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1	Temporary Erosion Control Index Sheet
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3	Temporary Inlet Protection, Gravel Ring
4	Temporary Inlet Protection, Filter Bag Insert
5	Temporary Curb Inlet Protection
6	Temporary Check Dam, Revetment Riprap
7	Temporary Check Dam, Traversable, Low Profile
8	Temporary Check Dam, Traversable
9	Temporary Sediment Trap
10	Perimeter Protection, Filter Sock
11	Perimeter Protection, Silt Fence
12	Temporary Erosion Control Perimeter Construction Entrance

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL INDEX SHEET

SEPTEMBER 2019

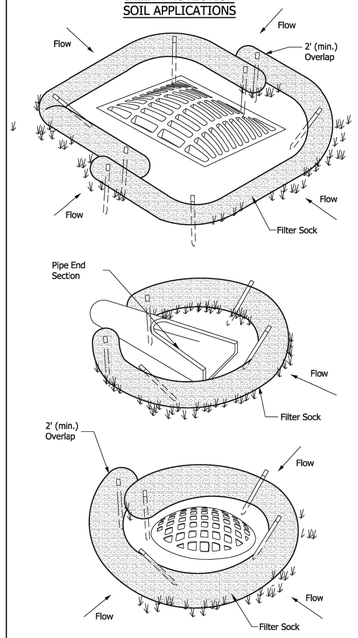
STANDARD DRAWING NO. E 205-TECD-01

REGISTERED ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

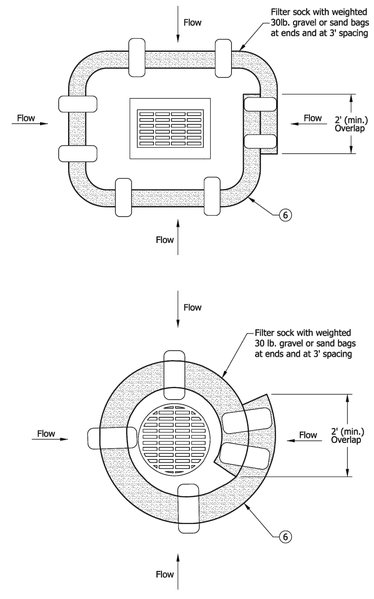
DESIGN STANDARDS ENGINEER — 5/2/2019 DATE

CHIEF ENGINEER — 5/31/2019 DATE

INLET PROTECTION SOIL APPLICATIONS



INLET PROTECTION PAVEMENT APPLICATIONS



NOTES:

1. Fiber roll may be substituted for filter sock.
2. Filter sock shall be secured to prevent movement and undercutting as shown or in accordance with the manufacturer's instructions. See Standard Drawing E 205-TECD-10 for securing methods.
3. Inlet protection shall be inspected, at a minimum once every seven days and after each storm event. Sediment shall be removed when 1/3 of the filter sock depth has been filled or as directed.
4. Sediment and gravel deposited on roadways shall be removed once identified after each storm event.
5. Inlet protection shall be removed after the surrounding area becomes stable.

(6) Inlet protection shall be used within a lane or shoulder only when closed to traffic. Inlet protection shall not cause water to encroach upon a lane open to traffic.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY INLET PROTECTION, FILTER SOCK

SEPTEMBER 2019

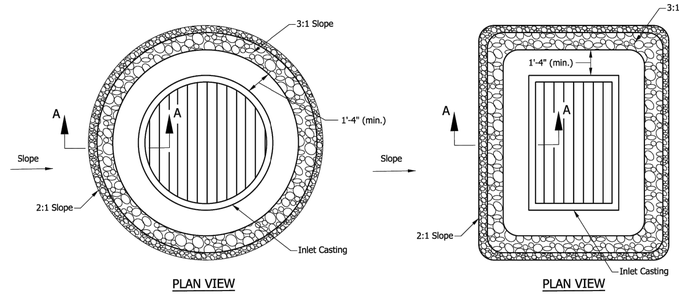
STANDARD DRAWING NO. E 205-TECD-02

REGISTERED ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

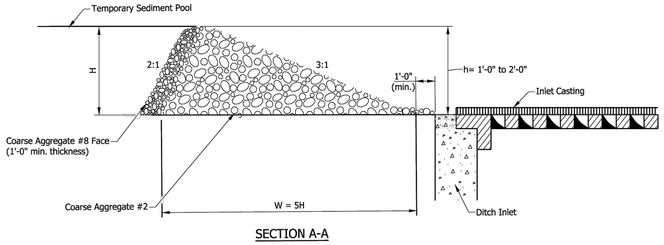
DESIGN STANDARDS ENGINEER — 5/2/2019 DATE

CHIEF ENGINEER — 5/31/2019 DATE

PLAN VIEW



SECTION A-A



NOTES:

1. H = h + 0.25, ft
2. Weight of coarse aggregate #2, Tons: (6.28/27)(0.67 + 2.5H)(1 +3H + ½ inlet width)(0.6)
3. Weight of coarse aggregate #8, Tons: (6.28/27)(H)(1 + 4H + ½ inlet width)(0.6)

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY INLET PROTECTION, GRAVEL RING

SEPTEMBER 2019

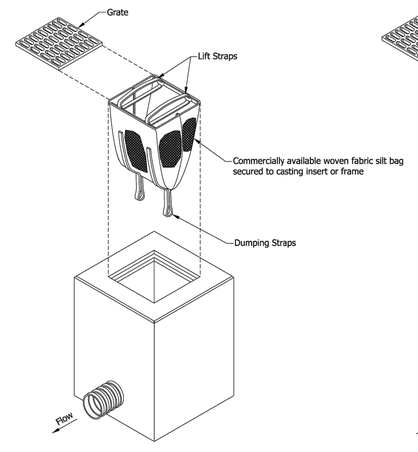
STANDARD DRAWING NO. E 205-TECD-03

REGISTERED ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

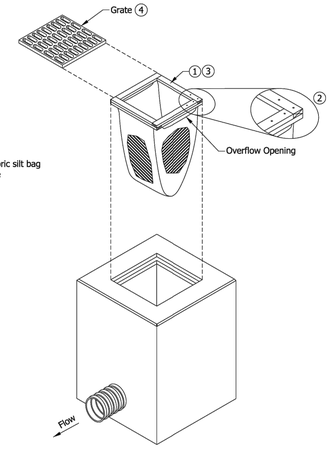
DESIGN STANDARDS ENGINEER — 5/2/2019 DATE

CHIEF ENGINEER — 5/31/2019 DATE

MANUFACTURED



BUILT IN FIELD



NOTES:

(1) Frame opening size to match inlet opening.

(2) Geotextile bag shall be fabricated from a piece of geotextile 2 times the opening size pushed through the opening to form an overflow opening. Secure by nails.

(3) Frame with bag to be placed over inlet opening.

(4) Bag frame shall be secured in place by weight of inlet grate. Grate may be rotated 45 degrees to the bag's frame.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY INLET PROTECTION, FILTER BAG INSERT

SEPTEMBER 2019

STANDARD DRAWING NO. E 205-TECD-04

REGISTERED ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER — 5/2/2019 DATE

CHIEF ENGINEER — 5/31/2019 DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS100
Sheet: 87 of 155

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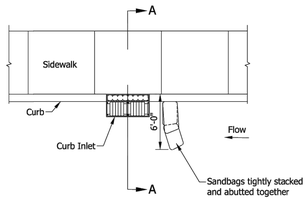
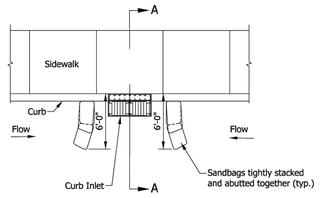


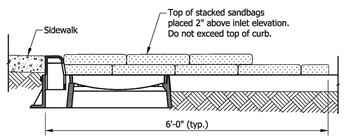
SANDBAG
SINGLE DIRECTION FLOW



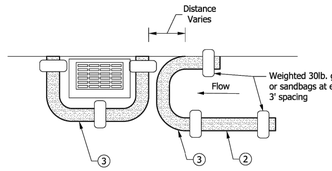
SANDBAG
DUAL DIRECTION FLOW

NOTES:

1. Curb inlet protection shall be used within a lane or shoulder only when closed to traffic. Curb inlet protection shall not cause water to encroach upon a lane open to traffic.
2. May be used in conjunction with drain inlet protection as a best management practice (BMP) in combination with bag or drop inlet protection inserts.
3. Inlet protection shall be used within a lane or shoulder only when closed to traffic. Inlet protection shall not cause water to encroach upon a lane open to traffic.



SECTION A-A



FILTER SOCK SINGLE OR DUAL
DIRECTION FLOW

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CURB INLET PROTECTION

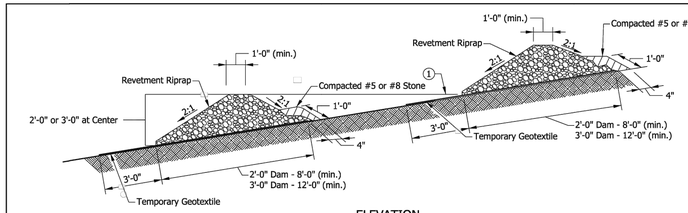
SEPTEMBER 2019

STANDARD DRAWING NO. E 205-TECD-05

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/2/2019
DESIGN STANDARDS ENGINEER DATE

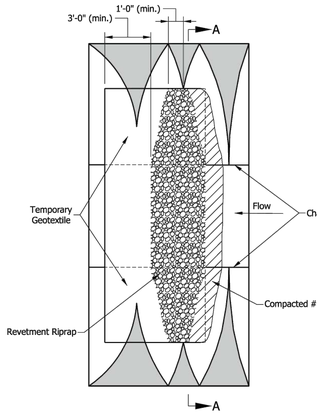
5/31/2019
CHIEF ENGINEER DATE



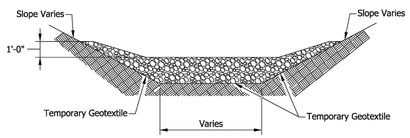
ELEVATION

NOTE:

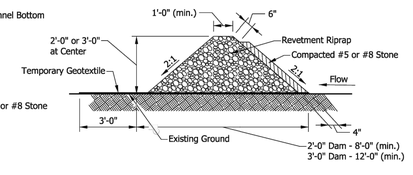
1. Riprap check dams shall be spaced such that the top of the downstream check dam is at the same elevations as the toe of the adjacent upstream check dam.



PLAN



SECTION A-A



MODIFIED CHECK DAM

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CHECK DAM,
REVETMENT RIPRAP

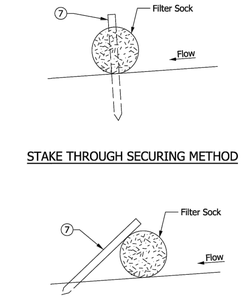
SEPTEMBER 2019

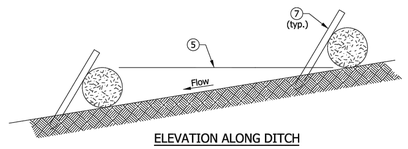
STANDARD DRAWING NO. E 205-TECD-06

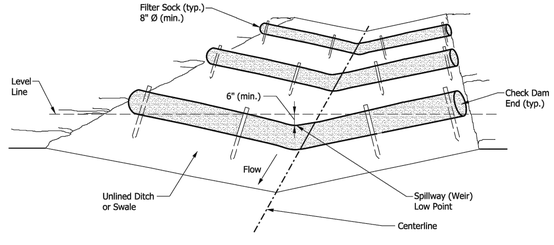
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/2/2019
DESIGN STANDARDS ENGINEER DATE

5/31/2019
CHIEF ENGINEER DATE







NOTES:

1. Fiber roll may be substituted for filter sock.
2. Check dams shall be placed perpendicular to the flow of water.
3. Check dam ends shall be positioned as shown such that storm water flows over the weir low point and does not flow around the ends.
4. Check dams shall remain in place until all upstream areas become stable.
5. Check dams shall be spaced such that the top of the downstream check dam is at the same elevation as the toe of the adjacent upstream check dam.
6. Filter sock shall be shall be secured as shown or in accordance with the manufacturer's instructions.
7. Stake angle and length shall be sufficient to wedge filter sock to the ground to prevent movement and undercutting.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CHECK DAM,
TRAVERSABLE, LOW PROFILE

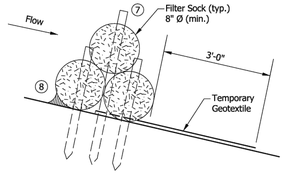
SEPTEMBER 2019

STANDARD DRAWING NO. E 205-TECD-07

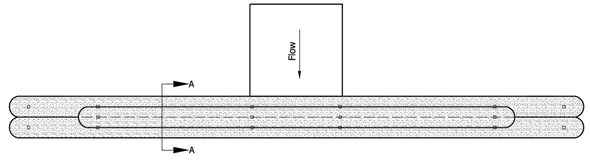
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/2/2019
DESIGN STANDARDS ENGINEER DATE

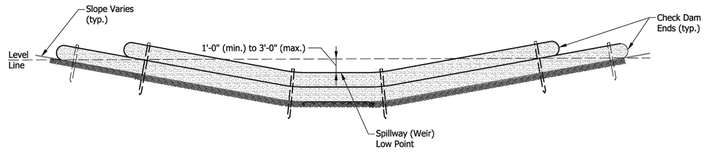
5/31/2019
CHIEF ENGINEER DATE



SECTION A-A



TRAVERSABLE CHECK DAM
PLAN VIEW



TRAVERSABLE CHECK DAM
ELEVATION

NOTES:

1. Fiber roll may be substituted for filter sock.
2. Check dams shall be placed perpendicular to the flow of water.
3. Check dam ends shall be positioned as shown such that storm water flows over the weir low point and does not flow around the ends.
4. Check dams shall remain in place until all upstream areas become stable.
5. Check dams shall be spaced such that the top of the downstream check dam is at the same elevation as the toe of the adjacent upstream check dam.
6. Filter sock shall be shall be secured as shown or in accordance with the manufacturer's instructions.
7. Stake length shall be sufficient to wedge filter sock to the ground to prevent movement and undercutting.
8. When undercutting is identified, compacted #5 or #8 stone shall be placed as shown.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CHECK DAM,
TRAVERSABLE

SEPTEMBER 2019

STANDARD DRAWING NO. E 205-TECD-08

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/2/2019
DESIGN STANDARDS ENGINEER DATE

5/31/2019
CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
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Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
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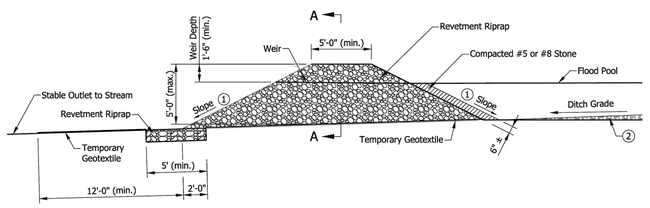
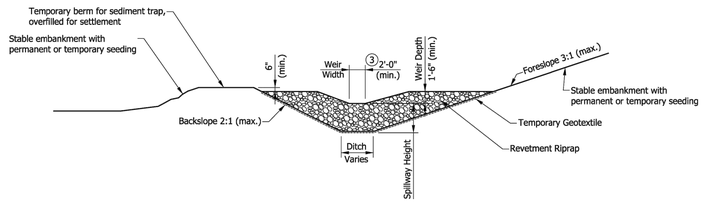


ELEVATION VIEW

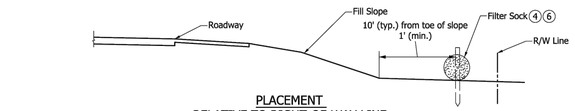


SECTION A-A

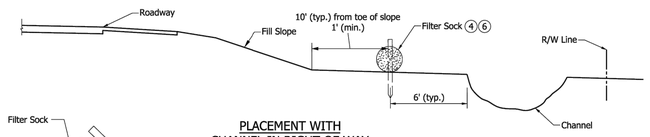
NOTES:

1. Slope should be 3:1 maximum on the near side with respect to the direction of traffic while the far side slope may be 2:1 maximum.
2. This area may be excavated below proposed ditch grade to achieve sediment trap capacity. Area shall not be excavated below the bottom elevation of sediment trap riprap. Over-excavation does not count toward trap capacity of 2-year, 24-hour storm event.
3. Weir width equals ditch bottom width, minimum 2ft.

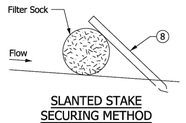
INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY SEDIMENT TRAP SEPTEMBER 2019	
STANDARD DRAWING NO. E 205-TECD-09	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	5/2/2019 DESIGN STANDARDS ENGINEER DATE 5/31/2019 CHIEF ENGINEER DATE



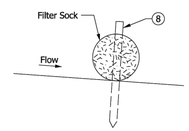
PLACEMENT
RELATIVE TO RIGHT-OF-WAY LINE



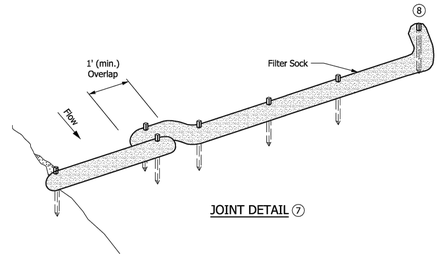
PLACEMENT WITH
CHANNEL IN RIGHT OF WAY



SLANTED STAKE
SECURING METHOD



STAKE THROUGH
SECURING METHOD

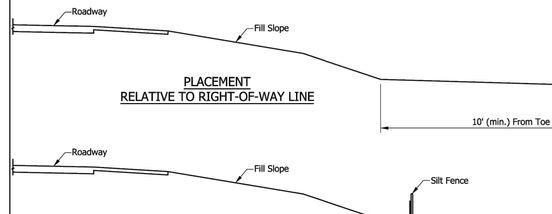


JOINT DETAIL 7

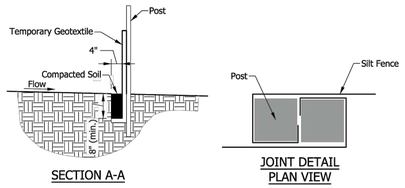
NOTES:

1. Fiber roll may be substituted for filter sock.
2. Filter sock shall be installed as shown or in accordance with manufacturer's recommendations.
3. Filter sock diameter shall be as required by design based on watershed area.
4. Filter sock shall be placed perpendicular to the flow of water.
5. Filter sock shall be secured as shown or in accordance with the manufacturer's instructions.
6. Filter sock does not require staking when fill slope is less than or equal to 12%, except when fill slope is below the Q_{100} water surface elevation and flood prone area.
7. Filter socks shall be secured in locations below the Q_{100} water surface elevation and flood prone location. Filter sock end shall be secured using the stake through method. Intermediate points may be secured using either the stake through or slanted stake method.
8. Stake angle and length shall be sufficient to wedge filter sock to the ground to prevent movement and undercutting.

INDIANA DEPARTMENT OF TRANSPORTATION	
PERIMETER PROTECTION, FILTER SOCK SEPTEMBER 2019	
STANDARD DRAWING NO. E 205-TECD-10	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	5/2/2019 DESIGN STANDARDS ENGINEER DATE 5/31/2019 CHIEF ENGINEER DATE



ELEVATION



SECTION A-A

JOINT DETAIL
PLAN VIEW

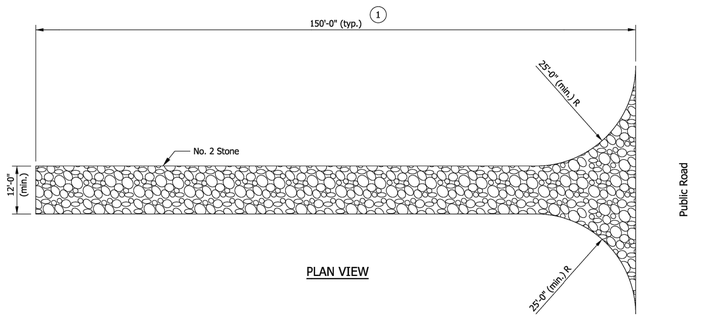
NOTES:

1. Dimensions will vary based on right-of-way availability. Silt fence shall be placed as close as possible to the edge of construction limits.
2. The spacing of the tiebacks shall equal the spacing of the posts. Additional post depth or tiebacks may be required in unstable soils
3. Filter Sock shall be used instead of silt fence at or below Q_{100}.

PLACEMENT
RELATIVE TO RIGHT-OF-WAY LINE

PLACEMENT WITH
CHANNEL IN RIGHT OF WAY

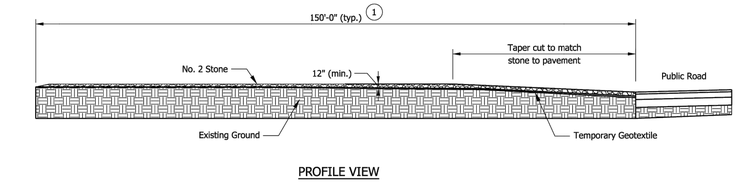
INDIANA DEPARTMENT OF TRANSPORTATION	
PERIMETER PROTECTION, SILT FENCE SEPTEMBER 2019	
STANDARD DRAWING NO. E 205-TECD-11	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	5/2/2019 DESIGN STANDARDS ENGINEER DATE 5/31/2019 CHIEF ENGINEER DATE



PLAN VIEW

NOTE:

1. May be reduced as justified by site conditions, but shall not be less than 50 ft.



PROFILE VIEW

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY EROSION CONTROL PERIMETER CONSTRUCTION ENTRANCE SEPTEMBER 2019	
STANDARD DRAWING NO. E 205-TECD-12	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	5/2/2019 DESIGN STANDARDS ENGINEER DATE 5/31/2019 CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS102
Sheet: 89 of 155

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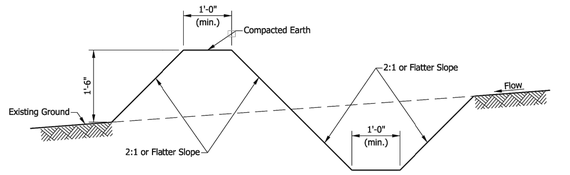
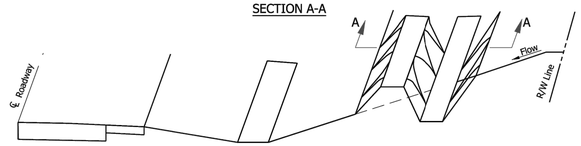
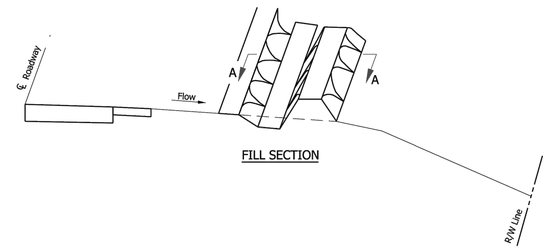


SECTION A-A



CUT SECTION



FILL SECTION

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY
INTERCEPTOR DITCH

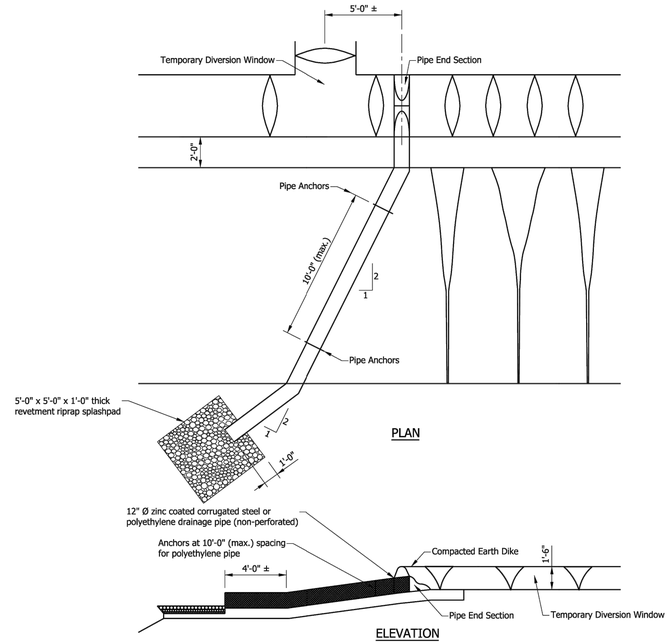
MARCH 2002

STANDARD DRAWING NO. E 205-TECS-01

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

/s/ Richard L. VanCleave 03/01/02
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 03/01/02
CHIEF ENGINEER DATE



PLAN

ELEVATION

NOTES:

1. Length of slope drain shall be extended as required as fill slope is constructed.
2. The maximum drainage area for a 12" dia. pipe is 1 acre.
3. The required revetment riprap weight is 1.4 tons.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY SLOPE DRAIN
PLAN AND ELEVATION VIEW

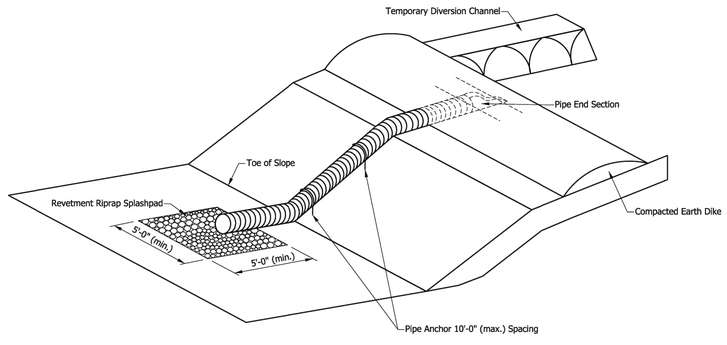
SEPTEMBER 2010

STANDARD DRAWING NO. E 205-TECS-02

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

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

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



ISOMETRIC VIEW

NOTE:

1. See Standard Drawing E 205-TECS-02 for notes.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY SLOPE DRAIN
ISOMETRIC VIEW

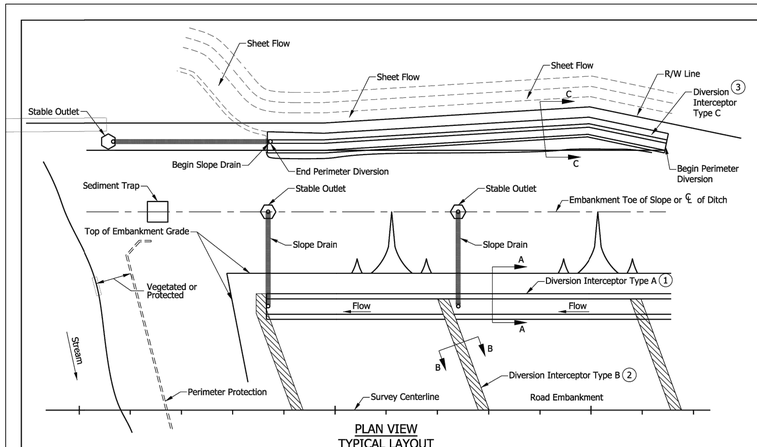
SEPTEMBER 2001

STANDARD DRAWING NO. E 205-TECS-03

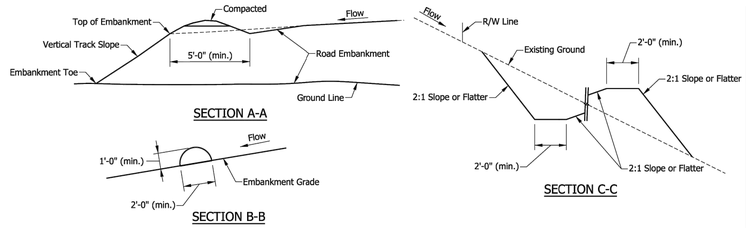
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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

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



PLAN VIEW
TYPICAL LAYOUT



SECTION A-A

SECTION C-C

SECTION B-B

NOTES:

1. Diversion Interceptor Type A shall be used to control embankment runoff to slope drains during grading operations.
2. Diversion Interceptor Type B shall be a series of ridges used to divert runoff from long narrow corridor. Maximum length of the ridges shall not exceed 100 ft. Ridges shall be used for dividing grades and haul roads.
3. Diversion Interceptor Type C shall be used to collect offsite runoff before entering the disturbed portion of the project site. Maximum allowable runoff captured from offsite drainage area is 5 acres.

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION CONTROL SLOPE
DIVERSION INTERCEPTORS

SEPTEMBER 2012

STANDARD DRAWING NO. E 205-TECS-04

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

/s/ Richard L. Van Cleave 09/04/12
DESIGN STANDARDS ENGINEER DATE

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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
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402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

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Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS103
Sheet: 90 of 155

Last Saved By: Joe Pinkard 2/23/23
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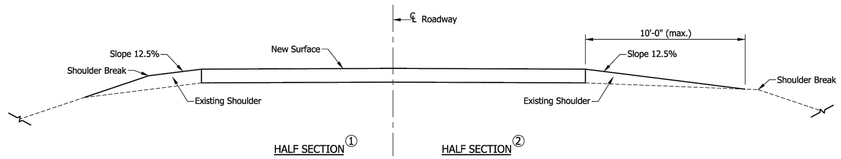
NOTES:

1. This section shall be used when the existing shoulder width is less than 3 ft. or the slope is steeper than 12.5%.
2. This section shall be used when the existing shoulder slope is flatter than 12.5%.

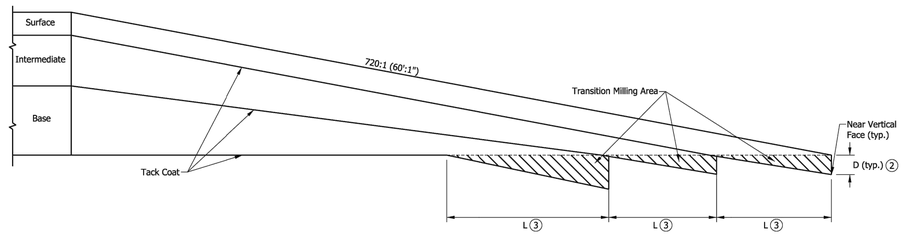


TYPICAL SECTION FOR SHOULDER TREATMENT

INDIANA DEPARTMENT OF TRANSPORTATION	
SHOULDER TREATMENT FOR RESURFACING WORK SEPTEMBER 2007	
STANDARD DRAWING NO. E 303-STRW-01	
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Richard L. VanCleave 09/04/07 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/04/07 CHIEF ENGINEER DATE

NOTES:

1. Transition milling areas inaccessible to the milling machine shall be removed by other methods to achieve a near vertical face.
2. D(in.)=1 1/2 in. or 2 times the maximum particle size of specified HMA course, whichever is greater
3. L(ft.)=D x 60



INDIANA DEPARTMENT OF TRANSPORTATION	
HMA PAVEMENT WEDGING AND TRANSITION MILLING SEPTEMBER 2020	
STANDARD DRAWING NO. E 306-TMPT-01	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	12/11/2019 DESIGN STANDARDS ENGINEER DATE 1/17/2020 CHIEF ENGINEER DATE

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
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402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Requisition Number: -
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Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS104
Sheet: 91 of 155

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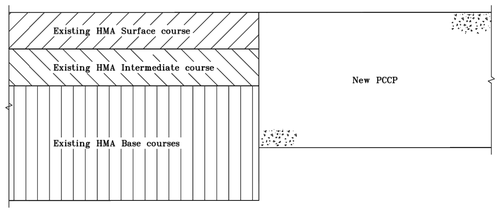
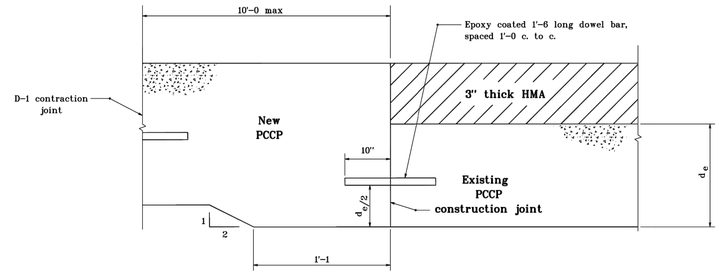


EXISTING HMA PAVEMENT TO NEW PCCP

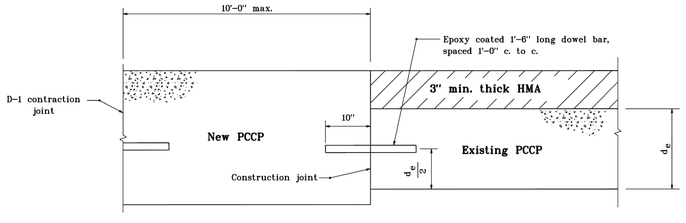
INDIANA DEPARTMENT OF TRANSPORTATION	
PAVEMENT TYPE TRANSITION SEPTEMBER 1999	
STANDARD DRAWING NO. **E 500-PTRN-01**	
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER	*/s/ Anthony L. Urbanovich* 9-01-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	*/s/ Donald W. Lucas* 9-01-99 CHIEF ECONOMY ENGINEER DATE



TRANSITION DESIGN WITH THICKENED SLAB

New PCCP Thickness is Less Than
that of 3" Thick HMA + Existing PCCP

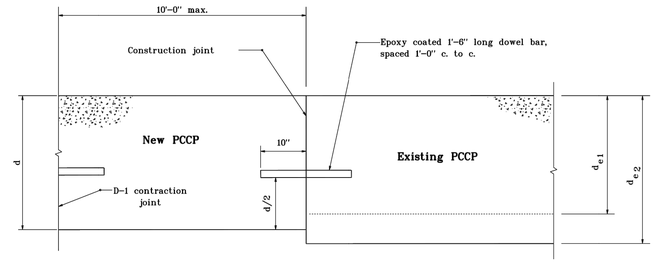
INDIANA DEPARTMENT OF TRANSPORTATION	
PAVEMENT TYPE TRANSITION JANUARY 2000	
STANDARD DRAWING NO. **E 500-PTRN-02**	
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER	*/s/ Anthony L. Urbanovich* 1-03-00 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	*/s/ Firoz Zaidi* 1-03-00 CHIEF HIGHWAY ENGINEER DATE



TRANSITION DESIGN

New PCCP Thickness is Greater Than or Equal to That
of 3" Thick HMA + Existing PCCP

INDIANA DEPARTMENT OF TRANSPORTATION	
PAVEMENT TYPE TRANSITION SEPTEMBER 1999	
STANDARD DRAWING NO. **E 500-PTRN-03**	
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER	*/s/ Anthony L. Urbanovich* 9-01-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	*/s/ Donald W. Lucas* 9-01-99 CHIEF ECONOMY ENGINEER DATE



TRANSITION DESIGN

New PCCP to Existing PCCP

$d > d_{e1}$ (New PCCP Thicker Than Existing)

$d < d_{e2}$ (New PCCP Thinner Than Existing)

INDIANA DEPARTMENT OF TRANSPORTATION	
PAVEMENT TYPE TRANSITION SEPTEMBER 1999	
STANDARD DRAWING NO. **E 500-PTRN-04**	
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER	*/s/ Anthony L. Urbanovich* 9-01-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	*/s/ Donald W. Lucas* 9-01-99 CHIEF ECONOMY ENGINEER DATE

Certified by: David Hedlund

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Sheet: 92 of 155

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INDEX	
SHEET NO.	SUBJECT
1	PCCP Joints Index
2	Sawed Joints and Joint Sealant
3	D-1 Contraction Joint Details
4	Transverse Construction Joint Details
5	Longitudinal Joint Details

GENERAL NOTES:

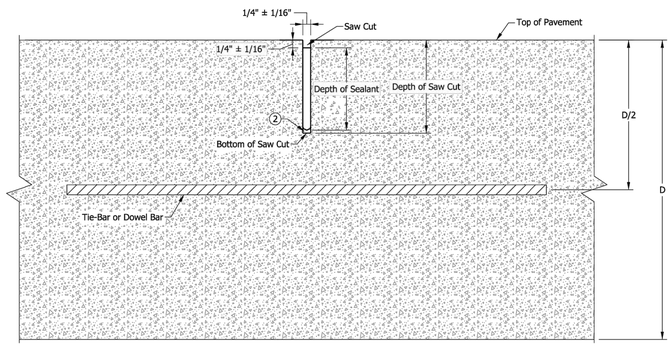
1. Dowel bars shall be epoxy coated.
2. Tie-bars shall be epoxy coated.

INDIANA DEPARTMENT OF TRANSPORTATION	
PCCP JOINTS INDEX SEPTEMBER 2020	
STANDARD DRAWING NO. E 503-CCPJ-01	
ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER	03/10/20 DESIGN STANDARDS ENGINEER DATE 05/08/20 CHIEF ENGINEER DATE

TYPE OF JOINT	DEPTH OF SAW CUT	DEPTH OF SEALANT
Longitudinal Joint	D/3	2" (min.)
D-1 Contraction Joint	D/3	2" (min.)
Retrofit Contraction Joint (3)	1"	Bottom of Saw Cut
Retrofit Pressure Relief Joint (3)	1"	Bottom of Saw Cut
Transverse Construction Joint	1"	Bottom of Saw Cut
Longitudinal Construction Joint	1"	Bottom of Saw Cut

NOTES:

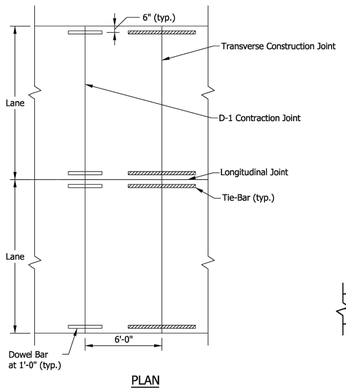
1. Multiple passes of sealant may be required.
2. (2) Backer rod shall not be installed.
3. (3) For retrofit contraction joint and pressure relief joint details, see Standard Drawing Series E 506-CCPP.



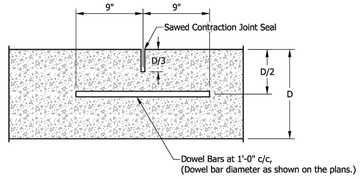
TRANSVERSE AND LONGITUDINAL
SAW CUT WITH HOT POURED SEALANT

D = PCCP Thickness

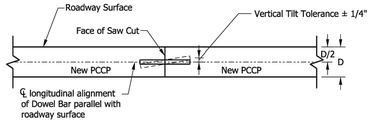
INDIANA DEPARTMENT OF TRANSPORTATION	
SAWED JOINTS AND JOINT SEALANT SEPTEMBER 2020	
STANDARD DRAWING NO. E 503-CCPJ-02	
ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER	03/10/20 DESIGN STANDARDS ENGINEER DATE 05/08/20 CHIEF ENGINEER DATE



PLAN



TYPE D-1 CONTRACTION JOINT
LONGITUDINAL SECTION THROUGH PCCP



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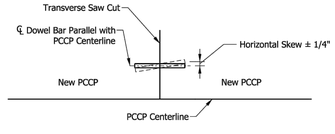
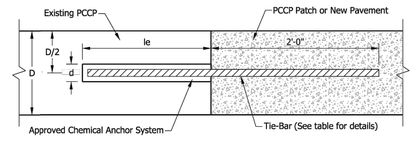


PLAN HORIZONTAL SKEW

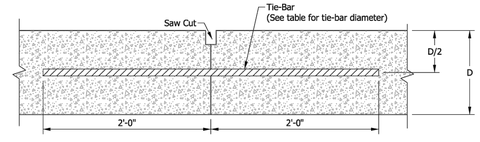
INDIANA DEPARTMENT OF TRANSPORTATION	
D-1 CONTRACTION JOINT DETAILS SEPTEMBER 2020	
STANDARD DRAWING NO. E 503-CCPJ-03	
ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER	03/10/20 DESIGN STANDARDS ENGINEER DATE 05/08/20 CHIEF ENGINEER DATE



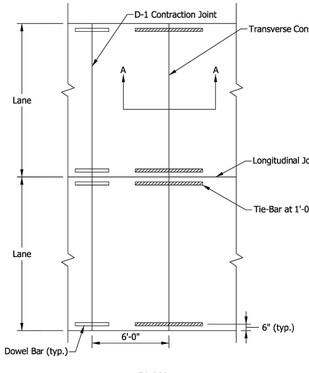
SECTION A-A
(RETROFITTED TIE-BARS)

NOTE:

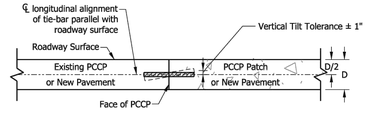
1. Diameter of drilled hole (d) shall be in accordance with the chemical anchor system manufacturer's instructions.



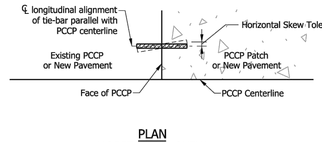
SECTION A-A
(TIE-BARS PLACED IN PLASTIC CONCRETE)



PLAN



ELEVATION
VERTICAL TILT



PLAN
HORIZONTAL SKEW

TIE-BAR SIZES FOR TRANSVERSE CONSTRUCTION JOINT		
Pavement Thickness, D	Tie-Bar Size	Min. le (Retrofit)
Less than 9"	#5	1'-0"
9" through 12"	#8	1'-8"
Greater than 12"	#10	2'-0"

INDIANA DEPARTMENT OF TRANSPORTATION	
TRANSVERSE CONSTRUCTION JOINT DETAILS SEPTEMBER 2020	
STANDARD DRAWING NO. E 503-CCPJ-04	
ELIZABETH W. PHILLIPS No. 10200124 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER	03/10/20 DESIGN STANDARDS ENGINEER DATE 05/08/20 CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number:	84003001-22-058-C1
Requisition Number:	-
Account Number:	-
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number:	1364
Building Reference:	-
Drawing Number:	CS106
Sheet:	93 of 155

Last Saved By: Jake Pinkard 2/23/23
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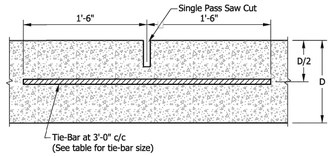
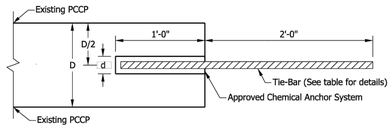


LONGITUDINAL JOINT TRANSVERSE SECTION THROUGH PCCP

TIE-BAR SIZES FOR LONGITUDINAL JOINT	
Pavement Thickness, D	Tie-Bar Size
Less than or equal to 9"	#5
Greater than 9"	#6

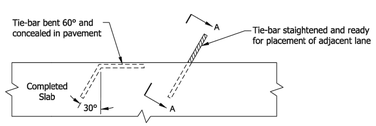
NOTE:

1. Diameter of drilled hole (d) shall be in accordance with the chemical anchor system manufacturer's instructions.
2. For retrofitted tie-bar skew and tilt tolerances see 503-CCPJ-04.

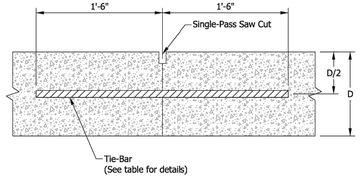


LONGITUDINAL CONSTRUCTION JOINT TRANSVERSE SECTION THROUGH PCCP
(RETROFITTED TIE-BARS)

TIE-BAR SIZES FOR LONGITUDINAL CONSTRUCTION JOINTS		
Pavement Thickness, D	Tie-Bar Size	Spacing
Less than 9"	#5	3'-0" c/c
9" through 12"	#6	3'-0" c/c
Greater than 12"	#6 or #7	2'-0" c/c 3'-0" c/c



LONGITUDINAL CONSTRUCTION JOINT PLAN VIEW
(BENT TIE-BAR PLACED IN PLASTIC CONCRETE)



SECTION A-A

INDIANA DEPARTMENT OF TRANSPORTATION

LONGITUDINAL JOINT DETAILS

SEPTEMBER 2020

STANDARD DRAWING NO. E 503-CCPJ-05

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

03/10/20
DESIGN STANDARDS ENGINEER DATE

05/08/20
CHIEF ENGINEER DATE

Certified by: David Hedlund

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Client Approval:
Reference Number: 1364
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Drawing Number: CS107
Sheet: 94 of 155

Last Saved By: jder Printed:2/23/23
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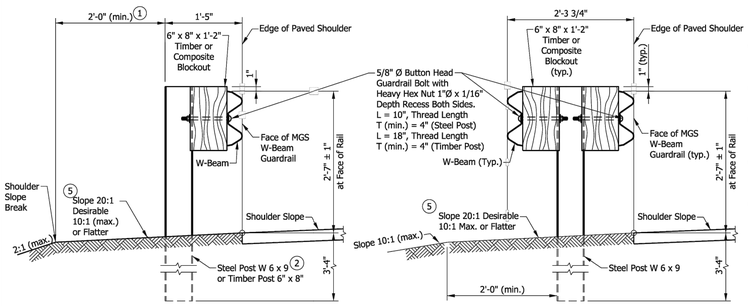
INDEX	
SHEET NO.	SUBJECT
1	Midwest Guardrail System Assembly Index and General Notes
2 - 5	Midwest Guardrail System Assembly
6 - 7	Midwest Guardrail System Assembly, Omitted Post
8 - 9	Midwest Guardrail System Assembly, Long-Span
10	Midwest Guardrail System Assembly, Structure Top-Mounted Post
11	Midwest Guardrail System Assembly, Guardrail Transition with Curb
12	Midwest Guardrail System Assembly, Guardrail Transition without Curb
13 - 15	Midwest Guardrail System Assembly, Guardrail Transition
16	Midwest Guardrail System Assembly, Height Transition
17 - 22	Midwest Guardrail System Assembly, Cable Terminal Anchor System
23	Midwest Guardrail System Assembly, Working Width

GENERAL NOTES:

1. The Midwest Guardrail System (MGS) is a steel or timber post w-beam guardrail semi-rigid longitudinal barrier system. The standard post length for MGS w-beam guardrail shall be 6 ft, unless noted otherwise.
2. MGS w-beam guardrail, omitted post, long-span, structure top-mount, guardrail transition, and cable terminal anchor are MASH TL-3 compliant.
3. Steel guardrail post W 6 x 8.5 may be substituted for W 6 x 9.

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY INDEX AND GENERAL NOTES SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-01	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE

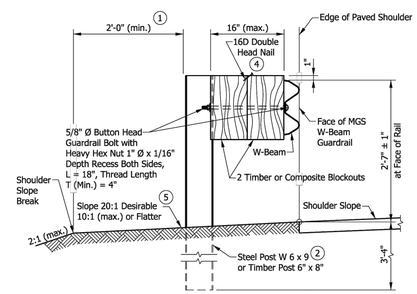


TYPICAL MGS W-BEAM INSTALLATION

TYPICAL DOUBLE-FACED MGS W-BEAM INSTALLATION

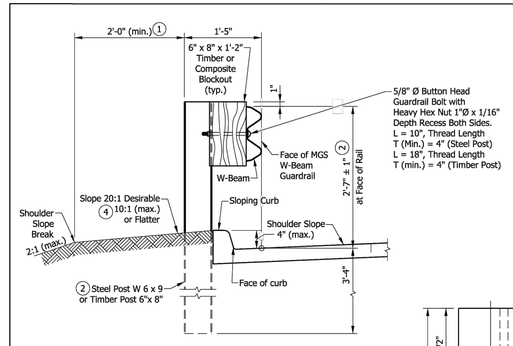
NOTES:

1. Where the distance from back of post to shoulder slope break is less than 2 ft, the working width shall be adjusted. See Standard Drawing E 601-MGSA-23.
2. Timber and steel posts shall not be intermixed. See Standard Drawing E 601-MGSA-04 for post details.
3. Blockouts of 12 in. or 16 in. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.
4. Where two timber blockouts are installed, one 16D galvanized double head nail shall be centered at the back of the blockout and driven into the adjacent blockout to limit rotation.
5. The post shall not be encased with asphalt, concrete, or riprap.



DETAIL FOR ALTERNATE BLOCKOUT DEPTH 3

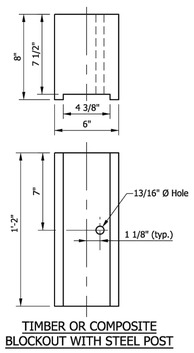
INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-02	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE



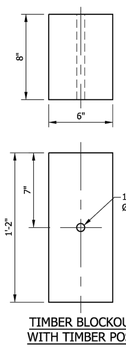
TYPICAL MGS W-BEAM INSTALLATION AT CURB

NOTES:

1. Where the distance from back of post to shoulder slope break is less than 2 ft, the working width shall be adjusted. See Standard Drawing E 601-MGSA-23.
2. Timber and steel posts shall not be intermixed. See Standard Drawing E 601-MGSA-04 for post details.
3. Blockouts of 12 in. or 16 in. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.
4. The post shall not be encased with asphalt, concrete, or riprap.

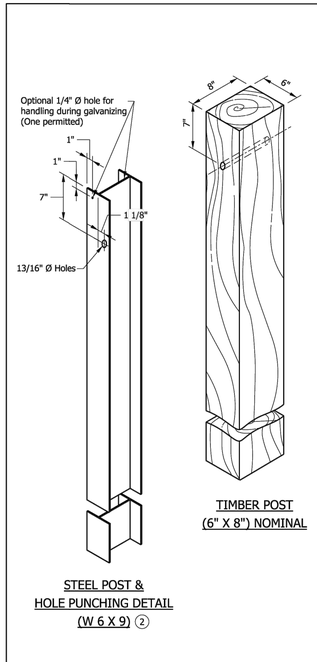


TIMBER OR COMPOSITE BLOCKOUT WITH STEEL POST



TIMBER BLOCKOUT WITH TIMBER POST

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-03	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE



NOTES:

1. Timber or steel posts may be used. Timber and steel posts shall not be intermixed.
2. Steel guardrail post W 6 x 8.5 may be substituted for W 6 x 9.
3. Steel posts shall be installed with bolt holes on approaching traffic side.
4. Where a timber post and a timber blockout are installed, one 16D galvanized double head nail shall be centered at the back of the blockout and driven into the adjacent post to limit rotation.
5. Blockouts of 12 in. or 16 in. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.
6. Hole pattern for posts may be drilled in back flange.

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY SEPTEMBER 2018	
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Drawing Number: CS108	
Sheet: 95 of 155	

Last Saved By: Joe Pinkard 2/23/23
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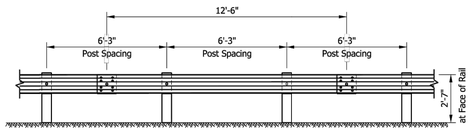
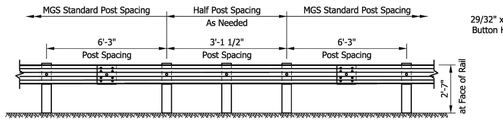


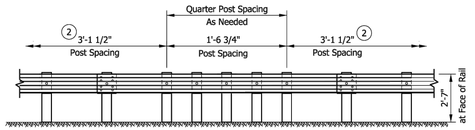
ELEVATION VIEW

MGS W-BEAM STANDARD POST SPACING, 6'-3"



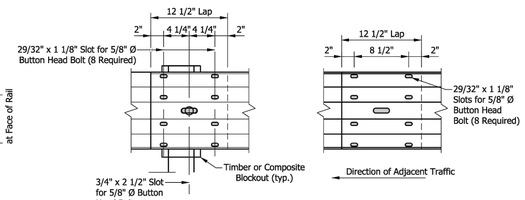
ELEVATION VIEW

MGS W-BEAM HALF POST SPACING, 3'-1 1/2"



ELEVATION VIEW

MGS W-BEAM QUARTER POST SPACING, 1'-6 3/4"

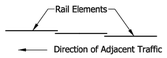


POST SPLICE DETAIL

MID-SPAN SPLICE DETAIL

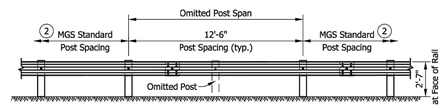
NOTES:

1. Splice locations shall be as shown.
2. (2) A minimum of 25 ft of MGS w-beam half post spacing shall be installed on the approach and departure ends of the quarter post spacing.



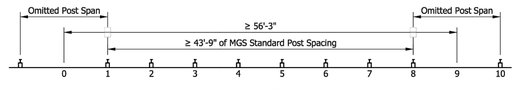
LAPPING PROCEDURE

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-05	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE



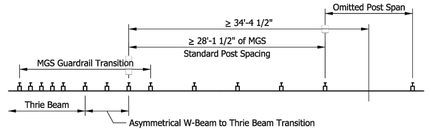
ELEVATION VIEW

MGS W-BEAM OMITTED POST



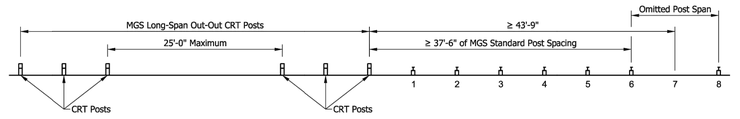
PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POSTS



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS GUARDRAIL TRANSITION



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS LONG-SPAN OUTER CRT POST

NOTES:

1. A single post may be omitted within an MGS w-beam guardrail run.
2. (2) Where a post is omitted, a minimum length of MGS standard post spacing guardrail shall be installed as shown.
3. An MGS w-beam guardrail run containing an omitted post shall not be installed adjacent to curb.

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, OMITTED POST SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-06	
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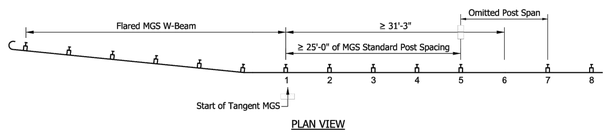
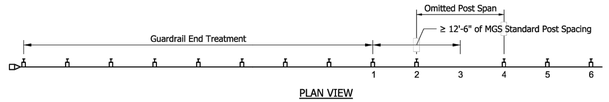


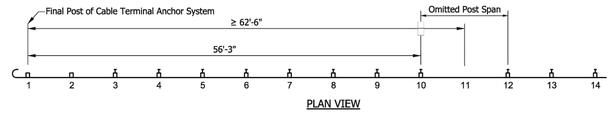
PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND FLARED MGS W-BEAM



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND GUARDRAIL END TREATMENT



PLAN VIEW

MINIMUM DISTANCE BETWEEN OMITTED POST AND MGS CABLE TERMINAL ANCHOR SYSTEM

NOTES:

1. A single post may be omitted within an MGS w-beam guardrail run. See Standard Drawing E 601-MGSA-06
2. Where a post is omitted, a minimum length of MGS standard post spacing guardrail shall be installed as shown.
3. An MGS w-beam guardrail run containing an omitted post shall not be installed adjacent to curb.

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, OMITTED POST SEPTEMBER 2018	
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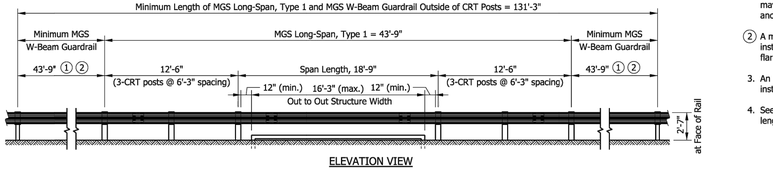
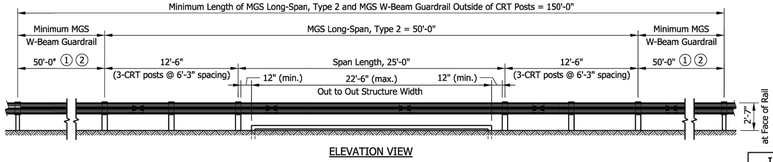


ELEVATION VIEW

INSTALLATION TYPE 1
(2 POSTS OMITTED)

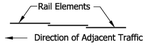


ELEVATION VIEW

INSTALLATION TYPE 2
(3 POSTS OMITTED)

NOTES:

1. (1) A minimum length of MGS w-beam guardrail shall be installed on the approach and departure ends of the outermost CRT posts. This length may include the length of a guardrail end treatment, cable terminal anchor, or transition.
2. (2) A minimum of 62 ft 6 in. of tangent MGS w-beam guardrail shall be installed between the outermost CRT post and the beginning of any flared guardrail section.
3. An MGS w-beam guardrail run containing MGS Long-Span shall not be installed adjacent to curb.
4. See Standard Drawing E 601-MGSA-06 for one omitted post, span length 12 ft 6 in.



LAPPING PROCEDURE

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-08	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS109
Sheet: 96 of 155

Last Saved By: Jake Pinkard/23/23
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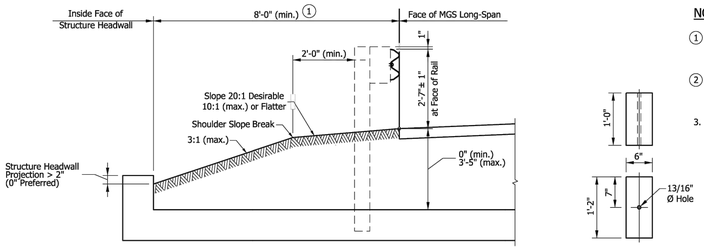
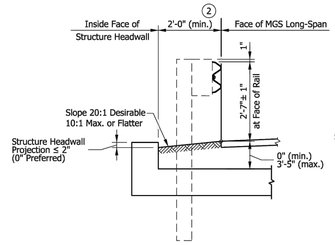


STRUCTURE HEADWALL PROJECTION > 2"

TIMBER BLOCKOUT WITH CRT POST



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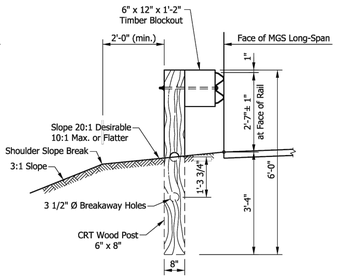


TYPICAL SECTION AT CRT POST

NOTES:

① Where the structure headwall projection is greater than 2 in. above the grade, the inside face of the headwall shall be a minimum of 8 ft from the face of MGS Long-Span.

② Where the structure headwall projection is 2 in. or less above the grade, the inside face of the headwall shall be a minimum of 2 ft from the face of MGS Long-Span.

3. MGS Long-Span shall not be installed adjacent to curb.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, LONG-SPAN

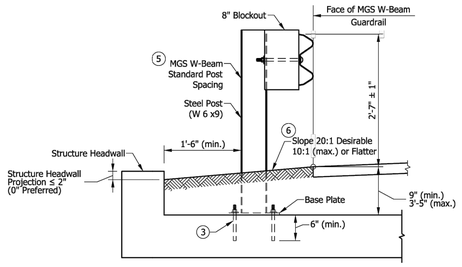
SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-09

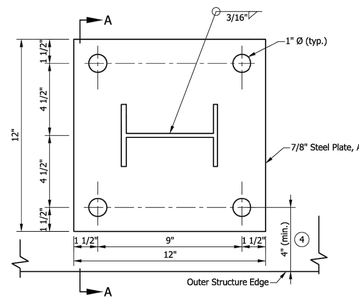
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

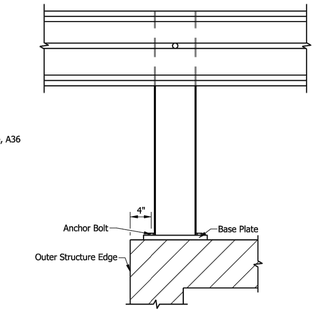
/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



TYPICAL SECTION



BASE PLATE AND POST



SECTION A-A

NOTES:

1. A top-mounted post shall not be installed on an arch-topped or true-arch structure.

2. Top-mounted post shall be spaced in accordance with standard MGS w-beam guardrail post spacing. See Standard Drawing E 601-MGSA-05.

③ The anchor bolt shall be 7/8 in. dia. rod, cut off to 8 1/2 in. length, with washer and nut, galvanized. The minimum embedment shall be 6 in. The anchor bolt shall be installed using Hilti RE500 Epoxy Anchoring System.

④ The center of the anchor bolt shall be installed a minimum of 4 in. from the outer structure edge.

⑤ The top of the post may be field cut to adjust the length. Where the post is field cut, drill holes at appropriate locations. All cut and hole surfaces shall receive a galvanized coating.

⑥ The post shall not be encased with asphalt, concrete, or riprap.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, STRUCTURE TOP-MOUNTED POST

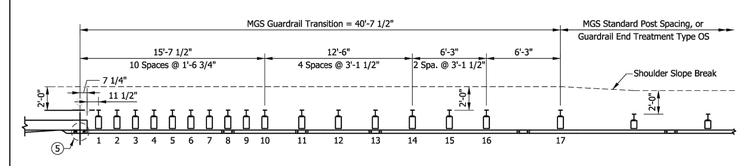
SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-10

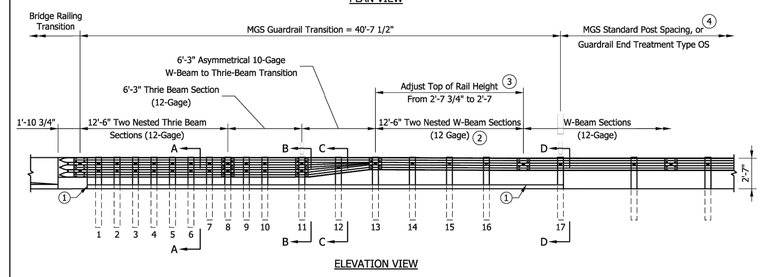
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



PLAN VIEW



ELEVATION VIEW

MGS GUARDRAIL TRANSITION

NOTES:

① Optional 4 in. sloping curb only. See Standard Drawing E 605-CCCG-01 or 605-CCIN-01. Where curb is present it shall extend the length of the transition to post 17. The face of curb shall not project beyond the face of w-beam or thrie-beam guardrail.

② Where curb is not present, a single w-beam section may be installed instead of a nested section. See Standard Drawing E 601-MGSA-12 for guardrail transition without curb.

③ Guardrail mounting height at bridge railing transition shall be 2 ft 7 3/4 in. Adjust guardrail mounting height down to 2 ft 7 in.

④ A minimum of 12 ft 6 in. of tangent MGS w-beam guardrail shall be installed beyond the MGS guardrail transition limits and the beginning of any flared guardrail section.

⑤ See Standard Drawing E 601-MGSA-13 for lap detail.

6. See Standard Drawing Series E 601-TBGC for Thrie-Beam Guardrail Components.

7. See Standard Drawing E 601-MGSA-14 through -15 for post and blockout details and section views.

8. See Standard Drawing E 706-CBRT-04 for bridge railing attachment details.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, GUARDRAIL TRANSITION WITH CURB

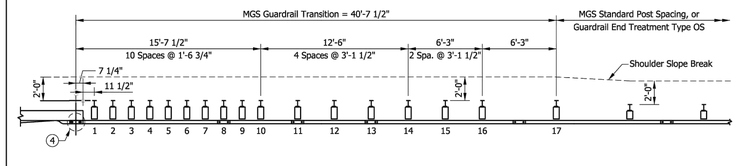
SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-11

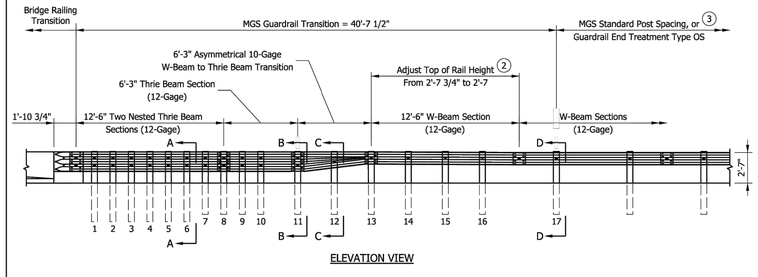
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



PLAN VIEW



ELEVATION VIEW

MGS GUARDRAIL TRANSITION

NOTES:

1. Where a curb is present, details on Standard Drawing E 601-MGSA-11 guardrail transition with curb shall apply.

② Guardrail mounting height at bridge railing transition is 2 ft 7 3/4 in. Adjust guardrail mounting height down to 2 ft 7 in.

③ A minimum of 12 ft 6 in. of tangent MGS w-beam guardrail shall be installed beyond the MGS guardrail transition limits and the beginning of any flared guardrail section.

④ See Standard Drawing E 601-MGSA-13 for lap detail.

5. See Standard Drawing Series E 601-TBGC for Thrie-Beam Guardrail Components.

6. See Standard Drawing E 601-MGSA-14 through -15 for post and blockout details and section views.

7. See Standard Drawing E 706-CBRT-04 for bridge railing attachment details.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, GUARDRAIL TRANSITION WITHOUT CURB

SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-12

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE

Certified by: David Hedlund

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Client Approval:
Reference Number: 1364
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Drawing Number: CS110
Sheet: 97 of 155

Last Saved By: Joe Printed:2/23/23
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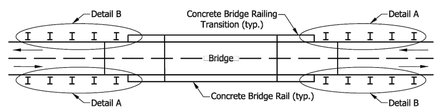
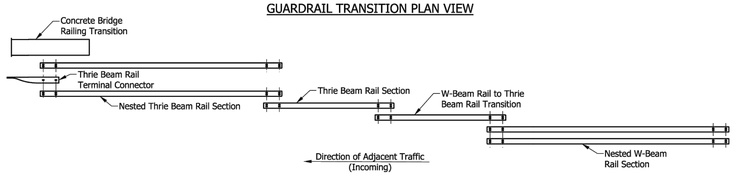
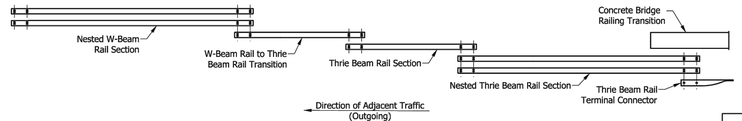


GUARDRAIL TRANSITION PLAN VIEW



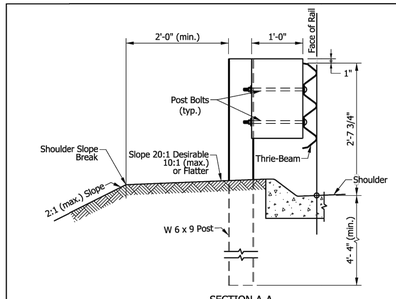
DETAIL A



DETAIL B

LAP DETAILS AT BRIDGE RAILING TRANSITION PLAN VIEW

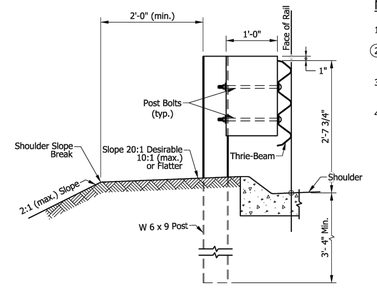
INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, GUARDRAIL TRANSITION SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-13	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE



SECTION A-A

POSTS 1-6

TOP VIEW

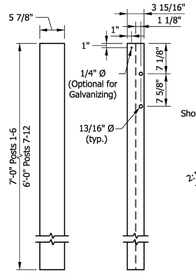


SECTION B-B

POSTS 7-11

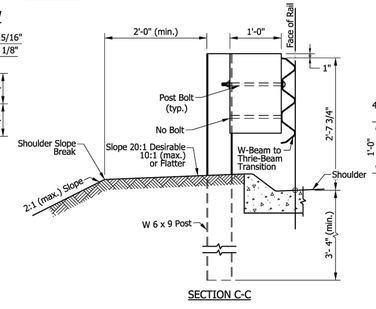
NOTES:

1. All holes drilled or punched to 13/16 in. dia.
2. Timber posts shall not be used within the limits of the MGS guardrail transition.
3. Hole pattern for post numbers 1 through 12 may be drilled in back flange.
4. See Standard Drawing E 601-MGSA-11 or -12 for post numbers and sections.



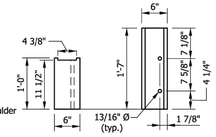
SIDE VIEW FRONT VIEW

W 6 x 9 POST DETAILS (2)



SECTION C-C

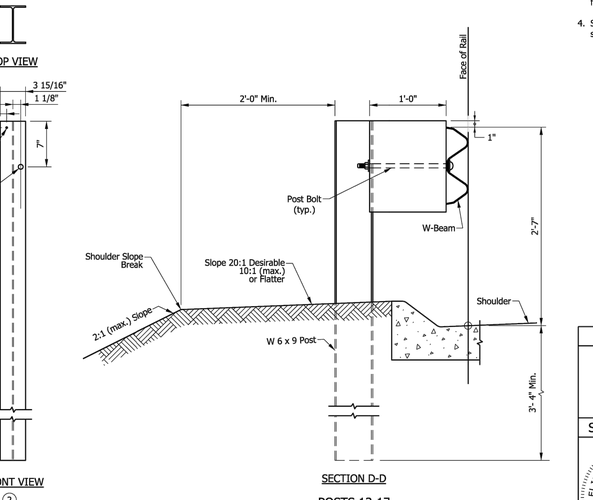
POST 12



TOP VIEW FRONT VIEW

BLOCKOUT POSTS 1-12 (TIMBER)

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, GUARDRAIL TRANSITION SEPTEMBER 2018	
STANDARD DRAWING NO. E601-MGSA-14	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE



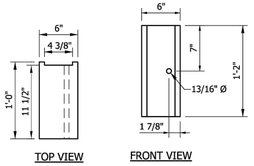
POSTS 13-17 (2)

SECTION D-D

POSTS 13-17

NOTES:

1. All holes drilled or punched to 13/16 in. dia.
2. Timber posts shall not be used within the limits of the MGS guardrail transition.
3. Hole pattern for post numbers 13 through 17 may be drilled in back flange.
4. See Standard Drawing E 601-MGSA-11 or -12 for post numbers and sections.



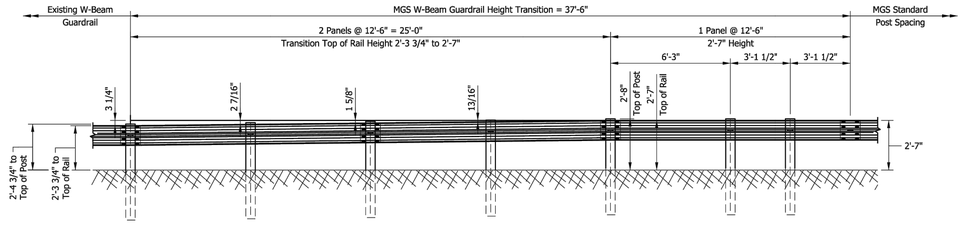
TOP VIEW FRONT VIEW

BLOCKOUT POSTS 13-17 (TIMBER)

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL SYSTEM ASSEMBLY, GUARDRAIL TRANSITION SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-15	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE

NOTES:

1. Where rub-rail is present on existing w-beam guardrail, the channel shall be cut and repositioned behind the flange.



ELEVATION VIEW

INDIANA DEPARTMENT OF TRANSPORTATION	
MIDWEST GUARDRAIL ASSEMBLY, HEIGHT TRANSITION SEPTEMBER 2018	
STANDARD DRAWING NO. E 601-MGSA-16	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/20/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE

Certified by: David Hedlund

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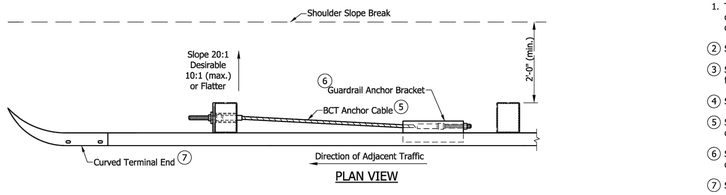
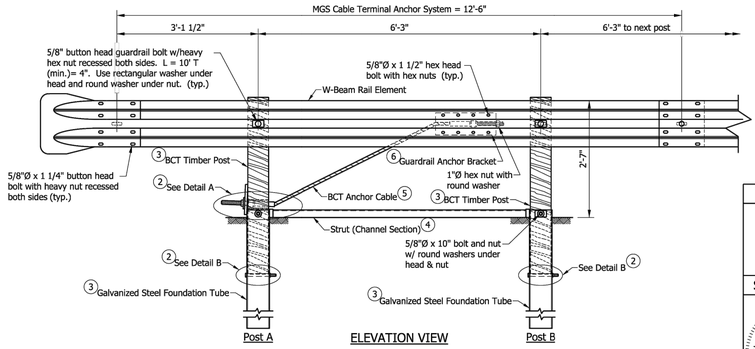


PLAN VIEW



ELEVATION VIEW

NOTES:

1. The MGS cable terminal anchor system shall only be used at the outgoing end of an MGS w-beam guardrail run not exposed to oncoming traffic.
2. See Standard Drawing E 601-MGSA-18 for Details A and B.
3. See Standard Drawing E 601-MGSA-19 for BCT timber post and steel foundation tube details.
4. See Standard Drawing E 601-MGSA-20 for strut details.
5. See Standard Drawing E 601-MGSA-21 for BCT anchor cable assembly details.
6. See Standard Drawing E 601-MGSA-22 for guardrail anchor bracket details.
7. See Standard Drawing E 601-WBGC-01 for curved terminal end details.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, CABLE TERMINAL ANCHOR SYSTEM

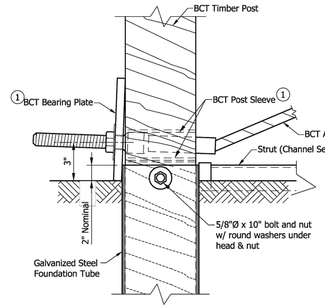
SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-17

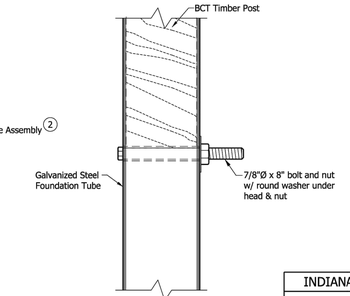
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



DETAIL A



DETAIL B

NOTES:

1 See Standard Drawing E 601-MGSA-21 for BCT post sleeve and BCT bearing plate details.

2 See Standard Drawing E 601-MGSA-21 for BCT anchor cable assembly details.

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, CABLE TERMINAL ANCHOR SYSTEM

SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-18

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
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/s/ John Leckie 04/25/18
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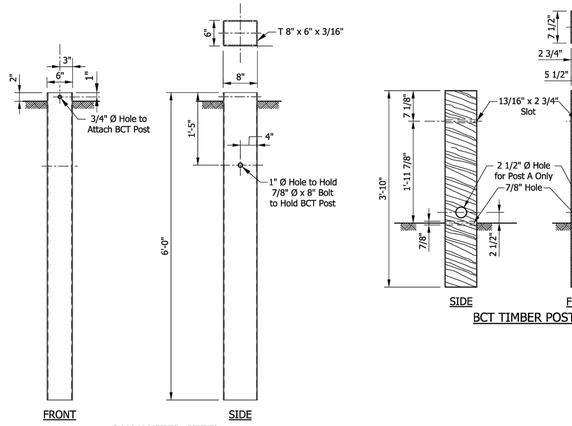

GALVANIZED STEEL FOUNDATION TUBE

BCT TIMBER POST

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY, CABLE TERMINAL ANCHOR SYSTEM

SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-19

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
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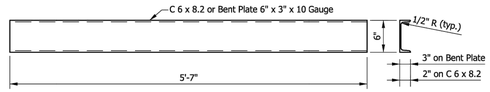
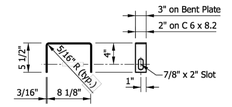
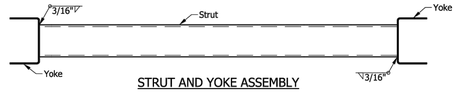
/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



STRUT DETAILS



YOKE DETAILS
(2 Required)



STRUT AND YOKE ASSEMBLY

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL ASSEMBLY, CABLE TERMINAL ANCHOR SYSTEM

SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-20

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE

Certified by: David Hedlund

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www.boeng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
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Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS112
Sheet: 99 of 155

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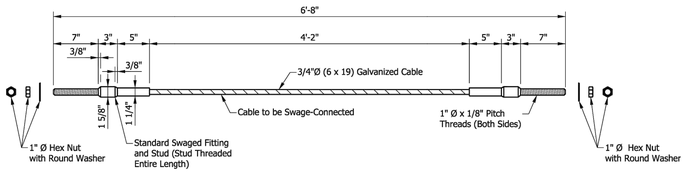
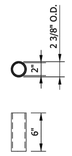
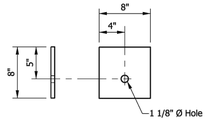


BCT ANCHOR CABLE ASSEMBLY



BCT POST SLEEVE



BCT BEARING PLATE

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY,
CABLE TERMINAL ANCHOR SYSTEM

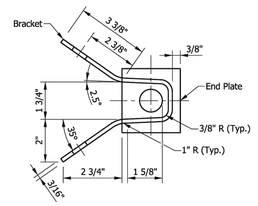
SEPTEMBER 2018

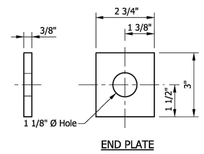
STANDARD DRAWING NO. E601-MGSA-21

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE





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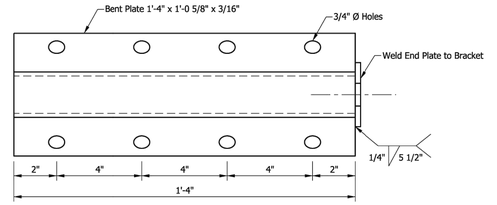


BRACKET

GUARDRAIL ANCHOR BRACKET

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM ASSEMBLY,
CABLE TERMINAL ANCHOR SYSTEM

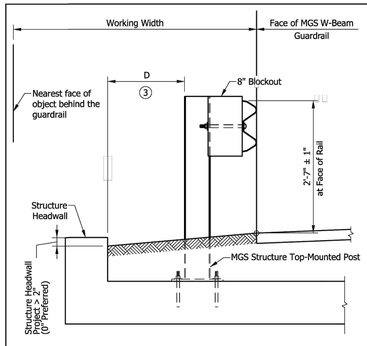
SEPTEMBER 2018

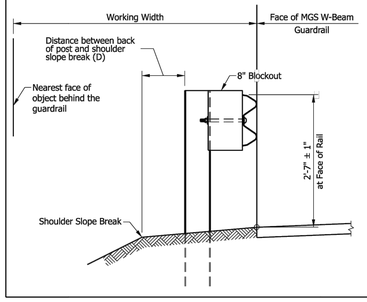
STANDARD DRAWING NO. E 601-MGSA-22

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE





NOTES:

1. Guardrail placement shall consider working width.
2. Working width assumes an 8-in. blockout. Where a deeper blockout is used, the working width shall be adjusted to include the additional depth.
3. Distance between the back of post and inside face of structure headwall.
4. See Standard Drawing E 601-MGSA-09 for the distance between front face of MSG Long-Span and inside face of structure headwall.

Guardrail Type	Post Spacing	D	Working Width
MGS W-Beam Standard	6'-3"	2 ft	5.0 ft
MGS W-Beam Standard w/Omitted Post	6'-3"	2 ft	5.0 ft
MGS W-Beam Standard	6'-3"	< 2 ft	6.5 ft
MGS W-Beam Half Post Spacing	3'-1 1/2"	2 ft	4.5 ft
MGS W-Beam Quarter Post Spacing	1'-6 3/4"	2 ft	4.0 ft
MGS Long-Span	Varies	(4)	8.0 ft
MGS Structure Top-Mount Post	6'-3"	1.5 ft (3)	4.2 ft

INDIANA DEPARTMENT OF TRANSPORTATION

MIDWEST GUARDRAIL SYSTEM
ASSEMBLY, WORKING WIDTH

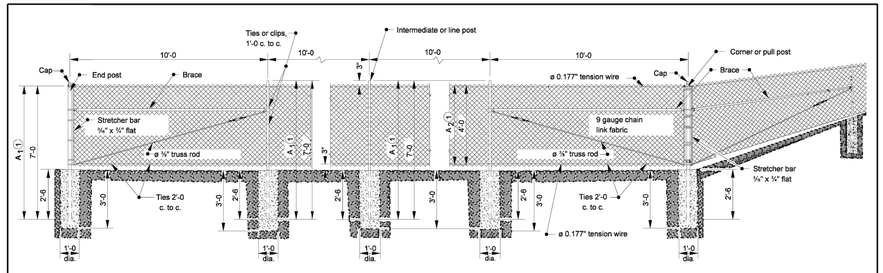
SEPTEMBER 2018

STANDARD DRAWING NO. E 601-MGSA-23

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



RIGHT OF WAY FENCE

Steel Chain Link Fence

GENERAL NOTES

(1) For each additional 1'-0 in height increase dimensions A_1 and A_2 by 1'-0.

2. Dimensions as shown are for 4'-0 fence.

3. For chain link type stream crossing or depression detail see Standard Drawing E 603-CLTF-02 for dimensions and installation.

TUBULAR POST CHART

HEIGHT OF FENCE	GROUP 1				GROUP 2			
	< 6'		≥ 6'		< 6'		≥ 6'	
	NOM. DIA.	WEIGHT	NOM. DIA.	WEIGHT	NOM. DIA.	WEIGHT	NOM. DIA.	WEIGHT
	inches	lb/ft	inches	lb/ft	inches	lb/ft	inches	lb/ft
END, CORNER, AND PULL POSTS	2	3.65	2½"	5.79	2	3.12	2½"	4.64
LINE POSTS	1¼"	2.27	2	3.65	1¼"	1.84	2	3.12
BRACE	1¼"	2.27	1¼"	2.27	1¼"	1.84	1¼"	1.84

INDIANA DEPARTMENT OF TRANSPORTATION

CHAIN LINK TYPE FENCE

MARCH 2006

STANDARD DRAWING NO. E 603-CLTF-01

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

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

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

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
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Drawing Scale: NONE
DAPW Approval:
Client Approval:
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Drawing Number: CS113
Sheet: 100 of 155

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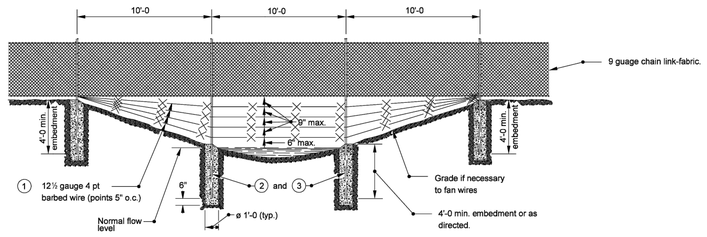
GENERAL NOTES

1. This installation to be made only where directed. Barbed wire will not be required at points where such installation would cause the collecting of drift in the channel.
2. Line posts of 9'-6 or longer for crossing shall be 2" nominal tubing or 3 x 3 x 1/4 angles and shall be set in concrete footings.
3. Extra length posts to be used as directed.



SECTION AT STREAM CROSSING OR DEPRESSION

INDIANA DEPARTMENT OF TRANSPORTATION

CHAIN LINK TYPE FENCE

SEPTEMBER 2004

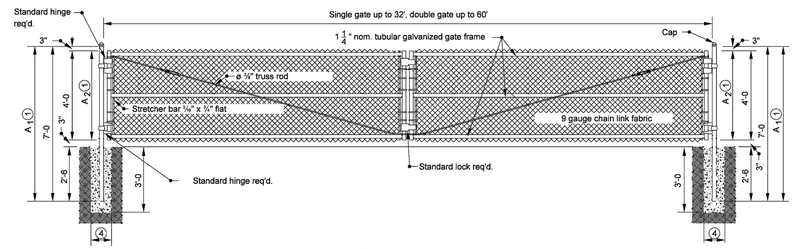
STANDARD DRAWING NO. E 603-CLTF-02

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

DESIGN STANDARDS ENGINEER

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

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



CHAIN LINK GATE

GENERAL NOTES

1. For each additional 1'-0 in height increase dimension A_1 and A_2 by 1'-0.
2. See Standard Drawing E 603-CLTF-01 for the tubular post chart.
3. Dimensions as shown are for 4'-0 fence.
4. Diameter equals 10" plus the outside diameter of the post.

INDIANA DEPARTMENT OF TRANSPORTATION

CHAIN LINK TYPE GATE

SEPTEMBER 2004

STANDARD DRAWING NO. E 603-CLTF-03

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

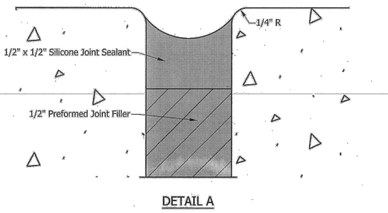
DESIGN STANDARDS ENGINEER

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

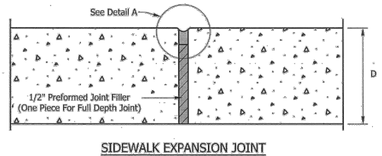
/s/ Richard K. Sautter 9-01-04
CHIEF HIGHWAY ENGINEER DATE

NOTES:

1. Dimension D is equal to the full depth of the sidewalk or curb ramp.



DETAIL A



SIDEWALK EXPANSION JOINT

INDIANA DEPARTMENT OF TRANSPORTATION

SIDEWALK EXPANSION JOINT

SEPTEMBER 2015

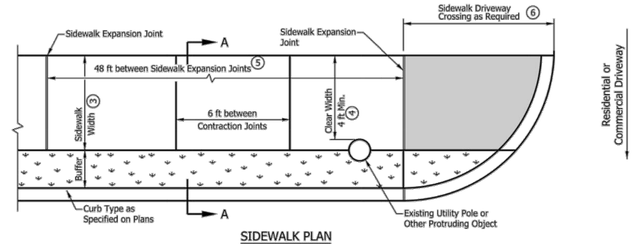
STANDARD DRAWING NO. E 604-CCSJ-01

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

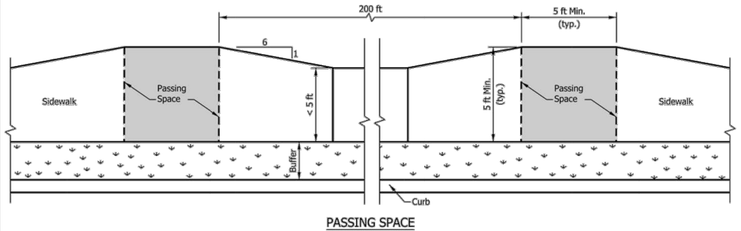
DESIGN STANDARDS ENGINEER

/s/ Elizabeth W. Phillips 12/02/14
DESIGN STANDARDS ENGINEER DATE

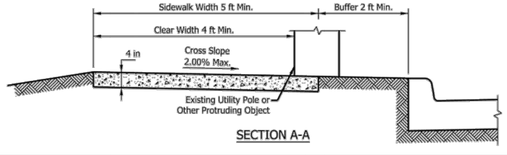
/s/ Mark A. Miller 12/02/14
CHIEF ENGINEER DATE



SIDEWALK PLAN



PASSING SPACE



SECTION A-A

NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. The grade of the sidewalk is measured in the direction of pedestrian travel. The grade of the sidewalk shall not exceed the grade of the adjacent roadway. The cross slope is measured perpendicular to the direction of pedestrian travel. The cross slope of the sidewalk shall not exceed 2.00%.
3. Where there is a buffer between the sidewalk and curb, the preferred minimum sidewalk clear width is 5 ft.
4. A 4-ft minimum clear width shall be provided adjacent to street furniture, mailbox, utility pole, or other protruding object. Where the sidewalk clear width is less than 5 ft, a passing space shall be provided at 200 ft intervals. The passing space minimum clear dimension shall be 5 ft x 5 ft.
5. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.
6. See Standard Drawing E 604-SDWK-03 for sidewalk driveway crossing configurations.

INDIANA DEPARTMENT OF TRANSPORTATION

SIDEWALK DETAILS
SIDEWALK WITH BUFFER

SEPTEMBER 2016

STANDARD DRAWING NO. E 604-SDWK-01

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/16/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/18/16
CHIEF ENGINEER DATE

Last Saved By: Joe Pinkard 2/23/23
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Certified by: David Hedlund

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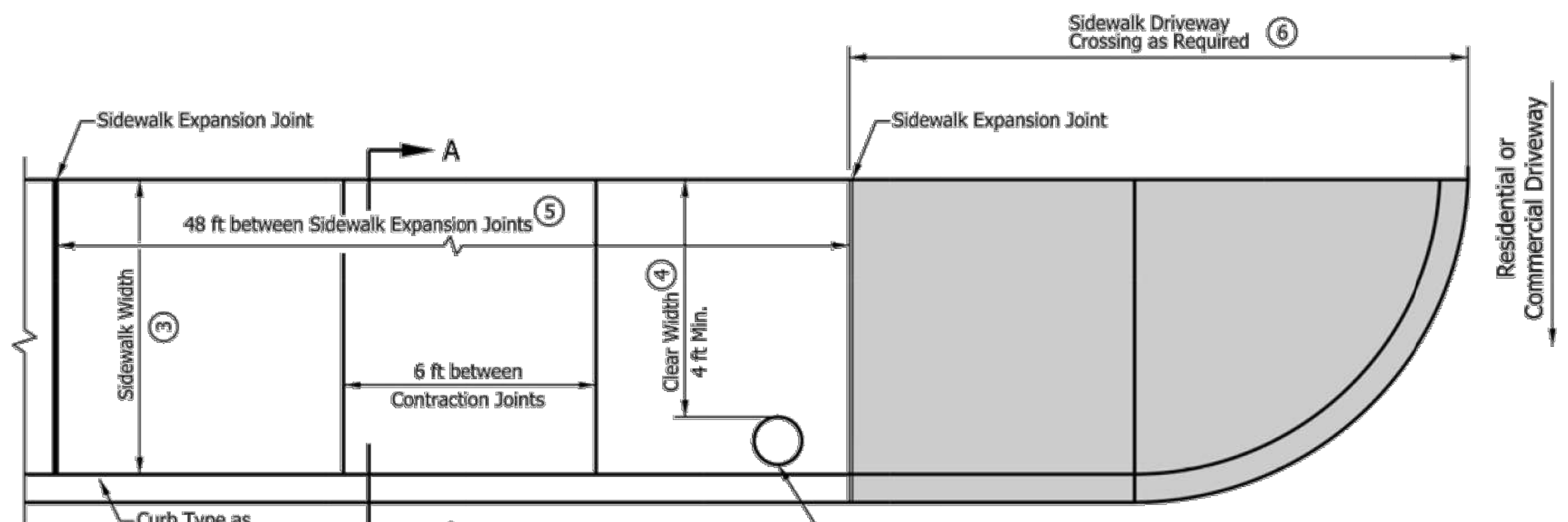
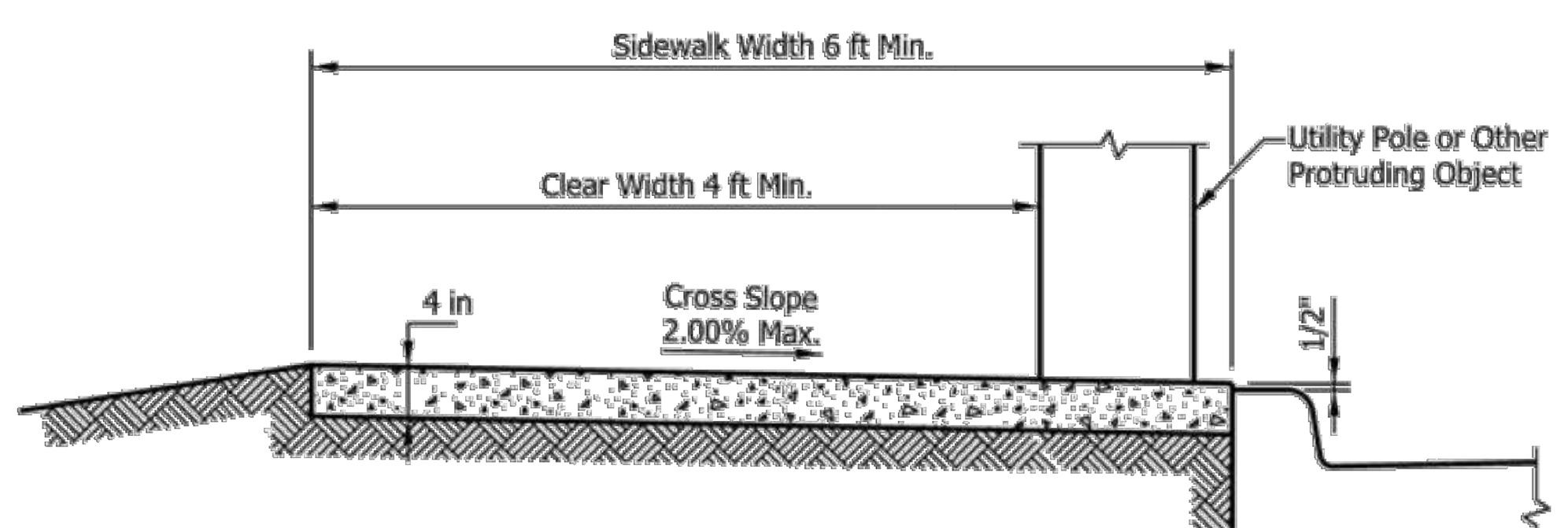


SIDEWALK PLAN



SECTION A-A

NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. The grade of the sidewalk is measured in the direction of pedestrian travel. The grade of the sidewalk shall not exceed the grade of the adjacent roadway. The cross slope is measured perpendicular to the direction of pedestrian travel. The cross slope of the sidewalk shall not exceed 2.00%.

③ Where there is no buffer between the sidewalk and curb, the preferred minimum sidewalk width is 6 ft.

④ A 4-ft minimum clear width shall be provided adjacent to street furniture, mailbox, utility pole, or other protruding object. Where the sidewalk clear width is less than 5 ft, a passing space shall be provided at 200 ft intervals. See Standard Drawing E 604-SDWK-01 for sidewalk passing space details.

⑤ See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

⑥ See Standard Drawing E 604-SDWK-03 for sidewalk driveway crossing configurations.

INDIANA DEPARTMENT OF TRANSPORTATION

SIDEWALK DETAILS
SIDEWALK ADJACENT TO CURB

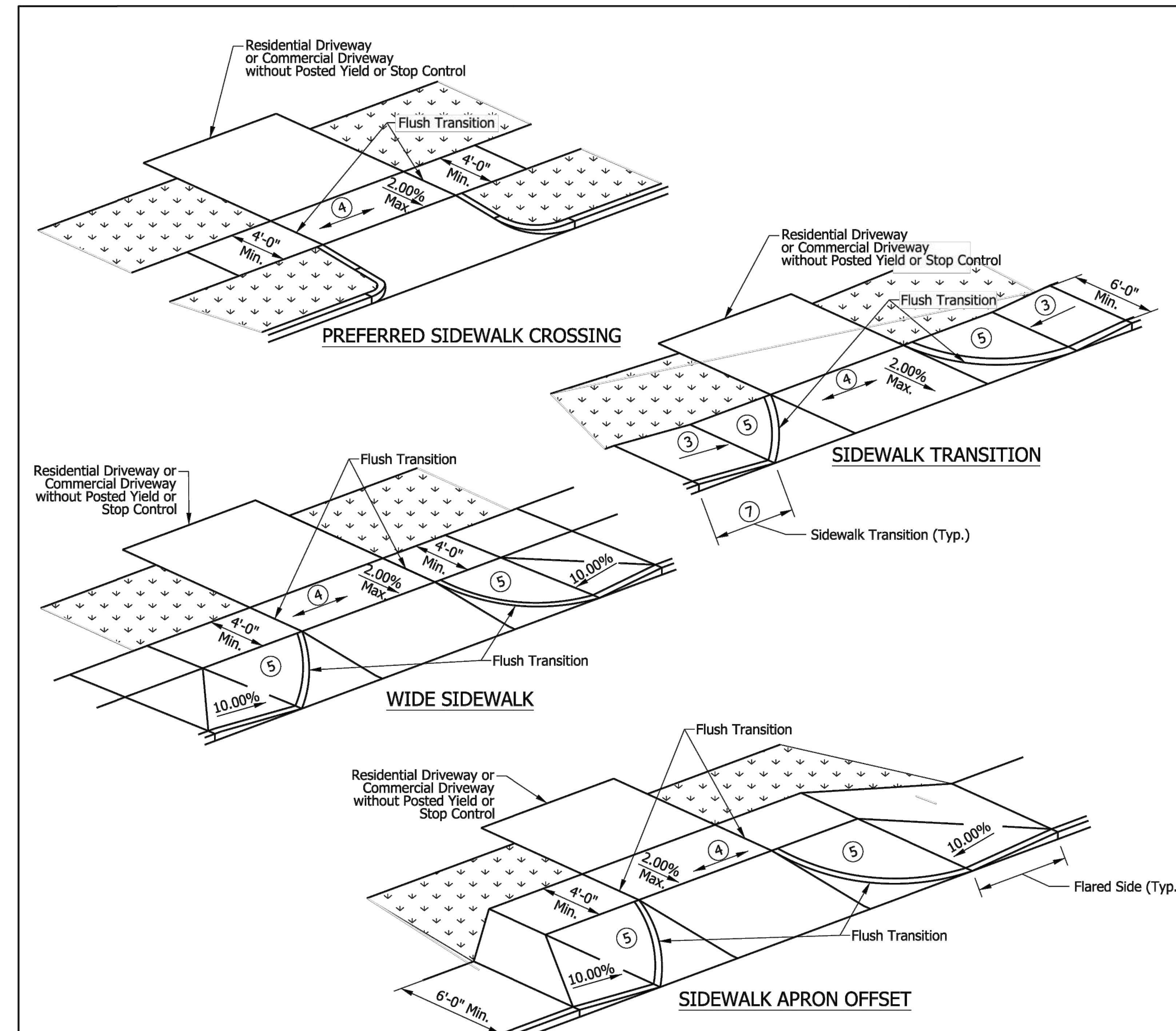
SEPTEMBER 2016

STANDARD DRAWING NO. E 604-SDWK-02

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/16/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/18/16
CHIEF ENGINEER DATE



NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. A sidewalk driveway crossing shall only be used on a sidewalk at a residential driveway or a commercial driveway without posted yield or stop control. A curb ramp shall be used at all other crossings. See Standard Drawing Series E 604-SWCR for curb ramp details.

③ Where a sidewalk transition is used to lower or raise the sidewalk to connect with a residential driveway or commercial driveway without posted yield or stop control, the running slope of the transition shall be 8.33% maximum.

④ The grade of the sidewalk across the driveway shall not exceed the grade of the adjacent roadway.

⑤ The area between the driveway and a flared side or sidewalk transition shall match the driveway profile and transverse slope.

6. A turning space is not required at the top of a sidewalk transition.

⑦ Objects such as a utility cover, vault frame, and grating shall be placed outside a sidewalk transition.

8. A detectable warning surface shall not be placed at the crossings of a residential driveway. A detectable warning surface may be placed at the crossing of a commercial driveway without yield or stop control.
9. See Standard Drawing E 604-SDWK-01 and -02 for Sidewalk Details.
10. See Standard Drawing Series E 610-DRIV for drives.

INDIANA DEPARTMENT OF TRANSPORTATION

SIDEWALK DRIVEWAY CROSSING

SEPTEMBER 2016

STANDARD DRAWING NO. E 604-SDWK-03

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

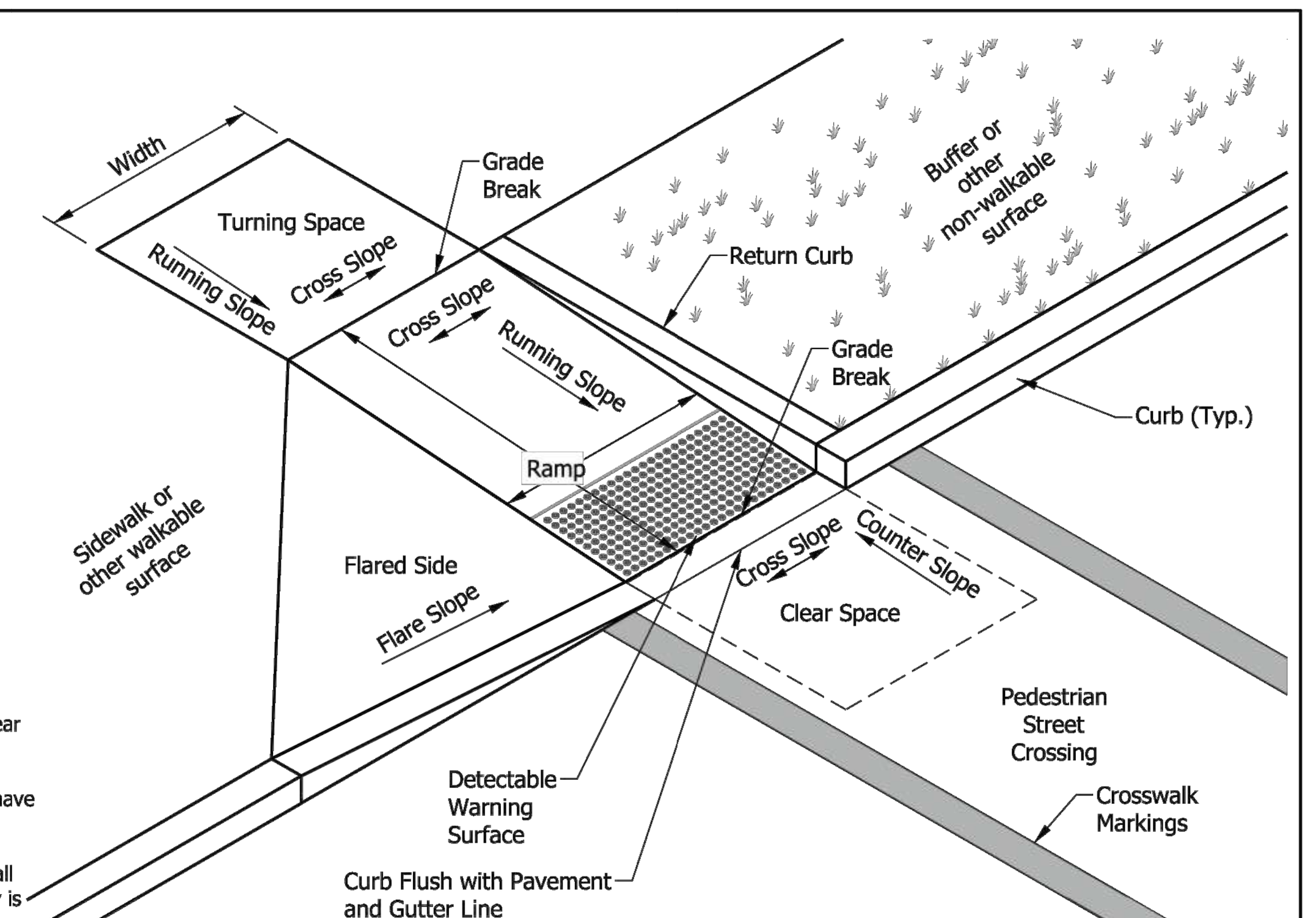
/s/ Elizabeth W. Phillips 03/16/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/18/16
CHIEF ENGINEER DATE

INDEX	
SHEET NO.	SUBJECT
1	Curb Ramp Drawing Index and General Notes
2-3	Perpendicular Curb Ramp Typical Placement
4	Perpendicular Curb Ramp Component Details
5	One-Way-Directional Perpendicular Curb Ramp Typical Placement
6	One-Way-Directional Perpendicular Curb Ramp Component Details
7	Parallel Curb Ramps Typical Placement
8	Parallel Curb Ramp Component Details
9	Blended Transition Curb Ramp, Depressed Curb Ramp and Diagonal Curb Ramp Typical Placement
10	Blended Transition Curb Ramp Component Details
11	Median Cut-Through and Median Perpendicular Curb Ramp Typical Placement
12-13	Detectable Warning Surface Placement and Configuration
14	Detectable Warning Surface Details

GENERAL NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. Ramp or Blended Transition. A ramp or blended transition shall be used to lower or raise the sidewalk to connect with the street or highway.
3. Turning Space. A turning space shall be provided at the top of a perpendicular ramp, bottom of a parallel ramp, or where the pedestrian travel requires a change in direction. A common turning space may be shared by adjacent ramps. The turning space shall have a minimum clear dimension of 4 ft x 4 ft. Where the turning space is constrained at the back of the sidewalk by a curb, retaining wall, building, or feature over 2 inches in height, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.
4. Flared Side. A flared side shall be used adjacent to a walkable surface. A flared side may be used adjacent to a non-walkable surface. A flared side shall have a maximum slope of 10.00% measured parallel to the back of the curb.
5. Return Curb. A return curb is placed perpendicular to the roadway curb. A return curb may be used adjacent to a non-walkable surface. A return curb shall not be used adjacent to a walkable surface. The return curb may be omitted where the non-walkable surface is flared and the curb adjacent the roadway is tapered to meet the flush curb at the bottom of the ramp.
6. Clear Space. A clear space shall be provided beyond the bottom grade break of a curb ramp wholly contained within the crosswalk and wholly outside the parallel vehicular travel path. The clear space shall have a minimum clear dimension of 4 ft x 4 ft.
7. Detectable Warning Surface. A detectable warning surface shall consist of truncated domes and be placed at each street, highway, or railroad crossing. The detectable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and be placed the entire width of a ramp, blended transition, or turning space.
8. Running Slope. The running slope of a ramp, blended transition, or turning space shall be measured parallel to the direction of pedestrian travel.
   a. A running slope of 2.00% or less is considered level.
   b. A ramp shall have a maximum running slope of 8.33% but shall not require a ramp length to exceed 15 ft.
   c. A blended transition shall have a maximum running slope of 5.00%.
   d. A turning space shall have a maximum running slope of 2.00%.
9. Width. Unless otherwise noted, minimum width of a ramp, blended transition, or turning space, excluding flared sides or return curb, shall be 4 ft.
10. Grade Break. A grade break at the top and bottom of a ramp, blended transition, or turning space shall be perpendicular to the running slope. Grade breaks shall not be within the ramp, blended transition, turning space, or detectable warning surface. Grade breaks shall be flush. Vertical discontinuities shall not be greater than 1/2 in. Where a discontinuity is greater than 1/4 in. the surface shall be beveled with a slope not steeper than 1V:2H.
11. Cross Slope Exceptions. The cross slope of a ramp, blended transition, or turning space shall be measured perpendicular to the direction of pedestrian travel.
   a. The maximum cross slope at a pedestrian street crossing without posted yield or stop control shall be 5.00%.
   b. The maximum cross slope at a pedestrian street crossing with posted yield or stop control shall be 2.00%.
   c. The maximum cross slope at a midblock crossing shall be the established grade of the adjacent roadway.
12. Counter Slope. A counter slope is the cross slope of the gutter or street adjacent the running slope of the ramp, blended transition, or turning space. See Standard Drawing E 604-SWCR-14 for counter slope details.
13. Objects such as a utility cover, vault frame, and grating shall be placed outside the curb ramp.
14. Curb ramps shall be placed within the marked crosswalk area.
15. Drainage inlets should be located uphill from a curb ramp to prevent ponding in the path of pedestrian travel.



TYPICAL CURB RAMP COMPONENTS

INDIANA DEPARTMENT OF TRANSPORTATION

CURB RAMP DRAWING INDEX
AND GENERAL NOTES

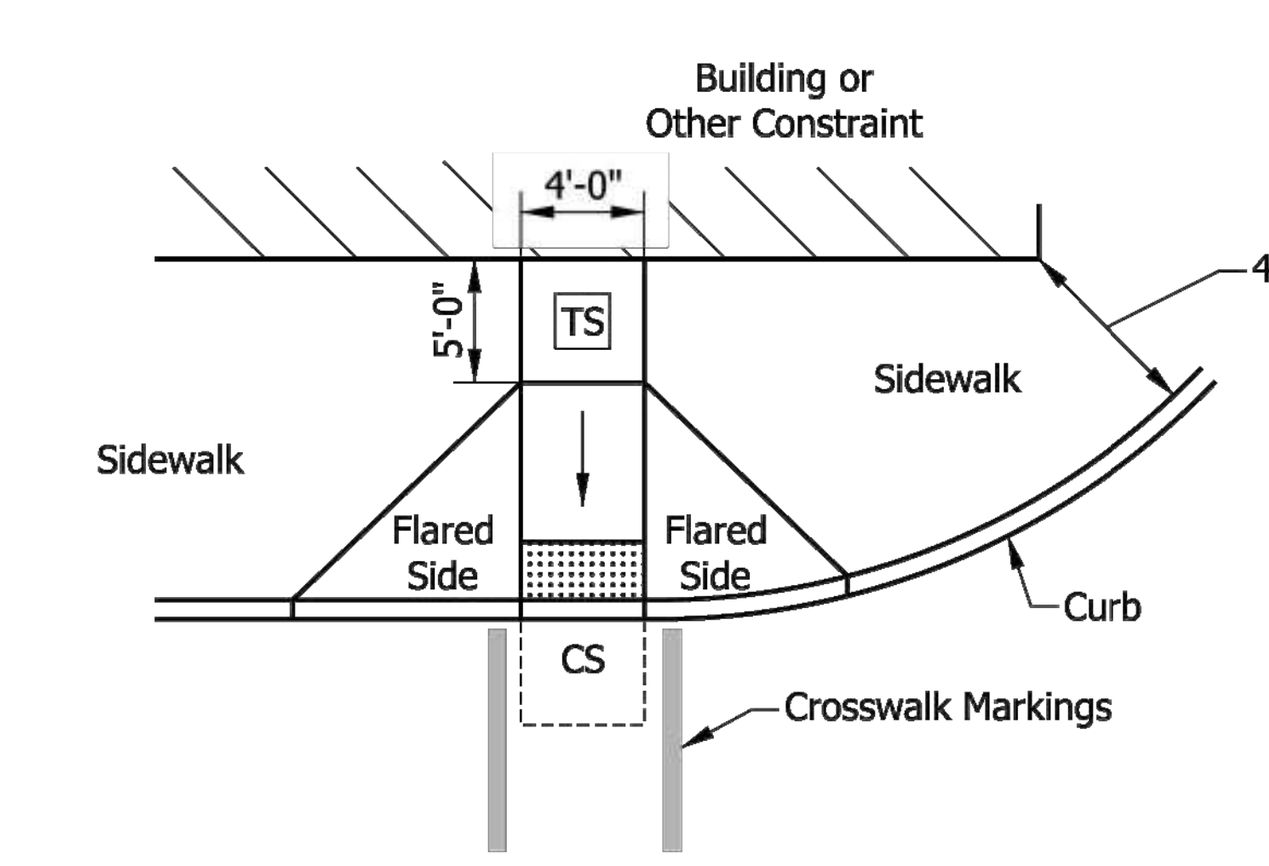
SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-01

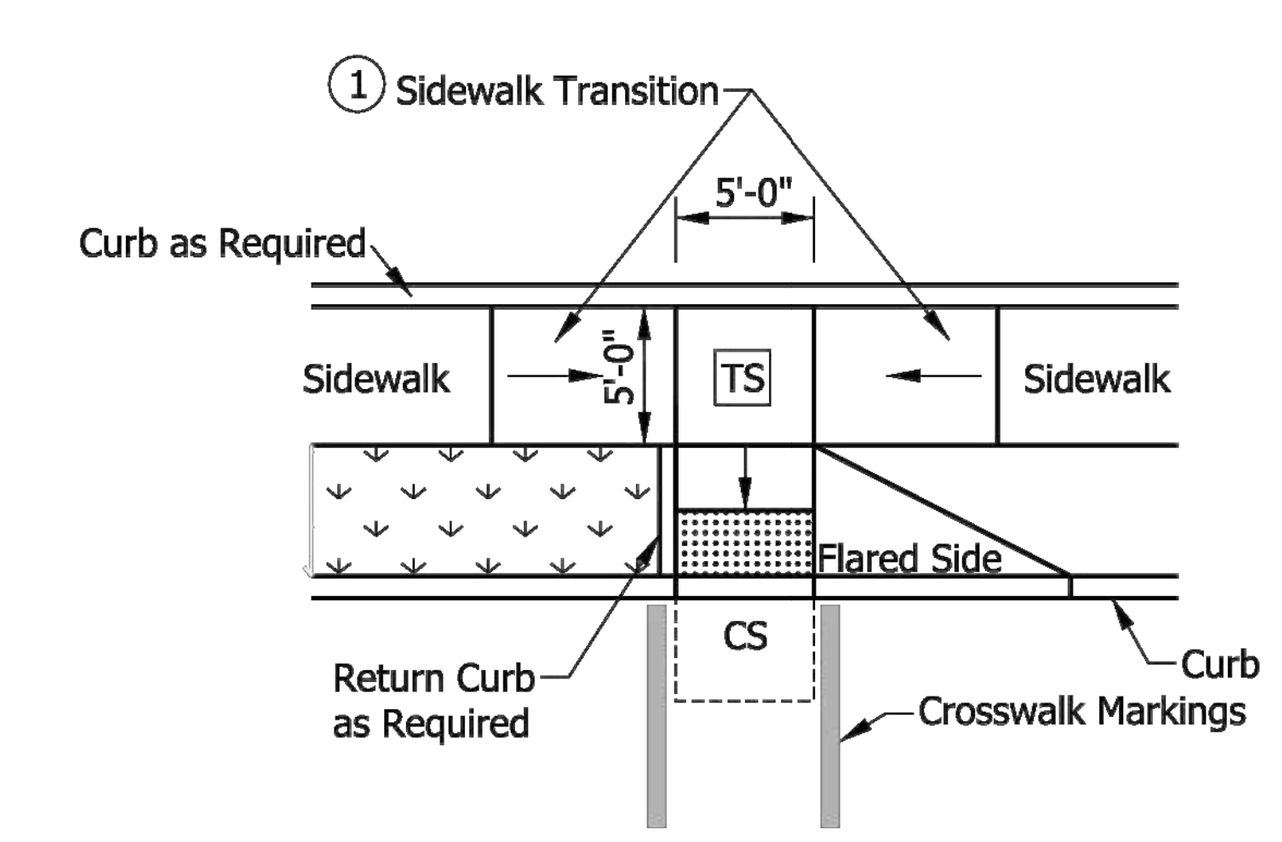
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/20/18
DESIGN STANDARDS ENGINEER DATE

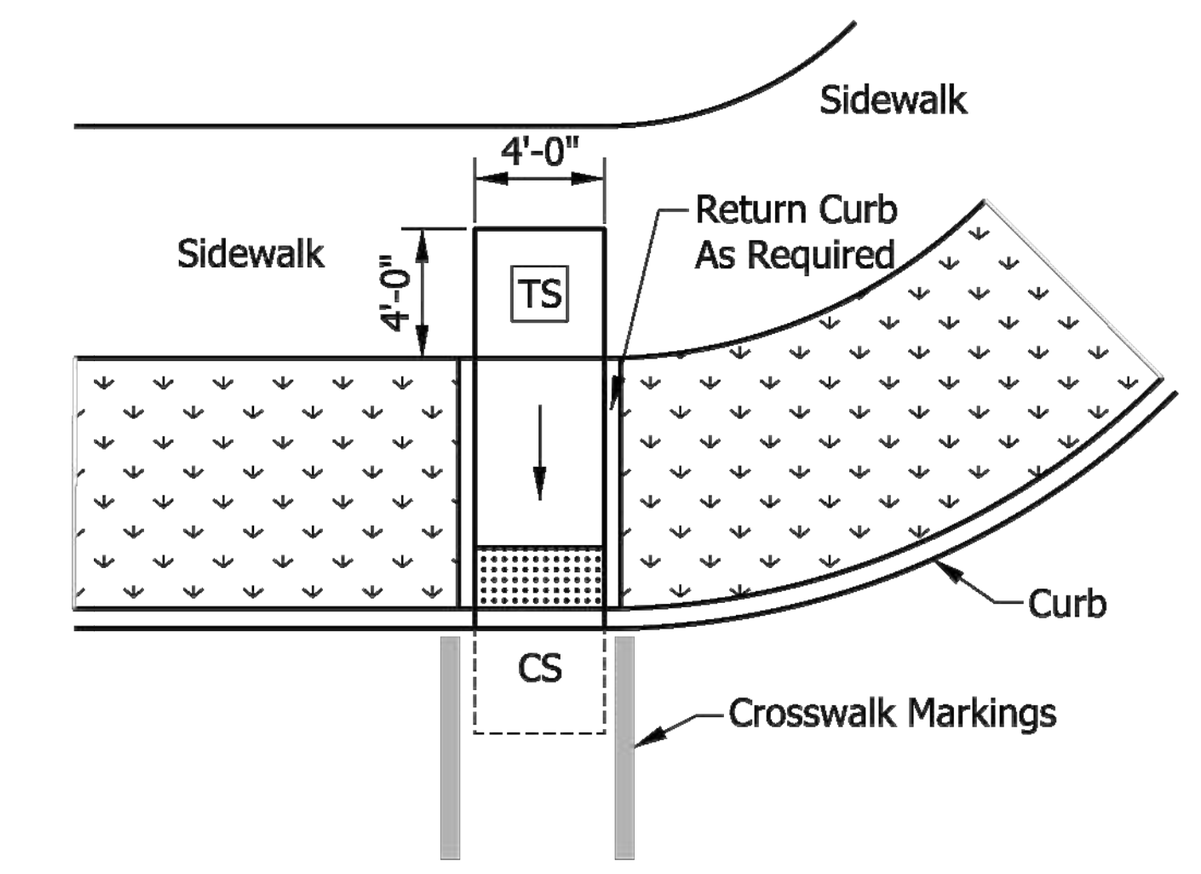
/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



PERPENDICULAR CURB RAMP
ADJACENT WALKABLE SURFACE



TIERED PERPENDICULAR CURB RAMP



PERPENDICULAR CURB RAMP
ADJACENT NON-WALKABLE SURFACE

NOTES:

① Where insufficient width between the curb and back of sidewalk prevent a standard perpendicular curb ramp running slope, a sidewalk transition may be used to lower the sidewalk grade. The sidewalk transition running slope shall not exceed 8.33%. See Standard Drawing Series E 604-SDWK for sidewalk details.

2. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- TS Turning Space
- CS Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION

PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT

SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-02

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1	
Requisition Number: -	
Account Number: -	
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number: 1364	
Building Reference: -	
Drawing Number: CS115	
Sheet: 102 of 155	

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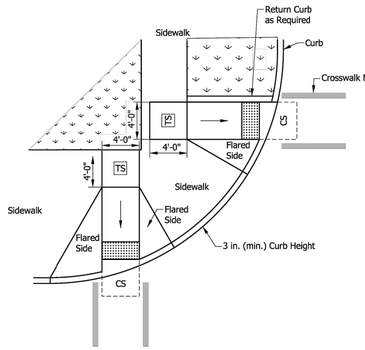
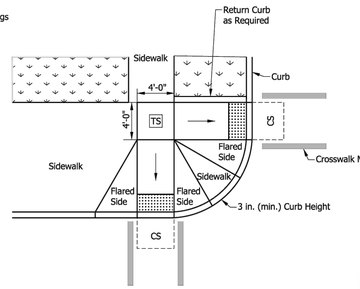


PAIRED PERPENDICULAR
CURB RAMPS AT LARGE RADIUS



PAIRED PERPENDICULAR
CURB RAMPS AT SMALL RADIUS

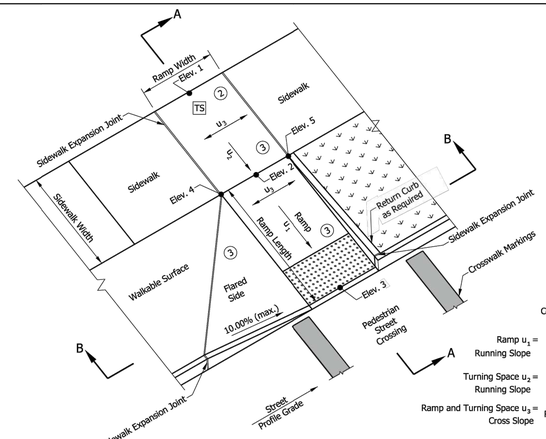
NOTE:

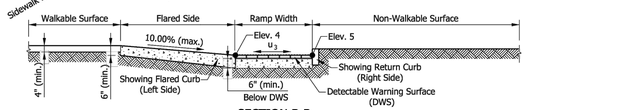
1. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

LEGEND:

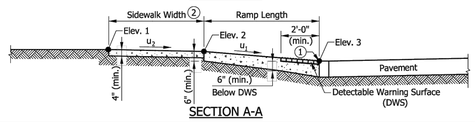
- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- TS — Turning Space
- CS — Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION	
PAIRED PERPENDICULAR CURB RAMPS TYPICAL PLACEMENT SEPTEMBER 2016	
STANDARD DRAWING NO. E 604-SWCR-03	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/15/16 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 03/18/16 CHIEF ENGINEER DATE





SECTION B-B



SECTION A-A

Component Slope Equations:

Ramp u_1 = Running Slope $\frac{|\text{Elev. 2 - Elev. 3}|}{\text{Ramp Length}} \le 8.33\%$

Turning Space u_2 = Running Slope $\frac{|\text{Elev. 1 - Elev. 2}|}{\text{Sidewalk Width}} \le 2.00\%$

Ramp and Turning Space u_3 = Cross Slope $\frac{|\text{Elev. 4 - Elev. 5}|}{\text{Ramp or Turning Space Width}} \le 2.00\%$ (4)

NOTES:

1. The bottom edge of the ramp and top of curb shall be flush with the edge of adjacent pavement and gutter line.
2. The turning space shall have a minimum clear dimension of 4 ft x 4 ft. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope. Where a tiered perpendicular curb ramp is used, a constrained turning space shall have a minimum clear dimension of 5 ft x 5 ft.
3. Curb ramp surface shall be coarse broomed transverse to the running slope.
4. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
5. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
6. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- TS — Turning Space

INDIANA DEPARTMENT OF TRANSPORTATION	
PERPENDICULAR CURB RAMP COMPONENT DETAILS SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-04	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/29/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE

ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP ADJACENT CURB

ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP WITH BUFFER

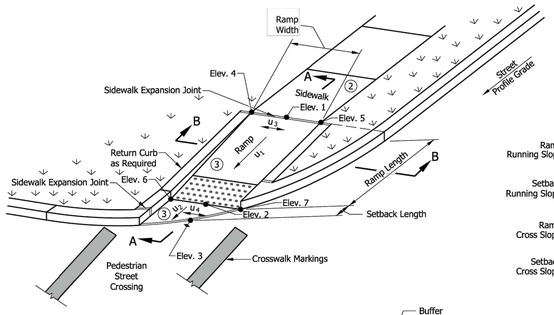
NOTES:

1. A turning space is not required at the top of the ramp for a one-way directional perpendicular curb ramp.
2. Where there is no buffer between the sidewalk and curb the preferred minimum sidewalk width is 6 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SDWK for sidewalk details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface

INDIANA DEPARTMENT OF TRANSPORTATION	
ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP TYPICAL PLACEMENT SEPTEMBER 2016	
STANDARD DRAWING NO. E 604-SWCR-05	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/15/16 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 03/18/16 CHIEF ENGINEER DATE



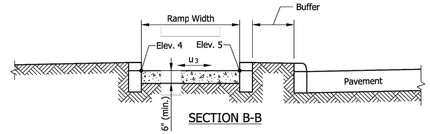
Component Slope Equations:

Ramp u_1 = Running Slope $\frac{|\text{Elev. 1 - Elev. 2}|}{\text{Ramp Length}} \le 8.33\%$

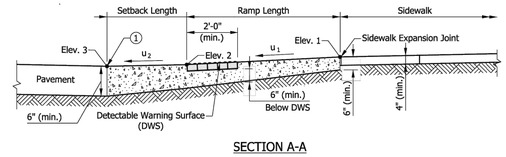
Setback u_2 = Running Slope $\frac{|\text{Elev. 2 - Elev. 3}|}{\text{Setback Length}} \le$ Profile Grade of Adjacent Street

Ramp u_3 = Cross Slope $\frac{|\text{Elev. 4 - Elev. 5}|}{\text{Ramp Width}} \le 2.00\%$ (4)

Setback u_4 = Cross Slope $\frac{|\text{Elev. 6 - Elev. 7}|}{\text{Ramp Width}} \le 2.00\%$ (4)



SECTION B-B



SECTION A-A

NOTES:

1. The bottom edge of the ramp or setback and top of curb shall be flush with the edge of adjacent pavement and gutter line.
2. A turning space is not required at the top of the ramp for a one-way directional perpendicular curb ramp.
3. Curb ramp surface shall be coarse broomed transverse to the running slope.
4. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
5. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
6. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface

INDIANA DEPARTMENT OF TRANSPORTATION	
ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP COMPONENT DETAILS SEPTEMBER 2018	
STANDARD DRAWING NO. E 604-SWCR-06	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/29/18 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/25/18 CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
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Sheet: 103 of 155

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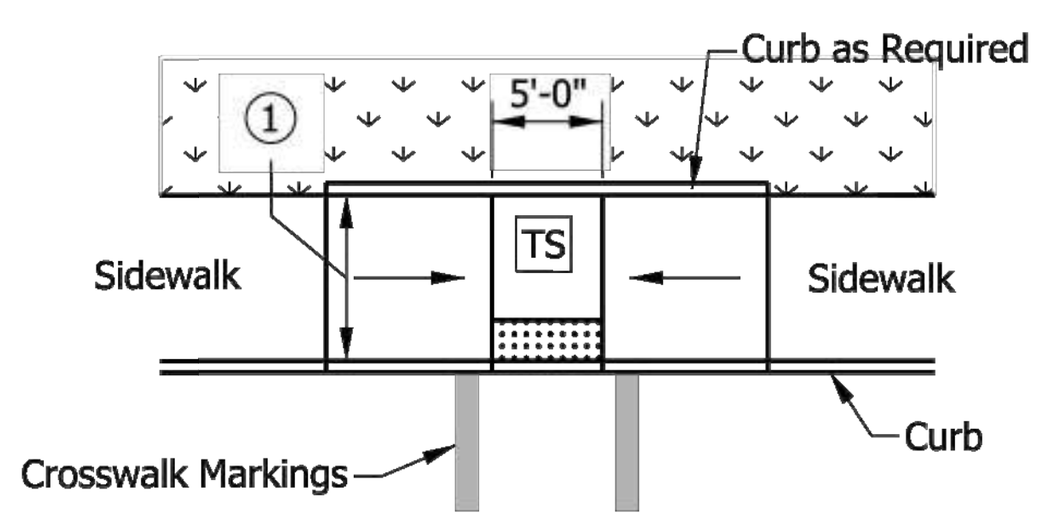
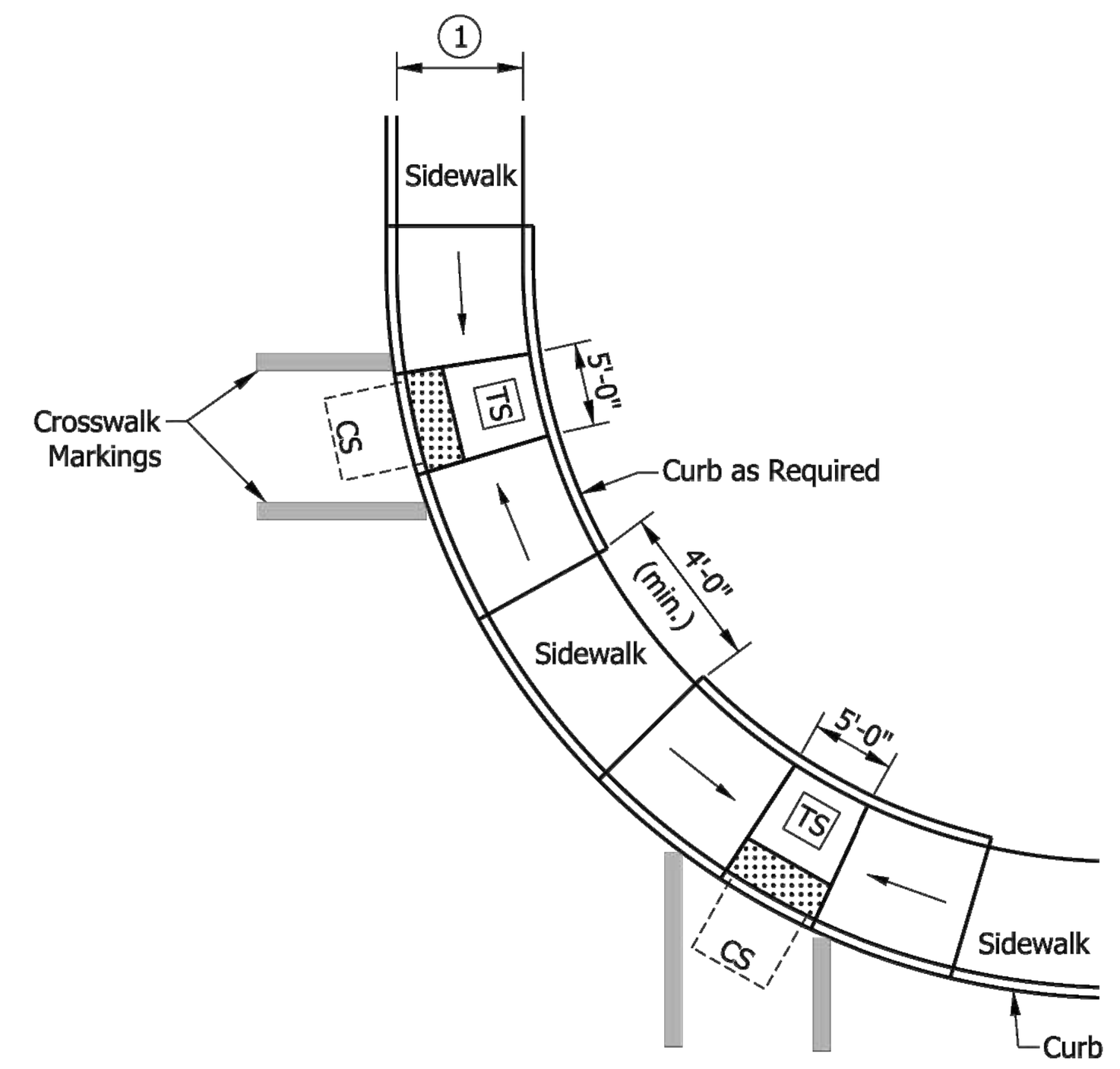


MIDBLOCK CROSSING CURB RAMP



PAIRED PARALLEL CURB RAMPS ALONG LARGE RADIUS

NOTES:

1. Where there is no buffer between the sidewalk and curb the preferred minimum sidewalk width is 6 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SDWK for sidewalk details.
2. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- TS Turning Space
- CS Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION

PAIRED PARALLEL CURB RAMPS AND MIDBLOCK CROSSING CURB RAMP TYPICAL PLACEMENT

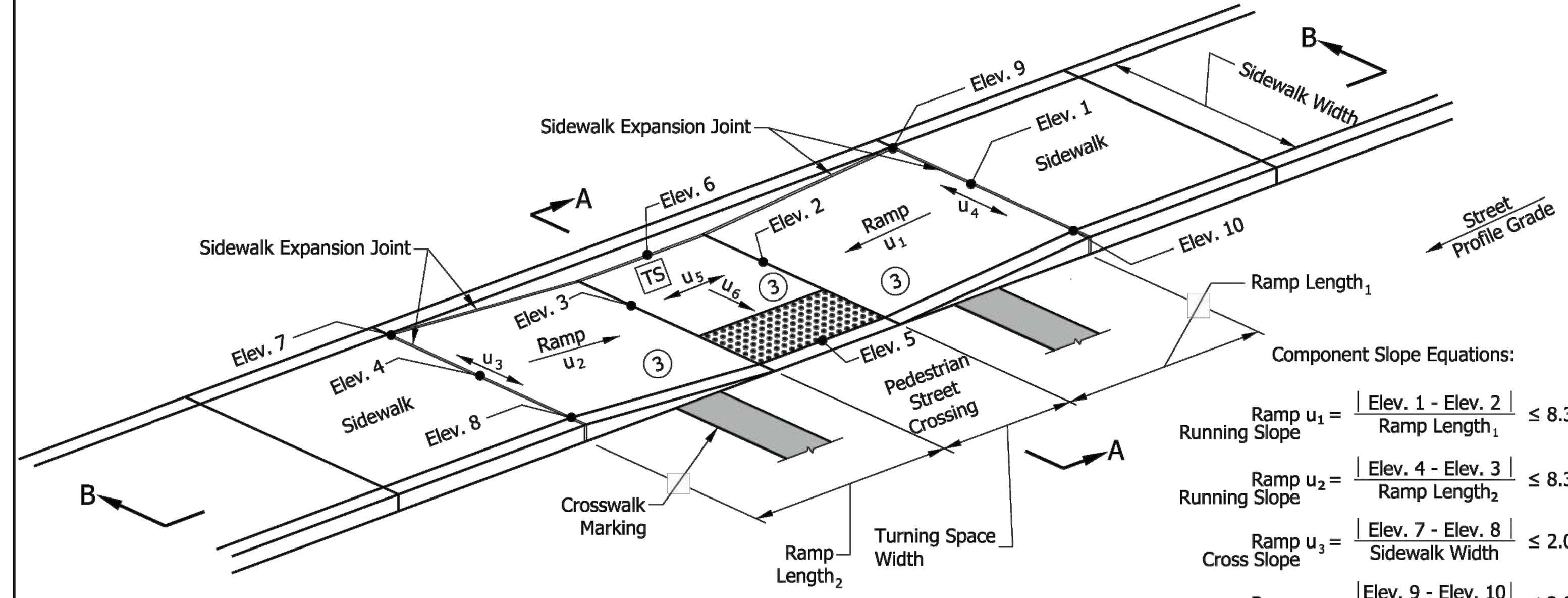
SEPTEMBER 2016

STANDARD DRAWING NO. E 604-SWCR-07

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/15/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 03/18/16
CHIEF ENGINEER DATE



Component Slope Equations:

$$\text{Ramp } u_1 \text{ Running Slope} = \frac{|\text{Elev. 1} - \text{Elev. 2}|}{\text{Ramp Length}_1} \leq 8.33\%$$

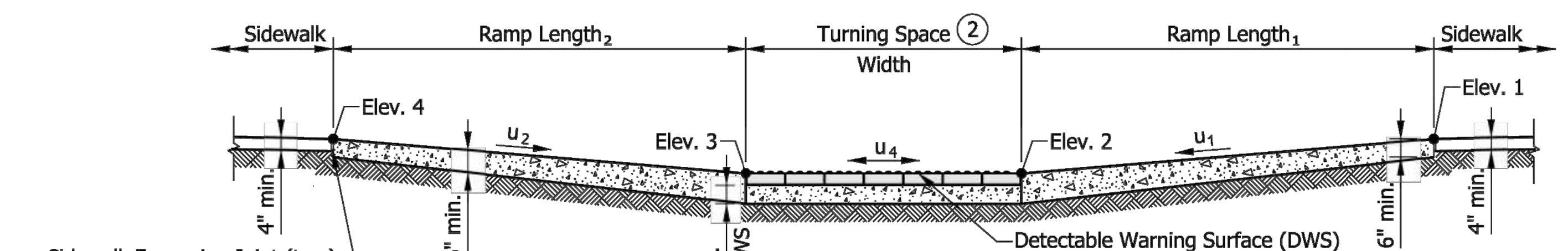
$$\text{Ramp } u_2 \text{ Running Slope} = \frac{|\text{Elev. 4} - \text{Elev. 3}|}{\text{Ramp Length}_2} \leq 8.33\%$$

$$\text{Ramp } u_3 \text{ Cross Slope} = \frac{|\text{Elev. 7} - \text{Elev. 8}|}{\text{Sidewalk Width}} \leq 2.00\%$$

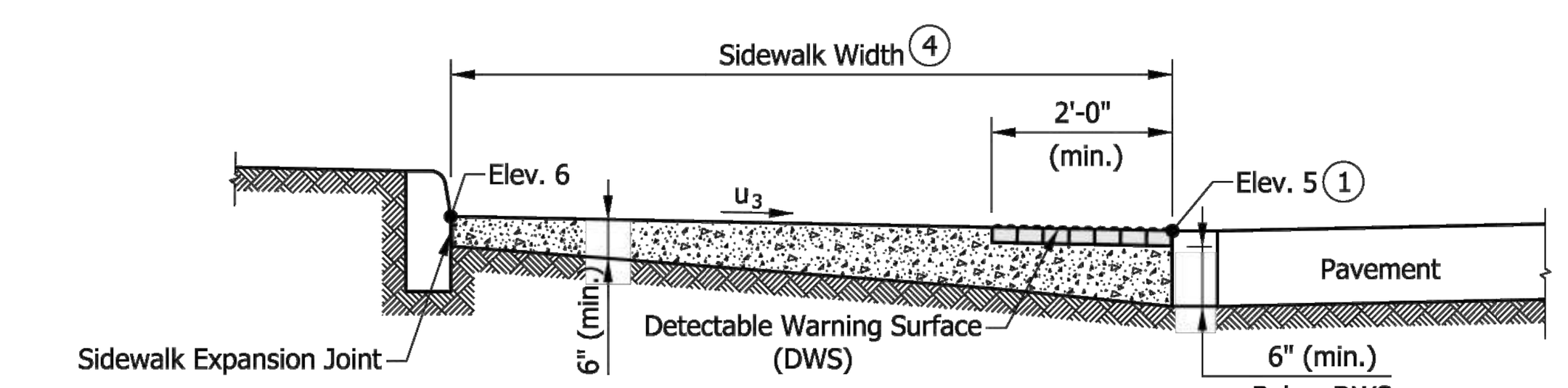
$$\text{Ramp } u_4 \text{ Cross Slope} = \frac{|\text{Elev. 9} - \text{Elev. 10}|}{\text{Sidewalk Width}} \leq 2.00\%$$

$$\text{Turning Space Cross Slope } u_5 = \frac{|\text{Elev. 2} - \text{Elev. 3}|}{\text{Turning Space Width}} \leq 2.00\% \ (5)$$

$$\text{Turning Space Running Slope } u_6 = \frac{|\text{Elev. 6} - \text{Elev. 5}|}{\text{Sidewalk Width}} \leq 2.00\%$$



SECTION B-B



SECTION A-A

NOTES:

1. The bottom edge of the turning space and top of curb shall be flush with the edge of adjacent pavement and gutter line.
2. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.
3. Curb ramp surface shall be coarse broomed transverse to the running slope.
4. Where there is no buffer between the sidewalk and curb, the preferred minimum sidewalk width is 6 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SDWK for sidewalk details.
5. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
6. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
7. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

LEGEND:

- Ramp
- Detectable Warning Surface
- TS Turning Space

INDIANA DEPARTMENT OF TRANSPORTATION

PARALLEL CURB RAMP COMPONENT DETAILS

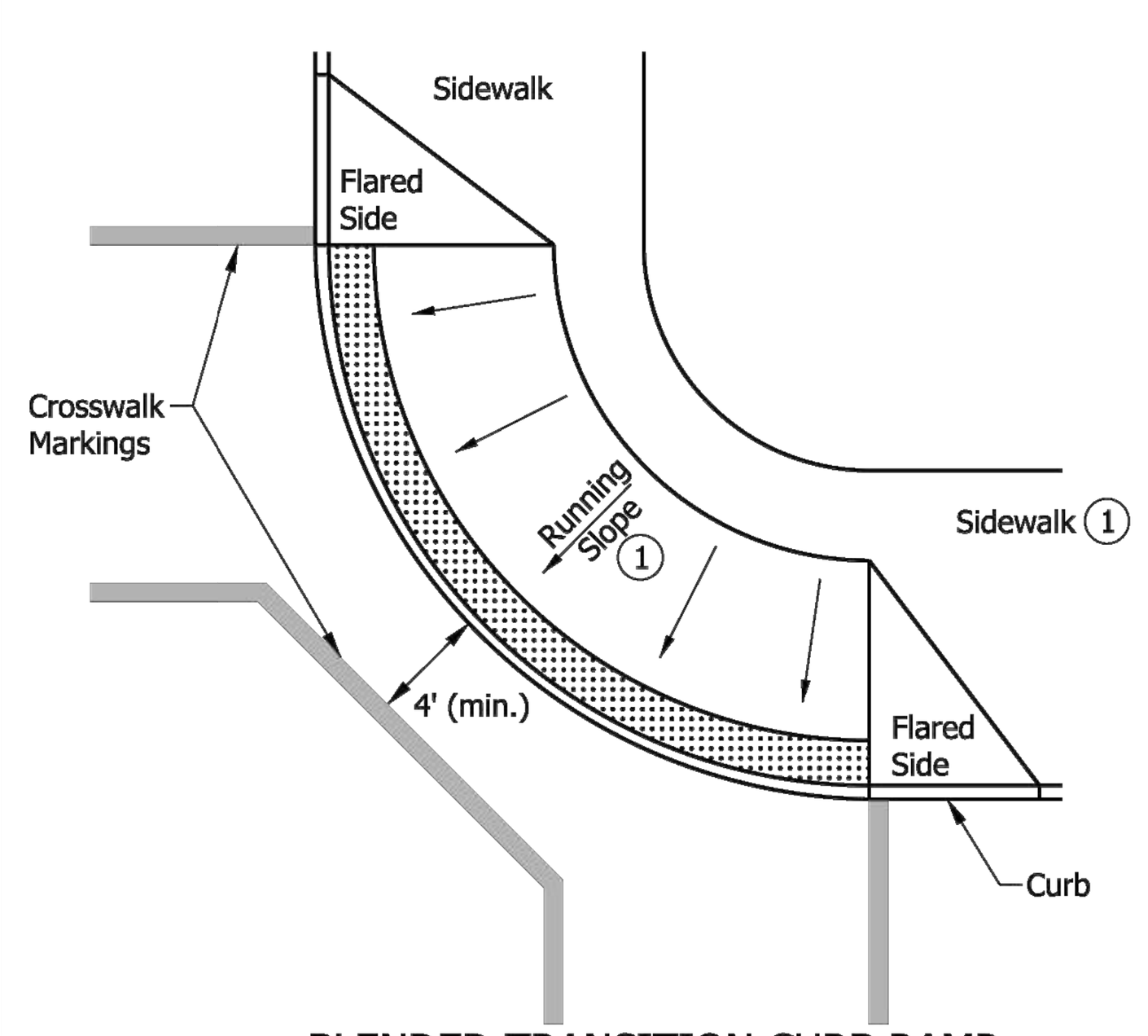
SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-08

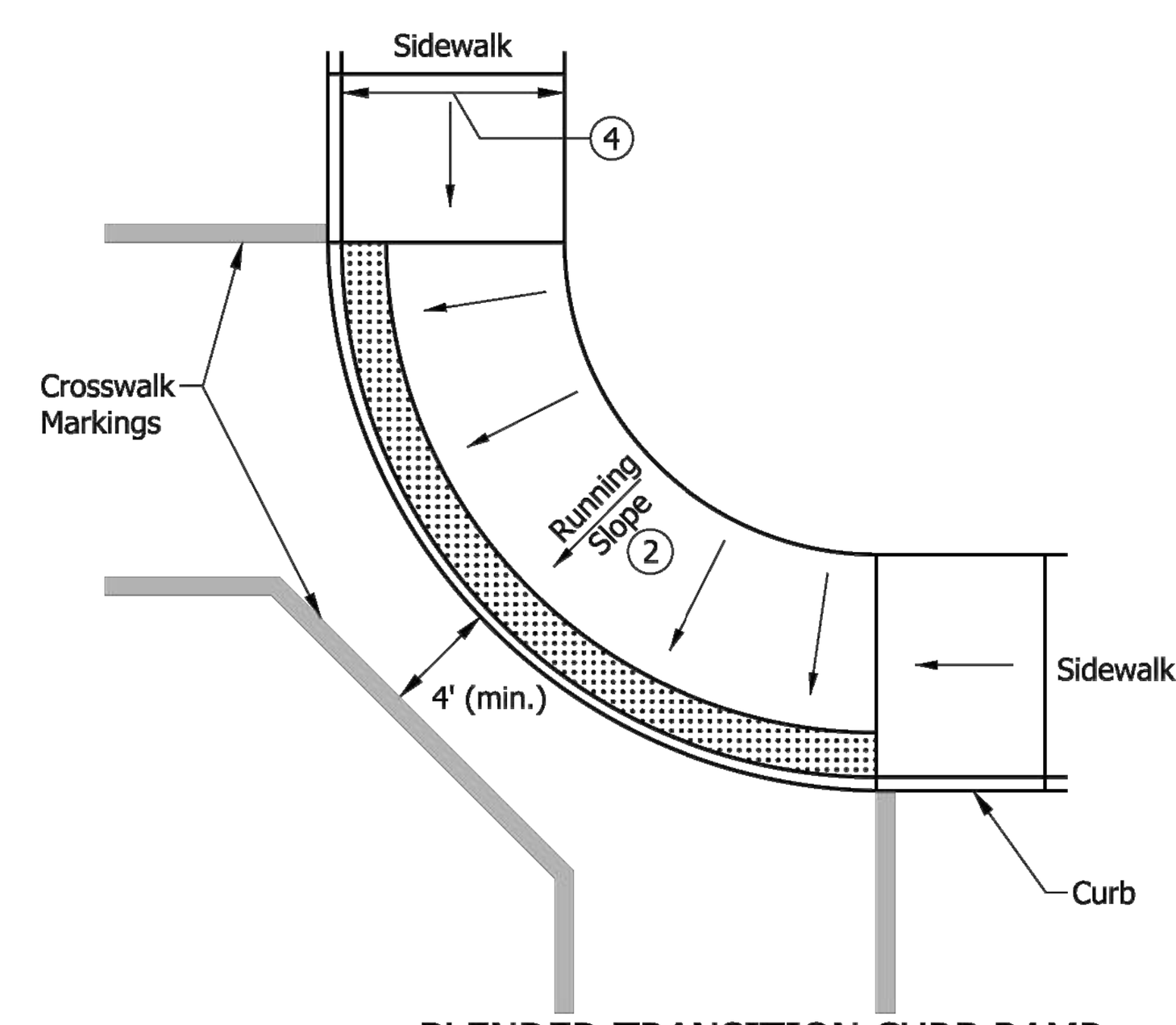
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

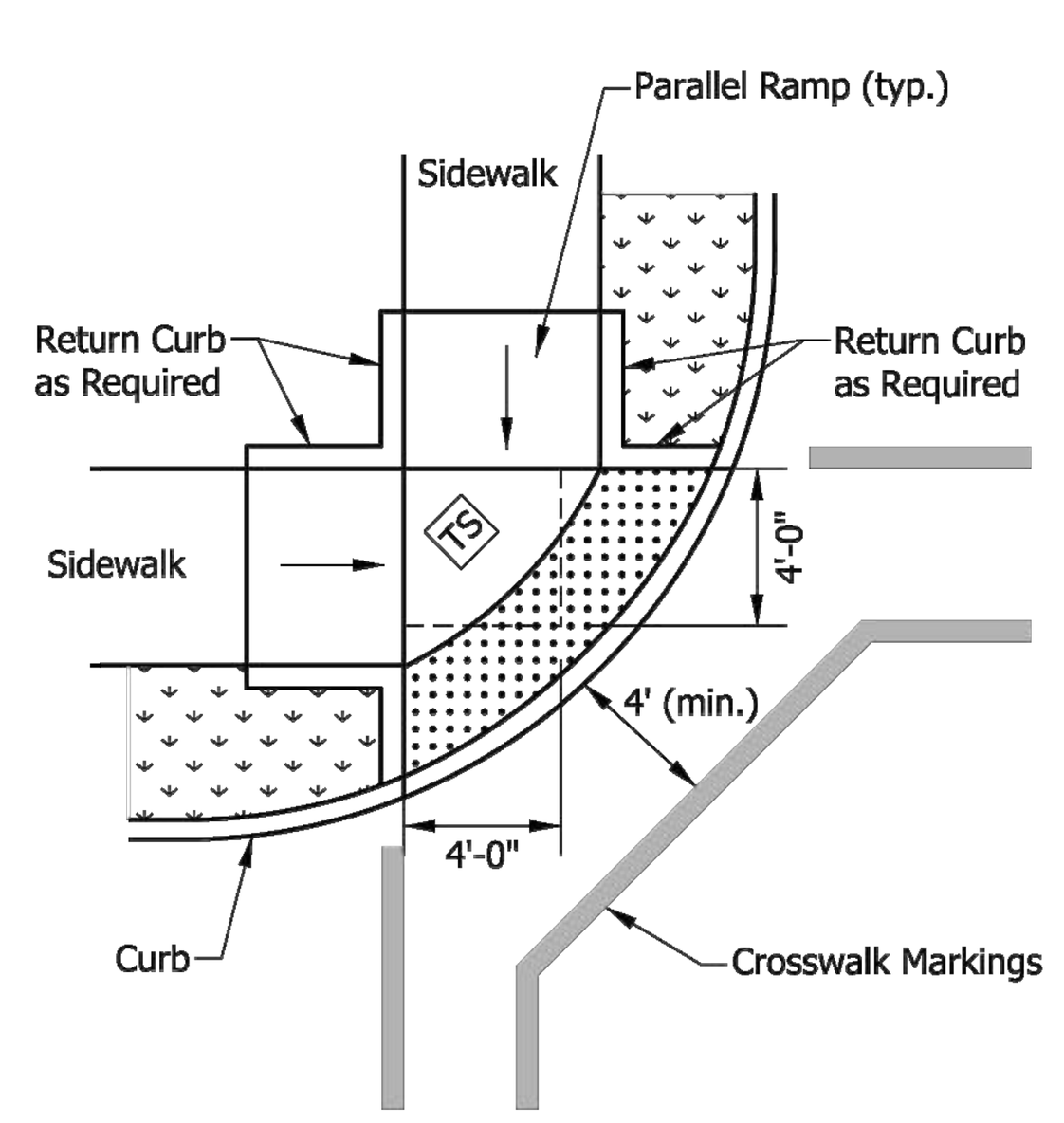
/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



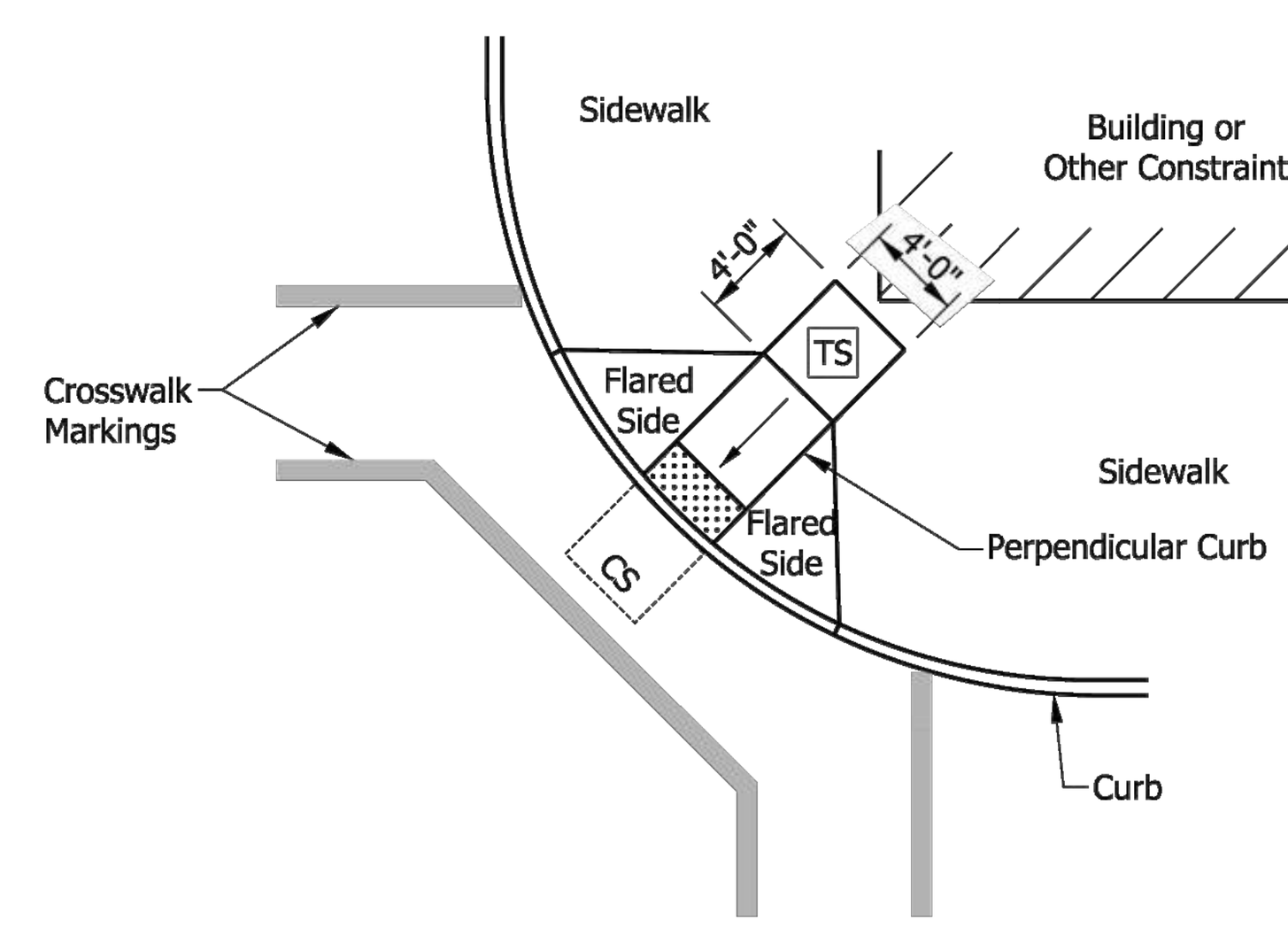
BLENDED TRANSITION CURB RAMP WITH RUNNING SLOPE > 2.00%



BLENDED TRANSITION CURB RAMP WITH RUNNING SLOPE ≤ 2.00%



DEPRESSED CORNER CURB RAMP



DIAGONAL CURB RAMP 3

NOTES:

1. Where the running slope is greater than 2.00%, a 4-ft minimum sidewalk shall continue behind the blended transition. The running slope shall not exceed 5.00%.
2. Where the running slope is less than or equal to 2.00% a 4-ft minimum sidewalk is not required behind the blended transition.
3. A diagonal curb ramp shall not be used for new construction. For an alteration project, a diagonal curb ramp shall be used only where existing physical conditions prevent paired curb ramps, a blended transition curb ramp, or a depressed corner curb ramp from being provided.
4. Where there is no buffer between the sidewalk and curb the preferred minimum sidewalk width is 6 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SDWK for sidewalk details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- TS Turning Space
- CS Clear Space

INDIANA DEPARTMENT OF TRANSPORTATION

BLENDED TRANSITION CURB RAMP, DEPRESSED CURB RAMP AND DIAGONAL CURB RAMP TYPICAL PLACEMENT

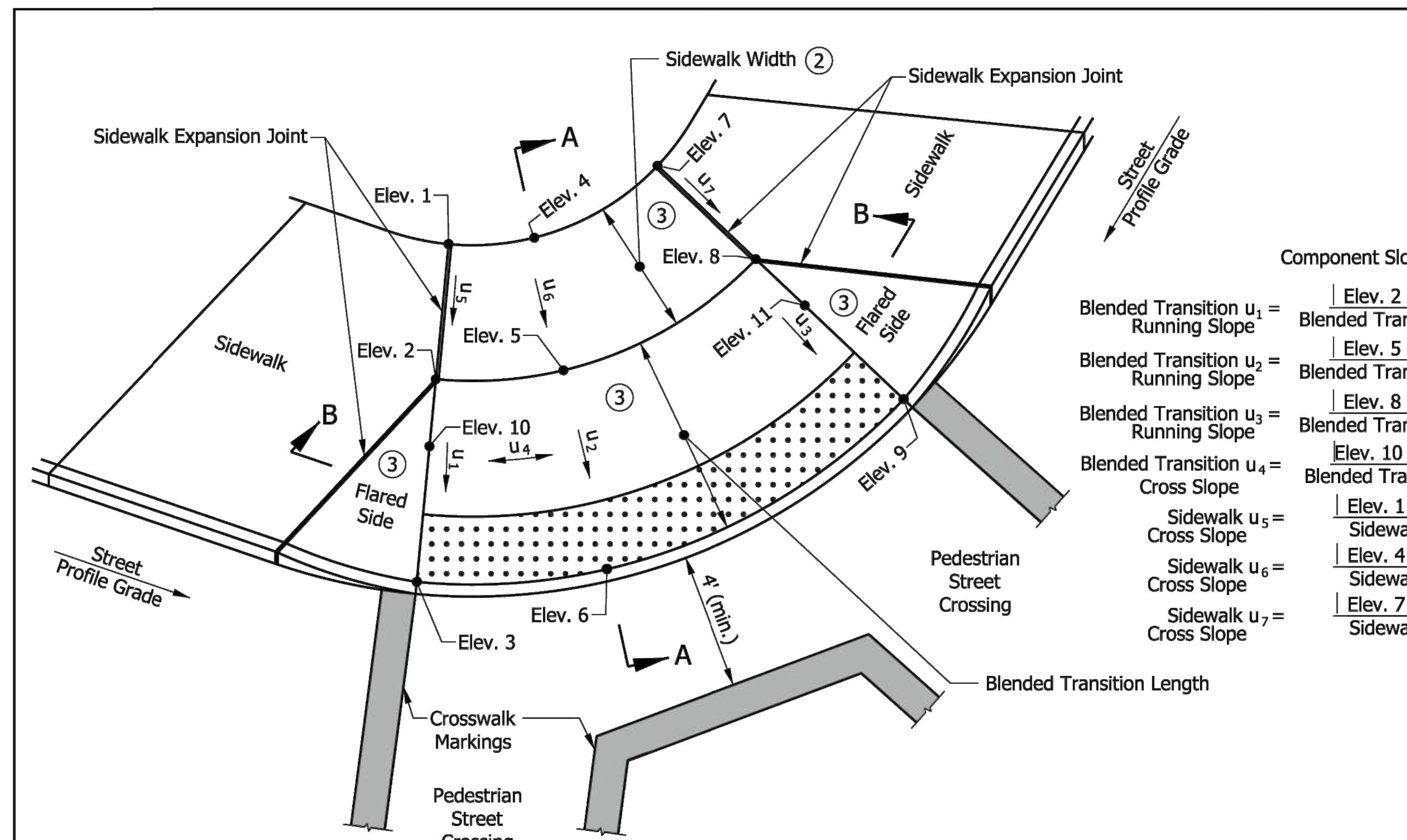
SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-09

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



Component Slope Equations:

$$\text{Blended Transition } u_1 \text{ Running Slope} = \frac{|\text{Elev. 2} - \text{Elev. 3}|}{\text{Blended Transition Length}} \leq 2.00\% \ (2)$$

$$\text{Blended Transition } u_2 \text{ Running Slope} = \frac{|\text{Elev. 5} - \text{Elev. 6}|}{\text{Blended Transition Length}} \leq 2.00\% \ (2)$$

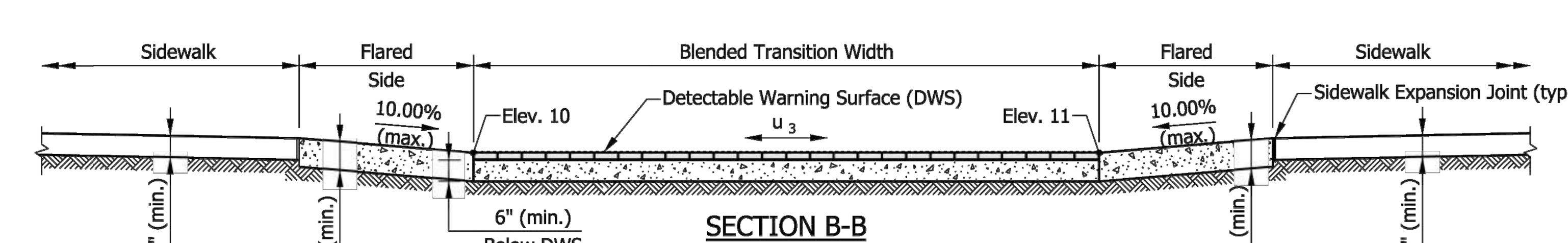
$$\text{Blended Transition } u_3 \text{ Running Slope} = \frac{|\text{Elev. 8} - \text{Elev. 9}|}{\text{Blended Transition Length}} \leq 2.00\% \ (2)$$

$$\text{Blended Transition } u_4 \text{ Cross Slope} = \frac{|\text{Elev. 10} - \text{Elev. 11}|}{\text{Blended Transition Width}} \leq 2.00\% \ (4)$$

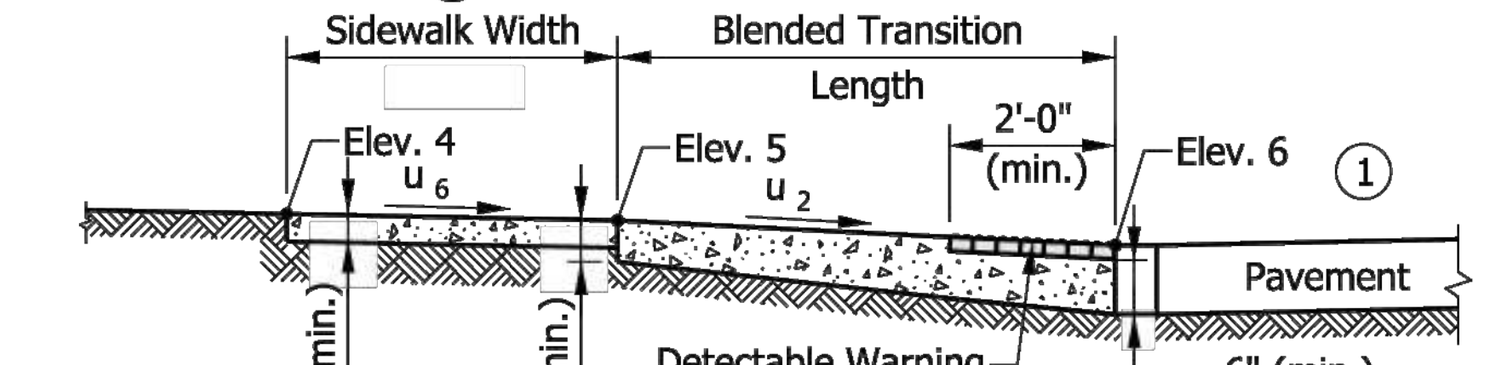
$$\text{Sidewalk } u_5 \text{ Cross Slope} = \frac{|\text{Elev. 1} - \text{Elev. 2}|}{\text{Sidewalk Width}} \leq 2.00\%$$

$$\text{Sidewalk } u_6 \text{ Cross Slope} = \frac{|\text{Elev. 4} - \text{Elev. 5}|}{\text{Sidewalk Width}} \leq 2.00\%$$

$$\text{Sidewalk } u_7 \text{ Cross Slope} = \frac{|\text{Elev. 7} - \text{Elev. 8}|}{\text{Sidewalk Width}} \leq 2.00\%$$



SECTION B-B



SECTION A-A

NOTES:

1. The bottom edge of the blended transition and top of curb shall be flush with the edge of adjacent pavement and gutter line.
2. Where the running slope is less than or equal to 2.00% a 4-ft minimum sidewalk is not required, behind the blended transition. Where the running slope is greater than 2.00%, a 4-ft minimum sidewalk shall continue behind the blended transition and the running slope shall not exceed 5.00%.
3. Curb ramp surface shall be coarse broomed transverse to the running slope.
4. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
5. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
6. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

LEGEND:

- Ramp
- Detectable Warning Surface

INDIANA DEPARTMENT OF TRANSPORTATION

BLENDED TRANSITION CURB RAMP COMPONENT DETAILS

SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-10

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1	
Requisition Number: -	
Account Number: -	
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number: 1364	
Building Reference: -	
Drawing Number: CS117	
Sheet: 104 of 155	

Last Saved By: jcler Printed:2/23/23
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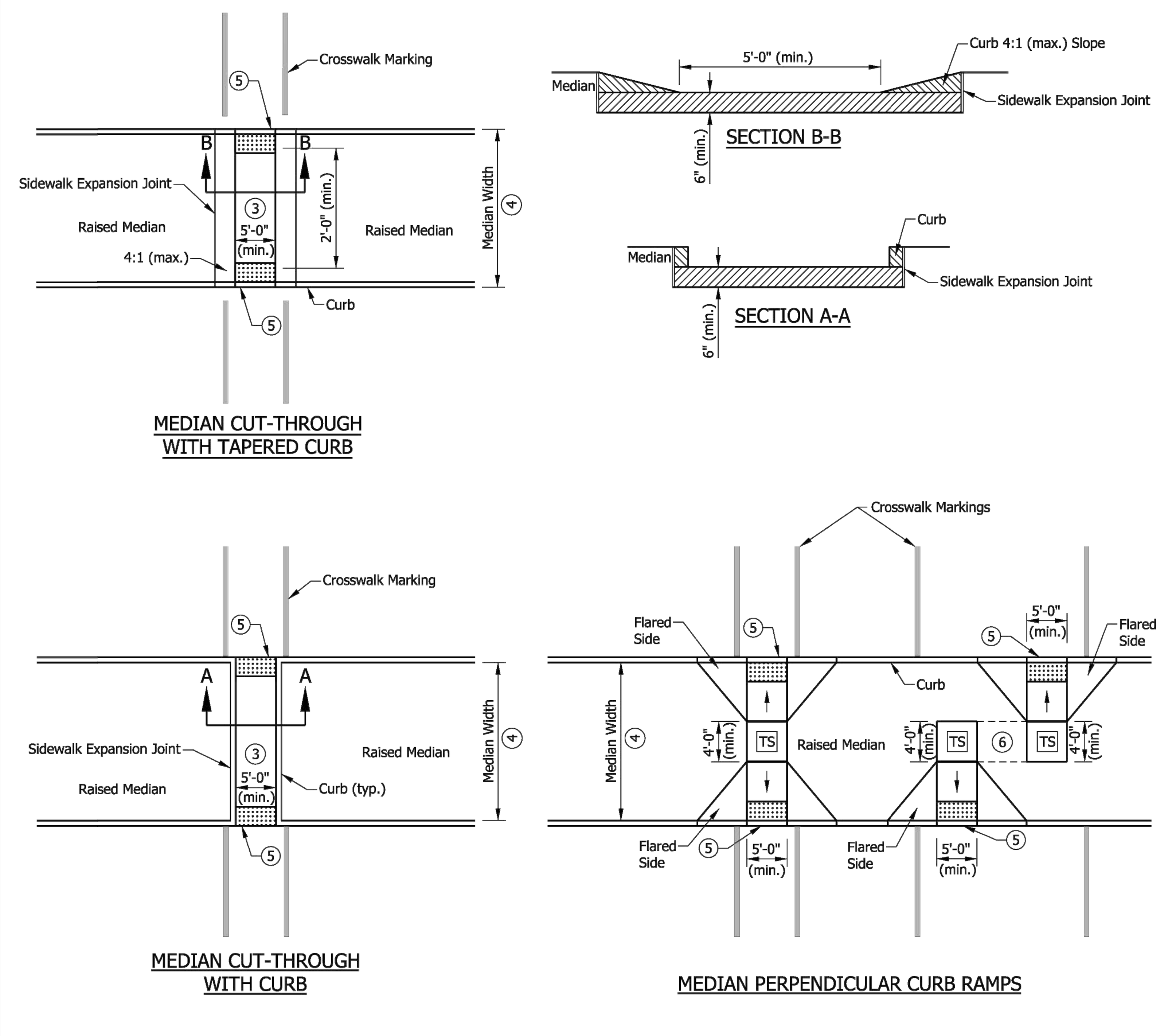


NOTES:

1. The minimum width of a median cut-through and median perpendicular curb ramp shall be 5 ft.
2. Where in-line or offset perpendicular curb ramps are used within a median, the turning space shall have a minimum clear dimension of 4 ft x 5 ft.
3. (3) Where a median cut through is used the running slope shall be 2.00% maximum.
4. (4) Where median width is less than 6 ft, detectable warning surfaces shall not be placed.
5. (5) The bottom edge of the median cut-through or median perpendicular curb ramp and the top of curb shall be flush with the edge of adjacent pavement gutter line.
6. See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
7. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
8. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

LEGEND:

- Ramp
- Detectable Warning Surface
- TS Turning Space

INDIANA DEPARTMENT OF TRANSPORTATION

MEDIAN CUT-THROUGH AND MEDIAN PERPENDICULAR CURB RAMP TYPICAL PLACEMENT

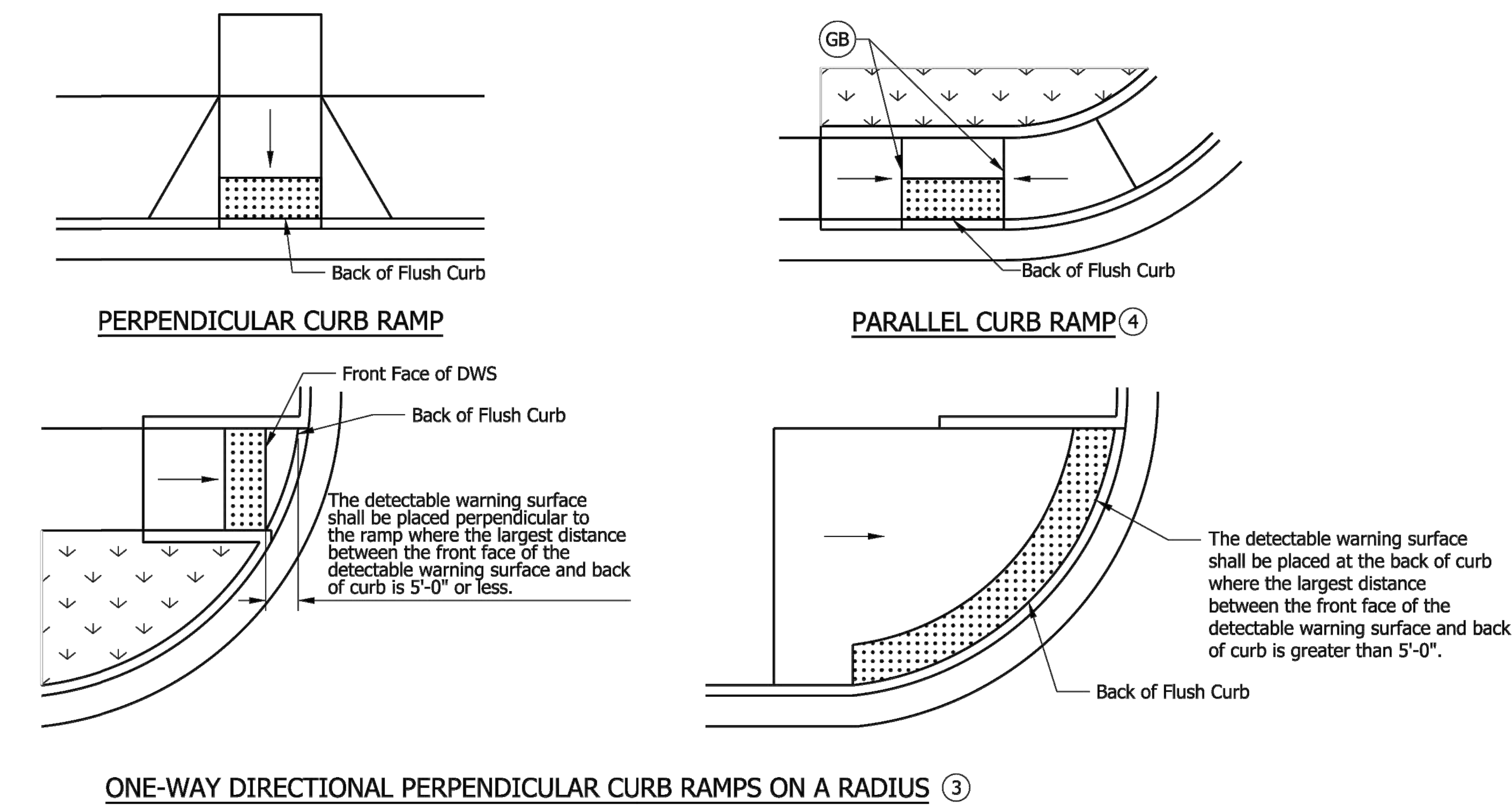
SEPTEMBER 2018

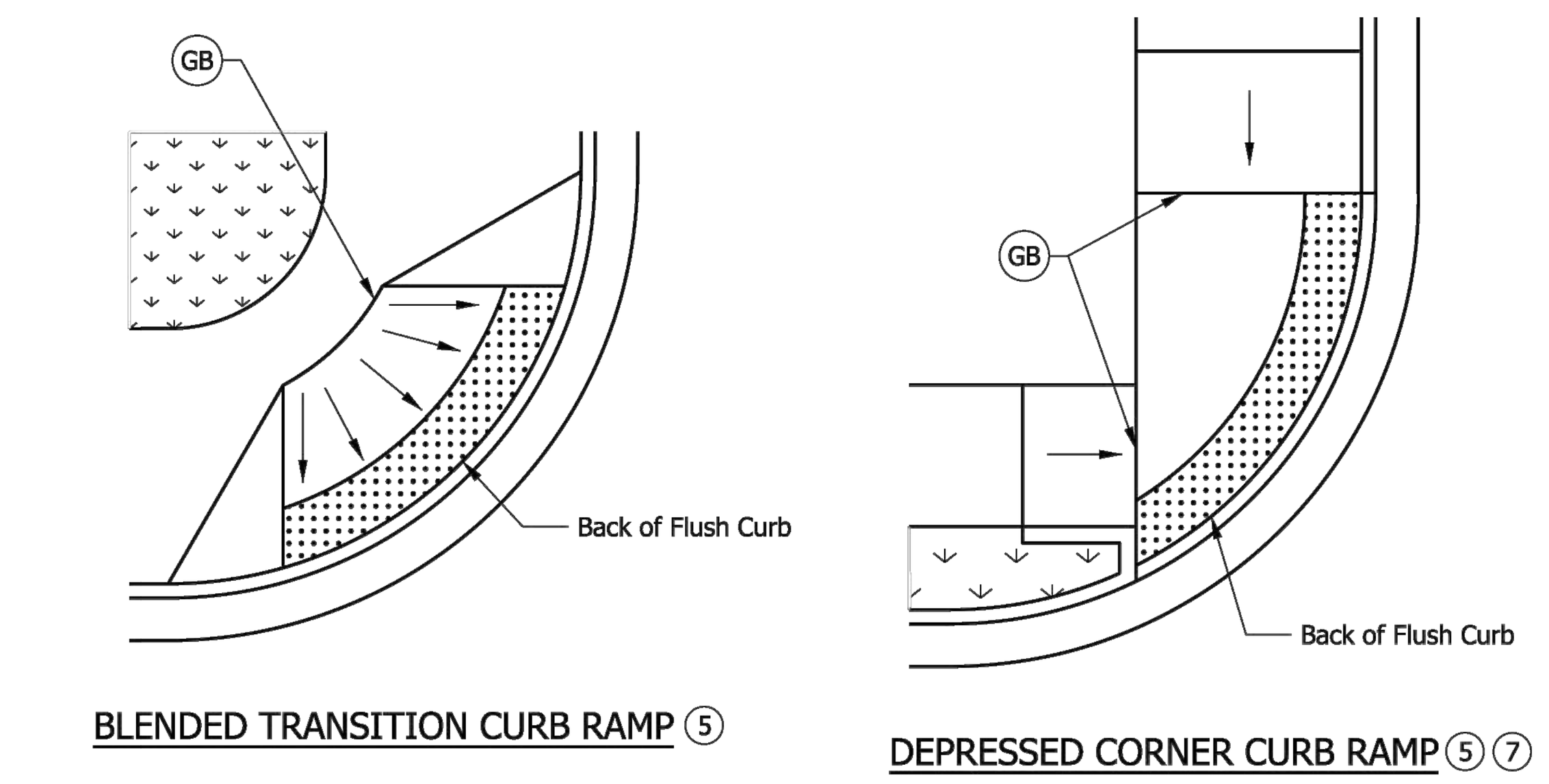
STANDARD DRAWING NO. E 604-SWCR-11

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE





NOTES:

1. A detectable warning surface shall be placed at each street, highway, or railroad crossing. See Standard Drawing E 604-SDWK-03 for a detectable warning surface placement at a sidewalk driveway crossing.
2. The detectable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and extend the full width as shown. The detectable warning surface shall not be placed across a grade break.
3. (3) Where the distance from the face of the detectable warning surface is 5 ft or less from the back of curb, the detectable warning surface shall be placed perpendicular to the ramp. Where the distance from the face of the detectable warning surface is more than 5 ft from the back of curb, the detectable warning surface shall be placed at the back of curb as shown or in an alternate placement configuration. See Standard Drawing E 604-SWCR-13 for alternate detectable warning surface placement.
4. (4) The detectable warning surface on a parallel curb ramp shall be placed on the turning space at the flush transition between the street and turning space at the back of curb.
5. (5) The detectable warning surface on a blended transition or depressed corner shall be placed at the back of curb as shown or in an alternate placement configuration. See Standard Drawing E 604-SWCR-13 for alternate detectable warning surface placement.
6. See Standard Drawing E 604-SWCR-14 for detectable warning surface details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Detectable Warning Surface (DWS)
- Ramp
- GB Grade Break

INDIANA DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION

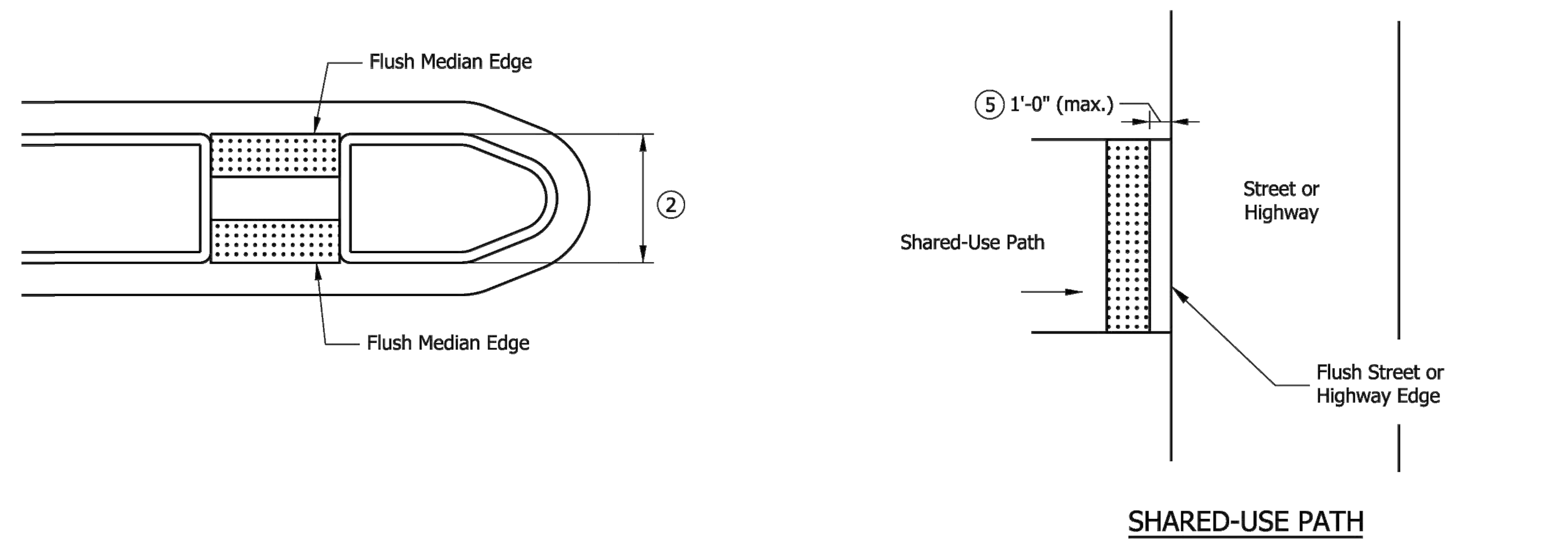
SEPTEMBER 2018

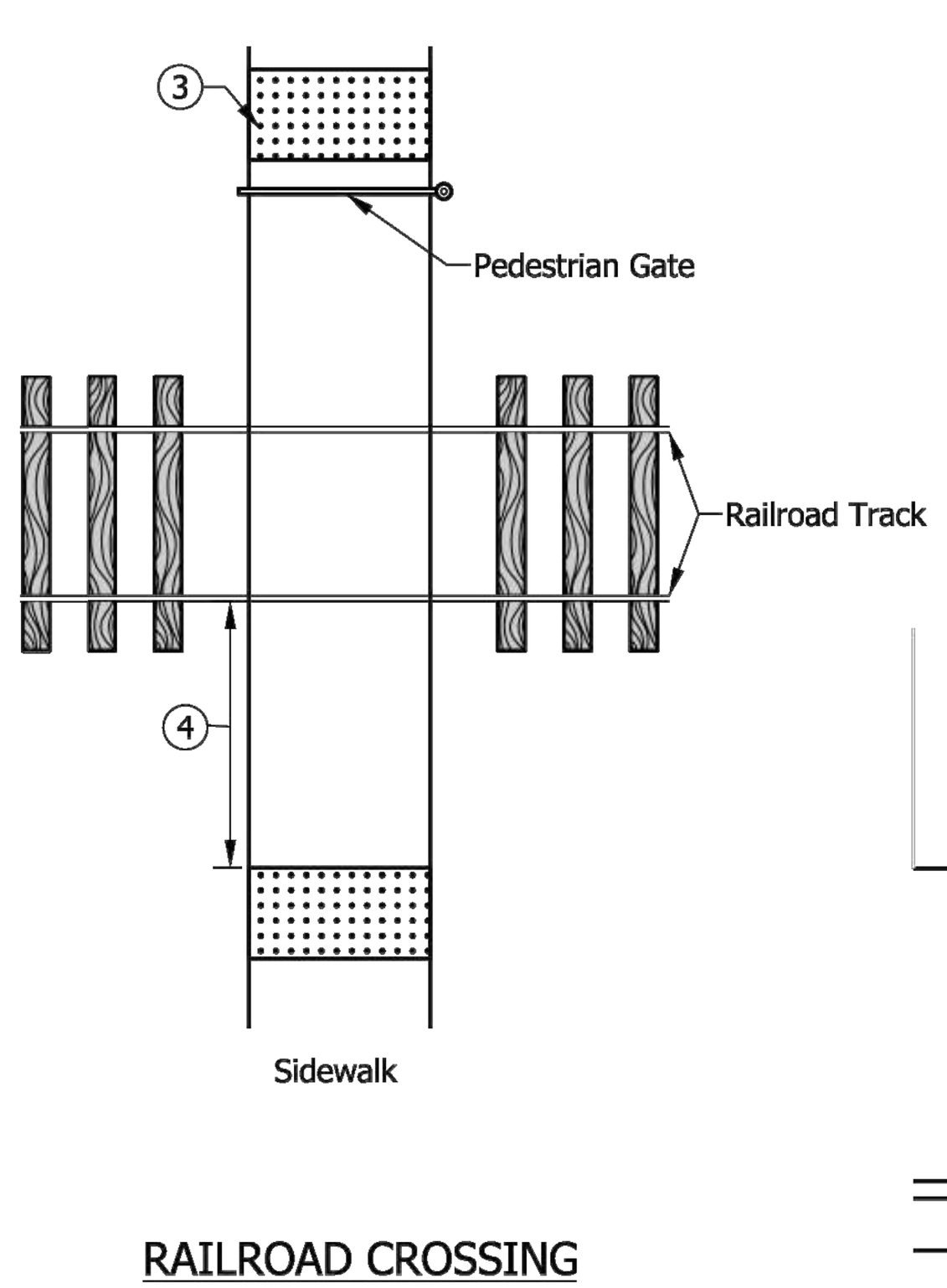
STANDARD DRAWING NO. E 604-SWCR-12

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

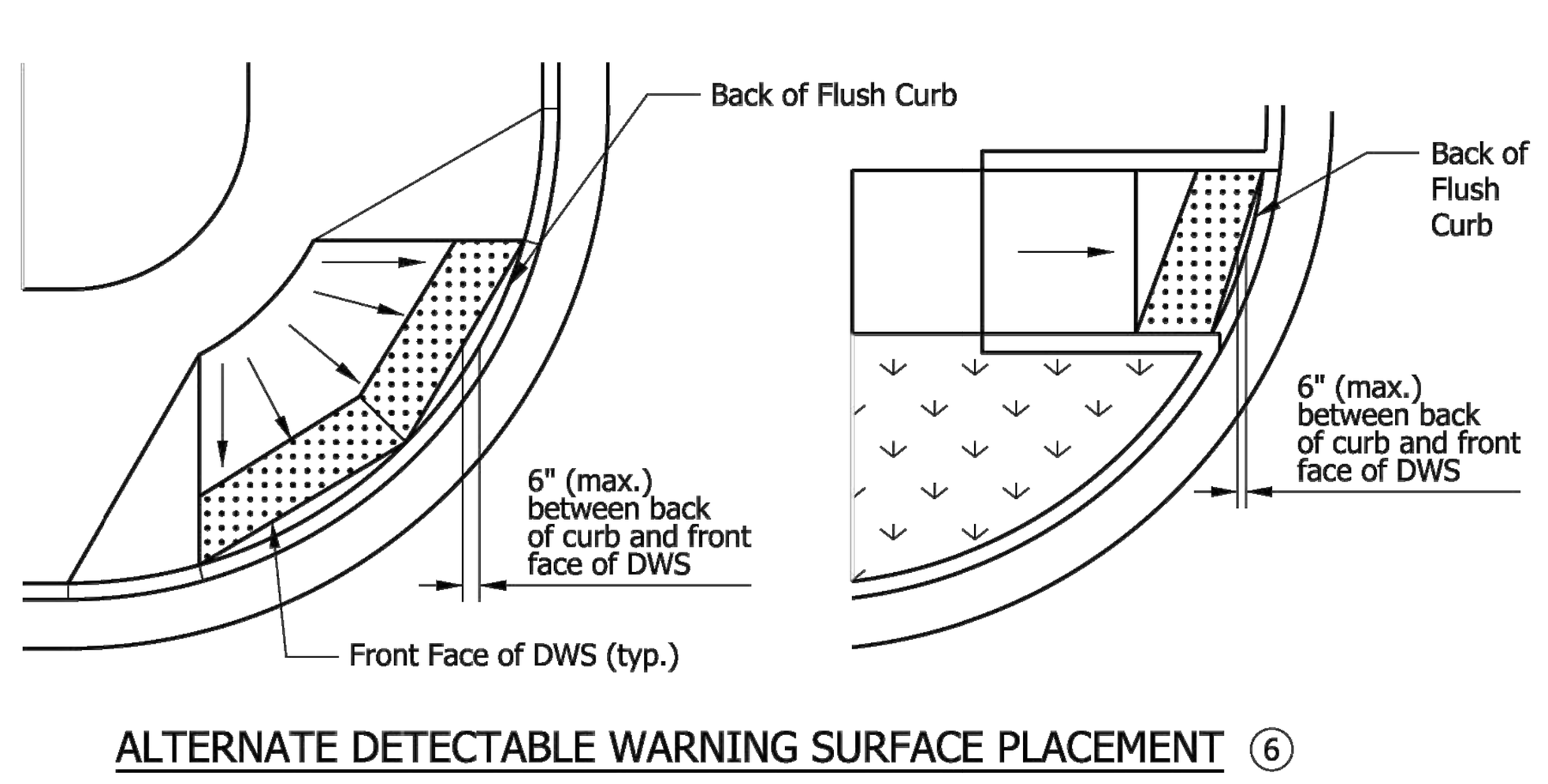
/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE





LEGEND:

- Buffer or Other Non-Walkable Surface
- Detectable Warning Surface (DWS)
- Ramp
- GB Grade Break



NOTES:

1. The detectable warning surface shall extend a minimum lenght of 2 ft in the direction of pedestrian travel and extend the full width as shown. The detectable warning surface shall not be placed across a grade brea. The edges of adjacent panes shall be parallel and tightly abutted.
2. (2) The detectable warning surface on a median cut-through shall be placed at the flush transition between the street and median cut-through. Where a median is less than 6ft, a detectable warning surface shall not be placed.
3. (3) Where a pedestrian gate is provided at a railroad crossing, the detectable warning surface shall be placed on the side of the gate opposite the railroad crossing.
4. (4) The edge of the detectable warning surface nearest to the railroad crossign shall be placed 6 ft minimum and 15 ft maximum from the centerline of the nearest rail.
5. (5) Where shared-use path intersects a street or highway, the detectable warning surface shall be placed on the shared-use path within 1 ft of the street or highway edge.
6. (6) Plate ends shall be placed at the back of curb. The distance between the back of curb and the front face of the detectable warning surface shall not exceed 6 in. between the ends.
7. See Standard Drawing E 604-SWCR-14 for detectable warning surface details.

INDIANA DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE PLACEMENT AND CONFIGURATION

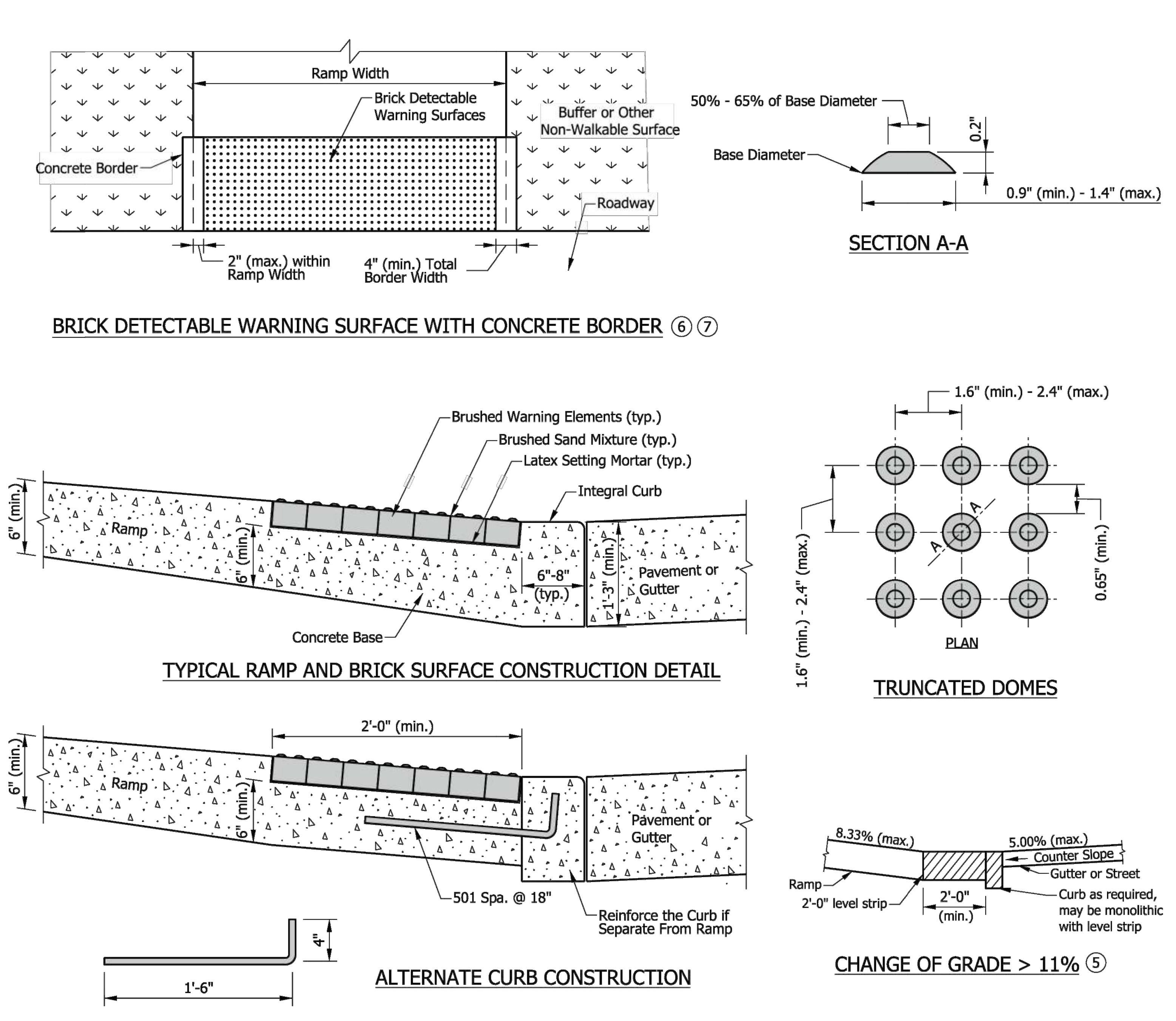
SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-13

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE



NOTES:

1. Detectable warning surface shall consist of truncated domes. Domes shall be aligned in a square or radial grid pattern with diameter and center-to-center spacing within the ranges specified.
2. The detectable warning surface may be field cut. Truncated dome spacing between adjacent panels shall be within the ranges specified.
3. The detectable warning surface shall contrast visually with adjacent surfaces, either light-on-dark or dark-on-light.
4. The detectable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and extend the full width as shown. The detectable warning surface shall not be placed across a grade break.
5. (5) The maximum counter slope of the gutter or street at the bottom of the ramp shall be 5.00%. Where the algebraic difference between the running slope and the counter slope exceeds 11%, a 2-ft minimum level strip should be provided at the bottom of the ramp.
6. (6) Where a concrete border is used for forming, the border shall be cast monolithically with the curb ramp concrete. The concrete border shall not reduce the ramp width by more than 2 in. on each side.
7. (7) Where forming other than a concrete border is used, the edge restraint shall not encroach upon the ramp width.

INDIANA DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING SURFACE DETAILS

SEPTEMBER 2018

STANDARD DRAWING NO. E 604-SWCR-14

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/29/18
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/25/18
CHIEF ENGINEER DATE

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Certified by: David Hedlund

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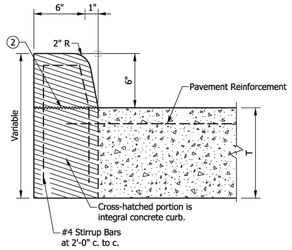
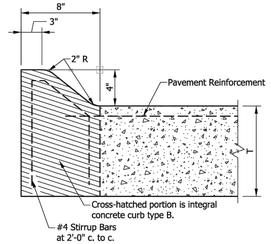
PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:	
Project Number:	84003001-22-058-C1
Requisition Number:	-
Account Number:	-
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number:	1364
Building Reference:	-
Drawing Number:	CS118
Sheet: 105 of 155	



INTEGRAL CONCRETE CURB
(VERTICAL)



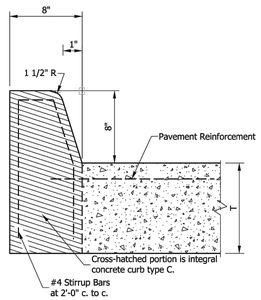
INTEGRAL CONCRETE CURB
TYPE B
(SLOPING)

NOTES:

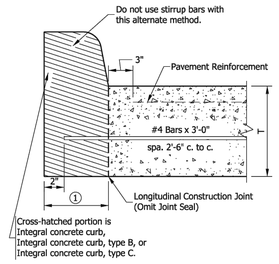
1. 8 in. for integral concrete curb type B or C and 7 in. for integral concrete curb.
2. Concrete below this line may be poured with the pavement.

LEGEND:

T = Nominal Pavement Thickness



INTEGRAL CONCRETE CURB
TYPE C
(VERTICAL)



ALTERNATE METHOD
OF CONSTRUCTION FOR ALL TYPES
OF INTEGRAL CONCRETE CURB

INDIANA DEPARTMENT OF TRANSPORTATION

INTEGRAL CONCRETE CURB

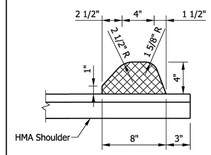
SEPTEMBER 2004

STANDARD DRAWING NO. E 605-CCIN-01

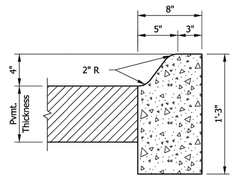
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

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

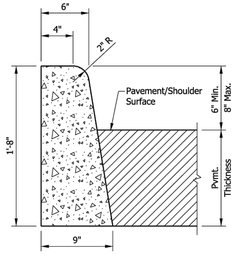
/s/ Richard K.Smutzer 9-01-04
CHIEF ENGINEER DATE



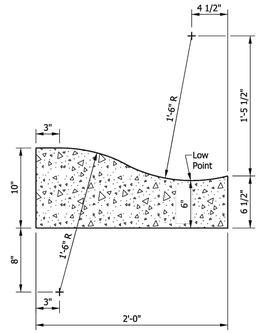
HMA CURB
(SLOPING)



CONCRETE CURB
TYPE B
(SLOPING)



CONCRETE CURB
(VERTICAL)



ROLLED CURB
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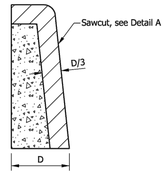
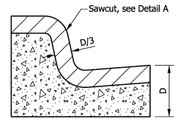
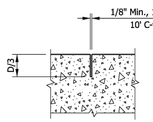


CURB SECTION
AT JOINT



COMBINED CURB AND GUTTER
SECTION AT JOINT



DETAIL A

SAWED CONTRACTION JOINTS FOR CURB AND COMBINED CURB & GUTTER

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE AND HMA
CURBS AND SAWED JOINTS

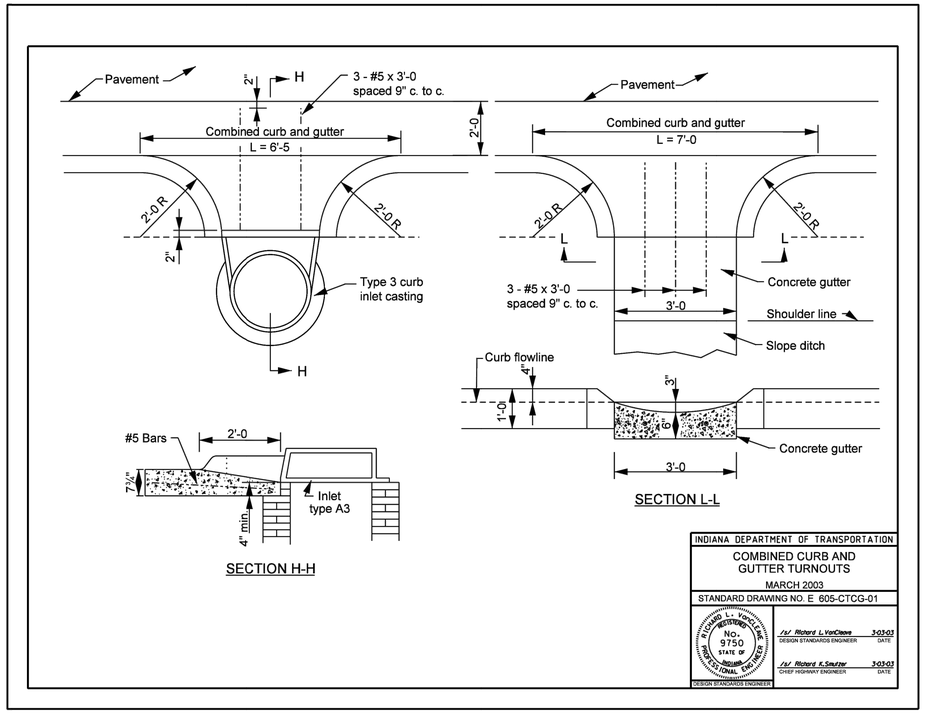
SEPTEMBER 2014

STANDARD DRAWING NO. E-605-CCSJ-01

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

/s/ Richard L. VanCleave 06/20/13
DESIGN STANDARDS ENGINEER DATE

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



SECTION H-H

SECTION L-L

INDIANA DEPARTMENT OF TRANSPORTATION

COMBINED CURB AND
GUTTER TURNOUTS

MARCH 2003

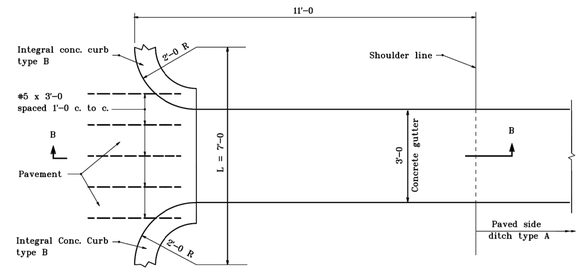
STANDARD DRAWING NO. E 605-CTCG-01

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

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

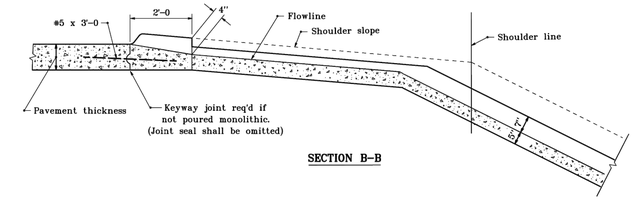
/s/ Richard K.Smutzer 3-03-03
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



NOTES :

1. See Standard Drawing E 607-PSDT-01 for paved side ditch details.
2. See Standard Drawing E 501-CCPJ-08 for keyway joint details.



SECTION B-B

INDIANA DEPARTMENT OF TRANSPORTATION

CURB TURNOUT TO CONCRETE
GUTTER & PAVED SIDE DITCH

SEPTEMBER 1997

STANDARD DRAWING NO. E 605-CTCG-02

DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

/s/ Firoz Zaidi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

ORIGINALLY APPROVED 9-01-97

Certified by: David Hedlund

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Phone : (812) 424-7941
Fax : (812) 424-7942
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
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PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS119
Sheet: 106 of 155

Last Saved By: Jake Pinkard 2/23/23
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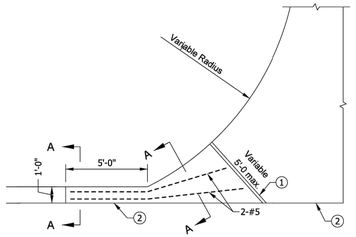
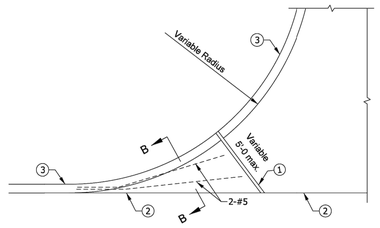


EAR CONSTRUCTION TYPE "A"



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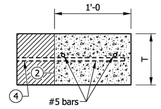
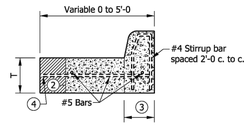


SECTION A-A



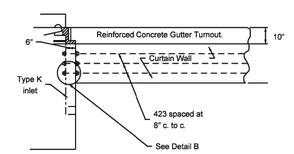
SECTION B-B

NOTES:

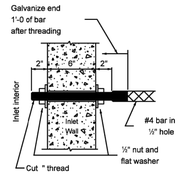
1. 1" performed joint filler (perpendicular to radius)
2. Longitudinal construction joint, see Standard Drawing series E 503-CCPJ.
3. Integral concrete curb
4. Where pavement is in place use retrofit construction tie bar.

T = Thickness of pavement

INDIANA DEPARTMENT OF TRANSPORTATION	
EAR CONSTRUCTION TYPE A & B SEPTEMBER 2019	
STANDARD DRAWING NO. E 605-ERCN-01	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	5/2/2019 DESIGN STANDARDS ENGINEER DATE 5/31/2019 CHIEF ENGINEER DATE



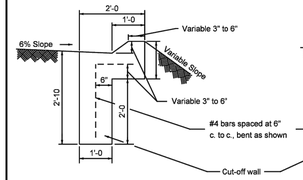
DETAIL A



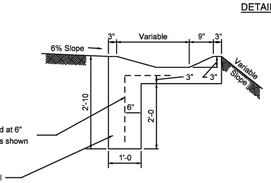
DETAIL B

GENERAL NOTES

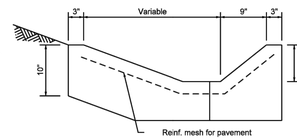
1. For location of details and sections see Standard Drawing E 605-GTRC-03.



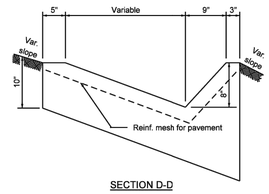
SECTION A-A



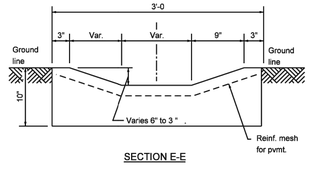
SECTION B-B



SECTION C-C

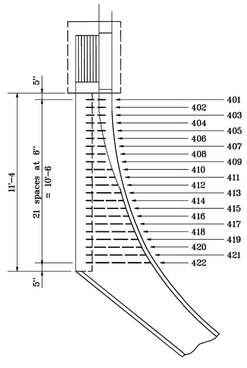


SECTION D-D

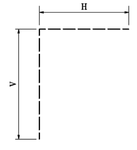


SECTION E-E

INDIANA DEPARTMENT OF TRANSPORTATION	
REINFORCED CONCRETE GUTTER TURNOUT MARCH 2003	
STANDARD DRAWING NO. E 605-GTRC-01	
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Richard L. VanCleave 3-03-03 DESIGN STANDARDS ENGINEER DATE /s/ Richard K. Sautter 3-03-03 CHIEF HIGHWAY ENGINEER DATE



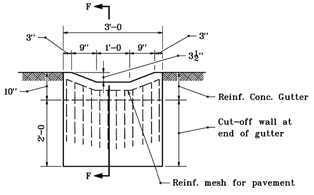
REINFORCING PLAN CONCRETE GUTTER TURNOUT



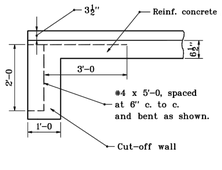
#4 BAR

MK	QTY.	SIZE	BAR LENGTHS V	H	TOTAL
401	1	#4	2'-0	1'-3	3'-3
402				1'-4	3'-4
403				1'-5	3'-5
404				1'-6	3'-6
405				1'-7	3'-7
406				1'-8	3'-8
407				1'-9	3'-9
408				1'-10	3'-10
409				1'-11	3'-11
410				2'-0	4'-0
411				2'-2	4'-2
412				2'-4	4'-4
413				2'-6	4'-6
414				2'-8	4'-8
415				2'-10	4'-10
416				3'-0	5'-0
417				3'-4	5'-4
418				3'-6	5'-8
419				3'-11	5'-11
420				4'-2	6'-2
421				4'-6	6'-6
422			2'-0	4'-10	6'-10
423	3	#4	1'-3	3'-0	4'-3

MK 423 bars to be threaded, galvanized, and installed as shown in Detail B on Standard Drawing E 605-GTRC-01.

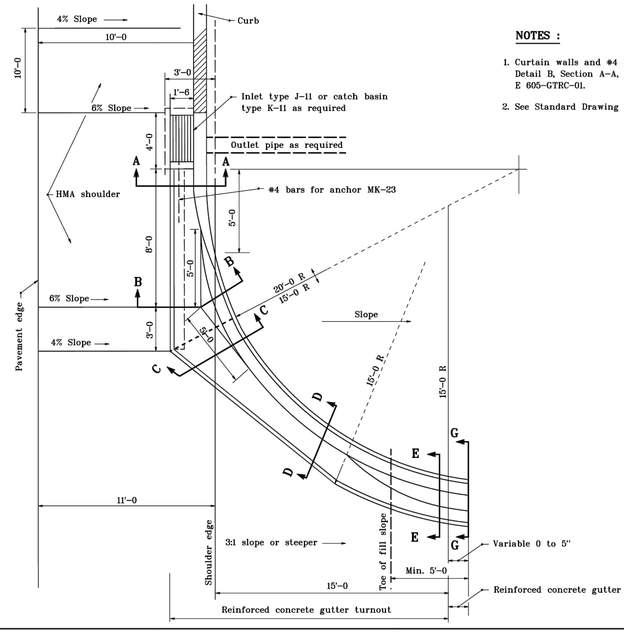


SECTION G-G



SECTION F-F

INDIANA DEPARTMENT OF TRANSPORTATION	
REINFORCED CONCRETE GUTTER TURNOUT SEPTEMBER 1997	
STANDARD DRAWING NO. E 605-GTRC-02	
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Urbanovich 11-15-99 DESIGN STANDARDS ENGINEER DATE /s/ Firoze Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 9-01-97



NOTES :

1. Curtain walls and #4 bars for anchor MK-23 shown in Detail A, Detail B, Section A-A, and Section B-B on Standard Drawing E 605-GTRC-01.
2. See Standard Drawing E 605-GTRC-02 for sections F-F and G-G.

INDIANA DEPARTMENT OF TRANSPORTATION	
REINFORCED CONCRETE GUTTER TURNOUT JANUARY 1999	
STANDARD DRAWING NO. E 605-GTRC-03	
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Urbanovich 11-15-99 DESIGN STANDARDS ENGINEER DATE /s/ Firoze Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 1-04-99

Certified by: David Hedlund

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Mechanical & Electrical Engineering
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number:	84003001-22-058-C1
Requisition Number:	-
Account Number:	-
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number:	1364
Building Reference:	-
Drawing Number:	CS120
Sheet:	107 of 155

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INDEX

SHEET NO.	SUBJECT
1	Drawing Index and General Notes
2	Class I Drive (Residential) Plan
3	Class II Drive (Residential) Plan
4	Class III Drive (Commercial) Plan
5	Class IV Drive (Commercial) Plan
6	Class V Drive (Field Entrance) Plan and Section
7	Class VI Drive (Industrial) Plan and Section
8	Class VII Drive (Industrial) Plan
9	Class I and Class III Drives Approach Grades
10	Class II and Class IV Drives Sections
11	Class II, IV & V Drives Approach Grades
12	Class VI Drive Approach Grades
13	Class VII Drive Approach Grades
14	Joint Placement, Corner Reinforcing, Monolithic Curb, and Concrete Curb and Gutter Details
15	Private Drive Crossover Plans
16	Private and Commercial Drive Crossover Sections
17	Commerical Drive Crossover Plans
18	Pavement Wedge and Pay Limits for Class II, IV and VII Drives

GENERAL NOTES

1. When the maximum approach grade of ±10% does not meet the grade of the existing drive before the R/W line, the approach grade of ±10% shall extend beyond the R/W to the point of intersection with the existing driveway grade. Construction beyond the R/W line shall be done in temporary R/W.
2. The appropriate pipe end treatment should be provided for pipes located either inside the clear zone or outside the clear zone.
3. The minimum driveway pavement sections for Class III, IV, VI and VII Drives have been designed for 400 trucks per day. If the truck traffic count is greater than 400 per day, the required pavement section shall be as shown elsewhere on the plans.
4. For Class III, IV, VI and VII Drives, if length of the driveway is more than 15 feet, then D-1 contraction joints are required in transverse direction. Spacing shall be 1/2 the length of the driveway or 15 feet max.
5. Embankment slopes within the mainline clear zone for new construction/reconstruction projects or within the obstruction-free zone for 3R projects should be as shown in the table on Standard Drawing E 610-PRAP-01. Outside the clear zone or the obstruction-free zone, the embankment slopes should desirably be 4:1 but not steeper than 3:1.

INDIANA DEPARTMENT OF TRANSPORTATION

INDEX
GENERAL NOTES AND LEGEND

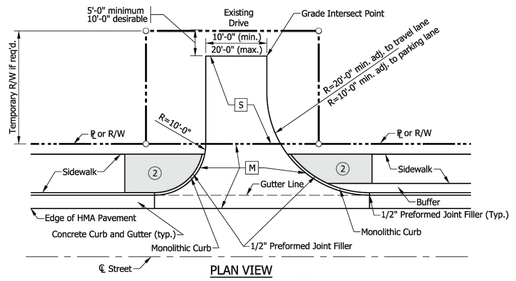
SEPTEMBER 2019

STANDARD DRAWING NO. E 610-DRIV-01

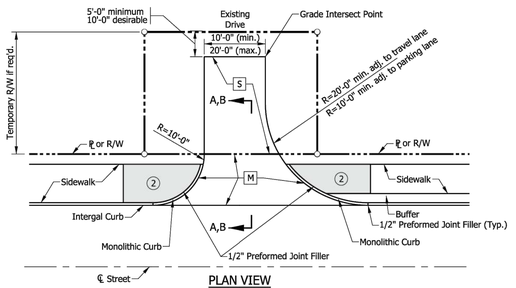
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/1/2019
DESIGN STANDARDS ENGINEER — DATE

6/5/2019
CHIEF ENGINEER — DATE



PLAN VIEW
CONCRETE CURB AND GUTTER



PLAN VIEW
INTEGRAL CONCRETE CURB

NOTES:

1. See Standard Drawing series E 610-DRIV-14 for joint placement, corner reinforcing, monolithic curb, and concrete curb and gutter details.
2. See Standard Drawing E 604-SDWK-03 sidewalk driveway crossing details.
3. See Standard Drawing E 610-DRIV-09 for Sections A-A and B-B.

LEGEND

M PCCP for Approaches, 6 in., on Dense Graded Subbase, 6 in., on Subgrade Treatment Type II (6 in. Coarse Aggregate No. 53)

S For type and thickness equivalent to surface in place, see plans.

Sidewalk Elevation Transition

INDIANA DEPARTMENT OF TRANSPORTATION

CLASS I DRIVE
(RESIDENTIAL)

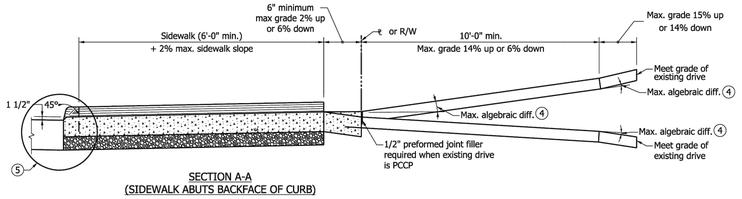
SEPTEMBER 2019

STANDARD DRAWING NO. E 610-DRIV-02

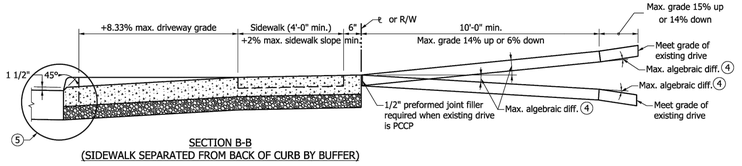
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/1/2019
DESIGN STANDARDS ENGINEER — DATE

6/5/2019
CHIEF ENGINEER — DATE



SECTION A-A
(SIDEWALK ABUTS BACKFACE OF CURB)



SECTION B-B
(SIDEWALK SEPARATED FROM BACK OF CURB BY BUFFER)

NOTES:

1. See Standard Drawing E 610-DRIV-02 Class I Drive pavement section.
2. See Standard Drawing E 610-DRIV-04 Class III Drive pavement section.
3. See Standard Drawing E 604-SDWK-03 for sidewalk driveway crossing details.
4. The maximum algebraic difference in grades shall not exceed 8% for crested grade nor 12% for sagged grade
5. See Standard Drawing E 610-DRIV-14 joint placement, monolithic curb, and concrete curb and gutter details.

LEGEND

= Curb ramp or sidewalk elevation transition.

= PCCP

INDIANA DEPARTMENT OF TRANSPORTATION

CLASS I AND CLASS III DRIVE
APPROACH GRADES

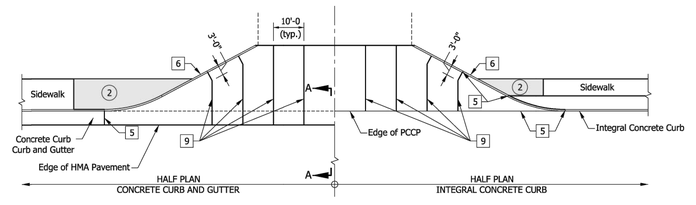
SEPTEMBER 2019

STANDARD DRAWING NO. E 610-DRIV-09

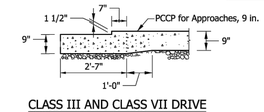
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/29/2019
DESIGN STANDARDS ENGINEER — DATE

6/5/2019
CHIEF ENGINEER — DATE

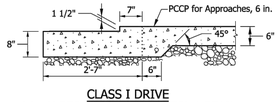


JOINT PLACEMENT DETAIL FOR PCCP DRIVES



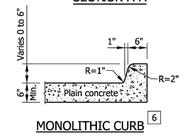
CLASS III AND CLASS VII DRIVE
CONCRETE CURB AND GUTTER DETAIL

SECTION A-A

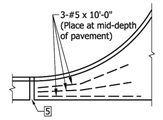


CLASS I DRIVE
CONCRETE CURB AND GUTTER DETAIL

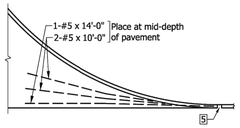
SECTION A-A



MONOLITHIC CURB 6

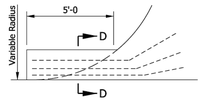


CONCRETE CURB AND GUTTER

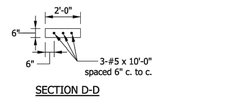


INTEGRAL CONCRETE CURB

TYPICAL CORNER REINFORCING FOR CLASS I DRIVE



TYPICAL CORNER REINFORCING FOR CLASS II DRIVE



SECTION D-D

NOTES:

1. See Standard Drawing series E 503-CCPJ for joint details.
2. See Standard Drawing E 604-SDWK-03 sidewalk driveway crossing details.

LEGEND

5 1/2" Preformed Joint Filler
6 Monolithic Curb
9 Longitudinal Joint

INDIANA DEPARTMENT OF TRANSPORTATION

JOINT PLACEMENT, CORNER REINFORCING, MONOLITHIC CURB, AND CONCRETE CURB AND GUTTER DETAILS

SEPTEMBER 2019

STANDARD DRAWING NO. E 610-DRIV-14

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

5/29/2019
DESIGN STANDARDS ENGINEER — DATE

6/5/2019
CHIEF ENGINEER — DATE

Certified by: David Hedlund

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Fax: (812) 424-7942
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
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Building Reference: -
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Sheet: 108 of 155

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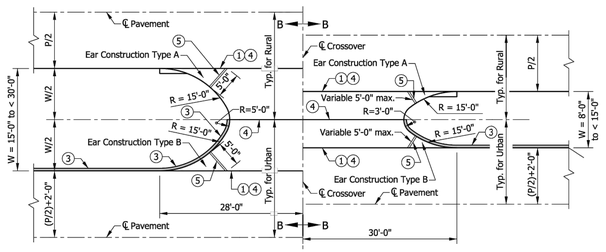
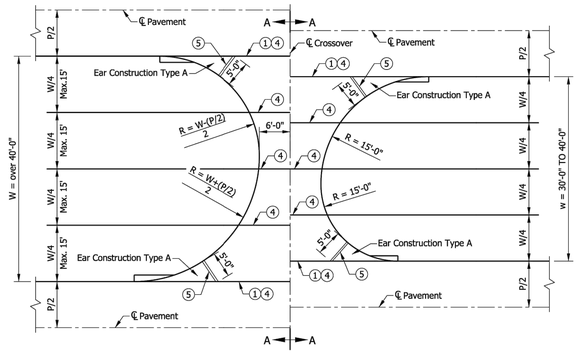


PRIVATE DRIVE CROSSOVER PLAN FOR W = 8'-0" to less than 30'-0"

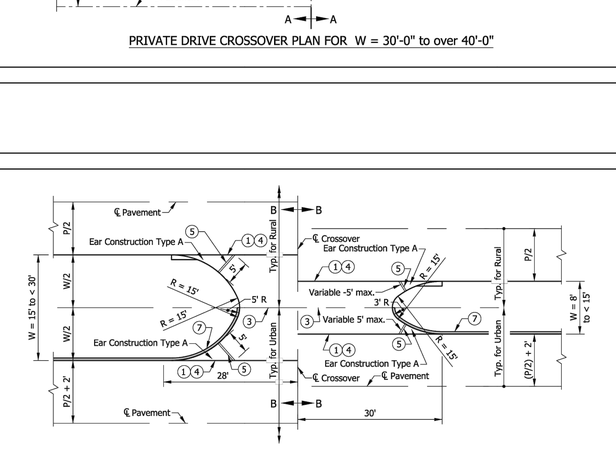


PRIVATE DRIVE CROSSOVER PLAN FOR W = 30'-0" to over 40'-0"

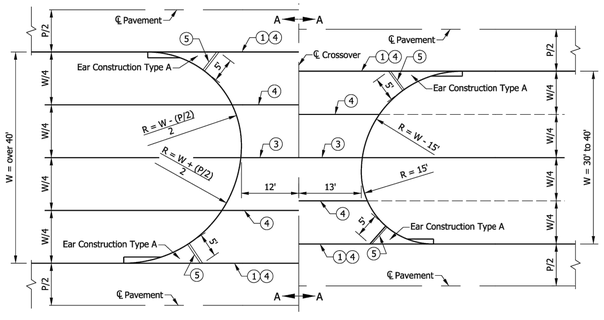
NOTES:

1. Thickened edge
2. See Standard Drawings:
   E 605-ERCN-01 for Ear Construction Type "A" and Type "B" details.
   E 610-DRIV-16 for sections A-A and B-B
3. See Standard Drawing E 605-CCIN-01 for Integral Concrete Curb details.
4. Longitudinal Joint, see Standard Drawing series E 503-CCPJ for joint details.
5. 1" Preformed Joint Filler.
6. See Standard Drawing E 610-DRIV-16 for sections A-A and B-B for PCCP and HMA pavement.

INDIANA DEPARTMENT OF TRANSPORTATION	
PRIVATE DRIVE CROSSOVER PLANS SEPTEMBER 2019	
STANDARD DRAWING NO. E 610-DRIV-15	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA TRANSPORTATION PROFESSIONAL ENGINEER	5/1/2019 DESIGN STANDARDS ENGINEER DATE 6/5/2019 CHIEF ENGINEER DATE



COMMERCIAL DRIVE CROSSOVER PLAN FOR W = 8' to less than 30'

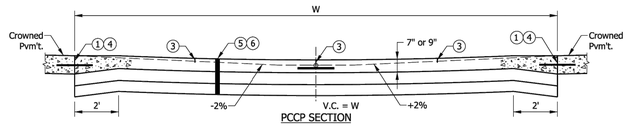


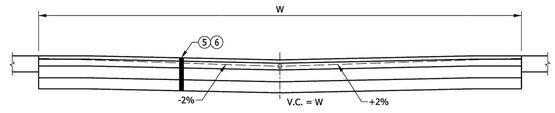
COMMERCIAL DRIVE CROSSOVER PLAN FOR W = 30' to over 40'

NOTES:

1. Thickened edge
2. See Standard Drawings
   E 605-ERCN-01 for Ear Construction for Type "A" and Type "B" details.
3. Contraction Joint, Type D-1, see Standard Drawing series E 503-CCPJ for joint details.
4. Longitudinal joint, see Standard Drawing series E 503-CCPJ for joint details.
5. 1" Preformed Joint Filler.
6. Grades for the commercial drive crossover shall be the same as for private drive crossover. See Standard Drawing E 610-DRIV-16 for sections A-A and B-B for PCCP and HMA pavement.
7. See Standard Drawing E 605-CCIN-01 for Integral Concrete Curb details.

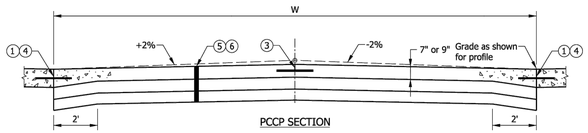
INDIANA DEPARTMENT OF TRANSPORTATION	
COMMERCIAL DRIVE CROSSOVER PLANS SEPTEMBER 2019	
STANDARD DRAWING NO. E 610-DRIV-17	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA TRANSPORTATION PROFESSIONAL ENGINEER	5/1/2019 DESIGN STANDARDS ENGINEER DATE 6/5/2019 CHIEF ENGINEER DATE

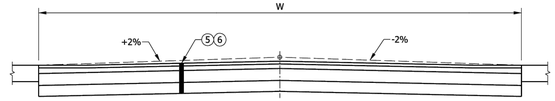




HMA SECTION
SECTION A-A

SECTION TO BE USED WITH CROWN PAVEMENT





HMA SECTION
SECTION B-B

SECTION TO BE USED WITH 3-IN. TILTED PAVEMENT

NOTES:

1. Thickened edge to be same thickness as mainline pavement.
2. See Standard Drawings E 610-DRIV-15 and E 610-DRIV-17 for location of Sections A-A and B-B.
3. Contraction Joint Type D-1. See Standard Drawing series E 503-CCPJ for details, and Standard Drawing E 610-DRIV-14 for spacing.
4. Longitudinal Joint, see Standard Drawing series E 503-CCPJ for joint details.
5. Private Drive Crossover shall be constructed of HMA or PCCP as shown on the plans, unless otherwise directed.
   For AADTT ≤ 50
   HMA for Approaches, Type B:
   165 lbs/yd² HMA Surface Type B on
   275 lbs/yd² HMA Intermediate, Type B on
   6" Compacted Aggregate, No. 53 on
   Subgrade Treatment, Type II (6 in. Coarse Aggregate, No. 53)
   or
   PCCP for Approaches, 7 in. on
   Dense Graded Subbase, 6 in., on
   Subgrade Treatment Type II (6 in. Coarse Aggregate, No. 53)
6. Commercial Drive Crossover shall be constructed of HMA or PCCP as shown on the plans, unless otherwise directed.
   For AADTT ≤ 50
   HMA for Approaches, Type B:
   165 lbs/yd² HMA Surface Type B on
   275 lbs/yd² HMA Intermediate, Type B on
   6" Compacted Aggregate, No. 53 on
   Subgrade Treatment, Type II (6 in. Coarse Aggregate, No. 53)
   or
   PCCP for Approaches, 9 in. on
   Dense Graded Subbase, 6 in., on
   Subgrade Treatment Type II (6 in. Coarse Aggregate, No. 53)

INDIANA DEPARTMENT OF TRANSPORTATION	
PRIVATE AND COMMERCIAL DRIVE CROSSOVER SECTIONS SEPTEMBER 2019	
STANDARD DRAWING NO. E 610-DRIV-16	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA TRANSPORTATION PROFESSIONAL ENGINEER	5/1/2019 DESIGN STANDARDS ENGINEER DATE 6/5/2019 CHIEF ENGINEER DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS122
Sheet: 109 of 155

Last Saved By: Joe Printed:2/23/23
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REINFORCED CONCRETE PIPE

D	H	R	S	SINGLE PIPE G	SINGLE PIPE CU.YDS.CONC. 2 ANCHORS	DOUBLE PIPE G	DOUBLE PIPE CU.YDS.CONC. 2 ANCHORS	TRIPLE PIPE G	TRIPLE PIPE CU.YDS.CONC. 2 ANCHORS
42"	3'-3	2'-7½"	6'-3	5'-3	2.5	11'-6	5.5	17'-9	8.6
48"	3'-5	2'-11	6'-10	5'-10	2.8	12'-8	6.2	19'-6	9.6
54"	3'-7	3'-2½"	7'-8	6'-5	3.2	14'-1	7.1	21'-9	11.1
60"	3'-9	3'-6	8'-6	7'-0	3.5	15'-6	8.0	24'-0	12.5
66"	3'-11	3'-9½"	9'-4	7'-7	3.9	16'-11	9.0	26'-3	14.1
72"	4'-1	4'-1	10'-2	8'-2	4.3	18'-4	10.0	28'-6	15.7
78"	4'-3	4'-4½"	11'-0	8'-9	4.7	19'-9	11.0	30'-9	17.3
84"	4'-5	4'-8	11'-10	9'-4	5.1	21'-2	12.1	33'-0	19.0
90"	4'-7	4'-11½"	12'-8	9'-11	5.5	22'-7	13.2	35'-3	20.8
96"	4'-9	5'-3	13'-6	10'-6	6.0	24'-0	14.3	37'-6	22.7
102"	4'-11	5'-6½"	14'-1	11'-1	6.4	25'-2	15.3	39'-3	24.2
108"	5'-1	5'-10	14'-8	11'-8	6.9	26'-4	16.3	41'-0	25.7
114"	5'-3	6'-1½"	15'-3	12'-3	7.4	27'-6	17.3	42'-9	27.3
120"	5'-5	6'-5	15'-10	12'-10	7.8	28'-8	18.4	44'-6	28.9
126"	5'-7	6'-8½"	16'-5	13'-5	8.3	29'-10	19.4	46'-3	30.5
132"	5'-9	7'-0	17'-0	14'-0	8.8	31'-0	20.5	48'-0	32.2
138"	5'-11	7'-3½"	17'-7	14'-7	9.4	32'-2	21.6	49'-9	33.9
144"	6'-1	7'-7	18'-2	15'-2	9.9	33'-4	22.8	51'-6	35.6

CORRUGATED ALUMINUM ALLOY OR STEEL PIPE

D	H	R	S	SINGLE PIPE G	SINGLE PIPE CU.YDS.CONC. 2 ANCHORS	DOUBLE PIPE G	DOUBLE PIPE CU.YDS.CONC. 2 ANCHORS	TRIPLE PIPE G	TRIPLE PIPE CU.YDS.CONC. 2 ANCHORS
42"	2'-11	2'-4	5'-8	4'-8	2.1	10'-4	4.7	16'-0	7.3
48"	3'-1	2'-7	6'-2	5'-2	2.4	11'-4	5.3	17'-6	8.2
54"	3'-3	2'-10	6'-11	5'-8	2.7	12'-7	6.1	19'-6	9.5
60"	3'-4	3'-1	7'-8	6'-2	3.0	13'-10	6.7	21'-6	10.5
66"	3'-5	3'-4	8'-5	6'-8	3.2	15'-1	7.5	23'-6	11.6
72"	3'-7	3'-7	9'-2	7'-2	3.6	16'-4	8.3	25'-6	13.0
78"	3'-9	3'-10	9'-11	7'-8	3.9	17'-7	9.1	27'-6	14.4
84"	3'-10	4'-1	10'-8	8'-2	4.2	18'-10	9.9	29'-6	15.6
90"	3'-11	4'-4	11'-5	8'-8	4.5	20'-1	10.7	31'-6	16.8
96"	4'-1	4'-7	12'-2	9'-2	4.8	21'-4	11.6	33'-6	18.4
102"	4'-2	4'-10	12'-8	9'-8	5.1	22'-4	12.2	35'-0	19.3
108"	4'-4	5'-1	13'-2	10'-2	5.5	23'-4	13.0	36'-6	20.6
114"	4'-5	5'-4	13'-8	10'-8	5.8	24'-4	13.7	38'-0	21.6
120"	4'-7	5'-7	14'-2	11'-2	6.2	25'-4	14.6	39'-6	22.9
126"	4'-8	5'-10	14'-8	11'-8	6.5	26'-4	15.2	41'-0	23.9
132"	4'-10	6'-1	15'-2	12'-2	6.9	27'-4	16.1	42'-6	25.3
138"	4'-11	6'-4	15'-8	12'-8	7.3	28'-4	16.8	44'-0	26.4
144"	5'-1	6'-7	16'-2	13'-2	7.7	29'-4	17.8	45'-6	27.8

GENERAL NOTES

1. Refer to Standard Drawings E 715-SPCA-01 and E 715-SPCA-02 for single pipe anchor details.
2. Refer to Standard Drawings E 715-MPCA-01 and E 715-MPCA-02 for multiple pipe anchor details.

LEGEND

D – Pipe diameter
H – Anchor height
R – Dimension from anchor edge to ℄ of pipe
S – Dimension between ℄ of adjacent pipes
G – Overall anchor length

INDIANA DEPARTMENT OF TRANSPORTATION
CONCRETE ANCHOR TABLE
JANUARY 1998
STANDARD DRAWING NO. E 715-ANCH-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL 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 1-02-98
DESIGN STANDARDS ENGINEER

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE

SPAN	RISE	H	R	S	SINGLE PIPE G	SINGLE PIPE CU.YDS.CONC., 2 ANCHORS	DOUBLE PIPE G	DOUBLE PIPE CU.YDS.CONC., 2 ANCHORS	TRIPLE PIPE G	TRIPLE PIPE CU.YDS.CONC., 2 ANCHORS
45"	29"	3'-0	2'-9	6'-6	5'-6	2.5	12'-0	5.5	18'-6	8.5
49"	32"	3'-1	2'-11½	6'-11	5'-11	2.7	12'-10	5.9	19'-9	9.2
53"	34"	3'-2	3'-1½	7'-6	6'-3	2.9	13'-9	6.4	21'-3	10.0
60"	38"	3'-3	3'-5½	8'-5	6'-11	3.2	13'-4	7.3	23'-9	11.3
68"	43"	3'-5	3'-10	9'-6	7'-8	3.6	17'-2	8.3	26'-8	13.0
76"	48"	3'-7	4'-2½	10'-7	8'-5	4.1	19'-0	9.4	29'-7	14.8
83"	53"	3'-8	4'-6½	11'-7	9'-1	4.5	20'-8	10.5	32'-3	16.5
91"	58"	3'-10	4'-11	12'-8	9'-10	4.9	22'-6	11.7	35'-2	18.4
98"	63"	4'-0	5'-3	13'-6	10'-6	5.3	24'-0	12.7	37'-6	20.1
106"	68"	4'-2	5'-7½	14'-3	11'-3	5.8	25'-6	13.7	39'-9	21.7
113"	72"	4'-3	5'-11½	14'-11	11'-11	6.2	26'-10	14.6	41'-9	23.0
121"	77"	4'-5	6'-4	15'-8	12'-8	6.7	28'-4	15.7	44'-0	24.6
128"	82"	4'-6	6'-8	16'-4	13'-4	7.2	29'-8	16.6	46'-0	26.1
136"	87"	4'-8	7'-0	17'-0	14'-0	7.6	31'-0	17.6	48'-0	27.6
143"	92"	4'-10	7'-4	17'-8	14'-8	8.1	32'-4	18.7	50'-0	29.2
151"	97"	5'-0	7'-8½	18'-5	15'-5	8.7	33'-10	19.9	52'-3	31.0
166"	106"	5'-3	8'-5	19'-10	16'-10	9.7	36'-8	22.0	56'-6	34.4
180"	116"	5'-6	9'-1	21'-2	18'-2	10.8	39'-4	24.3	60'-6	37.8

CORRUGATED ALUMINUM ALLOY OR STEEL PIPE–ARCH

SPAN	RISE	H	R	S	SINGLE PIPE G	SINGLE PIPE CU.YDS.CONC., 2 ANCHORS	DOUBLE PIPE G	DOUBLE PIPE CU.YDS.CONC., 2 ANCHORS	TRIPLE PIPE G	TRIPLE PIPE CU.YDS.CONC., 2 ANCHORS
49"	33"	3'-0	2'-7	6'-3	5'-2	2.2	11'-5	4.9	17'-8	7.7
57"	38"	3'-1	2'-11	7'-3	5'-10	2.5	13'-1	5.7	20'-4	8.9
64"	43"	3'-3	3'-2½	8'-1	6'-5	2.8	14'-6	6.4	22'-7	10.1
71"	47"	3'-4	3'-6	9'-0	7'-0	3.0	16'-0	7.2	25'-0	11.3
77"	52"	3'-6	3'-9	9'-9	7'-6	3.3	17'-3	7.9	27'-0	12.5
83"	57"	3'-8	4'-0	10'-6	8'-0	3.5	18'-6	8.6	29'-0	13.6
60"	46"	3'-9	3'-1	7'-8	6'-2	2.9	13'-10	6.7	21'-6	10.5
66"	51"	3'-10	3'-4	8'-5	6'-8	3.1	15'-1	7.4	23'-6	11.6
73"	55"	4'-0	3'-7½	9'-4	7'-3	3.4	16'-7	8.3	25'-11	13.1
81"	59"	4'-2	3'-11½	10'-4	7'-11	3.7	18'-3	9.1	28'-7	14.5
87"	63"	4'-2	4'-2½	11'-1	8'-5	4.0	19'-6	9.8	30'-7	15.6
95"	67"	4'-4	4'-6½	12'-1	9'-1	4.3	21'-2	10.8	33'-3	17.2
103"	71"	4'-6	4'-10½	12'-9	9'-9	4.7	22'-6	11.6	35'-3	18.5
112"	75"	4'-8	5'-3	13'-6	10'-6	5.1	24'-0	12.5	37'-6	19.8
117"	79"	4'-9	5'-5½	13'-11	10'-11	5.3	24'-10	12.9	38'-9	20.6
128"	83"	5'-0	5'-11	14'-10	11'-10	5.8	26'-8	14.1	41'-6	22.4
137"	87"	5'-2	6'-3	15'-7	12'-7	6.1	28'-1	14.8	43'-8	23.5
142"	91"	5'-4	6'-6	16'-0	13'-0	6.5	29'-0	15.7	45'-0	24.9

GENERAL NOTES

1. Refer to Standard Drawings E 715-SPCA-01 and E 715-SPCA-02 for single anchor details.
2. Refer to Standard Drawing E 715-MPCA-02 for multiple anchor details.

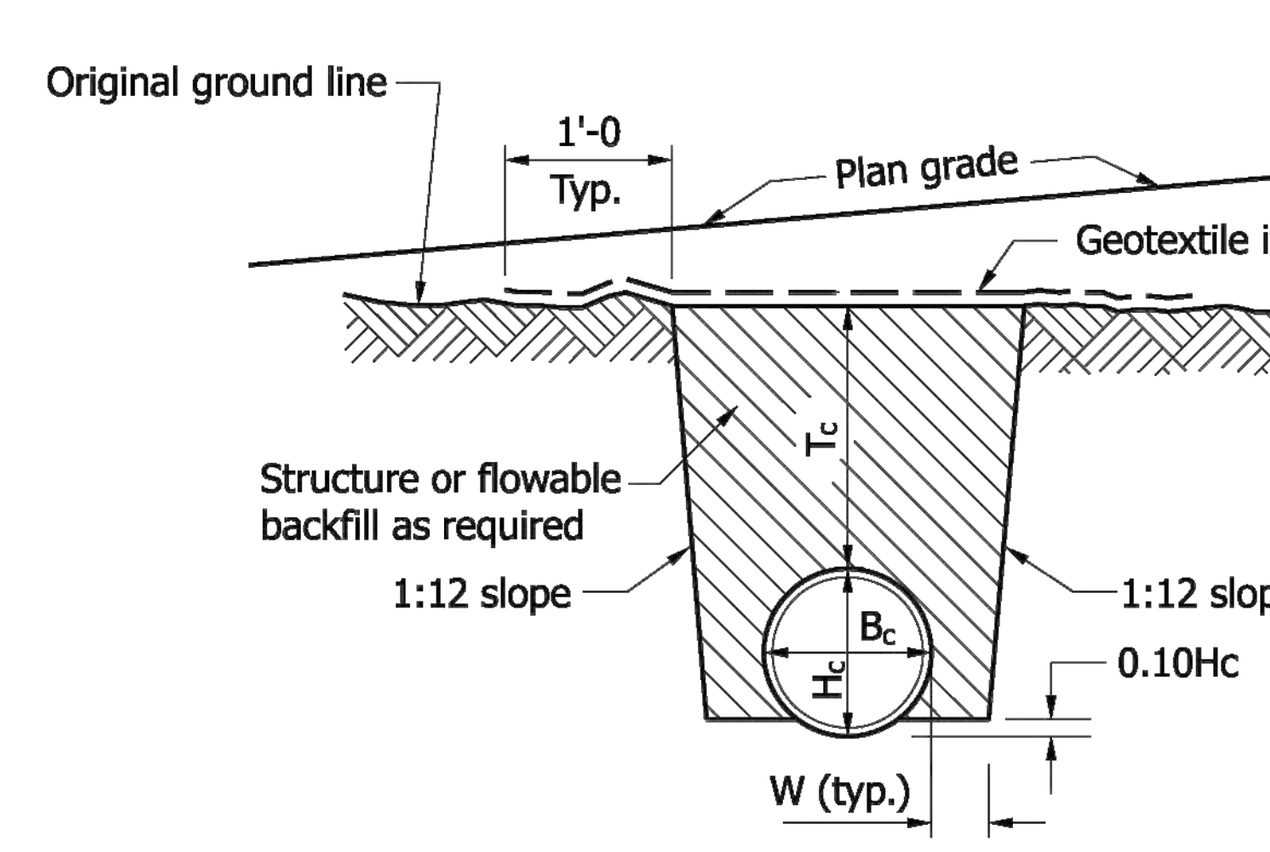
LEGEND

H – Anchor height
R – Dimension from anchor edge to ℄ exterior pipe
S – Dimension between ℄ of adjacent pipes
G – Overall anchor length

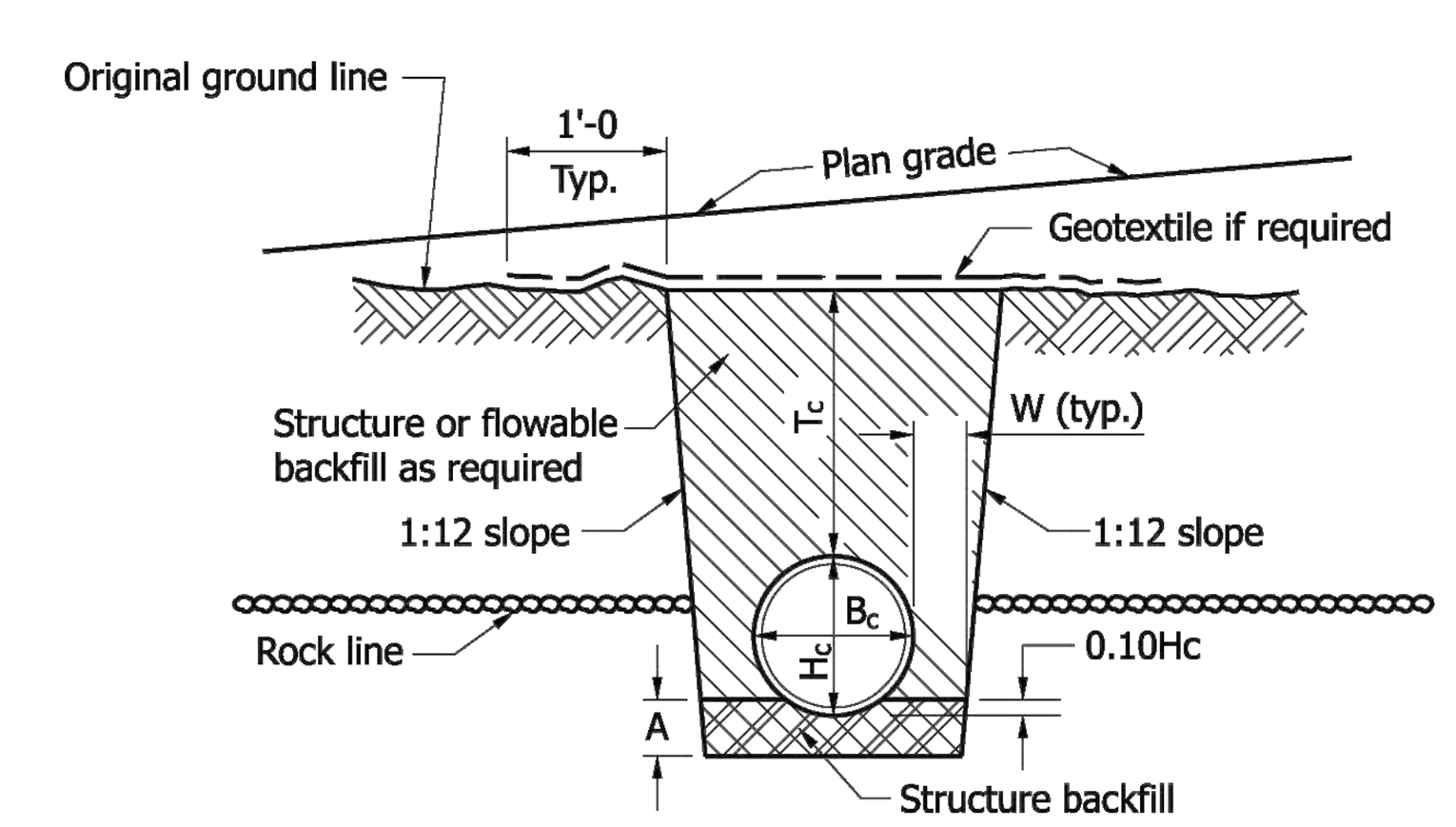
INDIANA DEPARTMENT OF TRANSPORTATION
CONCRETE ANCHOR TABLES
JANUARY 1998
STANDARD DRAWING NO. E 715-ANCH-02

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL 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 1-02-98
DESIGN STANDARDS ENGINEER



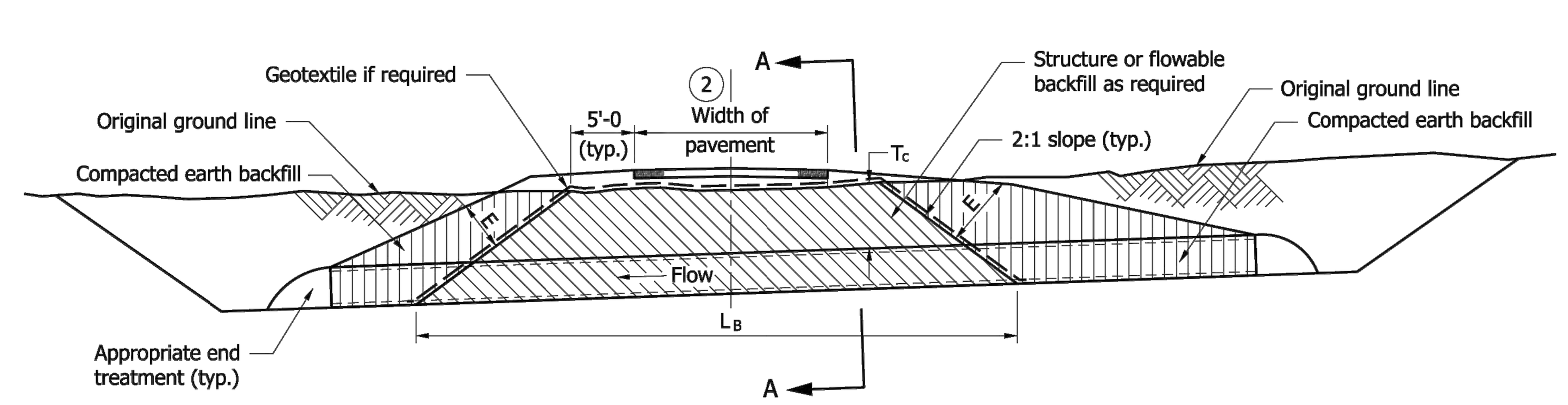
SECTION A-A



SECTION A-A
ROCK FOUNDATION

LEGEND

H_c = Overall diameter or rise (typ.)
B_c = Overall diameter or span
A = 8" min. for fill height less than 16'
= 12" min. for fill height of 16' or more
T_c = Trench cover depth over pipe
W = 0.3 B_c or 9", whichever is greater
E = Encasement
L_B = Backfill length measured from toe to toe of the 2:1 slopes.



ELEVATION

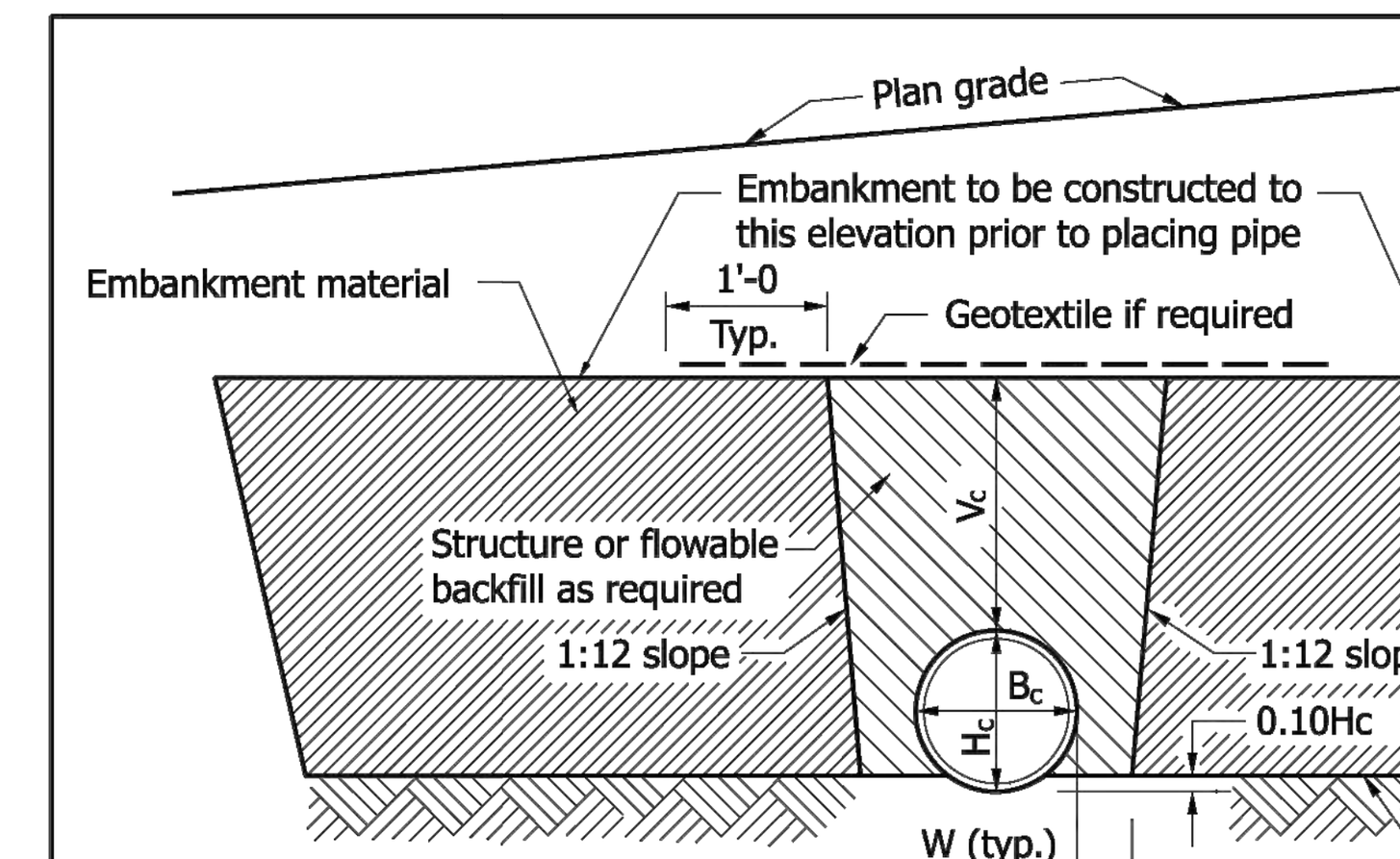
NOTES :

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
   a.) 1.5' for $B_c \le 18"$
   b.) 3' for $18" < B_c \le 54"$
   c.) 4' for $B_c > 54"$
2. (2) For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.

INDIANA DEPARTMENT OF TRANSPORTATION
PIPE BACKFILL METHOD 1
NEW ROADWAY, TRENCH
SEPTEMBER 2008
STANDARD DRAWING NO. E 715-BKFL-01

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

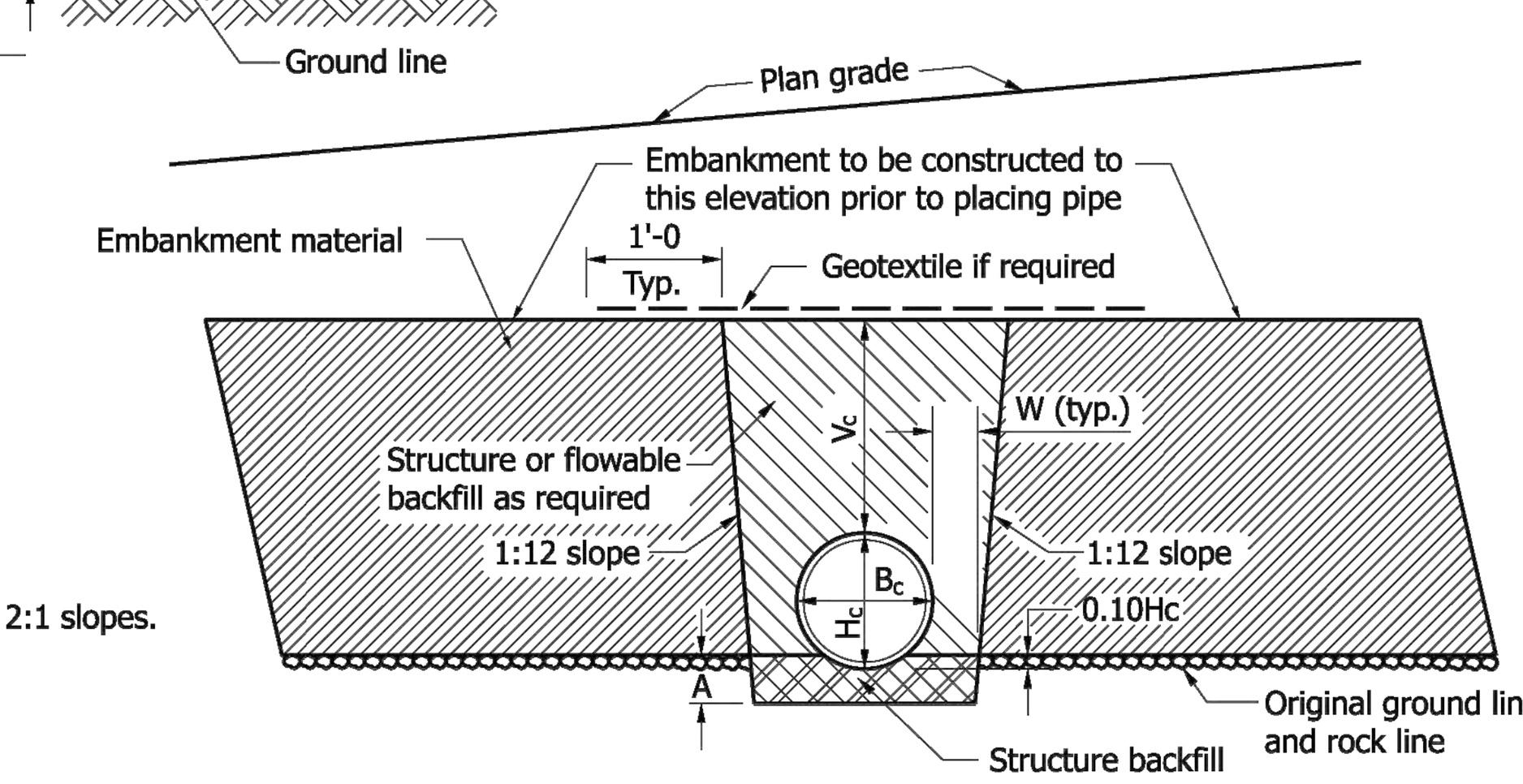
/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE
/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER



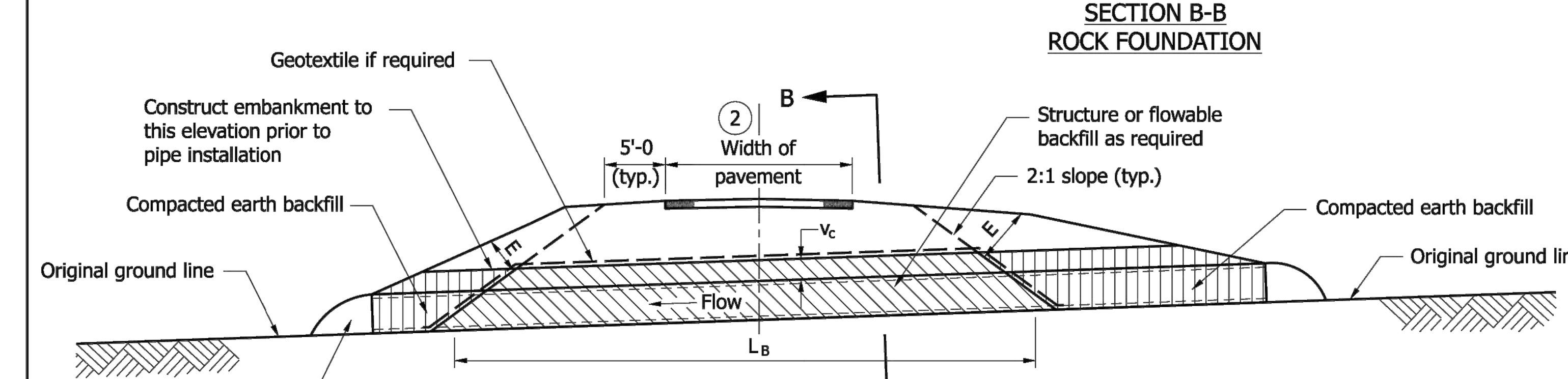
SECTION B-B

LEGEND

H_c = Overall diameter or rise (typ.)
B_c = Overall diameter or span
A = 8" min. for fill height less than 16'
= 12" min. for fill height of 16' or more
V_c = 12" for $B_c \le 18"$
18" for $B_c > 18"$
W = 0.3 B_c or 9", whichever is greater
L_B = Backfill length measured from toe to toe of the 2:1 slopes.



SECTION B-B
ROCK FOUNDATION



ELEVATION

NOTES :

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
   a.) 1.5' for $B_c \le 18"$
   b.) 3' for $18" < B_c \le 54"$
   c.) 4' for $B_c > 54"$
2. (2) For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.

INDIANA DEPARTMENT OF TRANSPORTATION
PIPE BACKFILL METHOD 1
NEW ROADWAY, EMBANKMENT
SEPTEMBER 2008
STANDARD DRAWING NO. E 715-BKFL-02

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

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE
/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER

Last Saved By: jcler Printed:2/23/23
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Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
9120 Harrison Park Court
Indianapolis, Indiana 46216
Business (317) 254-9686 Fax (317) 259-6262

Fosse & Associates Architects, Inc.
201 N.W. Fourth St. Suite 100 – Evansville, IN 47708
Phone: (812) 424-6858 – Fax (812) 424-6657
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Mechanical & Electrical Engineering
501 Carpenter Street
Evansville, IN 47708
Phone : (812) 424-7941
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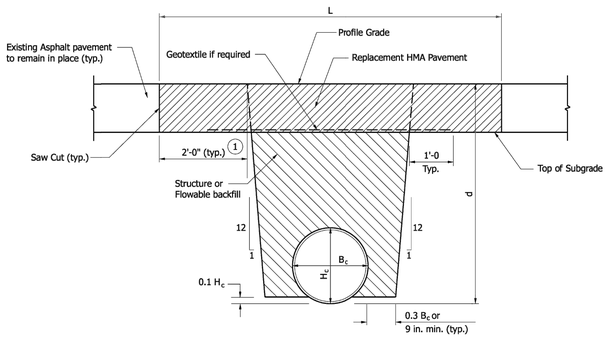
www.bceng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:	
Project Number:	84003001-22-058-C1
Requisition Number:	-
Account Number:	-
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number:	1364
Building Reference:	-
Drawing Number:	CS123
Sheet: 110 of 155	



NOTES :

1. Existing subgrade over this distance shall remain in place.
2. The minimum pavement sections shall be as follows:
   HMA: 165 #/syd HMA Surface, Type A,B,C or D on variable HMA Intermediate, Type A, B, C or D
3. If underdrains are present, they shall be perpetuated in accordance with the details shown on Standard Drawing E 718-UNDR-01.
4. See Standard Drawing E 715-BKFL-01 for pipe backfill trench elevation view.

L = Pay limits of pavement removal and pavement replacement (ft); for cross pipe, measured along roadway centerline; for pipe parallel to roadway centerline, measured prependicular to pipe centerline.
B_C = Overall diameter or span (in.)
H_C = Overall diameter or rise (in.)
d = Vertical distance from flowline to profile grade (ft)

ASPHALT REPLACEMENT PAVEMENT

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 1
EXISTING ROADWAY, TRENCH

SEPTEMBER 2008

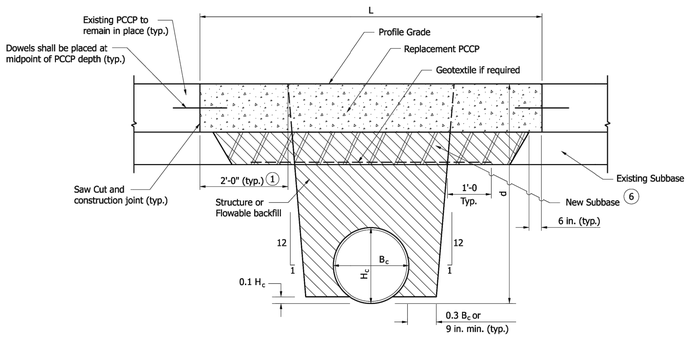
STANDARD DRAWING NO. E 715-BKFL-03

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

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE



NOTES :

1. Existing subgrade over this longitudinal distance shall remain in place.
2. The thickness of the replacement PCCP shall match that of the existing concrete pavement.
3. See Standard Drawing series 506-CCPP for concrete patching details.
4. If underdrains are present, they shall be perpetuated in accordance with the details shown on Standard Drawing E 718-UNDR-01.
5. See Standard Drawing E 715-BKFL-01 for pipe backfill trench elevation view.
6. New subbase type shall match the existing subbase type and thickness.

L = Pay limits of pavement removal and pavement replacement (ft); for cross pipe, measured along roadway centerline; for pipe parallel to roadway centerline, measured prependicular to pipe centerline.
B_C = Overall diameter or span (in.)
H_C = Overall diameter or rise (in.)
d = Vertical distance from flowline to profile grade (ft)

PCCP REPLACEMENT PAVEMENT

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 1
EXISTING ROADWAY, TRENCH

SEPTEMBER 2008

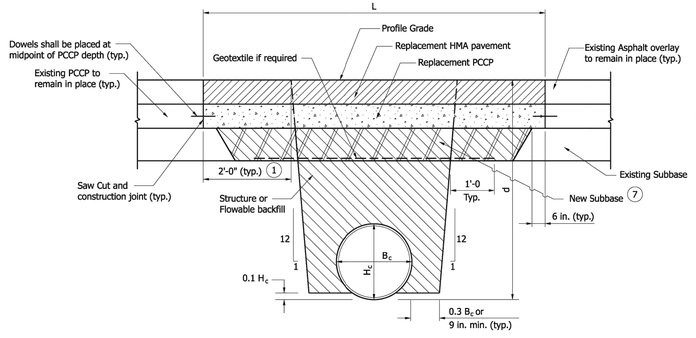
STANDARD DRAWING NO. E 715-BKFL-04

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

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE



NOTES :

1. Existing subgrade over this distance shall remain in place.
2. The thickness of the replacement PCCP shall match that of the existing concrete pavement.
3. The minimum pavement sections shall be as follows:
   HMA: 165 #/syd HMA Surface, Type A,B,C or D on variable HMA Intermediate, Type A, B, C or D
4. See Standard Drawing series 506-CCPP for concrete patching details.
5. If underdrains are present, they shall be perpetuated in accordance with the details shown on Standard Drawing E 718-UNDR-01.
6. See Standard Drawing E 715-BKFL-01 for pipe backfill trench elevation view.
7. New subbase type shall match the existing subbase type and thickness.

L = Pay limits of pavement removal and pavement replacement (ft); for cross pipe, measured along roadway centerline; for pipe parallel to roadway centerline, measured prependicular to pipe centerline.
B_C = Overall diameter or span (in.)
H_C = Overall diameter or rise (in.)
d = Vertical distance from flowline to profile grade (ft)

COMPOSITE REPLACEMENT PAVEMENT

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 1
EXISTING ROADWAY, TRENCH

SEPTEMBER 2008

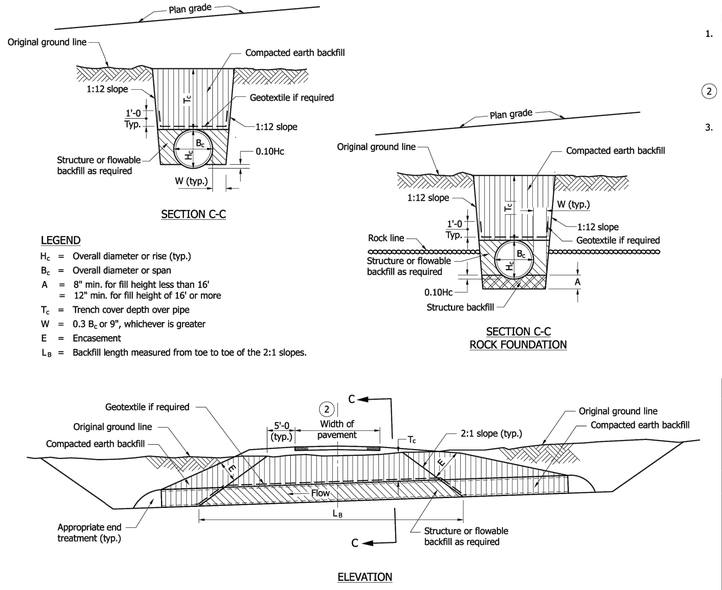
STANDARD DRAWING NO. E 715-BKFL-05

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

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE



LEGEND

H_c = Overall diameter or rise (typ.)
B_c = Overall diameter or span
A = 8" min. for fill height less than 16'
= 12" min. for fill height of 16' or more
T_c = Trench cover depth over pipe
W = 0.3 B_c or 9", whichever is greater
E = Encasement
L_B = Backfill length measured from toe to toe of the 2:1 slopes.

NOTES :

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
   a.) 1.5' for $B_c \leq 18"$
   b.) 3' for $18" < B_c \leq 54"$
   c.) 4' for $B_c > 54"$
2. For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 2
NEW OR EXISTING DRIVE

SEPTEMBER 2008

STANDARD DRAWING NO. E 715-BKFL-06

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

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
Indianapolis, Indiana 46220
Business (317) 254-9696 Fax (317) 255-5262

Fosse & Associates Architects, Inc.
323 NW Fourth St, Suite 102 – Evansville, IN 47708
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E-mail fosse@fosse-architects.com

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Mechanical & Electrical Engineering
501 Carpenter Street
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Phone : (812) 424-7941
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
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402 WEST WASHINGTON STREET
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317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS124
Sheet: 111 of 155

Last Saved By: Joe Pinkard/23/23
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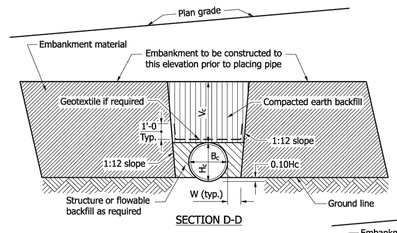
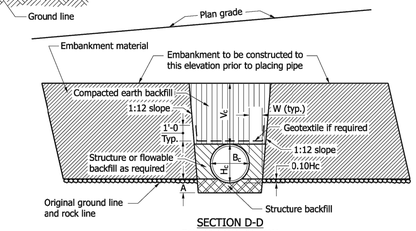


SECTION D-D



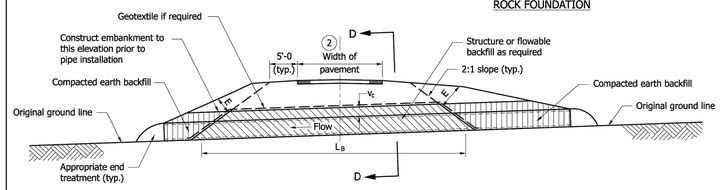
SECTION D-D
ROCK FOUNDATION

LEGEND

H_c = Overall diameter or rise (typ.)
B_c = Overall diameter or span
A = 8" min. for fill height less than 16'
= 12" min. for fill height of 16' or more
V_c = 12" for $B_c \leq 18"$
18" for $B_c > 18"$
W = 0.3 B_c or 9", whichever is greater
E = Encasement
L_B = Backfill length measured from toe to toe of the 2:1 slopes.

NOTES :

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
   a.) 1.5' for $B_c \leq 18"$
   b.) 3' for $18" < B_c \leq 54"$
   c.) 4' for $B_c > 54"$
2. For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.



ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 2
NEW OR EXISTING DRIVE

SEPTEMBER 2008

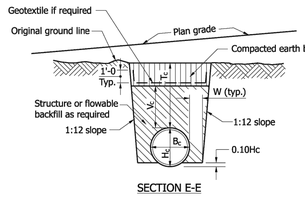
STANDARD DRAWING NO. E 715-BKFL-07

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

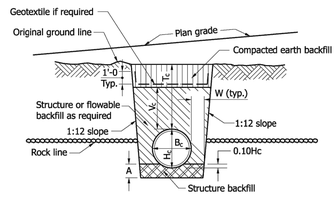
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE



SECTION E-E



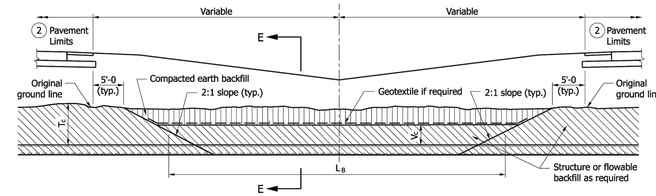
SECTION E-E
ROCK FOUNDATION

LEGEND

H_c = Overall diameter or rise (typ.)
B_c = Overall diameter or span
A = 8" min. for fill height less than 16'
= 12" min. for fill height of 16' or more
V_c = 12" for $B_c \leq 18"$
18" for $B_c > 18"$
T_c = Trench cover depth over pipe
W = 0.3 B_c or 9", whichever is greater
L_B = Backfill length measured from toe to toe of the 2:1 slopes.

NOTES :

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
   a.) 1.5' for $B_c \leq 18"$
   b.) 3' for $18" < B_c \leq 54"$
   c.) 4' for $B_c > 54"$
2. For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.



ELEVATION THRU MEDIAN STRIP

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 3
MEDIAN INSTALLATION, TRENCH

SEPTEMBER 2008

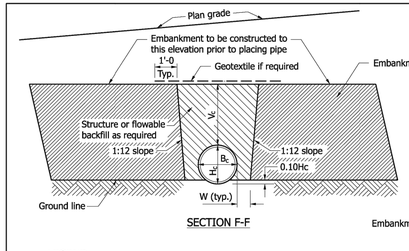
STANDARD DRAWING NO. E 715-BKFL-08

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

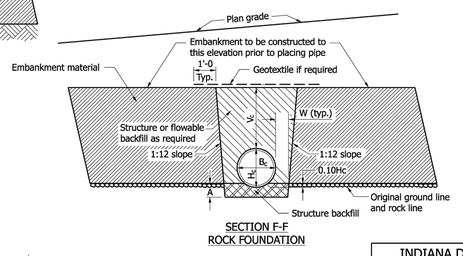
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE



SECTION F-F



SECTION F-F
ROCK FOUNDATION

LEGEND

H_c = Overall diameter or rise (typ.)
B_c = Overall diameter or span
A = 8" min. for fill height less than 16'
= 12" min. for fill height of 16' or more
V_c = 12" for $B_c \leq 18"$
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W = 0.3 B_c or 9", whichever is greater
L_B = Backfill length measured from toe to toe of the 2:1 slopes.

NOTES :

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
   a.) 1.5' for $B_c \leq 18"$
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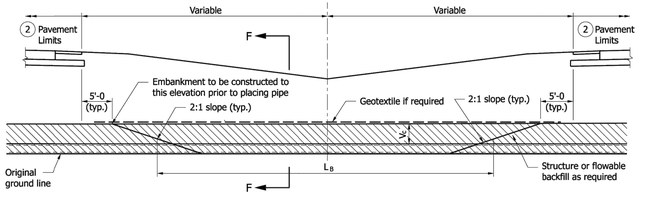


ELEVATION THRU MEDIAN STRIP

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 1
MEDIAN INSTALLATION, EMBANKMENT

SEPTEMBER 2008

STANDARD DRAWING NO. E 715-BKFL-09

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

DESIGN STANDARDS ENGINEER

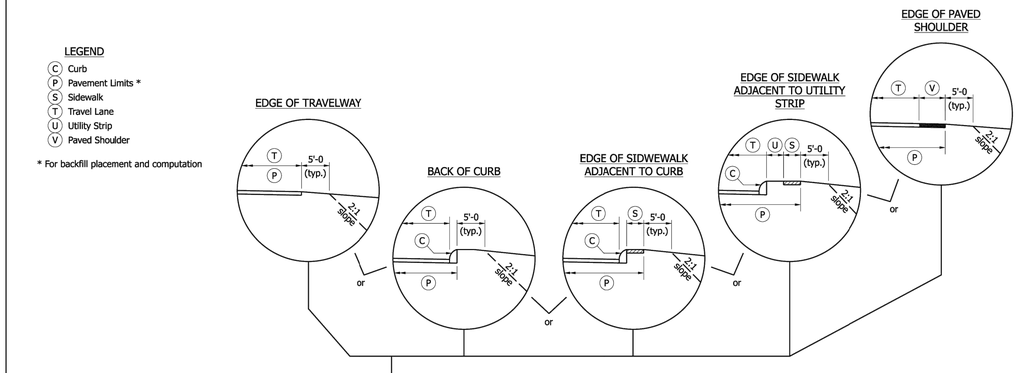
/s/ Richard L. Van Cleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE

LEGEND

(C) Curb
(P) Pavement Limits *
(S) Sidewalk
(T) Travel Lane
(U) Utility Strip
(V) Paved Shoulder

* For backfill placement and computation



ELEVATION

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL
LIMIT DETERMINATION

SEPTEMBER 2007

STANDARD DRAWING NO. E 715-BKFL-10

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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
920 Harrison Park Court
Indianapolis, Indiana 46226
Business (317) 254-0600 Fax (317) 259-0202

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Phone (812) 424-2222 – Fax (812) 424-2667
E-mail fosse@fosse-architects.com

B. C. Engineering, Inc.
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501 Carpenter Street
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Phone : (812) 424-7941
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
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ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
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317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
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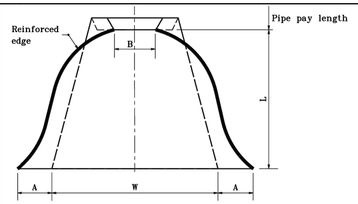
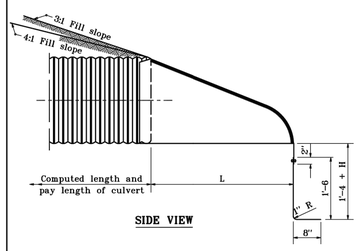
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS125
Sheet: 112 of 155

Last Saved By: Joe Pinkard 2/23/23
File: I:\04-Clear Creek Welcome Center\DWGS\SITE SHEETS\EB WELCOME CENTER_1364-EB-CS100 STANDARDS-700.dwg Feb 23, 2023-2:34:33 pm

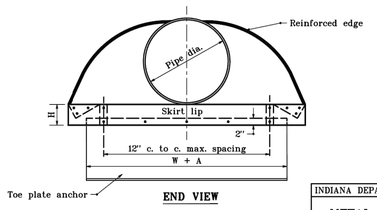
PIPE DIA.	END SECTION THICK. (in.)	DIMENSIONS A (±1")	B (Max.)	H (±1")	L (±1½")	W (±2")	APPROX. SLOPE	BODY
12	.064	6	6	6	21	24	2½:1	1 Pc.
15	.064	7	8	6	26	30	2½:1	1 Pc.
18	.064	8	10	6	31	36	2½:1	1 Pc.
21	.064	9	12	6	36	42	2½:1	1 Pc.
24	.064	10	13	6	41	48	2½:1	1 Pc.
30	.079	12	16	8	51	60	2½:1	1 Pc.
36	.079	14	19	9	60	72	2½:1	2 Pc.



PLAN VIEW



SIDE VIEW



END VIEW

INDIANA DEPARTMENT OF TRANSPORTATION

METAL PIPE END SECTION

JANUARY 1998

STANDARD DRAWING NO. E 715-MPES-01

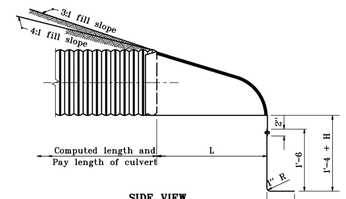
DETAILS PLACED IN THIS FORMAT 11-15-99

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

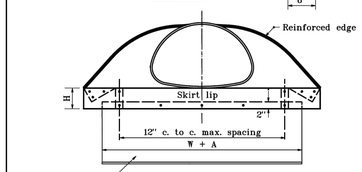
/s/ Firoos Zandi 11-15-99
CHIEF HIGHWAY ENGINEER — DATE

ORIGINALLY APPROVED 1-02-98
DESIGN STANDARDS ENGINEER

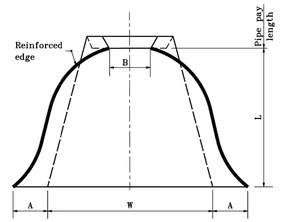
PIPE-ARCH DIMENSIONS SPAN	RISE	END SECTION THICK. (in.)	DIMENSIONS A (±1")	B (Max.)	H (± 1")	L (±1½")	W (±2")	APPROX. SLOPE	BODY
17	13	.064	7	9	6	19	30	2½:1	1 Pc.
21	15	.064	7	10	6	23	36	2½:1	1 Pc.
24	18	.064	8	12	6	28	42	2½:1	1 Pc.
28	20	.064	9	14	6	32	48	2½:1	1 Pc.
35	24	.079	10	16	8	39	60	2½:1	1 Pc.
42	29	.079	12	18	9	46	75	2½:1	1 Pc.



SIDE VIEW



END VIEW



PLAN VIEW

INDIANA DEPARTMENT OF TRANSPORTATION

METAL PIPE ARCH END SECTION

JANUARY 1998

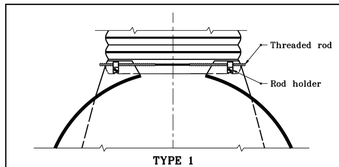
STANDARD DRAWING NO. E 715-MPES-02

DETAILS PLACED IN THIS FORMAT 11-15-99

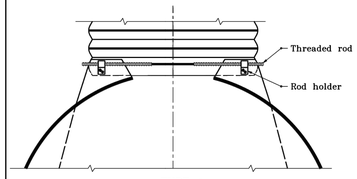
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER — DATE

/s/ Firoos Zandi 11-15-99
CHIEF HIGHWAY ENGINEER — DATE

ORIGINALLY APPROVED 1-02-98
DESIGN STANDARDS ENGINEER



TYPE 1
FOR 17" x 13" THROUGH 42" x 29" ONLY



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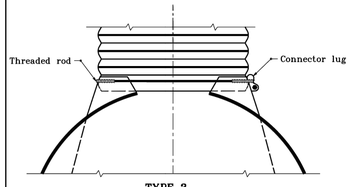
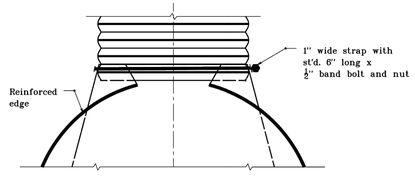


TYPE 3
FOR 12" THROUGH 24" ONLY



ALTERNATE TYPE 3
FOR 12" THROUGH 24" ONLY

INDIANA DEPARTMENT OF TRANSPORTATION

METAL PIPE END SECTION CONNECTIONS

JANUARY 1998

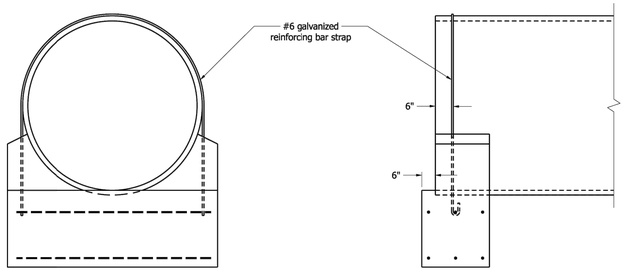
STANDARD DRAWING NO. E 715-MPES-03

DETAILS PLACED IN THIS FORMAT 7-27-99

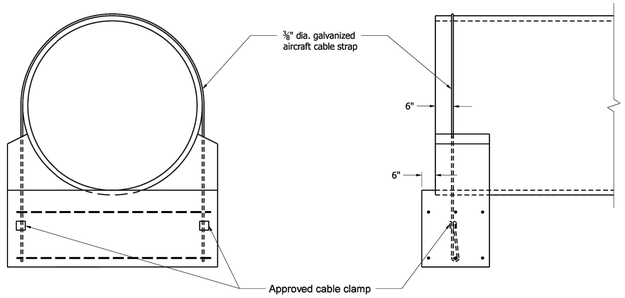
/s/ Anthony L. Uremovich 7-27-99
DESIGN STANDARDS ENGINEER — DATE

/s/ Firoos Zandi 7-27-99
CHIEF HIGHWAY ENGINEER — DATE

ORIGINALLY APPROVED 1-02-98
DESIGN STANDARDS ENGINEER



#6 REINFORCING BAR STRAP DETAILS



⅜" AIRCRAFT CABLE STRAP DETAILS

GENERAL NOTES

1. See Standard Drawing E 715-PAHB-01 for hook bolt details.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE ANCHOR STRAP DETAILS

SEPTEMBER 2008

STANDARD DRAWING NO. E 715- PASD-01

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER — DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER — DATE

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS126
Sheet: 113 of 155

Last Saved By: Joe Pinkard 2/23/23
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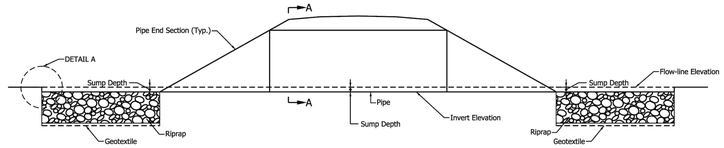
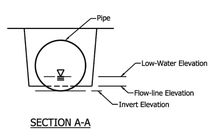
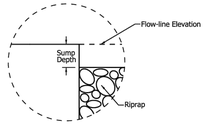


ELEVATION



SECTION A-A



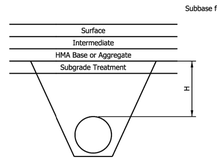
DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE SUMPING PROTECTION SEPTEMBER 2011	
STANDARD DRAWING NO. E 715-PCSP-01	
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	/s/ Richard L.VanCleave 09/01/11 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/01/11 CHIEF HIGHWAY ENGINEER DATE

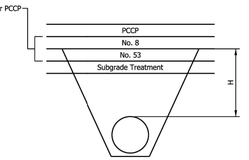
INDEX	
SHEET NO.	SUBJECT
01	Pipe Height of Cover Drawing Index and General Notes
02-04	2 2/3" x 1/2" Corrugated Aluminum Alloy Pipe and Pipe Arch Height of Cover Limits
05-07	3" x 1" Corrugated Aluminum Alloy Pipe and Pipe Arch Height of Cover Limits
08-09	6" x 1" Corrugated Aluminum Alloy Pipe Height of Cover Limits
10-12	2 2/3" x 1/2" Corrugated Steel Pipe and Pipe Arch Height of Cover Limits
13-15	3" x 1" Corrugated Steel Pipe and Pipe Arch Height of Cover Limits
16-17	5" x 1" Corrugated Steel Pipe and Pipe Arch Height of Cover Limits
18	3/4" x 3/4" x 7 1/2" Spiral Rib Steel Pipe Height of Cover Limits
19	Non-Reinforced Concrete Pipe Class 3 Height of Cover Limits
20-21	Polyethylene Pipe Height of Cover Limits
22	Polyvinyl Chloride and Polypropylene Pipe Height of Cover Limits
23	Vitrified Clay Pipe Height of Cover Limits
24-25	Reinforced Concrete Pipe Height of Cover Limits

GENERAL NOTE:

1. The tabulated cover depth H shall be measured from the top of the pipe to the bottom of the drainage No. 8 layer for PCCP and from the top of the pipe to the top of the subgrade treatment for HMA pavement.



HMA



PCCP

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS DRAWING INDEX AND GENERAL NOTES SEPTEMBER 2017	
STANDARD DRAWING NO. E 715-PHCL-01	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/27/17 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/10/17 CHIEF ENGINEER DATE

2 2/3" x 1/2" CORRUGATED ALUMINUM ALLOY PIPE (LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.) 0.060 MIN.	0.060 MAX.	0.075 MIN.	0.075 MAX.	0.105 MIN.	0.105 MAX.	0.135 MIN.	0.135 MAX.	0.164 MIN.	0.164 MAX.
0.8	12	1.0	100.0	1.0	100.0	1.0	100.0				
1.2	15	1.0	100.0	1.0	100.0	1.0	100.0				
1.8	18	1.0	100.0	1.0	100.0	1.0	100.0				
2.4	21	1.0	88.5	1.0	100.0	1.0	100.0				
3.1	24	1.0	77.5	1.0	96.8	1.0	100.0	1.0	100.0		
4.0	27	1.0	68.8	1.0	86.0	1.0	100.0	1.0	100.0		
4.9	30	1.0	62.0	1.0	77.4	1.0	100.0	1.0	100.0		
5.9	33			1.0	64.5	1.0	90.4	1.0	100.0		
7.1	36			1.0	64.5	1.0	90.4	1.0	100.0		
9.6	42					1.0	77.4	1.0	99.7		
12.6	48					1.0	66.7	1.0	86.6	1.0	100.0
15.9	54					1.0	54.4	1.0	70.8	1.0	87.6
19.6	60							1.0	57.6	1.0	71.6
23.8	66									1.0	57.7
28.3	72									1.0	45.5

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS SEPTEMBER 2017	
STANDARD DRAWING NO. E 715-PHCL-02	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/27/17 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/10/17 CHIEF ENGINEER DATE

2 2/3" x 1/2" CORRUGATED ALUMINUM ALLOY PIPE (RIVETED)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.) 0.060 MIN.	0.060 MAX.	0.075 MIN.	0.075 MAX.	0.105 MIN.	0.105 MAX.	0.135 MIN.	0.135 MAX.	0.164 MIN.	0.164 MAX.
0.8	12	1.0	50.0	1.0	50.0	1.0	86.6				
1.2	15	1.0	40.0	1.0	40.0	1.0	69.3				
1.8	18	1.0	33.3	1.0	33.3	1.0	57.7				
2.4	21	1.0	28.5	1.0	28.5	1.0	49.5				
3.1	24	1.0	25.0	1.0	25.0	1.0	43.3	1.0	45.0		
4.0	27	1.0	22.2	1.0	22.2	1.0	38.5	1.0	40.0		
4.9	30	1.1	20.0	1.1	20.0	1.0	34.6	1.0	36.0		
5.9	33			1.2	16.6	1.0	28.8	1.0	30.0		
7.1	36			1.2	16.6	1.0	28.8	1.0	30.0		
9.6	42					1.0	50.0	1.0	52.3		
12.6	48					1.0	43.7	1.0	45.8	1.0	47.2
15.9	54					1.0	38.8	1.0	40.7	1.0	41.9
19.6	60							1.0	36.6	1.0	37.7
23.8	66									1.0	34.3
28.3	72									1.0	31.4

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS SEPTEMBER 2017	
STANDARD DRAWING NO. E 715-PHCL-03	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 03/27/17 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/10/17 CHIEF ENGINEER DATE

Certified by: David Hedlund

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www.boeng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS127
Sheet: 114 of 155

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2 2/3" x 1/2" CORRUGATED ALUMINUM ALLOY PIPE-ARCH (RIVETED OR LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

CORNER RADIUS (in.)	SPAN (in.)	RISE (in.)	AREA (sft)	THICKNESS (in.) 0.060 MIN.	0.060 MAX.	0.075 MIN.	0.075 MAX.	0.105 MIN.	0.105 MAX.	0.135 MIN.	0.135 MAX.	0.164 MIN.	0.164 MAX.
3 (Min.) 3 1/2 (Typ.)	17	13	1.1	1.5	13.7	1.5	13.7	1.5	13.7				
3 (Min.) 4 1/8 (Typ.)	21	15	1.6	1.6	13.0	1.6	13.0	1.6	13.0				
3 (Min.) 4 7/8 (Typ.)	24	18	2.2	1.5	13.5	1.5	13.5	1.5	13.5				
3 (Min.) 5 1/2 (Typ.)	28	20	2.9	1.6	13.0	1.6	13.0	1.6	13.0	1.6	13.0		
3 (Min.) 6 7/8 (Typ.)	35	24	4.5			1.6	13.0	1.6	13.0	1.6	13.0		
3 1/2 (Min.) 8 1/4 (Typ.)	42	29	6.5			1.6	13.0	1.6	13.0	1.6	13.0		
4 (Min.) 9 5/8 (Typ.)	49	33	8.9			1.6	13.0	1.6	13.0	1.6	13.0		
5 (Min.) 11 (Typ.)	57	38	11.6					1.6	12.8	1.6	12.8	1.6	12.8
6 (Min.) 12 3/8 (Typ.)	64	43	14.7							1.6	12.8	1.6	12.8
7 (Min.) 13 3/4 (Typ.)	71	47	18.1									1.6	12.9

NOTES:

1. Dual entries in the "Corner Radius" column such as 3 (Min.), 3 1/2 (Typ.), represent the following:
   3 (Min.) = Minimum corner radius allowed by AASHTO M 196
   3 1/2 (Typ.) = Corner radius typically available
2. The tabulated cover heights reflect pipe-arches with typically available corner radii. If a pipe-arch with corner radii other than what is typically available is to be used, a specific design shall be performed to verify structural adequacy.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-04

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3" x 1" CORRUGATED ALUMINUM ALLOY PIPE (LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.) 0.060 MIN.	0.060 MAX.	0.075 MIN.	0.075 MAX.	0.105 MIN.	0.105 MAX.	0.135 MIN.	0.135 MAX.	0.164 MIN.	0.164 MAX.
4.9	30	1.0	71.2	1.0	89.4	1.0	100.0	1.0	100.0		
5.9	33	1.0	59.3	1.0	74.5	1.0	100.0	1.0	100.0		
7.1	36	1.0	59.3	1.0	74.5	1.0	100.0	1.0	100.0		
9.6	42	1.0	50.8	1.0	63.8	1.0	89.1	1.0	100.0		
12.6	48	1.0	44.5	1.0	55.9	1.0	78.0	1.0	100.0	1.0	100.0
15.9	54	1.0	39.5	1.0	49.6	1.0	69.3	1.0	92.8	1.0	90.7
19.6	60	1.0	35.6	1.0	44.7	1.0	62.4	1.0	83.5	1.0	81.6
23.8	66	1.0	32.3	1.0	40.6	1.0	56.7	1.0	75.9	1.0	74.2
28.3	72			1.0	37.2	1.0	52.0	1.0	69.6	1.0	68.0
33.2	78			1.0	34.4	1.0	48.0	1.0	64.2	1.0	62.8
38.5	84					1.0	44.5	1.0	59.6	1.0	58.3
44.2	90					1.0	41.6	1.0	55.6	1.0	54.4
50.3	96					1.0	38.1	1.0	51.3	1.0	51.0
56.7	102							1.1	46.3	1.1	48.0
63.6	108							1.1	41.8	1.1	45.3
70.9	114									1.2	42.9
78.5	120									1.3	40.1

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-05

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3" x 1" CORRUGATED ALUMINUM ALLOY PIPE (RIVETED)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.) 0.060 MIN.	0.060 MAX.	0.075 MIN.	0.075 MAX.	0.105 MIN.	0.105 MAX.	0.135 MIN.	0.135 MAX.	0.164 MIN.	0.164 MAX.
4.9	30	1.0	36.6	1.0	45.5	1.0	62.2	1.0	93.3		
5.9	33	1.0	30.5	1.0	37.9	1.0	51.8	1.0	77.7		
7.1	36	1.0	30.5	1.0	37.9	1.0	51.8	1.0	77.7		
9.6	42	1.0	26.1	1.0	32.5	1.0	44.4	1.0	66.6		
12.6	48	1.0	22.9	1.0	28.4	1.0	38.8	1.0	58.3	1.0	75.6
15.9	54	1.1	20.3	1.0	25.3	1.0	34.5	1.0	51.8	1.0	67.2
19.6	60	1.1	18.3	1.0	22.7	1.0	31.1	1.0	46.6	1.0	60.5
23.8	66	1.2	16.6	1.1	20.7	1.0	28.2	1.0	42.4	1.0	55.0
28.3	72			1.1	18.9	1.0	25.9	1.0	38.8	1.0	50.4
33.2	78			1.2	17.5	1.0	23.9	1.0	35.8	1.0	46.5
38.5	84					1.0	22.2	1.0	33.3	1.0	43.2
44.2	90					1.1	20.7	1.0	31.1	1.0	40.3
50.3	96					1.1	19.4	1.0	29.1	1.0	37.8
56.7	102							1.1	27.4	1.1	35.6
63.6	108							1.1	25.9	1.1	33.6
70.9	114									1.2	31.8
78.5	120									1.3	30.2

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-06

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3" x 1" CORRUGATED ALUMINUM ALLOY PIPE-ARCH (RIVETED OR LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

CORNER RADIUS (in.)	SPAN (in.)	RISE (in.)	AREA (sft)	THICKNESS (in.) 0.060 MIN.	0.060 MAX.	0.075 MIN.	0.075 MAX.	0.105 MIN.	0.105 MAX.	0.135 MIN.	0.135 MAX.	0.164 MIN.	0.164 MAX.
8 (Min.) 18 3/4 (Typ.)	60	46	15.6			1.1	20.8	1.1	20.8	1.1	20.8	1.1	20.8
9 (Min.) 20 3/4 (Typ.)	66	51	19.3			1.1	20.9	1.1	20.9	1.1	20.9	1.1	20.9
12 (Min.) 22 7/8 (Typ.)	73	55	23.2			1.1	20.8	1.1	20.8	1.1	20.8	1.1	20.8
14 (Min.) 20 7/8 (Typ.)	81	59	27.4					1.2	17.1	1.2	17.1	1.2	17.1
14 (Min.) 22 5/8 (Typ.)	87	63	32.1					1.2	17.3	1.2	17.3	1.2	17.3
16 (Min.) 24 3/8 (Typ.)	95	67	37.0							1.2	17.1	1.2	17.1
16 (Min.) 26 1/8 (Typ.)	103	71	42.4							1.2	16.9	1.2	16.9
18 (Min.) 27 3/4 (Typ.)	112	75	48.0									1.3	16.5

NOTES:

1. Dual entries in the "Corner Radius" column such as 8 (Min.), 18 3/4 (Typ.), represent the following:
   8 (Min.) = Minimum corner radius allowed by AASHTO M 196
   18 3/4 (Typ.) = Corner radius typically available
2. The tabulated cover heights reflect pipe-arches with typically available corner radii. If a pipe-arch with corner radii other than what is typically available is to be used, a specific design shall be performed to verify structural adequacy.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-07

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
Indianapolis, Indiana 46256
Business (317) 594-9999 Fax (317) 595-5555

Fosse & Associates Architects, Inc.
925 Main Street, Suite 100 - Evansville, IN 47708
Phone (812) 424-2222 - Fax (812) 424-2667
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B. C. Engineering, Inc.
Mechanical & Electrical Engineering
501 Carpenter Street
Evansville, IN 47708
Phone : (812) 424-7941
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www.boeng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS128
Sheet: 115 of 155

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F:\1364 - Clear Creek Welcome Center\DWGS\SITE SHEETS\EB WELCOME CENTER\1364-EB-CS100 STANDARDS-700.dwg Feb 23, 2023-2:34:45 pm

6" x 1" CORRUGATED ALUMINUM ALLOY PIPE (LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.)									
		0.060		0.075		0.105		0.135		0.164	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12.6	48	1.0	38.7	1.0	48.4	1.0	67.8	1.0	87.2	1.0	100.0
15.9	54	1.0	34.4	1.0	43.0	1.0	60.2	1.0	77.5	1.0	94.8
19.6	60	1.0	31.0	1.0	38.7	1.0	54.2	1.0	69.7	1.0	85.3
23.8	66	1.0	28.1	1.0	35.2	1.0	49.3	1.0	63.4	1.0	77.5
28.3	72			1.0	32.2	1.0	45.2	1.0	58.1	1.0	71.1
33.2	78			1.0	29.7	1.0	41.7	1.0	53.6	1.0	65.6
38.5	84					1.0	38.7	1.0	49.8	1.0	60.9
44.2	90					1.0	36.1	1.0	46.5	1.0	56.8
50.3	96							1.0	43.6	1.0	53.3
56.7	102							1.1	40.0	1.1	49.0
63.6	108									1.1	44.5
70.9	114									1.2	40.3

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-08

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

6" x 1" CORRUGATED ALUMINUM ALLOY PIPE (RIVETED)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.)									
		0.060		0.075		0.105		0.135		0.164	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12.6	48	1.0	22.2	1.0	26.3	1.0	38.7	1.0	49.8	1.0	60.4
15.9	54	1.1	19.7	1.0	23.4	1.0	34.4	1.0	44.3	1.0	53.7
19.6	60	1.2	17.7	1.1	21.1	1.0	31.0	1.0	39.8	1.0	48.3
23.8	66	1.3	16.1	1.1	19.1	1.0	28.1	1.0	36.2	1.0	43.9
28.3	72			1.2	17.5	1.0	25.8	1.0	33.2	1.0	40.2
33.2	78			1.3	16.2	1.0	23.8	1.0	30.6	1.0	37.1
38.5	84					1.0	22.1	1.0	28.4	1.0	34.5
44.2	90					1.1	20.6	1.0	26.5	1.0	32.2
50.3	96							1.0	24.9	1.0	30.2
56.7	102							1.1	23.4	1.1	28.4
63.6	108									1.1	26.8
70.9	114									1.2	25.4

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-09

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

2 2/3" x 1/2" CORRUGATED STEEL PIPE (LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.)									
		0.064		0.079		0.109		0.138		0.168	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0.8	12	1.0	100.0	1.0	100.0						
1.2	15	1.0	100.0	1.0	100.0	1.0	100.0				
1.8	18	1.0	100.0	1.0	100.0	1.0	100.0				
2.4	21	1.0	100.0	1.0	100.0	1.0	100.0				
3.1	24	1.0	100.0	1.0	100.0	1.0	100.0				
4.0	27	1.0	94.7	1.0	100.0	1.0	100.0				
4.9	30	1.0	85.2	1.0	100.0	1.0	100.0	1.0	100.0		
5.9	33	1.0	71.0	1.0	88.7	1.0	100.0	1.0	100.0		
7.1	36	1.0	71.0	1.0	88.7	1.0	100.0	1.0	100.0	1.0	100.0
9.6	42	1.0	60.8	1.0	76.0	1.0	100.0	1.0	100.0	1.0	100.0
12.6	48	1.0	53.2	1.0	66.5	1.0	93.2	1.0	100.0	1.0	100.0
15.9	54			1.0	59.1	1.0	82.8	1.0	100.0	1.0	100.0
19.6	60					1.0	87.8	1.0	95.9	1.0	100.0
23.8	66							1.0	87.2	1.0	100.0
28.3	72							1.0	79.9	1.0	97.0
33.2	78									1.0	86.7
38.5	84									1.0	75.1

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-10

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

2 2/3" x 1/2" CORRUGATED STEEL PIPE (RIVETED)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.)									
		0.064		0.079		0.109		0.138		0.168	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
0.8	12	1.0	92.7	1.0	100.0						
1.2	15	1.0	74.2	1.0	80.8	1.0	100.0				
1.8	18	1.0	61.8	1.0	67.4	1.0	86.6				
2.4	21	1.0	53.0	1.0	57.7	1.0	74.2				
3.1	24	1.0	46.3	1.0	50.5	1.0	65.0				
4.0	27	1.0	41.2	1.0	44.9	1.0	57.7				
4.9	30	1.0	37.1	1.0	40.4	1.0	52.0	1.0	54.4		
5.9	33	1.0	30.9	1.0	33.7	1.0	43.3	1.0	45.3		
7.1	36	1.0	30.9	1.0	33.7	1.0	43.3	1.0	45.3	1.0	47.4
9.6	42	1.0	34.2	1.0	47.3	1.0	74.2	1.0	77.7	1.0	81.4
12.6	48	1.0	30.0	1.0	41.3	1.0	65.0	1.0	68.0	1.0	71.2
15.9	54			1.0	36.7	1.0	57.7	1.0	60.4	1.0	63.3
19.6	60					1.0	52.0	1.0	54.4	1.0	57.0
23.8	66							1.0	49.4	1.0	51.8
28.3	72							1.0	45.3	1.0	47.5
33.2	78									1.0	43.8
38.5	84									1.0	40.7

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-11

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
Indianapolis, Indiana 46236
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS129
Sheet: 116 of 155

Last Saved By: jdw Printed:2/23/23
F:\Work\Clear Creek Welcome Center\Admin\SHEETS\EB WELCOME CENTER\1364-EB-CS100 STANDARDS-700.dwg Feb 23, 2023-2:34:50 pm

2 2/3" x 1/2" CORRUGATED STEEL PIPE-ARCH (RIVETED OR LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

CORNER RADIUS (in.)	SPAN (in.)	RISE (in.)	AREA (sft)	THICKNESS (in.) 0.064 MIN.	0.064 MAX.	0.079 MIN.	0.079 MAX.	0.109 MIN.	0.109 MAX.	0.138 MIN.	0.138 MAX.	0.168 MIN.	0.168 MAX.
3 (Min.) 3 1/2 (Typ.)	17	13	1.1	1.5	13.7	1.5	13.7	1.5	13.7				
3 (Min.) 4 1/8 (Typ.)	21	15	1.6	1.6	13.0	1.6	13.0	1.6	13.0				
3 (Min.) 4 7/8 (Typ.)	24	18	2.2	1.5	13.5	1.5	13.5	1.5	13.5				
3 (Min.) 5 1/2 (Typ.)	28	20	2.9	1.6	13.0	1.6	13.0	1.6	13.0				
3 (Min.) 6 7/8 (Typ.)	35	24	4.5	1.6	13.0	1.6	13.0	1.6	13.0	1.6	13.0		
3 1/2 (Min.) 8 1/4 (Typ.)	42	29	6.5	1.6	13.0	1.6	13.0	1.6	13.0	1.6	13.0	1.6	13.0
4 (Min.) 9 5/8 (Typ.)	49	33	8.9			1.6	13.0	1.6	13.0	1.6	13.0	1.6	13.0
5 (Min.) 11 (Typ.)	57	38	11.6					1.6	12.8	1.6	12.8	1.6	12.8
6 (Min.) 12 3/8 (Typ.)	64	43	14.7					1.6	12.8	1.6	12.8	1.6	12.8
7 (Min.) 13 3/4 (Typ.)	71	47	18.1							1.6	12.9	1.6	12.9
8 (Min.) 15 1/8 (Typ.)	77	52	21.9									1.6	13.0
9 (Min.) 16 1/2 (Typ.)	83	57	26.0									1.5	13.2

NOTES:

1. Dual entries in the "Corner Radius" column such as 3 (Min.), 3 1/2 (Typ.), represent the following:
   3 (Min.) = Minimum corner radius allowed by AASHTO M 196
   3 1/2 (Typ.) = Corner radius typically available
2. The tabulated cover heights reflect pipe-arches with typically available corner radii. If a pipe-arch with corner radii other than what is typically available is to be used, a specific design shall be performed to verify structural adequacy.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-12

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3" x 1" CORRUGATED STEEL PIPE (LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.) 0.064 MIN.	0.064 MAX.	0.079 MIN.	0.079 MAX.	0.109 MIN.	0.109 MAX.	0.138 MIN.	0.138 MAX.	0.168 MIN.	0.168 MAX.
7.1	36	1.0	81.5								
9.6	42	1.0	69.9	1.0	87.4	1.0	100.0	1.0	100.0		
12.6	48	1.0	61.1	1.0	76.5	1.0	100.0	1.0	100.0		
15.9	54	1.0	54.3	1.0	68.0	1.0	95.3	1.0	100.0	1.0	100.0
19.6	60	1.0	48.9	1.0	61.2	1.0	85.8	1.0	100.0	1.0	100.0
23.8	66	1.0	44.5	1.0	55.6	1.0	78.0	1.0	100.0	1.0	100.0
28.3	72	1.0	40.7	1.0	51.0	1.0	71.5	1.0	92.0	1.0	100.0
33.2	78	1.0	37.6	1.0	47.0	1.0	66.0	1.0	84.9	1.0	100.0
38.5	84	1.0	34.9	1.0	43.7	1.0	61.2	1.0	78.8	1.0	96.5
44.2	90	1.0	32.6	1.0	40.8	1.0	57.2	1.0	73.6	1.0	90.1
50.3	96			1.0	38.2	1.0	53.6	1.0	69.0	1.0	84.4
56.7	102			1.1	36.0	1.1	50.4	1.1	64.9	1.1	79.5
63.6	108					1.1	47.6	1.1	61.3	1.1	75.1
70.9	114					1.2	45.1	1.2	58.1	1.2	71.1
78.5	120					1.3	42.9	1.3	55.2	1.3	67.5
86.6	126							1.3	52.5	1.3	64.3
95.0	132							1.4	50.2	1.4	61.4
103.9	138							1.4	48.0	1.4	58.7
113.1	144									1.5	56.3

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-13

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3" x 1" CORRUGATED STEEL PIPE (RIVETED)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.) 0.064 MIN.	0.064 MAX.	0.079 MIN.	0.079 MAX.	0.109 MIN.	0.109 MAX.	0.138 MIN.	0.138 MAX.	0.168 MIN.	0.168 MAX.
7.1	36	1.0	53.1								
9.6	42	1.0	45.5	1.0	56.6	1.0	84.1	1.0	100.0		
12.6	48	1.0	39.8	1.0	49.5	1.0	73.6	1.0	88.4		
15.9	54	1.0	35.4	1.0	44.0	1.0	65.4	1.0	78.6	1.0	87.2
19.6	60	1.0	31.8	1.0	39.6	1.0	58.8	1.0	70.7	1.0	78.5
23.8	66	1.0	28.9	1.0	36.0	1.0	53.5	1.0	64.3	1.0	71.4
28.3	72	1.0	26.5	1.0	33.0	1.0	49.0	1.0	58.9	1.0	65.4
33.2	78	1.0	24.5	1.0	30.5	1.0	45.2	1.0	54.4	1.0	60.4
38.5	84	1.0	22.7	1.0	28.3	1.0	42.0	1.0	50.5	1.0	56.1
44.2	90	1.1	21.2	1.0	26.4	1.0	39.2	1.0	47.1	1.0	52.3
50.3	96			1.0	24.7	1.0	36.8	1.0	44.2	1.0	49.0
56.7	102			1.1	23.3	1.1	34.6	1.1	41.6	1.1	46.2
63.6	108					1.1	32.7	1.1	39.3	1.1	43.6
70.9	114					1.2	30.9	1.2	37.2	1.2	41.3
78.5	120					1.3	29.4	1.3	35.3	1.3	39.2
86.6	126							1.3	33.7	1.3	37.4
95.0	132							1.4	32.1	1.4	35.7
103.9	138							1.4	30.7	1.4	34.1
113.1	144									1.5	32.7

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-14

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3" x 1" CORRUGATED STEEL PIPE-ARCH (RIVETED OR LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

CORNER RADIUS (in.)	SPAN (in.)	RISE (in.)	AREA (sft)	THICKNESS (in.) 0.064 MIN.	0.064 MAX.	0.079 MIN.	0.079 MAX.	0.109 MIN.	0.109 MAX.	0.138 MIN.	0.138 MAX.	0.168 MIN.	0.168 MAX.
8 (Min.) 18 3/4 (Typ.)	60	46	15.6			1.1	20.8	1.1	20.8	1.1	20.8	1.1	20.8
9 (Min.) 20 3/4 (Typ.)	66	51	19.3			1.1	20.9	1.1	20.9	1.1	20.9	1.1	20.9
12 (Min.) 22 7/8 (Typ.)	73	55	23.2			1.1	20.8	1.1	20.8	1.1	20.8	1.1	20.8
14 (Min.) 20 7/8 (Typ.)	81	59	27.4			1.2	17.1	1.2	17.1	1.2	17.1	1.2	17.1
14 (Min.) 22 5/8 (Typ.)	87	63	32.1			1.2	17.3	1.2	17.3	1.2	17.3	1.2	17.3
16 (Min.) 24 3/8 (Typ.)	95	67	37.0			1.2	17.1	1.2	17.1	1.2	17.1	1.2	17.1
16 (Min.) 26 1/8 (Typ.)	103	71	42.4					1.2	16.9	1.2	16.9	1.2	16.9
18 (Min.) 27 3/4 (Typ.)	112	75	48.0					1.3	16.5	1.3	16.5	1.3	16.5
18 (Min.) 29 1/2 (Typ.)	117	79	59.2					1.2	16.8	1.2	16.8	1.2	16.8
18 (Min.) 31 1/4 (Typ.)	128	83	60.5							1.3	16.2	1.3	16.2
18 (Min.) 33 (Typ.)	137	87	67.4							1.3	16.0	1.3	16.0
18 (Min.) 34 3/4 (Typ.)	142	91	74.5									1.3	16.3

NOTES:

1. Dual entries in the "Corner Radius" column such as 8 (Min.), 18 3/4 (Typ.), represent the following:
   8 (Min.) = Minimum corner radius allowed by AASHTO M 196
   18 3/4 (Typ.) = Corner radius typically available
2. The tabulated cover heights reflect pipe-arches with typically available corner radii. If a pipe-arch with corner radii other than what is typically available is to be used, a specific design shall be performed to verify structural adequacy.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-15

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

/s/ John Leckie 04/10/17
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Sheet: 117 of 155

Last Saved By: jdw Printed:2/23/23
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5" x 1" CORRUGATED STEEL PIPE (LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

AREA (sft)	DIAMETER (in.)	THICKNESS (in.)									
		0.064		0.079		0.109		0.138		0.168	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
7.1	36			1.0	90.9	1.0	100.0				
9.6	42			1.0	77.9	1.0	100.0				
12.6	48	1.0	54.5	1.0	68.2	1.0	95.5	1.0	100.0		
15.9	54	1.0	48.5	1.0	60.6	1.0	84.9	1.0	100.0		
19.6	60	1.0	43.6	1.0	54.5	1.0	76.4	1.0	98.3		
23.8	66	1.0	39.7	1.0	49.6	1.0	69.5	1.0	89.4		
28.3	72	1.0	36.3	1.0	45.4	1.0	63.7	1.0	81.9	1.0	100.0
33.2	78	1.0	33.5	1.0	41.9	1.0	58.8	1.0	75.6	1.0	92.4
38.5	84	1.0	31.1	1.0	38.9	1.0	54.6	1.0	70.2	1.0	85.8
44.2	90	1.0	29.1	1.0	36.3	1.0	50.9	1.0	65.5	1.0	80.1
50.3	96			1.0	34.1	1.0	47.7	1.0	61.4	1.0	75.1
56.7	102			1.1	32.0	1.1	44.9	1.1	57.8	1.1	70.7
63.6	108					1.1	42.4	1.1	54.6	1.1	66.7
70.9	114					1.2	40.2	1.2	51.7	1.2	63.2
78.5	120					1.3	38.2	1.3	49.1	1.3	60.1
86.6	126							1.3	46.8	1.3	57.2
95.0	132							1.4	44.7	1.4	54.6
103.9	138							1.4	42.7	1.4	52.2
113.1	144									1.5	50.0

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-16

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

5" x 1" CORRUGATED STEEL PIPE-ARCH (RIVETED OR LOCK SEAM)
HEIGHT OF COVER LIMITS (ft)

CORNER RADIUS (in.)	SPAN (in.)	RISE (in.)	AREA (sft)	THICKNESS (in.)							
				0.064		0.079		0.109		0.138		0.168	
				MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
8 (Min.) 18 3/4 (Typ.)	60	46	15.6					1.1	20.8	1.1	20.8		
9 (Min.) 20 3/4 (Typ.)	66	51	19.3					1.1	20.9	1.1	20.9		
12 (Min.) 22 7/8 (Typ.)	73	55	23.2					1.1	20.8	1.1	20.8		
14 (Min.) 20 7/8 (Typ.)	81	59	27.4					1.2	17.1	1.2	17.1	1.2	17.1
14 (Min.) 22 5/8 (Typ.)	87	63	32.1					1.2	17.3	1.2	17.3	1.2	17.3
16 (Min.) 24 3/8 (Typ.)	95	67	37.0					1.2	17.1	1.2	17.1	1.2	17.1
16 (Min.) 26 1/8 (Typ.)	103	71	42.4					1.2	16.9	1.2	16.9	1.2	16.9
18 (Min.) 27 3/4 (Typ.)	112	75	48.0					1.3	16.5	1.3	16.5	1.3	16.5
18 (Min.) 29 1/2 (Typ.)	117	79	54.2					1.2	16.8	1.2	16.8	1.2	16.8
18 (Min.) 31 1/4 (Typ.)	128	83	60.5							1.3	16.2	1.3	16.2
18 (Min.) 33 (Typ.)	137	87	67.4							1.3	16.0	1.3	16.0
18 (Min.) 34 3/4 (Typ.)	142	91	74.5									1.3	16.3

NOTES:

1. Dual entries in the "Corner Radius" column such as 8 (Min.), 18 3/4 (Typ.), represent the following:
   8 = Minimum corner radius allowed by AASHTO M 196
   18 3/4 = Corner radius typically available
2. The tabulated cover heights reflect pipe-arches with typically available corner radii. If a pipe-arch with corner radii other than what is typically available is to be used, a specific design shall be performed to verify structural adequacy.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-17

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

3/4" x 3/4" x 7 1/2" SPIRAL RIB STEEL PIPE
HEIGHT OF COVER LIMITS (ft)

DIAMETER (in.)	THICKNESS (in.)					
	0.064		0.079		0.109	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12	1.3	100.0	1.3	100.0	1.3	100.0
15	1.3	100.0	1.3	100.0	1.3	100.0
18	1.3	68.0	1.3	72.0	1.3	100.0
21	1.3	58.0	1.3	62.0	1.3	100.0
24	1.3	51.0	1.3	60.0	1.3	100.0
30	1.3	41.0	1.3	58.0	1.3	97.0
36	1.3	34.0	1.3	48.0	1.3	81.0
42	1.3	29.0	1.3	41.0	1.3	69.0
48	1.3	26.0	1.3	36.0	1.3	61.0
54	1.3	23.0	1.3	32.0	1.3	54.0
60			1.3	29.0	1.3	49.0
66			1.3	26.0	1.3	44.0
72			1.3	24.0	1.3	40.0
78					1.3	37.0
84					1.3	35.0
90					2.3	32.0
96					2.3	30.0
102					2.8	29.0
108					2.8	27.0

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-18

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

NON-REINFORCED CONCRETE PIPE CLASS 3
HEIGHT OF COVER LIMITS (ft)

DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
12	1.3	14.1
15	1.4	13.1
18	1.5	12.8
21	1.5	13.4
24	1.5	13.5
27	1.6	12.1
30	1.8	10.7
33	1.9	9.8
36	2.1	9.0

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-19

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS131
Sheet: 118 of 155

Last Saved By: jdar Printed:2/23/23
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CORRUGATED POLYETHYLENE PIPE TYPE S HEIGHT OF COVER LIMITS (ft)

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
12	12	2.0	22.0
15	15	2.0	22.0
18	18	2.0	20.0
21	21	2.0	19.0
24	24	2.0	19.0
30	30	2.0	17.0
36	36	2.0	17.0
42	42	2.0	17.0
48	48	2.0	15.0

SMOOTH WALL POLYETHYLENE PIPE HEIGHT OF COVER LIMITS (ft)

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	DIMENSION RATIO (NOMINAL DIAMETER / WALL THICKNESS)							
		26		21		17		11	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12	13	2.0	40.0	2.0	57.0				
12	14					2.0	81.0		
15	18	2.0	40.0	2.0	57.0	2.0	81.0		
18	20	2.0	40.0	2.0	57.0	2.0	81.0		
18	22					2.0	81.0	2.0	100.0
21	24	2.0	40.0	2.0	57.0	2.0	81.0		
24	28	2.0	40.0	2.0	57.0	2.0	81.0		
27	32	2.0	40.0	2.0	57.0	2.0	81.0		
30	34	2.0	40.0	2.0	57.0	2.0	81.0		
36	42	2.0	40.0	2.0	57.0	2.0	81.0		

NOTES:

1. The pay item diameter reflects the minimum required inside diameter.
2. Because the nominal size of smooth wall polyethylene pipe is based on the outside diameter, different dimension ratios may require different nominal diameters to satisfy the pay item diameter requirements.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-20

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

PROFILE WALL (RIBBED) POLYETHYLENE PIPE HEIGHT OF COVER LIMITS (ft)

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
18	18	2.0	18.0
21	21	2.0	22.0
24	24	2.0	21.0
27	27	2.0	24.0
30	30	2.0	22.0
33	33	2.0	23.0
36	36	2.0	25.0

PROFILE WALL (CLOSED) POLYETHYLENE PIPE HEIGHT OF COVER LIMITS (ft)

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
18	18	2.0	47.0
21	21	2.0	38.0
24	24	2.0	42.0
27	27	2.0	40.0
30	23	2.2	38.0
33	33	2.4	45.0
36	36	2.6	30.0
42	42	3.0	29.0
48	48	3.5	30.0

NOTES:

1. The pay item diameter reflects the minimum required inside diameter.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-21

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

PROFILE WALL POLYVINYL CHLORIDE PIPE HEIGHT OF COVER LIMITS (ft)

DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
12	2.0	20.0
15	2.0	20.0
18	2.0	20.0
21	2.0	20.0
24	2.0	20.0
30	2.0	18.0
36	2.0	18.0
42	2.0	17.0
48	2.0	15.0

CORRUGATED POLYPROPYLENE PIPE HEIGHT OF COVER LIMITS (ft)

DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
12	2.0	28.0
15	2.0	28.0
18	2.0	25.0
21	2.0	23.0
24	2.0	23.0
30	2.2	19.0
36	2.6	23.0
42	3.1	22.0
48	3.5	21.0

SMOOTH WALL POLYVINYL CHLORIDE PIPE HEIGHT OF COVER LIMITS (ft)

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
12	12	2.0	64.0
15	15	2.0	64.0
18	18	2.0	61.0
21	21	2.0	61.0
24	24	2.0	61.0
27	27	2.0	61.0

NOTE:

1. The pay item diameter reflects the minimum required inside diameter.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-22

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

VITRIFIED CLAY PIPE, EXTRA STRENGTH HEIGHT OF COVER LIMITS (ft)

DIAMETER (in.)	MINIMUM (ft)	MAXIMUM (ft)
12	1.2	16.0
15	1.4	14.0
18	1.4	13.0
21	1.4	14.0
24	1.4	15.0
27	1.5	14.0
30	1.6	13.0
33	1.5	13.0
36	1.5	14.0

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-23

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS132
Sheet: 119 of 155

Last Saved By: jdar Printed:2/23/23
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REINFORCED CONCRETE CIRCULAR PIPE HEIGHT OF COVER LIMITS (ft)

DIAMETER (in.)	STRENGTH CLASS / D-LOAD RATING							
	CLASS II: $D_{0.01}$ = 1000		CLASS III: $D_{0.01}$ = 1350		CLASS IV: $D_{0.01}$ = 2000		CLASS V: $D_{0.01}$ = 3000	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12	1.0	12.0	1.0	17.0	1.0	25.0	1.0	38.0
15	1.0	13.0	1.0	17.0	1.0	26.0	1.0	39.0
18	1.0	13.0	1.0	17.0	1.0	26.0	1.0	40.0
21	1.0	13.0	1.0	17.0	1.0	26.0	1.0	40.0
24	1.0	13.0	1.0	17.0	1.0	26.0	1.0	40.0
27	1.0	13.0	1.0	17.0	1.0	26.0	1.0	40.0
30	1.0	13.0	1.0	17.0	1.0	26.0	1.0	40.0
33	1.0	12.0	1.0	17.0	1.0	26.0	1.0	40.0
36	1.0	12.0	1.0	17.0	1.0	26.0	1.0	40.0
42	1.0	12.0	1.0	17.0	1.0	26.0	1.0	40.0
48	1.0	12.0	1.0	17.0	1.0	26.0	1.0	40.0
54	1.0	12.0	1.0	17.0	1.0	26.0	1.0	40.0
60	1.0	12.0	1.0	17.0	1.0	26.0	1.0	40.0
66	1.0	12.0	1.0	17.0	1.0	26.0	1.0	39.0
72	1.0	12.0	1.0	17.0	1.0	25.0	1.0	39.0
78	1.0	12.0	1.0	17.0	1.0	25.0	1.0	39.0
84	1.0	12.0	1.0	16.0	1.0	25.0	1.0	39.0
90	1.0	12.0	1.0	16.0	1.0	25.0	1.0	39.0
96	1.0	11.0	1.0	16.0	1.0	25.0	1.0	39.0
102	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
108	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
114	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
120	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
126	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
132	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
138	1.0	9.0	1.0	16.0	1.0	25.0	1.0	39.0
144	1.0	9.0	1.0	15.0	1.0	25.0	1.0	39.0

NOTES:

1. A special design in accordance with AASHTO LRFD Bridge Design Specifications, Section 12, is required for pipe diameters and heights of cover beyond those shown.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-24

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE HEIGHT OF COVER LIMITS (ft)

SPAN (in.)	RISE (in.)	AREA (sft)	STRENGTH CLASS / D-LOAD RATING									
			CLASS HE-A: $D_{0.01}$ = 600		CLASS HE-I: $D_{0.01}$ = 800		CLASS HE-II: $D_{0.01}$ = 1000		CLASS HE-III: $D_{0.01}$ = 1350		CLASS HE-IV: $D_{0.01}$ = 2000	
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
23	14	1.8	1.3	4.0	1.0	8.0	1.0	11.0	1.0	20.0	1.0	100.0
30	19	3.3	1.1	5.0	1.0	7.0	1.0	10.0	1.0	16.0	1.0	47.0
34	22	4.1	1.0	5.0	1.0	8.0	1.0	11.0	1.0	17.0	1.0	48.0
38	24	5.1	1.0	5.0	1.0	8.0	1.0	11.0	1.0	18.0	1.0	49.0
42	27	6.3	1.0	6.0	1.0	9.0	1.0	12.0	1.0	19.0	1.0	50.0
45	29	7.4	1.0	6.0	1.0	9.0	1.0	12.0	1.0	19.0	1.0	45.0
49	32	8.8	1.0	6.0	1.0	9.0	1.0	12.0	1.0	19.0	1.0	45.0
53	34	10.2	1.0	6.0	1.0	9.0	1.0	12.0	1.0	20.0	1.0	44.0
60	38	12.9	1.0	5.0	1.0	8.0	1.0	10.0	1.0	15.0	1.0	26.0
68	43	16.6	1.0	6.0	1.0	8.0	1.0	10.0	1.0	15.0	1.0	27.0
76	48	20.5	1.0	6.0	1.0	8.0	1.0	11.0	1.0	16.0	1.0	28.0
83	53	24.8	1.0	6.0	1.0	9.0	1.0	11.0	1.0	16.0	1.0	29.0
91	58	29.5	1.0	6.0	1.0	9.0	1.0	12.0	1.0	17.0	1.0	29.0
98	63	34.6	1.1	6.0	1.1	9.0	1.1	12.0	1.1	17.0	1.1	29.0
106	68	40.1	1.2	6.0	1.2	9.0	1.2	12.0	1.2	17.0	1.2	30.0
113	72	46.1	1.2	7.0	1.2	9.0	1.2	12.0	1.2	18.0	1.2	30.0
121	77	52.4	1.3	7.0	1.3	9.0	1.3	12.0	1.3	18.0	1.3	30.0
128	82	59.2	1.4	7.0	1.4	10.0	1.4	13.0	1.4	18.0	1.4	30.0
136	87	66.4	1.5	7.0	1.5	10.0	1.5	13.0	1.5	18.0	1.5	31.0
143	92	74.0	1.5	7.0	1.5	10.0	1.5	13.0	1.5	18.0	1.5	31.0
151	97	82.0	1.6	7.0	1.6	10.0	1.6	13.0	1.6	19.0	1.6	31.0
166	106	99.2	1.7	7.0	1.8	10.0	1.8	13.0	1.8	19.0	1.8	31.0
180	116	118.6	1.8	7.0	1.9	10.0	1.9	13.0	1.9	19.0	1.9	31.0

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF COVER LIMITS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PHCL-25

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/27/17
DESIGN STANDARDS ENGINEER DATE

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

PIPE CLASSIFICATION TABLES

Material	Pipe Type 1	2	3	4	5
Non-Reinforced Concrete Pipe, Class 3 (S)	x	x	x		
Non-Reinforced Concrete Pipe				x	
Reinforced Concrete Pipe (S)	x	x	x		
Reinforced Concrete Horizontal Elliptical Pipe (S)	x	x	x		
Corrugated Steel Pipe (C)	x		x		x
Polymer Precoated Galvanized Corrugated Steel Pipe (C)	x		x		x
Polymer Precoated Galvanized Corrugated Steel Pipe Type IA (S)	x	x	x		x
Fully Bituminous Coated and Lined Corrugated Steel Pipe (S)		x			x
Corrugated Steel Pipe-Arch (C)	x		x		x
Polymer Precoated Galvanized Corr. Steel Pipe Arch Type IIA (S)	x	x	x		x
Fully Bituminous Coated and Lined Corrugated Steel Pipe-Arch (S)		x			x
Polymer Precoated Galvanized Corrugated Steel Pipe-Arch (C)	x		x		x
Corrugated Aluminum Alloy Pipe (C)	x		x		x
Corrugated Aluminum Alloy Pipe-Arch (C)	x		x		x
Structural Plate Steel Pipe (C)	x		x		
Structural Plate Steel Pipe-Arch (C)	x		x		
Structural Plate Aluminum Alloy Pipe (C)	x		x		
Structural Plate Aluminum Alloy Pipe-Arch (C)	x		x		
Spiral Rib Steel Pipe (SS)	x		x		x
Clay Pipe, Extra Strength (S)	x	x	x		
Clay Pipe				x	
Perforated Clay Pipe				x	
Concrete Drain Tile				x	
Clay Drain Tile				x	
Corrugated Polyethylene Pipe, Type SP				x	
Corrugated Polyethylene Pipe, Type (S)	x	x	x	x	x
Profile Wall (Ribbed) Polyethylene Pipe (S)	x	x	x		x
Profile Wall (Closed) Polyethylene Pipe (S)	x	x	x		x
Smooth Wall Polyethylene Pipe (S)	x	x	x		x
Corrugated Polyethylene Drainage Tubing				x	
Corrugated Polypropylene Pipe (S)	x	x	x		x
Perforated PVC Semicircular Pipe				x	
Profile Wall PVC Pipe (S)	x	x	x	x	x
Smooth Wall PVC Pipe (S)	x	x	x		x

NOTES:

1. The prescribed uses for the pipe types are as follows.
   a. Type 1 Pipe - Culverts under mainline pavement and public road approaches.
   b. Type 2 Pipe - Storm sewer pipe.
   c. Type 3 Pipe - Culverts under driveways and field entrances.
   d. Type 4 Pipe - Drain tile and longitudinal underdrains.
   e. Type 5 Pipe - Broken back and other installations requiring coupled pipe.
2. See to Standard Drawings E 715-PHCL-01 through E 715-PHCL-25 and E 717-PHCL-01 through E 717-PHCL-10 for allowable heights of cover for various pipe materials except Type 4 pipes.
3. See to Standard Drawings E 715-PSLC-01 through E 715-PSLC-03 for required pipe service life criteria.
4. Any pipe material which is in accordance with the designated pipe type, acceptable for height of cover conditions, and conforms to service life criteria may be installed.

LEGEND:

(C)- Corrugated Interior Culvert Pipe

(S)- Smooth Interior Culvert or Storm Sewer Pipe

(SS)- Semi-Smooth Interior Culvert Pipe

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE CLASSIFICATION TABLES

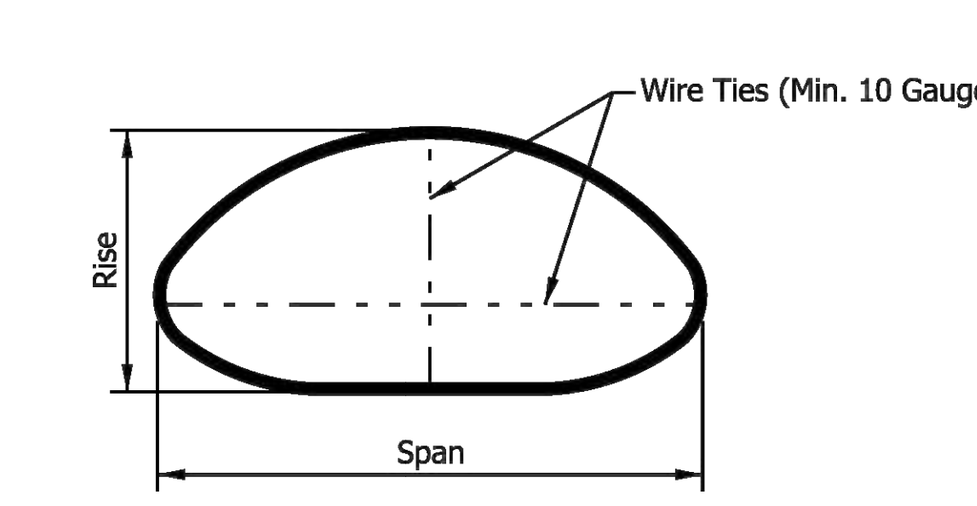
SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PIPE-01

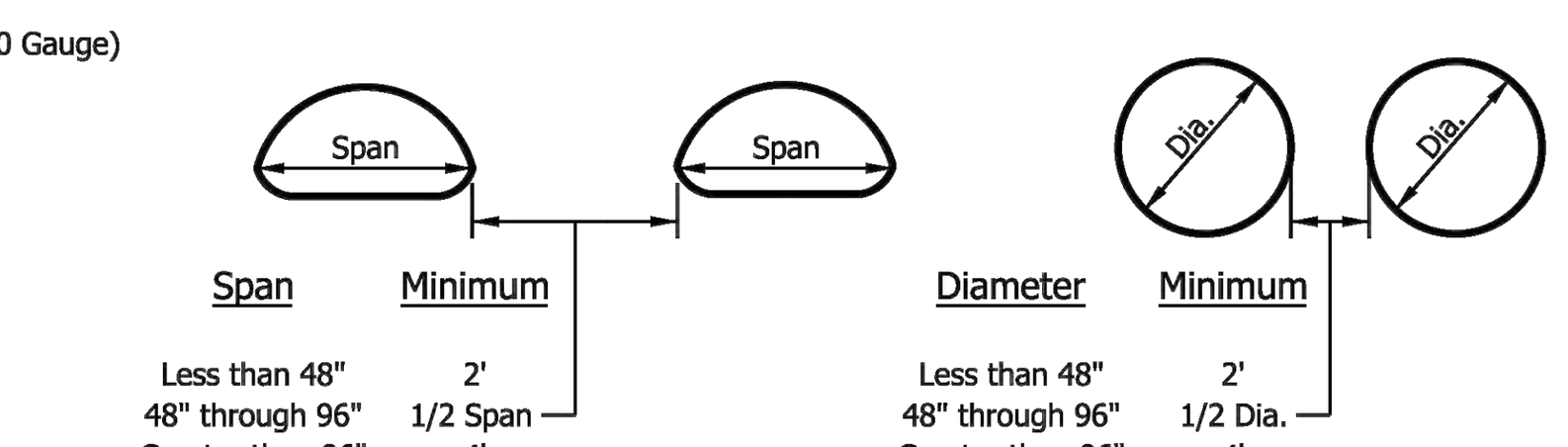
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/22/17
DESIGN STANDARDS ENGINEER DATE

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



STEEL PIPE-ARCH SECTIONS
END STABILIZATION OF 3" x 1" CORRUGATED (1)

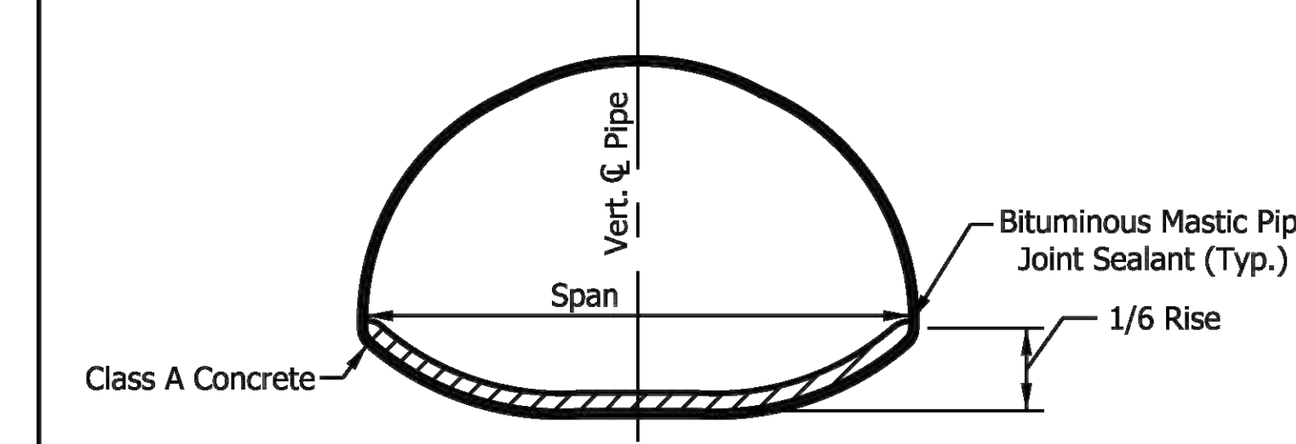


MULTIPLE INSTALLATION

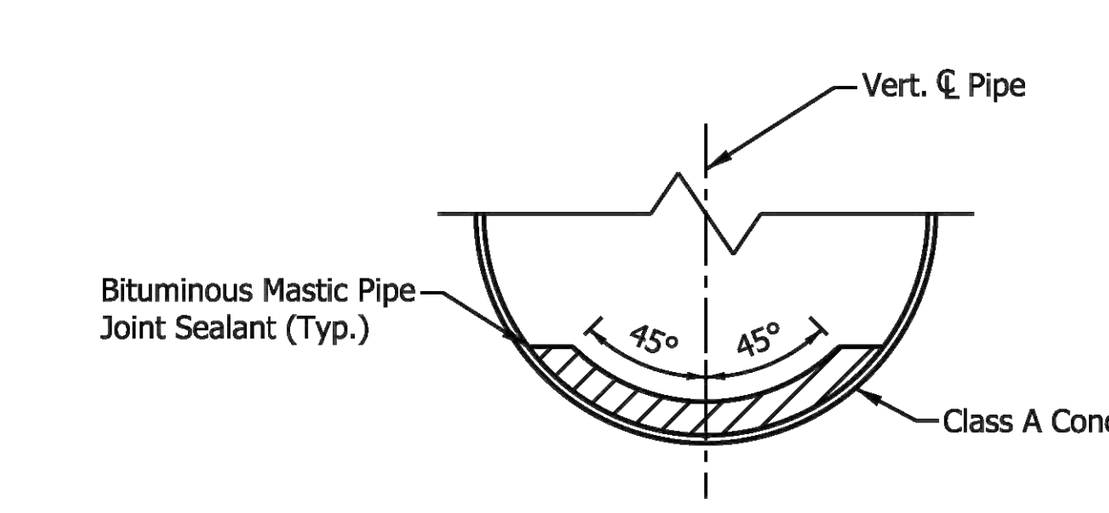
NOTES:

(1) In order to maintain their manufactured shape, all 3" x 1" corrugated steel pipe-arch sections shall have wire ties attached at each end as shown in the detail. The wire ties shall be attached across the largest vertical and horizontal dimension of the pipe-arch. the wire ties shall be installed by the manufacturer and shall remain in place until the on-site installation is complete.

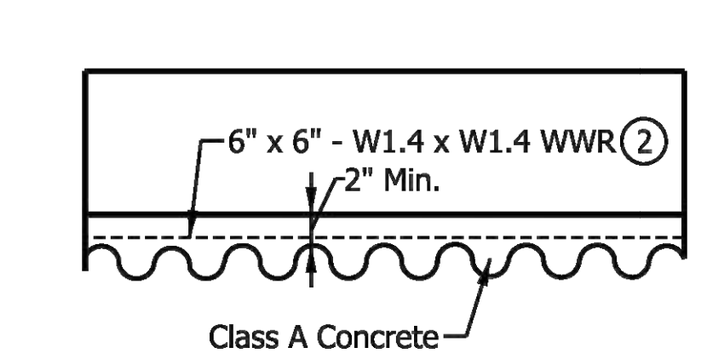
(2) WWR shall be wired to every second circumferential bolt and every twelfth longitudinal bolt.



STRUCTURAL PLATE
PIPE-ARCH CULVERT
ELEVATION



STRUCTURAL PLATE
PIPE CULVERT



TYPICAL LONGITUDINAL SECTION

CONCRETE FIELD PAVED INVERT DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS PIPE
DETAILS

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PIPE-02

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/22/17
DESIGN STANDARDS ENGINEER DATE

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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Designer: DEH
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Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS133
Sheet: 120 of 155

Last Saved By: jcler Printed:2/23/23
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REQUIREMENTS FOR CORRUGATED STEEL PIPE THICKNESS AND PROTECTION AT NON-ABRASIVE SITES

pH	≤ 4.0	4.5	5.0	5.5	6.0	6.5	≥7.0	Steel Conduit Type
Thickness required for 50-year Design Service Life	X	X	X	0.168	0.168	0.138	0.109	Zinc-Coated Corrugated Steel Pipe Zinc-Coated Corrugated Steel Pipe-Arch
	X	X	0.138	0.109	0.109	0.079	0.064	Zinc-Coated Corrugated and Steel Pipe w/Paved Invert Zinc-Coated Corrugated Steel Pipe-Arch w/Paved Invert Fully Bituminous-Coated and Lined Corrugated Steel Pipe Fully Bituminous-Coated and Lined Corrugated Steel Pipe-Arch
	X	X	0.138	0.109	0.109	0.079	0.064	Aluminum-Coated Type 2 Corrugated Steel Pipe Aluminum-Coated Type 2 Corrugated Steel Pipe-Arch
	0.109	0.109	0.079	0.064	0.064	0.064	0.064	Polymer Precoated Galvanized Corrugated Steel Pipe Polymer Precoated Galvanized Corrugated Steel Pipe-Arch
	0.111*	0.111*	0.111*	0.170	0.111	0.111	0.111	Structural Plate Steel Pipe Structural Plate Steel Pipe-Arch
	X	X	X	X	X	X	0.109	Zinc-Coated Spiral Ribbed Steel Pipe
	X	X	X	0.109	0.109	0.079	0.064	Zinc-Coated Sprial Ribbed Steel Pipe w/ Paved Invert
	X	X	X	0.109	0.109	0.079	0.064	Aluminum-Coated Type 2 Spiral Ribbed Steel Pipe
	0.109	0.109	0.079	0.064	0.064	0.064	0.064	Polymer Precoated Galvanized Spiral Ribbed Steel Pipe

* Concrete field paving required.

pH	≤ 4.0	4.5	5.0	5.5	6.0	6.5	≥7.0	Steel Conduit Type
Thickness required for 75-year Design Service Life	X	X	X	X	X	0.168	0.138	Zinc-Coated Corrugated and Spiral Ribbed Steel Pipe Zinc-Coated Corrugated Steel Pipe-Arch
	X	X	X	0.168	0.168	0.138	0.109	Zinc-Coated Corrugated Steel Pipe w/Paved Invert Zinc-Coated Corrugated Steel Pipe-Arch w/Paved Invert Fully Bituminous-Coated and Lined Corrugated Steel Pipe Fully Bituminous-Coated and Lined Corrugated Steel Pipe-Arch
	X	X	X	X	X	0.138	0.109	Aluminum-Coated Type 2 Corrugated Steel Pipe Aluminum-Coated Type 2 Corrugated Steel Pipe-Arch
	X	X	X	0.138	0.138	0.109	0.109	Polymer Precoated Galvanized Corrugated Steel Pipe Polymer Precoated Galvanized Corrugated Steel Pipe-Arch
	0.111*	0.111*	0.111*	0.218	0.111	0.111	0.111	Structural Plate Steel Pipe Structural Plate Steel Pipe-Arch
	X	X	X	X	X	X	0.109	Zinc-Coated Sprial Ribbed Steel Pipe w/ Paved Invert
	X	X	X	X	X	X	0.109	Aluminum-Coated Type 2 Spiral Ribbed Steel Pipe
	X	X	X	X	X	0.109	0.109	Polymer Precoated Galvanized Spiral Ribbed Steel Pipe

* Concrete field paving required.

NOTE:

1. See Standard Drawing E 715-PSLC-03 for General Notes.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE SERVICE LIFE CRITERIA
NON-ABRASIVE SITES

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PSLC-01

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/31/17
DESIGN STANDARDS ENGINEER DATE

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

REQUIREMENTS FOR CORRUGATED STEEL PIPE THICKNESS AND PROTECTION AT ABRASIVE SITES

pH	≤ 4.0	4.5	5.0	5.5	6.0	6.5	≥7.0	Steel Conduit Type
Thickness required for 50-year Design Service Life	X	X	X	0.168	0.168	0.138	0.109	Zinc-Coated Corrugated Steel Pipe w/Paved Invert Zinc-Coated Corrugated Steel Pipe-Arch w/Paved Invert Fully Bituminous-Coated and Lined Corrugated Steel Pipe Fully Bituminous-Coated and Lined Corrugated Steel Pipe-Arch
	X	X	0.138	0.109	0.109	0.079	0.064	Aluminum-Coated Type 2 Corrugated Steel w/Paved Invert Aluminum-Coated Type 2 Corrugated Steel Pipe-Arch w/Paved Invert
	0.109	0.109	0.079	0.064	0.064	0.064	0.064	Polymer Precoated Galvanized Corrugated Steel Pipe Polymer Precoated Galvanized Corrugated Steel Pipe-Arch
	X	X	X	0.170	0.111	0.111	0.111	Structural Plate Steel Pipe w/Concrete Field Paving Structural Plate Steel Pipe-Arch w/Concrete Field Paving
	X	X	X	X	X	X	0.109	Zinc-Coated Sprial Ribbed Steel Pipe w/ Paved Invert
	X	X	X	0.109	0.109	0.079	0.064	Aluminum-Coated Type 2 Spiral Ribbed Pipe w/ Paved Invert
	0.109	0.109	0.079	0.064	0.064	0.064	0.064	Polymer Precoated Galvanized Spiral Ribbed Steel Pipe

pH	≤ 4.0	4.5	5.0	5.5	6.0	6.5	≥7.0	Steel Conduit Type
Thickness required for 75-year Design Service Life	X	X	X	X	X	0.168	0.138	Zinc-Coated Corrugated Steel Pipe w/Paved Invert Zinc-Coated Corrugated Steel Pipe-Arch w/Paved Invert Fully Bituminous-Coated and Lined Corrugated Steel Pipe Fully Bituminous-Coated and Lined Corrugated Steel Pipe-Arch
	X	X	X	X	X	0.138	0.109	Aluminum-Coated Type 2 Corrugated Steel Pipe w/Paved Invert Aluminum-Coated Type 2 Corrugated Steel Pipe-Arch w/Paved Invert
	X	X	X	0.138	0.138	0.109	0.109	Polymer Precoated Galvanized Corrugated and Steel Pipe Polymer Precoated Galvanized Corrugated Steel Pipe-Arch
	X	X	X	0.218	0.111	0.111	0.111	Structural Plate Steel Pipe w/Concrete Field Paving Structural Plate Steel Pipe-Arch w/Concrete Field Paving
	X	X	X	X	X	X	0.109	Aluminum-Coated Type 2 Spiral Ribbed Pipe w/ Paved Invert
	X	X	X	X	X	0.109	0.109	Polymer Precoated Galvanized Spiral Ribbed Steel Pipe

NOTE:

1. See Standard Drawing E 715-PSLC-03 for General Notes.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE SERVICE LIFE CRITERIA
ABRASIVE SITES

SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PSLC-02

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/31/17
DESIGN STANDARDS ENGINEER DATE

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

GENERAL NOTES:

1. "X" entries in the table indicate that a thickness which satisfies the required design service life is not available.
2. The tabulated plate thickness for structural plate steel pipe and pipe-arches reflects the required thickness for the top and side plates. If the tabulated plate thickness is less than 0.280 in. the bottom plates shall be of the next greater available thickness.
3. Corrugated aluminum alloy pipe and pipe-arches and aluminum alloy structural plate pipe and pipe-arches are acceptable with the minimum thickness required to satisfy cover conditions for all non-abrasive sites with a structure pH ≥ 5.0.
4. Corrugated aluminum alloy pipe and pipe-arches with bituminous paved invert and aluminum alloy structural plate pipe and pipe-arches with concrete field paving are acceptable with the minimum thickness required to satisfy cover conditions for all abrasive sites with a structure pH ≥ 5.0.
5. Service life criteria apply only to reinforced concrete, corrugated metal, and structural plate metal pipe. Other materials which conform to the designated pipe type and height of cover parameters are acceptable for installation.
6. Service life criteria do not apply to Type 4 pipe.

REQUIREMENTS FOR REINFORCED CONCRETE PIPE PROTECTION

Pipe Slope	Minimum pH to Attain Design Service Life	
	50 Year	75 Year
Less than 3%	4.0	4.5
3% to 10%	4.5	5.0
Greater than 10%	5.0	5.5

For a structure pH lower than the minimums listed above, reinforced concrete pipe shall not be used.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE SERVICE
LIFE CRITERIA

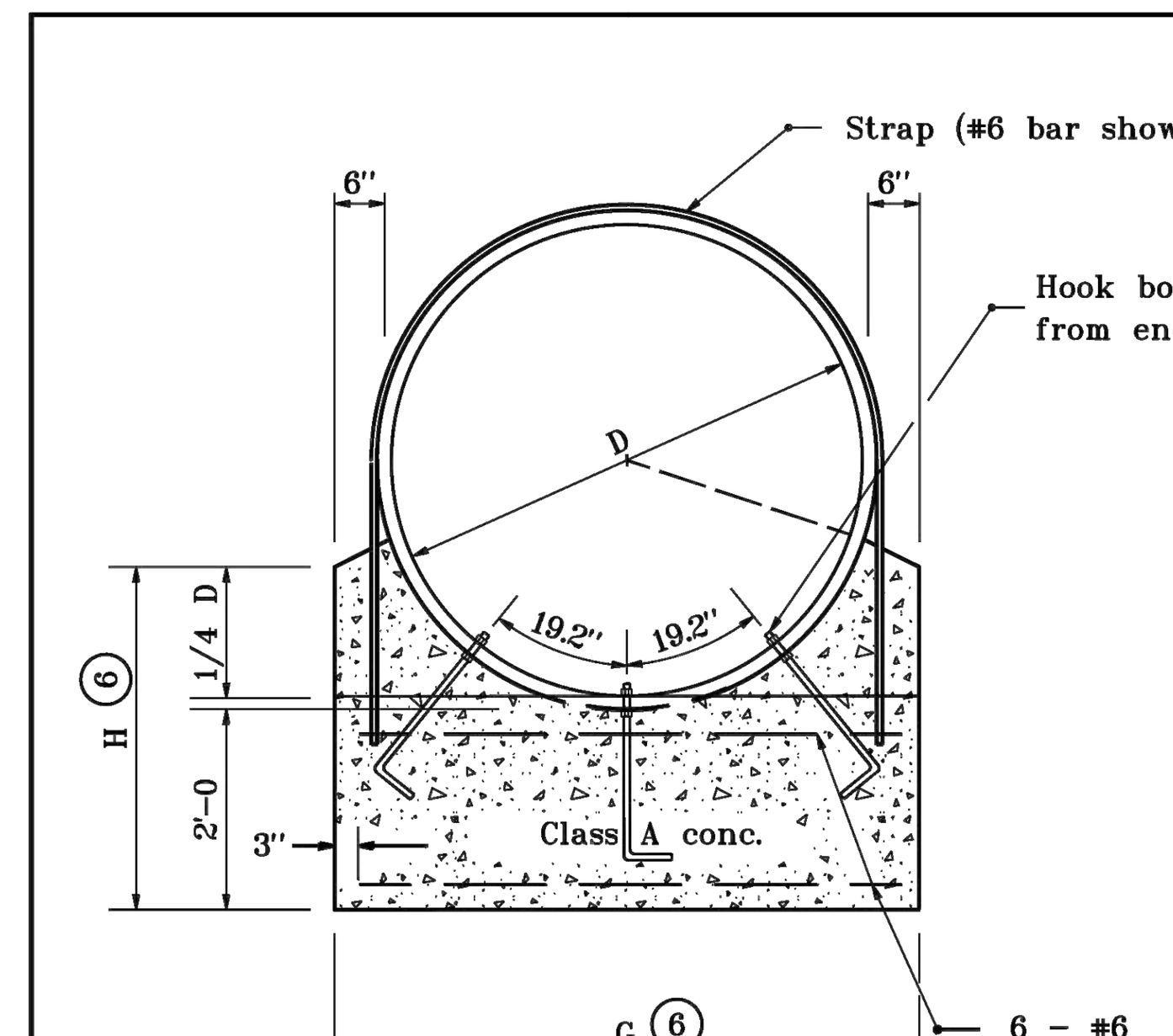
SEPTEMBER 2017

STANDARD DRAWING NO. E 715-PSLC-03

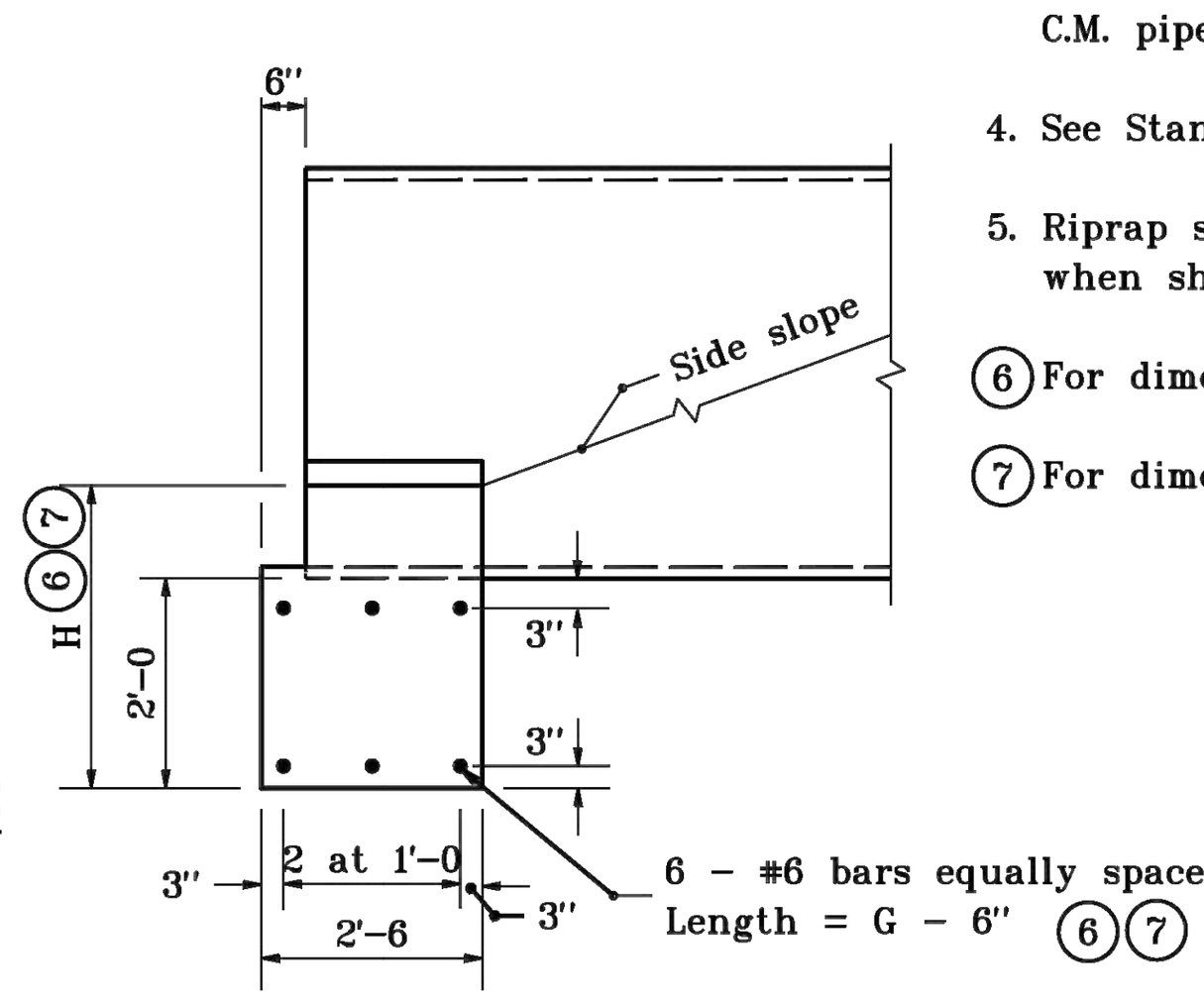
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 03/31/17
DESIGN STANDARDS ENGINEER DATE

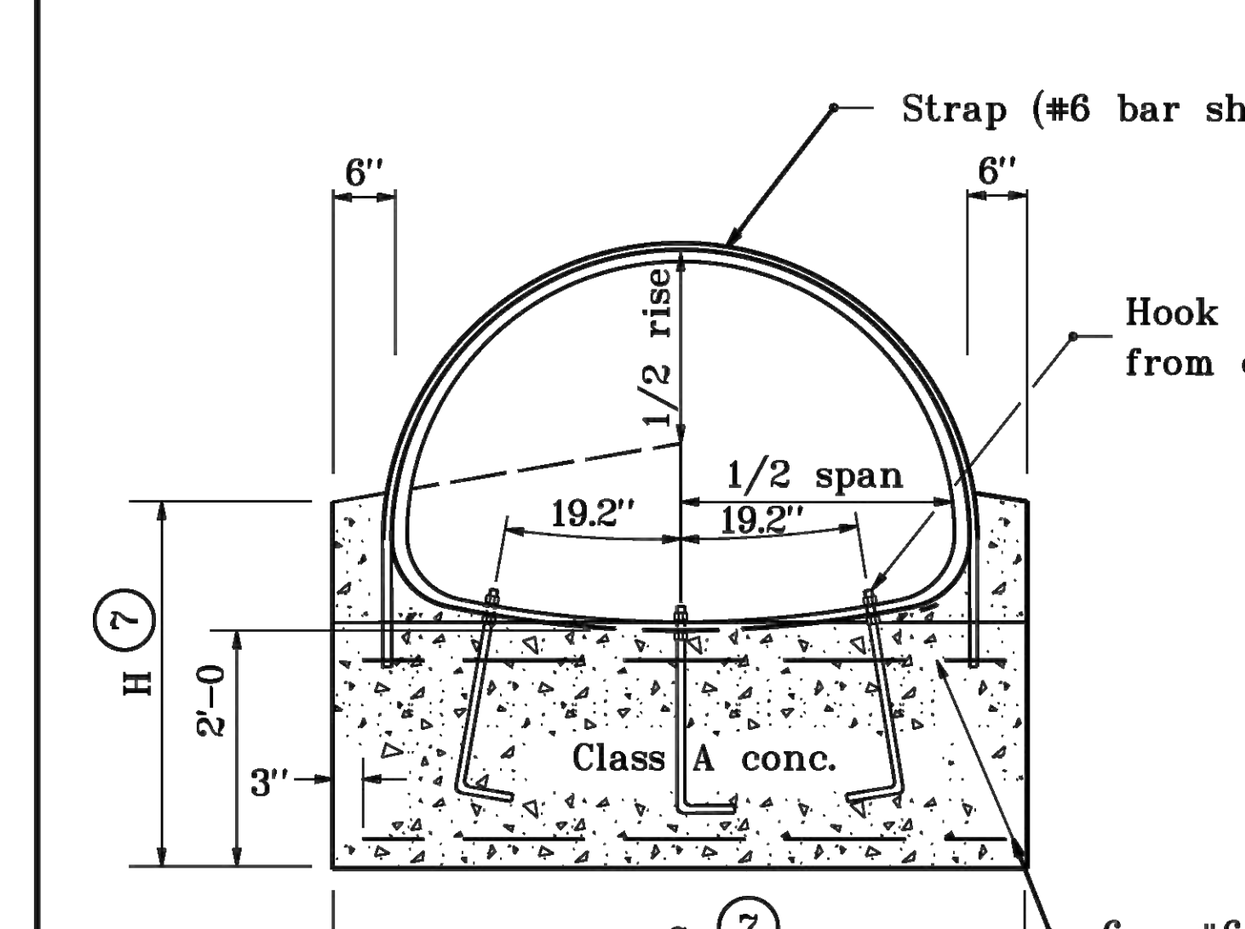
/s/ John Leckie 04/10/17
CHIEF ENGINEER DATE



ANCHOR FOR CIRCULAR CORRUGATED METAL PIPE
FRONT ELEVATION



SIDE ELEVATION



ANCHOR FOR CORRUGATED METAL PIPE-ARCH
FRONT ELEVATION

GENERAL NOTES

1. Anchor straps shall be used at both upstream and downstream ends of all C.M. pipes with a diameter or span of 42" or greater.
2. See Standard Drawing E 715-PASD-01 for anchor strap details.
3. Hook bolts and anchor straps shall be used for all C.M. pipes with a diameter or span of 84" or greater.
4. See Standard Drawing E 715-PAHB-01 for hook bolt details.
5. Riprap shall be placed at the ends of pipe structures when shown on plans.

(6) For dimension chart see Standard Drawing E 715-ANCH-01.

(7) For dimension chart see Standard Drawing E 715-ANCH-02.

LEGEND

C.M. = Corrugated Metal

INDIANA DEPARTMENT OF TRANSPORTATION

SINGLE PIPE
CONCRETE ANCHOR

JANUARY 1998

STANDARD DRAWING NO. E 715-SPCA-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

ORIGANLLY APPROVED 1-02-98

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Client Approval:
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Drawing Number: CS134

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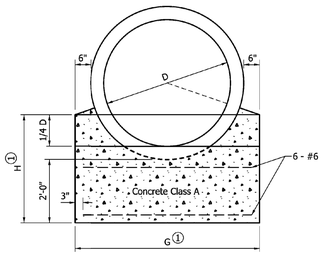
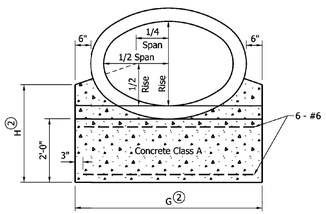


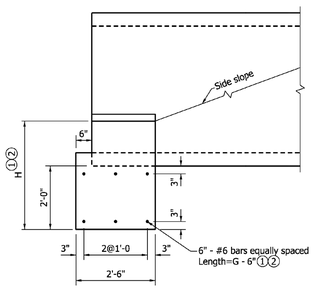
ANCHOR FOR
REINFORCED CONCRETE PIPE

FRONT ELEVATION



ANCHOR FOR
REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE

FRONT ELEVATION



SIDE ELEVATION

GENERAL NOTES

1. For dimension, enter chart on Standard Drawing E 715-ANCH-01 with known dimension D.
2. For dimension enter chart on Standard Drawing E 715-ANCH-02 with known span and rise.
3. Riprap shall be placed at the ends of pipe structures when shown on plans.

INDIANA DEPARTMENT OF TRANSPORTATION

SINGLE PIPE
CONCRETE ANCHOR

SEPTEMBER 2009

STANDARD DRAWING NO. E 715-SPCA-02

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

INDEX	
SHEET NO.	SUBJECT
1	Underdrain Drawing Index and General Notes
2	Underdrain Details
3	Underdrain Details
4	Outlet Protector, Type 1
5	Outlet Protector, Type 2
6	Outlet Protector, Type 3
7	Outlet Protector Rodent Screen

APPROXIMATE OUTLET PROTECTOR QUANTITIES			
TYPE	CONCRETE, CLASS A (cys)	REINFORCING BARS (lb)	SODDING (sys)
1	0.8	29	4.9
2	0.6	25	4.0
3	0.3	22	3.2

INDIANA DEPARTMENT OF TRANSPORTATION

UNDERDRAIN DRAWING INDEX
AND GENERAL NOTES

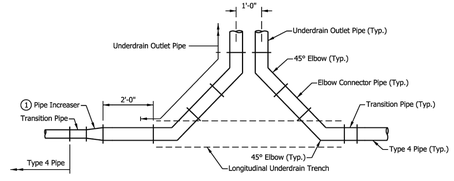
SEPTEMBER 2017

STANDARD DRAWING NO. E 718-UNDR-01

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 08/26/16
DESIGN STANDARDS ENGINEER DATE

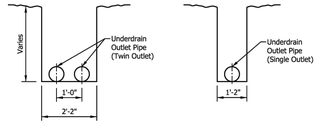
/s/ Mark A. Miller 09/19/16
CHIEF ENGINEER DATE



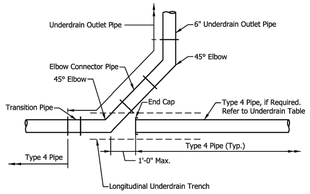
TWIN OUTLET DETAIL-PLAN VIEW

NOTE:

① If the underdrain pipe and the outlet pipe are of different sizes an increaser of the same material as the outlet pipe shall be installed 2 ft from the transition pipe and the 45° elbow.



OUTLET TRENCH DETAILS



SINGLE OUTLET DETAIL-PLAN VIEW

INDIANA DEPARTMENT OF TRANSPORTATION

UNDERDRAIN DETAILS

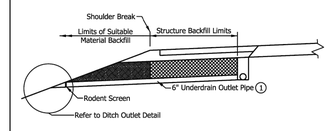
SEPTEMBER 2017

STANDARD DRAWING NO. E 718-UNDR-02

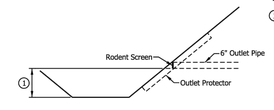
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 08/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/19/16
CHIEF ENGINEER DATE



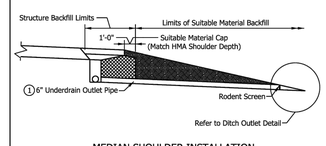
OUTSIDE SHOULDER INSTALLATION



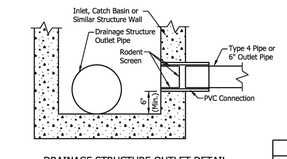
DITCH OUTLET DETAIL

NOTE:

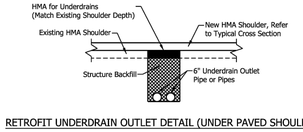
① If underdrain outlet pipe elevations are not shown on Underdrain Table, the minimum outlet pipe slope shall be 0.3%. The minimum freeboard between the outlet pipe outfall and the ditch line shall be 1'-0" for median ditches and 2'-0" for side ditches.



MEDIAN SHOULDER INSTALLATION



DRAINAGE STRUCTURE OUTLET DETAIL



RETROFIT UNDERDRAIN OUTLET DETAIL (UNDER PAVED SHOULDER)

INDIANA DEPARTMENT OF TRANSPORTATION

UNDERDRAIN DETAILS

SEPTEMBER 2017

STANDARD DRAWING NO. E 718-UNDR-03

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Elizabeth W. Phillips 08/26/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/19/16
CHIEF ENGINEER DATE

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
9920 Harrison Park Court
Indianapolis, Indiana 46235
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E-mail fosse@fosse-arch.com

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Mechanical & Electrical Engineering
501 Carpenter Street
Evansville, IN 47708
Phone : (812) 424-7941
Fax : (812) 424-7942
www.bceng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
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Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS135
Sheet: 122 of 155

Last Saved By: jdai Printed:2/23/23
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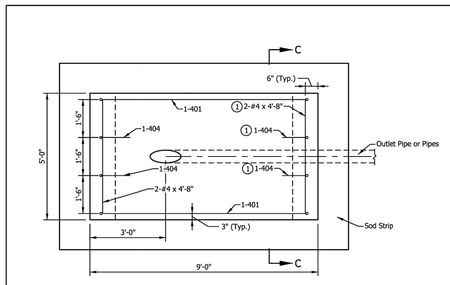
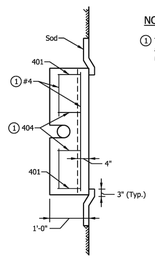


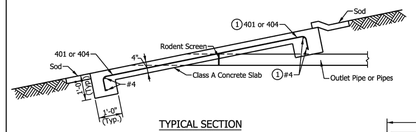
PLAN VIEW



SECTION C-C

NOTE:

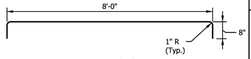
1. The #4 transverse bars in the upslope lug may be field cut to accommodate the outlet pipe or pipes. The 404 bars in the upslope lug may be moved to accommodate the outlet pipe or pipes.



TYPICAL SECTION

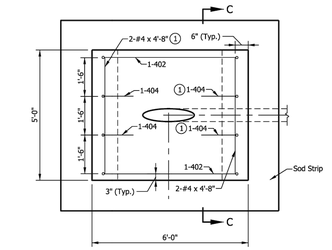


404 x 1'-8"

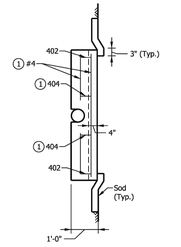


401 X 9'-4"

INDIANA DEPARTMENT OF TRANSPORTATION	
OUTLET PROTECTOR, TYPE 1 SEPTEMBER 2017	
STANDARD DRAWING NO. E 718-UNDR-04	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 08/26/16 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/19/16 CHIEF ENGINEER DATE



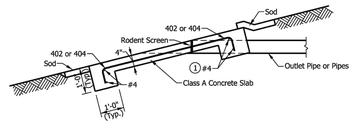
PLAN VIEW



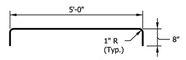
SECTION C-C

NOTE:

1. The #4 transverse bars in the upslope lug may be field cut to accommodate the outlet pipe or pipes. The 404 bars in the upslope lug may be moved to accommodate the outlet pipe or pipes.



TYPICAL SECTION

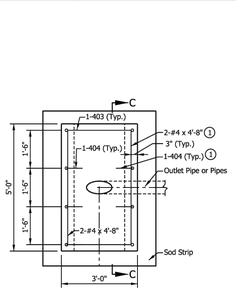


402 X 6'-4"

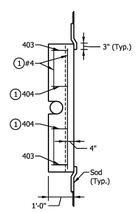


404 x 1'-8"

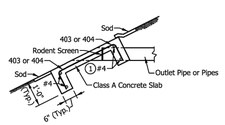
INDIANA DEPARTMENT OF TRANSPORTATION	
OUTLET PROTECTOR, TYPE 2 SEPTEMBER 2017	
STANDARD DRAWING NO. E 718-UNDR-05	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 08/26/16 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/19/16 CHIEF ENGINEER DATE



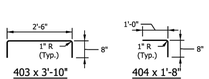
PLAN VIEW



SECTION C-C



TYPICAL SECTION



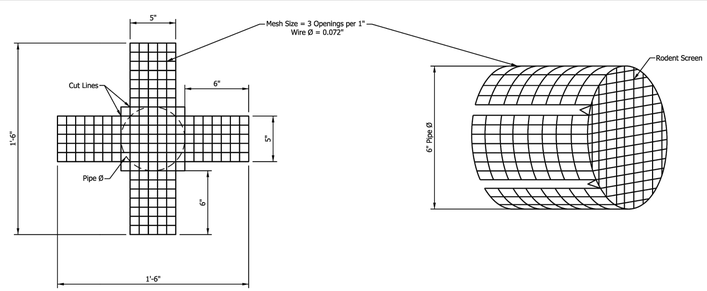
403 x 3'-10"

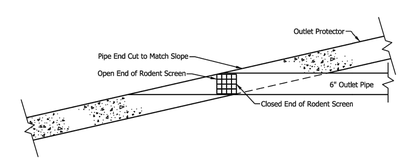
404 x 1'-8"

NOTE:

1. The #4 transverse bars in the upslope lug may be field cut to accommodate the outlet pipe or pipes. The 404 bars in the upslope lug may be moved to accommodate the outlet pipe or pipes.

INDIANA DEPARTMENT OF TRANSPORTATION	
OUTLET PROTECTOR, TYPE 3 SEPTEMBER 2017	
STANDARD DRAWING NO. E 718-UNDR-06	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 08/26/16 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/19/16 CHIEF ENGINEER DATE





INDIANA DEPARTMENT OF TRANSPORTATION	
OUTLET PROTECTOR RODENT SCREEN SEPTEMBER 2017	
STANDARD DRAWING NO. E 718-UNDR-07	
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ Elizabeth W. Phillips 08/26/16 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/19/16 CHIEF ENGINEER DATE

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
9920 Harrison Park Court
Indianapolis, Indiana 46236
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E-mail fosse@fosse-architects.com

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Mechanical & Electrical Engineering
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Evansville, IN 47708
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www.bceng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W451 INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
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Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS136
Sheet: 123 of 155

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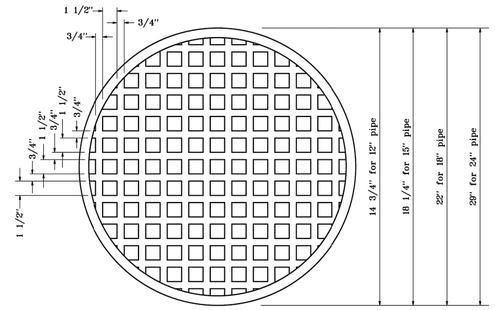
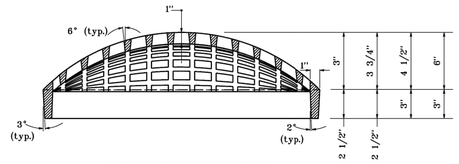




PIPE CATCH BASIN CASTING

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE CATCH BASIN CASTING

APRIL 1995

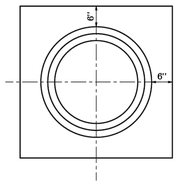
STANDARD DRAWING NO. E 720-CBCA-01

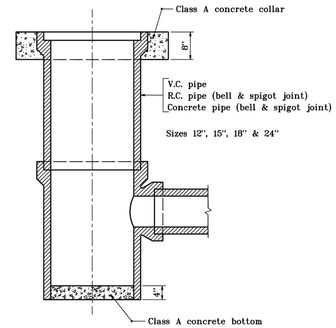
DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 4-03-95





INDIANA DEPARTMENT OF TRANSPORTATION

CATCH BASIN PIPE

APRIL 1995

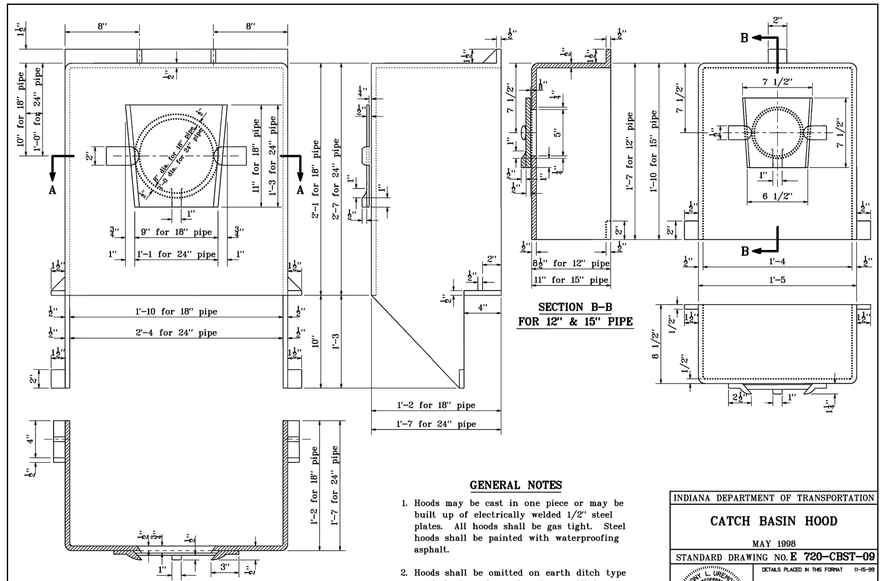
STANDARD DRAWING NO. E 720-CBST-06

DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 4-03-95



SECTION A–A
FOR 18" & 24" PIPE

SECTION B–B
FOR 12" & 15" PIPE

GENERAL NOTES

1. Hoods may be cast in one piece or may be built up of electrically welded 1/2" steel plates. All hoods shall be gas tight. Steel hoods shall be painted with waterproofing asphalt.

2. Hoods shall be omitted on earth ditch type catch basin unless otherwise specified.

INDIANA DEPARTMENT OF TRANSPORTATION

CATCH BASIN HOOD

MAY 1998

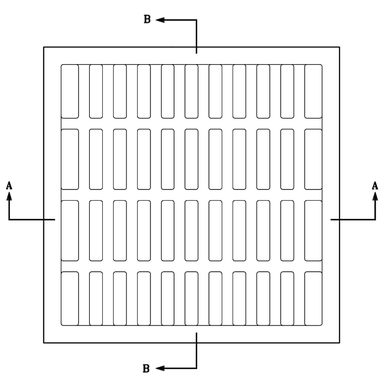
STANDARD DRAWING NO. E 720-CBST-09

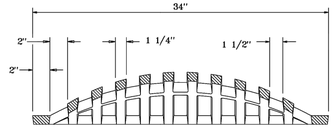
DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

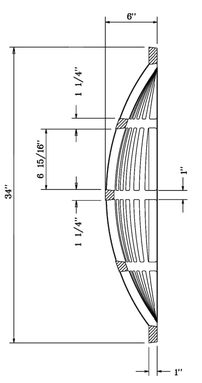
DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 5-01-98





SECTION A–A

EARTH DITCH CASTING TYPE 7



SECTION B–B

INDIANA DEPARTMENT OF TRANSPORTATION

EARTH DITCH CASTING TYPE 7

SEPTEMBER 1998

STANDARD DRAWING NO. E 720-EDCA-01

DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 5-01-98

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
920 Harrison Park Court
Indianapolis, Indiana 46208
Business (317) 924-9999 Fax (317) 926-5262

Fosse & Associates Architects, Inc.
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PUBLIC WORKS DIVISION
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Drawing Number: CS137
Sheet: 124 of 155

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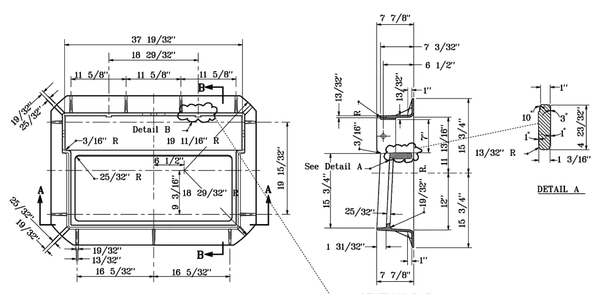
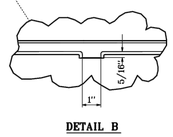


PLAN

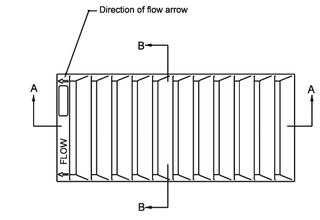
SECTION B–B



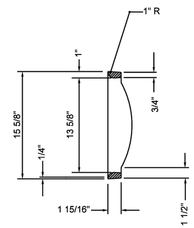
SECTION A–A

FRAME
CASTING TYPE 10

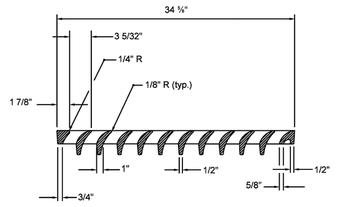
INDIANA DEPARTMENT OF TRANSPORTATION	
CASTINGS TYPE 10 FRAME SEPTEMBER 1998	
STANDARD DRAWING NO. E 720-ICCA-08	
RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Urmovich 11-15-99 DESIGN STANDARDS ENGINEER DATE /s/ Firoos Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 9-01-98



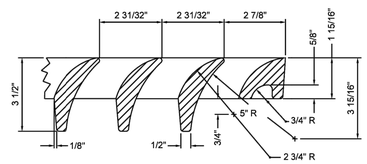
PLAN



SECTION B-B



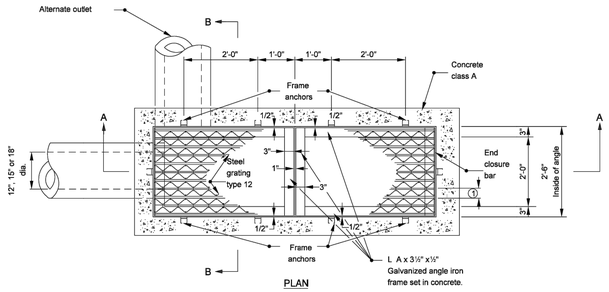
SECTION A-A



DETAIL OF SECTION A-A

GRATE
CASTING TYPE 10

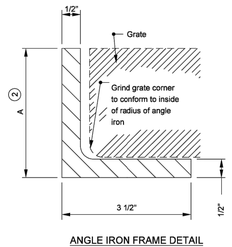
INDIANA DEPARTMENT OF TRANSPORTATION	
CASTING TYPE 10 GRATE SEPTEMBER 2003	
STANDARD DRAWING NO. E 720-ICCA-09	
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	/s/ Richard L.VanCleave 9-02-03 DESIGN STANDARDS ENGINEER DATE /s/ Richard K.Smutzer 9-02-03 CHIEF HIGHWAY ENGINEER DATE



PLAN

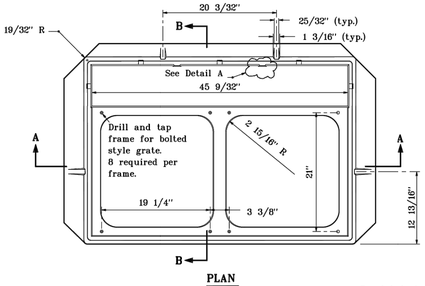
NOTES

1. Bar spacing shall be 1 ¼" c. to c. minimum and 2 ½" c. to c. maximum.
2. The dimensions of the angle iron frame shall be as shown except that the A dimension may vary according to type of grating used.
3. For Section A-A, Section B-B see Standard Drawing E 720-INST-08.

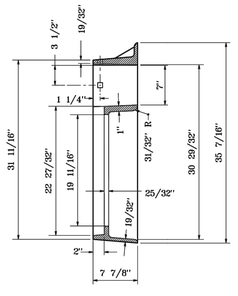


ANGLE IRON FRAME DETAIL

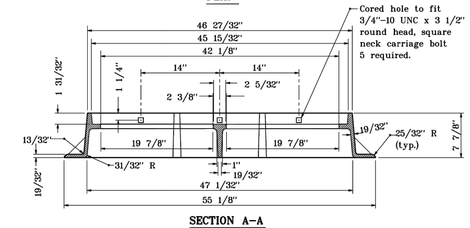
INDIANA DEPARTMENT OF TRANSPORTATION	
STEEL GRATING TYPE 12 FRAME AND GRATE SEPTEMBER 2005	
STANDARD DRAWING NO. E 720-ICCA-10	
RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	/s/ Richard L.VanCleave 9-01-05 DESIGN STANDARDS ENGINEER DATE /s/ Richard K.Smutzer 9-01-05 CHIEF HIGHWAY ENGINEER DATE



PLAN

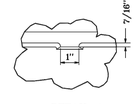


SECTION B–B



SECTION A–A

FRAME
CASTING TYPE 15



DETAIL A

INDIANA DEPARTMENT OF TRANSPORTATION	
CASTING TYPE 15 FRAME SEPTEMBER 1998	
STANDARD DRAWING NO. E 720-ICCA-16	
RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Urmovich 11-15-99 DESIGN STANDARDS ENGINEER DATE /s/ Firoos Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 9-01-98

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
Indianapolis, Indiana 46236
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Mechanical & Electrical Engineering
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Evansville, IN 47708
Phone : (812)-424-7941
Fax : (812) 424-7942
www.boeng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS138
Sheet: 125 of 155

Last Saved By: Jake Pinkard 2/23/23
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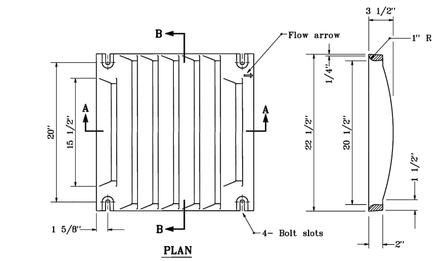
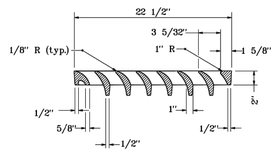
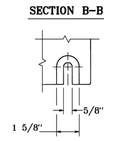


PLAN

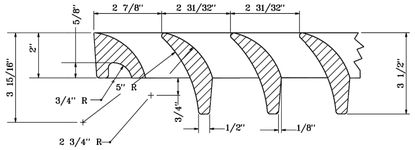


SECTION A–A



SECTION B–B

BOLT SLOT DETAIL



INDIANA DEPARTMENT OF TRANSPORTATION
CASTING TYPE 15
GRATE
SEPTEMBER 1998
STANDARD DRAWING NO. E 720–ICCA–17

RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

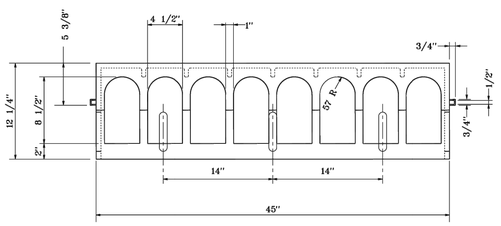
DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

DESIGN STANDARDS ENGINEER



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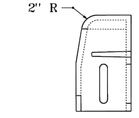

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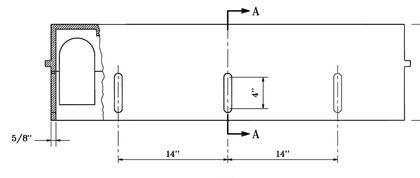

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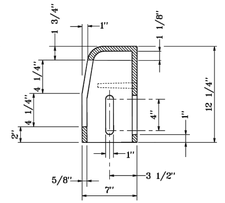


SECTION A–A

INDIANA DEPARTMENT OF TRANSPORTATION
CASTING TYPE 15
CURB BOX
SEPTEMBER 1998
STANDARD DRAWING NO. E 720–ICCA–18

RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

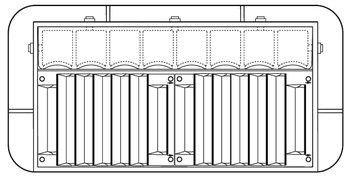
DETAILS PLACED IN THIS FORMAT 11-15-99

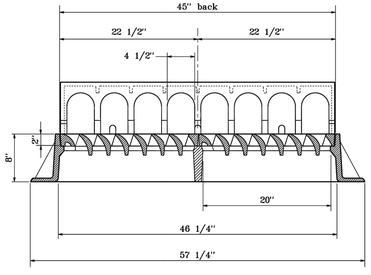
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

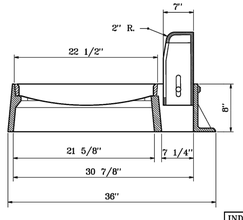
/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

DESIGN STANDARDS ENGINEER







GENERAL NOTES

1. Curb adjustment 5½" to 9½".

INDIANA DEPARTMENT OF TRANSPORTATION
CASTING TYPE 15 (ALTERNATE)
FRAME, GRATE, AND CURB BOX
SEPTEMBER 1998
STANDARD DRAWING NO. E 720–ICCA–19

RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

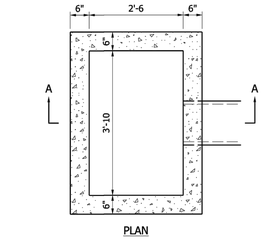
DETAILS PLACED IN THIS FORMAT 11-15-99

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

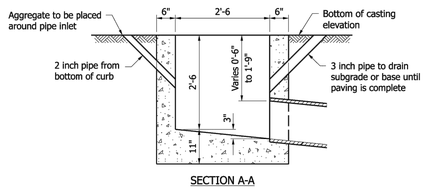
/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

DESIGN STANDARDS ENGINEER

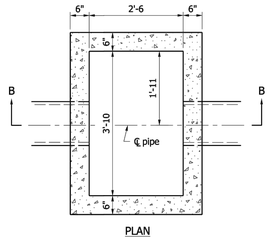


PLAN



SECTION A-A

INLET-TYPE B



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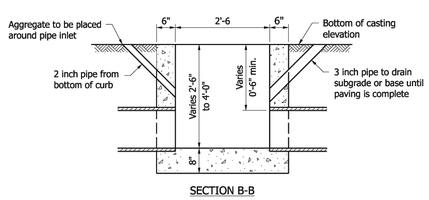

SECTION B-B

INLET-TYPE C

INDIANA DEPARTMENT OF TRANSPORTATION
INLET TYPE B AND C
SEPTEMBER 2008
STANDARD DRAWING NO. E 720- INST-02

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

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
6920 Harrison Park Court
Indianapolis, Indiana 46236
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Fosse & Associates Architects, Inc.
323 NW Fourth St, Suite 102 – Evansville, IN 47708
Phone (812) 424-2882 – Fax (812) 424-2887
E-mail fosse@fosse-architects.com

B. C. Engineering, Inc.
Mechanical & Electrical Engineering
501 Carpenter Street
Evansville, IN 47708
Phone: (812) 424-7941
Fax: (812) 424-7942
www.boeng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS139
Sheet: 126 of 155

Last Saved By: Joe Pinkard 2/23/23
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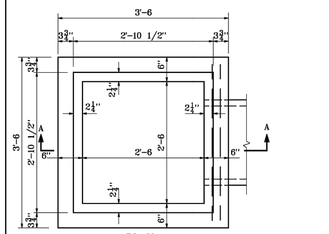
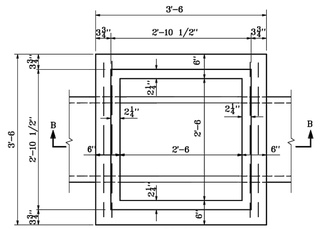
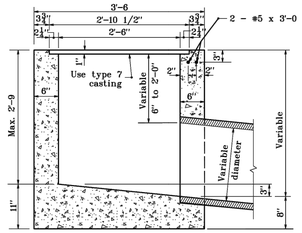
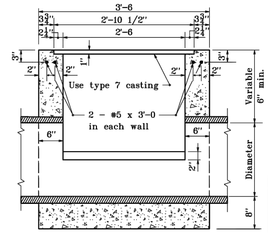






INLET TYPE E (CONC.)



INLET TYPE F (CONC.)

INDIANA DEPARTMENT OF TRANSPORTATION

INLETS TYPE E AND F

SEPTEMBER 1997

STANDARD DRAWING NO. E 720-INST-04

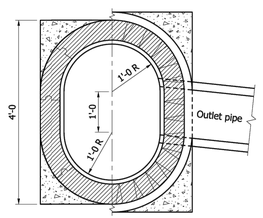
DETAILS PLACED IN THIS FORMAT 11-15-99

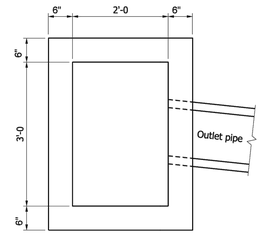
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

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

ORIGINALLY APPROVED 9-02-97

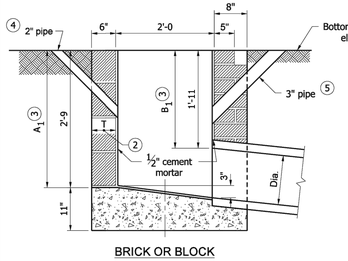
ANTHONY L. URMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER



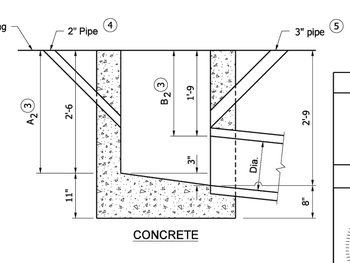


GENERAL NOTES

1. Brick, block, or concrete may be used.
2. T = 8" for brick structure
   T = 6" for segmental block structure
3. In special cases or where inlet pipe is required, A_1, B_1, A_2, and B_2 shall be increased or decreased 1'-0, as directed.
4. 2" dia. pipe drain from bottom of curb to inlet. Aggregate to be placed around inlet end of pipe.
5. 3" dia. pipe to be kept open for drainage of subgrade or base until surface is placed.



BRICK OR BLOCK



CONCRETE

INDIANA DEPARTMENT OF TRANSPORTATION

INLET TYPE J

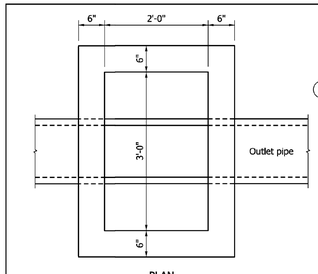
SEPTEMBER 2008

STANDARD DRAWING NO. E 720- INST-06

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

/s/ Richard L. VanCleave 09/02/08
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/02/08
CHIEF HIGHWAY ENGINEER DATE



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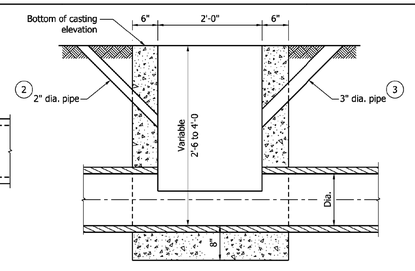
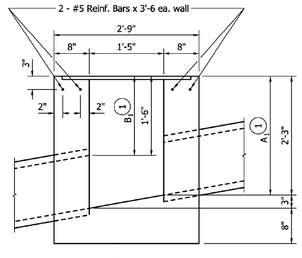
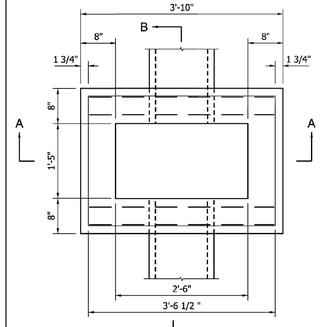
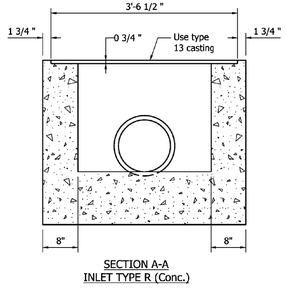


GENERAL NOTES

1. If inlet pipe is required, A_1 and B_1 shall be increased or decreased 1'-0 as directed.
2. 2" dia. drain from bottom of curb to inlet. Aggregate to be placed around inlet end of pipe.
3. 3" min. dia. pipe to be kept open for drainage of subgrade or base until surface is placed.







INLET TYPE R (Conc.)

INDIANA DEPARTMENT OF TRANSPORTATION

INLET TYPE M & R

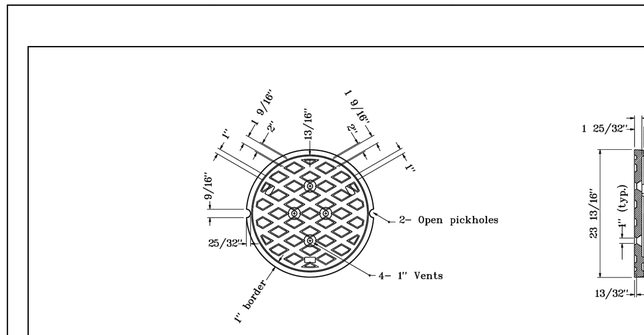
SEPTEMBER 2009

STANDARD DRAWING NO. E 720 INST-07

ANTHONY 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



INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLE CASTING

TYPE 4 RING AND COVER

SEPTEMBER 1998

STANDARD DRAWING NO E 720-MHCA-02

DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

ORIGINALLY APPROVED 9-01-98

ANTHONY L. URMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

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Indianapolis, Indiana 46208
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Mechanical & Electrical Engineering
501 Carpenter Street
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W462 INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS140
Sheet: 127 of 155

Last Saved By: Jake Pinkard 2/23/23
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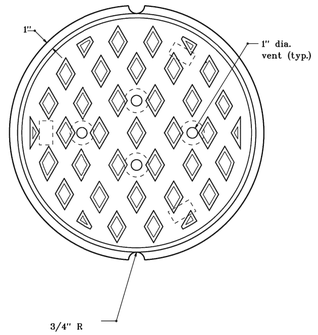
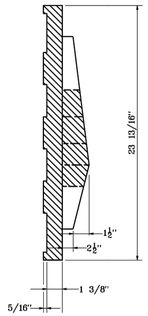




INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLE CASTING TYPE 4
ALTERNATE COVER

SEPTEMBER 1998

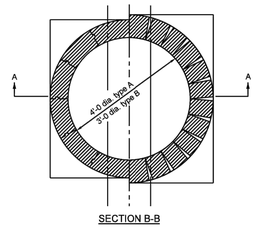
STANDARD DRAWING NO. E 720-MHCA-03

DETAILS PLACED IN THIS FORMAT 11-15-99

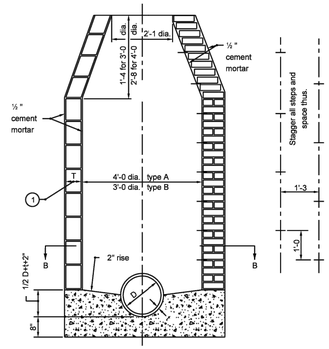
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 9-01-98



SECTION B-B



SECTION A-A

TYPE A Dia. = 4'-0"

TYPE B Dia. = 3'-0

NOTES

1. T = 8" for brick structure
   T = 6" for segmental block structure

INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLES TYPE A AND B

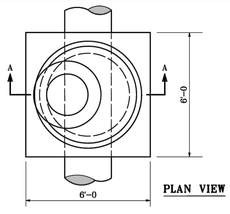
SEPTEMBER 2003

STANDARD DRAWING NO. E 720-MHST-01

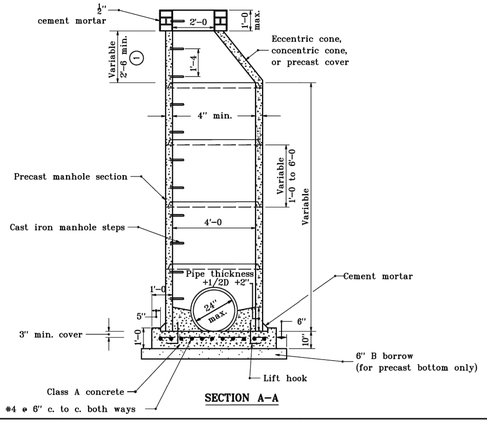
/s/ Richard L.VanCleave 9-02-03
DESIGN STANDARDS ENGINEER DATE

/s/ Richard E.Seutzer 9-02-03
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



PLAN VIEW



SECTION A-A

GENERAL NOTES

1. For eccentric and concentric cone heights see cone heights table on Standard Drawing E 720-MHST-08.

INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLE TYPE C

SEPTEMBER 1997

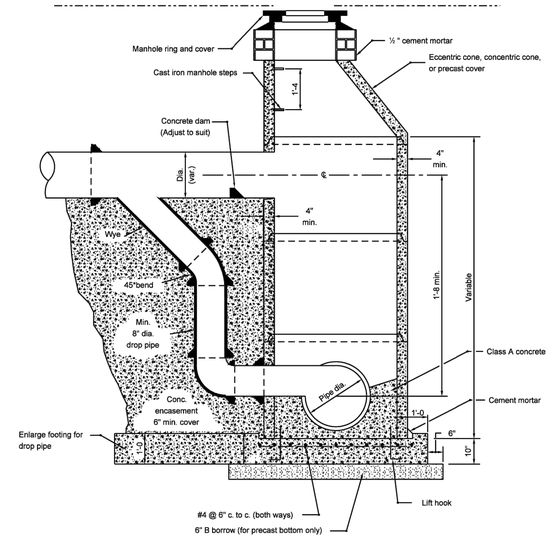
STANDARD DRAWING NO. E 720-MHST-02

DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 9-02-97



SECTION

NOTES

1. Drop pipe may be used with manhole type D, E, F, or G. Such manhole shall be referred to as drop manhole type D, E, F, or G.

INDIANA DEPARTMENT OF TRANSPORTATION

DROP MANHOLE TYPE C

SEPTEMBER 2003

STANDARD DRAWING NO. E 720-MHST-03

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

/s/ Richard E.Seutzer 9-02-03
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
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Sheet: 128 of 155

Last Saved By: Joe Pinkard 2/23/23
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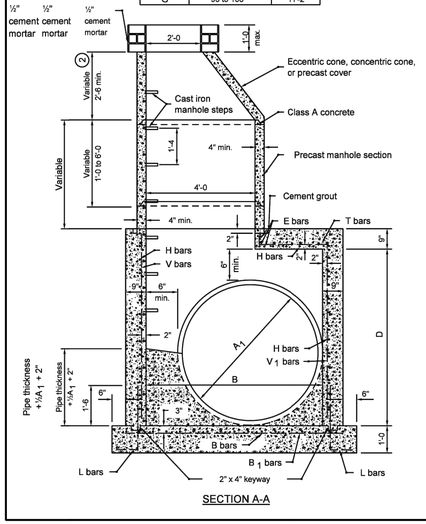
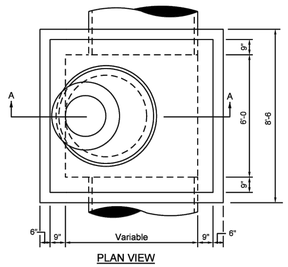
MANHOLE DIMENSIONS		
TYPE	A-1 PIPE SIZE DIA. (in)	B AND D
D	27 to 42	4'-9
E	48 to 60	6'-6
F	66 to 84	8'-10
G	90 to 108	11'-2

½" cement mortar ½" cement mortar ½" cement mortar

½" cement mortar ½" cement mortar ½" cement mortar



SECTION A-A



PLAN VIEW

NOTES

1. Manhole type H, J, K, L, M, or N, may be substituted for manhole type C, D, E, or F for comparable pipe sizes. See Standard Drawing E 720-MHST-05 for manholes type H, J, K, L, M, and N details.
2. For eccentric and concentric cone heights see Cone Heights Table on Standard Drawing 720-MHST-08.
3. See Standard Drawing 720-MHST-10 for Reinforcing Steel for Manholes table.

INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLES
TYPE D, E, F, AND G

SEPTEMBER 2003

STANDARD DRAWING NO. E 720-MHST-04

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

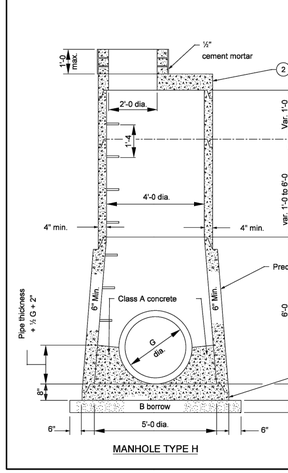
/s/ Richard L.VanCleave 9-02-03 — DESIGN STANDARDS ENGINEER — DATE

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

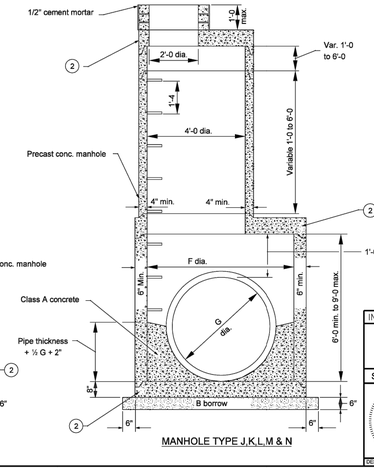
MANHOLE PIPE SIZES				
Type	G (in.)	F (ft. in.)	Maximum Pipe Size Rt. ∡ to Mainline (in.)	Maximum Pipe Size for Mainline (in.)
H	24 to 36	———	30	36
J	24 to 36	5'-0	30	36
K	36 to 48	6'-0	36	48
L	48 to 54	8'-0	48	54
M	54 to 72	8'-6	66	72
N	72 to 84	9'-0	72	84

NOTES

1. Drop pipe may be used with manholes Type H, J, K, L, M, or N. Such manhole shall be referred to as drop manholes type H, J, K, L, M, or N. For details of construction see Standard Drawing E 720-MHST-03.
2. See Standard Drawing E 720-MHST-06 for Details A, B, and C.
3. Manholes type C, D, E, or F. may be substituted for manholes type H, J, K, L, M, or N. for comparable pipe sizes. See Standard Drawings E 720-MHST-02 and -04 for manholes type D, E, F, and G details..



MANHOLE TYPE H



MANHOLE TYPE J,K,L,M & N

INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLES
TYPE H, J, K, L, M, AND N

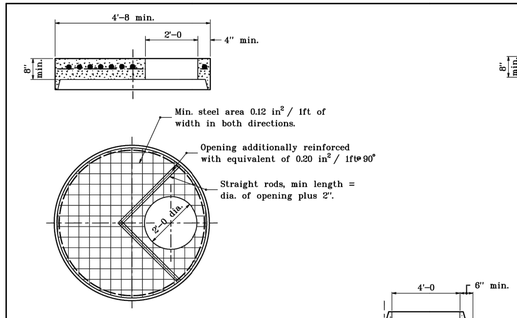
SEPTEMBER 2006

STANDARD DRAWING NO. E 720-MHST-05

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

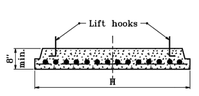
/s/ Richard L.VanCleave 9-01-06 — DESIGN STANDARDS ENGINEER — DATE

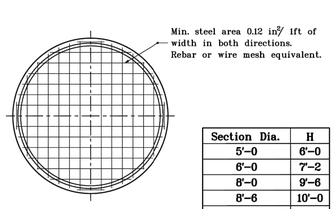
/s/ Richard K.Smutzer 9-01-06 — CHIEF HIGHWAY ENGINEER — DATE



DETAIL A

COVER CAP FOR PRECAST CONCRETE MANHOLE SECTION

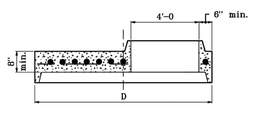


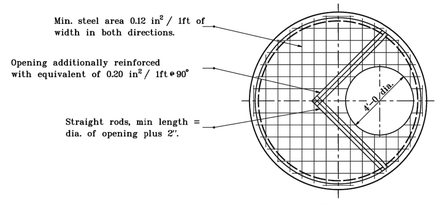


Section Dia.	H
5'-0	6'-0
6'-0	7'-2
8'-0	9'-6
8'-6	10'-0
9'-0	10'-8

DETAIL C

BASE FOR PRECAST CONCRETE MANHOLE SECTIONS (5'-0 to 9'-0 DIA.)





DETAIL B

REDUCER CAP FOR PRECAST MANHOLE SECTION (5'-0 to 9'-0 DIA.)

Section Dia.	D
5'-0	6'-0
6'-0	7'-2
8'-0	9'-6
8'-6	10'-0
9'-0	10'-8

INDIANA DEPARTMENT OF TRANSPORTATION

PRECAST CONCRETE MANHOLE SECTIONS

APRIL 1995

STANDARD DRAWING NO. E 720-MHST-06

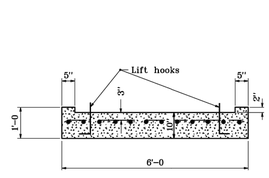
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER — DESIGN STANDARDS ENGINEER

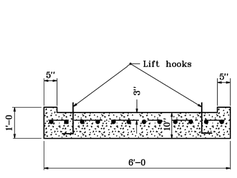
DETAILS PLACED IN THIS FORMAT 11-15-99

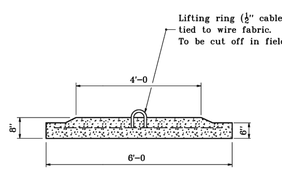
/s/ Anthony L. Urbanovich 11-15-99 — DESIGN STANDARDS ENGINEER — DATE

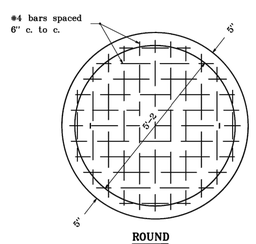
/s/ Firoze Zandi 11-15-99 — CHIEF ELGINEER ENGINEER — DATE

ORIGINALLY APPROVED 4-03-95

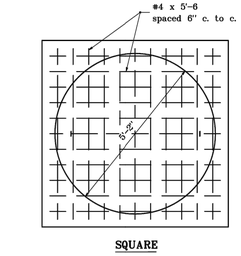




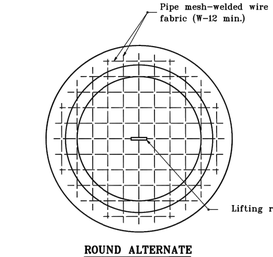




ROUND



SQUARE



ROUND ALTERNATE

INDIANA DEPARTMENT OF TRANSPORTATION

PRECAST MANHOLE BOTTOM SECTION

SEPTEMBER 1997

STANDARD DRAWING NO. E 720-MHST-07

ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER — DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoze Zandi 11-15-99 — CHIEF ELGINEER ENGINEER — DATE

ORIGINALLY APPROVED 9-01-97

Certified by: David Hedlund

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9920 Harrison Park Court
Indianapolis, Indiana 46236
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E-mail fosse@evansville.net

B. C. Engineering, Inc.
Mechanical & Electrical Engineering
501 Carpenter Street
Evansville, IN 47708
Phone: (812) 424-7941
Fax: (812) 424-7942
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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

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Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS142
Sheet: 129 of 155

Last Saved By: Joe Printed:2/23/23
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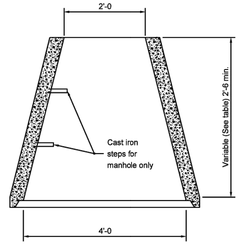
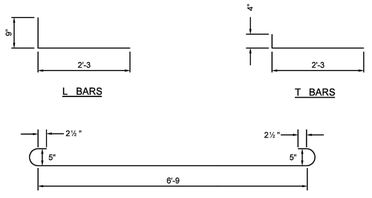
CONE HEIGHTS	
ECCENTRIC	CONCENTRIC
2'-6	2'-6
3'-0	3'-0
3'-2	3'-2
3'-6	4'-0



CONCENTRIC CONE

NOTES

1. The concentric concrete section will not be permitted for manholes which are under the jurisdiction of the Indianapolis Sanitary District.



INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLE BARS AND CONECNTRIC CONE

SEPTEMBER 2003

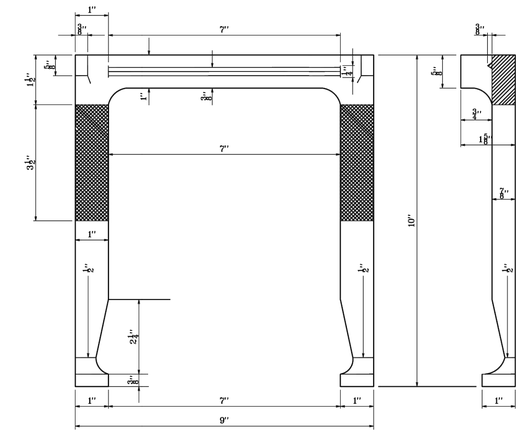
STANDARD DRAWING NO. E 720-MHST-08

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

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

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

DESIGN STANDARDS ENGINEER



INDIANA DEPARTMENT OF TRANSPORTATION

MANHOLE STEP

APRIL 1995

STANDARD DRAWING NO. E 720-MHST-09

DETAILS PLACED IN THIS FORMAT 11-15-99

RICHARD L. VANCLEAVE — REVISED — No. 18095 — STATE OF INDIANA — REGISTERED PROFESSIONAL ENGINEER

/s/ Anthony L Urenovich 11-15-99
DESIGN STANDARDS ENGINEER — DATE

/s/ Firoze Zandi 11-15-99
CHIEF ECONOMIC ENGINEER — DATE

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 4-03-96

REINFORCING STEEL FOR MANHOLES															
	Manhole Type D				Manhole Type E				Manhole Type F				Manhole Type G			
Bars	Length	No.	Spa.	Size	Length	No.	Spa.	Size	Length	No.	Spa.	Size	Length	No.	Spa.	Size
B	8'-0	10	9"	#5	8'-0	12	9"	#5	8'-0	16	9"	#5	8'-0	19	9"	#5
B_1	6'-9	12	9"	#5	8'-6	12	9"	#5	11'-0	12	9"	#5	13'-3	12	9"	#5
E	7'-3	3	2"	#5	7'-3	3	2"	#5	7'-3	3	2"	#5	7'-3	3	2"	#5
H	8'-6	22	6"	#5	8'-6	33	6"	#5	8'-6	41	6"	#5	8'-6	58	6"	#5
L	3'-0	16	12"	#5	3'-0	16	12"	#5	3'-0	16	12"	#5	3'-0	16	12"	#5
T	1'-3	16	6"	#5	3'-0	16	6"	#5	5'-3	16	6"	#5	7'-6	16	6"	#5
V	5'-0	16	6"	#5	6'-9	16	6"	#5	9'-0	16	6"	#5	11'-6	16	6"	#5
V_1	4'-9	16	6"	#5	6'-6	16	6"	#5	8'-9	16	6"	#5	11'-3	16	6"	#5

INDIANA DEPARTMENT OF TRANSPORTATION

TABLE OF REINFORCING STEEL FOR MANHOLES

SEPTEMBER 1997

STANDARD DRAWING NO. E 720-MHST-10

DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Anthony L Urenovich 11-15-99
DESIGN STANDARDS ENGINEER — DATE

/s/ Firoze Zandi 11-15-99
CHIEF ECONOMIC ENGINEER — DATE

DESIGN STANDARDS ENGINEER — ORIGINALLY APPROVED 9-02-97

Last Saved By: Joe Printed:2/23/23
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Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS143
Sheet: 130 of 155

INDEX

SHEET NO.	SUBJECT
1	Temporary Concrete Barrier Index Sheet
2	Temporary Concrete Barrier Dimensions
3	Temporary Concrete Barrier Details
4	Temporary Concrete Barrier Double Taper End Section
5	Anchored Temporary Concrete Barrier, Drop-In Anchor
6	Anchored Temporary Concrete Barrier, Ferrule Loop Insert

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER
INDEX SHEET

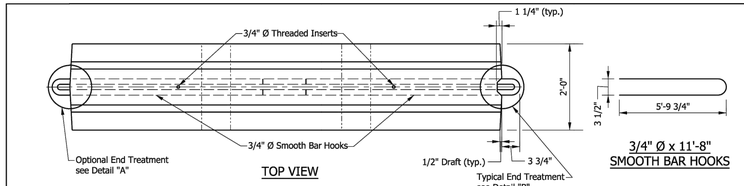
SEPTEMBER 2019

STANDARD DRAWING NO. E 801-TCCB-01

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

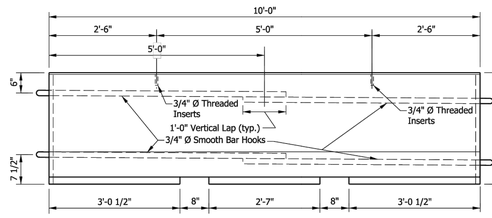
DESIGN STANDARDS ENGINEER — DATE 5/2/2019

CHIEF ENGINEER — DATE 6/5/2019



TOP VIEW

3/4" Ø x 11'-8" SMOOTH BAR HOOKS



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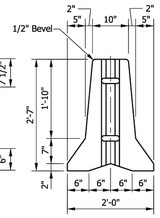
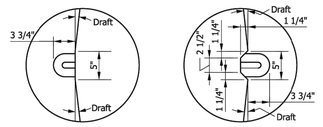


END VIEW

NOTES:

1. The dimensions of the lifting slots are subject to adjustment as necessary to accomodate handling equipment.
2. Maximum barrier taper rate flares for lane closures for legal posted speed are shown in Table No. 1.
3. For additional connection details see Standard Drawing E 801-TCCB-03.

(4) Where site conditions prohibit the use of these flare rates then flare rates may range from 10:1 to 6:1.



DETAIL "A"

DETAIL "B"

TABLE NO. 1	
Construction Zone Speed	Taper Flare Rate (4)
55 mph	16:1
50 mph	14:1
45 mph	12:1
40 mph	10:1
≤ 35 mph	10:1

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER
DIMENSIONS

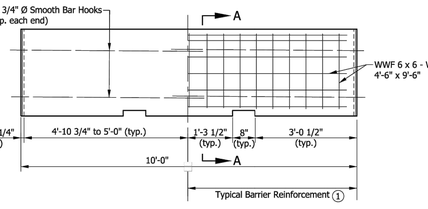
SEPTEMBER 2019

STANDARD DRAWING NO. E 801-TCCB-02

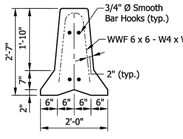
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER — DATE 5/2/2019

CHIEF ENGINEER — DATE 6/5/2019



REINFORCEMENT DETAILS



SECTION A-A (1)

NOTES:

(1) Section A-A shows reinforcement with welded wire fabric. The WWF may be bent to the shape of the wall.

(2) Hex nut may be tack welded to bottom spacer to facilitate installation and removal. Bolts shall be torqued only to tight condition. Clearance between the spacer and the ends of the barrier shall allow angular deflection at the joints to allow flare rate 11:1 or flatter.

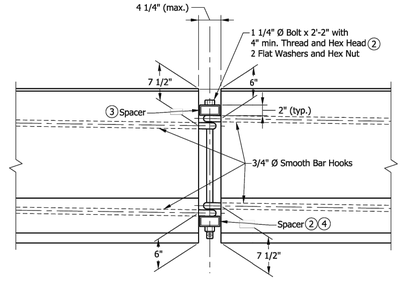
(3) Top spacer TS 4" x 2" x 5/16" x 10" long.

(4) Bottom spacer TS 4" x 2" x 5/16" x 1'-4" long.

5. Where necessary to meet short radius curving alignment, the shorter top spacer (10") may be substituted for the standard bottom spacer (16").
6. For additional connection details see Standard Drawing E 801-TCCB-02.

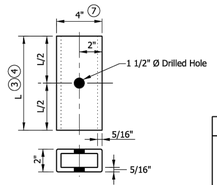
(7) Where very short radius curving alignment is encountered, spacers may be TS 3" x 2" x 1/4" x the appropriate length as shown above.

8. In lieu of the connection detail shown, the J-J Hook temporary barrier connection of Easi-Set Industries as described in FHWA acceptance letter B-52 of March 26, 1999 may be used.



FRONT VIEW

CONNECTION DETAIL



SPACER DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER
DETAILS

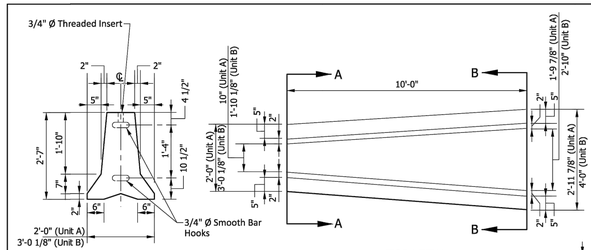
SEPTEMBER 2019

STANDARD DRAWING NO. E 801-TCCB-03

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER — DATE 5/2/2019

CHIEF ENGINEER — DATE 6/5/2019

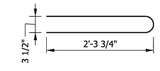


END VIEW A-A

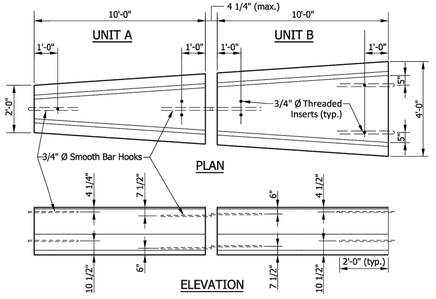
TOP VIEW
UNIT A OR UNIT B

NOTES:

1. For connection details between Units A and B, see Standard Drawing E 801-TCCB-03.
2. Extreme ends of the double taper end section assembly require a 1 1/4" Ø bolt x 2'-3 1/2" (4" min. thread, hex head and hex nut) for connecting to adjacent temporary concrete barriers.

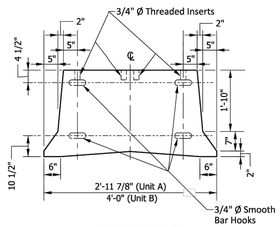


3/4" Ø x 4'-5 1/2" SMOOTH BAR HOOKS



PLAN

ELEVATION



END VIEW B-B

DOUBLE TAPER END SECTION ASSEMBLY
(Showing location of inserts and bar hooks)

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER
DOUBLE TAPER END SECTION

SEPTEMBER 2019

STANDARD DRAWING NO. E 801-TCCB-04

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER — DATE 5/2/2019

CHIEF ENGINEER — DATE 6/5/2019

Certified by: David Hedlund

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317-232-3000

Revisions:

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Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number:	1364
Building Reference:	-
Drawing Number:	CS144
Sheet:	131 of 155

Last Saved By: Joe Pinkard 2/23/23
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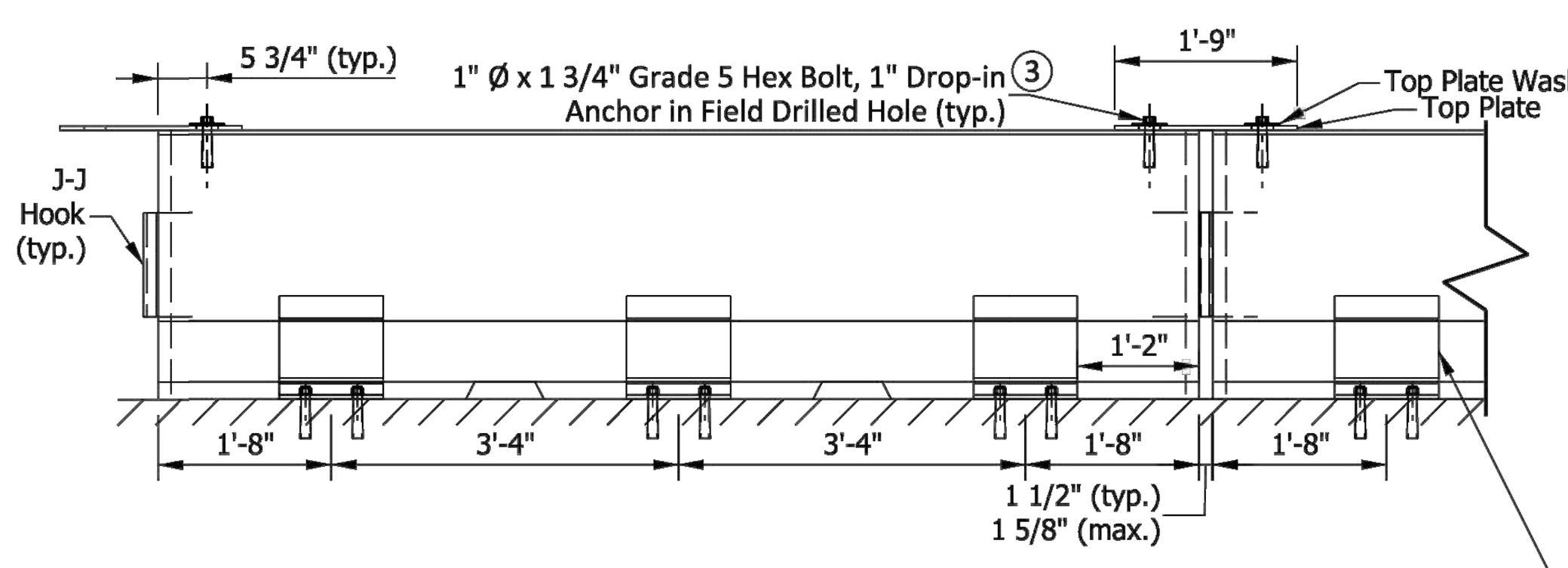
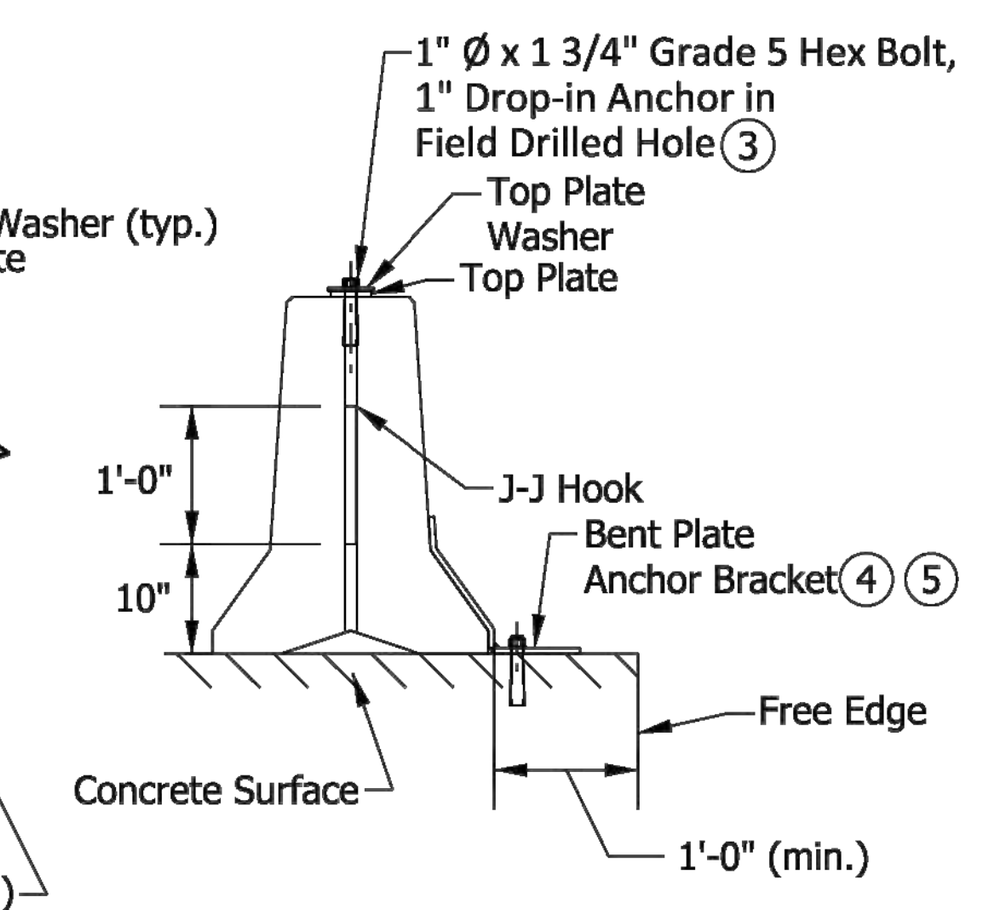
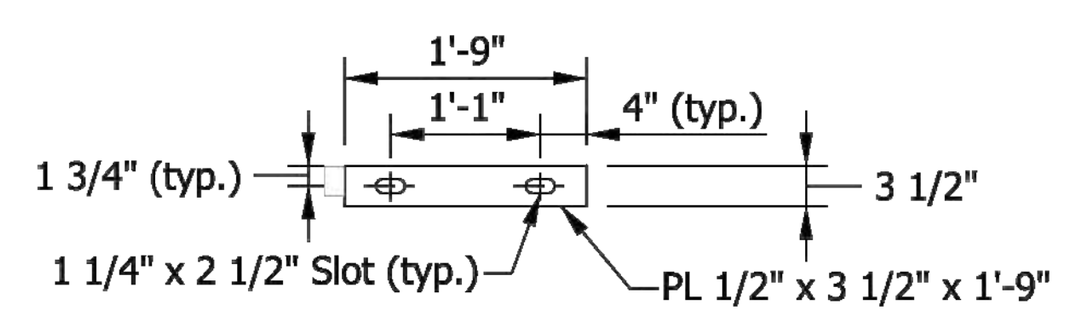


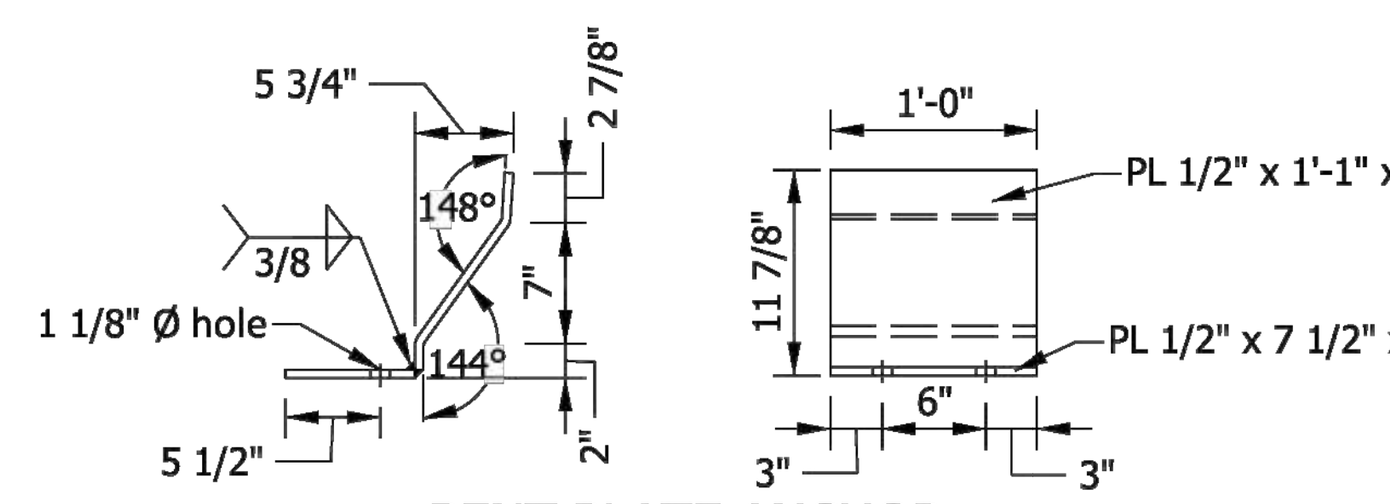
BARRIER FRONT VIEW



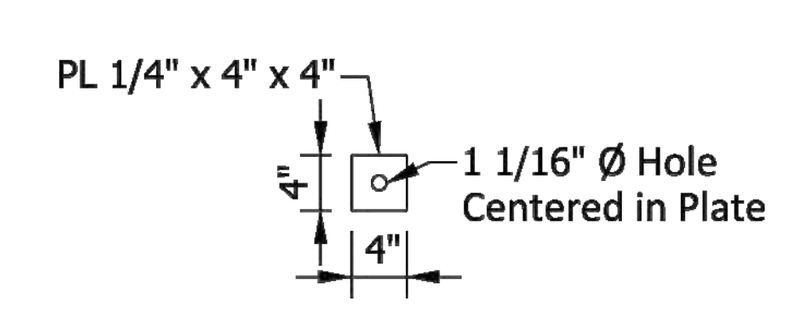
END VIEW



TOP PLATE DETAIL



BENT PLATE ANCHOR BRACKET DETAIL ⑥



TOP PLATE WASHER DETAIL

NOTES:

1. All steel shall be ASTM A-36 hot rolled unless otherwise noted.
2. J-J Hooks are a product of Easi-Set Worldwide. Hooks shall be cast into the barrier in accordance with the manufacturer's recommendations.
3. The drop-in anchor and bolt shall be tightened to the anchor manufacturer's specifications. The anchor shall have a minimum ultimate shear capacity of 26.4 kips.
4. Bent plate anchor bracket shall be attached to a concrete surface using one of the following anchor systems. Minimum embedment shall be in accordance with the manufacturer's recommendations, but not less than 4 1/2 in.
   - 1-in. threaded rod, grade 55 minimum, with washer and nut. Rod shall be installed using an approved epoxy chemical anchor system with a minimum ultimate shear capacity of 21.2 kips: or
   - 1-in. diameter wedge anchor; or
   - 1-in. nominal diameter drop-in anchor with 1-in. diameter, grade 5 hex bolt.
5. When concrete will remain in place after anchoring is removed, the threaded rod anchoring system shall be used. The rod shall be completely removed, the hole shall be blown out to remove any moisture or debris, and the hole completely filled using the same epoxy that was used for anchoring the rod.
6. A single bent plate anchor bracket may be used instead of the two-plate detail as shown.

INDIANA DEPARTMENT OF TRANSPORTATION

ANCHORED TEMPORARY CONCRETE BARRIER, DROP-IN ANCHOR

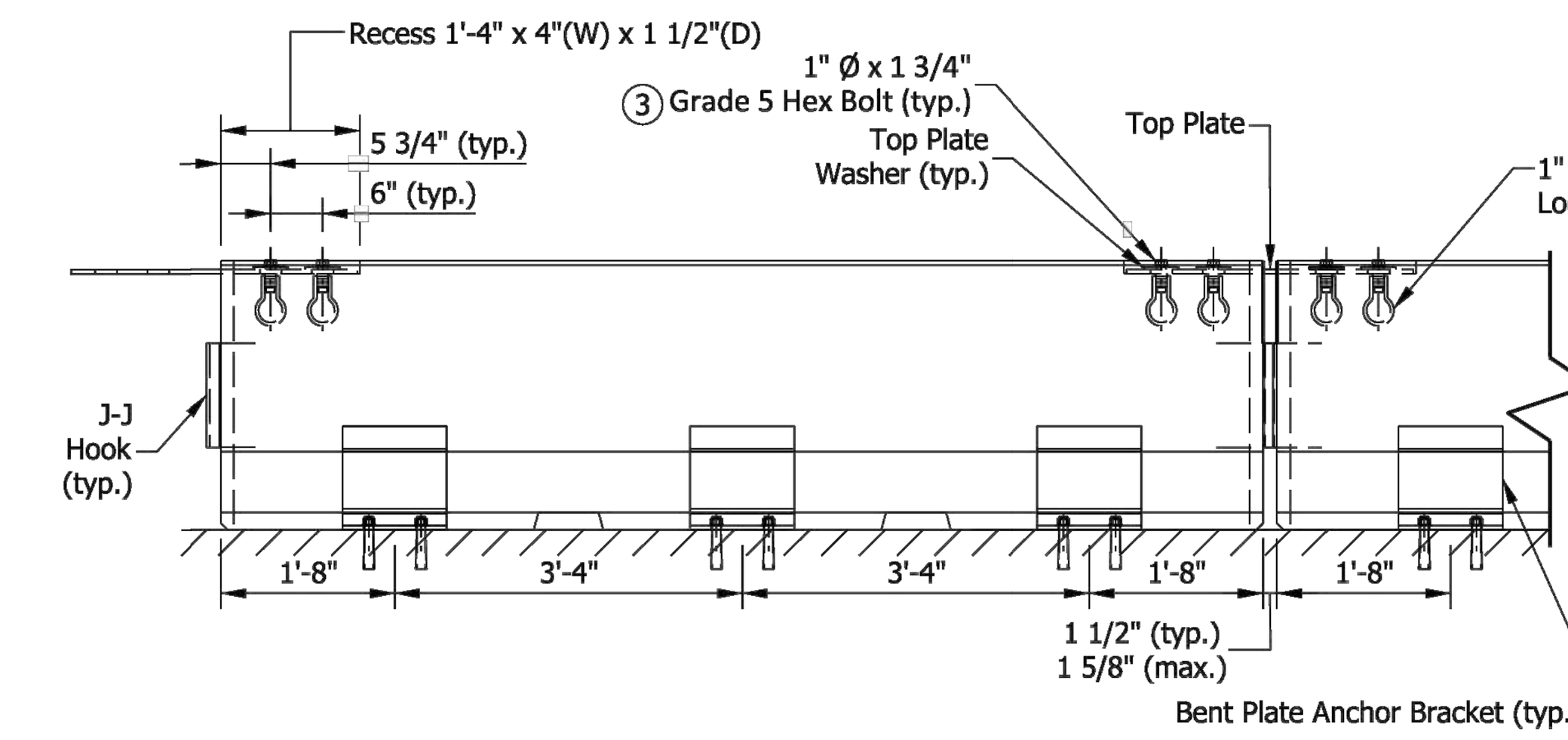
SEPTEMBER 2019

STANDARD DRAWING NO. E 801-TCCB-05

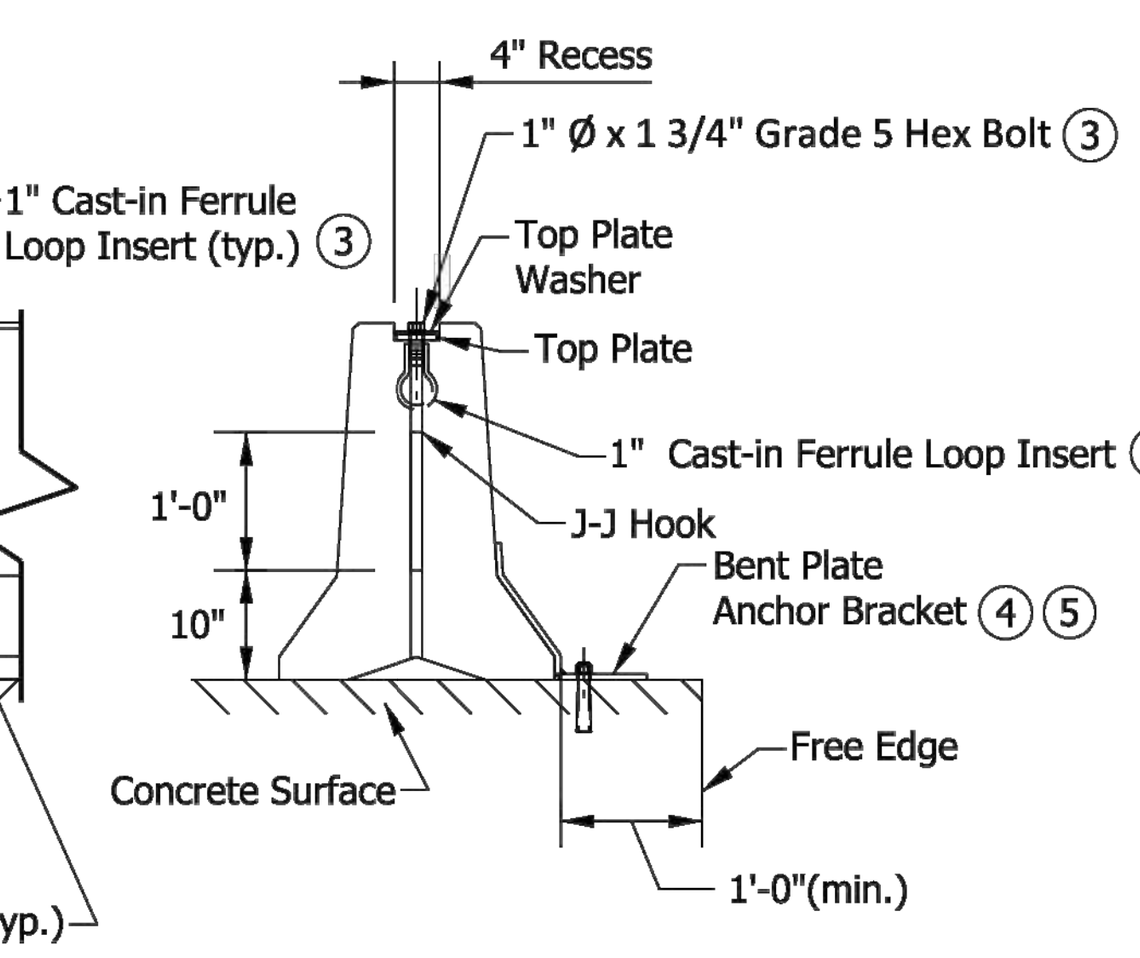
ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER 5/29/2019 DATE

CHIEF ENGINEER 6/5/2019 DATE



BARRIER FRONT VIEW



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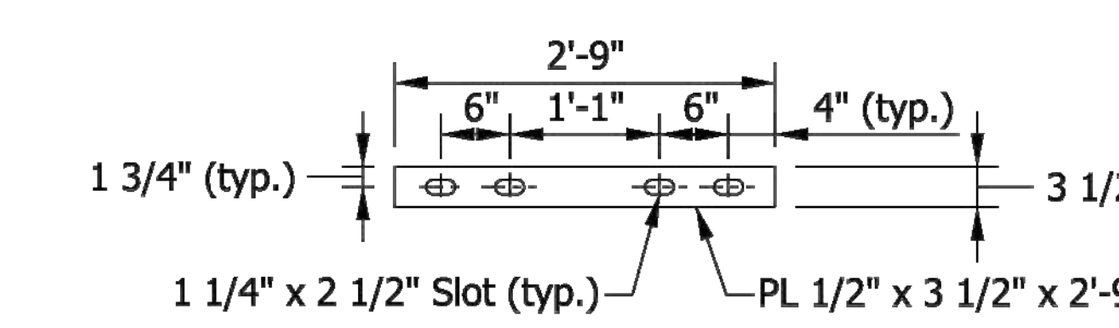


TOP PLATE DETAIL

NOTES:

1. All steel shall be ASTM A-36 hot rolled unless otherwise noted.
2. J-J Hooks are a product of Easi-Set Worldwide. Hooks shall be cast into the barrier in accordance with the manufacturer's recommendations.
3. The bolt shall be installed snug tight in the cast-in ferrule loop insert. The insert shall have a minimum ultimate shear capacity of 12.1 kips.
4. Bent plate anchor bracket shall be attached to a concrete surface using one of the following anchor systems. Minimum embedment shall be in accordance with the manufacturer's recommendations, but not less than 4 1/2 in.
   - 1-in. threaded rod, grade 55 minimum, with washer and nut. Rod shall be installed using an approved epoxy chemical anchor system with a minimum ultimate shear capacity of 21.2 kips: or
   - 1-in. diameter wedge anchor; or
   - 1-in. nominal diameter drop-in anchor with 1-in. diameter, grade 5 hex bolt.
5. When concrete will remain in place after anchoring is removed, the threaded rod anchoring system shall be used. The rod shall be completely removed, the hole shall be blown out to remove any moisture or debris, and the hole completely filled using the same epoxy that was used for anchoring the rod.
6. See E 801-TCCB-05 for bent plate anchor details, top plate washer details, and additional notes.

INDIANA DEPARTMENT OF TRANSPORTATION

ANCHORED TEMPORARY CONCRETE BARRIER, FERRULE LOOP INSERT

SEPTEMBER 2019

STANDARD DRAWING NO. E 801-TCCB-06

ELIZABETH W. PHILLIPS REGISTERED No. 10200124 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER 5/29/2019 DATE

CHIEF ENGINEER 6/5/2019 DATE

INDEX	
SHEET NO.	SUBJECT
1	Traffic Control Devices Index and General Notes
2	Channelizing Devices
3	Merge or Shift Taper
4	Channelizing Devices Usage
5	Type III Barricade
6	Typical Construction Sign Mounting
7	Type III Barricade Application for Road Closure for Thru Traffic
8	Type III Barricade Application for Road Closure to All Traffic
9	U Channel Steel Post Splice Detail
10	Temporary Transverse Rumble Strips
11	Worksite Speed Limit Sign Assembly
12	Worksite Speed Limit Sign Assembly Longitudinal Placement

GENERAL NOTES:

1. Unless otherwise noted, channelizing devices in tangent sections shall be 100 ft where the permanent posted speed limit is 50 m.p.h. or greater, and the spacing shall be 50 ft where the permanent posted speed limit is less than or equal to 45 m.p.h.
2. Unless otherwise noted, the spacing of channelizing devices in tapers shall be equal in feet to the permanent posted speed limit in m.p.h.
3. All channelizing devices shall satisfy NCHRP 350 or MASH crash evaluation criteria.
4. It is not necessary to delineate a drop-off of 3 in. or less adjacent to active travel lanes. Where channelizing 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 least 27 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.
5. 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.
6. **Short-term stationary**, work that occupies a location for more than one hour within a single daylight period. **Intermediate-term stationary**, work that occupies a location for more than one daylight period up to three days, or nighttime work lasting more than one hour. **Long-term stationary**, work that occupies a location for more than three days.

INDIANA DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DEVICES INDEX AND GENERAL NOTES

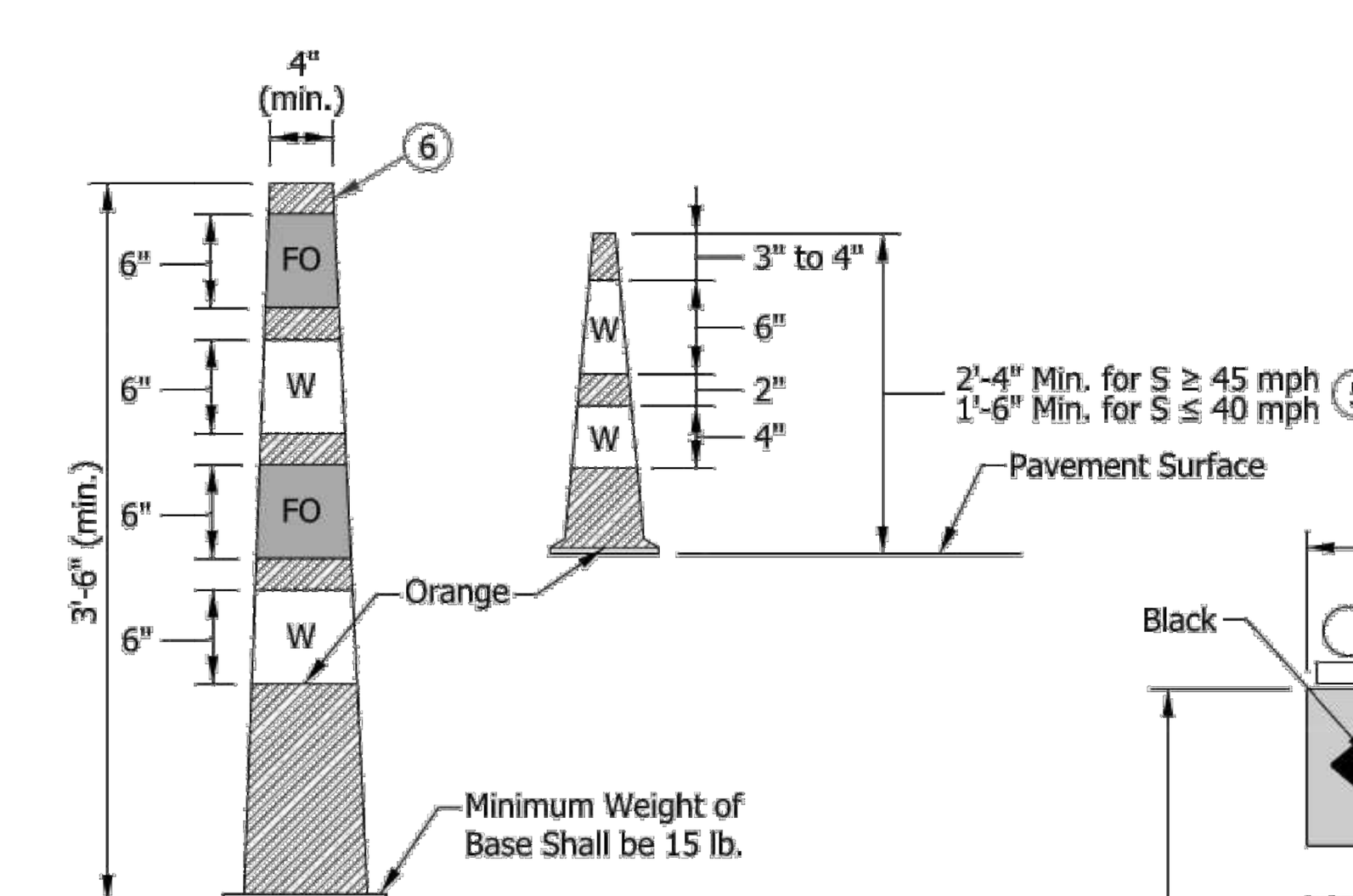
SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-01

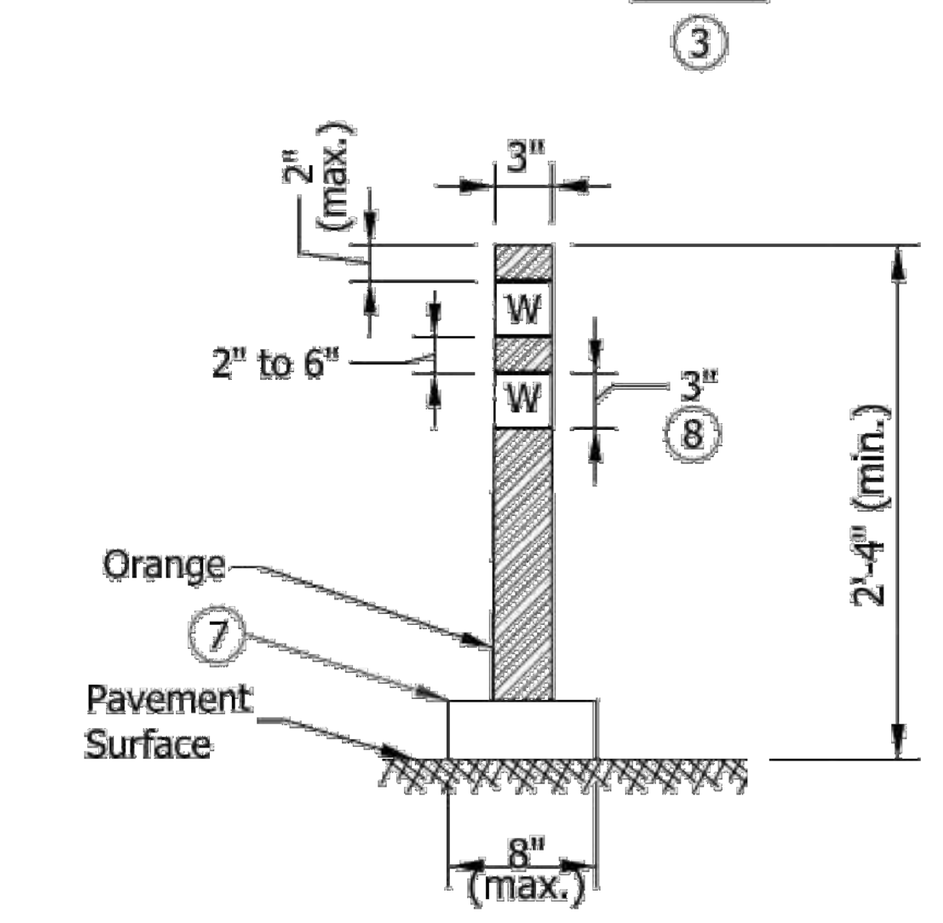
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER 06/08/22 DATE

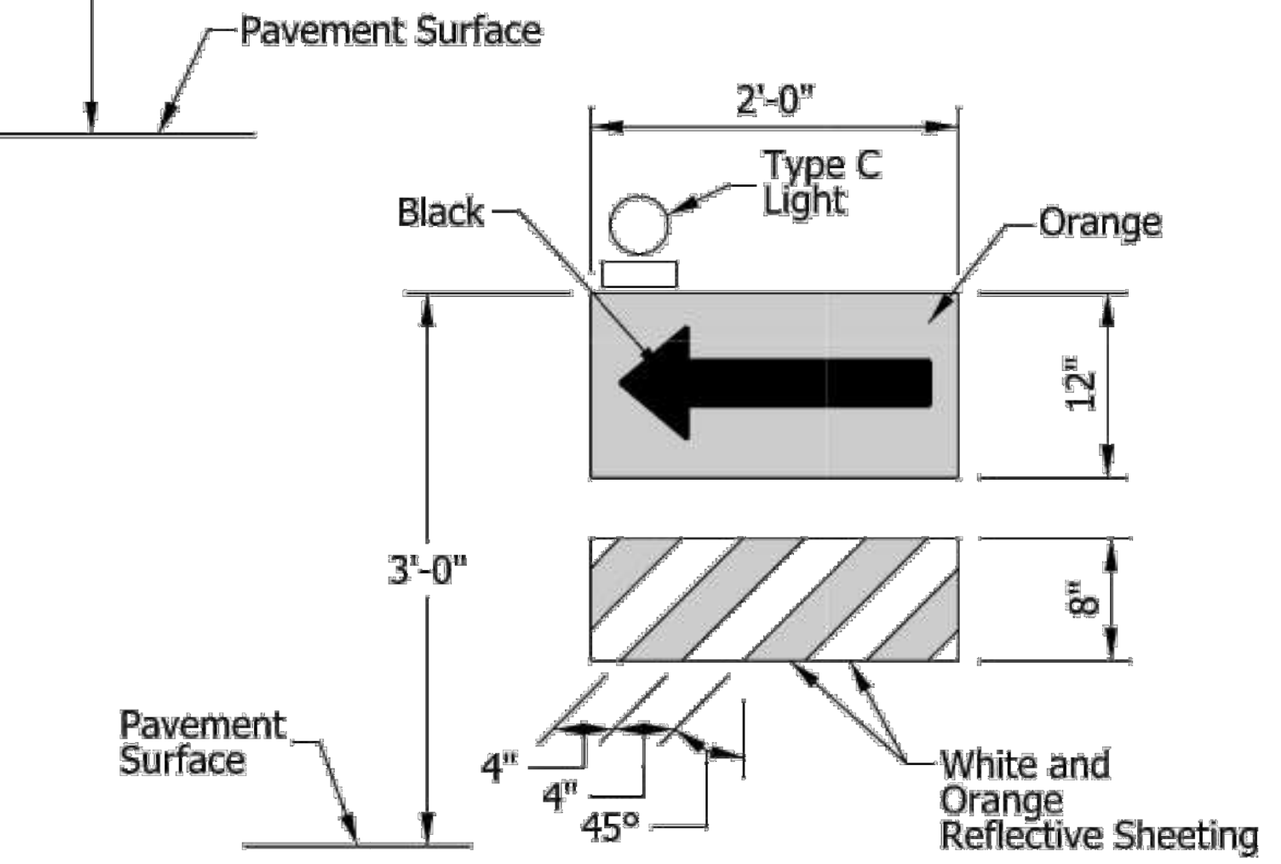
CHIEF ENGINEER 06/27/2022 DATE



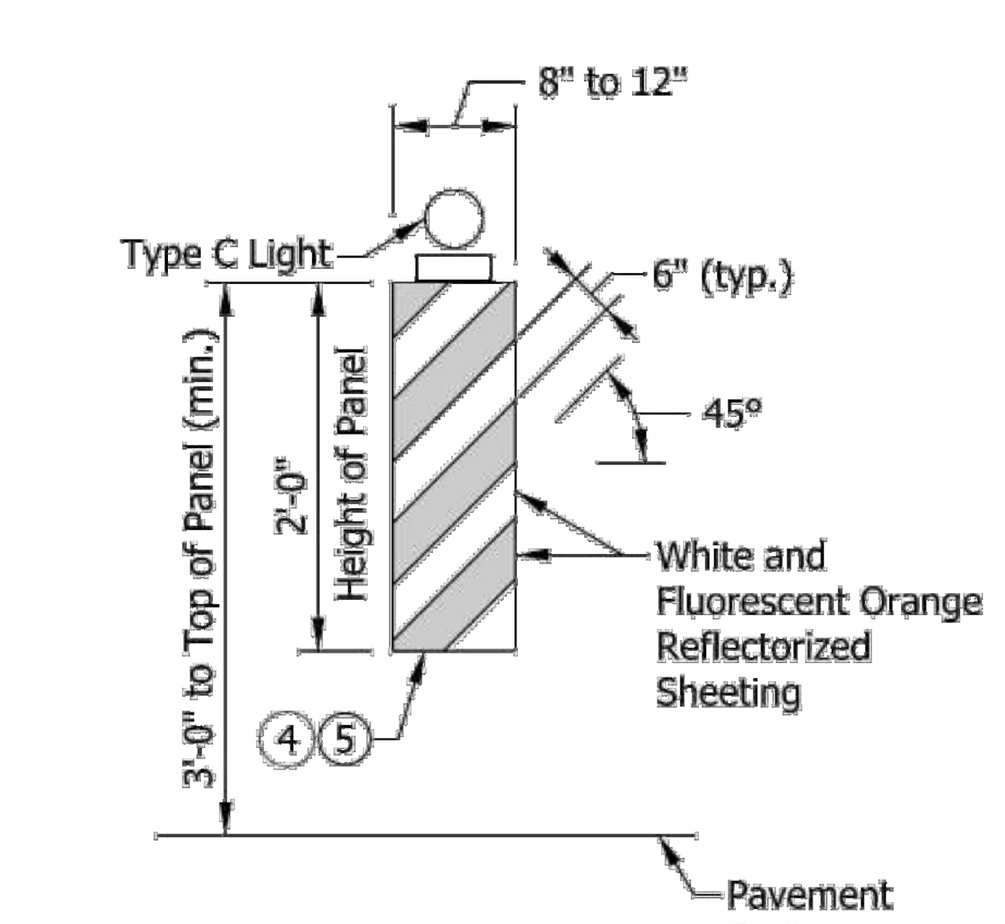
CONE ③



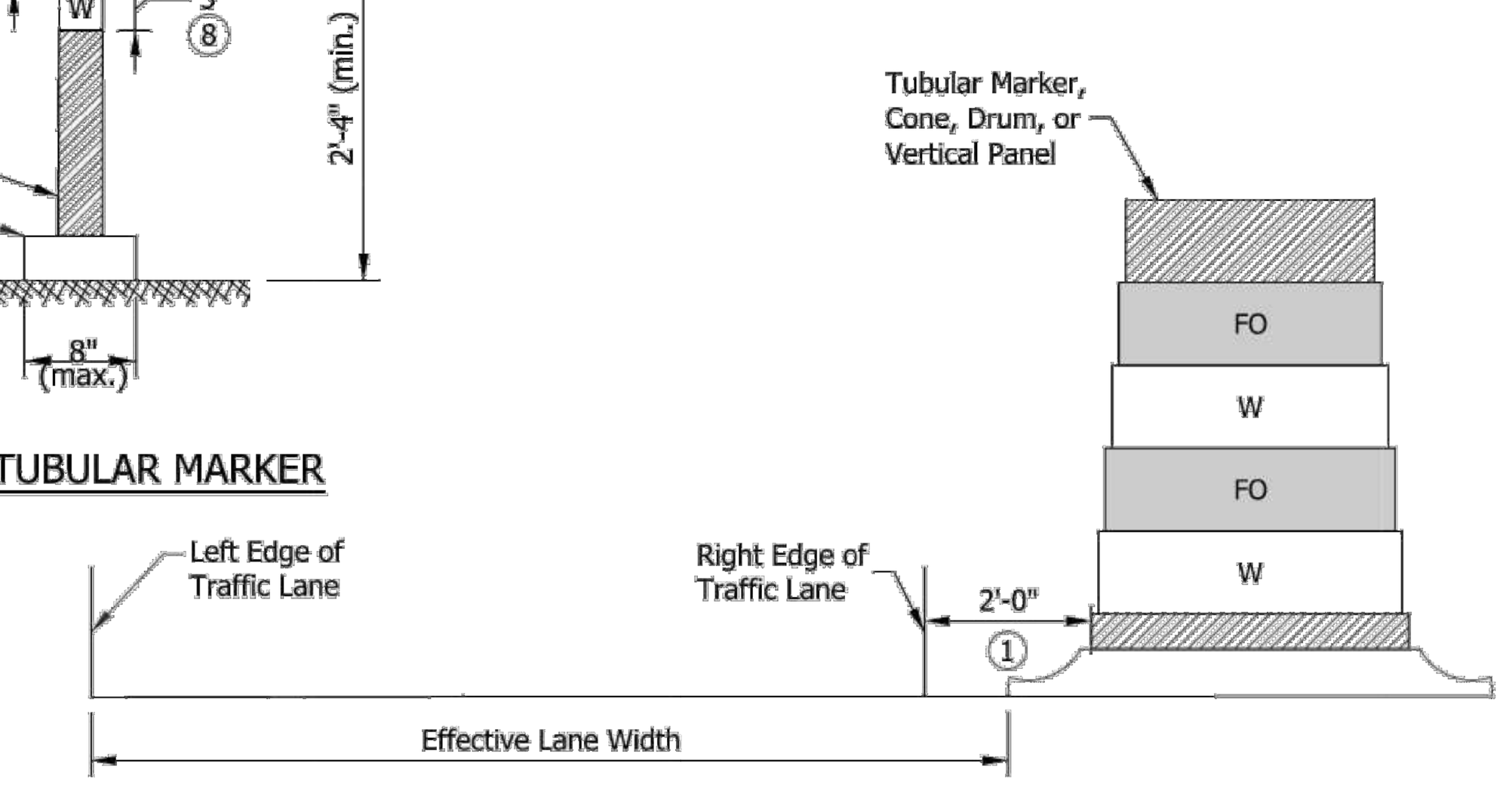
FLEXIBLE TUBULAR MARKER



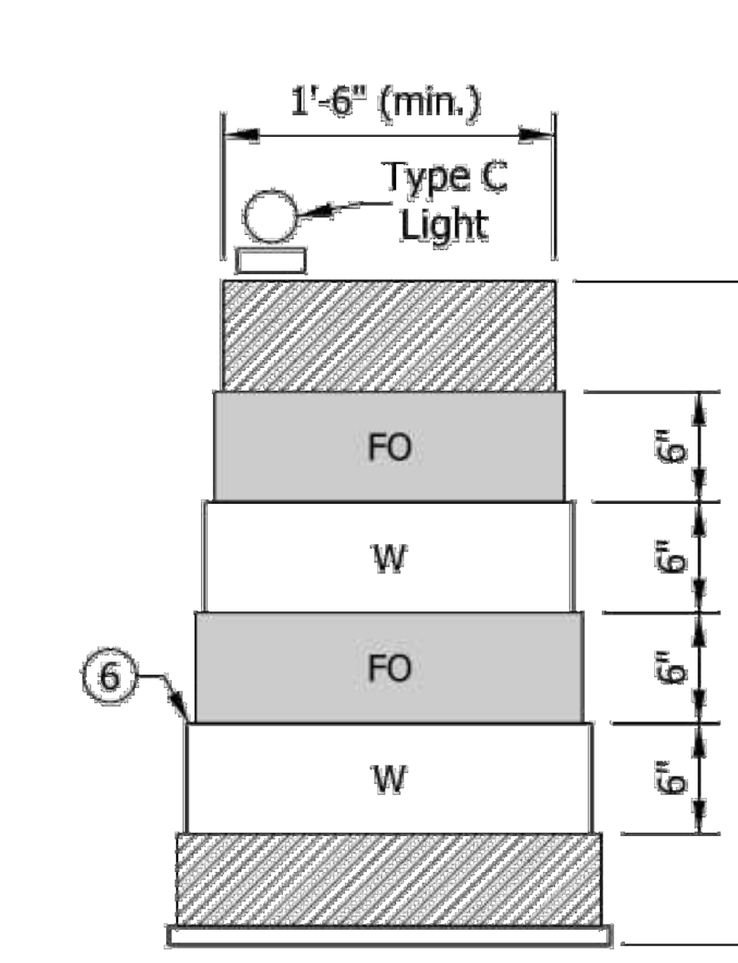
DIRECTION INDICATOR BARRICADE



VERTICAL PANEL ①



PLACEMENT OF CHANNELIZING DEVICES



DRUM

NOTES:

1. Shy distance for tubular markers and cones may be reduced to 1 ft.
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. Reflective sheeting 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 roadways with a permanent posted speed limit of 50 mph or greater shall have a minimum reflective panel area of 270 sq. in.
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 sq ft.
8. For nighttime work, tubular markers with a height of less than 3.5 ft shall have two 3 in. white bands of reflective sheeting placed a maximum of 2 in. from the top with a maximum of 6 in. between the bands.
9. See Standard Drawing E 801-TCDV-04 for channelizing device usage and application.

LEGEND

W = White Reflective Sheeting

FO = Fluorescent Orange Reflective Sheeting

INDIANA DEPARTMENT OF TRANSPORTATION

CHANNELIZING DEVICES

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-02

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

DESIGN STANDARDS ENGINEER 06/08/22 DATE

CHIEF ENGINEER 06/27/2022 DATE

Certified by: David Hedlund

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Revisions:	
Project Number: 84003001-22-058-C1	
Requisition Number: -	
Account Number: -	
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number: 1364	
Building Reference: -	
Drawing Number: CS145	
Sheet: 132 of 155	

Last Saved By: jcler Printed:2/23/23
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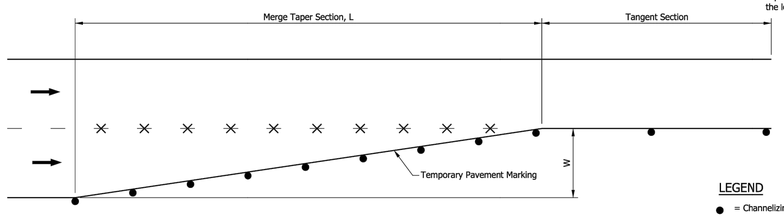


NOTES:

1. For freeways, a taper length of 840 ft shall be used for the first merge taper. For subsequent merges, a length of 840 ft shall be used unless otherwise shown on the plans.
2. A shift taper preceded by a merge taper shall be separated by a tangent section equal to or greater than the length of the shift taper.

LEGEND

- ● = Channelizing Device
- ✳ = Removal of pavement markings and prismatic reflectors
- → = Direction of Traffic
- L = Minimum length of taper in ft
- S = Posted speed limit prior to the construction zone in mph
- W = Width of lane or shift in ft

MERGE TAPER				
S	Min. Taper Length L			
MPH	W = 9	W = 10	W = 11	W = 12
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
75	675	750	825	900

For W not shown in the table, L = W x S for a speed of 45 mph or greater.
L = W x S²/60 for a speed of 40 mph or lower.

SHIFT TAPER				
S	Min. Taper Length L/2			
MPH	W = 9	W = 10	W = 11	W = 12
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
75	340	375	415	450

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

INDIANA DEPARTMENT OF TRANSPORTATION

MERGE OR SHIFT TAPER

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-03

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

DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE

	Usage Application									
	To delineate merge tapers on		To delineate tangents where adequate space exists and also lane shift tapers on		Where the effective lane width is less than 10 ft to delineate tangents in lieu of drums on		Where the effective lane width is less than 10 ft to delineate edge of pavement drop-off in lieu of drums on		To divide opposing lanes of traffic on	To divide two or more lanes of same direction traffic on
Channelizing Device Type	Freeways	Non-Freeways	Freeways	Non-Freeways	Freeways	Non-Freeways	Freeways	Non-Freeways	Non-Freeways	Non-Freeways
18 in. Cone (1) ≤ 40 mph Posted Speed Limit	No	Yes (4)	No	Yes (4)	No	No	No	No	Yes (4)	Yes (4)
18 in. Cone ≥ 45 mph Posted Speed Limit	No	No	No	No	No	No	No	No	No	No
28 in. Cone (1) ≤ 40 mph Posted Speed Limit	No	Yes (5)	No	Yes (5)	No	No	No	No	Yes (5)	Yes (5)
28 in. Cone (2) 45 mph Posted Speed Limit	No	Yes (4)	No	Yes (4)	No	No	No	No	Yes (5)	Yes (5)
28 in. Cone ≥ 50 mph Posted Speed Limit	No	Yes (4)	No	Yes (4)	No	No	No	No	Yes (5)	Yes (5)
42 in. Channelizer (Cone) (1) (6) ≤ 45 mph Posted Speed Limit	No	Yes (5)	No	Yes (5)	Yes	Yes	Yes	Yes	Yes (5)	Yes (5)
42 in. Channelizer (Cone) (2) (6) ≥ 50 mph Posted Speed Limit	No	Yes (5)	No	Yes (5)	Yes	Yes	Yes	Yes	Yes (5)	Yes (5)
Direction Indicator Barricade (3)	Yes	Yes	No	No	No	No	No	No	No	No
Flexible Tubular Marker (3)	No	No	No	No	No	No	No	Yes	Yes	Yes
Vertical Panel (3)	No	Yes	No	Yes	No	Yes	No	Yes	No	No
Construction Drum (3)	Yes	Yes	Yes	Yes	No	No	No	No	No	No

CHANNELIZING DEVICE USAGE TABLE

NOTES:

(1) Spacing in tangent shall be 40 ft maximum; spacing between devices in taper shall be numerically equal in feet, maximum, to the posted speed limit in m.p.h.

(2) Spacing in tangent shall be 80 ft maximum; spacing between devices in taper shall be numerically equal in feet, maximum, to the posted speed limit in m.p.h.

(3) Spacing in tangents shall be 50 ft maximum when the speed limit is 45 m.p.h. or below; spacing in tangents shall be 100 ft maximum when the posted speed limit is 50 mph or above; in cases where the posted speed limit is intermittently set to 45 m.p.h. the channelizing devices shall be maintained at 90 ft maximum spacing; spacing of channelizing devices on tapers shall be numerically equal in feet, maximum, to the posted speed limit in m.p.h.

(4) May only be used for daylight restrictions.

(5) May not be used for long-term, stationary work (more than 3 days).

(6) 30 lb ballast configuration required.

7. For the purpose of channelizing device usage and spacing, the posted speed limit is the permanent posted speed limit, temporary speed limit, or worksite speed limit, whichever is lower.

INDIANA DEPARTMENT OF TRANSPORTATION

CHANNELIZING DEVICE USAGE

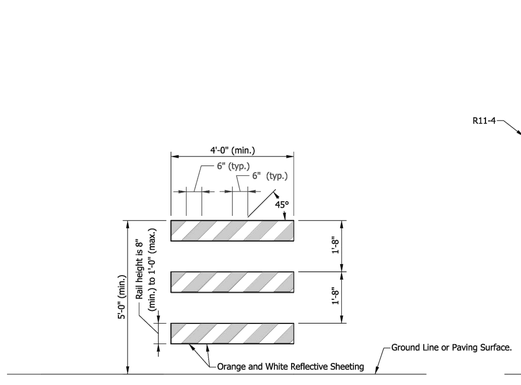
SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-04

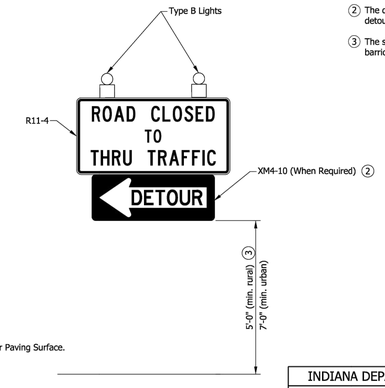
DAVID H. BOHUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE



TYPE III BARRICADE



ROAD CLOSURE SIGN ASSEMBLY

NOTES:

1. Barricade lights, signs, and supports shall satisfy 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 shall be above the Type III barricade.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPE III BARRICADE

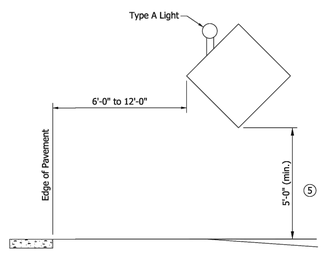
SEPTEMBER 2022

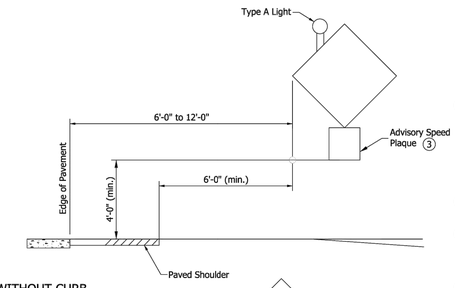
STANDARD DRAWING NO. E 801-TCDV-05

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

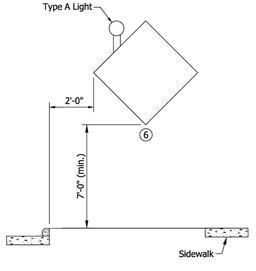
DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

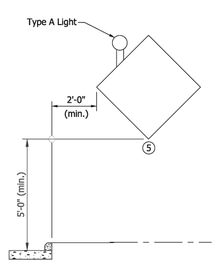
CHIEF ENGINEER — 06/27/2022 — DATE



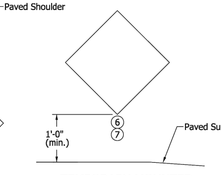


ROADWAY WITHOUT CURB





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) An advisory speed plaque, required to be placed with another construction sign, may be mounted on the post closest to the roadway at a height not less than 4 ft above the edge of pavement adjacent to the sign. The bottom of the construction warning sign shall not be lower than the top of the advisory speed plaque.
4. Type A warning light required on all construction signs.
(5) In urban area or on Interstate route, mounting height shall not be less than 7 ft.
(6) When signs are placed on sidewalk, a 4 ft useable width shall 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) Temporary mounted construction sign for nighttime work or for operations which affect traffic lanes shall have a 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 2022

STANDARD DRAWING NO. E 801-TCDV-06

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

DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

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Client Approval:
Reference Number: 1364
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Drawing Number: CS146
Sheet: 133 of 155

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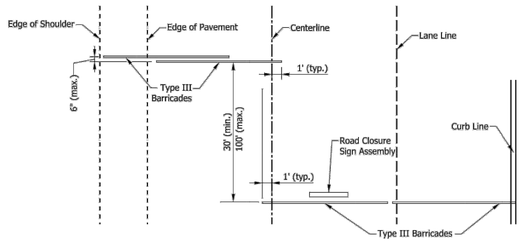
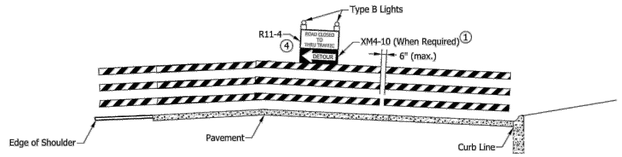


PLAN VIEW



ELEVATION

NOTES:

1. The detour arrow (XM4-10) sign shall be used only when a detour route has been signed.
2. See Standard Drawing E 801-TCDV-06 for sign mounting information.
3. Barricades and supports shall satisfy NCHRP 350 or MASH crash evaluation criteria.
4. The R11-3a ("ROAD CLOSED/LOCAL TRAFFIC ONLY") sign may be substituted for the R11-4 sign as shown on the plans or as directed by the engineer.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPE III BARRICADE APPLICATION FOR ROAD CLOSURE FOR THRU TRAFFIC

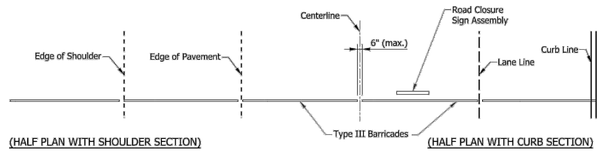
SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-07

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

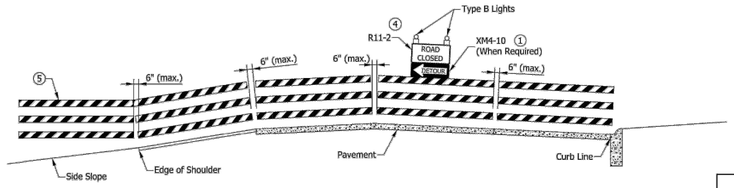
DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE



(HALF PLAN WITH SHOULDER SECTION) (HALF PLAN WITH CURB SECTION)

PLAN VIEW



(HALF ELEVATION WITH SHOULDER SECTION) (HALF ELEVATION WITH CURB SECTION)

ELEVATION

NOTES:

1. The detour arrow (XM 4-10) sign shall be used only when a detour route has been signed.
2. See Standard Drawing E 801-TCDV-06 for sign mounting information.
3. Barricades and supports shall satisfy NCHRP 350 or MASH crash evaluation criteria.
4. The sign legend of the R11-2 sign may be modified to "BRIDGE CLOSED" as shown on the plans or as directed by the engineer.
5. Barricades shall be supported on driven posts in areas outside of the pavement or sidewalk, where side slopes are 3 to 1 or flatter.

INDIANA DEPARTMENT OF TRANSPORTATION

TYPE III BARRICADE APPLICATION FOR ROAD CLOSURE TO ALL TRAFFIC

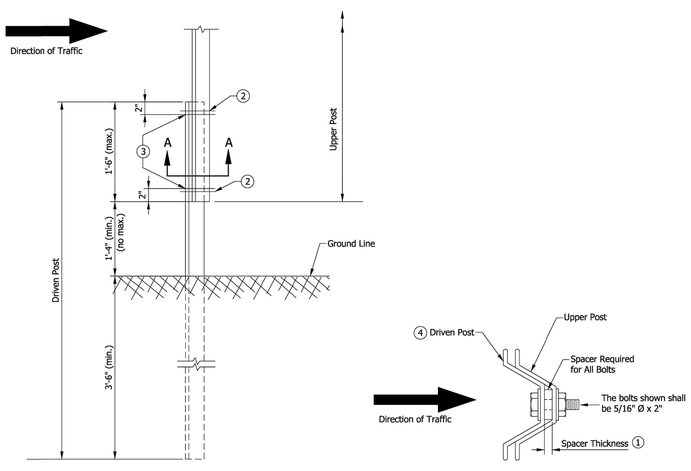
SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-08

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

DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE



ELEVATION

SECTION A-A

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 lower 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 upper bolt, spacer, washer, and nut shall be installed in a prepunched hole within the first 2 in. of the lower bolt. The maximum spacing between the bolts shall be 1.5 ft. If the length of the post lap is increased such that this 1.5 ft maximum is exceeded, then interior bolts shall be installed such that the maximum space between adjacent bolts does not exceed the 1.5 ft 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

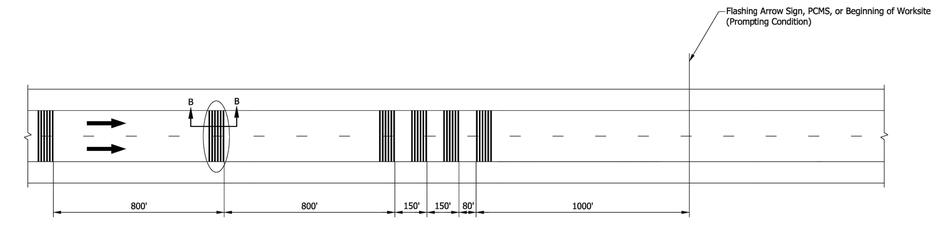
SEPTEMBER 2022

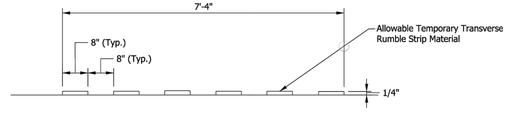
STANDARD DRAWING NO. E 801-TCDV-09

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

DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE





SECTION B-B

LEGEND

Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY TRANSVERSE RUMBLE STRIPS

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCDV-10

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

DESIGN STANDARDS ENGINEER — 06/08/22 — DATE

CHIEF ENGINEER — 06/27/2022 — DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
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317-232-3000

Revisions:

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Client Approval:
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Building Reference: -
Drawing Number: CS147
Sheet: 134 of 155

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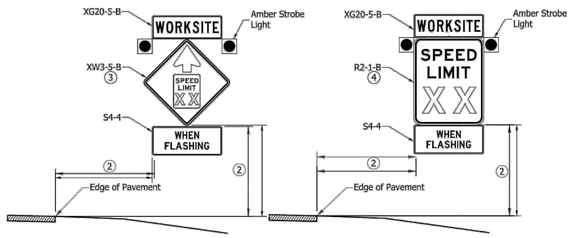
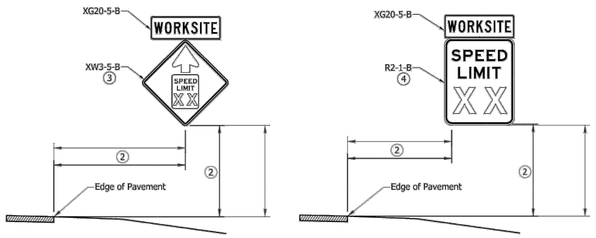


REDUCED SPEED ADVANCE WARNING SIGN ASSEMBLY

WORKSITE SPEED LIMIT SIGN ASSEMBLY

INTERMITTENT USE TYPE



REDUCED SPEED ADVANCE WARNING SIGN ASSEMBLY

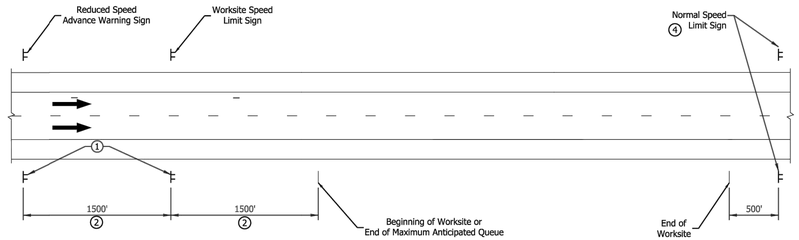
WORKSITE SPEED LIMIT SIGN ASSEMBLY

CONTINUOUS USE TYPE

NOTES:

1. If not trailer mounted, signs and supports shall satisfy NCHRP 350 or MASH crash evaluation criteria.
2. See Standard Drawing E 801-TCDV-06 for lateral and vertical placement.
3. The speed limit on advance warning signs shall match the worksite speed limit signs.
4. The worksite speed limit shall be at least 10 mph but no more than 15 mph below the permanent posted speed limit for the roadway under construction unless otherwise shown on the plans.
5. Sign series shown is for freeway or expressway application.

INDIANA DEPARTMENT OF TRANSPORTATION	
WORKSITE SPEED LIMIT SIGN ASSEMBLY SEPTEMBER 2022	
STANDARD DRAWING NO. E 801-TCDV-11	
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER	DESIGN STANDARDS ENGINEER 06/08/22 DATE CHIEF ENGINEER 06/27/2022 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 1 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-11 for worksite speed limit sign assembly.

INDIANA DEPARTMENT OF TRANSPORTATION	
WORKSITE SPEED LIMIT SIGN ASSEMBLY LONGITUDINAL PLACEMENT SEPTEMBER 2022	
STANDARD DRAWING NO. E 801-TCDV-12	
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER	DESIGN STANDARDS ENGINEER 06/08/22 DATE CHIEF ENGINEER 06/27/2022 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 Standard Drawing E 801-TCDV-03.
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
- 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

INDEX	
SHEET NO.	SUBJECT
1	Shoulder Closures, Index and General Notes
2	Advance Signing for Interstate Shoulder Closures
3	Shoulder Closure on Freeway or Expressway
4	Freeway Shoulder Closure for Roadside Work
5	Shoulder Closure on Divided Highway with Local Access
6	Shoulder Closure on Two-Lane Highway with Local Access

LEGEND

- Temporary Traffic Barrier
- Channelizing Device
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic
- Crash Cushion
- Work Area

GENERAL NOTES:

1. Unless otherwise noted, the spacing of channelizing devices in tangent sections shall be 100 ft where the posted speed limit is 50 mph or greater, and the spacing shall be 50 ft where the posted speed limit is less than or equal to 45 mph.
2. Unless otherwise noted, the spacing of channelizing devices in tapers shall be equal in feet to 1.0 times the posted speed limit in mph.
3. Channelizing devices as shown are schematic, the number of channelizing devices will vary based on field conditions.
4. The longitudinal buffer space is an area that provides recovery space for an errant vehicle. Values in the table below may be used to determine the length of the longitudinal buffer.

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
≤30	200
35	250
40	305
45	360
50	425
55	495

INDIANA DEPARTMENT OF TRANSPORTATION	
SHOULDER CLOSURES, INDEX AND GENERAL NOTES SEPTEMBER 2022	
STANDARD DRAWING NO. E 801-TCSC-01	
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER	DESIGN STANDARDS ENGINEER 05/17/22 DATE CHIEF ENGINEER 07/07/2022 DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
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Sheet: 135 of 155

Last Saved By: Joe Printed:2/23/23
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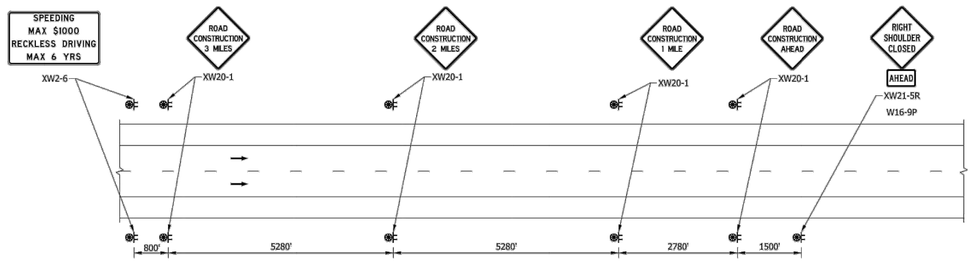
NOTES:

1. For sign sequence continuation, see freeway shoulder closure in Standard Drawing E 801-TCSC-03.
2. Advance signing is not required for work zone durations ≤ 1 hr.



LEGEND

- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION

ADVANCE SIGNING FOR INTERSTATE SHOULDER CLOSURE

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCSC-02

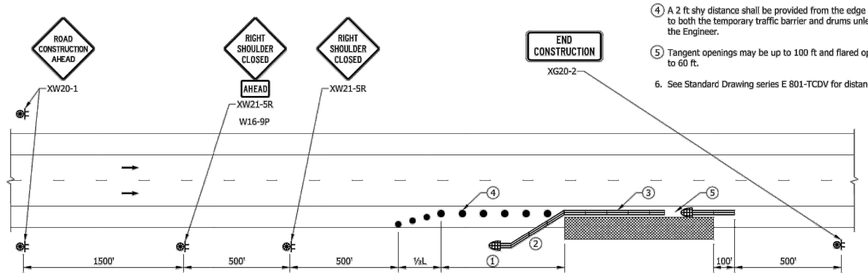
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

05/17/22
DESIGN STANDARDS ENGINEER DATE

07/07/2022
CHIEF ENGINEER DATE

NOTES:

1. Longitudinal Buffer Length, see table.
2. Flared rate for temporary traffic barrier shall be 16:1 to edge of shoulder or approved end treatment shall be used.
3. Drums may be used for freeway shoulder closures of 3 days or less.
4. A 2 ft shy distance shall be provided from the edge of the travel lane to both the temporary traffic barrier and drums unless approved by the Engineer.
5. Tangent openings may be up to 100 ft and flared openings may be up to 60 ft.
6. See Standard Drawing series E 801-TCDV for distance, L.



LEGEND

- Temporary Traffic Barrier
- Channelizing Device
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic
- Crash Cushion
- Work Area

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
≤30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

INDIANA DEPARTMENT OF TRANSPORTATION

SHOULDER CLOSURE ON FREEWAY OR EXPRESSWAY

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCSC-03

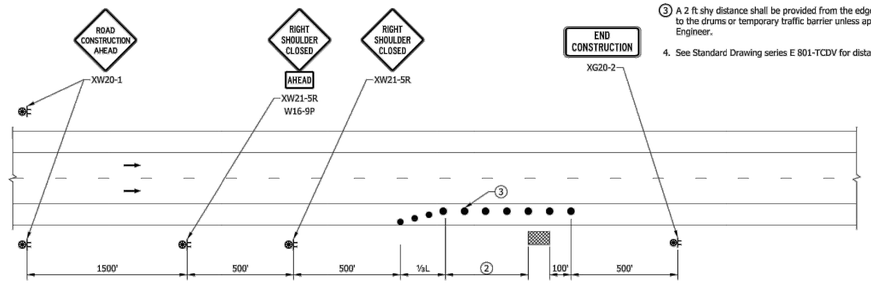
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

05/17/22
DESIGN STANDARDS ENGINEER DATE

07/07/2022
CHIEF ENGINEER DATE

NOTES:

1. Temporary traffic barrier shall be used in place of drums for work that occupies a location for more than 14 days.
2. Longitudinal Buffer Length, see table.
3. A 2 ft shy distance shall be provided from the edge of the travel lane to the drums or temporary traffic barrier unless approved by the Engineer.
4. See Standard Drawing series E 801-TCDV for distance, L.



LEGEND

- Work Area
- Channelizing Device
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
≤30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

INDIANA DEPARTMENT OF TRANSPORTATION

FREEWAY SHOULDER CLOSURE FOR ROADSIDE WORK

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCSC-04

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

05/17/22
DESIGN STANDARDS ENGINEER DATE

07/07/2022
CHIEF 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

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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS149
Sheet: 136 of 155

Last Saved By: Joe Pinkard 2/23/23
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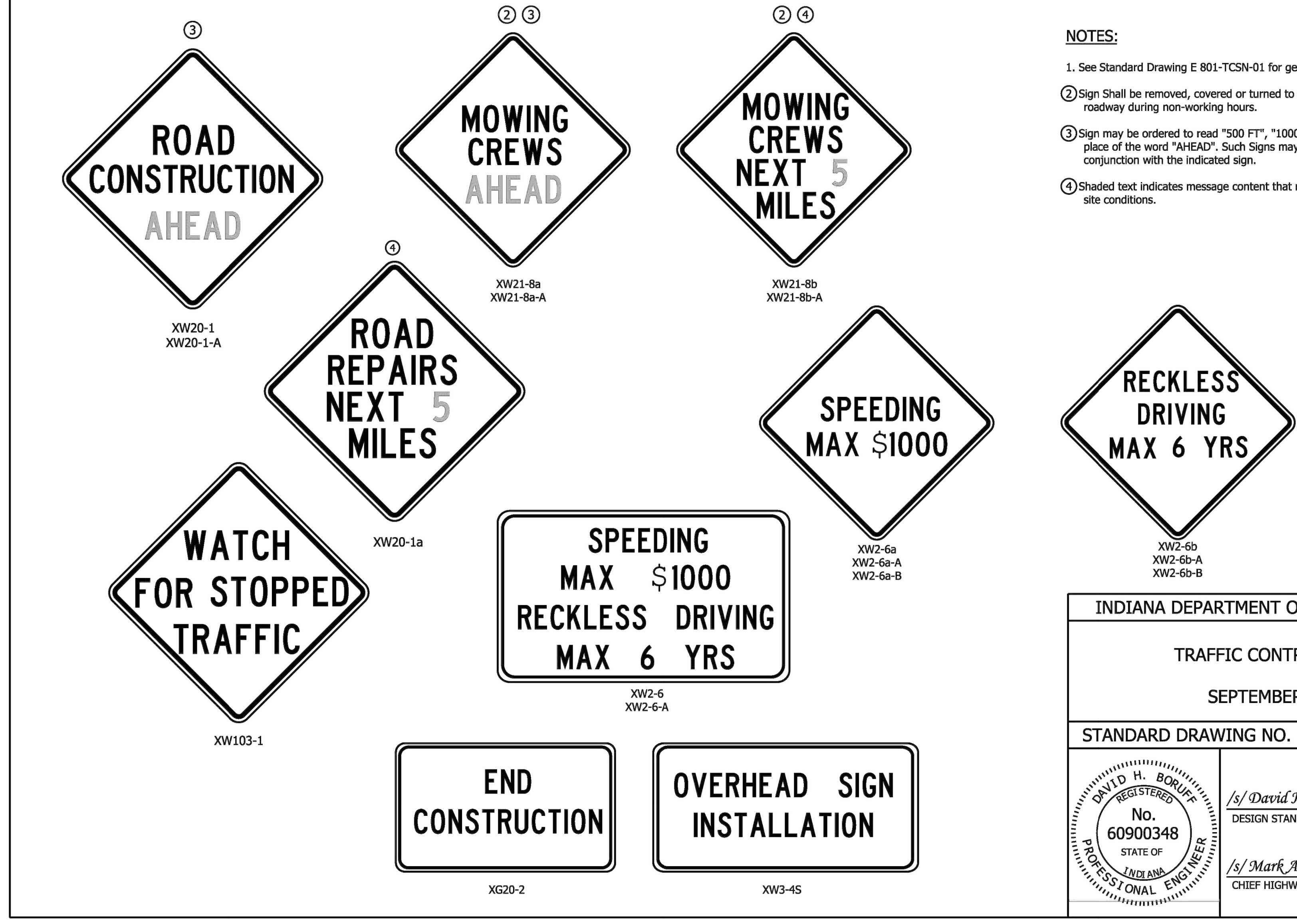


NOTES:

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

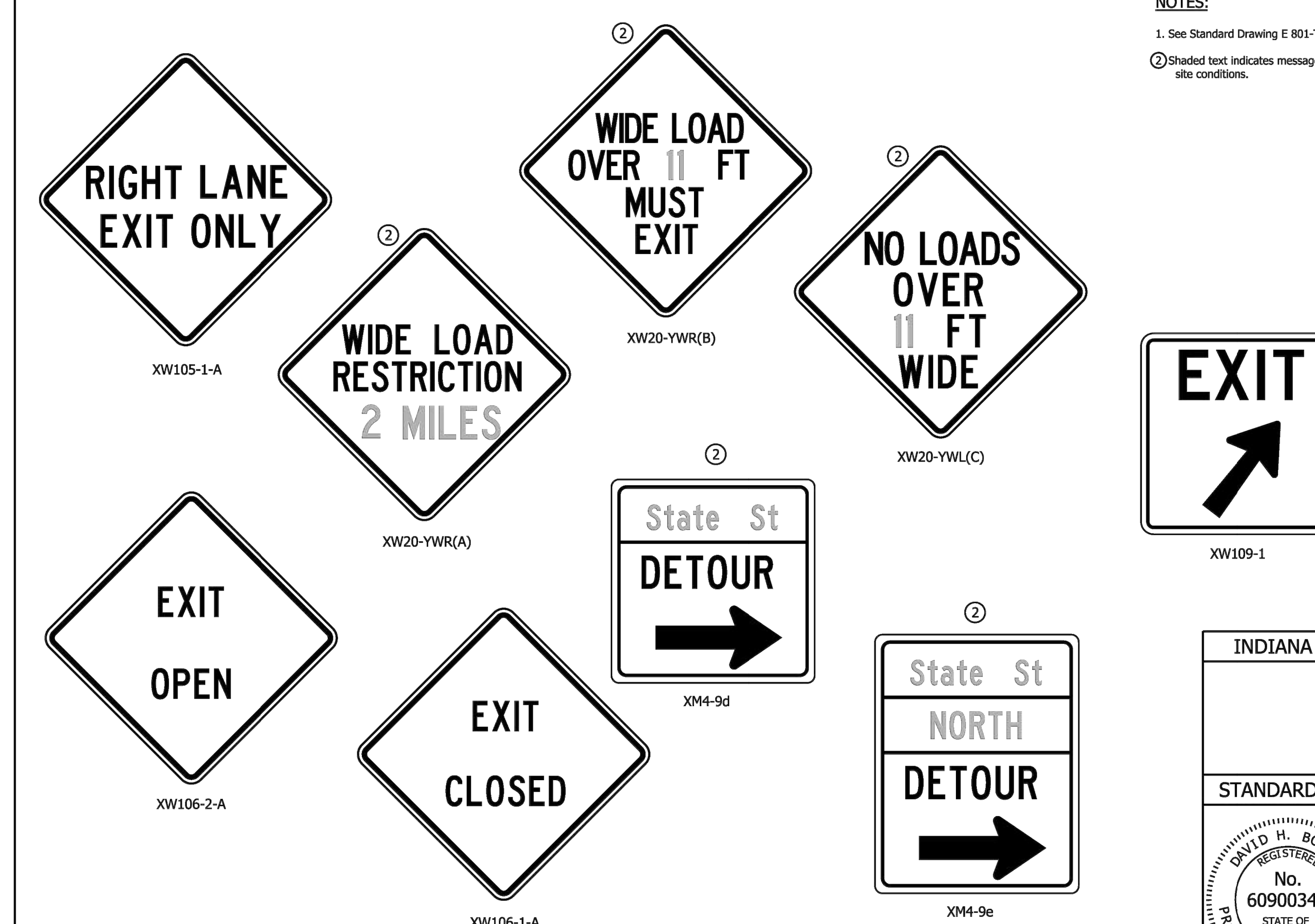
SEPTEMBER 2016

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.

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

Last Saved By: jcler Printed:2/23/23
P:\1364 - Clear Creek Welcome Center\DWGS\SITE SHEETS\EB WELCOME CENTER\1364-EB-CS100 STANDARDS-800.dwg Feb 23, 2023-2:39:03 pm

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS150
Sheet: 137 of 155

SIGN NUMBER	IMUTCD CODE	SIGN MESSAGE	POST DESIGN 4 X 4 WOOD	POST DESIGN STEEL	SIGN SIZE	SIGN COLOR BACKGROUND	SIGN COLOR COPY	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 1	NO. OF POSTS 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

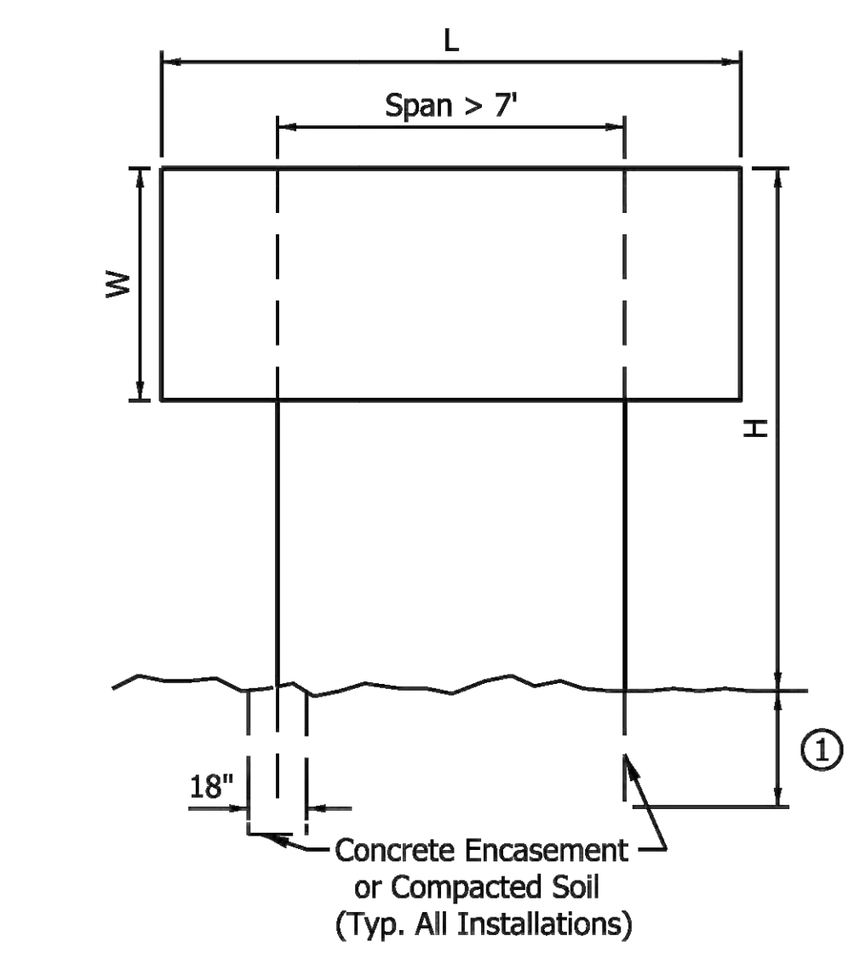
SEPTEMBER 2016

STANDARD DRAWING NO. E 801-TCSN-06

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



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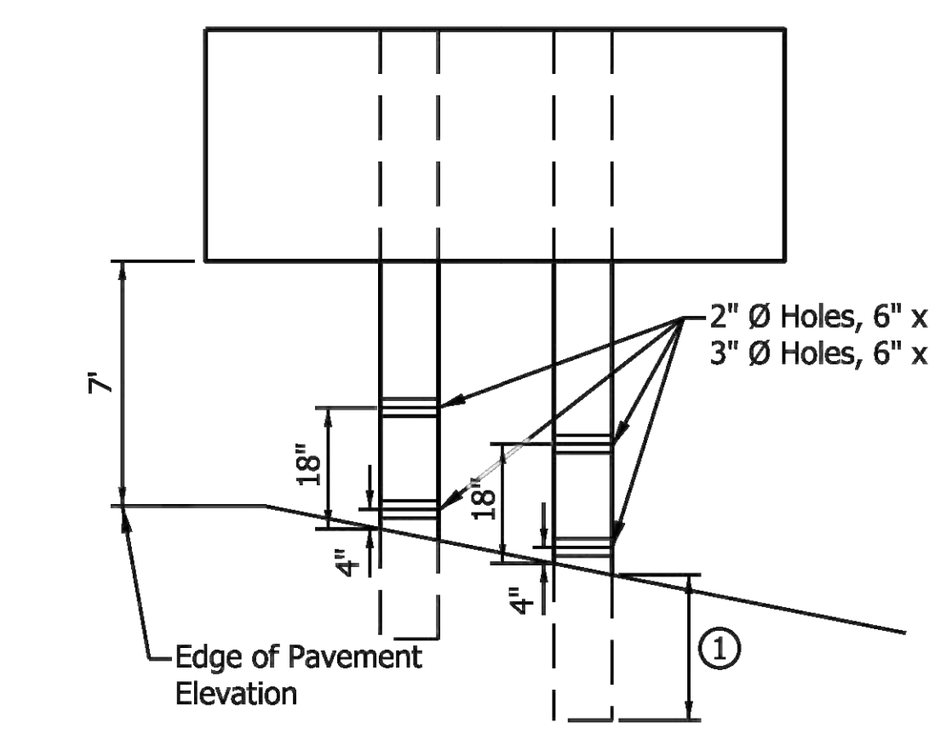
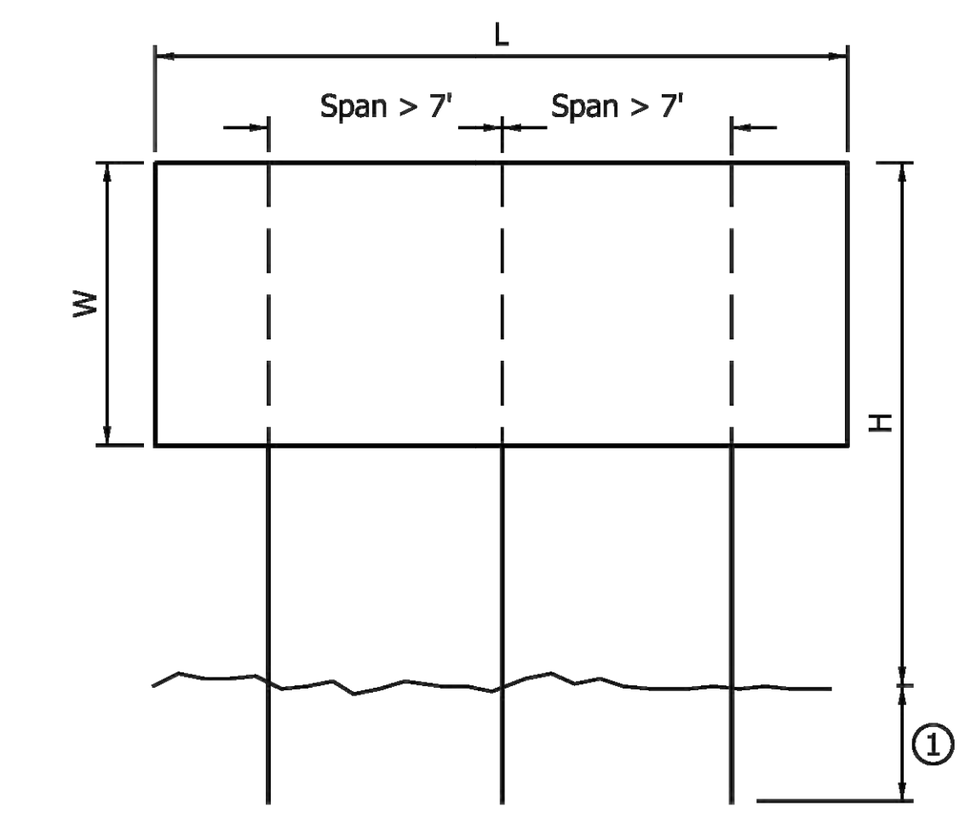
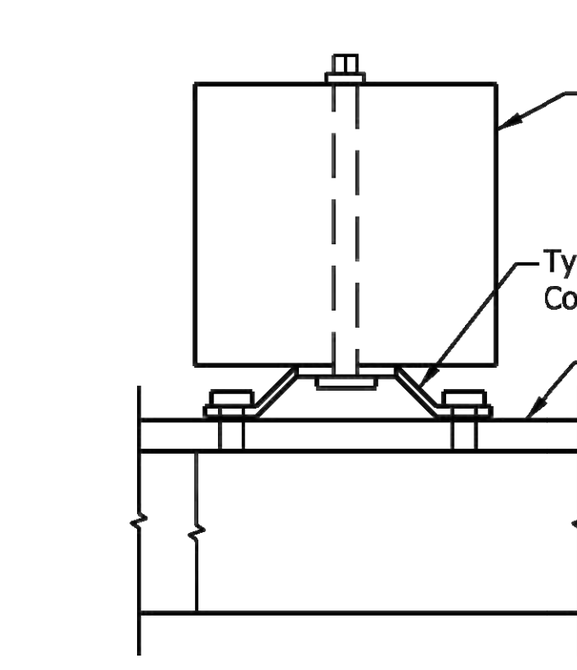
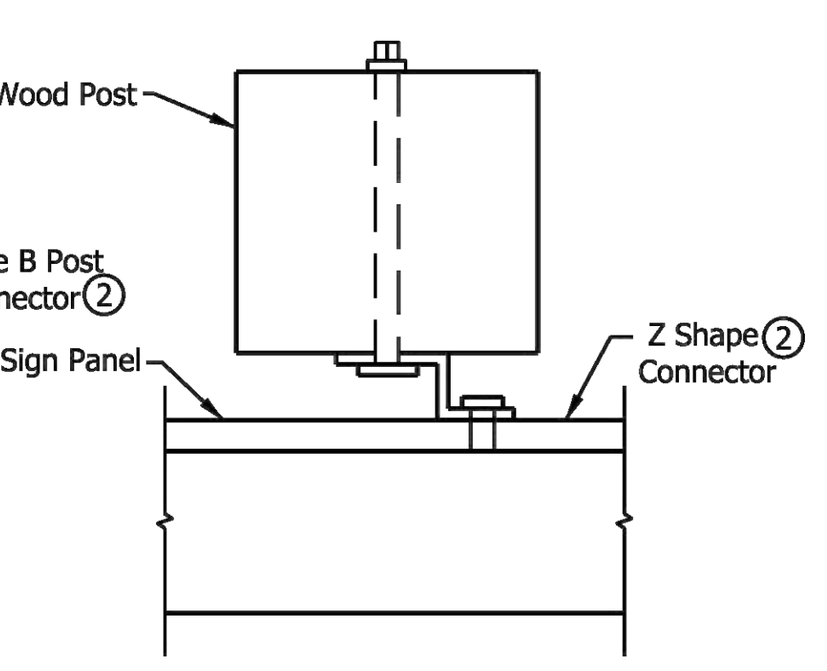




3 - POST INSTALLATION



TYPE B POST CONNECTION



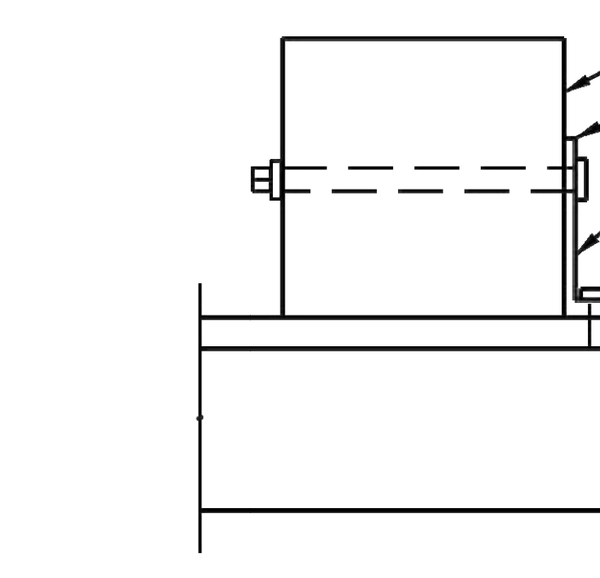
Z SHAPE CONNECTION DETAIL

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

INDIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY PANEL SIGN
BREAKAWAY POST INSTALLATION

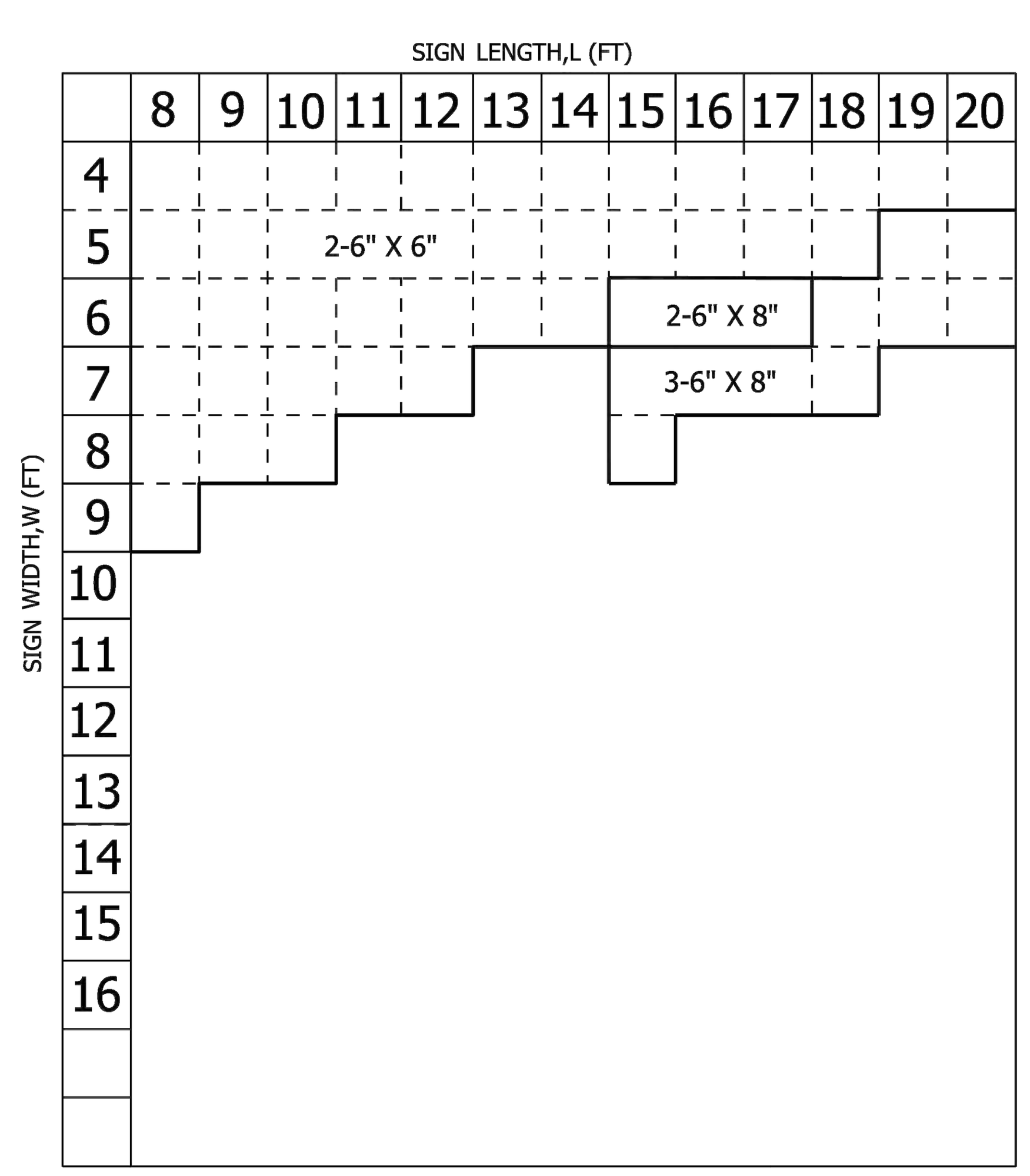
SEPTEMBER 2016

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

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

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

Certified by: David Hedlund

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INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number:	84003001-22-058-C1
Requisition Number:	-
Account Number:	-
Designer: DEH	Drawing Date: 02/23/2023
Drafter: JRC	Drawing Scale: NONE
DAPW Approval:	
Client Approval:	
Reference Number:	1364
Building Reference:	-
Drawing Number:	CS151
Sheet:	138 of 155

Last Saved By: jcler Printed:2/23/23
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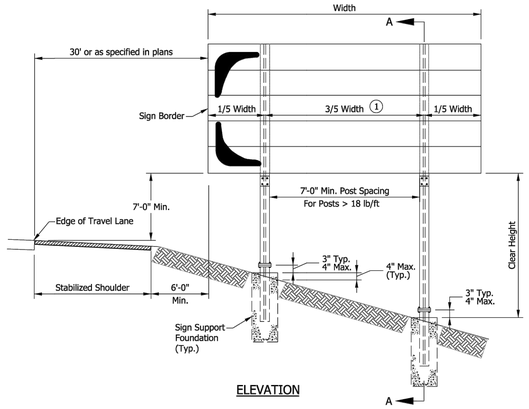
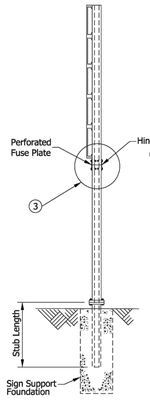


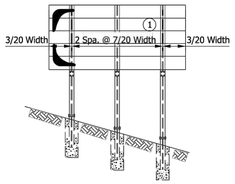
ELEVATION



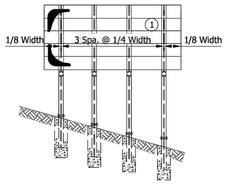
SECTION A-A

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
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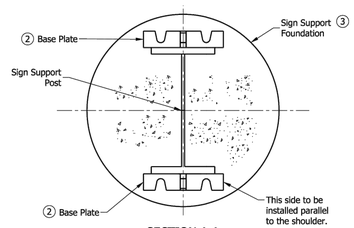
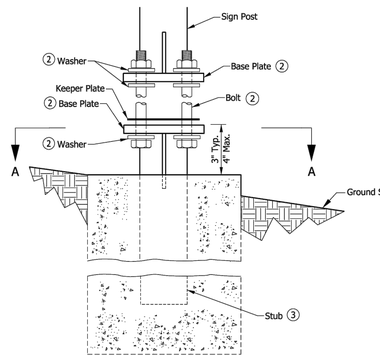


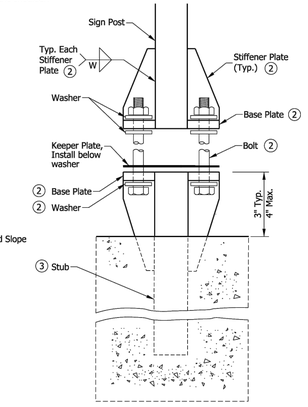
SECTION A-A

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.



FRONT ELEVATION



SIDE ELEVATION

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

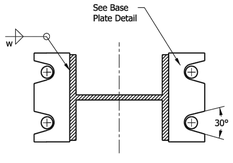
SEPTEMBER 2017

STANDARD DRAWING NO. E 802-SNGP-03

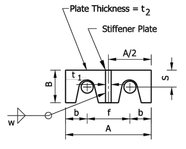
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER

/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

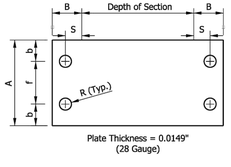
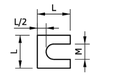


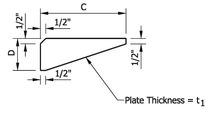
Plate Thickness = 0.0149"
(28 Gauge)

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
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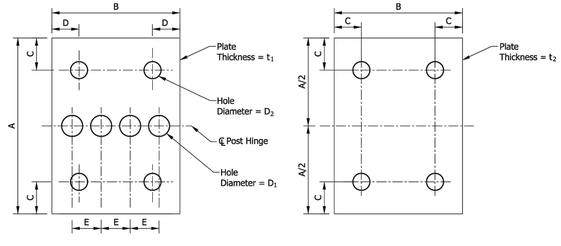


FUSE PLATE

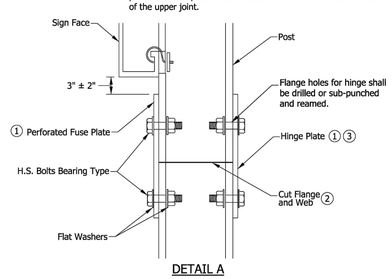
HINGE PLATE

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"	1/4"	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"	3/8"	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"	3/8""	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"	1/2"	1"	13/16"	3/4"	15.20	28,400
W 10x33	9-1/4"	8"	2"	1-3/4"	1-3/4"	5/8"	5/8"	1-1/8"	1-1/16"	1"	26.20	39,250
W 12x45	11"	8"	2"	1-3/4"	1-3/4"	3/4"	3/4"	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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
950 Harrison Park Court
Indianapolis, Indiana 46216
Business (317) 954-9999 Fax (317) 955-9292

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS152
Sheet: 139 of 155

Last Saved By: Jake Pinkard 2/23/23
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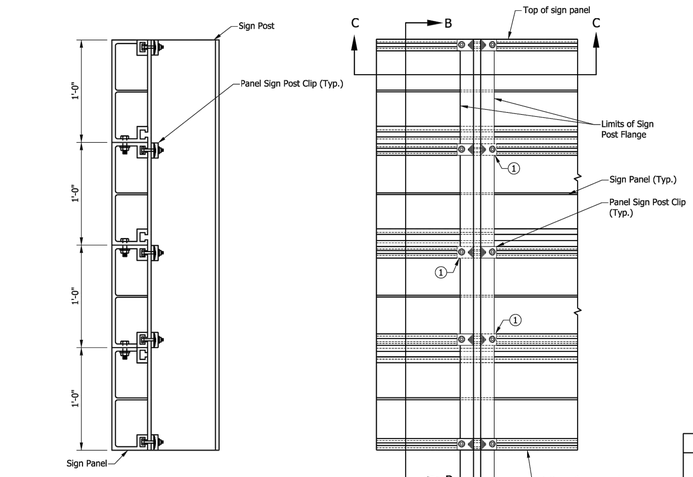
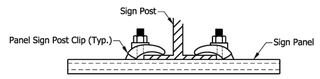
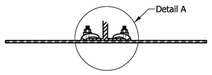


SECTION B-B

ELEVATION
(View from Back of Sign)



DETAIL A

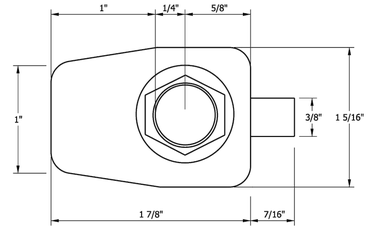


SECTION C-C

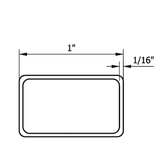
NOTES:

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.

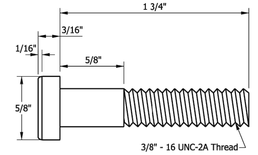
INDIANA DEPARTMENT OF TRANSPORTATION	
PANEL SIGN CONNECTION DETAILS SEPTEMBER 2017	
STANDARD DRAWING NO. E 802-SNGP-06	
DAVID H. BORUFF REGISTERED No. 60900348 STATE OF INDIANA PROFESSIONAL ENGINEER	/s/ David H. Boruff 03/17/17 DESIGN STANDARDS ENGINEER DATE /s/ John Leckie 04/10/17 CHIEF ENGINEER DATE



PLAN VIEW

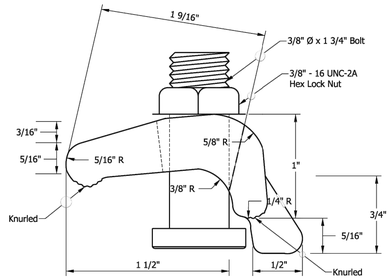


TOP VIEW



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		2- W8x24*	2- W8x24	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45
22			2- W8x24*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33
24			2- W10x33*	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33	4- W10x33
26			2- W10x33*	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- W10x33	2- W12x45	2- W12x45	3- W10x33			4- W10x33*	4- W10x33*	
30			2- W10x33*	2- W10x33	2- W12x45	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 = 8 FT SEPTEMBER 2017	
STANDARD DRAWING NO. E 802-SNGP-08	
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- 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- W8x18	2- W8x24	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- W10x33	2- W12x45	2- W12x45	3- W10x33	3- W10x33		4- W10x33*	4- W10x33
28			2- W10x33*	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	
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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS153
Sheet: 140 of 155

Last Saved By: Joe Pinkard 2/23/23
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WIDE-FLANGE SIGN SUPPORT POST SELECTION TABLE – CLEAR HEIGHT = 12 FT

Sign Width (ft) / Sign Height (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

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

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

Sign Width (ft) / Sign Height (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

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

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

Sign Width (ft) / Sign Height (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

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

Sign Width (ft) / Sign Height (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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS154
Sheet: 141 of 155

Last Saved By: jcler Printed:2/23/23
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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	X	X	2- W8x24*	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	2- W8x24	3- W8x24	3- W8x24	3- W8x24
8	X	X	2- W8x24*	2- W8x24	2- W8x24	2- W8x24	3- W8x24*	3- W8x24	X	X	X	X	X
10	X	X	2- W8x24*	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

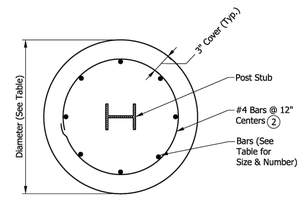
WIDE-FLANGE SIGN SUPPORT
POST SELECTION TABLE
CLEAR HEIGHT = 22 FT
SEPTEMBER 2017

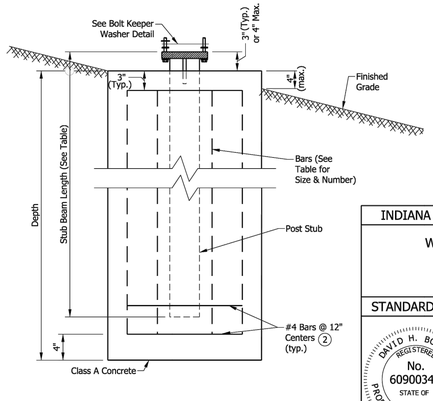
STANDARD DRAWING NO. E 802-SNGP-15

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





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. (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

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

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
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402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

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Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
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Drawing Number: CS155
Sheet: 142 of 155

Last Saved By: Joe Pinkard 2/23/23
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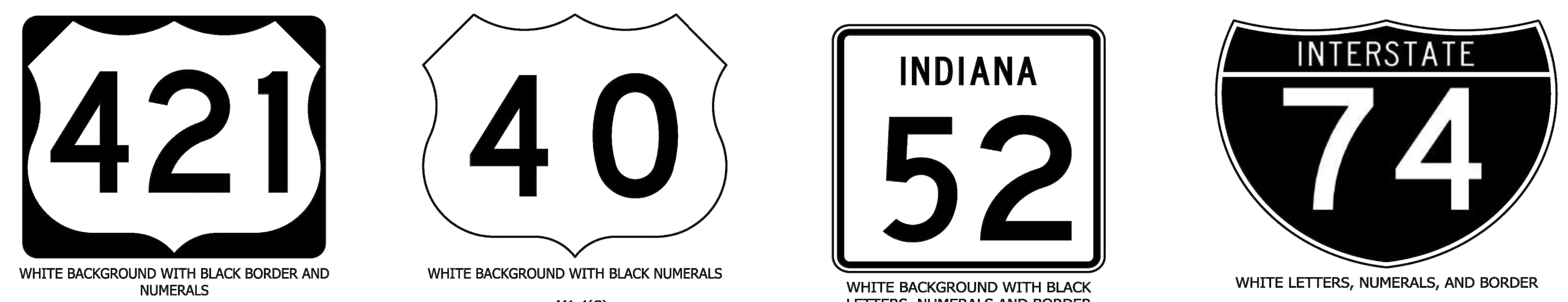


WHITE BACKGROUND WITH BLACK BORDER AND NUMERALS

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"

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.



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"

INDIANA DEPARTMENT OF TRANSPORTATION

ROUTE MARKER DETAILS
SHIELDS AND AUXILLARY SIGNS

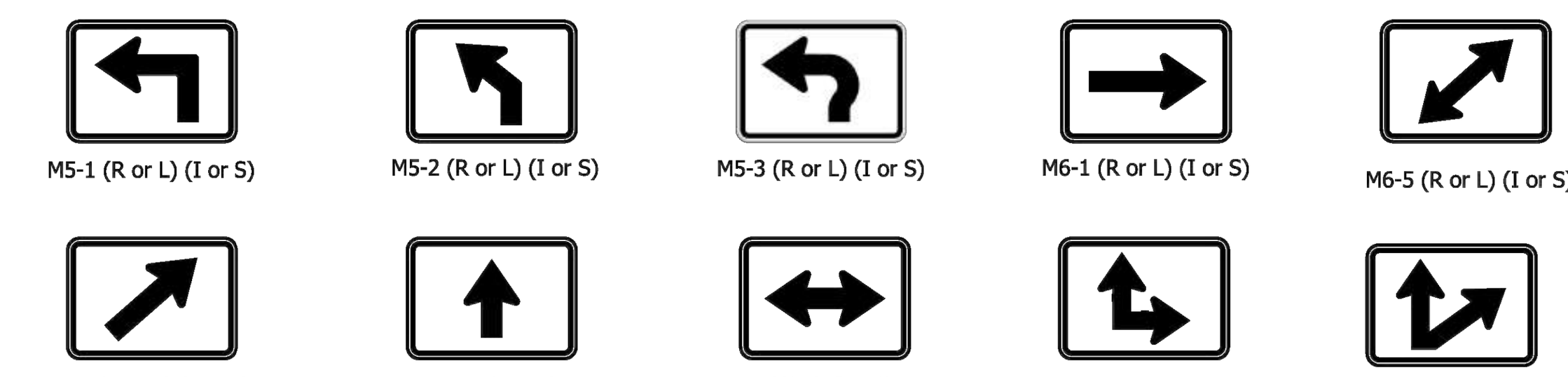
SEPTEMBER 2017

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



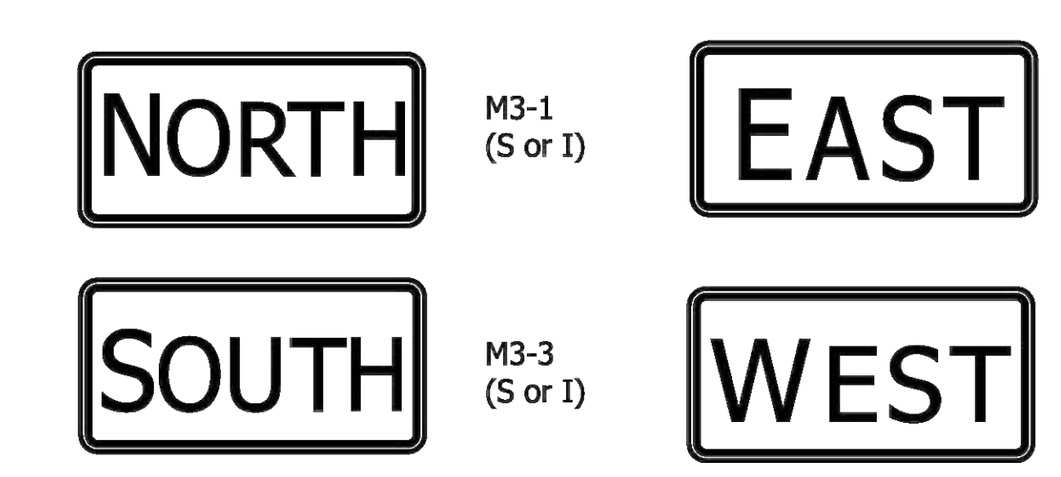
M5-1 (R or L) (I or S) · M5-2 (R or L) (I or S) · M5-3 (R or L) (I or S) · M6-1 (R or L) (I or S) · M6-5 (R or L) (I or S)

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

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
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
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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

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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
9120 Harrison Park Court
Indianapolis, Indiana 46216
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Fax : (812) 424-7942
www.bceng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS156
Sheet: 143 of 155

Last Saved By: jcler Printed:2/23/23
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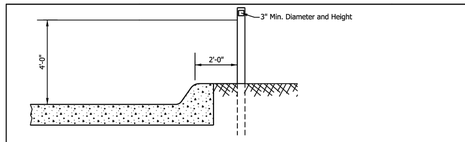
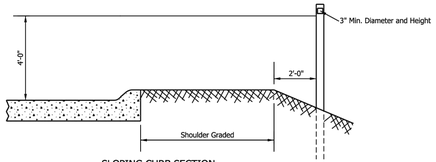
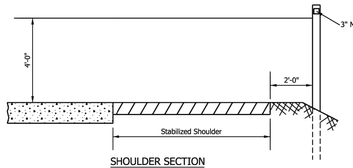


CURB SECTION



SLOPING CURB SECTION



SHOULDER SECTION

DELINEATOR DETAILS (2)

NOTES:

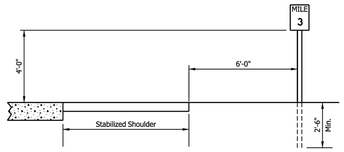
(1) Mileposts shall be installed in accordance with MUTCD.

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

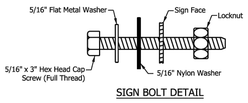
3. Signs shall be fastened to the posts with bolts, metal and nylon washers and locknut. The nylon washer and the metal washer shall be placed between each bolt head and the face of the sign.

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

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

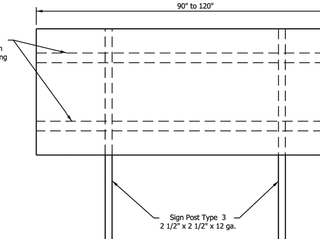
SEPTEMBER 2017

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"

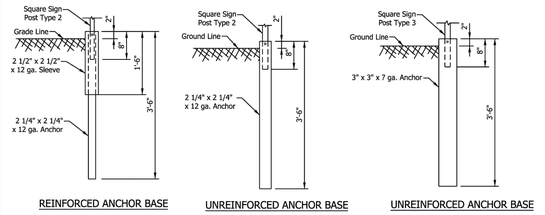
SEPTEMBER 2017

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



REINFORCED ANCHOR BASE

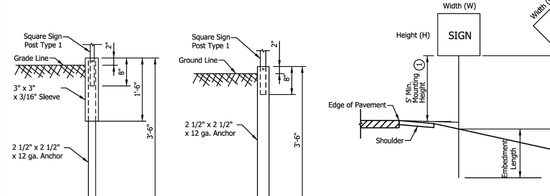
UNREINFORCED ANCHOR BASE

UNREINFORCED ANCHOR BASE

NOTES:

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

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

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
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Fosse & Associates Architects, Inc.
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Phone (479) 464-4882 – Fax (479) 464-4887
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B. C. Engineering, Inc.
Mechanical & Electrical Engineering
501 Carpenter Street
Evansville, IN 47708
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Fax : (812) 424-7942
www.boeing.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS157
Sheet: 144 of 155

Last Saved By: jdar Printed:2/23/23
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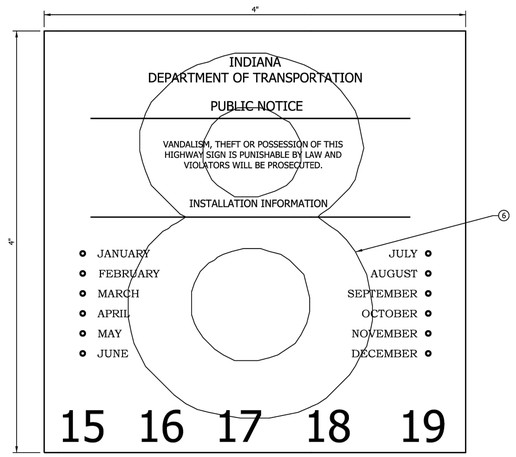
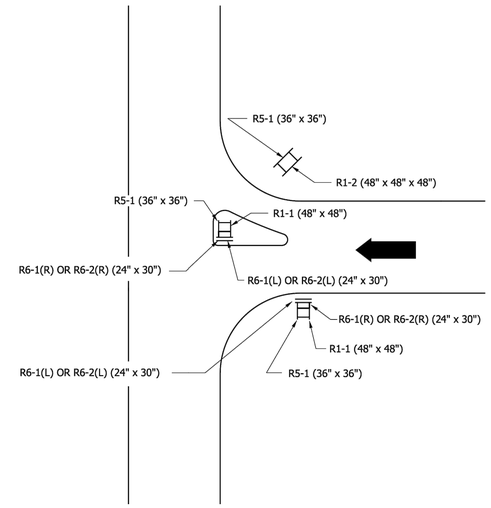


NOTES:

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



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:

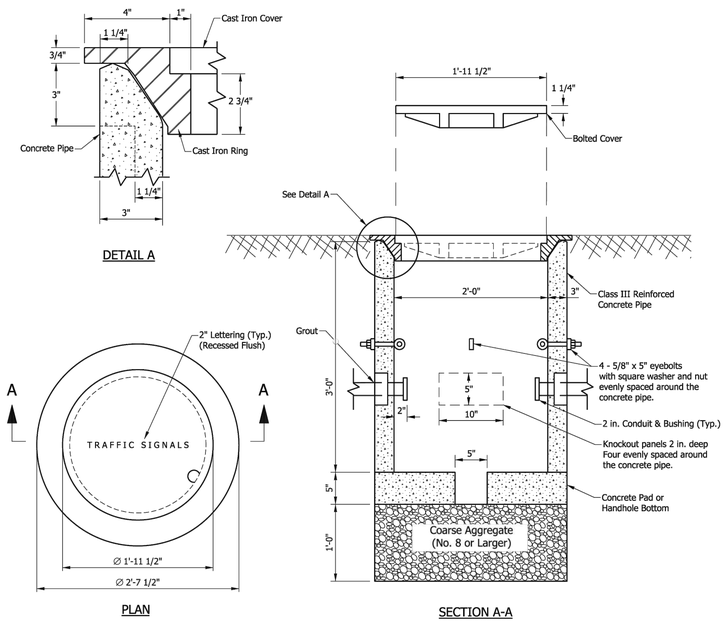
(1) If a secondary sign is mounted below another sign, the secondary sign shall be installed at least 5 ft. above the level of the pavement edge.

(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 CLEARANCE 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. Strutzer	*9-02-03*
	CHIEF HIGHWAY ENGINEER	DATE



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. 60020557 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	*/s/ Alfredo B. Hanza*	*02/22/13*
	DESIGN STANDARDS ENGINEER	DATE
	/s/ Mark A. Miller	*03/27/13*
	CHIEF ENGINEER	DATE

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS158
Sheet: 145 of 155

Last Saved By: Joe Printed:2/23/23
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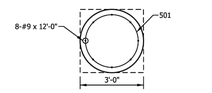
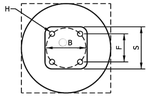
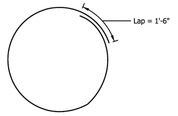
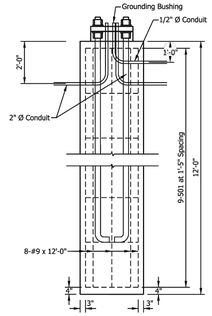
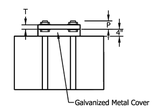






501 x 9'-4"





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

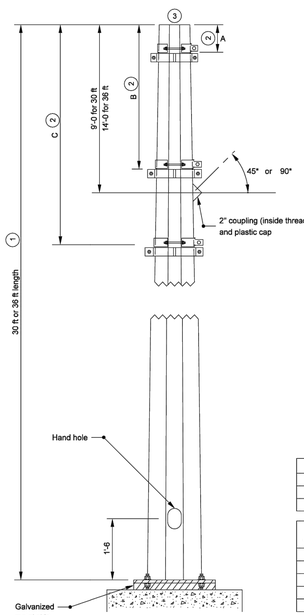
SEPTEMBER 2017

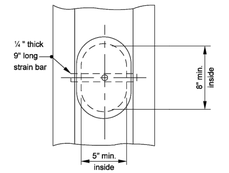
STANDARD DRAWING NO. E 805-SGSC-02

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

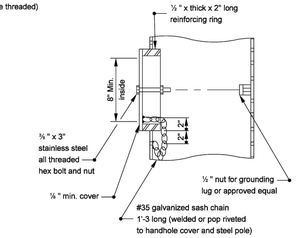
/s/ David H. Boruff 06/23/16
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 06/29/16
CHIEF ENGINEER DATE





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

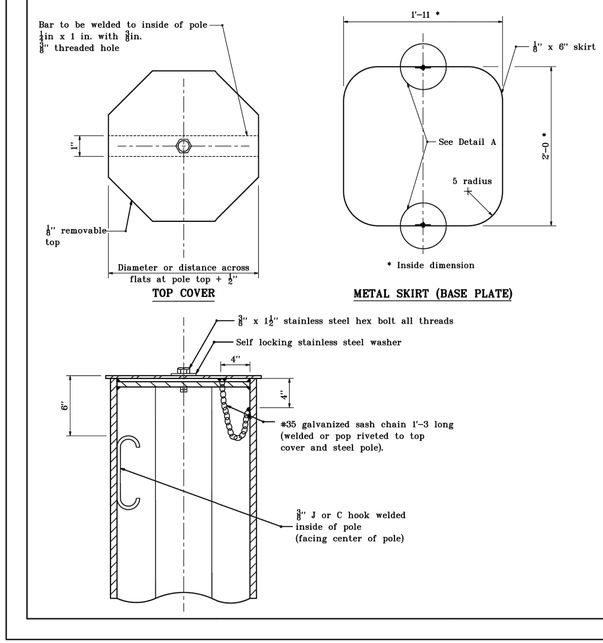
STANDARD DRAWING NO. E 805-SGSP-01

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

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

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

DESIGN STANDARDS ENGINEER



INDIANA DEPARTMENT OF TRANSPORTATION

TOP COVER AND METAL SKIRT
OF SIGNAL STEEL STRAIN POLE

MARCH 1995

STANDARD DRAWING NO. E 805-SGSP-02

DETAILS PLACED IN THIS FORMAT 11-15-99

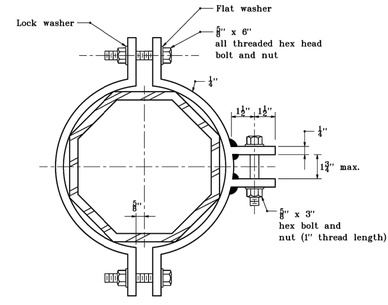
ANTHONY L. URBANOVICH REGISTERED No. 18095 STATE OF INDIANA REGISTERED PROFESSIONAL ENGINEER

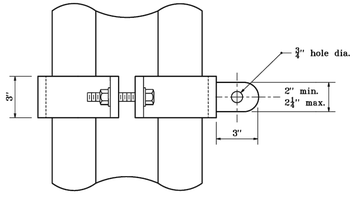
/s/ Anthony L. Urbanovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firoz Zaidi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

DESIGN STANDARDS ENGINEER





REQUIRES TWO POLE BANDS AT EACH POSITION
ON POLE (SIX BANDS PER POLE)

INDIANA DEPARTMENT OF TRANSPORTATION

POLE BAND FOR
SIGNAL STEEL STRAIN POLE

SEPTEMBER 1998

STANDARD DRAWING NO. E 805-SGSP-03

DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

/s/ Firoz Zaidi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

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Evansville, IN 47708
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www.bceng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

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317-232-3000

Revisions:

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Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS159
Sheet: 146 of 155

Last Saved By: Joe Pinkard 2/23/23
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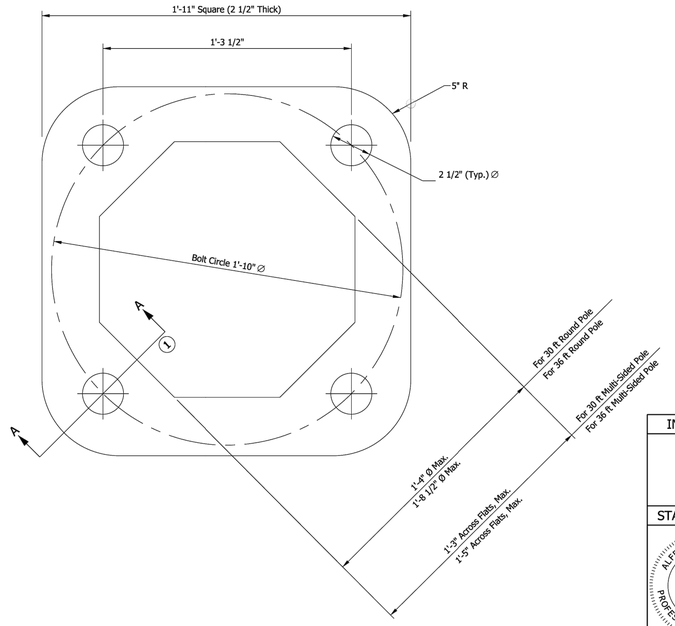


NOTES:

(1) See Standard Drawing E 805-SGSP-05 for Section A-A.

INDIANA DEPARTMENT OF TRANSPORTATION

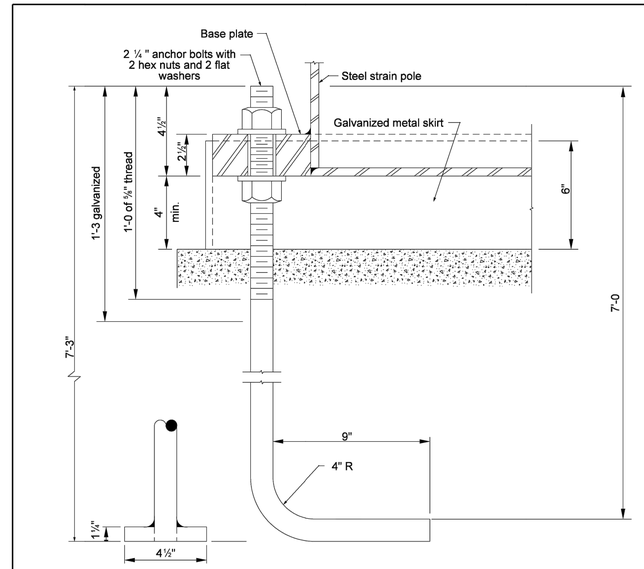
SIGNAL STEEL STRAIN POLE
BASE PLATE

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-A

INDIANA DEPARTMENT OF TRANSPORTATION

ANCHOR BOLT DETAIL FOR
SIGNAL STEEL STRAIN POLES

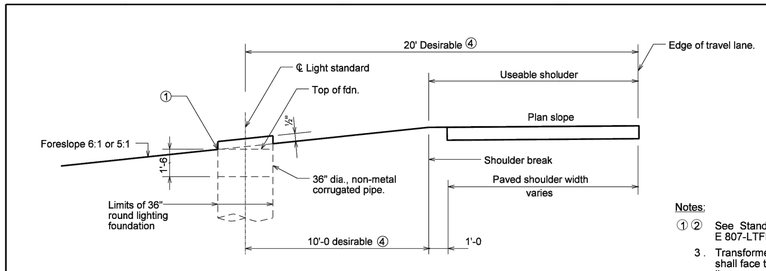
MARCH 2004

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



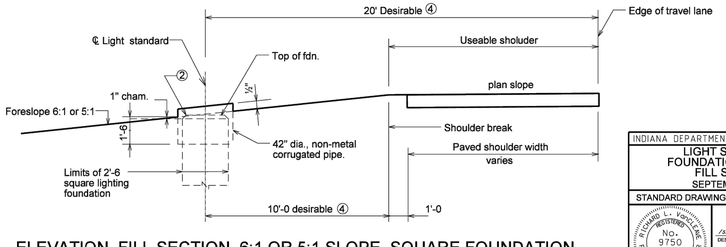
ELEVATION, FILL SECTION, 6:1 OR 5:1 SLOPE, ROUND FOUNDATION

Notes;

(1) (2) 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

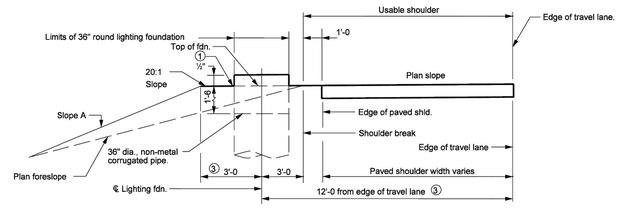
LIGHT STANDARD
FOUNDATION GRADING
FILL SECTION
SEPTEMBER 2005

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

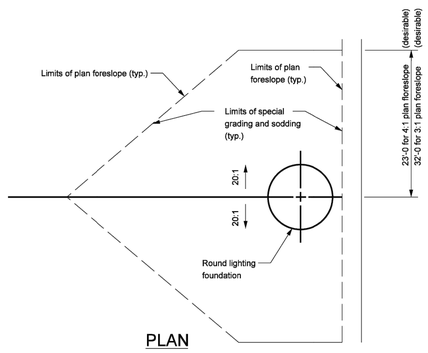
Notes:

(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

Last Saved By: Joe Pinkard 2/23/23
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Certified by: David Hedlund

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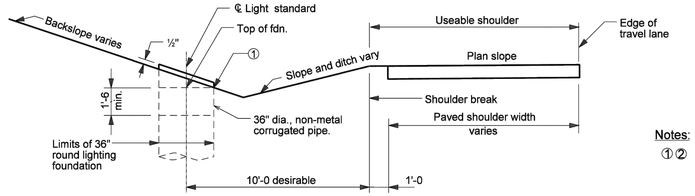


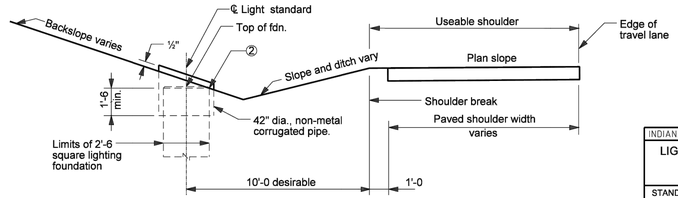
ELEVATION, CUT SECTION, ROUND FOUNDATION

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.



ELEVATION, CUT SECTION, SQUARE FOUNDATION

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT STANDARD FOUNDATION GRADING CUT SECTION

SEPTEMBER 2005

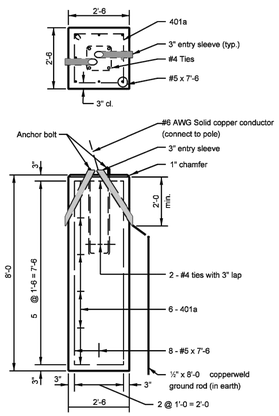
STANDARD DRAWING NO. E 807-LTFD-04

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

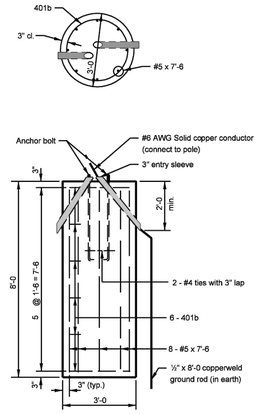
/s/ Richard L VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

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

DESIGN STANDARDS ENGINEER



SQUARE FOUNDATION DETAIL



ROUND FOUNDATION DETAIL

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.

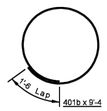
3. See Standard Drawing E 801-LTFD-04A for plan views of pipe placement and sodding.

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.



401a x 8'-10



401b x 9'-4

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT FOUNDATION

SEPTEMBER 2002

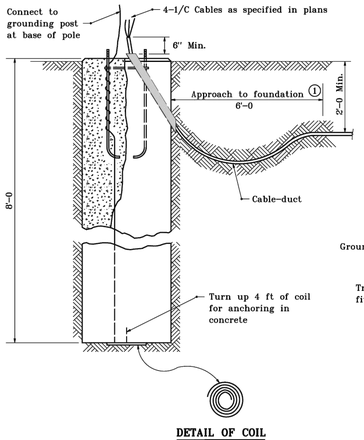
STANDARD DRAWING NO. E 807-LTFD-05

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

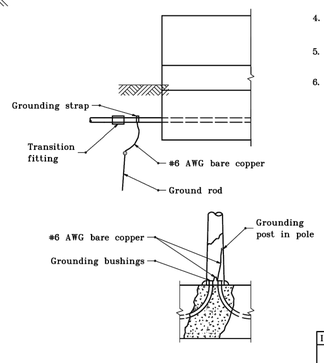
/s/ Richard L VanCleave 9-03-02
DESIGN STANDARDS ENGINEER DATE

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

DESIGN STANDARDS ENGINEER



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

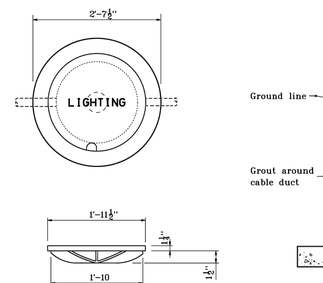
STANDARD DRAWING NO. E 807–LTFD–06

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

/s/ Anthony L Urbanovich 9-01-00
DESIGN STANDARDS ENGINEER DATE

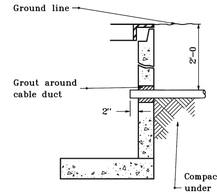
/s/ Firoze Zandi 9-01-00
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER



* 4" min. for alternate handhole

STREET & ALLEY TYPE HANDHOLE



CABLE DUCT ENTERING HANDHOLE

GENERAL NOTES

1. Alternate handhole minimum size shall be 1'–7 x 2'–6 x 1'–10 depth with 2 in. lid thickness.

2. Approximate weight for cast iron ring and cover shall be 320 lb.

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT HANDHOLE DETAILS

MARCH 1995

STANDARD DRAWING NO. E 807–LTHH–01

DETAILS PLACED IN THIS FORMAT 7-27-99

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

/s/ Anthony L Urbanovich 7-27-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firoze Zandi 7-27-99
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER ORIGINALLY APPROVED 3-01-95

Certified by: David Hedlund

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www.bceng.com

PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

Project Number: 84003001-22-058-C1
Requisition Number: -
Account Number: -
Designer: DEH
Drawing Date: 02/23/2023
Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS161
Sheet: 148 of 155

Last Saved By: Jake Pinkard 2/23/23
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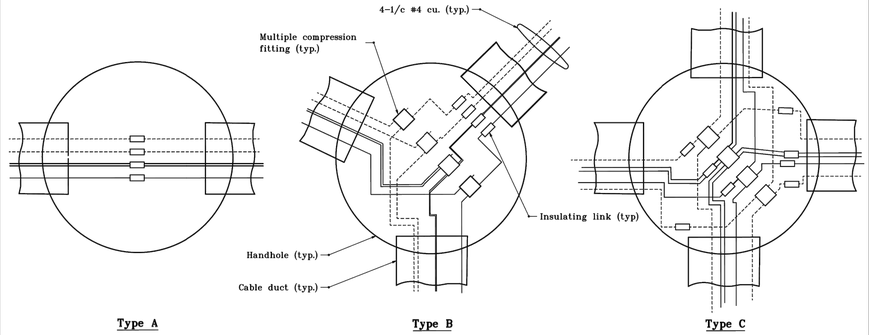
GENERAL NOTES

1. For multiple compression fitting and insulating link details, see Standard Drawing No. E 803-SNWR-04.



Type A | Type B | Type C

HANDHOLE CONNECTION DIAGRAM

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT HANDHOLE CONNECTIONS

MARCH 1995

STANDARD DRAWING NO. E 807-LTHH-02

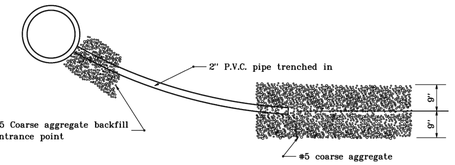
DETAILS PLACED IN THIS FORMAT 11-15-99

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

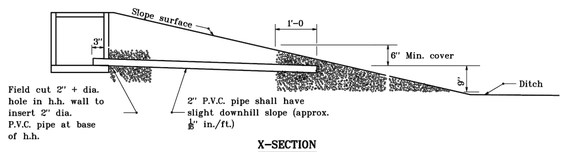
/s/ Firoze Zandi 11-15-99
CHIEF ROADWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

DESIGN STANDARDS ENGINEER

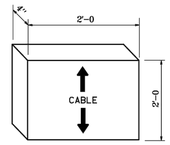


PLAN VIEW



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

DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoze Zandi 11-15-99
CHIEF ROADWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

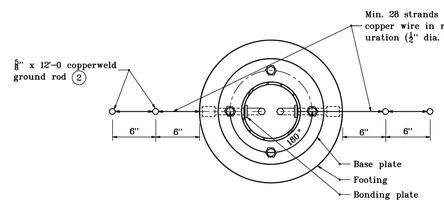
DESIGN STANDARDS ENGINEER

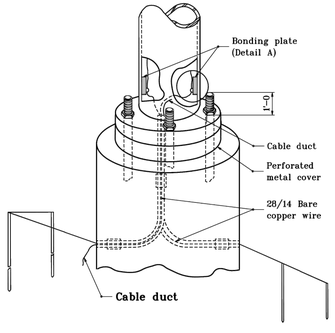
GENERAL NOTES

1. Shop drawings shall be submitted on lightning rod and connection details. Drawings are for informational purposes only. Only one lightning rod is required per structure.

(2) Grounding rod must be located a min. of 6 ft from base at a min. of 2 ft below grade.

For bonding plate detail, see Standard Drawing No. E 807-LTLR-02.





INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTNING ROD TYPICAL DETAILS

MARCH 1995

STANDARD DRAWING NO. E 807-LTLR-01

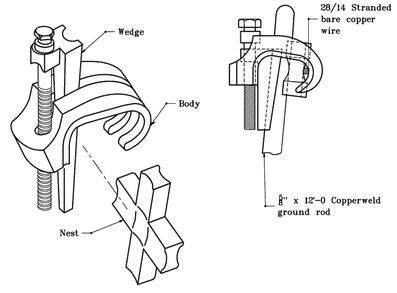
DETAILS PLACED IN THIS FORMAT 7-27-99

/s/ Anthony L. Uremovich 7-27-99
DESIGN STANDARDS ENGINEER DATE

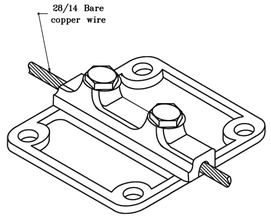
/s/ Firoze Zandi 7-27-99
CHIEF ROADWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

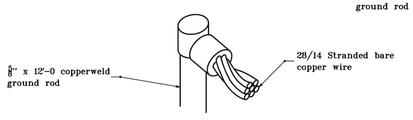
DESIGN STANDARDS ENGINEER



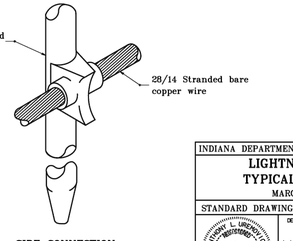
GROUNDING GRID CONNECTOR



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

DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoze Zandi 11-15-99
CHIEF ROADWAY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

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Drawing Number: CS162
Sheet: 149 of 155

Last Saved By: Joe Pinkard 2/23/23
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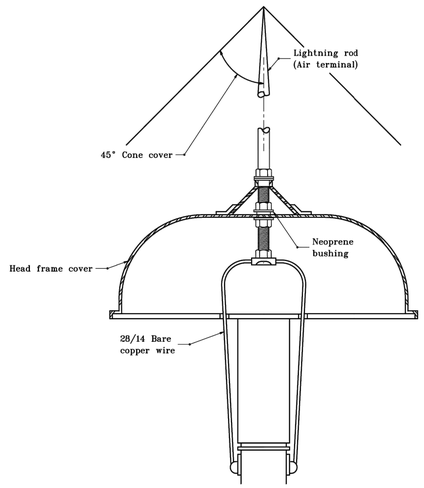


CENTER HOOD MOUNT

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTNING ROD
TYPICAL DETAILS

MARCH 1995

STANDARD DRAWING NO. E 807-LTLR-03

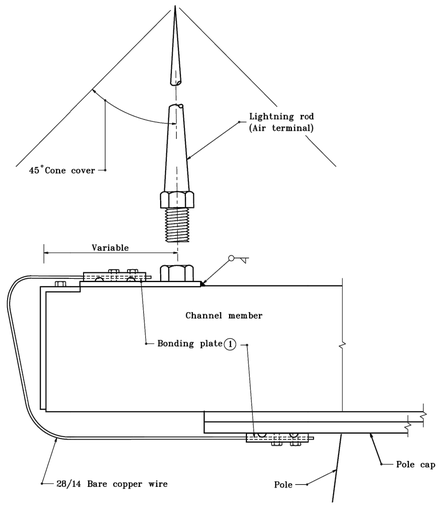
DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

DESIGN STANDARDS ENGINEER



NOTES

(1) See Standard Drawing E 807-LTLR-02 for Detail A.

CHANNEL MOUNT

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHTNING ROD
TYPICAL DETAILS

MARCH 1995

STANDARD DRAWING NO. E 807-LTLR-04

DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

ORIGINALLY APPROVED 3-01-95

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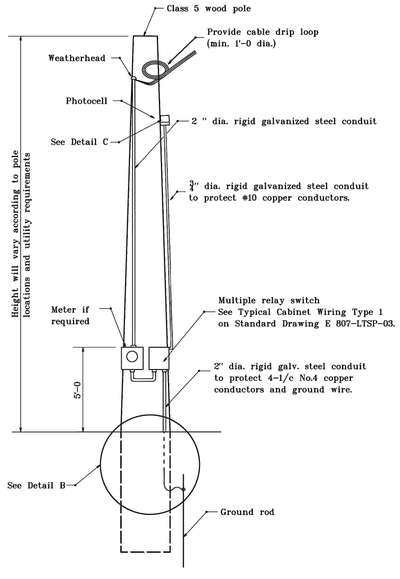
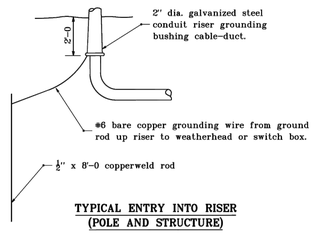
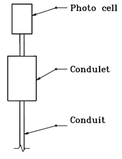


SERVICE POINT
TYPE I



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

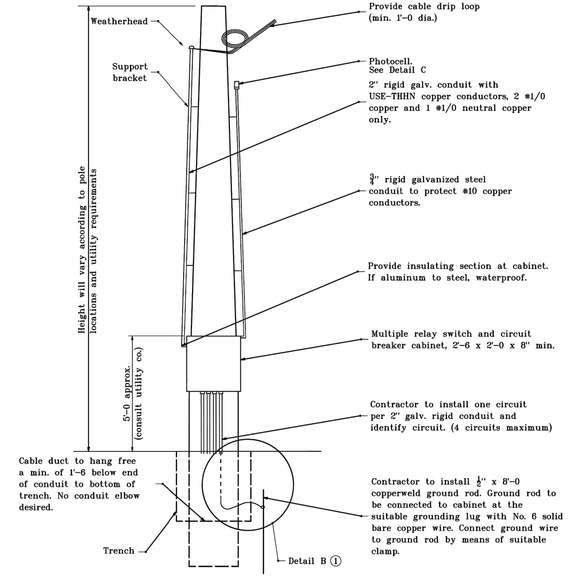
DETAILS PLACED IN THIS FORMAT 11-15-99

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

/s/ Firoos Zandi 11-15-99
CHIEF ECONOMY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

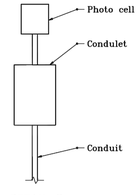
DESIGN STANDARDS ENGINEER



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

DETAILS PLACED IN THIS FORMAT 1-03-00

/s/ Anthony L. Uremovich 1-03-00
DESIGN STANDARDS ENGINEER DATE

/s/ Firoos Zandi 1-03-00
CHIEF ECONOMY ENGINEER DATE

DESIGN STANDARDS ENGINEER

Certified by: David Hedlund

JANSSEN & SPAANS ENGINEERING
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Client Approval:
Reference Number: 1364
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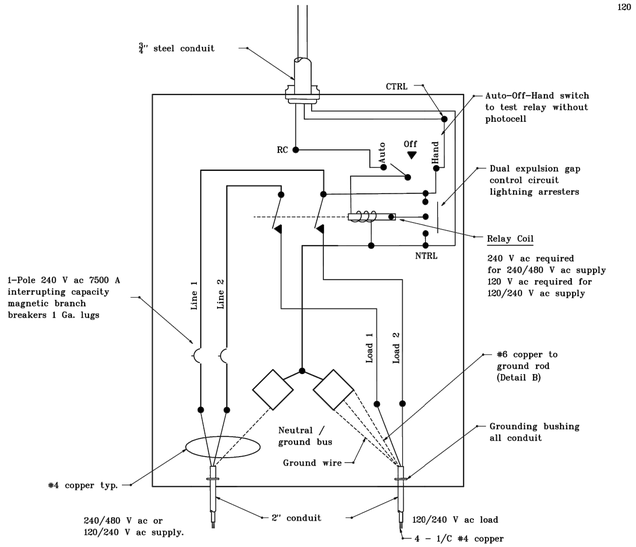
Drawing Number: CS163
Sheet: 150 of 155

Last Saved By: Joe Pinkard 2/23/23
F:\Work\Clear Creek Welcome Center\Drawings\CAD\SHEETS\EB WELCOME CENTER\1364-EB-CS100 STANDARDS-800.dwg Feb 23, 2023-2:39:53 pm

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

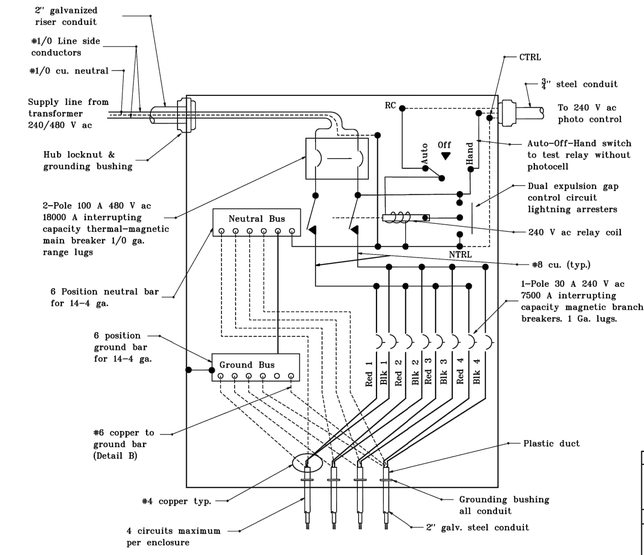
STANDARD DRAWING NO. **E 807-LTSP-03**

RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Anthony L. Uremovich 1-03-00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firoz Zandi 1-03-00
CHIEF HIGHWAY ENGINEER — DATE

DESIGN STANDARDS ENGINEER



TYPICAL CABINET WIRING, TYPE II

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT SERVICE POINT DETAILS

JANUARY 2000

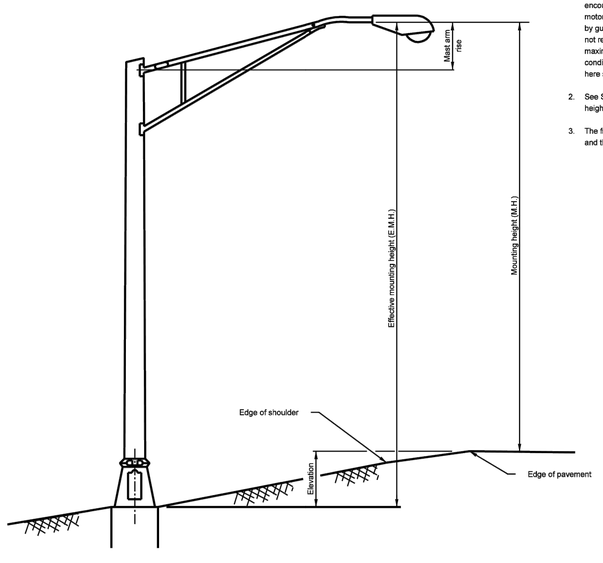
STANDARD DRAWING NO. **E 807-LTSP-04**

RICHARD L. VANCLEAVE REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

/s/ Anthony L. Uremovich 1-03-00
DESIGN STANDARDS ENGINEER — DATE

/s/ Firoz Zandi 1-03-00
CHIEF HIGHWAY ENGINEER — DATE

DESIGN STANDARDS ENGINEER



NOTES

1. Standard Drawings E 807-LTFD-02 through -04 represent the maximum roadside slope normally encountered without guardrail protection. If motorists are protected from the light standard by guardrail, the treatments found herein are not required. These drawings indicate the maximum slopes permissible on the fill. Any conditions more severe than those represented here shall be graded as directed.
2. See Standard Drawing E 807-LTST-02 for mounting heights and dimensions of corresponding components.
3. The front of the foundation shall face the roadway and the back shall face the right-of-way line.

INDIANA DEPARTMENT OF TRANSPORTATION

LIGHT STANDARD FOUNDATION

SEPTEMBER 2002

STANDARD DRAWING NO. E 807-LTST-01

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

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

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

DESIGN STANDARDS ENGINEER

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

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

Certified by: David Hedlund

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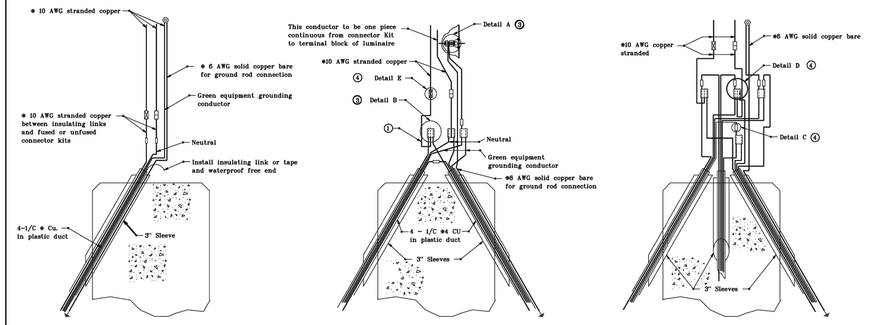


TYPE 1 **TYPE 2** **TYPE 3**

CONNECTION TYPES

NOTES

(1) Allow sufficient conductor slack to permit the withdrawal of outside of pole handhole.

2. Use of inhibiting compound is mandatory for all connections.

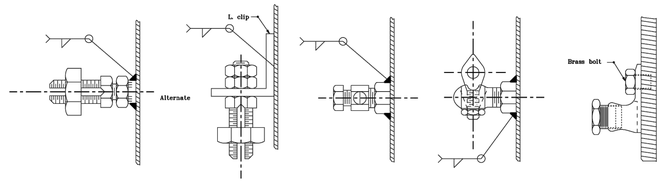
(3) See Standard Drawing E 807-LTWR-02 for details.

(4) See Standard Drawing E 807-LTWR-03 for details.

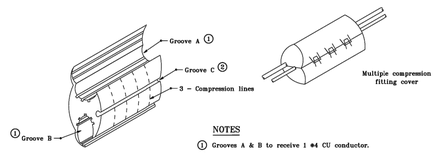
LEGEND

- ◎ — Grounding post
- ▯ — Self insulated splicer (insulating link)
- ⊟ — Unfused connector
- ⊠ — Fused connector
- ◫ — Compression connector

INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHTING WIRING DETAILS	
JANUARY 1996	
STANDARD DRAWING NO. E 807-LTWR-01	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Urmanich 11-15-99 (DESIGN STANDARDS ENGINEER / DATE)
	/s/ Firoz Zaidi 11-15-99 (CHIEF ELGINEER / DATE)
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED 1-02-96



DETAIL A
ALTERNATIVE GROUNDING POSTS



NOTES

(1) Grooves A & B to receive 1 #4 CU conductor.

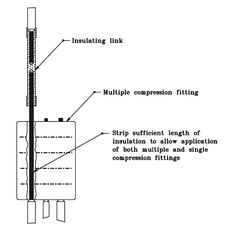
(2) Groove C to receive 1 #10 CU conductor.

DETAIL B
MULTIPLE COMPRESSION FITTING

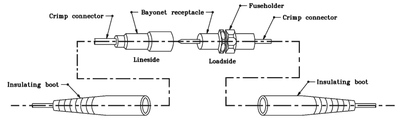
LEGEND

- ◎ — Grounding post
- ▯ — Self insulated splicer (insulating link)
- ⊟ — Unfused connector
- ⊠ — Fused connector
- ◫ — Compression connector

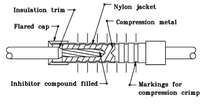
INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHTING WIRING DETAILS	
JANUARY 1996	
STANDARD DRAWING NO. E 807-LTWR-02	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Urmanich 11-15-99 (DESIGN STANDARDS ENGINEER / DATE)
	/s/ Firoz Zaidi 11-15-99 (CHIEF ELGINEER / DATE)
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED 1-02-96



DETAIL D



DETAIL E
BAYONET DISCONNECT CONNECTOR KIT



DETAIL C
INSULATING LINK

LEGEND

- ◎ — Grounding post
- ▯ — Self insulated splicer (insulating link)
- ⊟ — Unfused connector
- ⊠ — Fused connector
- ◫ — Compression connector

INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHTING WIRING DETAILS	
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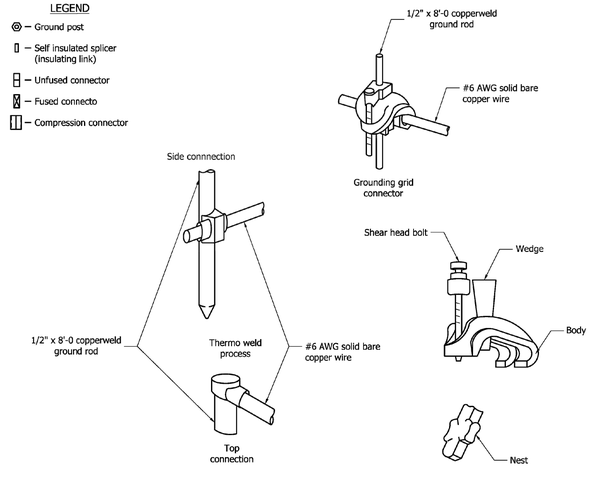
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Urmanich 11-15-99 (DESIGN STANDARDS ENGINEER / DATE)
	/s/ Firoz Zaidi 11-15-99 (CHIEF ELGINEER / DATE)
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED 1-02-96



DETAIL F
TYPICAL GROUND ROD CONNECTION

INDIANA DEPARTMENT OF TRANSPORTATION	
LIGHTING WIRING DETAILS	
SEPTEMBER 2009	
STANDARD DRAWING NO. E 807-LTWR-04	
	/s/ Richard L. VanCleave 09/01/09 (DESIGN STANDARDS ENGINEER / DATE)
	/s/ Mark A. Miller 09/01/09 (CHIEF HIGHWAY ENGINEER / DATE)
DESIGN STANDARDS ENGINEER	

Certified by: David Hedlund

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PUBLIC WORKS PROJECT NO. 84003001-22-058-C1
CLEAR CREEK WELCOME CENTER
VIGO COUNTY, INDIANA

STATE OF INDIANA
DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION
ROOM W467, INDIANA GOVERNMENT CENTER SOUTH
402 WEST WASHINGTON STREET
INDIANAPOLIS, INDIANA 46204
317-232-3000

Revisions:

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Drafter: JRC
Drawing Scale: NONE
DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS165
Sheet: 152 of 155

Last Saved By: Jake Pritchard 2/23/23
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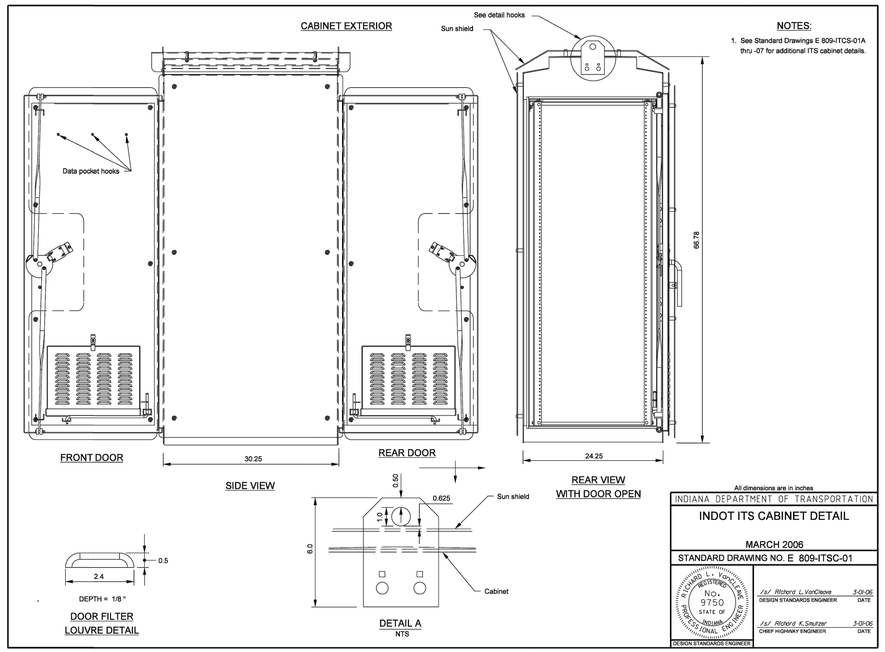


NOTES:

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

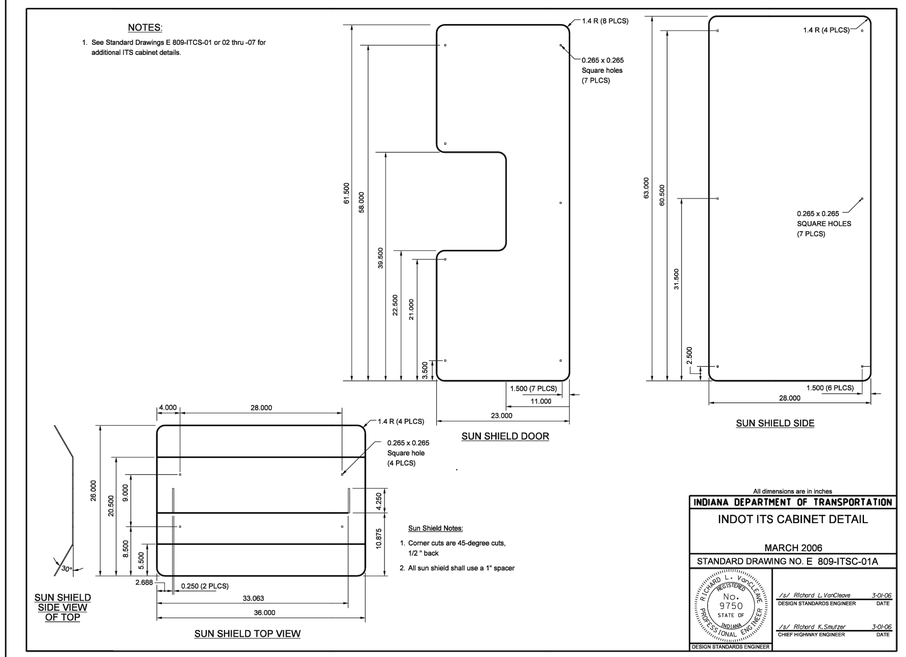
STANDARD DRAWING NO. E 809-ITSC-01

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



All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET DETAIL

MARCH 2006

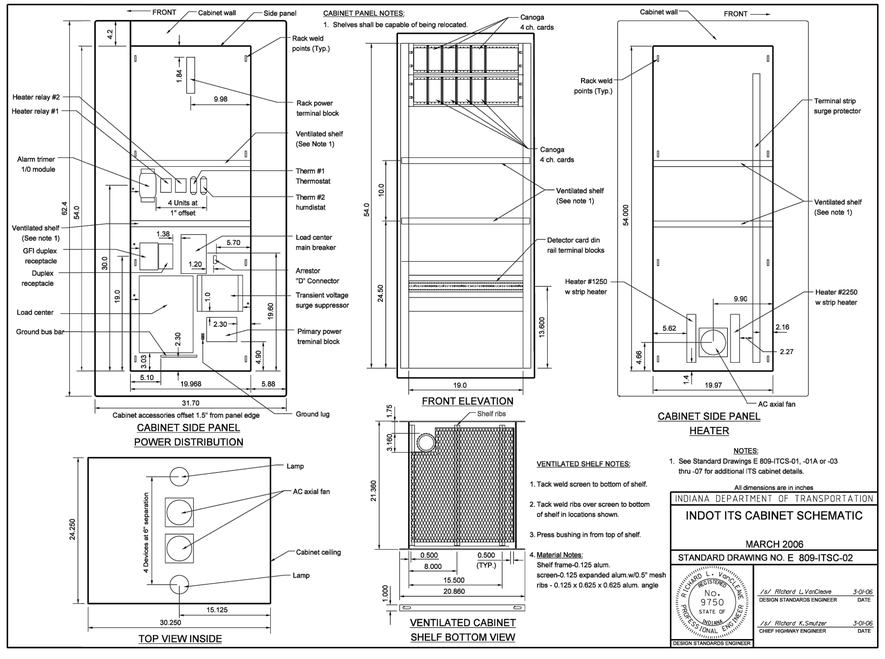
STANDARD DRAWING NO. E 809-ITSC-01A

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



VENTILATED SHELF NOTES:

1. Tack weld screen to bottom of shelf.
2. Tack weld ribs over screen to bottom of shelf in locations shown.
3. Press bushing in from top of shelf.
4. Material Notes:
   Shelf frame-0.125 alum.
   screen-0.125 expanded alum.w/0.5" mesh
   ribs - 0.125 x 0.625 x 0.625 alum. angle

NOTES:

1. See Standard Drawings E 809-ITCS-01, -01A or -03 thru -07 for additional ITS cabinet details.

All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET SCHEMATIC

MARCH 2006

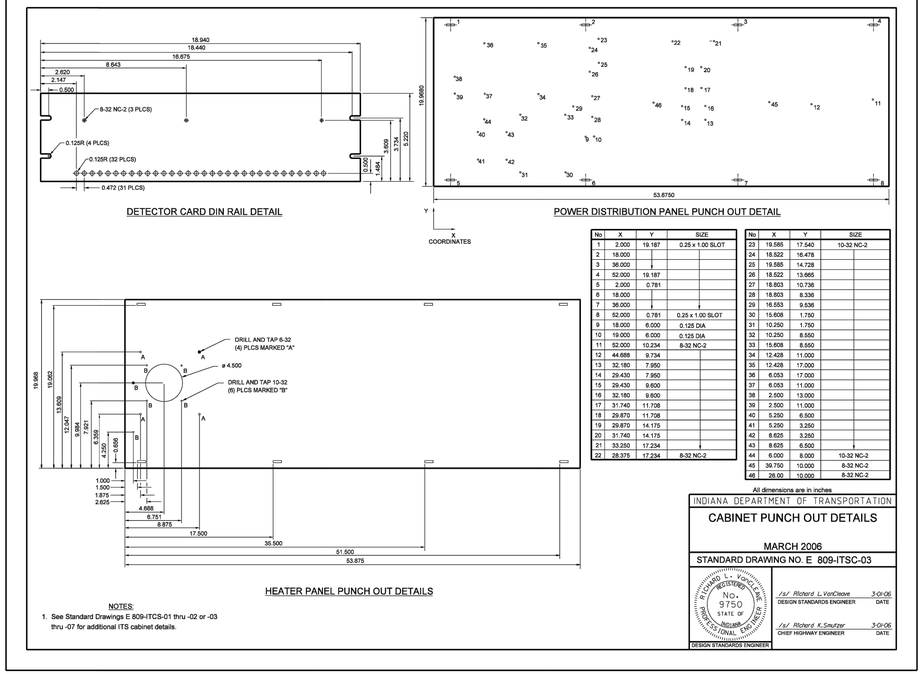
STANDARD DRAWING NO. E 809-ITSC-02

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



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	44.888	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	18.553	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

All dimensions are in inches

INDIANA DEPARTMENT OF TRANSPORTATION

CABINET PUNCH OUT DETAILS

MARCH 2006

STANDARD DRAWING NO. E 809-ITSC-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 Drawings E 809-ITCS-01 thru -02 or -03 thru -07 for additional ITS cabinet details.

Certified by: David Hedlund

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DAPW Approval:
Client Approval:
Reference Number: 1364
Building Reference: -
Drawing Number: CS166
Sheet: 153 of 155

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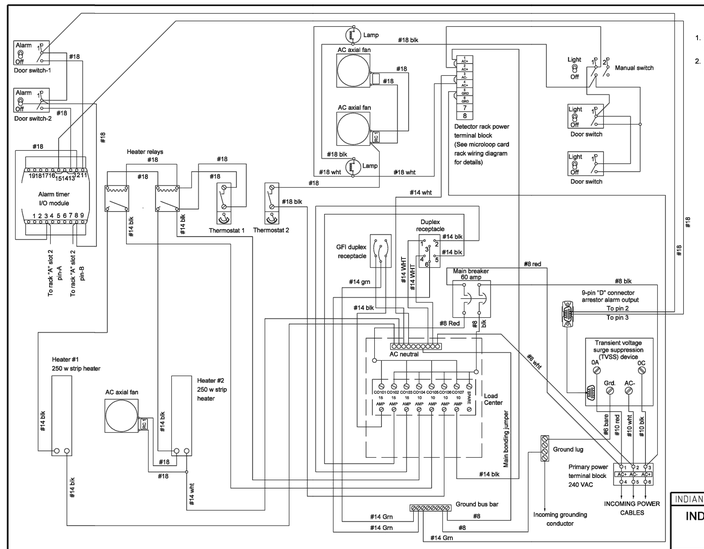


NOTES:

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

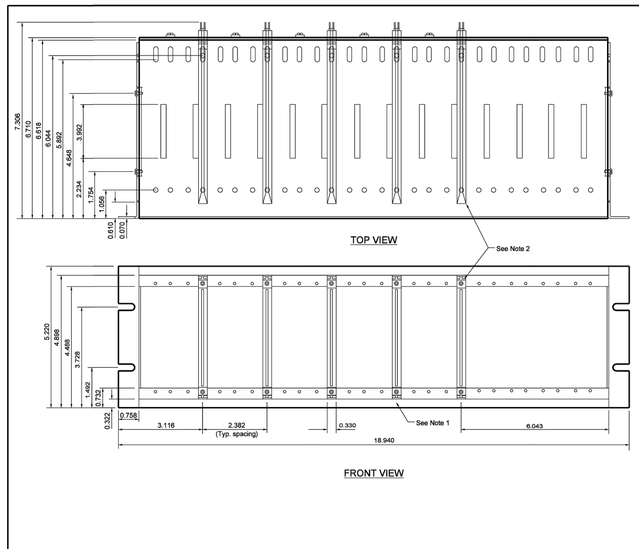
STANDARD DRAWING NO. E 809-ITSC-04

RICHARD L. VAN CLEAVE — 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. 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

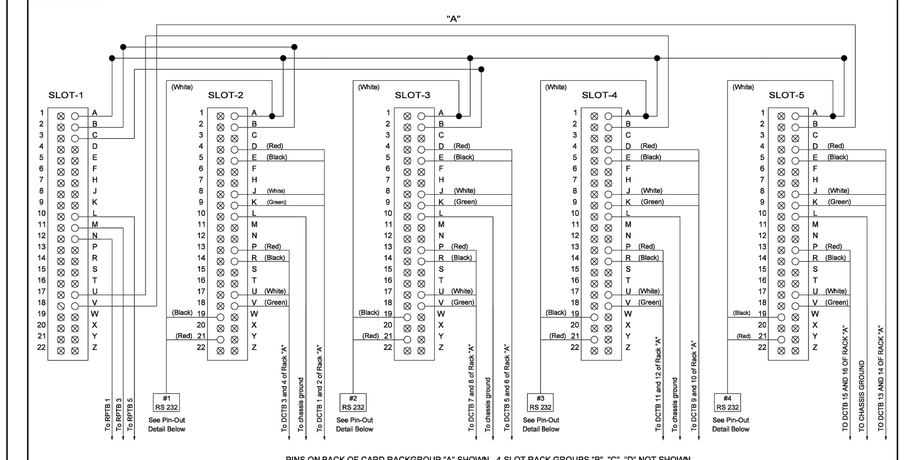
STANDARD DRAWING NO. E 809-ITSC-05

RICHARD L. VAN CLEAVE — 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

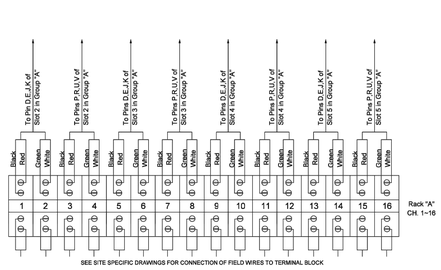
STANDARD DRAWING NO. E 809-ITSC-06

RICHARD L. VAN CLEAVE — REGISTERED — No. 9750 — STATE OF INDIANA — PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

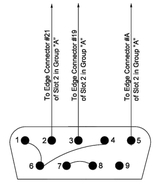
/s/ Richard L VanCleave 3-01-06
DESIGN STANDARDS ENGINEER DATE

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



NOTES:

1. 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.



INDIANA DEPARTMENT OF TRANSPORTATION

INDOT ITS CABINET MICROLOOP CARD RACK WIRING DIAGRAM

MARCH 2006

STANDARD DRAWING NO. E 809-ITSC-06A

RICHARD L. VAN CLEAVE — 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

Certified by: David Hedlund

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Client Approval:	
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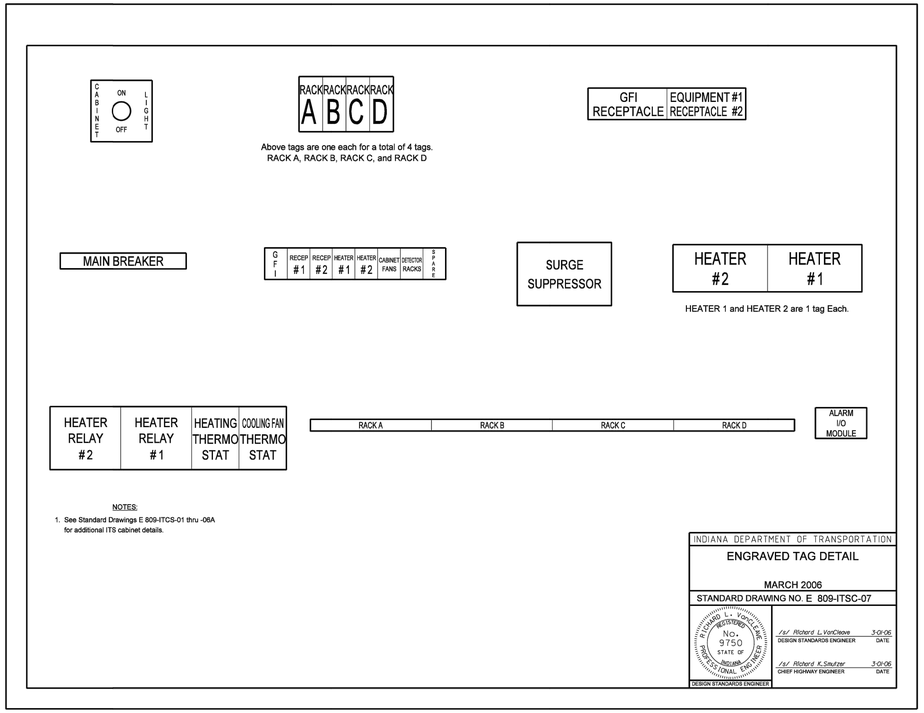

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