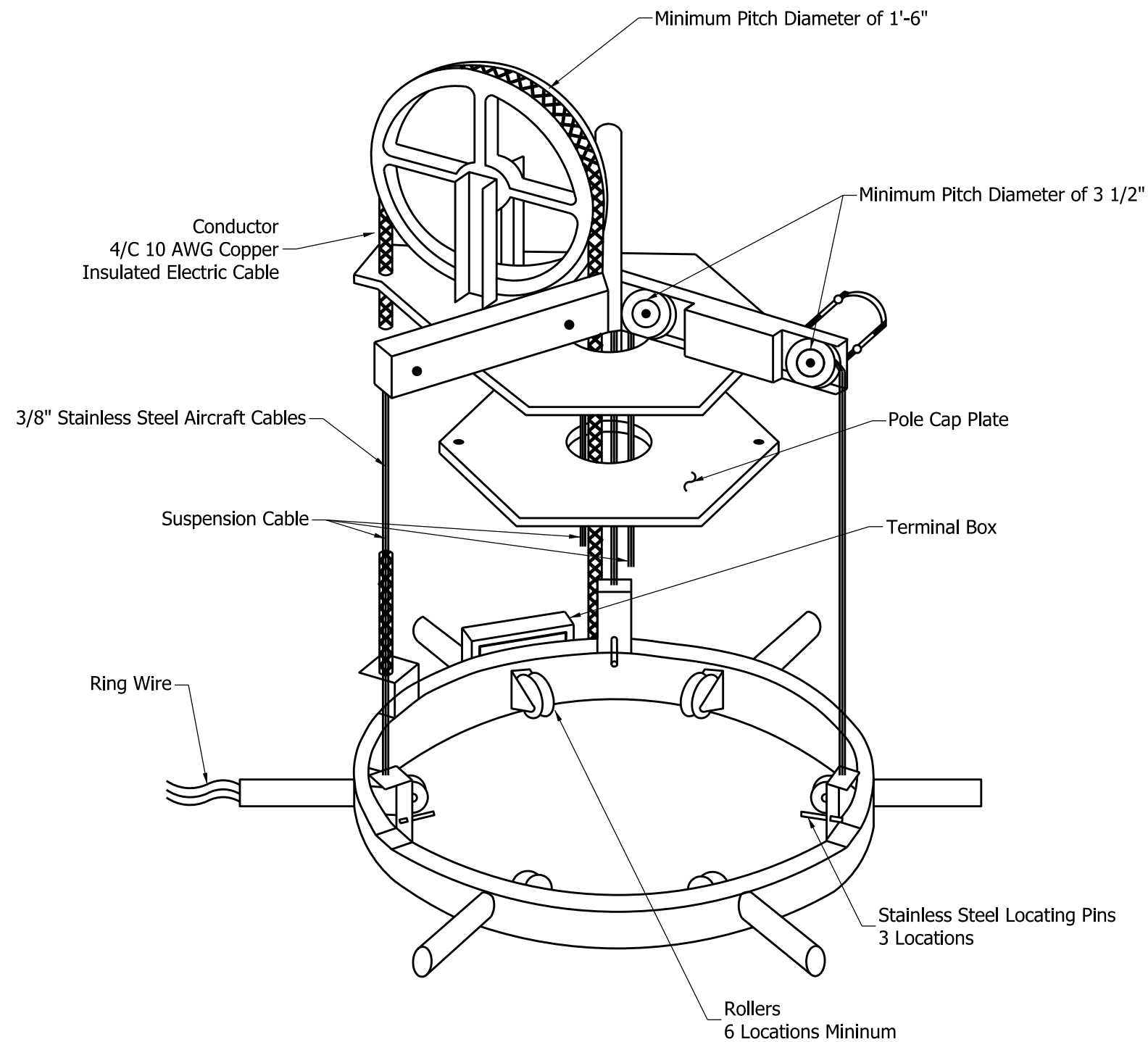
HANDHOLE COVER DETAIL



COVER PLATE



INDIANA DEPARTMENT OF TRANSPORTATION	
HIGHWAY ILLUMINATION TOWER BOTTOM LATCH	
MARCH 1995	
STANDARD DRAWING NO. E 807-LTHI-04	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	ORIGINALLY APPROVED 3-01-95



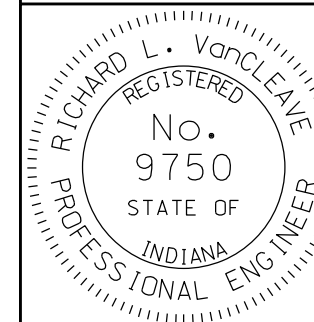
RING ASSEMBLY

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER  
DETAILS BOTTOM LATCH

SEPTEMBER 2010

STANDARD DRAWING NO. E 807-LTHI-05



/s/ Richard L. Vancleave 09/01/10

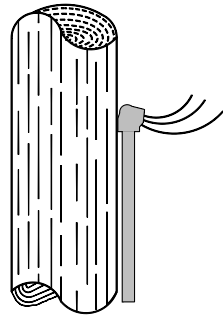
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10

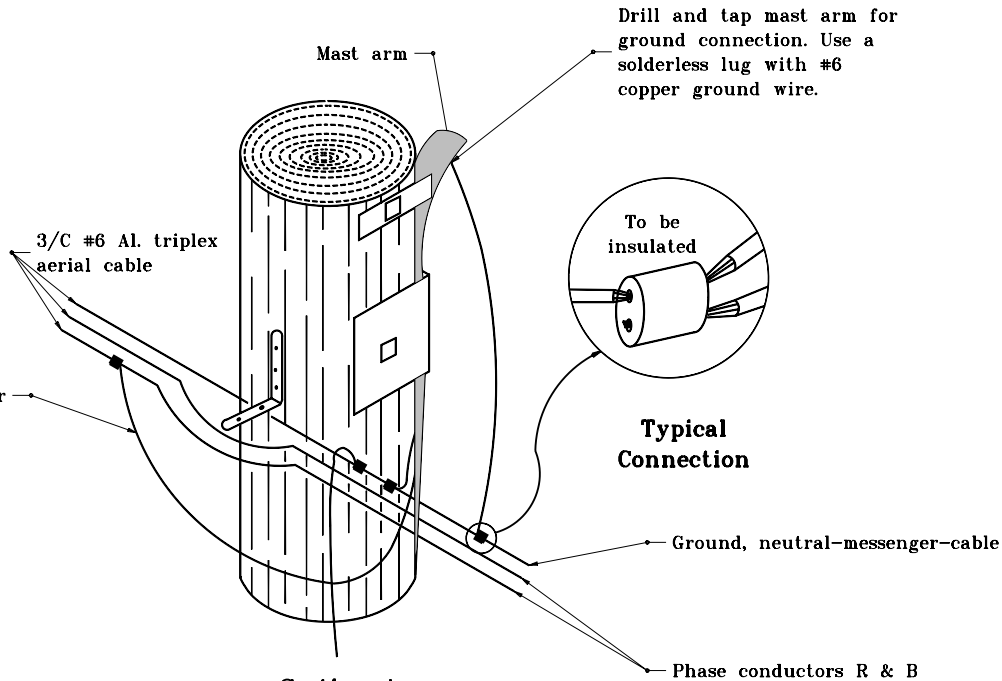
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

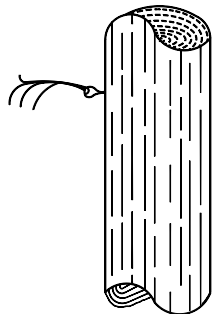




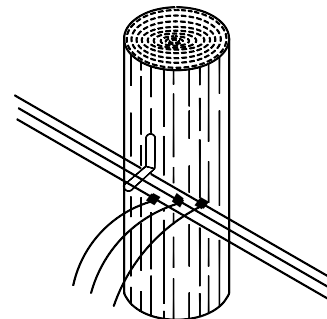
**Conduit Riser**



**Section A  
Typical Aerial Luminaire  
Connection with Ground**

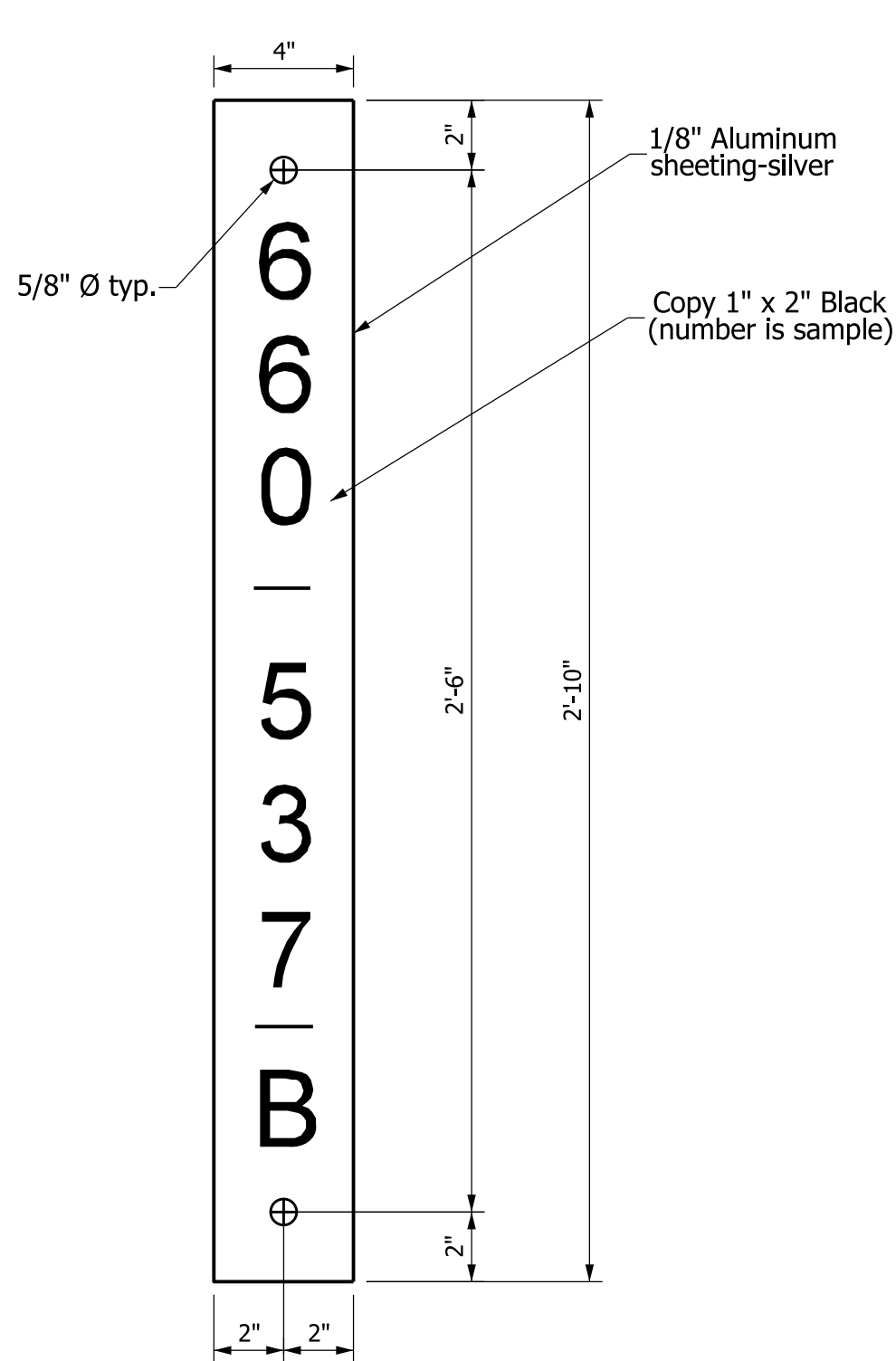


**Aerial Cable  
Termination**

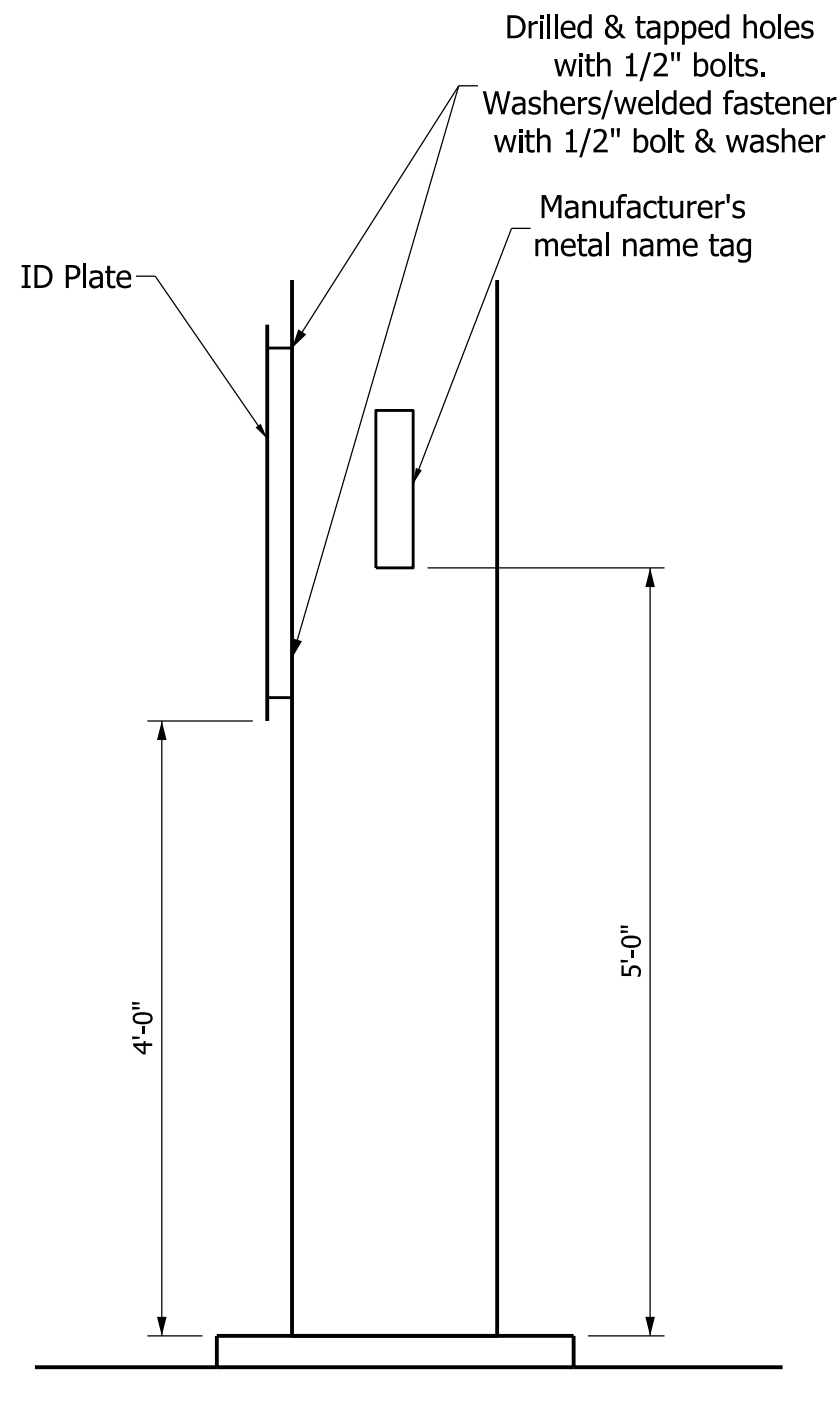


**Typical Circuit  
Connection to  
Aerial Cable**

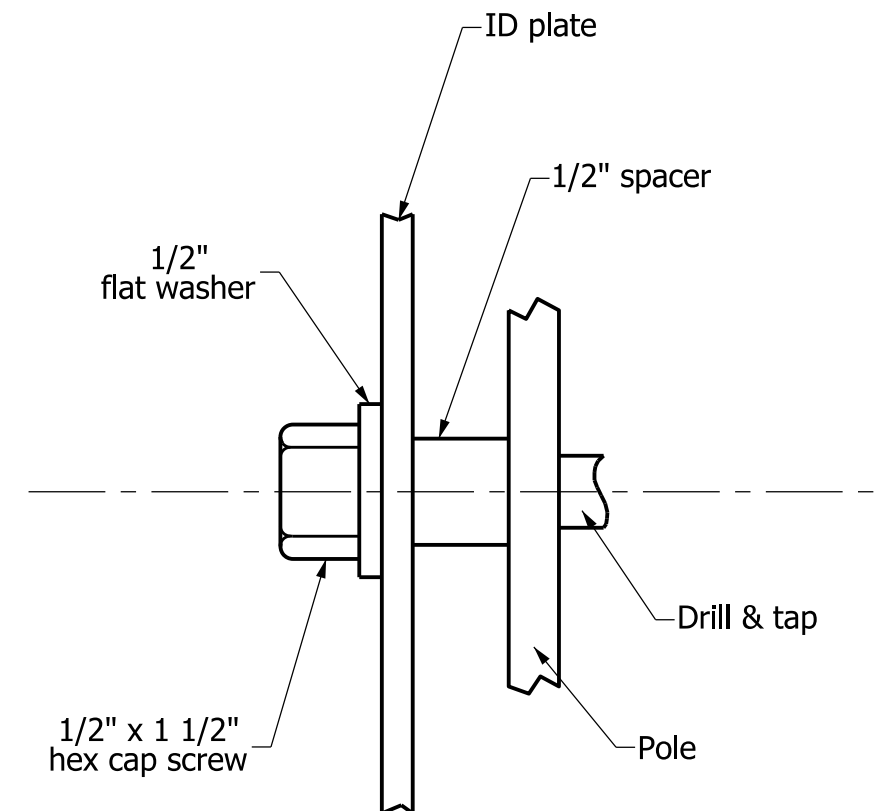
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>TEMPORARY HIGHWAY ILLUMINATION DETAILS</b>	
JANUARY 2000	
STANDARD DRAWING NO. <b>E 807-LTHI-07</b>	
	<i>/s/ Anthony L. Uremovich</i> 1-03-00 <small>DESIGN STANDARDS ENGINEER DATE</small>
	<i>/s/ Firooz Zandi</i> 1-03-00 <small>CHIEF HIGHWAY ENGINEER DATE</small>
<small>DESIGN STANDARDS ENGINEER</small>	




ID PLATE DETAIL



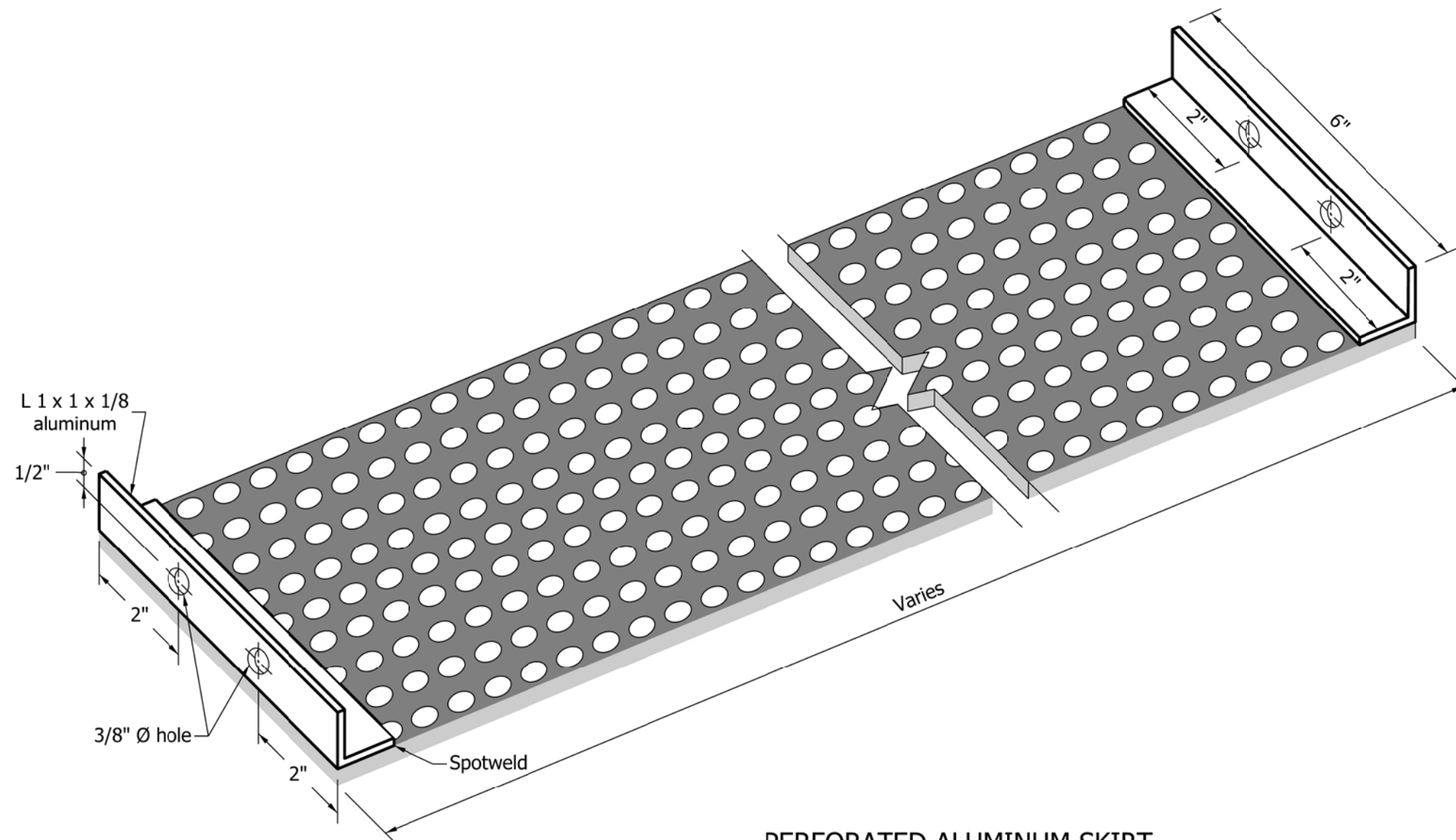
HIGH MAST POLE



MOUNTING DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION		
HIGH MAST POLE ID PLATES		
SEPTEMBER 2010		
STANDARD DRAWING NO.		E 807-LTHM-01
	/s/ <i>Richard L. VanCleave</i>	09/01/10
	DESIGN STANDARDS ENGINEER	DATE
	/s/ <i>Mark A. Miller</i>	09/01/10
	CHIEF HIGHWAY ENGINEER	DATE
DESIGN STANDARDS ENGINEER		





PERFORATED ALUMINUM SKIRT

NOTES:

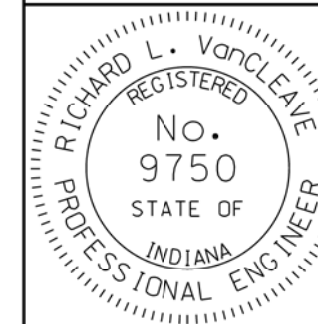
1. Holes shall be 3/8" dia., 1/2" outer circle, staggered.
2. The base plate of the high mast pole and exposed anchor bolts shall be enclosed by the aluminum skirt.

INDIANA DEPARTMENT OF TRANSPORTATION

HIGH MAST POLE  
PERFORATED ALUMINUM SKIRT

SEPTEMBER 2010

STANDARD DRAWING NO. E 807-LTHM-02



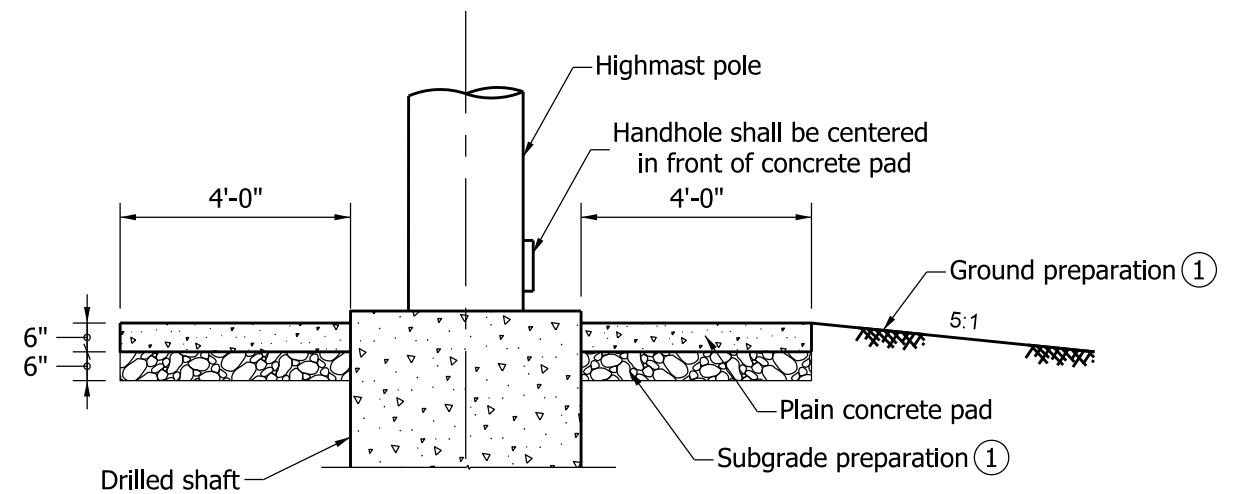
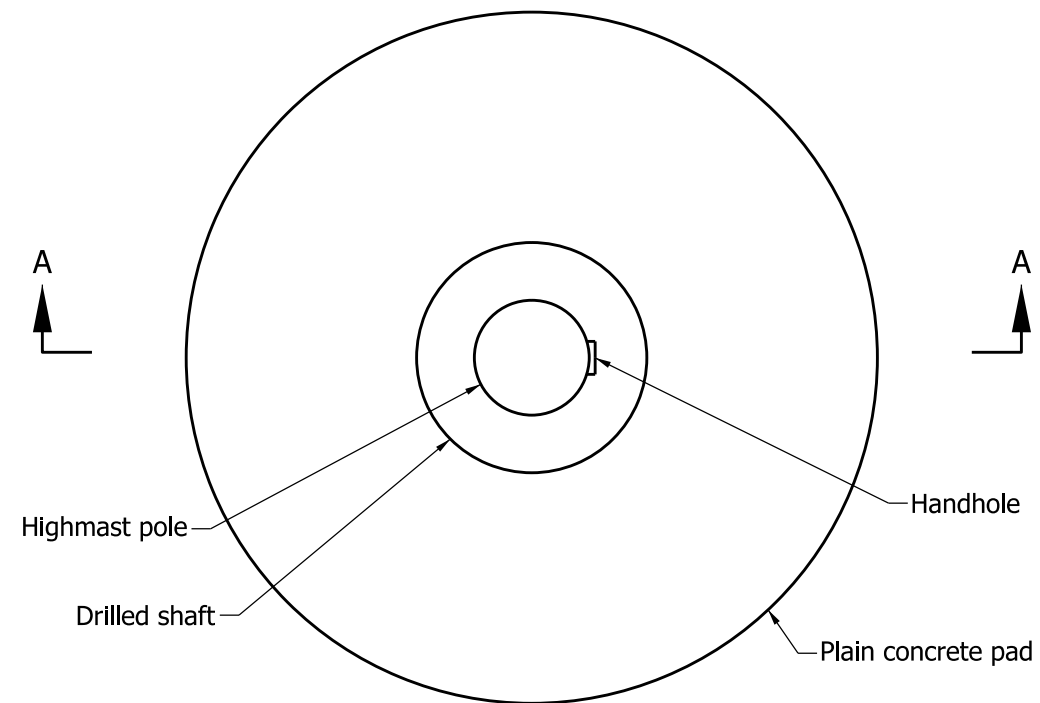
DESIGN STANDARDS ENGINEER

/s/ Richard L. Vancleave 09/01/10

DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10

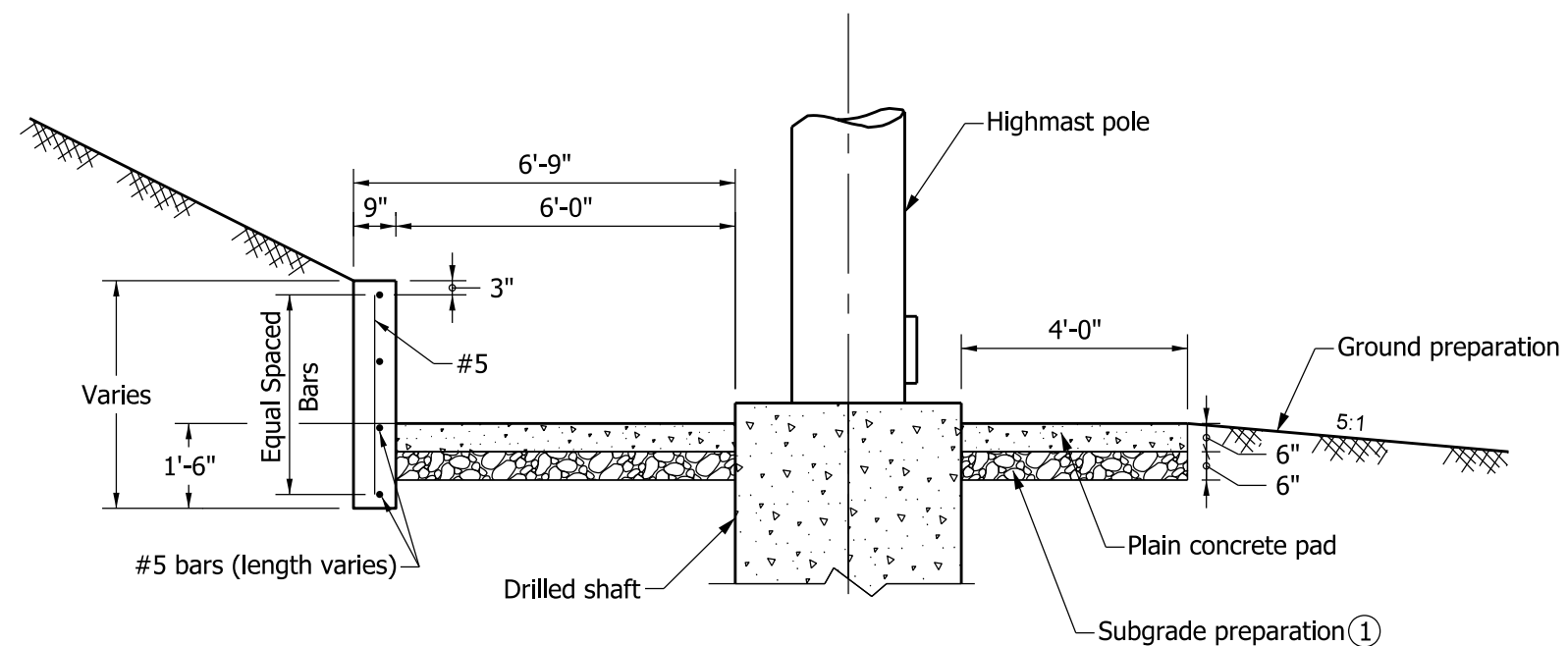
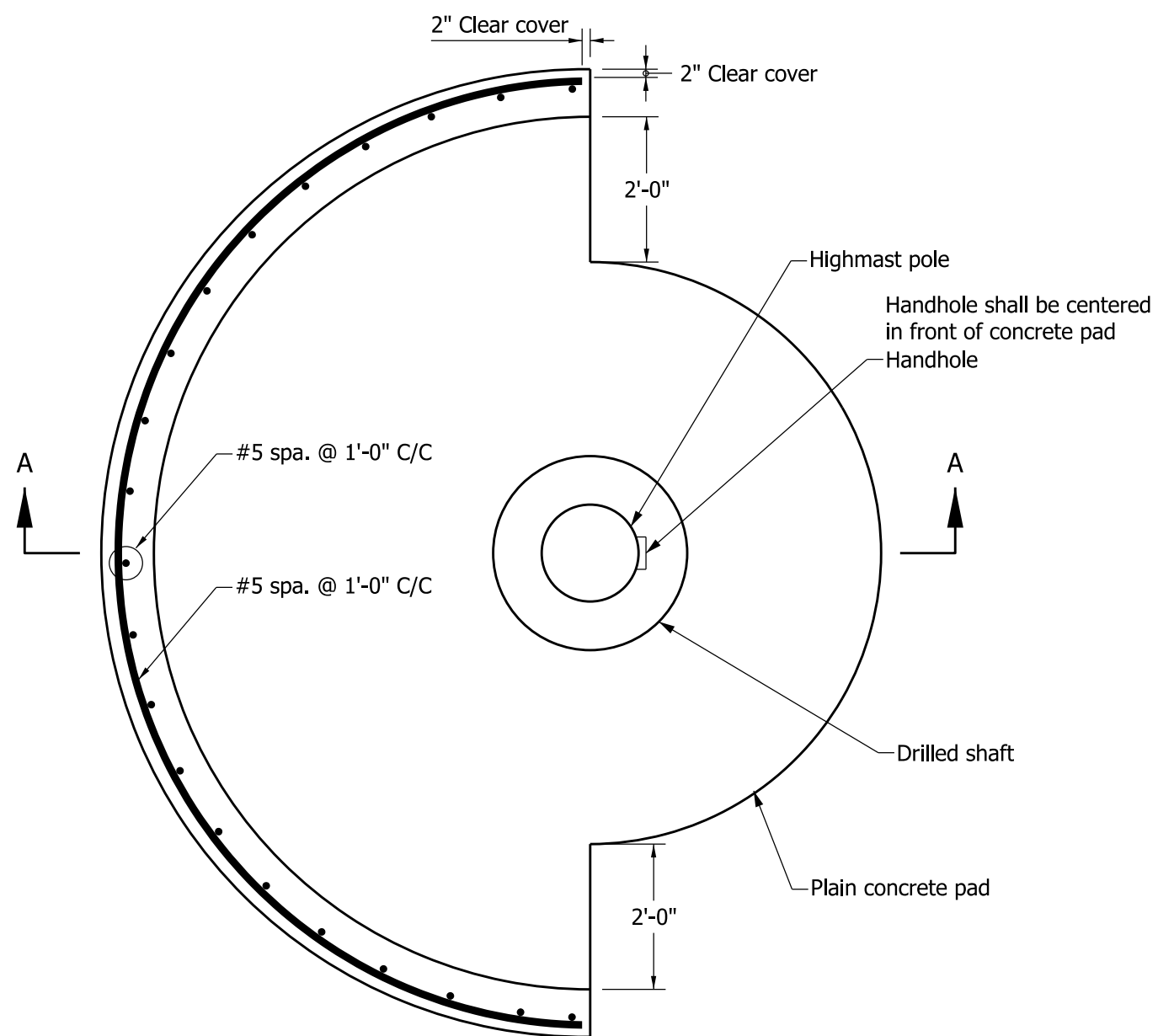
CHIEF HIGHWAY ENGINEER DATE



**SECTION A-A**

- NOTES:**
- ① See Standard Drawing E 807-LTHM-04 for Subgrade and ground preparation requirements.
  2. The slope grading around the concrete pad shall be as shown unless otherwise directed.


INDIANA DEPARTMENT OF TRANSPORTATION			
LIGHTING HIGH MAST POLE CONCRETE PAD			
SEPTEMBER 2010			
STANDARD DRAWING NO.		E 807-LTHM-03	
	<i>/s/ Richard L. Vancleave</i>		<i>09/01/10</i>
	DESIGN STANDARDS ENGINEER		DATE
	<i>/s/ Mark A. Miller</i>		<i>09/01/10</i>
DESIGN STANDARDS ENGINEER	CHIEF HIGHWAY ENGINEER		DATE

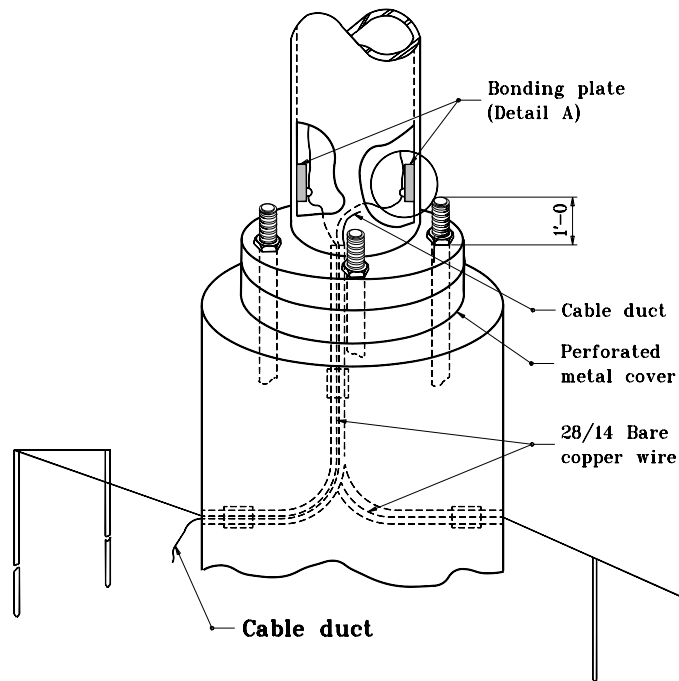
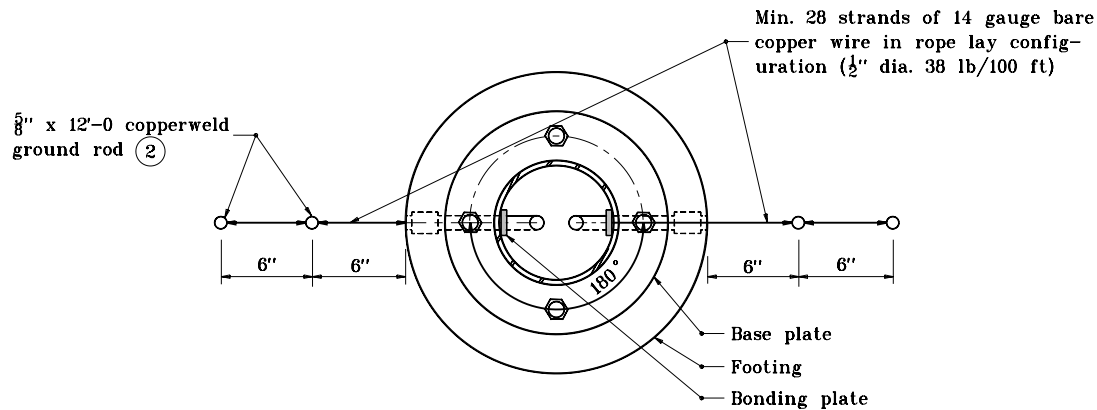


SECTION A-A

NOTES:

- ① After excavation, the ground shall be compacted by means of a portable vibratory roller. Soft soil which does not compact shall be removed. All excavated material shall be replaced with compacted aggregate No. 53.
2. See Standard Drawing E 807-LTHM-03 for concrete pad where no retaining wall is required.
3. See Standard Drawing E 703-BRST-01 for bar bending details.
4. All reinforcing bars shall be epoxy coated.

INDIANA DEPARTMENT OF TRANSPORTATION	
<p style="text-align: center;">LIGHTING HIGH MAST POLE CONCRETE PAD WITH RETAINING WALL SEPTEMBER 2010</p>	
STANDARD DRAWING NO.      E 807-LTHM-04	
	<i>/s/ Richard L. Vancleave</i> 09/01/10
	DESIGN STANDARDS ENGINEER      DATE
	<i>/s/ Mark A. Miller</i> 09/01/10
	CHIEF HIGHWAY ENGINEER      DATE
DESIGN STANDARDS ENGINEER	



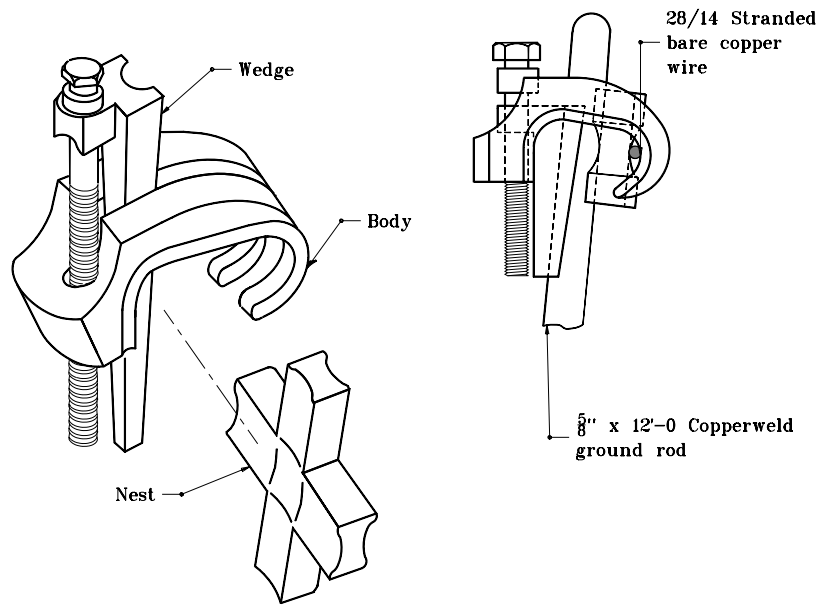
## GENERAL NOTES

1. Shop drawings shall be submitted on lightning rod and connection details. Drawings are for informational purposes only. Only one lightning rod is required per structure.

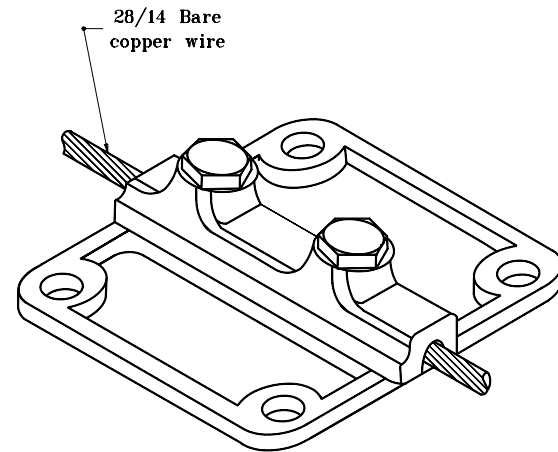
(2) Grounding rod must be located a min. of 6 ft from base at a min. of 2 ft below grade.

For bonding plate detail, see Standard Drawing No. E 807-LTLR-02.

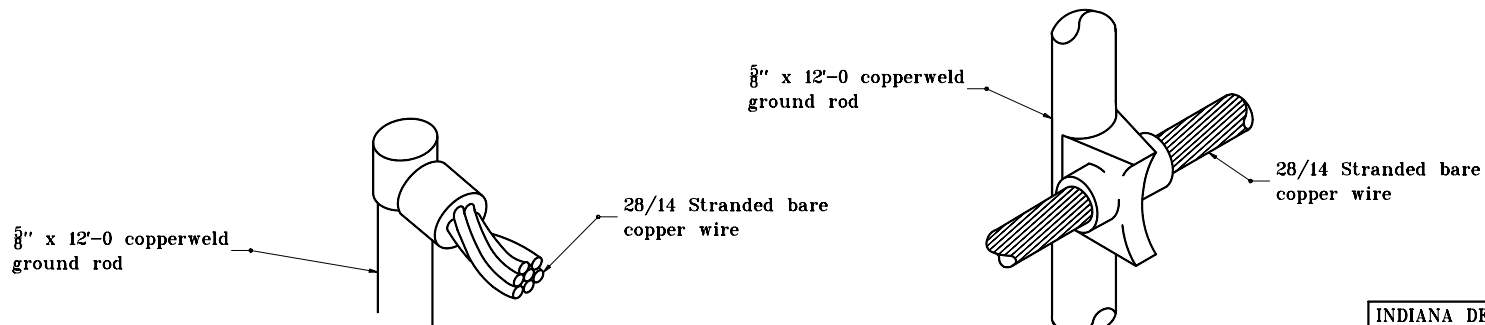
INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHTNING ROD TYPICAL DETAILS	
MARCH 1995	
STANDARD DRAWING NO. E 807-LTLR-01	
	DETAILS PLACED IN THIS FORMAT 7-27-99 /s/ Anthony L. Uremovich 7-27-99 DESIGN STANDARDS ENGINEER DATE /s/ Firooz Zandi 7-27-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 3-01-95



**GROUNDING GRID CONNECTOR**



**BONDING PLATE**  
(DETAIL A)

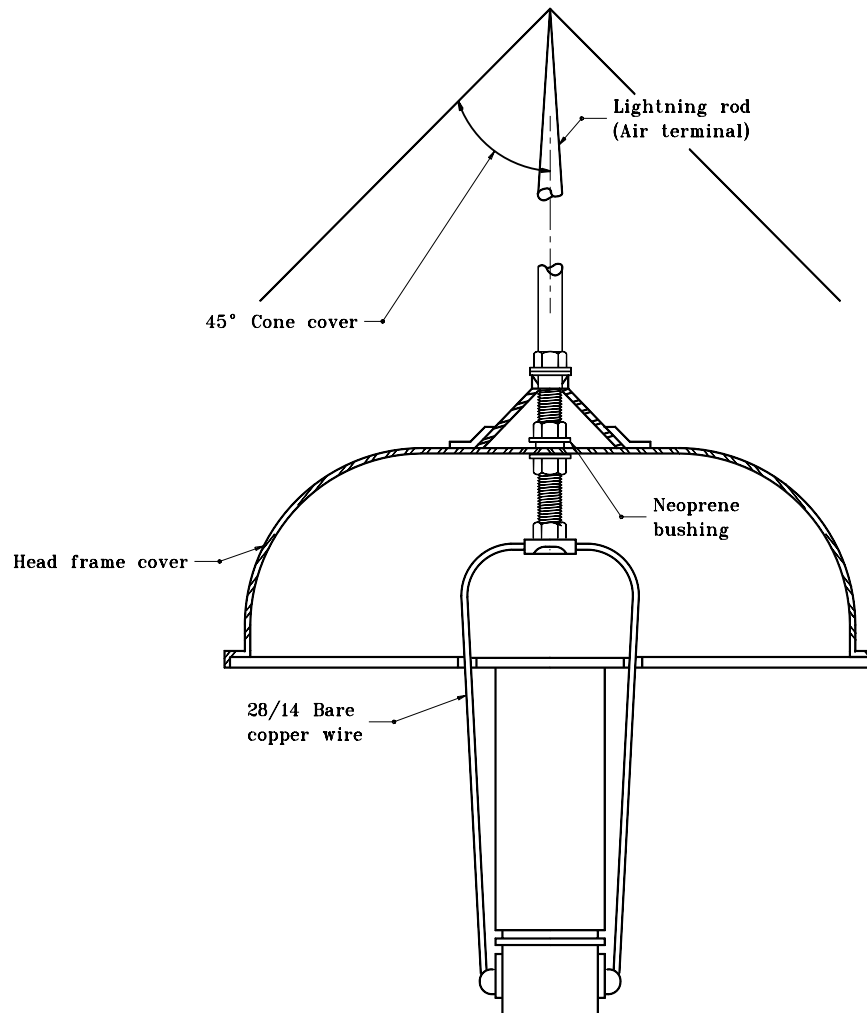


**TOP CONNECTION**

**SIDE CONNECTION**

**THERMOWELD PROCESS**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>LIGHTNING ROD TYPICAL DETAILS</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 807-LTLR-02</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95

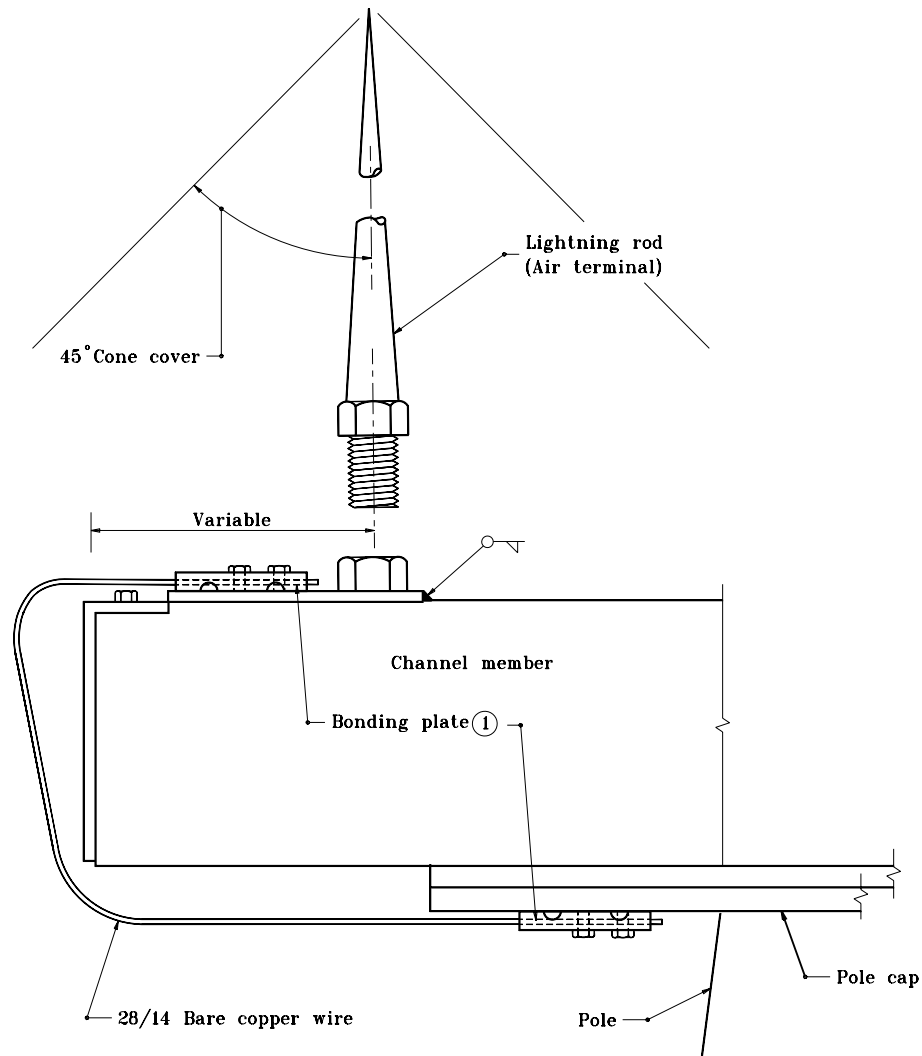


**CENTER HOOD MOUNT**


INDIANA DEPARTMENT OF TRANSPORTATION	
<b>LIGHTNING ROD TYPICAL DETAILS</b>	
MARCH 1995	
<b>STANDARD DRAWING NO.E 807-LTLR-03</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	ORIGINALLY APPROVED 3-01-95

NOTES


- ① See Standard Drawing E 807-LTLR-02 for Detail A.



**CHANNEL MOUNT**

INDIANA DEPARTMENT OF TRANSPORTATION			
LIGHTNING ROD TYPICAL DETAILS MARCH 1995			
STANDARD DRAWING NO. E 807-LTLR-04			
	DETAILS PLACED IN THIS FORMAT		11-15-99
	/s/ Anthony L. Uremovich		11-15-99
	DESIGN STANDARDS ENGINEER		DATE
	/s/ Firooz Zandi		11-15-99
DESIGN STANDARDS ENGINEER		CHIEF HIGHWAY ENGINEER	
ORIGINALLY APPROVED		DATE	
		3-01-95	

POLE DATA SCHEDULE												
POLE HEIGHT (E.M.H.)	POLE SHAFT DATA						BASE PLATE			ANCHOR BOLT		
	No. of Sec.	Sec.	Minimum Diameter in inches		Min. Wall Thickness in inches	Section Length in Feet	Size in inches	Bolt Circle (in.)	Thick- ness (in.)	No. Req'd.	Diameter (in.)	Length (in.)
			Base	Top								
100'	2	A	24.50	17.16	0.250	52.42	37.50	31.50	2.25	6	2.25	90
		B	18.00	10.88	0.1875	50.89						
105'	3	A	21.50	18.14	0.3125	23.98	37.50	31.50	2.25	6	2.25	90
		B	19.00	13.23	0.1875	41.21						
		C	14.00	7.55	0.1875	46.07						
110'	3	A	22.50	19.13	0.3125	24.10	37.50	31.50	2.25	6	2.25	90
		B	20.00	13.72	0.1875	44.84						
		C	14.50	7.85	0.1875	47.50						
115'	3	A	23.50	20.11	0.3125	24.23	37.50	31.50	2.25	6	2.25	90
		B	21.00	14.21	0.1875	48.48						
		C	15.00	8.15	0.1875	48.93						
120'	3	A	26.00	22.07	0.3125	28.05	37.50	31.50	2.25	6	2.25	90
		B	23.00	16.18	0.1875	48.73						
		C	17.00	9.95	0.1875	50.36						
125'	3	A	25.00	21.09	0.3750	27.92	37.50	31.50	2.25	6	2.25	90
		B	22.00	14.70	0.1875	52.11						
		C	15.50	8.25	0.1875	51.79						
130'	3	A	25.00	20.11	0.3750	34.94	37.50	31.50	2.25	6	2.25	90
		B	21.00	14.21	0.1875	48.48						
		C	15.00	7.55	0.1875	53.21						
135'	3	A	26.00	20.11	0.3750	42.09	37.50	31.50	2.25	6	2.25	90
		B	21.00	14.21	0.1875	48.48						
		C	15.00	7.85	0.1875	51.07						
140'	3	A	26.80	20.60	0.3750	44.29	37.50	31.50	2.25	6	2.25	90
		B	21.50	14.21	0.1875	52.05						
		C	15.00	7.95	0.1875	50.36						
145'	3	A	27.00	20.60	0.4375	45.72	39.50	33.50	2.25	8	2.25	90
		B	21.50	14.21	0.1875	52.05						
		C	15.00	7.45	0.1875	53.93						
150'	3	A	28.00	20.60	0.4375	52.86	39.50	33.50	2.25	8	2.25	90
		B	21.50	14.21	0.1875	52.05						
		C	15.00	7.75	0.1875	51.79						
155'	4	A	28.50	24.04	0.4375	31.87	39.50	33.50	2.25	8	2.25	90
		B	25.00	19.13	0.1875	41.96						
		C	20.00	14.21	0.1875	41.34						
		D	15.00	7.93	0.1875	50.54						

INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHTING HIGH MAST POLE POLE DATA SCHEDULE (1 of 2) POLE HEIGHTS 100' - 155' SEPTEMBER 2010	
STANDARD DRAWING NO. E 807-LTPD-01	
	<div>/s/ <i>Richard L. Vancleave</i> 09/01/10</div> <div>DESIGN STANDARDS ENGINEER DATE</div> <div>/s/ <i>Mark A. Miller</i> 09/01/10</div> <div>CHIEF HIGHWAY ENGINEER DATE</div>
DESIGN STANDARDS ENGINEER	




POLE DATA SCHEDULE												
POLE HEIGHT (E.M.H.)	POLE SHAFT DATA						BASE PLATE			ANCHOR BOLT		
	No. of Sec.	Sec.	Minimum Diameter in inches		Min. Wall Thickness in inches	Section Length in Feet	Size in inches	Bolt Circle (in.)	Thick- ness (in.)	No. Req'd.	Diameter (in.)	Length (in.)
			Base	Top								
160'	4	A	28.80	25.02	0.4375	27.00	39.50	33.50	2.25	8	2.25	90
		B	26.00	19.62	0.1875	45.59						
		C	20.50	13.72	0.1875	48.42						
		D	14.50	7.53	0.1875	49.82						
165'	4	A	29.50	25.51	0.5000	28.49	46	40.00	2.25	8	2.25	90
		B	26.50	19.62	0.1875	49.17						
		C	20.50	13.72	0.1875	48.42						
		D	14.50	7.53	0.1875	49.82						
170'	4	A	30.50	25.02	0.5000	39.14	46	40.00	2.25	8	2.25	90
		B	26.00	20.11	0.1875	42.09						
		C	21.00	14.21	0.1875	48.48						
		D	15.00	7.83	0.1875	51.25						
175'	4	A	31.00	25.02	0.5000	42.71	46	40.00	2.25	8	2.25	90
		B	26.00	19.62	0.1875	45.59						
		C	20.50	13.72	0.1875	48.42						
		D	14.50	7.63	0.1875	49.11						
180'	4	A	32.00	25.02	0.5000	49.85	46	40.00	2.25	8	2.25	90
		B	26.00	19.13	0.1875	49.10						
		C	20.00	13.23	0.1875	48.35						
		D	14.00	7.93	0.1875	43.39						
185'	4	A	32.50	26.00	0.5000	46.41	46	40.00	2.25	8	2.25	90
		B	27.00	20.11	0.1875	49.23						
		C	21.00	14.21	0.1875	48.48						
		D	15.00	7.73	0.1875	51.96						
190'	5	A	33.00	28.95	0.6250	28.92	48	42.00	2.25	12	2.25	90
		B	30.00	24.04	0.1875	42.59						
		C	25.00	19.13	0.1875	41.96						
		D	20.00	14.21	0.1875	41.34						
		E	15.00	7.90	0.1875	50.71						
195'	5	A	33.50	28.95	0.6250	32.50	48	42.00	2.25	12	2.25	90
		B	30.00	24.04	0.1875	42.59						
		C	25.00	19.13	0.1875	41.96						
		D	20.00	14.21	0.1875	41.34						
		E	15.00	7.70	0.1875	52.14						
200'	5	A	34.00	28.89	0.6250	36.51	48	42.00	2.25	12	2.25	90
		B	30.00	23.55	0.2188	46.09						
		C	24.50	18.63	0.1875	41.90						
		D	19.50	13.72	0.1875	41.27						
		E	14.50	7.56	0.1875	49.55						

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTING HIGH MAST POLE  
POLE DATA SCHEDULE (2 of 2)  
POLE HEIGHTS 160' - 200'  
SEPTEMBER 2010

STANDARD DRAWING NO. E 807-LTPD-02



/s/ Richard L. Vancleave

DESIGN STANDARDS ENGINEER

09/01/10

DATE

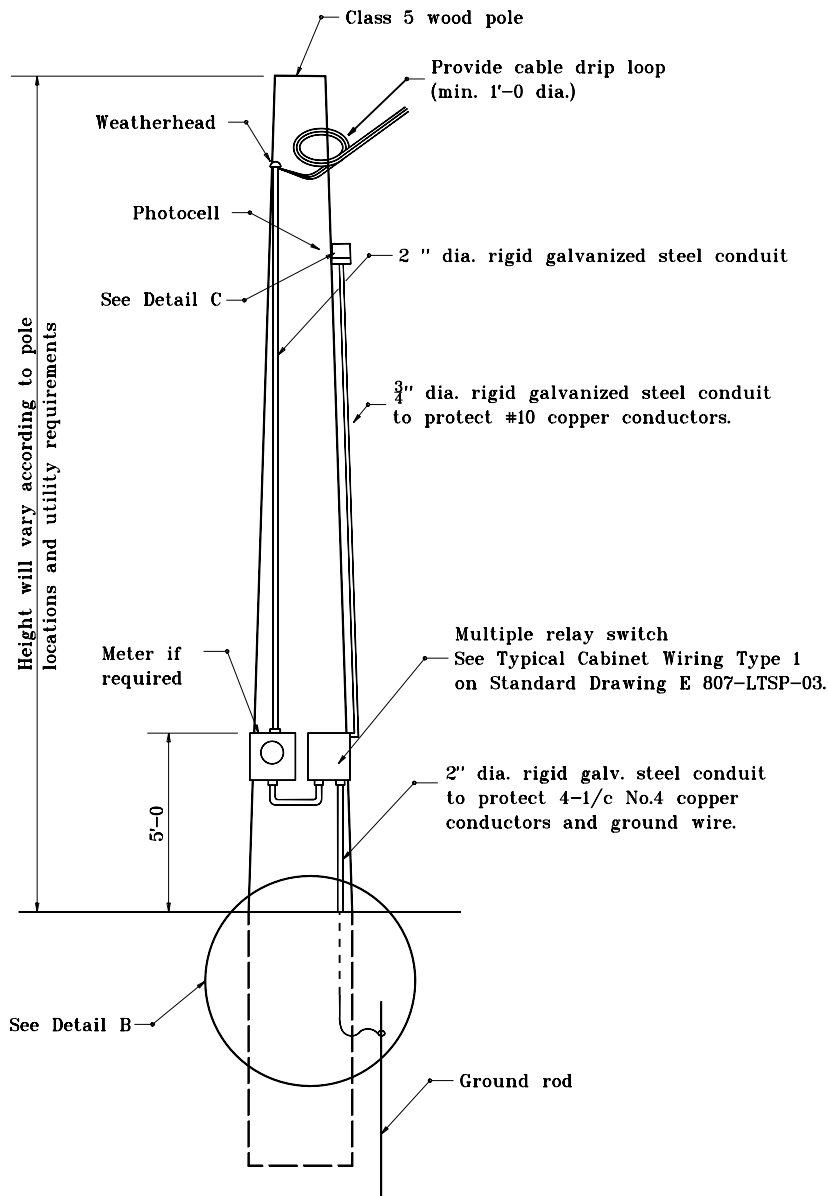
/s/ Mark A. Miller

CHIEF HIGHWAY ENGINEER

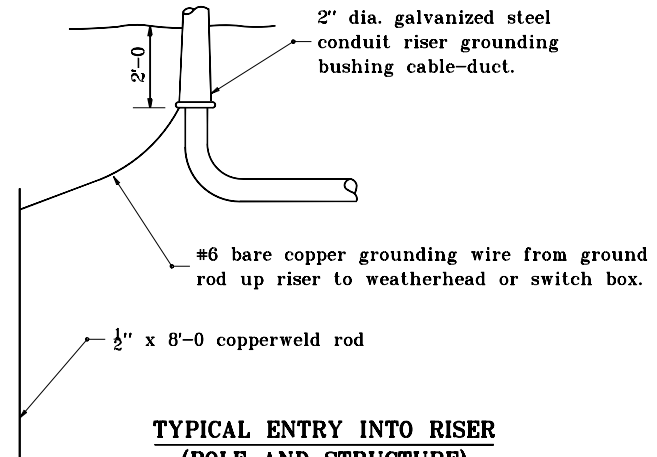
09/01/10

DATE

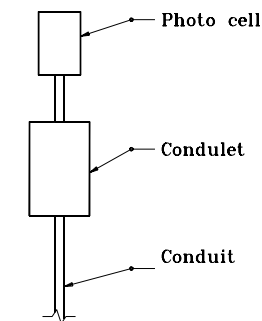
DESIGN STANDARDS ENGINEER



**SERVICE POINT  
TYPE I**

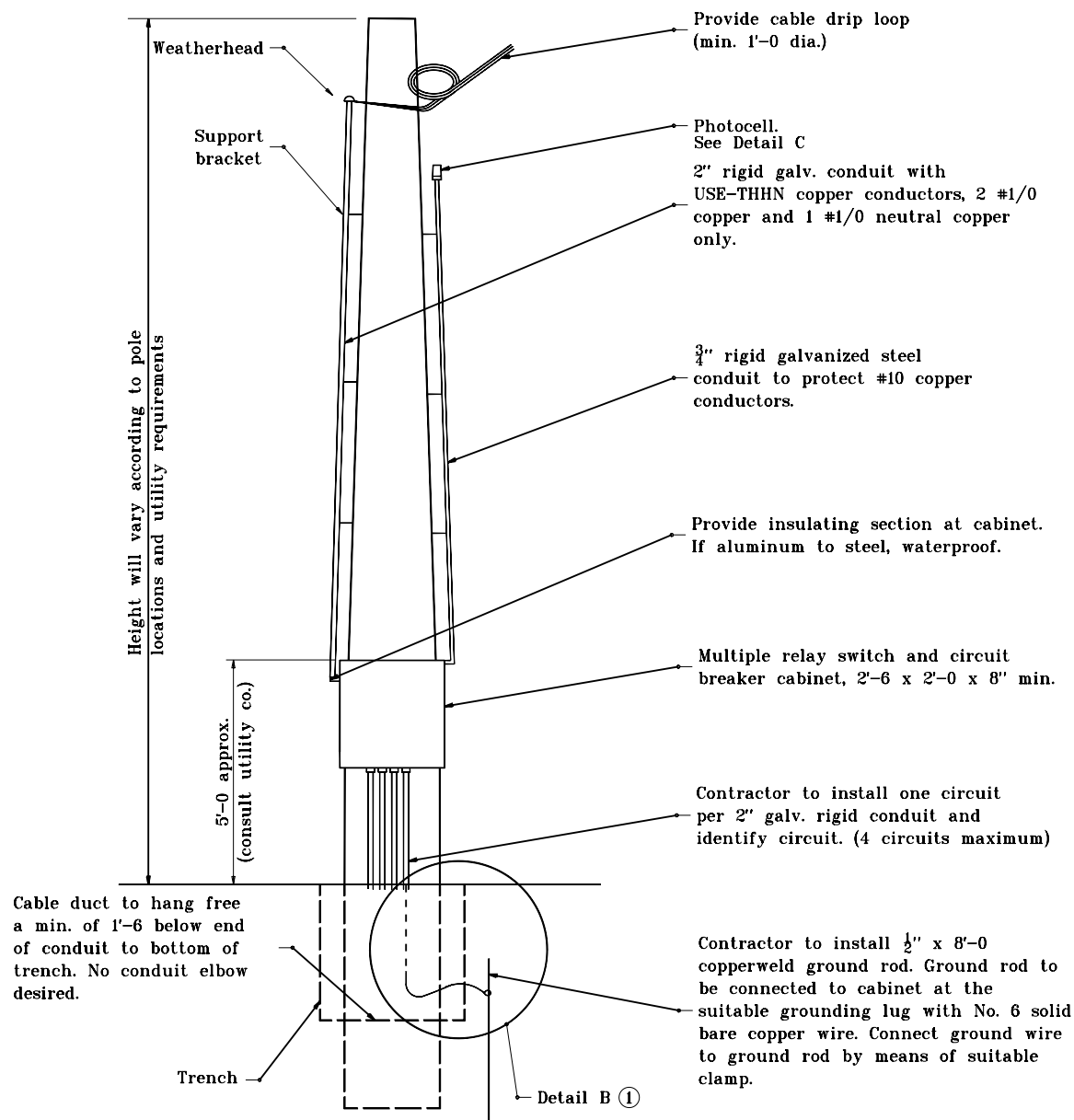


**DETAIL B**



**DETAIL C**

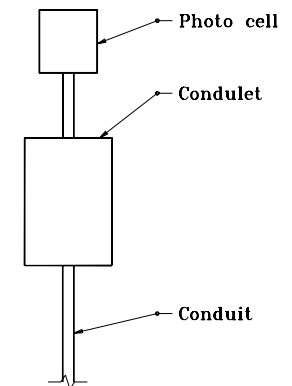
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>LIGHT SERVICE POINT DETAILS</b>	
SEPTEMBER 1998	
STANDARD DRAWING NO. <b>E 807-LTSP-01</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	ORIGINALLY APPROVED 9-01-98



**SERVICE POINT  
TYPE II**

**Notes:**

- ① See Standard Drawing E 807-LTSP-01 for Detail B.



**DETAIL C**

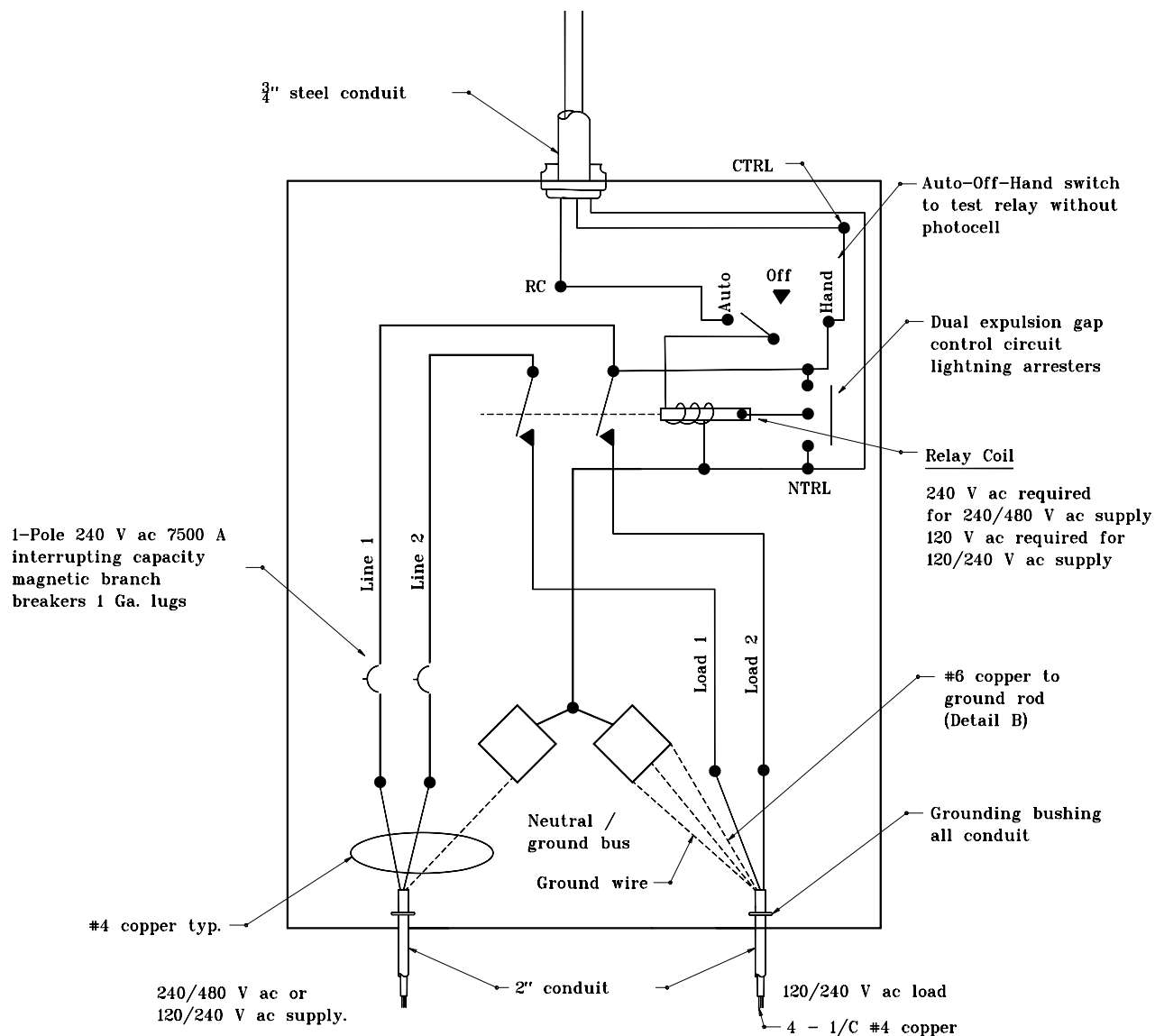
INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHT SERVICE POINT DETAILS	
JANUARY 2000	
STANDARD DRAWING NO. E 807-LTSP-02	
	/s/ Anthony L. Uremovich 1-03-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 1-03-00 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

## GENERAL NOTES

To Photo Control:

240 V ac required for 240/480 V ac supply.

120 V ac required for 120/240 V ac supply.



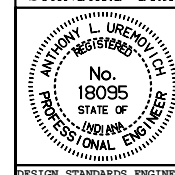
**TYPICAL CABINET WIRING,  
TYPE 1**

INDIANA DEPARTMENT OF TRANSPORTATION

**LIGHT SERVICE POINT DETAILS**

JANUARY 2000

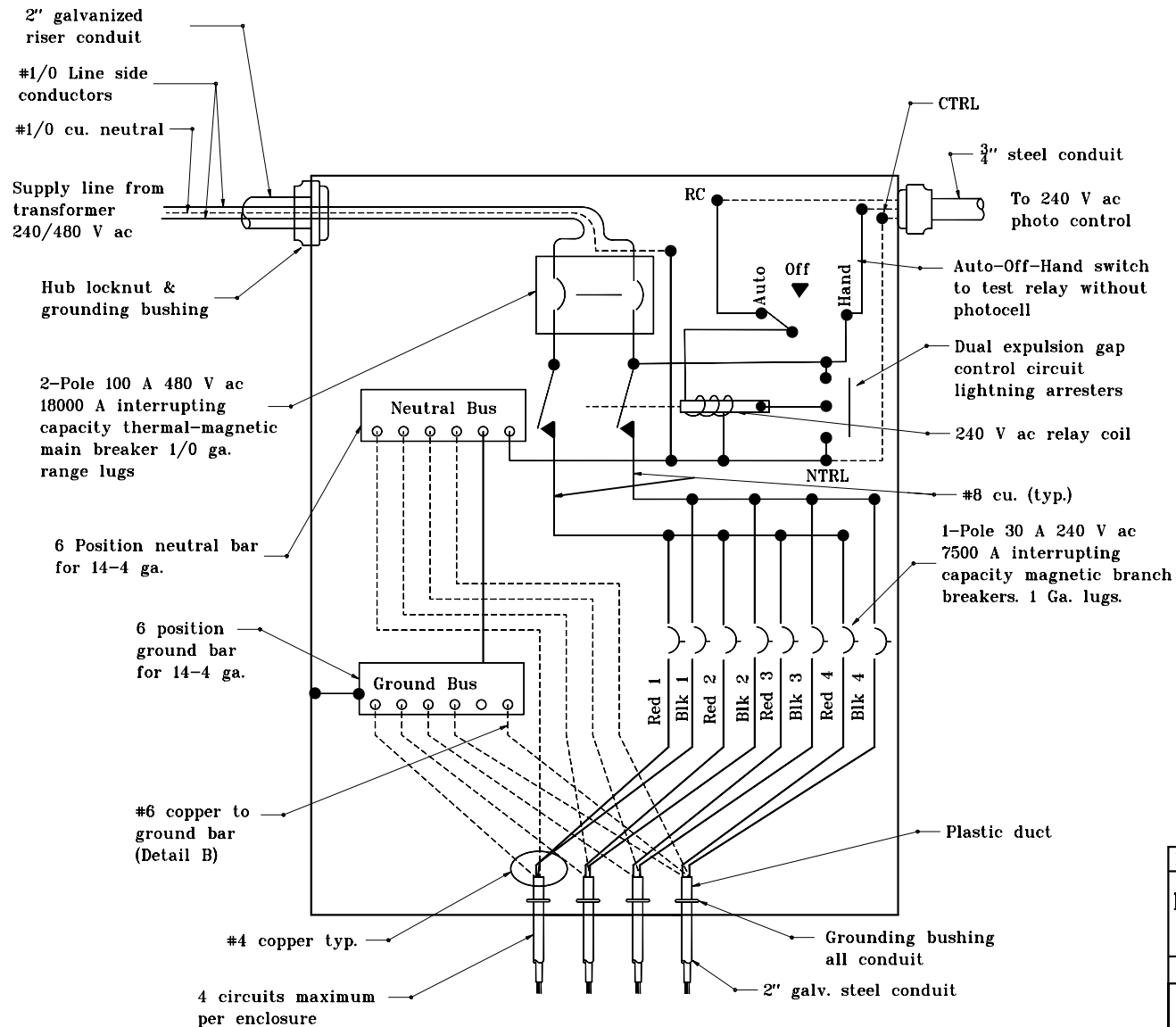
STANDARD DRAWING NO. E 807-LTSP-03



/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

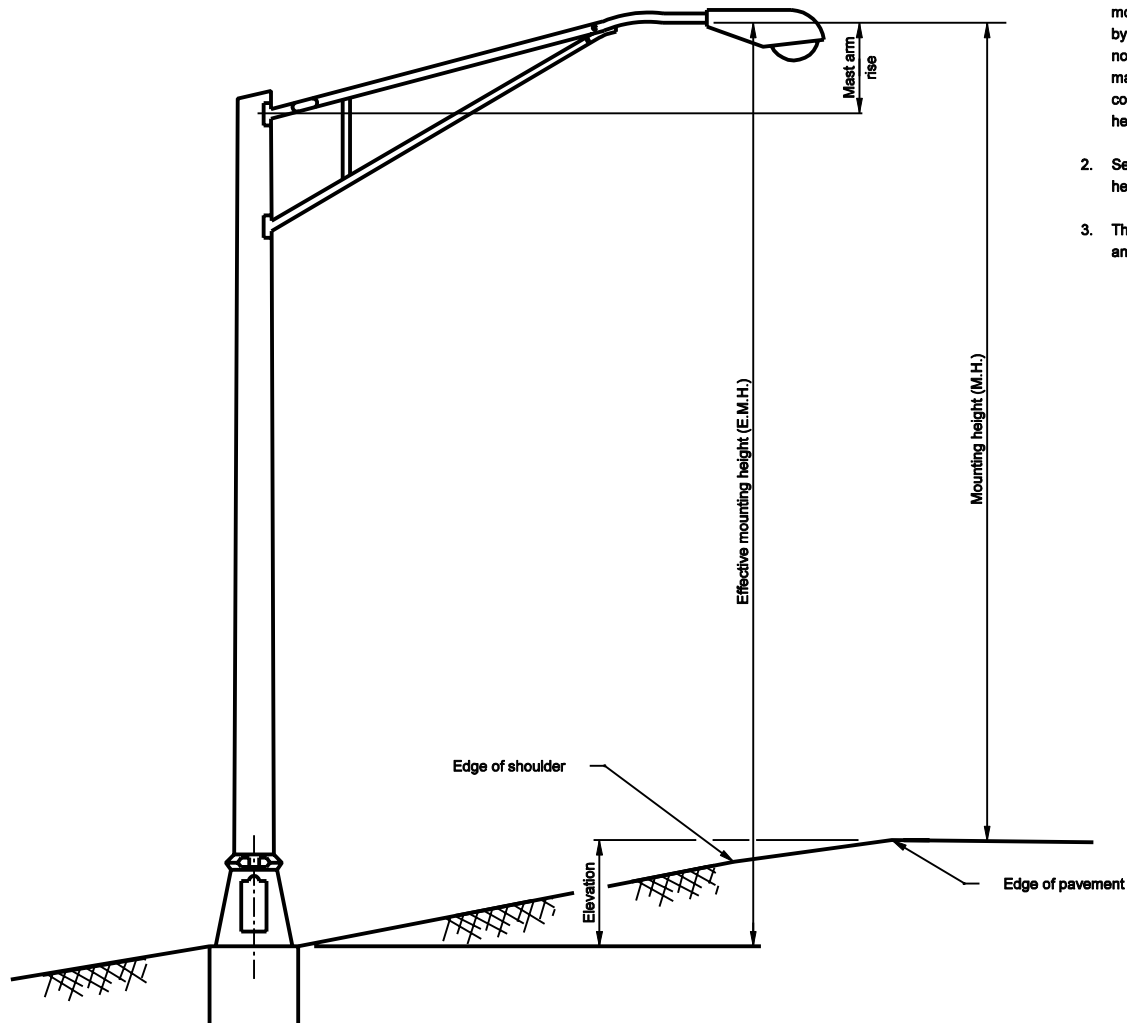
/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



**TYPICAL CABINET WIRING,  
TYPE II**

INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHT SERVICE POINT DETAILS	
JANUARY 2000	
STANDARD DRAWING NO. E 807-LTSP-04	
	/s/ Anthony L. Uremovich 1-03-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 1-03-00 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER



## NOTES

1. Standard Drawings E 807-LTFD-02 through -04 represent the maximum roadside slope normally encountered without guardrail protection. If motorists are protected from the light standard by guardrail, the treatments found herein are not required. These drawings indicate the maximum slopes permissible on the fill. Any conditions more severe than those represented here shall be graded as directed.
2. See Standard Drawing E 807-LTST-02 for mounting heights and dimensions of corresponding components.
3. The front of the foundation shall face the roadway and the back shall face the right-of-way line.

INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHT STANDARD FOUNDATION	
SEPTEMBER 2002	
STANDARD DRAWING NO. E 807-LTST-01	
	/s/ Richard L. VanCleave 9-03-02 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 9-03-02 CHIEF HIGHWAY ENGINEER DATE

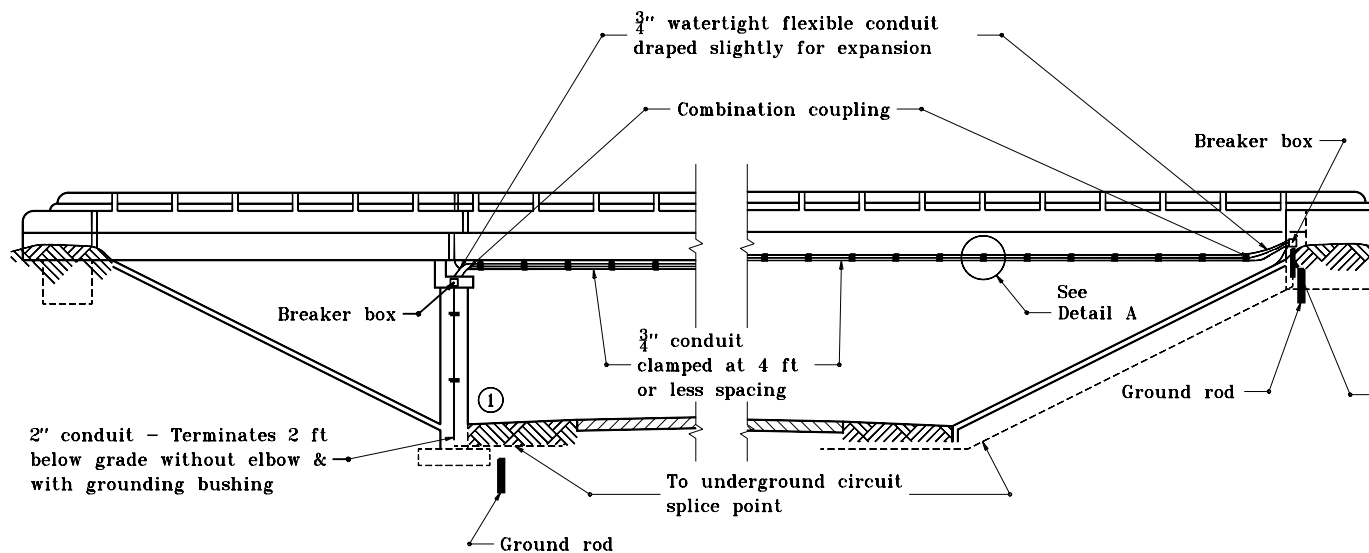
FOR ROADWAY INSTALLATION (TRANSFORMER BASE)					
E.M.H. (FT.)	ARM LENGTH (FT.)	SHAFT			BASE PLATE
		BASE DIAMETER (IN.)	TOP DIAMETER (IN.)	THICKNESS (IN.)	BOLT CIRCLE (IN.)
25	5	8	4.5	0.188	11 1/2"
25	10	8	6	0.188	11 1/2"
25	15	8	6	0.188	11 1/2"
25	20	10	6	0.188	14 1/2"
25	25	10	6	0.250	14 1/2"
30	5	8	4.5	0.188	11 1/2"
30	10	8	6	0.188	11 1/2"
30	15	8	6	0.188	11 1/2"
30	20	10	6	0.188	14 1/2"
30	25	10	6	0.250	14 1/2"
35	5	8	4.5	0.188	11 1/2"
35	10	8	6	0.188	11 1/2"
35	15	8	6	0.188	11 1/2"
35	20	10	6	0.188	14 1/2"
35	25	10	6	0.250	14 1/2"
40	5	8	6	0.188	11 1/2"
40	10	8	6	0.188	11 1/2"
40	15	8	6	0.219	11 1/2"
40	20	10	6	0.219	14 1/2"
40	25	10	6	0.312	14 1/2"
45	5	8	6	0.219	11 1/2"
45	10	8	6	0.219	11 1/2"
45	15	8	6	0.219	11 1/2"
45	20	10	6	0.250	14 1/2"
45	25	10	6	0.312	14 1/2"

NOTES

1. Each anchor bolt for roadway installation shall have a diameter of 1", a total length of 4'-4" and a hook length of 4". Each washer shall be galvanized flat washer 1 1/16" I.D., 2 3/4" O.D., 1/2" thick.
2. Each anchor bolt for a bridge deck installation shall have a diameter of 1", a total length of 3'-8", and a hook length of 4".

FOR BRIDGE DECK INSTALLATION (ANCHOR BASE)					
E.M.H. (FT.)	ARM LENGTH (FT.)	SHAFT			BASE PLATE
		BASE DIAMETER (IN.)	TOP DIAMETER (IN.)	THICKNESS (IN.)	BOLT CIRCLE (IN.)
25	5	8	4.5	0.188	11 1/2"
25	5	8	6	0.188	11 1/2"
30	5	8	4.5	0.188	11 1/2"
30	5	8	6	0.188	11 1/2"
35	5	8	4.5	0.188	11 1/2"
35	5	8	6	0.188	11 1/2"
40	5	8	6	0.188	11 1/2"
40	5	8	6	0.219	11 1/2"
45	5	8	6	0.219	11 1/2"
45	5	8	6	0.250	11 1/2"

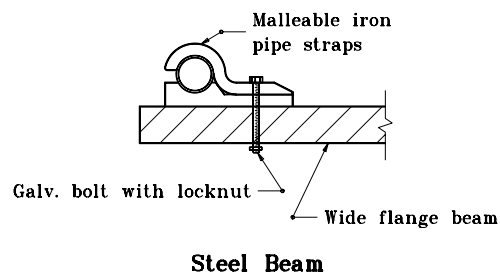
INDIANA DEPARTMENT OF TRANSPORTATION	
ALUMINUM LIGHT POLE WITH TRANSFORMER BASE	
SEPTEMBER 2012	
STANDARD DRAWING NO. E 807-LTST-02	
<div><div><div><div><div><div><span></span></div><div>REGISTERED</div><div>No.</div><div>9750</div><div>STATE OF</div><div>INDIANA</div><div>PROFESSIONAL ENGINEER</div></div></div><div><div><div>Richard L. VanCleave</div><div></div></div></div></div></div></div>	<div><div><div><div><div>/s/ Richard L. VanCleave</div><div>09/04/12</div></div><div>SUPERVISOR, ROADWAY STANDARDS</div><div>DATE</div></div><div><div><div>/s/ Mark A. Miller</div><div>09/04/12</div></div><div>CHIEF ENGINEER</div><div>DATE</div></div></div></div>



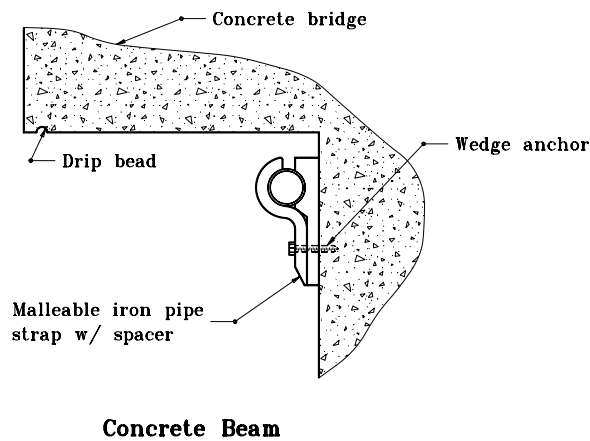
### GENERAL NOTES

- ① If feasible, conduit to be installed on coping of bent; if not, install as shown on end of bridge not facing traffic.

### ELEVATION



### DETAIL A

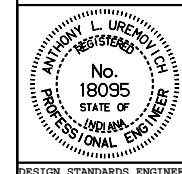


INDIANA DEPARTMENT OF TRANSPORTATION

### UNDERPASS LIGHTING DETAILS

MARCH 1995

STANDARD DRAWING NO. **E 807-LTUP-01**



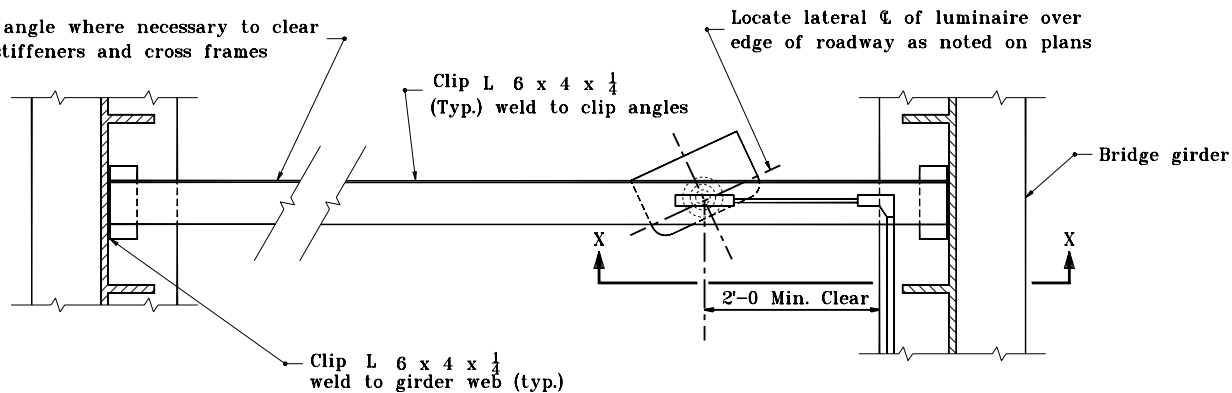
DETAILS PLACED IN THIS FORMAT 7-27-99

/s/ Anthony L. Uremovich 7-27-99  
DESIGN STANDARDS ENGINEER DATE

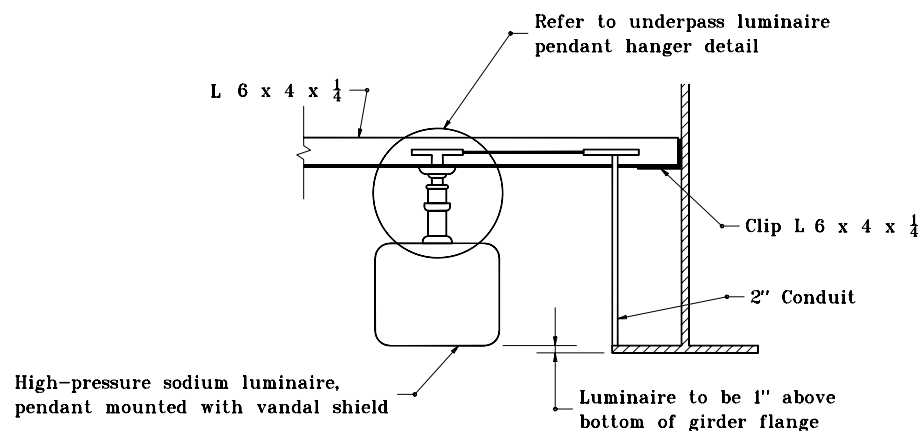
/s/ Firooz Zandi 7-27-99  
CHIEF HIGHWAY ENGINEER DATE  
ORIGINALLY APPROVED 3-01-95



Skew angle where necessary to clear  
web stiffeners and cross frames



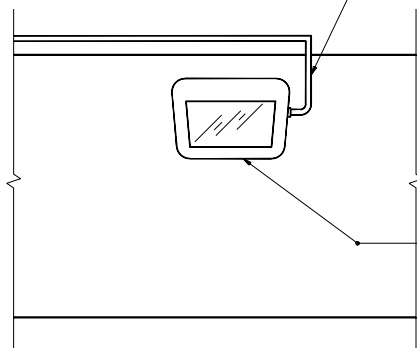
**PLAN VIEW**



**SECTION X-X**

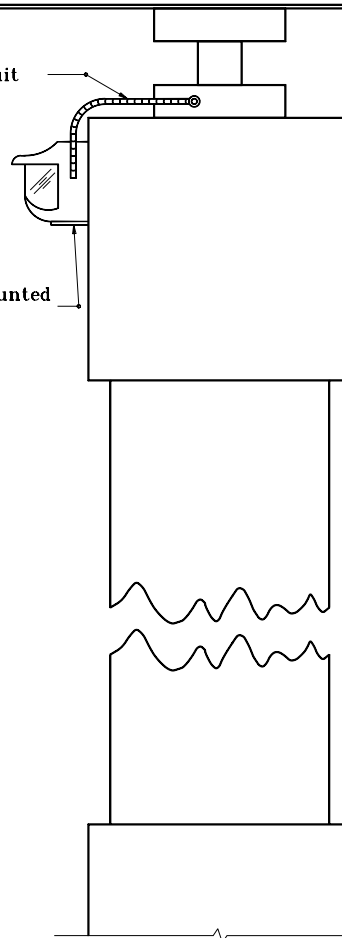
INDIANA DEPARTMENT OF TRANSPORTATION		
<b>UNDERPASS LIGHTING DETAILS</b>		
<b>PENDANT MOUNTING</b>		
JANUARY 2000		
<b>STANDARD DRAWING NO.E 807-LTUP-02</b>		
	/s/ Anthony L. Uremovich 1-03-00	
	DESIGN STANDARDS ENGINEER	DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 1-03-00	
	CHIEF HIGHWAY ENGINEER	DATE

Conduit shall enter underpass luminaire from the side, except for pendant mounting

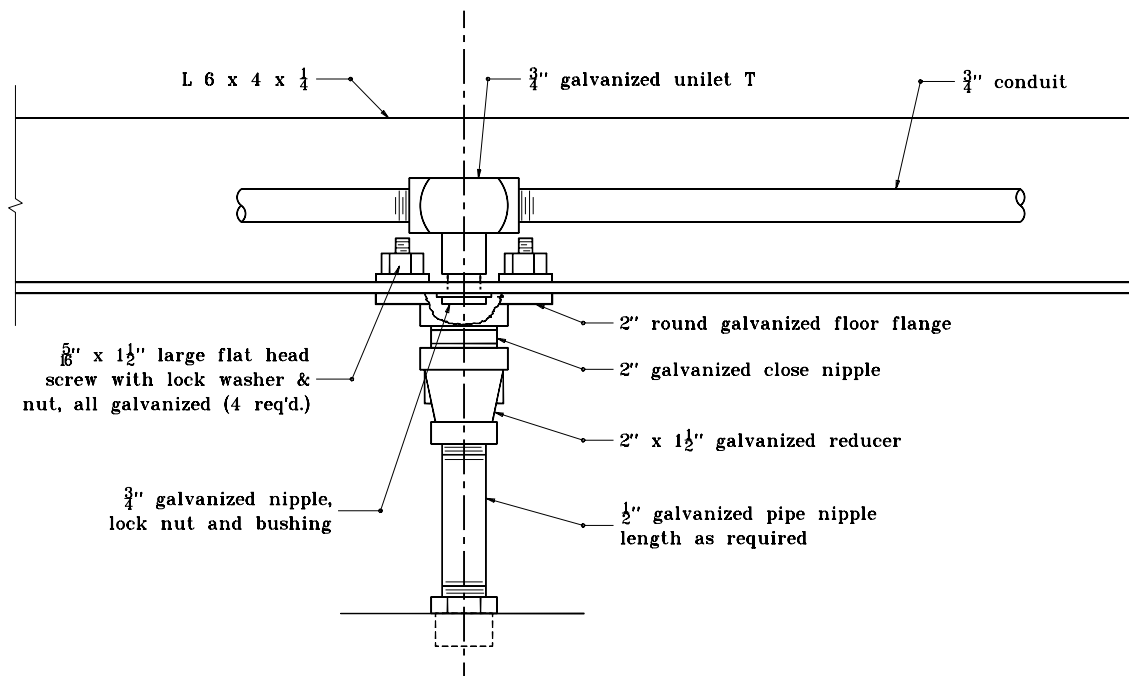


High pressure sodium wall mounted luminaire with vandal shield

$\frac{3}{4}$ " Flexible conduit



INDIANA DEPARTMENT OF TRANSPORTATION	
UNDERPASS LIGHTING DETAILS	
WALL MOUNTING	
MARCH 1995	
STANDARD DRAWING NO.E 807-LTUP-03	
	DETAILS PLACED IN THIS FORMAT 7-27-99
	/s/ Anthony L. Uremovich 7-27-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 7-27-99 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED 3-01-95



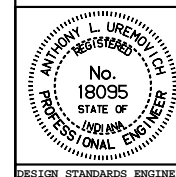
INDIANA DEPARTMENT OF TRANSPORTATION

UNDERPASS LIGHTING DETAILS

PENDANT HANGER DETAIL

JANUARY 2000

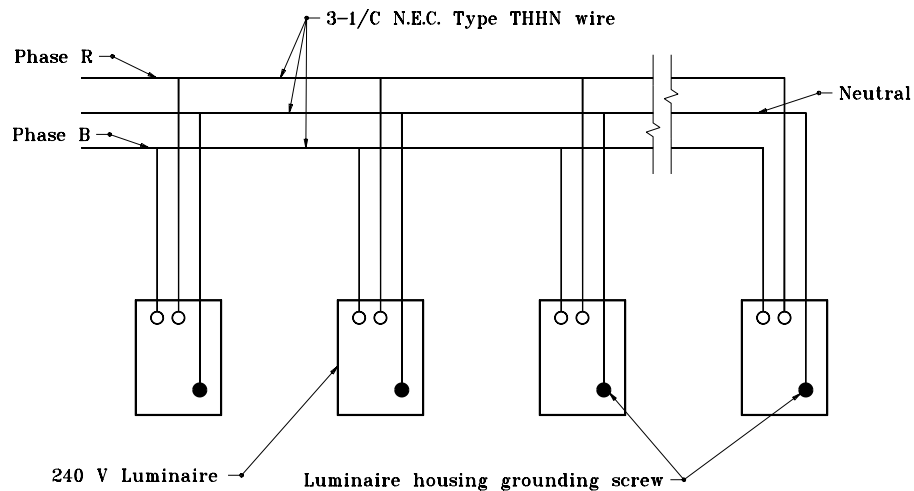
STANDARD DRAWING NO. E 807-LTUP-04



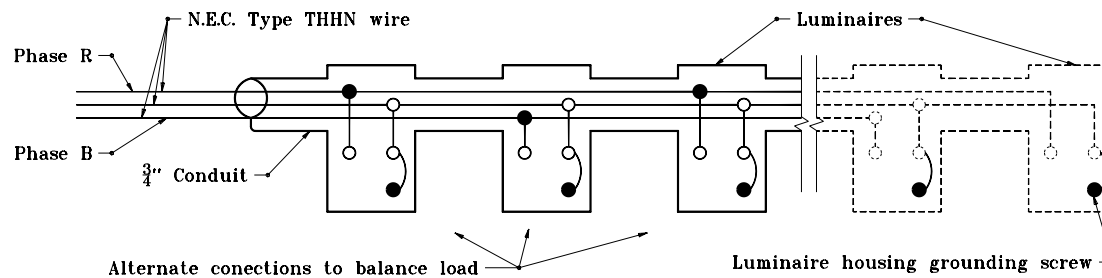
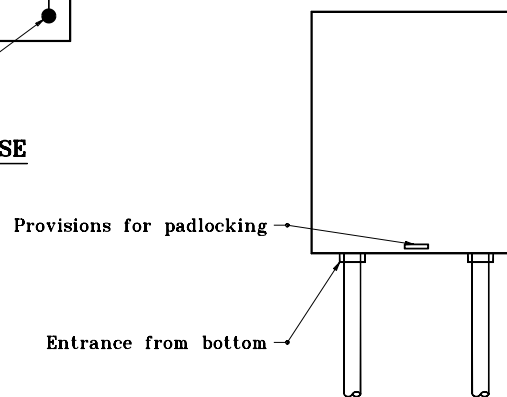
/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

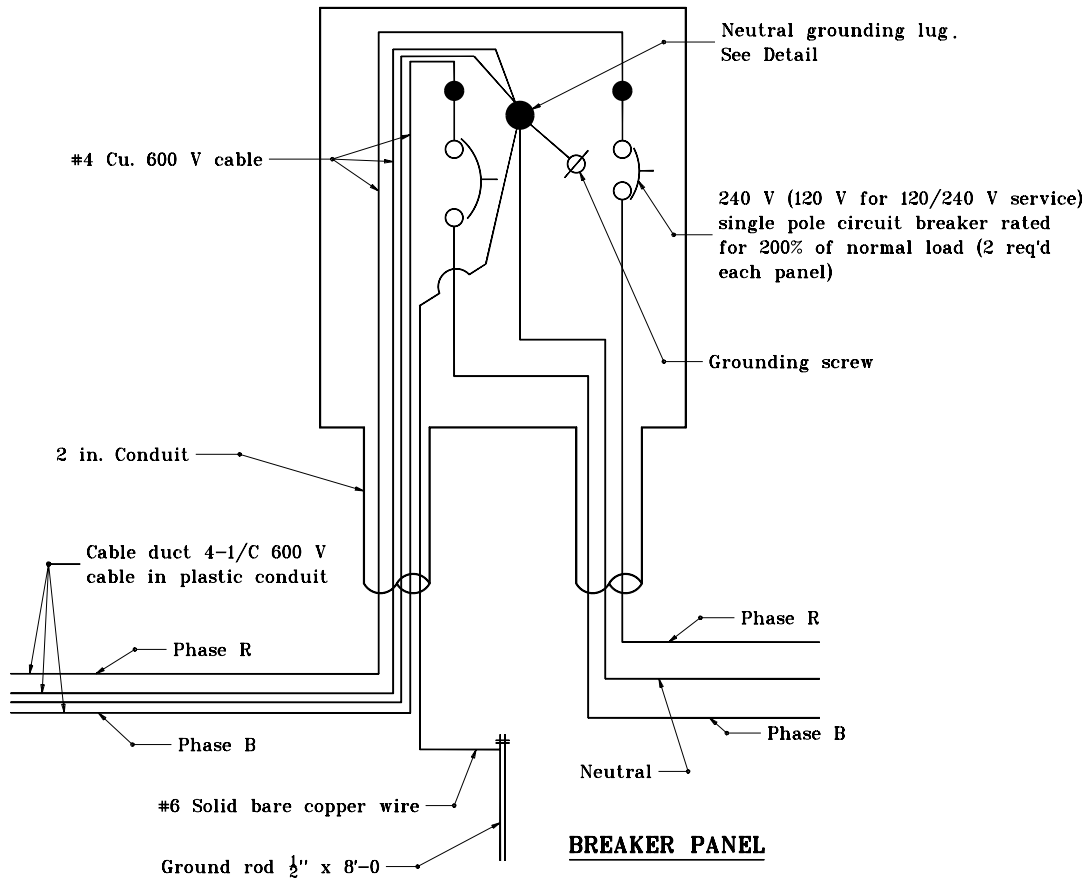


**FOR CONNECTION TO 240 V PHASE TO PHASE**

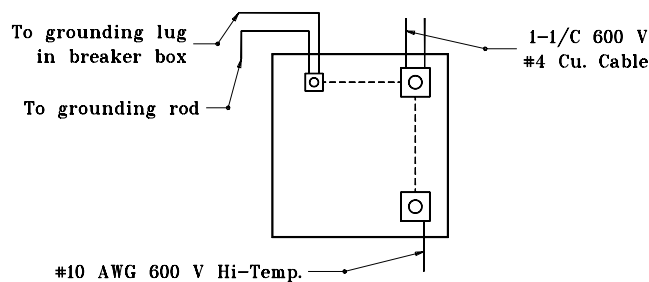


**FOR CONNECTION TO 120 V OR 240 V PHASE TO NEUTRAL**

INDIANA DEPARTMENT OF TRANSPORTATION	
UNDERPASS LIGHTING DETAILS	
LUMINAIRE WIRING DETAIL	
JANUARY 2000	
STANDARD DRAWING NO. <b>E 807-LTUP-05</b>	
	/s/ Anthony L. Uremovich 1-03-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 1-03-00 CHIEF HIGHWAY ENGINEER DATE



**BREAKER PANEL**



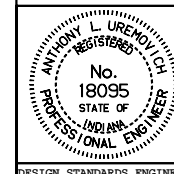
**NEUTRAL GROUNDING  
LUG DETAIL**

**GENERAL NOTES**

1. For all luminaire wiring from breaker panel, the last luminaire shall be #10 AWG stranded copper, 600 V.
2. Where sign illumination and underpass illumination are to be installed on the same structure, both sign and underpass luminaires may be connected to the same circuit.

INDIANA DEPARTMENT OF TRANSPORTATION  
**UNDERPASS LIGHTING DETAILS**  
**CIRCUIT BREAKER WIRING DETAIL**  
 MARCH 1995

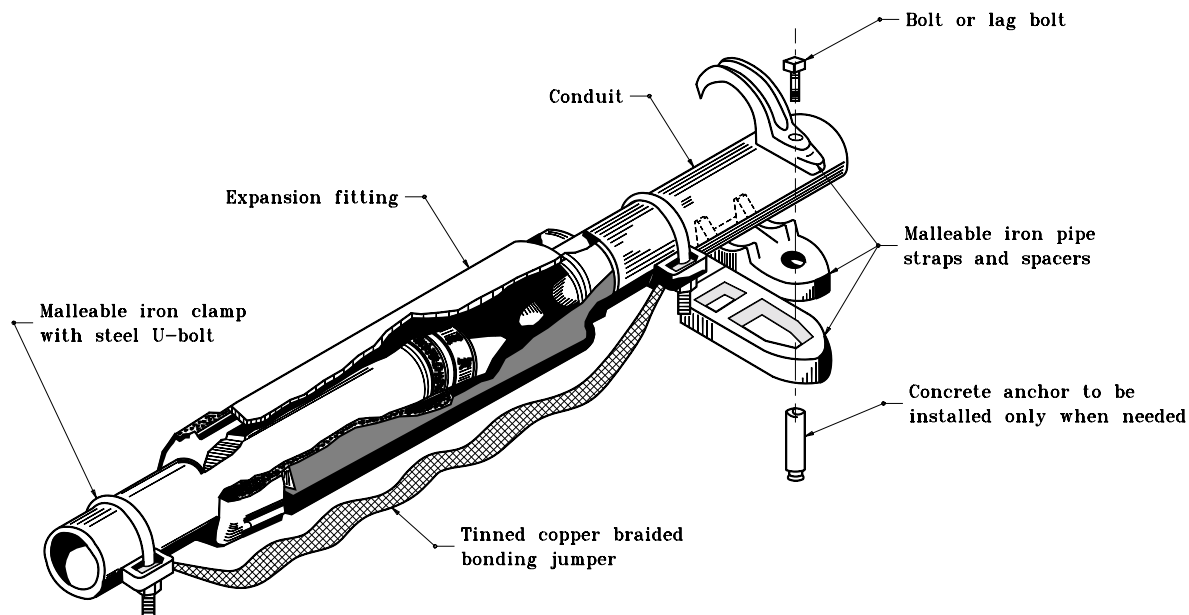
STANDARD DRAWING NO. **E 807-LTUP-06**



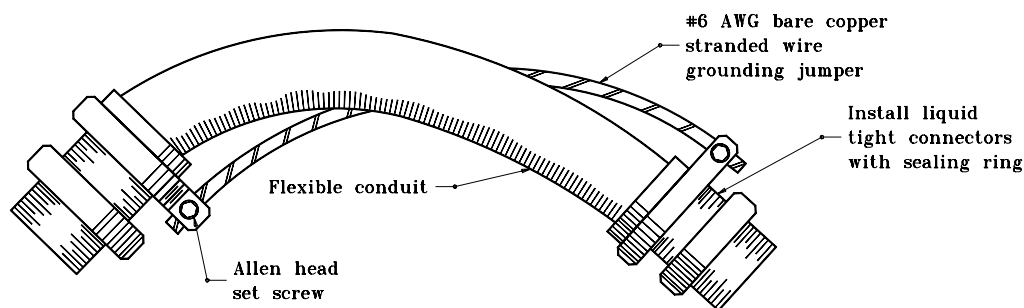
DETAILS PLACED IN THIS FORMAT		11-15-99
/s/ Anthony L. Uremovich	DESIGN STANDARDS ENGINEER	DATE
/s/ Firooz Zandi	CHIEF HIGHWAY ENGINEER	DATE
ORIGINALLY APPROVED		3-01-95

## GENERAL NOTES

1. Malleable iron pipe straps to be installed immediately before and after the installed expansion fitting, to support expansion fitting and conduit.
2. Spacers shall be provided underneath the pipe strap to allow proper clearance between the bridge structure and the fitting.
3. Grounding jumper shall not be wrapped around flexible conduit, but slightly draped on one side.



**TYPICAL  $\frac{3}{4}$  IN. AND 2 IN. DIAMETER EXPANSION FITTING  
WITH GROUNDING JUMPER**



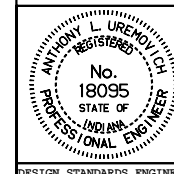
**TYPICAL  $\frac{3}{4}$  IN. AND 2 IN. DIAMETER FLEXIBLE CONDUIT  
WITH GROUNDING JUMPER**

INDIANA DEPARTMENT OF TRANSPORTATION

## UNDERPASS LIGHTING DETAILS

MARCH 1995

STANDARD DRAWING NO. **E 807-LTUP-07**



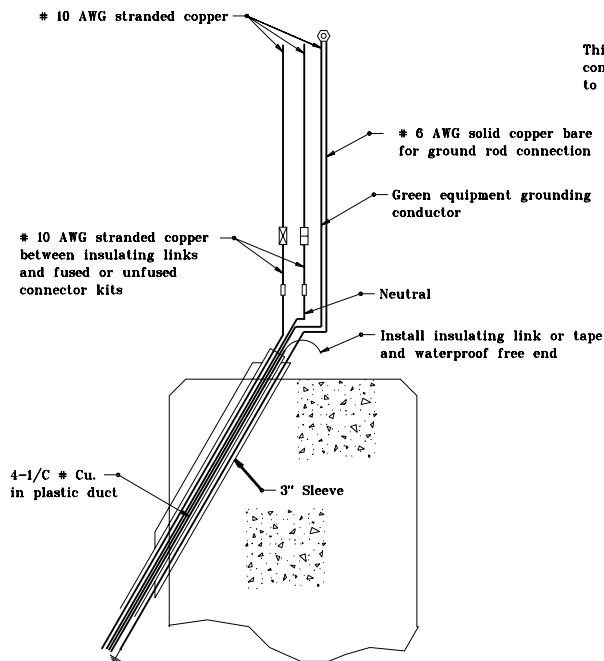
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

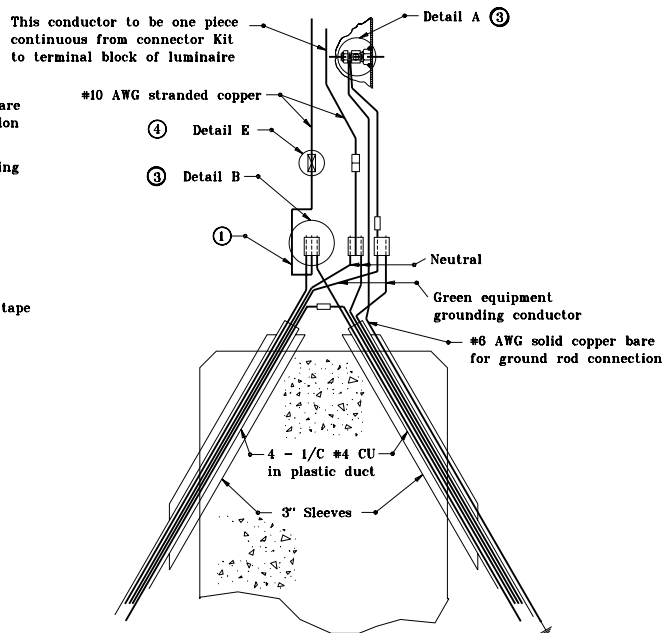
/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

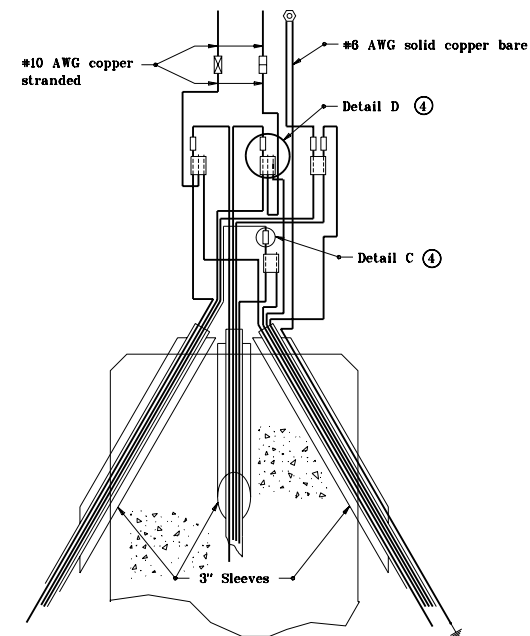
ORIGINALLY APPROVED 3-01-95



**TYPE 1**



**TYPE 2**



**TYPE 3**

## CONNECTION TYPES

### NOTES

- ① Allow sufficient conductor slack to permit the withdrawal of outside of pole handhole.
2. Use of inhibiting compound is mandatory for all connections.
- ③ See Standard Drawing E 807-LTWR-02 for details.
- ④ See Standard Drawing E 807-LTWR-03 for details.

### LEGEND

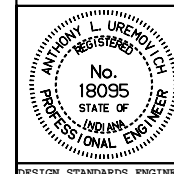
- ⊙ — Grounding post
- — Self insulated splicer (insulating link)
- — Unfused connector
- ⊗ — Fused connector
- ⊞ — Compression connector

INDIANA DEPARTMENT OF TRANSPORTATION

## LIGHTING WIRING DETAILS

JANUARY 1996

STANDARD DRAWING NO. E 807-LTWR-01



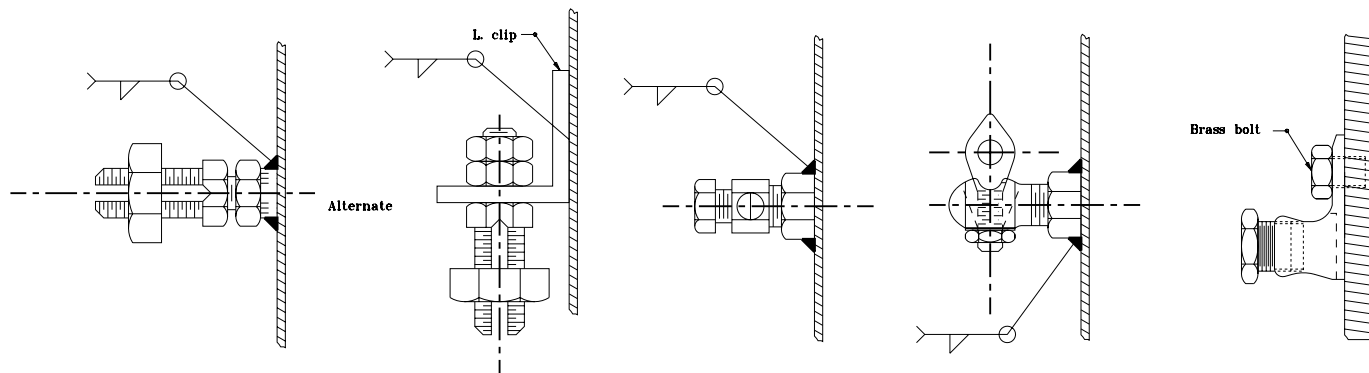
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

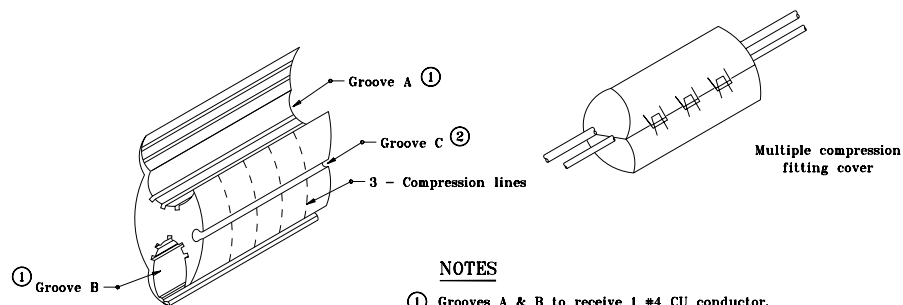
/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 1-02-96



**DETAIL A**  
**ALTERNATIVE GROUNDING POSTS**



**NOTES**

- ① Grooves A & B to receive 1 #4 CU conductor.  
② Groove C to receive 1 #10 CU conductor.

**DETAIL B**  
**MULTIPLE COMPRESSION FITTING**

**LEGEND**

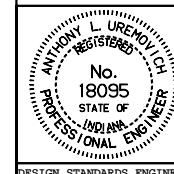
- ⊙ — Grounding post  
□ — Self insulated splicer (insulating link)  
□ — Unfused connector  
⊗ — Fused connector  
⊞ — Compression connector

INDIANA DEPARTMENT OF TRANSPORTATION

**LIGHTING WIRING DETAILS**

JANUARY 1996

STANDARD DRAWING NO. **E 807-LTWR-02**



DETAILS PLACED IN THIS FORMAT 11-15-99

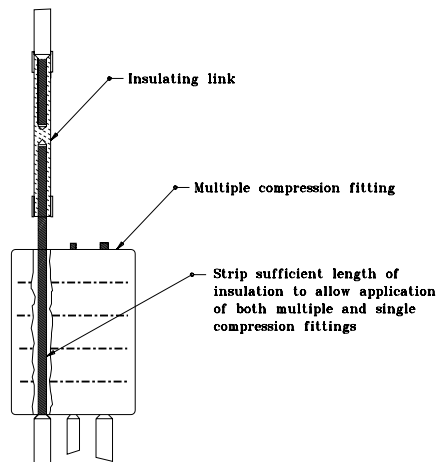
/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

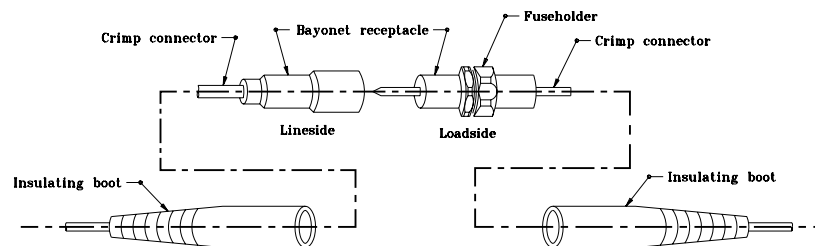
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 1-02-96

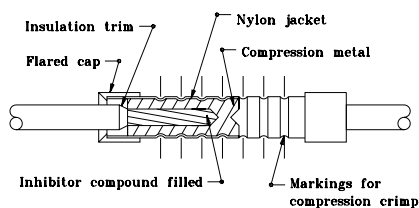




**DETAIL D**



**DETAIL E**  
**BAYONET DISCONNECT**  
**CONNECTOR KIT**



**DETAIL C**  
**INSULATING LINK**

**LEGEND**

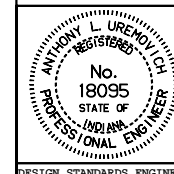
- ⊙ — Grounding post
- ▮ — Self insulated splicer (insulating link)
- — Unfused connector
- ⊠ — Fused connector
- ▤ — Compression connector

INDIANA DEPARTMENT OF TRANSPORTATION

**LIGHTING WIRING DETAILS**

JANUARY 1996

STANDARD DRAWING NO. **E 807-LTWR-03**



DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ *Anthony L. Uremovich* 11-15-99  
DESIGN STANDARDS ENGINEER DATE

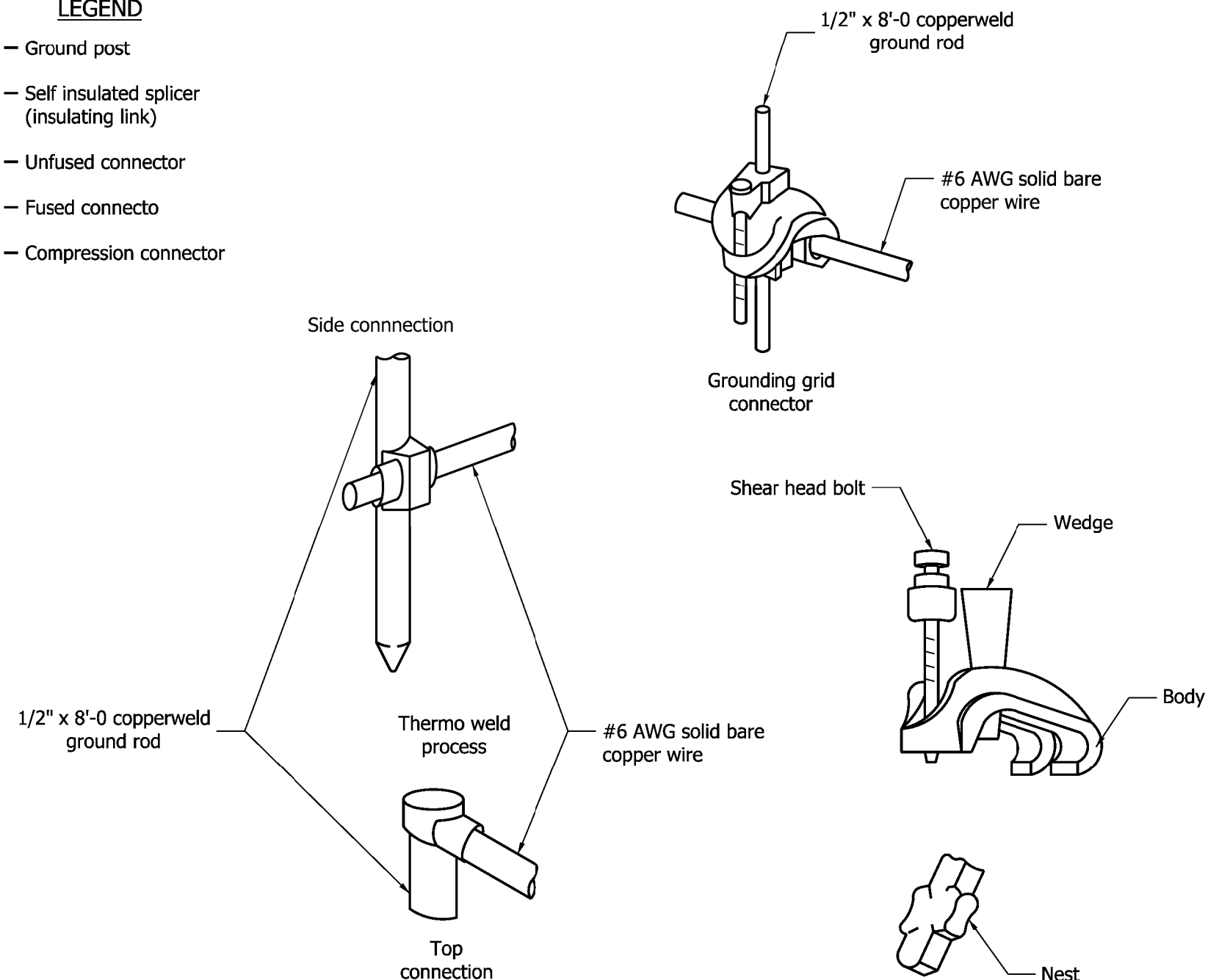
/s/ *Firooz Zandi* 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 1-02-96

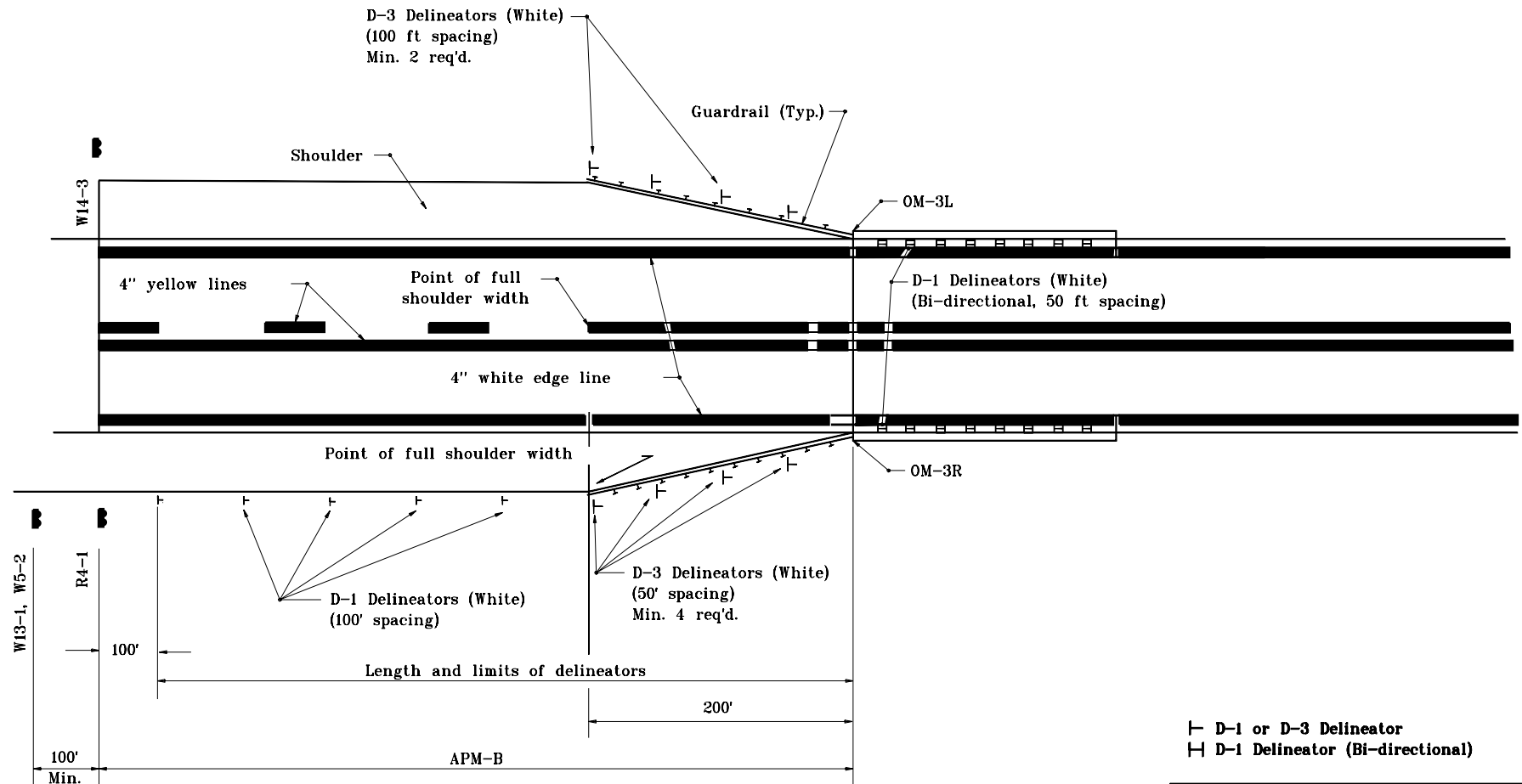
# LEGEND

- ⊗ — Ground post
- — Self insulated splicer (insulating link)
- — Unfused connector
- ⊗ — Fused connector
- — Compression connector



DETAIL F  
TYPICAL GROUND ROD CONNECTION

INDIANA DEPARTMENT OF TRANSPORTATION		
LIGHTING WIRING DETAILS		
SEPTEMBER 2009		
STANDARD DRAWING NO. E 807-LTWR-04		
	/s/ <i>Richard L. VanCleave</i>	09/01/09
	DESIGN STANDARDS ENGINEER	DATE
DESIGN STANDARDS ENGINEER	/s/ <i>Mark A. Miller</i>	09/01/09
	CHIEF HIGHWAY ENGINEER	DATE



#### Aborted Pass Maneuver Distance

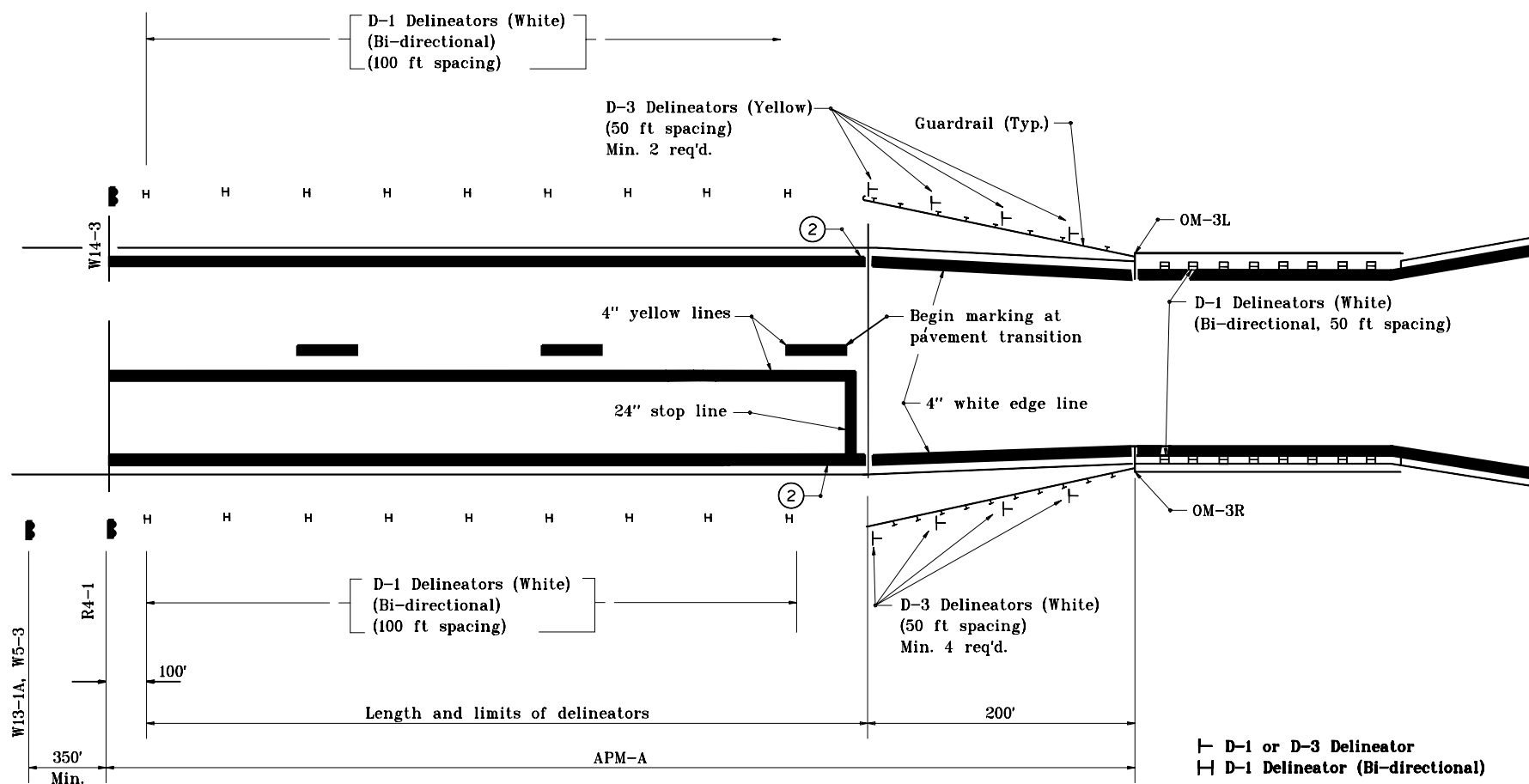
85th Percentile Speed (mph)	Distance (APM-B)
30	350 ft
35	400 ft
40	450 ft
45	500 ft
50	550 ft
55	600 ft
60	650 ft

#### GENERAL NOTES

1. The minimum length of the no passing zone at narrow bridges if marked, shall be the distance APM-B. If the 85th percentile speed is not known add 5 mph to the posted limit and use the appropriate distance APM-B.

- T D-1 or D-3 Delineator
- T D-1 Delineator (Bi-directional)

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL DEVICES	
AT NARROW BRIDGE ON TWO LANE ROAD	
JANUARY 2000	
STANDARD DRAWING NO.E 808-MKNB-01	
	/s/ Anthony L. Uremovich 1-03-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 1-03-00 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	



#### Aborted Pass Maneuver Distance

85th Percentile Speed (mph)	Distance (APM-A)
30	400 ft
35	500 ft
40	600 ft
45	700 ft
50	800 ft
55	900 ft
60	1000 ft

#### GENERAL NOTES

- The minimum length of the no passing zone at one lane bridges if marked, shall be the distance APM-A. If the 85th percentile speed is known add 5 mph to the posted limit and use the appropriate distance APM-A.

- ② When pavement width does not provide adequate width for normal edge line installation, the edge lines shall be installed only on the tapers and through the narrow obstruction.

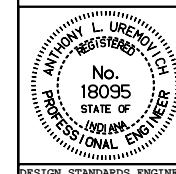
└ D-1 or D-3 Delineator  
└ D-1 Delineator (Bi-directional)

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DEVICES  
AT ONE LANE BRIDGE ON TWO LANE ROAD

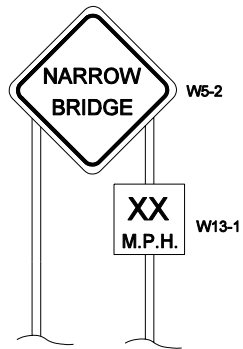
JANUARY 2000

STANDARD DRAWING NO. E 808-MKNB-02

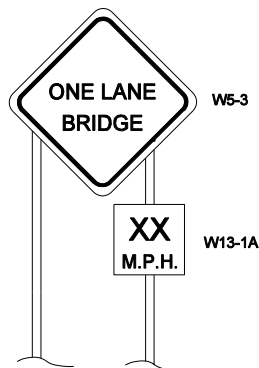


/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

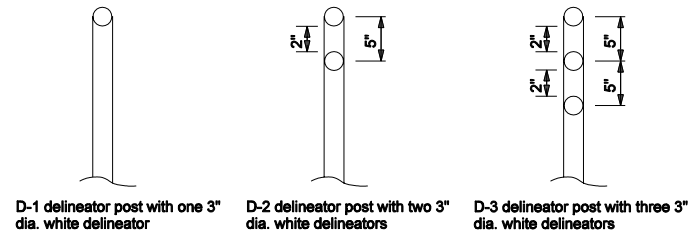
/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE



**SIGNAGE REQUIRED AT NARROW BRIDGE  
ON TWO LANE ROADWAY**



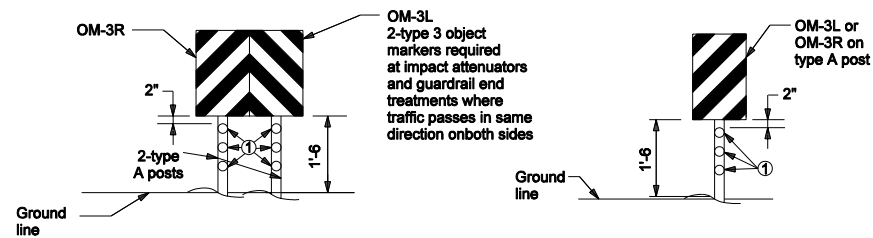
**SIGNAGE REQUIRED AT ONE LANE BRIDGE  
ON TWO LANE ROADWAY**



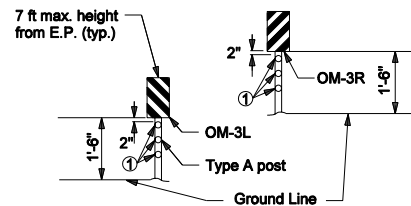
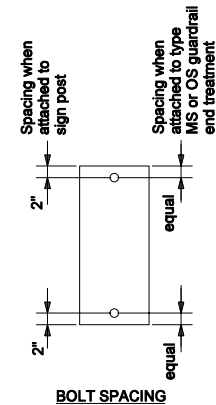
**DELINEATORS WITH POSTS**

**NOTES**

- ① Delineators:  
OM-3L: 3 amber buttons on 5" centers  
OM-3R: 3 white buttons on 5" centers
- ② Diagonal stripes similar in design to the Type 3 object marker, that have been applied by the manufacturer of approved impact attenuators or guardrail end treatments will be permitted in lieu of the object markers shown hereon.



**TYPE 3 OBJECT MARKERS  
PLACEMENT AT GUARDRAIL END TREATMENTS  
AND IMPACT ATTENUATORS ②**



Type 3 object marker (R or L) shall be installed in line with the inner edge of the obstruction.

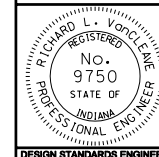
**TYPE 3 OBJECT MARKER  
PLACEMENT AT ONE-LANE OR NARROW  
BRIDGE ON TWO LANE ROADWAY**

INDIANA DEPARTMENT OF TRANSPORTATION

**PLACEMENT OF TRAFFIC  
CONTROL DEVICES**

MARCH 2005


STANDARD DRAWING NO. E 808-MKNB-03

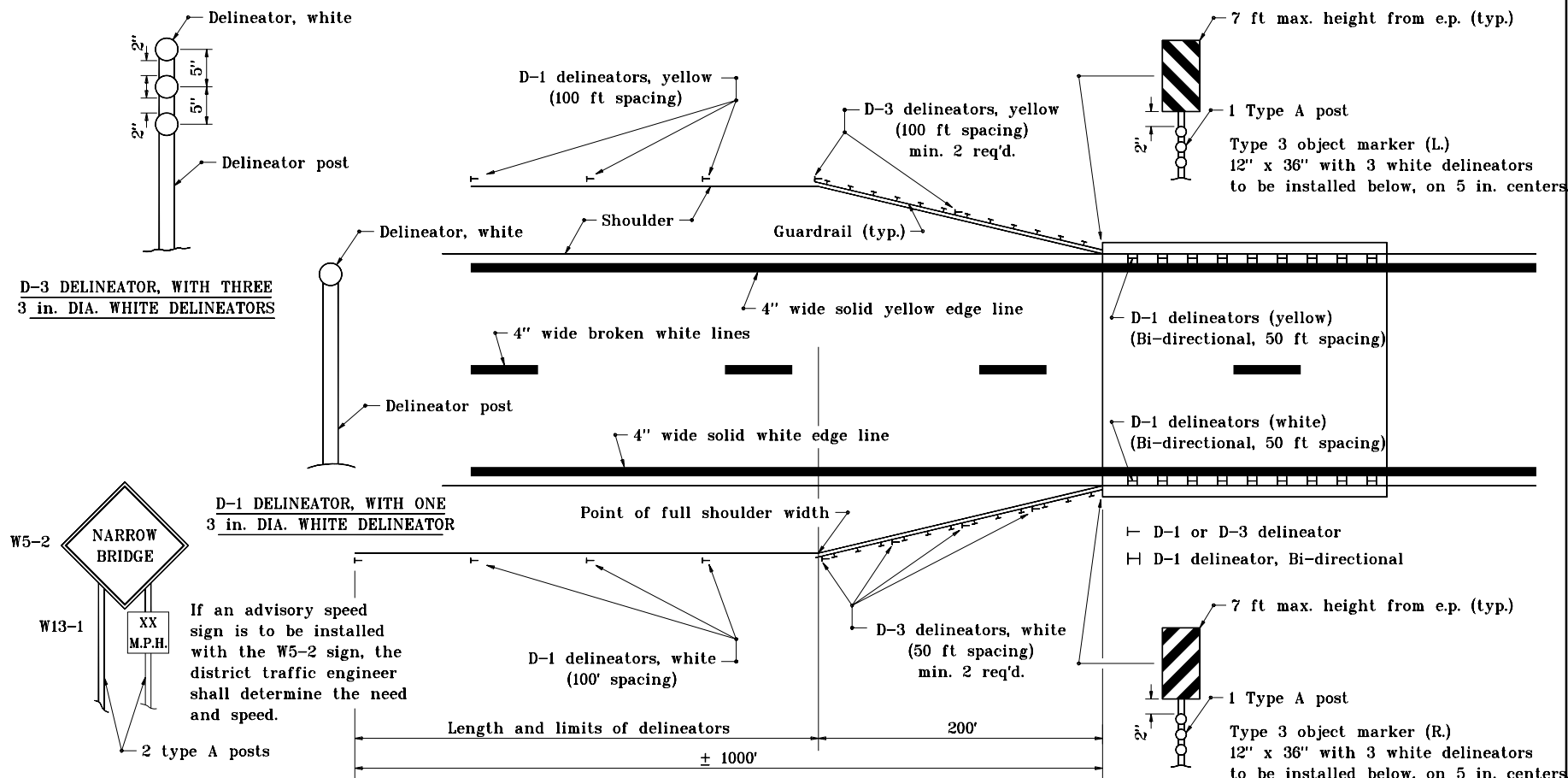


/s/ Richard L. VarCleave	3-01-05
DESIGN STANDARDS ENGINEER	DATE
/s/ Richard K. Smutzer	3-01-05
CHIEF HIGHWAY ENGINEER	DATE

## GENERAL NOTES

1. No-passing zone signs are required if ADT is greater than 750 or posted speed limit is 50 mph or greater.
2. Signs of larger sizes than implied by sign designations may be used if desired.
3. A bridge or culvert, with a clear roadway of 18 ft to 22 ft inclusive, with a clear roadway of less than that of the approach pavement, or where the handrail or curb is less than 2 ft from the edge of pavement will be considered a narrow bridge. The W5-2 sign shall be installed for this condition.
4. A bridge or culvert with less than 18 ft between opposite vertical surfaces will be considered a one lane bridge. The W5-3 sign shall be installed for this condition.
5. D-3 delineators will be required if ADT is greater than 500 at a narrow bridge. D-3 delineators will be required if ADT is greater than 250 at a one lane bridge.
6. The minimum length of the no-passing zone at a narrow bridge shall be the distance APM - B. If the 85th percentile speed is not known, add 5 mph to the posted speed limit and use the appropriate distance APM - B.
7. The minimum length of the no-passing zone at a one lane bridge shall be the distance APM - A. If the 85th percentile speed is not known, add 5 mph to the posted speed limit and use the appropriate distance APM - A.
8. Where guardrail is installed, delineators shall be installed at the back side of the guardrail. Where the guardrail run ends and additional delineators are required, they shall be installed a minimum of 2 ft from the edge of the shoulder.
9. Type 3 object markers may not be required at all four corners of a culvert. Two type 3 object markers shall be installed back-to-back on a single post at the incoming side of the culvert. If delineators may be placed such that there is a 25 ft diagonal distance between the delineators on the opposite side of the roadway, D-3 delineator spacing may be increased to 100 ft.

INDIANA DEPARTMENT OF TRANSPORTATION											
PLACEMENT OF TRAFFIC CONTROL DEVICES											
JANUARY 2000											
STANDARD DRAWING NOE 808-MKNB-04											
	<table><tr><td>/s/ Anthony L. Uremovich</td><td>1-03-00</td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td colspan="2"> </td></tr><tr><td>/s/ Firooz Zandi</td><td>1-03-00</td></tr><tr><td>CHIEF HIGHWAY ENGINEER</td><td>DATE</td></tr></table>	/s/ Anthony L. Uremovich	1-03-00	DESIGN STANDARDS ENGINEER	DATE			/s/ Firooz Zandi	1-03-00	CHIEF HIGHWAY ENGINEER	DATE
/s/ Anthony L. Uremovich	1-03-00										
DESIGN STANDARDS ENGINEER	DATE										
/s/ Firooz Zandi	1-03-00										
CHIEF HIGHWAY ENGINEER	DATE										
DESIGN STANDARDS ENGINEER											



#### GENERAL NOTES

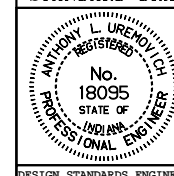
1. No-passing zone pavement markings shall not be placed on dual lane divided or 4 lane undivided highways.
2. A bridge which is not a narrow bridge but which does not have full approach shoulder width carried across the bridge, shall have D-1 delineators on the approach. The W-5 sign and type 3 object markers shall not be installed.
3. See Standard Drawing E 808-MKNB-04 for additional general notes.
4. See Standard Drawing E 808-MKNB-03 for traffic control devices.
5. The inside edge of the type 3 object marker shall be in line with the inner edge of the obstruction.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DEVICES  
NARROW BRIDGE DIVIDED HIGHWAY

MAY 1998

STANDARD DRAWING NO. E 808-MKNB-05



DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

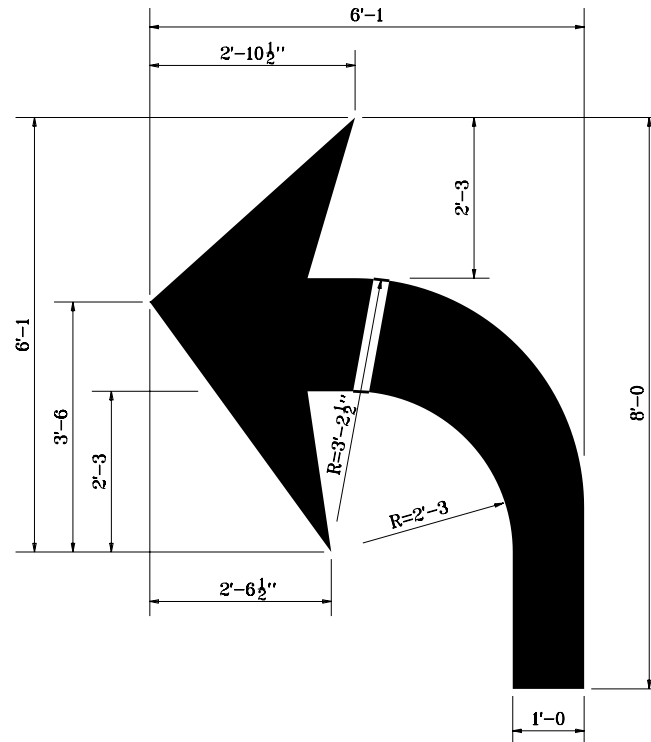
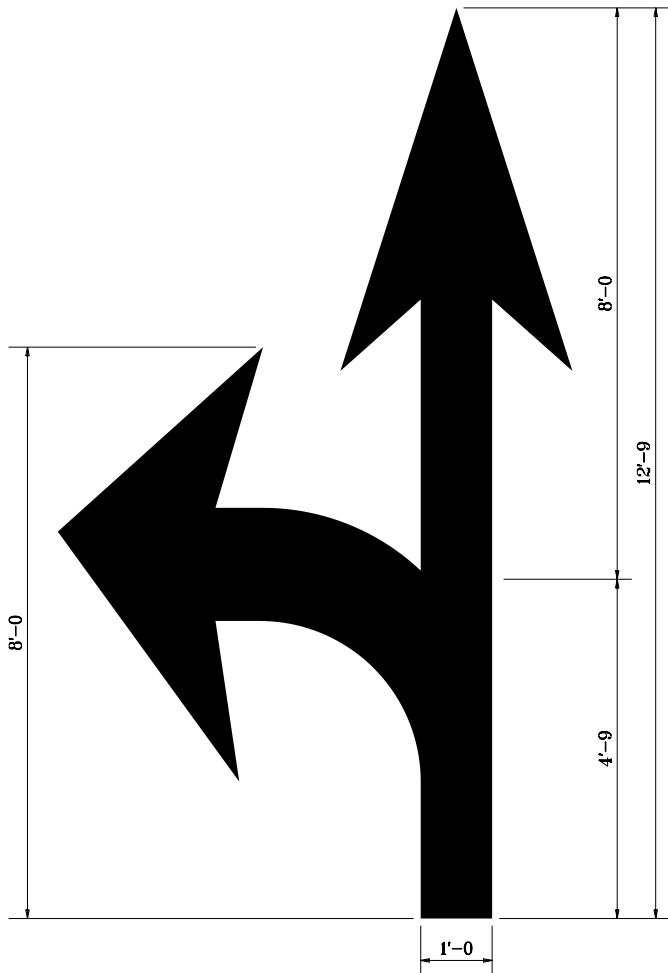
/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 5-01-98

## GENERAL NOTES

1. The tip of the lane indication arrow closest to the stop line shall be 20 ft in advance of the nearest edge of the stop line.



INDIANA DEPARTMENT OF TRANSPORTATION

## TRANSVERSE MARKINGS

MARCH 1995

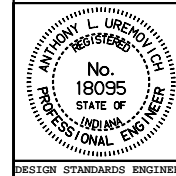
STANDARD DRAWING NO **E 808-MKPM-02**

DETAILS PLACED IN THIS FORMAT	7-27-99
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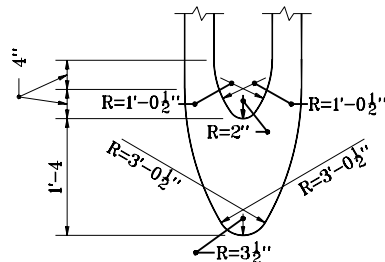
/s/ Anthony L. Uremovich 7-27-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi      7-27-99  
CHIEF HIGHWAY ENGINEER      DATE

ORIGINALLY APPROVED	3-01-95
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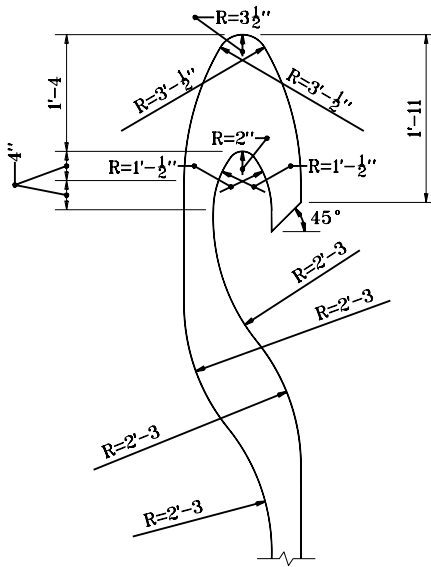




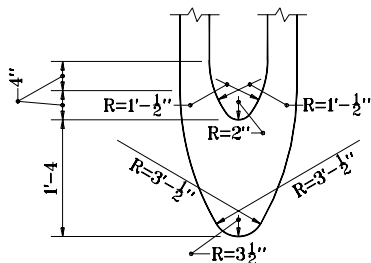
1. The top edge of the word ONLY shall be located in advance of the back edge of the lane indication arrow, at least 4 times the height of the characters for posted speeds  $\leq 45$  mph but not more than 10 times the height of the characters for posted speeds  $> 45$  mph.
2. Horizontal strokes are 1'-4" wide. Vertical strokes are 4" wide.

### GENERAL NOTES

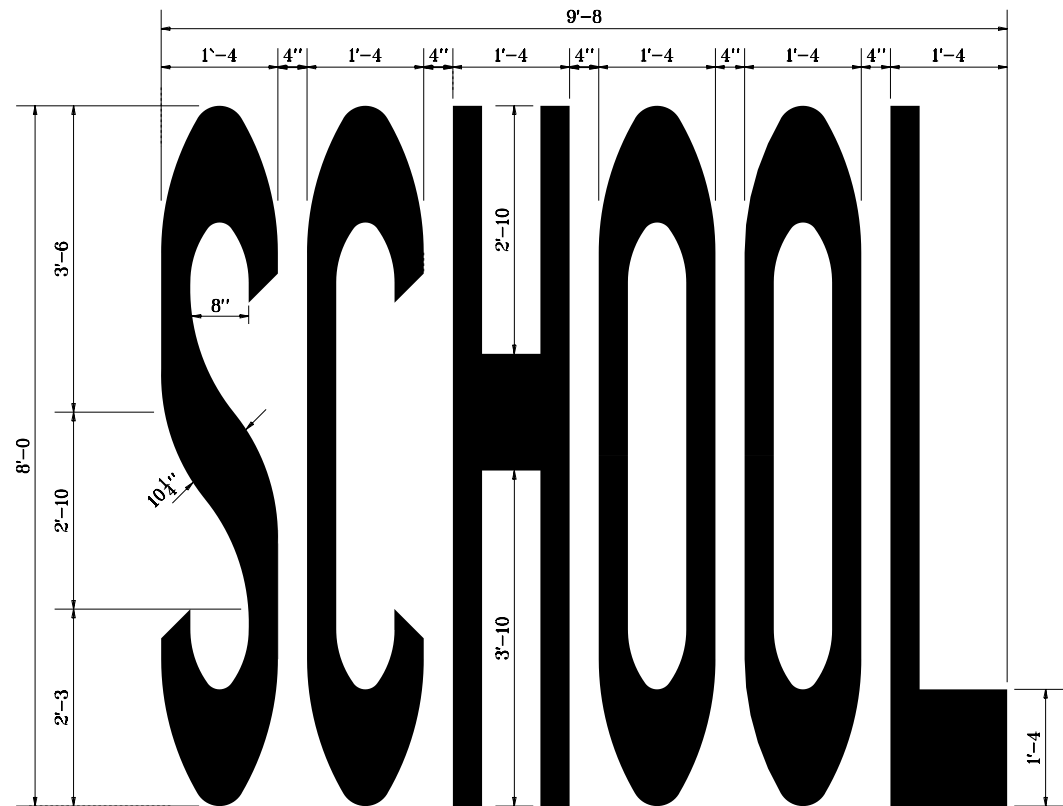
1. Horizontal strokes are 1'-4" wide.  
Vertical strokes are 4" wide.



### DETAILS FOR "C,G,S"



### DETAILS FOR "O"



INDIANA DEPARTMENT OF TRANSPORTATION

## TRANSVERSE MARKINGS

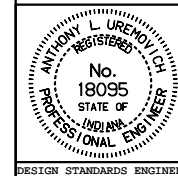
MARCH 1995

STANDARD DRAWING NOE 808-MKPM-04

DETAILS PLACED IN THIS FORMAT	7-27-99
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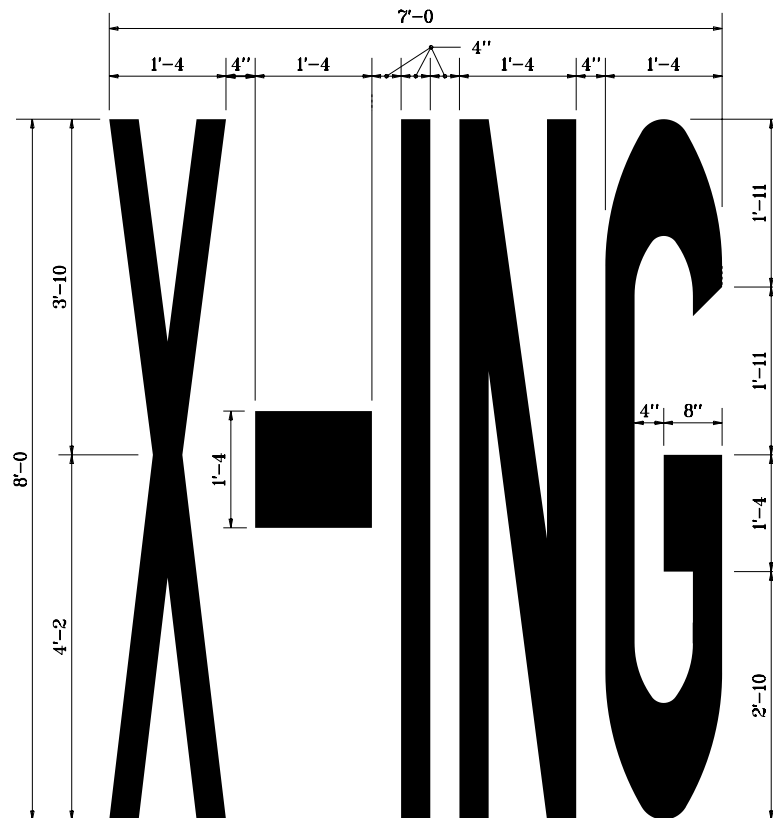
/s/ Anthony L. Uremovich 7-27-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi	7-27-99
CHIEF HIGHWAY ENGINEER	DATE
ORIGINALLY APPROVED	3-01-95



## GENERAL NOTES

1. Horizontal strokes are 1'-4 wide.  
vertical strokes are 4" wide.
2. See Standard Drawing E 807-  
MKPM-04 for Details for "G".

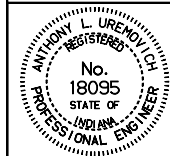


INDIANA DEPARTMENT OF TRANSPORTATION

## TRANSVERSE MARKINGS

JANUARY 2000

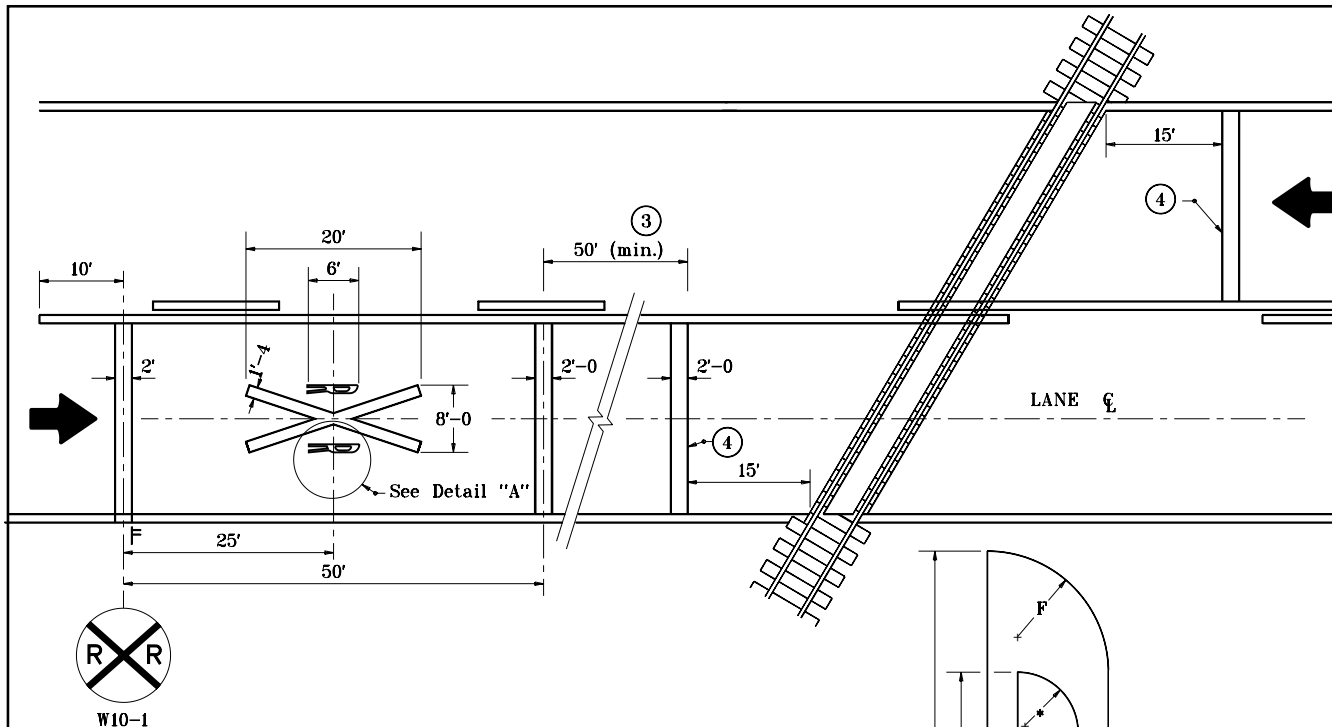
STANDARD DRAWING NO.E 808-MKPM-05



/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

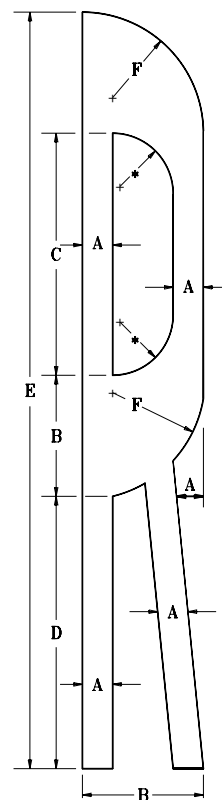


### STOPPING SIGHT DISTANCE <sup>③</sup>

DESIGN SPEED (mph)	Distance, ft
30	200
35	275
40	325
45	400
50	475
55	575
60	650

A = 2 3/4"  
 B = 11 1/2"  
 C = 1'-11"  
 D = 2'-1"  
 E = 6'-0"  
 F = 11 1/2"  
 \* = 5 3/4" R

### DETAIL "A"



### GENERAL NOTES

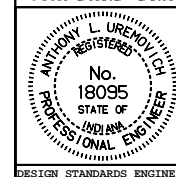
- For 2-way left-turn lanes, the center lane shall be discontinued across the railroad crossing and marked as a flush median or as a 1-way left-turn lane.
- For a multi-lane highway, the transverse lines shall be extended across all approach lanes, and the individual railroad crossing symbols provided in each lane.
- Stopping sight distance in rural areas; variable in urban areas, but not less than 50 ft. See Stopping Sight Distance Table.
- Stop line is approximately 8 ft from gate (if present).

INDIANA DEPARTMENT OF TRANSPORTATION

### PAVEMENT MARKING FOR RAILROAD CROSSINGS

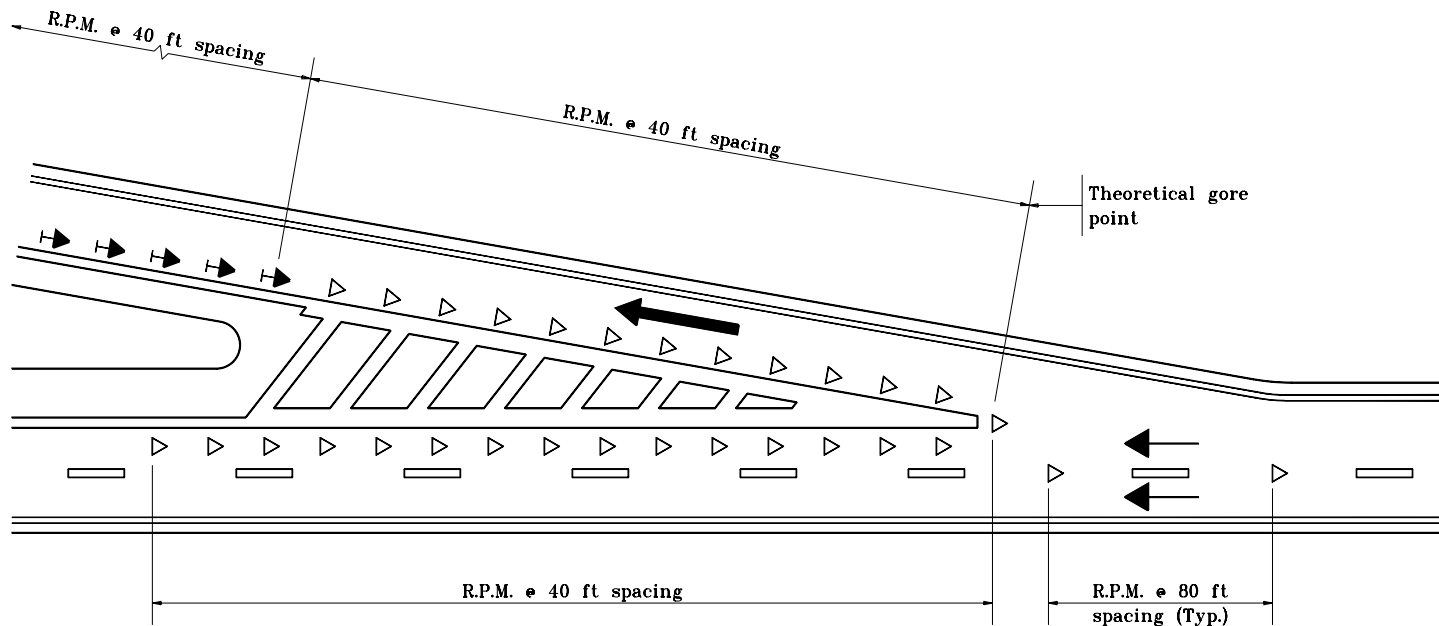
JANUARY 2000

STANDARD DRAWING NO. E 808-MKPM-07



/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE



#### LEGEND

- ◁ One-way white marker
- ◄ Two-way yellow/red marker
- Lane line

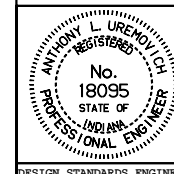
**TYPICAL EXIT RAMP SHOWING LOCATIONS OF RAISED  
PAVEMENT MARKERS (GORE AREA)  
DETAIL A**

INDIANA DEPARTMENT OF TRANSPORTATION

### RAISED PAVEMENT MARKERS TYPICAL LOCATIONS

MARCH 1995

STANDARD DRAWING NO. **E 808-MKRM-01**



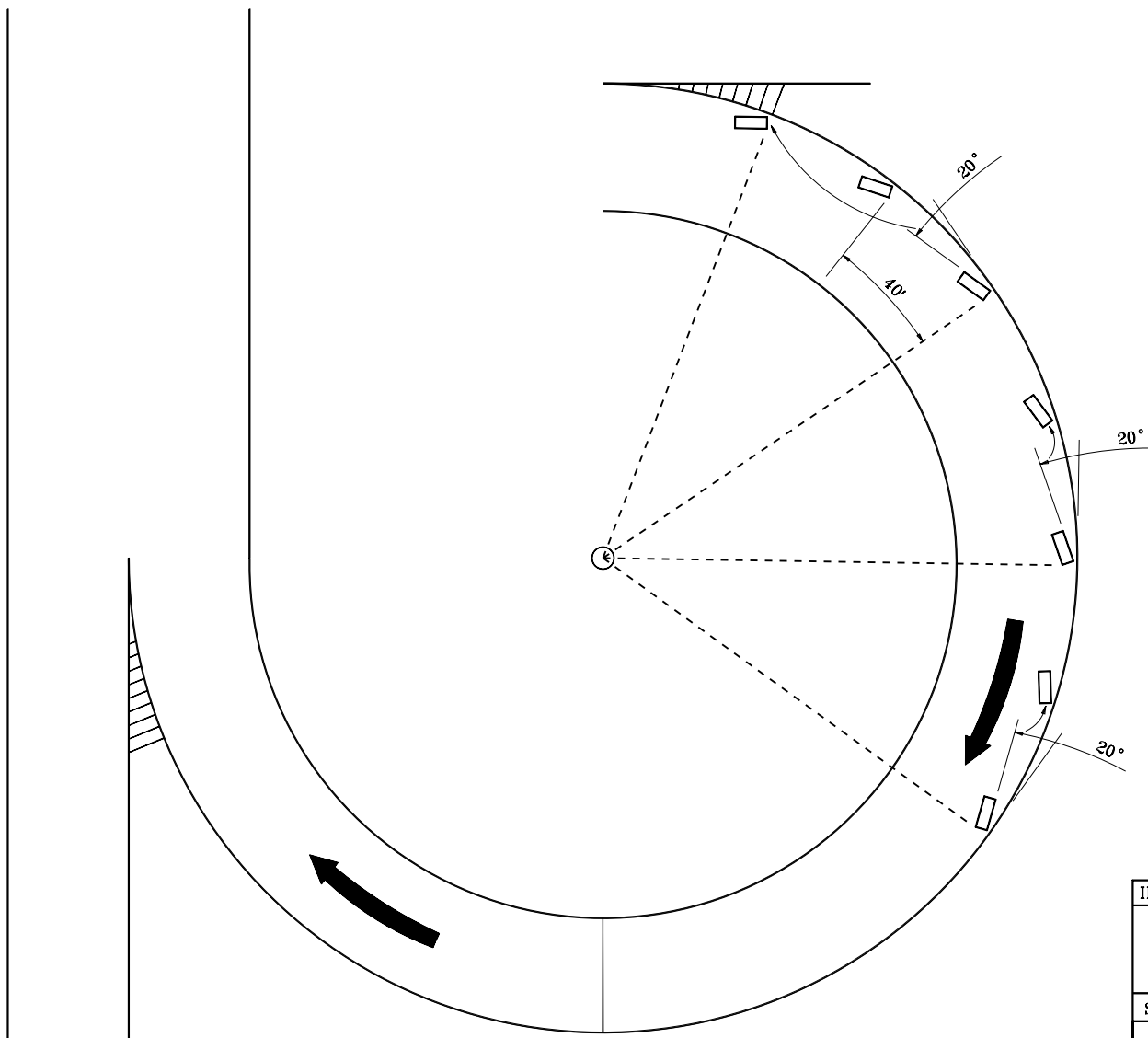
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99  
CHIEF HIGHWAY ENGINEER DATE

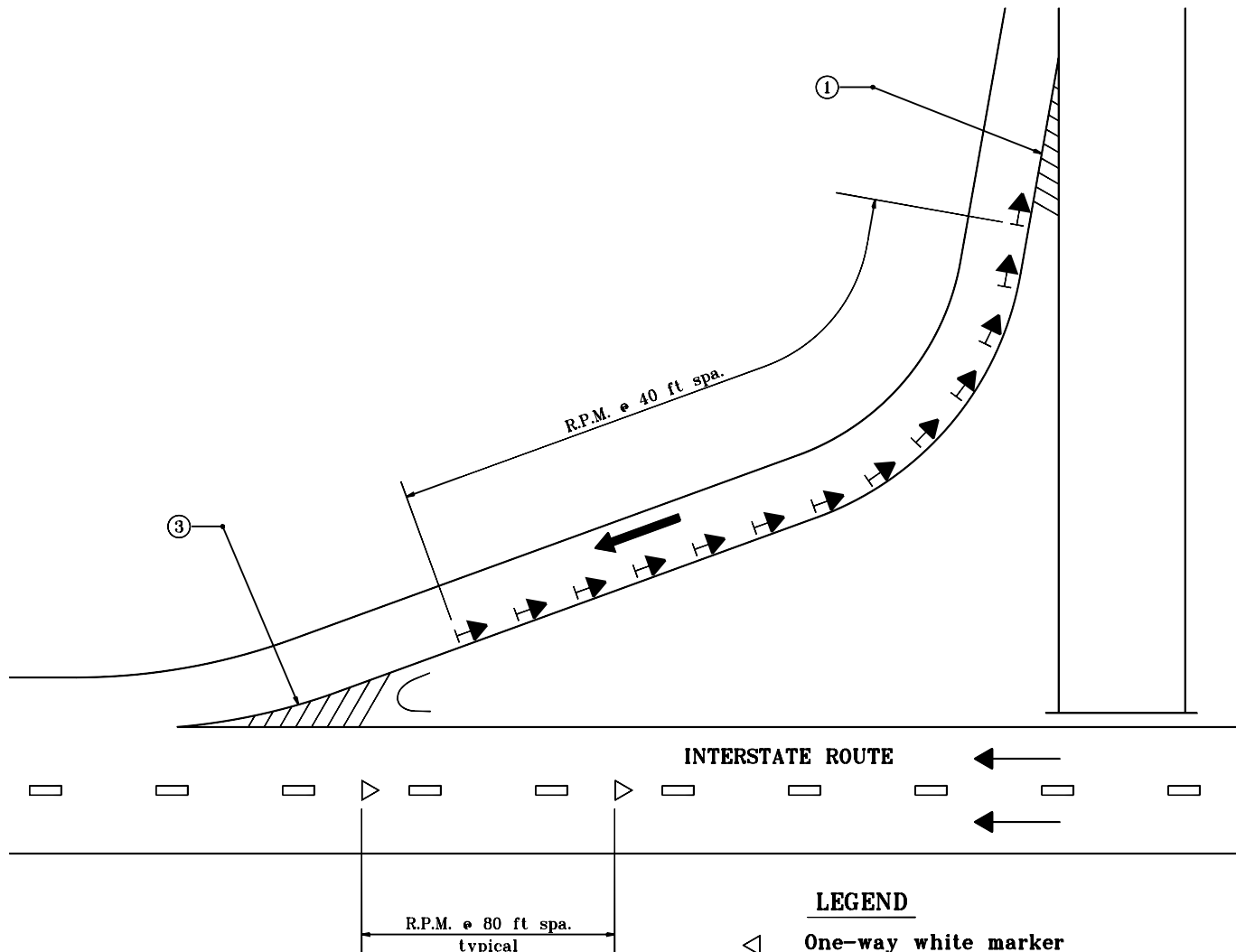
DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 3-01-95



**TYPICAL LOOP RAMP SHOWING LOCATIONS OF  
RAISED PAVEMENT MARKERS  
DETAIL B**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>RAISED PAVEMENT MARKERS TYPICAL LOCATIONS</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 808-MKRM-02</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ <i>Anthony L. Uremovich</i> 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ <i>Firooz Zandi</i> 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95



# NOTES

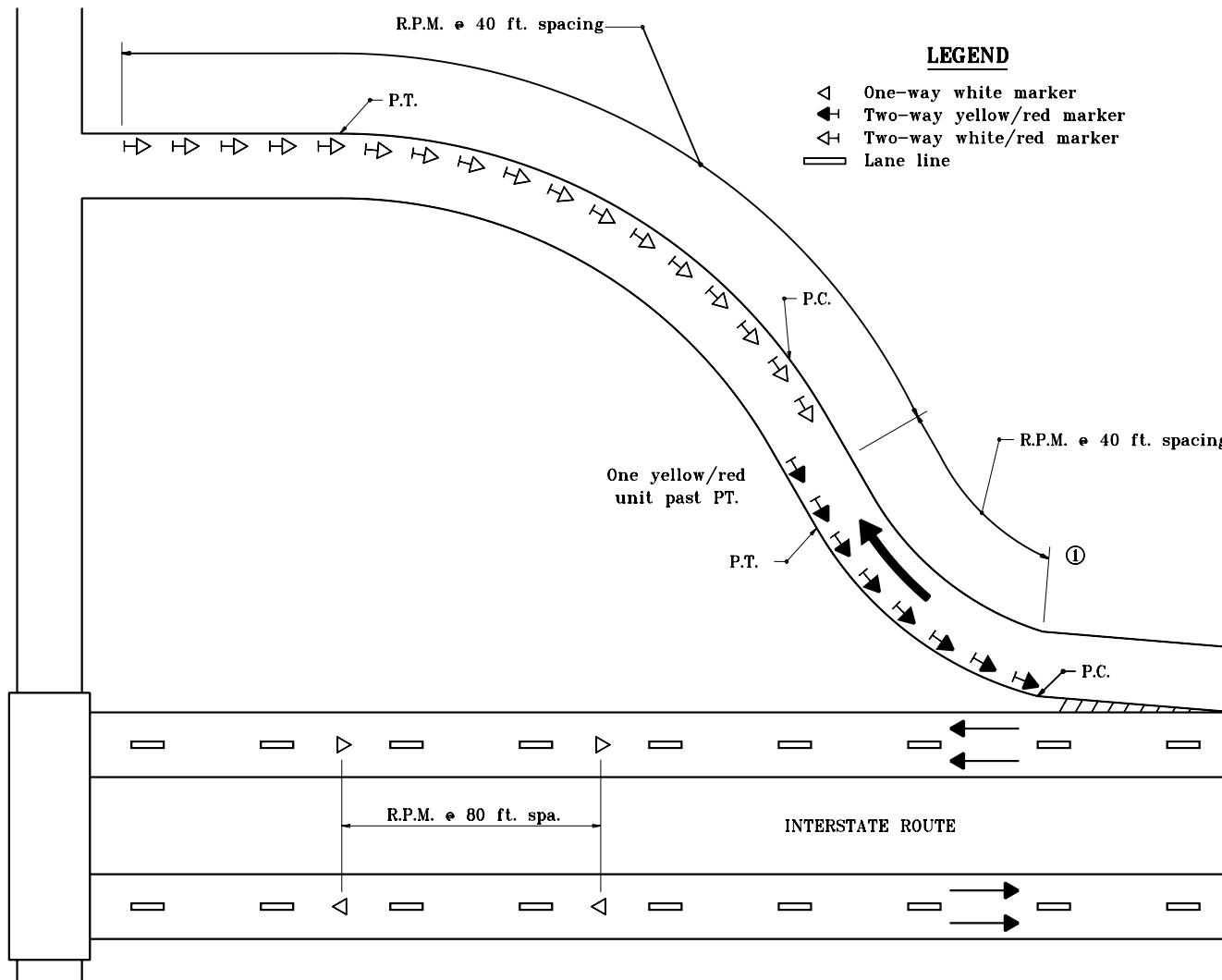
- See Standard Drawing E 808-MKRM-01 for Detail A.
- If ramp has reverse curves, see Standard Drawing 808-MKRM-04 for Detail D.
- See Standard Drawing E 808-MKRM-07 for Detail G and Standard Drawing E 808-MKRM-08 for Detail H.

## LEGEND

- One-way white marker
- Two-way yellow/red marker
- Lane line

TYPICAL ENTRANCE RAMP SHOWING LOCATIONS OF  
RAISED PAVEMENT MARKERS (CLOVERLEAF INTERCHANGE)  
DETAIL C

INDIANA DEPARTMENT OF TRANSPORTATION	
RAISED PAVEMENT MARKERS TYPICAL LOCATIONS	
JANUARY 2000	
STANDARD DRAWING NO E 808-MKRM-03	
	/s/ Anthony L. Uremovich 1-03-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 1-03-00 CHIEF HIGHWAY ENGINEER DATE



### LEGEND

- ◁ One-way white marker
- ◄ Two-way yellow/red marker
- ◄ Two-way white/red marker
- Lane line

### NOTE

- ① See Standard Drawing E 808-MKRM-01 for Detail A.

**TYPICAL EXIT RAMP SHOWING LOCATIONS OF  
RAISED PAVEMENT MARKERS (DIAMOND OR PARCLO INTERCHANGE)  
DETAIL D**

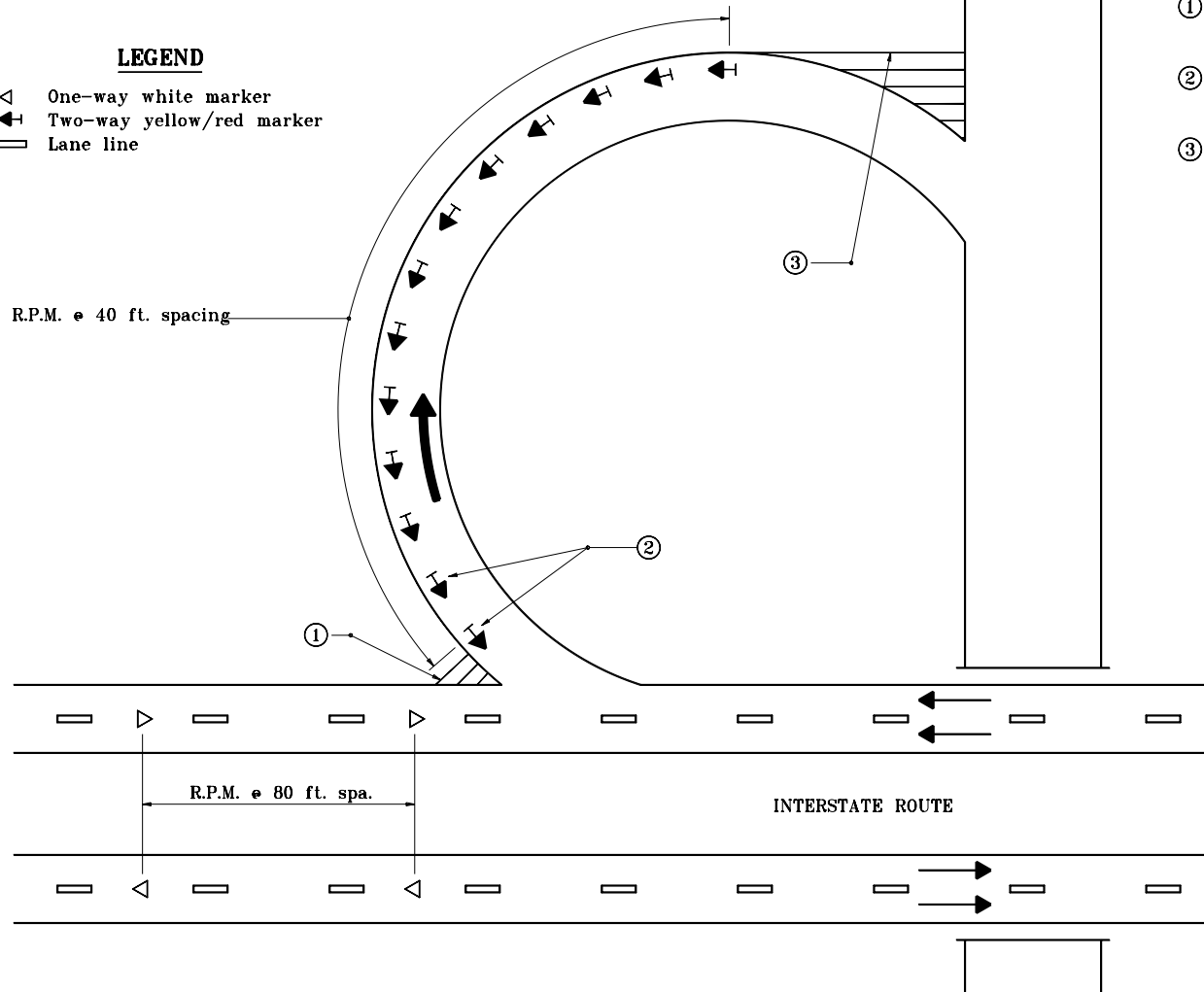
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>RAISED PAVEMENT MARKERS TYPICAL LOCATIONS</b>	
JANUARY 2000	
STANDARD DRAWING NO <b>E 808-MKRM-04</b>	
	<i>/s/ Anthony L. Uremovich</i> 1-03-00 <small>DESIGN STANDARDS ENGINEER DATE</small>
	<i>/s/ Firooz Zandi</i> 1-03-00 <small>CHIEF HIGHWAY ENGINEER DATE</small>
<small>DESIGN STANDARDS ENGINEER</small>	



### LEGEND

- ◁ One-way white marker
- ↔ Two-way yellow/red marker
- ▬ Lane line

R.P.M. @ 40 ft. spacing



**TYPICAL EXIT RAMP SHOWING LOCATIONS OF  
RAISED PAVEMENT MARKERS (CLOVERLEAF INTERCHANGE)  
DETAIL E**

### NOTES

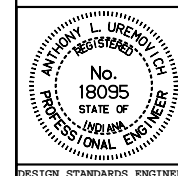
- ① See Standard Drawing E 808-MKRM-01 for Detail A.
- ② See Standard Drawing E 808-MKRM-02 for Detail B.
- ③ See Standard Drawing E 808-MKRM-07 for Detail G and Standard Drawing E 808-MKRM-08 for Detail H.

INDIANA DEPARTMENT OF TRANSPORTATION

### RAISED PAVEMENT MARKERS TYPICAL LOCATIONS

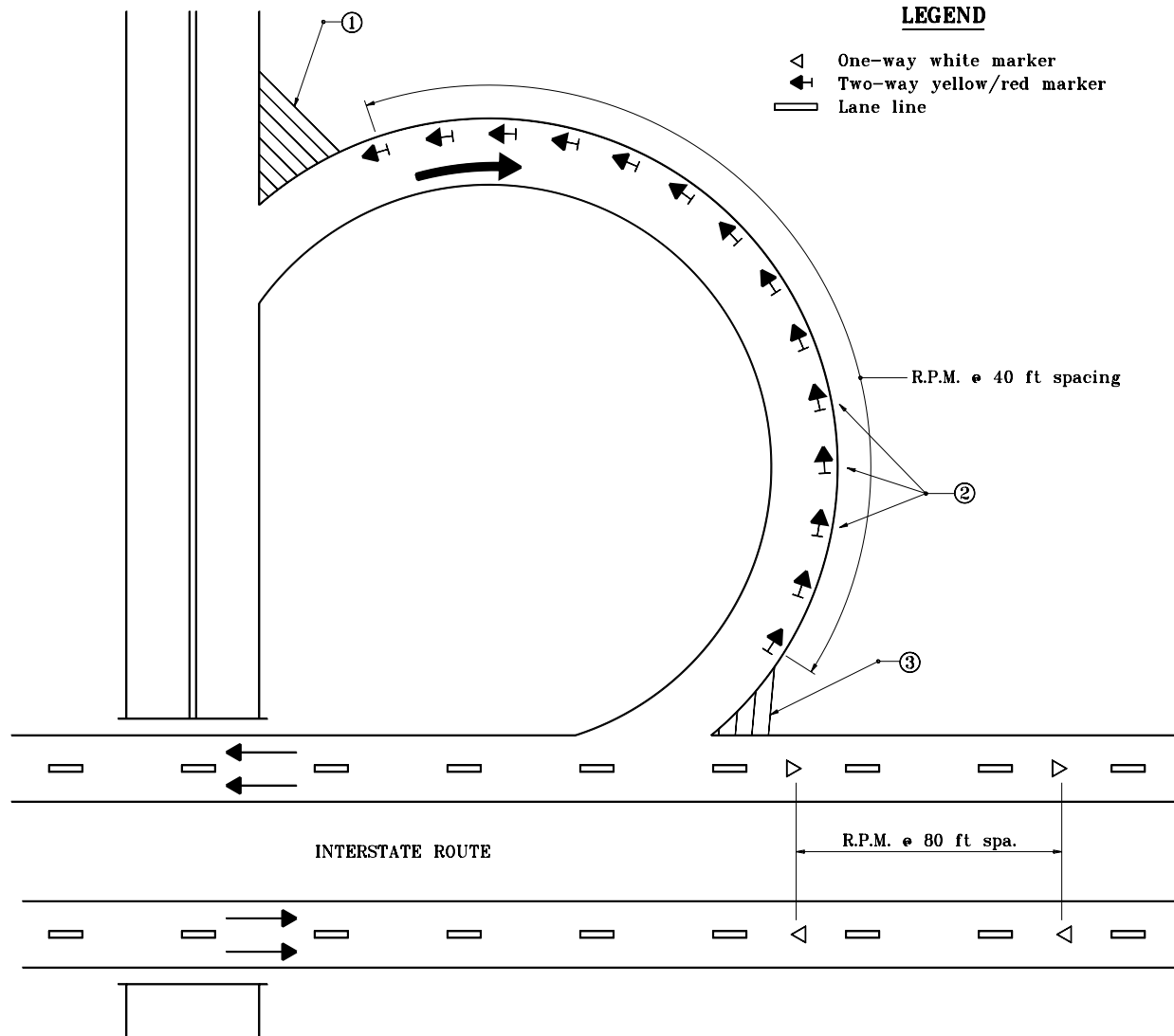
JANUARY 2000

STANDARD DRAWING NO. **E 808-MKRM-05**



/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE



### LEGEND

- △ One-way white marker
- Two-way yellow/red marker
- Lane line

### NOTES

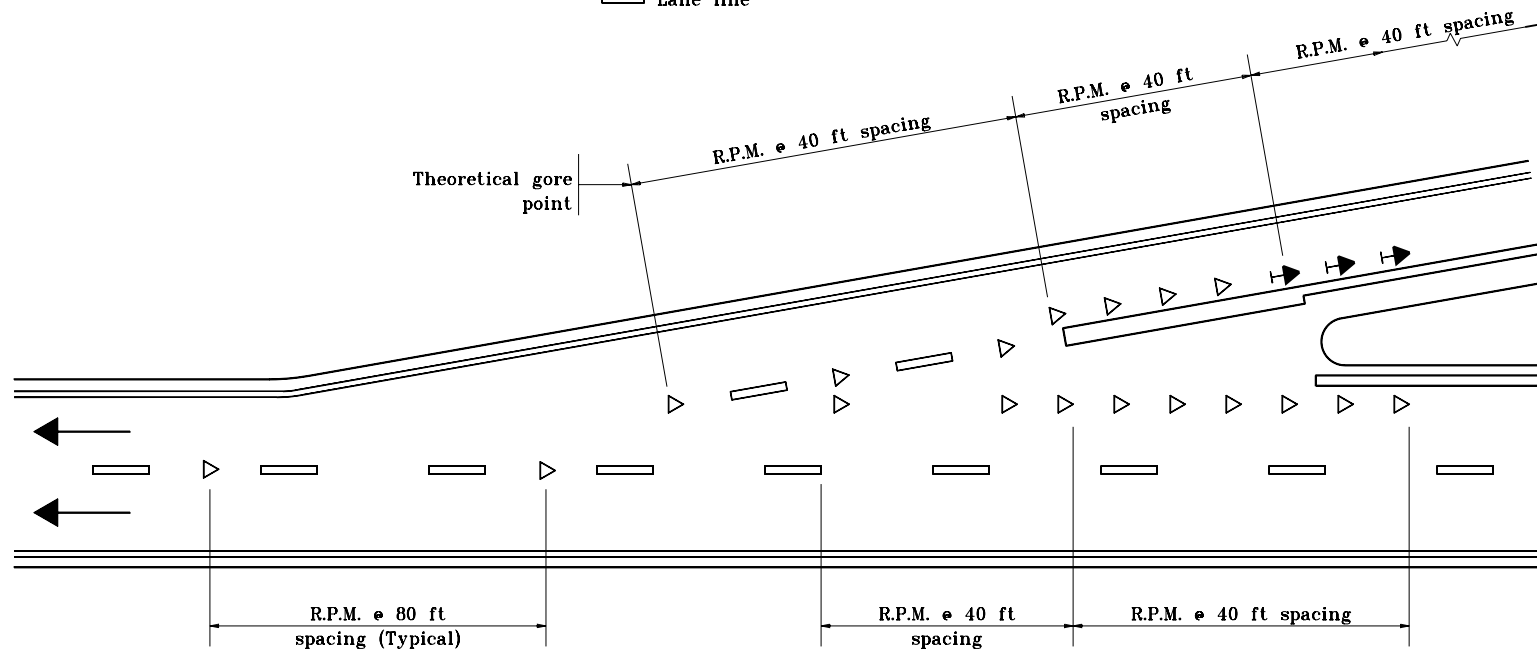
- ① See Standard Drawing E-808-MKRM-01 for Detail A.
- ② See Standard Drawing E-808-MKRM-02 for Detail B.
- ③ See Standard Drawing E-808-MKRM-07 for Detail G and Standard Drawing E-808-MKRM-08 for Detail H.

**TYPICAL EXIT RAMP SHOWING LOCATIONS OF  
RAISED PAVEMENT MARKERS (CLOVERLEAF INTERCHANGE)  
DETAIL F**

INDIANA DEPARTMENT OF TRANSPORTATION	
RAISED PAVEMENT MARKERS TYPICAL LOCATIONS JANUARY 2000	
STANDARD DRAWING NO <b>E 808-MKRM-06</b>	
	/s/ Anthony L. Uremovich 1-03-00 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 1-03-00 CHIEF HIGHWAY ENGINEER DATE

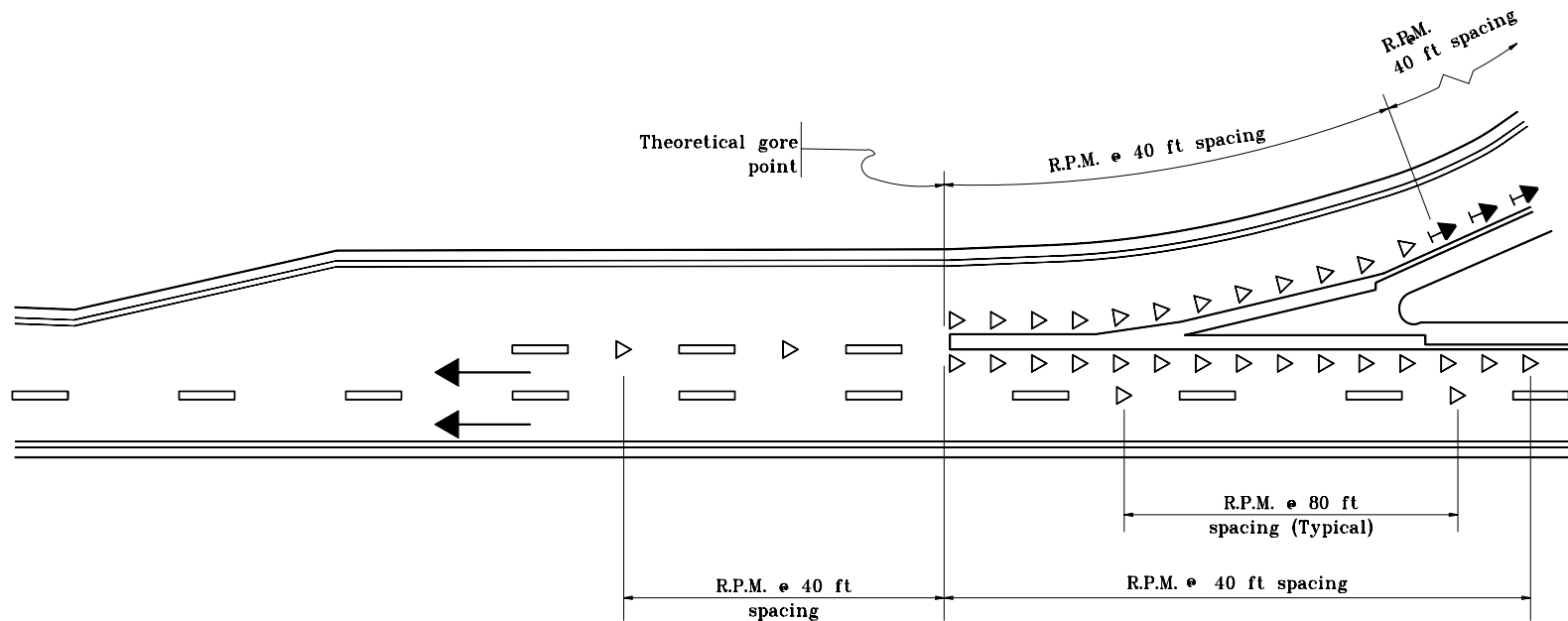
# **LEGEND**

- ◁ One-way white marker
- ◄ Two-way yellow/red marker
- ▬ Lane line



**TYPICAL ENTRANCE RAMP SHOWING LOCATIONS OF RAISED  
PAVEMENT MARKERS (GORE AREA)  
DETAIL G**

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>RAISED PAVEMENT MARKERS TYPICAL LOCATIONS</b>	
MARCH 1995	
STANDARD DRAWING NO. <b>E 808-MKRM-07</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95

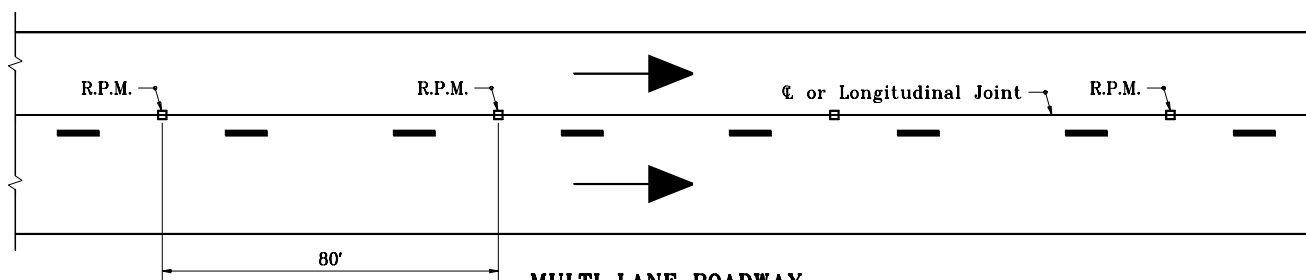
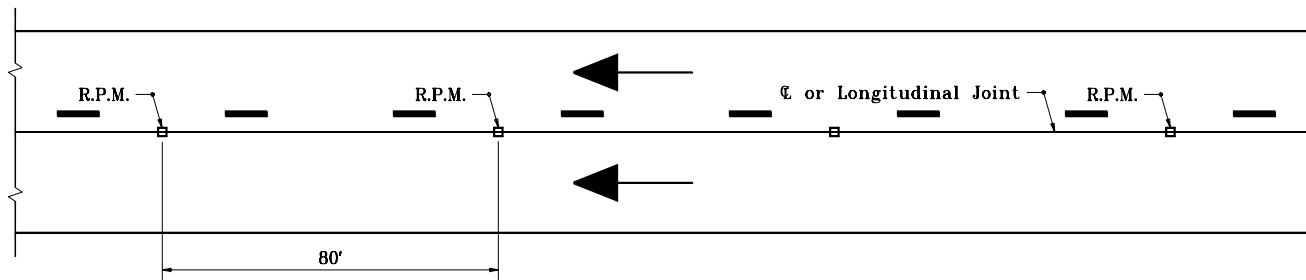


### LEGEND

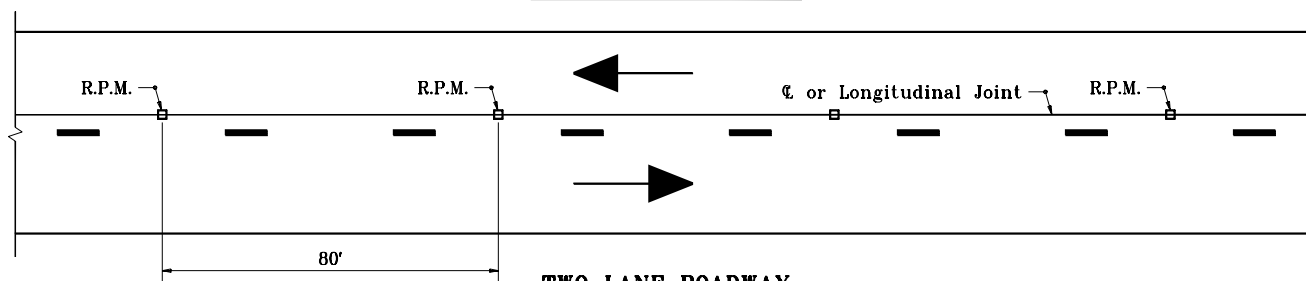
- ◁ One-way white marker
- ◄ Two-way yellow/red marker
- Lane line

**TYPICAL ENTRANCE RAMP SHOWING LOCATIONS OF RAISED  
PAVEMENT MARKERS (GORE AREA)  
DETAIL H**

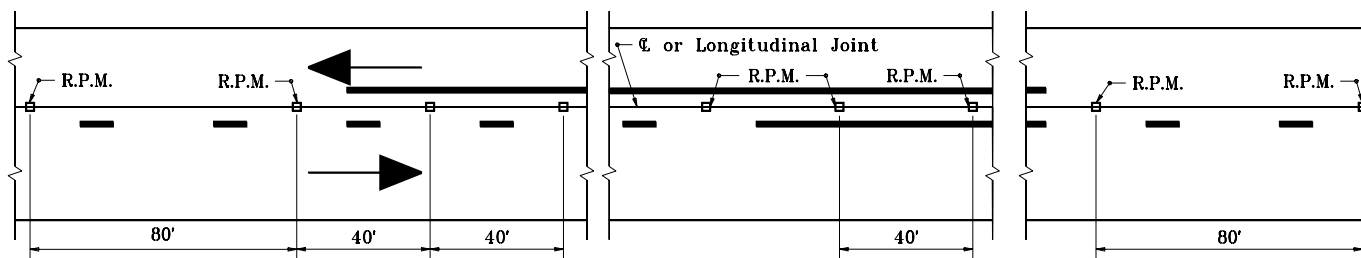
INDIANA DEPARTMENT OF TRANSPORTATION	
<b>RAISED PAVEMENT MARKERS TYPICAL LOCATIONS</b>	
MARCH 1995	
STANDARD DRAWING NO <b>E 808-MKRM-08</b>	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
	DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95



**MULTI LANE ROADWAY**



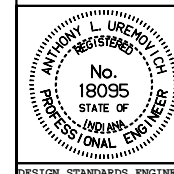
**TWO LANE ROADWAY  
TANGENT SECTION**



**TWO LANE ROADWAY  
NO PASSING ZONE**

INDIANA DEPARTMENT OF TRANSPORTATION  
**PLACEMENT OF SNOWPLOWABLE  
 RAISED PAVEMENT MARKERS**  
 MARCH 1995

STANDARD DRAWING NOE 808-MKRM-09



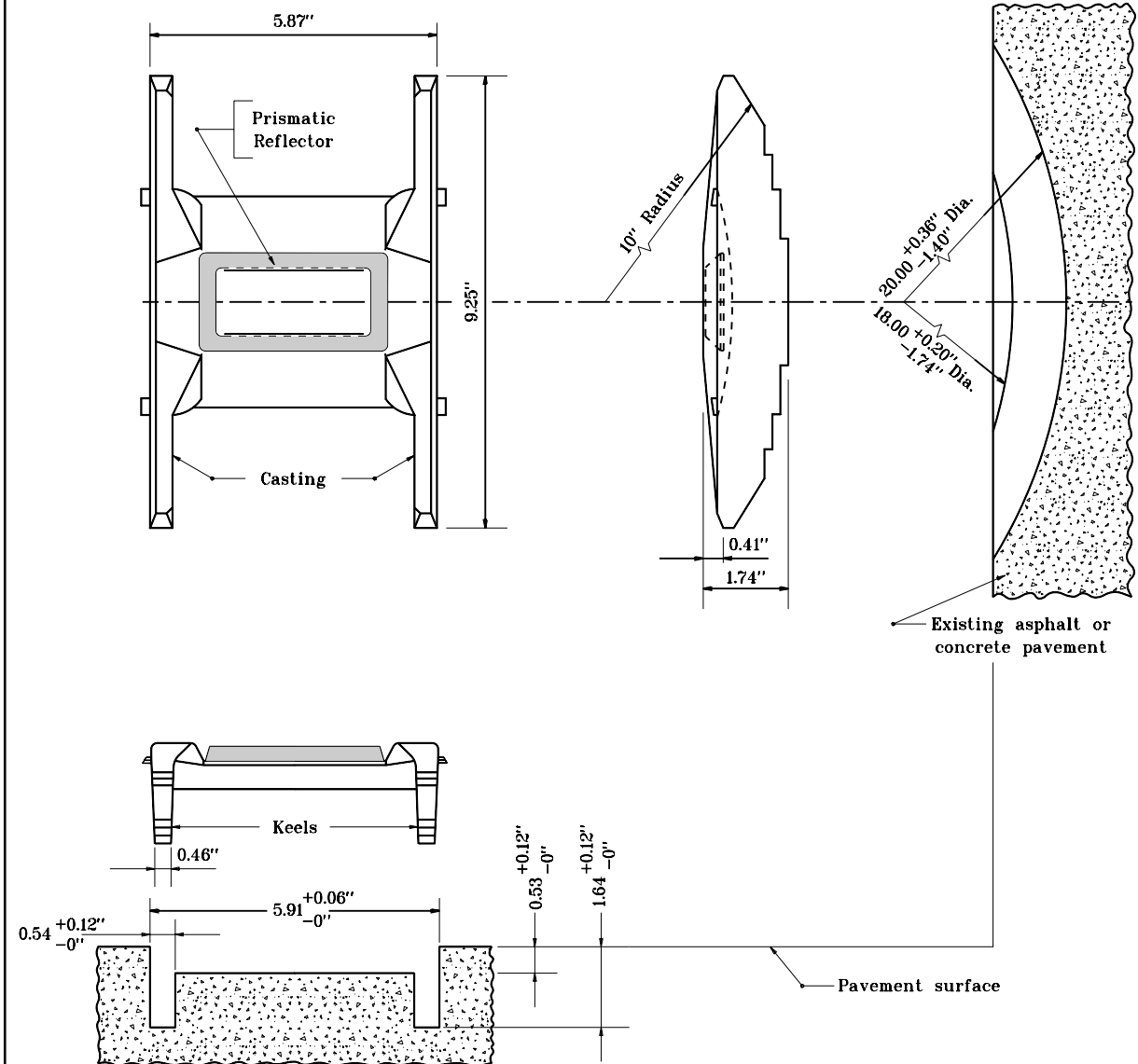
DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99  
 DESIGN STANDARDS ENGINEER DATE

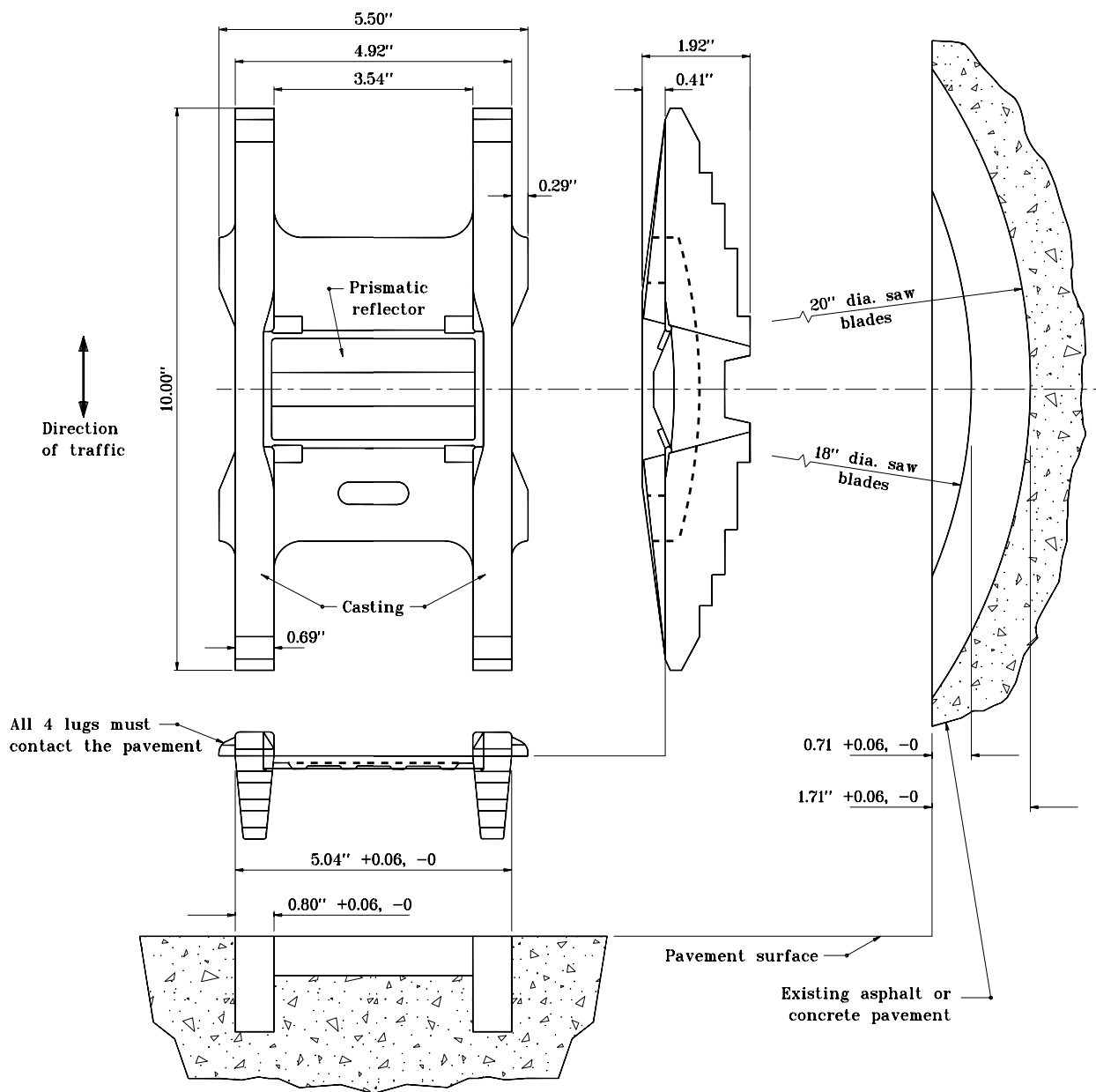
/s/ Firooz Zandi 11-15-99  
 CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 3-01-95



INDIANA DEPARTMENT OF TRANSPORTATION		
<b>RAISED PAVEMENT MARKER</b> <b>CAST METAL BASE, TYPE 1</b> SEPTEMBER 1998		
STANDARD DRAWING NO. <b>E 808-MKRM-10</b>		
	DETAILS PLACED IN THIS FORMAT 11-15-99	
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE	
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE	
	ORIGINALLY APPROVED 9-01-98	

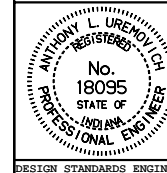


INDIANA DEPARTMENT OF TRANSPORTATION

**RAISED PAVEMENT MARKERS  
CAST METAL BASE, TYPE 2**

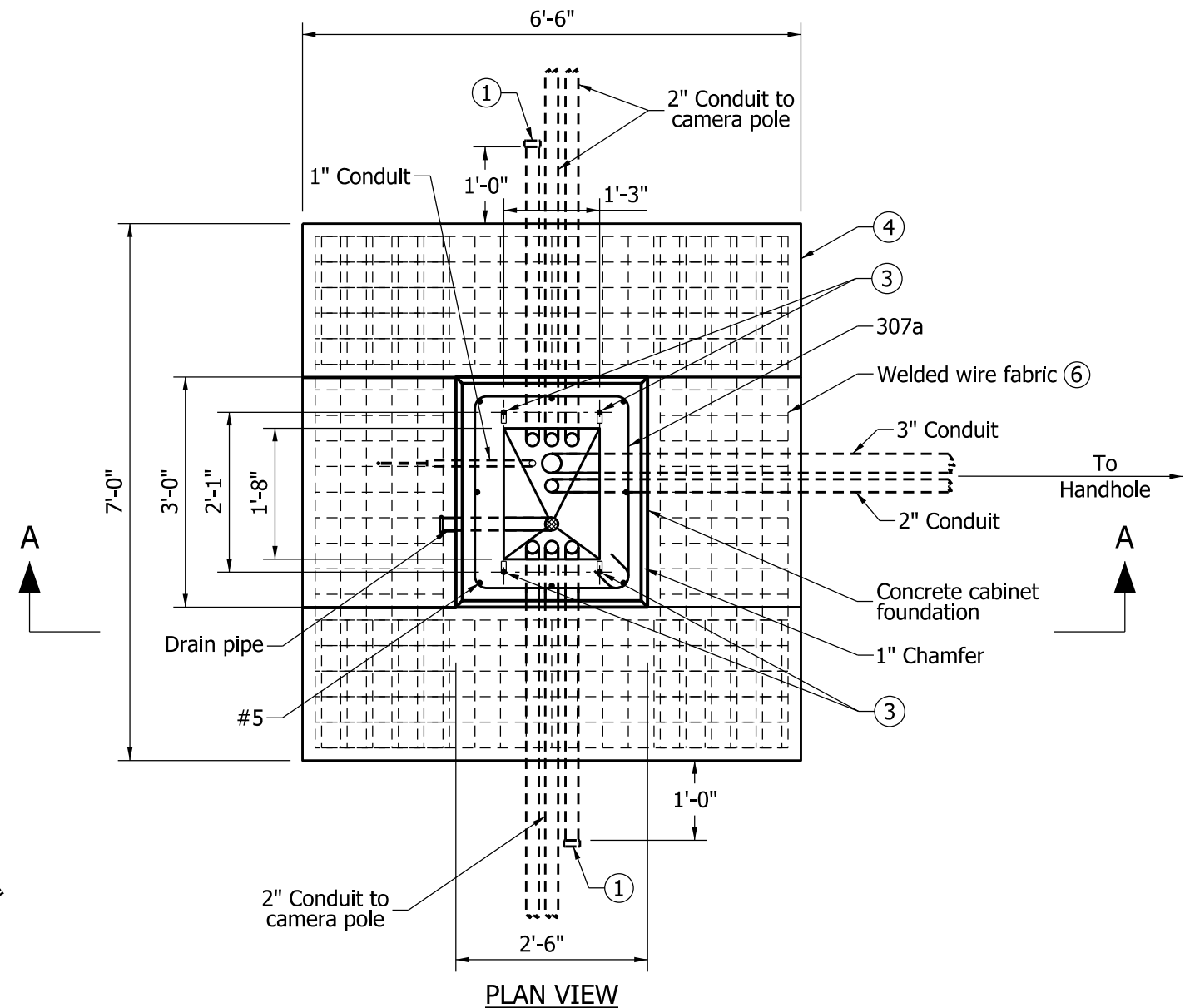
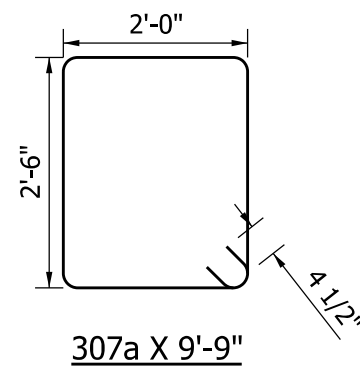
JANUARY 2000

STANDARD DRAWING NO. **E 808-MKRM-11**



/s/ Anthony L. Uremovich 1-03-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 1-03-00  
CHIEF HIGHWAY ENGINEER DATE



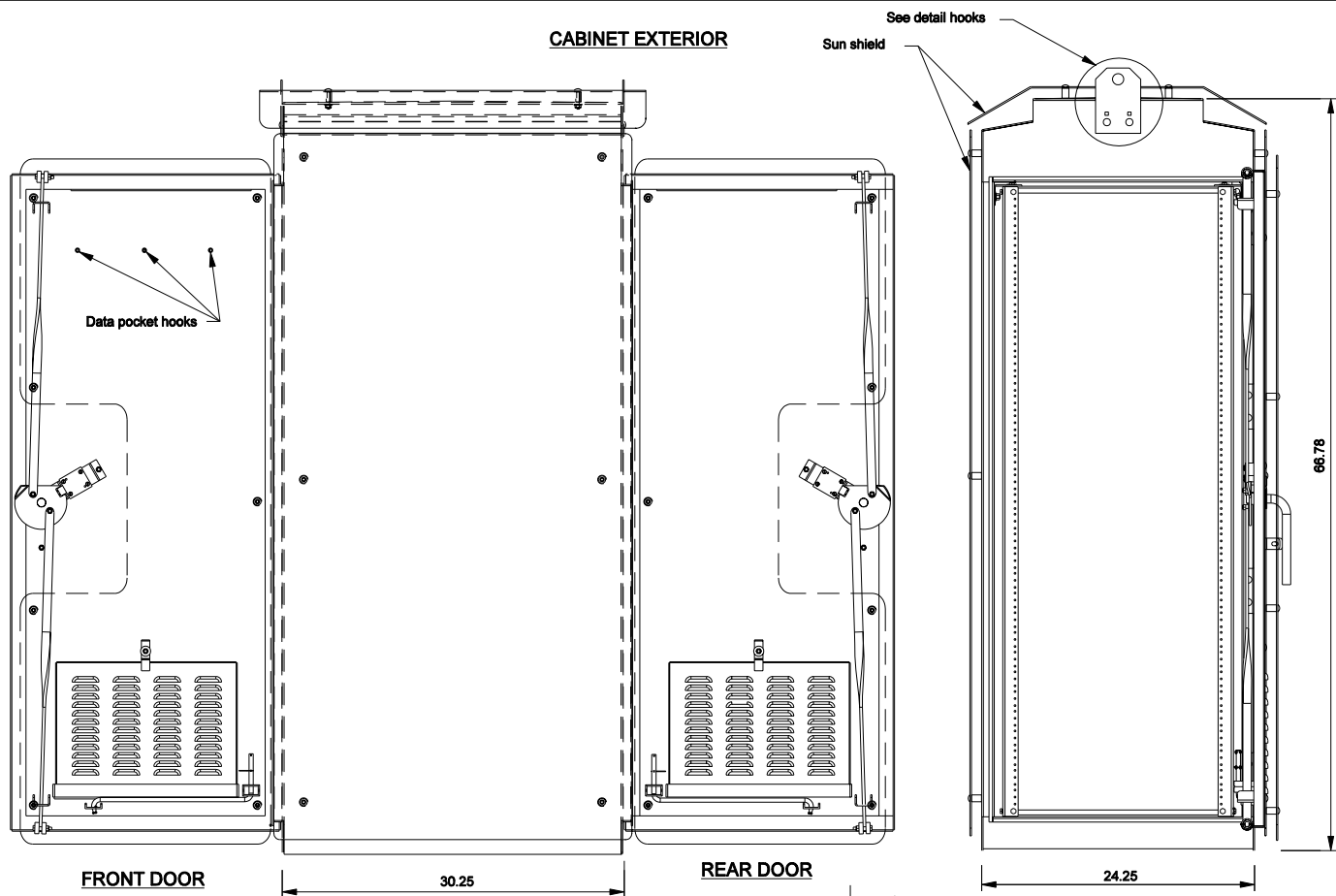
- ① 2" conduit capped off for future use.
2. Direction and actual location of conduit may vary due to service point and camera pole placement.
- ③ 3/4" x 18" anchor bolt as shown on Standard Drawing E 805 SGPB-01.
- ④ Concrete footpad shall be sloped to drain outward.
- ⑤ Bind ground rod to foundation using No. 2 solid tinned ground wire.
- ⑥ Welded wire fabric shall be 6 x 6 W6 x W6.

The seal is circular with a double-lined border. The outer ring contains the text "RICHARD L. VanCLEAVE" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by small tick marks. The inner circle contains the text "REGISTERED" at the top, "No. 9750" in the center, "STATE OF" below the number, and "INDIANA" at the bottom.

CHIEF ENGINEER	DATE
----------------	------



# **CABINET EXTERIOR**



## **NOTES:**

1. See Standard Drawings E 809-ITCS-01A thru -07 for additional ITS cabinet details.

**FRONT DOOR**

30.25

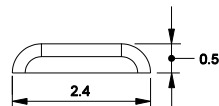
**REAR DOOR**

24.25

66.78

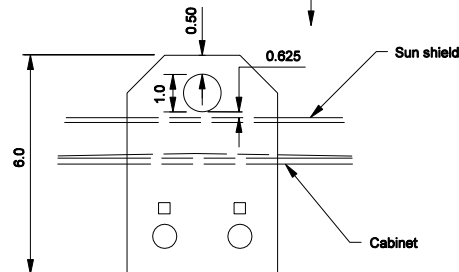
**SIDE VIEW**

**REAR VIEW  
WITH DOOR OPEN**



DEPTH = 1/8"

**DOOR FILTER  
LOUVRE DETAIL**



**DETAIL A  
NTS**

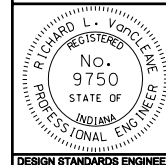
All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

**INDOT ITS CABINET DETAIL**

**MARCH 2006**

**STANDARD DRAWING NO. E 809-ITSC-01**

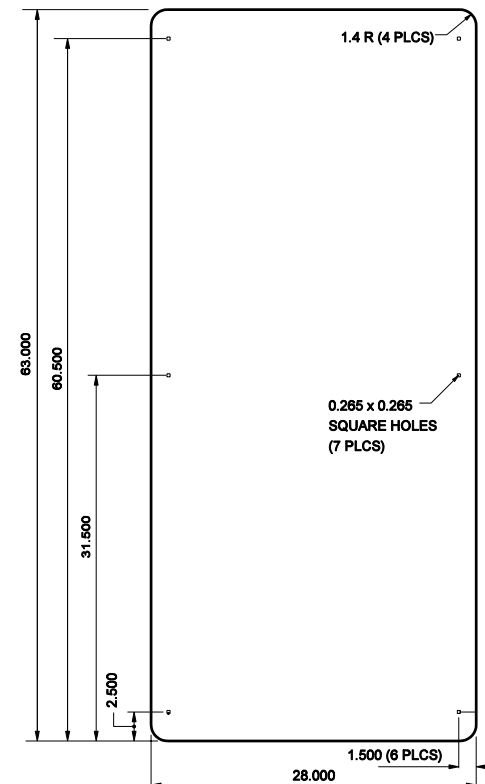
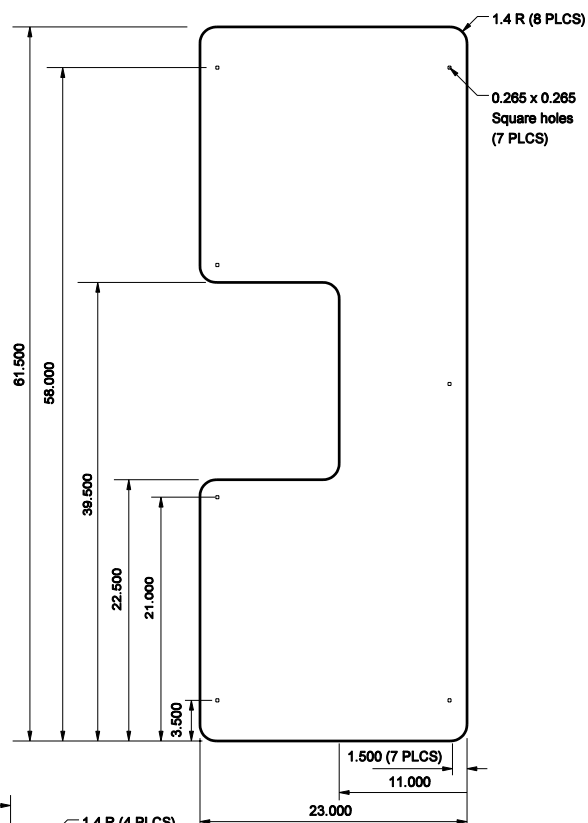


/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

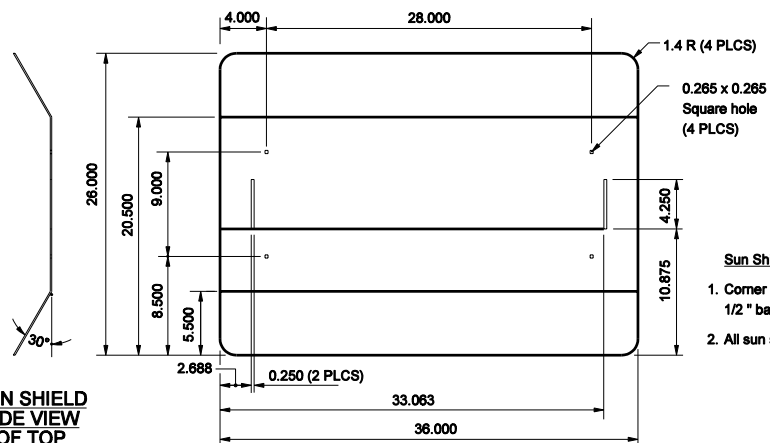
/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE

**NOTES:**

1. See Standard Drawings E 809-ITCS-01 or 02 thru -07 for additional ITS cabinet details.



**SUN SHIELD SIDE**



**SUN SHIELD TOP VIEW**

**Sun Shield Notes:**

1. Corner cuts are 45-degree cuts, 1/2" back
2. All sun shield shall use a 1" spacer

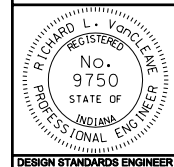
All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET DETAIL

MARCH 2006

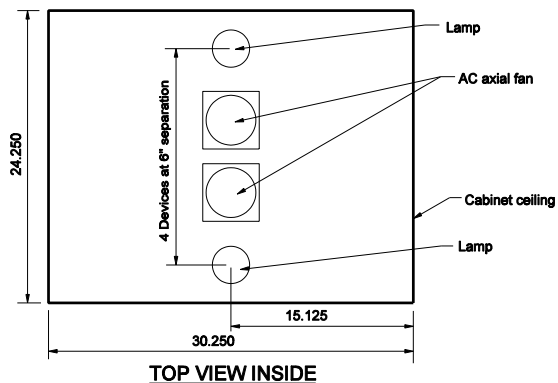
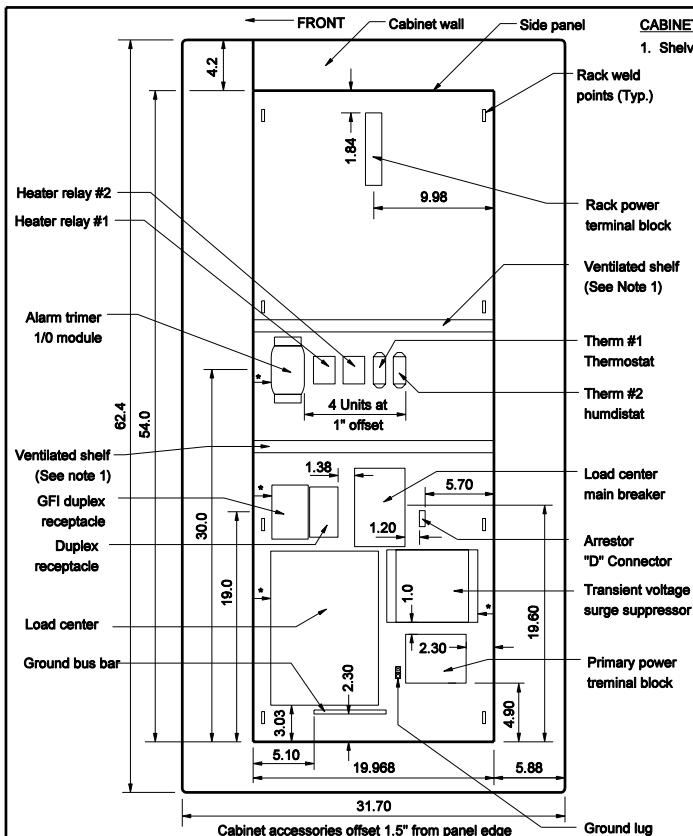
STANDARD DRAWING NO. E 809-ITSC-01A



/s/ Richard L. VanCleave	3-01-06
DESIGN STANDARDS ENGINEER	DATE
/s/ Richard K. Smutzer	3-01-06
CHIEF HIGHWAY ENGINEER	DATE

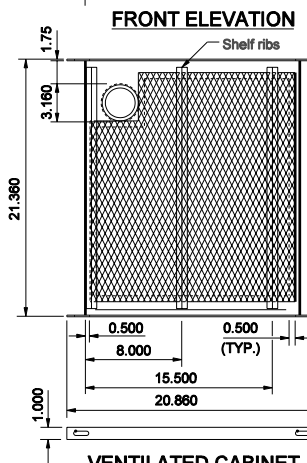
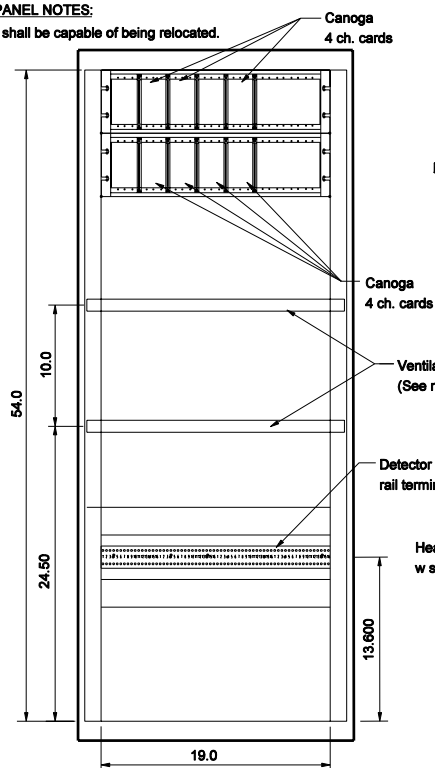
DESIGN STANDARDS ENGINEER

**SUN SHIELD  
SIDE VIEW  
OF TOP**



#### CABINET PANEL NOTES:

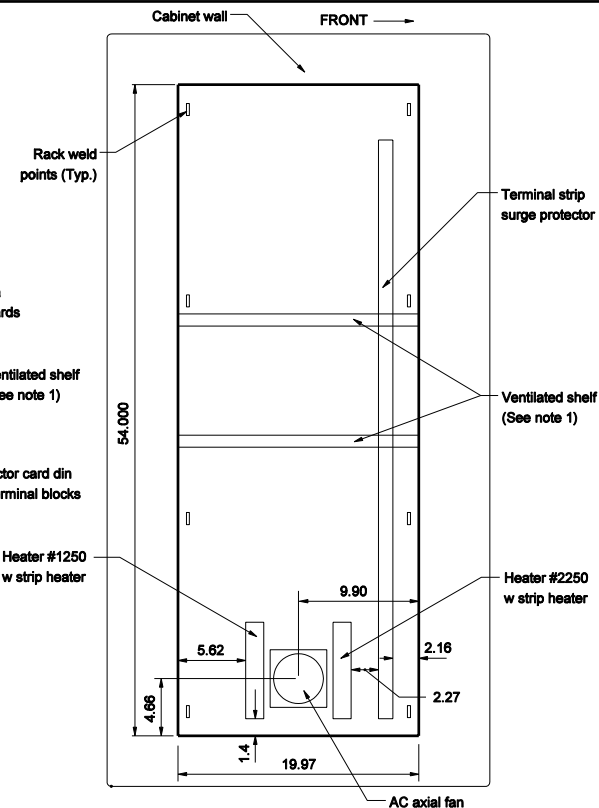
1. Shelves shall be capable of being relocated.



#### VENTILATED SHELF NOTES:

1. Tack weld screen to bottom of shelf.
2. Tack weld ribs over screen to bottom of shelf in locations shown.
3. Press bushing in from top of shelf.

4. Material Notes:  
Shelf frame-0.125 alum.  
screen-0.125 expanded alum.w/0.5" mesh  
ribs - 0.125 x 0.625 x 0.625 alum. angle



#### NOTES:

1. See Standard Drawings E 809-ITCS-01, -01A or -03 thru -07 for additional ITS cabinet details.

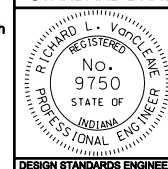
All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET SCHEMATIC

MARCH 2006

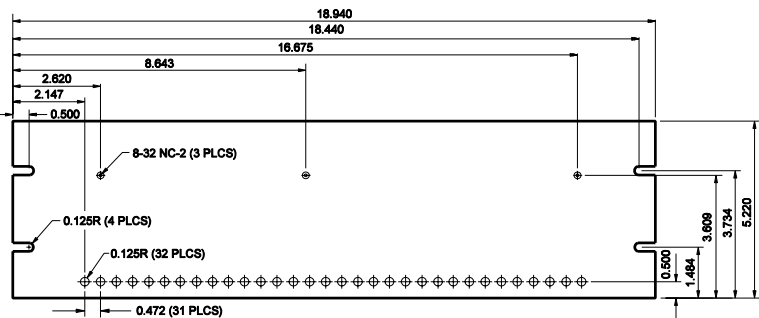
STANDARD DRAWING NO. E 809-ITSC-02



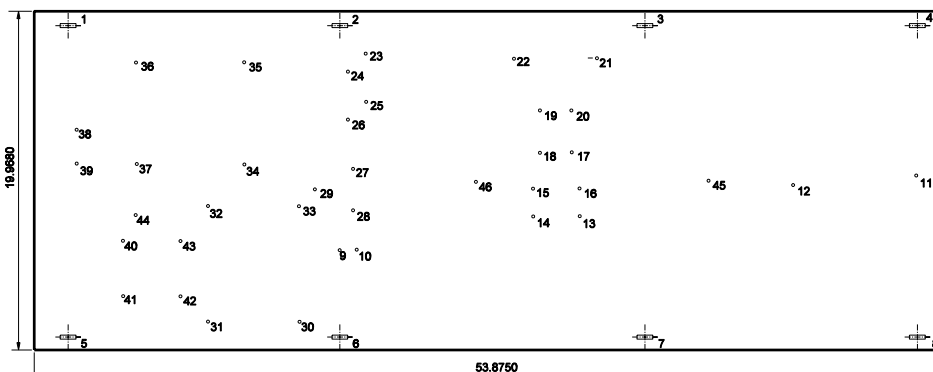
/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



DETECTOR CARD DIN RAIL DETAIL



POWER DISTRIBUTION PANEL PUNCH OUT DETAIL

COORDINATES

No	X	Y	SIZE
1	2.000	19.187	0.25 x 1.00 SLOT
2	18.000		
3	36.000		
4	52.000	19.187	
5	2.000	0.781	
6	18.000		
7	36.000		
8	52.000	0.781	0.25 x 1.00 SLOT
9	18.000	6.000	0.125 DIA
10	18.000	6.000	0.125 DIA
11	52.000	10.234	8-32 NC-2
12	44.888	9.734	
13	32.180	7.950	
14	29.430	7.950	
15	29.430	9.800	
16	32.180	9.800	
17	31.740	11.708	
18	29.870	11.708	
19	29.870	14.175	
20	31.740	14.175	
21	33.250	17.234	
22	28.375	17.234	8-32 NC-2

No	X	Y	SIZE
23	19.585	17.540	10-32 NC-2
24	18.522	16.478	
25	19.585	14.728	
26	18.522	13.865	
27	18.803	10.736	
28	18.803	8.336	
29	16.553	9.536	
30	15.608	1.750	
31	10.250	1.750	
32	10.250	8.550	
33	15.608	8.550	
34	12.428	11.000	
35	12.428	17.000	
36	6.053	17.000	
37	6.053	11.000	
38	2.500	13.000	
39	2.500	11.000	
40	5.250	6.500	
41	5.250	3.250	
42	8.625	3.250	
43	8.625	6.500	
44	6.000	8.000	10-32 NC-2
45	39.750	10.000	8-32 NC-2
46	28.000	10.000	8-32 NC-2

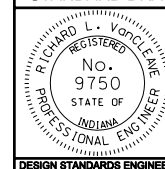
All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

## CABINET PUNCH OUT DETAILS

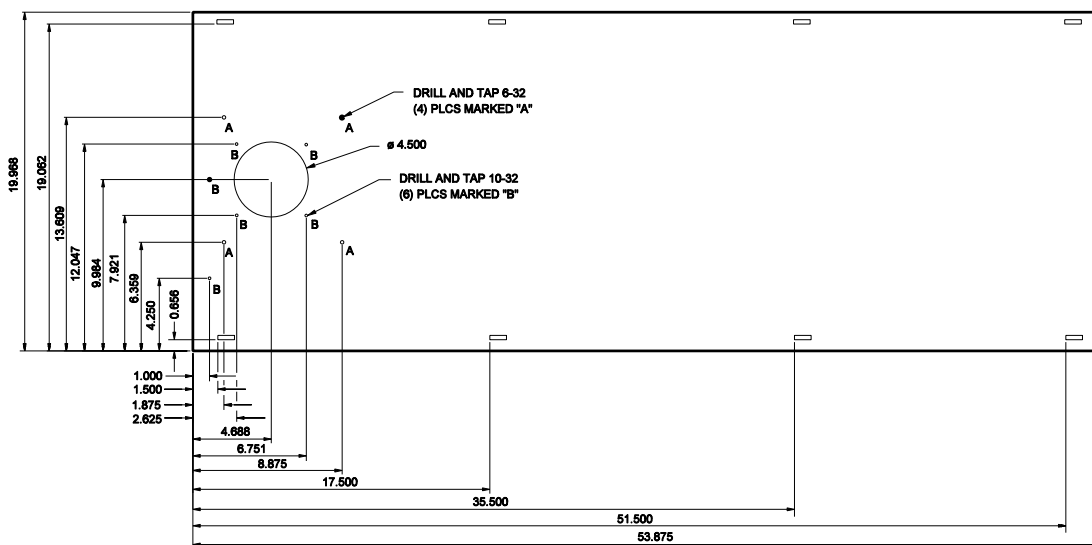
MARCH 2006

STANDARD DRAWING NO. E 809-ITSC-03



/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE



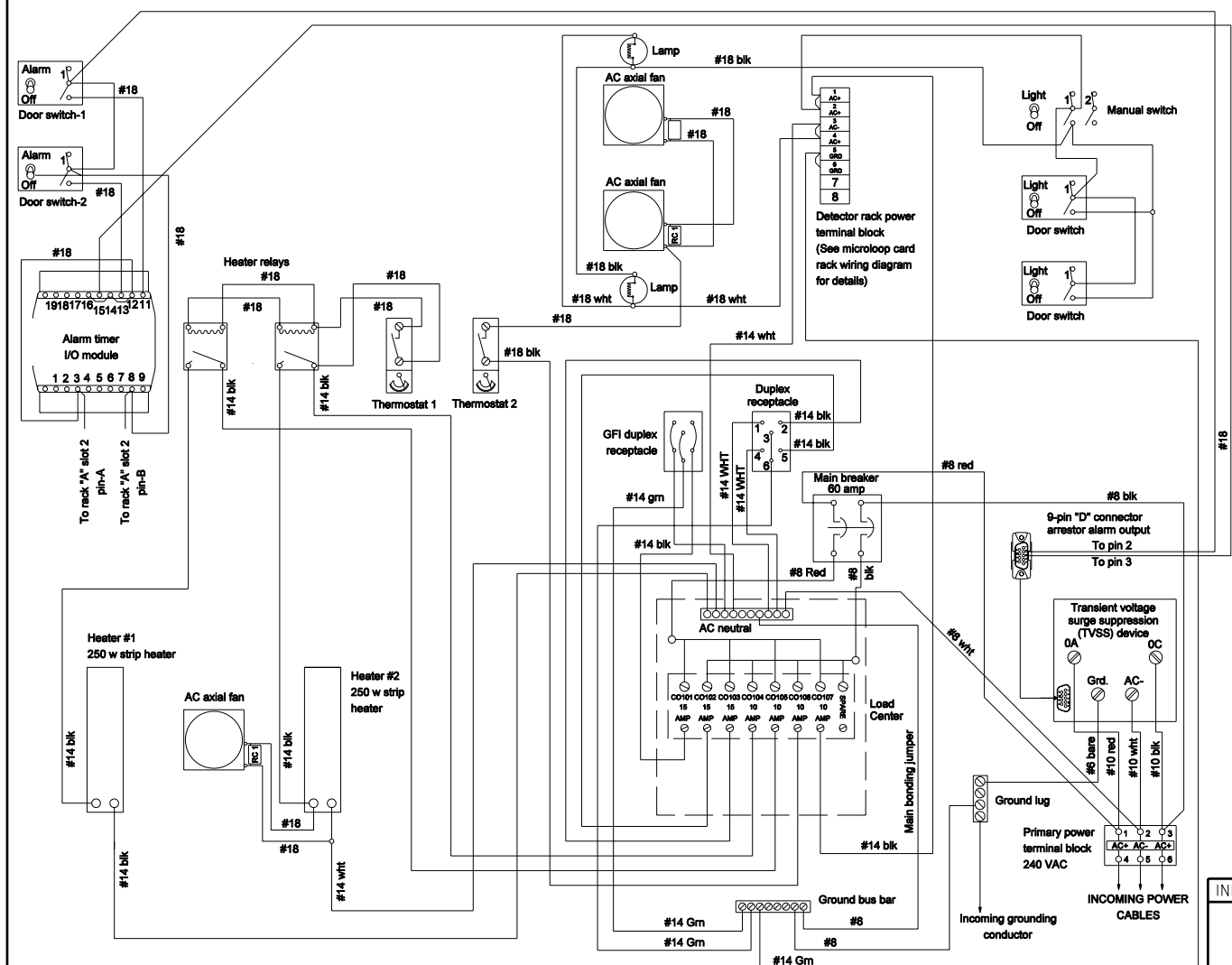
HEATER PANEL PUNCH OUT DETAILS

### NOTES:

- See Standard Drawings E 809-ITSC-01 thru -02 or -03 thru -07 for additional ITS cabinet details.

# NOTES:

1. See Standard Drawings E 809-ITCS-01 thru -03 or -05 thru -07 for additional ITS cabinet details.
2. Minimum wire diameter indicated on connections between components.

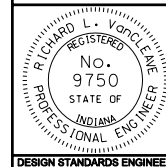


INDIANA DEPARTMENT OF TRANSPORTATION

## INDOT ITS CABINET SCHEMATIC

MARCH 2006

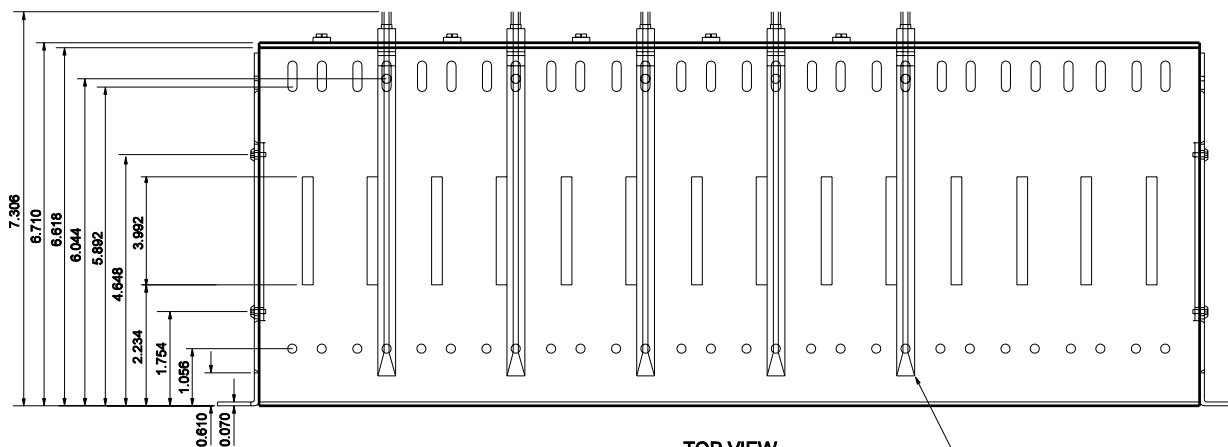
STANDARD DRAWING NO. E 809-ITSC-04



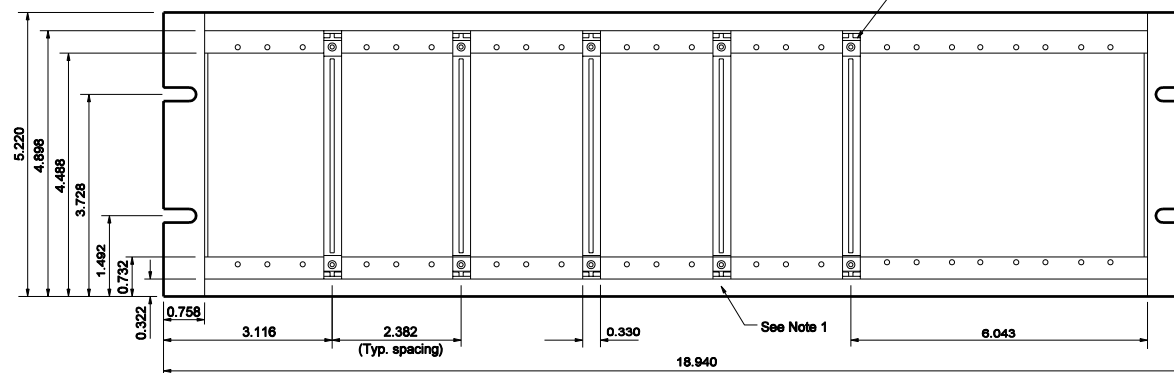
/s/ Richard L. VanCleave 3-01-06  
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06  
CHIEF HIGHWAY ENGINEER DATE

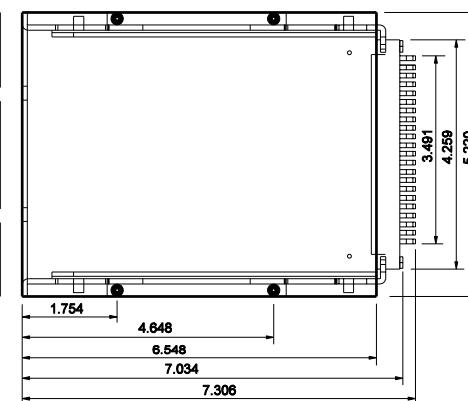
DESIGN STANDARDS ENGINEER



TOP VIEW



FRONT VIEW



SIDE VIEW

NOTES:

1. Apply marker tape to front lip of input file chassis, top and bottom.
2. Card guides must line up with edge card connectors.
3. No card guide keys are to be installed in this assembly.
4. Depth does not include wiring.
5. See Standard Drawings E 809-ITCS-01 thru -04 or -06 thru -07 for additional ITS cabinet details.

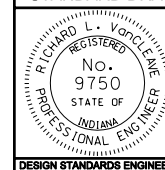
All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

DETECTOR CARD RACK DETAIL

MARCH 2006

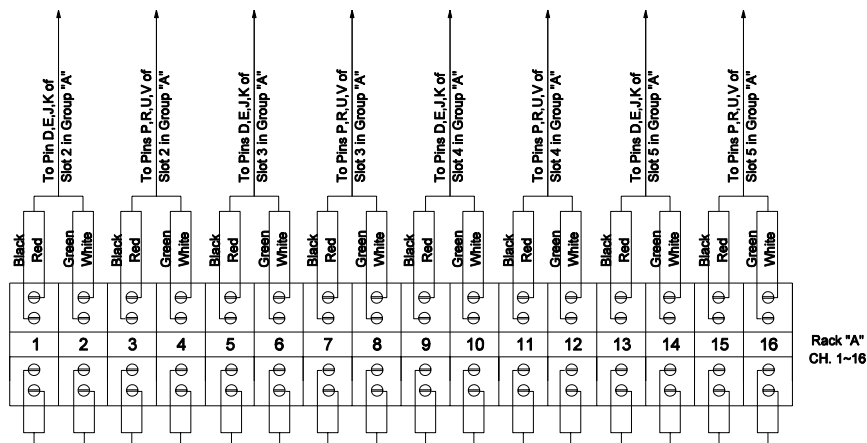
STANDARD DRAWING NO. E 809-ITSC-05



/s/ Richard L. VanCleave	3-01-06
DESIGN STANDARDS ENGINEER	DATE
/s/ Richard K. Smutzer	3-01-06
CHIEF HIGHWAY ENGINEER	DATE

DESIGN STANDARDS ENGINEER

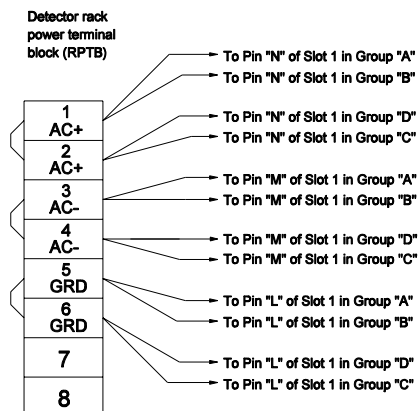
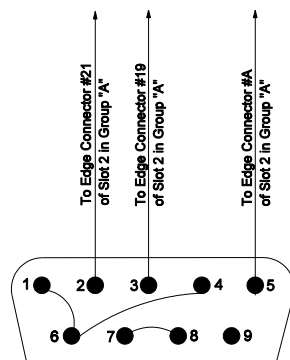




SEE SITE SPECIFIC DRAWINGS FOR CONNECTION OF FIELD WIRES TO TERMINAL BLOCK

DETECTOR CARD DIN RAIL  
TERMINAL BLOCKS (DCTB)

(16-BLOCK DIN RAIL GROUPS "B", "C", "D" NOT SHOWN)

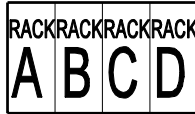
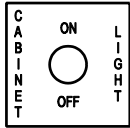


#### NOTES:

1. Cables from rack to field terminal block shall be two pair twisted with a shield on each pair.
2. Field terminal blocks shall be Entrelec #0115-271.22
3. Cables from rack to field terminal blocks shall be 10' in length with extra coiled P on end of rack.
4. Slot 1 for rack power module. Slots 2 through 5 are for canoga channel cards.
5. See Standard Drawings E 809-ITSC-01 thur -06 or -07 for additional ITS cabinet details.

INDIANA DEPARTMENT OF TRANSPORTATION	
INDOT ITS CABINET MICROLOOP CARD RACK WIRING DIAGRAM	
MARCH 2006	
STANDARD DRAWING NO. E 809-ITSC-06A	
	/s/ Richard L. VanCleave 3-01-06 DESIGN STANDARDS ENGINEER DATE
	/s/ Richard K. Smutzer 3-01-06 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	





Above tags are one each for a total of 4 tags.  
RACK A, RACK B, RACK C, and RACK D

GFI RECEPTACLE	EQUIPMENT #1 RECEPTACLE #2
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MAIN BREAKER

G F I	RECEP #1	RECEP #2	HEATER #1	HEATER #2	CABINET FANS	DETECTOR RACKS	S P A R E
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SURGE  
SUPPRESSOR

HEATER #2	HEATER #1
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HEATER 1 and HEATER 2 are 1 tag Each.


HEATER RELAY #2	HEATER RELAY #1	HEATING THERMO STAT	COOLING FAN THERMO STAT
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RACK A	RACK B	RACK C	RACK D
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ALARM  
I/O  
MODULE

NOTES:

1. See Standard Drawings E 809-ITCS-01 thru -06A  
for additional ITS cabinet details.

INDIANA DEPARTMENT OF TRANSPORTATION									
ENGRAVED TAG DETAIL									
MARCH 2006									
STANDARD DRAWING NO. E 809-ITSC-07									
	<table><tr><td>/s/ Richard L. VanCleave</td><td>3-01-06</td></tr><tr><td>DESIGN STANDARDS ENGINEER</td><td>DATE</td></tr><tr><td>/s/ Richard K. Smutzer</td><td>3-01-06</td></tr><tr><td>CHIEF HIGHWAY ENGINEER</td><td>DATE</td></tr></table>	/s/ Richard L. VanCleave	3-01-06	DESIGN STANDARDS ENGINEER	DATE	/s/ Richard K. Smutzer	3-01-06	CHIEF HIGHWAY ENGINEER	DATE
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