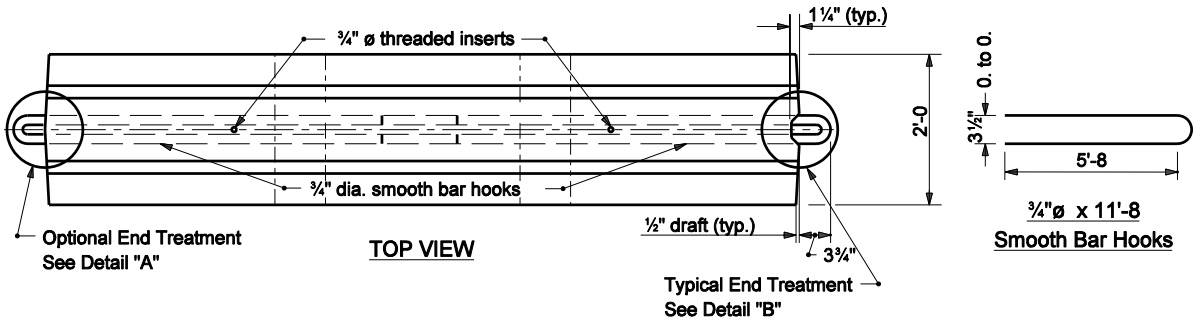
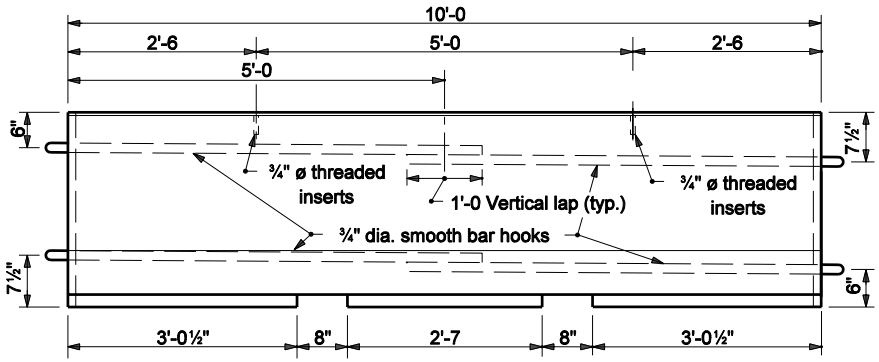
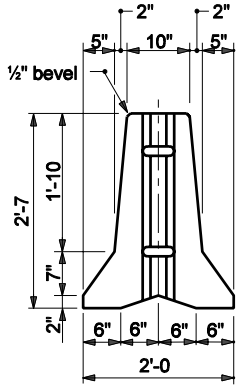


TOP VIEW

¾"ø x 11'-8
Smooth Bar Hooks



FRONT VIEW

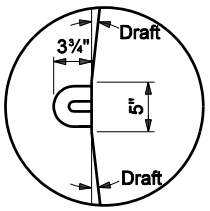


END VIEW

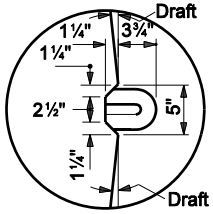
NOTES :

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



DETAIL "A"



DETAIL "B"

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

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER DIMENSIONS

SEPTEMBER 2004

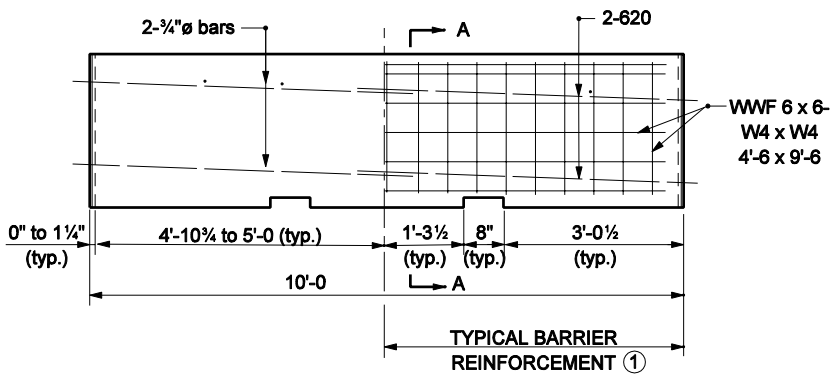
STANDARD DRAWING NO. E 801-TCCB-01

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

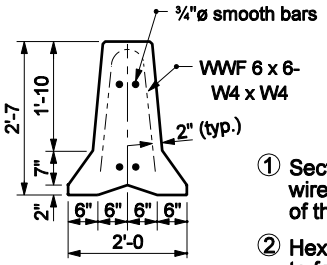
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

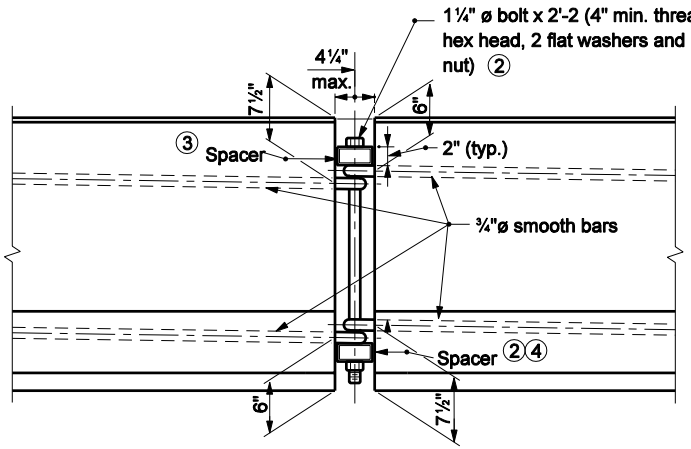
/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



REINFORCEMENT DETAILS

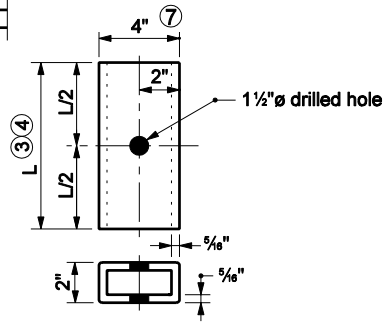


SECTION A-A ①



FRONT VIEW

CONNECTION DETAIL



SPACER DETAIL

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 subsituted 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 ¼" 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

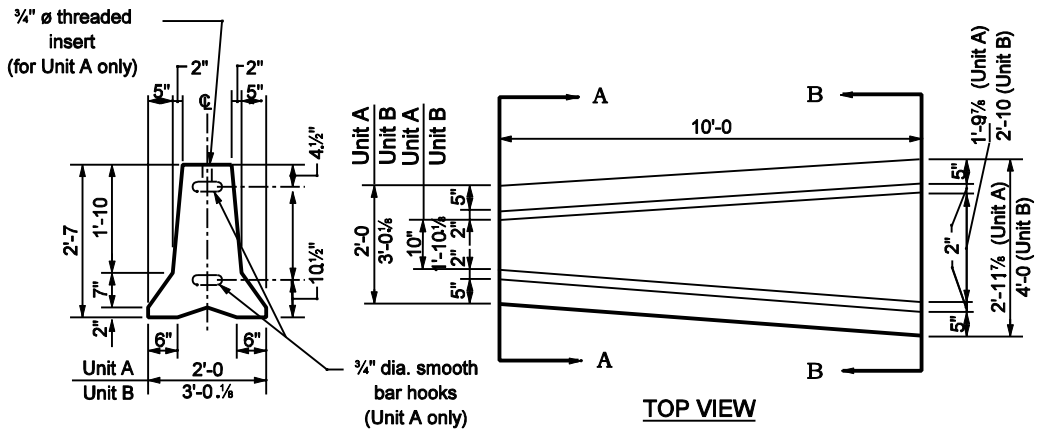
STANDARD DRAWING NO. E 801-TCCB-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

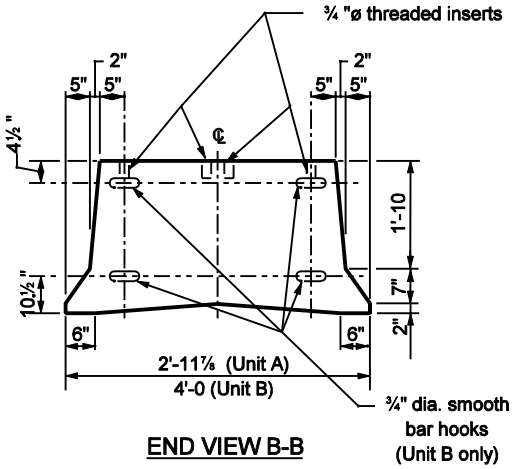
/s/ Richard K. Smutzer 3-01-05
CHIEF HIGHWAY ENGINEER DATE



END VIEW A-A

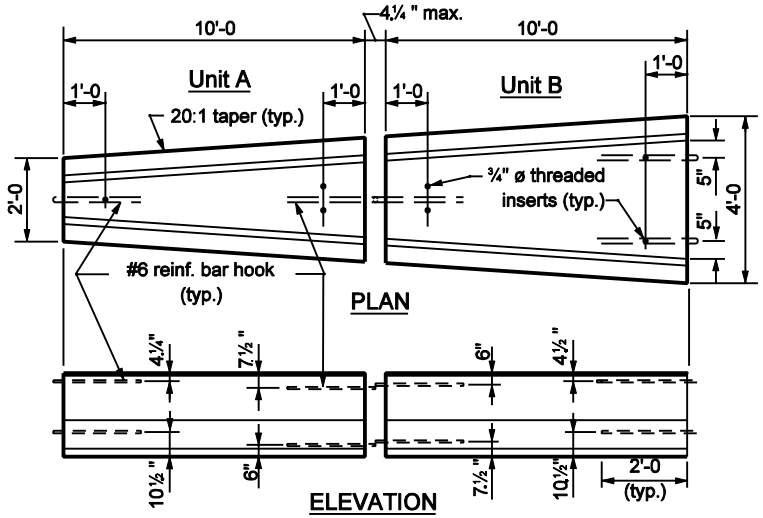
TOP VIEW

Unit A or Unit B



END VIEW B-B

DOUBLE TAPER END SECTION



ELEVATION

DOUBLE TAPER END SECTION ASSEMBLY

(Showing location of inserts and bar hooks)

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 1¼ " ø bolt x 2'-3½ " (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.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER
DOUBLE TAPER END SECTION

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCCB-03

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

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.

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

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER 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.

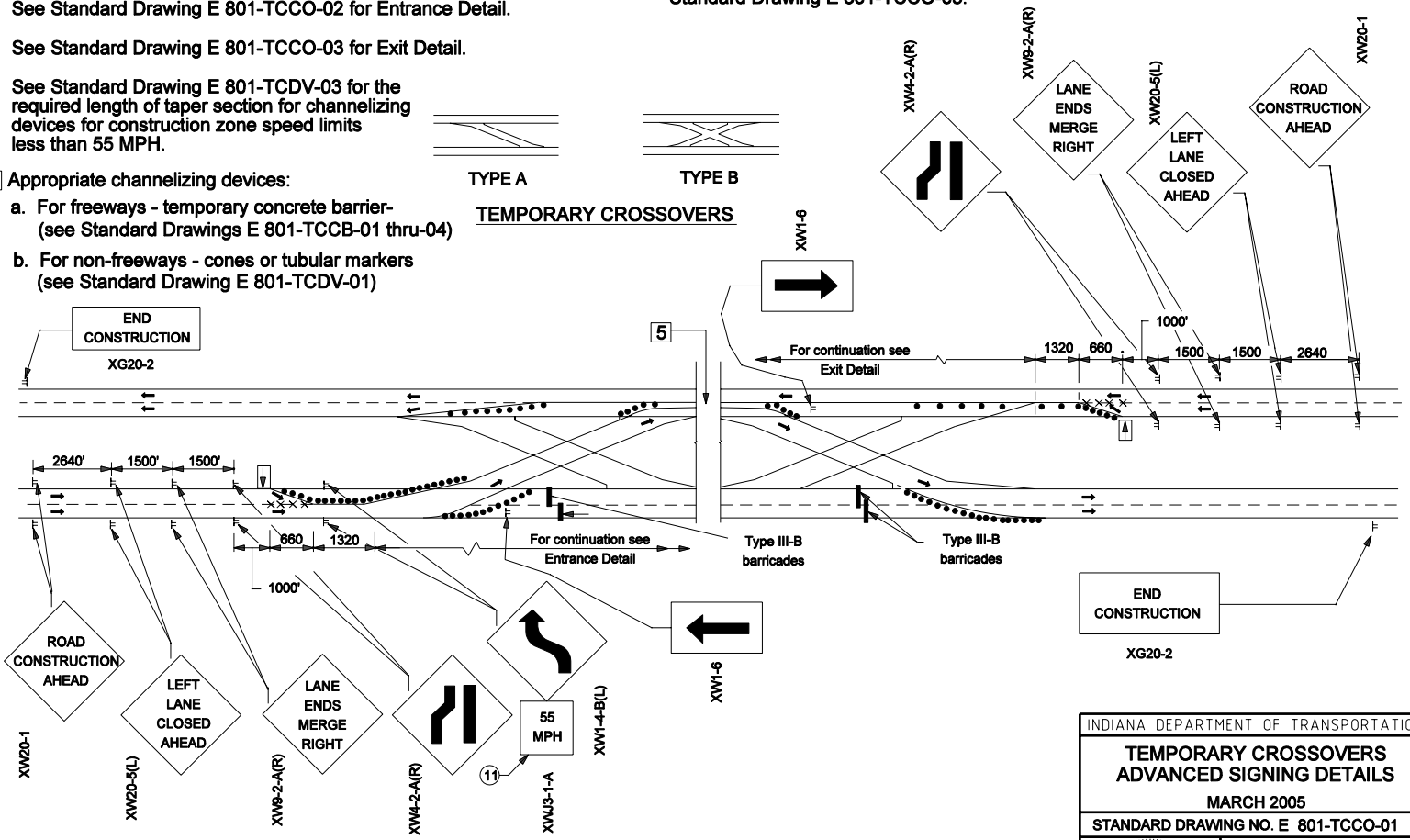
[5] Appropriate channelizing devices:

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)

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.

TEMPORARY CROSSOVERS



ADVANCE AND ENDING SIGNING DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CROSSOVERS ADVANCED SIGNING DETAILS

MARCH 2005

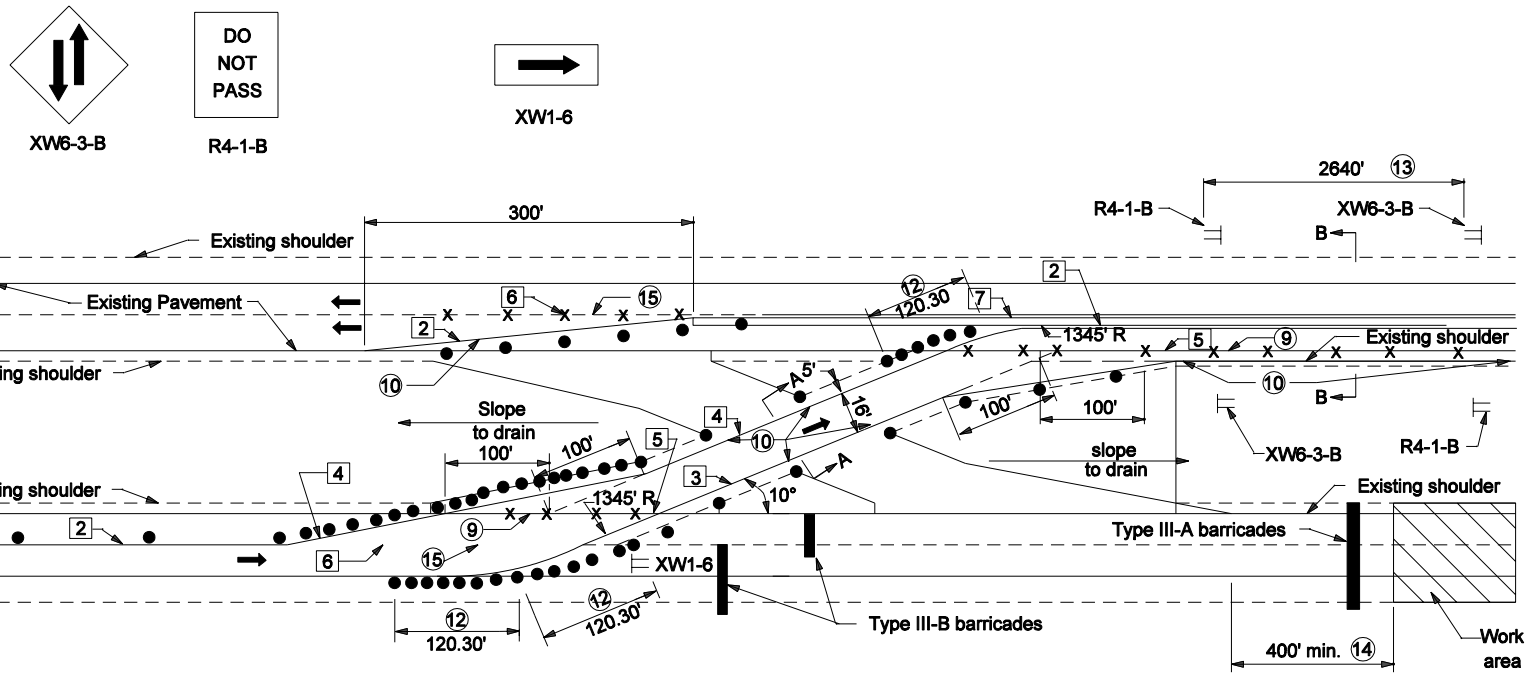
STANDARD DRAWING NO. E 801-TCCO-01

REGISTERED RICHARD L. VANCLEAVE No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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



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, Soild Yellow, 4", Remove
6. Line, Broken White, 4" Remove
7. Temporary Concrete Barrier - Freeways
   Channelizing Devices - Non-Freeway Multi-lane Divided Roadways.

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

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CROSSOVERS ENTRANCE DETAIL

MARCH 2006

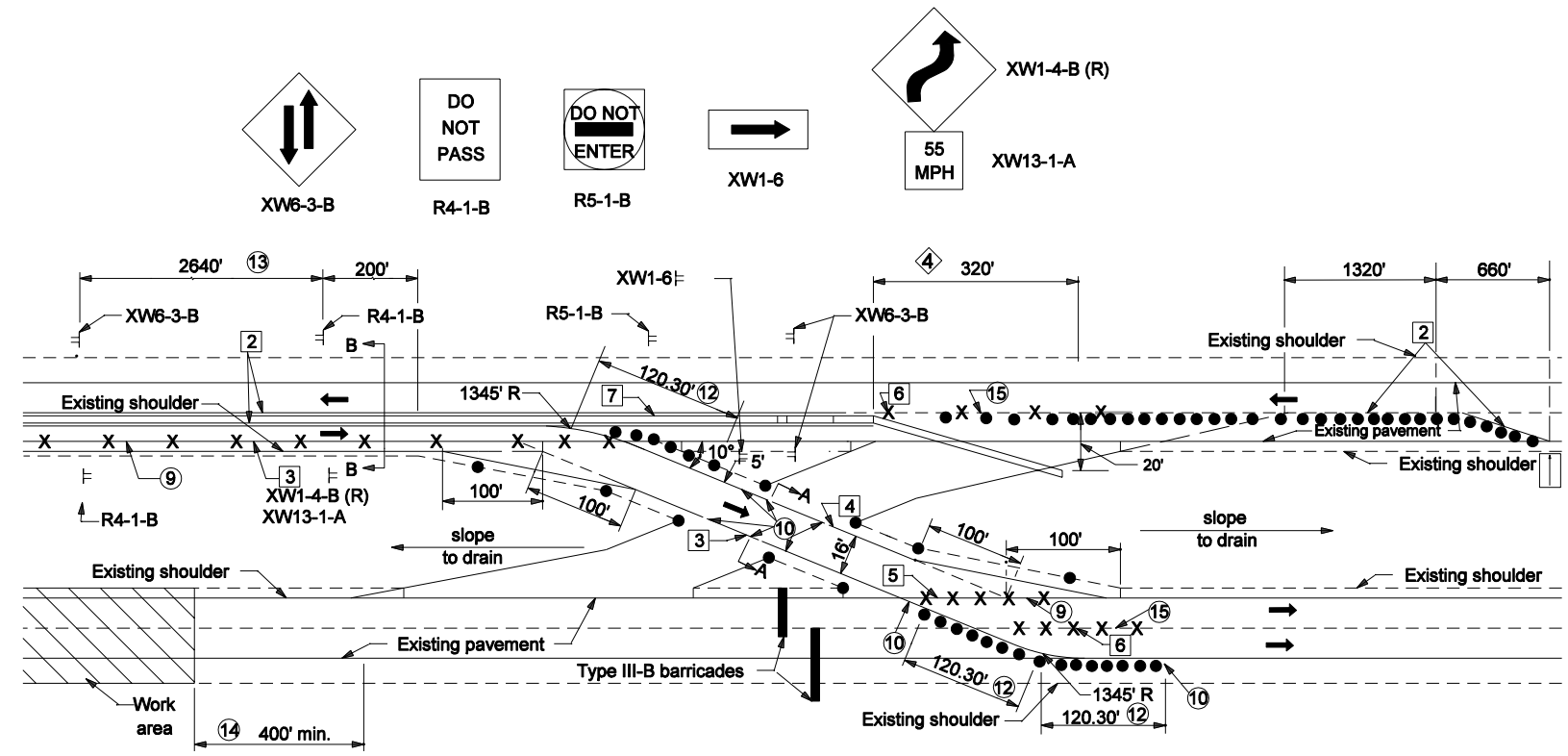
STANDARD DRAWING NO. E 801-TCCO-02

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

TEMPORARY CROSSOVERS EXIT DETAIL

MARCH 2006

STANDARD DRAWING NO. E 801-TCCO-03

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

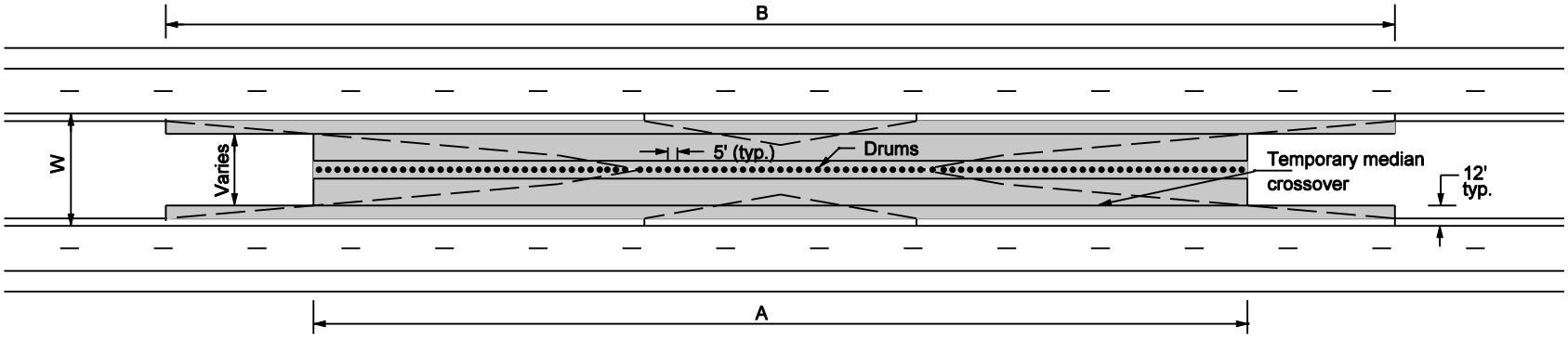
DESIGN STANDARDS ENGINEER

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

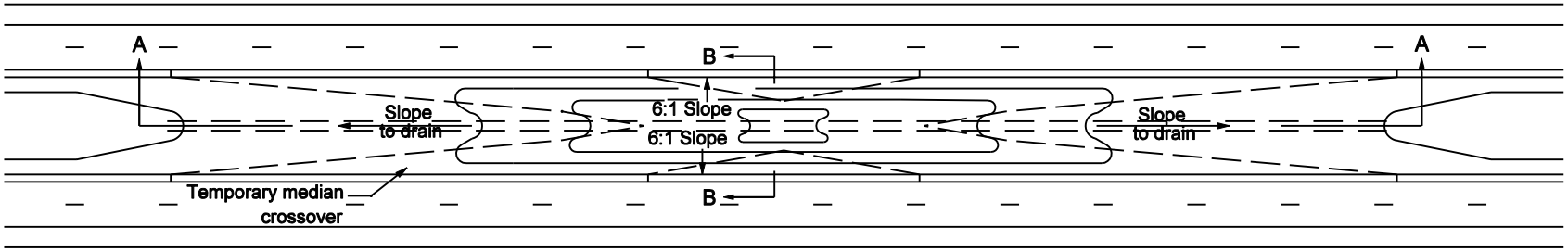
/s/ Richard K. Smutzer 3-01-06
CHIEF HIGHWAY ENGINEER DATE

NOTES

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



PAVING LIMITS AND DRUM CLOSURE



TYPE B CROSS OVER

Median Width W	Dimension A	Dimension B	Area of Paving strips
Feet	Feet	Feet	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

EARTH COVER CLOSURE

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CROSSOVER TYPE B PAVING AND CLOSURE LAYOUT

SEPTEMBER 2003

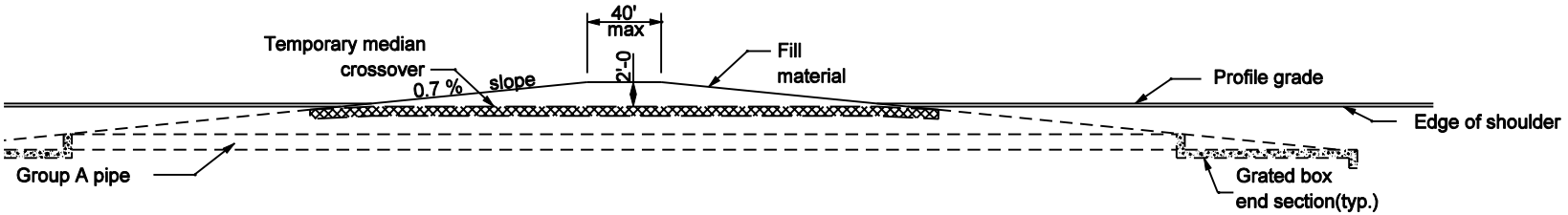
STANDARD DRAWING NO. E 801-TCCO-05

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

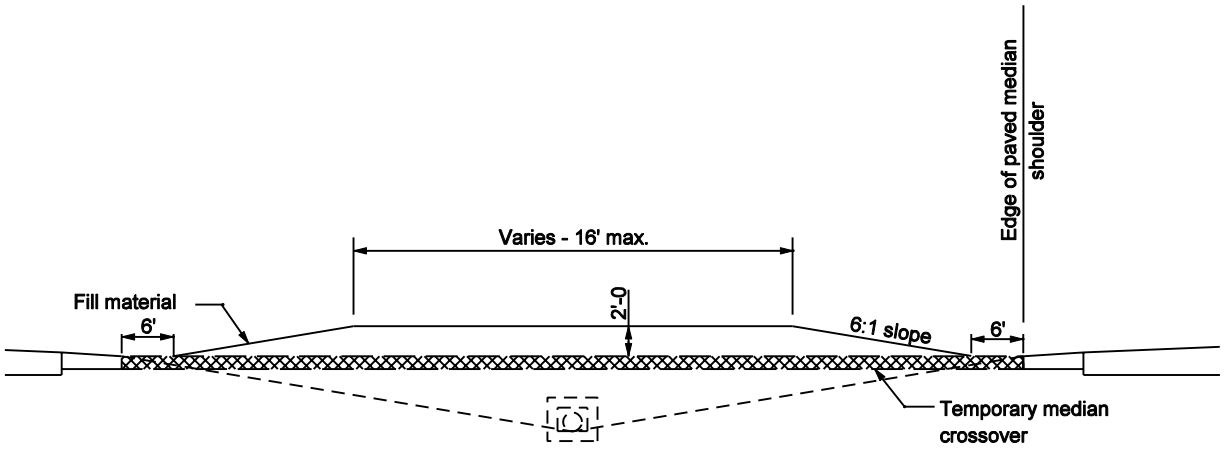
DESIGN STANDARDS ENGINEER

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

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



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

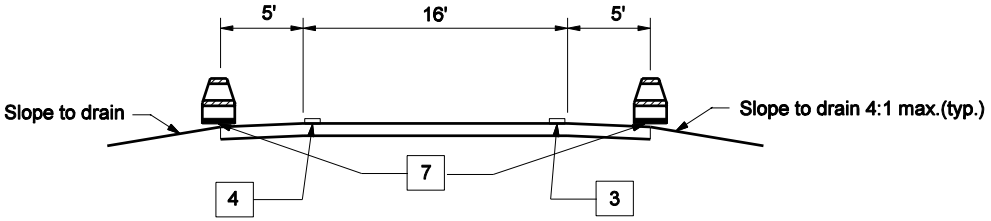
DESIGN STANDARDS ENGINEER

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

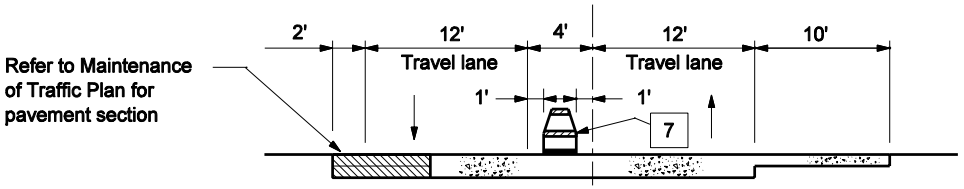
/s/ Richard K. Smutzer 9-02-03
CHIEF HIGHWAY ENGINEER DATE

GENERAL NOTES:

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

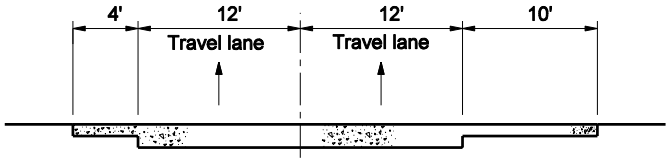


SECTION A-A



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

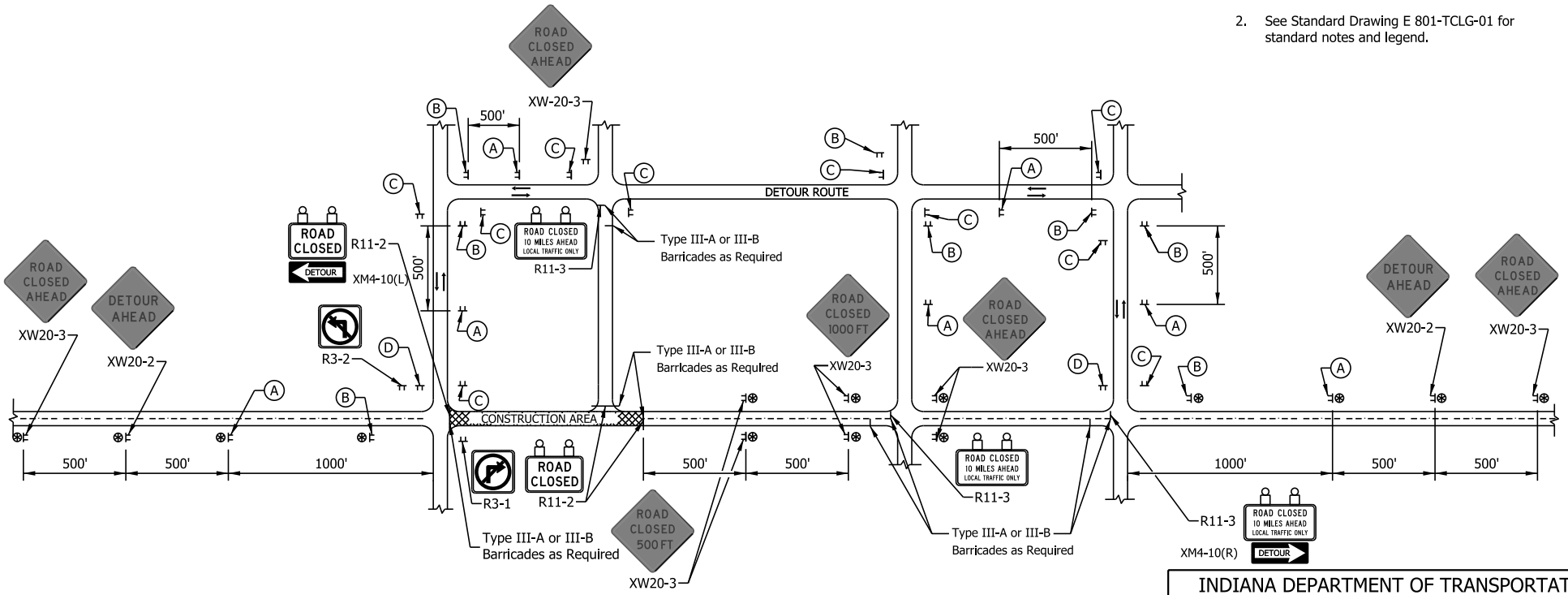
DESIGN STANDARDS ENGINEER

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

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

NOTES:

1. For detour route marker assemblies (A),(B),(C) and (D) see Standard Drawing E 801-TCDT-04.
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

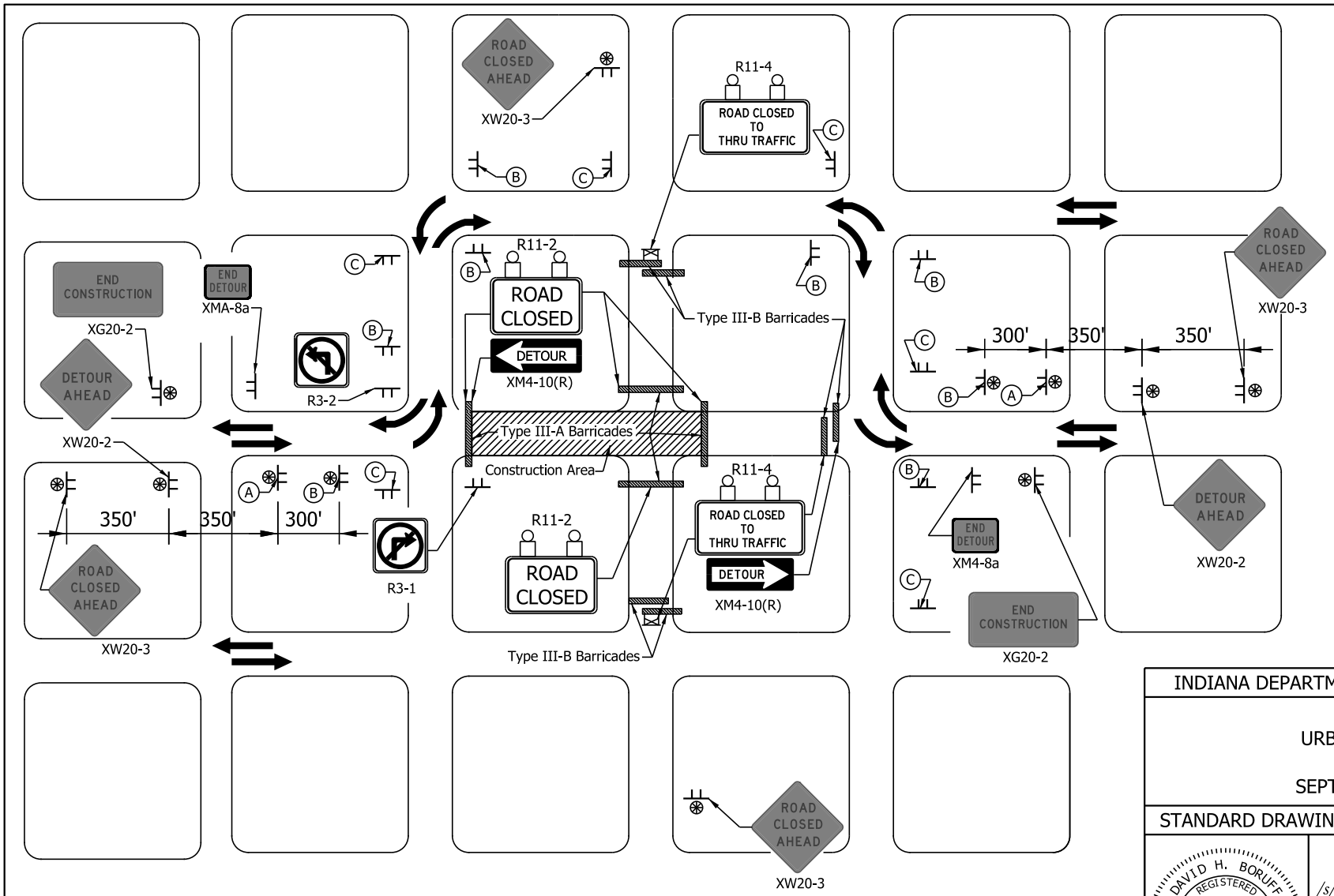
SEPTEMBER 2017

STANDARD DRAWING NO. E 801-TCDT-01

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 04/24/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/17
CHIEF ENGINEER DATE



NOTES:

1. For detour marker assemblies (A) (B) and (C) see Standard Drawing E 801-TCDT-04.
2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR AN URBAN DETOUR

INDIANA DEPARTMENT OF TRANSPORTATION

URBAN DETOUR

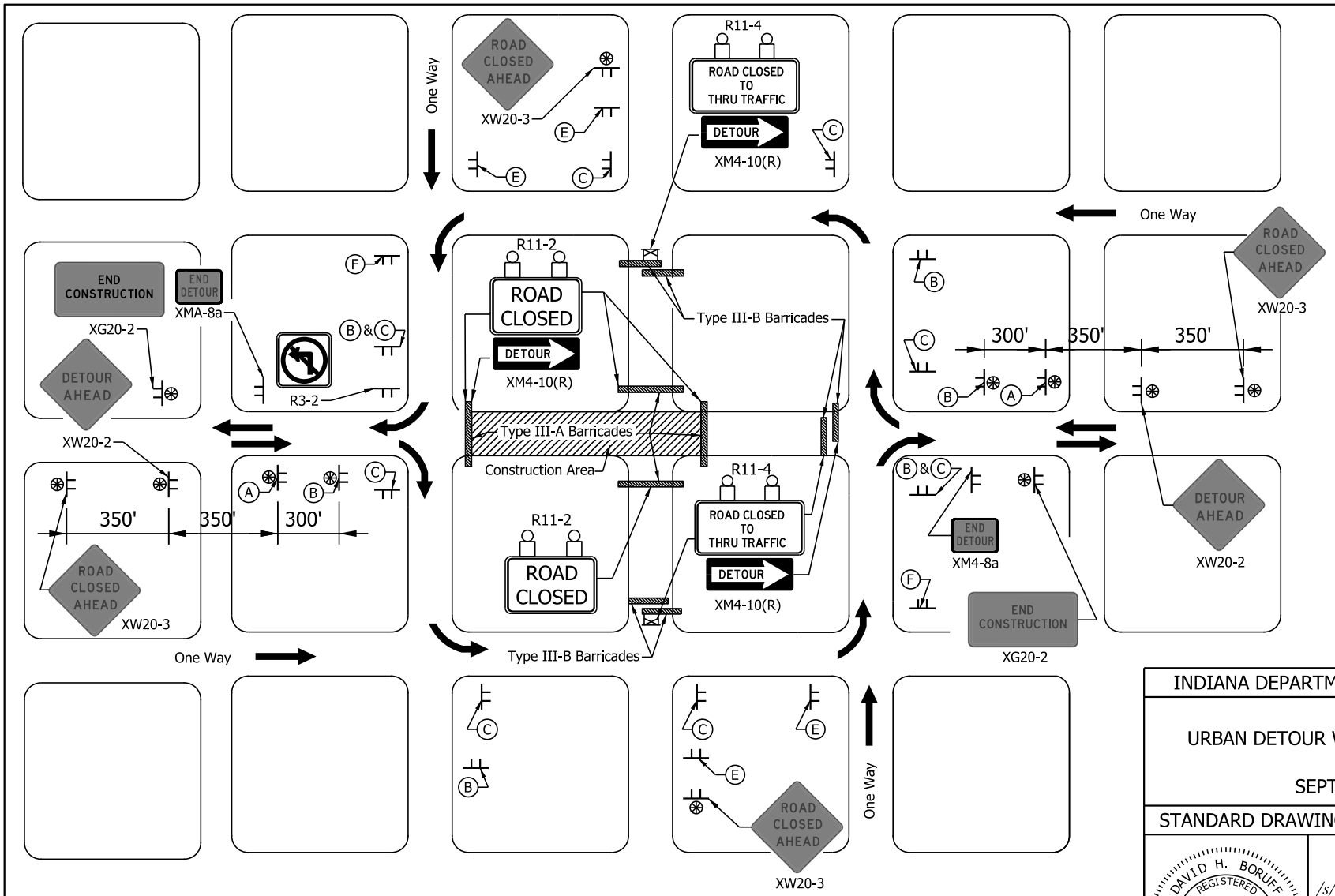
SEPTEMBER 2017

STANDARD DRAWING NO. E 801-TCDT-02

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 04/24/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/17
CHIEF ENGINEER DATE



TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR AN URBAN DETOUR

NOTES:

1. For detour marker assemblies (A), (B), (C), (E) and (F) see Standard Drawing E 801-TCDT-04.
2. See Standard Drawing E 801-TCLG-01 for standard notes and legend.

INDIANA DEPARTMENT OF TRANSPORTATION

URBAN DETOUR WITH ONE-WAY STREETS

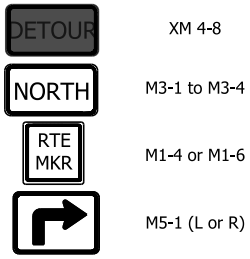
SEPTEMBER 2017

STANDARD DRAWING NO. E 801-TCDT-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

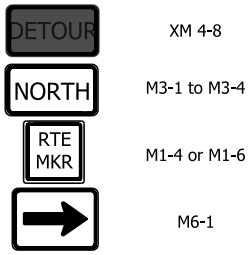
/s/ David H. Boruff 04/24/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/17
CHIEF ENGINEER DATE



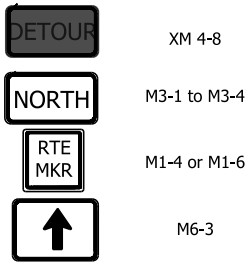
XM 4-8
M3-1 to M3-4
M1-4 or M1-6
M5-1 (L or R)

Ⓐ ADVANCE TURN DETOUR ROUTE MARKER ASSEMBLY ①



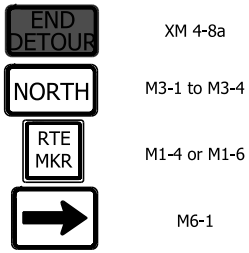
XM 4-8
M3-1 to M3-4
M1-4 or M1-6
M6-1

Ⓑ DIRECTIONAL DETOUR ROUTE MARKER ASSEMBLY ②



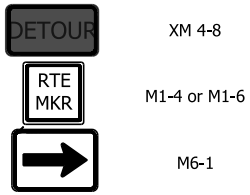
XM 4-8
M3-1 to M3-4
M1-4 or M1-6
M6-3

Ⓒ CONFIRMING DETOUR ROUTE MARKER ASSEMBLY ③



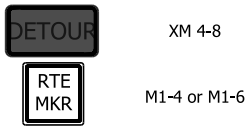
XM 4-8a
M3-1 to M3-4
M1-4 or M1-6
M6-1

Ⓓ END DETOUR ROUTE MARKER ASSEMBLY ④



XM 4-8
M1-4 or M1-6
M6-1

Ⓔ BI-DIRECTIONAL DETOUR ROUTE MARKER ASSEMBLY



XM 4-8
M1-4 or M1-6

Ⓕ BI-DIRECTIONAL CONFIRMING DETOUR ROUTE MARKER ASSEMBLY

STATE HIGHWAY / NUMBERED LOCAL HIGHWAY

NOTES:

① 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.

② Directional detour route marker assemblies shall be located 100 ft. to 200 ft. in advance of all required turns within the detour limits.

③ Confirming detour route marker assemblies shall be located 200 ft. past all major intersections, as required, 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.

④ End detour route marker assemblies shall be located 100 ft. to 200 ft. in advance of the final turn of the detour.

INDIANA DEPARTMENT OF TRANSPORTATION

DETOUR ROUTE MARKER ASSEMBLIES

SEPTEMBER 2017

STANDARD DRAWING NO. E 801-TCDT-04

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 04/24/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/17
CHIEF ENGINEER DATE

INDEX

SHEET NO.	SUBJECT
1	Index
2	Channelizing Devices
3	Merging or Shifting Taper
4	Type III Barricade
5	Typical Construction Sign Mounting
6	Type III Barricade Application for Road Closure for Thru Traffic
7	Type III Barricade Application for Road Closure to All Traffic
8	U Channel Steel Post Splice Detail
9	Temporary Buzz Strips
10	Worksite Speed Limit Sign Assembly for Intermittent Use
11	Worksite Speed Limit Sign Assembly for Continuous Use
12	Worksite Speed Limit Sign Assembly Longitudinal Placement

GENERAL NOTES:

1. Unless otherwise specified, channelizing devices shall be spaced as shown on Standard Drawing E-801-TCDV-12.

2. All channelizing devices shall meet NCHRP 350 or MASH crash evaluation criteria.

3. It is not necessary to delineate a drop-off of 3 in. or less adjacent to active travel lanes. Where channellizing devices are used to delineate drop-offs of 3 in. or less adjacent to active travel lanes, at least 33 in. of the device shall be above the adjoining pavement surface. Where channelizing devices are used to delineate a drop-off greater than 3 in. adjacent to active travel lanes, at least27 in. of the device shall be above the adjoining pavement surface and a Type C warning light shall be attached to the top of the device (on the pavement side). In no case shall more than 9 in. of the device be below the adjoining pavement surface.

4. The proper orientation in respect to approaching vehicular traffic shall be maintained on channelizing devices. Drums are the preferred channelizing device in a tight radius curve and at intersections.

LEGEND

O - Device may be used in tangent set-ups.

X - Device may be used in tangent set-ups.

(X) - Devices may be used in two-way traffic set-ups to divide opposing lanes of traffic.

(●) - Device may be used to divide two or more lanes of traffic in the same direction.

(O) - Device may be used to replace barricades and drums where space is limited.

[O] - Device may be used to delineate edge of pavement drop-off where space is limited.

INDIANA DEPARTMENT OF TRANSPORTATION

INDEX SHEET
TRAFFIC CONTROL DEVICES

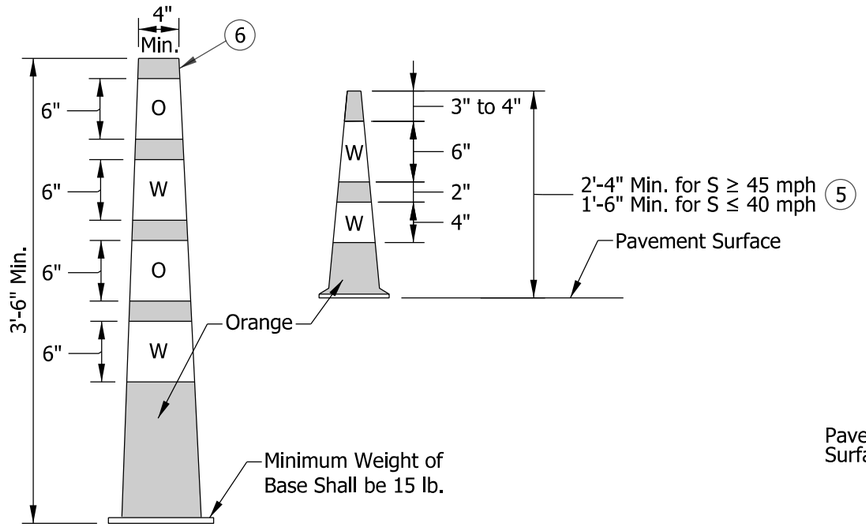
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-01

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

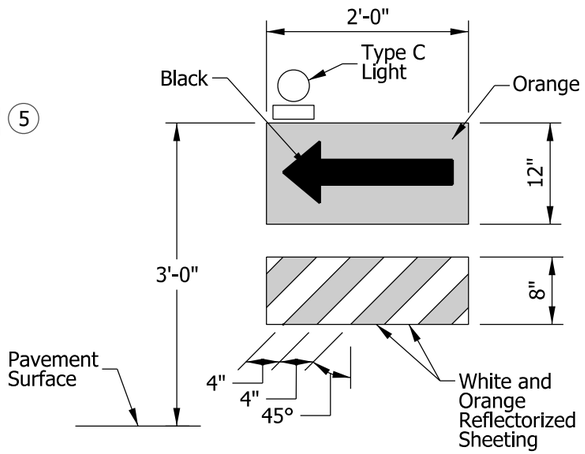
/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



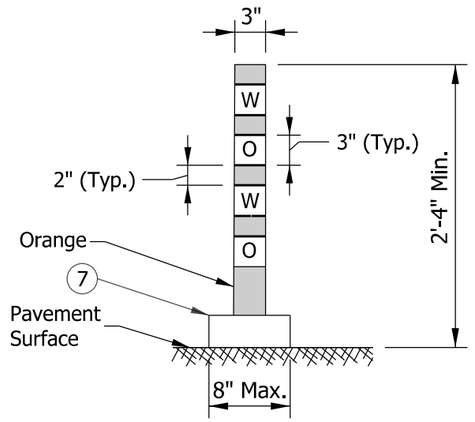
CONE

Use: O Ⓧ ◉ X



DIRECTION INDICATOR BARRICADE

Use: X



FLEXIBLE TUBULAR MARKER

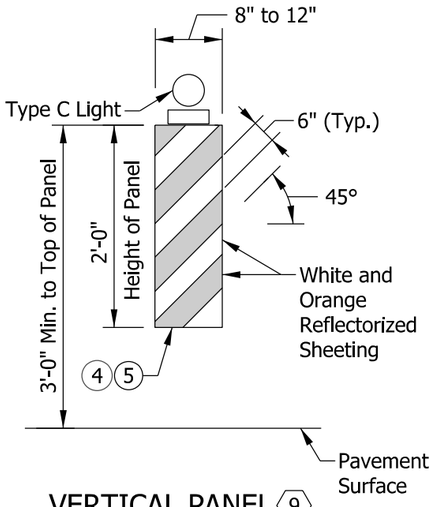
Use: O ◉ Ⓧ

NOTES:

1. For additional notes and legends see Standard Drawing E 801-TCLG-01 or E 801-TCDV-01.
2. 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.
3. Reflectorized bands may be omitted from cones for lane closures during daylight hours.
4. For vertical panels equal to or greater than 3 ft in height, the width of the stripes shall be 6 in.
5. Vertical panels used on an expressway or freeway shall have a minimum reflective panel area of 270 sq. in. Other roadways with a posted speed limit of 50 mph or greater shall have a minimum reflective panel area of 270 sq. in., also.
6. The maximum distance between the edges of adjacent reflective sheeting strips shall be 2 in.
7. Minimum flexible tubular marker base area shall be 0.3 sft.

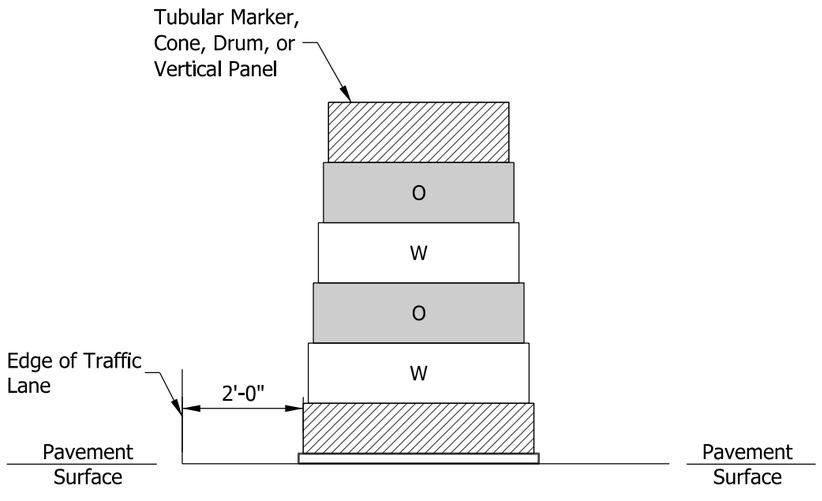
W = White Reflective Sheeting

O = Orange Reflective Sheeting

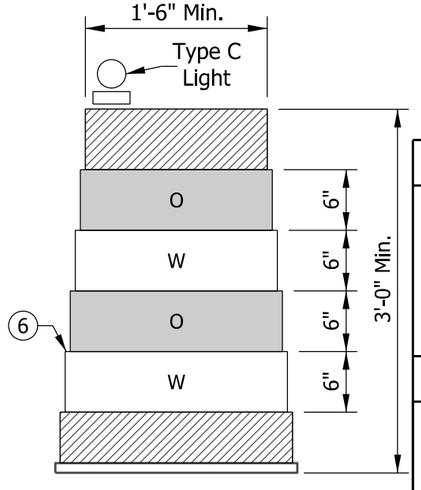


VERTICAL PANEL 9

Use: O Ⓞ O X



PLACEMENT OF CHANNELIZING DEVICES



DRUM 9

Use: O X

INDIANA DEPARTMENT OF TRANSPORTATION

CHANNELIZING DEVICES

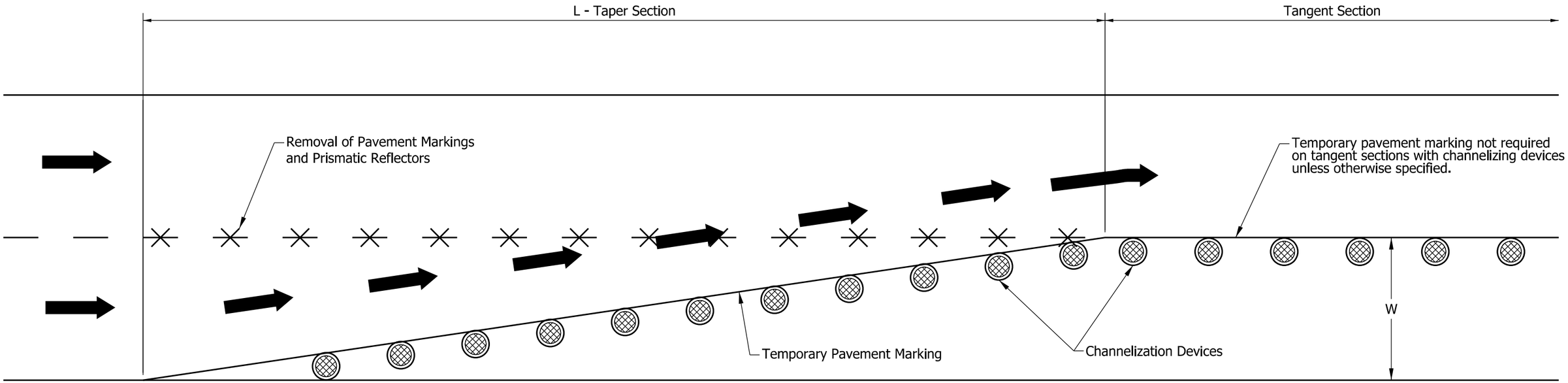
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-02

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



NOTE:

1. The taper lengths used may be wither of the values provided in the table, or the value calculated from the equation.

MERGING TAPER				
S	Min. Taper Length L/1			
MPH	W = 9	W = 10	W = 11	W = 12
20	60	70	75	80
25	95	105	115	125
30	135	150	165	180
35	185	205	225	245
40	240	270	295	320
45	405	450	500	540
50	450	500	550	600
55	495	550	605	660
60	540	600	660	720
65	585	650	715	780
70	630	700	770	840

For W not shown in the table, L = W x S for a speed of 45 mph or greater.
$L = W \times S^2/60$ for a speed of 40 mph or lower.

SHIFTING TAPER				
S	Min. Taper Length L/2			
MPH	W = 9	W = 10	W = 11	W = 12
20	30	35	40	40
25	50	55	60	65
30	70	75	85	90
35	95	105	115	125
40	120	135	150	160
45	205	225	250	270
50	225	250	275	300
55	250	275	305	330
60	270	300	330	360
65	295	325	360	390
70	315	350	385	420

For W not shown in the table, L is one half that required for a merging taper.

A shifting taper preceded by lane closure taper shall be separated by a tangent section equal to or greater than the length of the shifting taper.

LEGEND

L - Minimum length of taper in feet.

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

W - Width of lane or shift in feet.

INDIANA DEPARTMENT OF TRANSPORTATION

MERGING OR SHIFTING TAPER

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

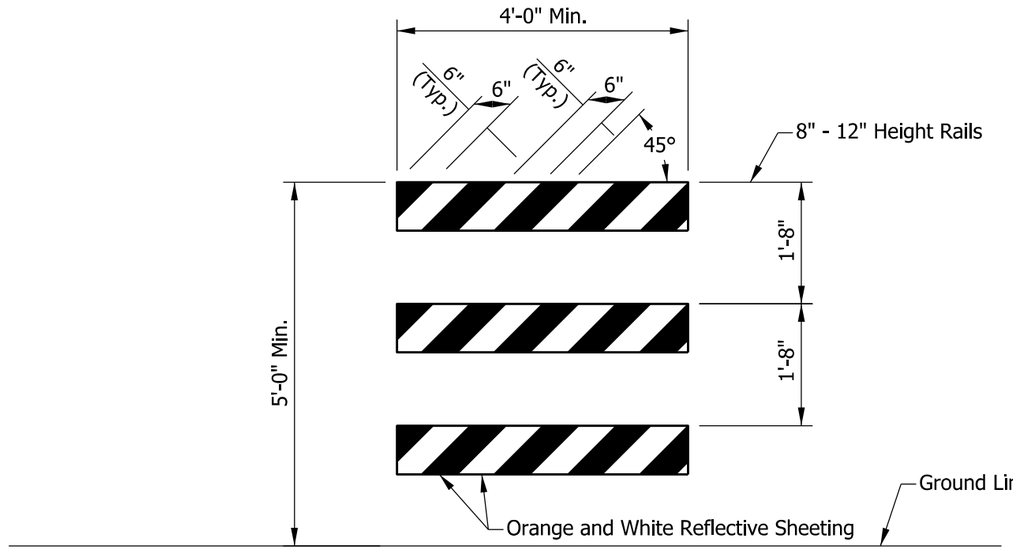
/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE

NOTES:

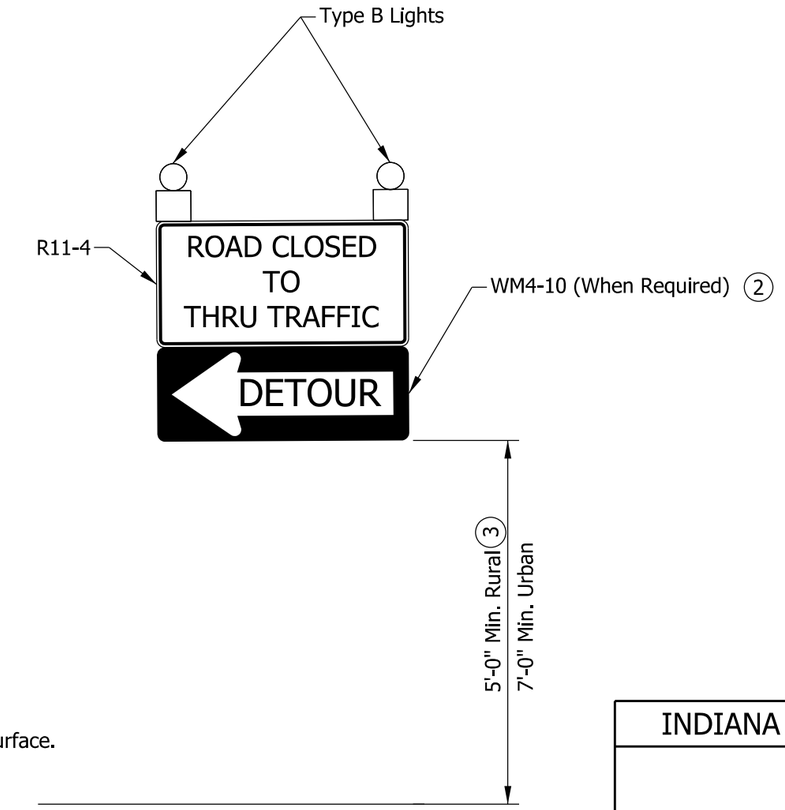
1. Barricade lights, signs, and supports shall meet NCHRP 350 or MASH crash evaluation criteria.

(2) The Detour Arrow sign shall be used only when a detour route has been signed.

(3) The sign assembly must be above the Type III barricade.



TYPE III BARRICADE



ROAD CLOSURE SIGN ASSEMBLY

INDIANA DEPARTMENT OF TRANSPORTATION

TYPE III BARRICADE

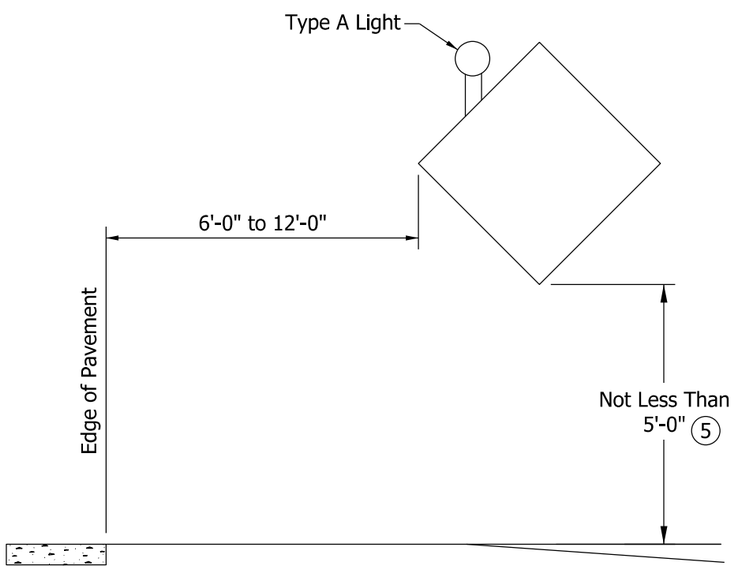
SEPTEMBER 2016

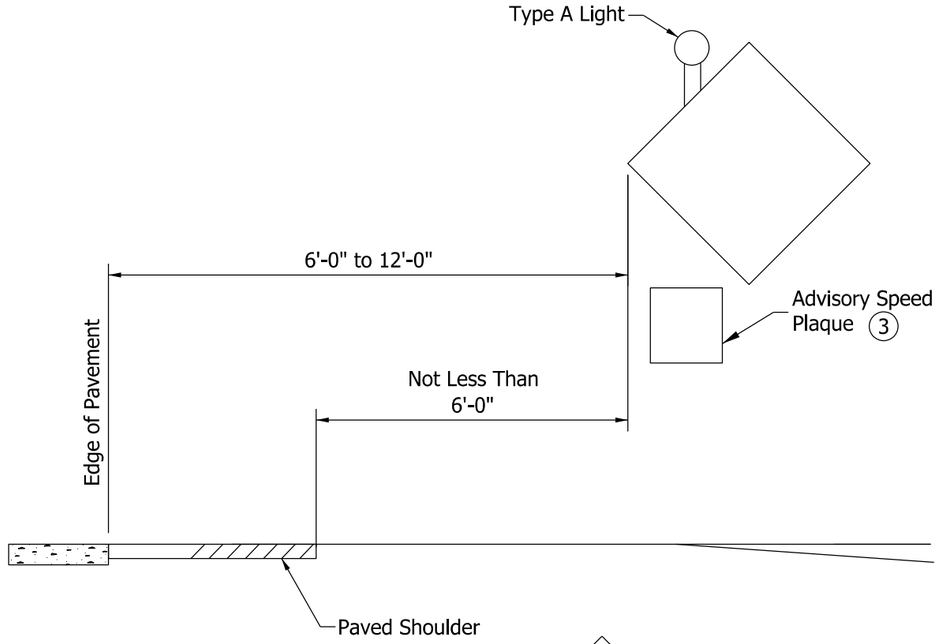
STANDARD DRAWING NO. E 801-TCDV-04

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

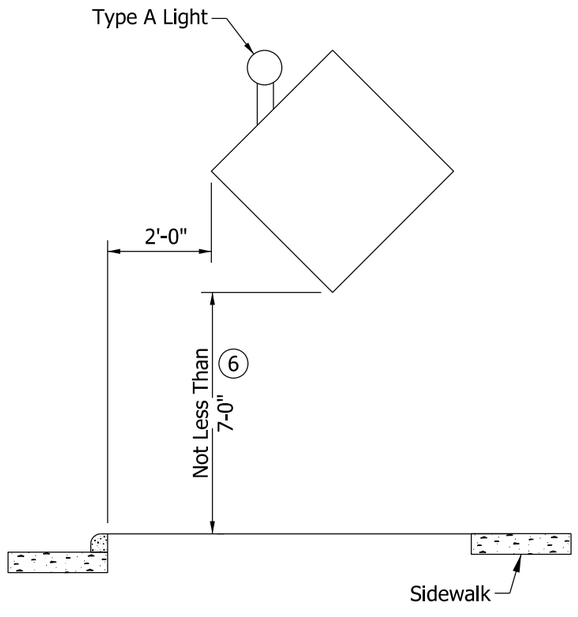
/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

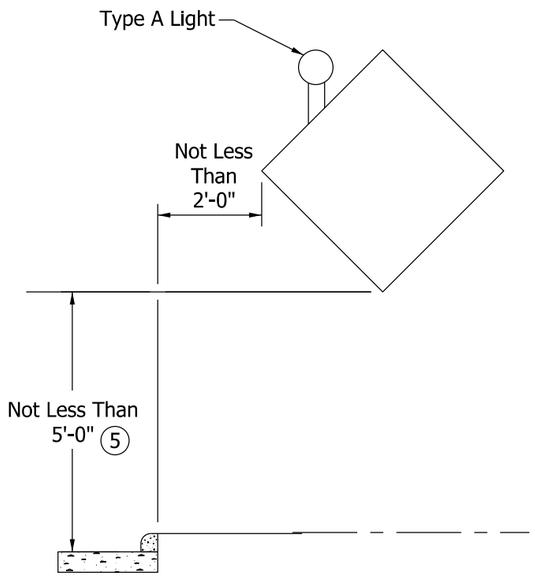
/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



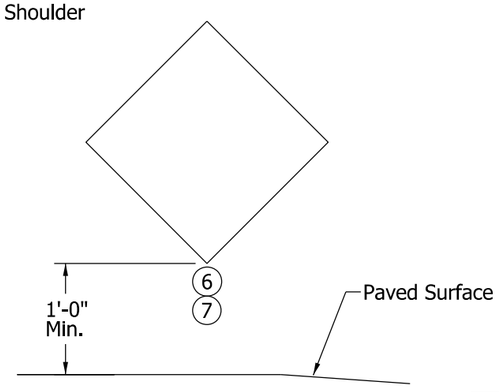


UN-CURBED ROADWAY





CURBED ROADWAY



TEMPORARY MOUNTED
CONSTRUCTION SIGN

NOTES:

1. See Standard Drawing E 801-TCSN-07 for additional notes.
2. Signs, lights, and supports shall satisfy NCHRP 350 or MASH crash evaluation criteria.
3. (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. (5) In urban area or on Interstate route, mounting height shall not be less than 7 ft.
6. (6) When signs are placed on sidewalk, a 4 ft useable width must be maintained. No part of the sign or support that is less than 7 ft in height may protrude more than 4 in. into the 4 ft useable sidewalk width.
7. (7) Temporary mounted construction sign for nighttime work or for operations which affect traffic lanes shall be mounting height of 5 ft above the traveled way. On roadways where on-street parking is allowed, temporary mounted construction signs shall have a minimum sign mounting height of 7 ft above the traveled way.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPICAL CONSTRUCTION
SIGN MOUNTING

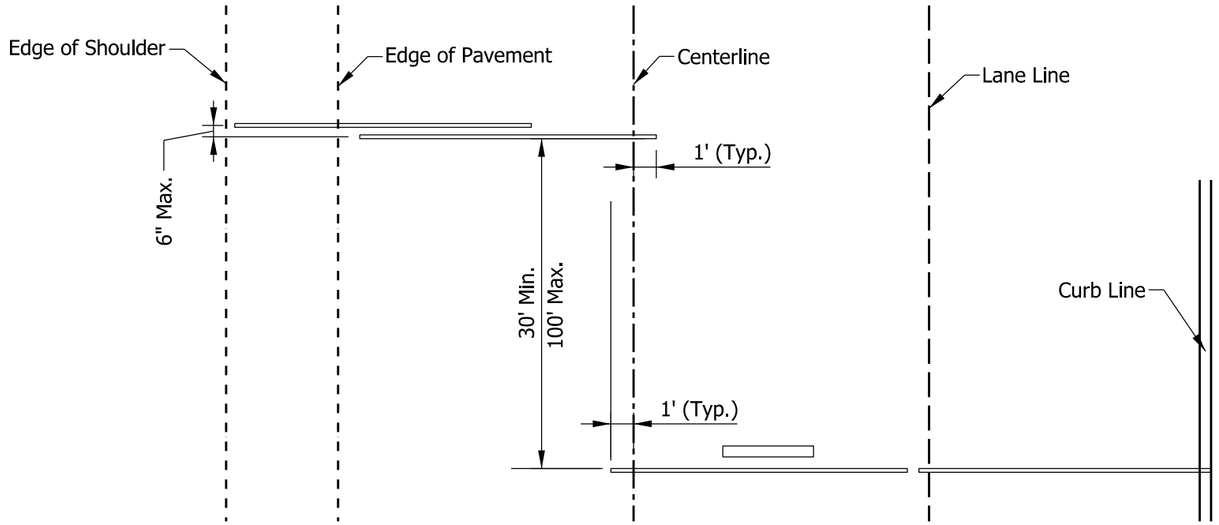
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-05

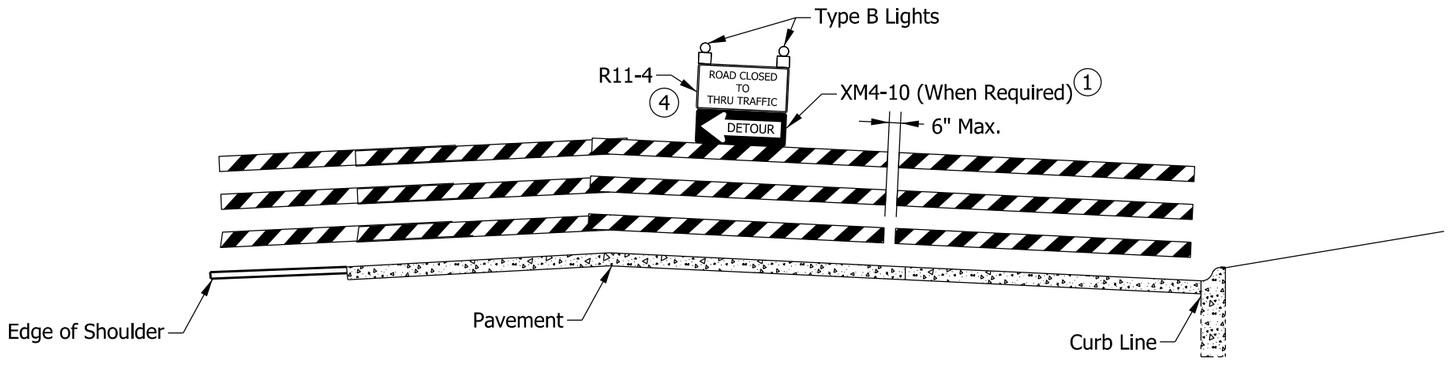
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



PLAN VIEW



ELEVATION

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

NOTES:

1. The Detour Arrow sign shall be used only when a detour route has been signed.
2. See Standard Drawing E 801-TCDV-04 for sign use and mounting information.
3. Barricades and supports shall meet NCHRP 350 or MASH crash evaluation criteria.
4. The R11-3a ("ROAD CLOSED/LOCAL TRAFFIC ONLY") or R11-3b ("BRIDGE CLOSED/LOCAL TRAFFIC ONLY") sign may be substituted for the R11-4 signs as directed on the plans or by the engineer.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPE III BARRICADE APPLICATION FOR
ROAD CLOSURE FOR THRU TRAFFIC

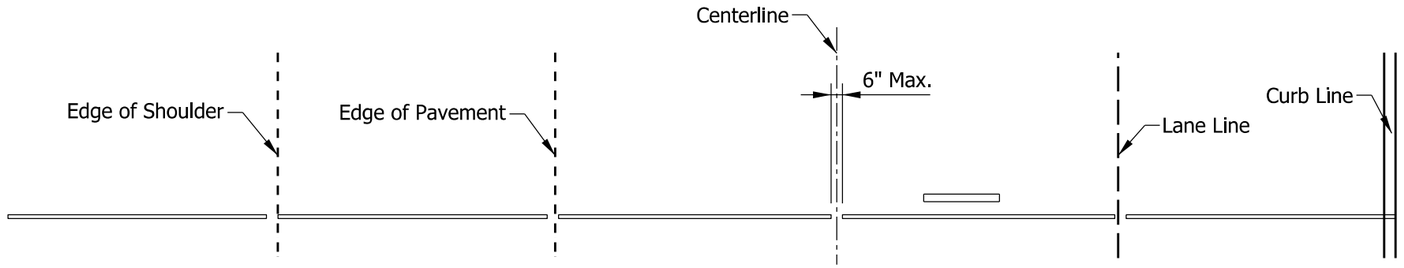
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-06

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

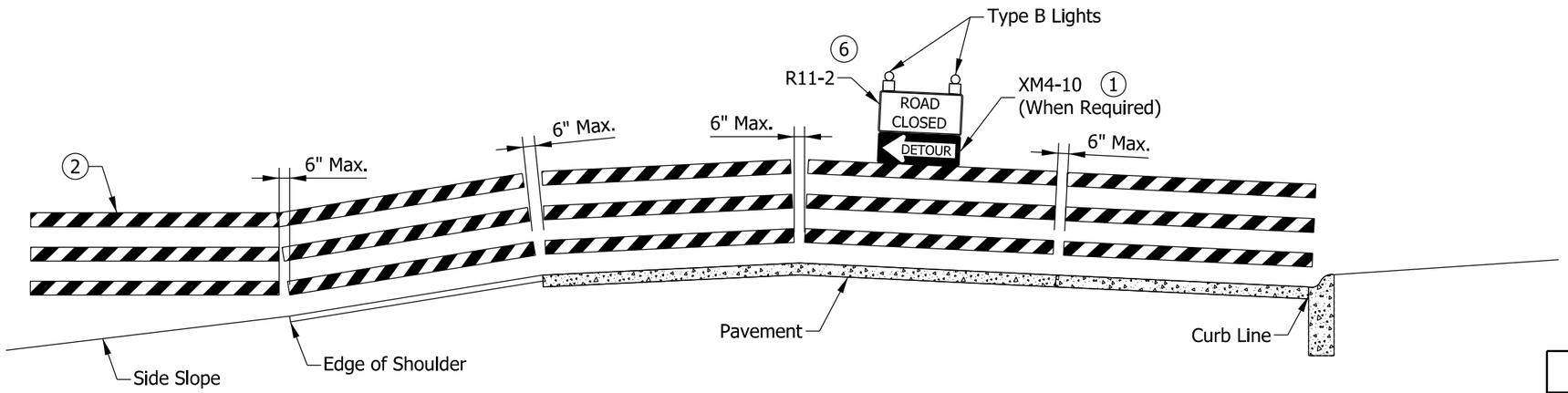
/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



(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

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 801-TCDV-04 for sign use and mounting information.

4. Barricades and supports shall meet NCHRP 350 or MASH crash evaluation criteria.

5. See Note 5 on Standard Drawing 801-TCSN-07 for post depth.

(6) The Legend of the R11-2 may be modified to "BRIDGE CLOSED" as indicated on the plans or directed by the engineer.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPE III BARRICADE APPLICATION
FOR ROAD CLOSURE TO ALL TRAFFIC

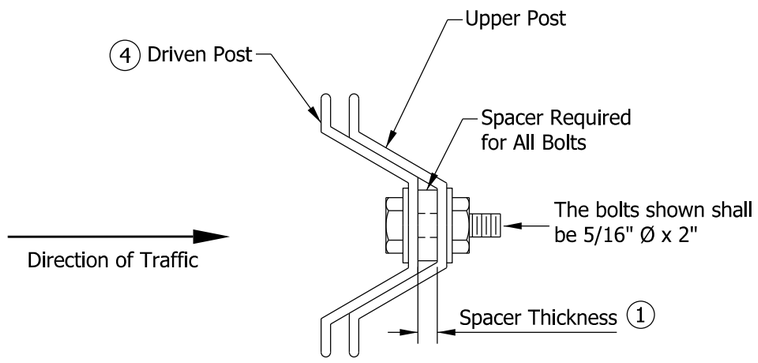
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-07

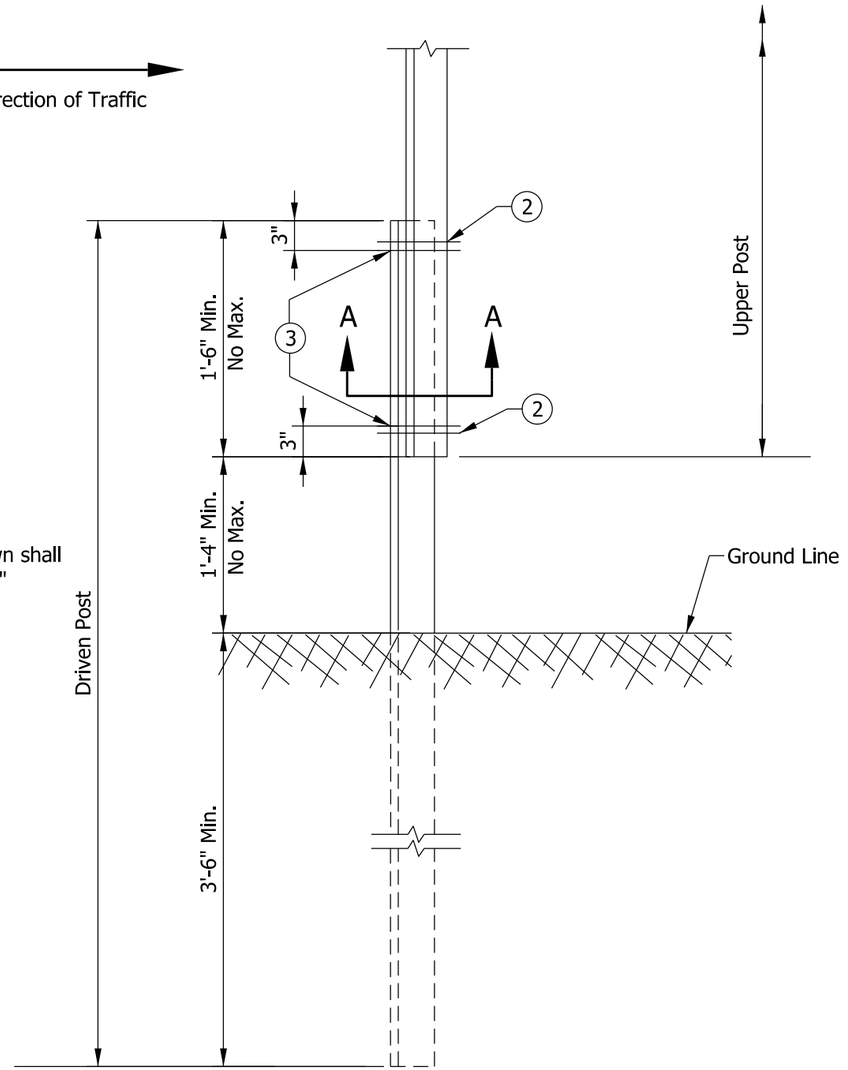
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



SECTION "A-A"



ELEVATION

U CHANNEL STEEL POST SPLICE

NOTES:

1. The spacer thickness shall be 1/16 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 be mounted in front of the upper post with respect to adjacent oncoming traffic, regardless of the direction the sign is facing.

INDIANA DEPARTMENT OF TRANSPORTATION

U CHANNEL STEEL
POST SPLICE DETAIL

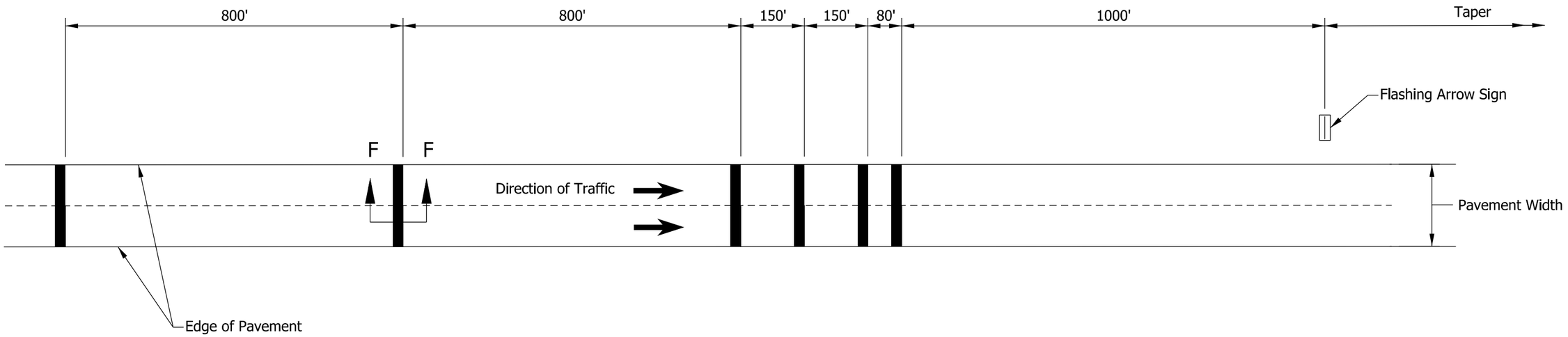
SEPTEMBER 2016

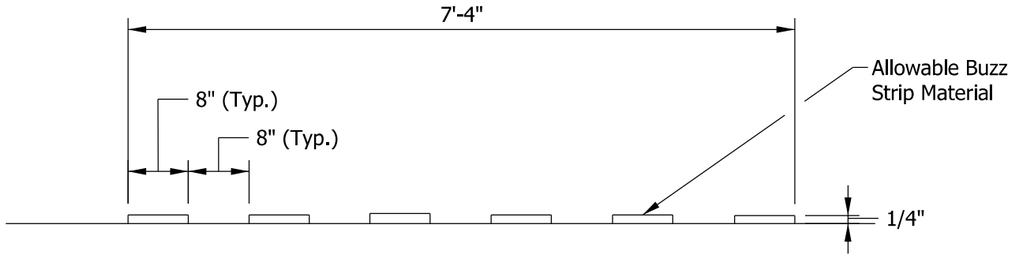
STANDARD DRAWING NO. E 801-TCDV-08

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE





SECTION F-F

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY BUZZ STRIPS

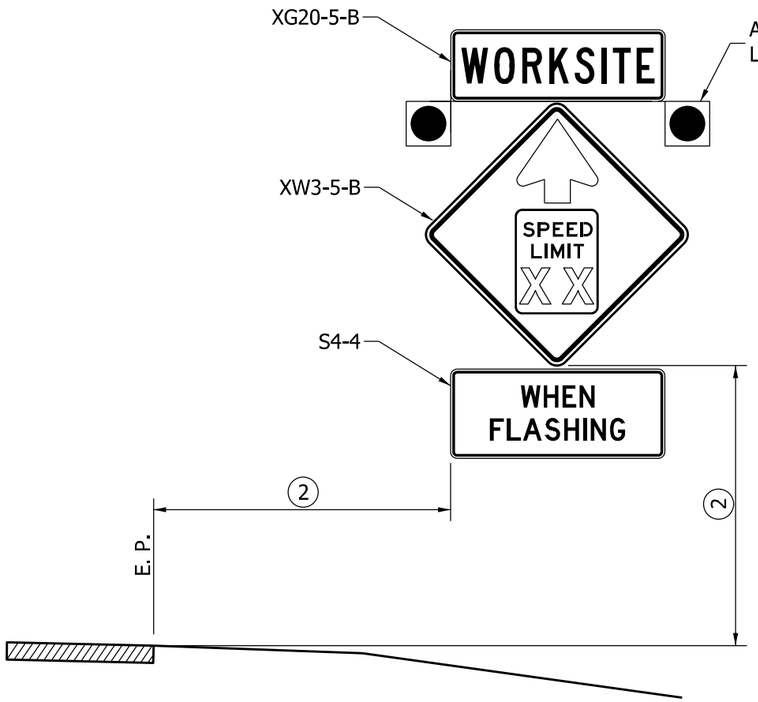
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-09

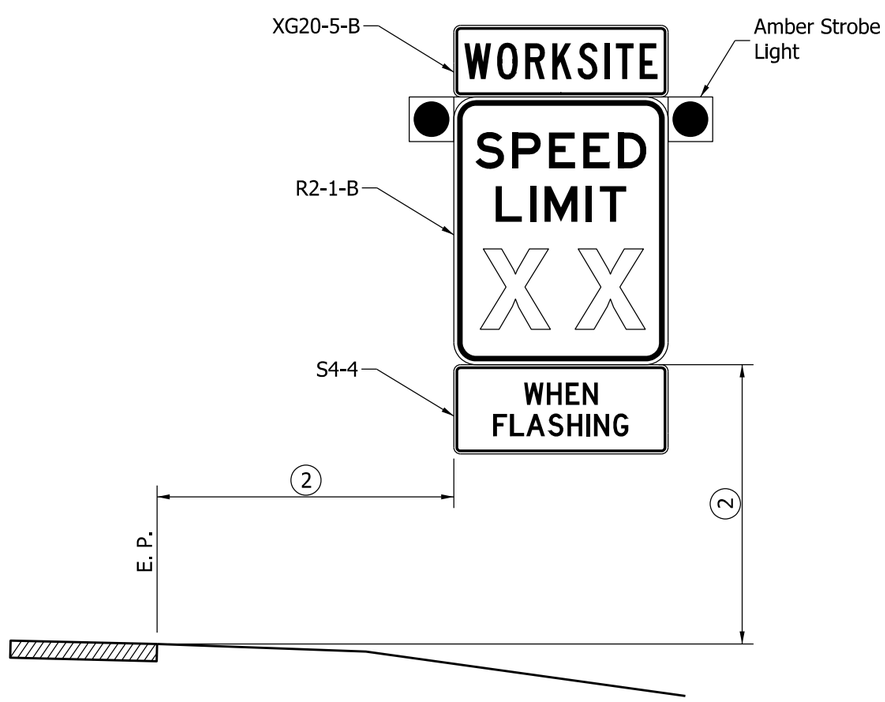
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff *06/25/15*
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller *07/02/15*
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 or MASH crash evaluation criteria.
2. See Standard Drawing 801-TCDV-05 for lateral and vertical placement.
3. Advance warning signs 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
(WORKERS PRESENT)

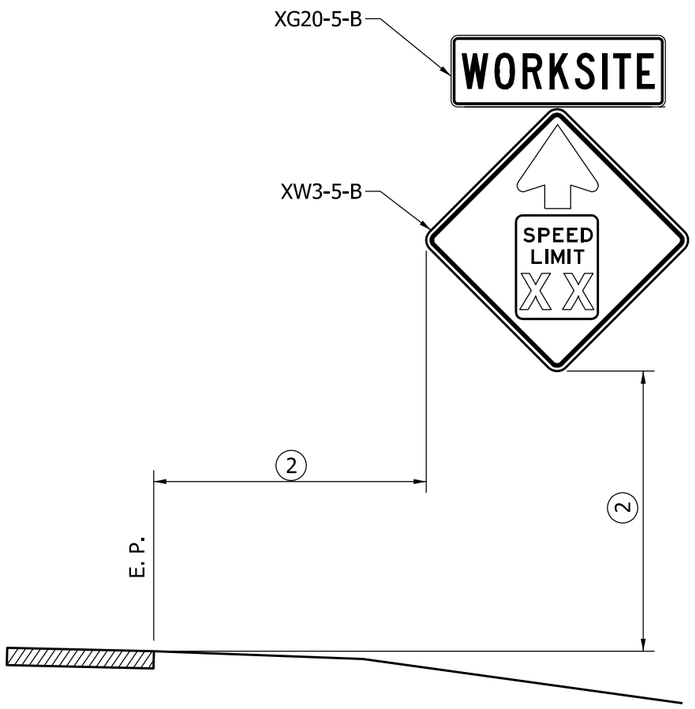
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-10

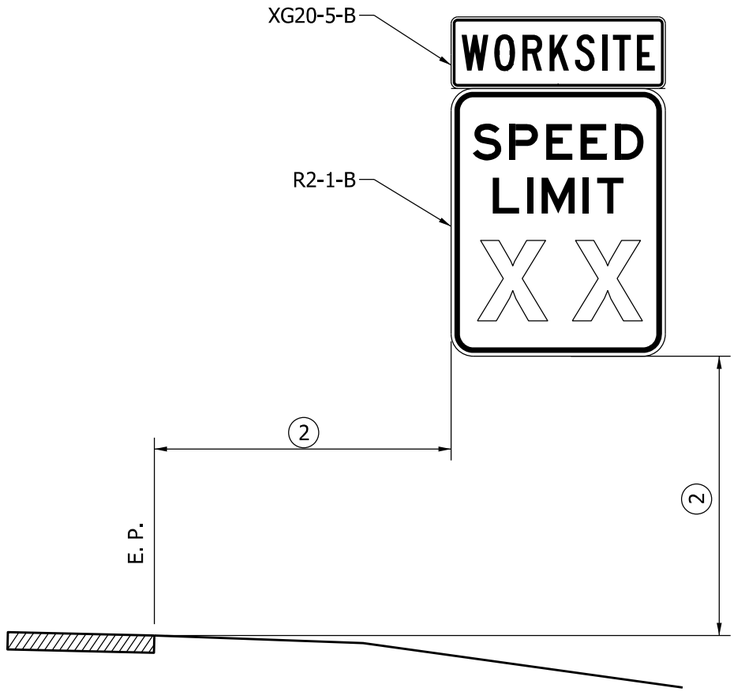
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
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 or MASH crash evaluation criteria.
2. See Standard Drawing 801-TCDV-05 for lateral and vertical placement.
3. Advance warning signs 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
(24/7)

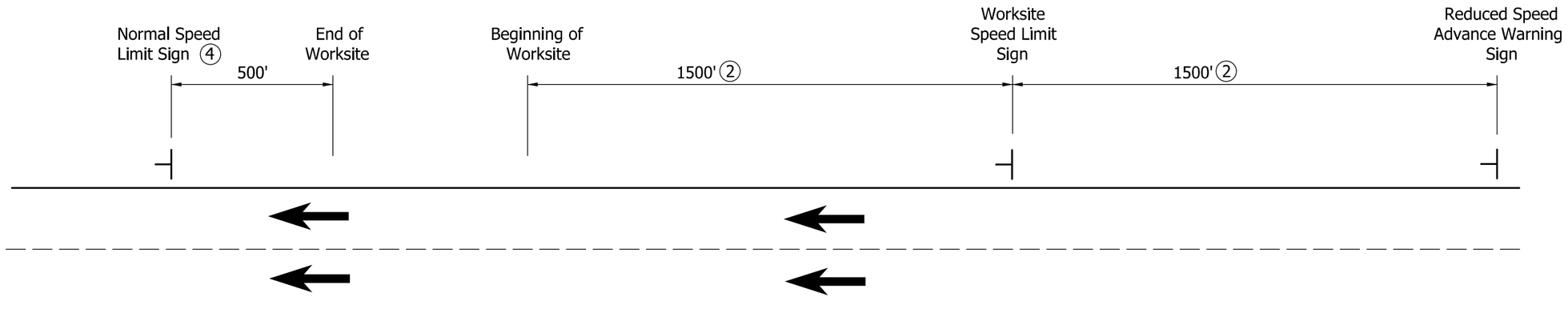
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-11

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/25/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 07/02/15
CHIEF ENGINEER DATE



NOTES:

1. Worksite speed limit sign assemblies shall be placed on both sides of the directional lanes when multiple lanes traveling in the same direction are open to traffic. For undivided roadways, or on roadways where a single lane is open in one direction, assemblies are required on only one side of the roadway.

(2) Assembly spacing may be reduced using Distance B from Table 6C-1 of the IMUTCD for Urban and Rural Roadways.

3. 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.

(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.

5. See Standard Drawing E 801-TCDV-10 and -11 for sign assembly.

INDIANA DEPARTMENT OF TRANSPORTATION

WORKSITE SPEED LIMIT
SIGN ASSEMBLY
LONGITUDINAL PLACEMENT

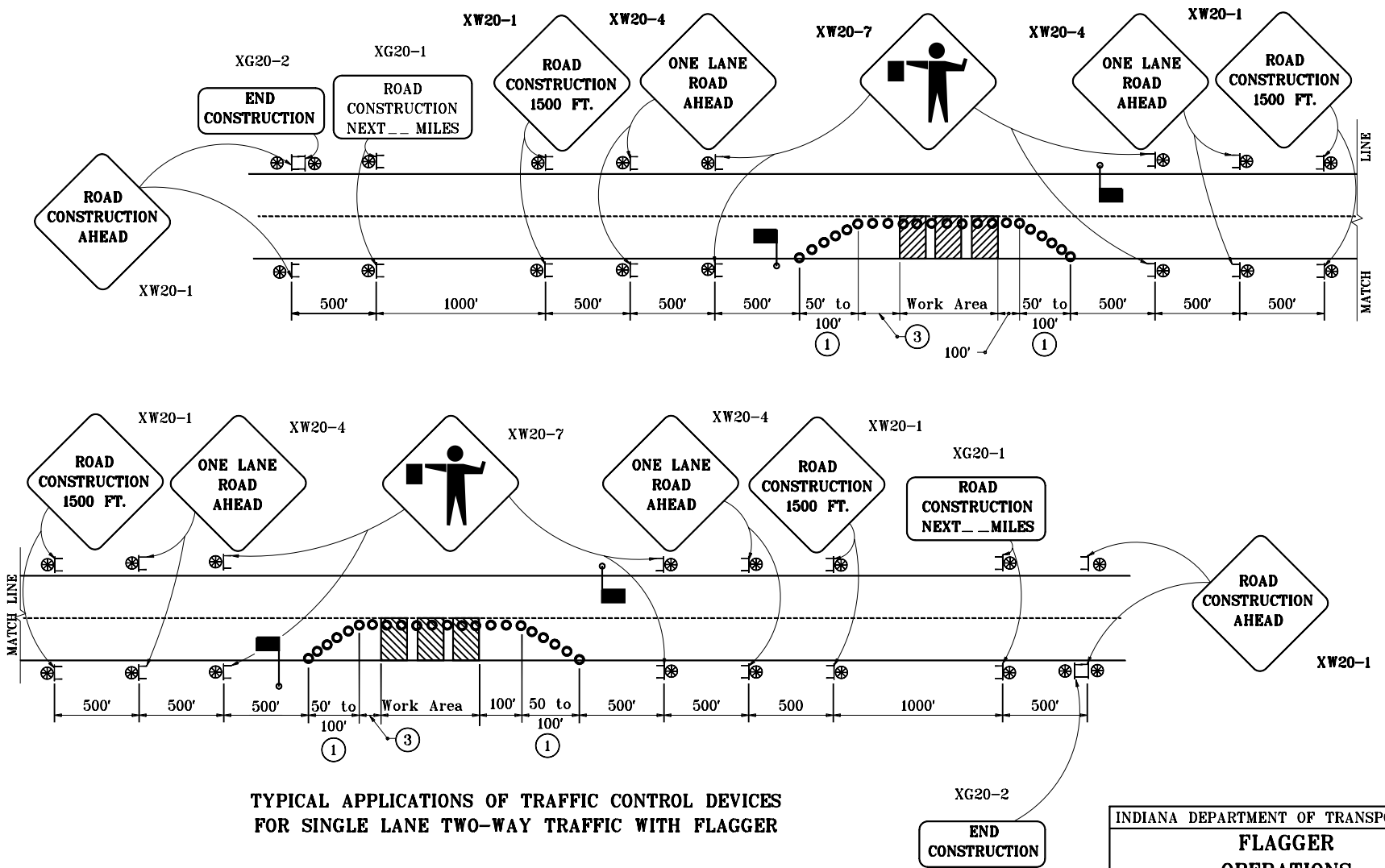
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCDV-12

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 07/29/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 08/03/15
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-TCFO-03 for table this dimension.

INDIANA DEPARTMENT OF TRANSPORTATION

FLAGGER OPERATIONS

SEPTEMBER 1997

STANDARD DRAWING NO. **E 801-TCFO-01**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

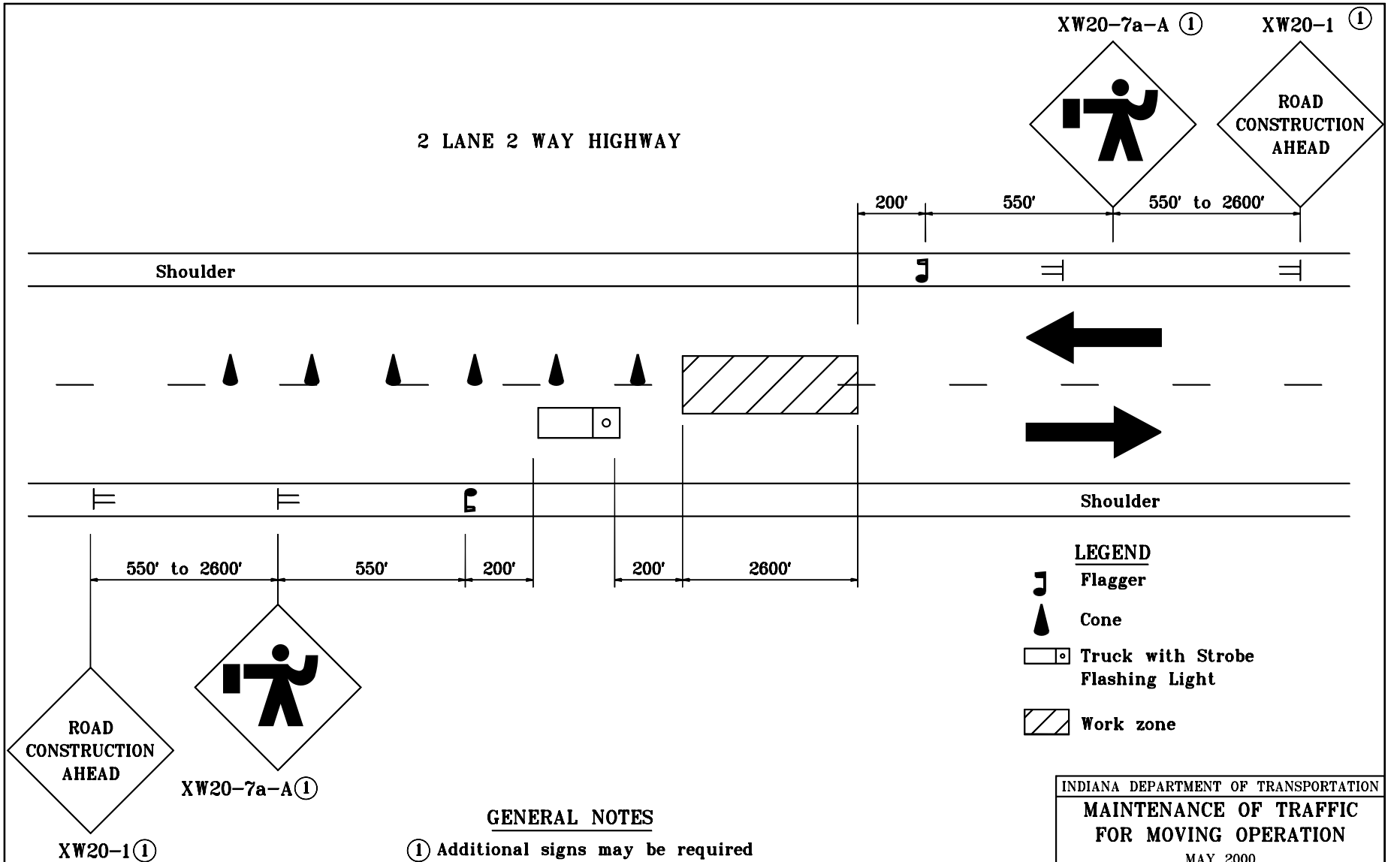
DESIGN STANDARDS ENGINEER

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) 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-TCFO-02

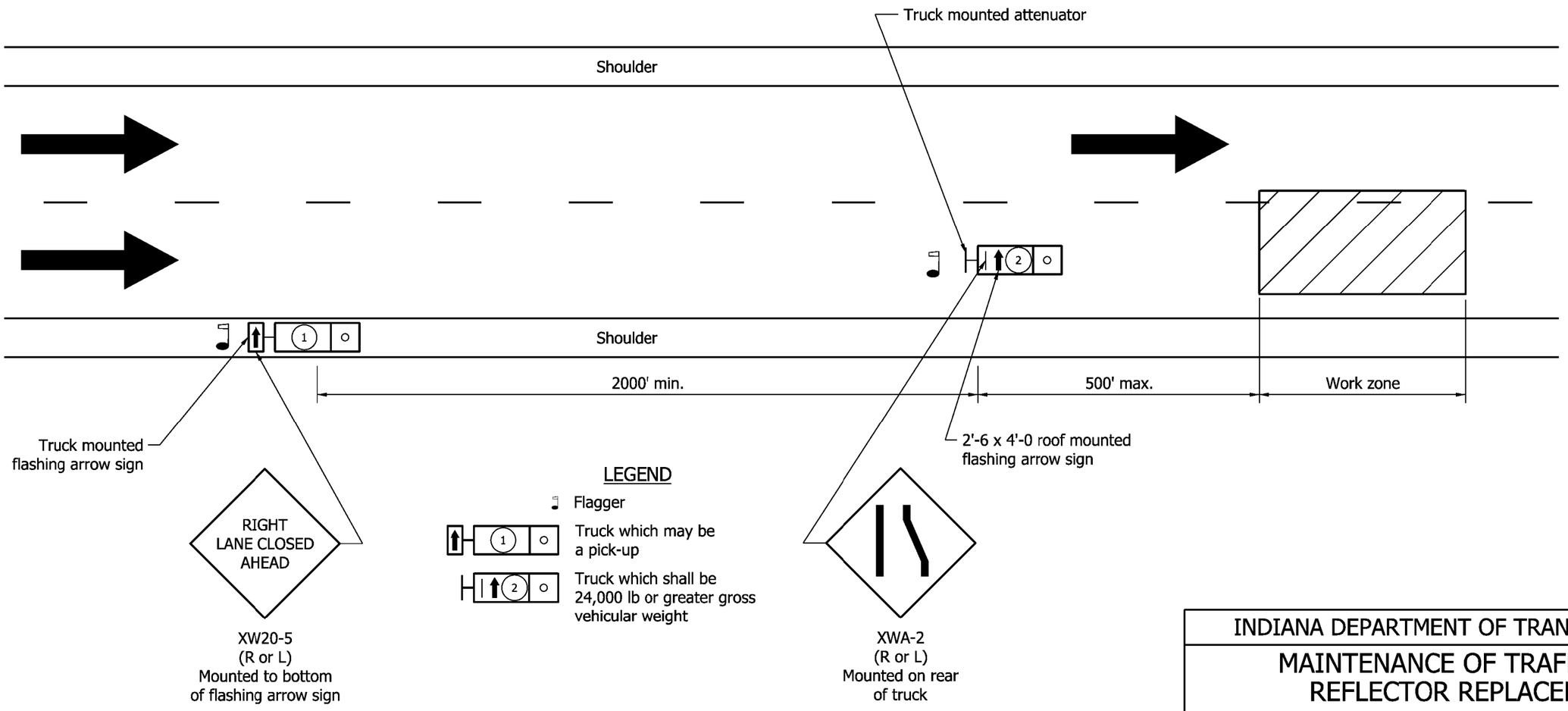
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/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



LEGEND

- Flagger
- Truck which may be a pick-up
- Truck which shall be 24,000 lb or greater gross vehicular weight

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

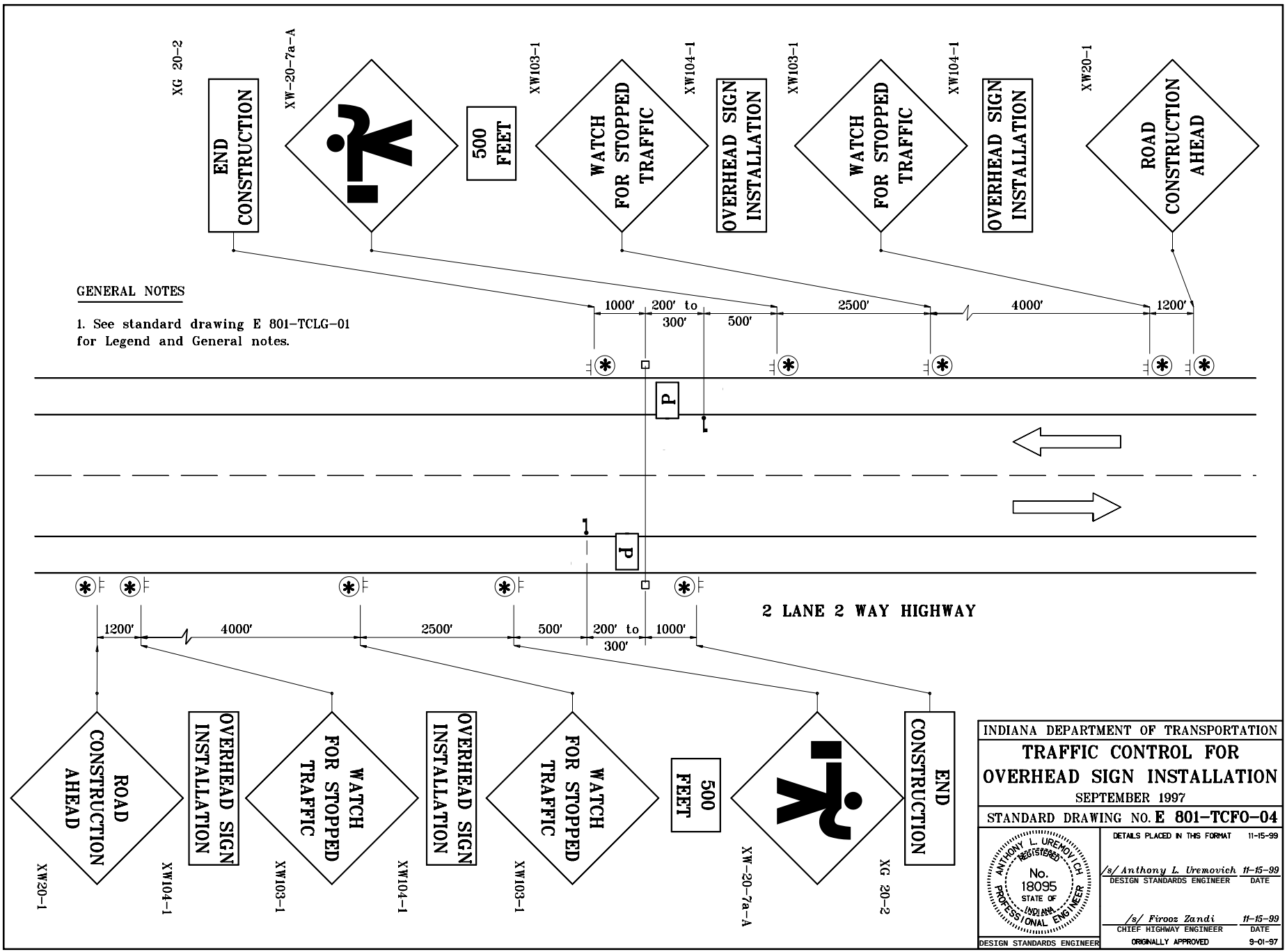
STANDARD DRAWING NO. E 801-TCFO-03

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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-TCFO-04**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

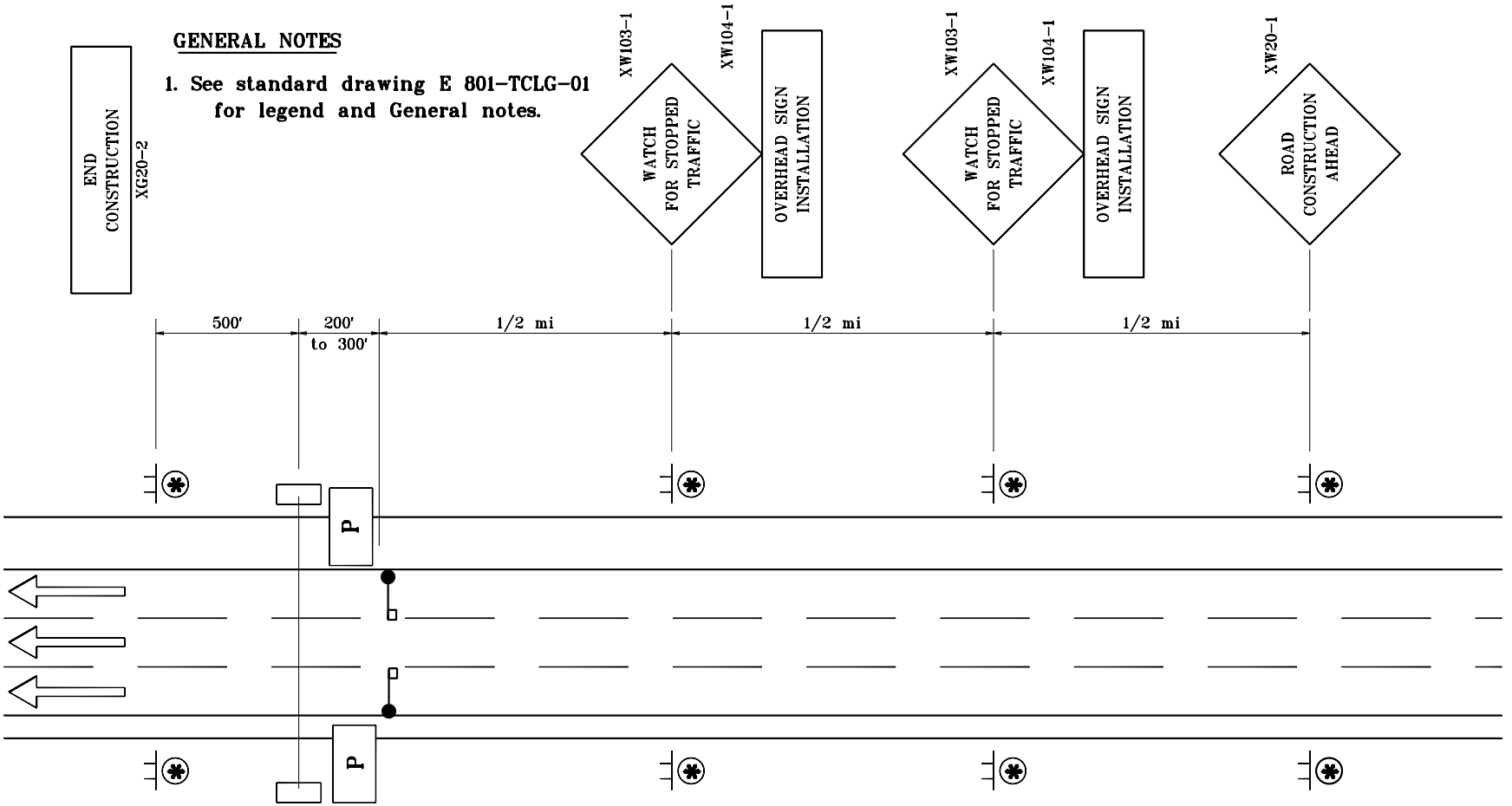
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/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

TRAFFIC CONTROL FOR OVERHEAD INSTALLATION

SEPTEMBER 1997

STANDARD DRAWING NO. E 801-TCFO-05

ANTHONY L. URENOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

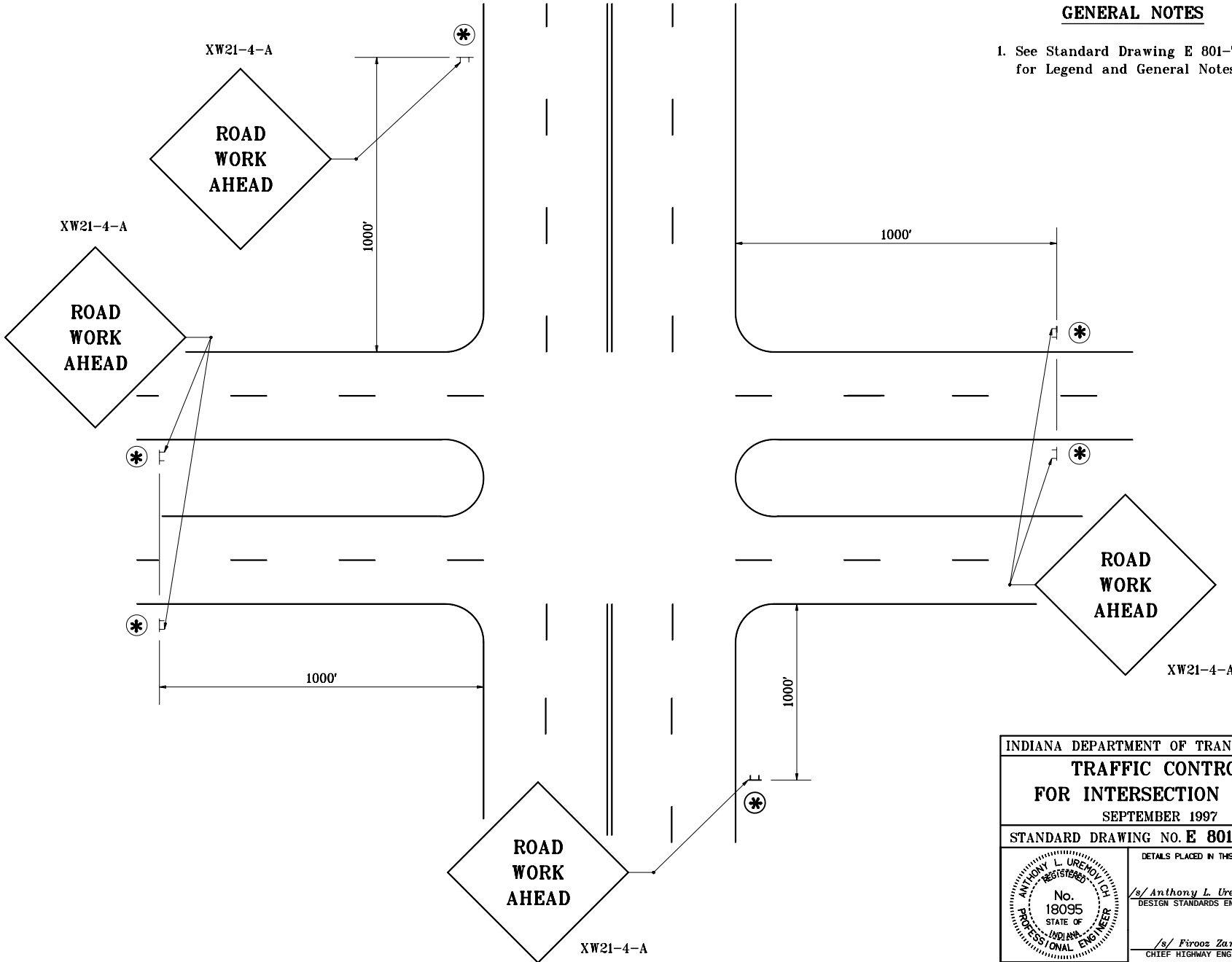
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/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.



INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR INTERSECTION WORK

SEPTEMBER 1997

STANDARD DRAWING NO. **E 801-TCFO-06**

ANTHONY L. URENOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

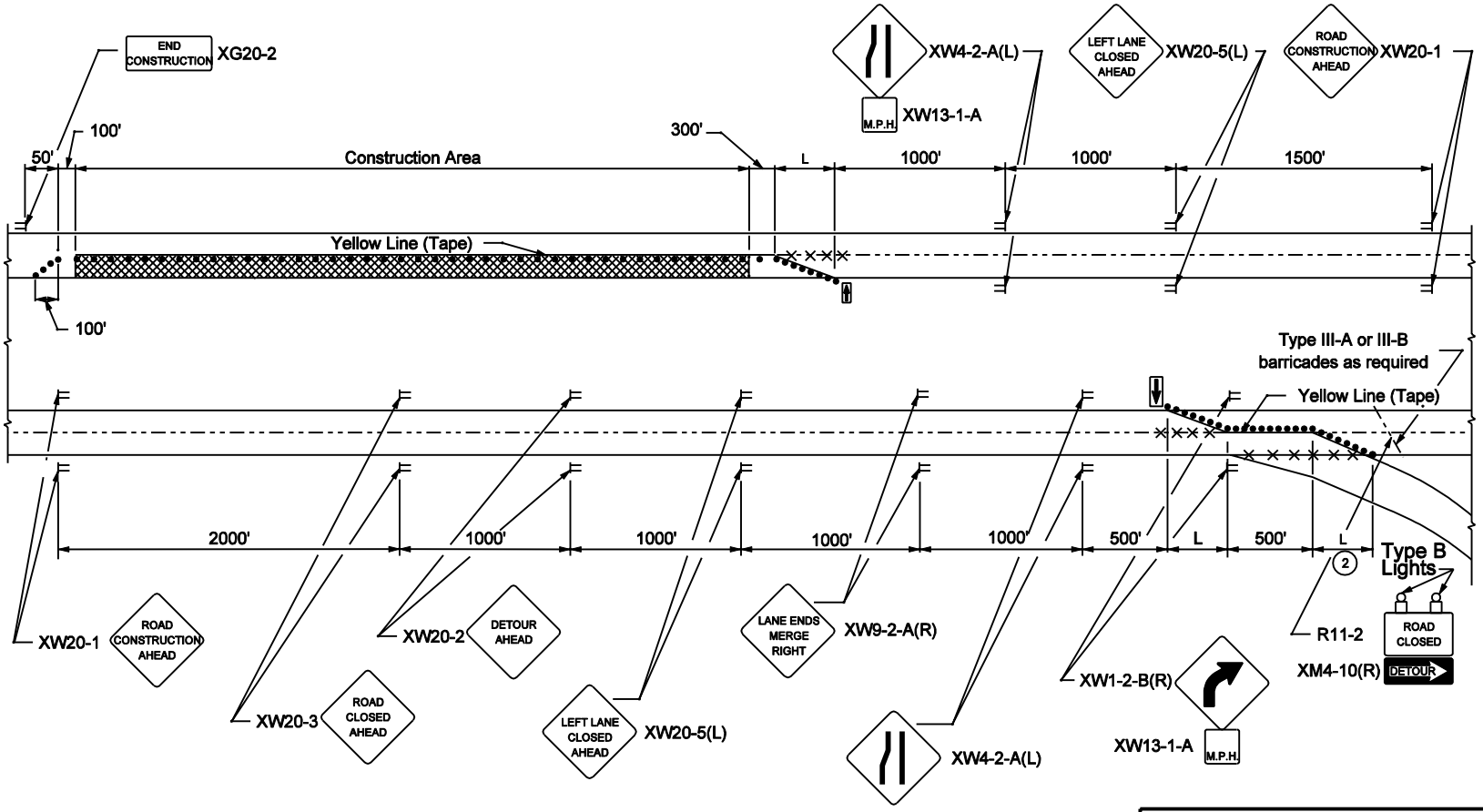
DESIGN STANDARDS ENGINEER

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 9-02-97



TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON INTERSTATE HIGHWAYS

INDIANA DEPARTMENT OF TRANSPORTATION

LANE CLOSURES
INTERSTATE APPLICATIONS

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCLC-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

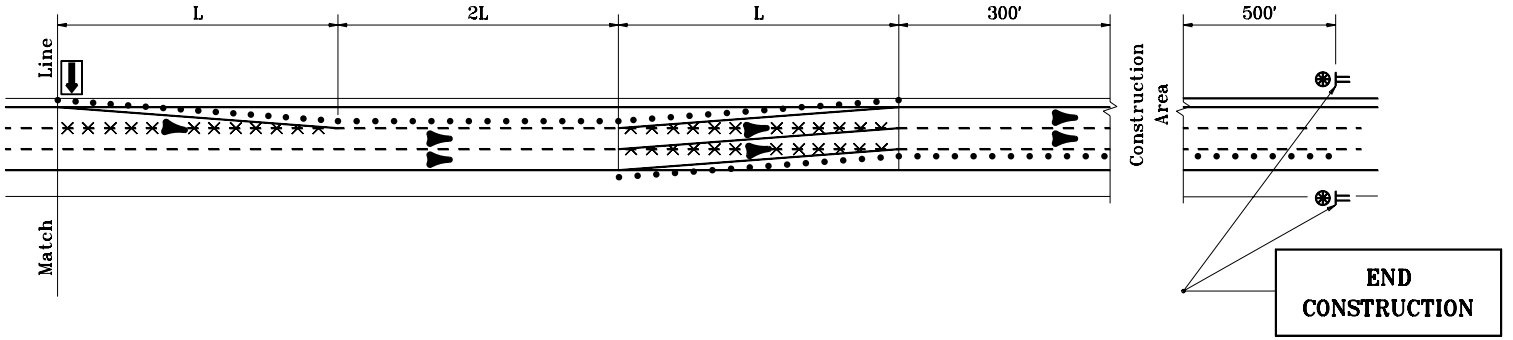
/s/ Richard L VanCleave 9-03-02
DESIGN STANDARDS ENGINEER DATE

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

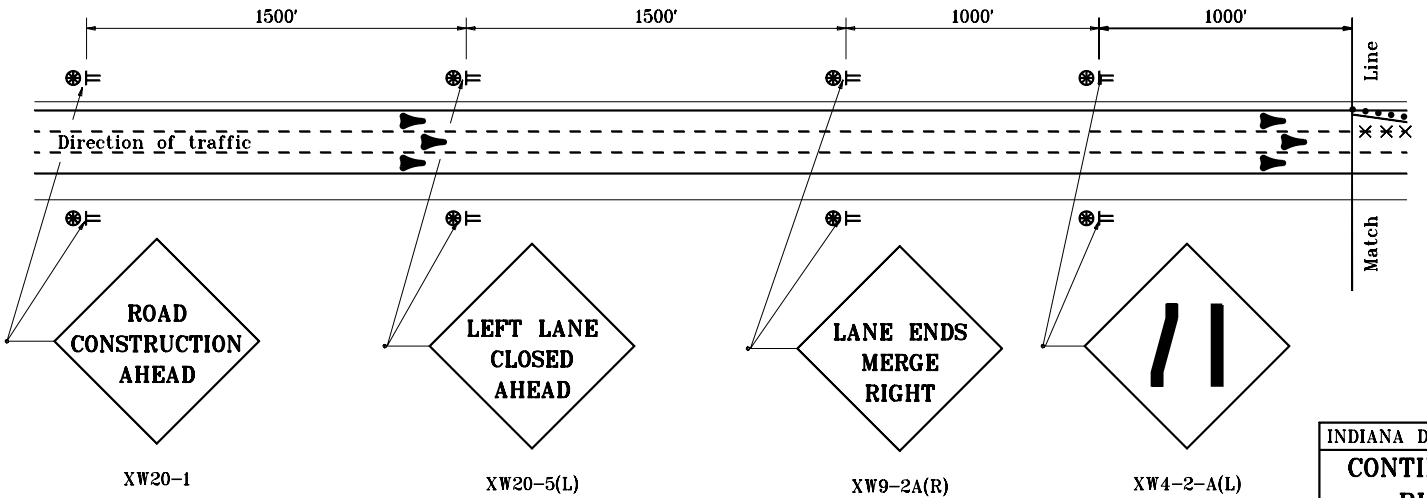
GENERAL NOTES

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

(2) Spacing of drums at this location shall be 20 ft.



TYPICAL APPLICATION ON 6 – LANE DIVIDED HIGHWAY WHERE RIGHT LANE IS CLOSED



TYPICAL ADVANCE SIGNING

GENERAL NOTES

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

INDIANA DEPARTMENT OF TRANSPORTATION

CONTINOUS LANE CLOSURES RIGHT LANE CLOSED

MAY 1997

STANDARD DRAWING NO. E 801-TCLC-02

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

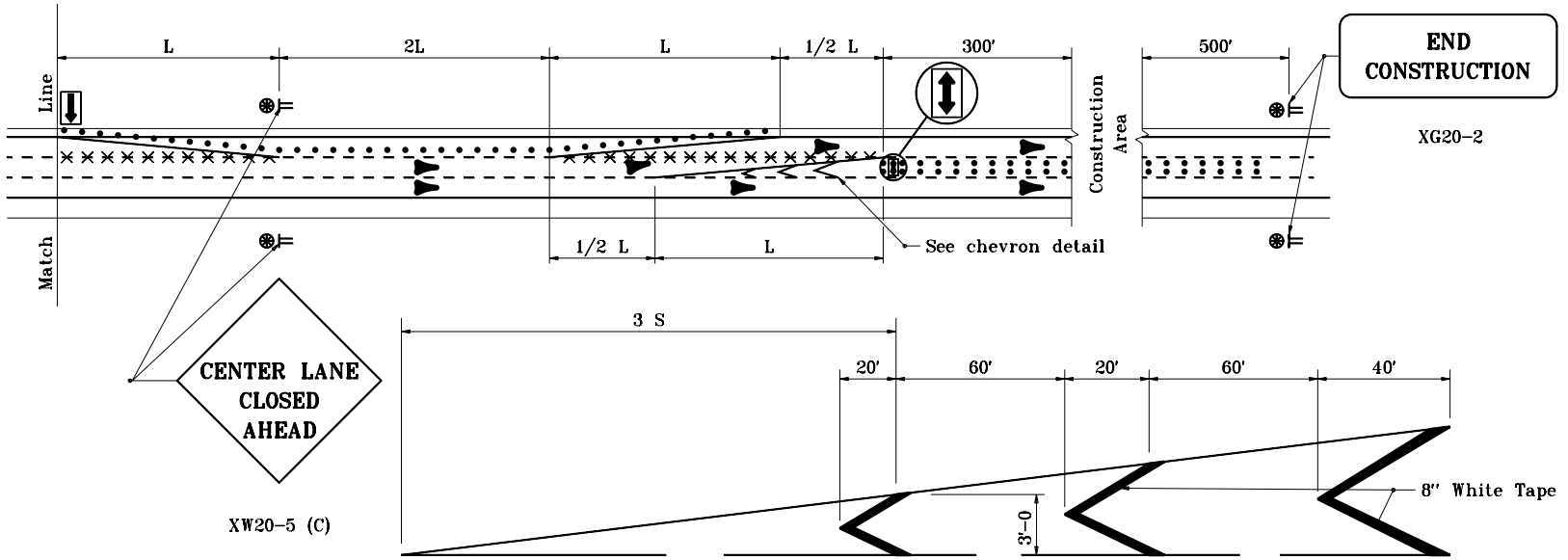
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

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

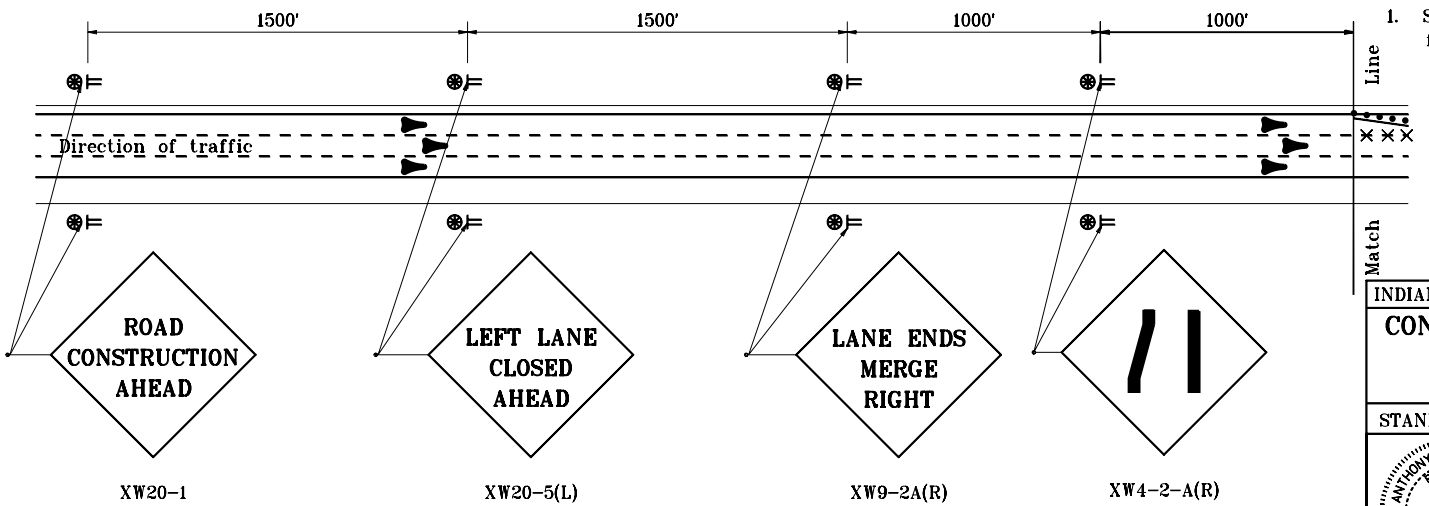
/s/ Firooz Zandi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 5-01-97



GORE AREA CHEVRONS FOR CENTER LANE CLOSURE

TYPICAL APPLICATION ON 6 – LANE DIVIDED HIGHWAY WHERE CENTER LANE IS CLOSED



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
CENTER LANE CLOSED

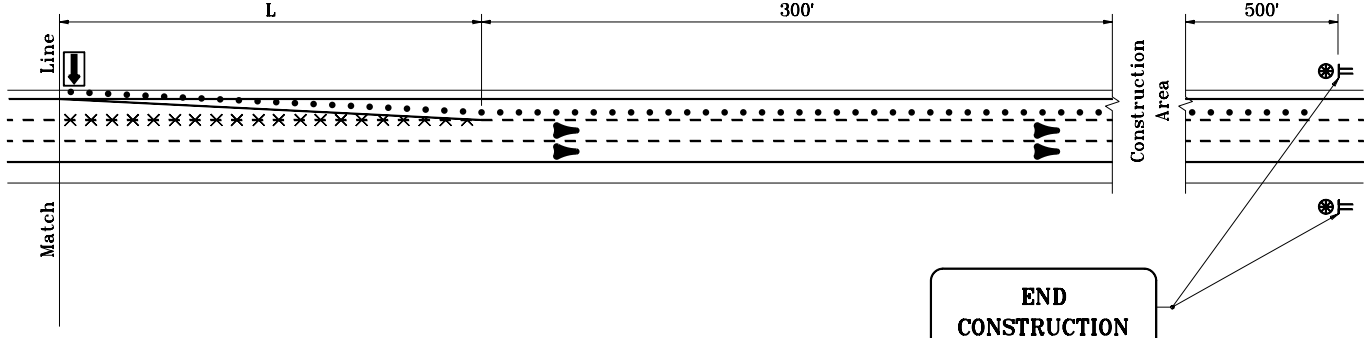
MAY 1997

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

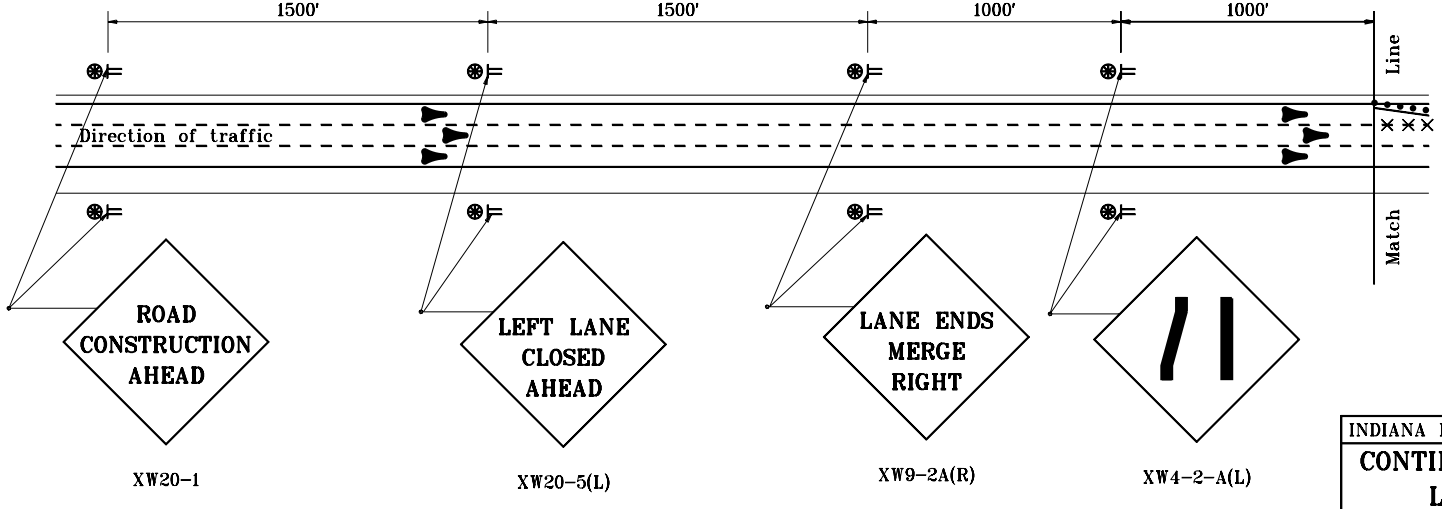
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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	5-01-97



TYPICAL APPLICATION ON 6 – LANE DIVIDED HIGHWAY WHERE LEFT LANE IS CLOSED



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

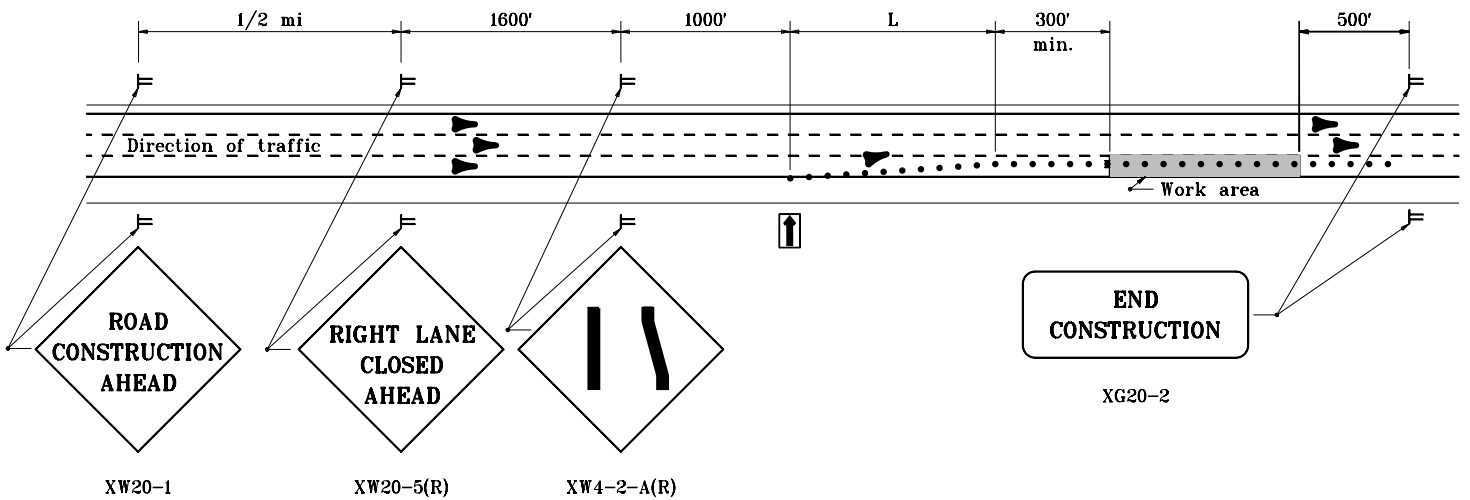
STANDARD DRAWING NO. **E 801-TCLC-04**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 5-01-97
DESIGN STANDARDS ENGINEER DATE

/s/ Donald W. Lucas 5-01-97
CHIEF HIGHWAY ENGINEER DATE



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 Drawiog 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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

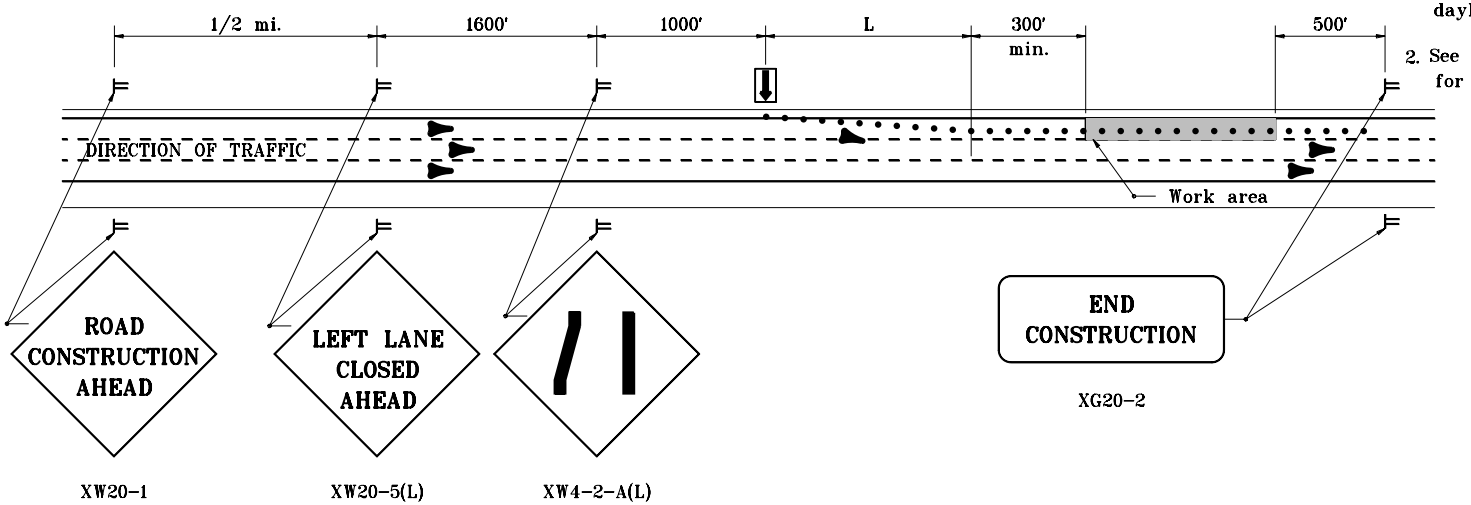
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

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

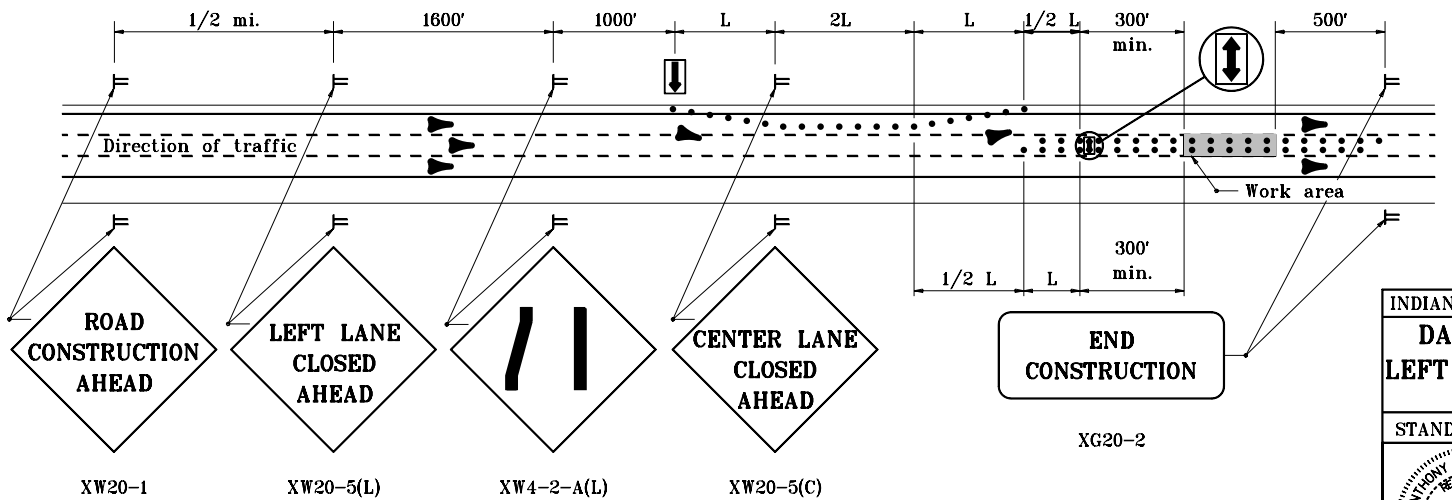
ORIGINALLY APPROVED 5-01-97

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**

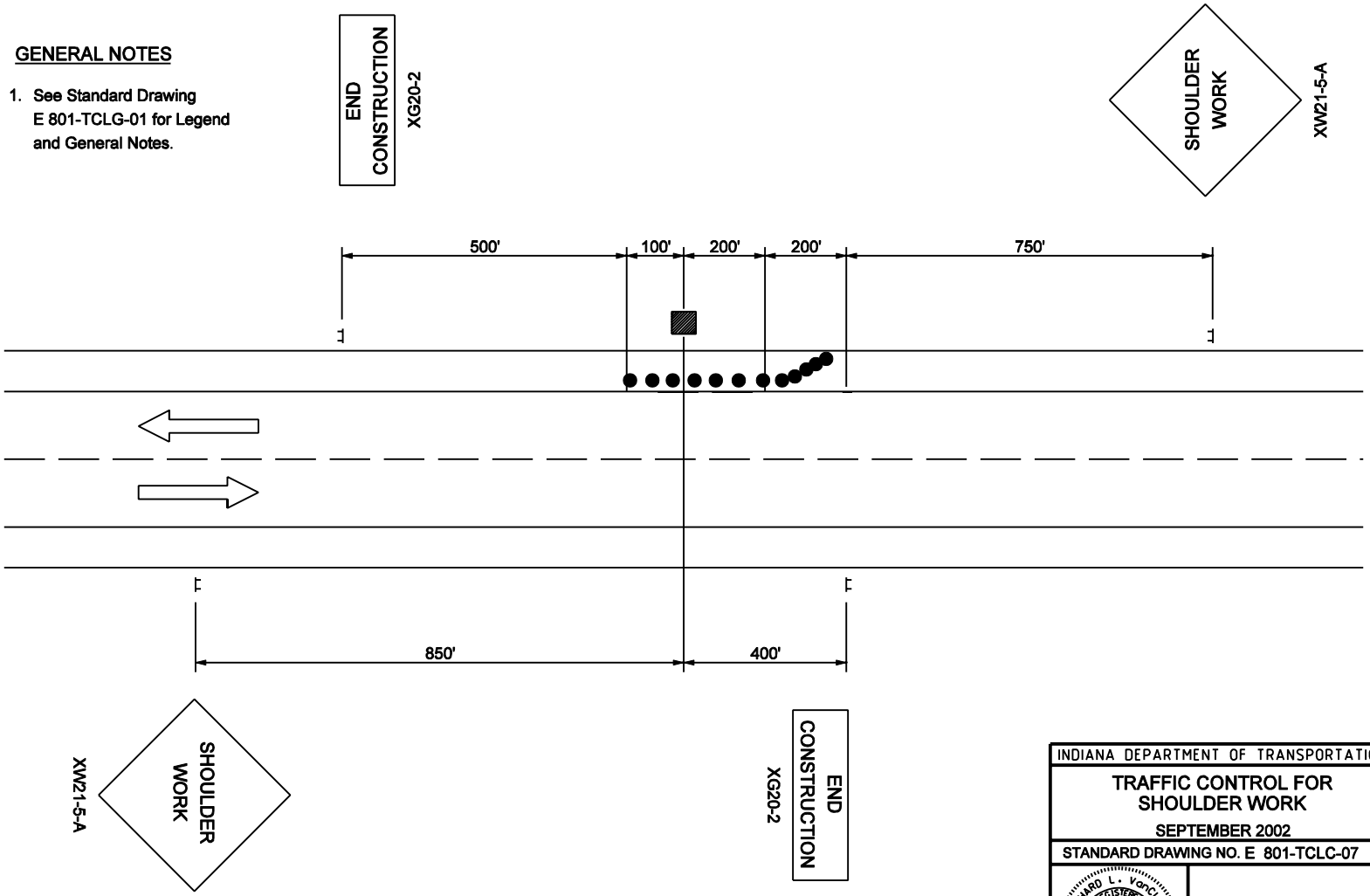
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich, DESIGN STANDARDS ENGINEER	11-15-99
/s/ Firooz Zandi, CHIEF HIGHWAY ENGINEER	11-15-99
ORIGINALLY APPROVED	5-01-97

GENERAL NOTES

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



2 LANE 2 WAY HIGHWAY

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR SHOULDER WORK

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCLC-07

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

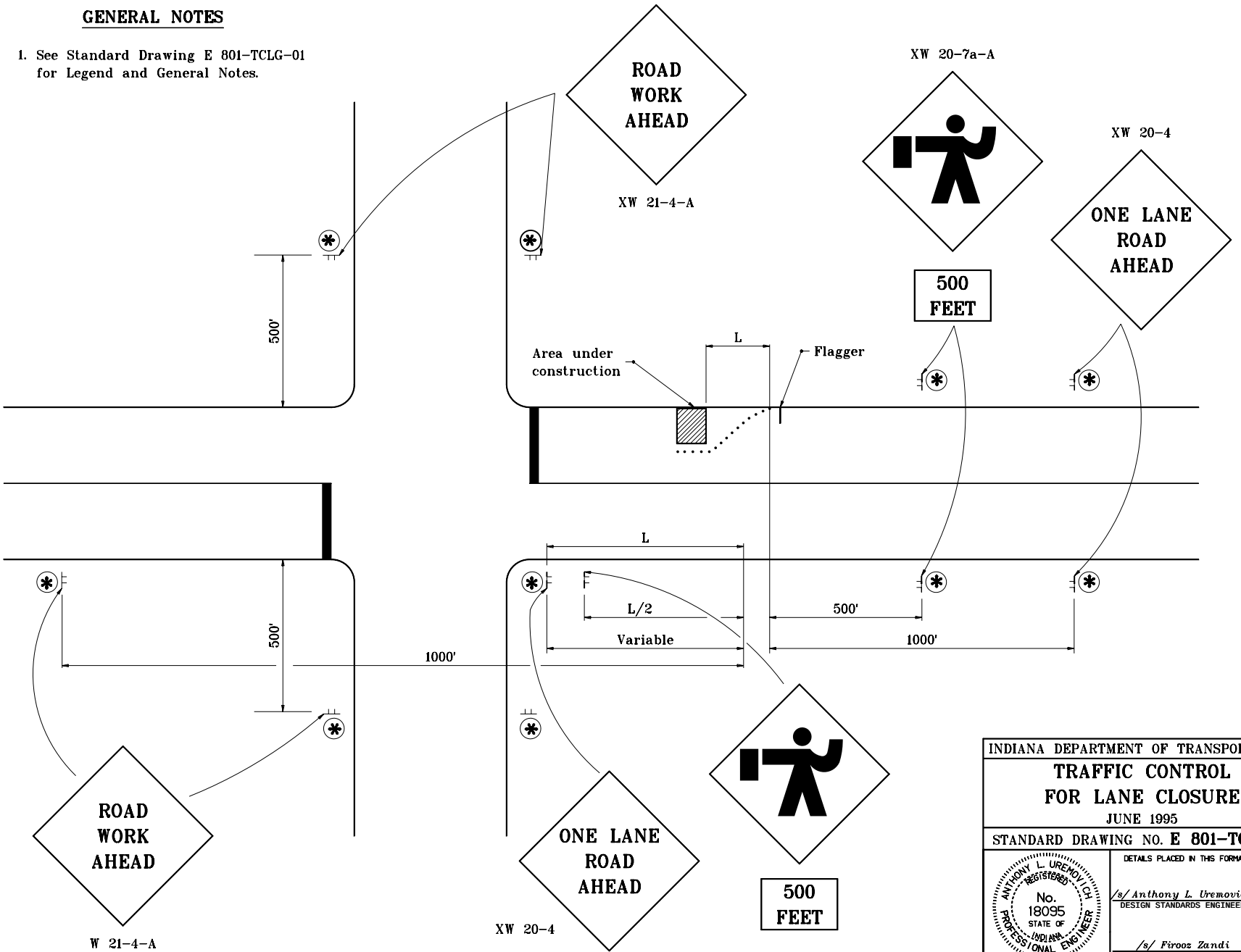
DESIGN STANDARDS ENGINEER

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

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

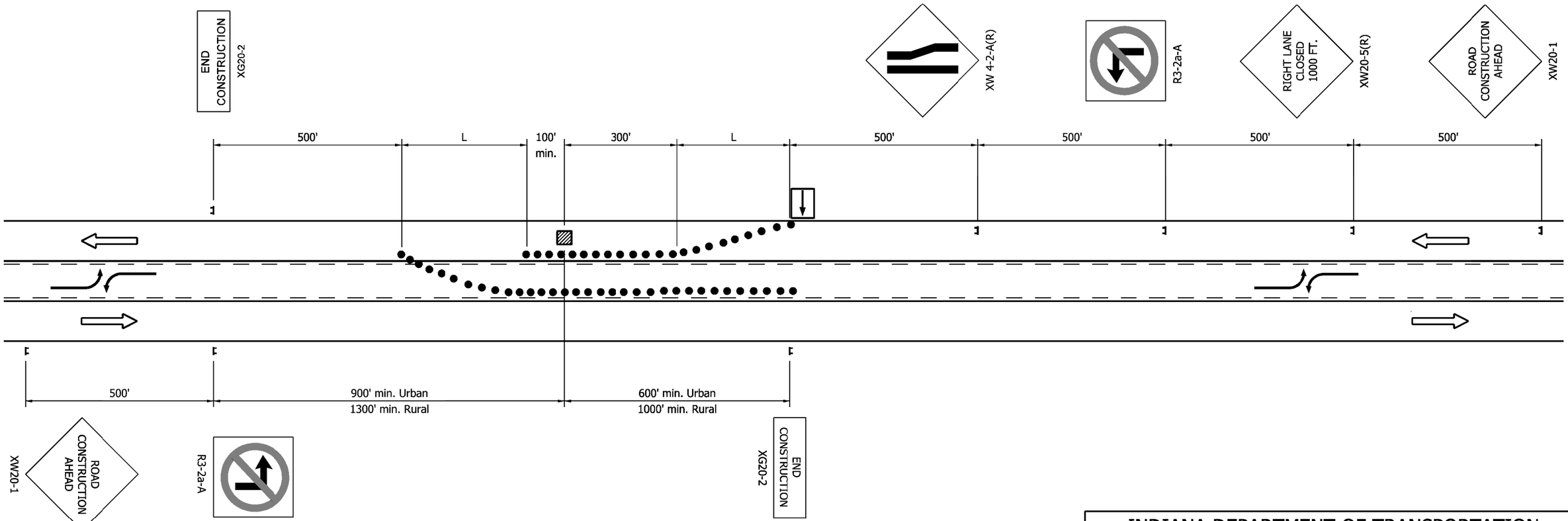
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

NOTES

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



WORK ON PAVEMENT (3 LANE SECTION)

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR LANE CLOSURE

SEPTEMBER 2009

STANDARD DRAWING NO. E 801-TCLC-09

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

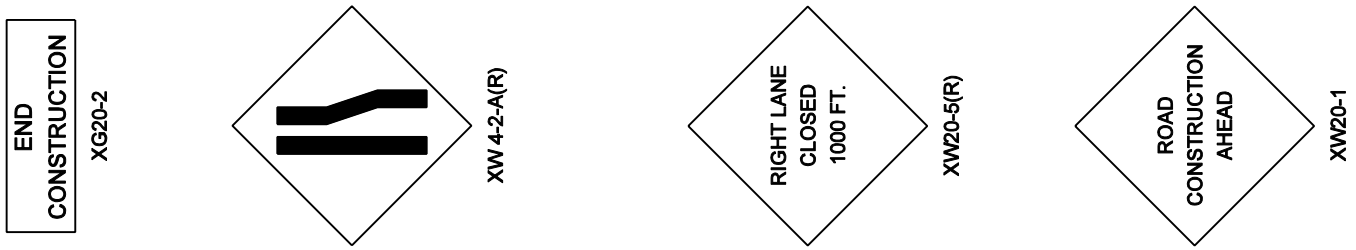
DESIGN STANDARDS ENGINEER

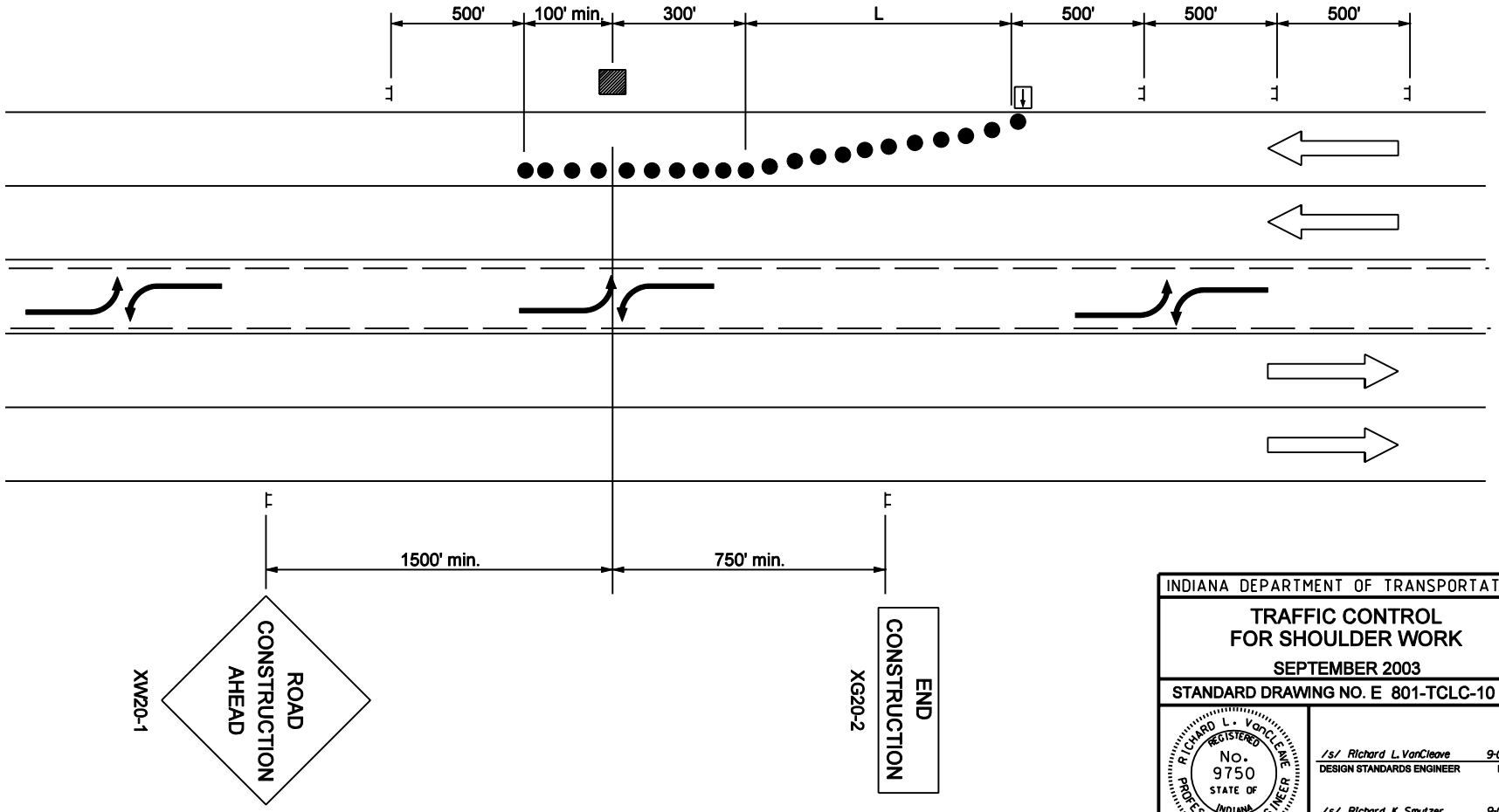
/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER — DATE

/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 SHOULDER WORK

SEPTEMBER 2003

STANDARD DRAWING NO. E 801-TCLC-10

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

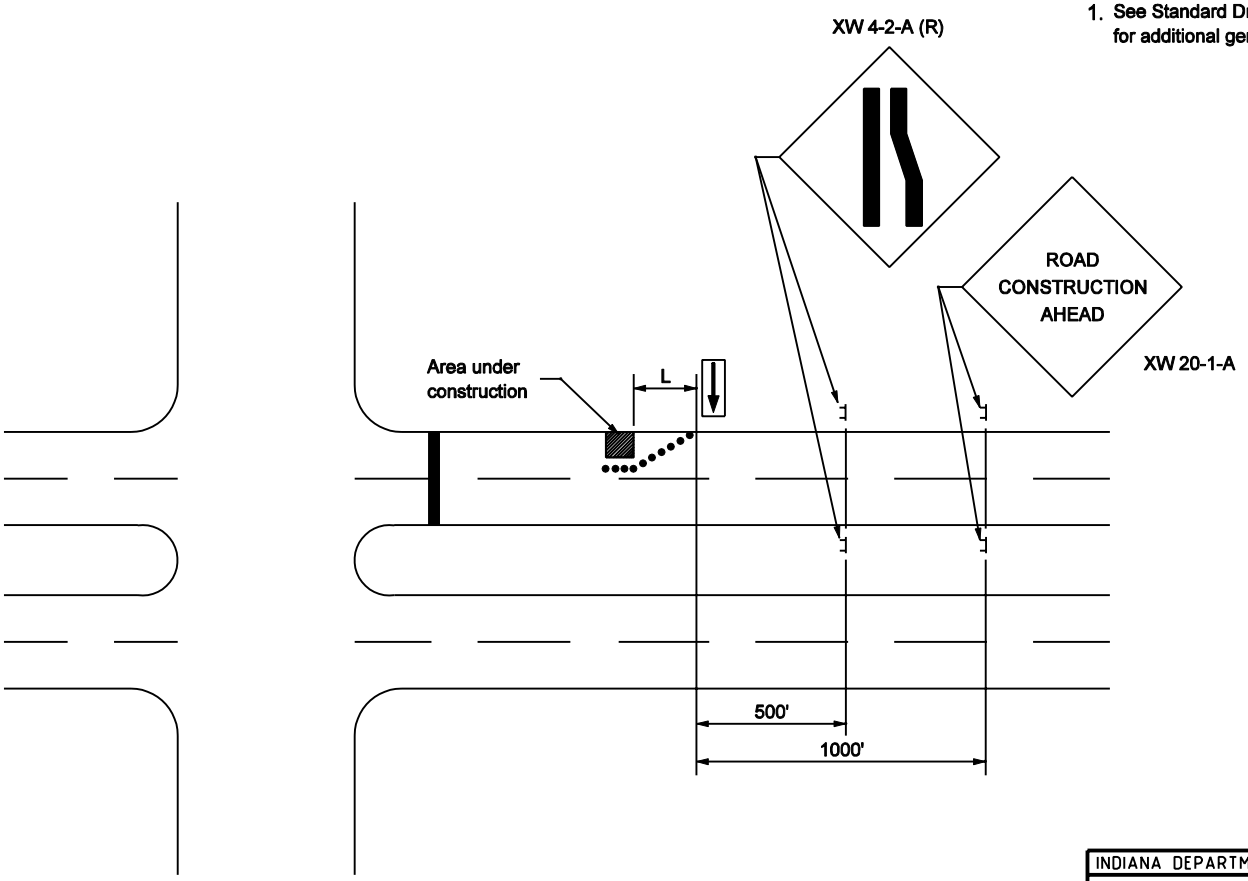
DESIGN STANDARDS ENGINEER

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

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

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

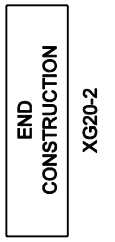
STANDARD DRAWING NO. E 801-TCLC-11

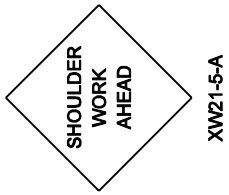
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

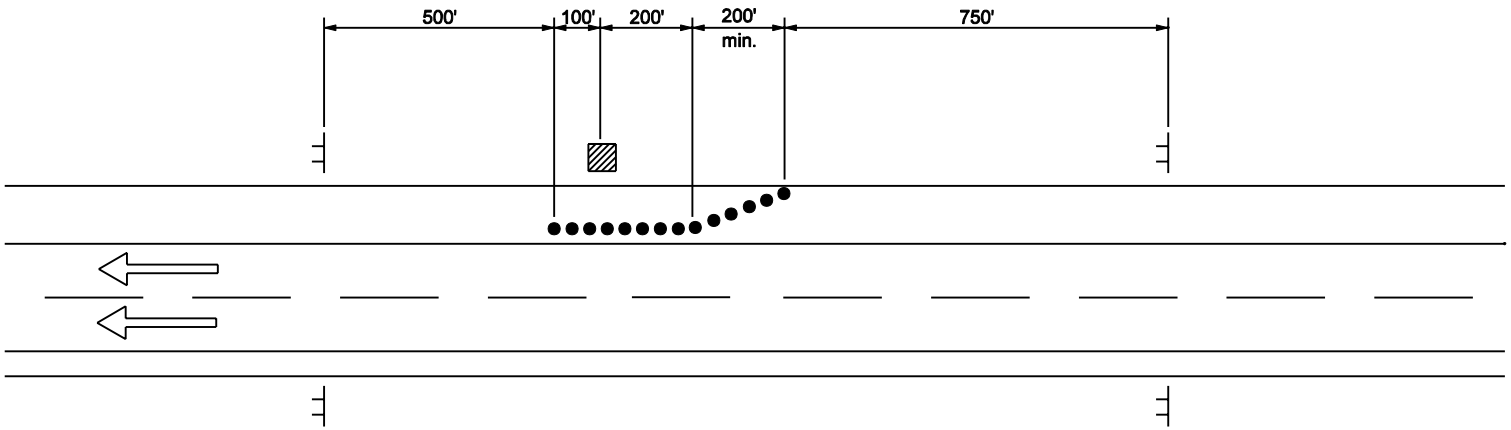
/s/ Richard K. Smutzer — CHIEF HIGHWAY ENGINEER — 9-03-02 DATE





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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

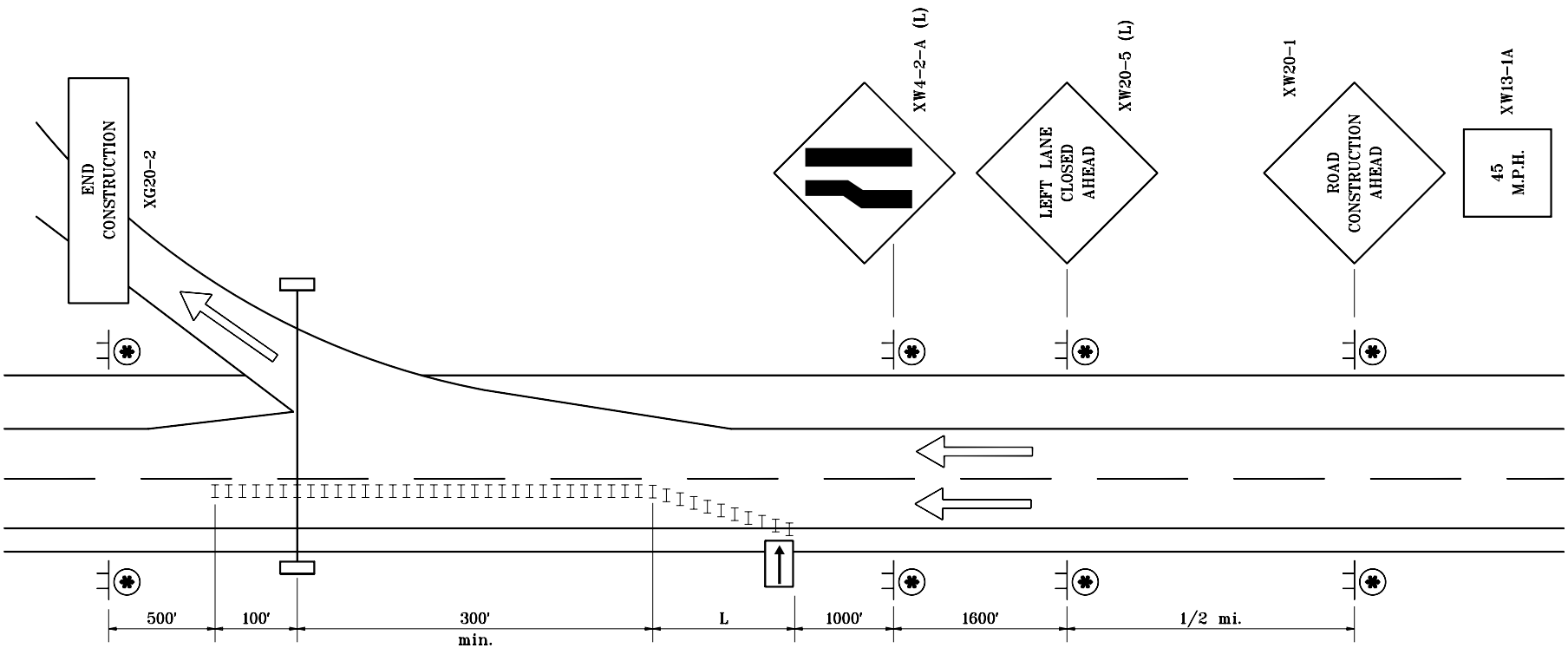
DESIGN STANDARDS ENGINEER

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

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

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**

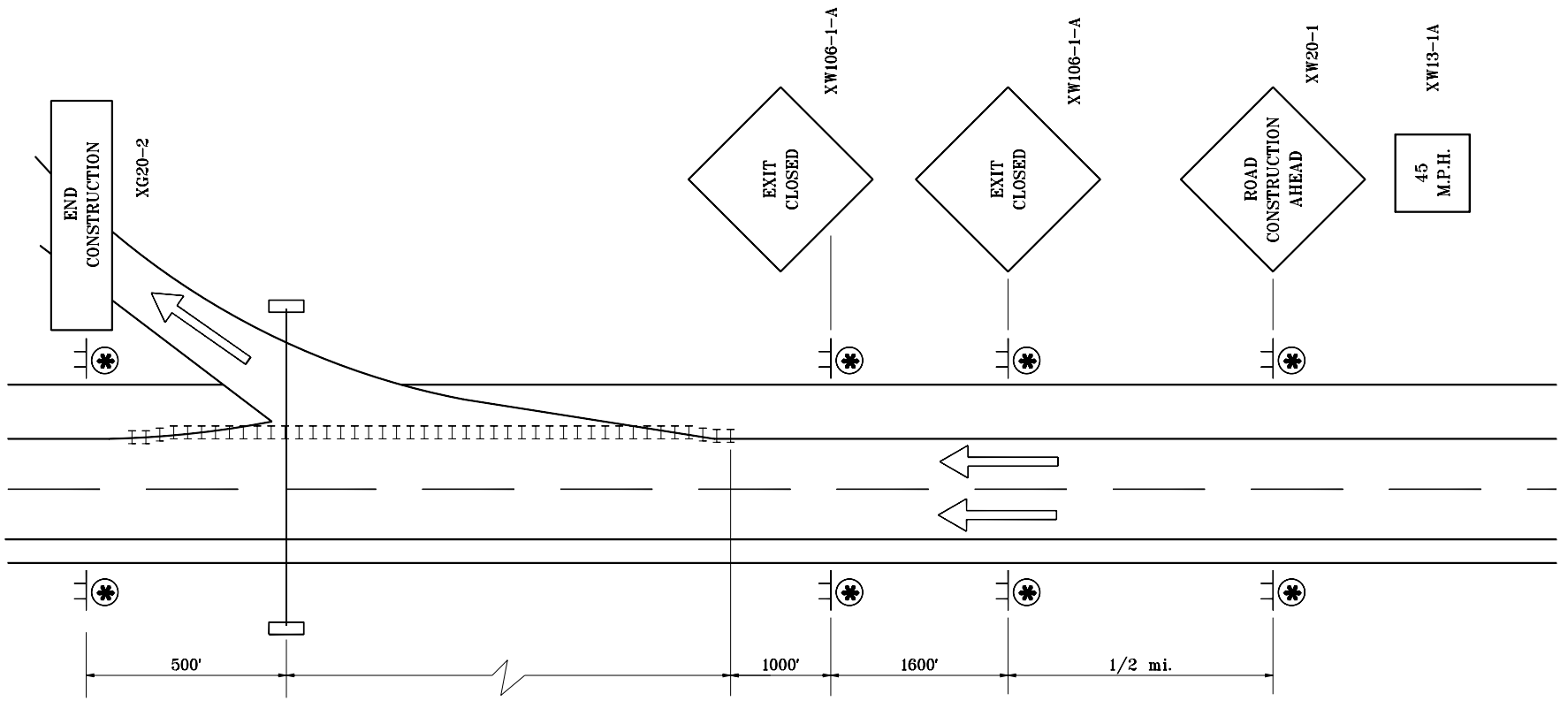
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

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

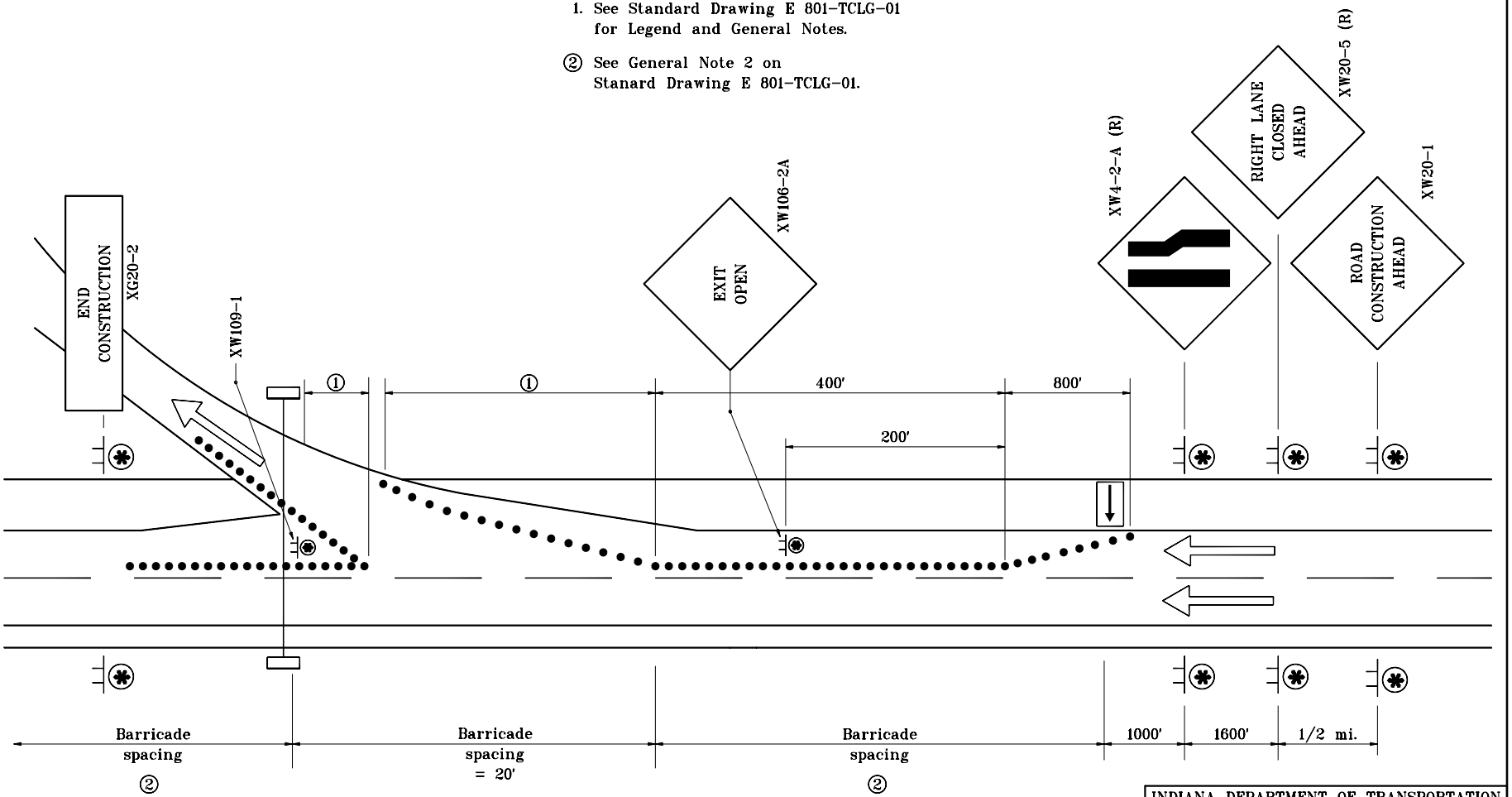
/s/ Firooz Zandi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 7-03-95

GENERAL NOTES

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.



MULTI-LANE DIVIDED HIGHWAY

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL FOR OVERHEAD SIGN INSTALLATION

MAY 1998

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

ANTHONY L. URENOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

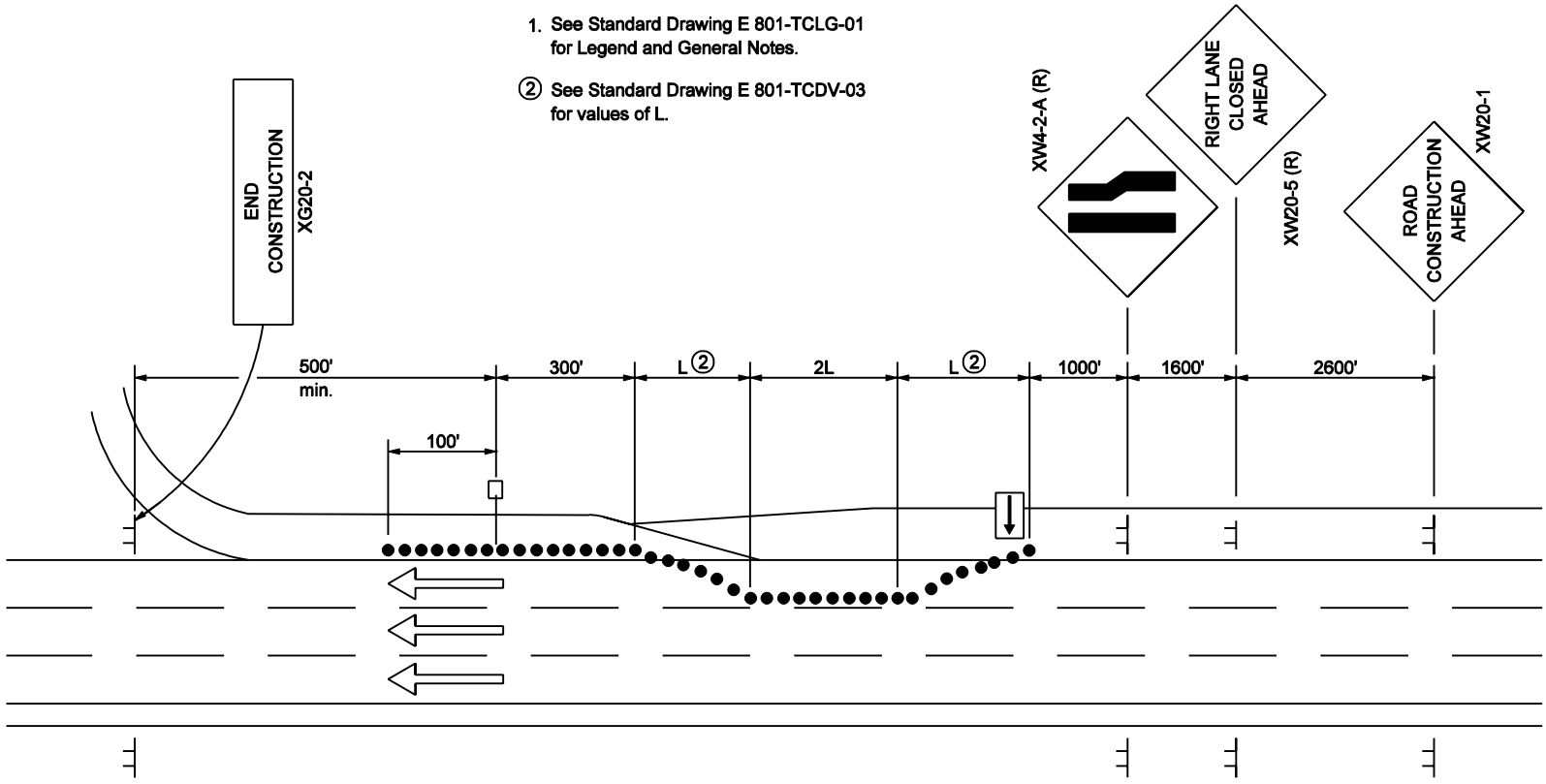
DESIGN STANDARDS ENGINEER

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
ORGINALLY APPROVED	5-01-98

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

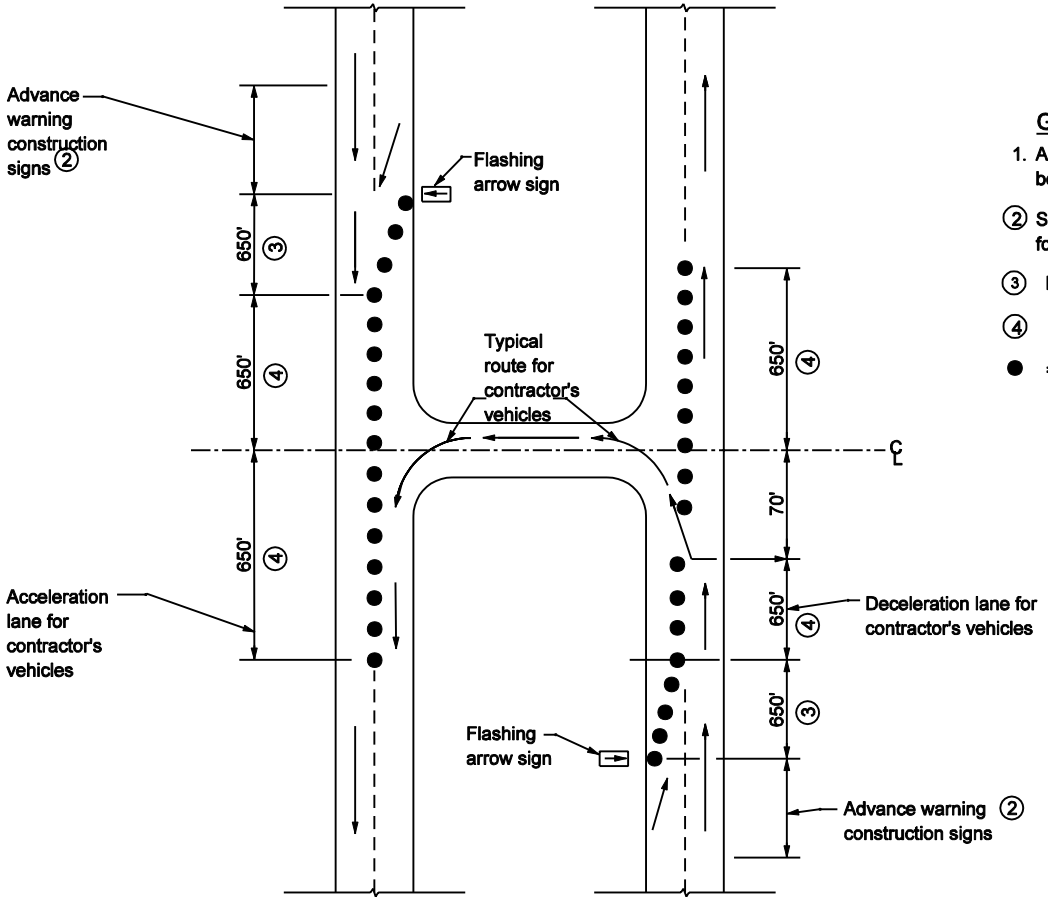
STANDARD DRAWING NO. E 801-TCLC-16

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/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 shall be 100 ft where the posted speed limit is 50 m.p.h. or greater.
3. The spacing of channelizing devices shall be 50 ft where the posted speed limit is less than or equal to 45 m.p.h.
4. The spacing of channelizing devices on tapers shall be numerically equal in feet to the posted speed limit in m.p.h.
5. 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, where L is the merge taper, see Sheet 11.
6. For temporary lane closures during daylight hours, cones or tubular markers may be used in lieu of drums.
7. Temporary pavement markings shall not be required for temporary daylight lane closures.
8. Temporary highway illumination, when specified, shall be as detailed on the plans.

(9) Once the crossovers have been removed, this line shall be restriped yellow if the pavement is to 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 be used for one-way traffic.

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

LEGEND

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

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
LEGEND AND GENERAL NOTES

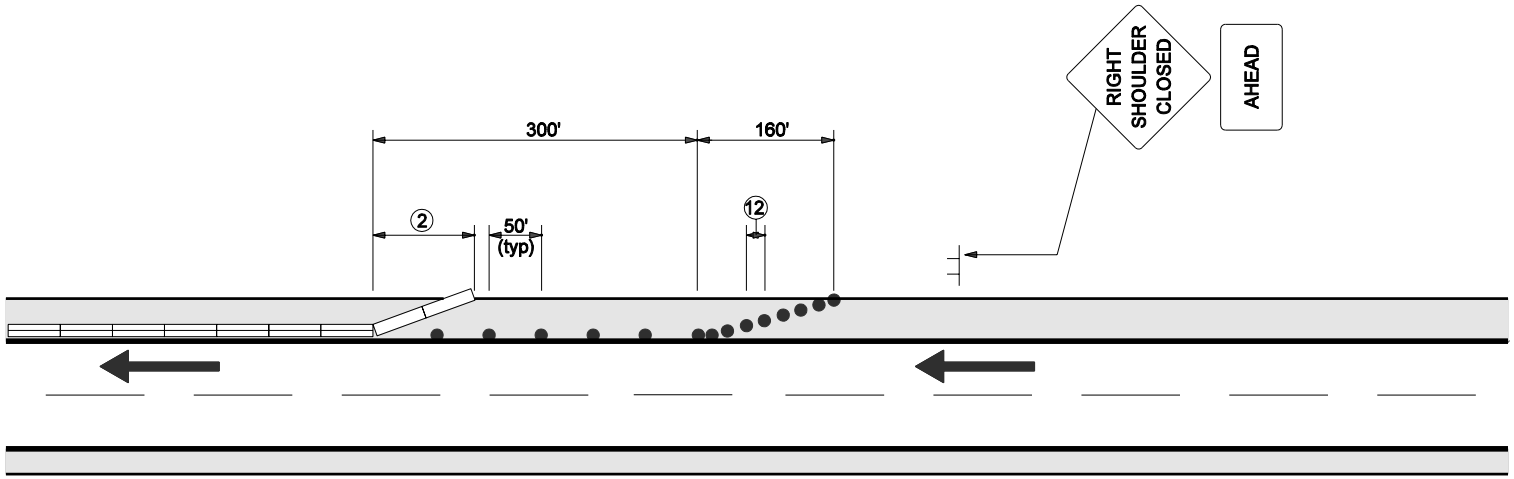
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCLG-01

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/02/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/16
CHIEF 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.

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

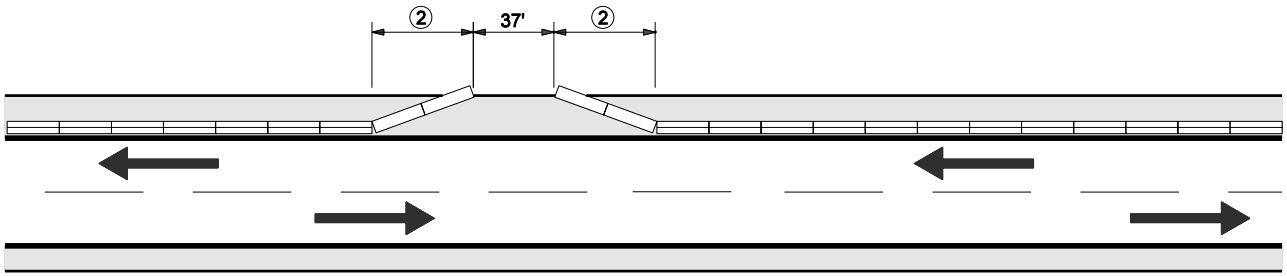
STANDARD DRAWING NO. E 801-TCSC-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/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

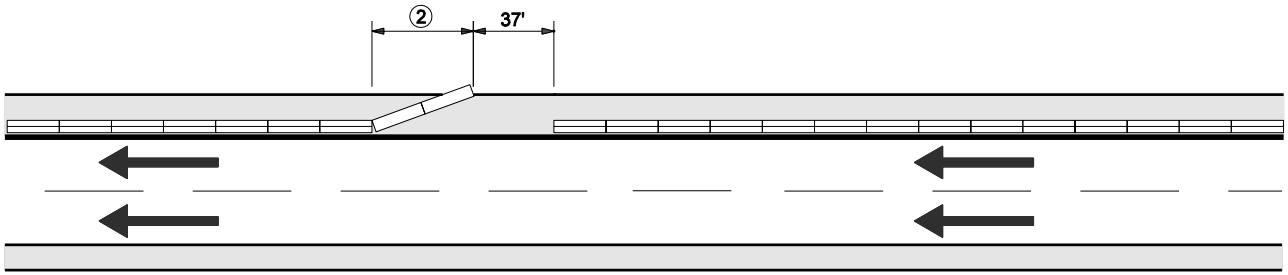
STANDARD DRAWING NO. E 801-TCSC-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/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 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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

INDEX

SHEET NO.	SUBJECT
1	Index
2	Traffic Control Signs
3	Traffic Control Signs
4	Traffic Control Sign Design Details
5	Traffic Control Sign Design Details
6	Traffic Control Sign Design Details
7	Temporary Panel Sign Breakaway Post Installation
8	Wood Post Design For Temporary Panel Signs

GENERAL NOTES:

1. The minimum vertical and horizontal clearances for construction signs shall be as shown on Standard Drawing E 801-TCDV-05.

2. 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.

3. The minimum depth for wood or steel posts shall be 4 ft.

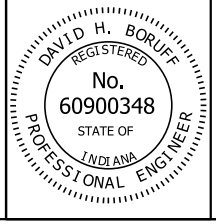
4. See Standard Drawing E 801-TCDV-08 for U-Channel Steel Post Splice Detail.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGNS
INDEX SHEET

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-01



/s/ David H. Boruff 02/25/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 02/25/16
CHIEF ENGINEER DATE

XW20-1
XW20-1-A

XW21-8a
XW21-8a-A

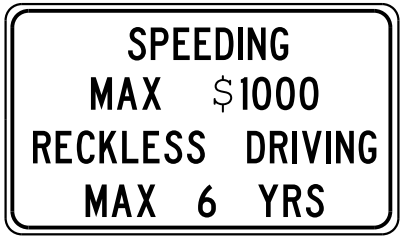
XW21-8b
XW21-8b-A

XW20-1a

XW2-6a
XW2-6a-A
XW2-6a-B

XW2-6b
XW2-6b-A
XW2-6b-B

XW103-1



XW2-6
XW2-6-A

XG20-2

XW3-4S

NOTES:

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

(2) Sign Shall be removed, covered or turned to face away from the roadway during non-working hours.

(3) 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.

(4) Shaded text Indicates message content that must be varied to reflect site conditions.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGNS

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-02

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/24/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/24/16
CHIEF HIGHWAY ENGINEER DATE

NOTES:

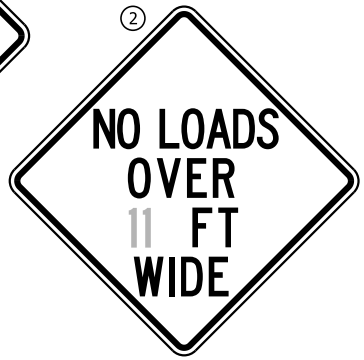
1. See Standard Drawing E 801-TCSN-01 for general notes.

(2) Shaded text indicates message content that must be varied to reflect site conditions.

XW105-1-A

XW20-YWR(A)

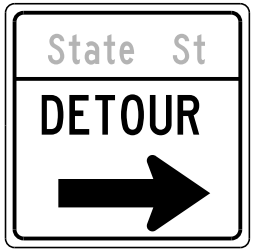
XW20-YWR(B)



XW20-YWL(C)

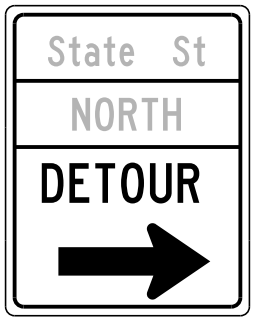
XW109-1

XW106-2-A



XM4-9d

XW106-1-A



XM4-9e

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGNS

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/24/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/24/16
CHIEF HIGHWAY ENGINEER DATE

SIGN NUMBER	IMUTCD CODE	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)	CORNER RADIUS	NO. OF POSTS	
			4 X 4 WOOD	STEEL		BACKGROUND	COPY									1	2
R2-1	R2-1	Speed Limit ___	*	A	24 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
R2-1-B	R2-1	Speed Limit ___	*	B	48 X 60	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
R3-2-A (R or L)	R3-2	(Movement Prohibition)	*	A	30 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
R3-2-C (R or L)	R3-2	(Movement Prohibition)	*	B	48 X 48	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
R4-1	R4-1	Do Not Pass	*	A	24 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
R4-1-B	R4-1	Do Not Pass	*	B	48 X 60	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
R5-1-A	R5-1	Do Not Enter	*	A	36 X 36	Red	White	See FHWA publication Standard Highway Signs for fabrication details									X
R5-1-B	R5-1	Do Not Enter	*	B	48 X 48	Red	White	See FHWA publication Standard Highway Signs for fabrication details									X
R6-1 (R or L)	R6-1	One Way (Inside White Arrow)	*	A	36 X 12	White	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
R6-2-A (R or L)	R6-2	One Way (Above White Arrow)	*	A	24 X 30	Black & White	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
R11-2	R11-2	Road Closed	*	B	48 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
R11-3	R11-3	Road Closed - Local Traffic Only	*	B	60 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
R11-4	R11-4	Road Closed to Thru Traffic	*	B	60 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
R12-1	R12-1	Weight Limit ___ Tons	*	A	24 X 30	White	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
R12-1-A	R12-1	Weight Limit ___ Tons	-	B	36 X 48	White	Black	See FHWA publication Standard Highway Signs for fabrication details									X
S4-4	S4-4	When Flashing Plaque	*	-	48 X 20	White	Black	See FHWA publication Standard Highway Signs for fabrication details								-	-
XW1-1-A (R or L)	W1-1	(Turn Symbol)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-1-B (R or L)	W1-1	(Turn Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-2-A (R or L)	W1-2	(Curve Symbol)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-2-B (R or L)	W1-2	(Curve Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-3-A (R or L)	W1-3	(Reverse Turn Symbol)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-3-B (R or L)	W1-3	(Reverse Turn Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-4-A (R or L)	W1-4	(Reverse Curve Symbol)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-4-B (R or L)	W1-4	(Reverse Curve Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-6	W1-6	(Single Headed Arrow)	*	B	48 X 24	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW1-6-A	W1-6	(Single Headed Arrow)	*	B	60 X 30	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW2-6	XW2-6	Worksite Added Penalty	*	B	60 X 36	Orange	Black	7/8	5/8	5 - Series C	5 - Series C	5 - Series C	5 - Series C		2 1/4		X
XW2-6-A	XW2-6	Worksite Added Penalty	*	B	78 X 42	Orange	Black	7/8	5/8	6 - Series D	6 - Series D	6 - Series D	6 - Series D		2 1/4		X
XW2-6a	XW2-6a	Speeding Max $1000	*	A	30 X 30	Orange	Black	3/4	1/2	4 - Series C	4 - Series C				1 7/8	X	
XW2-6a-A	XW2-6a	Speeding Max $1000	*	A	36 X 36	Orange	Black	7/8	5/8	5 - Series C	5 - Series C				2 1/4		X
XW2-6a-B	XW2-6a	Speeding Max $1000	*	B	48 X 48	Orange	Black	1 1/4	3/4	6 - Series D	6 - Series D				3		X
XW2-6b	XW2-6b	Reckless Driving Max 6 Yrs	*	A	30 X 30	Orange	Black	3/4	1/2	4 - Series C	4 - Series C				1 7/8	X	
XW2-6b-A	XW2-6b	Reckless Driving Max 6 Yrs	*	A	36 X 36	Orange	Black	7/8	5/8	5 - Series C	5 - Series C				2 1/4		X
XW2-6b-B	XW2-6b	Reckless Driving Max 6 Yrs	*	B	48 X 48	Orange	Black	1 1/4	3/4	6 - Series D	6 - Series D				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-01 for additional general notes.

3. All dimensions are in inches.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN DESIGN DETAILS

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-04

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/24/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/24/16
CHIEF ENGINEER DATE

SIGN NUMBER	IMUTCD CODE	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)	CORNER RADIUS	NO. OF POSTS	
			4 X 4 WOOD	STEEL		BACKGROUND	COPY									1	2
XW3-4S	-	Overhead Sign Installation	*	B	60 x 24	Orange	Black	1/2	3/8	6 - Series C	6 - Series C				1 1/2		X
XW3-5-A	W3-5	(Reduced Speed Limit Ahead)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW3-5-B	W3-5	(Reduced Speed Limit Ahead)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW3-5a-A	W3-5	(Reduced Speed Limit Ahead)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW3-5a-B	W3-5	(Reduced Speed Limit Ahead)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW4-2 (R or L)	W4-2	(Lane Ends Merge ____ Symbol)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW4-2-A (R or L)	W4-2	(Lane Ends Merge ____ Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW6-2a-A	W6-2	(Divided Highway Ends Symbol)	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
WX6-2a-B	W6-2	(Divided Highway Ends Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW6-3-B	W6-3	(Two Way Traffic Symbol)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-1-A	W8-1	Bump	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-1-B	W8-1	Bump	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-2-A	W8-2	Dip	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-2-B	W8-2	Dip	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-3-A	W8-3	Pavement Ends	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-4-A	W8-4	Soft Shoulder	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-4-B	W8-4	Soft Shoulder	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-6-A	W8-6	Truck Crossing	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW8-6-B	W8-6	Truck Crossing	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW9-1-A (R or L)	W9-1	____ Lane Ends	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW9-1-B (R or L)	W9-1	____ Lane Ends	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW9-2-B (R or L)	W9-2	Lane Ends Merge ____	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW12-1-C	W12-1	Double Arrow	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW13-1-A	W13-1	Advisory Speed Plaque	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details								-	-
XW20-1	W20-1	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	W20-1	Road Construction Ahead	*	B	60 X 60	Orange	Black	1 1/2	1	8 - Series C	8 - Series C	8 - Series C	Construction	25	3		X
XW20-1a	W20-1	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	W20-2	Detour Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW20-3	W20-3	Road Closed Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW20-4	W20-4	One Lane Road Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW20-5 (R, C, or	W20-5	_____ Lane Closed Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW20-7-A	W20-7	Flagger Symbol	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW20-YWR(A)	-	Wide Load Restriction ___ Miles	*	B	48 X 48	Orange	Black	1 1/4	3/4	6 - Series D	6 - Series D	6 - Series D			3		X
XW20-YWR(B)	-	Wide Load Over __ ft Must Exit	*	B	48 X 48	Orange	Black	1 1/4	3/4	6 - Series C	6 - Series C	6 - Series C	6 - Series C		3		X
XW20-YWR(C)	-	No Loads Over ___ ft Wide	*	B	48 X 48	Orange	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) 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-01 for additional general notes.

3. All dimensions are in inches.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN DESIGN DETAILS

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-05

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/24/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/24/16
CHIEF ENGINEER DATE

SIGN NUMBER	IMUTCD CODE	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)	CORNER RADIUS	NO. OF POSTS	
			4 X 4 WOOD	STEEL		BACKGROUND	COPY									1	2
XW21-1-A	W21-1	Workers Symbol	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-2	W21-2	Fresh Oil	*	A	30 X 30	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
XW21-2-A	W21-2	Fresh Oil	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-3-A	W21-3	Road Machinery Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
W20-1	W20-1	Road Work Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-5-A	W21-5	Shoulder Work	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-6-A	W21-6	Survey Crew	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-7	W21-7	Utility Work Ahead	*	A	36 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-7-A	W21-7	Utility Work Ahead	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XW21-8a	W21-8	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
XW21-8a-A	W21-8	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
XW21-8b	W21-8	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
XW21-8b-A	W21-8	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
XG20-1	G20-1	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	G20-2	End Construction	*	B	60 X 24	Orange	Black	1/2	3/8	6 - Series C	6 - Series C				1 1/2		X
G20-2	G20-2	End Road Work	*	B	48 X 18	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XG20-4	G20-4	Pilot Car Follow Me	-	-	36 X 18	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details								-	-
XG20-5	-	(Route Number or Lane Closed On or After ____)	*	B	60 X 36	Orange	Black	3/4	1/2	6 - Series C	6 - Series C	6 - Series C			2 1/4		X
XG20-5P	XG20-5P	Worksite Plaque	-	-	48 X 16	Orange	Black	1/2	3/8	8 - Series C					1 1/2	-	-
XW20-6	-	Lane Restrictions On or After _____	*	B	60 X 36	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 _____	*	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)	M4-9	Detour (Above Black Arrow)	*	A	30 X 24	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details								X	
XM4-9-B (R or L)	M4-9	Detour (Above Black Arrow)	*	B	48 X 36	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									X
XM4-Y9d	-	_____ St / Detour Arrow	*	B	L X 36	Orange	Black	1/2	3/8	4 - Series C	6 - Series C		1	30	1 1/2	X (L ≤ 42)	X (L > 42)
XM4-Y9e	-	_____ St / Direction / Detour Arrow	*	B	L X 48	Orange	Black	1/2	3/8	4 - Series C	6 -Series C	6 -Series C	1	30	1 1/2	X (L ≤ 36)	X (L > 36)
XM4-10 (R or L)	M4-10	Detour (Inside Orange Arrow)	*	B	48 X 18	Black & Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									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
XW109-1	-	Exit (Above Black Arrow)	*	B	48 X 48	Orange	Black	See FHWA publication Standard Highway Signs for fabrication details									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-01 for additional general notes.

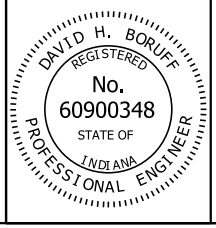
3. All dimensions are in inches.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGN DESIGN DETAILS

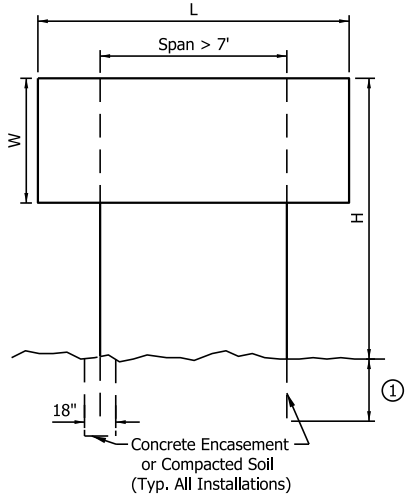
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-06

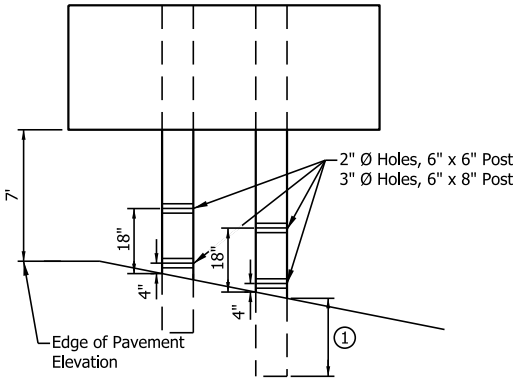


/s/ David H. Boruff 03/24/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/24/16
CHIEF ENGINEER DATE

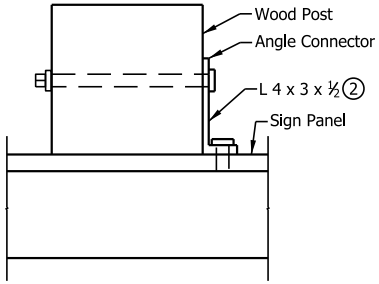


2 - POST INSTALLATION

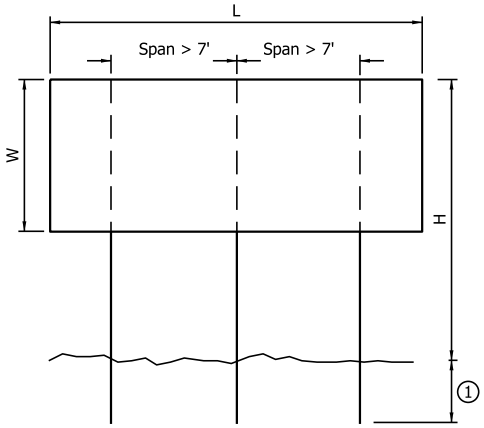


NOTES:

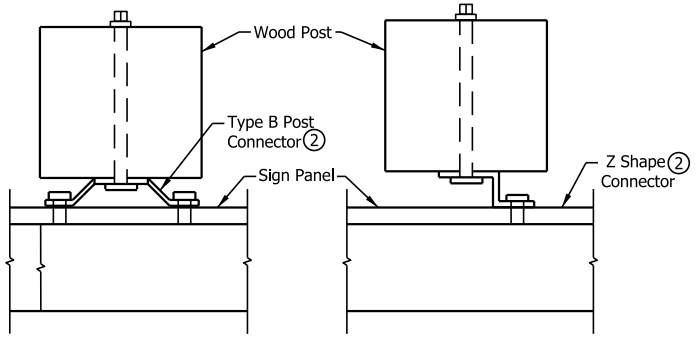
1. The dimension is H/10 + 3 ft or a minimum of 5 ft.
2. The length of the Type B Post Connector or Z Shape Connector is equal to the length of W.
3. See Standard Drawing E 801-TCSN-08 for post size and number of posts required.



ANGLE SHAPE CONNECTION DETAIL



3 - POST INSTALLATION



TYPE B POST CONNECTION

Z SHAPE CONNECTION DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY PANEL SIGN
BREAKAWAY POST INSTALLATION

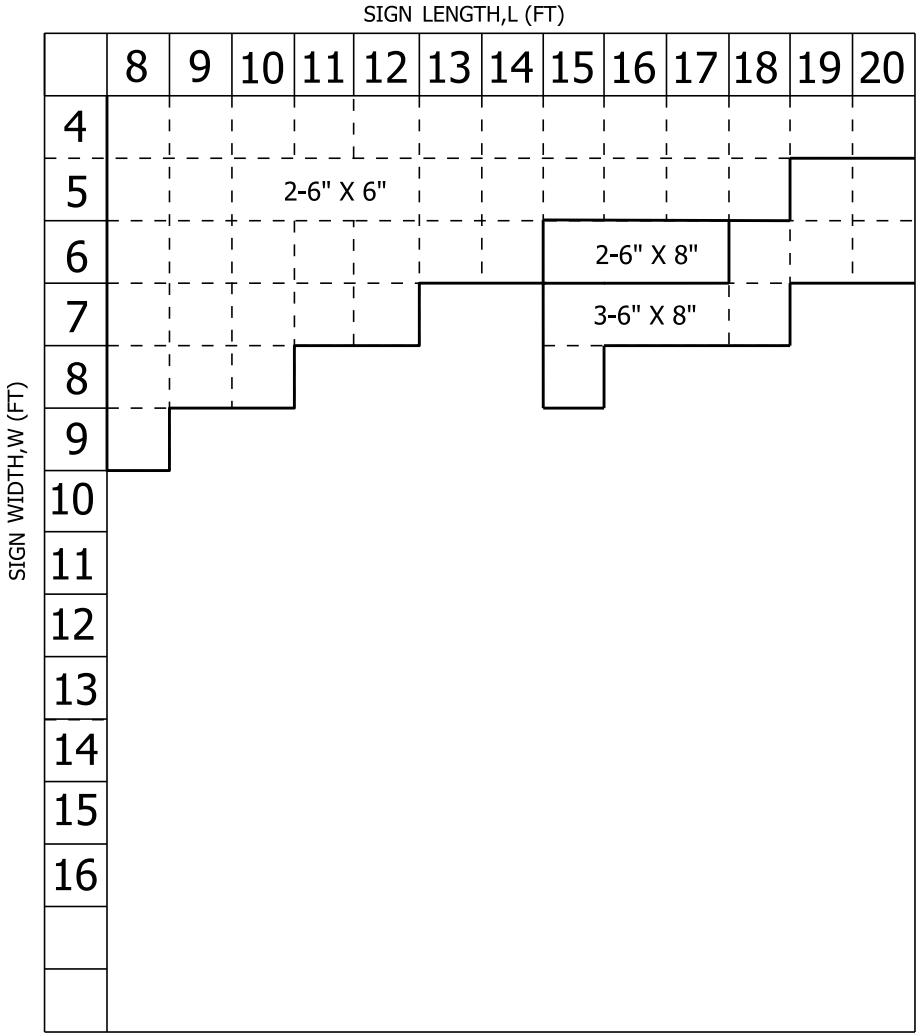
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-07

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/25/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 02/25/16
CHIEF HIGHWAY ENGINEER DATE



NOTES:

1. 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

SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-08

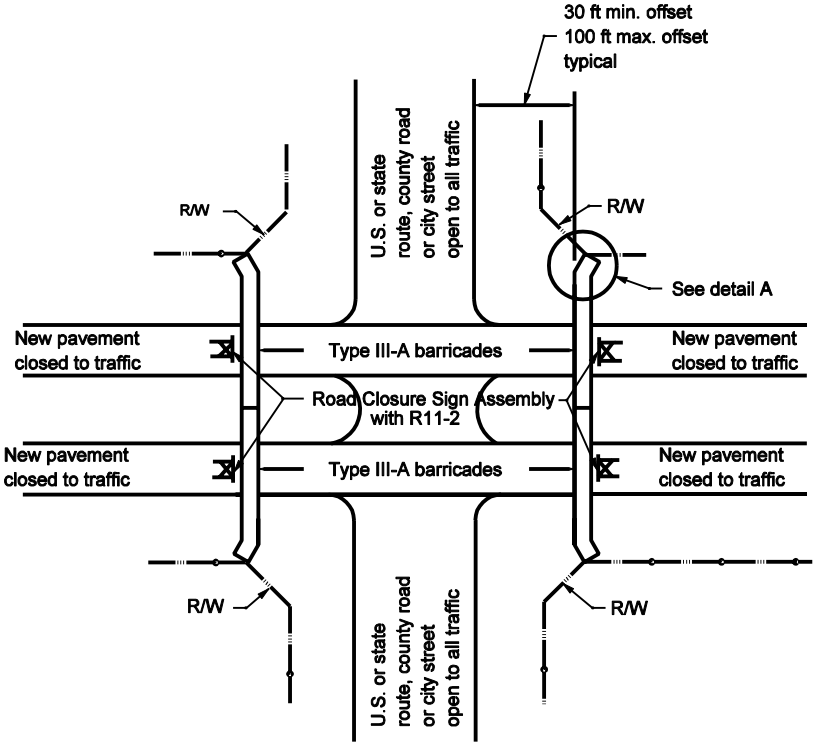
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/25/16
DESIGN STANDARDS ENGINEER DATE

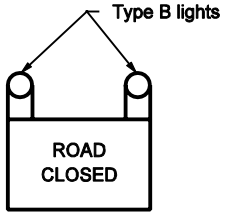
/s/ Mark A. Miller 02/25/16
CHIEF ENGINEER DATE

GENERAL NOTES

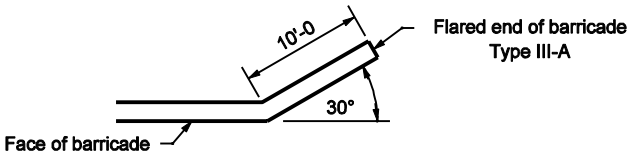
1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

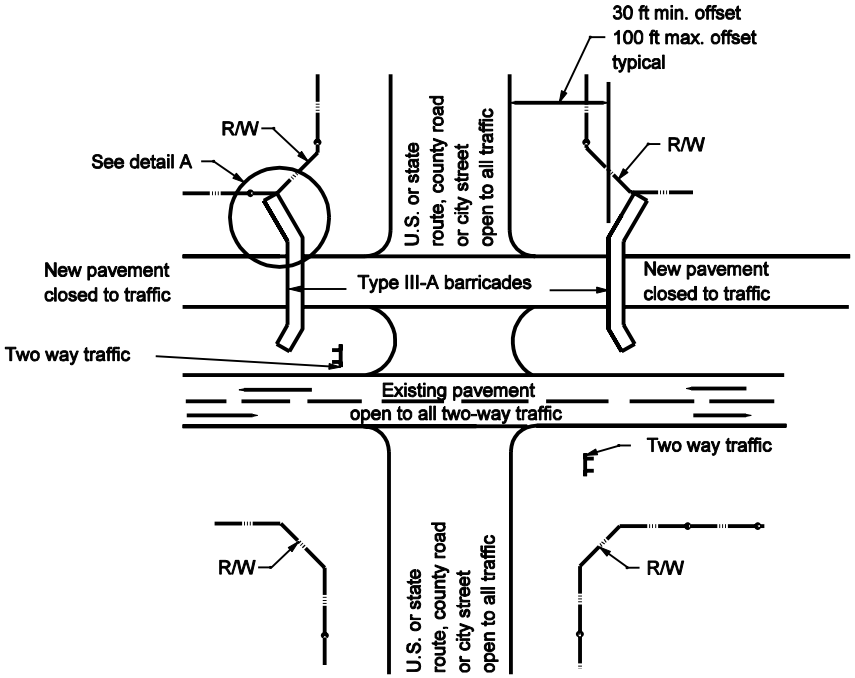
DESIGN STANDARDS ENGINEER

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

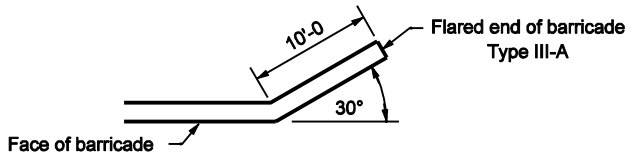
/s/ Richard K. Smutzer 9-03-02
CHIEF HIGHWAY ENGINEER DATE

GENERAL NOTES

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



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



DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CLOSURES

SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCTC-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

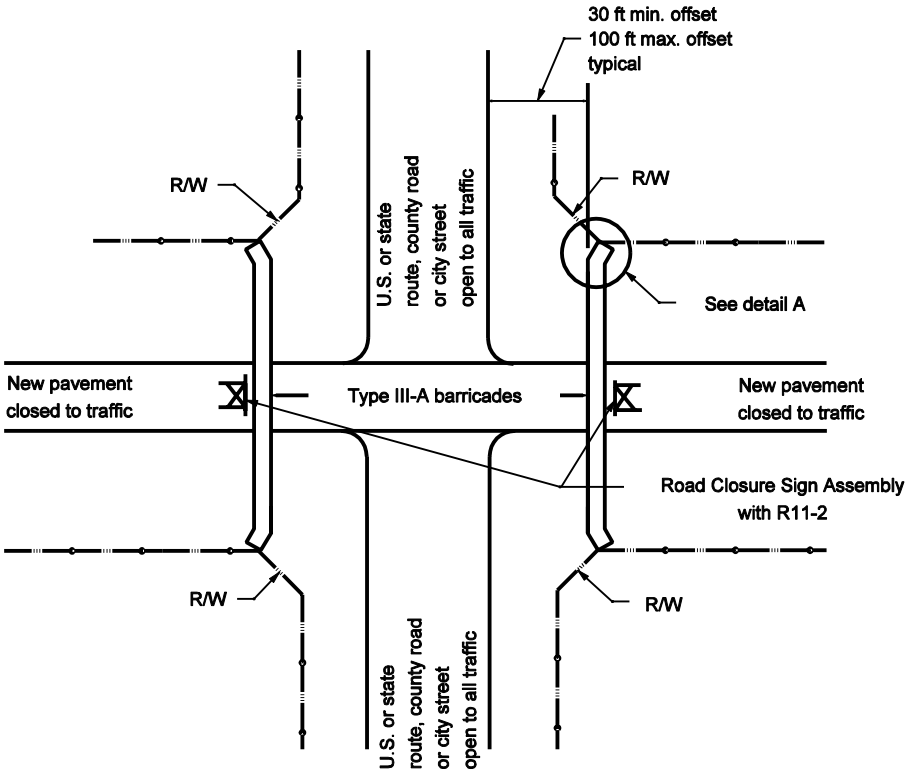
DESIGN STANDARDS ENGINEER

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

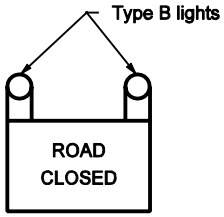
/s/ Richard K. Smutzer 9-03-02
CHIEF HIGHWAY ENGINEER DATE

GENERAL NOTES

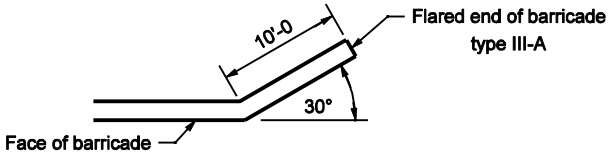
1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

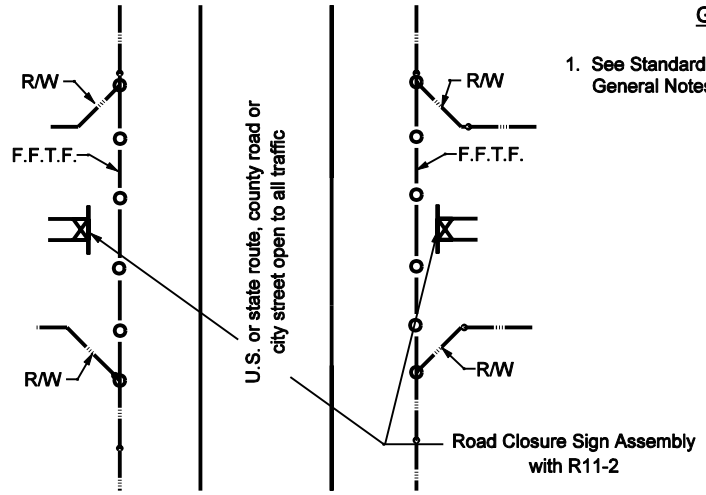
DESIGN STANDARDS ENGINEER

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

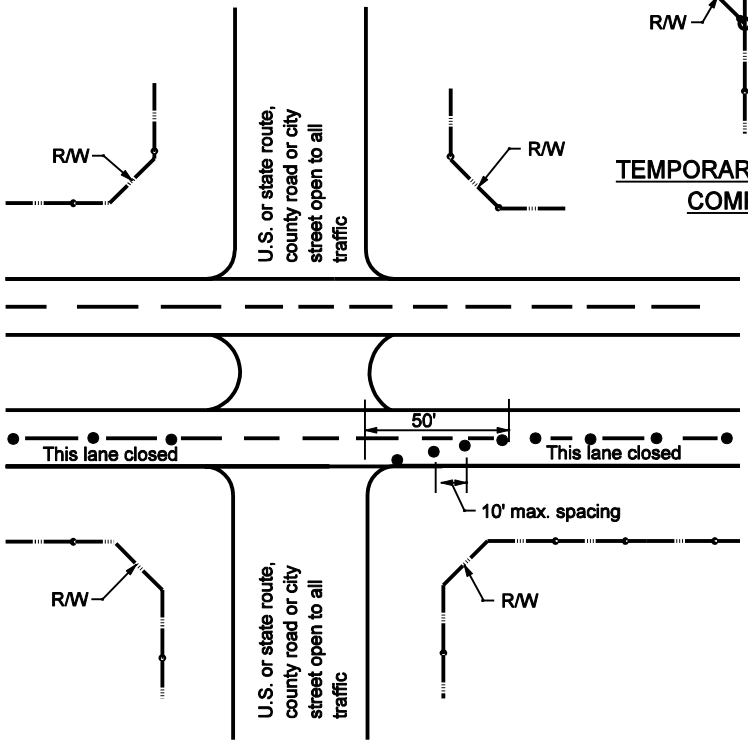
/s/ Richard K. Smutzer 9-03-02
CHIEF HIGHWAY ENGINEER DATE

GENERAL NOTES

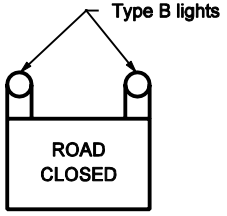
1. See Standard Drawing E 801-TCLG-01 for General Notes and Legend.



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

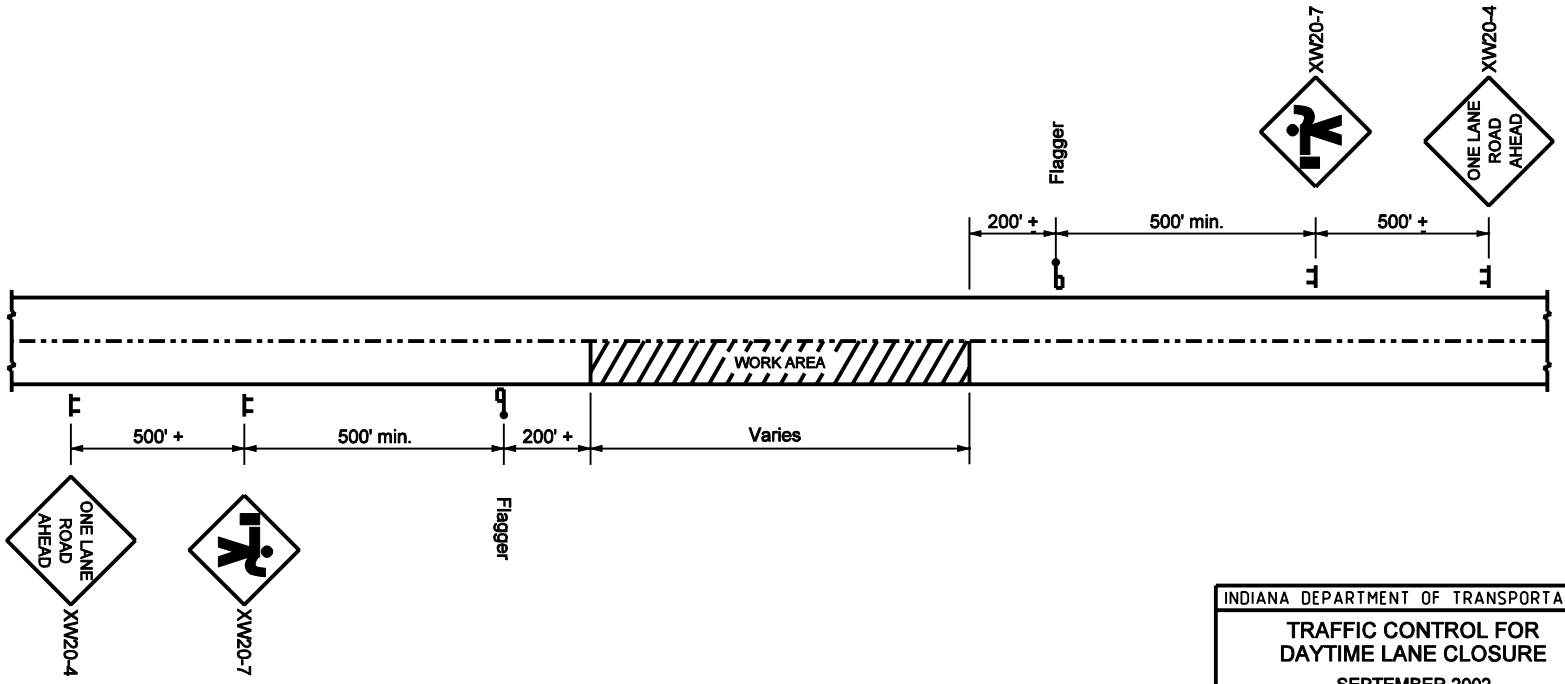
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

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

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

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

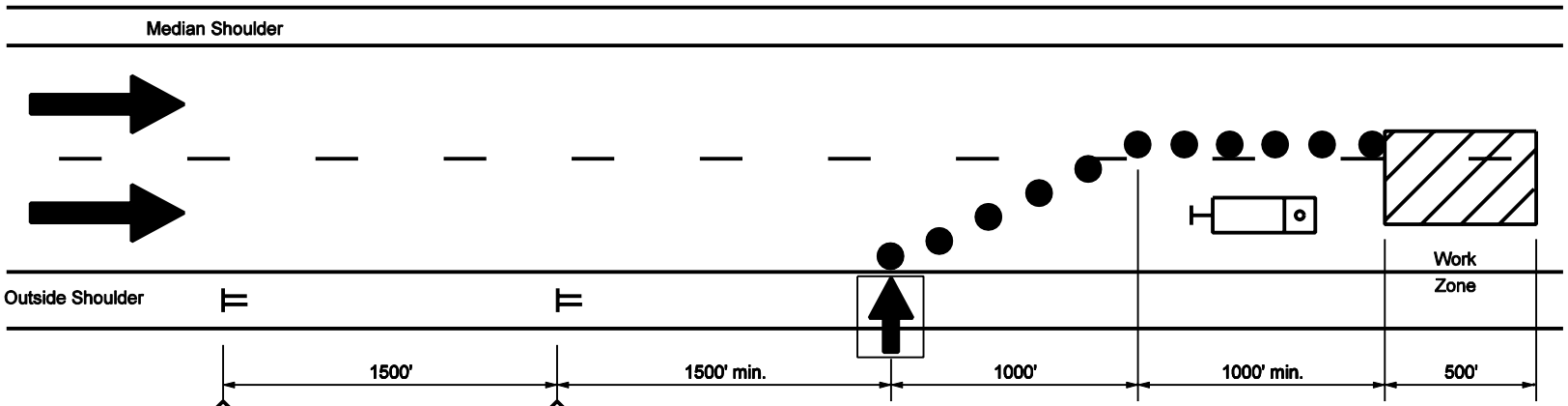
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

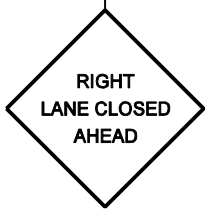
DESIGN STANDARDS ENGINEER

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

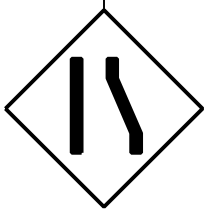
/s/ Richard K. Smutzer 9-03-02
CHIEF HIGHWAY ENGINEER DATE

MULTI-LANE DIVIDED HIGHWAY





XW20-5 (R)
(R or L)



XW4-2 (R)
(R or L)

GENERAL NOTES

1. Distances shown are approximate and may be adjusted as directed.
2. Strobe lights will be required on all vehicles.
3.

XW103-1
Optional sign to be placed when directed.
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-01 for channelizing devices.
6. See Standard Drawing E 801-TCDV-05 for sign mounting.

LEGEND

Flashing Arrow Sign

Truck of 24,00 lb gross vehicular weight with truck mounted attenuator

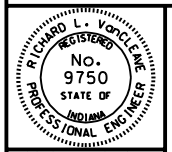
Channelizing device

INDIANA DEPARTMENT OF TRANSPORTATION

MAINTENCE OF TRAFFIC FOR RPM CASTING INSTALLATION

SEPTEMBER 2002

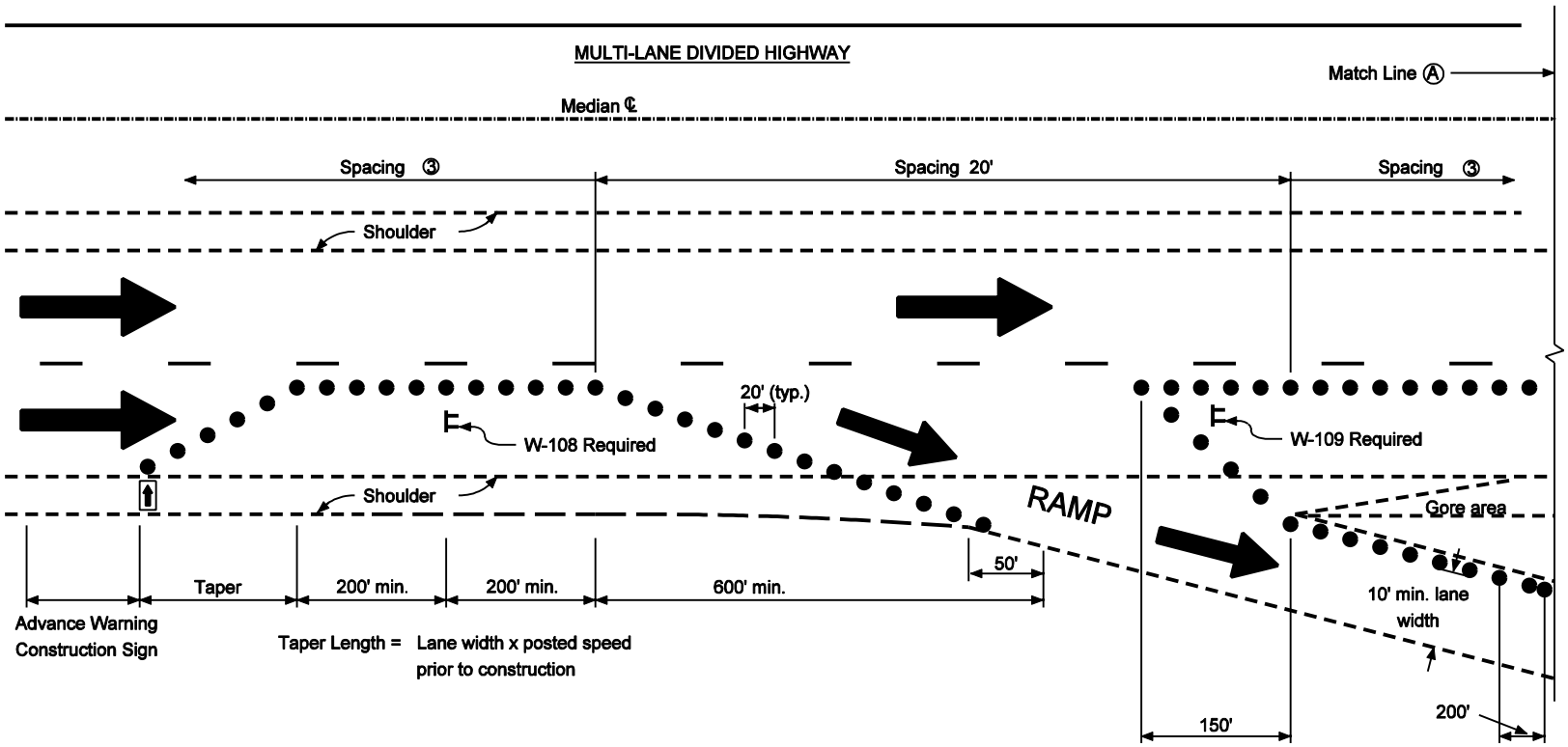
STANDARD DRAWING NO. E 801-TCTC-06



DESIGN STANDARDS ENGINEER

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

/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 Ⓐ.

INDIANA DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC FOR RPM CASTING REPLACEMENT

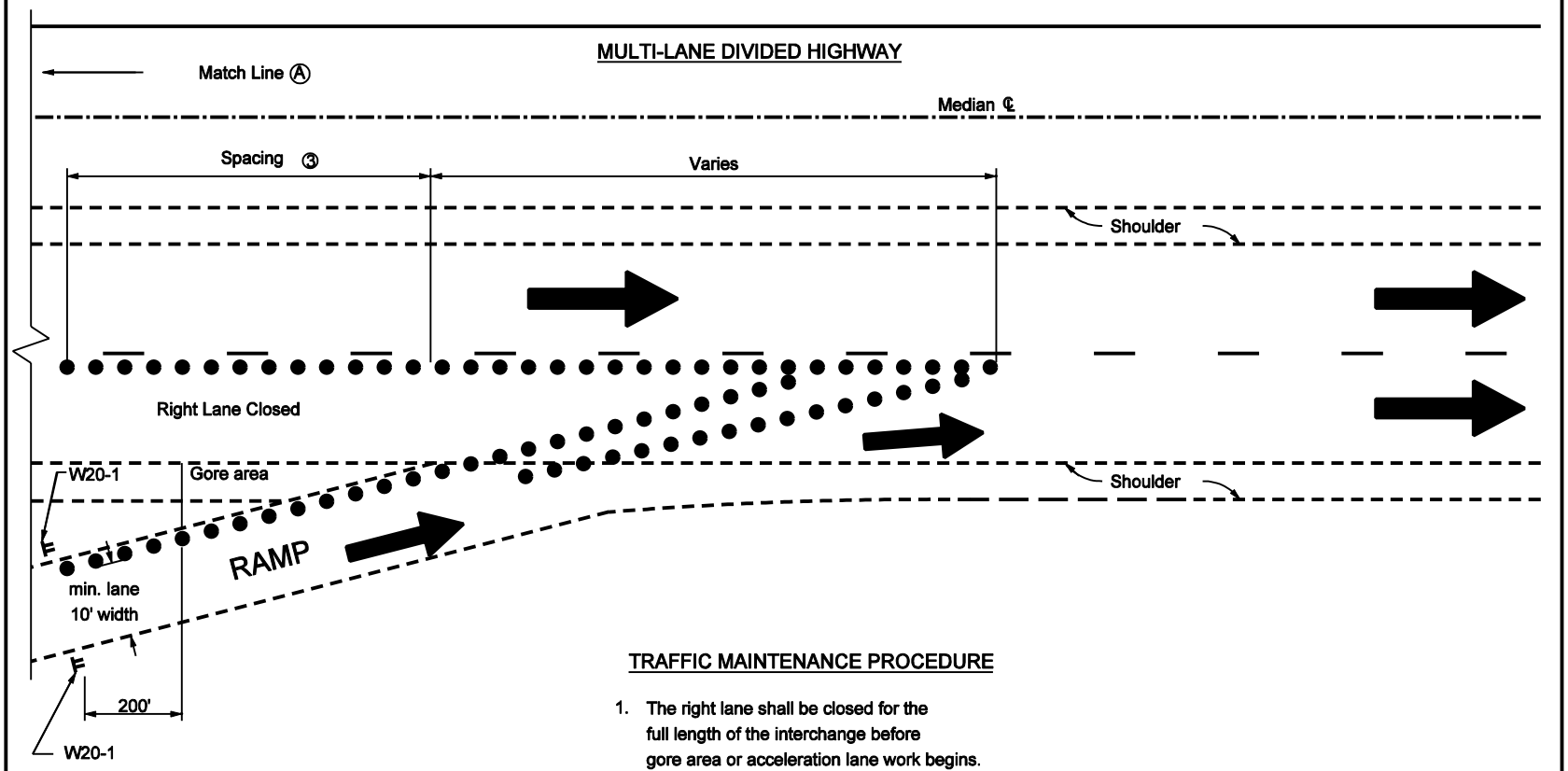
SEPTEMBER 2002

STANDARD DRAWING NO. E 801-TCTC-07

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

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

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



TRAFFIC MAINTENANCE PROCEDURE

1. The right lane shall be closed for the full length of the interchange before gore area or acceleration lane work begins. The right lane closure shall not to extend through two adjacent interchanges.
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-07 for Match Line Ⓐ .

LEGEND

● Cones for daytime operations
Drums for nighttime operations

INDIANA DEPARTMENT OF TRANSPORTATION

MAINTAINCE OF TRAFFIC FOR RPM CASTING REPLACEMENT

SEPTEMBER 2002

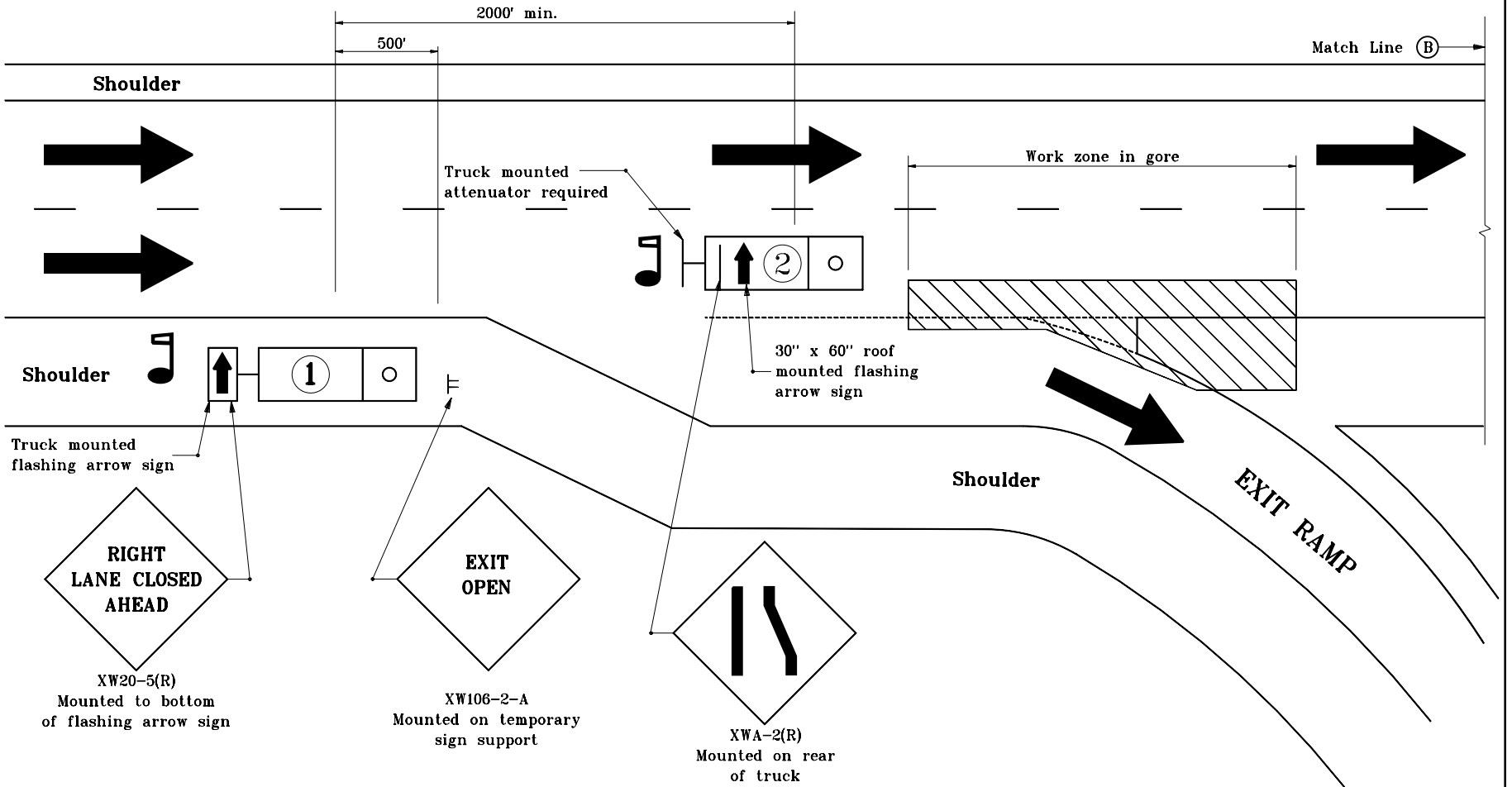
STANDARD DRAWING NO. E 801-TCTC-08

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

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

/s/ Richard K. Smulzer 9-03-02
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 GVW or greater

INDIANA DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT

MAY 2000

STANDARD DRAWING NO. **E 801–TCTC–09**

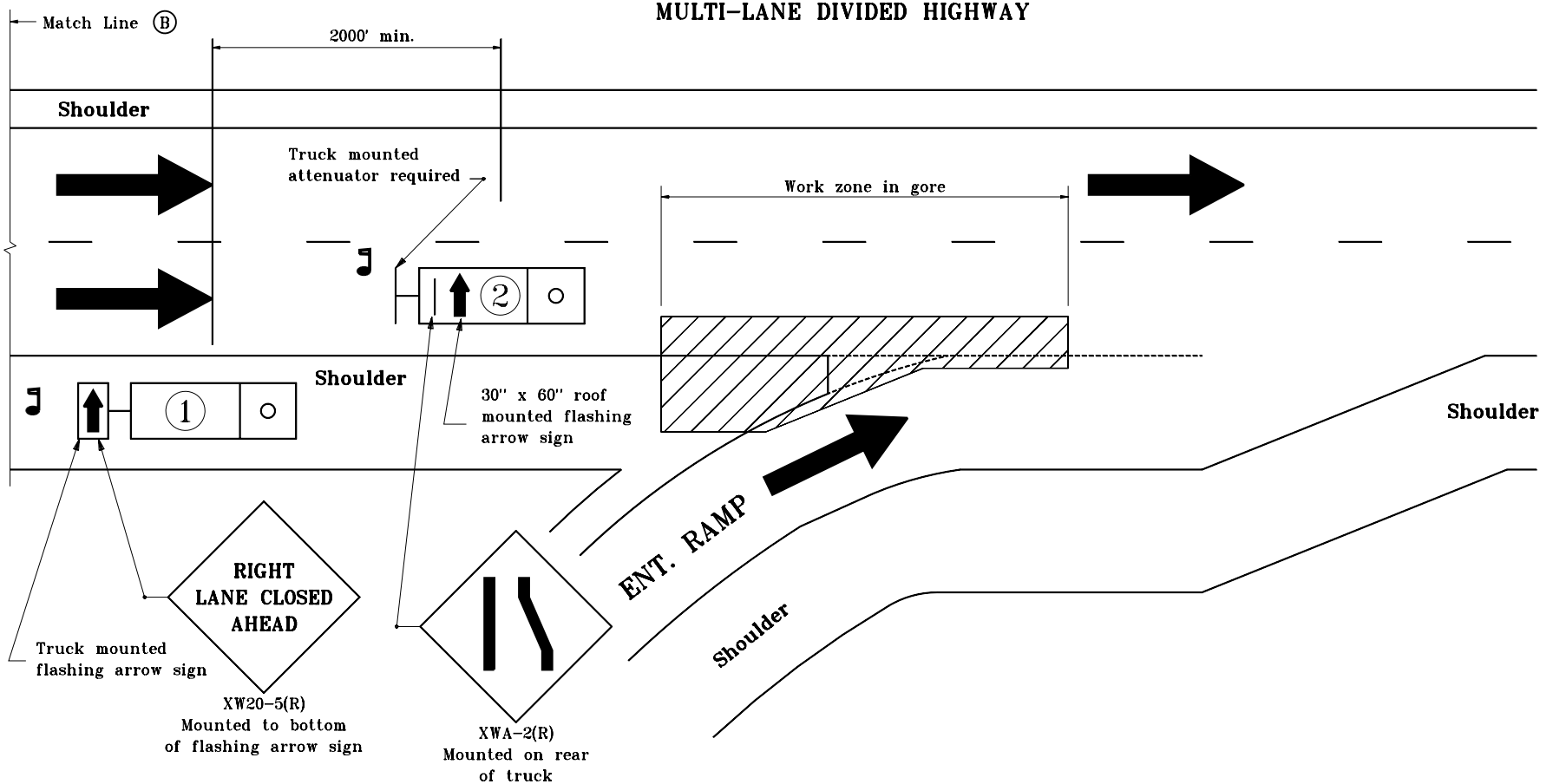
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

/s/ Firooz Zandi 5–01–00
CHIEF HIGHWAY ENGINEER — DATE

GENERAL NOTES:

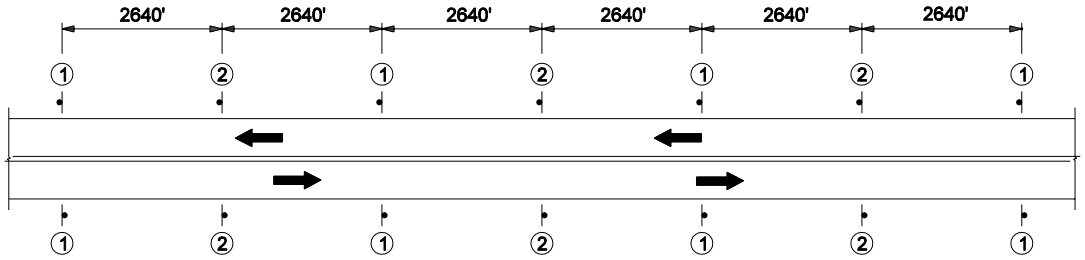
1. Signing pattern typical both sides of roadway, for each direction of travel.
2. See Standard Drawing E 801-TCDV-01 for tubular marker details.

LEGEND

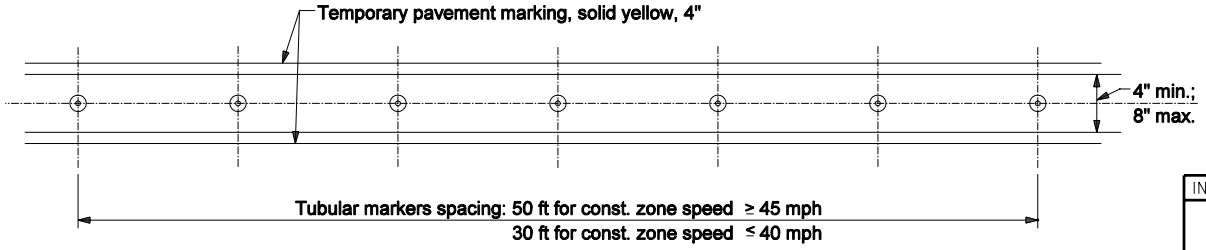
① R4-1-B "Do Not Pass"

② XW6-3 two-way traffic symbol

◯ Tubular markers



CONSTRUCTION SIGNS LOCATION DETAIL



TUBULAR MARKERS ALONG CENTERLINE OF PAVEMENT LAYOUT

TWO LANE, TWO WAY OPPOSING TRAFFIC

INDIANA DEPARTMENT OF TRANSPORTATION

TUBULAR MARKER DELINEATION

MARCH 2006

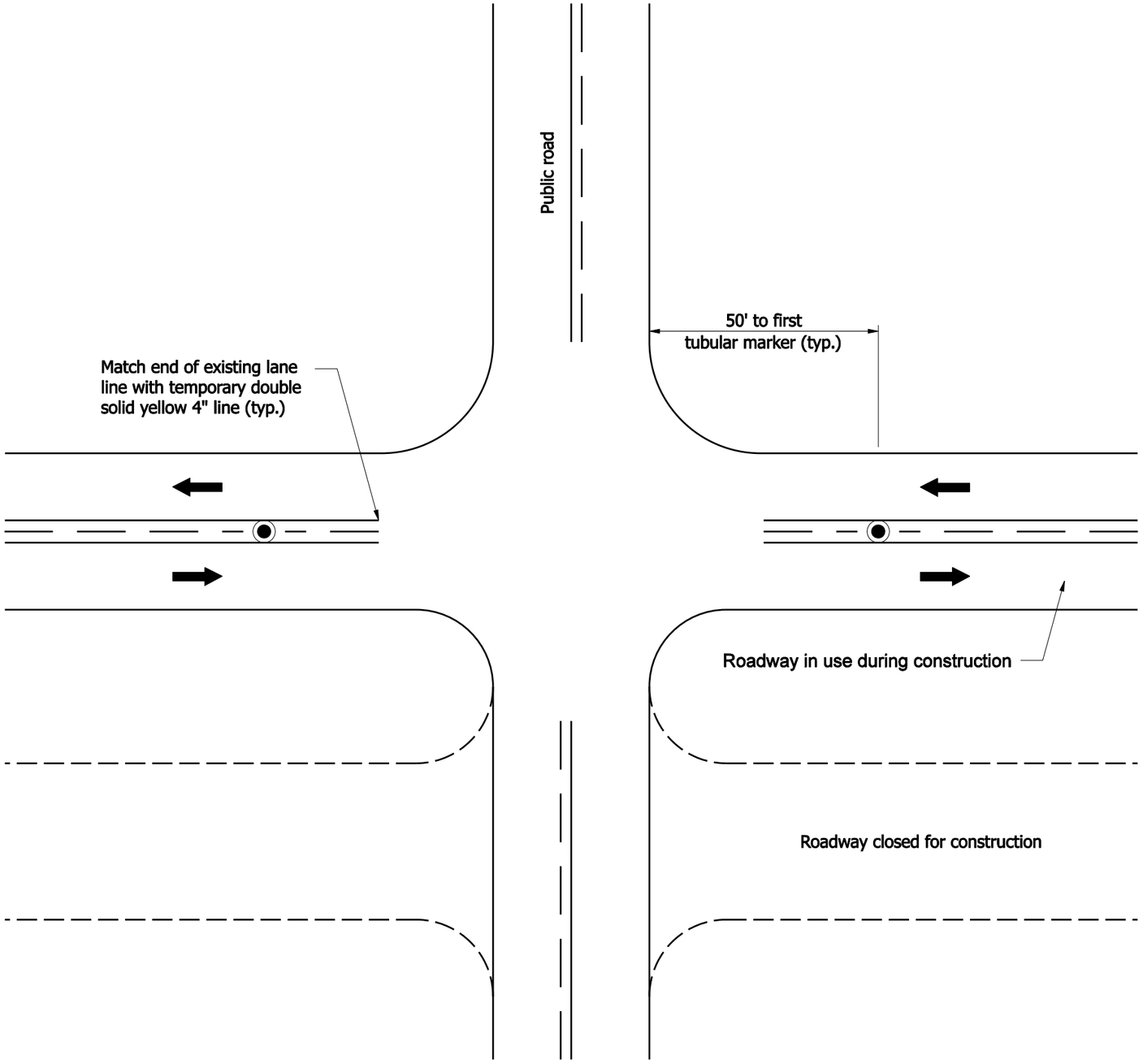
STANDARD DRAWING NO. E 801-TCTC-11

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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



GENERAL NOTES:

1. See Standard Drawing E 801-TCDV-01 for tubular marker details.

LEGEND

Tubular markers

INDIANA DEPARTMENT OF TRANSPORTATION

TUBULAR MARKER DELINEATION AT INTERSECTION

SEPTEMBER 2007

STANDARD DRAWING NO. E 801-TCTC-12

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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 :

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

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

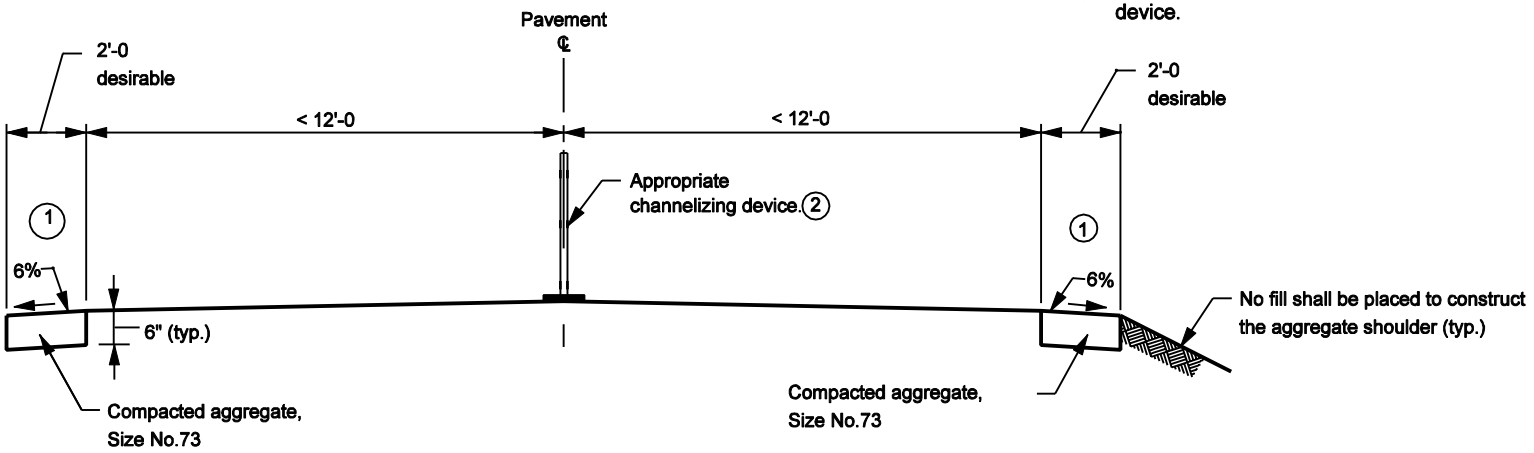
4% ↘ for horizontal curve radius R ≥ 3820 ft

2% ↘ for 2870 ft ≤ R ≤ 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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

INDEX	
SHEET NO.	SUBJECT
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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
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21	Spread Foundation at 45" Concrete Barrier Wall
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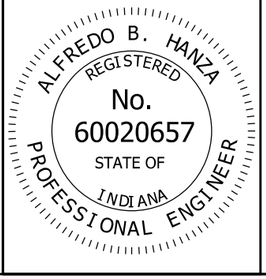
23	Spread Foundations Quantities

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
DRAWING INDEX

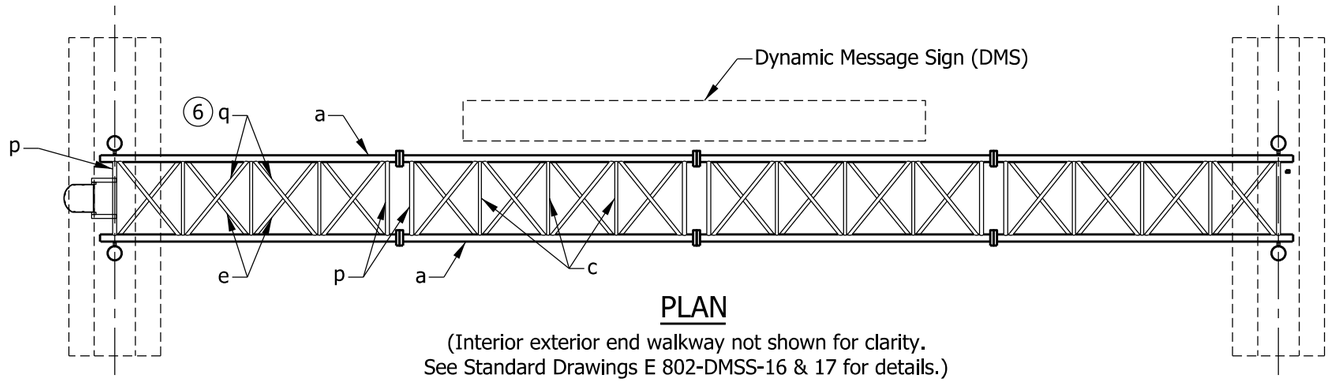
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-01



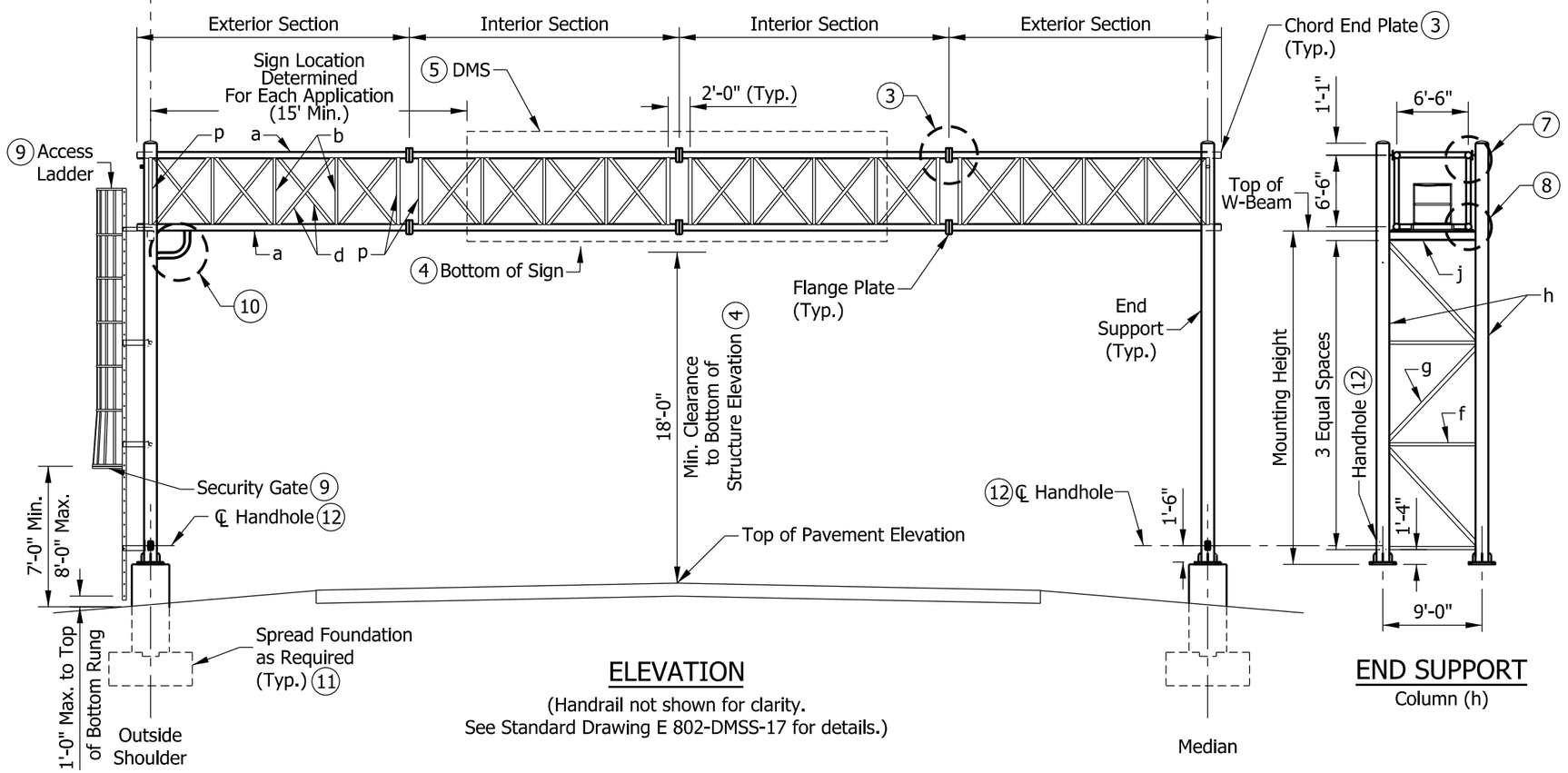
/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

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



PLAN

(Interior exterior end walkway not shown for clarity.
See Standard Drawings E 802-DMSS-16 & 17 for details.)



ELEVATION

(Handrail not shown for clarity.
See Standard Drawing E 802-DMSS-17 for details.)

END SUPPORT

Column (h)

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)
- a - Chords
- b - Verticals
- c - Horizontals
- d - Vertical Diagonals
- e - Horizontal Diagonals
- p - End Verticals and Horizontals
- q - Counter Diagonals (6)

END SUPPORT MEMBERS (STEEL)
- f - Horizontals
- g - Diagonals
- h - Columns
- j - W-Beam

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE PLAN & ELEVATION

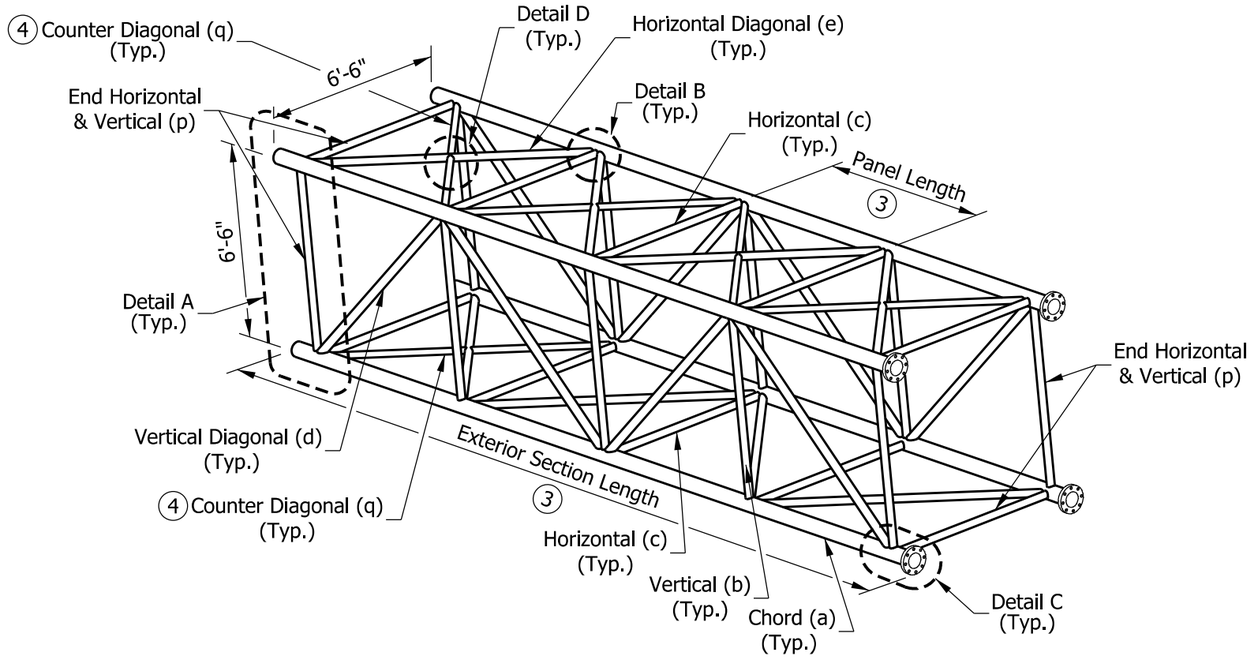
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-02

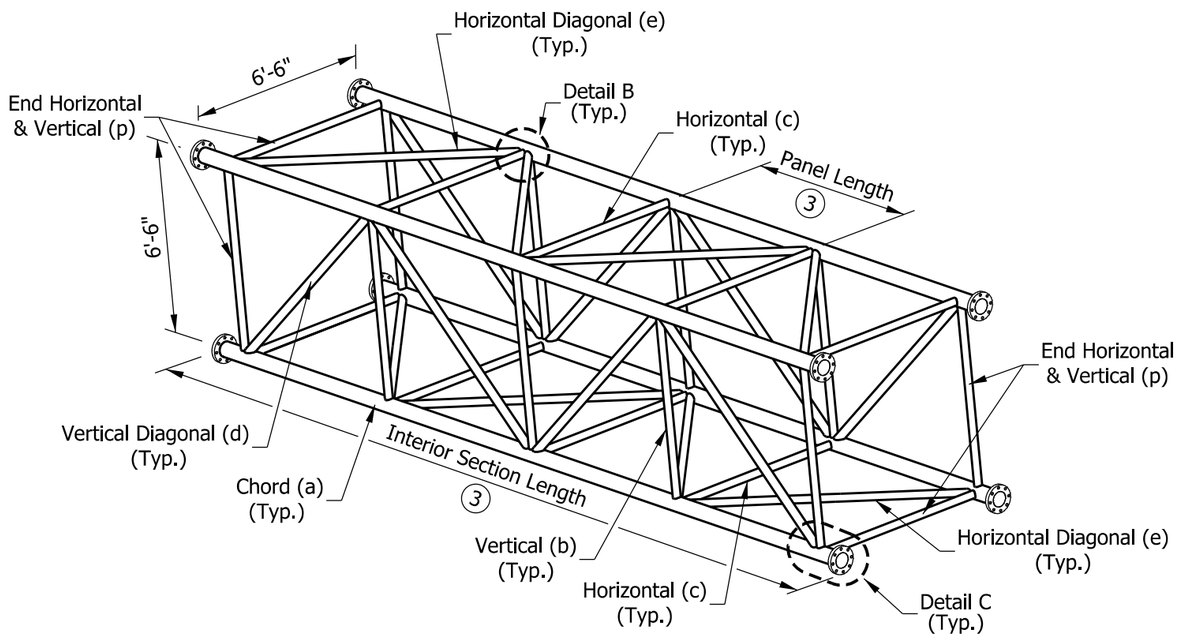
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



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

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

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:

1. 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.
2. 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".
3. A single interior section in a truss shall have an even number of panels to maintain the pattern of the vertical diagonals.
4. Use minimum number of sections for each truss, keeping the maximum section length at 35'-6".
5. 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. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

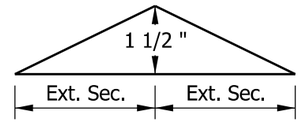
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE

DIMENSIONS FOR DYNAMIC MESSAGE SIGN STRUCTURES (82' THRU 130')

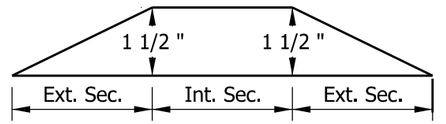
SPAN	EXTERIOR SECTIONS					INTERIOR SECTIONS			
SPAN-TRUSS LENGTH, (FT)	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	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:

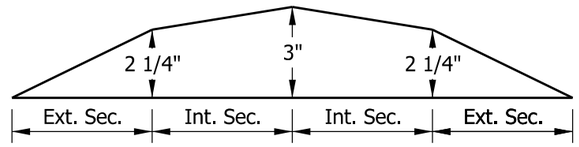
1. Camber diagrams to build truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
2. See Standard Drawing E 805-DMSS-04 for additional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



CAMBER DIAGRAM (2-Section Truss)



CAMBER DIAGRAM (3-Section Truss)

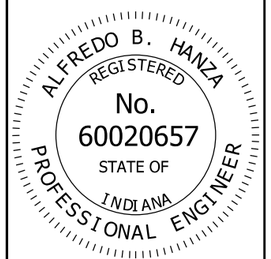


CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

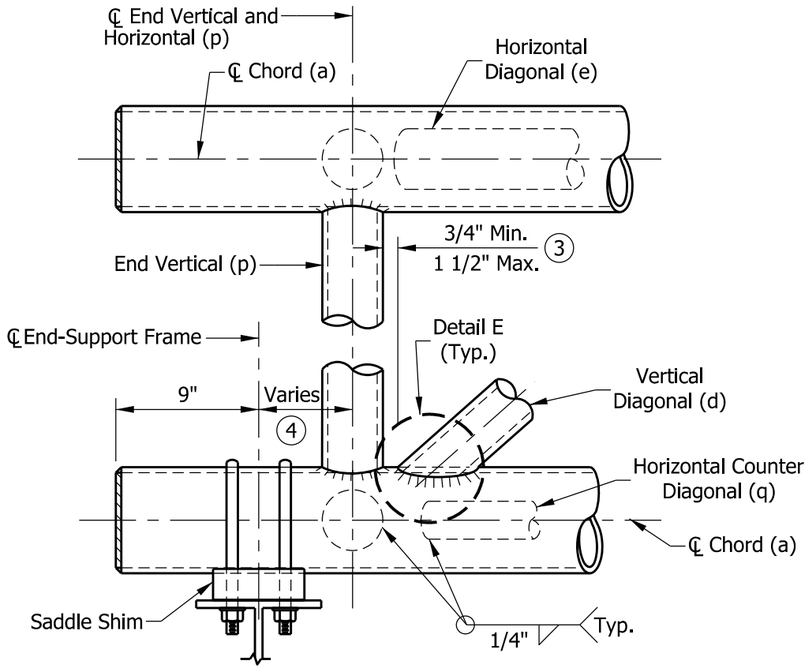
DYNAMIC MESSAGE SIGN STRUCTURE
TABLE OF DIMENSIONS
SPANS 82' THRU 130' & CAMBER
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-05

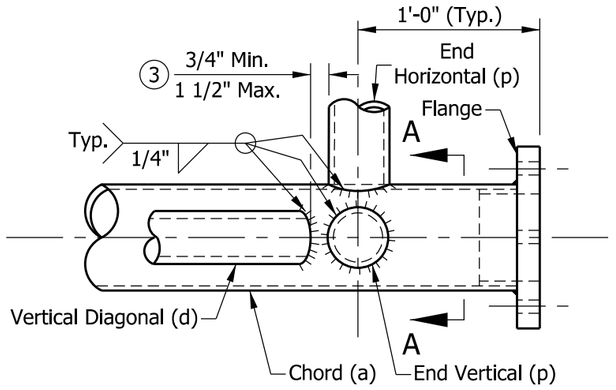


/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

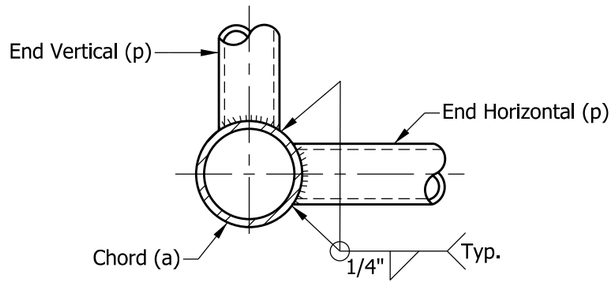
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



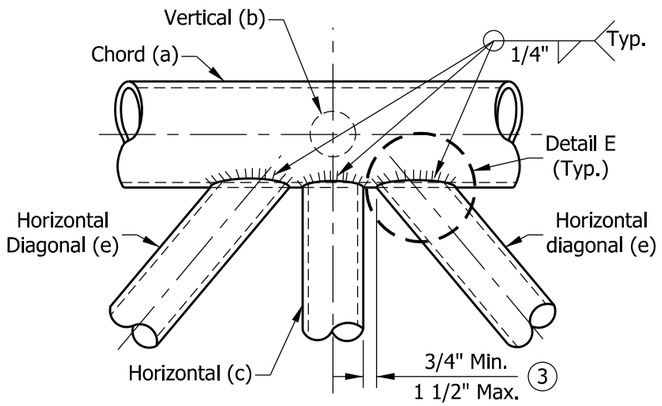
DETAIL A
EXTERIOR SECTION AT END-SUPPORT



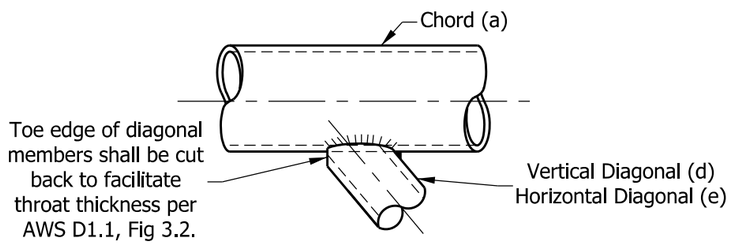
DETAIL C
CHORD AT FLANGE CONNECTION
PLAN VIEW



SECTION A-A
TYPICAL JOINT DETAILS



DETAIL B
TYPICAL PANEL CONNECTION
PLAN VIEW



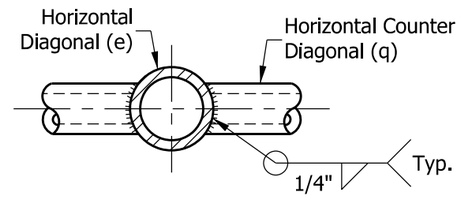
DETAIL E

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

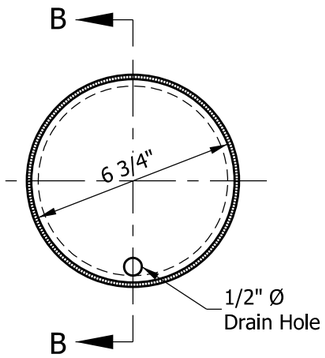
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-06

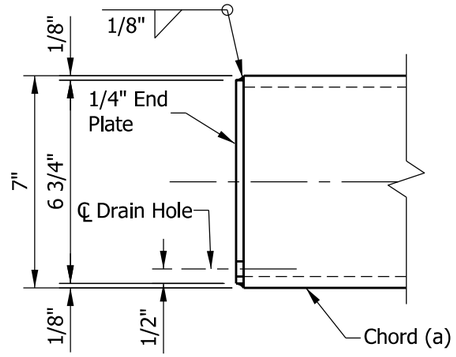
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



END VIEW

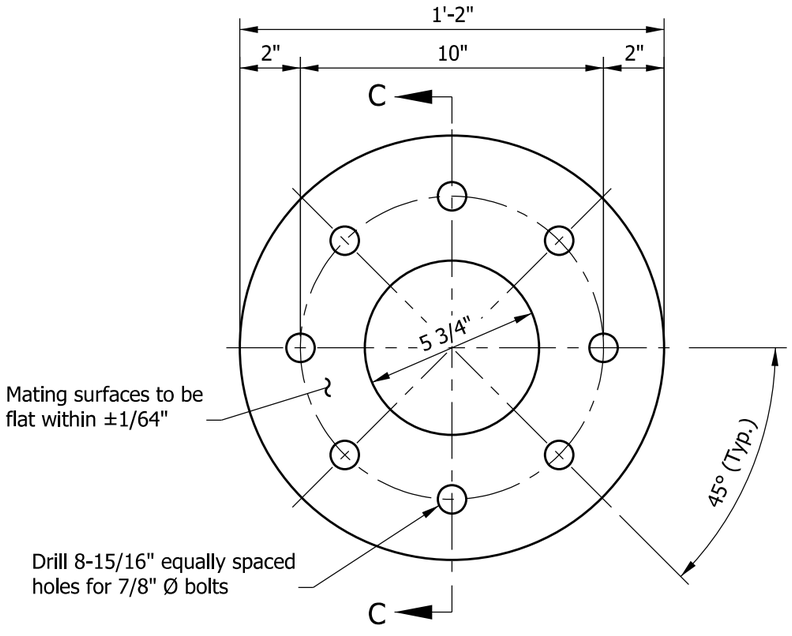


SECTION B-B

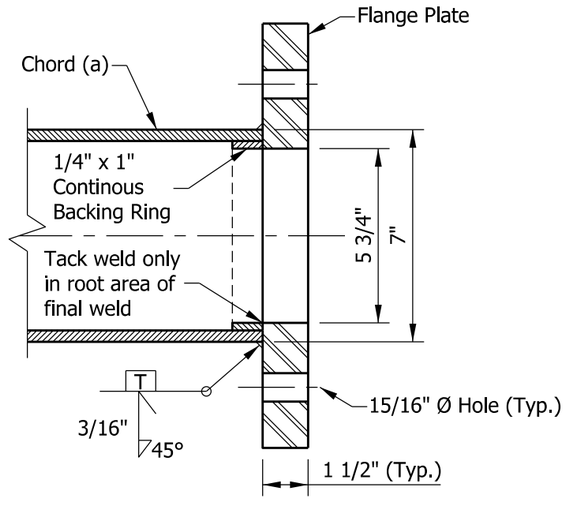
CHORD END PLATE DETAILS

NOTE:

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



END VIEW



SECTION C-C

FLANGE PLATE DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
FLANGE & CHORD END PLATE DETAILS

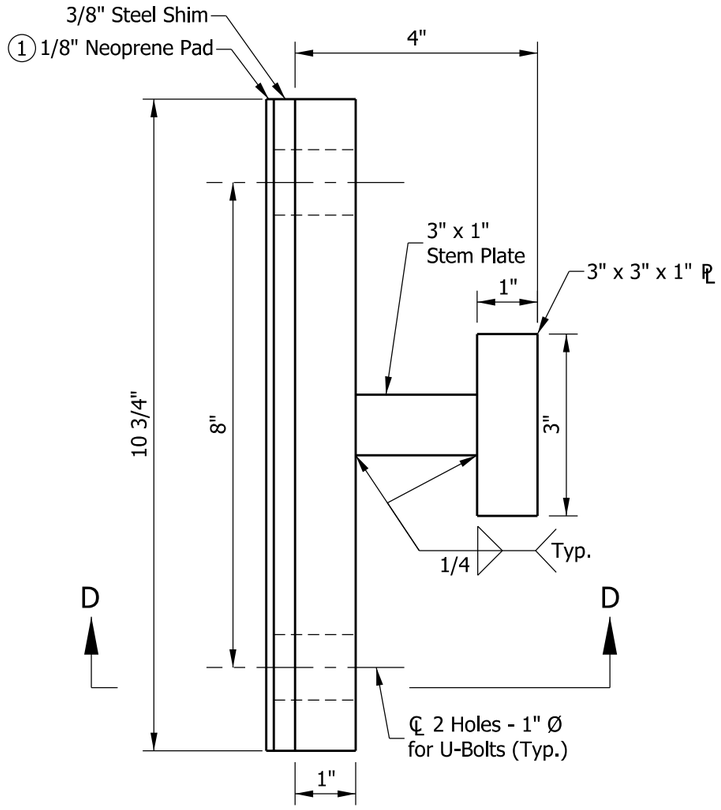
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-07

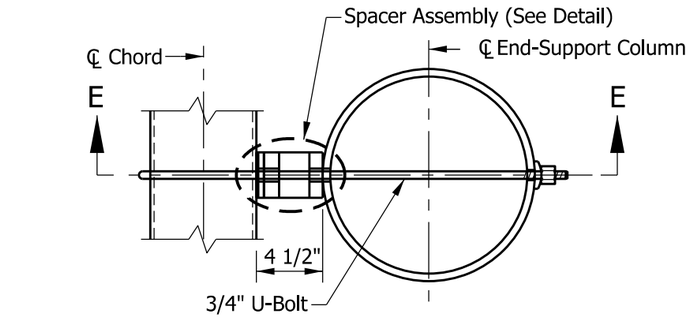
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

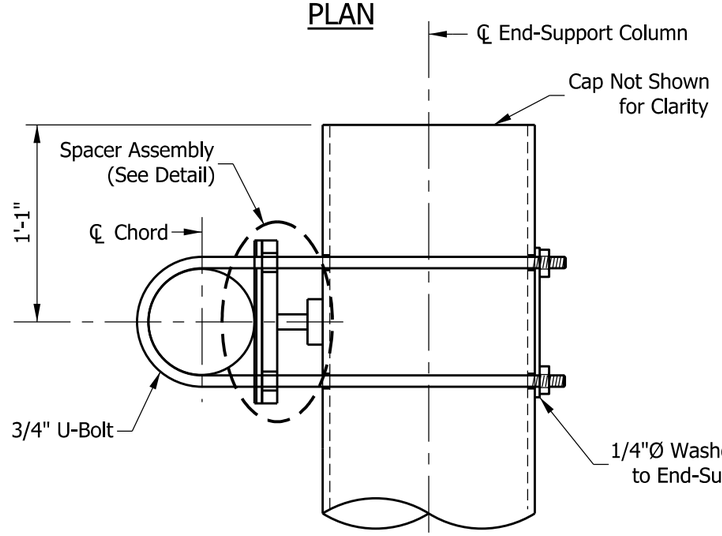
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



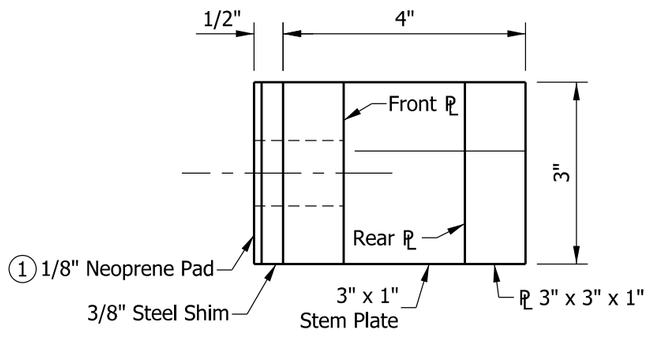
ELEVATION
END-SUPPORT SPACER ASSEMBLY DETAIL



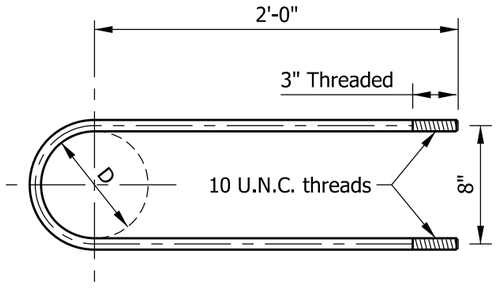
PLAN



SECTION E-E
UPPER CHORD CONNECTION DETAILS



SECTION D-D



3/4" DIA. STAINLESS STEEL U-BOLT DETAIL

NOTES:

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

INDIANA DEPARTMENT OF TRANSPORTATION

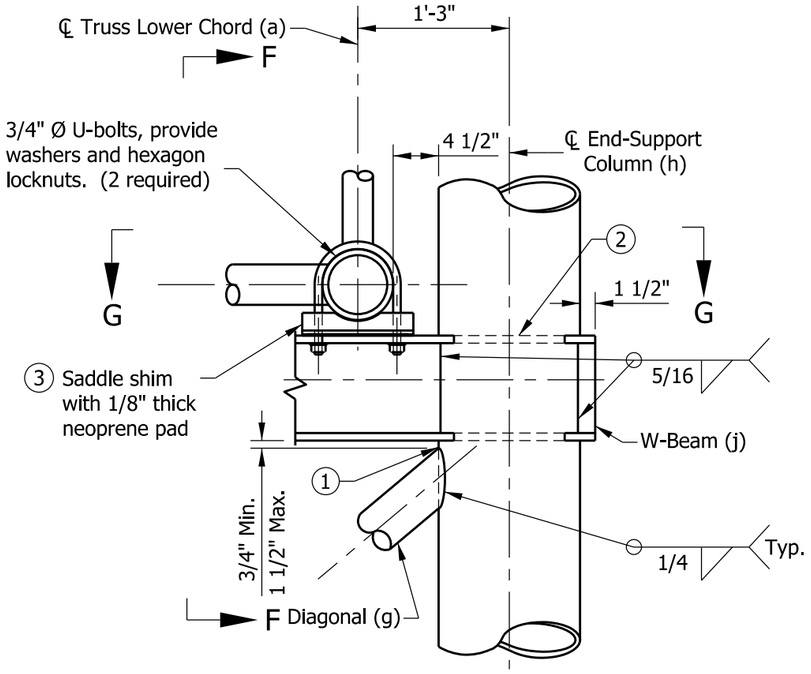
DYNAMIC MESSAGE SIGN STRUCTURE
END SUPPORT
UPPER CHORD CONNECTION DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-08

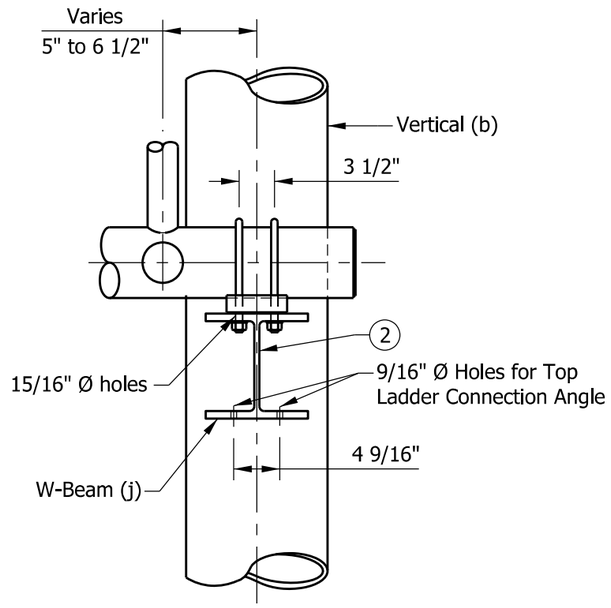
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



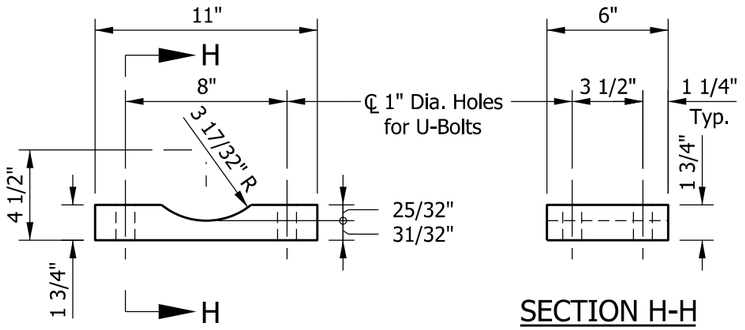
LOWER CHORD CONNECTION DETAIL



SECTION F-F

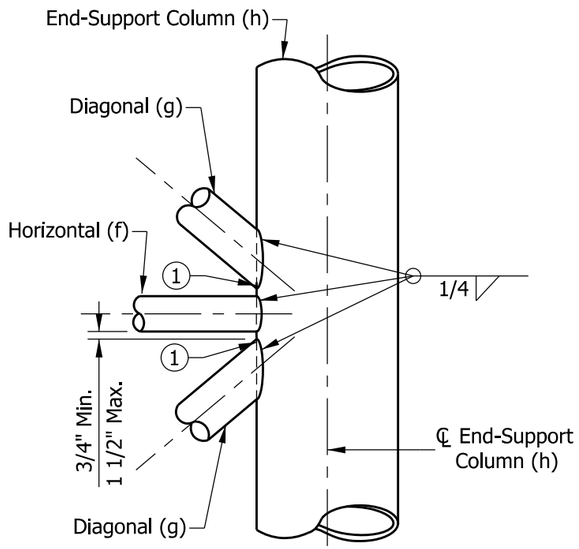
NOTES:

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.

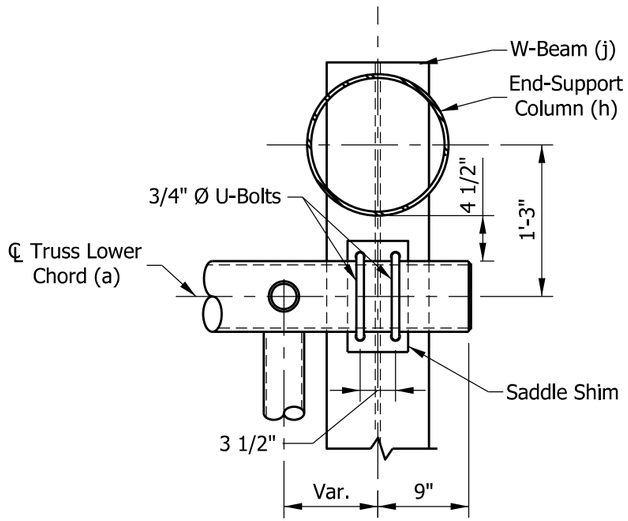


SECTION H-H

SADDLE SHIM DETAIL

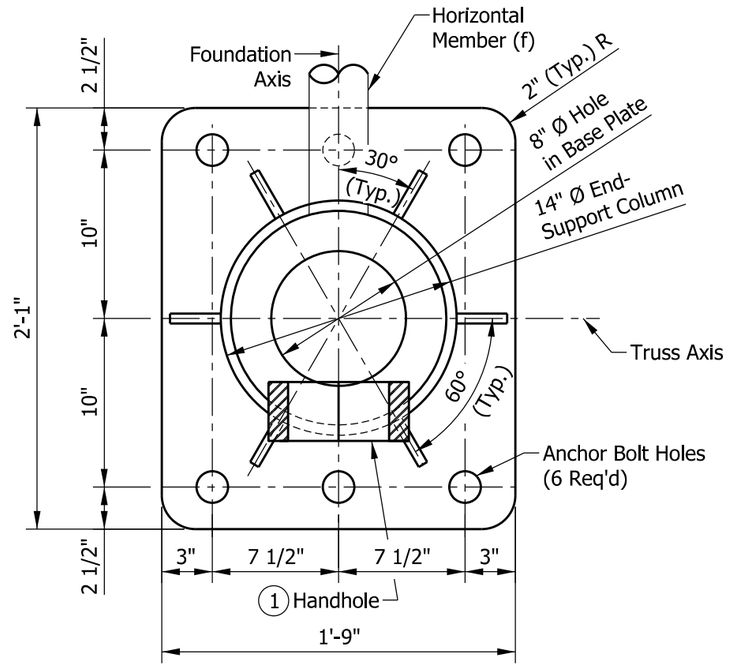


ELEVATION (END SUPPORT)
TYPICAL BRACING MEMBERS CONNECTION

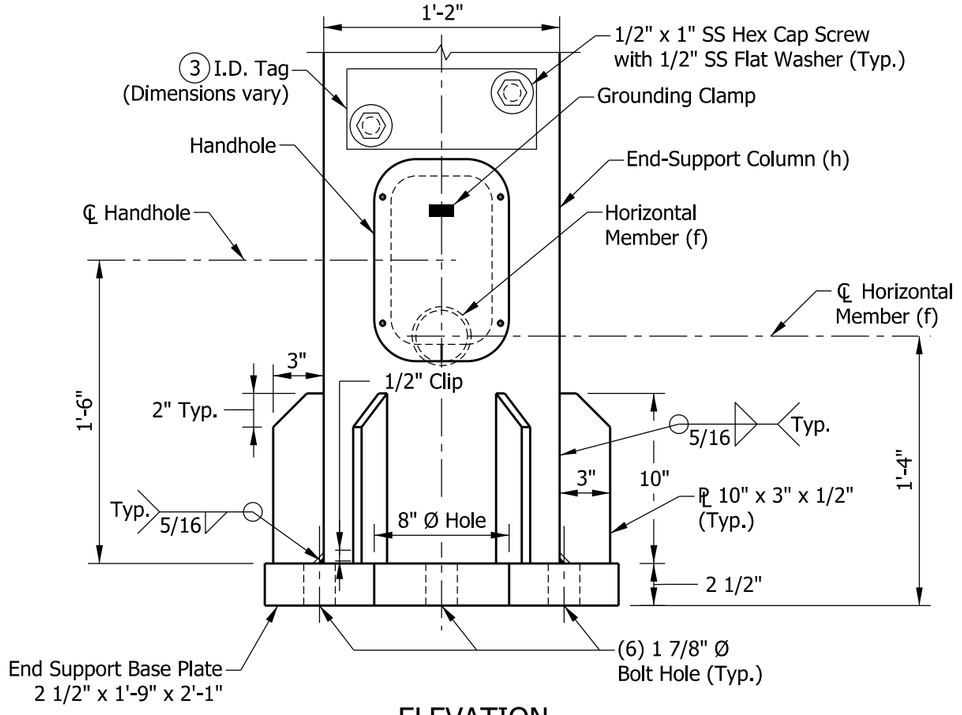


SECTION G-G

INDIANA DEPARTMENT OF TRANSPORTATION		
DYNAMIC MESSAGE SIGN STRUCTURE END-SUPPORT LOWER CHORD CONNECTION DETAILS SEPTEMBER 2013		
STANDARD DRAWING NO. E 802-DMSS-09		
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



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

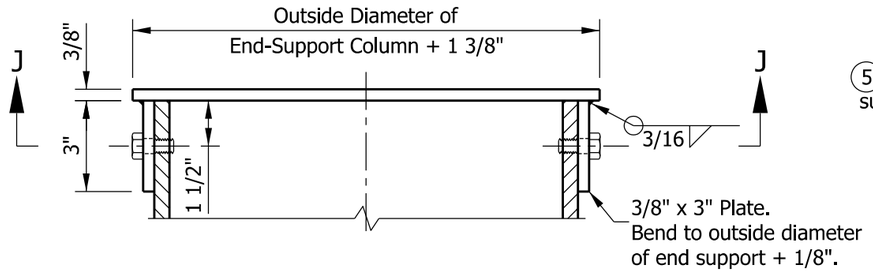
DYNAMIC MESSAGE SIGN STRUCTURE
END SUPPORT
BASE PLATE AND I.D. TAG DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-10

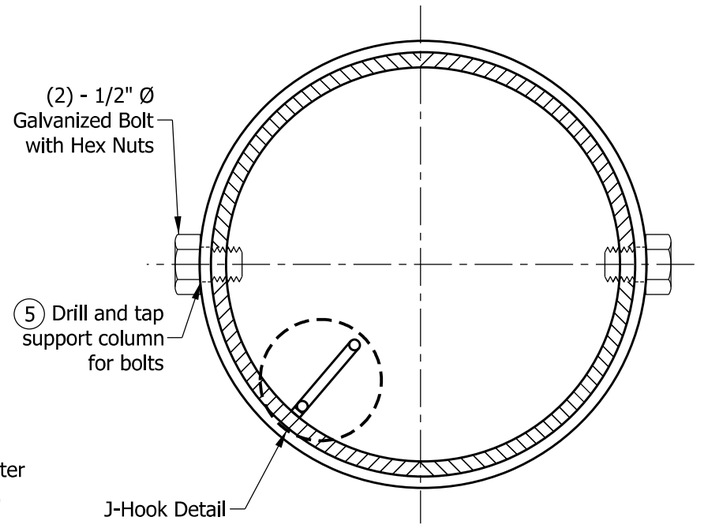
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



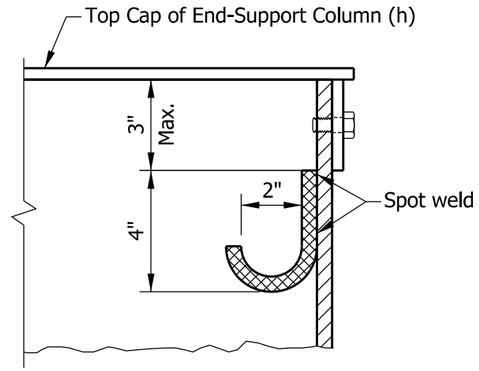
TOP CAP
ELEVATION VIEW



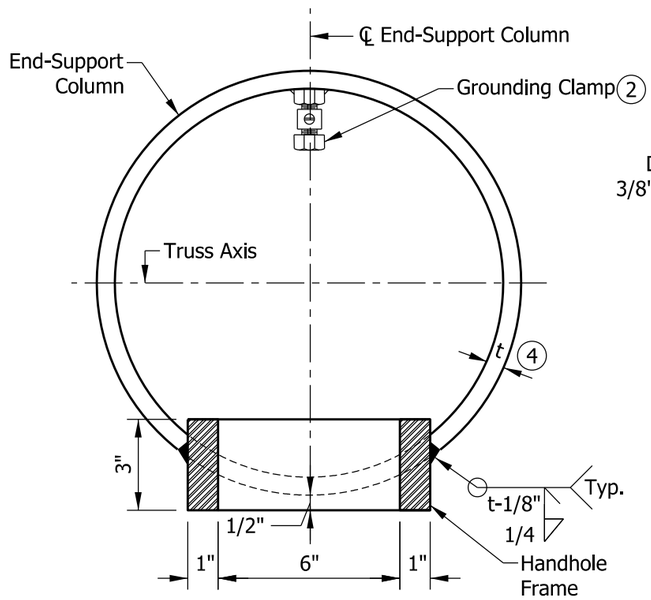
SECTION J-J

NOTES:

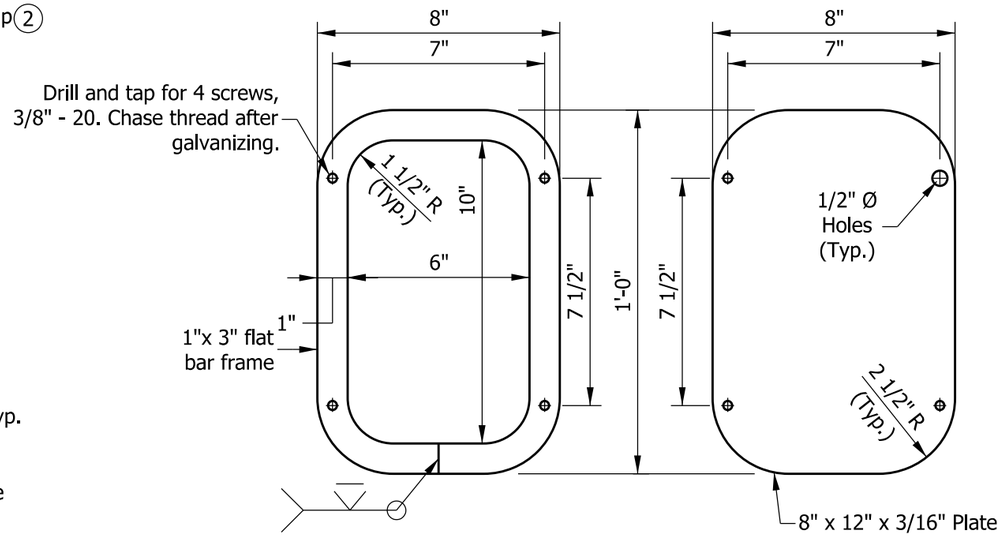
1. In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
2. See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawing E 802-DMSS-10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



J-HOOK DETAIL



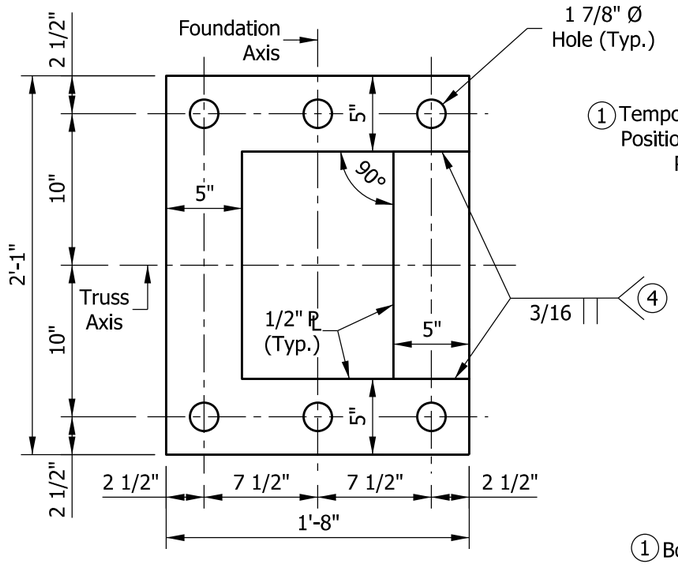
HANDHOLE
SECTION ACROSS COLUMN



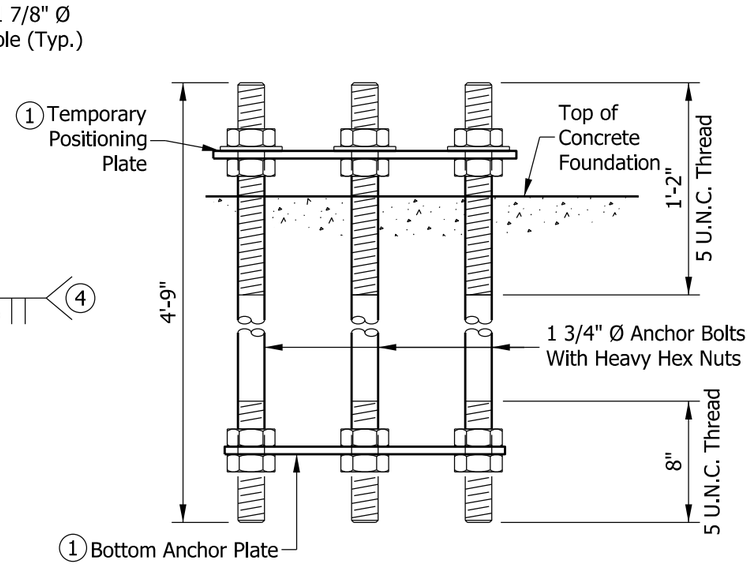
HANDHOLE FRAME DETAIL

HANDHOLE COVER

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	
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



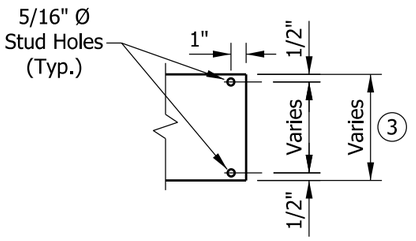
TEMPORARY POSITIONING PLATE



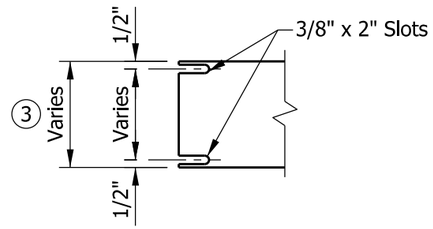
ANCHOR BOLT DETAILS
BEFORE CONCRETE PLACEMENT

NOTES:

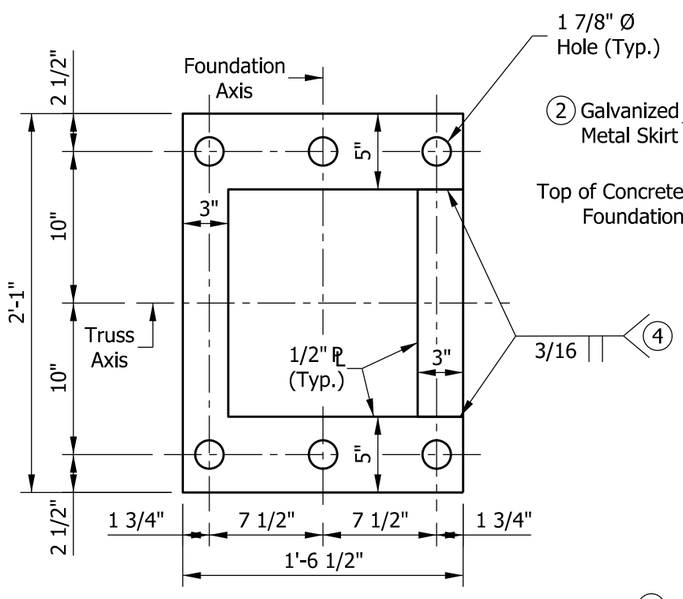
1. Use temporary positioning plate and bottom anchor plate for all foundations. Temporary positioning plate should be removed after placing concrete.
2. Secure galvanized metal skirt to base plate after erection as shown in skirt detail.
3. Minimum base plate gap is 2 1/2" and can be increased up to 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.



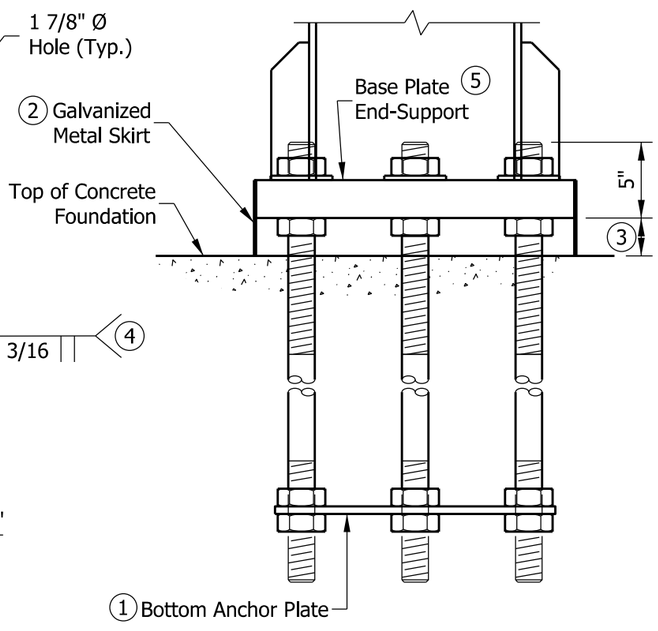
DETAIL G



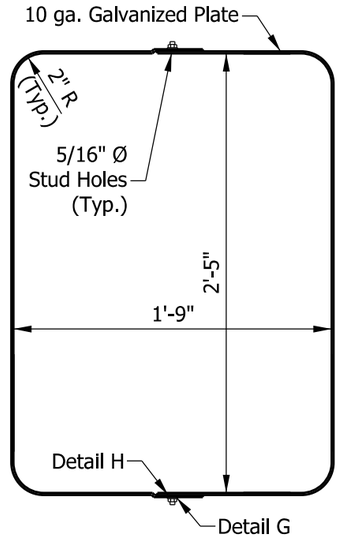
DETAIL H



BOTTOM ANCHOR PLATE



ANCHOR BOLT DETAILS
AFTER CONCRETE PLACEMENT



METAL SKIRT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

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

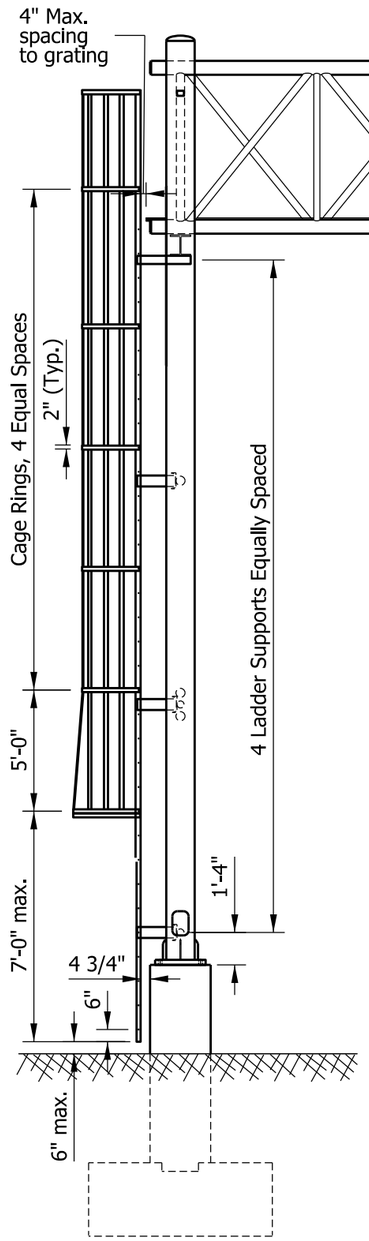
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-12

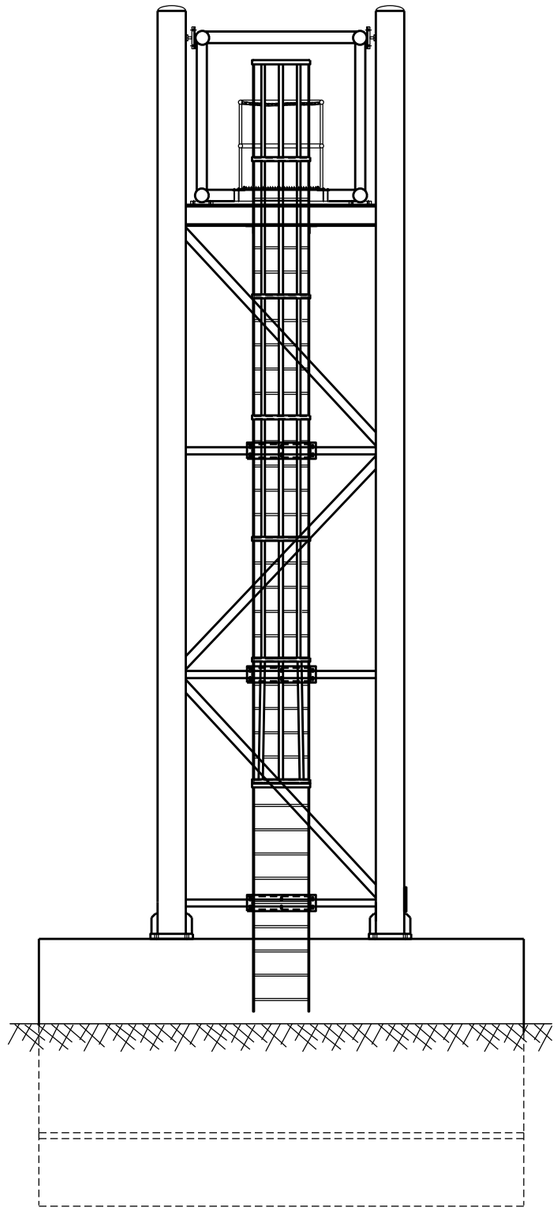
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

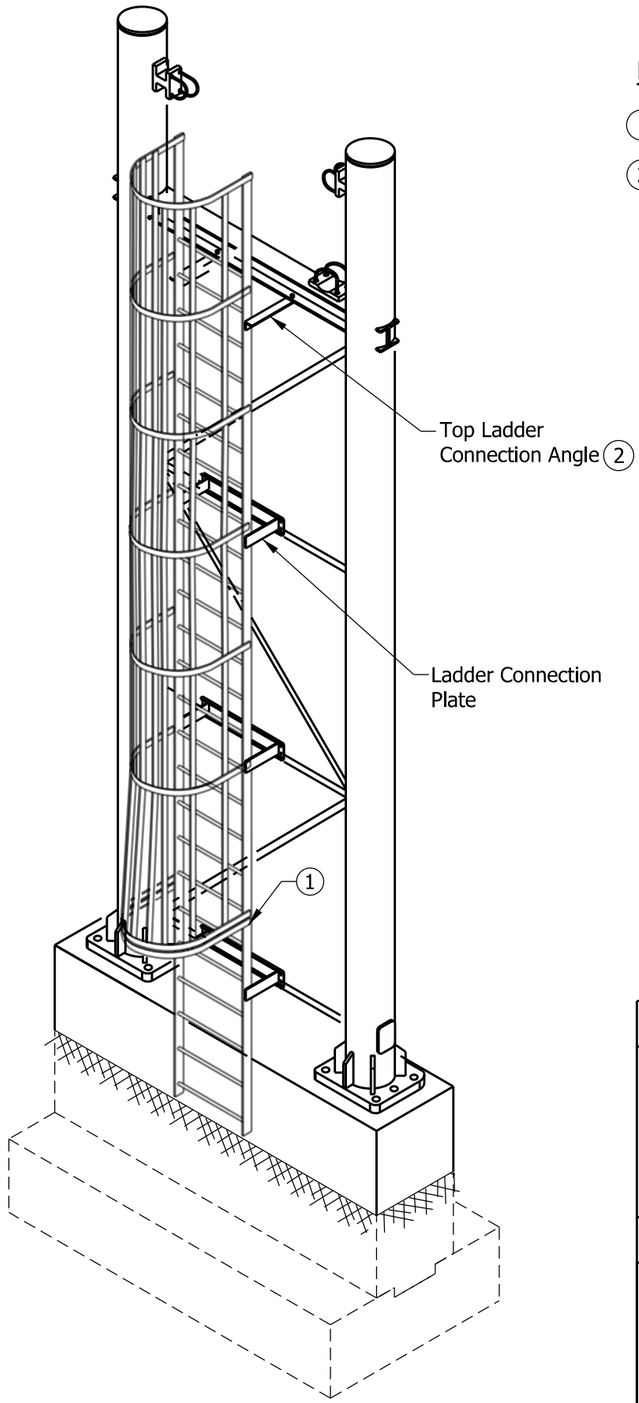
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SIDE VIEW

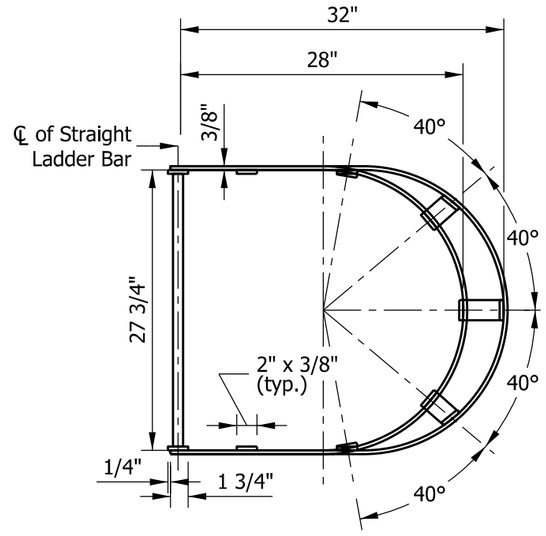


FRONT VIEW OF
LADDER AND CAGE



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

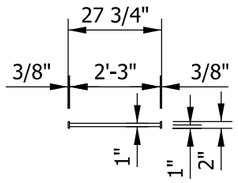
DYNAMIC MESSAGE SIGN STRUCTURE
LADDER DETAILS

SEPTEMBER 2013

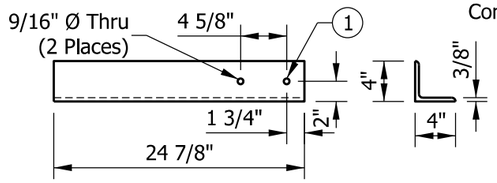
STANDARD DRAWING NO. E 802-DMSS-13

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

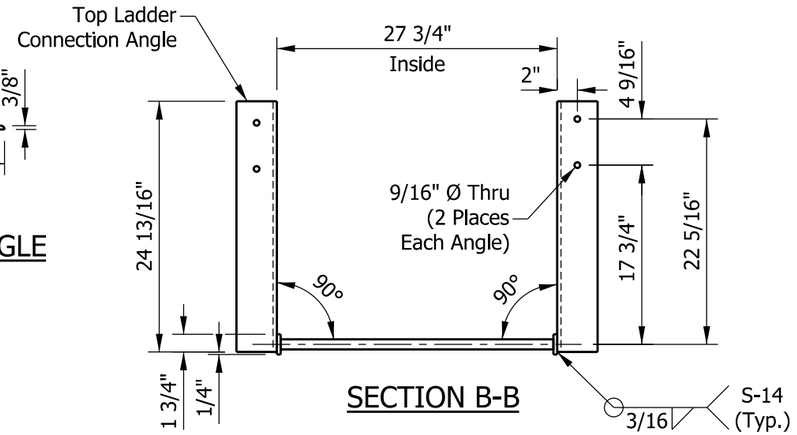
/s/ Alfredo B. Hanza	02/05/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



TOP VIEW OF LADDER



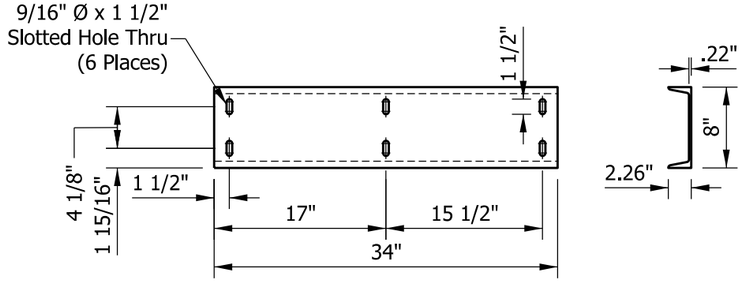
TOP LADDER CONNECTION ANGLE



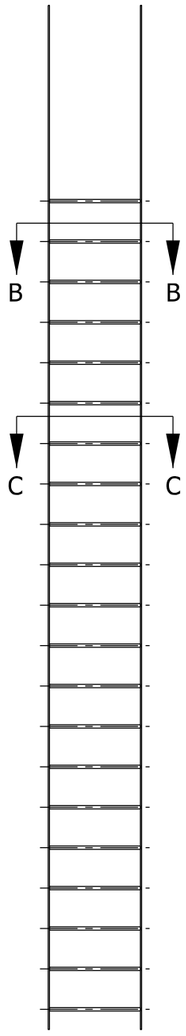
SECTION B-B

NOTE:

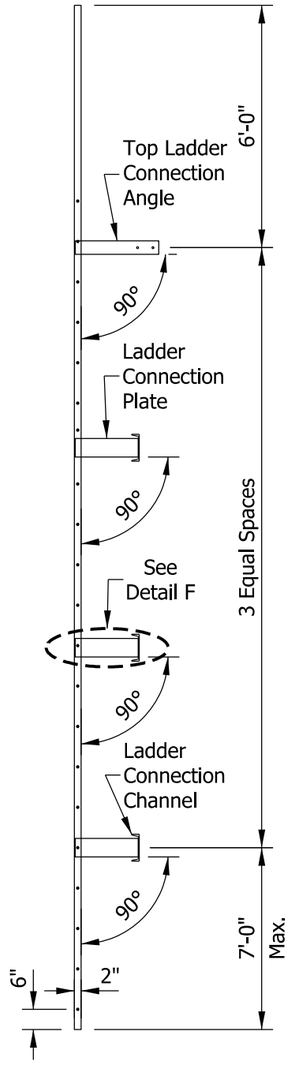
1 (1) A-325 bolts 1/2" x 2" on each side of the W-beam with (1) flat washer and (1) lock nut.



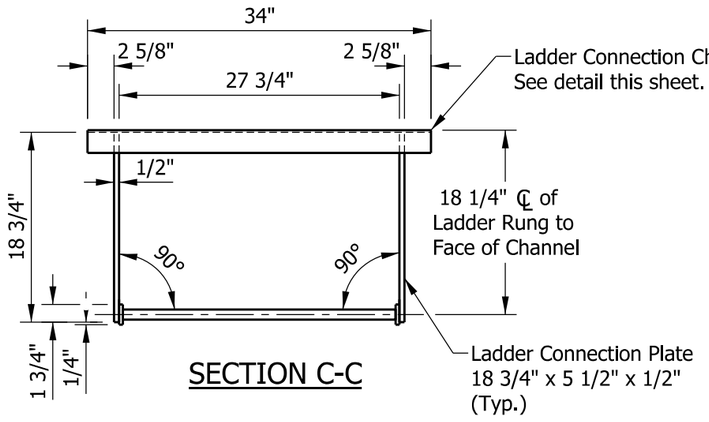
LADDER CONNECTION CHANNEL



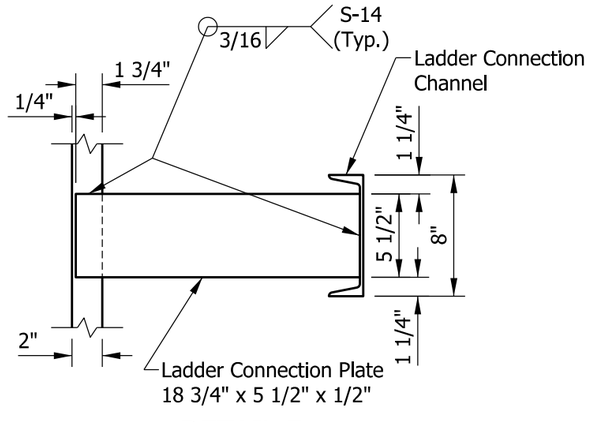
FRONT VIEW OF LADDER



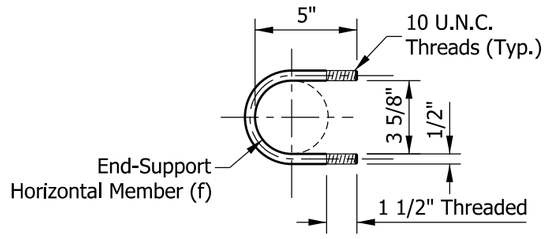
SIDE VIEW OF LADDER AND CAGE



SECTION C-C



DETAIL F



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

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
LADDER DETAILS

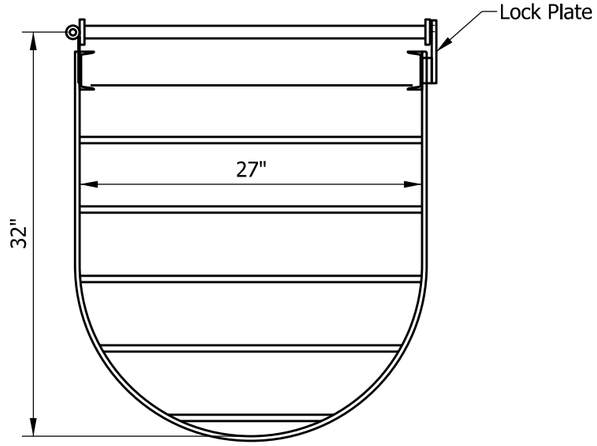
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-14

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



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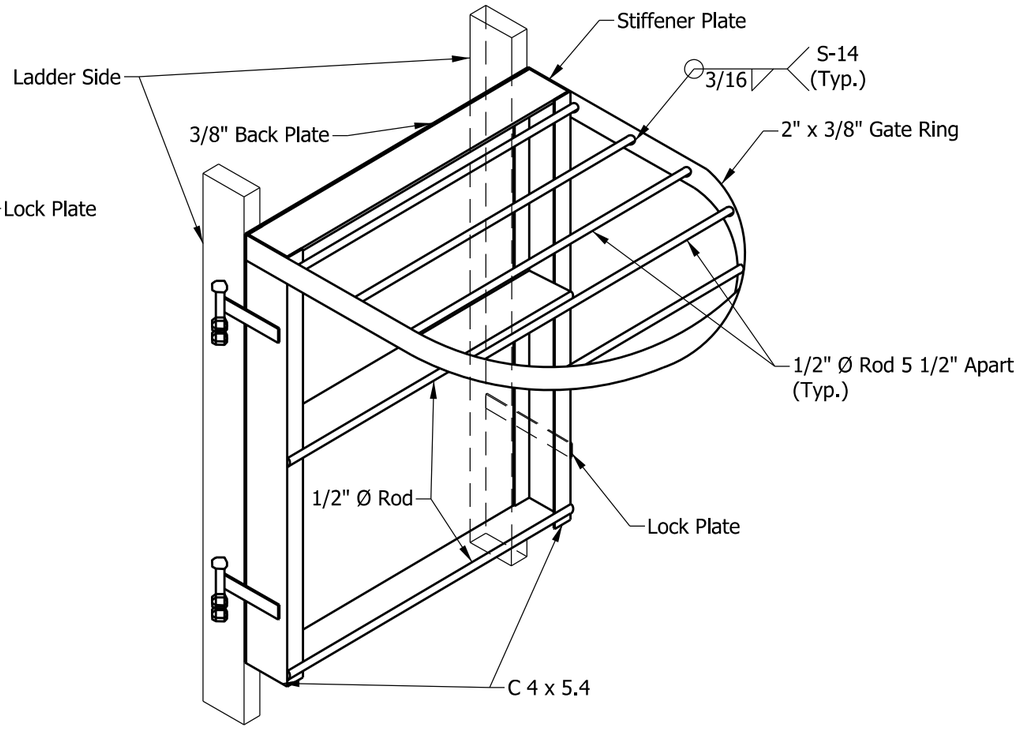

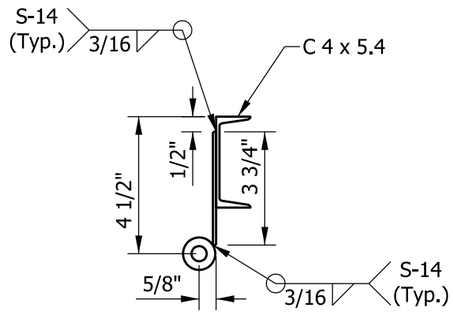

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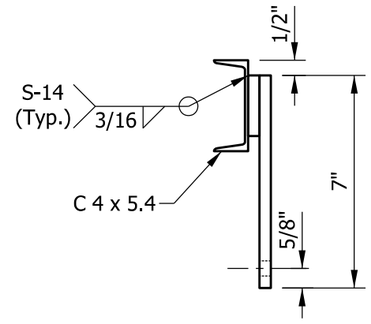
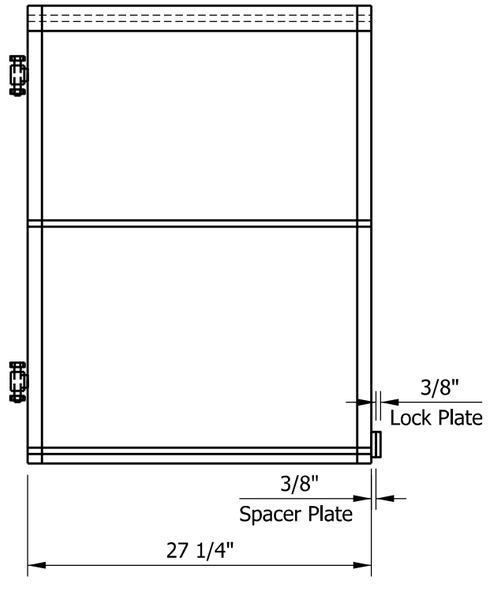
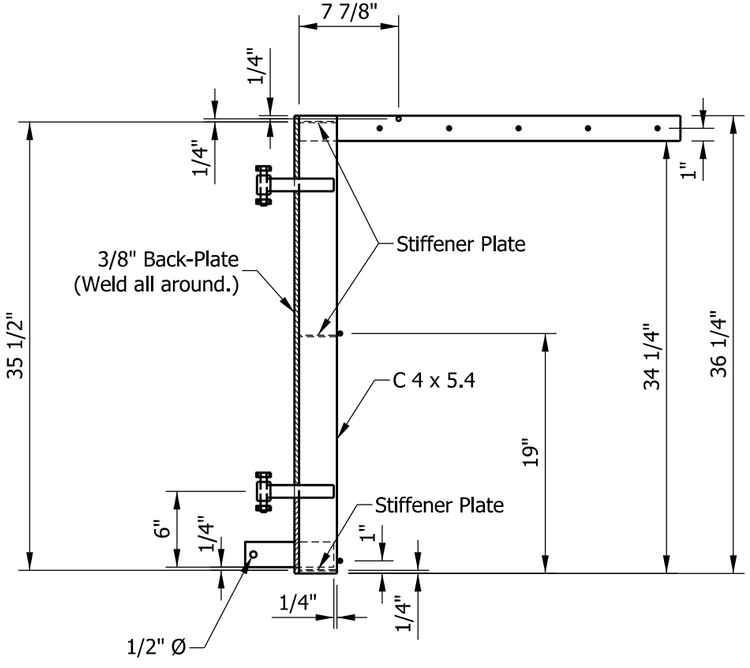


GATE LOCK



FRONT



SIDE

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
SECURITY GATE DETAILS

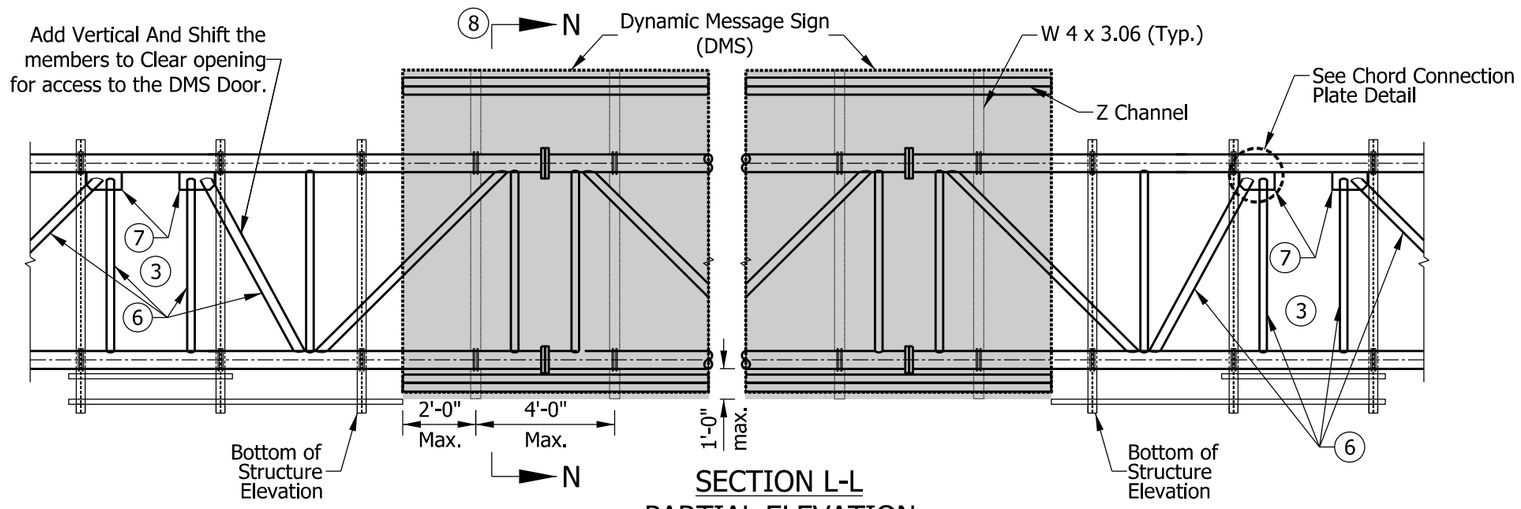
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-15

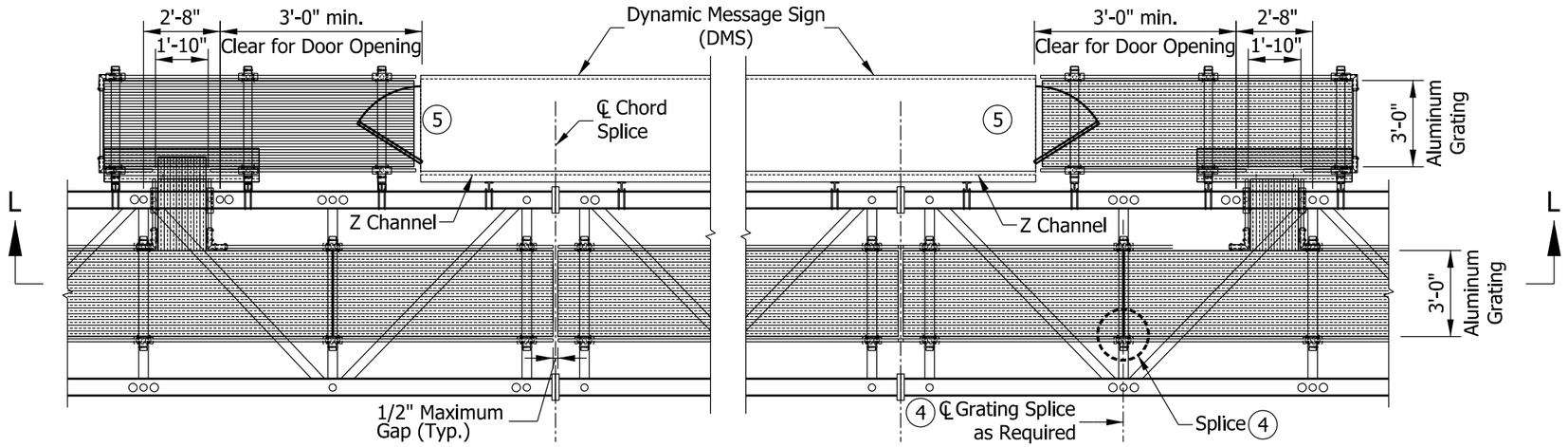
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

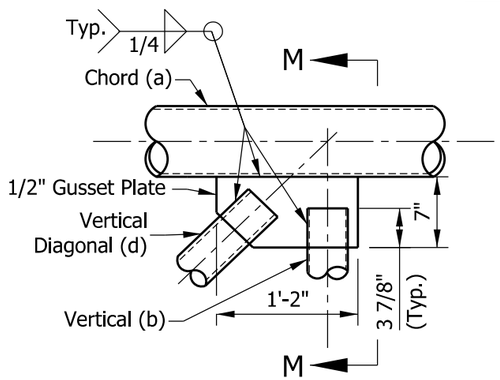
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



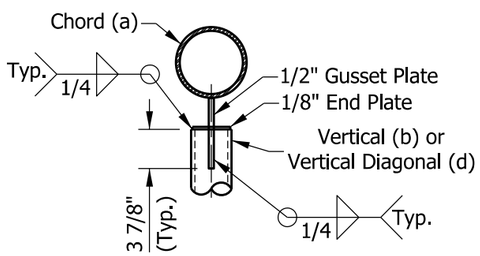
SECTION L-L
PARTIAL ELEVATION
(Handrail omitted for clarity)



WALKWAY GRATING PLAN



CHORD CONNECTION PLATE DETAIL



SECTION M-M

NOTES:

1. 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 in^4. A different grating of equal strength may be used upon approval.
2. Interior walkway grating shall run the full length center to center of end support truss members plus 9" at each end.

(3) 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.

(4) 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.

(5) The contractor shall coordinate with sign manufacturer so floor inside DMS is one comfortable step to the exterior grating.

(6) 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".

(7) Install gusset plates at vertical and diagonal intersection on each side of the opening for access to DMS door.

(8) See Standard Drawing E 802-DMSS-17 for Section N-N.

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
WALKWAY GRATING DETAILS

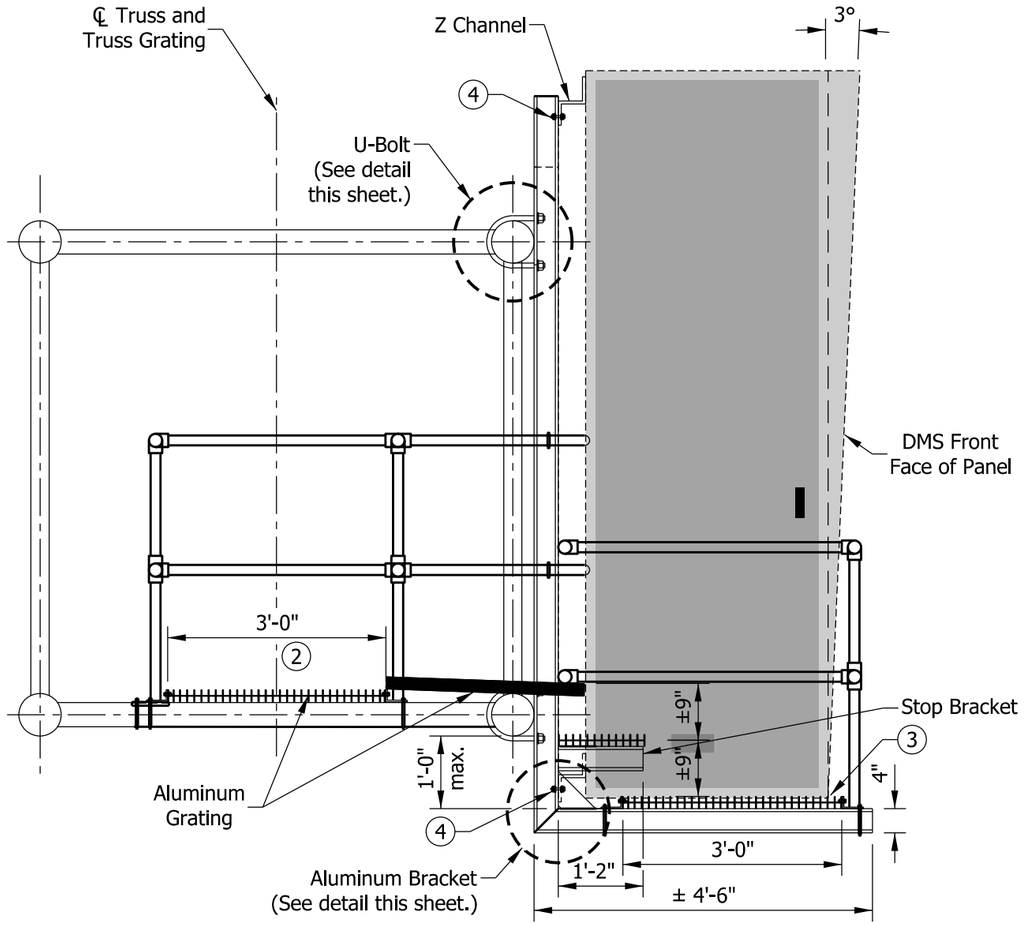
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-16

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

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

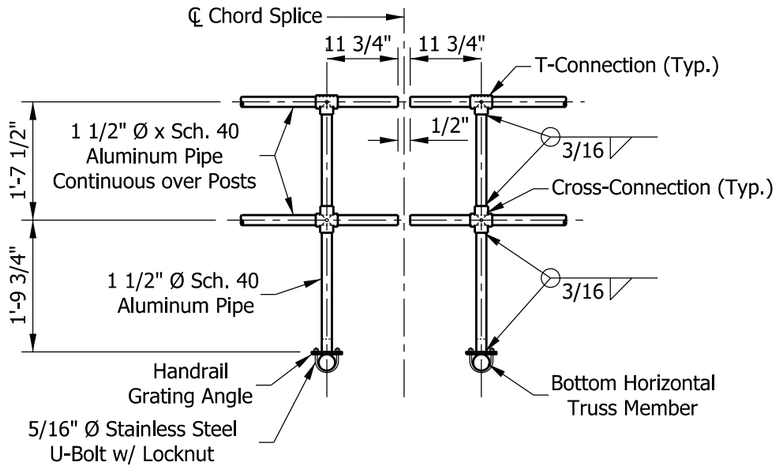
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



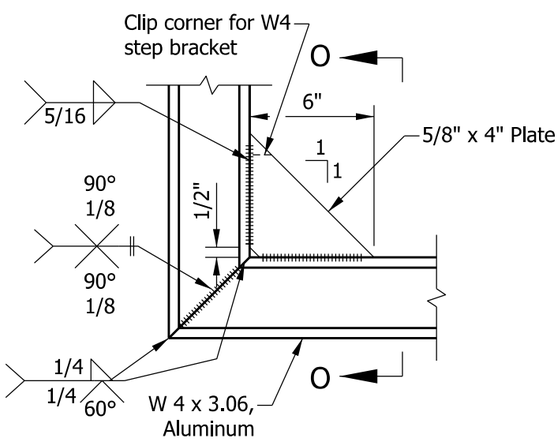
SECTION N-N

NOTES:

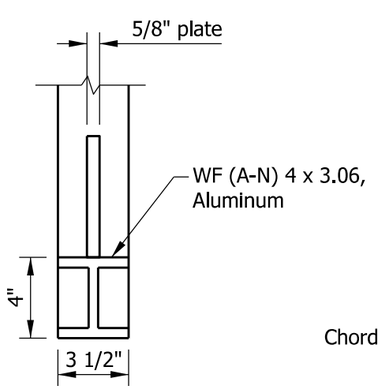
1. The front face of the DMS shall be tilted at 3° toward approaching traffic. If the DMS is not built with the front face tilted appropriately, a block shall be placed on the top of the back face to obtain the 3° tilt.
2. The walkway grating width is nominal and may vary ±1/2" based on available standard widths.
3. The bottom of the DMS door shall open without obstruction from the grating.
4. (1) A-325 bolt 1/2" x 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.



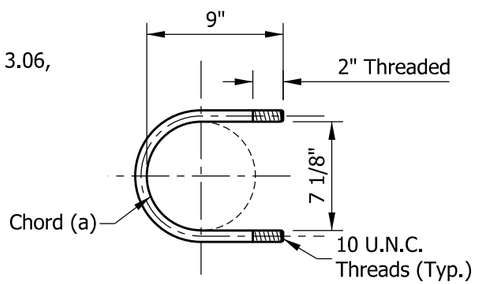
TYPICAL HANDRAIL DETAIL



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

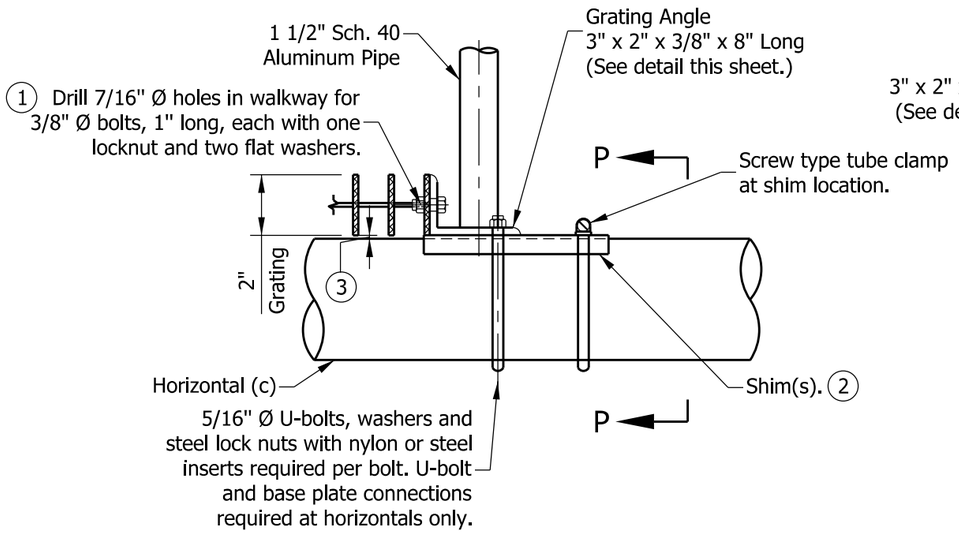
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-17

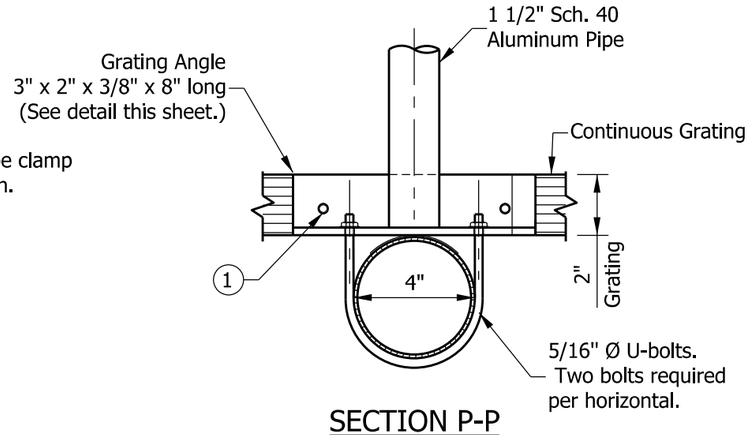
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

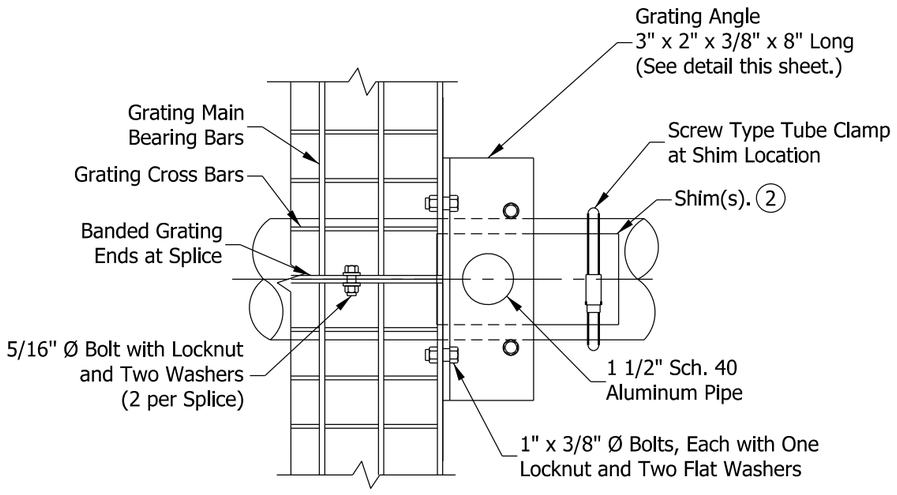
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE



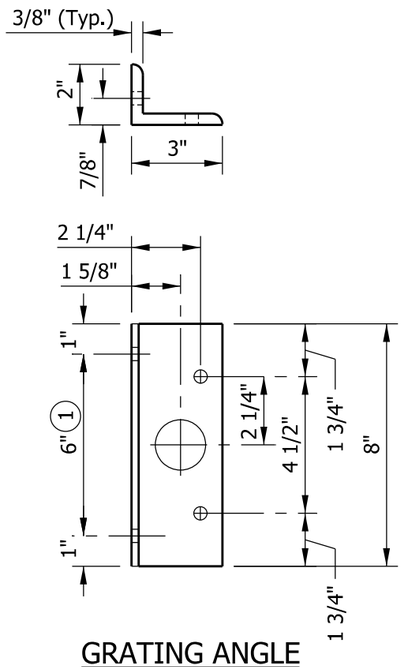
GRATING SUPPORT DETAIL



SECTION P-P



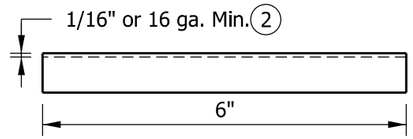
GRATING SPLICE DETAIL



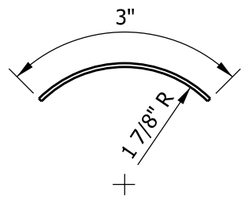
GRATING ANGLE

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.



ELEVATION



END VIEW

SHIM DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

DYNAMIC MESSAGE SIGN STRUCTURE
WALKWAY GRATING DETAILS

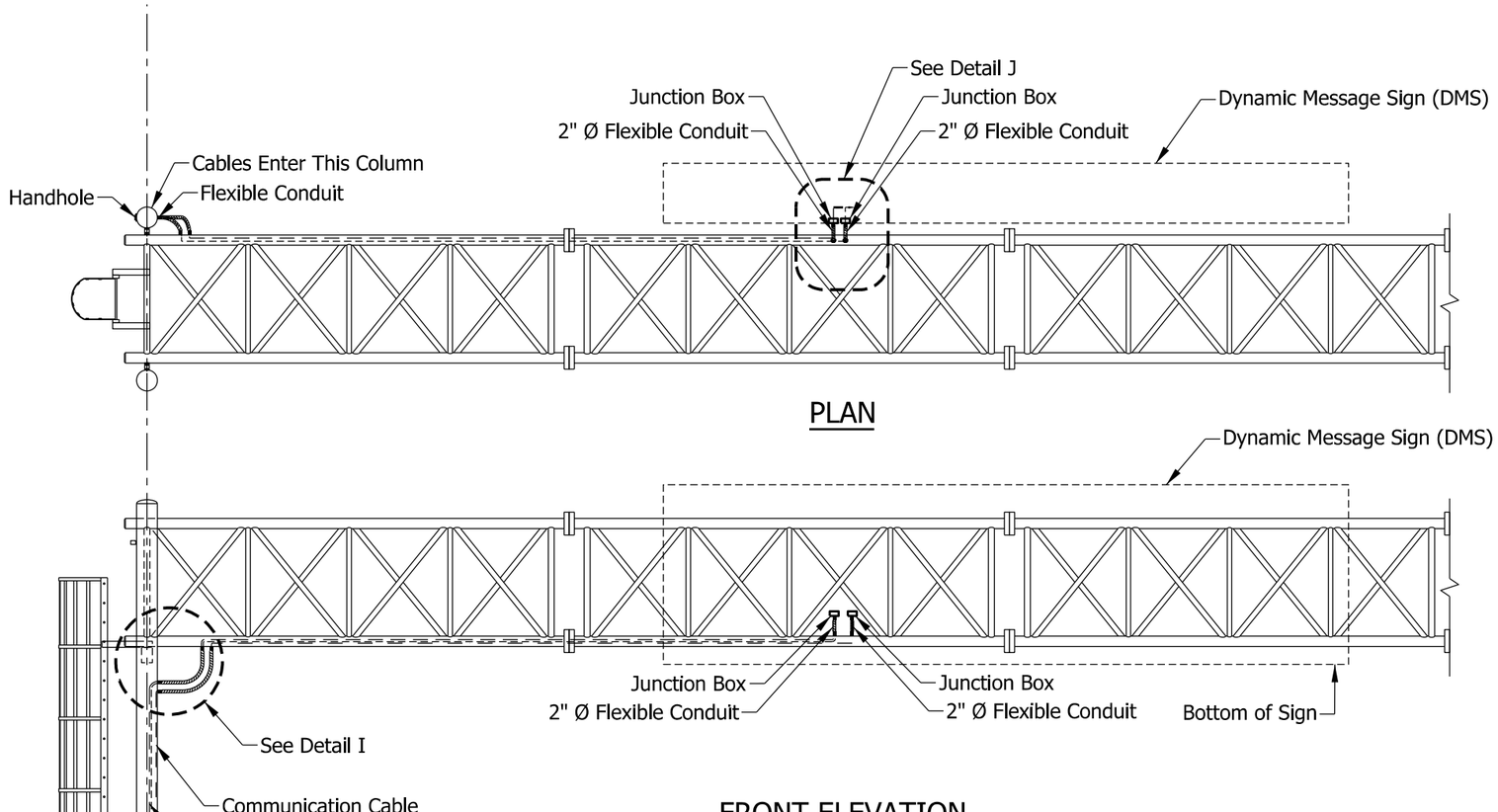
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-18

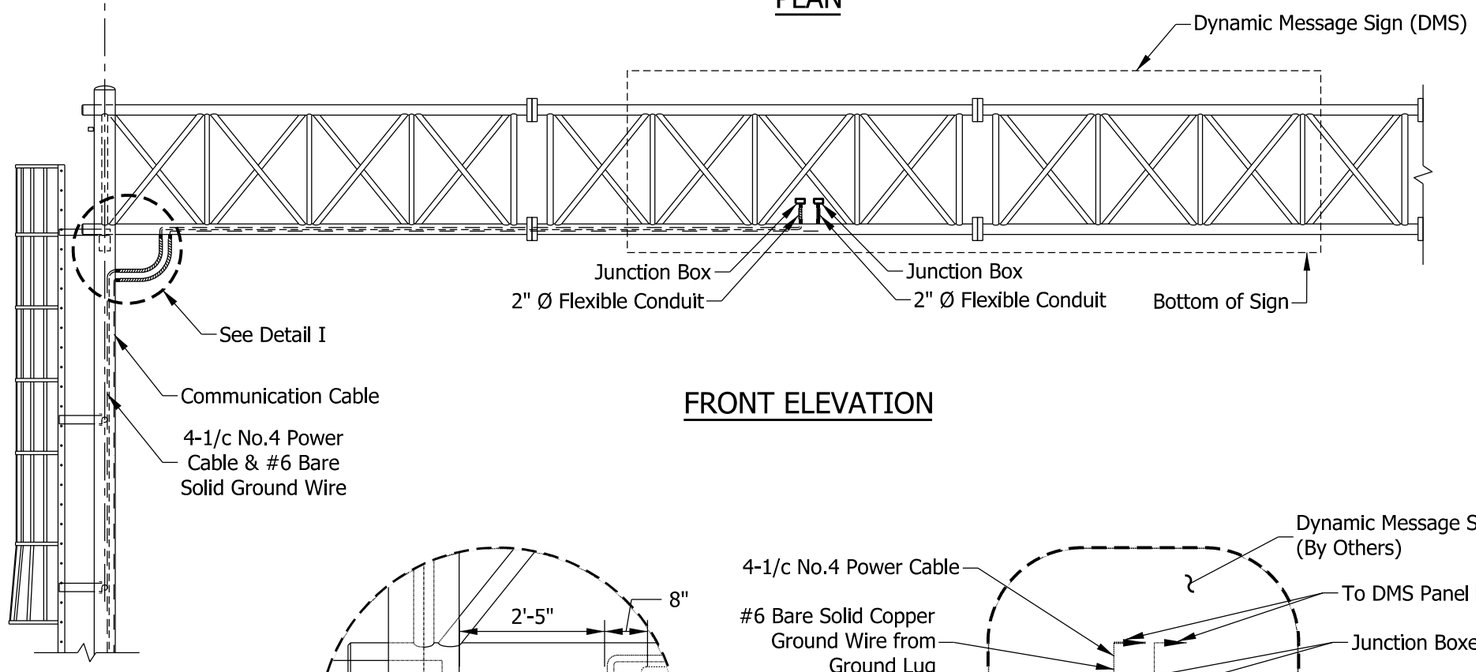
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

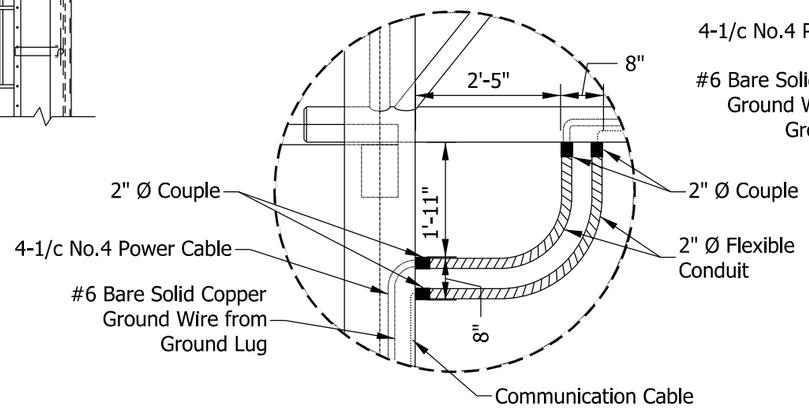
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



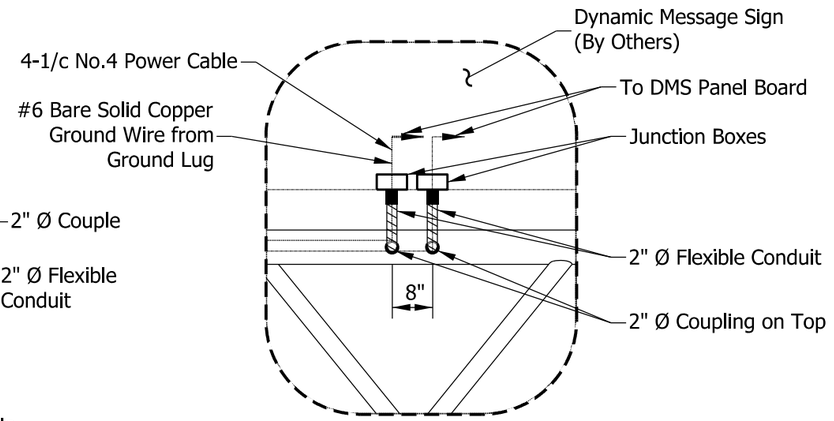
PLAN



FRONT ELEVATION



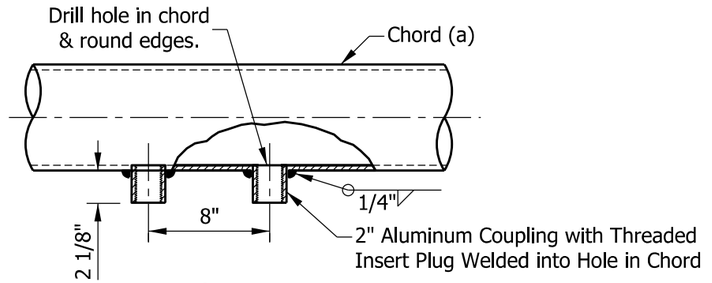
DETAIL I



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

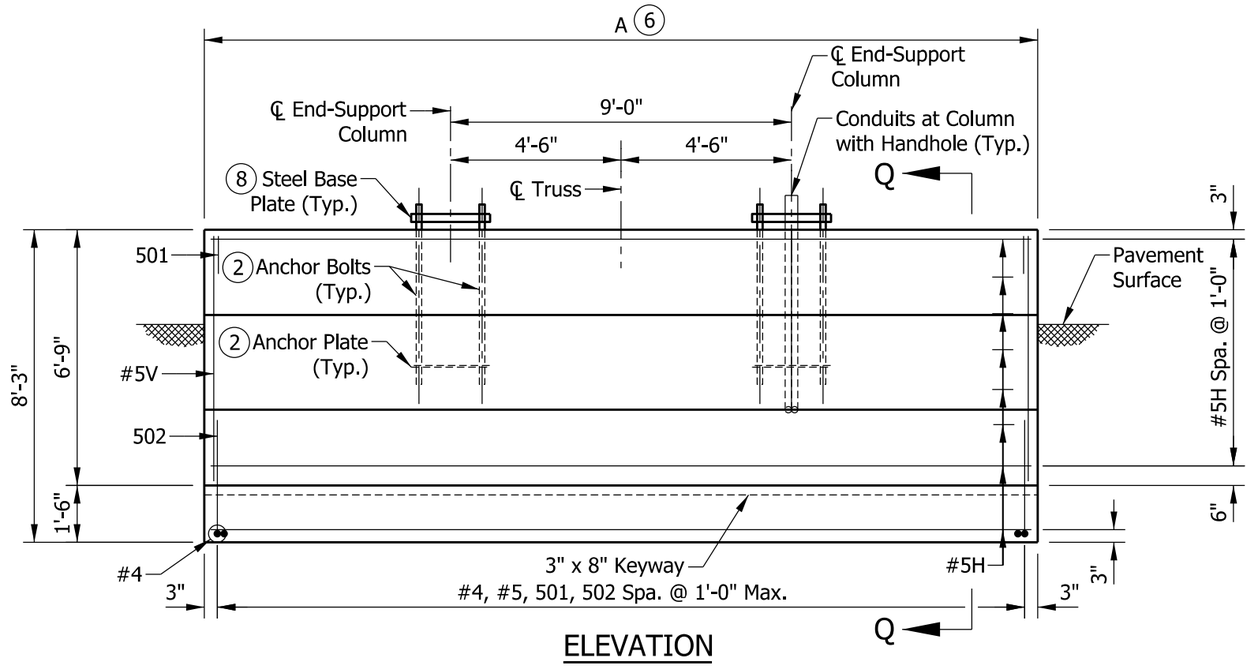
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-19

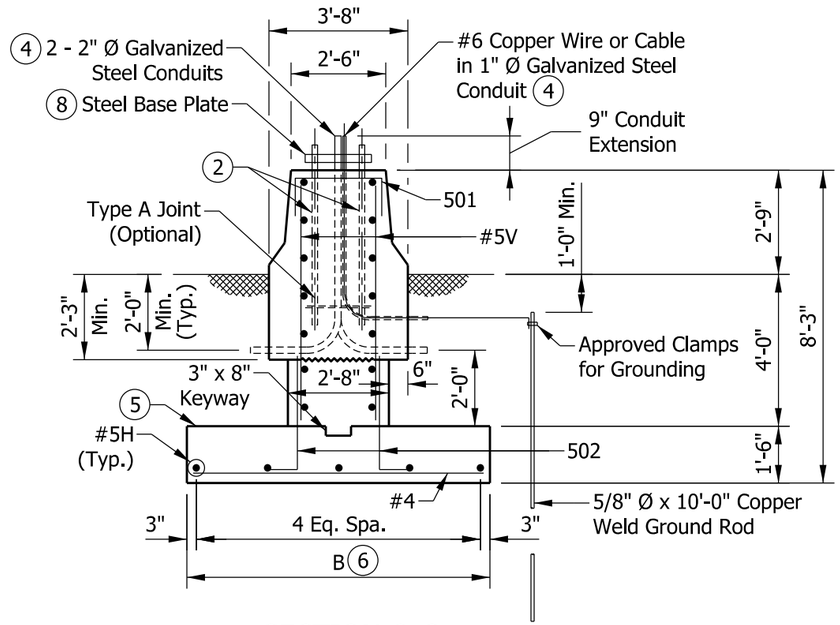
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

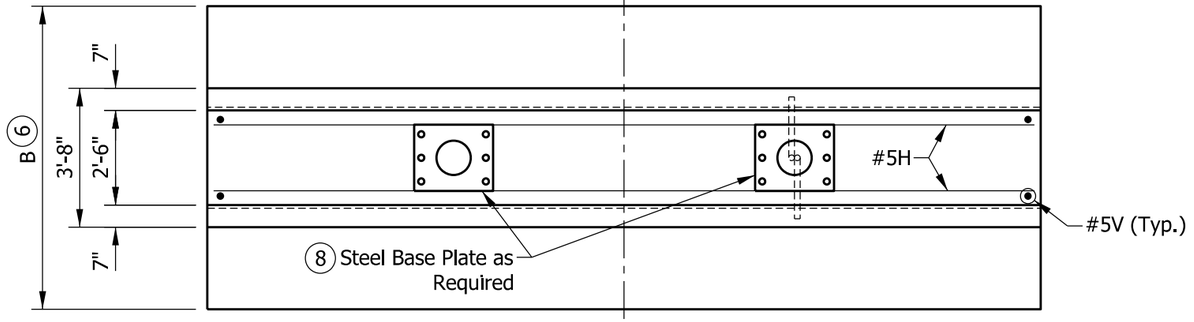
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



ELEVATION



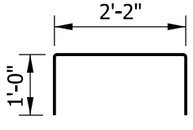
SECTION Q-Q



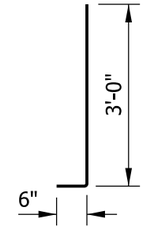
PLAN

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.



501 x 4'-2"



502 x 3'-6"

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

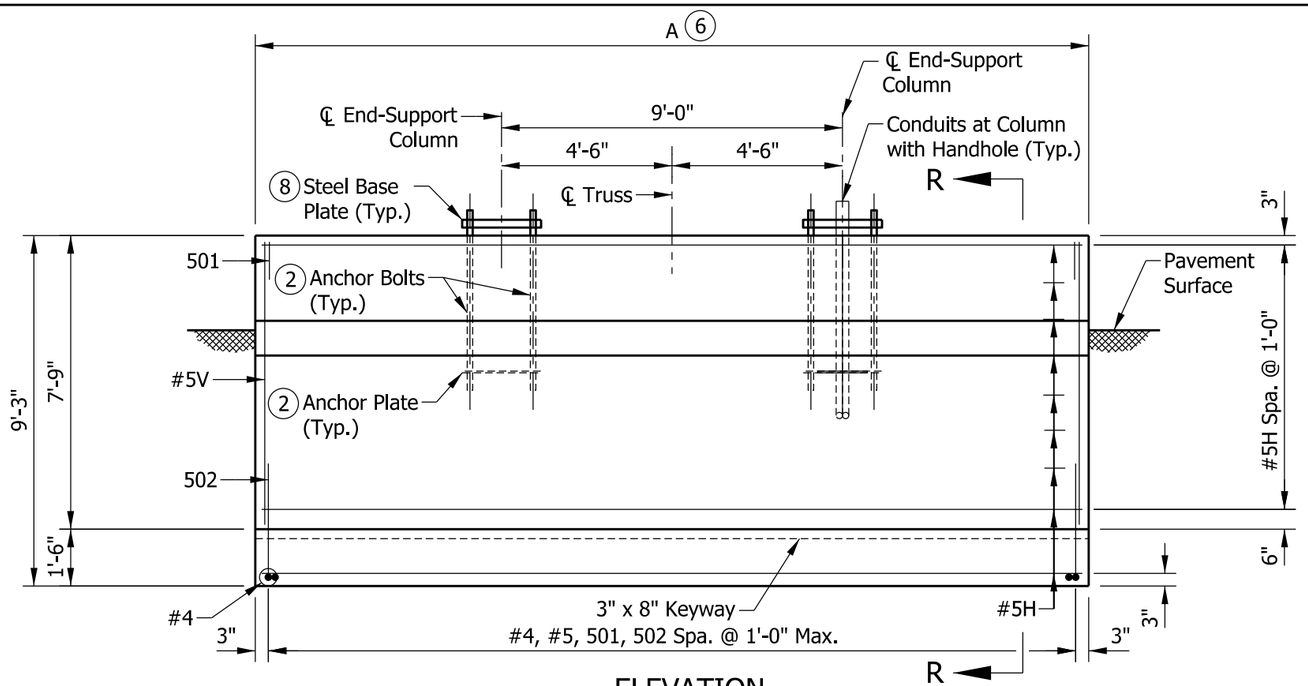
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

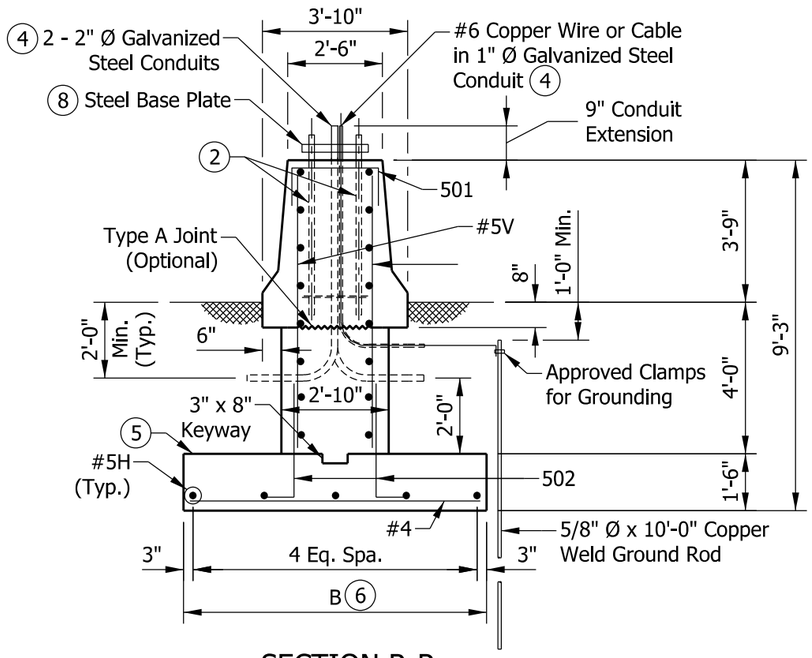
DESIGN STANDARDS ENGINEER DATE

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

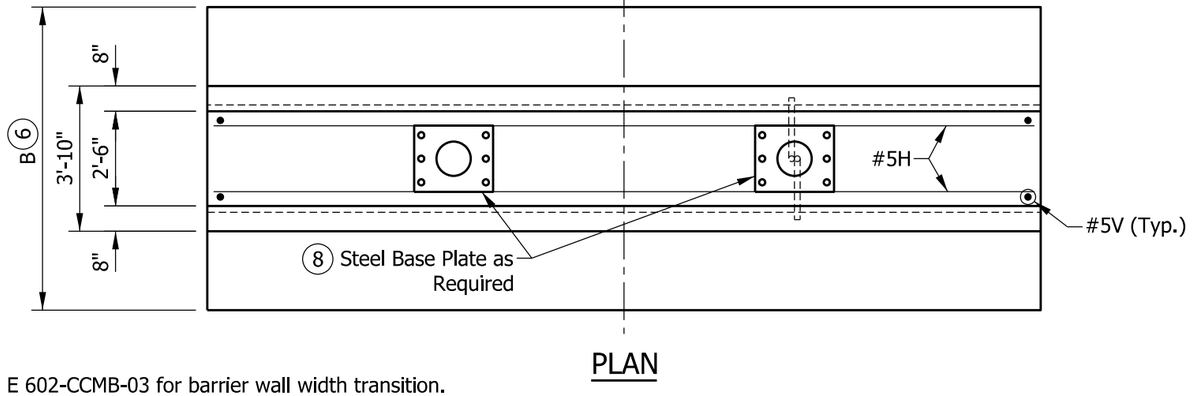
CHIEF ENGINEER DATE



ELEVATION



SECTION R-R



PLAN

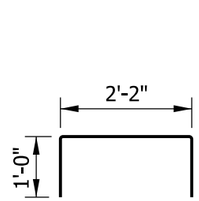
LEGEND:

H = Horizontal

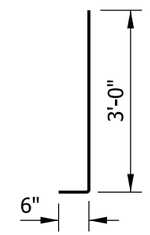
V = Vertical

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.



501 x 4'-2"



502 x 3'-6"

INDIANA DEPARTMENT OF TRANSPORTATION

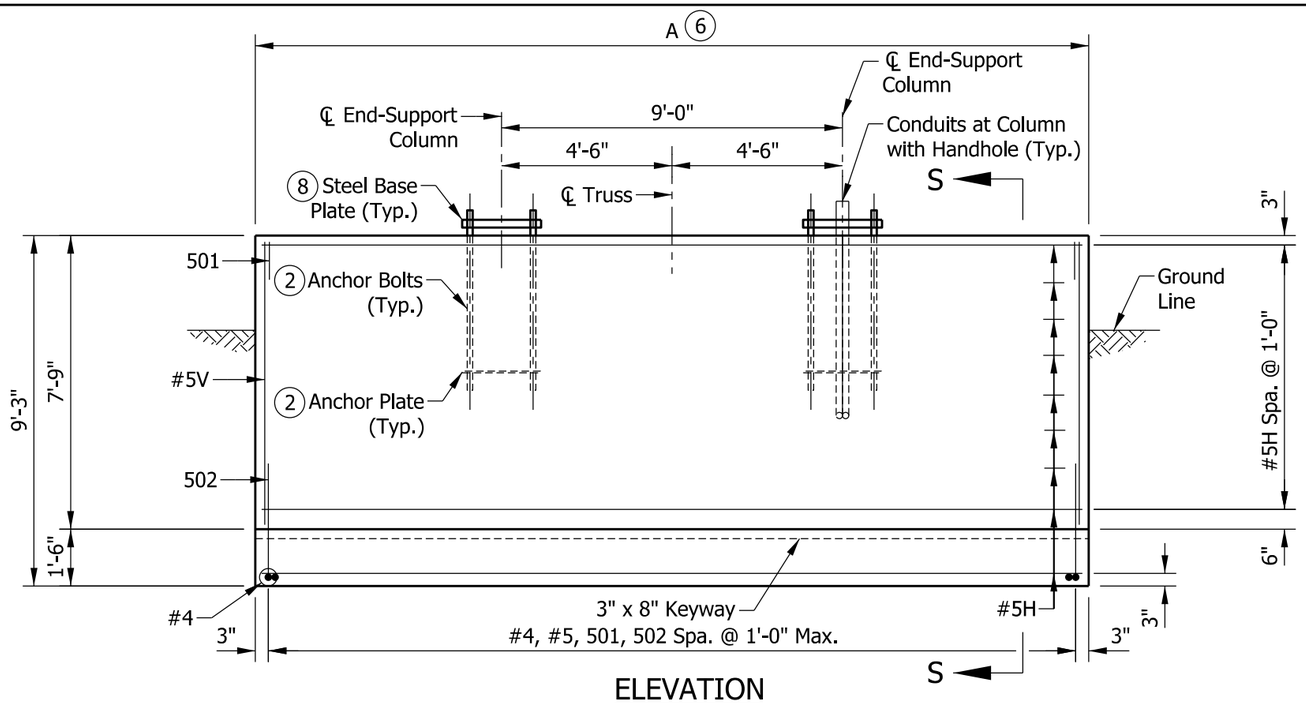
DYNAMIC MESSAGE SIGN STRUCTURE
SPREAD FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-DMSS-21

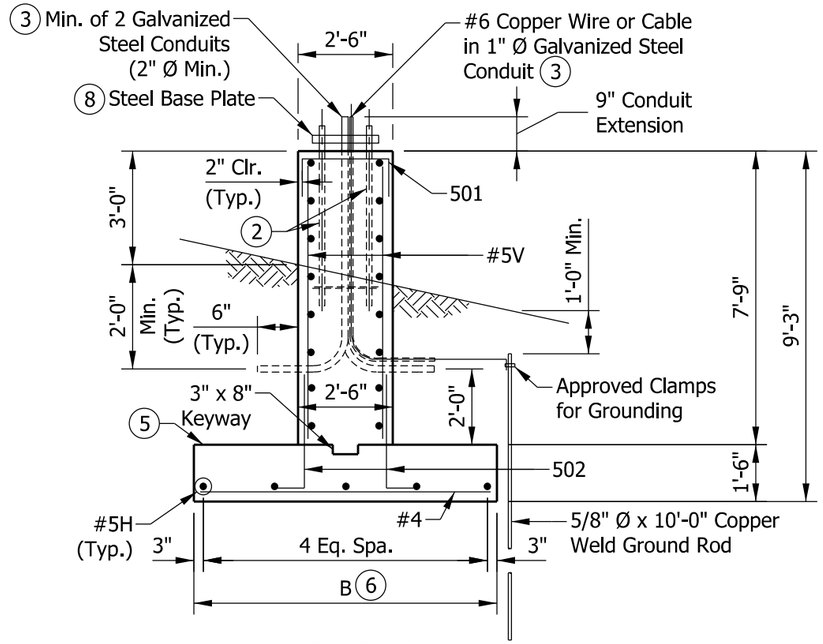
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

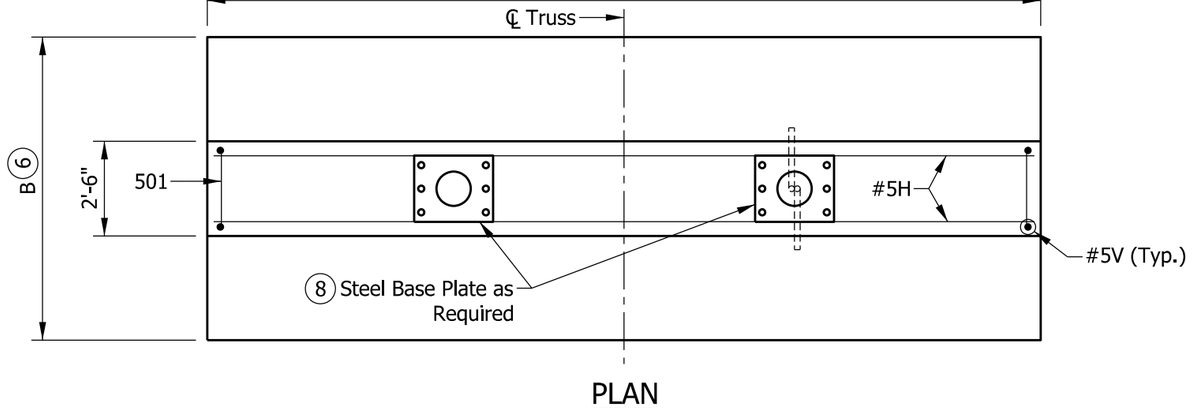
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



ELEVATION



SECTION S-S



PLAN

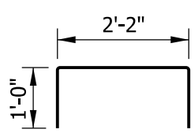
LEGEND:

H = Horizontal

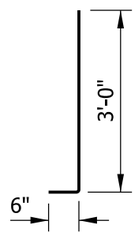
V = Vertical

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.



501 x 4'-2"



502 x 3'-6"

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

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

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:

1. Geotechnical recommendations for Allowable Gross Soil Bearing Pressure shall be obtained to determine footing size and reinforcement shown in Tables 1 and 2.
2. If Allowable Gross Soil Bearing Pressure is less than 1500 psf, a drilled shaft or other special foundation shall be used.
3. 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

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

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
16	Lighting Walkway
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
24	Spread Foundation for Median or Shoulder, 36" Height
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

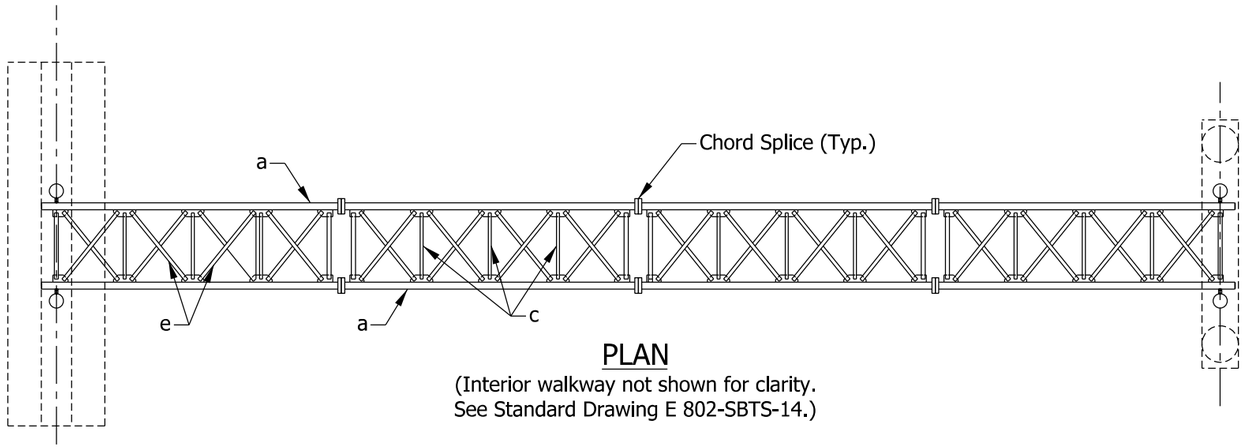
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-01

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

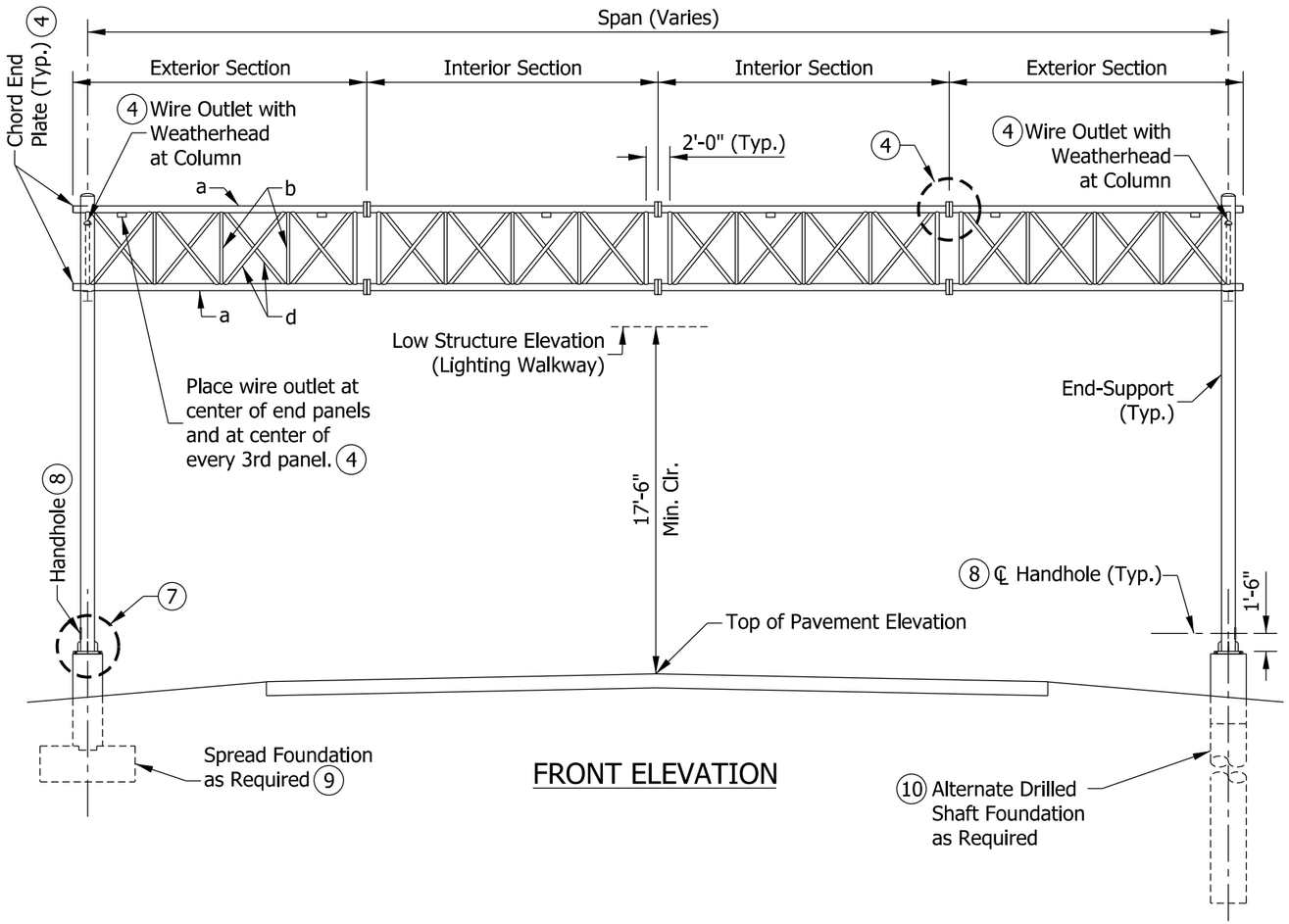
/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

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

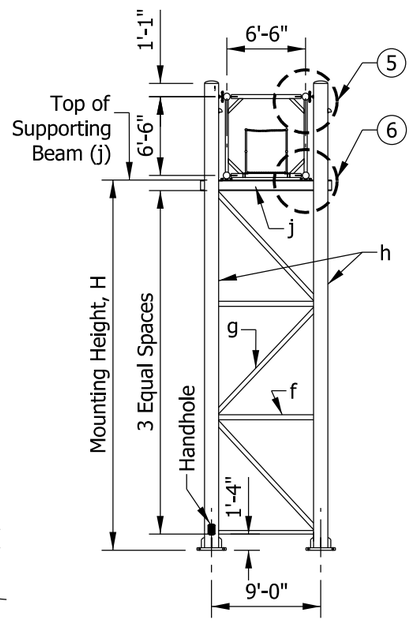


PLAN

(Interior walkway not shown for clarity.
See Standard Drawing E 802-SBTS-14.)



FRONT ELEVATION



END-SUPPORT

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

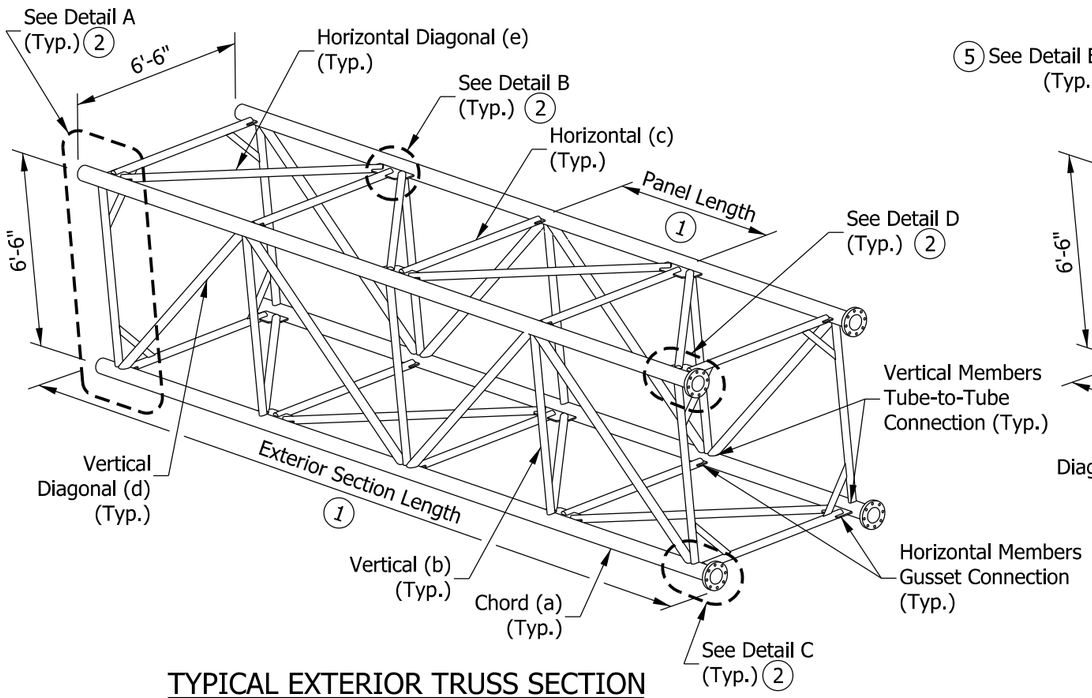
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

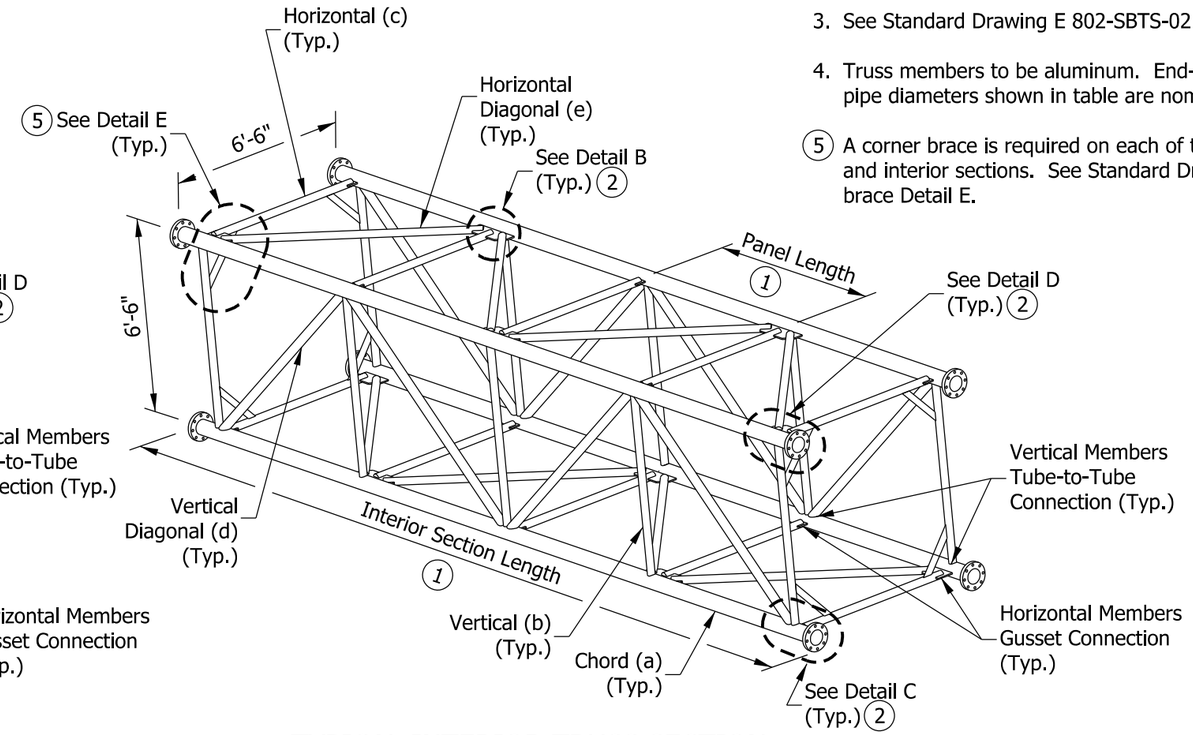
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE

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.



TYPICAL EXTERIOR TRUSS SECTION



TYPICAL INTERIOR TRUSS SECTION

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
			H	a		b		c		d		e		f		g		h		j
				DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	DIA.	THK	
	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	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	
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	W 8 x 58 or HSS 8" x 8" x 1/2"
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	
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	W 10 x 68 or HSS 10" x 10" x 1/2"

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 02/05/13
DESIGN STANDARDS ENGINEER DATE

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

DIMENSIONS FOR SIGN BOX TRUSSES (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	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"

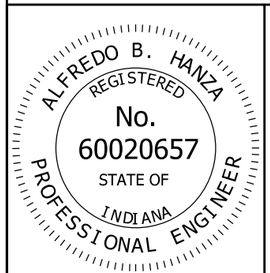
NOTES:

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



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

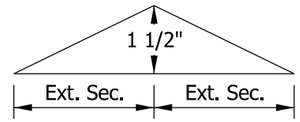
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE

DIMENSIONS FOR SIGN BOX TRUSSES (82' THRU 130')

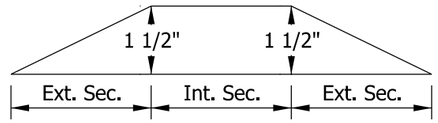
SPAN SPAN-TRUSS LENGTH, (FT)	EXTERIOR SECTIONS					INTERIOR SECTIONS			
	NO. OF EXT. SECTIONS	NO. OF PANELS PER SECTION	VARIABLE END DIMEN.	PANEL LENGTH	SECTION LENGTH	NO. OF INT. SECTIONS	NO. OF PANELS PER SECTION	PANEL LENGTH	SECTION LENGTH
82	2	4	6"	6'-5"	27'-11"	1	4	6'-5"	27'-8"
83	2	4	6"	6'-6"	28'-3"	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:

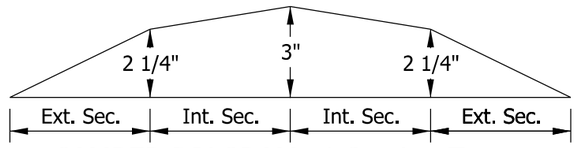
1. Camber diagrams for truss structures with 2 to 4 sections are shown. Cambers shown are for fabrication only and are measured with trusses fully supported at no-load conditions. Allowable camber tolerance for truss is 25% of specific camber value.
2. See Standard Drawing E 802-SBTS-04 for additional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



CAMBER DIAGRAM (2-Section Truss)



CAMBER DIAGRAM (3-Section Truss)



CAMBER DIAGRAM (4-Section Truss)

INDIANA DEPARTMENT OF TRANSPORTATION

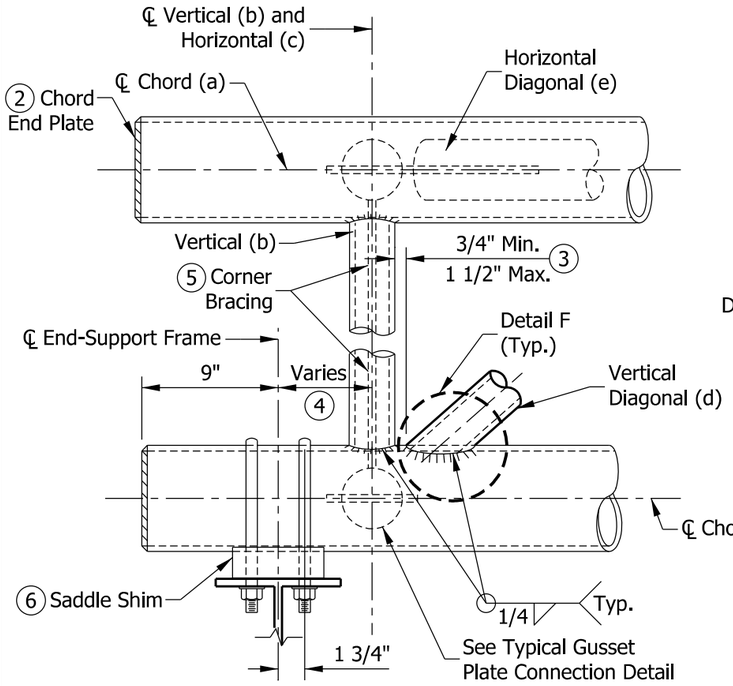
SIGN BOX TRUSS STRUCTURE
TABLE OF DIMENSIONS
SPANS 82' THRU 130' AND CAMBER
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-05

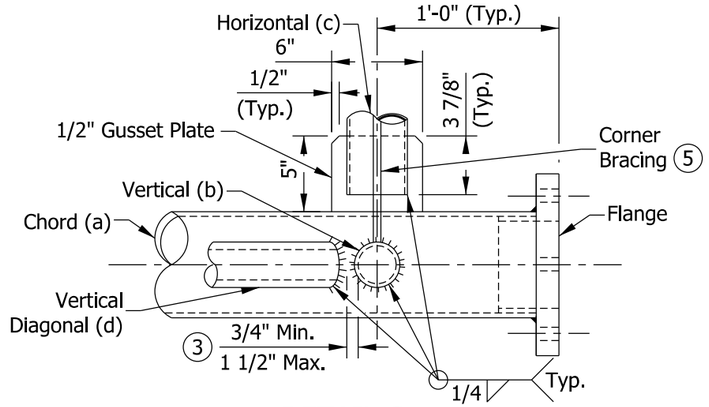
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

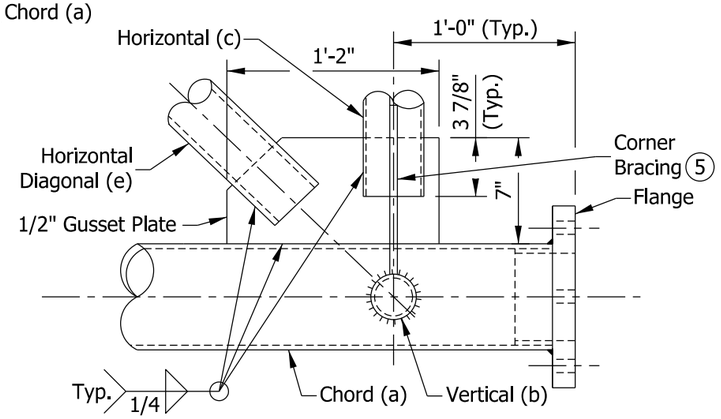
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



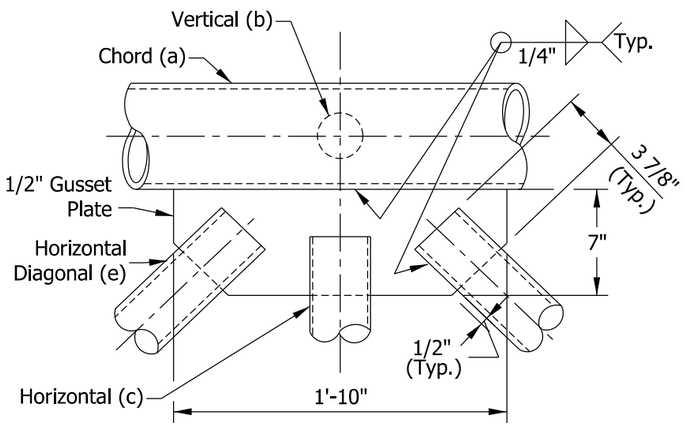
DETAIL A
EXTERIOR SECTION AT END SUPPORT



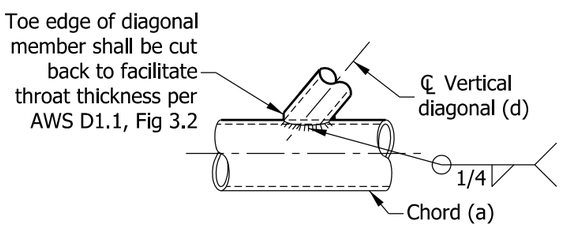
DETAIL C
CHORD AT FLANGE CONNECTION
PLAN VIEW



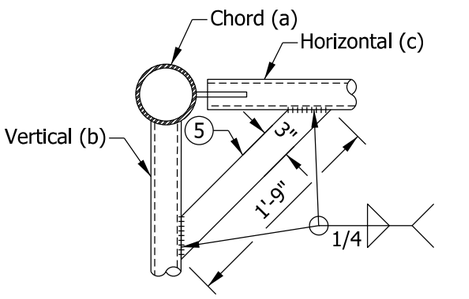
DETAIL D
CHORD AT FLANGE CONNECTION
PLAN VIEW



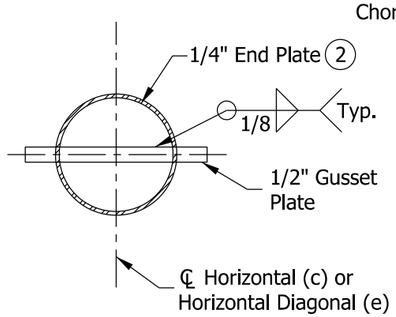
DETAIL B
TYPICAL PANEL CONNECTION
PLAN VIEW



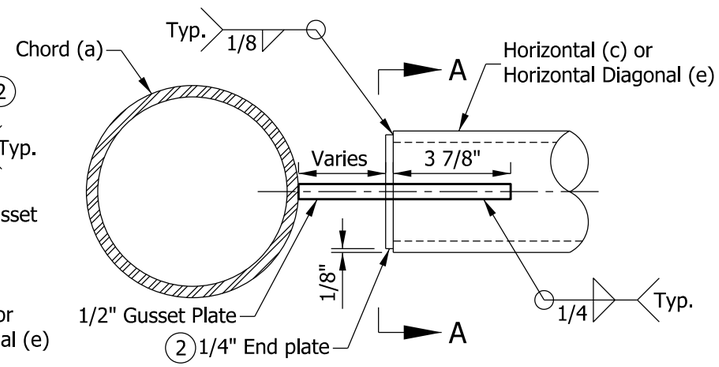
DETAIL F



DETAIL E
TYPICAL CORNER BRACING



SECTION A-A



TYPICAL GUSSET PLATE CONNECTION DETAIL
ELEVATION VIEW

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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
CHORD CONNECTIONS AND WELD DETAILS

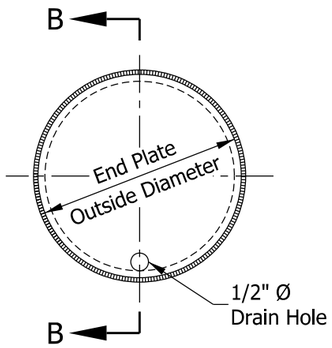
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-06

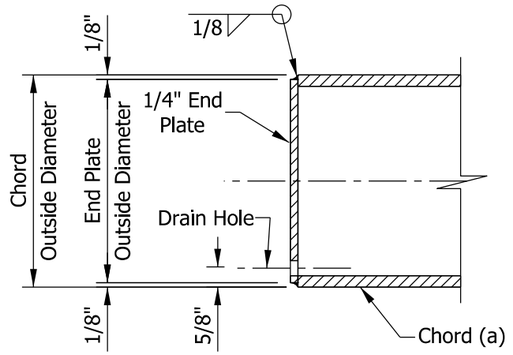
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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

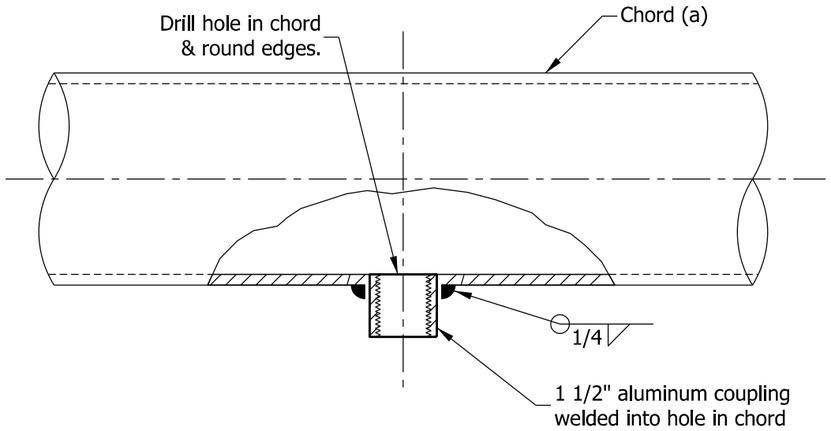


END VIEW

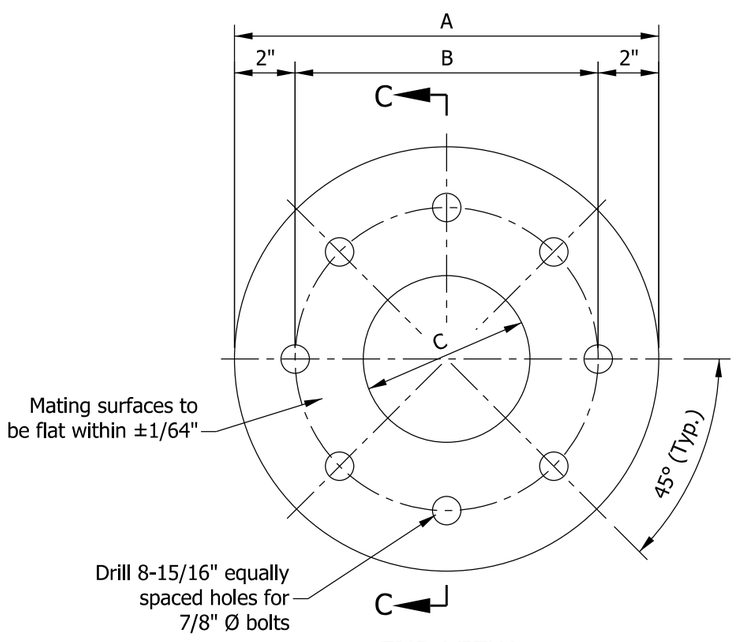


SECTION B-B

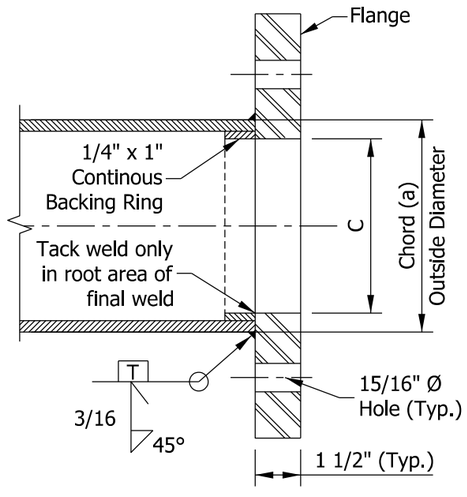
CHORD END PLATE DETAILS



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

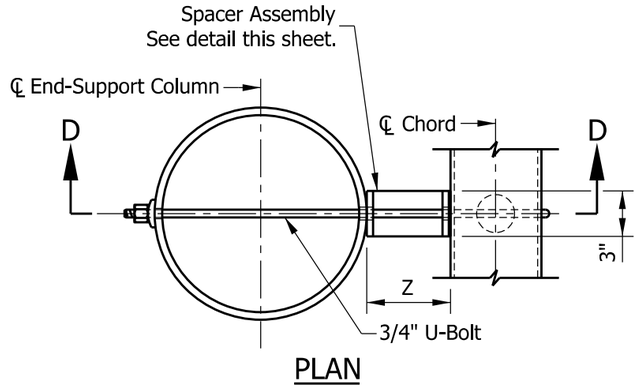
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-07

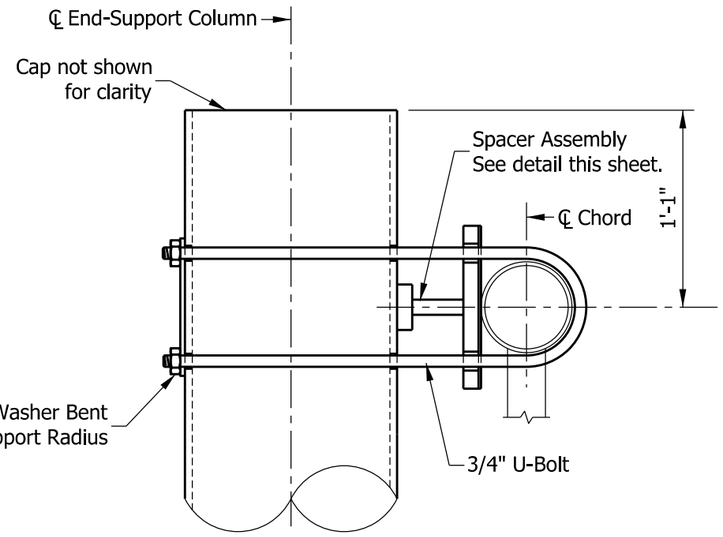
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

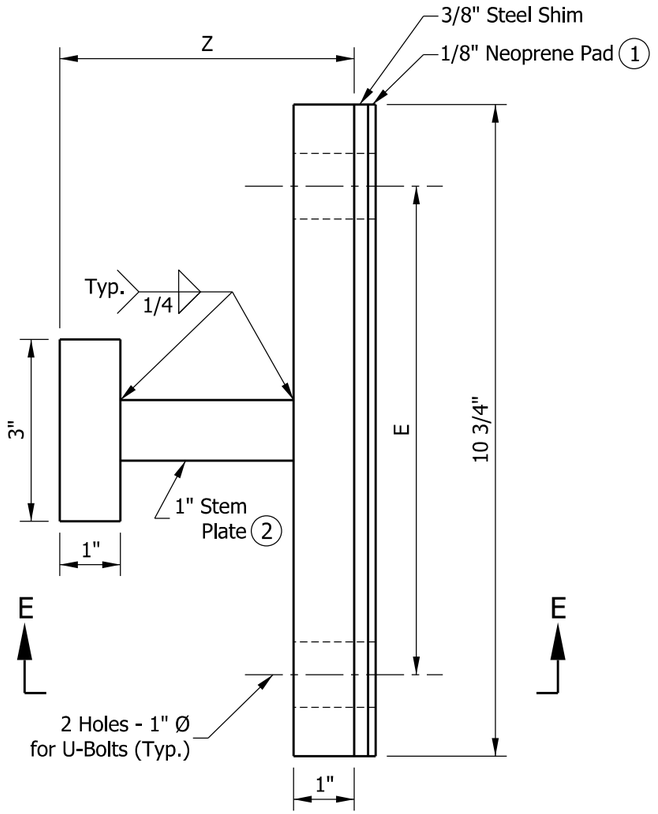
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



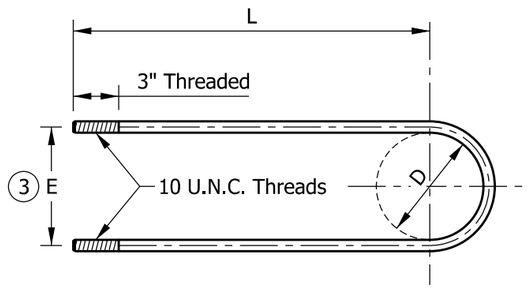
PLAN



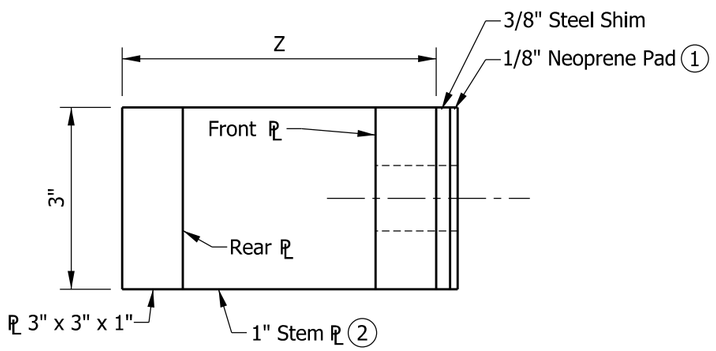
SECTION D-D
UPPER CHORD CONNECTION DETAILS



ELEVATION
END SUPPORT SPACER ASSEMBLY DETAIL



3/4" DIA. STAINLESS STEEL U-BOLT DETAIL



SECTION E-E

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

INDIANA DEPARTMENT OF TRANSPORTATION

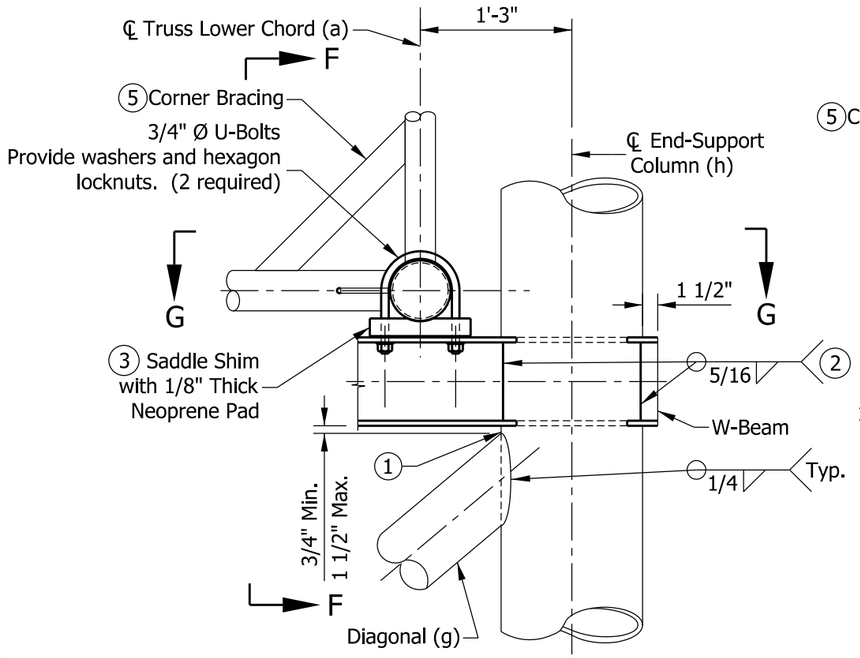
SIGN BOX TRUSS STRUCTURE
END-SUPPORT
UPPER CHORD CONNECTION DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-08

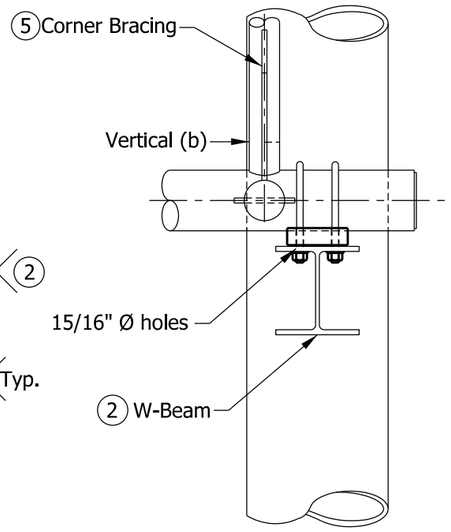
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

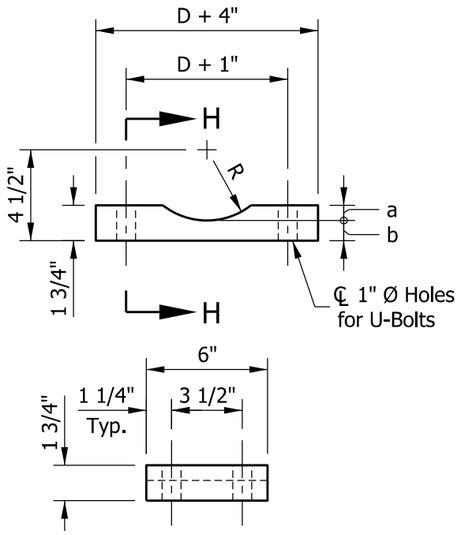
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



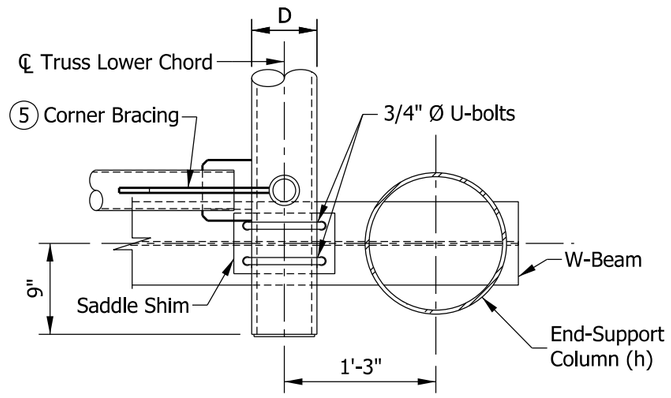
LOWER CHORD CONNECTION DETAIL



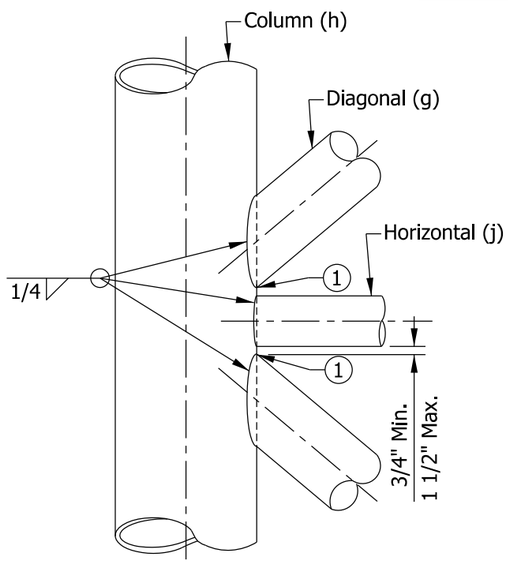
SECTION F-F



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 = Outside Diameter of Chord(a).

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE END-SUPPORT LOWER CHORD CONNECTION DETAILS

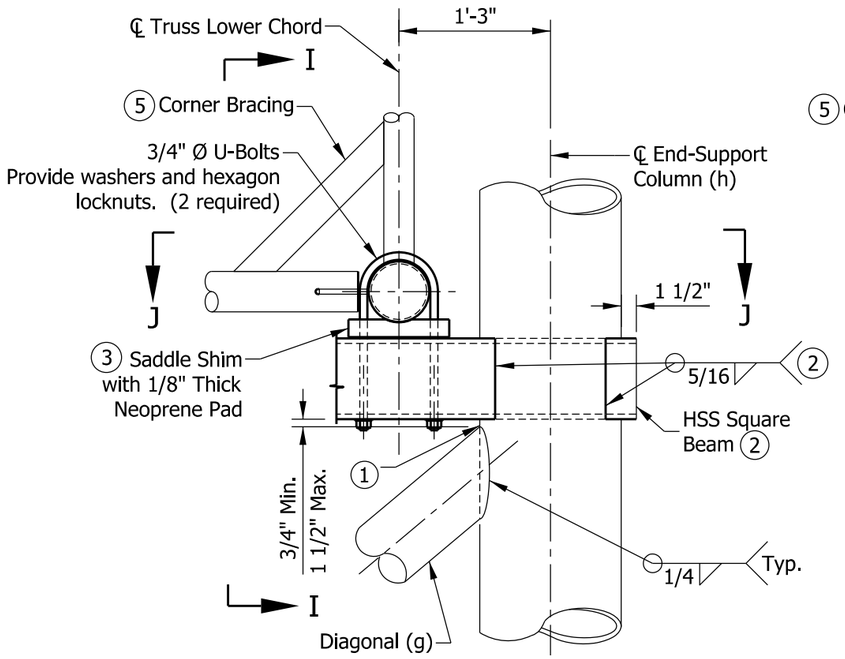
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-09

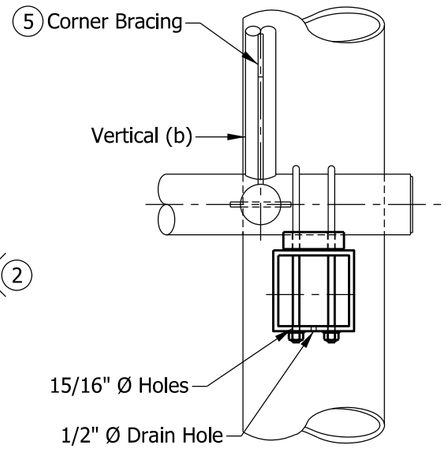
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

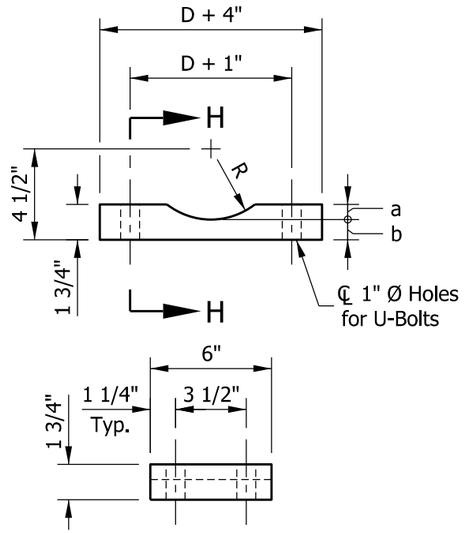
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



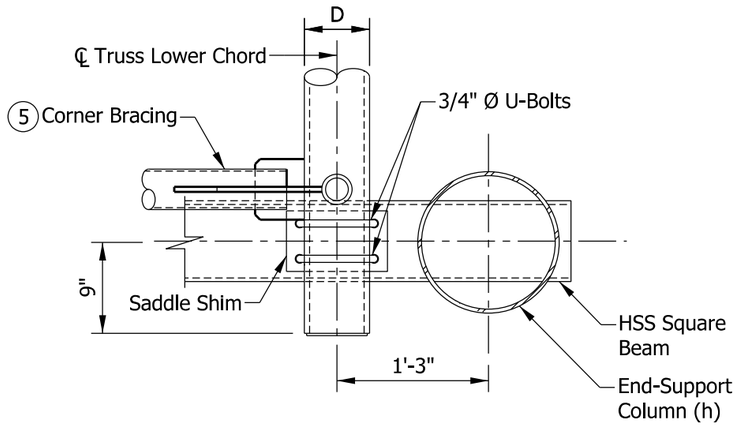
LOWER CHORD CONNECTION DETAIL



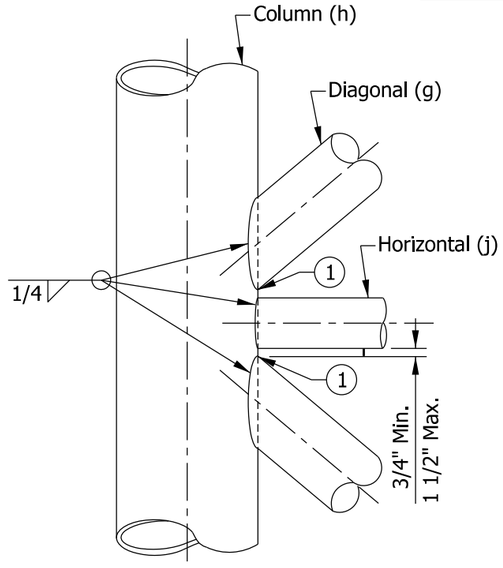
SECTION I-I



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 = Outside Diameter of Chord(a).

INDIANA DEPARTMENT OF TRANSPORTATION

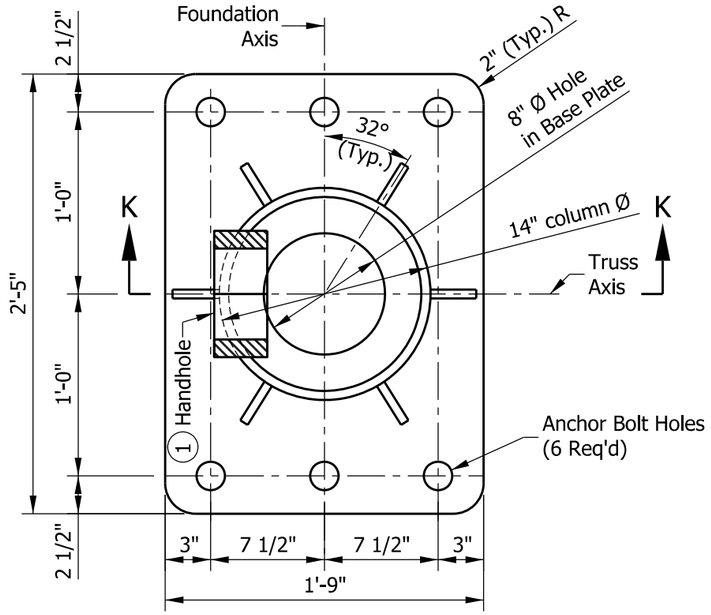
SIGN BOX TRUSS STRUCTURE
END SUPPORT LOWER CHORD
CONNECTION DETAILS, ALTERNATE HSS BEAM
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-10

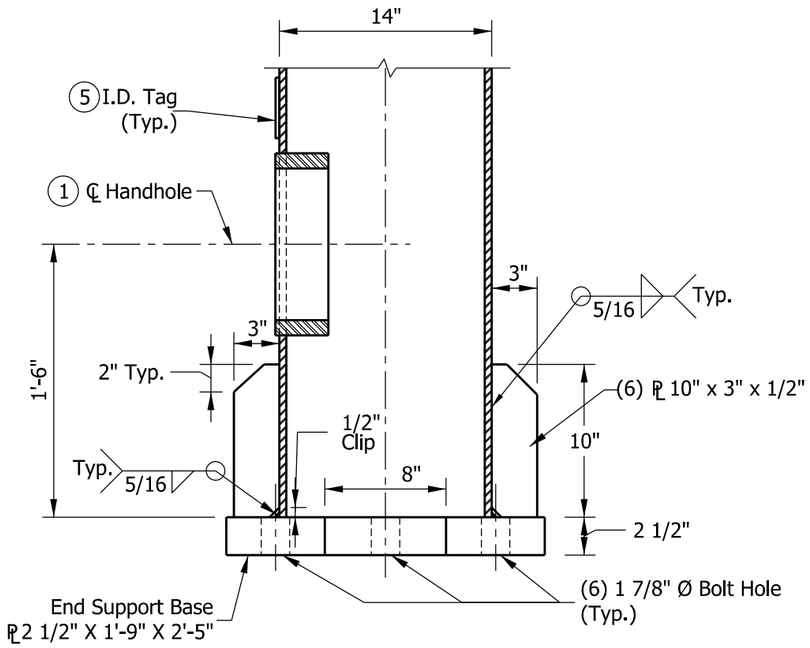
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

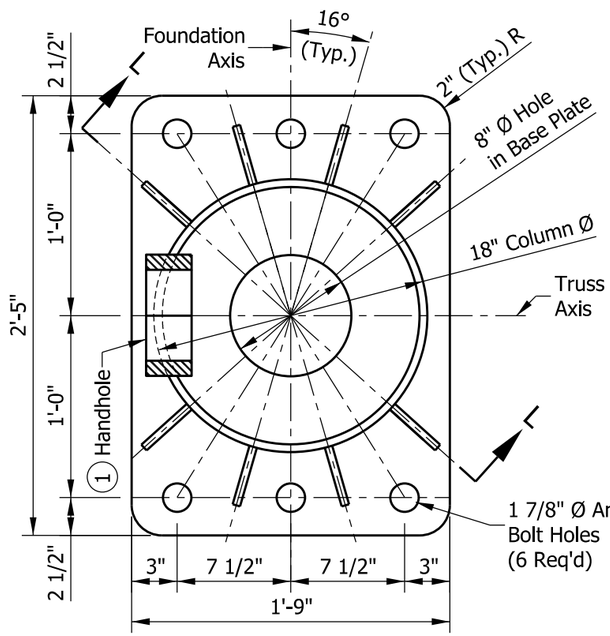
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



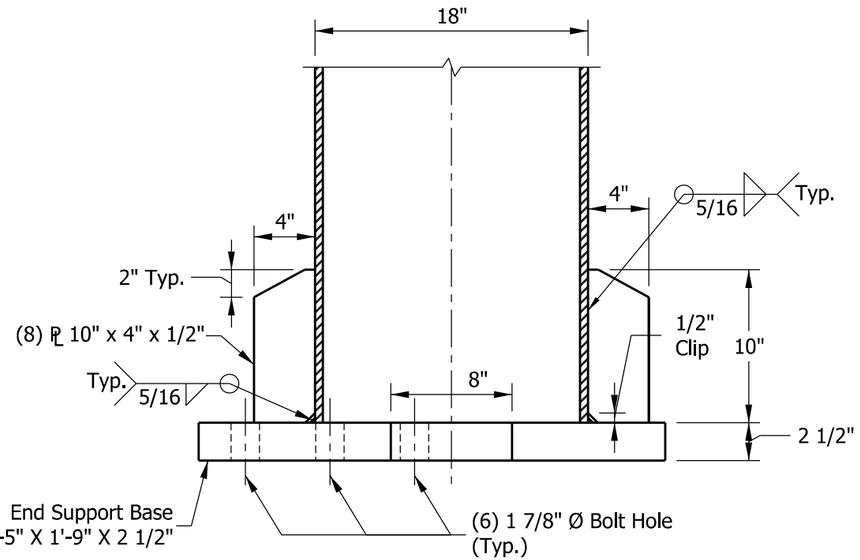
TYPE B-14 BASE PLATE



SECTION K-K



TYPE B-18 BASE PLATE

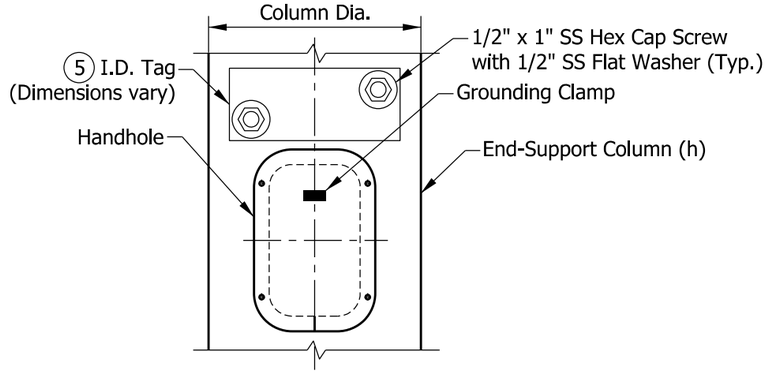


SECTION L-L

NOTES:

1. See Standard Drawing E 802-SBTS-12 for handhole details.
2. 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".
3. See Standard Drawing E 802-SBTS-13 for anchor bolt and metal skirt details.
4. Each end support shall have one handhole at the column base (h). Handhole shall be placed on the column nearest to the sign.
5. 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

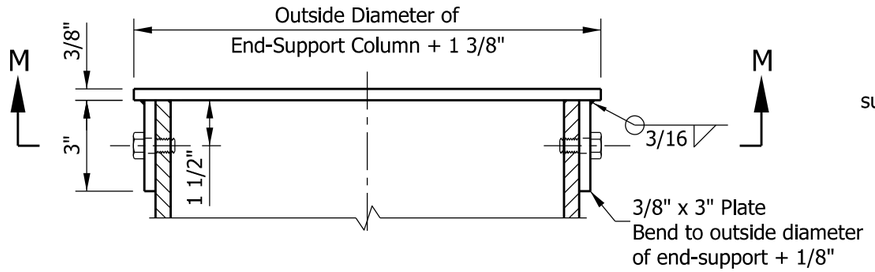
INDIANA DEPARTMENT OF TRANSPORTATION

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

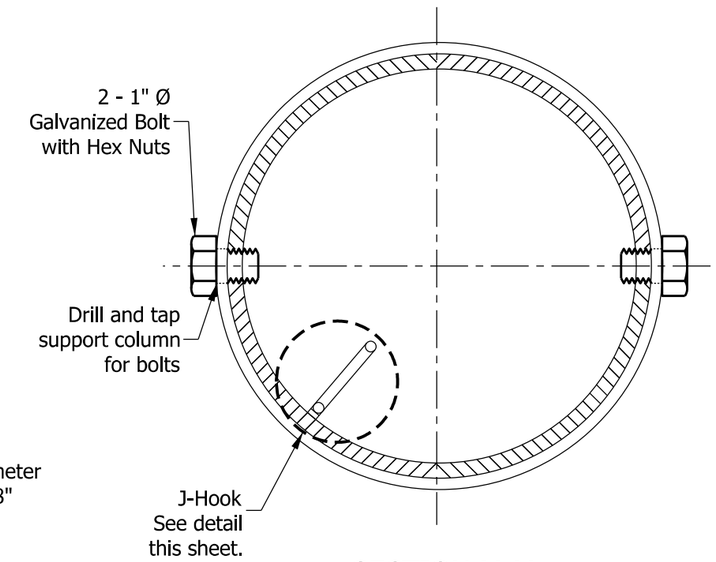
STANDARD DRAWING NO. E 802-SBTS-11

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



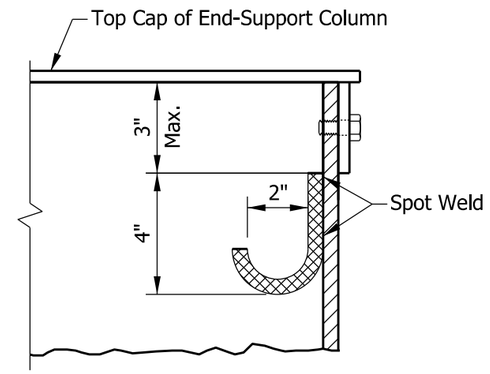
TOP CAP
ELEVATION VIEW



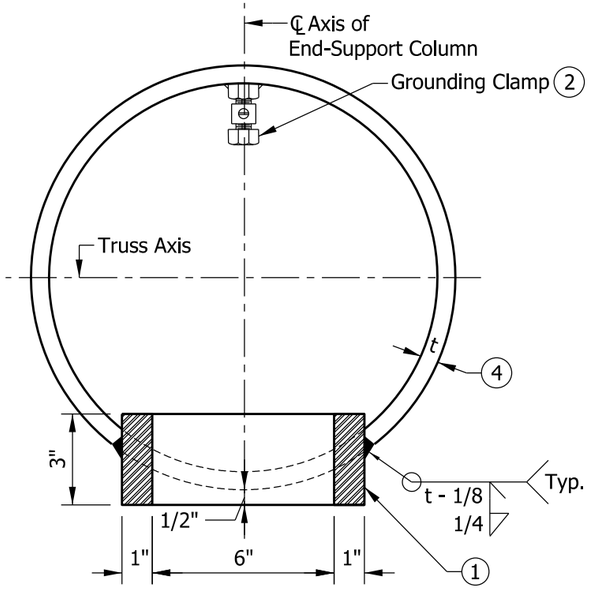
SECTION M-M

NOTES:

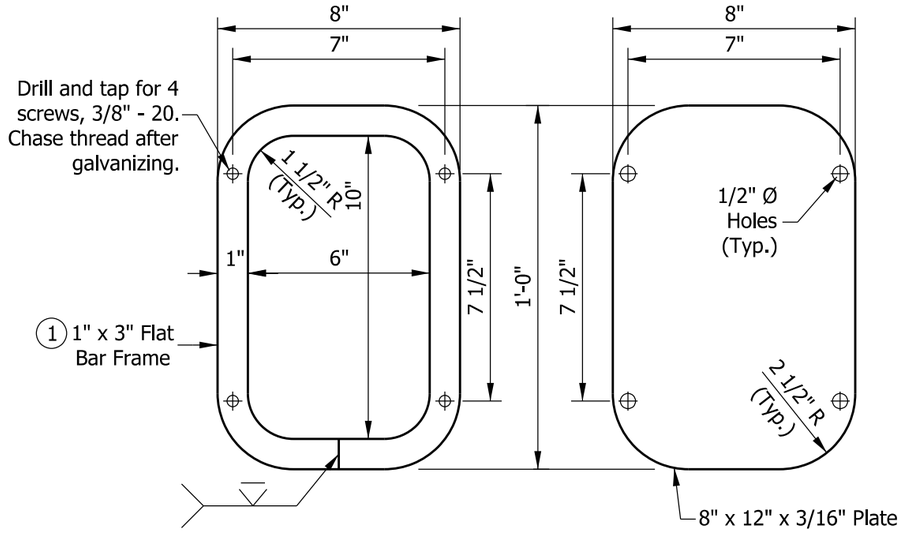
1. In lieu of fabricated handhole frame as shown, frame may be cut from 3" plate (rolling direction vertical).
2. See Standard Drawing E 802-SNWR-03 for grounding post details. Grounding post to be placed on far side of support directly opposite center of handhole.
3. See Standard Drawing E 802-SBTS-02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



J-HOOK DETAIL



HANDHOLE
SECTION ACROSS COLUMN



HANDHOLE FRAME DETAIL

HANDHOLE COVER

INDIANA DEPARTMENT OF TRANSPORTATION

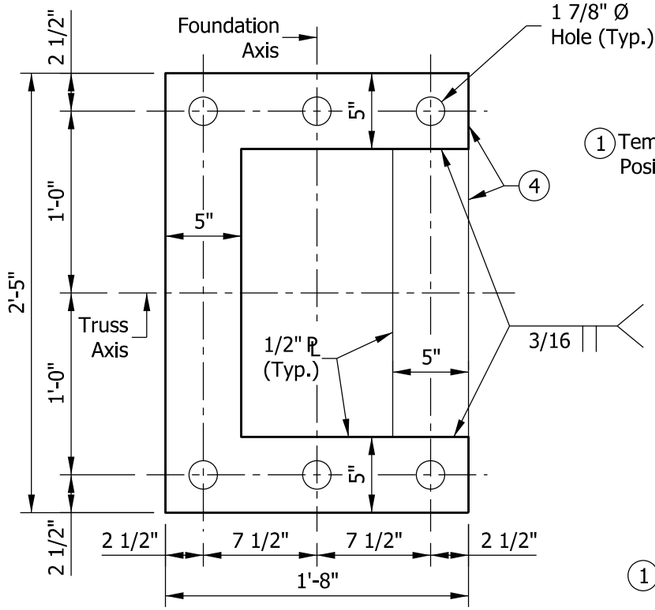
SIGN BOX TRUSS STRUCTURE
END-SUPPORT
TOP-CAP, HANDHOLE, AND J-HOOK DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-12

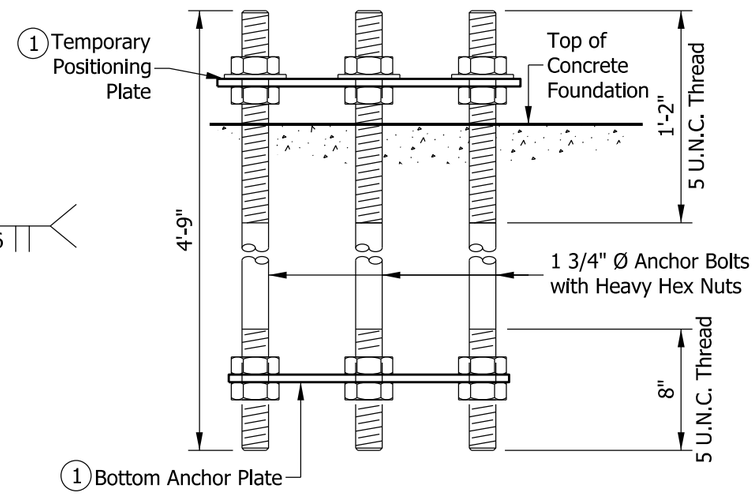
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

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



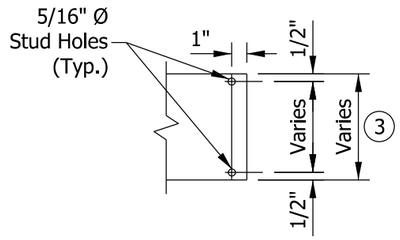
TEMPORARY POSITIONING PLATE



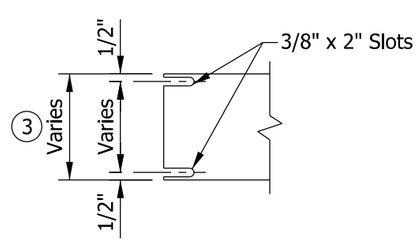
ANCHOR BOLT DETAILS
BEFORE CONCRETE PLACEMENT

NOTES:

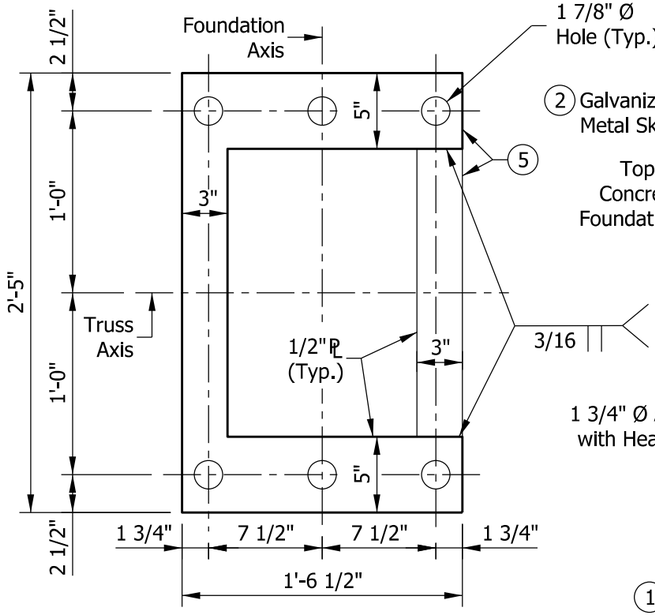
1. Use temporary positioning plate and bottom anchor plate for all foundations. Temporary positioning plate should be removed after placing concrete.
2. Secure galvanized metal skirt to base plate after erection as shown in skirt detail.
3. Minimum base plate gap is 2 1/2" and can be increased up to 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.



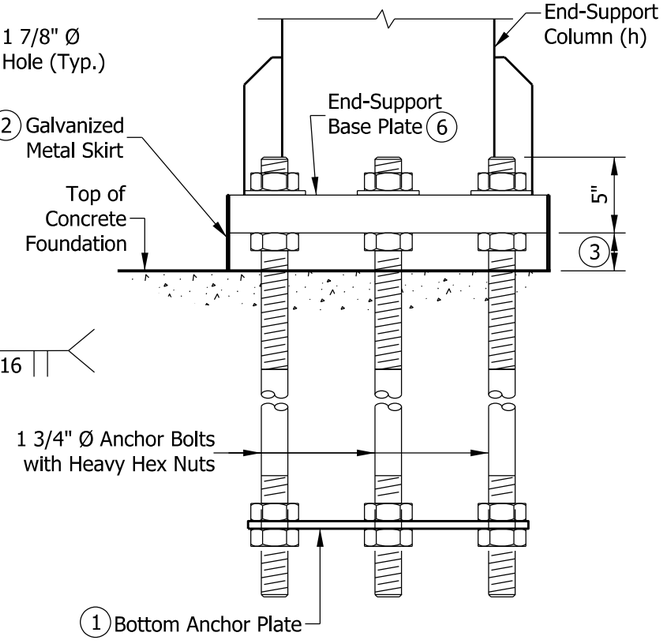
DETAIL G



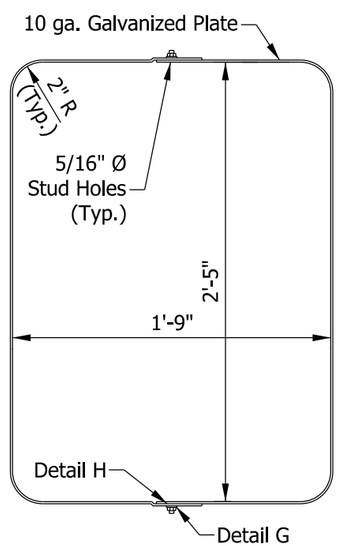
DETAIL H



BOTTOM ANCHOR PLATE



ANCHOR BOLT DETAILS
AFTER CONCRETE PLACEMENT



METAL SKIRT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

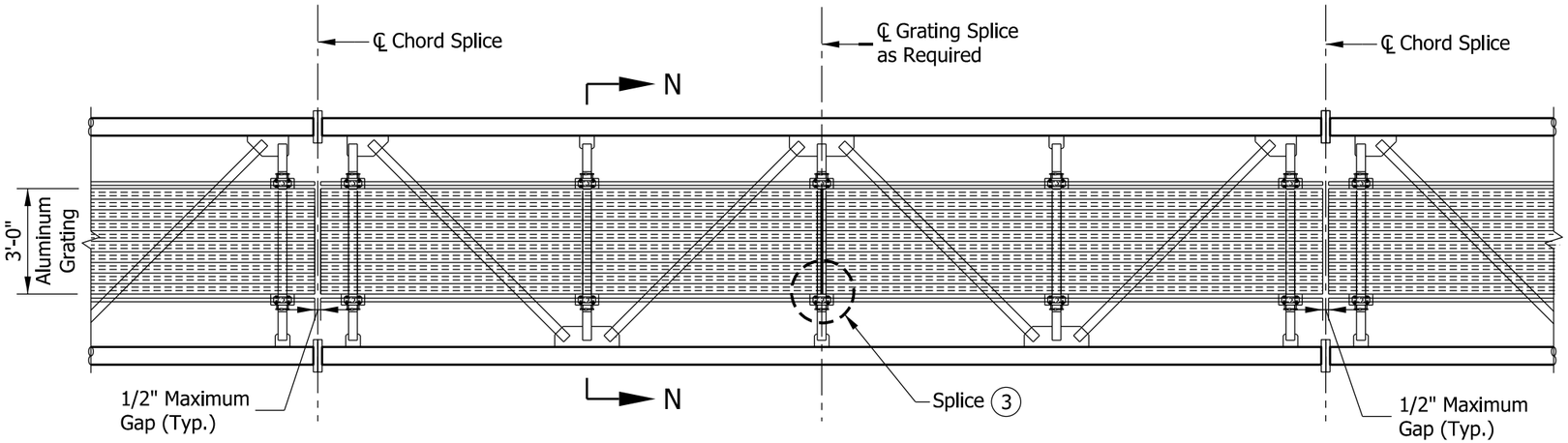
SIGN BOX TRUSS STRUCTURE
END-SUPPORT
ANCHOR BOLT AND METAL SKIRT DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-13

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

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

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



WALKWAY GRATING PLAN

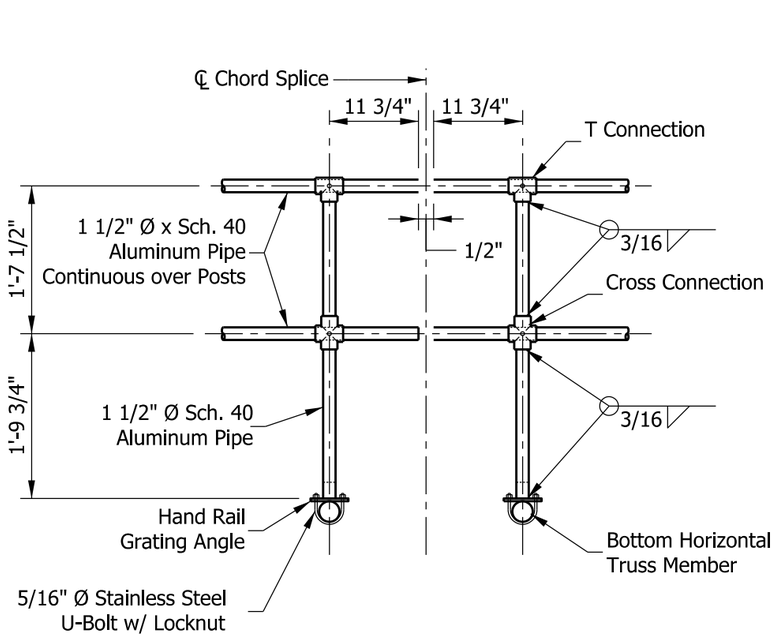
NOTES:

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 in^4. A different grating of equal strength may be used upon approval.

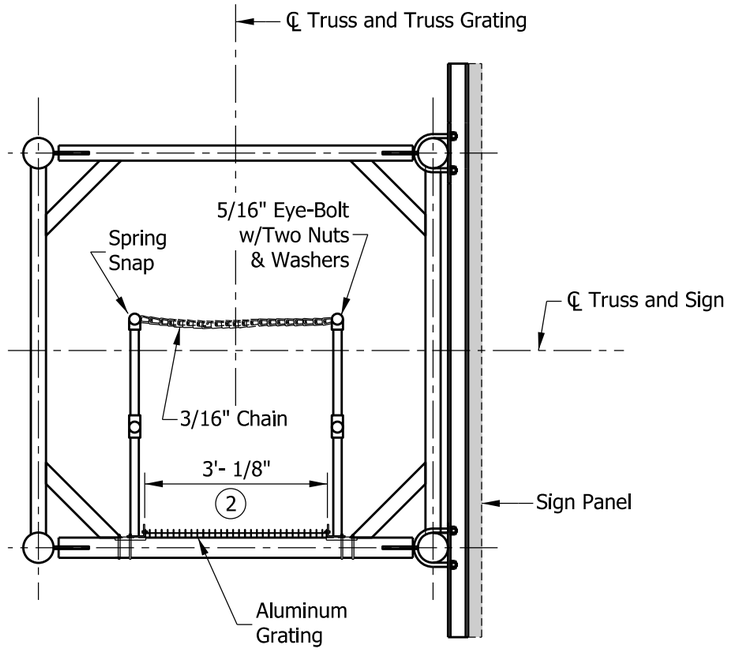
(2) Walkway grating width is nominal and may vary ±1/2" based on available standard widths.

(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

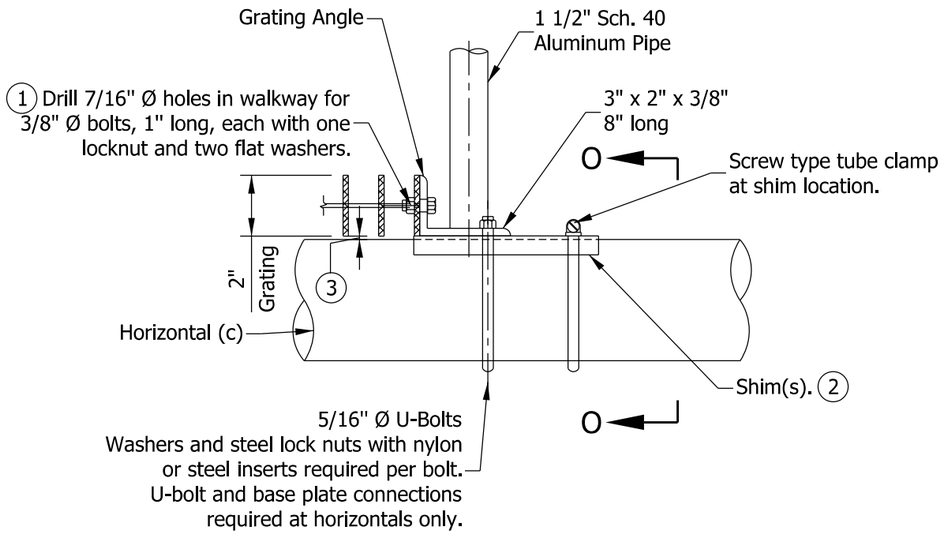
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-14

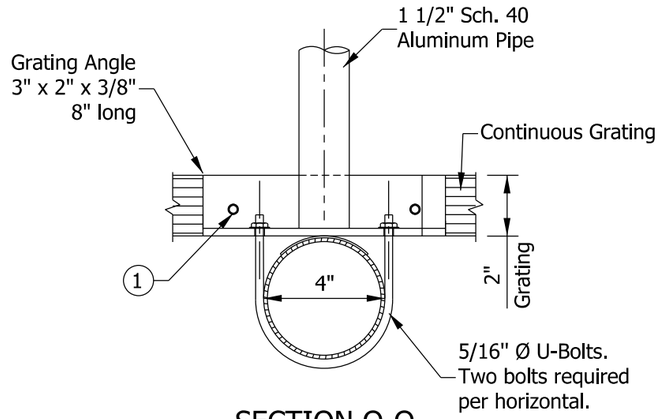
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

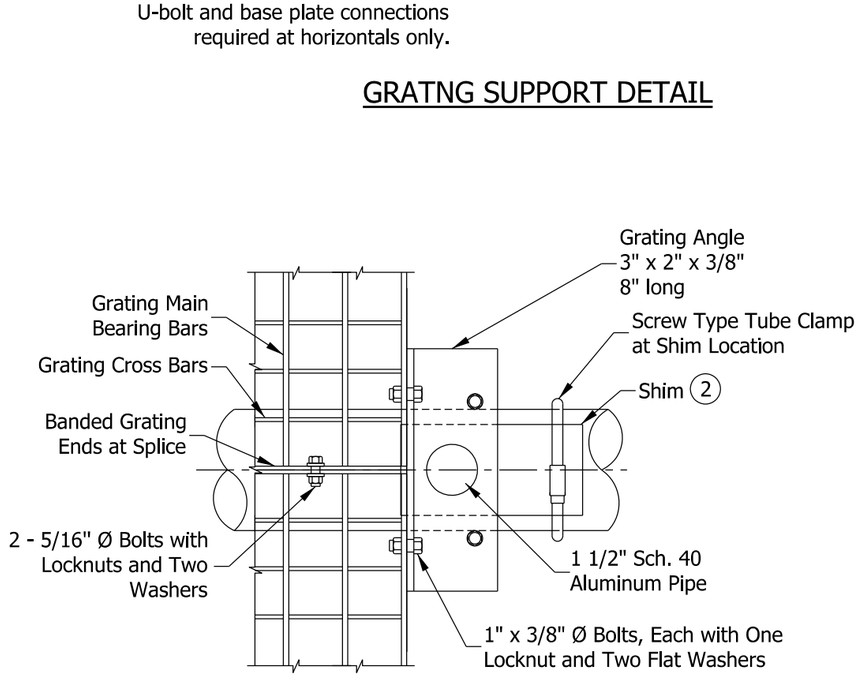
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



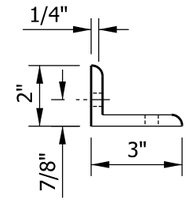
GRATNG SUPPORT DETAIL

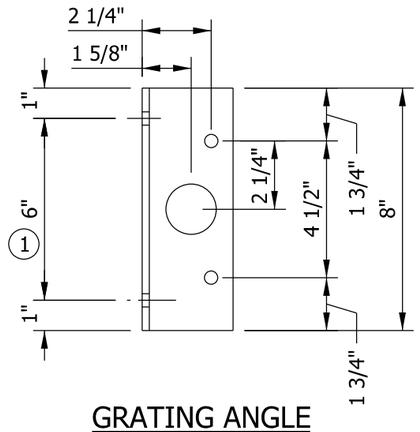


SECTION O-O



GRATING SPLICE DETAIL

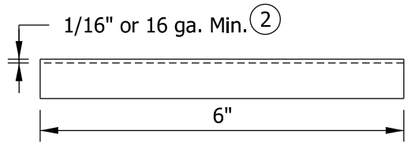




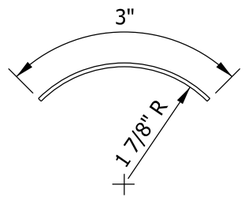
GRATING ANGLE

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

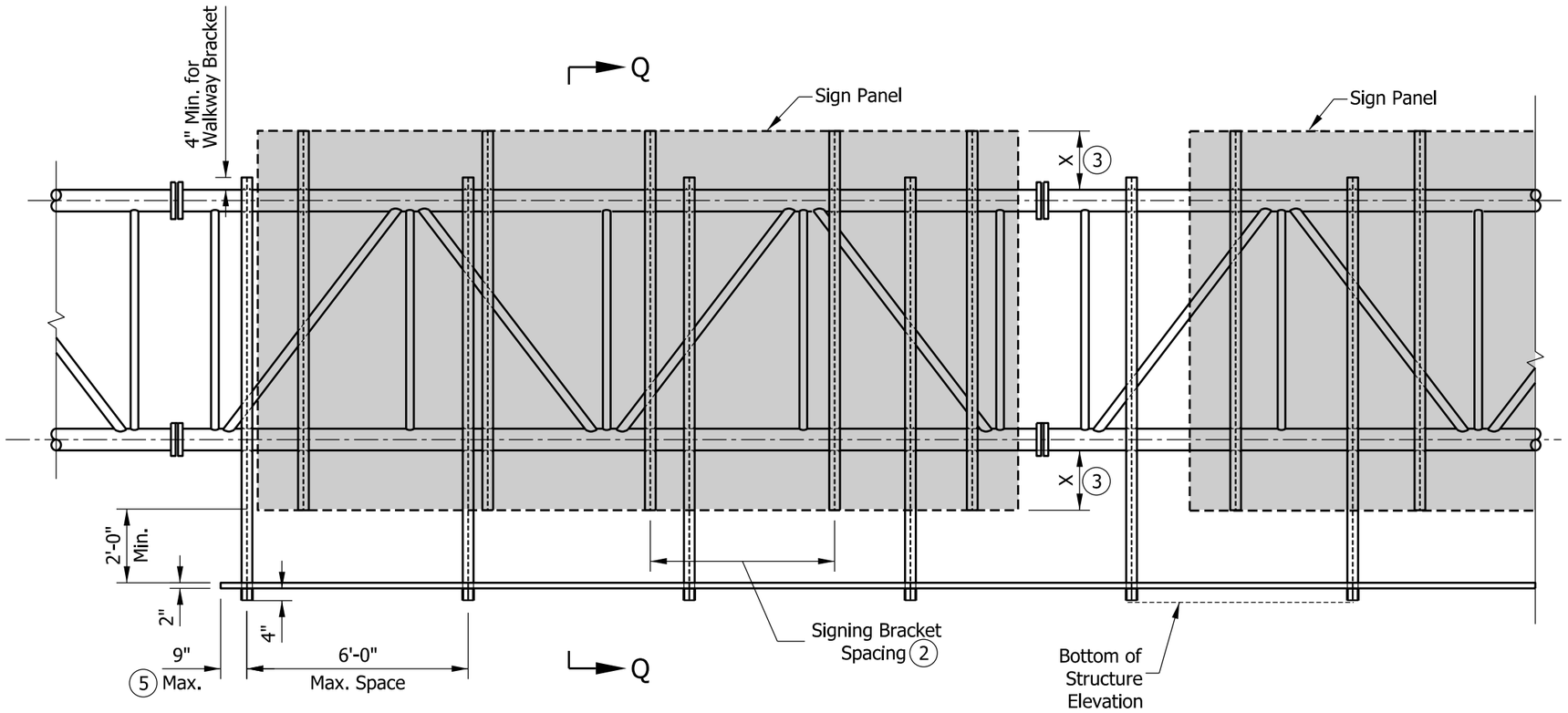
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

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

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

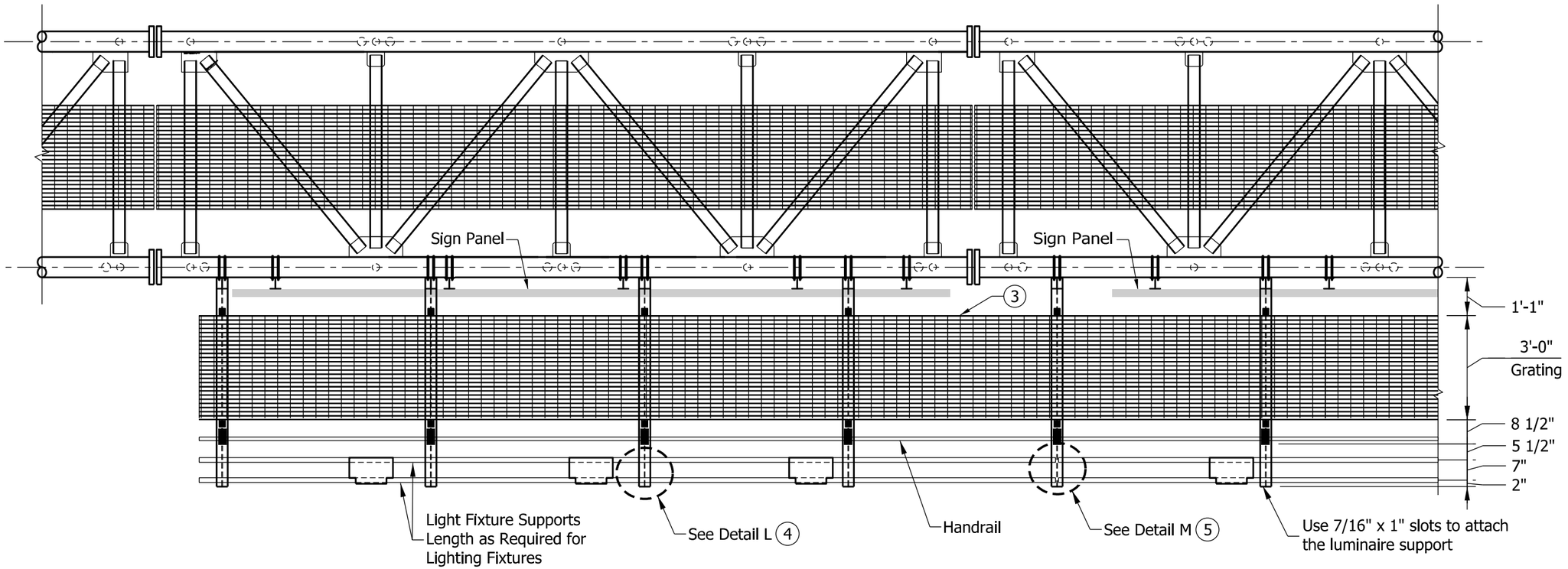
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-16

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



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 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

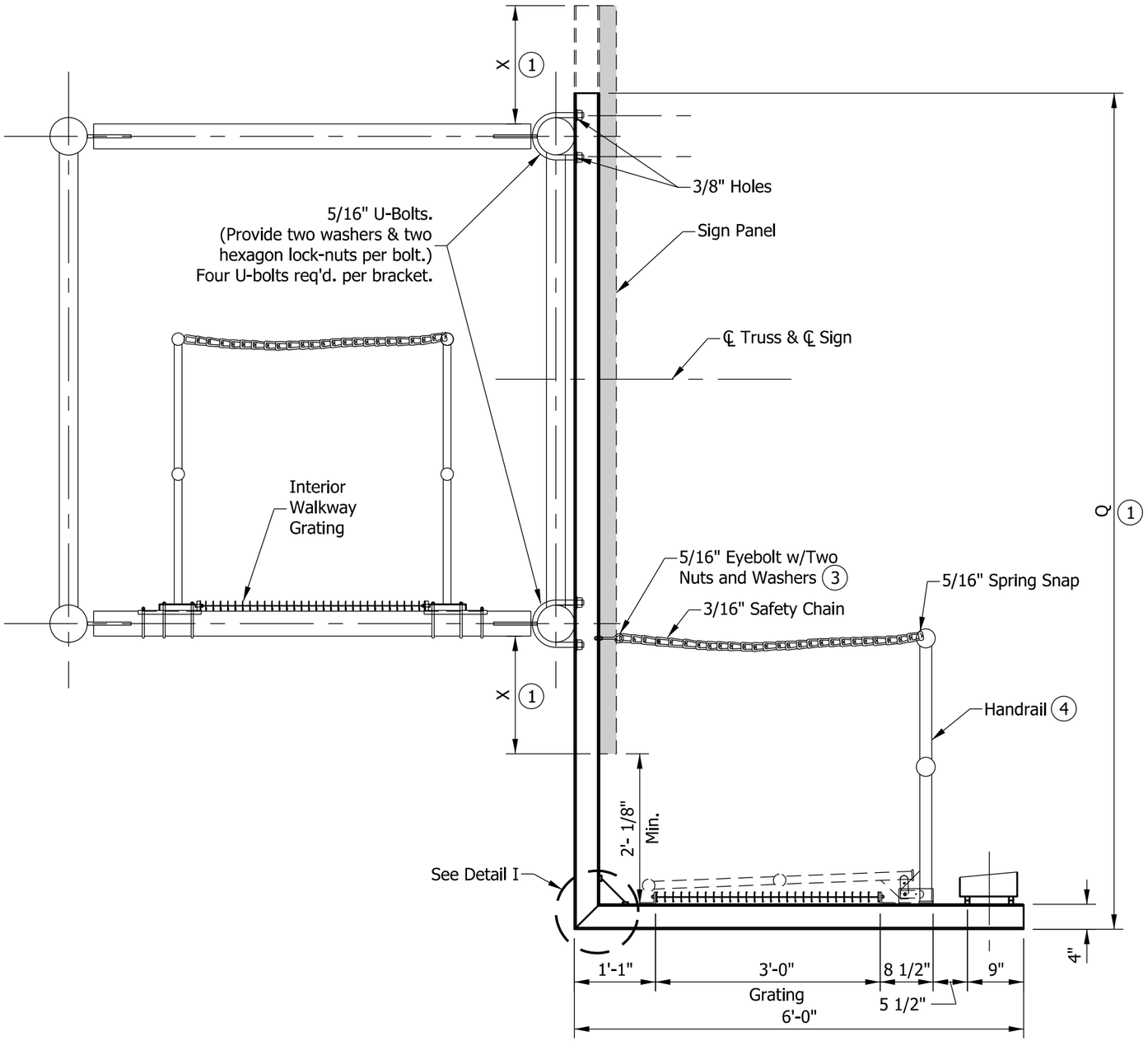
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-17

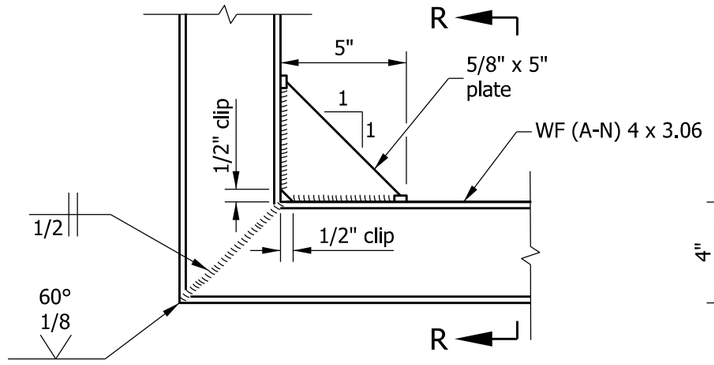
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

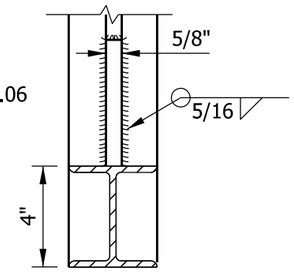
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SECTION Q-Q



DETAIL I



SECTION R-R

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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY PROFILE

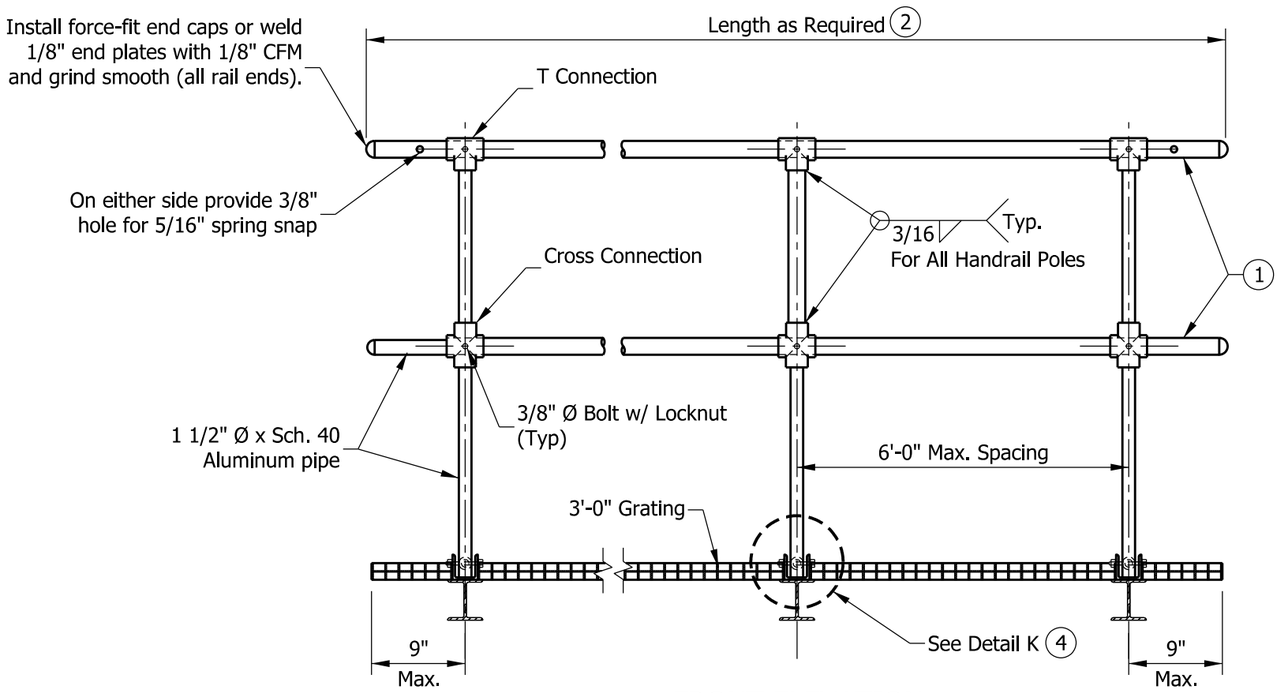
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-18

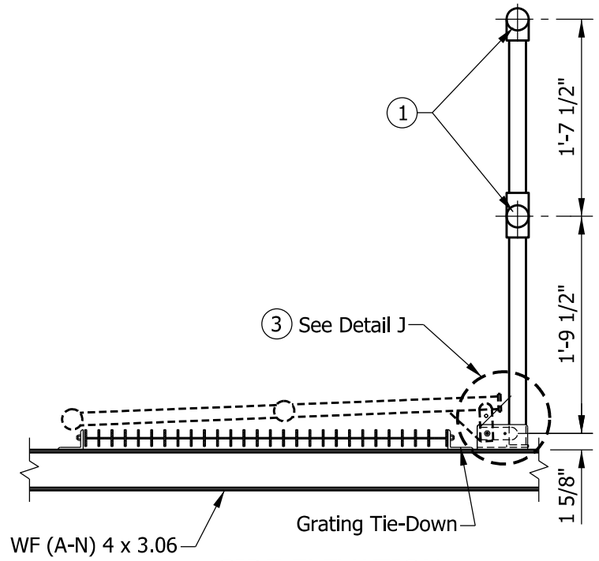
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

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



FRONT ELEVATION



SIDE ELEVATION

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

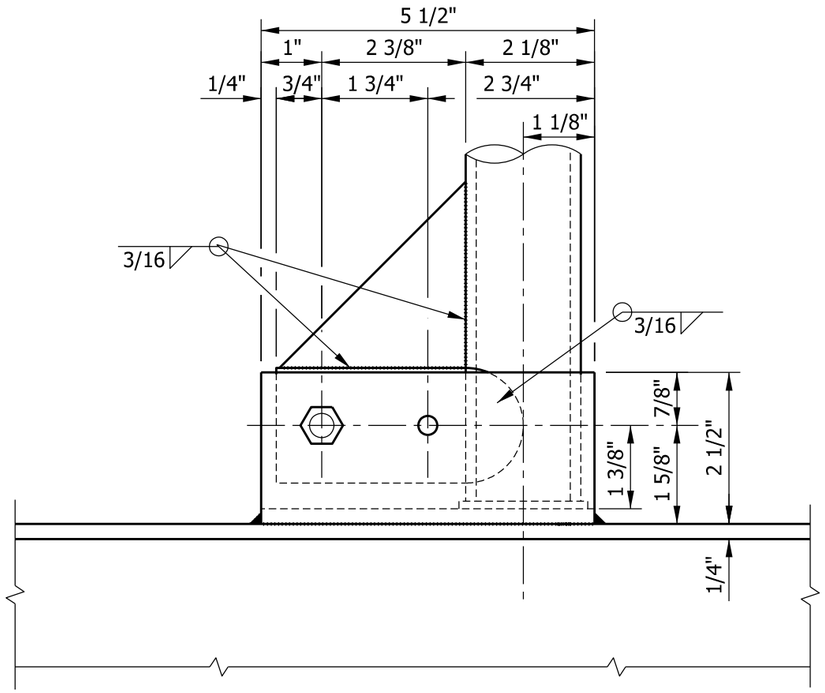
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-19

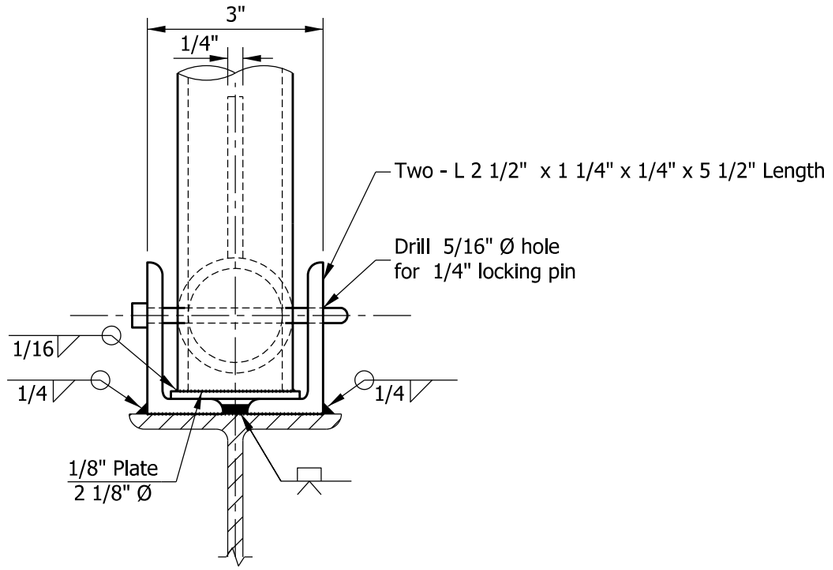
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

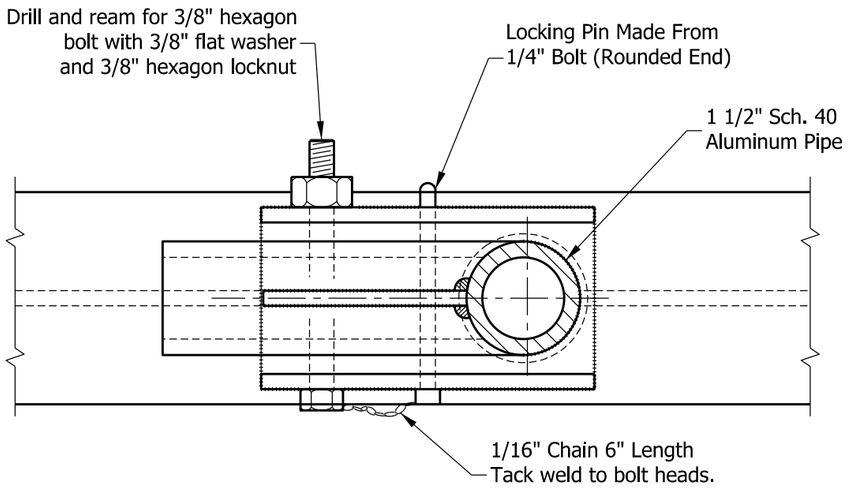
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



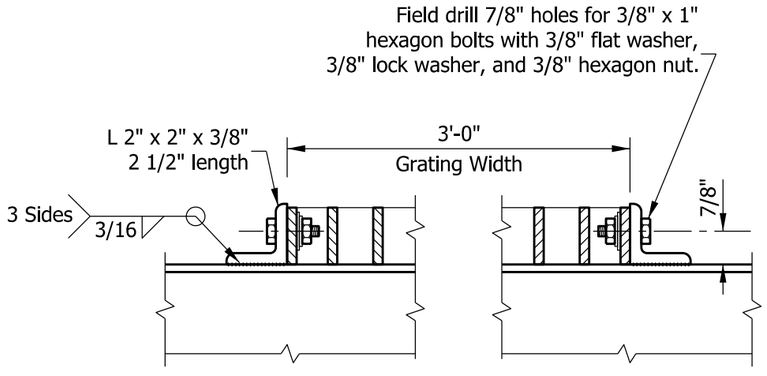
DETAIL J
SIDE ELEVATION



DETAIL K
FRONT ELEVATION



PLAN
DETAILS OF HANDRAIL HINGE



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

INDIANA DEPARTMENT OF TRANSPORTATION

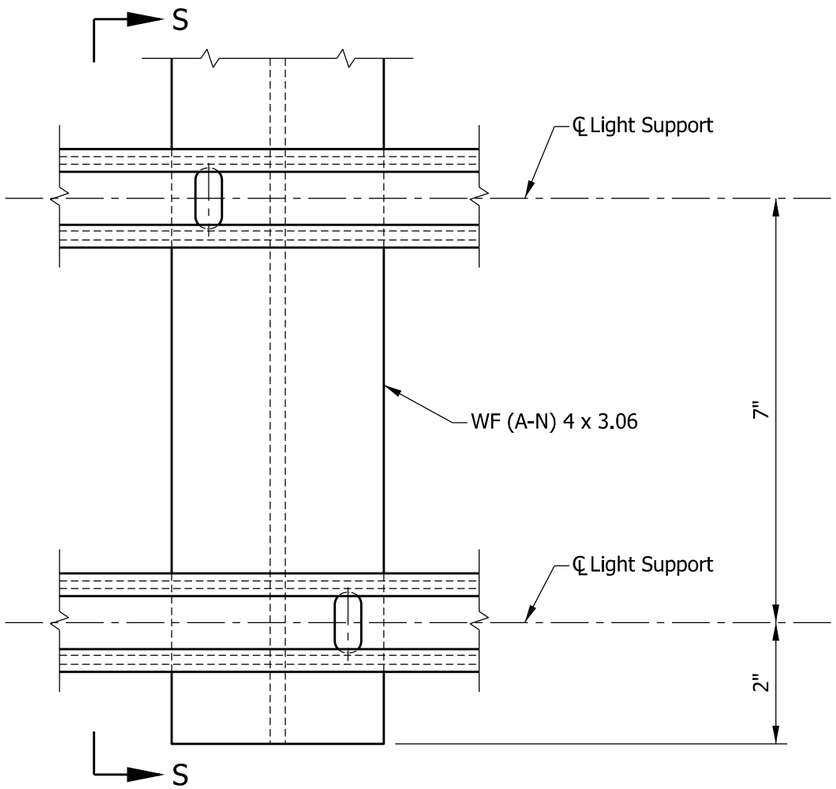
SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY, HANDRAIL HINGE, AND GRATING DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-20

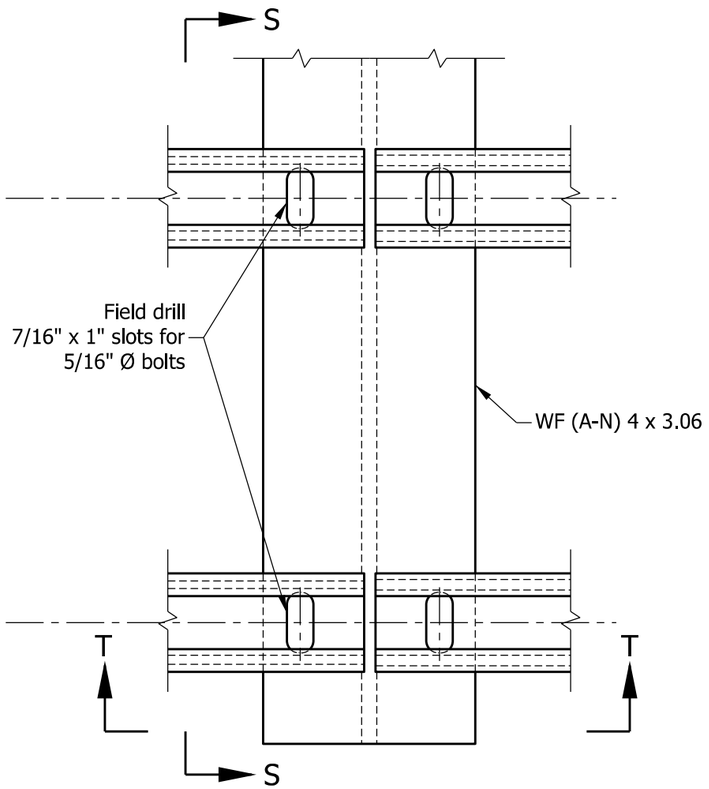
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

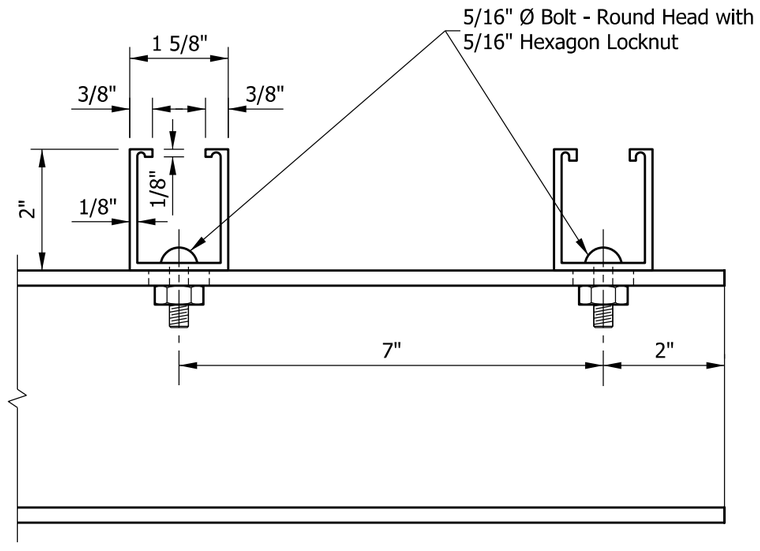
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



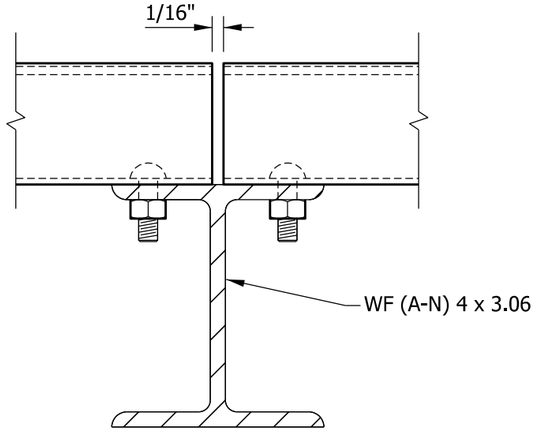
DETAIL L



DETAIL M



SECTION S-S



SECTION T-T

INDIANA DEPARTMENT OF TRANSPORTATION

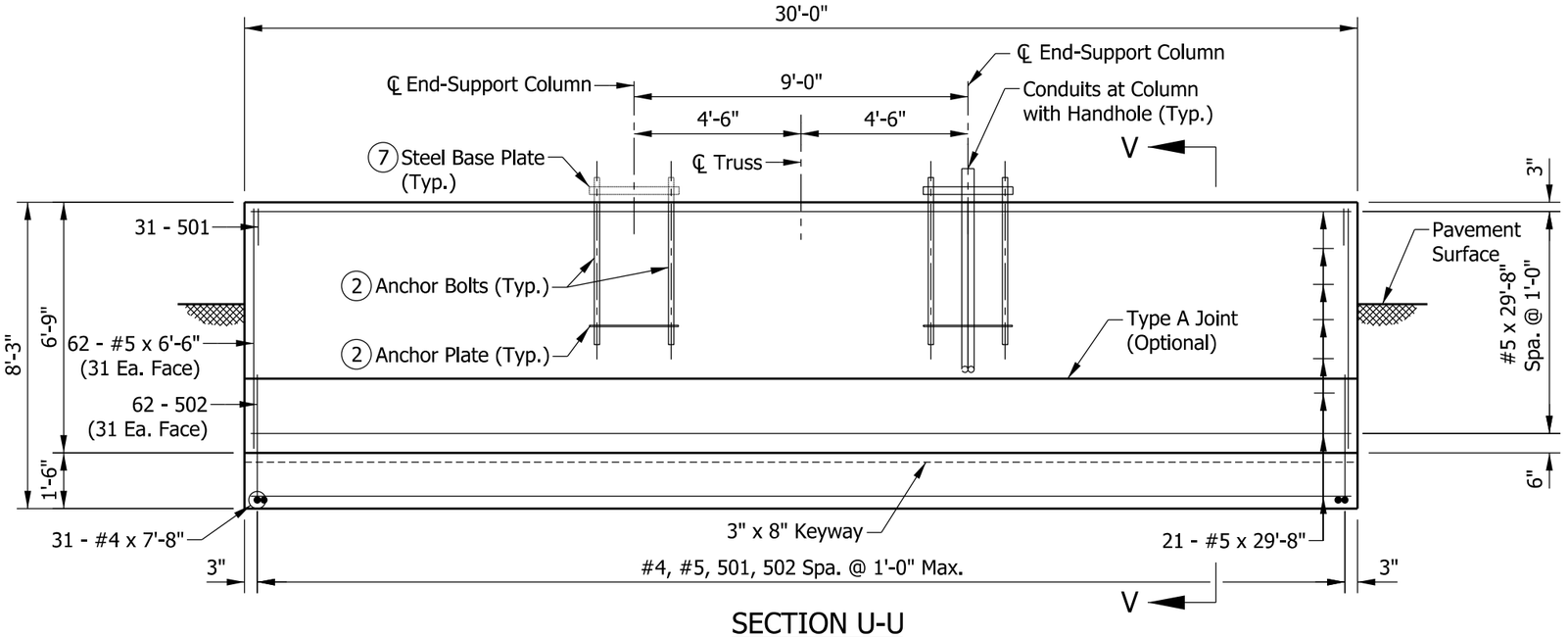
SIGN BOX TRUSS STRUCTURE
LIGHTING WALKWAY
FIXTURE MOUNT DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-21

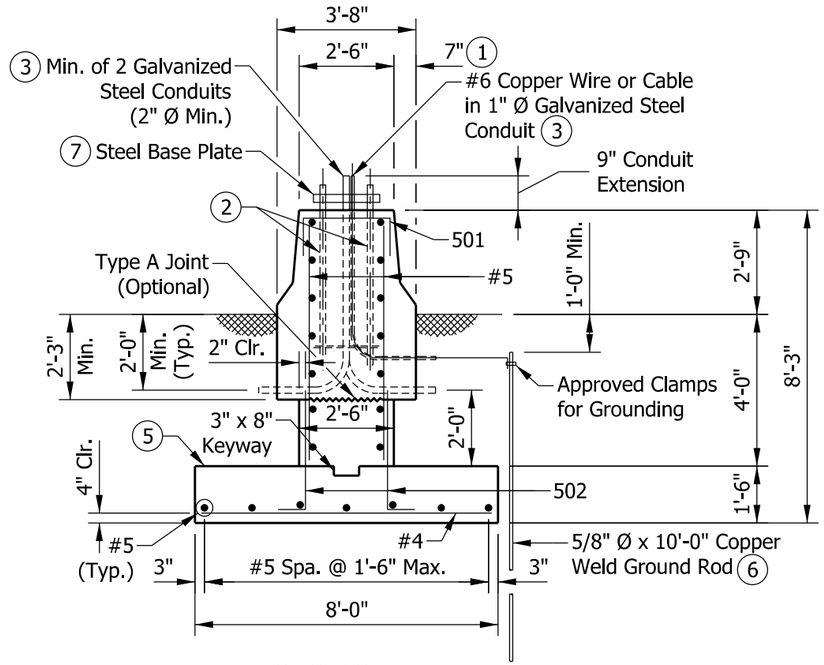
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

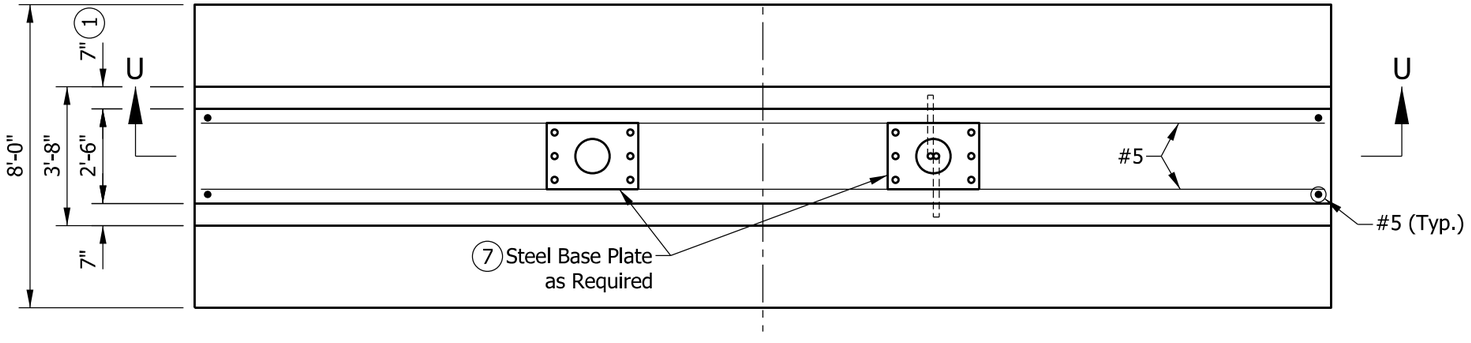
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SECTION U-U



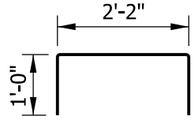
SECTION V-V



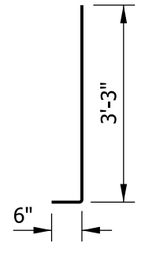
PLAN

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.



501 x 4'-2"



502 x 3'-9"

INDIANA DEPARTMENT OF TRANSPORTATION

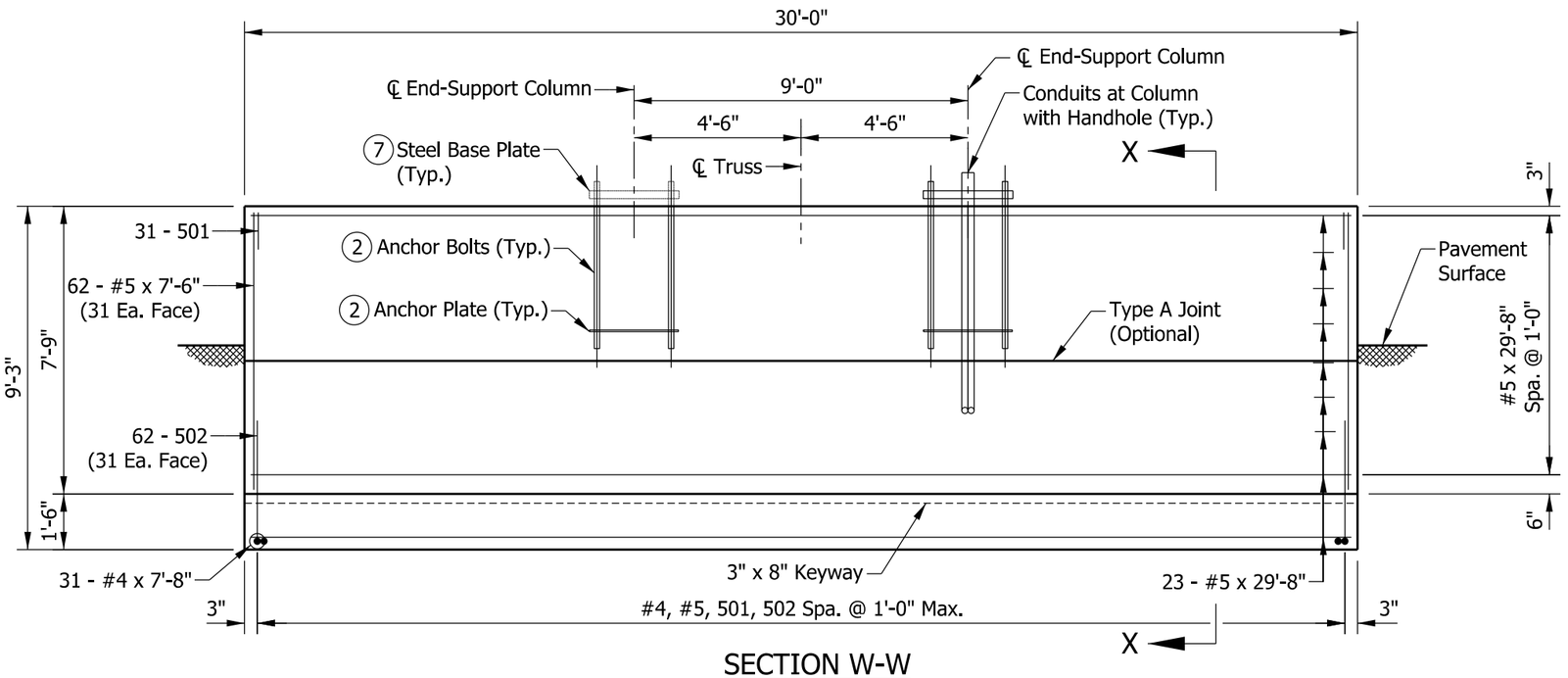
SIGN BOX TRUSS STRUCTURE
SPREAD FOUNDATION
AT 33" CONCRETE BARRIER WALL
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-22

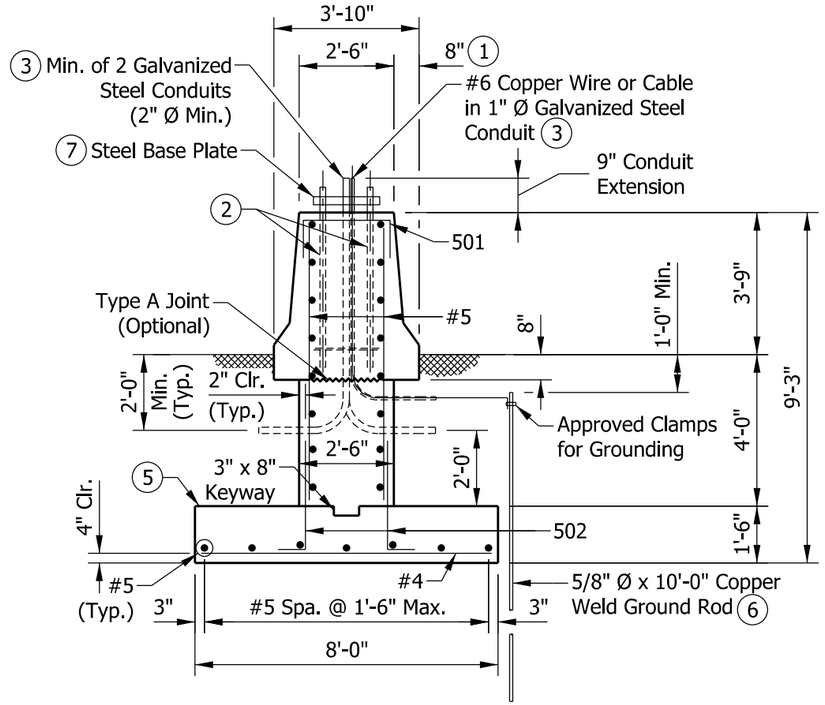
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

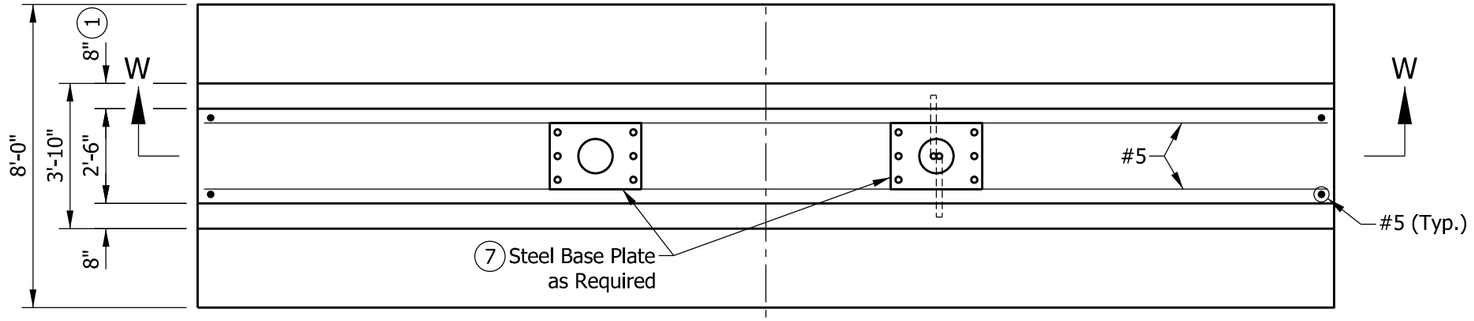
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SECTION W-W



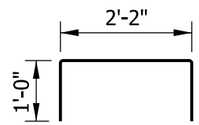
SECTION X-X



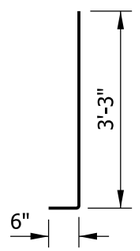
PLAN

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 details.



501 x 4'-2"



502 x 3'-9"

INDIANA DEPARTMENT OF TRANSPORTATION

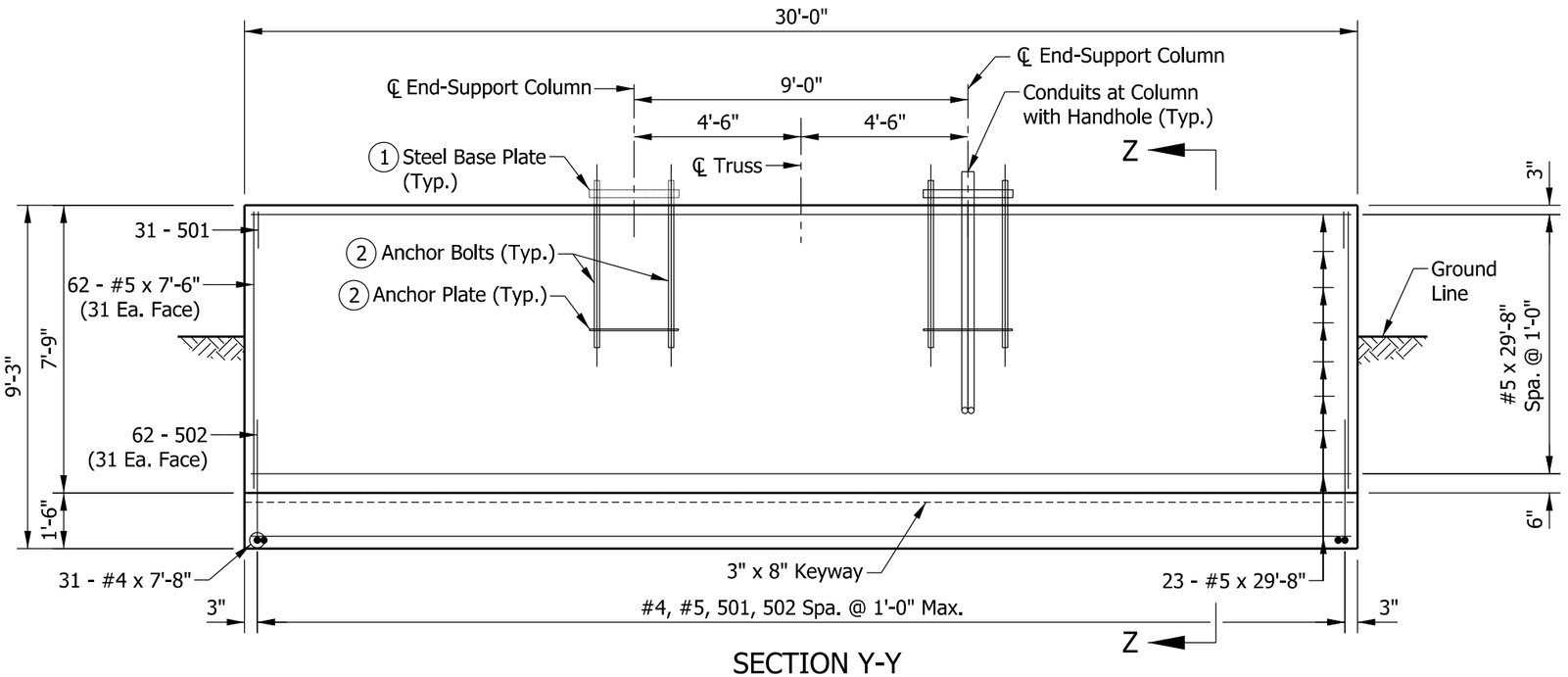
SIGN BOX TRUSS STRUCTURE
SPREAD FOUNDATION
AT 45" CONCRETE BARRIER WALL
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-23

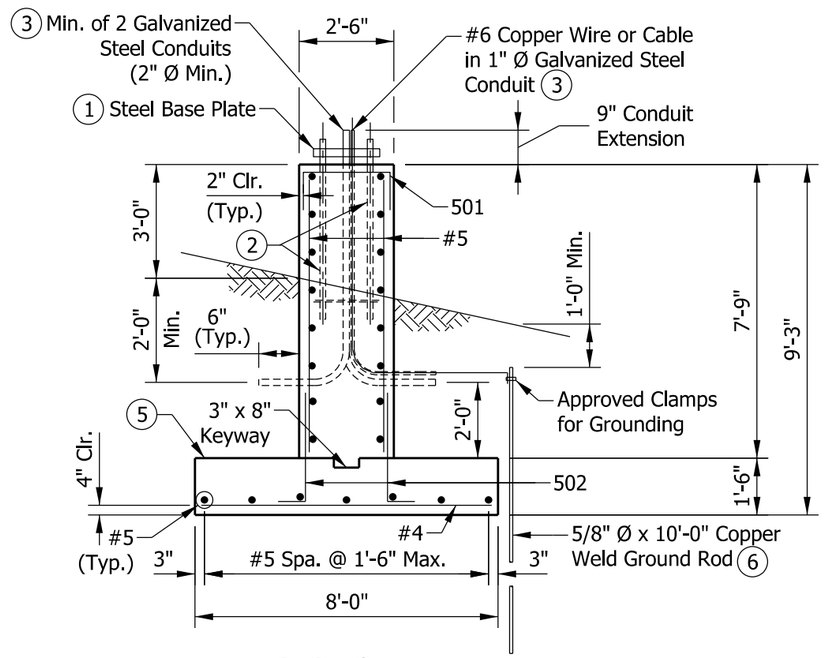
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

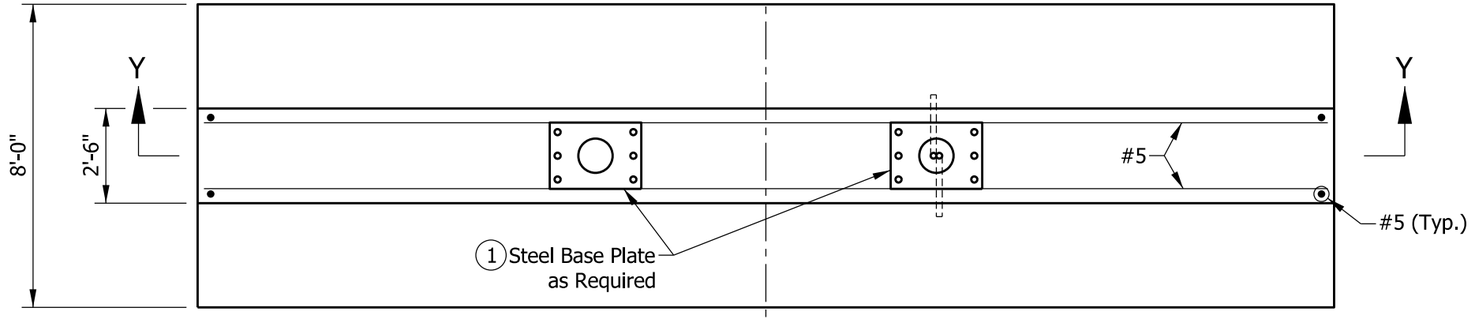
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SECTION Y-Y



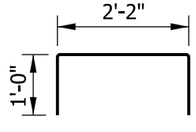
SECTION Z-Z



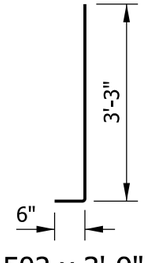
PLAN

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.



501 x 4'-2"



502 x 3'-9"

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

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

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

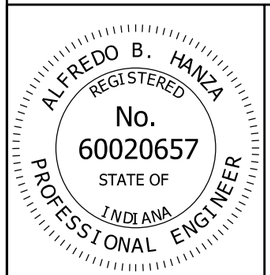
SPREAD FOUNDATION FOR MEDIAN OR SHOULDER, 36" HEIGHT			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
501	31	4'-2"	
502	62	3'-9"	
#5	62	7'-6"	
#5	23	29'-8"	
Total #5			1574 LBS
#4	31	7'-8"	
Total #4			159 LBS
Total Epoxy-Coated Reinforcing Bars			1733 LBS
CONCRETE, CLASS A	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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE SPREAD FOUNDATIONS QUANTITIES

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-25

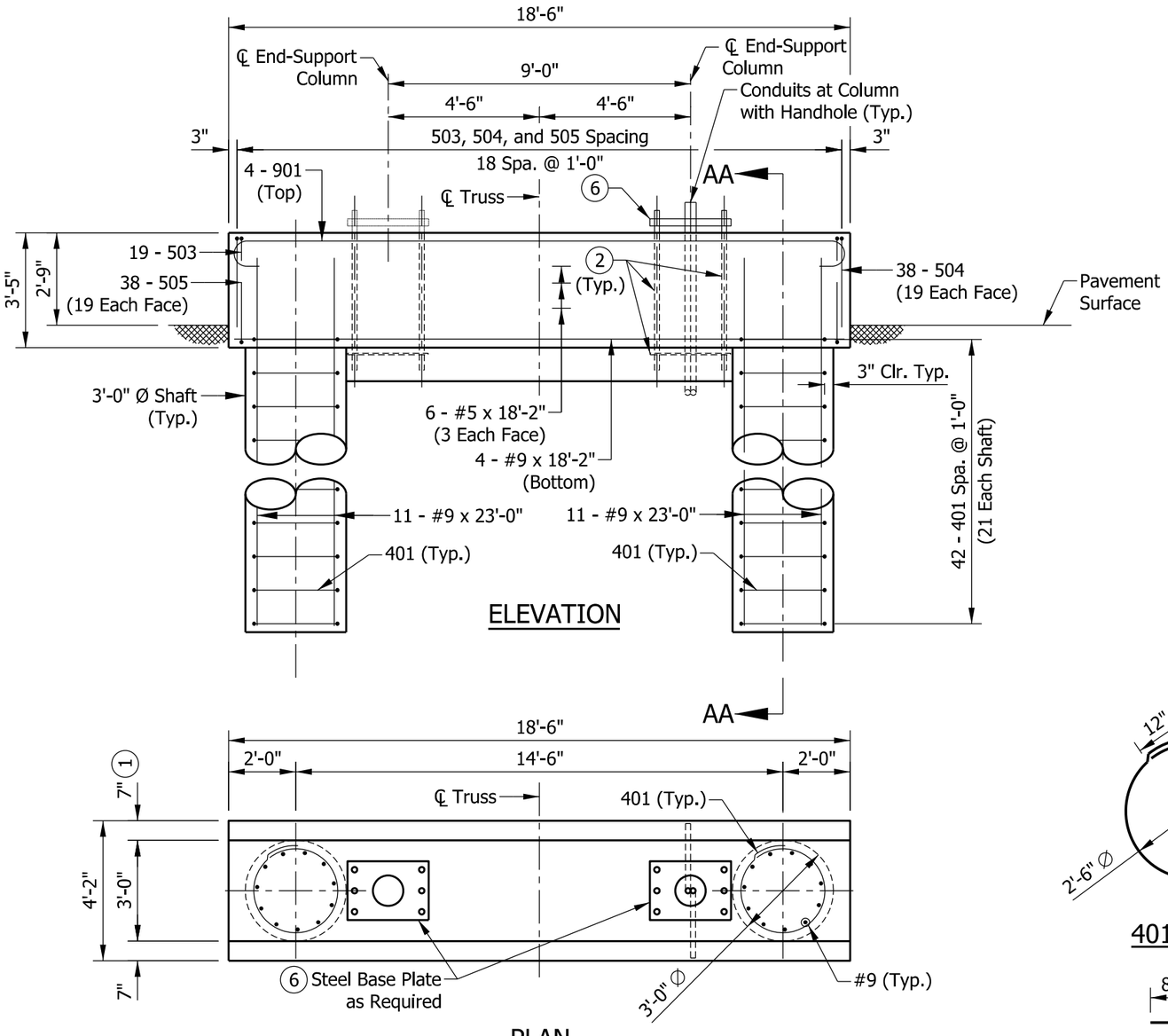


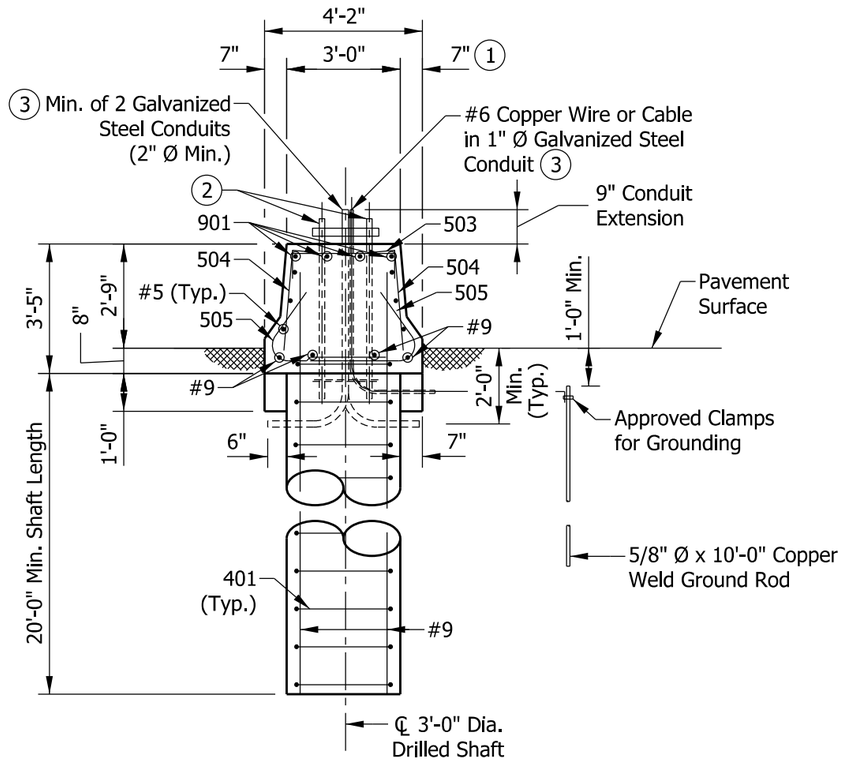
/s/ Alfredo B. Hanza *02/05/13*

DESIGN STANDARDS ENGINEER DATE

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

CHIEF ENGINEER DATE





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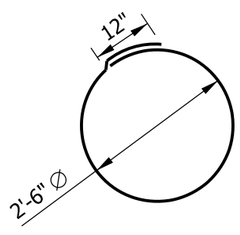
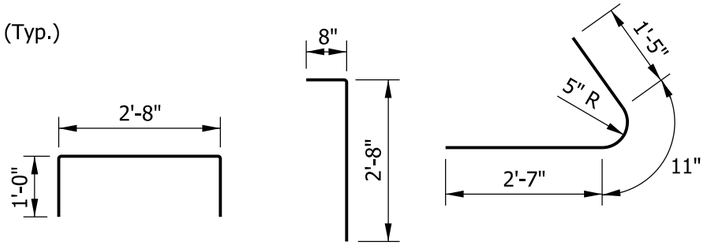
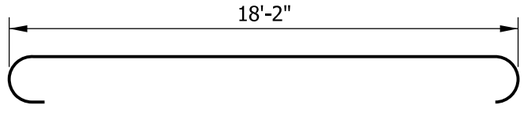


401 x 8'-10"



503 x 4'-8" 504 x 3'-4" 505 x 4'-11"



901 x 20'-8"

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

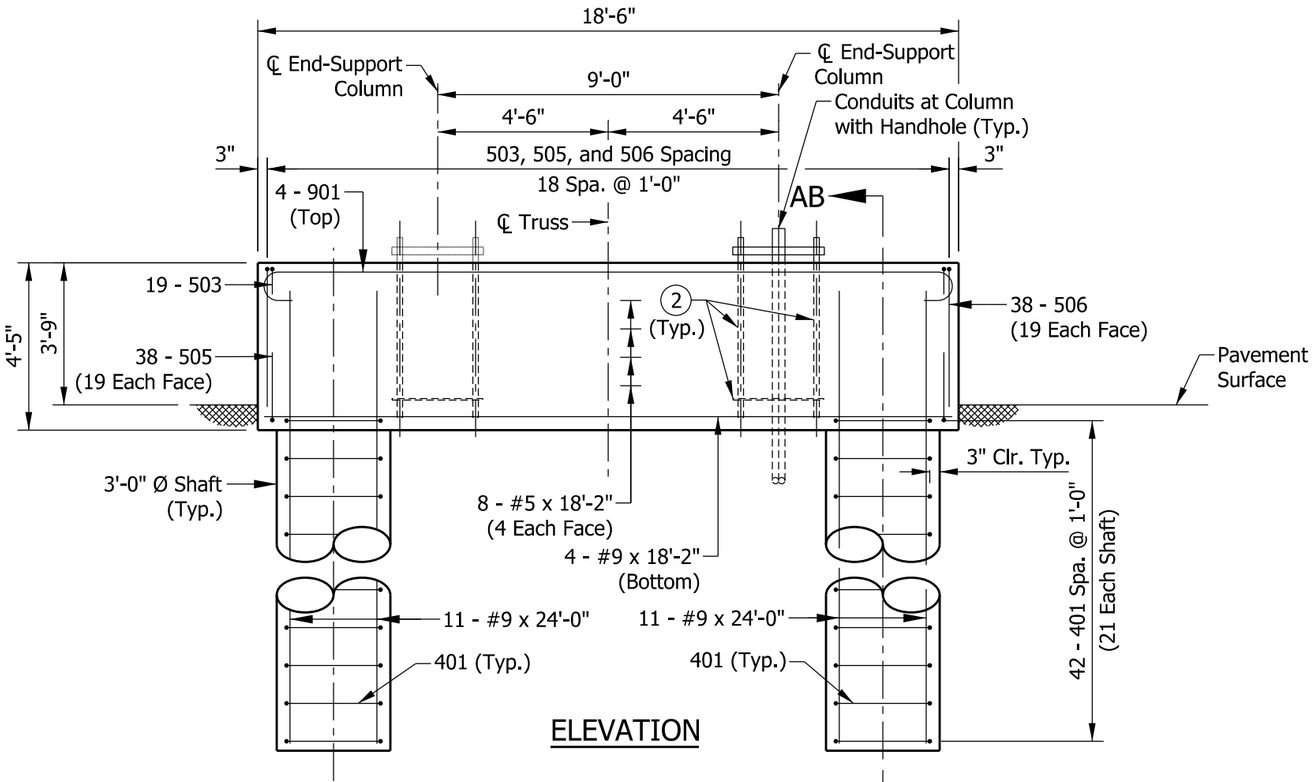
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-26

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



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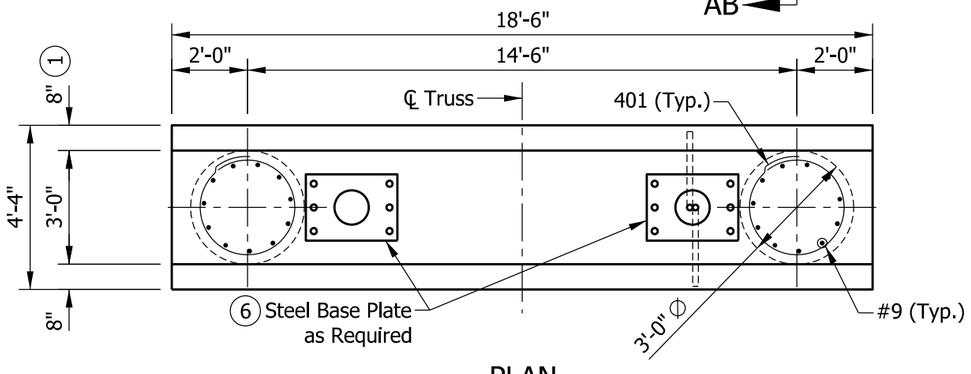
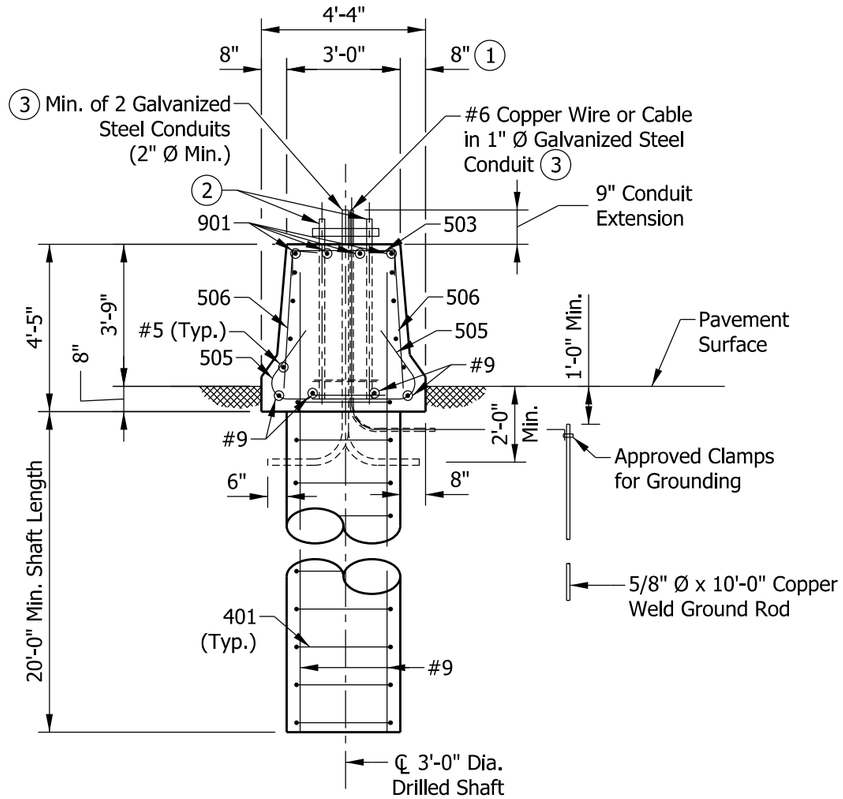
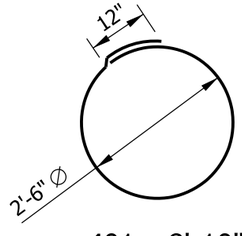


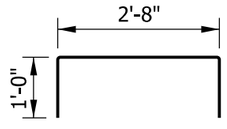
PLAN



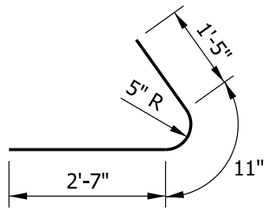
SECTION AB-AB



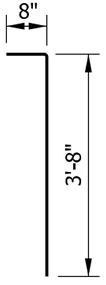
401 x 8'-10"



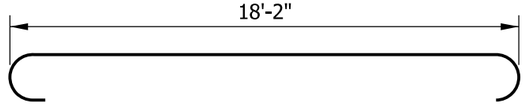
503 x 4'-8"



505 x 4'-11"



506 x 4'-4"



901 x 20'-8"

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 45" CONCRETE BARRIER WALL

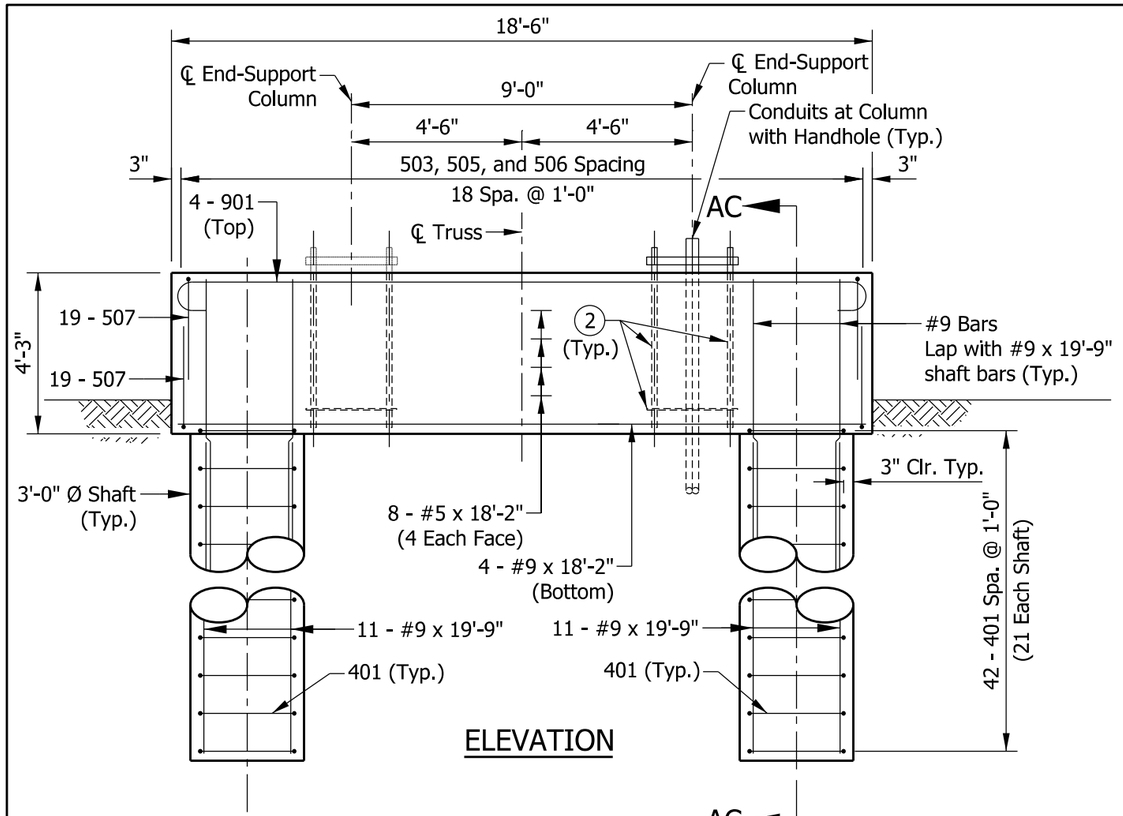
SEPTEMBER 2013

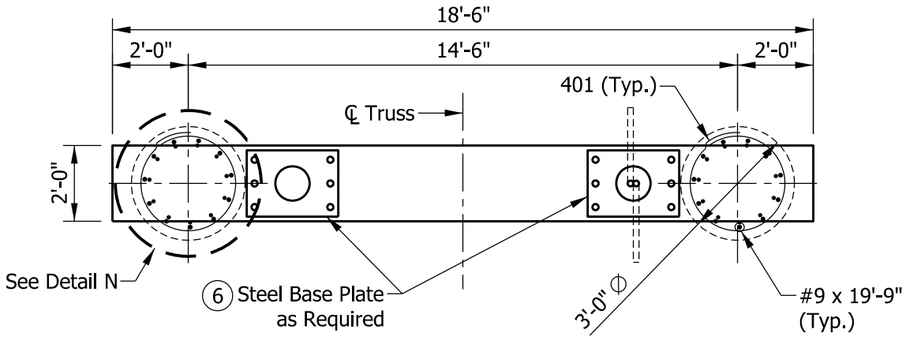
STANDARD DRAWING NO. E 802-SBTS-27

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

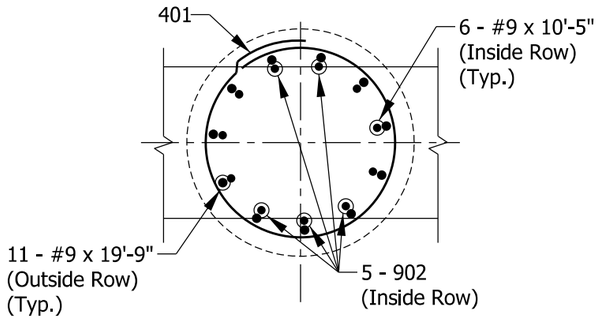
/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

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

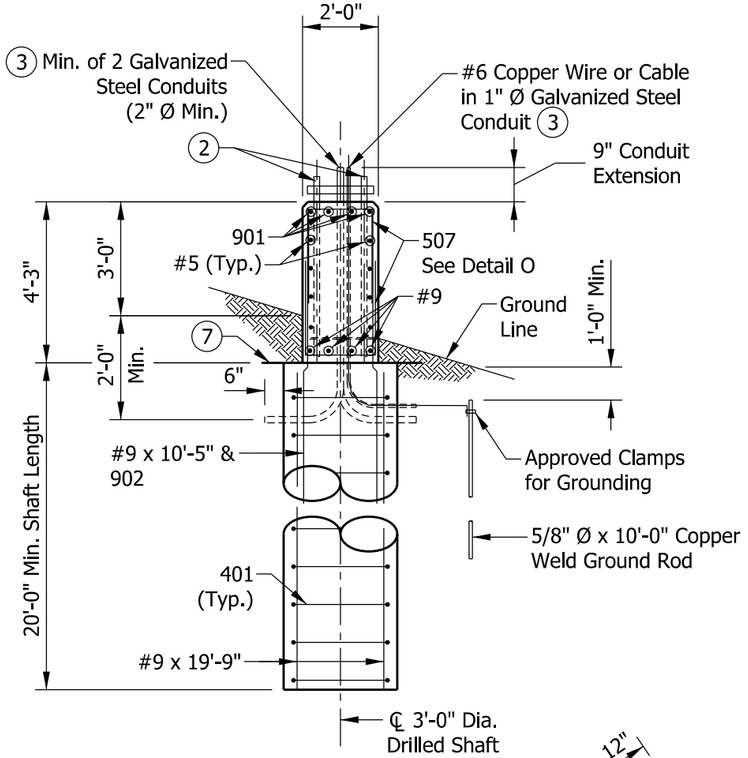




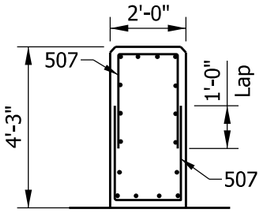
PLAN



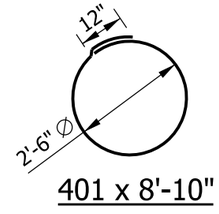
DETAIL N



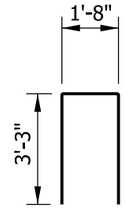
SECTION AC-AC



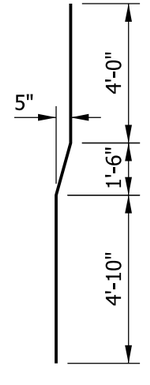
DETAIL O



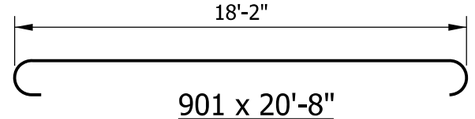
401 x 8'-10"



507 x 8'-2"



902 x 10'-5"



901 x 20'-8"

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.
7. 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

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

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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN BOX TRUSS STRUCTURE ALTERNATE DRILLED SHAFT FOUNDATIONS QUANTITIES

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SBTS-29

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

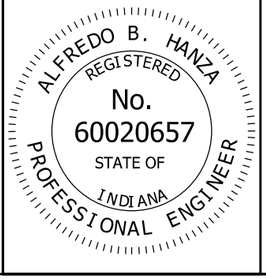
INDEX	
SHEET NO.	SUBJECT
1	Index
2	Double Arm Plan and Elevation
3	Double Arm Panel Dimensions and Member Sizes
4	Double Arm Connections, Weld Details, Chord End Plate Details, and Camber
5	Double Arm Connection to Column Details
6	Double Arm Column Top Cap and Cable J-Hook
7	Quadri-Chord Plan and Elevation
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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE
DRAWING INDEX

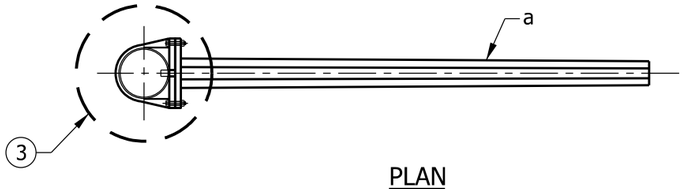
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-01

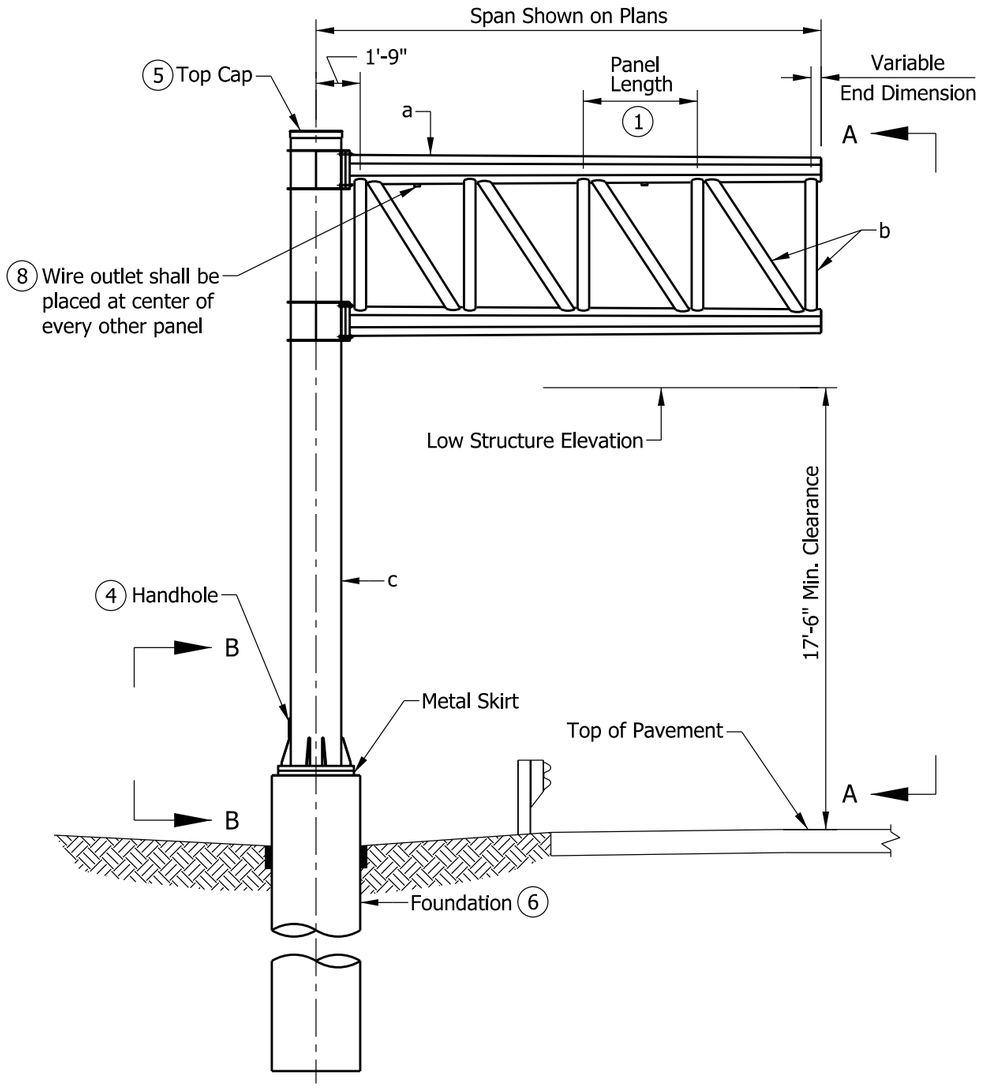


/s/ Alfredo B. Hanza 03/25/13
DESIGN STANDARDS ENGINEER DATE

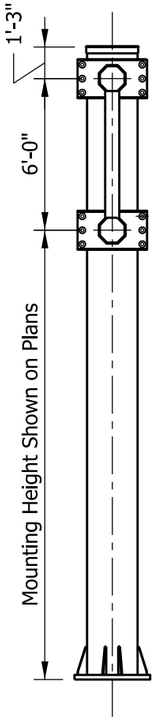
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



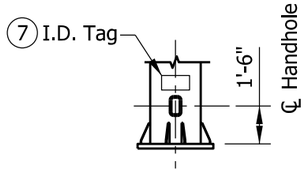
PLAN



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

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

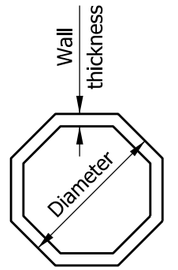
/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

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

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

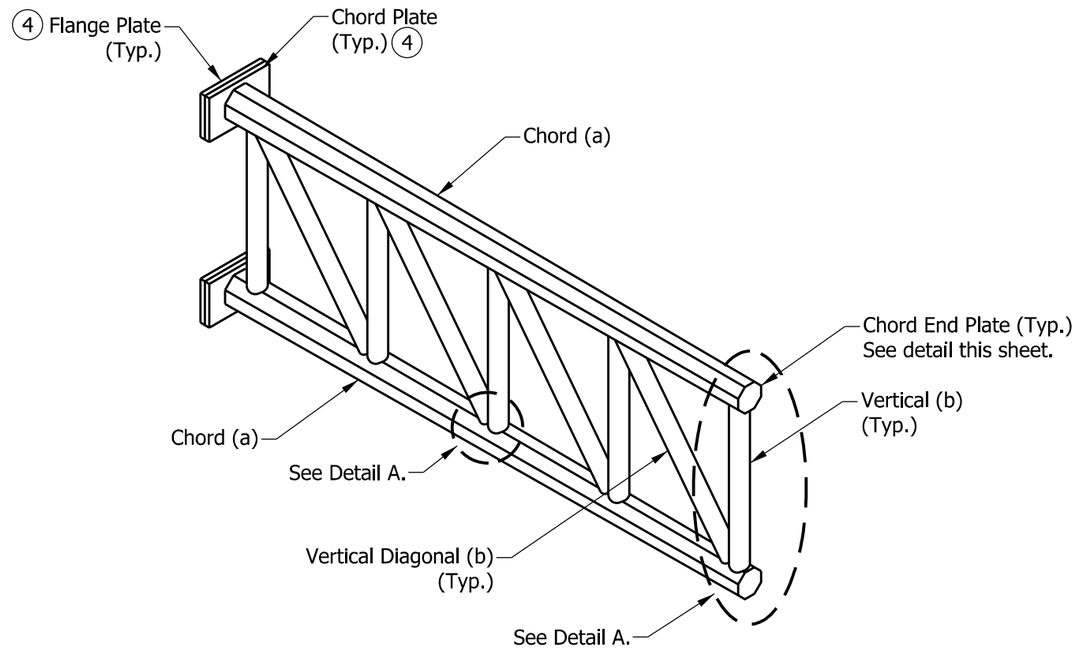
SIGN CANTILEVER STRUCTURE
DOUBLE ARM
PANEL DIMENSIONS AND MEMBER SIZES
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-03

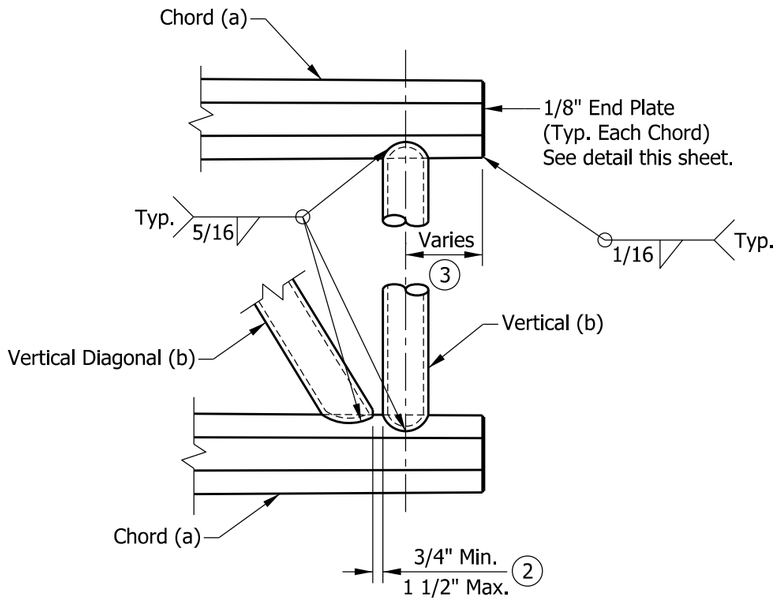
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

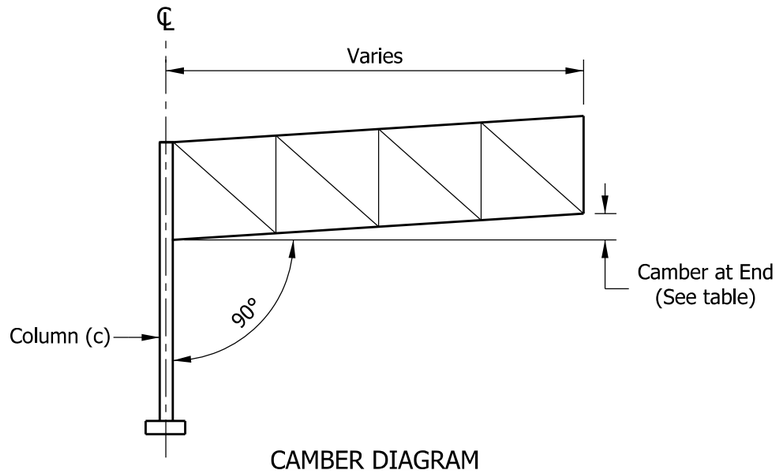
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



DOUBLE ARM



DETAIL A

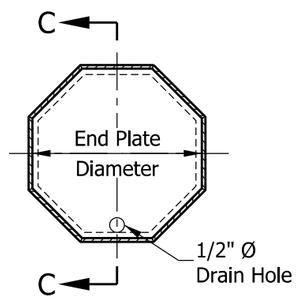


CAMBER DIAGRAM

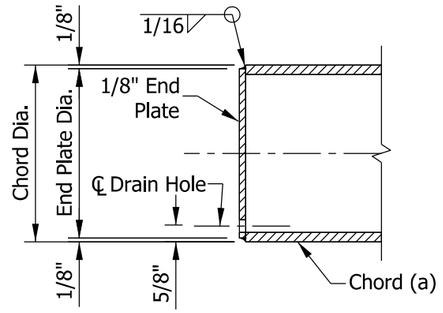
DOUBLE ARM		
STR. TYPE	LENGTH	CAMBER AT END (IN.)
A	10'-0"	0.375
B	15'-0"	0.750
C	20-0"	1.000

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

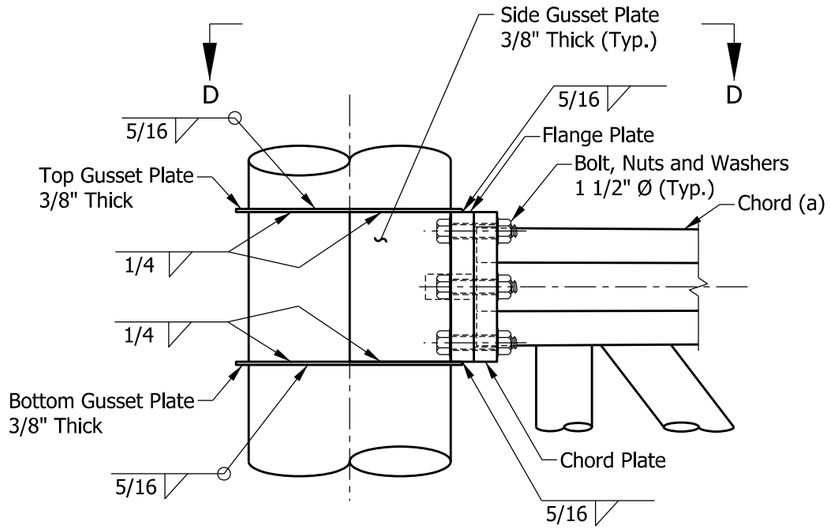
SIGN CANTILEVER STRUCTURE
DOUBLE ARM CONNECTIONS, WELD DETAILS, CHORD END PLATE DETAILS, AND CAMBER
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-04

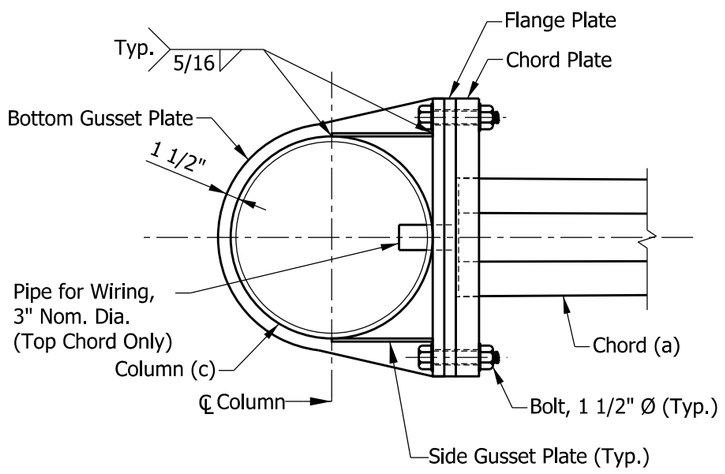
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

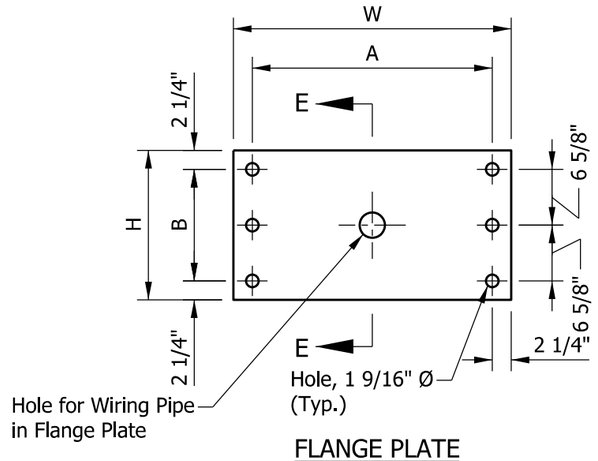
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



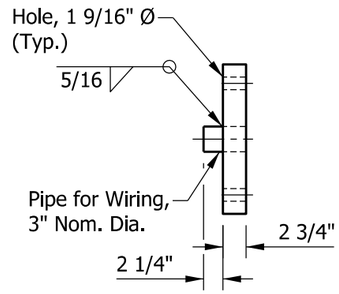
DOUBLE ARM TRUSS CONNECTION
ELEVATION



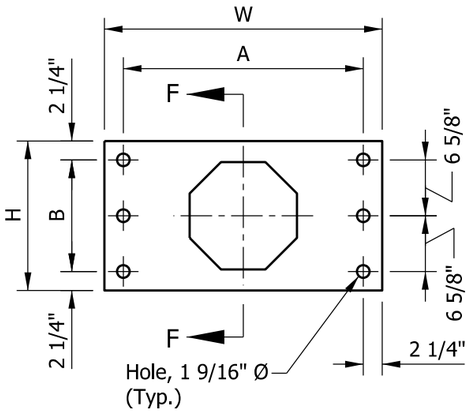
SECTION D-D



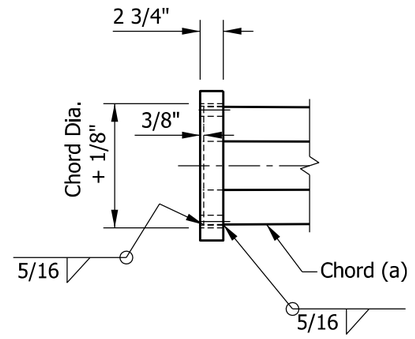
FLANGE PLATE



SECTION E-E



CHORD PLATE



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

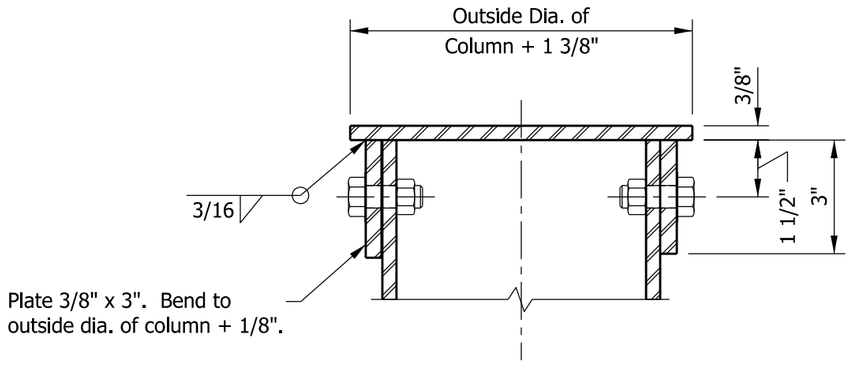
SIGN CANTILEVER STRUCTURE
DOUBLE ARM
CONNECTION TO COLUMN DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-05

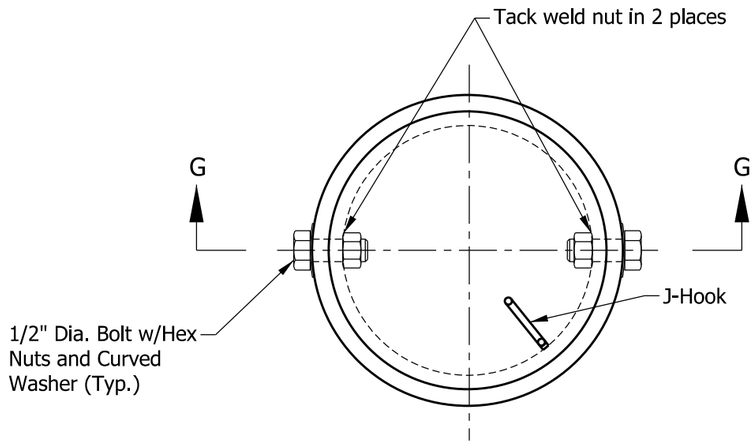
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

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



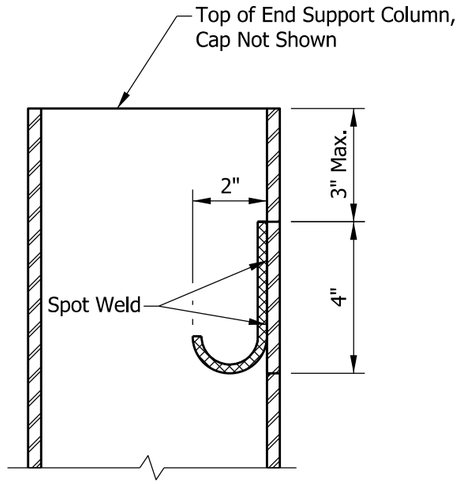
SECTION G-G



PLAN
TOP CAP - STEEL COLUMN

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.



CABLE J-HOOK

INDIANA DEPARTMENT OF TRANSPORTATION

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

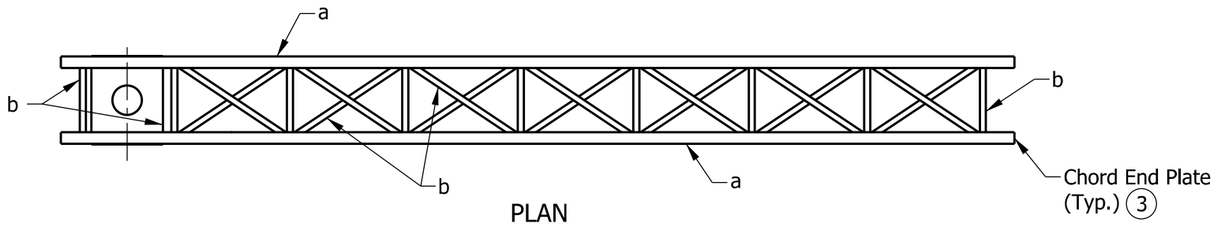
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-06

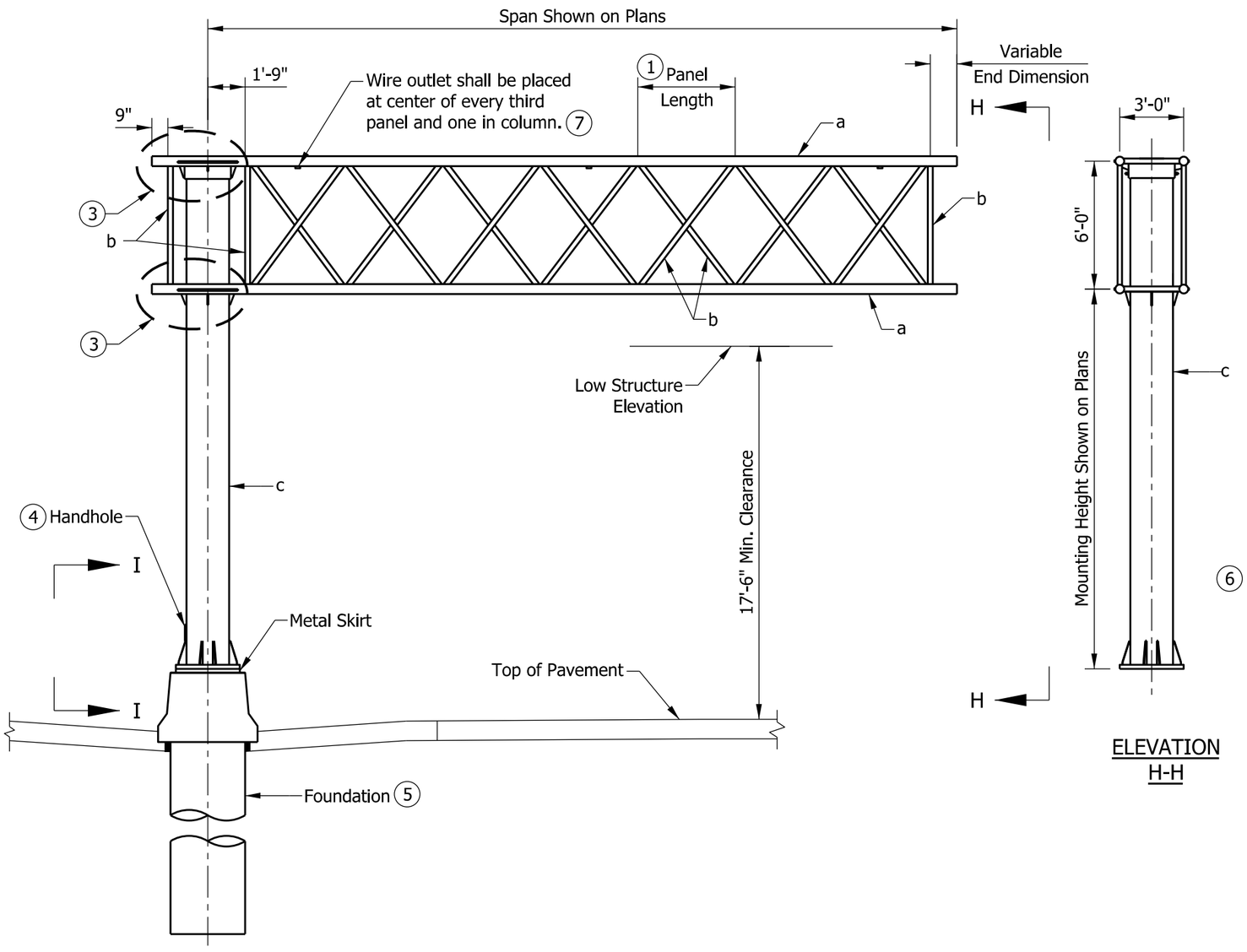
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

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

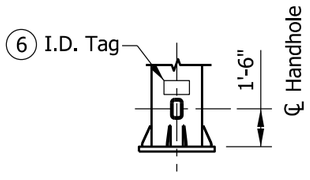


PLAN



FRONT ELEVATION

ELEVATION
H-H



ELEVATION
I-I

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

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

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. (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

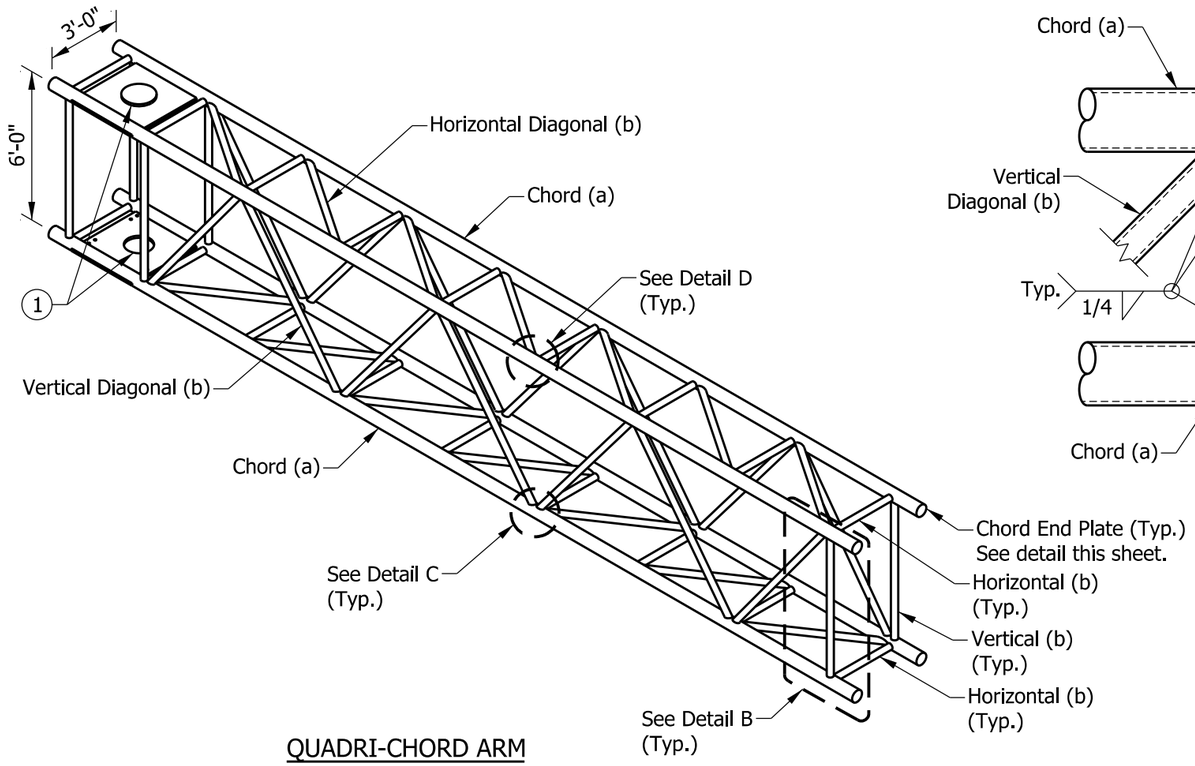
SIGN CANTILEVER STRUCTURE
QUADRI-CHORD
PANEL DIMENSIONS AND MEMBER SIZES
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-08

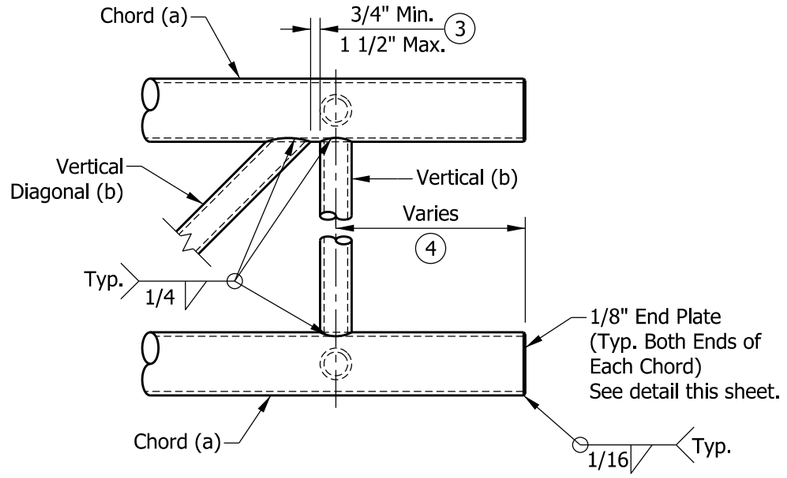
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



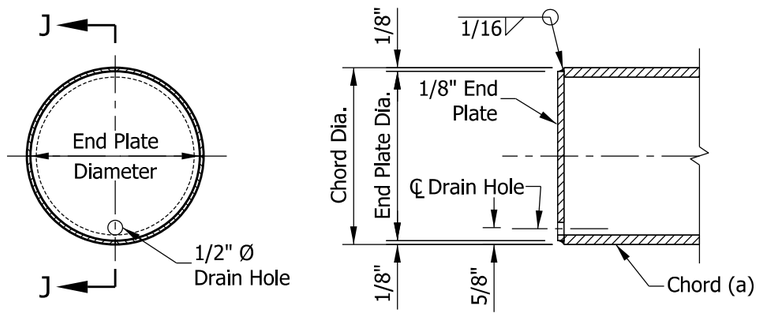
QUADRI-CHORD ARM



DETAIL B

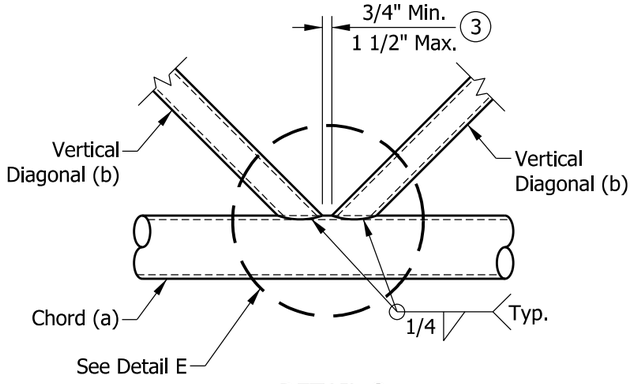
NOTES:

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.

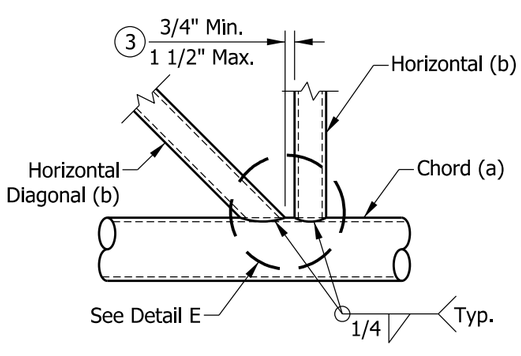


END VIEW SECTION J-J

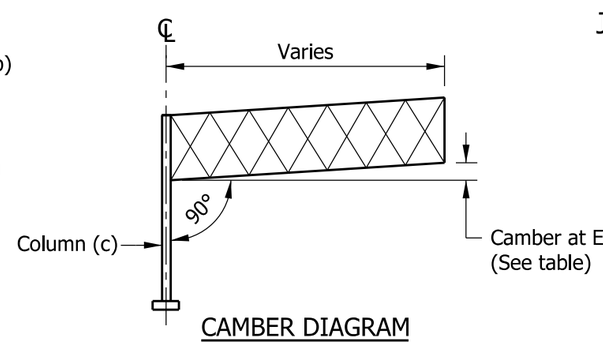
CHORD END PLATE DETAILS



DETAIL C
TYPICAL PANEL CONNECTION

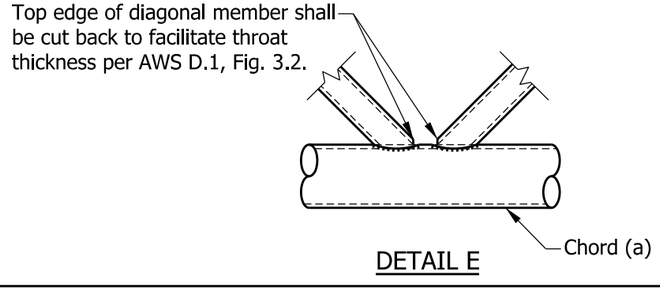


DETAIL D
TYPICAL PANEL CONNECTION



CAMBER DIAGRAM

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



DETAIL E

INDIANA DEPARTMENT OF TRANSPORTATION

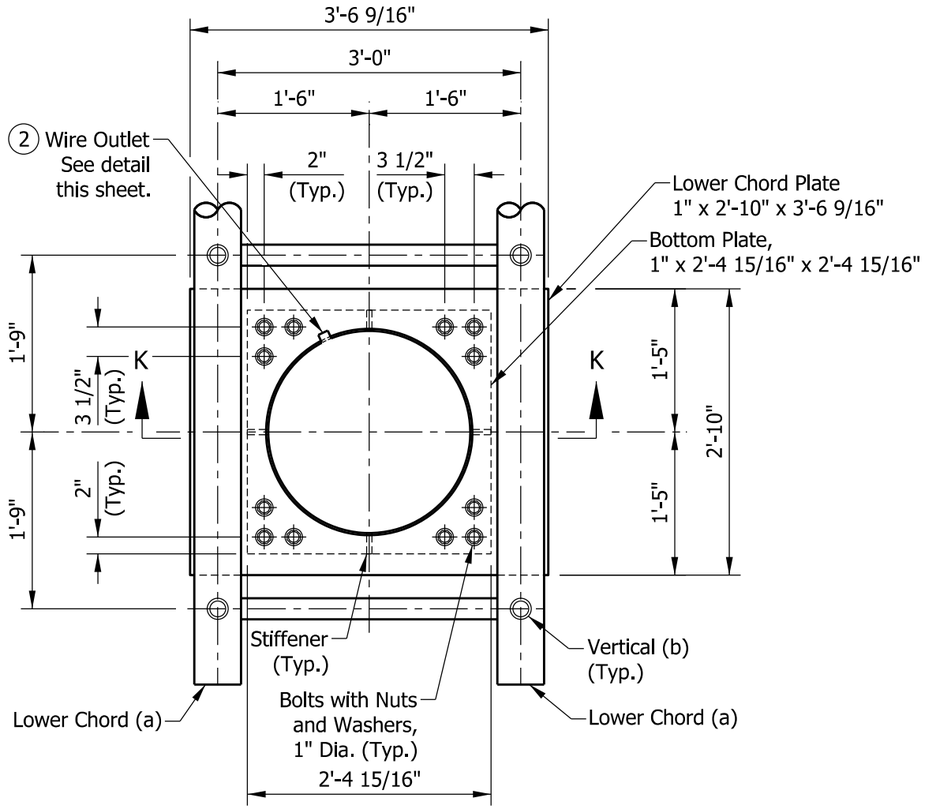
SIGN CANTILEVER STRUCTURE
QUADRI-CHORD CONNECTIONS, WELD DETAILS,
CHORD END PLATE DETAILS, AND CAMBER
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-09

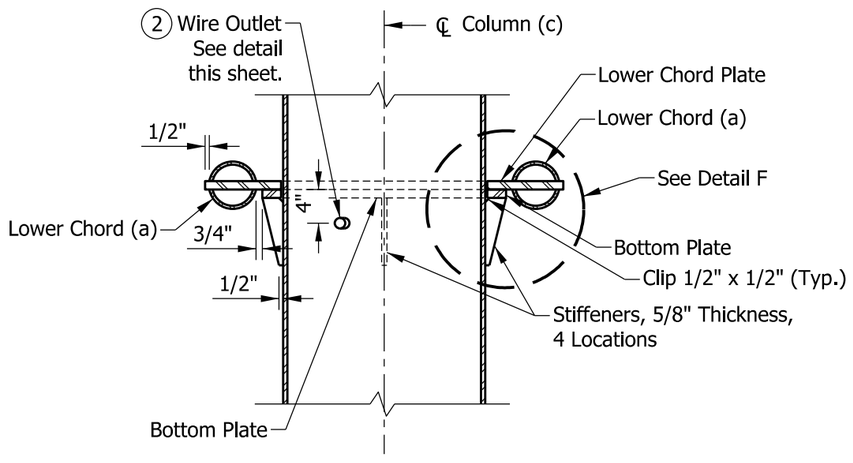
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

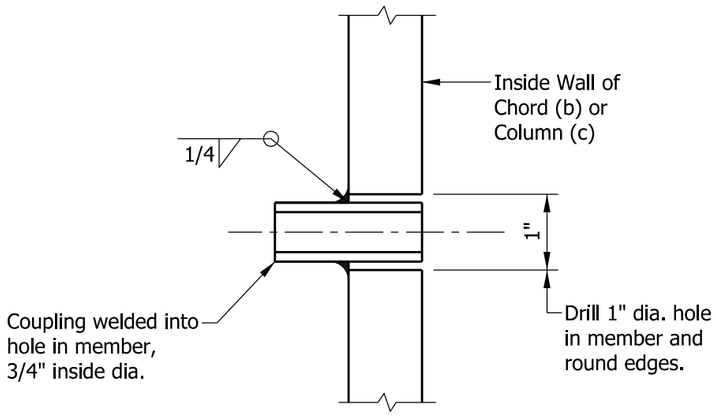
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



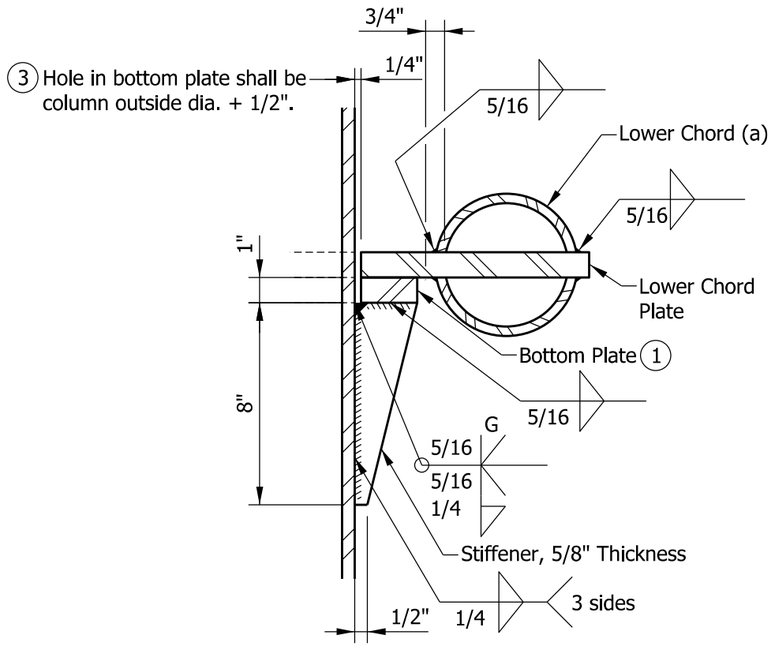
PLAN VIEW THROUGH COLUMN ABOVE LOWER CHORDS



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

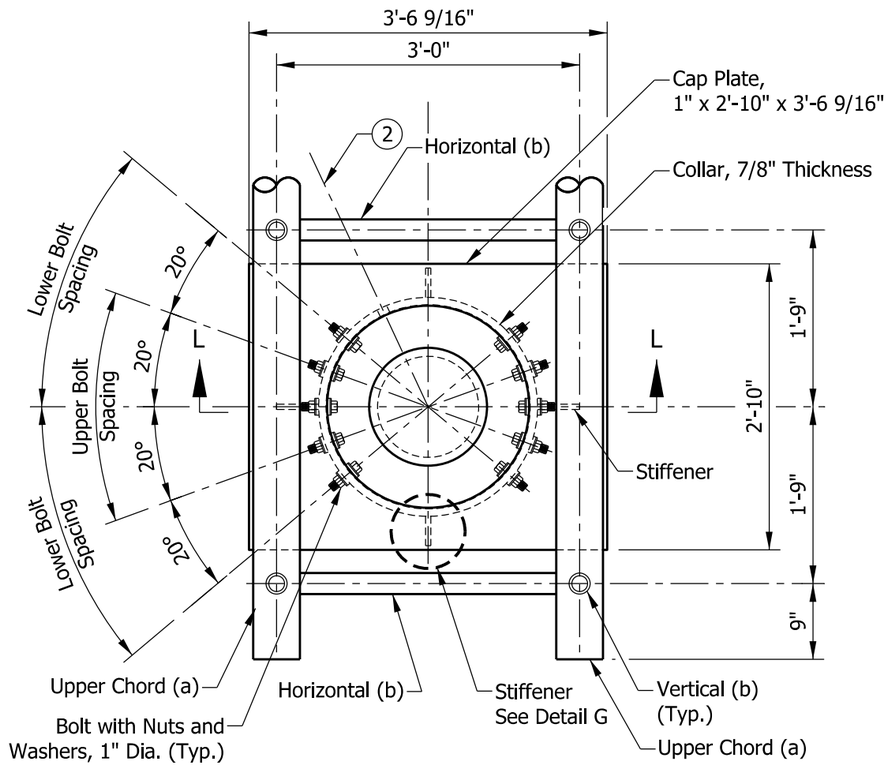
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-10

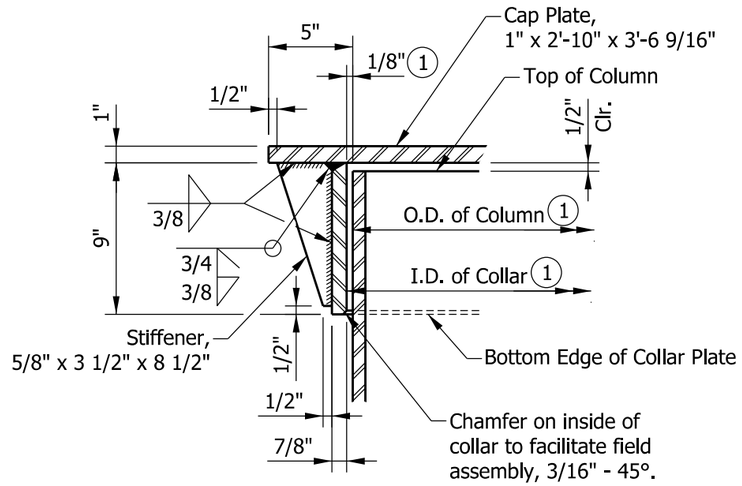
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza 03/25/13
DESIGN STANDARDS ENGINEER DATE

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



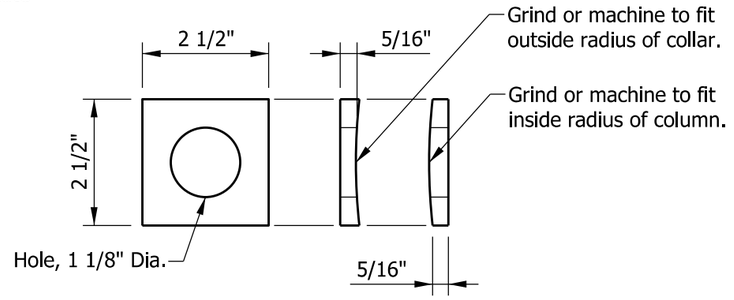
PLAN VIEW - TOP OF COLUMN
ABOVE UPPER CHORDS



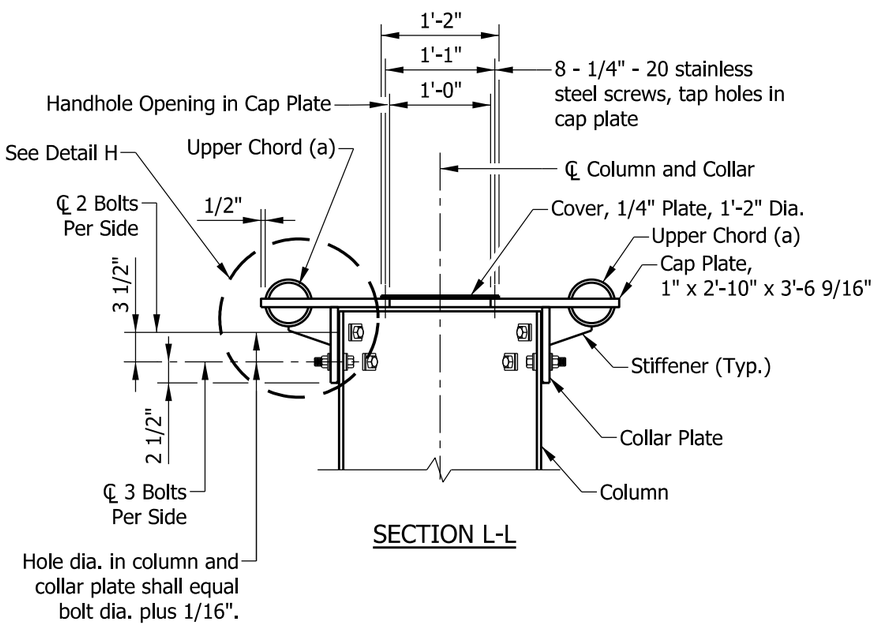
DETAIL G

NOTES:

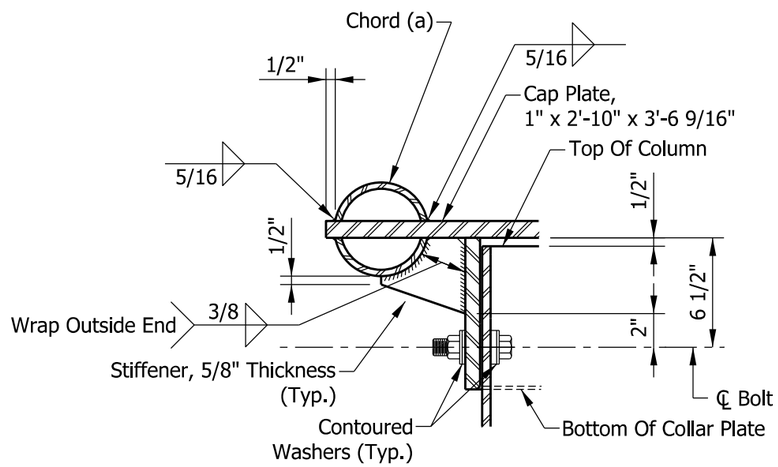
1. After galvanizing, collar inside diameter shall equal outside diameter of galvanized column plus 1/8" ± 1/16". Maximum gap between column and collar shall be 1/8" before tightening bolts.
2. Optional full penetration weld in collar may be made at two locations, 180° apart. X-ray or ultrasonic test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



CONTOURED WASHER



SECTION L-L



DETAIL H

INDIANA DEPARTMENT OF TRANSPORTATION

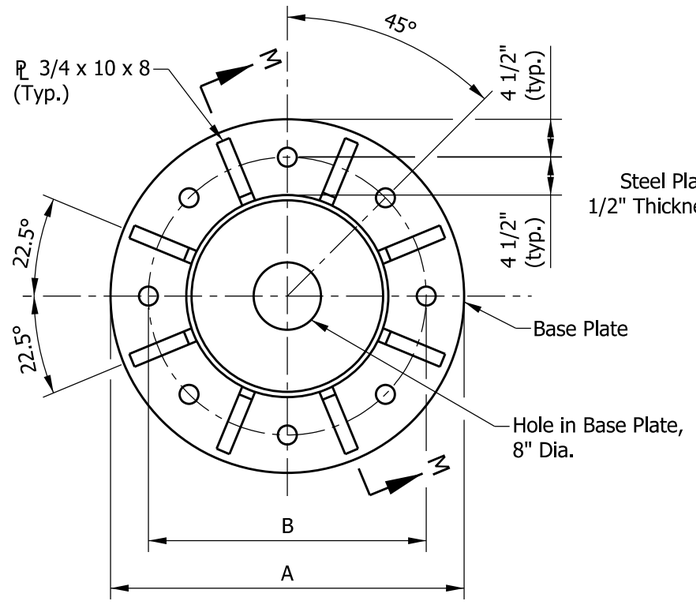
SIGN CANTILEVER STRUCTURE
QUADRI-CHORD UPPER ARM CONNECTION
TO COLUMN

SEPTEMBER 2013

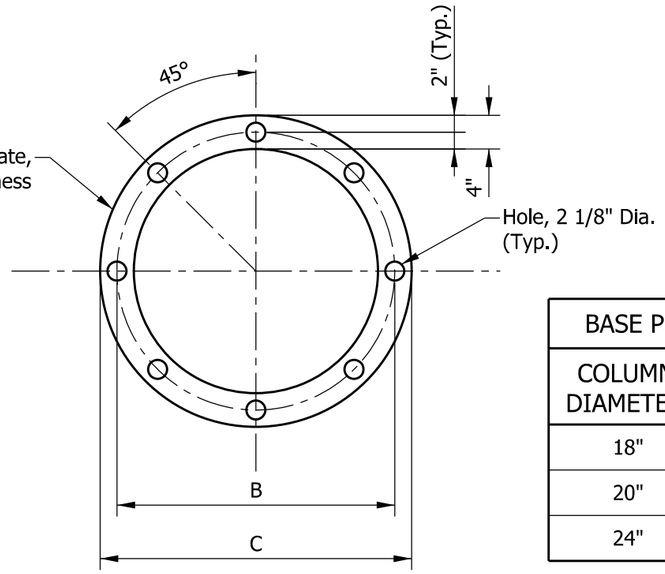
STANDARD DRAWING NO. E 802-SCLS-11

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

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



PLAN

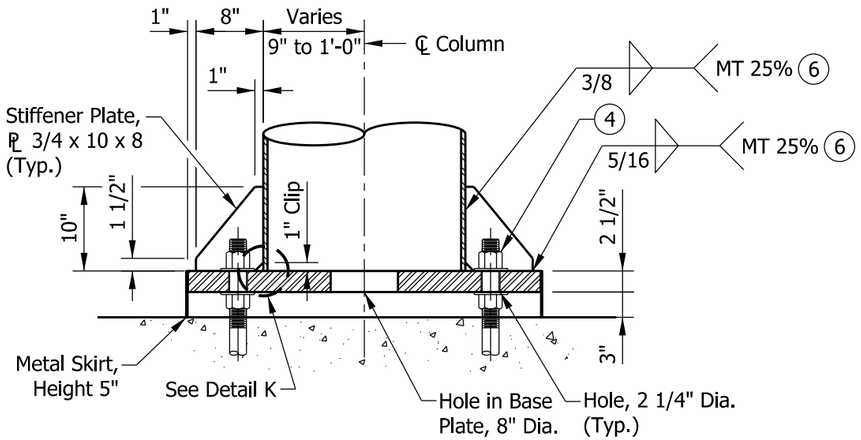


ANCHOR AND POSITIONING PLATE

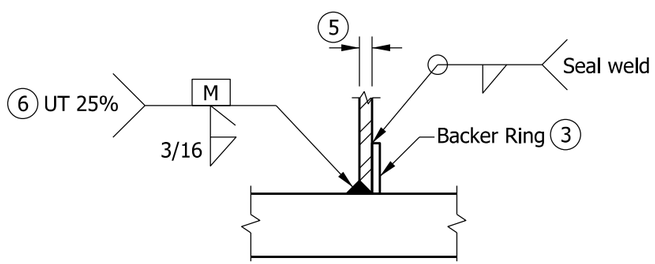
BASE PLATE DIMENSIONS			
COLUMN DIAMETER	A	B	C
18"	3'-0"	2'-3"	2'-7"
20"	3'-2"	2'-5"	2'-9"
24"	3'-6"	2'-9"	3'-1"

NOTES:

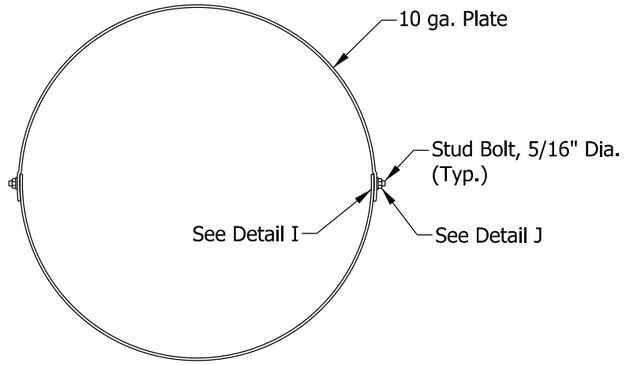
1. Minimum length which shall be galvanized. Entire bolt may be galvanized at contractor's option.
2. Provide uncoated nut at bottom of anchor plate. Deform thread or use chemical thread lock to secure.
3. Use continuous backer ring, 5/16" x 2" minimum. Tack weld only in root area of final weld.
4. Anchor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



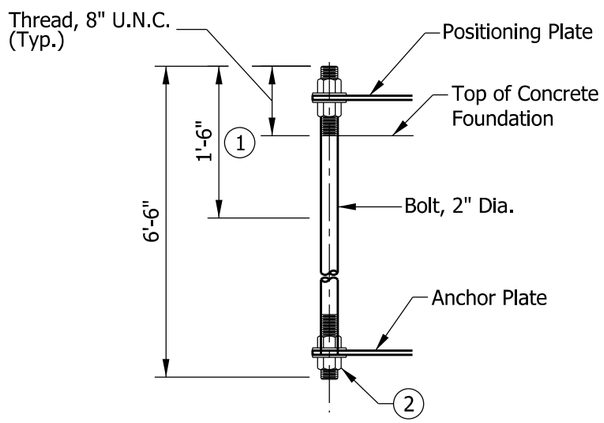
SECTION M-M



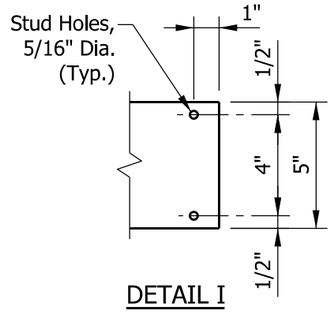
DETAIL K
BASE PLATE WELD



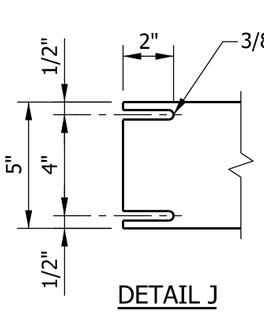
SKIRT DETAIL



ANCHOR BOLT DETAIL



DETAIL I



DETAIL J

INDIANA DEPARTMENT OF TRANSPORTATION

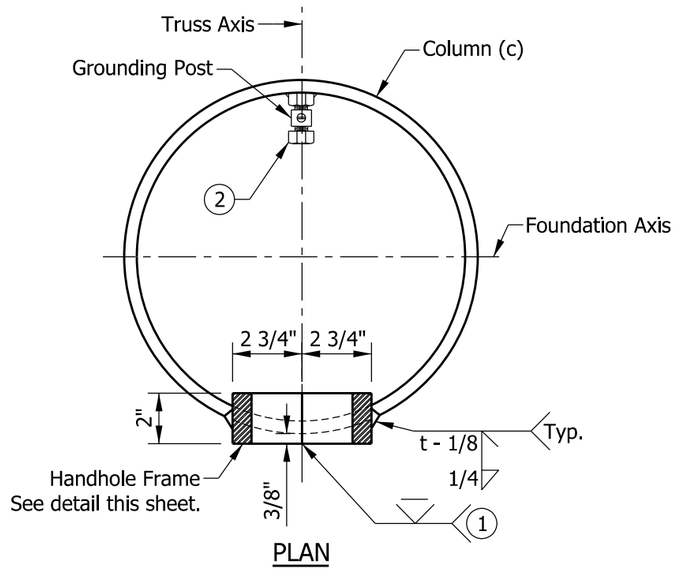
SIGN CANTILEVER STRUCTURE
DOUBLE ARM AND QUADRI-CHORD BASE PLATE,
ANCHOR BOLT, AND METAL SKIRT DETAILS
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCLS-12

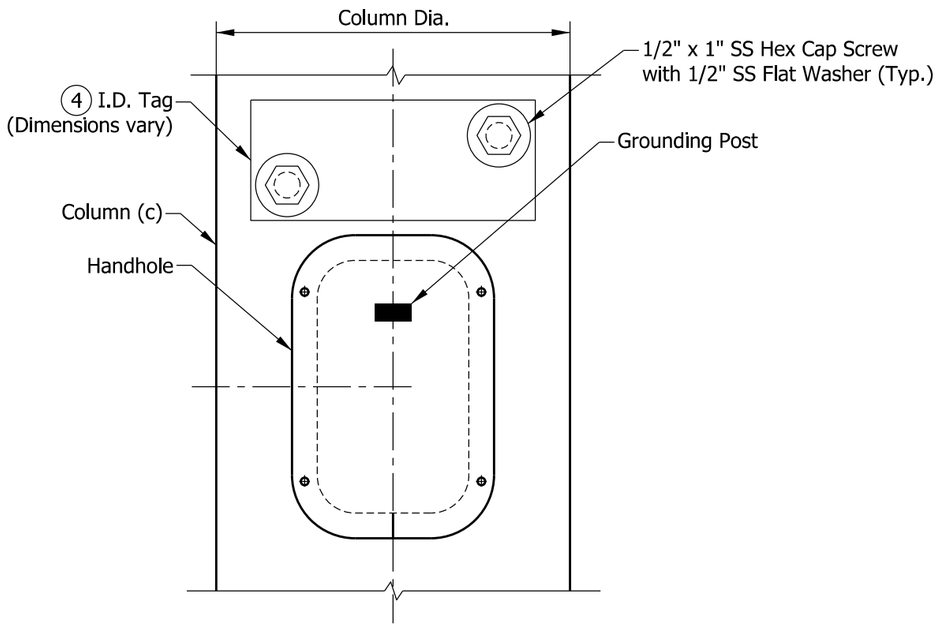
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

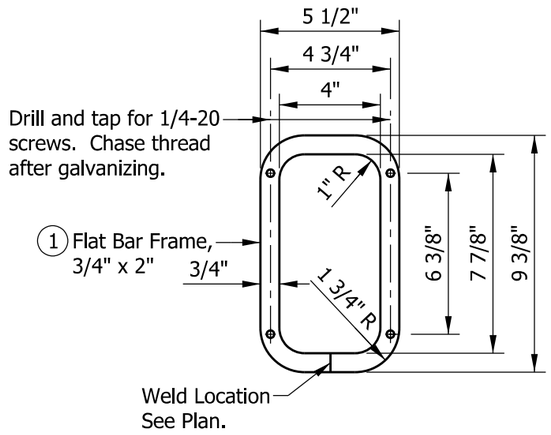
/s/ Mark A. Miller 12/05/13
CHIEF ENGINEER DATE



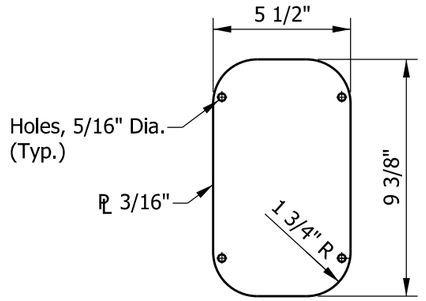
PLAN



ELEVATION



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

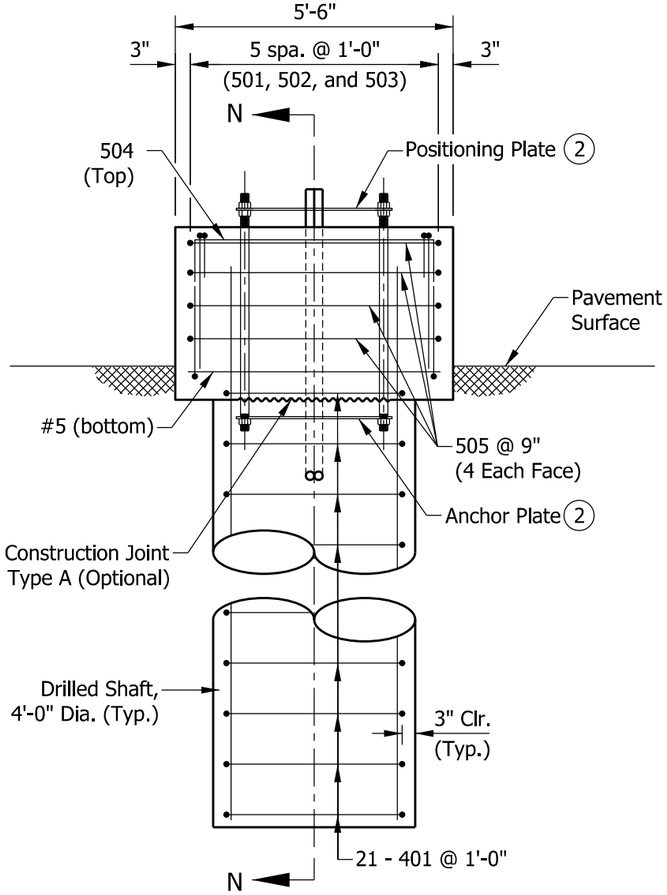
SIGN CANTILEVER STRUCTURE DOUBLE ARM AND QUADRI-CHORD COLUMN HANDHOLE AND I.D. TAG DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-13

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



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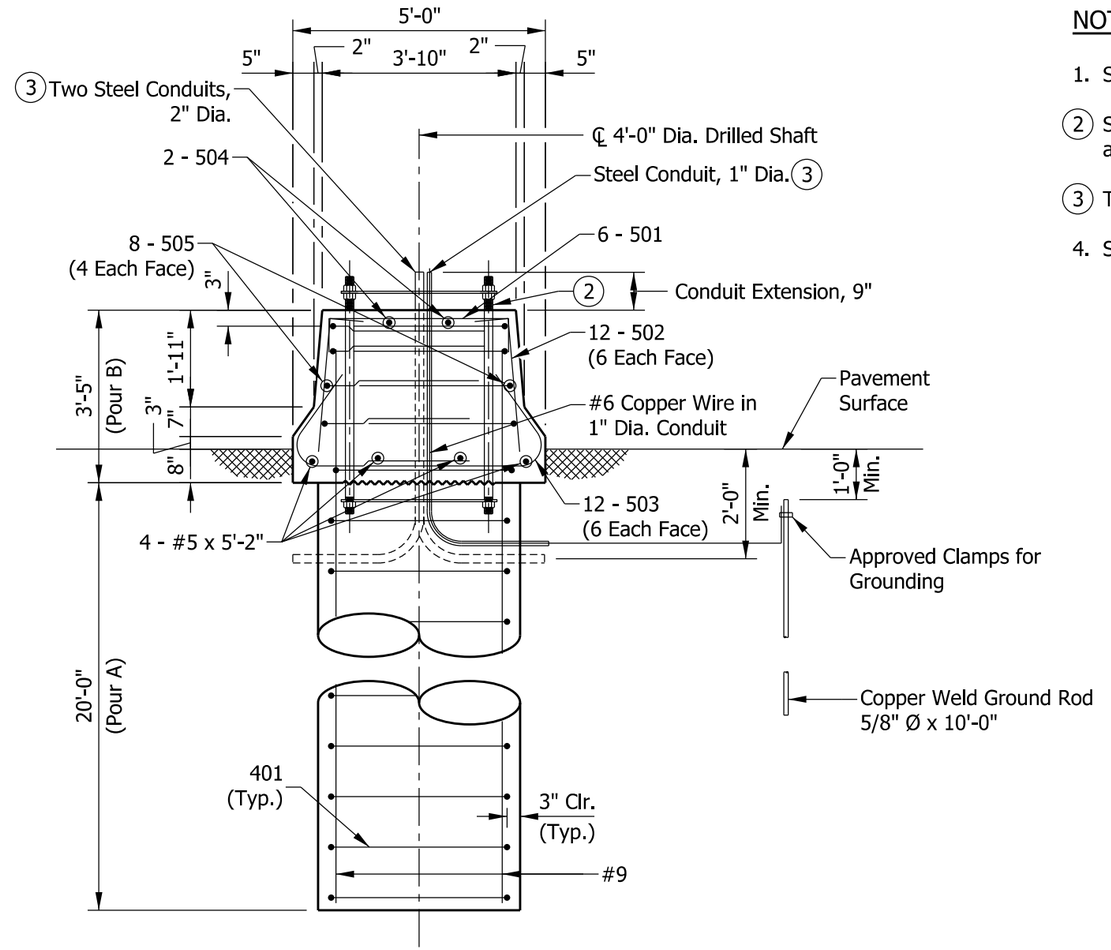
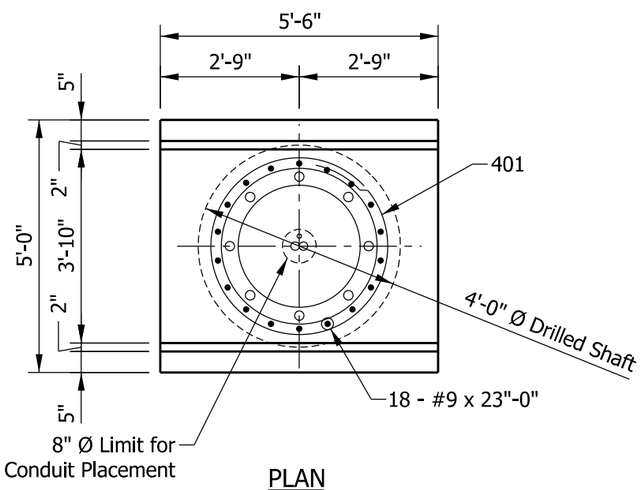
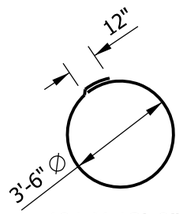


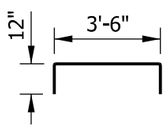
SECTION N-N



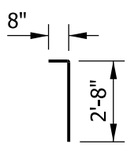
PLAN



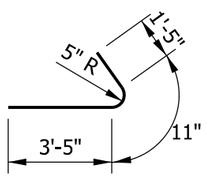
401 X 12'-0"



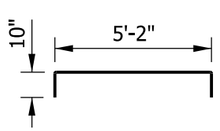
501 X 5'-6"



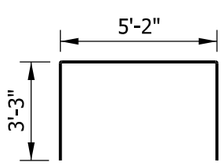
502 X 3'-4"



503 X 5'-9"



504 X 6'-10"



505 X 11'-8"

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	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

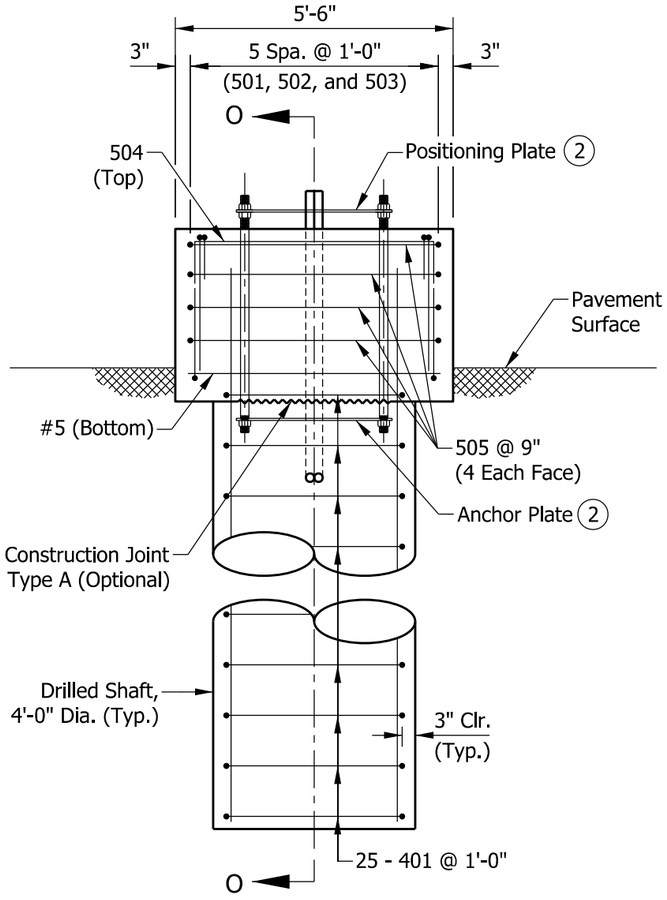
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-14

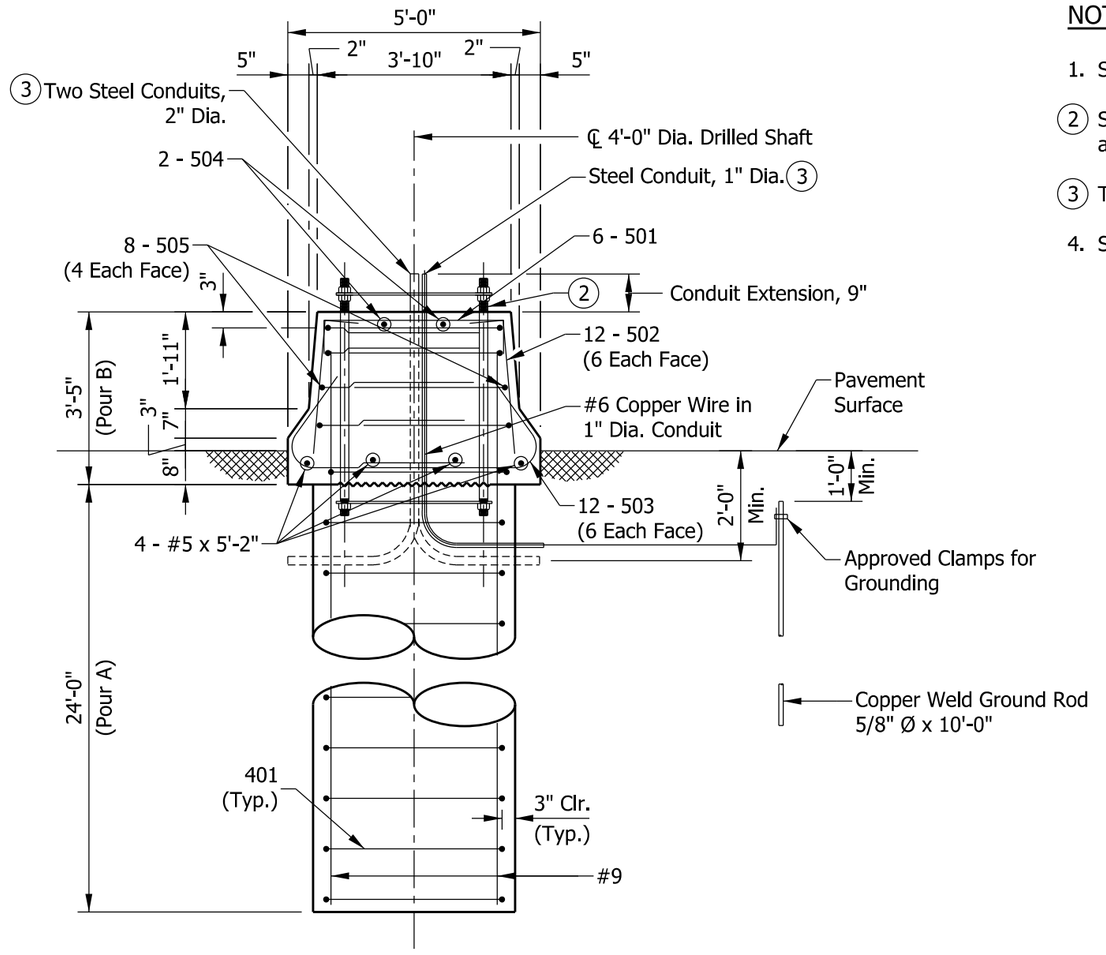
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

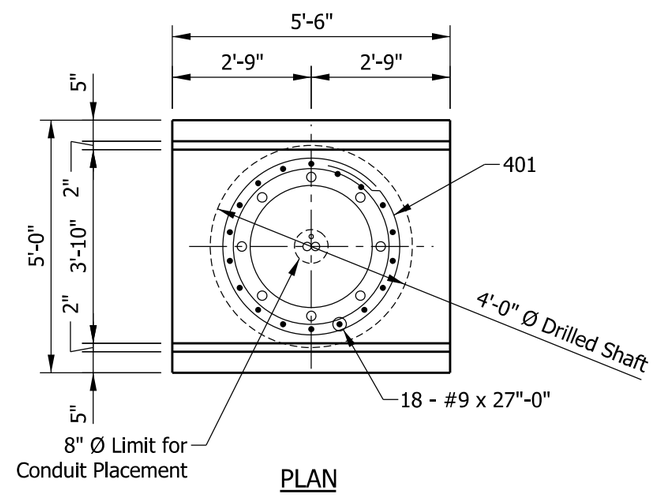
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE



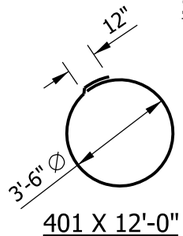
ELEVATION



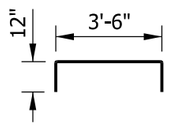
SECTION O-O



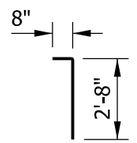
PLAN



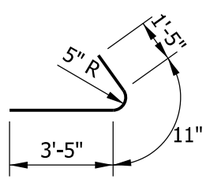
401 X 12'-0"



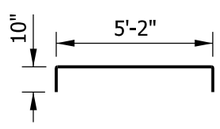
501 X 5'-6"



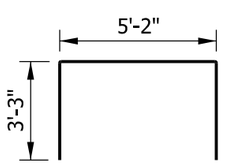
502 X 3'-4"



503 X 5'-9"



504 X 6'-10"



505 X 11'-8"

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

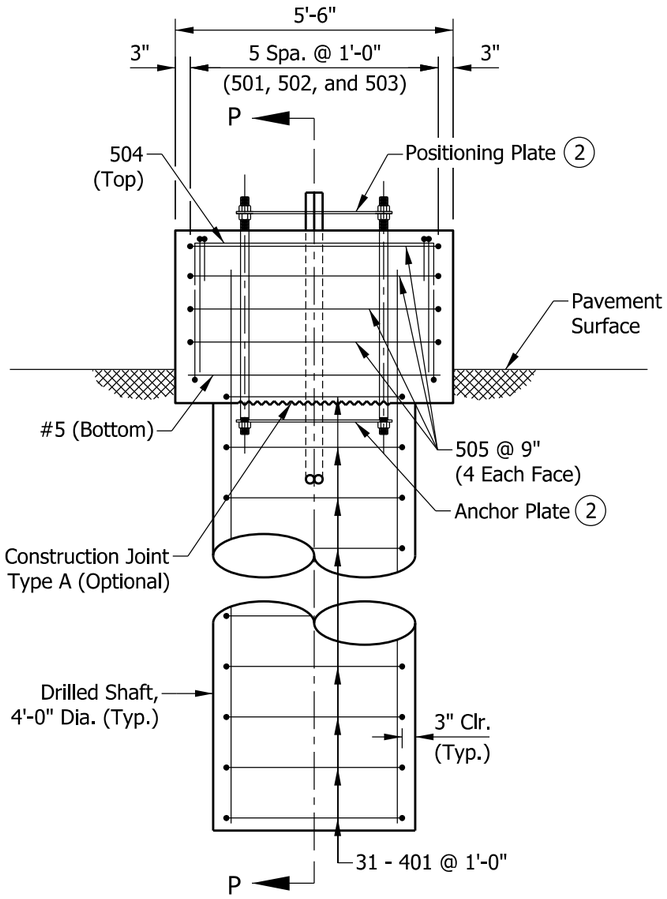
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-15

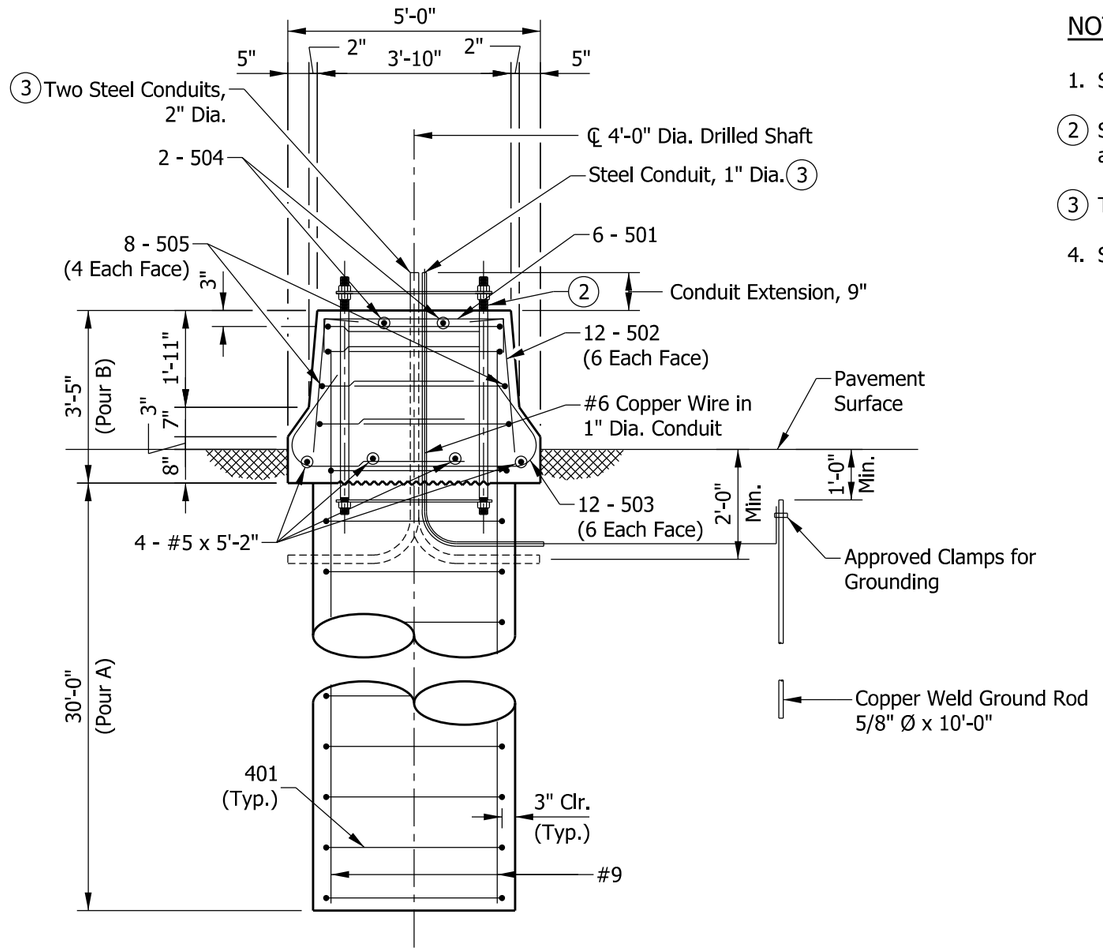
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

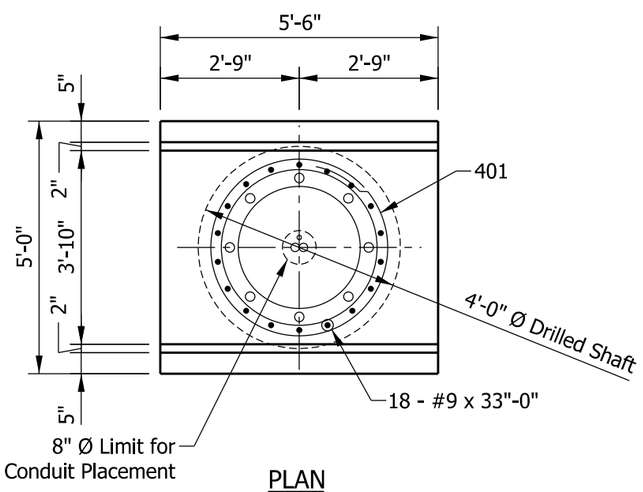
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE



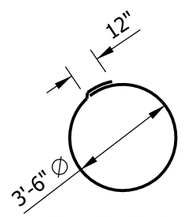
ELEVATION



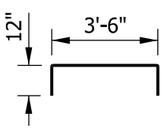
SECTION P-P



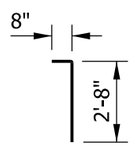
PLAN



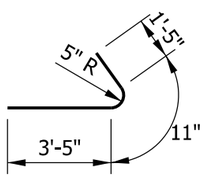
401 X 12'-0"



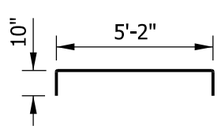
501 X 5'-6"



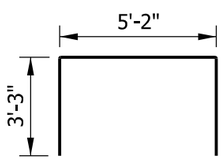
502 X 3'-4"



503 X 5'-9"



504 X 6'-10"



505 X 11'-8"

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	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

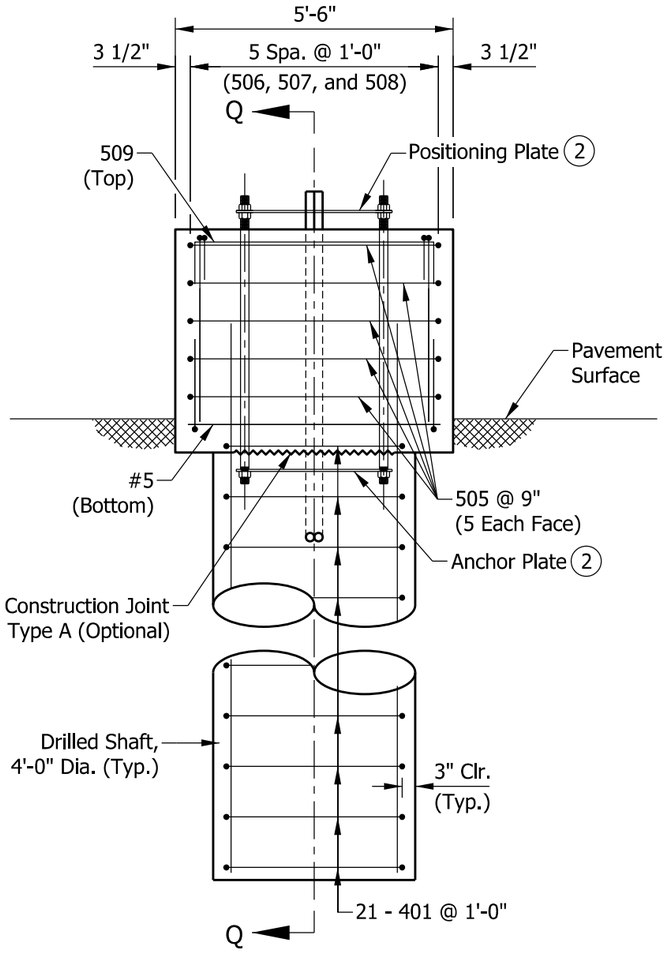
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-16

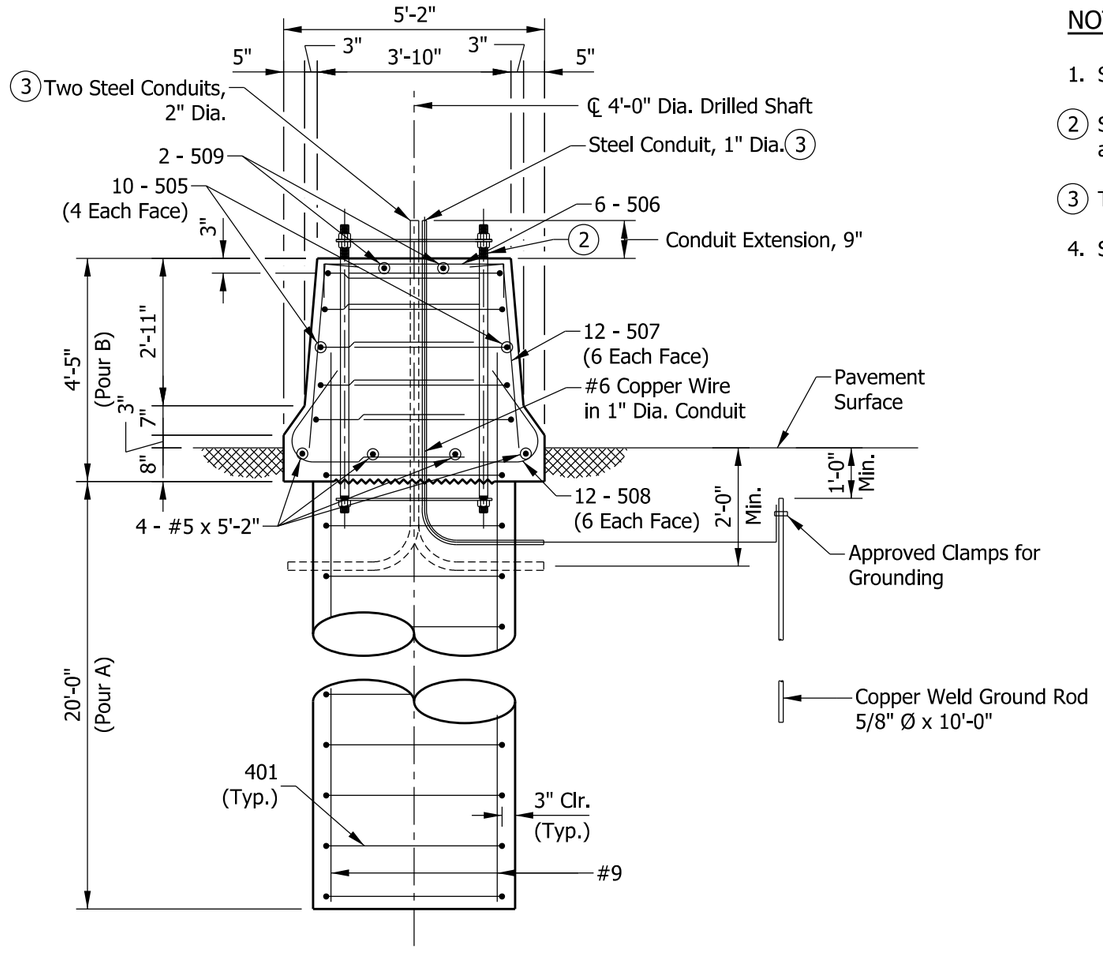
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

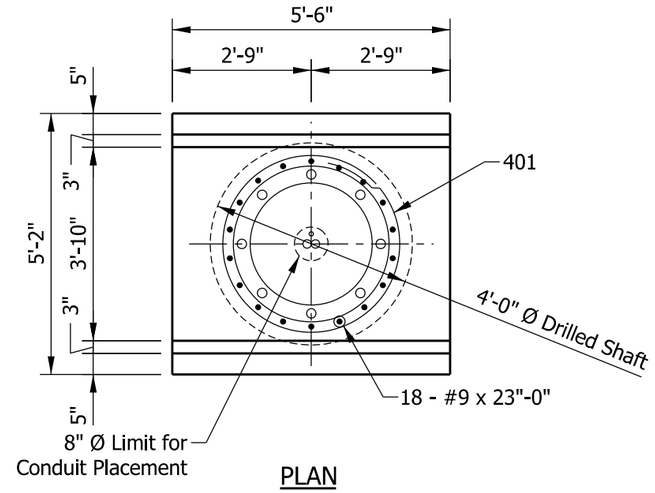
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE



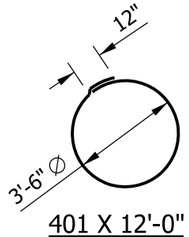
ELEVATION



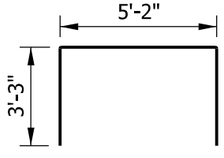
SECTION Q-Q



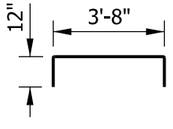
PLAN



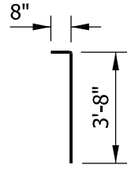
401 X 12'-0"



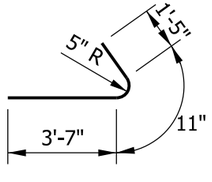
505 X 11'-8"



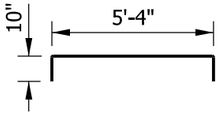
506 X 5'-8"



507 X 4'-4"



508 X 5'-11"



509 X 7'-0"

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	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

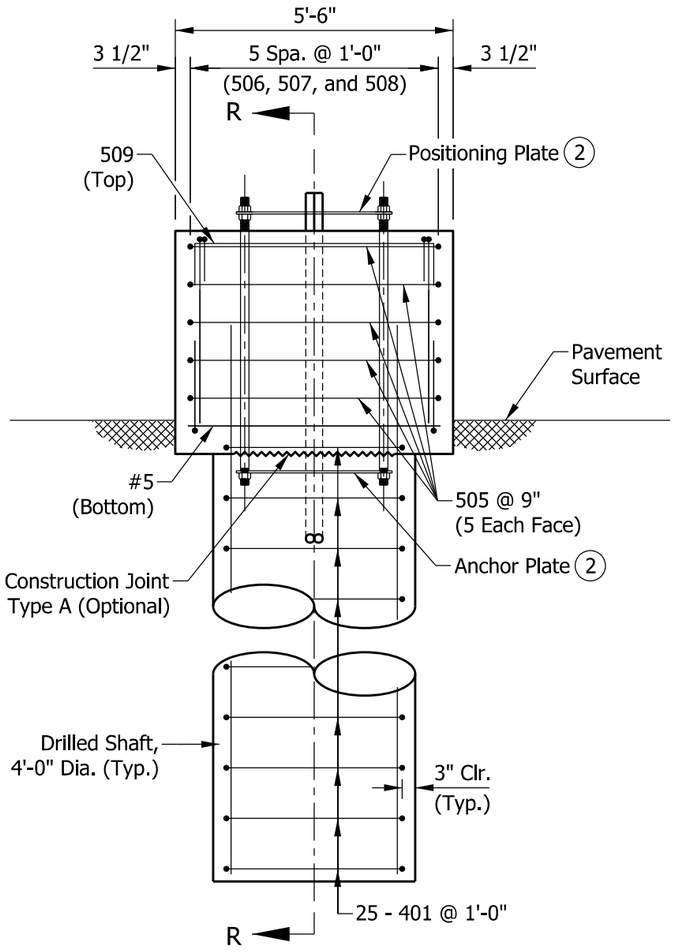
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-17

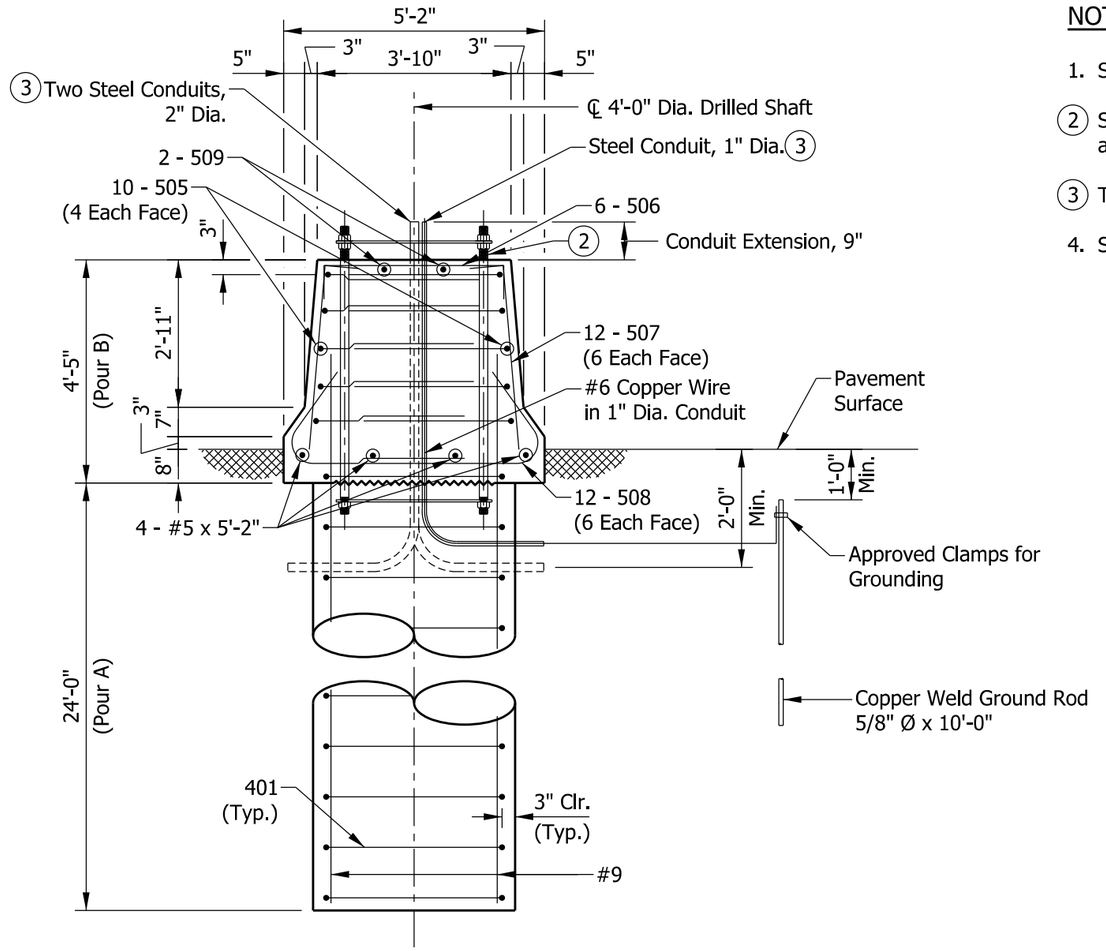
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



ELEVATION

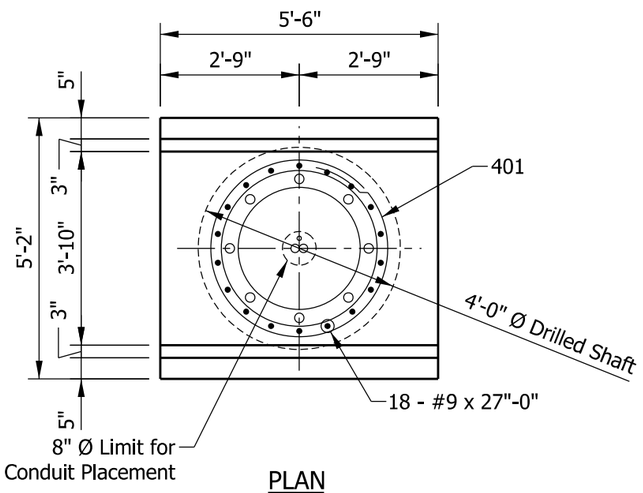


SECTION R-R

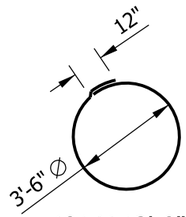
NOTES:

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.

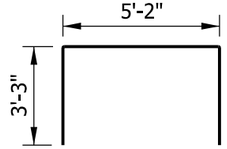
BILL OF MATERIALS			
EPOXY-COATED REINFORCING BARS			
MARK OR SIZE	NO. OF BARS	LENGTH	WEIGHT
#9	18	27'-0"	
Total #9			1652 LBS
505	10	11'-8"	
506	6	5'-8"	
507	12	4'-4"	
508	12	5'-11"	
509	2	7'-0"	
#5	4	5'-2"	
Total #5			322 LBS
401	25	12'-0"	
Total #4			200 LBS
Total Epoxy-Coated Reinforcing Bars			1848 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



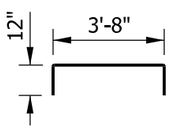
PLAN



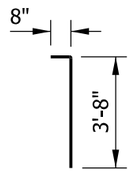
401 X 12'-0"



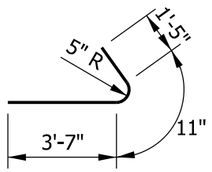
505 X 11'-8"



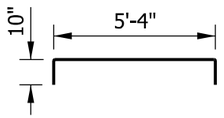
506 X 5'-8"



507 X 4'-4"



508 X 5'-11"



509 X 7'-0"

INDIANA DEPARTMENT OF TRANSPORTATION

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

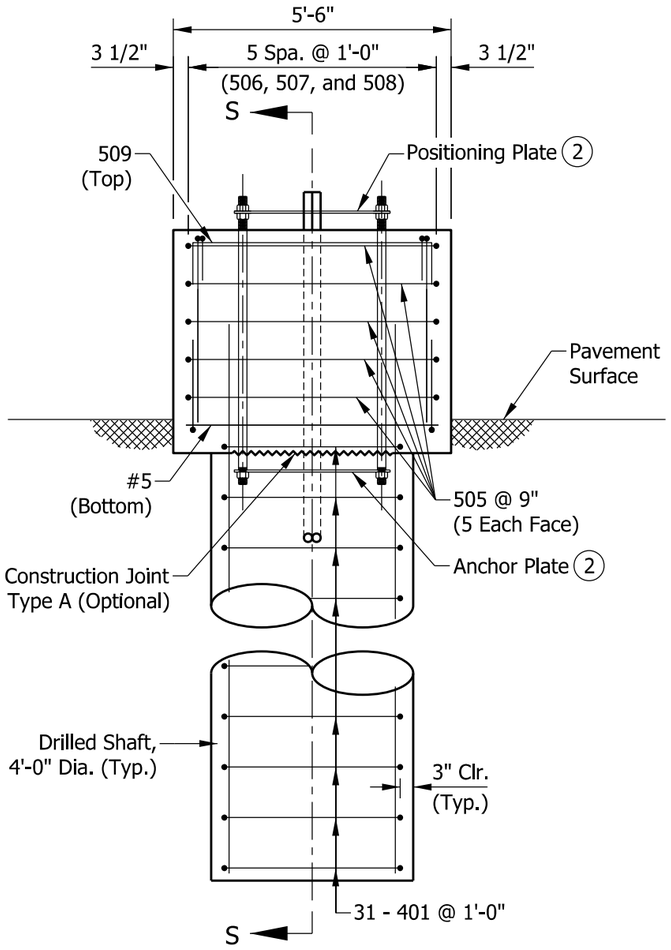
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-18

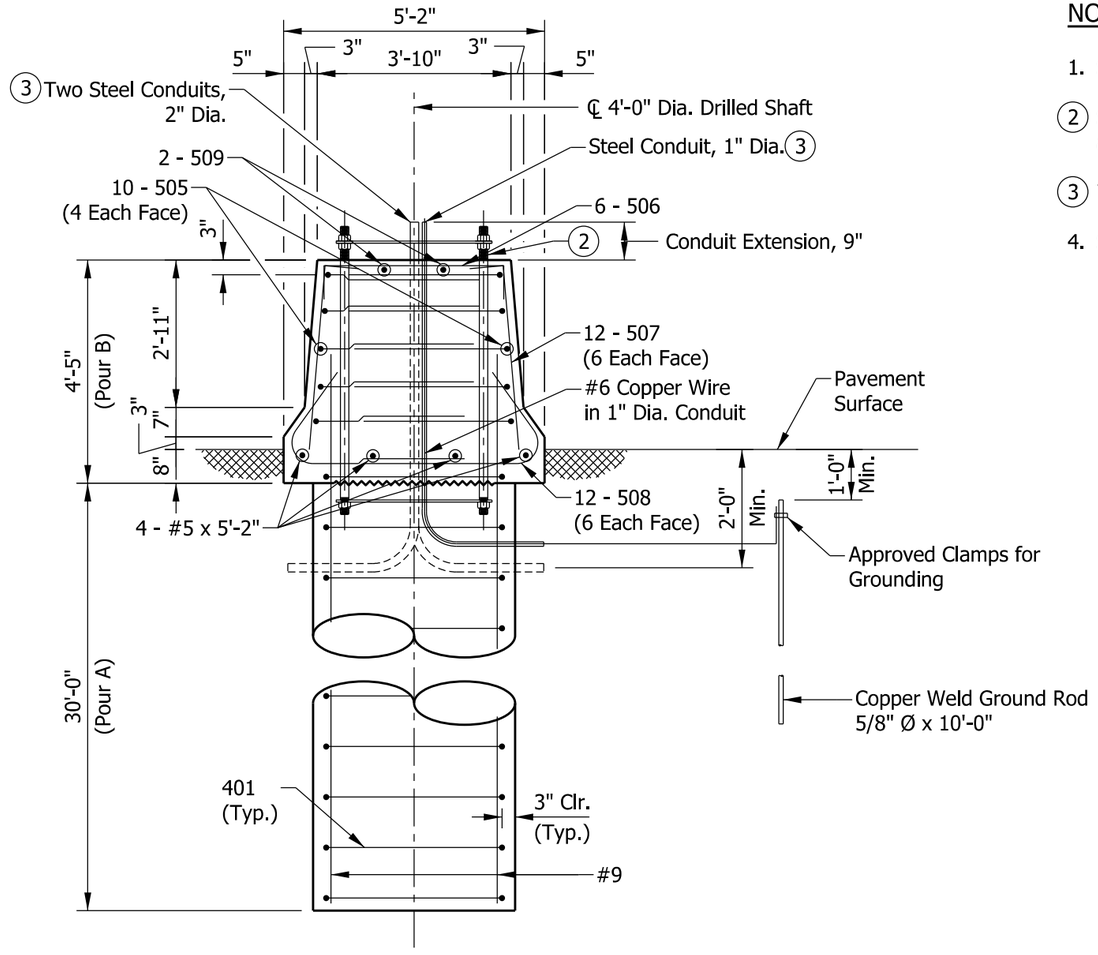
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

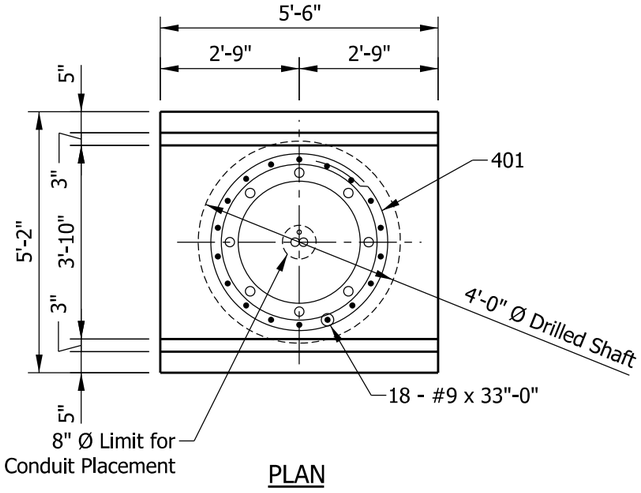
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE



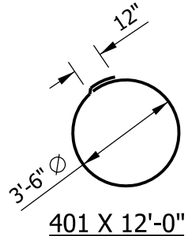
ELEVATION



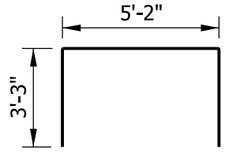
SECTION S-S



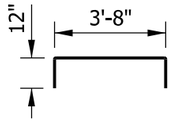
PLAN



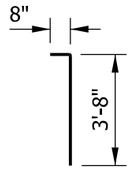
401 X 12'-0"



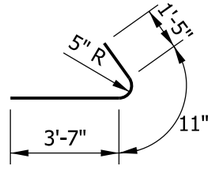
505 X 11'-8"



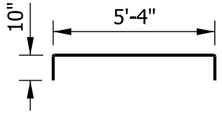
506 X 5'-8"



507 X 4'-4"



508 X 5'-11"



509 X 7'-0"

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	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

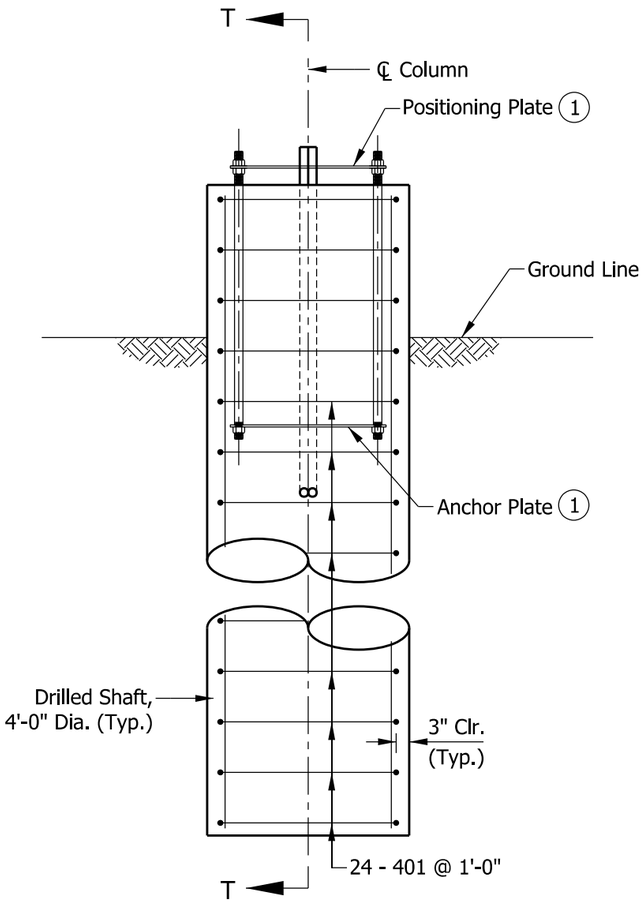
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-19

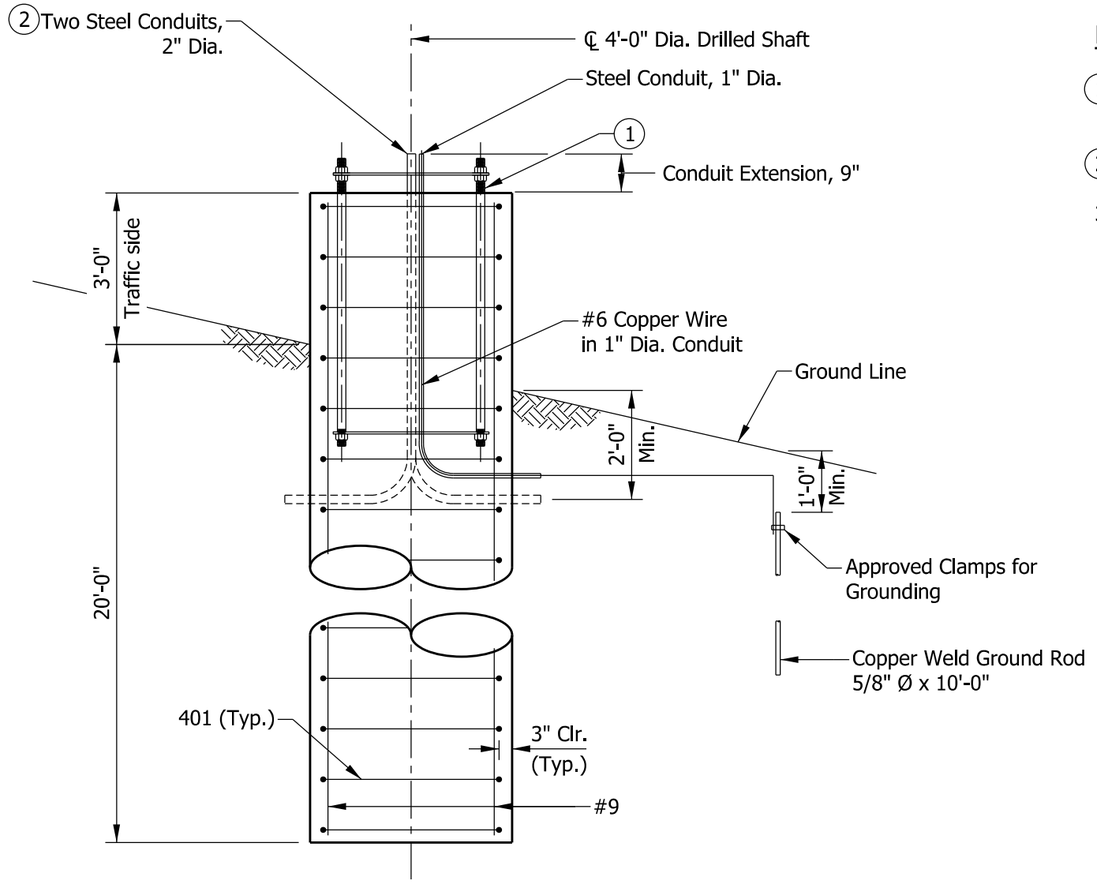
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

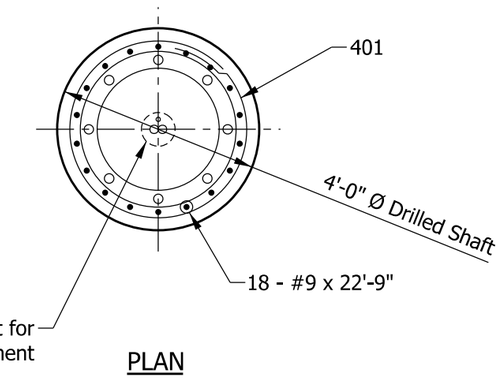
/s/ Mark A. Miller — 03/27/13
CHIEF ENGINEER — DATE



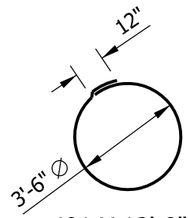
ELEVATION



SECTION T-T



PLAN



401 X 12'-0"

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

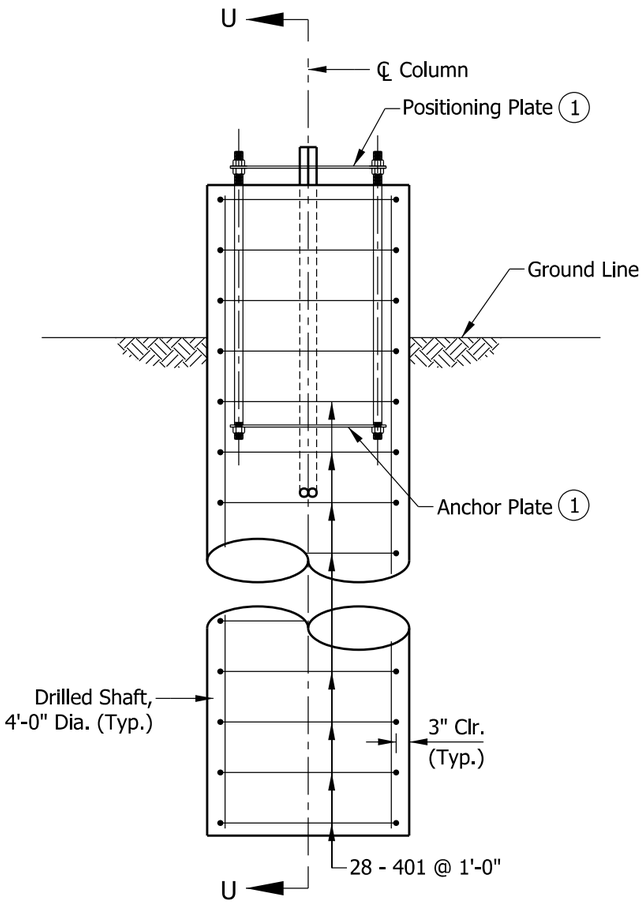
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-20

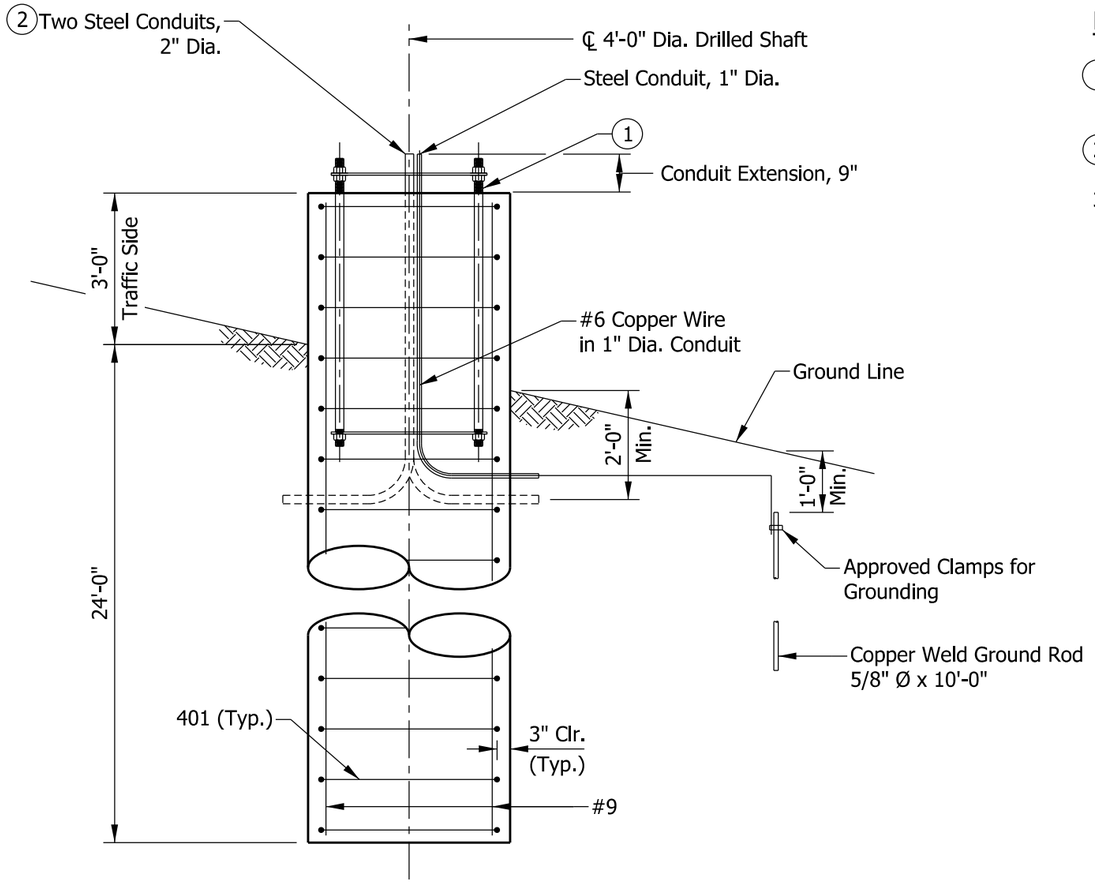
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

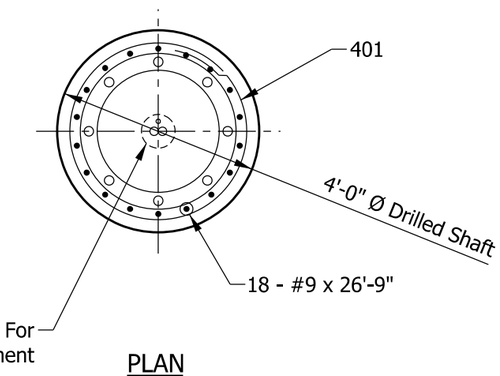
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



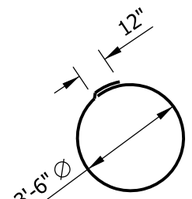
ELEVATION



SECTION U-U



PLAN



401 X 12'-0"

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

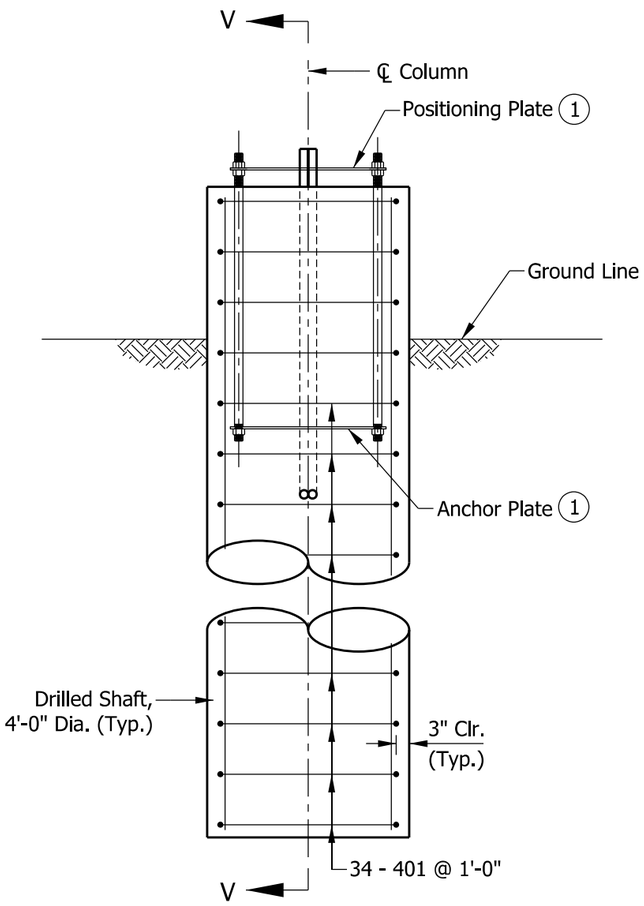
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-SCLS-21

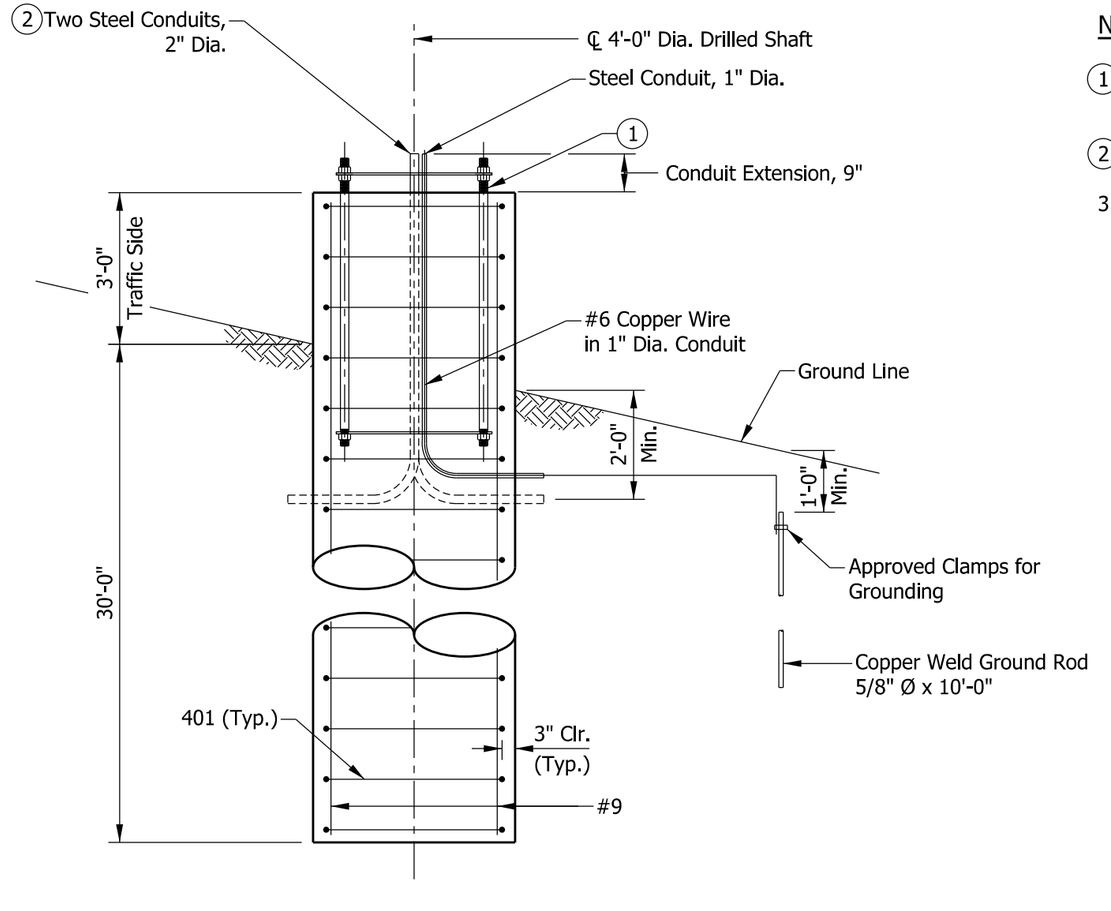
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

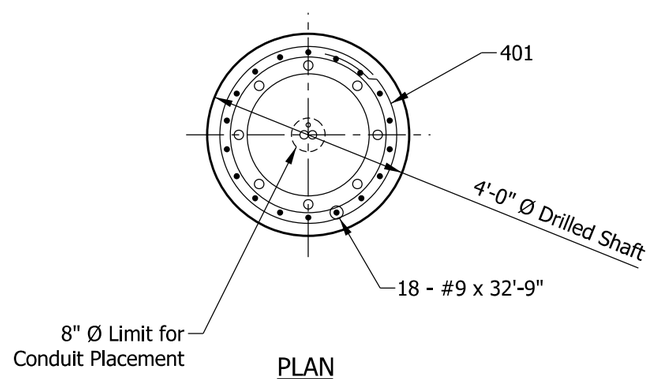
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



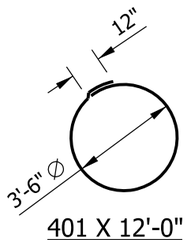
ELEVATION



SECTION V-V



PLAN



401 X 12'-0"

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

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

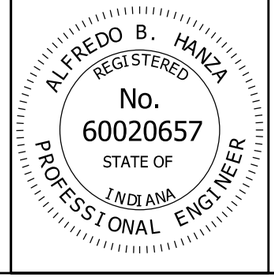
INDEX	
SHEET NO.	SUBJECT
1	Drawing Index
2	Plan, Elevation, Member Sizes, and Camber
3	Quadri-Chord and Flange Details
4	Upper Chords Connection Details
5	Lower Chords Connection and Wire Outlet Details
6	Base Plate, Anchor Bolt, and Metal Skirt Details
7	Handhole and I.D. Tag Details
8	Foundation at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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY
DRAWING INDEX

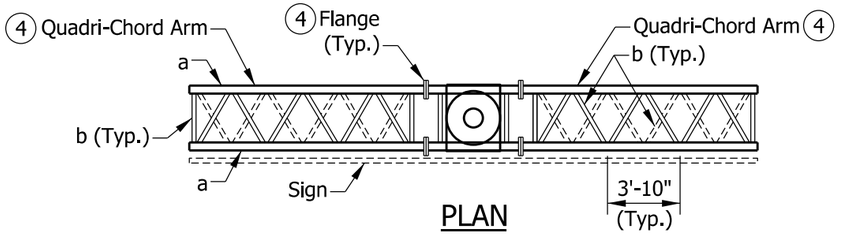
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-01

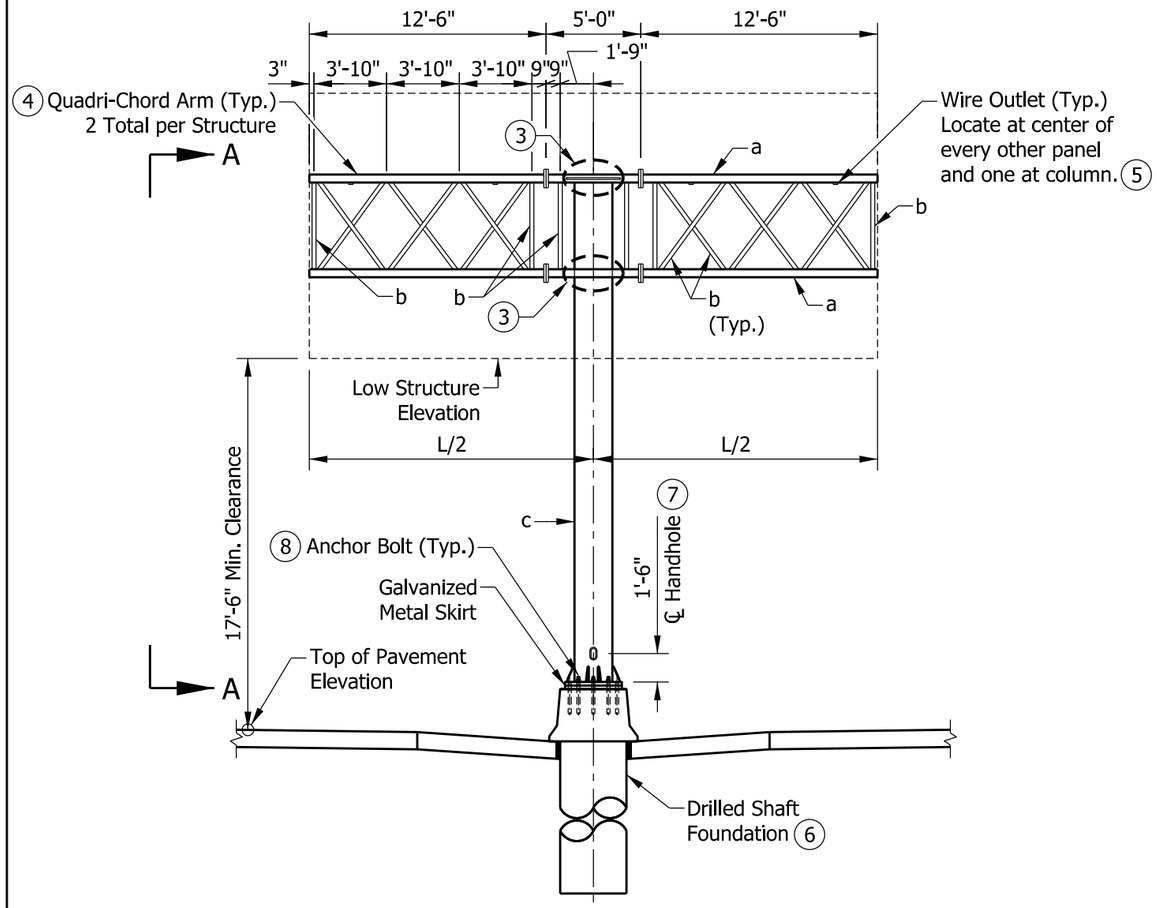


/s/ Alfredo B. Hanza *09/20/13*
DESIGN STANDARDS ENGINEER DATE

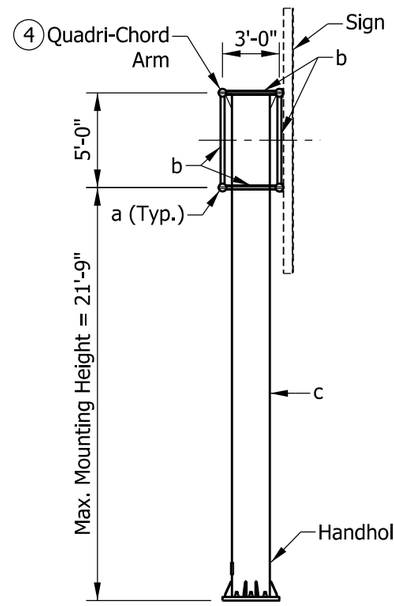
/s/ Mark A. Miller *09/26/13*
CHIEF ENGINEER DATE



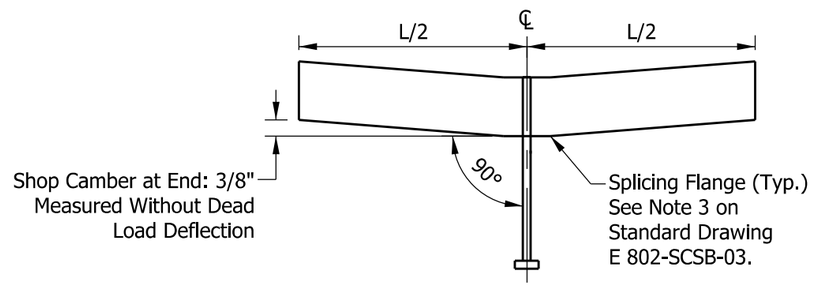
PLAN



ELEVATION



SIDE ELEVATION A-A



CAMBER DIAGRAM

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:

1. Maximum deviation of any chord from a straight line shall be 1/8".
2. All butterfly structure members are steel.
3. See Standard Drawings E 802-SCSB-04 and -05 for upper and lower chord connection details.
4. See Standard Drawing E 802-SCSB-03 for quadri-chord and flange details.
5. See Standard Drawing E 802-SCSB-05 for wire outlet detail.
6. See Standard Drawings E 802-SCSB-08 and -09 for foundation details.
7. See Standard Drawing E 802-SCSB-07 for handhole and I.D. tag details.
8. 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

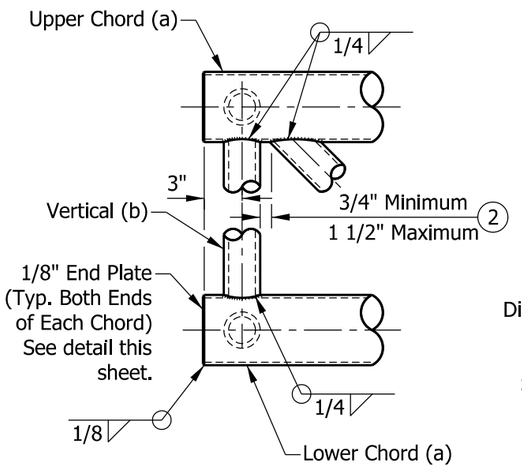
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-02

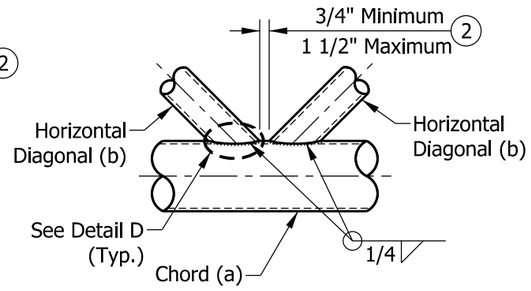
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

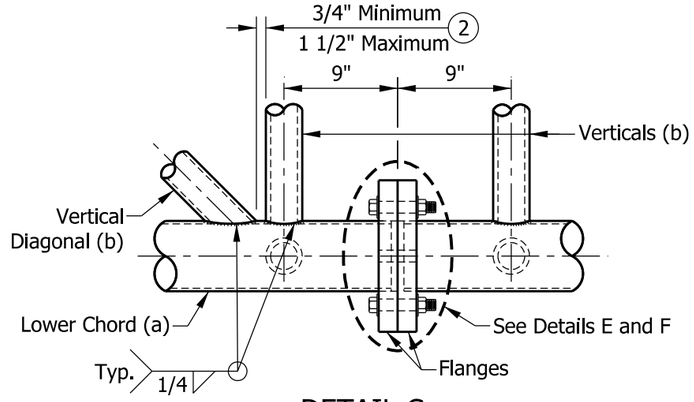
/s/ Mark A. Miller 09/26/13
CHIEF ENGINEER DATE



DETAIL A



DETAIL B



DETAIL C

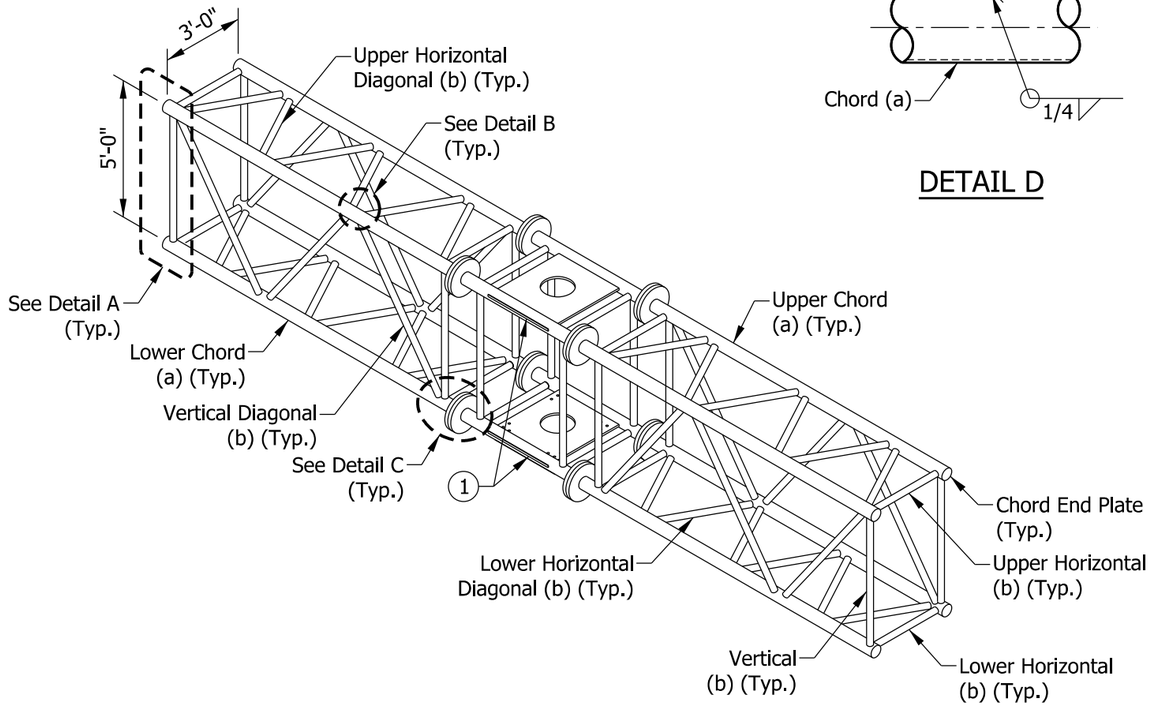
NOTES:

(1) See Standard Drawings E 802-SCSB-04 and -05 for upper and lower chords connection details.

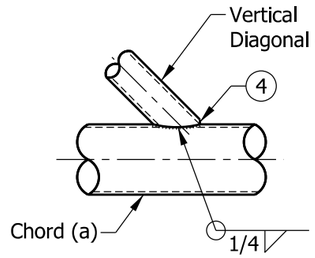
(2) Diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a 3/4" minimum to 1 1/2" maximum clearance between any diagonal and any vertical member, and to provide clearance for U-bolt connections of signs.

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.

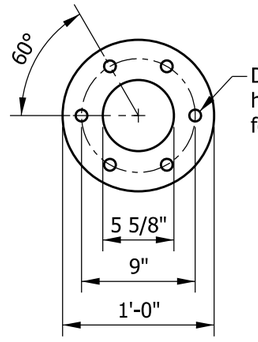
(4) Toe edge of diagonal member shall be cut back to facilitate throat thickness per AWS D1.1, Figure 3.2.



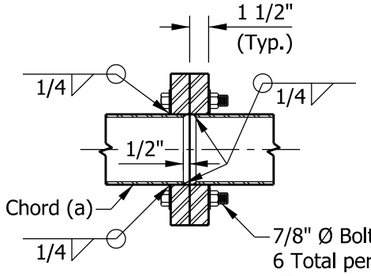
TYPICAL QUADRI-CHORD ARM PAIR



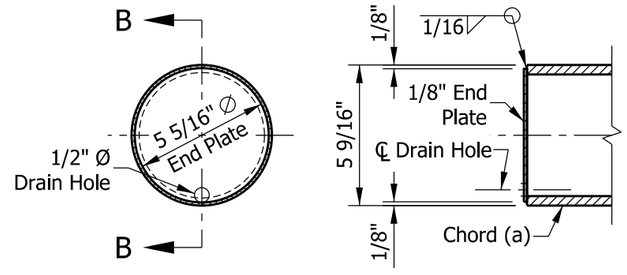
DETAIL D



FLANGE
DETAIL E



FLANGE
DETAIL F



END VIEW SECTION B-B

CHORD END PLATE DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY
QUADRI-CHORD AND FLANGE DETAILS

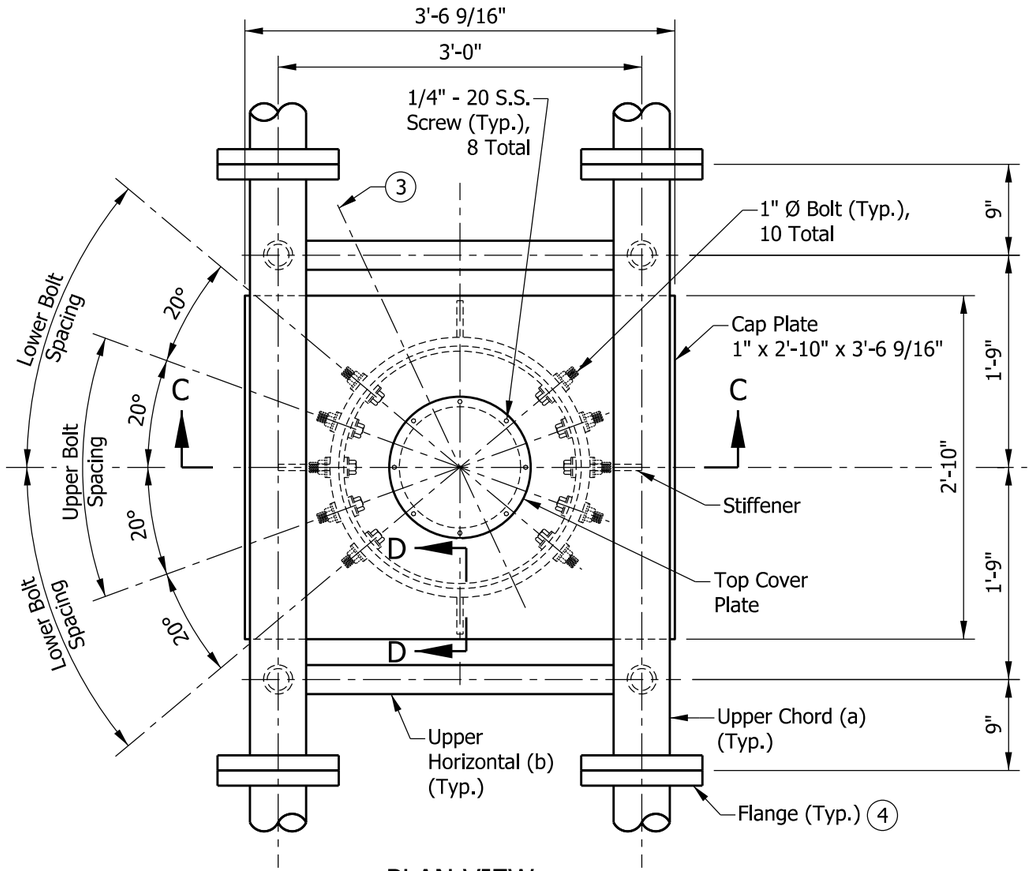
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-03

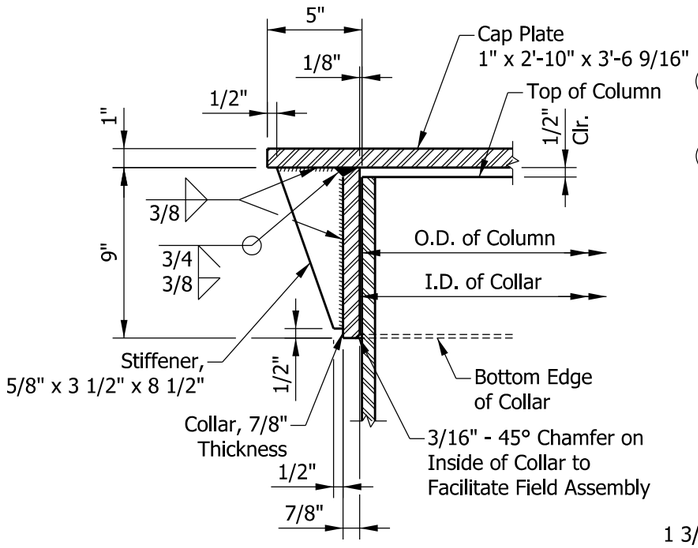
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

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



PLAN VIEW



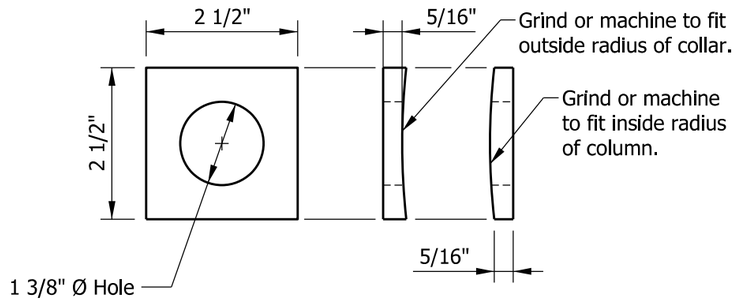
SECTION D-D

NOTES:

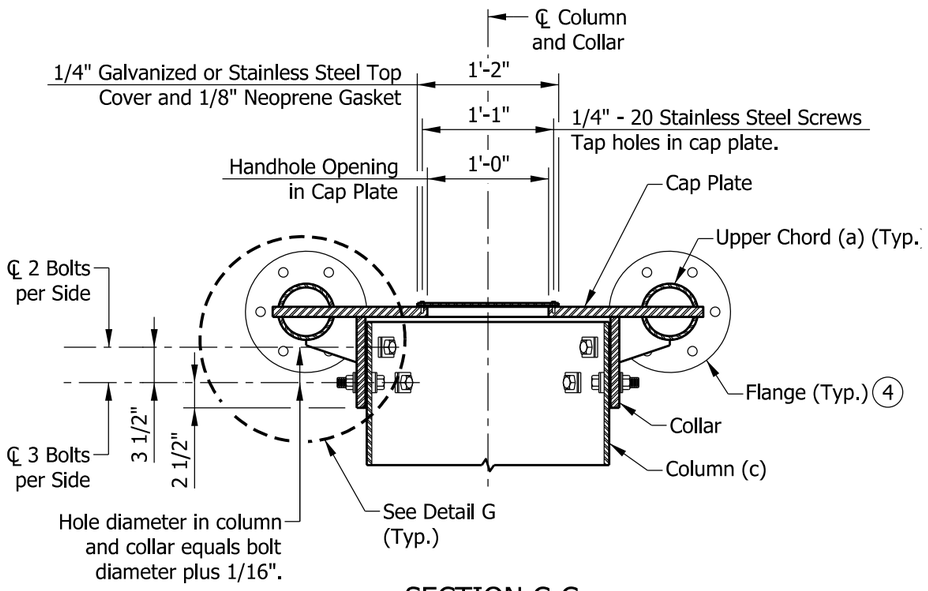
1. Connection bolts in collar and bolts at lower chord connection must be high strength with matching locknuts. Connection bolts shall each have two (2) stainless steel flat, washers. Bolts, contoured washers, and locknuts shall be galvanized.
2. After galvanizing, collar inside diameter shall equal outside diameter of galvanized column plus 1/8" (±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%.

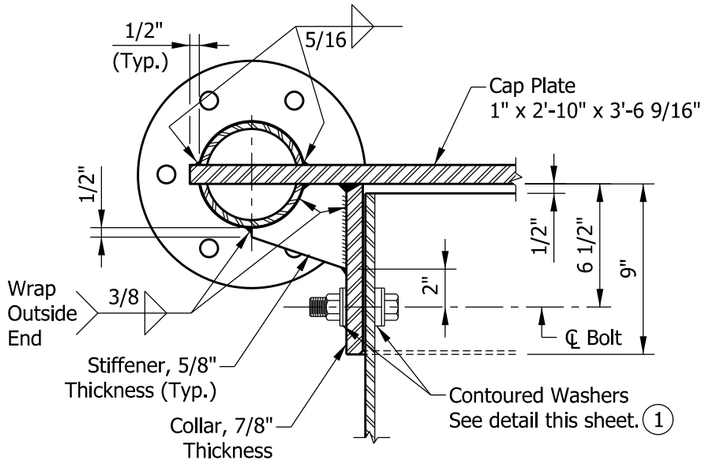
(4) See Standard Drawing E 802-SCSB-03 for flange details.



CONTOURED WASHER DETAIL

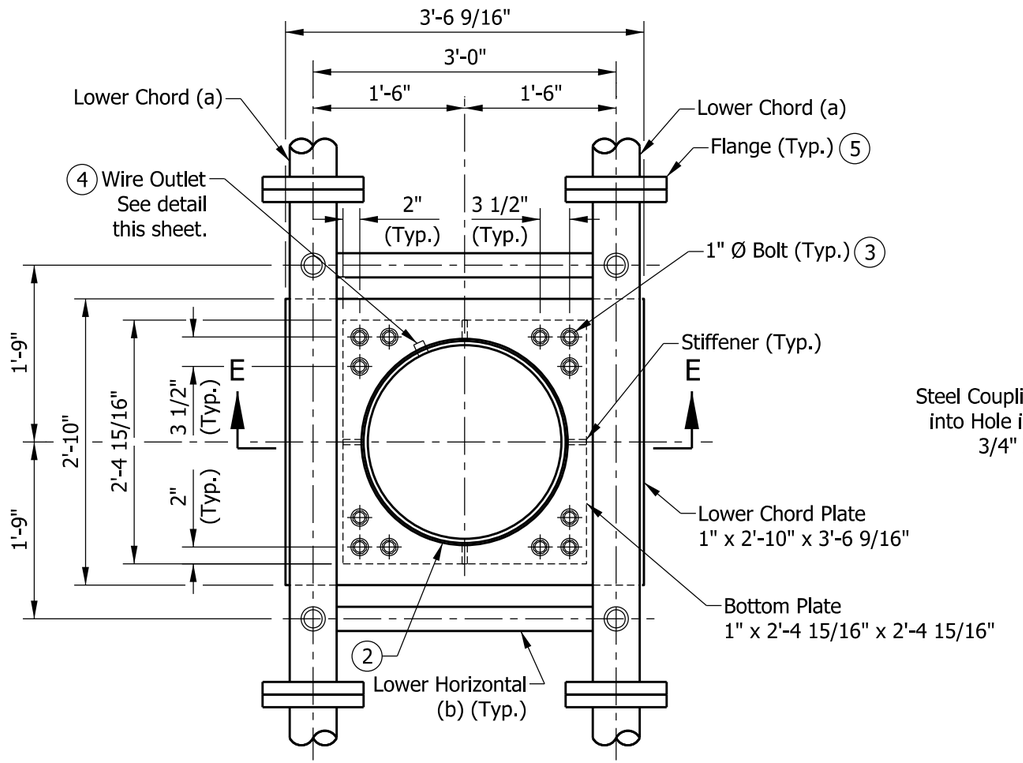


SECTION C-C

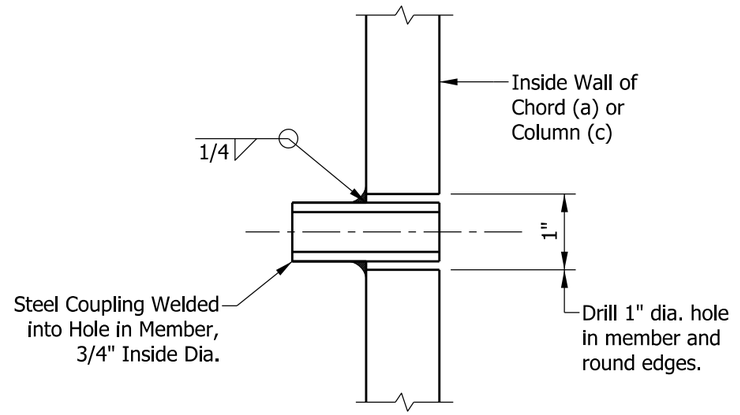


DETAIL G

INDIANA DEPARTMENT OF TRANSPORTATION	
SIGN CANTILEVER STRUCTURE BUTTERFLY UPPER CHORDS CONNECTION SEPTEMBER 2014	
STANDARD DRAWING NO. E 802-SCSB-04	
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Alfredo B. Hanza 09/20/13 DESIGN STANDARDS ENGINEER DATE
	/s/ Mark A. Miller 09/26/13 CHIEF ENGINEER DATE



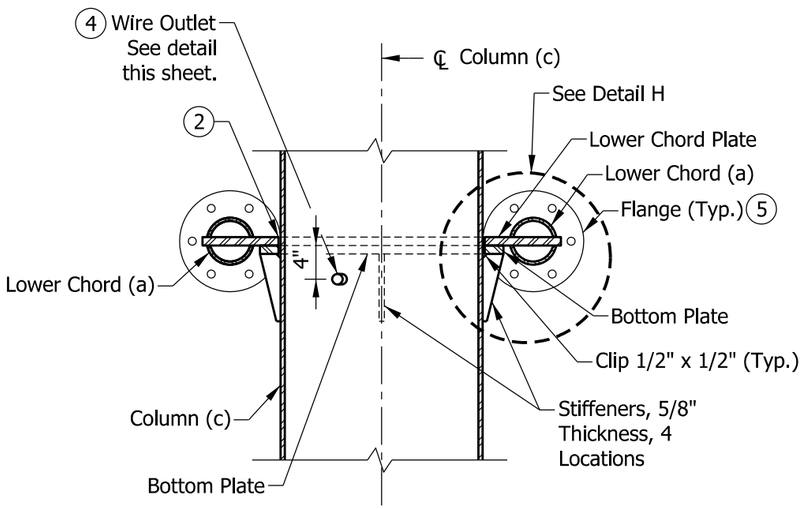
PLAN SECTION THROUGH COLUMN ABOVE LOWER CHORDS



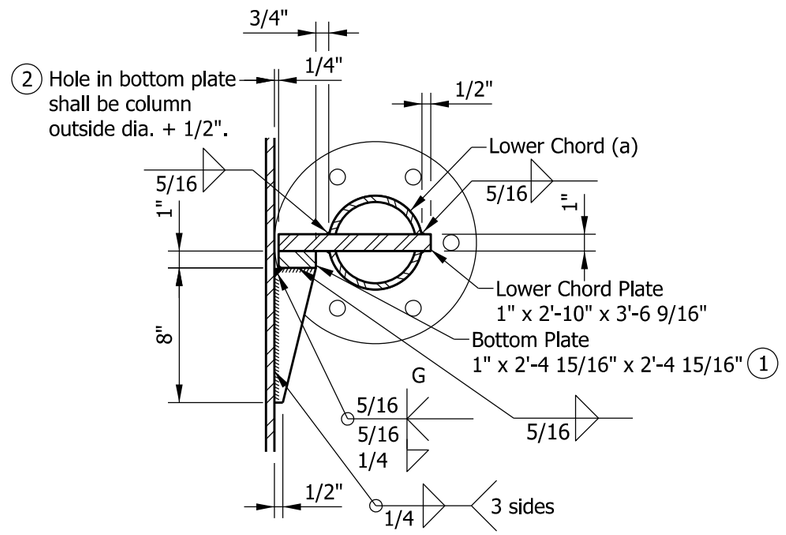
WIRE OUTLET

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.



SECTION E-E



DETAIL H

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY
LOWER CHORDS CONNECTION
AND WIRE OUTLET DETAIL

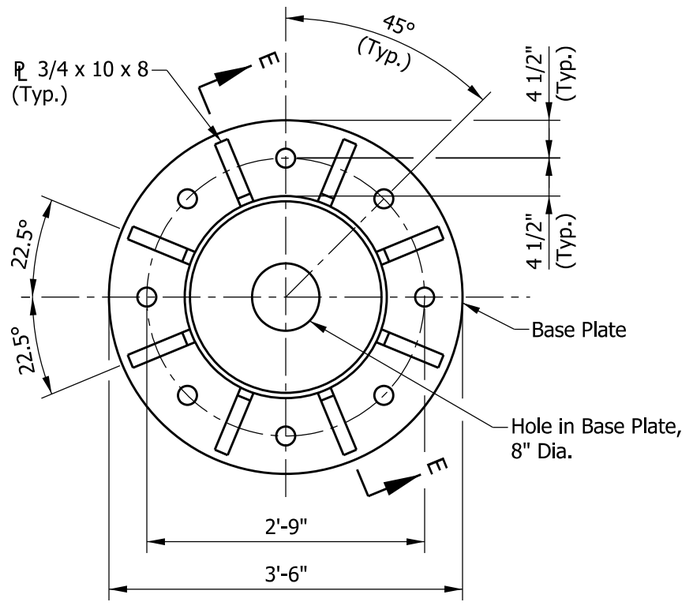
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-05

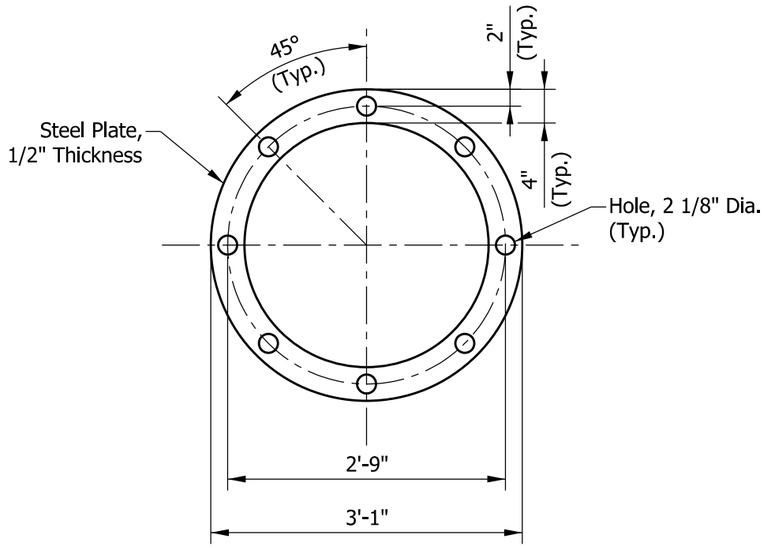
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza 09/25/13
DESIGN STANDARDS ENGINEER DATE

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



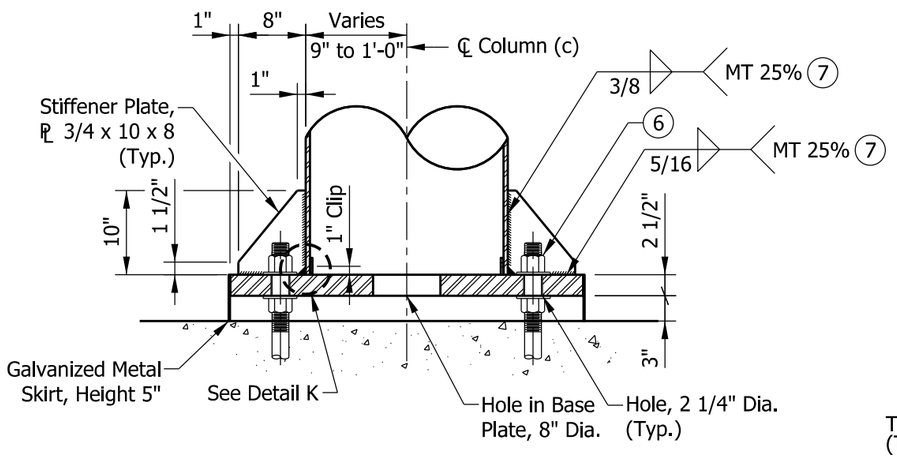
PLAN



ANCHOR AND POSITIONING PLATE

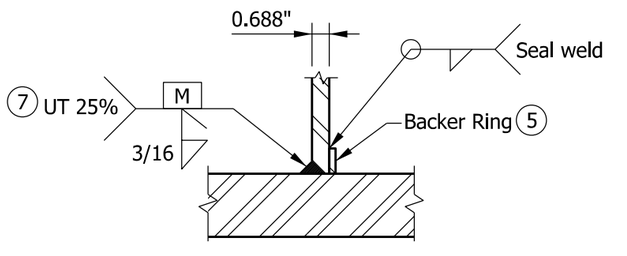
NOTES:

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.

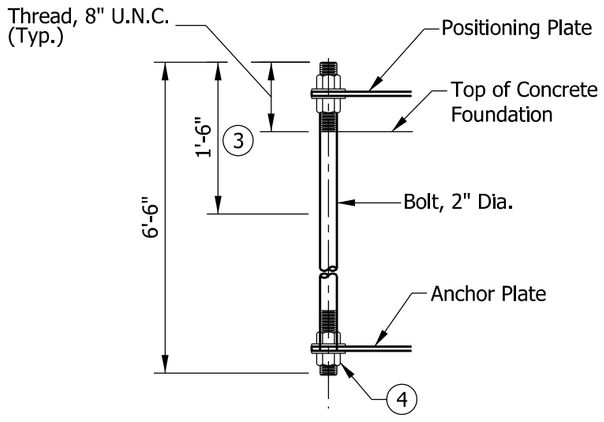


SECTION E-E

METAL SKIRT DETAIL



DETAIL K
BASE PLATE WELD



ANCHOR BOLT DETAIL

DETAIL I DETAIL J

INDIANA DEPARTMENT OF TRANSPORTATION

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

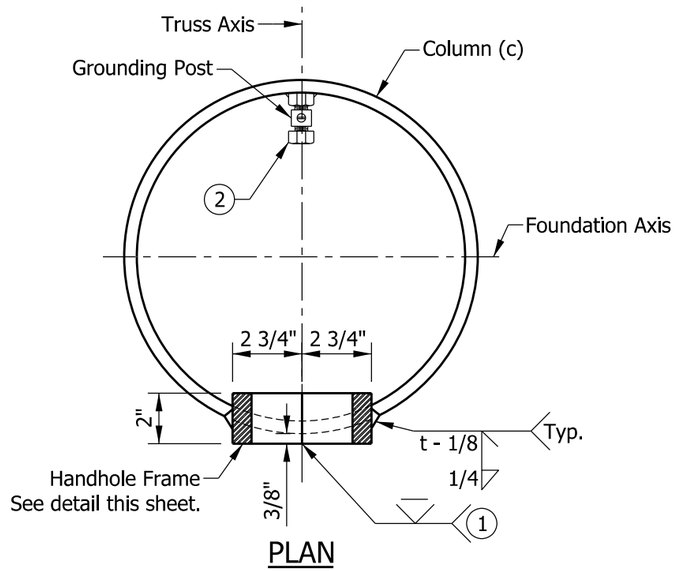
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-06

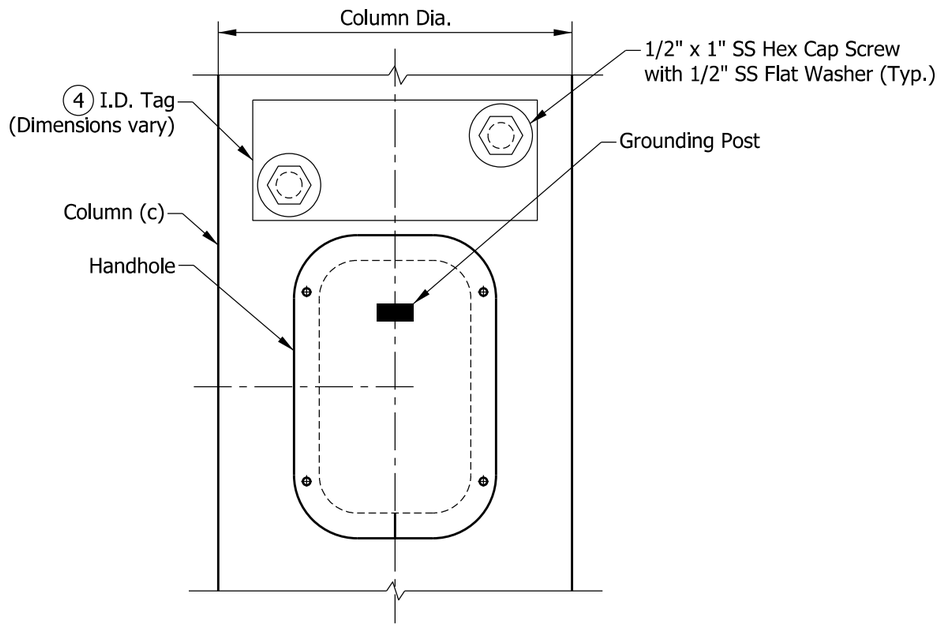
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



PLAN



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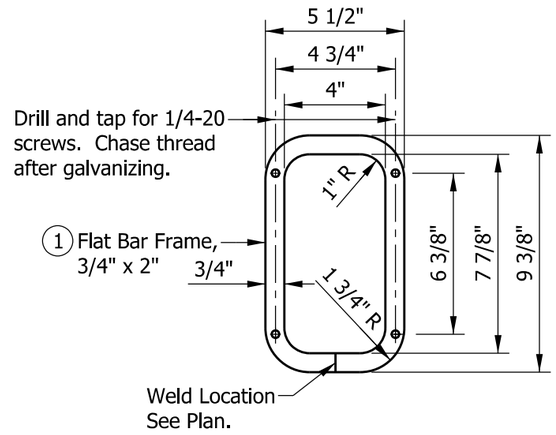
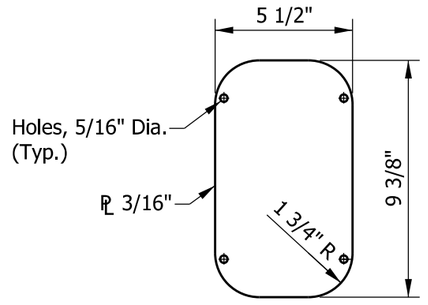


HANDHOLE FRAME



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 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

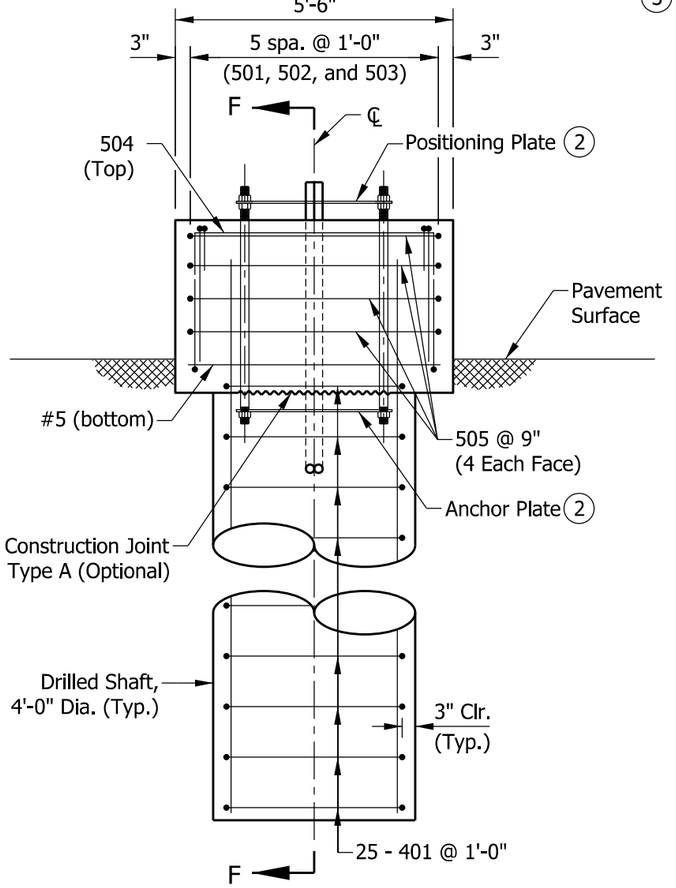
SIGN CANTILEVER STRUCTURE BUTTERFLY
HANDHOLE AND I.D. TAG DETAILS

SEPTEMBER 2014

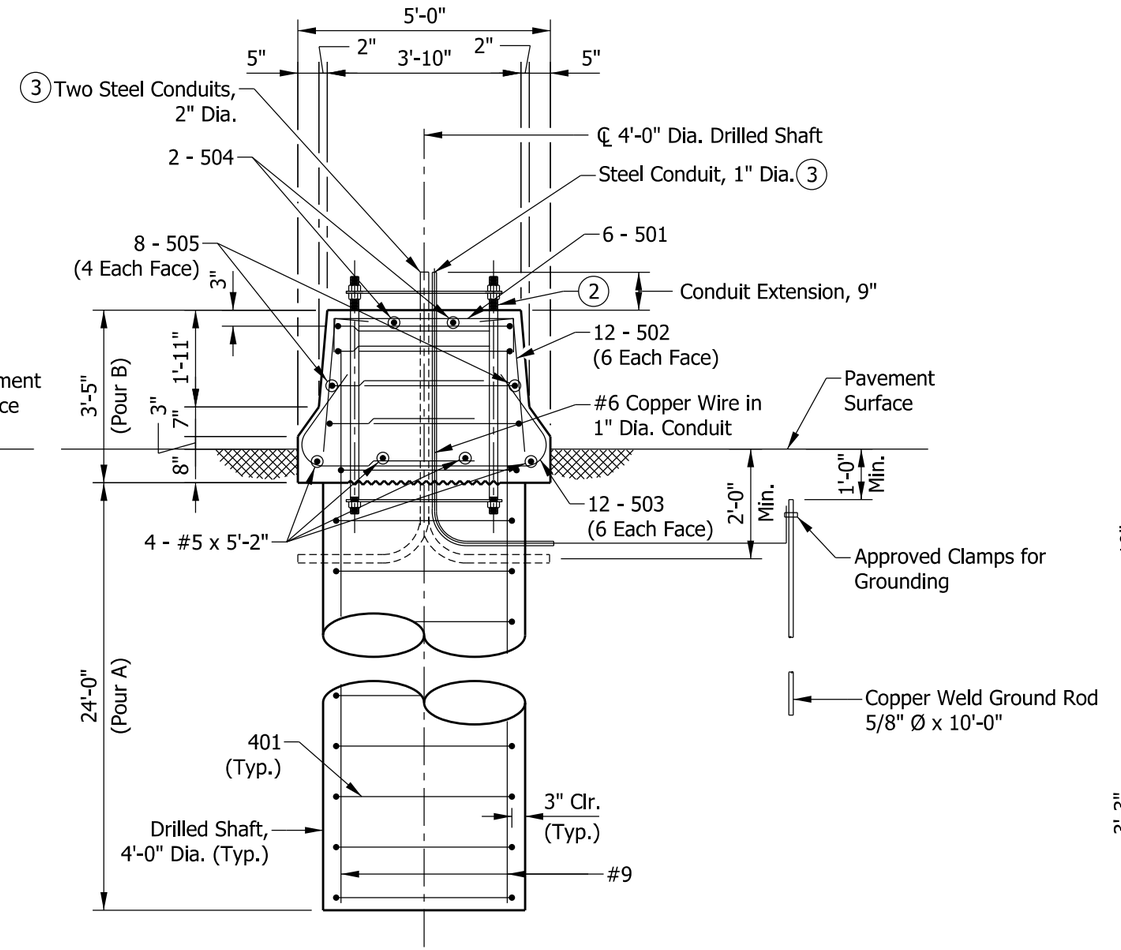
STANDARD DRAWING NO. E 802-SCSB-07

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

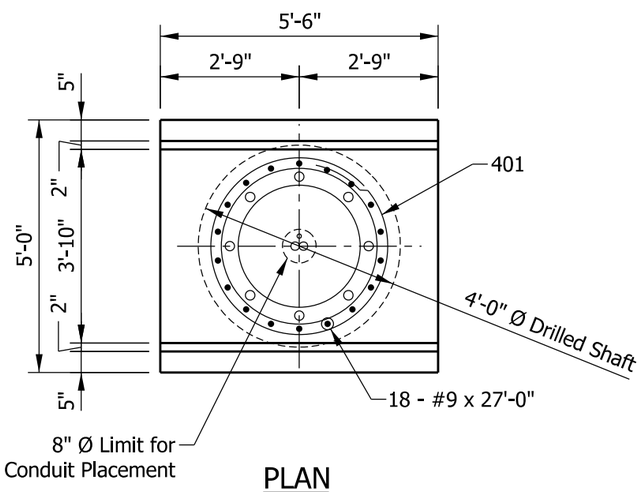
/s/ Alfredo B. Hanza	*09/20/13*
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	*09/26/13*
CHIEF ENGINEER	DATE



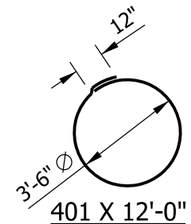
ELEVATION



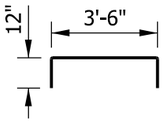
SECTION F-F



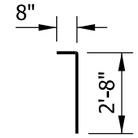
PLAN



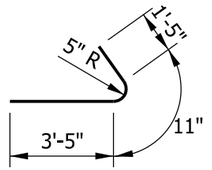
401 X 12'-0"



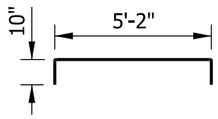
501 X 5'-6"



502 X 3'-4"



503 X 5'-9"



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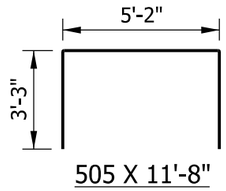


505 X 11'-8"

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

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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN CANTILEVER STRUCTURE BUTTERFLY FOUNDATION AT 33" CONCRETE BARRIER

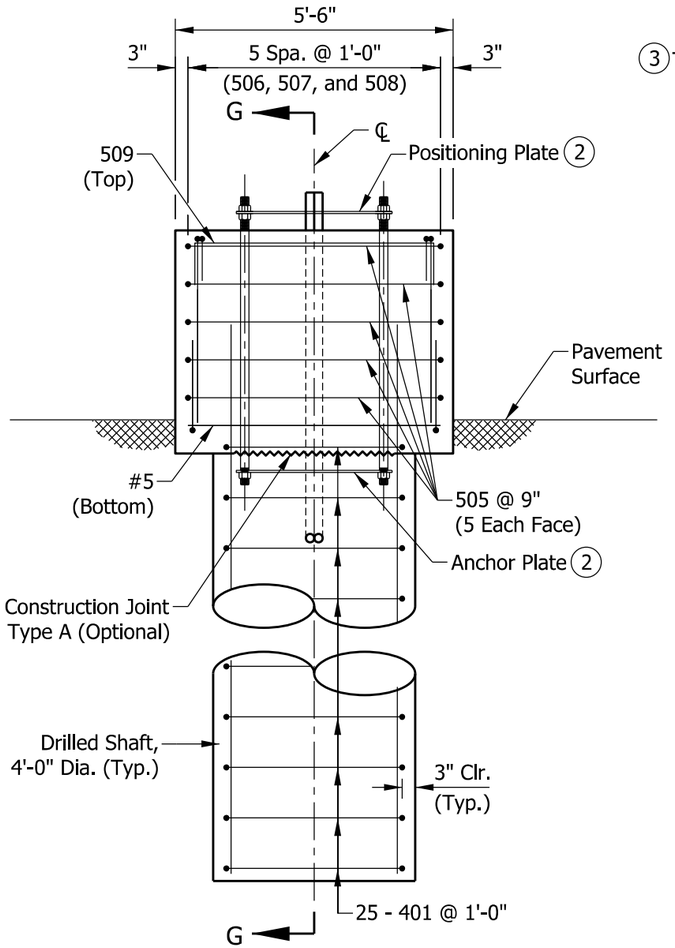
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-08

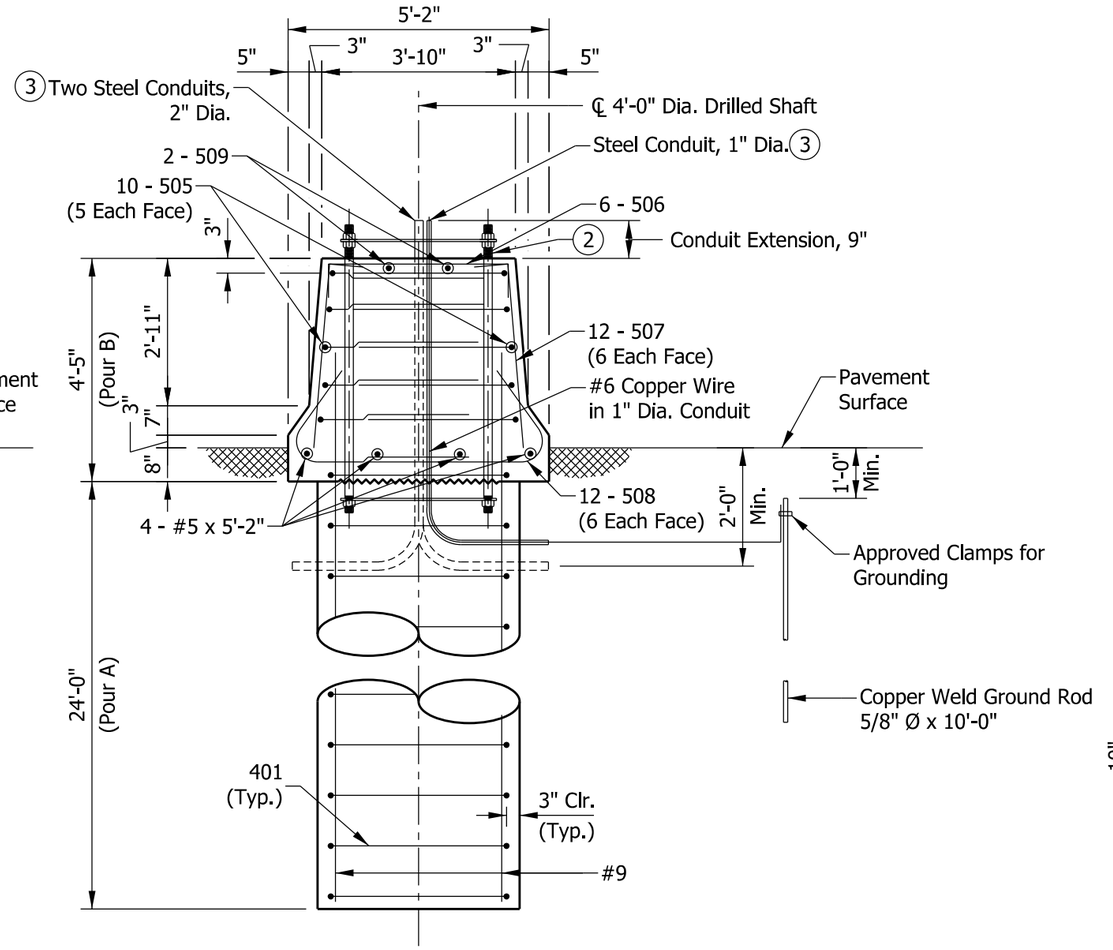
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

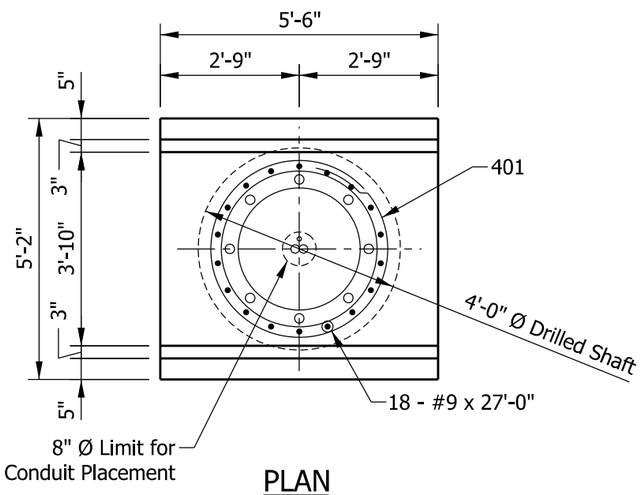
/s/ Mark A. Miller — 09/26/13
CHIEF ENGINEER — DATE



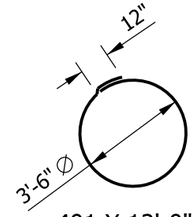
ELEVATION



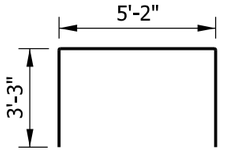
SECTION G-G



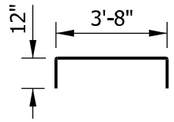
PLAN



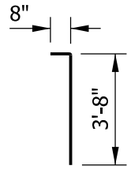
401 X 12'-0"



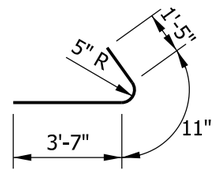
505 X 11'-8"



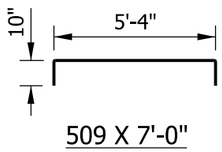
506 X 5'-8"



507 X 4'-4"



508 X 5'-11"



509 X 7'-0"

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
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

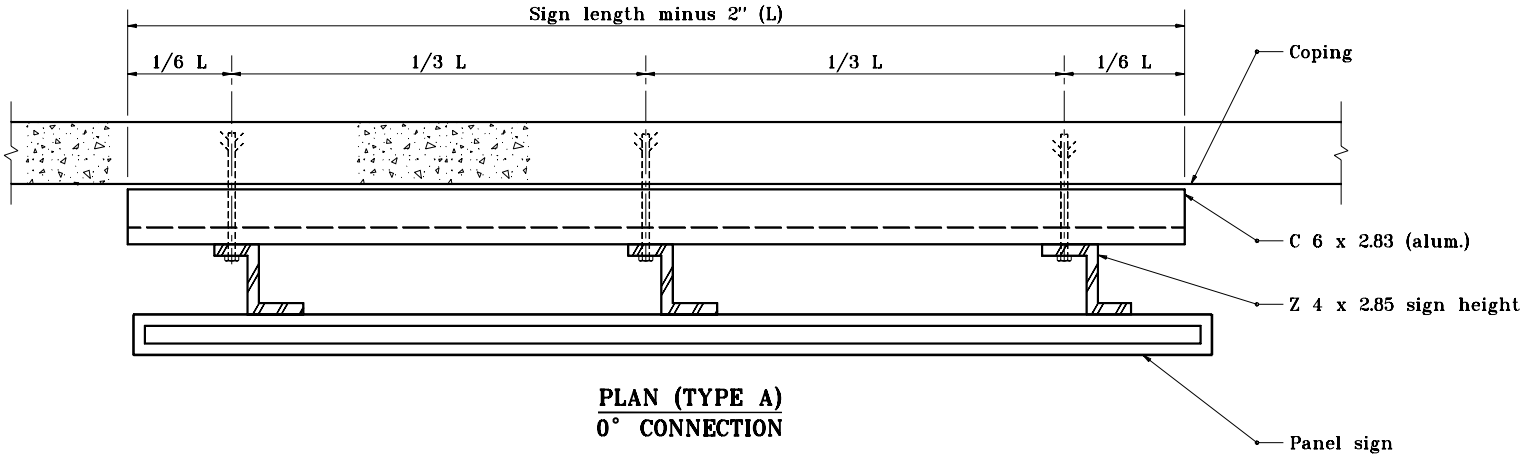
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SCSB-09

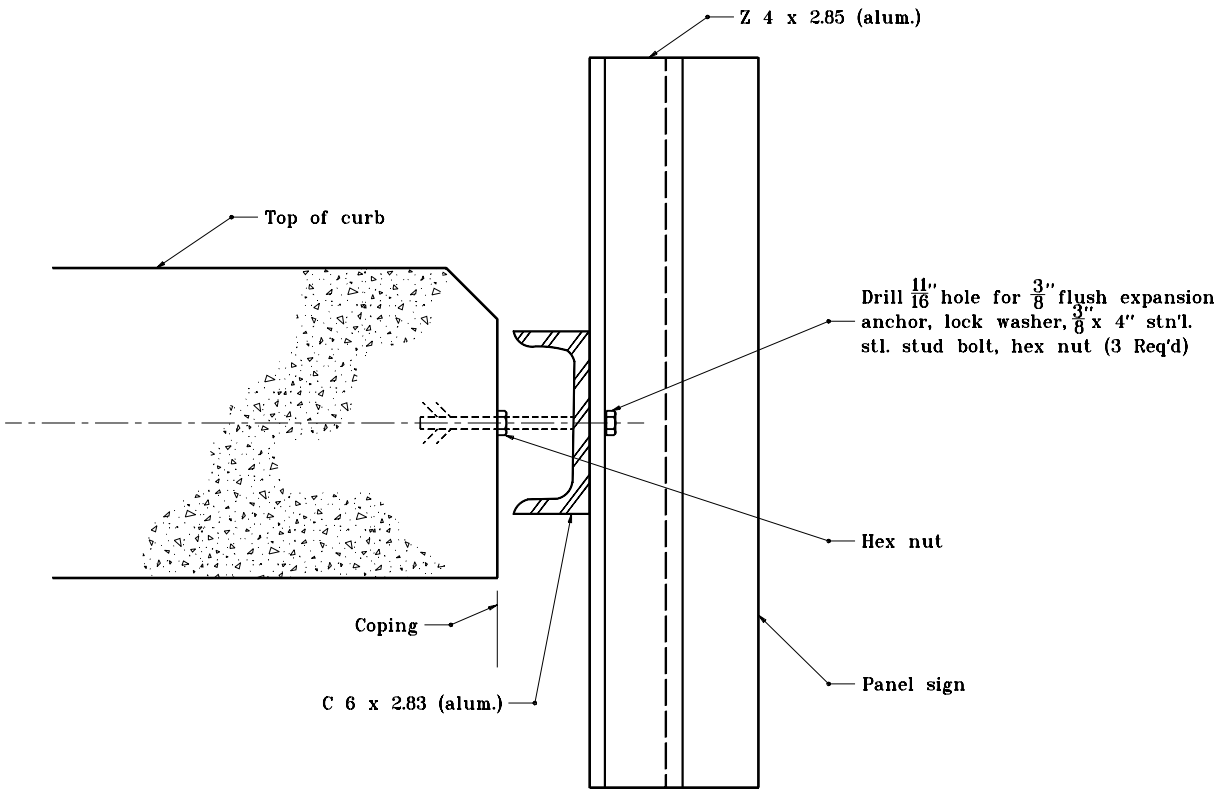
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



PLAN (TYPE A)
0° CONNECTION



SECTION A–A

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE BRACKET ASSY. FOR CROSSROAD SIGNING

SEPTEMBER 2001

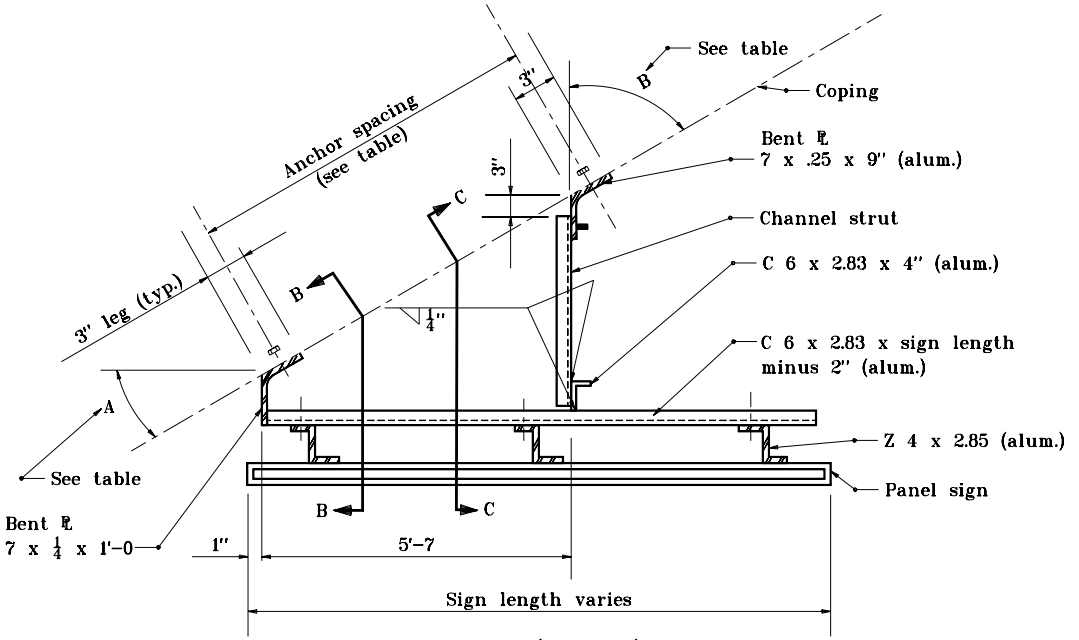
STANDARD DRAWING NO. **E 802–SNBB–01**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

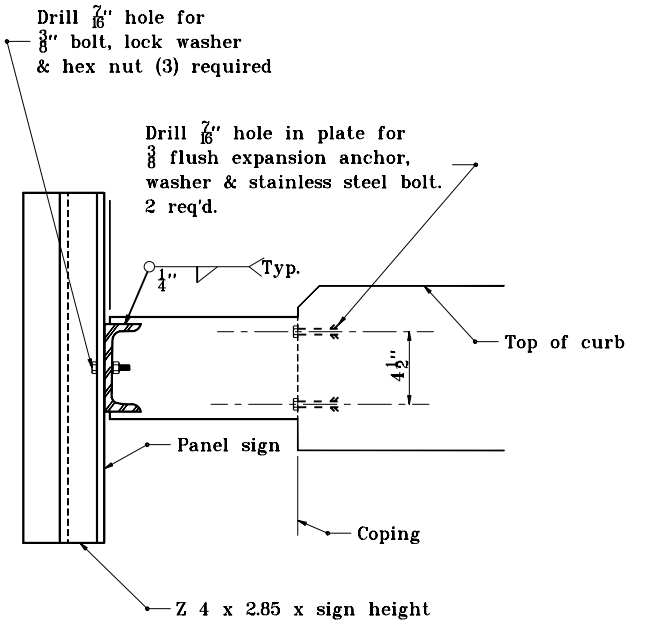
/s/ Anthony L. Uremovich 9-04-01
DESIGN STANDARDS ENGINEER — DATE

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



PLAN (TYPE A)

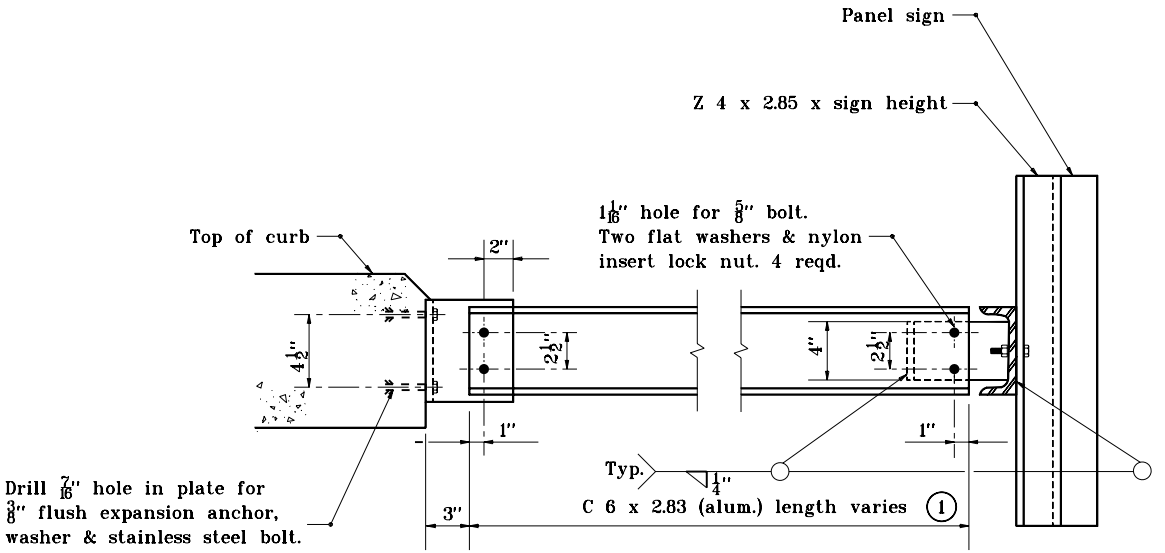
10°, 20°, 30°, & 40° CONNECTIONS



SECTION B–B

GENERAL NOTES

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



SECTION C–C

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE BRACKET ASSY. FOR CROSSROAD SIGNING

SEPTEMBER 2001

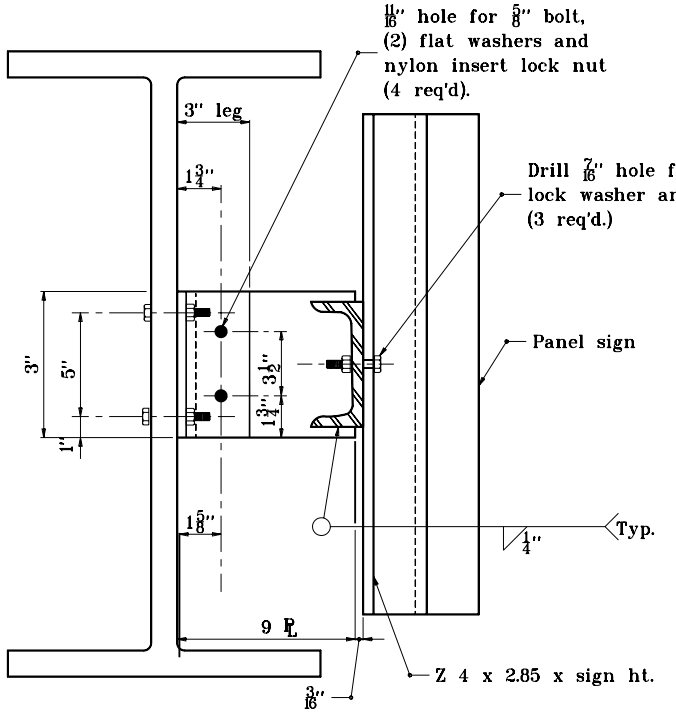
STANDARD DRAWING NO. E 802-SNBB-02

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

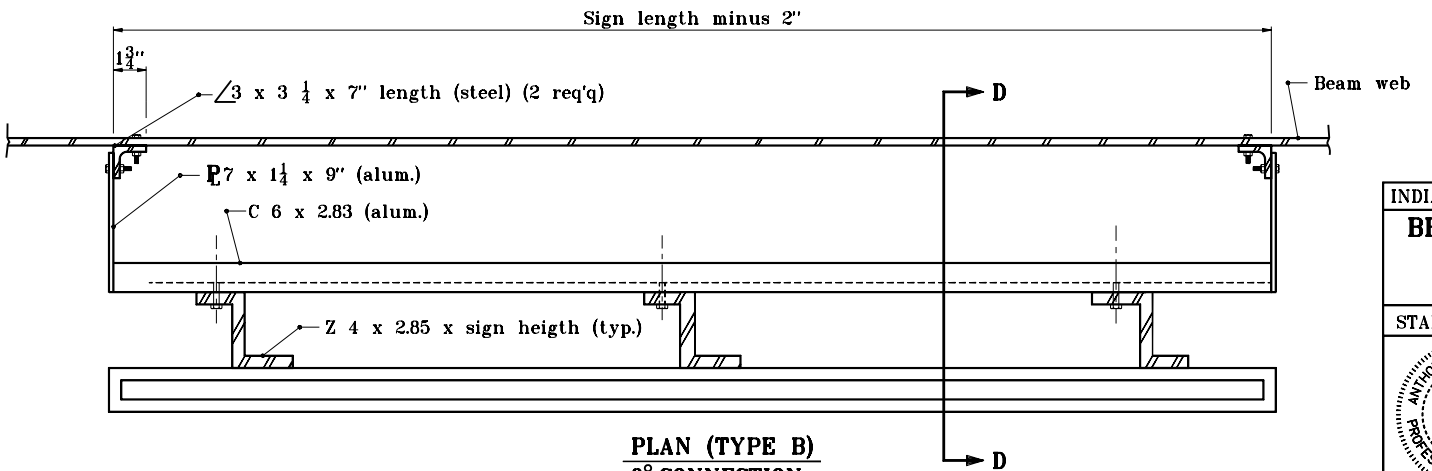
DESIGN STANDARDS ENGINEER

/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

BRIDGE BRACKET ASSY. FOR CROSS–ROAD SIGNING

SEPTEMBER 2001

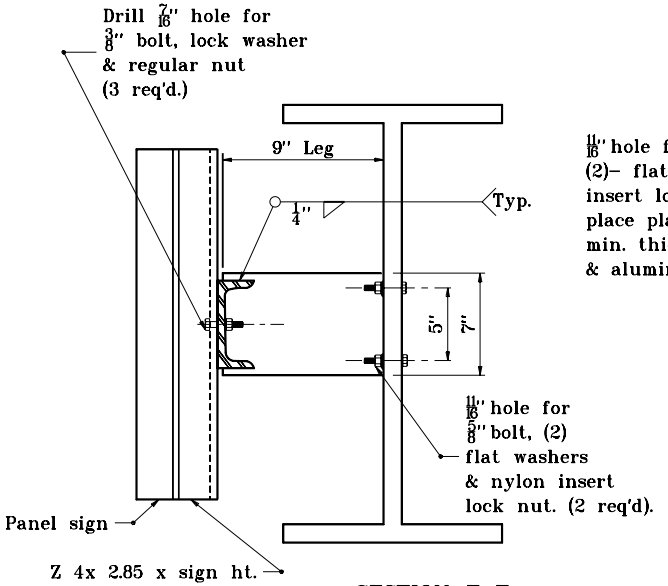
STANDARD DRAWING NO. E 802–SNBB–03

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

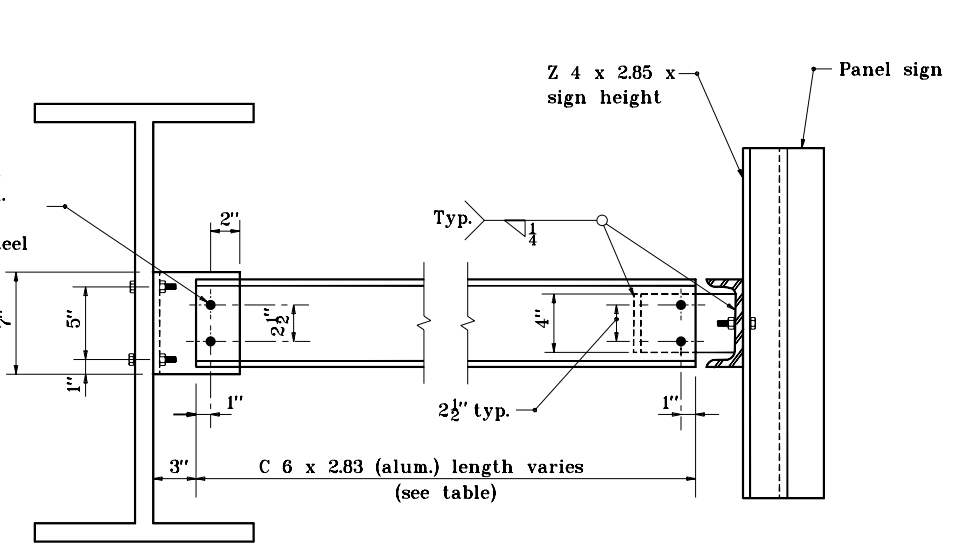
DESIGN STANDARDS ENGINEER

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

/s/ Firooz Zandi 9–04–01
CHIEF HIGHWAY ENGINEER — DATE



SECTION E–E



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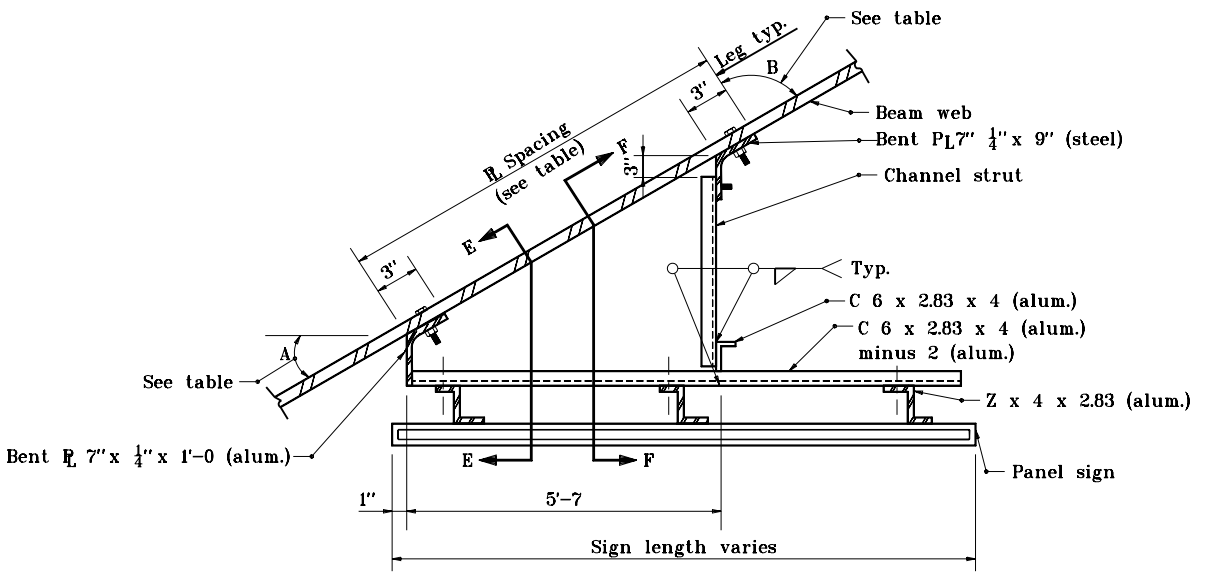


PLAN (TYPE B)

10°, 20°, 30°, & 40° Connections

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE BRACKET ASSY. FOR CROSSROAD SIGNING

SEPTEMBER 2001

STANDARD DRAWING NO. E 802–SNBB–04

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

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 3/4"	5'–6	5'–11
20°– 30°	20°	70°	C 6 x 2.83 x 2'–5 1/4"	5'–11 1/2"	6'–2 1/2"
30°– 40°	30°	60°	C 6 x 2.83 x 3'–7 1/2"	6'–5 1/2"	6'–8 1/2"
40°– 50°	40°	50°	C 6 x 2.83 x 5'–1 1/4"	7'–3 3/4"	7'–6 1/2"

GENERAL NOTES

1. 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.

2. All 3/8" bolts used with 3/8" expansion anchors shall be 1 in. long (±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

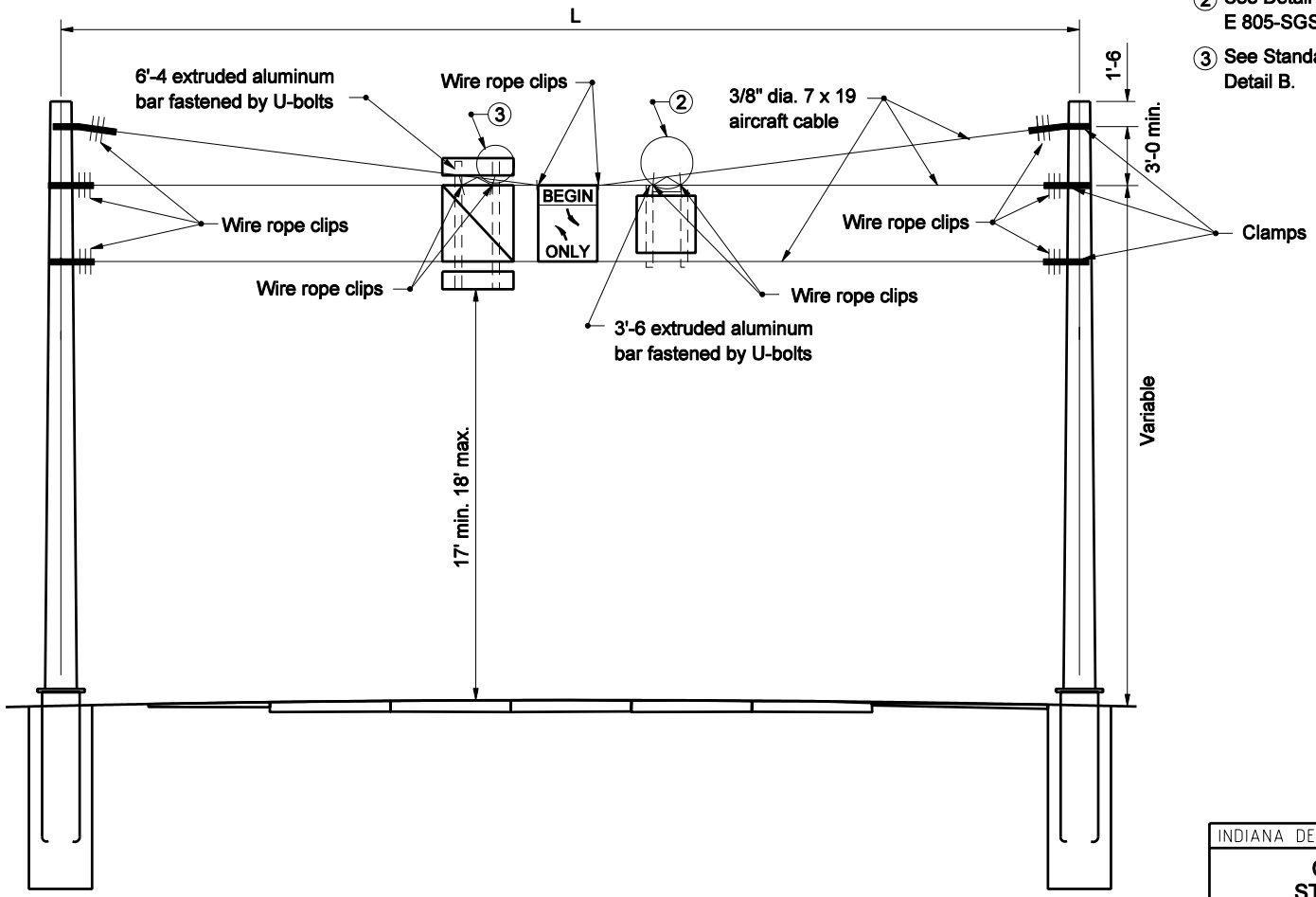
STANDARD DRAWING NO. E 802–SNBB–05

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

/s/ Firooz Zandi 9–04–01
CHIEF HIGHWAY ENGINEER — DATE



GENERAL NOTES

1. Sign centered over appropiate 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

CABLE SPAN SIGN STRUCTURE DETAILS

SEPTEMBER 2005

STANDARD DRAWING NO. E 802-SNCS-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

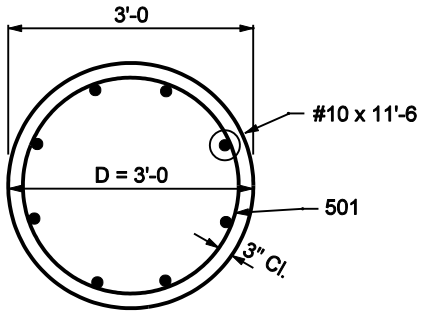
DESIGN STANDARDS ENGINEER

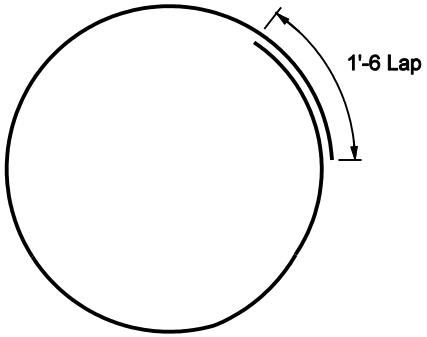
/s/ Anthony L.Uremovich 9-01-05
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 9-01-05
CHIEF HIGHWAY ENGINEER DATE

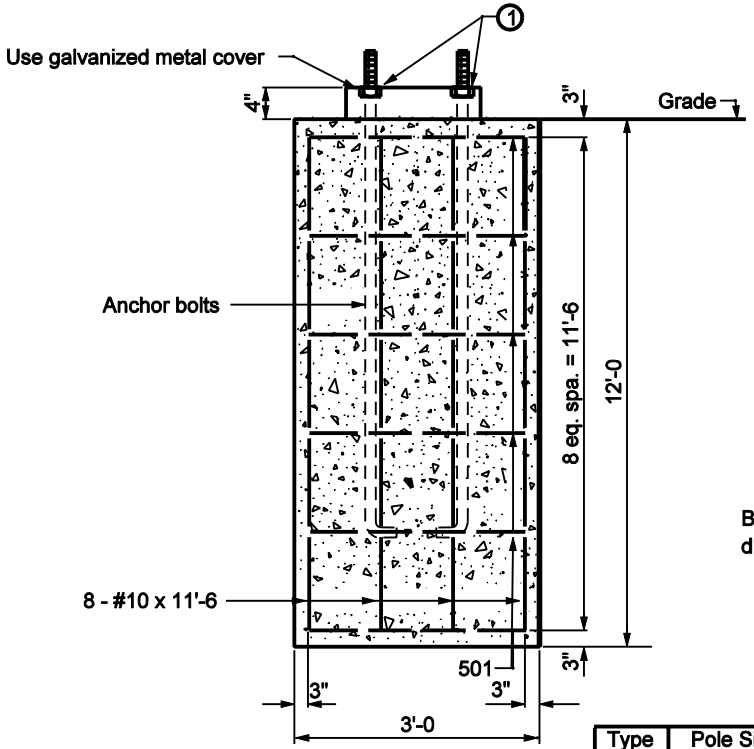
GENERAL NOTES

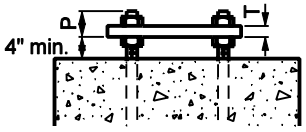
① Square nut under base plate for plumbing or raking pole.

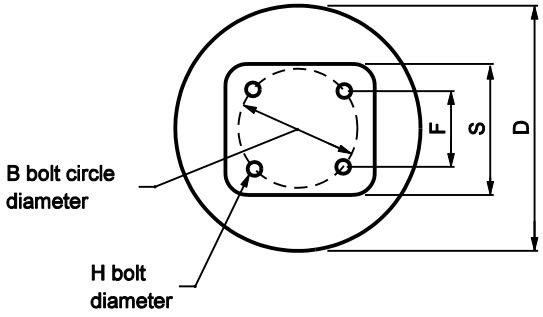




501 x 9'-3







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

INDIANA DEPARTMENT OF TRANSPORTATION

CABLE SPAN SIGN FOUNDATION DETAILS

MARCH 2003

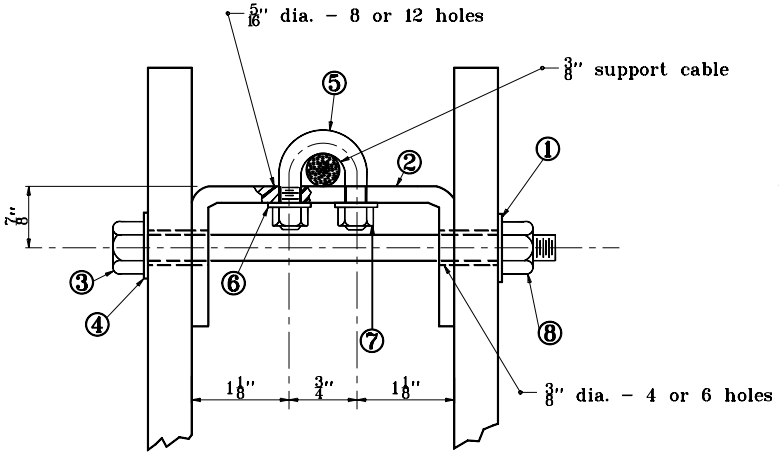
STANDARD DRAWING NO. E 802-SNCS-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

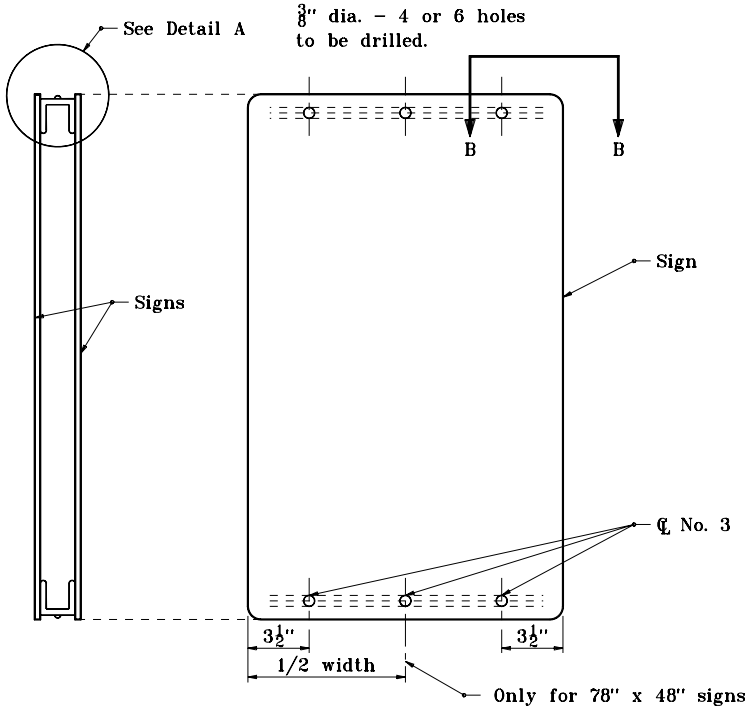
DESIGN STANDARDS ENGINEER

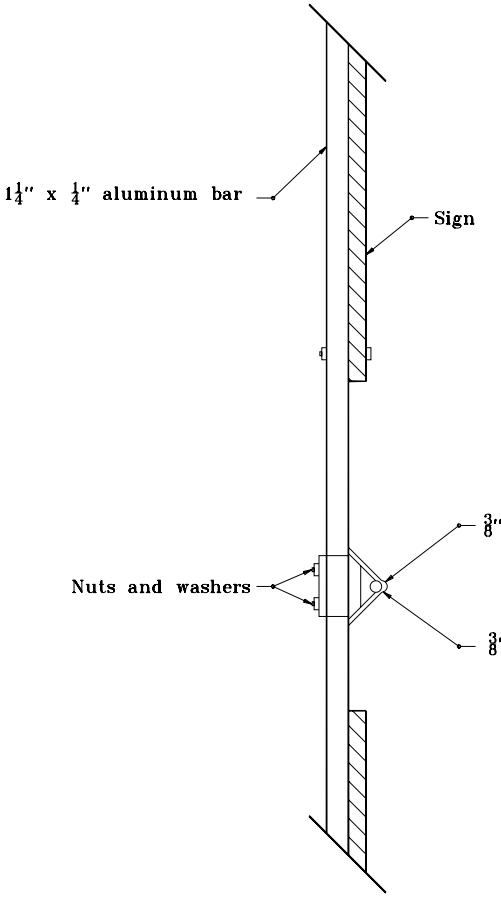
/s/ Richard L. VanCleave 3-03-03
DESIGN STANDARDS ENGINEER DATE

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

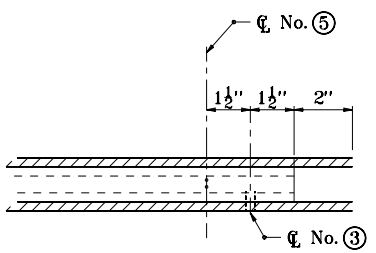


DETAIL A





DETAIL B



B–B TOP VIEW

PART No.	MATERIAL DESCRIPTION
①	5/16" nylon washer
②	3 x 4.1 steel channel
③	5/16 x 4" bolt
④	5/16" nylon washer
⑤	1/4" x 2 3/4" U bolt
⑥	1/4" lock washer
⑦	1/4" hex nut
⑧	5/16" lock nut

INDIANA DEPARTMENT OF TRANSPORTATION

CABLE SPAN SIGN STRUCTURE DETAILS

SEPTEMBER 2001

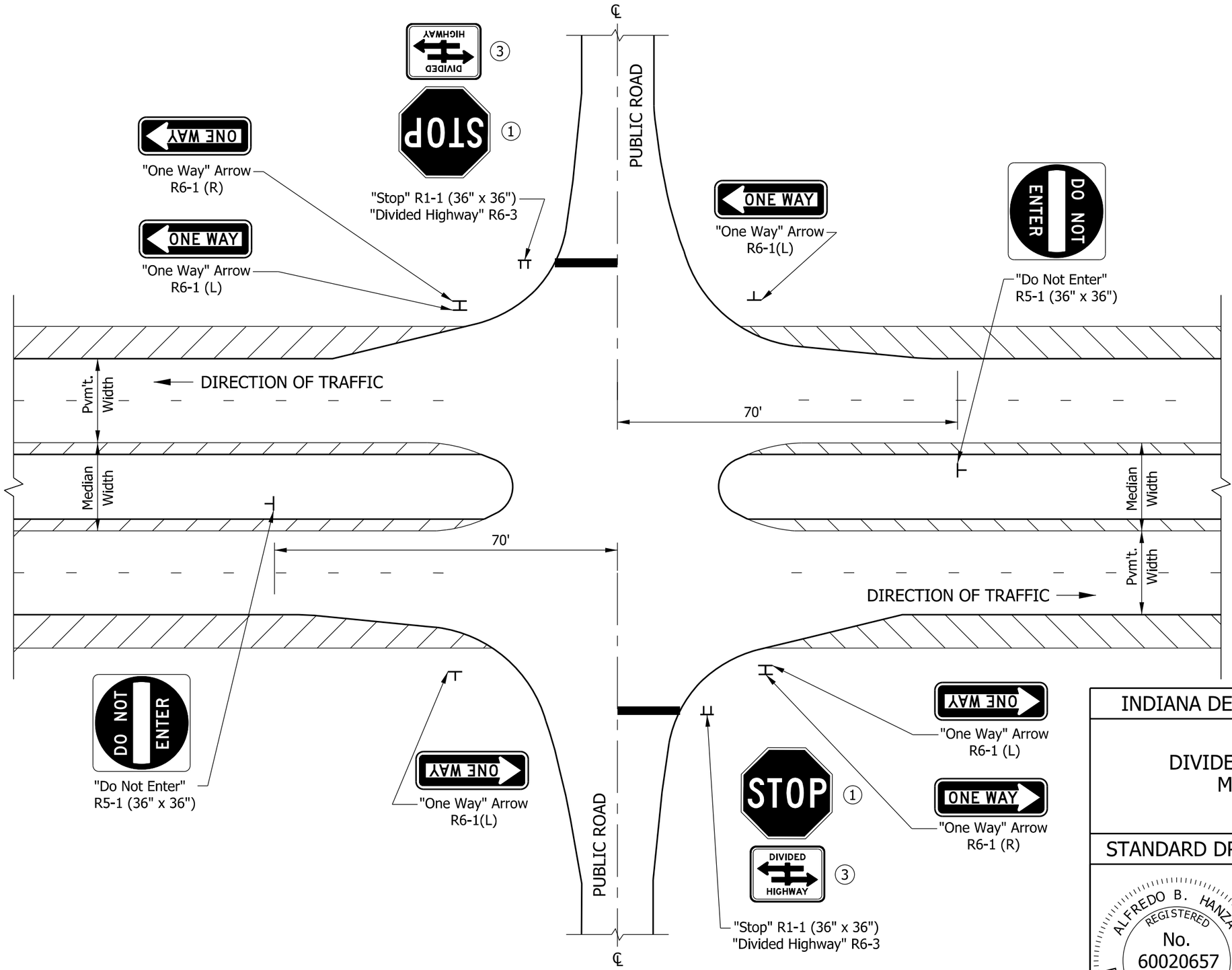
STANDARD DRAWING NO. **E 802–SNCS–03**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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



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

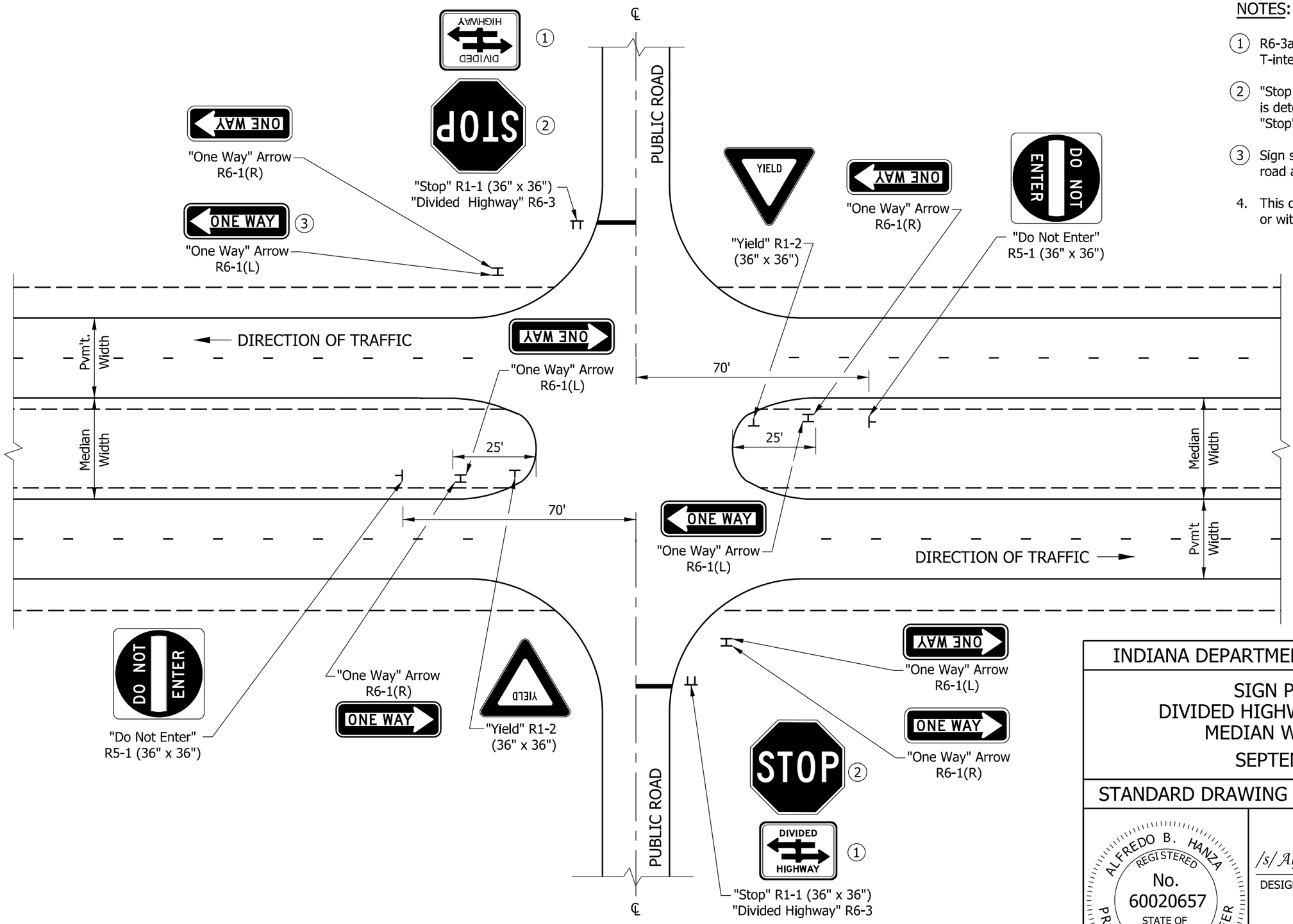
SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SNDH-01

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

/s/ Alfredo B. Hanza 03/28/14
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/31/14
CHIEF ENGINEER DATE



NOTES:

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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN PLACEMENT DIVIDED HIGHWAY INTERSECTION MEDIAN WIDTH ≥ 30 FT

SEPTEMBER 2014

STANDARD DRAWING NO. E 802-SNDH-02

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

/s/ Alfredo B. Hanza 03/28/14
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/31/14
CHIEF ENGINEER DATE

INDEX

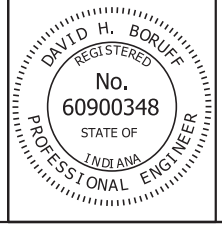
SHEET NO.	SUBJECT
1	Wide-Flange Sign Support and Panel Sign Drawing Index
2	Wide-Flange Sign Support, Placement and Post Spacing
3	Wide-Flange Sign Support, Base Connection
4	Wide-Flange Sign Support, Base Connection Dimensions
5	Wide-Flange Sign Support, Fuse/Hinge Plate Connection
6	Panel Sign Connection Details
7	Panel Sign Post Clip
8	Wide-Flange Sign Support, Post Selection Table, Clear Height=8 ft
9	Wide-Flange Sign Support, Post Selection Table, Clear Height=10 ft
10	Wide-Flange Sign Support, Post Selection Table, Clear Height=12 ft
11	Wide-Flange Sign Support, Post Selection Table, Clear Height=14 ft
12	Wide-Flange Sign Support, Post Selection Table, Clear Height=16 ft
13	Wide-Flange Sign Support, Post Selection Table, Clear Height=18 ft
14	Wide-Flange Sign Support, Post Selection Table, Clear Height=20 ft
15	Wide-Flange Sign Support, Post Selection Table, Clear Height=22 ft
16	Wide-Flange Sign Support, Foundation

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT AND PANEL SIGN DRAWING INDEX

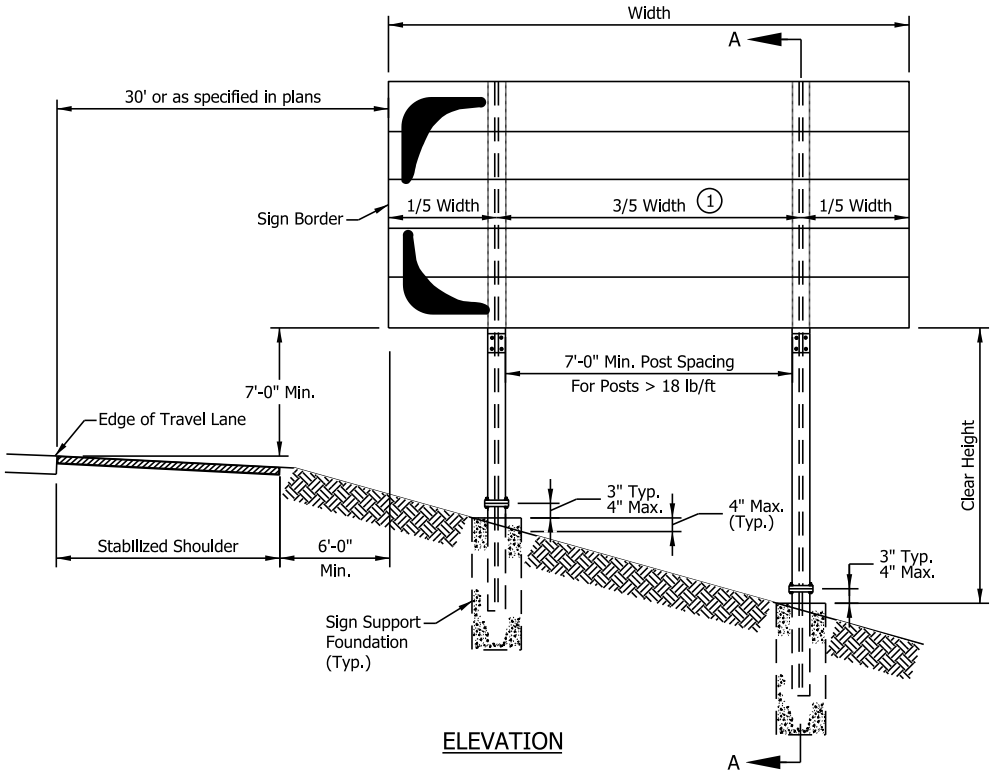
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-01

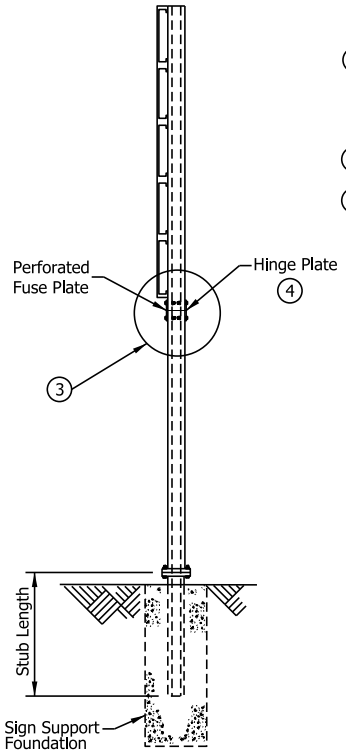


/s/ David H. Boruff *03/17/17*
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie *04/10/17*
CHIEF ENGINEER DATE



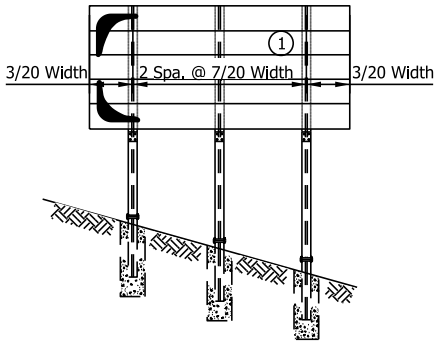
ELEVATION



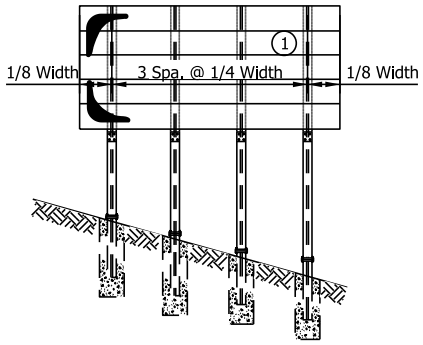
SECTION A-A

NOTES:

1. For beams that have a unit weight greater than 18 lbs per foot the minimum beam spacing shall be 7 ft.
2. For sign post clip details see Standard Drawing E 802-SNGP-07.
3. See Detail A on Standard Drawing E 802-SNGP-05.
4. See keynote 3 on Standard Drawing E 802-SNGP-05.
5. Clear height is based on the longest post.



3 BEAM SPACING



4 BEAM SPACING

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE FLANGE SIGN SUPPORT
PLACEMENT AND POST SPACING

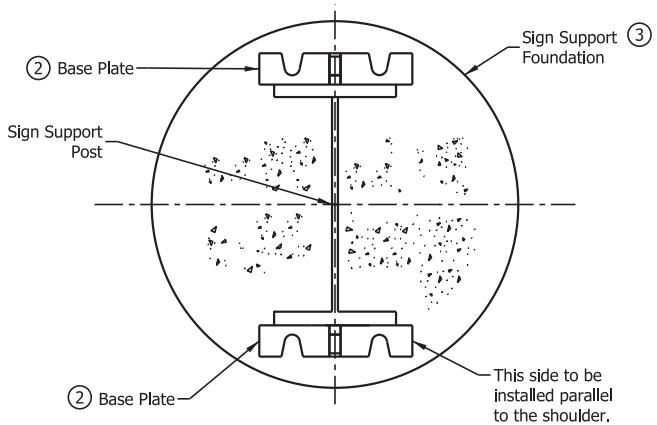
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-02

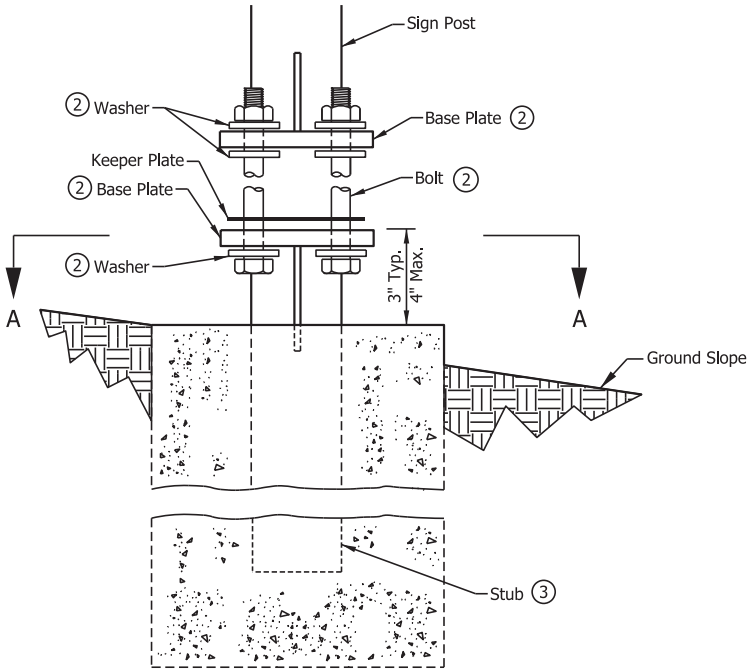
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

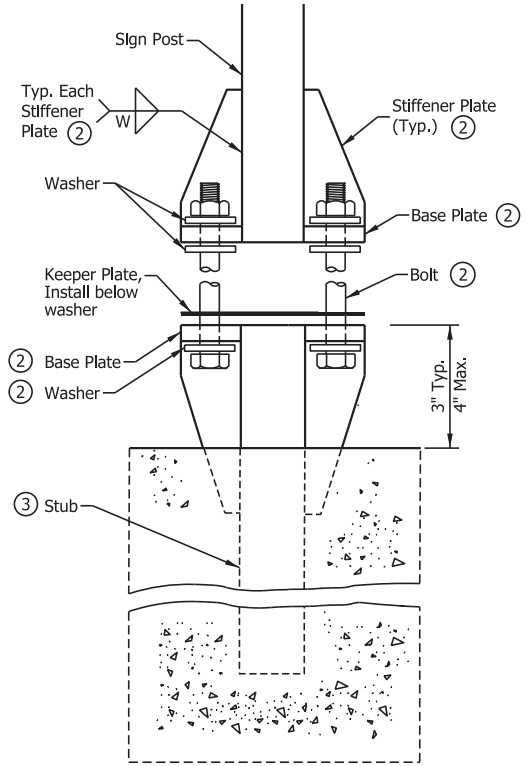
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



SECTION A-A



FRONT ELEVATION



SIDE ELEVATION

NOTES:

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

(2) See Standard Drawing E 802-SNGP-04 for base plate and stiffener plate details, including weld thickness and bolt diameter.

(3) See Foundation Data table on Standard Drawing E 802-SNGP-16 for stub length and foundation dimensions.

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

A. The contractor shall bolt post to stub. 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.

B. All bolts shall be tightened in accordance to 711.65(d).

C. Threads at junction with nuts shall be burred using a center punch to prevent nut loosening.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT BASE CONNECTION

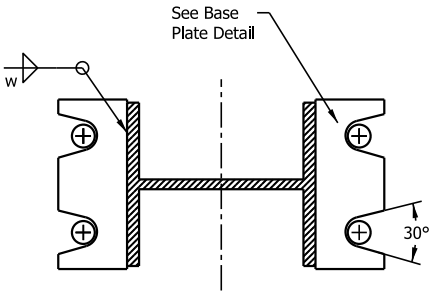
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-03

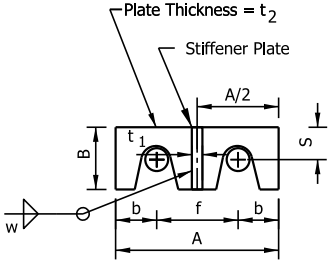
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

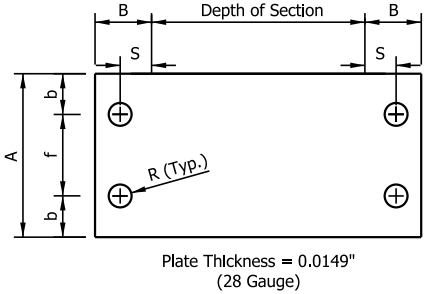
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



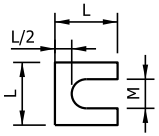
SECTION AT BASE PLATE



BASE PLATE

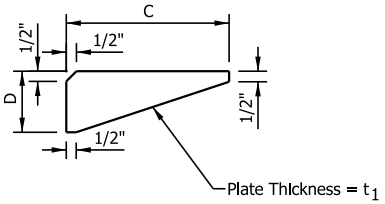


BOLT KEEPER PLATE



Provide 2 - 0.0149" Thick (28 Gauge)
and 2 - 0.0329" Thick (21 Gauge)
Shims per Post.

SHIM DETAIL



STIFFENER PLATE

BASE CONNECTION DATA														SHIM		Wt. of Base Plate, Stiffener, & Misc. Hardware Per Post (lb)
Post Size	A	B	C	D	Bolt Dia.	Torque (lbf*in)	R	b	f	S	t_1	t_2	w	L	M	
W 6x9	4-1/2"	2"	4-1/2"	2"	1/2"	140 ±20	9/32"	1"	2-1/2"	1-3/8"	1/2"	1/2"	3/16"	1-3/4"	13/16"	8.43
W 6x12	4-3/4"	2"	5-1/8"	2"	5/8"	270 ± 45	3/8"	1-1/8"	2-1/2"	1-3/16"	1/2"	1/2"	1/4"	1-3/8"	11/16"	9.02
W 8x18	5-3/4"	2-3/16"	6-1/4"	2-3/16"	3/4"	445 ± 75	7/16"	1-1/2"	2-3/4"	1-3/8"	1/2"	5/8"	1/4"	1-3/4"	13/16"	13.71
W 8x24	7"	2-3/8"	8"	2-3/8"	3/4"	445 ± 75	7/16"	1-3/4"	3-1/2"	1-3/8"	1/2"	3/4"	5/16"	2-1/8"	13/16"	20.70
W 10x33	8"	2-3/4"	8"	2-3/4"	1"	580 ± 90	9/16"	2"	4"	1-9/16"	1/2"	3/4"	5/16"	2-3/8"	1-1/16"	26.08
W 12x45	8"	3"	8"	3"	1"	580 ± 90	9/16"	2"	4"	1-9/16"	1/2"	3/4"	5/16"	2-3/4"	1-1/16"	28.35

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
BASE CONNECTION DIMENSIONS

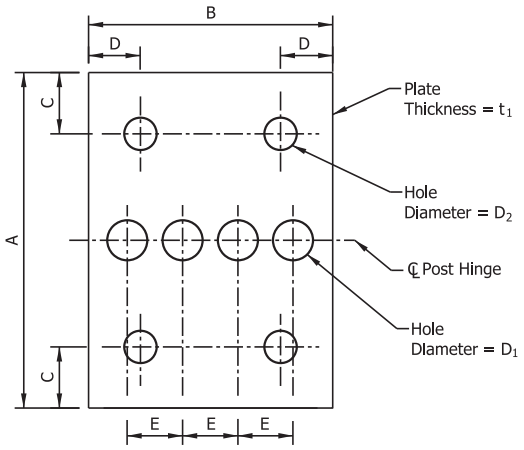
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-04

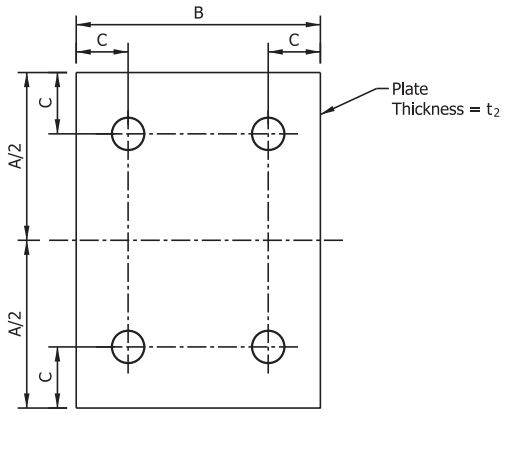
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



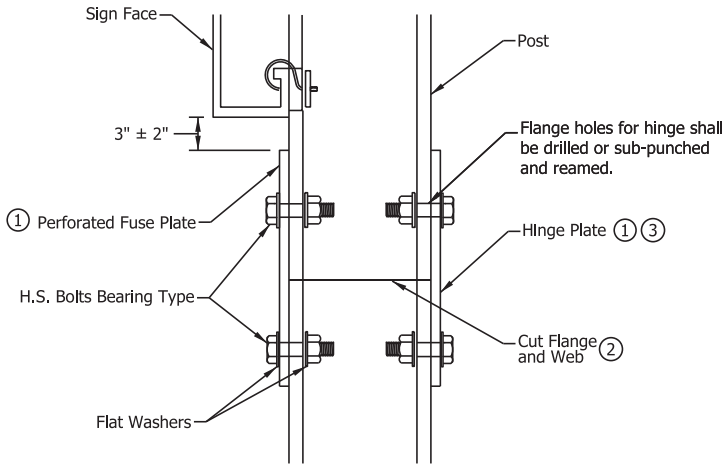
FUSE PLATE



HINGE PLATE

NOTES:

1. The distance from the top of the fuse plate and the hinge plate to the bottom of the sign shall be the same for all posts.
2. The upper and middle W-Beam sections at the fuse plate/hinge plate connection shall fit flush. Any variation shall not exceed 0.0625 in.
3. For assemblies in medians or along undivided highways, perforated fuse plates shall be used on the front and back sides of the upper joint.



DETAIL A

FUSE AND HINGE PLATE DATA

Post Size	A	B	C	D	E	t_1 fuse plate	t_2 hinge plate	D_1	D_2	Bolt Diameter	Wt. of Fuse Plate & Hinge Plate Per Post (lb)	Bolt Tension (lbs)
W 6x9	4-1/4"	4"	1-1/8"	7/8"	1"	1/4"	0.215"	3/4"	9/16"	1/2"	4.80	12,050
W 6x12	7-1/4"	4"	1-1/4"	7/8"	15/16"	3/8"	0.280"	13/16"	11/16"	5/8"	6.16	19,200
W 8x18	8-1/4"	5-1/4"	1-3/8"	1-1/8"	1-1/4"	3/8"	0.330"	1"	13/16"	3/4"	9.20	28,400
W 8x24	8-1/4"	6-1/2"	1-3/8"	1-1/2"	1-1/2"	1/2"	0.400"	1"	13/16"	3/4"	15.20	28,400
W 10x33	9-1/4"	8"	2"	1-3/4"	1-3/4"	5/8"	0.435"	1-1/8"	1-1/16"	1"	26.20	39,250
W 12x45	11"	8"	2"	1-3/4"	1-3/4"	3/4"	0.575"	1-5/16"	1-1/16"	1"	37.40	51,500

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
FUSE/HINGE PLATE CONNECTION

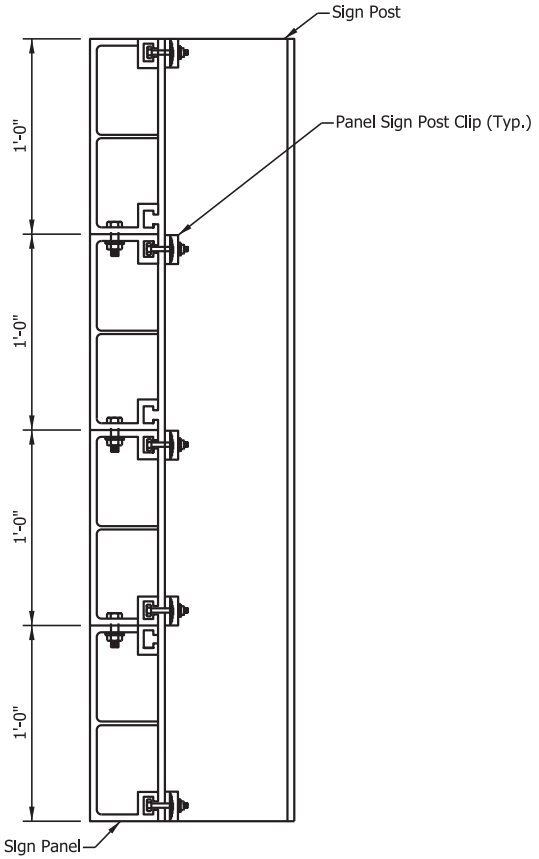
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-05

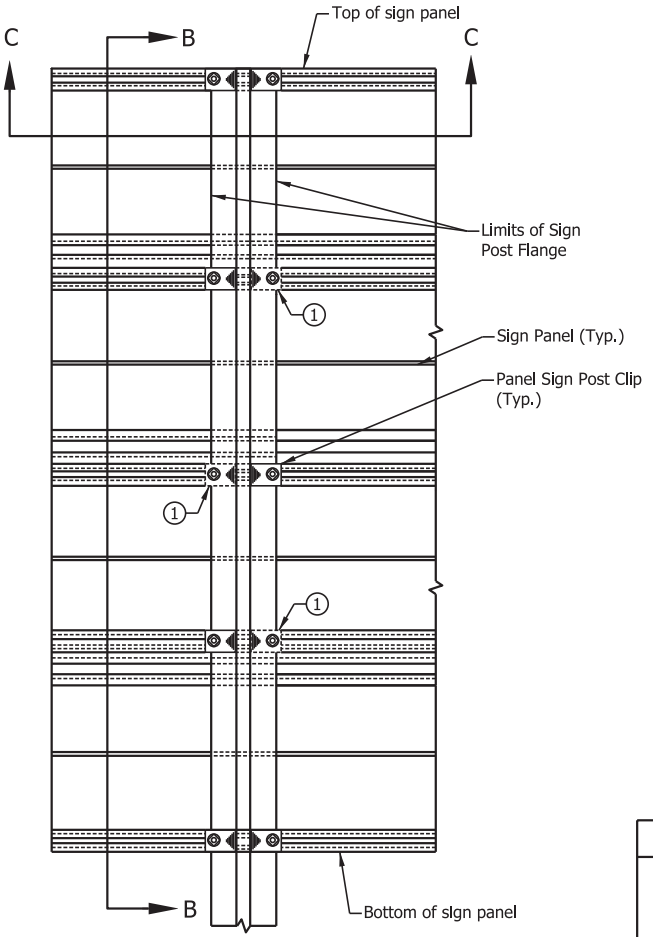
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

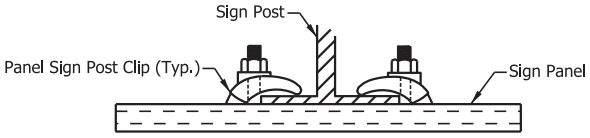
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



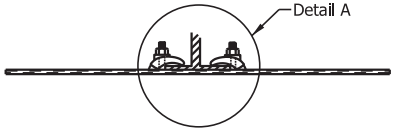
SECTION B-B



ELEVATION
(View from Back of Sign)



DETAIL A



SECTION C-C

NOTES:

1. These clips are not required for signs less than 24 ft. in width. See Standard Drawing E 802-SNGP-07 for Post Clip details.

INDIANA DEPARTMENT OF TRANSPORTATION

PANEL SIGN CONNECTION DETAILS

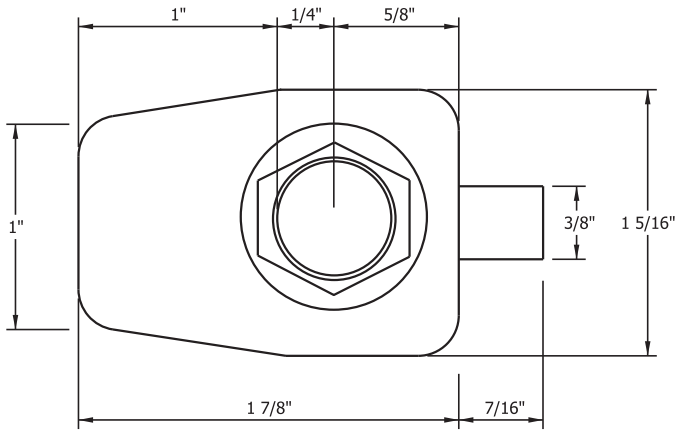
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-06

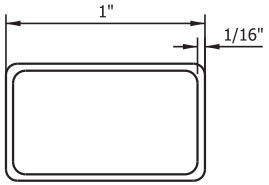
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

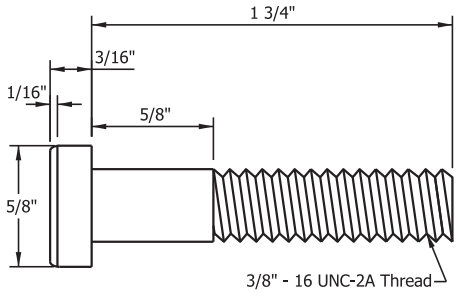
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



PLAN VIEW

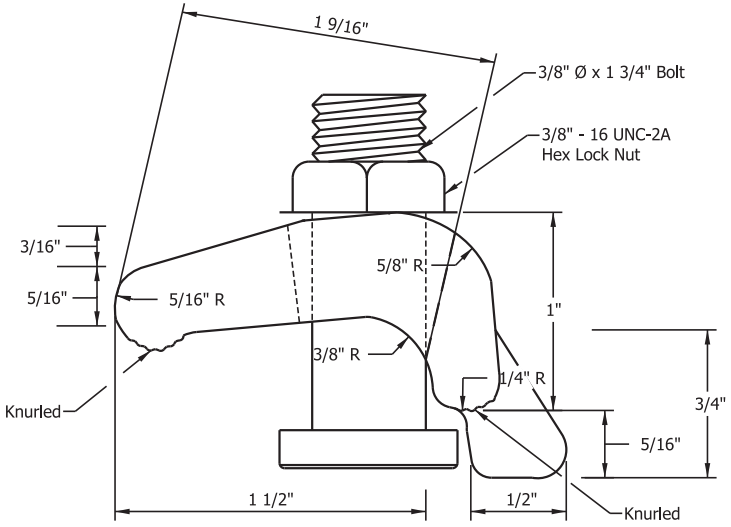


TOP VIEW



SIDE VIEW

POST CLIP BOLT



ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION

PANEL SIGN POST CLIP

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-07

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9
6	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12	2- W6x12	2- W6x12
8	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
10	2- W6x9	2- W6x9	2- W6x9	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
12	2- W6x9	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33
14	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33
16	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
18	2- W8x18	2- W8x18	2- W8x24*	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
20	2- W8x18	X	2- W8x24*	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45
22	X	X	2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33
24	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33	4- W10x33
26	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33	4- W10x33*	4- W10x33	4- W10x33
28	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	X	X	4- W10x33*	4- W10x33*	X
30	X	X	2- W10x33*	2- W10x33	2- W12x45	2- W12x45	X	X	X	X	X	X	X

X Standard size not available

* Post spacing shall be 7'-0"

NOTES:

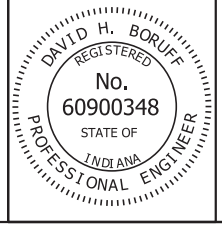
1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 8 FT

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-08



/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12
6	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18
8	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
10	2- W6x9	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33
14	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
16	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
18	2- W8x18	2- W8x18	2- W8x24*	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45
20	2- W8x18	✕	2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33
22	✕	✕	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	3- W10x33	3- W10x33	3- W10x33
24	✕	✕	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	3- W10x33	3- W10x33	3- W10x33	4- W10x33	4- W10x33
26	✕	✕	2- W10x33*	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33	✕	4- W10x33*	4- W10x33	4- W10x33
28	✕	✕	2- W10x33*	2- W10x33	2- W12x45	2- W12x45	3- W10x33*	3- W10x33	✕	✕	4- W10x33*	4- W10x33	✕
30	✕	✕	2- W10x33*	2- W10x33	2- W12x45	✕	✕	✕	✕	✕	✕	✕	✕

✕ Standard size not available
* Post spacing shall be 7'-0"

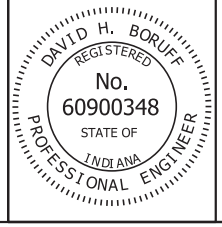
NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 10 FT
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-09



/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W8x18
6	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
8	2- W6x9	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
10	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W10x33	2- W10x33
12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
14	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
16	2- W8x18	2- W8x18	2- W8x24*	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
18	2- W8x18	X	2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33
20	X	X	2- W8x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33	3- W10x33
22	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33	3- W12x45	3- W12x45
24	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W12x45	3- W10x33	3- W10x33	3- W10x33	4- W10x33*	4- W10x33	4- W10x33
26	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W12x45	3 W10x33*	3- W10x33	X	X	4- W10x33*	4- W10x33	4- W12x45
28	X	X	2- W10x33*	2- W10x33	2- W12x45	X	X	X	X	X	X	X	X
30	X	X	2- W10x33*	2- W12x45	X	X	X	X	X	X	X	X	X

X Standard size not available
* Post spacing shall be 7'-0"

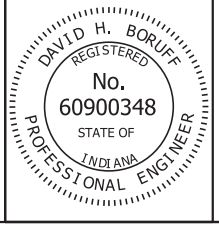
NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 12 FT
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-10



/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W6x9	2- W6x9	2- W6x9	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
6	2- W6x9	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
8	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24
10	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33
12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
14	2- W8x18	2- W8x18	2- W8x24*	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
16	2- W8x18	X	2- W8x24*	2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33
18	X	X	2- W8x24*	2- W10x33	2- 10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33	3- W10x33	3- W10x33
20	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33	3- W10x33	3- W10x33	4- W10x33
22	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	3- W10x33*	2- W10x33	3- W10x33	3- W10x33	4- W10x33*	4- W10x33	4- W10x33
24	X	X	2- W10x33*	2- W10x33	2- W10x33	X	3- W10x33*	3- W10x33	X	X	4- W10x33*	4- W10x33	X
26	X	X	2- W10x33*	2- W10x33	X	X	X	X	X	X	X	X	X
28	X	X	2- W10x33*	X	X	X	X	X	X	X	X	X	X

X Standard size not available
* Post spacing shall be 7'-0"

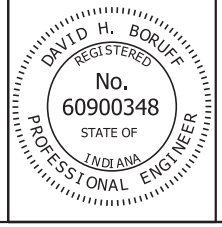
NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 14 FT
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-11



/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W6x12	2- W6x12	2- W6x12	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18
6	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24
8	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33
10	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
12	2- W8x18	X	2- W8x24*	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
14	X	X	2- W8x24*	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33
16	X	X	2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33	3- W10x33
18	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33	3- W10x33	3- W10x33	4- W10x33
20	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	3- W10x33*	3- W10x33	3- W10x33	X	4- W10x33*	4- W10x33	4- W10x33
22	X	X	2- W10x33*	2- W10x33	2- W10x33	X	X	X	X	X	X	X	X
24	X	X	2- W10x33*	X	X	X	X	X	X	X	X	X	X

X Standard size not available
* Post spacing shall be 7'-0"

NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 16 FT

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-12

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W6x12	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24
6	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24
8	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
10	2- W8x18	X	2- W8x24*	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
12	X	X	2- W8x24*	2- W8x24	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33
14	X	X	2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33	3- W10x33
16	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	3- W10x33	3- W10x33	4- W10x33
18	X	X	2- W10x33*	2- W10x33	2- W10x33	2- W10x33	3- W10x33*	3- W10x33	3- W10x33	X	4- W10x33*	4- W10x33	4- W10x33
20	X	X	2- W10x33*	2- W10x33	2- W10x33	X	X	X	X	X	X	X	X
22	X	X	2- W10x33*	X	X	X	X	X	X	X	X	X	X

X Standard size not available
* Post spacing shall be 7'-0"

NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 18 FT

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-13

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24
6	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	3- W8x24
8	2- W8x18	X	2- W8x24*	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	3- W8x24	3- W8x24	3- W8x24	3- W8x24	4- W8x24
10	X	X	2- W8x24*	2- W8x24	2- W8x24	3- W8x24*	3- W8x24*	3- W8x24	X	X	X	X	X
12	X	X	2- W8x24*	2- W8x24	X	X	X	X	X	X	X	X	X

X Standard size not available
* Post spacing shall be 7'-0"

NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 20 FT
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-14

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

Sign Width (ft)

Sign Height (ft)	6	8	10	12	14	16	18	20	22	24	26	28	30
4	2- W8x18	2- W8x18	2- W8x18	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24
6			2- W8x24*	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	3- W8x24	3- W8x24	3- W8x24
8			2- W8x24*	2- W8x24	2- W8x24	2- W8x24	3- W8x24*	3- W8x24					
10			2- W8x24*										

⨯ Standard size not available
* Post spacing shall be 7'-0"

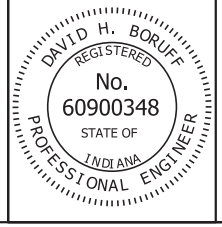
NOTES:

1. Clear height is the distance from the top of foundation to bottom of sign.
2. Table entries are number of posts- post size.
3. Sign dimensions and clear height should be rounded up to the nearest even number.

INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 22 FT
SEPTEMBER 2017

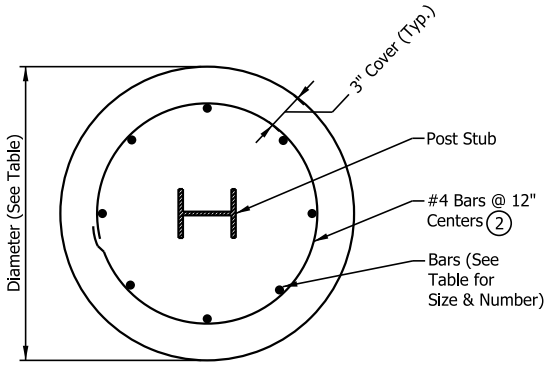
STANDARD DRAWING NO. E 802-SNGP-15



/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

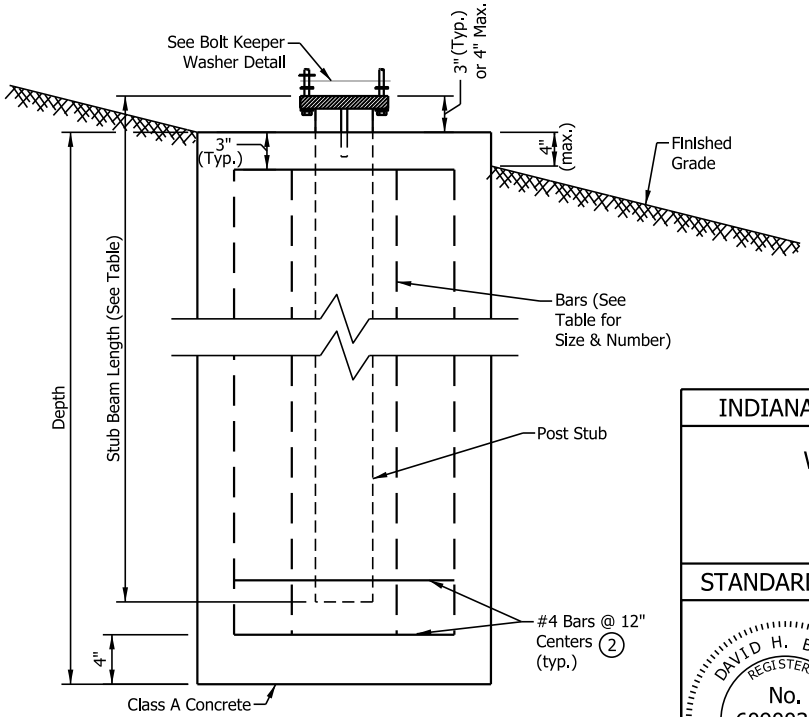
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

FOUNDATION DATA					
Type	Post Size	Diameter	Depth	Stub Length	Reinforcement Bars
A	W6x9	2'	7'	4'	8 - #8
A	W6x12	2'	7'	4'	8 - #8
B	W8x18	2'	10'	4'	8 - #8
B	W8x24	2'	10'	4'	8 - #8
C	W10x33	2'-6"	12'	5'	10 - #8
C	W12x45	2'-6"	12'	5'	10 - #8



NOTES:

1. All reinforcing shall be grade 60.
2. At the option of the contractor, D10 spiral wire @ 6" pitch, three flat turns top and one flat turn bottom may be utilized in lieu of #4 bars.
3. Where shop-welded assemblies of foundation stirrup reinforcing bars are used, reinforcing bars shall be in accordance with ASTM Specification A706/706M and holding wires shall be in accordance with ASTM Specification A1064.



INDIANA DEPARTMENT OF TRANSPORTATION

WIDE-FLANGE SIGN SUPPORT FOUNDATION

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-16

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/17/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

INDEX

SHEET NO.	SUBJECT
1	Signs Drawing Index and General Notes
2	Route Marker Details, Sheilds and Auxillary Signs
3	Route Marker Details, Arrow and Cardinal Direction Signs
4	Sign Reflectorization Schedule
5	Sign Reflectorization Schedule
6	Miscellaneous Sign Details
7	Steel Sign Posts, Selection Table
8	Steel Sign Posts, Bracing for Signs Greater Than 90"
9	Steel Sign Posts, Anchor Base Details
10	Sign Identification Marking

GENERAL NOTES:

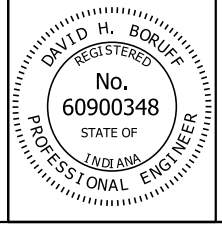
1. Numerals sometimes cannot be accommodated within the space available. For this situation, the standard series D numeral may be reduced to series C. As a second choice, use the next smaller height commonly available.
2. For independent use of sheet signs, a nylon and metal washer shall be placed between each bolt head and the face of the metal sign. See Sign Bolt Detail on Standard Drawing E 802-SNGS-06.
3. Fabrication details for the signs shown shall be found in the Standard Highway Signs and Markings Book. Shop drawings will be supplied on all other signs not found in the publication.
4. See Standard Drawing E 802-SNPL-02 for mounting height and lateral locations of signs.
5. Splicing of flanged channel post will not be permitted.
6. Wherever white is specified as a color, it is understood to include silver-colored reflecting coatings or elements the reflect white light.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNS
DRAWING INDEX AND GENERAL NOTES

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-01



/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

WHITE BACKGROUND WITH BLACK BORDER AND NUMERALS

M1-4(I)

FOR INDEPENDENT USE ONLY

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 GUIDE SIGN USE

WHITE BACKGROUND WITH BLACK LETTERS, NUMERALS AND BORDER

M1-5

STATE ROUTE MARKER

WHITE LETTERS, NUMERALS, AND BORDER

M1-1

INTERSTATE SHIELD

M1-4(I), M1-4(G), M1-5, 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"

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

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

M4-6(S)
M4-6(I)

M4-4(S)

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

STATE	M2-1(S)		M4-4(S)		M4-5(S)		M4-6(S)	
INTERSTATE	M2-1(I)				M4-5(I)		M4-6(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"	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"		24" x 12"	30" x 15"	24" x 12"	30" x 15"	24" x 12"	30" x 15"

NOTES:

1. All series M(S) "JCT", "TO", "TRUCK", and "END" shall be white background with black legend and border.
2. All series M(I) "JCT", "TO", "TRUCK", and "END" shall be blue background with white legend and border.
3. Center align numbers about vertical centerline of shield.

INDIANA DEPARTMENT OF TRANSPORTATION

ROUTE MARKER DETAILS
SHIELDS AND AUXILLARY SIGNS

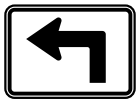
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-02

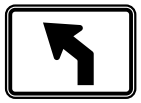
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

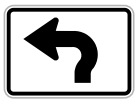
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



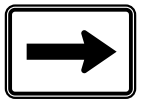
M5-1 (R or L) (I or S)



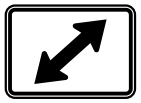
M5-2 (R or L) (I or S)



M5-3 (R or L) (I or S)

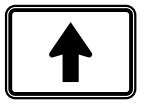


M6-1 (R or L) (I or S)

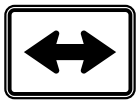


M6-5 (R or L) (I or S)

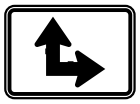
M6-2 (R or L) (I or S)



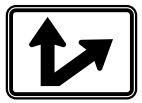
M6-3 (I or S)



M6-4 (I or S)



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



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

NOTES:

1. All series M(S) cardinal directions and arrows shall be white background with black legend and border.
2. All series M(I) cardinal directions and arrows shall be blue background with white legend and border.

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)

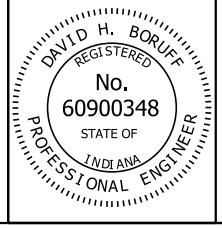
STATE	M3-1(S) M3-2(S) M3-3(S) M3-4(S)			
INTERSTATE	M3-1(I) M3-2(I) M3-3(I) M3-4(I)			
SHIELD SIZES	24" x 24"	30" x 24"	36" x 36"	45" x 36"
CORRESPONDING SIGN SIZE	24" x 12"	24" x 12"	36" x 18"	36" x 18"

INDIANA DEPARTMENT OF TRANSPORTATION

ROUTE MARKER DETAILS
ARROW AND CARDINAL DIRECTION SIGNS

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-03



/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

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-10-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-10-H	S-2-H, S-5-H, O-1-H
W3-3	Signal Ahead	S-10-H	S-5-H S-7-H, O-1-H
All School Warning Signs		S-11-H	O-1-H
All other warning signs	Except Construction Signs, School Warning Signs	S-10-H	O-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	O-1-H
M1-5	County Shields	S-4-H	S-1-H
M1-6	State Shields	S-2-H	O-1-H
M1-7	National Forest	△	S-2-H

BACKGROUND, COPY & BORDER KEY

CODE	DESCRIPTION
0-1-H	Paint (Black) For Use With Prismatic Reflective Sheeting
S-1-H	Prismatic Reflective Sheeting (Yellow)
S-2-H	Prismatic Reflective Sheeting (Silver)
S-3-H	Prismatic Reflective Sheeting (Green)
S-4-H	Prismatic Reflective Sheeting (Blue)
S-5-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Red)
S-6-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Blue)
S-7-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Green)
S-8-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Red and Blue)
S-9-H	Prismatic Reflective Sheeting (Fluorescent Orange)
S-10-H	Prismatic Reflective Sheeting (Fluorescent Yellow)
S-11-H	Prismatic Reflective Sheeting (Fluorescent Yellow-Green)
A	Cut - Out Letters Which Are Painted Black
B	Cut - Out Letters and Border - White Prismatic Reflective Sheeting
△	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 and Maint. Signs
M	Route Markers and Aux. Markers for Assemblies
D	Destination Sign
I	Information

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN REFLECTORIZATION SCHEDULE

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-04

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

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

BACKGROUND, COPY AND BORDER KEY

CODE	DESCRIPTION
O-1-H	Paint (Black) For Use With Prismatic Reflective Sheeting
S-1-H	Prismatic Reflective Sheeting (Yellow)
S-2-H	Prismatic Reflective Sheeting (Silver)
S-3-H	Prismatic Reflective Sheeting (Green)
S-4-H	Prismatic Reflective Sheeting (Blue)
S-5-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Red)
S-6-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Blue)
S-7-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Green)
S-8-H	Prismatic Reflective Sheeting (Silver with reverse screen transparent Red and Blue)
S-9-H	Prismatic Reflective Sheeting (Fluorescent Orange)
A	Cut - Out Letters Which Are Painted Black
B	Cut - Out Letters And Border - White Prismatic Reflective Sheeting
△	Brown Background With Prismatic Reflective Sheeting

SIGN IDENTIFICATION CODES

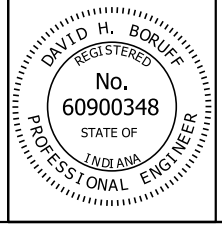
IGDO	Interstate Guide Directional Overhead
IGD	Interstate Guide Directional
IGS	Interstate Guide Service and Rest Area
IGI	Interstate Guide Information
GDO	Guide Directional Overhead
GD	Guide Directional
R	Regulatory Sign
W	Warning, Construction and Maint. Signs
M	Route Markers and Aux. Markers for Assemblies
D	Destination Sign
I	Information

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN REFLECTORIZATION SCHEDULE

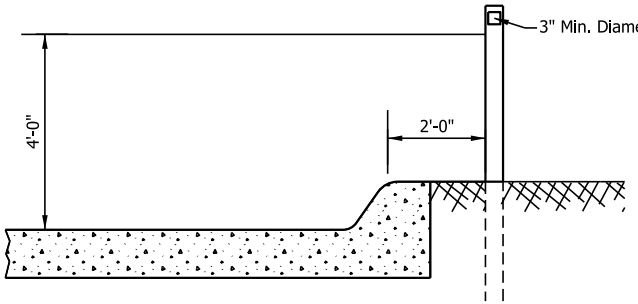
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-05

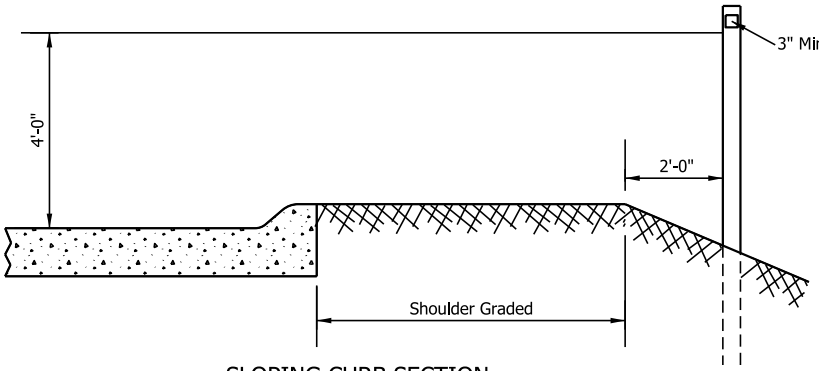


/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

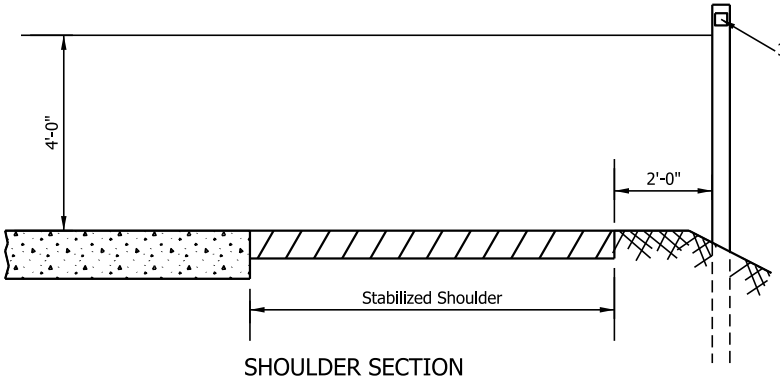
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



CURB SECTION



SLOPING CURB SECTION



SHOULDER SECTION

DELINEATOR DETAILS ②

NOTES:

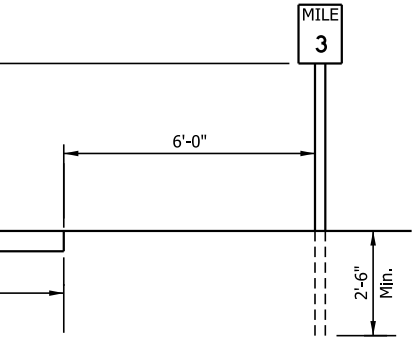
① Mileposts shall be installed in accordance with MUTCD.

② Delineator models shall be selected from the INDOT Approved Materials List.

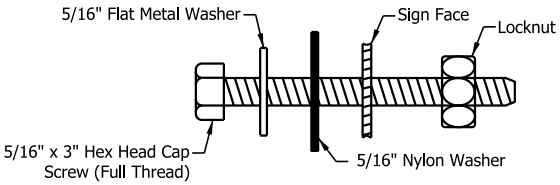
3. Signs shall be fastened to the posts with bolts, metal and nylon washers and locknut. The nylon washer and the metal washer shall be placed between each bolt head and the face of the sign.

4. Nut shall be tightened sufficiently so that the sign is firmly against the post. However, there shall be no deformation of aluminum sheeting or twisting or damage to the reflective sheeting.

5. Bolt can either be stainless steel or galvanized steel bolt.



TYPICAL MILE OR REFERENCE POST ①



SIGN BOLT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS SIGN DETAILS

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-06

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

WIDTH X HEIGHT ("W X H")	MOUNTING HEIGHT							
	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 36 120 x 36	2-B	2-Type 3	2-B	2-Type 3	2-B	2-Type 3	2-B	2-Type 3

NOTES:

1. See Standard Drawing E 802-SNGS-08 and -09 for square steel sign post installation details.
2. The Type 1 post shall be 2 1/4 in. x 2 1/4 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 2 1/2 in. x 2 1/2 in. x 12 ga. wall thickness.
5. Flanged channel posts are as specified and as shown on the plans.

INDIANA DEPARTMENT OF TRANSPORTATION

STEEL SIGN
POST SELECTION TABLE

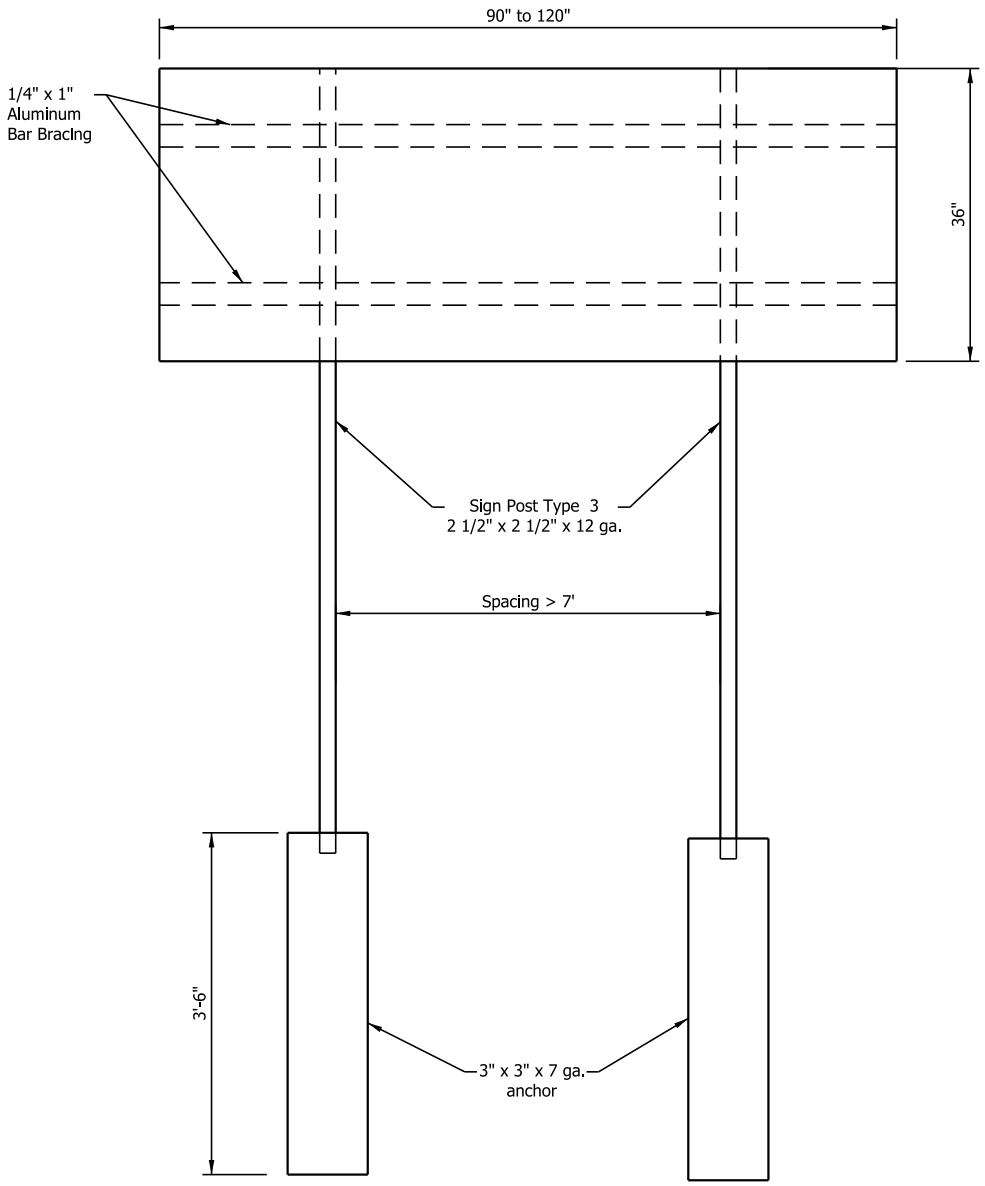
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-07

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



UNREINFORCED
ANCHOR BASE

NOTES:

1. Maximum sign width 120", maximum sign area 30 sq. ft.

INDIANA DEPARTMENT OF TRANSPORTATION

STEEL SIGN POSTS
BRACING FOR SIGNS GREATER THAN 90"

SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-08

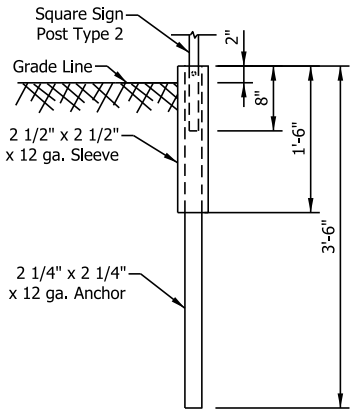
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

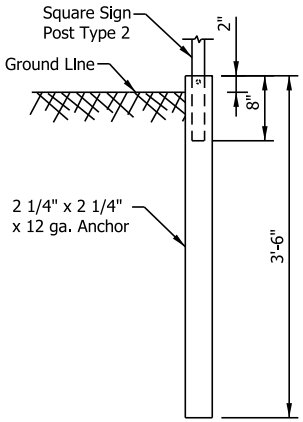
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

NOTES:

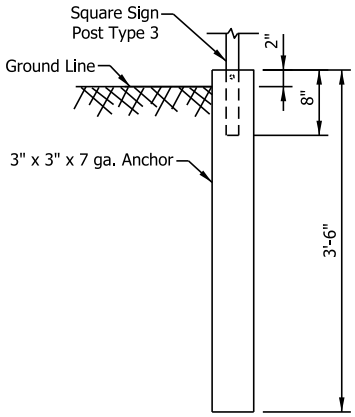
(1) See Standard Drawing E 802-SNGS-09 for sign size and E 802-SNPL-02 for horizontal and vertical sheet sign clearance.



REINFORCED ANCHOR BASE

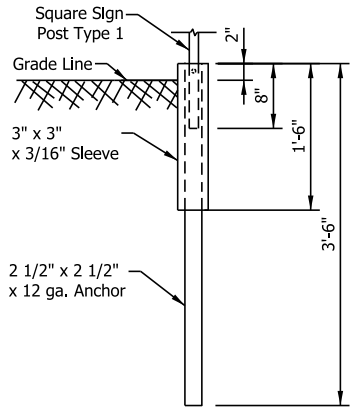


UNREINFORCED ANCHOR BASE

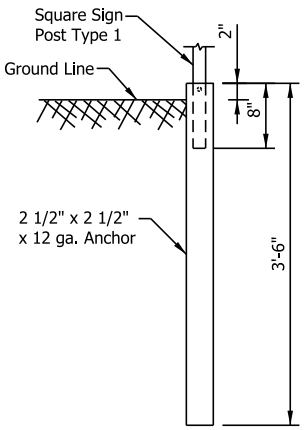


UNREINFORCED ANCHOR BASE

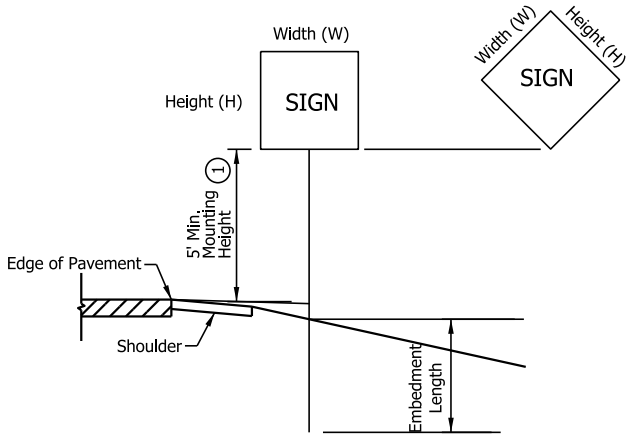
POST	TYPE	WALL THICKNESS	NO. OF POSTS PERMITTED IN 7 ft PATH	EMBEDMENT LENGTH
U-CHANNEL	A, B		1 OR 2	3'-6"
SQUARE	1	12 ga.	1	Anchor Base
	2	12 ga.	1 OR 2	
	3	12 ga.	1	



REINFORCED ANCHOR BASE



UNREINFORCED ANCHOR BASE



INDIANA DEPARTMENT OF TRANSPORTATION

STEEL SIGN POSTS
ANCHOR BASE DETAILS

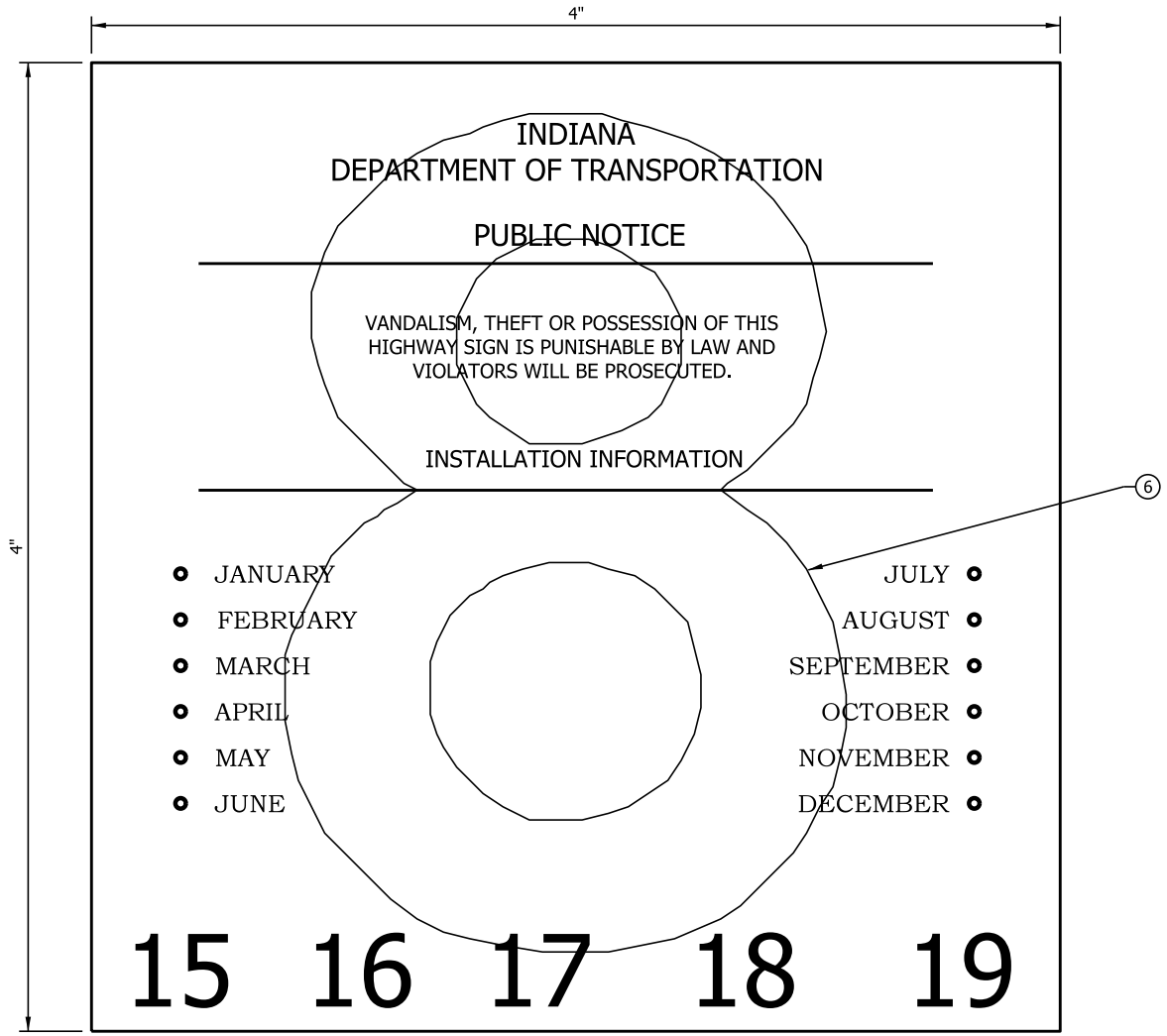
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-09

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



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 15. 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 is 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

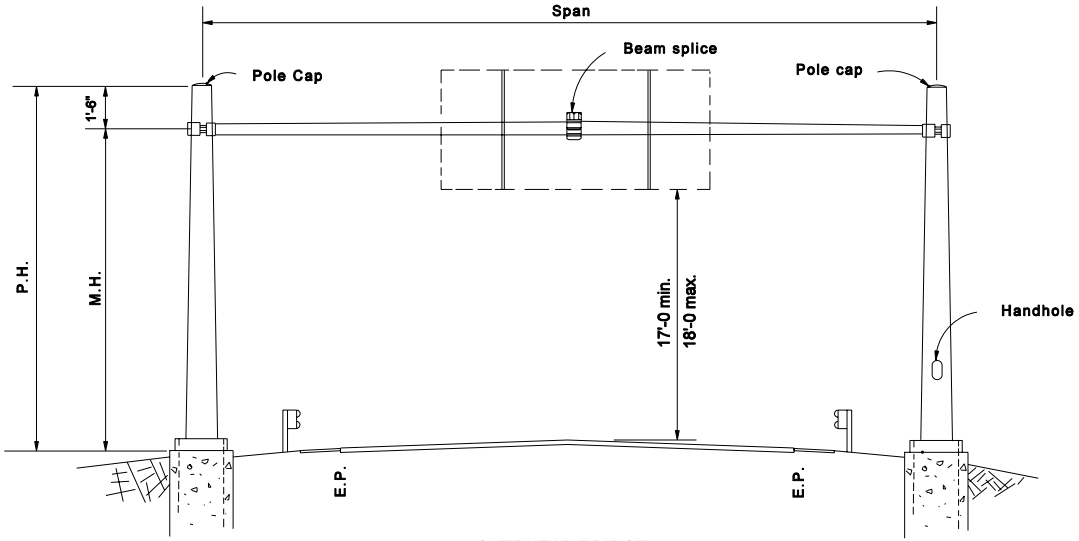
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGS-10

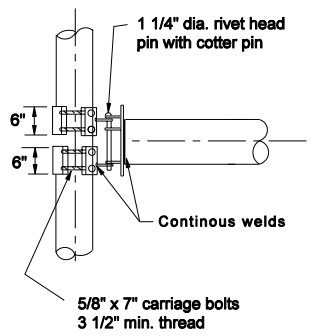
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

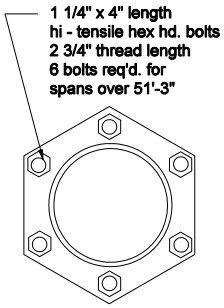
/s/ David H. Boruff 03/16/17
DESIGN STANDARDS ENGINEER DATE

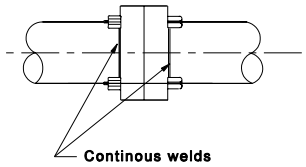
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



OVERHEAD BRIDGE







BEAM SPLICE

All Dimension are in mm unless otherwise specfied

INDIANA DEPARTMENT OF TRANSPORTATION

OVERHEAD SIGN BRIDGE SPANS

MARCH 2004

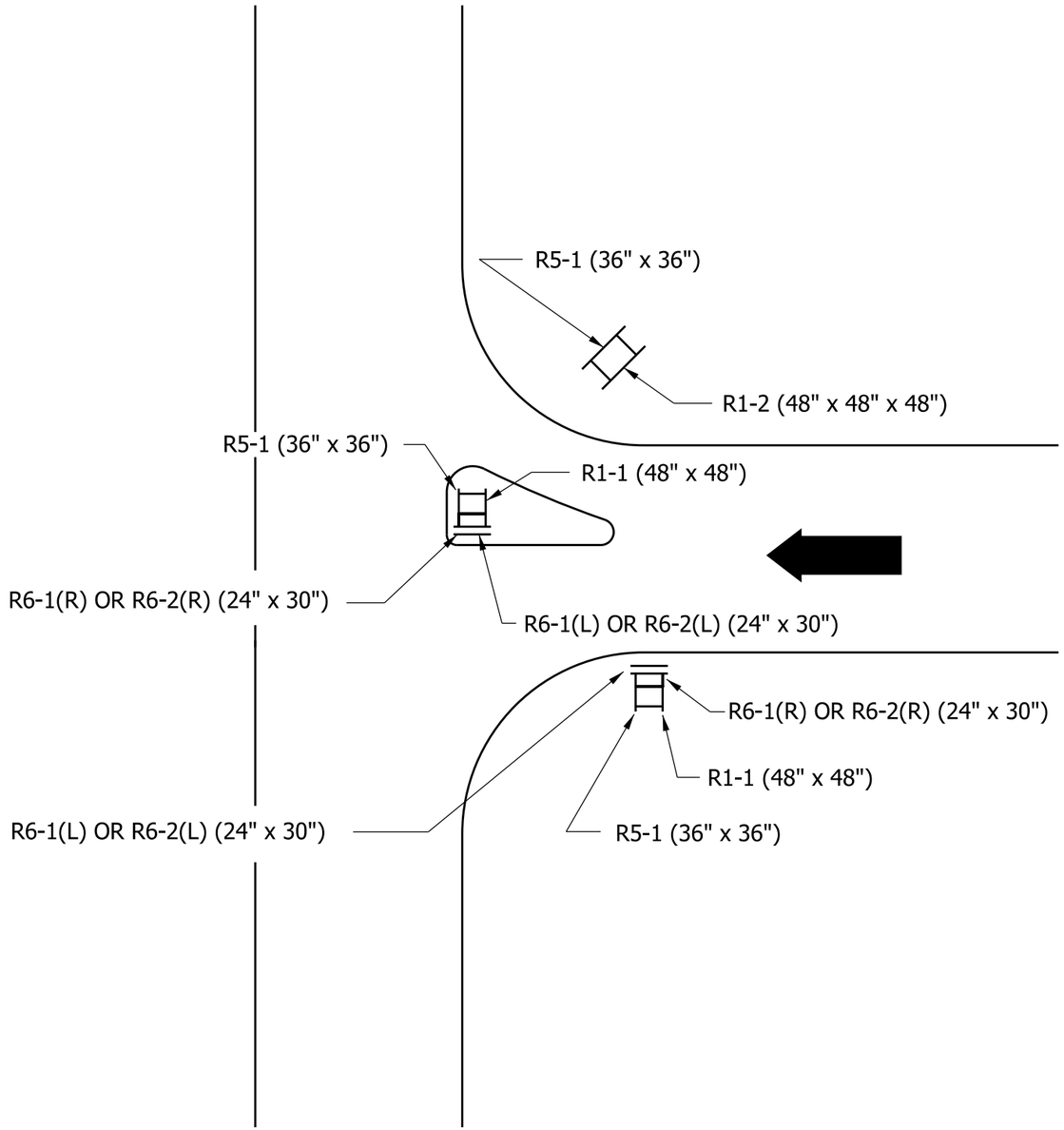
STANDARD DRAWING NO. E 802-SNOB-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L.VanCleave 3-01-04
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K.Smutzer 3-01-04
CHIEF HIGHWAY ENGINEER DATE



INDIANA DEPARTMENT OF TRANSPORTATION

SIGN DETAILS
TYPICAL LOCATION

SEPTEMBER 2010

STANDARD DRAWING NO. E 802-SNPL-01

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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

HORIZONTAL AND VERTICAL SHEET SIGN CLEARENCE

SEPTEMBER 2003

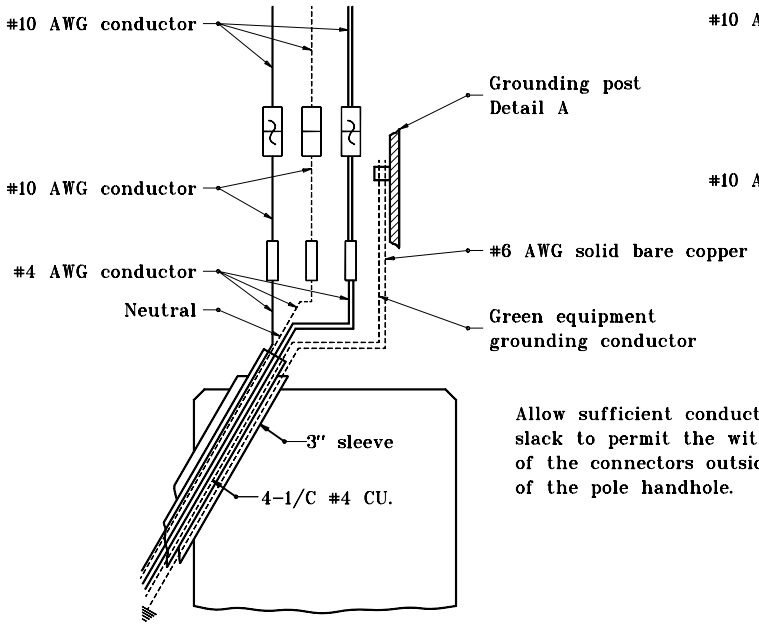
STANDARD DRAWING NO. E 802-SNPL-02

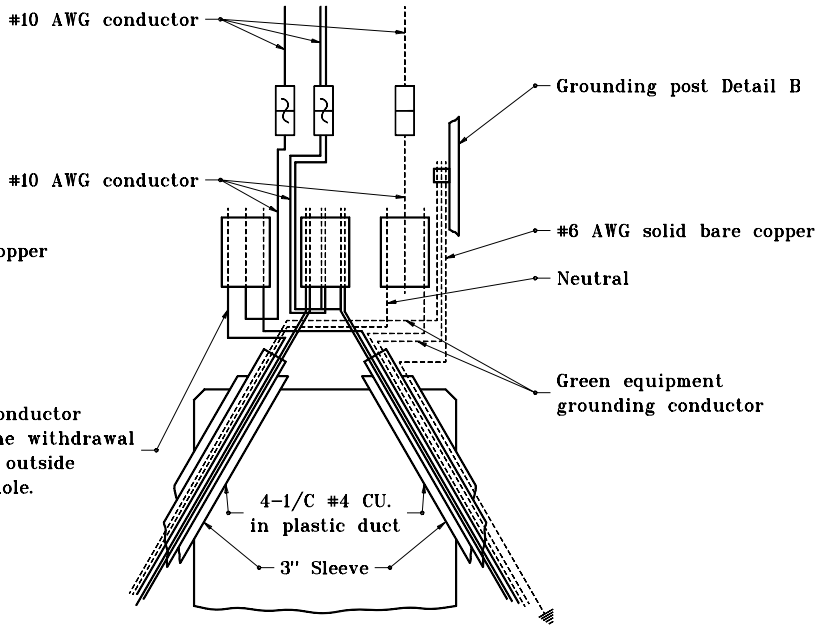
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

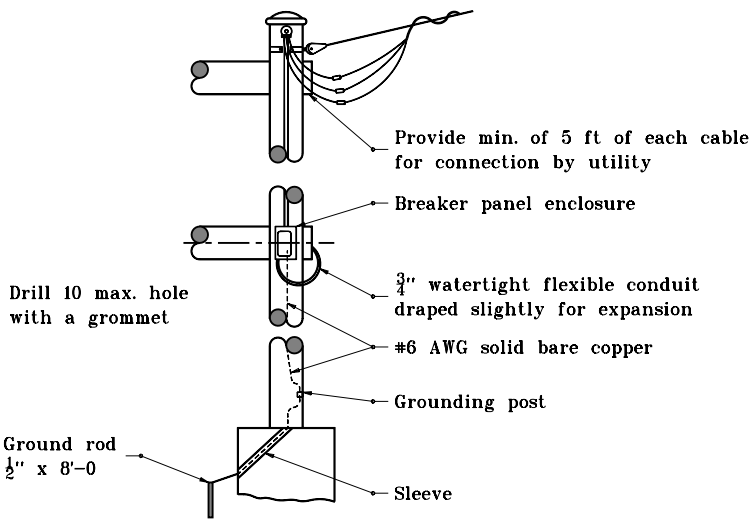
/s/ Richard L. VanCleave 9-02-03
DESIGN STANDARDS ENGINEER DATE

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





OVERHEAD SIGN SERVICE DETAIL (UNDERGROUND CONNECTIONS)

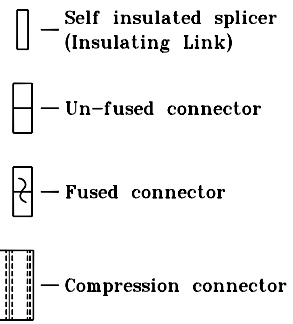


OVERHEAD SIGN SERVICE DETAIL (AERIAL CONNECTION)

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



INDIANA DEPARTMENT OF TRANSPORTATION

SIGN WIRING DETAILS

SEPTEMBER 2001

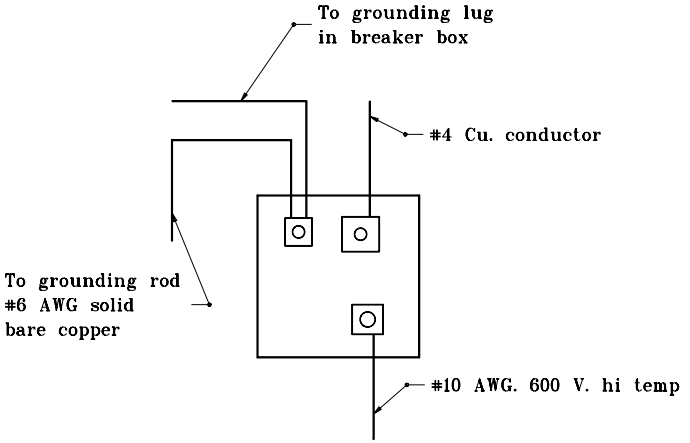
STANDARD DRAWING NO. E 802-SNWR-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

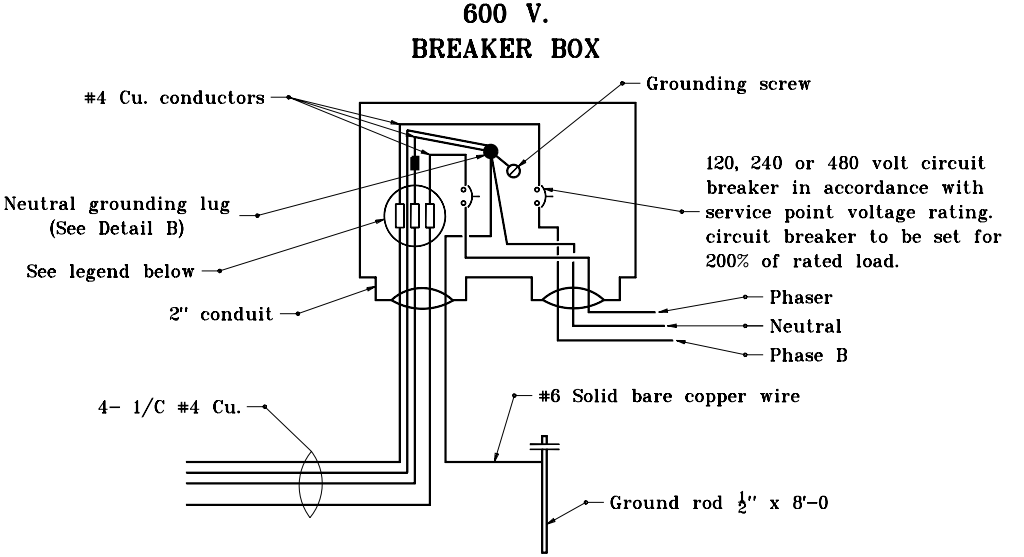
DESIGN STANDARDS ENGINEER

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

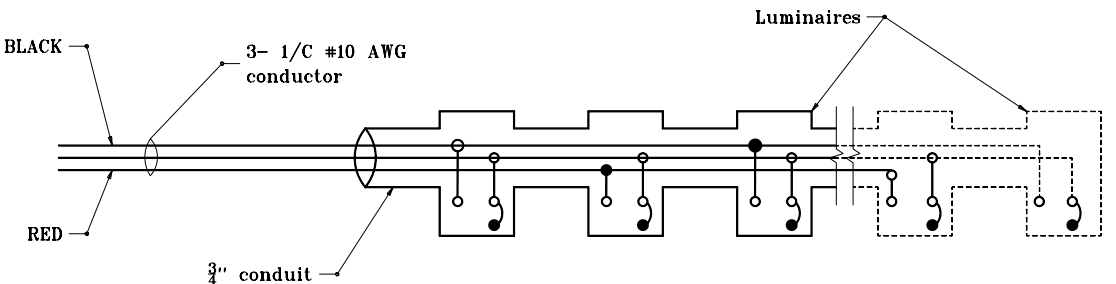
/s/ Firooz Zandi 9-04-01
CHIEF HIGHWAY ENGINEER — DATE



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

LEGEND

Yes No

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.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN WIRING DETAILS

SEPTEMBER 2001

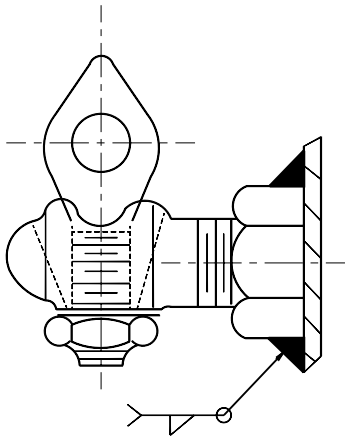
STANDARD DRAWING NO. E 802-SNWR-02

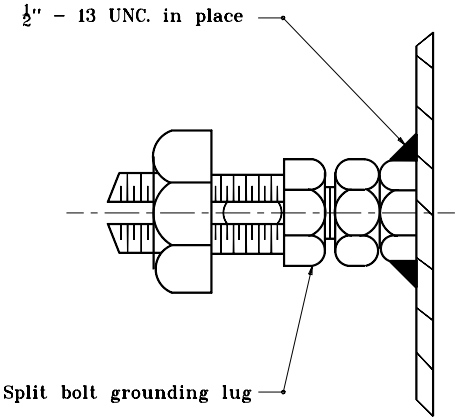
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

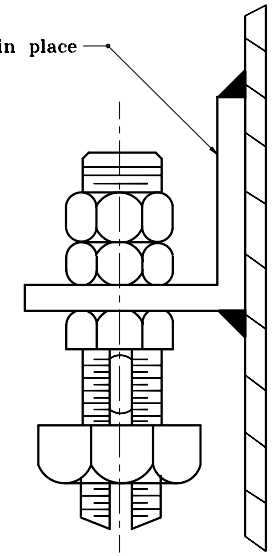
DESIGN STANDARDS ENGINEER

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

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

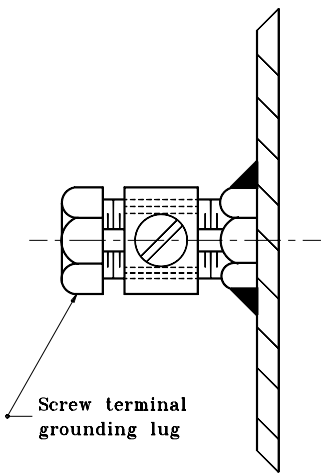


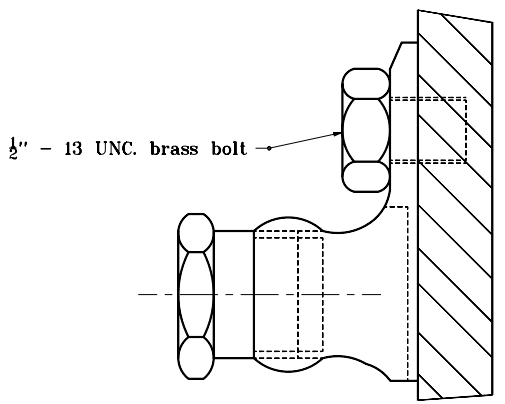




GENERAL NOTES

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





ALTERNATIVE GROUNDING POSTS DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

SIGN WIRING DETAILS

SEPTEMBER 2001

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

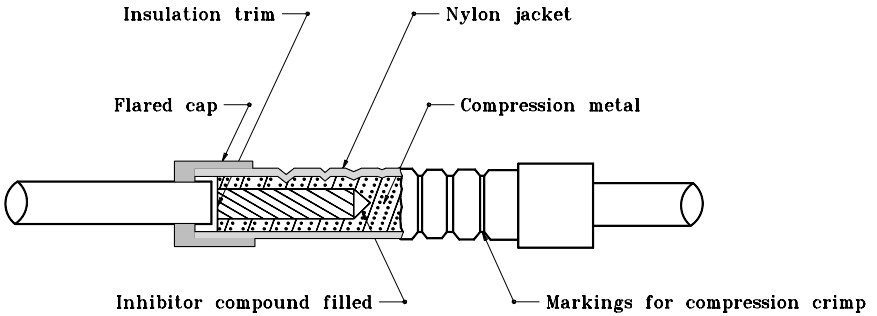
DESIGN STANDARDS ENGINEER

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

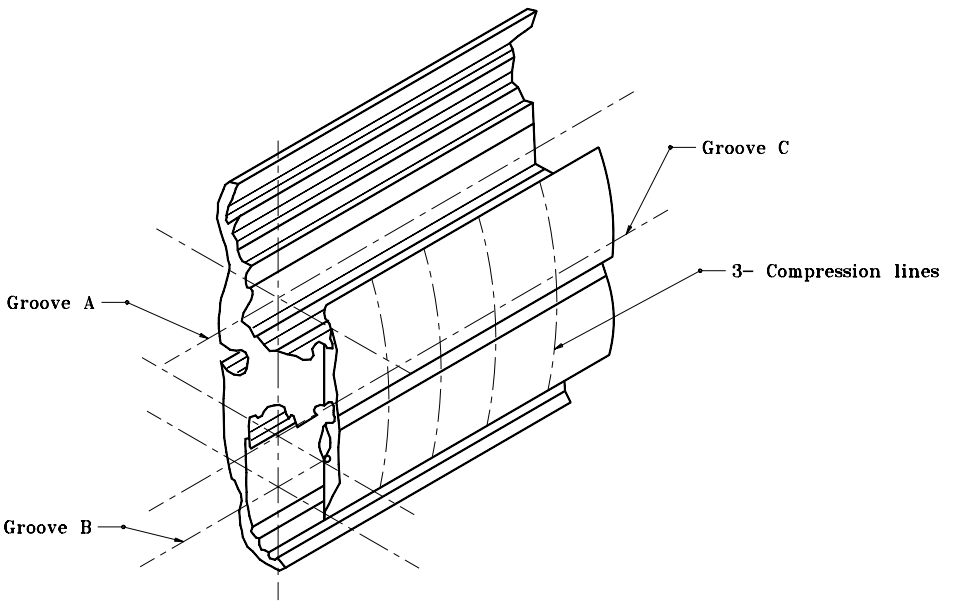
/s/ Firooz Zandi 9-04-01
CHIEF HIGHWAY ENGINEER — DATE

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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

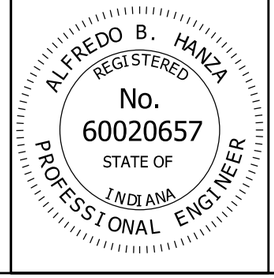
INDEX	
SHEET NO.	SUBJECT
1	Index
2	Plan & Elevation
3	Isometric Views
4	Panel Dimensions, Spans 36' thru 83'
5	Panel Dimensions, Spans 84' thru 130'
6	Member Sizes and Camber
7	Connection Details
8	Connection and Welding Details
9	Chord Flange Details
10	Top Cap and Chord End Plate Details
11	Sign Attachment 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

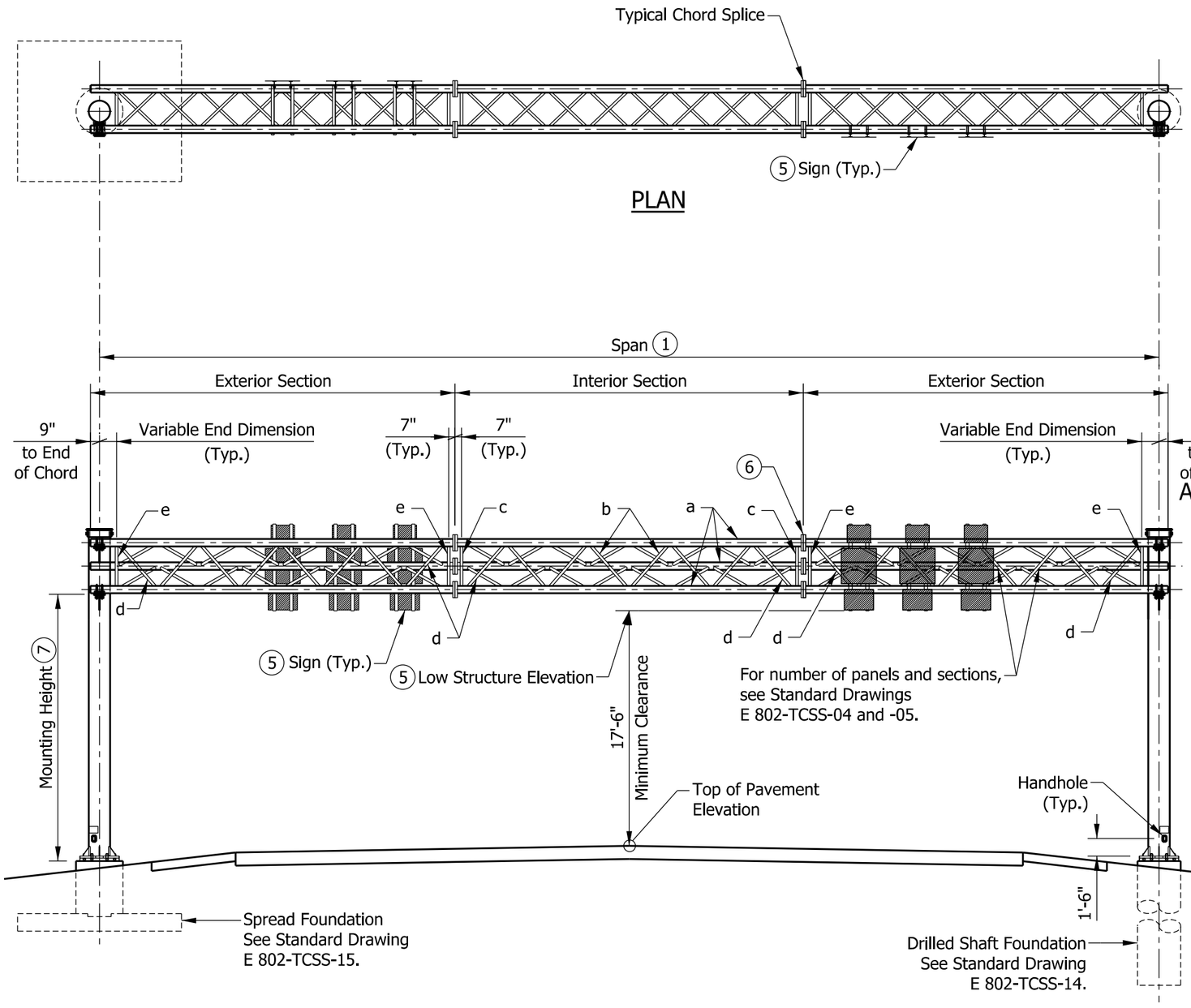
SEPTEMBER 2013

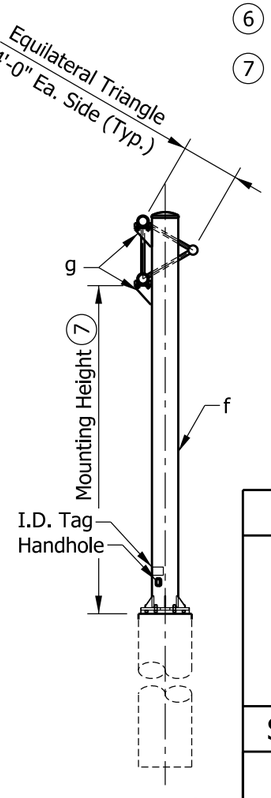
STANDARD DRAWING NO. E 802-TCSS-01



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

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

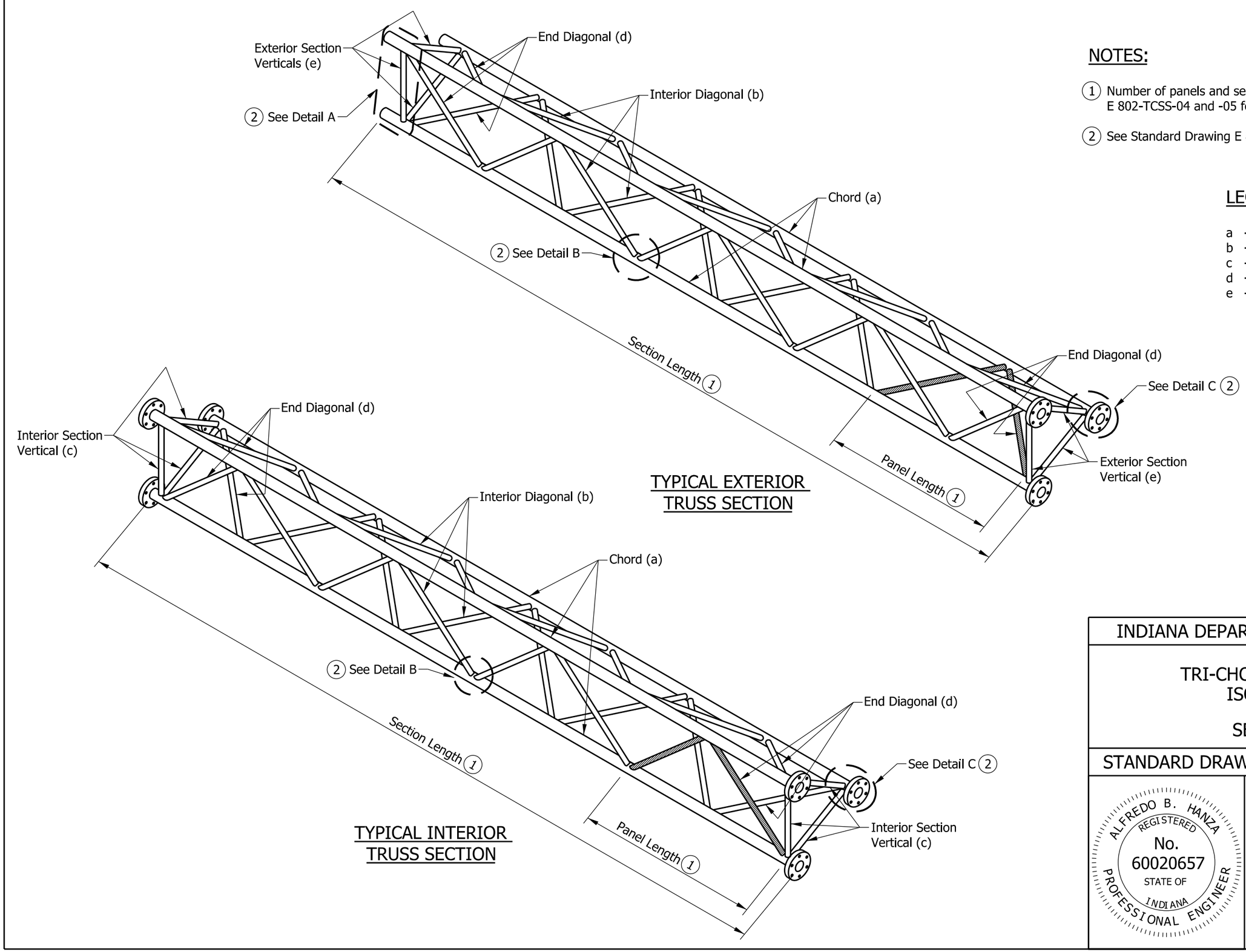
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-02

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

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

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

/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:

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 36' THRU 83'

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-04

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

/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 (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'-1/2"
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

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

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

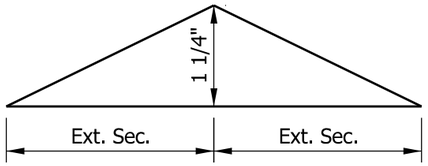
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE

TRI-CHORD SIGN STRUCTURE MEMBER SIZES

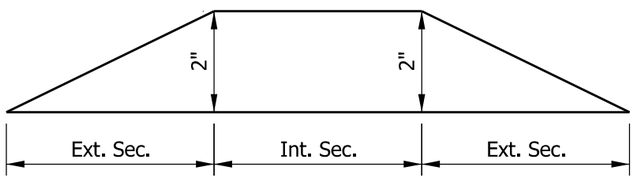
TRUSS TYPE	MAX SIGN AREA (SQ FT)	MAX MOUNTING HEIGHT, H	MAX SPAN (FT)	TRUSS MEMBERS										END SUPPORT MEMBERS		
				CHORD a		INT. DIAGONALS b		INT. SECTION VERT. c		END DIAGONALS d		EXT. SECTION VERT. e		COLUMN f		W-BEAM g
				DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	DIAM. (IN.)	THICK (IN.)	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:

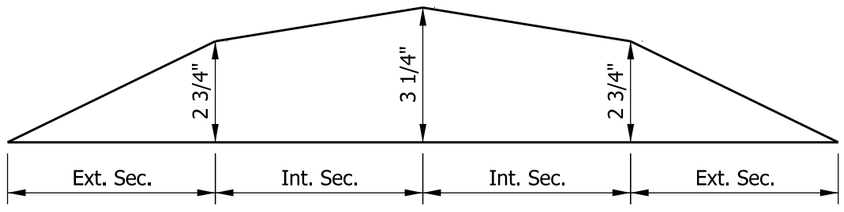
a - Chord
b - Interior Diagonal
c - Interior Section Vertical
d - End Diagonal
e - Exterior Section Vertical
f - Column
g - W-Beam Support



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

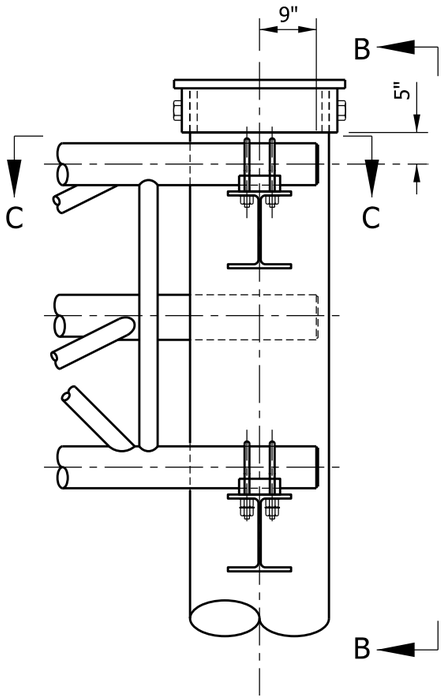
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-06

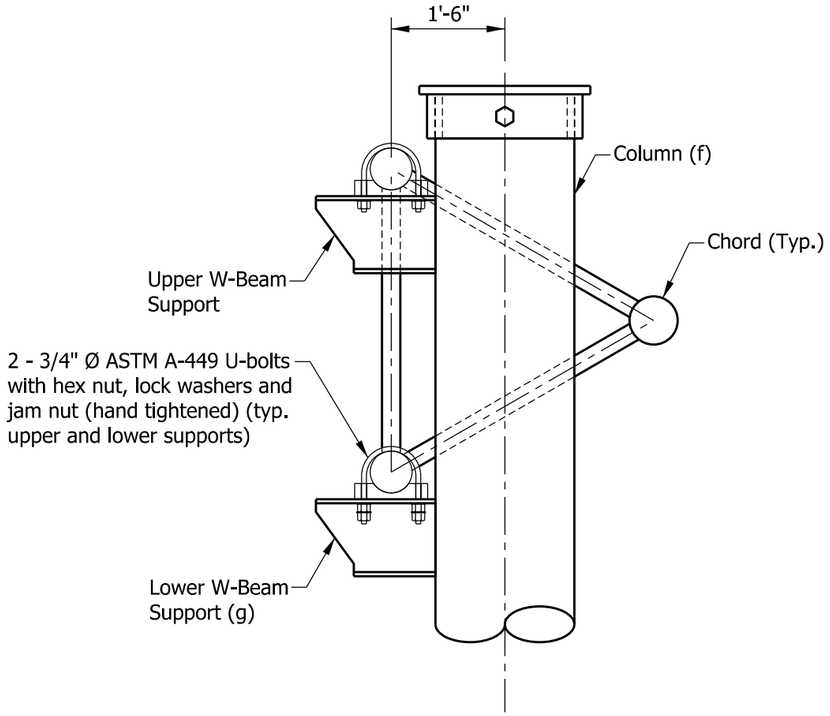
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

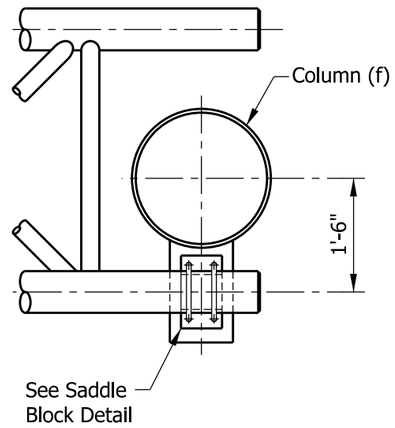
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



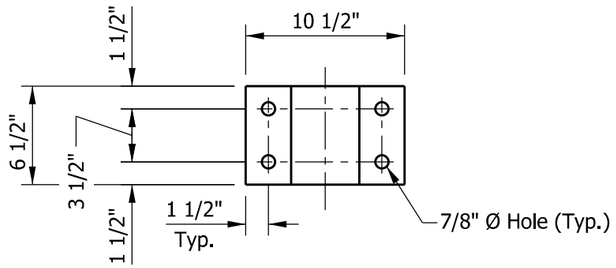
TRUSS SEAT DETAIL



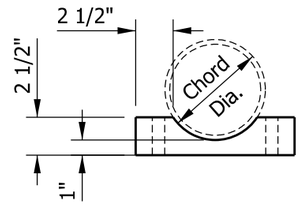
VIEW B-B



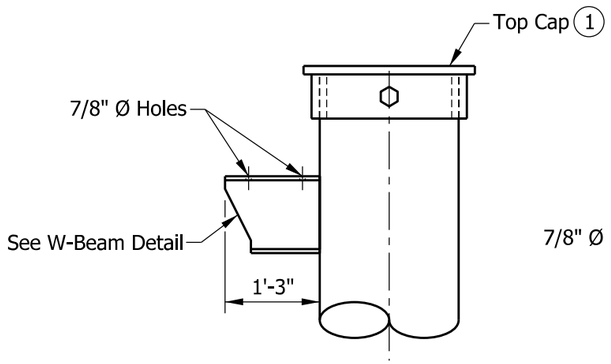
VIEW C-C

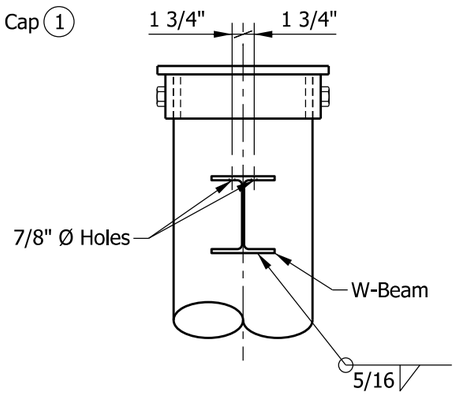


PLAN

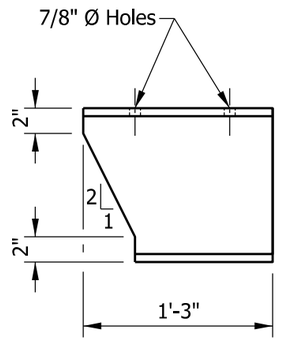


SADDLE BLOCK DETAIL





TRUSS SEAT DETAIL



W-BEAM DETAIL

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

NOTE:

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

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE CONNECTION DETAILS

SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-07

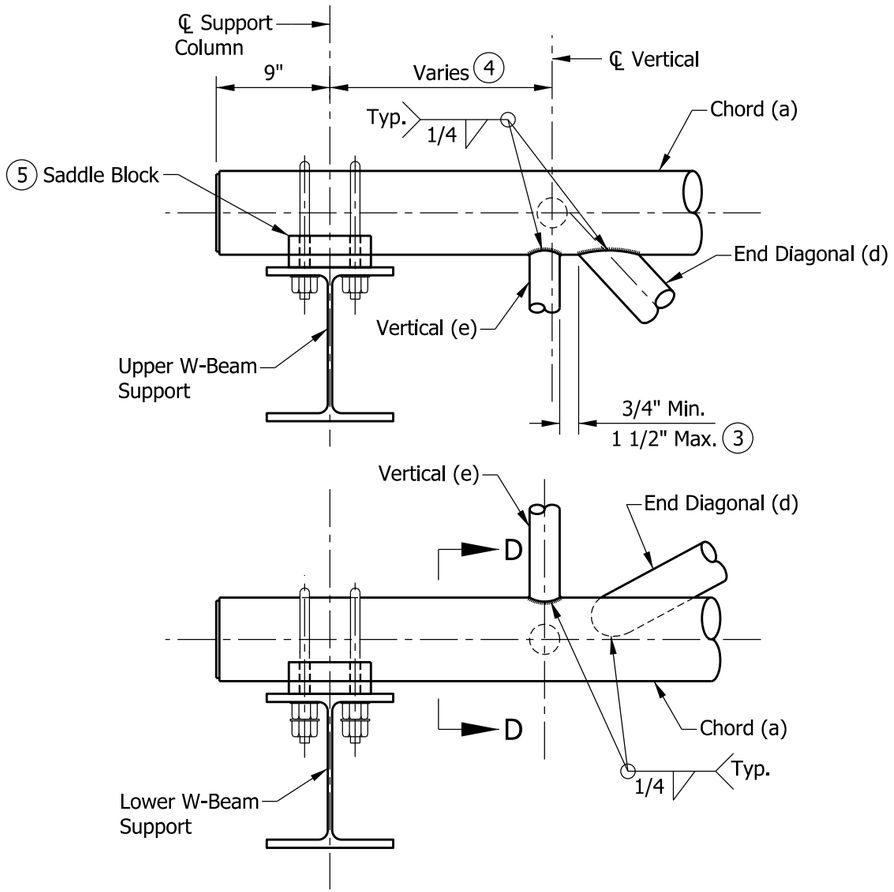
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

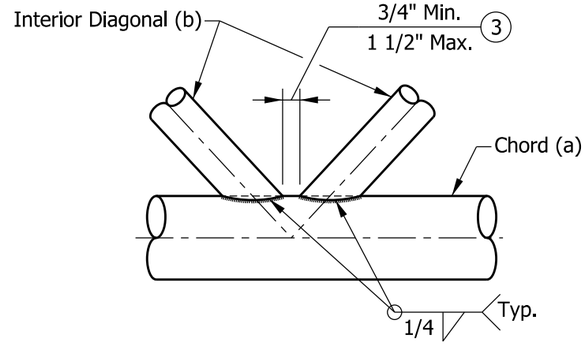
DESIGN STANDARDS ENGINEER DATE

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

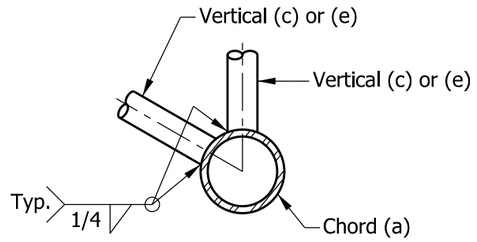
CHIEF ENGINEER DATE



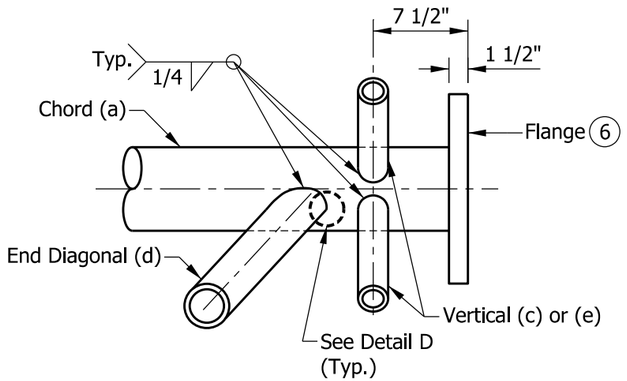
DETAIL A
SUPPORT END DETAIL FOR EXTERIOR SECTION



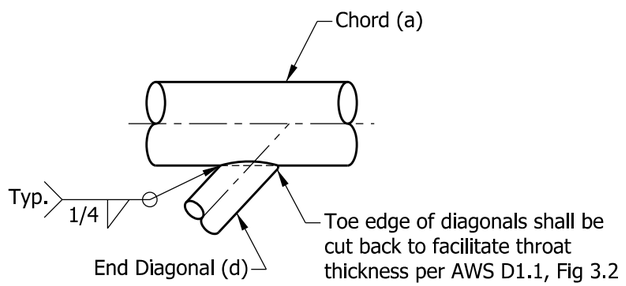
DETAIL B
TYPICAL PANEL CONNECTION



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

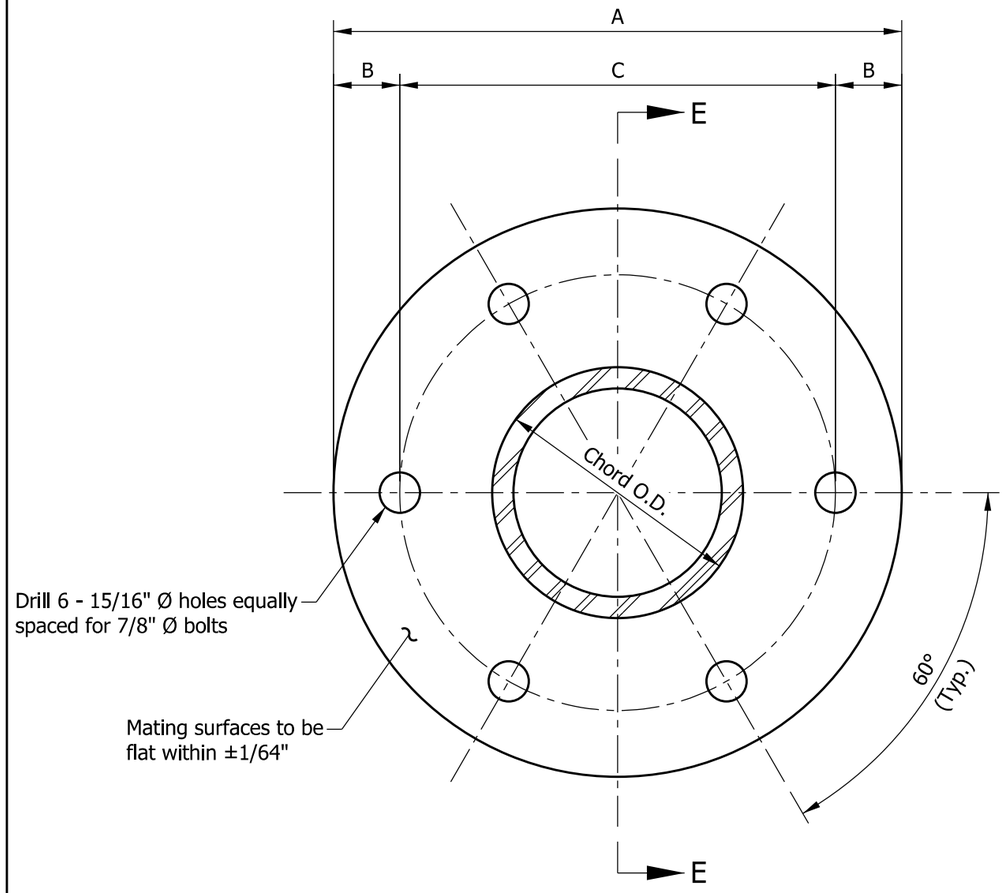
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-08

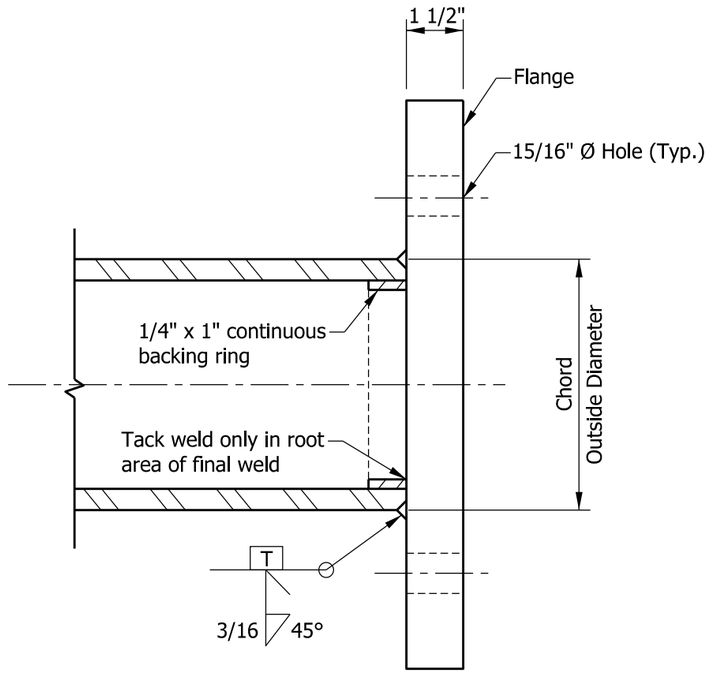
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



FLANGE DETAIL



SECTION E-E

NOTES:

1. Mating surfaces to be flat within ±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

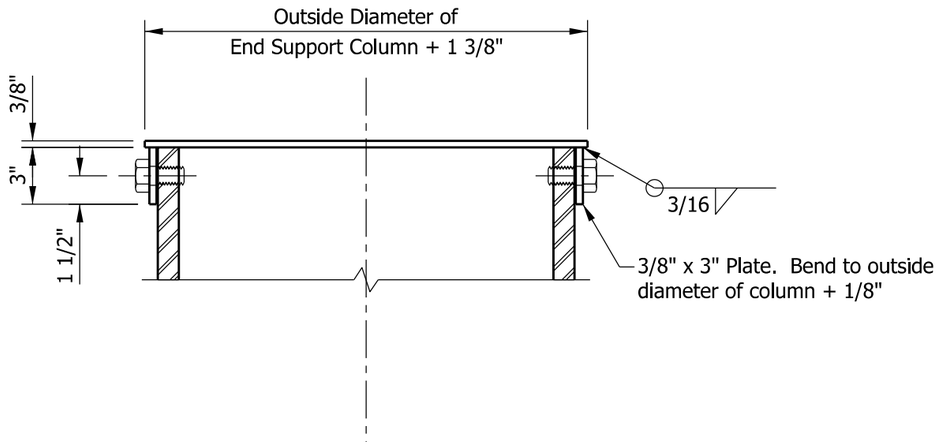
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-09

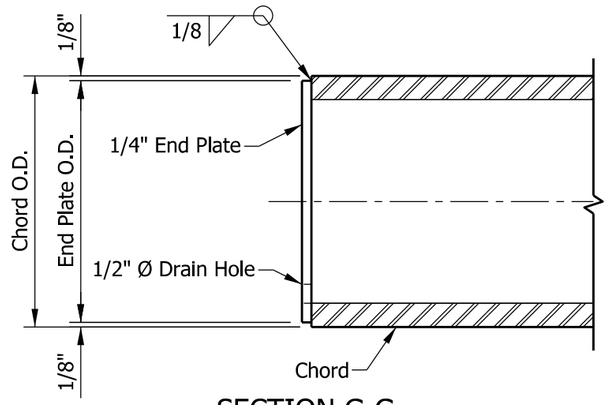
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

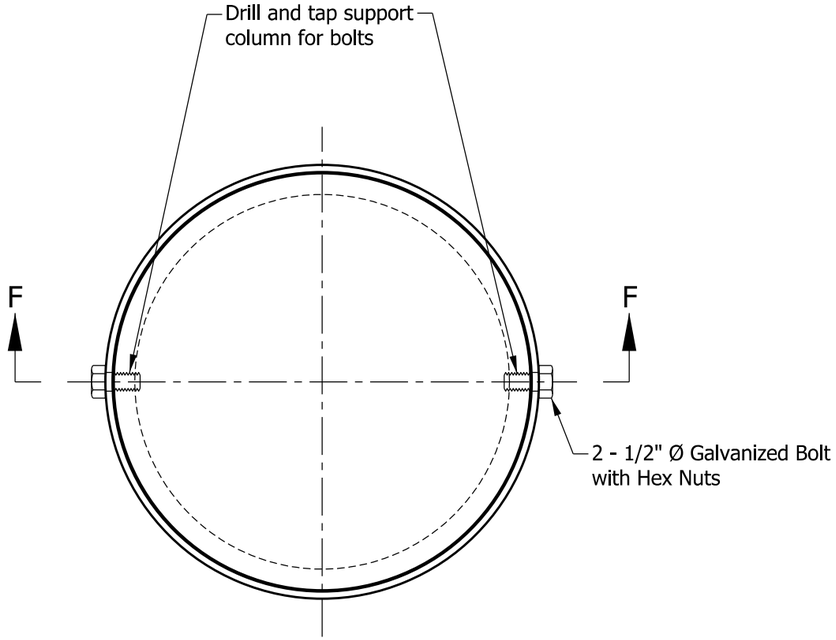
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SECTION F-F

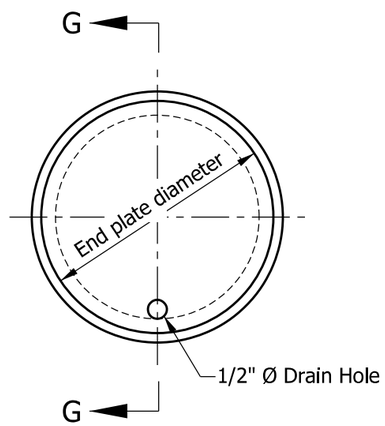


SECTION G-G



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

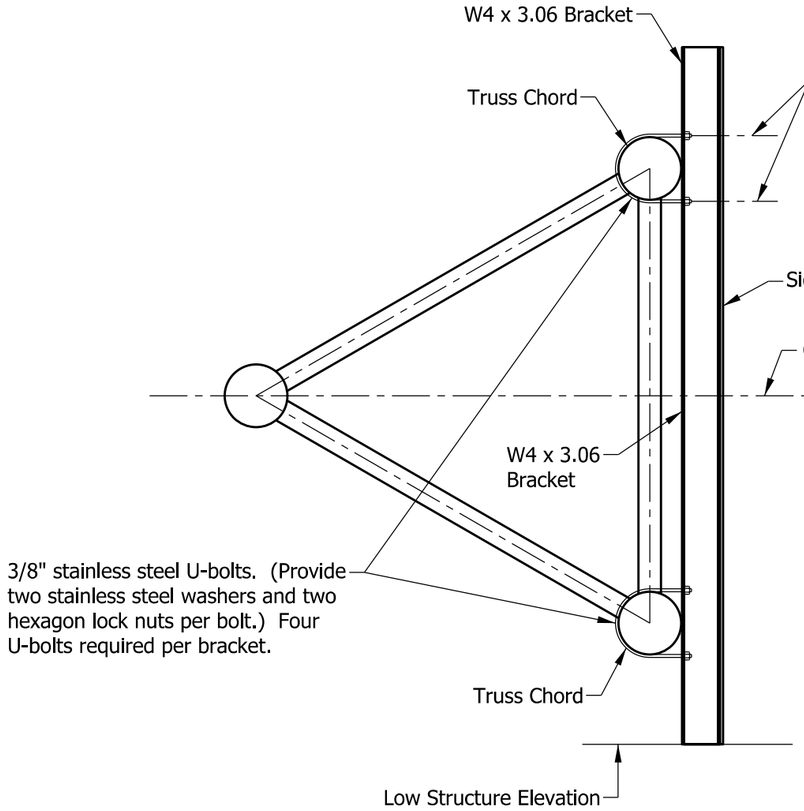
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

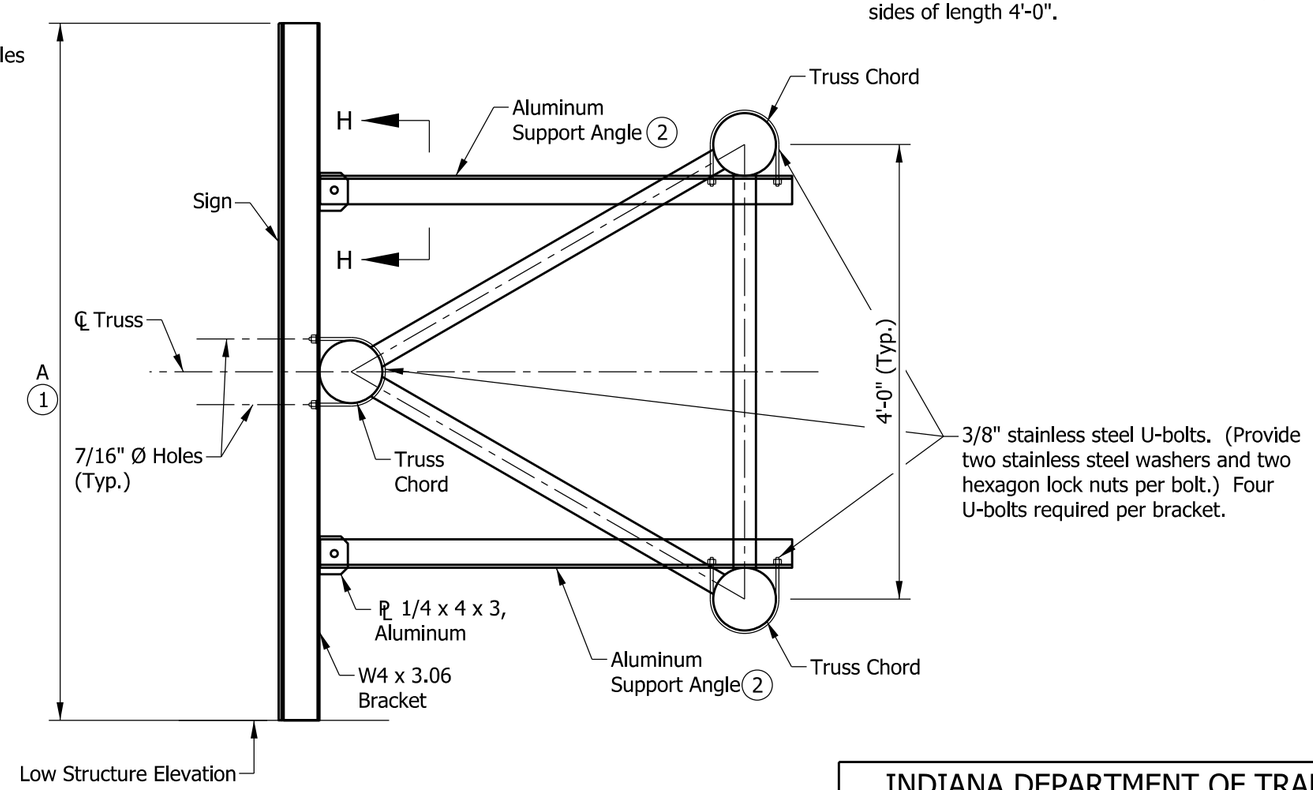
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE

NOTES:

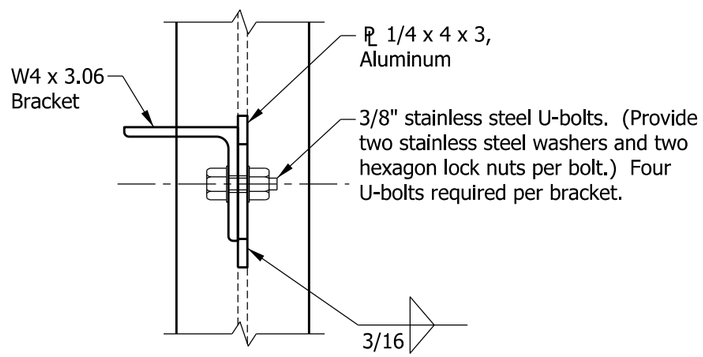
1. Dimension A to be determined by Contractor to fit required signs.
2. A minimum of two truss chord attachment points to be used for each bracket.
3. The chords shall be at the vertices of an equilateral triangle having sides of length 4'-0".



FRONT SIGN MOUNTING DETAIL



REAR SIGN MOUNTING DETAIL



VIEW H-H

INDIANA DEPARTMENT OF TRANSPORTATION

TRI-CHORD SIGN STRUCTURE
SIGN ATTACHMENT DETAILS

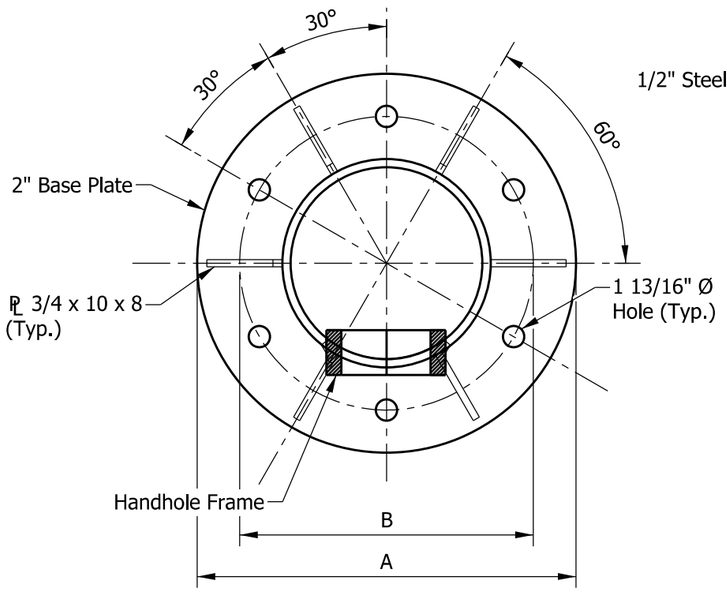
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-11

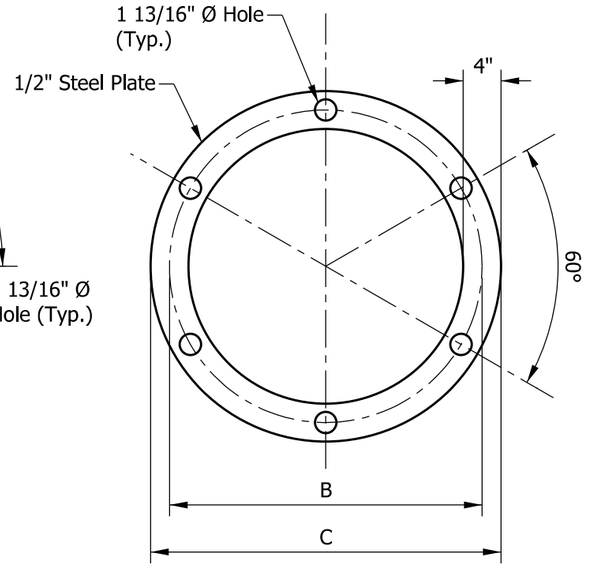
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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

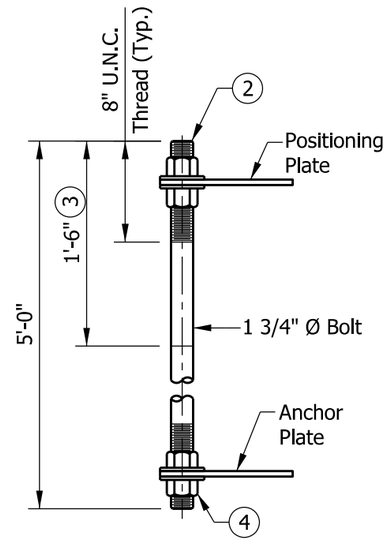


COLUMN BASE PLAN VIEW



ANCHOR AND POSITIONING PLATE (1)

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"

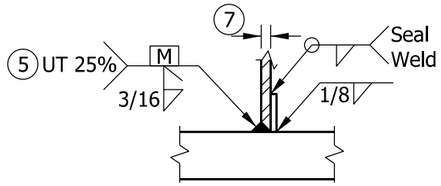


ANCHOR BOLT DETAIL

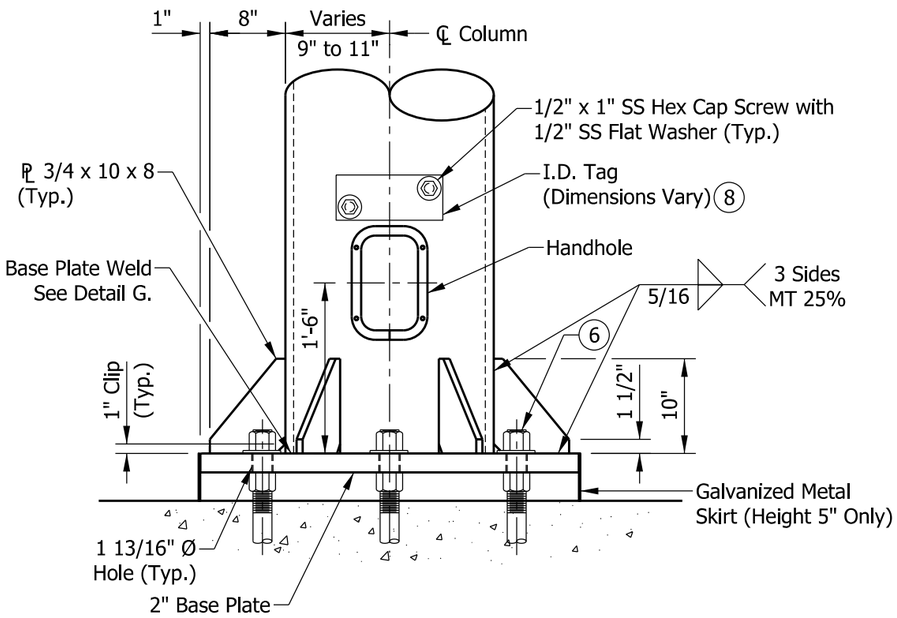
NOTES:

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:

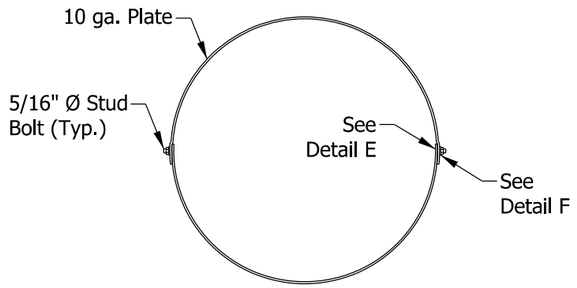
Manufacturer _____, Drawing/Order #_____
Contract #_____, Structure Type _____
Fabrication Date _____, Structure Length _____
Column Mounting Height _____



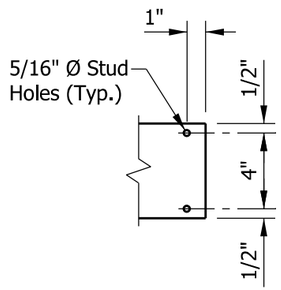
DETAIL G
BASE PLATE WELD



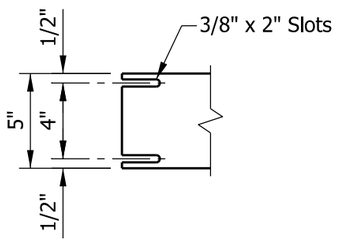
ELEVATION



SKIRT DETAIL



DETAIL E



DETAIL F

INDIANA DEPARTMENT OF TRANSPORTATION

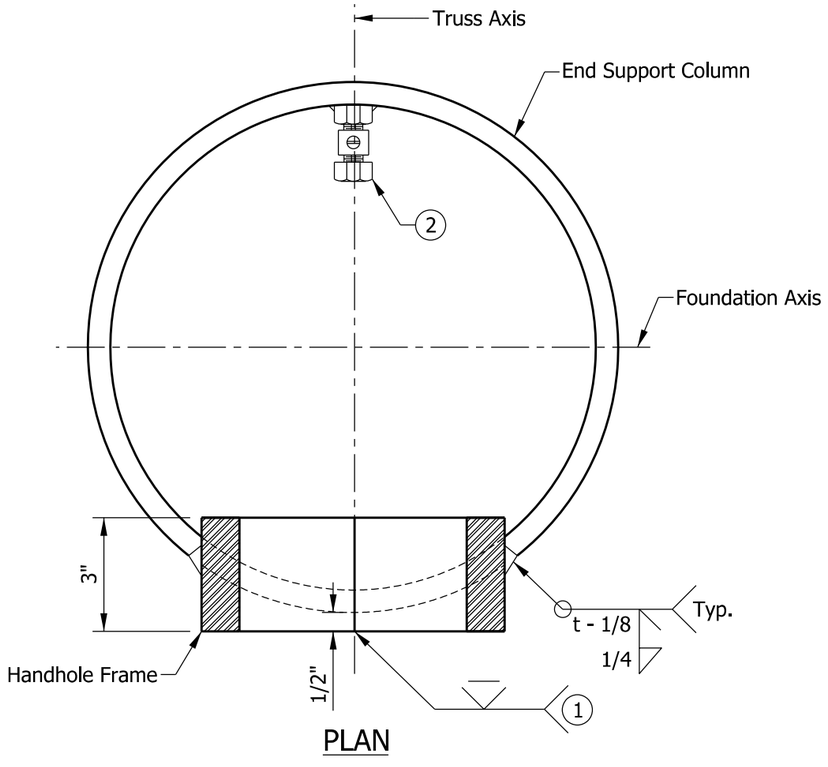
TRI-CHORD SIGN STRUCTURE
BASE PLATE, ANCHOR BOLT,
AND I.D. TAG DETAILS
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-12

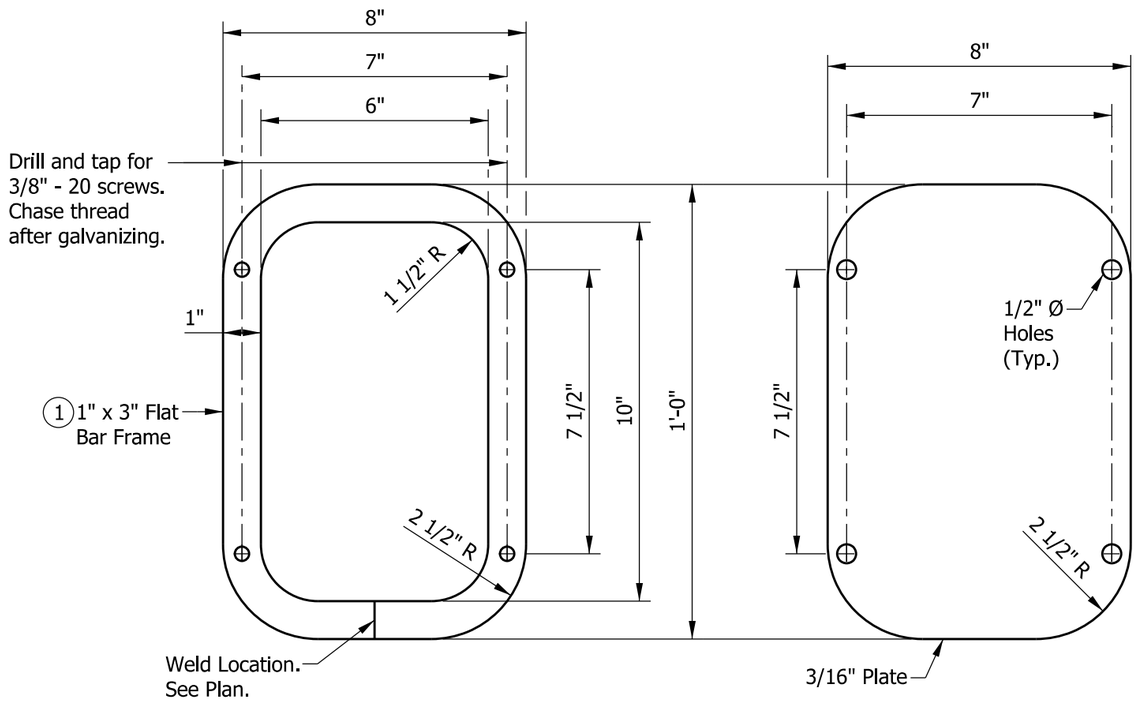
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



PLAN



HANDHOLE FRAME DETAIL

HANDHOLE COVER

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

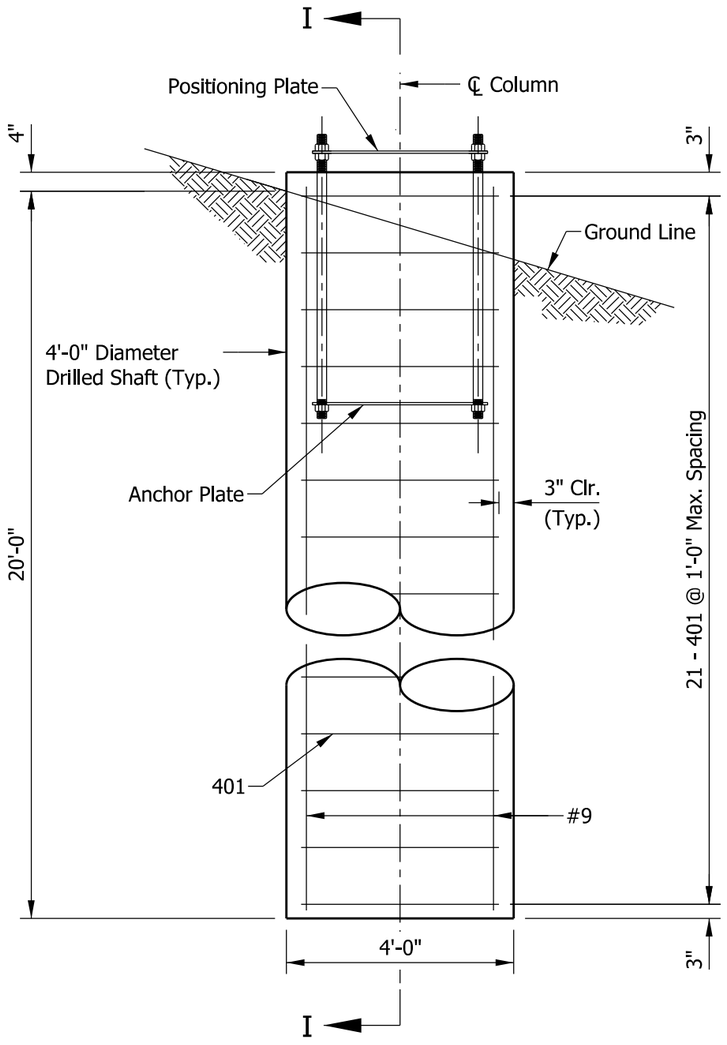
TRI-CHORD SIGN STRUCTURE
HANDHOLE DETAILS

SEPTEMBER 2013

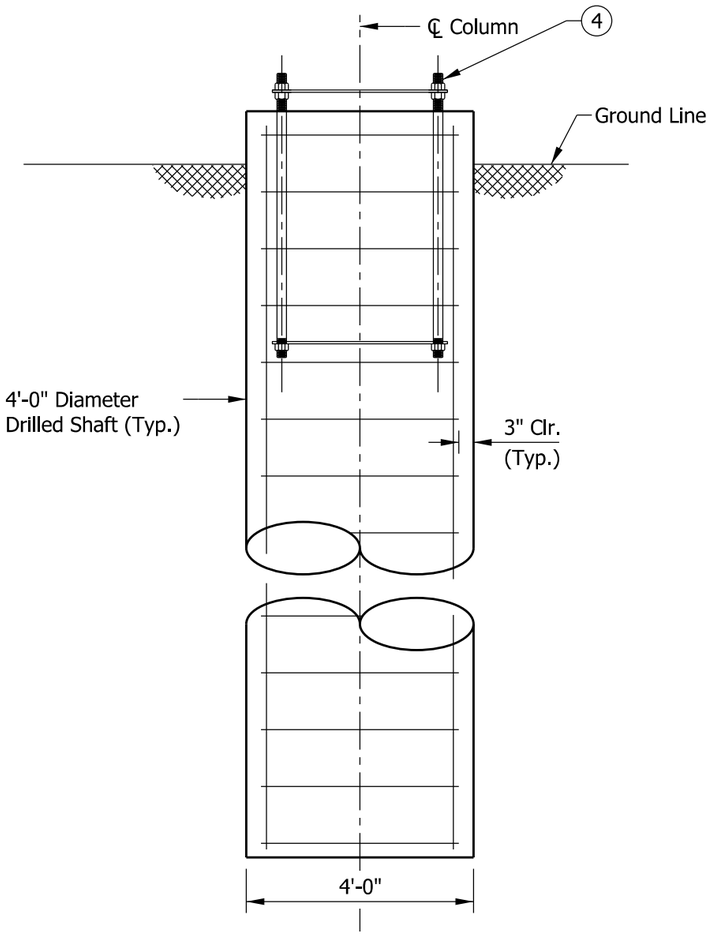
STANDARD DRAWING NO. E 802-TCSS-13

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

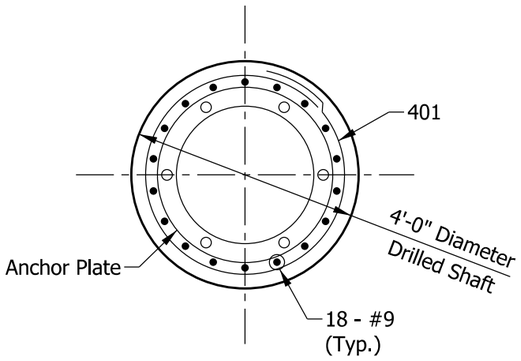
/s/ Alfredo B. Hanza	02/22/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



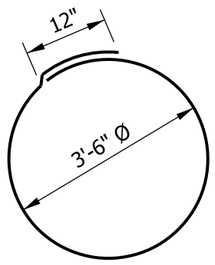
ELEVATION



SECTION I-I



PLAN



401 X 12'-0"

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

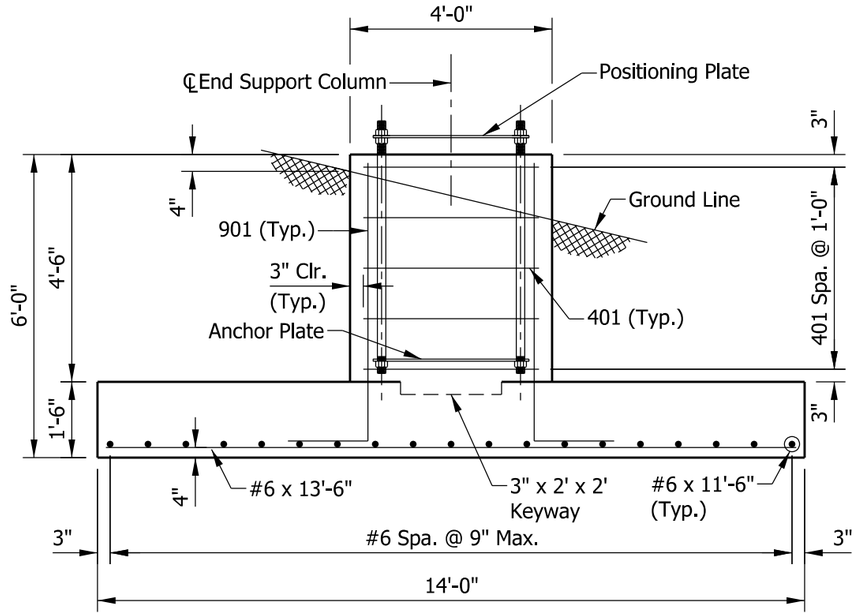
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-14

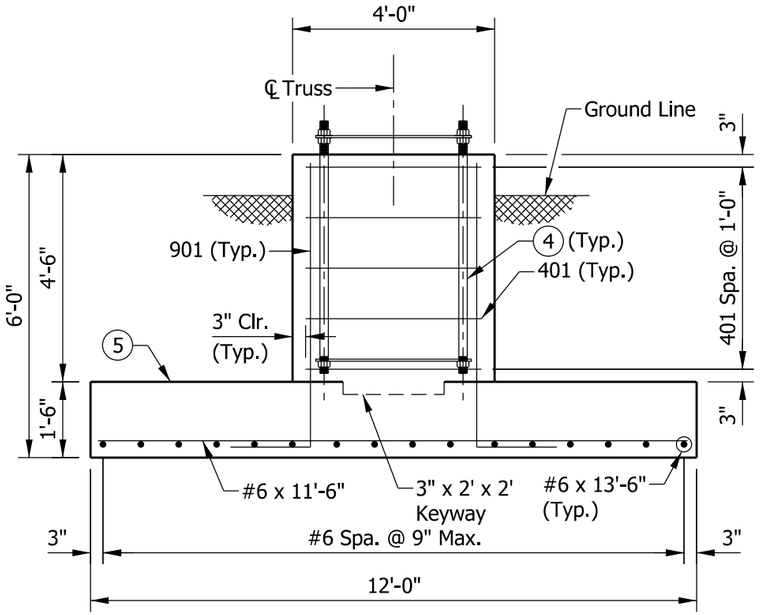
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

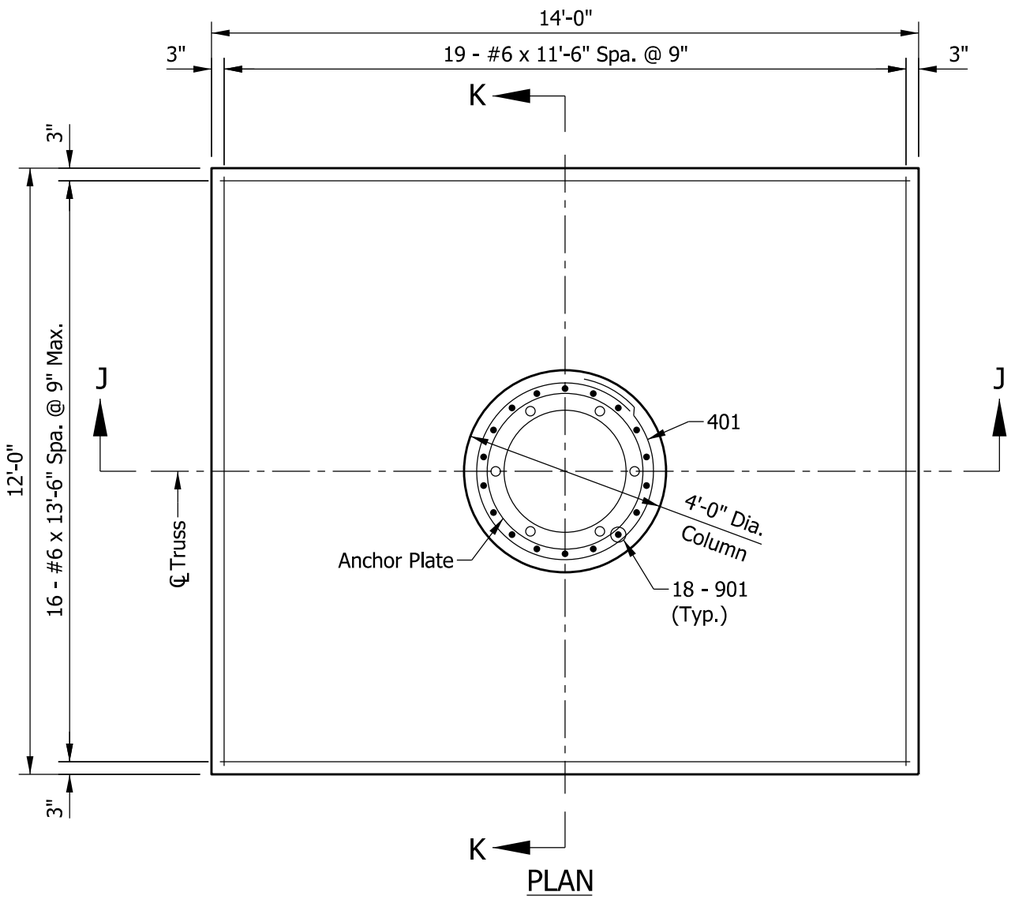
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



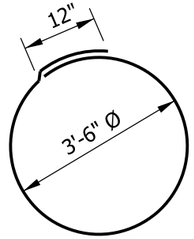
SECTION J-J



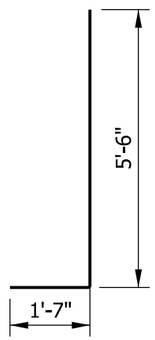
SECTION K-K



PLAN



401 X 12'-0"



901 X 7'-1"

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

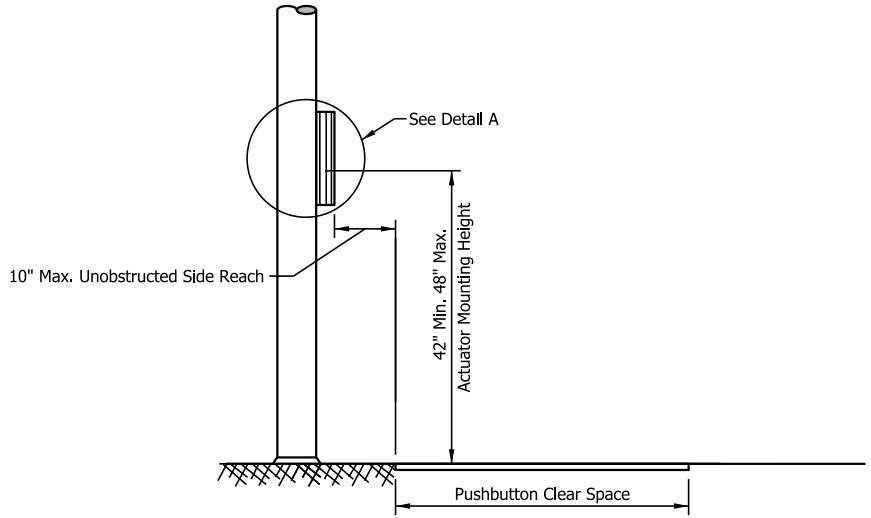
SEPTEMBER 2013

STANDARD DRAWING NO. E 802-TCSS-15

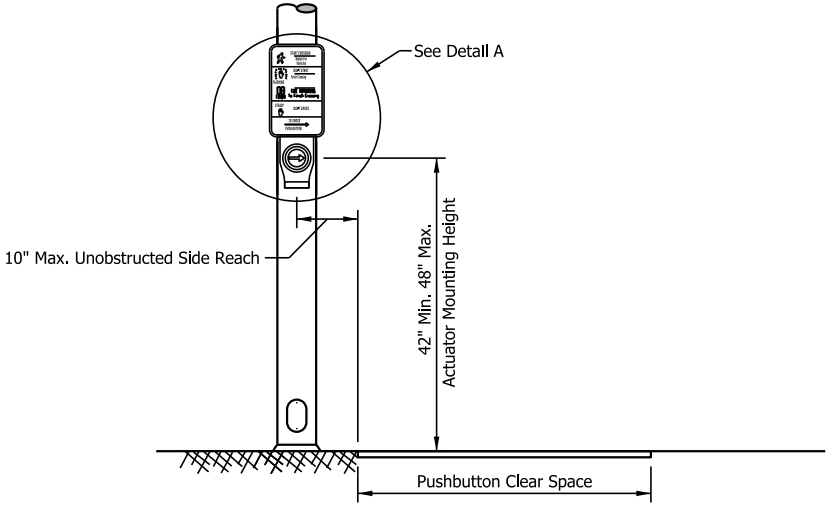
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

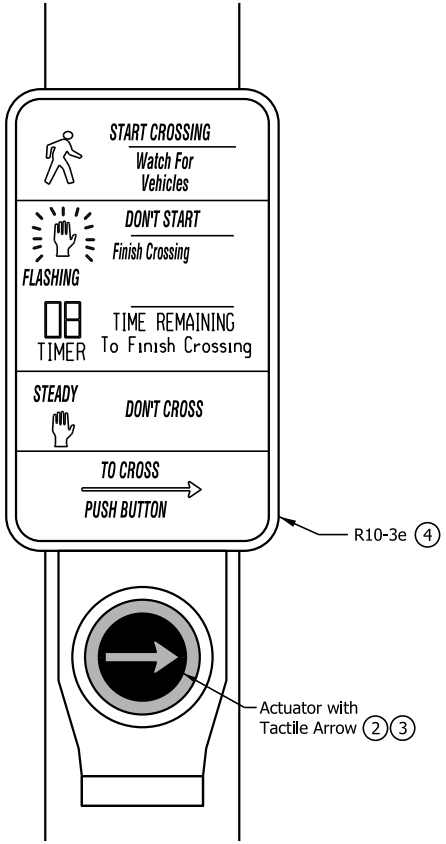
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



APPROACH TO PEDESTRIAN PUSHBUTTON ASSEMBLY MOUNTING



APPROACH TO PEDESTRIAN PUSHBUTTON ASSEMBLY MOUNTING



DETAIL A

NOTES:

1. The face of a pedestrian pushbutton assembly shall be aligned parallel to the direction of pedestrian travel on the associated crosswalk.
2. The actuator shall be a 2-in. minimum diameter and the color shall contrast with the housing or mounting. The actuator for an accessible pedestrian signal shall vibrate during the walk interval.
3. For an accessible pedestrian signal, a tactile arrow shall be provided. The tactile arrow can be part of the actuator or can be directly above or below the actuator. The tactile arrow color shall contrast with the background.
4. Pedestrian signal signs applicable to pedestrian actuation shall be mounted immediately above or incorporated into the pedestrian pushbutton assembly. For an extended actuator press function, the R10-32P sign shall be mounted adjacent to or integral with the pedestrian pushbutton assembly.
5. Where pole placement is limited, a 6 in. or 12 in. pushbutton assembly extension may be used to meet the side reach requirements.
6. See Standard Drawing E 805-PPBA-02 and -03 for Typical Pedestrian Pushbutton Assembly Locations.

INDIANA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN PUSHBUTTON ASSEMBLY DETAILS

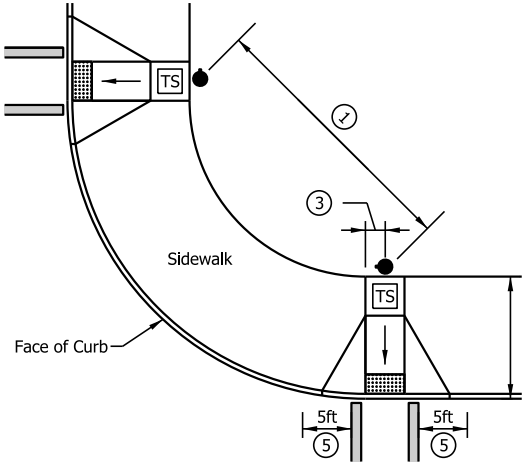
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-PPBA-01

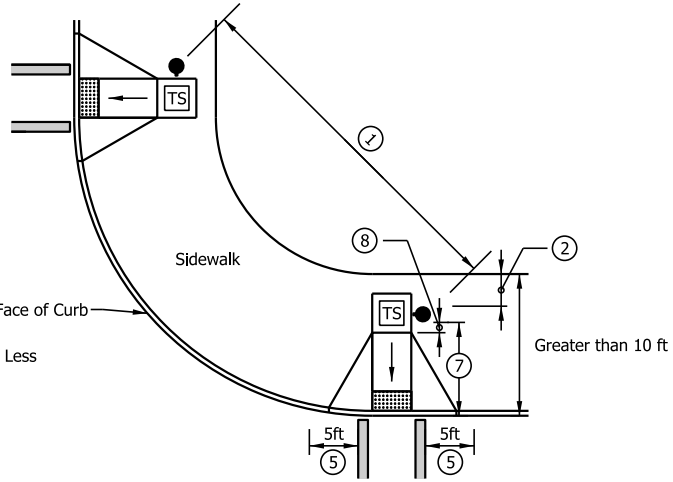
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

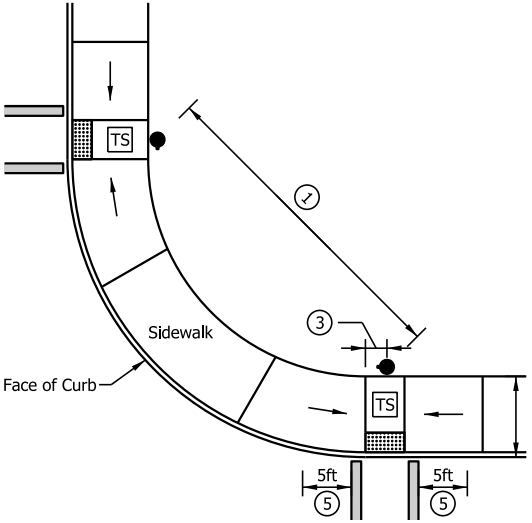
/s/ Mark A. Miller 11/01/16
CHIEF ENGINEER DATE



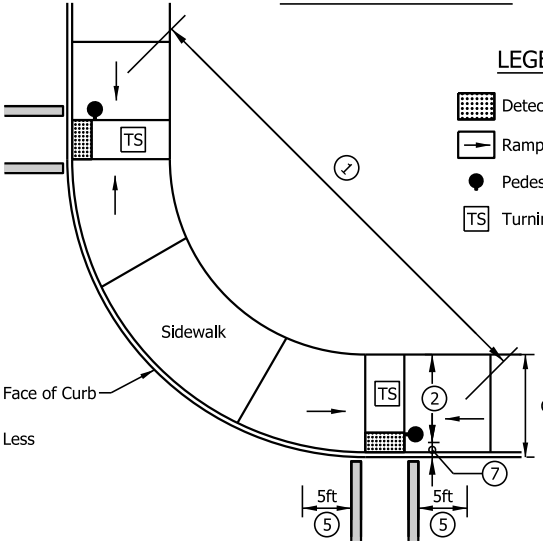
PERPENDICULAR RAMPS
ROADWAY TO BACK OF SIDEWALK
10 FT OR LESS



PERPENDICULAR RAMPS,
ROADWAY TO BACK OF SIDEWALK
GREATER THAN 10 FT



PARALLEL RAMP
ROADWAY TO BACK OF SIDEWALK
10 FT OR LESS



PARALLEL RAMP
ROADWAY TO BACK OF SIDEWALK
GREATER THAN 10 FT

LEGEND:

- Detectable Warning Surface
- Ramp
- Pedestrian Pushbutton Assembly
- TS Turning Space\Pushbutton Clear Space

NOTES:

1. Where two pedestrian pushbutton assemblies are provided on the same corner or median, the pedestrain pushbutton assemblies should be separated by at least 10 ft. Where constraints prevent a 10 ft separation, pedestrian pushbutton assemblies may be placed closer together or on the same pole. Where accessible pedestrian signal pushbutton assemblies are closer than 10 ft, the assemblies shall be in accordance with IMUTCD 4E.10.
2. A 4-ft minimum sidewalk clear width shall be provided where a pedestrian pushbutton assembly is placed within a sidewalk. A pedestrian pushbutton assembly should be adjacent a pushbutton clear space.
3. A pedestrian pushbutton assembly should be centered and adjacent a pushbutton clear space.
4. A pushbutton clear space shall have minimum clear dimension of 4 ft x 4 ft.
5. A pedestrian pushbutton assembly should not be placed more than 5 ft outside the crosswalk.
6. A pedestrian pushbutton assembly should not be placed adjacent a ramp with a running slope greater than 2%.
7. The distance from the nearest face of a pedestrian pushbutton assembly to face of the curb or edge of pavement should be between 1.5 ft and 6 ft and should not be greater than 10 ft.
8. The distance from the nearest face of a pedestrain pushbutton assembly to a grade break should not be less than 1.5 ft.
9. See Standard Drawing E 805-PPBA-01 for Pedestrian Pushbutton Assembly Details.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPICAL PEDESTRIAN PUSHBUTTON ASSEMBLY LOCATIONS

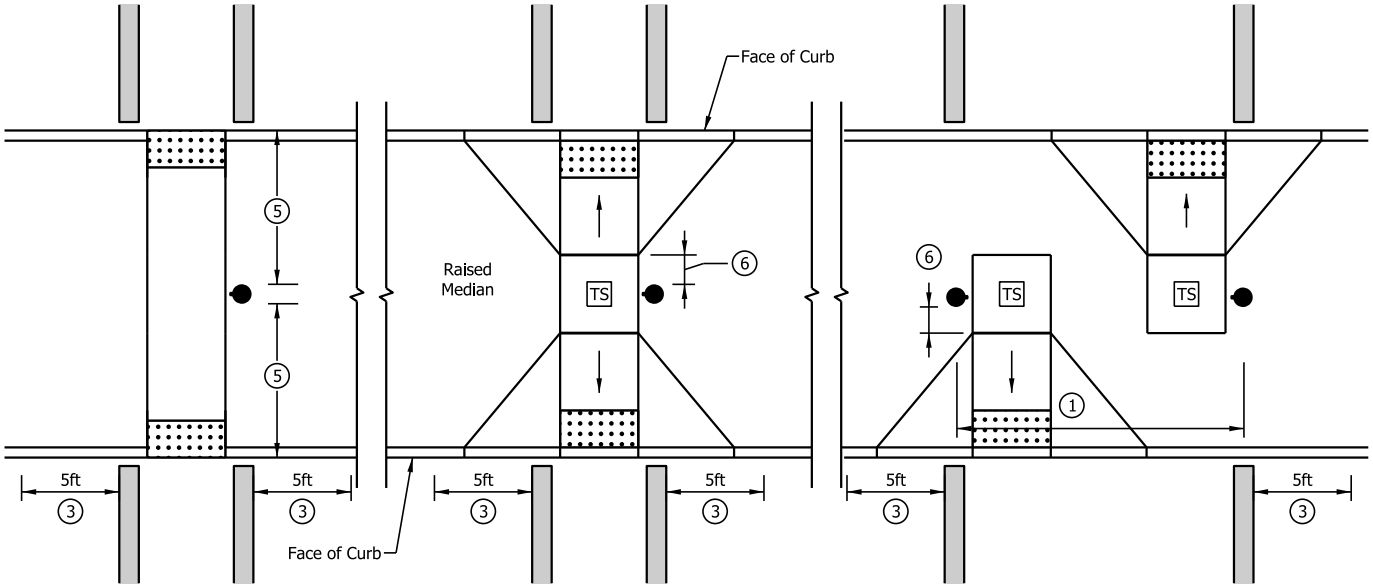
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-PPBA-02

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/01/16
CHIEF ENGINEER DATE



MEDIAN CROSSING

NOTES:

1. Where two pedestrian pushbutton assemblies are provided on the same corner or median, the pedestrain pushbutton assemblies should be separated by at least 10 ft. Where constraints prevent a 10 ft separation, pedestrian pushbutton assemblies may be placed closer together or on the same pole. Where accessible pedestrian signal pushbutton assemblies are closer than 10 ft, the assemblies shall be in accordance with IMUTCD 4E.10.
2. A pedestrian pushbutton assembly should be adjacent a pushbutton clear space. A pushbutton clear space shall have a minimum clear dimension of 4 ft x 4 ft.
3. The pedestrian pushbutton assembly should not be placed more than 5 ft outside the crosswalk.
4. A pedestrian pushbutton assembly should not be placed adjacent a ramp with a running slope greater than 2%.
5. The distance from the nearest face of a pedestrian pushbutton assembly to face of the curb or edge of pavement should be between 1.5 ft and 6 ft and should not be greater than 10 ft.
6. The distance from the nearest face of a pedestrian pushbutton assembly to a grade break should not be less than 1.5 ft.
7. See Standard Drawing E 805-PPBA-01 for Pedestrian Pushbutton Assembly Details.

LEGEND:

- Detectable Warning Surface
- Ramp
- Pedestrian Pushbutton Assembly
- TS Turning Space\Pushbutton Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION

TYPICAL PEDESTRIAN PUSHBUTTON ASSEMBLY LOCATIONS

SEPTEMBER 2017

STANDARD DRAWING NO. E 805-PPBA-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/01/16
CHIEF ENGINEER DATE

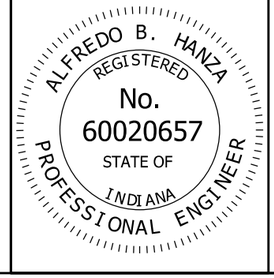
INDEX	
SHEET NO.	SUBJECT
1	Index
2	Pole Dimensions and Details
3	Arm Dimensions and Details
4	Base Plate and Pole Top Cover Details
5	Arm Connection Details
6	Handhole and I.D. Tag Details
7	Loading Diagrams
8	Foundation, Drilled Shaft Type E, for Dual Arms 35' or Less
9	Foundation, Drilled Shaft Type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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS
DRAWING INDEX

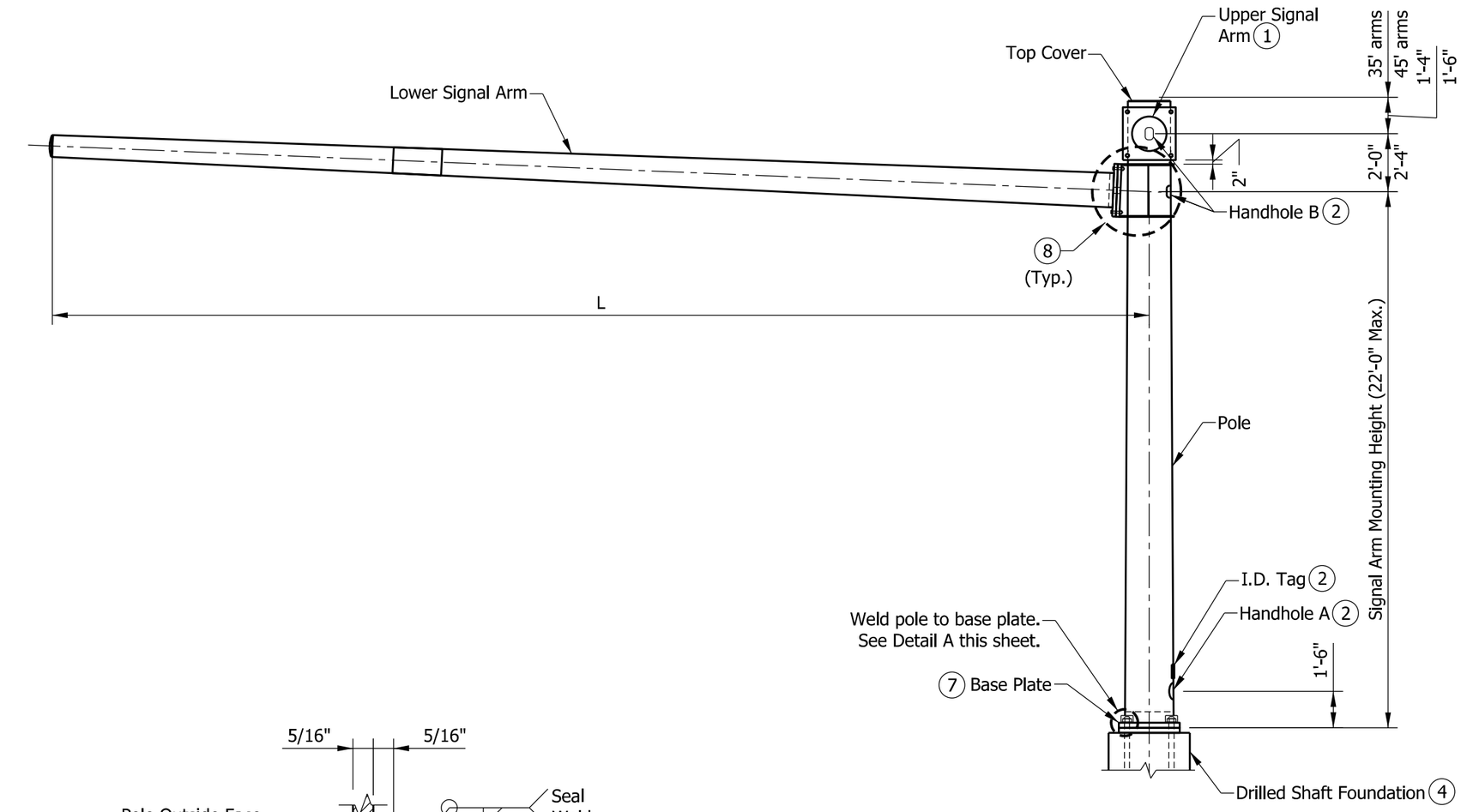
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-01



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

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



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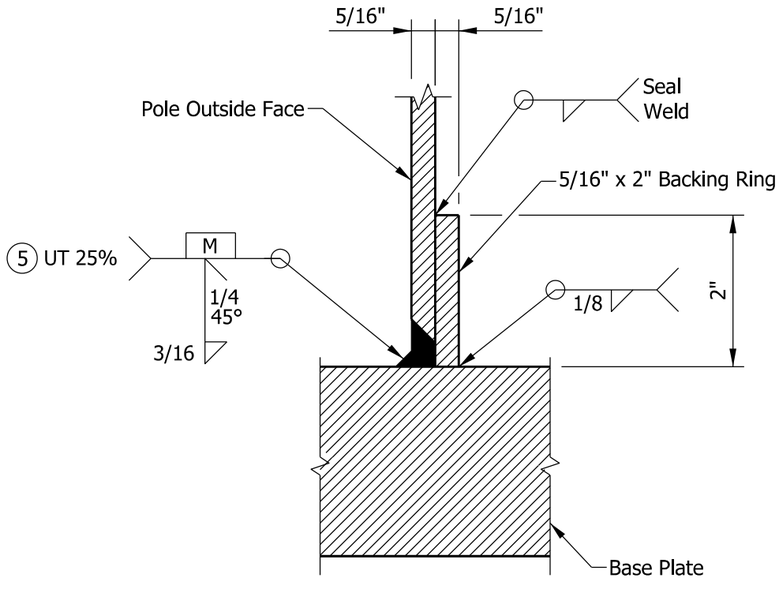


POLE/BASE PLATE WELD DETAIL A

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.

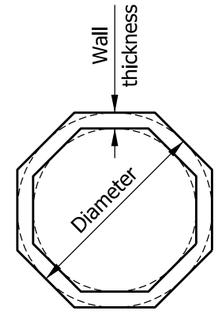
(4) See Standard Drawings E 805-SDAC-08 and -09 for foundation details.

(5) A minimum of 25% of the pole to base plate welds shall be ultransonically 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

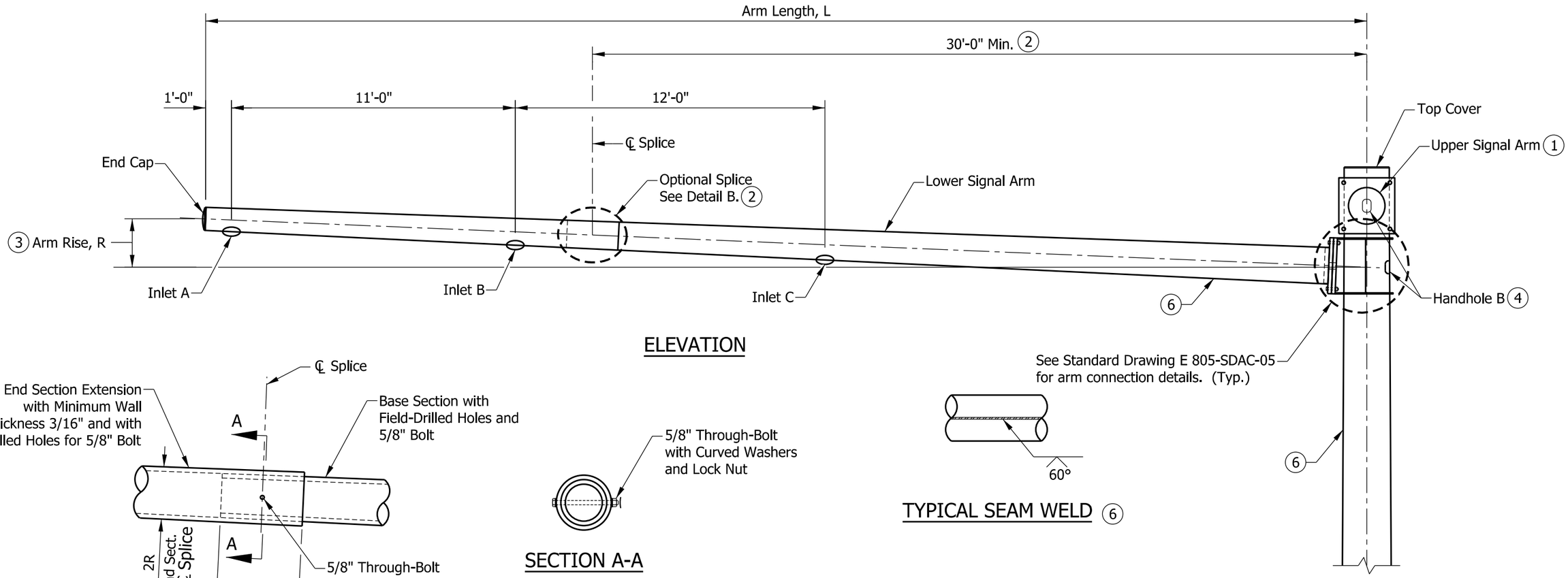
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-02

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

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

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



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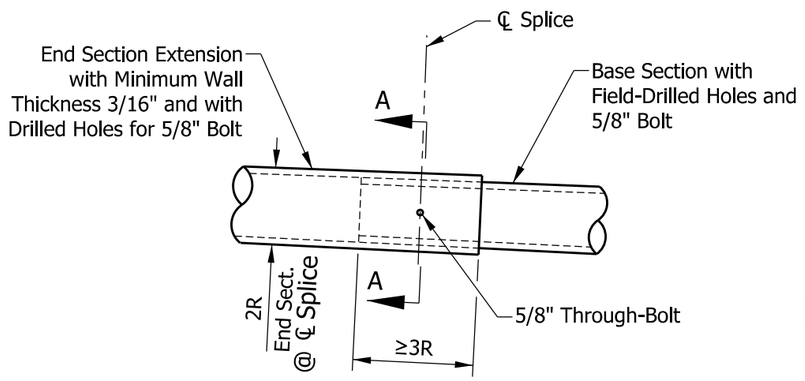


DETAIL B

SECTION A-A

TYPICAL SEAM WELD (6)

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

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 ofthe 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.).

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS
ARM DIMENSIONS AND DETAILS

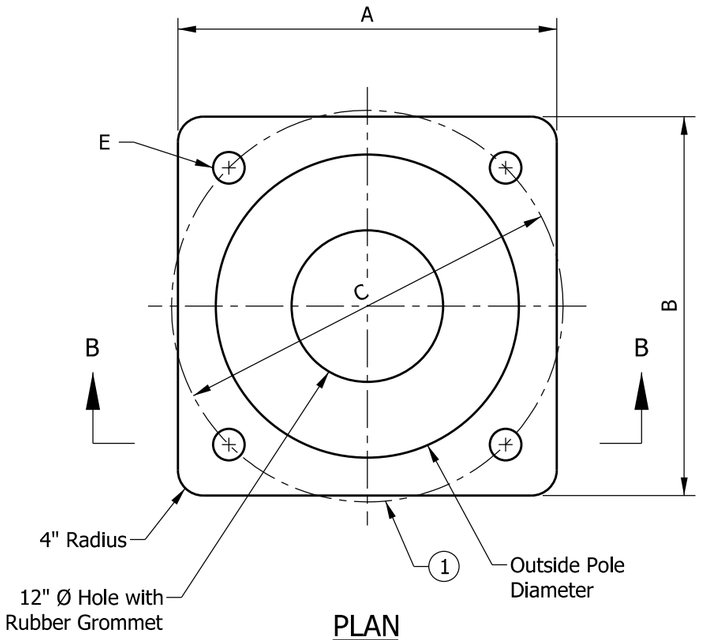
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-03

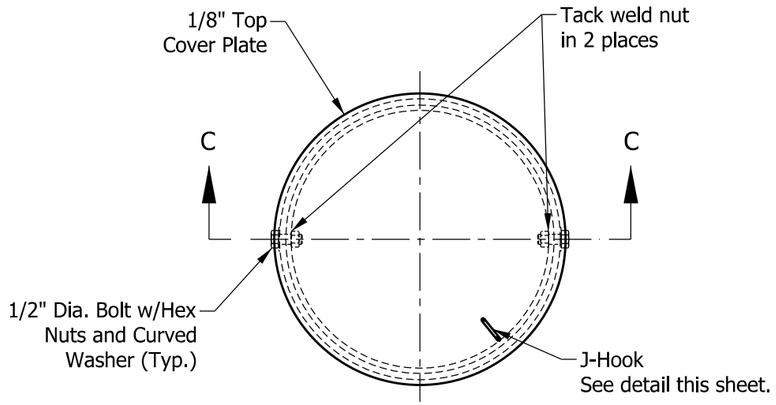
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



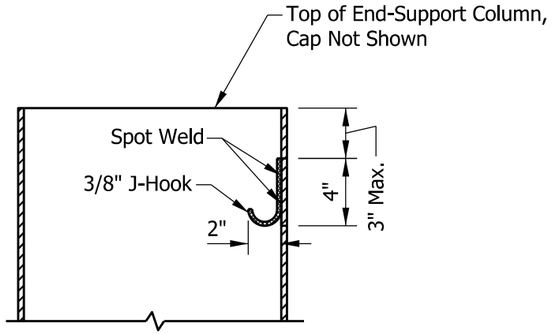
PLAN



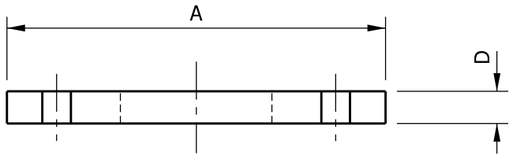
PLAN
TOP COVER - STEEL COLUMN

NOTES:

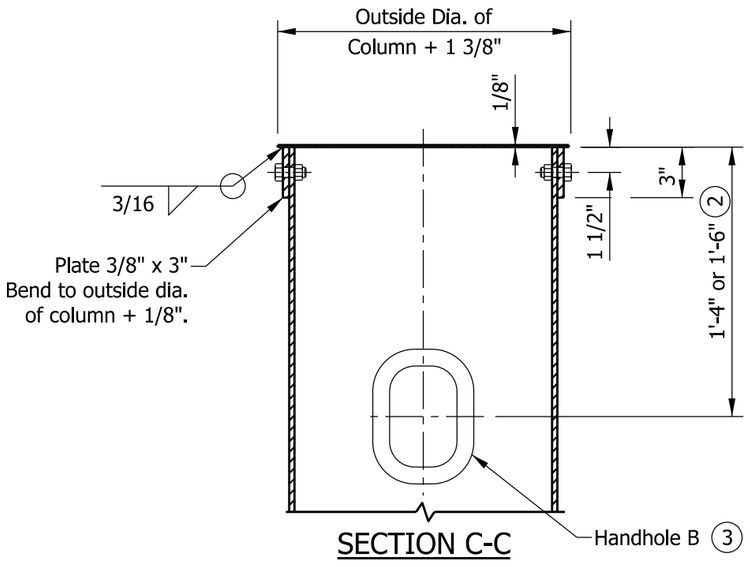
1. Anchor bolt circle shall allow clearance for the anchor bolt washers. Cutting or trimming of the washers will not be allowed.
2. See Standard Drawing E 805-SDAC-02 for handhole locations.
3. See Standard Drawing E 805-SDAC-06 for handhole details.



CABLE J-HOOK



SECTION B-B
BASE PLATE



SECTION C-C

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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS
BASE PLATE AND POLE TOP COVER DETAILS

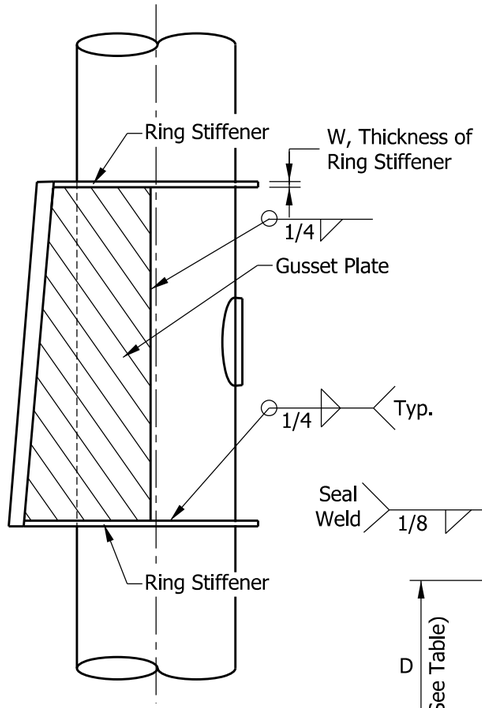
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-04

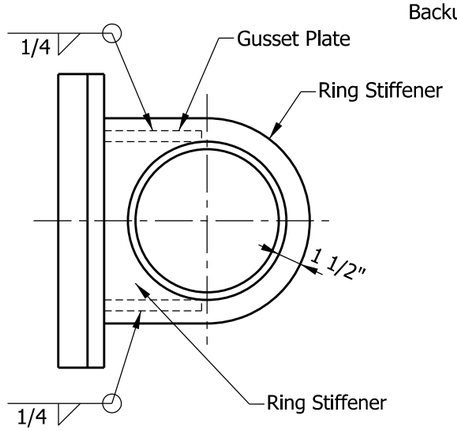
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

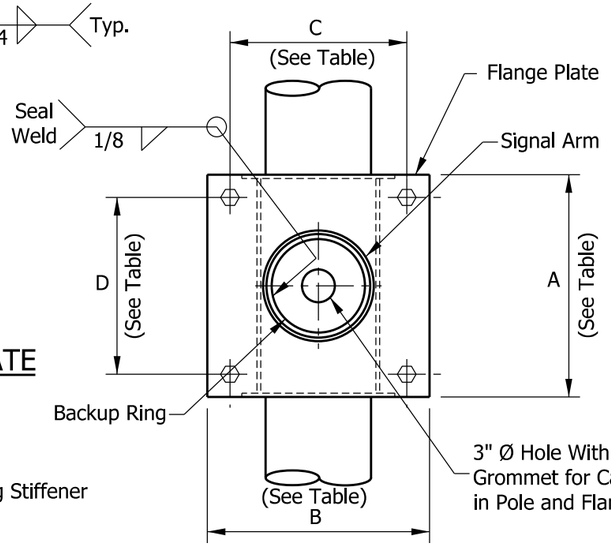
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



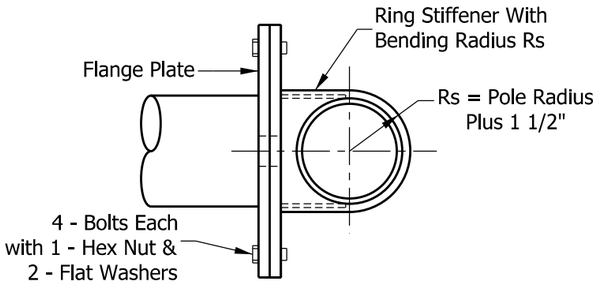
ELEVATION OF GUSSET PLATE



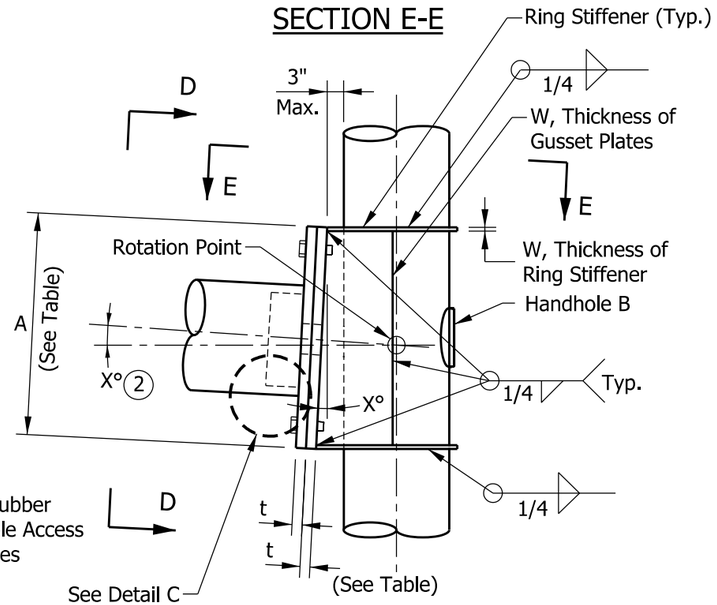
TOP OF GUSSET PLATE



SECTION D-D



SECTION E-E

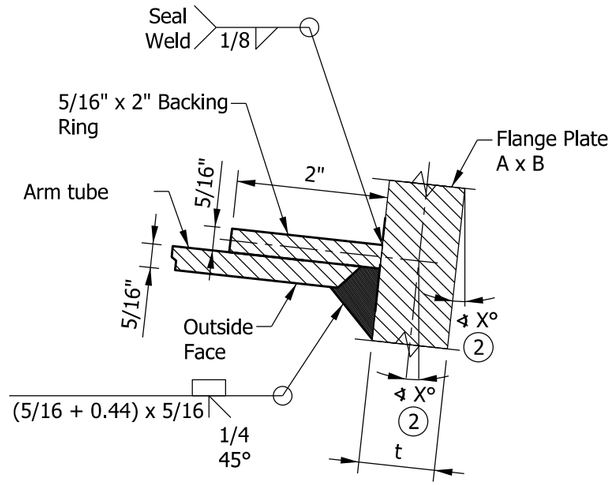


ELEVATION

SIGNAL ARM CONNECTION DETAIL

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

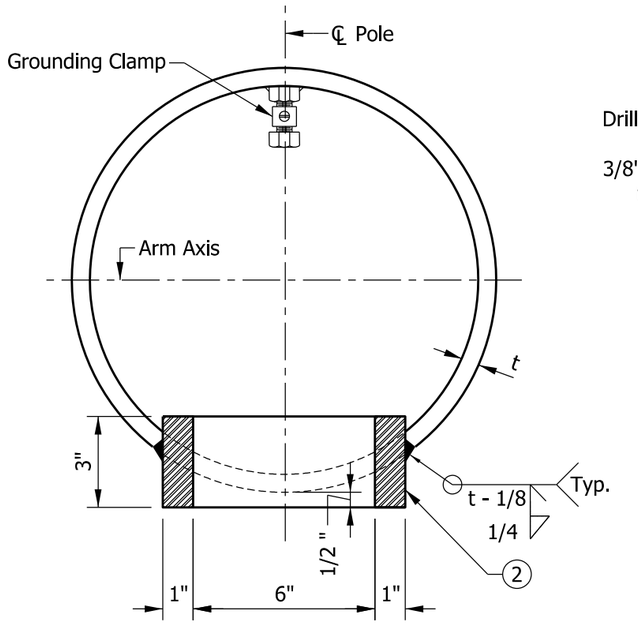
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-05

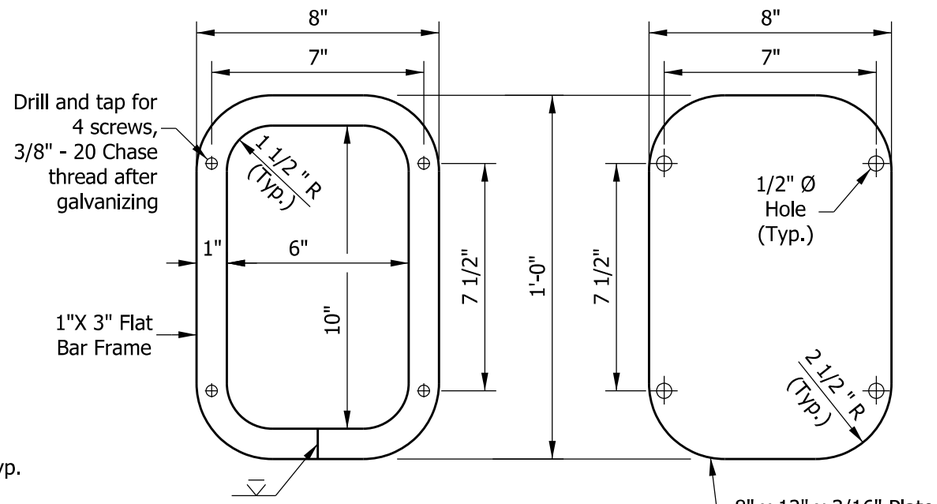
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



HANDHOLE A
SECTION ACROSS POLE



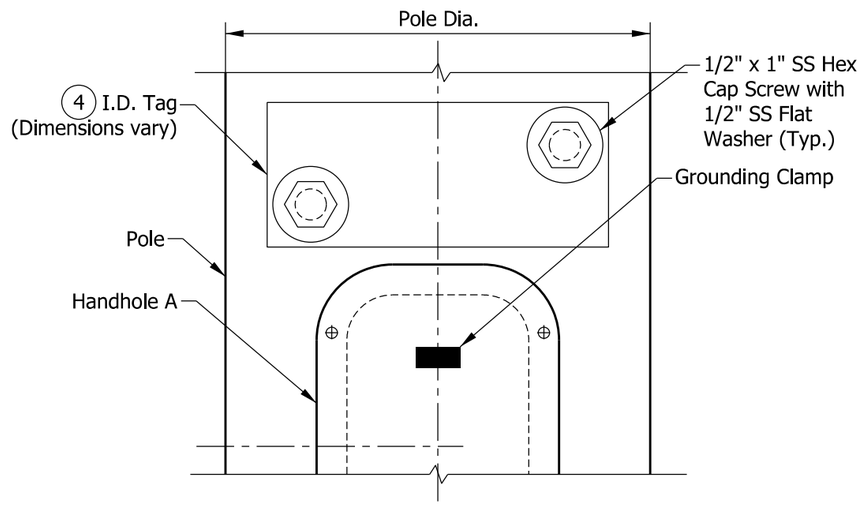
FRAME DETAIL COVER

HANDHOLE A

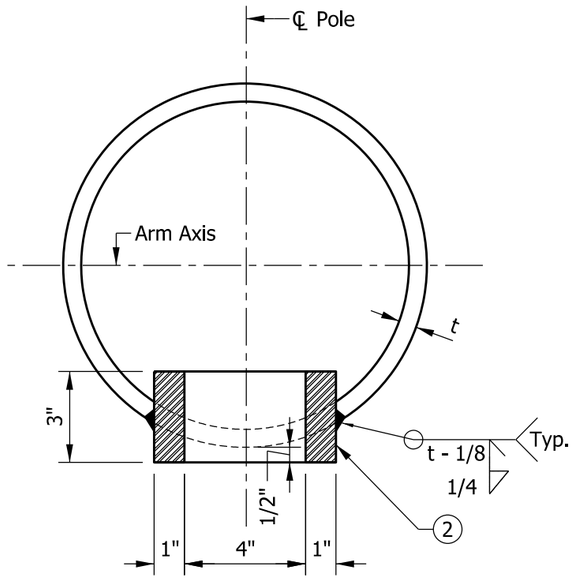
NOTES:

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

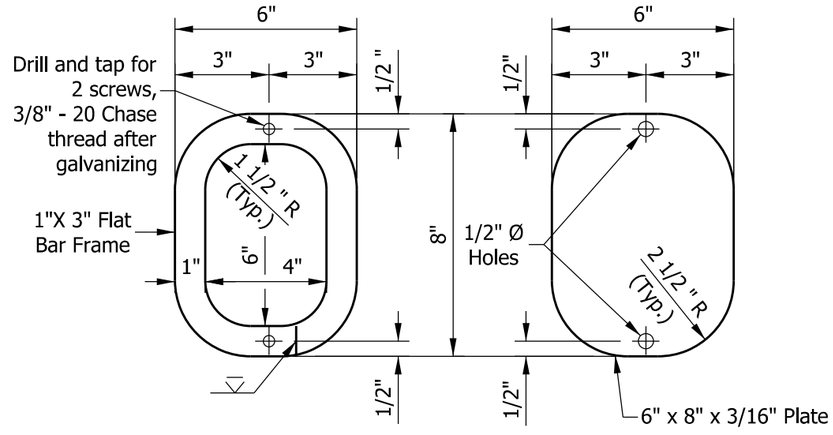
Manufacturer _____, Drawing/Order #_____
Contract #_____, Structure Type _____
Fabrication Date _____, Pole Mounting Height _____



PARTIAL ELEVATION
AT HANDHOLE A



HANDHOLE B
SECTION ACROSS POLE



FRAME DETAIL COVER

HANDHOLE B

INDIANA DEPARTMENT OF TRANSPORTATION

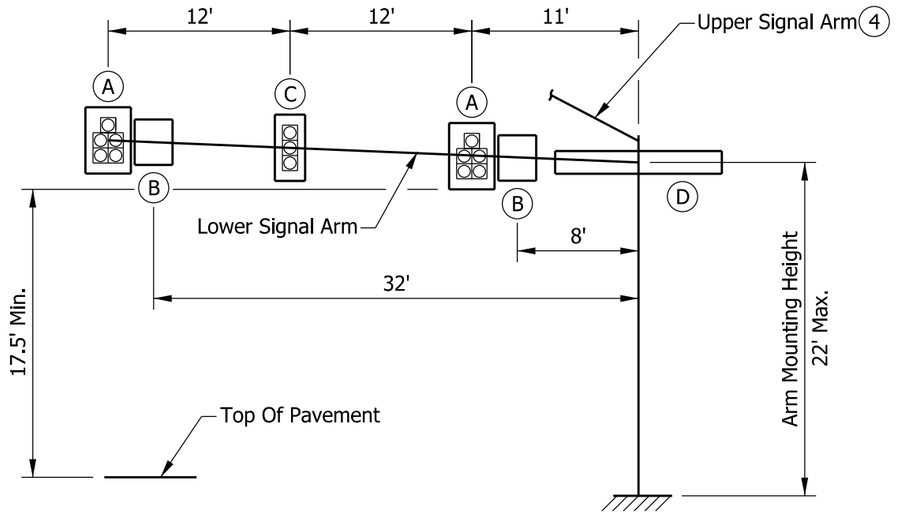
SIGNAL DUAL ARM CANTILEVERS
HANDHOLE AND I.D. TAG DETAILS

SEPTEMBER 2013

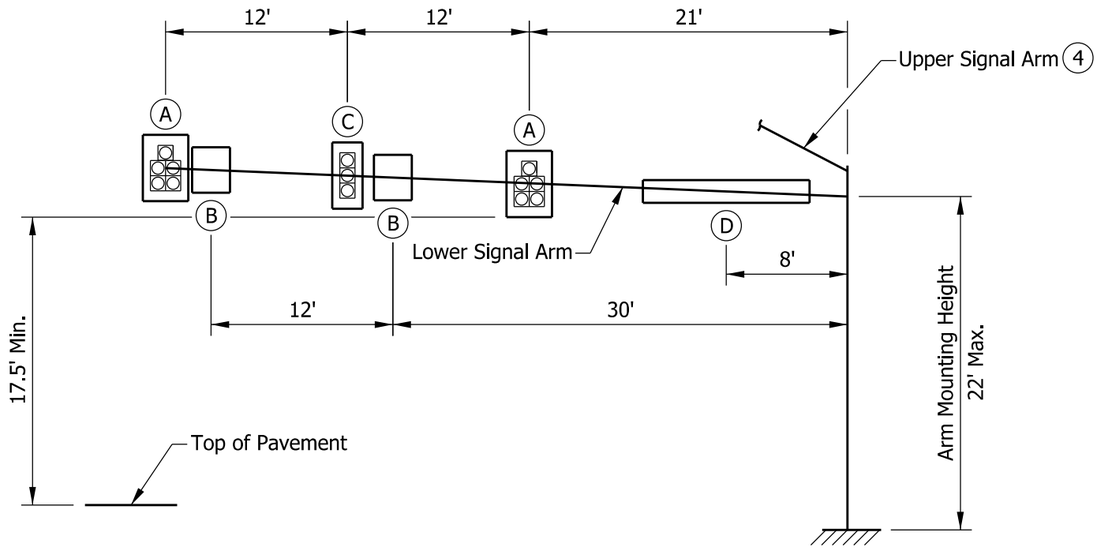
STANDARD DRAWING NO. E 805-SDAC-06

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



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)
(A)	12" - 5 section signal head with backplates	14.5	69
(B)	36" x 30" regulatory sign	7.5	19
(C)	12" - 3 section signal head with backplates	10.1	55
(D)	18" x 11'-0" street name sign	16.5	41

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL DUAL ARM CANTILEVERS LOADING DIAGRAMS

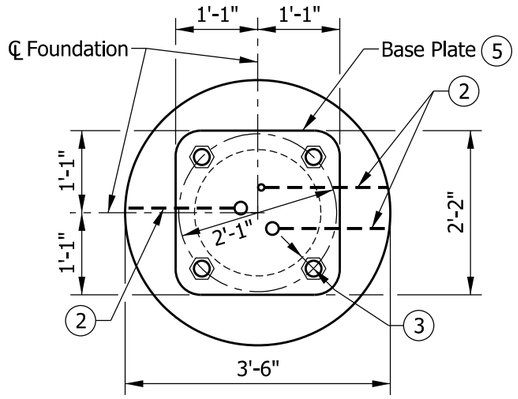
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-07

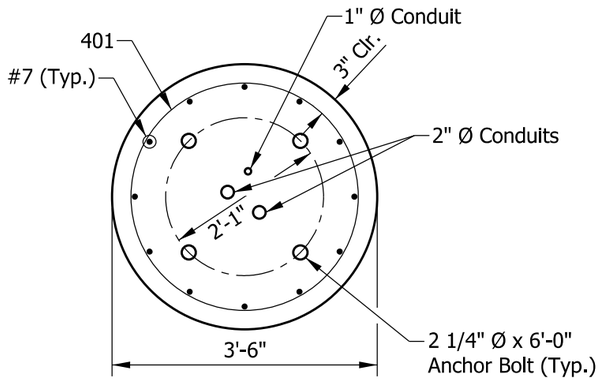
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

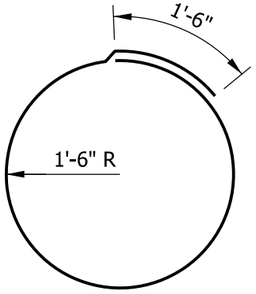
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



PLAN



SECTION F-F



401 X 11'-0"

NOTES:

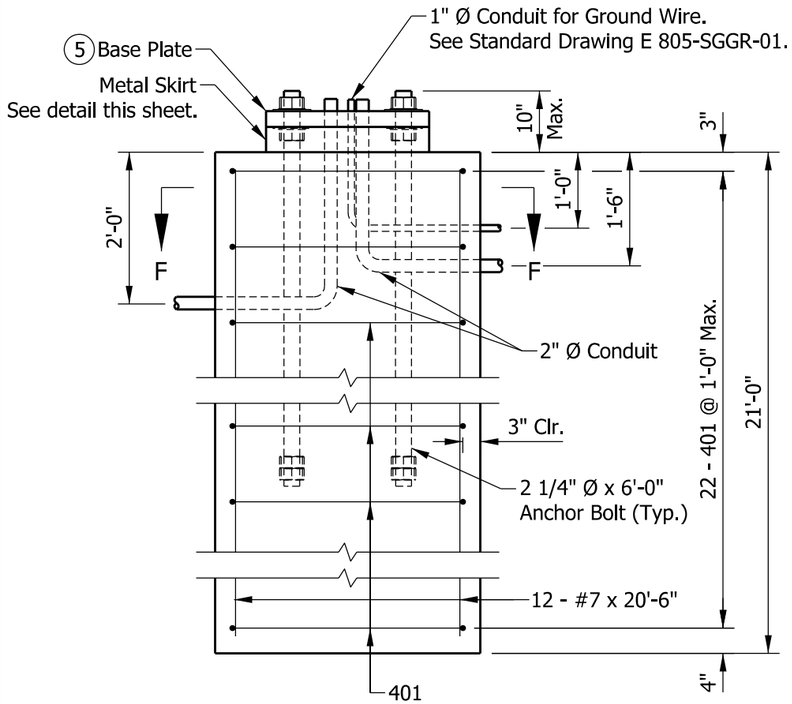
1. The Type E foundations are to be used for 35' dual arm structures and cohesive soil with minimum Q_u = 750 lb/ft or sand with minimum friction angle 30°.

(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.

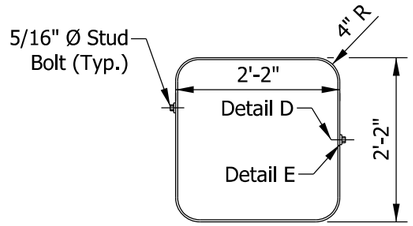
(3) 2 1/2" minimum clearance to weld at pole. Anchor bolt circle shall allow clearance for the anchor bolt washers. Cutting or trimming of the washers will not be allowed.

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

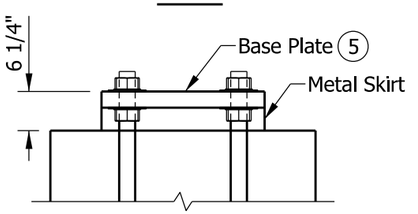
(5) See Standard Drawing E 805-SDAC-04 for base plate details.



DRILLED SHAFT
ELEVATION

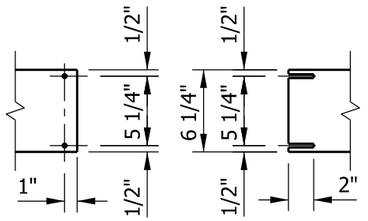


PLAN

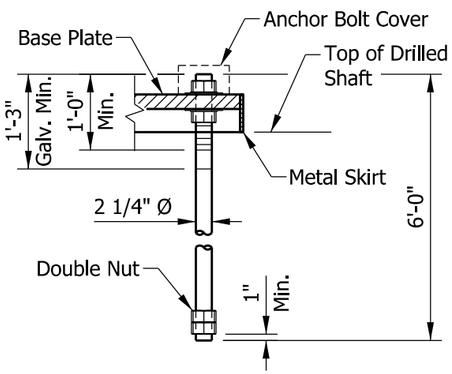


ELEVATION

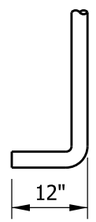
METAL SKIRT DETAIL



DETAIL D DETAIL E



ANCHOR BOLT DETAIL



ALTERNATE ANCHOR BOLT HOOK

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

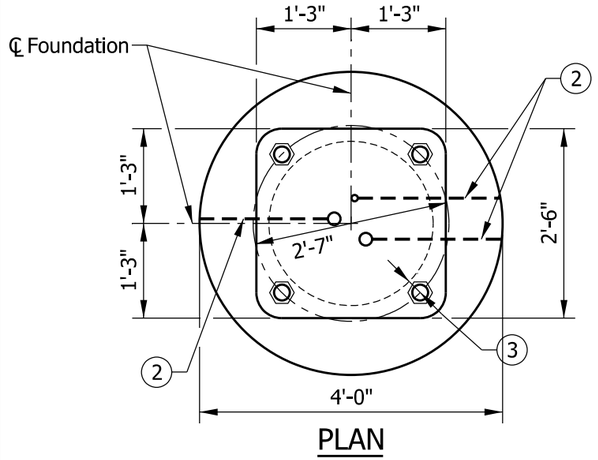
SIGNAL DUAL ARM CANTILEVERS
FOUNDATION, DRILLED SHAFT TYPE E
FOR DUAL ARMS 35' OR LESS
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-08

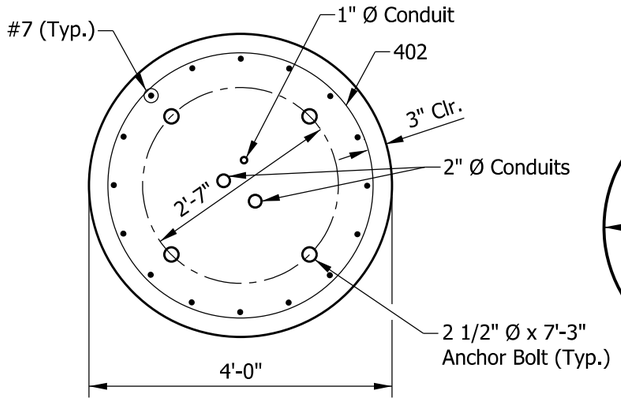
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

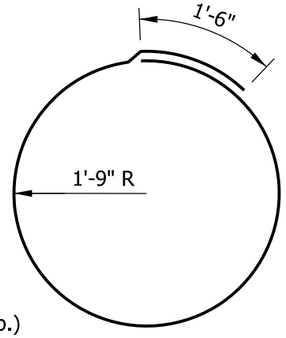
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



PLAN



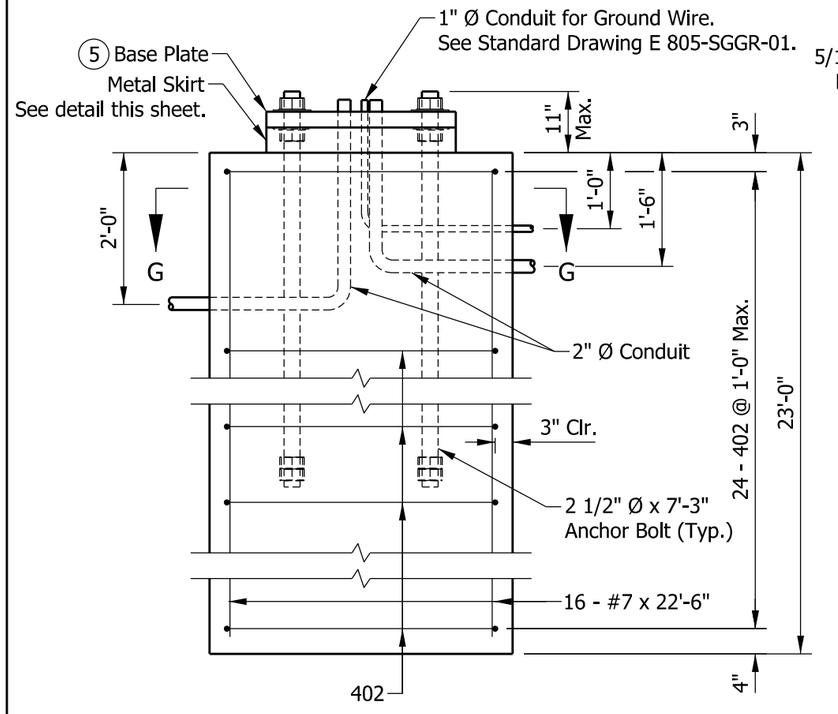
SECTION G-G



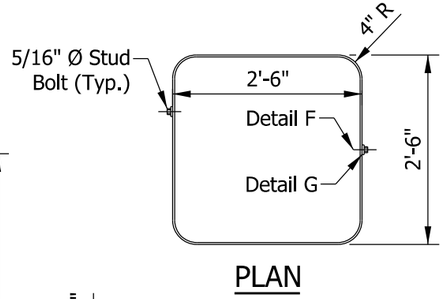
402 X 12'-6"

NOTES:

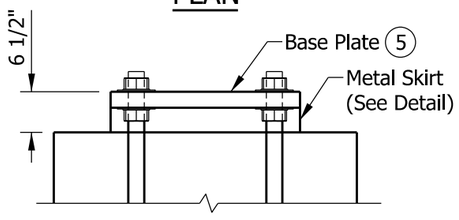
1. The Type E foundations are to be used for 35' dual arm structures and cohesive soil with minimum Q_u = 750 lb/ft or sand with minimum friction angle 30°.
2. A tooled line or other permanent marking shall be provided on the top of the foundation to indicate the direction of the conduits' exit ends.
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.



DRILLED SHAFT
ELEVATION

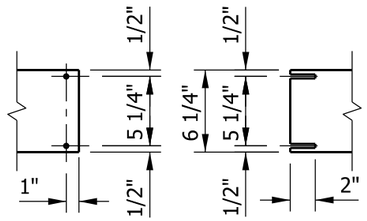


PLAN

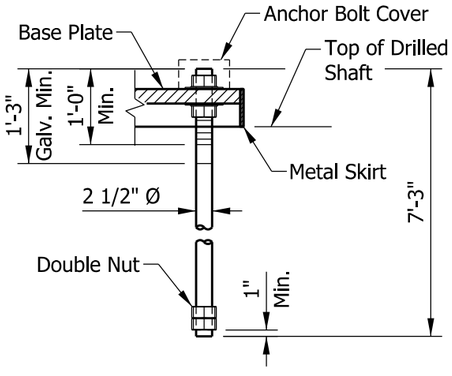


ELEVATION

METAL SKIRT DETAIL



DETAIL F DETAIL G



ANCHOR BOLT DETAIL

ALTERNATE ANCHOR BOLT HOOK

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

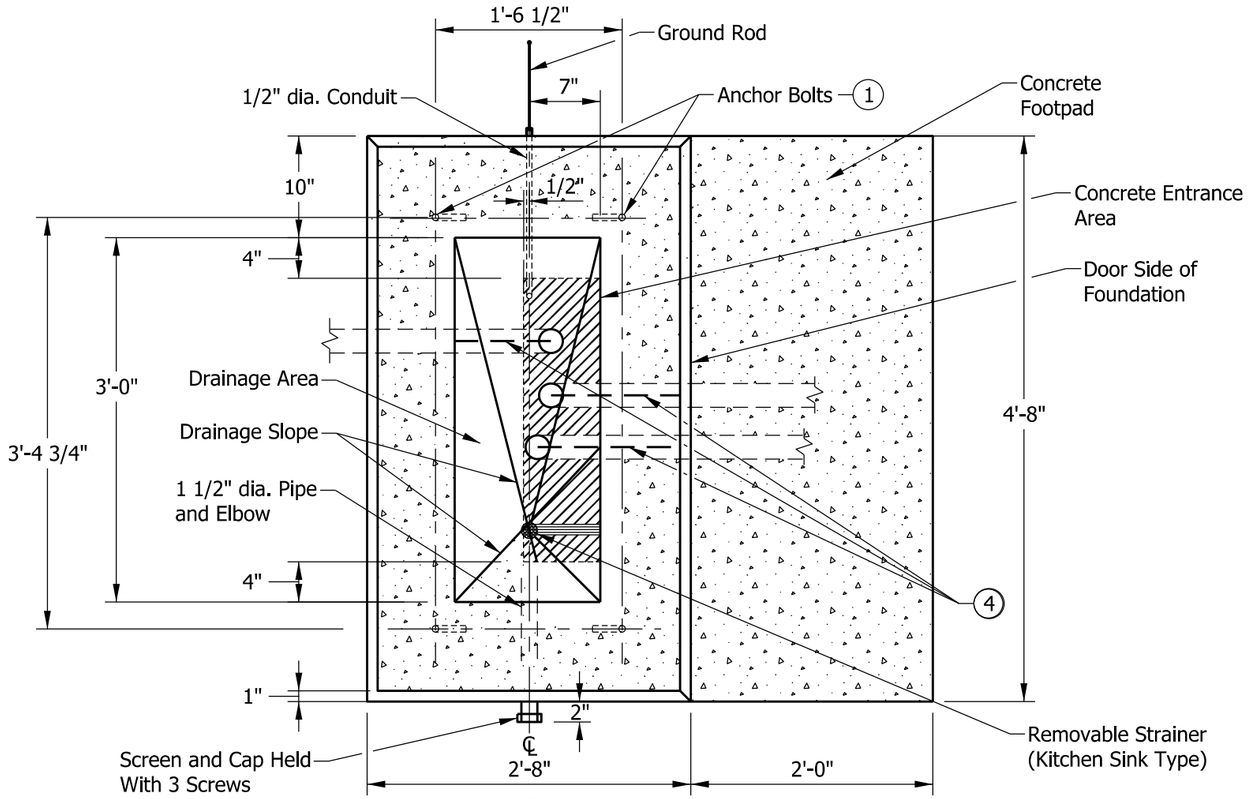
SIGNAL DUAL ARM CANTILEVERS
FOUNDATION, DRILLED SHAFT TYPE F
FOR DUAL ARMS GREATER THAN 35' TO 45'
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SDAC-09

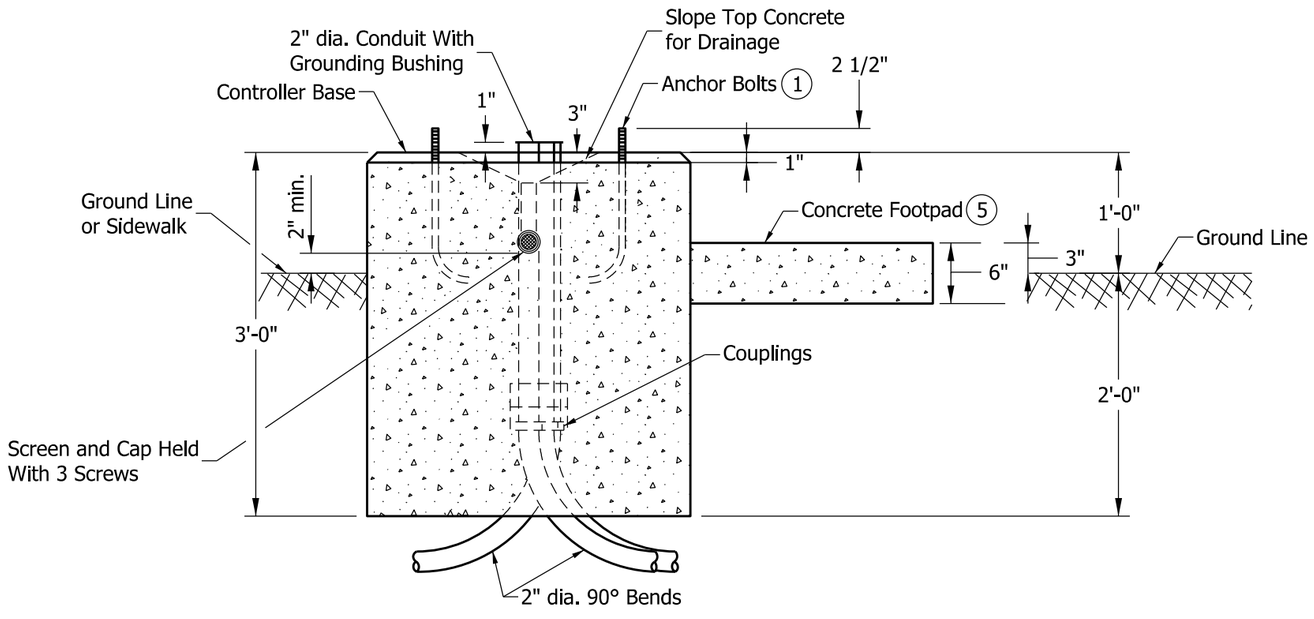
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



PLAN



ELEVATION

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

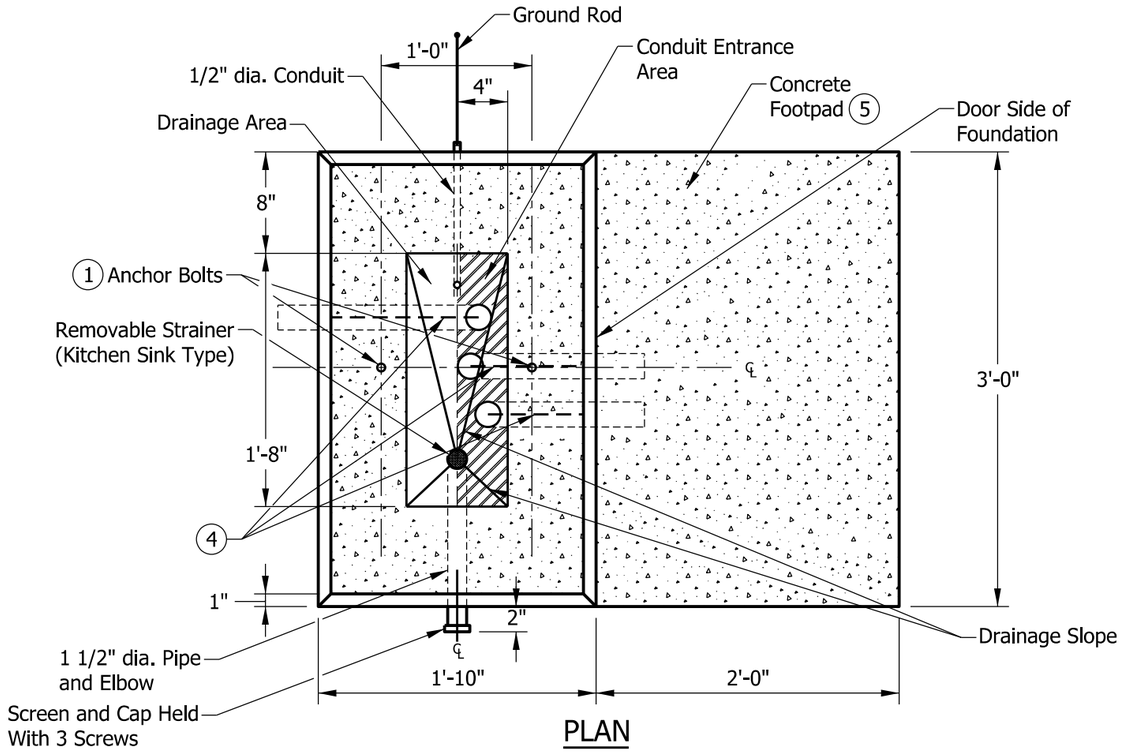
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-01

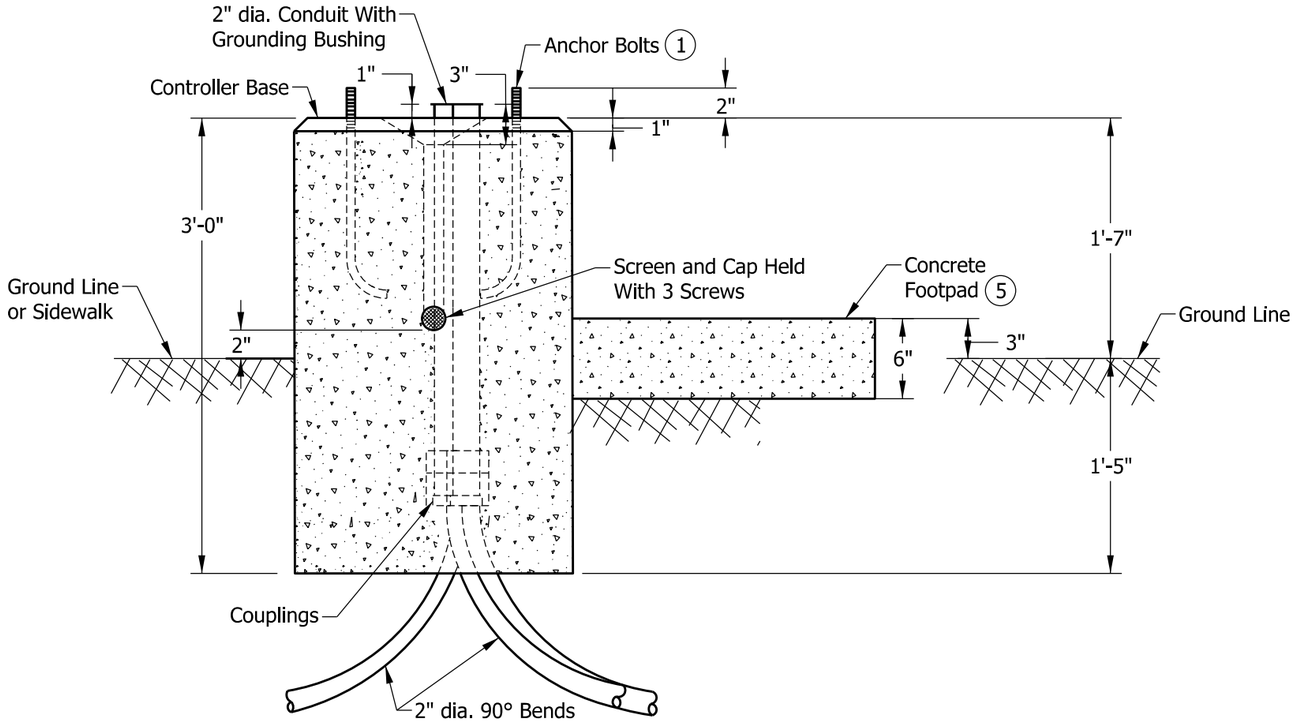
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



PLAN



ELEVATION

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

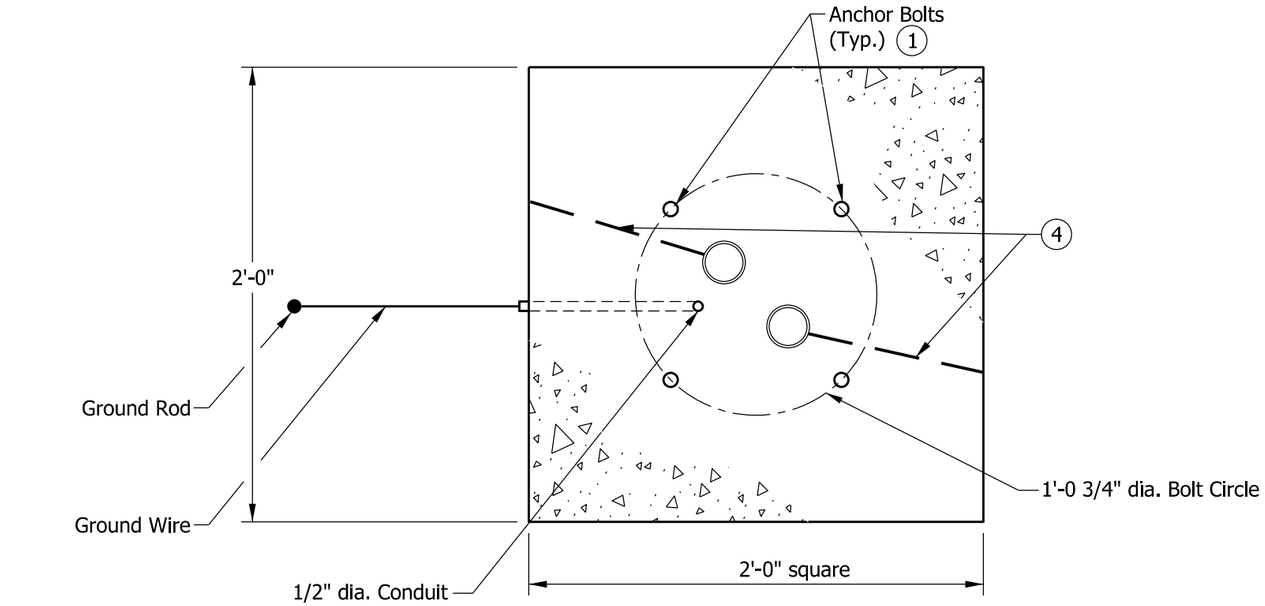
SIGNAL CONTROLLER CABINET FOUNDATION TYPE M

SEPTEMBER 2013

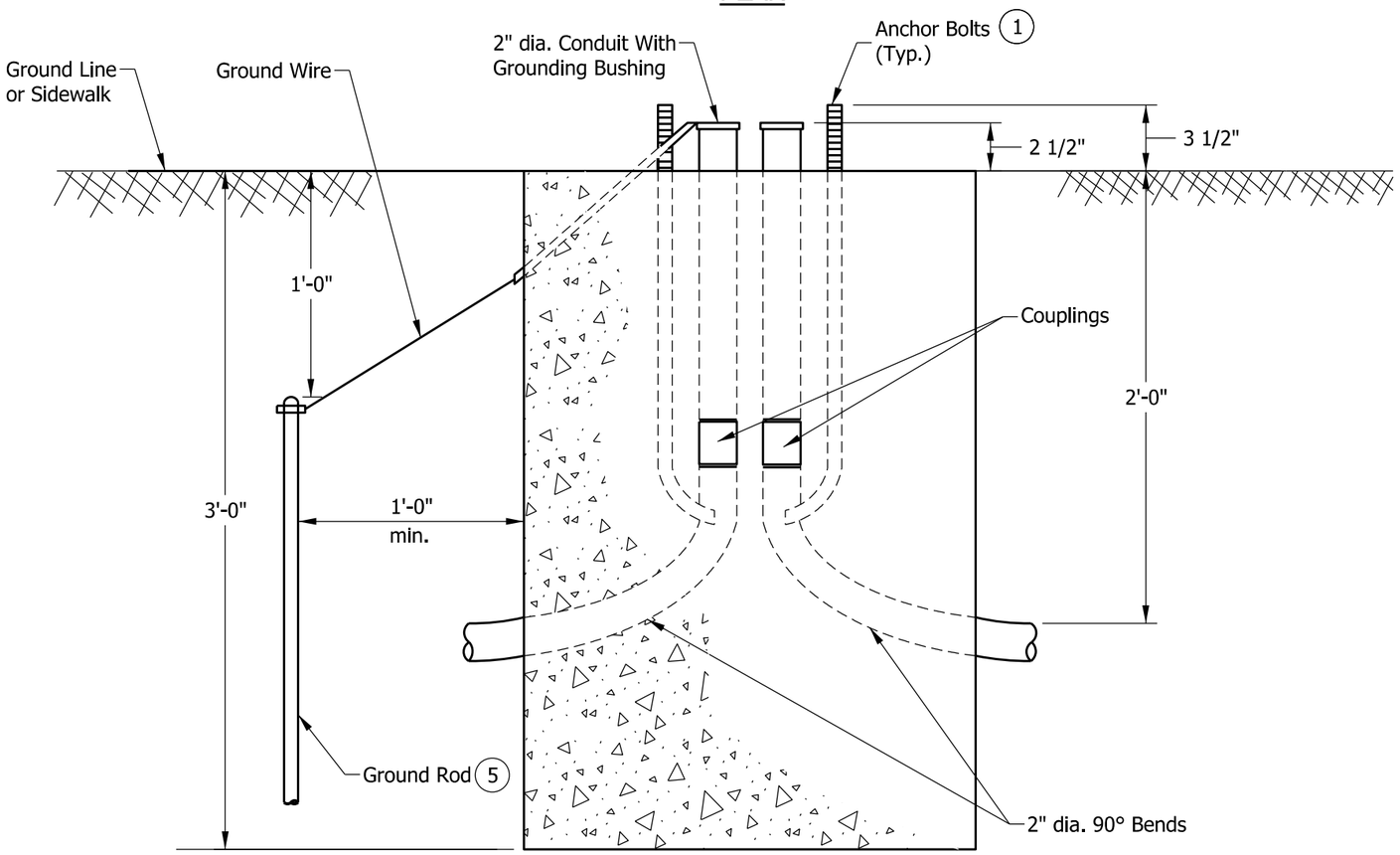
STANDARD DRAWING NO. E 805-SGCF-02

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

/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.
6. The signal pole foundation, 24 in. x 24 in. x 36 in. is also known as a type A foundation.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL POLE FOUNDATION,
24 IN. X 24 IN. X 36 IN.

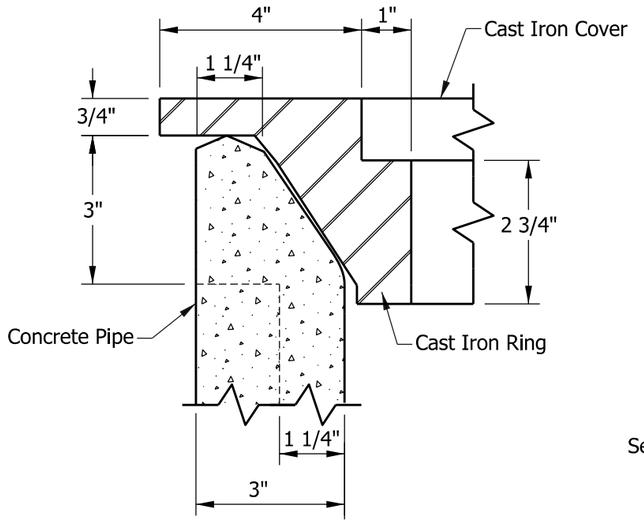
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-03

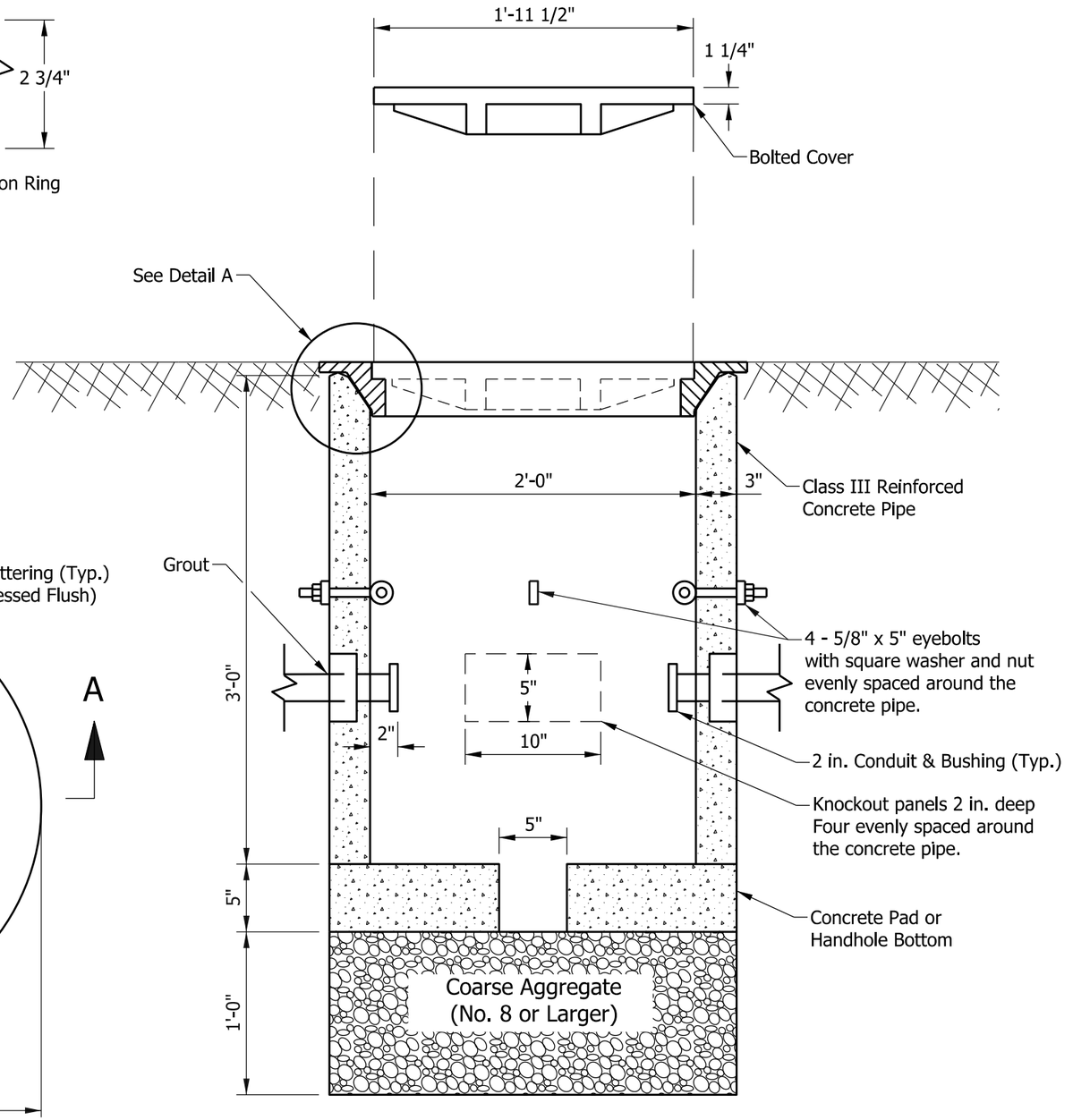
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza 02/27/13
DESIGN STANDARDS ENGINEER DATE

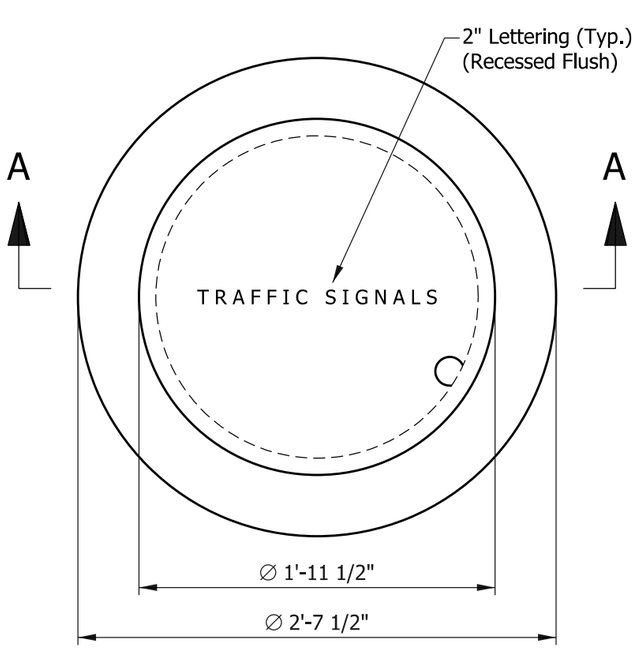
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



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

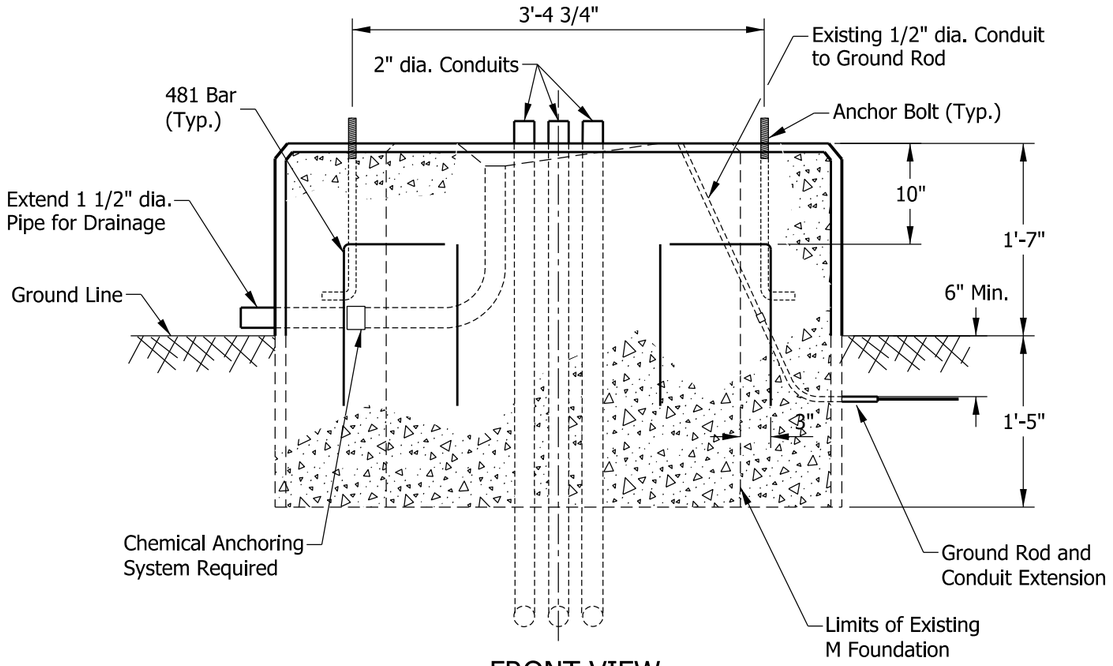
SIGNAL HANDHOLE, TYPE I CONCRETE

SEPTEMBER 2013

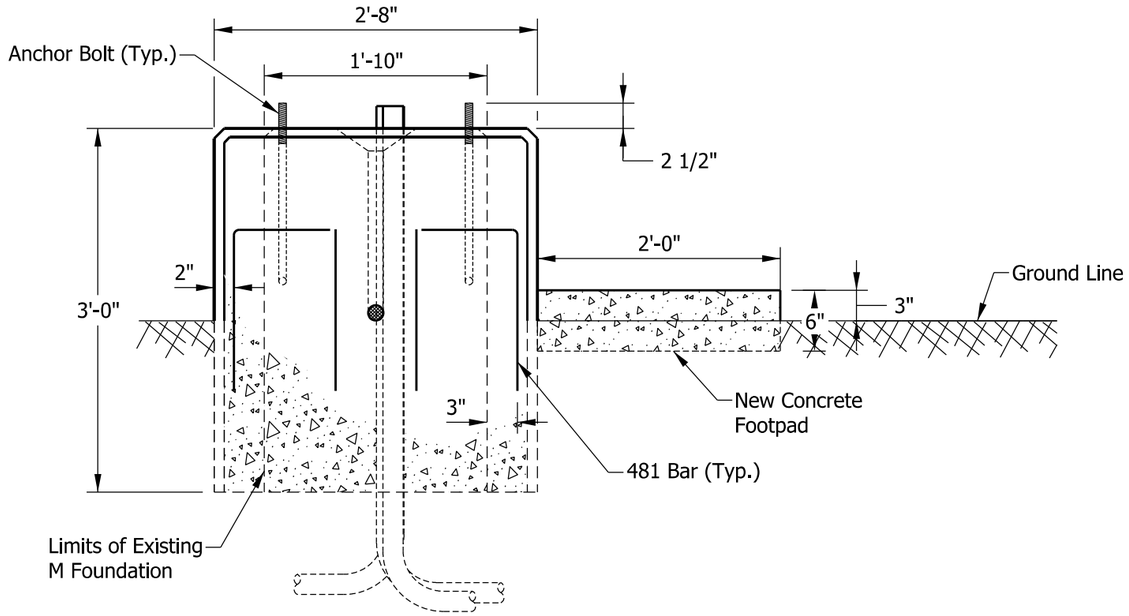
STANDARD DRAWING NO. E 805-SGCF-04

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

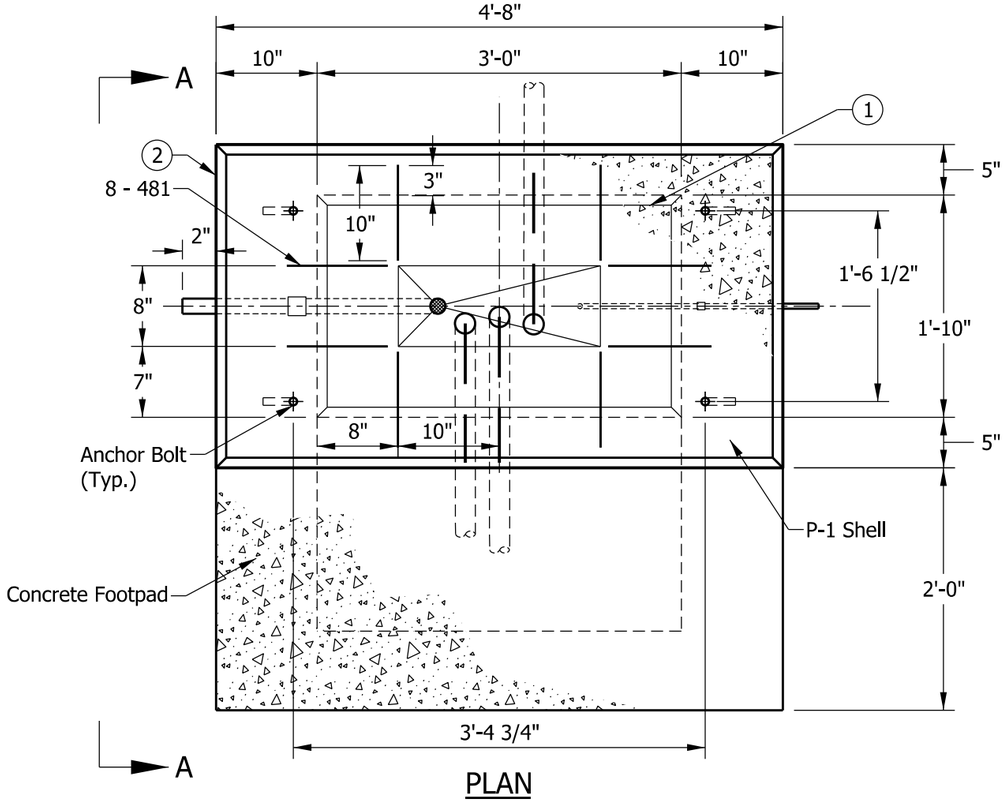
/s/ Alfredo B. Hanza	02/22/13
DESIGN STANDARDS ENGINEER	DATE
/s/ Mark A. Miller	03/27/13
CHIEF ENGINEER	DATE



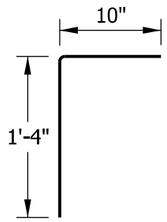
FRONT VIEW



SIDE VIEW A-A



PLAN



481 x 2'-2"

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

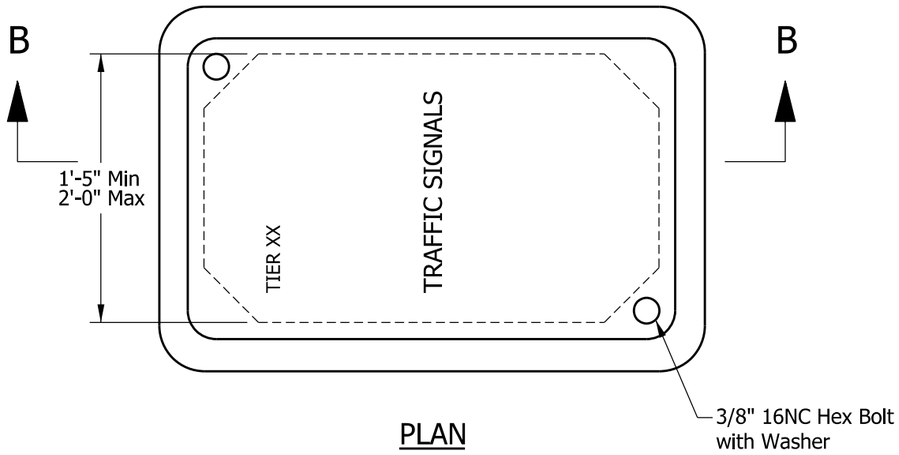
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGCF-05

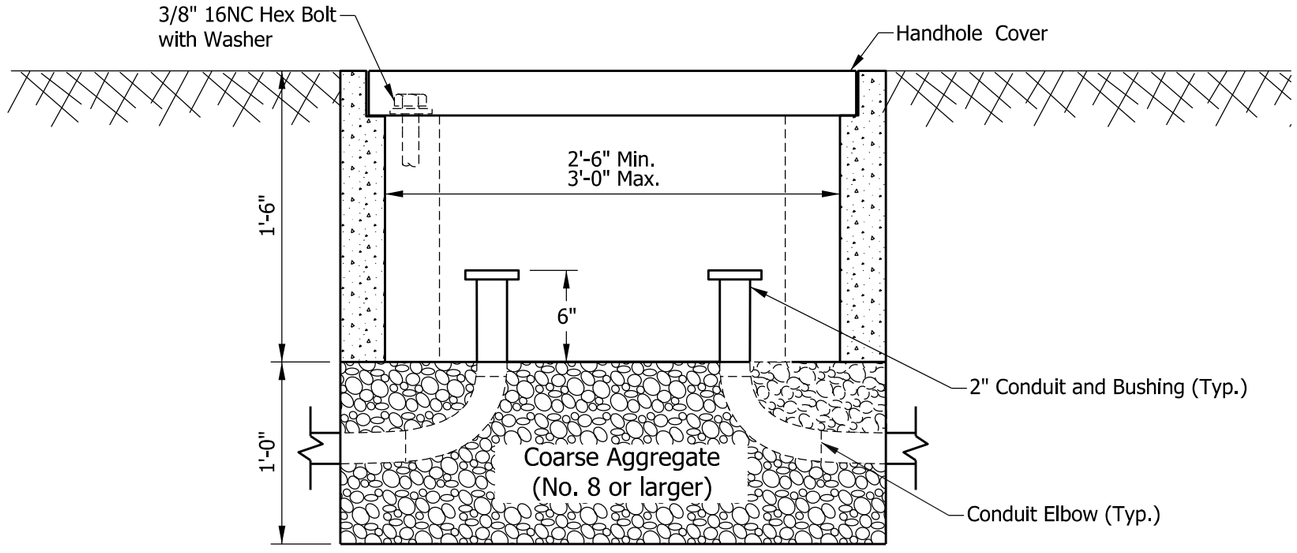
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Alfredo B. Hanza 02/28/13
DESIGN STANDARDS ENGINEER DATE

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



PLAN



SECTION B-B

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

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

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

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

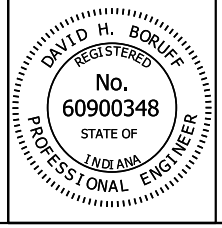
INDEX	
SHEET NO.	SUBJECT
1	Signal Index and General Notes
2	Signal Service & Controller Mounted on Wood Pole
3	Signal Service & Controller Mounted on Steel Pole
4	Signal Service On Wood Pole
5	Signal Indication Mounted on Steel Pole
6	Signal Indication Mounted on Wood Pole
7	Pedestal Mounted Signal Indications
8	Controller Cabinet Type G On Pedestal

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL INDEX AND
GENERAL NOTES

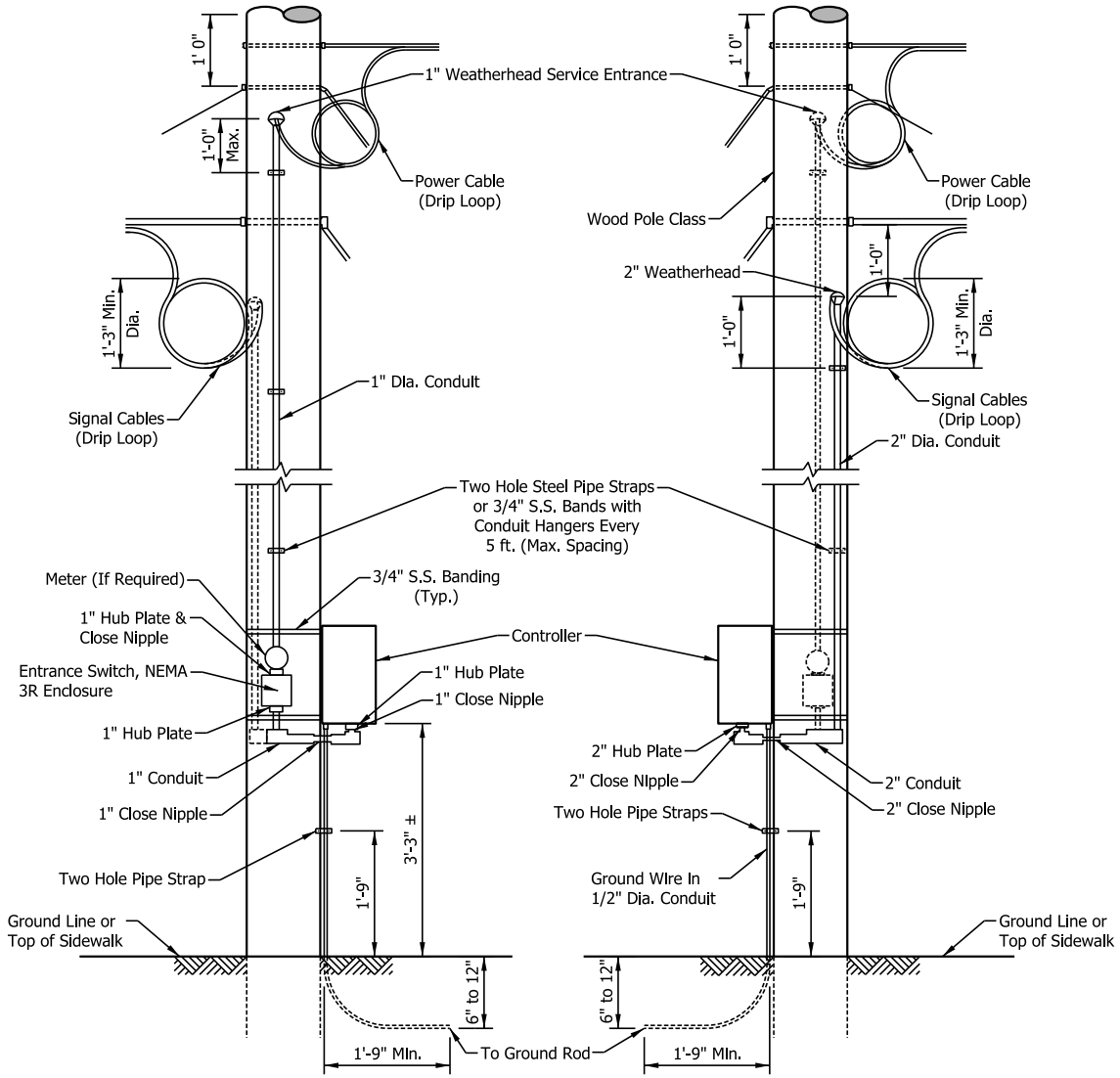
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGCO-01



/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE



INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL SERVICE & CONTROLLER MOUNTED ON WOOD POLE

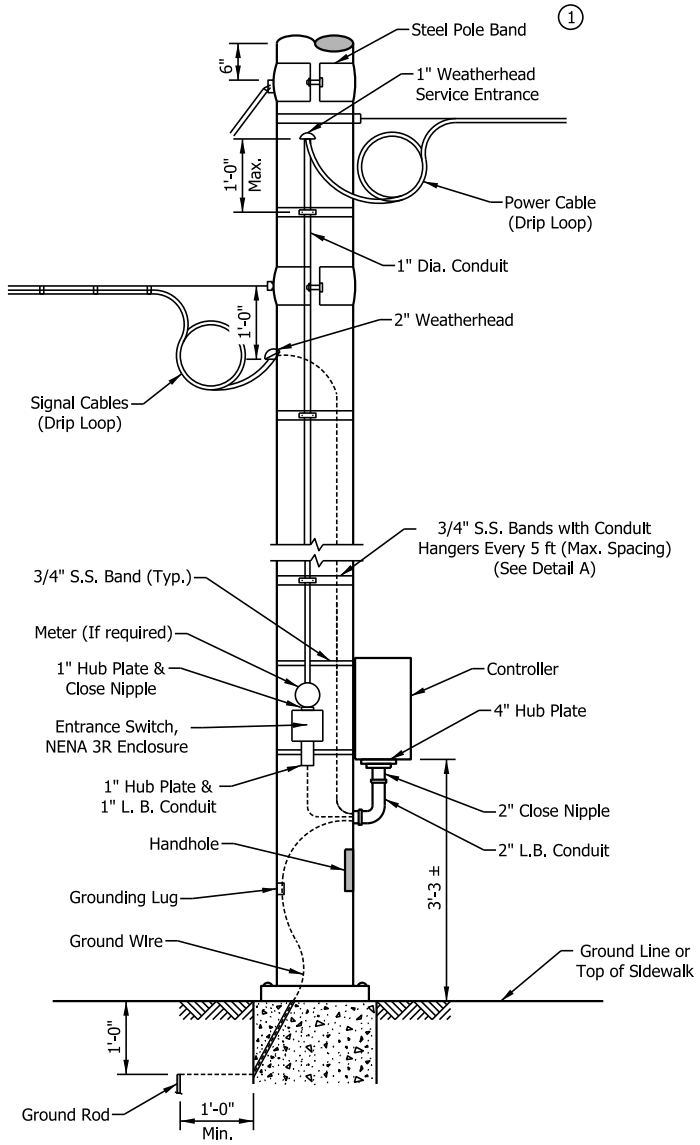
SEPTEMBER 2017

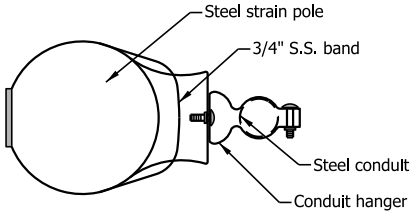
STANDARD DRAWING NO. E 805-SGCO-02

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE





DETAIL A

NOTES:

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

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL SERVICE & CONTROLLER
MOUNTED ON STEEL POLE

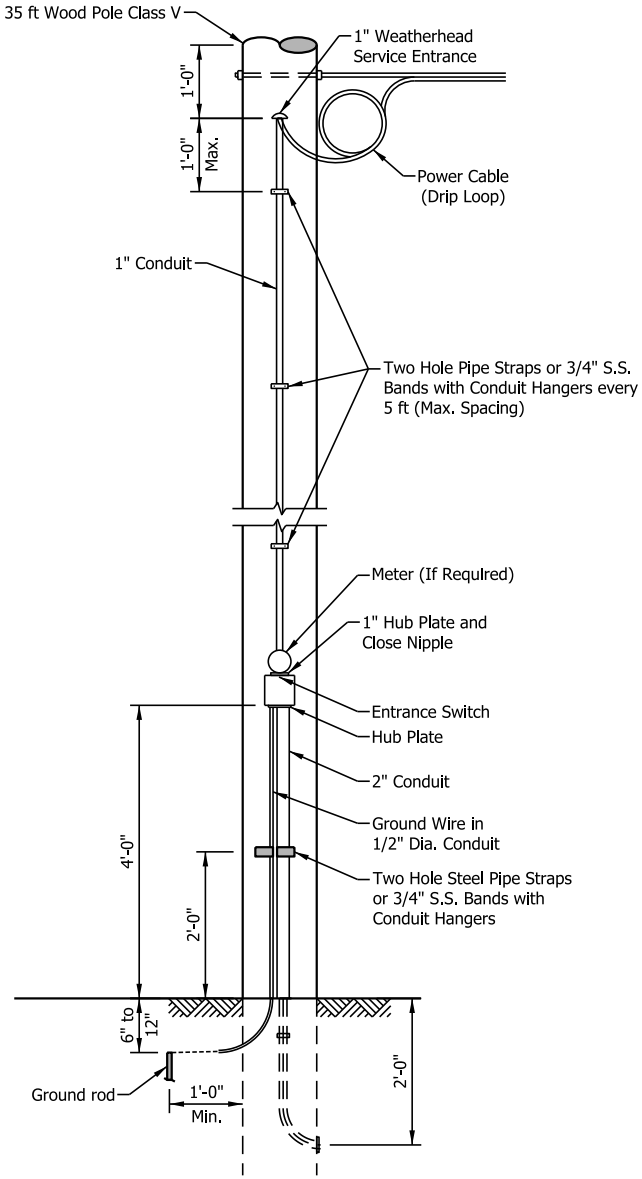
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGCO-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE



INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL SERVICE
ON WOOD POLE

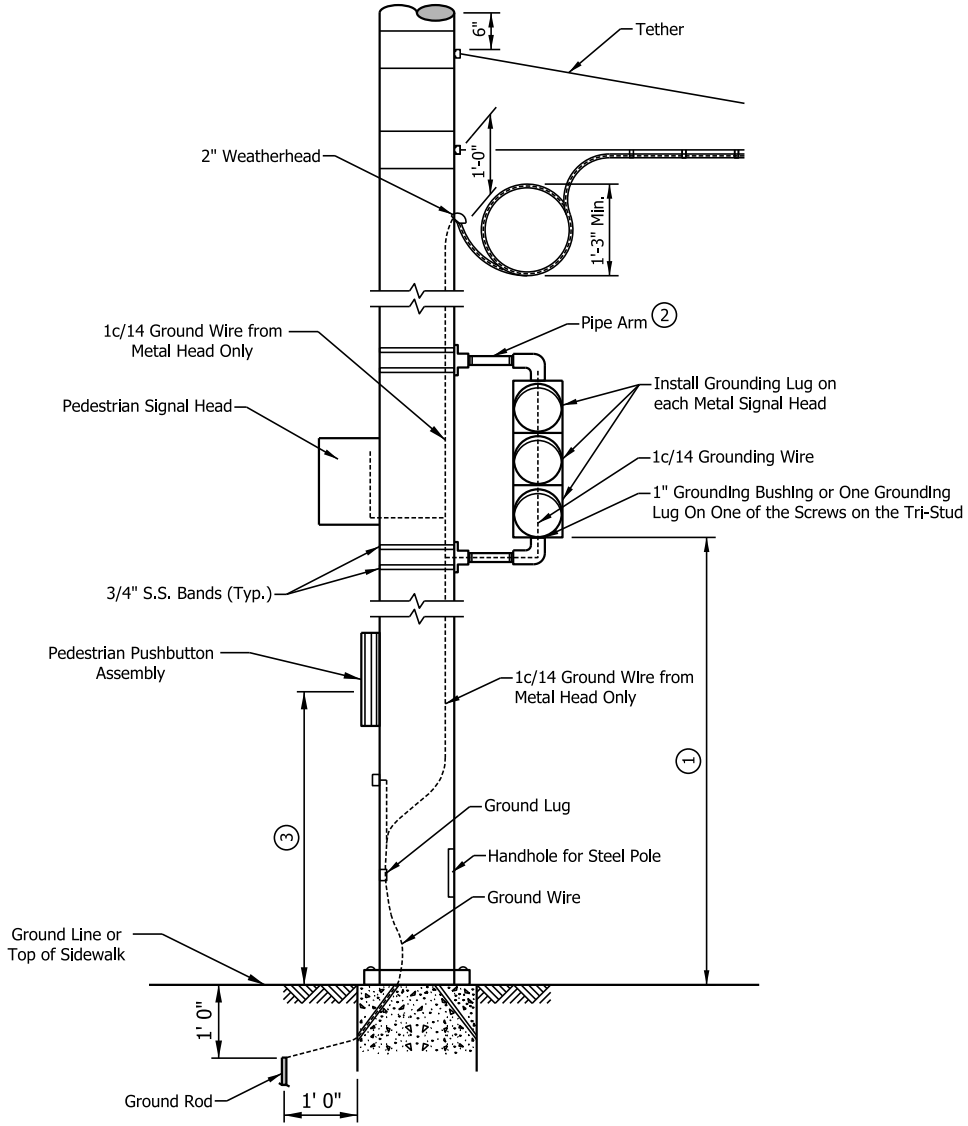
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGCO-04

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE



NOTES:

(1) This distance shall be 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.

(3) See Standard Drawing E 805-PPBA-01 for pedestrian pushbutton assembly mounting height and unobstructed side reach.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL INDICATION MOUNTED ON STEEL POLE

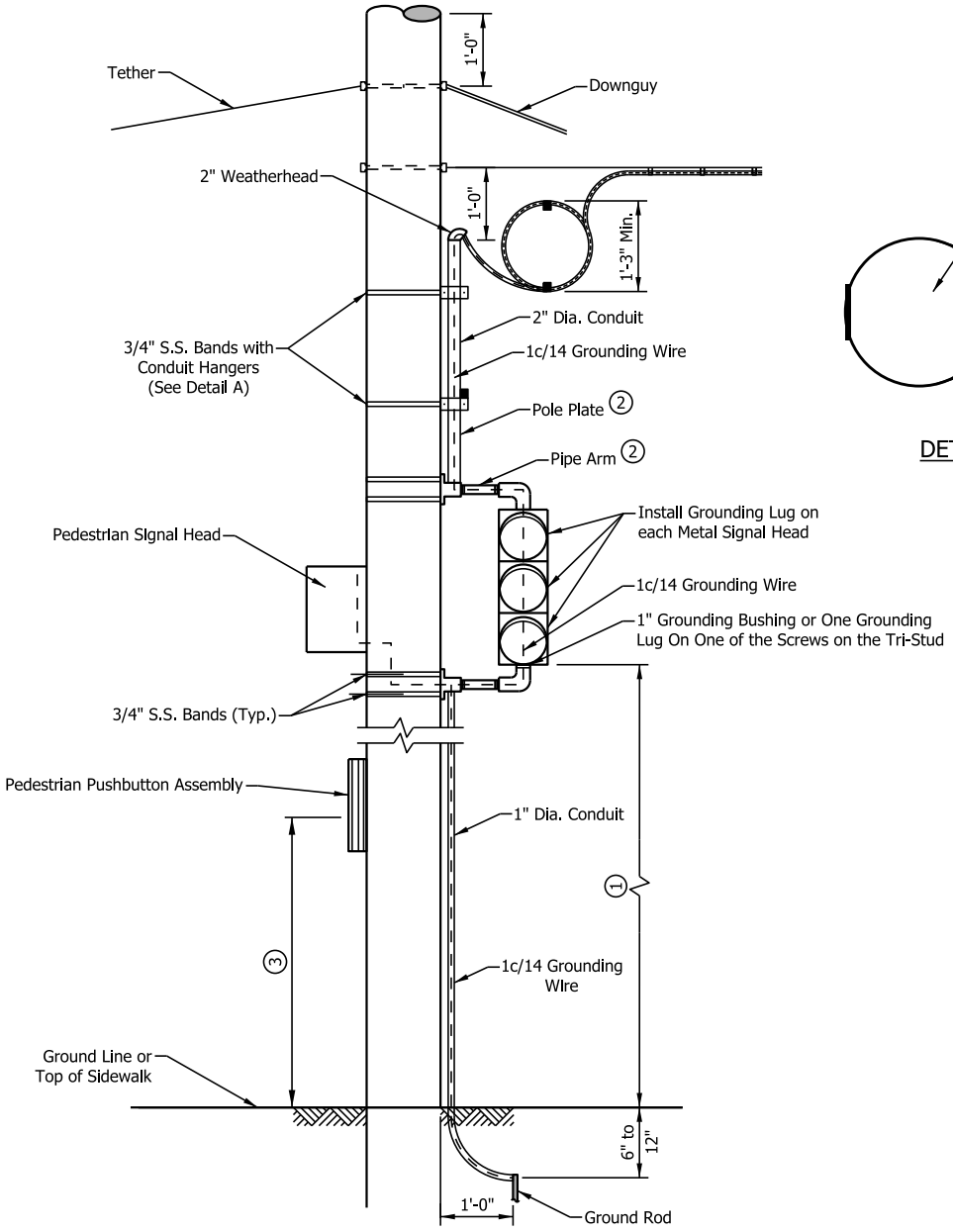
SEPTEMBER 2017

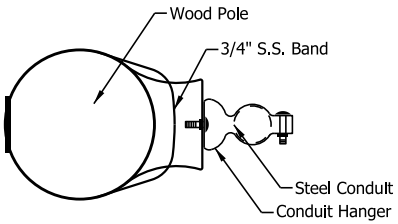
STANDARD DRAWING NO. E 805-SGCO-05

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE





DETAIL A

NOTES:

(1) This distance shall be 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.

(3) See Standard Drawing E 805-PPBA-01 for pedestrian pushbutton assembly mounting height and unobstructed side reach.

INDIANA DEPARTMENT OF TRANSPORTATION

SIGNAL INDCATION MOUNTED
ON WOOD POLES

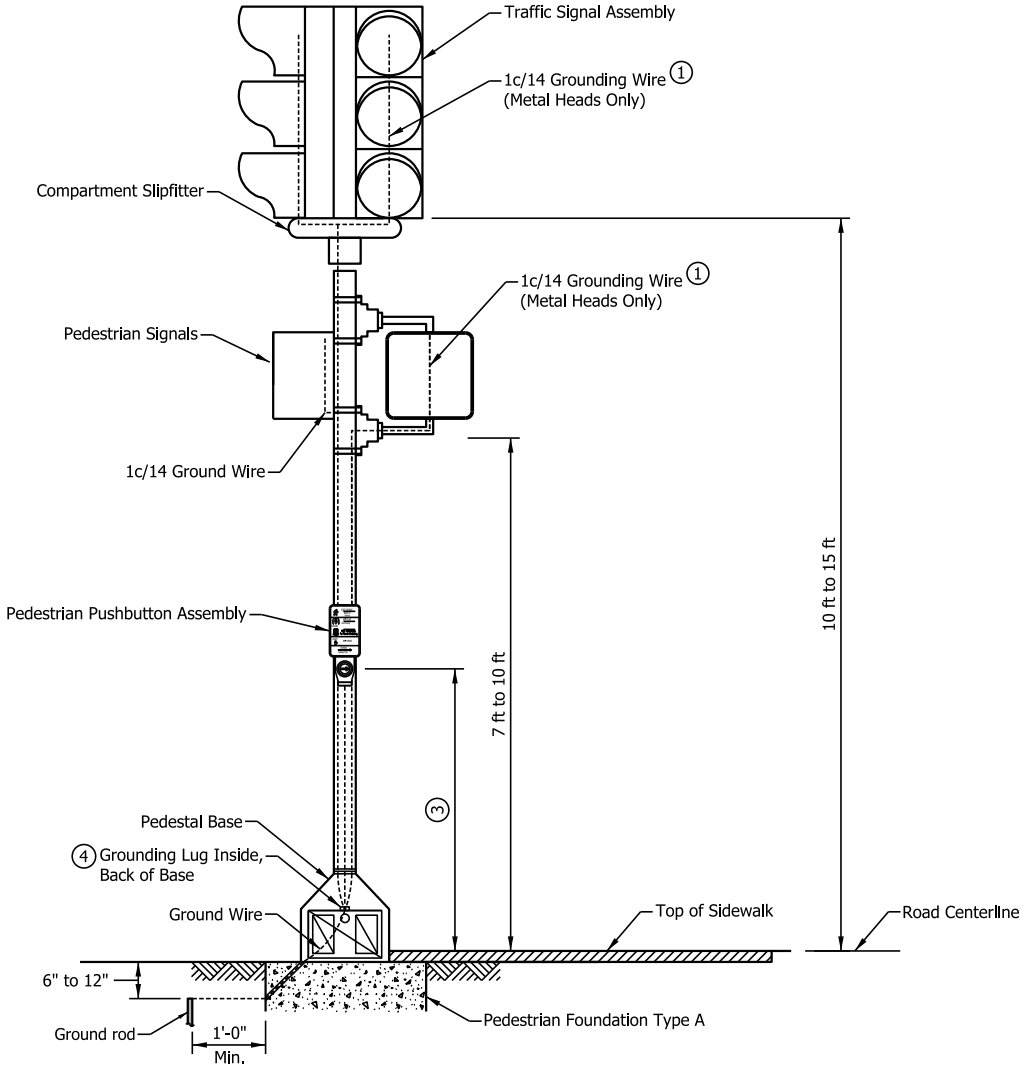
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGCO-06

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE



NOTES:

(1) On metal signal heads grounding wire shall connect each signal head and the bottom grounding bushing of the assembly to the grounding lug.

2. Single conductor (hookup) shall be used from slipfitter terminal block to signal indications.

(3) See Standard Drawing E 805-PPBA-01 for pedestrian pushbutton assembly mounting height and unobstructed side reach.

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

INDIANA DEPARTMENT OF TRANSPORTATION

PEDESTAL MOUNTED
SIGNAL INDICATIONS

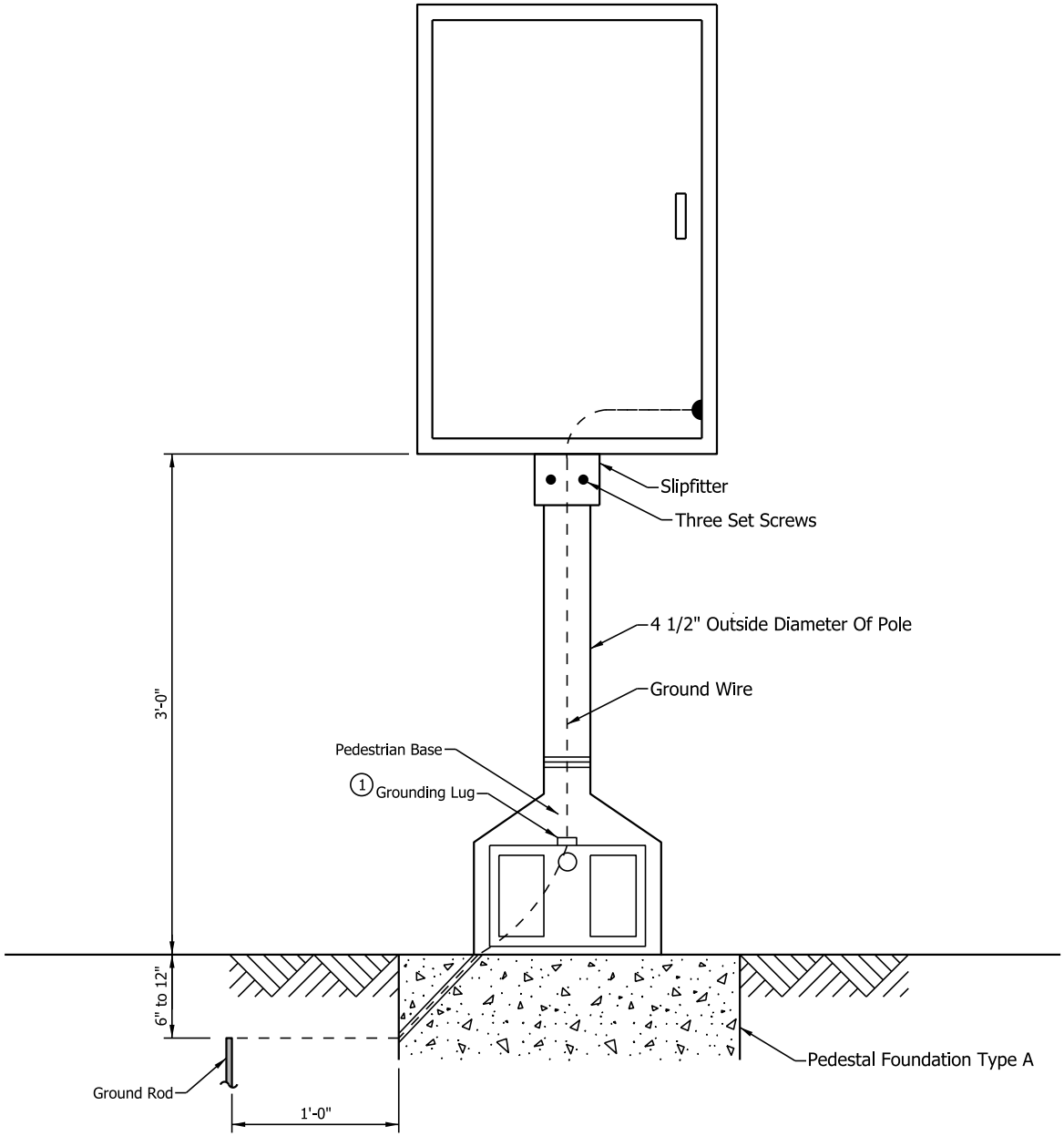
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGCO-07

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE



NOTES:

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

INDIANA DEPARTMENT OF TRANSPORTATION

CONTROLLER CABINET
TYPE G ON PEDESTAL

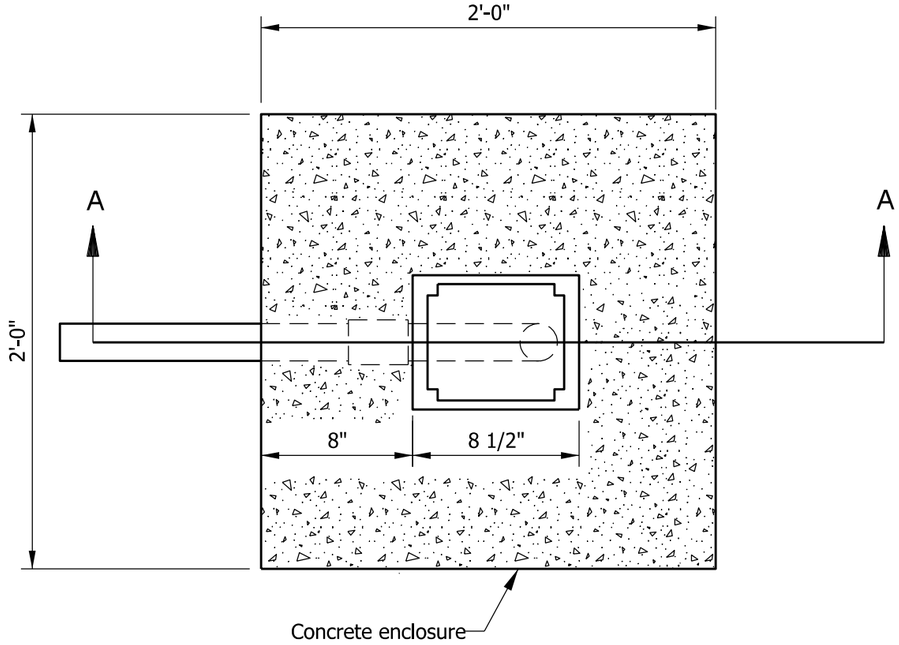
SEPTEMBER 2017

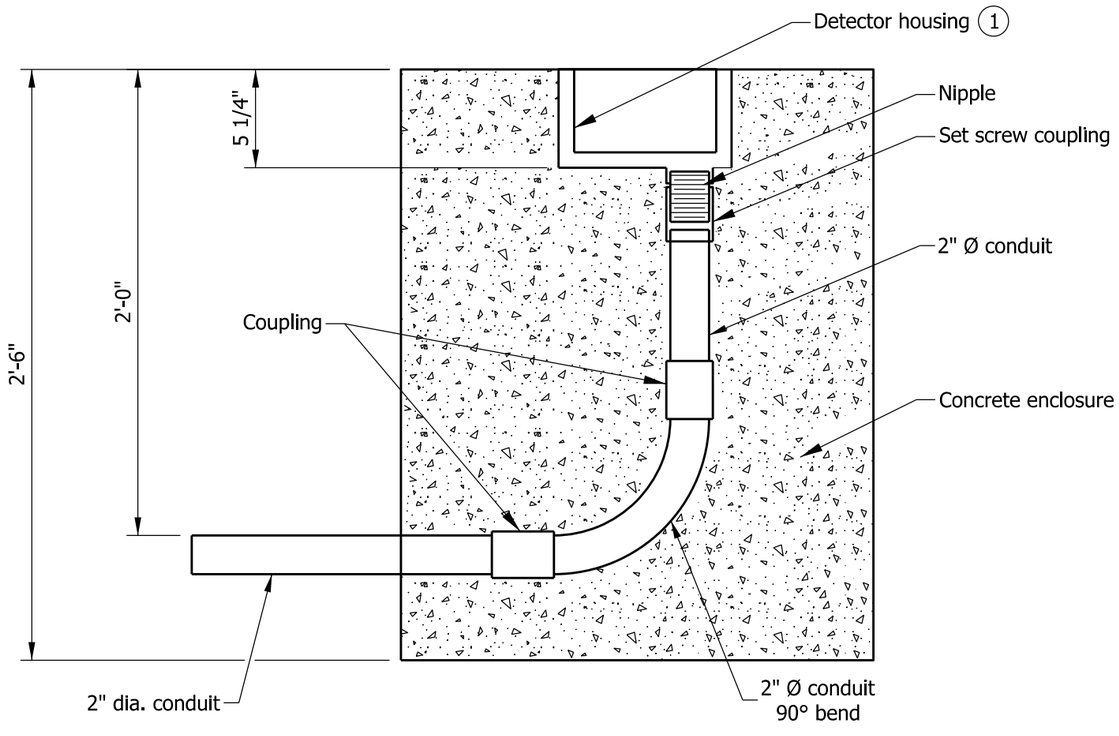
STANDARD DRAWING NO. E 805-SGCO-08

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 10/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 11/02/16
CHIEF ENGINEER DATE

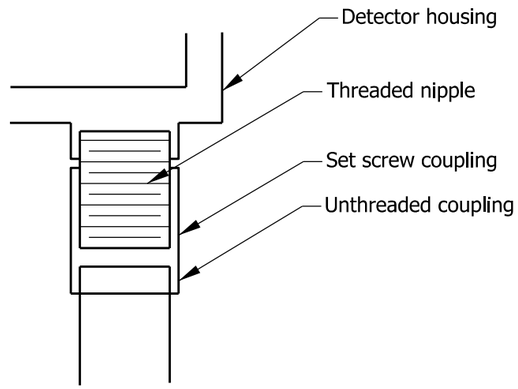




SECTION A-A

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

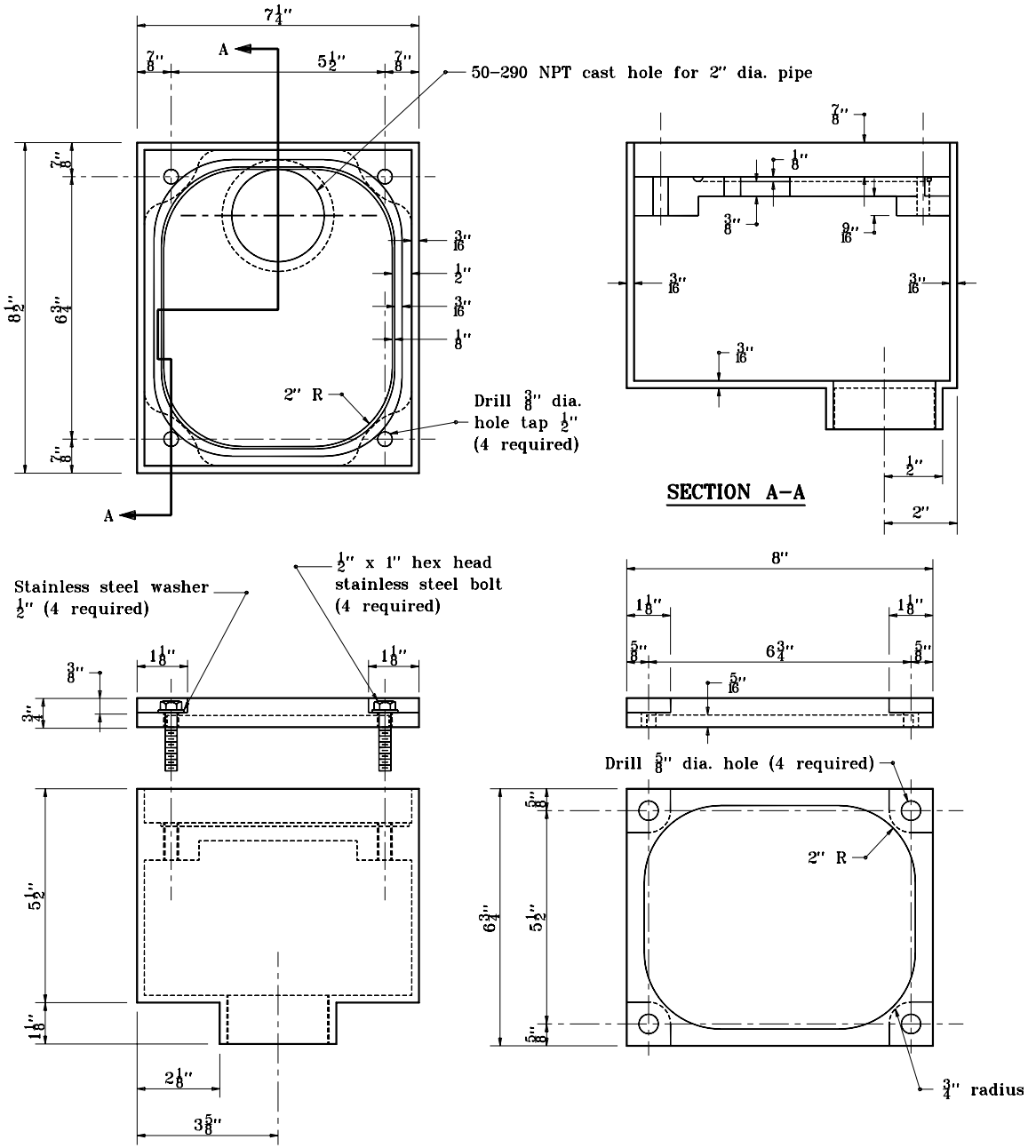
SEPTEMBER 2012

STANDARD DRAWING NO. E 805-SGDH-01

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

/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

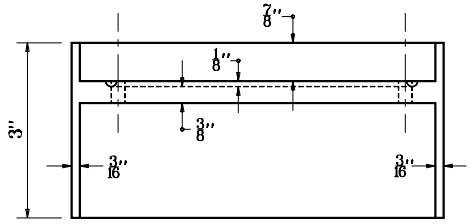
MAY 1998

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

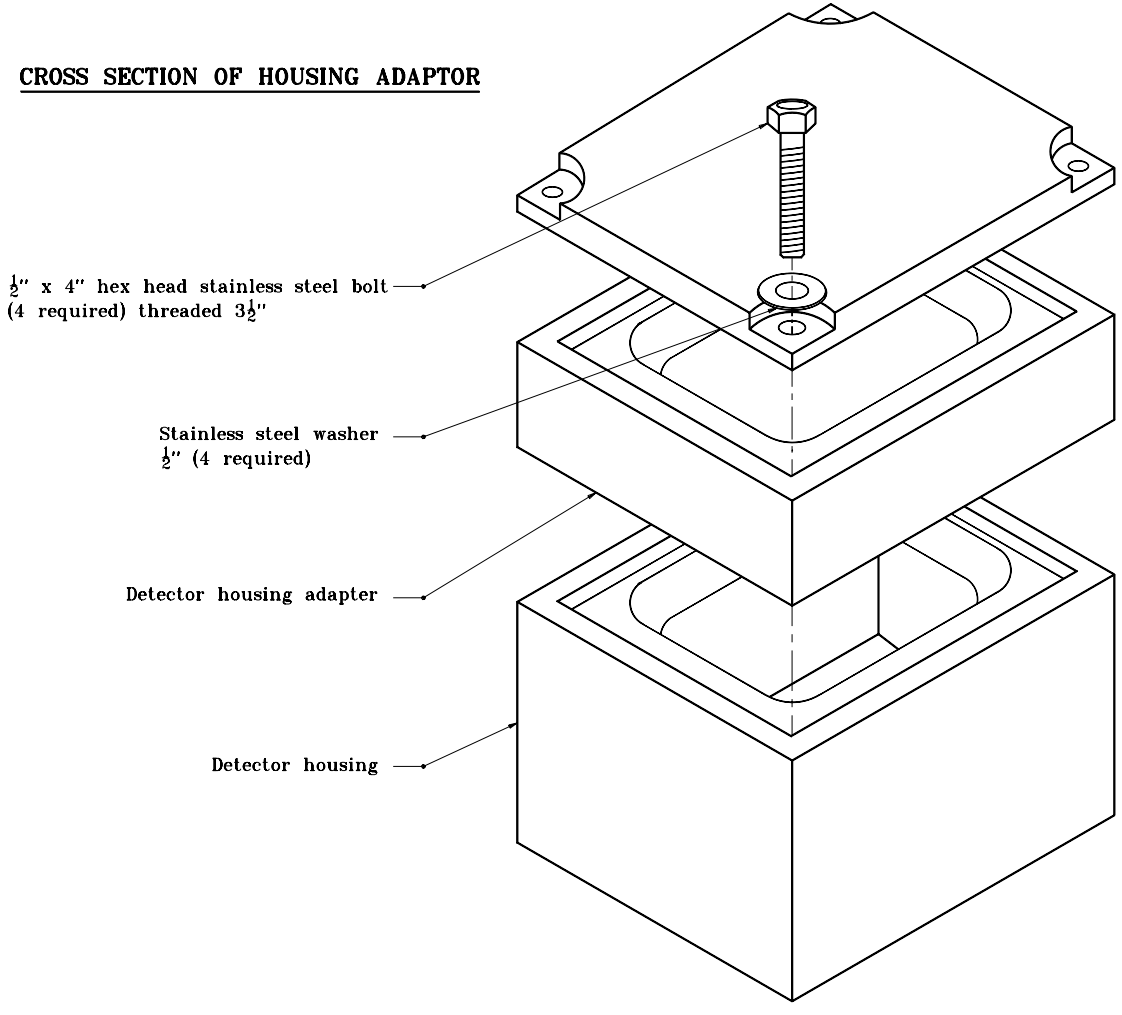
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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	5-01-98



CROSS SECTION OF HOUSING ADAPTOR



INDIANA DEPARTMENT OF TRANSPORTATION

DETAILS OF DETECTOR HOUSING ADAPTER

MARCH 1995

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

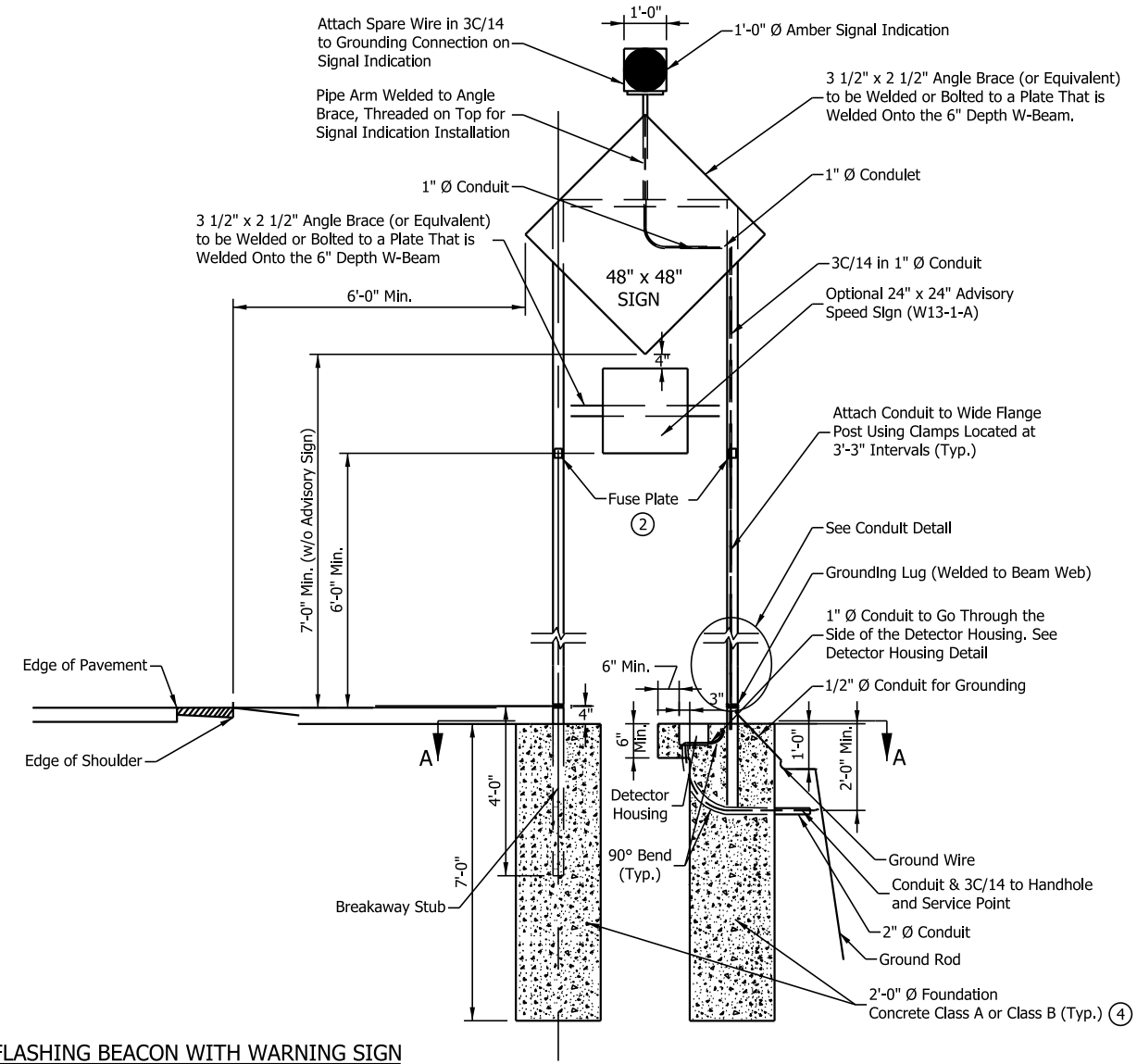
DESIGN STANDARDS ENGINEER

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

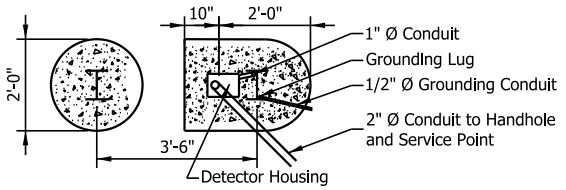
ORIGINALLY APPROVED 3-01-95



FLASHING BEACON WITH WARNING SIGN ON W 6 x 9 BEAM

NOTES:

1. See Standard Drawing E 802-SNGP-03 through -05 for breakaway details and dimensions. Use beam size W 6 x 9.
2. The fuse plate shall be 6 in. below the lowest fastener of the sign. Fuse plate shall be used on both the front and back sides.
3. See Standard Drawing E 805-SGFB-02 for conduit and detector housing details.
4. See Standard Drawing E 802-SNGP-16 for foundation details.



SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON WITH WARNING SIGN

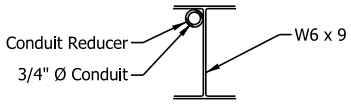
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGFB-01

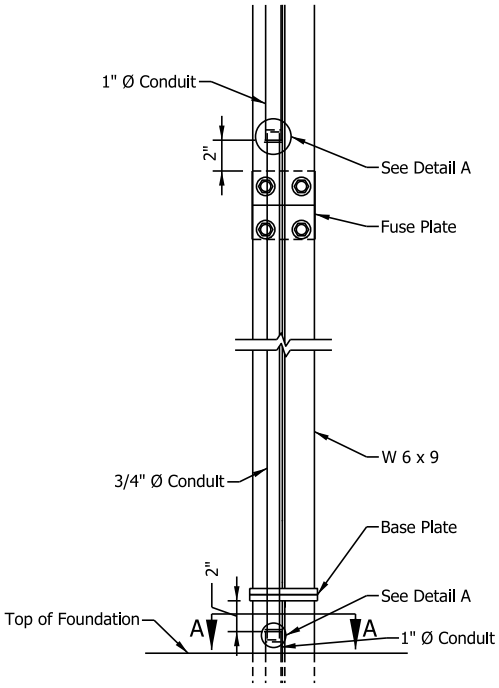
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/15/17
DESIGN STANDARDS ENGINEER DATE

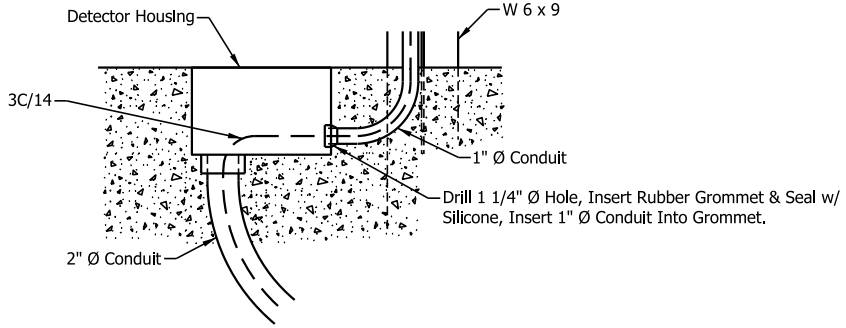
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



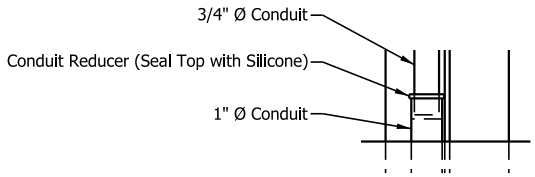
SECTION A-A



CONDUIT DETAIL



DETECTOR HOUSING DETAIL



DETAIL A
INVERT FOR TOP CONDUIT JOINT

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON WITH WARNING SIGN DETAILS

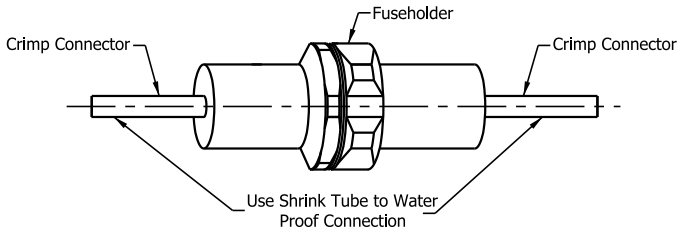
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGFB-02

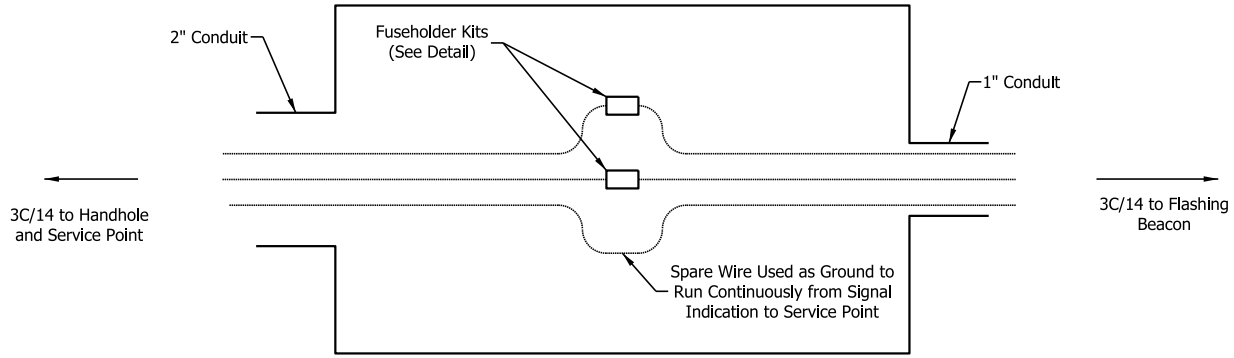
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/15/17
DESIGN STANDARDS ENGINEER DATE

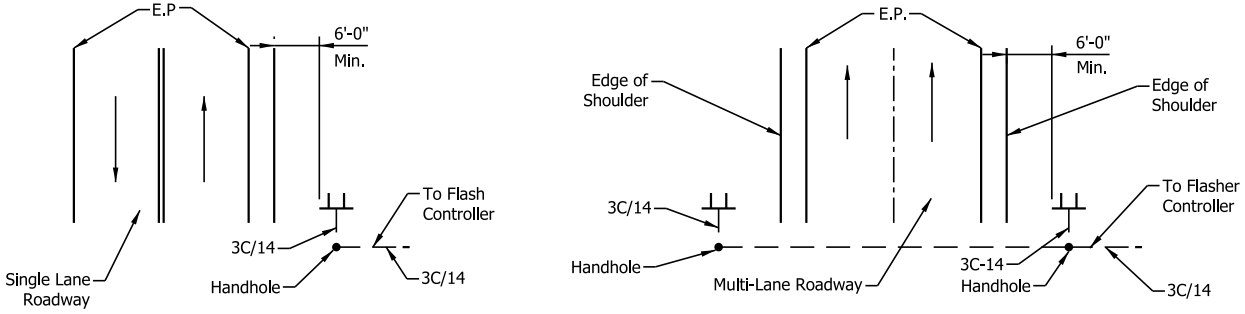
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



FUSEHOLDER KIT
TO BE USED IN DETECTOR HOUSING



DETECTOR HOUSING CONNECTIONS DETAIL



TYPICAL FLASHING BEACON CONFIGURATION

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON WITH
WARNING SIGN DETAILS

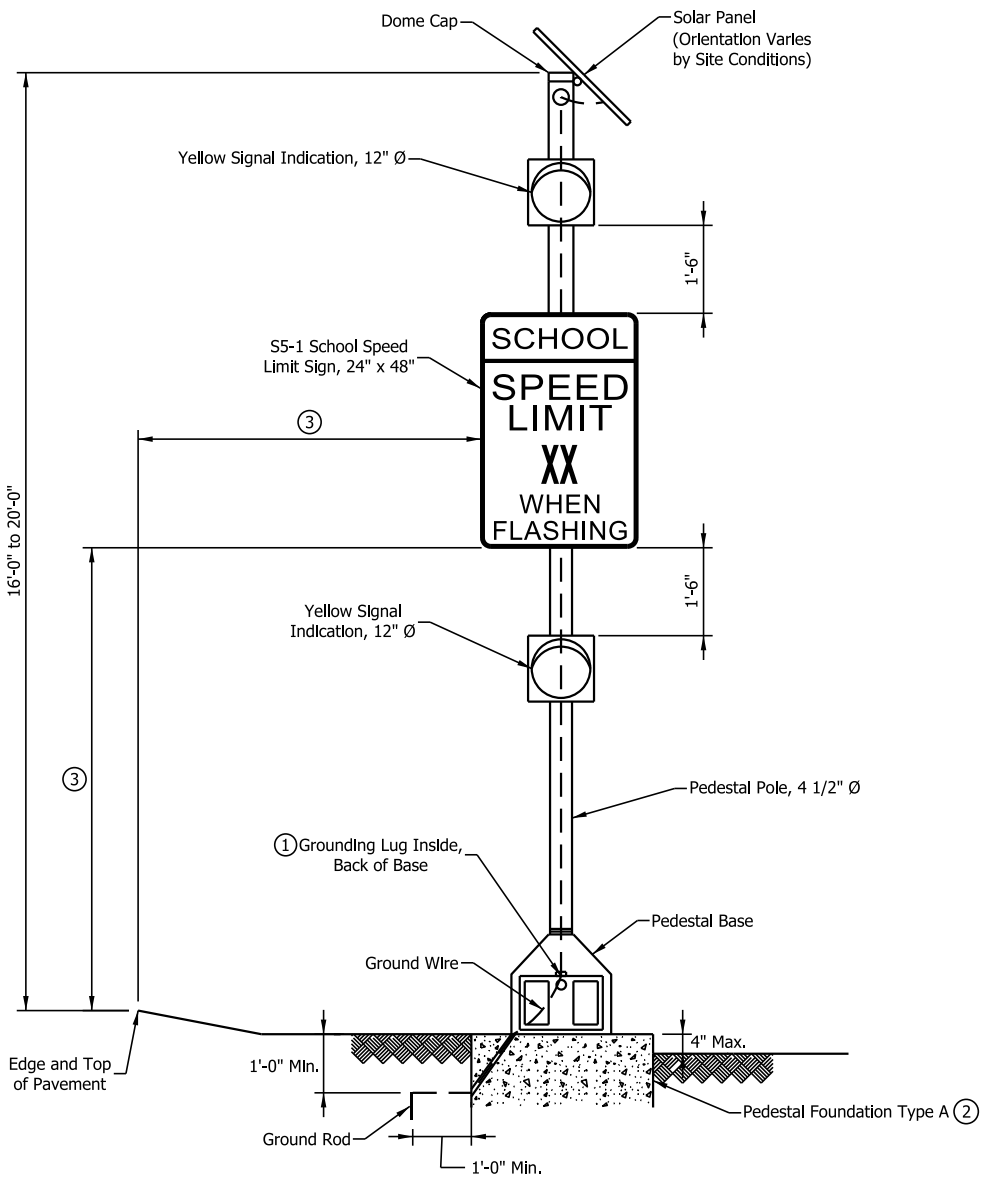
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGFB-03

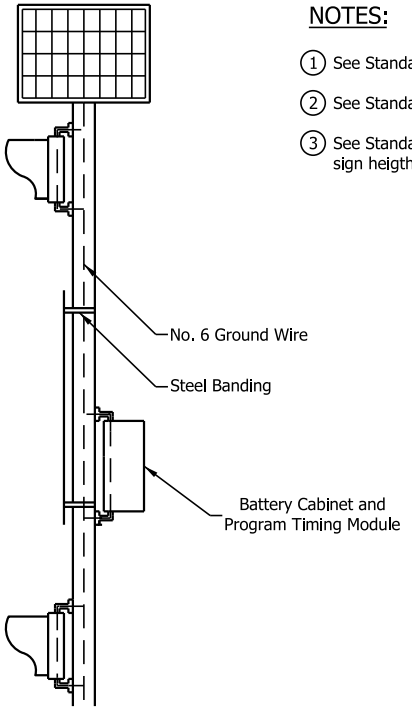
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/15/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



FRONT VIEW



SIDE VIEW

NOTES:

1. See Standard Drawing E 805-SGGR-03 for grounding lug details.
2. See Standard Drawing E 805-SGCF-03 for Foundation Type A.
3. See Standard Drawing E 802-SNPL-02 for edge of pavement offset and sign heigth.

INDIANA DEPARTMENT OF TRANSPORTATION

PEDESTAL MOUNTED SOLAR POWERED SCHOOL SPEED LIMIT FLASHING BEACON ASSEMBLY

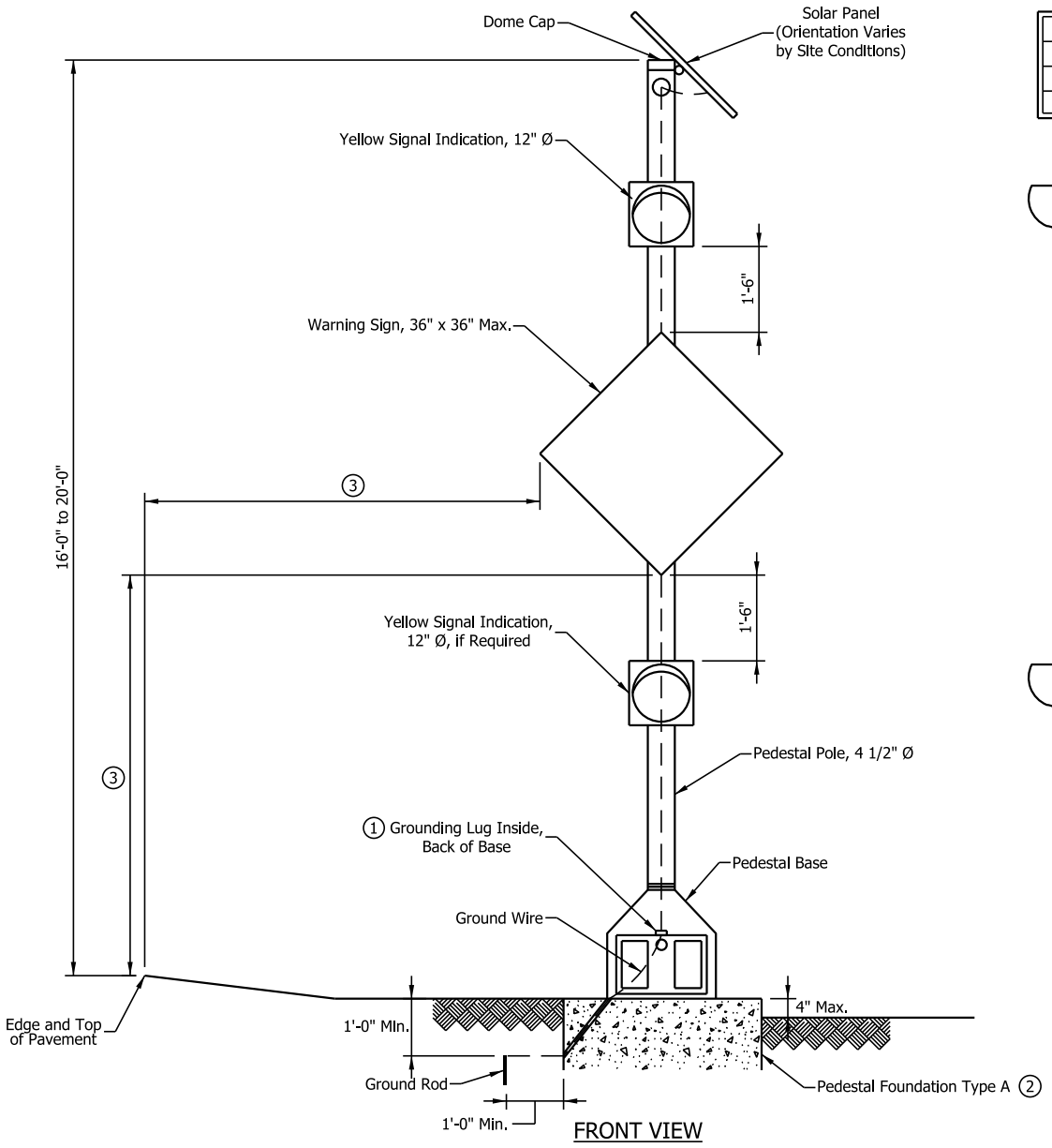
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGFB-04

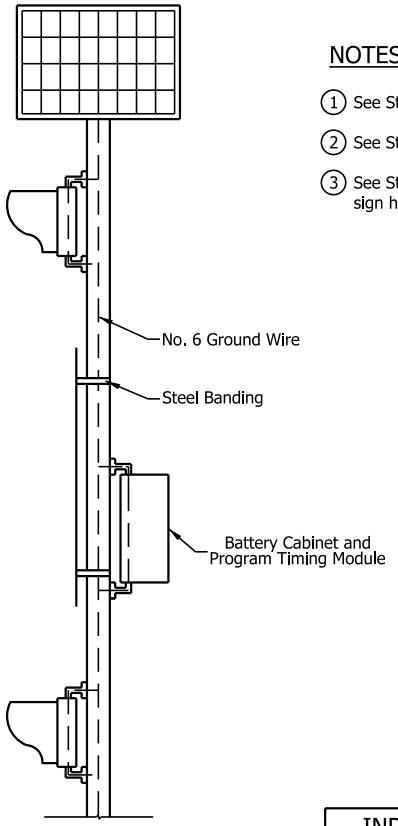
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/15/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



FRONT VIEW



SIDE VIEW

NOTES:

1. See Standard Drawing E 805-SGGR-03 for grounding lug details.
2. See Standard Drawing E 805-SGCF-03 for Foundation Type A.
3. See Standard Drawing E 802-SNPL-02 for edge of pavement offset and sign heigth.

INDIANA DEPARTMENT OF TRANSPORTATION

PEDESTAL MOUNTED SOLAR POWERED
WARNING SIGN
FLASHING BEACON ASSEMBLY

SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGFB-05

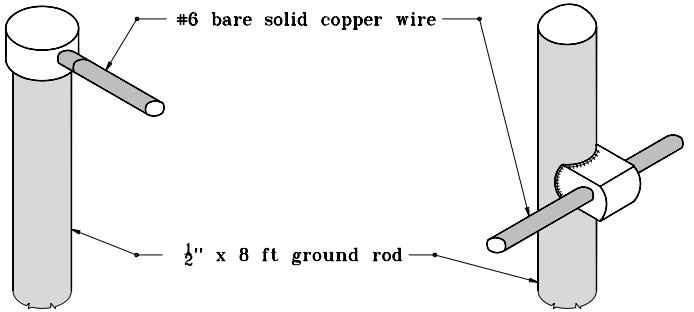
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/15/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE

GENERAL NOTES

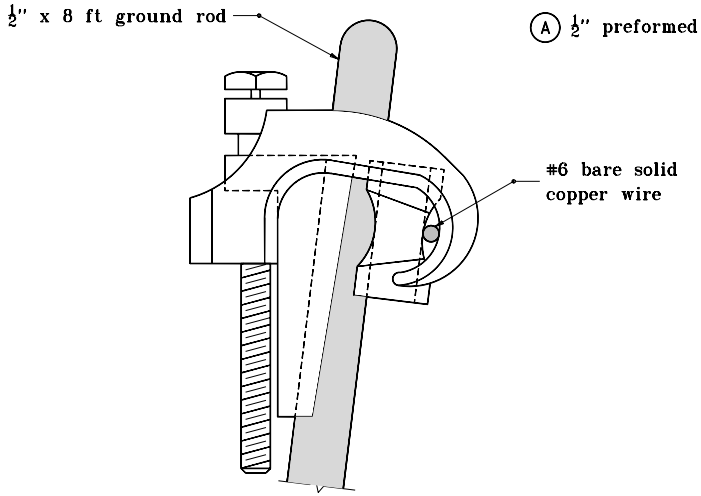
(A) ½" preformed joint



TOP CONNECTION

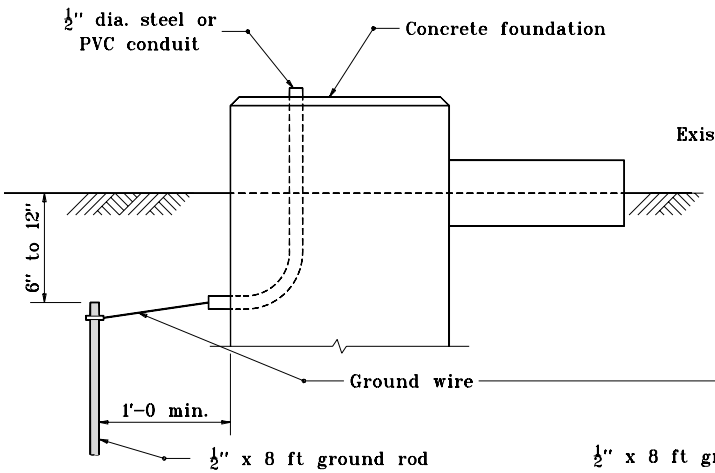
SIDE CONNECTION

THERMO WELD

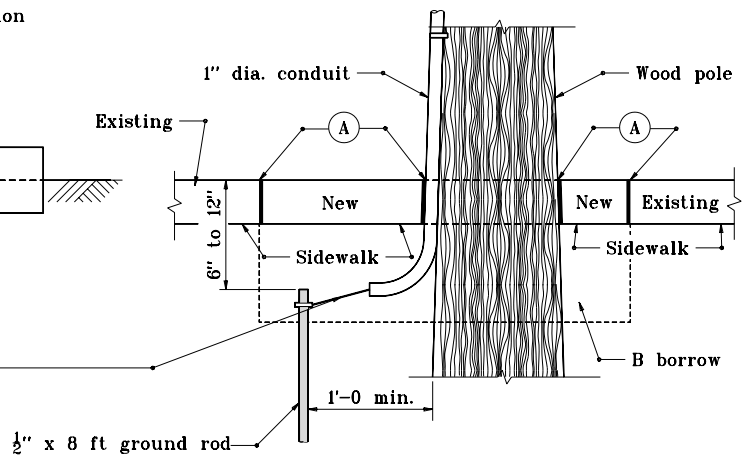


GROUNDING GRID

GROUND ROD CONNECTIONS



TYPICAL DETAIL
GROUND ROD IN EARTH



TYPICAL DETAIL
GROUND ROD IN SIDEWALK

INDIANA DEPARTMENT OF TRANSPORTATION

GROUND ROD

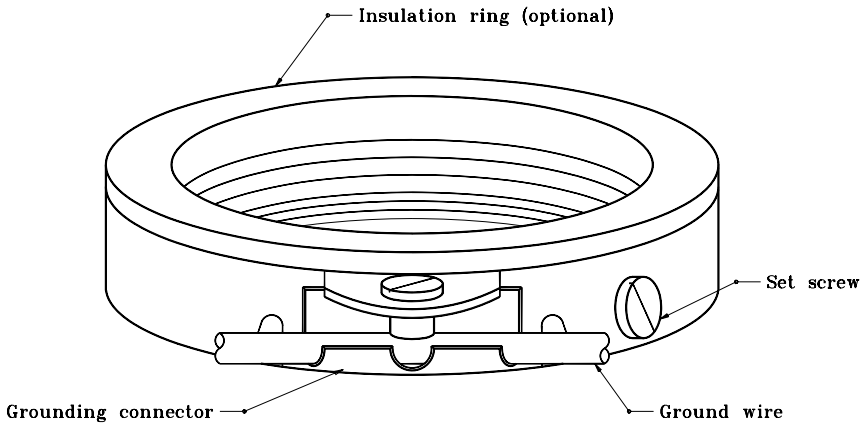
SEPTEMBER 1998

STANDARD DRAWING NO. E 805-SGGR-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	9-01-98



INDIANA DEPARTMENT OF TRANSPORTATION

THREADED GROUNDING BUSHING

SEPTEMBER 1998

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

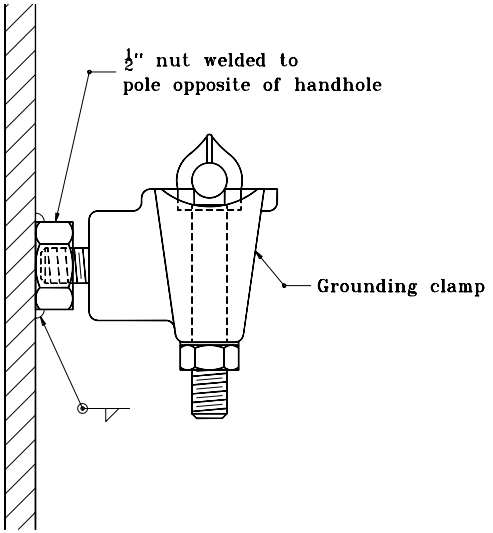
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

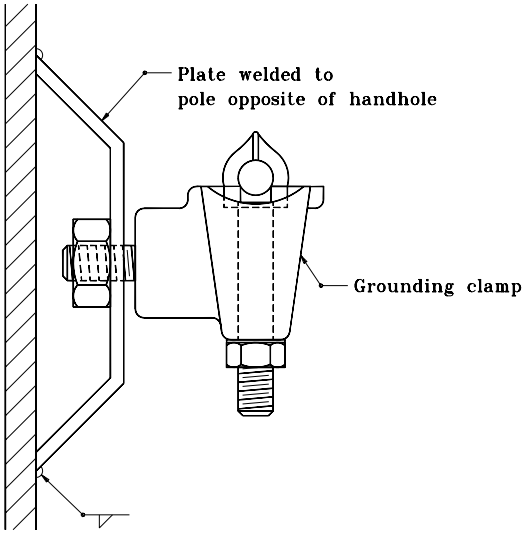
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

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

ORIGINALLY APPROVED 9-01-98

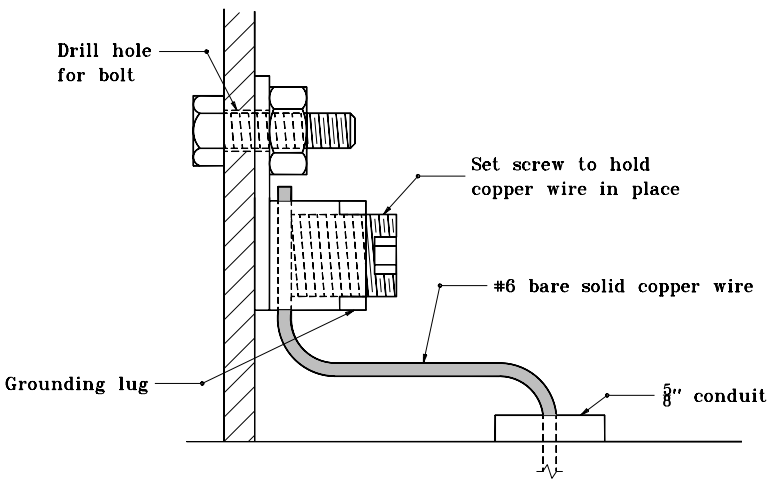


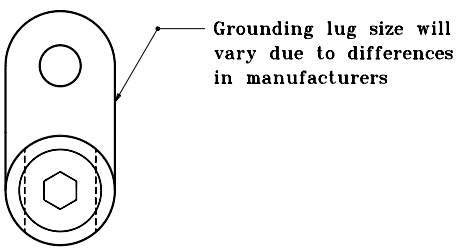
ALUMINUM POLES



STEEL POLES

GROUNDING POST DETAIL





GROUNDING LUG DETAIL (FIELD CONNECTION)

INDIANA DEPARTMENT OF TRANSPORTATION

GROUNDING DETAILS

MARCH 1995

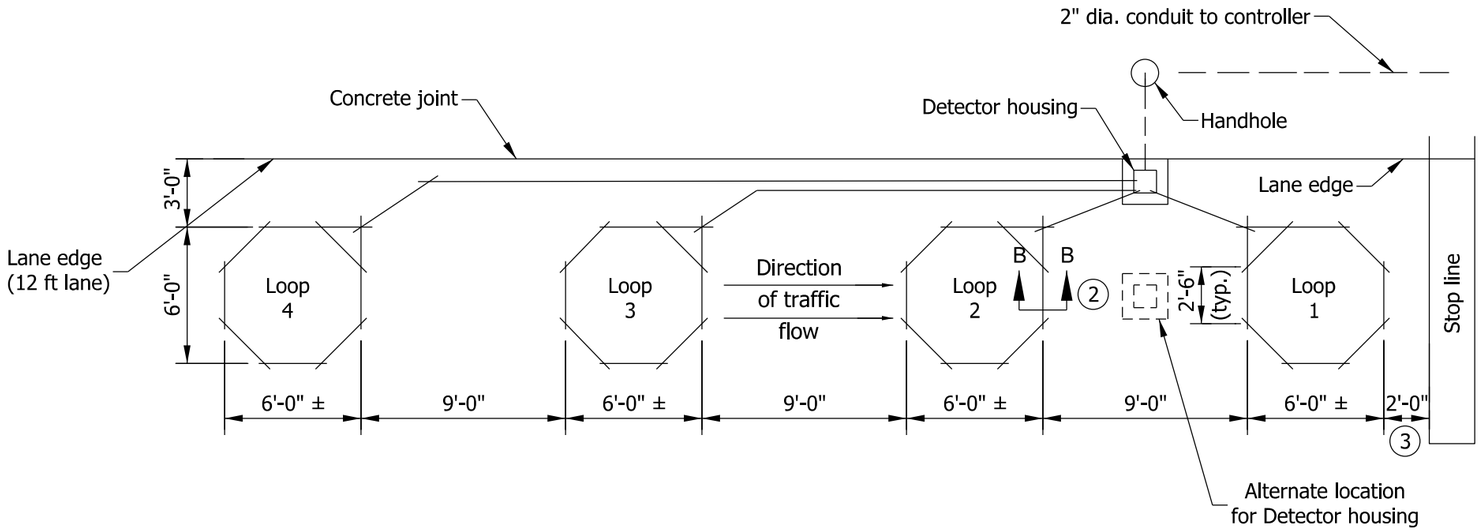
STANDARD DRAWING NO. **E 805-SGGR-03**

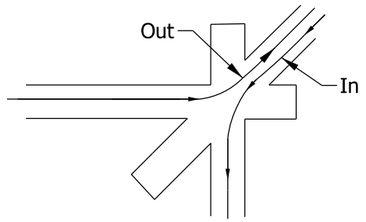
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

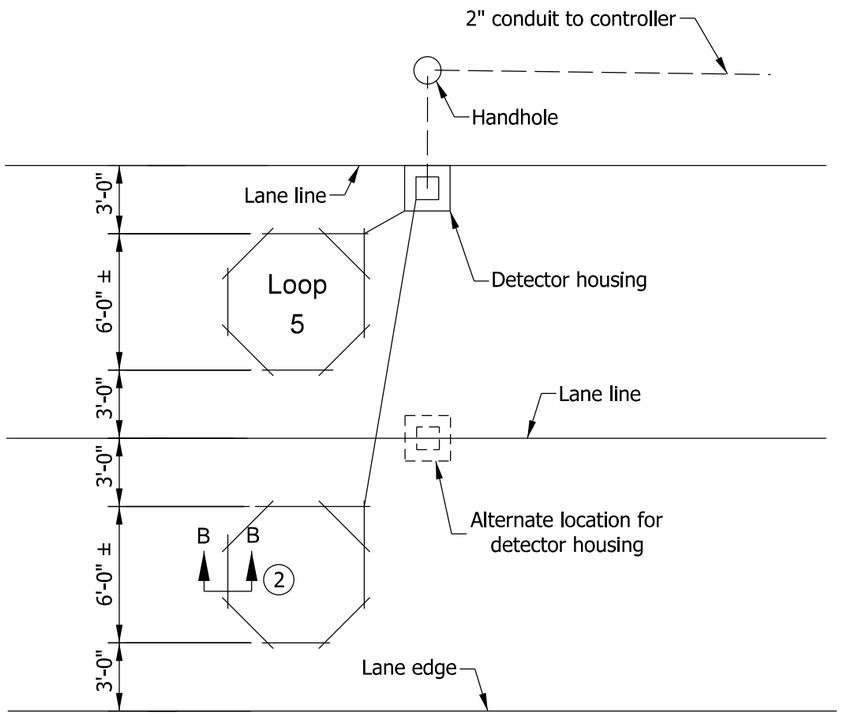
DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	3-01-95

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

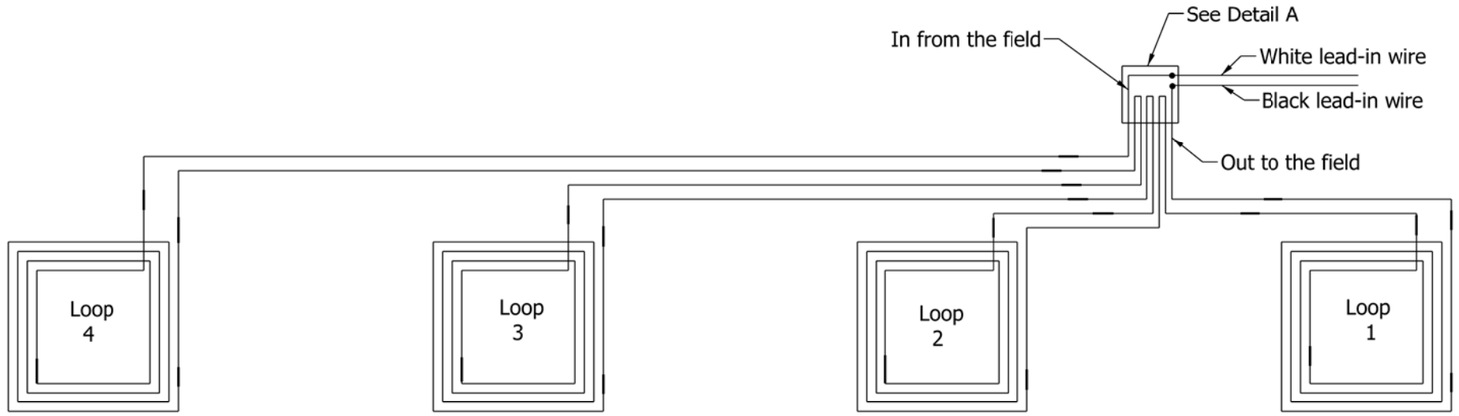
SEPTEMBER 2012

STANDARD DRAWING NO. E 805-SGLI-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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

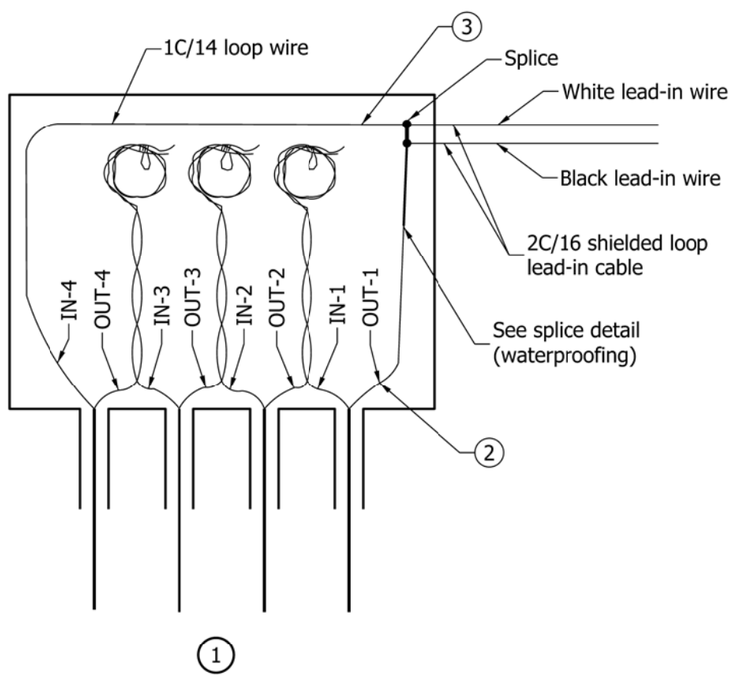
/s/ Mark A. Miller 09/04/12
CHIEF ENGINEER DATE



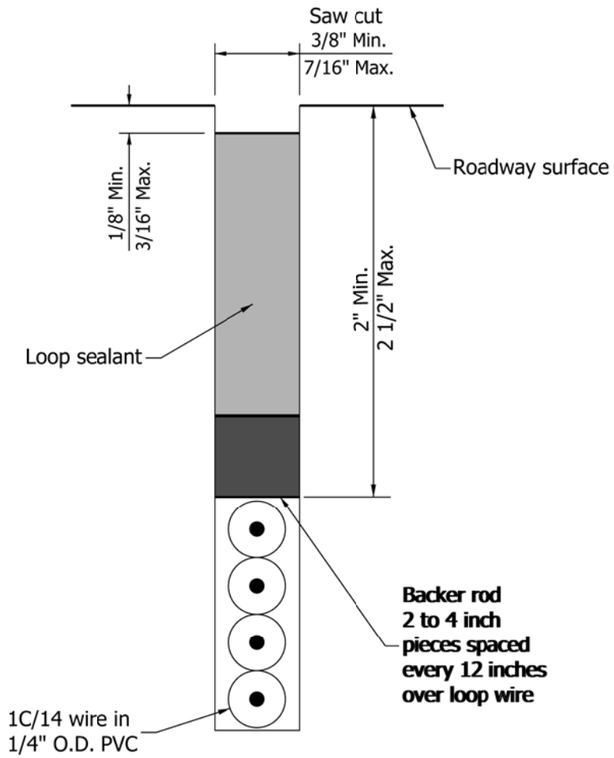
LOOP WIRING DIAGRAM

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

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richarh L. Vancleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

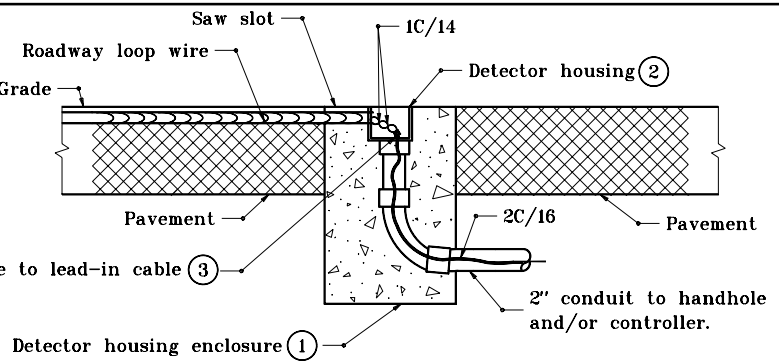
/s/ Mark A. Miller 09/01/10
CHEIF HIGHWAY ENGINEER DATE

GENERAL NOTES

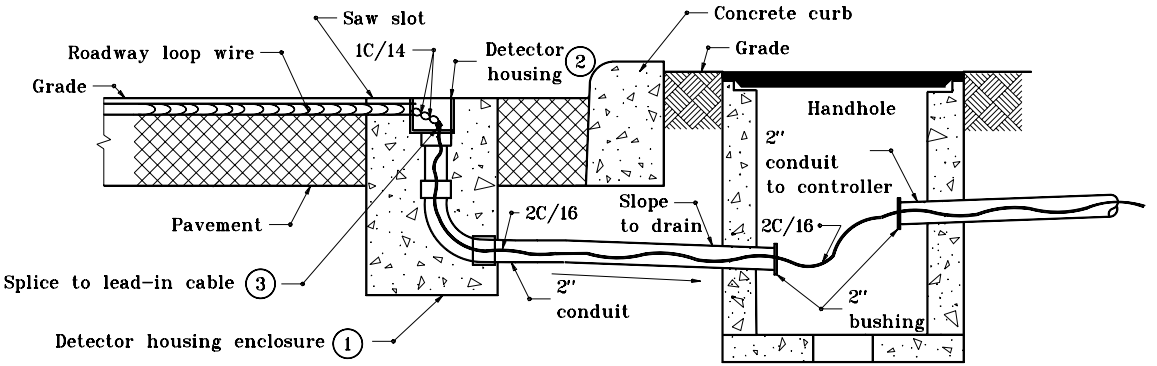
(1) For detail, see Standard Drawing No. E 805-SGDH-01.

(2) For detail, see Standard Drawing No. E 805-SGDH-02

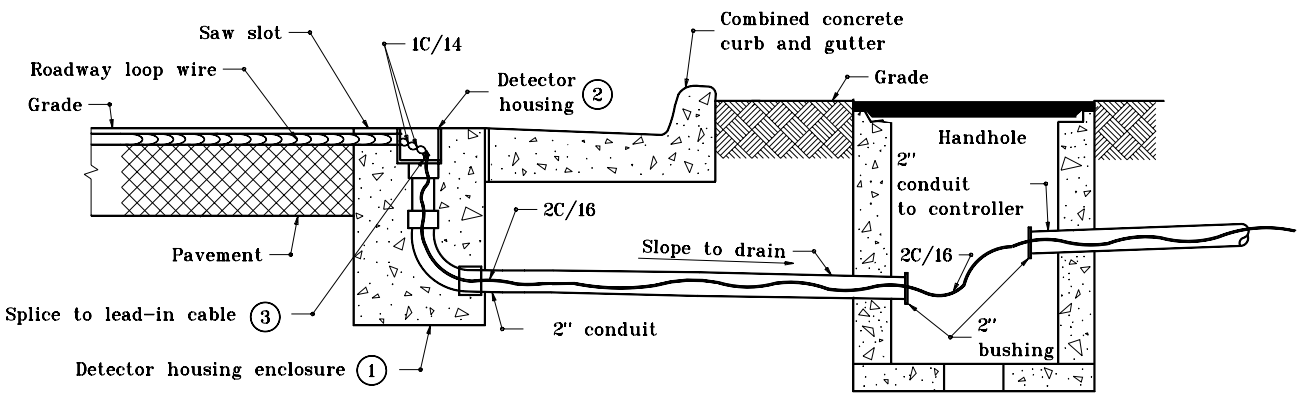
(3) For detail, see Standard Drawing No. E 805-SGLI-04.



CROSS SECTION FOR NON-CURBED SECTIONS



CROSS SECTION FOR CONCRETE CURB SECTIONS



CROSS SECTION FOR COMBINED CURB & GUTTER SECTIONS

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL LOOP DETECTOR HOUSING INSTALLATION

MARCH 1995

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

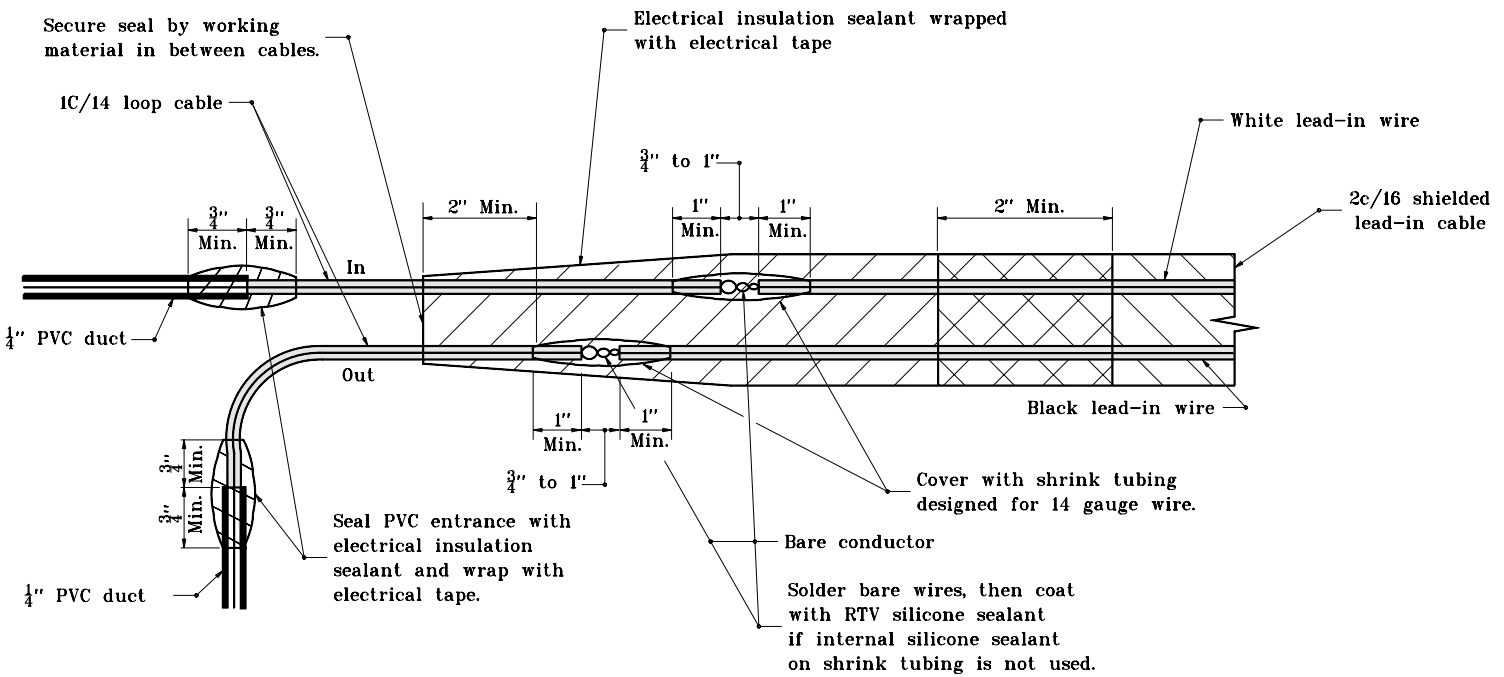
DESIGN STANDARDS ENGINEER

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



SPLICE DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL LOOP SPLICE

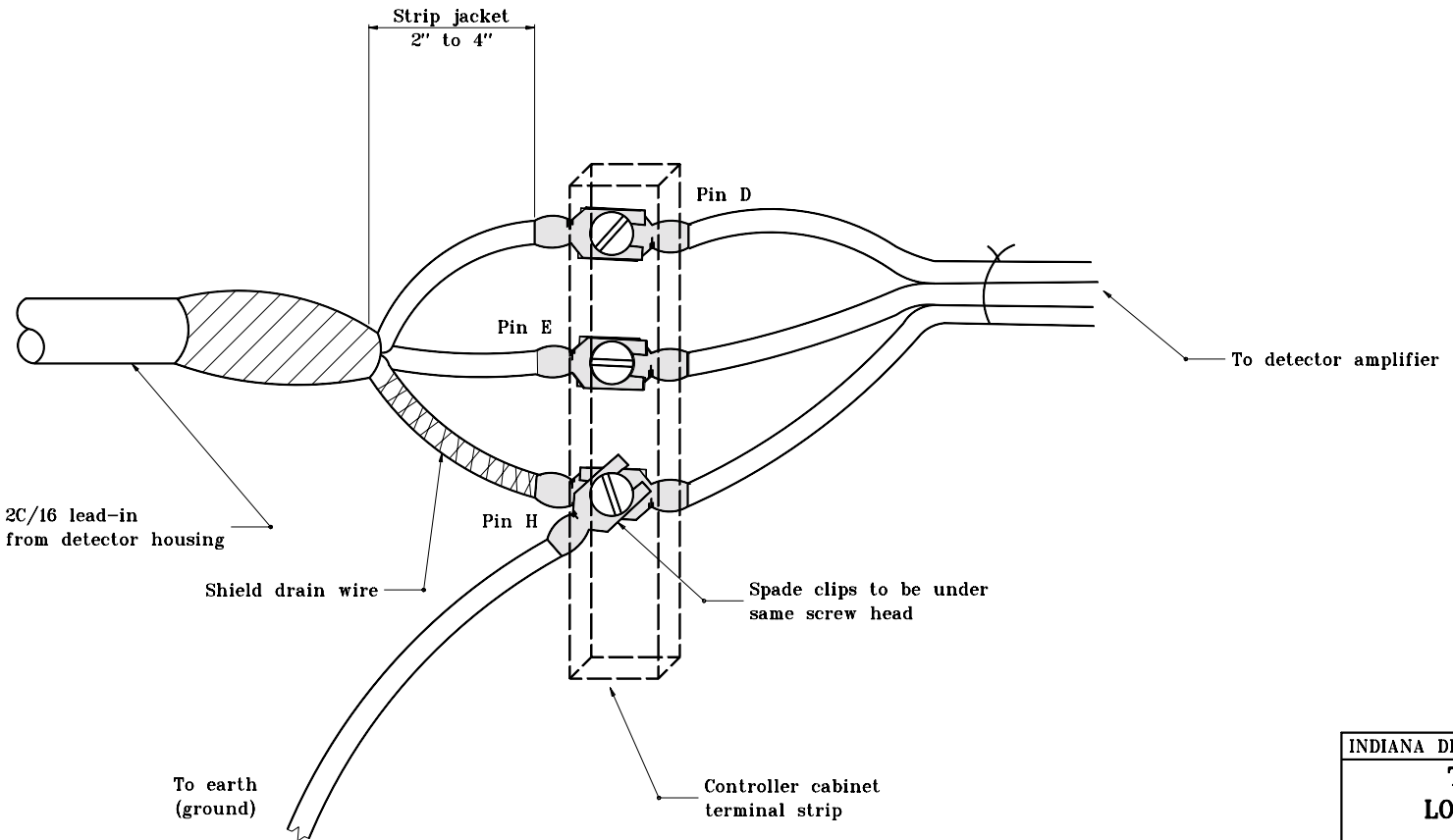
MARCH 1995

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	3-01-95



LOOP LEAD-IN
CONTROLLER CABINET CONNECTION DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL
LOOP INSTALLATION

MARCH 1995

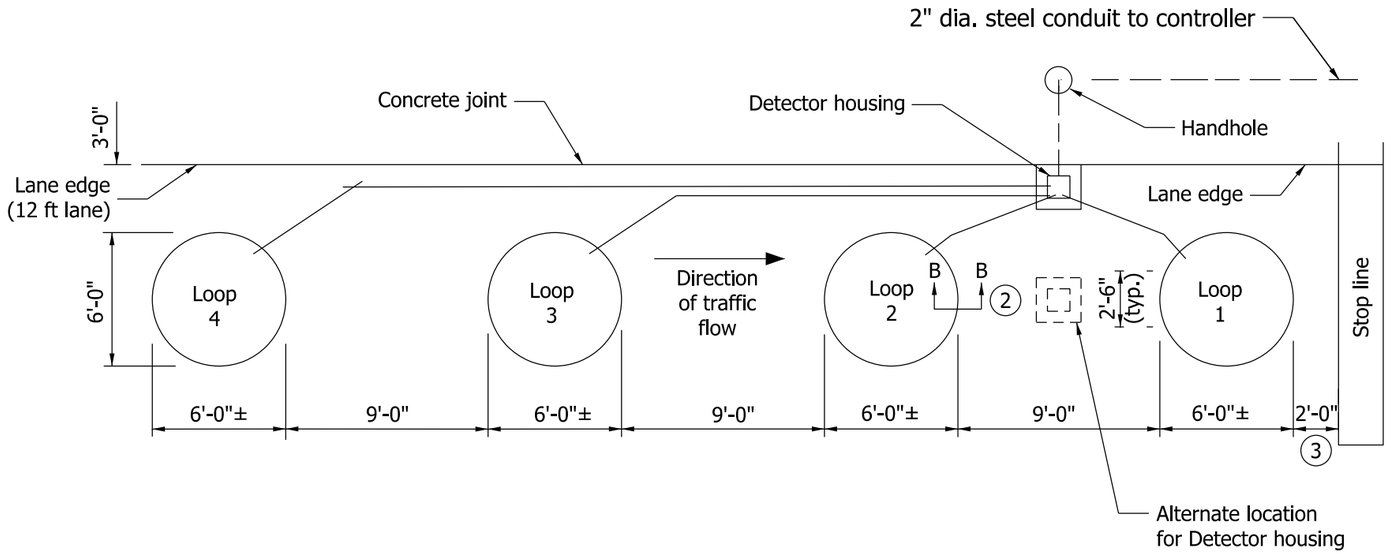
STANDARD DRAWING NO. **E 805-SGLI-05**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

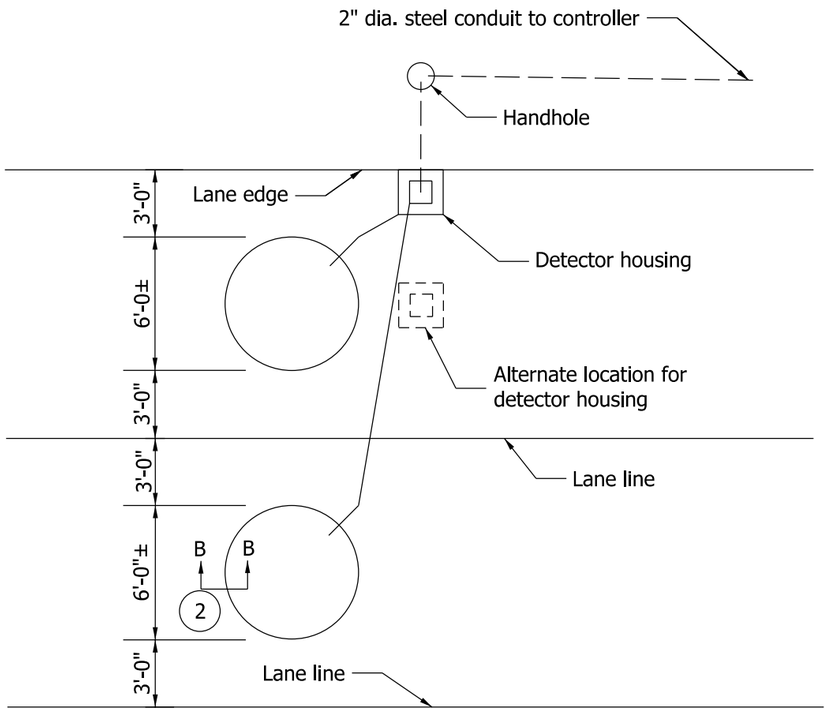
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	3-01-95

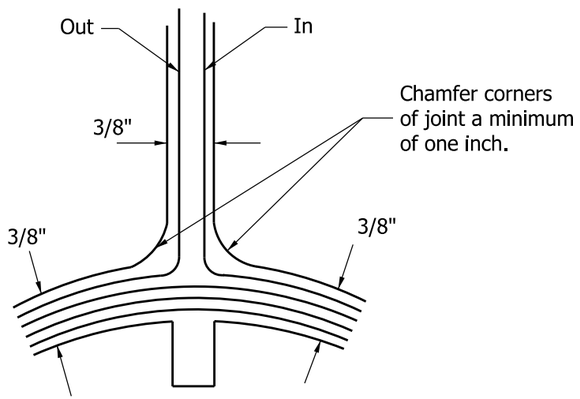
TYPICAL LOOP DETECTION SAW-CUT PLAN (ONE LANE)



TYPICAL LOOP DETECTION (TWO LANES)



DETAIL A
DETECTOR HOUSING WIRING



The loop wire is continously wound in the loop saw slot for the required numbers of turns (4 turns shown)

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.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL LOOP INSTALLATION

SEPTEMBER 2011

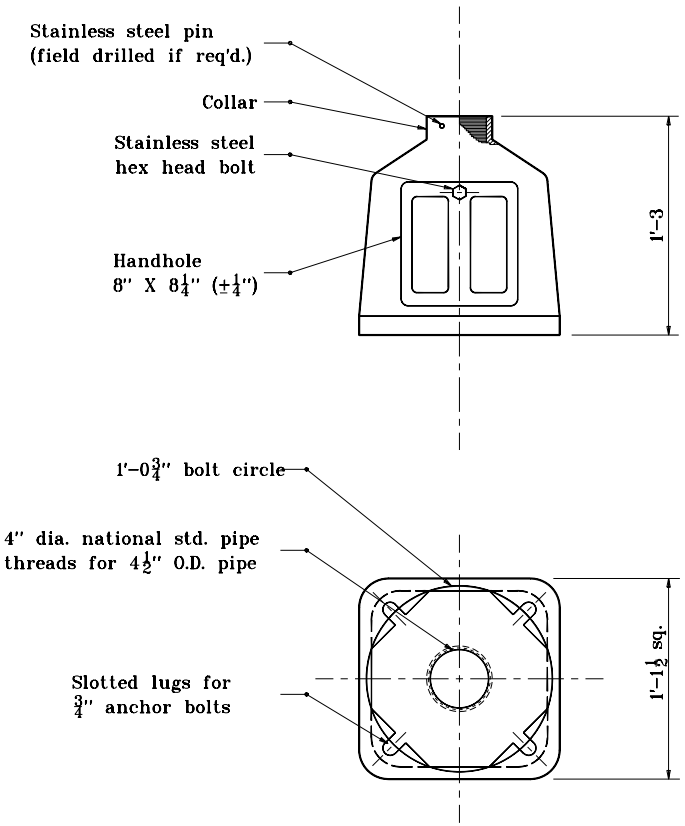
STANDARD DRAWING NO. E 805-SGLI-06

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

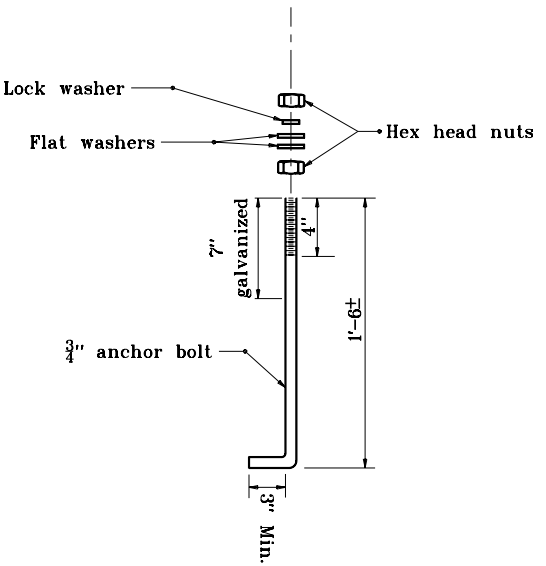
DESIGN STANDARDS ENGINEER

/s/ Richarh L. Vancleave 09/01/11
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/11
CHEIF HIGHWAY ENGINEER DATE



BOTTOM VIEW



ANCHOR BOLT FOR
A, M, AND P-1
FOUNDATIONS

INDIANA DEPARTMENT OF TRANSPORTATION

ANCHOR BOLTS AND PEDESTAL BASE

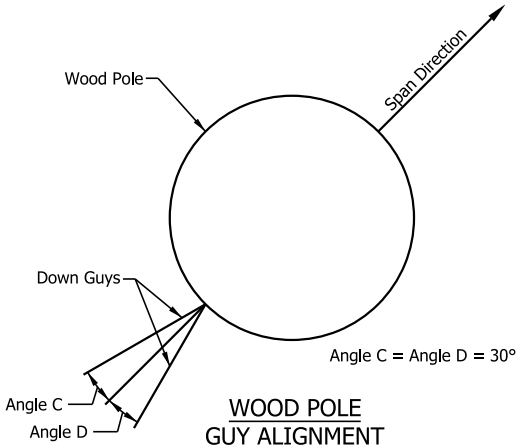
SEPTEMBER 1998

STANDARD DRAWING NO. **E 805-SGPB-01**

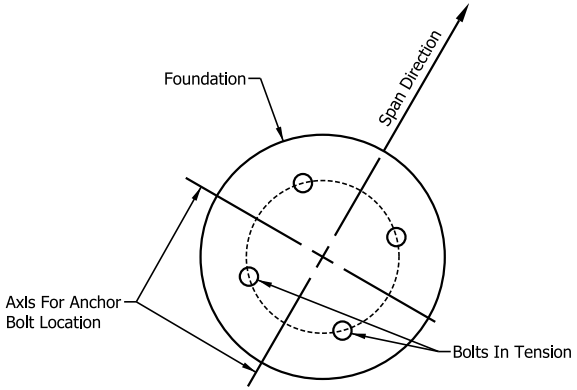
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

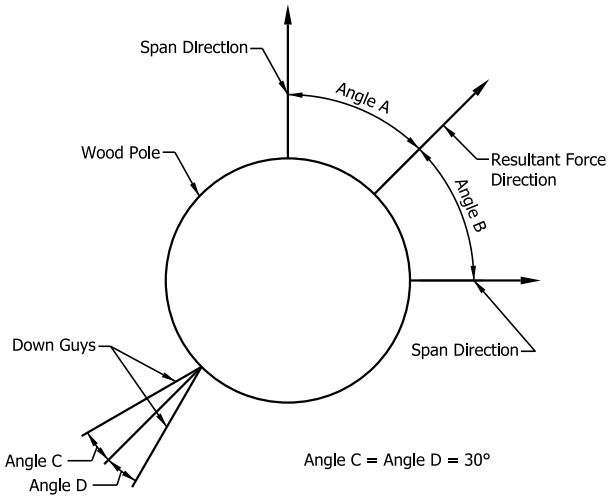
DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	9-01-98



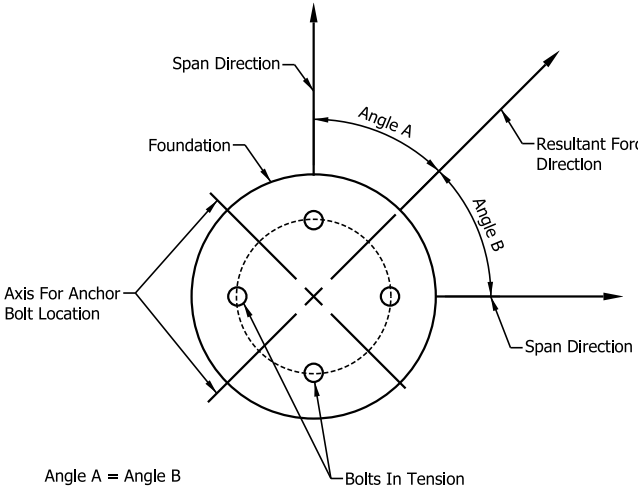
WOOD POLE
GUY ALIGNMENT
(1 Span)



STEEL STRAIN POLE
ANCHOR BOLT ORIENTATION
(1 Span)



WOOD POLE
GUY ALIGNMENT
(2 Spans)



STEEL STAIN POLE
ANCHOR BOLT ORIENTATION
(2 Spans)

INDIANA DEPARTMENT OF TRANSPORTATION

POLE ALIGNMENT

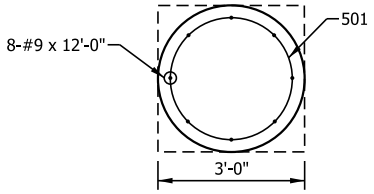
SEPTEMBER 2017

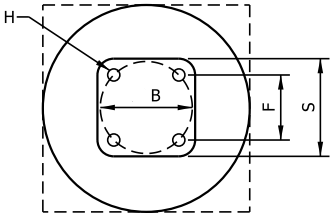
STANDARD DRAWING NO. E 805-SGSC-01

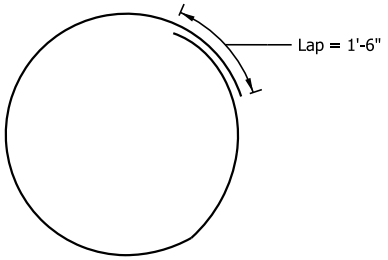
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/23/16
DESIGN STANDARDS ENGINEER DATE

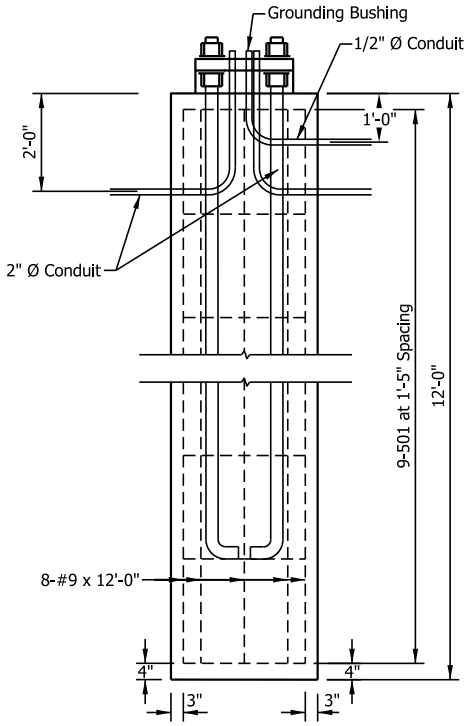
/s/ Mark A. Miller 06/29/16
CHIEF ENGINEER DATE

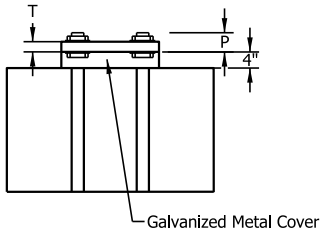






501 x 9'-4"





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

STEEL SIGNAL STRAIN POLE
FOUNDATION DETAILS

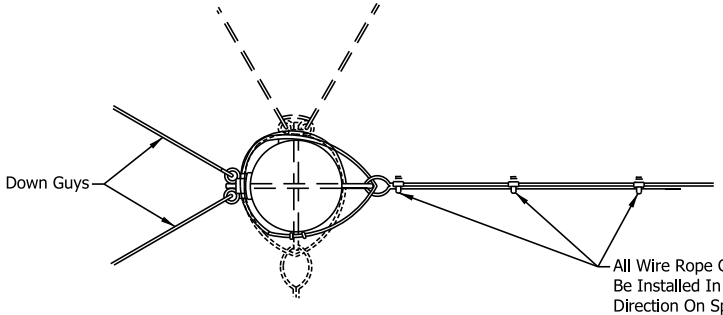
SEPTEMBER 2017

STANDARD DRAWING NO. E 805-SGSC-02

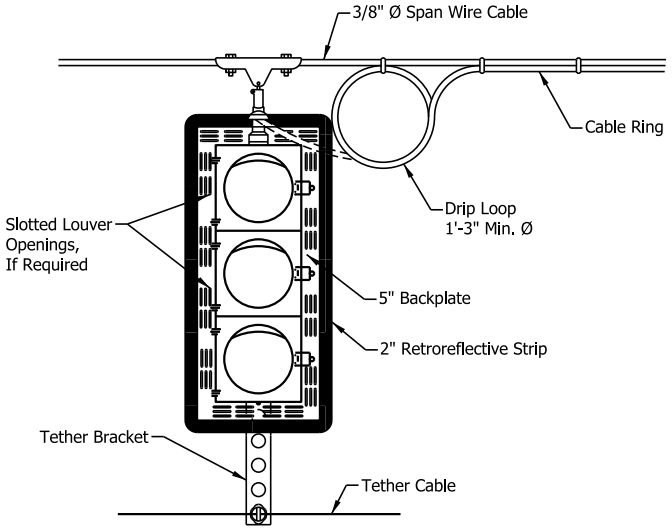
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/23/16
DESIGN STANDARDS ENGINEER DATE

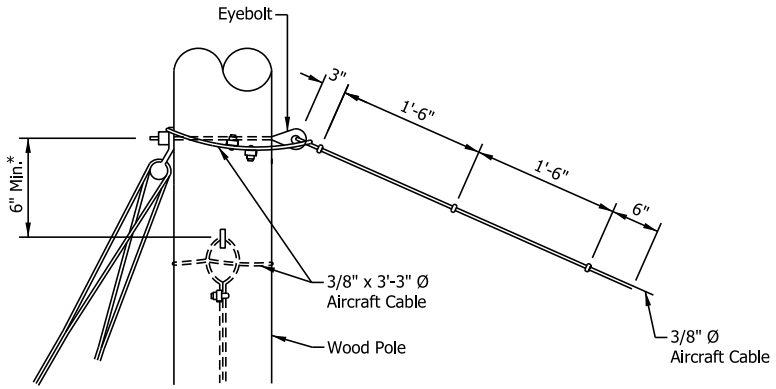
/s/ Mark A. Miller 06/29/16
CHIEF ENGINEER DATE



TOP VIEW



SPAN-HEAD ATTACHMENT



SAFETY CABLE AND EYE BOLT DETAIL

* If more than one catenary is attached to pole.

NOTES:

1. Installaion 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

CABLE SPAN ATTACHMENT

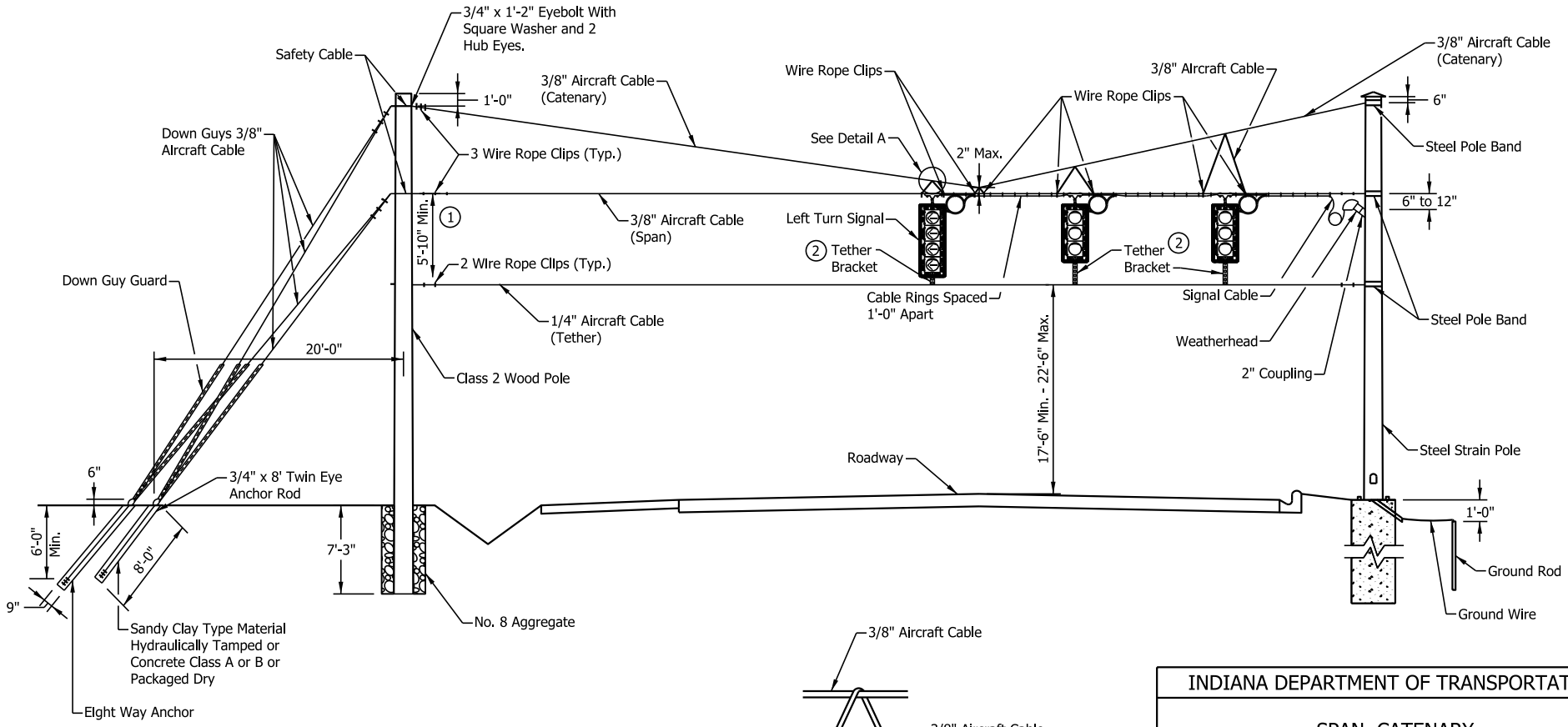
SEPTEMBER 2017

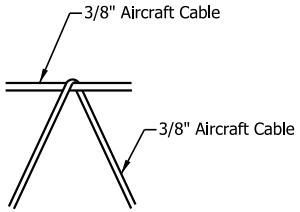
STANDARD DRAWING NO. E 805-SGSC-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 06/23/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 06/29/16
CHIEF ENGINEER DATE





DETAIL A

NOTES:

1. With a 3-Section Left Turn Signal, the minimum distance shall be 4'-10".
2. The tether bracket shall provide a 2 in. minimum space between the signal backplate and tether and shall be secured by a wire rope clamp or tether plate.

INDIANA DEPARTMENT OF TRANSPORTATION

SPAN, CATENARY & TETHER DETAIL

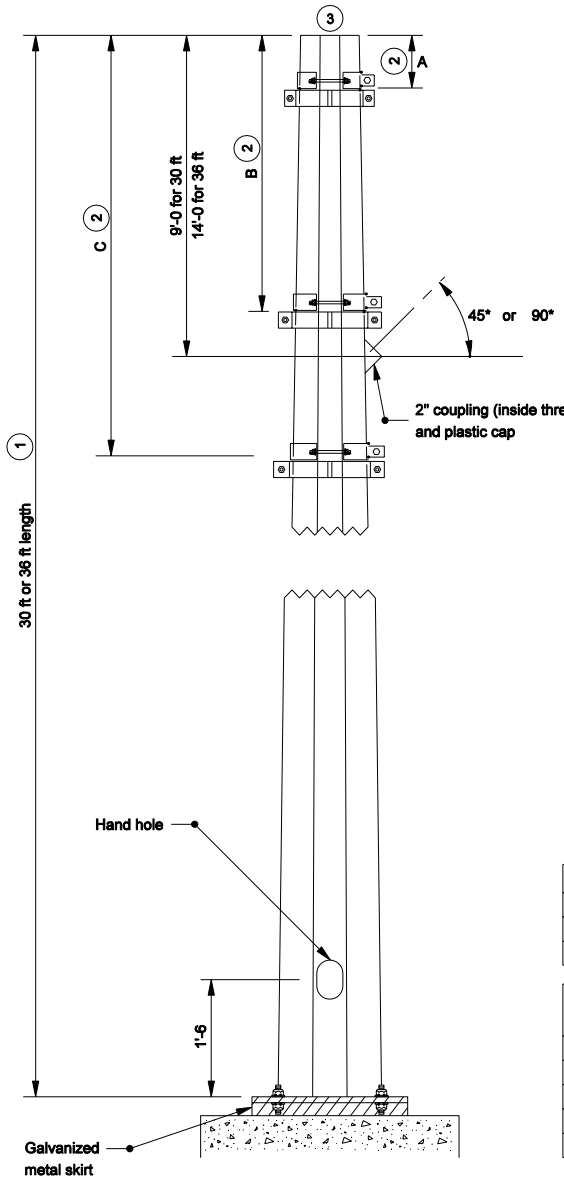
SEPTEMBER 2017

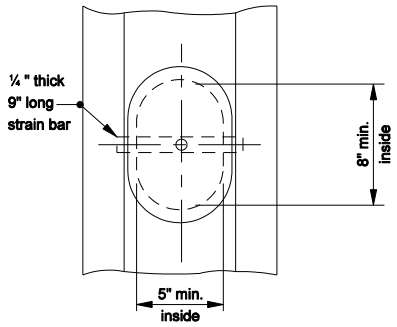
STANDARD DRAWING NO. E 805-SGSC-04

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

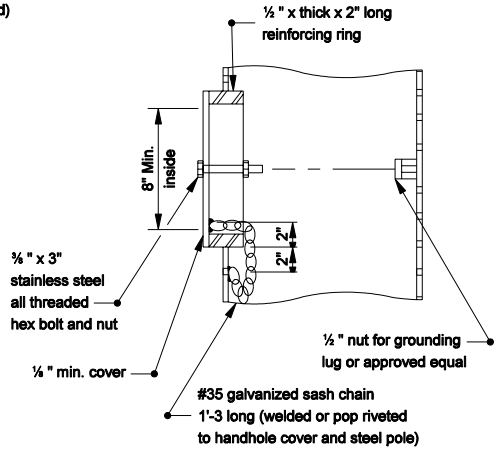
/s/ David H. Boruff 06/23/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 06/29/16
CHIEF ENGINEER DATE





HANDHOLE AND GROUNDING LUG



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.

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

INDIANA DEPARTMENT OF TRANSPORTATION

30 ft. AND 36 ft. SIGNAL STEEL STRAIN POLES

SEPTEMBER 2005

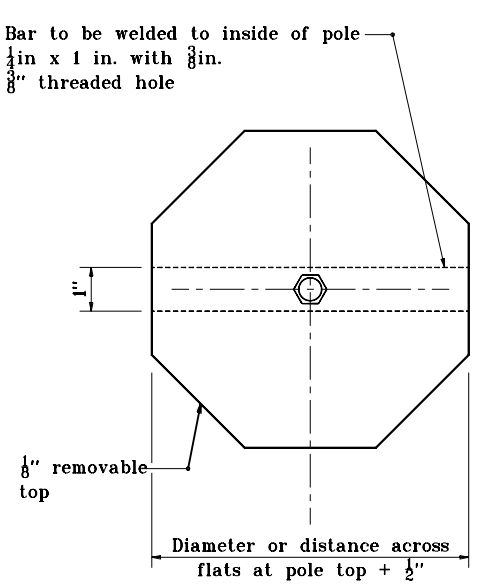
STANDARD DRAWING NO. E 805-SGSP-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

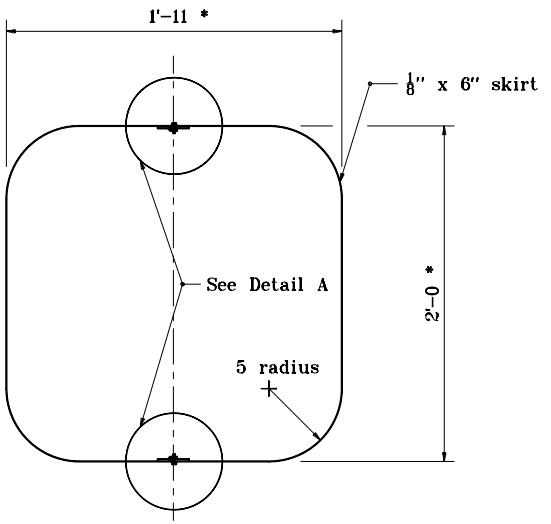
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

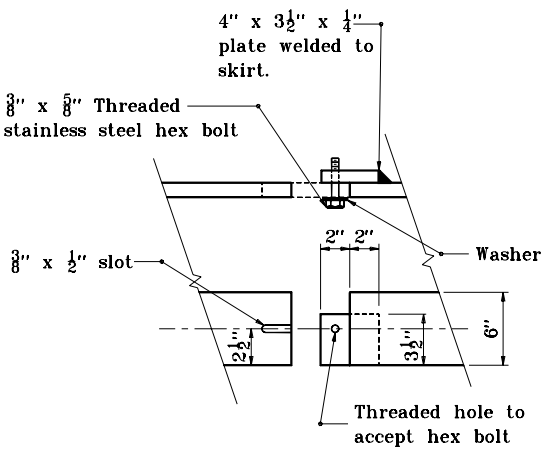
/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



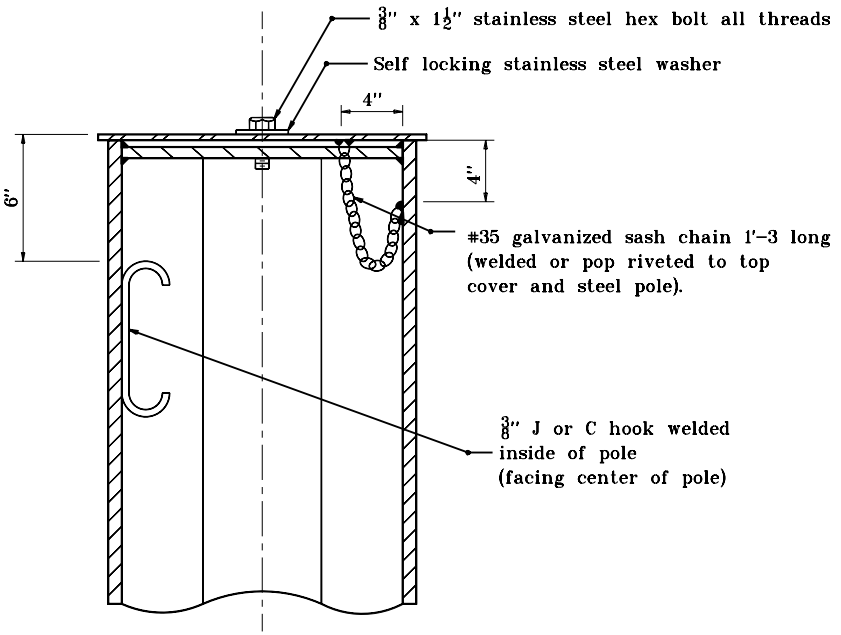
TOP COVER



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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

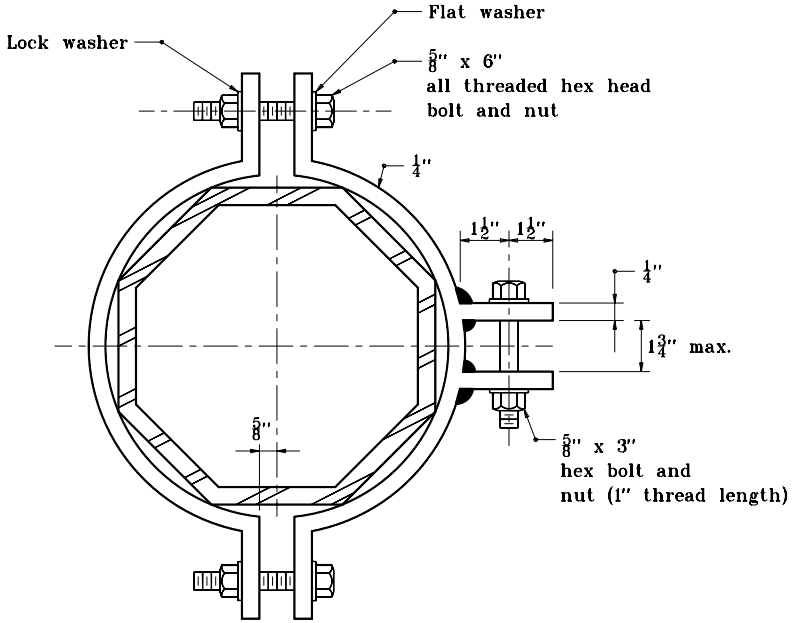
DESIGN STANDARDS ENGINEER

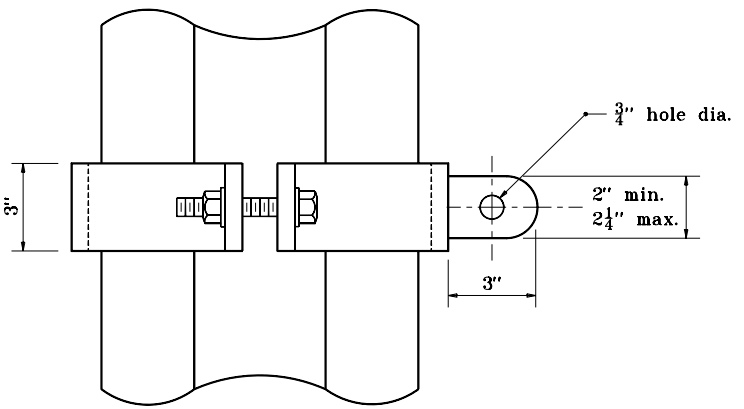
DETAILS PLACED IN THIS FORMAT 11-15-99

/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





REQUIRES TWO POLE BANDS AT EACH POSITION ON POLE (SIX BANDS PER POLE)

INDIANA DEPARTMENT OF TRANSPORTATION

POLE BAND FOR SIGNAL STEEL STRAIN POLE

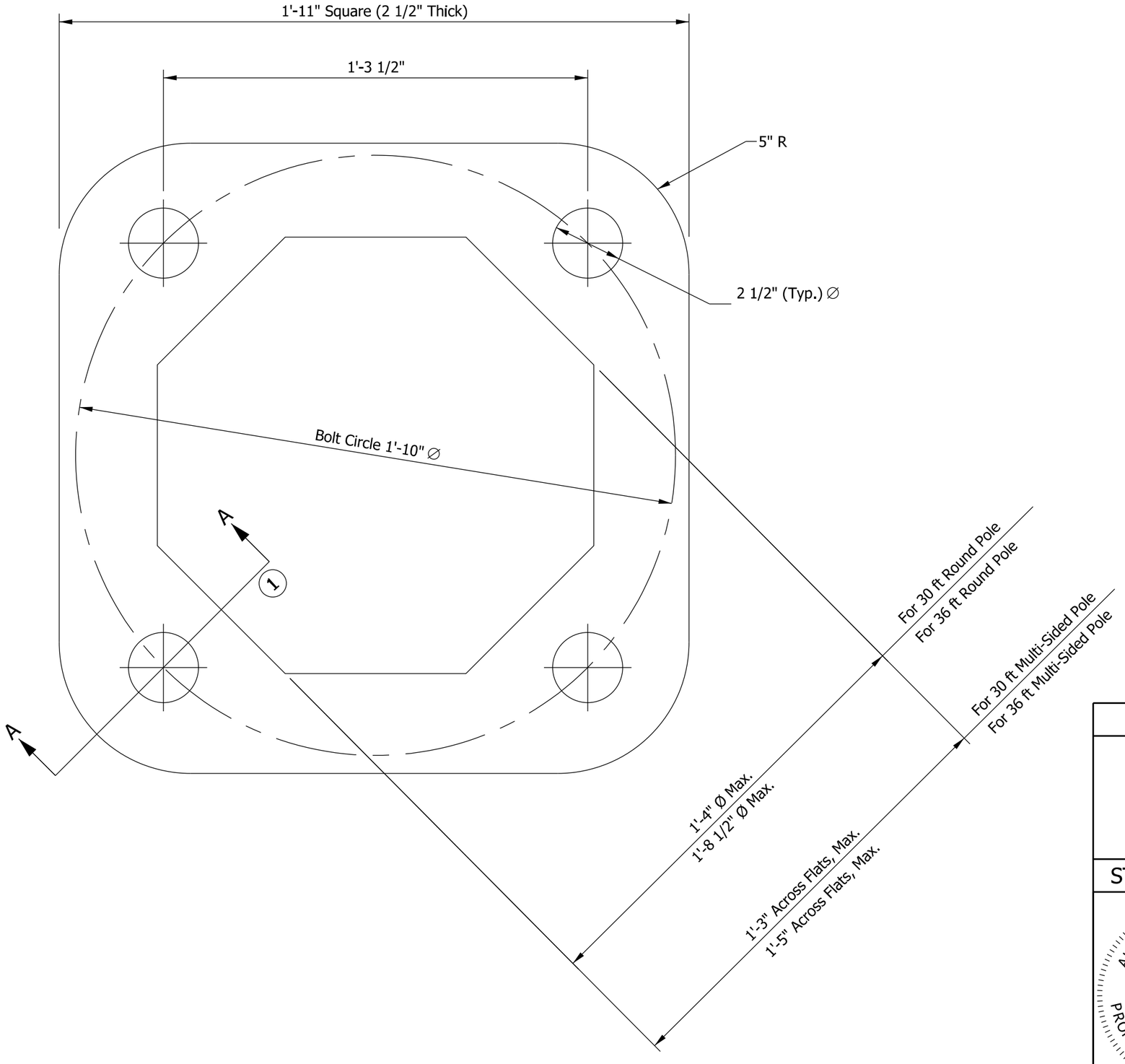
SEPTEMBER 1998

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich, DESIGN STANDARDS ENGINEER	11-15-99
/s/ Firooz Zandi, CHIEF HIGHWAY ENGINEER	11-15-99
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

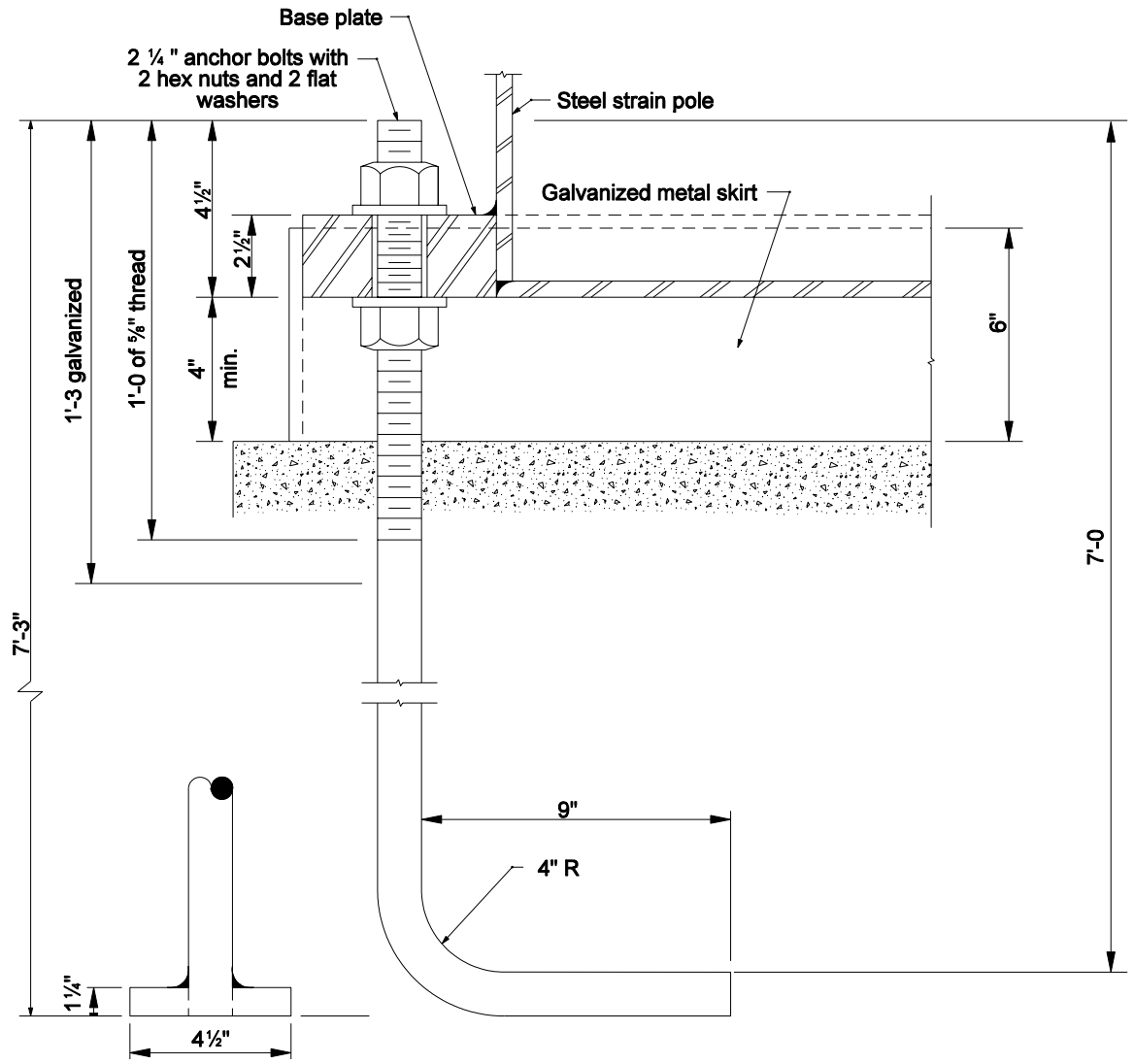
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-SGSP-04

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



ALTERNATIVE
1¼" x 4½" square plate tapped & welded to anchor bolt

SECTION A-S

INDIANA DEPARTMENT OF TRANSPORTATION

ANCHOR BOLT DETAIL FOR SIGNAL STEEL STRAIN POLES

MARCH 2004

STANDARD DRAWING NO. E 805-SGSP-05

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 3/01/04
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3/01/04
CHIEF HIGHWAY ENGINEER DATE

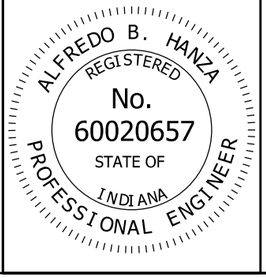
INDEX	
SHEET NO.	SUBJECT
1	Drawing Index
2	Single Signal Arm Pole Elevation, Dimensions, and Base Plate Weld Detail
3	Signal Arm Dimensions & Details
4	Signal Arm Pole Base Plate, Bottom Splice Plates, and Pole Top Cover Details
5	Signal Arm Connection Details
6	Handhole Details
7	Placement of Signals 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

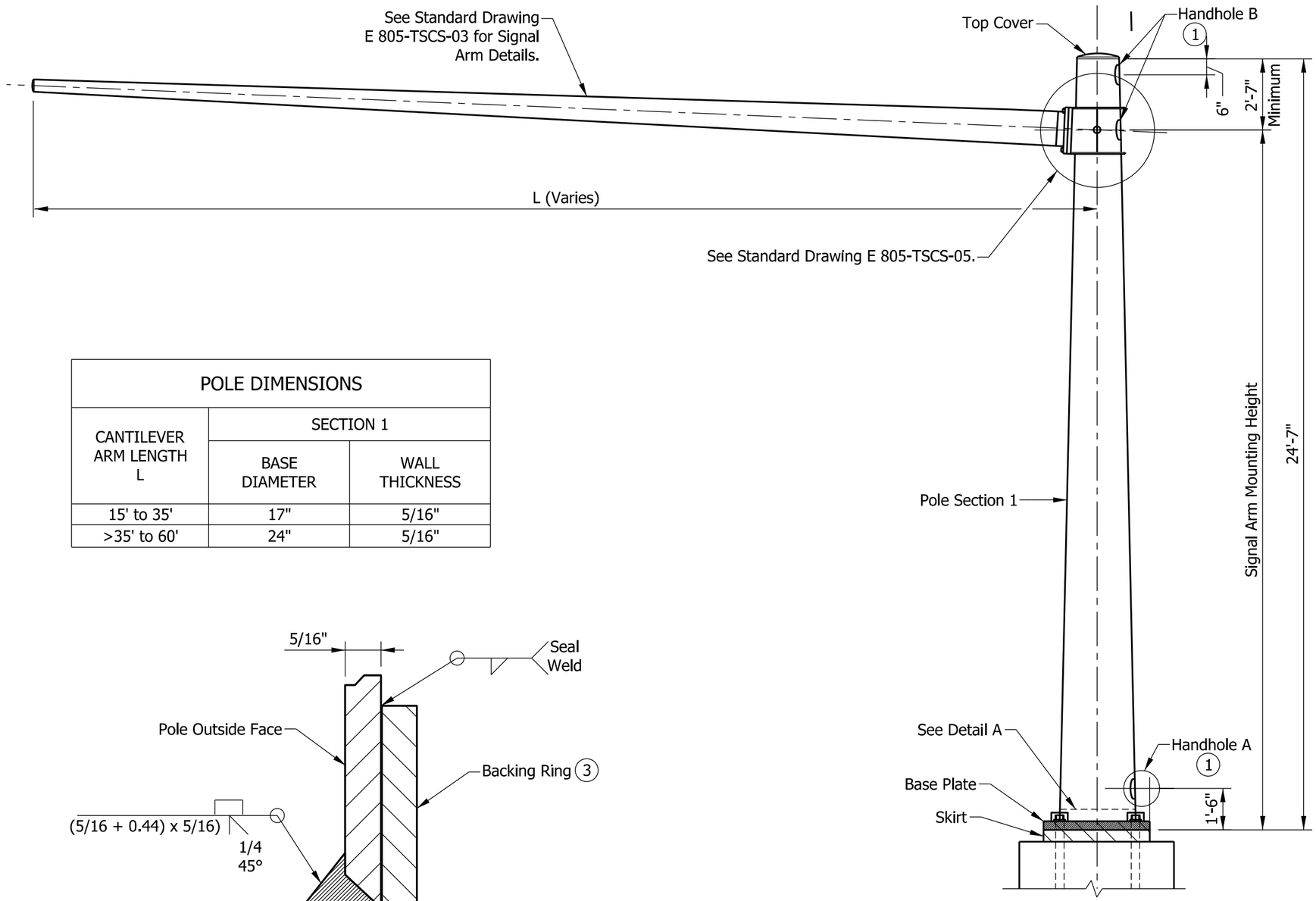


/s/ Alfredo B. Hanza 02/05/13

DESIGN STANDARDS ENGINEER DATE

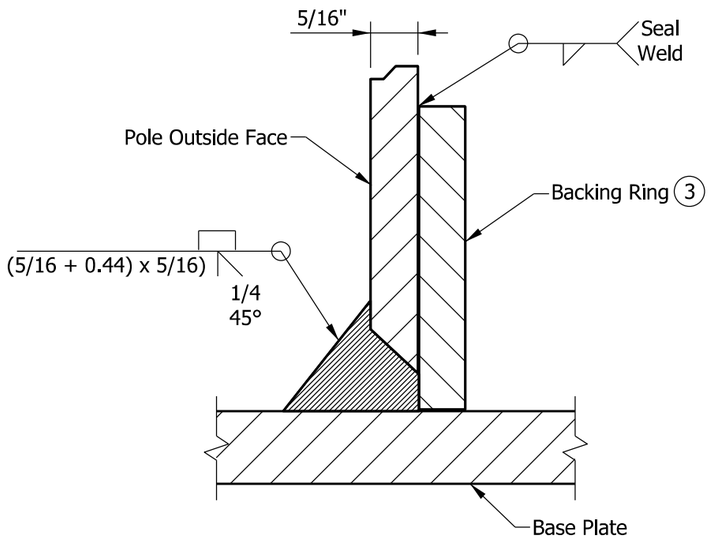
/s/ Mark A. Miller 03/27/13

CHIEF ENGINEER DATE



POLE ELEVATION

POLE DIMENSIONS		
CANTILEVER ARM LENGTH L	SECTION 1	
	BASE DIAMETER	WALL THICKNESS
15' to 35'	17"	5/16"
>35' to 60'	24"	5/16"



POLE/BASE PLATE WELD
DETAIL A

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

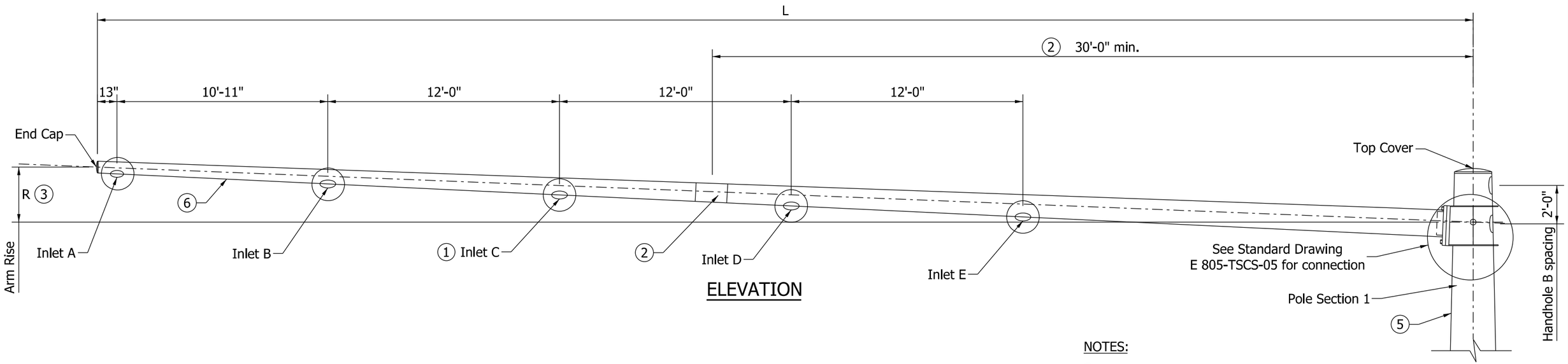
TRAFFIC SIGNAL CANTILEVER STRUCTURE
SINGLE SIGNAL ARM POLE ELEVATION,
DIMENSIONS, AND BASE PLATE WELD DETAIL
SEPTEMBER 2018

STANDARD DRAWING NO. E 805-TSCS-02

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

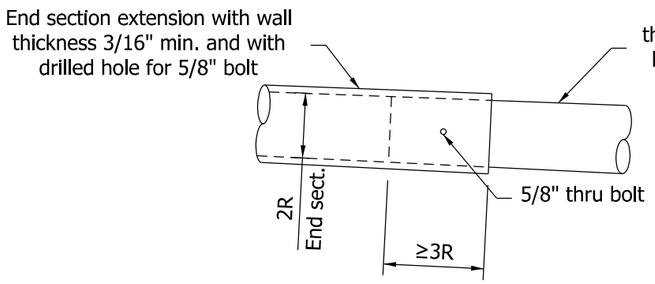
/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE



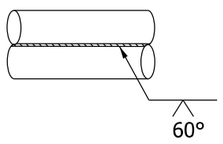
ELEVATION

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.



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

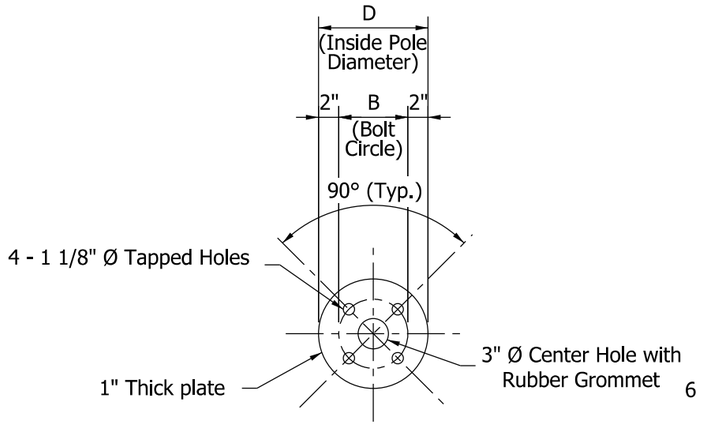
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-03

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

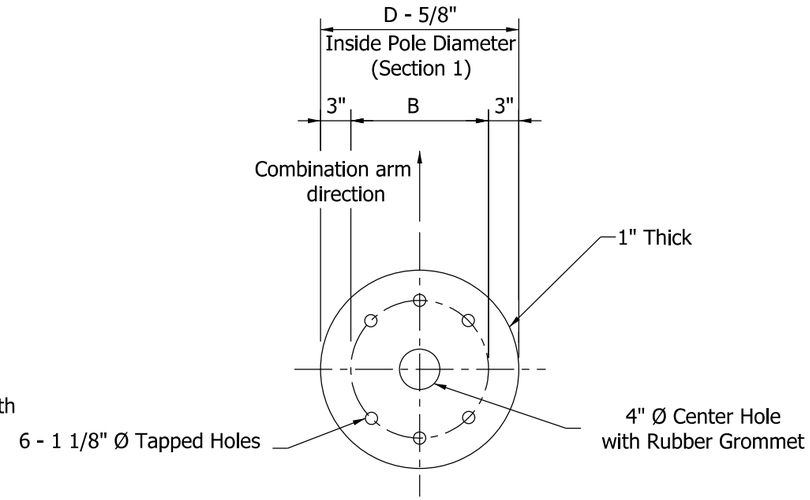
/s/ Alfredo B. Hanza 02/05/13
DESIGN STANDARDS ENGINEER DATE

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



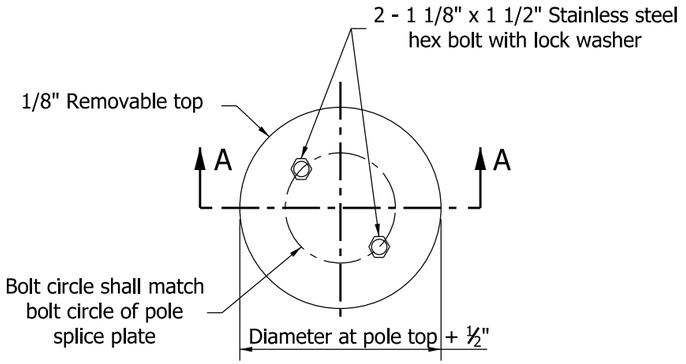
① BOTTOM SPLICE PLATE

(For Cantilever Arm Length of 35' or Less)

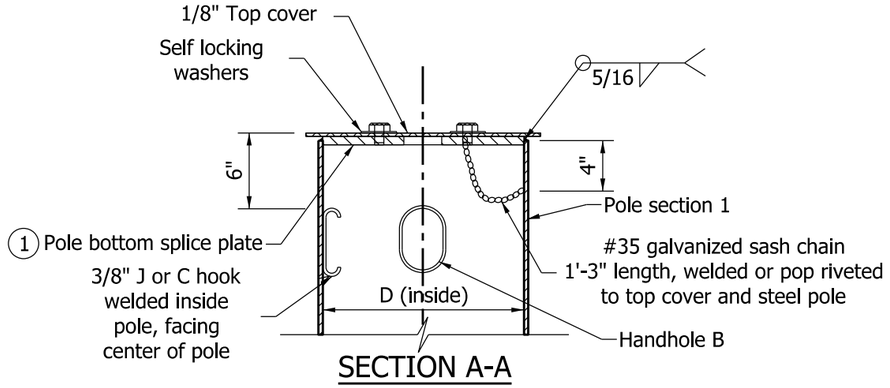


① BOTTOM SPLICE PLATE

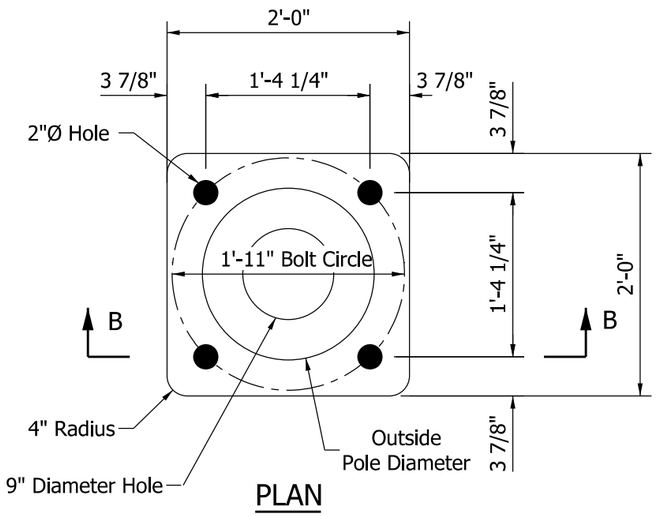
(For Cantilever Arm Length Greater Than 35' to 60')



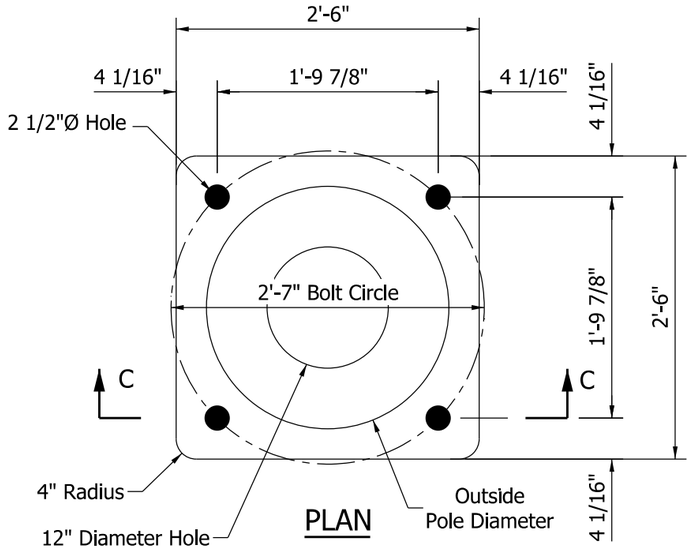
POLE TOP COVER



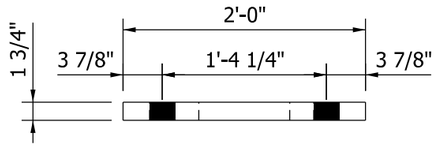
SECTION A-A



PLAN

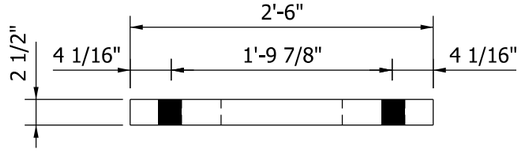


PLAN



SECTION B-B

BASE PLATE A



SECTION C-C

BASE PLATE B

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

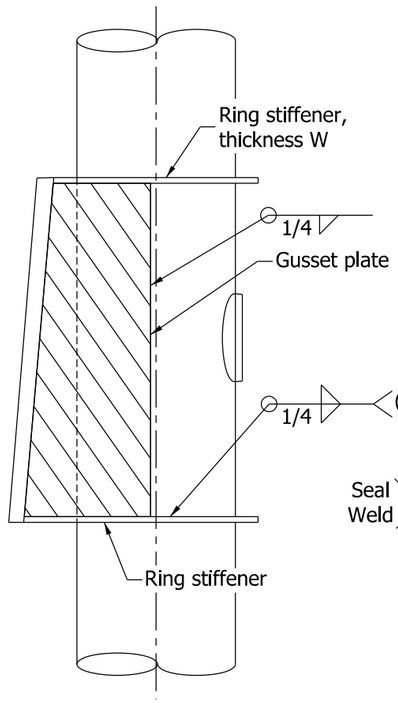
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

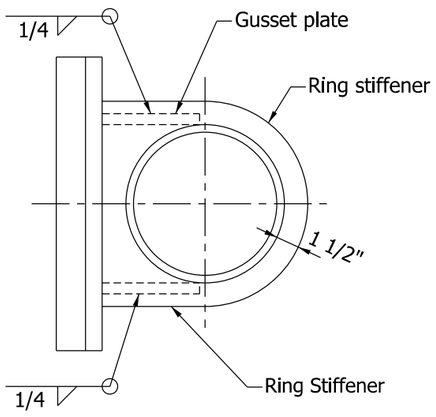
DESIGN STANDARDS ENGINEER DATE

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

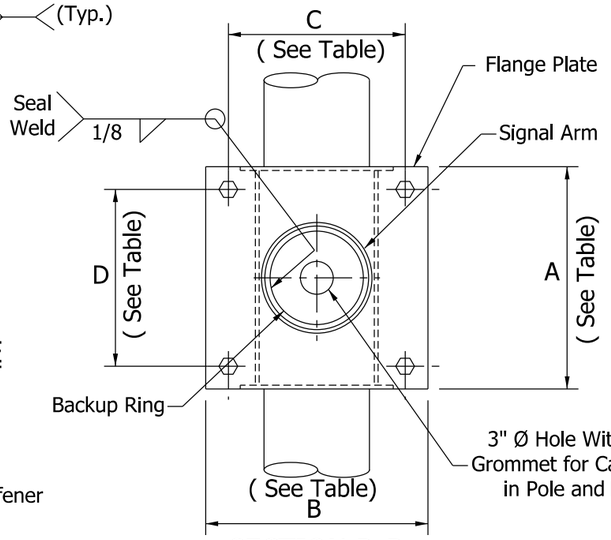
CHIEF ENGINEER DATE



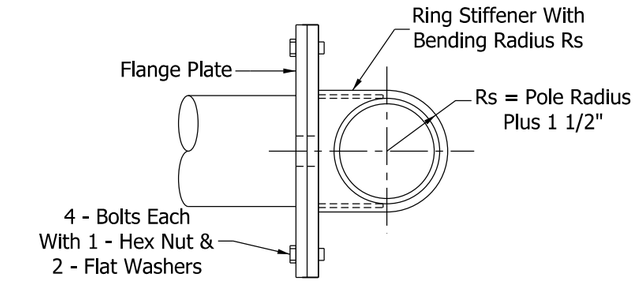
ELEVATION OF GUSSET PLATE



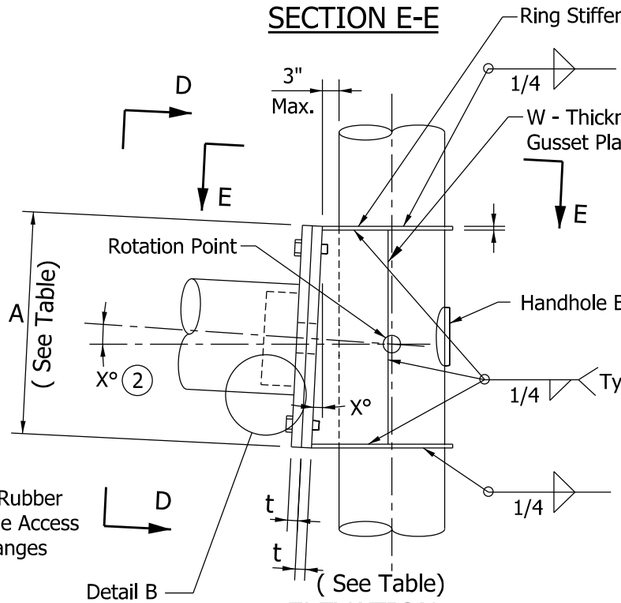
TOP OF GUSSET PLATE



SECTION D-D



SECTION E-E

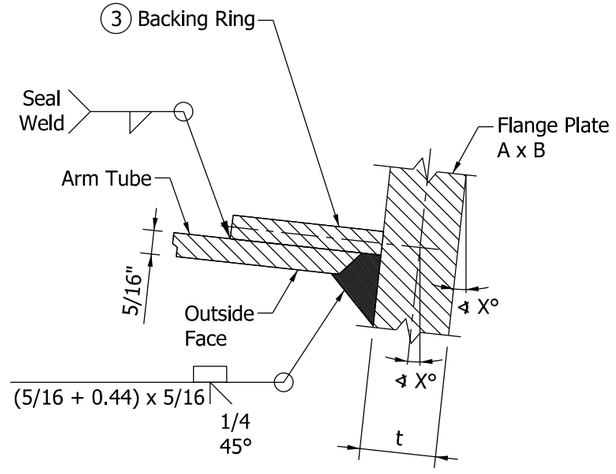


ELEVATION

SIGNAL ARM CONNECTION DETAIL

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

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

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE
SIGNAL ARM CONNECTION DETAILS

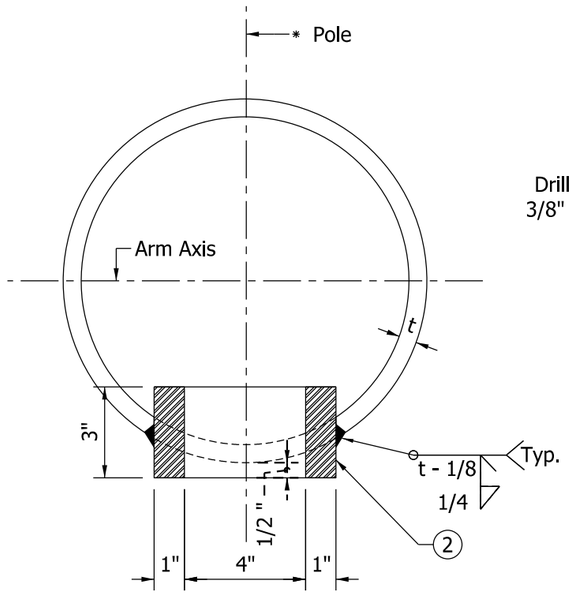
SEPTEMBER 2014

STANDARD DRAWING NO. E 805-TSCS-05

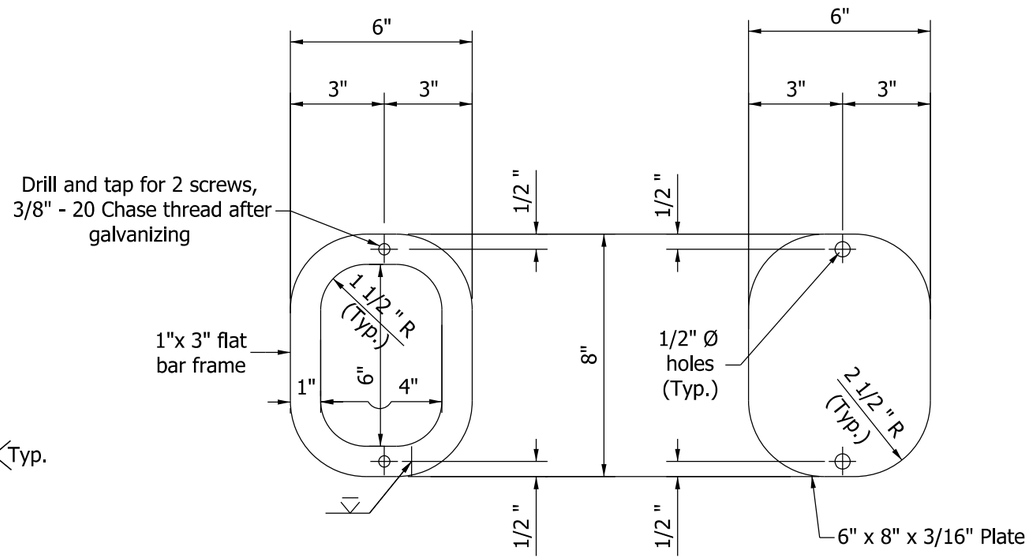
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



HANDHOLE B
SECTION ACROSS POLE



FRAME DETAIL COVER

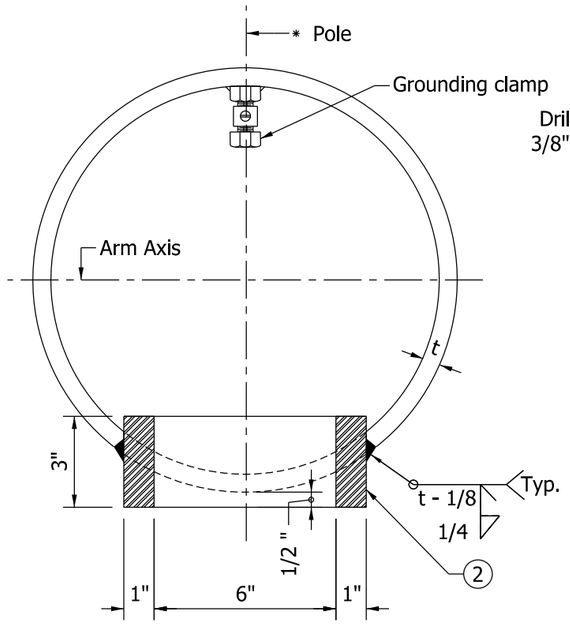
HANDHOLE B

NOTES:

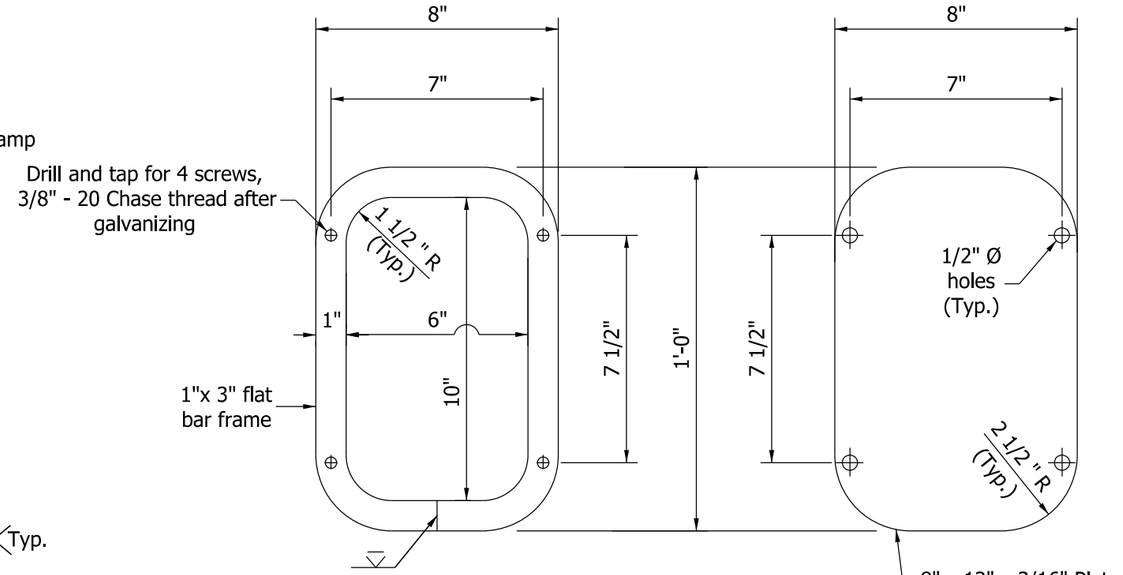
1 Handhole A shall be used at the base of the pole. Handhole B shall be used at all other locations.

(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.



HANDHOLE A
SECTION ACROSS POLE



FRAME DETAIL COVER

HANDHOLE A

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE
HANDHOLE DETAILS

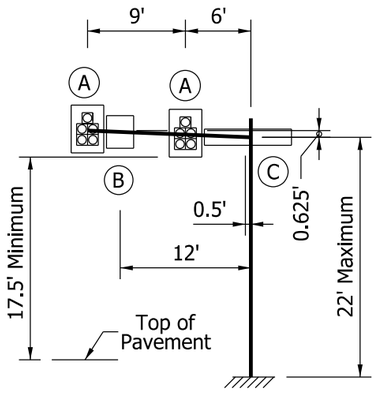
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-06

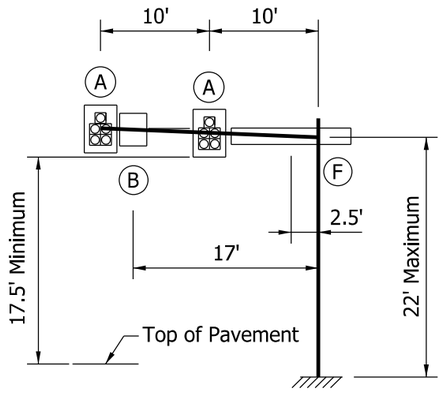
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

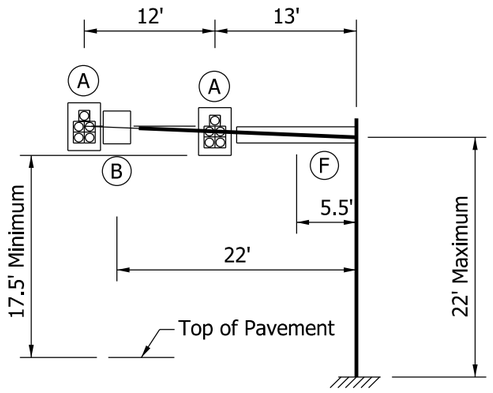
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



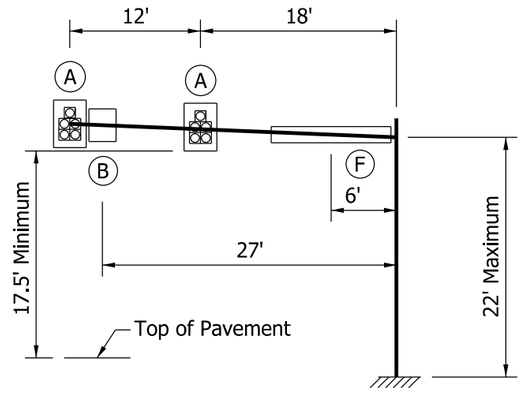
15' ARM



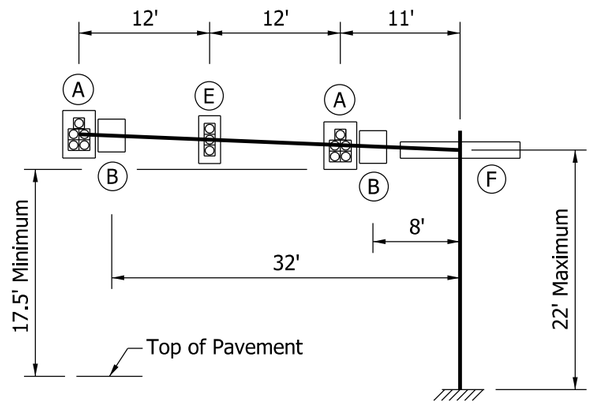
20' ARM



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
(E)	12" - 3 Section Signal Head With Backplates
(F)	18" x 132" Street Name Sign

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.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE PLACEMENT OF SIGNALS AND SIGNS LOADING FOR ARM OF 35' OR LESS

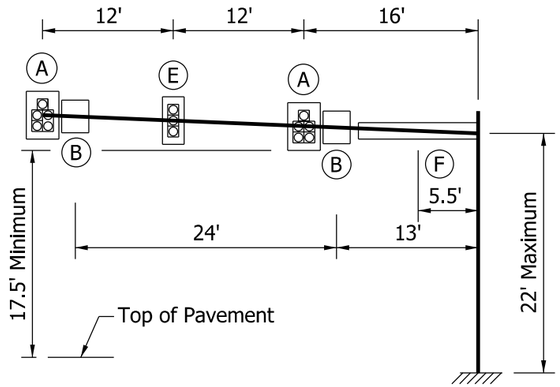
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-07

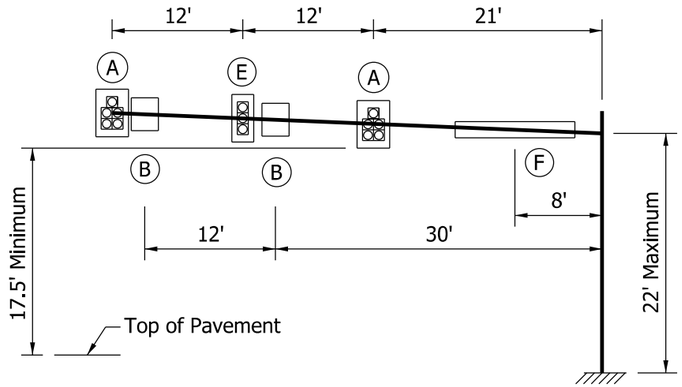
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

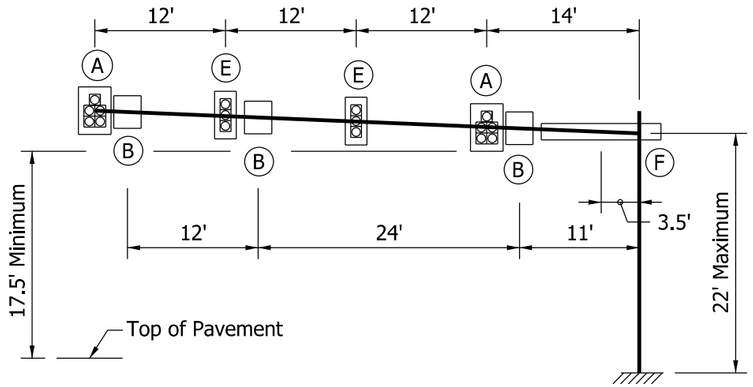
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



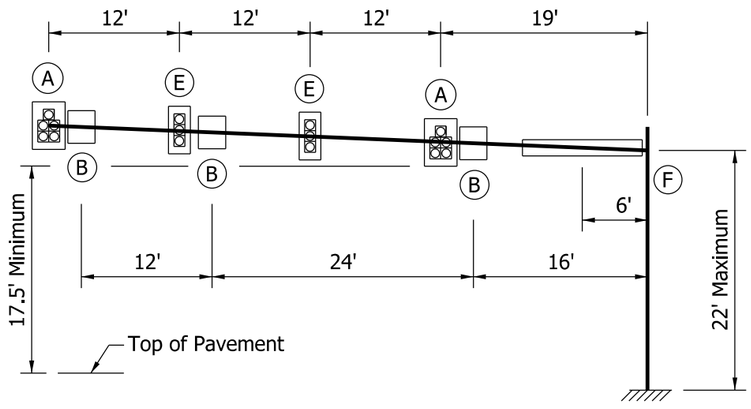
40' ARM



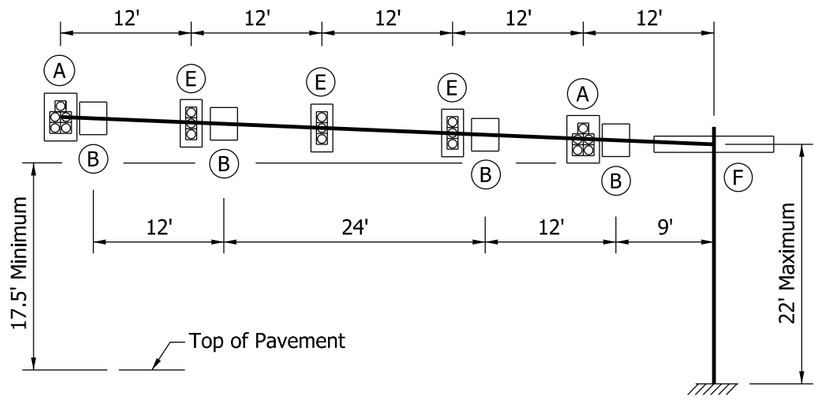
45' ARM



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

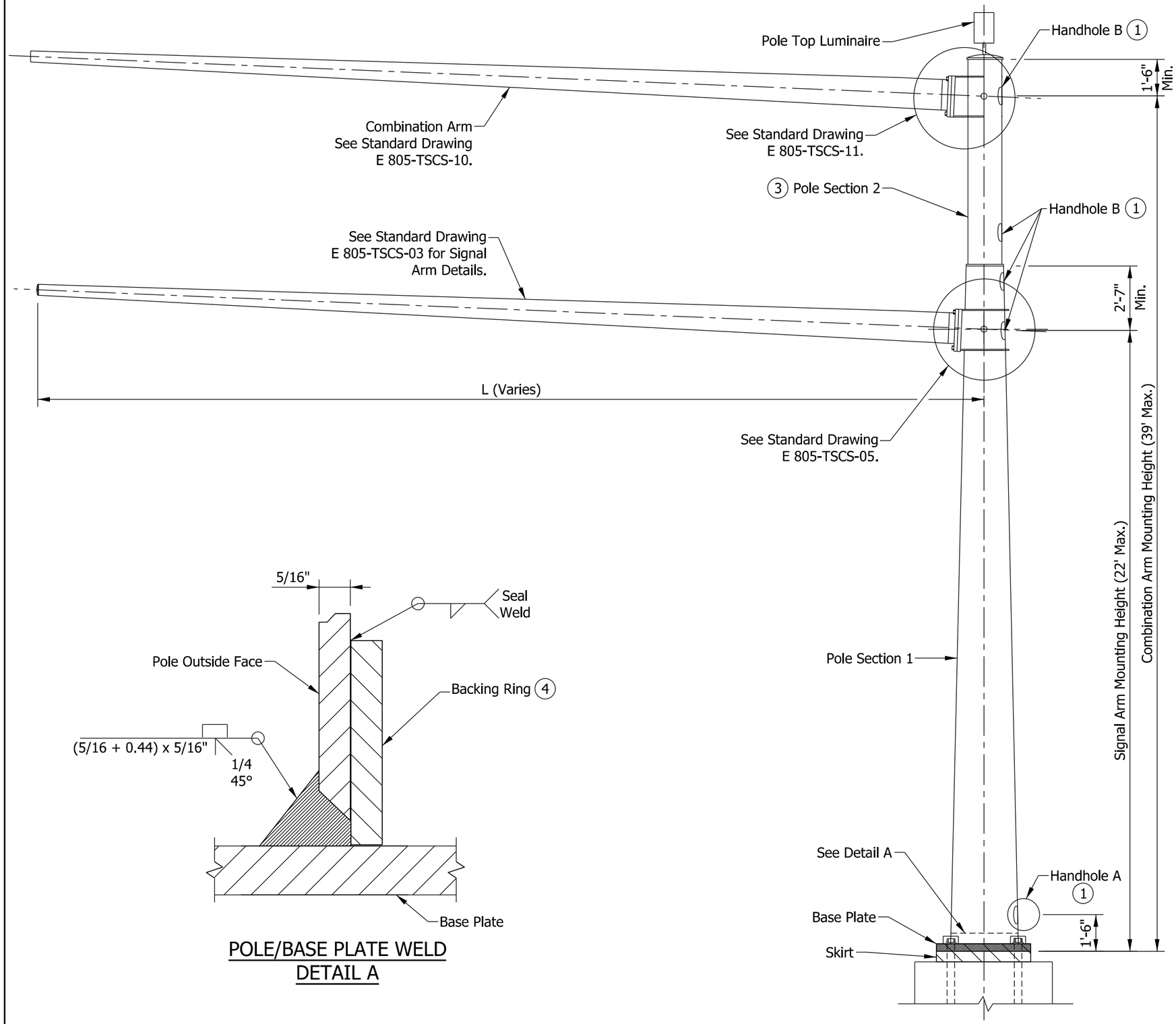
TRAFFIC SIGNAL CANTILEVER STRUCTURE
PLACEMENT OF SIGNALS AND SIGNS
LOADING FOR ARM OF GREATER THAN 35' TO 60'
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-08

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



POLE ELEVATION

POLE/BASE PLATE WELD
DETAIL A

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

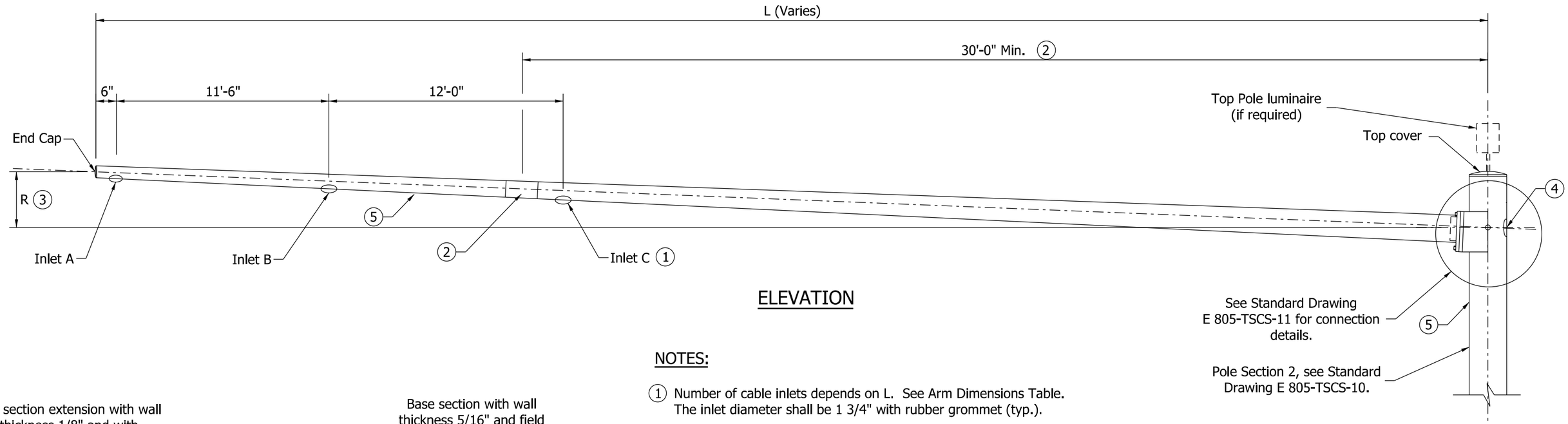
SEPTEMBER 2014

STANDARD DRAWING NO. E 805-TSCS-09

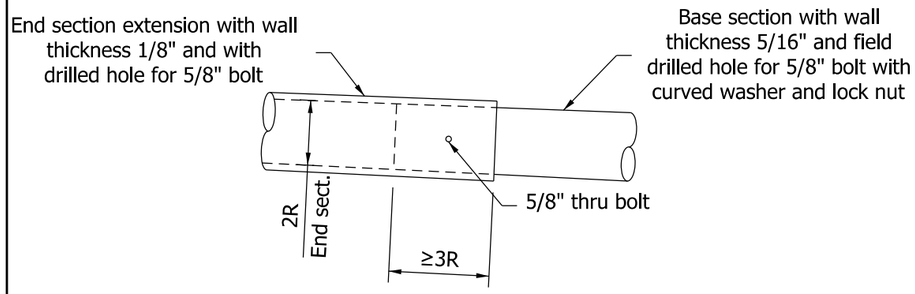
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

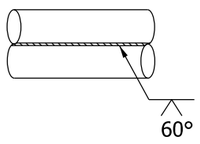
/s/ Mark A. Miller — 12/05/13
CHIEF ENGINEER — DATE



ELEVATION



(2) OPTIONAL ARM SPLICE DETAIL



(5) TYPICAL SEAM WELD

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.

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

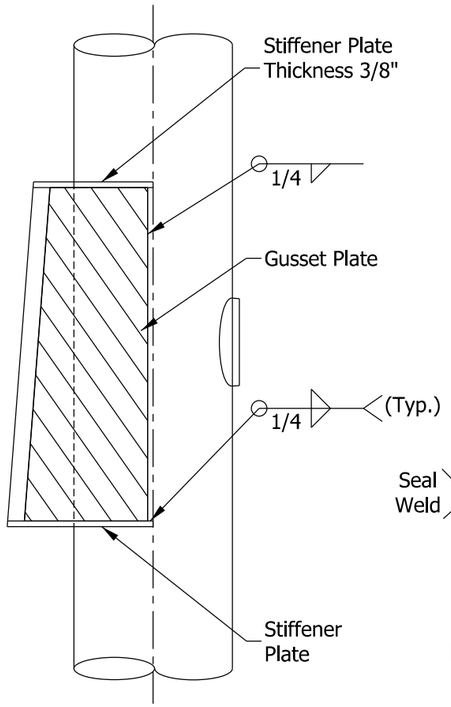
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-10

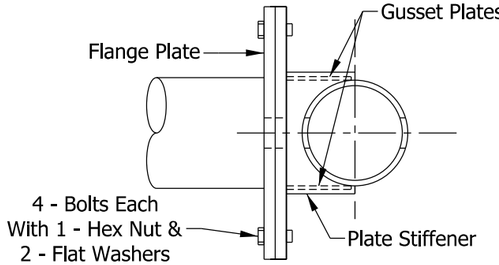
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



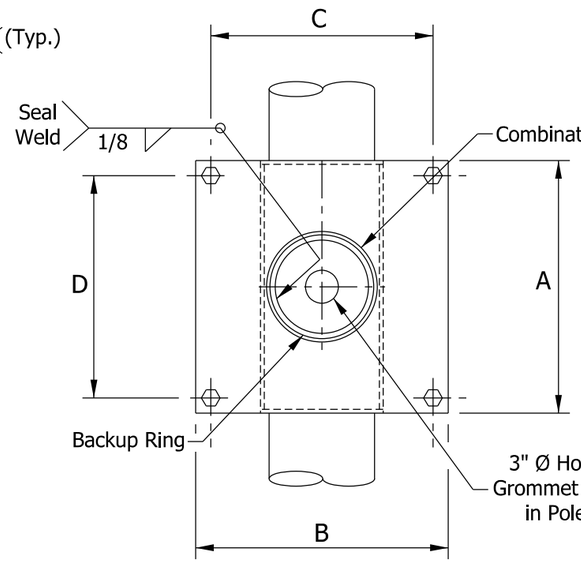
ELEVATION OF GUSSET PLATES



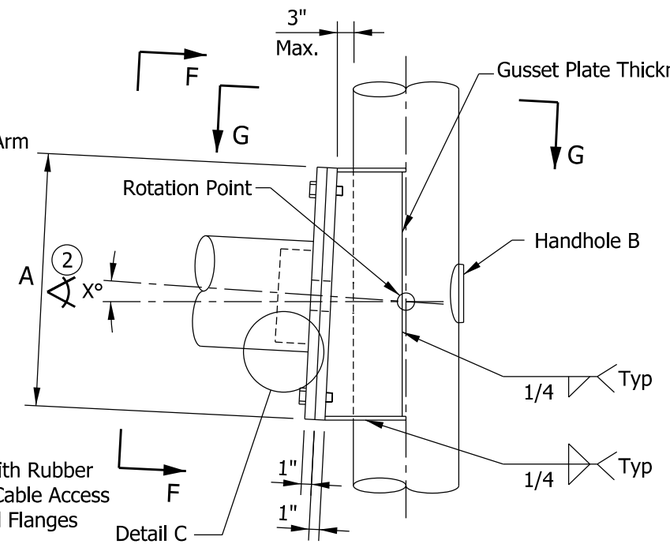
SECTION G-G

NOTES:

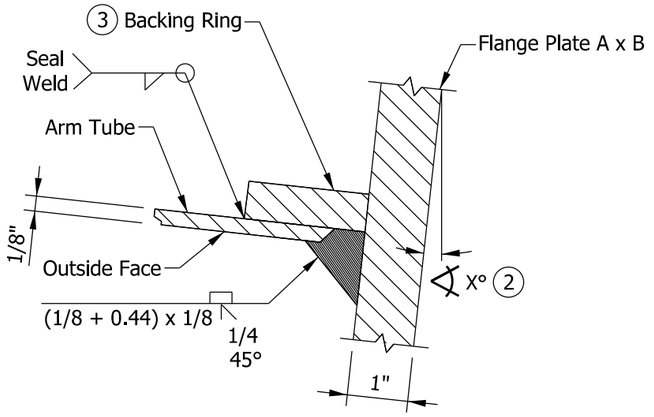
1. See Standard Drawing E 805-TSCS-06 for handhole details.
2. The required combination arm rise shall be built into the gusset plate at the angle X. The angle X is described as arc tan R/L, where R is the combination arm rise and L is the arm length. Both R and L vary and are listed in the Arm Dimensions 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.



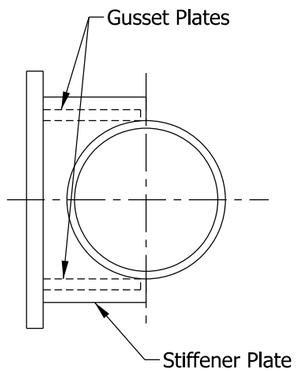
SECTION F-F



ELEVATION



DETAIL C - ARM WELD



TOP OF GUSSET PLATES

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

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE
COMBINATION ARM CONNECTION DETAILS

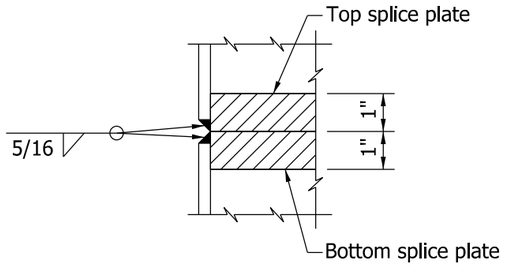
SEPTEMBER 2014

STANDARD DRAWING NO. E 805-TSCS-11

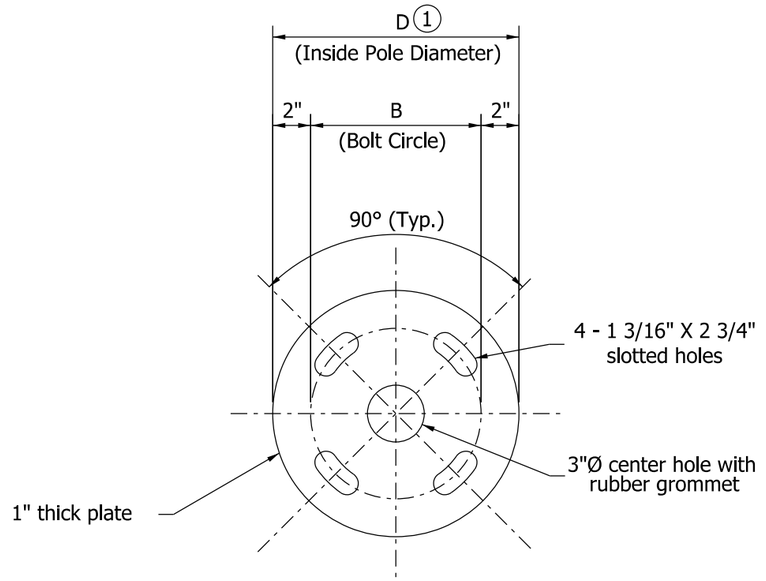
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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



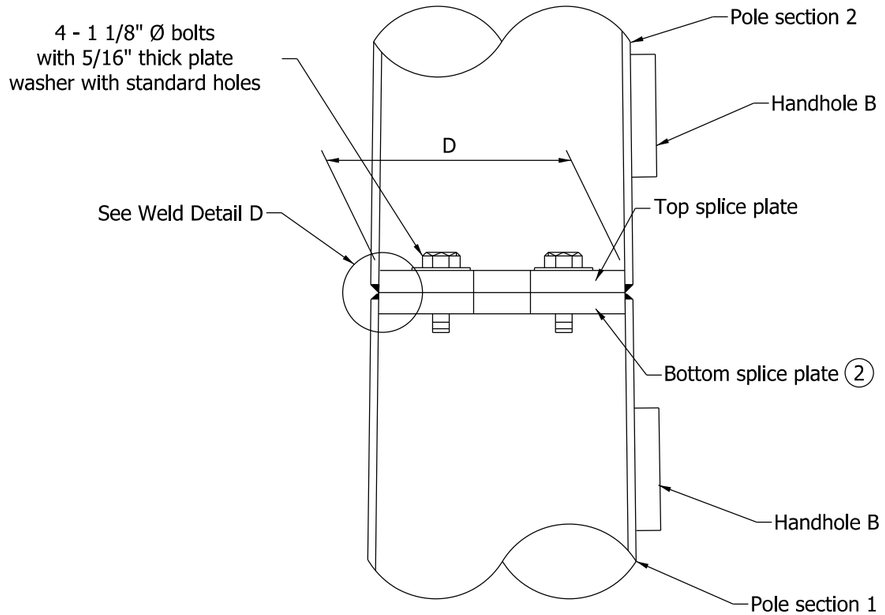
WELD DETAIL D



TOP SPLICE PLATE

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.



ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE
COMBINATION POLE SPLICE DETAILS
FOR ARMS 35' OR LESS

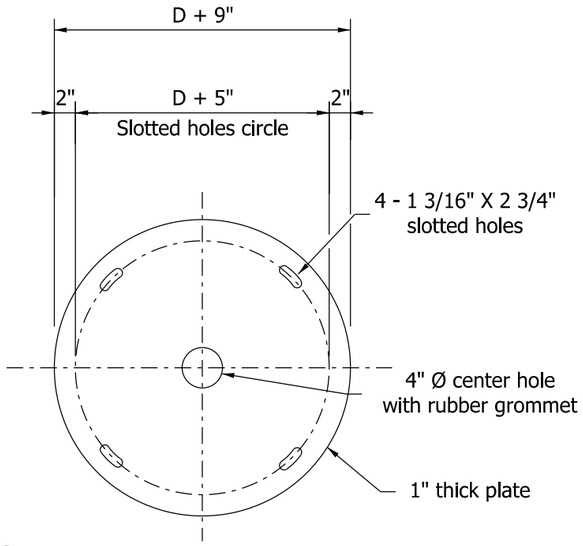
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-12

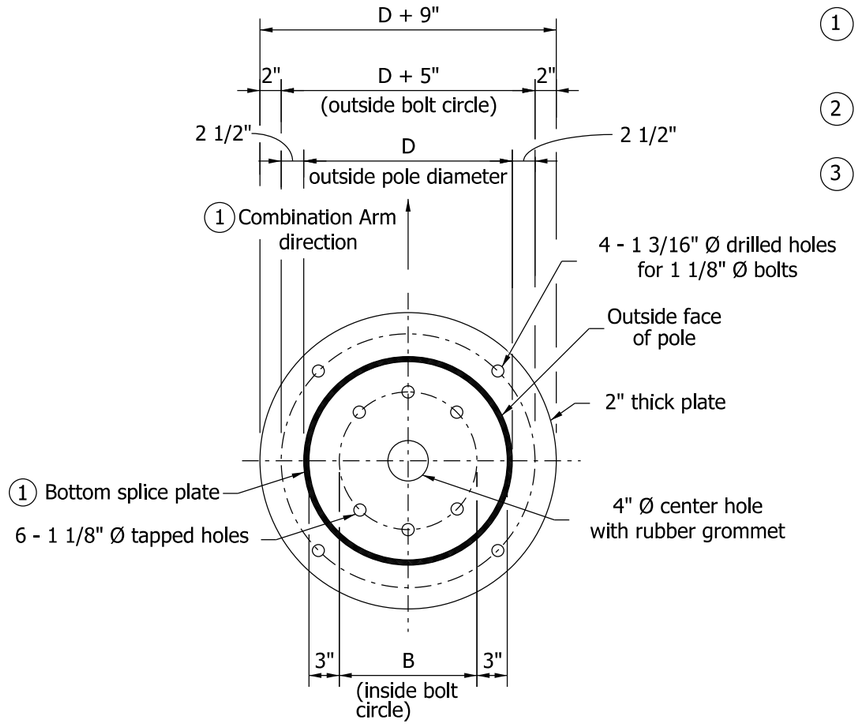
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

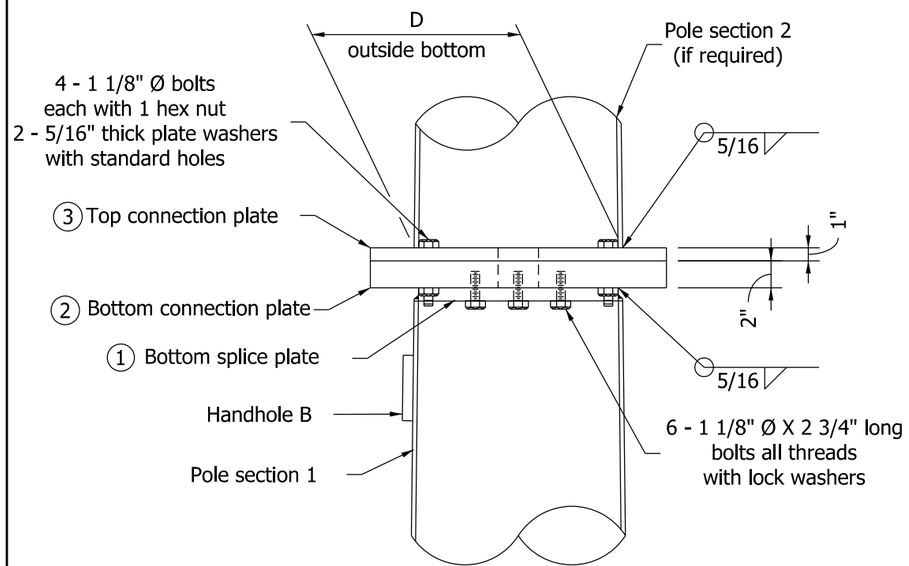
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



③ TOP CONNECTION PLATE



② BOTTOM CONNECTION PLATE



ELEVATION

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'

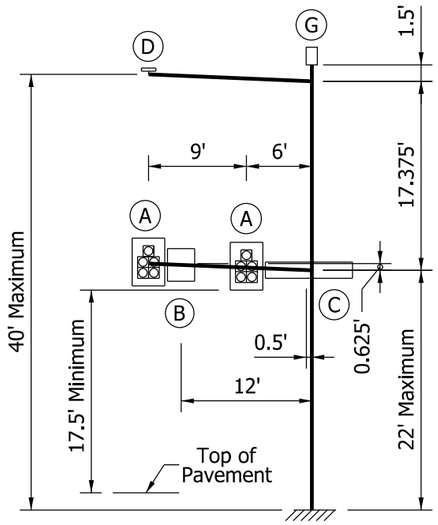
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-13

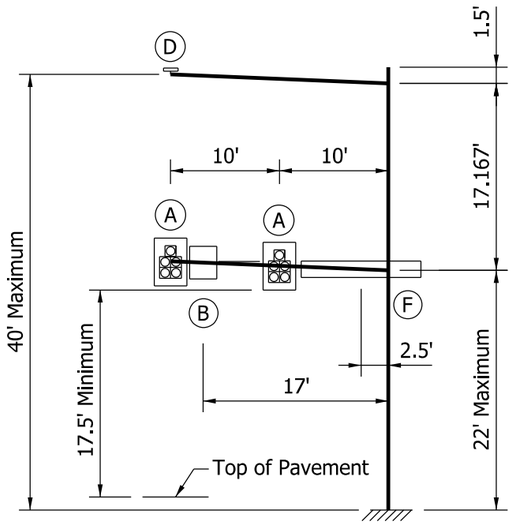
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

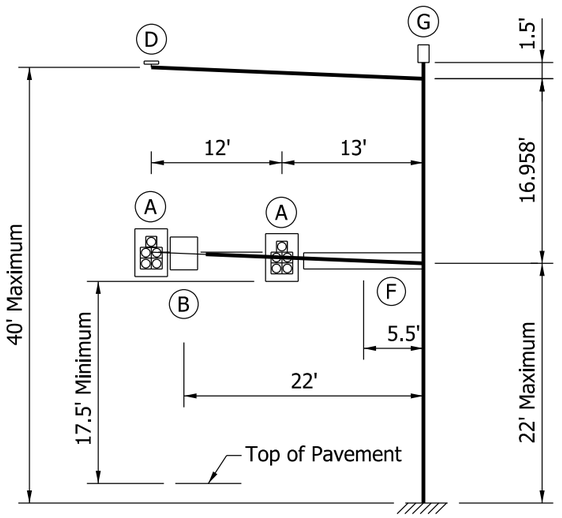
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



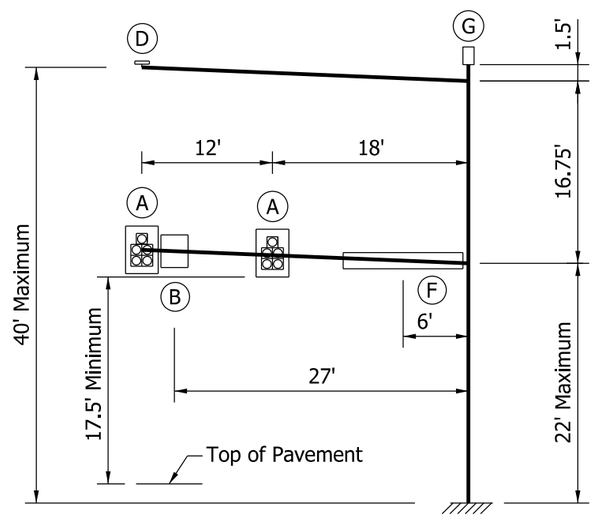
15' ARM



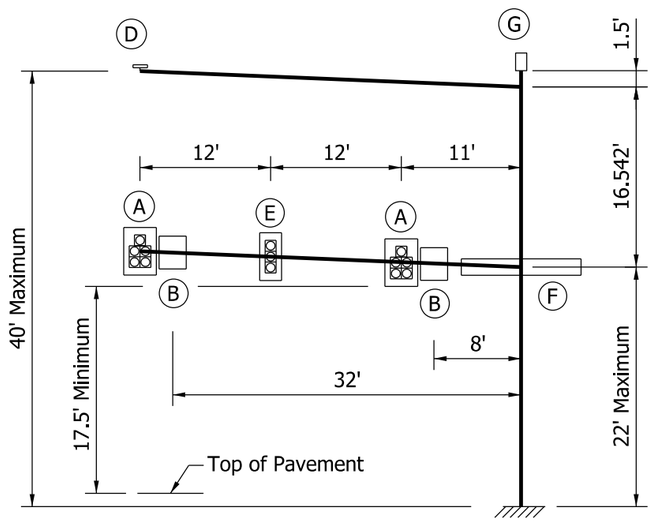
20' ARM



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:

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.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE COMBINATION ARM LOADING FOR ARM OF 35' OR LESS

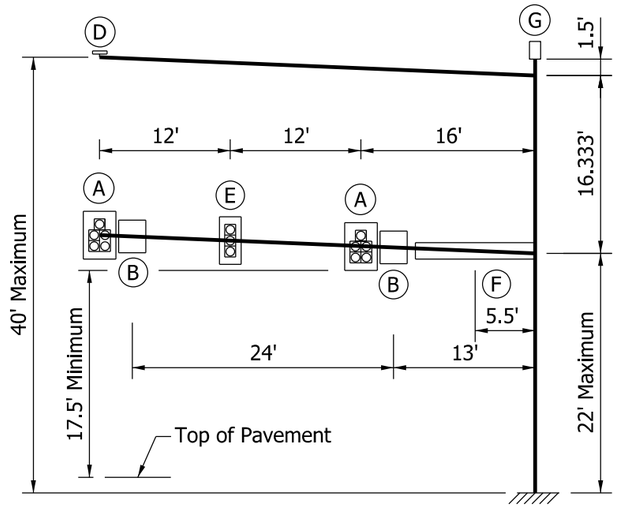
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-14

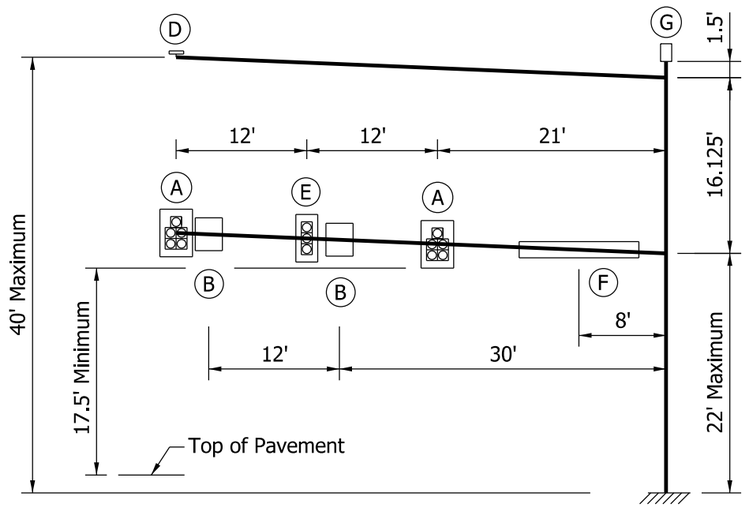
ALFREDO B. HANZA
REGISTERED
No.
60020657
STATE OF
INDIANA
PROFESSIONAL ENGINEER

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

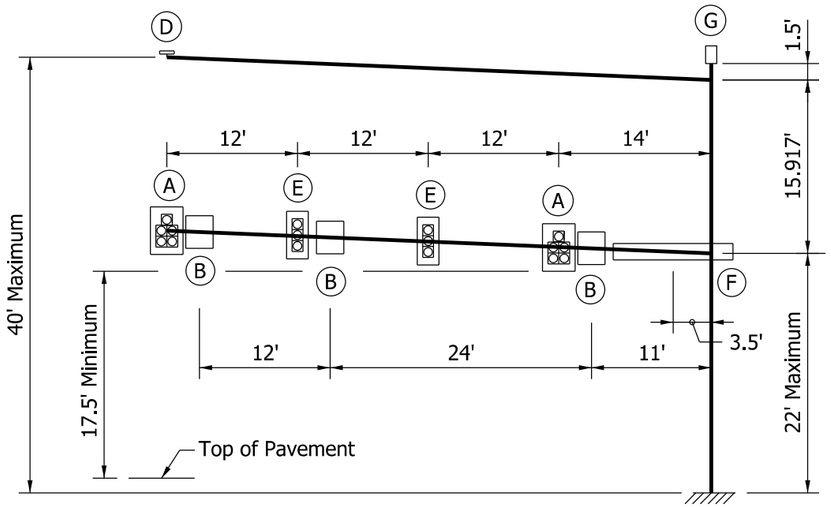
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



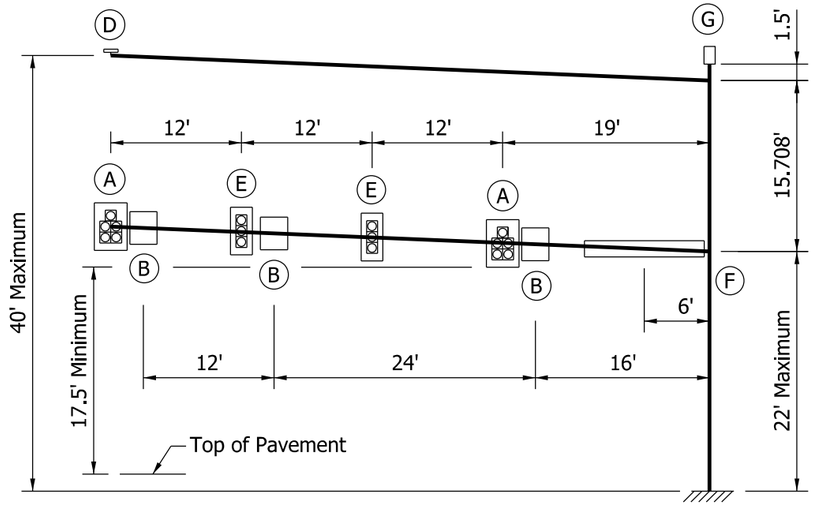
40' ARM



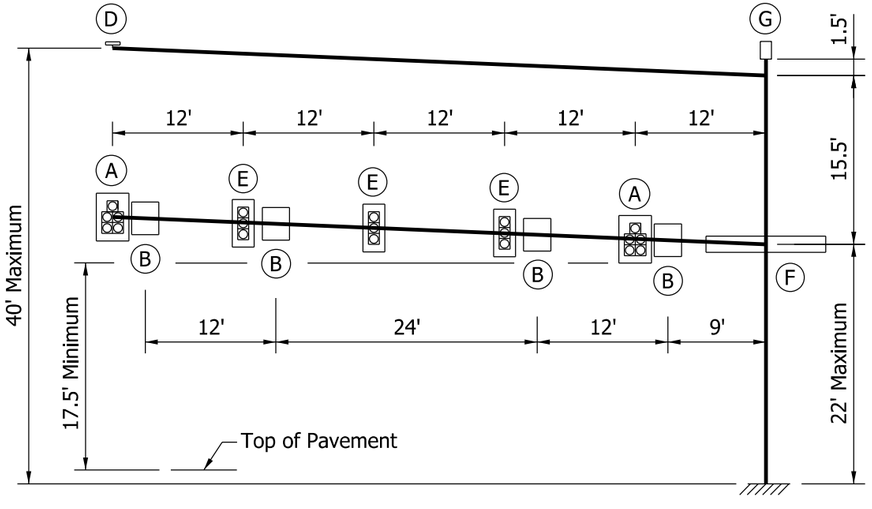
45' ARM



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

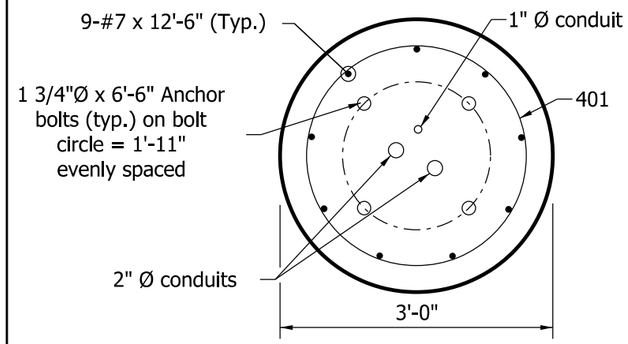
TRAFFIC SIGNAL CANTILEVER STRUCTURE
COMBINATION ARM LOADING
FOR ARM OF GREATER THAN 35' TO 60'
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-15

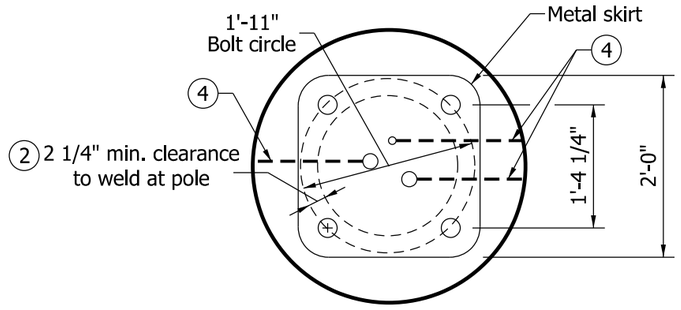
ALFREDO B. HANZA
REGISTERED
No. 60020657
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

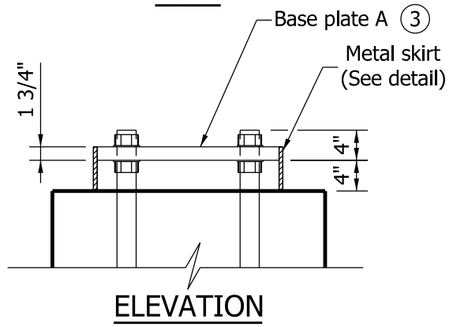
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



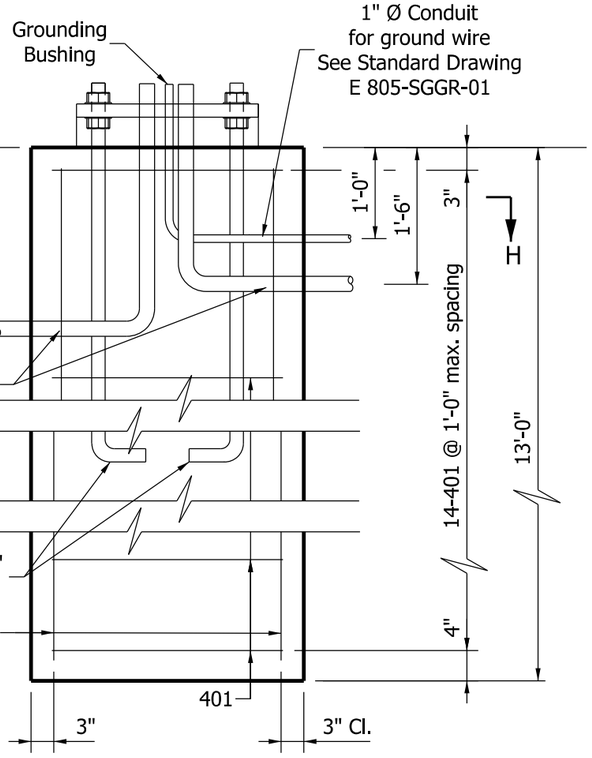
SECTION H-H



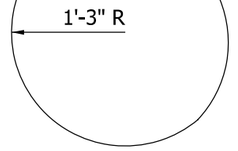
PLAN



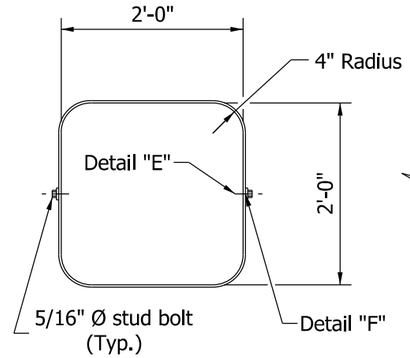
ELEVATION



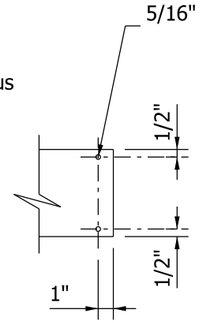
SHAFT SECTION



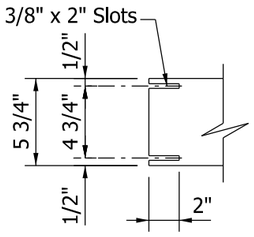
401 X 9'-5"



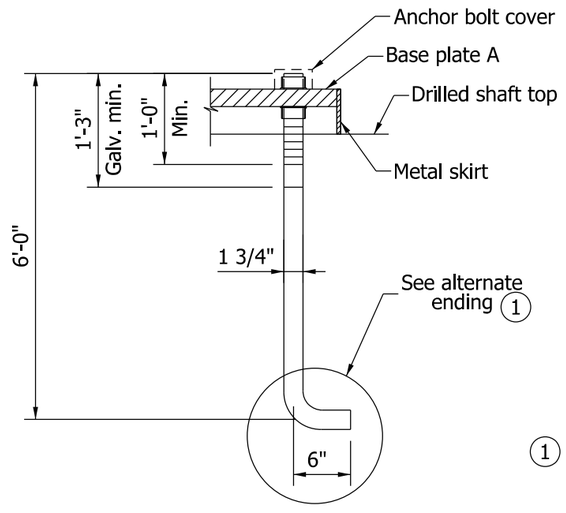
METAL SKIRT DETAIL



DETAIL E



DETAIL F



ANCHOR BOLT A DETAIL

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

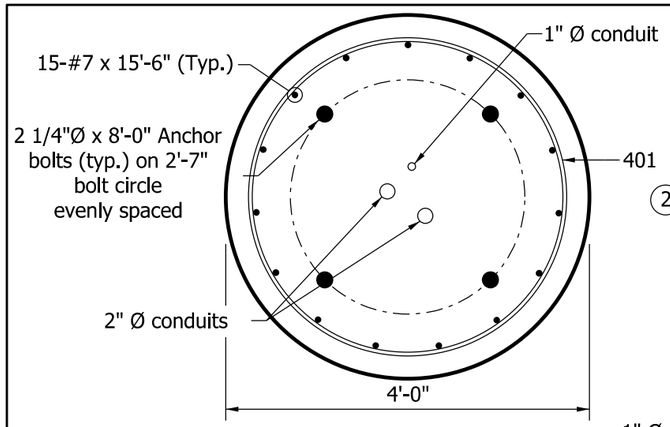
SEPTEMBER 2013

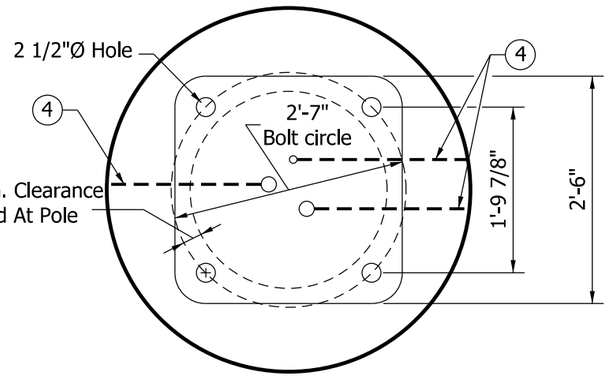
STANDARD DRAWING NO. E 805-TSCS-16

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





PLAN

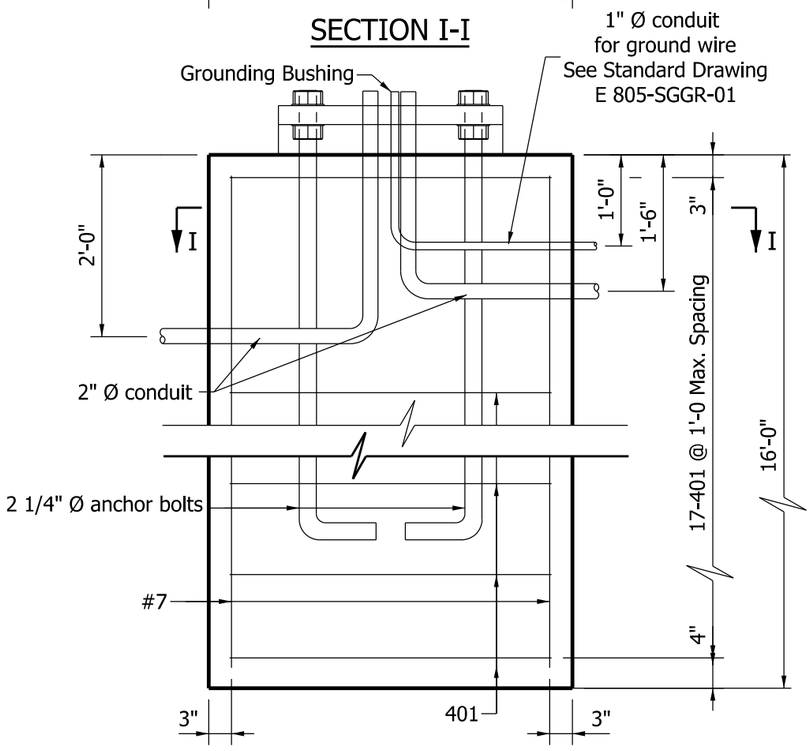
NOTES:

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.

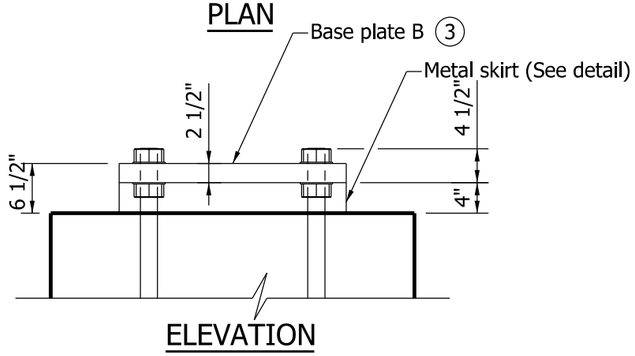
BILL OF MATERIALS DRILLED SHAFT TYPE B

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

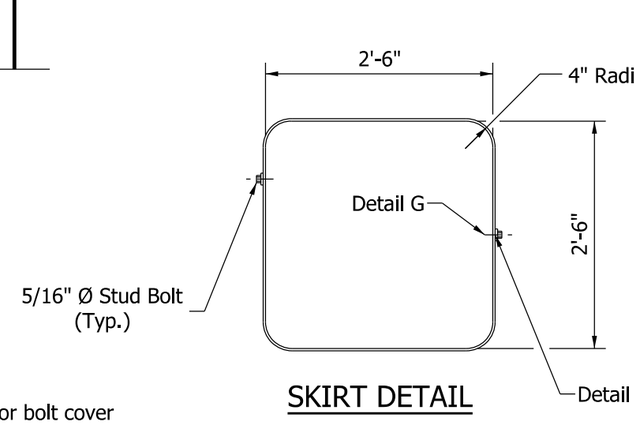
SECTION I-I



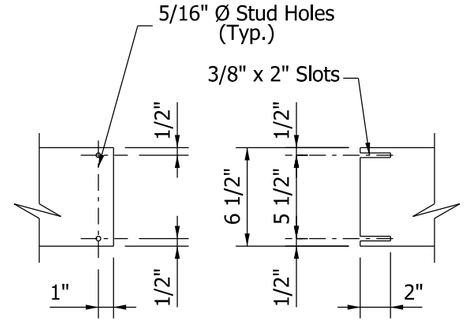
SHAFT SECTION



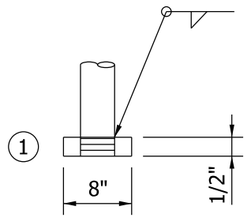
ELEVATION

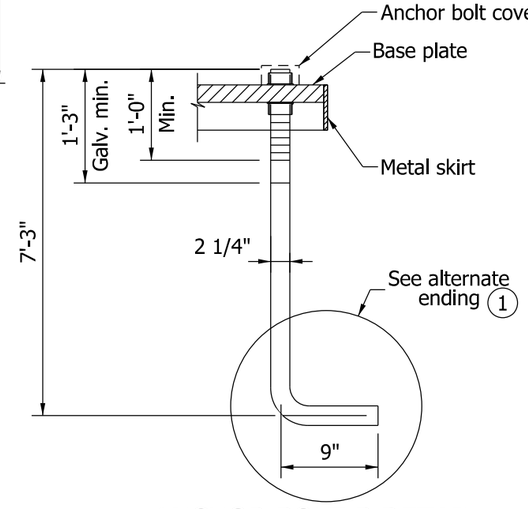


SKIRT DETAIL

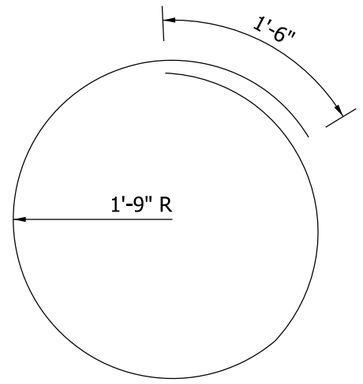


DETAIL G DETAIL H





ANCHOR BOLT B DETAIL



401 X 12'-6"

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL CANTILEVER STRUCTURE DRILLED SHAFT FOUNDATION TYPE B FOR ARM OF GREATER THAN 35' TO 60'

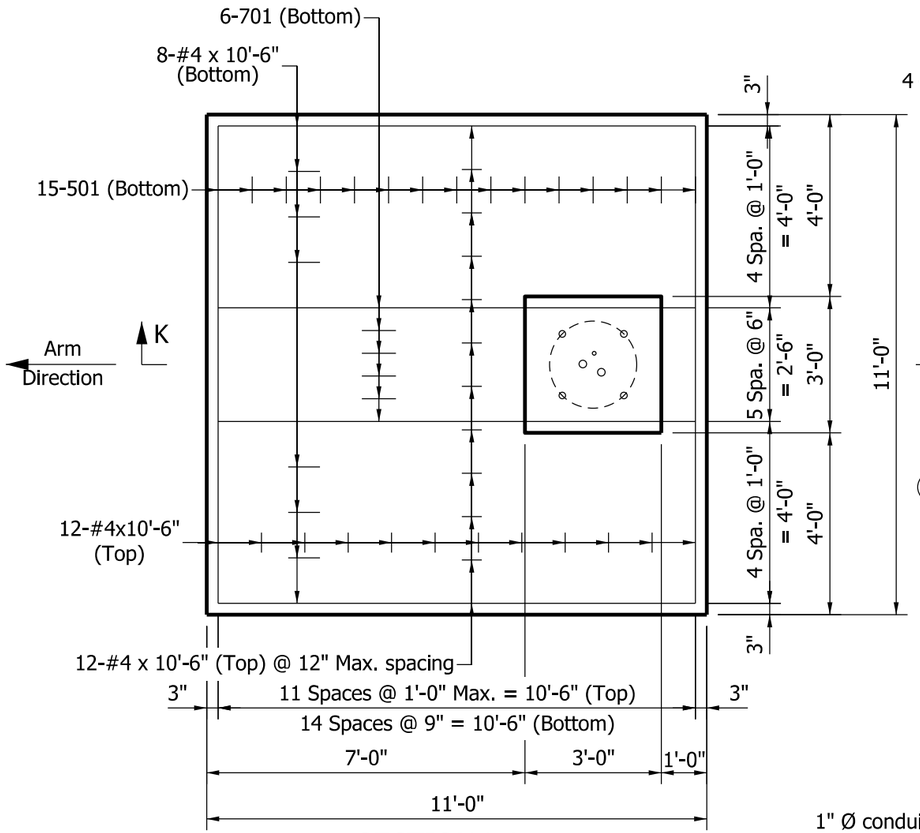
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-17

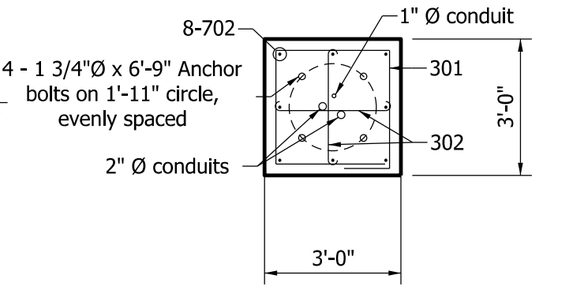
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

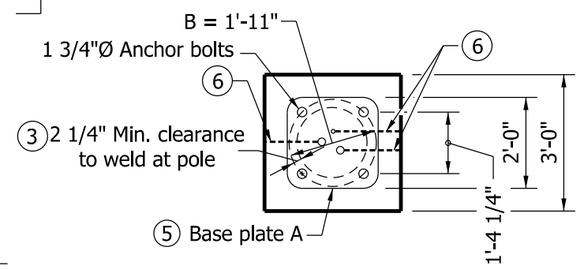
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



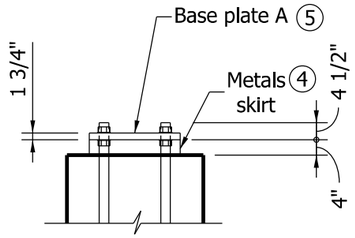
SECTION L-L



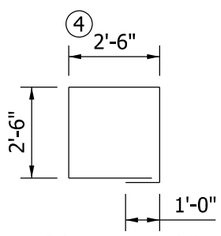
SECTION J-J



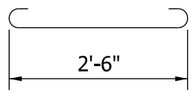
PLAN



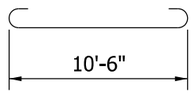
ELEVATION



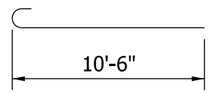
301 x 11'-0"



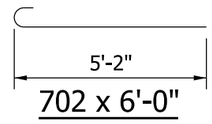
302 x 3'-4"



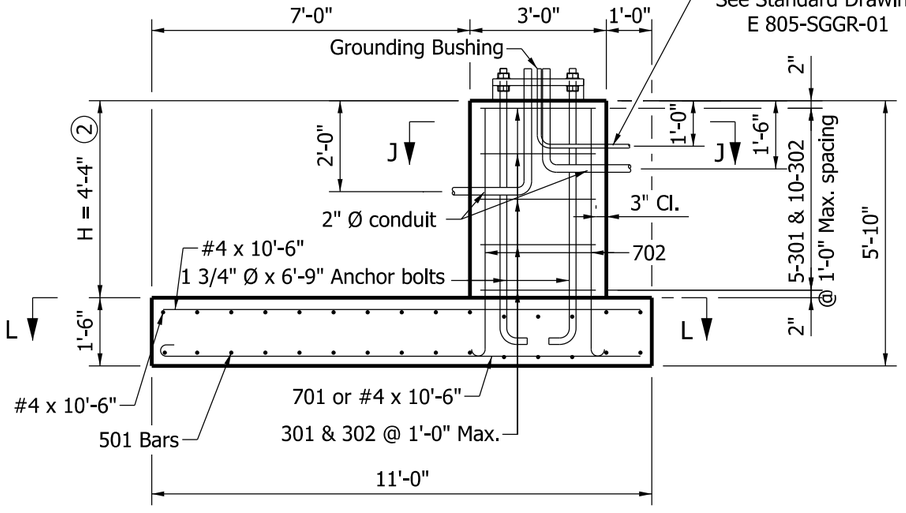
501 x 11'-8"



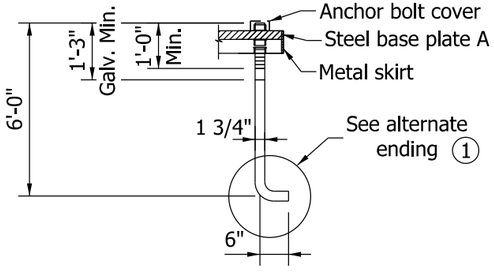
701 x 11'-4"



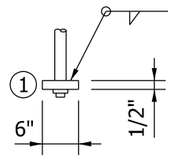
702 x 6'-0"



SECTION K-K



ANCHOR BOLT C DETAIL



NOTES:

1. 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.
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-16 for metal skirt details.
5. See Standard Drawing E 805-TSCS-04 for base plate A 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 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

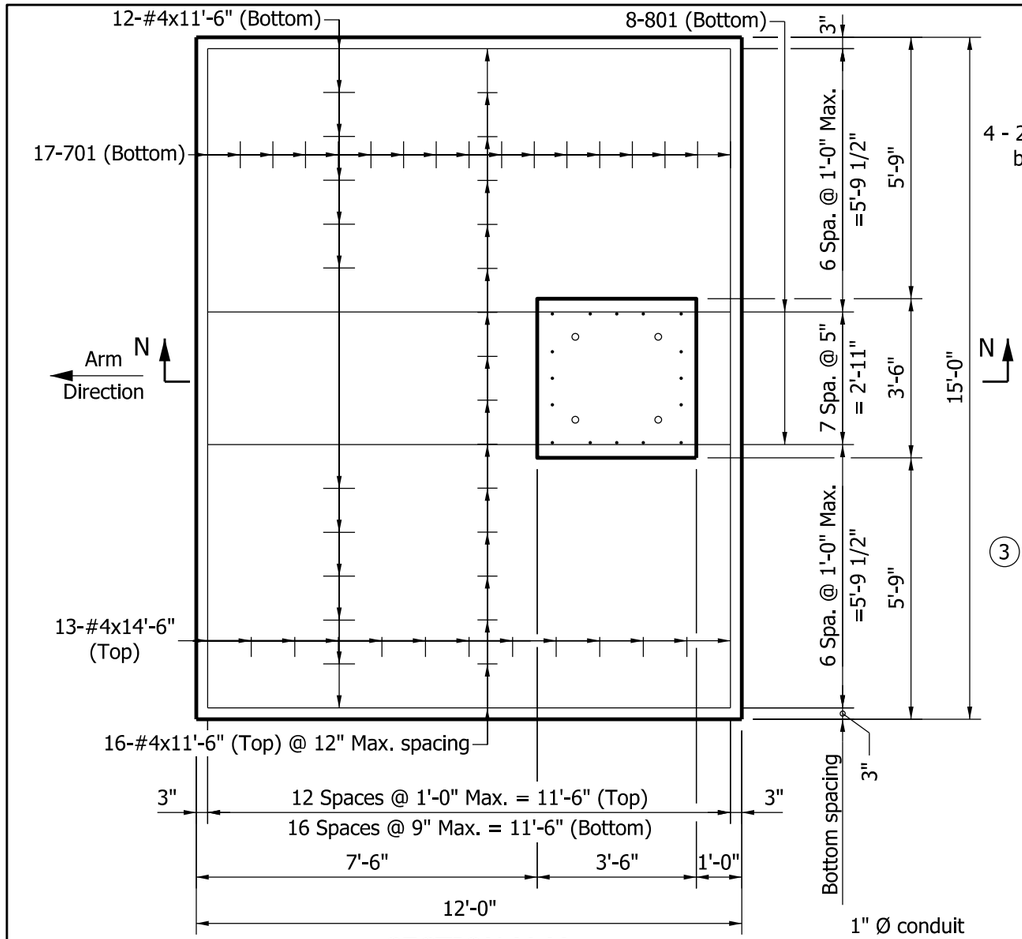
SEPTEMBER 2013

STANDARD DRAWING NO. E 805-TSCS-18

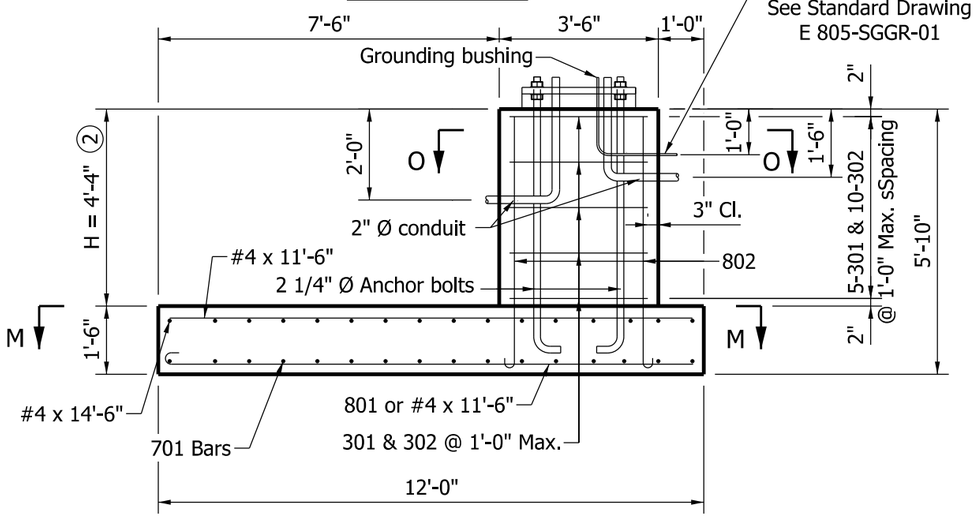
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

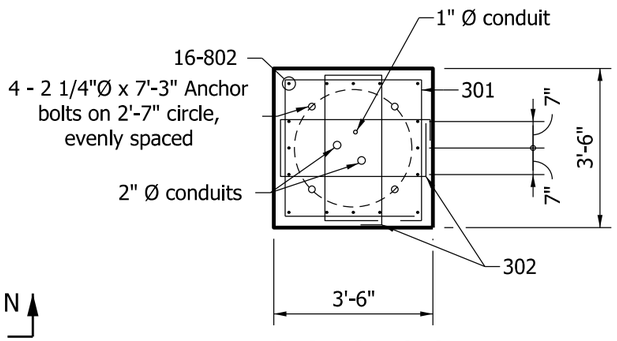
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE



SECTION M-M



SECTION N-N



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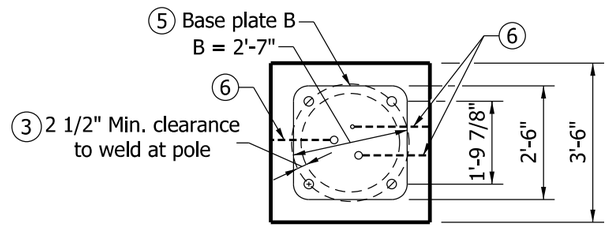
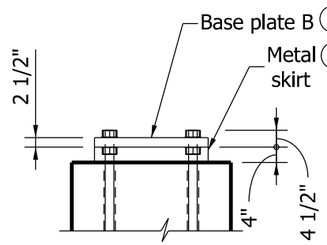
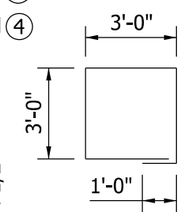


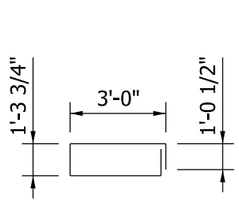
PLAN



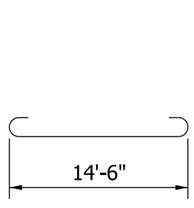
ELEVATION



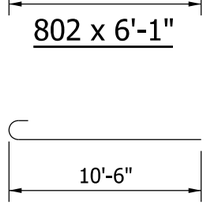
301 x 13'-0"



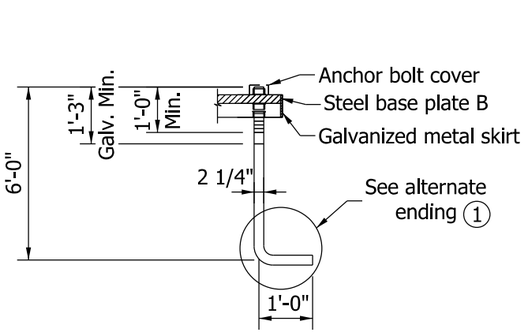
302 x 9'-8"



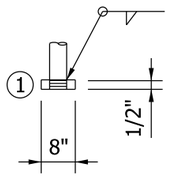
701 x 16-2"

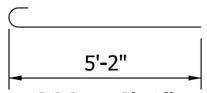


801 x 11'-5"



ANCHOR BOLT D DETAIL





802 x 6'-1"

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

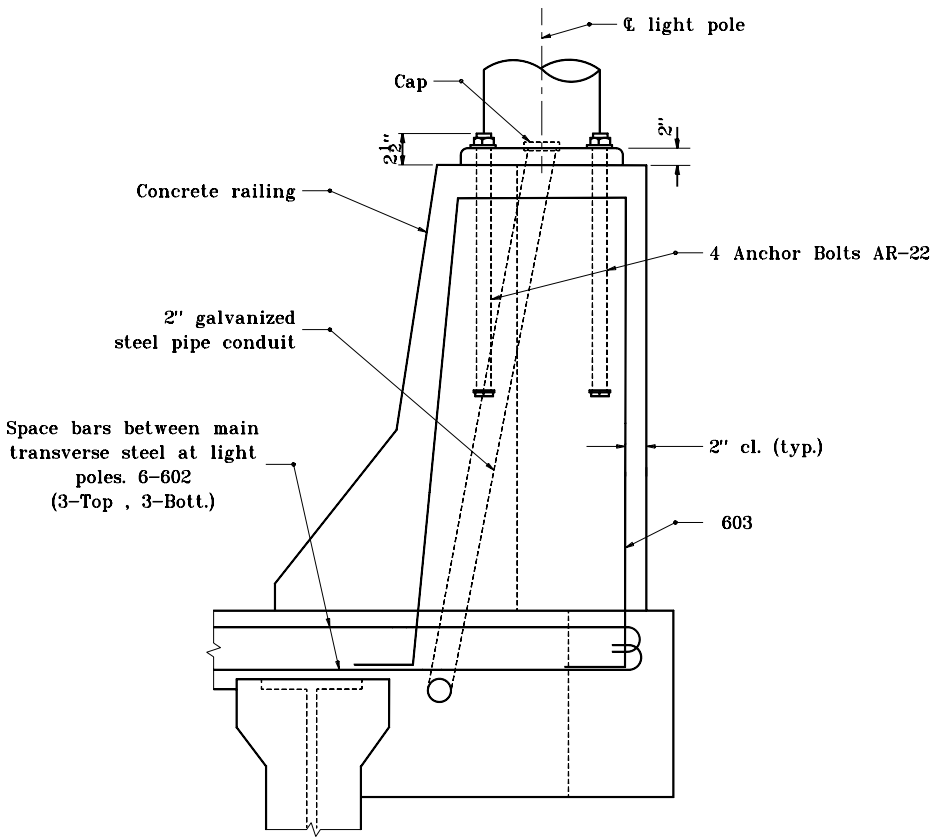
ALFREDO B. HANZA REGISTERED No. 60020657 STATE OF INDIANA PROFESSIONAL ENGINEER

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

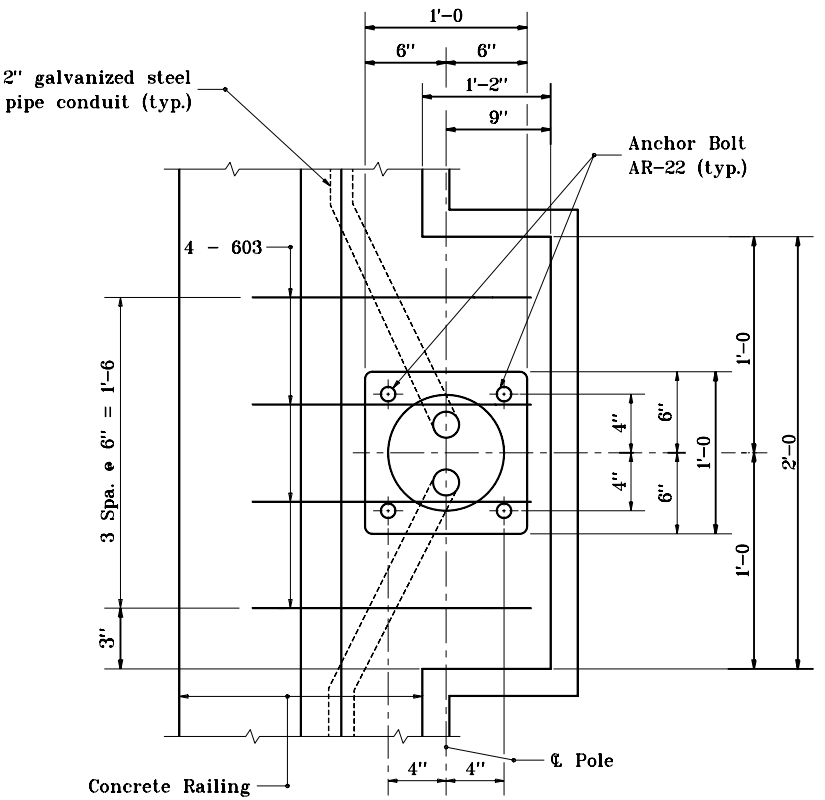
/s/ Mark A. Miller 03/27/13
CHIEF ENGINEER DATE

GENERAL NOTES

1. See Standard Drawing E 807-BLIT-03 for bending diagrams.



SECTION



The bolt circle diameter is approximately 11½".

PLAN

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE LIGHTING DETAILS

SEPTEMBER 1997

STANDARD DRAWING NO. **E 807-BLIT-01**

ANTHONY L. URENOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

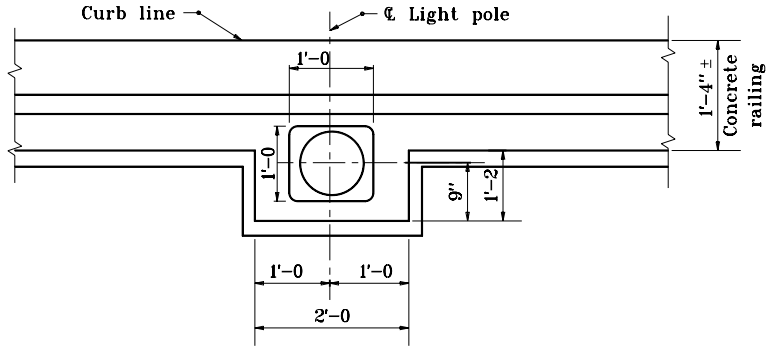
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

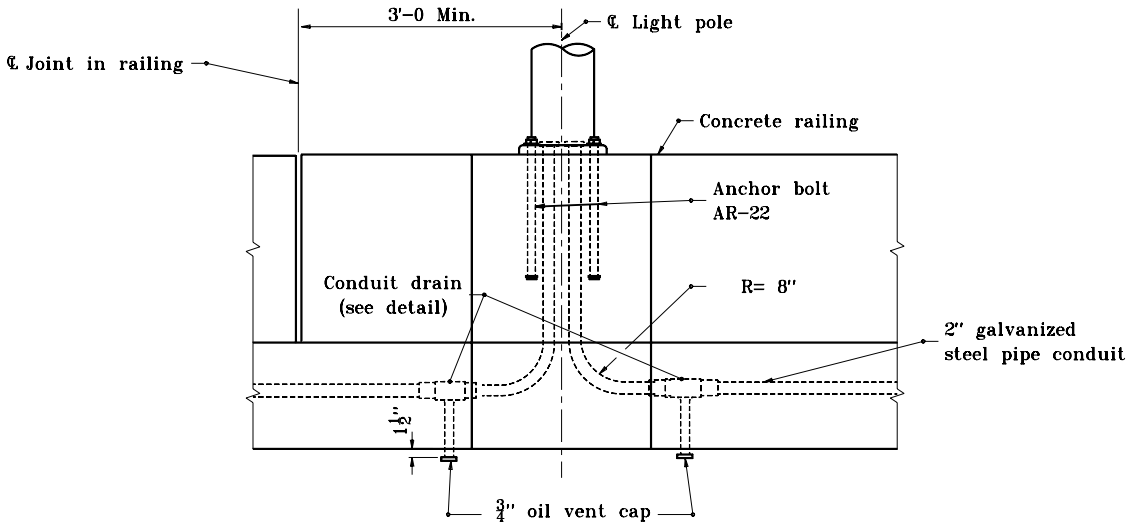
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

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

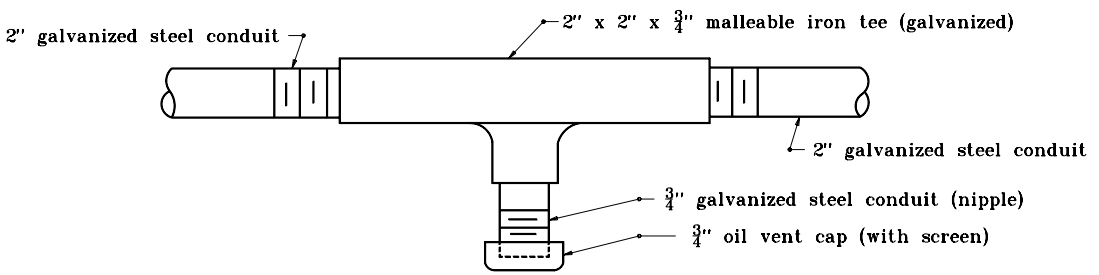
ORIGINALLY APPROVED 9-01-97



PLAN



TYPICAL ELEVATION



CONDUIT DRAIN DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE LIGHTING DETAILS

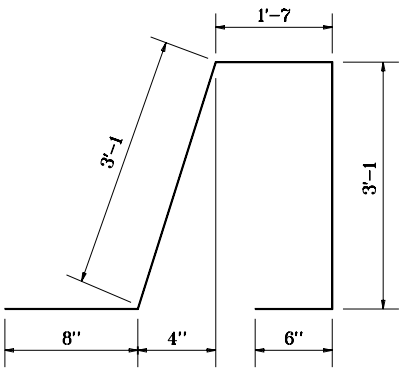
SEPTEMBER 1994

STANDARD DRAWING NO. **E 807–BLIT–02**

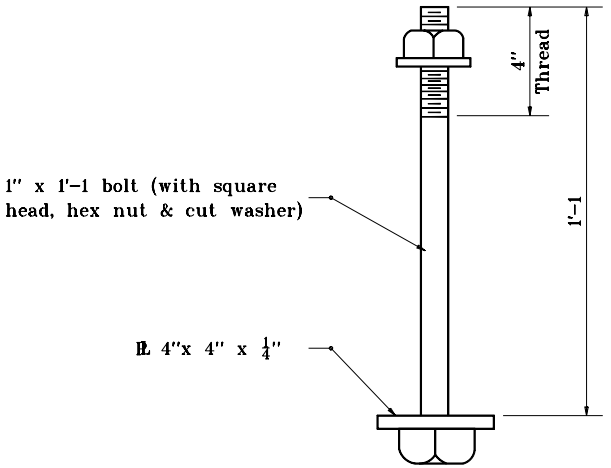
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	9-30-94

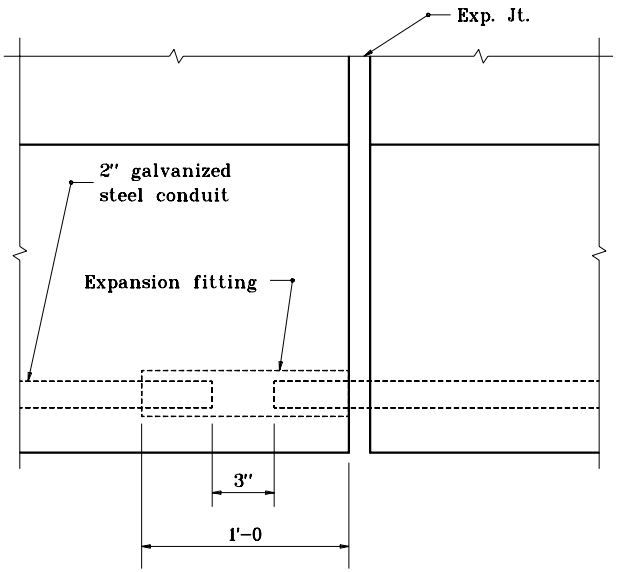


603 x 8'-11

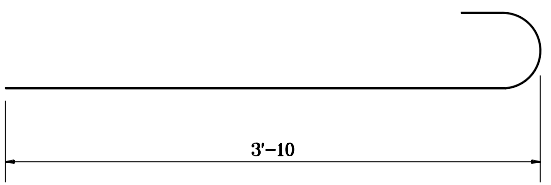


Galvanize thread, hex nut & cut washer.

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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

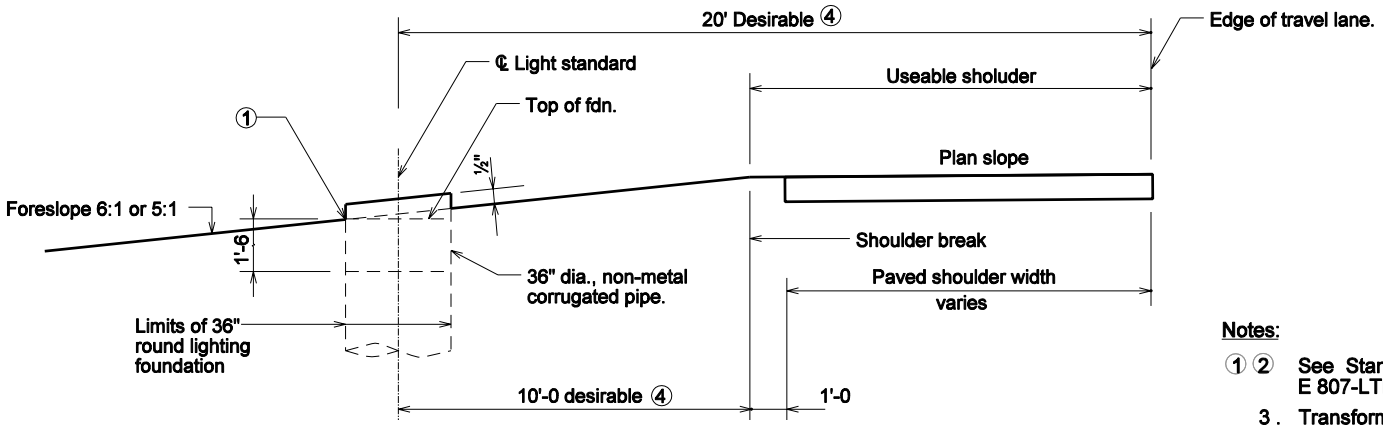
DESIGN STANDARDS ENGINEER

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



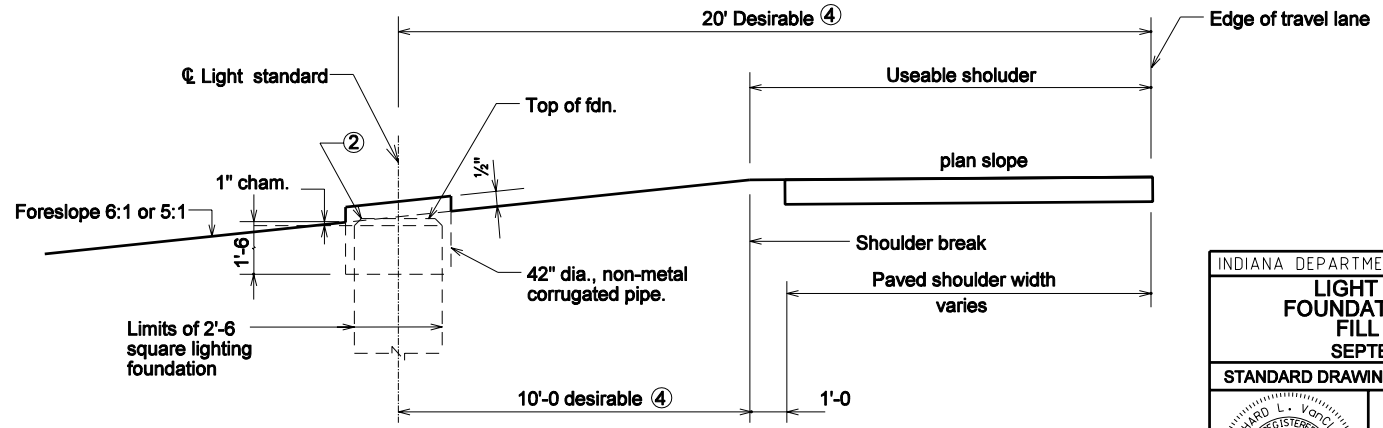
ELEVATION, FILL SECTION, 6:1 OR 5:1 SLOPE, ROUND FOUNDATION

Notes:

①② See Standard Drawing E 807-LTFD-05 General Notes.

3. Transformer base door shall face the right-of-way line.

4 Use which ever gives the greatest offset distance from the edge of the travel lane.



ELEVATION, FILL SECTION, 6:1 OR 5:1 SLOPE, SQUARE FOUNDATION

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT STANDARD FOUNDATION GRADING FILL SECTION

SEPTEMBER 2005

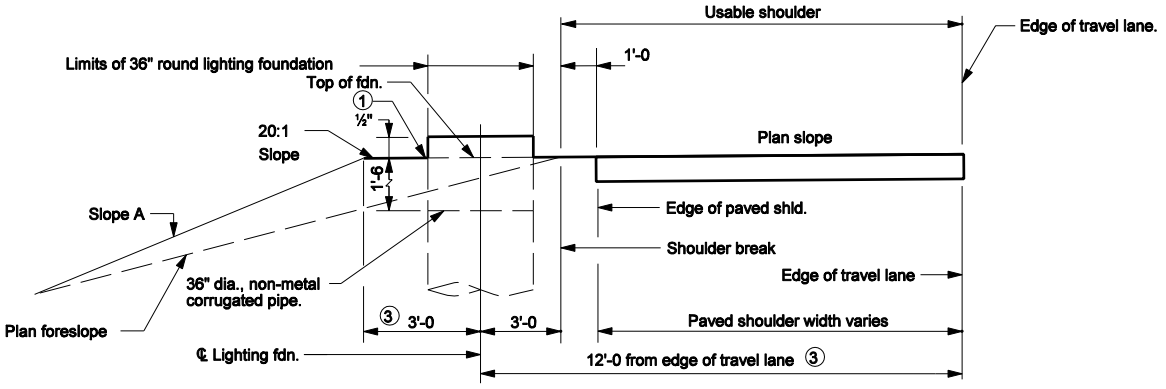
STANDARD DRAWING NO. E 807-LTFD-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



ELEVATION, 4:1 OR 3:1 SLOPE

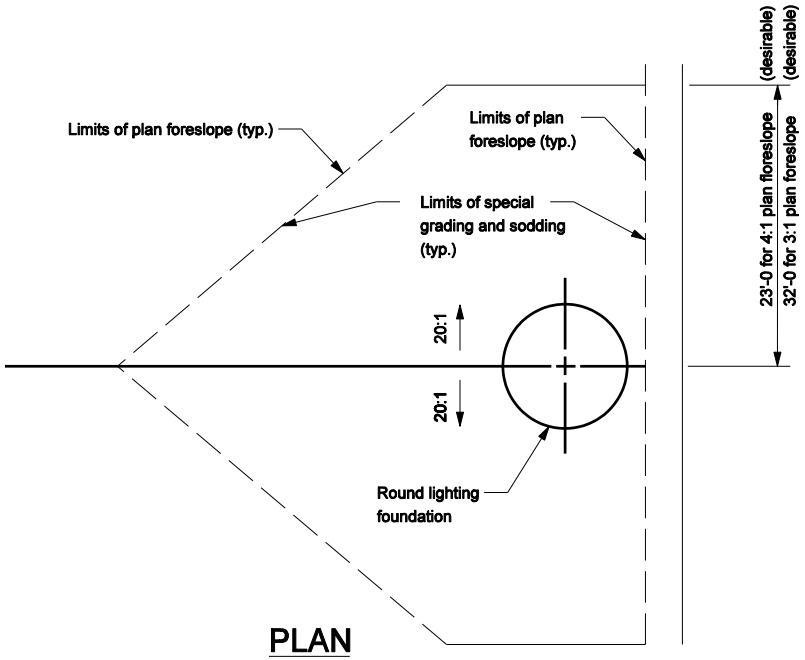
Notes:

① See Standard Drawing E 807-LTFD-05 for General Notes.

2. Transformer base door shall face the right-of-way line.

③ Use which ever 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



PLAN

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT STANDARD ROUND FDN. TNT. FILL SECTION FORESLOPE 4:1 OR 3:1

September 2005

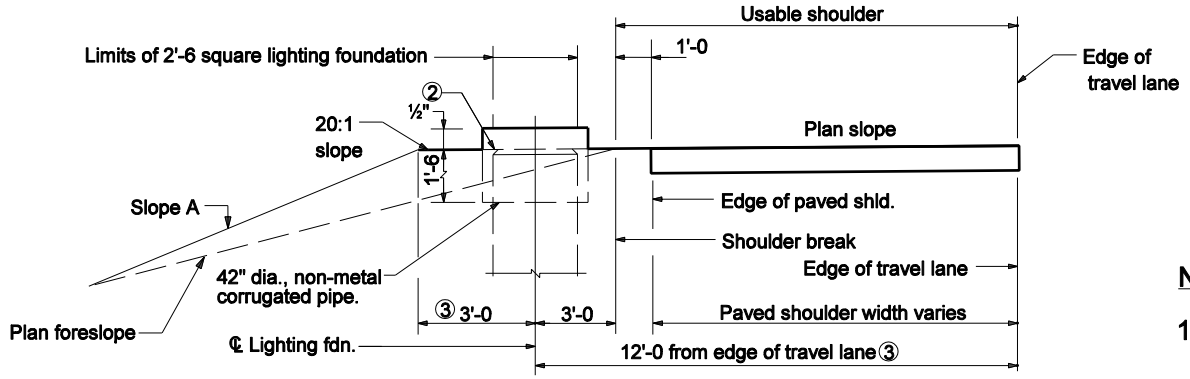
STANDARD DRAWING NO. E 807-LTFD-03

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

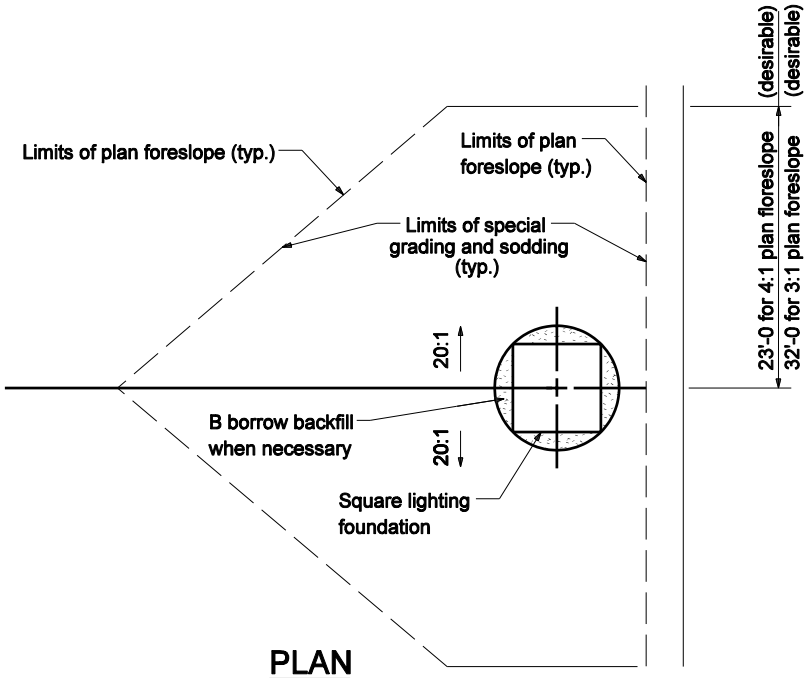
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



ELEVATION 4:1 OR 3:1 SLOPE



PLAN

Notes:

1. Transformer base door shall face the right-of-way line.

② See Standard Drawing E 807-LTFD-05 for General Notes.

3. 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

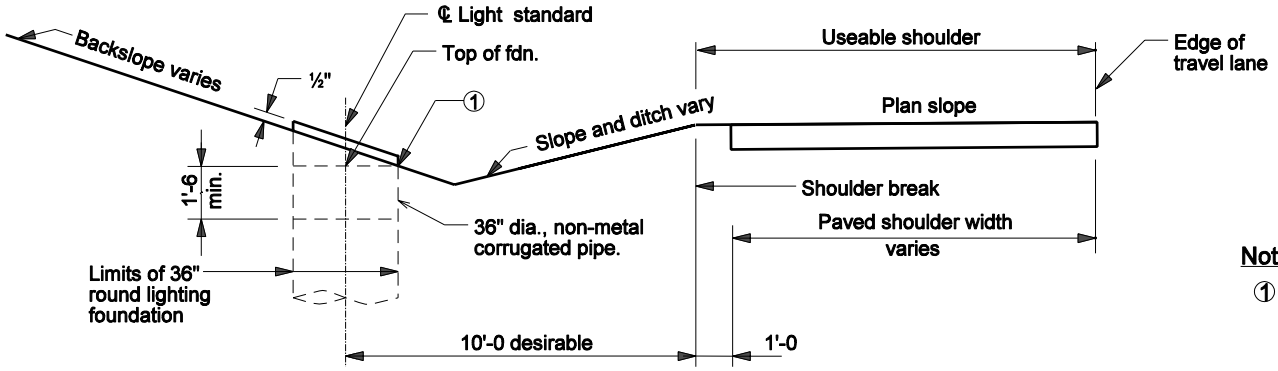
STANDARD DRAWING NO. E 807-LTFD-03A

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

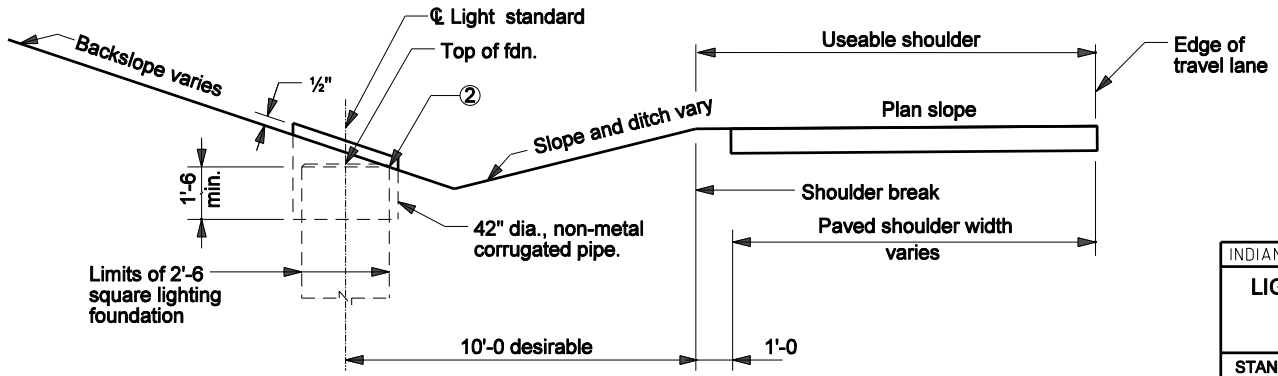
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



ELEVATION, CUT SECTION, ROUND FOUNDATION



ELEVATION, CUT SECTION, SQUARE FOUNDATION

Notes:

①② See Standard Drawing E 807-LTFD-05 for General Notes.

3. Transformer base door shall face roadway.

4. Foundation shall not be installed in ditch flow line.

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT STANDARD FOUNDATION GRADING CUT SECTION

SEPTEMBER 2005

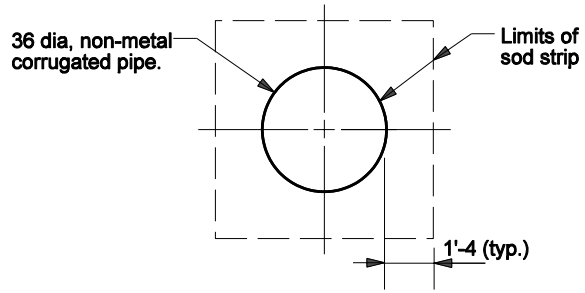
STANDARD DRAWING NO. E 807-LTFD-04

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

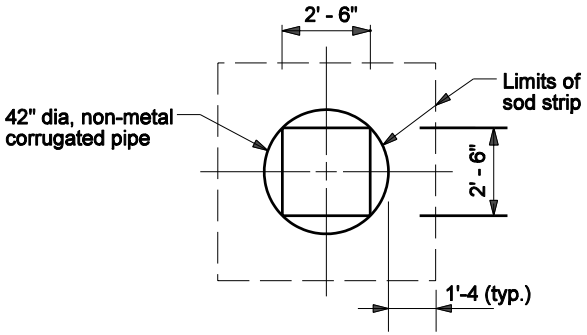
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

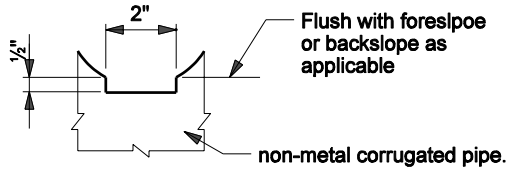
/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



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

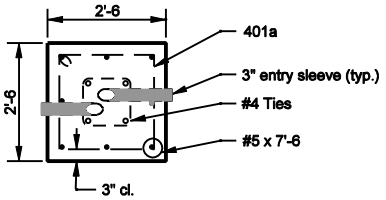
STANDARD DRAWING NO. E 807-LTFD-04A

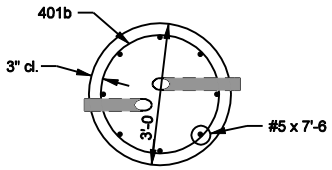
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

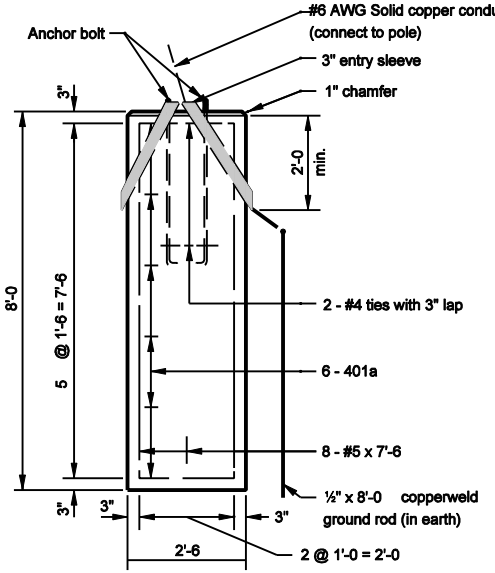
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

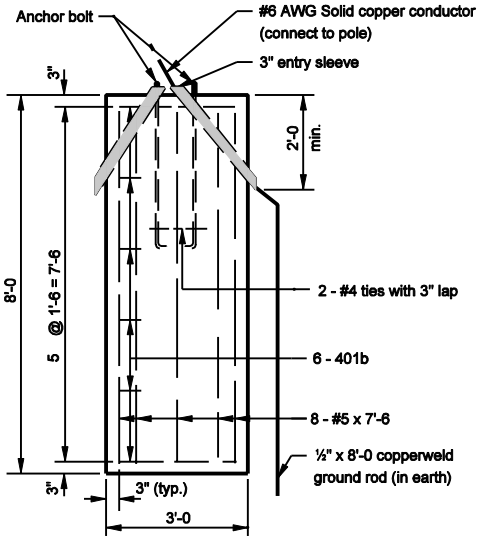
/s/ Richard K. Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE



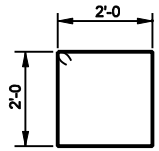




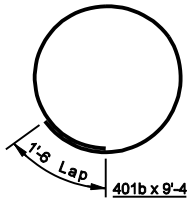
SQUARE FOUNDATION DETAIL



ROUND FOUNDATION DETAIL



401a x 8'-10



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 exposd 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

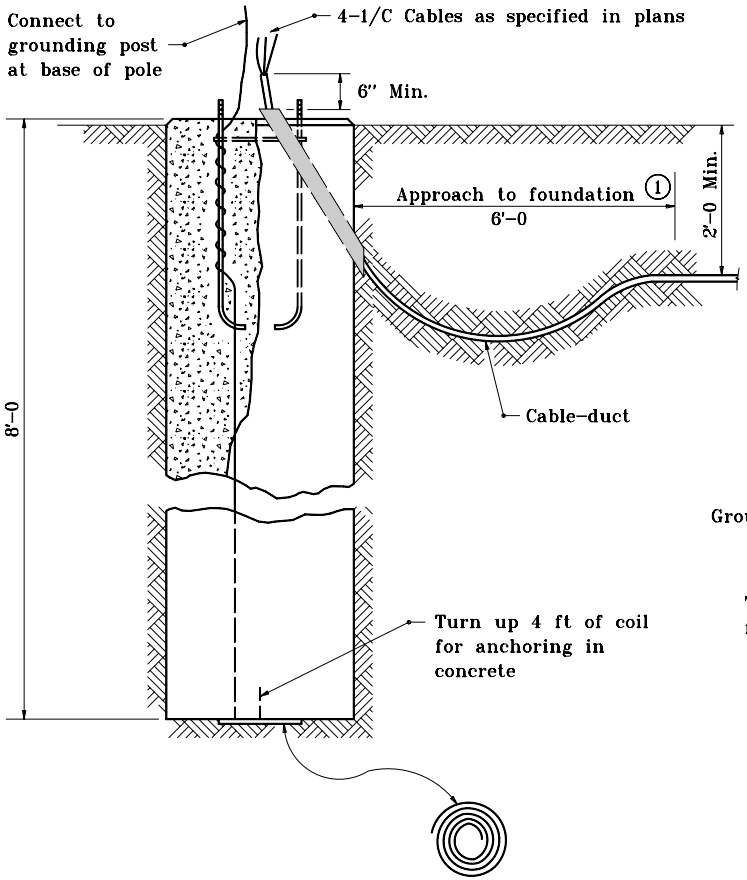
STANDARD DRAWING NO. E 807-LTFD-05

RICHARD L. VONCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

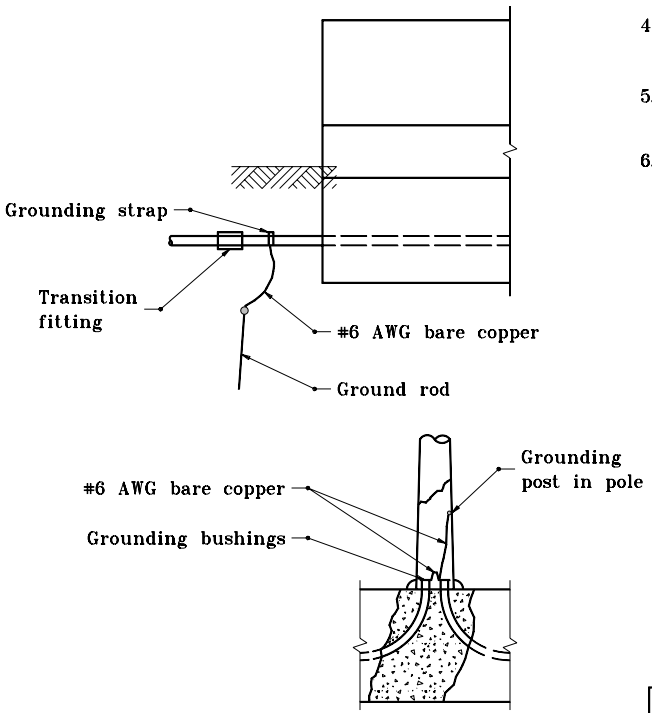
DESIGN STANDARDS ENGINEER

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

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



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

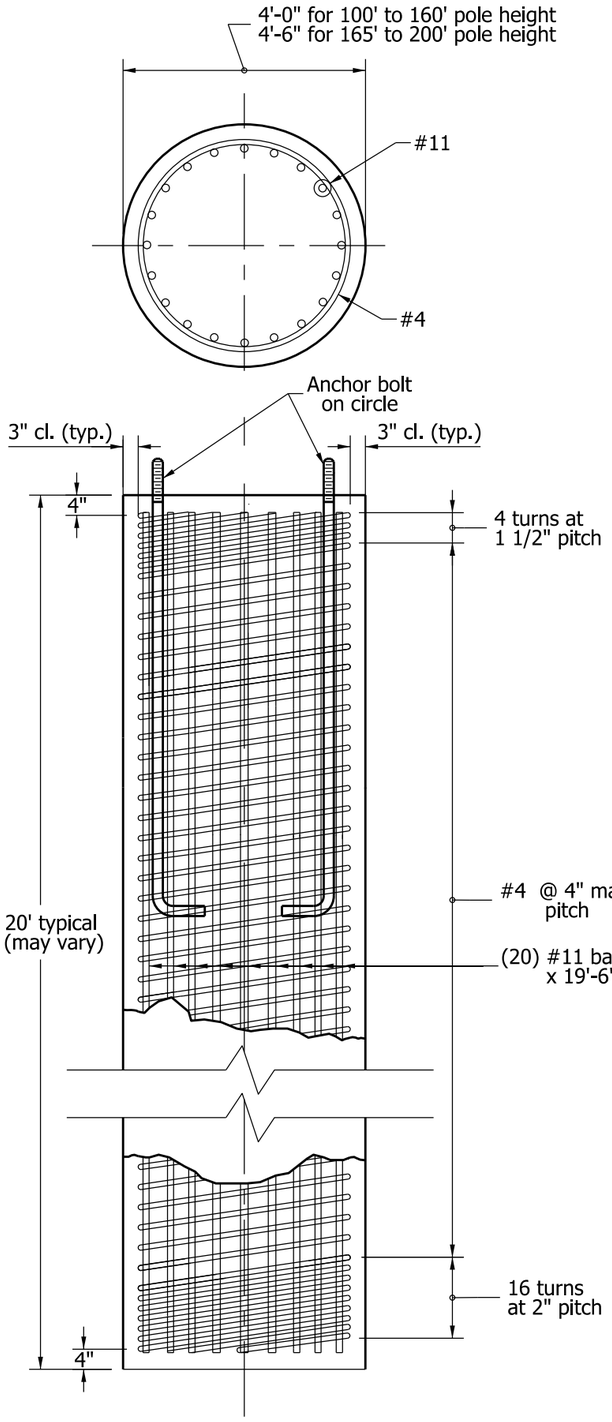
STANDARD DRAWING NO. **E 807-LTFD-06**

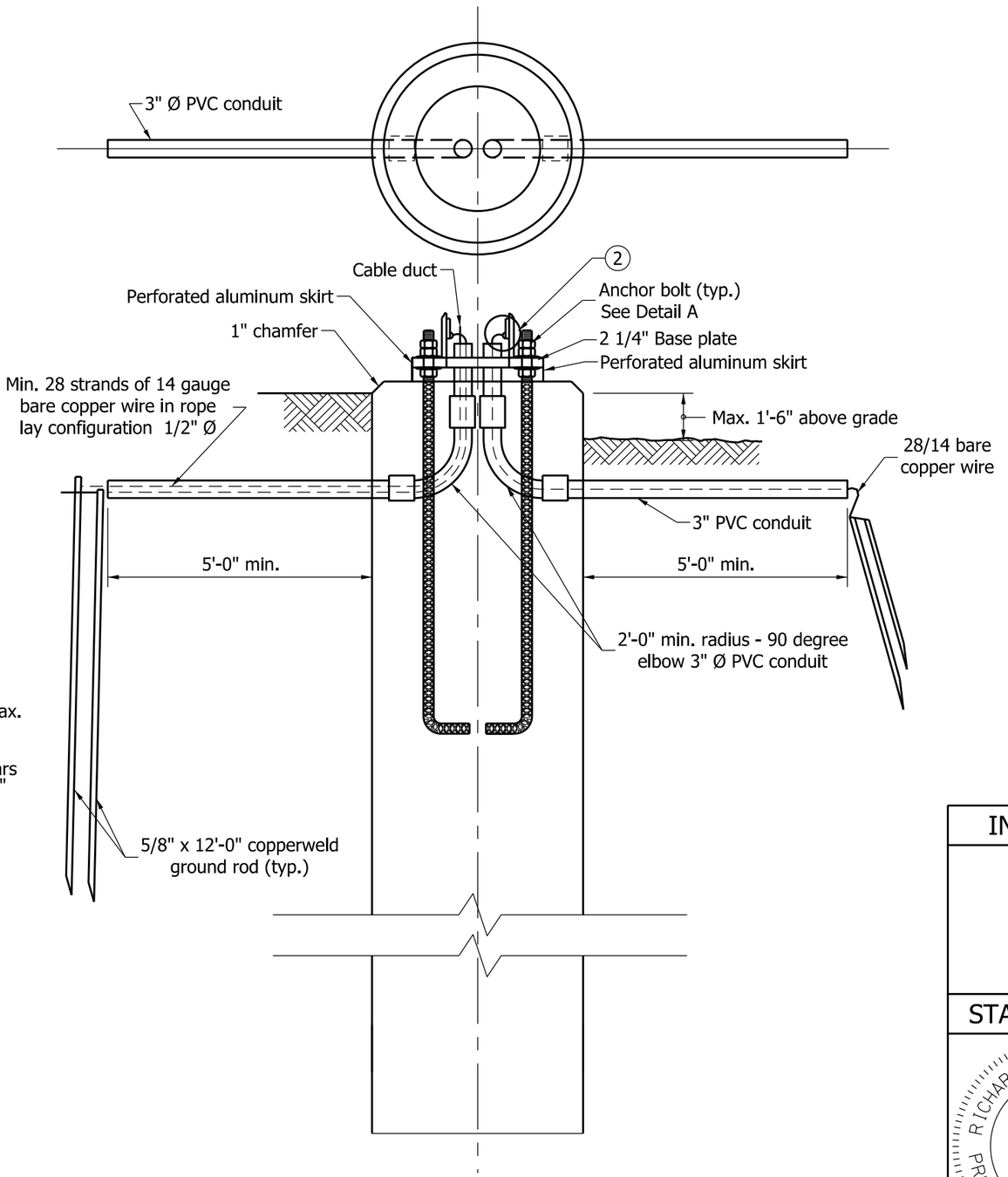
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 9-01-00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 9-01-00
CHIEF HIGHWAY ENGINEER — DATE

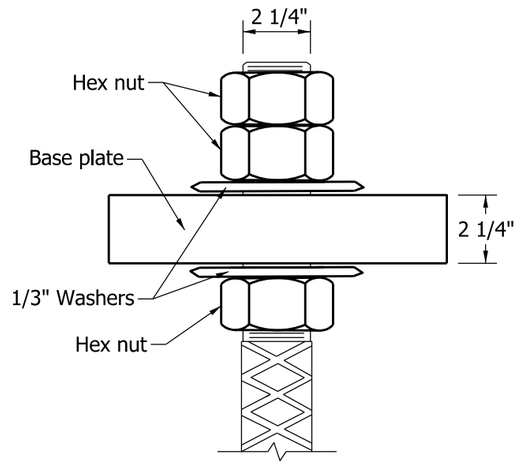




NOTES:

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.



DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

HIGH MAST TOWER FOUNDATION

SEPTEMBER 2010

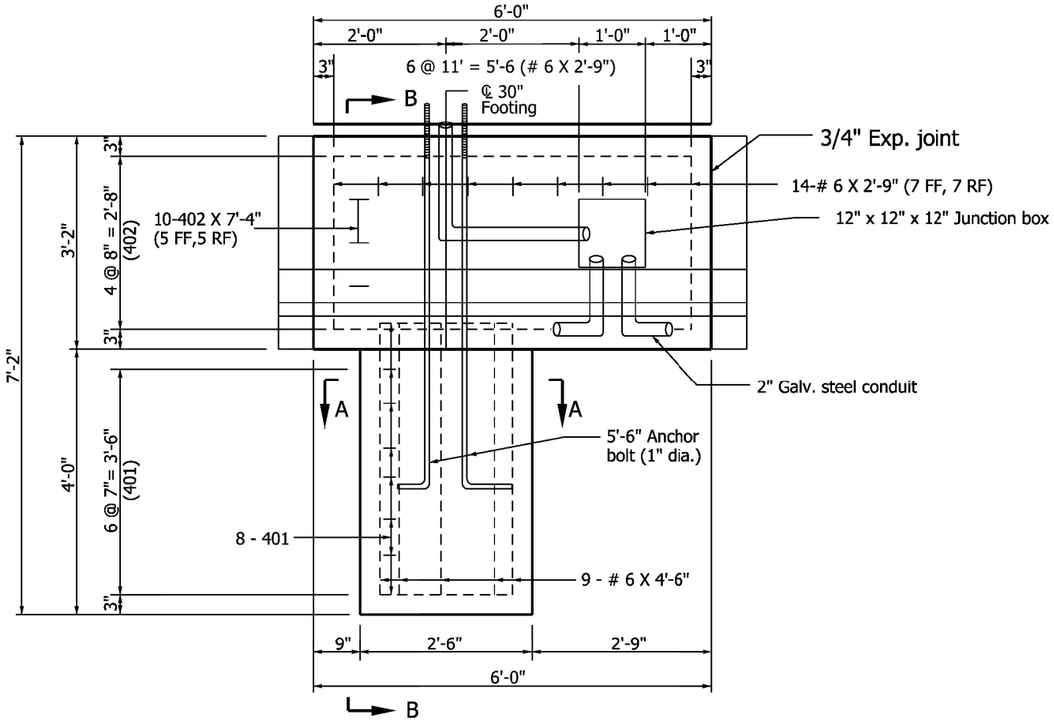
STANDARD DRAWING NO. E 807-LTFD-07

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

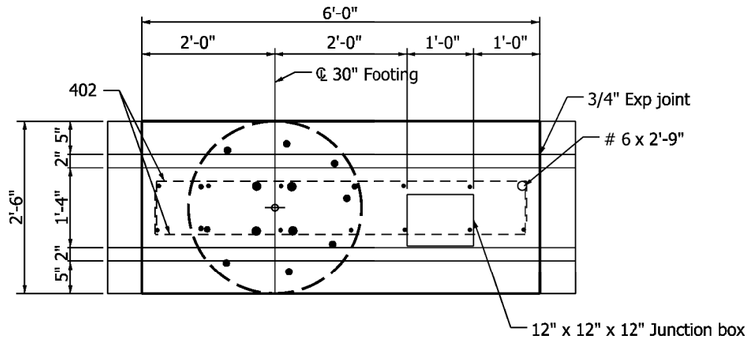
DESIGN STANDARDS ENGINEER

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

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



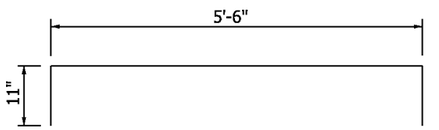
ELEVATION



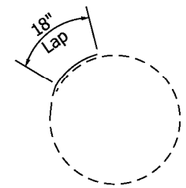
PLAN

Notes:

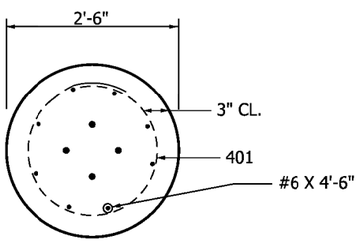
1. The 2" galvanized steel conduit and junction box can be installed in the median shoulder. The junction box must be in front of the light foundation.
2. Field cut reinforcing bars to accomodate juncton box.



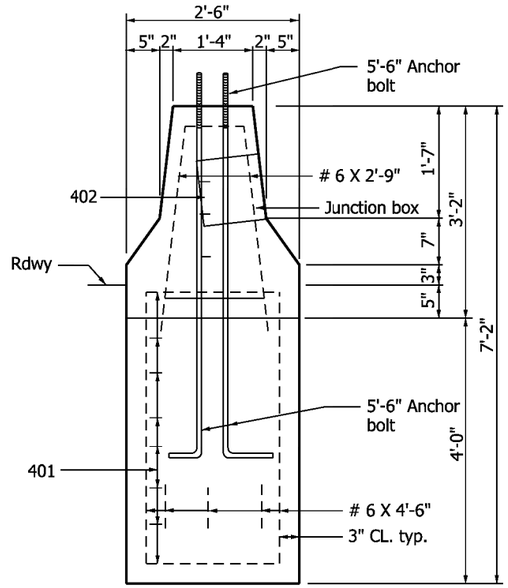
402 X 7'-4"



401 X 7'-9"



SECTION A-A



SECTION B-B

INDIANA DEPARTMENT OF TRANSPORTATION

CONVENTIONAL LIGHT FOUNDATION FOR 33" CONCRETE MEDIAN WALL INSTALLATION SEPTEMBER 2009

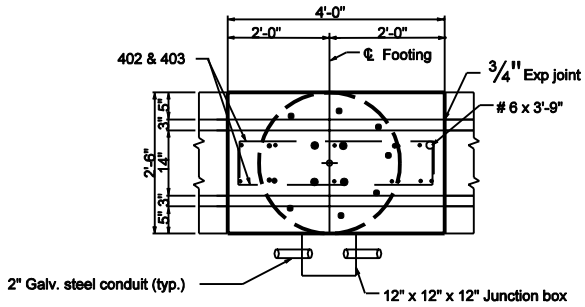
STANDARD DRAWING NO. E 807-LTFD-09

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

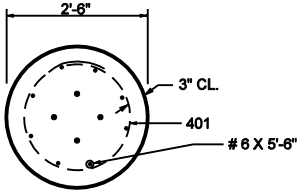
DESIGN STANDARDS ENGINEER

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

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



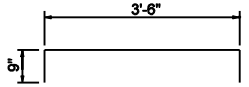
PLAN



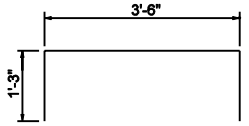
SECTION A-A

Notes:

1. Junction box shall meet the following specifications:
   a. Material: Polymer concrete
   b. Color: Concrete gray
   c. Cover rating: 20,000 lbs.



403 X 5'-0"



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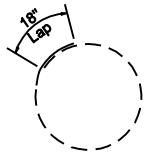
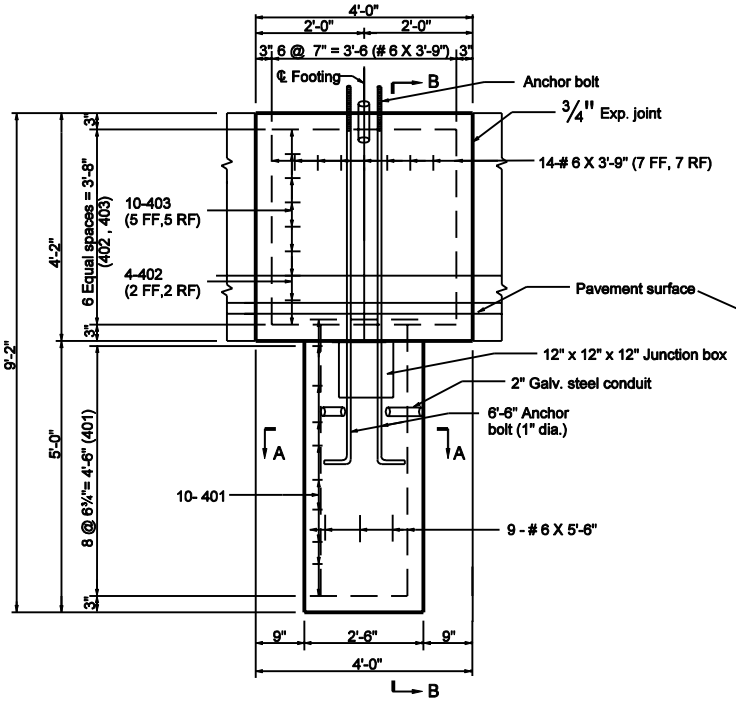
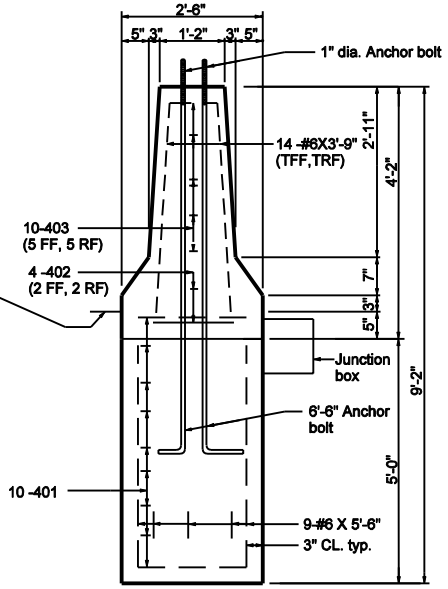


401 X 8'-10"



ELEVATION



SECTION B-B

INDIANA DEPARTMENT OF TRANSPORTATION

CONVENTIONAL LIGHT FOUNDATION FOR 45" CONCRETE MEDIAN WALL INSTALLATION.

SEPTEMBER 2002

STANDARD DRAWING NO. E 807-LTFD-10

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

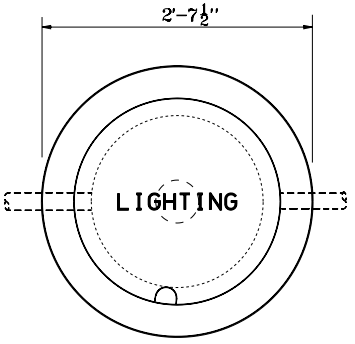
DESIGN STANDARDS ENGINEER

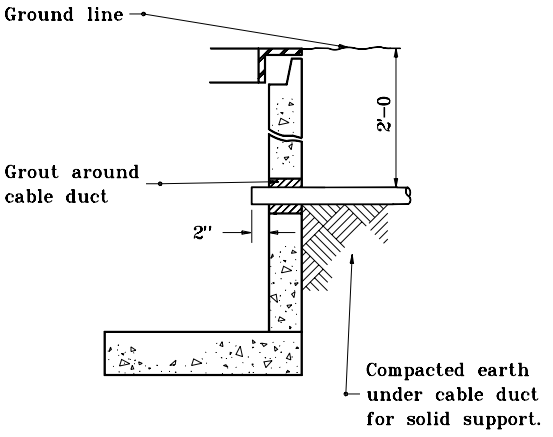
/s/ Richard L VanCleave — DESIGN STANDARDS ENGINEER — 9-03-02 DATE

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

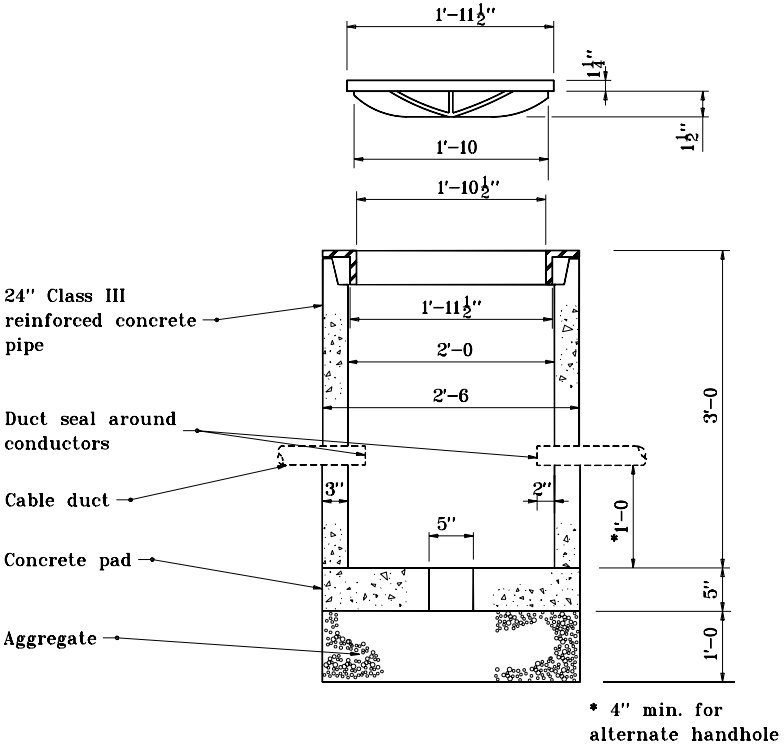
GENERAL NOTES

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.





CABLE DUCT ENTERING HANDHOLE



* 4" min. for alternate handhole

STREET & ALLEY TYPE HANDHOLE

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT HANDHOLE DETAILS

MARCH 1995

STANDARD DRAWING NO. **E 807–LTHH–01**

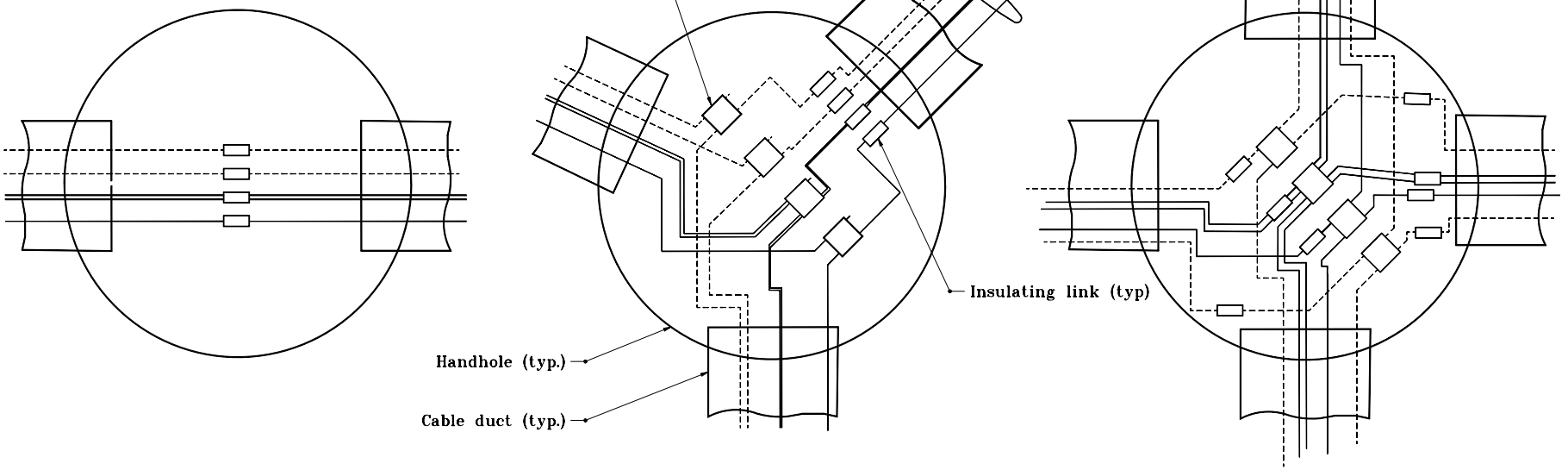
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	7-27-99
/s/ Anthony L. Uremovich — DESIGN STANDARDS ENGINEER	7-27-99 — DATE
/s/ Firooz Zandi — CHIEF HIGHWAY ENGINEER	7-27-99 — 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

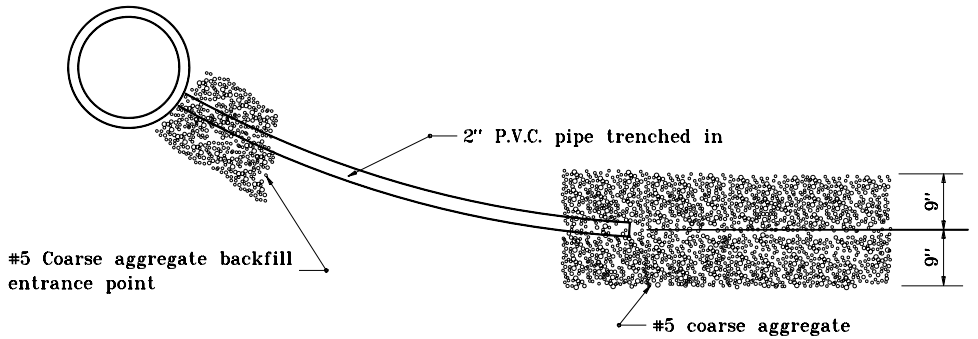
MARCH 1995

STANDARD DRAWING NO. **E 807-LTHH-02**

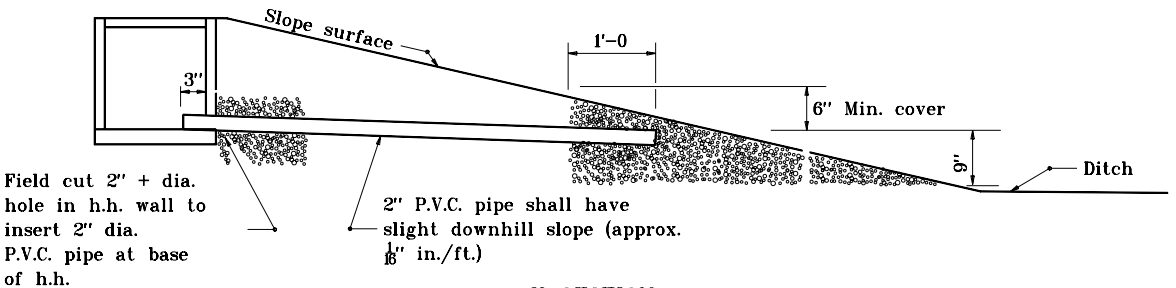
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich, DESIGN STANDARDS ENGINEER	11-15-99
/s/ Firooz Zandi, CHIEF HIGHWAY ENGINEER	11-15-99
ORIGINALLY APPROVED	3-01-95

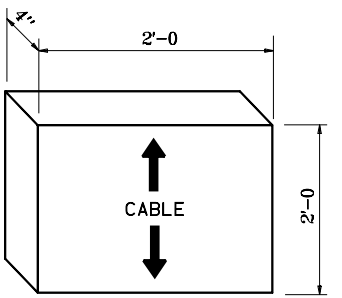


PLAN VIEW



X-SECTION

HANDHOLE DRAIN DETAIL



CABLE MARKER

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT HANDHOLE DRAIN & CABLE MARKER

MARCH 1995

STANDARD DRAWING NO. **E 807-LTHH-03**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	3-01-95

INDEX

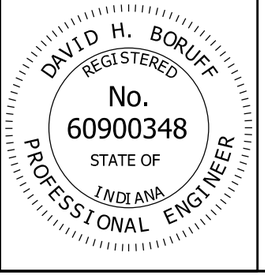
SHEET NO.	SUBJECT
1	Highway Illumination Tower Index
2	Highway Illumination Tower
3	Highway Illumination Tower Wiring Details
4	Highway Illumination Tower Bottom Latch And Winch Details
5	Highway Illumination Tower Winch Drive Details
6	Highway Illumination Tower Power Unit Mounting Bracket Details
7	Highway Illumination Tower Handhole Details
8	Highway Illumination Tower Luminaire Ring Assembly
9	Highway Illumination Tower ID Plate
10	Highway Illumination Tower Perforated Aluminum Skirt
11	Highway Illumination Tower Concrete Pad
12	Highway Illumination Tower Concrete Pad With Retaining Wall
13	Highway Illumination Tower Pole Data Schedule 100' - 155'
14	Highway Illumination Tower Pole Data Schedule 160' - 200'

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER
INDEX

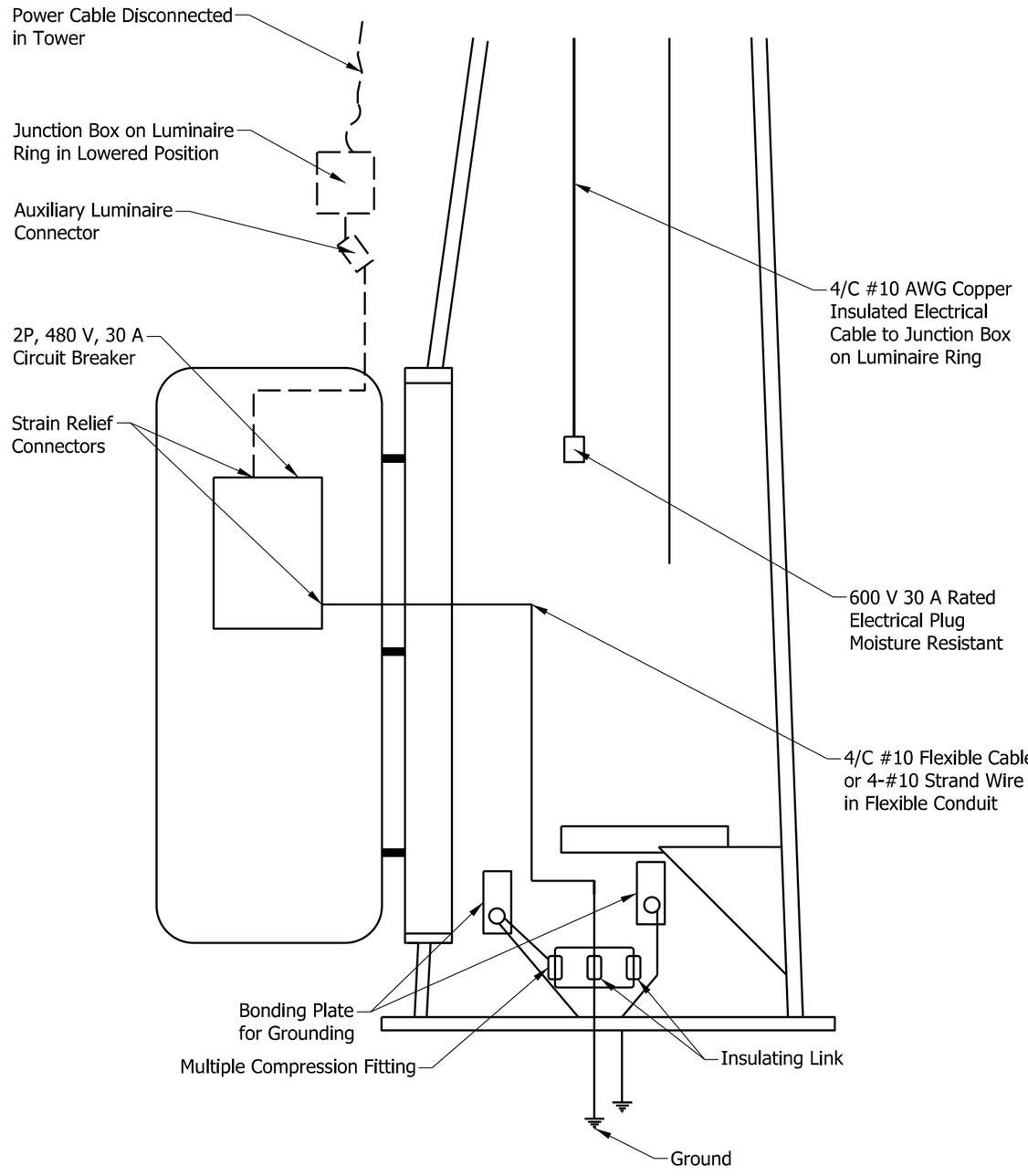
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-01



/s/ David H. Boruff *03/20/17*
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie *03/20/17*
CHIEF ENGINEER DATE



DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER CIRCUIT BREAKER AND GROUNDING

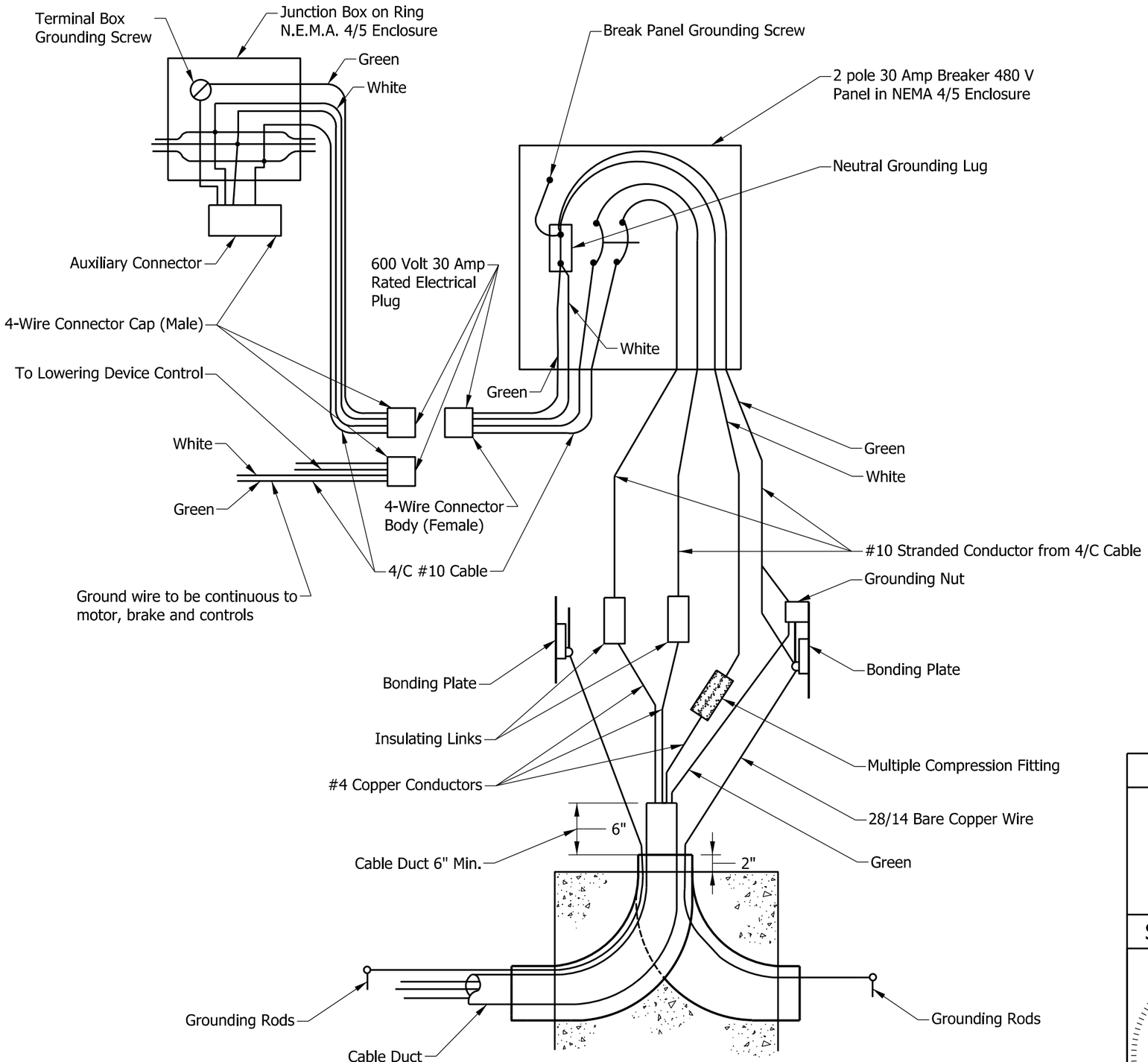
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-02

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE



WIRING DIAGRAM

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER
WIRING DETAILS

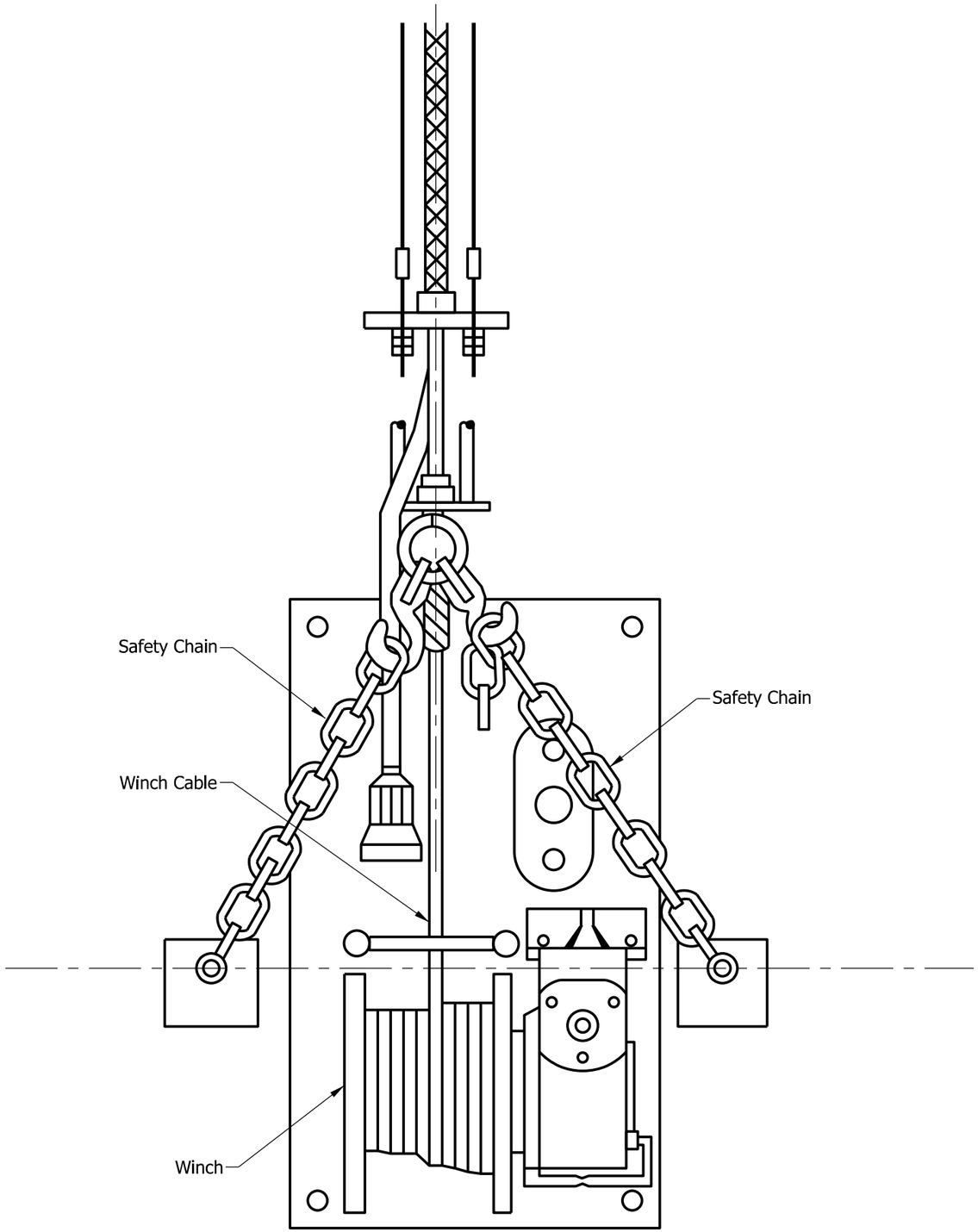
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-03

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE



BOTTOM LATCH

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER BOTTOM LATCH AND WINCH DETAILS

SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-04

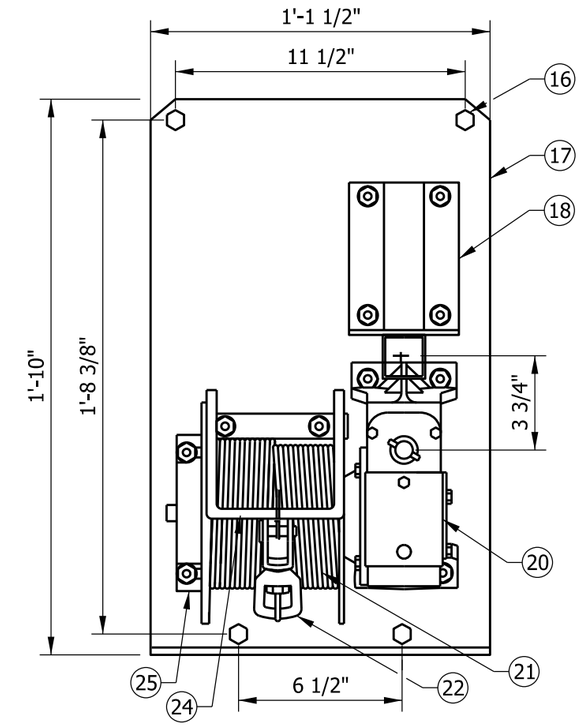
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

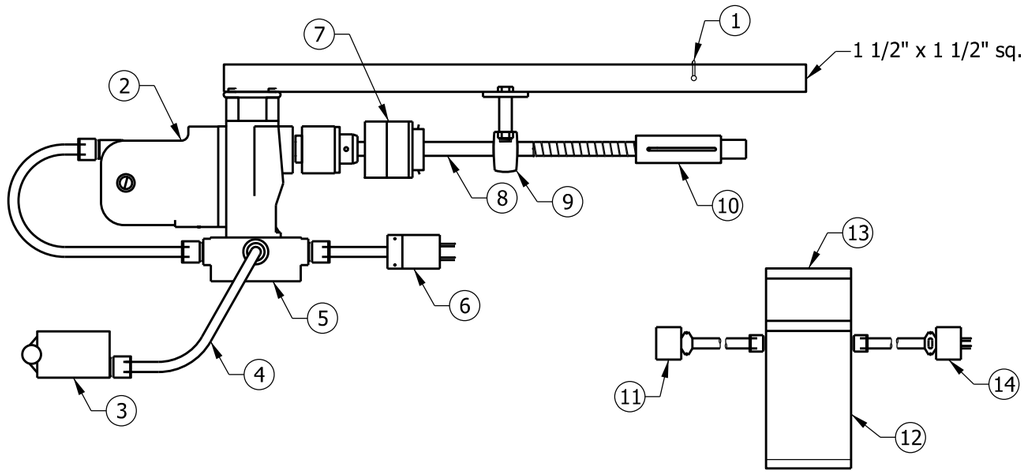
/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

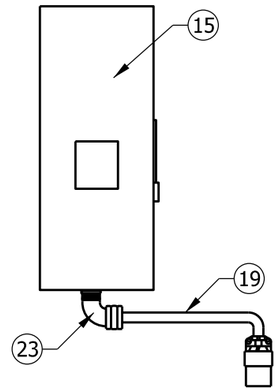
ITEM DESRIPTIONS

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 Stainless Steel Wire Rope. Length is Pole Height + 6 ft
22. Forged Steel Swivel, 11,000 psi Ultimate Strength
23. Cord Grip
24. Winch Cable Guard
25. Winch Outboard Support



WINCH PLATE ASSEMBLY

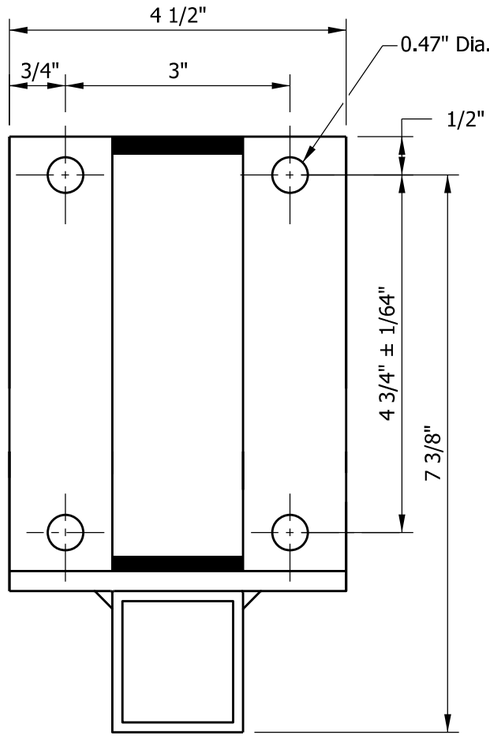




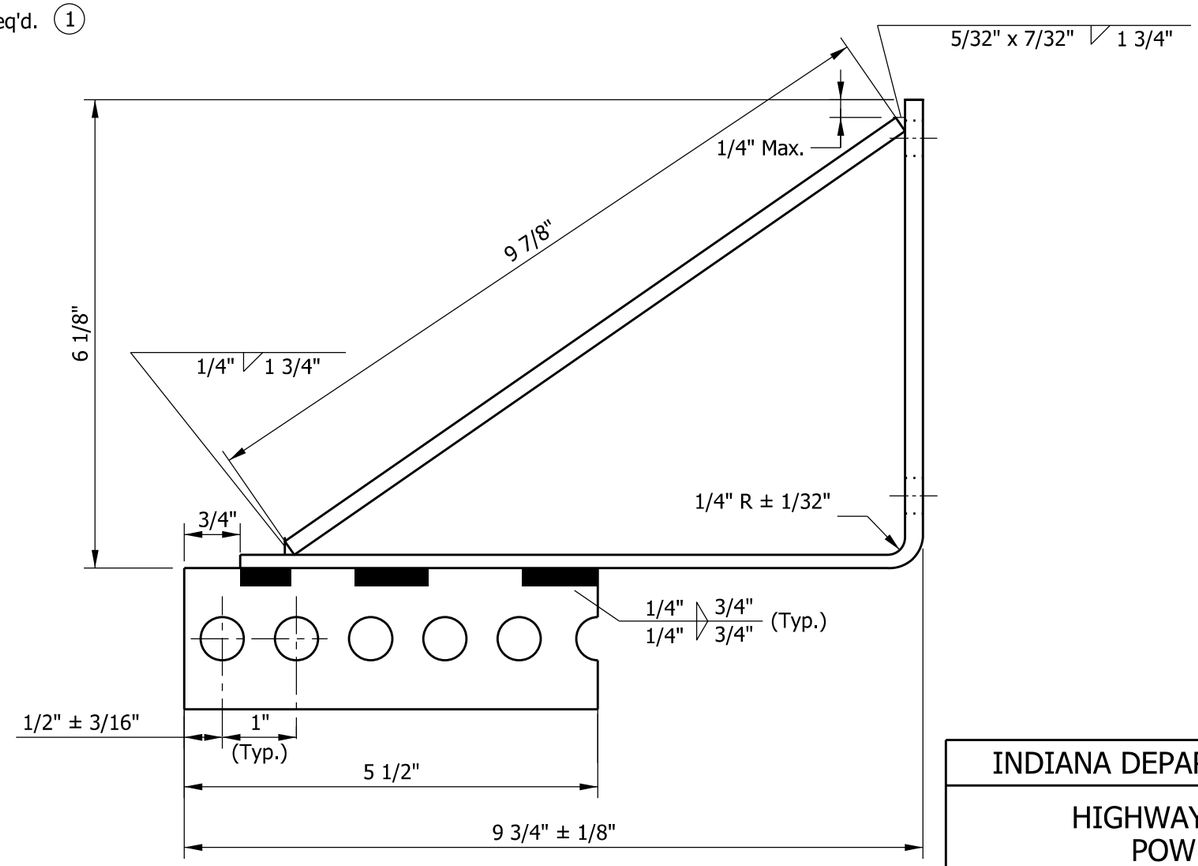
INDIANA DEPARTMENT OF TRANSPORTATION	
HIGHWAY ILLUMINATION TOWER WINCH DRIVE DETAILS SEPTEMBER 2017	
STANDARD DRAWING NO. E 807-LTHI-05	
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ David H. Boruff 03/20/17 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 03/20/17 CHIEF ENGINEER DATE

NOTES:

1. Tolerances: 0 1/32", Angles ± 1/2" Unless Noted



FRONT VIEW



SIDE VIEW

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER POWER UNIT MOUNTING BRACKET DETAILS

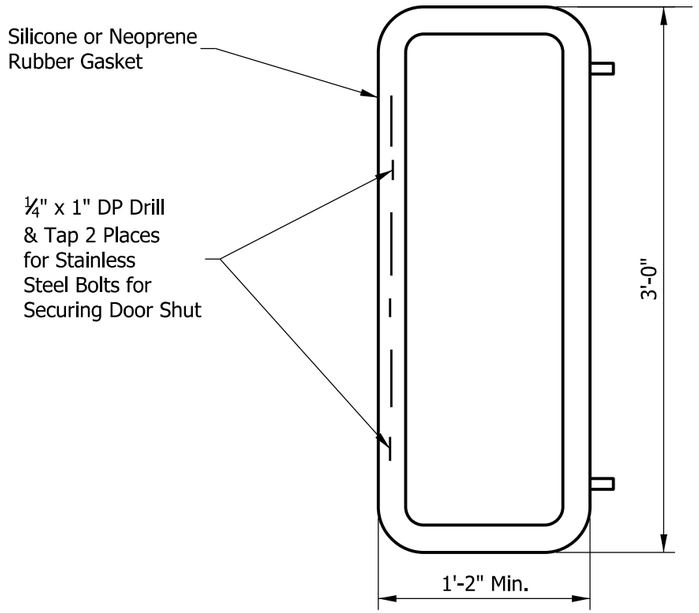
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-06

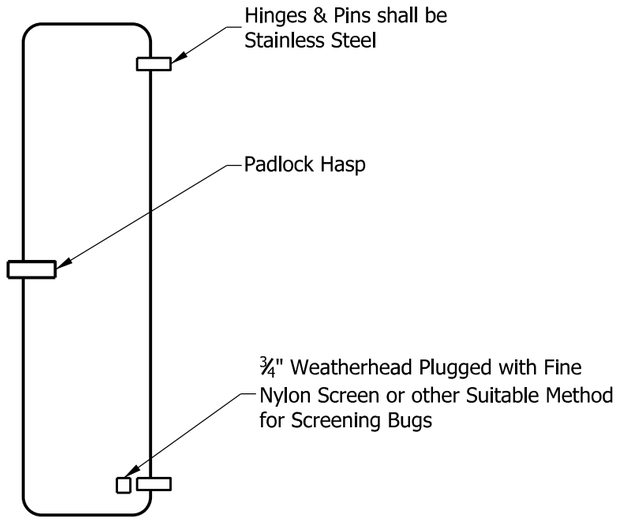
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

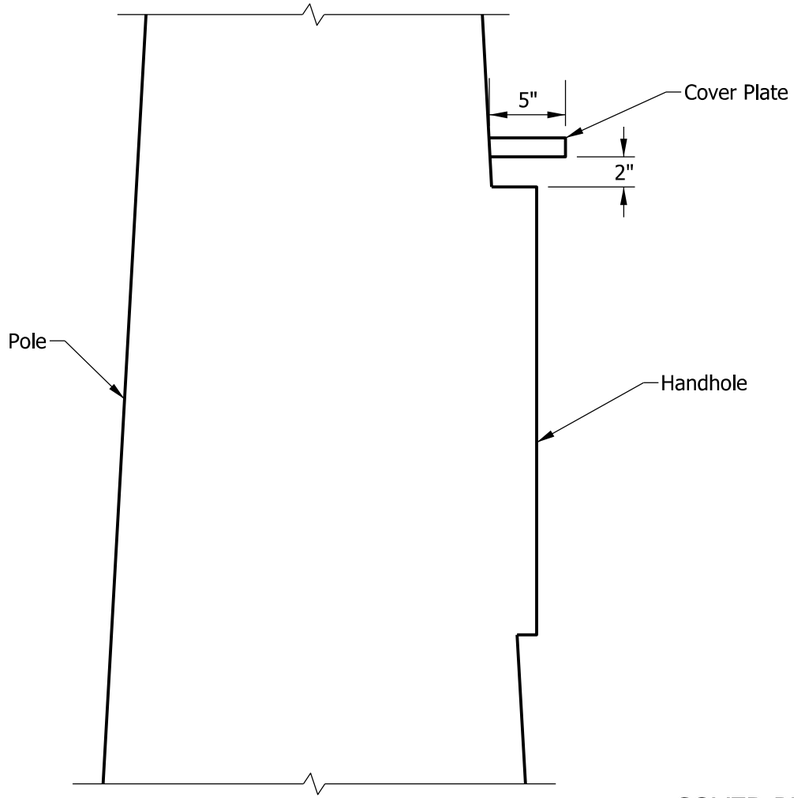
/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

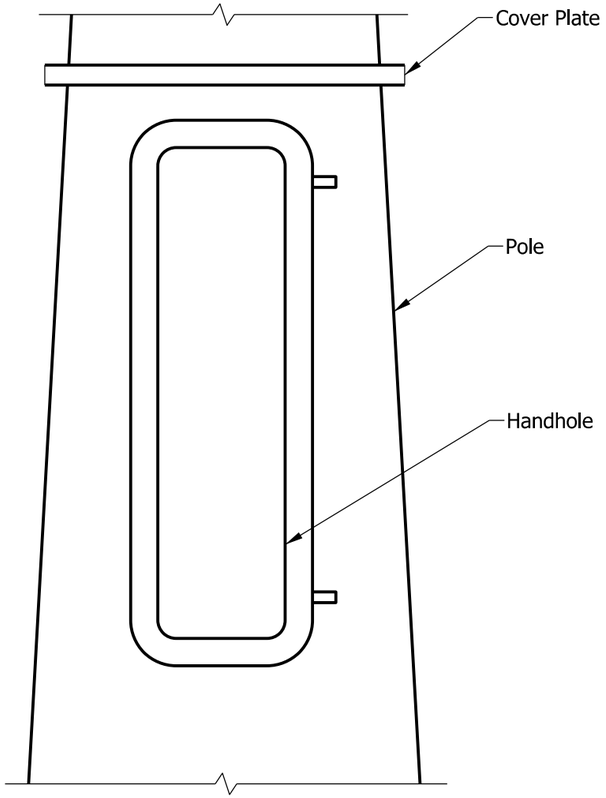


HANDHOLE FRAME DETAIL



HANDHOLE COVER DETAIL





COVER PLATE

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER
HANDHOLE DETAILS

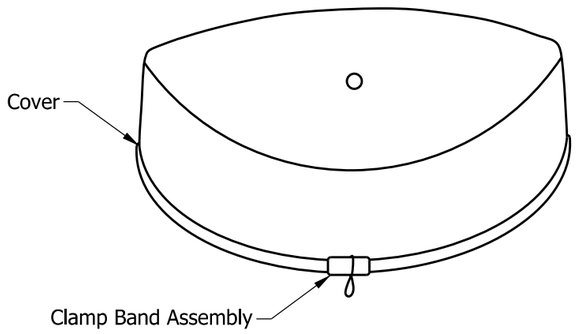
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-07

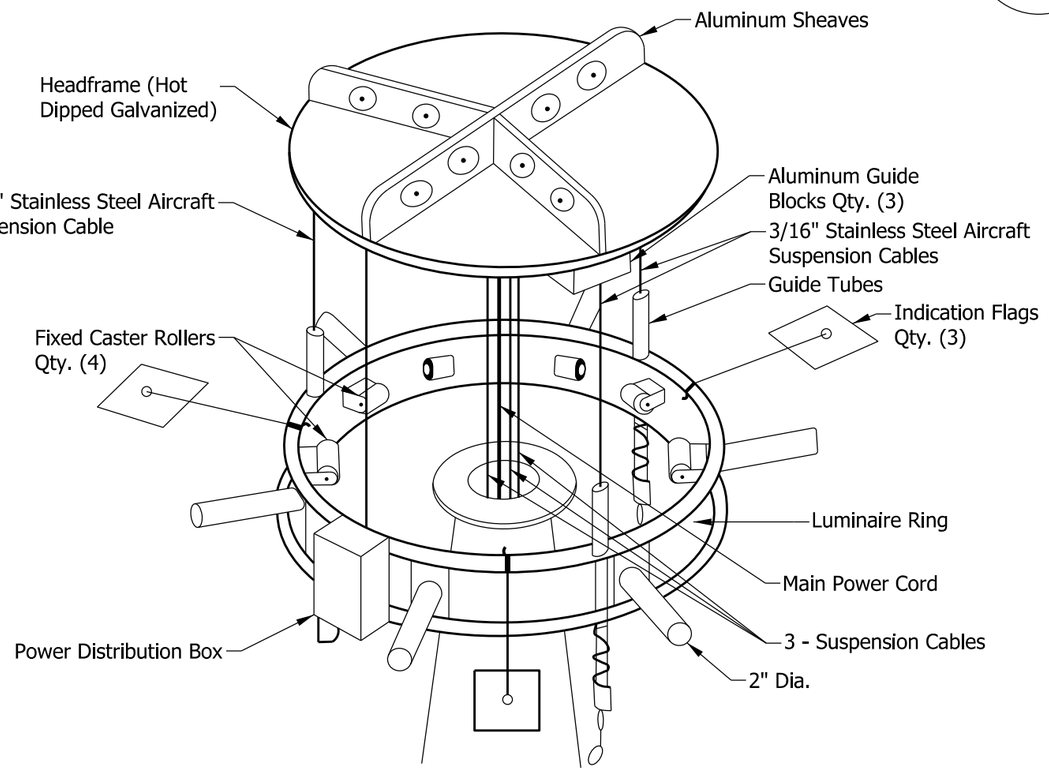
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

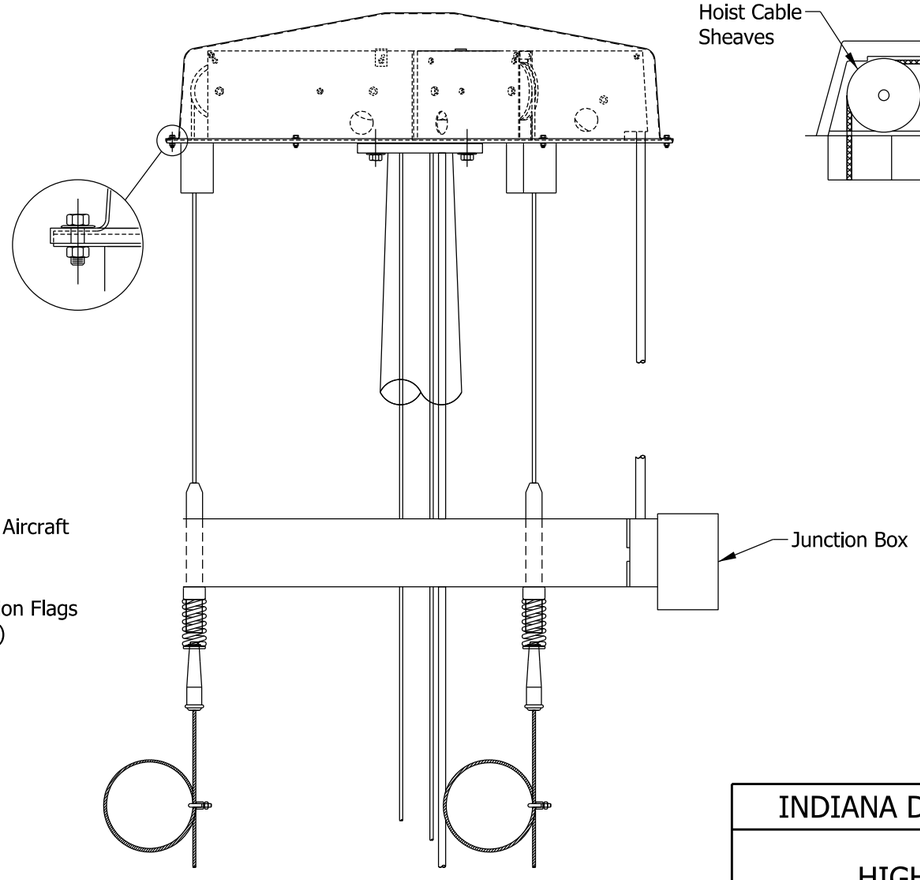
/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

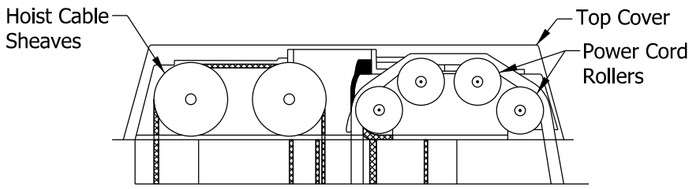


COVER



RING ASSEMBLY





COVER DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER
LUMINAIRE RING ASSEMBLY

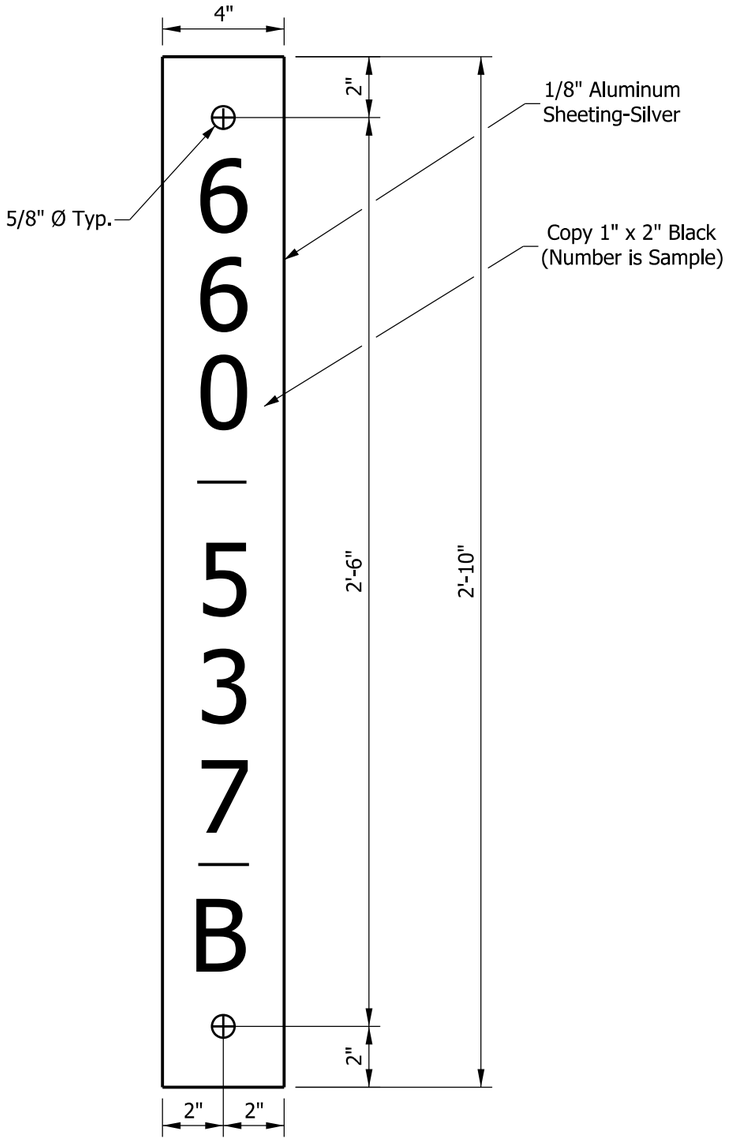
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-08

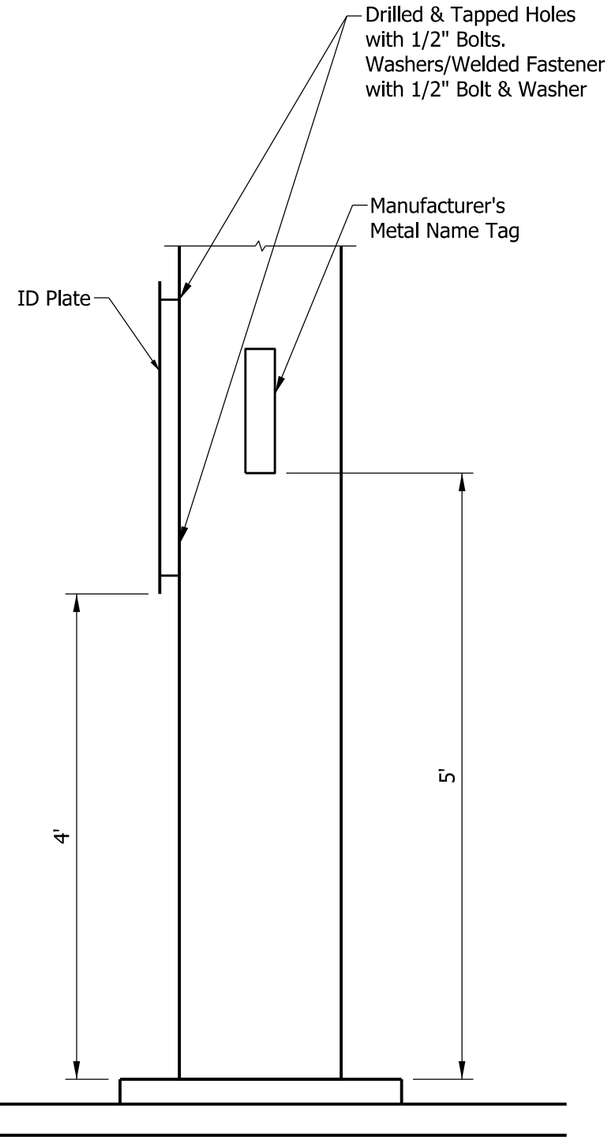
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

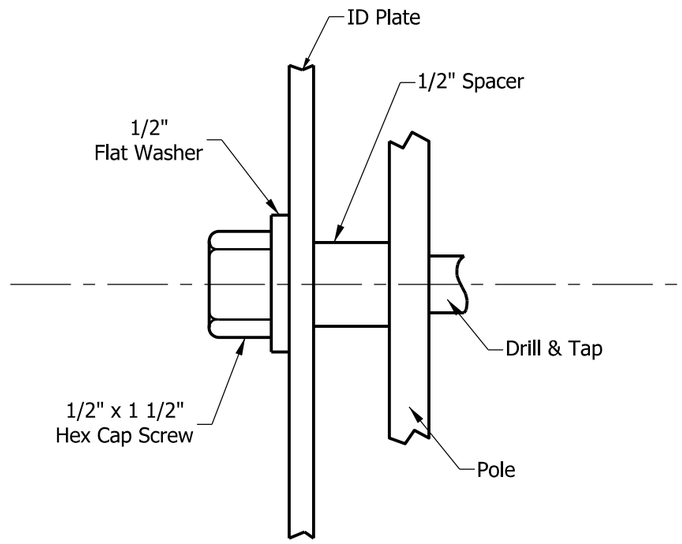
/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE



ID PLATE DETAIL



HIGH MAST POLE



MOUNTING DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER
ID PLATES

SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-09

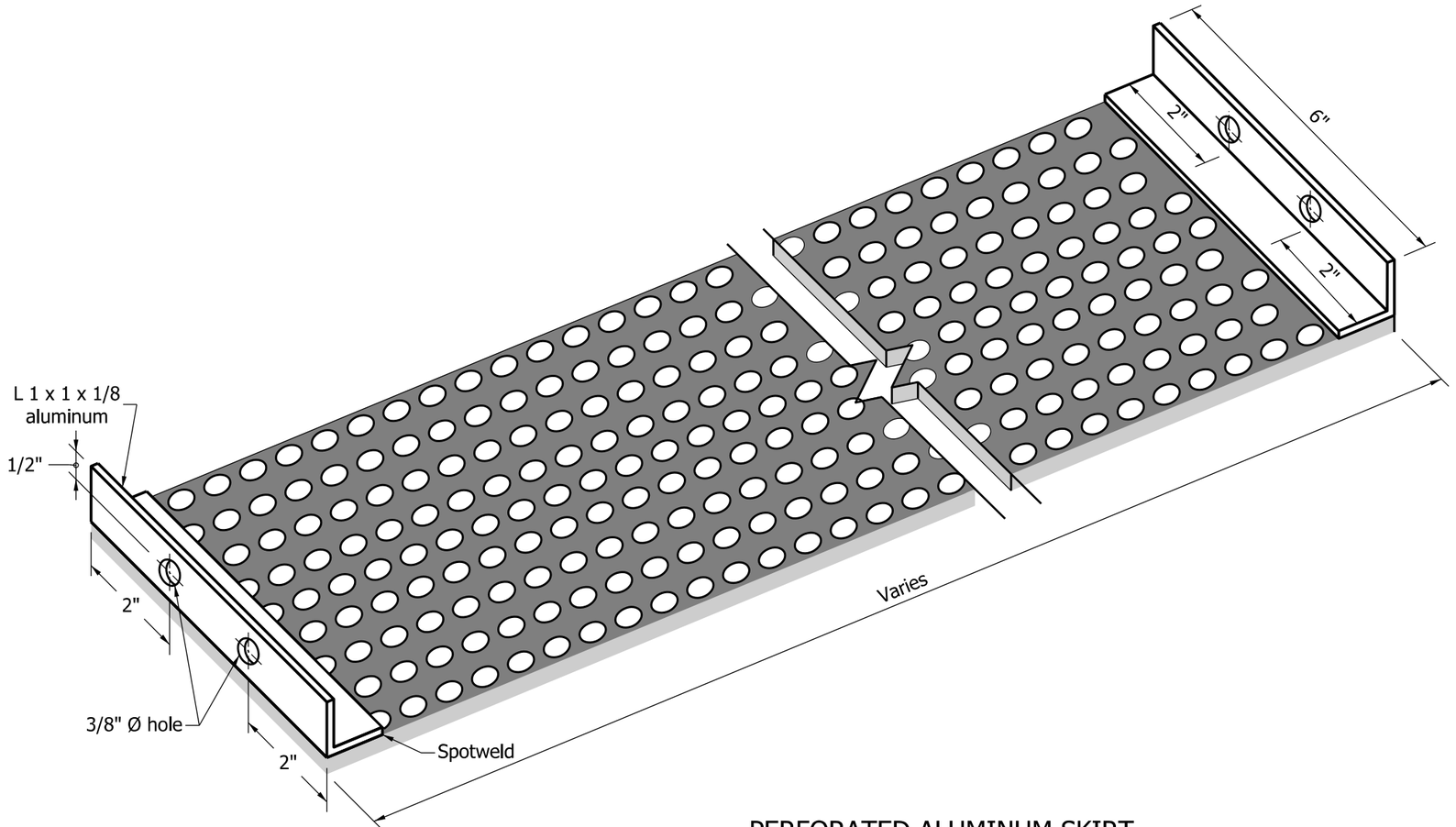
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

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.



PERFORATED ALUMINUM SKIRT

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER
PERFORATED ALUMINUM SKIRT

SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-10

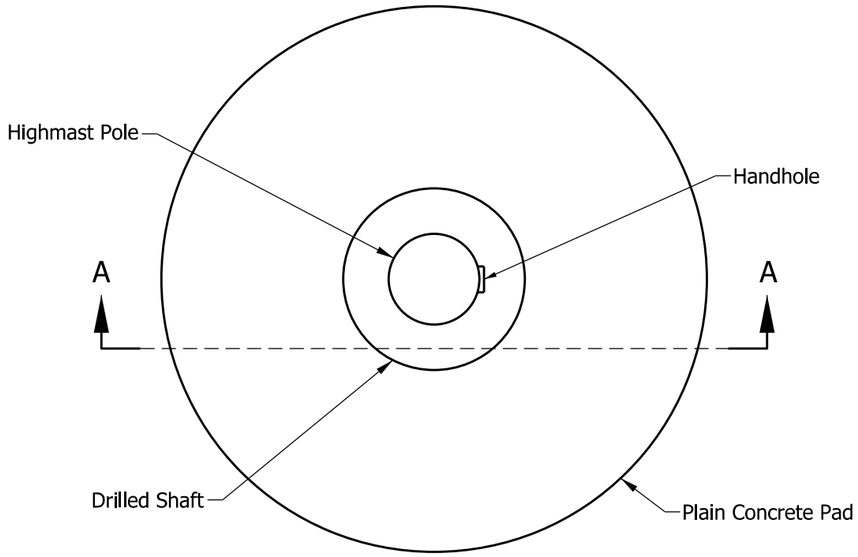
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

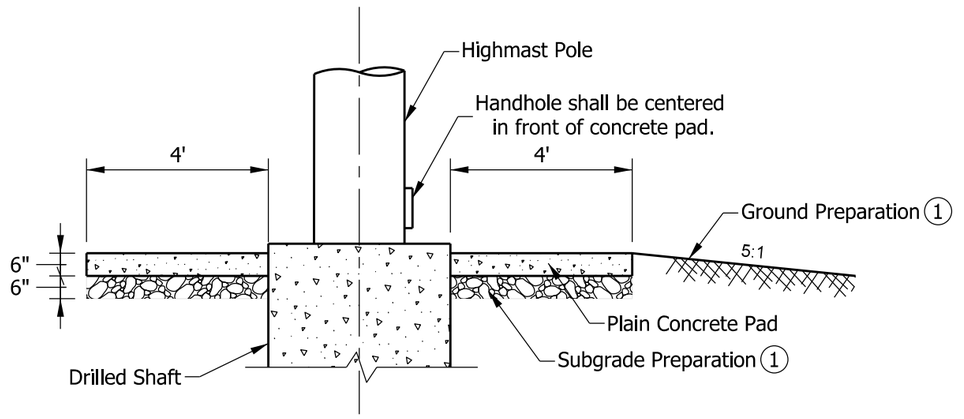
/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

NOTES:

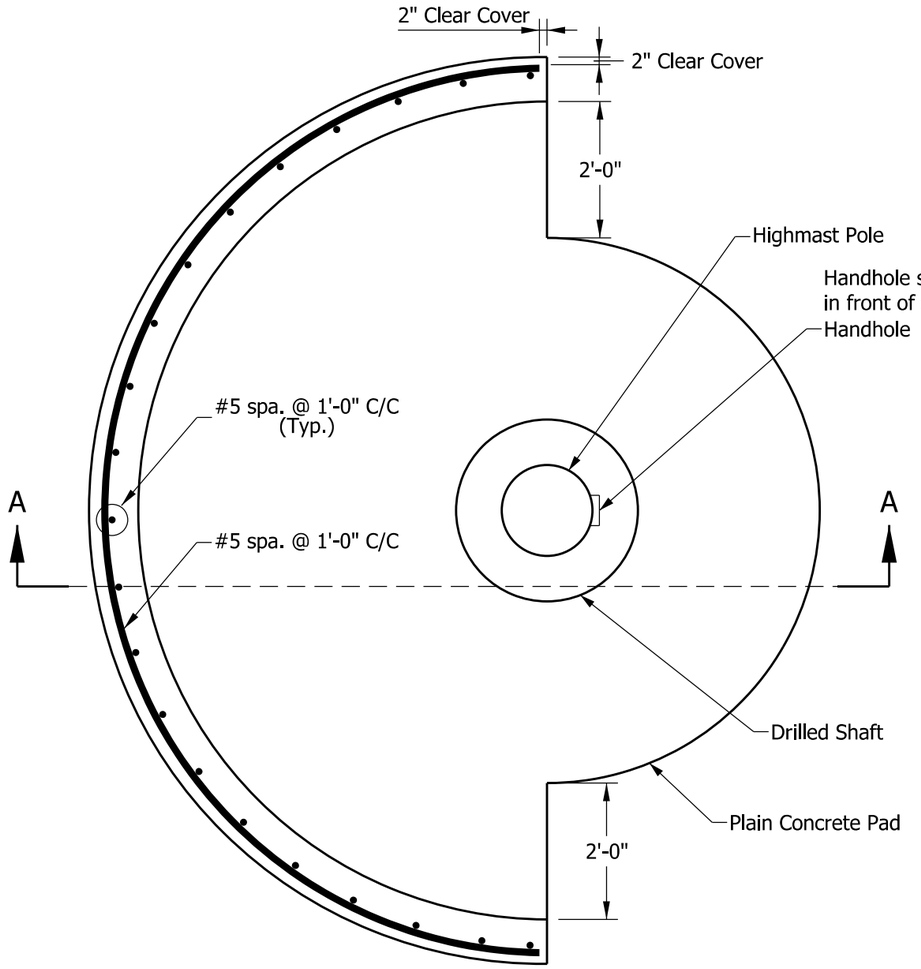
1. See Standard Drawing E 807-LTHI-11 for Subgrade and ground preparation requirements.
2. The slope grading around the concrete pad shall be as shown unless otherwise directed.

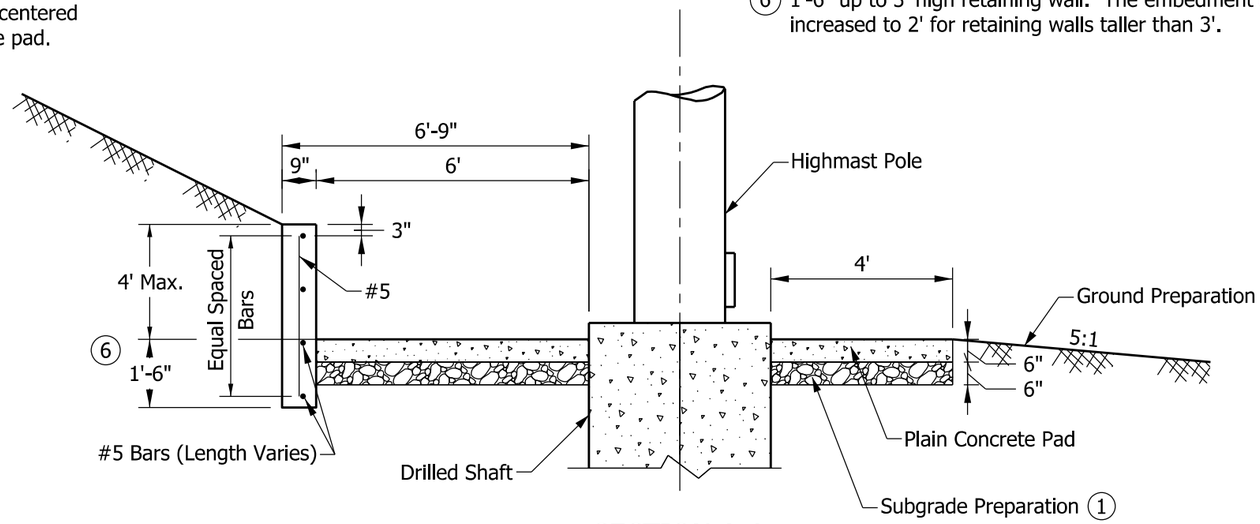




SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION	
HIGHWAY ILLUMINATION TOWER CONCRETE PAD SEPTEMBER 2017	
STANDARD DRAWING NO. E 807-LTHI-11	
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER	*/s/ David H. Boruff* 03/20/17 DESIGN STANDARDS ENGINEER DATE */s/ John Leckie* 03/20/17 CHIEF 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. Concrete pad shall be placed prior to placing backfill behind wall.
2. See Standard Drawing E 807-LTHI-11 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.
5. Shape of retaining wall may be semi circular or half trapazoidal.
6. 1'-6" up to 3' high retaining wall. The embedment depth shall be increased to 2' for retaining walls taller than 3'.

INDIANA DEPARTMENT OF TRANSPORTATION

HIGHWAY ILLUMINATION TOWER CONCRETE PAD WITH RETAINING WALL

SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-12

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

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

HIGHWAY ILLUMINATION TOWER
POLE DATA SCHEDULE (1 of 2)
POLE HEIGHTS 100' - 155'

SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-13

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE

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

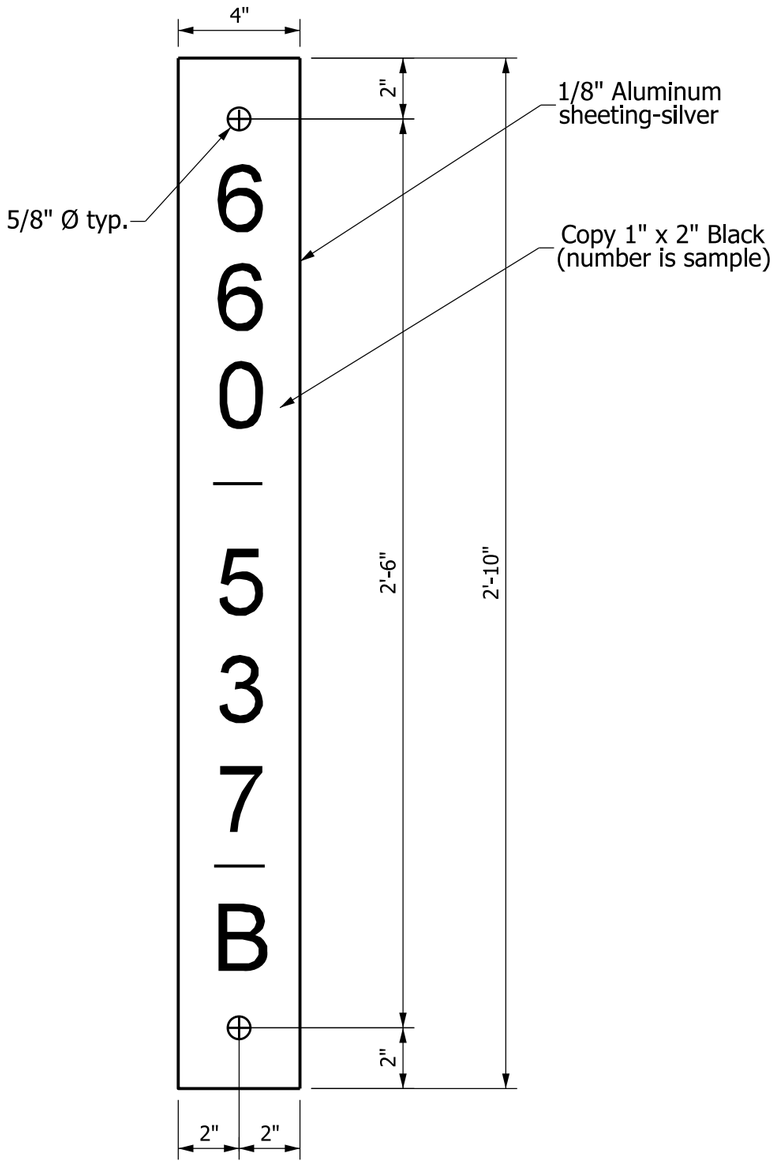
HIGHWAY ILLUMINATION TOWER
POLE DATA SCHEDULE (2 of 2)
POLE HEIGHTS 160' - 200'
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-LTHI-14

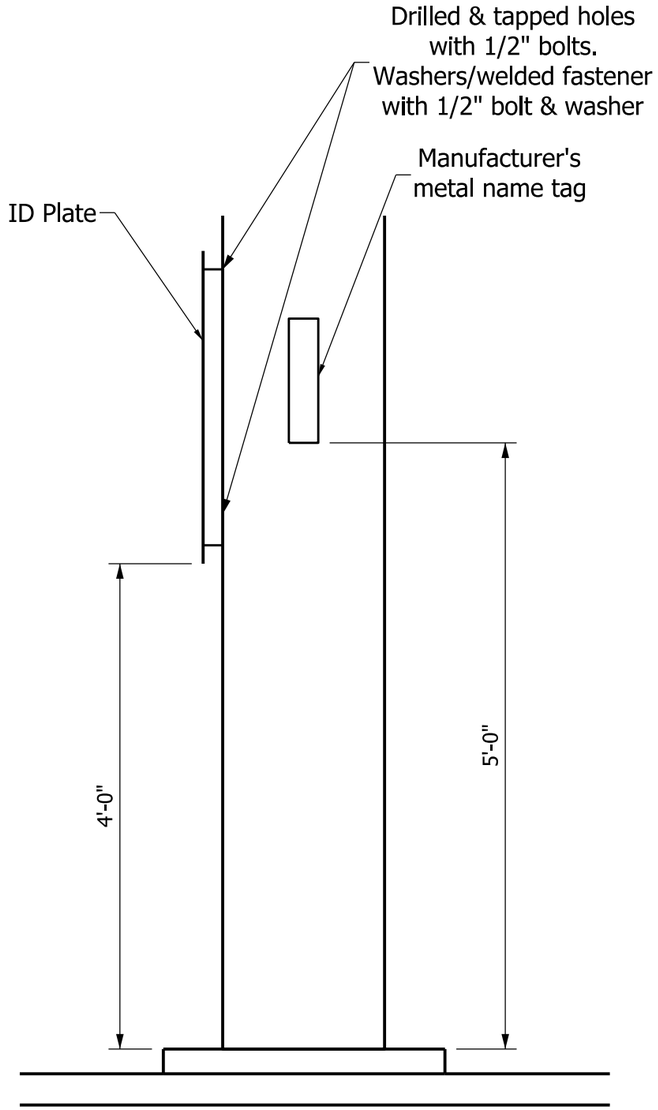
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/20/17
DESIGN STANDARDS ENGINEER DATE

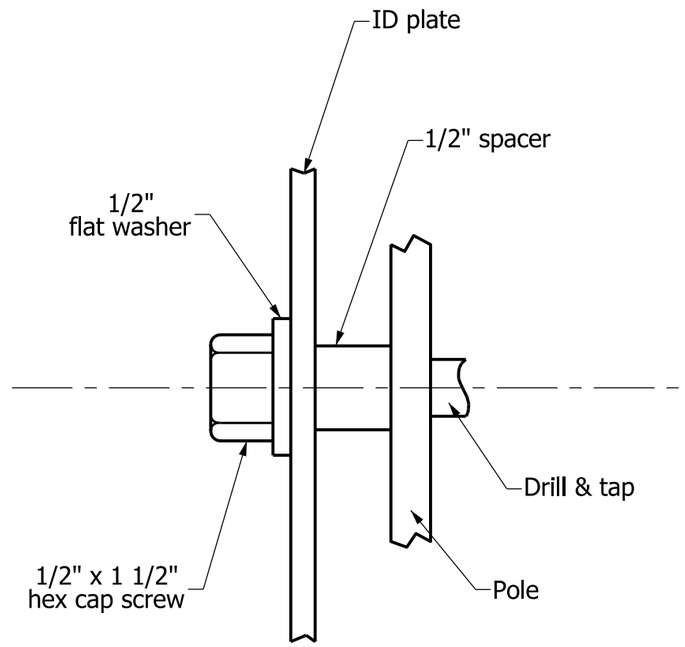
/s/ John Leckie 03/20/17
CHIEF ENGINEER DATE



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

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

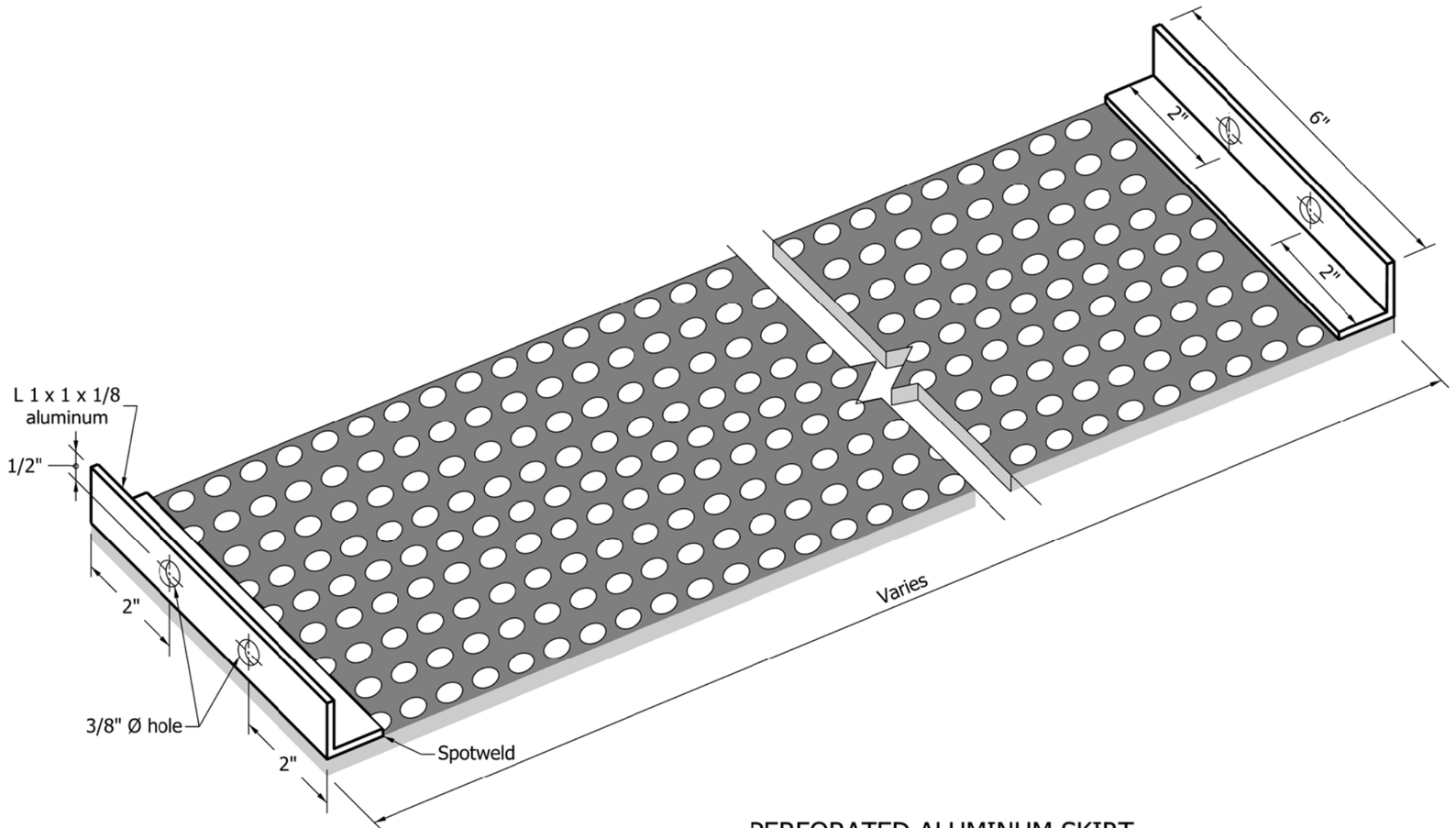
DESIGN STANDARDS ENGINEER

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

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

NOTES:

1. 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.



PERFORATED ALUMINUM SKIRT

INDIANA DEPARTMENT OF TRANSPORTATION

HIGH MAST POLE
PERFORATED ALUMINUM SKIRT

SEPTEMBER 2010

STANDARD DRAWING NO. E 807-LTHM-02

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

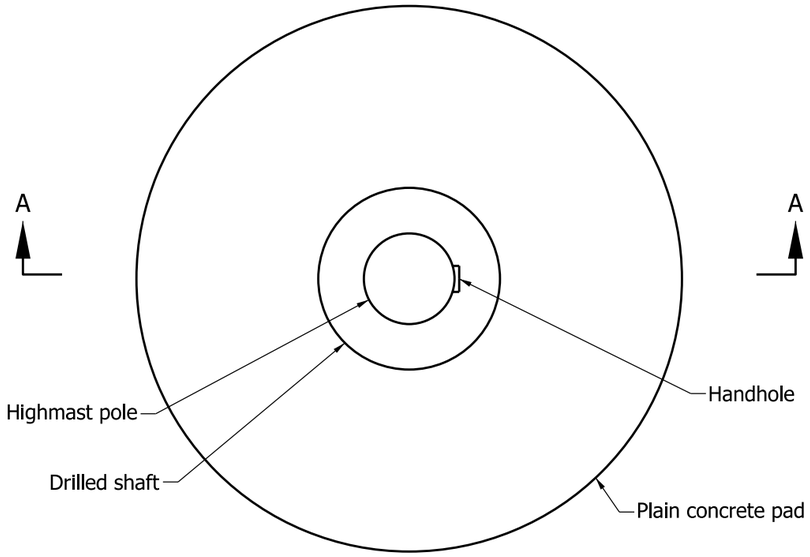
DESIGN STANDARDS ENGINEER

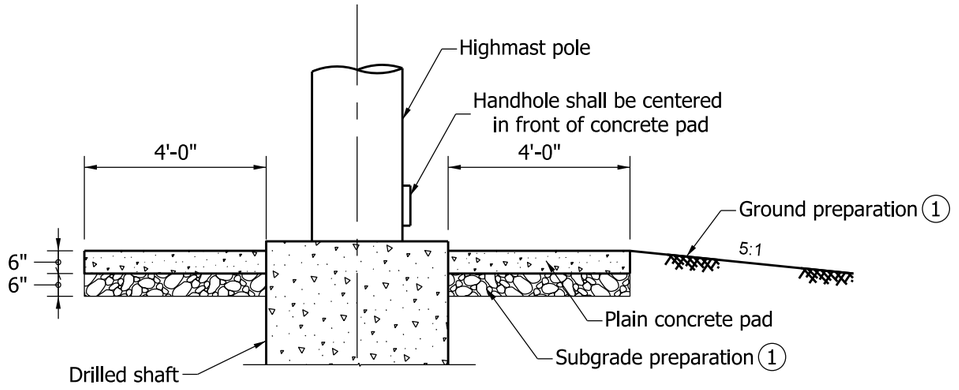
/s/ Richard L. Vancleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

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

NOTES:

1. 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.





SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTING HIGH MAST POLE
CONCRETE PAD

SEPTEMBER 2010

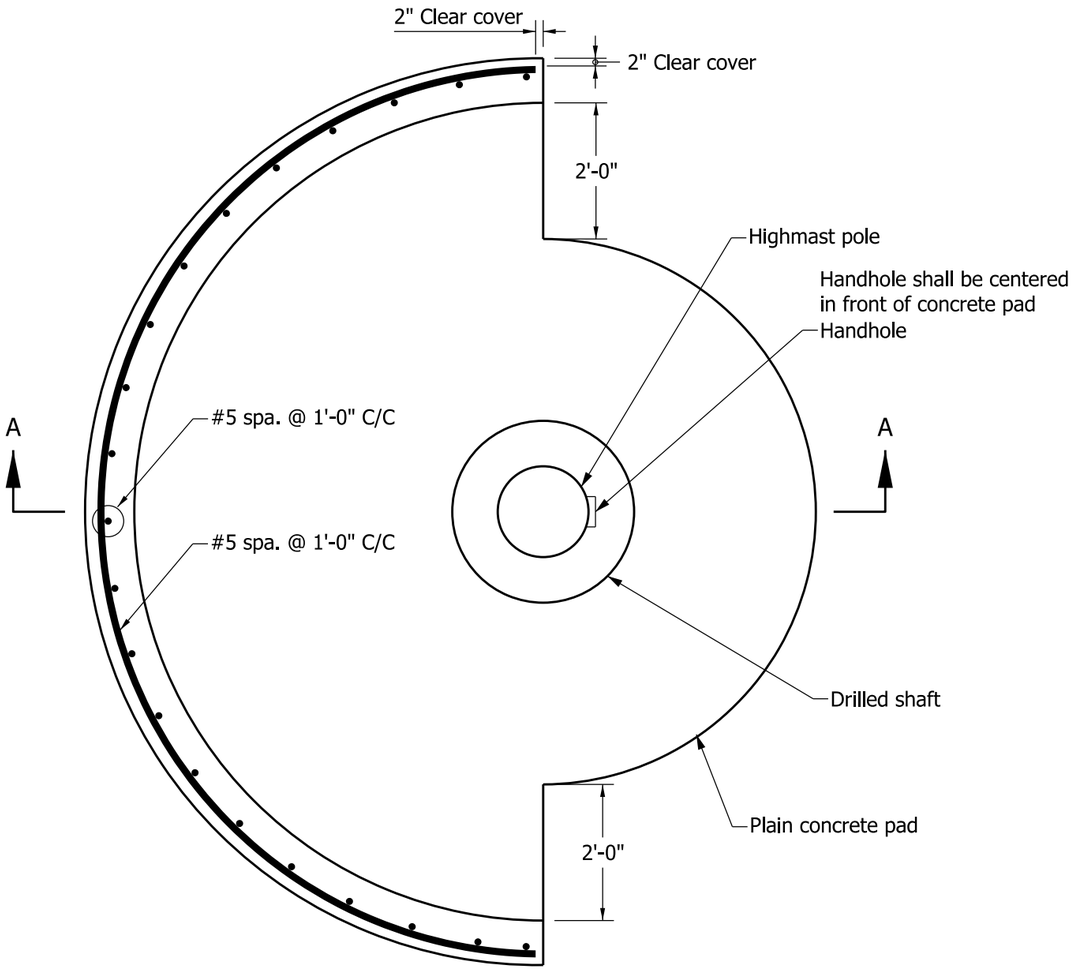
STANDARD DRAWING NO. E 807-LTHM-03

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

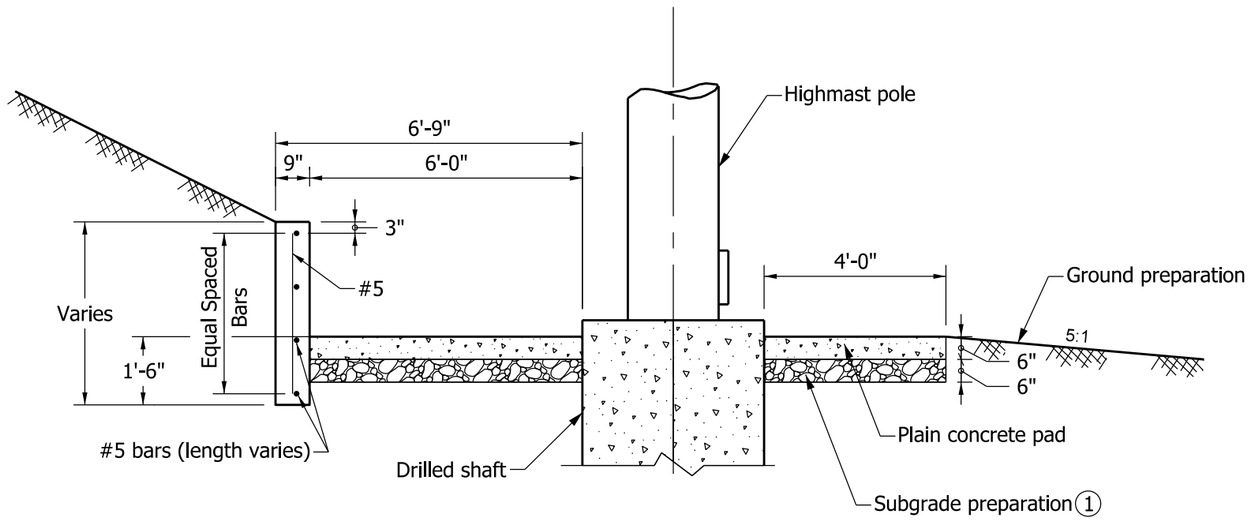
/s/ Richard L. Vancleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

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



NOTES:

1. 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.



SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTING HIGH MAST POLE
CONCRETE PAD
WITH RETAINING WALL

SEPTEMBER 2010

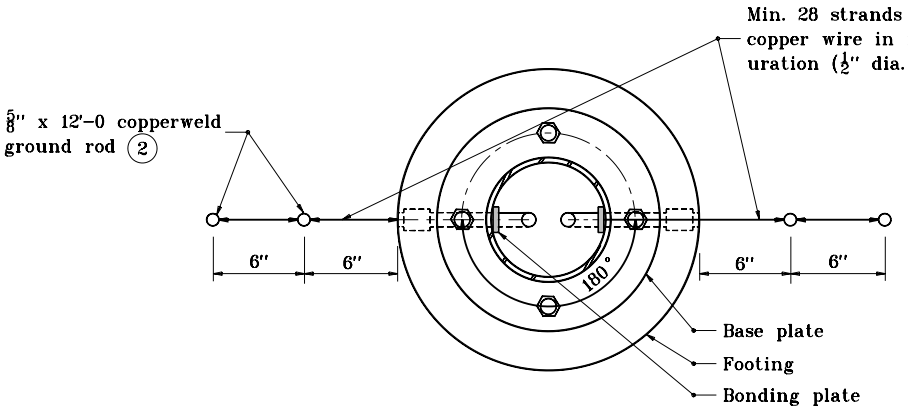
STANDARD DRAWING NO. E 807-LTHM-04

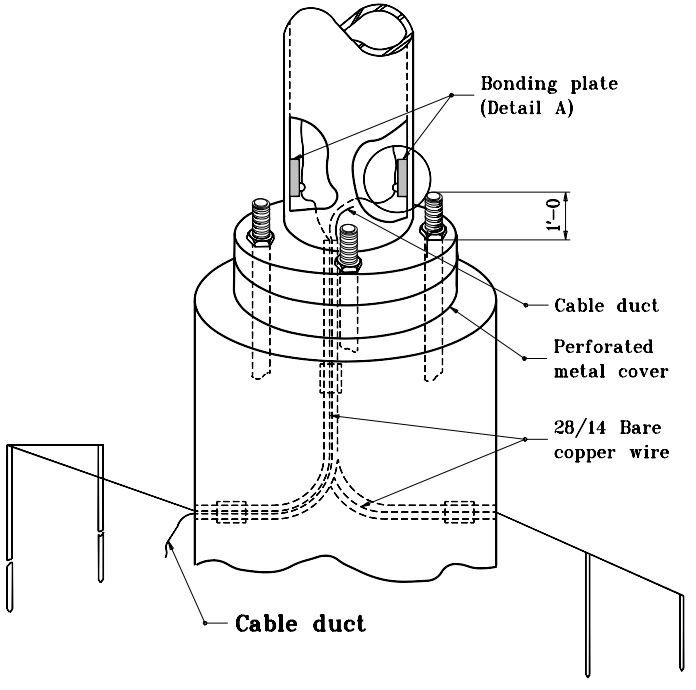
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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. 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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

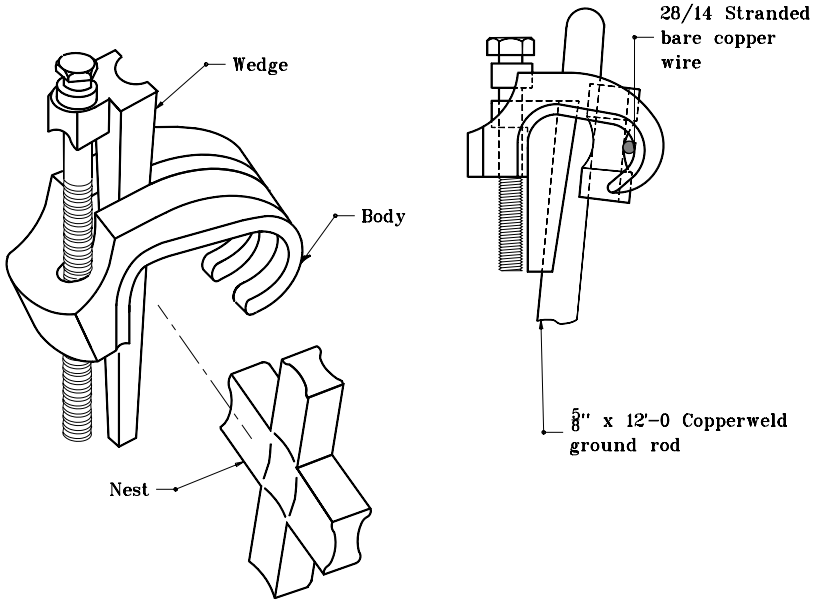
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 7-27-99

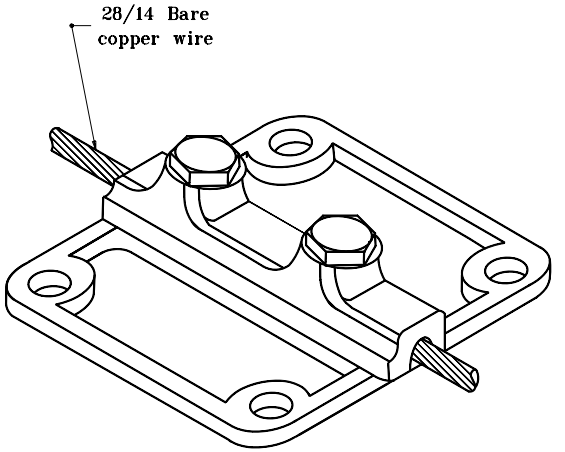
/s/ Anthony L. Uremovich 7-27-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 7-27-99
CHIEF HIGHWAY ENGINEER DATE

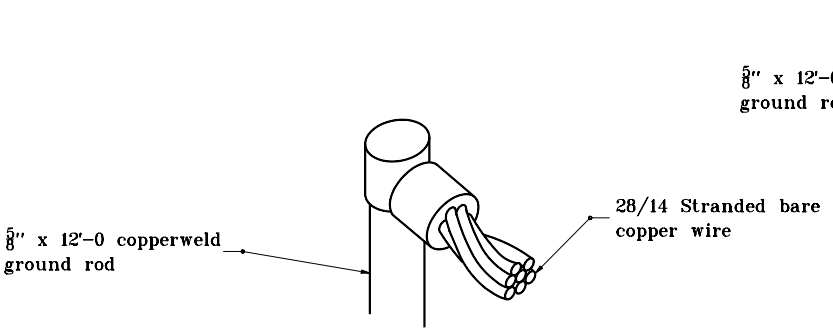
ORIGINALLY APPROVED 3-01-95



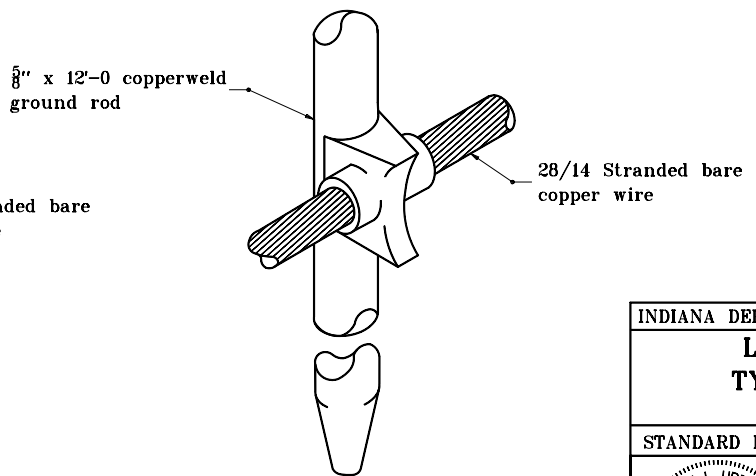
GROUNDING GRID CONNECTOR



BONDING PLATE
(DETAIL A)



TOP CONNECTION



SIDE CONNECTION

THERMOWELD PROCESS

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTNING ROD TYPICAL DETAILS

MARCH 1995

STANDARD DRAWING NO. **E 807-LTLR-02**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

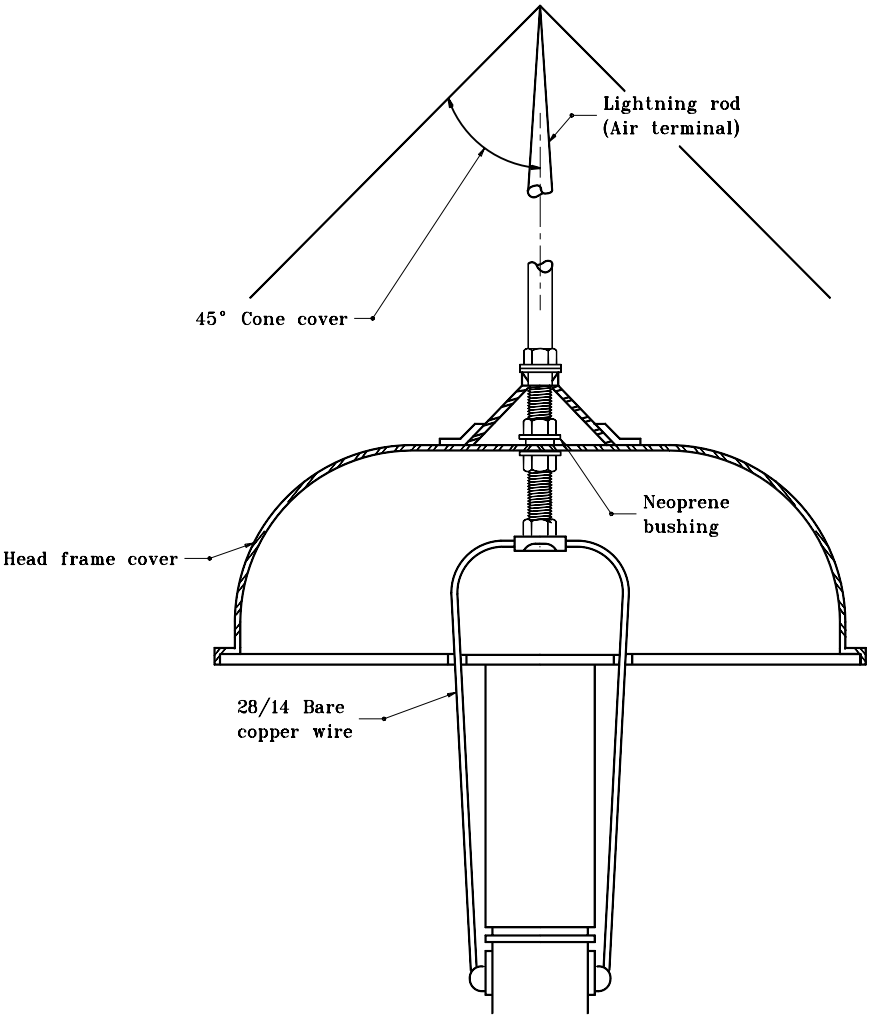
DESIGN STANDARDS ENGINEER

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



CENTER HOOD MOUNT

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTNING ROD TYPICAL DETAILS

MARCH 1995

STANDARD DRAWING NO. **E 807-LTLR-03**

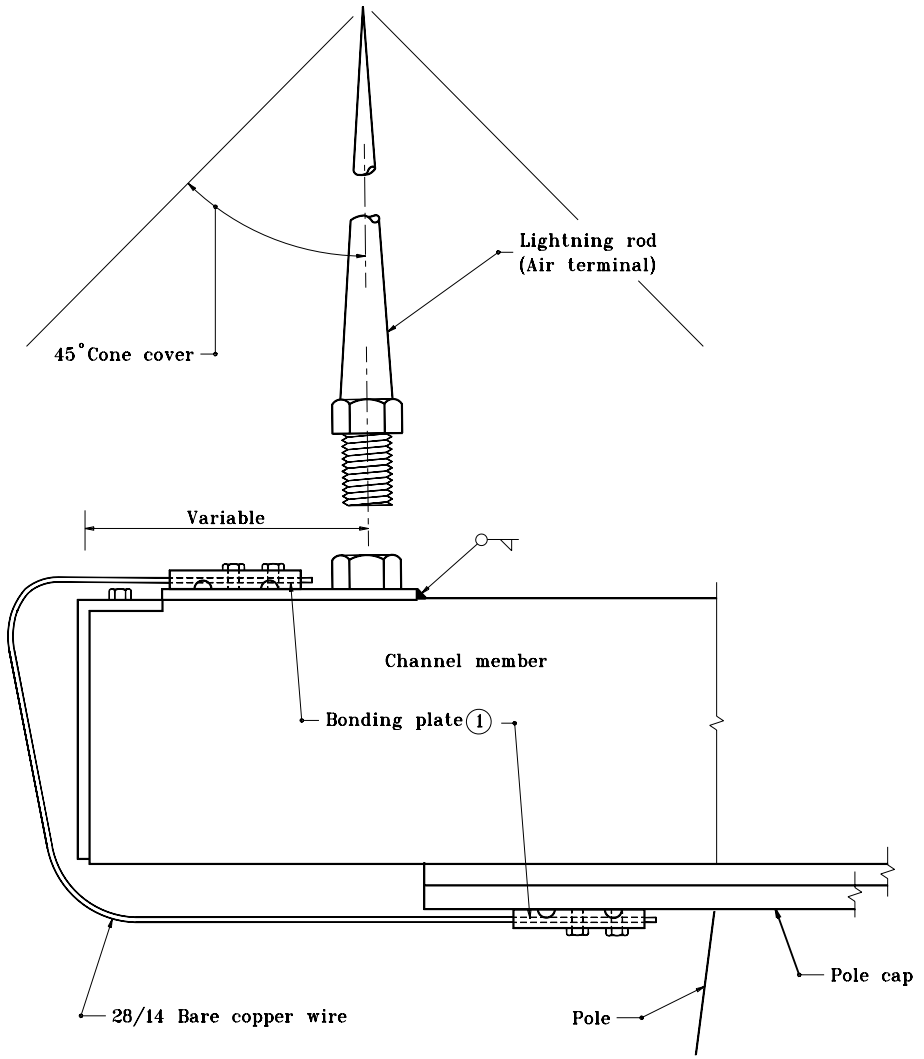
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

RICHARD L. VanCLEAVE
REGISTERED
No. 9750
STATE OF INDIANA
PROFESSIONAL ENGINEER

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

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

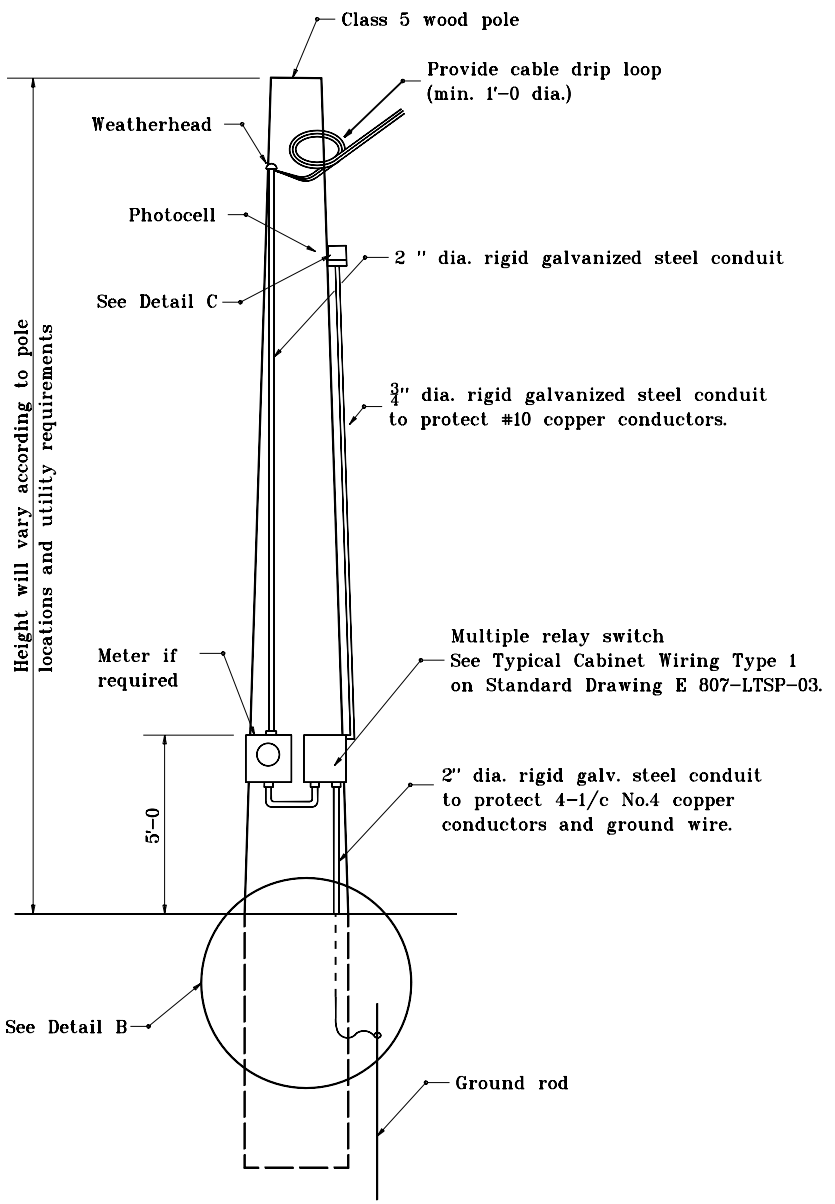
STANDARD DRAWING NO. E 807-LTPD-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

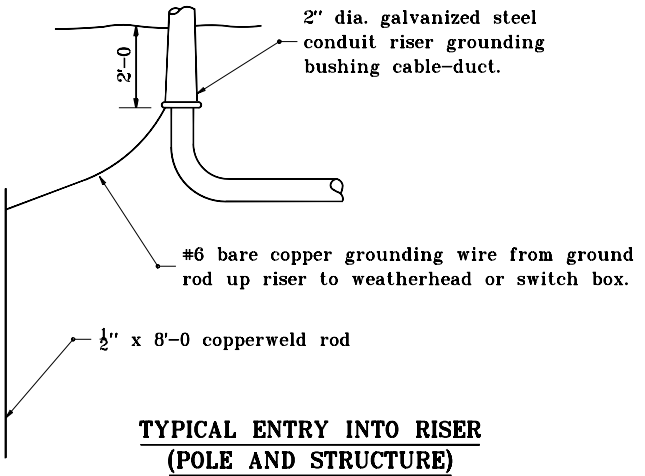
DESIGN STANDARDS ENGINEER

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

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

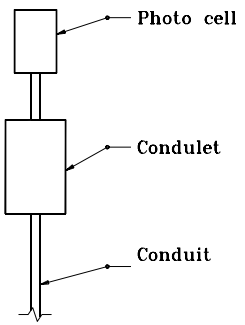


SERVICE POINT
TYPE I



TYPICAL ENTRY INTO RISER
(POLE AND STRUCTURE)

DETAIL B



DETAIL C

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT SERVICE POINT DETAILS

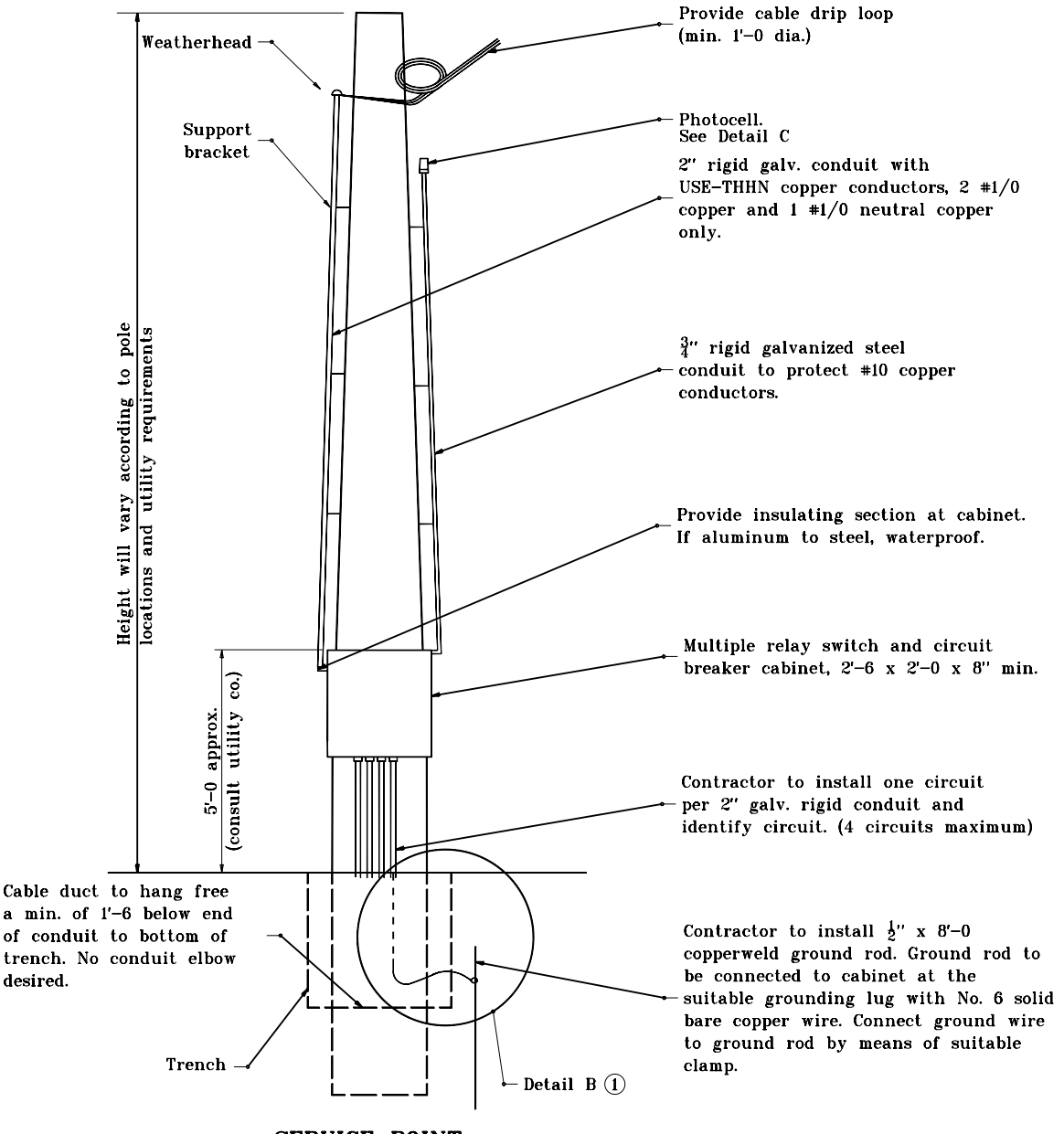
SEPTEMBER 1998

STANDARD DRAWING NO. **E 807-LTSP-01**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

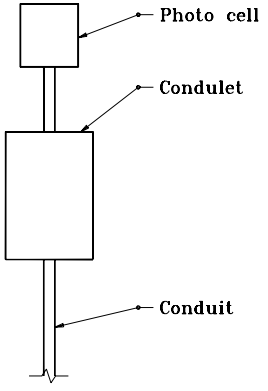
DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich, DESIGN STANDARDS ENGINEER	11-15-99
/s/ Firooz Zandi, CHIEF HIGHWAY ENGINEER	11-15-99
ORIGINALLY APPROVED	9-01-98



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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

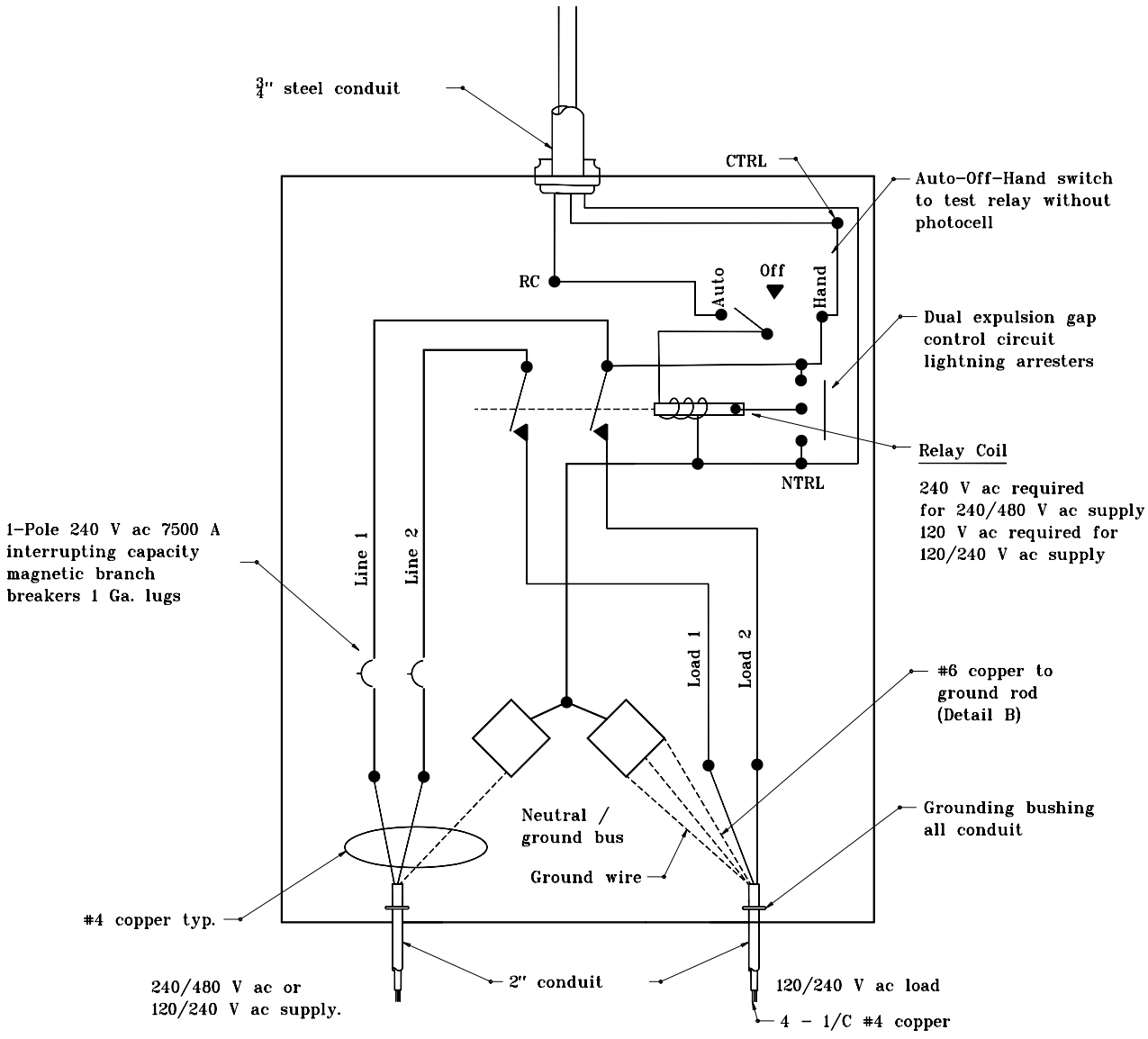
DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 1-03-00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 1-03-00
CHIEF HIGHWAY ENGINEER — DATE

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

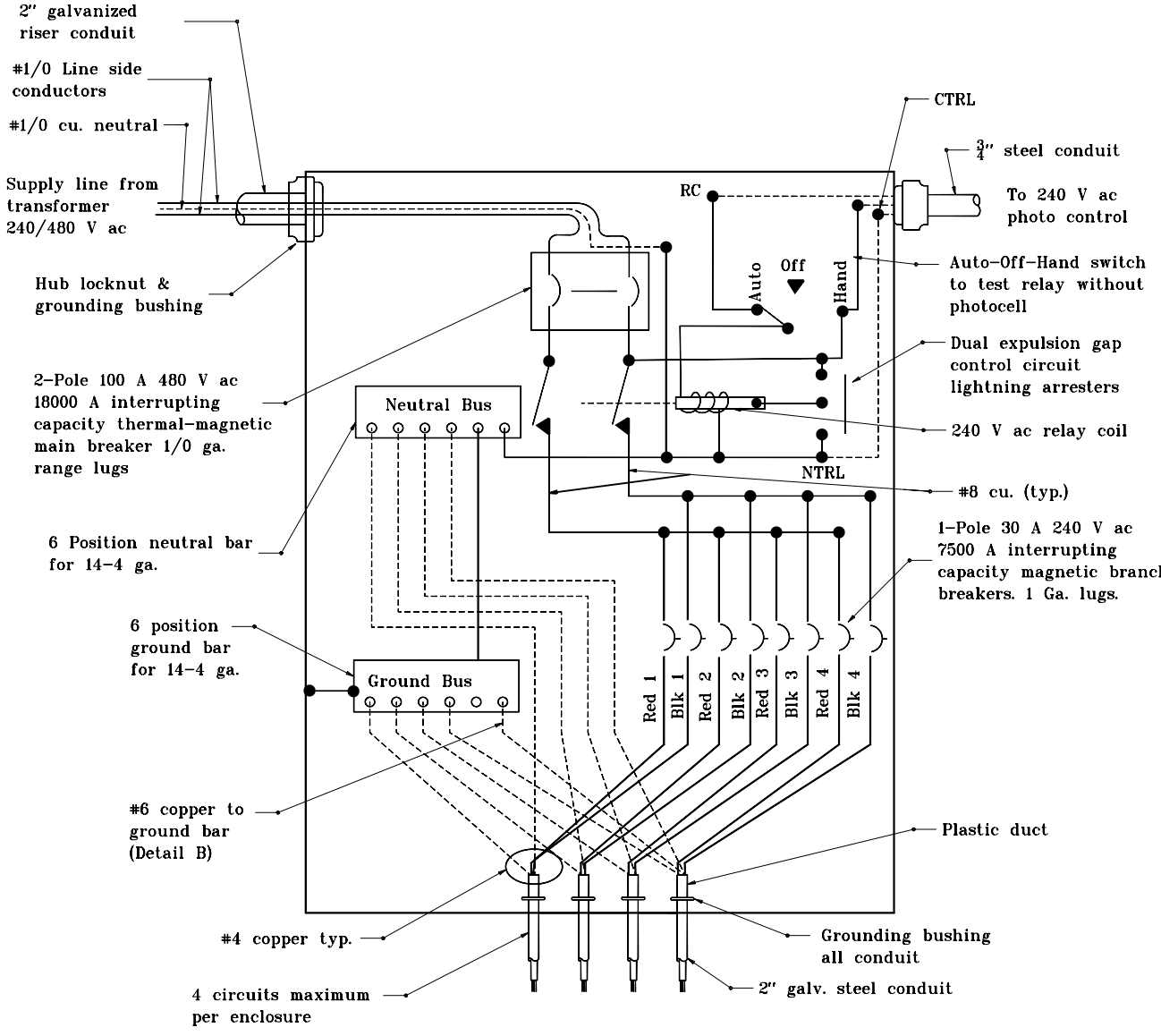
STANDARD DRAWING NO. **E 807-LTSP-03**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 1-03-00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 1-03-00
CHIEF HIGHWAY ENGINEER — DATE



TYPICAL CABINET WIRING, TYPE II

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT SERVICE POINT DETAILS

JANUARY 2000

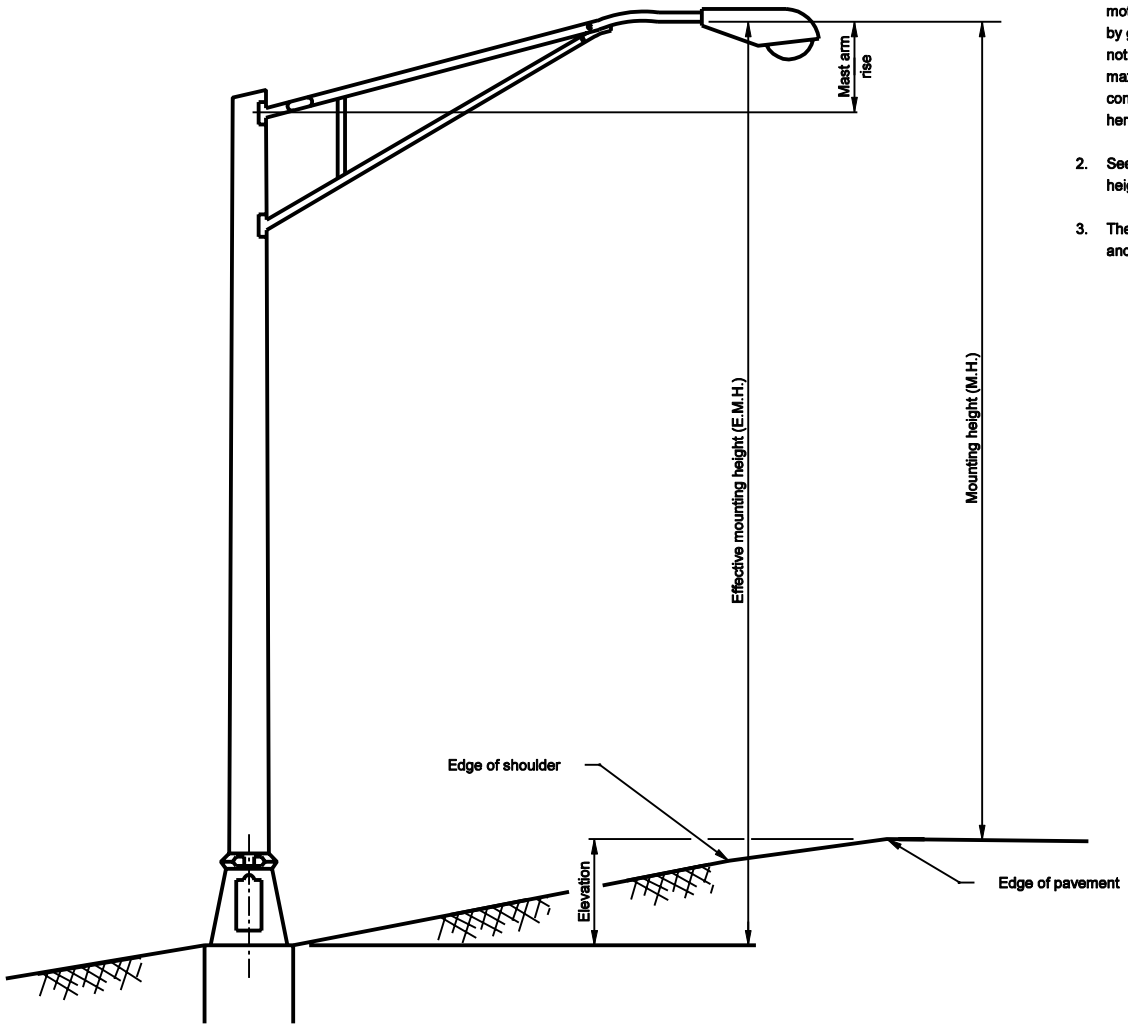
STANDARD DRAWING NO. **E 807-LTSP-04**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 1-03-00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 1-03-00
CHIEF HIGHWAY ENGINEER — DATE



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

/s/ Richard K. Smulzer 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"

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"

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.

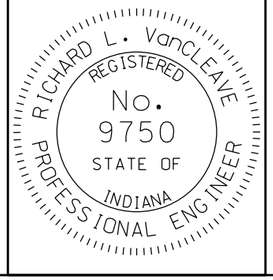
2. Each anchor bolt for a bridge deck installation shall have a diameter of 1", a total length of 3'-8", and a hook length of 4".

INDIANA DEPARTMENT OF TRANSPORTATION

ALUMINUM LIGHT POLE
WITH TRANSFORMER BASE

SEPTEMBER 2012

STANDARD DRAWING NO. E 807-LTST-02

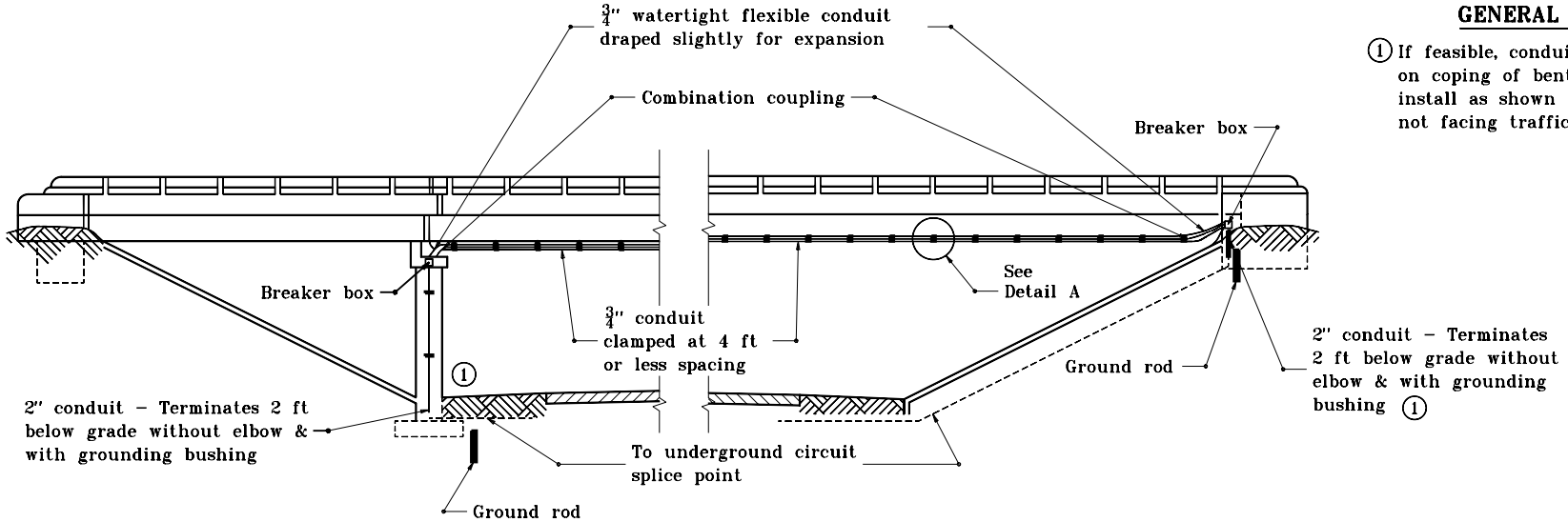


/s/ Richard L. VanCleave *09/04/12*
SUPERVISOR, ROADWAY STANDARDS DATE

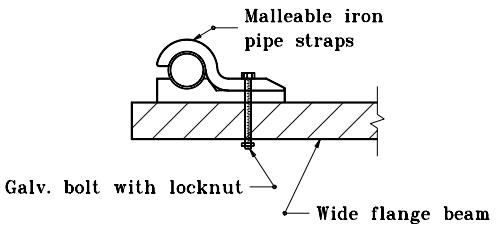
/s/ Mark A. Miller *09/04/12*
CHIEF ENGINEER DATE

GENERAL NOTES

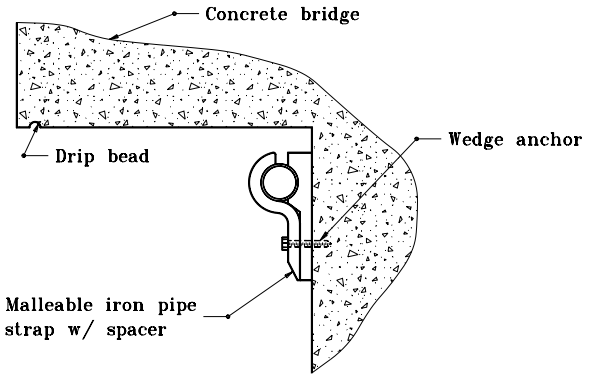
(1) If feasible, conduit to be installed on coping of bent; if not, install as shown on end of bridge not facing traffic.



ELEVATION



Steel Beam



Concrete Beam

DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

UNDERPASS LIGHTING DETAILS

MARCH 1995

STANDARD DRAWING NO. E 807-LTUP-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

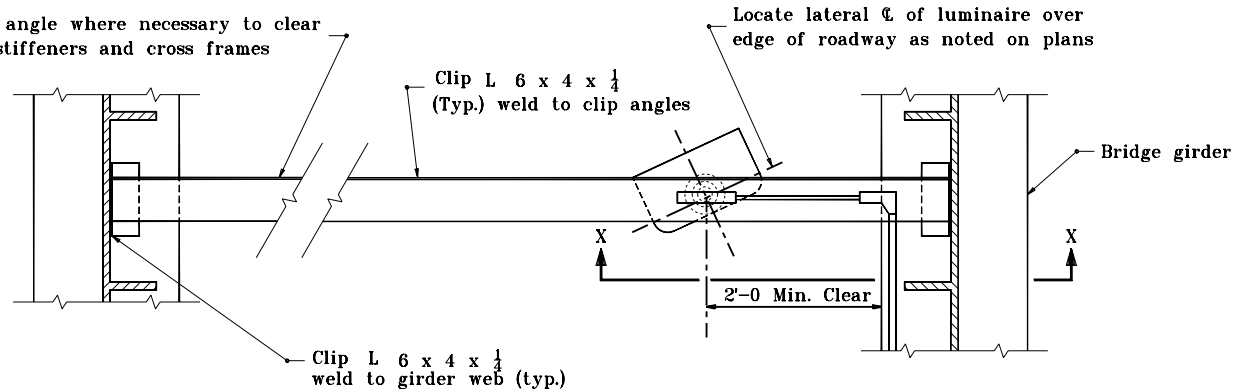
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 7-27-99

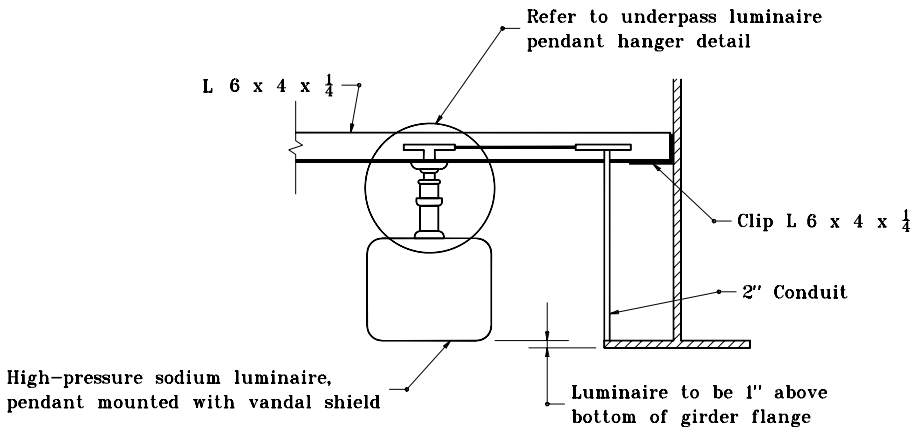
/s/ Anthony L. Uremovich 7-27-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 7-27-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95



PLAN VIEW



SECTION X–X

INDIANA DEPARTMENT OF TRANSPORTATION

UNDERPASS LIGHTING DETAILS
PENDANT MOUNTING

JANUARY 2000

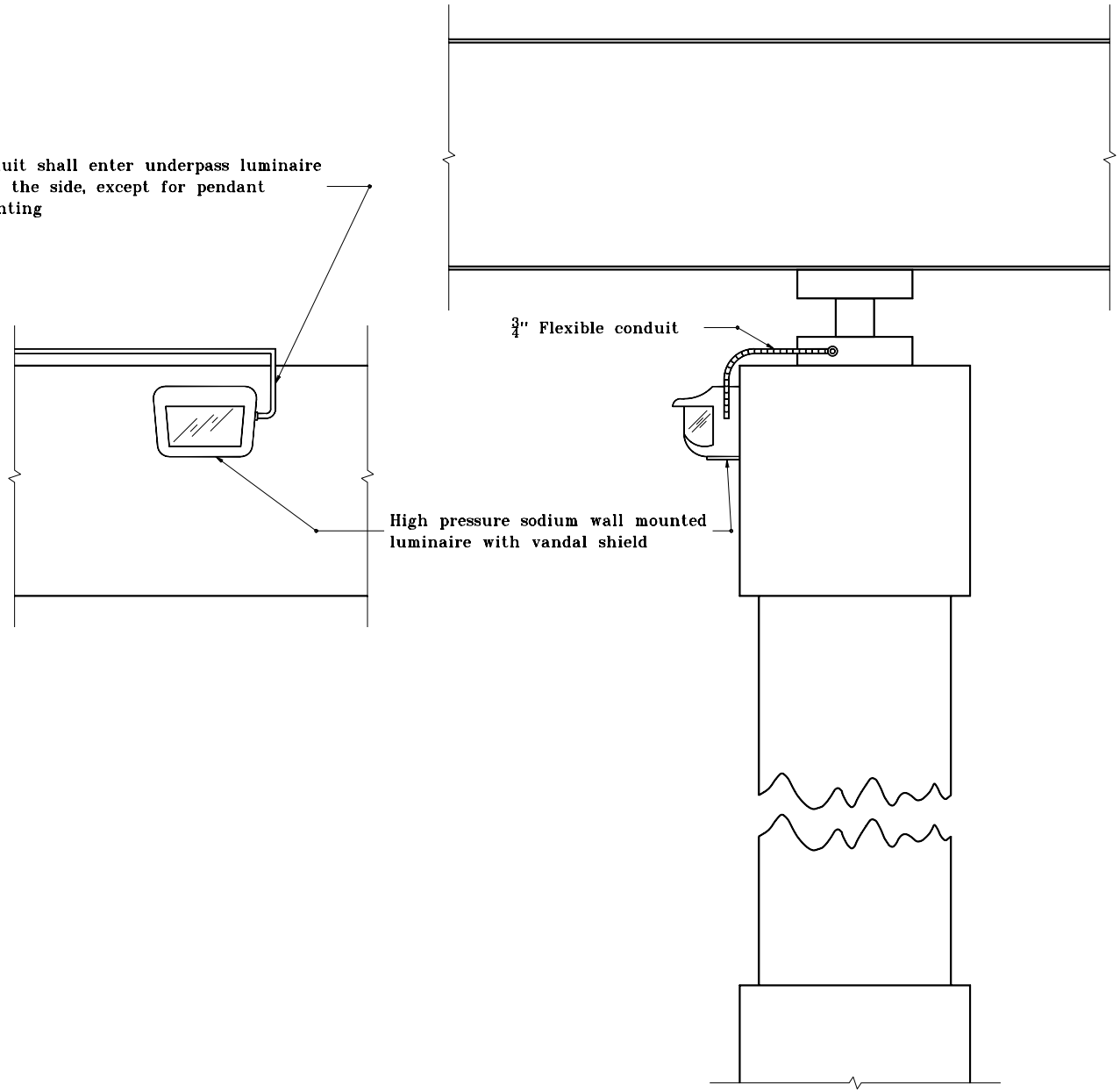
STANDARD DRAWING NO. **E 807–LTUP–02**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich — DESIGN STANDARDS ENGINEER — 1–03–00 DATE

/s/ Firooz Zandi — CHIEF HIGHWAY ENGINEER — 1–03–00 DATE



INDIANA DEPARTMENT OF TRANSPORTATION

UNDERPASS LIGHTING DETAILS WALL MOUNTING

MARCH 1995

STANDARD DRAWING NO. **E 807-LTUP-03**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

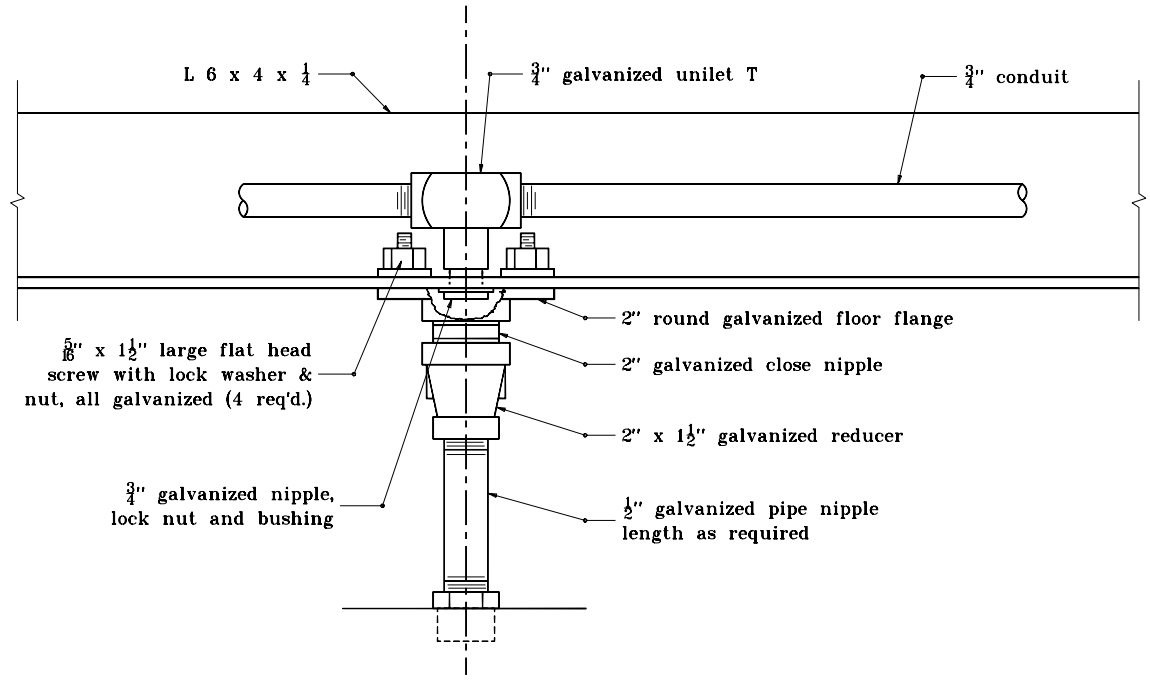
DESIGN STANDARDS ENGINEER

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



INDIANA DEPARTMENT OF TRANSPORTATION

UNDERPASS LIGHTING DETAILS
PENDANT HANGER DETAIL

JANUARY 2000

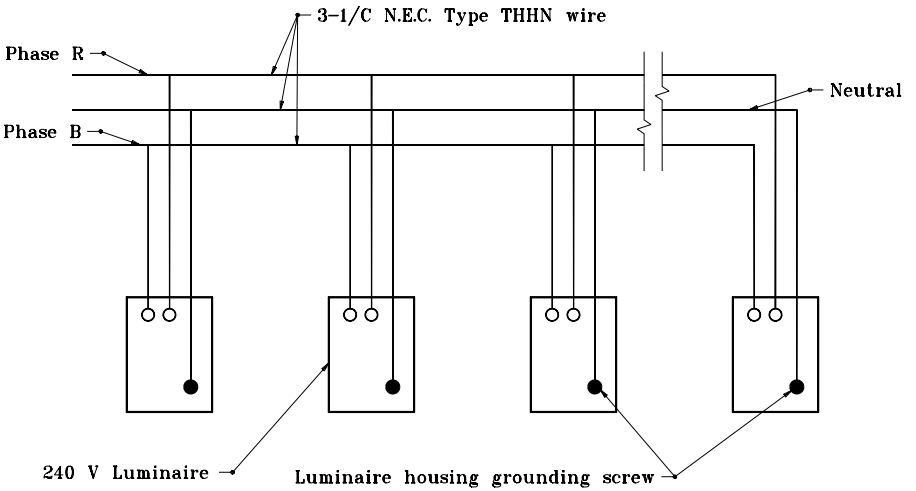
STANDARD DRAWING NO. **E 807-LTUP-04**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

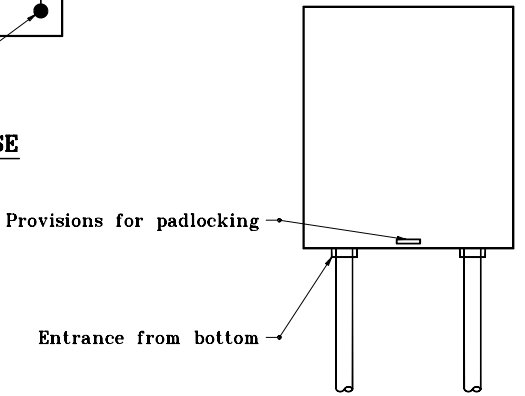
DESIGN STANDARDS ENGINEER

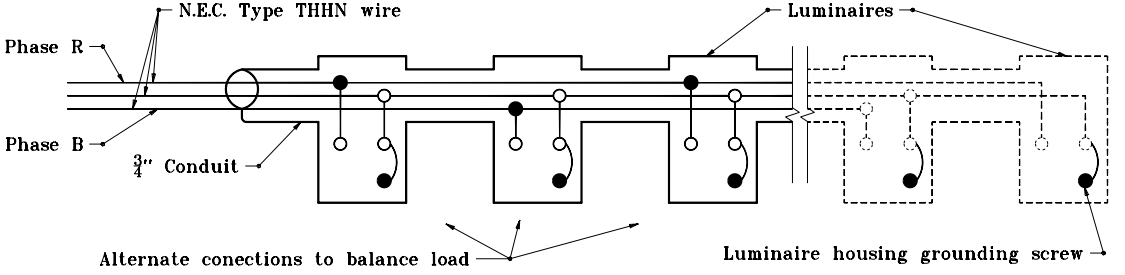
/s/ Anthony L. Uremovich — DESIGN STANDARDS ENGINEER — 1-03-00 DATE

/s/ Firooz Zandi — CHIEF HIGHWAY ENGINEER — 1-03-00 DATE



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

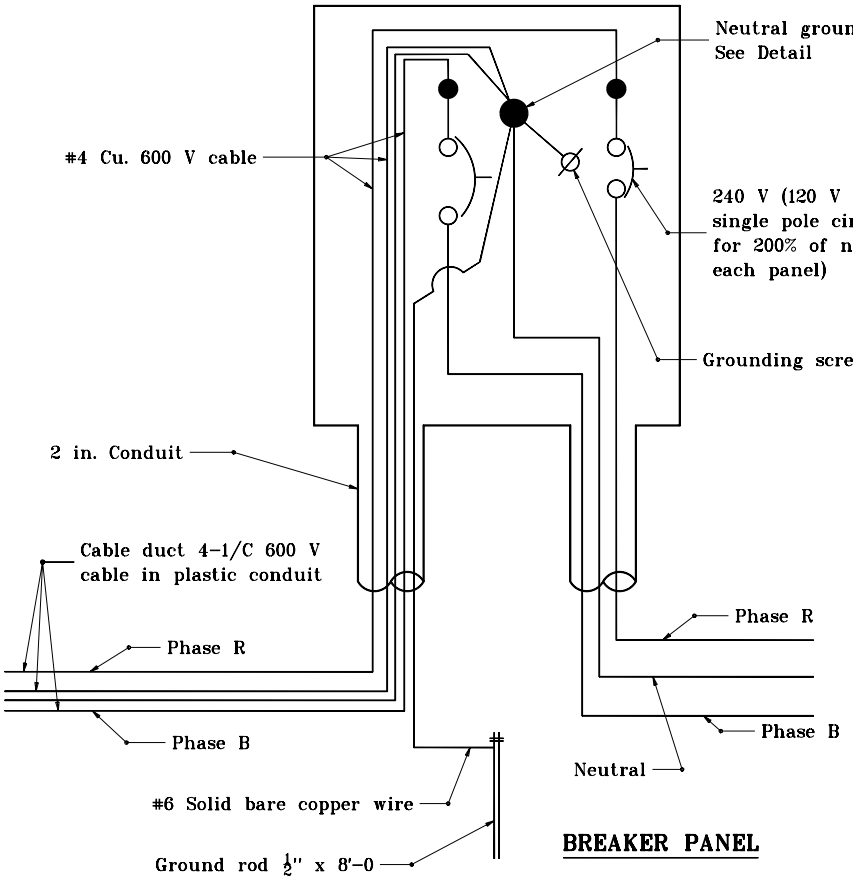
STANDARD DRAWING NO. **E 807-LTUP-05**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

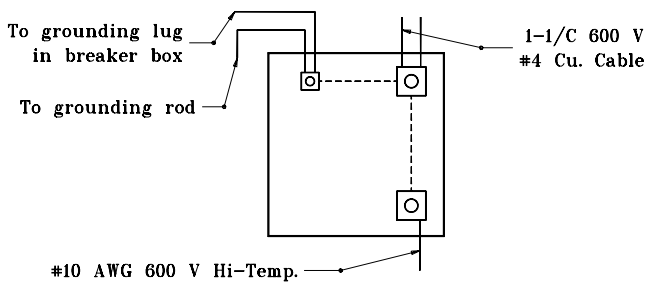
DESIGN STANDARDS ENGINEER

/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

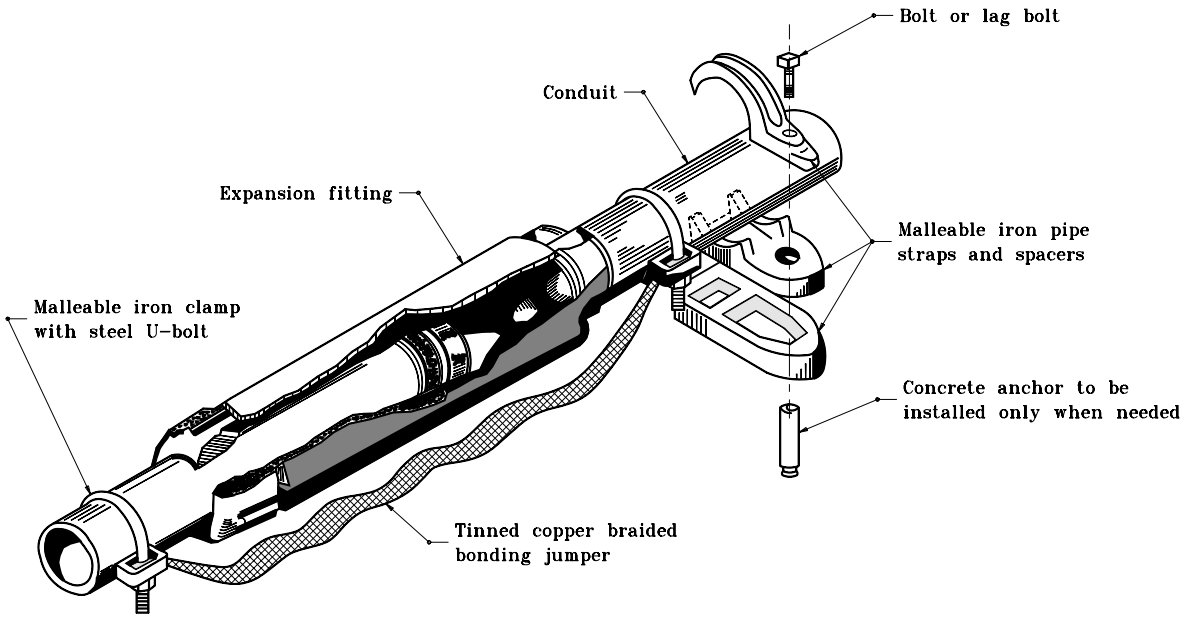
MARCH 1995

STANDARD DRAWING NO. **E 807-LTUP-06**

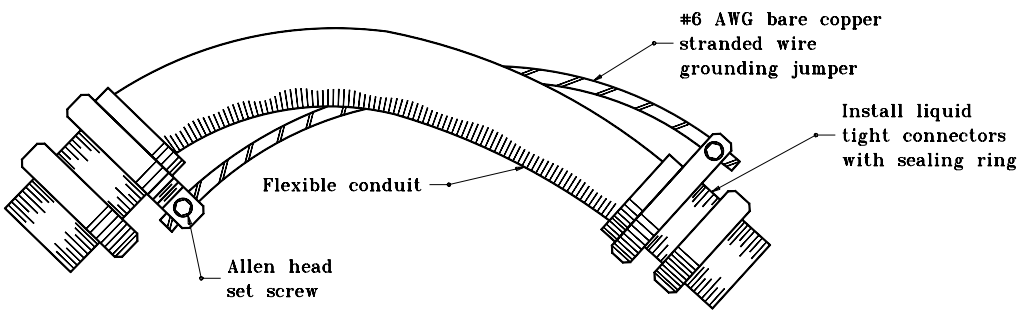
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich, DESIGN STANDARDS ENGINEER	11-15-99
/s/ Firooz Zandi, CHIEF HIGHWAY ENGINEER	11-15-99
ORIGINALLY APPROVED	3-01-95



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

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.

INDIANA DEPARTMENT OF TRANSPORTATION

UNDERPASS LIGHTING DETAILS

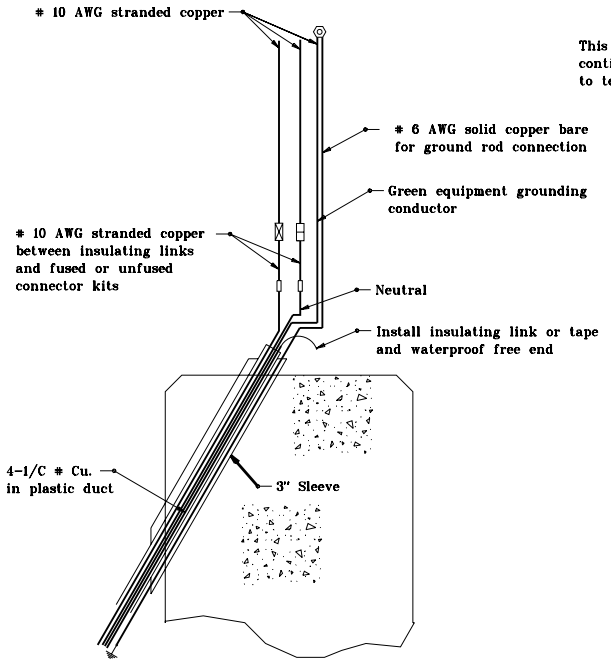
MARCH 1995

STANDARD DRAWING NO. **E 807-LTUP-07**

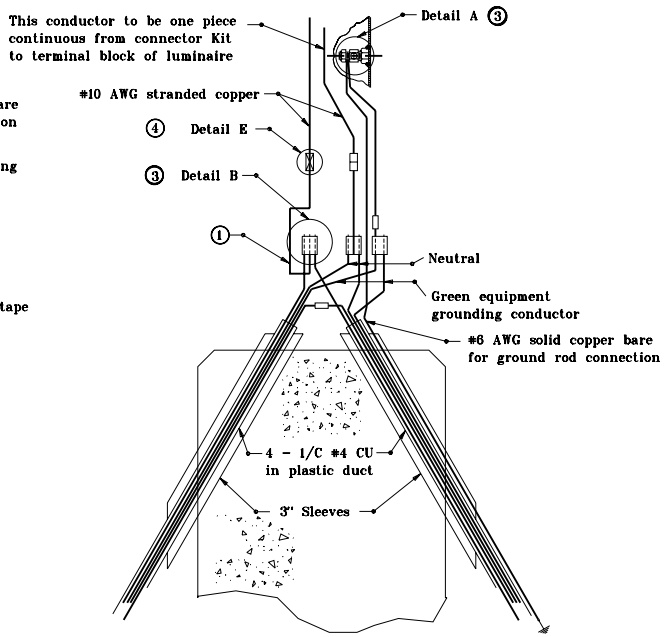
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

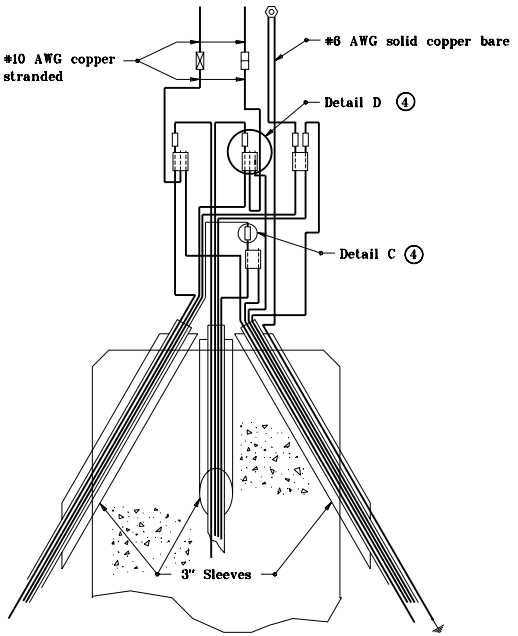
DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich DESIGN STANDARDS ENGINEER	11-15-99 DATE
/s/ Firooz Zandi CHIEF HIGHWAY ENGINEER	11-15-99 DATE
ORIGINALLY APPROVED	3-01-95



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

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

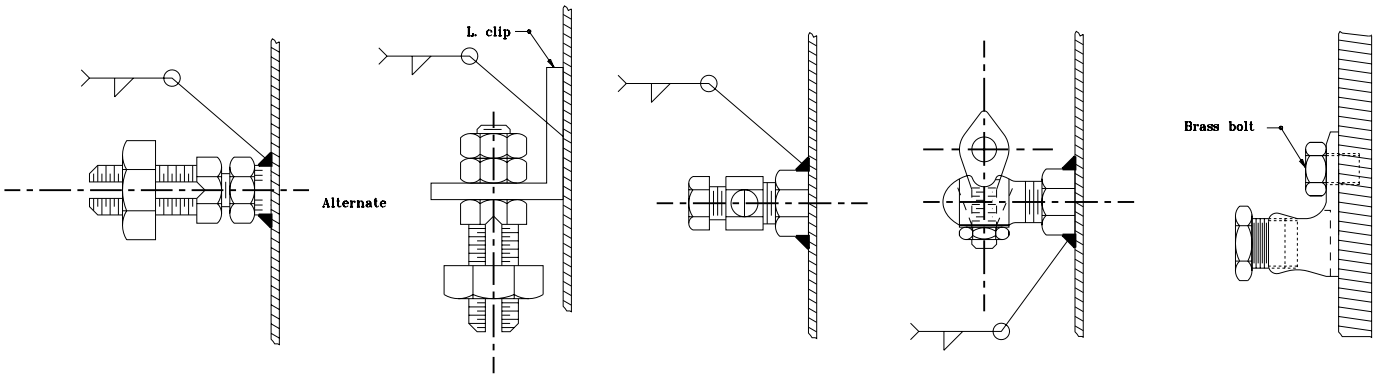
DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

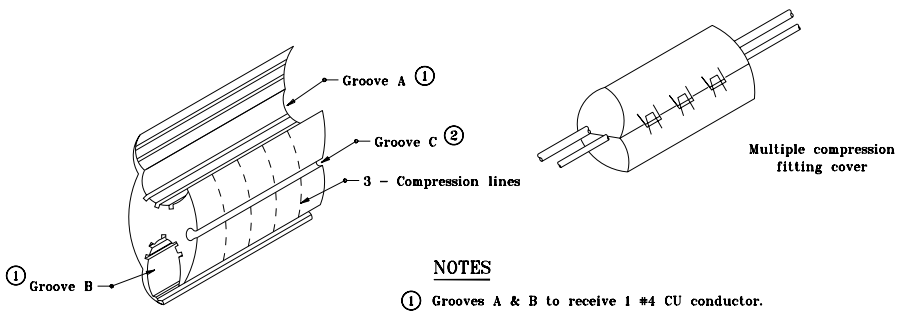
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

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

ORIGINALLY APPROVED 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

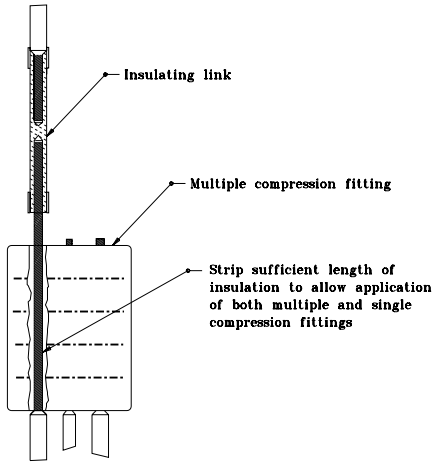
JANUARY 1996

STANDARD DRAWING NO. **E 807-LTWR-02**

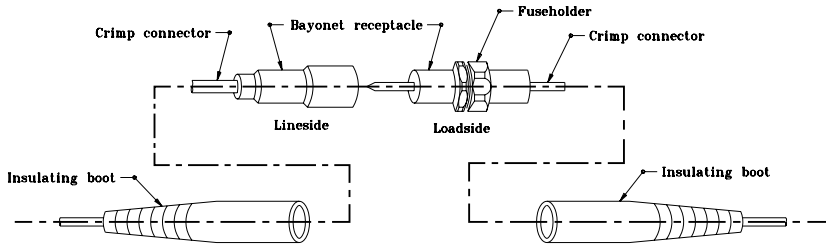
ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

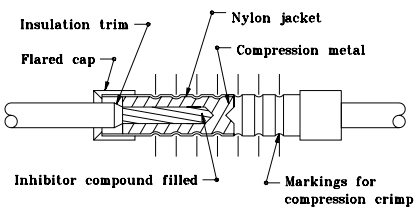
DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich	11-15-99
DESIGN STANDARDS ENGINEER	DATE
/s/ Firooz Zandi	11-15-99
CHIEF HIGHWAY ENGINEER	DATE
ORIGINALLY APPROVED	1-02-96



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**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

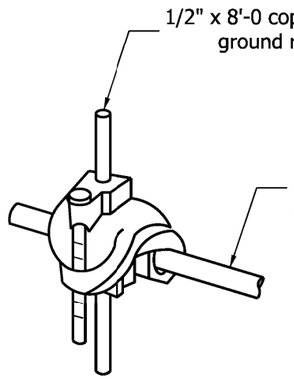
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

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

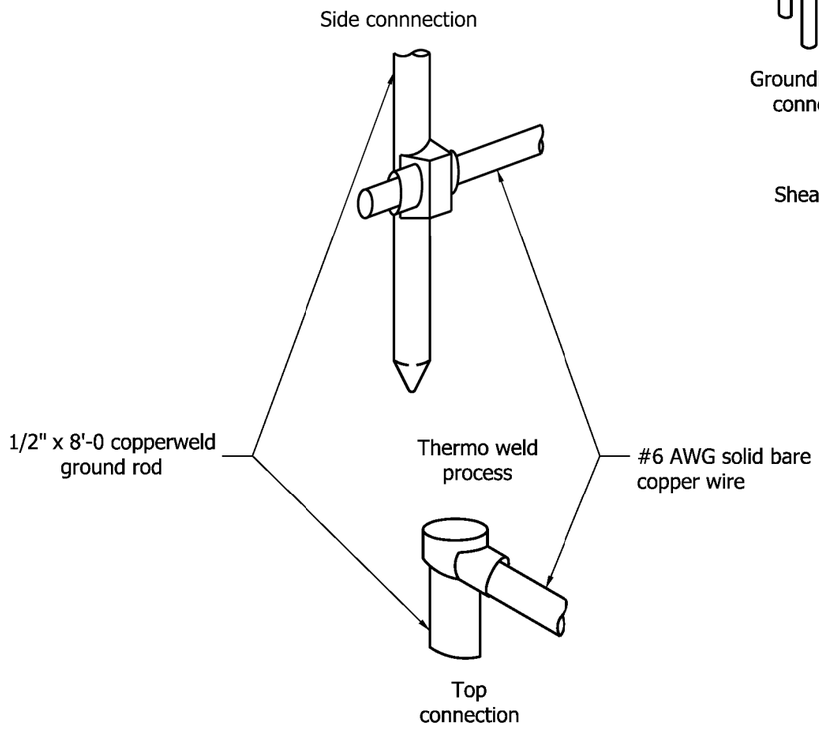
ORIGINALLY APPROVED 1-02-96

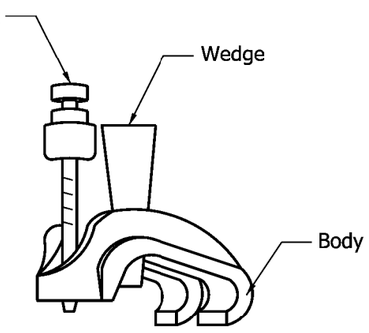
LEGEND

- Ground post
- Self insulated splicer (insulating link)
- Unfused connector
- Fused connecto
- Compression connector



Grounding grid connector





DETAIL F
TYPICAL GROUND ROD CONNECTION

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTING WIRING DETAILS

SEPTEMBER 2009

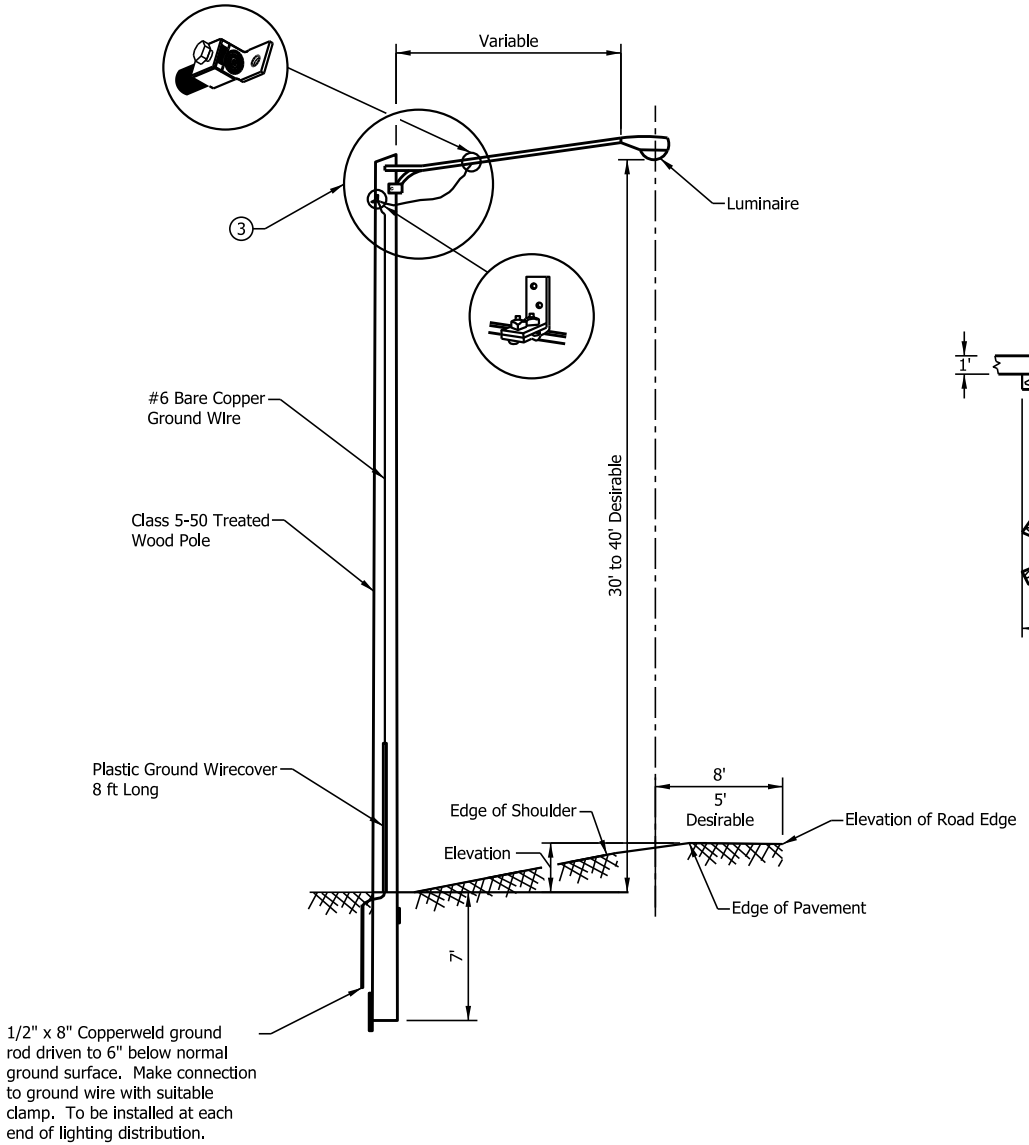
STANDARD DRAWING NO. E 807-LTWR-04

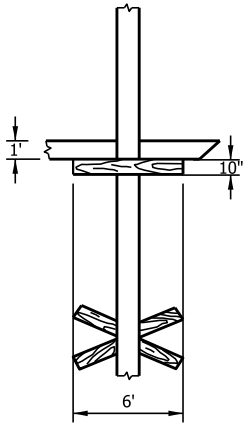
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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:

1. Install 2" x 10" x 6' treated plank 1' below ground surface with inner face directly against pole outer face to be placed against undisturbed earth as near as practical.
2. Pole key anchor and plank stabilizer to be installed at each major change of overhead line direction and at each end of lighting distribution.
3. See Section on Standard Drawing E 807-THID-02.
4. Luminaire shall be either a 400 Watt HPS or an alternative light source type with an equivalent light (lumen) output.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY HIGHWAY ILLUMINATION DETAILS POLE AND LUMINAIRE

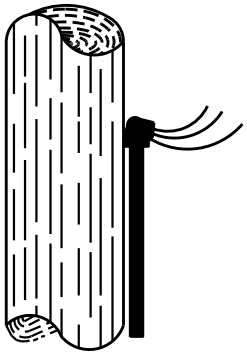
SEPTEMBER 2017

STANDARD DRAWING NO. E 807-THID-01

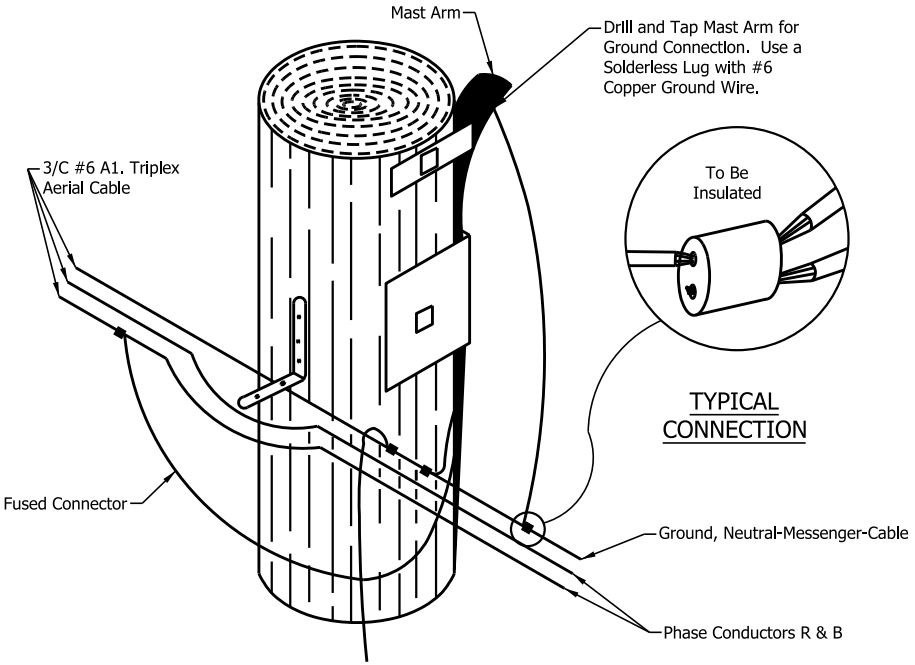
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 04/25/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/27/17
CHIEF ENGINEER DATE

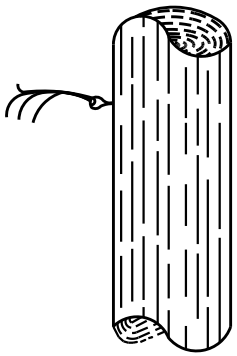


CONDUIT
RISER

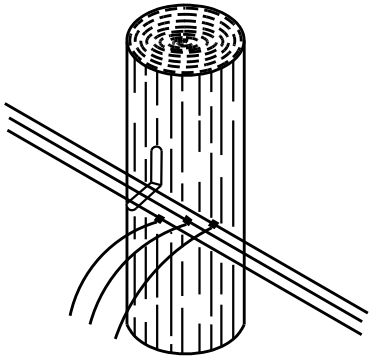


TYPICAL
CONNECTION

SECTION A
TYPICAL AERIAL LUMINAIRE
CONNECTION WITH GROUND



AERIAL CABLE
TERMINATION



TYPICAL CIRCUIT
CONNECTION TO
AERIAL CABLE

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY HIGHWAY
ILLUMINATION DETAILS
WIRING

SEPTEMBER 2017

STANDARD DRAWING NO. E 807-THID-02

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 04/25/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/27/17
CHIEF ENGINEER DATE

INDEX	
SHEET NO.	SUBJECT
1	Index and General Notes
2	Dotted Lines for Freeway Acceleration Lanes
3	Dotted Lines for Freeway Deceleration Lanes
4	Freeway Short Auxiliary Lanes and Extended Auxiliary Lanes
5	Freeway Lane Drops and Route Split
6	Lane Drops at Intersections
7	Dotted Lines for Freeway Double Acceleration Lanes
8	Pavement Markings for Freeway Double Deceleration Lanes
9	Major Diverge or Route Split with Option Lane

GENERAL NOTE:

1. The dotted line details for freeways also apply to collector distributor roads and interchanges on expressways and conventional state highways.

INDIANA DEPARTMENT OF TRANSPORTATION

DOTTED LINE MARKING
INDEX AND GENERAL NOTES

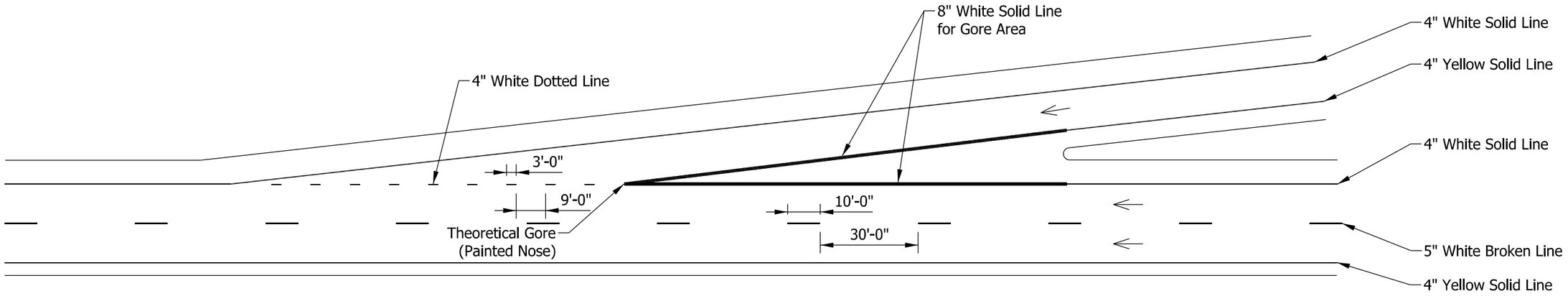
SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-01

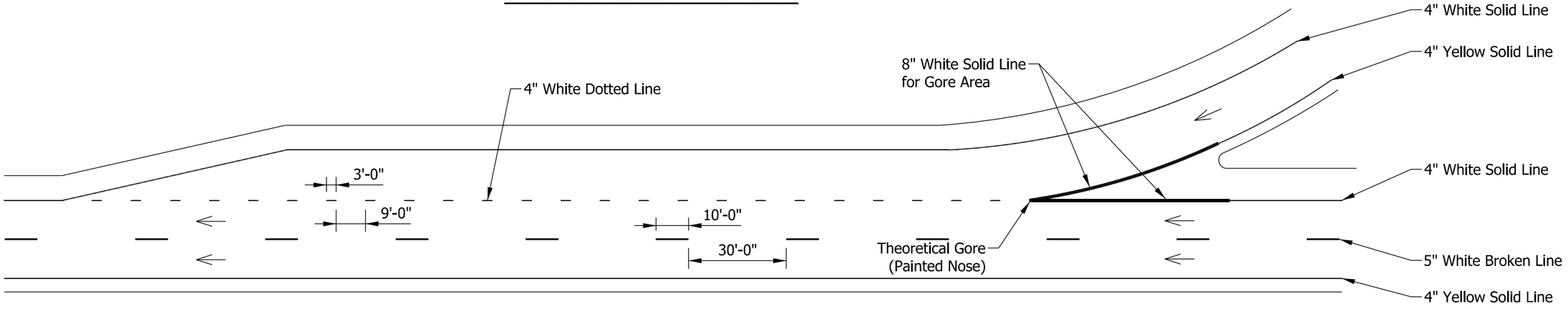
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff *03/12/18*
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie *05/03/18*
CHIEF ENGINEER DATE



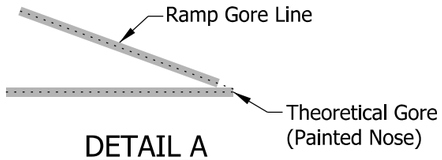
TAPERED ACCELERATION LANE



PARALLEL ACCELERATION LANE

NOTE:

1. 8 in. white solid lines for gore areas shall connect at the theoretical gore.



DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION

DOTTED LINES FOR FREEWAY
ACCELERATION LANES

SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-02

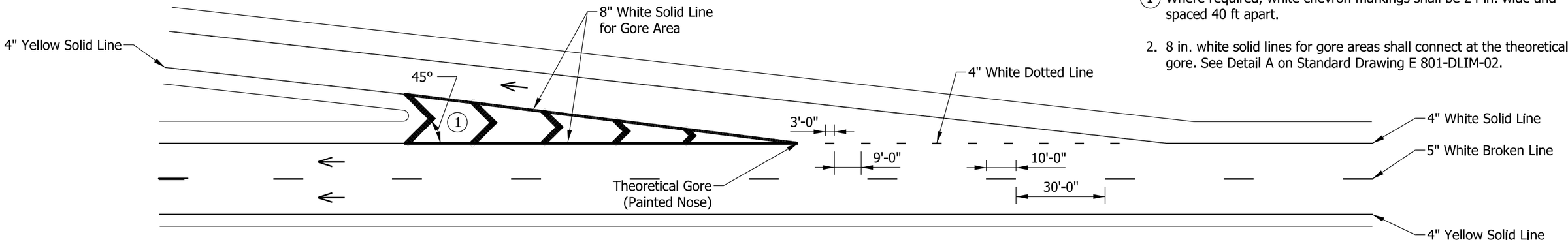
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

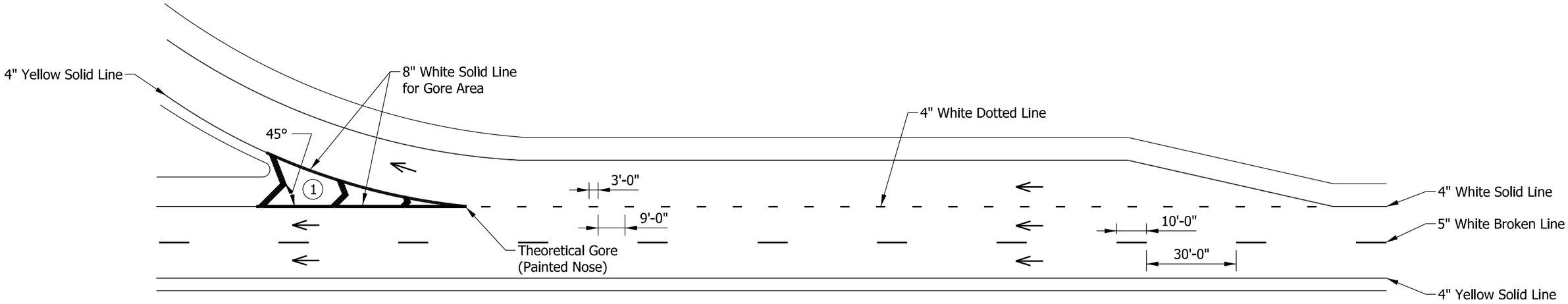
/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE

NOTES:

1. Where required, white chevron markings shall be 24 in. wide and spaced 40 ft apart.
2. 8 in. white solid lines for gore areas shall connect at the theoretical gore. See Detail A on Standard Drawing E 801-DLIM-02.



TAPERED DECELERATION LANE



PARALLEL DECELERATION LANE

INDIANA DEPARTMENT OF TRANSPORTATION

DOTTED LINES FOR FREEWAY DECELERATION LANES

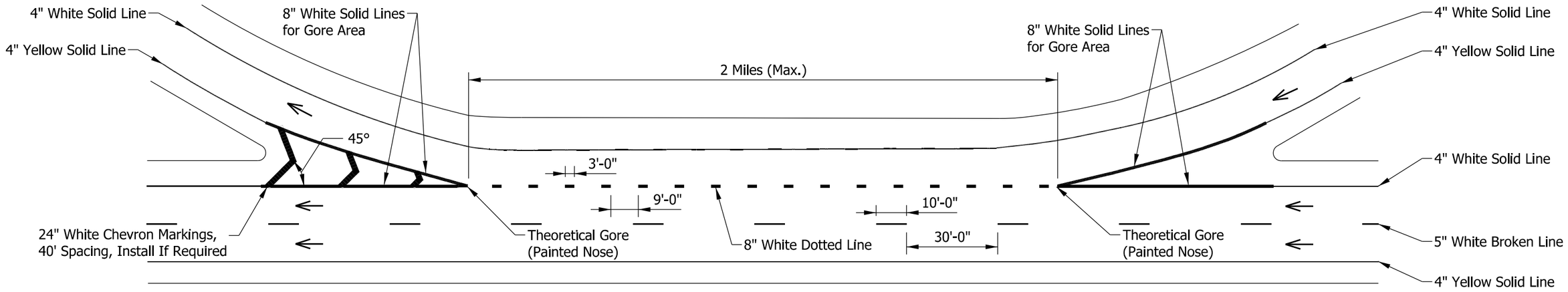
SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-03

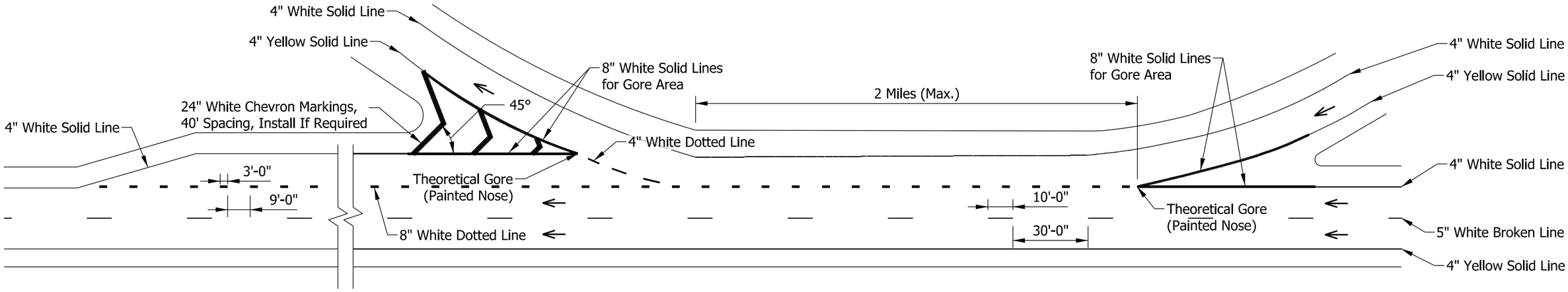
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE



AUXILIARY LANE LESS THAN 2 MILES



EXTENDED AUXILIARY LANE

NOTE:

1. 8 in. white solid lines for gore areas shall connect at the theoretical gore. See Detail A on Standard Drawing E 801-DLIM-02.

INDIANA DEPARTMENT OF TRANSPORTATION

FREEWAY SHORT AUXILIARY LANES AND EXTENDED AUXILIARY LANES

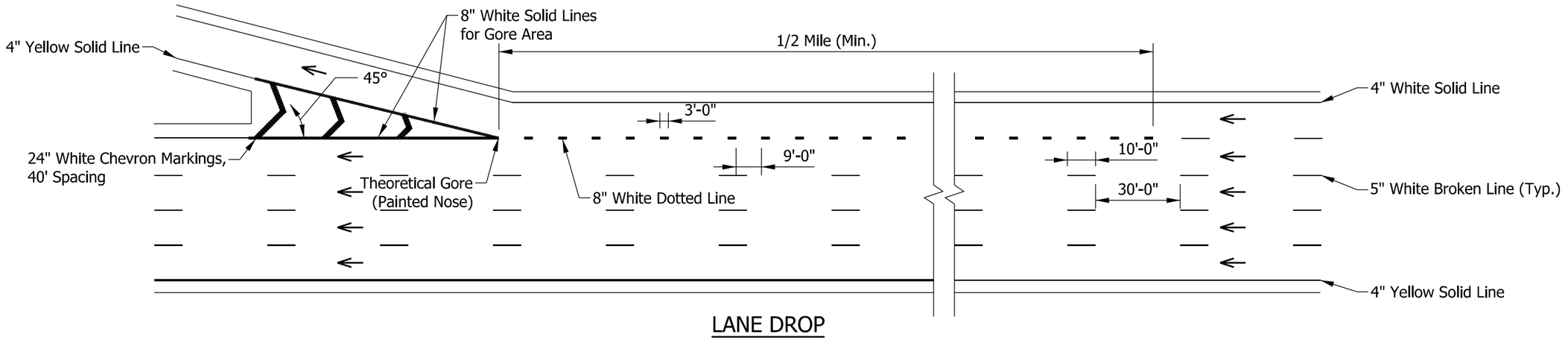
SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-04

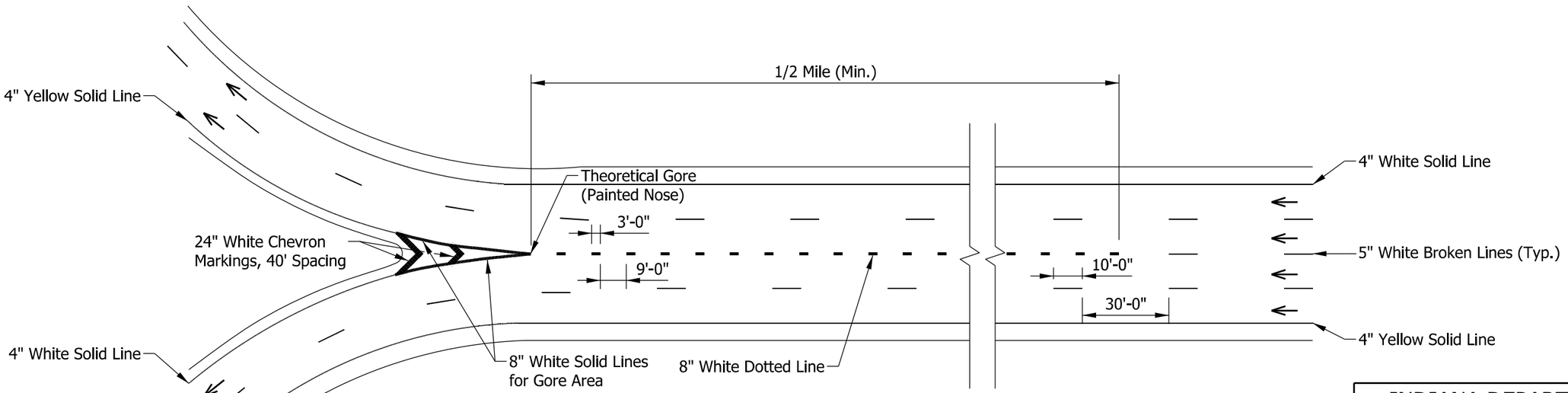
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE



LANE DROP



ROUTE SPLIT WITH DEDICATED LANES

NOTE:

1. 8 in. white solid lines for gore areas shall connect at the theoretical gore. See Detail A on Standard Drawing E 801-DLIM-02.

INDIANA DEPARTMENT OF TRANSPORTATION

FREEWAY LANE DROPS AND ROUTE SPLIT

SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-05

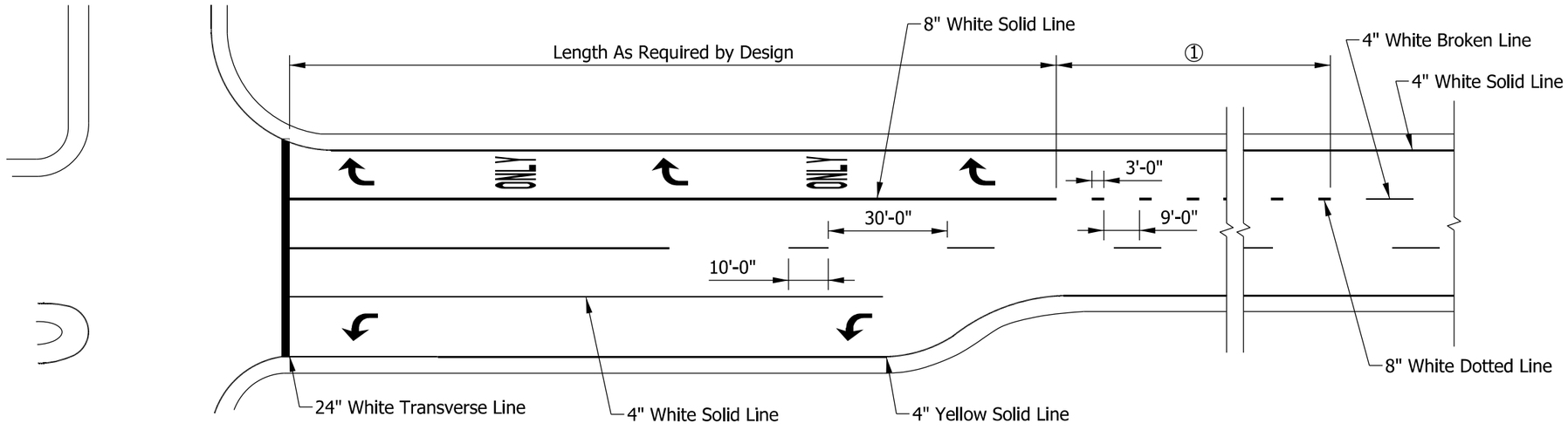
DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE

NOTE:

① The dotted line shall be extended to the lesser of 300 ft or the nearest intersection.



INDIANA DEPARTMENT OF TRANSPORTATION

LANE DROPS AT INTERSECTIONS

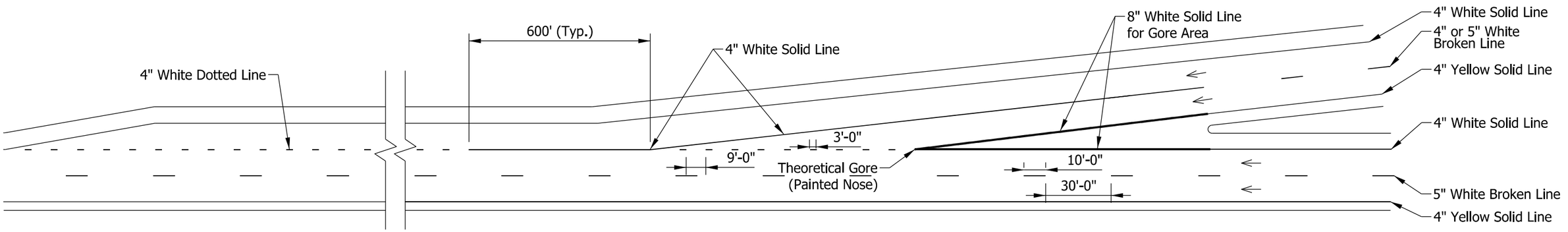
SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-06

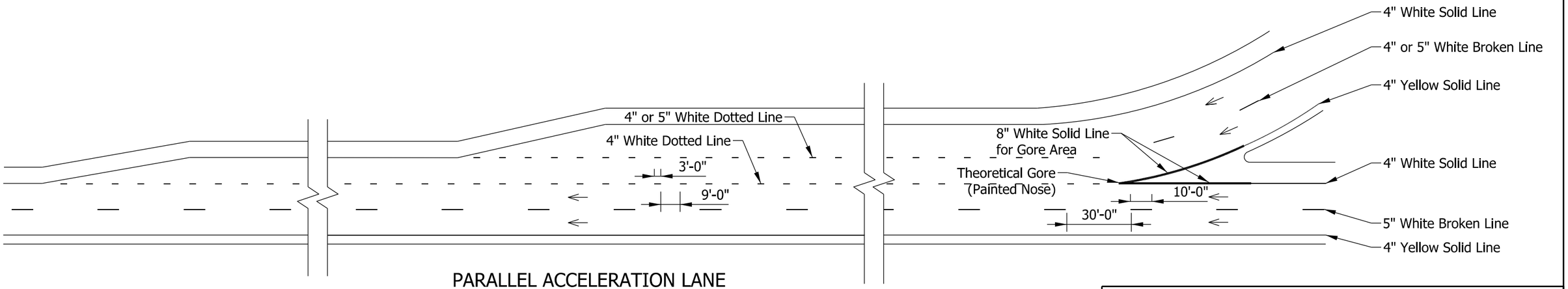
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE



TAPERED ACCELERATION LANE FOR MAINTENANCE AND RESURFACE CONTRACTS ONLY



PARALLEL ACCELERATION LANE

NOTE:

1. 8 in. white solid lines for gore areas shall connect at the theoretical gore. See Detail A on Standard Drawing E 801-DLIM-02.

INDIANA DEPARTMENT OF TRANSPORTATION

DOTTED LINES FOR FREEWAY DOUBLE ACCELERATION LANES

SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-07

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

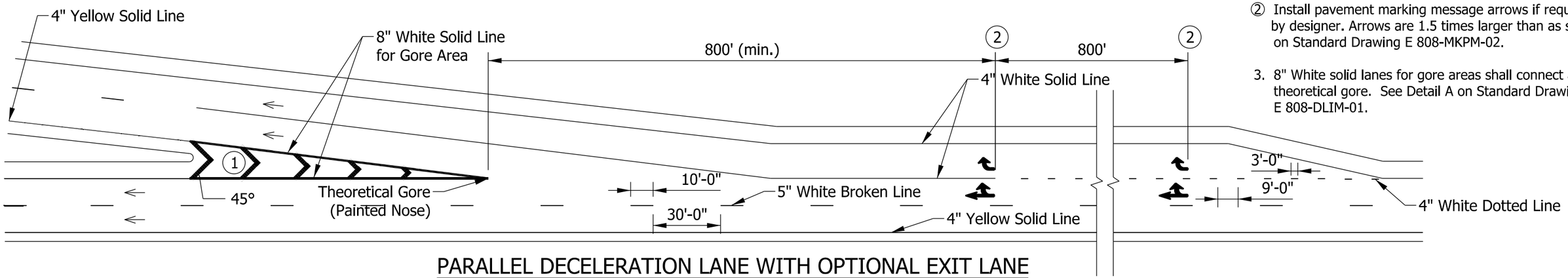
/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE

NOTES:

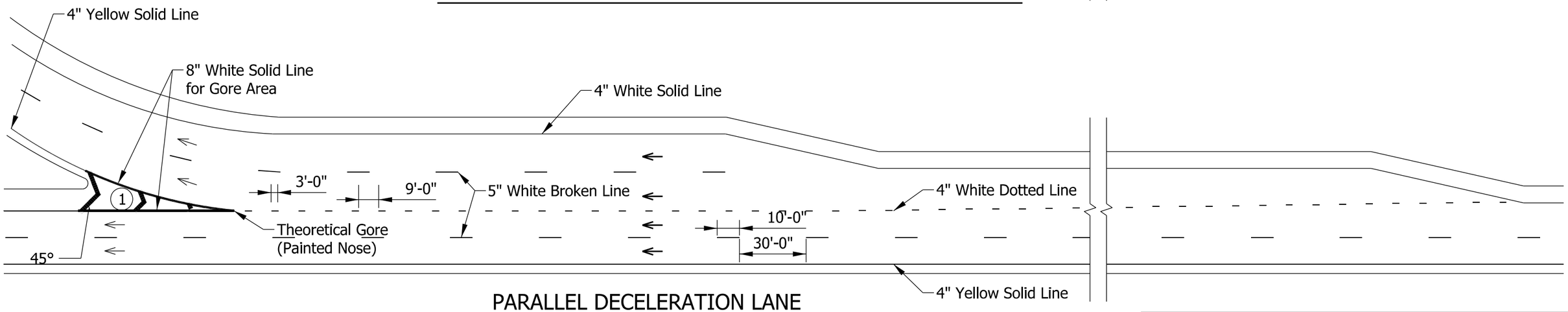
① Where required, white chevron markings shall be 24 in. wide and spaced 40 ft apart.

② Install pavement marking message arrows if required by designer. Arrows are 1.5 times larger than as shown on Standard Drawing E 808-MKPM-02.

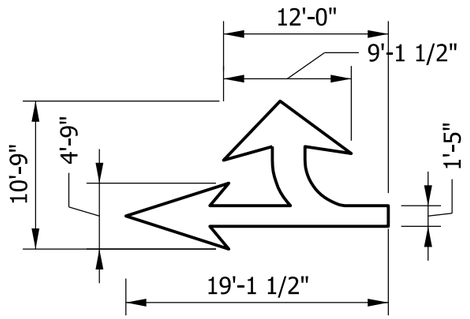
3. 8" White solid lanes for gore areas shall connect at the theoretical gore. See Detail A on Standard Drawing E 808-DLIM-01.



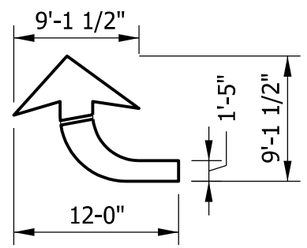
PARALLEL DECELERATION LANE WITH OPTIONAL EXIT LANE



PARALLEL DECELERATION LANE



COMBO ARROW



TURN ARROW

INDIANA DEPARTMENT OF TRANSPORTATION

DOTTED LINES FOR FREEWAY
DOUBLE DECELERATION LANES

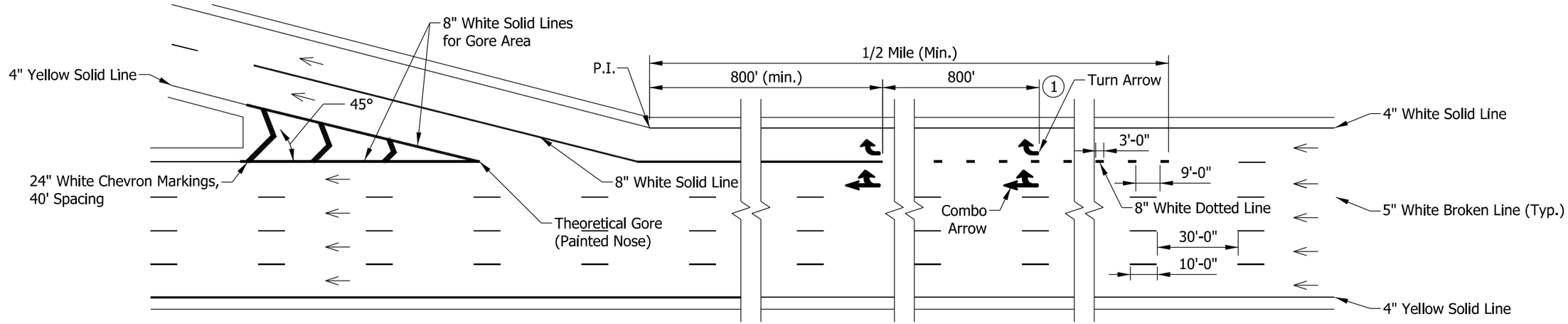
SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-08

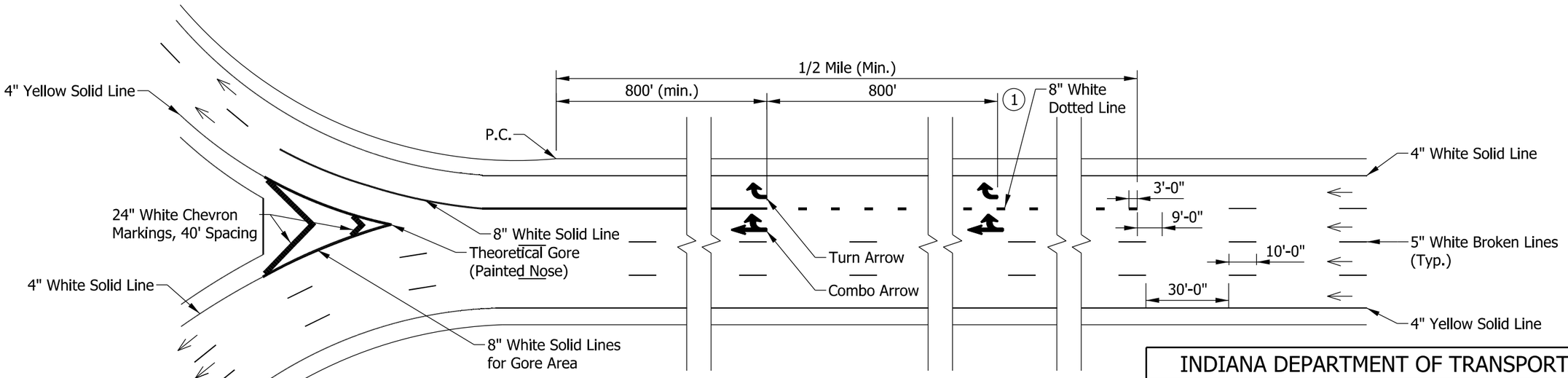
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

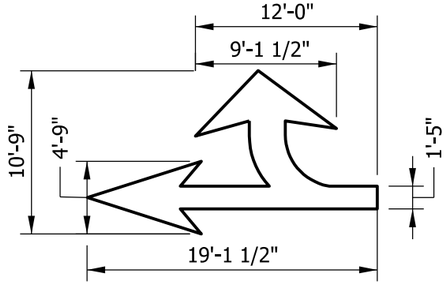
/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE



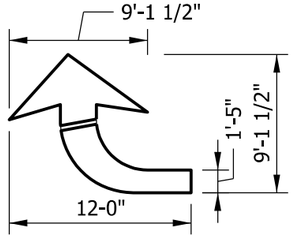
MAJOR DIVERGE WITH OPTIONAL EXIT LANE



ROUTE SPLIT WITH OPTIONAL EXIT LANE



COMBO ARROW



TURN ARROW

NOTES:

1. Install pavement marking messafe arrows if required by designers. Arrows are 1 1/2 times larger than as shown on Standard Drawing E 808-MKPM-02.
2. 8 in. white solid lines for gore areas shall connect at the theoretical gore. See Detail A on Standard Drawing E 801-DLIM-02.

INDIANA DEPARTMENT OF TRANSPORTATION

MAJOR DIVERGE OR ROUTE SPLIT
WITH OPTION LANE

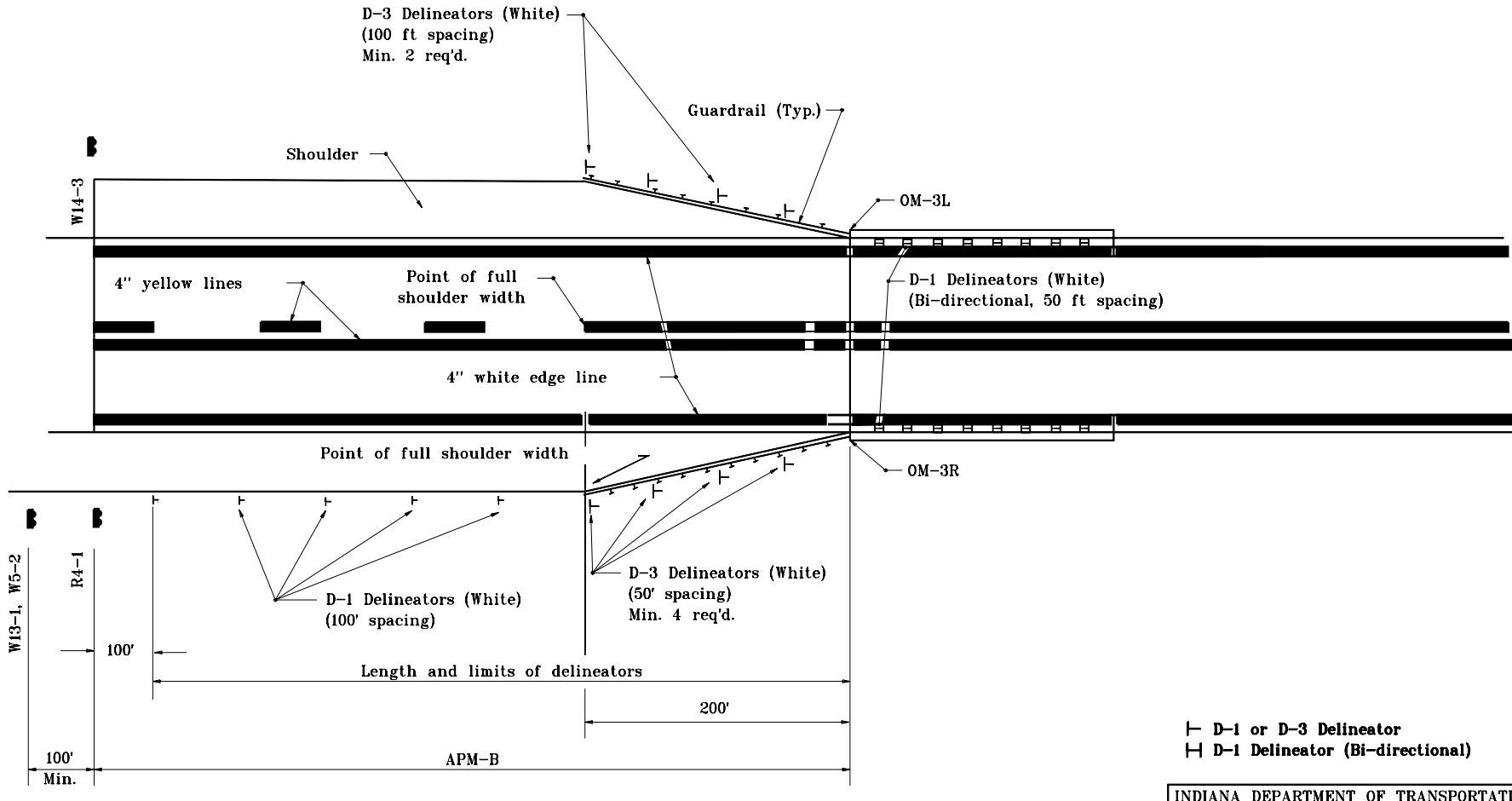
SEPTEMBER 2018

STANDARD DRAWING NO. E 808-DLIM-09

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/12/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 05/03/18
CHIEF ENGINEER DATE



⊢ **D–1 or D–3 Delineator**
⊢⊣ **D–1 Delineator (Bi–directional)**

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.

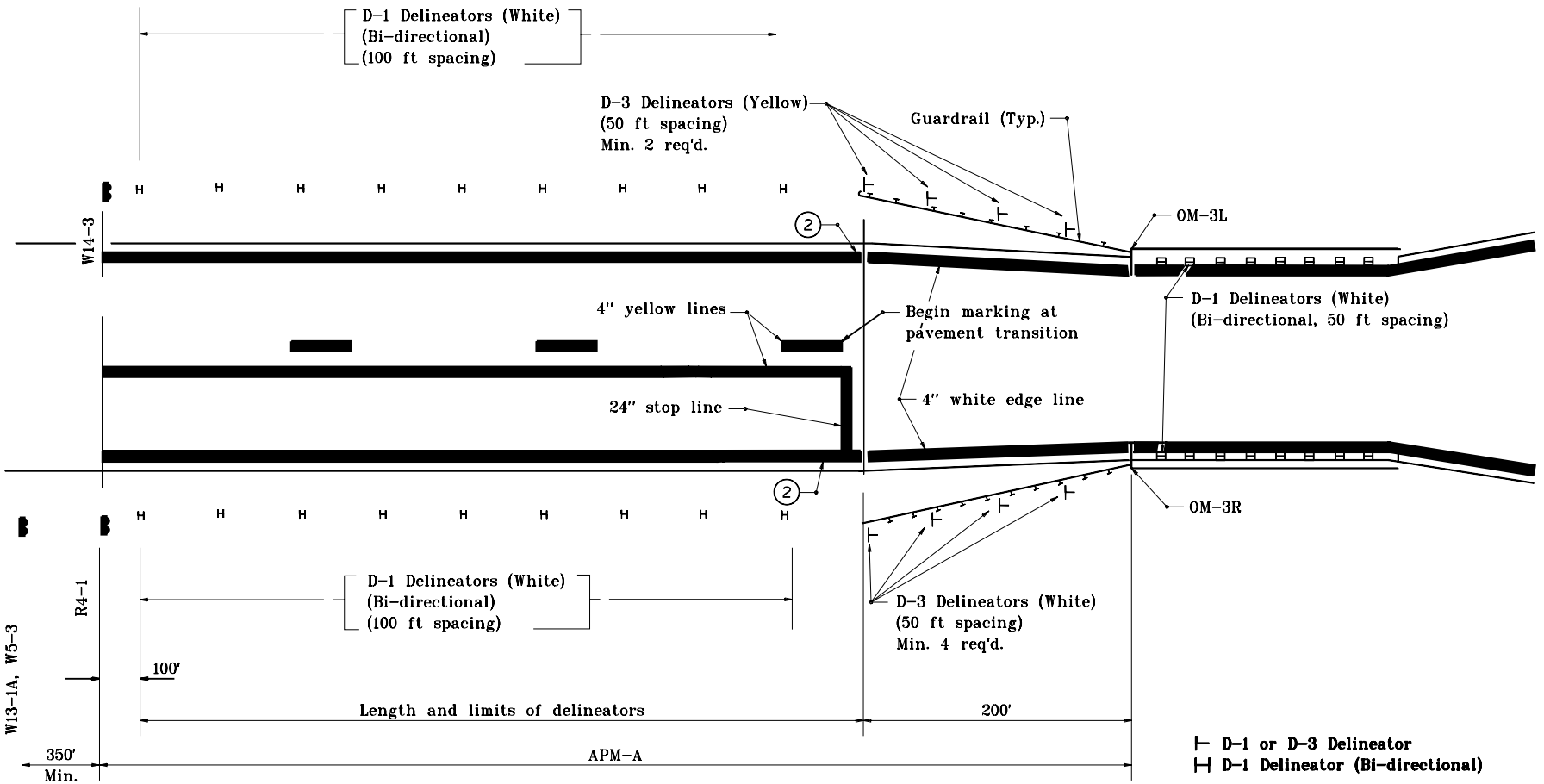
INDIANA DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL DEVICES
AT NARROW BRIDGE ON TWO LANE ROAD
JANUARY 2000

STANDARD DRAWING NO. **E 808–MKNB–01**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 1–03–00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 1–03–00
CHIEF HIGHWAY ENGINEER — DATE



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

1. 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.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DEVICES
AT ONE LANE BRIDGE ON TWO LANE ROAD

JANUARY 2000

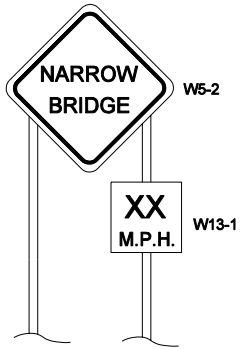
STANDARD DRAWING NO. **E 808–MKNB–02**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

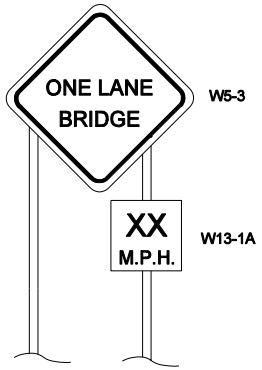
DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 1–03–00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firooz Zandi 1–03–00
CHIEF HIGHWAY ENGINEER — DATE

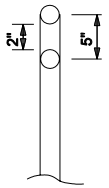


SIGNAGE REQUIRED AT NARROW BRIDGE
ON TWO LANE ROADWAY

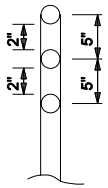


SIGNAGE REQUIRED AT ONE LANE BRIDGE
ON TWO LANE ROADWAY

D-1 delineator post with one 3" dia. white delineator



D-2 delineator post with two 3" dia. white delineators



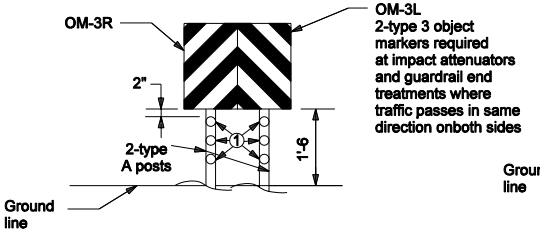
D-3 delineator post with three 3" dia. white delineators

NOTES

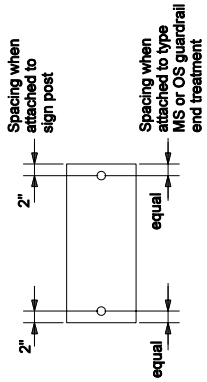
① Delineators:
OM-3L: 3 amber buttons on 5" centers
OM-3R: 3 white buttons on 5" centers

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.

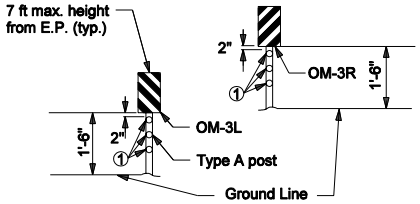
DELINEATORS WITH POSTS



TYPE 3 OBJECT MARKERS
PLACEMENT AT GUARDRAIL END TREATMENTS
AND IMPACT ATTENUATORS ②



BOLT SPACING



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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 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 delineatiors 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.

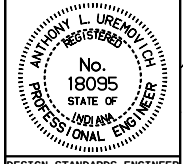
9. Type 3 object markers may not be required at all four corners of a culvert. Two type 3 object markers shall be installed back-to-back on a single post at the incoming side of the culvert. If delineators may be placed such that there is a 25 ft diagonal distance between the delineators on the opposite 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

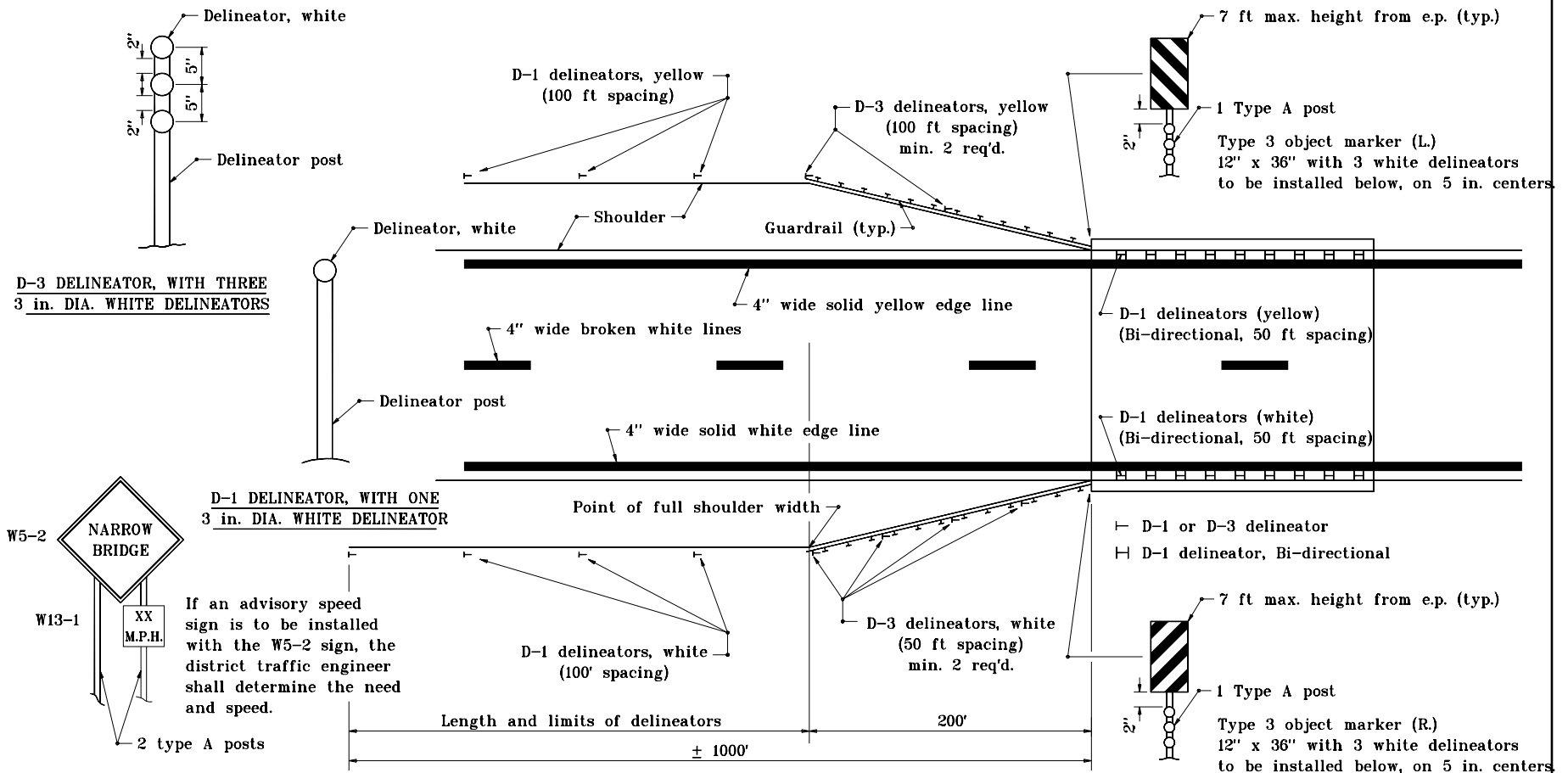
STANDARD DRAWING NO **E 808-MKNB-04**



DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich — DESIGN STANDARDS ENGINEER — 1-03-00 DATE

/s/ Firooz Zandi — CHIEF HIGHWAY ENGINEER — 1-03-00 DATE



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

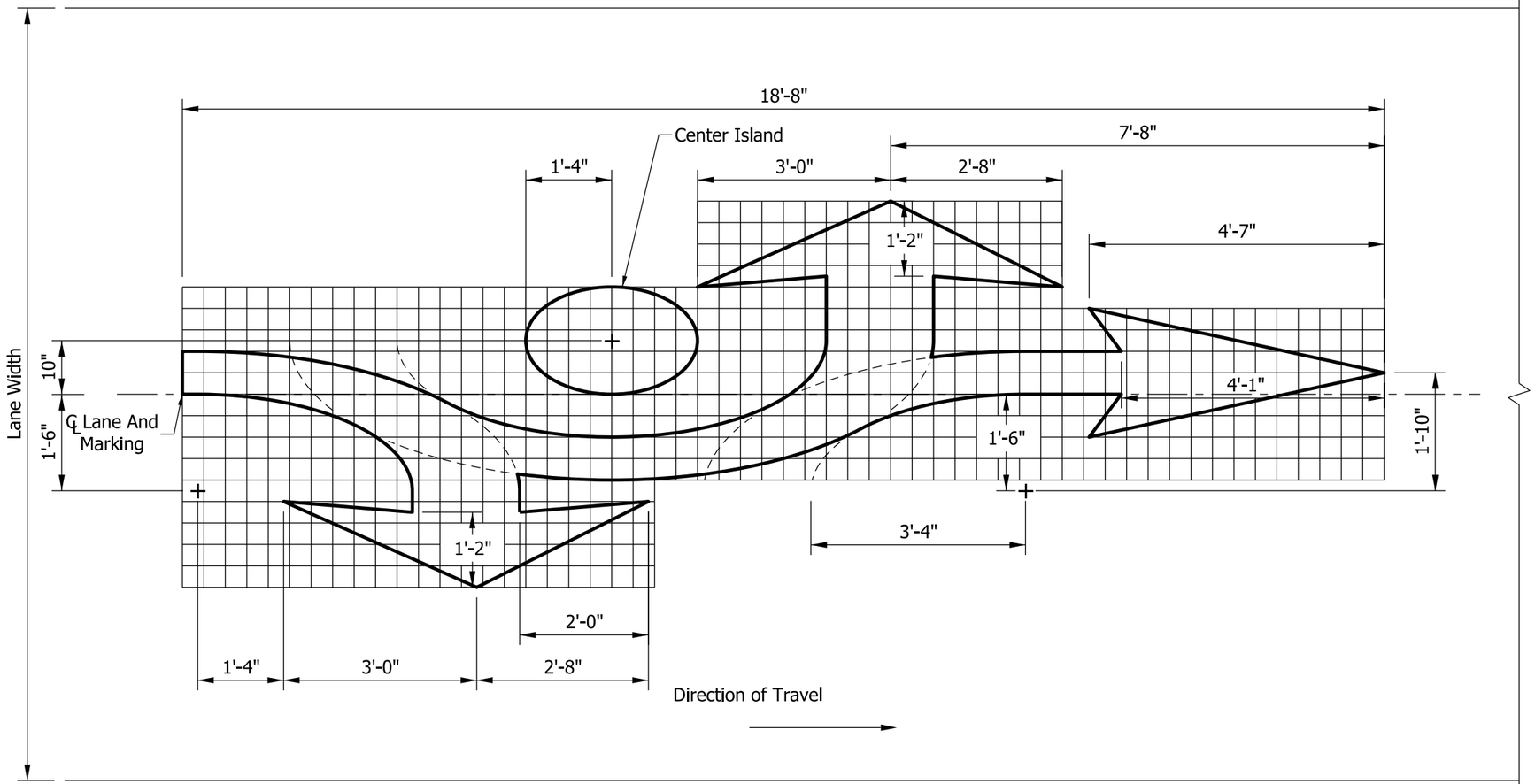
MAY 1998

STANDARD DRAWING NO. **E 808-MKNB-05**

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT	11-15-99
/s/ Anthony L. Uremovich, DESIGN STANDARDS ENGINEER	11-15-99
/s/ Firooz Zandi, CHIEF HIGHWAY ENGINEER	11-15-99
ORIGINALLY APPROVED	5-01-98



DETAIL

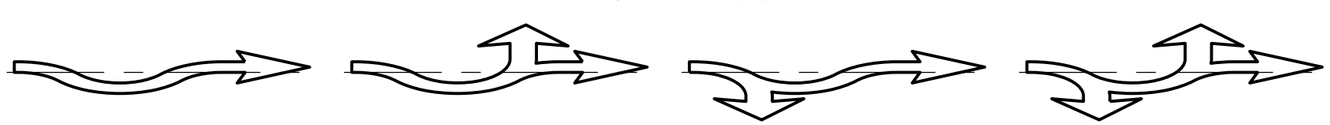
NOTES:

1. Each roundabout traffic arrow pavement marking shall be centered in the travel lane.
2. The grid lines are 4 in. apart.

ROUNDABOUT TRAFFIC ARROWS WITH QUANTITIES

THRU ONLY (2.1 SYS) | LEFT / THRU (2.7 SYS) | RIGHT / THRU (2.6 SYS) | RIGHT / LEFT / THRU (3.2 SYS) | LEFT ONLY (2.0 SYS)

With Center Island



THRU ONLY (1.7 SYS) | LEFT / THRU (2.3 SYS) | RIGHT / THRU (2.2 SYS) | RIGHT / LEFT / THRU (2.8 SYS)

Without Center Island

INDIANA DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKINGS
ROUNDABOUT TRAFFIC ARROWS

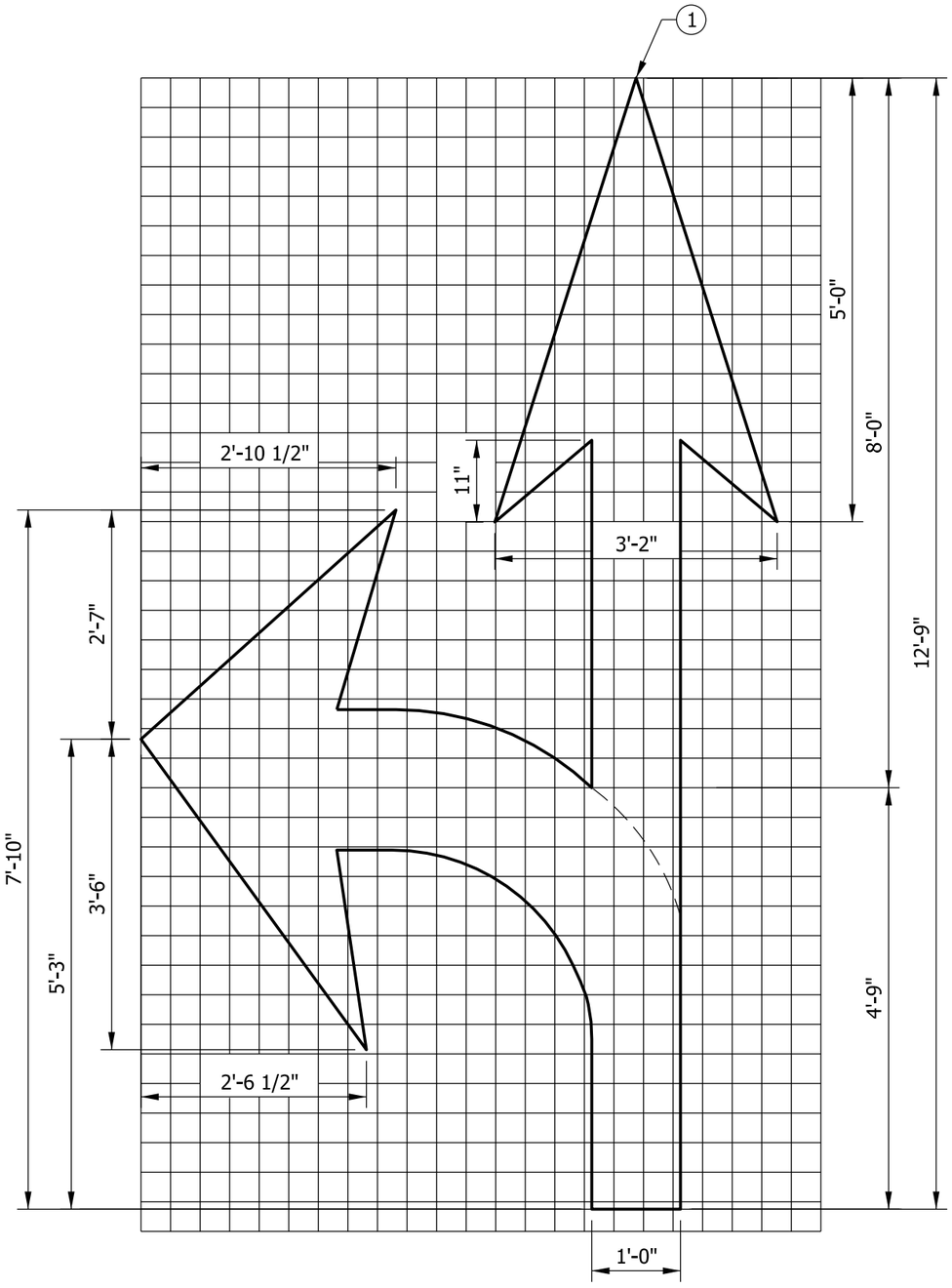
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKPM-01

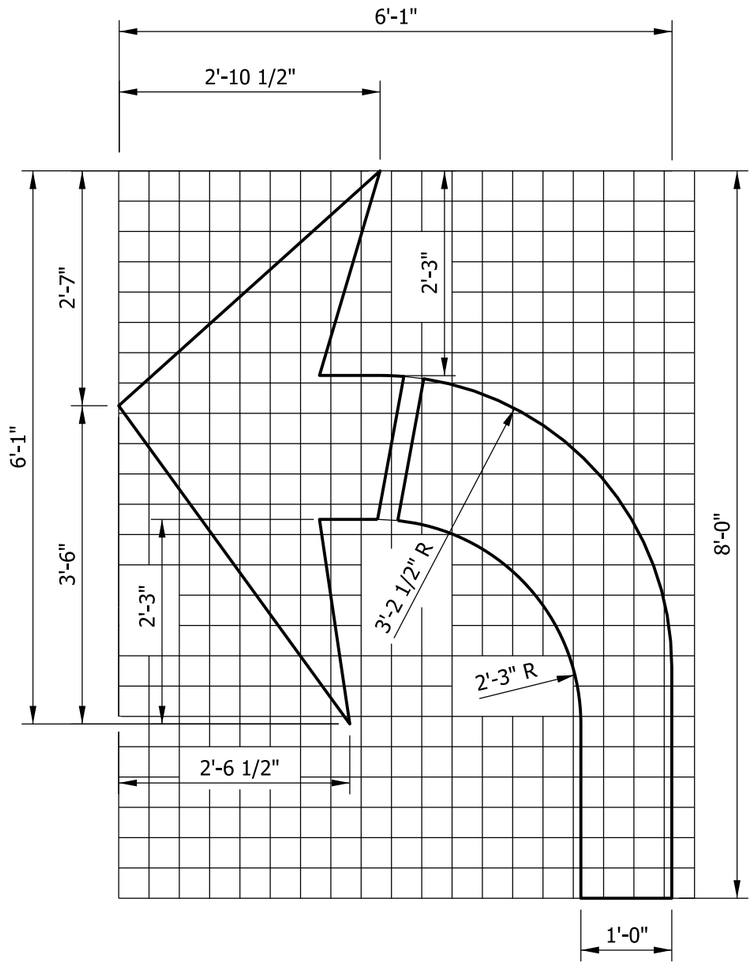
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/04/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/06/15
CHIEF ENGINEER DATE



LEFT/THRU ARROW (3)



LEFT ONLY ARROW (3)

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.
2. The grid lines are 4 in. apart.
3. Reverse the dimensions of the left arrow for a right/thru or right only arrow.

INDIANA DEPARTMENT OF TRANSPORTATION

TRANSVERSE MARKINGS
TURN ARROWS

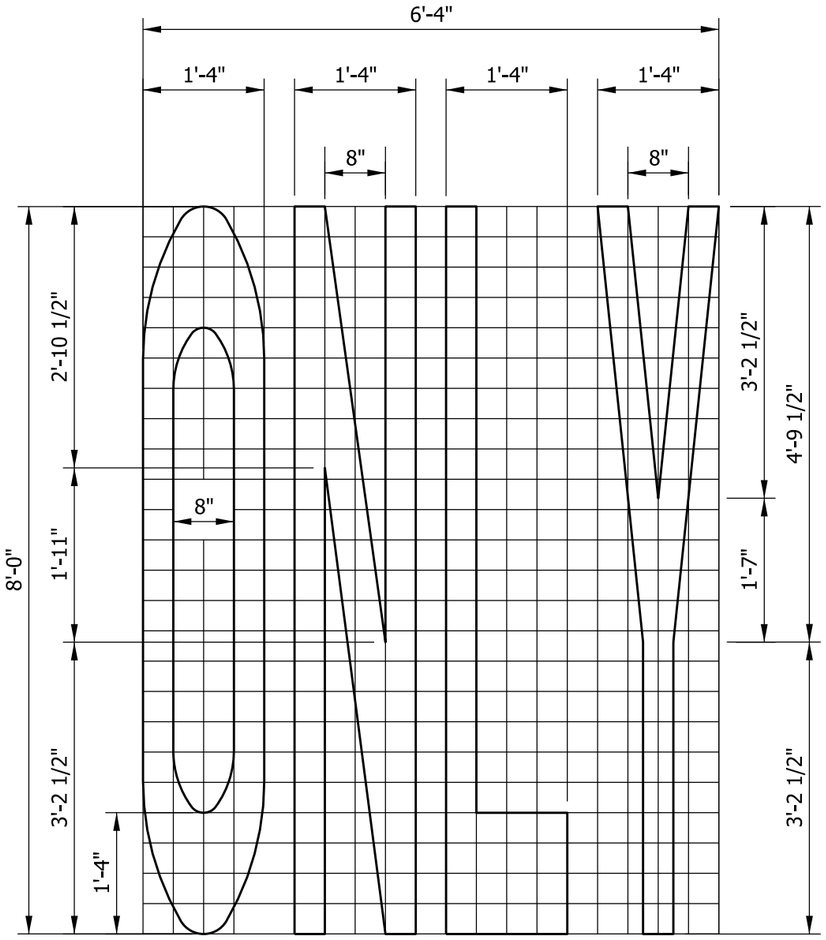
SEPTEMBER 2015

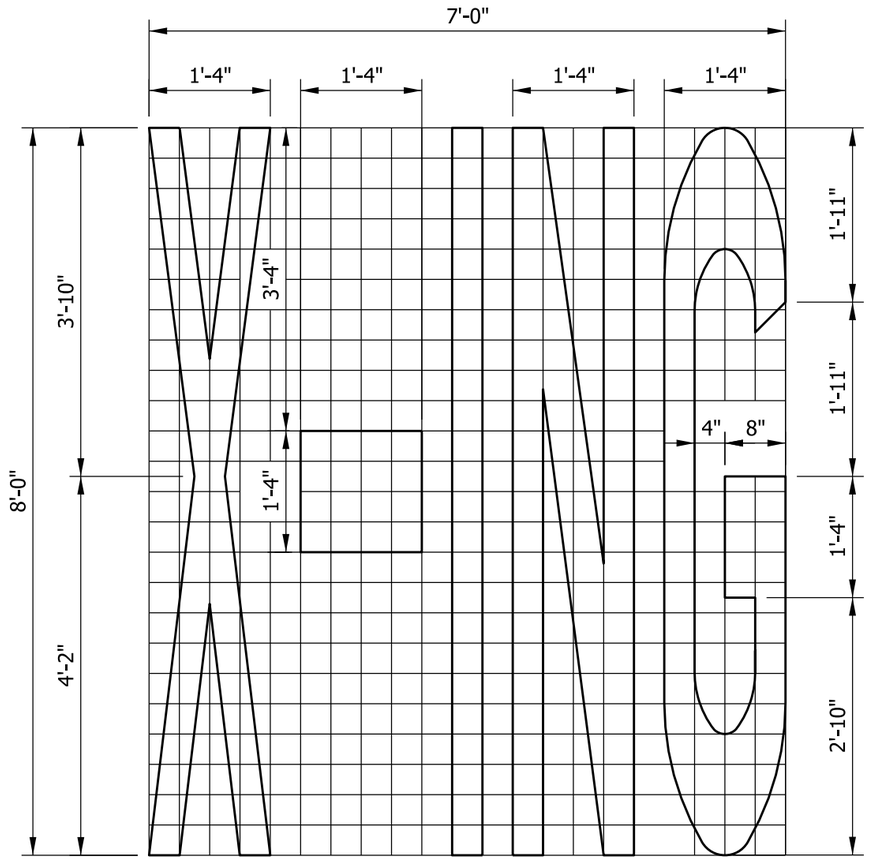
STANDARD DRAWING NO. E 808-MKPM-02

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/04/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/06/15
CHIEF ENGINEER DATE





NOTES:

1. The top part of the word ONLY shall be placed prior to the lane indication arrow, 32 ft for posted speeds ≤ 45 mph but not more than 80 ft for posted speeds > 45 mph.
2. Each letter is 1'-4" wide. Vertical line segments within each letter are 4" wide. Spaces between vertical line segments are 4".
3. The grid lines are 4 in. apart.

INDIANA DEPARTMENT OF TRANSPORTATION

TRANSVERSE MARKINGS
WORD MESSAGES
"ONLY" AND "X-ING"

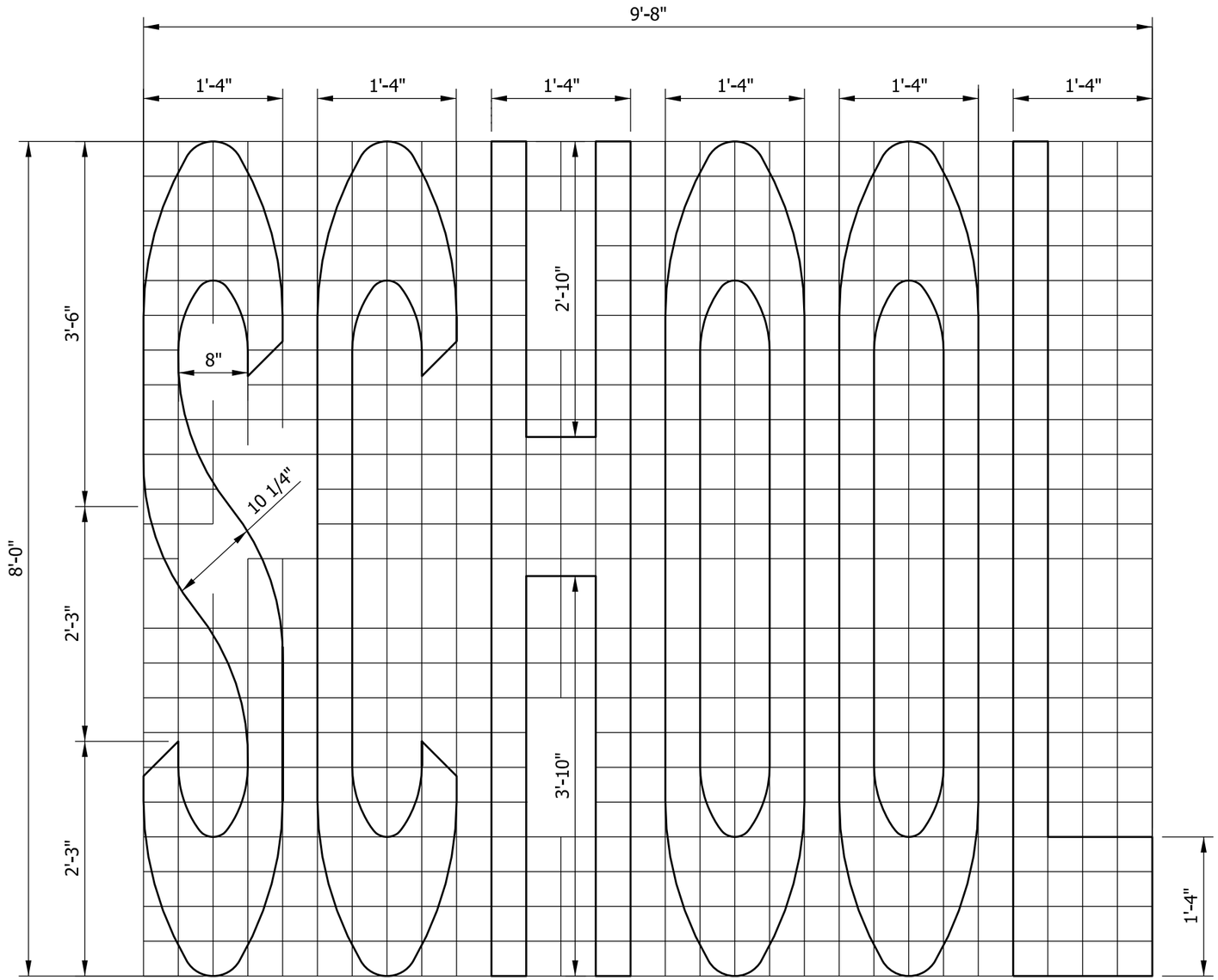
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKPM-03

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/04/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/06/15
CHIEF ENGINEER DATE



NOTES:

1. Each letter is 1'-4" wide. Vertical line segments within each letter are 4" wide. Spaces between vertical lines are 4".

2. Grid lines are 4 in. apart.

INDIANA DEPARTMENT OF TRANSPORTATION

TRANSVERSE MARKINGS
WORD MESSAGE
"SCHOOL"

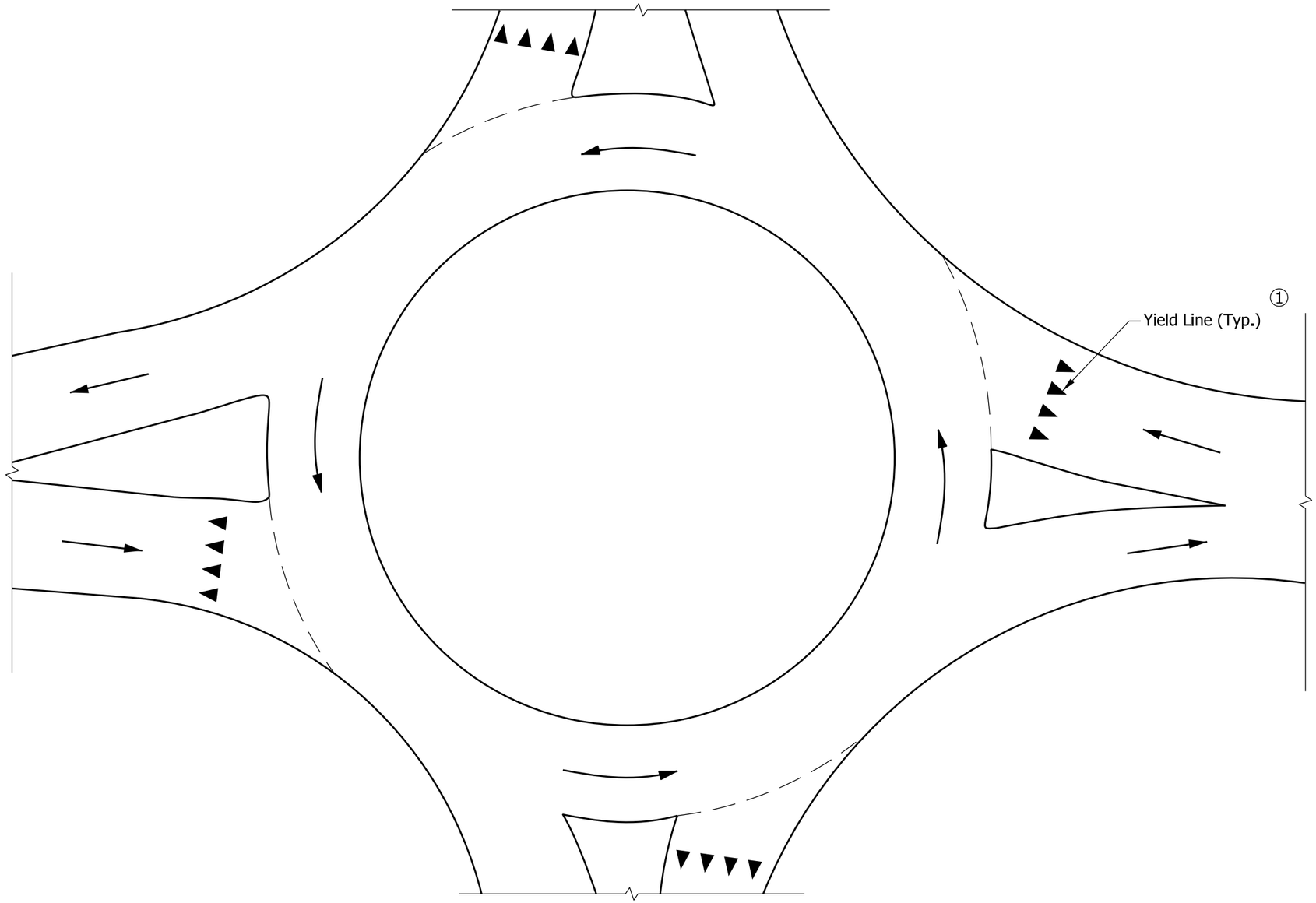
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKPM-04

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/04/15
DESIGN STANDARDS ENGINEER DATE

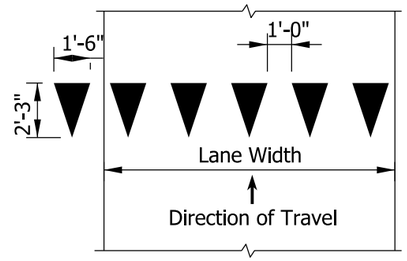
/s/ Mark A. Miller 03/06/15
CHIEF ENGINEER DATE



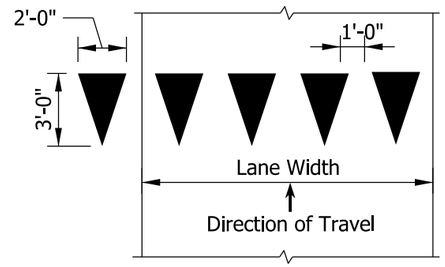
YIELD LINE PLACEMENT

NOTES:

① Yield line width and placement shall be as shown on the plans.



27 INCH WIDE YIELD LINES



36 INCH WIDE YIELD LINES

INDIANA DEPARTMENT OF TRANSPORTATION

TRANSVERSE MARKINGS
YIELD LINES

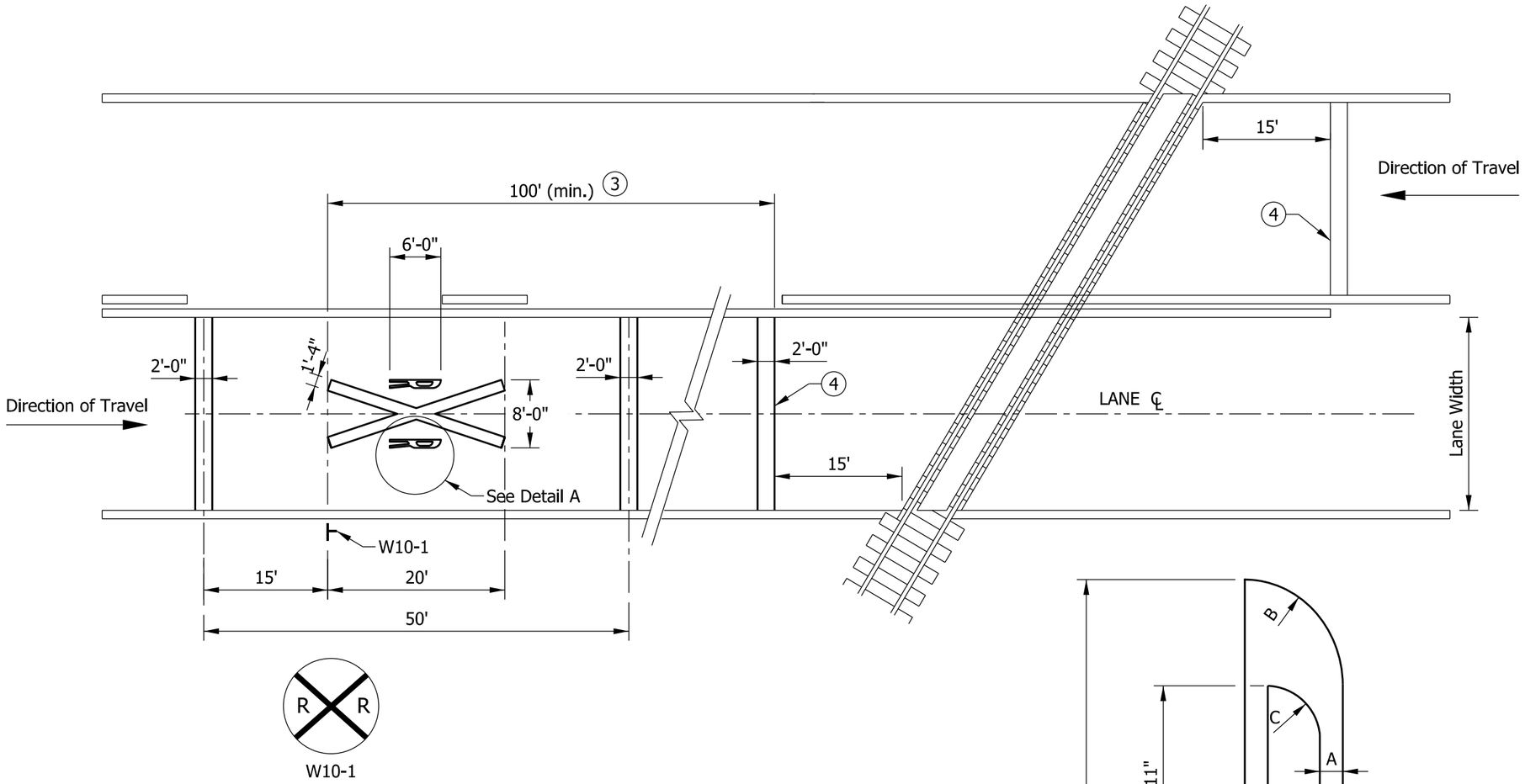
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKPM-05

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

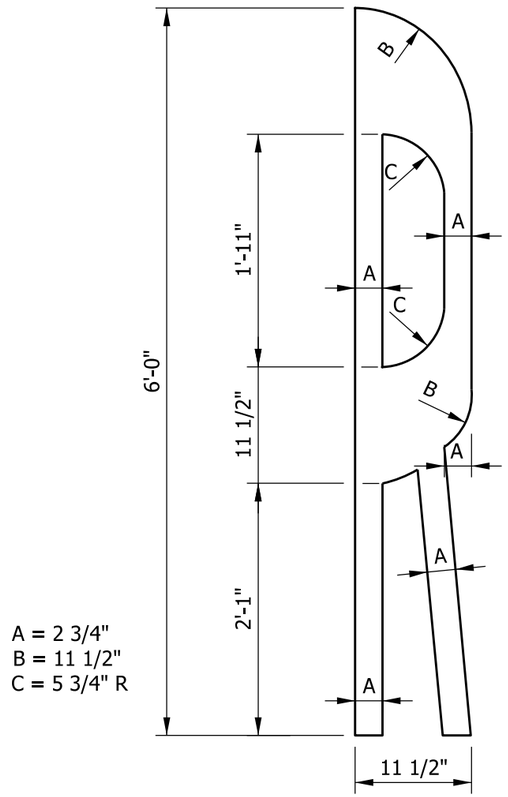
/s/ David H. Boruff 03/04/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/06/15
CHIEF ENGINEER DATE



W10-1

ADVANCE PLACEMENT DISTANCE (3)	
DESIGN SPEED (MPH)	DISTANCE (FT)
30	100
35	100
40	125
45	175
50	250
55	325
60	400



A = 2 3/4"
B = 11 1/2"
C = 5 3/4" R

DETAIL A

NOTES:

1. For two-way left-turn lanes, the center lane shall be discontinued across the railroad crossing and marked as a flush median or as a one-way left-turn lane.
2. For a multi-lane highway, the tranverse lines shall be extended across all approach lanes, and the individual railroad crossing symbols provided in each lane.

(3) Advance Placement Distance Table is in accordance with the MUTCD.

(4) Stop line is approximately 8 ft from gate (if present).

INDIANA DEPARTMENT OF TRANSPORTATION

TRANSVERSE MARKINGS
RAILROAD CROSSINGS

SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKPM-06

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 03/04/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/06/15
CHIEF ENGINEER DATE

INDEX

SHEET NO.	SUBJECT
1	Index
2	Raised Pavement Markers at Freeway Exit Ramp Gore Area
3	Raised Pavement Markers at Freeway Entrance Ramps
4	Raised Pavement Markers at Freeway Exit Ramps
5	Raised Pavement Markers at Cloverleaf Freeway Exit Ramps
6	Raised Pavement Markers at Cloverleaf Entrance Ramps
7	Raised Pavement Markers for Tapered Freeway Entrance Lanes
8	Raised Pavement Markers at Parallel Freeway Entrance Lanes
9	Placement of Snowplowable Raised Pavement Markers on Non-Freeways

GENERAL NOTES:

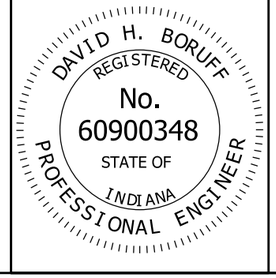
1. Raised pavement markers shall be selected from the Department's list of approved Snowplowable Raised Pavement Markers.

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS
DRAWING INDEX AND GENERAL NOTES

SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-01

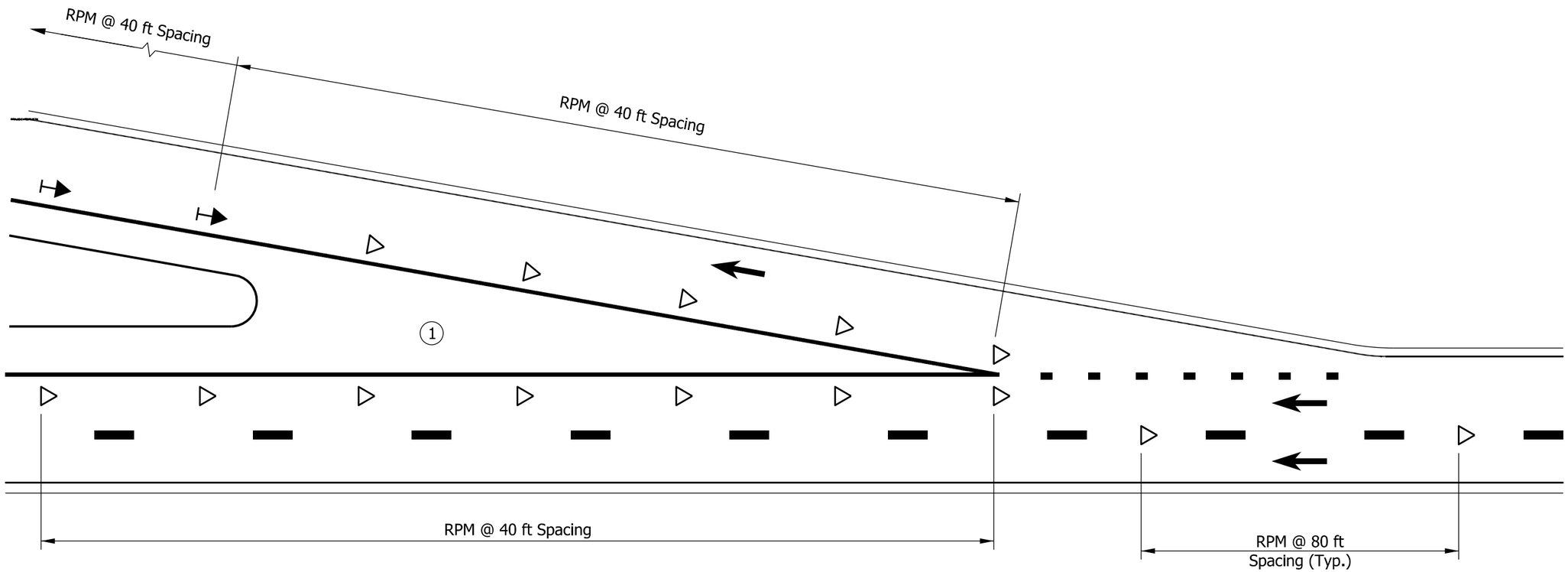


/s/ David H. Boruff *02/27/15*
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller *03/02/15*
CHIEF ENGINEER DATE

NOTES:

1. See Standard Drawing 808-DLIM-03 for chevron marking details.



TYPICAL EXIT RAMP SHOWING LOCATIONS OF RAISED PAVEMENT MARKERS (GORE AREA)

LEGEND

- One-way White R.P.M.
- Two-way Yellow/Red R.P.M.
- Broken Line
- Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS AT
FREEWAY EXIT RAMP GORE AREA

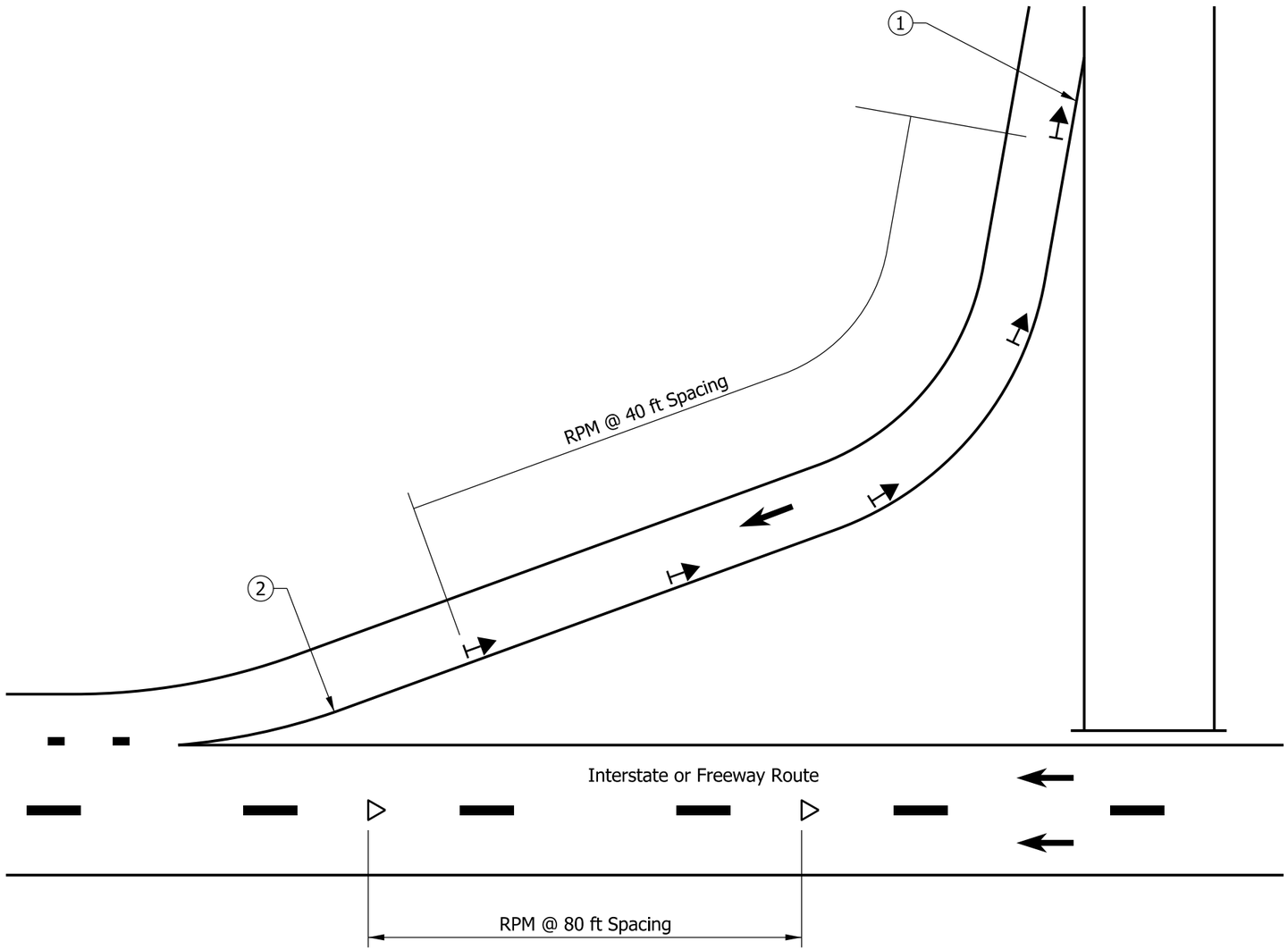
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-02

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE



TYPICAL ENTRANCE RAMP SHOWING LOCATIONS OF RAISED PAVEMENT MARKERS

NOTES:

1. See Standard Drawing E 808-MKRM-02 for location of raised pavement markers at typical exit ramp gore area.
2. See Standard Drawing E 808-MKRM-08 for location of raised pavement markers at typical entrance ramp gore area.

LEGEND

- One-way White R.P.M.
- Two-way Yellow/Red R.P.M.
- Broken Line
- Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS AT FREEWAY ENTRANCE RAMPS

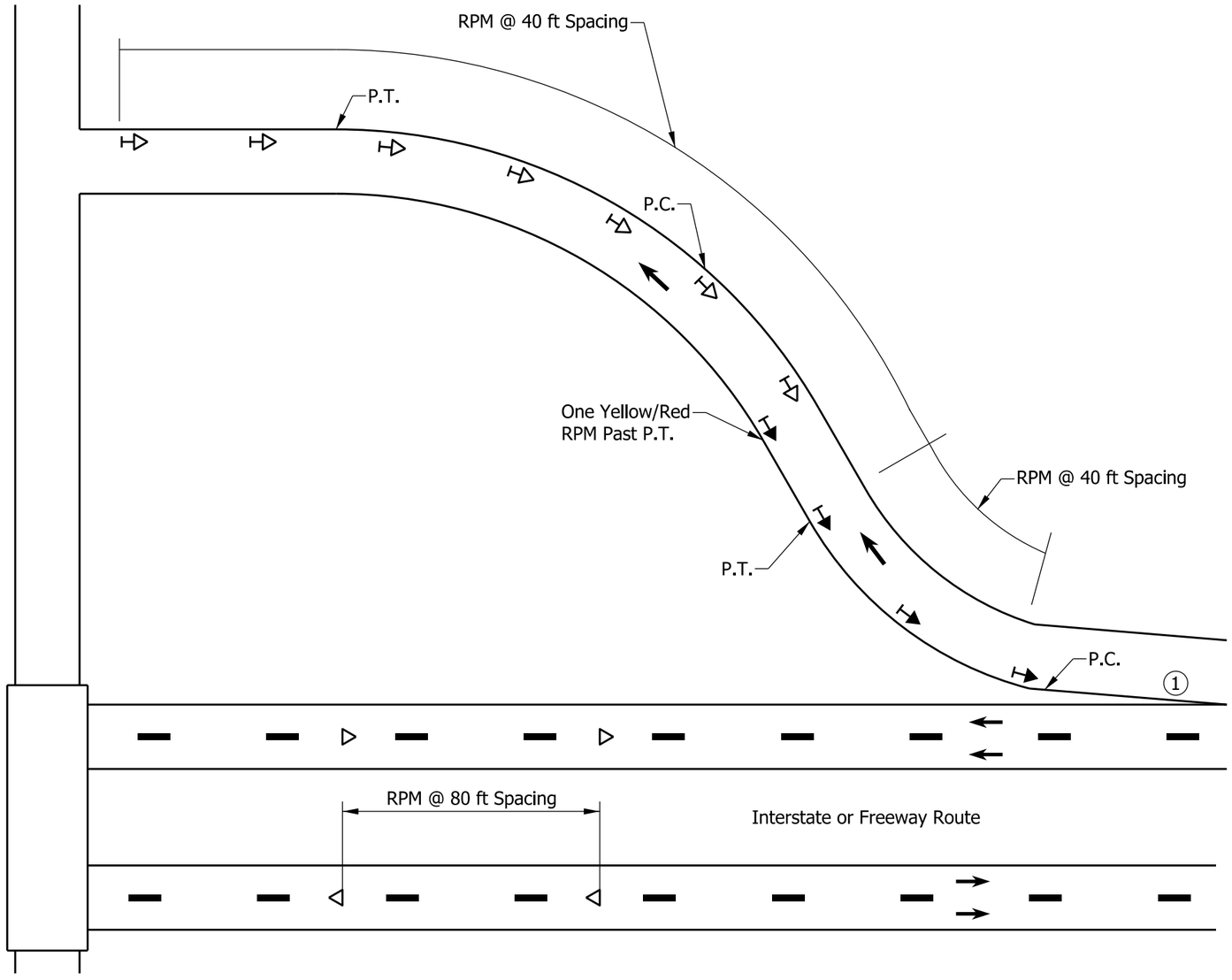
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-03

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE



TYPICAL EXIT RAMP SHOWING LOCATIONS OF
RAISED PAVEMENT MARKERS (DIAMOND OR PARTIAL CLOVERLEAF INTERCHANGE)

NOTES:

1. See Standard Drawing E 808-MKRM-02 for location of raised pavement markers at typical exit ramp gore area.

LEGEND

- One-way White R.P.M.
- Two-way White/Red R.P.M.
- Two-way Yellow/Red R.P.M.
- Broken Line
- Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS
AT FREEWAY EXIT RAMPS

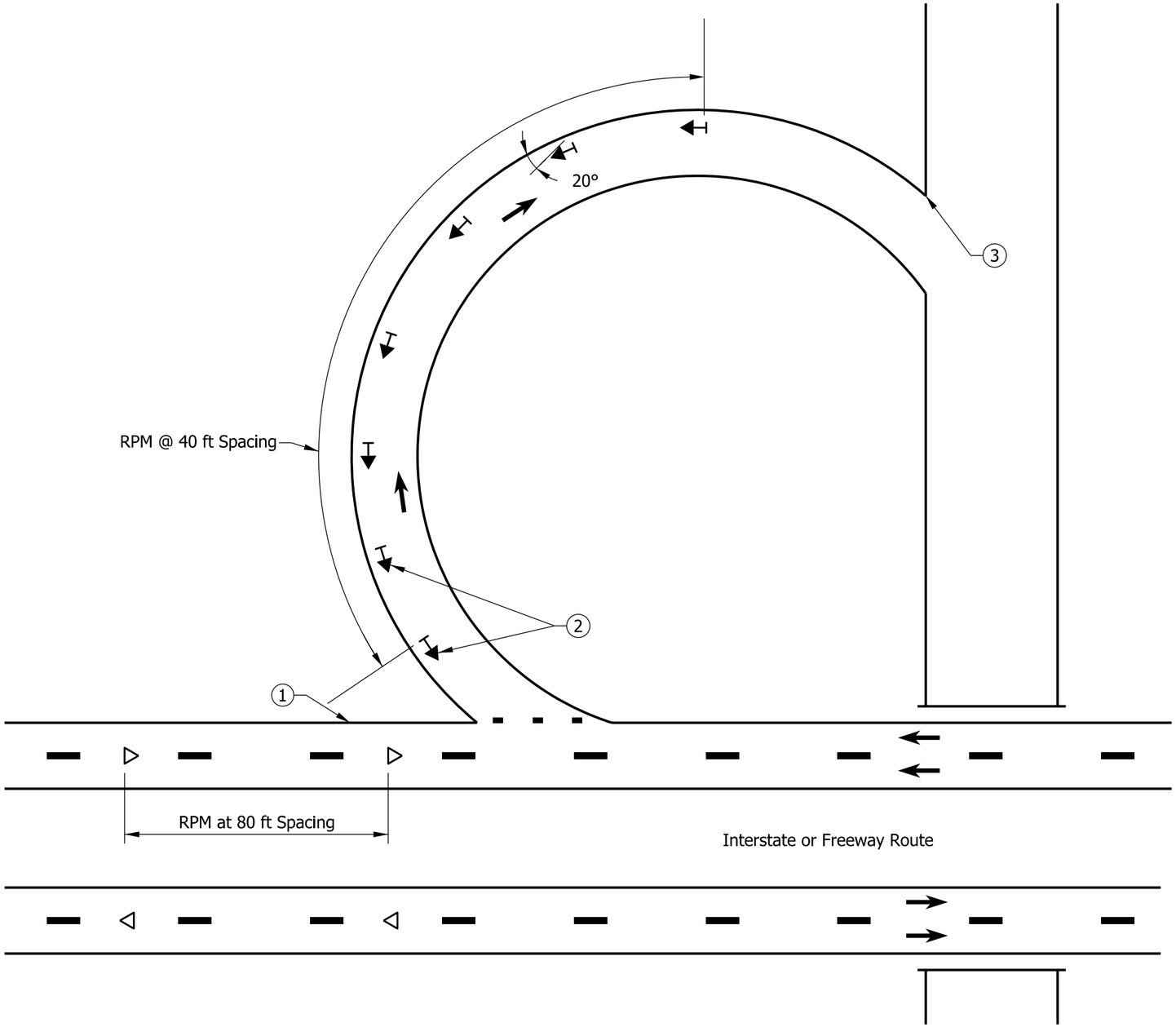
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-04

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE



TYPICAL EXIT RAMP SHOWING LOCATIONS OF
RAISED PAVEMENT MARKERS (CLOVERLEAF INTERCHANGE)

NOTES:

1. See Standard Drawing E 808-MKRM-02 for location of raised pavement markers at typical exit ramp gore area.
2. See Standard Drawing E 808-MKRM-03 for location of raised pavement markers at typical loop ramp.
3. See Standard Drawing E 808-MKRM-07 for location of raised pavement markers at typical tapered entrance ramp gore area and Standard Drawing E 808-MKRM-08 for location of raised pavement markers at typical parallel entrance ramp gore area.

LEGEND

- One-way White R.P.M.
- Two-way Yellow/Red R.P.M.
- Broken Line
- Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS
AT CLOVER LEAF FREEWAY EXIT RAMPS

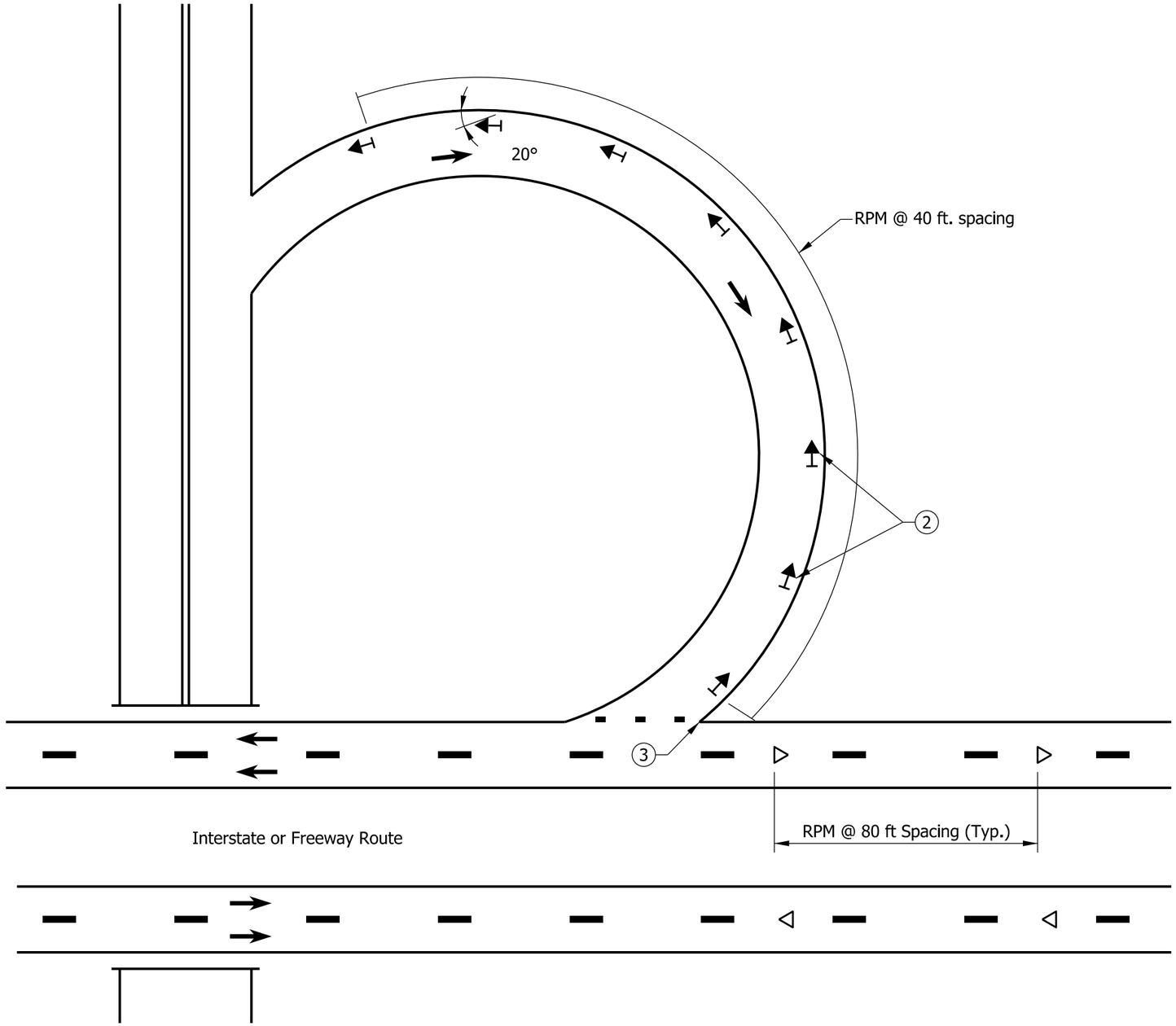
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-05

DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff — 02/27/15
DESIGN STANDARDS ENGINEER — DATE

/s/ Mark A. Miller — 03/02/15
CHIEF ENGINEER — DATE



TYPICAL EXIT RAMP SHOWING LOCATIONS OF
RAISED PAVEMENT MARKERS (CLOVERLEAF INTERCHANGE)

NOTES:

1. See Standard Drawing E-808-MKRM-02 for location of raised pavement markers at typical exit ramp gore area.
2. See Standard Drawing E-808-MKRM-03 for location of raised pavement markers at typical loop ramp.
3. See Standard Drawing E-808-MKRM-07 for location of raised pavement markers at typical tapered entrance ramp and Standard Drawing E-808-MKRM-08 for location of raised pavement markers at typical parallel entrance ramp gore area.

LEGEND

- One-way White R.P.M.
- Two-way Yellow/Red R.P.M.
- Broken Line
- Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS
AT CLOVERLEAF ENTRANCE RAMPS

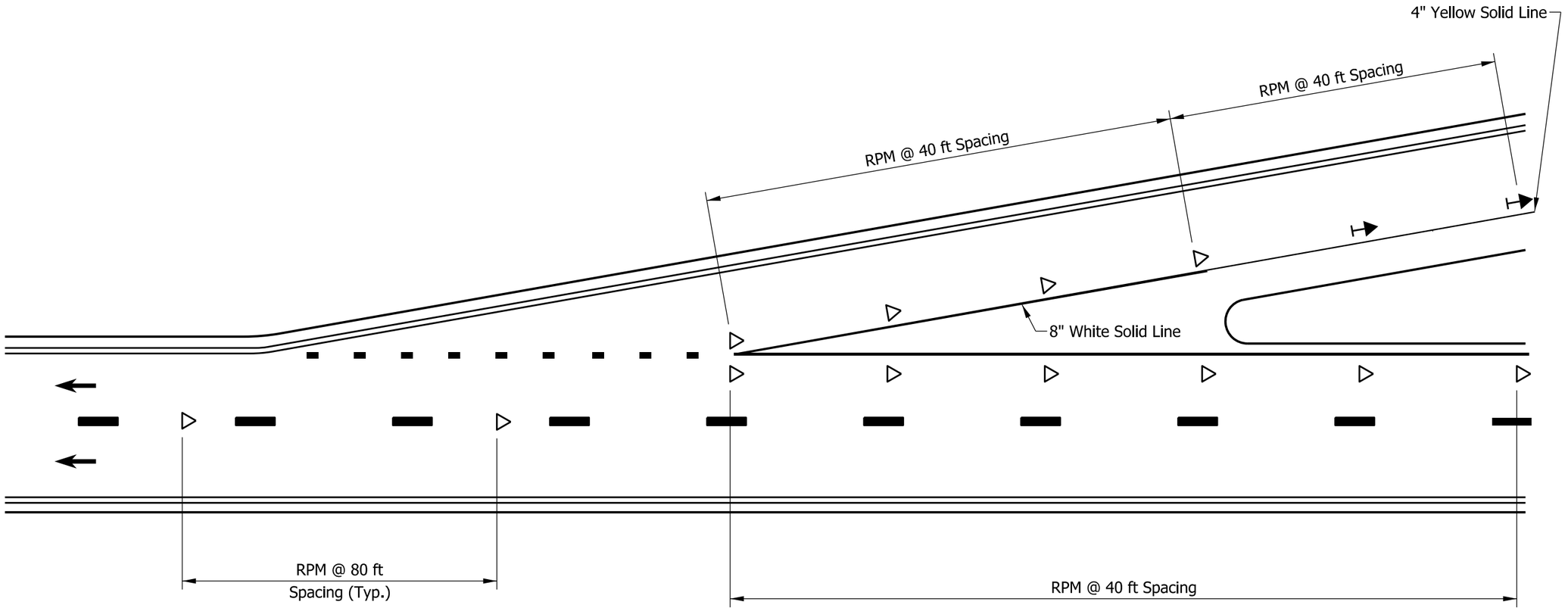
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-06

DAVID H. BORUFF
REGISTERED
No. 60900348
STATE OF INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE



TYPICAL ENTRANCE RAMP SHOWING LOCATIONS OF RAISED PAVEMENT MARKERS (GORE AREA)

LEGEND

- ◁ One-way White R.P.M.
- ← Two-way Yellow/Red R.P.M.
- ▬ Broken Line
- ▪ Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS FOR TAPERED FREEWAY ENTRANCE LANES

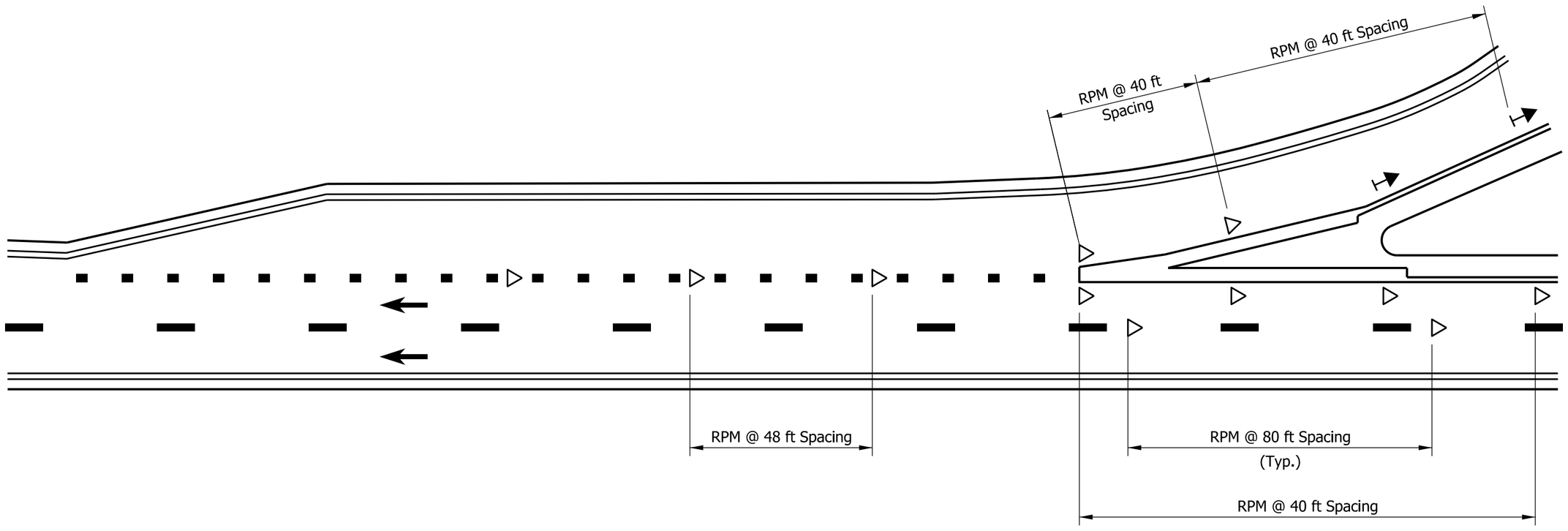
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-07

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE



TYPICAL ENTRANCE RAMP SHOWING LOCATIONS OF RAISED PAVEMENT MARKERS (GORE AREA)

LEGEND

- One-way White R.P.M.
- Two-way Yellow/Red R.P.M.
- Broken Line
- Dotted Line

INDIANA DEPARTMENT OF TRANSPORTATION

RAISED PAVEMENT MARKERS AT PARALLEL FREEWAY ENTRANCE LANES

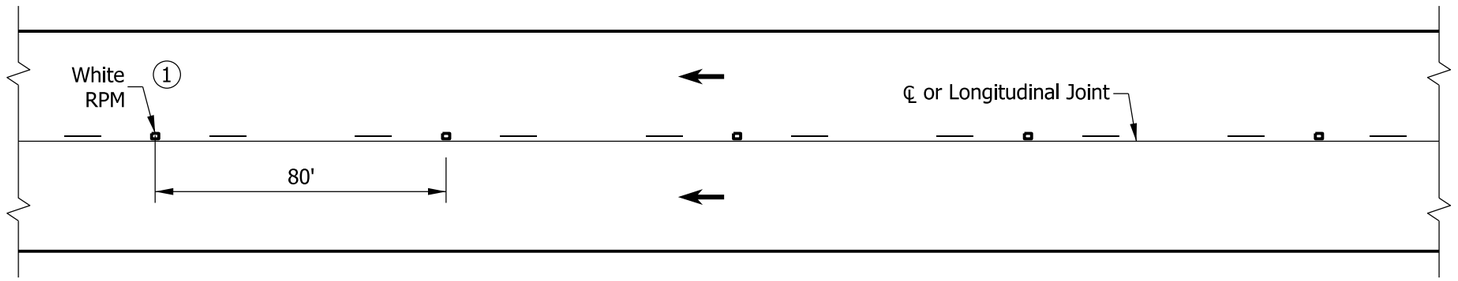
SEPTEMBER 2015

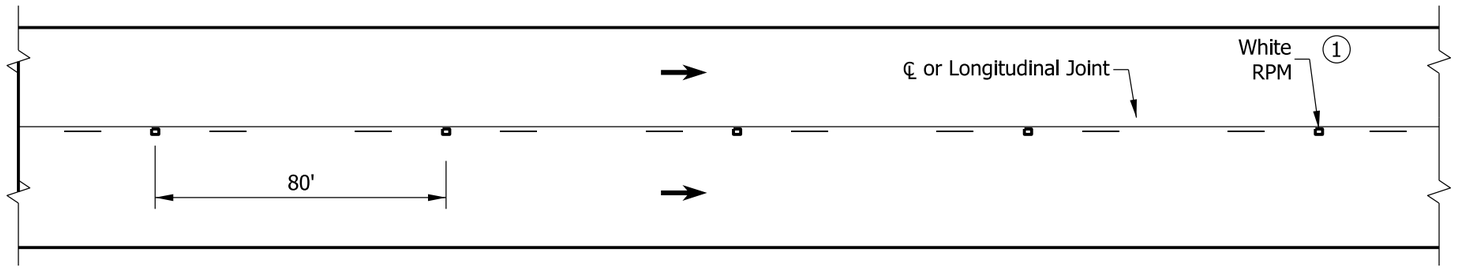
STANDARD DRAWING NO. E 808-MKRM-08

DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

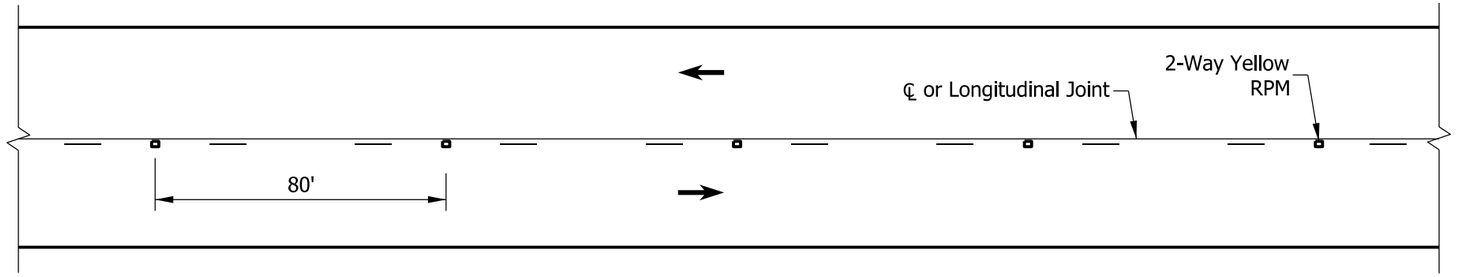
/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE

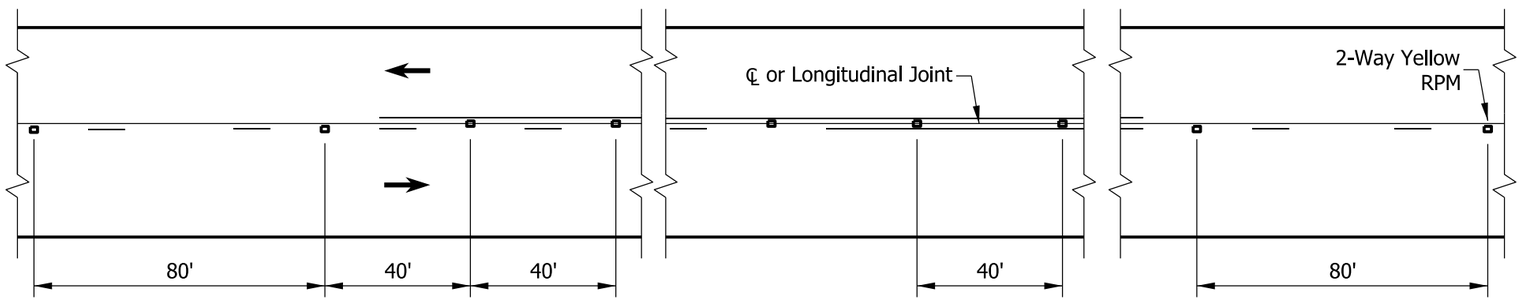




MULTI LANE ROADWAY



TWO LANE ROADWAY
TANGENT SECTION



TWO LANE ROADWAY
NO PASSING ZONE

NOTES:

1. Use 2-way White/Red RPM within 200 ft of all public road intersections.

INDIANA DEPARTMENT OF TRANSPORTATION

PLACEMENT OF SNOWPLOWABLE
RAISED PAVEMENT MARKERS ON
NON-FREEWAYS

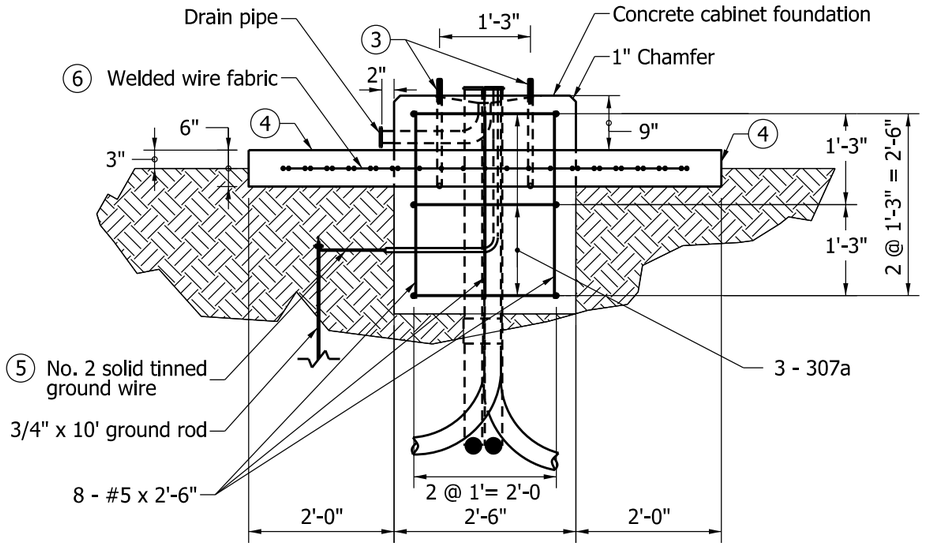
SEPTEMBER 2015

STANDARD DRAWING NO. E 808-MKRM-09

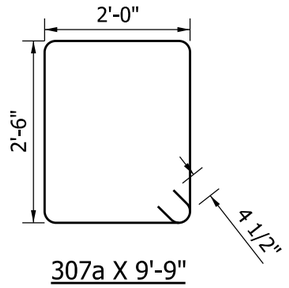
DAVID H. BORUFF
REGISTERED
No.
60900348
STATE OF
INDIANA
PROFESSIONAL ENGINEER

/s/ David H. Boruff 02/27/15
DESIGN STANDARDS ENGINEER DATE

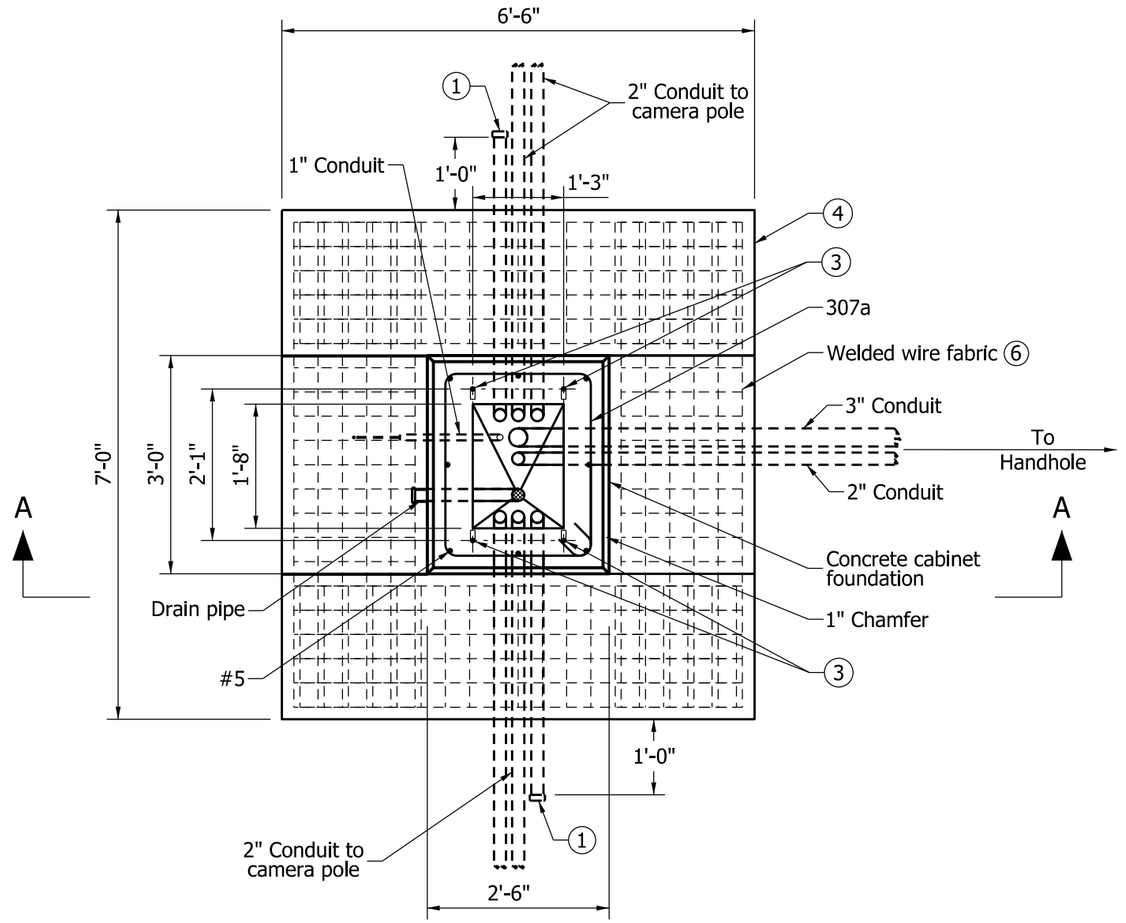
/s/ Mark A. Miller 03/02/15
CHIEF ENGINEER DATE



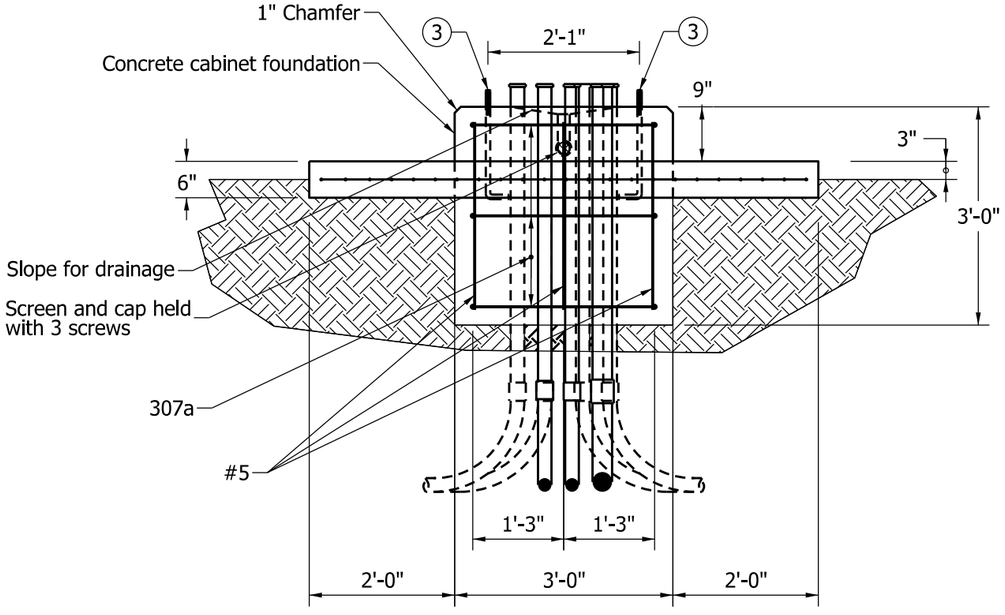
SECTION A-A



307a X 9'-9"



PLAN VIEW



SIDE VIEW

NOTES:

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.

INDIANA DEPARTMENT OF TRANSPORTATION

ITS CONTROLLER CABINET FOUNDATION VIRTUAL WEIGH-IN-MOTION (VWIM)

SEPTEMBER 2012

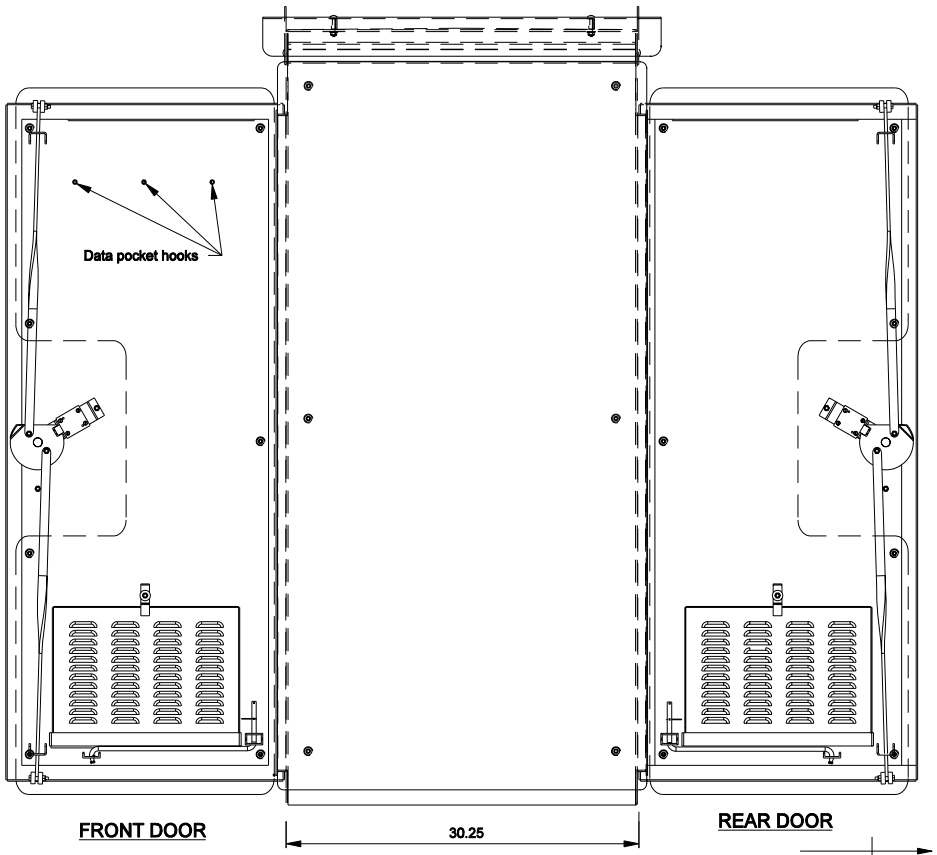
STANDARD DRAWING NO. E 809-ICCF-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

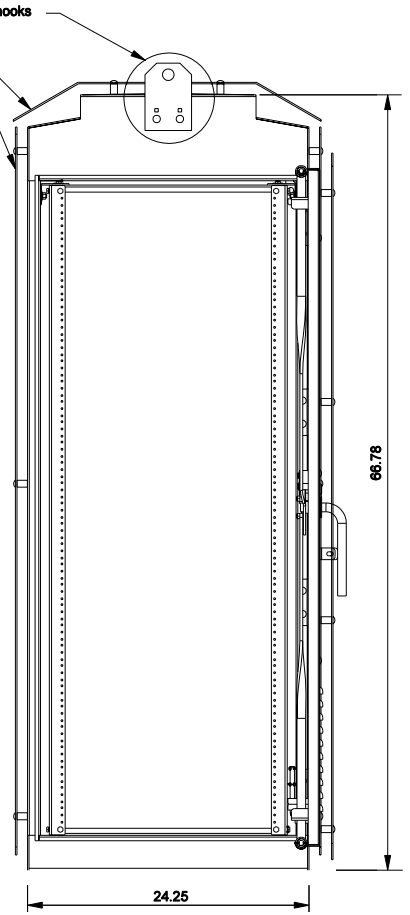
/s/ Richard L. Van Cleave 09/04/12
SUPERVISOR, ROADWAY STANDARDS DATE

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

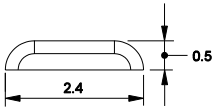
CABINET EXTERIOR



SIDE VIEW

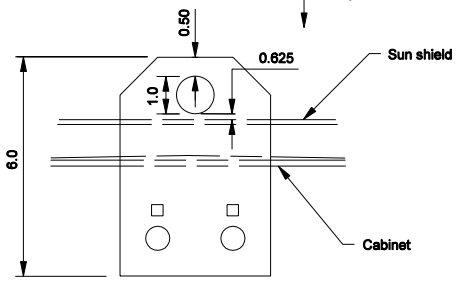


REAR VIEW
WITH DOOR OPEN



DEPTH = 1/8 "

DOOR FILTER
LOUVRE DETAIL



DETAIL A
NTS

NOTES:

1. See Standard Drawings E 809-ITCS-01A thru -07 for additional ITS cabinet details.

All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET DETAIL

MARCH 2006

STANDARD DRAWING NO. E 809-ITSC-01

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

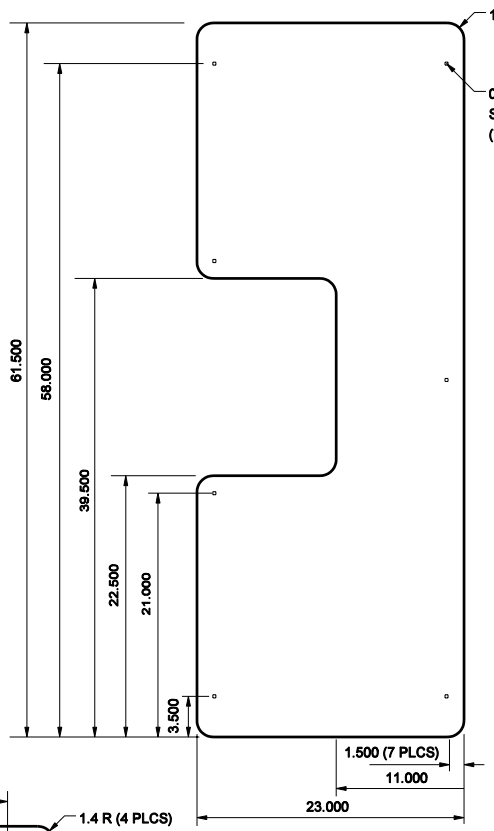
DESIGN STANDARDS ENGINEER

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

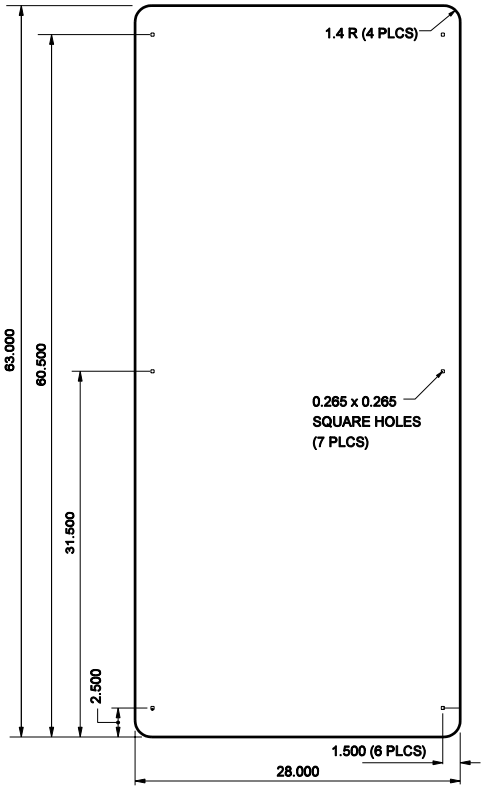
/s/ Richard K. Smutzer 3-01-06
CHIEF HIGHWAY ENGINEER DATE

NOTES:

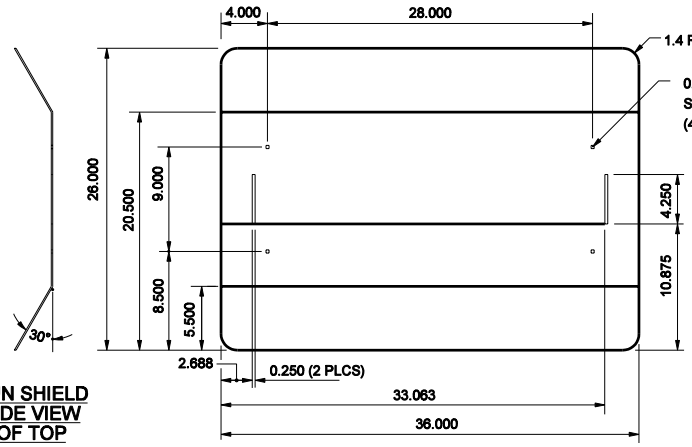
1. See Standard Drawings E 809-ITCS-01 or 02 thru -07 for additional ITS cabinet details.



SUN SHIELD DOOR



SUN SHIELD SIDE



SUN SHIELD TOP VIEW

SUN SHIELD SIDE VIEW OF TOP

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

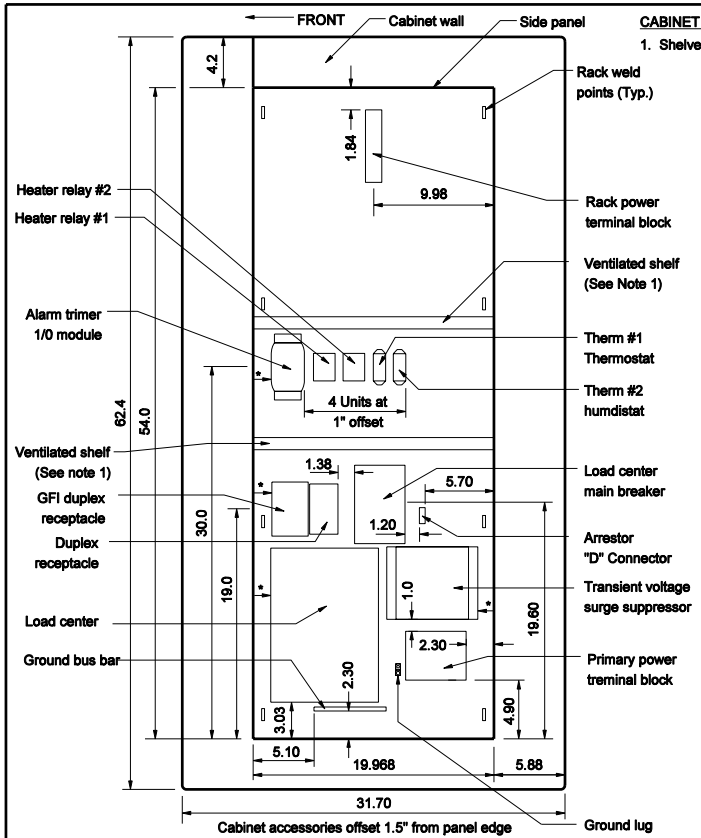
STANDARD DRAWING NO. E 809-ITSC-01A

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

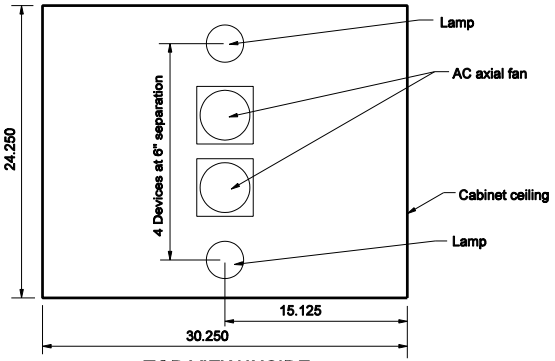
DESIGN STANDARDS ENGINEER

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

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



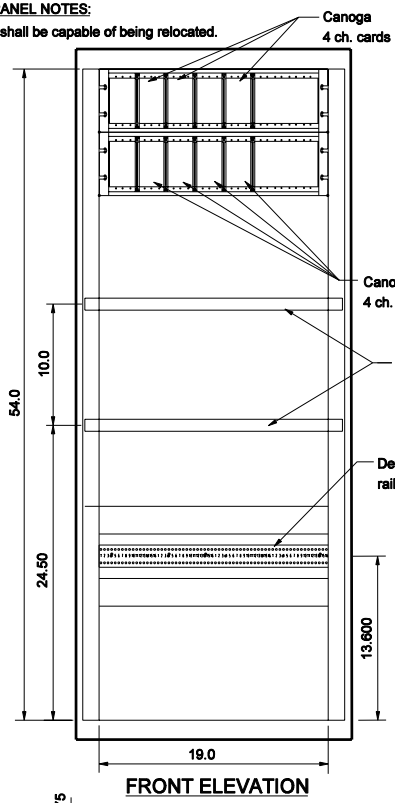
CABINET SIDE PANEL
POWER DISTRIBUTION



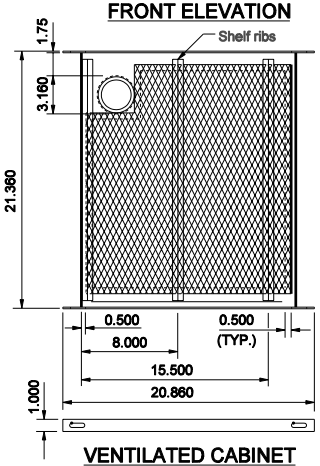
TOP VIEW INSIDE

CABINET PANEL NOTES:

1. Shelves shall be capable of being relocated.



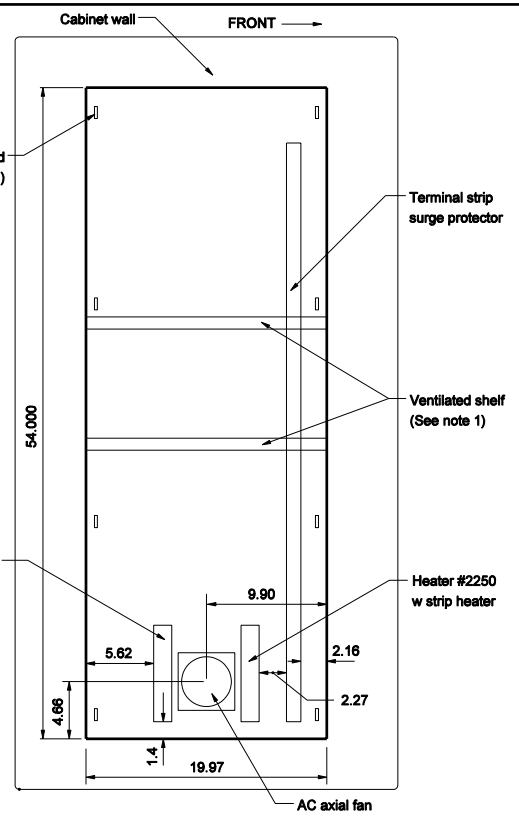
FRONT ELEVATION



VENTILATED CABINET
SHELF BOTTOM VIEW

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



CABINET SIDE PANEL
HEATER

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

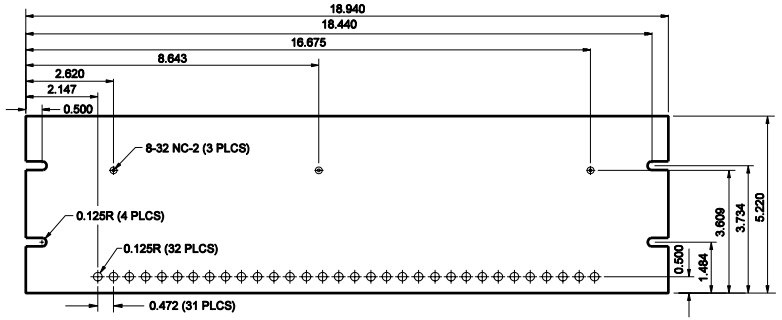
STANDARD DRAWING NO. E 809-ITSC-02

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

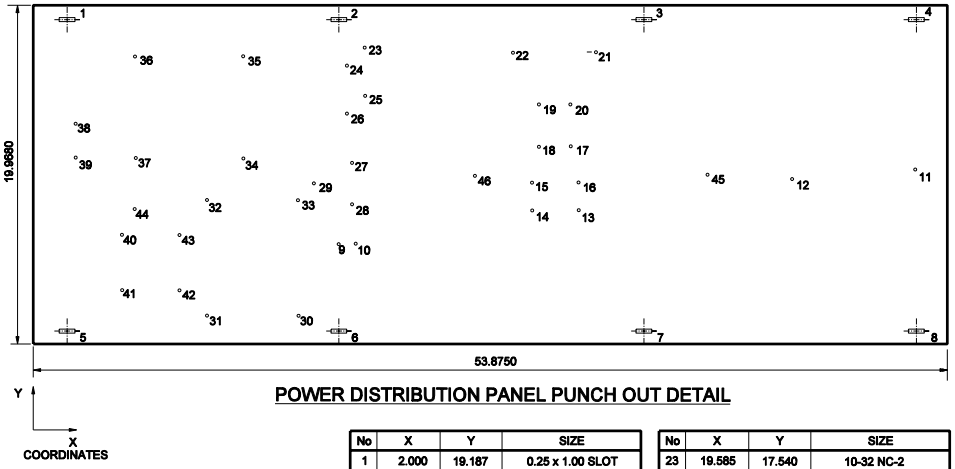
DESIGN STANDARDS ENGINEER

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

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



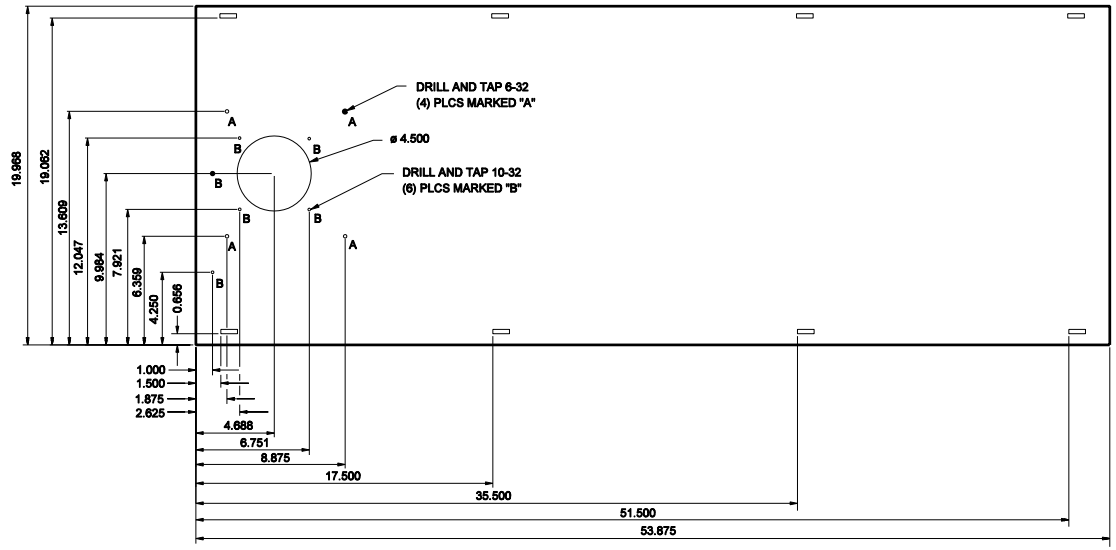
DETECTOR CARD DIN RAIL DETAIL



POWER DISTRIBUTION PANEL PUNCH OUT DETAIL

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	19.000	6.000	0.125 DIA
11	52.000	10.234	8-32 NC-2
12	44.688	9.734	
13	32.180	7.950	
14	29.430	7.950	
15	29.430	9.600	
16	32.180	9.600	
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	13.665	
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	26.00	10.000	8-32 NC-2



HEATER PANEL PUNCH OUT DETAILS

All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

CABINET PUNCH OUT DETAILS

MARCH 2006

STANDARD DRAWING NO. E 809-ITSC-03

NOTES:

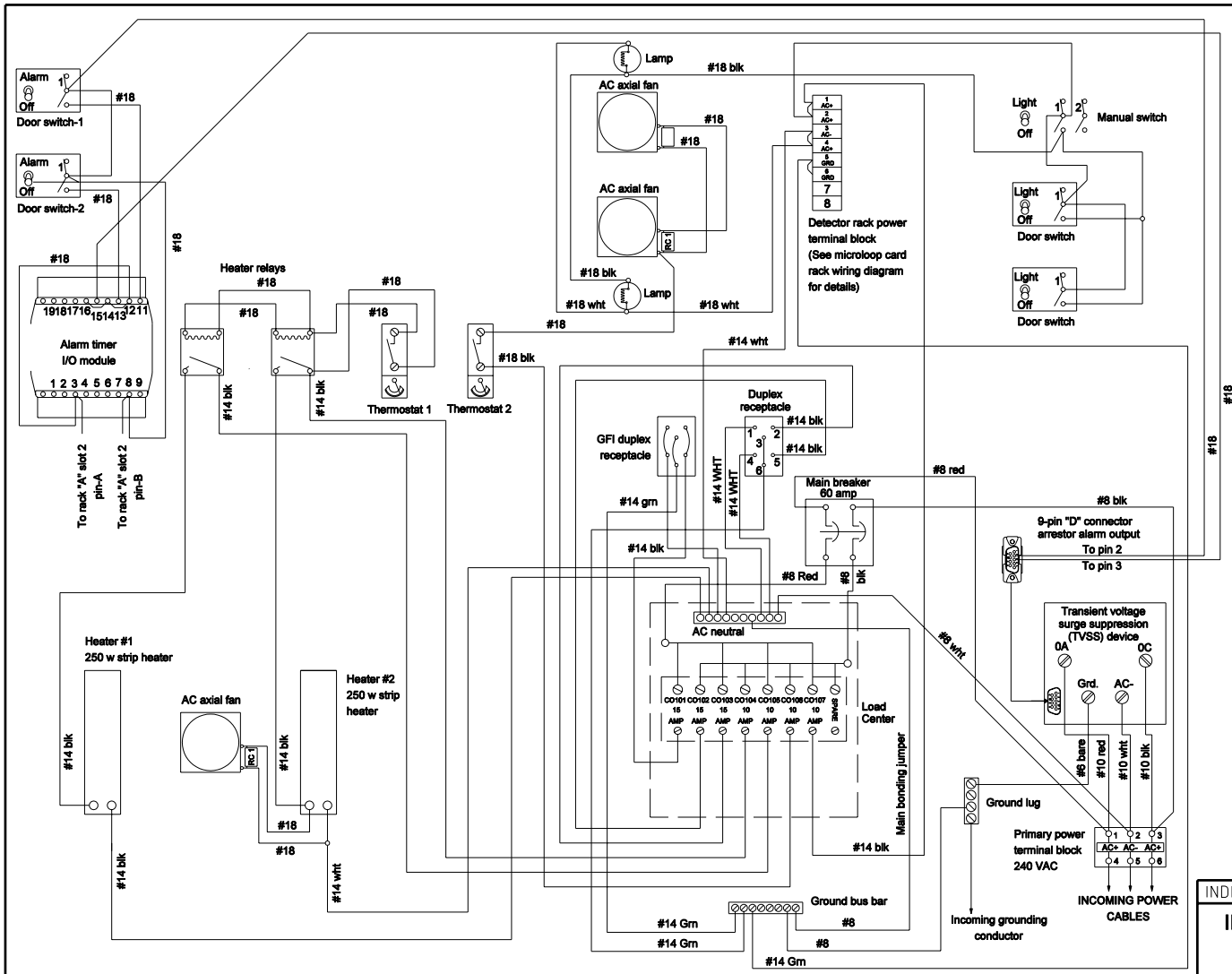
1. See Standard Drawings E 809-ITCS-01 thru -02 or -03 thru -07 for additional ITS cabinet details.

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/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 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

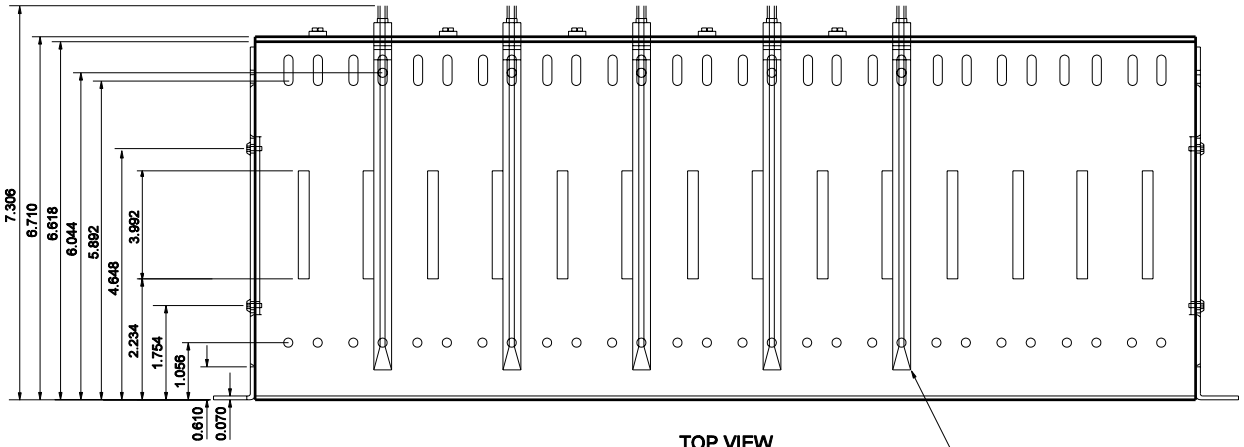
STANDARD DRAWING NO. E 809-ITSC-04

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

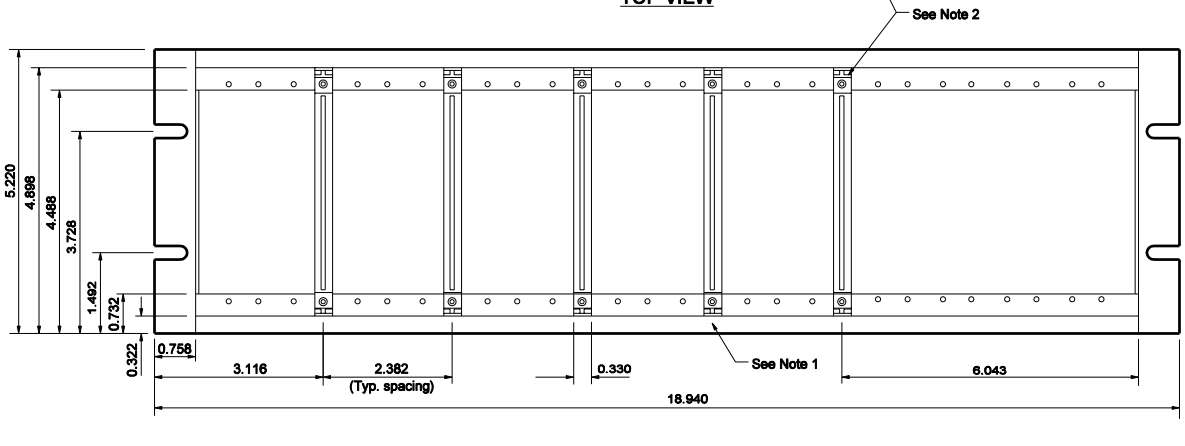
DESIGN STANDARDS ENGINEER

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

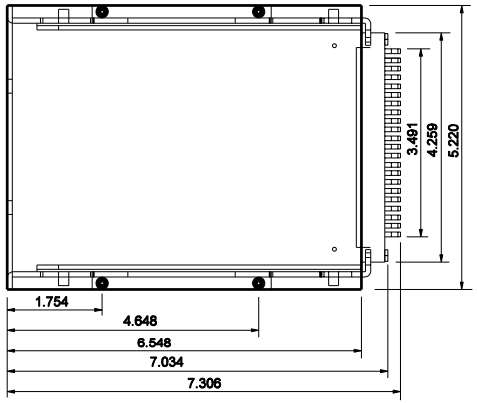
/s/ Richard K. Smutzer 3-01-06
CHIEF HIGHWAY ENGINEER DATE



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

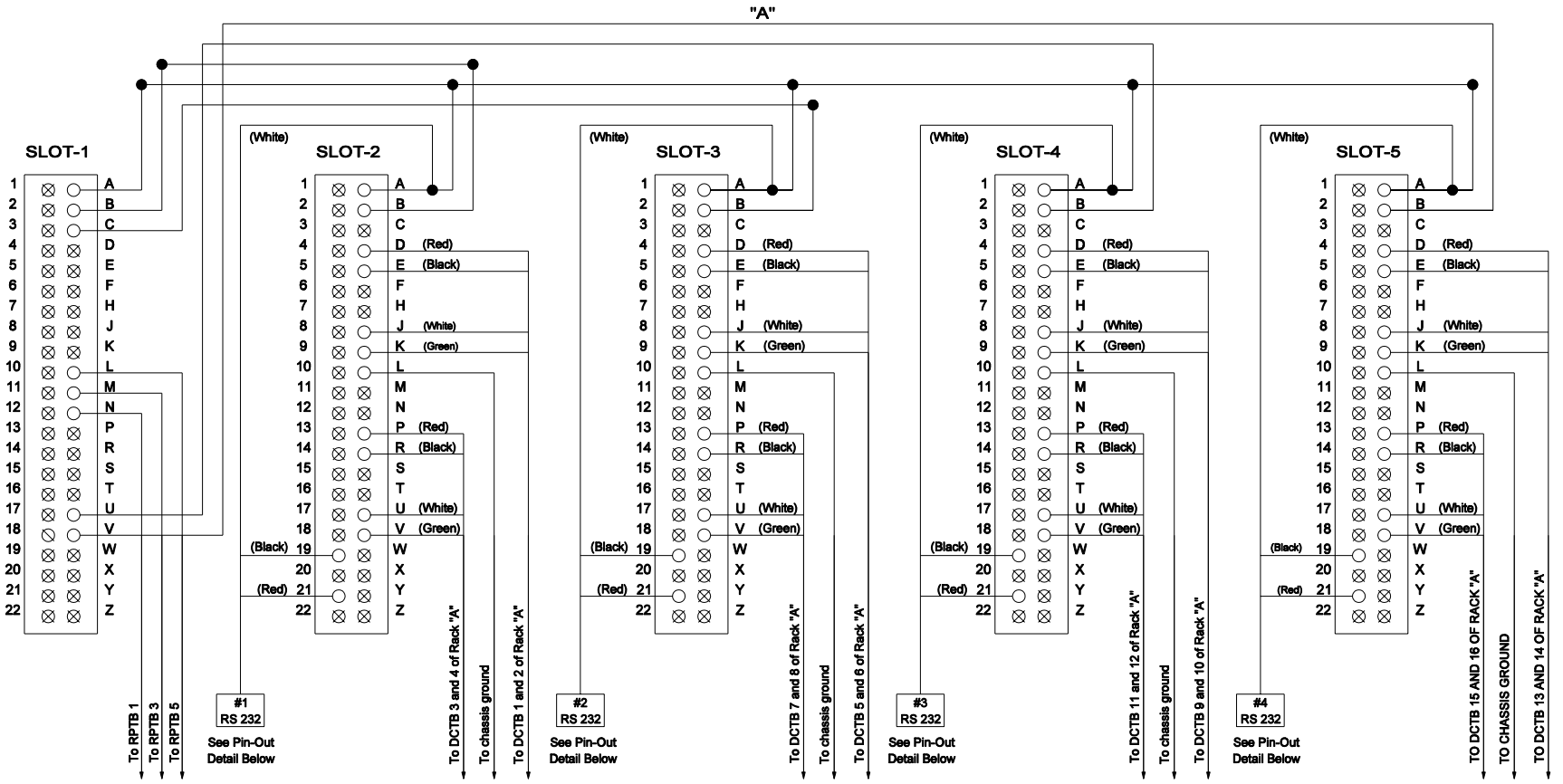
STANDARD DRAWING NO. E 809-ITSC-05

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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



PINS ON BACK OF CARD RACKGROUP "A" SHOWN. 4-SLOT RACK GROUPS "B", "C", "D" NOT SHOWN.

NOTES:

1. See Standard Drawings E 809-ITCS-01 thru-05 or -06A and -07 for additional ITS cabinet details.

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET MICROLOOP CARD RACK WIRING DIAGRAM

MARCH 2006

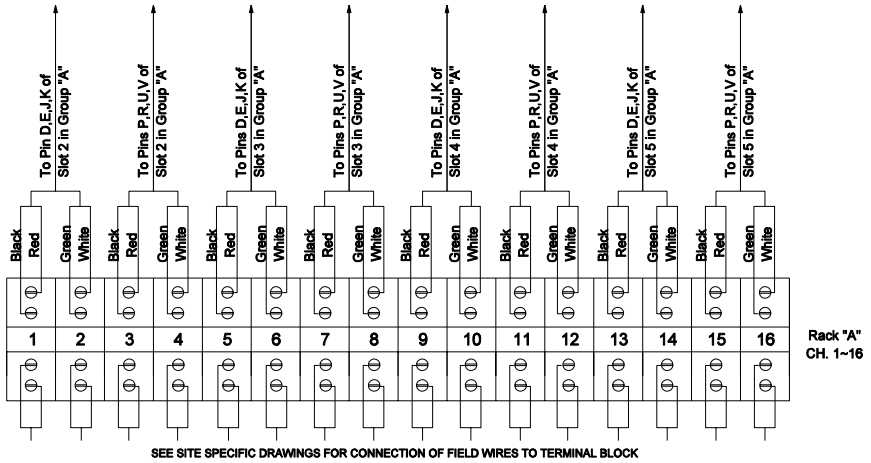
STANDARD DRAWING NO. E 809-ITSC-06

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

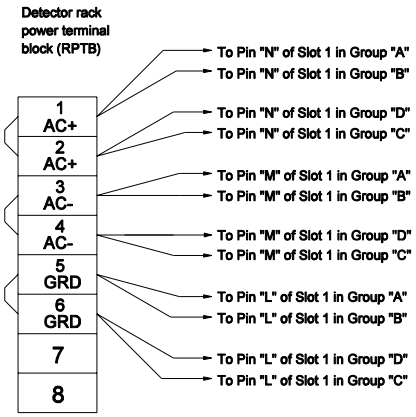
/s/ Richard K. Smutzer — 3-01-06
CHIEF HIGHWAY ENGINEER — DATE



SEE SITE SPECIFIC DRAWINGS FOR CONNECTION OF FIELD WIRES TO TERMINAL BLOCK

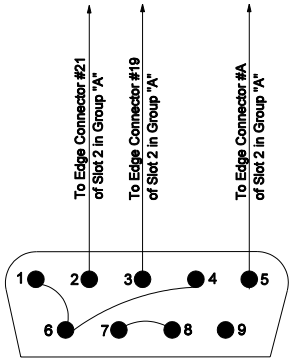
DETECTOR CARD DIN RAIL
TERMINAL BLOCKS (DCTB)

(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 sheild 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.



#1 RS232

PIN-OUT DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET MICROLOOP CARD RACK WIRING DIAGRAM

MARCH 2006

STANDARD DRAWING NO. E 809-ITSC-06A

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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

CABINET LIGHT
ON
○
OFF

RACK A	RACK B	RACK C	RACK D

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

MAIN BREAKER

GFI	RECEP #1	RECEP #2	HEATER #1	HEATER #2	CABINET FANS	DETECTOR RACKS	SPARE

SURGE SUPPRESSOR

HEATER #2	HEATER #1

HEATER 1 and HEATER 2 are 1 tag Each.

HEATER RELAY #2	HEATER RELAY #1	HEATING THERMO STAT	COOLING FAN THERMO STAT

RACK A	RACK B	RACK C	RACK D

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

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

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

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