THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY

2700 OGDEN AVENUE • DOWNERS GROVE • ILLINOIS • 60515

STANDARD DRAWINGS

VOLUME 1 of 2

MARCH 2025

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Illinois Tollway

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STANDARD DRAWINGS

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ROADWAY PAVEMENT

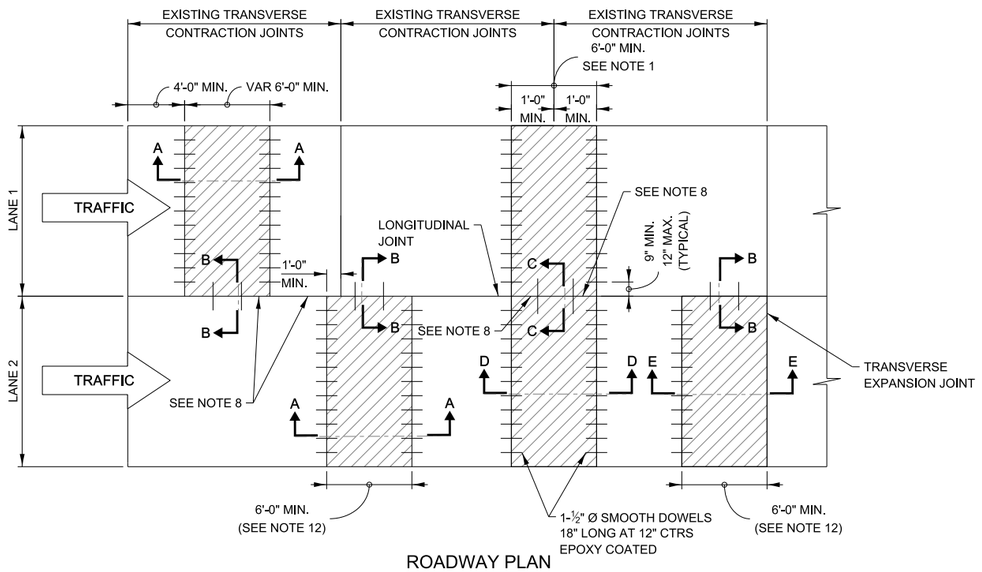
MARCH 2025

Illinois Tollway Standard Drawing Revisions

Section A	Roadway Pavement	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads except for Standards A12 through A17.
	A12-03	**Jointing Plan Entrance Ramp Terminal with Auxiliary Lane**
	Sheet 1	Updated the Dimensions of the Stub from 4' Min to 4' Nominal.
	A13-06	**Jointing Plan Exit Ramp Terminal with Auxiliary Lane**
	Sheet 1	Added a Longitudinal Joint at the gore of the exit ramp.
	A15-09	**Jointing Plan Exit Ramp Terminal**
	Sheet 1	Added a Longitudinal Joint at the gore of the exit ramp.
	A17-08	**Jointing Plan Parallel Entrance Ramp Terminal Loop Ramp Only**
	Sheet 1	Updated the Dimensions of the Stub from 4' Min to 4' Nominal.

New Sheet

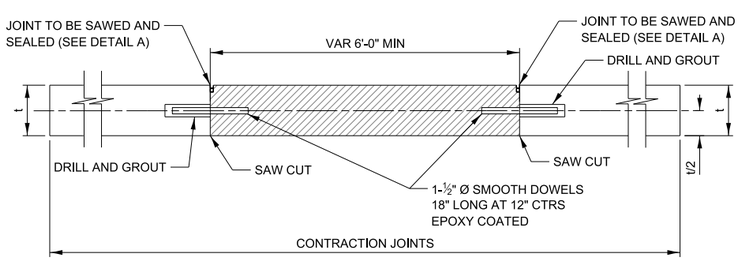
Retired Standard



ROADWAY PLAN

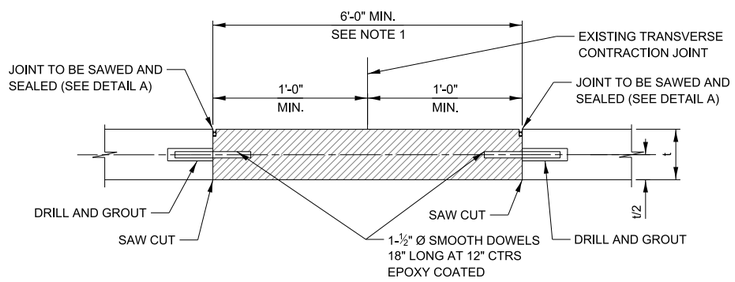
PROPOSED CONCRETE PAVEMENT FULL DEPTH REPAIR TYPICAL

(PAID AS CLASS B PATCH)



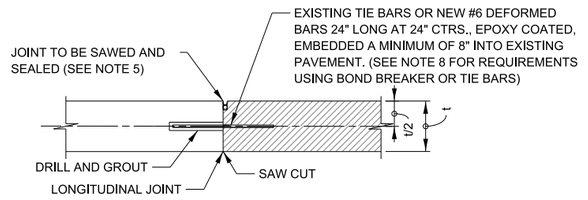
SECTION A-A

REPAIR - FULL DEPTH, ONE LANE



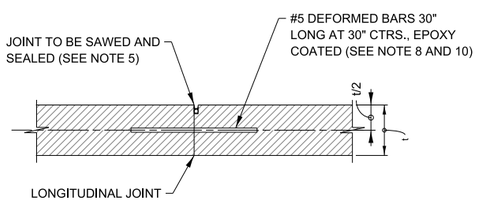
SECTION D-D

REPAIR AT CONTRACTION JOINT



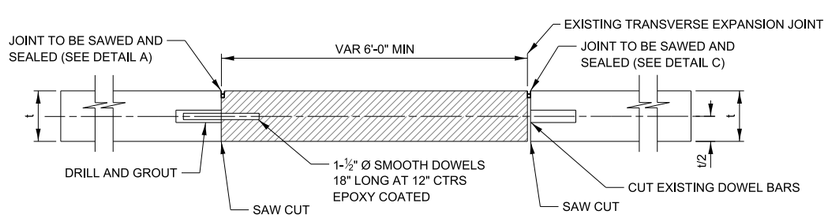
SECTION B-B

REPAIR ALONG LONGITUDINAL JOINT



SECTION C-C

REPAIR THROUGH LONGITUDINAL JOINT



SECTION E-E

REPAIR - FULL DEPTH, ONE LANE

TRANSVERSE EXPANSION JOINT

GENERAL NOTES:

1. THE MINIMUM OVERALL DIMENSIONS OF REPAIRS SHALL BE SIX (6) FEET BY THE LANE WIDTH EXCEPT FOR REPLACEMENT OF DETERIORATED PAVEMENT EDGES ADJACENT TO PROPOSED WIDENING (SEE SECTION F-F). REPAIRS TERMINATING AT TRANSVERSE CONTRACTION JOINTS SHALL BE EXTENDED ONE FOOT ACROSS THE JOINT. WHEN A REPAIR EXTENDS WITHIN FOUR FEET OF AN EXISTING TRANSVERSE CONTRACTION JOINT THE REPAIR SHALL BE EXTENDED ONE FOOT BEYOND THE JOINT.
2. WHENEVER A REPAIR IS CONSTRUCTED IN TWO OR MORE SEGMENTS BECAUSE OF MAINTENANCE OF TRAFFIC STAGING REQUIREMENTS, EACH SEGMENT SHALL BE CONSIDERED A SEPARATE PATCH WITH SIX (6) FEET MINIMUM DIMENSION.
3. UNLESS OTHERWISE NOTED, DRILLED AND GROUTED DOWELS SHALL BE EMBEDDED ½ THEIR LENGTH INTO THE EXISTING CONCRETE USING CHEMICAL ADHESIVE AS SPECIFIED.
4. UNLESS OTHERWISE NOTED, TIE BARS SHALL BE EMBEDDED ⅓ THEIR LENGTH INTO THE EXISTING CONCRETE USING CHEMICAL ADHESIVE AS SPECIFIED.
5. SAW CUTTING AND SEALING OF LONGITUDINAL JOINTS IN THE REPAIR AREAS SHALL FOLLOW IDOT HIGHWAY STANDARD 420001 (PAVEMENT JOINTS) WHERE TIE BARS ARE NEEDED OR DETAIL B WHERE BOND BREAKER IS USED. SEE NOTE 8 TO DETERMINE JOINT REQUIREMENTS. JOINT SEALING IS NOT REQUIRED FOR PAVEMENT BEING RESURFACED.
6. FOR REPAIR OF ASPHALT OVERLAY AND P.C.C. PAVEMENT, THE SAWCUT SHALL BE FULL DEPTH. THE PATCH SHALL MEET EXISTING CROSS SECTION MATERIALS THICKNESS.
7. AT LOCATIONS OF PROPOSED PAVEMENT WIDENING, EDGE DETERIORATION REQUIRING FULL DEPTH REPAIR SHALL BE REPAIRED BY REMOVAL AND REPLACEMENT OF A MINIMUM OF 1'-6" WIDE STRIP. SAW CUTTING AND REMOVAL WILL BE PAID PER ARTICLE 109.04 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS, UNLESS OTHERWISE PROVIDED IN THE CONTRACT. THE ADDITIONAL PAVEMENT WIDTH REPLACING THE EDGE DETERIORATION SHALL BE CONSTRUCTED MONOLITHICALLY WITH THE PAVEMENT WIDENING. THIS ADDITIONAL PAVEMENT SHALL BE PAID USING CONTRACT PAVEMENT WIDENING ITEMS IN ACCORDANCE WITH ARTICLE 109.03 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
8. WHEN PROPOSED TRANSVERSE JOINTS ARE OFFSET FROM EXISITING JOINTS IN ADJACENT PAVEMENT TO REMAIN, BOND BREAKER SHALL BE USED AT THE LONGITUDINAL JOINT ADJACENT TO THE EXISTING PAVEMENT, WITH TIE BARS OMITTED. WHEN PROPOSED TRANSVERSE JOINTS LINE UP WITH ADJACENT JOINTS, TIE BARS SHALL BE USED WITH NO BOND BREAKER.
9. TYPICAL ROADWAY PLAN FOR FULL DEPTH REPAIR IS APPLICABLE TO ALL PAVEMENTS, LANE WIDTHS AND NUMBER OF EXISTING LANES.
10. THE TIE BAR FOR THE LONGITUDINAL SAWED JOINT SHALL BE 15" FROM THE TRANSVERSE CONTRACTION JOINT.
11. OMIT SEALING OF ALL JOINTS IN THE REPAIR AREA OF PAVEMENT TO BE RESURFACED.
12. THE MAXIMUM LENGTH BETWEEN TRANSVERSE CONTRACTION JOINTS IN ANY PATCH SHALL BE 15'.
13. CONTRACTOR WILL BE RESPONSIBLE TO ATTAIN A SMOOTHNESS REQUIREMENT OF PASSING A 3/16TH INCH BUMP TEST USING A 16' ROLLING STRAIGHT EDGE AFTER PATCHING IS COMPLETE. DIAMOND GRINDING MAY BE USED TO RESTORE RIDE QUALITY AND IS INCIDENTAL TO THE WORK UNLESS OTHERWISE SPECIFIED IN THE PLANS.

LEGEND

- EXISTING PAVEMENT
- PROPOSED CONCRETE PAVEMENT REPAIR - FULL DEPTH
- PROPOSED CONCRETE PAVEMENT WIDENING

t = CONCRETE PAVEMENT THICKNESS

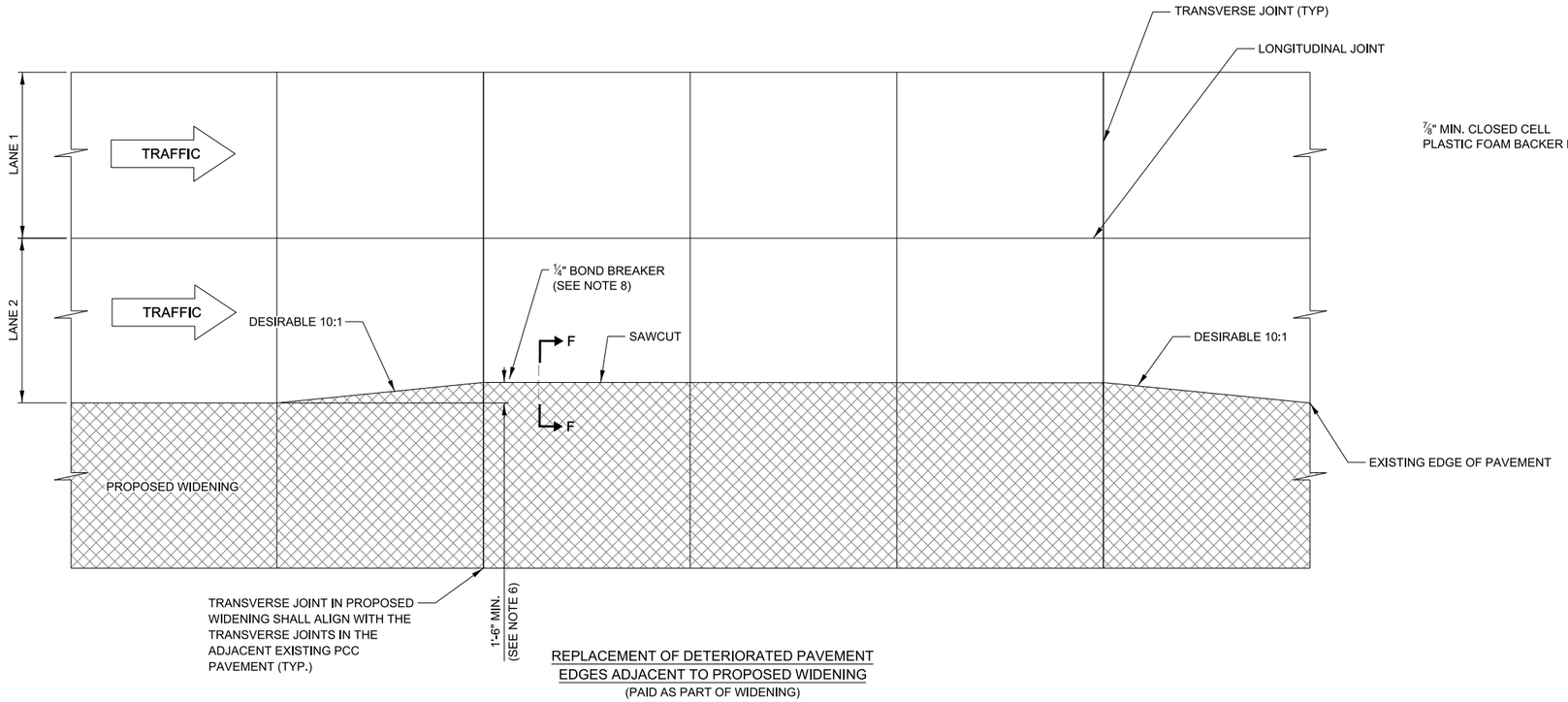
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2021

REVISIONS	
DATE	DESCRIPTION
03-01-2021	REVISED NOTES
03-01-2020	ADDED TRANSVERSE EXPANSION JOINT
03-01-2019	REVISED NOTES
03-01-2018	REMOVED TIE BARS & REVISED NOTES
	TAPER SAW CUT

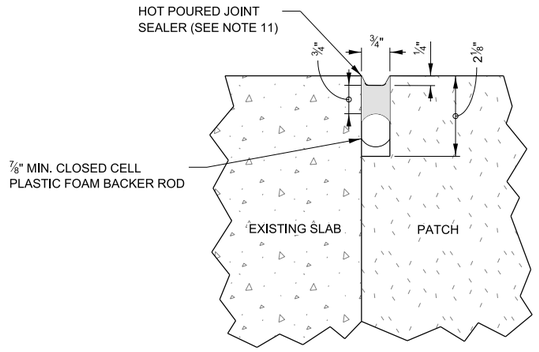
Illinois Tollway

CONCRETE PAVEMENT REPAIR FULL DEPTH

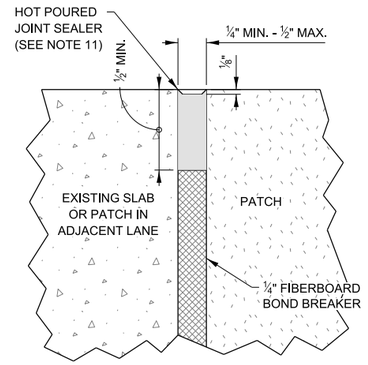
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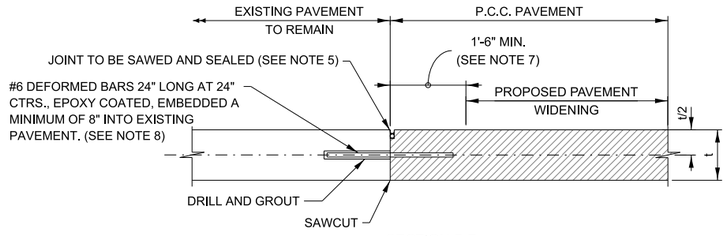
REPLACEMENT OF DETERIORATED PAVEMENT EDGES ADJACENT TO PROPOSED WIDENING
(PAID AS PART OF WIDENING)



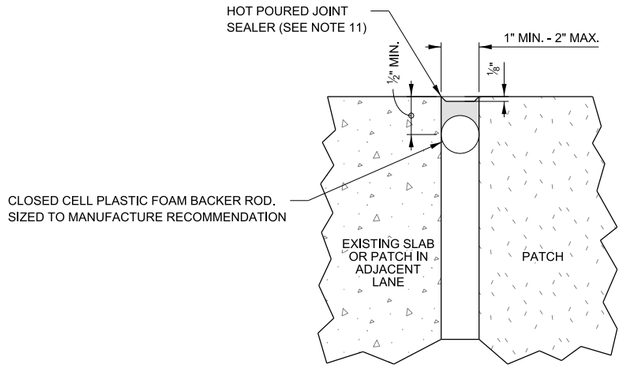
DETAIL A
(TRANSVERSE JOINT)



DETAIL B
(LONGITUDINAL JOINT)



SECTION F-F
REPLACEMENT OF DETERIORATED PAVEMENT
EDGES ADJACENT TO PROPOSED WIDENING



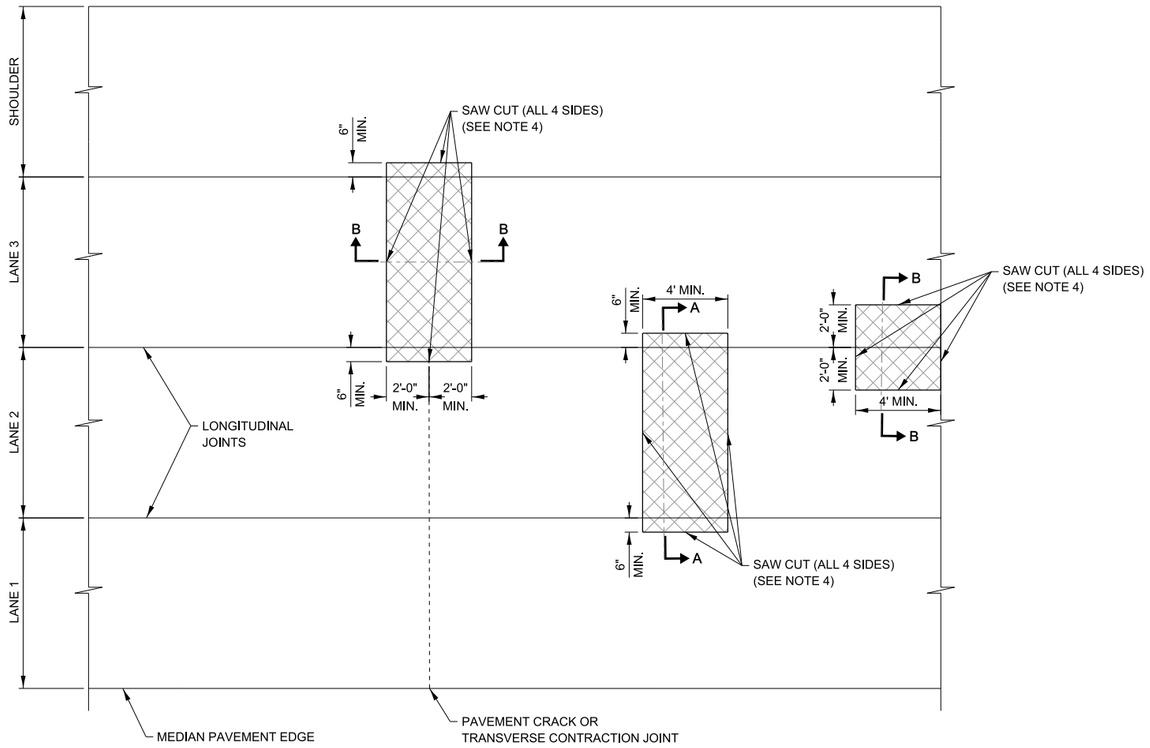
DETAIL C
(TRANSVERSE EXPANSION JOINT)

APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2021

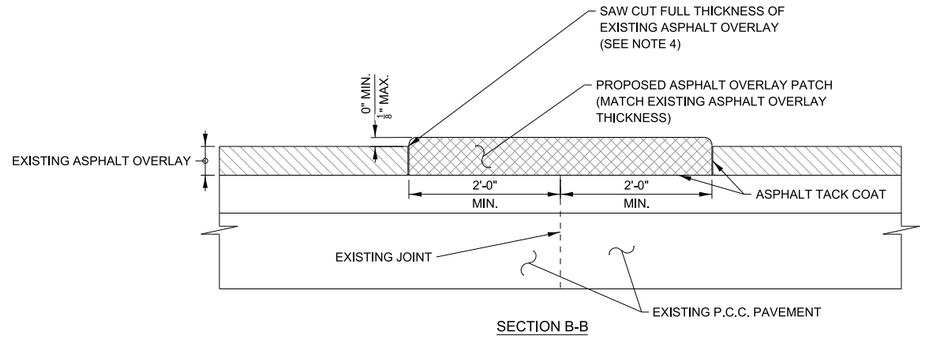
Illinois Tollway

CONCRETE PAVEMENT REPAIR FULL DEPTH

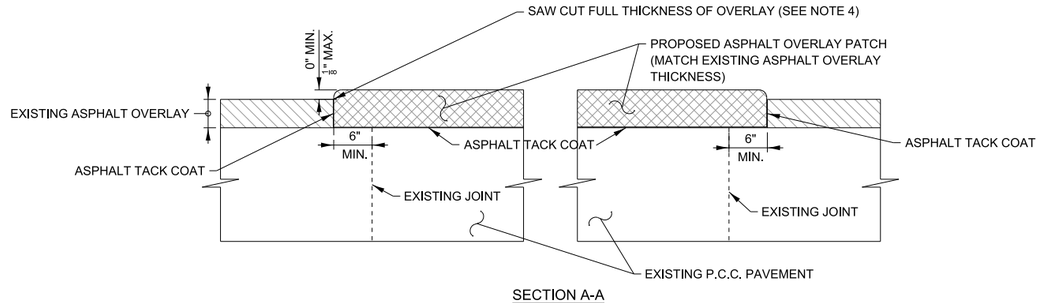
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PROPOSED ASPHALT OVERLAY REPAIR
TYPICAL ROADWAY PLAN



SECTION B-B



SECTION A-A
ASPHALT OVERLAY REPAIR

NOTES:

1. LOCATION OF ALL OVERLAY REPAIR AREAS SHALL BE DETERMINED BY THE ENGINEER.
2. MINIMUM DIMENSIONS SHALL BE AS SHOWN IN TYPICAL ROADWAY PLAN.
3. ALL ASPHALT OVERLAY SHALL BE REMOVED TO THE TOP OF THE P.C.C. PAVEMENT.
4. SAWCUT MAY BE ELIMINATED IF MILLING EQUIPMENT IS USED AND VERTICAL AND STRAIGHT SIDES ARE OBTAINED. TRANSVERSE SAWCUTS ARE ALWAYS REQUIRED.

LEGEND

EXISTING ASPHALT OVERLAY

PROPOSED PAVEMENT REPAIR

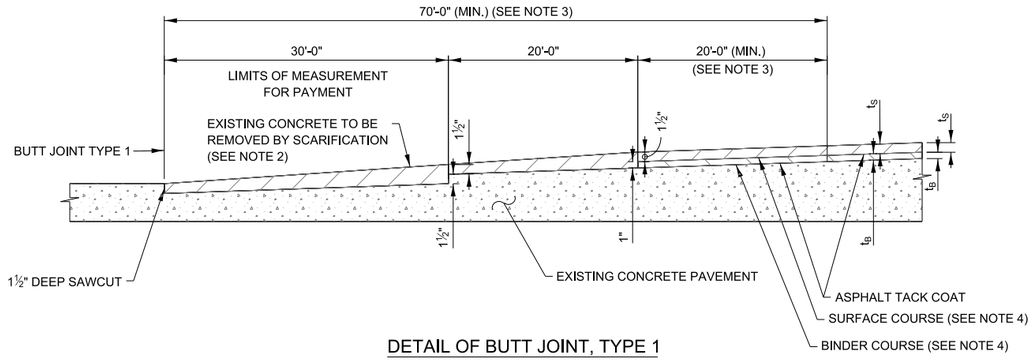
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2021

REVISIONS	
DATE	DESCRIPTION
03-01-2021	UPDATED MIN PAVEMENT DIMENSIONS
03-01-2020	REVISED NOTES
03-01-2019	REVISED NOTES
03-31-2017	REVISED SPECIAL PROVISION
	REFERENCE

Illinois Tollway

ASPHALT OVERLAY REPAIR

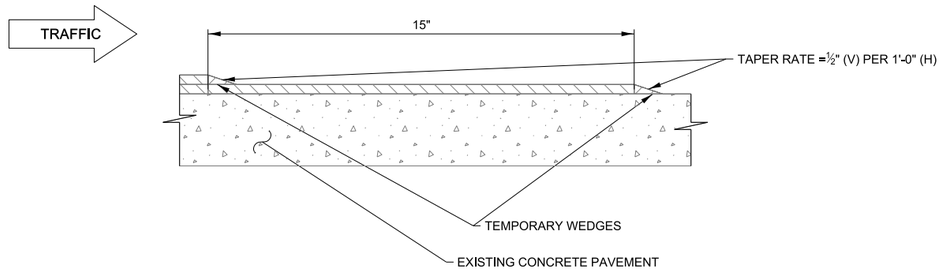
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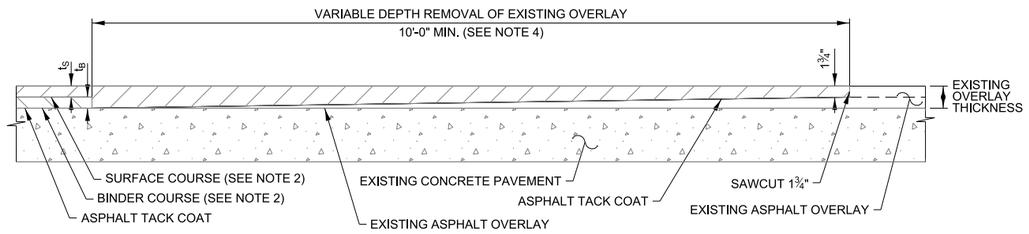
DETAIL OF BUTT JOINT, TYPE 1

NOTES FOR BUTT JOINT, TYPE 1

1. THE ABOVE WORK WILL BE PERFORMED AT THE ENDS OF ALL ASPHALT RESURFACING.
2. ONLY APPROVED SCARIFYING OR MILLING EQUIPMENT SHALL BE USED TO SCARIFY THE CONCRETE PAVEMENT.
3. REGARDLESS OF TYPE OF SURFACE MIX USED, NUMBER OR THICKNESS OF COURSES OR LAYERS, THE OVERLAY THICKNESS TRANSITION LENGTH SHALL BE BASED ON 1" IN 20' AND THE MINIMUM SURFACE LAYER THICKNESS SHALL BE 1½".
4. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS. "t_S" IS THE THICKNESS OF THE SURFACE COURSE SPECIFIED IN THE CONTRACT. "t_B" IS THE THICKNESS OF THE BINDER COURSE SPECIFIED IN THE CONTRACT.



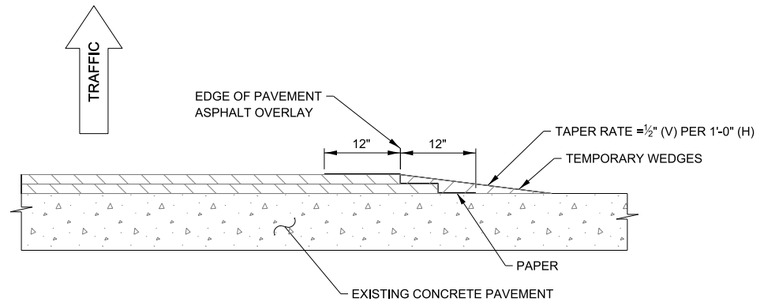
TEMPORARY ASPHALT WEDGE - TRANSVERSE



DETAIL OF BUTT JOINT, TYPE 2 AT EXISTING OVERLAY AREAS

NOTES FOR BUTT JOINT, TYPE 2

1. THE ABOVE WORK WILL BE PERFORMED AT THE ENDS OF ALL ASPHALT RESURFACING WHERE BUTT JOINTS EXIST.
2. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS. "t_S" IS THE THICKNESS OF THE SURFACE COURSE SPECIFIED IN THE CONTRACT. "t_B" IS THE THICKNESS OF THE BINDER COURSE SPECIFIED IN THE CONTRACT.
3. SAWCUT MAY BE ELIMINATED IF MILLING EQUIPMENT IS USED AND VERTICAL AND STRAIGHT SIDES ARE OBTAINED.
4. REGARDLESS OF TYPE OF SURFACE MIX USED, NUMBER OR THICKNESS OF COURSES OR LAYERS, THE OVERLAY THICKNESS TRANSITION LENGTH SHALL BE BASED ON 1" IN 20' AND THE MINIMUM SURFACE LAYER THICKNESS SHALL BE 1¾".



TEMPORARY ASPHALT WEDGE - LONGITUDINAL

NOTES FOR TEMPORARY ASPHALT WEDGE - LONGITUDINAL

1. UPON REMOVAL OF THE WEDGES, THE SURFACE COURSE SHALL BE SAWCUT PARALLEL TO THE JOINT TO PROVIDE A TRUE VERTICAL SURFACE.
2. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS.

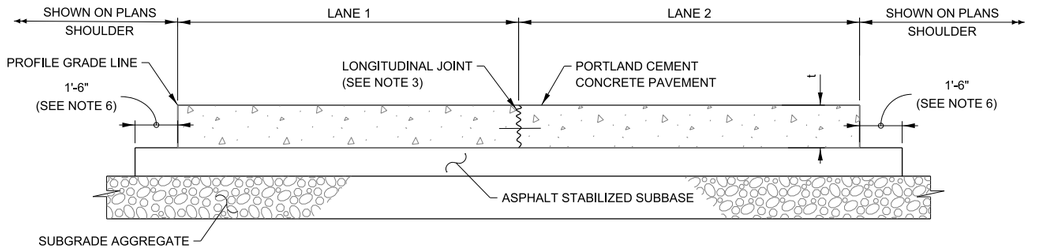
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2018	ADDED DIRECTION ARROWS
03-31-2017	REMOVED PAY ITEM DESIGNATION FROM
	NOTES REVISED MIN t THICKNESS
	UPDATED BUTT JOINT TYPE 2
	ADDED TRAFFIC ARROWS

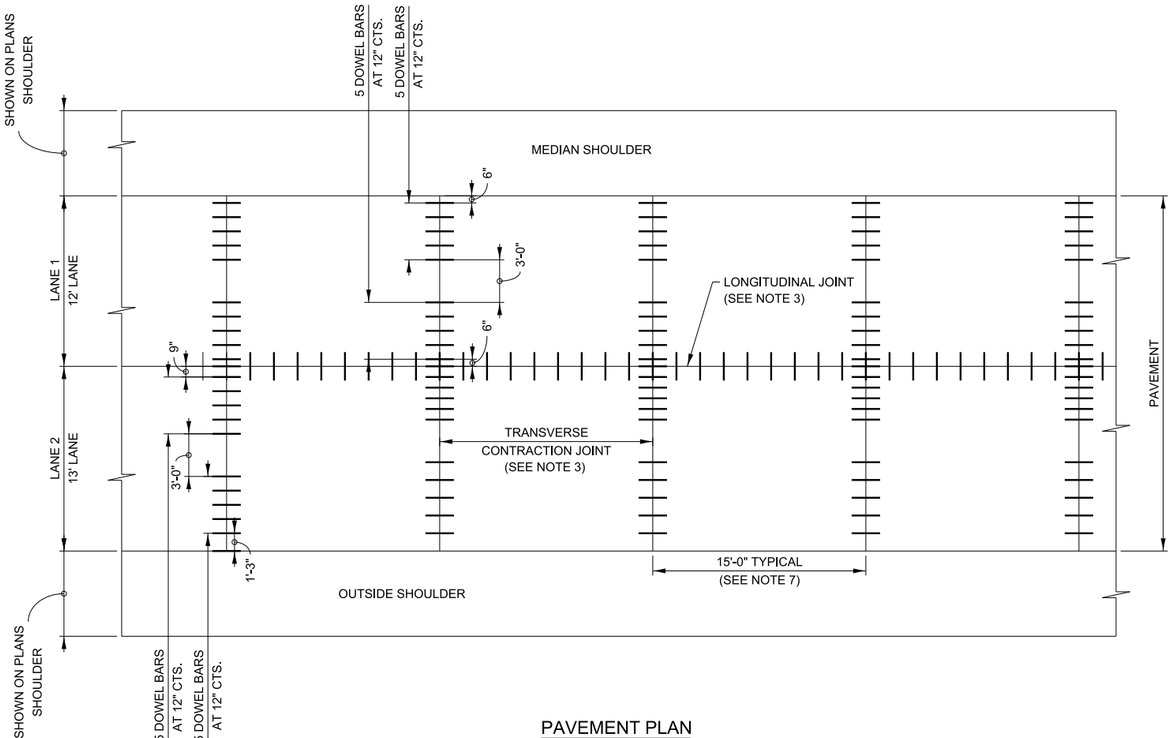
BUTT JOINTS AND TEMPORARY ASPHALT WEDGE

VERSION:	STANDARD:	SHEET:
2018-03	A4-05	1 OF 1



PAVEMENT CROSS - SECTION
2 LANES

t = CONCRETE PAVEMENT THICKNESS



PAVEMENT PLAN
2 - LANE SECTION

GENERAL NOTES:

1. DOWEL BASKET ASSEMBLIES, WHERE USED, SHALL BE SUPPORTED AND ANCHORED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
2. MATERIALS ARE PROJECT SPECIFIC. REFER TO PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS.
3. SEE ILLINOIS TOLLWAY STANDARD DRAWING A7 (PAVEMENT JOINTS) AND IDOT HIGHWAY STANDARD 420001 (PAVEMENT JOINTS) FOR DETAILS OF JOINTS AND TIE BARS NOT SHOWN.
4. PAVEMENT DESIGNS ARE PROJECT SPECIFIC, OTHER MATERIALS MAY BE SUBSTITUTED FOR ASPHALT STABILIZED SUBBASE AND SUBGRADE AGGREGATE. REFER TO PROJECT PLANS FOR DETAILS AND MATERIAL THICKNESS.
5. THE TIE BAR FOR THE LONGITUDINAL SAWED JOINT SHALL BE 18" FROM THE TRANSVERSE CONTRACTION JOINT.
6. THE 1'-6" WIDE ASPHALT STABILIZED SUBBASE MAY BE REDUCED TO 1'-0" WHEN PAVING EQUIPMENT UTILIZED FOR CONSTRUCTION OF THE PCC PAVEMENT WILL ALLOW.
7. THE 15'-0" TYPICAL TRANSVERSE JOINT SPACING DIMENSION SHALL BE ADJUSTED TO 12'-0" MIN. TO 18'-0" MAX. WHEN PLACED ADJACENT TO EXISTING PCC PAVEMENT STRUCTURE SO THAT THE JOINTS ARE IN PROLONGATION. ADJUST THE TIE BAR SPACING TO MAINTAIN A CLEARANCE OF 6" FROM DOWEL BARS.
8. SEE ILLINOIS TOLLWAY STANDARD DRAWINGS A12, A13, A14, A15, A16 AND A17 FOR CONCRETE SLAB WIDTH.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

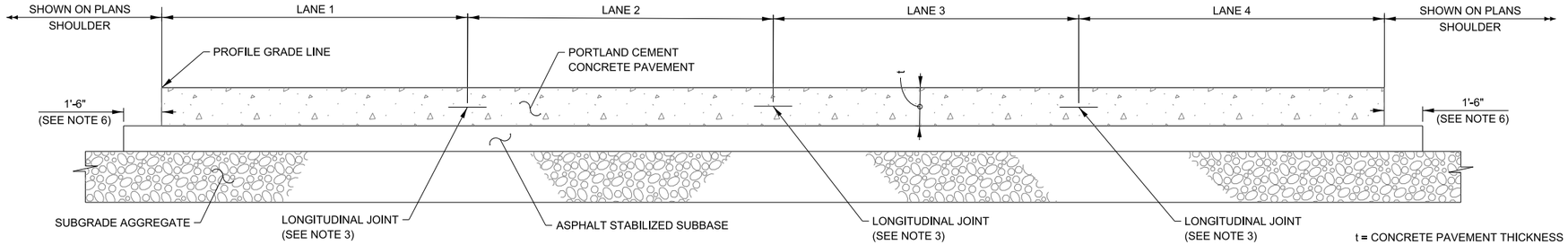
DATE:
03/01/2024

Illinois Tollway

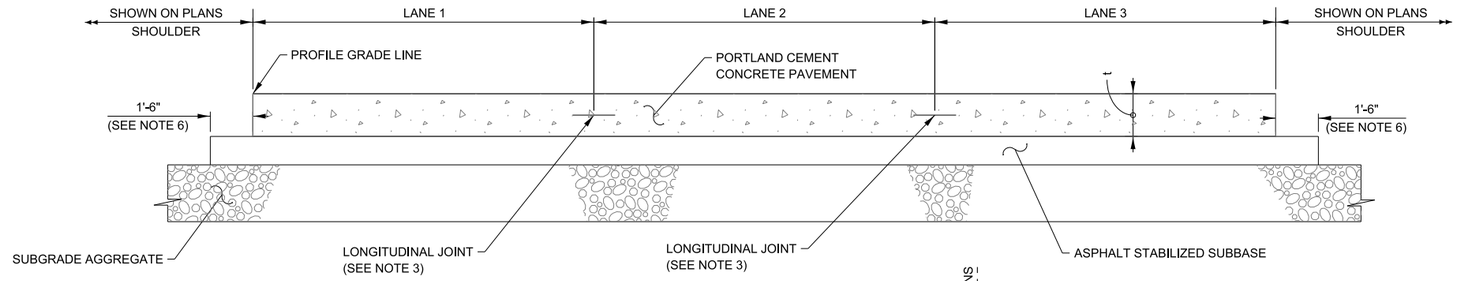
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED NEW SHEET WITH RAMP PAVEMENT DETAIL. ADDED NOTE 8 IN GENERAL NOTES
03-01-2021	UPDATED NOTES
03-01-2020	UPDATED CROWN AND DOWELS
03-01-2019	UPDATED NOTES
03-01-2018	CORRECTED DIMENSION

J.P.C. PAVEMENT

VERSION:	STANDARD:	SHEET:
2024-03	A5-08	1 OF 3

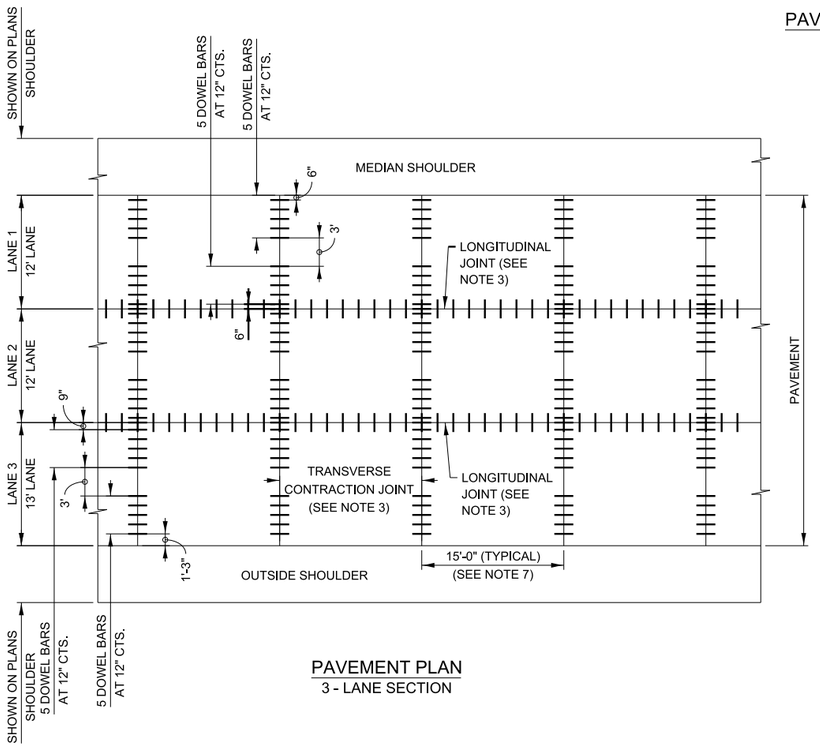


PAVEMENT CROSS - SECTION
4 LANES

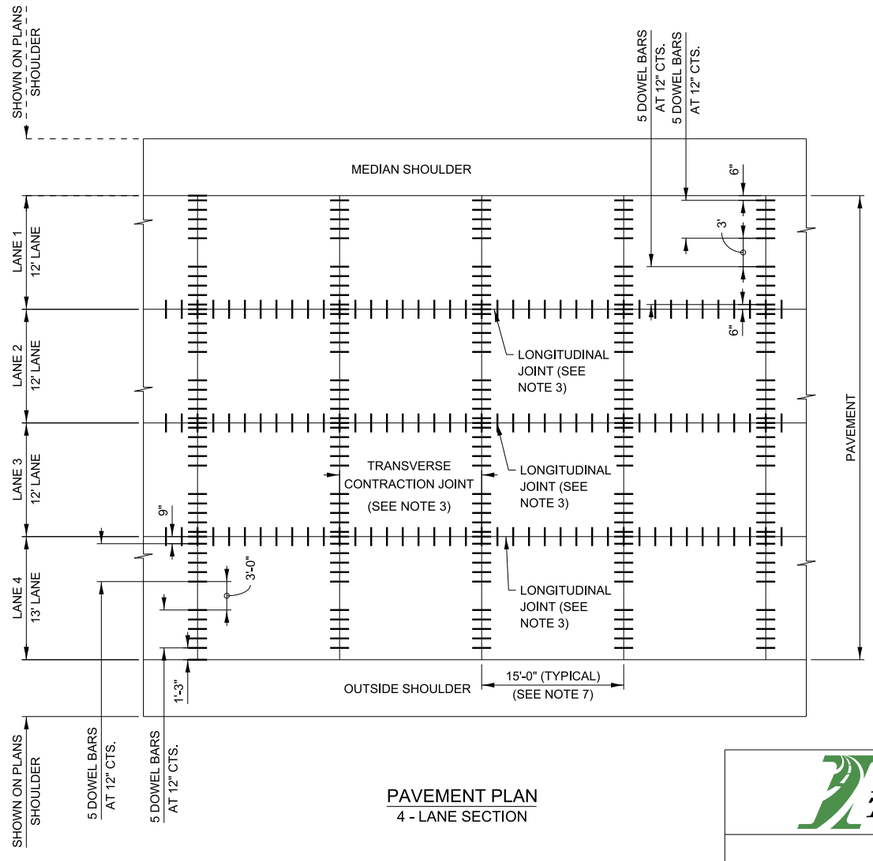


PAVEMENT CROSS - SECTION
3 LANES

SEE SHEET 1 IN THIS SERIES FOR GENERAL NOTES.



PAVEMENT PLAN
3 - LANE SECTION



PAVEMENT PLAN
4 - LANE SECTION

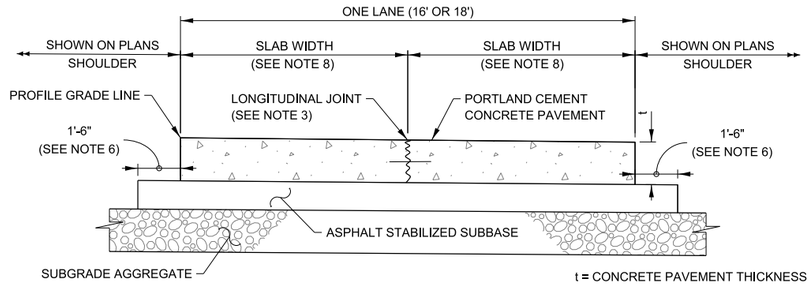
APPROVED BY:
Marua Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

Illinois Tollway

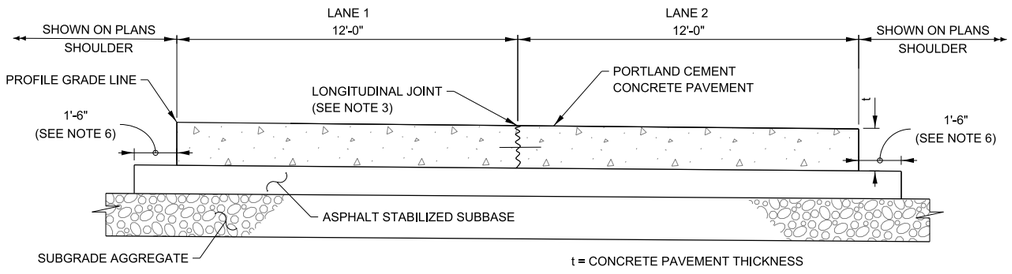
J.P.C. PAVEMENT

VERSION:	STANDARD:	SHEET:
2024-03	A5-08	2 OF 3

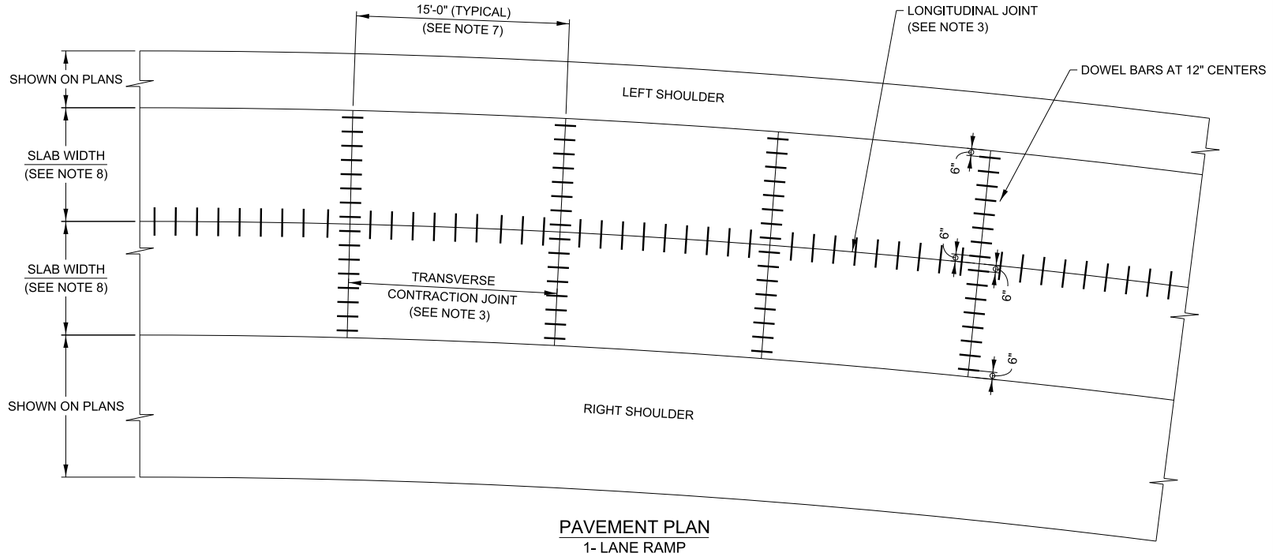


PAVEMENT CROSS - SECTION
1- LANE RAMP

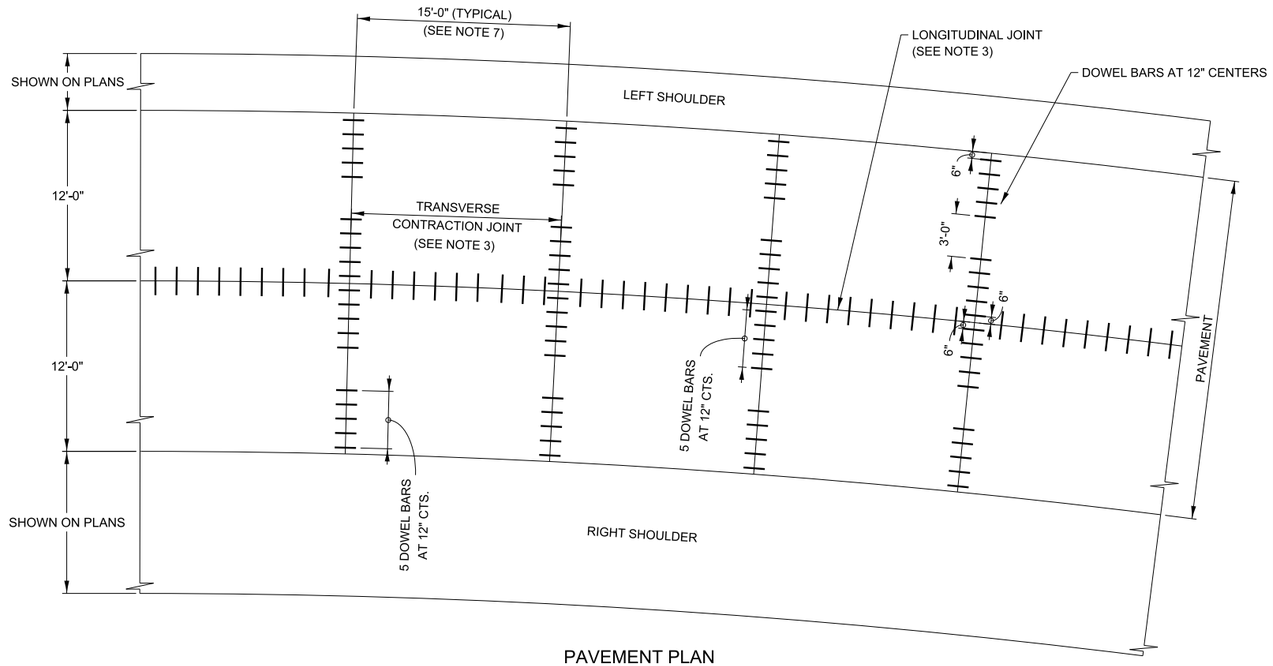
SEE SHEET 1 IN THIS SERIES FOR GENERAL NOTES.



PAVEMENT CROSS - SECTION
2- LANE RAMP



PAVEMENT PLAN
1- LANE RAMP



PAVEMENT PLAN
2 - LANE RAMP

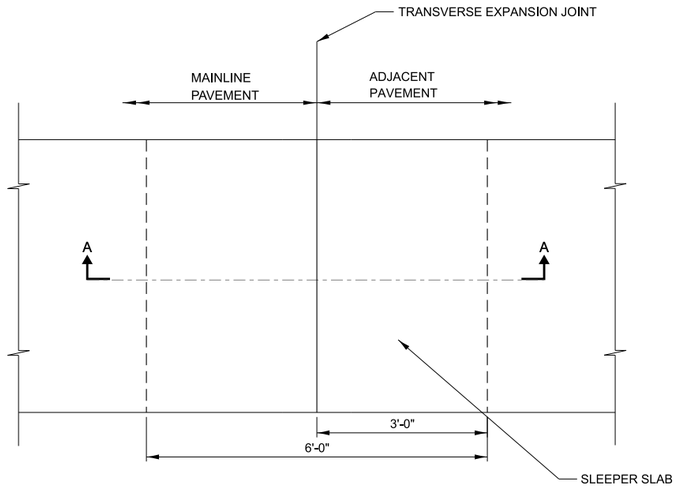
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

Illinois Tollway

J.P.C. PAVEMENT

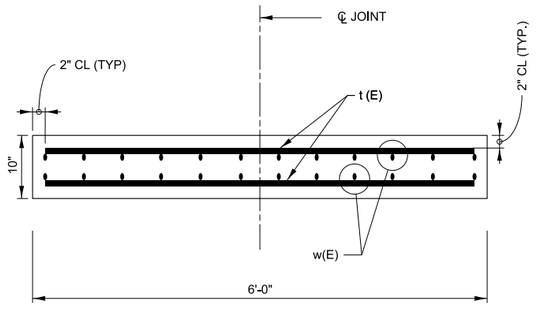
VERSION:	STANDARD:	SHEET:
2024-03	A5-08	3 OF 3



PLAN

SLEEPER SLAB NOTES

1. ADDITIONAL THICKNESS OF PAVEMENT SHALL BE INCLUDED IN THE COST OF THE PAY ITEM FOR THE PAVEMENT TYPE.
2. POLYETHYLENE SHEET AND AGGREGATE SUPPORTING THE SLEEPER SLAB SHALL BE INCLUDED IN THE COST OF SLEEPER SLAB.

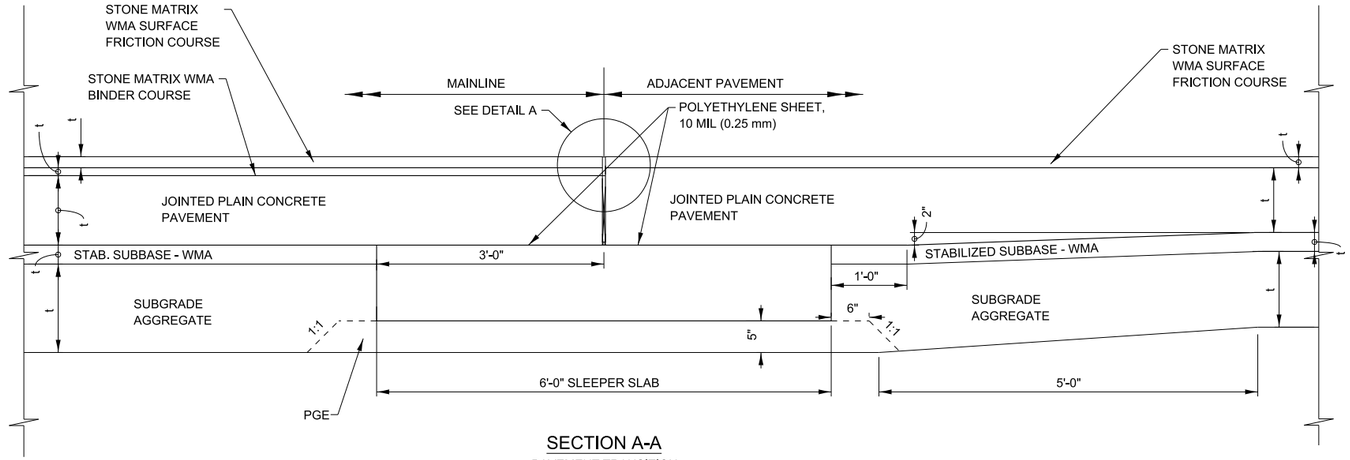


SLEEPER SLAB SECTION

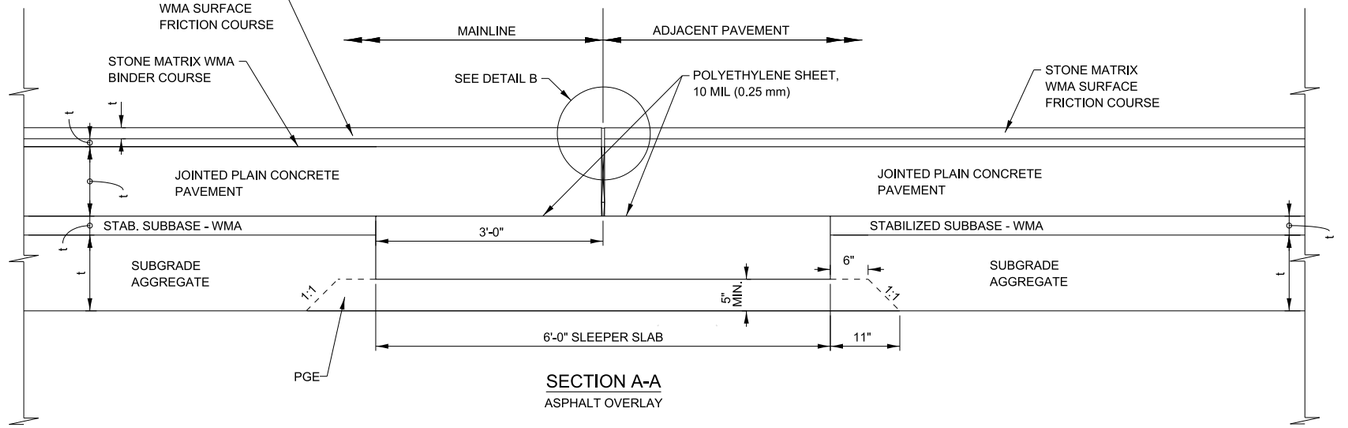
Bar	No.	Size	Length
t(E)	XX	#4	5'-8"
w(E)	XX	#5	XX

SLEEPER SLAB SECTION NOTES

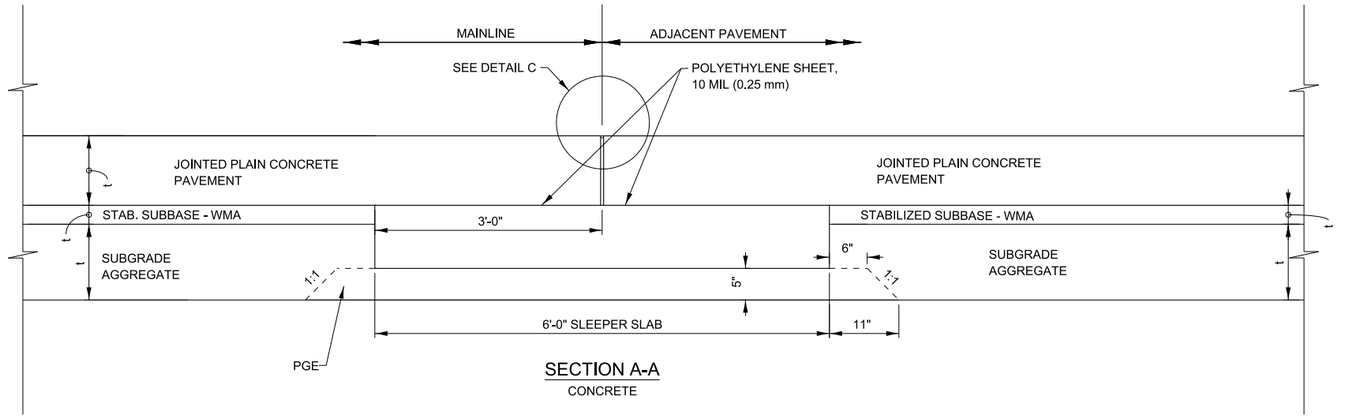
1. t(E) BARS SHALL BE PLACED AT 12" CENTERS.
2. w(E) NUMBER AND LENGTH DEPEND ON WIDTH OF ROADWAY.
3. USE 2'-8" MIN LAP FOR #4 BARS. USE 4-0" MIN. LAP FOR #5 BARS.



SECTION A-A
PAVEMENT TRANSITION



SECTION A-A
ASPHALT OVERLAY



SECTION A-A
CONCRETE

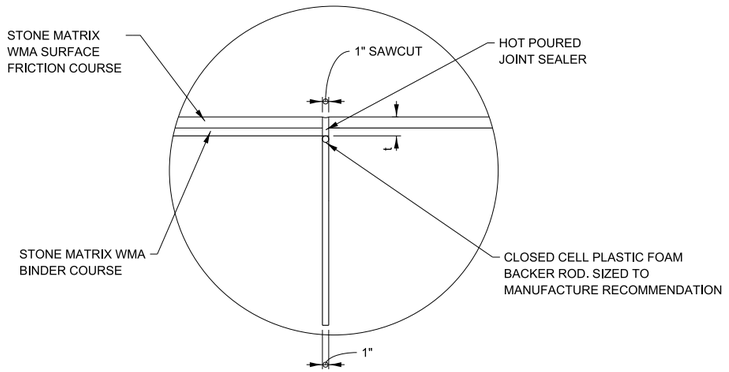
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE:
03/01/2022

REVISIONS	
DATE	DESCRIPTION
3-01-2022	REMOVED CAPPING AGG
3-01-2021	UPDATED NOTES
3-01-2020	REVISED TRANSVERSE EXPANSION JOINT
5-01-2017	MODIFIED JOINT DETAIL, REVISED NOTES
3-31-2017	ADDED TRANSVERSE EXPANSION JOINT
3-31-2016	REVISED 13" PAVE NOTE FOR DOWEL BAR

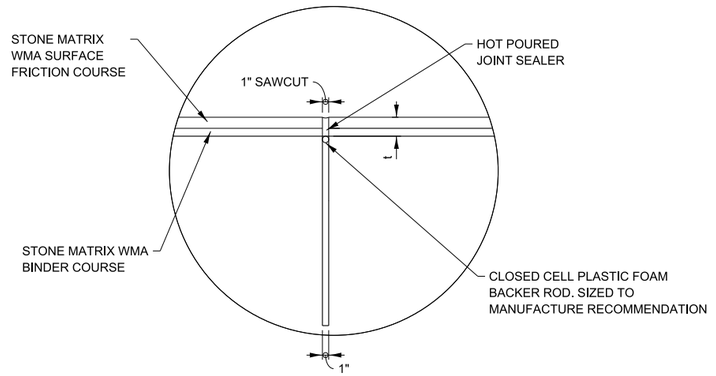
Illinois Tollway

PAVEMENT JOINTS

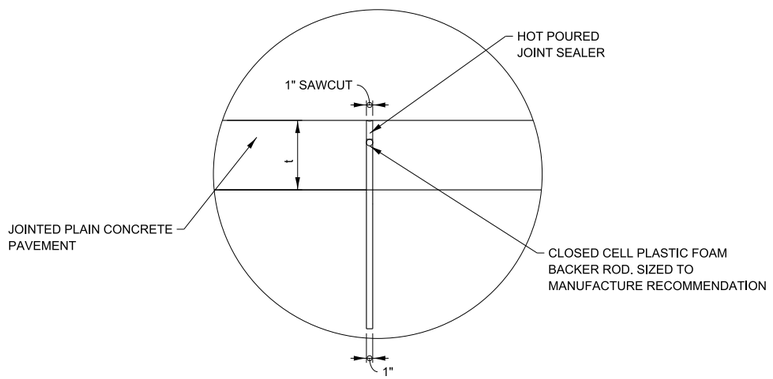
VERSION:	STANDARD:	SHEET:
2022-03	A7-06	1 OF 2



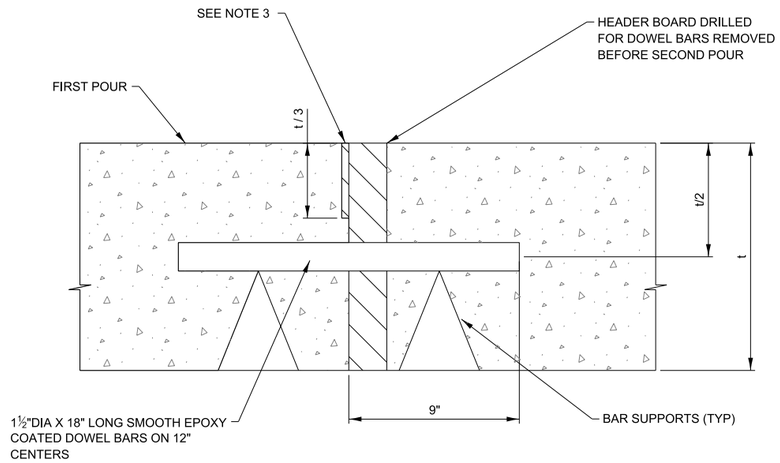
DETAIL A



DETAIL B



DETAIL C



TRANSVERSE CONSTRUCTION JOINT
(JOINTED PLAIN CONCRETE PAVEMENT)

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SHOWN.
2. t = PAVEMENT THICKNESS.
3. A ⅜" WIDE SAW CUT SHALL BE PROVIDED AFTER THE SECOND POUR FOR PAVEMENT CRACK CONTROL. MINIMUM DEPTH SHALL BE t/3.

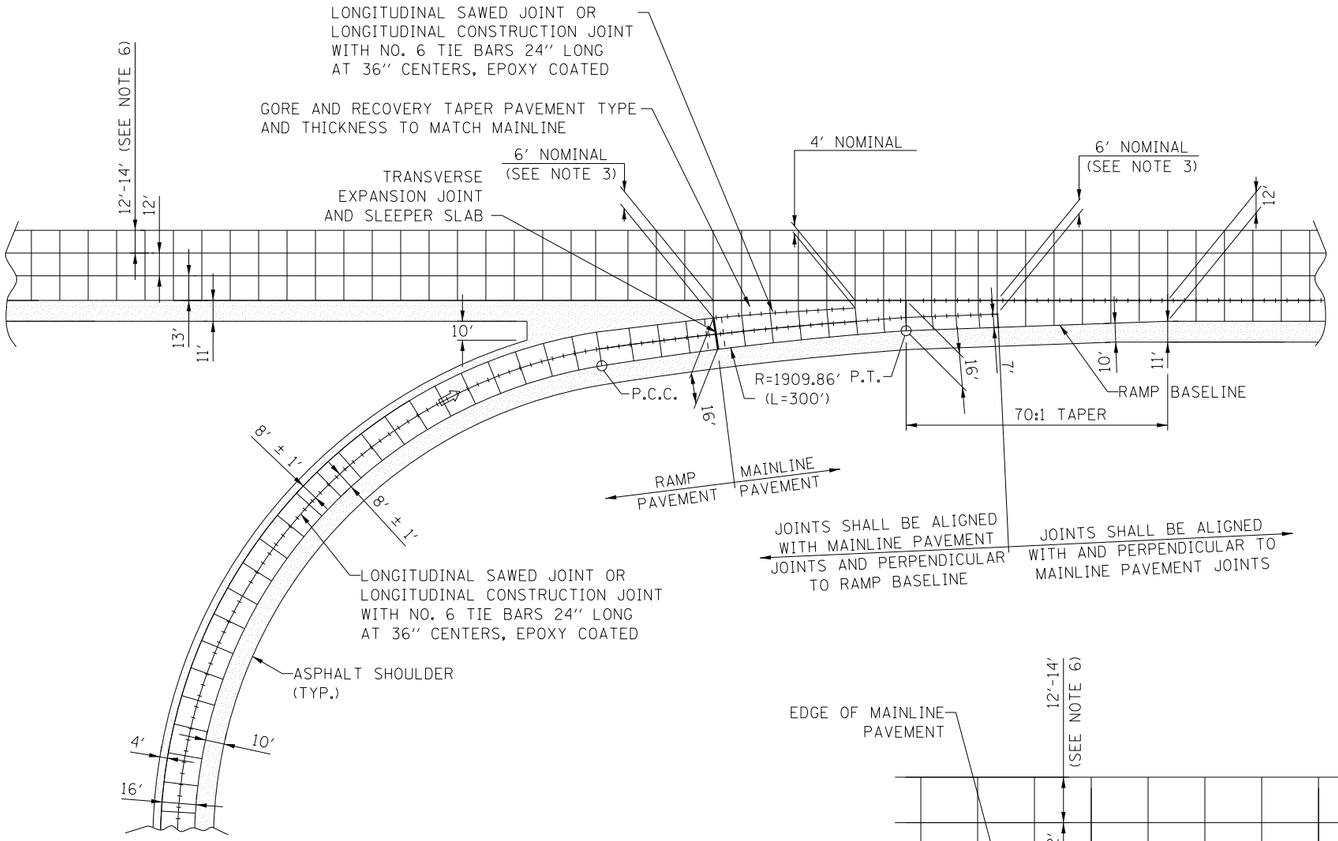
APPROVED BY:
CHIEF ENGINEERING OFFICER

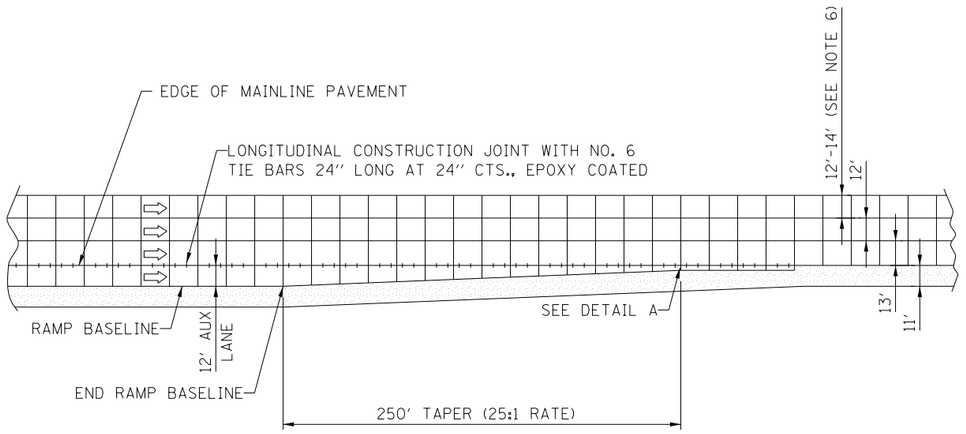
DATE:
03/01/2022

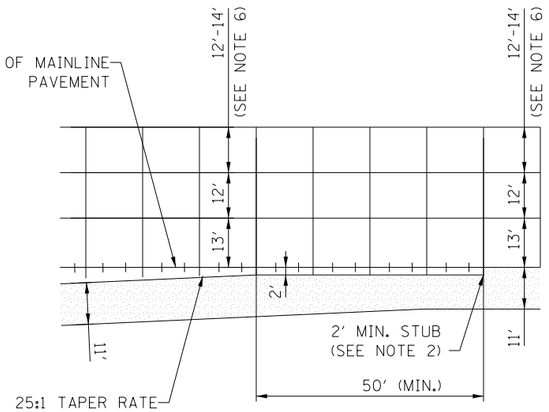
Illinois Tollway

PAVEMENT JOINTS

VERSION:	STANDARD:	SHEET:
2022-03	A7-06	2 OF 2







DETAIL A

NOTES:

1. ALL TRANSVERSE CONSTRUCTION AND EXPANSION PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7. ALL OTHER PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON IDOT HIGHWAY STANDARD 420001.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 6' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
6. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

APPROVED BY: Mansa Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

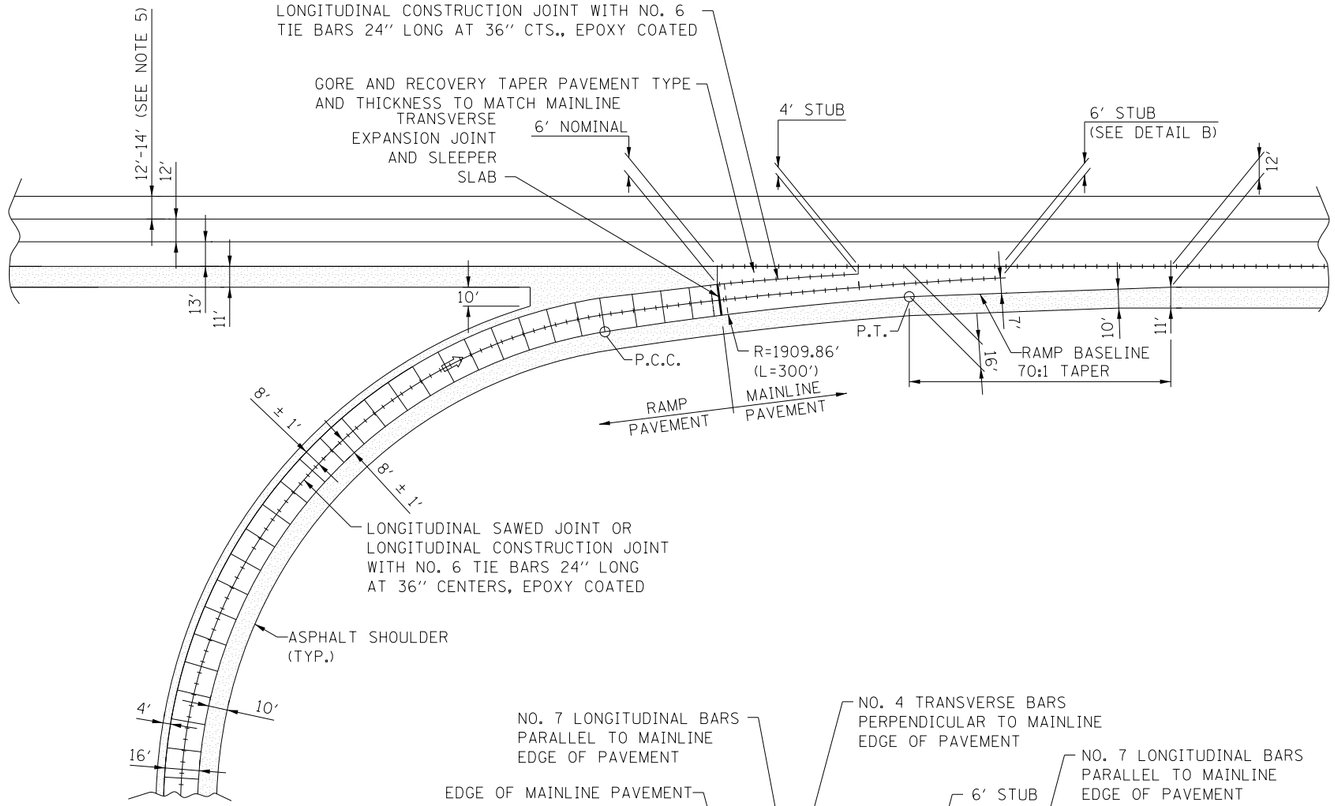
JOINTED PCC RAMP ADJACENT TO JOINTED PCC MAINLINE PAVEMENT

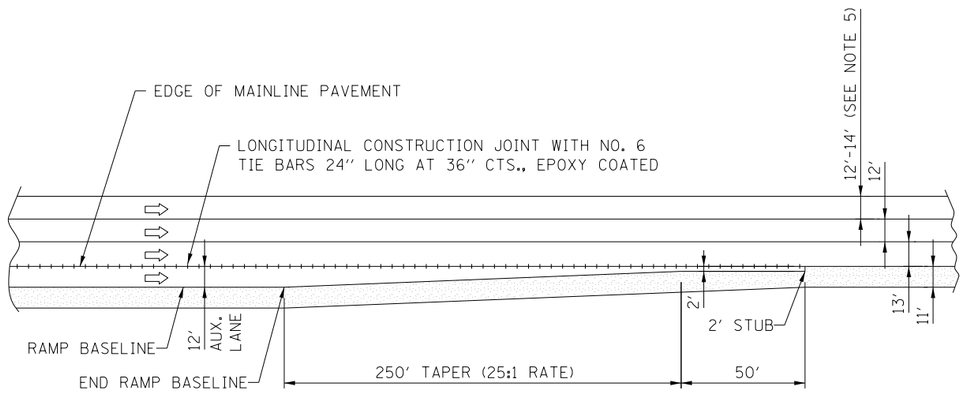
DATE	REVISIONS
3-01-2025	UPDATED DIMENSION CALLOUT
3-01-2021	TIE BARS AT 36" CENTERS
	UPDATED SHOULDER TO 11'
3-01-2020	UPDATED DIMENSIONS

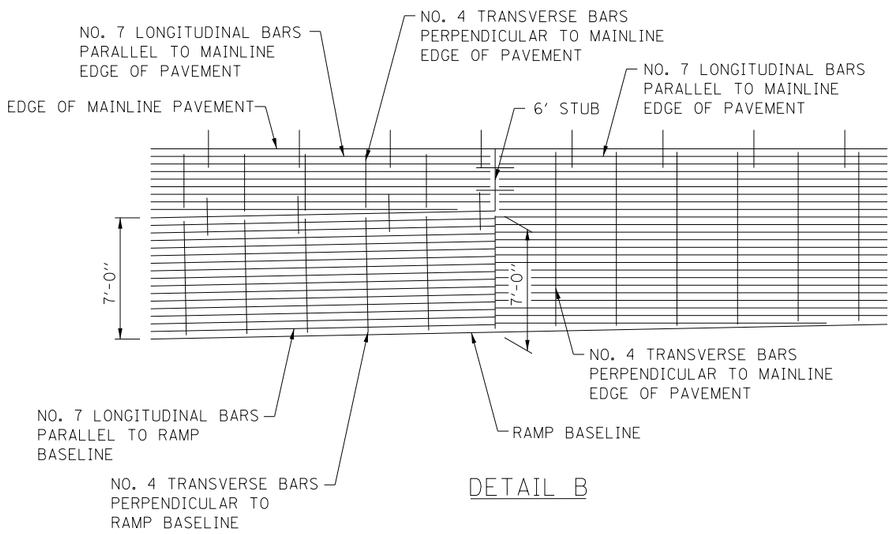
Illinois Tollway

JOINTING PLAN
ENTRANCE RAMP TERMINAL
WITH AUXILIARY LANE

STANDARD A12-03







DETAIL B

NOTES:

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7 AND IDOT HIGHWAY STANDARD 420001.
2. SEE PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
4. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
5. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

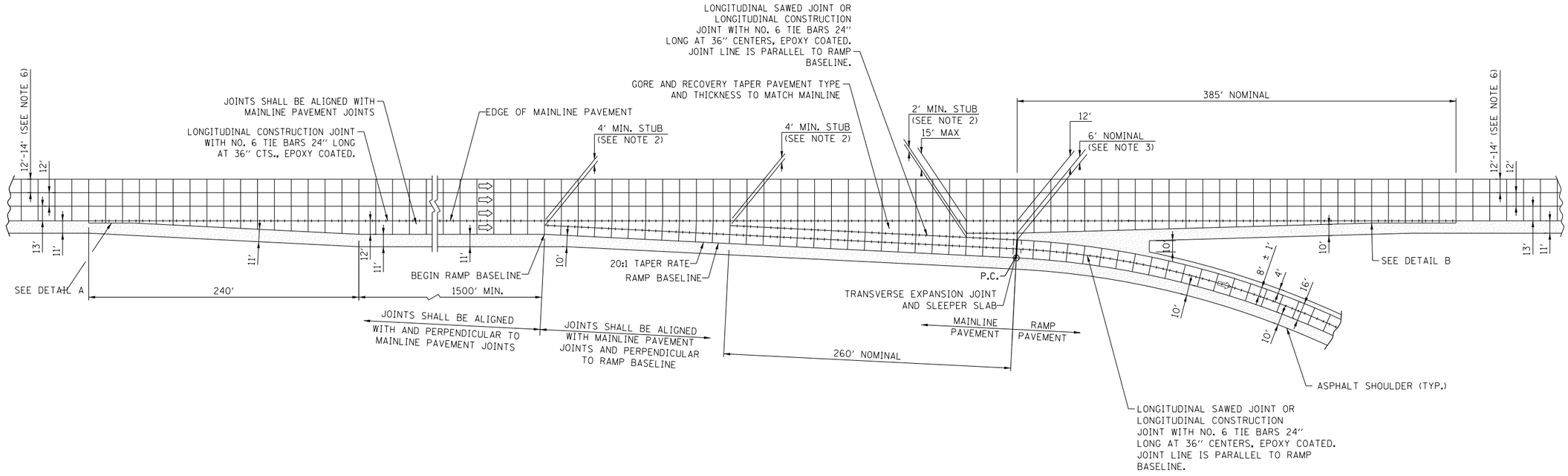
APPROVED BY: Mansa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

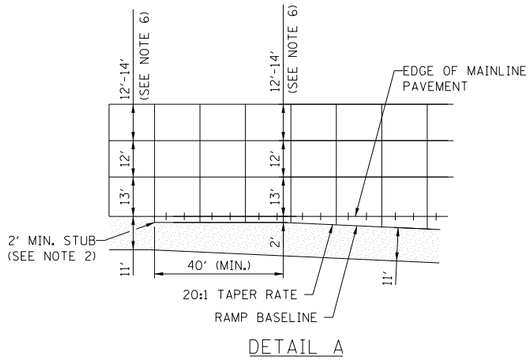
JOINTED PCC RAMP ADJACENT TO C.R.C. MAINLINE PAVEMENT

Illinois Tollway

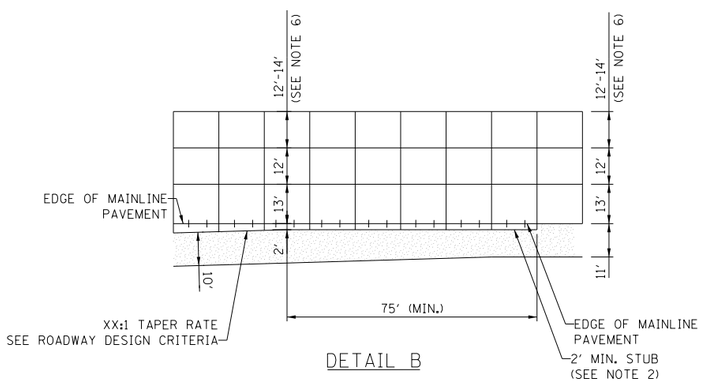
JOINTING PLAN
ENTRANCE RAMP TERMINAL
WITH AUXILIARY LANE

STANDARD A12-03





DETAIL A



DETAIL B

NOTES:

1. ALL TRANSVERSE CONSTRUCTION AND EXPANSION PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7. ALL OTHER PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON IDOT HIGHWAY STANDARD 420001.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 6' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL P.C.C. PAVEMENT JOINT SPACING SHALL BE 15'.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
6. DIMENSIONS OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

JOINTED PCC RAMP ADJACENT TO JOINTED PCC MAINLINE PAVEMENT

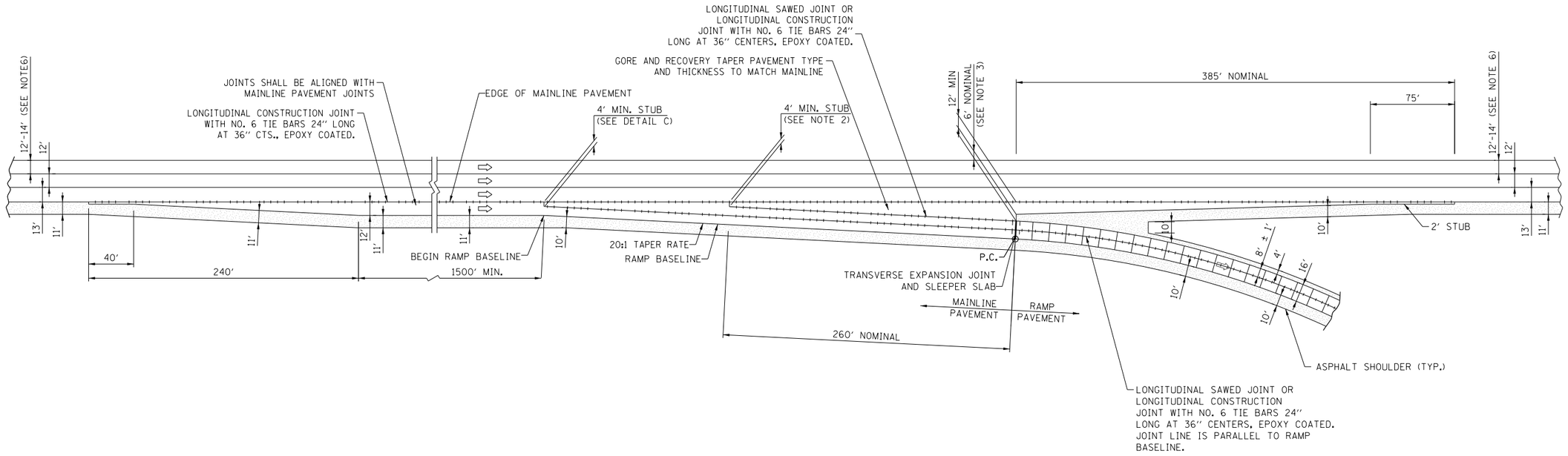
APPROVED BY: Mansa Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

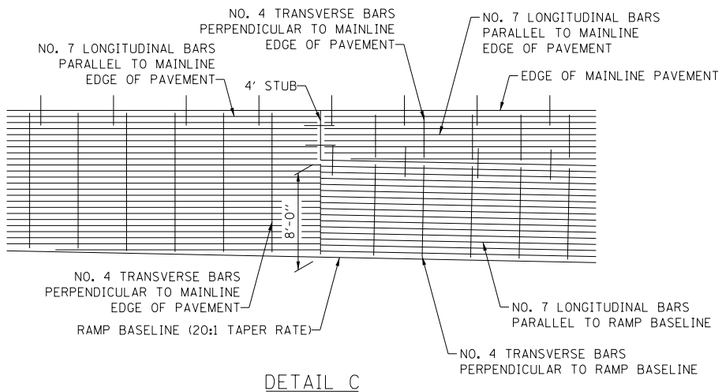
DATE	REVISIONS
3-01-2025	ADDED LONGITUDINAL JOINT AT GORE AND UPDATED DIMENSION CALL OUT
3-01-2022	UPDATED DIMENSIONS
3-01-2021	TIE BARS AT 36" CENTERS
3-01-2020	UPDATED 12' MIN AT GORE

Illinois Tollway

JOINTING PLAN
EXIT RAMP TERMINAL
WITH AUXILIARY LANE

STANDARD A13-06





DETAIL C

NOTES:

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7 AND IDOT HIGHWAY STANDARD 420001.
2. SEE PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
4. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
5. DIMENSIONS OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

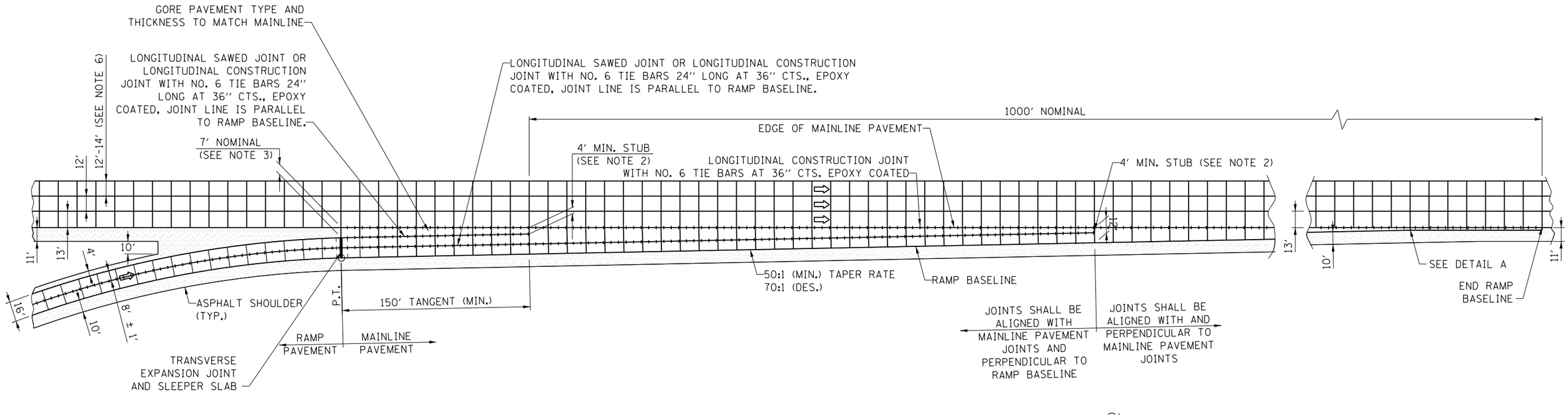
JOINTED PCC RAMP ADJACENT TO C.R.C MAINLINE PAVEMENT

APPROVED BY:
Mansa Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2025

Illinois Tollway

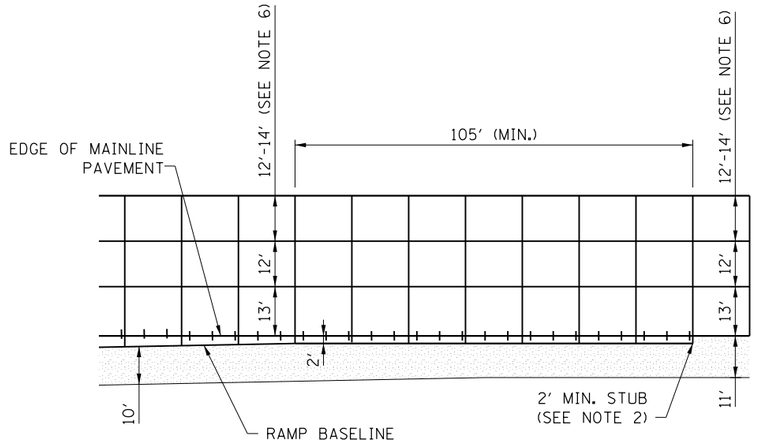
JOINTING PLAN
EXIT RAMP TERMINAL
WITH AUXILIARY LANE

STANDARD A13-06



NOTES:

1. ALL TRANSVERSE CONSTRUCTION AND EXPANSION PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7. ALL OTHER PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON IDOT HIGHWAY STANDARD 420001.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 7' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATION IN THE WHEEL PATH SHALL BE MINIMIZED.
6. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.



DETAIL A

JOINTED PCC RAMP ADJACENT TO JOINTED PCC MAINLINE PAVEMENT

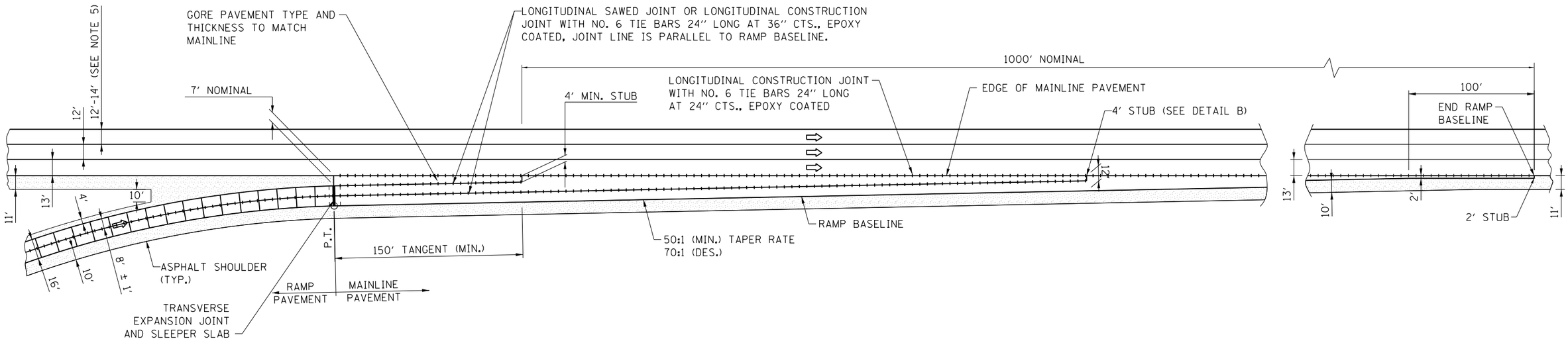
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 01/31/2015

DATE	REVISIONS
3-01-2021	UPDATE DETAIL B
	UPDATE 12' AT MAINLINE
	TIE BARS AT 36'' CENTERS
3-01-2020	REVISED WITH EPOXY BARS
3-01-2019	UPDATED TAPER DESIRED
3-01-2018	MOVED RAMP PAVEMENT

Illinois Tollway

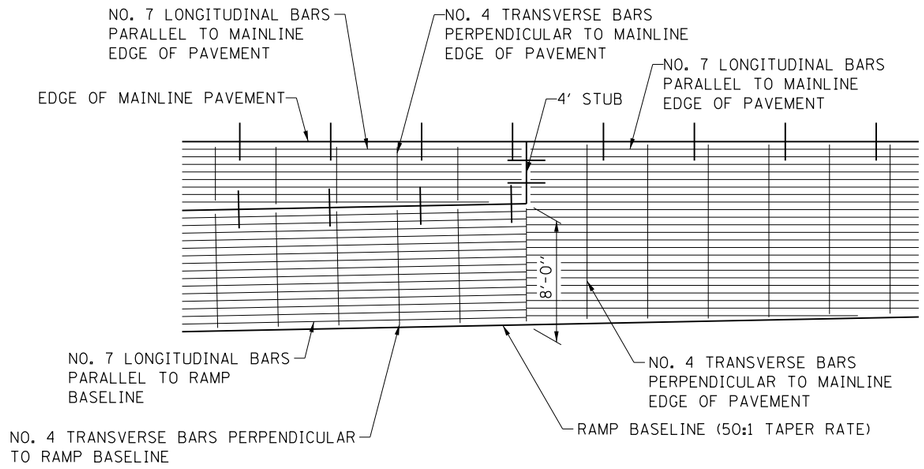
JOINTING PLAN
ENTRANCE RAMP TERMINAL

STANDARD A14-07



NOTES:

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7 AND IDOT HIGHWAY STANDARD 420001, EXCEPT EXPANSION JOINT SEALS SHALL BE AS DESCRIBED IN THE ILLINOIS TOLLWAY SPECIAL PROVISION, BONDED PREFORMED JOINT SEAL.
2. SEE PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
4. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL JOINT SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
5. DIMENSIONS OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.



DETAIL B

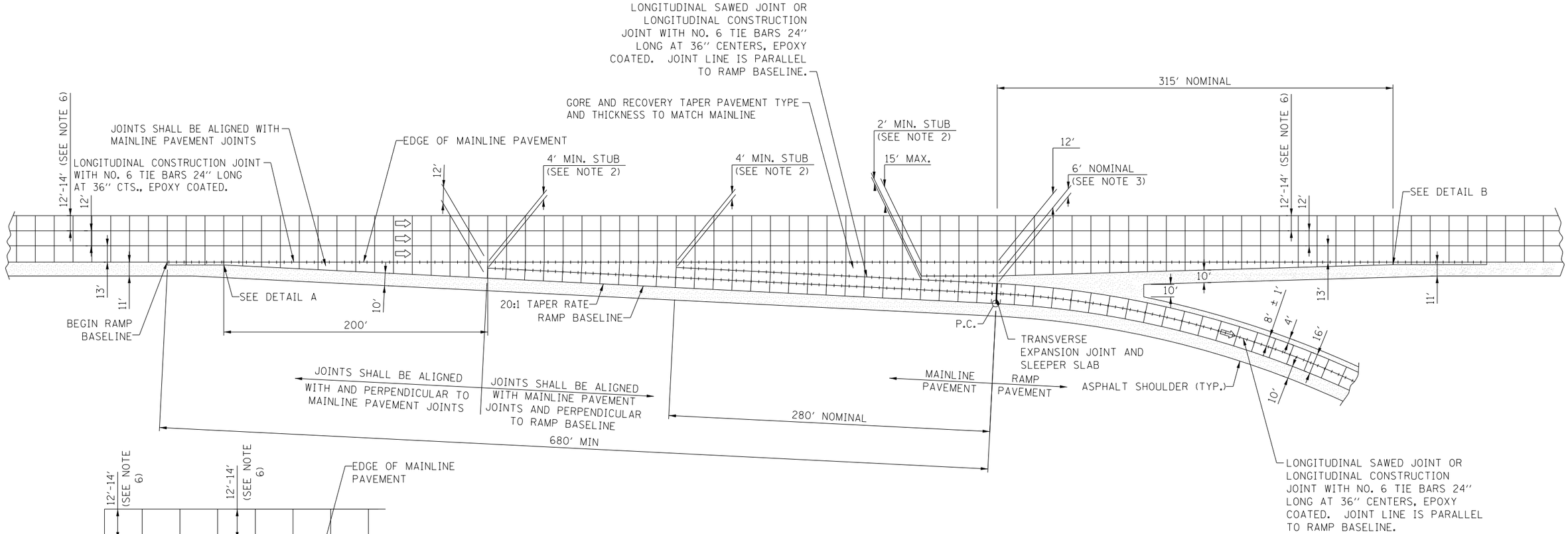
JOINTED PCC RAMP ADJACENT TO JOINTED C.R.C. MAINLINE PAVEMENT

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 01/31/2015

Illinois Tollway

JOINTING PLAN
ENTRANCE RAMP TERMINAL

STANDARD A14-07



DETAIL A

DETAIL B

NOTES:

1. ALL TRANSVERSE CONSTRUCTION AND EXPANSION PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7. ALL OTHER PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON IDOT HIGHWAY STANDARD 420001.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 6' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL P.C.C. PAVEMENT JOINT SPACING SHALL BE 15'.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
6. DIMENSIONS OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

JOINTED PCC RAMP ADJACENT TO JOINTED PCC MAINLINE PAVEMENT

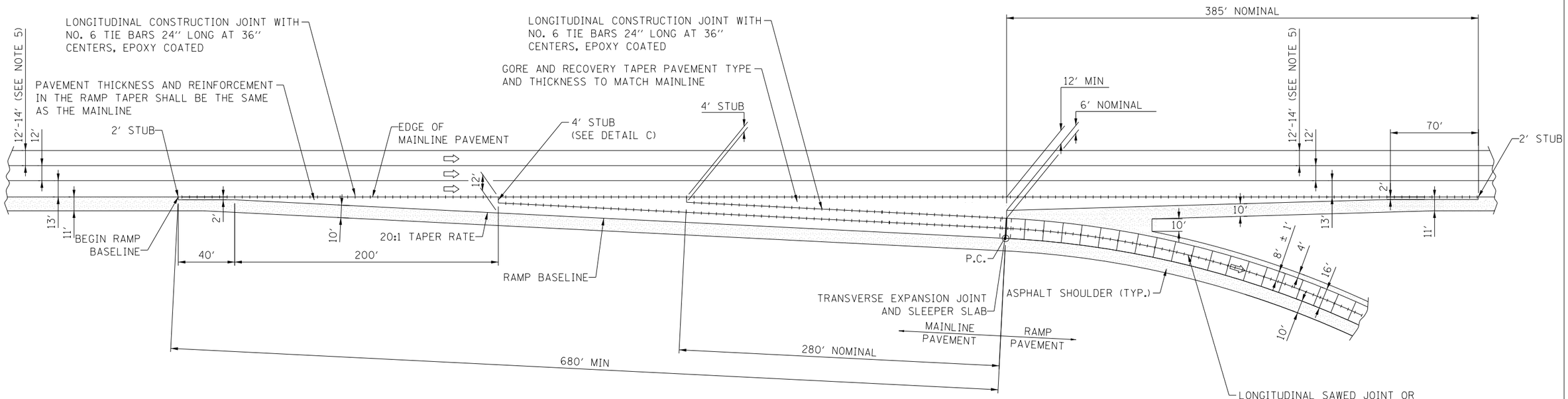
APPROVED BY: Mansa Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

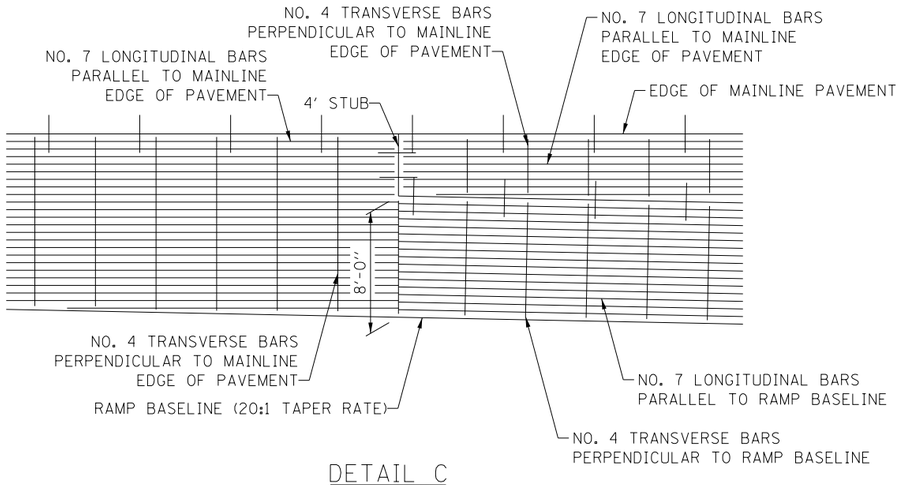
DATE	REVISIONS
3-01-2025	ADDED LONGITUDINAL JOINT AT GORE
3-01-2022	UPDATED DIMENSIONS
3-01-2021	UPDATE 12' AT MAINLINE TIE BARS AT 36" CENTERS
3-01-2020	UPDATE 12' MIN. AT GORE

Illinois Tollway

JOINTING PLAN
EXIT RAMP TERMINAL

STANDARD A15-09





DETAIL C

NOTES:

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7 AND IDOT HIGHWAY STANDARD 420001.
2. SEE PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. TYPICAL P.C.C. PAVEMENT JOINT SPACING SHALL BE 15'.
4. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
5. DIMENSIONS OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

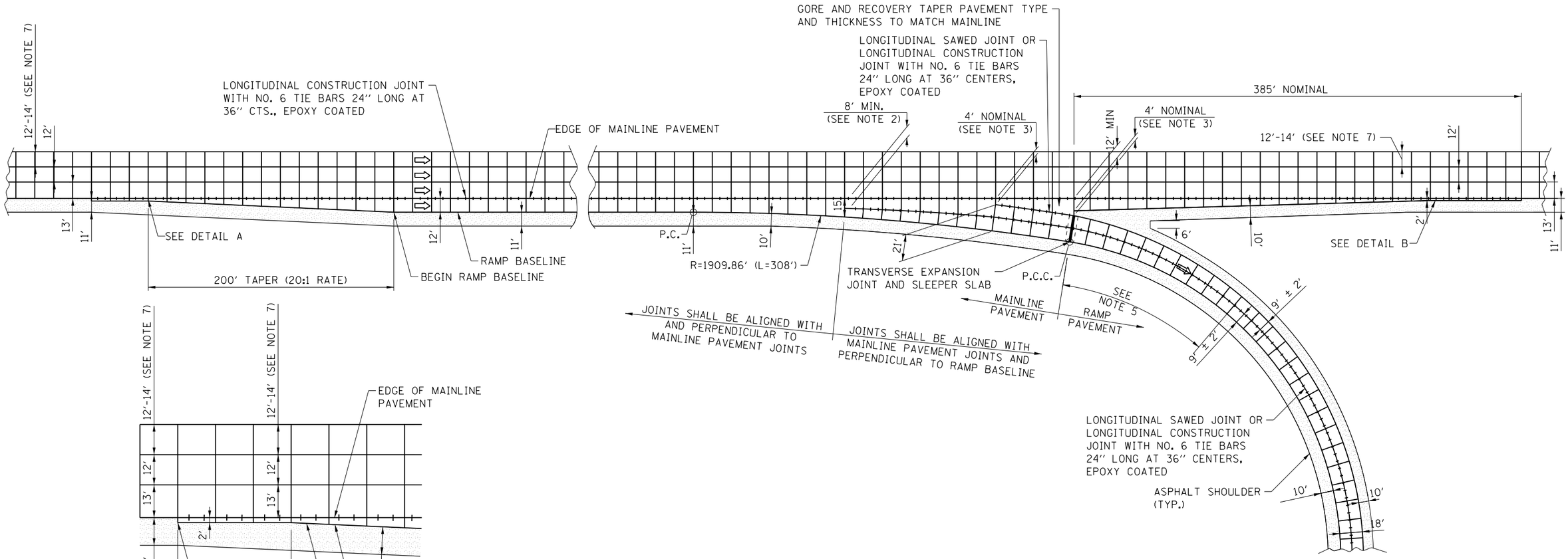
APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

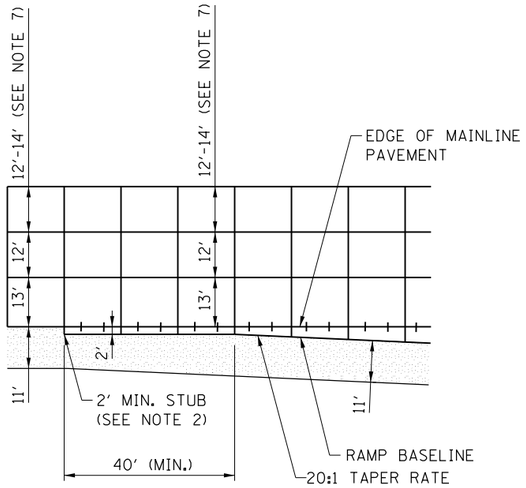
JOINTED PCC RAMP ADJACENT TO C.R.C. MAINLINE PAVEMENT

Illinois Tollway

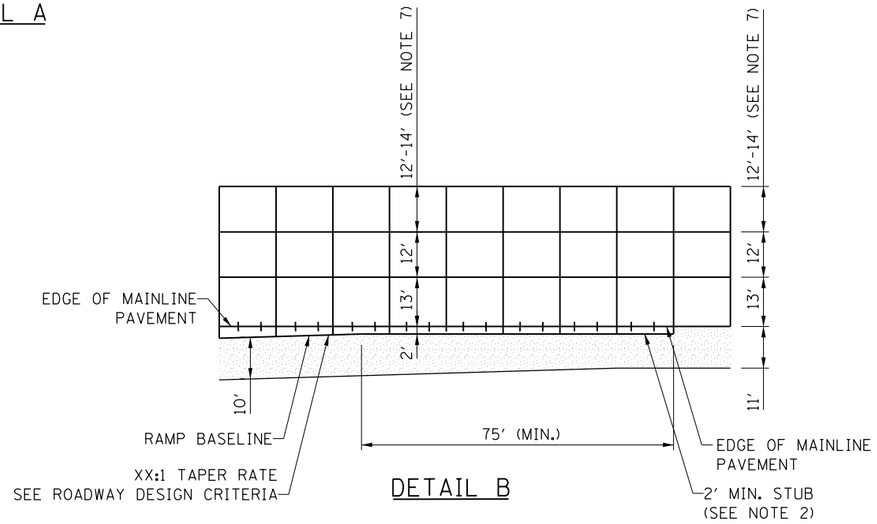
JOINTING PLAN
EXIT RAMP TERMINAL

STANDARD A15-09





DETAIL A



DETAIL B

JOINTED PCC RAMP ADJACENT TO JOINTED PCC MAINLINE PAVEMENT

NOTES:

1. ALL TRANSVERSE CONSTRUCTION AND EXPANSION PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7. ALL OTHER PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON IDOT HIGHWAY STANDARD 420001.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 4' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL P.C.C. PAVEMENT JOINT SPACING SHALL BE 15'.
5. RAMP NARROWS FROM 21' TO 18' IN 150'.
6. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
7. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

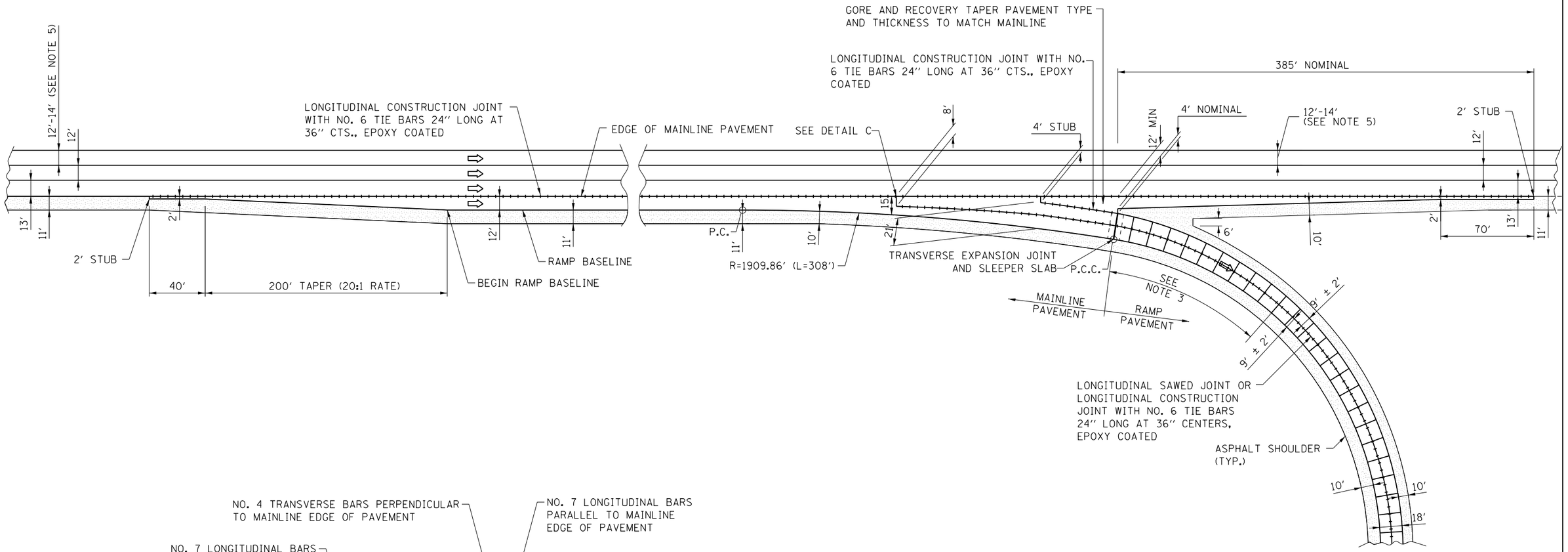
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 01/31/2015

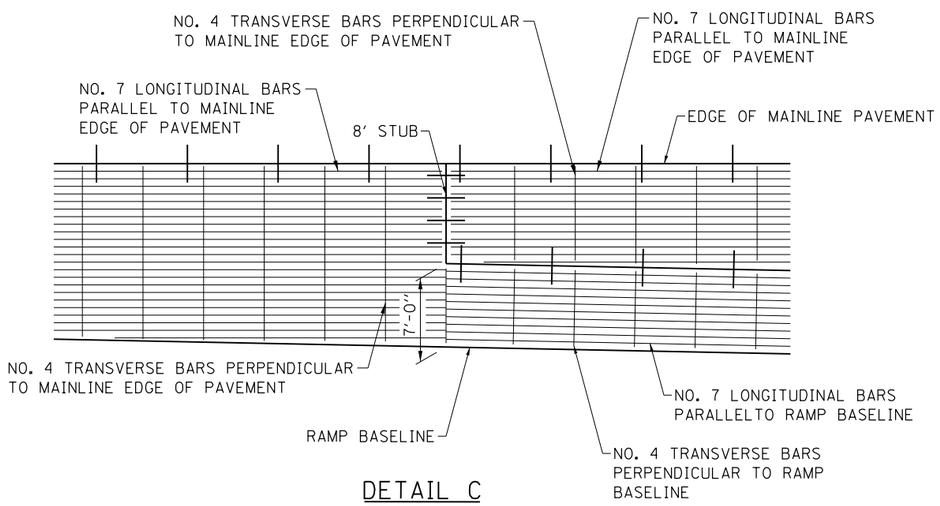
DATE	REVISIONS
3-01-2022	UPDATED DIMENSIONS
3-01-2021	TIE BARS AT 36" CENTERS
	UPDATED SHOULDER TO 11'
3-01-2020	UPDATED 12' MIN AT GORE
3-01-2019	UPDATED DETAIL A AND B
	ADDED 150' TAPER

Illinois Tollway

JOINTING PLAN
PARALLEL EXIT RAMP TERMINAL
LOOP RAMP ONLY

STANDARD A16-08





DETAIL C

NOTES:

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7 AND IDOT HIGHWAY STANDARD 420001.
2. TYPICAL P.C.C. PAVEMENT JOINT SPACING SHALL BE 15'.
3. RAMP NARROWS FROM 21' TO 18' IN 150'.
4. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
5. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.
6. SEE PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS OF PAVEMENT REINFORCEMENT.

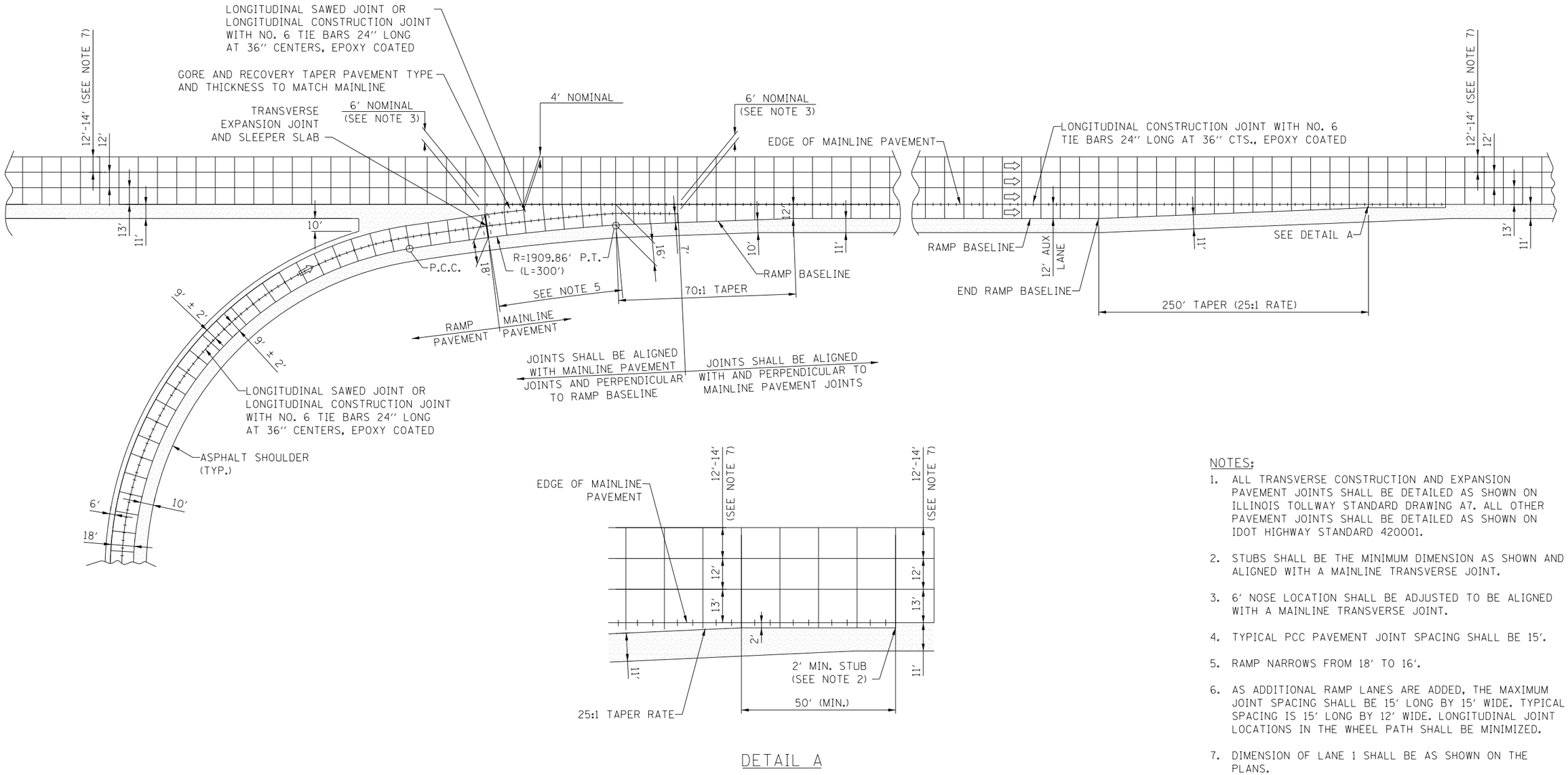
APPROVED BY: Paul Kovacs CHIEF ENGINEERING OFFICER DATE: 01/31/2015

JOINTED PCC RAMP ADJACENT TO C.R.C. MAINLINE PAVEMENT

Illinois Tollway

JOINTING PLAN
PARALLEL EXIT RAMP TERMINAL
LOOP RAMP ONLY

STANDARD A16-08



DETAIL A

NOTES:

1. ALL TRANSVERSE CONSTRUCTION AND EXPANSION PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7. ALL OTHER PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON IDOT HIGHWAY STANDARD 420001.
2. STUBS SHALL BE THE MINIMUM DIMENSION AS SHOWN AND ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
3. 6' NOSE LOCATION SHALL BE ADJUSTED TO BE ALIGNED WITH A MAINLINE TRANSVERSE JOINT.
4. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
5. RAMP NARROWS FROM 18' TO 16'.
6. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
7. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

APPROVED BY: Mansa Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

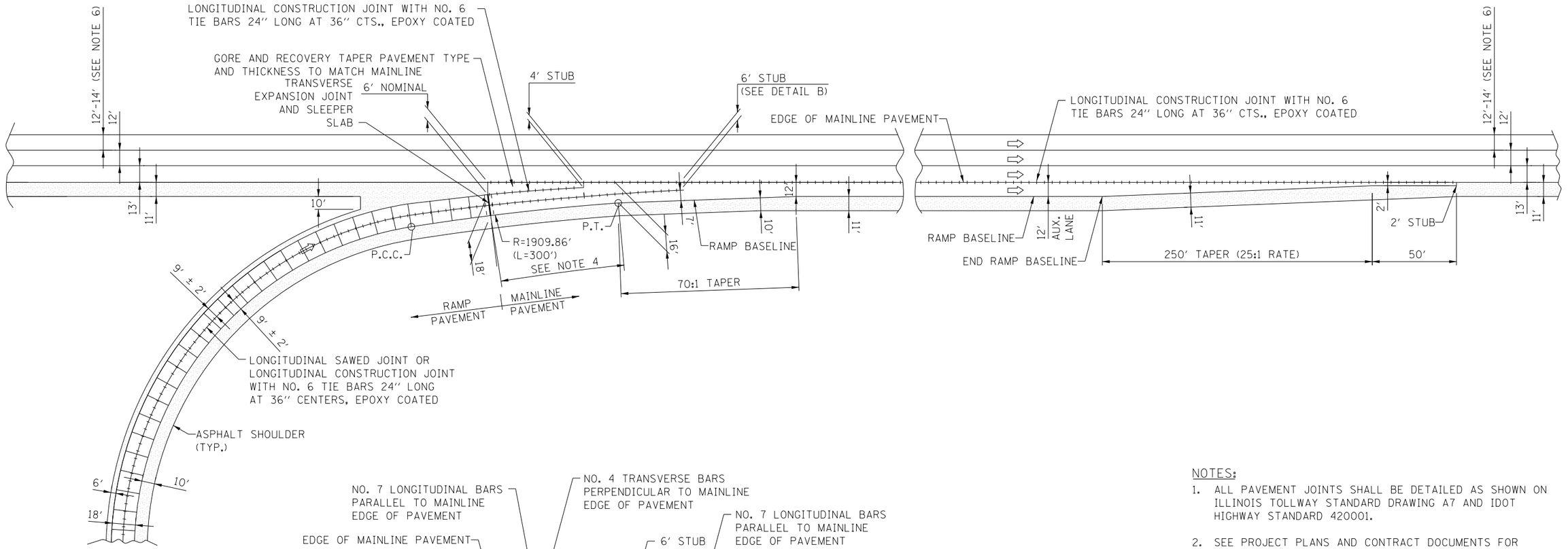
JOINTED PCC RAMP ADJACENT TO JOINTED PCC MAINLINE PAVEMENT

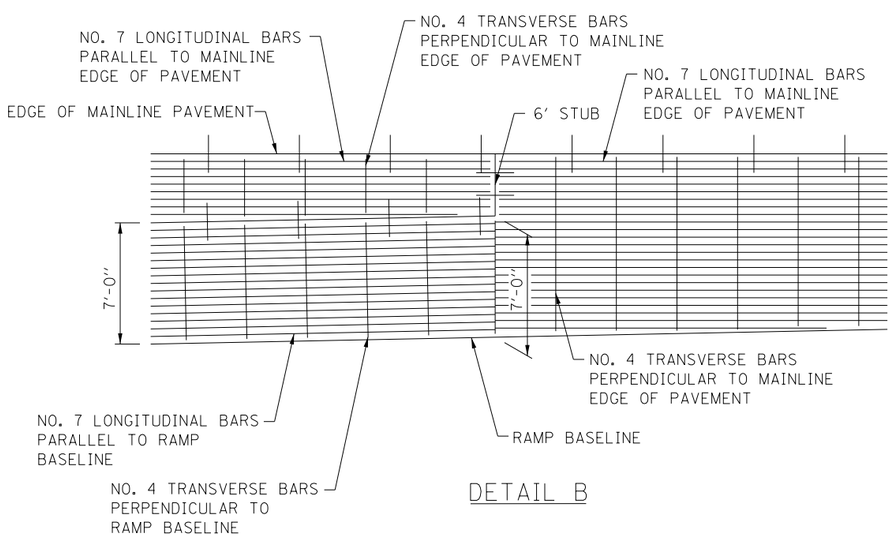
DATE	REVISIONS
3-01-2025	UPDATED DIMENSION CALLOUT
3-01-2021	TIE BARS AT 36" CENTERS
	UPDATED SHOULDER TO 11'
3-01-2020	UPDATED DIMENSION
3-01-2019	ENTRANCE LAYOUT UPDATE
3-01-2018	MOVED RAMP PAVEMENT

Illinois Tollway

JOINTING PLAN PARALLEL ENTRANCE RAMP TERMINAL LOOP RAMP ONLY

STANDARD A17-08





DETAIL B

NOTES:

1. ALL PAVEMENT JOINTS SHALL BE DETAILED AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING A7 AND IDOT HIGHWAY STANDARD 420001.
2. SEE PROJECT PLANS AND CONTRACT DOCUMENTS FOR DETAILS OF PAVEMENT REINFORCEMENT.
3. TYPICAL PCC PAVEMENT JOINT SPACING SHALL BE 15'.
4. RAMP TAPERS FROM 18' TO 16'.
5. AS ADDITIONAL RAMP LANES ARE ADDED, THE MAXIMUM JOINT SPACING SHALL BE 15' LONG BY 15' WIDE. TYPICAL SPACING IS 15' LONG BY 12' WIDE. LONGITUDINAL JOINT LOCATIONS IN THE WHEEL PATH SHALL BE MINIMIZED.
6. DIMENSION OF LANE 1 SHALL BE AS SHOWN ON THE PLANS.

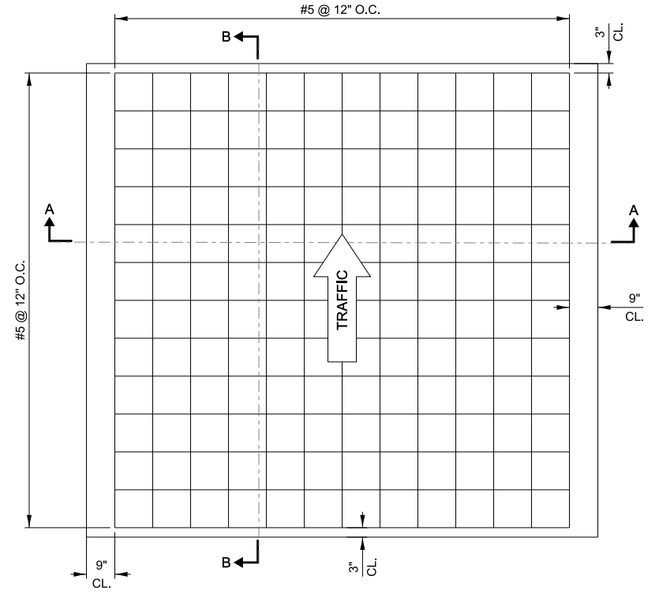
APPROVED BY: Manar Nashif CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

JOINTED PCC RAMP ADJACENT TO C.R.C. MAINLINE PAVEMENT

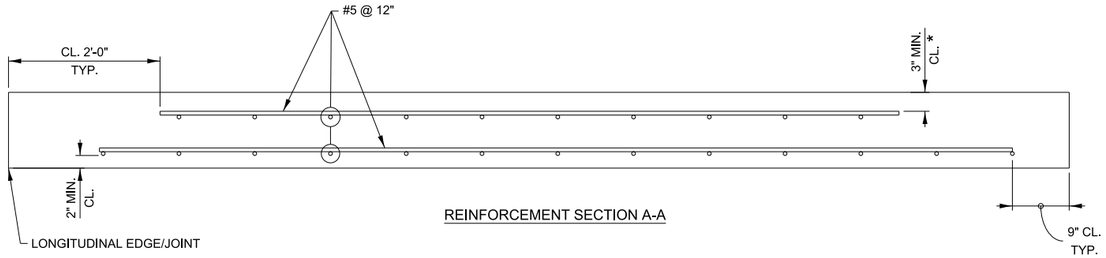
Illinois Tollway

JOINTING PLAN PARALLEL ENTRANCE RAMP TERMINAL LOOP RAMP ONLY

STANDARD A17-08



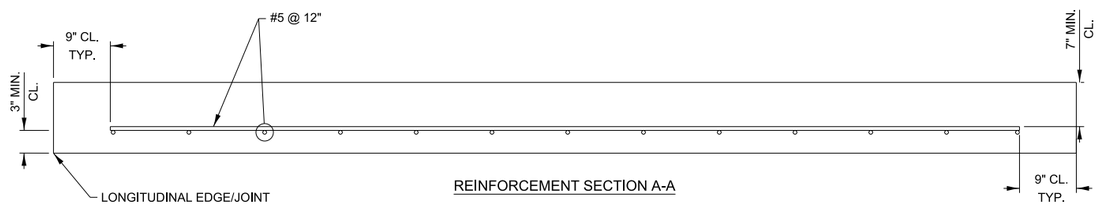
TYPICAL REINFORCEMENT DETAIL FOR STANDARD SLABS



REINFORCEMENT SECTION A-A

TWO MATS OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETED

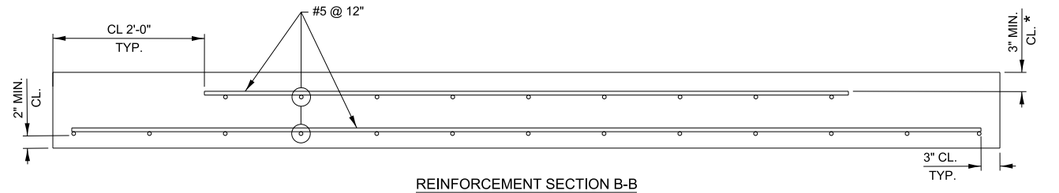
ALL BARS ARE TRIMMED TO FIT #5 BAR. SAW CUTS OFF LONGITUDINAL EDGES SHALL BE NO MORE THAN 6" OFF THE EDGES



REINFORCEMENT SECTION A-A

ONE MAT OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL STANDARD SLABS AND FOR ANY CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC ONLY AFTER GROUTING IS COMPLETED.

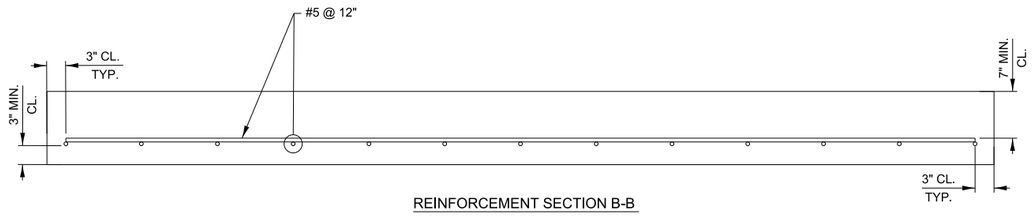
ALL BARS ARE TRIMMED TO FIT #5 BAR SAW CUTS OFF LONGITUDINAL EDGES SHALL BE NO MORE THAN 6" OFF THE EDGES



REINFORCEMENT SECTION B-B

TWO MATS OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETED

ALL BARS TRIMMED TO FIT #5 BAR



REINFORCEMENT SECTION B-B

ONE MAT OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL STANDARD SLABS AND FOR ANY CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC ONLY AFTER GROUTING IS COMPLETED.

ALL BARS ARE TRIMMED TO FIT #5 BAR

NOTE:
* MIN. CLEARANCE FOR TOP REINFORCEMENT SHALL BE ADJUSTED FOR PLAZA SLAB TO FIT TREADLE FRAMES OR INSERTED HARDWARE.

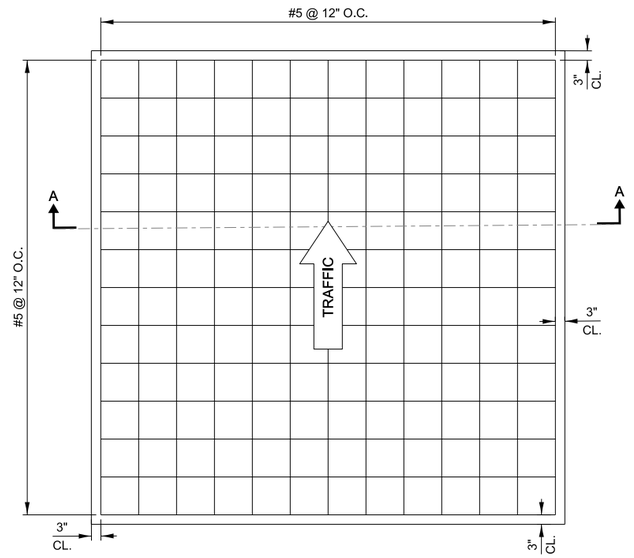
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

Illinois Tollway

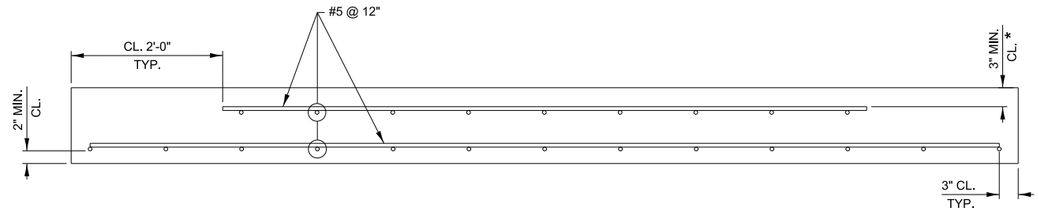
REVISIONS	
DATE	DESCRIPTION
03-01-2019	REMOVED SHEETS 1,9,10,13,14,15,16
	UPDATED NOTES 4,5,6,8,11,12
03-01-2018	REVISED TEXT
03-31-2016	REVISED NOTES; UPDATED CALLOUTS
11-01-2012	REVISED NOTES

PRECAST PAVEMENT SLABS

VERSION: 2019-03 | STANDARD: A18-05 | SHEET: 1 OF 12



TYPICAL REINFORCEMENT DETAIL FOR CUSTOM SLABS



REINFORCEMENT SECTION A-A

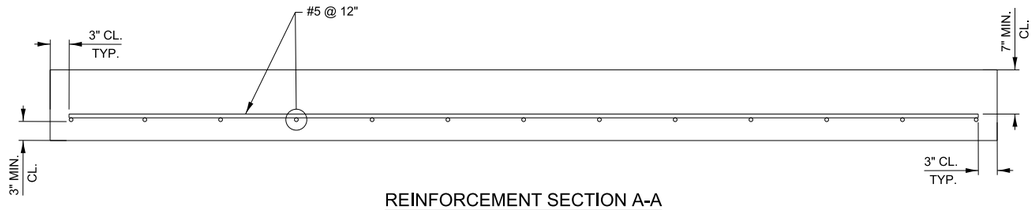
TWO MATS OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC BEFORE GROUTING IS COMPLETED

ALL BARS ARE TRIMMED TO FIT #5 BAR

NOTE:

FOR ALL CUSTOM SLABS OF TRAPEZOID SHAPES, REINFORCEMENT SHALL BE LAID OUT IN A PERPENDICULAR GRID PATTERN, NOT SKEWED.

* MIN. CLEARANCE FOR TOP REINFORCEMENT SHALL BE ADJUSTED FOR PLAZA SLAB TO FIT TREADLE FRAMES OR INSERTED HARDWARE.



REINFORCEMENT SECTION A-A

ONE MAT OF REINFORCEMENT SHALL BE FOR APPLICATION TO ALL STANDARD SLABS AND FOR ANY CUSTOM SLABS GREATER THAN 6 FT. LONGITUDINAL LENGTH TO BE OPENED TO TRAFFIC ONLY AFTER GROUTING IS COMPLETED.

ALL BARS ARE TRIMMED TO FIT #5 BAR

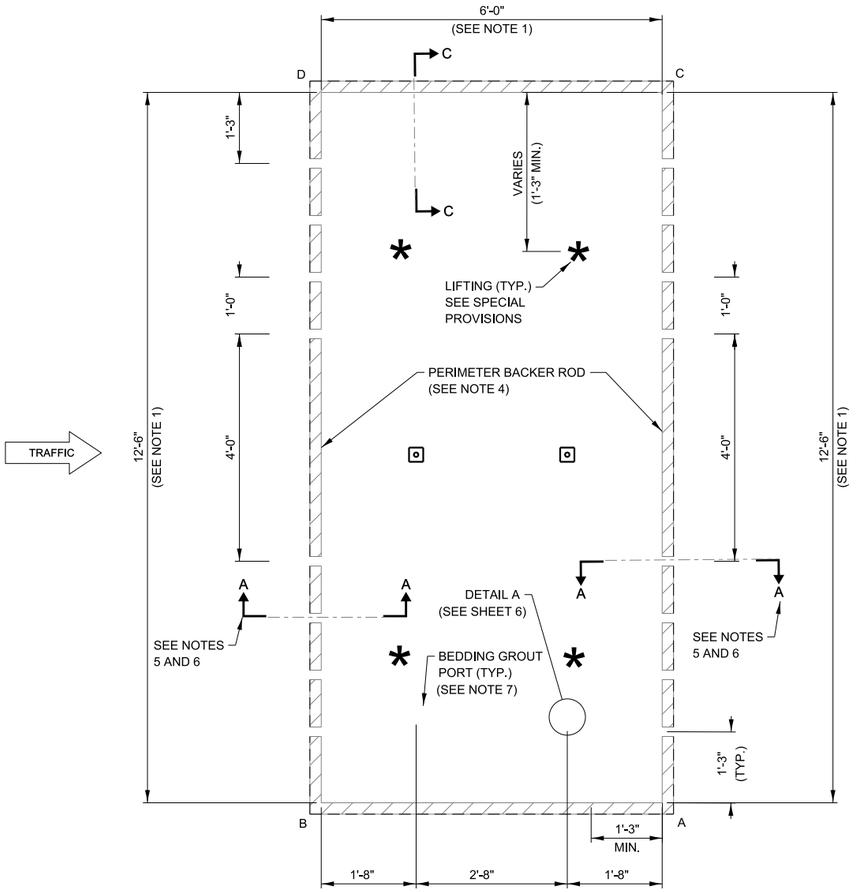
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE:
03/01/2019

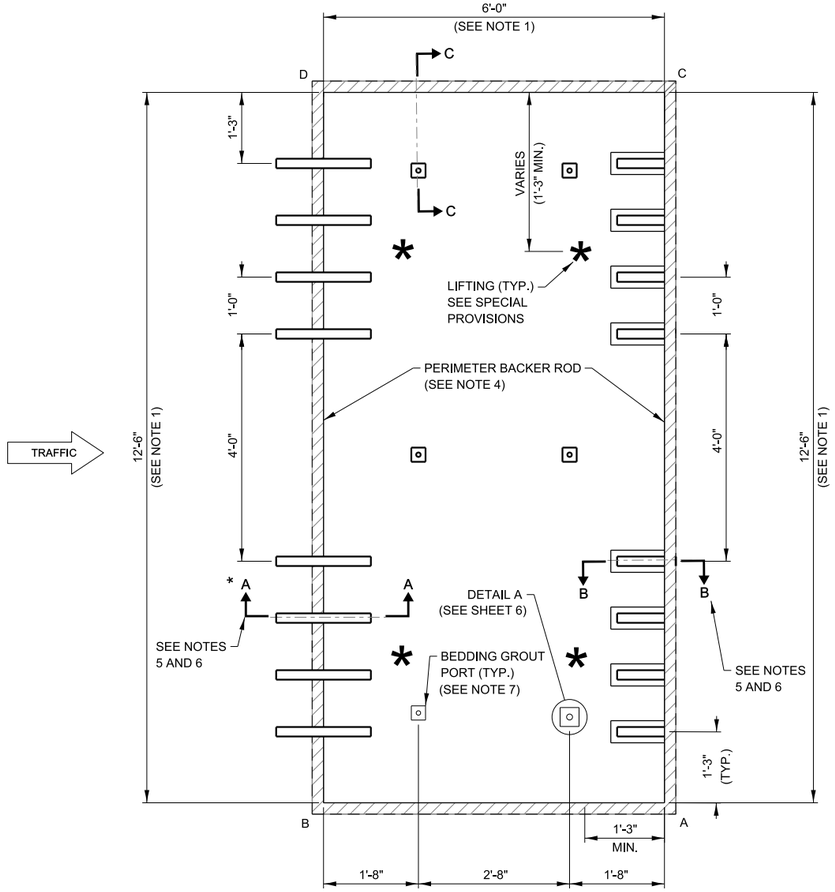
Illinois Tollway

PRECAST PAVEMENT SLABS

VERSION:	STANDARD:	SHEET:
2019-03	A18-05	2 OF 12



STANDARD 12'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH EMBEDDED DOWELS FOR PRECUT WIDE MOUTH SLOTS IN ADJACENT PAVEMENT



STANDARD 12'-6" WIDE PANEL LAYOUT FOR CONSECUTIVE PLACEMENT

* FOR INTERNAL CONSECUTIVE SLABS, PREFORMED SLOTS IN ACCORDANCE WITH SECTION B-B OF SHEET 4 MAY BE USED IN PLACE OF EMBEDDED DOWELS OR OF FIELD RETROFITTED DOWEL BARS WITH SAWCUT SLOTS. ALL PREFORMED SLOTS MUST BE FILLED BEFORE BEING OPENED TO TRAFFIC.

NOTES:

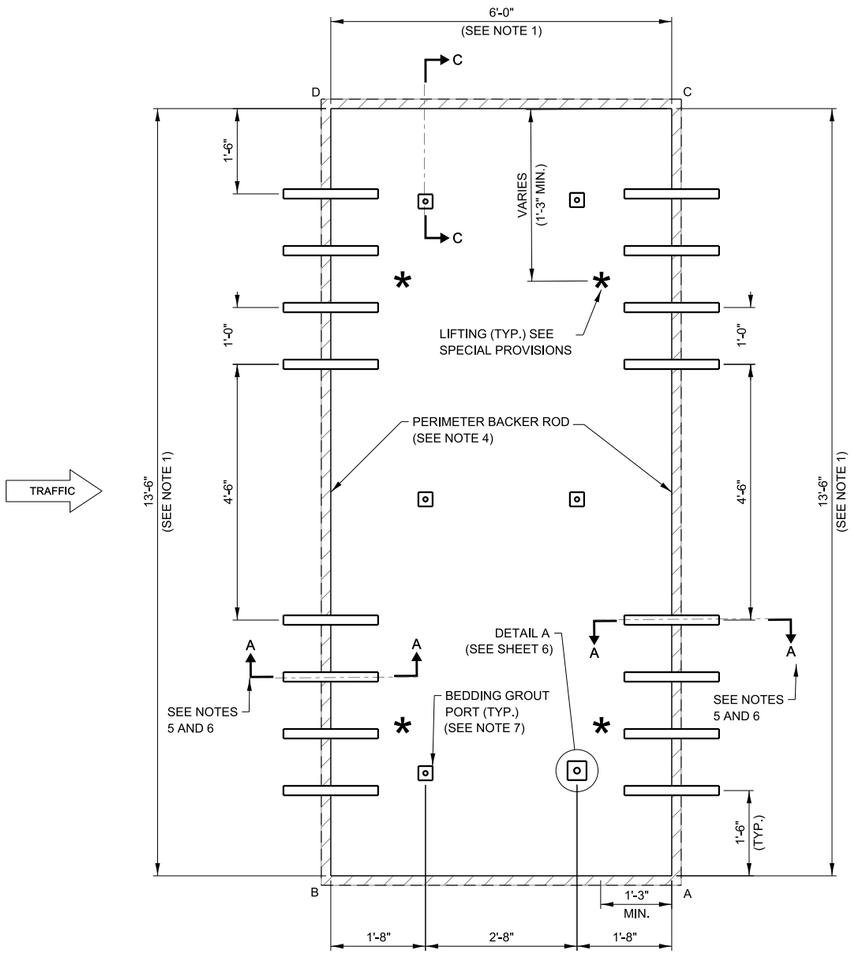
1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS ±⅛".
2. FOR MIDDLE LANE SLAB OPENINGS/PATCHES LESS THAN 12'-6" IN WIDTH AND GREATER THAN 11'-6" IN WIDTH, THE STANDARD PRECAST SLAB CAN BE SAW CUT ON-SITE TO FIT THE OPENING AND TO MAINTAIN ALIGNMENT WITH EXISTING LONGITUDINAL JOINTS. OTHERWISE, THE SLAB PATCH LOCATION MUST BE PRESURVEYED BY THE CONTRACTOR AND THE SLAB FABRICATED AS A CUSTOM SLAB.
3. SLAB THICKNESS SHALL BE 11½" ± ⅛".
4. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELED WITH FLOWABLE FILL.
5. SEE SHEET 6 FOR SECTION DETAILS.
6. IT SHALL BE THE CONTRACTOR'S OPTION TO REPLACE ANY EMBEDDED DOWEL BARS OR PREFORMED SLOTS AS SHOWN ON THESE DRAWINGS WITH FULLY RETROFITTED DOWEL BARS FIELD INSTALLED IN ACCORDANCE WITH "DETAIL C" OF SHEET 13. THE CONTRACTOR SHALL USE AN APPROVED TEMPLATE TO LOCATE THE SAW CUTS REQUIRED FOR PROPER SPACING AND RETROFITTING OF THE DOWEL BARS IN ACCORDANCE WITH THESE DRAWINGS. DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NONSKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
7. SEE "PRECAST REPLACEMENT OF CONCRETE PAVEMENT SLABS" (ILLINOIS TOLLWAY) SPECIAL PROVISION FOR LOCATING BEDDING GROUT PORTS.

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CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

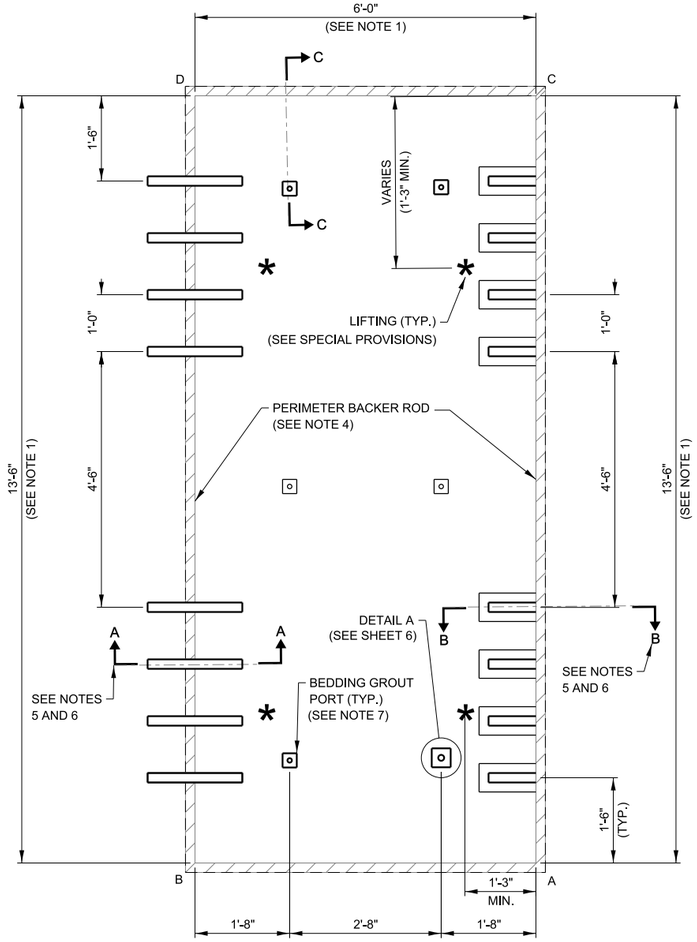
Illinois Tollway

PRECAST PAVEMENT SLABS

VERSION:	STANDARD:	SHEET:
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STANDARD 13'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH EMBEDDED DOWELS FOR PRECUT WIDE MOUTH SLOTS IN ADJACENT PAVEMENT.



STANDARD 13'-6" WIDE PANEL LAYOUT FOR CONSECUTIVE PLACEMENT

* FOR INTERNAL CONSECUTIVE SLABS, PREFORMED SLOTS IN ACCORDANCE WITH SECTION B-B OF SHEET 4 MAY BE USED IN PLACE OF EMBEDDED DOWELS OR OF FIELD RETROFITTED DOWEL BARS WITH SAWCUT SLOTS. ALL PREFORMED SLOTS MUST BE FILLED BEFORE BEING OPENED TO TRAFFIC.

NOTES:

1. THE WIDTH AND LENGTH OF PRODUCED SLABS SHALL BE THE INDICATED DIMENSIONS ±⅛".
2. FOR MIDDLE LANE SLAB OPENINGS/PATCHES LESS THAN 13'-6" IN WIDTH AND GREATER THAN 12'-6" IN WIDTH, THE STANDARD PRECAST SLAB CAN BE SAW CUT ON-SITE TO FIT THE OPENING AND TO MAINTAIN ALIGNMENT WITH EXISTING LONGITUDINAL JOINTS. OTHERWISE, THE SLAB PATCH LOCATION MUST BE PRESURVEYED BY THE CONTRACTOR AND THE SLAB FABRICATED AS A CUSTOM SLAB.
3. SLAB THICKNESS SHALL BE 11½" ± ⅛".
4. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELED WITH FLOWABLE FILL.
5. SEE SHEET 6 FOR SECTION DETAILS.
6. IT SHALL BE THE CONTRACTOR'S OPTION TO REPLACE ANY EMBEDDED DOWEL BARS OR PREFORMED SLOTS AS SHOWN ON THESE DRAWINGS WITH FULLY RETROFITTED DOWEL BARS FIELD INSTALLED IN ACCORDANCE WITH "DETAIL C" OF STANDARD A19-00. THE CONTRACTOR SHALL USE AN APPROVED TEMPLATE TO LOCATE THE SAW CUTS REQUIRED FOR PROPER SPACING AND RETROFITTING OF THE DOWEL BARS IN ACCORDANCE WITH THESE DRAWINGS. DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NONSKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
7. SEE "PRECAST REPLACEMENT OF CONCRETE PAVEMENT SLABS" (ILLINOIS TOLLWAY) SPECIAL PROVISION FOR LOCATING BEDDING GROUT PORTS.

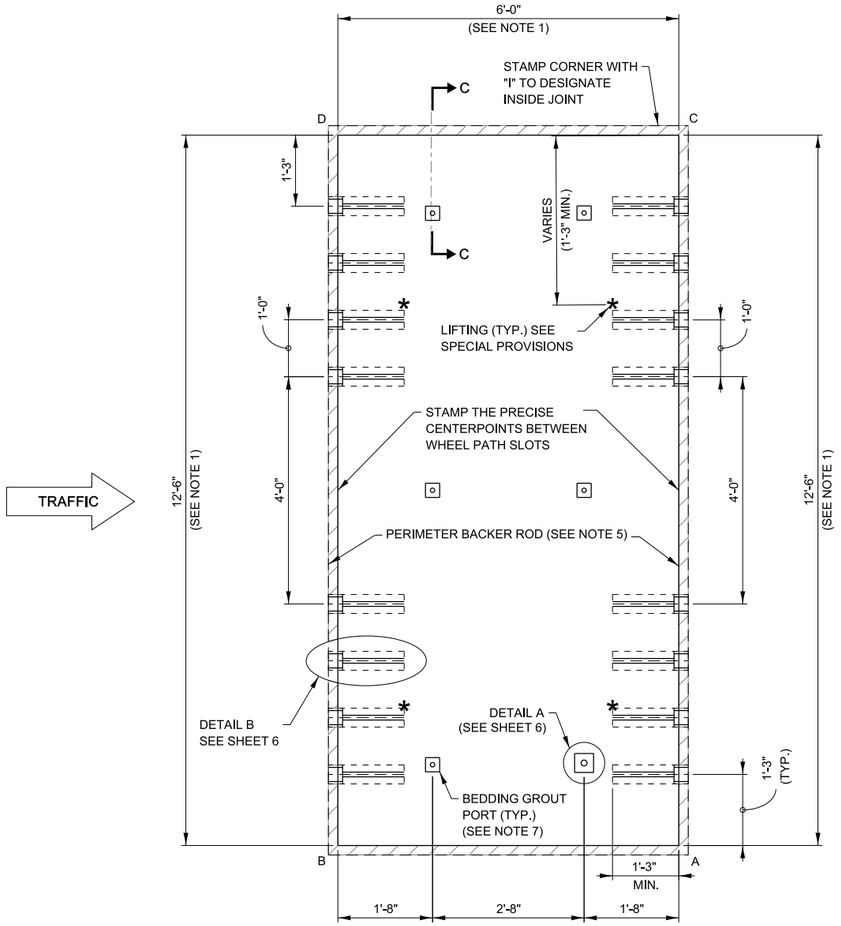
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE:
03/01/2019

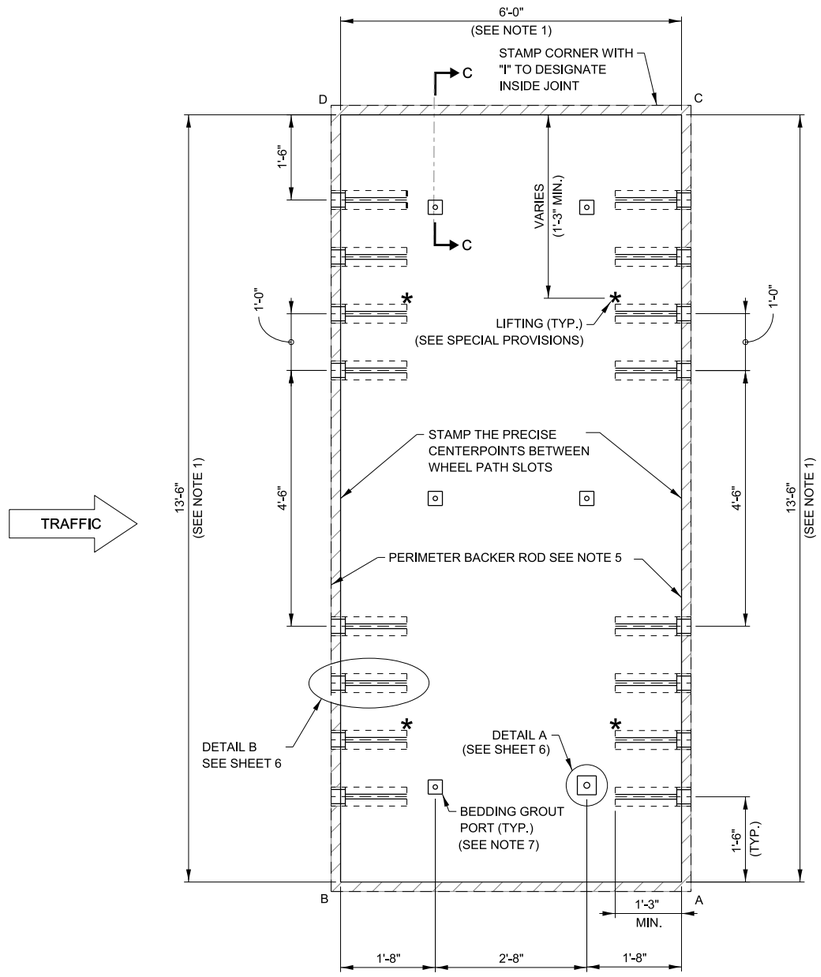
Illinois Tollway

PRECAST PAVEMENT SLABS

VERSION:	STANDARD:	SHEET:
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STANDARD 12'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH NARROW MOUTH PREFORMED DOWEL SLOTS TO ALIGN WITH PRE-DRILLED HOLES IN ADJACENT PAVEMENT.



STANDARD 13'-6" WIDE PANEL LAYOUT FOR ISOLATED PLACEMENT WITH NARROW MOUTH PREFORMED DOWEL SLOTS TO ALIGN WITH PRE-DRILLED HOLES IN ADJACENT PAVEMENT.

NOTES:

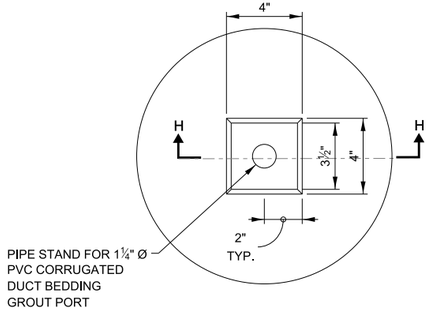
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6. SEE SHEET 6 FOR SECTION DETAILS.
7. SEE "PRECAST REPLACEMENT OF CONCRETE PAVEMENT SLABS" (ILLINOIS TOLLWAY) SPECIAL PROVISION FOR LOCATING BEDDING GROUT PORTS.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

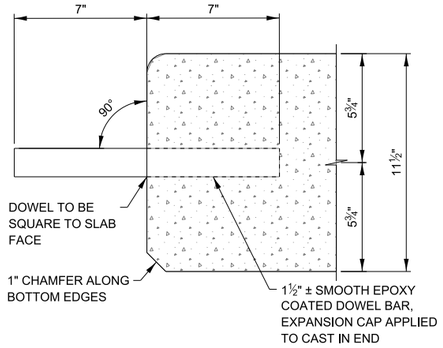
Illinois Tollway

PRECAST PAVEMENT SLABS

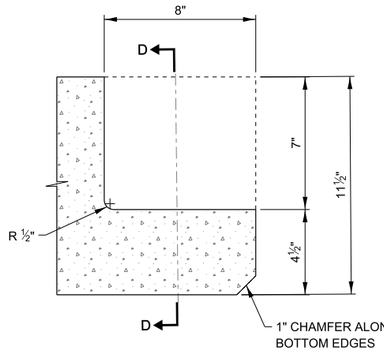
VERSION:	STANDARD:	SHEET:
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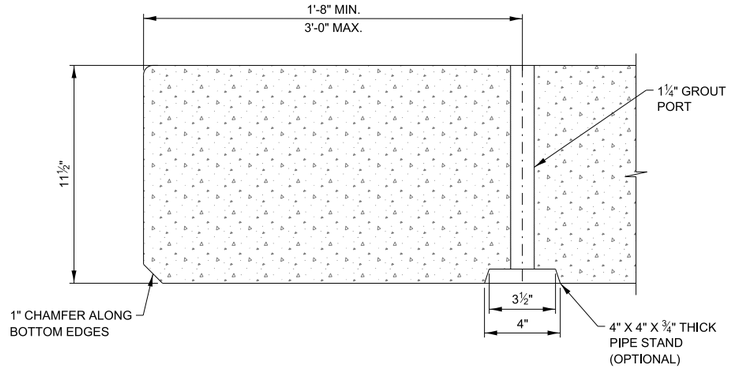
DETAIL A
GROUT PIPE STAND



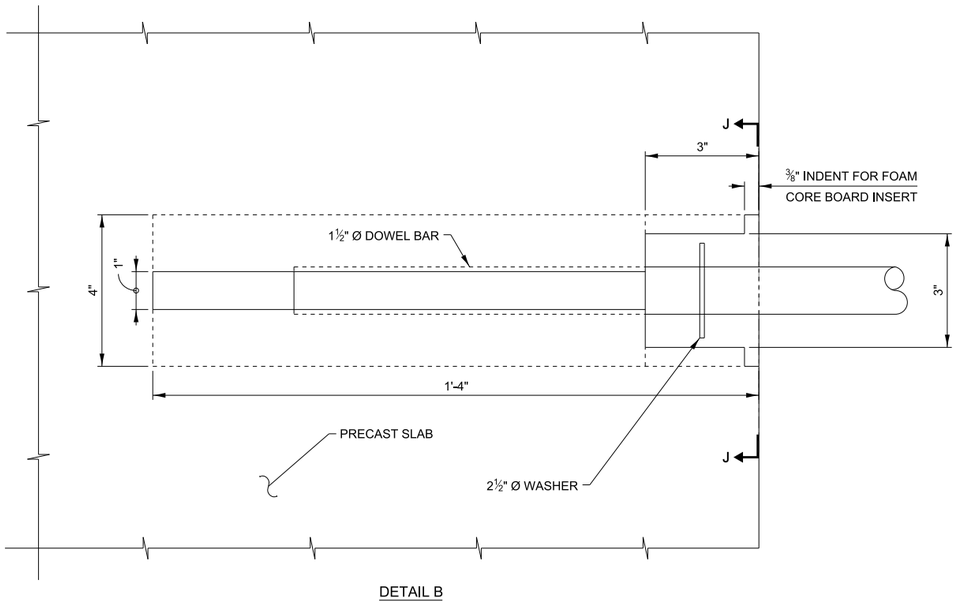
SECTION A-A
TRANSVERSE JOINT DOWEL BAR (EMBEDDED INTO STANDARD PRECAST PAVEMENT SLAB FOR BOTH ISOLATED AND CONSECUTIVE PLACEMENT TYP.)



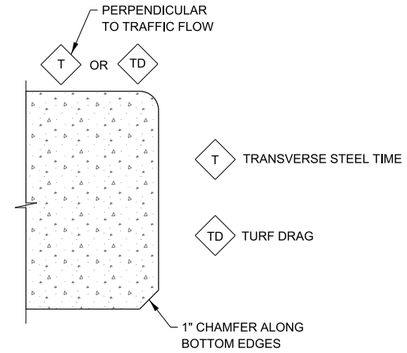
SECTION B-B
TRANSVERSE WIDE MOUTH OPEN SLOT DETAIL FOR CONSECUTIVE STANDARD SLABS



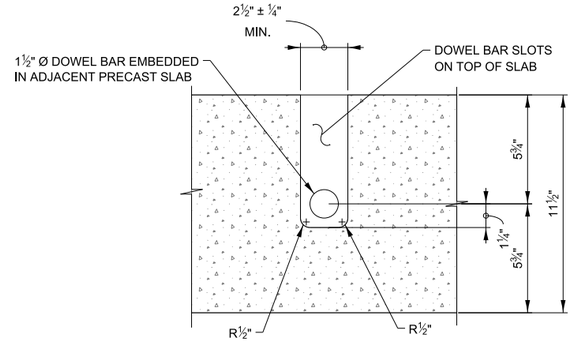
SECTION C-C
GROUT CHANNEL & PORT LOCATION



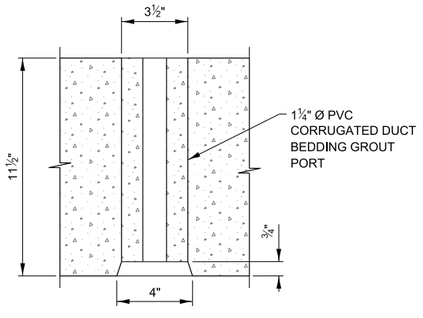
DETAIL B
TRANSVERSE NARROW MOUTH SLOT DETAIL FOR ISOLATED SLABS



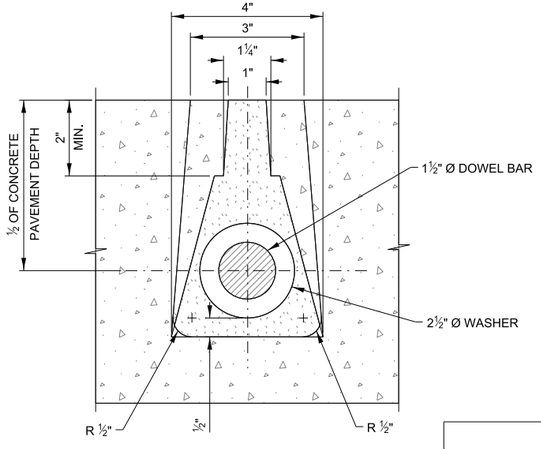
FINISH SCHEDULE



SECTION D-D
DOWEL BAR SECTION FOR WIDE MOUTH OPEN SLOTS



SECTION H-H
PIPE STAND ELEVATION



SECTION J-J
3" TAPER TO 4" X 16" LONG DOWEL SLOT

FABRICATION DETAILS

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

Illinois Tollway

PRECAST PAVEMENT SLABS

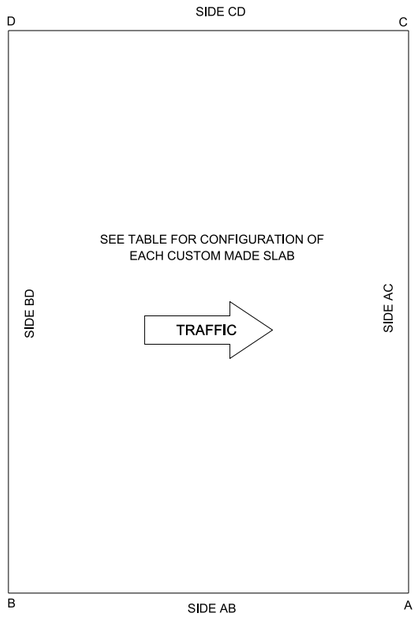
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FOR NON-STANDARD SLABS, UPON COMPLETION BY THE CONTRACTOR A SLAB LAYOUT WILL BE ADDED WITH SLAB DIMENSIONS TO INCLUDE BUT NOT BE LIMITED TO THE TABLE SHOWN BELOW.

	CORRIDOR	STATION NUMBER	MAINLINE LANE NO.	RAMP ID.	RAMP LANE NO.	PLAZA NO.	PLAZA LANE NO.	MARK NO.	LANE TYP.	VARIABLES (FT.)				AB * SIDE	BD * SIDE	CD * SIDE	AC * SIDE	AREA (SQ.FT.)	VOLUME (CU.FT.)	WEIGHT (TONS)	DIAGONALS (FT.)	
										AB (FT.)	AC (FT.)	BD (FT.)	CD (FT.)								AD	BC
EXAMPLE																						

MAINLINE LANE NO.: LANE NO 1 IS ADJACENT TO MEDIAN SHOULDER.
RAMP LANE NO.: LANE NO 1 IS ADJACENT TO THE BUILDING
PLAZA LANE NO.: LANE NO 1 IS ADJACENT TO THE BUILDING
MARK NO.: EACH PANEL SHALL BE INDIVIDUALLY MARKED FOR CORRECT PLACEMENT.
LANE TYP.: "OUT" IN THIS COLUMN INDICATES OUTSIDE LANE.
"MID" IN THIS COLUMN INDICATES MIDDLE LANE.
"IN" IN THIS COLUMN INDICATES INSIDE LANE.
"PLAZA" IN THIS COLUMN INDICATES PLAZA LANE.

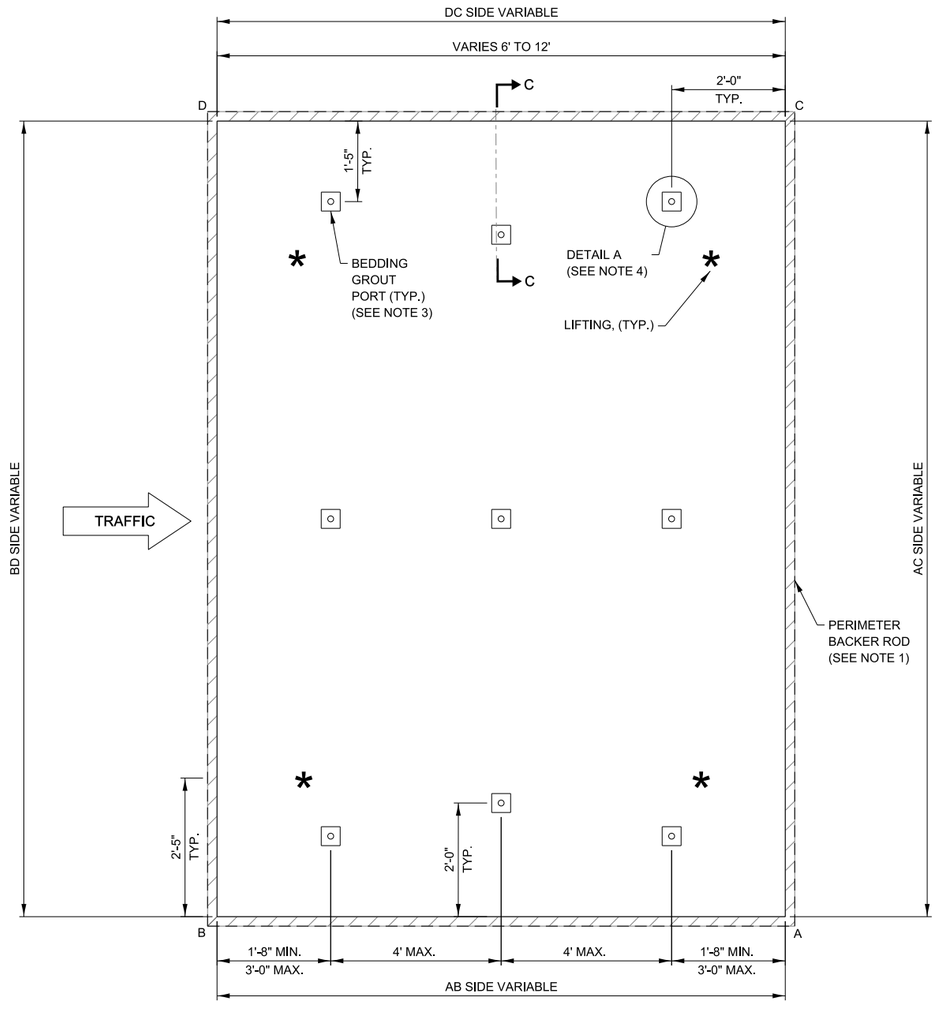
* LEGEND
DB = DOWEL BAR EMBEDDED
DS = DOWEL SLOT
ST = SLOT OR HOLE FOR STITCHED TIE BAR
RD = FIELD RETROFITTED DOWEL BARS



LAYOUT FOR CUSTOM SLABS
LAYOUT KEY

NOTES:

1. A FOAM BACKER ROD SHALL BE PLACED AROUND THE OUTSIDE PERIMETER OF THE SLAB AT THE BOTTOM OF THE JOINTS BEFORE THE SLAB HAS BEEN SET AND BEFORE BEDDING GROUT OR POLYURETHANE LEVELING FILL IS APPLIED. THE BACKER ROD SHALL NOT BE REQUIRED WHEN ANY SLAB IS LEVELED WITH A FLOWABLE FILL.
2. EITHER SINGLE DIAMOND BLADED SAWS OR DIAMOND BLADED GANG SAWS SHALL BE USED TO MAKE THE SAW CUTS PERPENDICULAR TO THE TRANSVERSE (NONSKEWED) JOINT LINE TO ALLOW FOR DOWEL BAR PLACEMENTS WITHIN THE SPECIFIED TOLERANCES.
3. SEE "PRECAST REPLACEMENT OF CONCRETE PAVEMENT SLABS" (ILLINOIS TOLLWAY) SPECIAL PROVISION FOR LOCATING BEDDING GROUT PORTS.
4. SEE SHEET 6 FOR SECTION DETAILS.



LAYOUT DETAIL FOR CUSTOM SLABS 6'-12' IN LENGTH (VARIED WIDTH **)

** FOR TRAPEZOID SLABS MINIMUM WIDTH IS 2 FT. WITH MAXIMUM WIDTH OF 16 FT.

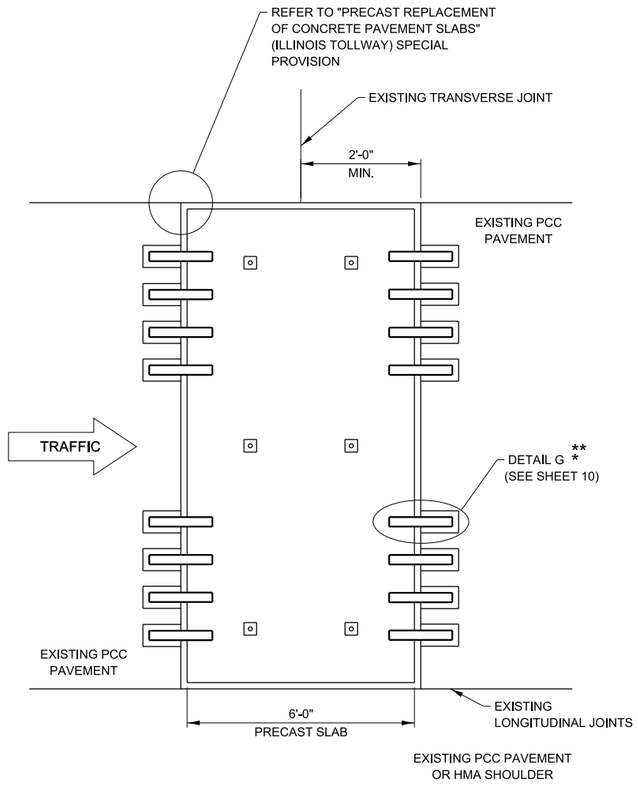
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

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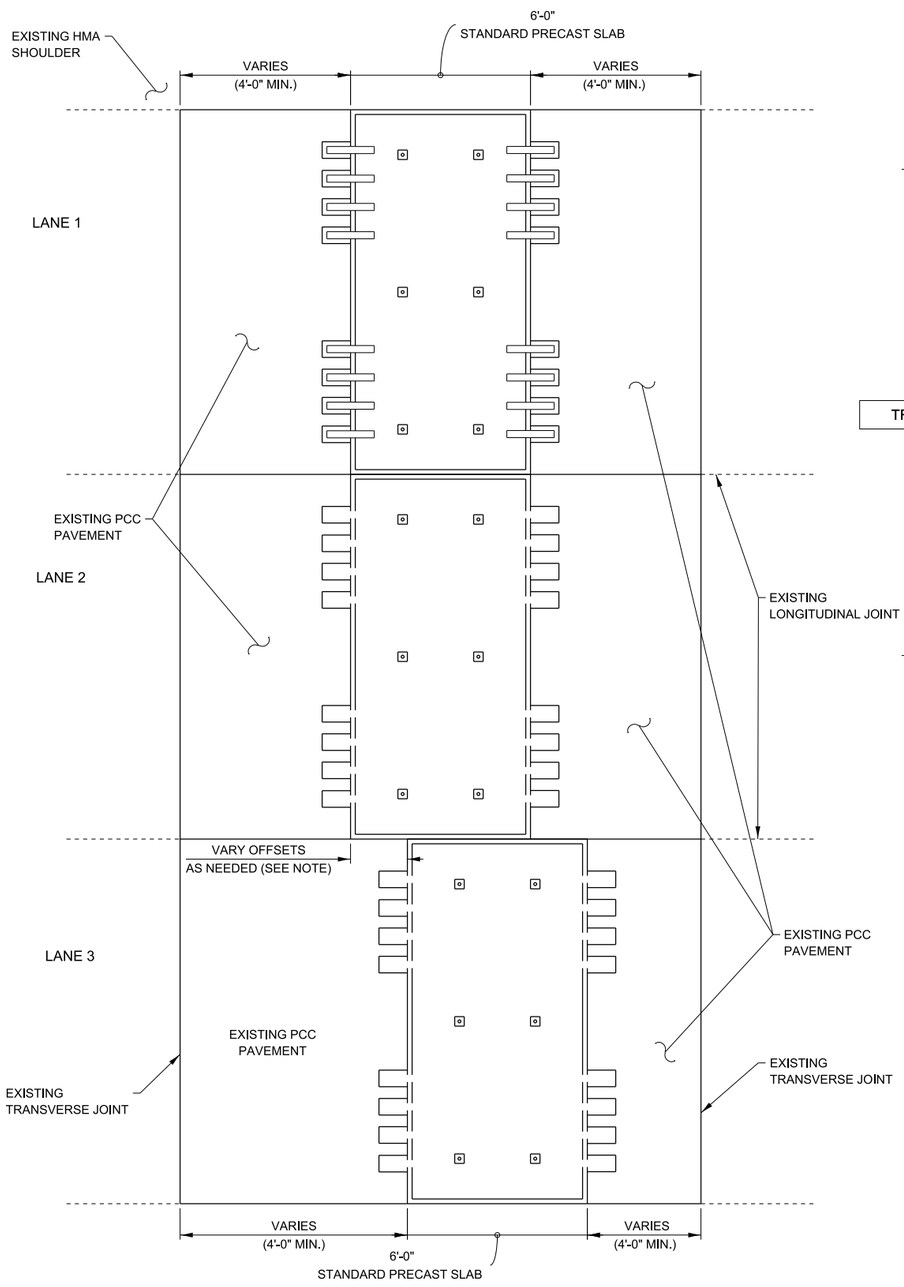
PRECAST PAVEMENT SLABS

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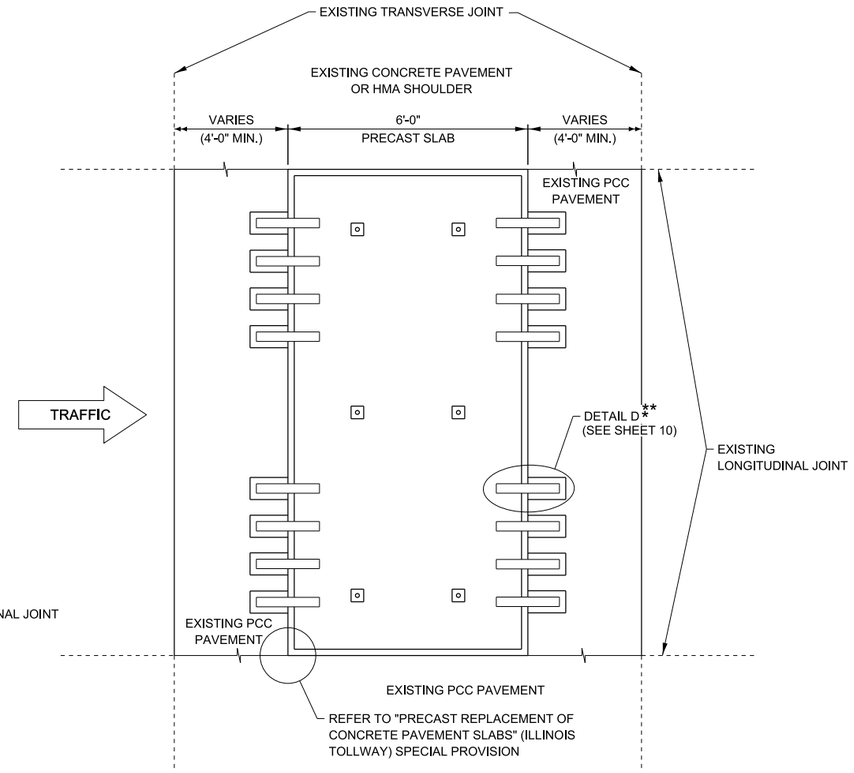
INSTALLATION OF ISOLATED STANDARD PRECAST SLABS



SINGLE LANE JOINT REPLACEMENT DROP IN PANEL FOR STANDARD PRECAST SLABS



MULTIPLE LANE MID SLAB DROP IN PANEL FOR STANDARD PRECAST PANELS



SINGLE LANE MID SLAB DROP IN PANEL FOR STANDARD PRECAST PANELS

NOTE:
WHEN THE TRANSVERSE JOINTS OF ANY PRECAST SLAB CANNOT BE ALIGNED WITH TRANSVERSE JOINTS IN ADJACENT LANES, A MINIMUM 2'-0" OFFSET BETWEEN JOINTS SHALL BE PROVIDED.

* FOR DOWEL BARS FULLY RETROFITTED IN THE FIELD, REFER TO DETAIL G ON SHEET 10

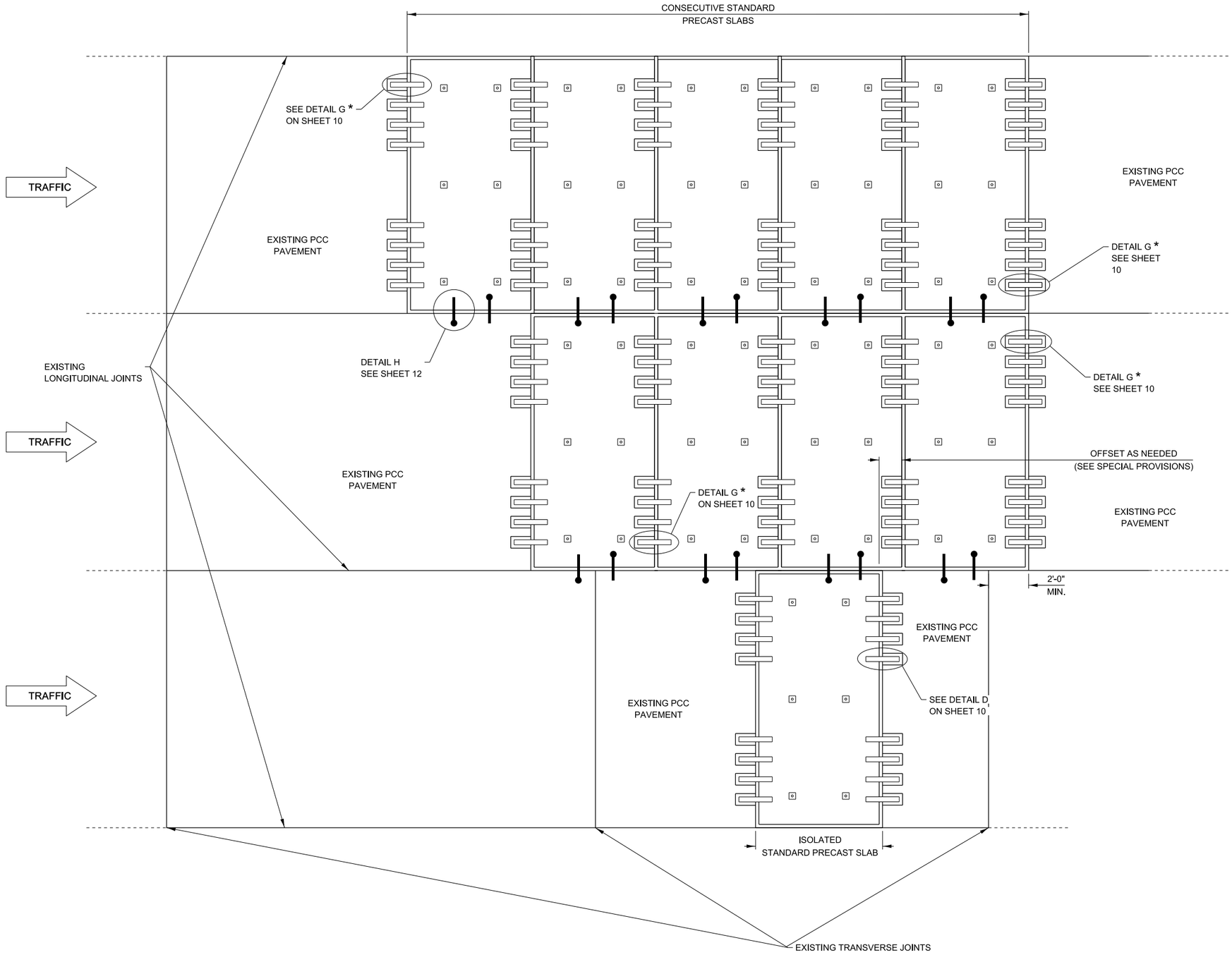
** FOR DOWEL BARS TO BE SLID INTO PRE-DRILLED HOLES IN THE FIELD, REFER TO DETAIL G ON SHEET 10

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

Illinois Tollway

PRECAST PAVEMENT SLABS

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NOTE:

* FOR DOWEL BARS FULLY RETROFITTED IN THE FIELD, REFER TO DETAIL C ON STANDARD A19-00.

INSTALLATION OF CONSECUTIVE STANDARD PRECAST SLABS

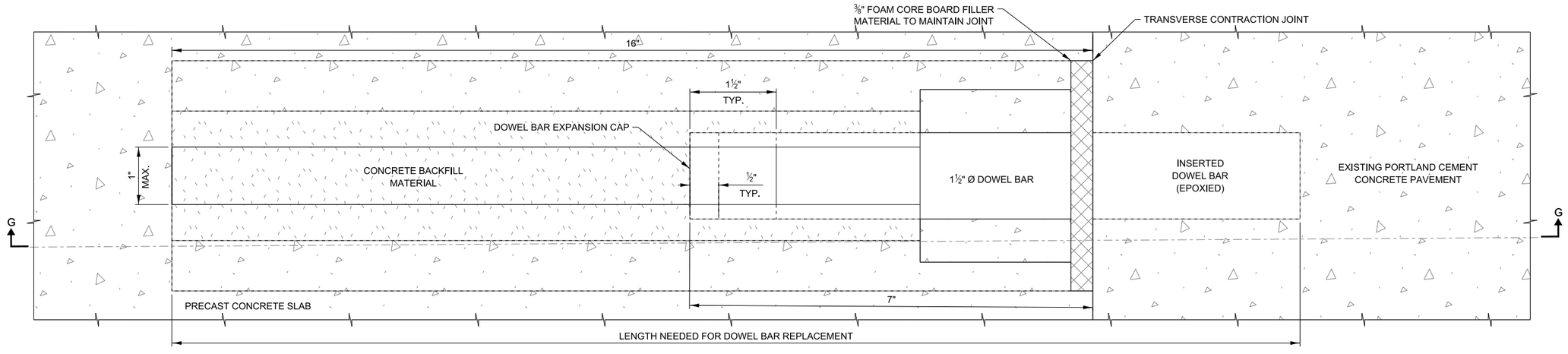
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/01/2019

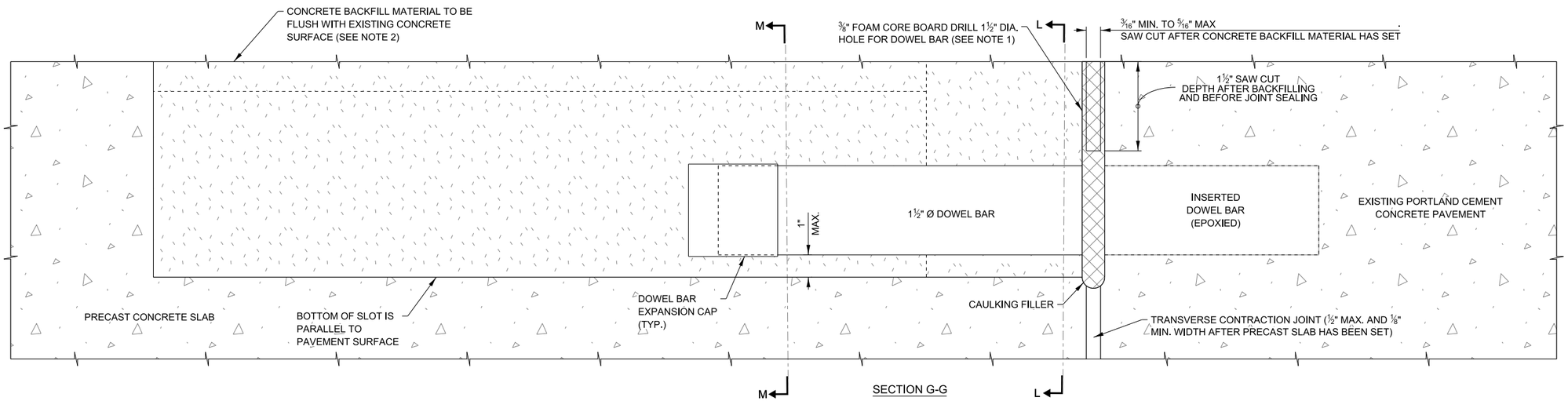
Illinois Tollway

PRECAST PAVEMENT SLABS

VERSION:	STANDARD:	SHEET:
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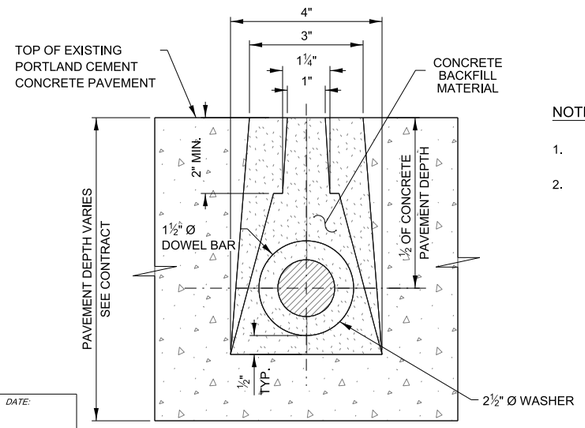
PLAN VIEW



SECTION G-G

DETAIL G - NARROW MOUTH DOWEL BAR PLACEMENT
DETAIL FOR ISOLATED PRECAST PANELS

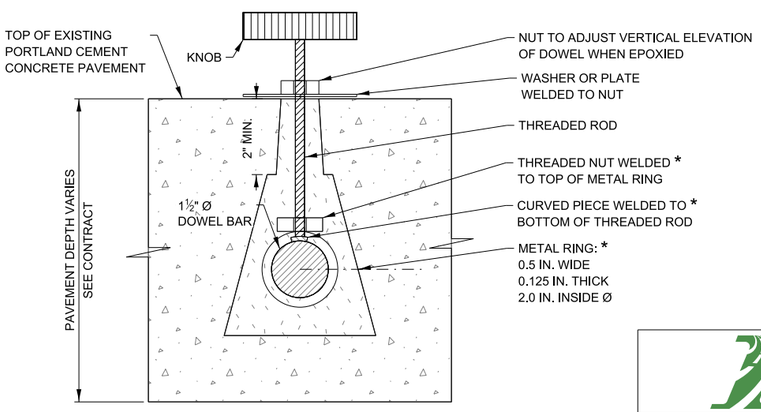
(FOR OPTIONAL APPLICATION WITH ALL ISOLATED SLABS IN PLACE OF FULL RETROFITS)



SECTION L-L

NOTES:

1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW EXISTING CONCRETE SURFACE.



SECTION M-M
CLAMP DETAIL FOR SLIDING DOWEL BAR SLOTS

* METAL RING MAY BE REPLACED WITH A STRONG MAGNET WELDED TO THE THREADED ROD. AT LEAST ONE CLAMP WILL BE NEEDED FOR EACH INSERTED DOWEL BAR TO MAINTAIN ALIGNMENT.

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

Illinois Tollway

PRECAST PAVEMENT SLABS

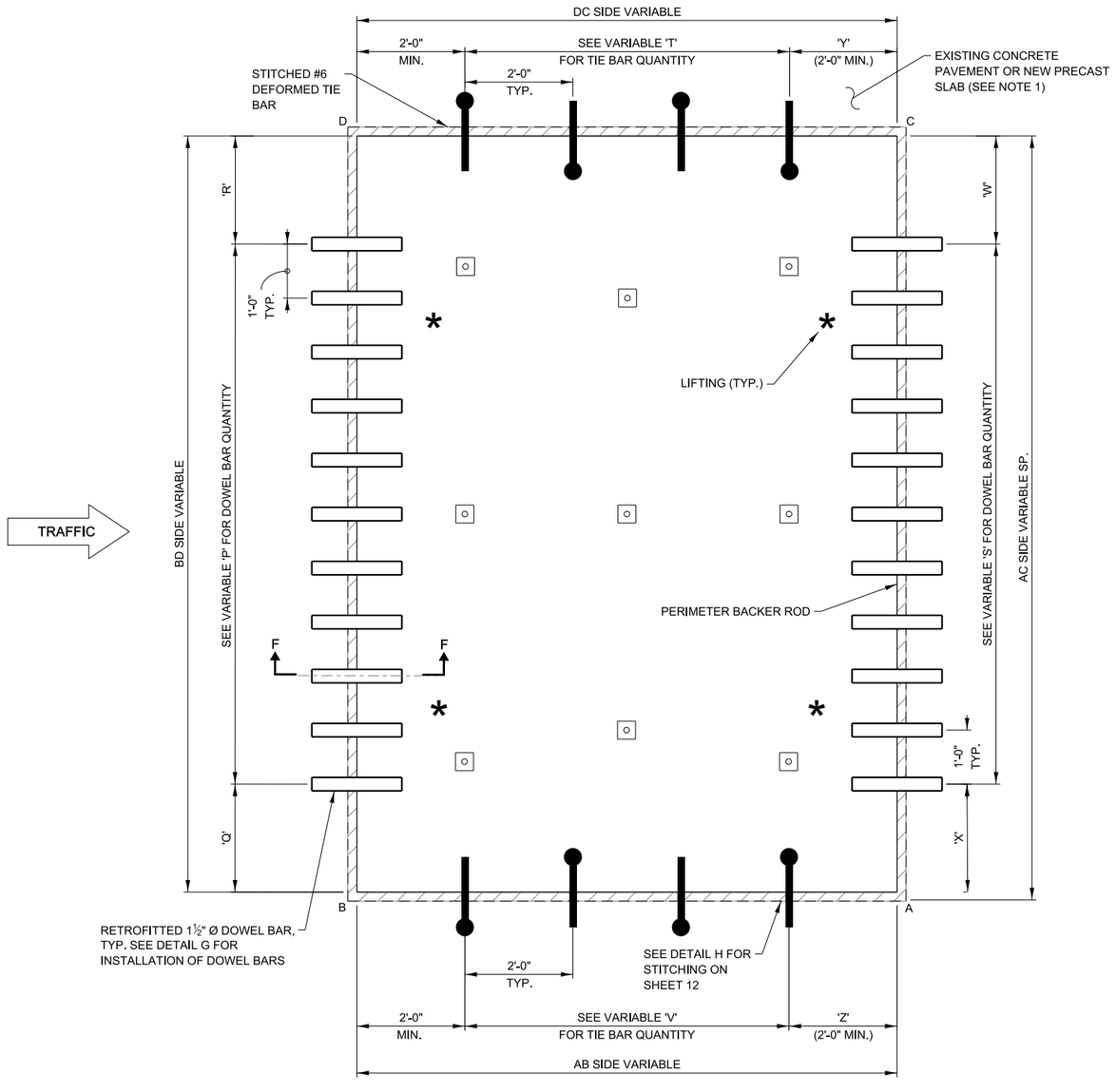
VERSION:	STANDARD:	SHEET:
2019-03	A18-05	10 OF 12

FOR NON-STANDARD SLABS, UPON COMPLETION BY THE CONTRACTOR A SLAB LAYOUT WILL BE ADDED WITH SLAB DIMENSIONS TO INCLUDE BUT NOT BE LIMITED TO THE TABLE SHOWN BELOW.

	CORRIDOR	STATION NUMBER	MAINLINE LANE NO.	RAMP ID.	RAMP LANE NO.	PLAZA NO.	PLAZA LANE NO.	MARK NO.	LANE TYP.	VARIABLES													AB * SIDE	BD * SIDE	CD * SIDE	AC * SIDE	AREA (SQ.FT)	VOLUME (CU.FT)	WEIGHT (TONS)	DIAGONALS (FT.)	
										AB (FT.)	AC (FT.)	BD (FT.)	CD (FT.)	P (NO.)	Q (FT.)	R (FT.)	S (NO.)	T (NO.)	V (NO.)	W (FT.)	X (FT.)	Y (FT.)	Z (FT.)								AD	BC
EXAMPLE																														

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RAMP LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING.
PLAZA LANE NO.: LANE NO. 1 IS ADJACENT TO THE BUILDING.
MARK NO.: EACH PANEL SHALL BE INDIVIDUALLY MARKED FOR CORRECT PLACEMENT.
LANE TYP.: "OUT" IN THIS COLUMN INDICATES OUTSIDE LANE.
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"IN" IN THIS COLUMN INDICATES INSIDE LANE.
"PLAZA" IN THIS COLUMN INDICATES PLAZA LANE.

* LEGEND
DB = DOWEL BAR EMBEDDED
DS = DOWEL SLOT
ST = SLOT OR HOLE FOR STITCHED TIE BAR
RD = FIELD RETROFITTED DOWEL BARS



INSTALLATION DETAIL FOR CUSTOM SLABS

NOTES:

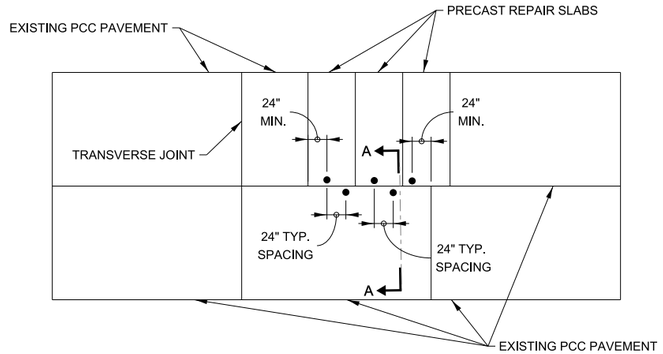
1. NO STITCHING OF DEFORMED TIE BARS IS REQUIRED WHEN PRECAST SLAB IS PLACED ADJACENT TO HMA SHOULDER OR PLAZA ISLAND.
2. TIE BAR STITCHING SHALL BE REQUIRED WHEN THE REPAIR AREA LENGTH EXCEEDS 20 FT. OR WHEN MORE THAN 3 PRECAST SLABS ARE PLACED IN SEQUENCE.
3. SHOP DRAWINGS SHALL BE REQUIRED FOR ALL CUSTOM PLAZA SLABS.

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

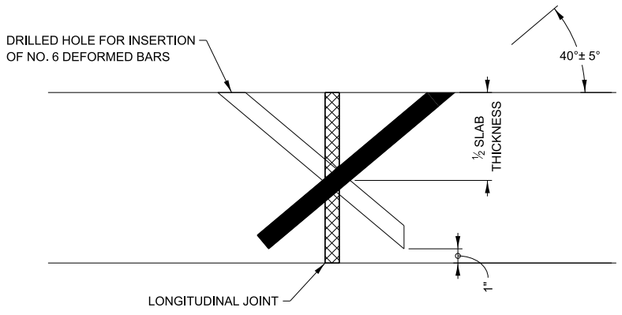
Illinois Tollway

PRECAST PAVEMENT SLABS

VERSION:	STANDARD:	SHEET:
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DETAIL H - LONGITUDINAL TIE BAR STITCHING FOR PRECAST PANELS



SECTION A-A

NOTES FOR TIE BAR STITCHING:

1. DRILL HOLES THAT ARE ORIENTED AT 40°± 5° ANGLE TO THE PAVEMENT SURFACE SO THAT THEY INTERSECT THE LONGITUDINAL CRACK OR JOINT AT ABOUT MID-DEPTH. (IT IS IMPORTANT TO START DRILLING THE HOLE AT A CONSISTENT DISTANCE FROM THE JOINT, IN ORDER TO CONSISTENTLY CROSS AT THE MID-DEPTH OF THE SLAB.)
2. HOLE CENTERLINES ARE PERPENDICULAR TO THE JOINT (IN PLAN VIEW) AT EACH LOCATION BEING DRILLED.
3. SELECT A DRILL THAT MINIMIZES DAMAGE TO THE CONCRETE SURFACE, SUCH AS A HYDRAULIC POWERED DRILL. SELECT A DRILL DIAMETER NO MORE THAN 0.375 IN. LARGER THAN THE TIE BAR DIAMETER. CHOOSE A GANG-MOUNTED DRILL IF A HIGHER PRODUCTIVITY IS NEEDED.
4. DRILL HOLES WITH NO LESS THAN A 24 INCH BAR SPACING. ADJACENT HOLES ARE DRILLED IN OPPOSITE DIRECTIONS ACROSS THE JOINT. THE HOLES AND INSERTED TIE BAR SHALL BE NO LESS THAN 24 INCHES FROM ANY EXISTING TRANSVERSE JOINT OR ANY PRECAST OR REPAIR TRANSFER JOINT.
5. HOLE BOTTOMS ARE NO MORE THAN 1 INCH FROM THE SLAB BOTTOM.
6. AIR BLOW THE HOLES TO REMOVE DUST AND DEBRIS AFTER DRILLING.
7. INJECT ADHESIVE INTO THE HOLE, LEAVING SOME VOLUME FOR THE BAR TO OCCUPY THE HOLE. (POURING THE ADHESIVE IS ACCEPTABLE FOR SMALL QUANTITIES.)
8. INSERT THE NO. 6 EPOXY COATED DEFORMED TIE BAR INTO THE HOLE, LEAVING ABOUT 1 IN. FROM THE TOP OF BAR TO THE PAVEMENT SURFACE. DEFORMED TIE BARS SHALL BE EPOXY COATED.
9. REMOVE EXCESS ADHESIVE AND FINISH FLUSH WITH THE PAVEMENT SURFACE.

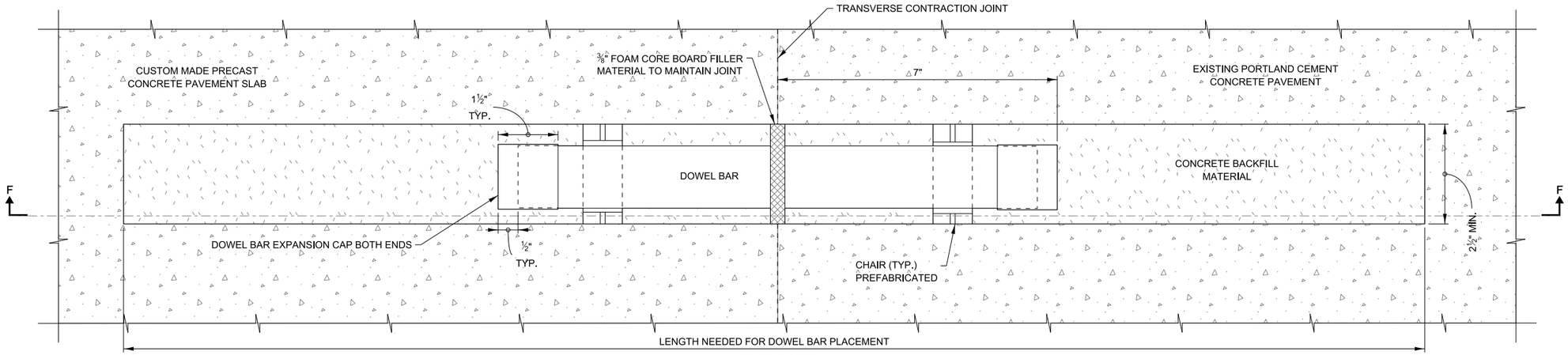
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE:
03/01/2019

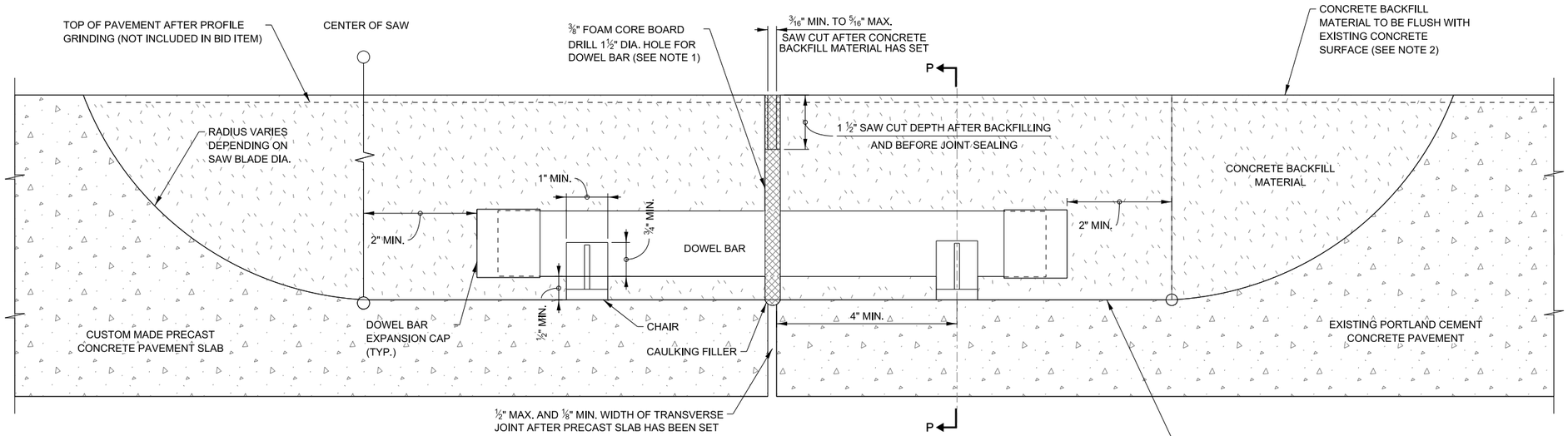
Illinois Tollway

PRECAST PAVEMENT SLABS

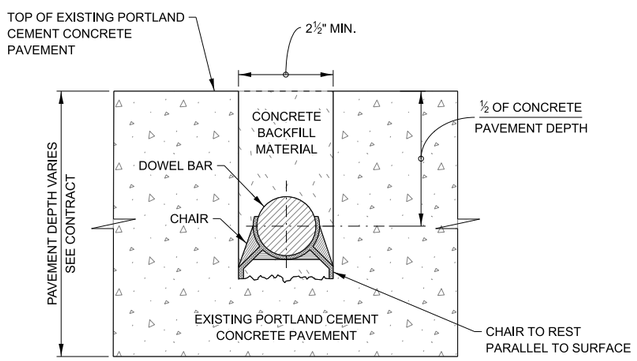
VERSION:	STANDARD:	SHEET:
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PLAN VIEW

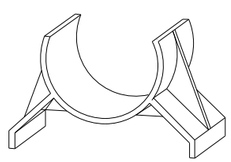


SECTION F-F

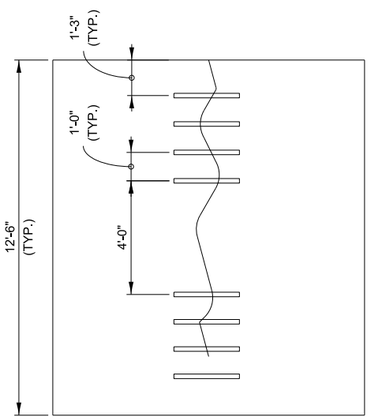


SECTION P-P

DETAIL C - WIDE MOUTH DOWEL BAR PLACEMENT DETAIL FOR ALL CUSTOM MADE PRECAST PANELS AND OPTIONAL FOR STANDARD SLABS



CHAIR DETAIL



DOWEL BAR RETROFIT (PLAN VIEW)

NOTES:

1. PLACE FOAM CORE BOARDS TO THE TOP OF PATCH.
2. UPON COMPLETION, THE FINISHED SURFACE OF THE CONCRETE BACKFILL MATERIAL SHALL NOT BE BELOW EXISTING CONCRETE SURFACE.

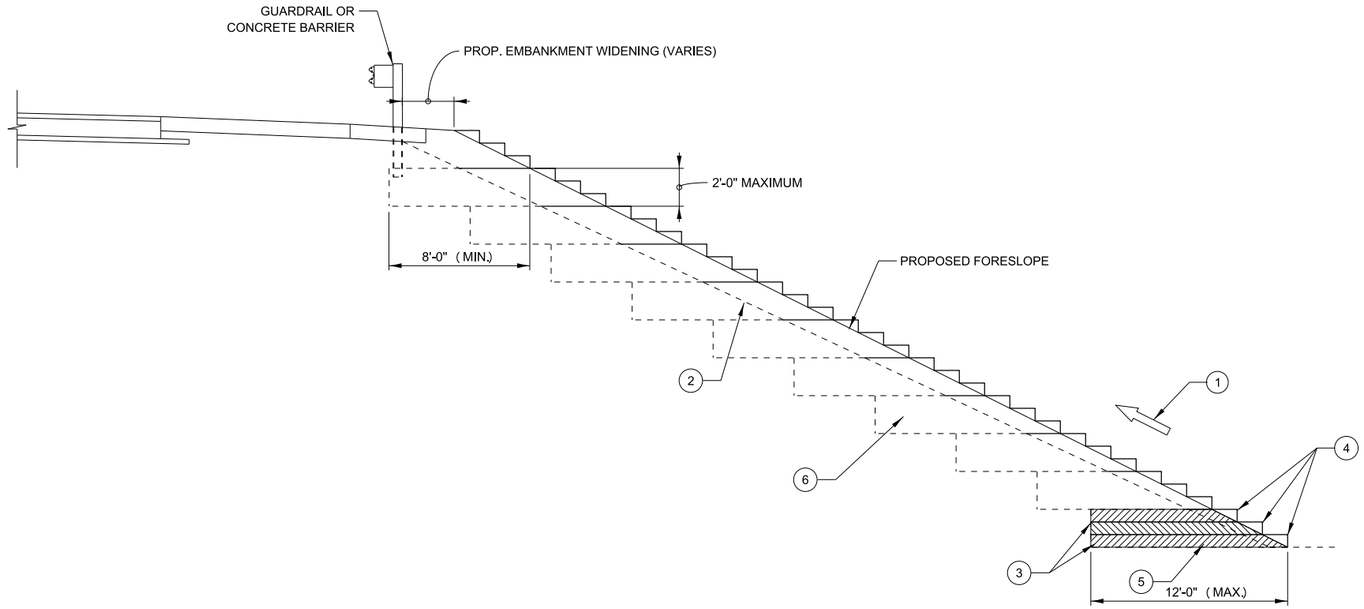
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2019

REVISIONS	
DATE	DESCRIPTION

Illinois Tollway

DOWEL BAR RETROFIT

VERSION: 2019-03 | STANDARD: A19-00 | SHEET: 1 OF 1



TYPICAL BENCHING DETAIL FOR EMBANKMENT

NOTES:

1. CONSTRUCT SUCCEEDING BENCH CUTS AND EMBANKMENT PLACEMENT AND COMPACTION FROM BOTTOM TO TOP IN STAIR STEP FASHION.
2. EXISTING FORESLOPE PREPARED IN ACCORDANCE WITH ARTICLE 205.03 OF THE STANDARD SPECIFICATIONS.
3. BENCH CUT EXISTING SLOPE TYPICAL FOR EACH STEP.
4. TRIM TO FINAL SLOPE.
5. EQUAL 8-INCH LIFTS OF EMBANKMENT COMPACTED IN ACCORDANCE WITH ARTICLE 205.05 OF THE STANDARD SPECIFICATIONS.
6. EXCAVATION OF BENCH CUTS FOR EMBANKMENT WIDENING WITHIN EXISTING EMBANKMENT WILL BE INCIDENTAL TO THE CONTRACTS EARTH EXCAVATION.
7. SLOPES SHALL BE BENCHED ACCORDING TO THIS DETAIL WHEN THE SLOPE IS STEEPER THAN 1:4(V:H) AND THE HEIGHT IS GREATER THAN 5'.
8. SOILS EXCAVATED FOR BENCHING THAT ARE TYPE 1 AND ARE TO BE DISPOSED OFF-SITE, SHALL BE PAID FOR AS NON-SPECIAL WASTE DISPOSAL, TYPE 1.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

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REVISIONS	
DATE	DESCRIPTION

BENCHING DETAIL FOR EMBANKMENT WIDENING

VERSION:	STANDARD:	SHEET:
2022-03	A20-00	1 OF 1

STANDARD DRAWINGS

SECTION B

DRAINAGE STRUCTURES, CURBS AND GUTTER

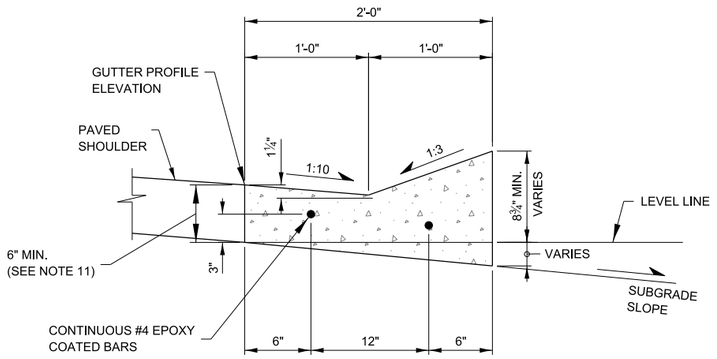
MARCH 2025

Illinois Tollway Standard Drawing Revisions

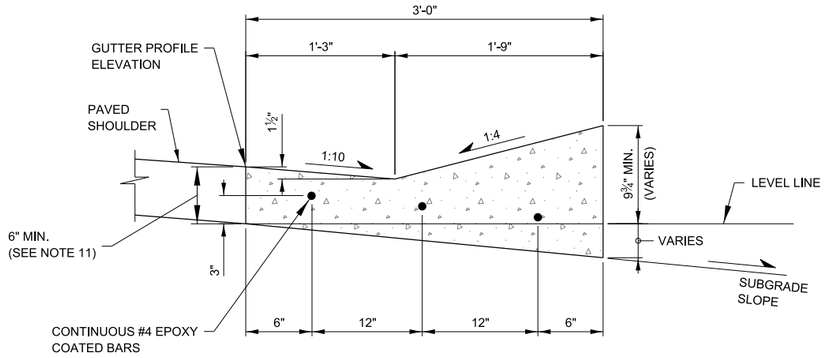
Section B	Drainage Structures, Curbs & Gutter	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standards has been converted from v8i to OpenRoads.
		There are no other changes to this set of standards from the previous version.

New Sheet

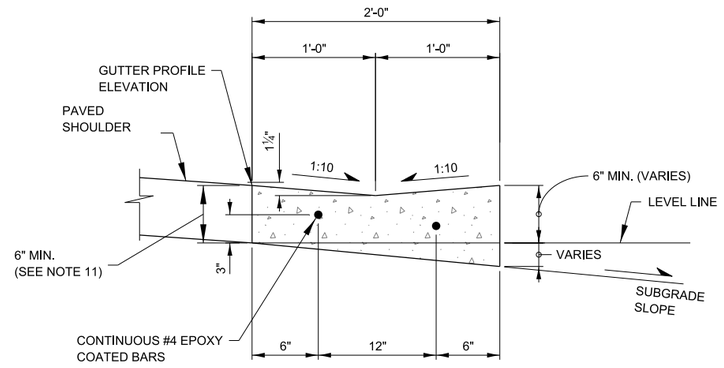
Retired Standard



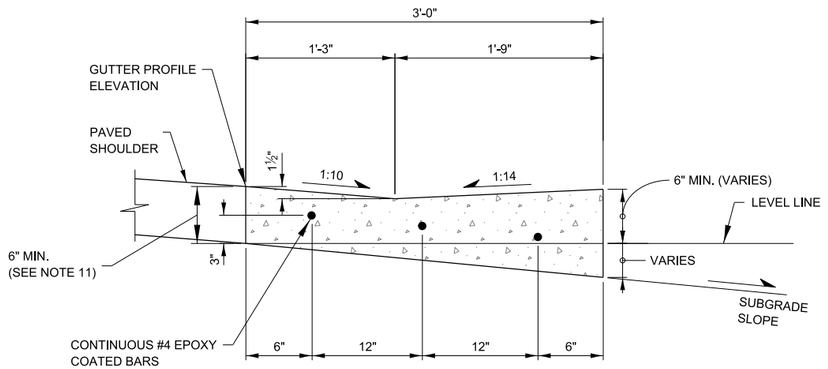
GUTTER, TYPE G-2



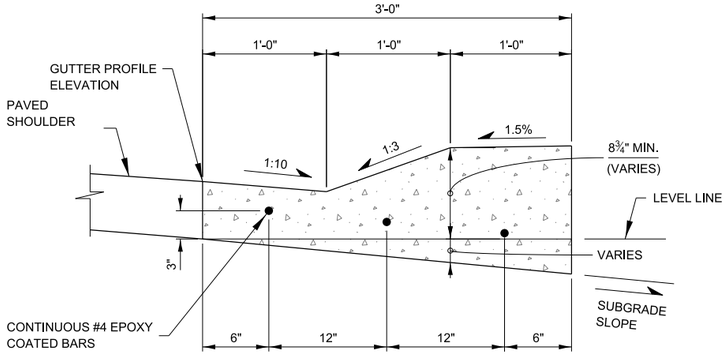
GUTTER, TYPE G-3



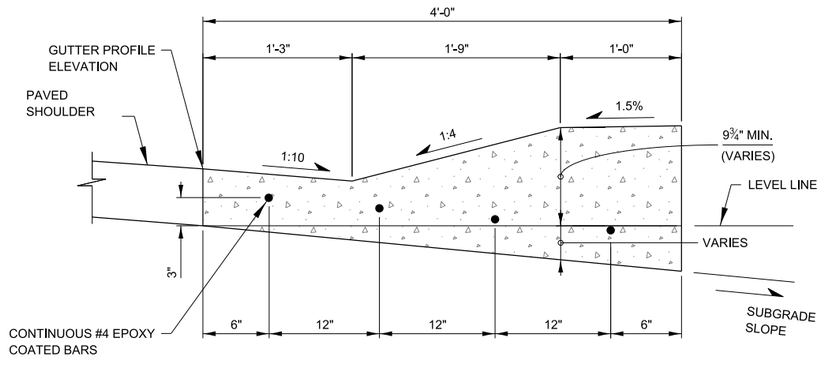
GUTTER, TYPE G-2, MODIFIED



GUTTER, TYPE G-3, MODIFIED



GUTTER, TYPE G-2N



GUTTER, TYPE G-3N

NOTES:

1. FOR CONCRETE CURB, TYPE C TRANSITIONS, THE LEADING ENDS OF CURB IN THE DIRECTION OF TRAFFIC SHALL BEGIN FLUSH WITH ADJACENT PAVEMENT OR SHOULDER SURFACE AND TRANSITION TO FULL HEIGHT AT THE RATE OF ONE INCH VERTICAL TO ONE FOOT HORIZONTAL.

2.

GUTTER TRANSITION DETAILS	STANDARD DRAWING
TRAFFIC BARRIER TERMINAL TYPE T1 (SPECIAL)	B-28
TRAFFIC BARRIER TERMINAL TYPE T1-A (SPECIAL)	B-29
TRAFFIC BARRIER TERMINAL TYPE T10	B-2
TRAFFIC BARRIER TERMINAL TYPE T6	B-3

3. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

4. REINFORCEMENT STEEL SHALL BE ACCURATELY PLACED AND FIRMLY HELD IN THE POSITION SPECIFIED USING EPOXY COATED STEEL CHAIRS. CHAIR SPACING SHALL NOT EXCEED 4'-0".

5. GUTTER REINFORCEMENT SHALL BE PLACED 3" ABOVE BOTTOM OF GUTTER FOLLOWING THE SUBGRADE SLOPE.

6. OTHER GUTTER AND CURB TRANSITION DETAILS WILL BE SHOWN ON THE PLANS.

7. CONTINUOUS #4 BARS SHALL BE LAPPED A MINIMUM OF 1'-1".

8. FOR CONCRETE GUTTER OVERLAYS, CRACK CONTROL JOINTS SHALL BE PLACED AT LOCATIONS OF UNDERLYING JOINTS AND WORKING CRACKS.

9. GUTTER CRACK CONTROL JOINTS TO ALIGN IN PROLONGATION WITH PCC SHOULDER JOINTS WHERE EXISTING. CRACK CONTROL JOINTS SHALL BE SEALED FULL DEPTH AND WIDTH IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

10. EXPANSION JOINTS SHALL BE CONSTRUCTED IN GUTTER AT MAXIMUM JOINT SPACING OF 60'-0", SEE EXPANSION JOINT DETAIL ON SHEET 3 OF THIS STANDARD.

11. GUTTER DEPTH SHALL MATCH PAVED SHOULDER DEPTH.

12. THIS WORK WILL BE MEASURED FOR PAYMENT IN FEET ALONG THE FLOW LINE OF THE GUTTER, WHICH MEASUREMENT WILL INCLUDE DRAINAGE CASTINGS INCORPORATED WITHIN GUTTER.

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER

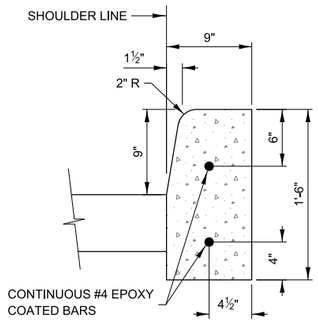
DATE: 03/01/2024

Illinois Tollway

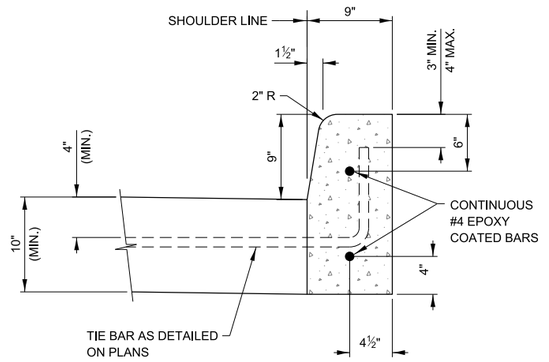
REVISIONS	
DATE	DESCRIPTION
03-01-2024	REMOVED CONCRETE GUTTER OVERLAY DETAIL
03-01-2023	REVISED NOTE 10 AND USAGE OF CONCRETE CURB, TYPE C
03-01-2022	ADDED NEW G-2N & G3-N DETAILS
	REVISED CONC. GUTTER OVERLAY

GUTTER AND CURB DETAILS

VERSION:	STANDARD:	SHEET:
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ADJACENT TO FLEXIBLE PAVEMENT



ADJACENT TO PCC PAVEMENT

CONCRETE CURB, TYPE C
(SEE NOTE 1)

NOTES:

1. CONCRETE CURB, TYPE C SHALL ONLY BE USED ALONG PLAZA PARKING AREAS, AT MAINTENANCE FACILITIES, OR IN CONJUNCTION WITH GUARDRAIL ON THE TAPERING APPROACH TO A NON-AET PLAZA.

2. SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.

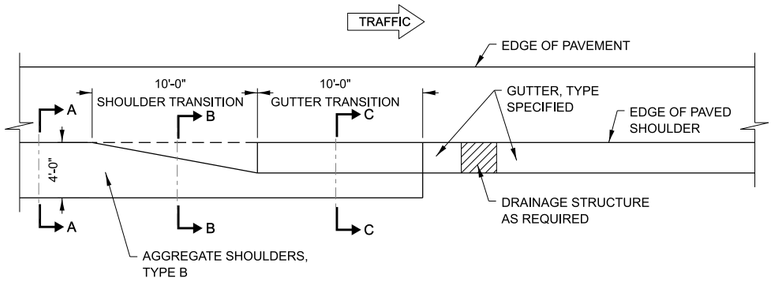
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

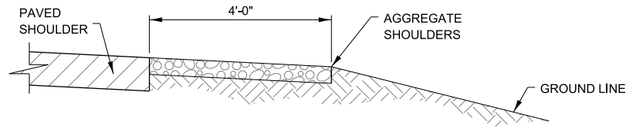
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GUTTER AND CURB DETAILS

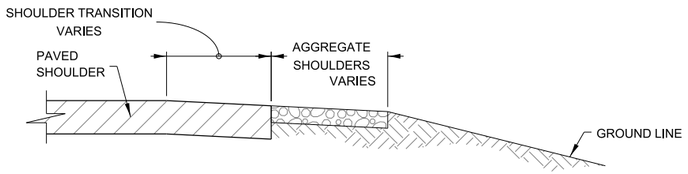
VERSION:	STANDARD:	SHEET:
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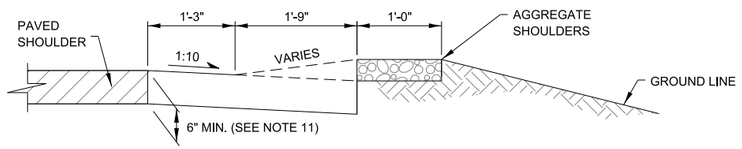
GUTTER TRANSITION TERMINATION



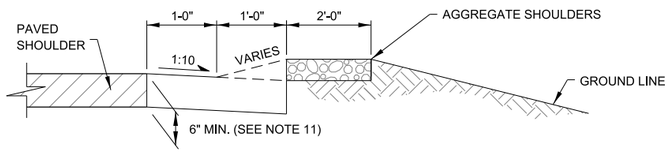
SECTION A-A



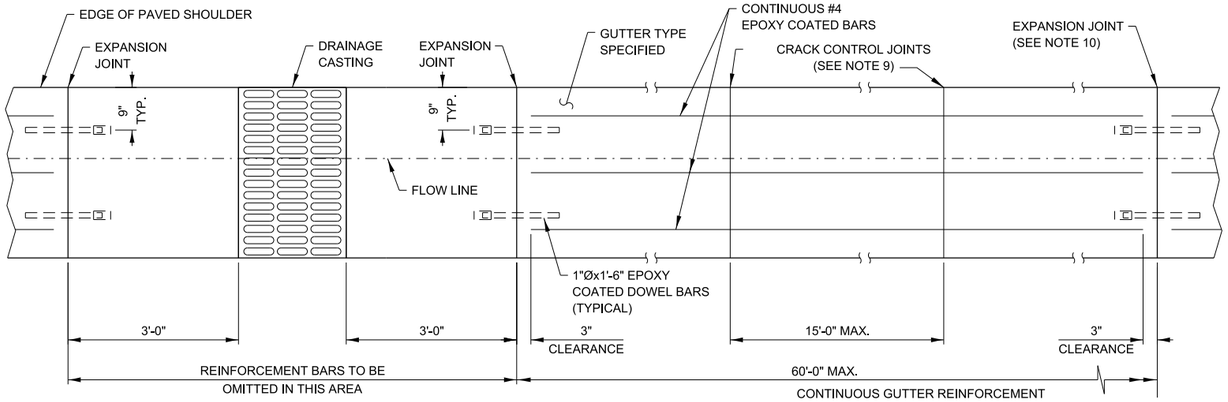
SECTION B-B
ASPHALT SHOULDER TRANSITION



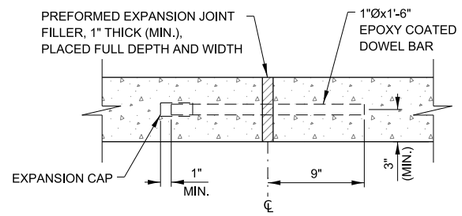
GUTTER, TYPE G-3 TRANSITION



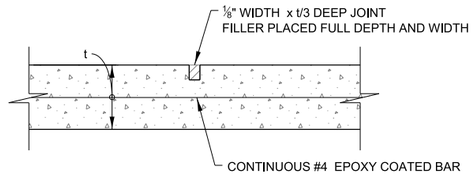
GUTTER, TYPE G-2 TRANSITION
SECTION C-C



PLAN
GUTTER, TYPE G-2 OR GUTTER, TYPE G-3
(GUTTER, TYPE G-3 SHOWN)

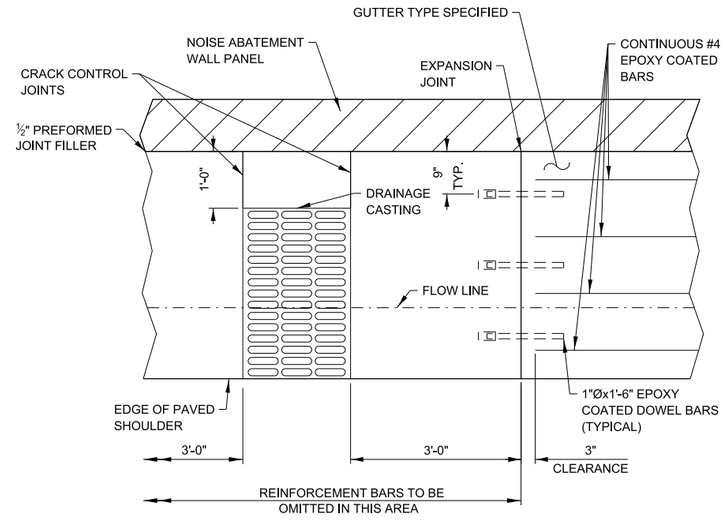


EXPANSION JOINT



CRACK CONTROL JOINT

CONTRACTION-CRACK CONTROL JOINTS
GUTTER, TYPE SPECIFIED



PLAN
GUTTER, TYPE G-2N OR GUTTER, TYPE G-3N
(GUTTER, TYPE G-3N SHOWN)

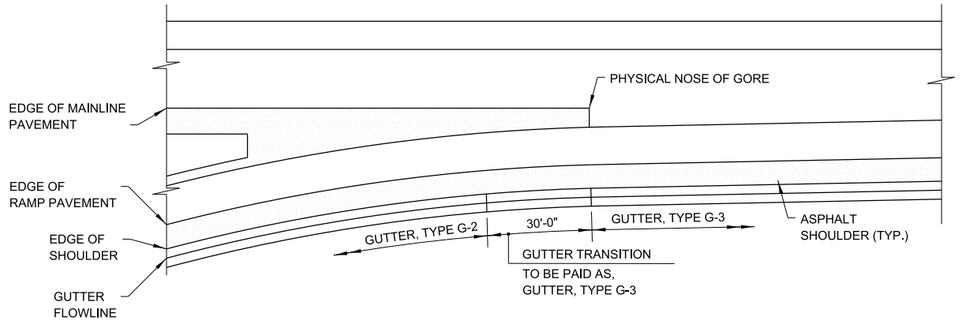
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY:
Marco Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

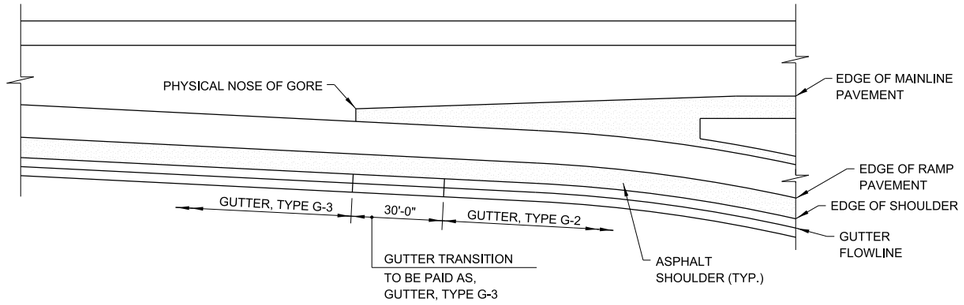
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GUTTER AND CURB DETAILS

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GUTTER TRANSITION AT ENTRANCE RAMP TERMINALS



GUTTER TRANSITION AT EXIT RAMP TERMINALS

GUTTER TRANSITION NOTES:

1. PROVIDE 1" EXPANSION JOINT WITH PREFORMED JOINT FILLER BETWEEN TRANSITION SECTION AND WINGWALL, BARRIER, PARAPET OR NOISE ABATEMENT WALL.
2. SEE STANDARD B3 FOR GUTTER TRANSITIONS AT BRIDGE APPROACH.
3. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
4. REINFORCEMENT BARS SHALL BE ACCURATELY PLACED AND FIRMLY HELD AT THE POSITION USING EPOXY COATED CHAIRS. CHAIR SPACING SHALL NOT EXCEED 4'-0".
5. GUTTER REINFORCEMENT BARS SHALL BE PLACED 3" ABOVE BOTTOM OF GUTTER FOLLOWING SUBGRADE SLOPE.
6. CONTINUOUS #4 BARS SHALL BE LAPPED A MINIMUM OF 1'-1".
7. GUTTER DEPTH SHALL MATCH PAVED SHOULDER DEPTH.

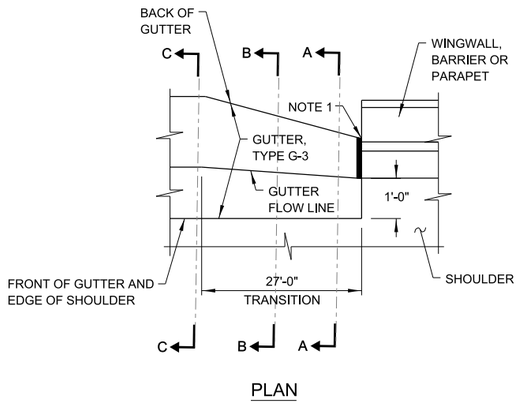
APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2023

REVISIONS	
DATE	DESCRIPTION
03-01-2023	ADDED G-3N & G-2N GUTTER
	TRANSITIONS, REMOVED GORE
	DIMENSIONS, RENAMED STANDARD
03-01-2019	TRANSITION SHT NOTED GUTTER DEPTH
	SHALL MATCH PAVED SHOULDER DEPTH
03-01-2018	REVISED NOTE

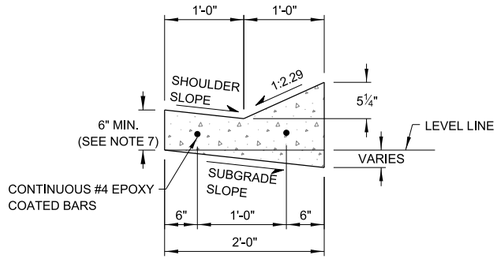
Illinois Tollway

GUTTER TRANSITION DETAILS

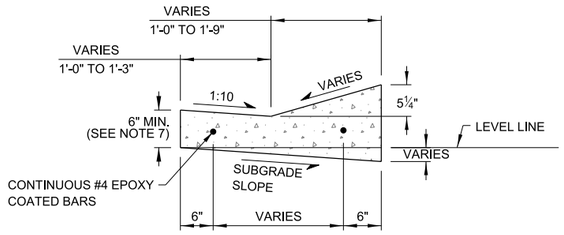
VERSION:	STANDARD:	SHEET:
2023-03	B2-09	1 OF 4



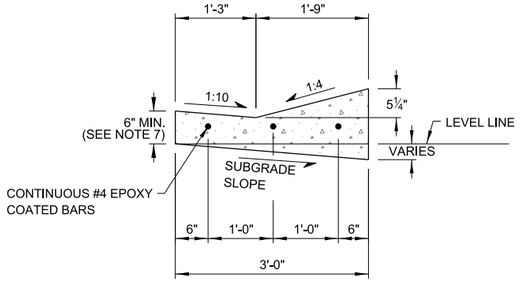
PLAN



SECTION A-A

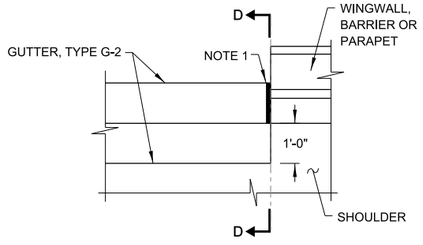


SECTION B-B

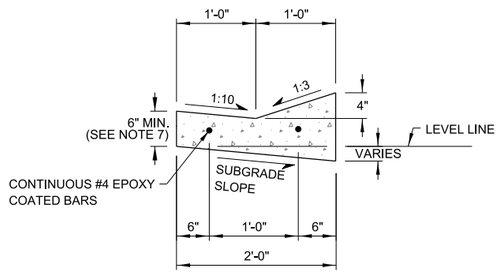


SECTION C-C
GUTTER, TYPE G-3

GUTTER, TYPE G-3 TRANSITION AT BRIDGE DEPARTURE



PLAN



SECTION D-D
GUTTER, TYPE G-2

GUTTER, TYPE G-2 AT BRIDGE DEPARTURE

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

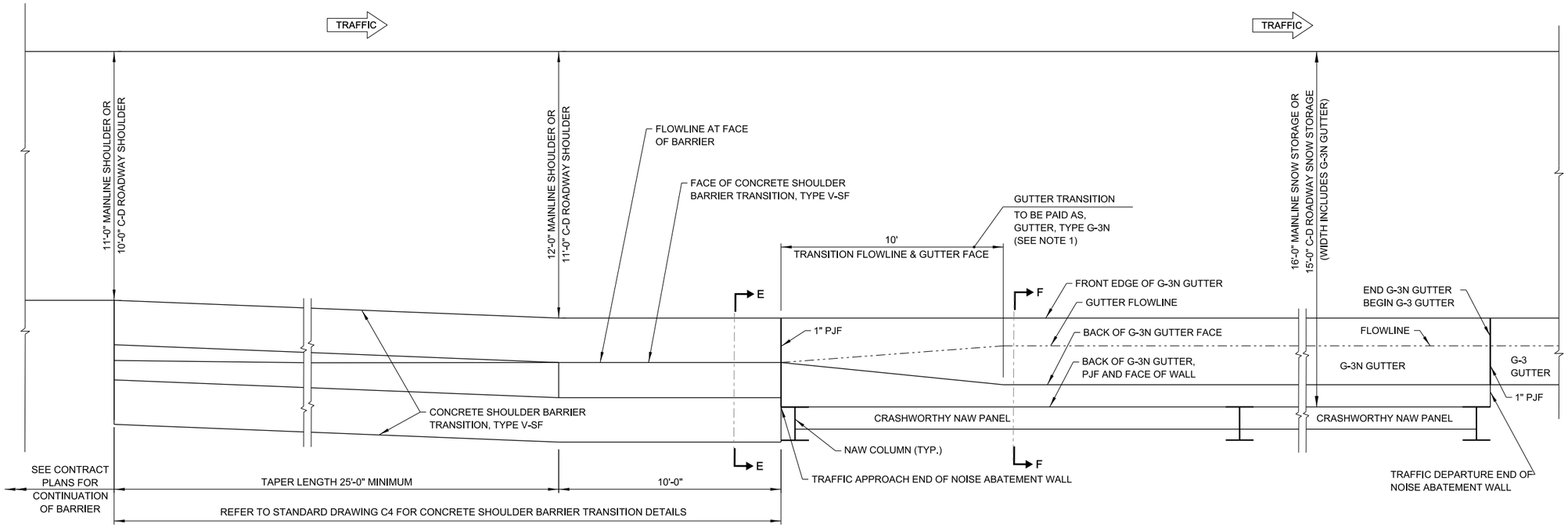
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2023

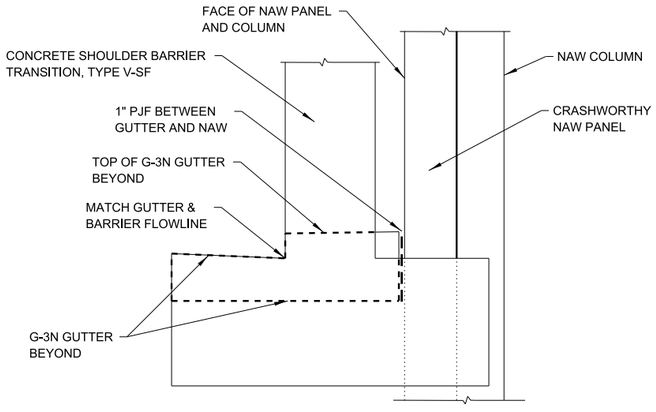
Illinois Tollway

GUTTER TRANSITION DETAILS

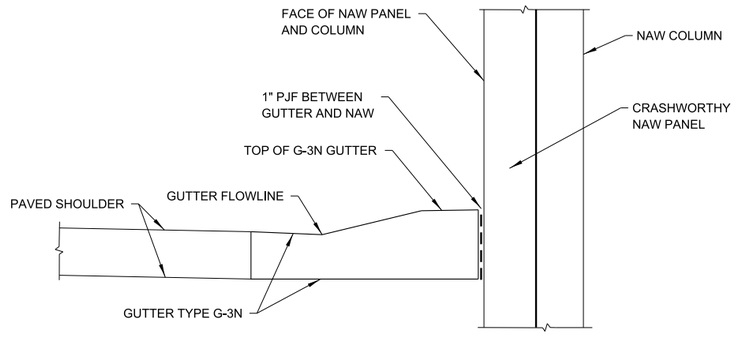
VERSION:	STANDARD:	SHEET:
2023-03	B2-09	2 OF 4



G-3N GUTTER TRANSITION AT END OF CRASHWORTHY NOISE ABATEMENT WALL
(USE ALONG MAINLINE AND C-D ROADWAYS)



SECTION E-E



SECTION F-F

NOTES:
1. NO DRAINAGE STRUCTURES SHALL BE PLACED WITHIN THE GUTTER TRANSITION.

2. SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.

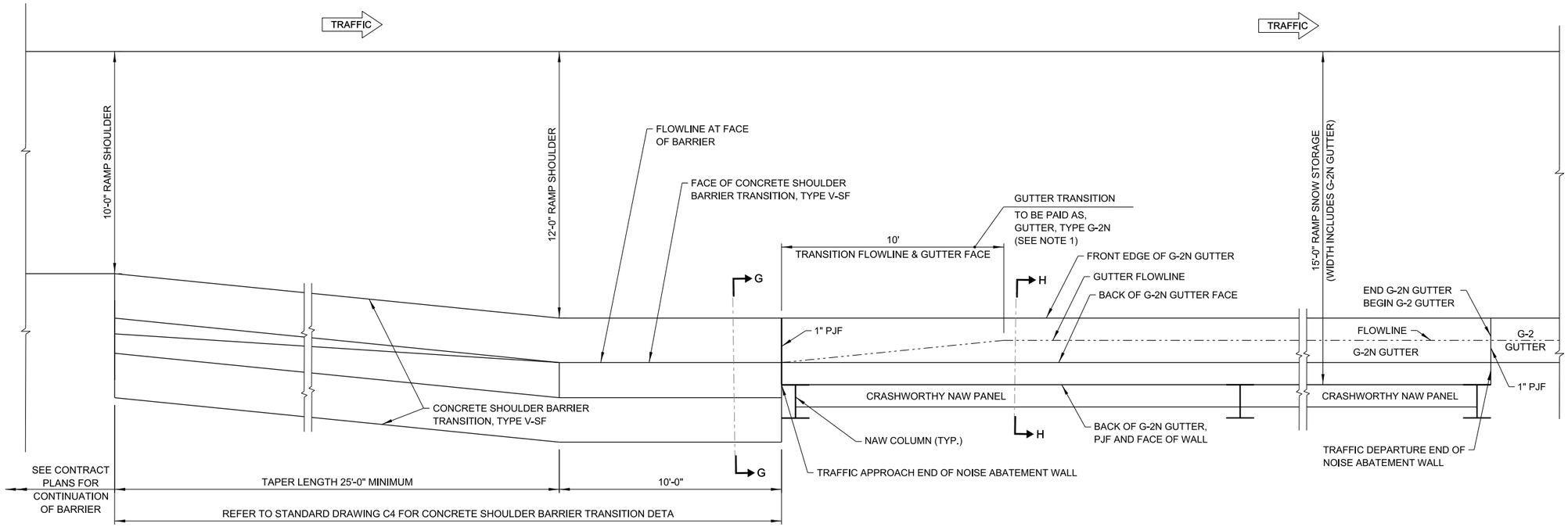
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2023

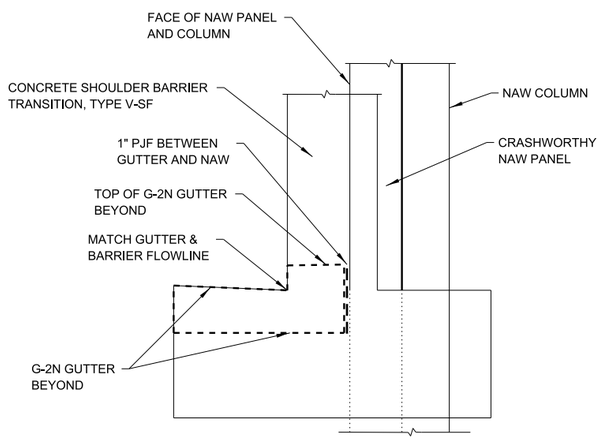
Illinois Tollway

GUTTER TRANSITION DETAILS

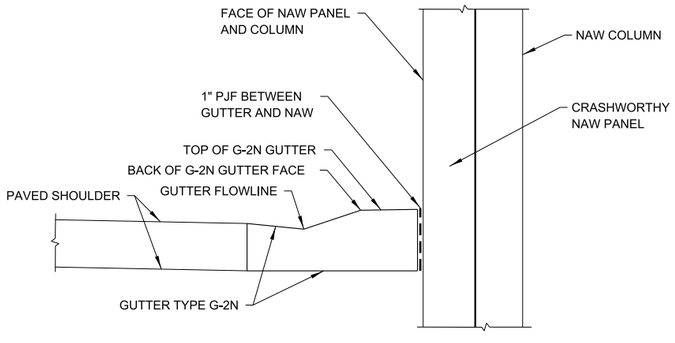
VERSION:	STANDARD:	SHEET:
2023-03	B2-09	3 OF 4



G-2N GUTTER TRANSITION AT END OF CRASHWORTHY NOISE ABATEMENT WALL
(USE ALONG RAMPS)



SECTION G-G



SECTION H-H

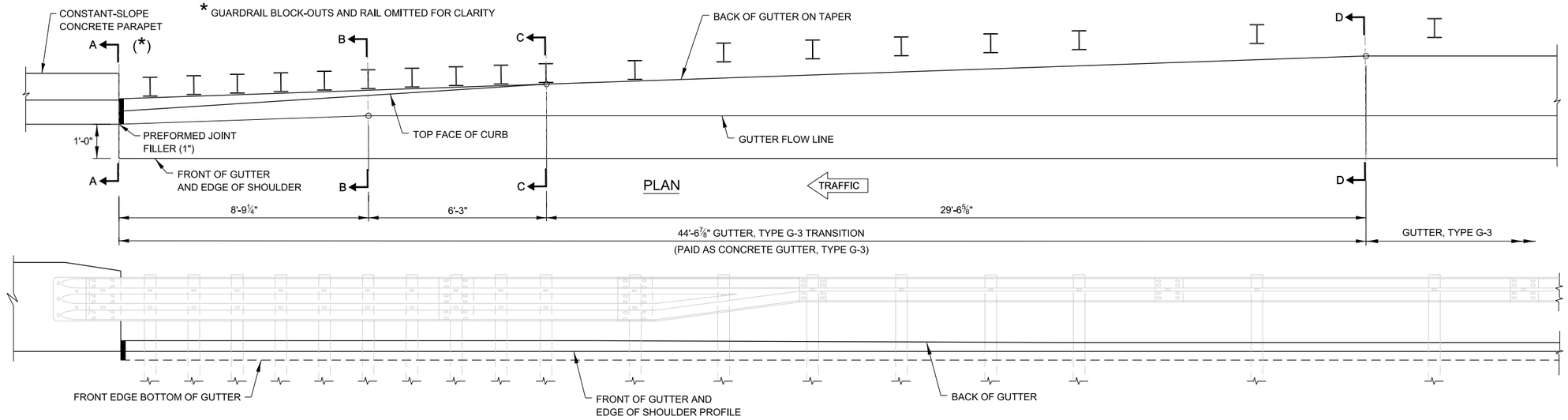
NOTES:
1. NO DRAINAGE STRUCTURES SHALL BE PLACED WITHIN THE GUTTER TRANSITION.
2. SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2023

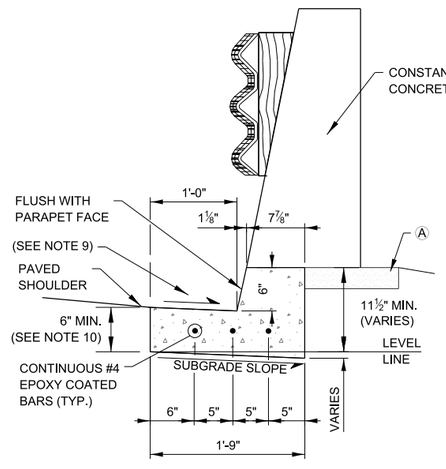
Illinois Tollway

GUTTER TRANSITION DETAILS

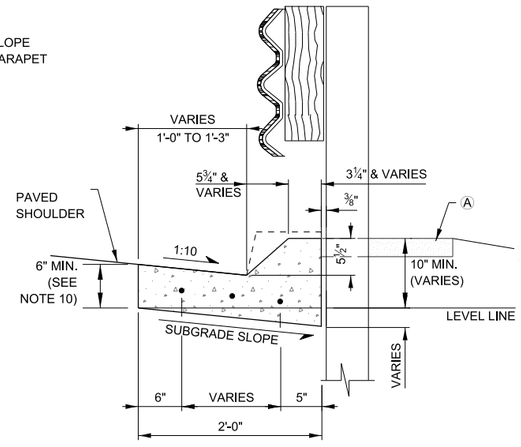
VERSION:	STANDARD:	SHEET:
2023-03	B2-09	4 OF 4



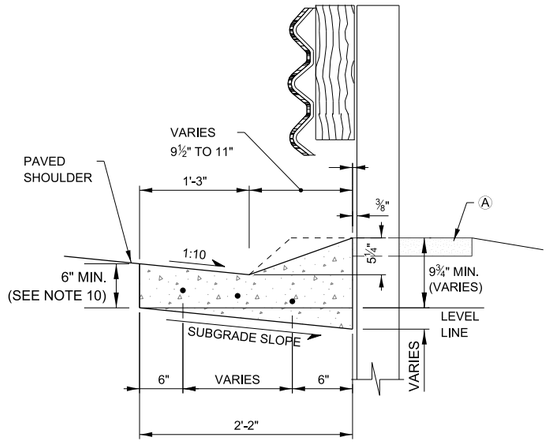
ELEVATION



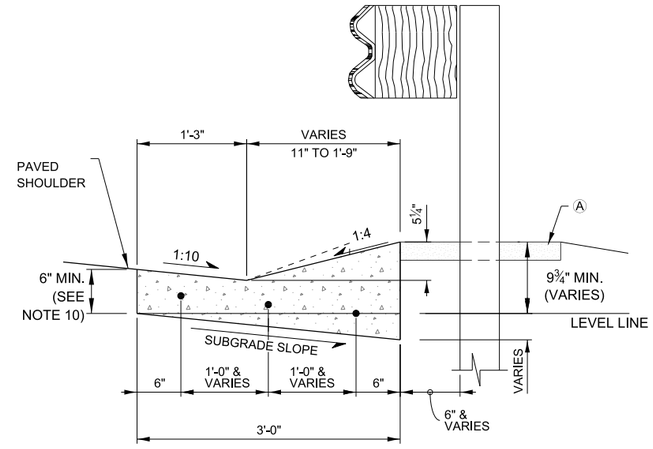
G-3 SECTION A-A
AT CONCRETE PARAPET (SEE NOTE 7)



G-3 SECTION B-B
8'-9¼" FROM PARAPET



G-3 SECTION C-C
15'-0¼" FROM PARAPET



G-3 SECTION D-D
44'-6⅞" FROM PARAPET

GUTTER, TYPE G-3 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6 TO CONSTANT-SLOPE CONCRETE PARAPET

GUTTER TRANSITION NOTES:

1. SLOPE TO MATCH ADJACENT SHOULDER SLOPE.
2. PROVIDE 1" EXPANSION JOINT WITH PREFORMED JOINT FILLER BETWEEN TRANSITION SECTION AND WINGWALL OR BARRIER WALL.
3. INSTALLATION ON CURVED WINGWALLS SIMILAR.
4. FOR DETAILS OF TRAFFIC BARRIER TERMINAL, TYPE T6, SEE ILLINOIS TOLLWAY STANDARD C9.
5. GUTTER TRANSITIONS SHALL BE CONSTRUCTED TO FIT THE STANDARD LOCATION OF THE TRAFFIC BARRIER TERMINAL, TYPE T6.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. GUTTER SECTION SHOWN AT BARRIER WALL SHALL MATCH PROFILE AND VERTICAL FACE OF BARRIER. MODIFY GUTTER FACE TO MATCH OTHER BARRIER/PARAPET PROFILES.
8. CONTINUOUS #4 BARS SHALL BE LAPPED A MINIMUM OF 1'-1".
9. MATCH SHOULDER SLOPE IN FRONT OF PARAPET OR BARRIER.
10. GUTTER DEPTH SHALL MATCH PAVED SHOULDER DEPTH.

LEGEND

Ⓐ AGGREGATE SHOULDERS SPECIAL, TYPE C

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

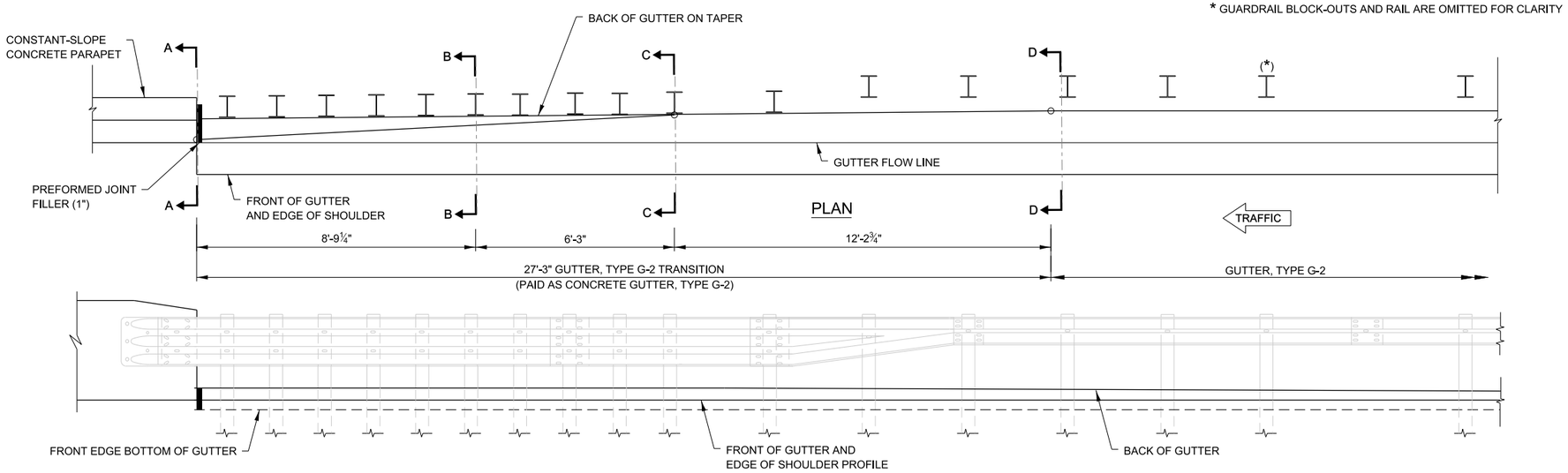
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED NEW SHEET (4 OF 7)
03-15-2023	REVISED GUTTER TRANSITION LENGTH AND TAPER
03-01-2019	ADDED PG 1, 2 & 3 CONSTANT-SLOPE BARRIER & NOTE 10 (GUTTER DEPTH)
03-01-2018	REVISED G-2 GUTTER SHAPE

Illinois Tollway

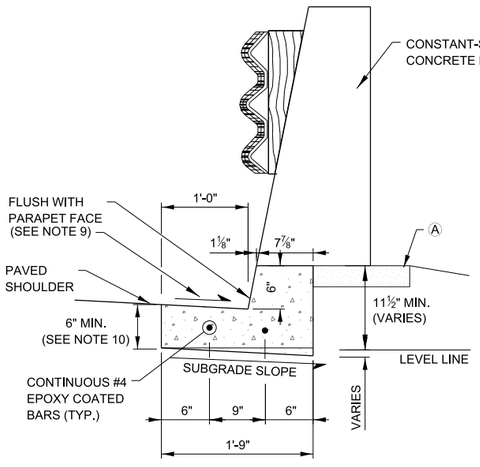
TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

VERSION:	STANDARD:	SHEET:
2024-03	B3-10	1 OF 7

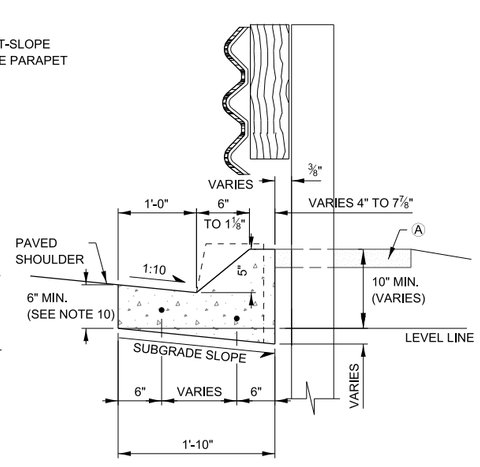
* GUARDRAIL BLOCK-OUTS AND RAIL ARE OMITTED FOR CLARITY



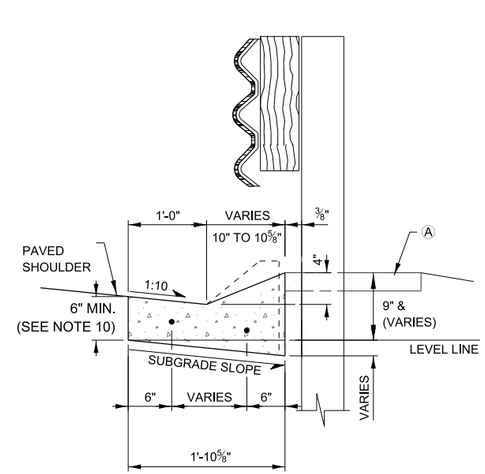
ELEVATION



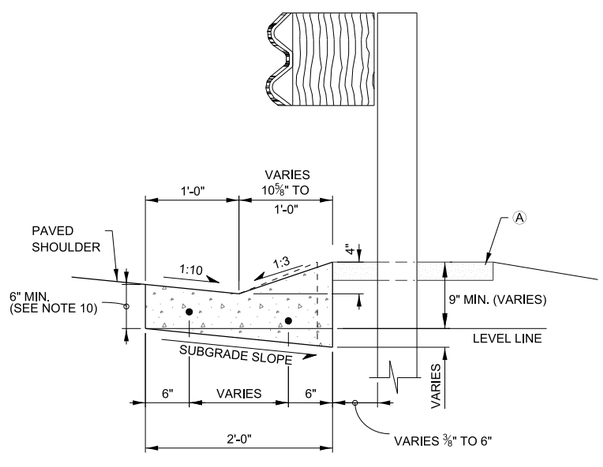
G-2 SECTION A-A
AT CONCRETE PARAPET
(SEE NOTE 8)



G-2 SECTION B-B
8'-9¼" FROM PARAPET



G-2 SECTION C-C
15'-0¼" FROM PARAPET



G-2 SECTION D-D
27'-3" FROM PARAPET

GUTTER, TYPE G-2 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6 TO CONSTANT-SLOPE CONCRETE PARAPET

LEGEND

Ⓐ AGGREGATE SHOULDERS SPECIAL, TYPE C

NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES.

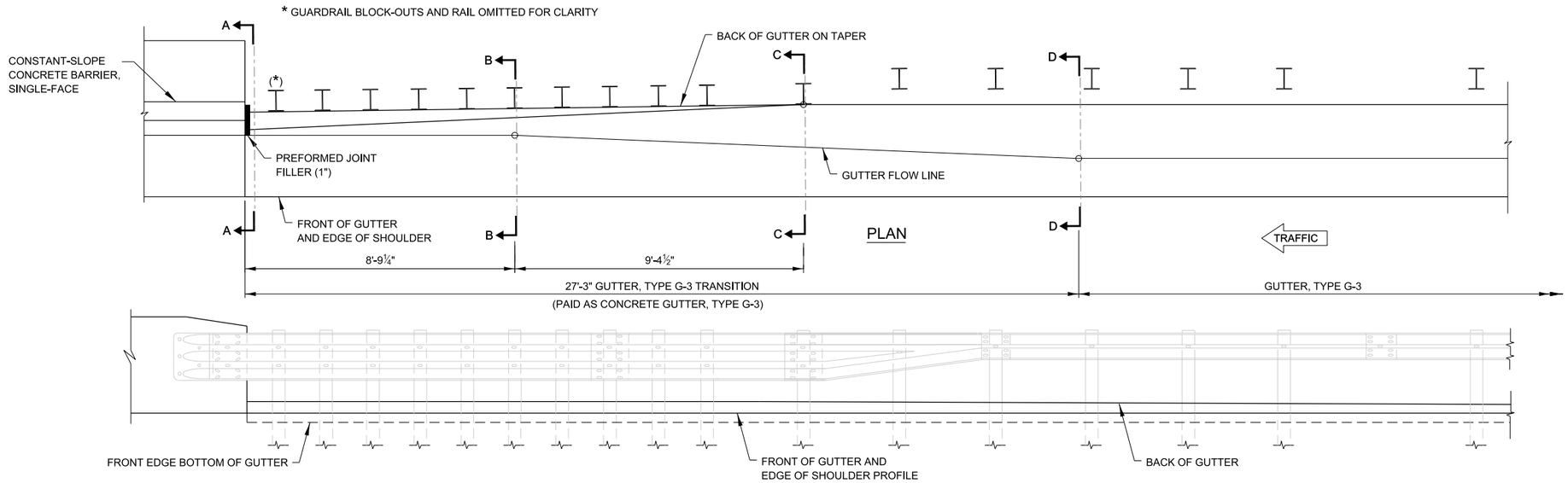
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

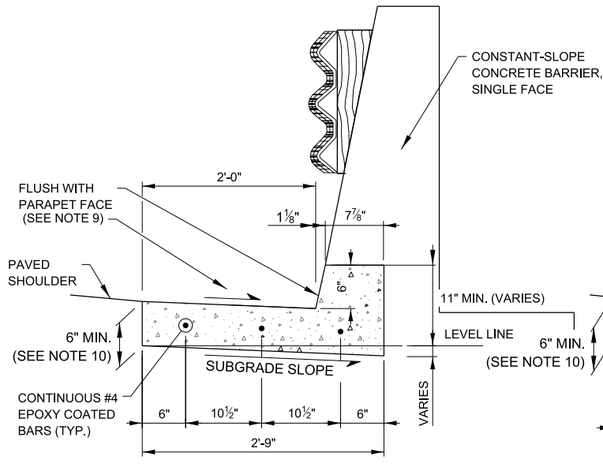
Illinois Tollway

TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

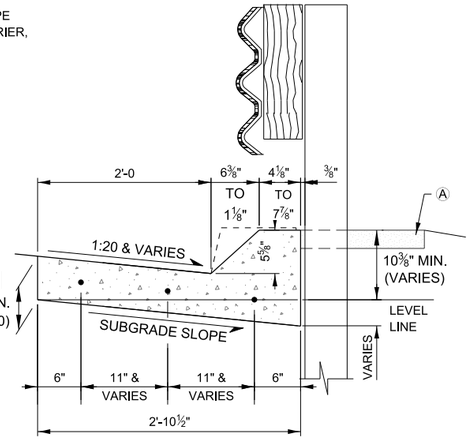
VERSION:	STANDARD:	SHEET:
2024-03	B3-10	2 OF 7



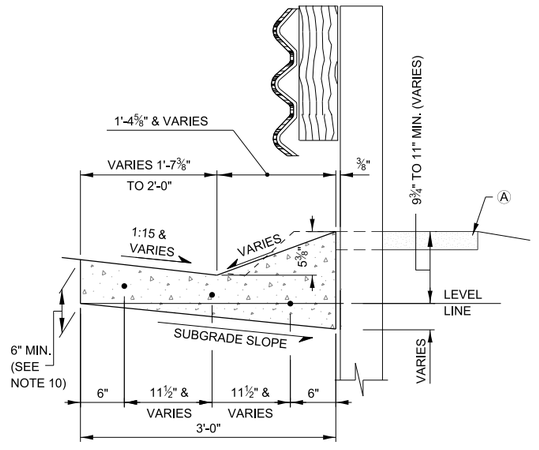
ELEVATION



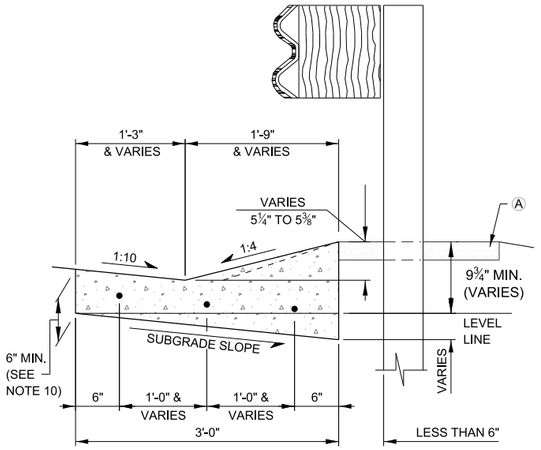
G-3 SECTION A-A
AT CONCRETE BARRIER, SINGLE-FACE
(SEE NOTE 7)



G-3 SECTION B-B
8'-9¼" FROM CONCRETE BARRIER



G-3 SECTION C-C
18'-1¾" FROM CONCRETE BARRIER



G-3 SECTION D-D
27'-3" FROM CONCRETE BARRIER

LEGEND:

Ⓐ AGGREGATE SHOULDERS SPECIAL, TYPE C

GUTTER, TYPE G-3 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6, TO CONSTANT-SLOPE CONCRETE BARRIER, SINGLE FACE

NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES.

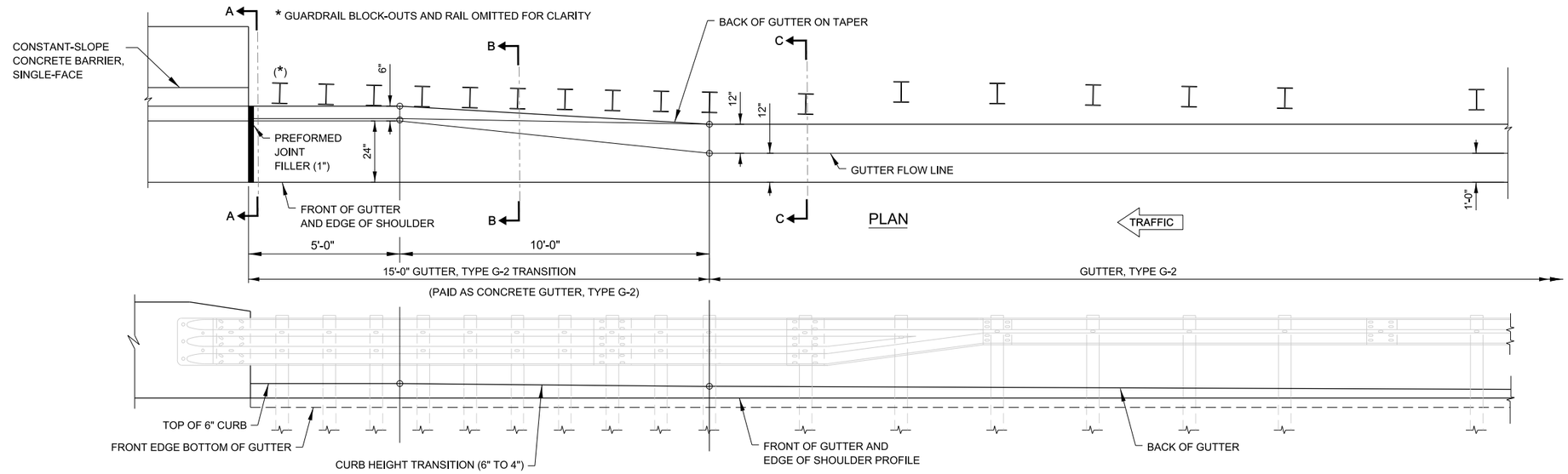
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

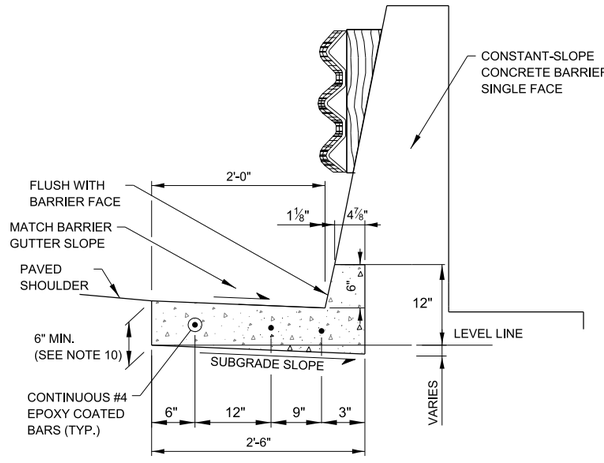
Illinois Tollway

TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

VERSION:	STANDARD:	SHEET:
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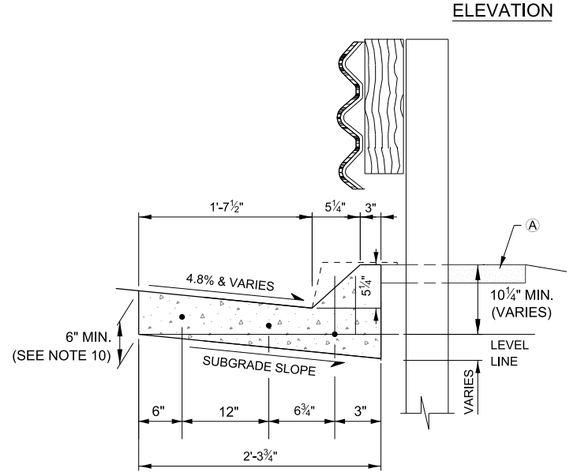


ELEVATION



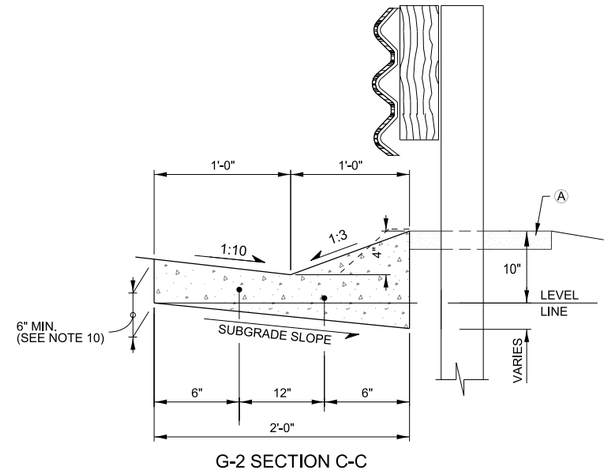
G-2 SECTION A-A

AT CONCRETE BARRIER, SINGLE-FACE
(SEE NOTE 7)



G-2 SECTION B-B

8'-9¼" FROM CONCRETE BARRIER



G-2 SECTION C-C

18'-1¾" FROM CONCRETE BARRIER

GUTTER, TYPE G-2 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6, TO CONSTANT-SLOPE CONCRETE BARRIER, SINGLE FACE

LEGEND

Ⓐ AGGREGATE SHOULDERS SPECIAL, TYPE C

NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES.

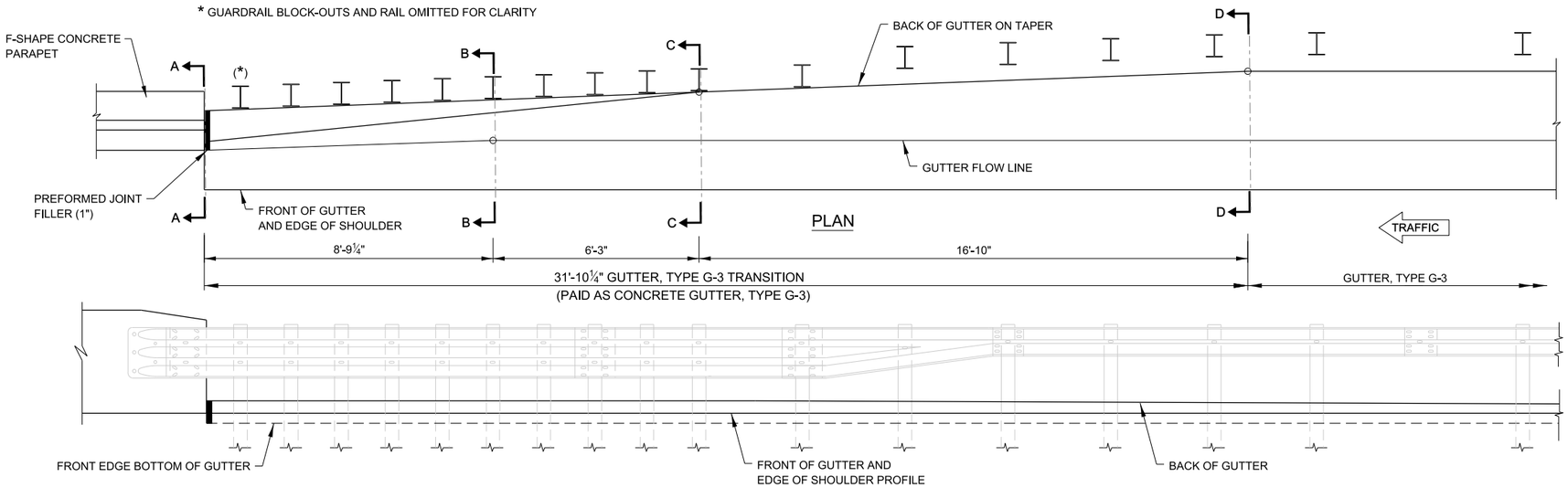
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

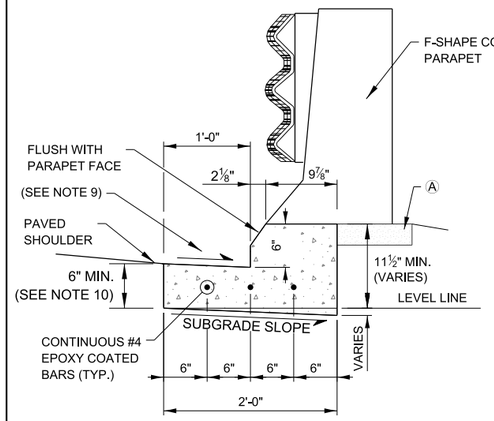
Illinois Tollway

TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

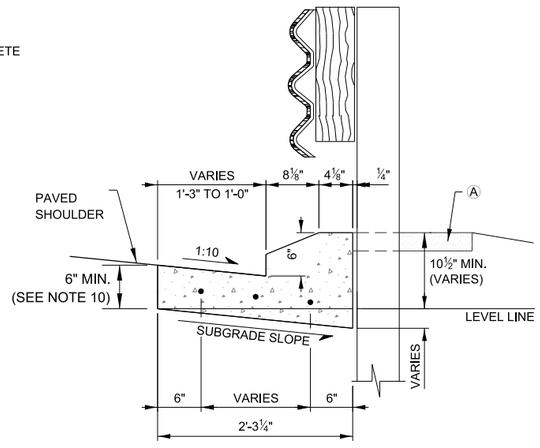
VERSION:	STANDARD:	SHEET:
2024-03	B3-10	4 OF 7



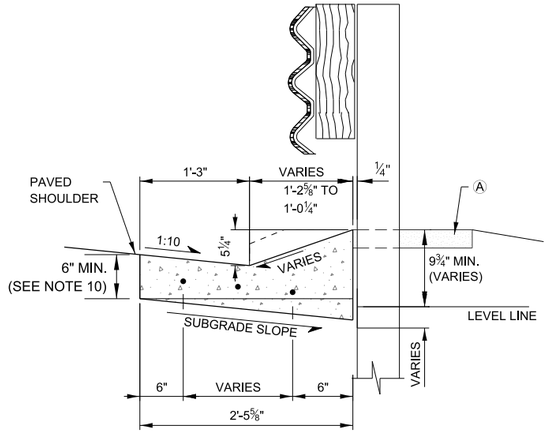
ELEVATION



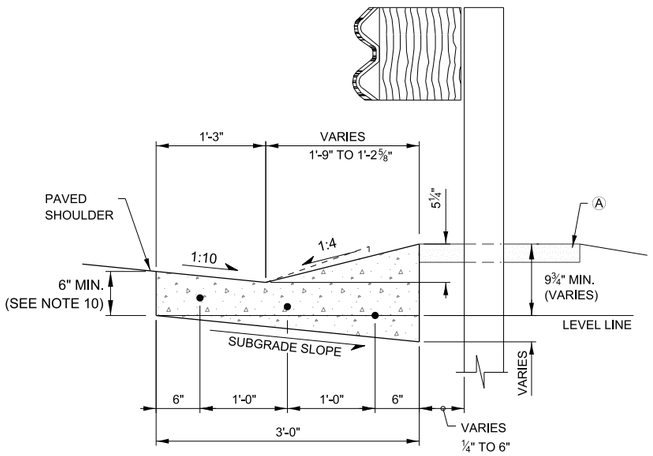
G-3 SECTION A-A
AT CONCRETE PARAPET
(SEE NOTE 7)



G-3 SECTION B-B
8'-9¼" FROM PARAPET



G-3 SECTION C-C
15'-0¼" FROM PARAPET



G-3 SECTION D-D
31'-10¼" FROM PARAPET

GUTTER, TYPE G-3 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6 TO F-SHAPE CONCRETE PARAPET

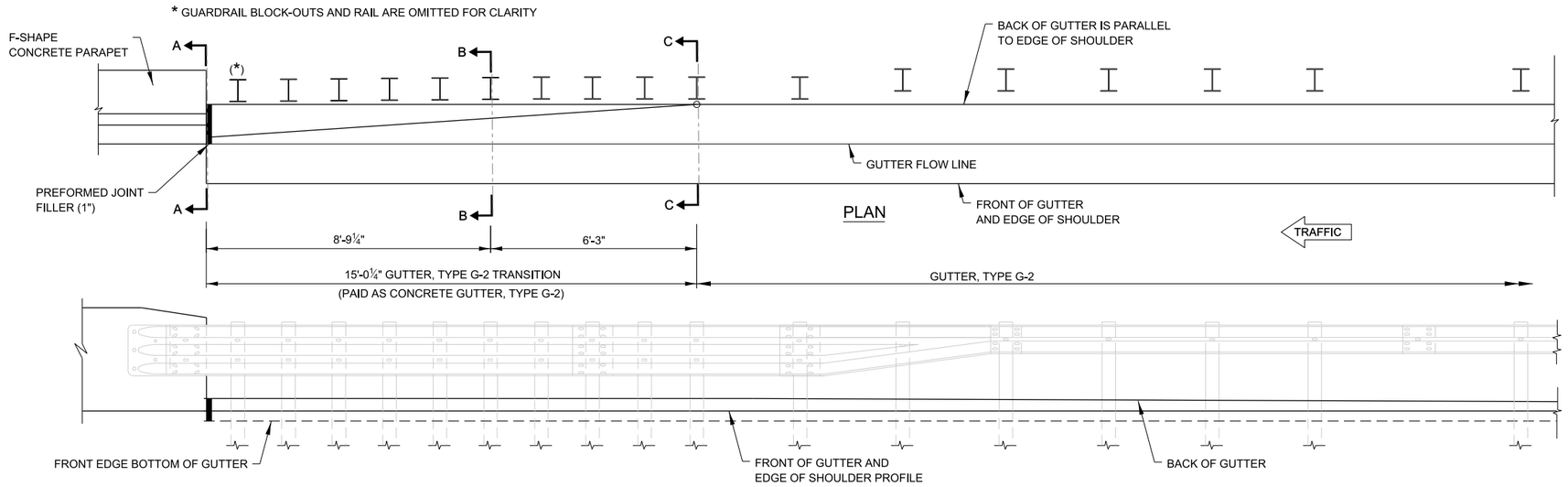
NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

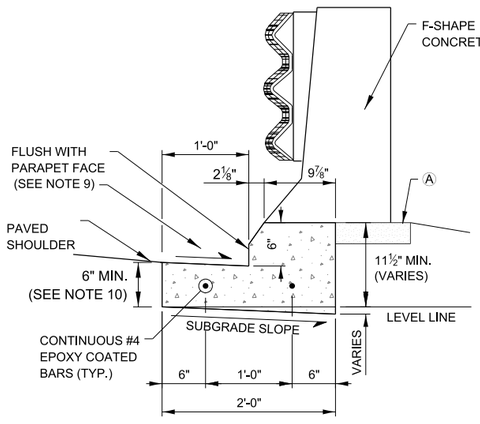
Illinois Tollway

TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

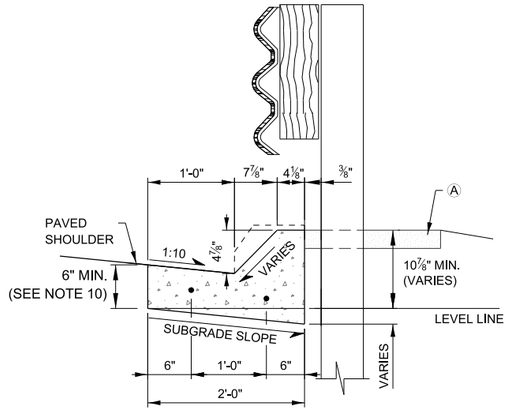
VERSION:	STANDARD:	SHEET:
2024-03	B3-10	5 OF 7



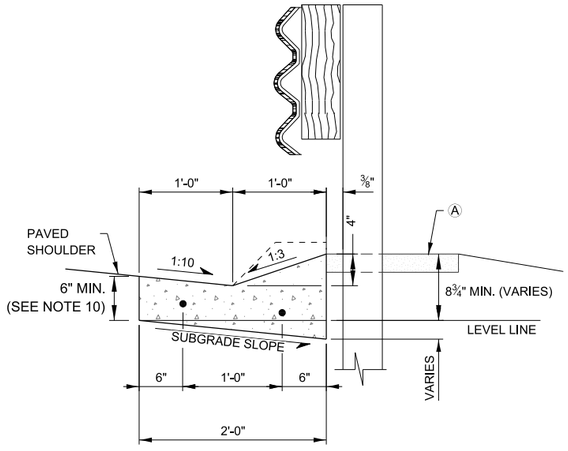
ELEVATION



G-2 SECTION A-A
AT CONCRETE PARAPET
(SEE NOTE 7)



G-2 SECTION B-B
8'-9¼" FROM PARAPET



G-2 SECTION C-C
15'-0¼" FROM PARAPET

GUTTER, TYPE G-2 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6 TO F-SHAPE CONCRETE PARAPET

LEGEND

Ⓐ AGGREGATE SHOULDERS SPECIAL, TYPE C

NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES.

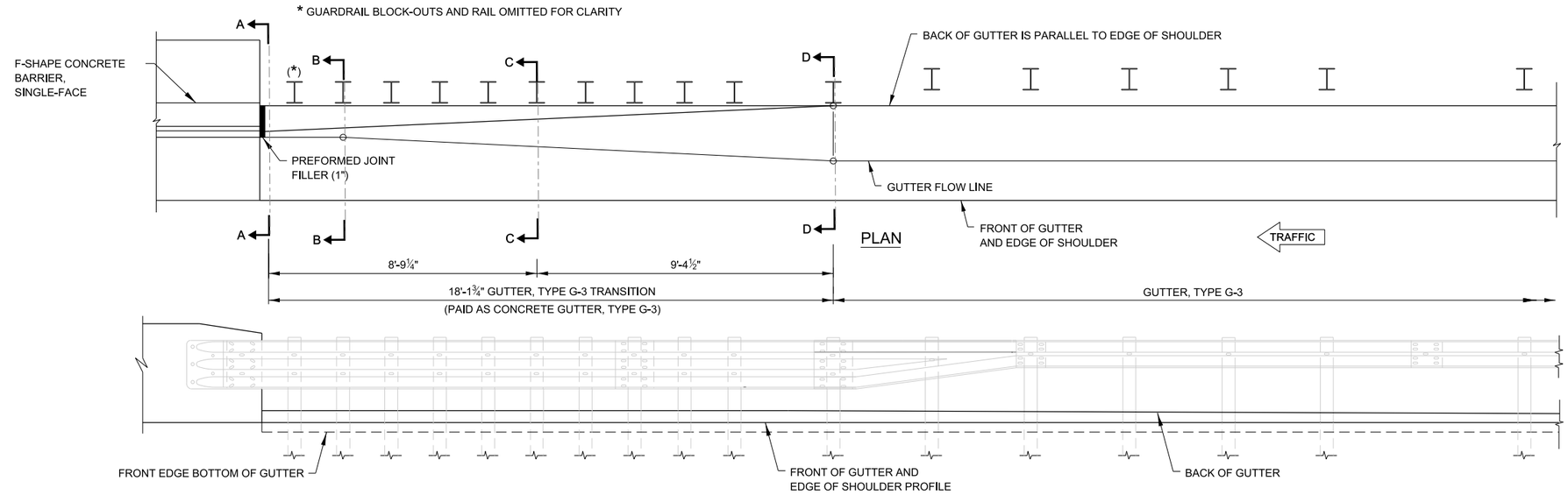
APPROVED BY:
Marua Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

Illinois Tollway

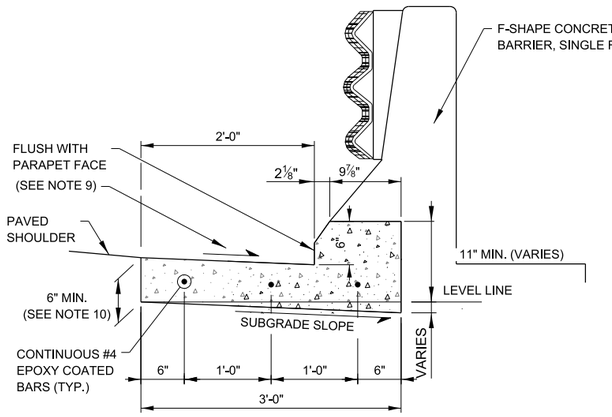
TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

VERSION:	STANDARD:	SHEET:
2024-03	B3-10	6 OF 7

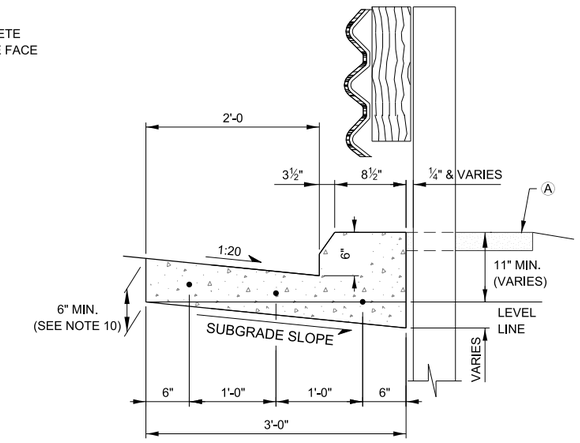


PLAN

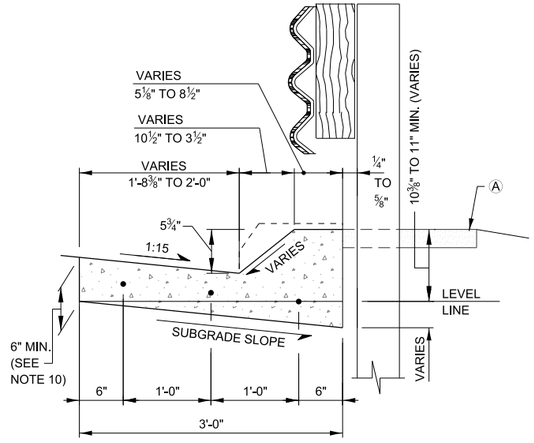
ELEVATION



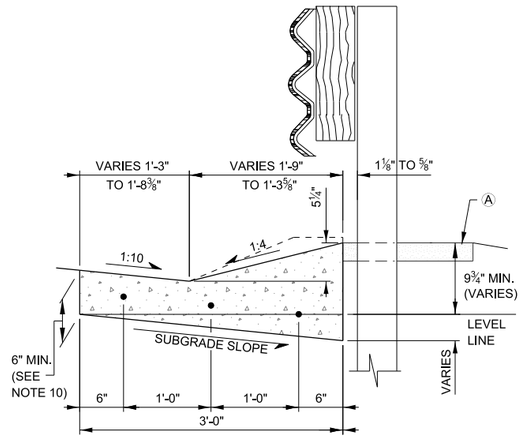
G-3 SECTION A-A
AT CONCRETE BARRIER, F-SHAPE
(SEE NOTE 7)



G-3 SECTION B-B
2'-6¼" FROM CONCRETE BARRIER



G-3 SECTION C-C
8'-9¼" FROM CONCRETE BARRIER



G-3 SECTION D-D
18'-1¾" FROM CONCRETE BARRIER

GUTTER, TYPE G-3 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6, TO F-SHAPE CONCRETE BARRIER, SINGLE-FACE

LEGEND

Ⓐ AGGREGATE SHOULDERS SPECIAL, TYPE C

NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES.

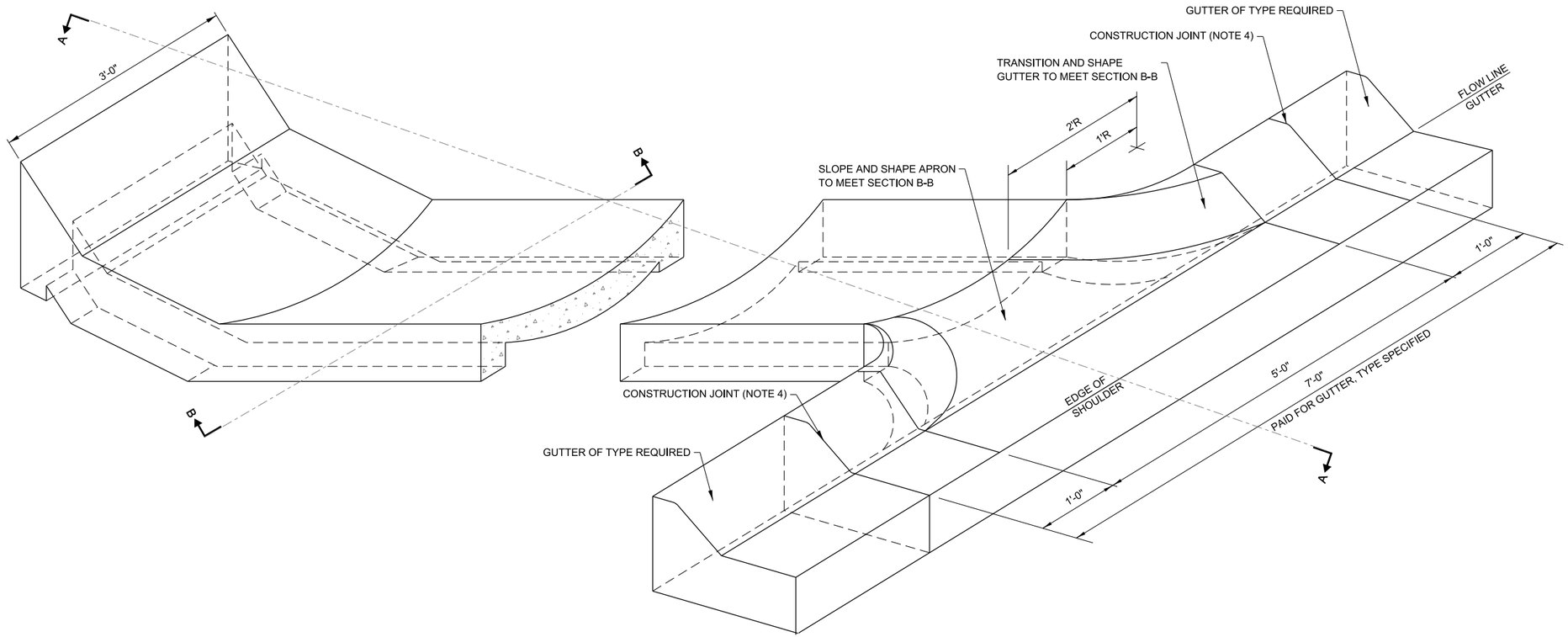
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

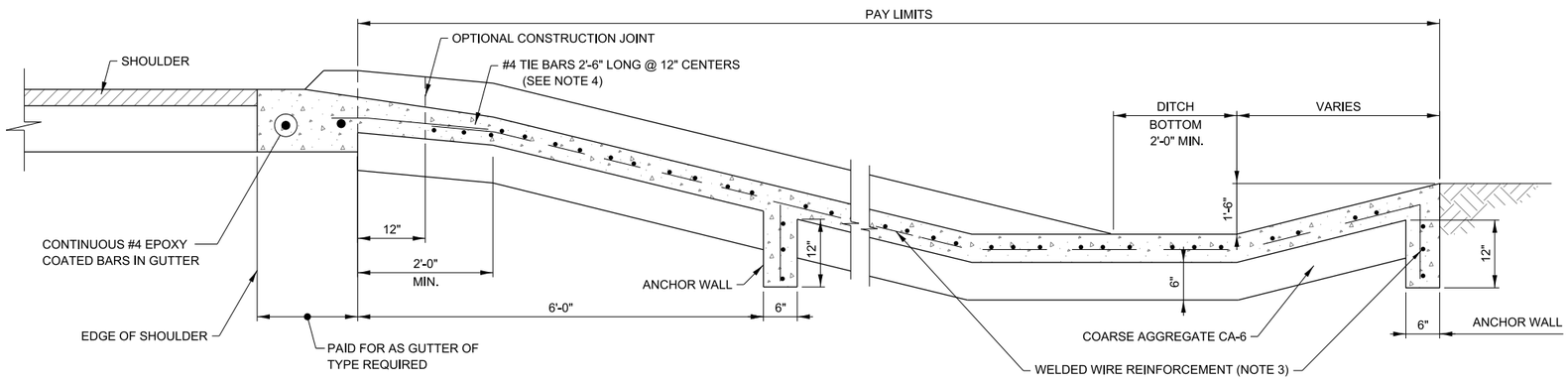
Illinois Tollway

TYPE G-2/G-3 GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6

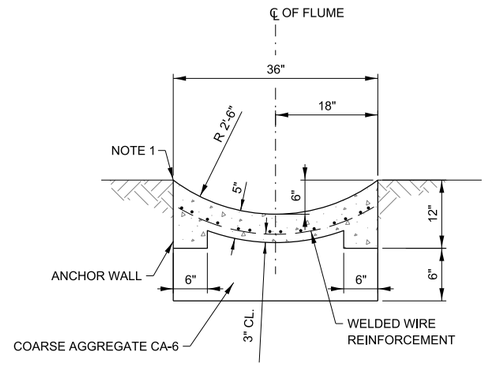
VERSION:	STANDARD:	SHEET:
2024-03	B3-10	7 OF 7



PLAN



SECTION A-A
ADJACENT TO GUTTER



NOTE:
0.62 C.Y. CONCRETE / L.F.

SECTION B-B

CONCRETE FLUME

NOTES:

1. CONCRETE FLUMES SHALL BE CONSTRUCTED FLUSH WITH THE ADJACENT EXISTING OR PROPOSED SURFACES.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. WELDED WIRE REINFORCEMENT SHALL BE EPOXY COATED 6x6 W4xW4, 58 LBS. PER 100 SQ. FT.
4. #4 EPOXY COATED TIE BARS 2'-6" LONG AT 12" O/C SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS.
5. EPOXY COATED EXPANDED METAL FABRIC OF EQUIVALENT STRENGTH MAY BE USED IN LIEU OF WELDED WIRE REINFORCEMENT SUBJECT TO ENGINEER'S APPROVAL.
6. THE LOCATION OF THE ANCHOR WALL MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
7. THE MATERIALS AND CONSTRUCTION OF THE CONCRETE FLUME SHALL CONFORM TO THE APPLICABLE PORTIONS OF THE STANDARD SPECIFICATIONS.

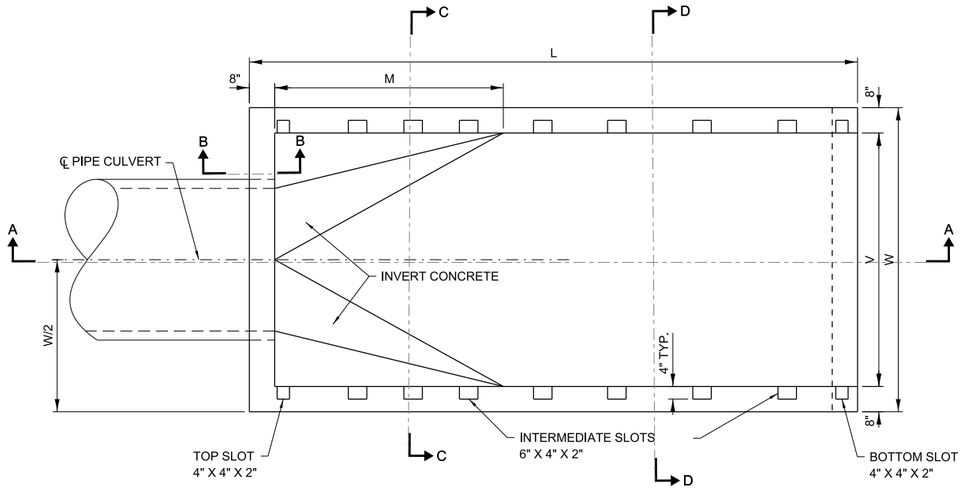
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

Illinois Tollway

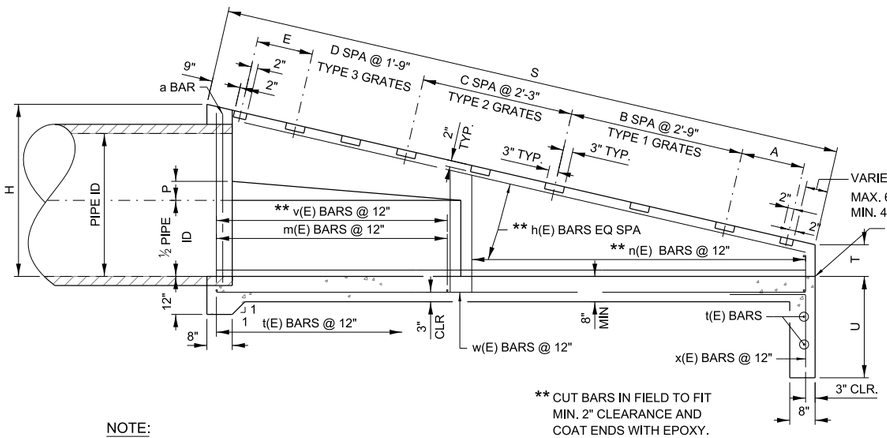
REVISIONS	
DATE	DESCRIPTION
03-01-2018	REVISED SECTION A-A TO INCLUDE COARSE AGGREGATE, NOTE 8 WAS REMOVED.
03-31-2016	CHANGED TERMINOLOGY TO WELDED WIRE REINFORCEMENT
03-11-2015	DELETED CURB SECTION

CONCRETE FLUME DETAILS

VERSION:	STANDARD:	SHEET:
2018-03	B5-04	1 OF 1



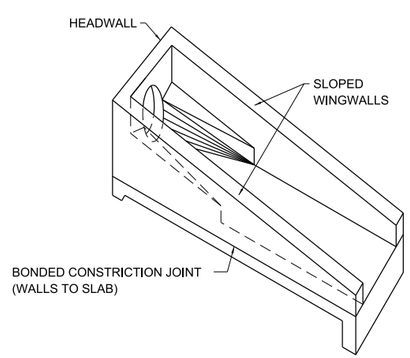
PLAN



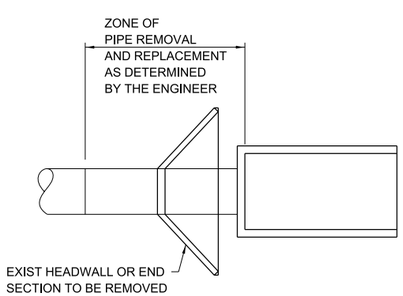
** CUT BARS IN FIELD TO FIT MIN. 2" CLEARANCE AND COAT ENDS WITH EPOXY.

NOTE:
'v' AND 'm' BARS ARE TO BEGIN AT THE PIPE END OF THE SLOPED WINGWALLS.

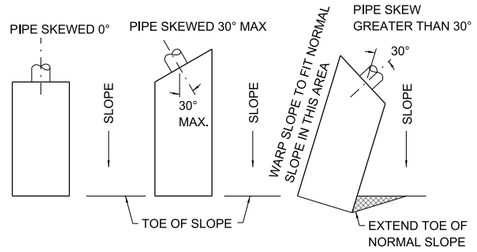
SECTION A-A



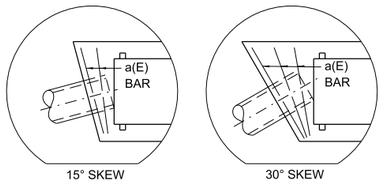
ISOMETRIC VIEW



INSTALLATION DETAIL



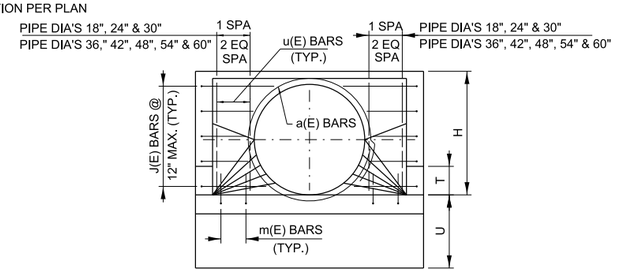
PLAN VIEW OF STRUCTURE LOCATIONS



FLARED BAR DETAILS

NOTES:
ADDITIONAL "a" BARS SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR. THE ADDITIONAL BARS ARE NOT INCLUDED IN THE LISTED QUANTITIES, BUT WILL BE PAID FOR AS REINFORCEMENT BARS (EPOXY COATED).

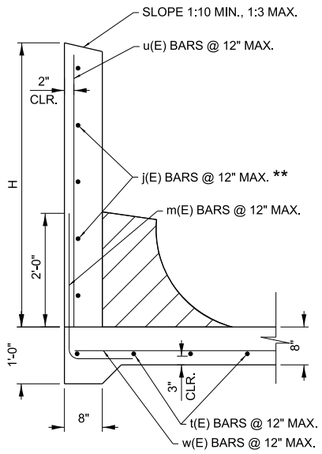
1 ADDITIONAL BAR REQUIRED FOR EACH 15° SKEW OR FRACTION THEREOF.



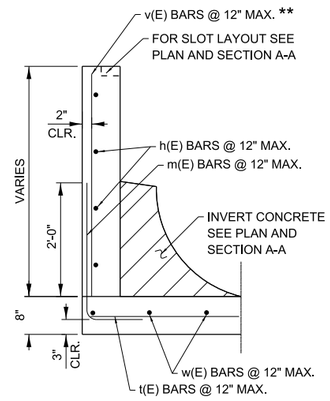
FRONT ELEVATION

NOTES:

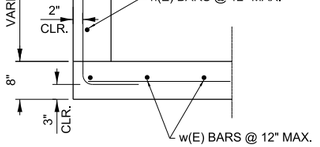
1. HEADWALL TYPE III SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
5. ALL EXPOSED EDGES SHALL HAVE A ¾" - 45 CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW THE FINISHED GROUND LINE.
6. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
7. CARE SHALL BE EXERCISED IN REMOVING ANY LENGTH OF EXISTING PIPE SO THE REMAINING PIPE IS UNDAMAGED AND FULLY FUNCTIONING.
8. FOR DIMENSIONS AND QUANTITIES FOR ONE HEADWALL, SEE SHEET 2 IN THIS SERIES.
9. FOR STEEL GRATING DETAILS, SEE SHEET 3 IN THIS SERIES.
10. FOR ALTERNATE PRECAST CONCRETE DETAILS AND NOTES, SEE SHEET 4 IN THIS SERIES.
11. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).



SECTION B-B



SECTION C-C



SECTION D-D

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED BAR NO. 1 THICKNESS AND WEIGHT OF HEADWALL GRATES
03-01-2021	ADJUSTED LENGTH OF 'h' BARS FOR THE 1:3 SLOPE HEADWALL
03-01-2019	MINOR EDIT

HEADWALL TYPE III
18"-24"-30"-36"-42"-48"-54"-60"
FOR 1:3, 1:4, 1:6, AND 1:10 SLOPES

VERSION:	STANDARD:	SHEET:
2022-03	B6-09	1 OF 4

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:3 SLOPE

PIPE DIA	DIMENSIONS											NO. OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
36"	3'-10"	11'-0"	3'-3"	4"	11'-7"	2"	2'-8"	6'-0"	7'-4"	2'-2"	1'-8"	0	2	1	3.8	347
42"	4'-5"	12'-9"	3'-10"	6"	13'-5"	2"	3'-2"	6'-6"	7'-10"	2'-2"	1'-8"	0	2	2	4.6	444
48"	5'-0"	14'-6"	4'-4"	6"	15'-3"	2"	3'-2"	7'-0"	8'-4"	1'-8"	1'-8"	0	0	6	5.5	502
54"	5'-6"	16'-0"	4'-10"	8"	16'-10"	2"	3'-6"	7'-6"	8'-10"	2'-2"	1'-8"	0	2	4	6.4	613
60"	6'-0"	17'-6"	5'-3"	8"	18'-5"	2"	3'-6"	8'-0"	9'-4"	2'-8"	1'-8"	2	0	4	7.3	668

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:4 SLOPE

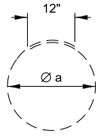
PIPE DIA	DIMENSIONS											NO. OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
36"	3'-10"	14'-8"	4'-5"	4"	15'-2"	2"	2'-8"	6'-0"	7'-4"	2'-8"	2'-8"	3	0	0	4.7	415
42"	4'-5"	17'-0"	5'-1"	6"	17'-6"	2"	3'-2"	6'-6"	7'-10"	2'-8"	2'-2"	0	5	0	5.8	546
48"	5'-0"	19'-4"	5'-10"	6"	19'-11"	2"	3'-2"	7'-0"	8'-4"	2'-8"	2'-2"	0	6	0	6.9	625
54"	5'-6"	21'-4"	6'-5"	8"	22'-0"	2"	3'-6"	7'-6"	8'-10"	2'-8"	2'-2"	0	7	0	8.0	788
60"	6'-0"	23'-4"	7'-0"	8"	24'-1"	2"	3'-6"	8'-0"	9'-4"	1'-8"	1'-8"	0	0	11	9.1	837

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:6 SLOPE

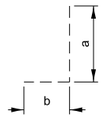
PIPE DIA	DIMENSIONS											NO OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
36"	3'-10"	22'-0"	6'-8"	4"	22'-4"	2"	2'-8"	6'-0"	7'-4"	1'-8"	1'-8"	0	0	10	7.5	573
42"	4'-5"	25'-6"	7'-8"	6"	25'-10"	2"	3'-2"	6'-6"	7'-10"	1'-8"	1'-8"	0	0	12	9.5	746
48"	5'-0"	29'-0"	8'-9"	6"	29'-5"	2"	3'-2"	7'-0"	8'-4"	1'-8"	1'-8"	0	0	14	11.7	863
54"	5'-6"	32'-0"	9'-8"	8"	32'-5"	2"	3'-6"	7'-6"	8'-10"	2'-2"	1'-8"	0	5	9	13.9	1047
60"	6'-0"	35'-0"	10'-6"	8"	35'-6"	2"	3'-6"	8'-0"	9'-4"	2'-2"	1'-8"	0	1	16	16.3	1177

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:10 SLOPE

PIPE DIA	DIMENSIONS											NO OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BAR LBS.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
18"	2'-3"	20'-10"	6'-3"	2"	20'-11½"	2"	2'-8"	3'-0"	4'-4"	2'-8"	2'-2"	2	4	0	4.1	368
24"	2'-9"	25'-10"	7'-9"	3"	25'-11½"	2"	2'-8"	4'-0"	5'-4"	1'-8"	1'-8"	0	0	12	6.1	490
30"	3'-4"	31'-8"	9'-6"	4"	31'-10"	2"	2'-8"	5'-0"	6'-4"	2'-8"	2'-2"	6	4	0	8.8	705
36"	3'-10"	36'-8"	11'-0"	4"	36'-10½"	2"	2'-8"	6'-0"	7'-4"	2'-8"	2'-2"	7	5	0	11.9	944
42"	4'-5"	42'-6"	12'-9"	6"	42'-8½"	2"	3'-2"	6'-6"	7'-10"	2'-8"	2'-8"	13	0	0	15.2	1178
48"	5'-0"	48'-4"	14'-6"	6"	48'-7"	2"	3'-2"	7'-0"	8'-4"	2'-2"	2'-2"	0	19	0	18.8	1457
54"	5'-6"	53'-4"	16'-0"	8"	53'-7½"	2"	3'-6"	7'-6"	8'-10"	2'-8"	2'-8"	17	0	0	22.4	1687
60"	6'-0"	58'-4"	17'-6"	8"	58'-7½"	2"	3'-6"	8'-0"	9'-4"	2'-8"	2'-2"	19	0	0	26.2	1964



TYPE 1



TYPE 2

REINFORCEMENT BARS SCHEDULE FOR ONE HEADWALL

TYPE III 1:10 SLOPE

PIPE DIA	NO 4 REINFORCEMENT BARS						
	MARK(E)	TYPE	NO REQ'D	LENGTH	a	b	
18"	a18	1	1	8'-7"	2'-5"	-	
	n18	2	32	2'-7"	1'-10"	9"	*
	m18	2	18	3'-2"	2'-5"	9"	
	j18	2	6	4'-0"	2'-0"	2'-0"	*
	h18	STR.	6	20'-8"	-	-	
	x18	2	5	4'-3"	2'-3"	2'-0"	
	t18	STR.	23	4'-0"	-	-	
	u18	STR.	4	2'-1"	-	-	
	v18	STR.	14	2'-1"	-	-	*
	w18	STR.	5	20'-6"	-	-	
24"	a24	1	1	10'-5"	3'-0"	-	
	n24	2	38	2'-11"	2'-2"	9"	*
	m24	2	20	3'-2"	2'-5"	9"	
	j24	2	6	4'-0"	2'-0"	2'-0"	
	h24	STR.	6	25'-8"	-	-	
	x24	2	6	4'-3"	2'-3"	2'-0"	
	t24	STR.	28	5'-0"	-	-	
	u24	STR.	4	2'-7"	-	-	
	v24	STR.	16	2'-7"	-	-	*
	w24	STR.	6	25'-6"	-	-	
30"	a30	1	1	12'-3"	3'-7"	-	
	n30	2	46	3'-4"	2'-7"	9"	*
	m30	2	24	3'-2"	2'-5"	9"	
	j30	2	8	4'-0"	2'-0"	2'-0"	*
	h30	STR.	8	31'-6"	-	-	
	x30	2	7	4'-3"	2'-3"	2'-0"	
	t30	STR.	34	6'-0"	-	-	
	u30	STR.	4	3'-2"	-	-	
	v30	STR.	20	3'-2"	-	-	*
	w30	STR.	7	31'-4"	-	-	
36"	a36	1	1	13'-10"	4'-1"	-	
	n36	2	52	3'-8"	2'-11"	9"	*
	m36	2	30	3'-2"	2'-5"	9"	
	j36	2	10	4'-0"	2'-0"	2'-0"	*
	h36	STR.	10	36'-6"	-	-	
	x36	2	8	4'-3"	2'-3"	2'-0"	
	t36	STR.	39	7'-0"	-	-	
	u36	STR.	6	3'-8"	-	-	
	v36	STR.	24	3'-8"	-	-	*
	w36	STR.	8	36'-4"	-	-	
42"	a42	1	1	15'-11"	4'-9"	-	
	n42	2	62	3'-8"	2'-11"	9"	*
	m42	2	34	3'-2"	2'-5"	9"	
	j42	2	10	4'-0"	2'-0"	2'-0"	*
	h42	STR.	20	22'-2"	-	-	**
	x42	2	9	4'-7"	2'-7"	2'-0"	
	t42	STR.	46	7'-6"	-	-	
	u42	STR.	6	4'-3"	-	-	
	v42	STR.	28	4'-3"	-	-	*
	w42	STR.	18	22'-1"	-	-	**
48"	a48	1	1	17'-9"	5'-4"	-	
	n48	2	70	4'-6"	3'-9"	9"	*
	m48	2	36	3'-2"	2'-5"	9"	
	j48	2	12	4'-0"	2'-0"	2'-0"	*
	h48	STR.	24	25'-2"	-	-	**
	x48	2	9	4'-7"	2'-7"	2'-0"	
	t48	STR.	52	8'-0"	-	-	
	u48	STR.	6	4'-10"	-	-	
	v48	STR.	30	4'-10"	-	-	*
	w48	STR.	18	25'-0"	-	-	**
54"	a54	1	1	19'-7"	5'-11"	-	
	n54	2	76	4'-10"	4'-1"	9"	*
	m54	2	40	3'-2"	2'-5"	9"	
	j54	2	12	4'-0"	2'-0"	2'-0"	*
	h54	STR.	24	27'-8"	-	-	**
	x54	2	10	5'-1"	3'-1"	2'-0"	
	t54	STR.	57	8'-6"	-	-	
	u54	STR.	6	5'-4"	-	-	
	v54	STR.	34	5'-4"	-	-	*
	w54	STR.	20	27'-6"	-	-	**
60"	a60	1	1	21'-2"	6'-5"	-	
	n60	2	82	5'-3"	4'-6"	9"	*
	m60	2	42	3'-2"	2'-5"	9"	
	j60	2	14	4'-0"	2'-0"	2'-0"	*
	h60	STR.	28	30'-2"	-	-	**
	x60	2	10	5'-1"	3'-1"	2'-0"	
	t60	STR.	62	9'-0"	-	-	
	u60	STR.	6	5'-10"	-	-	
	v60	STR.	36	5'-10"	-	-	*
	w60	STR.	20	30'-0"	-	-	**

REINFORCEMENT BARS SCHEDULE FOR ONE HEADWALL

TYPE III 1:6 SLOPE

PIPE DIA	NO 4 REINFORCEMENT BARS						
	MARK(E)	TYPE	NO REQ'D	LENGTH	a	b	
36"	a36	1	1	13'-10"	4'-1"	-	
	n36	2	32	3'-8"	2'-11"	9"	*
	m36	2	20	3'-2"	2'-5"	9"	
	j36	2	8	4'-0"	2'-0"	2'-0"	*
	h36	STR.	8	22'-0"	-	-	
	x36	2	8	4'-3"	2'-0"	2'-0"	
	t36	STR.	25	7'-0"	-	-	
	u36	STR.	6	3'-7"	-	-	
	v36	STR.	14	3'-7"	-	-	*
	w36	STR.	8	21'-8"	-	-	
42"	a42	1	1	15'-11"	4'-9"	-	
	n42	2	38	4'-2"	3'-5"	9"	*
	m42	2	22	3'-2"	2'-5"	9"	
	j42	2	10	4'-0"	2'-0"	2'-0"	*
	h42	STR.	10	25'-6"	-	-	
	x42	2	9	4'-7"	2'-7"	2'-0"	
	t42	STR.	29	7'-6"	-	-	
	u42	STR.	6	4'-2"	-	-	
	v42	STR.	16	4'-2"	-	-	*
	w42	STR.	9	25'-2"	-	-	
48"	a48	1	1	17'-9"	5'-4"	-	
	n48	2	42	4'-6"	3'-9"	9"	*
	m48	2	24	3'-2"	2'-5"	9"	
	j48	2	10	4'-0"	2'-0"	2'-0"	*
	h48	STR.	10	29'-1"	-	-	
	x48	2	9	4'-7"	2'-7"	2'-0"	
	t48	STR.	33	8'-0"	-	-	
	u48	STR.	6	4'-9"	-	-	
	v48	STR.	18	4'-9"	-	-	*
	w48	STR.	9	28'-8"	-	-	
54"	a54	1	1	19'-7"	5'-11"	-	
	n54	2	46	4'-10"	4'-1"	9"	*
	m54	2	26	3'-2"	2'-5"	9"	
	j54	2	12	4'-0"	2'-0"	2'-0"	*
	h54	STR.	12	32'-1"	-	-	
	x54	2	10	5'-1"	3'-1"	2'-0"	
	t54	STR.	36	8'-6"	-	-	
	u54	STR.	6	5'-3"	-	-	
	v54	STR.	20	5'-3"	-	-	*
	w54	STR.	10	31'-8"	-	-	
60"	a60	1	1	21'-2"	6'-5"	-	
	n60	2	50	5'-3"	4'-6"	9"	*
	m60	2	28	3'-2"	2'-5"	9"	
	j60	2	12	4'-0"	2'-0"	2'-0"	*
	h60	STR.	12	35'-2"	-	-	**
	x60	2	10	5'-1"	3'-1"	2'-0"	
	t60	STR.	40	9'-0"	-	-	
	u60	STR.	6	5'-9"	-	-	
	v60	STR.	22	5'-9"	-	-	*
	w60	STR.	10	34'-8"	-	-	**

REINFORCEMENT BARS SCHEDULE FOR ONE HEADWALL

TYPE III 1:4 SLOPE

PIPE DIA	NO 4 REINFORCEMENT BARS						
	MARK(E)	TYPE	NO REQ'D	LENGTH	a	b	
36"	a36	1	1	13'-10"	4'-1"	-	
	n36	2	22	3'-8"	2'-11"	9"	*
	m36	2	16	3'-2"	2'-5"	9"	
	j36	2	8	4'-0"	2'-0"	2'-0"	*
	h36	STR.	8	14'-10"	-	-	
	x36	2	8	4'-3"	2'-3"	2'-0"	
	t36	STR.	17	7'-0"	-	-	
	u36	STR.	6	3'-7"	-	-	
	v36	STR.	10	3'-7"	-	-	*
	w36	STR.	8	14'-4"	-	-	
42"	a42	1	1	15'-11"	4'-9"	-	
	n42	2	26	4'-2"	3'-5"	9"	*
	m42	2	18	3'-2"	2'-5"	9"	
	j42	2	10	4'-0"	2'-0"	2'-0"	*
	h42	STR.	10	17'-2"	-	-	
	x42	2	9	4'-7"	2'-7"	2'-0"	
	t42	STR.	21	7'-6"	-	-	
	u42	STR.	6	4'-2"	-	-	
	v42	STR.	12	4'-2"	-	-	*
	w42	STR.	9	16'-8"	-	-	
48"	a48	1	1	17'-9"	5'-4"	-	
	n48	2	28	4'-6"	3'-9"	9"	*
	m48	2	20	3'-2"	2'-5"	9"	
	j48	2	10	4'-0"	2'-0"	2'-0"	*
	h48	STR.	10	19'-7"	-	-	
	x48	2	9	4'-7"	2'-7"	2'-0"	
	t48	STR.	23	8'-0"	-	-	
	u48	STR.	6	4'-9"	-	-	
	v48	STR.	14	4'-9"	-	-	*
	w48	STR.	9	19'-0"	-	-	
54"	a54	1	1	19'-7"	5'-11"	-	
	n54	2	30	6'-2"	5'-5"	9"	*
	m54	2	22	3'-2"	2'-5"	9"	
	j54	2	12	4'-0"	2'-0"	2'-0"	*
	h54	STR.	12	21'-8"	-	-	
	x54	2	10	5'-1"	3'-1"	2'-0"	
	t54	STR.	26	8'-6"	-	-	
	u54	STR.	6	5'-3"	-	-	
	v54	STR.	16	5'-3"	-	-	*
	w54	STR.	10	21'-0"	-	-	
60"	a60	1	1	21'-2"	6'-5"	-	
	n60	2	34	5'-3"	4'-6"	9"	*
	m60	2	22	3'-2"	2'-5"	9"	
	j60	2	12	4'-0"	2'-0"	2'-0"	*
	h60	STR.	12	23'-9"	-	-	
	x60	2	10	5'-1"	3'-1"	2'-0"	
	t60	STR.	27	9'-0"	-	-	
	u60	STR.	6	5'-9"	-	-	
	v60	STR.	16	5'-9"	-	-	*
	w60	STR.	10	23'-0"	-	-	

REINFORCEMENT BARS SCHEDULE FOR ONE HEADWALL

TYPE III 1:3 SLOPE

PIPE DIA	NO 4 REINFORCEMENT BARS						
	MARK(E)	TYPE	NO REQ'D	LENGTH	a	b	
36"	a36	1	1	13'-10"	4'-1"	-	
	n36	2	18	3'-8"	2'-11"	9"	*
	m36	2	14	3'-2"	2'-5"	9"	
	j36	2	8	4'-0"	2'-0"	2'-0"	*
	h36	STR.	8	11'-3"	-	-	
	x36	2	8	4'-3"	2'-3"	2'-0"	
	t36	STR.	14	7'-0"	-	-	
	u36	STR.	6	3'-7"	-	-	
	v36	STR.	8	3'-7"	-	-	*
	w36	STR.	8	10'-8"	-	-	
42"	a42	1	1	15'-11"	4'-9"	-	
	n42	2	20	4'-1"	3'-4"	9"	*
	m42	2	16	3'-2"	2'-5"	9"	
	j42	2	10	4'-0"	2'-0"	2'-0"	*
	h42	STR.	10	13'-1"	-	-	
	x42	2	9	4'-7"	2'-7"	2'-0"	
	t42	STR.	16	7'-6"	-	-	
	u42	STR.	6	4'-2"	-	-	
	v42	STR.	10	4'-2"	-	-	*
	w42	STR.	9	12'-5"	-	-	
48"	a48	1	1	17'-9"	5'-4"	-	
	n48	2	22	4'-6"	3'-9"	9"	*
	m48	2	16	3'-2"	2'-5"	9"	
	j48	2	10	4'-0"	2'-0"	2'-0"	*
	h48	STR.	10	14'-11"	-	-	
	x48	2	9	4'-7"	2'-7"	2'-0"	
	t48	STR.	18	8'-0"	-	-	
	u48	STR.	6	4'-9"	-	-	
	v48	STR.	10	4'-9"	-	-	*
	w48	STR.	9	14'-2"	-	-	
54"	a54	1	1	19'-7"	5'-11"	-	
	n54	2	24	4'-10"	4'-1"	9"	*
	m54	2	18	3'-2"	2'-5"	9"	
	j54	2	12	4'-0"	2'-0"	2'-0"	*
	h54	STR.	12	16'-6"	-	-	
	x54	2	10	5'-1"	3'-1"	2'-0"	
	t54	STR.	20	8'-6"	-	-	
	u54	STR.	6	5'-3"	-	-	
	v54	STR.	12	5'-3"	-	-	*
	w54	STR.	10	15'-8"	-	-	
60"	a60	1	1	21'-2"	6'-5"	-	
	n60	2	26	5'-2"	4'-5"	9"	*
	m60	2	18	3'-2"	2'-5"	9"	
	j60	2	12	4'-0"	2'-0"	2'-0"	*
	h60	STR.	12	18'-1"	-	-	
	x60	2	10	5'-1"	3'-1"	2'-0"	
	t60	STR.	21	9'-0"	-	-	
	u60	STR.	6	5'-9"	-	-	
	v60	STR.	12	5'-9"	-	-	*
	w60	STR.	10	17'-2"	-	-	

* CUT BARS IN FIELD TO FIT MIN. 2" CLEARANCE
** PROVIDE 2'-0" MIN. LAP

NOTES:

1. THE 'v', 'n' and 'j' BARS, TYPE 3, SHALL BE ORDERED FULL LENGTH AND CUT IN THE FIELD.
2. THE LONG LEG OF THE 'm' AND 'n' BARS SHALL BE VERTICAL.
3. QUANTITIES ON THIS DRAWING ARE BASED ON THE CAST-IN-PLACE DESIGN. SEE SHEET 4 IN THIS SERIES FOR ALTERNATE PRECAST CONCRETE NOTES.
4. "STR." = STRAIGHT BAR
5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

HEADWALL TYPE III 18"-24"-30"-36"-42"-48"-54"-60" FOR 1:3, 1:4, 1:6, AND 1:10 SLOPES

VERSION:	STANDARD:	SHEET:
2022-03	B6-09	2 OF 4

GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:3 SLOPE

INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
36"	0	1	2	6'-7"	11	2'-4"	133	601
	3	2	2	6'-7"	11	1'-10"	124	
	2	3	2	6'-7"	11	1'-4"	115	
42"	0	1	2	7'-1"	12	2'-4"	144	772
	3	2	2	7'-1"	12	1'-10"	134	
	3	3	2	7'-1"	12	1'-4"	124	
48"	0	1	2	7'-7"	13	2'-4"	155	1062
	0	2	2	7'-7"	13	1'-10"	144	
	8	3	2	7'-7"	13	1'-4"	133	
54"	0	1	2	8'-1"	14	2'-4"	166	1170
	3	2	2	8'-1"	14	1'-10"	154	
	5	3	2	8'-1"	14	1'-4"	142	
60"	3	1	2	8'-7"	15	2'-4"	176	1283
	0	2	2	8'-7"	15	1'-10"	164	
	5	3	2	8'-7"	15	1'-4"	151	

GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:4 SLOPE

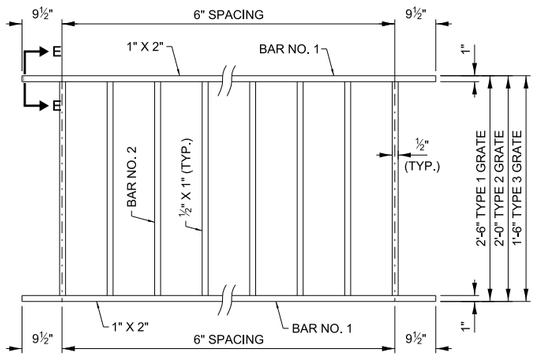
INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
36"	5	1	2	6'-7"	11	2'-4"	133	666
	0	2	2	6'-7"	11	1'-10"	124	
	0	3	2	6'-7"	11	1'-4"	115	
42"	1	1	2	7'-1"	12	2'-4"	144	947
	6	2	2	7'-1"	12	1'-10"	134	
	0	3	2	7'-1"	12	1'-4"	124	
48"	1	1	2	7'-7"	13	2'-4"	155	1161
	7	2	2	7'-7"	13	1'-10"	144	
	0	3	2	7'-7"	13	1'-4"	133	
54"	1	1	2	8'-1"	14	2'-4"	166	1395
	8	2	2	8'-1"	14	1'-10"	154	
	0	3	2	8'-1"	14	1'-4"	142	
60"	0	1	2	8'-7"	15	2'-4"	176	1961
	0	2	2	8'-7"	15	1'-10"	164	
	13	3	2	8'-7"	15	1'-4"	151	

GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:6 SLOPE

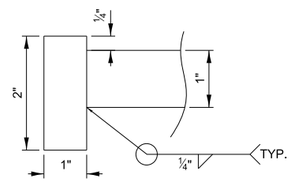
INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
36"	0	1	2	6'-7"	11	2'-4"	133	1375
	0	2	2	6'-7"	11	1'-10"	124	
	12	3	2	6'-7"	11	1'-4"	115	
42"	0	1	2	7'-1"	12	2'-4"	144	1731
	0	2	2	7'-1"	12	1'-10"	134	
	14	3	2	7'-1"	12	1'-4"	124	
48"	0	1	2	7'-7"	13	2'-4"	155	2123
	0	2	2	7'-7"	13	1'-10"	144	
	16	3	2	7'-7"	13	1'-4"	133	
54"	0	1	2	8'-1"	14	2'-4"	166	2340
	6	2	2	8'-1"	14	1'-10"	154	
	10	3	2	8'-1"	14	1'-4"	142	
60"	0	1	2	8'-7"	15	2'-4"	176	2892
	2	2	2	8'-7"	15	1'-10"	164	
	17	3	2	8'-7"	15	1'-4"	151	

GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:10 SLOPE

INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
18"	3	1	2	3'-7"	5	2'-4"	69	528
	5	2	2	3'-7"	5	1'-10"	64	
	0	3	2	3'-7"	5	1'-4"	60	
24"	0	1	2	4'-7"	7	2'-4"	90	1096
	0	2	2	4'-7"	7	1'-10"	84	
	14	3	2	4'-7"	7	1'-4"	78	
30"	7	1	2	5'-7"	9	2'-4"	112	1302
	5	2	2	5'-7"	9	1'-10"	104	
	0	3	2	5'-7"	9	1'-4"	96	
36"	8	1	2	6'-7"	11	2'-4"	133	1810
	6	2	2	6'-7"	11	1'-10"	124	
	0	3	2	6'-7"	11	1'-4"	115	
42"	15	1	2	7'-1"	12	2'-4"	144	2161
	0	2	2	7'-1"	12	1'-10"	134	
	0	3	2	7'-1"	12	1'-4"	124	
48"	0	1	2	7'-7"	13	2'-4"	155	3019
	21	2	2	7'-7"	13	1'-10"	144	
	0	3	2	7'-7"	13	1'-4"	133	
54"	19	1	2	8'-1"	14	2'-4"	166	3146
	0	2	2	8'-1"	14	1'-10"	154	
	0	3	2	8'-1"	14	1'-4"	142	
60"	20	1	2	8'-7"	15	2'-4"	176	3691
	1	2	2	8'-7"	15	1'-10"	164	
	0	3	2	8'-7"	15	1'-4"	151	



TYPICAL GRATE



SECTION E-E

NOTES:

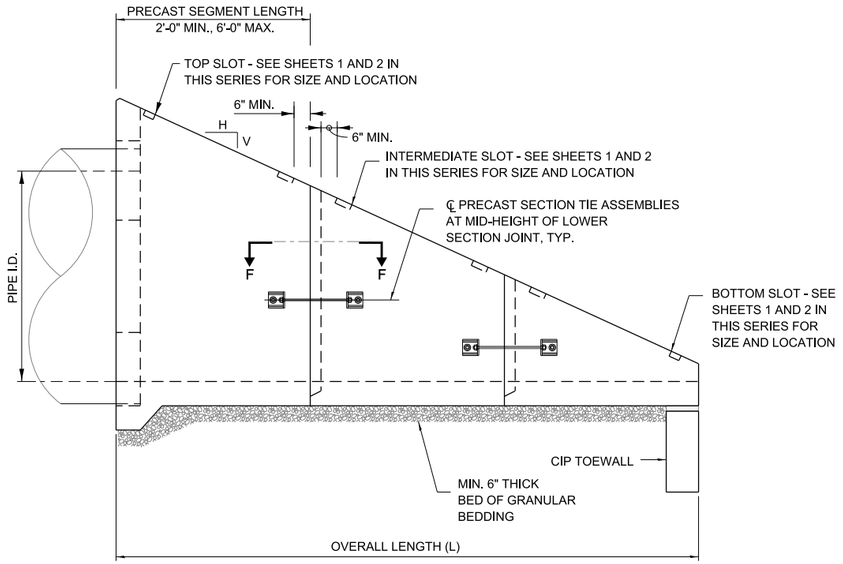
1. ALL STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 36 OR 50.
2. GALVANIZING SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. FOR PLACEMENT OF GRATES, SEE SHEET 1 IN THIS SERIES.
4. ALL TABLE DIMENSIONS AND QUANTITIES ARE FOR SINGLE HEADWALL, TYPE III.
5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
6. GRATING IS DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

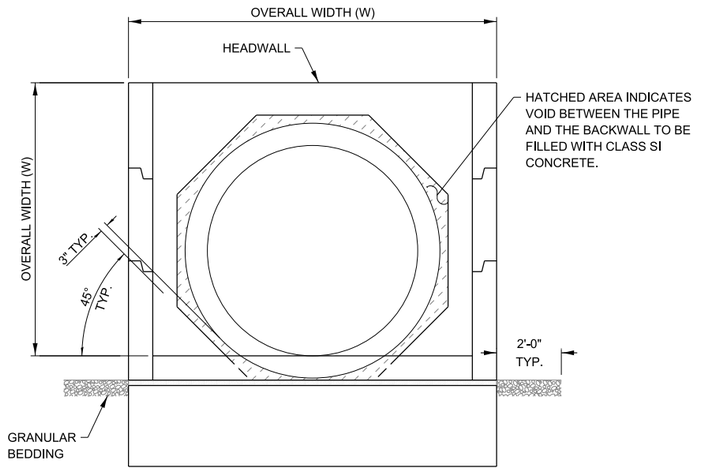
Illinois Tollway

HEADWALL TYPE III 18"-24"-30"-36"-42"-48"-54"-60" FOR 1:3, 1:4, 1:6, AND 1:10 SLOPES

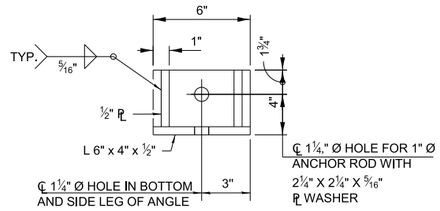
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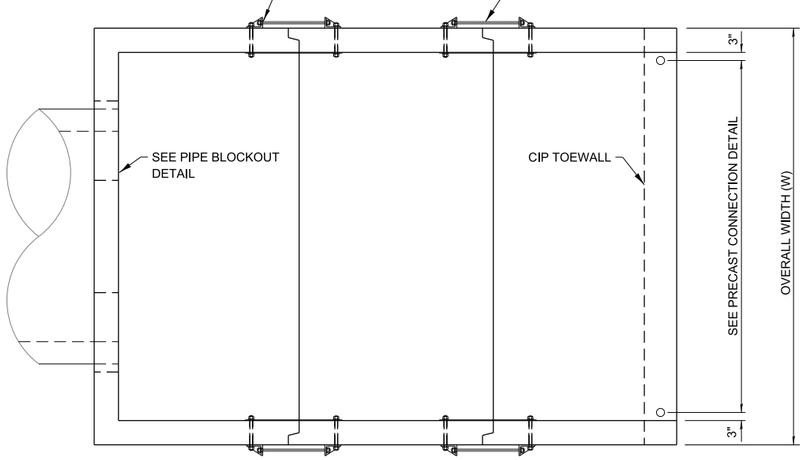
ELEVATION



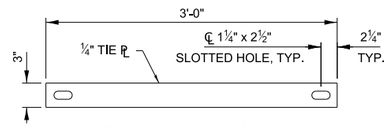
END VIEW



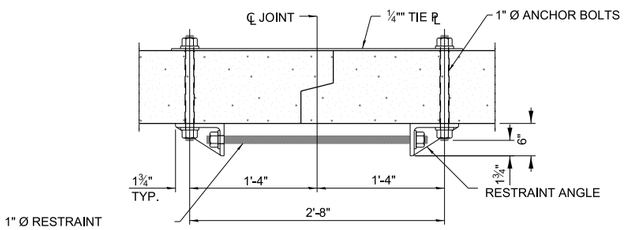
RESTRAINT ANGLE DETAIL



PLAN

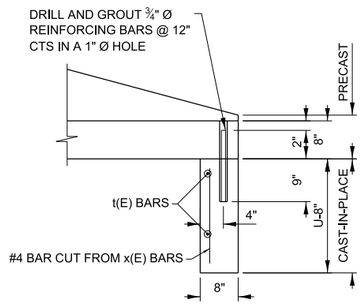


TIE PLATE DETAIL



SECTION F-F

(SHOWING PRECAST SECTION TIE DETAILS)



PRECAST CONNECTION DETAIL

GENERAL NOTES:

1. THE NUMBER OF SEGMENTS SHOWN IN ELEVATION IS FOR EXAMPLE ONLY. THE LENGTH AND NUMBER OF PRECAST SECTIONS REQUIRED TO CONSTRUCT THE END SECTION SHALL BE DETERMINED BY THE CONTRACTOR.
2. CONTRACTOR SHALL RETAIN THE SERVICES OF AN ILLINOIS LICENSED STRUCTURAL ENGINEER TO PROPORTION, DESIGN AND DETAIL PRECAST SECTIONS FOR INSTALLATION AND FOR SERVICE. SEE CAST-IN-PLACE DIMENSIONS AND REINFORCING DETAILS FOR MINIMUM REQUIREMENTS. INCREASE MEMBER SIZES AND REINFORCING AS NECESSARY TO SATISFY HANDLING AND INSTALLATION STRESSES IN PRECAST SECTIONS.
3. CLASS "SI" CONCRETE SHALL BE USED THROUGHOUT.
4. REINFORCEMENT BARS (GRADE 60) SHALL BE EPOXY COATED. SEE CAST-IN-PLACE DETAILS FOR BENDING DIAGRAMS. SEE NOTES ON SHEET 1 IN THIS SERIES FOR REINFORCING COVER REQUIREMENTS.
5. ALL EXPOSED EDGES SHALL BE CHAMFERED. SEE NOTES ON SHEET 1 IN THIS SERIES.
6. SEE ROADWAY PLANS FOR SLOPE (V:H) AND PIPE INSIDE DIAMETER.
7. HOLES IN THE WALLS FOR THE PRECAST TIE ASSEMBLY MAY BE DRILLED USING CORE BITS IN LIEU OF FORMED HOLES. AVOID DAMAGE TO REINFORCING FROM DRILLING HOLES.
8. FOR STEEL GRATING DETAILS, SEE SHEET 3 IN THIS SERIES.
9. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
10. TIE ASSEMBLIES, CONSISTING OF ANCHOR RODS, TIE PLATES, RESTRAINT ANGLES, RESTRAINT RODS AND ALL NUTS AND WASHERS SHALL CONFORM WITH AASHTO M270 GR36, OR GR50 AND SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M 111 AFTER FABRICATION.

HEADWALL TYPE III ALTERNATE PRECAST CONCRETE DETAILS

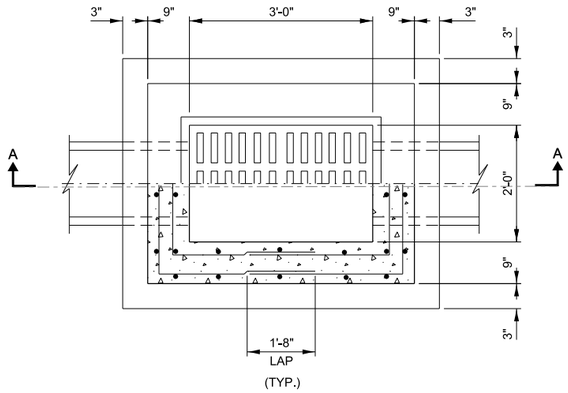
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

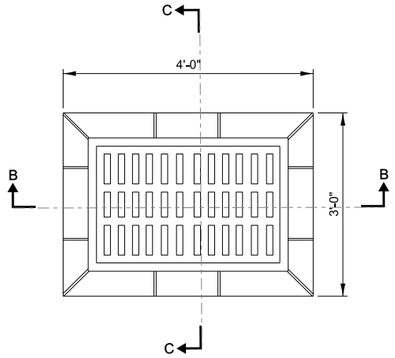
Illinois Tollway

HEADWALL TYPE III 18"-24"-30"-36"-42"-48"-54"-60" FOR 1:3, 1:4, 1:6, AND 1:10 SLOPES

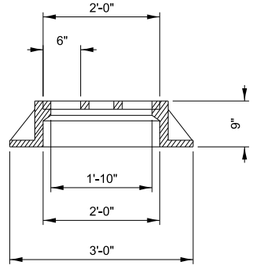
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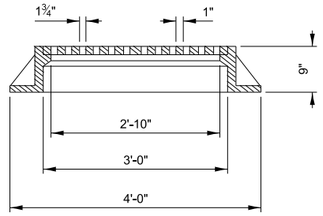
HALF PLAN



PLAN

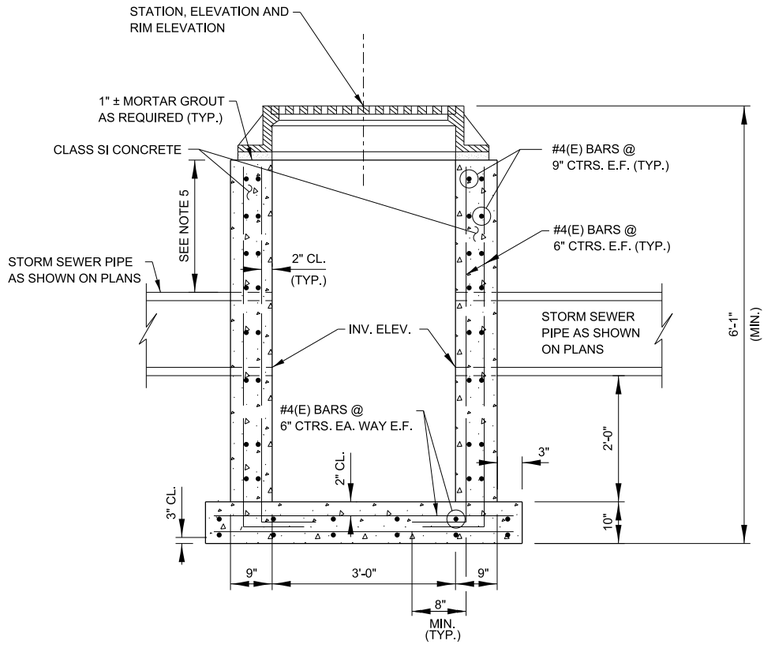


SECTION C-C

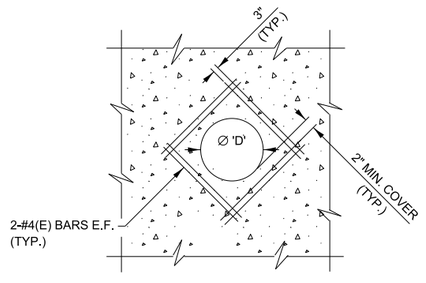


SECTION B-B

FRAME AND GRATE DETAIL



SECTION A-A



TYPICAL REINFORCEMENT
AROUND STORM SEWER PIPE

NOTES:

1. FOR MATERIALS AND CONSTRUCTION REQUIREMENTS OF THE CATCH BASIN, REFER TO THE STANDARD SPECIFICATIONS.
2. FRAME AND GRATE FOR CATCH BASIN TYPE B SHALL BE NEENAH FOUNDRY COMPANY TYPE R-3455C, EAST JORDAN IRON WORKS V5360-1 OR APPROVED EQUAL.
3. REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED.
4. THE CONTRACTOR SHALL CLEARLY MARK EACH CATCH BASIN WITH "ILLINOIS TOLLWAY", CONTRACT NUMBER, STRUCTURE NUMBER, PRODUCER NAME AND DATE OF MANUFACTURE. THIS INFORMATION SHALL BE MARKED ON THE OUTSIDE FACE OF THE STRUCTURE IN A VISIBLE SURFACE AS DESIGNATED BY THE ENGINEER. THE MARKING SHALL BE PAINTED/STAMPED IN THE STRUCTURE WITH WATERPROOF PAINT/INK OR RECESSED IN THE STRUCTURE BY 1/2". THE LETTERS SHALL BE CAPITALS, NOT LESS THAN 2 IN. AND NOT MORE THAN 3 IN. IN HEIGHT.
5. A MINIMUM OF 9" OF MONOLITHIC REINFORCED CONCRETE SHALL BE MAINTAINED ABOVE PIPE PENETRATION HOLES >15".

CATCH BASIN TYPE B

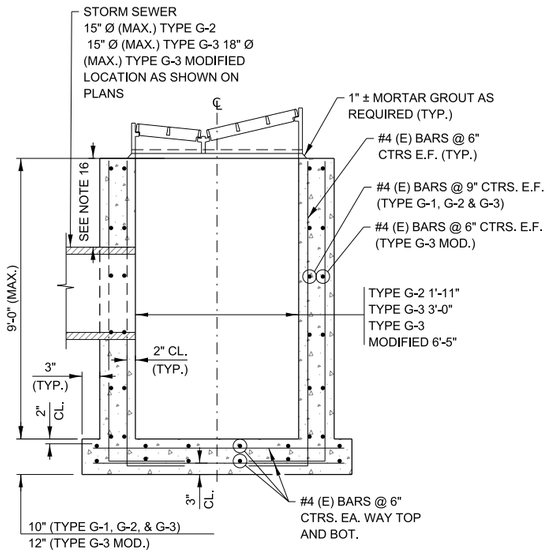
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	ADDED NOTES FOR MARKINGS AND MINIMUM 9" ABOVE PIPE PENETRATION HOLES
03-01-2020	REVISED TYPICAL REINFORCEMENT AROUND PIPE
03-11-2015	SLOPE DRAIN CHANGE TO BASE SHEET

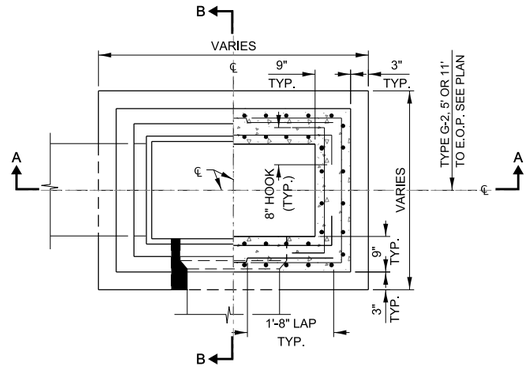
Illinois Tollway

CATCH BASIN, TYPE B

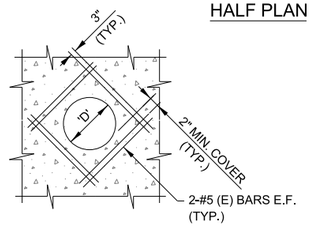
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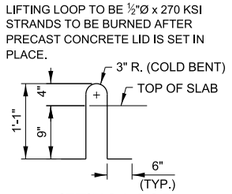
SECTION A-A



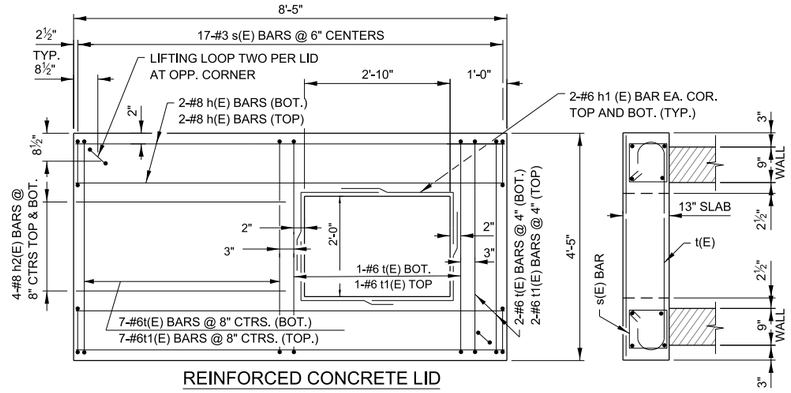
HALF PLAN



TYPICAL REINFORCEMENT
AROUND STORM SEWER PIPE

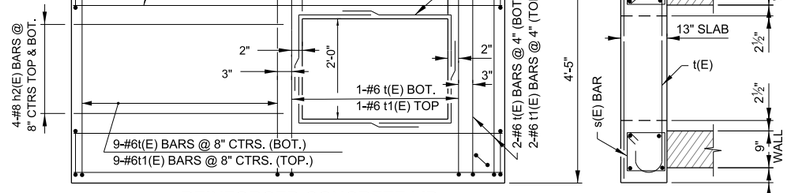


LIFTING LOOP
DETAIL



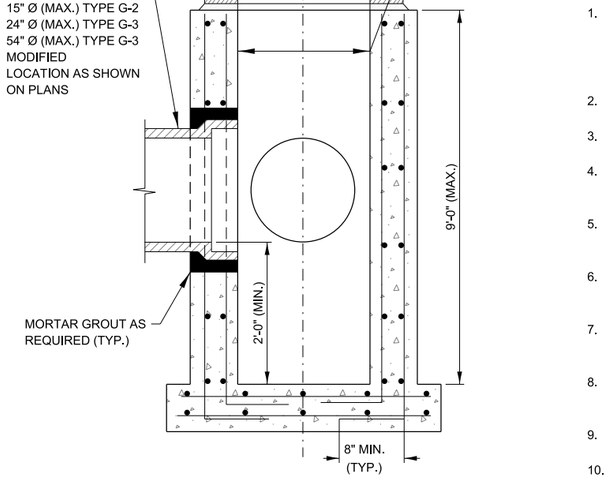
REINFORCED CONCRETE LID
TYPE G-3 FRAME AND GRATE

CATCH BASIN,TYPE G-3, MODIFIED



REINFORCED CONCRETE LID
TYPE 20A FRAME AND GRATE

CATCH BASIN,TYPE G-3, MODIFIED



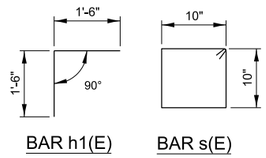
SECTION B-B
CATCH BASIN TYPE "G" SERIES

NOTE:

POSITION OF OPENING VARIES
FROM 3'-2" TO 5'-4" MEASURED
FROM BACK OF GUTTER LINE.

NOTES:

1. PRECAST CONCRETE UNITS WILL BE ACCEPTABLE PROVIDED THEY MEET ALL THE REQUIREMENTS AS SHOWN ON THIS DRAWING. BASE EXTENSION OF 3" NOT REQUIRED FOR PRECAST UNITS. FABRICATION DRAWINGS SHOWING PIPE OPENINGS, REINFORCEMENT AND OTHER PERTINENT DIMENSIONS WILL BE REQUIRED FOR EACH UNIT, FOR APPROVAL BY THE ENGINEER PRIOR TO FABRICATION.
2. CATCH BASIN, TYPE G-2 SHALL BE USED ALONG RAMPS WHERE GUTTER TYPE G-2 IS PROVIDED.
3. CATCH BASIN, TYPE G-3 SHALL BE USED WHERE GUTTER TYPE G-3 IS PROVIDED.
4. CATCH BASIN, TYPE G-3 MODIFIED SHALL BE USED IN PAVEMENT SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED PAVEMENT.
5. CATCH BASIN, TYPE G-3 MODIFIED SHALL BE PROVIDED WITH A REINFORCED CONCRETE SLAB TOP AS DETAILED ON THIS DRAWING.
6. TYPE G-2 FRAME AND GRATE SHALL BE NEENAH R-3508-A2, EAST JORDAN IRON WORKS 7300 OR APPROVED EQUAL.
7. TYPE G-3 FRAME AND GRATE SHALL BE NEENAH INLET FOR ROLL TYPE CURB R-3501-U OR EAST JORDAN IRON WORKS 7545 OR APPROVED EQUAL.
8. TYPE G-3, MODIFIED FRAME AND GRATE SHALL BE NEENAH INLET FOR ROLL TYPE CURB SPECIAL R-3501-U1, EAST JORDAN IRON WORKS 7546 OR APPROVED EQUAL.
9. TYPE G-2, MODIFIED FRAME AND GRATE FOR ROLL TYPE CURB R-3508-B2 OR APPROVED EQUAL.
10. MORTAR OR SEALER SHALL BE USED WHEN A PRECAST REINFORCED CONCRETE LID IS USED.
11. REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED.
12. E.O.P. = EDGE OF PAVEMENT.
13. ALL CONCRETE SHALL BE CLASS SI CONCRETE.
14. FRAME AND GRATE RIM ELEVATION AND OFFSET MEASURED AT THE EDGE OF SHOULDER.
15. THE CONTRACTOR SHALL CLEARLY MARK EACH CATCH BASIN WITH "ILLINOIS TOLLWAY", CONTRACT NUMBER, STRUCTURE NUMBER, PRODUCER NAME AND DATE OF MANUFACTURE. THIS INFORMATION SHALL BE MARKED ON THE OUTSIDE FACE OF THE STRUCTURE IN A VISIBLE SURFACE AS DESIGNATED BY THE ENGINEER. THE MARKING SHALL BE PAINTED/STAMPED IN THE STRUCTURE WITH WATERPROOF PAINT/INK OR RECESSED IN THE STRUCTURE BY 1/2". THE LETTERS SHALL BE CAPITALS, NOT LESS THAN 2 IN. AND NOT MORE THAN 3 IN. IN HEIGHT.
16. A MINIMUM OF 9" OF MONOLITHIC REINFORCED CONCRETE SHALL BE MAINTAINED ABOVE PIPE PENETRATION HOLES.



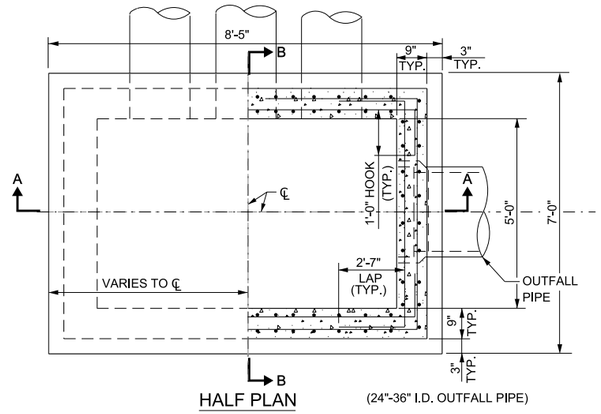
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REVISED NOTE 16 (SHEET 1)
	NOTE 11 (SHEETS 2 AND 3).
03-01-2022	ADDED NOTES FOR MARKINGS
	AND MINIMUM 9" ABOVE PIPE
	PENETRATION HOLES

Illinois Tollway

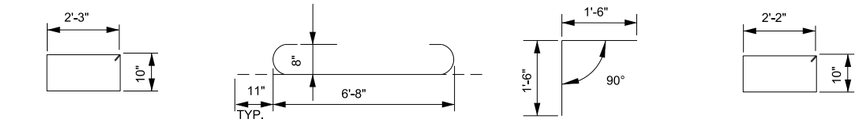
CATCH BASINS TYPE G AND TYPE G-3 MODIFIED, FRAMES AND GRATES

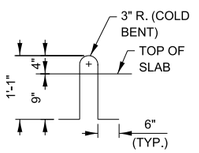
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HALF PLAN

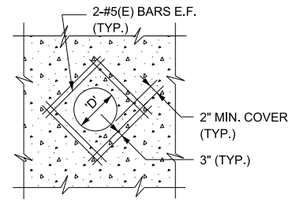
(24"-36" I.D. OUTFALL PIPE)



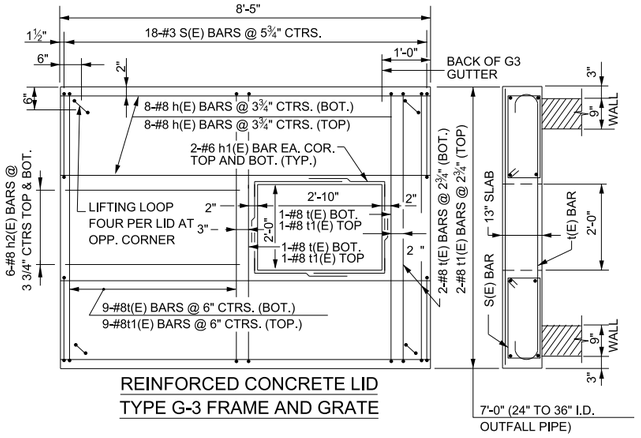


LIFTING LOOP DETAIL

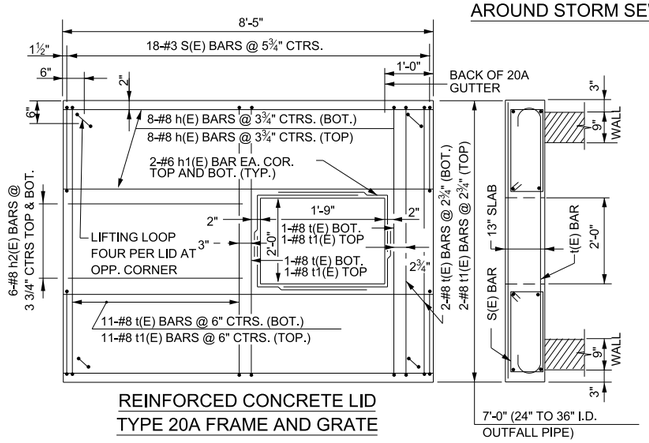
LIFTING LOOP TO BE ½"ØX270KSI STRANDS TO BE BURNED AFTER PRECAST CONCRETE LID IS SET IN PLACE.



TYPICAL REINFORCEMENT AROUND STORM SEWER PIPE

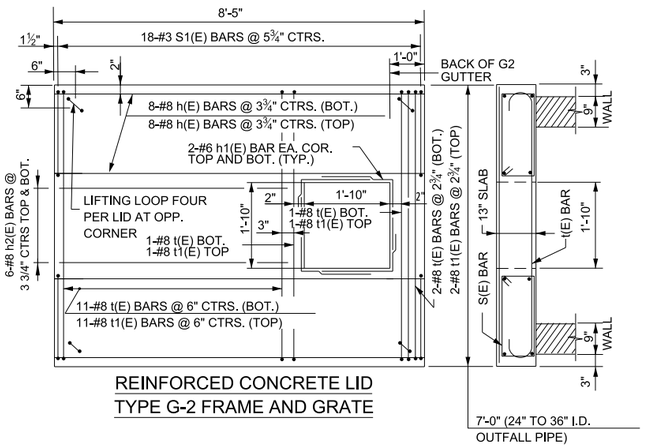


REINFORCED CONCRETE LID TYPE G-3 FRAME AND GRATE



REINFORCED CONCRETE LID TYPE 20A FRAME AND GRATE

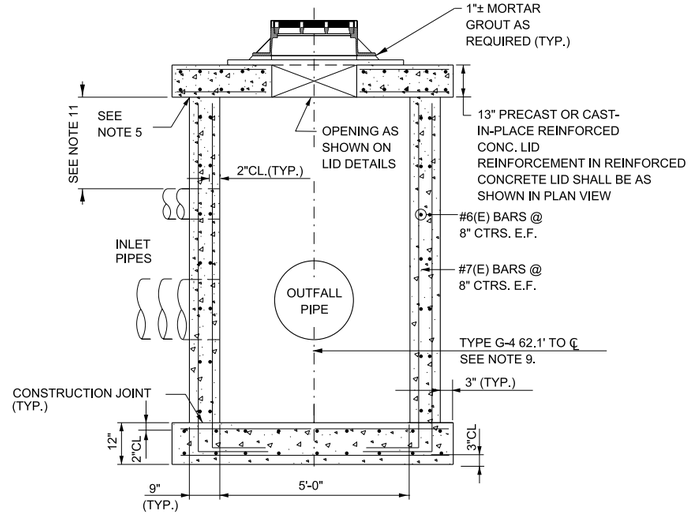
CATCH BASIN TYPE G-4



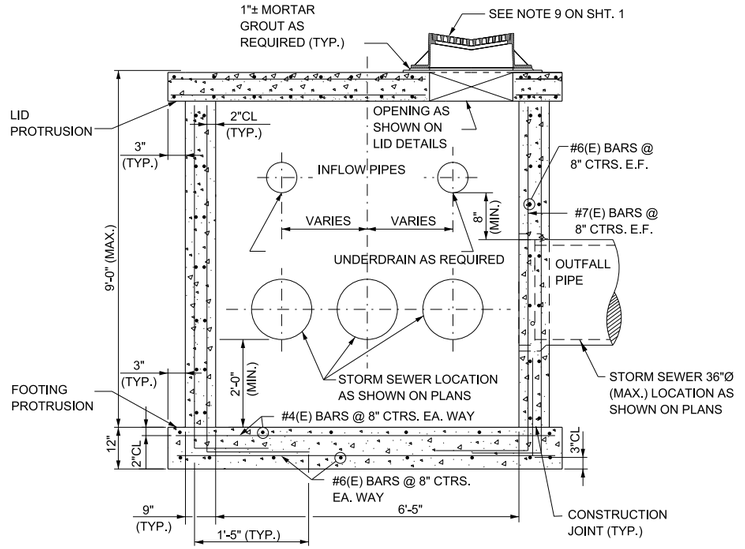
REINFORCED CONCRETE LID TYPE G-2 FRAME AND GRATE

NOTES:

1. SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.
2. CATCH BASINS TYPE G-4 SHALL BE USED IN TANGENT SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED PAVEMENT.
3. CATCH BASINS TYPE G-4 SHALL BE PROVIDED WITH A REINFORCED CONCRETE SLAB TOP AS DETAILED ON THIS DRAWING.
4. CATCH BASINS TYPE G-4 SHALL BE USED WHEN GUTTER, TYPE G-3 IS PROVIDED.
5. MORTAR OR SEALER SHALL BE USED WHEN A PRECAST REINFORCED CONCRETE LID IS USED.
6. FRAME AND GRATE RIM ELEVATION AND OFFSET MEASURED AT THE EDGE OF SHOULDER.
7. 36"Ø MAX. OUTFALL PIPE FOR TYPE G-4 CATCH BASIN.
8. ALL CONCRETE SHALL BE CLASS SI CONCRETE.
9. DISTANCE FROM ℄ OUTFALL PIPE TO ℄ ROADWAY TO BE VERIFIED BY ENGINEER.
10. THE CONTRACTOR SHALL CLEARLY MARK EACH CATCH BASIN WITH "ILLINOIS TOLLWAY", CONTRACT NUMBER, STRUCTURE NUMBER, PRODUCER NAME AND DATE OF MANUFACTURE. THIS INFORMATION SHALL BE MARKED ON THE OUTSIDE FACE OF THE STRUCTURE IN A VISIBLE SURFACE AS DESIGNATED BY THE ENGINEER. THE MARKING SHALL BE PAINTED/STAMPED IN THE STRUCTURE WITH WATERPROOF PAINT/INK OR RECESSED IN THE STRUCTURE BY 1/2". THE LETTERS SHALL BE CAPITALS, NOT LESS THAN 2 IN. AND NOT MORE THAN 3 IN. IN HEIGHT.
11. A MINIMUM OF 9" OF MONOLITHIC REINFORCED CONCRETE SHALL BE MAINTAINED ABOVE PIPE PENETRATION HOLES.



SECTION B-B



SECTION A-A

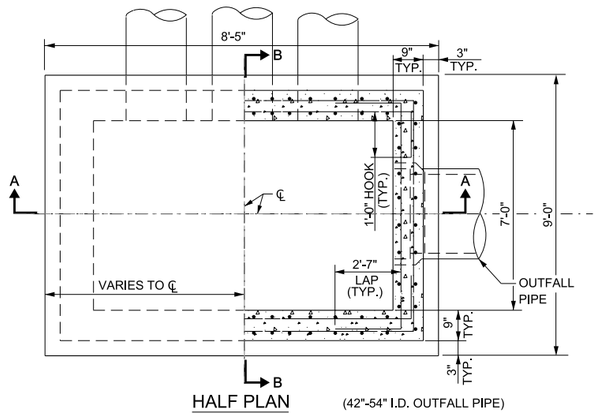
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE: 03/01/2024

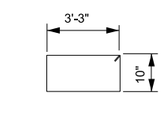
Illinois Tollway

CATCH BASINS TYPE G AND TYPE G-3 MODIFIED, FRAMES AND GRATES

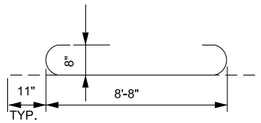
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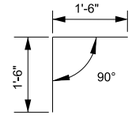
HALF PLAN (42"-54" I.D. OUTFALL PIPE)



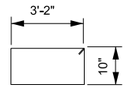
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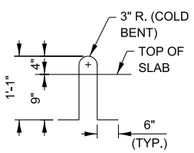
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#6 BAR h1(E)

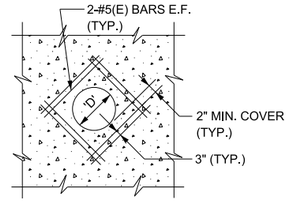


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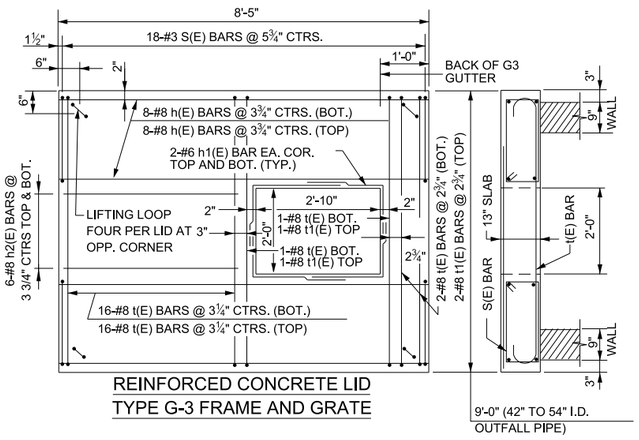


LIFTING LOOP DETAIL

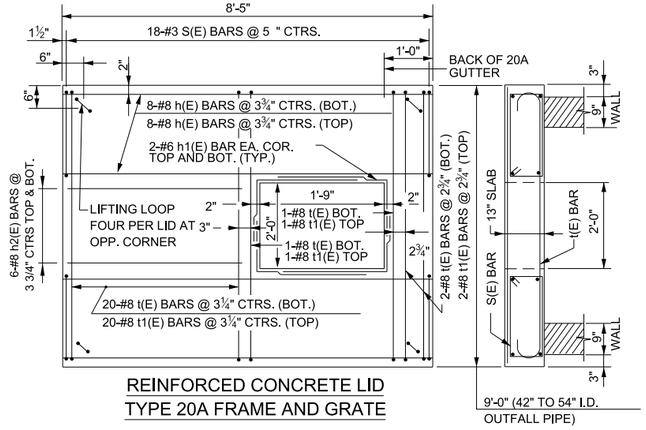
LIFTING LOOP TO BE ½"ØX270KSI STRANDS TO BE BURNED AFTER PRECAST CONCRETE LID IS SET IN PLACE.



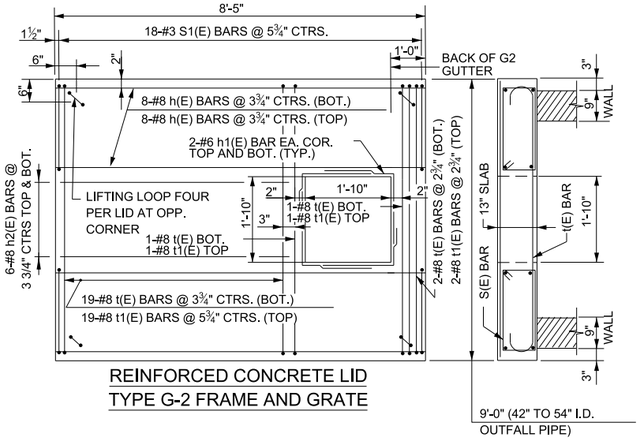
TYPICAL REINFORCEMENT AROUND STORM SEWER PIPE



REINFORCED CONCRETE LID TYPE G-3 FRAME AND GRATE



REINFORCED CONCRETE LID TYPE 20A FRAME AND GRATE

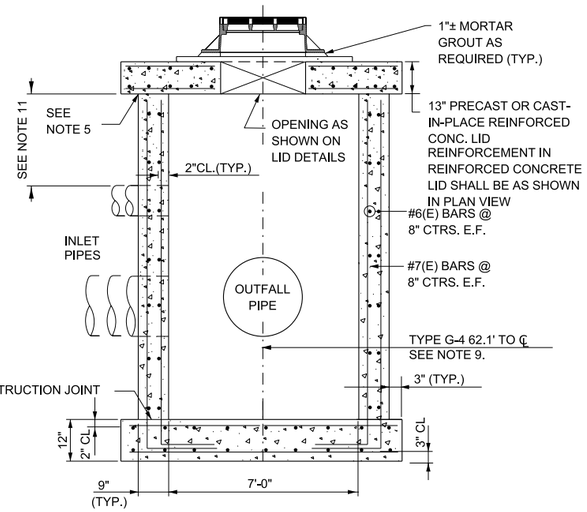


REINFORCED CONCRETE LID TYPE G-2 FRAME AND GRATE

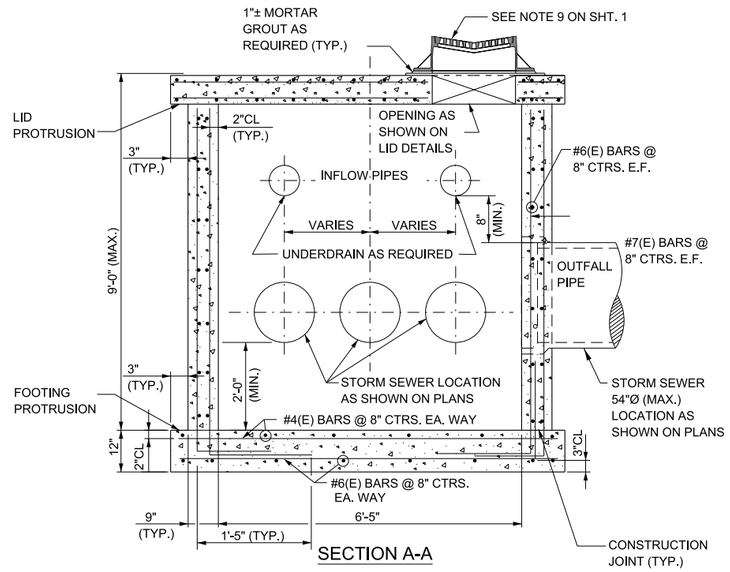
CATCH BASIN TYPE G-5

NOTES:

1. SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.
2. CATCH BASINS TYPE G-5 SHALL BE USED IN TANGENT SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED PAVEMENT.
3. CATCH BASINS TYPE G-5 SHALL BE PROVIDED WITH A REINFORCED CONCRETE SLAB TOP AS DETAILED ON THIS DRAWING.
4. CATCH BASINS TYPE G-5 SHALL BE USED WHEN GUTTER, TYPE G-3 IS PROVIDED.
5. MORTAR OR SEALER SHALL BE USED WHEN A PRECAST REINFORCED CONCRETE LID IS USED.
6. FRAME AND GRATE RIM ELEVATION AND OFFSET MEASURED AT THE EDGE OF SHOULDER.
7. 54"Ø MAX. OUTFALL PIPE FOR TYPE G-5 CATCH BASIN.
8. ALL CONCRETE SHALL BE CLASS SI CONCRETE.
9. DISTANCE FROM ℄ OUTFALL PIPE TO ~ ROADWAY TO BE VERIFIED BY ENGINEER.
10. THE CONTRACTOR SHALL CLEARLY MARK EACH CATCH BASIN WITH "ILLINOIS TOLLWAY", CONTRACT NUMBER, STRUCTURE NUMBER, PRODUCER NAME AND DATE OF MANUFACTURE. THIS INFORMATION SHALL BE MARKED ON THE OUTSIDE FACE OF THE STRUCTURE IN A VISIBLE SURFACE AS DESIGNATED BY THE ENGINEER. THE MARKING SHALL BE PAINTED/STAMPED IN THE STRUCTURE WITH WATERPROOF PAINT/INK OR RECESSED IN THE STRUCTURE BY 1/2". THE LETTERS SHALL BE CAPITALS, NOT LESS THAN 2 IN. AND NOT MORE THAN 3 IN. IN HEIGHT.
11. A MINIMUM OF 9" OF MONOLITHIC REINFORCED CONCRETE SHALL BE MAINTAINED ABOVE PIPE PENETRATION HOLES.



SECTION B-B



SECTION A-A

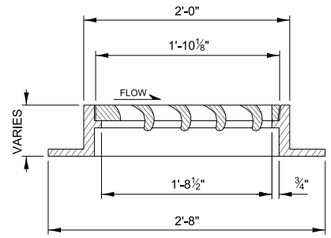
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE: 03/01/2024

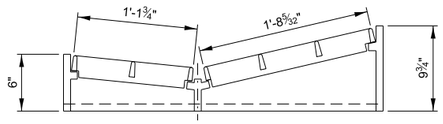
Illinois Tollway

CATCH BASINS TYPE G AND TYPE G-3 MODIFIED, FRAMES AND GRATES

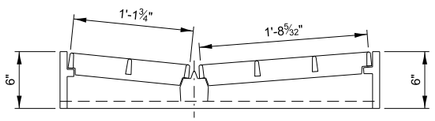
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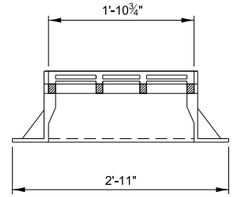
SECTION T-T



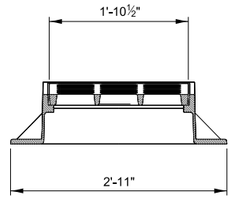
SECTION U-U



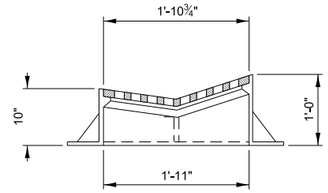
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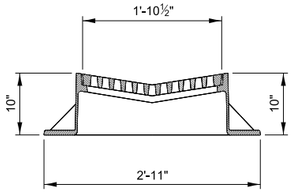
SECTION Y-Y



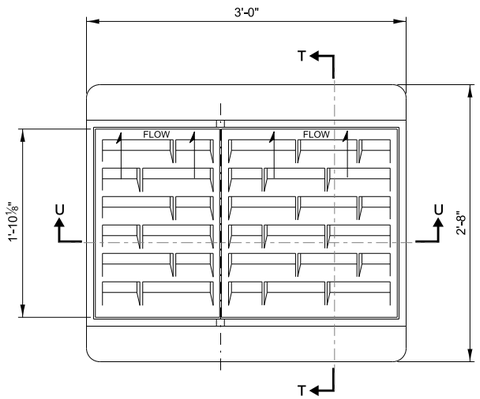
SECTION S-S



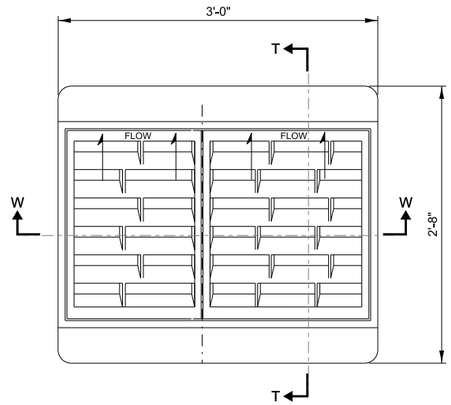
SECTION Z-Z



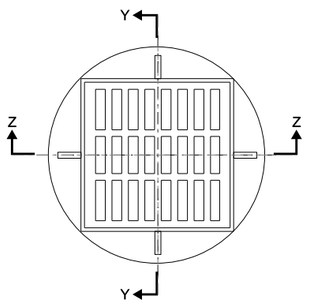
SECTION V-V



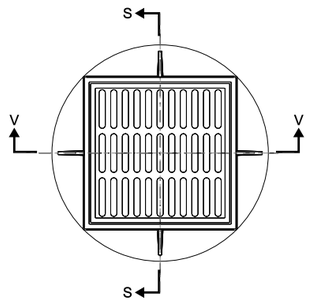
TYPE G-3 FRAME & GRATE



TYPE G-3, MODIFIED
FRAME & GRATE



TYPE G-2 FRAME & GRATE



TYPE G-2 MODIFIED
FRAME & GRATE

NOTE:

SEE SHEET 1 OF THIS SERIES FOR NOTES.

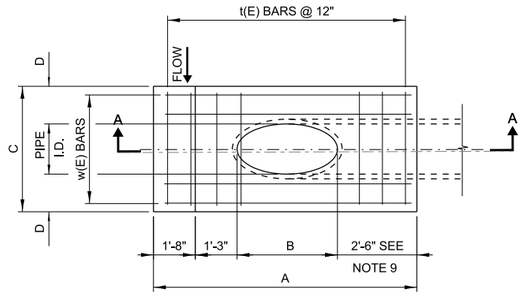
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

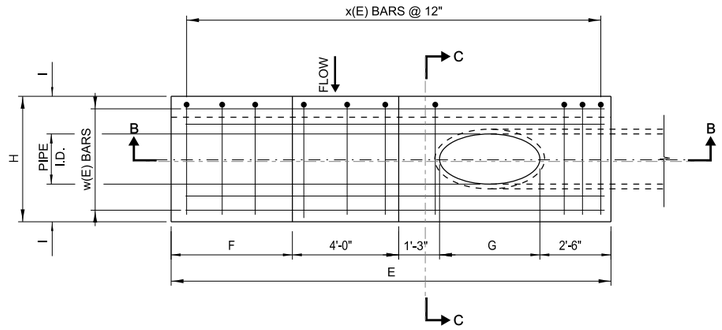
Illinois Tollway

CATCH BASINS TYPE G AND TYPE G-3 MODIFIED, FRAMES AND GRATES

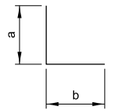
VERSION:	STANDARD:	SHEET:
2024-03	B8-09	4 OF 4



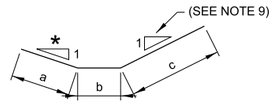
PLAN I



PLAN II



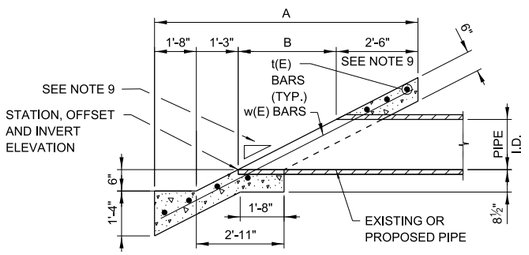
x(E) BARS



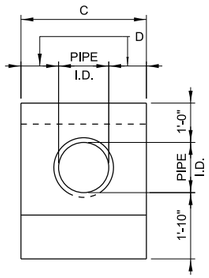
w(E) BARS

NOTES:

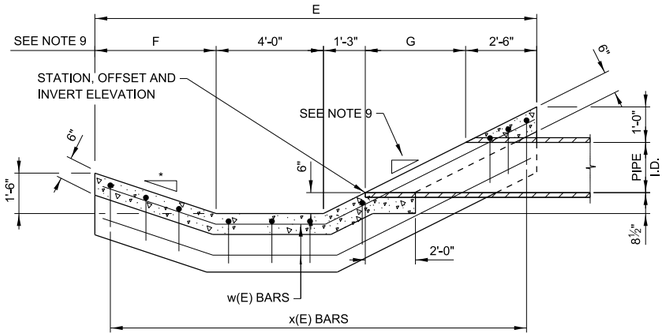
1. SLOPED HEADWALL TYPES I AND II SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
5. ALL EXPOSED EDGES SHALL HAVE A ¾" CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW THE FINISHED GROUND LINE.
6. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
7. CARE SHALL BE EXERCISED IN REMOVING ANY LENGTH OF EXISTING PIPE SO THE REMAINING PIPE IS UNDAMAGED AND FULLY FUNCTIONING.
8. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
9. SLOPED HEADWALLS, TYPES I AND II TO BE USED ONLY FOR SLOPES STEEPER THAN 1:3. DIMENSIONS AND QUANTITIES SHOWN ARE BASED ON A 1:2.5 SLOPE (EXISTING AND PROPOSED).
10. I.D. DENOTES INSIDE DIAMETER OF PIPE. O.D. DENOTES OUTSIDE DIAMETER OF PIPE.



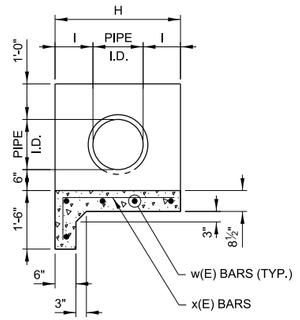
SECTION A-A



ELEVATION



SECTION B-B



SECTION C-C

★ MATCH EXISTING OR PROPOSED SLOPE, SEE NOTE 9

TABLES FOR DIMENSIONS, REINFORCEMENT AND QUANTITIES FOR ONE SLOPED HEADWALL TYPE I

SLOPED HEADWALL DIMENSION TABLE - TYPE I				
PIPE I.D.	A	B	C	D
6"	6'-8"	1'-3"	2'-6"	1'-0"
12"	7'-11"	2'-6"	3'-0"	1'-0"
15"	8'-7"	3'-2"	3'-9"	1'-3"
18"	9'-2"	3'-9"	4'-6"	1'-6"

PIPE I.D.	REINFORCEMENT BARS		
	MARK(E)	NO. & SIZE	LENGTH
6"	t6	7-#4	2'-2"
	w6	4-#4	6'-8"
12"	t12	7-#4	2'-8"
	w12	4-#4	8'-2"
15"	t15	7-#4	3'-5"
	w15	4-#4	8'-11"
18"	t18	7-#4	4'-2"
	w18	4-#4	9'-6"

DESIGN NO.	INSIDE DIA. OF PIPE	CONC. 1 HDWL. (CU. YD.)	REINF. BARS. 1 HDWL. (POUND)
F-6-2	6"	0.5	29
F-12-2	12"	0.6	35
F-15-2	15"	0.8	40
F-18-2	18"	1.0	45

SLOPED HEADWALL TYPE I

TABLES FOR DIMENSIONS, REINFORCEMENT AND QUANTITIES FOR ONE SLOPED HEADWALL TYPE II

SLOPED HEADWALL DIMENSION TABLE - TYPE II					
PIPE I.D.	E	F	G	H	I
12"	14'-0"	3'-9"	2'-6"	3'-0"	1'-0"
15"	14'-8"	3'-9"	3'-2"	3'-9"	1'-3"
18"	15'-3"	3'-9"	3'-9"	4'-6"	1'-6"

PIPE I.D.	REINFORCEMENT BARS					
	MARK(E)	NO. & SIZE	LENGTH	a	b	c
12"	x12	10-#4	3'-6"	2'-6"	1'-0"	---
	w12	5-#4	14'-4"	3'-10"	4'-0"	6'-6"
15"	x15	10-#4	4'-3"	3'-3"	1'-0"	---
	w15	5-#4	15'-1"	3'-10"	4'-0"	7'-3"
18"	x18	10-#4	5'-0"	4'-0"	1'-0"	---
	w18	5-#4	15'-8"	3'-10"	4'-0"	7'-10"

DESIGN NO.	INSIDE DIA. OF PIPE	CONC. 1 HDWL. (CU. YD.)	REINF. BARS. 1 HDWL. (POUND)
E-12-2	12"	1.2	75
E-15-2	15"	1.6	82
E-18-2	18"	1.7	89

SLOPED HEADWALL TYPE II

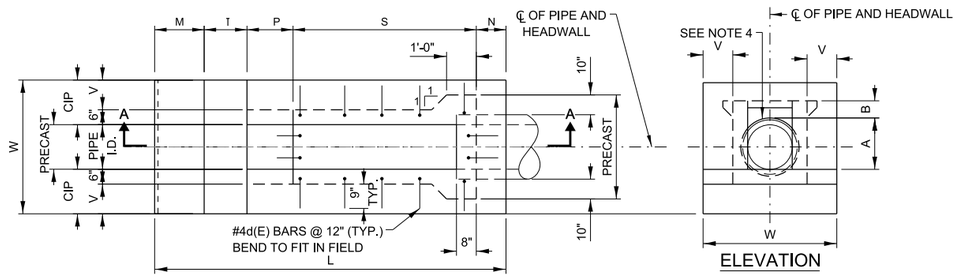
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/31/2017

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-31-2017	REVISED REINFORCEMENT BARS, TABLES
03-11-2015	REVISED REINFORCEMENT BARS, TABLES
03-31-2014	REVISED CONCRETE QUANTITIES
	REINFORCEMENT STEEL

SLOPED HEADWALLS TYPE I AND TYPE II

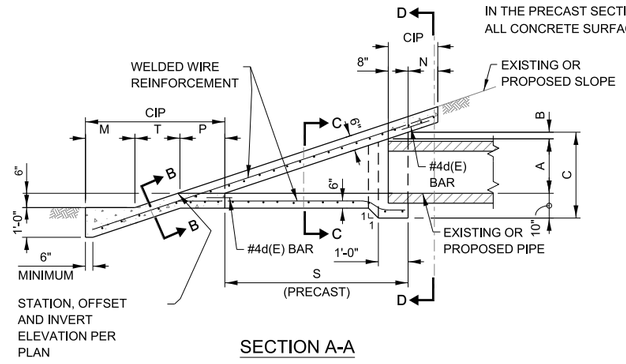
VERSION:	STANDARD:	SHEET:
2017-03	B9-04	1 OF 1



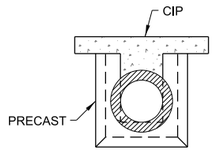
PLAN - SLOPED HEADWALL

ELEVATION

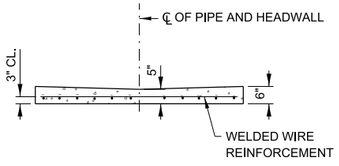
NOTES:
EACH #4d(E) BAR SHALL BE PLACED SUCH THAT IT WILL PROJECT 9" INTO THE CAST IN PLACE (CIP) CONCRETE AND IT SHALL BE 3" BELOW THE TOP SURFACE. HOOKS IN THE PRECAST SECTION SHALL BE TIPPED TO CLEAR ALL CONCRETE SURFACES A MIN. OF 2".



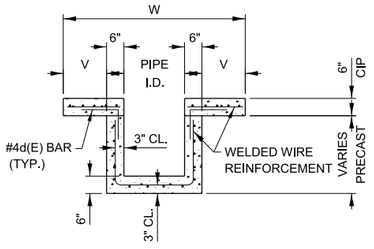
SECTION A-A
(FOR PIPE ABOVE DITCH FLOW LINE)



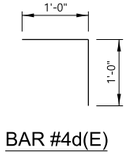
SECTION D-D



SECTION B-B



SECTION C-C



BAR #4d(E)

DIMENSIONS AND QUANTITIES FOR ONE SLOPED HEADWALL TYPE III

1 TO 3 SLOPE

PIPE I.D.	DIMENSIONS											PRE CAST CONC. CU. YD.	CAST-IN-PLACE CU. YD.	WELDED WIRE REINFORCEMENT SQ. YD.	REINFORCEMENT BARS				
	A	B	C	N	M	T	P	S	L	V	W				MARK(E)	SIZE	NO.	LENGTH	LB.
6"	9"	2¾"	1'-9¾"	1'-0"	1'-8"	1'-6"	1'-6¾"	2'-11¼"	8'-8"	1'-0"	3'-6"	0.15	0.72	3.28	d6	#4	12	2'-0"	16
8"	11"	2¾"	1'-11¾"	1'-0"	1'-8"	1'-6"	1'-6¾"	3'-5¼"	9'-2"	1'-0"	3'-8"	0.22	0.75	3.89	d8	#4	12	2'-0"	16
12"	1'-3½"	2¾"	2'-4¼"	1'-0"	1'-8"	1'-6"	1'-6¾"	4'-6¾"	10'-3½"	1'-0"	4'-0"	0.34	0.92	4.50	d12	#4	14	2'-0"	19
15"	1'-6½"	2¾"	2'-7¼"	1'-0"	1'-8"	1'-6"	1'-6¾"	5'-3¾"	11'-½"	1'-0"	4'-3"	0.45	1.01	5.88	d15	#4	16	2'-0"	21
18"	1'-10"	2¾"	2'-10¾"	1'-0"	1'-8"	1'-6"	1'-6¾"	6'-2¼"	11'-11"	1'-0"	4'-6"	0.61	1.13	6.44	d18	#4	18	2'-0"	24
21"	2'-1"	2¾"	3'-1¾"	1'-0"	1'-9"	1'-6"	1'-6¾"	6'-11¼"	12'-9"	1'-3"	5'-3"	0.76	1.39	8.34	d21	#4	22	2'-0"	29
24"	2'-4½"	2¾"	3'-5¼"	1'-0"	2'-0"	1'-6"	1'-6¾"	7'-9¾"	13'-10½"	1'-6"	6'-0"	0.95	1.72	9.85	d24	#4	24	2'-0"	32
27"	2'-7½"	2¾"	3'-8¼"	1'-1½"	2'-3"	1'-6"	1'-6¾"	8'-6¾"	15'-0"	1'-9"	6'-9"	1.14	2.07	13.54	d27	#4	24	2'-0"	32
30"	2'-11"	2¾"	3'-11¾"	1'-3"	2'-6"	1'-6"	1'-6¾"	9'-5¼"	16'-3"	2'-0"	7'-6"	1.38	2.46	16.40	d30	#4	26	2'-0"	35

1 TO 4 SLOPE

PIPE I.D.	DIMENSIONS											PRE CAST CONC. CU. YD.	CAST-IN-PLACE CU. YD.	WELDED WIRE REINFORCEMENT SQ. YD.	REINFORCEMENT BARS				
	A	B	C	N	M	T	P	S	L	V	W				MARK(E)	SIZE	NO.	LENGTH	LB.
6"	9"	2"	1'-9"	1'-0"	1'-8"	2'-0"	2'-1"	3'-8"	10'-5"	1'-0"	3'-6"	0.17	0.83	4.07	d6	#4	12	2'-0"	16
8"	11"	2"	1'-11"	1'-0"	1'-8"	2'-0"	2'-1"	4'-4"	11'-1"	1'-0"	3'-8"	0.28	0.87	4.97	d8	#4	14	2'-0"	19
12"	1'-3½"	2"	2'-3½"	1'-0"	1'-8"	2'-0"	2'-1"	5'-10"	12'-7"	1'-0"	4'-0"	0.41	1.07	5.50	d12	#4	16	2'-0"	21
15"	1'-6½"	2"	2'-6½"	1'-0"	1'-8"	2'-0"	2'-1"	6'-10"	13'-7"	1'-0"	4'-3"	0.55	1.18	6.63	d15	#4	18	2'-0"	24
18"	1'-10"	2"	2'-10"	1'-0"	1'-8"	2'-0"	2'-1"	8'-0"	14'-9"	1'-0"	4'-6"	0.74	1.32	8.60	d18	#4	22	2'-0"	29
21"	2'-1"	2"	3'-1"	1'-0"	1'-9"	2'-0"	2'-1"	9'-0"	15'-10"	1'-3"	5'-3"	0.93	1.63	11.03	d21	#4	24	2'-0"	32
24"	2'-4½"	2"	3'-4½"	1'-0"	2'-0"	2'-0"	2'-1"	10'-2"	17'-3"	1'-6"	6'-0"	1.18	2.00	13.88	d24	#4	28	2'-0"	37
27"	2'-7½"	2"	3'-7½"	1'-1½"	2'-3"	2'-0"	2'-1"	11'-2"	18'-7½"	1'-9"	6'-9"	1.42	2.41	14.83	d27	#4	30	2'-0"	40
30"	2'-11"	2"	3'-11"	1'-3"	2'-6"	2'-0"	2'-1"	12'-4"	20'-2"	2'-0"	7'-6"	1.71	2.87	20.49	d30	#4	32	2'-0"	43

1 TO 6 SLOPE

PIPE I.D.	DIMENSIONS											PRE CAST CONC. CU. YD.	CAST-IN-PLACE CU. YD.	WELDED WIRE REINFORCEMENT SQ. YD.	REINFORCEMENT BARS				
	A	B	C	N	M	T	P	S	L	V	W				MARK(E)	SIZE	NO.	LENGTH	LB.
6"	9"	1½"	1'-8½"	1'-0"	1'-8"	3'-0"	3'-0"	5'-3"	13'-11"	1'-0"	3'-6"	0.23	1.07	5.29	d6	#4	16	2'-0"	21
8"	11"	1½"	1'-10½"	1'-0"	1'-8"	3'-0"	3'-0"	6'-3"	14'-11"	1'-0"	3'-8"	0.43	1.13	7.13	d8	#4	18	2'-0"	24
12"	1'-3½"	1½"	2'-3"	1'-0"	1'-8"	3'-0"	3'-0"	8'-6"	17'-2"	1'-0"	4'-0"	0.57	1.38	8.62	d12	#4	22	2'-0"	29
15"	1'-6½"	1½"	2'-6"	1'-0"	1'-8"	3'-0"	3'-0"	10'-0"	18'-8"	1'-0"	4'-3"	0.77	1.53	10.35	d15	#4	26	2'-0"	35
18"	1'-10"	1½"	2'-9½"	1'-0"	1'-8"	3'-0"	3'-0"	11'-9"	20'-5"	1'-0"	4'-6"	1.04	1.70	12.47	d18	#4	28	2'-0"	37
21"	2'-1"	1½"	3'-0½"	1'-0"	1'-9"	3'-0"	3'-0"	13'-3"	22'-0"	1'-3"	5'-3"	1.31	2.11	15.77	d21	#4	34	2'-0"	45
24"	2'-4½"	1½"	3'-4"	1'-0"	2'-0"	3'-0"	3'-0"	15'-0"	24'-0"	1'-6"	6'-0"	1.66	2.59	17.62	d24	#4	38	2'-0"	51
27"	2'-7½"	1½"	3'-7"	1'-1½"	2'-3"	3'-0"	3'-0"	16'-6"	25'-10½"	1'-9"	6'-9"	1.99	3.11	24.10	d27	#4	40	2'-0"	53
30"	2'-11"	1½"	3'-10½"	1'-3"	2'-6"	3'-0"	3'-0"	18'-3"	28'-0"	2'-0"	7'-6"	2.41	3.70	29.13	d30	#4	44	2'-0"	59

NOTES:

1. THE CAST IN PLACE (CIP) SLOPED HEADWALL SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. WELDED WIRE REINFORCEMENT SHALL BE EPOXY COATED 4x4-W4xW4, 58 LBS. PER 100 SQ.FT.
4. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
5. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
6. COVER FROM FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
7. PRECAST UNIT USE IS OPTIONAL. THE ENTIRE STRUCTURE MAY BE CAST IN PLACE.
8. AFTER THE PRECAST SLOPED HEADWALL HAS BEEN PLACED, THE SPACE BETWEEN THE HEADWALL AND PIPE SHALL BE COMPLETELY FILLED WITH AN APPROVED NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
9. THE SLOPED HEADWALL DETAILS SHOWN ON THIS DRAWING ARE FOR USE ONLY WITH PIPES HAVING DIAMETER OR SPAN OF 30" OR LESS.
10. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
11. I.D. DENOTES INSIDE DIAMETER OF PIPE. O.D. DENOTES OUTSIDE DIAMETER OF PIPE.
12. REBAR REINFORCEMENT MAY BE USED AS AN OPTION TO WELDED WIRE REINFORCEMENT, DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

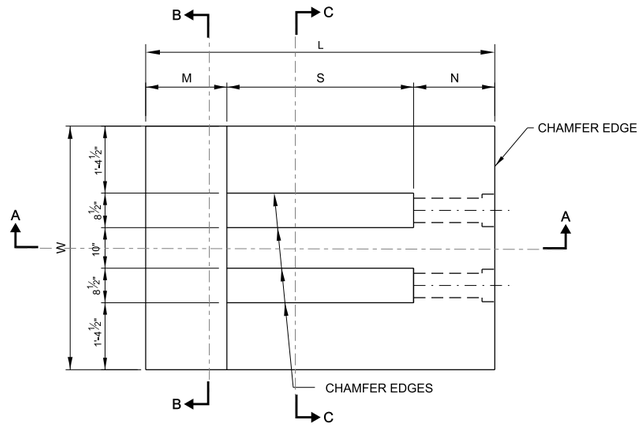
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED WELDED WIRE NOTE
03-01-2021	ADDED 8" SLOPED HEADWALL TYPE III
03-01-2020	REVISED NOTES
03-01-2019	ADDED DOUBLE SLOPED HEADWALL TYPE III
03-31-2017	REVISED TABLE (L)

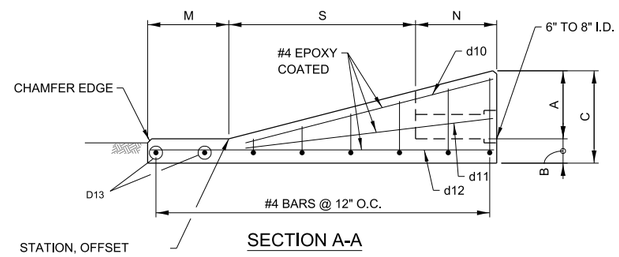
Illinois Tollway

SLOPED HEADWALLS TYPE III DETAILS

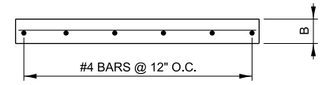
VERSION:	STANDARD:	SHEET:
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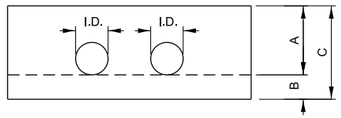
PLAN - DOUBLE SLOPED HEADWALL



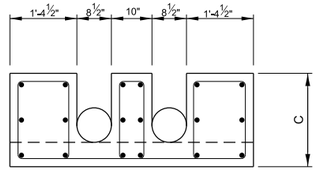
SECTION A-A



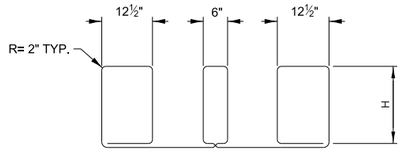
SECTION B-B



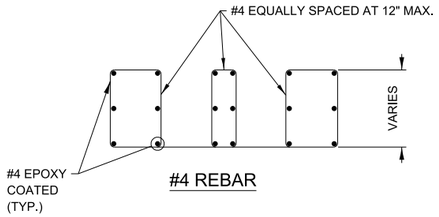
ELEVATION



SECTION C-C



d1 THROUGH d9 BAR
BENT



#4 REBAR

STIRRUP HEIGHT TABLE
FOR DOUBLE SLOPED HEADWALL TYPE III

1 TO 3 SLOPE AND C=1'-11"	
	STIRRUP HEIGHT, H
d1 E	17'-6"
d2 E	14'-4¾"
d3 E	11'-3¾"
d4 E	8'-2¾"
d5 E	5'-1½"

1 TO 4 SLOPE AND C=1'-11"	
	STIRRUP HEIGHT, H
d1 E	17'-7"
d2 E	15'-7¾"
d3 E	12'-6¾"
d4 E	10'-5½"
d5 E	7'-6"
d6 E	5'-0"

1 TO 6 SLOPE AND C=1'-11"	
	STIRRUP HEIGHT, H
d1 E	17'-8¾"
d2 E	15'-10½"
d3 E	14'-1¼"
d4 E	12'-2¼"
d5 E	10'-4¼"
d6 E	8'-6"
d7 E	6'-8¼"
d8 E	4'-10"

1 TO 3 SLOPE AND C=2'-1"	
	STIRRUP HEIGHT, H
d1 E	19'-6"
d2 E	16'-4¾"
d3 E	13'-3¾"
d4 E	10'-2¾"
d5 E	7'-1½"
d6 E	4'-½"

1 TO 4 SLOPE AND C=2'-1"	
	STIRRUP HEIGHT, H
d1 E	19'-7"
d2 E	17'-3¼"
d3 E	14'-5¾"
d4 E	12'-1½"
d5 E	9'-6"
d6 E	7'-0"
d7 E	4'-5¾"

1 TO 6 SLOPE AND C=2'-1"	
	STIRRUP HEIGHT, H
d1 E	19'-8¼"
d2 E	17'-10½"
d3 E	16'-1¼"
d4 E	14'-2¼"
d5 E	12'-4¼"
d6 E	10'-6"
d7 E	8'-8¼"
d8 E	6'-10"
d9 E	5'-0"

NOTES:

1. THE DOUBLE SLOPED HEADWALL SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
5. COVER FROM FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
6. PRECAST UNIT USE IS OPTIONAL. THE ENTIRE STRUCTURE MAY BE CAST IN PLACE.
7. AFTER THE PRECAST SLOPED HEADWALL HAS BEEN PLACED, THE SPACE BETWEEN THE HEADWALL AND PIPE SHALL BE COMPLETELY FILLED WITH AN APPROVED NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. THE DOUBLE SLOPED HEADWALL DETAILS SHOWN ON THIS DRAWING ARE FOR USE ONLY WITH PIPES HAVING DIAMETER OR SPAN OF 8" OR LESS.
9. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
10. I.D. DENOTES INSIDE DIAMETER OF PIPE.
11. WELDED WIRE REINFORCEMENT MAY BE USED AS AN OPTION TO REBAR REINFORCEMENT, DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

APPROVED BY:
CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

Illinois Tollway

SLOPED HEADWALLS
TYPE III DETAILS

VERSION:	STANDARD:	SHEET:
2022-03	B10-13	2 OF 3

	PIPE I.D.	DIMENSIONS								PRECAST CONCRETE CU YD	MARK	SIZE	NO	LENGTH	LB
		A	B	C	N	S	M	L	W						
1 TO 3 SLOPE	(2) - 6" PIPE	1'-5"	6"	1'-11"	1'-8"	3'-10"	1'-8"	7'-2"	5'-0"	1.29	d1 E	#4	1	17'-4 3/4"	12
											d2 E	#4	1	15'-10 3/4"	11
											d3 E	#4	1	14'-3 1/2"	10
											d4 E	#4	1	12'-9 1/4"	9
											d5 E	#4	1	11'-2 1/2"	7
											d10 E	#4	6	4'-8"	19
											d11 E	#4	6	3'-10 3/4"	16
											d12 E	#4	6	6'-10"	27
											d13 E	#4	2	4'-8"	6
	(2) - 8" PIPE OR (1) - 6" PIPE & (1) - 8" PIPE	1'-5"	8"	2'-1"	1'-8"	3'-10"	1'-8"	7'-2"	5'-0"	1.51	d1 E	#4	1	18'-4 3/4"	12
											d2 E	#4	1	16'-10 3/4"	11
											d3 E	#4	1	15'-3 1/2"	10
											d4 E	#4	1	13'-9 1/4"	9
											d5 E	#4	1	12'-2 1/2"	8
											d6 E	#4	1	10'-8"	7
											d10 E	#4	6	5'-4"	21
											d11 E	#4	6	4'-6 1/2"	18
											d12 E	#4	6	6'-10"	27
											d13 E	#4	2	4'-8"	6

	PIPE I.D.	DIMENSIONS								PRECAST CONCRETE CU YD	MARK	SIZE	NO	LENGTH	LB
		A	B	C	N	S	M	L	W						
1 TO 6 SLOPE	(2) - 6" PIPE	1'-5"	6"	1'-11"	1'-8"	7'-7"	1'-8"	10'-11"	5'-0"	2.00	d1 E	#4	1	17'-6"	12
											d2 E	#4	1	16'-7"	11
											d3 E	#4	1	15'-8"	10
											d4 E	#4	1	14'-9"	10
											d5 E	#4	1	13'-10"	9
											d6 E	#4	1	12'-10 1/4"	9
											d7 E	#4	1	12'-0"	8
											d8 E	#4	1	11'-1/4"	7
											d10 E	#4	6	7'-9 1/4"	31
											d11 E	#4	6	6'-7 3/4"	27
											d12 E	#4	6	10'-7 1/4"	42
											d13 E	#4	2	4'-8"	6
	(2) - 8" PIPE OR (1) - 6" PIPE & (1) - 8" PIPE	1'-5"	8"	2'-1"	1'-8"	7'-7"	1'-8"	10'-11"	5'-0"	2.33	d1 E	#4	1	18'-6"	12
											d2 E	#4	1	17'-7"	12
											d3 E	#4	1	16'-8"	11
											d4 E	#4	1	15'-9"	11
											d5 E	#4	1	14'-10"	10
											d6 E	#4	1	13'-10 1/4"	9
											d7 E	#4	1	13'-0"	9
											d8 E	#4	1	12'-1/4"	8
											d9 E	#4	1	11'-1 3/4"	7
											d10 E	#4	6	8'-11"	36
											d11 E	#4	6	7'-9"	31
											d12 E	#4	6	10'-7 1/4"	42
											d13 E	#4	2	4'-8"	6

	PIPE I.D.	DIMENSIONS								PRECAST CONCRETE CU YD	MARK	SIZE	NO	LENGTH	LB
		A	B	C	N	S	M	L	W						
1 TO 4 SLOPE	(2) - 6" PIPE	1'-5"	6"	1'-11"	1'-8"	5'-1"	1'-8"	8'-5"	5'-0"	1.53	d1 E	#4	1	17'-5 1/4"	12
											d2 E	#4	1	16'-2 1/4"	11
											d3 E	#4	1	14'-11"	10
											d4 E	#4	1	13'-8"	9
											d5 E	#4	1	12'-4 1/4"	8
											d6 E	#4	1	11'-1 3/4"	7
											d10 E	#4	6	5'-8 1/2"	23
											d11 E	#4	6	4'-9 1/4"	19
											d12 E	#4	6	8'-1 1/4"	32
											d13 E	#4	2	4'-8"	6
	(2) - 8" PIPE OR (1) - 6" PIPE & (1) - 8" PIPE	1'-5"	8"	2'-1"	1'-8"	5'-1"	1'-8"	8'-5"	5'-0"	1.79	d1 E	#4	1	18'-5 1/4"	12
											d2 E	#4	1	17'-2 1/4"	11
											d3 E	#4	1	15'-11"	11
											d4 E	#4	1	14'-8"	10
											d5 E	#4	1	13'-4 1/4"	9
											d6 E	#4	1	12'-1 3/4"	8
											d7 E	#4	1	10'-10 3/4"	7
											d10 E	#4	6	6'-6 3/4"	26
											d11 E	#4	6	5'-7 1/4"	22
											d12 E	#4	6	8'-1 1/4"	32
											d13 E	#4	2	4'-8"	6

DIMENSIONS AND QUANTITIES
FOR DOUBLE SLOPED HEADWALL TYPE III

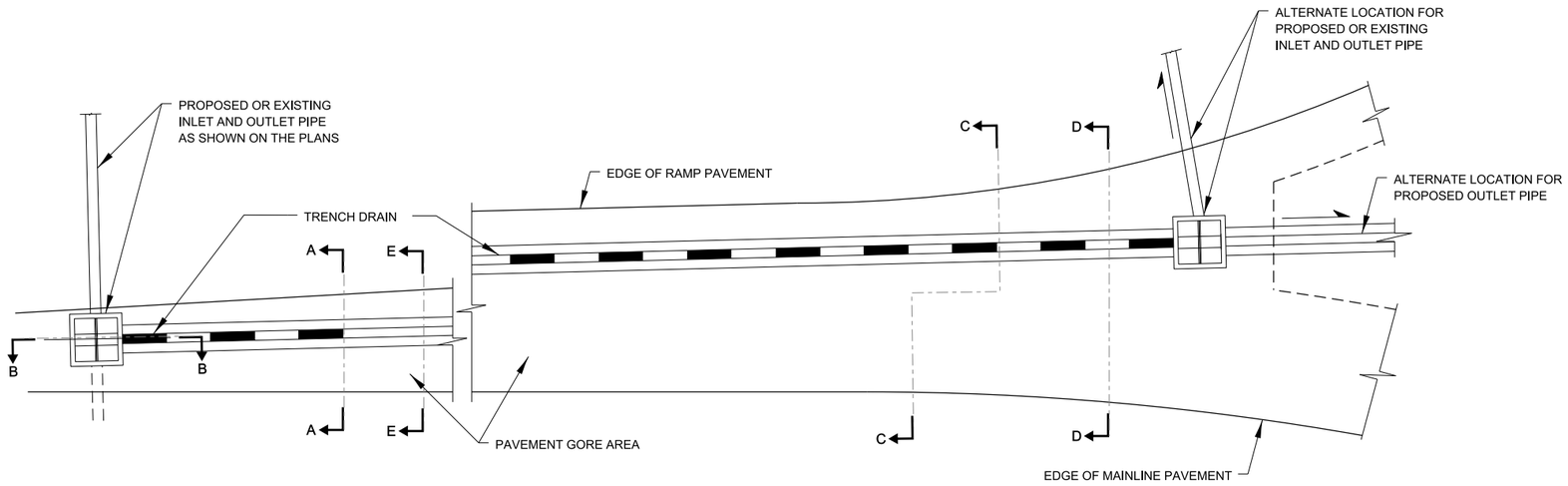
APPROVED BY:
CHIEF ENGINEERING OFFICER

DATE:
03/01/2022

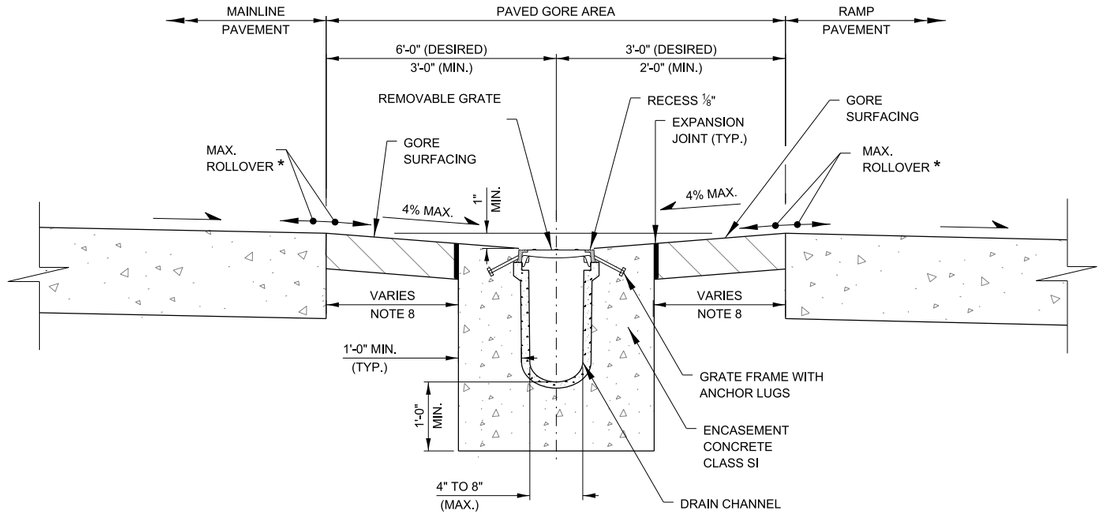
Illinois Tollway

SLOPED HEADWALLS
TYPE III DETAILS

VERSION:	STANDARD:	SHEET:
2022-03	B10-13	3 OF 3



PLAN



SECTION A-A
TRENCH DRAIN INSTALLATION

NOTES:

1. OUTLET PIPES AND PREFORMED CHANNEL INVERTS SHALL BE SLOPED AT 0.6% OR STEEPER TOWARD OUTLET REGARDLESS OF THE SURFACE SLOPE.
2. TRENCH DRAIN MAY BE STUBBED DIRECTLY INTO DRAINAGE STRUCTURES OR OUTLET PIPES MAY BE USED TO CONNECT TRENCH DRAIN TO DRAINAGE STRUCTURES.
3. TRENCH EXCAVATION MUST ALLOW FOR A MINIMUM OF 12 INCHES OF CONCRETE TO BE PLACED UNDER AND ALONGSIDE THE TRENCH DRAIN CHANNEL SYSTEM.
4. THE FINISHED LEVEL OF CONCRETE MUST BE APPROXIMATELY 1/8" ABOVE THE TOP OF THE DRAIN CHANNEL.
5. TRENCH DRAINS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DETAILS AND SPECIFICATIONS.
6. PROVIDE 1" EXPANSION JOINT WITH PREFORMED JOINT FILLER BETWEEN PAVED SHOULDER AND TRENCH DRAIN ENCASEMENT.
7. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL PLACEMENT (V:H).
8. WHEN THE CONCRETE ENCASEMENT FOR TRENCH DRAIN IS WITHIN 6' OF THE PAVEMENT, REPLACE THE GORE SURFACING WITH CLASS SI CONCRETE 9" DEPTH; PAY ITEM: PORTLAND CEMENT CONCRETE SHOULDERS (JOINTED) 9".

* MAXIMUM ROLLOVER AND ** MAXIMUM SLOPE FROM EDGE OF SHOULDER VARIES FROM THE PHYSICAL NOSE TO THE GORE NOSE ACCORDING TO THE FOLLOWING:

FOR EXIT RAMPS:
* 5% MAX. ROLLOVER AND
** 9% MAX. SLOPE FROM EDGE OF SHOULDER

FOR ENTRANCE RAMPS:
* 7% MAX. ROLLOVER AND
** 10% MAX. SLOPE FROM EDGE OF SHOULDER

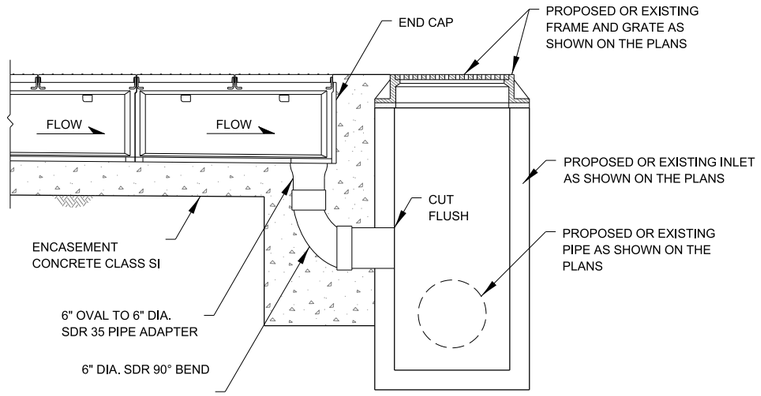
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

REVISIONS	
DATE	DESCRIPTION
03-01-2018	UPDATED MAX. ROLLOVER REQS
	REVISION SECTION E-E HATCHING
03-31-2016	REVISED PIPING BEND
03-11-2015	REVISED ROLLOVER, ADDED CATCH
	BASIN, TYPE B
03-31-2014	REVISED NOTES

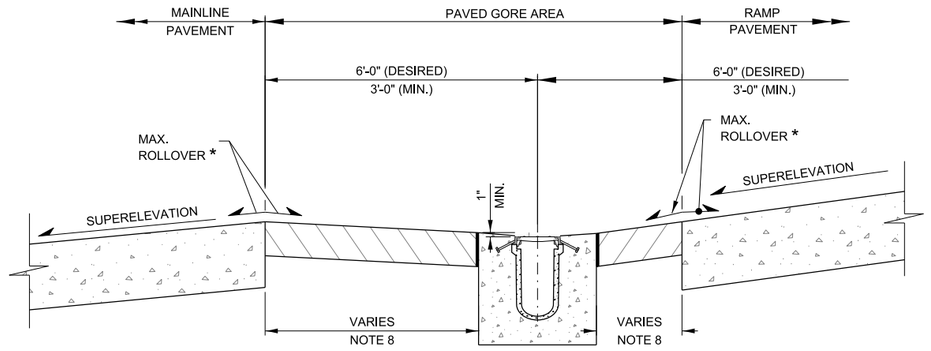
Illinois Tollway

TRENCH DRAIN DETAIL

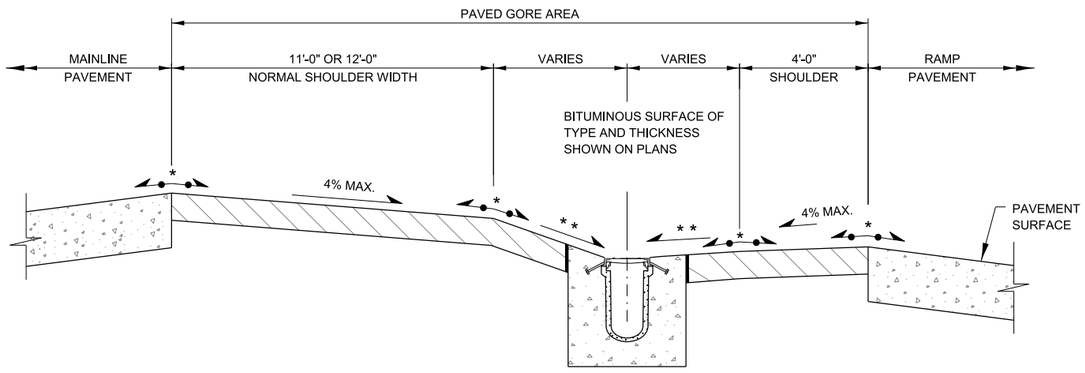
VERSION:	STANDARD:	SHEET:
2018-03	B12-07	1 OF 2



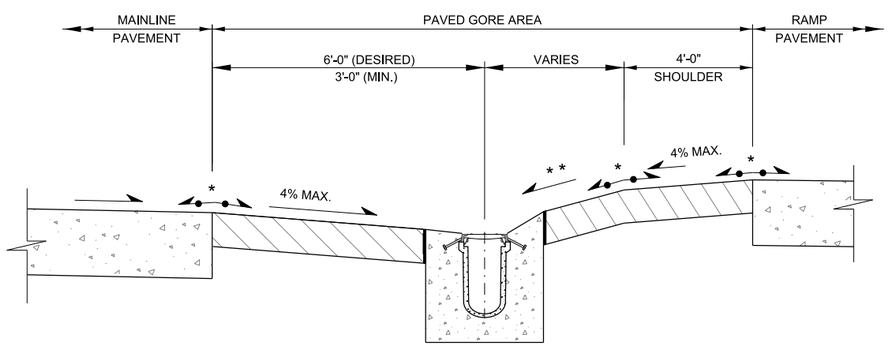
SECTION B-B
PIPE OUTLET TO DRAINAGE STRUCTURE



SECTION E-E
RAMP ON OUTSIDE OF
SUPERELEVATED MAINLINE SECTION



SECTION D-D



SECTION C-C

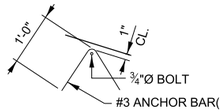
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

Illinois Tollway

TRENCH DRAIN DETAIL

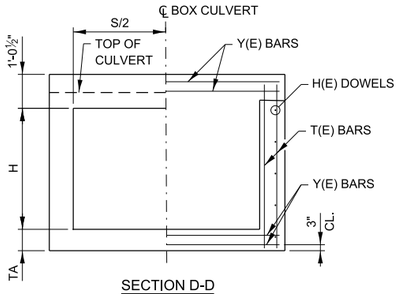
VERSION:	STANDARD:	SHEET:
2018-03	B12-07	2 OF 2



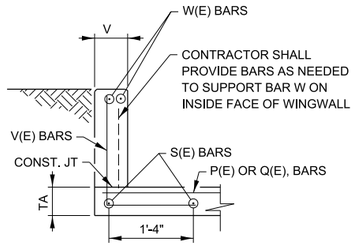
ANCHOR BARS

CONTRACTOR SHALL PROVIDE 2-#3 ANCHOR BARS(E) PER SIDEWALL BOLT.

DETAIL B



SECTION D-D



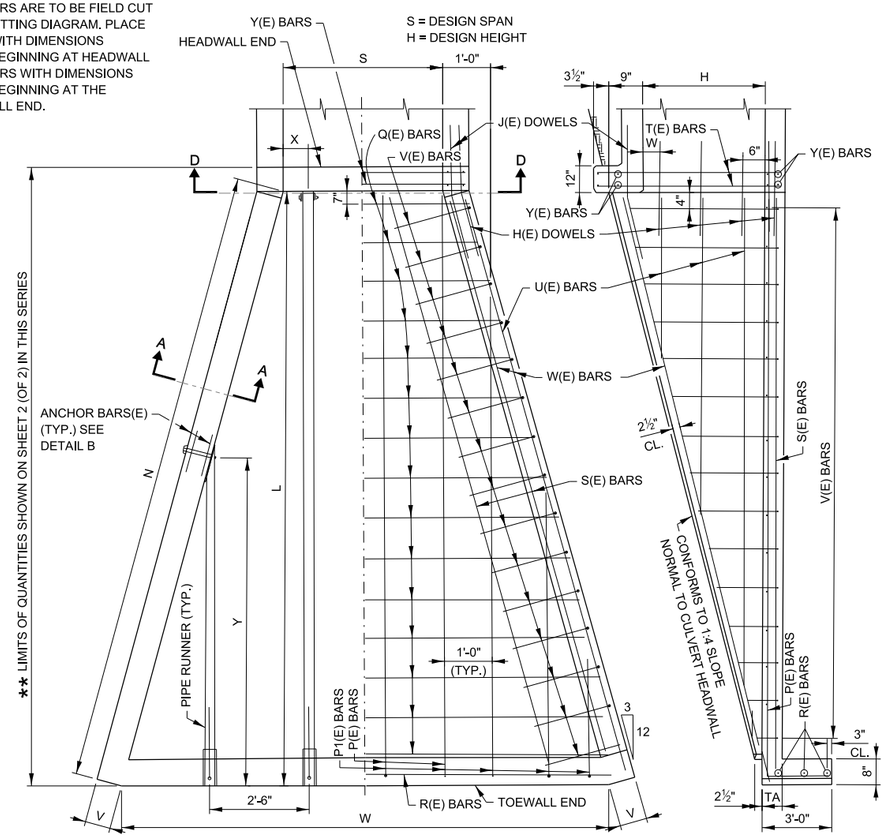
SECTION A-A

NOTE:

J & H, DOWEL BARS NOT REQUIRED WITH EXISTING BOX CULVERTS PROVIDING THE REINFORCING FROM THE EXISTING BOX IS EXTENDED INTO THE NEW CONCRETE A MINIMUM OF 1'-3".

NOTE:

Q(E) BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE BARS WITH DIMENSIONS C_4-C_5 BEGINNING AT HEADWALL AND BARS WITH DIMENSIONS C_3-C_6 BEGINNING AT THE TOEWALL END.



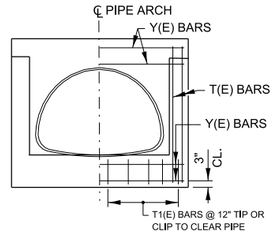
HALF PLAN SHOWING DIMENSIONS

HALF PLAN SHOWING REINFORCEMENT BARS

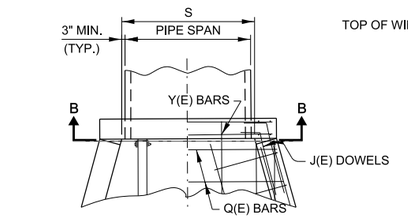
ELEVATION PARALLEL TO BARREL

** DOWEL BARS EXTENDING INTO THE CONCRETE BOX CULVERT ARE INCLUDED IN THE QUANTITIES

BOX CULVERT DETAILS

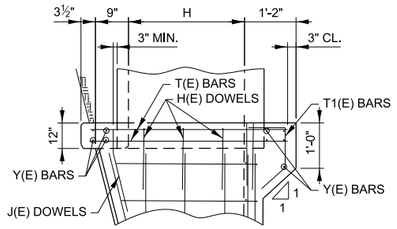


SECTION B-B



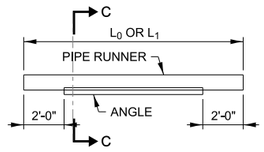
HALF PLAN SHOWING DIMENSIONS

HALF PLAN SHOWING REINFORCEMENT BARS



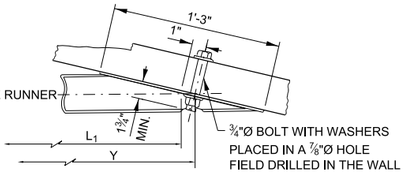
ELEVATION

PIPE ARCH DETAILS

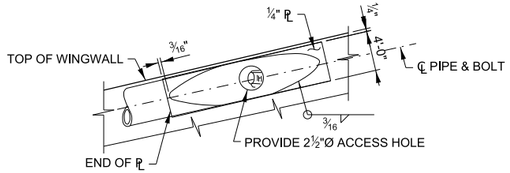


DETAIL A

PIPE RUNNER DETAILS



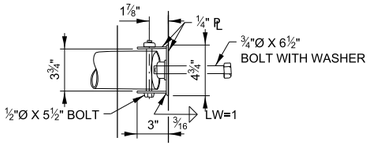
SECTION AT WING



ELEVATION AT WING

NOTE:

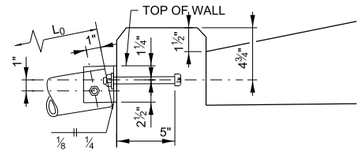
PIPE O.D. IS THE PIPE RUNNER OUTSIDE DIAMETER.



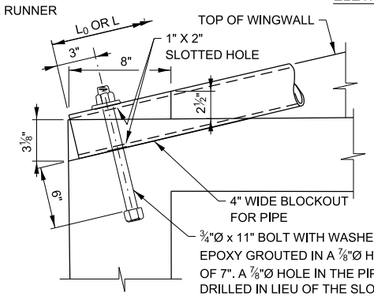
PLAN AT HEADWALL

NOTE:

A ¾"Ø X 9½" BOLT WITH ADDITIONAL PL WASHER PLACED IN A ⅞"Ø HOLE DRILLED THROUGH THE HEADWALL OR A ¾"Ø X 8" THREADED ROD EPOXY GROUTED IN A ⅞"Ø HOLE WITH A MINIMUM EMBEDMENT OF 6⅝" MAY BE USED IN LIEU OF CAST-IN-PLACE BOLT SHOWN.



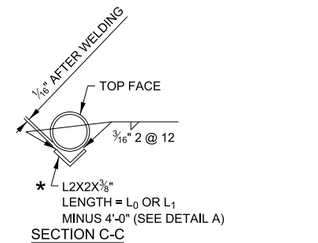
ELEVATION AT HEADWALL



SECTION THRU TOEWALL

NOTE:

V, P1 AND U BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE ONE-HALF THE BARS IN OR NEAR EACH WINGWALL BEGINNING WITH THE SHORTEST V BARS AND P1 BARS AT THE TOEWALL END AND LONGEST U BARS AT THE BOTTOM OF THE WALL.

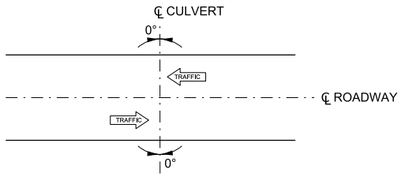


SECTION C-C

* NOTE:

WHERE L_0 OR L_1 EXCEEDS THE FOLLOWING LENGTH, THE PIPE RUNNER SHALL BE STRENGTHENED OVER THE MIDSPAN AS SHOWN.

PIPE	LENGTH
3"Ø, SCH. 40	12'-8"



CULVERT SKEW ORIENTATION

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS SI.
2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" x 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. COVER FROM THE FACE OF CONCRETE TO THE FACE OF REINFORCEMENT BARS SHALL BE 2", UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ON SHEET 2 (OF 2) IN THIS SERIES ARE FOR REINFORCED CONCRETE BOX CULVERT SECTIONS AND ADDITIONAL CONCRETE REQUIRED IN HEADWALLS FOR PIPE OR ARCH CULVERT SECTIONS SHALL BE ADDED TO THESE QUANTITIES.
4. THIS STANDARD MAY BE USED FOR CULVERTS WITH SKEW OF 0° ± 7.5°. AS SHOWN PER CULVERT SKEW ORIENTATION ON THIS SHEET.
5. DESIGN: SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-1, SAFETY TREATMENT OF ROADSIDE CROSS DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, MARCH 1981.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. FOR EROSION PROTECTION SEE STANDARD B19.
8. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS AND REBAR TABLE
03-11-2015	REVISED NOTES
03-31-2014	TABLE QUANTITIES REVISED
02-07-2012	TABLE QUANTITIES REVISED

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE CULVERTS 0° SKEW, 1:4 SLOPE, H ≤ 4'

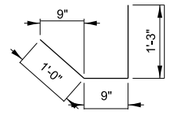
VERSION:	STANDARD:	SHEET:
2022-03	B13-06	1 OF 2

CULVERT SIZE	TABLE OF DIMENSIONS							TOTAL QUANTITIES ONE END			PIPE RUNNERS FOR ONE END - SIZE 3" O.D.			
								CONC.	REINF. BARS	PIPE RUNNER	HEADWALL PIPE		WINGWALL PIPE	
S x H	L	N	V	W	TA	X	Y	CU. YD.	POUND	FT.	NO.	L_0	NO.	L_1
3 x 2	10'-10"	11'-2"	7"	8'-5"	6"	0'-3"	–	3.2	346	22.16	2	11'-1"	0	–
3 x 3	14'-10"	15'-3½"	7"	10'-5"	6"	1'-6"	10'-10"	5.2	489	37.50	1	15'-2"	2	11'-2"
4 x 2	10'-10"	11'-2"	7"	9'-5"	6"	0'-9"	–	3.4	372	22.16	2	11'-1"	0	–
4 x 3	14'-10"	15'-3½"	7"	11'-5"	6"	2'-0"	12'-10"	6.5	521	41.50	1	15'-2"	2	13'-2"
4 x 4	18'-10"	19'-5"	7"	13'-5"	6"	0'-9"	11'-10"	8.1	727	63.00	2	19'-4"	2	12'-2"
5 x 2	10'-10"	11'-2"	7"	10'-5"	6"	1'-3"	5'-10"	3.7	397	34.16	2	11'-1"	2	6'-0"
5 x 3	14'-10"	15'-3½"	7"	12'-5"	6"	1'-3"	9'-10"	5.9	554	50.50	2	15'-2"	2	10'-1"
5 x 4	18'-10"	19'-5"	7"	14'-5"	6"	1'-3"	13'-10"	8.5	765	67.17	2	19'-4"	2	14'-3"
6 x 3	14'-10"	15'-3½"	7"	13'-5"	6"	1'-9"	11'-10"	6.2	583	54.67	2	15'-2"	2	12'-2"
6 x 4	18'-10"	19'-5"	7"	15'-5"	6"	0'-6"	10'-10"	8.9	800	80.33	3	19'-4"	2	11'-2"
7 x 3	14'-10"	15'-3½"	7"	14'-5"	6½"	2'-3"	13'-10"	6.5	614	58.83	2	15'-2"	2	14'-3"
7 x 4	18'-10"	19'-5"	7"	16'-5"	6½"	1'-0"	12'-10"	9.3	835	84.33	3	19'-4"	2	13'-2"
8 x 4	18'-10"	19'-5"	7"	17'-5"	7"	0'-3"	9'-10"	9.7	871	97.50	4	19'-4"	2	10'-1"

PIPE ARCH AND ELLIPTICAL PIPE CULVERTS

FOR PIPE ARCH OR ELLIPTICAL PIPE CULVERTS SELECT APPROPRIATE "S" & "H" FROM SIZES SHOWN. ADD THE FOLLOWING ADDITIONAL BARS:

(a) 1 ADDITIONAL Y(E) BAR
(b) #4 - T1(E) BARS @ APPROX. 12" CTS. (NO. = S + 2)

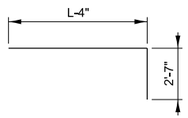


T1(E) BARS

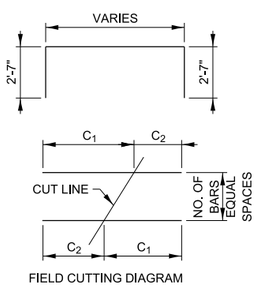
THE WEIGHT OF THE ADDITIONAL BARS AND THE ADDITIONAL QUANTITY OF CONCRETE IN THE HEADWALL SHALL BE ADDED TO THE QUANTITIES SHOWN.

CULVERT SIZE	TABLE OF REINFORCING STEEL FOR ONE END																														
	H(E) DOWEL #4 @ 12"		J(E) DOWEL #6		P(E) BARS #4 @ 12"		P1(E) BARS #4 @ 12"				Q(E) BARS #4 @ 12"						R(E) BARS 3-#4	S(E) BARS 4-#4	U(E) BARS #4 @ 12"				V(E) BARS #4 @ 10.5"				4 W(E) BARS		Y(E) BARS 8-#5	T(E) BARS 8-#5 BOX CULVERT	T(E) BARS 8-#5 PIPE ARCH
S x H	NO.	LENGTH.	NO.	LENGTH.	NO.	LENGTH.	NO.	C_1	C_2	LENGTH.	NO.	C_3	C_4	C_5	C_6	LENGTH.	LENGTH.	LENGTH.	NO.	C_7	C_8	LENGTH.	NO.	C_9	C_{10}	LENGTH.	SIZE	LENGTH.	LENGTH.	LENGTH.	LENGTH.
3 x 2	6	2'-6"	4	4'-0"	4	13'-1"	2	8'-4"	4'-4"	17'-10"	5	8'-8"	4'-2"	6'-2"	6'-8"	12'-10"	8'-9"	10'-10"	2	8'-7"	4'-5"	13'-0"	11	2'-9"	6"	6'-3"	#5	10'-4"	3'-8"	3'-2"	3'-8"
3 x 3	8	2'-6"	4	4'-0"	4	17'-1"	3	12'-4"	4'-4"	21'-10"	7	10'-8"	4'-2"	7'-2"	7'-8"	14'-10"	10'-9"	15'-0"	3	12'-8"	4'-5"	17'-1"	16	3'-9"	6"	7'-3"	#5	14'-6"	3'-8"	4'-2"	4'-8"
4 x 2	6	2'-6"	4	4'-0"	5	13'-1"	2	8'-4"	4'-4"	17'-10"	5	9'-8"	5'-2"	7'-2"	7'-8"	14'-10"	9'-9"	10'-10"	2	8'-7"	4'-5"	13'-0"	11	2'-9"	6"	6'-3"	#5	10'-4"	4'-8"	3'-2"	3'-8"
4 x 3	8	2'-6"	4	4'-0"	5	17'-1"	3	12'-4"	4'-4"	21'-10"	7	11'-8"	5'-2"	8'-2"	8'-8"	16'-10"	11'-9"	15'-0"	3	12'-8"	4'-5"	17'-1"	16	3'-9"	6"	7'-3"	#5	14'-6"	4'-8"	4'-2"	4'-8"
4 x 4	10	2'-6"	4	4'-0"	5	21'-1"	4	16'-4"	4'-4"	25'-10"	9	13'-8"	5'-2"	9'-2"	9'-8"	18'-10"	13'-9"	19'-1"	4	16'-9"	4'-5"	21'-2"	21	4'-9"	6"	8'-3"	#6	18'-7"	4'-8"	5'-2"	5'-8"
5 x 2	6	2'-6"	4	4'-0"	6	13'-1"	2	8'-4"	4'-4"	17'-10"	5	10'-8"	6'-2"	8'-2"	8'-8"	16'-10"	10'-9"	10'-10"	2	8'-7"	4'-5"	13'-0"	11	2'-9"	6"	6'-3"	#5	10'-4"	5'-8"	3'-2"	3'-8"
5 x 3	8	2'-6"	4	4'-0"	6	17'-1"	3	12'-4"	4'-4"	21'-10"	7	12'-8"	6'-2"	9'-2"	9'-8"	18'-10"	12'-9"	15'-0"	3	12'-8"	4'-5"	17'-1"	16	3'-9"	6"	7'-3"	#5	14'-6"	5'-8"	4'-2"	4'-8"
5 x 4	10	2'-6"	4	4'-0"	6	21'-1"	4	16'-4"	4'-4"	25'-10"	9	14'-8"	6'-2"	10'-2"	10'-8"	20'-10"	14'-9"	19'-1"	4	16'-9"	4'-5"	21'-2"	21	4'-9"	6"	8'-3"	#6	18'-7"	5'-8"	5'-2"	5'-8"
6 x 3	8	2'-6"	4	4'-0"	7	17'-1"	3	12'-4"	4'-4"	21'-10"	7	13'-8"	7'-2"	10'-2"	10'-8"	20'-10"	13'-9"	15'-0"	3	12'-8"	4'-5"	17'-1"	16	3'-9"	6"	7'-3"	#5	14'-6"	6'-8"	4'-2"	4'-8"
6 x 4	10	2'-6"	4	4'-0"	7	21'-1"	4	16'-4"	4'-4"	25'-10"	9	15'-8"	7'-2"	11'-2"	11'-8"	22'-10"	15'-9"	19'-1"	4	16'-9"	4'-5"	21'-2"	21	4'-9"	6"	8'-3"	#6	18'-7"	6'-8"	5'-2"	5'-8"
7 x 3	8	2'-6"	4	4'-0"	8	17'-1"	3	12'-4"	4'-4"	21'-10"	7	14'-8"	8'-2"	11'-2"	11'-8"	22'-10"	14'-9"	15'-0"	3	12'-8"	4'-5"	17'-1"	16	3'-9"	6"	7'-3"	#5	14'-6"	7'-8"	4'-2"	4'-8"
7 x 4	10	2'-6"	4	4'-0"	8	21'-1"	4	16'-4"	4'-4"	25'-10"	9	16'-8"	8'-2"	12'-2"	12'-8"	24'-10"	16'-9"	19'-1"	4	16'-9"	4'-5"	21'-2"	21	4'-9"	6"	8'-3"	#6	18'-7"	7'-8"	5'-2"	5'-8"
8 x 4	10	2'-6"	4	4'-0"	9	21'-1"	4	16'-4"	4'-4"	25'-10"	9	17'-8"	9'-2"	13'-2"	13'-8"	26'-10"	17'-9"	19'-1"	4	16'-9"	4'-5"	21'-2"	21	4'-9"	6"	8'-3"	#6	18'-7"	8'-8"	5'-3"	5'-8"

NOTE:
REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

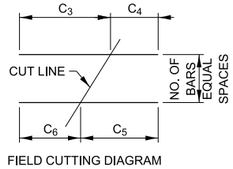


P(E) BARS



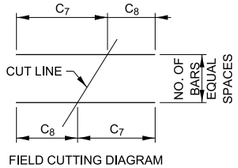
FIELD CUTTING DIAGRAM

P1(E) BARS



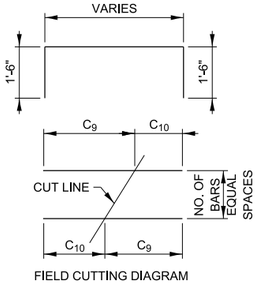
FIELD CUTTING DIAGRAM

Q(E) BARS



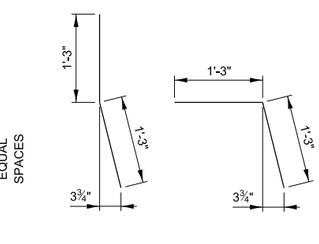
FIELD CUTTING DIAGRAM

U(E) BARS



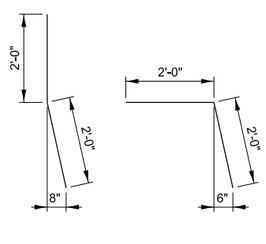
FIELD CUTTING DIAGRAM

V(E) BARS



FOR BOX CULVERTS FOR PIPE ARCHES

H(E) DOWELS



FOR BOX CULVERTS FOR PIPE ARCHES

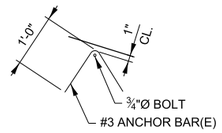
J(E) DOWELS

APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE CULVERTS 0° SKEW, 1:4 SLOPE, H ≤ 4'

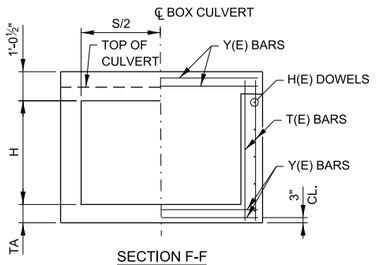
VERSION:	STANDARD:	SHEET:
2022-03	B13-06	2 OF 2



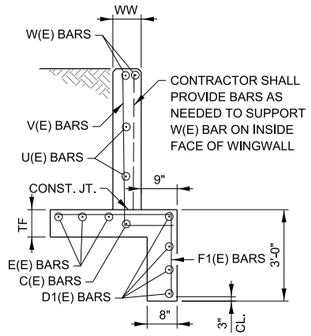
ANCHOR BARS

CONTRACTOR SHALL PROVIDE 2-#3 ANCHOR BARS(E) PER SIDEWALL BOLT.

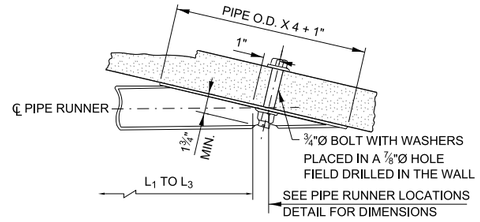
DETAIL B



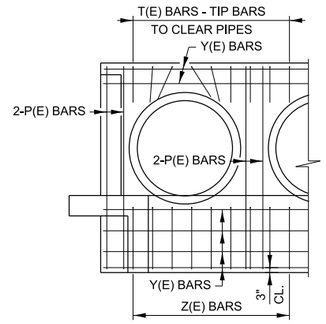
SECTION F-F



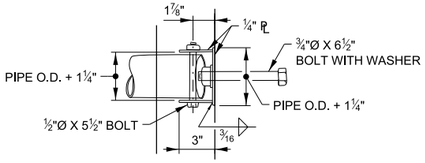
SECTION A-A



SECTION AT WING



SECTION C-C



PLAN AT HEADWALL

NOTE:

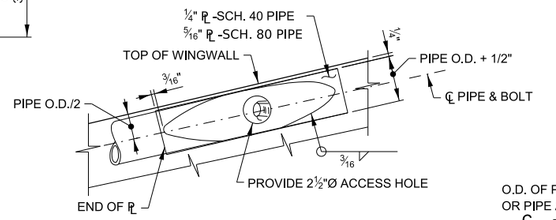
A ¾"Ø X 9½" BOLT WITH ADDITIONAL ℄ WASHER PLACED IN A ⅞"Ø HOLE DRILLED THROUGH THE HEADWALL OR A ¾"Ø X 8" THREADED ROD EPOXY GROUTED IN A ⅞"Ø HOLE WITH A MINIMUM EMBEDMENT OF 6⅝" MAY BE USED IN LIEU OF CAST-IN-PLACE BOLT SHOWN.

NOTE:

F & V BAR TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE BARS WITH DIMENSIONS C2, C6 BEGINNING AT HEADWALL & BARS WITH DIMENSIONS C1, C5 BEGINNING AT THE TOEWALL END.

NOTE:

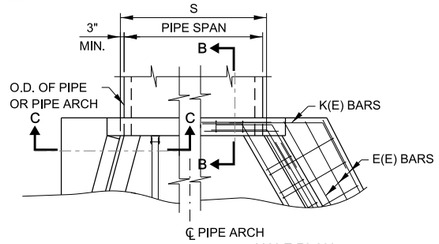
J & H, DOWEL BARS NOT REQUIRED WITH EXISTING BOX CULVERTS PROVIDING THE REINFORCING FROM THE EXISTING BOX IS EXTENDED INTO THE NEW CONCRETE A MINIMUM OF 1'-3".



ELEVATION AT WING

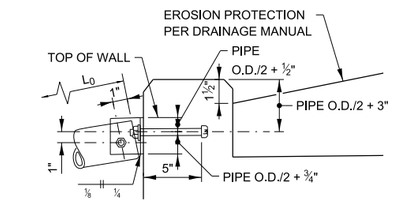
NOTE:

PIPE O.D. IS THE PIPE RUNNER OUTSIDE DIAMETER.

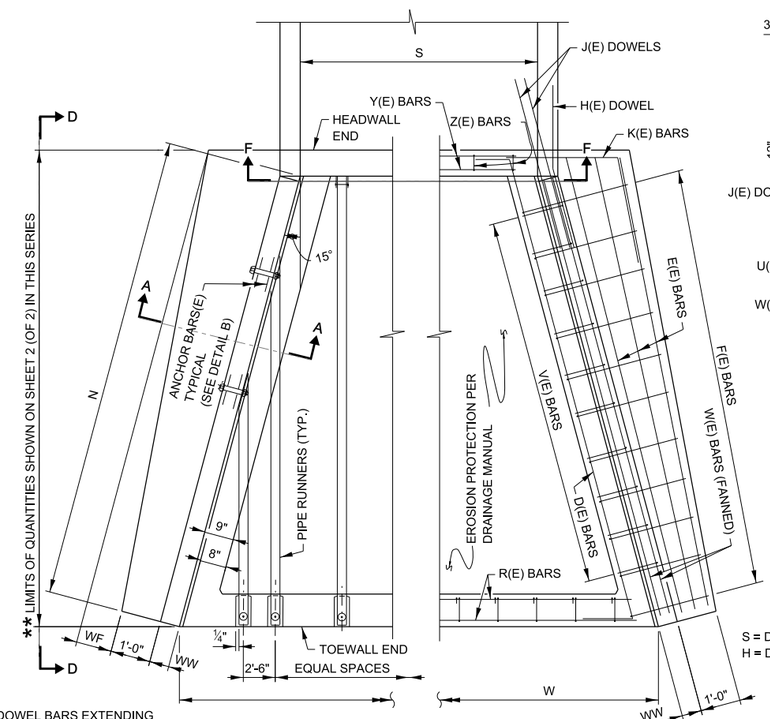


HALF PLAN SHOWING DIMENSIONS

HALF PLAN SHOWING REINFORCEMENT BARS



ELEVATION AT HEADWALL

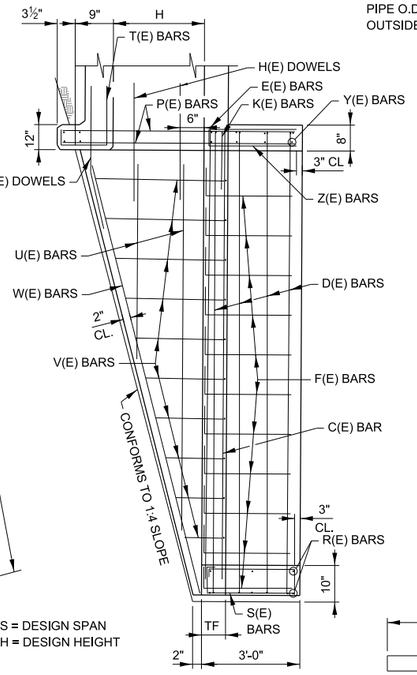


** DOWEL BARS EXTENDING INTO THE CONCRETE BOX CULVERT ARE INCLUDED IN THE QUANTITIES.

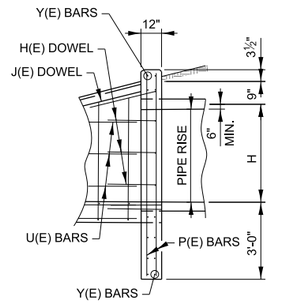
HALF PLAN SHOWING DIMENSIONS

HALF PLAN SHOWING REINFORCEMENT BARS

FOR BOX CULVERTS



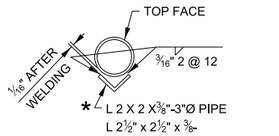
ELEVATION D-D



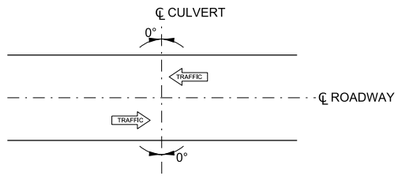
SECTION B-B

FOR PIPE AND PIPE-ARCH CULVERTS

DETAIL A



SECTION E-E



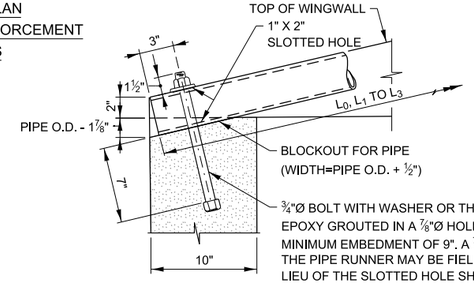
CULVERT SKEW ORIENTATION

* NOTE:

WHERE L_0 OR L_1 EXCEEDS THE FOLLOWING LENGTH, THE PIPE RUNNER SHALL BE STRENGTHENED OVER THE MIDSPAN AS SHOWN.

PIPE	LENGTH
3"Ø, SCH. 40	12'-8"
3"Ø, SCH. 40	17'-3"
3"Ø, SCH. 80	22'-1"
4"Ø, SCH. 40	22'-6"
4"Ø, SCH. 80	29'-4"

PIPE RUNNER DETAILS



SECTION THRU TOEWALL

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS SI.
2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" x 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. COVER FROM THE FACE OF CONCRETE TO THE FACE OF REINFORCEMENT BARS SHALL BE 2", UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ON SHEET 2 (OF 2) IN THIS SERIES ARE FOR REINFORCED CONCRETE BOX CULVERT SECTIONS AND ADDITIONAL CONCRETE REQUIRED IN HEADWALLS FOR PIPE OR ARCH CULVERT SECTIONS SHALL BE ADDED TO THESE QUANTITIES.
4. THIS STANDARD MAY BE USED FOR CULVERTS WITH SKEW OF 0° ± 7.5°. AS SHOWN PER CULVERT SKEW ORIENTATION ON THIS SHEET.
5. DESIGN; SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-1, SAFETY TREATMENT OF ROADSIDE CROSS DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, MARCH 1981.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. FOR EROSION PROTECTION SEE STANDARD B19.
8. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

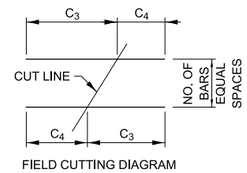
Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS AND REBAR TABLE
03-11-2015	REVISED NOTES
03-31-2014	TABLE QUANTITIES REVISED
02-07-2012	TABLE QUANTITIES REVISED

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE AND MULTIPLE CULVERTS 0° SKEW, 1:4 SLOPE, H ≤ 8'

VERSION:	STANDARD:	SHEET:
2022-03	B14-06	1 OF 2

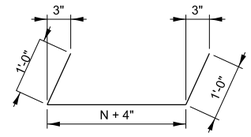
TABLE OF DIMENSIONS							TABLE OF REINFORCEMENT BARS FOR ONE END																									
							C(E) BARS 2 REQ'D.		D(E) BARS 8-#4	E(E) BARS #4 ⑤		F(E) BARS				H(E) DOWEL #5 @ 12"		J(E) DOWEL 4-#6	K(E) DOWEL 2-#5	U(E) BARS #4 @ 12"					V(E) BARS #5 @ 6" CTS.					W(E) BARS 4 REQ'D.	
S	H	L	WF	WW	TF	N	SIZE	LENGTH	LENGTH	NO.	LENGTH	SIZE	NO.	C_1	C_2	LENGTH	NO.	LENGTH	LENGTH	LENGTH	NO.	C_3	C_4	LENGTH	NO.	C_5	C_6	C_7	LENGTH	SIZE	LENGTH
9'	3'	14'-4"	3"	7"	7"	14'-10⅛"	#4	15'-2"	17'-2"	4	16'-8"	#4	15	2'-0"	2'-2"	9'-4"	6	3'-0"	4'-6"	4'-0"	3	12'-8"	4'-5"	17'-1"	28	9"	3'-10"	1'-0"	6'-7"	#5	14'-11"
9'	4'	18'-4"	9"	7"	8"	18'-11¾"	#4	19'-4"	21'-4"	4	20'-10"	#4	19	2'-0"	2'-8"	9'-10"	8	3'-0"	4'-6"	4'-6"	4	16'-10"	4'-5"	21'-3"	36	10"	4'-11"	1'-0"	7'-9"	#6	19'-2"
5'	5'	22'-4"	1'-3"	7"	8"	23'-1½"	#4	23'-6"	25'-6"	4	25'-0"	#4	23	2'-0"	3'-2"	10'-4"	10	3'-0"	4'-6"	5'-0"	5	20'-11"	4'-5"	25'-4"	44	10"	5'-11"	1'-0"	8'-9"	#6	23'-5"
6'	6'	26'-4"	1'-9"	7"	8½"	27'-3⅛"	#4	27'-7"	29'-7"	6	29'-1"	#5	27	2'-0"	3'-8"	10'-10"	12	3'-0"	4'-6"	5'-6"	6	25'-1"	4'-5"	29'-6"	52	10"	6'-11"	1'-0"	9'-9"	#6	27'-8"
7'	7'	30'-4"	2'-3"	7"	9"	31'-4⅞"	#5	31'-9"	33'-9"	6	33'-3"	#5	31	2'-1"	4'-3"	11'-6"	14	3'-0"	4'-6"	6'-0"	7	29'-2"	4'-5"	33'-7"	60	11"	8'-0"	1'-0"	10'-11"	#6	31'-11"
8'	8'	34'-4"	2'-9"	8½"	9½"	35'-6½"	#5	35'-10"	37'-10"	6	37'-4"	#6	35	2'-2"	4'-10"	12'-2"	16	3'-0"	4'-6"	6'-6"	8	33'-4"	4'-5"	37'-9"	68	11"	9'-0"	1'-1"	12'-1"	#6	36'-2"



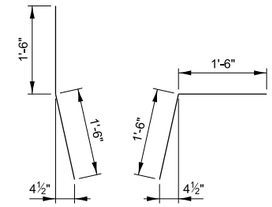
FIELD CUTTING DIAGRAM

U(E) BARS

PIPE RUNNERS FOR ONE END								
S	H	SIZE (DIA.)	SCHEDULE	NO. WINGWALL PIPES	L_1	L_2	L_3	LENGTH (FT.)
9'	3'	3"	40	2	9'-11"	–	–	19.84
9'	4'	3"	40	2	14'-0"	–	–	28.00
5'	5'	3½"	40	4	18'-1"	8'-6"	–	53.16
6'	6'	3½"	80	4	22'-3"	12'-7"	–	69.66
7'	7'	4"	40	6	26'-4"	16'-9"	7'-2"	100.50
8'	8'	4"	80	6	30'-6"	20'-10"	11'-7"	125.83



D(E) BARS



FOR BOX CULVERTS FOR PIPE CULVERTS

H(E) DOWELS

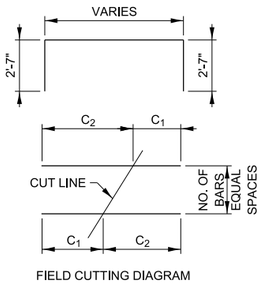
	TABLE OF DIMENSIONS		TABLE OF REINFORCEMENT BARS FOR MINIMUM "S"									HEADWALL PIPE RUNNERS FOR MINIMUM "S"					QUANTITIES FOR MIN. "S" (SINGLE PIPE OR CONC. BOX CULVERT)		INCREASE IN QUANTITIES FOR 1' INCREASE IN "S"	
			② Y(E) BARS 12-#5	① Z(E) BARS #4 @ 12"		② R(E) BARS 6-#5	① S(E) BARS #4 @ 12"		① T(E) BARS #4 @ 12"		③ P(E) BARS 8-#5	SIZE (DIA.)	SCHEDULE	NO.	L_0	LENGTH (FT.)	CONCRETE CU. YD.	REIN. BARS POUND	CONCRETE CU. YD.	REIN. BARS POUND
S	H	W ④	LENGTH	NO.	LENGTH	LENGTH	NO.	LENGTH	NO.	LENGTH	LENGTH									
≥9'	3'	16'-8"	9'-10"	9	5'-4"	15'-10"	16	6'-10"	9	3'-0"	6'-8"	3"	40	4	14'-9"	59.00	7.24	863	0.35	13
≥9'	4'	18'-9"	9'-10"	9	5'-4"	17'-11"	18	6'-10"	9	3'-0"	7'-8"	3"	40	4	18'-10"	75.33	10.44	1078	0.35	13
≥5'	5'	16'-11"	5'-10"	5	5'-4"	16'-1"	16	6'-10"	5	3'-0"	8'-8"	3½"	40	2	23'-0"	46.00	10.87	1162	0.35	13
≥6'	6'	20'-1"	6'-10"	6	5'-4"	19'-3"	19	6'-10"	6	3'-0"	9'-8"	3½"	80	3	27'-2"	81.51	14.77	1553	0.35	13
≥7'	7'	23'-3"	7'-10"	7	5'-4"	22'-5"	22	6'-10"	7	3'-0"	10'-8"	4"	40	3	31'-3"	93.75	19.47	1869	0.35	13
≥8'	8'	26'-4"	9'-0"	8	5'-4"	25'-6"	25	6'-10"	8	3'-0"	11'-8"	4"	80	4	35'-4"	141.33	25.01	2379	0.35	13

FOR BOX CULVERTS FOR PIPE CULVERTS

J(E) DOWELS

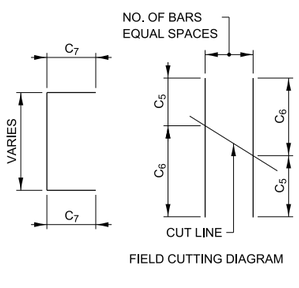
K(E) DOWEL

NUMBER OF HDWL PIPE RUNNERS FOR ONE END			
S	No	S	No
10'	4	23'	10
11'	5	24'	10
12'	5	25'	10
13'	6	26'	11
14'	6	27'	11
15'	6	28'	12
16'	7	29'	12
17'	7	30'	12
18'	8	31'	13
19'	8	32'	13
20'	8	33'	14
21'	9	34'	14
22'	9	35'	14



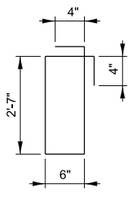
FIELD CUTTING DIAGRAM

F(E) BARS

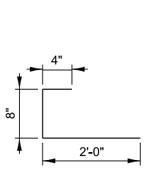


FIELD CUTTING DIAGRAM

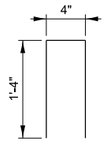
V(E) BARS



S(E) BARS

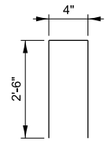


FOR BOX CULVERTS



FOR PIPE CULVERTS

T(E) BARS



Z(E) BARS

NOTE:
REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

NOTES FOR TABLE OF DIMENSIONS:

① THE NUMBER OF S, T AND Z BARS SHALL BE INCREASED BY 1 FOR EACH 1 FOOT OF INCREASE IN DIMENSION "S".

② THE LENGTH OF R AND Y BARS SHALL BE INCREASED BY 1 FOOT FOR EACH 1 FOOT OF INCREASE IN DIMENSION "S".

③ THE NUMBER OF P BARS SHOWN ARE FOR SINGLE SPAN PIPES OR BOX CULVERTS. THIS NUMBER SHALL BE INCREASED BY 4 FOR EACH MULTIPLE OF PIPE OR BOX ADDED.

④ THIS DIMENSION SHALL BE INCREASED BY 1 FOOT FOR EACH 1 FOOT INCREASE IN DIMENSION "S".

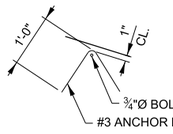
⑤ THE LENGTH OF THIS BAR INCLUDES ONE 1'-6" MINIMUM LAP.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE AND MULTIPLE CULVERTS 0° SKEW, 1:4 SLOPE, H ≤ 8'

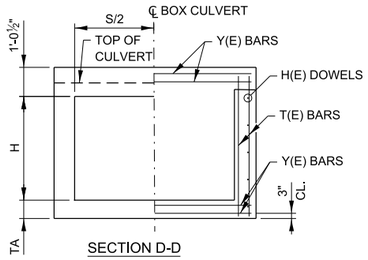
VERSION:	STANDARD:	SHEET:
2022-03	B14-06	2 OF 2



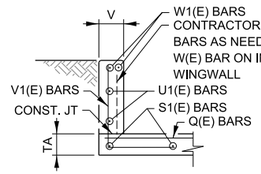
ANCHOR BARS

CONTRACTOR SHALL PROVIDE 2-#3 ANCHOR BARS(E) PER SIDEWALL BOLT.

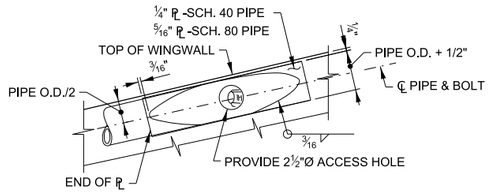
DETAIL B



SECTION D-D



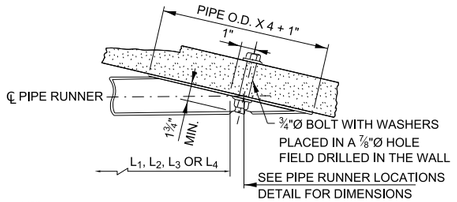
SECTION A-A



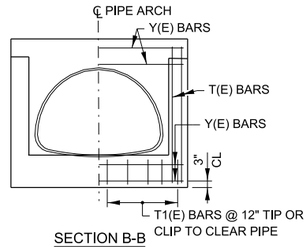
ELEVATION AT WING

NOTE:

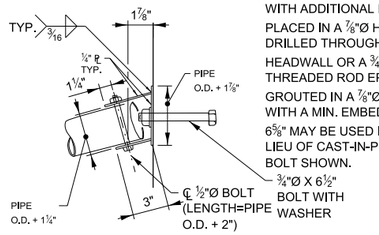
PIPE O.D. IS THE PIPE RUNNER OUTSIDE DIAMETER.



SECTION AT WING



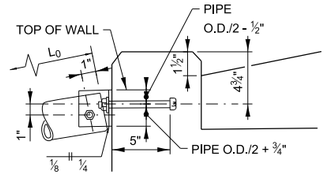
SECTION B-B



PLAN AT HEADWALL

NOTE:

A ¾"Ø X 9½" BOLT WITH ADDITIONAL ℞ WASHER PLACED IN A ⅞"Ø HOLE DRILLED THROUGH THE HEADWALL OR A ¾"Ø x 8" THREADED ROD EPOXY GROUTED IN A ⅞"Ø HOLE WITH A MIN. EMBEDMENT OF 6⅝" MAY BE USED IN LIEU OF CAST-IN-PLACE BOLT SHOWN.



ELEVATION AT HEADWALL

NOTE:

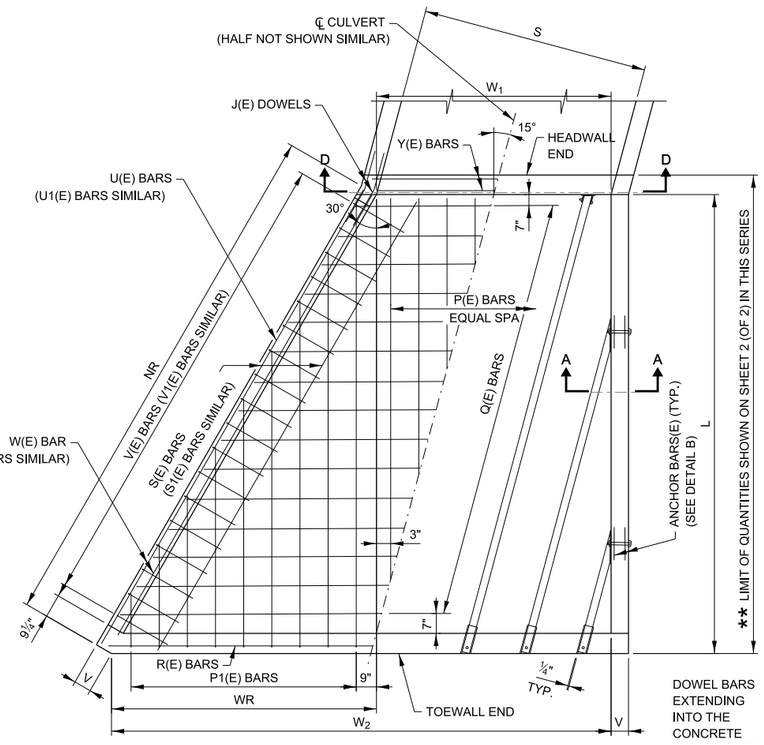
Q, V, AND V_1 BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE BARS WITH DIMENSIONS C_2-C_3, C_9-C_{12} BEGINNING AT HEADWALL AND BARS WITH DIMENSIONS C_1-C_4, C_{10}-C_{11} BEGINNING AT THE TOEWALL END.

NOTE:

P1 BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM PLACE BARS WITH DIMENSIONS C_6-C_7 BEGINNING AT TOEWALL END OF 30° WING AND BARS WITH DIMENSIONS C_5-C_8 BEGINNING PARALLEL THE P(E) BARS.

NOTE:

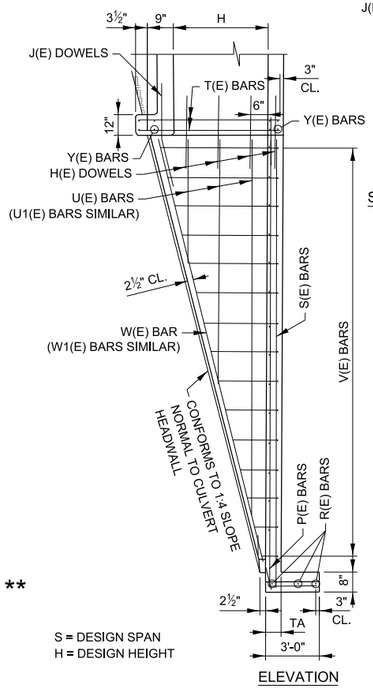
J & H DOWEL BAR NOT REQUIRED WITH EXISTING BOX CULVERTS PROVIDING THE REINFORCING FROM THE EXIST. BOX IS EXTENDED INTO THE NEW CONCRETE A MIN. OF 1'-3".



HALF PLAN SHOWING REINFORCEMENT BARS

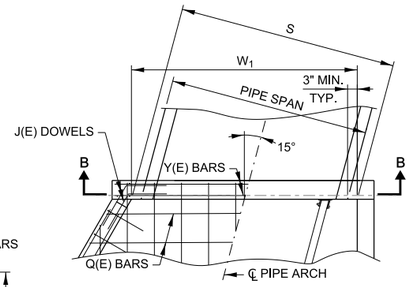
HALF PLAN SHOWING DIMENSIONS

DOWEL BARS EXTENDING INTO THE CONCRETE BOX CULVERT ARE INCLUDED IN THE QUANTITIES. **



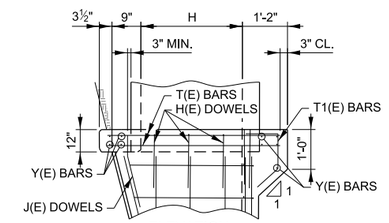
S = DESIGN SPAN
H = DESIGN HEIGHT

ELEVATION



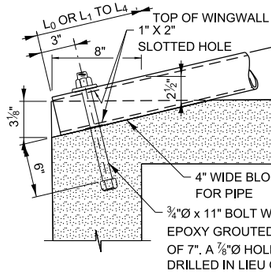
HALF PLAN SHOWING REINFORCEMENT BARS

HALF PLAN SHOWING DIMENSIONS



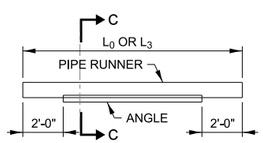
ELEVATION

PIPE ARCH DETAILS



SECTION THRU TOEWALL

PIPE RUNNER DETAILS

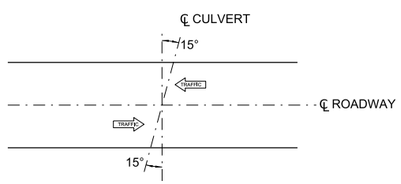


DETAIL A

* NOTE:

WHERE L_0 OR L_3 EXCEEDS THE FOLLOWING LENGTH, THE PIPE RUNNER SHALL BE STRENGTHENED OVER THE MIDSPAN AS SHOWN.

PIPE	LENGTH
3"Ø, SCH. 40	12'-8"
3"Ø, SCH. 80	15'-4"



CULVERT SKEW ORIENTATION

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS SI.
2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" x 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. COVER FROM THE FACE OF CONCRETE TO THE FACE OF REINFORCEMENT BARS SHALL BE 2", UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ON SHEET 2 (OF 2) IN THIS SERIES ARE FOR REINFORCED CONCRETE BOX CULVERT SECTIONS AND ADDITIONAL CONCRETE REQUIRED IN HEADWALLS FOR PIPE OR ARCH CULVERT SECTIONS SHALL BE ADDED TO THESE QUANTITIES.
4. THIS STANDARD MAY BE USED FOR CULVERTS WITH SKEW OF 15° ± 7.5°. AS SHOWN PER CULVERT SKEW ORIENTATION ON THIS SHEET.
5. DESIGN: SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-1, SAFETY TREATMENT OF ROADSIDE CROSS DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, MARCH 1981.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. FOR EROSION PROTECTION SEE STANDARD B19.
8. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

APPROVED BY:

Paul Kovacs

CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS
03-11-2015	REVISED NOTES
02-07-2012	TABLE QUANTITIES REVISED
03-01-2010	MODIFIED CULVERT SKEW
03-01-2010	DETAIL, REVISED EROSION PROTECTION AND NOTES

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE CULVERTS 15° SKEW, 1:4 SLOPE, H ≤ 4

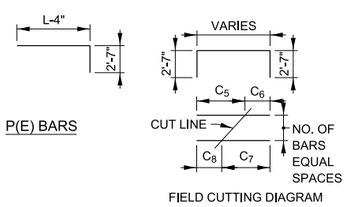
VERSION:	STANDARD:	SHEET:
2022-03	B15-05	1 OF 2

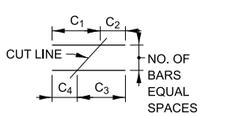
CULVERT SIZE (FEET)	TABLE OF DIMENSIONS							PIPE RUNNERS FOR ONE END SIZE 3" DIA.							TABLE OF REINFORCEMENT BARS FOR ONE END												
								HEADWALL PIPE			WINGWALL PIPE - ONE PER EACH LENGTH SHOWN				H(E) DOWELS #4 @ 12"				J(E) DOWELS 2-#6 EACH WALL		P(E) BARS #4 - EQUALLY SPACED		P1(E) BARS #4 @ 12"					
										LENGTH	0° WALL		30° WALL		30° WALL		0° WALL		30° WALL	0° WALL							
S X H	L	NR	V	W_1	W_2	WR	TA	SCH.	NO.	L_0	L_1	L_2	L_3	L_4	NO.	LENGTH	NO.	LENGTH	LENGTH	LENGTH	NO.	LENGTH	NO.	C_5	C_6	C_7	C_8	LENGTH
3 x 2	10'-10"	12'-6⅛"	7"	3'-1¼"	9'-4¼"	6'-3"	6"	40	2	11'-5"	6'-3"	-	7'-0"	-	3	2'-6"	3	2'-6"	4'-0"	4'-0"	4	13'-1"	3	10'-2"	1'-6"	5'-0"	6'-8"	16'-10"
3 x 3	14'-10"	17'-1½"	7"	3'-1¼"	11'-8"	8'-6¾"	6"	40	2	15'-8"	10'-6"	-	11'-3"	-	4	2'-6"	4	2'-6"	4'-0"	4'-0"	4	17'-1"	4	14'-2"	2'-0"	7'-3"	8'-11"	21'-4"
4 x 2	10'-10"	12'-6⅛"	7"	4'-1¾"	10'-4¾"	6'-3"	6"	40	2	11'-5"	6'-3"	-	7'-0"	-	3	2'-6"	3	2'-6"	4'-0"	4'-0"	5	13'-1"	3	10'-2"	1'-6"	5'-0"	6'-8"	16'-10"
4 x 3	14'-10"	17'-1½"	7"	4'-1¾"	12'-8½"	8'-6¾"	6"	40	2	15'-8"	10'-6"	-	11'-3"	-	4	2'-6"	4	2'-6"	4'-0"	4'-0"	5	17'-1"	4	14'-2"	2'-0"	7'-3"	8'-11"	21'-4"
4 x 4	18'-10"	21'-9"	7"	4'-1¾"	15'-0¼"	10'-10½"	6"	80	2	19'-11"	14'-9"	4'-6"	15'-6"	6'-7"	5	2'-6"	5	2'-6"	4'-0"	4'-0"	5	21'-1"	5	18'-2"	2'-5"	9'-5"	11'-2"	25'-9"
5 x 2	10'-10"	12'-6⅛"	7"	5'-2⅛"	11'-5⅛"	6'-3"	6"	40	2	11'-5"	6'-3"	-	7'-0"	-	3	2'-6"	3	2'-6"	4'-0"	4'-0"	6	13'-1"	3	10'-2"	1'-6"	5'-0"	6'-8"	16'-10"
5 x 3	14'-10"	17'-1½"	7"	5'-2⅛"	13'-8⅞"	8'-6¾"	6"	40	2	15'-8"	10'-6"	-	11'-3"	-	4	2'-6"	4	2'-6"	4'-0"	4'-0"	6	17'-1"	4	14'-2"	2'-0"	7'-3"	8'-11"	21'-4"
5 x 4	18'-10"	21'-9"	7"	5'-2⅛"	16'-0⅝"	10'-10½"	6"	80	2	19'-11"	14'-9"	4'-6"	15'-6"	6'-7"	5	2'-6"	5	2'-6"	4'-0"	4'-0"	6	21'-1"	5	18'-2"	2'-5"	9'-5"	11'-2"	25'-9"
6 x 3	14'-10"	17'-1½"	7"	6'-2½"	14'-9¼"	8'-6¾"	6"	40	3	15'-8"	10'-6"	-	11'-3"	-	4	2'-6"	4	2'-6"	4'-0"	4'-0"	7	17'-1"	4	14'-2"	2'-0"	7'-3"	8'-11"	21'-4"
6 x 4	18'-10"	21'-9"	7"	6'-2½"	17'-1"	10'-10½"	6"	80	3	19'-11"	14'-9"	4'-6"	15'-6"	6'-7"	5	2'-6"	5	2'-6"	4'-0"	4'-0"	7	21'-1"	5	18'-2"	2'-5"	9'-5"	11'-2"	25'-9"
7 x 3	14'-10"	17'-1½"	7"	7'-3"	15'-9¾"	8'-6¾"	6½"	40	3	15'-8"	10'-6"	-	11'-3"	-	4	2'-6"	4	2'-6"	4'-0"	4'-0"	8	17'-1"	4	14'-2"	2'-0"	7'-3"	8'-11"	21'-4"
7 x 4	18'-10"	21'-9"	7"	7'-3"	18'-1½"	10'-10½"	6½"	80	3	19'-11"	14'-9"	4'-6"	15'-6"	6'-7"	5	2'-6"	5	2'-6"	4'-0"	4'-0"	8	21'-1"	5	18'-2"	2'-5"	9'-5"	11'-2"	25'-9"
8 x 4	18'-10"	21'-9"	7"	8'-3⅜"	19'-1⅞"	10'-10½"	7"	80	4	19'-11"	14'-9"	4'-6"	15'-6"	6'-7"	5	2'-6"	5	2'-6"	4'-0"	4'-0"	9	21'-1"	5	18'-2"	2'-5"	9'-5"	11'-2"	25'-9"

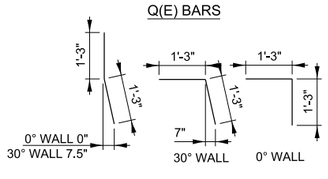
CULVERT SIZE (FEET)	TABLE OF REINFORCEMENT BARS FOR ONE END																														
	Q(E) BARS #4 @ 12"						R(E) BARS 3-#4	S(E) BARS 30° WALL 2-#4	S1(E) BARS 0° WALL 2-#4	T(E) BARS 8-#5 BOX CULVERT	T(E) BARS 8-#5 PIPE ARCH	U(E) BARS-ONE PER EACH LENGTH SHOWN #4 @ 12"				U1(E) BARS ONE PER EACH LENGTH SHOWN #4 @ 12"				V(E) BARS #4 - EQUALLY SPACED							V1(E) BARS #4 - EQUALLY SPACED					
												30° WALL				0° WALL				30° WALL							0° WALL					
S X H	NO.	C_1	C_2	C_3	C_4	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	LENGTH	C_5	C_6	C_7	C_8	C_5	C_6	C_7	C_8	NO.	C_9	C_{10}	C_{11}	C_{12}	LENGTH	NO.	C_9	C_{10}	C_{11}	C_{12}	LENGTH
3 x 2	5	9'-7"	4'-4"	6'-8"	7'-3"	13'-11"	9'-10"	12'-2"	10'-6"	3'-2"	3'-8"	5'-0"	9'-8"	-	-	4'-4"	8'-4"	-	-	6	2'-9"	6"	1'-6"	1'-9"	6'-3"	5	2'-9"	6"	1'-6"	1'-9"	6'-3"
3 x 3	7	11'-10"	4'-4"	7'-9"	8'-5"	16'-2"	12'-2"	16'-9"	14'-6"	4'-2"	4'-8"	5'-0"	9'-8"	14'-3"	-	4'-4"	8'-4"	12'-4"	-	8	3'-9"	6"	2'-0"	2'-3"	7'-3"	7	3'-9"	6"	2'-0"	2'-3"	7'-3"
4 x 2	5	10'-7"	5'-5"	7'-8"	8'-4"	16'-0"	10'-10"	12'-2"	10'-6"	3'-2"	3'-8"	5'-0"	9'-8"	14'-3"	-	4'-4"	8'-4"	-	-	6	2'-9"	6"	1'-6"	1'-9"	6'-3"	5	2'-9"	6"	1'-6"	1'-9"	6'-3"
4 x 3	7	12'-11"	5'-5"	8'-10"	9'-6"	18'-4"	13'-2"	16'-9"	14'-6"	4'-2"	4'-8"	5'-0"	9'-8"	-	-	4'-4"	8'-4"	12'-4"	-	8	3'-9"	6"	2'-0"	2'-3"	7'-3"	7	3'-9"	6"	2'-0"	2'-3"	7'-3"
4 x 4	9	15'-2"	5'-5"	10'-0"	10'-7"	20'-7"	15'-6"	21'-4"	18'-6"	5'-2"	5'-8"	5'-0"	9'-8"	14'-3"	18'-10"	4'-4"	8'-4"	12'-4"	16'-4"	10	4'-9"	6"	2'-6"	2'-9"	8'-3"	9	4'-9"	6"	2'-6"	2'-9"	8'-3"
5 x 2	5	11'-8"	6'-5"	8'-7"	9'-3"	18'-1"	11'-11"	12'-2"	10'-6"	3'-2"	3'-8"	5'-0"	9'-8"	-	-	4'-4"	8'-4"	-	-	6	2'-9"	6"	1'-6"	1'-9"	6'-3"	5	2'-9"	6"	1'-6"	1'-9"	6'-3"
5 x 3	7	13'-11"	6'-5"	9'-10"	10'-6"	20'-4"	14'-2"	16'-9"	14'-6"	4'-2"	4'-8"	5'-0"	9'-8"	14'-3"	-	4'-4"	8'-4"	12'-4"	-	8	3'-9"	6"	2'-0"	2'-3"	7'-3"	7	3'-9"	6"	2'-0"	2'-3"	7'-3"
5 x 4	9	16'-3"	6'-5"	11'-0"	11'-8"	22'-8"	16'-6"	21'-4"	18'-6"	5'-2"	5'-8"	5'-0"	9'-8"	14'-3"	18'-10"	4'-4"	8'-4"	12'-4"	16'-4"	10	4'-9"	6"	2'-6"	2'-9"	8'-3"	9	4'-9"	6"	2'-6"	2'-9"	8'-3"
6 x 3	7	14'-11"	7'-5"	10'-10"	11'-6"	22'-4"	15'-3"	16'-9"	14'-6"	4'-2"	4'-8"	5'-0"	9'-8"	14'-3"	-	4'-4"	8'-4"	12'-4"	-	8	3'-9"	6"	2'-0"	2'-3"	7'-3"	7	3'-9"	6"	2'-0"	2'-3"	7'-3"
6 x 4	9	17'-3"	7'-5"	12'-0"	12'-8"	24'-8"	17'-6"	21'-4"	18'-6"	5'-2"	5'-8"	5'-0"	9'-8"	14'-3"	18'-10"	4'-4"	8'-4"	12'-4"	16'-4"	10	4'-9"	6"	2'-6"	2'-9"	8'-3"	9	4'-9"	6"	2'-6"	2'-9"	8'-3"
7 x 3	7	16'-0"	8'-6"	11'-11"	12'-7"	24'-6"	16'-3"	16'-9"	14'-6"	4'-2"	4'-8"	5'-0"	9'-8"	14'-3"	-	4'-4"	8'-4"	12'-4"	-	8	3'-9"	6"	2'-0"	2'-3"	7'-3"	7	3'-9"	6"	2'-0"	2'-3"	7'-3"
7 x 4	9	18'-4"	8'-6"	13'-1"	13'-9"	26'-10"	18'-7"	21'-4"	18'-6"	5'-2"	5'-8"	5'-0"	9'-8"	14'-3"	18'-10"	4'-4"	8'-4"	12'-4"	16'-4"	10	4'-9"	6"	2'-6"	2'-9"	8'-3"	9	4'-9"	6"	2'-6"	2'-9"	8'-3"
8 x 4	9	19'-4"	9'-6"	14'-1"	14'-9"	28'-10"	19'-7"	21'-4"	18'-6"	5'-2"	5'-8"	5'-0"	9'-8"	14'-3"	18'-10"	4'-4"	8'-4"	12'-4"	16'-4"	10	4'-9"	6"	2'-6"	2'-9"	8'-3"	9	4'-9"	6"	2'-6"	2'-9"	8'-3"

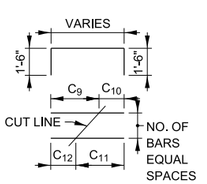
CULVERT SIZE (FEET)	TABLE OF REINFORCING STEEL FOR ONE END				
	2 W(E) BARS		2 W_1(E) BARS		Y(E) BARS 8-#5
	30° WALL		0° WALL		
S X H	SIZE	LENGTH	SIZE	LENGTH	LENGTH
3 x 2	#5	11'-6"	#5	10'-4"	3'-11"
3 x 3	#5	16'-2"	#5	14'-5"	3'-11"
4 x 2	#5	11'-6"	#5	10'-4"	4'-11"
4 x 3	#5	16'-2"	#5	14'-5"	4'-11"
4 x 4	#6	20'-11"	#6	18'-7"	4'-11"
5 x 2	#5	11'-6"	#5	10'-4"	6'-0"
5 x 3	#5	16'-2"	#5	14'-5"	6'-0"
5 x 4	#6	20'-11"	#6	18'-7"	6'-0"
6 x 3	#5	16'-2"	#5	14'-5"	7'-0"
6 x 4	#6	20'-11"	#6	18'-7"	7'-0"
7 x 3	#5	16'-2"	#5	14'-5"	8'-1"
7 x 4	#6	20'-11"	#6	18'-7"	8'-1"
8 x 4	#6	20'-11"	#6	18'-7"	9'-1"

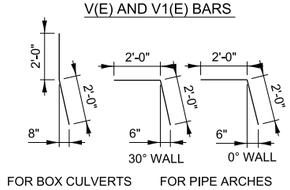
TOTAL QUANTITIES ONE END		
CONC.	REINF. BARS	PIPE RUNNERS
CU. YD.	LB.	FT.
3.2	395	36.09
4.9	537	53.08
3.6	426	36.09
5.3	573	53.08
7.4	781	81.17
3.9	446	36.09
5.7	610	53.08
7.9	823	81.17
6.2	635	68.75
8.4	854	101.08
6.8	676	68.75
9.3	903	101.08
10.2	950	121.00

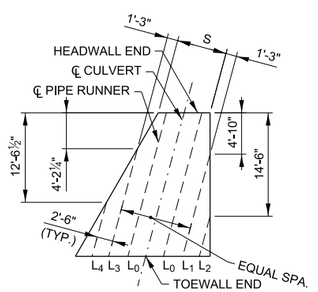




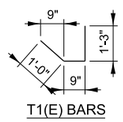








PIPE ARCH AND ELLIPTICAL PIPE CULVERTS



FOR PIPE OR ELLIPTICAL PIPE CULVERTS SELECT APPROPRIATE "S" & "H" FROM SIZES SHOWN. ADD THE FOLLOWING ADDITIONAL BARS:
(a) 1 ADDITIONAL Y(E) BAR
(b) #4-T1 BARS @ APPROX. 12" CTS. (NO. = S + 2)

THE WEIGHT OF THE ADDITIONAL BARS AND THE ADDITIONAL QUANTITY OF CONCRETE IN THE HEADWALL SHALL BE ADDED TO THE QUANTITIES SHOWN.

NOTE:

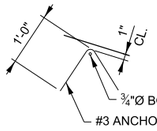
REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE CULVERTS 15° SKEW, 1:4 SLOPE, H ≤ 4

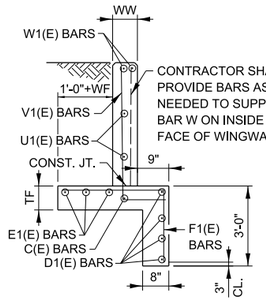
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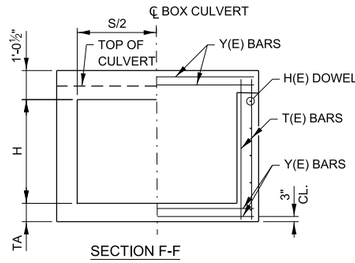
ANCHOR BARS

CONTRACTOR SHALL PROVIDE 2-#3 ANCHOR BARS(E) PER SIDEWALL BOLT.

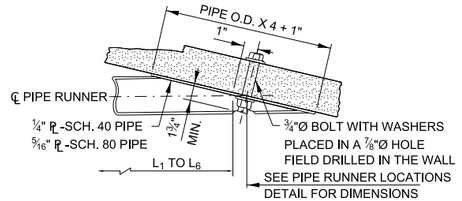
DETAIL B



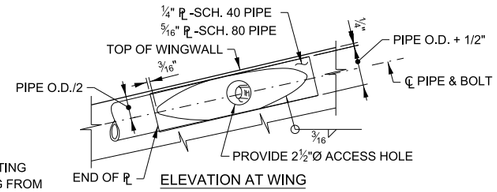
SECTION A-A



SECTION F-F



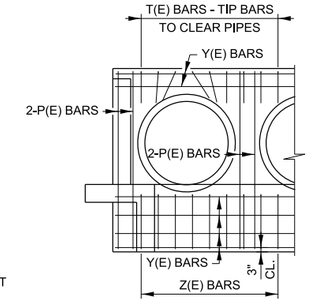
SECTION AT WING



ELEVATION AT WING

NOTE:

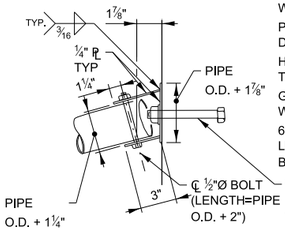
J & H DOWEL BARS NOT REQUIRED WITH EXISTING BOX CULVERTS PROVIDING THE REINFORCING FROM THE EXISTING BOX IS EXTENDED INTO THE NEW CONCRETE A MINIMUM OF 1'-3".



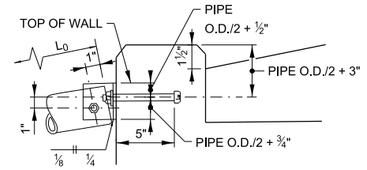
SECTION C-C

NOTE:

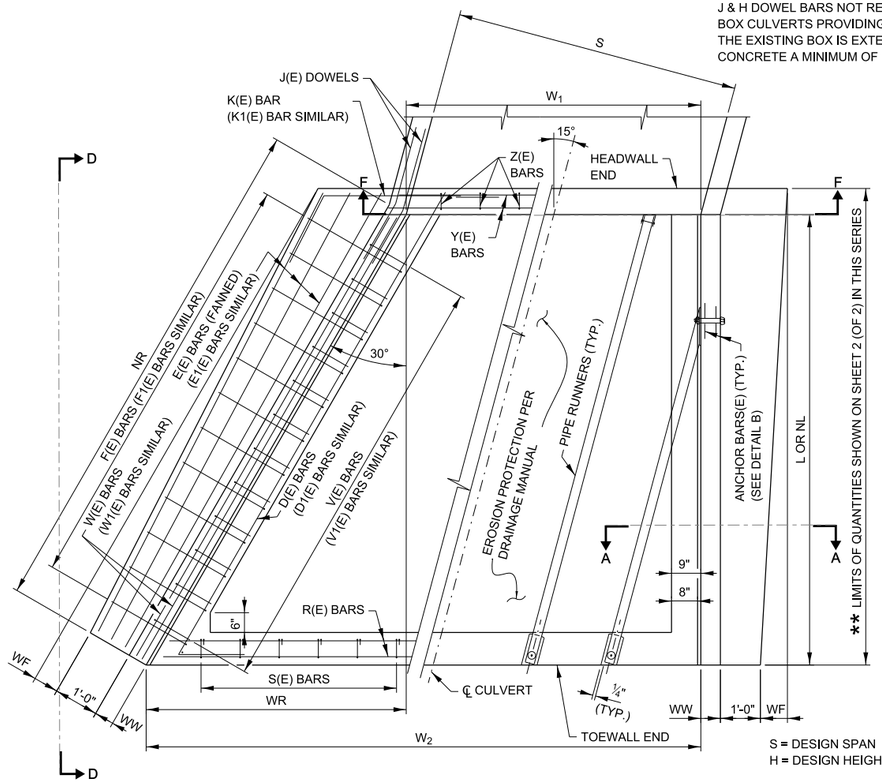
A ¾"Ø X 9½" BOLT WITH ADDITIONAL ℙ WASHER PLACED IN A ⅞"Ø HOLE DRILLED THROUGH THE HEADWALL OR A ¾"Ø x 8" THREADED ROD EPOXY GROUTED IN A ⅞"Ø HOLE WITH A MIN. EMBEDMENT OF 6⅝" MAY BE USED IN LIEU OF CAST-IN-PLACE BOLT SHOWN.



PLAN AT HEADWALL



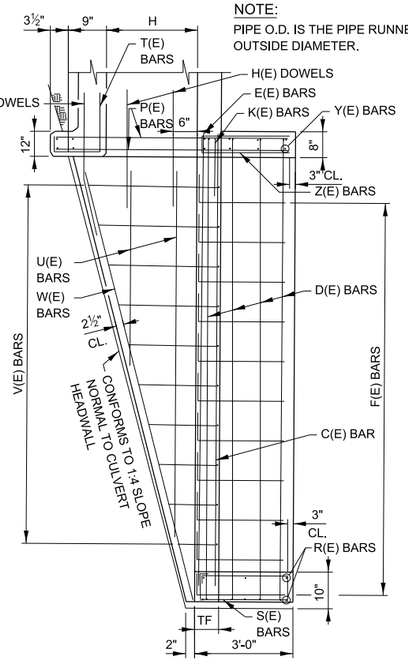
ELEVATION AT HEADWALL



HALF PLAN SHOWING REINFORCEMENT BARS

HALF PLAN SHOWING DIMENSIONS

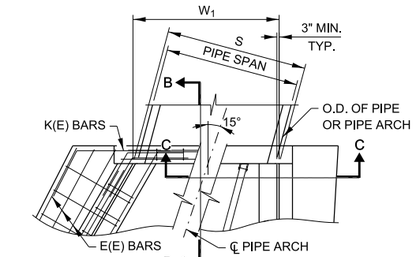
** DOWEL BARS EXTENDING INTO THE CONCRETE BOX CULVERT ARE INCLUDED IN THE QUANTITIES.



SECTION D-D

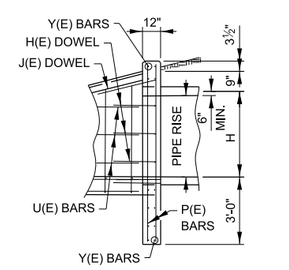
NOTE:

PIPE O.D. IS THE PIPE RUNNER OUTSIDE DIAMETER.



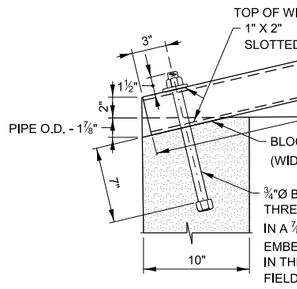
HALF PLAN SHOWING REINFORCEMENT BARS

HALF PLAN SHOWING DIMENSIONS

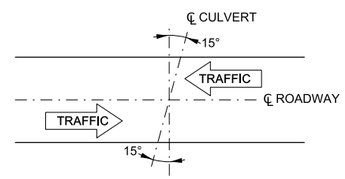


SECTION B-B

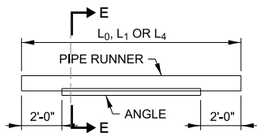
FOR PIPE AND PIPE-ARCH CULVERTS



SECTION THRU TOEWALL



CULVERT SKEW ORIENTATION



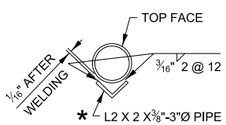
DETAIL A

* NOTE:

WHERE L_0, L_1 OR L_4 EXCEEDS THE FOLLOWING LENGTH, THE PIPE RUNNER SHALL BE STRENGTHENED OVER THE MIDSPAN AS SHOWN.

PIPE	LENGTH
3"Ø, SCH. 40	12'-8"
3½"Ø, SCH. 40	17'-3"
3½"Ø, SCH. 80	22'-1"
4"Ø, SCH. 40	22'-6"
4"Ø, SCH. 80	29'-4"

PIPE RUNNER DETAILS



SECTION E-E

FOR BOX CULVERTS

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS SI.
2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" x 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. COVER FROM THE FACE OF CONCRETE TO THE FACE OF REINFORCEMENT BARS SHALL BE 2", UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ON SHEET 2 (OF 2) IN THIS SERIES ARE FOR REINFORCED CONCRETE BOX CULVERT SECTIONS AND ADDITIONAL CONCRETE REQUIRED IN HEADWALLS FOR PIPE OR ARCH CULVERT SECTIONS SHALL BE ADDED TO THESE QUANTITIES.
4. THIS STANDARD MAY BE USED FOR CULVERTS WITH SKEW OF 15° ± 7.5°. AS SHOWN PER CULVERT SKEW ORIENTATION ON THIS SHEET.
5. DESIGN: SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-1, SAFETY TREATMENT OF ROADSIDE CROSS DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, MARCH 1981.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. FOR EROSION PROTECTION SEE STANDARD B19.
8. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS AND REBAR TABLE
03-31-2014	TABLE QUANTITIES REVISED
02-07-2012	TABLE QUANTITIES REVISED

Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE AND MULTIPLE CULVERTS 15° SKEW, 1:4 SLOPE, H ≤ 8'

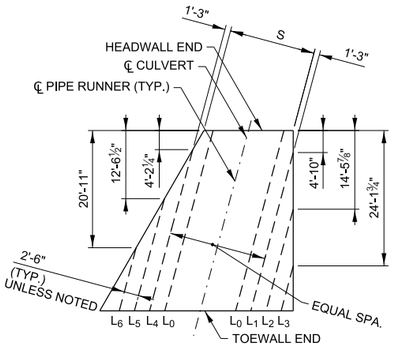
VERSION: 2022-03 | STANDARD: B16-06 | SHEET: 1 OF 2

TABLE OF DIMENSIONS										
L	H	L	NL	NR	WW	W_1 ④	W_2 ④	WR	WF	TF
9'	3'	14'-4"	14'-4"	16'-6⅝"	7"	9'-3¾"	17'-7"	8'-3¼"	3"	7"
9'	4'	18'-4"	18'-4"	21'-2"	7"	9'-3¾"	19'-10¾"	10'-7"	9"	8"
5'	5'	22'-4"	22'-4"	25'-9½"	7"	5'-2"	18'-0¾"	12'-10¾"	1'-3"	8"
6'	6'	26'-4"	26'-4"	30'-4⅞"	7"	6'-2½"	21'-5"	15'-2½"	1'-9"	8½"
7'	7'	30'-4"	30'-4"	35'-0¼"	7½"	7'-3"	24'-9"	17'-6"	2'-3"	9"
8'	8'	34'-4"	34'-4"	39'-7¾"	9½"	8'-3½"	28'-1¼"	19'-9¾"	2'-9"	9½"

PIPE RUNNERS FOR ONE END													
			WINGWALL PIPES - ONE PER EACH LENGTH SHOWN						HEADWALL PIPE			
			0° WALL			30° WALL						
H	SIZE (DIA.)	SCHEDULE	L_1	L_2	L_3	L_4	L_5	L_6	S	NO.	Lo	TOTAL LENGTH
3'	3"	40	10'-0"	-	-	10'-8"	-	-	9'	4	15'-1"	81.00
4'	3"	40	14'-3"	-	-	14'-11"	6'-2"	-	9'	4	19'-4"	112.67
5'	3½"	40	18'-6"	8'-3"	-	19'-2"	10'-5"	-	5'	2	23'-7"	103.50
6'	3½"	80	22'-9"	12'-6"	-	23'-5"	14'-8"	5'-9"	6'	3	28'-0"	162.08
7'	4"	40	27'-0"	16'-9"	6'-7"	27'-8"	18'-11"	10'-0"	7'	3	32'-3"	203.67
8'	4"	80	31'-3"	21'-0"	10'-10"	31'-11"	23'-2"	14'-3"	8'	4	36'-6"	277.42

NOTE:

REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

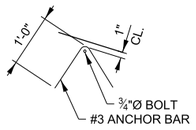


PIPE RUNNER LAYOUT

TABLE OF REINFORCEMENT BARS FOR ONE END																													
	1-C(E) BAR 30° WALL		1-C1(E) BAR 0° WALL		D(E) BAR 4-#4 30° WALL	D1(E) BAR 4-#4 0° WALL	#4-E(E) BARS 30° WALL ⑥		#4-E1(E) BARS 0° WALL ⑥		F(E) BARS EQUALLY SPACED 30° WALL						F1(E) BARS EQUALLY SPACED 0° WALL							H(E) DOWELS #5 @ 12" 30° WALL		H1(E) DOWELS #5 @ 12" 0° WALL		J(E) DOWELS 4-#6 ⑤
H	SIZE	LENGTH	SIZE	LENGTH	LENGTH	LENGTH	NO.	LENGTH	NO.	LENGTH	SIZE	NO.	C_1	C_2	C_3	C_4	LENGTH	SIZE	NO.	C_1	C_2	C_3	C_4	LENGTH	NO.	LENGTH	NO.	LENGTH	LENGTH
3'	#4	16'-11"	#4	14'-8"	18'-10"	16'-7"	2	18'-4"	2	16'-2"	#4	7	1'-11"	2'-1"	2'-0"	2'-0"	9'-2"	#4	7	1'-11"	2'-1"	2'-0"	2'-0"	9'-2"	3	3'-0"	3	3'-0"	4'-6"
4'	#4	21'-7"	#4	18'-8"	23'-6"	20'-7"	2	23'-0"	2	20'-2"	#4	9	1'-11"	2'-7"	2'-3"	2'-3"	9'-8"	#4	9	1'-11"	2'-7"	2'-3"	2'-3"	9'-8"	4	3'-0"	4	3'-0"	4'-6"
5'	#4	22'-2"	#4	22'-8"	24'-1"	24'-7"	2	27'-7"	2	24'-2"	#4	11	1'-11"	3'-1"	2'-6"	2'-6"	10'-2"	#4	11	1'-11"	3'-1"	2'-6"	2'-6"	10'-2"	5	3'-0"	5	3'-0"	4'-6"
6'	#4	30'-9"	#4	26'-8"	32'-8"	28'-7"	3	32'-3"	3	28'-2"	#5	13	1'-11"	3'-8"	2'-9"	2'-10"	10'-9"	#5	13	1'-11"	3'-6"	2'-8"	2'-9"	10'-7"	6	3'-0"	6	3'-0"	4'-6"
7'	#5	35'-5"	#5	30'-8"	37'-4"	32'-7"	3	36'-10"	3	32'-2"	#5	15	2'-0"	4'-3"	3'-1"	3'-2"	11'-5"	#5	15	2'-0"	4'-1"	3'-0"	3'-1"	11'-3"	7	3'-0"	7	3'-0"	4'-6"
8'	#5	40'-0"	#5	34'-8"	41'-11"	36'-7"	3	41'-6"	3	36'-2"	#6	18	2'-1"	4'-10"	3'-5"	3'-6"	12'-1"	#6	17	2'-1"	4'-8"	3'-4"	3'-5"	11'-11"	8	3'-0"	8	3'-0"	4'-6"

TOTAL QUANTITIES ONE END MINIMUM "S"				INCREASE IN QUANTITIES FOR 1' INCREASE IN "S"	
S	H	CONC. CU. YD.	REINF. BARS POUND	CONC. CU. YD.	REINF. BARS POUND
9'	3'	8.4	890	0.20	30
9'	4'	12.7	1120	0.20	30
5'	5'	14.4	1200	0.20	30
6'	6'	20.1	1610	0.20	30
7'	7'	27.0	1930	0.20	30
8'	8'	36.0	2460	0.20	30

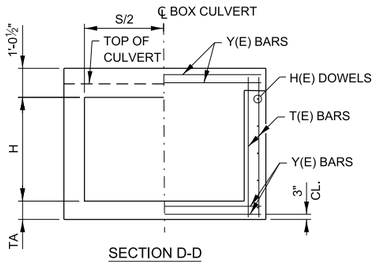
| TABLE OF REINFORCEMENT BARS FOR ONE END | | | | | | | | | | | | | | | | | | |



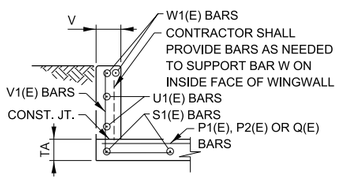
ANCHOR BARS(E)

CONTRACTOR SHALL PROVIDE 2-#3 ANCHOR BARS(E) PER SIDEWALL BOLT.

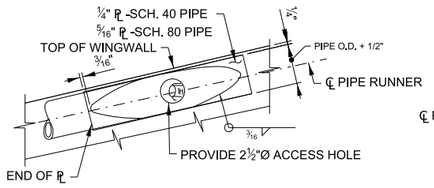
DETAIL B



SECTION D-D



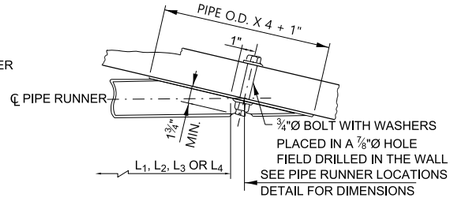
SECTION A-A



ELEVATION AT WING

NOTE:

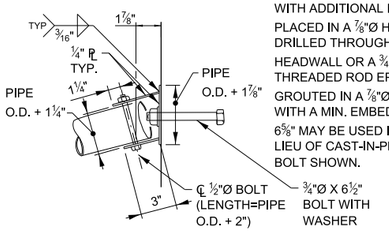
PIPE O.D. IS THE PIPE RUNNER OUTSIDE DIAMETER.



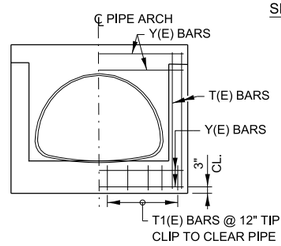
SECTION AT WING

NOTE:

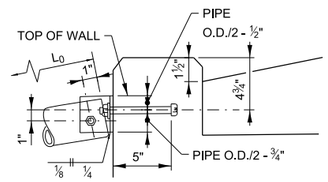
A ¾"Ø X 9½" BOLT WITH ADDITIONAL ℙ WASHER PLACED IN A ⅞"Ø HOLE DRILLED THROUGH THE HEADWALL OR A ¾"Ø x 8" THREADED ROD EPOXY GROUTED IN A ⅞"Ø HOLE WITH A MIN. EMBEDMENT OF 6⅝" MAY BE USED IN LIEU OF CAST-IN-PLACE BOLT SHOWN.



PLAN AT HEADWALL



SECTION B-B



ELEVATION AT HEADWALL

NOTE:

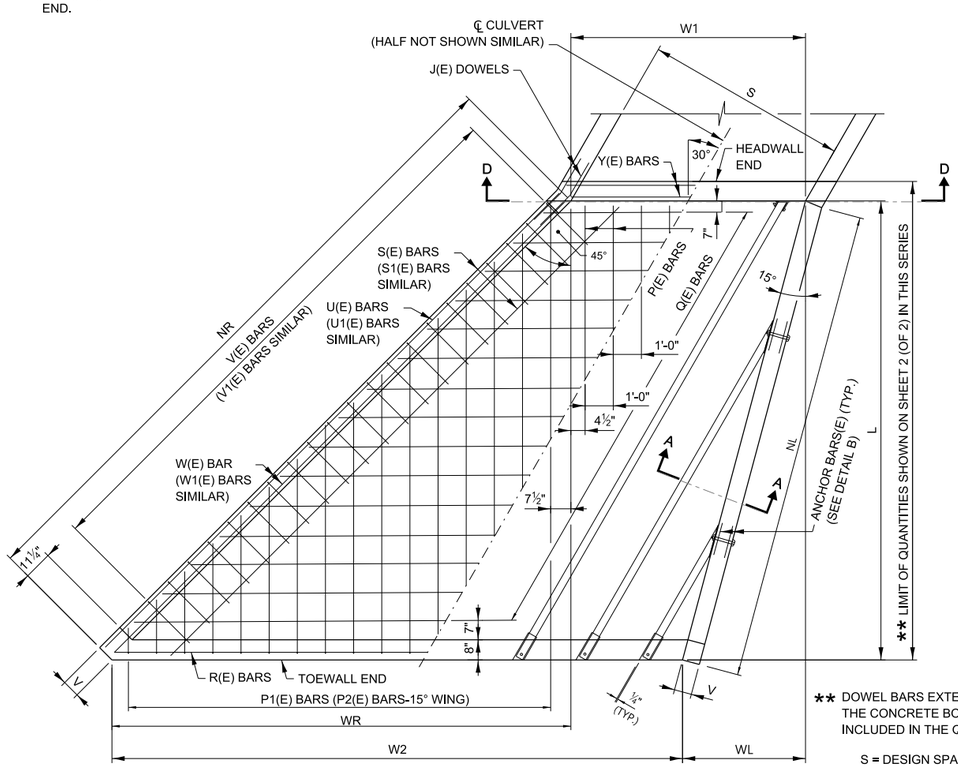
Q(E), V(E), AND V_1(E) BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE BARS WITH DIMENSIONS C_2-C_3, C_9-C_{12} BEGINNING AT HEADWALL AND BARS WITH DIMENSIONS C_1-C_4, C_{10}-C_{11} BEGINNING AT THE TOEWALL END.

NOTE:

P1(E) BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE BARS WITH DIMENSIONS C6-C7 BEGINNING AT THE TOEWALL END OF 45° WINGWALL AND BARS WITH DIMENSIONS C_5-C_8 BEGINNING PARALLEL TO THE P(E) BARS. PLACE P2(E) BARS PARALLEL TO THE P(E) BARS BEGINNING WITH THE SHORTEST BARS AT THE HEADWALL END OF THE 15° WINGWALL.

NOTE:

J(E) & H(E) DOWEL BARS NOT REQUIRED WITH EXISTING BOX CULVERTS PROVIDING THE REINFORCING FROM THE EXIST. BOX IS EXTENDED INTO THE NEW CONCRETE A MIN. OF 1'-3".

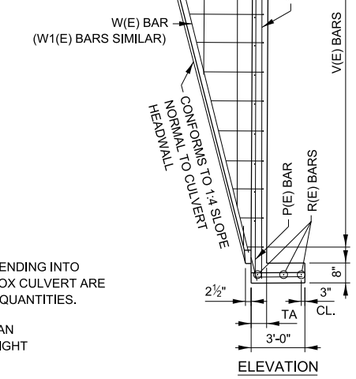


** DOWEL BARS EXTENDING INTO THE CONCRETE BOX CULVERT ARE INCLUDED IN THE QUANTITIES.

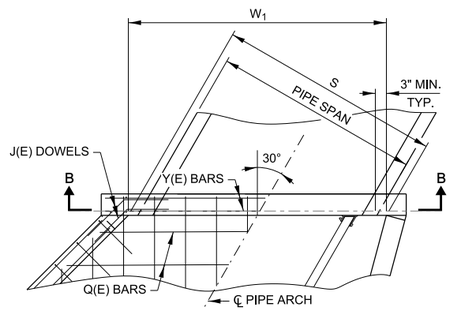
S = DESIGN SPAN
H = DESIGN HEIGHT

HALF PLAN
SHOWING REINFORCEMENT BARS

HALF PLAN
SHOWING DIMENSIONS

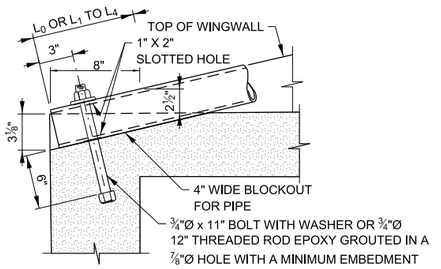


ELEVATION

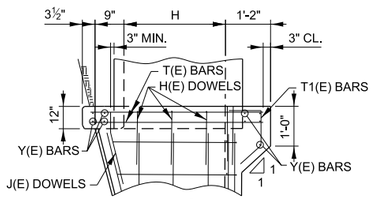


HALF PLAN
SHOWING REINFORCEMENT BARS

HALF PLAN
SHOWING DIMENSIONS

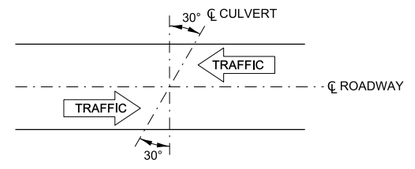


SECTION THRU TOEWALL

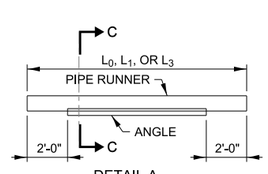


ELEVATION

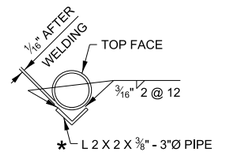
PIPE ARCH DETAILS



CULVERT SKEW ORIENTATION



DETAIL A



* L 2 X 2 X ⅜" - 3"Ø PIPE
LENGTH = L_0, L_1 OR L_3 MINUS 4'-0" (SEE DETAIL A)

SECTION C-C

* NOTE:

WHERE L_0, L_1 OR L_3 EXCEEDS THE FOLLOWING LENGTH, THE PIPE RUNNER SHALL BE STRENGTHENED OVER THE MIDSPAN AS SHOWN.

PIPE	LENGTH
3"Ø, SCH. 40	12'-8"
3"Ø, SCH. 80	15'-4"

PIPE RUNNER DETAILS

BOX CULVERT DETAILS

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS SI.
2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" x 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. COVER FROM THE FACE OF CONCRETE TO THE FACE OF REINFORCEMENT BARS SHALL BE 2", UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ON SHEET 2 (OF 2) IN THIS SERIES ARE FOR REINFORCED CONCRETE BOX CULVERT SECTIONS AND ADDITIONAL CONCRETE REQUIRED IN HEADWALLS FOR PIPE OR ARCH CULVERT SECTIONS SHALL BE ADDED TO THESE QUANTITIES.
4. THIS STANDARD MAY BE USED FOR CULVERTS WITH SKEW OF 30° ± 7.5°. AS SHOWN PER CULVERT SKEW ORIENTATION ON THIS SHEET.
5. DESIGN: SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-1, SAFETY TREATMENT OF ROADSIDE CROSS DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, MARCH 1981.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. FOR EROSION PROTECTION SEE STANDARD B19.
8. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

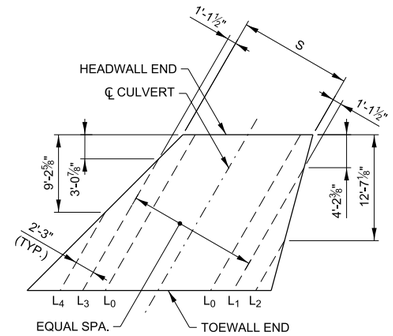
REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS AND REBAR TABLE
03-11-2015	REVISED NOTES
02-07-2012	TABLE QUANTITIES REVISED

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE CULVERTS 30° SKEW, 1:4 SLOPE, H ≤ 4'

VERSION: 2022-03 | STANDARD: B17-05 | SHEET: 1 OF 2

CULVERT SIZE (FEET)	TABLE OF DIMENSIONS								
S X H	L	NL	NR	V	W_1	W_2	WL	WR	TA
3 x 2	10'-10"	11'-2⅝"	15'-3⅞"	7"	3'-5⅝"	11'-4¾"	2'-10⅞"	10'-10"	6"
3 x 3	14'-10"	15'-4¼"	20'-11¾"	7"	3'-5⅝"	14'-3⅞"	3'-11¾"	14'-10"	6"
4 x 2	10'-10"	11'-2⅝"	15'-3⅞"	7"	4'-7⅜"	12'-6½"	2'-10⅞"	10'-10"	6"
4 x 3	14'-10"	15'-4¼"	20'-11¾"	7"	4'-7⅜"	15'-5⅝"	3'-11¾"	14'-10"	6"
4 x 4	18'-10"	19'-6"	26'-7⅝"	7"	4'-7⅜"	18'-4⅞"	5'-0½"	18'-10"	6"
5 x 2	10'-10"	11'-2⅝"	15'-3¾"	7"	5'-9¼"	13'-8⅜"	2'-10⅞"	10'-10"	6"
5 x 3	14'-10"	15'-4¼"	20'-11¾"	7"	5'-9¼"	16'-7½"	3'-11¾"	14'-10"	6"
5 x 4	18'-10"	19'-6"	26'-7⅝"	7"	5'-9¼"	19'-6¾"	5'-0½"	18'-10"	6"
6 x 3	14'-10"	15'-4¼"	20'-11¾"	7"	6'-11⅛"	17'-9⅜"	3'-11¾"	14'-10"	6"
6 x 4	18'-10"	19'-6"	26'-7⅝"	7"	6'-11⅛"	20'-8⅝"	5'-0½"	18'-10"	6"
7 x 3	14'-10"	15'-4¼"	20'-11¾"	7"	8'-1"	18'-11¼"	3'-11¾"	14'-10"	6½"
7 x 4	18'-10"	19'-6"	26'-7⅝"	7"	8'-1"	21'-10½"	5'-0½"	18'-10"	6½"
8 x 4	18'-10"	19'-6"	26'-7⅝"	7"	9'-2⅞"	23'-0⅜"	5'-0½"	18'-10"	7"

PIPE RUNNERS FOR ONE END SIZE 3" DIA.						
SCHEDULE	HEADWALL PIPE		WINGWALL PIPE-ONE PER EACH LENGTH SHOWN			
			15° WALL		45° WALL	
	NO.	L_0	L_1	L_2	L_3	L_4
40	2	12'-10"	7'-10"	-	9'-2"	-
40	2	17'-8"	12'-6"	-	13'-11"	6'-7"
40	2	12'-10"	7'-10"	-	9'-2"	-
40	2	17'-8"	12'-6"	-	13'-11"	6'-7"
80	2	22'-4"	17'-3"	7'-4"	18'-7"	11'-4"
40	3	12'-10"	7'-10"	-	9'-2"	-
40	3	17'-8"	12'-6"	-	13'-11"	6'-7"
80	3	22'-4"	17'-3"	7'-4"	18'-7"	11'-4"
40	3	17'-8"	12'-6"	-	13'-11"	6'-7"
80	3	22'-4"	17'-3"	7'-4"	18'-7"	11'-4"
40	4	17'-8"	12'-6"	-	13'-11"	6'-7"
80	4	22'-4"	17'-3"	7'-4"	18'-7"	11'-4"
80	4	22'-4"	17'-3"	7'-4"	18'-7"	11'-4"



PIPE RUNNER LAYOUT

CULVERT SIZE (FEET)	TABLE OF REINFORCEMENT BARS FOR ONE END																														
	H(E) DOWELS #4 @ 12" 2'-6" LG.		J(E) DOWELS #4 @ 12" 4'-0" LG.		P(E) BARS #4 @ 12"		P1(E) BARS #4 @ 12"						P2(E) BARS - ONE PER EACH LENGTH SHOWN #4 @ 12"						Q(E) BARS #4 @ 12"						R(E) BARS 3-#4	S(E) BARS 45° WALL 2-#4	S1(E) BARS 15° WALL 2-#4	U(E) BARS-ONE PER EACH LENGTH SHOWN #4 @ 12"			
													LENGTH															45° WALL			
S X H	NO.*	NO.**	NO.*	NO.**	NO.	LENGTH	NO.	C_5	C_6	C_7	C_8	LENGTH	a_1	a_2	a_3	a_4	a_5	NO.	C_1	C_2	C_3	C_4	LENGTH	LENGTH	LENGTH	LENGTH	a_6	a_7	a_8	a_9
3 x 2	3	3	2	2	1	13'-1"	5	10'-6"	1'-6"	5'-6"	6'-6"	17'-2"	5'-4"	9'-1"	-	-	-	5	11'-6"	4'-11"	7'-10"	8'-7"	16'-5"	11'-10"	14'-10"	11'-0"	6'-2"	11'-10"	-	-
3 x 3	4	4	2	2	0	-	7	14'-6"	1'-6"	7'-6"	8'-6"	21'-2"	5'-4"	9'-1"	12'-10"	-	-	7	14'-5"	4'-11"	9'-4"	10'-0"	19'-4"	14'-9"	20'-6"	15'-2"	6'-2"	11'-10"	17'-6"	-
4 x 2	3	3	2	2	2	13'-1"	5	10'-6"	1'-6"	5'-6"	6'-6"	17'-2"	2'-3"	6'-0"	9'-9"	-	-	5	12'-8"	6'-1"	9'-0"	9'-9"	18'-9"	13'-0"	14'-10"	11'-0"	6'-2"	11'-10"	-	-
4 x 3	4	4	2	2	1	17'-1"	7	14'-6"	1'-6"	7'-6"	8'-6"	21'-2"	2'-3"	6'-0"	9'-9"	13'-6"	-	7	15'-7"	6'-1"	10'-6"	11'-2"	21'-8"	15'-11"	20'-6"	15'-2"	6'-2"	11'-10"	17'-6"	-
4 x 4	5	5	2	2	0	-	9	18'-6"	1'-6"	9'-6"	10'-6"	25'-2"	2'-3"	6'-0"	9'-9"	13'-6"	17'-3"	9	18'-6"	6'-1"	11'-11"	12'-8"	24'-7"	18'-10"	26'-2"	19'-4"	6'-2"	11'-10"	17'-6"	23'-1"
5 x 2	3	3	2	2	3	13'-1"	5	10'-6"	1'-6"	5'-6"	6'-6"	17'-2"	2'-10"	6'-7"	10'-4"	-	-	5	13'-10"	7'-3"	10'-2"	10'-11"	21'-1"	14'-2"	14'-10"	11'-0"	6'-2"	11'-10"	-	-
5 x 3	4	4	2	2	2	17'-1"	7	14'-6"	1'-6"	7'-6"	8'-6"	21'-2"	2'-10"	6'-7"	10'-4"	14'-0"	-	7	16'-9"	7'-3"	11'-8"	12'-4"	24'-0"	17'-1"	20'-6"	15'-2"	6'-2"	11'-10"	17'-6"	-
5 x 4	5	5	2	2	1	21'-1"	9	18'-6"	1'-6"	9'-6"	10'-6"	25'-2"	2'-10"	6'-7"	10'-4"	14'-0"	17'-9"	9	19'-8"	7'-3"	13'-1"	13'-10"	26'-11"	20'-0"	26'-2"	19'-4"	6'-2"	11'-10"	17'-6"	23'-1"
6 x 3	4	4	2	2	3	17'-1"	7	14'-6"	1'-6"	7'-6"	8'-6"	21'-2"	3'-4"	7'-1"	10'-10"	14'-7"	-	7	17'-11"	8'-4"	12'-9"	13'-6"	26'-3"	18'-3"	20'-6"	15'-2"	6'-2"	11'-10"	17'-6"	-
6 x 4	5	5	2	2	2	21'-1"	9	18'-6"	1'-6"	9'-6"	10'-6"	25'-2"	3'-4"	7'-1"	10'-10"	14'-7"	18'-3"	9	20'-10"	8'-4"	14'-3"	14'-11"	29'-2"	21'-2"	26'-2"	19'-4"	6'-2"	11'-10"	17'-6"	23'-1"
7 x 3	4	4	2	2	4	17'-1"	7	14'-6"	1'-6"	7'-6"	8'-6"	21'-2"	4'-0"	7'-9"	11'-5"	15'-2"	-	7	19'-1"	9'-6"	13'-11"	14'-8"	28'-7"	19'-5"	20'-6"	15'-2"	6'-2"	11'-10"	17'-6"	-
7 x 4	5	5	2	2	3	21'-1"	9	18'-6"	1'-6"	9'-6"	10'-6"	25'-2"	4'-0"	7'-9"	11'-5"	15'-2"	18'-6"	9	22'-0"	9'-6"	15'-5"	16'-1"	31'-6"	22'-4"	26'-2"	19'-4"	6'-2"	11'-10"	17'-6"	23'-1"
8 x 4	5	5	2	2	5	21'-1"	9	18'-6"	1'-6"	9'-6"	10'-6"	25'-2"	4'-6"	8'-3"	12'-0"	15'-9"	-	9	23'-1"	10'-8"	16'-6"	17'-3"	33'-9"	23'-6"	26'-2"	19'-4"	6'-2"	11'-10"	17'-6"	23'-1"

CULVERT SIZE (FEET)	TABLE OF REINFORCEMENT BARS FOR ONE END																																
	U1(E) BARS-ONE PER EACH LENGTH SHOWN #4 @ 12"				V(E) BARS #4 @ 10.5"						V1(E) BARS #4 @ 10.5"						2 W(E) BARS 45° WALL		2 W1(E) BARS 15° WALL		Y(E) BARS 8-#5	T(E) BARS 8-#5 BOX CULVERT	T(E) BARS 8-#5 PIPE ARCH								
	15° WALL				45° WALL						15° WALL																						
S X H	a_{10}	a_{11}	a_{12}	a_{13}	No.	C_9	C_{10}	C_{11}	C_{12}	LENGTH	No.	C_9	C_{10}	C_{11}	C_{12}	LENGTH	SIZE	LENGTH	SIZE	LENGTH	LENGTH	LENGTH	LENGTH										
3 x 2	4'-6"	8'-7"	-	-	16	2'-9"	6"	7"	2'-8"	6'-3"	12	2'-9"	6"	7"	2'-8"	6'-3"	#5	14'-5"	#5	10'-8"	4'-4"	3'-2"	3'-8"										
3 x 3	4'-6"	8'-7"	12'-9"	-	23	3'-9"	6"	6"	3'-9"	7'-3"	16	3'-9"	6"	9"	3'-6"	7'-3"	#5	20'-2"	#5	14'-11"	4'-4"	4'-2"	4'-8"										
4 x 2	4'-6"	8'-7"	-	-	16	2'-9"	6"	7"	2'-8"	6'-3"	12	2'-9"	6"	7"	2'-8"	6'-3"	#5	14'-5"	#5	10'-8"	5'-6"	3'-2"	3'-8"										
4 x 3	4'-6"	8'-7"	12'-9"	-	23	3'-9"	6"	6"	3'-9"	7'-3"	16	3'-9"	6"	9"	3'-6"	7'-3"	#5	20'-2"	#5	14'-11"	5'-6"	4'-2"	4'-8"										
4 x 4	4'-6"	8'-7"	12'-9"	16'-11"	29	4'-9"	6"	7"	4'-8"	8'-3"	21	4'-9"	6"	8"	4'-7"	8'-3"	#6	25'-11"	#6	19'-1"	5'-6"	5'-2"	5'-8"										
5 x 2	4'-6"	8'-7"	-	-	16	2'-9"	6"	7"	2'-8"	6'-3"	12	2'-9"	6"	7"	2'-8"	6'-3"	#5	14'-5"	#5	10'-8"	6'-8"	3'-2"	3'-8"										
5 x 3	4'-6"	8'-7"	12'-9"	-	23	3'-9"	6"	6"	3'-9"	7'-3"	16	3'-9"	6"	9"	3'-6"	7'-3"	#5	20'-2"	#5	14'-11"	6'-8"	4'-2"	4'-8"										
5 x 4	4'-6"	8'-7"	12'-9"	16'-11"	29	4'-9"	6"	7"	4'-8"	8'-3"	21	4'-9"	6"	8"	4'-7"	8'-3"	#6	25'-11"	#6	19'-1"	6'-8"	5'-2"	5'-8"										
6 x 3	4'-6"	8'-7"	12'-9"	-	23	3'-9"	6"	6"	3'-9"	7'-3"	16	3'-9"	6"	9"	3'-6"	7'-3"	#5	20'-2"	#5	14'-11"	7'-10"	4'-2"	4'-8"										
6 x 4	4'-6"	8'-7"	12'-9"	16'-11"	29	4'-9"	6"	7"	4'-8"	8'-3"	21	4'-9"	6"	8"	4'-7"	8'-3"	#6	25'-11"	#6	19'-1"	7'-10"	5'-2"	5'-8"										
7 x 3	4'-6"	8'-7"	12'-9"	-	23	3'-9"	6"	6"	3'-9"	7'-3"	16	3'-9"	6"	9"	3'-6"	7'-3"	#5	20'-2"	#5	14'-11"	9'-0"	4'-2"	4'-8"										
7 x 4	4'-6"	8'-7"	12'-9"	16'-11"	29	4'-9"	6"	7"	4'-8"	8'-3"	21	4'-9"	6"	8"	4'-7"	8'-3"	#6	25'-11"	#6	19'-1"	9'-0"	5'-2"	5'-8"										
8 x 4	4'-6"	8'-7"	12'-9"	16'-11"	29	4'-9"	6"	7"	4'-8"	8'-3"	21	4'-9"	6"	8"	4'-7"	8'-3"	#6	25'-11"	#6	19'-1"	10'-2"	5'-2"	5'-8"										

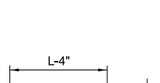
TOTAL QUANTITIES ONE END		
CONC.	REINF. BARS	PIPE RUNNERS
CU. YD.	LB.	FT.
3.8	396	41.67
5.8	580	67.17
4.2	430	41.67
6.3	617	67.17
8.8	874	97.83
4.6	460	54.17
6.8	653	84.42
9.4	915	119.83
7.3	688	84.42
9.9	957	119.83
8.0	724	101.67
10.9	999	141.84
12.0	1042	141.84

NOTE:

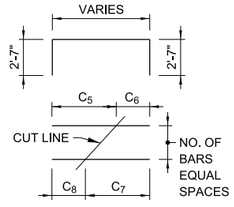
REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

* 45° WALL

** 15° WALL

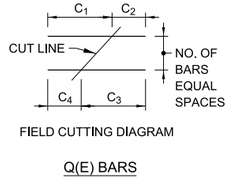


P(E) BARS



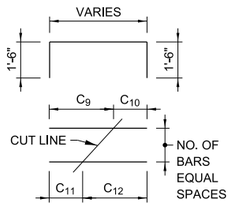
FIELD CUTTING DIAGRAM

P1(E) BARS



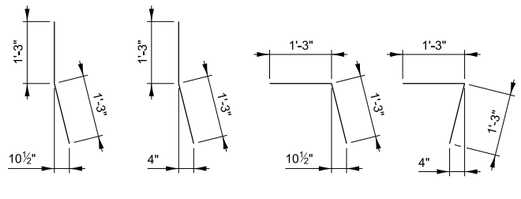
FIELD CUTTING DIAGRAM

Q(E) BARS

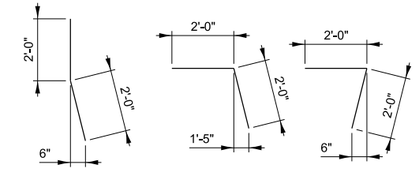


FIELD CUTTING DIAGRAM

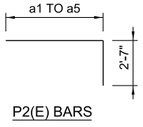
V(E) AND V1(E) BARS



H(E) DOWELS

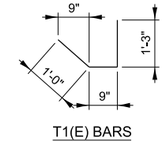


J(E) DOWELS



P2(E) BARS

PIPE ARCH AND ELLIPTICAL PIPE CULVERTS



T1(E) BARS

FOR PIPE OR ELLIPTICAL PIPE CULVERTS SELECT APPROPRIATE "S" & "H" FROM SIZES SHOWN. ADD THE FOLLOWING ADDITIONAL BARS:
(a) 1 ADDITIONAL Y(E) BAR
(b) #4-T1 BARS @ APPROX. 12" CTS. (NO. = S + 2)

THE WEIGHT OF THE ADDITIONAL BARS AND THE ADDITIONAL QUANTITY OF CONCRETE IN THE HEADWALL SHALL BE ADDED TO THE QUANTITIES SHOWN.

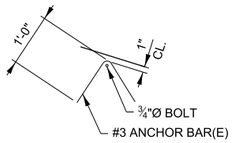
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE CULVERTS 30° SKEW, 1:4 SLOPE, H ≤ 4'

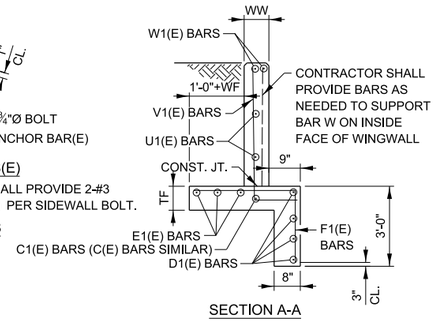
VERSION:	STANDARD:	SHEET:
2022-03	B17-05	2 OF 2



ANCHOR BARS(E)

CONTRACTOR SHALL PROVIDE 2-#3 ANCHOR BARS(E) PER SIDEWALL BOLT.

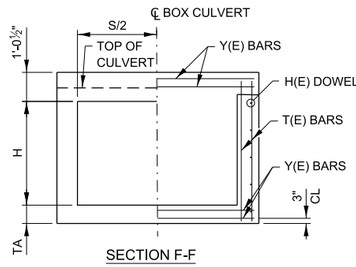
DETAIL B



SECTION A-A

NOTE:

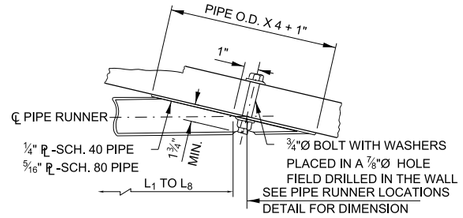
F(E), F1(E), V(E) & V1(E) BARS ARE TO BE FIELD CUT PER CUTTING DIAGRAM. PLACE BARS WITH DIMENSIONS C_2-C_4, C_{15}-C_{18} BEGINNING AT HEADWALL AND BARS WITH DIMENSIONS C_1-C_3, C_{16}-C_{17} BEGINNING AT THE TOEWALL END.



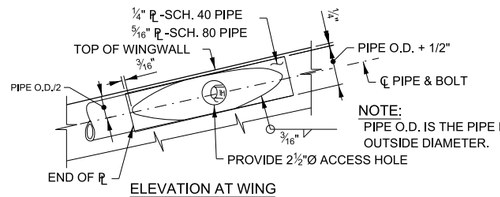
SECTION F-F

NOTE:

J(E) & H(E) DOWEL BAR NOT REQUIRED WITH EXISTING BOX CULVERTS PROVIDING THE REINFORCING FROM THE EXISTING BOX IS EXTENDED INTO THE NEW CONCRETE A MINIMUM OF 1'-3".



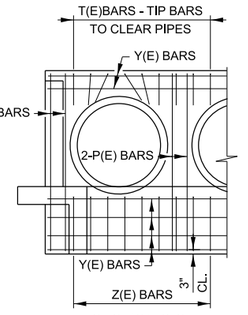
SECTION AT WING



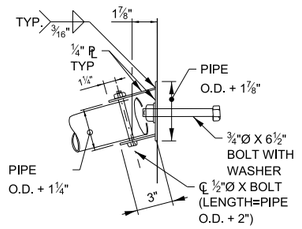
ELEVATION AT WING

NOTE:

PIPE O.D. IS THE PIPE RUNNER OUTSIDE DIAMETER.



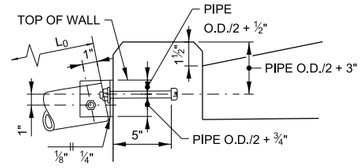
SECTION C-C



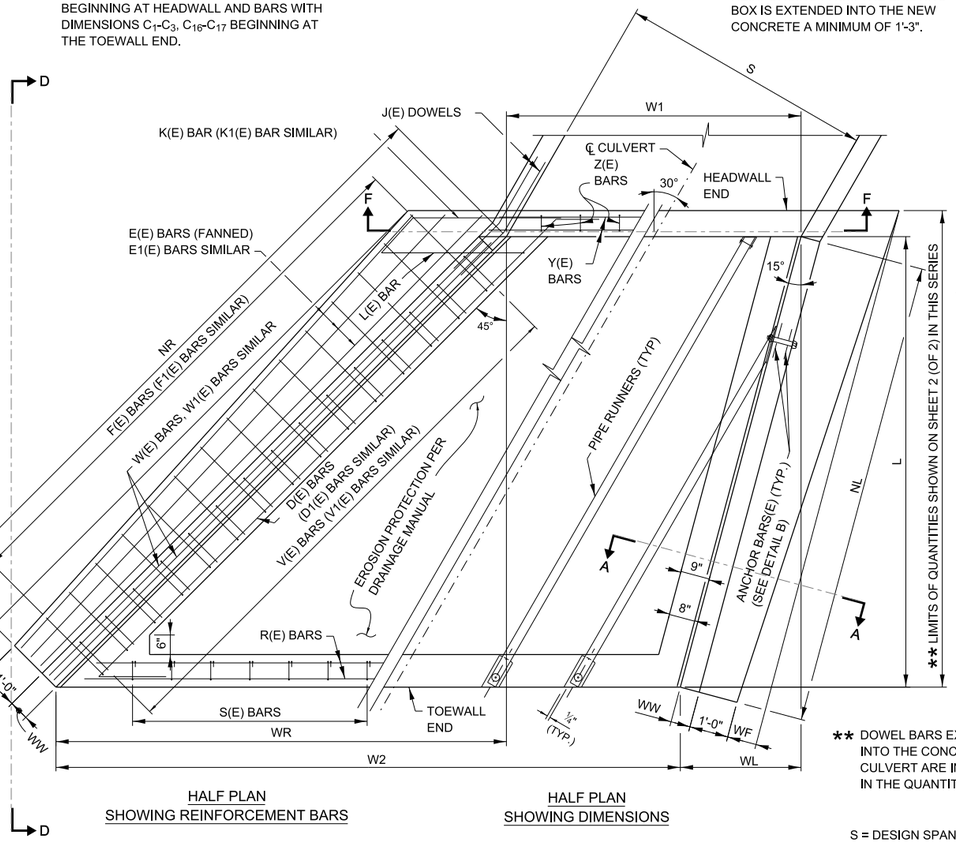
PLAN AT HEADWALL

NOTE:

A ¾"Ø X 9½" BOLT WITH ADDITIONAL ℞ WASHER PLACED IN A ⅞"Ø HOLE DRILLED THROUGH THE HEADWALL OR A ¾"Ø x 8" THREADED ROD EPOXY GROUTED IN A ⅞"Ø HOLE WITH A MIN. EMBEDMENT OF 6⅝" MAY BE USED IN LIEU OF CAST-IN-PLACE BOLT SHOWN.



ELEVATION AT HEADWALL

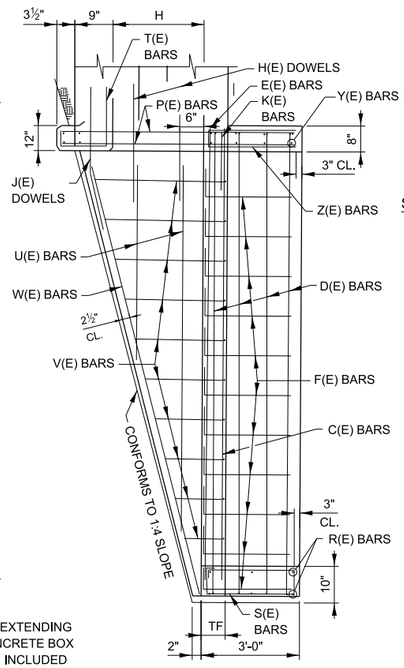


HALF PLAN SHOWING REINFORCEMENT BARS

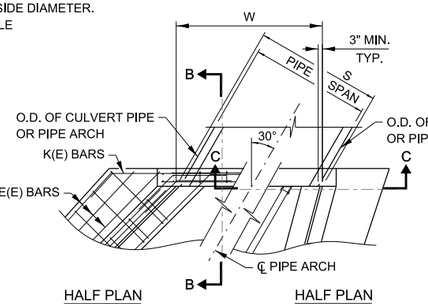
HALF PLAN SHOWING DIMENSIONS

** DOWEL BARS EXTENDING INTO THE CONCRETE BOX CULVERT ARE INCLUDED IN THE QUANTITIES.

S = DESIGN SPAN
H = DESIGN HEIGHT

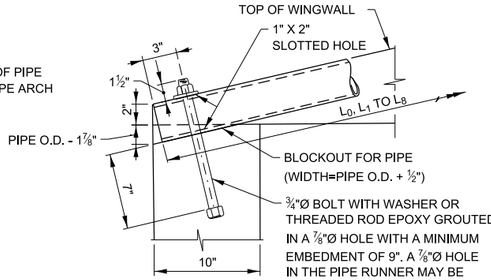


ELEVATION D-D

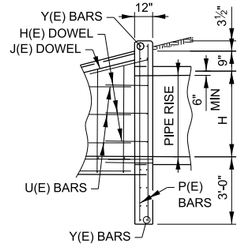


HALF PLAN SHOWING REINFORCEMENT BARS

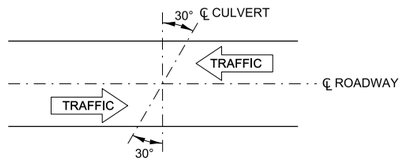
HALF PLAN SHOWING DIMENSIONS



SECTION THRU TOEWALL

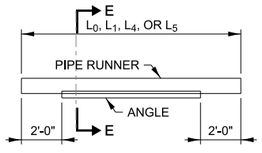


SECTION B-B

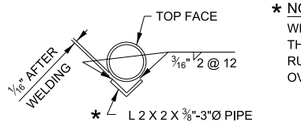


CULVERT SKEW ORIENTATION

FOR PIPE AND PIPE-ARCH CULVERTS



DETAIL A



SECTION E-E

* NOTE:

WHERE L_0, L_1, L_4 OR L_5 EXCEEDS THE FOLLOWING LENGTH, THE PIPE RUNNER SHALL BE STRENGTHENED OVER THE MIDSPAN AS SHOWN.

PIPE	LENGTH
3"Ø, SCH. 40	12'-8"
3"Ø, SCH. 80	15'-4"
3"Ø, SCH. 80	22'-1"
4"Ø, SCH. 80	29'-4"

PIPE RUNNER DETAILS

FOR BOX CULVERTS

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS SI.
2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" x 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. COVER FROM THE FACE OF CONCRETE TO THE FACE OF REINFORCEMENT BARS SHALL BE 2", UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ON SHEET 2 (OF 2) IN THIS SERIES ARE FOR REINFORCED CONCRETE BOX CULVERT SECTIONS AND ADDITIONAL CONCRETE REQUIRED IN HEADWALLS FOR PIPE OR ARCH CULVERT SECTIONS SHALL BE ADDED TO THESE QUANTITIES.
4. THIS STANDARD MAY BE USED FOR CULVERTS WITH SKEW OF 30° ± 7.5°. AS SHOWN PER CULVERT SKEW ORIENTATION ON THIS SHEET.
5. DESIGN: SAFETY PIPE RUNNERS ARE DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD AS RECOMMENDED BY RESEARCH REPORT 280-1, SAFETY TREATMENT OF ROADSIDE CROSS DRAINAGE STRUCTURES, TEXAS TRANSPORTATION INSTITUTE, MARCH 1981.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. FOR EROSION PROTECTION SEE STANDARD B19.
8. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS AND REBAR TABLES
03-11-2015	REVISED NOTES
03-31-2014	TABLE QUANTITIES REVISED
02-07-2012	TABLE QUANTITIES REVISED

Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE AND MULTIPLE CULVERTS 30° SKEW, 1:4 SLOPE, H≤8' AND S=VARIES

VERSION:	STANDARD:	SHEET:
2022-03	B18-06	1 OF 2

TABLE OF DIMENSIONS

S	H	L	NL	NR	WW	W_1 (4)	W_2 (4)	WL	WR	WF	TF
9'	3'	14'-4"	14'-10⅛"	20'-3¼"	7"	10'-4¾"	20'-10⅜"	3'-10⅛"	14'-4"	3"	7"
9'	4'	18'-4"	18'-11¾"	25'-11⅛"	7"	10'-4¾"	23'-9¾"	4'-11"	18'-4"	9"	8"
5'	5'	22'-4"	23'-1½"	31'-7"	7"	5'-9¼"	22'-1½"	5'-11¾"	22'-4"	1'-3"	8"
6'	6'	26'-4"	27'-3⅛"	37'-2⅞"	7"	6'-11⅛"	26'-2½"	7'-⅝"	26'-4"	1'-9"	8½"
7'	7'	30'-4"	31'-4⅞"	42'-10¾"	8"	8'-1"	30'-3½"	8'-1½"	30'-4"	2'-3"	9"
8'	8'	34'-4"	35'-6½"	48'-6⅝"	9"	9'-2⅞"	34'-4½"	9'-2⅜"	34'-4"	2'-9"	9½"

TOTAL QUANTITIES ONE END MINIMUM "S"		INCREASE IN QUANTITIES FOR 1' INCREASE IN "S"	
CONC. CU. YD.	REINF. BARS POUND	CONC. CU. YD.	REINF. BARS POUND
9.8	1010	0.22	33
14.8	1270	0.22	33
16.8	1380	0.22	33
23.5	1860	0.22	33
31.5	2330	0.22	33
42.2	2960	0.22	33

NOTE:

REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

PIPE RUNNERS FOR ONE END

H	SIZE (DIA.)	SCHEDULE	WINGWALL PIPES - ONE PER EACH LENGTH SHOWN								HEADWALL PIPES			TOTAL LENGTH
			15° WALL			45° WALL								
			L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	S	NO.	L_0	
3'	3"	40	11'-11"	-	-	13'-3"	6'-0"	-	-	-	9'	4	16'-10"	98.50
4'	3"	80	16'-8"	-	-	18'-0"	10'-9"	-	-	-	9'	4	21'-7"	131.75
5'	3½"	80	21'-4"	11'-6"	-	22'-8"	15'-5"	8'-2"	-	-	5'	3	26'-4"	158.08
6'	3½"	80	26'-1"	16'-2"	-	27'-9"	20'-2"	12'-11"	5'-8"	-	6'	3	31'-0"	201.75
7'	4"	80	30'-10"	20'-11"	11'-0"	32'-2"	24'-9"	17'-8"	10'-9"	-	7'	4	35'-9"	291.08
8'	4"	80	35'-9"	25'-8"	15'-9"	36'-10"	29'-7"	22'-4"	15'-1"	7'-10"	8'	4	40'-6"	350.83

TABLE OF REINFORCEMENT BARS FOR ONE END

H	1-C(E) BAR 45° WALL		1-C1(E) BAR 15° WALL		D(E) BAR 4-#4 45° WALL	D1(E) BAR 4-#4 45° WALL	#4-E(E) BARS 45° WALL (6)		#4-E1(E) BARS 15° WALL (6)	
	SIZE	LENGTH	SIZE	LENGTH	LENGTH	LENGTH	NO.	LENGTH	NO.	LENGTH
3'	#4	20'-8"	#4	15'-3"	22'-9"	17'-2"	2	21'-4"	2	17'-0"
4'	#4	26'-4"	#4	19'-5"	28'-5"	21'-4"	2	27'-0"	2	21'-1"
5'	#4	32'-0"	#4	23'-7"	34'-1"	25'-6"	2	32'-8"	2	25'-3"
6'	#4	37'-8"	#4	27'-8"	39'-9"	29'-7"	3	38'-4"	3	29'-4"
7'	#5	44'-10" (6)	#5	31'-10"	46'-11" (6)	33'-9"	3	44'-0"	3	33'-6"
8'	#5	50'-6" (6)	#5	36'-0"	52'-6" (6)	37'-10"	3	49'-8"	3	37'-7"

TABLE OF REINFORCEMENT BARS FOR ONE END

H	F(E) BARS EQUALLY SPACED 45° WALL							L(E) BARS 45° WALL				H(E) DOWELS #5 @ 12" 45° WALL		F1(E) BARS EQUALLY SPACED 15° WALL					H(E) DOWELS #5 @ 12" 15° WALL		J(E) DOWELS 4 - #6 (5)	1-K(E) BAR 45° WALL			1-K1(E) BAR 15° WALL			2-W(E) BARS 45° WALL		2-W1(E) BARS 15° WALL	
	SIZE	NO.	C_1	C_2	C_3	C_4	LENGTH	SIZE	NO.	C_0	LENGTH	SIZE	NO.	C_1	C_2	C_3	C_4	LENGTH	NO.	LENGTH	NO.	LENGTH	LENGTH	SIZE	C_5	LENGTH	SIZE	C_6	LENGTH	SIZE	LENGTH	SIZE	LENGTH
3'	#4	10	1'-11"	2'-2"	2'-0"	2'-1"	9'-3"	#4	–	–	–	#4	8	1'-11"	2'-2"	2'-0"	2'-1"	9'-3"	3	3'-0"	3	3'-0"	4'-6"	#5	4'-3"	5'-9"	#5	3'-10"	5'-4"	#5	20'-6"	#5	14'-11"
4'	#4	12	1'-11"	2'-8"	2'-3"	2'-4"	9'-9"	#4	1	3'-10"	6'-5"	#4	10	1'-11"	2'-8"	2'-3"	2'-4"	9'-9"	4	3'-0"	4	3'-0"	4'-6"	#5	5'-0"	6'-6"	#5	4'-4"	5'-10"	#6	26'-4"	#6	19'-2"
5'	#4	15	1'-11"	3'-2"	2'-6"	2'-7"	10'-3"	#4	2	4'-6"	7'-1"	#4	12	1'-11"	3'-2"	2'-6"	2'-7"	10'-3"	5	3'-0"	5	3'-0"	4'-6"	#5	5'-8"	7'-2"	#5	4'-10"	6'-4"	#6	32'-2"	#6	23'-5"
6'	#5	18	1'-11"	3'-8"	2'-9"	2'-10"	10'-9"	#5	2	5'-3"	7'-10"	#5	14	1'-11"	3'-8"	2'-9"	2'-10"	10'-9"	6	3'-0"	6	3'-0"	4'-6"	#5	6'-5"	7'-11"	#5	5'-4"	6'-10"	#6	38'-0"	#6	27'-8"
7'	#5	20	2'-0"	4'-3"	3'-1"	3'-2"	11'-5"	#5	3	6'-0"	8'-7"	#5	16	2'-0"	4'-2"	3'-1"	3'-1"	11'-4"	7	3'-0"	7	3'-0"	4'-6"	#5	7'-1"	8'-7"	#5	5'-10"	7'-4"	#7	45'-4" (6)	#7	31'-11"
8'	#6	23	2'-1"	4'-10"	3'-5"	3'-6"	12'-1"	#6	3	6'-9"	9'-4"	#6	18	2'-1"	4'-8"	3'-4"	3'-5"	11'-11"	8	3'-0"	8	3'-0"	4'-6"	#5	7'-10"	9'-4"	#5	6'-5"	7'-11"	#7	51'-2" (6)	#7	36'-2"

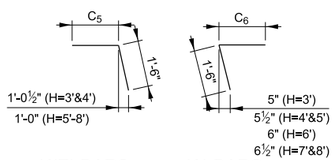
TABLE OF REINFORCEMENT BARS FOR ONE END

H	U(E) BARS - ONE PER EACH LENGTH SHOWN #4 @ 12" 45° WALL								U1(E) BARS - ONE PER EACH LENGTH SHOWN #4 @ 12" 15° WALL								V(E) BARS #5-EQUALLY SPACED 45° WALL							V1(E) BARS #5-EQUALLY SPACED 15° WALL						
	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}	C_{14} (6)	C_7	C_8	C_9	C_{10}	C_{11}	C_{12}	C_{13}	C_{14}	NO.	C_{15}	C_{16}	C_{17}	C_{18}	C_{19}	LENGTH	NO.	C_{15}	C_{16}	C_{17}	C_{18}	C_{19}	LENGTH
3'	6'-2"	11'-9"	17'-5"	--	–	–	--	–	4'-6"	8'-7"	12'-9"	–	–	–	–	–	38	3'-10"	9"	7"	4'-0"	1'-0"	6'-7"	27	3'-10"	9"	9"	3'-10"	1'-0"	6'-7"
4'	6'-2"	11'-9"	17'-5"	23'-1"	–	–	--	–	4'-6"	8'-7"	12'-9"	16'-11"	–	–	–	–	49	4'-11"	10"	9"	5'-0"	1'-0"	7'-9"	35	4'-11"	10"	10"	4'-11"	1'-0"	7'-9"
5'	6'-2"	11'-9"	17'-5"	23'-1"	28'-9"	–	--	–	4'-6"	8'-7"	12'-9"	16'-11"	21'-0"	–	–	–	60	5'-11"	10"	9"	6'-0"	1'-0"	8'-9"	43	5'-11"	10"	11"	5'-10"	1'-0"	8'-9"
6'	6'-2"	11'-9"	17'-5"	23'-1"	28'-9"	34'-5"	--	–	4'-6"	8'-7"	12'-9"	16'-11"	21'-0"	25'-2"	–	–	72	6'-11"	10"	8"	7'-1"	1'-0"	9'-9"	52	6'-11"	10"	10"	6'-11"	1'-0"	9'-9"
7'	6'-2"	11'-9"	17'-5"	23'-1"	28'-9"	34'-5"	40'-0"	–	4'-6"	8'-7"	12'-9"	16'-11"	21'-0"	25'-2"	29'-4"	–	83	8'-0"	11"	9"	8'-2"	1'-0"	10'-11"	60	8'-0"	11"	11"	8'-0"	1'-0"	10'-11"
8'	6'-2"	11'-9"	17'-5"	23'-1"	28'-9"	34'-5"	40'-0"	47'-3"	4'-6"	8'-7"	12'-9"	16'-11"	21'-0"	25'-2"	29'-4"	33'-5"	94	9'-0"	11"	10"	9'-1"	1'-1"	12'-1"	68	9'-0"	11"	11"	9'-0"	1'-1"	12'-1"

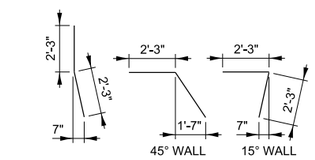
NUMBER OF HEADWALL PIPE RUNNERS FOR 1 END			
S	NO.	S	NO.
10'	5	23'	11
11'	5	24'	11
12'	6	25'	12
13'	6	26'	12
14'	7	27'	12
15'	7	28'	13
16'	8	29'	13
17'	8	30'	14
18'	8	31'	14
19'	9	32'	15
20'	9	33'	15
21'	10	34'	16
22'	10	35'	16

TABLE OF REINFORCEMENT BARS FOR MINIMUM "S" - ONE END

S	H	Y(E) BARS 12-#5 (2) LENGTH	R(E) BARS 6-#5 (2) LENGTH	Z(E) BARS #4@12" (1) No.	Z(E) BARS #4@12" (1) LENGTH	S(E) BARS #4@12" (1) No.	S(E) BARS #4@12" (1) LENGTH	T(E) BARS #4@12" (1) No.	T(E) BARS #4@12" (1) LENGTH	P(E) BARS 8-#5 (3) LENGTH
≥ 9'	3'	11'-4"	19'-10"	10	5'-4"	20	6'-10"	10	3'-0"	6'-8"
≥ 9'	4'	11'-4"	22'-10"	10	5'-4"	23	6'-10"	10	3'-0"	7'-8"
≥ 5'	5'	6'-9"	21'-1"	6	5'-4"	21	6'-10"	6	3'-0"	8'-8"
≥ 6'	6'	7'-10"	25'-2"	7	5'-4"	25	6'-10"	7	3'-0"	9'-8"
≥ 7'	7'	9'-1"	29'-3"	8	5'-4"	30	6'-10"	8	3'-0"	10'-8"
≥ 8'	8'	10'-4"	33'-4"	9	5'-4"	34	6'-10"	9	3'-0"	11'-8"

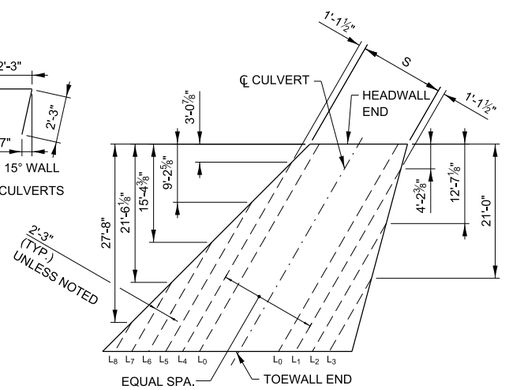


K(E) BARS K1 BARS

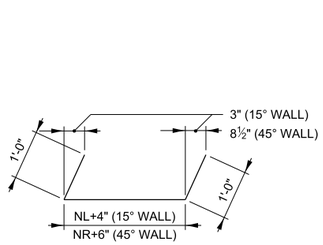


FOR BOX CULVERTS FOR PIPE CULVERTS

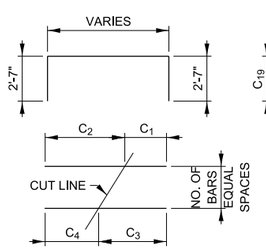
J(E) DOWELS



PIPE RUNNER LAYOUT

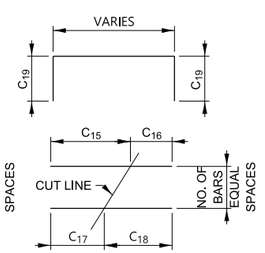


D(E) AND D1(E) BARS



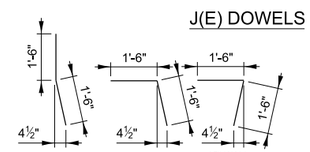
FIELD CUTTING DIAGRAM

F(E) AND F1(E) BARS



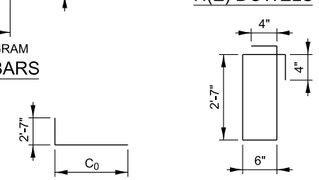
FIELD CUTTING DIAGRAM

V(E) AND V1(E) BARS



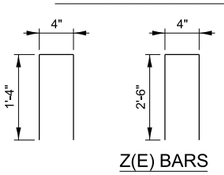
FOR BOX CULVERTS FOR PIPE CULVERTS

H(E) DOWELS



S(E) BARS FOR BOX CULVERTS FOR PIPE CULVERTS

T(E) BARS



Z(E) BARS

L(E) BARS

NOTES FOR TABLES:

1. THE NUMBER OF S(E), T(E) AND Z(E) BARS SHALL BE INCREASED BY 1 FOR EACH 1 FOOT OF INCREASE IN DIMENSION "W_1".
2. THE LENGTH OF R(E) AND Y(E) BARS SHALL BE INCREASED BY 1'-1⅛" FOR EACH 1 FOOT OF INCREASE IN DIMENSION "S".
3. THE NUMBER OF P(E) BARS SHOWN ARE FOR SINGLE SPAN PIPES OR BOX CULVERTS. THIS NUMBER SHALL BE INCREASED BY 4 FOR EACH MULTIPLE OF PIPE OR BOX ADDED.
4. THIS DIMENSION SHALL BE INCREASED BY 1'-1⅞" INCHES FOR EACH 1 FOOT INCREASE IN DIMENSION "S".
5. 2 BARS FOR 15° WALL, 2 BARS FOR 45° WALL.
6. THE LENGTH OF THIS BAR INCLUDES ONE 1'-6" MINIMUM LAP.

APPROVED BY:

Paul Kovacs

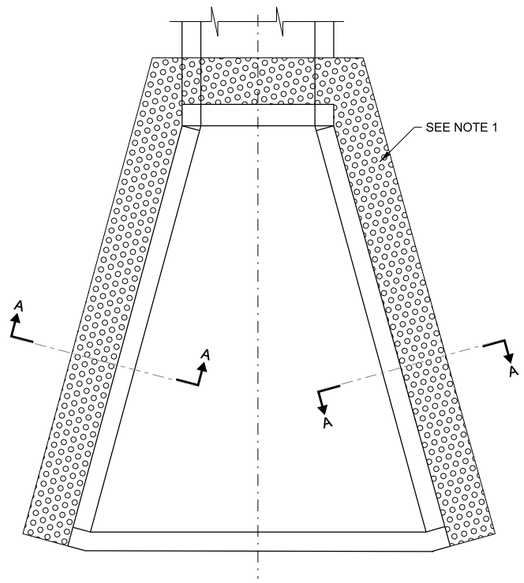
CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

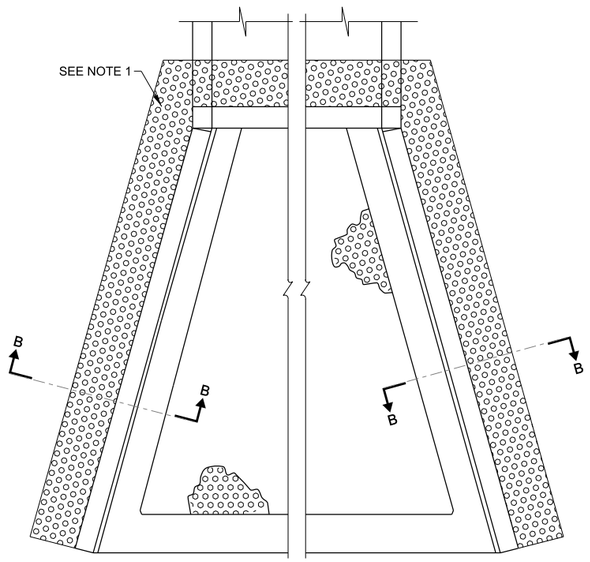
Illinois Tollway

END TREATMENT WITH PIPE RUNNERS, FOR SINGLE AND MULTIPLE CULVERTS 30° SKEW, 1:4 SLOPE, H≤8' AND S=VARIES

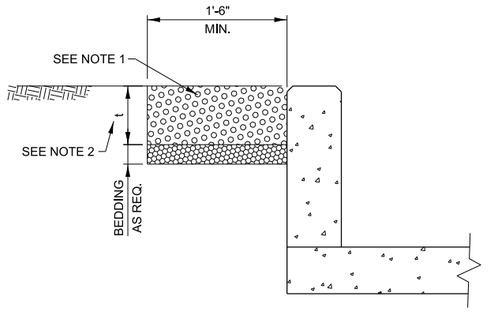
VERSION:	STANDARD:	SHEET:
2022-03	B18-06	2 OF 2



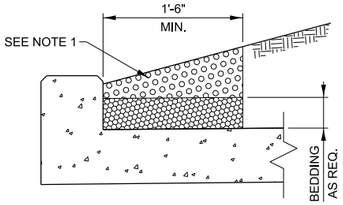
PLAN-0° SKEW, H≤4'



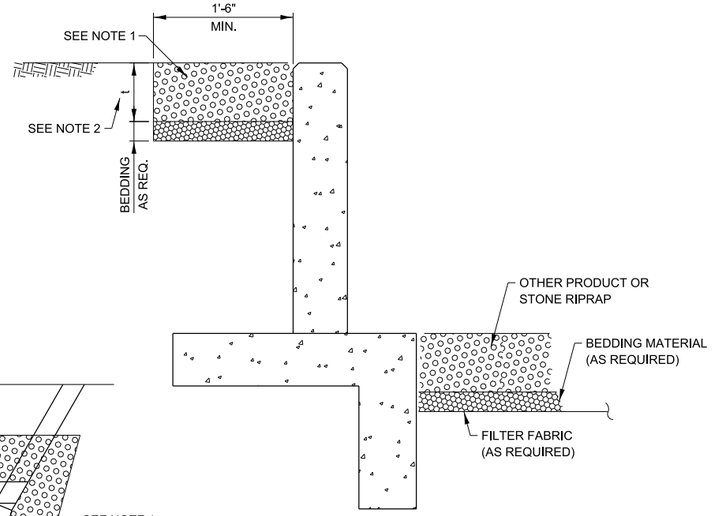
PLAN-0° SKEW, H≤8'



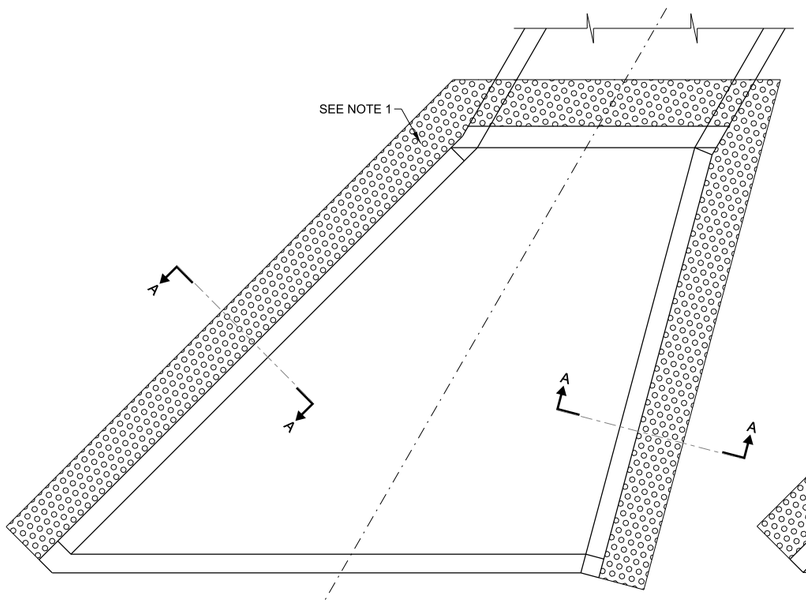
SECTION A-A



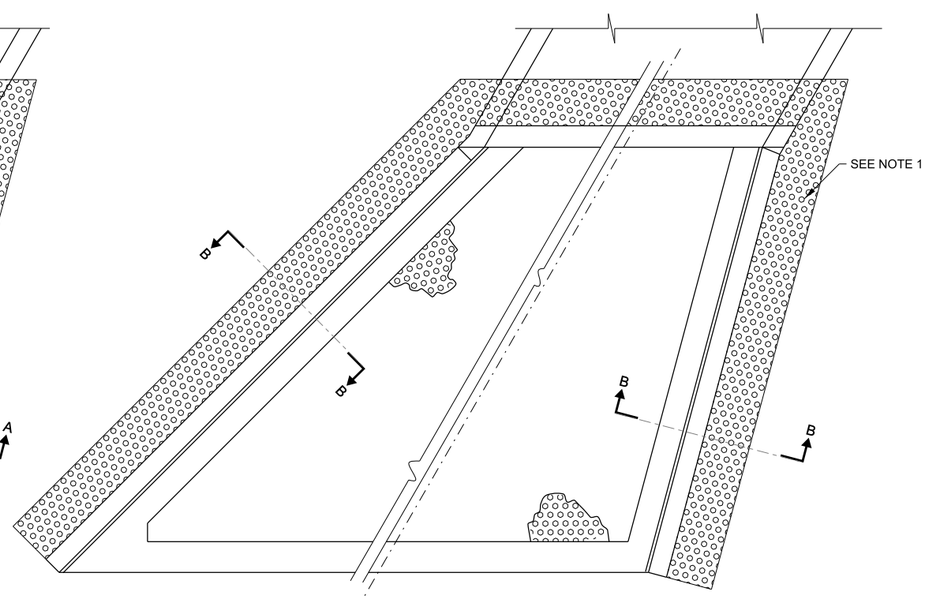
SECTION AT HEADWALL



SECTION B-B



PLAN-SKEW, H≤4'



PLAN-SKEW, H≤8'

NOTES:

1. THE PREFERRED METHOD FOR ACHIEVING EROSION PROTECTION AT END SECTIONS SHOULD BE THROUGH THE USE OF PRODUCTS THAT PROMOTE REVEGETATION WITHIN THE AREA OF CONCERN.
2. THICKNESS "t" WILL BE DETERMINED BY THE MANUFACTURER'S RECOMMENDATION FOR THE PRODUCT USED.
3. EROSION PROTECTION PLACEMENT SHALL BE INSTALLED FLUSH WITH ADJACENT GRADE.
4. FOR USE WITH STANDARDS B10 TO B18.
5. STONE RIPRAP SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND DRAINAGE DESIGN MANUAL.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

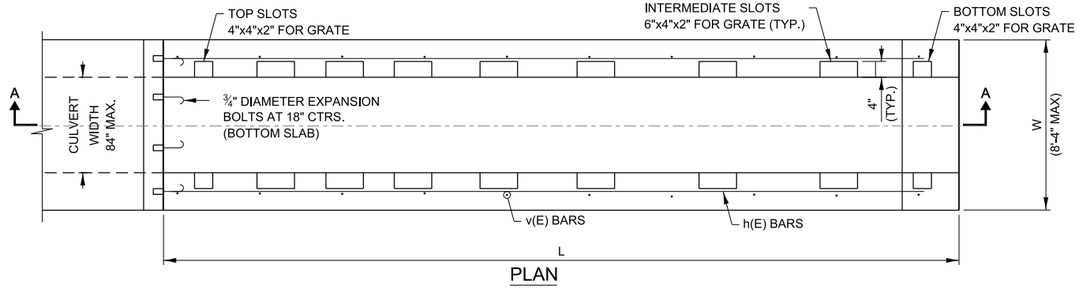
DATE: 03/01/2015

REVISIONS	
DATE	DESCRIPTION
03-11-2015	REVISED NOTES
03-01-2010	REVISED EROSION PROTECTION AND NOTES

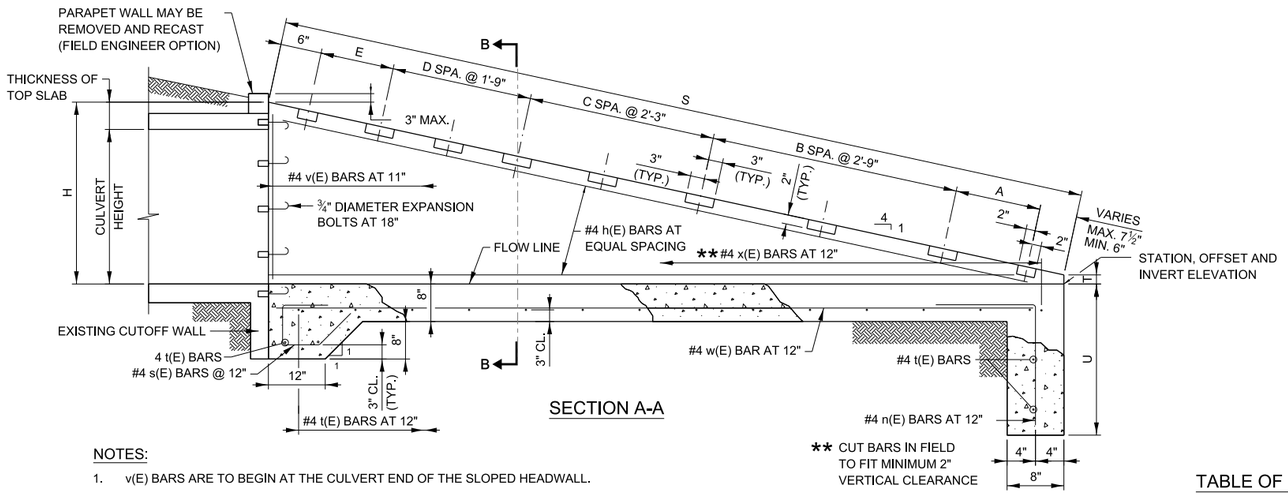
Illinois Tollway

EROSION PROTECTION

VERSION:	STANDARD:	SHEET:
2015-03	B19-02	1 OF 1



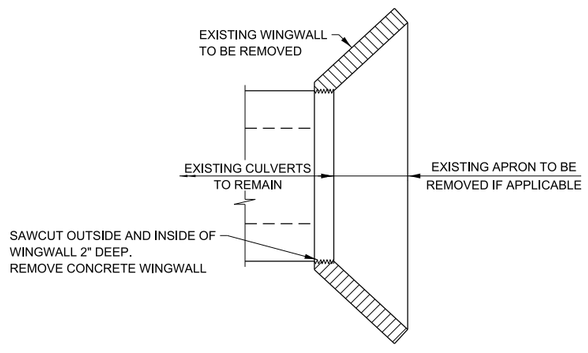
PLAN



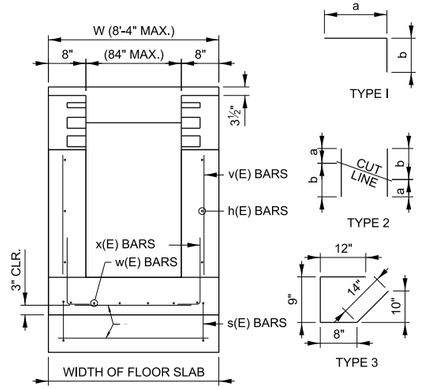
SECTION A-A

NOTES:

1. v(E) BARS ARE TO BEGIN AT THE CULVERT END OF THE SLOPED HEADWALL.
2. ¾" DIAMETER EXPANSION BOLTS SHALL CONSIST OF SELF DRILLING EXPANSION SHIELDS AND ¾" DIAMETER HOOKED BOLTS. HOOKED BOLTS SHALL EXTEND A MINIMUM OF 9" INTO NEW CONCRETE WITH ANCHORAGE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. MINIMUM CERTIFIED PROOF LOAD = 4,080 LBS.



REMOVAL DETAIL



SECTION B-B
SINGLE BOX ≤ 84" WIDTH

DIMENSIONS AND QUANTITIES IN TWO WINGWALLS 1:4 SLOPE

CULVERT HEIGHT	DIMENSIONS							NO. OF SPACES			CONCRETE CLASS SI * C.Y.	REINF. BARS * (POUND)
	H	L	S	T	U	A	E	B	C	D		
36"	3'-8"	14'-0"	14'-5⅛"	2"	2'-8"	2'-2"	2'-2"	-	4	-	1.33	188
42"	4'-3"	16'-4"	16'-10"	2"	3'-2"	2'-8"	2'-2"	4	-	-	1.78	259
48"	4'-9"	18'-4"	18'-10¾"	2"	3'-2"	2'-2"	2'-2"	-	6	-	2.23	304
54"	5'-3"	20'-4"	20'-11½"	2"	3'-6"	2'-2"	2'-2"	4	2	-	2.72	379
60"	5'-10"	22'-8"	23'-4⅜"	2"	3'-6"	2'-2"	2'-2"	-	8	-	3.36	468

TABLE OF BARS IN ONE WINGWALL 1:4 SLOPE

NO. 4 REINFORCEMENT BARS						
CULVERT HEIGHT	MARK(E)	TYPE	NO. REQ'D	LENGTH	a	b
36"	h 36 3/4" EXP BLT v 36 x 36	STR. — 2 1	4 3 7 15	13'-8" — 5'-6" 3'-2"	 2'-0" 2'-2"	 3'-6" 1'-0"
42"	h 42 3/4" EXP BLT v 42 x 42	STR. — 2 1	5 4 10 17	16'-0" — 6'-0" 3'-2"	 1'-11" 2'-2"	 4'-1" 1'-0"
48"	h 48 3/4" EXP BLT v 48 x 48	STR. — 2 1	5 4 13 19	18'-0" — 6'-5" 3'-2"	 1'-10" 2'-2"	 4'-7" 1'-0"
54"	h 54 3/4" EXP BLT v 54 x 54	STR. — 2 1	6 4 15 21	20'-0" — 6'-11" 3'-2"	 1'-10" 2'-2"	 5'-1" 1'-0"
60"	h 60 3/4" EXP BLT v 60 x 60	STR. — 2 1	7 5 17 23	22'-4" — 7'-7" 3'-2"	 1'-11" 2'-2"	 5'-8" 1'-0"

TABLE OF BARS IN SLAB 1:4 SLOPE (PER FT. OF FLOOR SLAB WIDTH)

NO. 4 REINFORCEMENT BARS								
CULVERT HEIGHT	MARK(E)	TYPE	NO. REQ'D	LENGTH	a	b	REINF. BAR LB. *	CONCRETE CLASS SI (C.Y.) *
36"	n 36 w 36 t 36 ¾" EXP BLT s 36	1 STR. STR — 3	1 1 18 0.67 1	4'-1" 13'-5" W-(0'-4") — 3'-7"	2'-1"	2'-0"	27	.45
42"	n 42 w 42 t 42 ¾" EXP BLT s 42	1 STR. STR — 3	1 1 20 0.67 1	4'-7" 15'-9" W-(0'-4") — 3'-7"	2'-7"	2'-0"	32	.53
48"	n 48 w 48 t 48 ¾" EXP BLT s 48	1 STR. STR — 3	1 1 22 0.67 1	4'-7" 17'-9" W-(0'-4") — 3'-7"	2'-7"	2'-0"	33	.58
54"	n 54 w 54 t 54 ¾" EXP BLT s 54	1 STR. STR — 3	1 1 24 0.67 1	4'-11" 19'-9" W-(0'-4") — 3'-7"	2'-11"	2'-0"	37	.64
60"	n 60 w 60 t 60 ¾" EXP BLT s 60	1 STR. STR — 3	1 1 26 0.67 1	4'-11" 22'-1" W-(0'-4") — 3'-7"	2'-11"	2'-0"	39	.70

NOTES:

1. TYPE 2 "v(E)" BARS SHALL BE ORDERED FULL LENGTH AND CUT IN THE FIELD. THE REMAINING PORTION OF THE "v(E)" BARS SHALL BE USED IN THE OTHER WALL.
2. THE LONG LEG OF THE "n(E)" BAR SHALL BE VERTICAL.
3. SEE STANDARD B23 FOR GRATING DETAILS.

GENERAL NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" X 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.
2. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 2" UNLESS OTHERWISE SHOWN.
3. CONCRETE QUANTITIES SHOWN ARE FOR REINFORCED CONCRETE BOX CULVERT HEADWALLS.
4. PAY ITEMS ARE IDENTIFIED BY AN ASTERISK (*).
5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
6. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

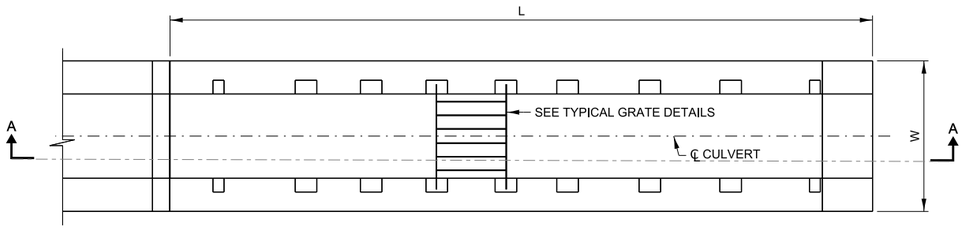
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL TO WINGWALL IN
	REMOVAL DETAIL AND REVISED REBAR
	TABLE
03-31-2016	STATION, OFFSET & INVERT ELEVATION
	MOVED

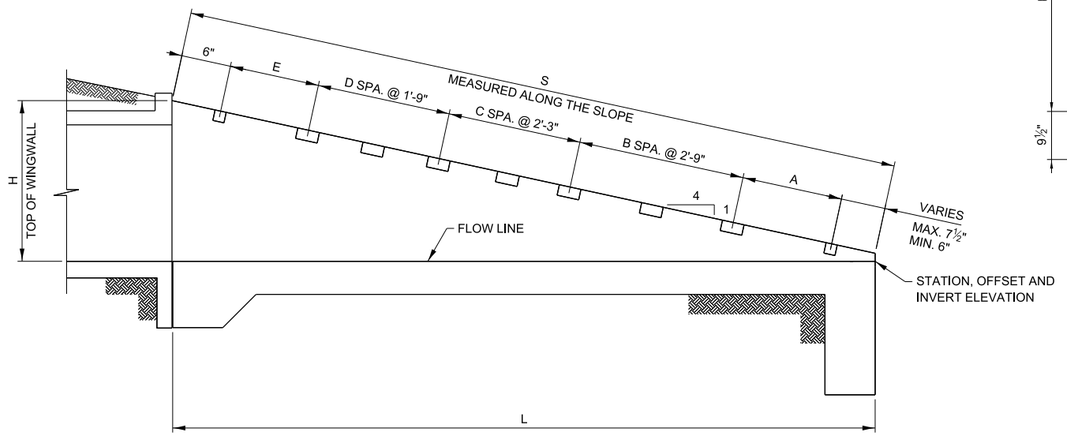
Illinois Tollway

HEADWALL TYPE IV CONCRETE BOX CULVERT ≤ 84" WIDTH

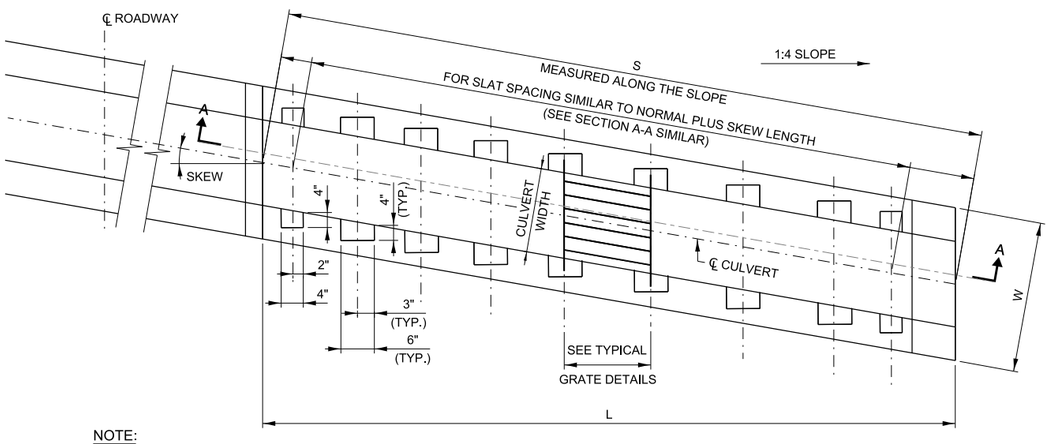
VERSION:	STANDARD:	SHEET:
2022-03	B20-06	1 OF 1



PLAN VIEW (NO SKEW)
SINGLE BOX CULVERT ≤ 84" WIDE

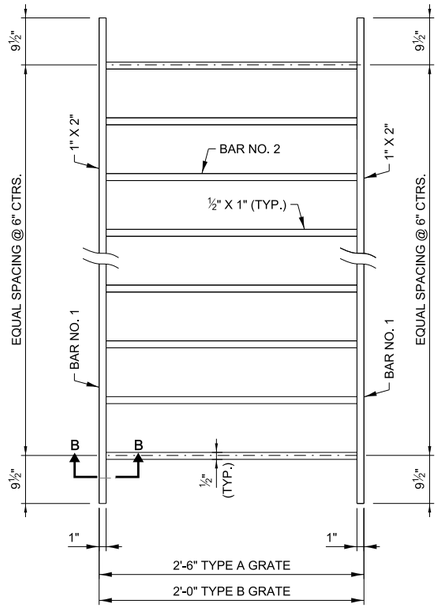


SECTION A-A
END TREATMENT - MULTIPLE OR SINGLE CELL
BOX CULVERT

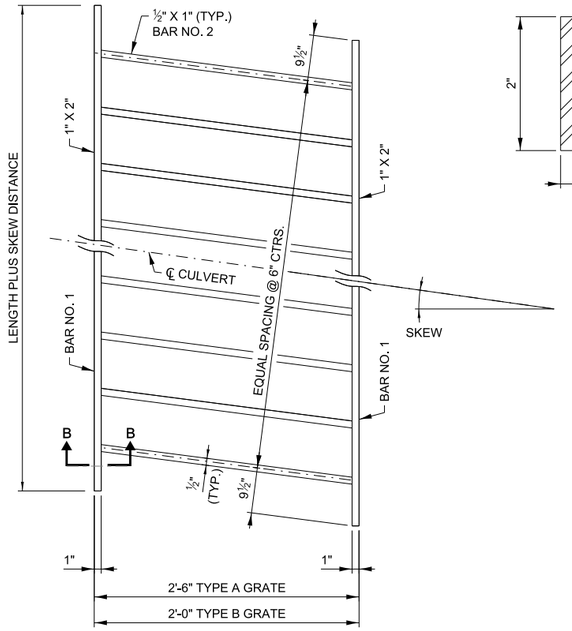


NOTE:
REINFORCEMENT BARS AND GRATE SPACING ARE SIMILAR TO BOX CULVERT AT NORMAL (NO SKEW).

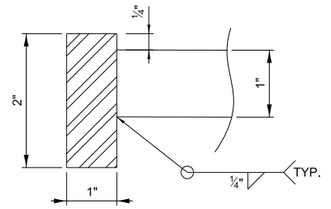
PLAN VIEW (WITH SKEW)
SINGLE BOX CULVERT ≤ 84" WIDE



TYPICAL GRATE
(NO SKEW)



GRATE
(WITH SKEW)



SECTION B-B

GRATING DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE IV BASED ON A 1 FOOT WIDTH, 1:4 SLOPE, AND NO SKEW

CULVERT HEIGHT	GRATES		BARS FOR ONE GRATE				GRATING (LBS.) *
	NUMBER REQUIRED	TYPE REQ'D	BAR NO. 1		BAR NO. 2		
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH	EACH GRATE
36"	6	B	2	W-0.75	$\frac{W-1.33}{0.5}$-1	1'-10"	19.9W - 21.6
42"	5	A	2	W-0.75	$\frac{W-1.33}{0.5}$-1	2'-4"	21.5W - 24.7
	1	B	2			1'-10"	19.9W - 21.6
48"	8	B	2	W-0.75	$\frac{W-1.33}{0.5}$-1	1'-10"	19.9W - 21.6
54"	4	A	2	W-0.75	$\frac{W-1.33}{0.5}$-1	2'-4"	21.5W - 24.7
	4	B	2			1'-10"	19.9W - 21.6
60"	10	B	2	W-0.75	$\frac{W-1.33}{0.5}$-1	1'-10"	19.9W - 21.6

DIMENSIONS "S" FOR SLOPE 1:4 FOR VARIOUS CULVERT SIZES AND SKEWS

CULVERT HEIGHT	NO SKEW	≤ 10°	10° ≤ 20°	20° ≤ 30°
36"	14'-5⅛"	14'-7¾"	15'-4¼"	16'-8"
42"	16'-10"	17'-1"	17'-11"	19'-5¼"
48"	18'-10¾"	19'-2¼"	20'-1⅛"	21'-10"
54"	20'-11½"	21'-3⅜"	22'-3⅝"	24'-2⅜"
60"	23'-4⅜"	23'-8¾"	24'-10⅜"	26'-11¾"

GENERAL NOTES:

1. ALL TABLE DIMENSIONS AND QUANTITIES ARE FOR SINGLE BOX CULVERT HEADWALLS. TO ADAPT ANY OF THESE TABLES FOR DOUBLE BOX CULVERTS, DOUBLE THE NUMBER OF GRATES REQUIRED AND ADD AN ADDITIONAL WALL. (WALL THICKNESS SHALL BE SAME AS THE CENTER WALL THICKNESS OF THE BOX CULVERT).
2. FOR QUANTITY CALCULATIONS DIMENSION "W" SHALL BE MEASURED IN FEET.
3. QUANTITIES FOR SKEWED HEADWALLS NOT SHOWN.
4. PAY ITEMS ARE IDENTIFIED BY AN ASTERISK (*).
5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
6. GRATING IS DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD.

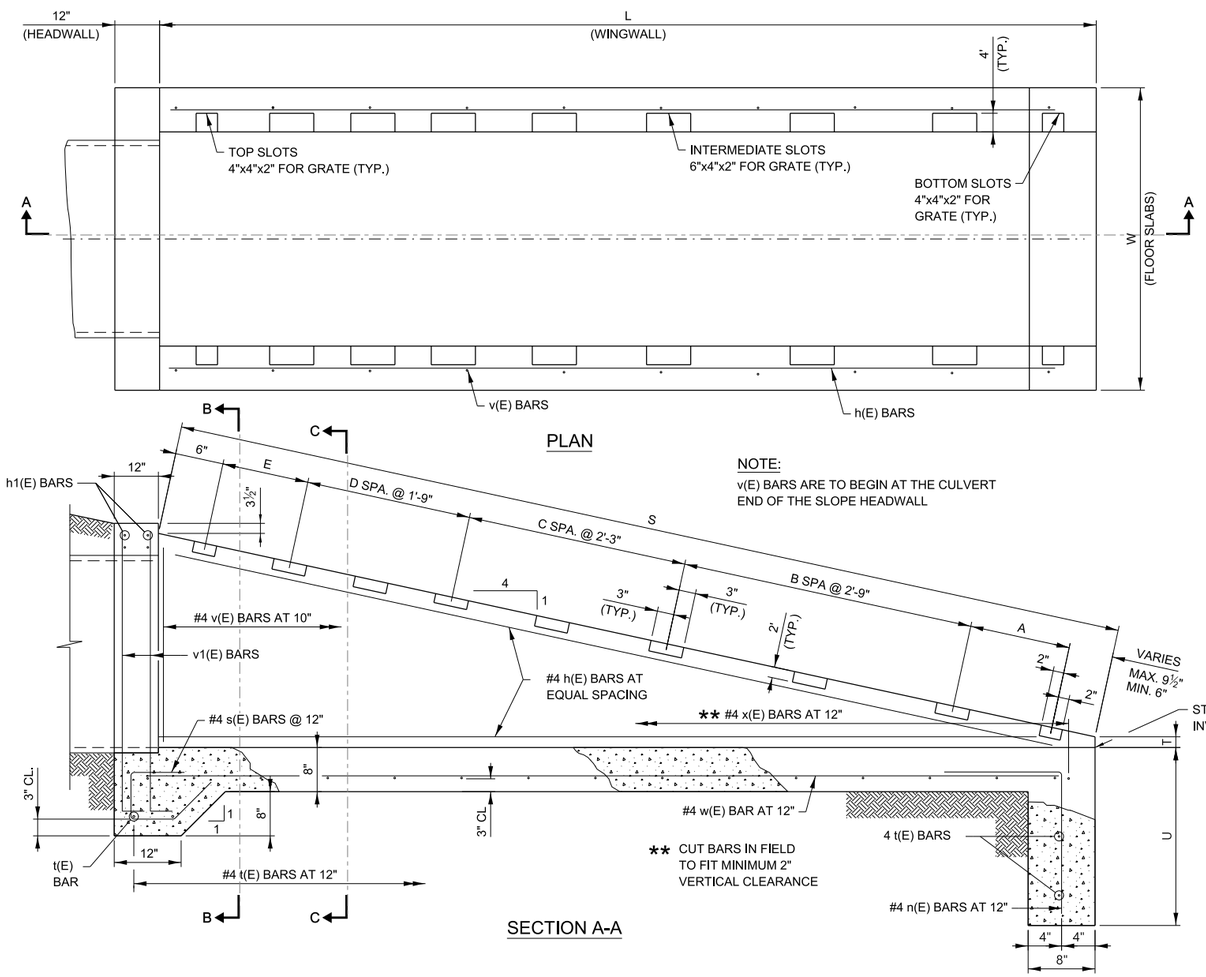
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED BAR NO. 1 THICKNESS AND WEIGHT OF HEADWALL GRATES
03-31-2016	STATION, OFFSET AND INVERT ELEVATION MOVED
02-07-2012	DELETED SECTION FROM PLAN VIEW

Illinois Tollway

GRATING FOR HEADWALL TYPE IV BOX CULVERT ≤ 84" WIDTH

VERSION:	STANDARD:	SHEET:
2022-03	B21-04	1 OF 1

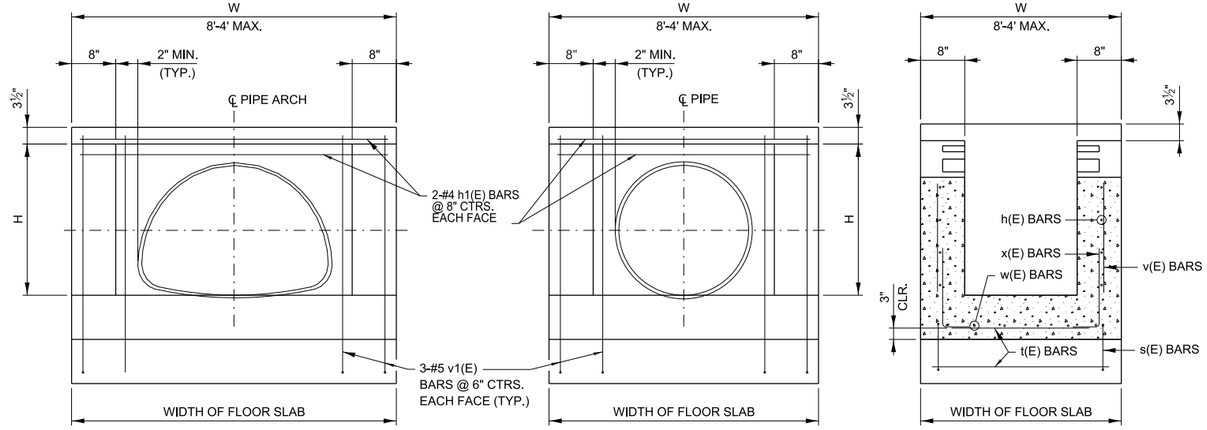


PLAN

NOTE:

v(E) BARS ARE TO BEGIN AT THE CULVERT END OF THE SLOPE HEADWALL

SECTION A-A



SECTION B-B
ELLIPTICAL PIPE OR PIPE-ARCH

SECTION B-B
CIRCULAR PIPE

SECTION C-C

DIMENSIONS AND QUANTITIES IN TWO WINGWALLS 1:4 SLOPE

PIPE-ARCH ELLIPTICAL PIPE (SPAN ≤ 77")	CIRCULAR PIPE (DIAMETER)	DIMENSIONS							NO. OF SPACES			CONCRETE CLASS SI * CY.	REINF. BAR * (POUND)
		H	L	S	T	U	A	E	B	C	D		
RISE ≤ 30"		3'-2"	12'-0"	12'-4½"	2"	2'-8"	2'-2"	2'-2"	-	3	-	.98	151
RISE ≤ 36"		3'-8"	14'-0"	14'-5⅛"	2"	2'-8"	2'-2"	2'-2"	-	4	-	1.33	188
RISE ≤ 42"		4'-3"	16'-4"	16'-10"	2"	3'-2"	2'-8"	2'-2"	4	-	-	1.78	251
RISE ≤ 48"		4'-9"	18'-4"	18'-10¾"	2"	3'-2"	2'-2"	2'-2"	-	6	-	2.23	295
RISE ≤ 54"	54"	5'-3"	20'-4"	20'-11½"	2"	3'-6"	2'-2"	2'-2"	4	2	-	2.72	370
RISE ≤ 60"	60"	5'-10"	22'-8"	23'-4¾"	2"	3'-6"	2'-2"	2'-2"	-	8	-	3.36	428
	66"	6'-4"	24'-8"	25'-5⅛"	2"	3'-6"	2'-2"	2'-2"	4	4	-	3.96	517

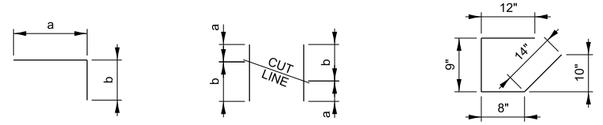


TABLE OF BARS IN ONE WINGWALL 1:4 SLOPE

NO. 4 REINFORCEMENT BARS						
H	MARK(E)	TYPE	NO. REQ'D	LENGTH	a	b
3'-2"	H 30	STR.	4	11'-8"		
	V 30	2	6	5'-0"	2'-0"	3'-0"
	X 30	1	13	3'-2"	2'-2"	1'-0"
3'-8"	H 36	STR.	4	13'-8"		
	V 36	2	8	5'-6"	2'-0"	3'-6"
	X 36	1	15	3'-2"	2'-2"	1'-0"
4'-3"	H 42	STR.	5	16'-0"		
	V 42	2	11	6'-0"	1'-11"	4'-1"
	X 42	1	17	3'-2"	2'-2"	1'-0"
4'-9"	H 48	STR.	5	18'-0"		
	V 48	2	14	6'-5"	1'-10"	4'-7"
	X 48	1	19	3'-2"	2'-2"	1'-0"
5'-3"	H 54	STR.	6	20'-0"		
	V 54	2	16	6'-11"	1'-10"	5'-1"
	X 54	1	21	3'-2"	2'-2"	1'-0"
5'-10"	H 60	STR.	6	22'-4"		
	V 60	2	18	7'-7"	1'-11"	5'-8"
	X 60	1	23	3'-2"	2'-2"	1'-0"
6'-4"	H 66	STR.	7	24'-4"		
	V 66	2	21	8'-1"	1'-11"	6'-2"
	X 66	1	25	3'-2"	2'-2"	1'-0"

TABLE OF BARS IN SLAB 1:4 SLOPE (PER FT. OF FLOOR SLAB WIDTH)

NO. 4 REINFORCEMENT BARS								
H	MARK(E)	TYPE	NO. REQ'D	LENGTH	a	b	REINF. BARS (POUND) *	CONCRETE CLASS SI (C.Y.) *
3'-2"	h 131	STR.	4	W-(0'-4")				
	v 131	1	8	5'-0"	4'-4"	8"		
	n 30	1	1	4'-1"	2'-1"	2'-0"	52	.38
	w 30	STR.	1	12'-1"				
	t 30	STR	15	W-(0'-4")				
	s 30	3	1	3'-7"				
3'-8"	h 136	STR.	4	W-(0'-4")				
	v 136	1	8	5'-6"	4'-10"	8"		
	n 36	1	1	4'-1"	2'-1"	2'-0"	58	.43
	w 36	STR.	1	14'-1"				
	t 36	STR	19	W-(0'-4")				
	s 36	3	1	3'-7"				
4'-3"	h 142	STR.	4	W-(0'-4")				
	v 142	1	8	6'-1"	5'-5"	8"		
	n 42	1	1	4'-7"	2'-7"	2'-0"	65	.50
	w 42	STR.	1	16'-5"				
	t 42	STR	21	W-(0'-4")				
	s 42	3	1	3'-7"				
4'-9"	h 148	STR.	4	W-(0'-4")				
	v 148	1	8	6'-7"	5'-11"	8"		
	n 48	1	1	4'-7"	2'-7"	2'-0"	70	.55
	w 48	STR.	1	18'-5"				
	t 48	STR	23	W-(0'-4")				
	s 48	3	1	3'-7"				
5'-3"	h 154	STR.	4	W-(0'-4")				
	v 154	1	8	7'-1"	6'-5"	8"		
	n 54	1	1	4'-11"	2'-11"	2'-0"	76	.60
	w 54	STR.	1	20'-5"				
	t 54	STR	25	W-(0'-4")				
	s 54	3	1	3'-7"				
5'-10"	h 160	STR.	4	W-(0'-4")				
	v 160	1	8	7'-8"	7'-0"	8"		
	n 60	1	1	4'-11"	2'-11"	2'-0"	82	.66
	w 60	STR.	1	22'-9"				
	t 60	STR	27	W-(0'-4")				
	s 60	3	1	3'-7"				
6'-4"	h 166	STR.	4	W-(0'-4")				
	v 166	1	8	8'-2"	7'-6"	8"		
	n 66	1	1	4'-11"	2'-11"	2'-0"	87	.71
	w 66	STR.	1	24'-9"				
	t 66	STR	29	W-(0'-4")				
	s 4	3	1	3'-7"				

GENERAL NOTES:

1. TYPE 2 "v(E)" BARS SHALL BE ORDERED FULL LENGTH AND CUT IN THE FIELD. THE REMAINING PORTION OF THE "v(E)" BARS SHALL BE USED IN THE OTHER WALL.
2. THE LONG LEG OF THE "n(E)" BARS SHALL BE VERTICAL.
3. PAY ITEMS ARE IDENTIFIED BY AN ASTERISK (*).
4. SEE STANDARD B23 FOR GRATING DETAILS.
5. ALL CONCRETE SHALL BE CLASS SI.
6. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
7. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E).

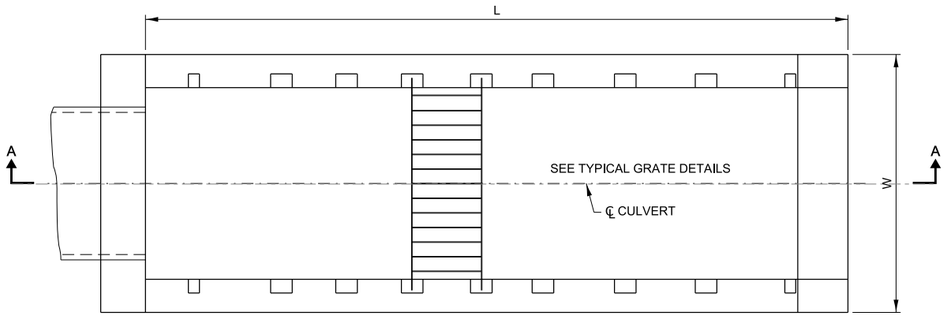
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL THICKNESS, REBAG
	SPACING AND REBAR TABLE
03-31-2016	STATION, OFFSET AND INVERT
	ELEVATION
03-11-2015	REVISED NOTES

Illinois Tollway

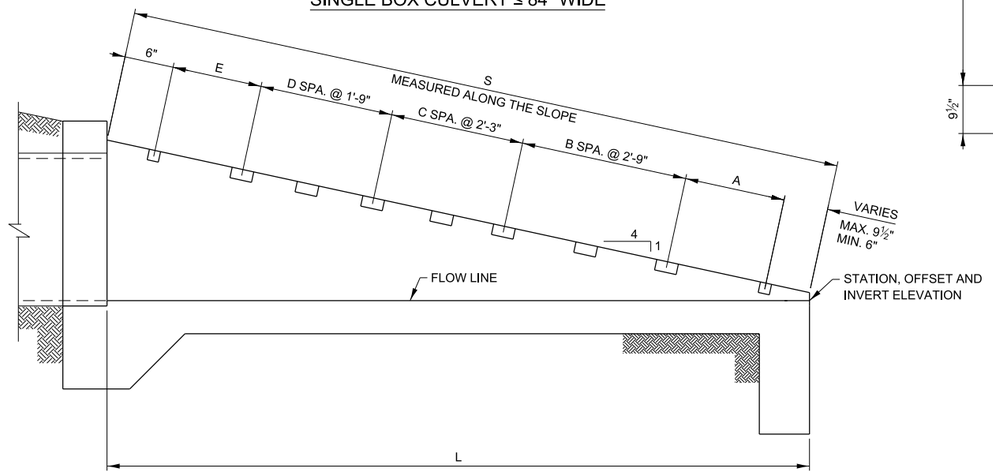
HEADWALL TYPE IV METAL PIPE & PIPE-ARCH CULVERTS

VERSION:	STANDARD:	SHEET:
2022-03	B22-05	1 OF 1



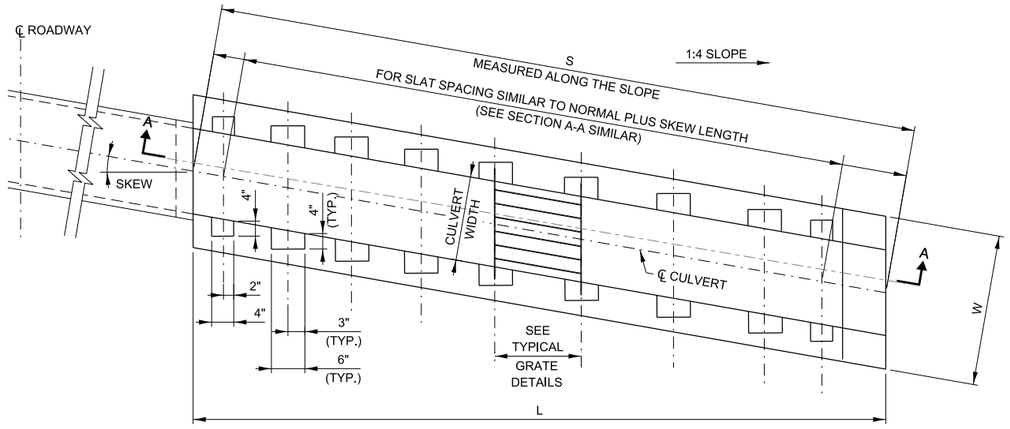
PLAN VIEW (NO SKEW)

SINGLE BOX CULVERT ≤ 84" WIDE



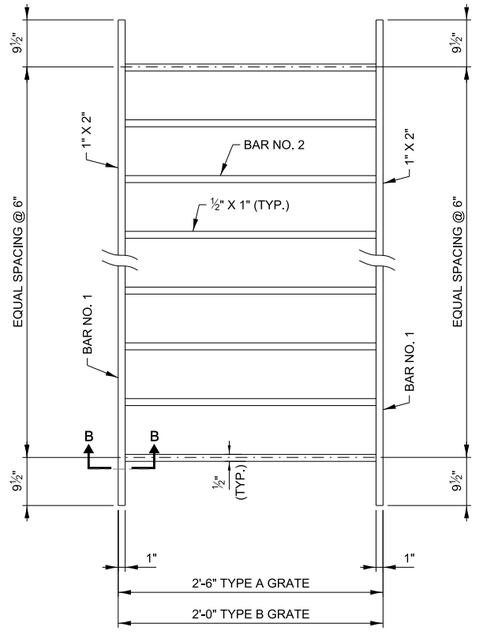
SECTION A-A

END TREATMENT - MULTIPLE OR SINGLE CELL BOX CULVERT

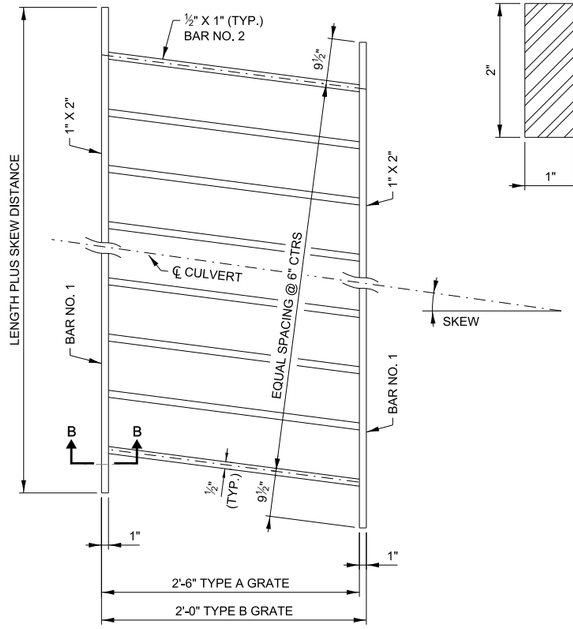


PLAN VIEW (WITH SKEW)

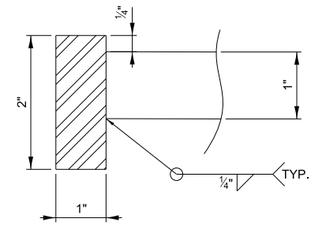
NOTE:
REINFORCEMENT BARS AND GRATE SPACING ARE SIMILAR TO BOX CULVERT AT NORMAL (NO SKEW).



GRATE DETAILS
(WITH NO SKEW)



GRATE DETAILS
(WITH SKEW)



SECTION B-B

GRATING DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE IV
BASED ON A 1 FOOT WIDTH, 1:4 SLOPE AND SKEW

H	GRATES		BARS FOR ONE GRATE				GRATING (POUND) *
			BAR NO. 1		BAR NO. 2		
	NUMBER REQUIRED	TYPE REQ'D.	BARS REQ'D.	LENGTH	BARS REQ'D.	LENGTH	EACH GRATE
3'-2"	5	B	2	W-.75	$\frac{W-1.33}{0.5}$ -1	1'-10"	19.9W - 21.6
3'-8"	6	B	2	W-.75	$\frac{W-1.33}{0.5}$ -1	1'-10"	19.9W - 21.6
4'-3"	5	A	2	W-.75	$\frac{W-1.33}{0.5}$ -1	2'-4"	21.5W - 24.7
	1	B	2			1'-10"	19.9W - 21.6
4'-9"	8	B	2	W-.75	$\frac{W-1.33}{0.5}$ -1	1'-10"	19.9W - 21.6
5'-3"	4	A	2	W-.75	$\frac{W-1.33}{0.5}$ -1	2'-4"	21.5W - 24.7
	4	B	2			1'-10"	19.9W - 21.6
5'-10"	10	B	2	W-.75	$\frac{W-1.33}{0.5}$ -1	1'-10"	19.9W - 21.6
6'-4"	4	A	2	W-.75	$\frac{W-1.33}{0.5}$ -1	2'-4"	21.5W - 24.7
	6	B	2			1'-10"	19.9W - 21.6

DIMENSIONS "S" FOR SLOPE 1:4
FOR VARIOUS CULVERT SIZES AND SKEWS

H	NO SKEW	≤ 10°	10° ≤ 20°	20° ≤ 30°
3'-2"	12'-4½"	12'-6¾"	13'-2"	14'-3⅜"
3'-8"	14'-5¼"	14'-7¾"	15'-4¼"	16'-8"
4'-3"	16'-10"	17'-1"	17'-11"	19'-5¼"
4'-9"	18'-10¾"	19'-2¼"	20'-1¼"	21'-10"
5'-3"	20'-11½"	21'-3⅜"	22'-3⅝"	24'-2¾"
5'-10"	23'-4⅜"	23'-8¾"	24'-10⅜"	26'-11¾"
6'-4"	25'-5⅛"	25'-9¾"	27'-0⅝"	29'-4¼"

GENERAL NOTES:

1. ALL TABLE DIMENSIONS AND QUANTITIES ARE FOR SINGLE CULVERT HEADWALLS. TO ADAPT ANY OF THESE TABLES FOR DOUBLE CULVERTS, DOUBLE THE NUMBER OF GRATES REQUIRED AND ADD AN ADDITIONAL WALL. (WALL THICKNESS SHALL BE SAME AS THE CENTER WALL THICKNESS OF THE CULVERT.)
2. FOR QUANTITY CALCULATIONS DIMENSION "W" SHALL BE MEASURED IN FEET.
3. QUANTITIES FOR SKEWED HEADWALLS NOT SHOWN.
4. PAY ITEMS ARE IDENTIFIED BY AN ASTERISK (*).
5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
6. GRATING IS DESIGNED FOR A TRANSVERSING LOAD OF 1,800 POUNDS AT YIELD.

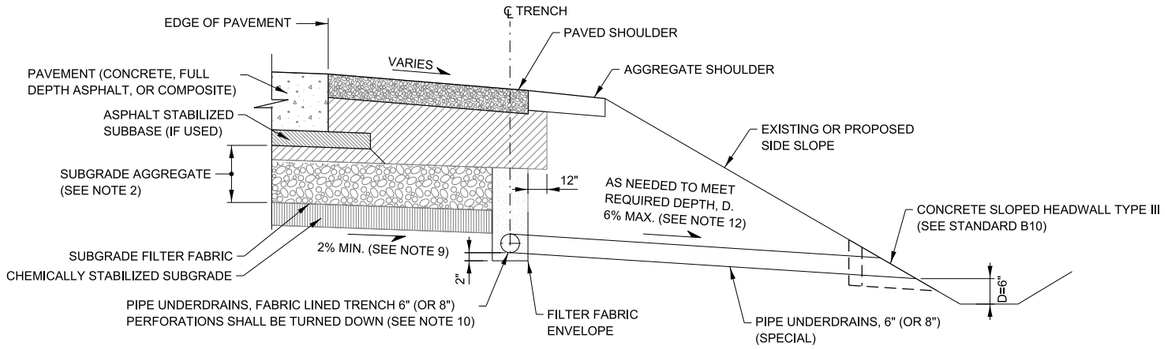
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2022

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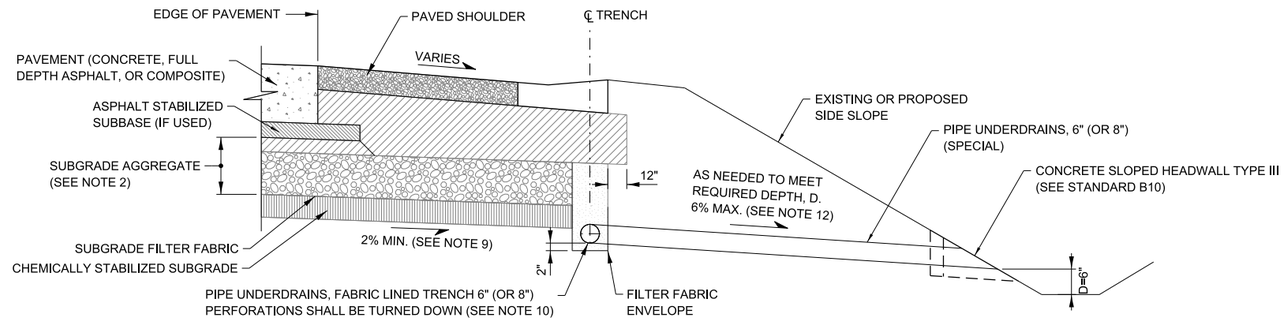
REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED BAR NO. 1 THICKNESS AND WEIGHT OF HEADWALL GRATES
03-31-2016	STATION, OFFSET AND INVERT ELEVATION MOVED
02-07-2012	DELETED SECTION VIEW FROM SKEW PLAN

GRATING FOR HEADWALL TYPE IV PIPE AND PIPE-ARCH CULVERTS

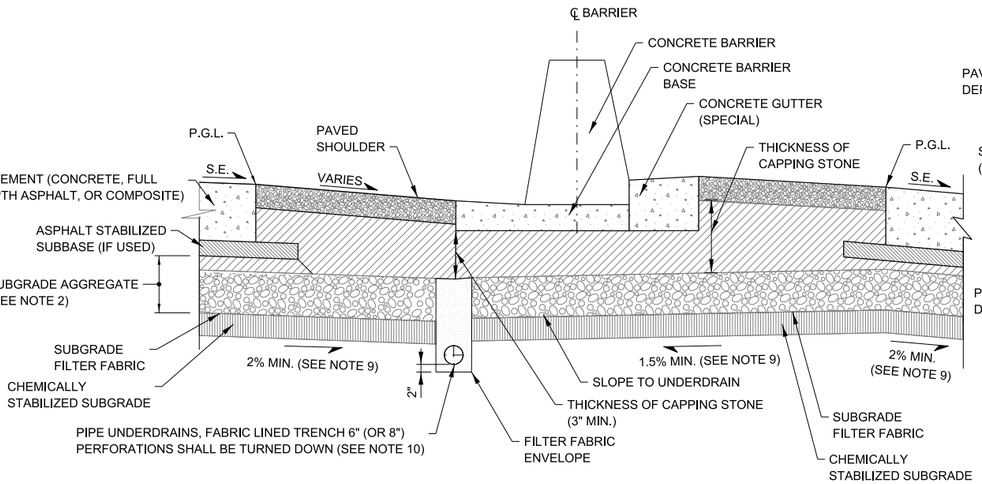
VERSION: 2022-03 | STANDARD: B23-04 | SHEET: 1 OF 1



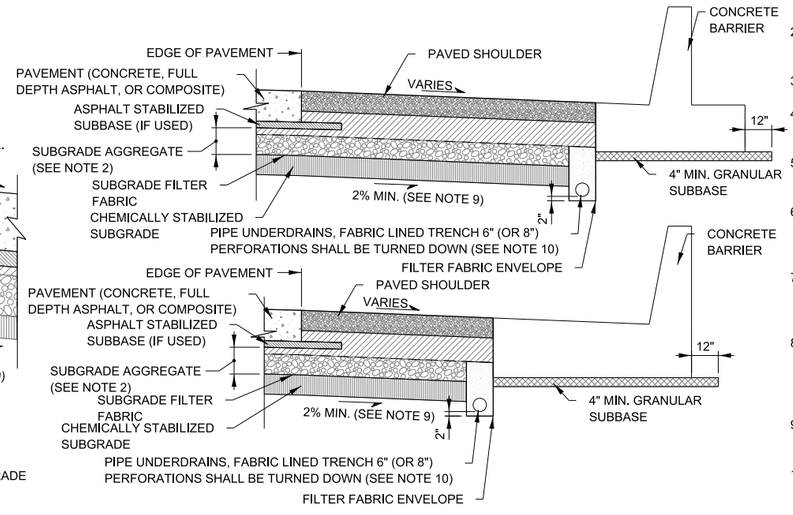
LOCATIONS WITHOUT GUTTER



LOCATIONS WITH GUTTER

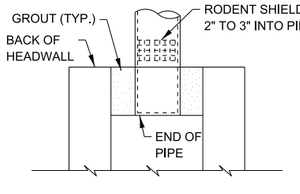


LOCATIONS WITH VARIABLE HEIGHT DOUBLE FACE BARRIER

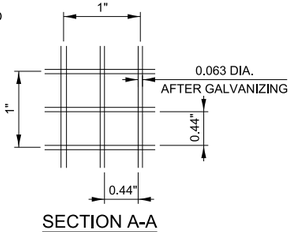


LOCATIONS WITH BARRIER

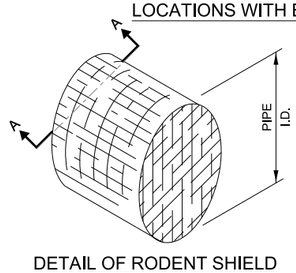
MAXIMUM ALLOWABLE DRAINAGE DISTANCE TO OUTLET OR SEPARATION DISTANCE BETWEEN OUTLETS	
ROADWAY PROFILE GRADE (%)	DISTANCE
≤ 1	250 FT.
BETWEEN 1 AND 2	375 FT.
≥ 2	500 FT. (NOTE 5)



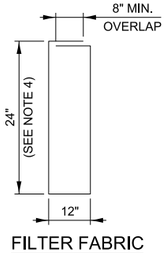
RODENT SHIELD PLACEMENT



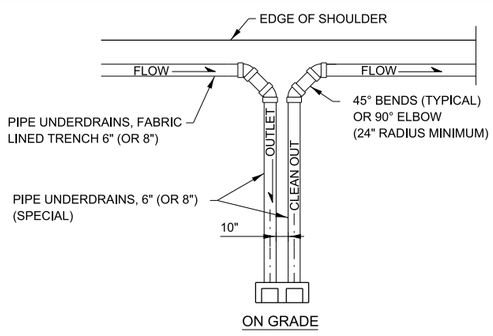
SECTION A-A



DETAIL OF RODENT SHIELD

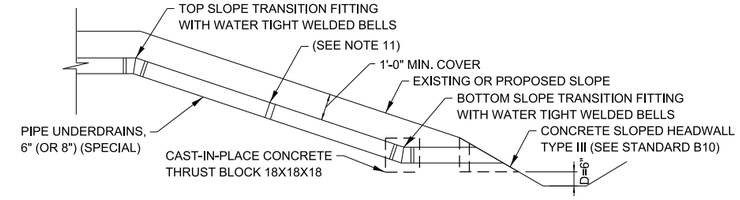


FILTER FABRIC ENVELOPE



DETAIL OF PIPE UNDERDRAIN OUTLETS

(SEE NOTE 7)



DETAIL OF PIPE UNDERDRAIN OUTLET ON HIGH FILL SLOPE

NOTES FOR PIPE UNDERDRAIN

1. FOR NEW CONSTRUCTION OR WIDENING PROJECTS, THE PIPE UNDERDRAIN INSTALLATION SHALL OCCUR AFTER SUBGRADE HAS BEEN PREPARED AND AFTER LIFT OF PGE BASE IS PLACED AND BEFORE 3" AND VARIES CA-6 CAPPING STONE IS PLACED. FOR PAVEMENT RUBBLIZATION PROJECTS, THE PIPE UNDERDRAIN SHALL BE INSTALLED PRIOR TO RUBBLIZATION.
2. SUBGRADE AGGREGATE SHALL CONSIST OF A 3" AND VARIES CA-6 CAP ABOVE A PGE BASE, THICKNESS AS NOTED IN THE PLANS.
3. ON SUPERELEVATED CURVES PLACE LONGITUDINAL UNDERDRAIN ON LOW SIDE ONLY.
4. IN AREAS WHERE ROADWAY LONGITUDINAL GRADE IS LESS THAN 0.5%, DIMENSION WILL INCREASE AS NECESSARY TO MAINTAIN MINIMUM 0.5% SLOPE IN PIPE UNDERDRAIN.
5. IF 500' MAXIMUM DISTANCE IS EXCEEDED, PIPE UNDERDRAIN SHALL BE INCREASED TO 8" DIAMETER AND TRENCH WIDTH INCREASED TO 16".
6. AT OUTLET LOCATIONS, PIPE UNDERDRAINS SHALL SEPARATE SUFFICIENTLY TO PROVIDE SPACE FOR TWO CONCRETE SLOPED HEADWALLS, OR TWO PIPES CAN RUN PARALLEL INTO A DOUBLE SLOPED HEADWALL.
7. IN AREAS WHERE A CLOSED DRAINAGE SYSTEM EXISTS, THE PIPE UNDERDRAIN, 6" (OR 8") (SPECIAL) SHALL DRAIN TO THE NEAREST CATCH BASIN. THE UPPER END OF A RUN ON GRADE SHALL ALSO BE CONNECTED TO A CATCH BASIN TO BE USED AS A CLEANOUT.
8. THE OUTLET END OF THE SUBDRAIN SHALL BE PROTECTED BY A PERMANENT RODENT SHIELD. THE RODENT SHIELD SHALL HAVE THE CONFIGURATION SHOWN AND BE CONSTRUCTED FROM HOT DIP GALVANIZED STEEL INDUSTRIAL WIRE CLOTH 3x3 MESH, 0.063"x0.063" WIRE SIZE IN ACCORDANCE WITH AASHTO M232 (ASTM A153).
9. BOTTOM OF SUBGRADE AGGREGATE SLOPE FROM ROADWAY PROFILE GRADE SHALL NOT BE LESS THAN 1.5% TOWARD THE PIPE UNDERDRAIN IN SUPERELEVATED SECTIONS.
10. A CA 16 BACKFILLED TRENCH SHALL BE USED WITH THE INSTALLATION OF A PIPE UNDERDRAIN SYSTEM, EXCEPT THE PERCENT PASSING THE NO. 16 (1.18 mm) SIEVE SHALL BE 4 ± 4 PERCENT.
11. ALL JOINTS IN SLOPE DRAIN SYSTEM SHALL BE WATERTIGHT WITH A WELDED INTERNAL CYLINDER ON THE SPIGOT END OF THE PIPE. FIELD JOINTS SHALL BE WRAPPED WITH A DOUBLE WIDE MARMAC COUPLER, OR EQUIVALENT.
12. IF REQUIRED PIPE UNDERDRAIN SLOPE EXCEEDS 6%, PIPE UNDERDRAIN OUTLET ON HIGH FILL SLOPE DETAIL SHALL APPLY.

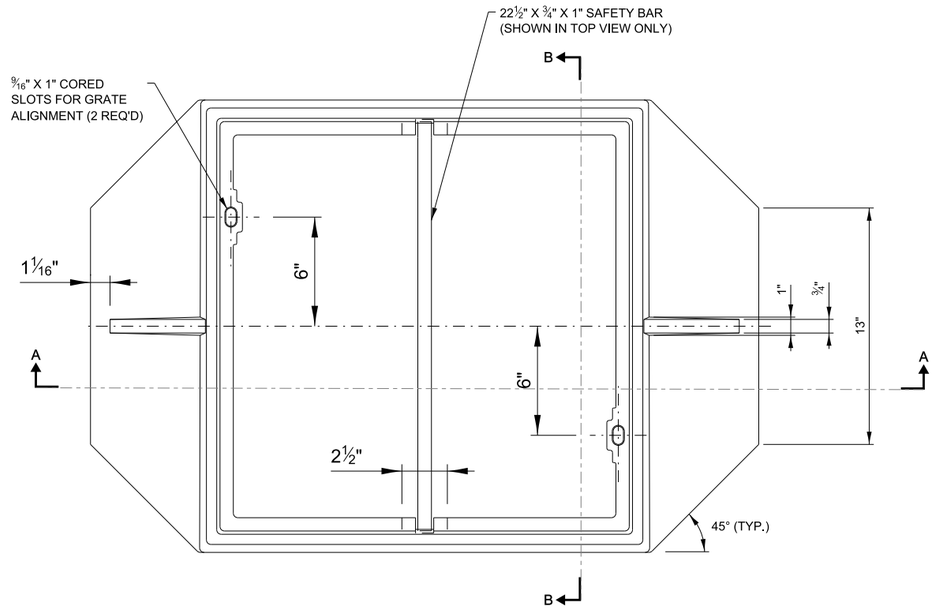
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2021

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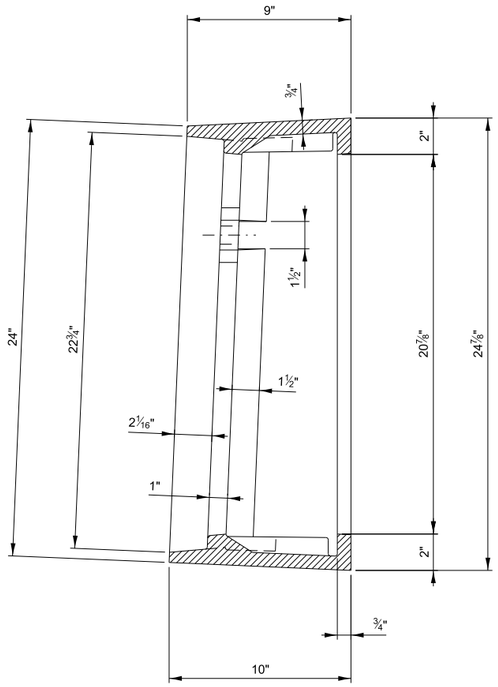
REVISIONS	
DATE	DESCRIPTION
03-01-2021	ADDED DETAIL FOR BARRIER
03-01-2020	ADDED COMPOSITE PAVEMENT AS OPTION
03-01-2019	REVISED PIPE UNDERDRAIN OUTLETS
	ADDED DETAIL FOR HIGH FILL SLOPE

PIPE UNDERDRAINS

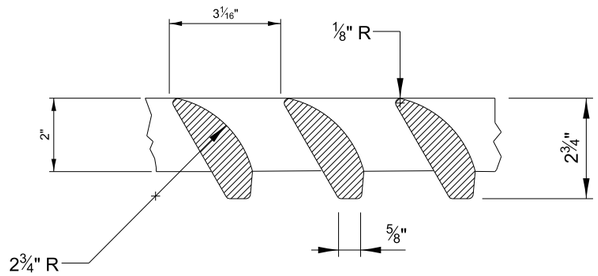
VERSION: 2021-03 | STANDARD: B24-09 | SHEET: 1 OF 1



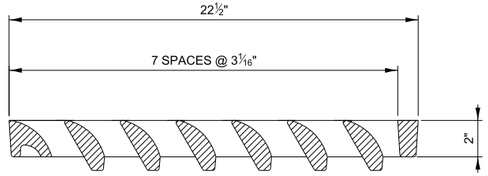
TOP VIEW



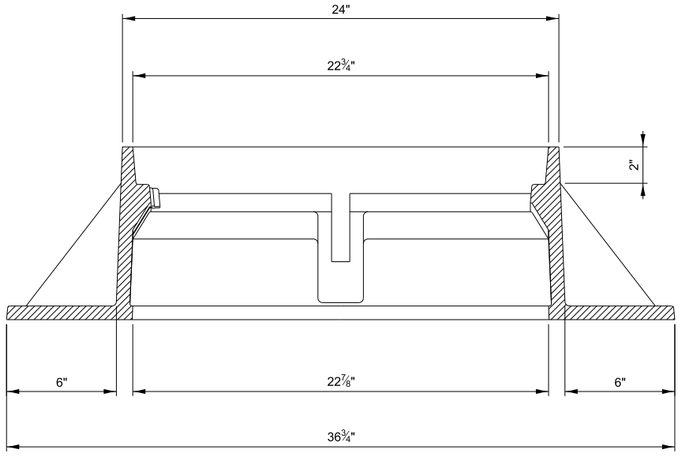
SECTION B-B



DETAIL OF VANES

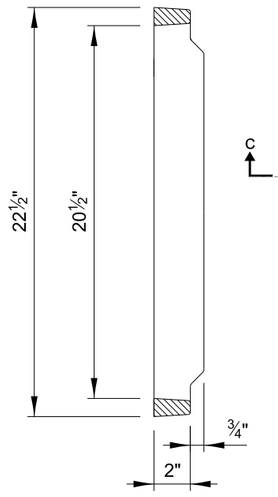


SECTION C-C

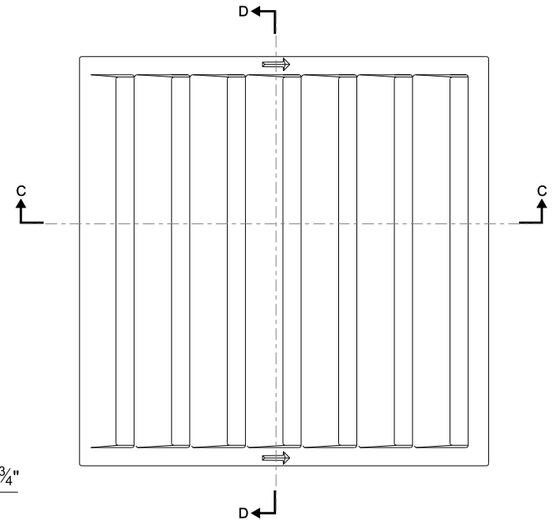


SECTION A-A

CAST FRAME



SECTION D-D



TOP VIEW

CAST GRATE

NOTES:

1. ALL FRAMES AND GRATES SHALL CONFORM TO THE REQUIREMENTS OF ART. 1006.14 FOR GRAY IRON CASTINGS AND TO ART. 1006.15 FOR DUCTILE IRON CASTINGS.
2. FRAME AND GRATE TO BE NEENAH FOUNDRY COMPANY, NEENAH NO. R-3528-V, EAST JORDAN IRON WORKS 7535 OR APPROVED EQUAL.
3. GRATE SHALL NOT BE BOLTED TO FRAME.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

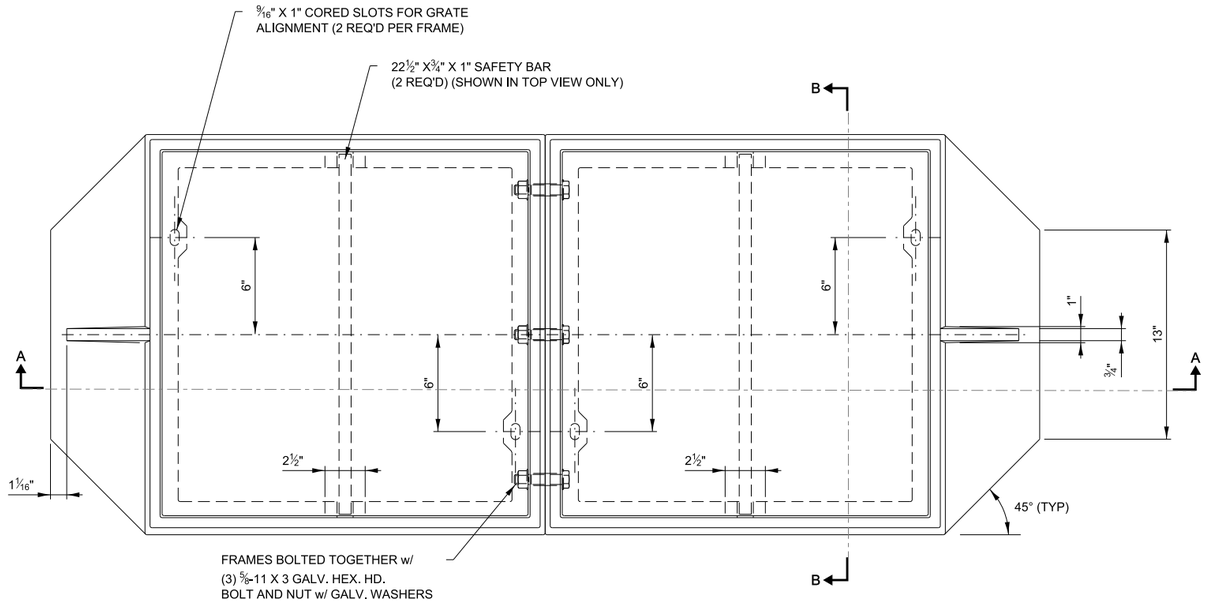
DATE: 03/01/2014

REVISIONS	
DATE	DESCRIPTION
03-31-2014	ADDED FRAME AND GRATE CASTINGS

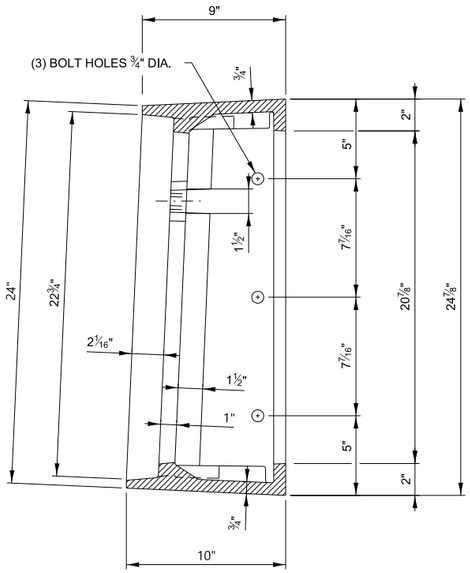
Illinois Tollway

FRAME AND GRATE TYPE 20A

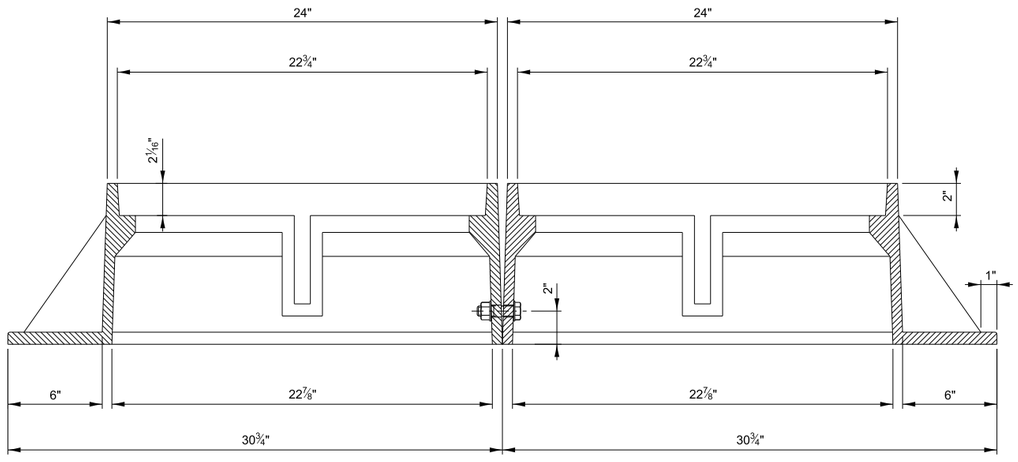
VERSION:	STANDARD:	SHEET:
2014-03	B25-01	1 OF 1



TOP VIEW



SECTION B-B



SECTION A-A

CAST FRAME

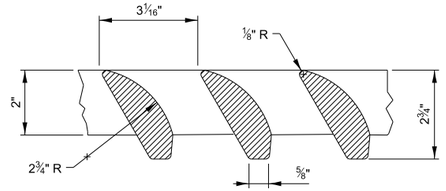
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2014

REVISIONS	
DATE	DESCRIPTION
03-31-2014	ADDED FRAME AND GRATE CASTINGS

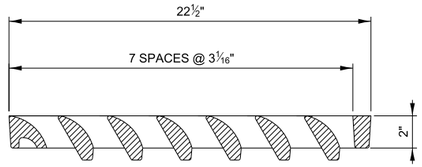
Illinois Tollway

FRAME AND GRATE
TYPE 22A

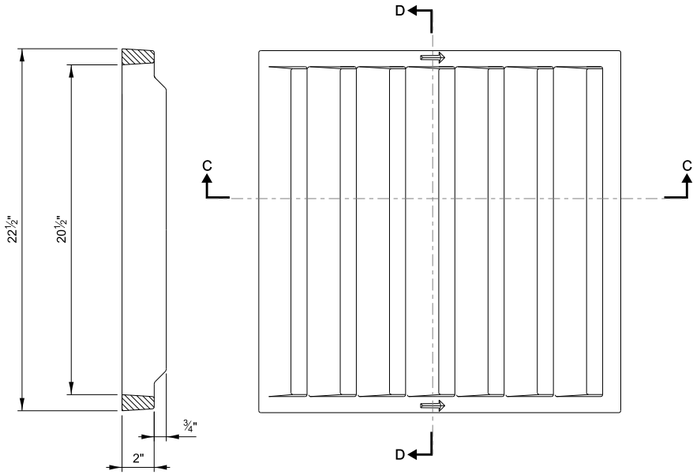
VERSION:	STANDARD:	SHEET:
2014-03	B27-01	1 OF 2



DETAIL OF VANES



SECTION C-C



SECTION D-D

TOP VIEW

CAST GRATE
(2 REQ'D)

NOTES:

1. ALL FRAMES AND GRATES SHALL CONFORM TO THE REQUIREMENTS OF ART. 1006.14 FOR GRAY IRON CASTINGS AND TO ART. 1006.15 FOR DUCTILE IRON CASTINGS.
2. FRAME AND GRATE TO BE NEENAH FOUNDRY COMPANY, NEENAH NO. R-3529-V, EAST JORDAN IRON WORKS 7536 OR APPROVED EQUAL.
3. GRATE SHALL NOT BE BOLTED TO FRAME.

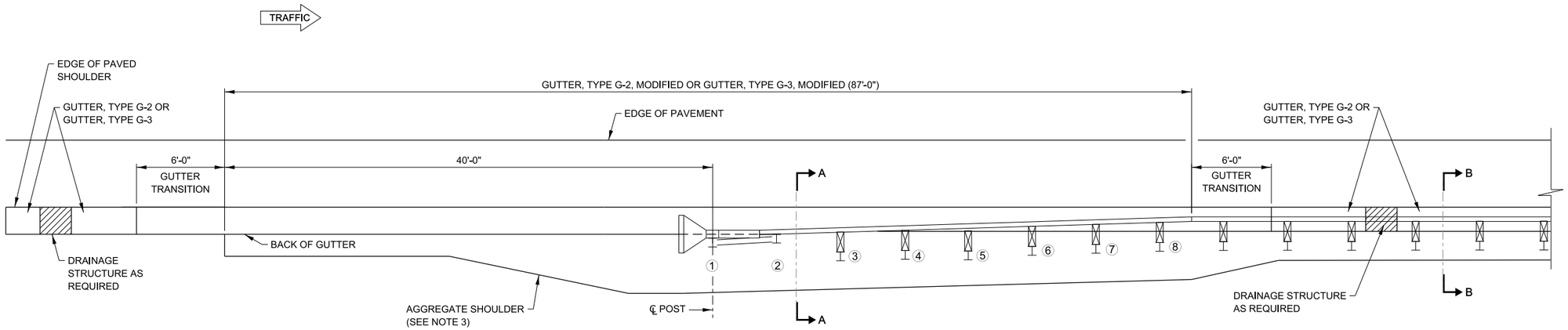
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/01/2014

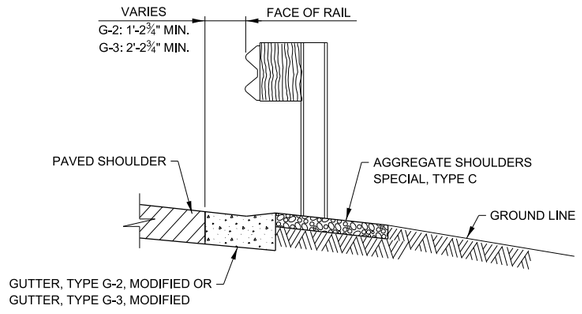
Illinois Tollway

FRAME AND GRATE
TYPE 22A

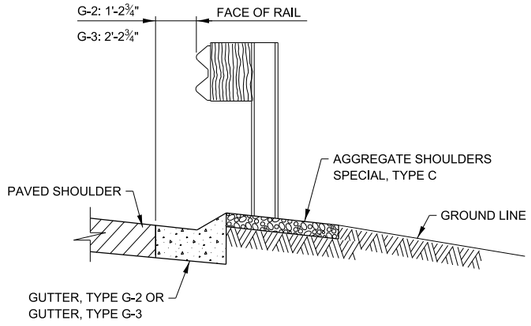
VERSION:	STANDARD:	SHEET:
2014-03	B27-01	2 OF 2



PLAN



SECTION A-A



SECTION B-B

GUTTER, TYPE G-2 TRANSITION AND GUTTER, TYPE G-3 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL)

GENERAL NOTES:

1. GUTTER TRANSITIONS SHALL BE PAID FOR PER FOOT AS GUTTER, TYPE G-2 OR GUTTER, TYPE G-3, AS SPECIFIED IN THE PLANS.
2. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR ADDITIONAL GUARDRAIL INFORMATION.
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C6 FOR SHOULDER WIDENING INFORMATION.

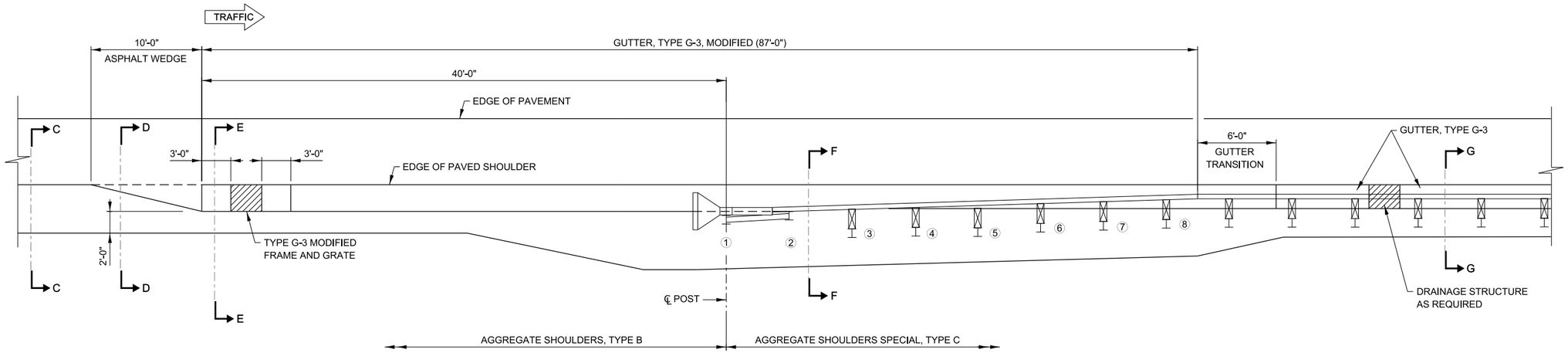
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

REVISIONS	
DATE	DESCRIPTION
03-01-2018	CHANGED LINESTYLE AT WEDGE TO
	DASHED
03-31-2017	DELETED SHEET 2
03-11-2015	REVISED NOTES
03-01-2013	REVISED GUTTER
01-01-2011	REVISED GUTTER TRANSITION TERM

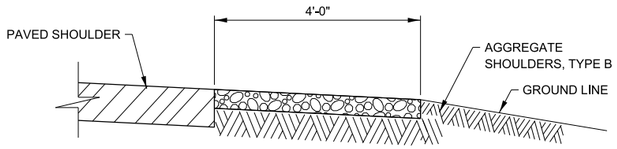
Illinois Tollway

GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL TYPE T1 (SPECIAL)

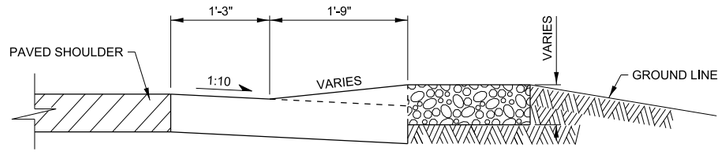
VERSION:	STANDARD:	SHEET:
2018-03	B28-05	1 OF 2



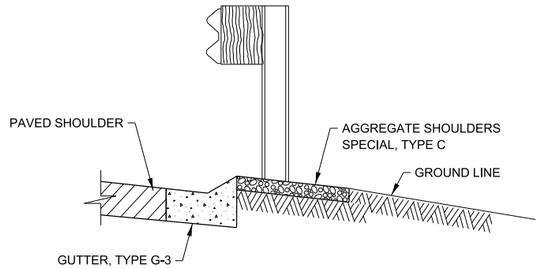
PLAN



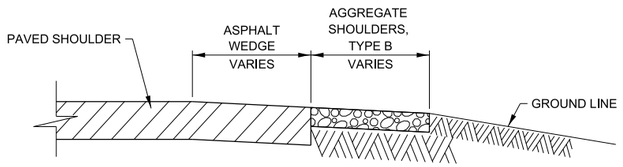
SECTION C-C



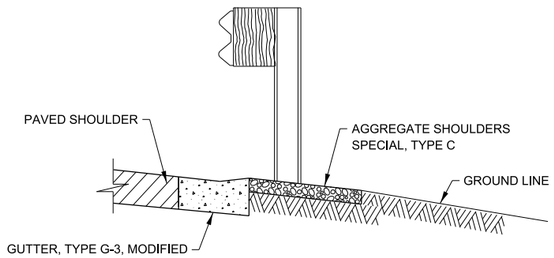
SECTION E-E
GUTTER, TYPE G-3, MODIFIED TRANSITION



SECTION G-G



SECTION D-D
ASPHALT SHOULDER TRANSITION



SECTION F-F

GUTTER, TYPE G-3 TRANSITION TERMINATION AT TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL)

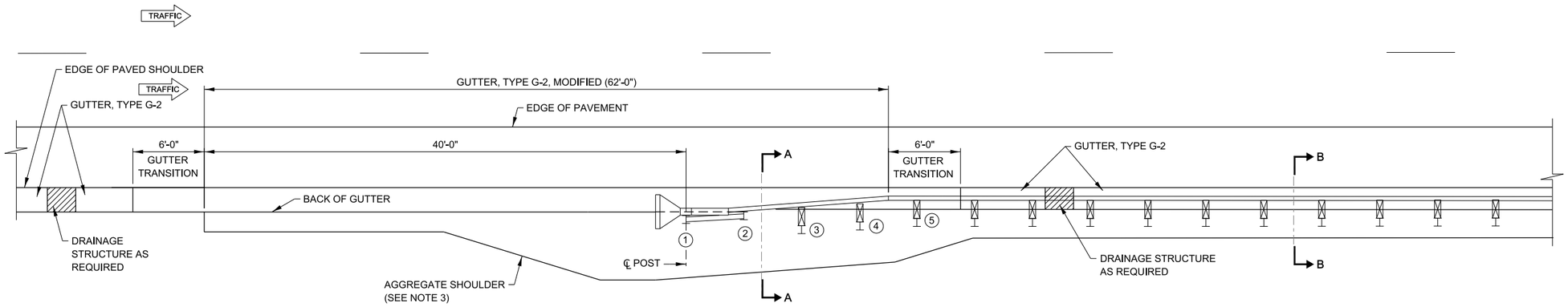
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES

APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE:
03/01/2018

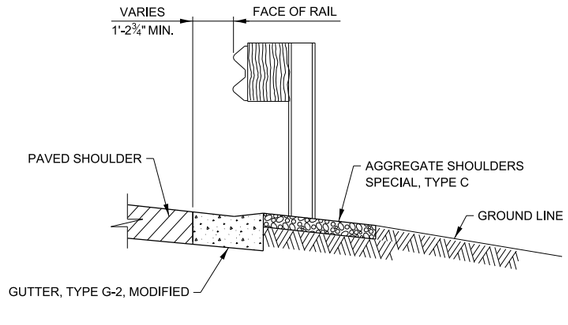
Illinois Tollway

GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL TYPE T1 (SPECIAL)

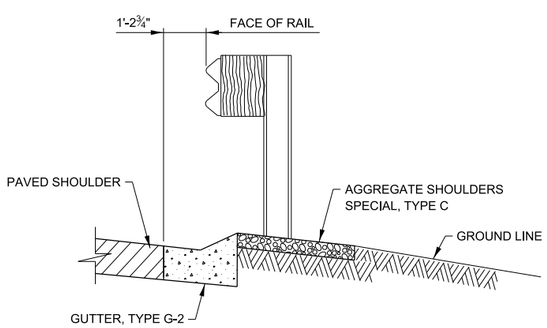
VERSION:	STANDARD:	SHEET:
2018-03	B28-05	2 OF 2



PLAN



SECTION A-A



SECTION B-B

GUTTER, TYPE G-2 TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

GENERAL NOTES:

1. GUTTER TRANSITIONS SHALL BE PAID FOR PER FOOT AS GUTTER, TYPE G-2 OR AS SPECIFIED IN THE PLANS.
2. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR ADDITIONAL GUARDRAIL INFORMATION.
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C12 FOR SHOULDER WIDENING INFORMATION.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/31/2017

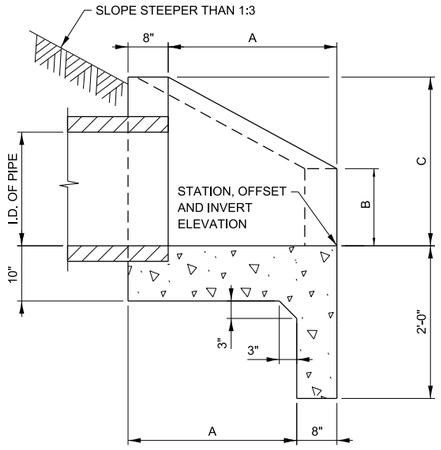
REVISIONS

DATE	DESCRIPTION
03-31-2017	REMOVED SHLDR DIMS
03-11-2015	REVISED NOTES
03-01-2013	REVISED GUTTER

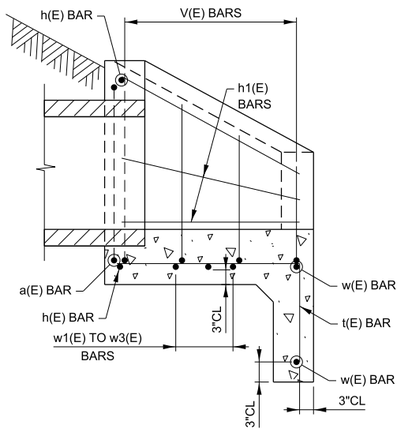
Illinois Tollway

GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL TYPE T1-A (SPECIAL)

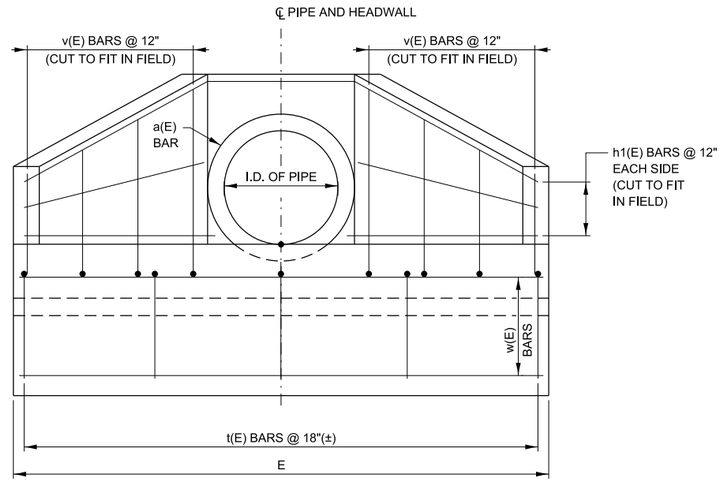
VERSION:	STANDARD:	SHEET:
2017-03	B29-03	1 OF 1



SECTION A-A
(DIMENSIONS)



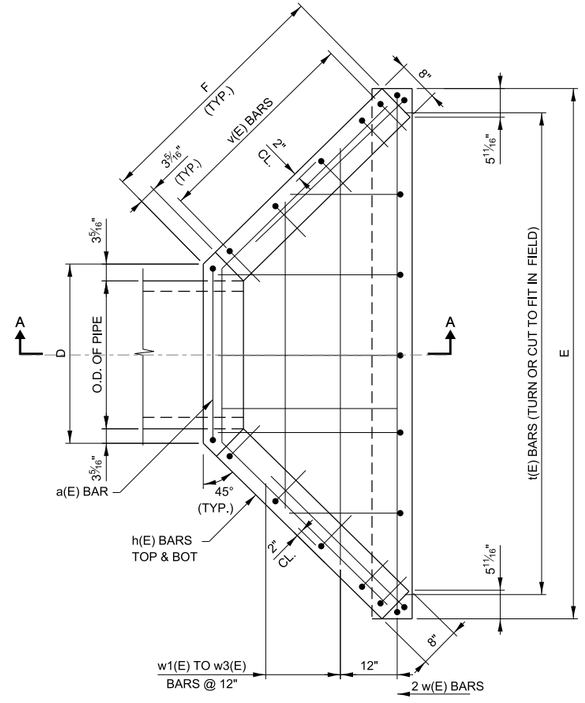
SECTION A-A
(REINFORCEMENT)



FRONT ELEVATION

NOTES:

1. SLOPED HEADWALLS TYPES I AND II SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
5. ALL EXPOSED EDGES SHALL HAVE A ¾"-45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW THE FINISHED GROUND LINE.
6. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
7. CARE SHALL BE EXERCISED IN REMOVING ANY LENGTH OF EXISTING PIPE SO THE REMAINING PIPE IS UNDAMAGED AND FULLY FUNCTIONING.
8. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT.
9. TYPES I AND II HEADWALLS TO BE USED ONLY FOR SLOPES STEEPER THAN 1:3. DIMENSIONS AND QUANTITIES ARE BASES ON A SLOPE 1:2.
10. I.D. DENOTES INSIDE DIAMETER OF PIPE.
O.D. DENOTES OUTSIDE DIAMETER OF PIPE.
11. FOR EROSION PROTECTION SEE STANDARD B19.

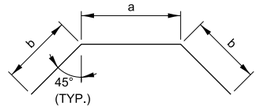


PLAN

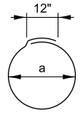


v(E) - BARS

t(E) - BARS



h(E) BARS



a(E) BARS

HEADWALL - TYPE I
(PIPE DIAMETER ≤36")

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE HEADWALL

INSIDE DIA. OF PIPE	SLOPE OF FILL	DIMENSIONS						CONCRETE CLASS SI	REINF. BARS (POUND)
		A	B	C	D	E	F		
21"	1:3	4'-0"	1'-2"	2'-6"	2'-9⅛"	11'-1⅞"	5'-11³⁄₁₆"	1.6 C.Y.	75
24"	1:3	4'-3"	1'-4"	2'-9"	3'-0⅝"	11'-11⅜"	6'-3⁷⁄₁₆"	2.1 C.Y.	80
27"	1:3	4'-0"	1'-8"	3'-0"	3'-4⅛"	11'-8⅞"	5'-11³⁄₁₆"	2.0 C.Y.	100
30"	1:3	5'-0"	1'-7"	3'-3"	3'-7⅝"	14'-0⅜"	7'-4³⁄₁₆"	2.7 C.Y.	120
36"	1:3	6'-0"	1'-10"	3'-10"	4'-2⅝"	16'-7⅜"	8'-9⅛"	3.6 C.Y.	145

TABLE OF REINFORCING STEEL FOR ONE HEADWALL

BAR		21" I.D. PIPE				24" I.D. PIPE				27" I.D. PIPE				30" I.D. PIPE				36" I.D. PIPE			
MARK (E)	SIZE	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b
a	#4	1	9'-3"	31½"	-	1	10'-2"	2'-11"	-	1	11'-1"	3'-2"	-	1	12'-0"	3'-6"	-	1	13'-10"	4'-1"	-
h	#4	2	8'-7"	2'-3"	3'-2"	2	10'-2"	2'-6"	3'-10"	2	11'-0"	2'-10"	4'-1"	2	9'-5"	3'-1"	3'-2"	2	11'-0"	3'-8"	4'-1"
h1	#4	4	3'-2"	-	-	4	3'-10"	-	-	4	4'-2"	-	-	5	4'-7"	-	-	6	5'-6"	-	-
v	#4	6	4'-0"	1'-0"	3'-0"	8	4'-3"	1'-0"	3'-3"	8	4'-6"	1'-0"	3'-6"	10	4'-9"	1'-0"	3'-9"	10	5'-4"	1'-0"	4'-4"
t	#4	6	4'-0"	1'-6"	2'-6"	6	4'-3"	1'-6"	2'-9"	6	4'-8"	1'-6"	3'-1"	7	4'-10"	1'-6"	3'-4"	8	5'-4"	1'-6"	3'-10"
w	#4	2	7'-7"	-	-	2	8'-6"	-	-	2	10'-1"	-	-	2	10'-0"	-	-	2	12'-0"	-	-
w1	#4	1	6'-0"	-	-	1	6'-11"	-	-	1	7'-11"	-	-	1	8'-7"	-	-	1	10'-6"	-	-
w2	#4	1		-	-	1	4'-11"	-	-	1	5'-11"	-	-	1	6'-7"	-	-	1	8'-6"	-	-
w3	#4	-	-	-	-	-	-	-	-	-	-	-	-	1	4'-7"	-	-	1	7'-6"	-	-

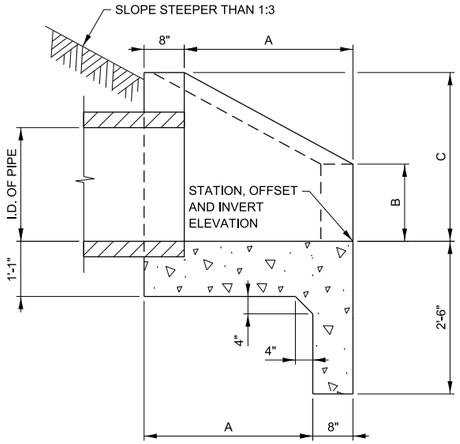
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

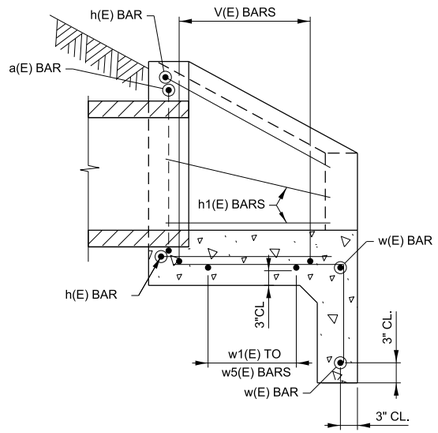
REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED HEADWALL DIMENSIONS
03-11-2015	REVISED NOTES
02-07-2012	ADDED 21" AMD 27" DIA PIPE AND
	REVISED TABLE QUANTITIES

HEADWALLS TYPE I AND II

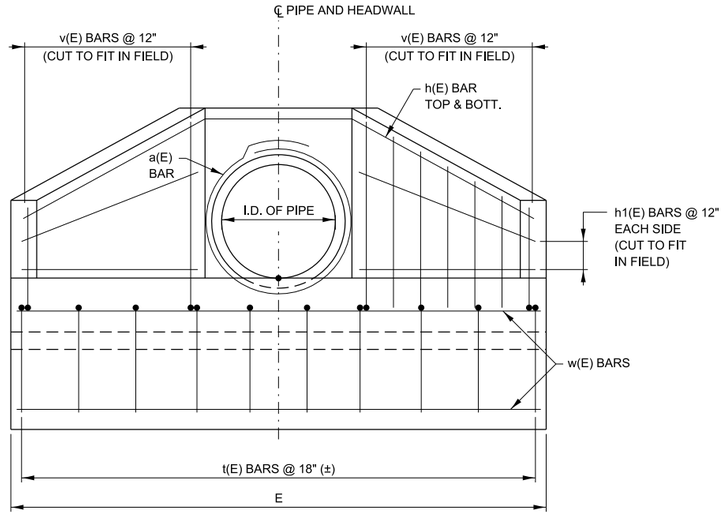
VERSION: 2022-03 | STANDARD: B30-03 | SHEET: 1 OF 2



SECTION A-A
(DIMENSIONS)



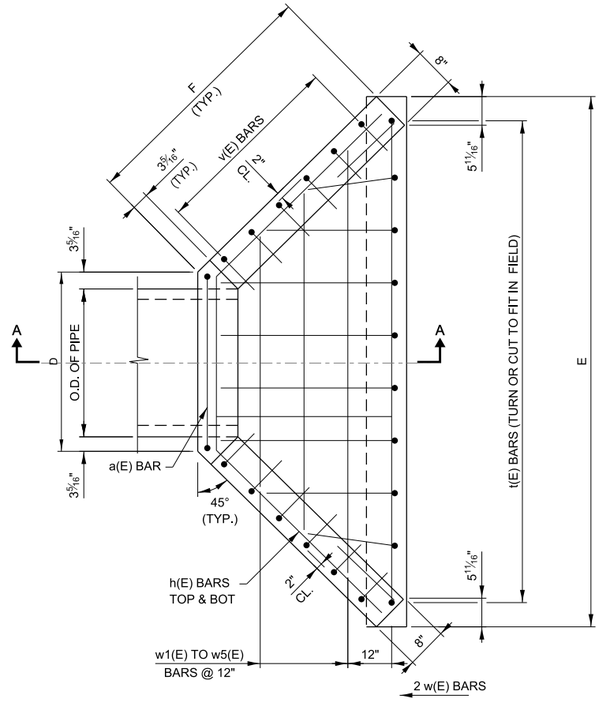
SECTION A-A
(REINFORCEMENT)



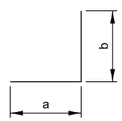
FRONT ELEVATION

NOTE:

1. FOR ADDITIONAL NOTES SEE SHEET 1 IN THIS SERIES.

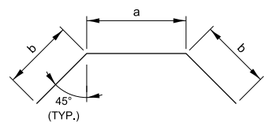


PLAN

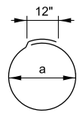


v(E) BARS

t(E) BARS



h(E) BARS



a(E) BARS

HEADWALL - TYPE II
(PIPE DIAMETER ≥36")

TABLE OF BARS FOR ONE HEADWALL

BAR		42" PIPE				48" PIPE				54" I.D. PIPE				60" I.D. PIPE			
MARK (E)	SIZE	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b
a	#5	2	15'-11"	4'-9"	-	2	17'-9"	5'-4"	-	2	19'-7"	5'-11"	-	2	21'-5"	6'-6"	-
h	#5	2	17'-7"	5'-3"	6'-2"	2	19'-9"	5'-9"	7'-0"	2	22'-0"	6'-4"	7'-10"	2	24'-1"	6'-9"	8'-8"
h1	#5	8	6'-6"	-	-	10	7'-4"	-	-	10	8'-2"	-	-	12	9'-0"	-	-
t	#5	10	6'-1"	1'-6"	4'-7"	11	6'-8"	1'-6"	5'-2"	13	7'-3"	1'-6"	5'-9"	15	7'-10"	1'-6"	6'-4"
v	#5	14	5'-10"	1'-0"	4'-10"	16	6'-6"	1'-0"	5'-6"	16	7'-1"	1'-0"	6'-1"	18	7'-8"	1'-0"	6'-8"
w	#5	2	14'-3"	-	-	2	15'-10"	-	-	2	17'-8"	-	-	2	18'-10"	-	-
w1	#5	1	12'-0"	-	-	1	13'-8"	-	-	1	15'-2"	-	-	1	16'-10"	-	-
w2	#5	1	10'-0"	-	-	1	11'-8"	-	-	1	13'-4"	-	-	1	15'-0"	-	-
w3	#5	1	8'-0"	-	-	1	9'-8"	-	-	1	11'-6"	-	-	1	13'-2"	-	-
w4	#5	-	-	-	-	1	8'-0"	-	-	1	9'-8"	-	-	1	11'-4"	-	-
w5	#5	-	-	-	-	-	-	-	-	-	7'-8"	-	-	1	9'-6"	-	-

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE HEADWALL

INSIDE DIA. OF PIPE	SLOPE OF FILL	DIMENSIONS						CONCRETE CLASS SI	REINF. BARS (POUND)
		A	B	C	D	E	F		
42"	1:3	6'-7½"	2'-2"	4'-4½"	4'-9⅝"	18'-5⅜"	9'-7¾"	3.8 C.Y.	400
48"	1:3	7'-6"	2'-5"	4'-11"	5'-4⅝"	20'-9⅜"	10'-10⁹⁄₁₆"	4.1 C.Y.	450
54"	1:3	8'-4½"	2'-8"	5'-5½"	5'-11⅝"	23'-1⅜"	12'-1⅞"	5.6 C.Y.	500
60"	1:3	9'-3"	2'-11"	6'-0"	6'-6⅝"	25'-5⅜"	13'-4⅝"	6.5 C.Y.	600

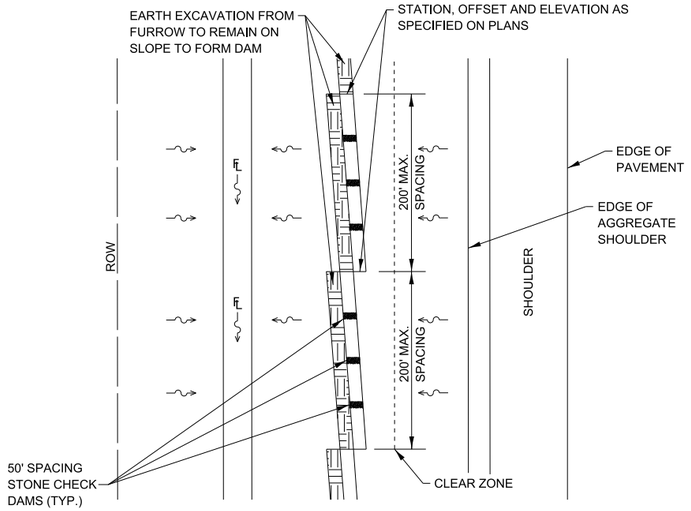
APPROVED BY:
CHIEF ENGINEERING OFFICER

DATE:
03/01/2022

Illinois Tollway

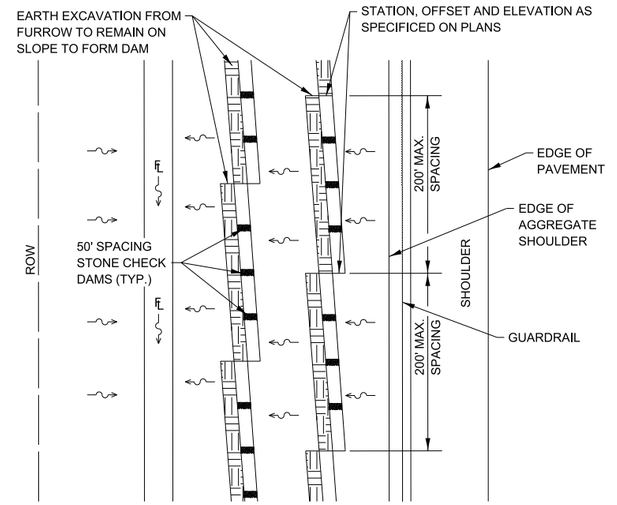
HEADWALLS
TYPE I AND II

VERSION:	STANDARD:	SHEET:
2022-03	B30-03	2 OF 2



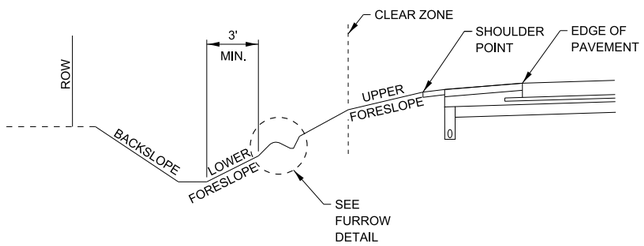
DEFINED CLEAR ZONE LOCATIONS

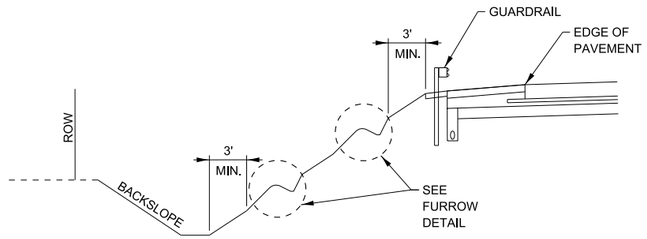
PLAN VIEW: NOT TO SCALE

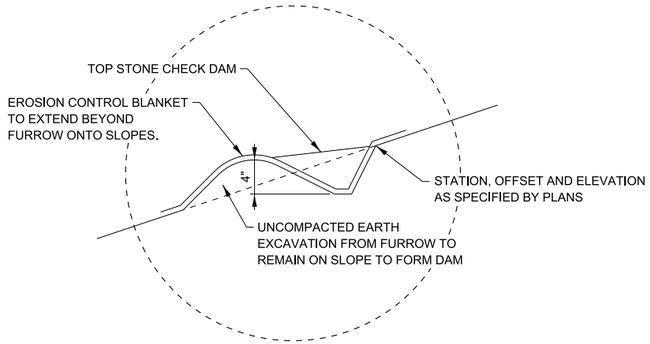


SHIELDED LOCATIONS

PLAN VIEW: NOT TO SCALE







FURROW DETAIL

SECTION VIEW: NOT TO SCALE

NOTES:

1. INSTALL STONE CHECK DAMS AT 50' SPACING ALONG FURROW. STONE CHECK DAMS TO CONSIST OF CA-7 STONE, 2' LONG, FILLED TO FULL DEPTH OF FURROW
2. FURROW TO BE SLICED/TILLED ALONG LEVEL CONTOUR BEGINNING.
3. FURROWS SHALL NOT BE INSTALLED IN UNSHIELDED, UNDEFINED CLEAR ZONE LOCATIONS.

APPROVED BY: Marco Nastif, CHIEF ENGINEERING OFFICER

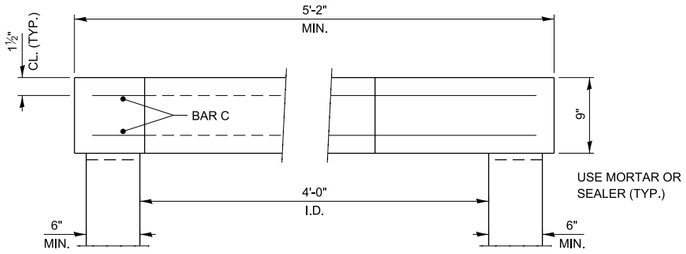
DATE: 03/01/2024

Illinois Tollway

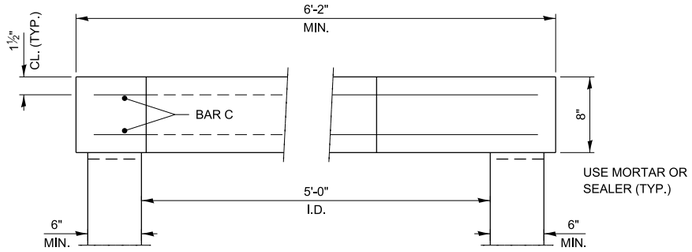
REVISIONS	
DATE	DESCRIPTION

FURROW DETAIL

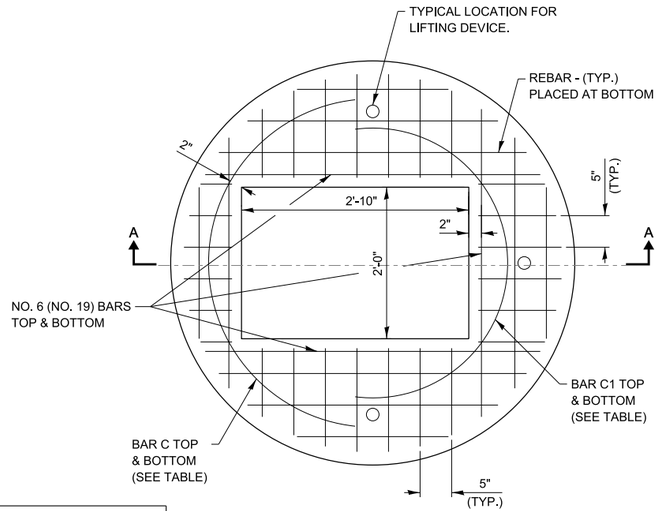
VERSION:	STANDARD:	SHEET:
2024-03	B31-00	1 OF 1



SECTION A-A



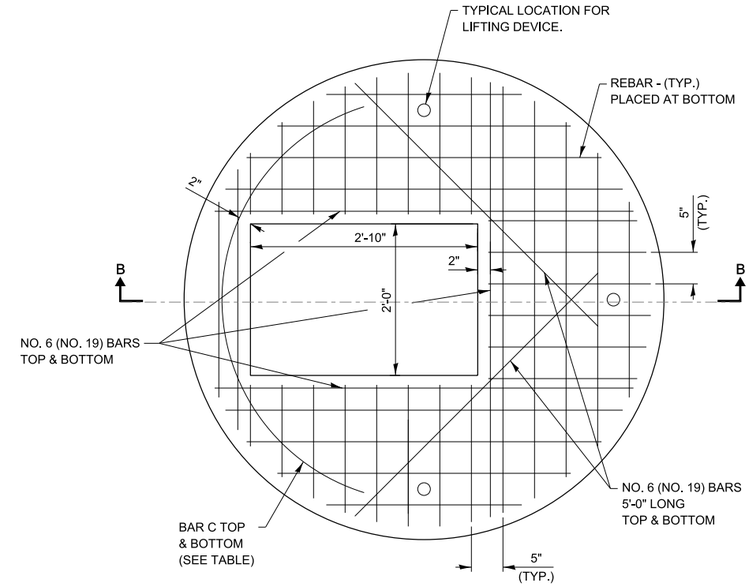
SECTION B-B



NO. 4 (NO. 13)		
BAR	LENGTH	RADIUS
C	6'-6"	2'-2"
C1	6'-6"	1'-10"

4' MANHOLE PLAN

SHOWING REBAR REINFORCEMENT
NO. 6 (NO. 19) UNLESS OTHERWISE SHOWN



NO. 4 (NO. 13) BAR C	
LENGTH	RADIUS
7'-0"	2'-6"

5' MANHOLE PLAN

SHOWING REBAR REINFORCEMENT
NO. 6 (NO. 19) UNLESS OTHERWISE SHOWN

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

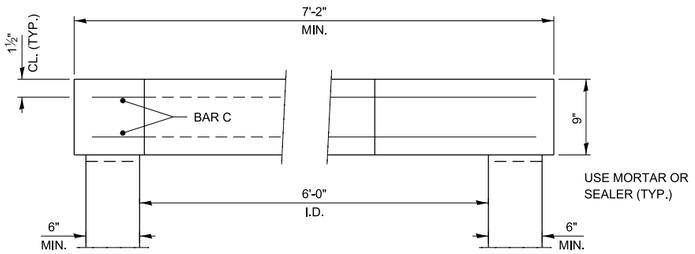
DATE:
03/01/2024

Illinois Tollway

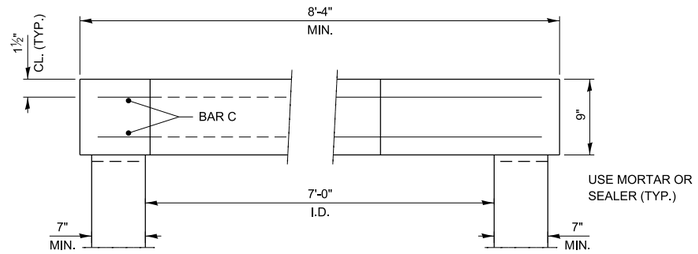
REVISIONS	
DATE	DESCRIPTION
03-01-2024	RENAMED STANDARD
03-01-2022	REVISED SLAB THICKNESS AND REBAR SPACING

FLAT SLAB TOP FOR TYPE G-3 FRAME AND GRATE 4'-5'-6'-7'-8'-9' DIAMETER

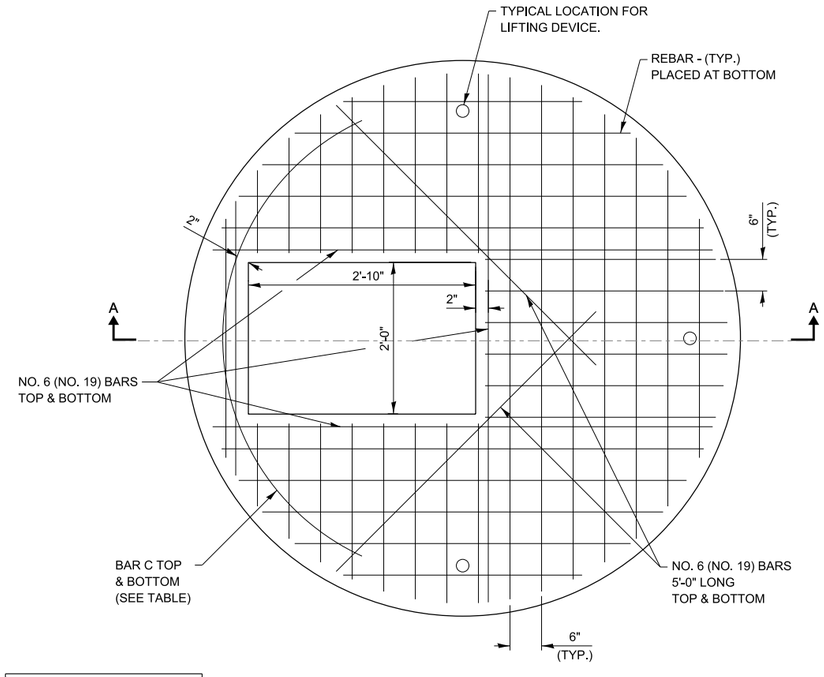
VERSION:	STANDARD:	SHEET:
2024-03	B32-02	1 OF 3



SECTION A-A



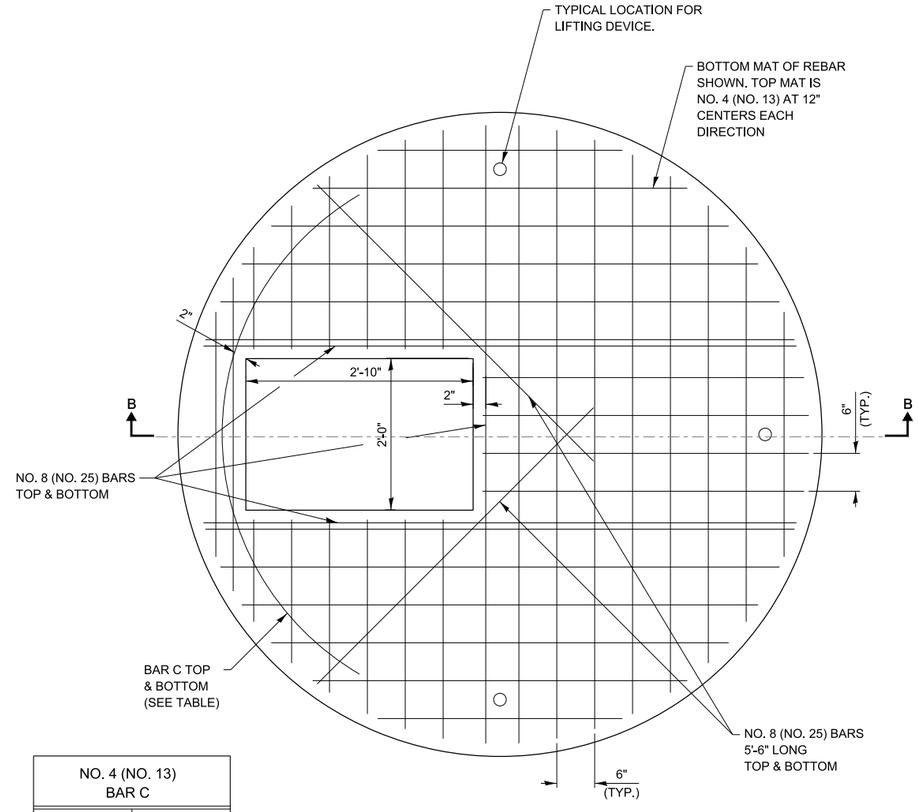
SECTION B-B



NO. 4 (NO. 13) BAR C	
LENGTH	RADIUS
7'-6"	3'-2"

6' MANHOLE PLAN

SHOWING REBAR REINFORCEMENT
NO. 6 (NO. 19) UNLESS OTHERWISE SHOWN



NO. 4 (NO. 13) BAR C	
LENGTH	RADIUS
8'-0"	3'-8"

7' MANHOLE PLAN

SHOWING REBAR REINFORCEMENT
NO. 8 (NO. 25) UNLESS OTHERWISE SHOWN

APPROVED BY:

Marwa Nashif

CHIEF ENGINEERING OFFICER

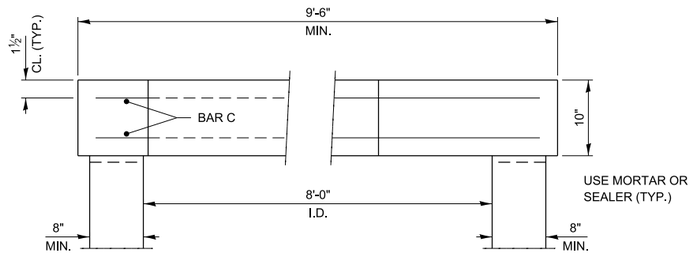
DATE:

03/01/2024

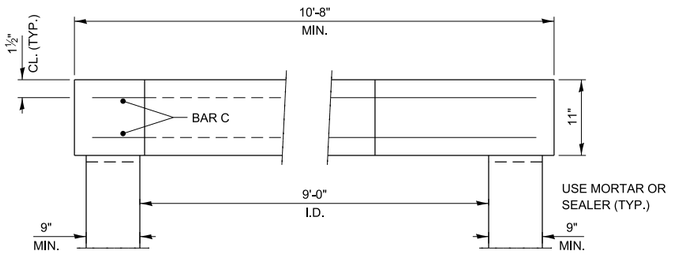
Illinois Tollway

FLAT SLAB TOP FOR TYPE G-3 FRAME AND GRATE 4'-5'-6'-7'-8'-9' DIAMETER

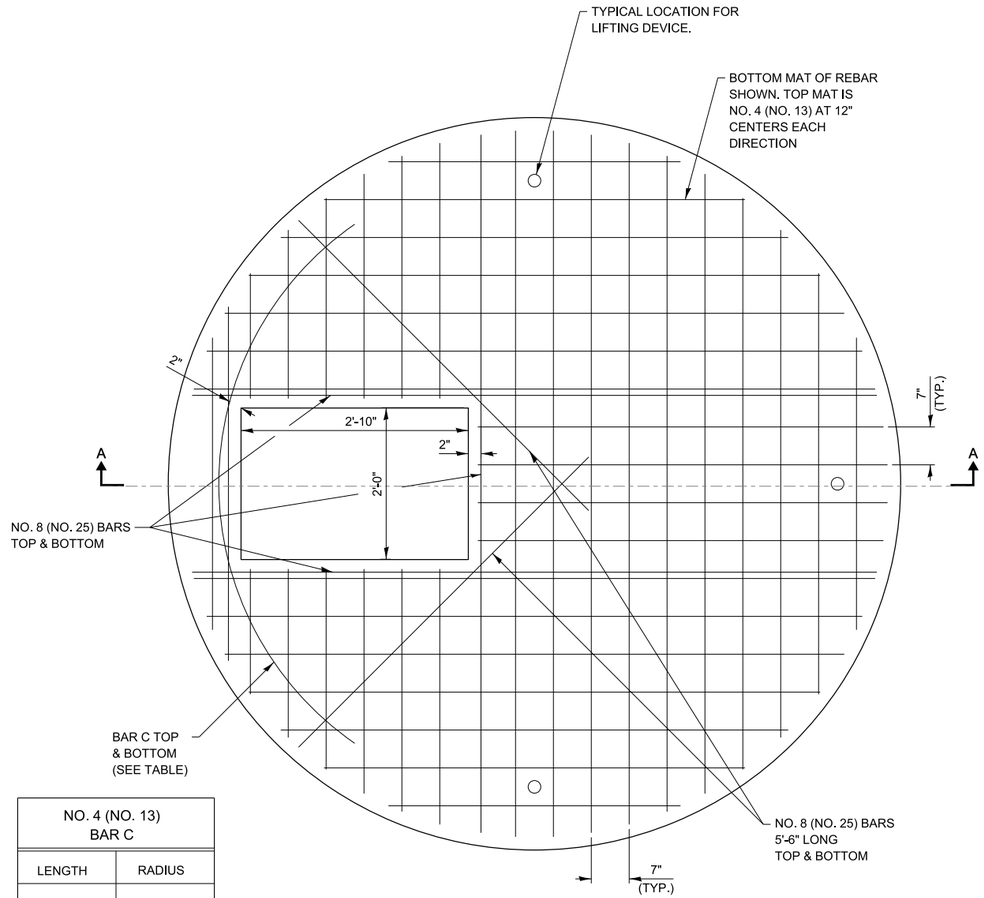
VERSION:	STANDARD:	SHEET:
2024-03	B32-02	2 OF 3



SECTION A-A



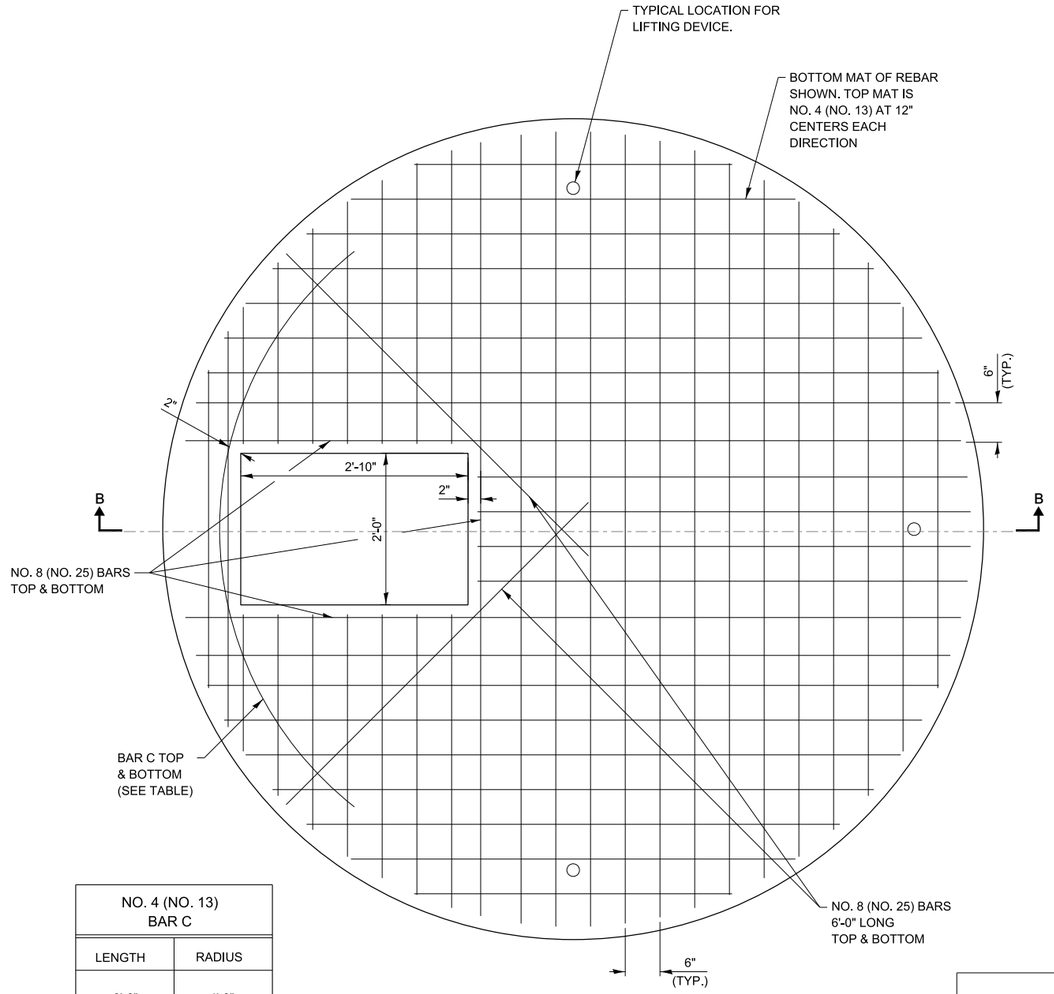
SECTION B-B



NO. 4 (NO. 13) BAR C	
LENGTH	RADIUS
8'-6"	4'-2"

8' MANHOLE PLAN

SHOWING REBAR REINFORCEMENT
NO. 8 (NO. 25) UNLESS OTHERWISE SHOWN



NO. 4 (NO. 13) BAR C	
LENGTH	RADIUS
8'-6"	4'-8"

9' MANHOLE PLAN

SHOWING REBAR REINFORCEMENT
NO. 8 (NO. 25) UNLESS OTHERWISE SHOWN

APPROVED BY:

Manar Nashif

CHIEF ENGINEERING OFFICER

DATE: 03/01/2024

Illinois Tollway

FLAT SLAB TOP FOR TYPE G-3 FRAME AND GRATE 4'-5'-6'-7'-8'-9' DIAMETER

VERSION:	STANDARD:	SHEET:
2024-03	B32-02	3 OF 3

STANDARD DRAWINGS

SECTION C

GUARDRAIL & CONCRETE BARRIER

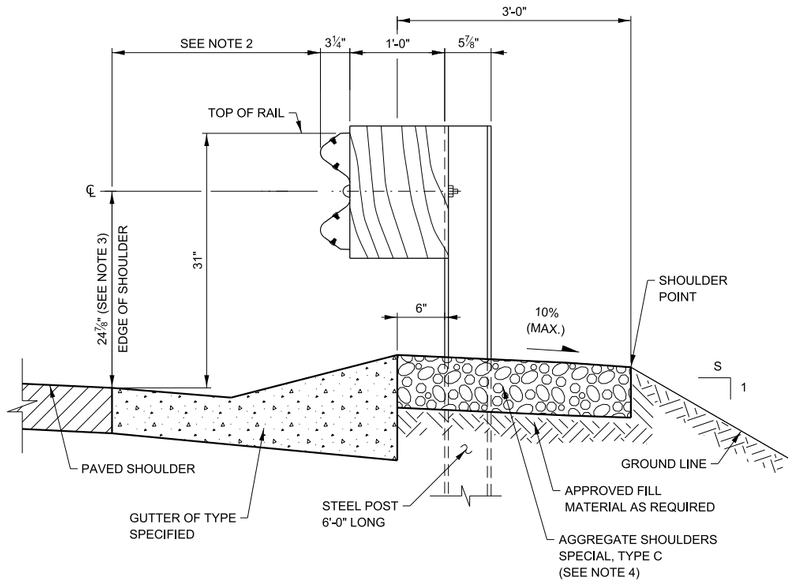
MARCH 2025

Illinois Tollway Standard Drawing Revisions

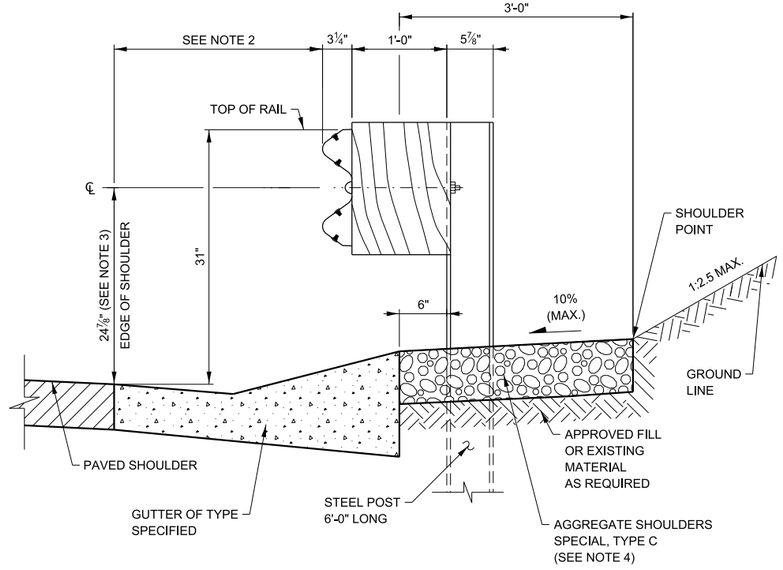
Section C	Guardrail and Concrete Barriers	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads.
		There are no other changes to this set of standards from the previous version.

New Sheet

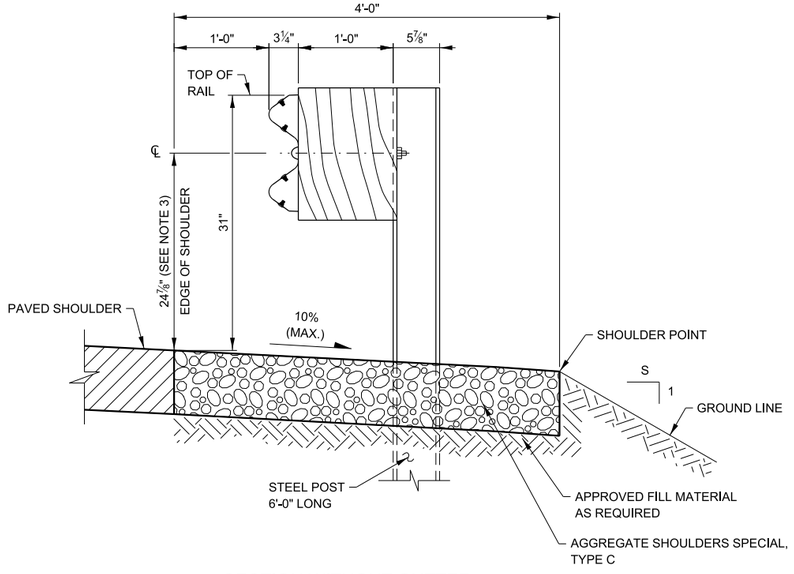
Retired Standard



FILL SECTION WITH GUTTER



CUT SECTION WITH GUTTER



SECTION WITHOUT GUTTER

NOTES:

1. 1'-0" OFFSET FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL IS TYPICAL FOR ALL INSTALLATIONS WITHOUT GUTTER EXCEPT AS OTHERWISE DETAILED IN THE PLAN DRAWINGS.
2. WHERE GUTTERS SUCH AS TYPE G-2, G-3 ARE REQUIRED IN FRONT OF THE GUARDRAIL, THE POSTS SHALL BE LOCATED 6" BEHIND THE GUTTER, OR AS OTHERWISE DETAILED IN THE PLANS. THE OFFSET FROM THE EDGE OF SHOULDER TO THE FACE OF THE GUARDRAIL SHALL BE AS SHOWN ON STANDARD B28.
3. THE 24⅞" TYPICAL RAIL HEIGHT IS MEASURED FROM EXISTING SURFACE 1'-0" IN FRONT OF RAIL, OR FROM EDGE OF SHOULDER/EDGE OF GUTTER WHEN EDGE IS MORE THAN 1'-0" IN FRONT OF RAIL TO CENTER OF RAIL.
4. WHERE GUTTER IS PROPOSED WITH GUARDRAIL, A 6" MINIMUM THICKNESS OF AGGREGATE SHOULDERS SPECIAL, TYPE C SHALL BE PLACED BEHIND GUTTER. FOR GUARDRAIL WITHOUT GUTTER, AGGREGATE SHOULDER, TYPE C, OF THE SAME THICKNESS AS PAVED SHOULDER SHALL BE PLACED FROM THE EDGE OF PAVED SHOULDER SLOPING AWAY TO A 6" MIN. THICKNESS.
5. GUARDRAIL POSTS SHALL NOT BE ATTACHED TO ANY STRUCTURE.
6. PLASTIC BLOCK-OUTS SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR WOOD BLOCK-OUTS ON NEW INSTALLATIONS.
7. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENTS (V:H).
8. UNDER NO CIRCUMSTANCES SHALL AN EXISTING GUARDRAIL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE EXTENDED, ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
9. THE MGS GUARDRAIL SYSTEM WITH STANDARD POST SPACING HAS BEEN PERFORMANCE-TESTED FOR TL-3 CRASH WORTHINESS UNDER PROCEDURES DEFINED IN THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH). OTHER VARIATIONS OF THE MGS GUARDRAIL SYSTEM HAVE BEEN PERFORMANCE-TESTED FOR TL-3 CRASH WORTHINESS UNDER PROCEDURES OUTLINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
10. GUARDRAIL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL ON SHEET 3 OF 4 OF THIS SERIES.

GUARDRAIL INSTALLATION DETAILS

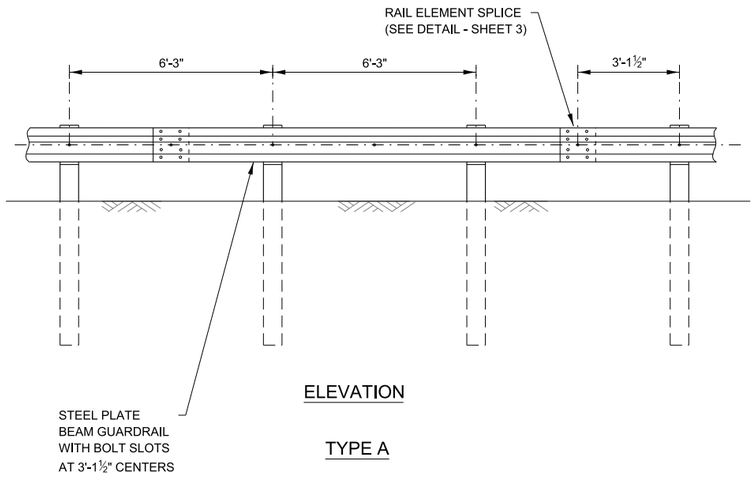
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REMOVE 9' POSTS AND REQUIRE FULL WIDTH AGGREGATE SHOULDER
03-01-2021	CHANGED DRAINAGE CONFLICTS TO OMITTED POST, SHEET 4
03-01-2020	MODIFIED NOTE 11 AND HEADING OF TABLE 2B

Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

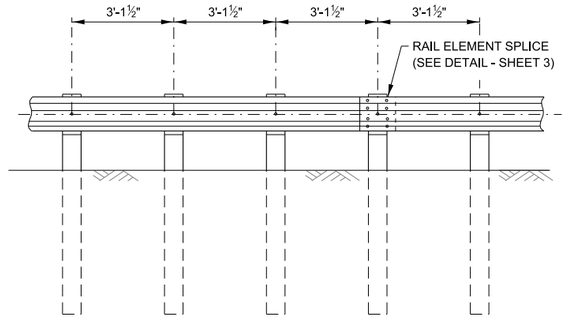
VERSION:	STANDARD:	SHEET:
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ELEVATION

TYPE A

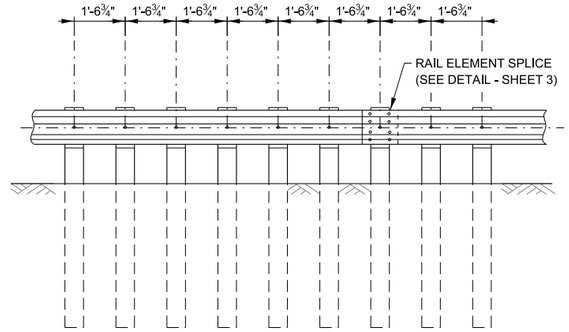
6'-3" TYPICAL POST SPACING



ELEVATION

TYPE B

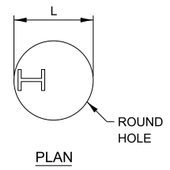
3'-1½" ½ POST SPACING



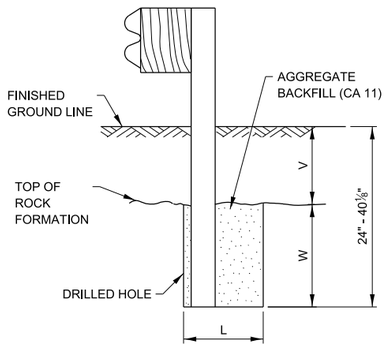
ELEVATION

TYPE C

1'-6¾" ¼ POST SPACING



PLAN

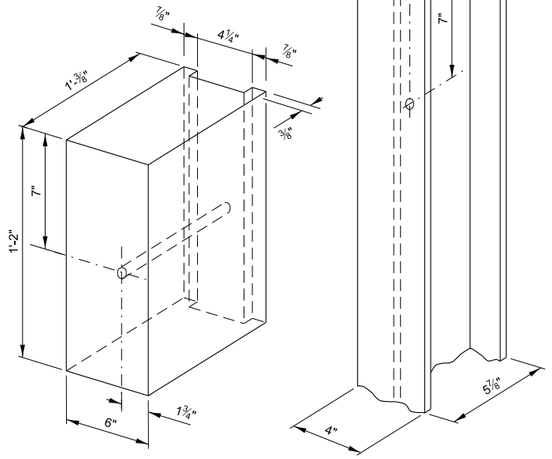


ELEVATION

FOOTING FOR POST WHEN ROCK FORMATION IS ENCOUNTERED

TABLE 1		
V	W	L
0 - 16⅛"	24"	21"
> 16⅛" - 28⅛"	12"	8"
> 28⅛" - 40⅛"	12" - 0 (*)	8"

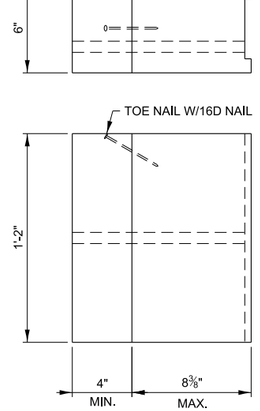
* V + W = 40⅛"



NOTES:

ALL HOLES 3/4" DIA.

WOOD BLOCK-OUT AND STEEL POST DETAILS



TWO-PIECE WOOD BLOCK-OUT OPTION

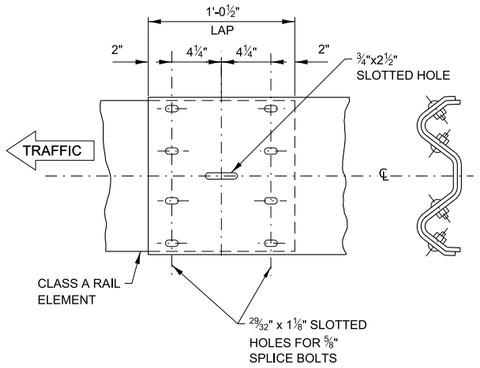
APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

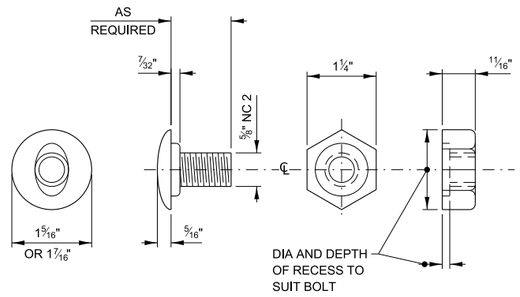
Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

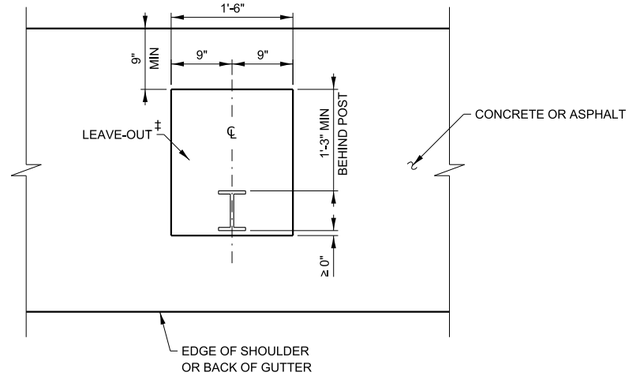
VERSION:	STANDARD:	SHEET:
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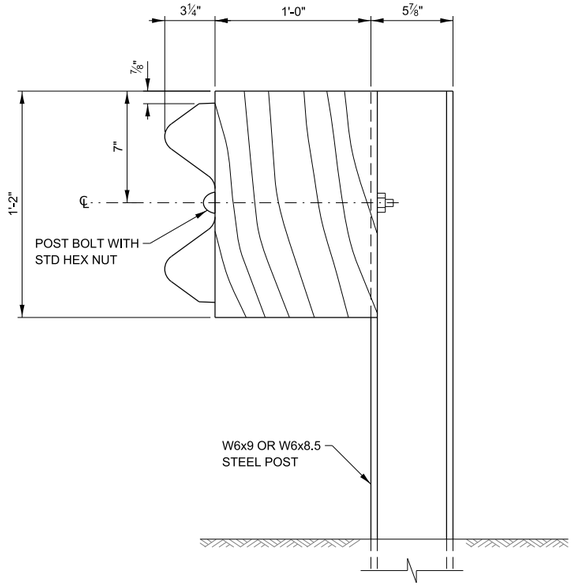
RAIL ELEMENT SPLICE



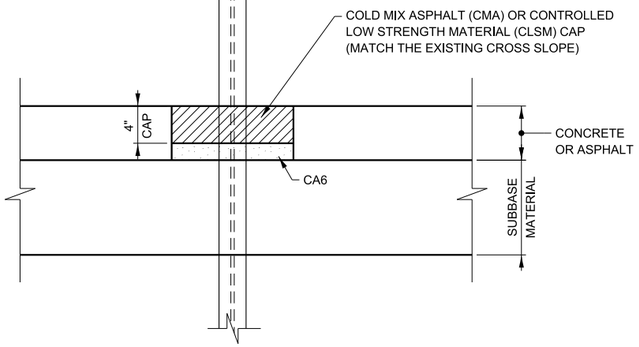
POST OR SPLICE BOLT & NUT



PLAN



STEEL POST CONSTRUCTION



ELEVATION

LEAVE-OUTS

‡ THE AREA AROUND THE POST THAT IS EITHER OMITTED FROM THE NEW CONSTRUCTION OR REMOVED FROM THE EXISTING CONCRETE OR ASPHALT.

APPROVED BY:
Marco Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

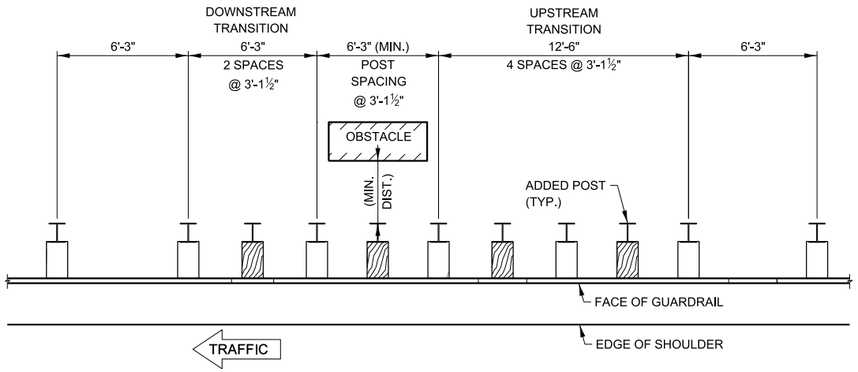
Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

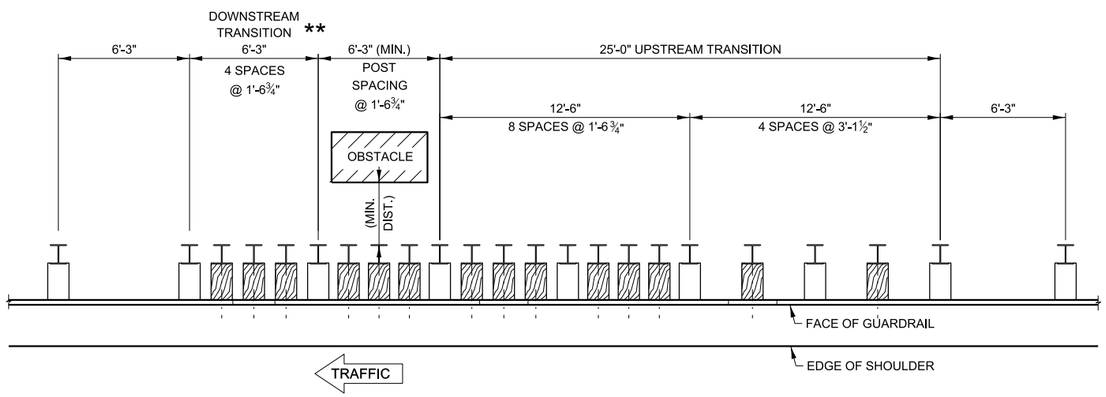
VERSION:	STANDARD:	SHEET:
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TABLE 2A BARRIER CLEARANCE DISTANCE (MGS) NEW CONSTRUCTION/RECONSTRUCTION		
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE
TYPE A	6'-3"	39"
TYPE B ½ POST SPACING	3'-1½"	26"
TYPE C ¼ POST SPACING	1'-6¾"	20"

TABLE 2B BARRIER CLEARANCE DISTANCE (MGS) REHABILITATION				
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE		
		EXISTING BREAKAWAY LIGHT POLES	ALL OTHER OBSTACLES	
			NON-MGS GUARDRAIL	MGS GUARDRAIL
TYPE A	6'-3"	20"	28"	39"
TYPE B ½ POST SPACING	3'-1½"	N/A	23"	26"
TYPE C ¼ POST SPACING	1'-6¾"	N/A	14"	20"



TRANSITION TO ½-POST SPACING

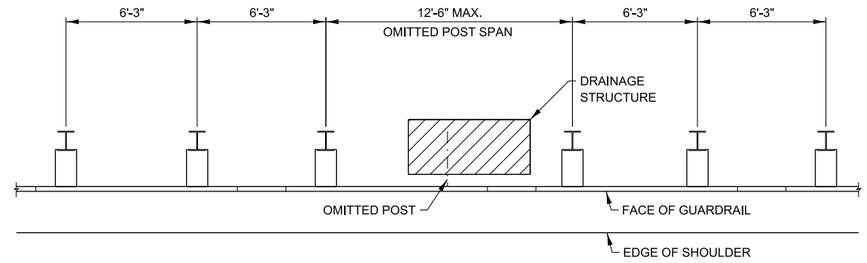


TRANSITION TO ¼-POST SPACING

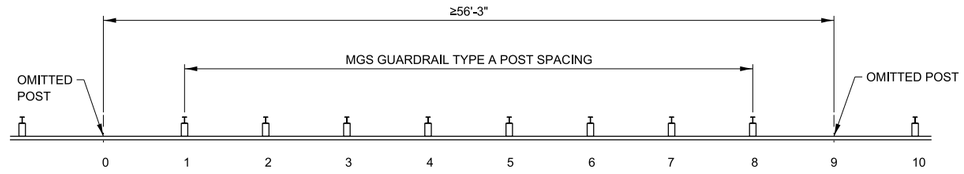
** WHEN LENGTH OF OBSTACLES IS 1'-3" OR LESS, THE DOWNSTREAM TRANSITION SHALL BE OMITTED.

POST SPACING TRANSITIONS

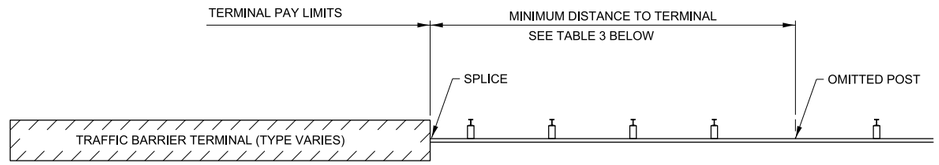
NOTE: NO MODIFICATIONS OF ANY KIND TO THE TRANSITION POST SPACING ARE ALLOWED.



TYPE A GUARDRAIL-DRAINAGE STRUCTURE CONFLICT
ONE POST OMITTED



MINIMUM ALLOWED DISTANCE BETWEEN OMITTED POSTS



MINIMUM DISTANCE TO TERMINAL FROM OMITTED POST

NOTES:

A. THE OMISSION OF A SINGLE SUPPORT POST WITHIN THE GUARDRAIL SPAN IS PERMITTED WHEN A CONFLICT EXISTS. THE MINIMUM DISTANCE BETWEEN TWO OMITTED POSTS IS 56'-3".

B. GUARDRAIL POSTS SHALL NOT BE SET BACK TO AVOID CONFLICTS WITH A DRAINAGE SUBSURFACE UTILITY.

C. THIS DETAIL ALSO APPLIES TO OTHER UNDERGROUND CONFLICTS.

D. THE OMISSION OF A SUPPORT POST IS NOT PERMITTED WITHIN A GUARDRAIL INSTALLATION WITH GUTTER.

TABLE 3 MINIMUM DISTANCE FROM OMITTED POST TO TERMINAL LIMIT	
TRAFFIC BARRIER TERMINAL	MIN. DISTANCE
TBT TYPE T1 (SP) OR TBT TYPE T1-A (SP)	15'-7½"
TBT TYPE T6 OR TBT TYPE T6B	28'-1½"
TBT TYPE T2	53'-1½"

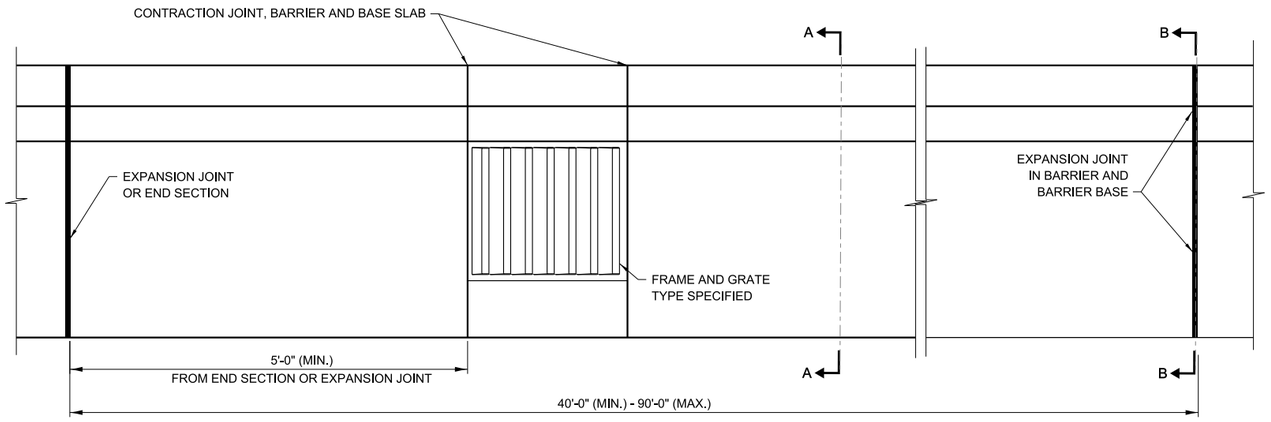
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

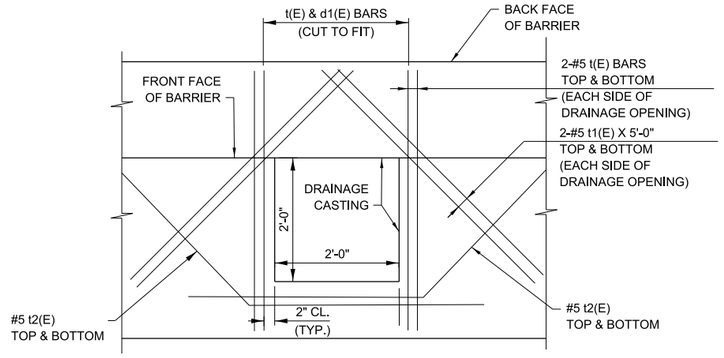
Illinois Tollway

GALVANIZED STEEL PLATE BEAM GUARDRAIL

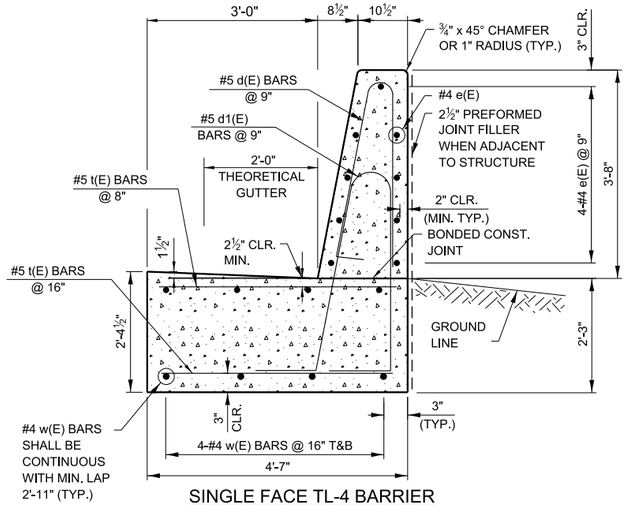
VERSION:	STANDARD:	SHEET:
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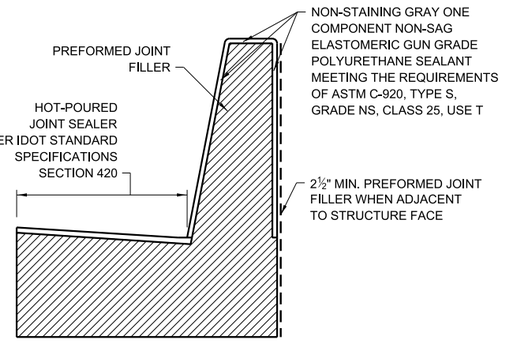
PLAN



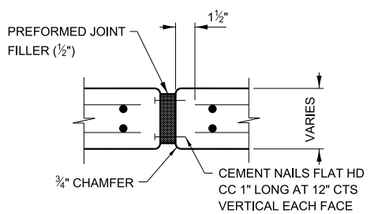
PLAN
REINFORCEMENT AROUND DRAINAGE STRUCTURE



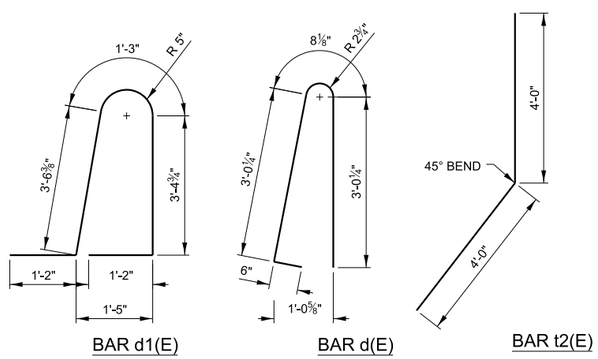
SINGLE FACE TL-4 BARRIER
SECTION A-A



SINGLE FACE TL-4 BARRIER
EXPANSION JOINT
SECTION B-B



EXPANSION JOINT



BENDING DIAGRAMS

NOTES:

1. THIS REINFORCED CONCRETE TL-4 ROADSIDE BARRIER IS USED TO SHIELD NON-CRASHWORTHY SOIL-BACKED WALLS AND OTHER ROADWAY APPURTENANCES WHEN SPACE BEHIND DOES NOT ALLOW THE FOOTING EXTENSION OF THE T-SHAPED BARRIER (STD C3). THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE SHALL MATCH THE TOP OF SHOULDER ELEVATION. BACKSIDE OF BARRIER SHALL BE FILLED TO THE TOP OF THE BASE.
3. WHEN USED ADJACENT TO A STRUCTURE, A 2 1/2" PREFORMED JOINT FILLER SHALL BE INSTALLED BETWEEN THE BARRIER AND THE STRUCTURE FACE.
4. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
5. CONTRACTION JOINTS SHALL BE FORMED BY A ⅛" WIDE, GROOVE EITHER FORMED IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
6. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
7. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
8. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD ADDITIONAL t, t1, AND t2 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE. A 1" PJF SHALL BE PLACED BELOW THE BARRIER BASE WHEN IT SITS UPON A FLAT SLAB DRAINAGE STRUCTURE.
9. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER AND BASE AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.

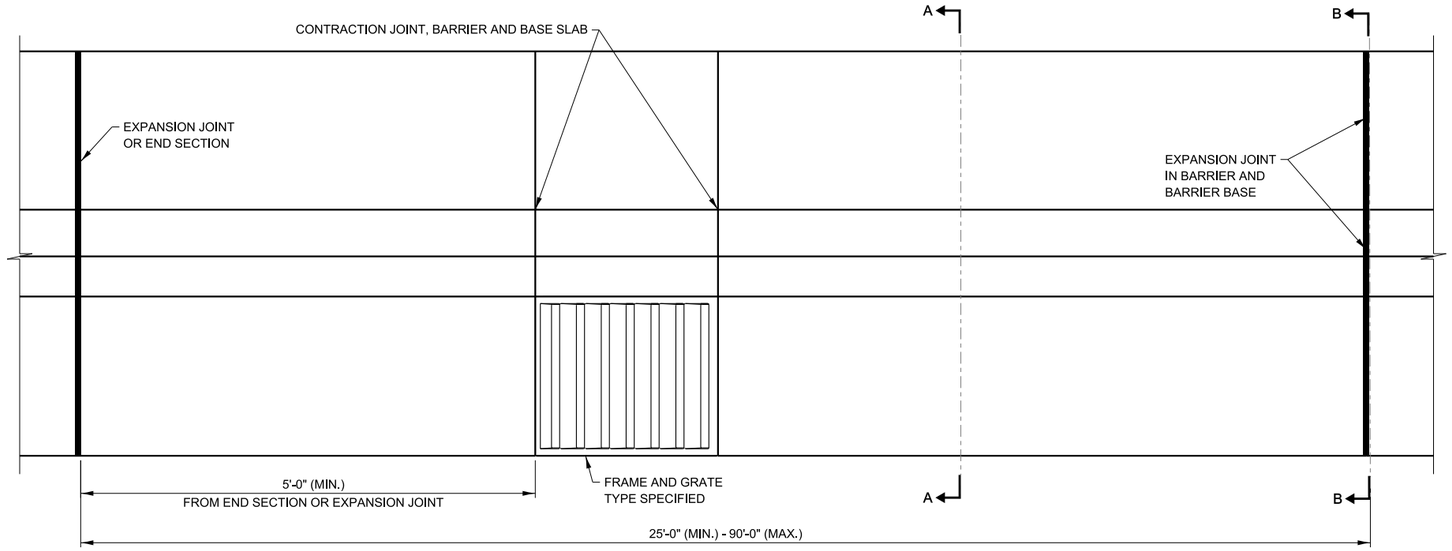
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

Illinois Tollway

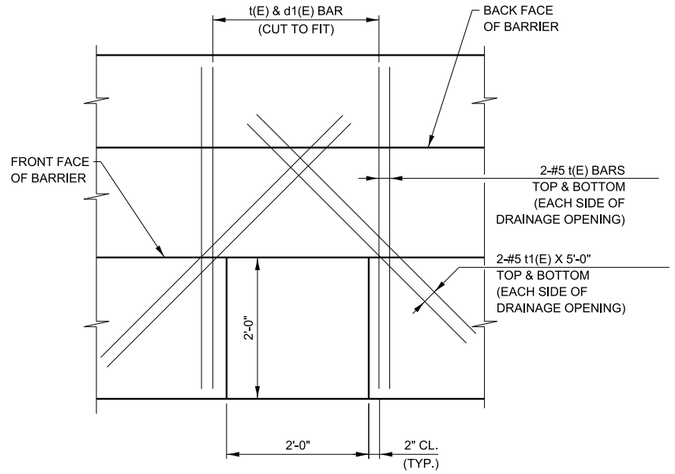
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED PJF BETWEEN BASE AND
	DRAINAGE STRUCTURE

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-4, L-SHAPE 44 INCH

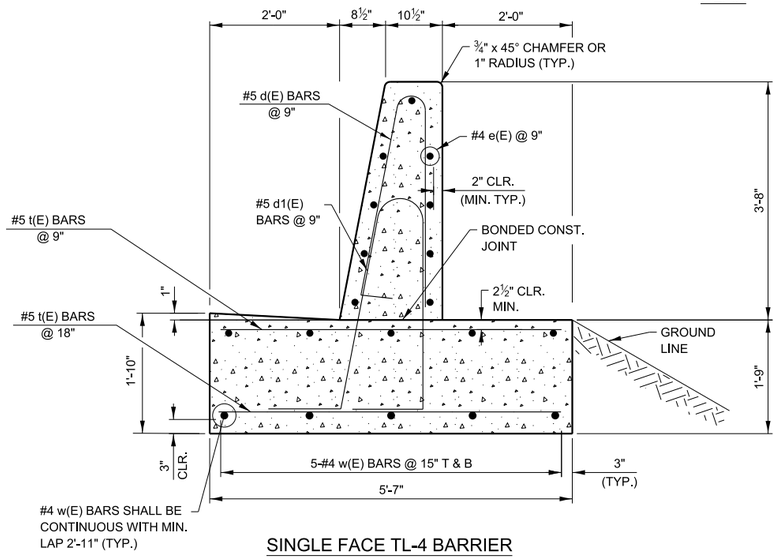
VERSION:	STANDARD:	SHEET:
2024-03	C2-01	1 OF 1



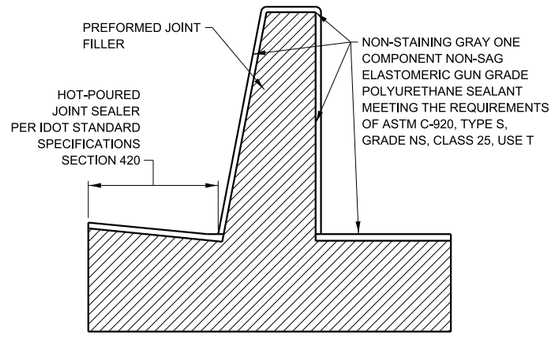
PLAN



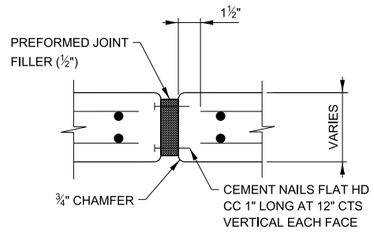
PLAN
REINFORCEMENT AROUND DRAINAGE STRUCTURE



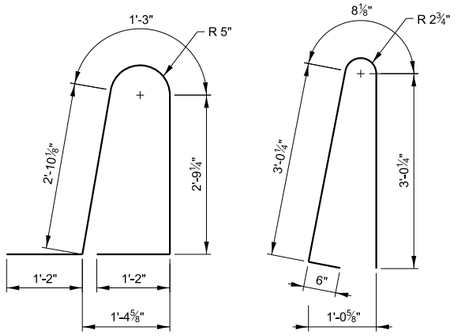
SINGLE FACE TL-4 BARRIER
SECTION A-A



SINGLE FACE TL-4 BARRIER
EXPANSION JOINT
SECTION B-B



EXPANSION JOINT



BAR d1(E) BAR d(E)

BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-4 ROADSIDE BARRIER USED TO SHIELD ROADWAY APPURTENANCES. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 25'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. CONTRACTION JOINTS SHALL BE FORMED BY A GROOVE ⅛", EITHER FORMED IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD ADDITIONAL t AND t1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE. A 1" PJF SHALL BE PLACED BELOW THE BARRIER BASE WHEN IT SITS UPON A FLAT SLAB DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 25'-0". SEE SECTION B-B FOR DETAILS.
9. WHEN SPECIFIED IN THE PLANS, THE BACKSIDE OF THE BARRIER BASE MAY BE LEFT EXPOSED A MAXIMUM OF 1', MEASURED FROM THE TOP OF THE BARRIER BASE.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

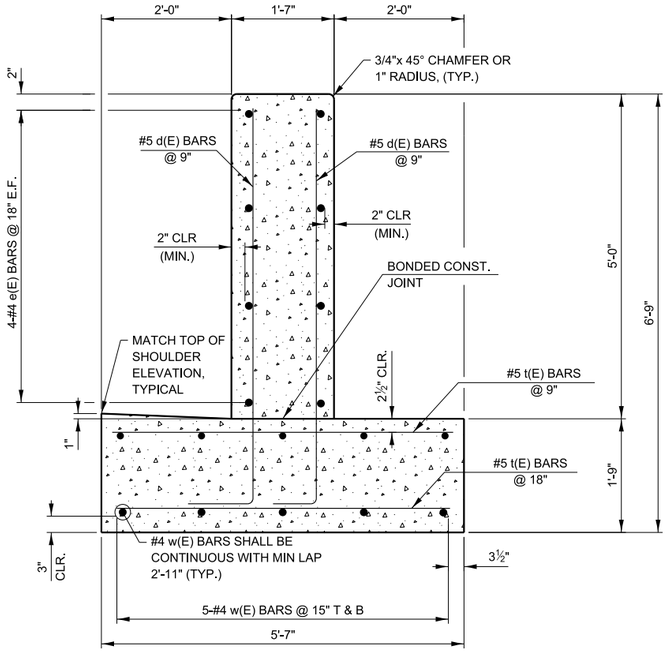
DATE:
03/01/2024

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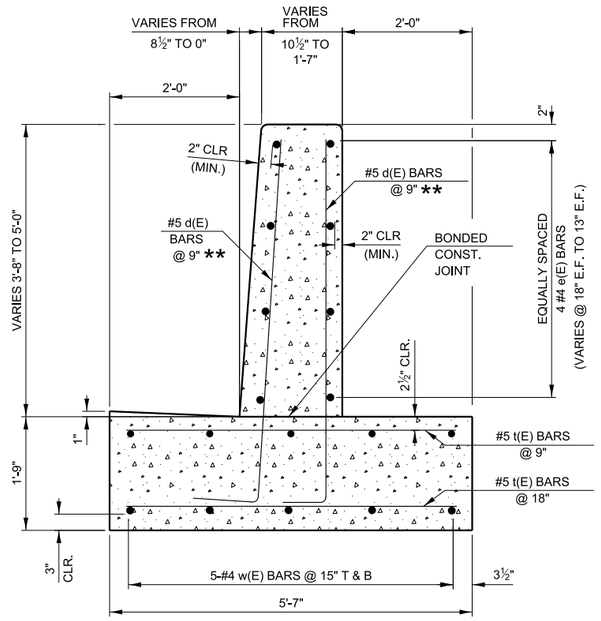
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED PJF BETWEEN BASE AND DRAINAGE STRUCTURE
03-01-2023	REVISED REINF. AT DRAINAGE STR.
03-01-2022	REVISED CALLOUTS AND NOTES
03-01-2020	REVISED TO 44" HEIGHT & RENAMED
03-01-2019	REVISED TO CONSTANT SLOPE

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-4, 44 INCH

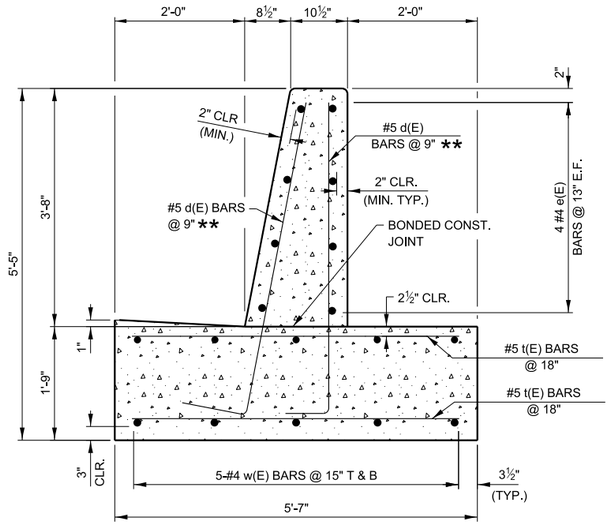
VERSION:	STANDARD:	SHEET:
2024-03	C3-11	1 OF 1



SECTION C-C

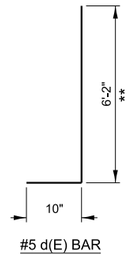


SECTION B-B

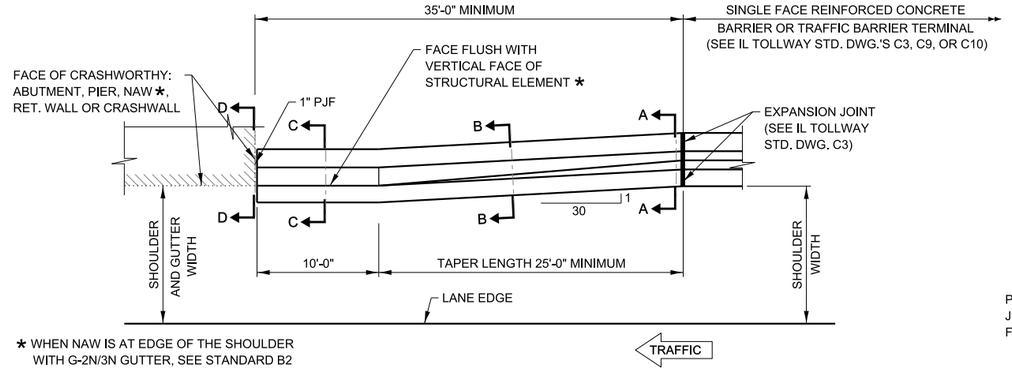


SECTION A-A

** CUT TO FIT IN FIELD
2" MIN. VERTICAL CLR.

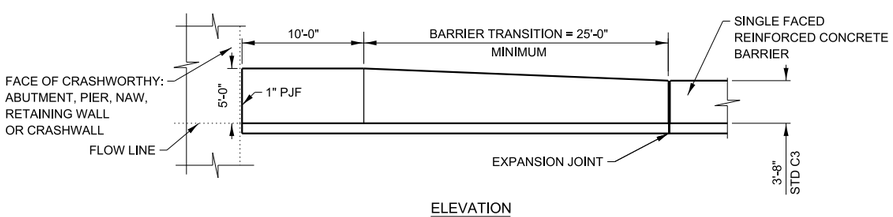


BENDING DIAGRAM



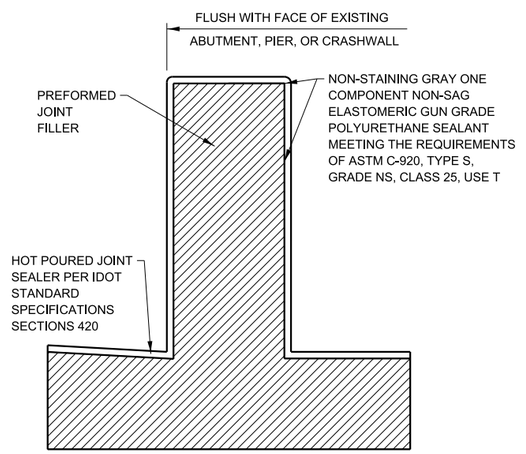
* WHEN NAW IS AT EDGE OF THE SHOULDER
WITH G-2N/3N GUTTER, SEE STANDARD B2
FOR PREFERRED LAYOUT.

PLAN



ELEVATION

CONCRETE SHOULDER BARRIER TRANSITION, V-SF



SECTION D-D

NOTES:

1. TAPER LENGTH REQUIRED FOR THE SHOULDER WIDTH TRANSITION SHALL BE 25'-0" MINIMUM. INCREASE TAPER RATE AS REQUIRED TO OBTAIN THE LENGTH 0F 25'-0".
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. CONTRACTION JOINTS SHALL BE FORMED BY A GROOVE ⅛", EITHER IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.
7. REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.
8. CONSTANT-SLOPE BARRIER SHALL BE USED WITH ALL NEW CONSTRUCTION, OR RECONSTRUCTION OF EXISTING BARRIERS.
9. E.F. DENOTES EACH FACE
10. MINIMUM EXPANSION JOINT SPACING SHALL BE 25'-0".

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

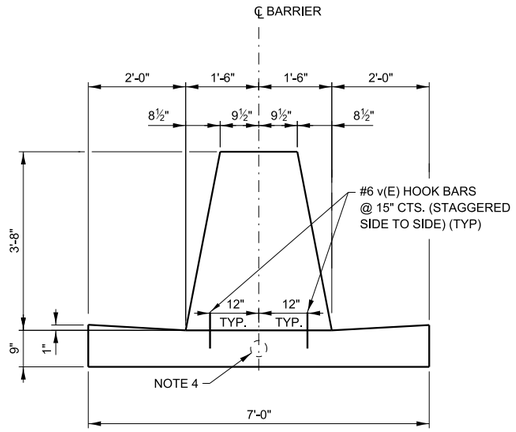
DATE:
03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED NOTE, NAW WITH G-2N/3N SEE
	STD B2,ADDED HOT POUR AT SECT D-D
03-01-2022	REVISED NOTE 4
03-01-2021	CLARIFIED SHLD. WIDTH AND
	REVISED NOTES IN PLAN VIEW

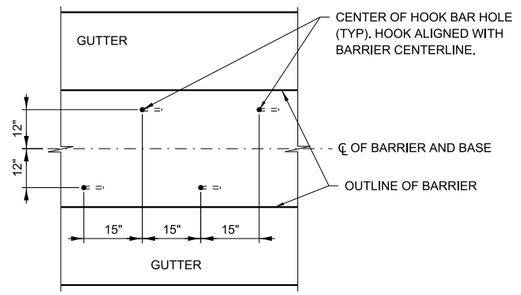
Illinois Tollway

CONCRETE SHOULDER BARRIER TRANSITION TYPE V-SF

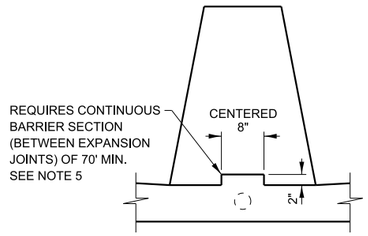
VERSION:	STANDARD:	SHEET:
2024-03	C4-12	1 OF 1



CONCRETE BARRIER, DOUBLE FACE, 44"
CONCRETE BARRIER BASE, 7'-0"



HOOK BAR PLACEMENT
(Plan View)



CONCRETE BARRIER BASE
WITH KEYWAY OPTION

NOTES:

1. 2" DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, CONCRETE BARRIER BASE, AND CONCRETE GUTTER (SPECIAL). CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0". THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0". WHEN A DRAINAGE STRUCTURE FALLS WITHIN 2'-0" FROM AN EXPANSION JOINT (OR) CONTRACTION JOINT, THE NEAREST CONTRACTION JOINT SHALL BE OMITTED.

2. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.

3. IN AREAS OF RELATIVELY FLAT LONGITUDINAL PROFILE GRADES, THE VERTICAL DIMENSION TO THE TOP OF THE BARRIER CAN VARY (BY VARYING THE GUTTER SLOPE) FROM 43" TO 44.5" TO CREATE AN ACCEPTABLE LONGITUDINAL GRADE IN THE GUTTER.

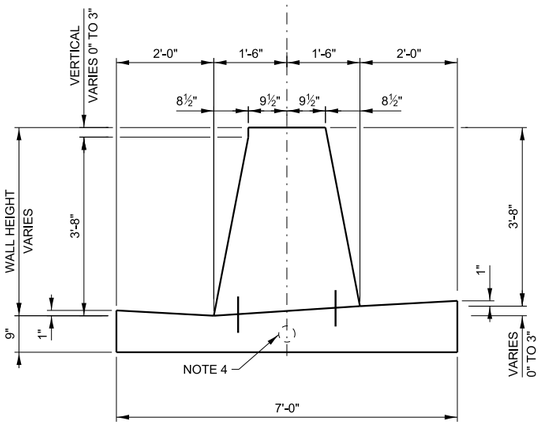
4. REFERENCE PLAN SHEET FOR TYPE, SIZE AND NUMBER OF CONDUITS. PROVIDE 1½" (MIN.) CLEARANCE TO THE TOP OF CONDUIT AND 2" (MIN.) CLEARANCE TO THE BOTTOM OF THE CONDUIT.

5. THE CONTRACTOR HAS THE OPTION OF USING EITHER THE KEYWAY OR THE #6 HOOK BAR v(E) BETWEEN THE BARRIER AND THE BASE. WHEN THE KEYWAY IS USED, THE RAISED KEYWAY SHALL BE POURED MONOLITHIC WITH THE BARRIER BASE AND THE BARRIER SHALL HAVE A MINIMUM UNINTERRUPTED SECTION LENGTH OF 70'. IF THE KEYWAY OR ITS EDGES BECOME DAMAGED, THEN HOOK BARS SHALL BE INSTALLED WITHIN THE DAMAGED SECTION.

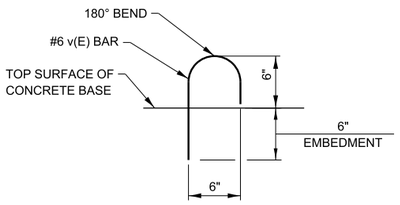
6. ALL BARS SHALL BE INCLUDED IN THE COST OF THE VARIOUS BARRIER AND GUTTER ITEMS. REINFORCEMENT BARS DESIGNATED '(E)' SHALL BE EPOXY COATED. TIE BARS BETWEEN THE BARRIER AND BASE SHALL BE v(E) HOOK BARS ON 15" CENTERS AND ALTERNATE LEFT AND RIGHT OF THE BARRIER CENTERLINE. TIE BARS BETWEEN EITHER THE VARIABLE HEIGHT BARRIER OR THE BASE AND THE GUTTER (SPECIAL) SHALL BE h(E) STRAIGHT BAR PAIRS ON 30" CENTERS.

7. WHEN VARIABLE HEIGHT VERTICAL DIFFERENTIAL EXCEEDS 12" SEE STRUCTURAL PLANS FOR DETAILS.

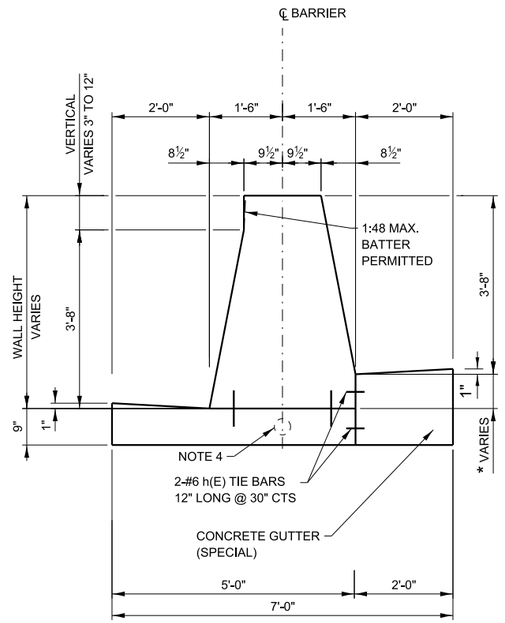
8. GUTTER SLOPE SHALL BE 4.17% SLOPED TOWARD THE MEDIAN UNLESS OTHERWISE NOTED. GUTTER SLOPE IS REVERSE PITCHED WHEN THE SHOULDER/FLEX LANE DRAINS AWAY FROM THE GUTTER. TRANSITION GUTTER SLOPE OVER 30'-0". GUTTER SLOPE TRANSITIONS ARE INCLUDED IN THE COST OF CONCRETE BASE AND/OR CONCRETE GUTTER (SPECIAL). SEE ROADWAY PLANS FOR LIMITS OF REVERSE PITCHED GUTTER AND TRANSITIONS.



CONCRETE BARRIER, DOUBLE FACE, VARIABLE HEIGHT
CONCRETE BARRIER BASE, VARIABLE HEIGHT, 7'-0"
(BARRIER HEIGHT VERTICAL DIFFERENTIAL VARIES 0" TO 3")



HOOK BAR
(Side View)



CONCRETE BARRIER, DOUBLE FACE, VARIABLE HEIGHT
CONCRETE BARRIER BASE, 5'-0"

(BARRIER HEIGHT VERTICAL DIFFERENTIAL VARIES 3" TO 12")
* WHEN 6" OR GREATER ADD TOP TIE BAR.

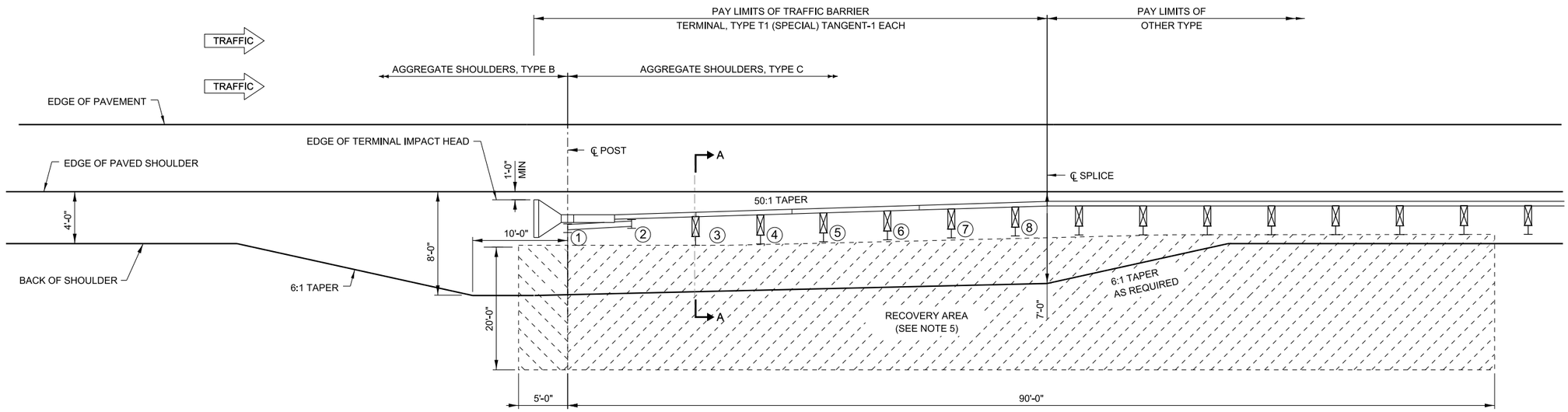
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

REVISIONS	
DATE	DESCRIPTION
08-28-2020	CHANGED TIE BAR DETAILS
03-01-2020	CHANGED MAX. VERTICAL DIFFERENTIAL TO 12"
03-01-2019	REVISED TO CONSTANT SLOPE ADDED TIE BARS
03-31-2016	REVISED NOTES

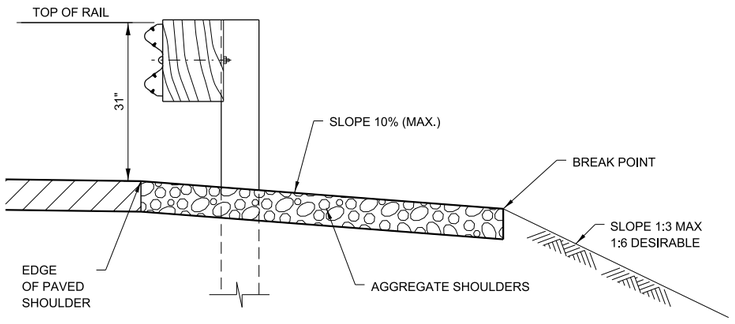
Illinois Tollway

CONCRETE BARRIER BASE, AND CONCRETE BARRIER, DOUBLE FACE, 44 INCH AND VARIABLE HEIGHT

VERSION:	STANDARD:	SHEET:
2020-03	C5-08	1 OF 1



SHOULDER WIDENING TRANSITION - WITHOUT GUTTER FOR
TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT



SECTION A-A

GENERAL NOTES:

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

2. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B28 FOR GUTTER TRANSITION, AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.

3. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

4. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.

5. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.

6. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 50:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY.
ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TERMINAL SHALL BE LAID OUT IN A STRAIGHT LINE.

7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.

8. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

9. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.

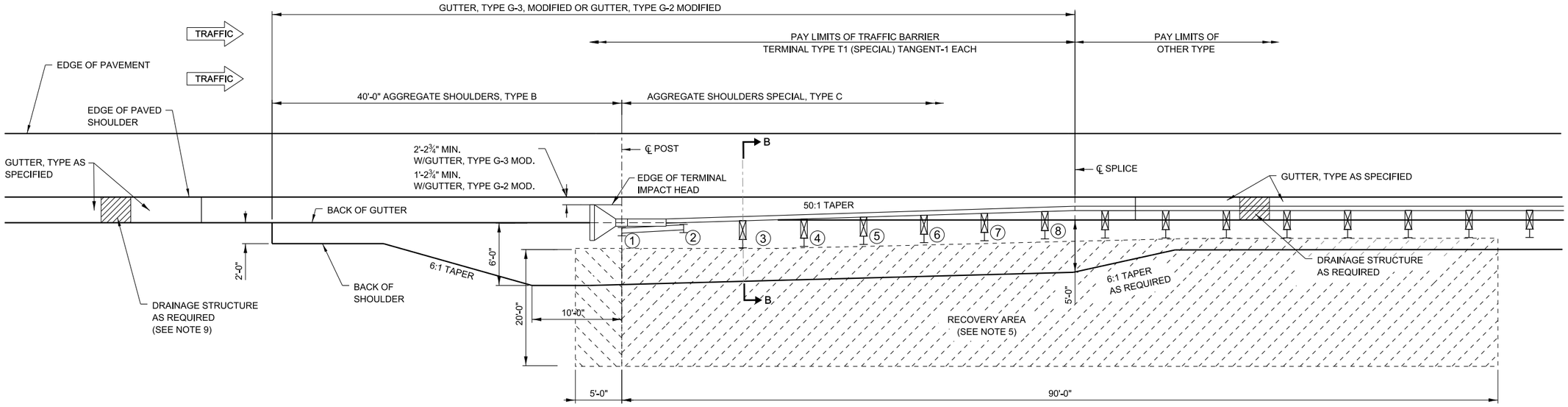
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

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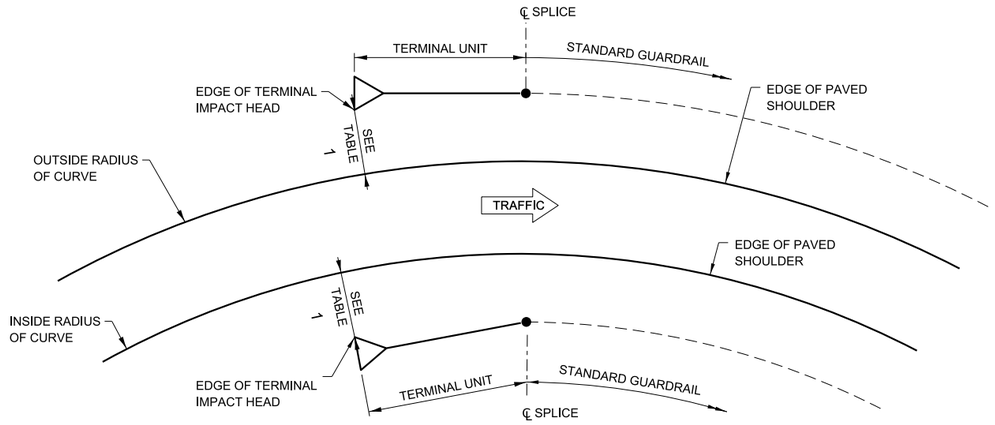
REVISIONS	
DATE	DESCRIPTION
03-01-2020	ADDED MOD. TO TABLE 1
	& PLAN NOTE
03-01-2019	REVISED NOTES FOR MASH
03-31-2017	REVISED NOTES
03-31-2016	COMBINED G-3 & G-2
03-11-2015	REVISED NOTES

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

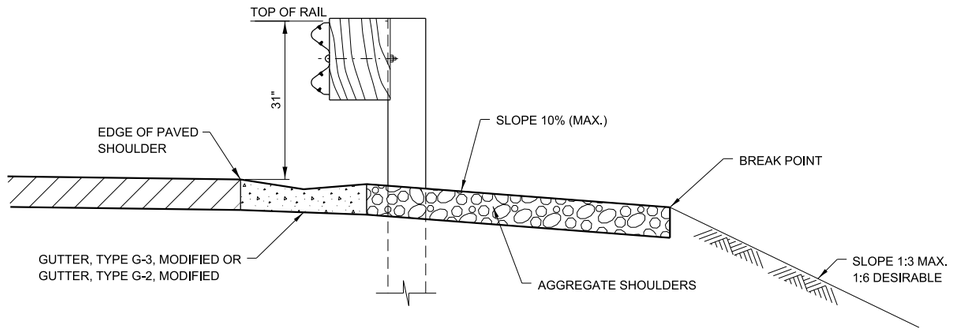
VERSION:	STANDARD:	SHEET:
2020-03	C6-11	1 OF 2



SHOULDER WIDENING TRANSITION - WITH GUTTER, TYPE G-3 OR TYPE G-2 FOR
TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT



CURVED ROADWAY
TRAFFIC BARRIER TERMINAL PLACEMENT



SECTION B-B

TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" *
GUTTER, TYPE G-2, MOD.	1'-2¾"	1'-2¾" MIN. *
GUTTER, TYPE G-3, MOD.	2'-2¾"	2'-2¾" MIN. *

(*) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

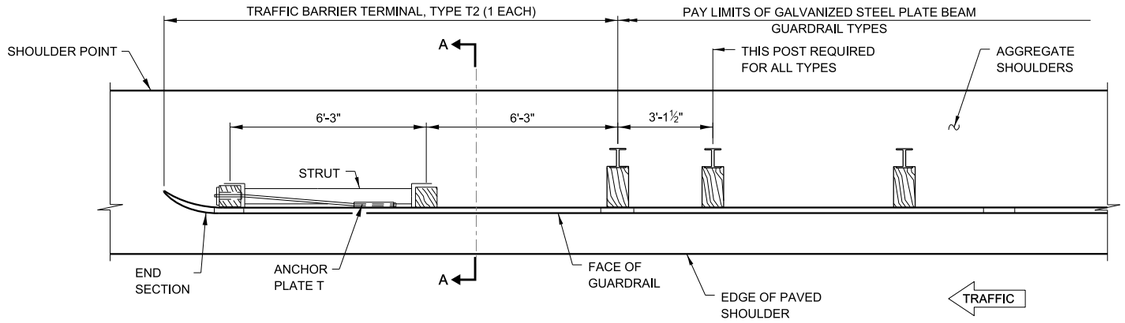
NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

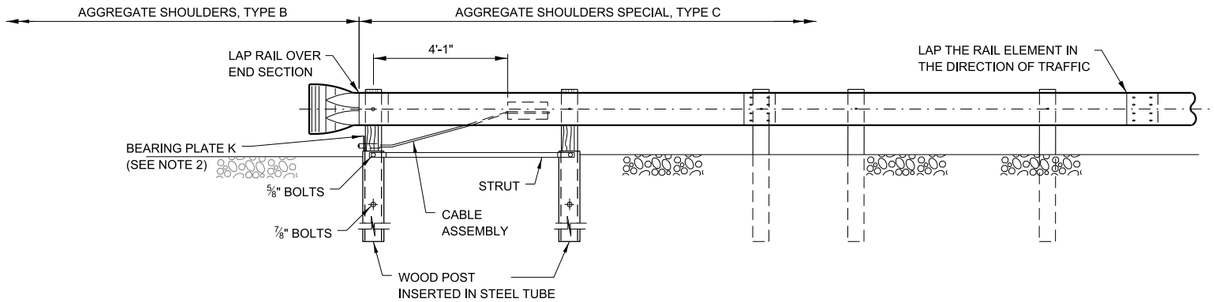
Illinois Tollway

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT

VERSION:	STANDARD:	SHEET:
2020-03	C6-11	2 OF 2

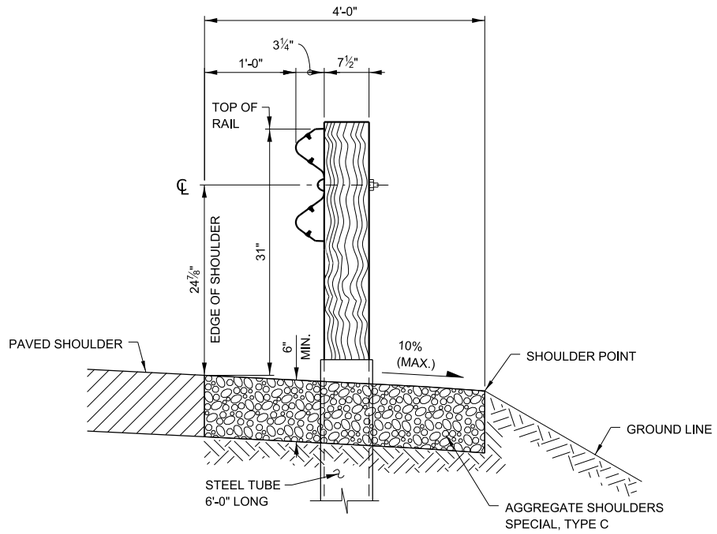


PLAN



ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER



SECTION A-A

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE BEARING PLATE K SHALL BE HELD IN POSITION BY TWO 8D NAILS DRIVEN INTO THE POST AND BENT OVER THE TOP OF THE PLATE.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T2 IS TYPICALLY UTILIZED FOR THE DEPARTING END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM.
4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.
7. WHERE GUTTER, TYPE G-2 OR GUTTER, TYPE G-3 ARE REQUIRED IN FRONT OF THE GUARDRAIL, THE POSTS SHALL BE LOCATED 6" BEHIND THE GUTTER, OR AS OTHERWISE DETAILED IN THE PLANS. THE OFFSET FROM THE EDGE OF SHOULDER TO THE FACE OF THE GUARDRAIL SHALL BE AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING B28.

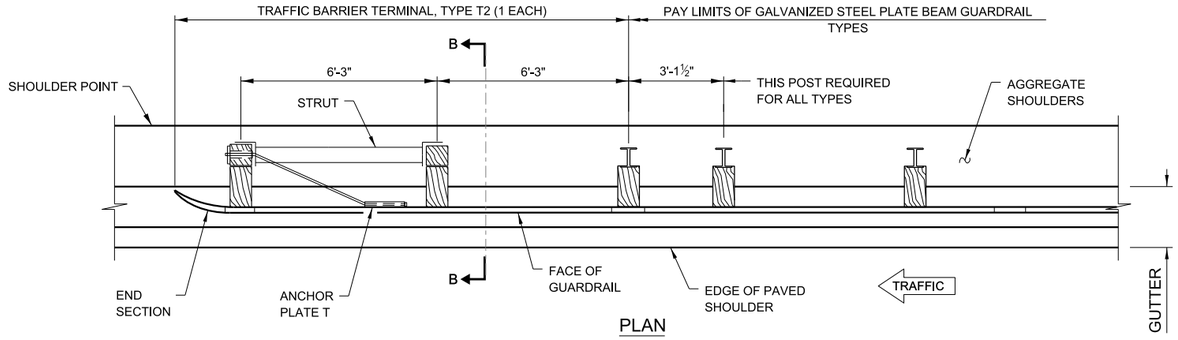
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/31/2017

REVISIONS	
DATE	DESCRIPTION
03-31-2017	REVISED SECT A-A SHOULDER SLOPE TO %
03-31-2016	REVISED SECTION A-A SHOULDER
03-11-2015	REVISED NOTES
03-31-2014	REVISED NOTES

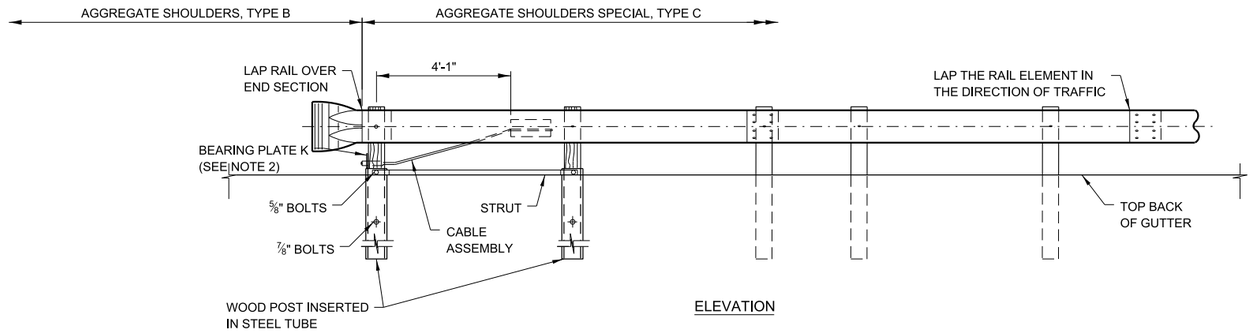
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

VERSION:	STANDARD:	SHEET:
2017-03	C7-08	1 OF 3

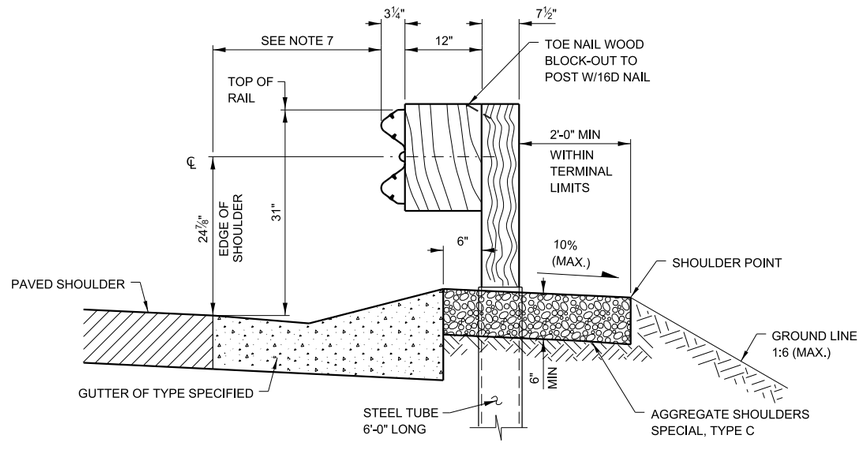


PLAN



ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2-WITH GUTTER



SECTION B-B

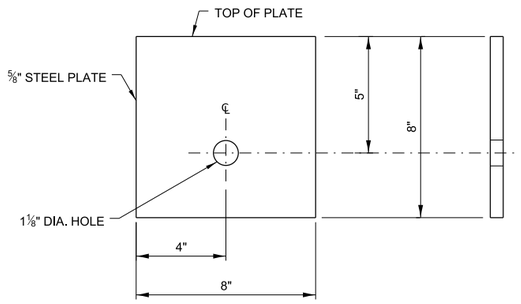
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/31/2017

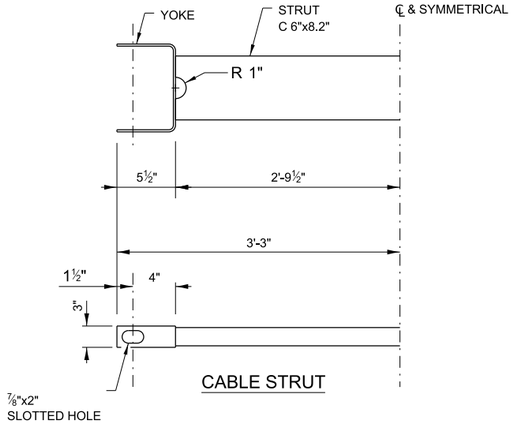
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

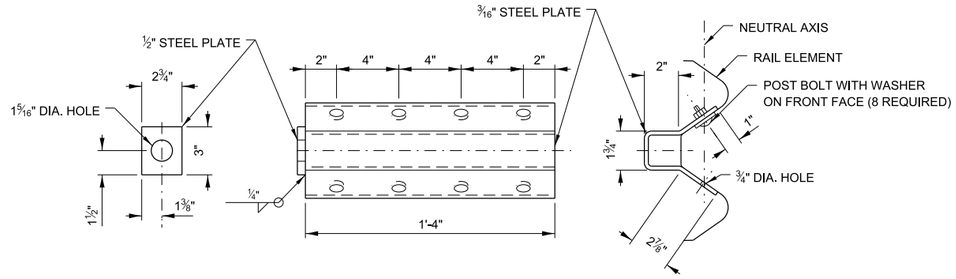
VERSION:	STANDARD:	SHEET:
2017-03	C7-08	2 OF 3



BEARING PLATE K

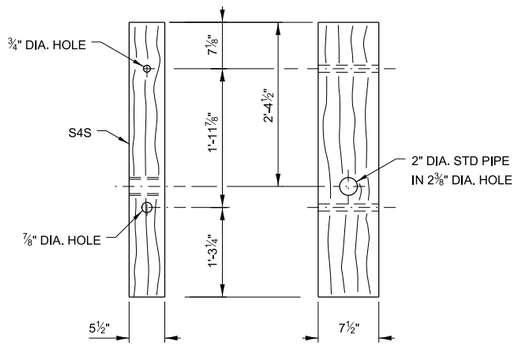


CABLE STRUT

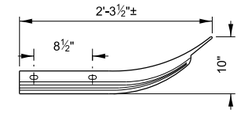


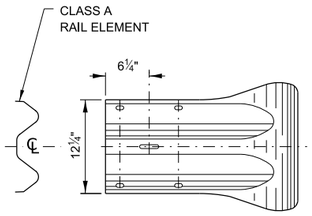
NOTE:
ANCHOR PLATE T SHALL BE USED TO ATTACH CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

ANCHOR PLATE T DETAILS



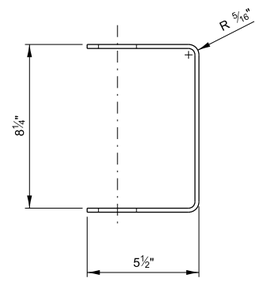
WOOD POST



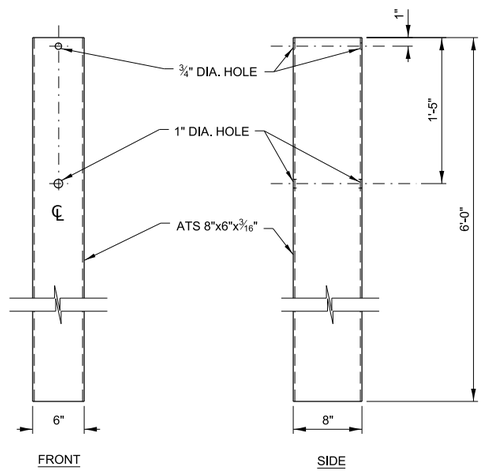


END SECTION

CABLE ASSEMBLY
(40,000 LBS.) MIN. BREAKING STRENGTH)
TIGHTEN TO TAUT TENSION



YOKE
3/16" THICK STEEL



STEEL TUBE

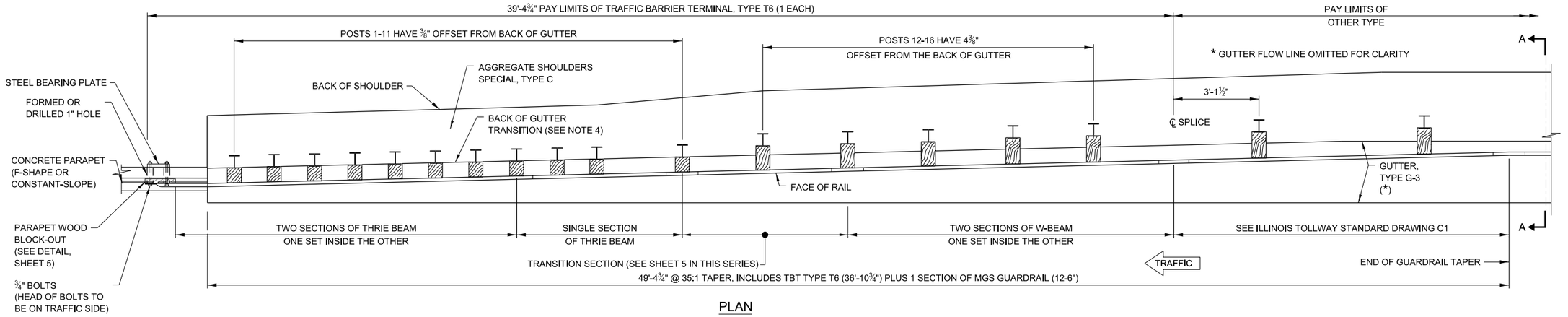
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/31/2017

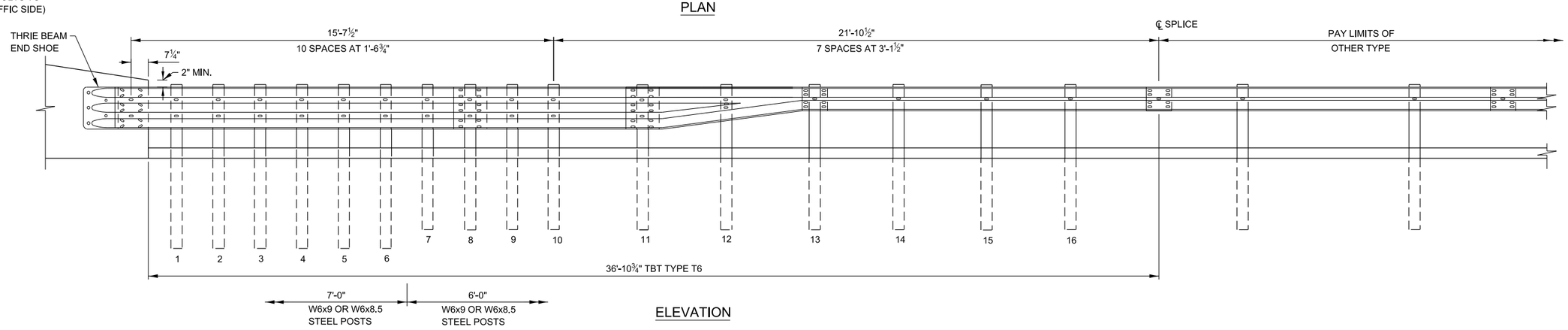
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T2

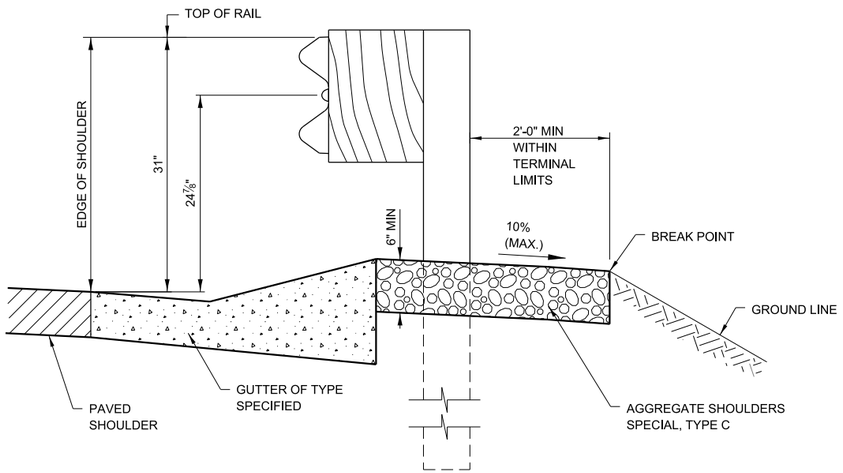
VERSION:	STANDARD:	SHEET:
2017-03	C7-08	3 OF 3



PLAN



ELEVATION



WITH GUTTER,TYPE G-3

SECTION A-A

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRIE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T6 IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGES CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS TO BE INSTALLED.
4. SEE ILLINOIS TOLLWAY STANDARD DRAWING B3 FOR GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T6.
5. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
6. TRAFFIC BARRIER TERMINAL, TYPE T6 SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. TERMINAL POSTS TO BE INSTALLED PERPENDICULAR TO BACK OF GUTTER.
9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
10. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
11. LEAVE-OUT DIMENSION BEHIND POSTS 1-6, SHALL BE A MINIMUM OF 4".
12. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.

FOR PARAPET (SAFETY SHAPE)
WITH GUTTER, TYPE G-3

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

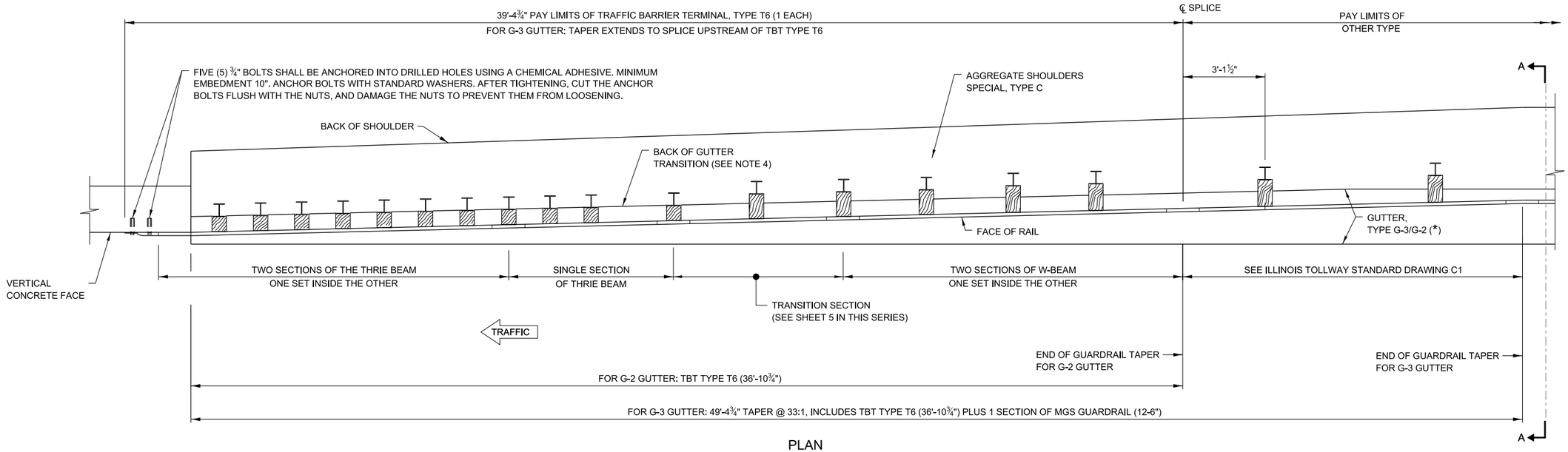
REVISIONS	
DATE	DESCRIPTION
03-21-2020	REVISED LENGTH OF THRIE BEAM
	REVISED LENGTH OF POSTS
03-01-2019	UPDATED NOTES FOR
	CONSTANT-SLOPE CONCRETE BARRIER
03-31-2017	ADDED DRAINAGE STRUCTURE NOTE
03-31-2016	REVISED SHOULDER SECTION

Illinois Tollway

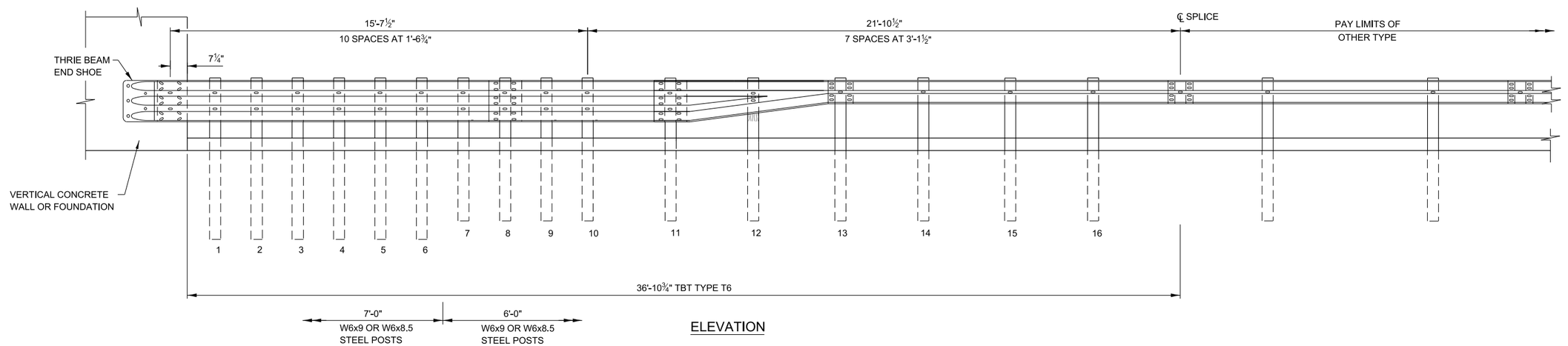
TRAFFIC BARRIER TERMINAL, TYPE T6

VERSION:	STANDARD:	SHEET:
2020-03	C9-10	1 OF 5

* GUTTER FLOW LINE IS OMITTED FOR CLARITY



PLAN



ELEVATION

FOR OTHER VERTICAL CONCRETE WALL/FOUNDATION WITH GUTTER

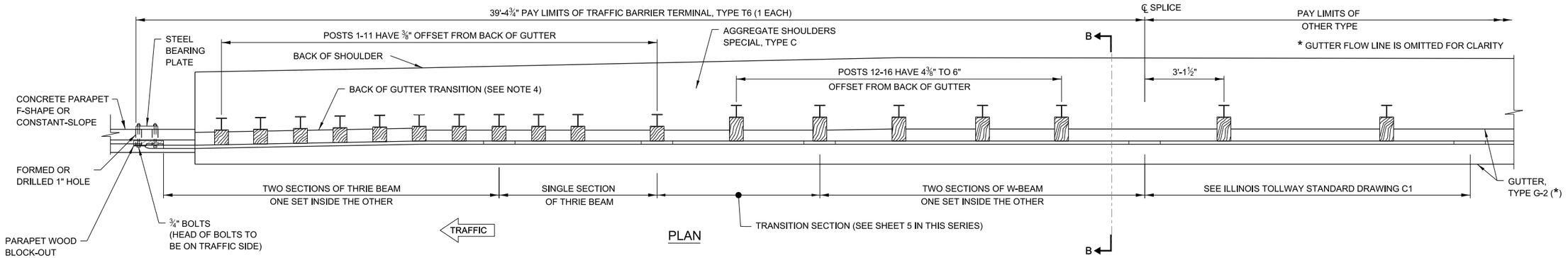
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES AND SECTION A-A.

APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

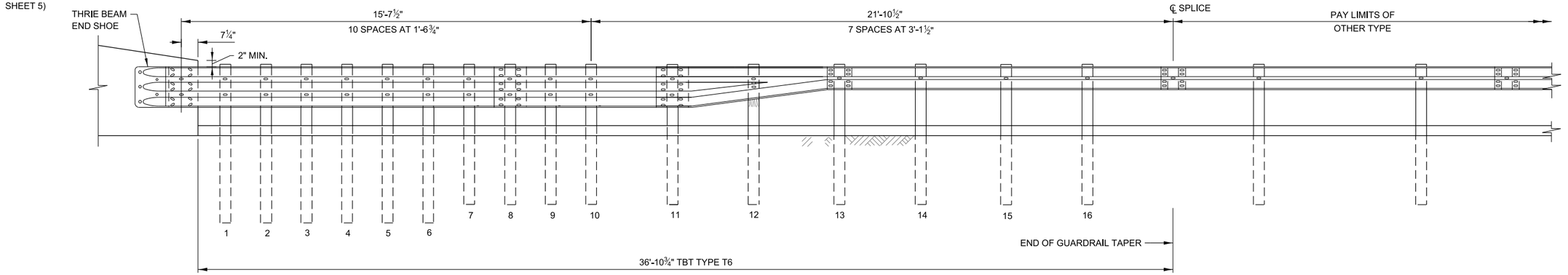
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

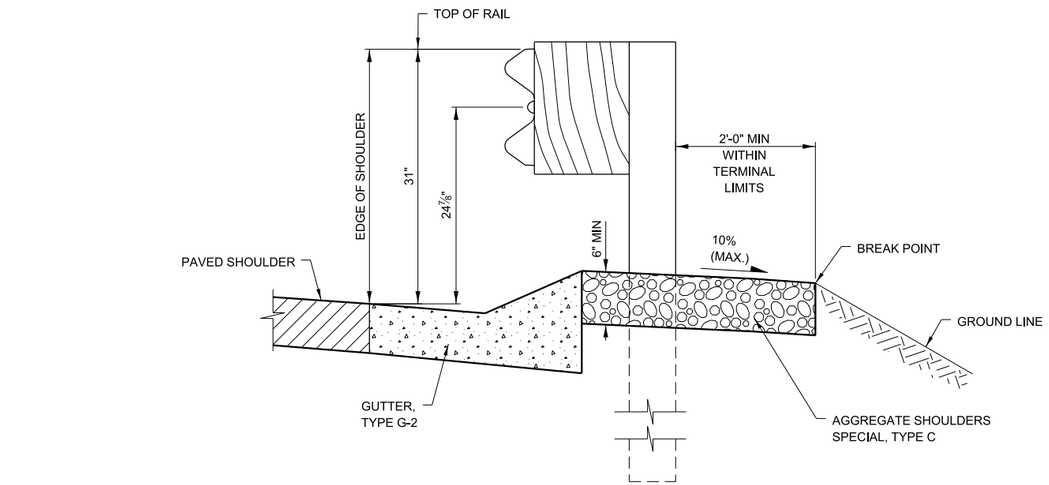
VERSION:	STANDARD:	SHEET:
2020-03	C9-10	2 OF 5



PLAN



ELEVATION



SECTION B-B
WITH GUTTER, TYPE G-2

FOR PARAPET (SAFETY SHAPE)
WITH GUTTER, TYPE G-2

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

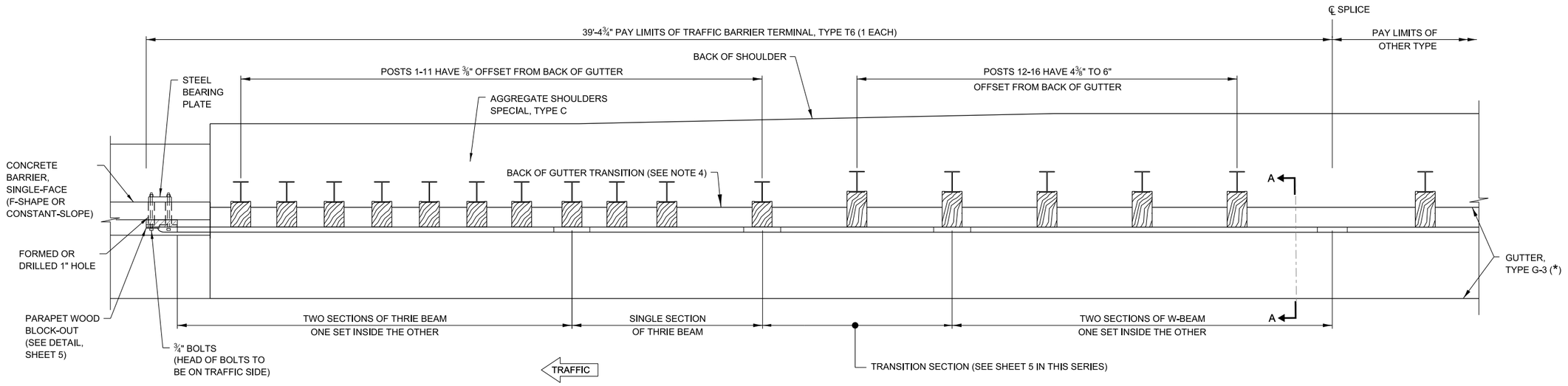
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

Illinois Tollway

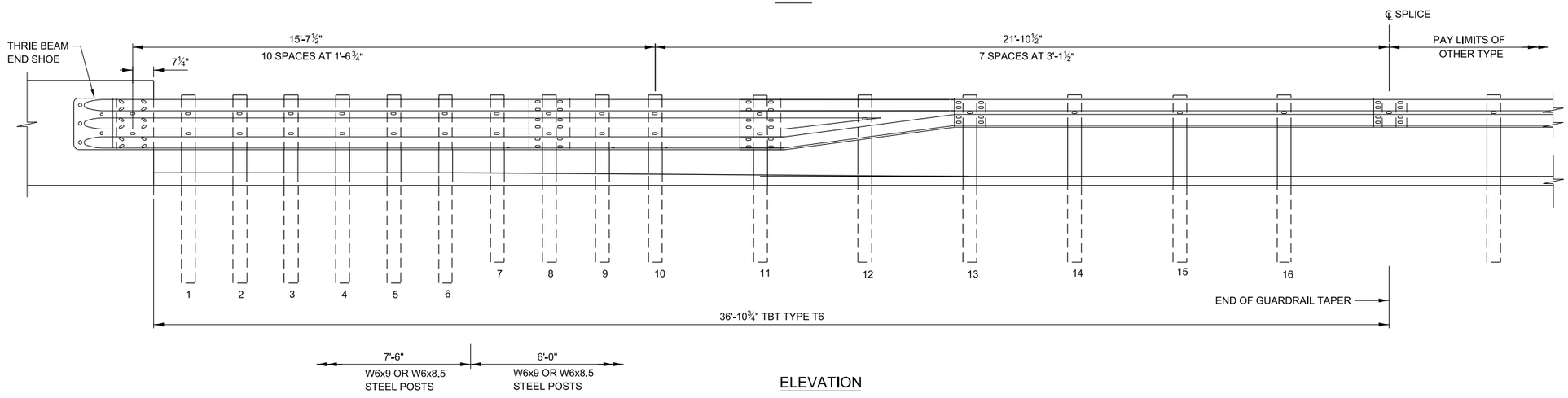
TRAFFIC BARRIER TERMINAL, TYPE T6

VERSION:	STANDARD:	SHEET:
2020-03	C9-10	3 OF 5

* GUTTER FLOW LINE IS OMITTED FOR CLARITY



PLAN



ELEVATION

FOR CONCRETE BARRIER, SINGLE-FACE W/ GUTTER, TYPE G-3

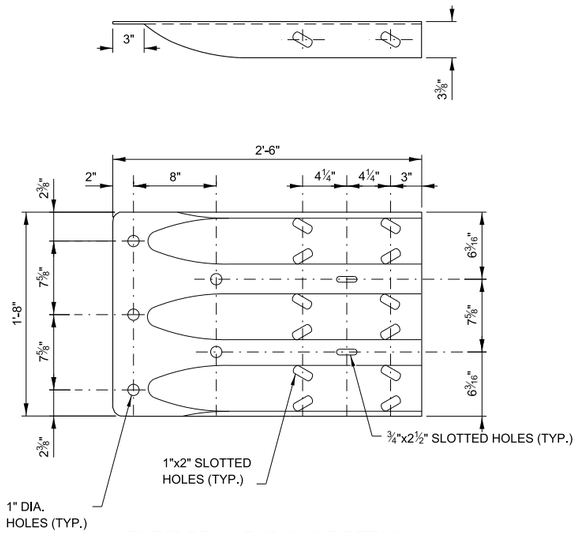
NOTE:
SEE SHEET 1 OF THIS SERIES FOR GUTTER TRANSITION NOTES AND SECTION A-A.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

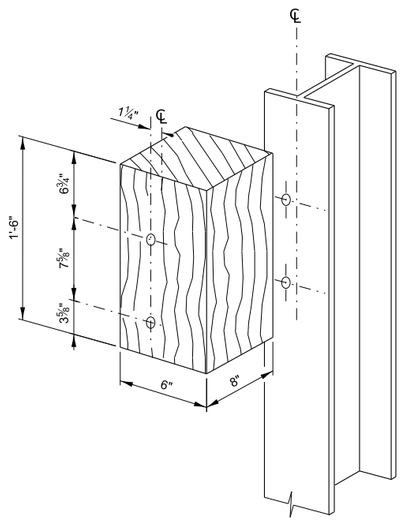
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6

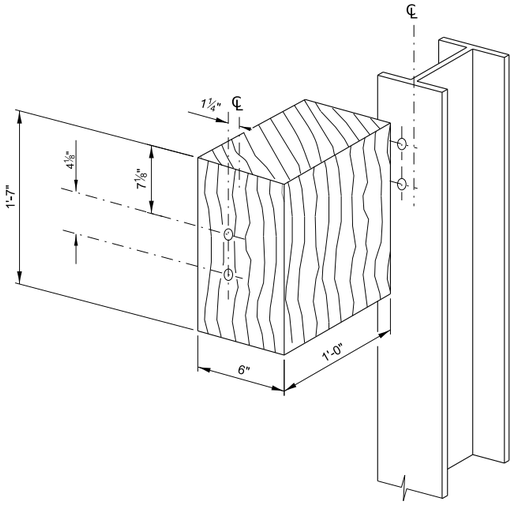
VERSION:	STANDARD:	SHEET:
2020-03	C9-10	4 OF 5



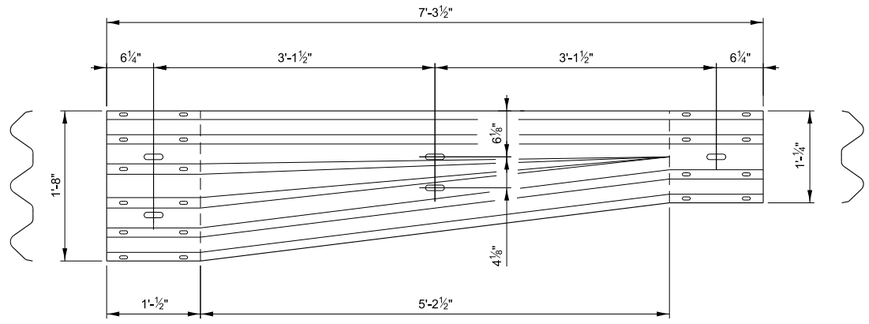
THRIE BEAM END SHOE DETAIL



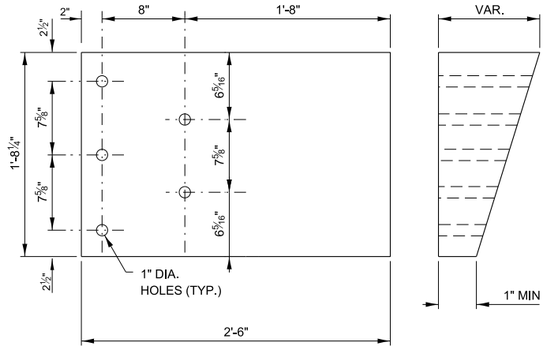
POSTS 1-11 WOOD BLOCK-OUT DETAIL



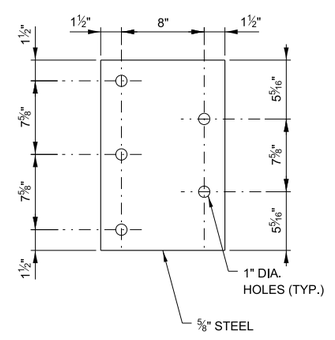
POST 12 WOOD BLOCK-OUT DETAIL
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-16 BLOCKOUTS)



TRANSITION SECTION
(10 GAUGE RAIL ELEMENT)



PARAPET WOOD BLOCK-OUT DETAIL



PARAPET STEEL BEARING PLATE DETAIL
(5 EACH INDIVIDUAL 5"x5"x⅝" STEEL PLATES WITH CENTERED 1" HOLES MAY BE SUBSTITUTED FOR THE PLATE SHOWN.)

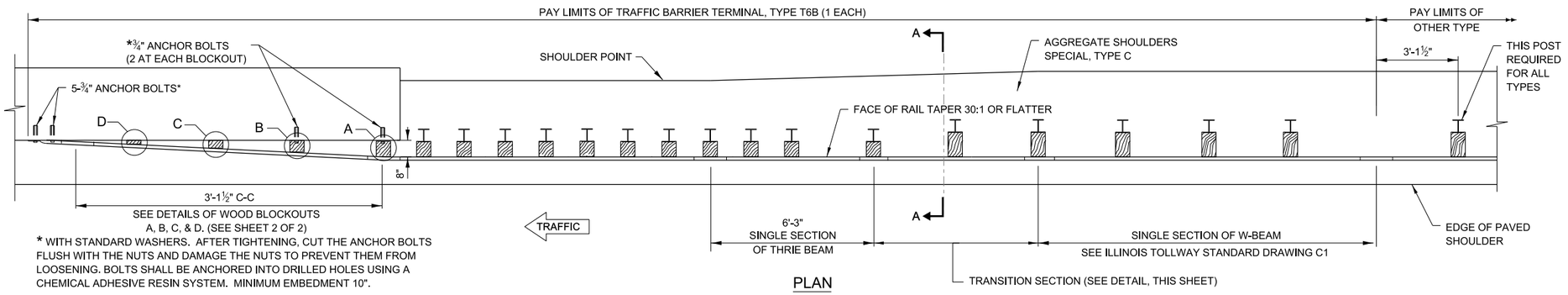
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

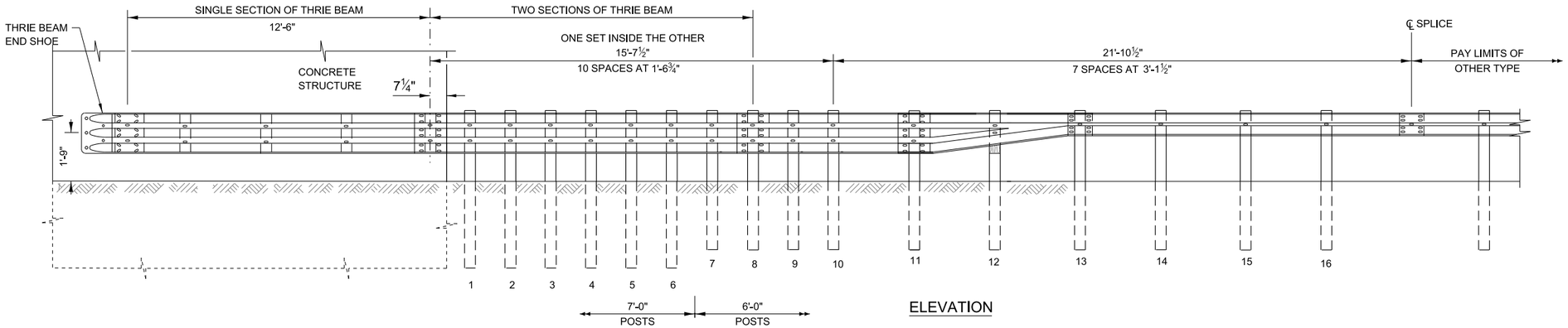
Illinois Tollway

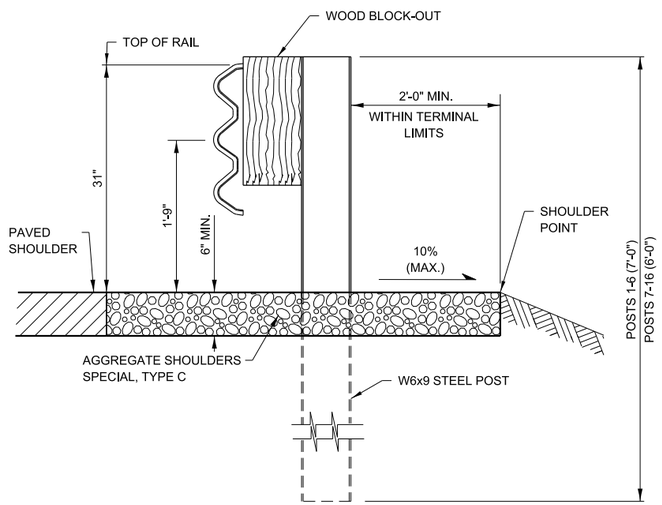
TRAFFIC BARRIER TERMINAL, TYPE T6

VERSION:	STANDARD:	SHEET:
2020-03	C9-10	5 OF 5



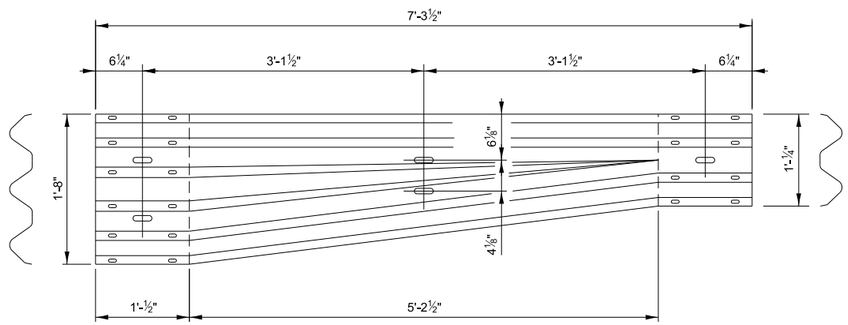
* WITH STANDARD WASHERS. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10".





NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRIE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T6B IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGE CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS NOT TO BE INSTALLED.
4. UNDER NO CIRCUMSTANCES SHALL EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1, SHEET 3 OF 4.
7. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. LEAVE-OUT DIMENSION BEHIND POSTS 1-6, SHALL BE A MINIMUM OF 4".



TRANSITION SECTION
(10 GAUGE RAIL ELEMENT)

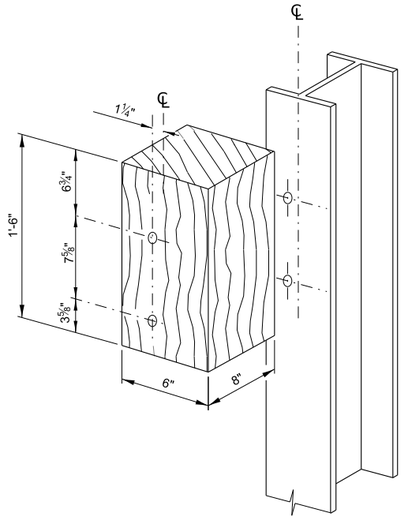
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2020

REVISIONS	
DATE	DESCRIPTION
03-01-2020	REVISED LENGTH OF THRIE BEAM
	REVISED LENGTH OF POSTS
03-31-2017	REVISED SHOULDER SLOPE LABEL
03-31-2016	REVISED SECTION A-A SHOULDER
03-11-2015	REVISED NOTES
03-31-2014	REVISED WOOD BLOCKS AND NOTES

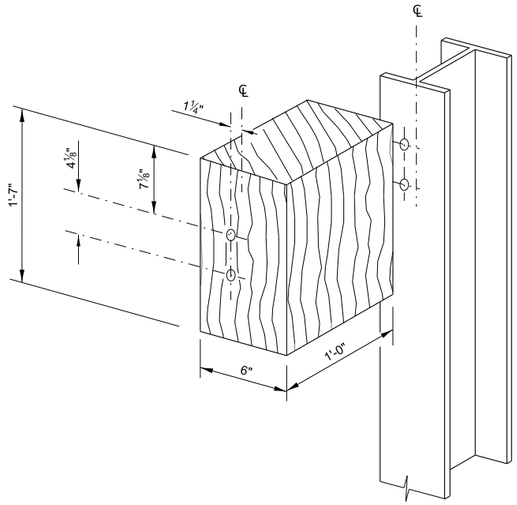
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6B

VERSION:	STANDARD:	SHEET:
2020-03	C10-09	1 OF 2

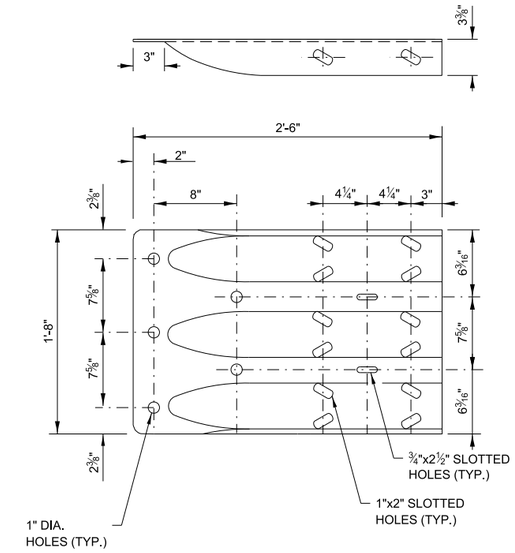


POSTS 1-11 WOOD BLOCK-OUT DETAIL

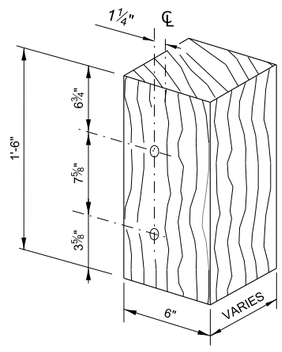


POST 12 WOOD BLOCK-OUT DETAIL

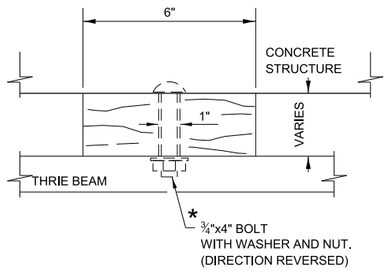
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-16 BLOCKOUTS)



THRIE BEAM END SHOE DETAIL

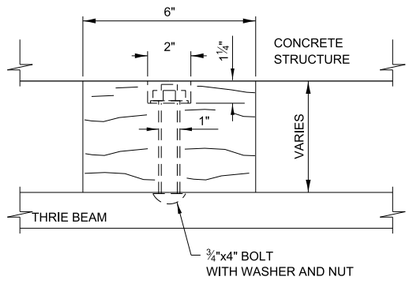


MODIFIED THICKNESS DETAIL
WOOD BLOCK-OUTS A, B, C, & D

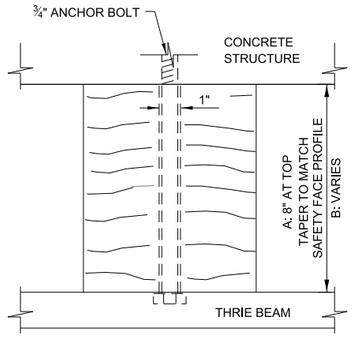


WOOD BLOCK-OUT D

* AFTER TIGHTENING, CUT THE BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING.



WOOD BLOCK-OUT C



WOOD BLOCK-OUT A & B

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

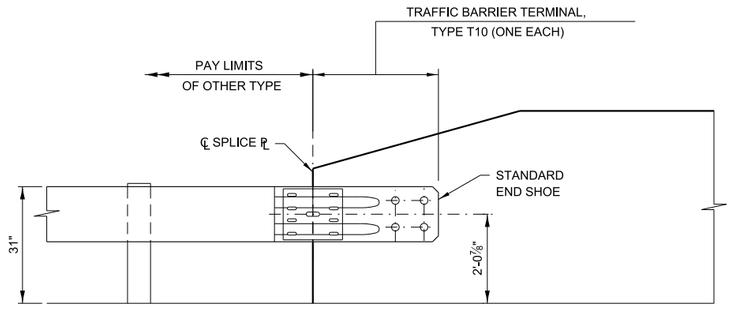
APPROVED BY:
CHIEF ENGINEERING OFFICER

DATE:
03/01/2020

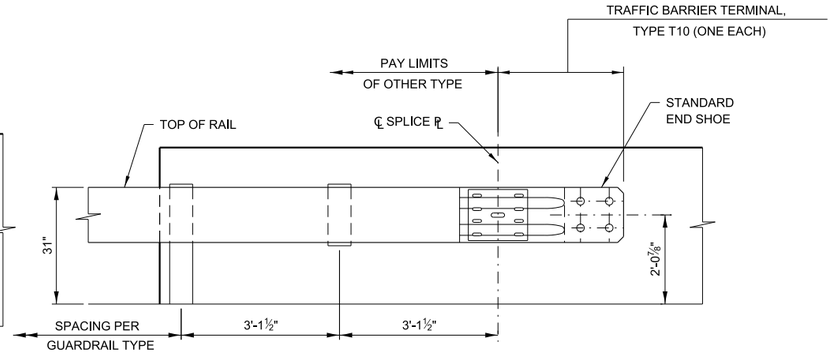
Illinois Tollway

TRAFFIC BARRIER TERMINAL, TYPE T6B

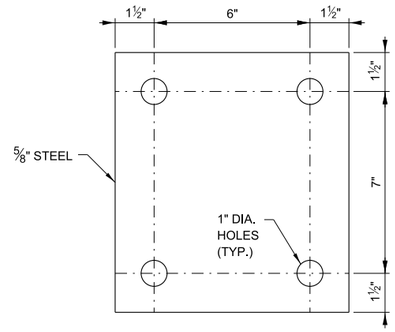
VERSION:	STANDARD:	SHEET:
2020-03	C10-09	2 OF 2



ELEVATION

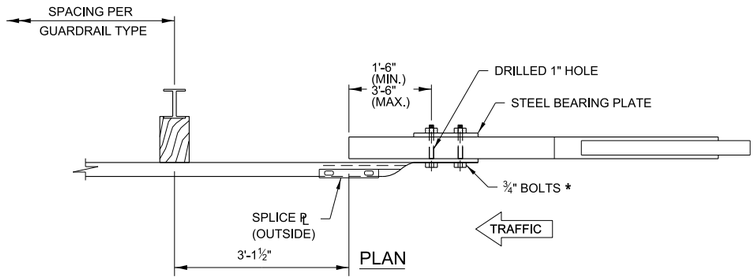


ELEVATION

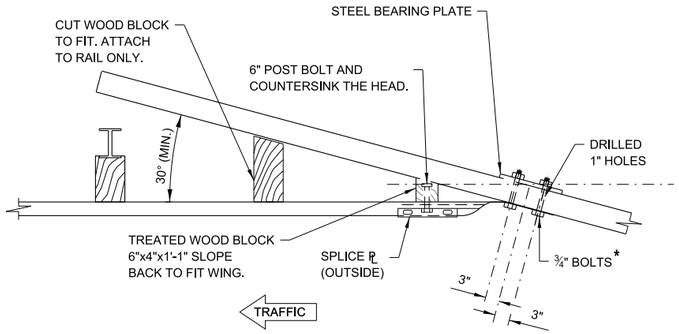


PARAPET STEEL BEARING
PLATE DETAIL

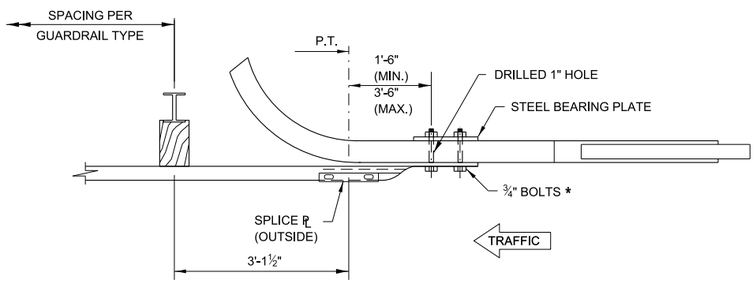
(4 EACH INDIVIDUAL 5"x5"x⅝" STEEL PLATES WITH CENTERED HOLES MAY BE SUBSTITUTED FOR THE PLATE SHOWN)



TANGENT WING



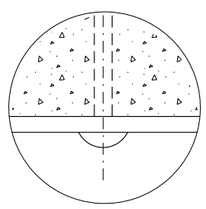
PLAN
FLARED WING



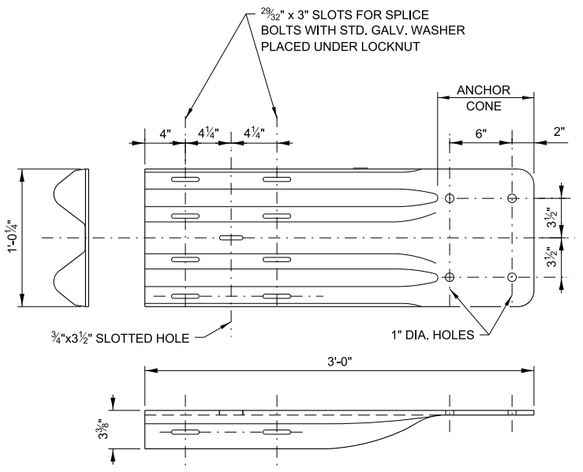
PLAN
CURVED WING

GENERAL NOTE:

* HEAD OF BOLT TO BE ON TRAFFIC SIDE. SEE DETAIL "A"



DETAIL "A"



END SHOE

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE 24⅞" TYPICAL RAIL HEIGHT IS MEASURED FROM EXISTING SURFACE 1'-0" IN FRONT OF RAIL, OR FROM EDGE OF SHOULDER/EDGE OF GUTTER WHEN EDGE IS MORE THAN 1'-0" IN FRONT OF RAIL TO CENTER OF RAIL.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T10 IS TYPICALLY UTILIZED TO CONNECT GALVANIZED STEEL PLATE BEAM GUARDRAIL TO THE DEPARTING END OF AN EXISTING BRIDGE CONCRETE WING WALL OR PARAPET.
4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. WHEN END SHOE IS ATTACHED TO A BRIDGE PARAPET WHICH HAS AN EXPANSION JOINT, THE BOLTS SHALL BE PROVIDED WITH A LOCKNUT OR DOUBLE NUT AND SHALL BE TIGHTENED ONLY TO A POINT THAT WILL ALLOW GUARDRAIL MOVEMENT.
7. THE ANCHOR CONE SHALL BE SET FLUSH WITH THE SURFACE OF THE CONCRETE.
8. EXTERNALLY THREADED STUDS PROTRUDING FROM THE SURFACE OF THE CONCRETE SHALL NOT BE PERMITTED.
9. WHEN WING WALL THICKNESS IS GREATER THAN 18" OR NOT ACCESSIBLE TO THE BACK SIDE, 4-¾" BOLTS SHALL BE ANCHORED INTO DRILLED HOLES, USING A CHEMICAL ADHESIVE. MINIMUM EMBEDMENT SHALL BE 10". ANCHOR BOLTS WITH STANDARD WASHER SHALL BE USED. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS, AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

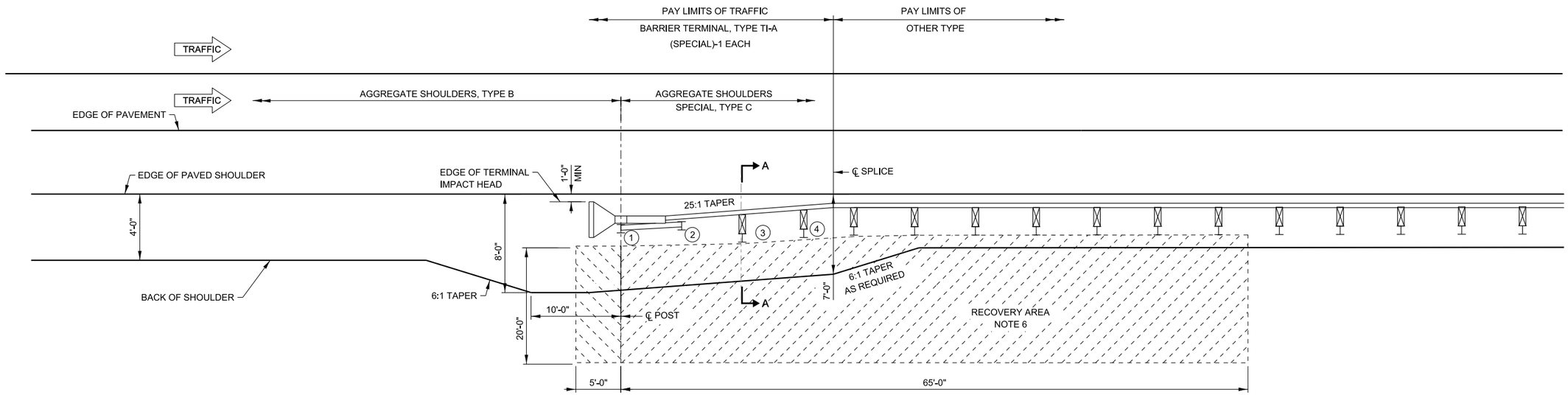
DATE: 03/31/2017

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-31-2017	REV'D EL PARAPET & FL WING ANGLE
03-31-2016	REVISED FLARED WING ANGLE
03-11-2015	REVISED NOTES
03-31-2014	REVISED NOTES
02-07-2012	REVISED BOLT NOTE, ADDED DETAIL "A" AND REVISED NOTES

TERMINAL BARRIER TERMINAL, TYPE T10

VERSION:	STANDARD:	SHEET:
2017-03	C11-07	1 OF 1



SHOULDER WIDENING TRANSITION - WITHOUT GUTTER
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

GENERAL NOTES:

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

2. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) IS THE UPSTREAM END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM, FOR RAMP INSTALLATION WITH DESIGN SPEED LIMIT OF 40 MPH OR LESS, AASHTO MASH, TEST LEVEL (TL-2).

3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B29 FOR GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL), AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.

4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.

5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.

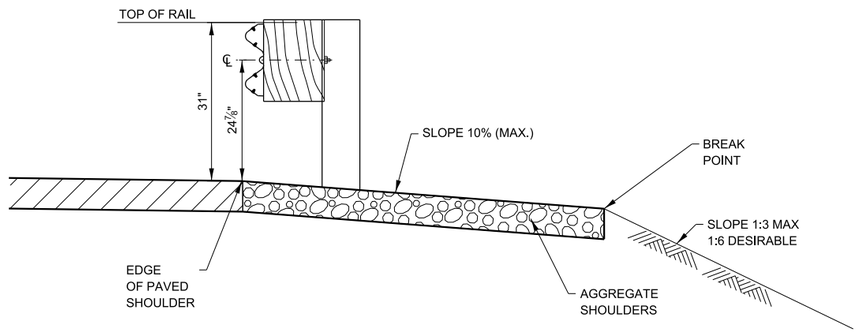
6. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.

7. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 25:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY.
   ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) SHALL BE LAID OUT IN A STRAIGHT LINE.

8. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.

9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURCES DEFINED IN AASHTO MASH. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.

10. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.



SECTION A-A

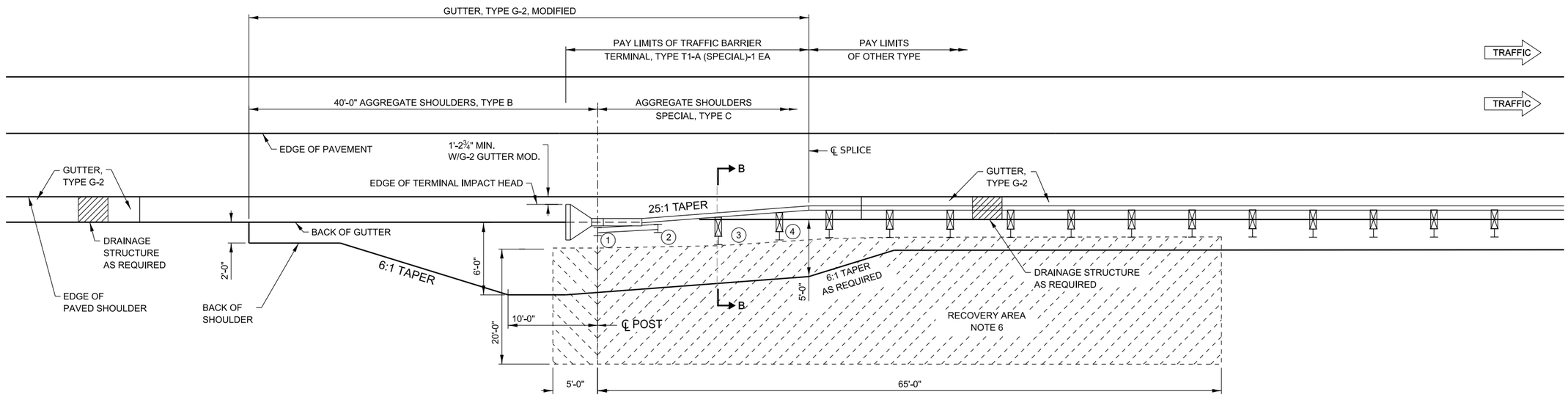
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

REVISIONS	
DATE	DESCRIPTION
03-01-2020	ADD MOD. TO TABLE 1 & PLAN NOTE
03-01-2019	ADDED MOD. TO TABLE 1 & PL
03-01-2018	CORRECTED G-2 GUTTER REFERENCE
03-01-2017	REV SHOULDER WIDTH AT TERMINAL
03-01-2016	ADD INSTALL NOTES IN NOTE 7
	AND REVISED SECTION A-A SHLDR

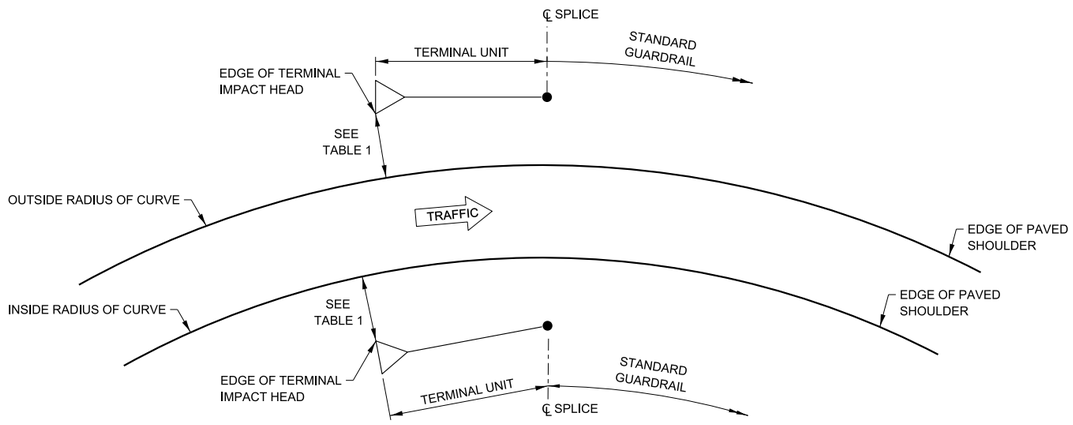
Illinois Tollway

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

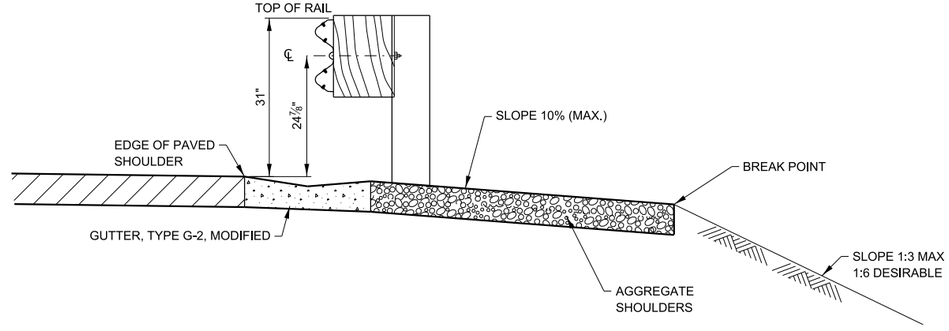
VERSION:	STANDARD:	SHEET:
2020-03	C12-10	1 OF 2



SHOULDER WIDENING TRANSITION - WITH GUTTER, TYPE G-2
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)



CURVED ROADWAY
TRAFFIC BARRIER TERMINAL PLACEMENT
(SEE NOTE 7)



SECTION B-B

TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" *
GUTTER, TYPE G-2, MOD.	1'-2¾"	1'-2¾" MIN.*

(*) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

NOTES:

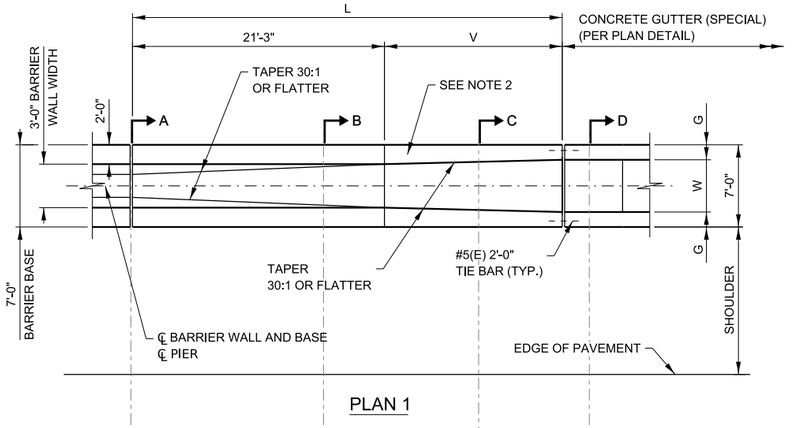
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

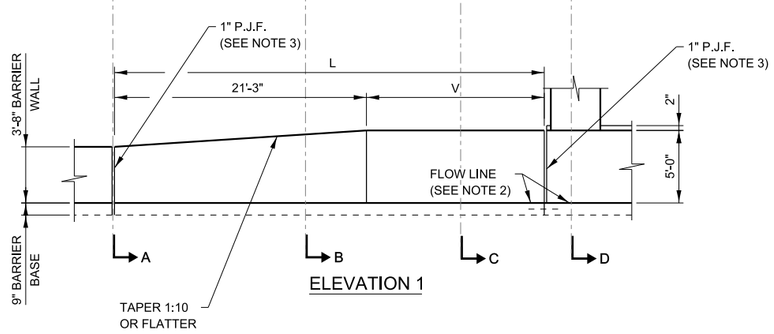
Illinois Tollway

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

VERSION:	STANDARD:	SHEET:
2020-03	C12-10	2 OF 2

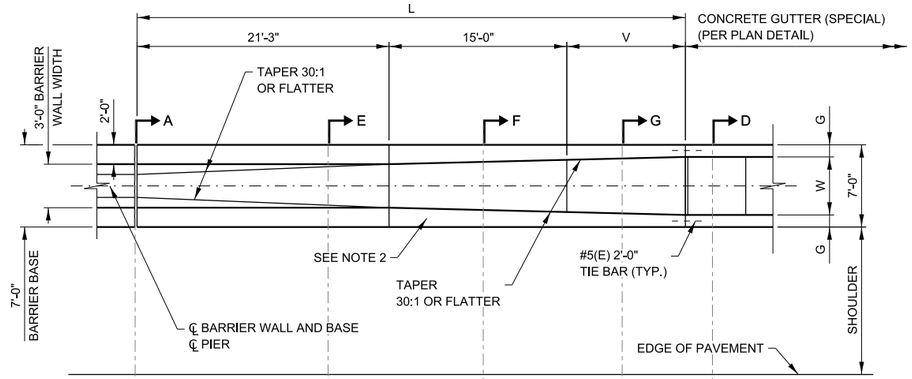


PLAN 1

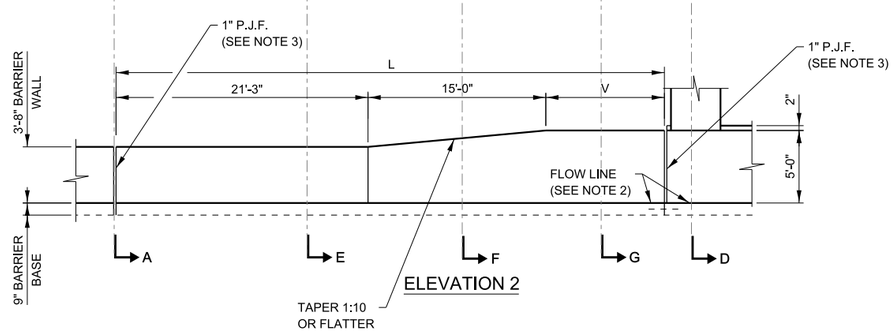


ELEVATION 1

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF
AT BRIDGE PIERS (FOR W ≤4'-0")



PLAN 2



ELEVATION 2

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF
AT BRIDGE PIERS (FOR W >4'-0")

	TABLE OF VARIABLES			
	W	L	V	G
PLAN 1	3'-0"	31'-3"	10'-0"	2'-0"
	3'-6"	31'-3"	10'-0"	1'-9"
	4'-0"	36'-3"	15'-0"	1'-6"
PLAN 2	4'-6"	46'-3"	10'-0"	1'-3"
	5'-0"	51'-3"	15'-0"	1'-0"
	5'-6"	58'-9"	22'-6"	9"
	6'-0"	66'-3"	30'-0"	6"

NOTES:

1. 2" DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, CONCRETE BARRIER BASE, AND CONCRETE GUTTER (SPECIAL). CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0". THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0". WHEN A DRAINAGE STRUCTURE FALLS WITHIN 2'-0" FROM AN EXPANSION JOINT (OR) CONTRACTION JOINT, THE NEAREST CONTRACTION JOINT SHALL BE OMITTED.

2. GUTTER PROFILE IN THE VICINITY OF SAG VERTICAL CURVES, ALONG FLAT GRADES AND AT THE MEETING OF PROPOSED AND EXISTING GUTTER, SHALL BE CAREFULLY CONTROLLED AND FIELD ADJUSTED IF NECESSARY TO ENSURE POSITIVE DRAINAGE AND AVOID PONDING.

3. NON-STAINING GRAY ONE COMPONENT NON-SAG ELASTOMERIC GUN GRADE POLYURETHANE SEALANT MEETING THE REQUIREMENTS OF ASTM C-920, TYPE S, GRADE NS, CLASS 25, USE T.

4. HOOK BARS SHALL BE INCLUDED IN THE COST OF THE VARIOUS BARRIER AND GUTTER ITEMS AND SHALL BE EPOXY COATED. HOOK BARS BETWEEN THE BARRIER AND BASE SHALL BE ON 15" CENTERS AND ALTERNATE LEFT AND RIGHT OF THE BARRIER CENTERLINE. SEE STANDARD C5 FOR "HOOK BAR" DETAIL.

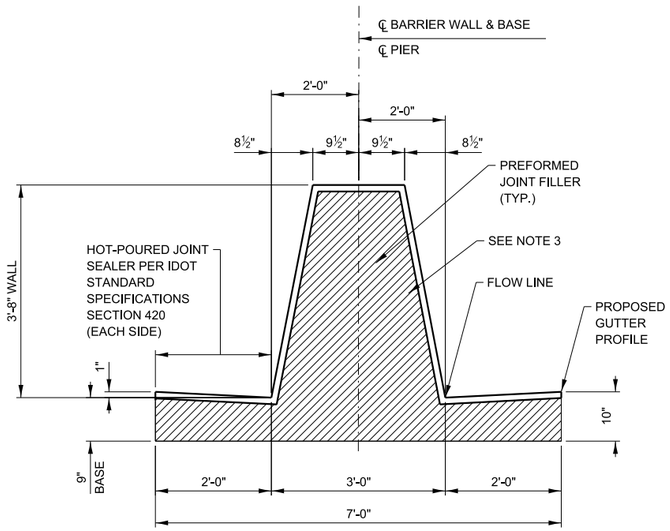
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED SECTION A-A DIMENSIONS
03-01-2021	REVISED TO HOOK BARS
03-01-2019	REVISED TO CONSTANT SLOPE AT 44"
03-31-2016	MODIFIED NOTES
03-11-2015	MODIFIED MEDIAN BARRIER TRANSITION
03-31-2014	MODIFIED BARRIER BASE

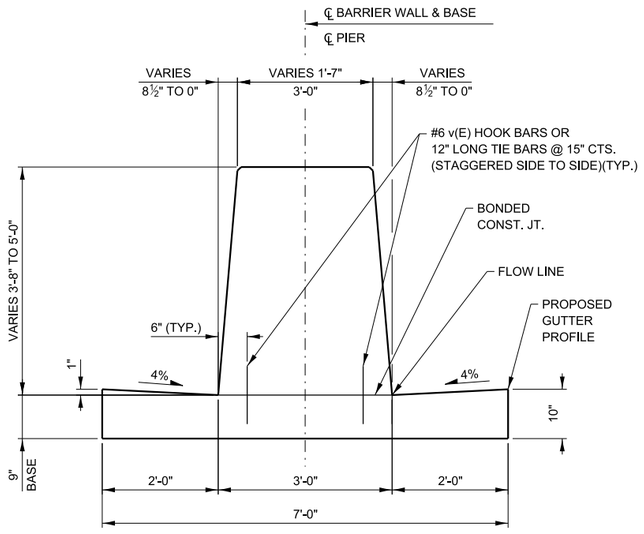
Illinois Tollway

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS

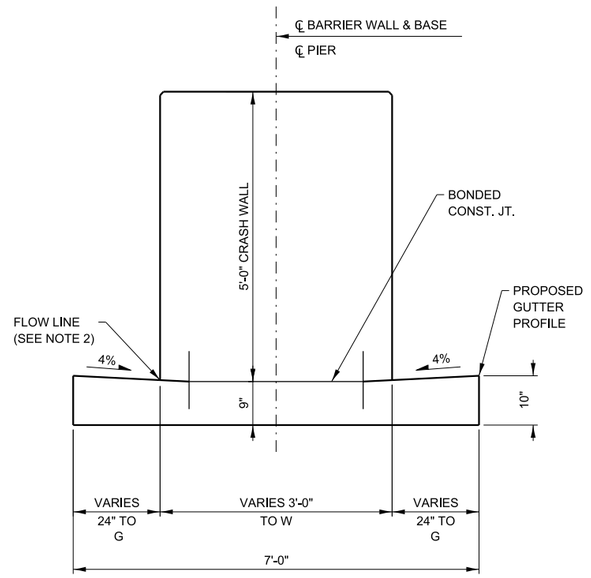
VERSION:	STANDARD:	SHEET:
2022-03	C13-07	1 OF 2



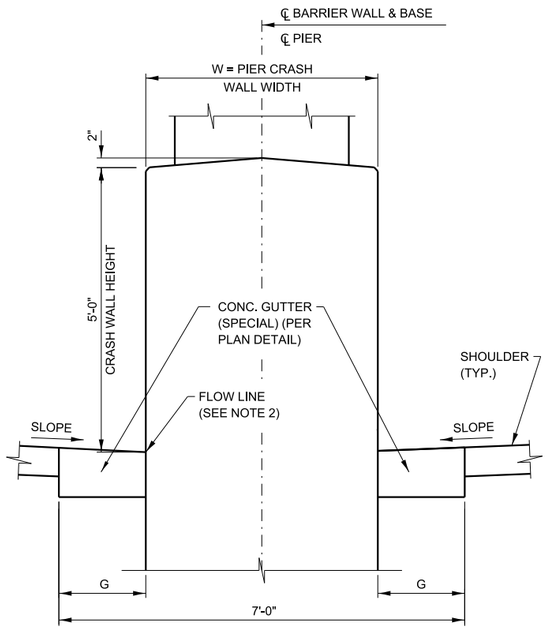
SECTION A-A



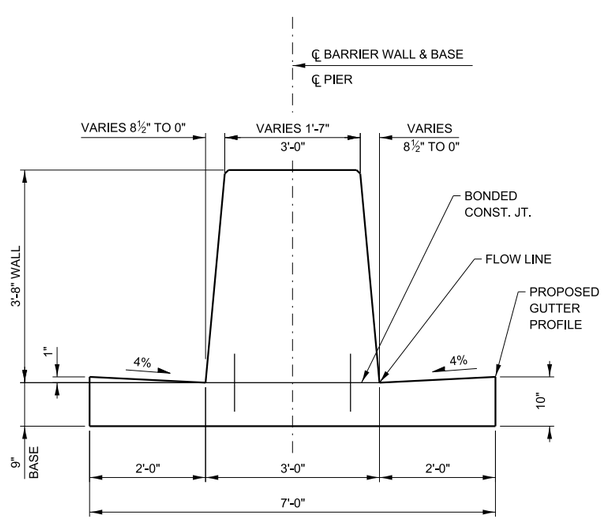
SECTION B-B



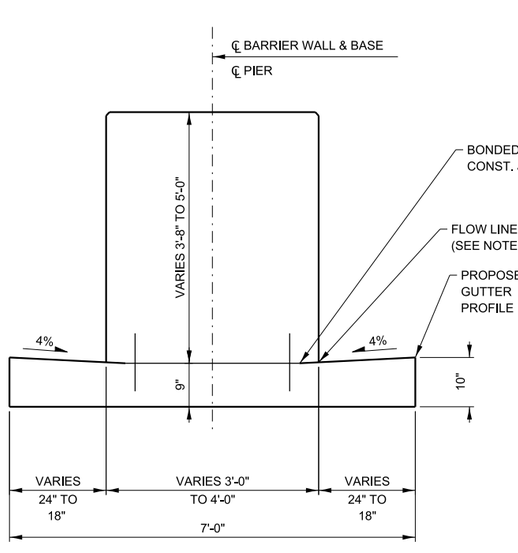
SECTION C-C



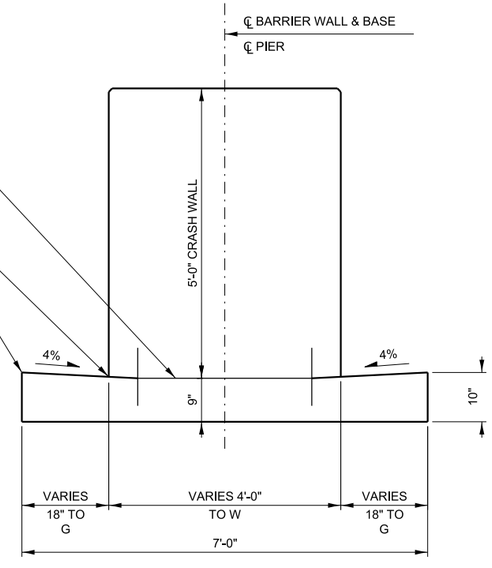
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

APPROVED BY:

CHIEF ENGINEERING OFFICER

DATE: 03/01/2022

NOTES:

SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V-DF AT BRIDGE PIERS

VERSION:	STANDARD:	SHEET:
2022-03	C13-07	2 OF 2

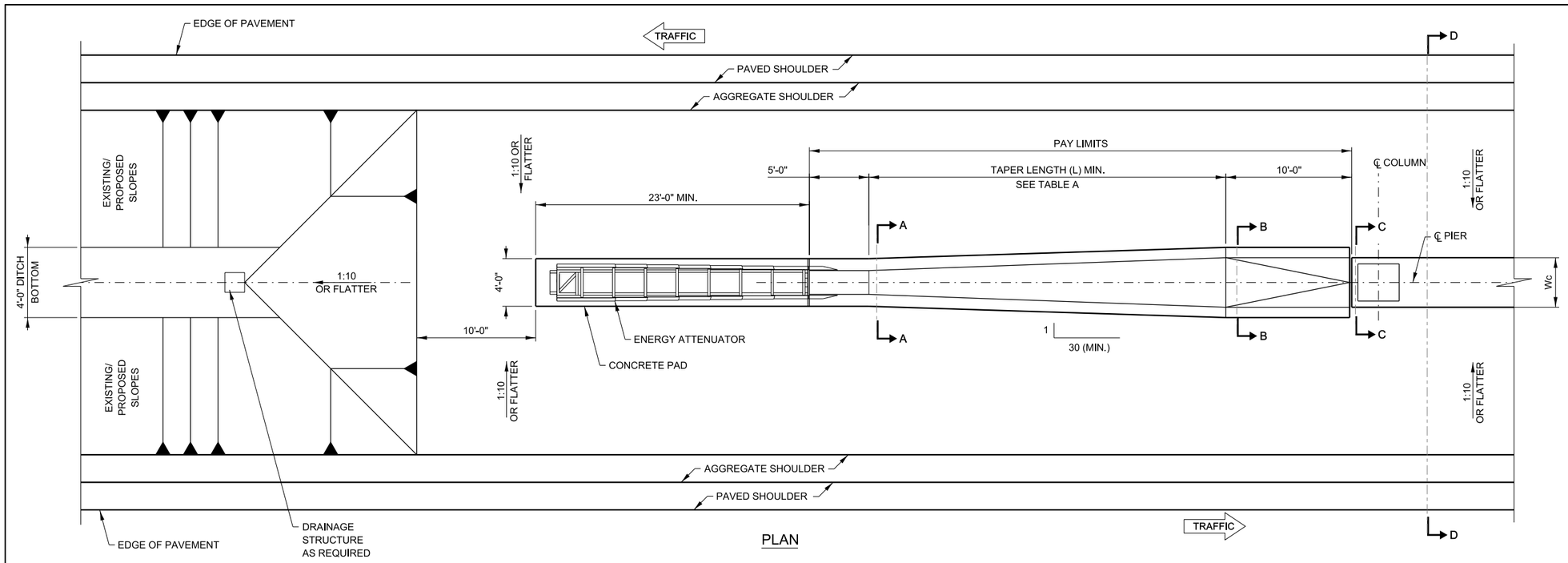
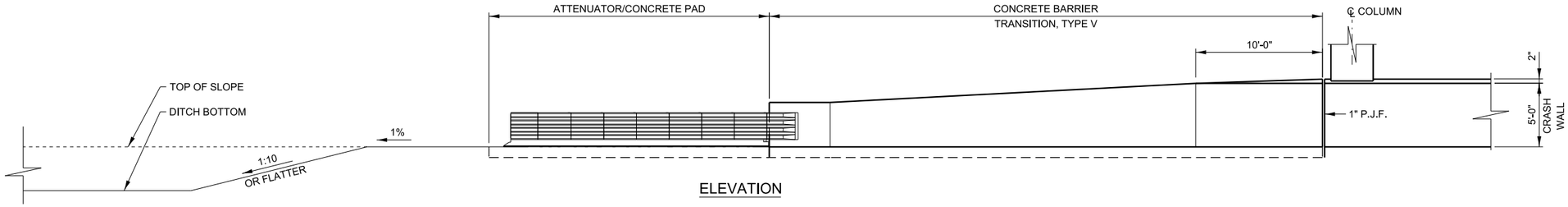
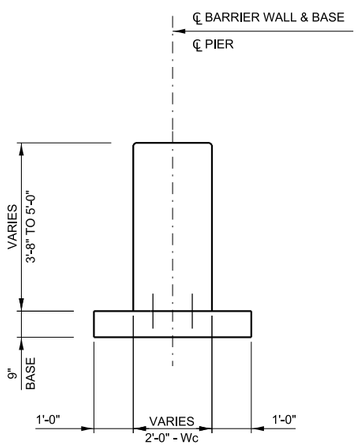


TABLE A	
Wc	L (MIN.)
24"	20'-0"
24"<Wc<35"	25'-0"
35"<Wc<43"	35'-0"
43"<Wc<51"	45'-0"
51"<Wc<59"	55'-0"
59"<Wc<67"	65'-0"
67"<Wc<72"	75'-0"

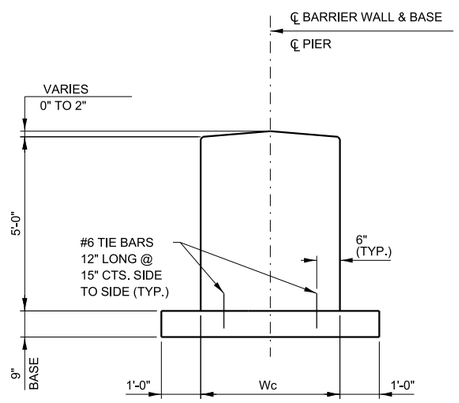
Wc=PIER CRASH WALL WIDTH



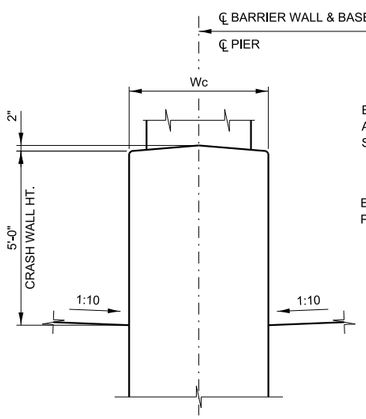
ELEVATION



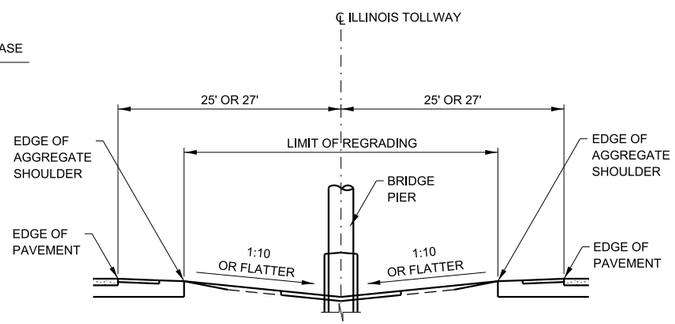
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES:

1. SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
2. ENERGY ATTENUATOR AND PAD SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
3. 2" DEEP CONTRACTION JOINTS SHALL BE DONE BY SAWING AND SHALL BE CONSTRUCTED IN THE CONCRETE BARRIER WALL, AND CONCRETE BARRIER BASE. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0". THE MINIMUM DISTANCE BETWEEN CONTRACTION JOINTS IN THE MEDIAN BARRIER WALL SHALL BE 2'-0".

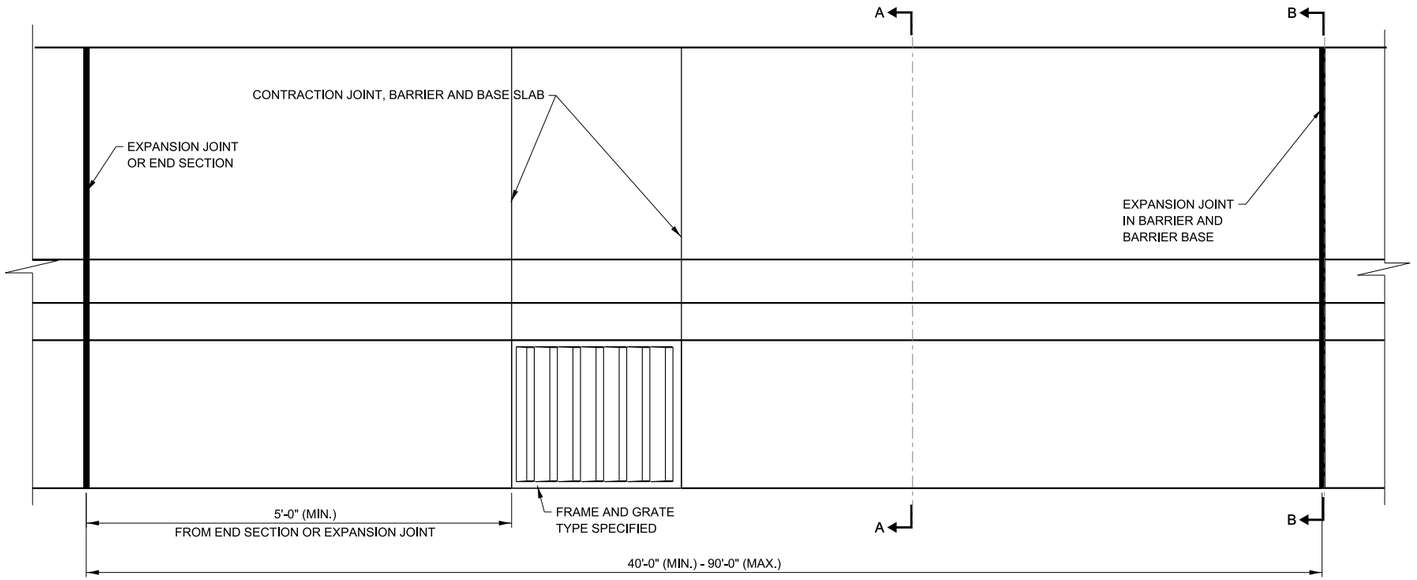
APPROVED BY: Paul Kovacs CHIEF ENGINEERING OFFICER DATE: 03/01/2021

REVISIONS	
DATE	DESCRIPTION
03-01-2021	ADDED TIE BARS
03-01-2020	CORRECTED HEIGHT IN SECTION A-A
03-01-2019	REVISED ATTENUATOR
03-31-2016	ADDED SEC. B-B TOP, DITCH ELEV.
	VIEW AND REVISED NOTE 3
03-11-2015	REVISED NOTES

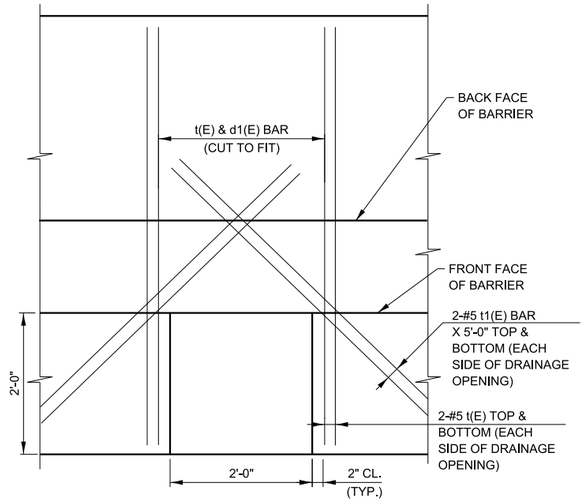
Illinois Tollway

CONCRETE MEDIAN BARRIER TRANSITION, TYPE V AT BRIDGE PIERS

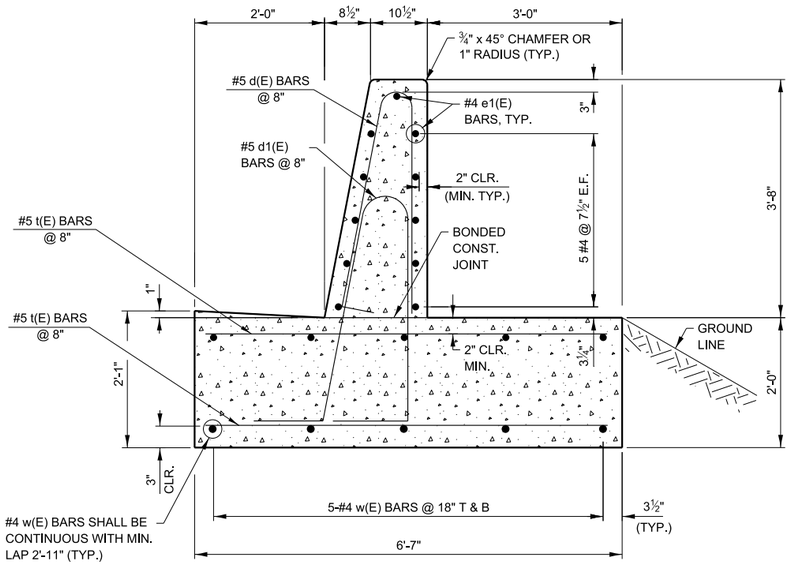
VERSION:	STANDARD:	SHEET:
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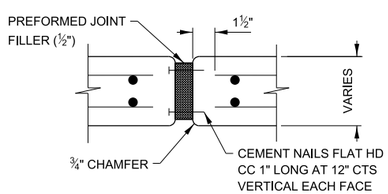
PLAN



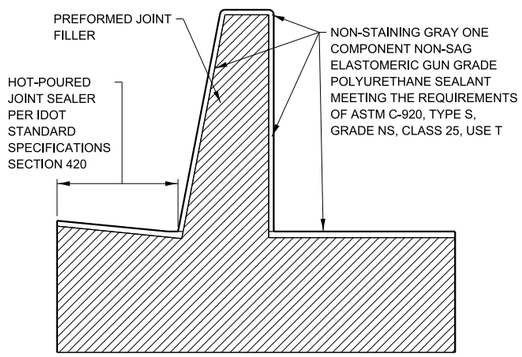
PLAN
REINFORCEMENT AROUND
DRAINAGE STRUCTURE



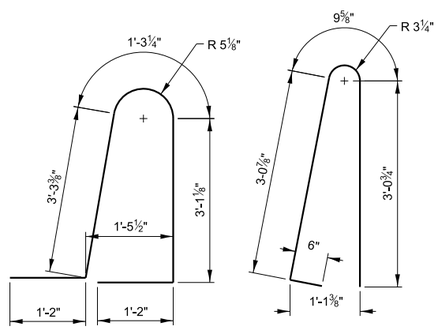
SINGLE FACE TL-5 BARRIER
SECTION A-A



EXPANSION JOINT



SINGLE FACE 44" BARRIER
EXPANSION JOINT
SECTION B-B



BAR d1(E) BAR d(E)

BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD DROP-OFFS AND FOR PROTECTION OF STRUCTURES WHEN THE BARRIER IS AWAY FROM THE FACE OF THE STRUCTURE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. CONTRACTION JOINTS SHALL BE FORMED BY A GROOVE ⅛", EITHER IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES" FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT. E.F. DENOTES EACH FACE.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD ADDITIONAL t AND t1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE. A 1" PJF SHALL BE PLACED BELOW THE BARRIER BASE WHEN IT SITS UPON A FLAT SLAB DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.
9. WHEN SPECIFIED IN THE PLANS, THE BACKSIDE OF THE BARRIER BASE MAY BE LEFT EXPOSED A MAXIMUM OF 1', MEASURED FROM THE TOP OF THE BARRIER BASE.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

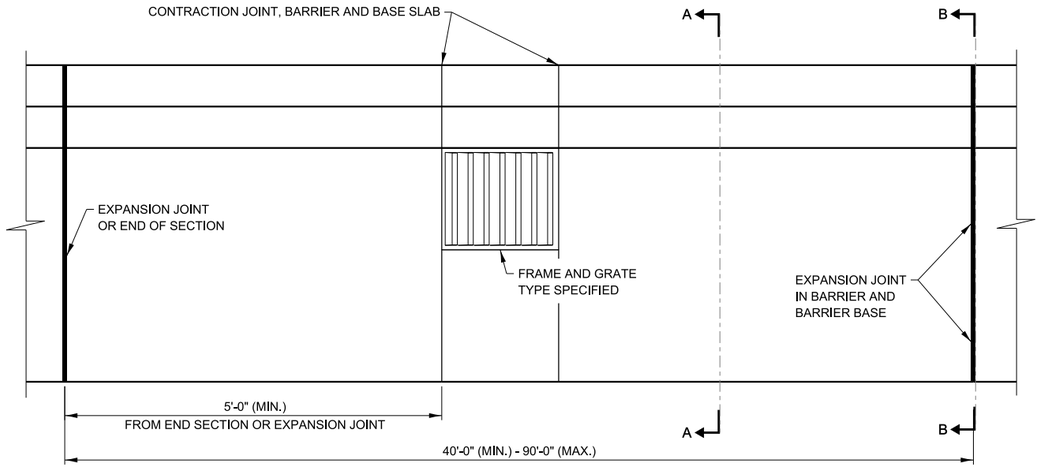
DATE:
03/01/2024

Illinois Tollway

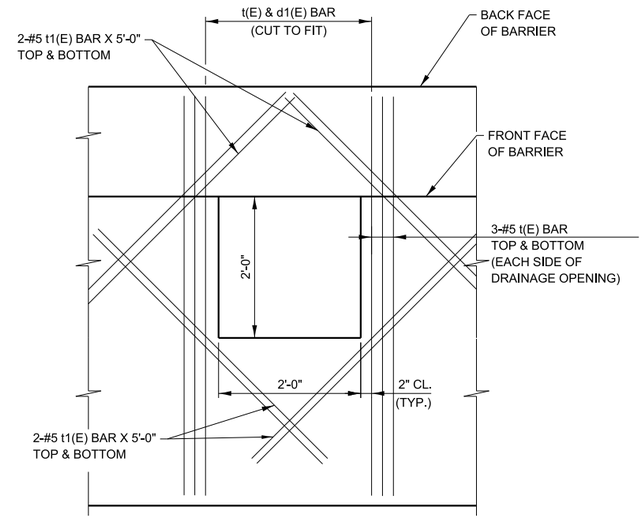
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED PJF BETWEEN BASE AND DRAINAGE STRUCTURES
03-01-2023	REVISED NOTE #1 AND REINF. DETAIL AT DRAINAGE STRUCTURES
03-01-2022	REVISED NOTES & CALLOUTS
03-01-2020	REVISED NAME & REINFORCING

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, T-SHAPE 44 INCH

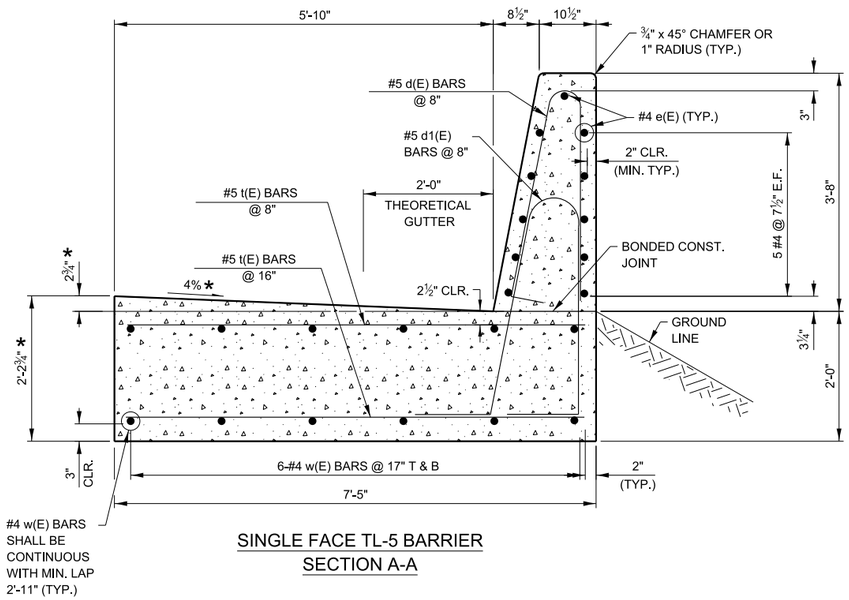
VERSION:	STANDARD:	SHEET:
2024-03	C15-04	1 OF 1



PLAN

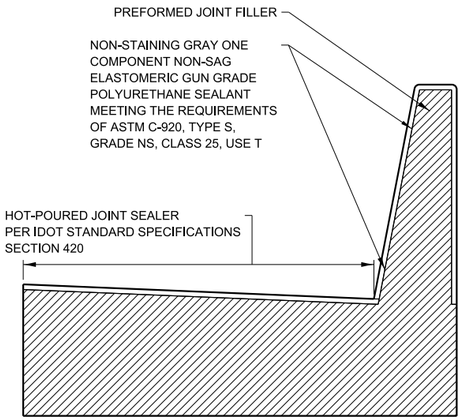


PLAN
REINFORCEMENT AROUND
DRAINAGE STRUCTURE



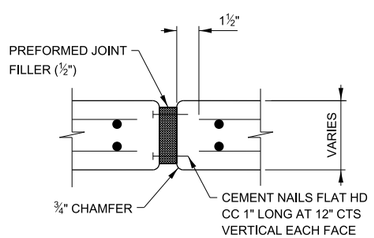
SINGLE FACE TL-5 BARRIER
SECTION A-A

* OR AS REQUIRED TO MATCH
SHOULDER CROSS SLOPE

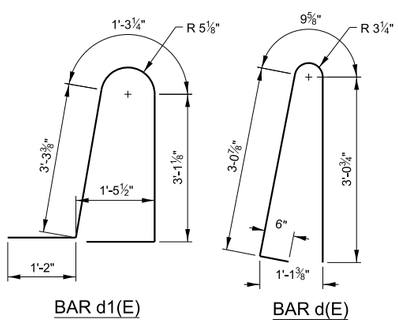


SINGLE FACE 44" BARRIER
EXPANSION JOINT

SECTION B-B



EXPANSION JOINT



BAR d1(E) BAR d(E)

BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD DROP-OFFS AND FOR PROTECTION OF STRUCTURES WHEN THE BARRIER IS AWAY FROM THE FACE OF THE STRUCTURE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. CONTRACTION JOINTS SHALL BE FORMED BY A GROOVE ⅛", EITHER IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT. E. F. DENOTES EACH FACE.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD ADDITIONAL t AND t1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE. A 1" PJF SHALL BE PLACED BELOW THE BARRIER BASE WHEN IT SITS UPON A FLAT SLAB DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.
9. WHEN SPECIFIED IN THE PLANS, THE BACKSIDE OF THE BARRIER BASE MAY BE LEFT EXPOSED A MAXIMUM OF 1', MEASURED FROM THE TOP OF THE BARRIER BASE.

APPROVED BY:
Mansur Nashif
CHIEF ENGINEERING OFFICER

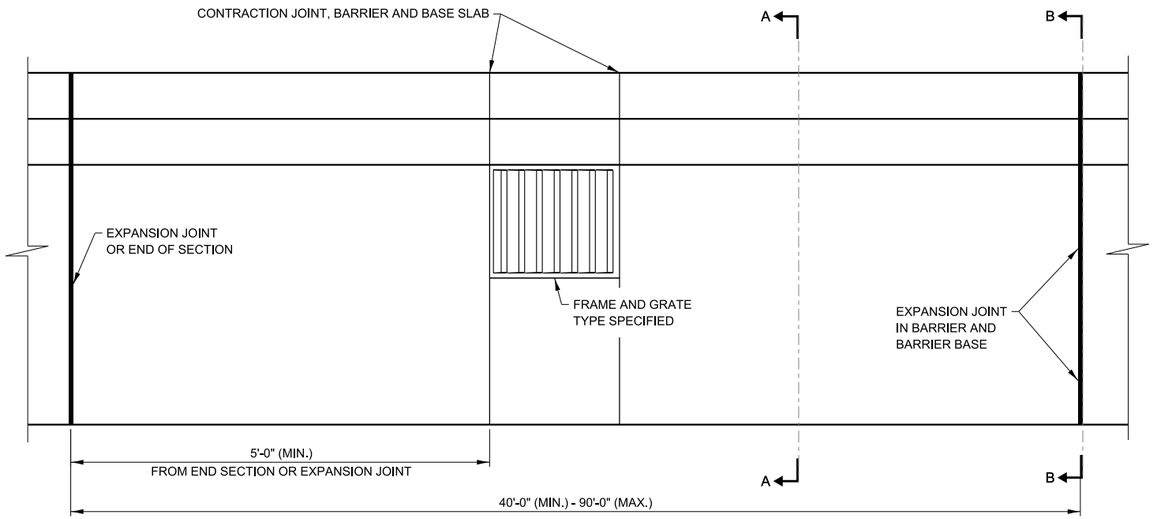
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03/01/2024

Illinois Tollway

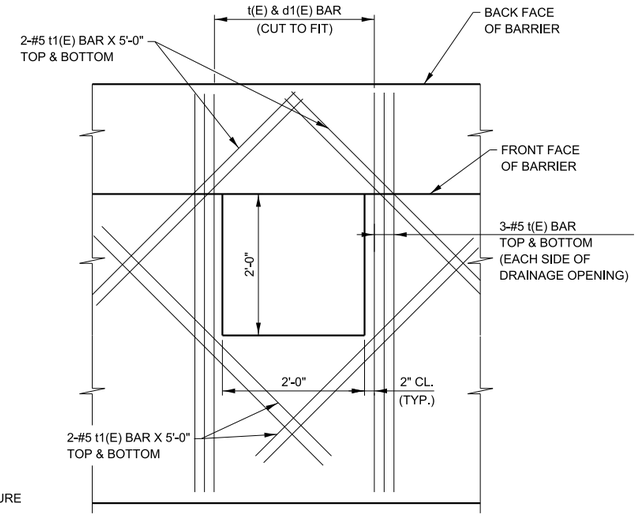
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED PJF BETWEEN BASE AND
	DRAINAGE STRUCTURES
03-01-2023	REVISED NOTE #1 AND REINF.
	DETAIL AT DRAINAGE STRUCTURES
03-01-2022	REVISED NOTES & CALLOUTS

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, L-SHAPE 44 INCH

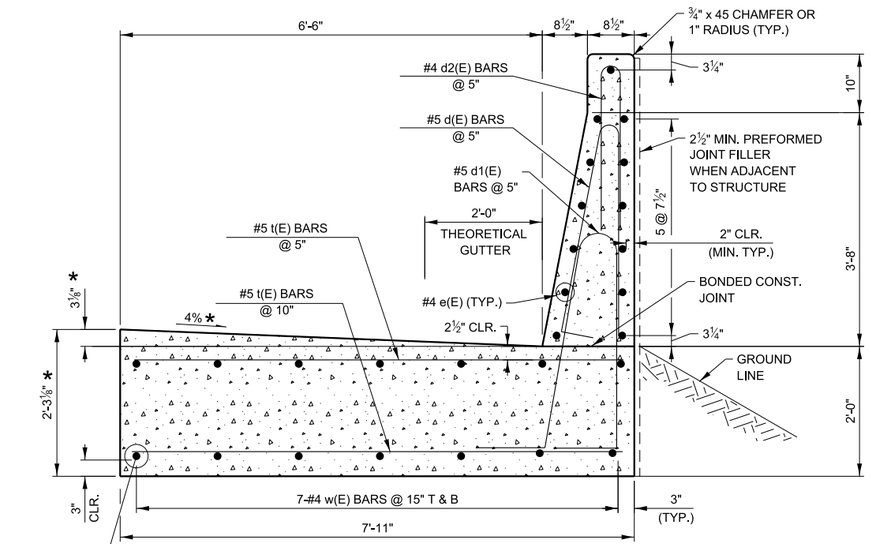
VERSION:	STANDARD:	SHEET:
2024-03	C16-04	1 OF 1



PLAN



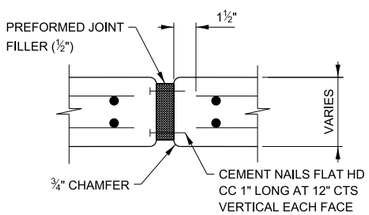
PLAN
REINFORCEMENT AROUND
DRAINAGE STRUCTURE



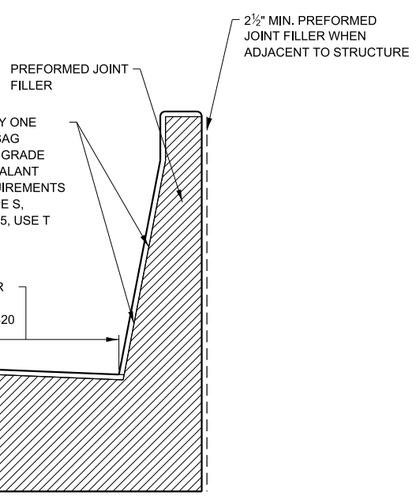
SINGLE FACE TL-5 BARRIER

SECTION A-A

* OR AS REQUIRED TO MATCH
SHOULDER CROSS SLOPE

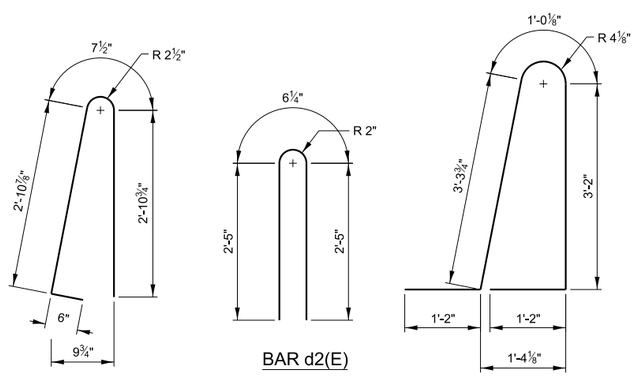


EXPANSION JOINT



SINGLE FACE 54" BARRIER
EXPANSION JOINT

SECTION B-B



BAR d(E) BAR d2(E) BAR d1(E)

BENDING DIAGRAMS

NOTES:

1. THIS IS A REINFORCED CONCRETE TL-5 ROADSIDE BARRIER USED TO SHIELD BRIDGE PIERS AND ABUTMENTS WHEN THE BARRIER IS ADJACENT TO THE FACE OF THE STRUCTURE. THE MINIMUM LENGTH OF INSTALLATION SHALL BE 40'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. CONTRACTION JOINTS SHALL BE FORMED BY A GROOVE ⅛", EITHER IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BAR BENDING DIMENSIONS ARE SHOWN OUT TO OUT.
7. AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD ADDITIONAL t, AND t1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE. A 1" PJF SHALL BE PLACED BELOW THE BARRIER BASE WHEN IT SITS UPON A FLAT SLAB DRAINAGE STRUCTURE.
8. EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT A MAXIMUM JOINT SPACING OF 90'-0" AND A MINIMUM JOINT SPACING OF 40'-0". SEE SECTION B-B FOR DETAILS.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

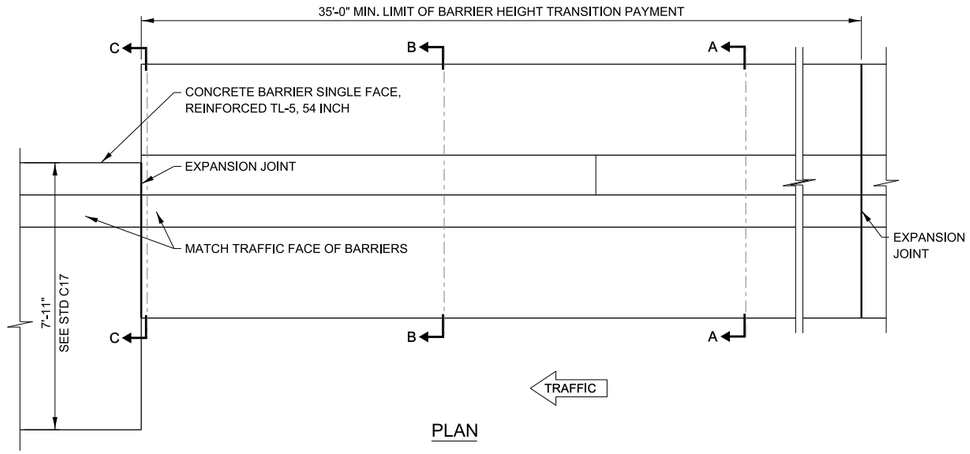
DATE:
03/01/2024

Illinois Tollway

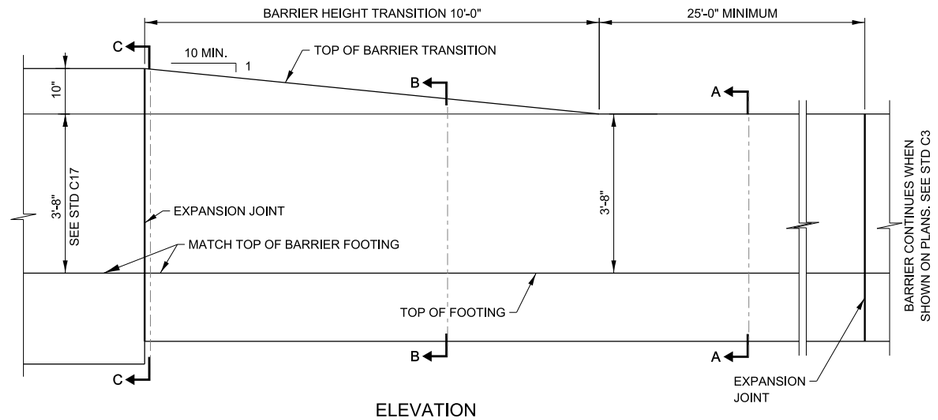
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED PJF BETWEEN BASE AND DRAINAGE STRUCTURE
03-01-2023	REVISED REINF. DETAIL AT DRN. STRUCTURE. REMOVED NOTE 9
03-01-2022	REVISED NOTE 4.
03-01-2021	REVISED REBAR LENGTH, ADDED NOTE

CONCRETE BARRIER SINGLE FACE, REINFORCED TL-5, 54 INCH

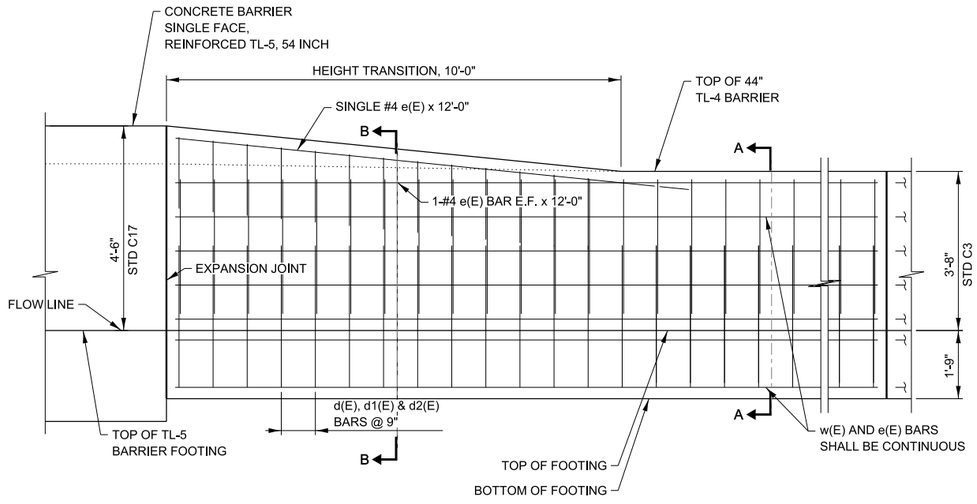
VERSION:	STANDARD:	SHEET:
2024-03	C17-05	1 OF 1



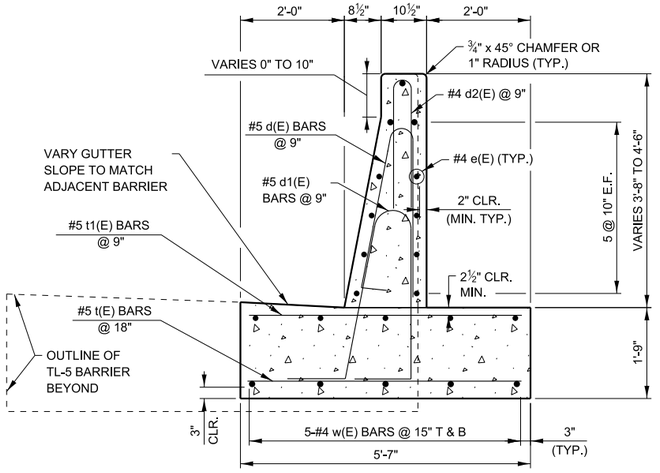
PLAN



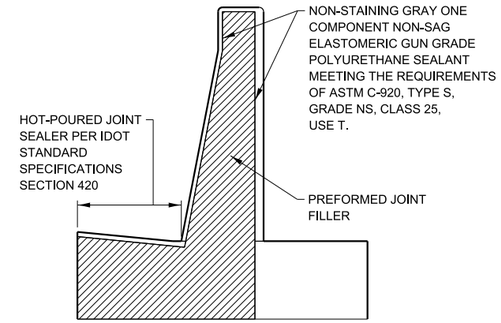
ELEVATION



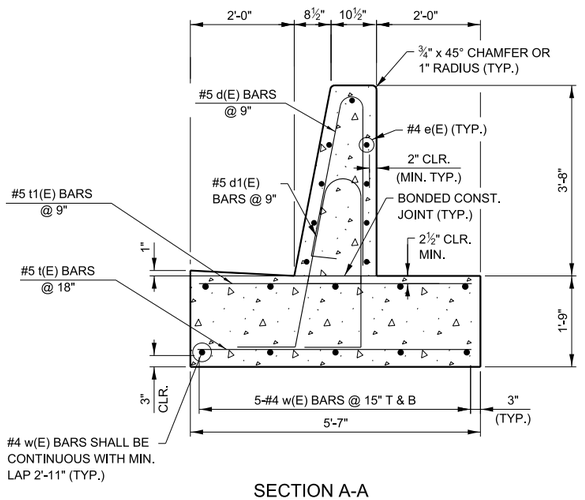
REINFORCEMENT ELEVATION



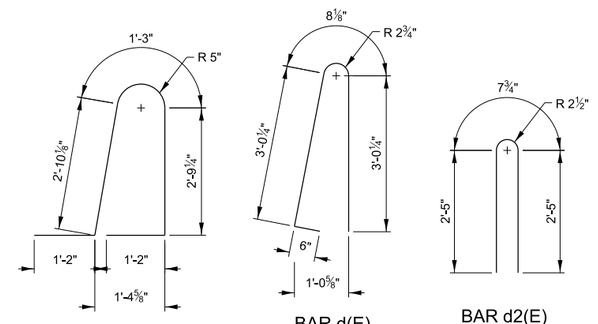
SECTION B-B



EXPANSION JOINT
SECTION C-C



SECTION A-A



BAR d1(E) BAR d(E) BAR d2(E)

BENDING DIAGRAMS

NOTES:

1. THIS REINFORCED CONCRETE TL-4 BARRIER HEIGHT TRANSITION IS USED TO VARY THE BARRIER HEIGHT FROM 44" TO 54". THE MINIMUM LENGTH OF INSTALLATION BETWEEN EXPANSION JOINTS SHALL BE 35'-0". BASIS OF DESIGN: IL TOLLWAY STRUCTURE DESIGN MANUAL.
2. TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
3. 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. SEE STANDARD C3 FOR REINFORCEMENT AROUND DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
4. CONTRACTION JOINTS SHALL BE FORMED BY A GROOVE ⅛", EITHER IN THE PLASTIC CONCRETE OR SAWED AFTER THE CONCRETE HAS SET.
5. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED. ALL w(E) AND e(E) BARS SHALL BE CONTINUOS WITH 2'-11" LAPS MIN. "E.F." DENOTES EACH FACE.
6. REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.

APPROVED BY: Paul Kovacs CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED NOTES
03-01-2021	REVISED REBAR LENGTH

Illinois Tollway

CONCRETE SHOULDER BARRIER HEIGHT TRANSITION, SINGLE FACE, TYPE SF-54

VERSION:	STANDARD:	SHEET:
2022-03	C18-02	1 OF 1

STANDARD DRAWINGS

SECTION D

ROADWAY APPURTENANCES
(FENCE, SYMBOLS, MARKERS AND DELINEATORS)

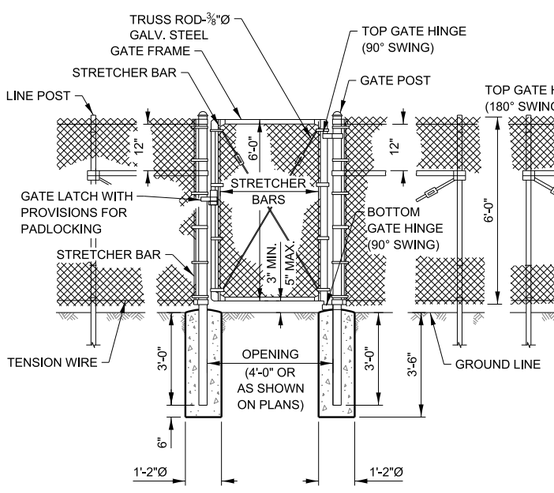
MARCH 2025

Illinois Tollway Standard Drawing Revisions

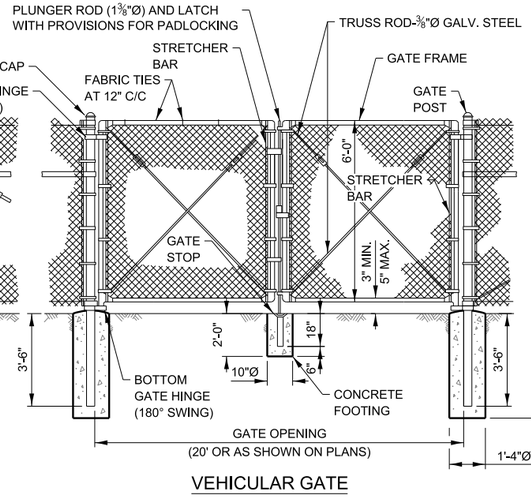
Section D	Roadway Appurtenances	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads.
	D4-10	**ROADWAY DELINEATORS AND REFLECTORS**
	Sheet 1	Post Mounted Delineator spacing along tangent ramp, reduced from 200 feet to 100 feet. Table A, Reflector Spacing on Ramp – Curves, reduced spacing to be consistent with the MUTCD. Red reflectors installed only on ramps that lead up to intersections.
	Sheet 2	Increased delineator height from 4 feet to top of post, to 4 feet, to lowest reflector to be consistent with the MUTCD. Double back red reflectors only on specified ramps.
	Sheet 3	Increased the reflector mounting height on Temporary Concrete Barrier and Vertical Wall, Barrier or Parapet details as identified in the MUTCD.
	D5-11	**PERMANENT PAVEMENT MARKING MAINLINE**
		Note 1 clarified the diagonal lines required where the shoulder width is less than standard, except on shoulders less than 4 feet. Added references to Note 1, on the shoulder taper plan.
	D10-04	**TEMPORARY CONCRETE BARRIER WITH CROSS-BOLT CONNECTION**
	Sheet 1	Added note in Cross-Bolt Connection Hardware detail, stating that hardware shall be hot–dipped zinc coated conforming to ASTM F2329.

New Sheet

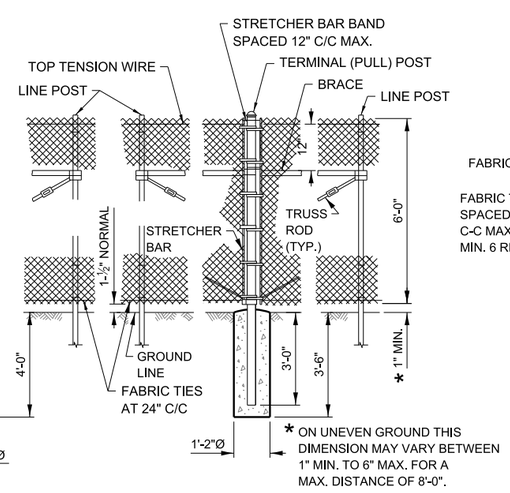
Retired Standard



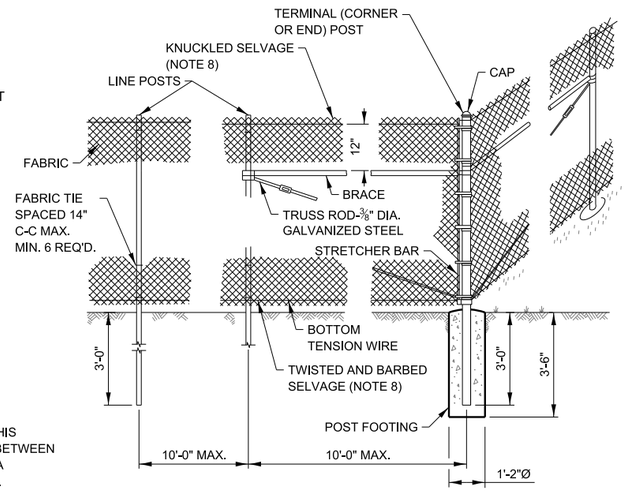
PEDESTRIAN GATE



VEHICULAR GATE



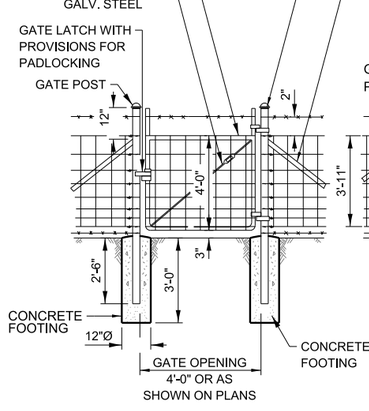
PULL POST



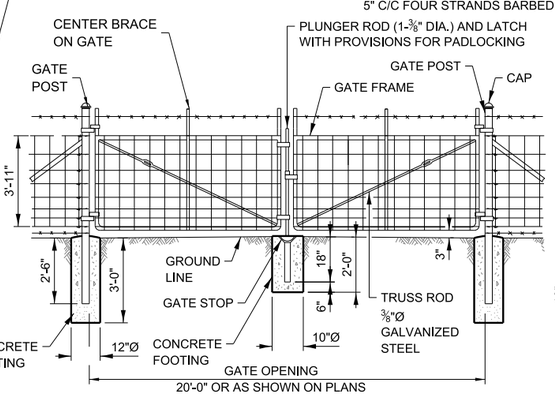
LINE POST

CORNER OR END POST

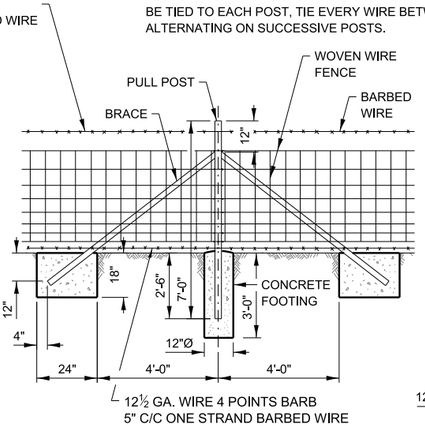
RIGHT OF WAY FENCE, TYPE 1, 6'



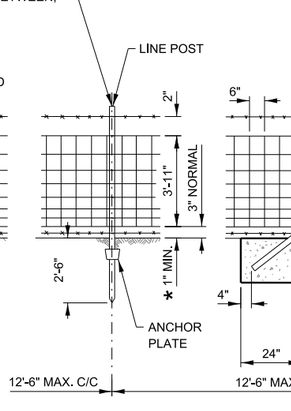
PEDESTRIAN GATE



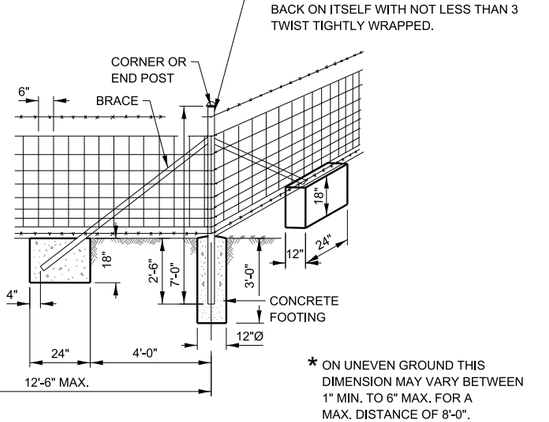
VEHICULAR GATE



PULL POST



LINE POST



CORNER OR END POST

* ON UNEVEN GROUND THIS DIMENSION MAY VARY BETWEEN 1" MIN. TO 6" MAX. FOR A MAX. DISTANCE OF 8'-0".

RIGHT OF WAY FENCE, TYPE 2, 4'

GENERAL NOTES

1. ON STRAIGHT RUNS OF FENCE, PULL POSTS SHALL BE USED AT 500' CENTERS FOR TYPE 1 AND 330' CENTERS FOR TYPE 2.
2. WHERE R.O.W. FENCE FOLLOWS R.O.W. LINE IT SHALL BE INSTALLED PARALLEL TO AND 6" INSIDE THE R.O.W. LINE ON ILLINOIS TOLLWAY PROPERTY.
3. LINE POSTS AND BRACES SHALL BE ON ILLINOIS TOLLWAY SIDE OF FENCE FABRIC.
4. WHEN THE TENSION OF THE FENCE TENDS TO PULL THE POSTS FROM THE GROUND, THE LINE POSTS SHALL BE ANCHORED WITH ANCHORAGE SPECIFIED FOR CORNER POSTS.
5. WHEN THE FENCE LINE HAS A CHANGE IN DIRECTION OF 10° OR MORE, A CORNER POST SHALL BE PLACED AT THE POINT OF CHANGE. WHERE THE ANGLE OF CHANGE IS LESS THAN 10° A PULL POST SHALL BE USED.
6. WHERE GRADE LINE HAS A CHANGE IN SLOPE OF 10° OR MORE, A CORNER POST WITH BRACING AS REQUIRED SHALL BE PLACED. WHERE ANGLE IS LESS THAN 10° LINE POST MAY BE USED.
7. WHERE RIGHT-OF-WAY FENCE, TYPE 1 IS USED, THE FABRIC SHALL BE KNUCKLED SELVAGE ON TOP AND TWISTED AND BARBED SELVAGE ON BOTTOM.
8. PLACEMENT OF BRACED END POSTS OR CORNER POSTS WITHIN THE CLEAR ZONE SHALL BE AVOIDED.

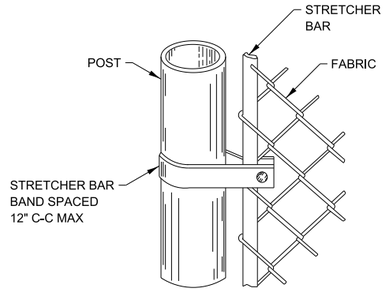
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2020	ADDED GATE TO HEADWALL DETAIL
03-31-2017	REVISED NOTES
03-11-2015	REVISED NOTES
03-31-2014	REVISED ROLLED FORM SECTIONS
11-01-2012	REVISED NOTES

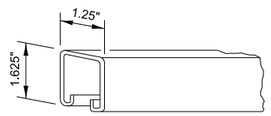
RIGHT OF WAY FENCE

VERSION: 2020-03 | STANDARD: D1-06 | SHEET: 1 OF 3



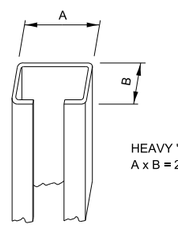
STRETCHER BARS SHALL BE GALVANIZED FLAT STEEL BAR NOT LESS THAN ¼" x ¾" AND THE STRETCHER BAR BANDS SHALL BE GALVANIZED FLAT STEEL BAR NOT LESS THAN ⅛"x 1" WITH A ⅜" GALVANIZED CARRIAGE BOLT.

METHOD OF FASTENING STRETCHER BAR TO POST



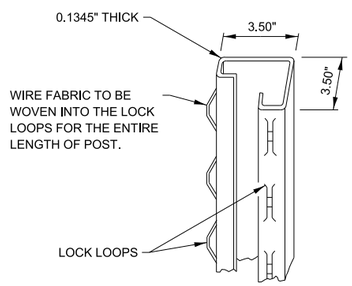
BRACE SECTION

1.25 LBS/LF



HEAVY "C" - 2.70 LBS/LF
A x B = 2.250" x 1.625"

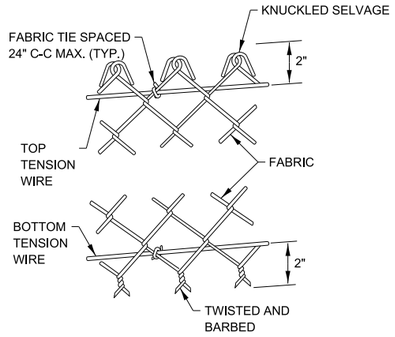
LINE POST "C" SECTION



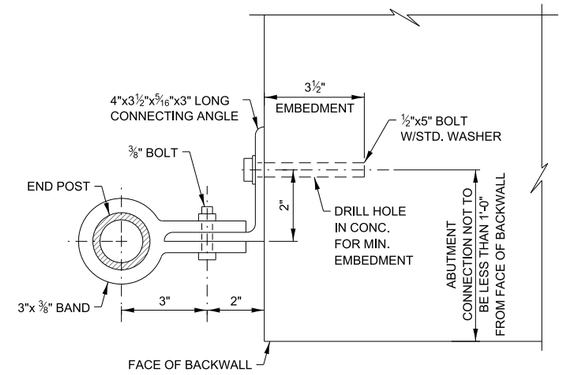
TERMINAL POST SECTION

5.10 LBS/LF

DETAILS OF ROLL FORMED SECTIONS



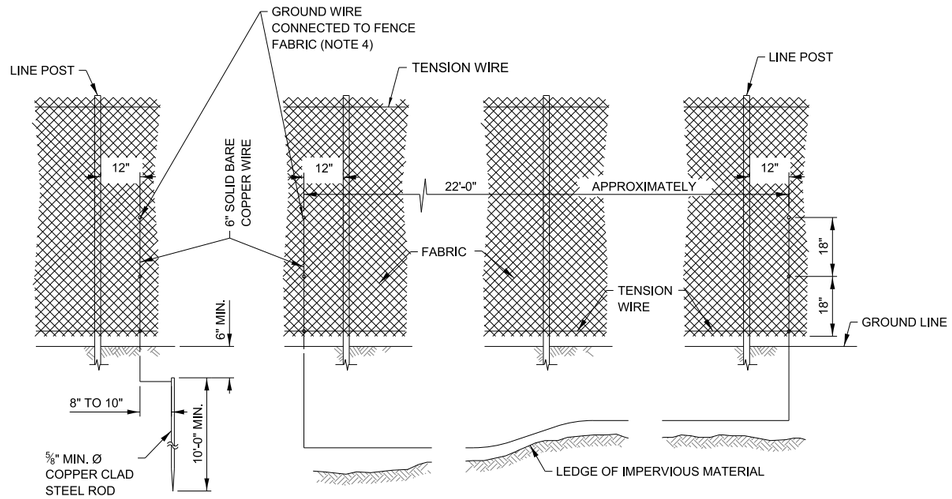
METHOD OF TYING FABRIC TO TENSION WIRES



ABUTMENT CONNECTION DETAIL

NOTES FOR ABUTMENT CONNECTION:

1. WHEN ROLL FORMED SECTION IS USED IN LIEU OF PIPE AS END POST, THE POST SHALL BE BOLTED DIRECTLY TO THE ABUTMENT WALL WITH 2½" x 5" BOLTS WITH STANDARD WASHERS MEETING THE APPROVAL OF THE ENGINEER.



STANDARD GROUND

COUNTERPOISE GROUND (ALTERNATE)

NOTES FOR STANDARD AND COUNTERPOISE GROUND:

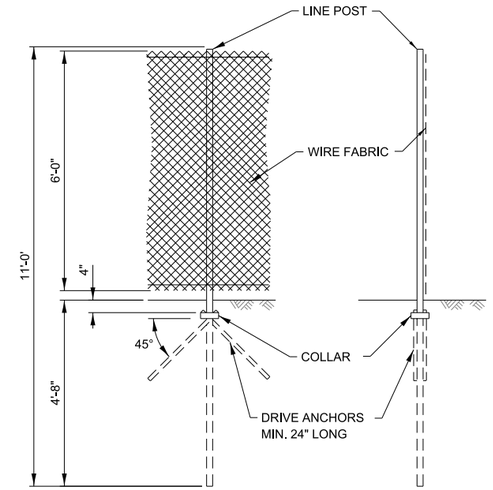
1. THE INTERVALS FOR GROUNDING CONTINUOUS FENCING SHALL NOT EXCEED 500 FEET IN URBAN AREAS AND 1000 FEET IN RURAL AREAS. FENCE ADJACENT TO A GATE SHALL BE GROUNDED A MAXIMUM DISTANCE 100 FEET EACH SIDE OF THE GATE.

2. FENCE CROSSING UNDER A POWER LINE SHALL BE GROUNDED, ONCE DIRECTLY UNDER THE CROSSING AND ONE ON EACH SIDE AT 25 TO 50 FEET AWAY. FENCE LOCATED DIRECTLY UNDER A TELEPHONE WIRE OR CABLE CROSSING SHALL HAVE A SINGLE GROUND.

3. COUNTERPOISE GROUNDS SHALL BE USED AT LOCATIONS WHERE GROUND RODS CAN NOT BE DRIVEN DUE TO IMPERVIOUS EARTH MATERIALS.

4. THE GROUND WIRES SHALL BE CONNECTED TO FENCE FABRIC AND GROUND ROD BY STAINLESS STEEL BOLTS AND WASHERS. THE LOWER CONNECTION OF THE GROUND WIRE SHALL BE MADE TO THE BOTTOM TENSION WIRE.

ELECTRICAL GROUNDING DETAILS



ALTERNATE DRIVEN LINE POST ANCHORAGE WITH OR WITHOUT DRIVE ANCHORS

NOTE FOR FENCE POST:

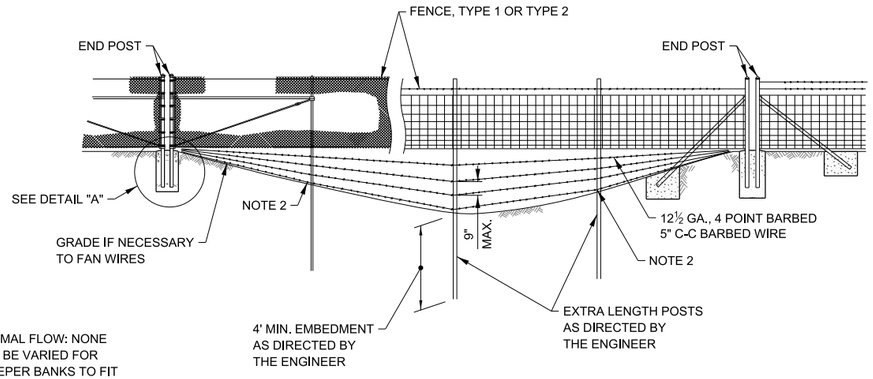
ALTERNATE DRIVEN LINE POST ANCHORAGE IS OPTIONAL. DRIVEN LINE POST ANCHORAGE WITHOUT DRIVE ANCHORS MAY BE USED IN AVERAGE TO GOOD SOIL CONDITIONS. WHEN SOIL IS WEAKER (Qu < 1.25 TONS/ SQ. FT.) AND STABILITY OF THE POST IS QUESTIONABLE, DRIVE ANCHORS SHALL BE USED. TYPES, SHAPES, DIMENSIONS AND COATING REQUIREMENTS OF DRIVE ANCHORS (ANCHOR BLADES AND COLLARS) FOR DIFFERENT TYPE OF POSTS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2020

Illinois Tollway

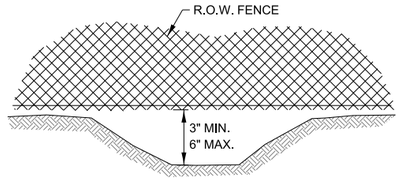
RIGHT OF WAY FENCE

VERSION:	STANDARD:	SHEET:
2020-03	D1-06	2 OF 3

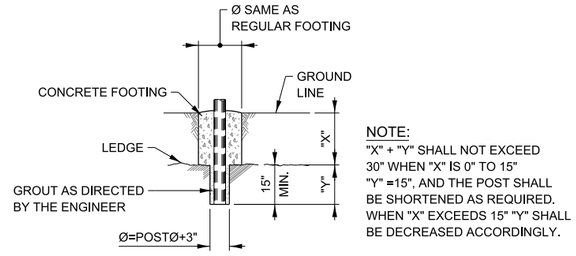


NORMAL FLOW: NONE
MAY BE VARIED FOR
STEEPER BANKS TO FIT
VARIOUS CHANNEL SECTIONS.

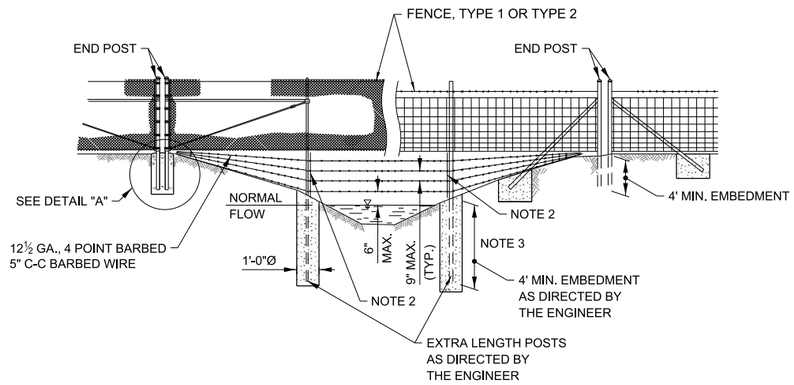
STREAM CROSSING, TYPE 1



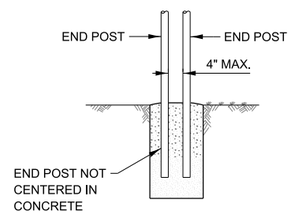
FENCE INSTALLATION OVER DITCH



FOOTING FOR POST WHEN
ROCK LEDGE IS ENCOUNTERED



STREAM CROSSING, TYPE 2



THE FENCE FABRIC SHALL BE REPLACED BY BARBED WIRE STRANDS AT 12" MAXIMUM CENTERS BETWEEN THE END POSTS.

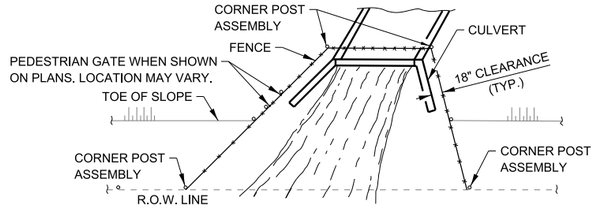
DETAIL A

NOTES FOR STREAM CROSSING TYPE 1 AND TYPE 2:

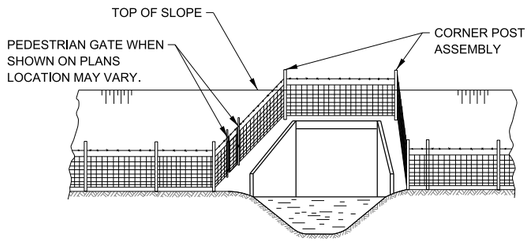
1. THESE INSTALLATION CONDITIONS ARE TYPICAL AND ARE NOT TO BE CONSTRUED AS REPRESENTATIVE OF ALL CONDITIONS WHICH WILL BE ENCOUNTERED. CONSTRUCTION WILL BE VARIED AS REQUIRED OR DIRECTED TO MEET FIELD CONDITIONS.

2. FOR STREAM CROSSING OF THE TYPE REQUIRED THE BOTTOM BARBED WIRE SHALL BE ANCHORED TO CONCRETE FOOTING OR TO HOLES DRILLED IN POSTS, AND INTERMEDIATE WIRES SHALL BE TIED TO THE BOTTOM WIRE AND TO POSTS IN AN EVENLY SPACED FASHION TO PREVENT SLIPPAGE.

3. CONCRETE AND FITTINGS FOR ALL TYPES OF FENCE SHALL BE AS DETAILED FOR SIMILAR CONDITIONS PER STANDARD DRAWING.



PLAN AT HEADWALL



ELEVATION

NOTES FOR INSTALLATION AROUND HEADWALL:

1. THIS TYPE OF INSTALLATION IS TO BE USED ONLY WHEN SPECIFICALLY CALLED FOR IN THE CONTRACT PLANS.

2. WHEN THE WIDTH OF THE CULVERT MAKES IT NECESSARY TO ANCHOR A POST TO THE TOP OF THE CULVERT, A CAST IRON SHOE OR OTHER DEVICE APPROVED BY THE ENGINEER SHALL BE USED.

INSTALLATION AROUND HEADWALL

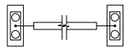
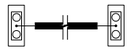
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

Illinois Tollway

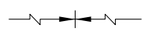
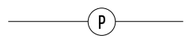
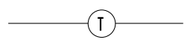
RIGHT OF WAY FENCE

VERSION:	STANDARD:	SHEET:
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SURVEY AND ROADWAY ITEMS

EXISTING	PROPOSED	
		CONSTRUCTION JOINT W/DOWEL BARS
		BENCHMARK
		CANTILEVER SIGN STRUCTURE
		BUTTERFLY SIGN STRUCTURE
		DOUBLE COLUMN GROUND MOUNTED SIGN
		SINGLE COLUMN GROUND MOUNTED SIGN
		SPAN TYPE SIGN STRUCTURE
		TRIPLE COLUMN GROUND MOUNTED SIGN
		RUMBLE STRIP

DRAINAGE AND UTILITY ITEMS; ROADWAY LIGHTING AND SIGNS

EXISTING	PROPOSED	
		BOX CULVERT WITH HEADWALL
		CABLE IN DUCT W/O GROUND
		LOW POINT
		OVERHEAD ELECTRICAL
		OVERHEAD TELEPHONE
		PIPE CULVERT
		LAKE OR POND
		QUARRY
		STREAM
		SWAMP
		CABLE OR CONDUIT TAG
		ELECTRICAL MANHOLE
		LIGHT-DUTY BOX
		ROADWAY LUMINAIRE
		STEEL TOWER
		TELEPHONE MANHOLE
		UNDERPASS LUMINAIRE
		WATER POINT
		WATERMAIN VALVE VAULT
		WATER WELL
		WOOD POLE

APPROVED BY:

Paul Kovacs

CHIEF ENGINEERING OFFICER

DATE: 03/31/2016

REVISIONS	
DATE	DESCRIPTION
03-31-2016	UPDATED DITCH CHECK SYMBOL
03-11-2015	ADDED NEW SYMBOL
11-01-2012	ADDED NEW SYMBOLS
07-01-2009	REVISED SYMBOLS & PATTERNS

Illinois Tollway

SYMBOLS AND PATTERNS

VERSION:	STANDARD:	SHEET:
2016-03	D2-04	1 OF 4

EROSION & SEDIMENT CONTROL, LANDSCAPING ITEMS

EXISTING	PROPOSED	
		CLEARING & GRADING LIMITS (LIMITS OF CONSTRUCTION)
		DIVERSION DIKE
		DRAINAGE DIVIDE
		DRAINAGE PATH
		SEDIMENT BASIN AGGREGATE BERM
	CIP	CULVERT INLET PROTECTION-STONE
		CULVERT INLET PROTECTION-FENCE
	DB	DEWATERING BASIN
	FIPB	FILTER FABRIC INLET PROTECTION, BASKET TYPE
	FIPC	FILTER FABRIC INLET PROTECTION, COVER TYPE
	FB FB	FLOTATION BOOM
	IC	INITIAL CONSTRUCTION ITEM
	RIP	RECTANGULAR INLET PROTECTION
		TEMPORARY ROCK CHECK DAM
	T	TEMPORARY DITCH CHECK
		SEDIMENT BASIN
		SILT FENCE
	SSF	SUPER SILT FENCE
		STABILIZED CONSTRUCTION ENTRANCE
		STONE OUTLET STRUCTURE
		SEDIMENT TRAP
		STREAM DIVERSION
		TEMPORARY PIPE SLOPE DRAIN
		TEMPORARY RIPRAP
	TS	TEMPORARY SWALE
		TREES AND STUMP
	TP	TREE PROTECTION
		TEMPORARY STREAM CROSSING

PROPOSED	
	EROSION CONTROL BLANKET
	OVER SEEDING CLASS B1
	OVER SEEDING CLASS B2
	SEEDING CLASS A1
	SEEDING CLASS A2
	SEEDING CLASS A3
	SEEDING CLASS A4
	SEEDING CLASS A5
	SEEDING CLASS A6
	SEEDING CLASS D1
	SODDING (SALT TOLERANT)
	TEMPORARY GROUND COVER
	TURF REINFORCEMENT MAT

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/31/2016

Illinois Tollway

SYMBOLS AND PATTERNS

VERSION:	STANDARD:	SHEET:
2016-03	D2-04	2 OF 4

ELECTRICAL AND MECHANICAL ITEMS

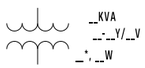
HOME RUN TO PANEL AS NOTED

INDICATES CIRCUIT TURNING DOWN

INDICATES CIRCUIT TURNING UP

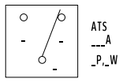
GROUND ROD

GROUNDING TRIAD



TRANSFORMER

MOTOR



AUTOMATIC TRANSFER SWITCH (ATS)



JUNCTION BOX



DISCONNECT SWITCH



CIRCUIT BREAKER



MANUAL TRANSFER SWITCH



SELF CONTAINED UTILITY METERING



STANDBY GENERATOR



PANEL CIRCUIT BREAKER



MECHANICALLY HELD LIGHTING COIL



CONTROL RELAY COIL

SINGLE-POLE SWITCH



DUPLEX RECEPTACLE



4P, 4W, WEATHERPROOF RECEPTACLE
WITH SPRING DOOR, BACK BOX, &
ANGLE ADAPTER



4P, 4W, WEATHERPROOF RECEPTACLE
WITH SPRING DOOR & BACK BOX



DUPLEX RECEPTACLE WITH
GROUND FAULT PROTECTION



CONTROL BUILDING LIGHTING
1' X 4' INDUSTRIAL FLUORESCENT FIXTURE, PORCELAIN
REFLECTOR, ELECTRONIC BALLAST.



COMPACT WALL-MOUNTED LOW WATTAGE HPS FIXTURE
WITH WIRE GUARD & SINGLE FACTORY INSTALLED FUSE



EMERGENCY LIGHT UNIT WITH 2-6 VOLT,
12 WATT SEALED BEAM HALOGEN LAMPS
WITH WALL MOUNTING BRACKET



LANE LIGHTING - HEAVY DUTY ALUMINUM HOUSING WITH
ENCLOSED REFLECTOR & TEMPERED GLASS LENS W/AUTO
REGULATOR BALLAST. ASYMMETRIC PATTERN



WIRE



CONDUIT

EXISTING	PROPOSED	
A	A	COMPRESSED AIR (A)
AR	AR	ACID RESISTANT WASTE OR DRAIN
ARV	ARV	ACID RESISTANT VENT
DS	DS	STORM SEWER (DOWNSPOUT)
G	G	GAS LINE
HG	HG	HOT GAS BYPASS LINE (HG)
HHWR	HHWR	HEATING HOT WATER RETURN (HHWR)
HHWS	HHWS	HEATING HOT WATER SUPPLY (HHWS)
IA	IA	DRY COMPRESSED AIR (IA-INSTRUMENT AIR)
P	P	PROCESS WATER ("P" WATER) LINE
PW	PW	PROTECTED WATER OR PLANT WATER (PW)
RD	RD	REFRIGERANT DISCHARGE LINE (RD)
RS	RS	REFRIGERANT SUCTION LINE (RS)
V	V	VENT LINE (V)

NOTE:

ALL SYMBOLS AND PATTERNS ON THIS DRAWING ARE PROPOSED UNLESS OTHERWISE NOTED.

APPROVED BY:

Paul Kovacs

CHIEF ENGINEERING OFFICER

DATE: 03/31/2016

Illinois Tollway

SYMBOLS AND PATTERNS

VERSION:	STANDARD:	SHEET:
2016-03	D2-04	3 OF 4

ELECTRICAL AND MECHANICAL ITEMS

CFM OR CFM — QUANTITY AND DIRECTION OF THE AIR FLOW

X OR X — DUCT SIZE (FIRST FIGURE SIZE OF SHOWN, SECOND FIGURE SIZE OF SIDE NOT SHOWN.)

SUPPLY DUCT SECTION

OR — RETURN OR EXHAUST DUCT SECTION

D OR D — DUCT DROPS IN THE DIRECTION OF FLOW

R OR R — DUCT RISES IN THE DIRECTION OF FLOW

OR — TURNING VANES

CFM OR CFM — 8" THROAT DIAMETER CEILING DIFFUSER; AIR FLOW – 100 CFM

OR — BALANCING OR VOLUME DAMPER

M OR M — MOTOR OPERATED DAMPER

FLEXIBLE DUCT

FIRE DAMPER

A — SOUND ATTENUATOR

ZONE DAMPER

FLEXIBLE CONNECTION AT FAN OR EQUIPMENT

EXTRACTOR

OR — SPLITTER DAMPER

B — PLUG VALVE WITH MEMORY STOP (BALANCING)

PLUG VALVE

S — SOLENOID VALVE

TEMPERATURE CONTROL VALVE

THREE-WAY TEMPERATURE CONTROL VALVE DIAPHRAGM

THREE-WAY TEMPERATURE CONTROL VALVE TOP VIEW

PRESSURE REDUCING VALVE (NOS = INITIAL AND FINAL PRESSURE - PSIG)

PRV — AIR PRESSURE REDUCING STATION (NO. CORRESPONDS WITH AIR PRESSURE REDUCER SCHEDULE)

SAFETY VALVE (NOS. = PRESSURE SETTING - PSIG)

FLOAT OPERATED VALVE

QC — QUICK COUPLING (QC)

UH — HORIZONTAL UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)

UH — VERTICAL UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)

UH — CABINET TYPE UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)

T — THERMOSTAT OR ROOM TEMPERATURE SENSOR

GATE VALVE

FLOW SWITCH

GPM — VENTURI FLOW METER AND FLOW TO BE INDICATED

CONNECTION BETWEEN NEW AND EXISTING

GLOBE VALVE

BUTTERFLY VALVE

CHECK VALVE

ANGLE GATE VALVE

CONCENTRIC REDUCER

ECCENTRIC REDUCER

ORIFICE FLANGE

CROSSOVER

PIPE GUIDE

EXPANSION JOINT (SLIP TYPE)

EXPANSION JOINT (BELLOWS TYPE)

AIR ELIMINATOR (AIR VENT)

PIPE CAP

STRAIGHT CROSS

90° ELBOW

90° ELBOW TURNED DOWN

90° ELBOW TURNED UP

SIDE OUTLET ELBOW TURNED DOWN

SIDE OUTLET ELBOW TURNED UP

LATERAL

TEE

TEE OUTLET UP

TEE OUTLET DOWN

UNION

STRAINER

X — PIPE ANCHOR

THERMOMETER (NOS. = RANGE IN DEGREES FAHRENHEIT)

PRESSURE, VACUUM OR COMPOUND GAUGE

NOTE:

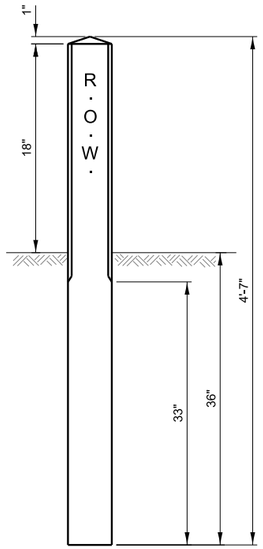
ALL SYMBOLS AND PATTERNS ON THIS DRAWING ARE PROPOSED UNLESS OTHERWISE NOTED.

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/31/2016

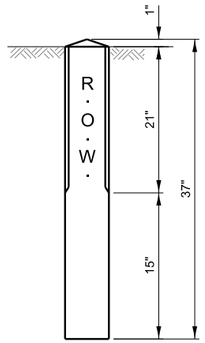
Illinois Tollway

SYMBOLS AND PATTERNS

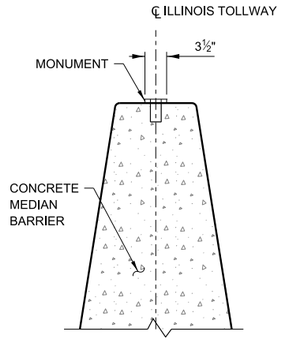
VERSION:	STANDARD:	SHEET:
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RIGHT OF WAY MARKER

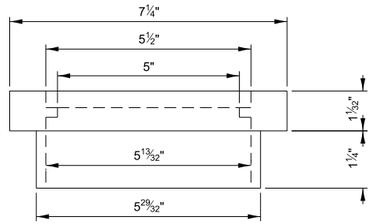


RIGHT OF WAY MARKER (SPECIAL)



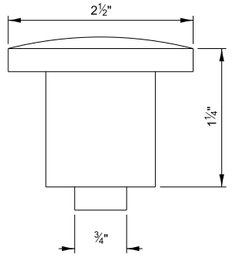
TYPICAL CENTERLINE MONUMENT AT MEDIAN BARRIER



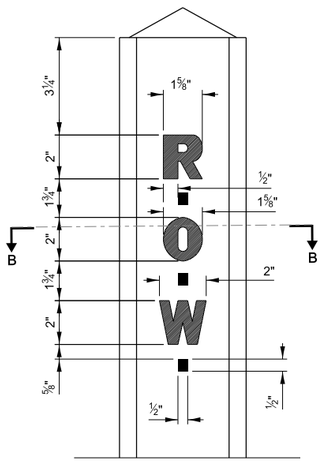


ACCESS COVER (RECESSED HINGE)

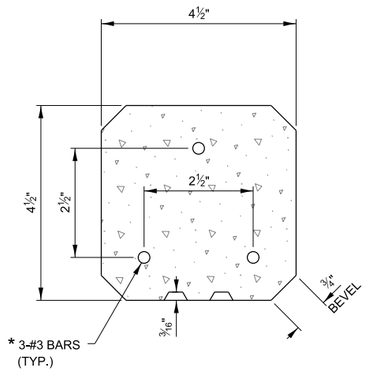




ALUMINUM DOMED CAP



LETTERING DETAIL



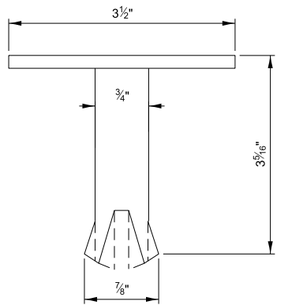
* METHOD A- 4'-2" LONG BARS
* METHOD B- 2'-6" LONG BARS

SECTION B-B

RIGHT OF WAY MARKER

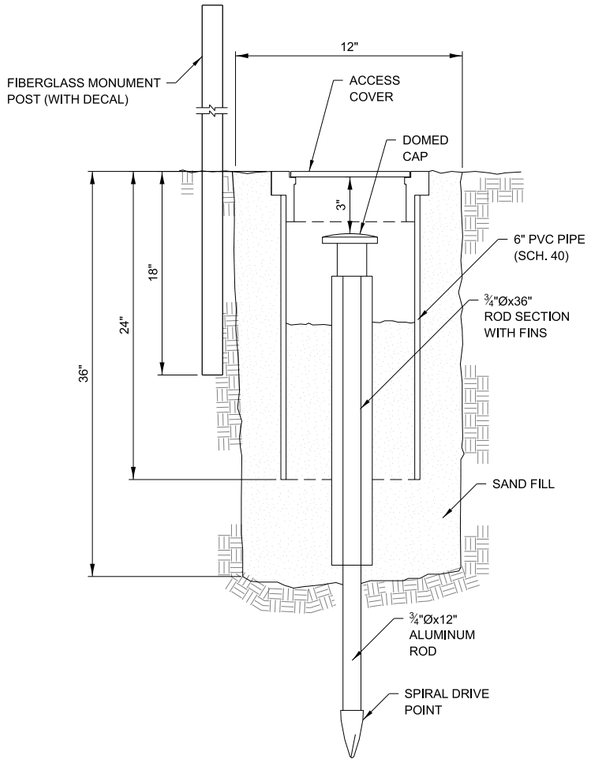


TOP VIEW

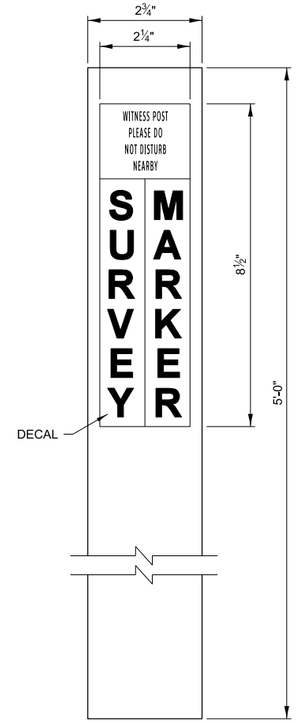


BRONZE DOMED CAP

PERMANENT SURVEY MONUMENT



PERMANENT SURVEY MONUMENT (SPECIAL)



MONUMENT POST

APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

REVISIONS	
DATE	DESCRIPTION
03-01-2019	CHANGED TO CONSTANT-SLOPE
	MEDIAN BARRIER
07-01-2010	NEW MONUMENT AND BARRIER
	MARKERS

Illinois Tollway

PERMANENT SURVEY MONUMENTS AND RIGHT-OF-WAY MARKERS

VERSION:	STANDARD:	SHEET:
2019-03	D3-02	1 OF 1

PERMANENT DELINEATION SPACING

		MAINLINE		RAMP	
	REFLECTORS	TANGENT	CURVE	TANGENT	CURVE
*	GUARDRAIL	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
*	BARRIER WALL (DOUBLE FACE)	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
*	BARRIER WALL (SINGLE FACE)	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
	SHOULDER NARROWING	3 @ 15'	3 @ 15'	3 @ 15'	3 @ 15'
	BRIDGE APPROACHES	3 @ 15'	3 @ 15'	3 @ 15'	3 @ 15'
*	BRIDGE OR RETAINING WALL PARAPET	50'	50'	50'	50'
*	CRASHWORTHY NOISE ABATEMENT WALL OR RETAINING WALL AT EDGE OF SHOULDER	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')

	ROADWAY DELINEATORS	MAINLINE		RAMP	
		TANGENT	CURVE	TANGENT	CURVE
	POST MOUNTED DELINEATOR	200'	200'	100' **	TABLE A **
	POST MOUNTED DELINEATOR (RAMP TAPERS AND TANGENTS)	100' **	100' **	NA	NA

	TEMPORARY DELINEATION SPACING				
		TANGENT	REVERSE CURVE	SHIFT	TAPER
	TEMPORARY CONCRETE BARRIER	50'	25'	25'	25'

* WHEN ADJACENT SHOULDER IS USED AS A TRAVELED LANE, USE SPACING REQUIREMENTS AS SHOWN FOR TEMPORARY DELINEATION.

** IN ADDITION TO CRYSTAL/AMBER REFLECTORS, RED REFLECTORS SHALL BE INSTALLED (FACING OPPOSITE TRAFFIC FLOW) ONLY ALONG TOLLWAY EXIT RAMPS TO CROSSROADS WHERE THE EXIT RAMP TERMINAL IS LOCATED AT A STOP CONTROLLED, SIGNALIZED OR ROUNDABOUT INTERSECTION. THE LOCATIONS OF THE RED REFLECTORS SHALL BE IN ACCORDANCE WITH THE INTERCHANGE RAMP PLACEMENT PLAN ON SHEET 2 OF THIS STANDARD.

TABLE A

REFLECTOR SPACING ON RAMP - CURVES

RADIUS OF CURVE (FT.)	SPACING ALONG CURVE (FT.)
LESS THAN 140	25
140-249	30
250-349	40
350-699	50
700-1200	75
MORE THAN 1200	100

GENERAL NOTES:

1. EMERGENCY TURNAROUNDS DELINEATION - THE FOLLOWING DELINEATION SHOULD BE INSTALLED ON THE LEFT SIDE OF THE PAVEMENT APPROACHING EMERGENCY TURNAROUNDS.
   A. ONE-HALF OF A MILE IN ADVANCE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER THREE AMBER REFLECTOR UNITS.
   B. ONE-FOURTH OF A MILE IN ADVANCE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER TWO AMBER REFLECTOR UNITS.
   C. AT A POINT NEAR THE INTERSECTION OF THE EDGE OF THE LEFT SHOULDER AND NEAR EDGE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER ONE AMBER REFLECTOR UNIT.
2. ALL REFLECTORS FACING OPPOSITE TRAFFIC FLOW SHALL BE RED.

NOTES FOR ROADWAY DELINEATORS, POST MOUNTED INSTALLATION:

1. A. MAINLINE-SINGLE WHITE REFLECTOR UNITS SHALL BE PLACED CONTINUOUSLY ON THE RIGHT AND SINGLE AMBER REFLECTOR UNITS SHALL BE PLACED ON THE LEFT ON MAIN LINE SECTIONS WITHOUT BARRIER WALL.
   B. RAMPS-SINGLE REFLECTOR UNITS SHALL BE PLACED ON THE OUTSIDE OF ALL CURVED SECTIONS OF RAMPS, SINGLE WHITE SHALL BE PLACED ON THE RIGHT SIDE AND AMBER ON THE LEFT SIDE. THE DELINEATORS SHALL BE OVERLAPPED FOR A SHORT DISTANCE TO CLEARLY INDICATE WHERE DELINEATION ON ONE SIDE OF THE RAMP ENDS AND DELINEATION ON THE OTHER SIDE APPEARS.
   C. DOUBLE WHITE REFLECTOR UNITS SHALL BE PLACED ON THE RIGHT AT ALL ACCELERATION AND DECELERATION LANES.
   D. THE LOCATION OF THE REFLECTORS SHALL BE IN ACCORDANCE WITH THE INTERCHANGE RAMP PLACEMENT PLAN ON SHEET 2 OF THIS STANDARD.
2. REFLECTORS SHALL BE MOUNTED ON SUPPORTS SUCH THAT THE BOTTOM OF REFLECTORS IS FOUR FEET ABOVE THE ROADWAY EDGE AND TWO FEET OUTSIDE THE OUTER EDGE OF THE PAVED SHOULDER OR TWO FEET MINIMUM AND SIX FEET MAXIMUM OUTSIDE THE BACKS OF CURBS OR GUTTERS.
3. IN ALL CASES, THE COLOR OF THE REFLECTORS SHALL BE THE SAME AS THE ADJACENT EDGE LINE EXCEPT AS SPECIFIED IN GENERAL NOTES.
4. POST MOUNTED REFLECTORS SHALL BE PLACED CONTINUOUSLY AS NOTED ABOVE IN CONJUNCTION WITH GUARDRAIL INSTALLED.
5. THE PLACEMENT OF ROADWAY DELINEATOR "CIRCULAR REFLECTORS" SHALL BE USED FOR ALL MINOR PROJECTS WHICH HAVE A LENGTH OF LESS THAN 5 MILES. THE PLACEMENT OF ROADWAY DELINEATOR "RECTANGULAR REFLECTORS" SHALL BE USED FOR ALL MAJOR PROJECTS WHICH HAVE A LENGTH GREATER THAN 5 MILES. ALL ROADWAY DELINEATORS WITHIN A ROADWAY SEGMENT SHALL BE OF THE SAME TYPE.

NOTES FOR GUARDRAIL AND BARRIER WALL REFLECTOR:

1. REFLECTORS TYPE B AND TYPE C SHALL HAVE REFLECTIVE SURFACE ON ONE SIDE ONLY. WHERE DOUBLE BACK REFLECTOR IS INDICATED, A SINGLE RED REFLECTOR SHALL BE INSTALLED BACK TO BACK WITH THE APPROACHING TRAFFIC FACING REFLECTOR.

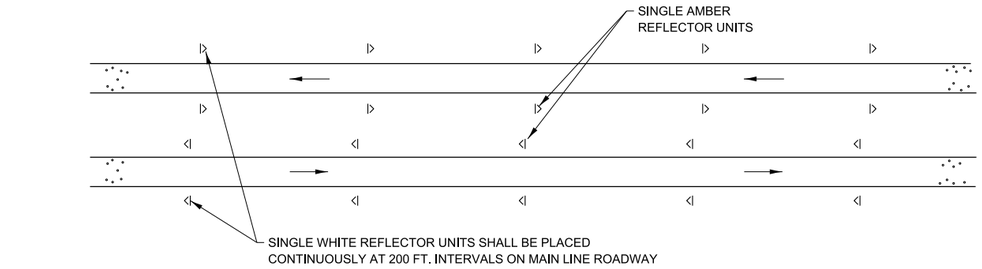
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

Illinois Tollway

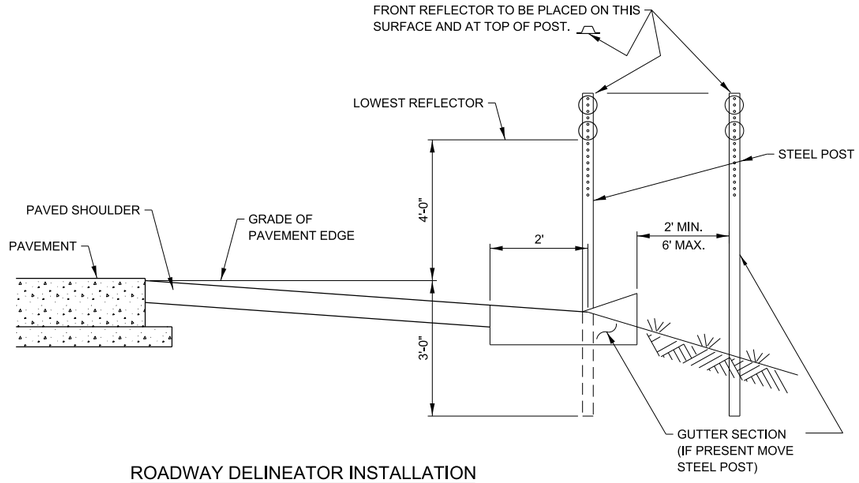
REVISIONS	
DATE	DESCRIPTION
03-01-2025	DELINEATOR SPACING AND MOUNTING
	HEIGHT REVISED AND RED REFLECTORS
	ONLY ON SPECIFIED RAMPS
03-01-2024	ADDED DETAIL FOR REFLECTOR
	AT NAW & RETAINING WALL

ROADWAY DELINEATORS AND REFLECTORS

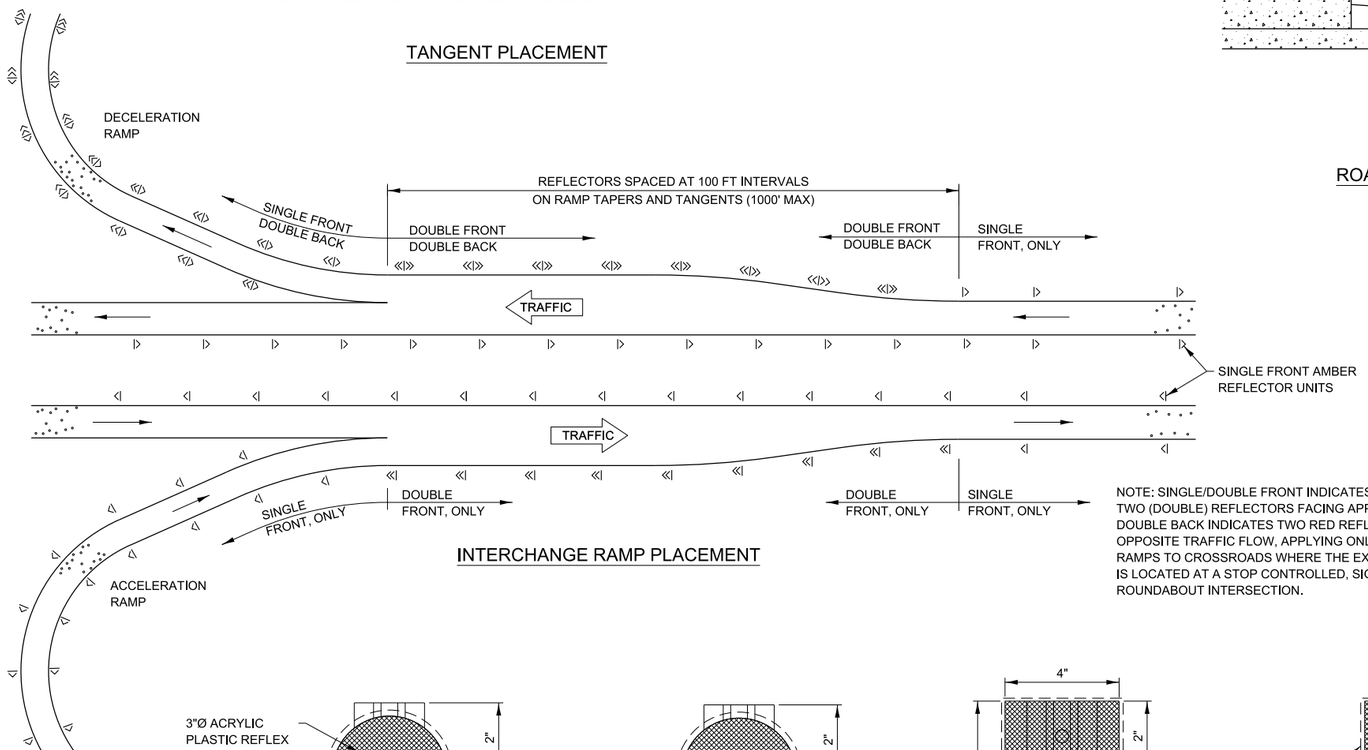
VERSION:	STANDARD:	SHEET:
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TANGENT PLACEMENT

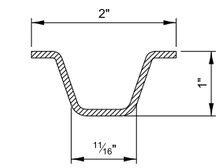


ROADWAY DELINEATOR INSTALLATION



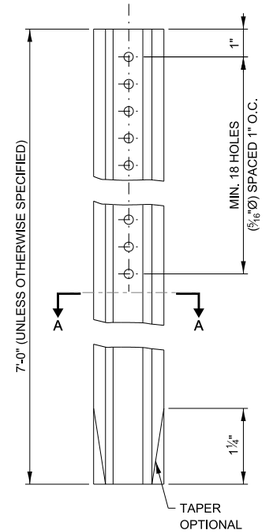
INTERCHANGE RAMP PLACEMENT

NOTE: SINGLE/DOUBLE FRONT INDICATES ONE (SINGLE) OR TWO (DOUBLE) REFLECTORS FACING APPROACHING TRAFFIC. DOUBLE BACK INDICATES TWO RED REFLECTORS FACING OPPOSITE TRAFFIC FLOW, APPLYING ONLY TO TOLLWAY EXIT RAMPS TO CROSSROADS WHERE THE EXIT RAMP TERMINAL IS LOCATED AT A STOP CONTROLLED, SIGNALIZED OR ROUNDABOUT INTERSECTION.

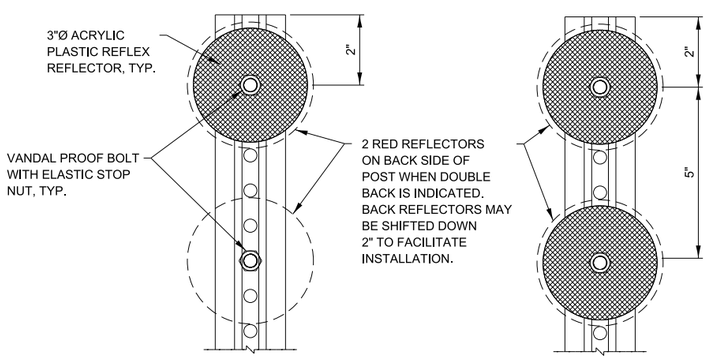


SECTION A-A

STEEL- 1.12 LBS/FT.



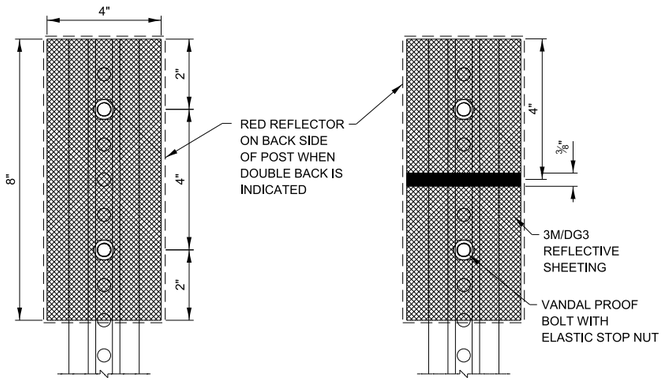
STEEL POST



SINGLE FRONT

DOUBLE FRONT

CIRCULAR REFLECTORS



SINGLE FRONT

DOUBLE FRONT

RECTANGULAR REFLECTORS

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

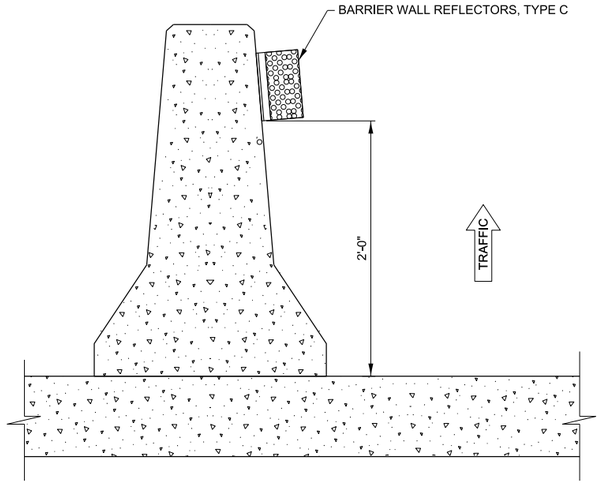
APPROVED BY:
Marni Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

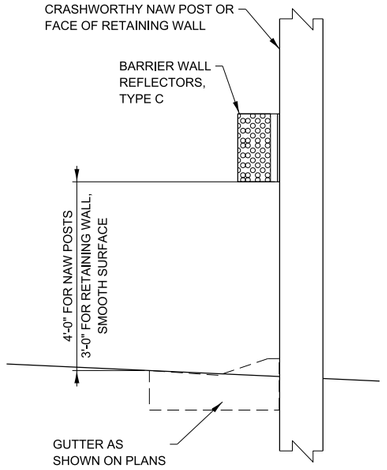
Illinois Tollway

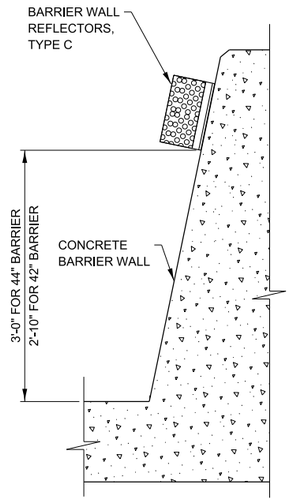
ROADWAY DELINEATORS AND REFLECTORS

VERSION:	STANDARD:	SHEET:
2025-03	D4-10	2 OF 3

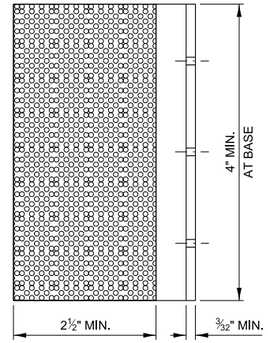


CROSS-SECTION
TEMPORARY CONCRETE BARRIER

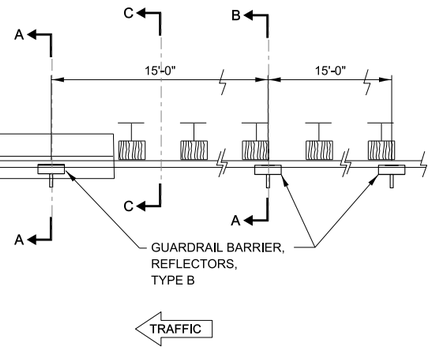




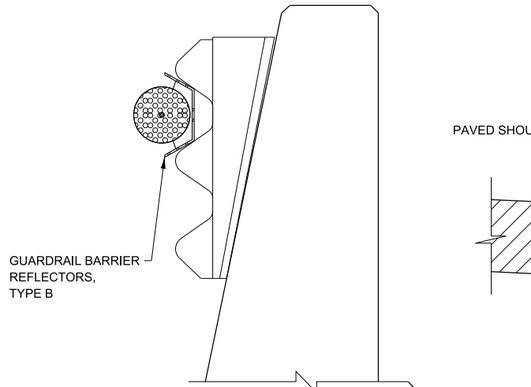
VERTICAL WALL, BARRIER OR PARAPET
REFLECTOR INSTALLATION



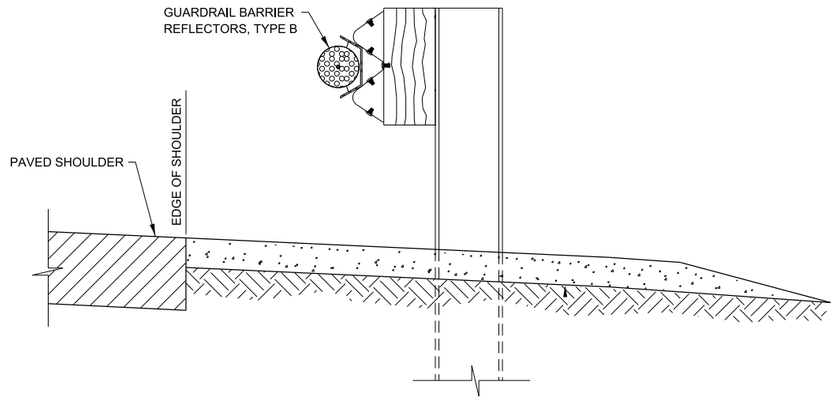
REFLECTOR,TYPE C



PLAN

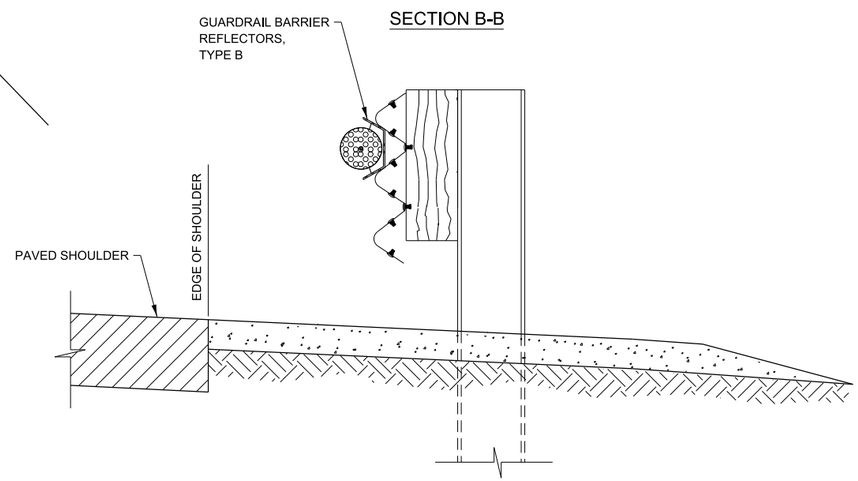


SECTION A-A



SECTION B-B

REFLECTOR, TYPE B



SECTION C-C

REFLECTOR INSTALLATION ON GUARDRAIL
AT BRIDGE APPROACHES
ALSO SEE SHEET 1 IN THIS SERIES
FOR ADDITIONAL INFORMATION

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

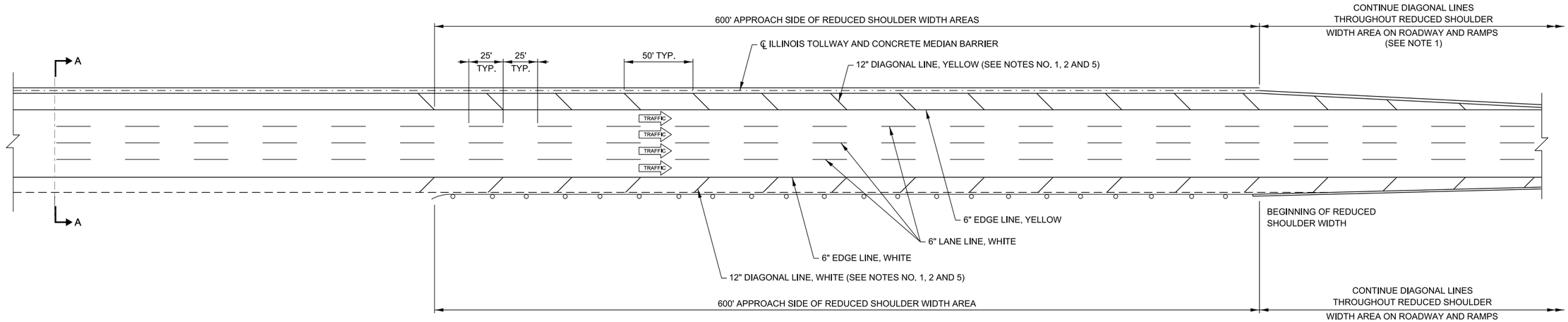
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

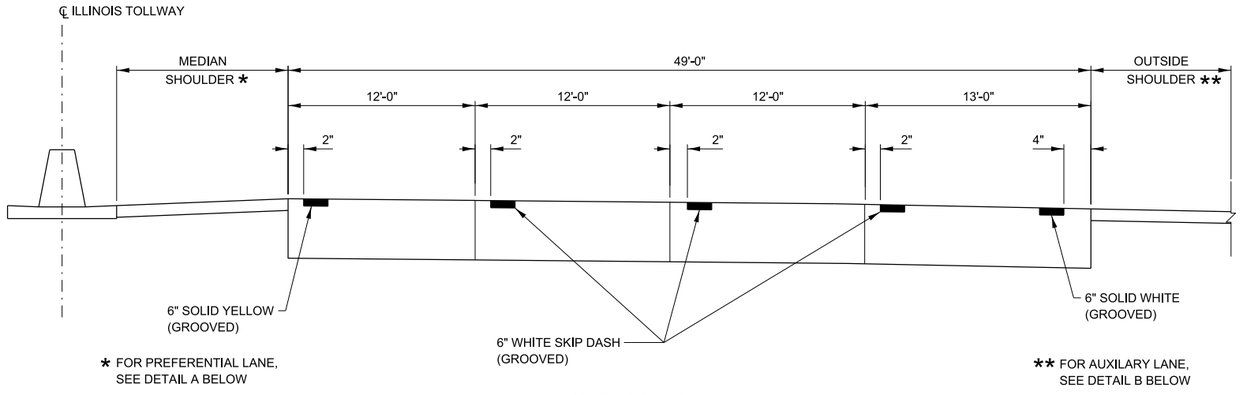
Illinois Tollway

ROADWAY DELINEATORS AND REFLECTORS

VERSION:	STANDARD:	SHEET:
2025-03	D4-10	3 OF 3

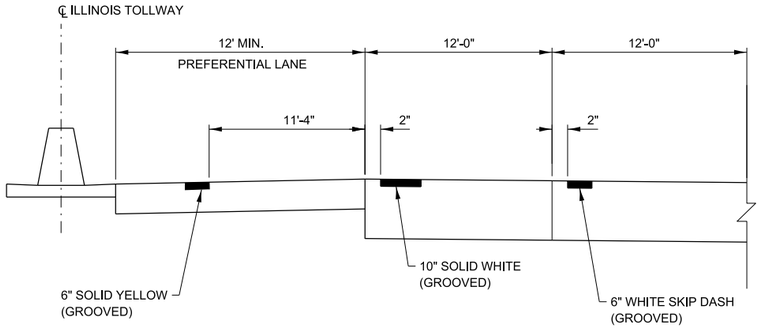


PLAN

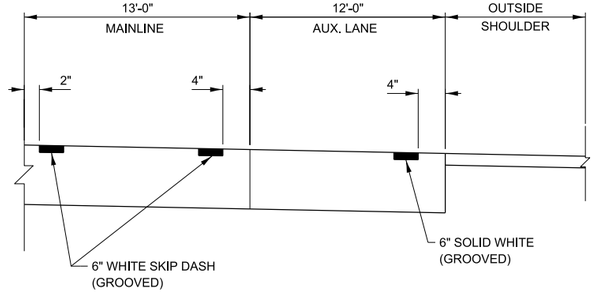


SECTION A-A
ROADWAY AND SHOULDER STRIPING - NEW CONSTRUCTION

FOR RUMBLE STRIP DETAILS
SEE STANDARD DRAWING D7



DETAIL A - PREFERENTIAL LANE STRIPING



DETAIL B - AUXILIARY LANE STRIPING

GENERAL NOTES:

1. DIAGONAL SHOULDER STRIPING REQUIRED WHERE THE SHOULDER WIDTH IS LESS THAN STANDARD EXCEPT ON SHOULDERS LESS THAN 4 FEET.
2. ROADWAY MARKING MATERIALS TO BE USED ON FINISHED CONCRETE SURFACE AND ASPHALT SURFACE SHALL BE AS SHOWN ON THE PLANS.
3. WHERE THE GUARDRAIL ENCROACHES ON THE SHOULDER THE DIAGONAL MARKINGS SHALL EXTEND AS CLOSE TO THE FACE OF THE RAIL AS POSSIBLE.
4. ALL PERMANENT LANE LINES AND EDGE LINES SHALL BE GROOVED, ON ROADWAY SURFACES, UNLESS OTHERWISE NOTED.
5. DIAGONAL STRIPING SHALL BE SURFACE APPLIED.
6. GORE STRIPING (CHEVRON) SHALL BE SURFACE APPLIED.
7. ALL LANE LINES AND EDGE LINES SHALL BE SURFACE APPLIED ON BRIDGES.
8. ALL LANE LINES AND EDGE LINES SHALL BE SURFACE APPLIED ON CONTINUOUSLY REINFORCED CONCRETE (CRC) PAVEMENT AT TOLL PLAZAS.

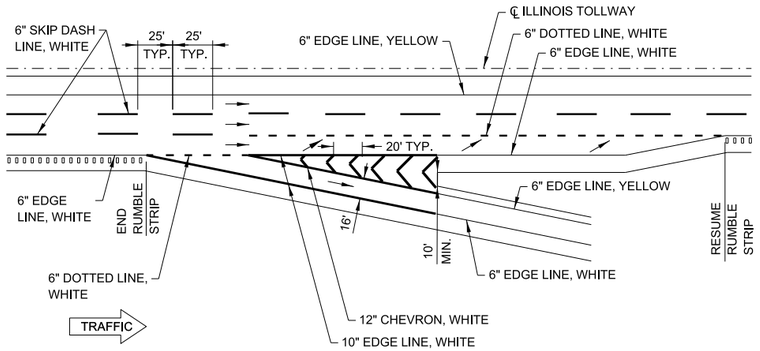
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REVISED NOTE 1
03-01-2023	ADDED AUX. LANE STRIPING DETAIL
03-01-2022	REVISED EDGE LINES TO 6"
03-01-2021	ADDED PREF. LANE STRIPING
03-01-2020	REVISED EDGE LINE TO BE 4" MIN.
03-31-2016	REVISED NOTES

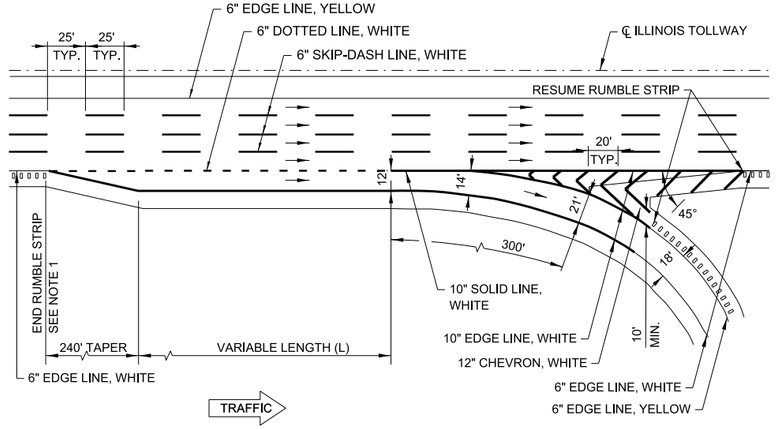
Illinois Tollway

PERMANENT PAVEMENT MARKINGS MAINLINE

VERSION:	STANDARD:	SHEET:
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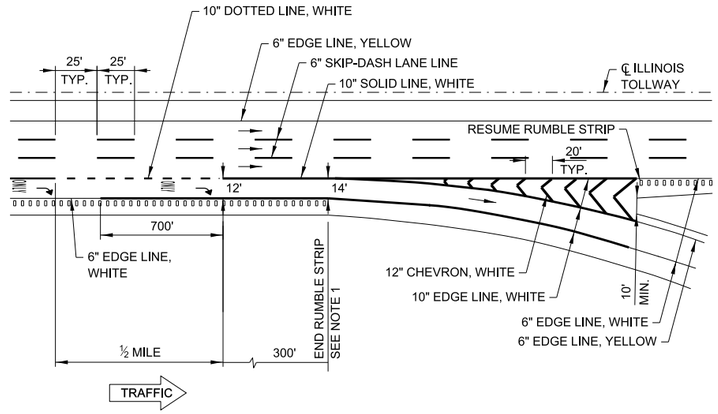


EXIT - SINGLE LANE RAMP
LANE THREE TERMINATION

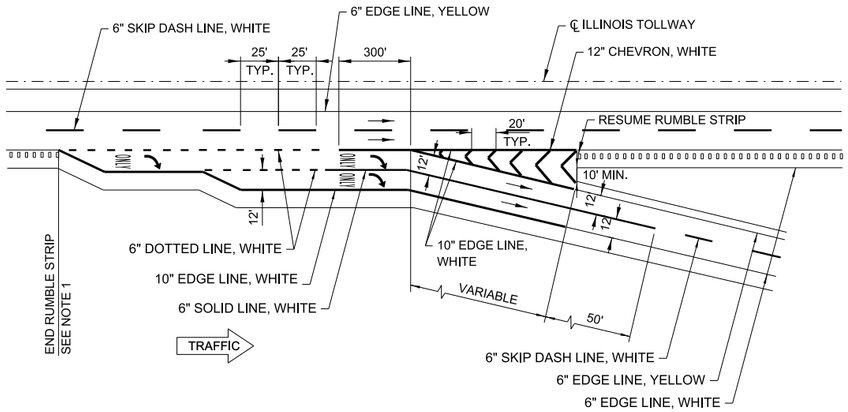


EXIT - SINGLE LANE LOOP RAMP - PARALLEL TYPE

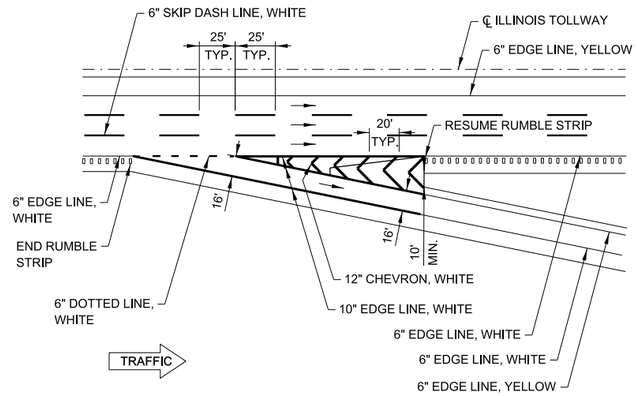
SEE SHEET 4 FOR SPEED REDUCTION MARKINGS



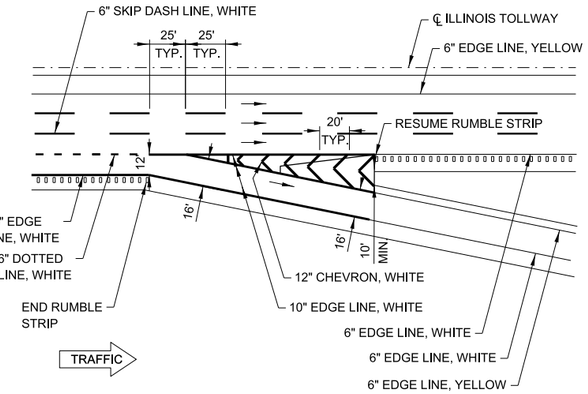
EXIT - SINGLE LANE RAMP - LANE DROP



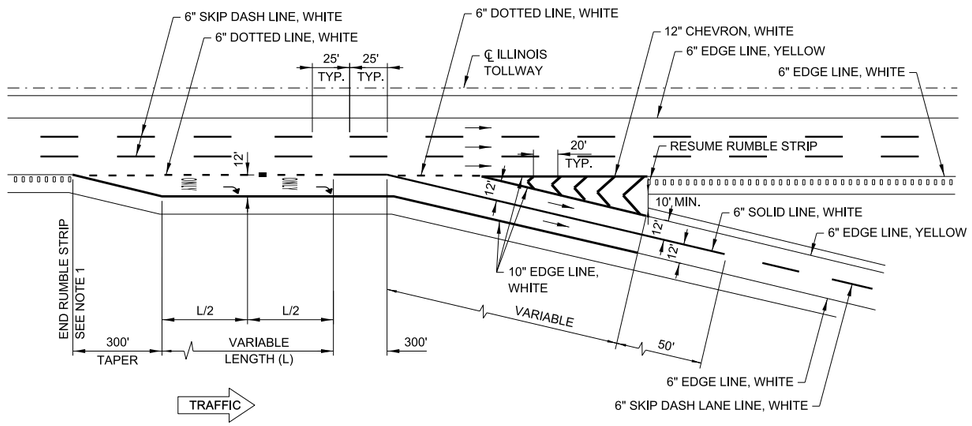
EXIT - TWO LANE PARALLEL RAMP



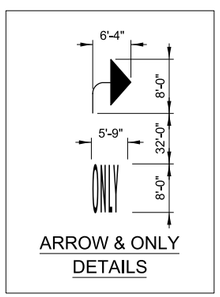
EXIT - SINGLE LANE RAMP - TAPER TYPE



EXIT - SINGLE LANE RAMP WITH AUX LANE - TAPER TYPE



EXIT - TWO LANE RAMP



ARROW & ONLY
DETAILS

NOTE:
PAVEMENT MARKING LETTERS AND SYMBOLS-ONLY AND ARROW ARE TO BE TYPICALLY PLACED AT ½ MILE EXIT ONLY GUIDE SIGN, AT GORE EXIT GUIDE SIGN AND APPROXIMATELY HALFWAY BETWEEN THE TWO.

GENERAL NOTES:

1. RUMBLE STRIPS SHALL BE INSTALLED BETWEEN THE THEORETICAL GORE AND TAPER WHEN LENGTHS (L) OF AUXILIARY LANES, ACCELERATION LANES OR DECELERATION LANES, ARE GREATER THAN 1000'.
2. ROADWAY MARKING MATERIALS TO BE USED ON FINISHED CONCRETE SURFACE AND ASPHALT SURFACE SHALL BE AS SHOWN ON THE PLANS.
3. ALL LANE LINES AND EDGE LINES SHALL BE GROOVED.
4. GORE STRIPING (CHEVRON) SHALL BE SURFACE APPLIED.
5. LETTERS AND SYMBOL MARKING SHALL BE SURFACE APPLIED.
6. DOTTED LINES SHALL CONSIST OF 3' LINE AND 9' GAPS.
7. PAVEMENT MARKINGS SHALL NOT BE GROOVED ON THE CONTINUOUSLY REINFORCED CONCRETE (CRC) PAVEMENT SECTION AT TOLL PLAZAS.

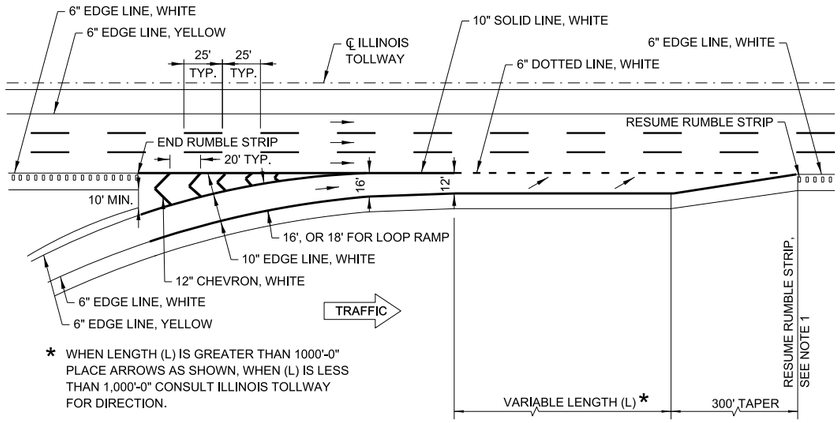
APPROVED BY:
Marco Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2023

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-31-2023	ADD 6" DOTTED LINE ACROSS EXIT
	& ENTRANCE RAMP TAPERS, ADDED
	NOTE 7
03-01-2022	REVISED EDGE LINES TO 6"

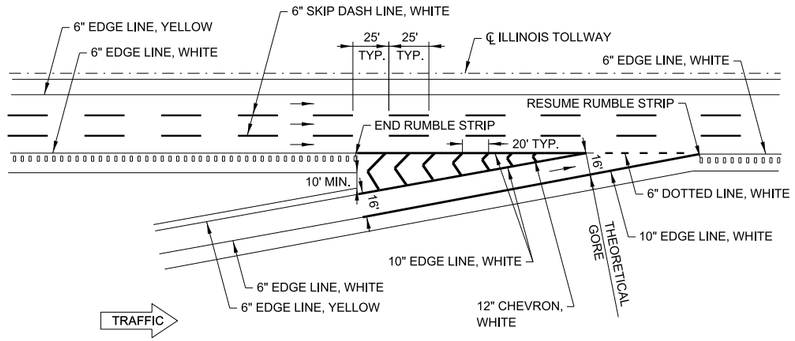
PERMANENT PAVEMENT MARKINGS RAMPS

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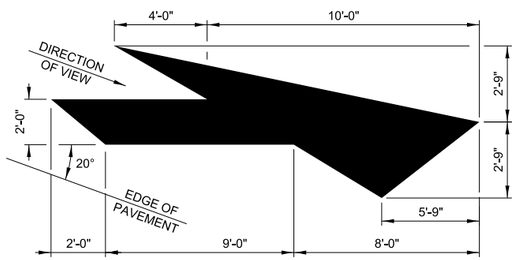


* WHEN LENGTH (L) IS GREATER THAN 1000'-0" PLACE ARROWS AS SHOWN, WHEN (L) IS LESS THAN 1,000'-0" CONSULT ILLINOIS TOLLWAY FOR DIRECTION.

ENTRANCE - SINGLE LANE RAMP - PARALLEL TYPE

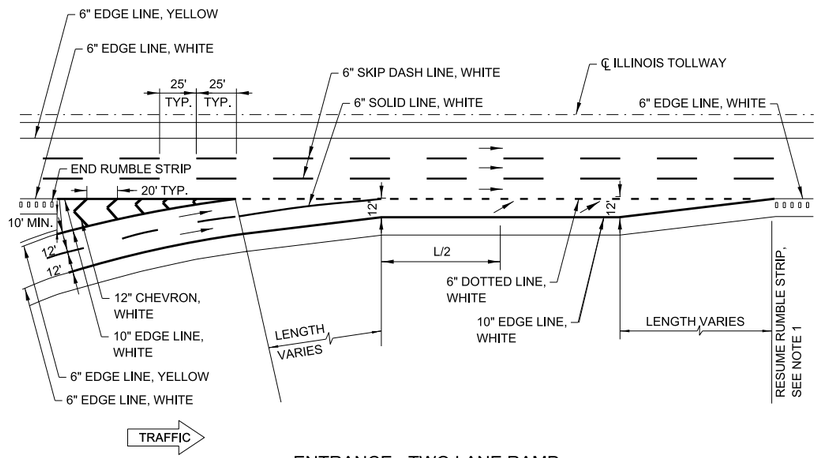


ENTRANCE - SINGLE LANE RAMP - TAPER TYPE

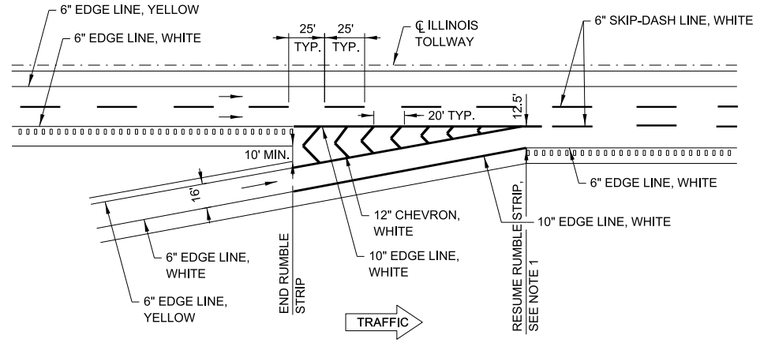


LANE-REDUCTION ARROW

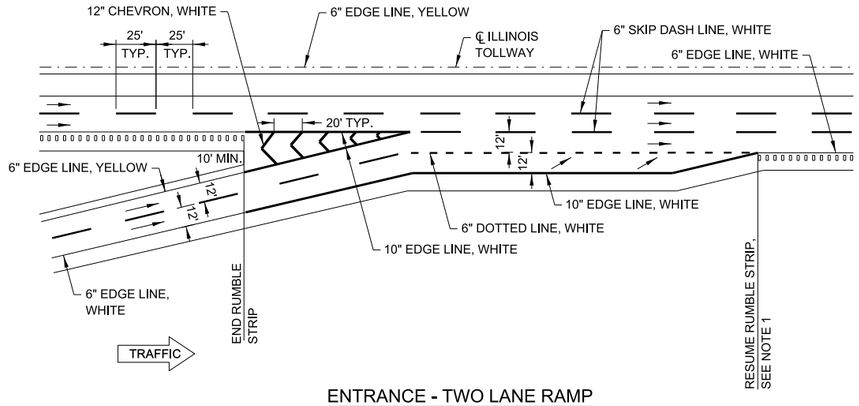
RIGHT LANE-REDUCTION ARROW SHOWN. USE MIRROR IMAGE FOR LEFT LANE.



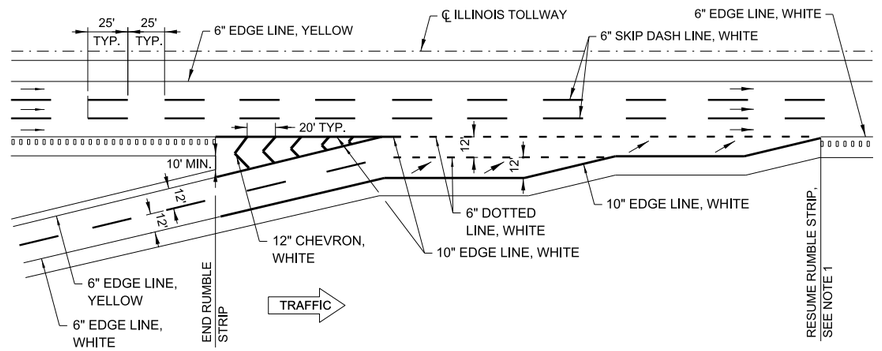
ENTRANCE - TWO LANE RAMP



ENTRANCE - SINGLE LANE RAMP WITH ADDED MAINLINE LANE



ENTRANCE - TWO LANE RAMP WITH ADDED MAINLINE LANE



ENTRANCE - TWO LANE PARALLEL RAMP

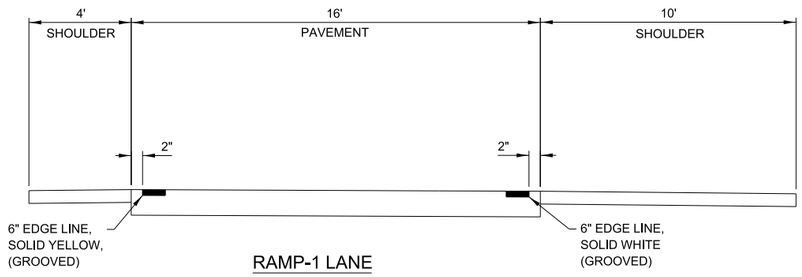
APPROVED BY: Marco Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2023

SEE SHEET 1 IN THIS SERIES FOR GENERAL NOTES.

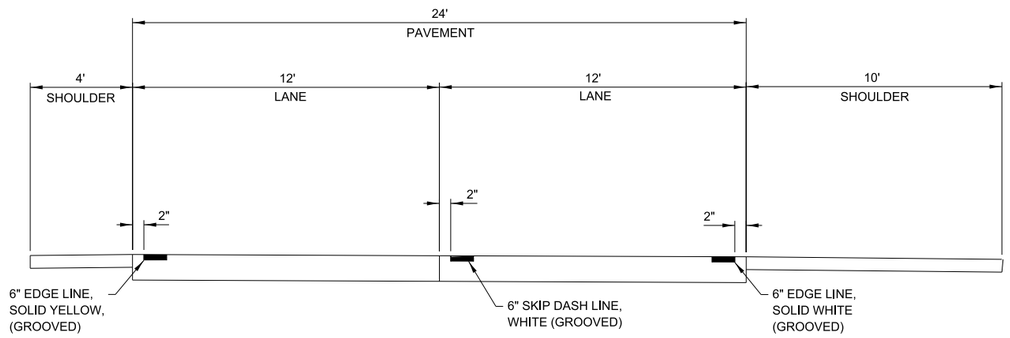
Illinois Tollway

PERMANENT PAVEMENT MARKINGS RAMPS

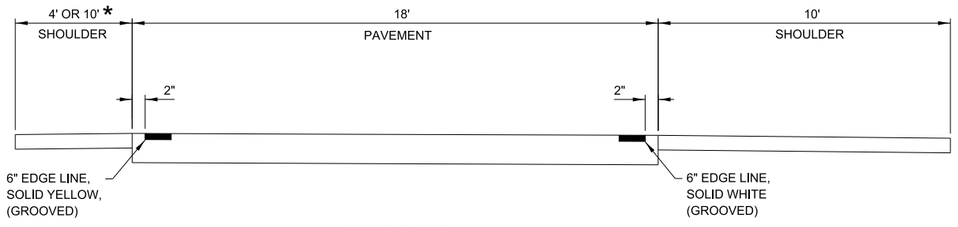
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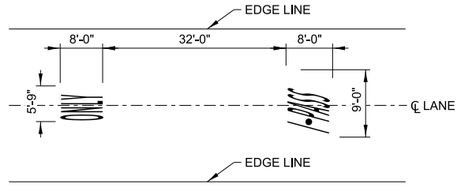
RAMP-1 LANE



RAMP-2 LANES



LOOP RAMP



IPO LANE PAVEMENT MARKING

* RUMBLE STRIP SHALL BE ADDED WHEN ALONG EXIT LOOP RAMP AND LEFT SHOULDER IS 10' WIDE

APPROVED BY:
Mamun Nashif
CHIEF ENGINEERING OFFICER

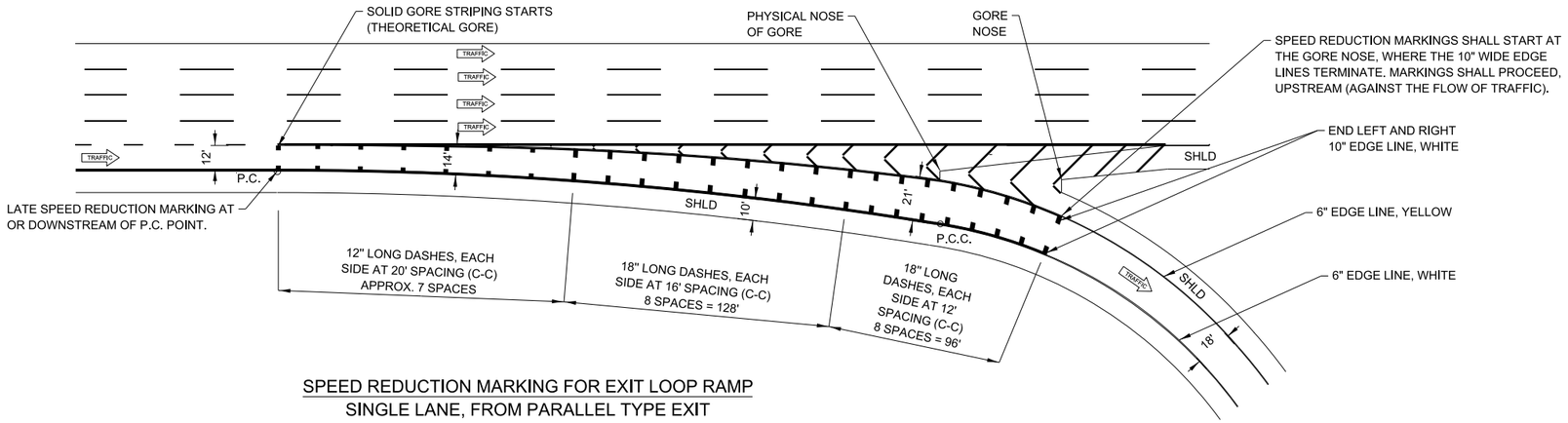
DATE:
03/01/2023

SEE SHEET 1 IN THIS SERIES FOR GENERAL NOTES.

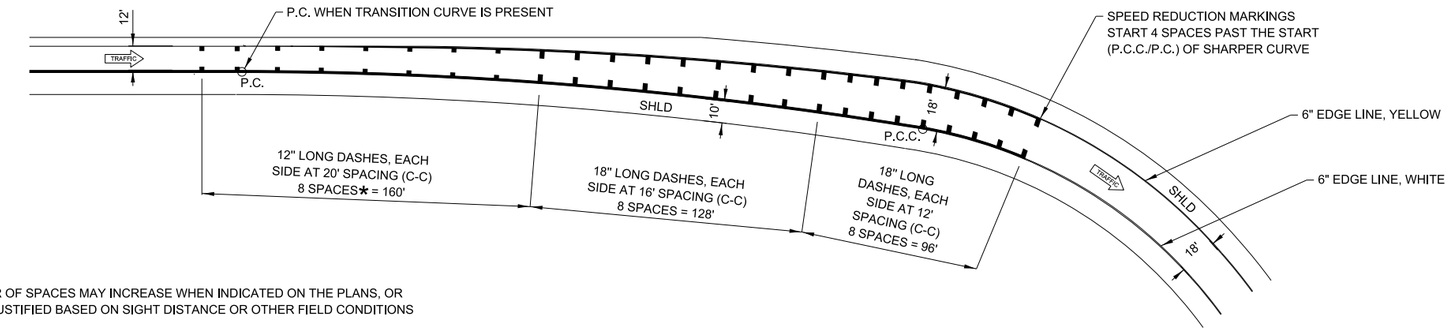
Illinois Tollway

PERMANENT PAVEMENT MARKINGS RAMPS

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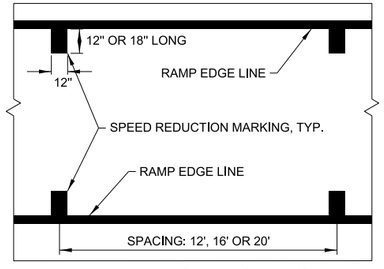


SPEED REDUCTION MARKING FOR EXIT LOOP RAMP
SINGLE LANE, FROM PARALLEL TYPE EXIT



* NUMBER OF SPACES MAY INCREASE WHEN INDICATED ON THE PLANS, OR WHEN JUSTIFIED BASED ON SIGHT DISTANCE OR OTHER FIELD CONDITIONS

SPEED REDUCTION MARKING FOR EXIT LOOP RAMP
SINGLE LANE, FROM C-D ROAD



SPEED REDUCTION MARKING DETAIL

SPEED REDUCTION MARKING NOTES:

SR-1. SPEED REDUCTION MARKINGS SHALL BE WHITE IN COLOR, BE 12" WIDE AND BE PLACED PERPENDICULAR TO THE EDGE LINE. THE MARKINGS SHALL TOUCH THE EDGE LINE AND EXTEND INTO THE LANE BY THE LENGTH INDICATED. THE MARKINGS ARE NOT GROOVED INTO THE PAVEMENT.

SR-2. SPACINGS SHALL VARY FROM LONGER SPACES TO SHORTER SPACES IN THE DIRECTION OF TRAFFIC. THE SPACES SHALL BE MEASURED ALONG THE RAMP BASELINE AND SHALL BE AS INDICATED ON THE DETAIL.

SR-3. SPEED REDUCTION MARKINGS SHALL ONLY BE USED ON EXIT LOOP RAMPS. PAYMENT FOR SPEED REDUCTION MARKINGS WILL BE FOR PAVEMENT MARKING LINE, 12" OF THE PERMANENT PAVEMENT MARKING TYPE USED ON THE RAMP.

SR-4. THIS DETAIL SHOWS PLACEMENT OF SPEED REDUCTION MARKINGS. FOR PLACEMENT AND TYPE OF EDGE LINES AND OTHER RAMP PAVEMENT MARKINGS, REFER TO OTHER DETAILS ON THE STANDARD DRAWINGS AND PLANS.

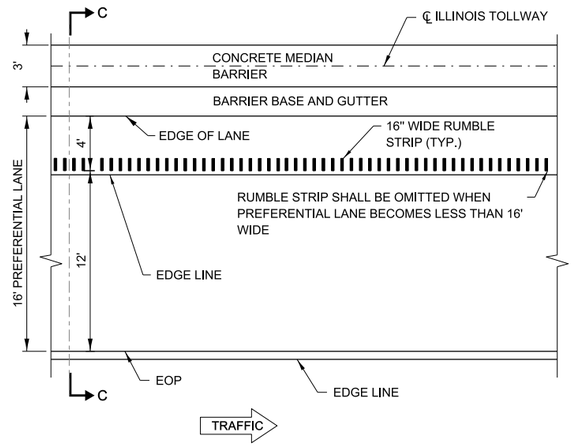
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2023

Illinois Tollway

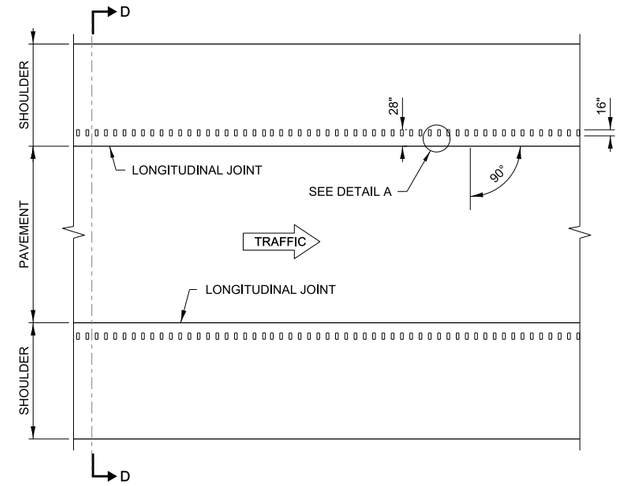
PERMANENT PAVEMENT MARKINGS RAMPS

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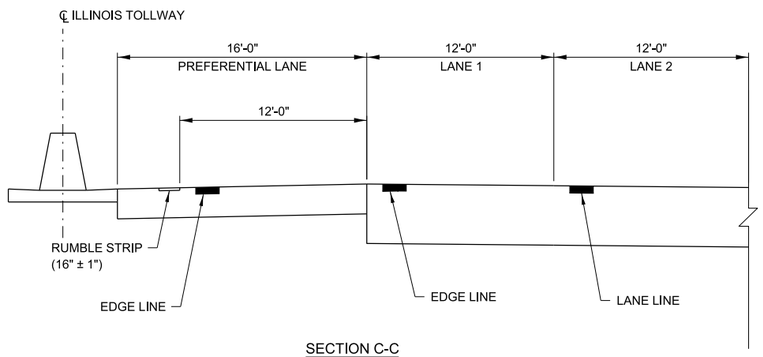


PREFERENTIAL LANE RUMBLE STRIP PLACEMENT - PLAN VIEW

USE WHEN SHOWN ON PLANS, MAINLINE MEDIAN SHOULDER IS AT LEAST 16' WIDE AND USED AS PREFERENTIAL LANE

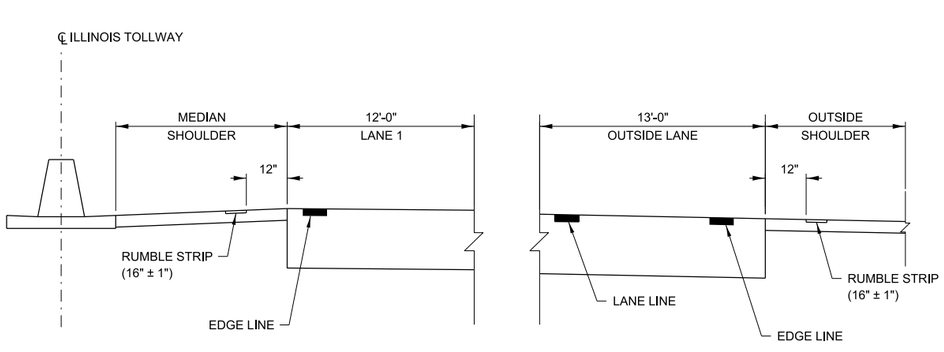


TYPICAL MAINLINE RUMBLE STRIP PLACEMENT - PLAN VIEW



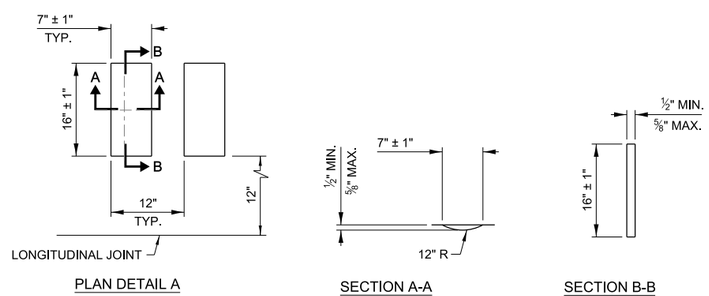
SECTION C-C

PREFERENTIAL LANE RUMBLE STRIP PLACEMENT - SECTION VIEW

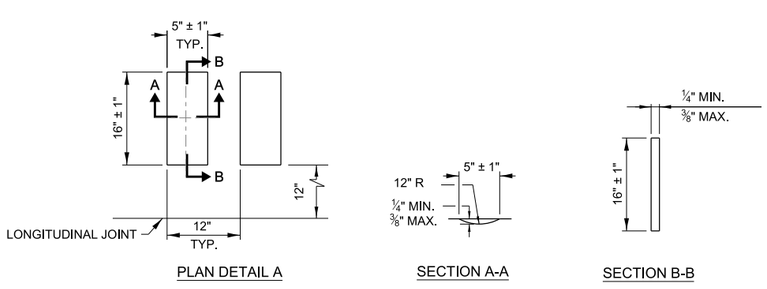


SECTION D-D

TYPICAL MAINLINE RUMBLE STRIP PLACEMENT - SECTION VIEW



ASPHALT SHOULDER RUMBLE STRIP DETAILS



CONCRETE SHOULDER RUMBLE STRIP DETAILS

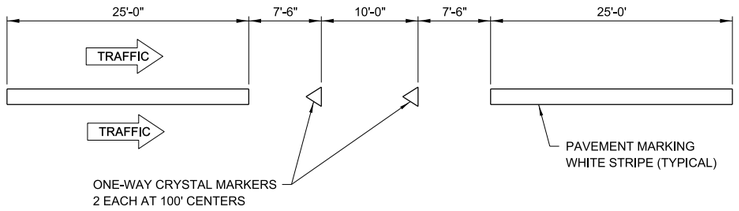
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2022

REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED EDGE LINES ON SECTIONS C-C & D-D

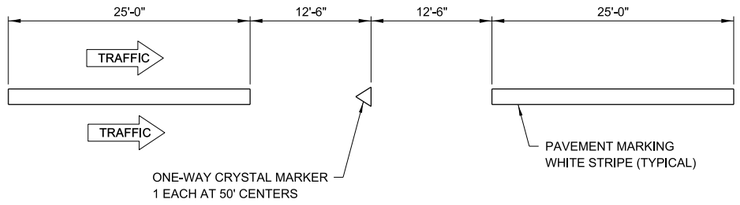
Illinois Tollway

SHOULDER RUMBLE STRIP DETAILS

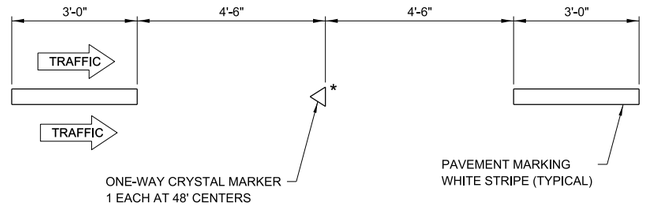
VERSION:	STANDARD:	SHEET:
2022-03	D7-01	1 OF 1



DETAIL A

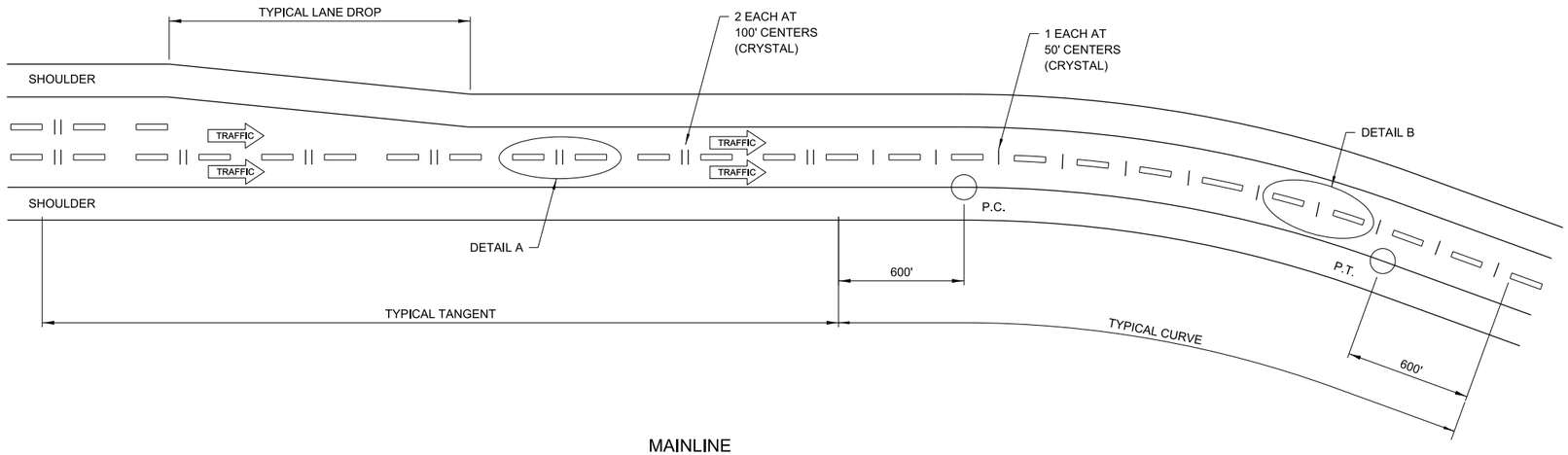


DETAIL B



* MARKER TO BE INSTALLED WHEN LENGTHS
OF AUXILIARY LANES ARE GREATER THAN 1000'.

DETAIL C



MAINLINE

RAISED PAVEMENT LANE MARKER DETAILS

NOTES:

1. USE OF RAISED PAVEMENT LANE MARKERS SHALL BE IN ACCORDANCE WITH THE IL TOLLWAY, ROADWAY SIGNING AND PAVEMENT MARKING GUIDELINES.
2. FOR COLLECTOR-DISTRIBUTOR (C-D) ROADWAYS, PLACE ONE-WAY CRYSTAL MARKER, 2 EACH AT 100' CENTERS. USE DETAIL A.
3. FOR MULTI LANE DIRECTIONAL RAMPS, PLACE ONE-WAY CRYSTAL MARKER, 1 EACH AT 50' CENTERS. USE DETAIL B.
4. FOR AUXILIARY LANES, PLACE ONE-WAY CRYSTAL MARKER, 1 EACH AT 48' CENTERS. USE DETAIL C.

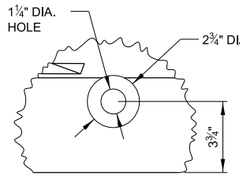
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

REVISIONS	
DATE	DESCRIPTION
03-15-2019	ADDED NEW NOTE 1
03-31-2016	REVISED NOTES 1.
11-01-2012	REVISED DETAIL C.

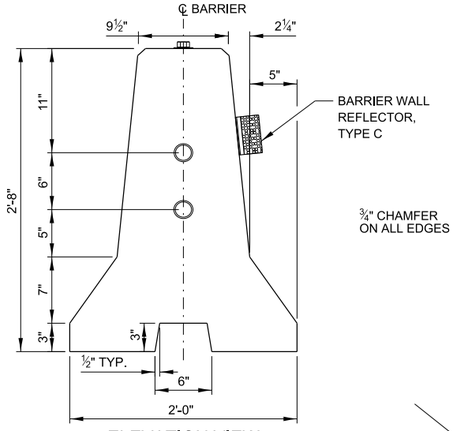
Illinois Tollway

RAISED PAVEMENT LANE MARKER

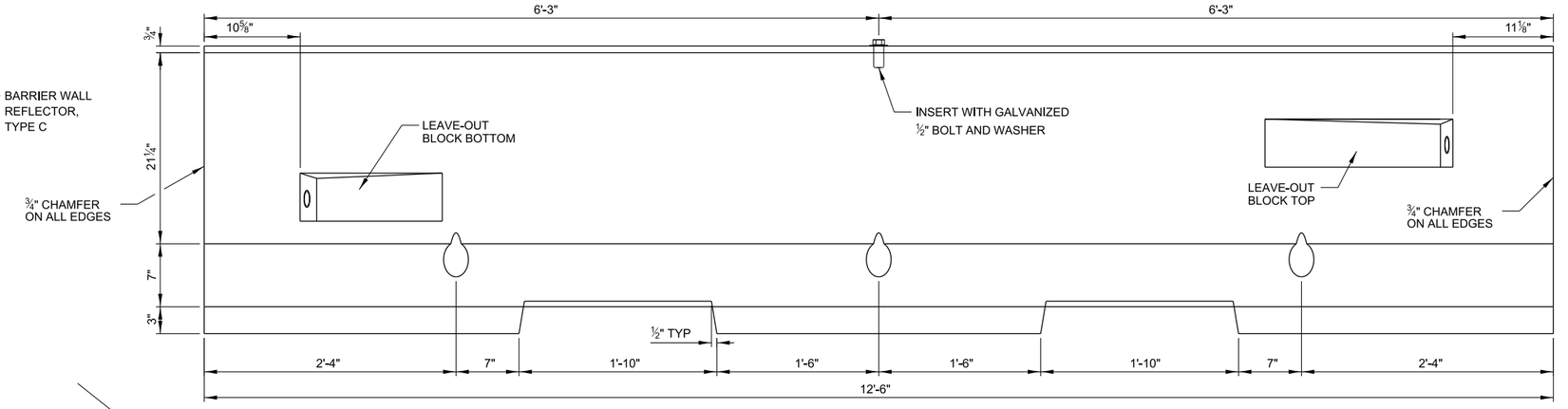
VERSION:	STANDARD:	SHEET:
2019-03	D8-03	1 OF 1



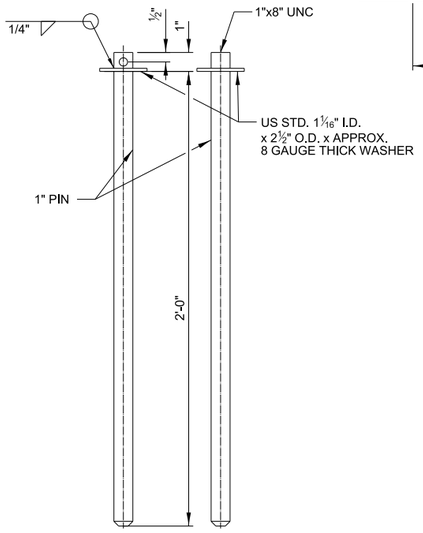
DETAIL A
TYP 6 PLACES



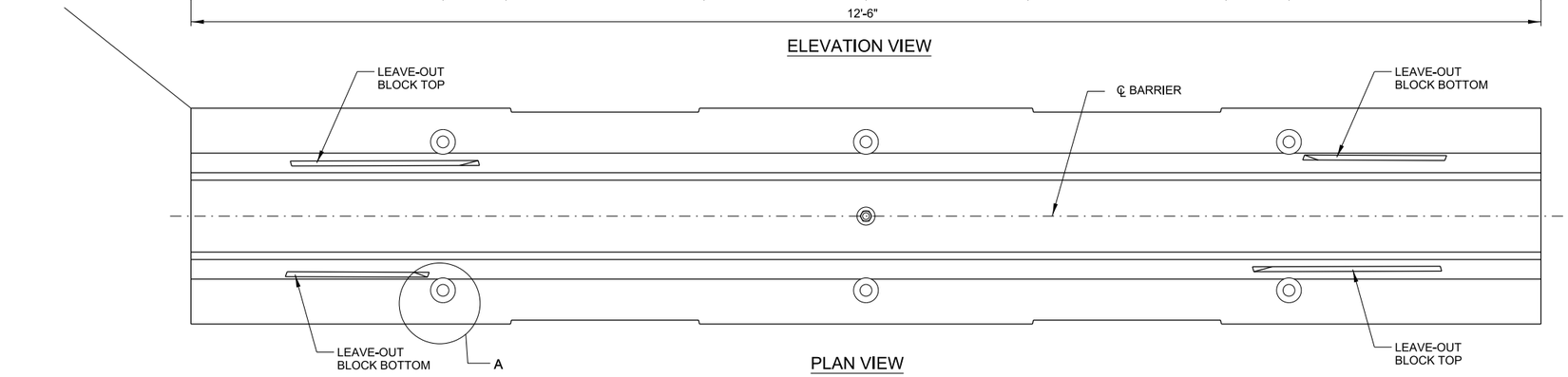
ELEVATION VIEW
END



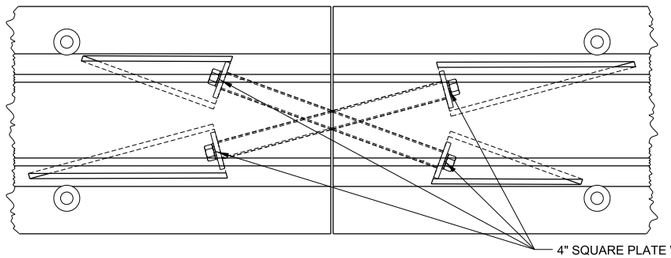
ELEVATION VIEW



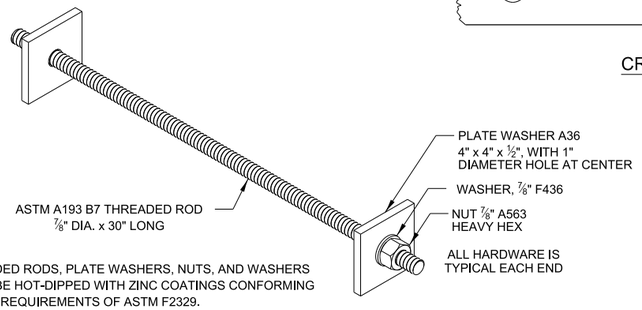
ANCHOR PIN
(END MAY BE BEVELED
1/4" MAX.)



PLAN VIEW



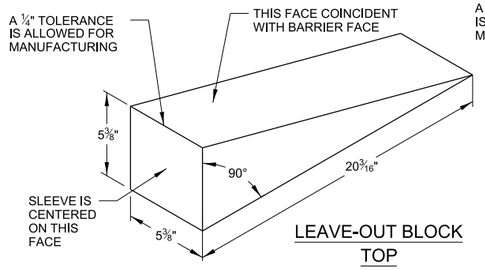
CROSS-BOLT CONNECTION DETAIL



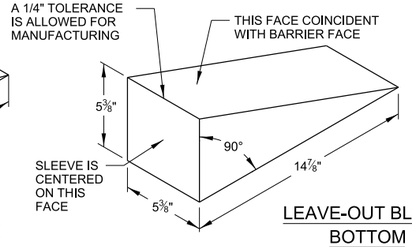
THREADED RODS, PLATE WASHERS, NUTS, AND WASHERS SHALL BE HOT-DIPPED WITH ZINC COATINGS CONFORMING TO THE REQUIREMENTS OF ASTM F2329.



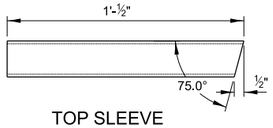
CROSS-BOLT CONNECTION HARDWARE
2 SETS OF HARDWARE NEEDED FOR EACH BARRIER



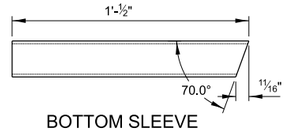
LEAVE-OUT BLOCK
TOP



LEAVE-OUT BLOCK
BOTTOM



TOP SLEEVE
PIPE, 1-1/2" SCH. 40 PVC



BOTTOM SLEEVE
PIPE, 1-1/2" SCH. 40 PVC

NOTES:

1. EACH F SHAPE BARRIER UNIT SHALL BE CLEARLY MARKED WITH "IL TOLLWAY F SHAPE", THE PRODUCER'S MARK AND THE DATE OF MANUFACTURE. THE MARKING SHALL BE RECESSED IN THE BARRIER BY 1/2" OR PAINTED THEREON WITH WATERPROOF PAINT/INK.
2. THE INSERT FOR THE 1/2" BOLT AT THE TOP OF THE BARRIER SHALL BE CAPABLE OF 3000 LB PULL-OUT STRENGTH.
3. AT LOCATIONS WHERE THE BARRIER SEPARATES OPPOSING FLOWS OF TRAFFIC, TYPE C REFLECTORS SHALL BE ON BOTH SIDES OF BARRIER. SEE STANDARD D4 FOR DIMENSIONS OF TYPE C REFLECTOR.
4. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER, EXCEPT WHERE SHOWN OTHERWISE.
5. REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
6. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315.
7. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
8. COVER (CL.) IS 1-1/2" UNLESS OTHERWISE INDICATED.
9. CONCRETE SHALL BE PORTLAND CEMENT CONCRETE, CLASS PS (4000 PSI).
10. TWO OF EACH LEAVE-OUT BLOCK AND TWO OF EACH SLEEVE NEEDED FOR EACH BARRIER.

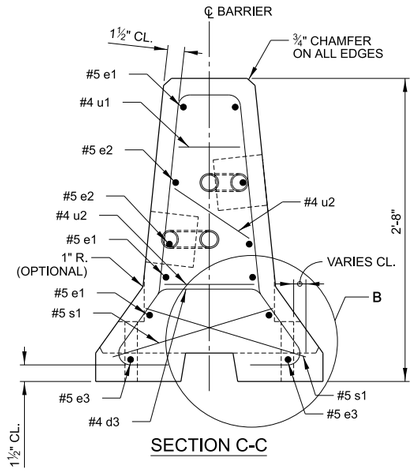
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2023

Illinois Tollway

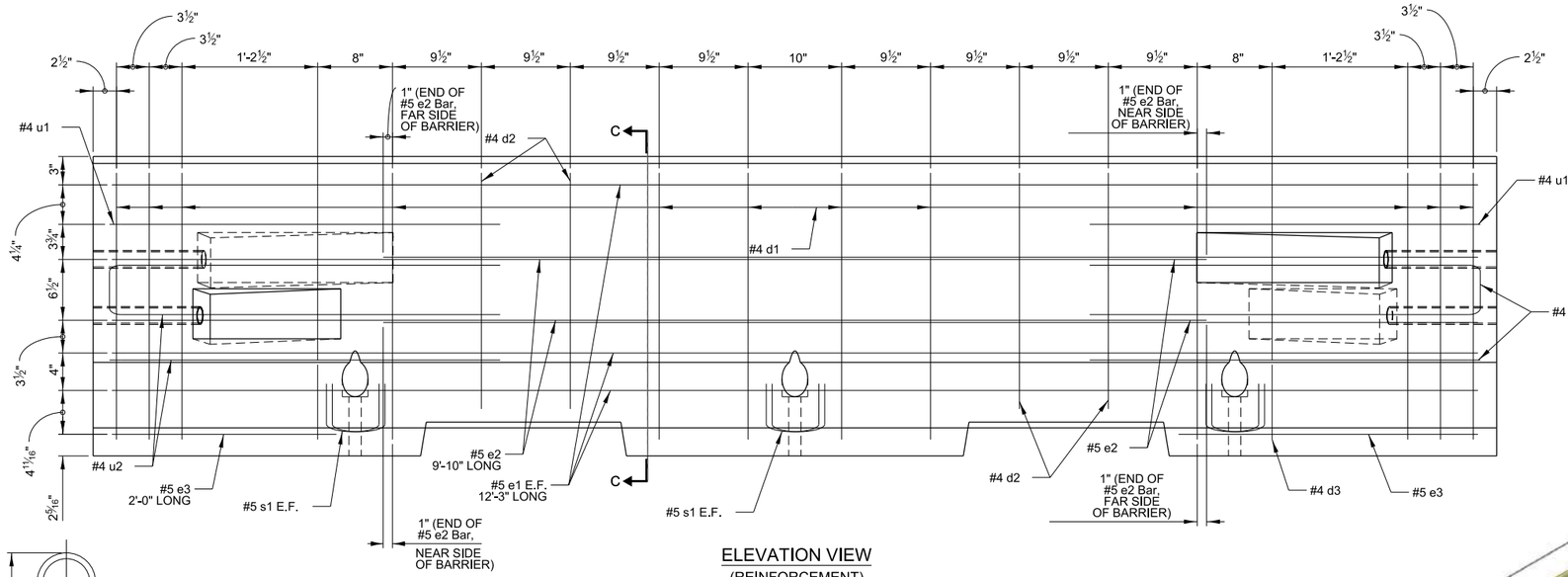
REVISIONS	
DATE	DESCRIPTION
03-01-2025	ALL CONNECTION HARDWARE SHALL BE ZINC COATED.
03-01-2023	ADDED DIMENSION & LEAVE-OUT BLOCKS TO SECTION C-C, MOVED DETAIL B.
03-01-2022	REVISED NOTE 2.

TEMPORARY CONCRETE BARRIER WITH CROSS-BOLT CONNECTION

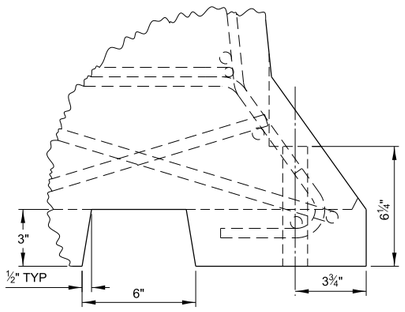
VERSION:	STANDARD:	SHEET:
2025-03	D10-04	1 OF 2



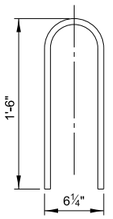
SECTION C-C



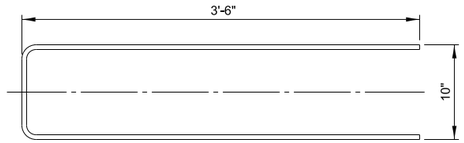
ELEVATION VIEW
(REINFORCEMENT)



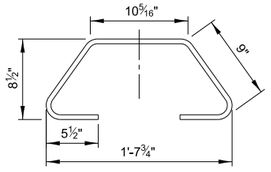
DETAIL B



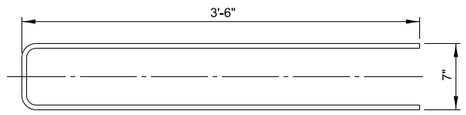
s1 BAR
No. 5 REBAR



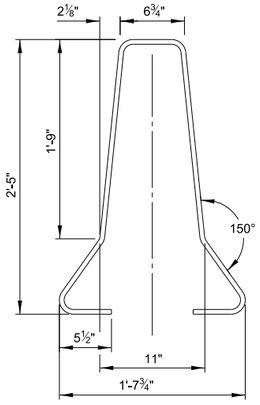
u2 BAR
No. 4 REBAR



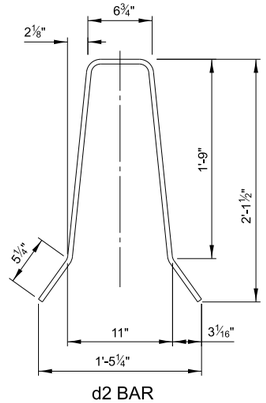
d3 BAR
No. 4 REBAR



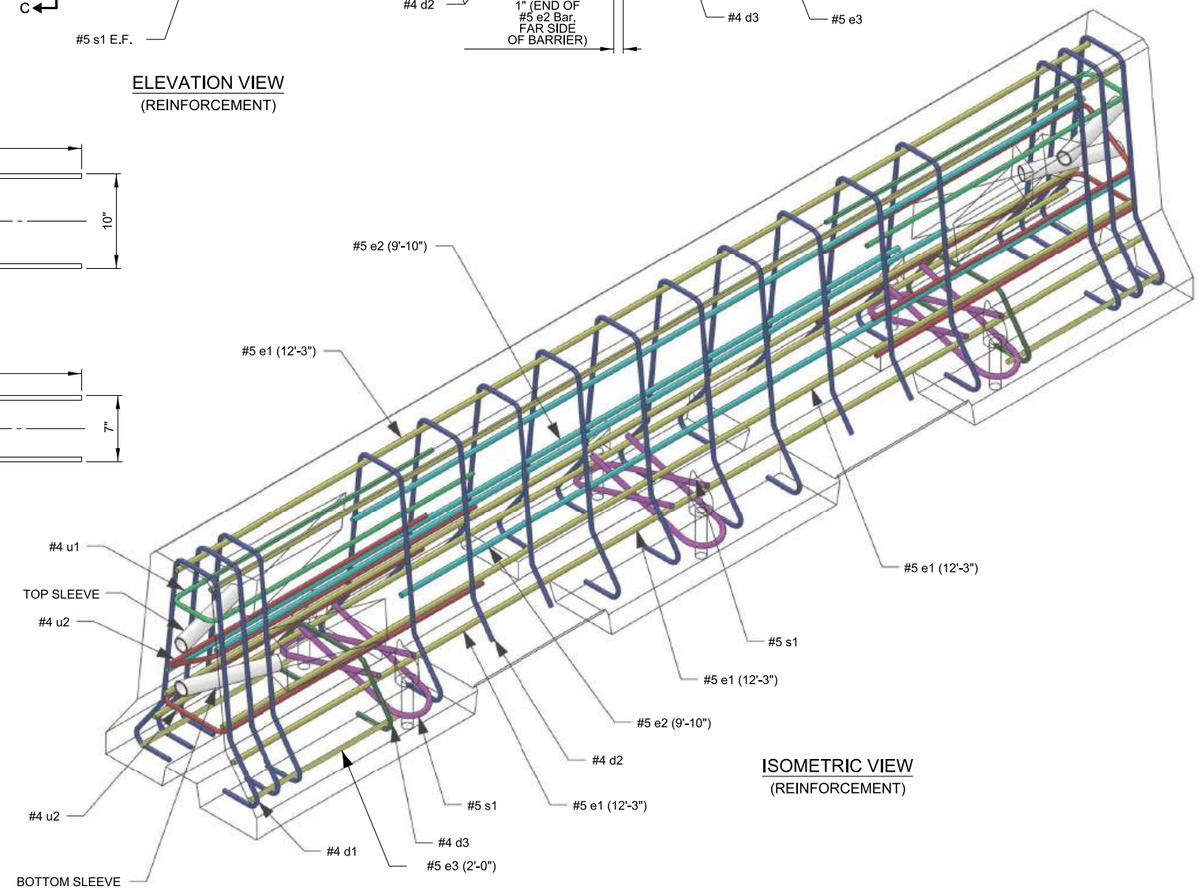
u1 BAR
No. 4 REBAR



d1 BAR
No. 4 REBAR



d2 BAR
No. 4 REBAR



ISOMETRIC VIEW
(REINFORCEMENT)

APPROVED BY:
Marco Nastrf
CHIEF ENGINEERING OFFICER
DATE:
03/01/2023

Illinois Tollway

TEMPORARY CONCRETE BARRIER WITH CROSS-BOLT CONNECTION

VERSION:	STANDARD:	SHEET:
2025-03	D10-04	2 OF 2

STANDARD DRAWINGS

SECTION E

MAINTENANCE OF TRAFFIC

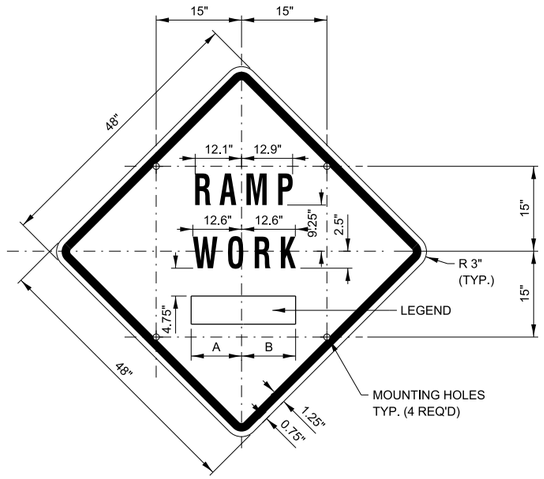
MARCH 2025

Illinois Tollway Standard Drawing Revisions

Section E	Maintenance of Traffic	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads.
	E2-12	**Lane Closure Details**
	Sheet 1	Deleted "Worker" from Legend
	Sheet 2 & 3	Deleted "Worker" from Legend and work area. Removed "Flagger" from work area hatching. Revised distance from Flagger sign to flagger and flagger to work area. Revised note 18 to increase buffer to active lane and revised description for flagger in the legend.
	E3-11	**Shoulder Closure Details**
		Revised Notes 1 and 2 to increase buffer to active lane.
	E5-11	**Temporary Gore Details**
	Sheets 1 & 2	Revised work area hatching to increase buffer to active lane
	E6-09	**Contractor Access to Work Area**
	Sheet 1	Various notes revised and revised Contractor Access to Work Area design to include full shoulder and named it as Type A.
	Sheet 2	Included new designs for Contractor Access Type B and Type C.
	Sheet 3	Added callout for Note 15 to the flagger in Construction Access w/o Barrier Wall detail.
	E7-06	**Pull-out Area**
	Sheets 1 & 2	Revised work area hatching behind TCB

New Sheet

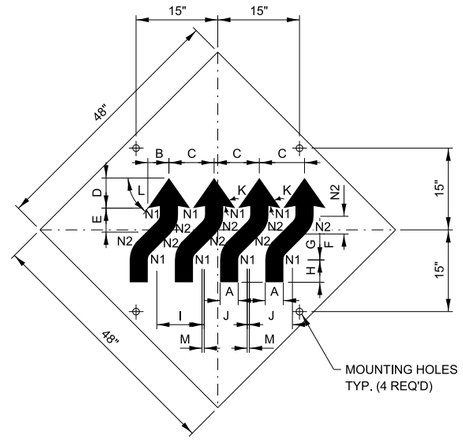
Retired Standard



SIGN NO.	LEGEND	A	B
TS-2A	AHEAD	15.50"	15.50"
TS-2B	500 FT	14.25"	15.13"
TS-2C	1000 FT	14.88" ∠2	15.75" ∠2
TS-2D	1500 FT	14.88" ∠2	15.75" ∠2
TS-2E	½ MILE	15.75" ∠3	15.75" ∠3
TS-2F	1 MILE	13.06"	13.06"

SIGN TS-2 (O)

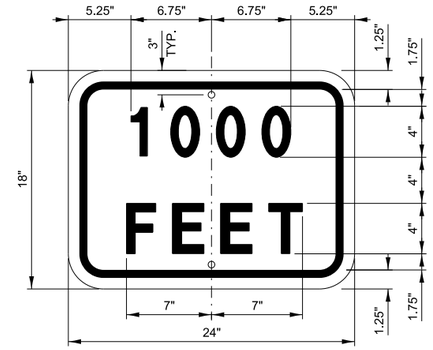
COLOR: BACKGROUND - FLUORESCENT ORANGE (O)
BORDER AND SYMBOL - BLACK
SIZE: 48"x48"
LETTERING: 7" FEDERAL SERIES D
MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN



A	4½"
B	5¾"
C	12½"
D	7¾"
E	6½"
F	4½"
G	6½"
H	6"
I	12¾"
J	12"
K	45°
L	55°
M	¾"
N1	2"
N2	6½"

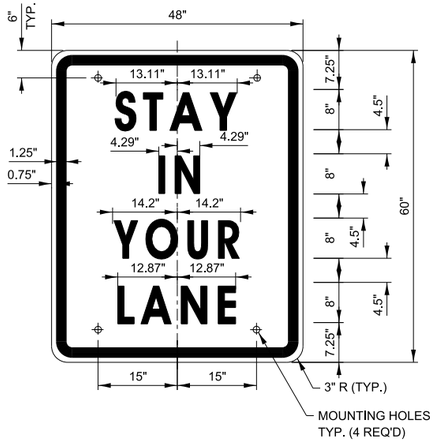
SIGN W1-4dR (O)

COLOR: BACKGROUND-FLUORESCENT ORANGE (O)
TYPE A REFLECTIVE
SHEETING PER STANDARD
SPECIFICATIONS (★ A)
BORDER AND LETTERS-BLACK
SIZE: 48"x48"
MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN.



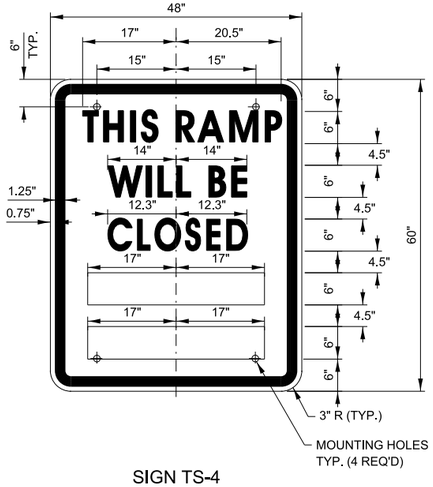
SUPPLEMENTAL PLATE (O)

COLOR: BACKGROUND - FLUORESCENT ORANGE (O)
BORDER AND LETTERS - BLACK
SIZE: 24"x18"
LETTERING: 4" FEDERAL SERIES D
MOUNTING HOLES: 7/16" DIA., 2 HOLES SPACED AS SHOWN



SIGN TS-3

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (★ A)
BORDER AND LETTERS - BLACK
SIZE: 48"x60"
LETTERING: LEGEND - 8" FEDERAL SERIES D
MOUNTING HOLES: 7/16" DIA., 4 HOLES, SPACED AS SHOWN

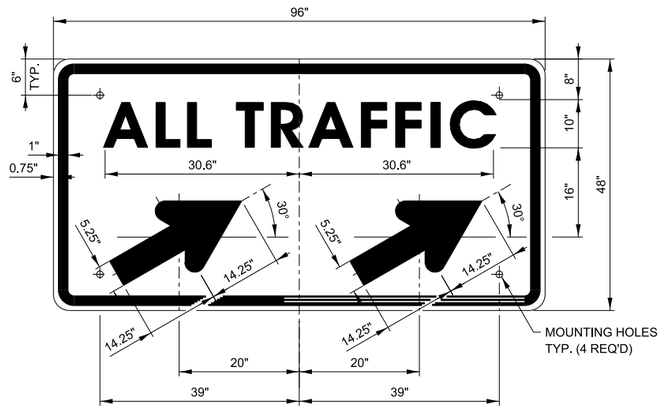


SIGN TS-4

COLOR: BACKGROUND - WHITE (REFLECTORIZED)(★ A)
BORDER AND LETTERS - BLACK
SIZE: 48"x60"
LETTERING: LEGEND - 6" FEDERAL SERIES C
MOUNTING HOLES: 7/16" DIA., 4 HOLES, SPACED AS SHOWN

RAMP CLOSURE ADVANCE INFORMATION SIGN

THE VARIABLE MESSAGE WITH DATES FOR THE BOTTOM TWO LINES SHALL BE DETERMINED BY THE ENGINEER AND GIVEN TO THE CONTRACTOR BEFORE THE REQUIRED FIELD ERECTION DATE.



SIGN TS-5a & TS-5b

COLOR: BACKGROUND - WHITE (REFLECTORIZED)(★ A)
BORDER AND LETTERS - BLACK
ARROW - BLACK
SIZE: 96"x48"
LETTERING: 10" FEDERAL SERIES D
MOUNTING HOLES: 7/16" DIA., 4 HOLES, SPACED AS SHOWN
NOTE: SIGN TS-5a IS SHOWN, SUBSTITUTE
LEGEND "↙" FOR "↙↙" FOR SIGN TS-5b

NOTES:

1. ALL LETTERING IS DESIGNATED BY SIZE AND SERIES IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AS PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION. LETTERING SPACING SHALL BE IN ACCORDANCE WITH THIS GUIDE EXCEPT WHERE NOTED.

2. SYMBOLS AND ARROWS SHALL CONFORM TO THE DETAILS SHOWN IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" AS PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION.

3. SEE THE CONTRACT REQUIREMENTS FOR ADDITIONAL NOTES AND SPECIFICATIONS.
   (O) FLUORESCENT ORANGE REFLECTIVE SHEETING PER THE STANDARD SPECIFICATIONS.
   (★ A) - REFLECTIVE SHEETING PER THE STANDARD SPECIFICATIONS.

4. DIMENSIONS INDICATED THUS ∠ ARE BASED ON A REDUCTION IN STANDARD LETTERING SPACING AS SHOWN BELOW:
   ∠1 SPACING REDUCED BY 25%
   ∠2 SPACING REDUCED BY 40%
   ∠3 SPACING REDUCED BY 50%

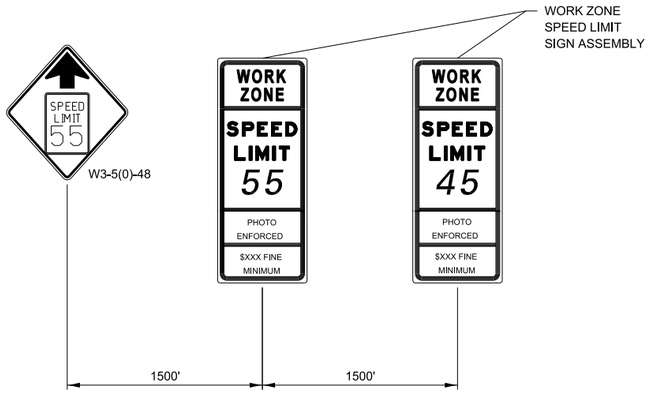
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2019

REVISIONS	
DATE	DESCRIPTION
03-01-2019	REMOVED STANDARD IDOT SIGNS.
	REVISED WZSL ASSEMBLY, ADDED
	WZSL TRANSITION
03-31-2017	REVISED END WZSL SIGN COLOR
03-11-2015	REVISED NOTES

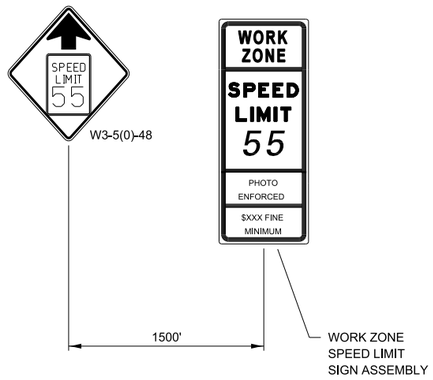
Illinois Tollway

CONSTRUCTION SIGNS

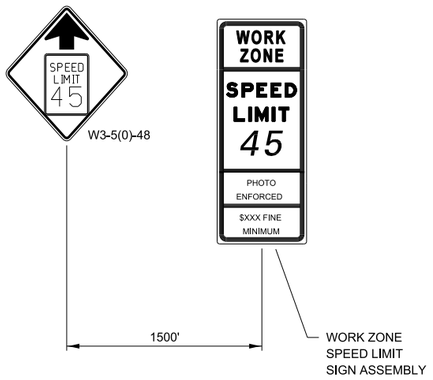
VERSION: 2019-03 | STANDARD: E1-07 | SHEET: 1 OF 2



70 MPH TO 45 MPH

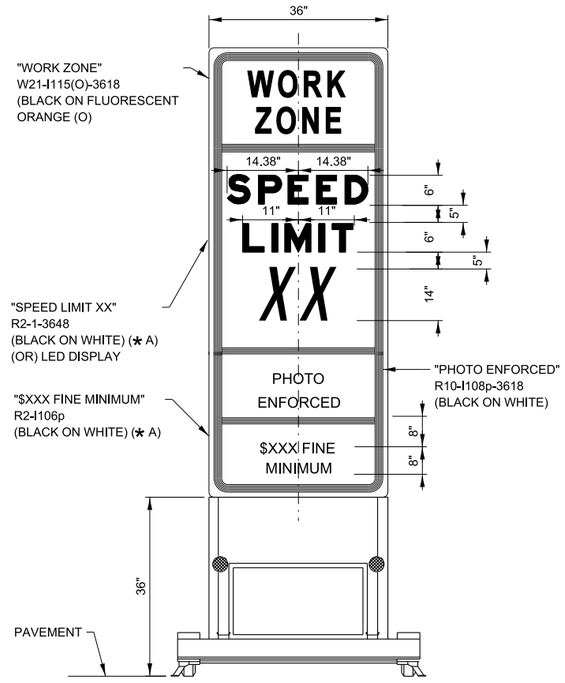


70 MPH TO 55 MPH

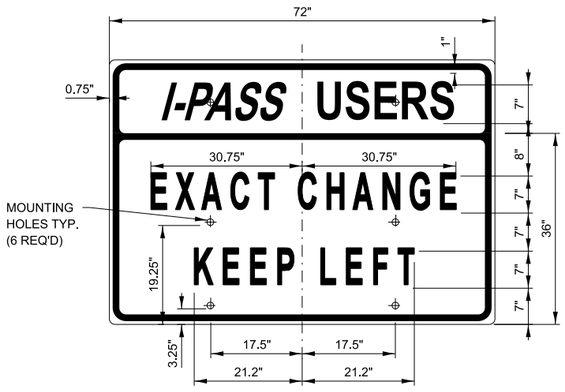


60 MPH TO 45 MPH

WORK ZONE SPEED LIMIT TRANSITION SIGNAGE

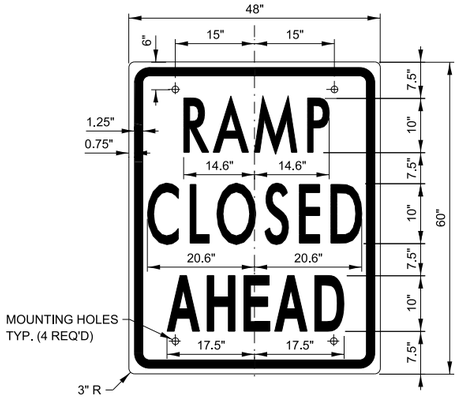


WORK ZONE SPEED LIMIT SIGN ASSEMBLY



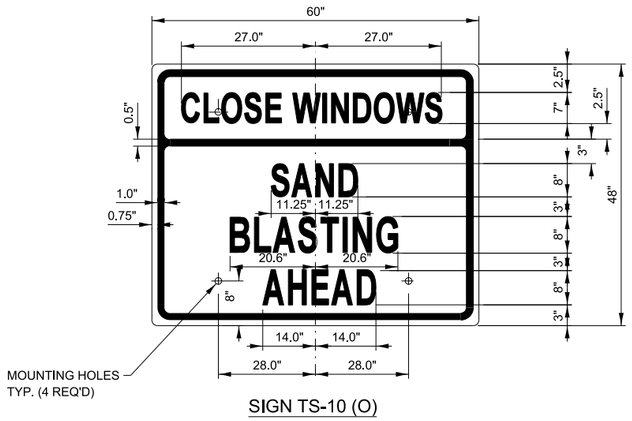
SIGN TS-7

COLOR:	BACKGROUND - WHITE (REFLECTORIZED) (★ A) BORDER AND LETTERS - BLACK
SIZE:	72"x36"
LETTERING:	7" FEDERAL SERIES C
MOUNTING HOLES:	7/16" DIA., 4 HOLES SPACED AS SHOWN



SIGN TS-9

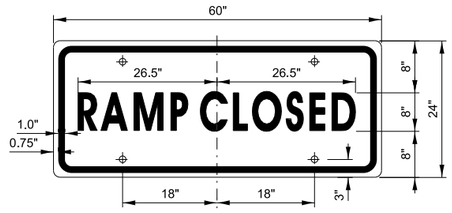
COLOR:	BACKGROUND - WHITE (REFLECTORIZED) (★ A) BORDER AND LETTERS - BLACK
SIZE:	48"x60"
LETTERING:	10" FEDERAL SERIES C
MOUNTING HOLES:	7/16" DIA., 4 HOLES SPACED AS SHOWN



SIGN TS-10 (O)

COLOR:	BACKGROUND - FLUORESCENT ORANGE (O) BORDER AND LETTERS - BLACK
SIZE:	60"x48"
LETTERING:	8" FEDERAL SERIES C, 7" FEDERAL SERIES B
MOUNTING HOLES:	7/16" DIA., 4 HOLES SPACED AS SHOWN

WORK ZONE SPEED LIMIT SIGN ASSEMBLY



SIGN TS-6

COLOR:	BACKGROUND - WHITE (REFLECTORIZED) (★ A) BORDER AND LETTERS - BLACK
SIZE:	60"x24"
LETTERING:	8" FEDERAL SERIES C
MOUNTING HOLES:	7/16" DIA., 4 HOLES SPACED AS SHOWN

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

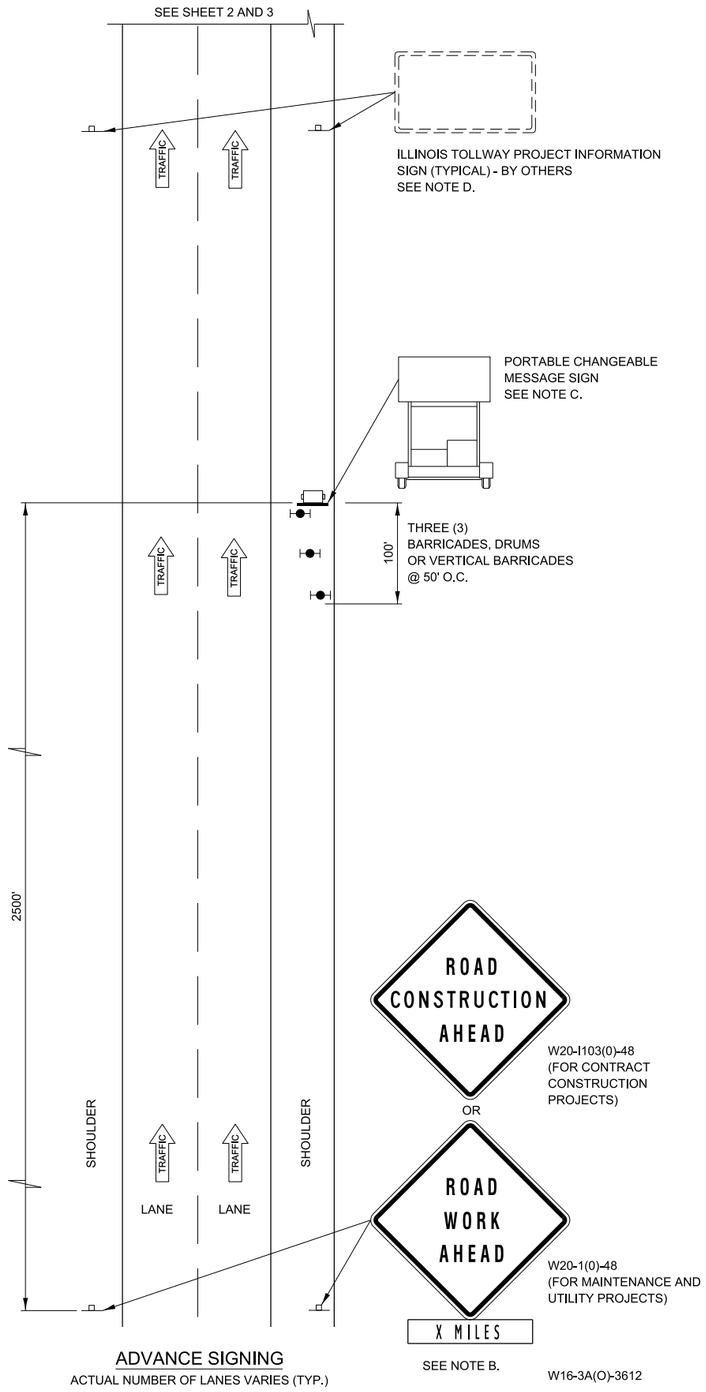
APPROVED BY:
CHIEF ENGINEERING OFFICER

DATE:
03/01/2019

Illinois Tollway

CONSTRUCTION SIGNS

VERSION:	STANDARD:	SHEET:
2019-03	E1-07	2 OF 2



ADVANCE SIGNING

ACTUAL NUMBER OF LANES VARIES (TYP.)

ADVANCE SIGNING NOTES:

A. THE ADVANCE SIGNING SHOWN ON THIS STANDARD SHALL APPLY ANY TIME THE CONTRACTOR CLOSES ONE OR MORE LANES, OR IS REQUIRED TO SHIFT THE LANE ALIGNMENT. THE "ROAD WORK AHEAD" OR "ROAD CONSTRUCTION AHEAD" SIGNS, WORK ZONE PUBLIC INFORMATION SIGNS AND PORTABLE CHANGEABLE MESSAGE ARE STATIONARY.

B. THE ROAD CONSTRUCTION AHEAD SIGN (W20-1A, WITH W16-3a SUPPLEMENTAL PLATE) OR ROAD WORK AHEAD SIGN (W20-1, WITH W16-3A SUPPLEMENTAL PLATE) SHALL BE LOCATED UP TO 5 MILES IN ADVANCE OF THE PROJECT LIMITS, WITH THE LOCATION BEING DETERMINED BY THE ENGINEER.

C. THE PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE USED TO DISPLAY THE STATUS OF LANE WITHIN THE CONTRACT LIMITS. THE PRIMARY MESSAGES SHALL BE: "RIGHT LANE(S) CLOSED" / "x MILES AHEAD", "LEFT LANE(S) CLOSED" / "x MILES AHEAD", "LANE(S) SHIFT" / "x MILES AHEAD", "ALL LANES OPEN". THE PORTABLE CHANGEABLE MESSAGE SIGN MAY BE MOVED TO THE MEDIAN SHOULDER WHEN THE LANE CLOSURES ARE ON THE LEFT, PROVIDED THE EXISTING SHOULDER WIDTH IS ADEQUATE.

D. THE ILLINOIS TOLLWAY WILL FURNISH AND INSTALL STATIC PROJECT INFORMATION SIGNS IN ADVANCE, THROUGH AND AT THE END OF THE WORK ZONE. THESE SIGNS WILL BE INSTALLED ALONG THE OUTSIDE SHOULDER WITH THE ADVANCE SIGNS LOCATED BEYOND THE PORTABLE CHANGEABLE MESSAGE SIGN. THE ENGINEER AND CONTRACTOR SHALL COORDINATE WITH THE ILLINOIS TOLLWAY REGARDING THE LOCATION OF THESE SIGNS AND NOTIFY THE ILLINOIS TOLLWAY OF ANY DAMAGE TO THE SIGNS OR SUPPORTS.

LEGEND

- ARROW BOARD
- WORK AREA
- SIGN
- DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH LIGHT IF REQUIRED. SEE ARTICLE 701.05(a)(5)
- FLAGGER WITH TRAFFIC CONTROL SIGN
- LANE CLOSED
- CHECK BARRICADE
- TRUCK MOUNTED ATTENUATOR

APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER

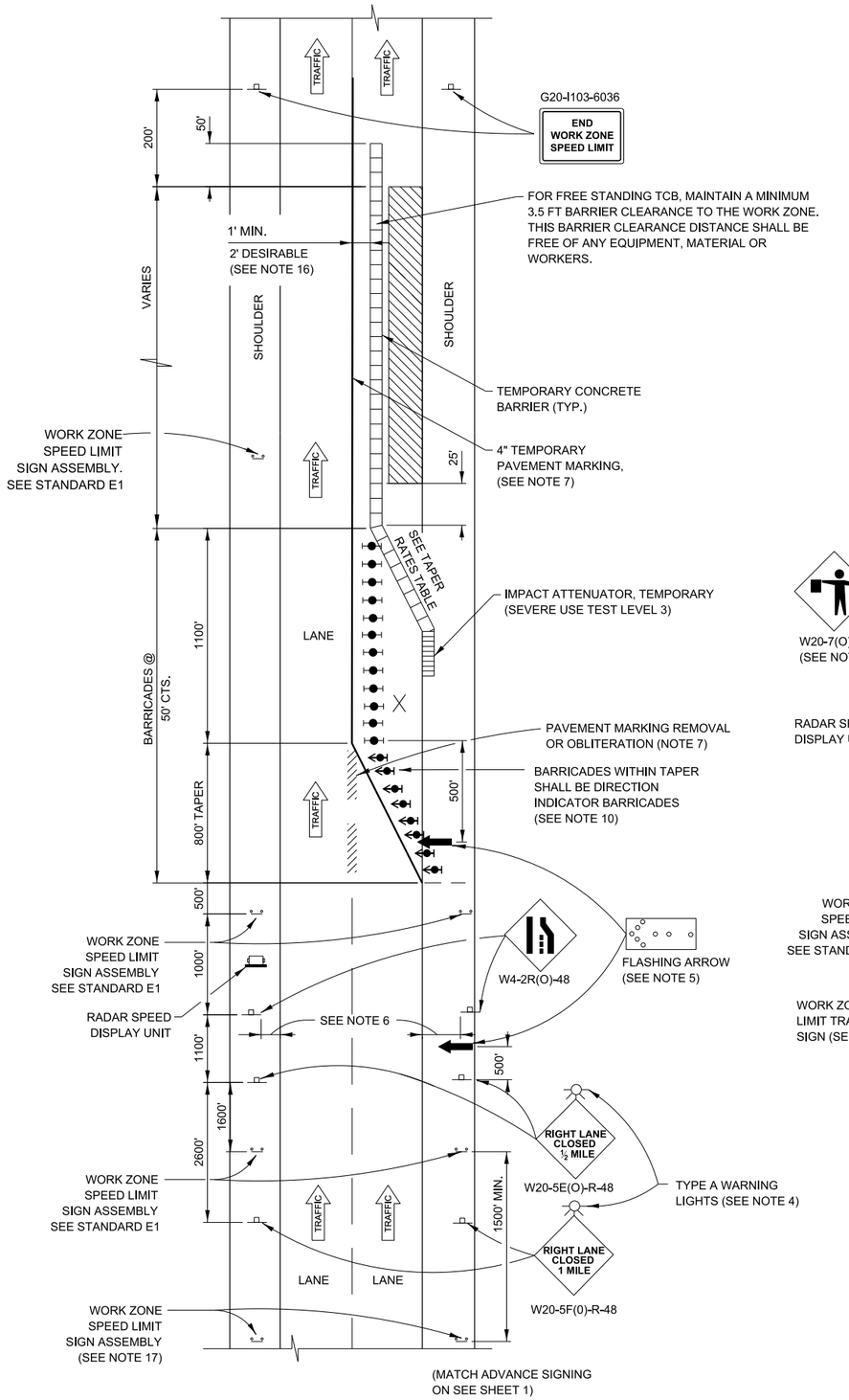
DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REVISED NOTE 18 TO INCREASE BUFFER
	TO ACTIVE LANES, DELETE WORKER
	LEGEND AND WORK AREA, REVISED
	DIMENSIONS FOR FLAGGER SIGN TO
	FLAGGER, AND TMA TO FLAGGER.

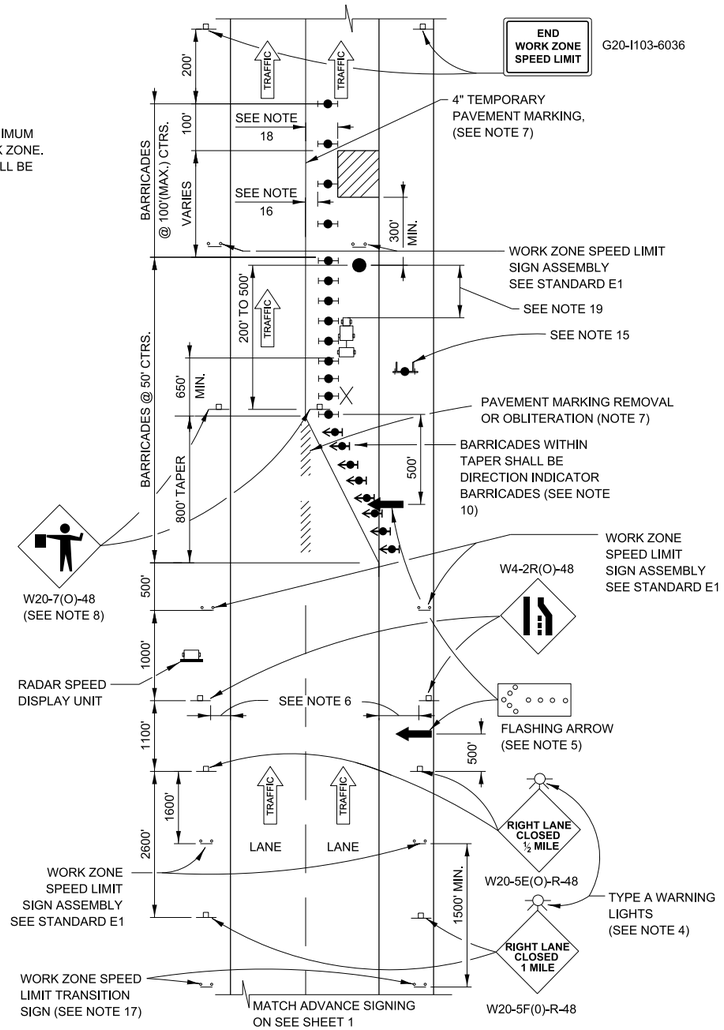
Illinois Tollway

LANE CLOSURE DETAILS

VERSION:	STANDARD:	SHEET:
2025-03	E2-12	1 OF 3



ONE - LANE CLOSURE WITH BARRIER



ONE - LANE CLOSURE WITH BARRICADE

TAPER RATES

WORK ZONE SPEED (mph)	SHY LINE (ft.)	BARRIER INSIDE SHY LINE	BARRIER AT OR BEYOND SHY LINE
65	8.5	28:1	19:1
60	8	26:1	18:1
55	7	24:1	16:1
50	6.5	21:1	14:1
45	6	18:1	12:1
40	5	16:1	10:1
35	4.5	15:1	9:1
30	4	13:1	8:1

LEGEND

- ARROW BOARD
- WORK AREA
- SIGN
- DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH LIGHT IF REQUIRED. SEE ARTICLE 701.05(a)(5)
- FLAGGER WITH TRAFFIC CONTROL SIGN
- LANE CLOSED
- CHECK BARRICADE
- TRUCK MOUNTED ATTENUATOR
- RADAR SPEED DISPLAY UNIT

LANE CLOSURE NOTES:

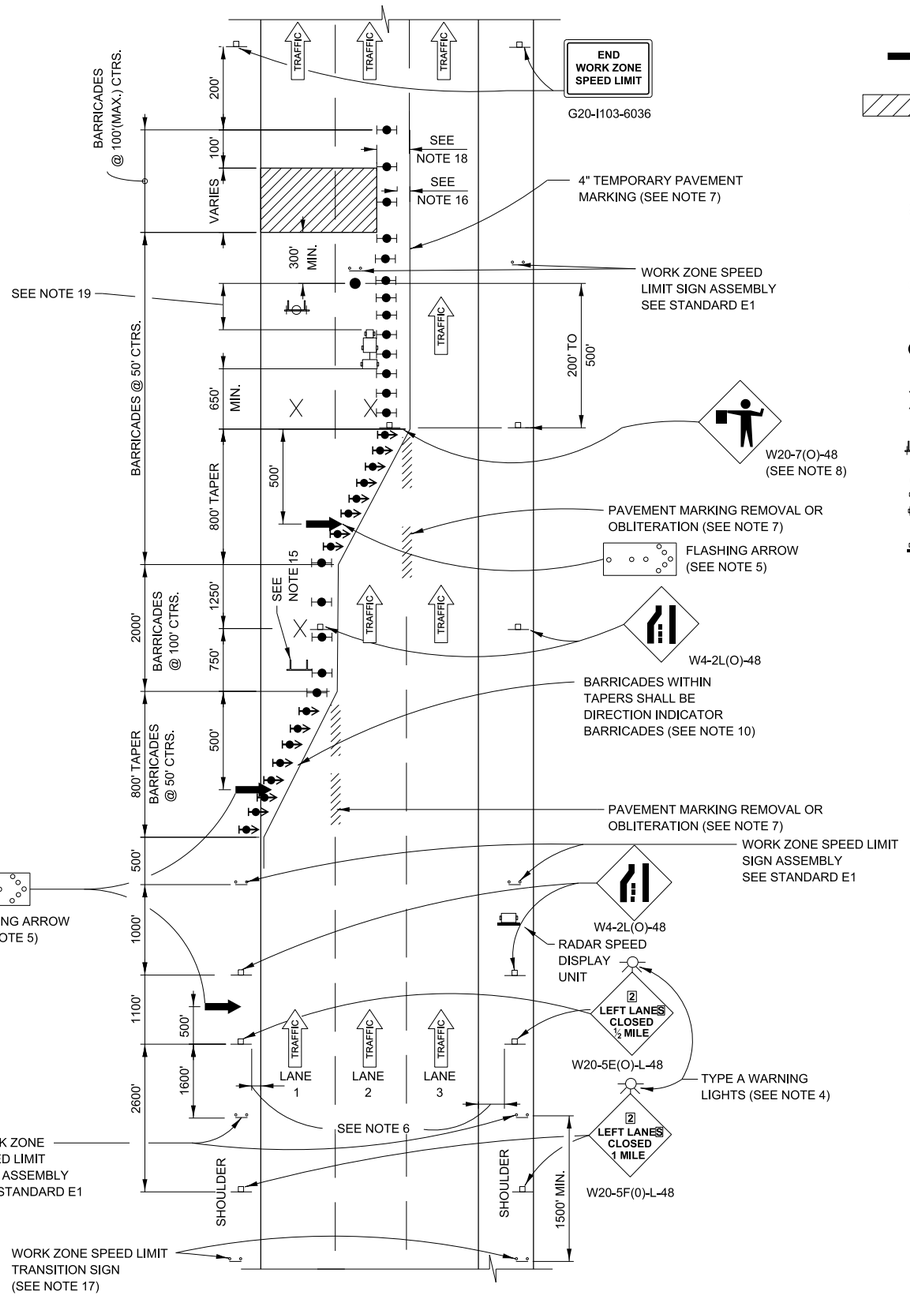
1. IF CLOSURES ARE EXPECTED TO PRODUCE TRAFFIC BACKUPS EXTENDING BEYOND THE FIRST WARNING SIGN SHOWN ON THE DETAILS, ADDITIONAL UPSTREAM SIGNS SHALL BE PLACED SO THAT THE TRAFFIC CONTROL ZONE ENCOMPASSES THE ANTICIPATED BACKUP ZONE.
2. LONGITUDINAL DIMENSIONS MAY BE ADJUSTED SLIGHTLY TO FIT FIELD CONDITIONS.
3. THESE DETAILS ALSO APPLY TO OPPOSITE HAND LANE CLOSURES BY CHANGING SIGN LEGENDS AND ARROW DIRECTIONS TO INDICATE THE APPROPRIATE CLOSURE.
4. FOR NIGHT TIME CLOSURES, ONE TYPE A WARNING LIGHT SHALL BE INSTALLED ABOVE EACH OF THE 1 MILE AND ½ MILE ADVANCE WARNING SIGNS. FOR DAYLIGHT - ONLY CLOSURES, THE LIGHTS MAY BE OMITTED.
5. FOR ANY LANE CLOSURE, FLASHING ARROW BOARDS SHALL BE REQUIRED AND IN OPERATION AT ALL TIMES. THE FLASHING ARROW BOARD IN ADVANCE OF THE TAPER SHALL BE PROTECTED WITH THREE TYPE II BARRICADES AT 50' O.C.
6. CONSTRUCTION SIGNS SHALL GENERALLY BE POST - MOUNTED OR ATTACHED TO PORTABLE SUPPORTS AND SHALL BE INSTALLED 8' TO 12' FROM ADJACENT TRAVEL LANE WHEREVER POSSIBLE. IN NO CASE SHALL SIGNS BE LOCATED TO PROVIDE LESS THAN 2' CLEARANCE BETWEEN EDGE OF SIGN AND ADJACENT TRAVEL LANE.
7. PAVEMENT MARKING TAPE AND REMOVAL OR OBLITERATION OF EXISTING MARKINGS SHALL BE REQUIRED WHEN THE CLOSURE TIME EXCEEDS FOUR DAYS. THIS WORK SHALL BE MEASURED AND PAID FOR SEPARATELY.
8. WHEN A FLAGGER IS NOT ON STATION, THE FLAGGER SIGN SHALL BE PROMPTLY REMOVED, COVERED OR TURNED TO FACE AWAY FROM TRAFFIC. FLAGGER SIGNS SHALL BE MOVED AS NECESSARY TO MAINTAIN THE REQUIRED SPACING BETWEEN THE SIGNS AND THE WORKERS IN EACH SEPARATE WORK ACTIVITY, PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
9. WORK ZONE SPEED LIMIT SIGN ASSEMBLIES, SHALL BE PLACED ADJACENT TO THE OPEN TRAFFIC LANE(S). WORK ZONE SPEED SIGNS SHALL BE MOVED AS NECESSARY TO MAINTAIN THE REQUIRED SPACING BETWEEN SIGNS AND THE WORKERS IN EACH SEPARATE WORK ACTIVITY PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
10. DIRECTION INDICATOR BARRICADES SHALL BE USED IN LANE TAPERS.
11. FOR CLOSURES OTHER THAN SHORT TERM (SUNRISE TO ONE HOUR BEFORE SUNSET), THE MINIMUM HEIGHT OF THE SIGN FROM SHOULDER ELEVATION SHALL BE 7'-0".
12. CONES MAY BE USED IN LIEU OF BARRICADES IN THE BUFFER AND WORK AREAS, WHEN THE CLOSURE IS FOR MAINTENANCE OPERATIONS.
13. BARRICADES ARE TO BE LOCATED AT JOINT LINE WHEN WORK AREA EXTENDS UP TO JOINT UNLESS OTHERWISE SHOWN ON THE PLANS.
14. SEE MAINTENANCE OF TRAFFIC DRAWINGS FOR ADDITIONAL SIGNING IN THIS AREA.
15. CHECK BARRICADES SHALL BE PLACED IN EACH CLOSED LANE AND SHOULDER AT 1000 FOOT CENTERS.
16. A 1'-0" MINIMUM/2'-0" DESIRABLE SHY DISTANCE SHALL BE PROVIDED, MEASURED BETWEEN EDGE OF PAVEMENT LANE MARKING TO THE EDGE OF THE TRAFFIC CONTROL DEVICE.
17. SEE STANDARD E1 FOR ADDITIONAL SIGNAGE REQUIRED WHEN WORK ZONE SPEED LIMIT IS REDUCED BY MORE THAN 10 MPH. THE SPEED LIMIT SHALL BE TRANSITIONED TO THE SPECIFIED WORK ZONE SPEED LIMIT 2600 FEET BEFORE THE FIRST W4-2 SIGN.
18. WHEN WORKERS OR EQUIPMENT ENCROACH WITHIN 3'-0" FROM THE EDGE OF TRAVELED WAY (INSIDE OF PAVEMENT MARKING LINE), THE LANE OPEN TO TRAFFIC SHALL BE TEMPORARILY CLOSED OR SHIFTED DURING WORK ACTIVITIES.
19. IN WORK ZONES WITH NO POSITIVE PROTECTION, A TRUCK MOUNTED ATTENUATOR (TMA) SHALL BE PROVIDED WITH A BUFFER AREA BETWEEN THE FRONT OF THE TMA AND WORKERS OR EQUIPMENT. THE BUFFER AREA SHALL BE 200' UNLESS OTHERWISE DETERMINED. WHERE WORKERS OR EQUIPMENT ARE PRESENT BEYOND THE WORK AREA, AN ADDITIONAL TMA SHALL BE PROVIDED TO EACH WORK AREA. A WORK AREA IS DEFINED AS STARTING AT THE END OF THE BUFFER AREA, EXTENDING 1000 FEET BEYOND THIS POINT.

APPROVED BY:
Mansur Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

LANE CLOSURE DETAILS

VERSION:	STANDARD:	SHEET:
2025-03	E2-12	2 OF 3



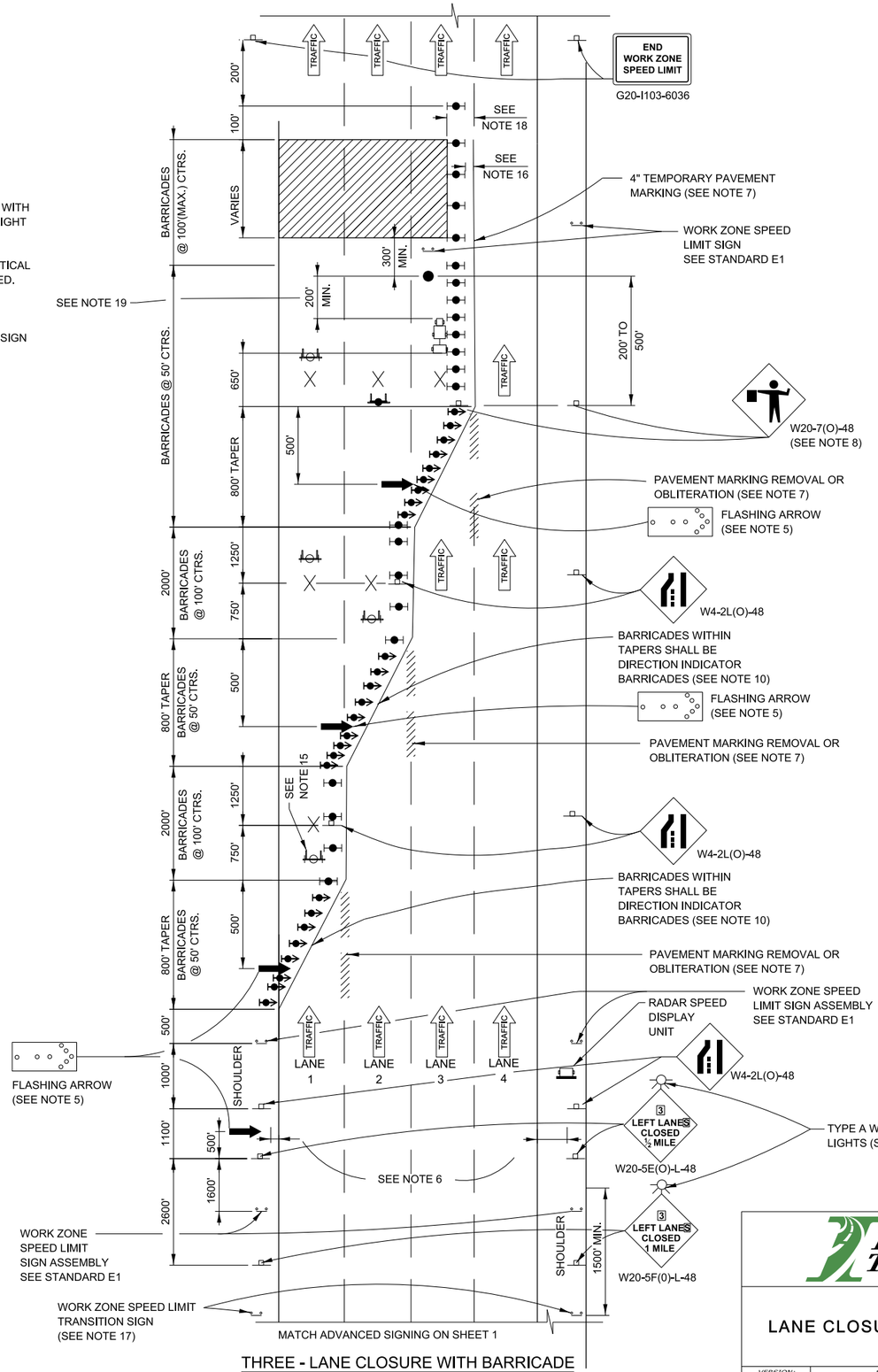
MATCH ADVANCED SIGNING ON SHEET 1

TWO - LANE CLOSURE WITH BARRICADE

ACTUAL NUMBER OF LANES VARIES (TYP.)

LEGEND

- ARROW BOARD
- WORK AREA
- SIGN
- DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH LIGHT IF REQUIRED. SEE ARTICLE 701.05(a)(5)
- FLAGGER WITH TRAFFIC CONTROL SIGN
- LANE CLOSED
- CHECK BARRICADE
- TRUCK MOUNTED ATTENUATOR
- RADAR SPEED DISPLAY UNIT



MATCH ADVANCED SIGNING ON SHEET 1

THREE - LANE CLOSURE WITH BARRICADE

APPROVED BY:

Manar Nashif

CHIEF ENGINEERING OFFICER

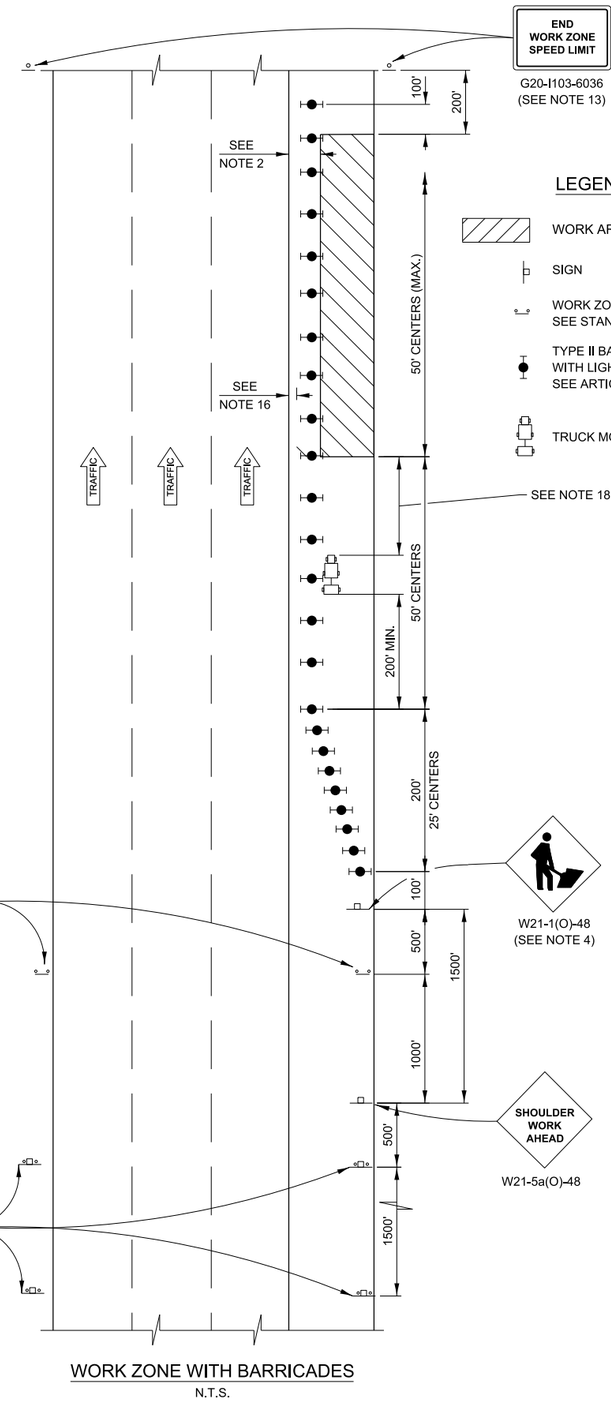
DATE: 03/01/2025

SEE SHEET 1 IN THIS SERIES FOR NOTES

Illinois Tollway

LANE CLOSURE DETAILS

VERSION:	STANDARD:	SHEET:
2025-03	E2-12	3 OF 3

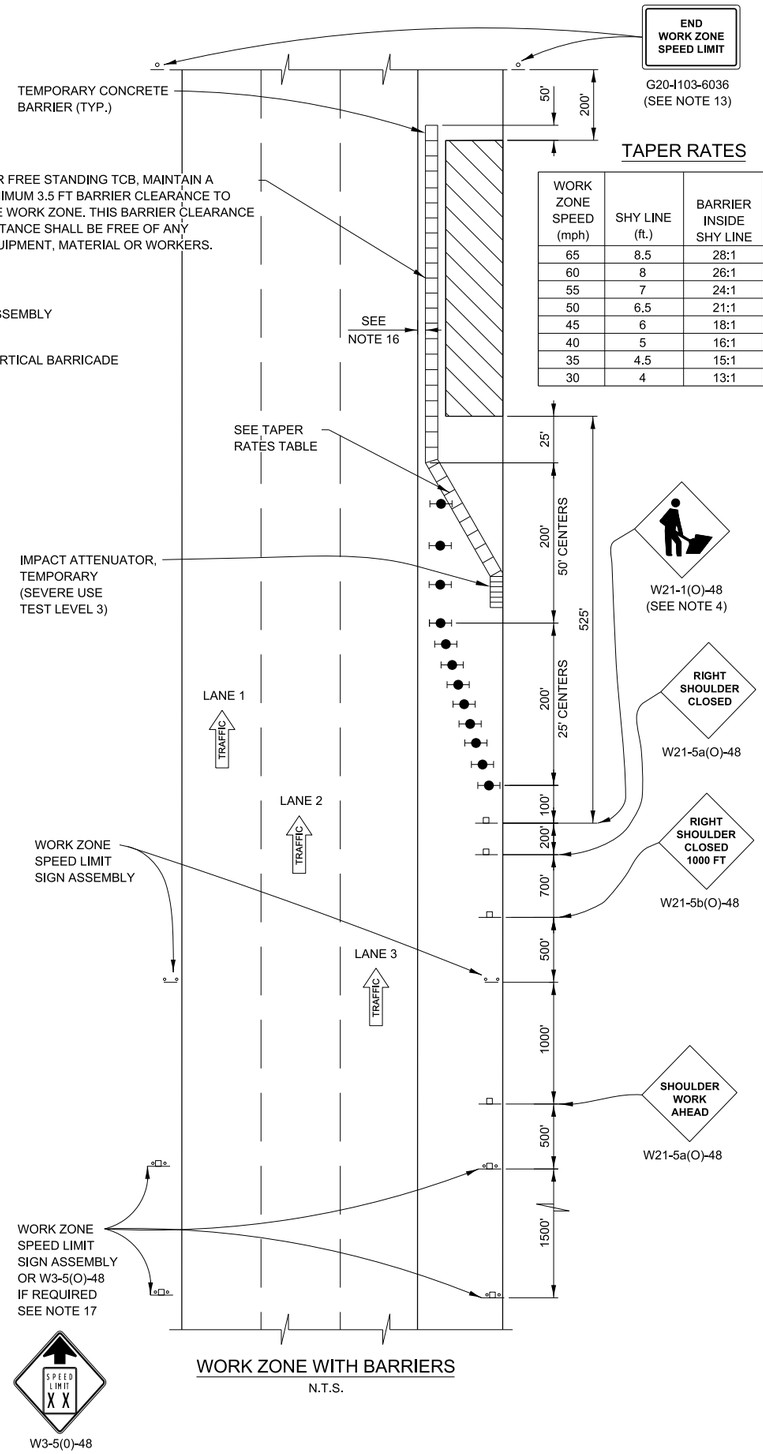


WORK ZONE WITH BARRICADES

N.T.S.

LEGEND

- WORK AREA
- SIGN
- WORK ZONE SPEED LIMIT SIGN ASSEMBLY SEE STANDARD E1
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH LIGHT IF REQUIRED. SEE ARTICLE 701.05(a)(5)
- TRUCK MOUNTED ATTENUATOR



WORK ZONE WITH BARRIERS

N.T.S.

TAPER RATES

WORK ZONE SPEED (mph)	SHY LINE (ft.)	BARRIER INSIDE SHY LINE	BARRIER AT OR BEYOND SHY LINE
65	8.5	28:1	19:1
60	8	26:1	18:1
55	7	24:1	16:1
50	6.5	21:1	14:1
45	6	18:1	12:1
40	5	16:1	10:1
35	4.5	15:1	9:1
30	4	13:1	8:1

GENERAL NOTES:

1. THE SHOULDER SHALL BE CLOSED WHEN A WORK ACTIVITY REQUIRING 15 OR MORE MINUTES IS PERFORMED AT A DISTANCE WHICH IS LESS THAN 15 FEET BUT NO CLOSER THAN 3 FEET FROM THE EDGE OF TRAVELED WAY (INSIDE OF PAVEMENT MARKING LINE).
2. THE ADJACENT EXTERIOR LANE SHALL BE CLOSED WHEN WORK IS PERFORMED WITHIN 3 FEET FROM THE EDGE OF TRAVELED WAY (INSIDE OF PAVEMENT MARKING LINE).
3. THE CHANNELIZING DEVICES WHICH SEPARATE THE WORK SPACE FROM THE ADJACENT TRAVEL LANE SHALL BE SPACED AT 25' FOR (200 FEET) AND AT A MAXIMUM OF 50' FOR ALL ADDITIONAL DEVICES.
4. WHEN THE WORK SITE IS UNATTENDED, SUBSTITUTE - "SHOULDER WORK AHEAD" SIGN.
5. WORKER SIGNS OR SHOULDER WORK SIGNS AND CHANNELIZATION DEVICES ARE PLACED ONLY ON THE SIDE OF THE ROADWAY ON WHICH THE ACTIVITY IS PERFORMED.
6. FOR SHOULDER CLOSURE EXTENDING OVERNIGHT, BARRICADE TYPE II SHALL BE USED. SEE ARTICLE 701.05(a)(5) FOR BARRICADE LIGHT REQUIREMENTS
7. FOR SHORT TERM CLOSURE (SUNRISE TO ONE HOUR BEFORE SUNSET) NOT EXTENDING INTO DARKNESS, CONES MAY BE USED.
8. ONE WORK ZONE SPEED LIMIT SIGN ASSEMBLY SHALL BE PLACED AT A DISTANCE OF 500' TO 2,500' MAXIMUM IN ADVANCE OF WORKERS THROUGHOUT THE SHOULDER CLOSURE. MOVING OPERATIONS MAY REQUIRE CONTINUOUS ADJUSTMENT OF THE SIGN ASSEMBLY LOCATION TO MAINTAIN THE ABOVE INTERVAL.
9. AN ADDITIONAL SIGN ASSEMBLY SHALL BE PLACED 500' BEYOND THE LAST ENTRANCE RAMP FOR EACH INTERCHANGE THAT FALLS WITHIN THE 2,500'.
10. THE SIGN ASSEMBLY SHALL BE PLACED NO CLOSER THAN 500' TO ANY OTHER SIGN.
11. THE WORK ZONE SPEED LIMIT SIGNS AND SIGN ASSEMBLY SHALL BE PROMPTLY REMOVED OR COVERED WHEN SHOULDER CLOSURE IS REMOVED.
12. ALL CONFLICTING SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED.
13. "END WORK ZONE SPEED LIMIT" SIGNS SHALL BE IN PLACE ONLY WHEN THE EXISTING POSTED SPEED > 55MPH.
14. FOR SHOULDER REPAIRS OR REPLACEMENT THE CHANNELIZING DEVICES SHALL BE PLACED AT THE EDGE OF PAVEMENT WHENEVER THE WORK ACTIVITIES RESULT IN A DROP OFF AT THE EDGE OF PAVEMENT.
15. ANY UNATTENDED OBSTACLE OR EXCAVATION LEFT ON THE SHOULDER OVERNIGHT SHALL BE IN COMPLIANCE WITH THE ROADWAY TRAFFIC CONTROL AND COMMUNICATIONS MANUAL.
16. A 1'-0" MINIMUM/2'-0" DESIRABLE SHY DISTANCE SHALL BE PROVIDED, MEASURED BETWEEN EDGE OF PAVEMENT LANE MARKING TO THE EDGE OF THE TRAFFIC CONTROL DEVICE.
17. SEE STANDARD E1 FOR ADDITIONAL SIGNAGE REQUIRED WHEN WORK ZONE SPEED LIMIT IS REDUCED BY MORE THAN 10 MPH.
18. IN WORK ZONES WITH NO POSITIVE PROTECTION, A TRUCK MOUNTED ATTENUATOR SHALL BE PROVIDED WITH A BUFFER AREA BETWEEN THE FRONT OF THE TMA AND WORKERS OR EQUIPMENT. THE BUFFER AREA SHALL BE 200' UNLESS OTHERWISE DETERMINED. WHERE WORKERS OR EQUIPMENT ARE PRESENT BEYOND THE WORK AREA, AN ADDITIONAL TMA SHALL BE PROVIDED FOR EACH WORK AREA IS DEFINED AS STARTING AT THE END OF THE BUFFER AREA, EXTENDING 1000 FEET BEYOND THIS POINT.

APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER

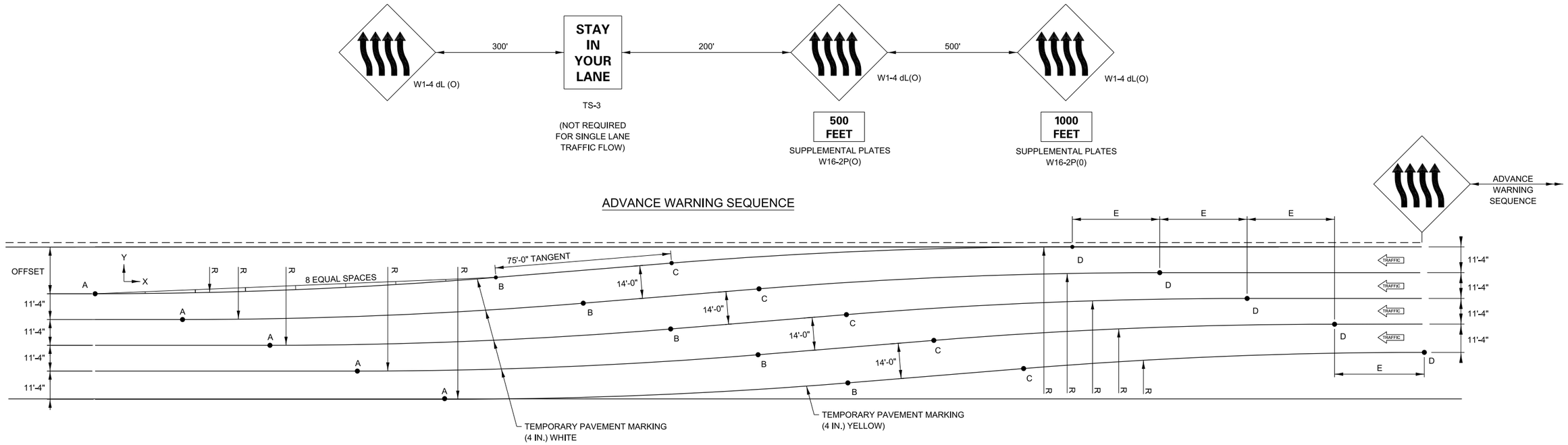
DATE: 03/01/2025

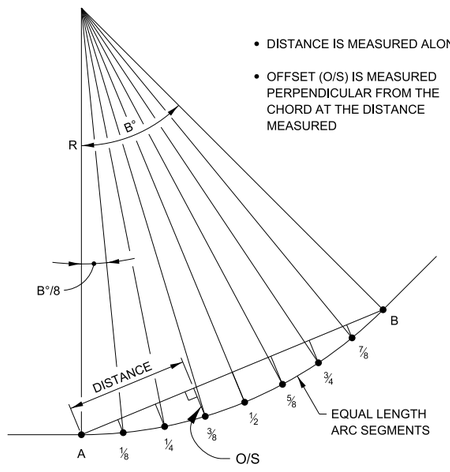
Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REVISED NOTE 1 AND 2 TO INCREASE
	BUFFER TO ACTIVE LANES
03-01-2024	REVISED NOTE 1, 2 AND 6, ADDED
	CALLOUT FOR NOTE 2, REDUCED
	WORK ZONE HATCH

SHOULDER CLOSURE DETAILS

VERSION: 2025-03 | STANDARD: E3-11 | SHEET: 1 OF 1





CHORD OFFSET SKETCH

- DISTANCE IS MEASURED ALONG CHORD A-B
- OFFSET (O/S) IS MEASURED PERPENDICULAR FROM THE CHORD AT THE DISTANCE MEASURED

GENERAL NOTES:

1. REVERSE CURVE INFORMATION CAN BE USED FOR SINGLE LANE OR MULTILANE TRAFFIC FLOWS, SHIFTING RIGHT TO LEFT (AS SHOWN) OR LEFT TO RIGHT BY CHANGING TO THE APPROPRIATE ADVANCE WARNING SEQUENCE.
2. THE REVERSE CURVE SHALL NOT BE USED OUTSIDE THE ACTIVITY AREA. LANE SHIFTS IN ADVANCE OF OR ON THE APPROACH TO THE ACTIVITY AREA SHALL BE IMPLEMENTED WITH A SHIFT RATE OF 65:1.
3. LANE SHIFTS FOR DEPARTURES OUT OF THE ACTIVITY AREA SHALL BE IMPLEMENTED WITH A SHIFT RATE OF 65:1.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/31/2017

REVISIONS	
DATE	DESCRIPTION
03-31-2017	REVISED TABLE DATA ON SHEET 2.
03-31-2016	REVISED TABLE DATA ON SHEET 2.
03-11-2015	REVISED NOTES AND ADDED RADIUS
	DIMENSIONS TO TABLES.
03-31-2014	REVISED CURVE DATA PER MPH AND
	REVISED NOTES.

Illinois Tollway

MAINTENANCE OF TRAFFIC REVERSE CURVE

VERSION:	STANDARD:	SHEET:
2017-03	E4-07	1 OF 2

TYPE I (45 MPH) (RADIUS: 2100')

			POINT LAY-OUT								CHORD OFFSET DATA							
OFFSET	E	B	A		B		C		D		1/8 & 7/8		1/4 & 3/4		3/8 & 5/8		1/2	
			X	Y	X	Y	X	Y	X	Y	0/S	DIST	0/S	DIST	0/S	DIST	0/S	DIST
10	50.23	3.06	0	0	112.2	3.0	187.1	7.0	299.2	10.0	0.3	14.0	0.6	28.0	0.7	42.1	0.7	56.1
12	44.94	3.43	0	0	125.6	3.8	200.4	8.2	326.0	12.0	0.4	15.7	0.7	31.4	0.9	47.1	0.9	62.8
14	40.96	3.77	0	0	138.0	4.5	212.8	9.5	350.8	14.0	0.5	17.3	0.9	34.5	1.1	51.8	1.1	69.0
16	37.86	4.08	0	0	149.5	5.3	224.3	10.7	373.9	16.0	0.6	18.7	1.0	37.4	1.2	56.1	1.3	74.8
18	35.34	4.38	0	0	160.4	6.1	235.2	11.9	395.6	18.0	0.7	20.1	1.2	40.1	1.4	60.2	1.5	80.3
20	33.26	4.66	0	0	170.7	7.0	245.5	13.0	416.2	20.0	0.8	21.4	1.3	42.7	1.6	64.1	1.7	85.4
22	31.50	4.93	0	0	180.5	7.8	255.3	14.2	435.8	22.0	0.9	22.6	1.5	45.2	1.8	67.8	1.9	90.4
24	30.00	5.19	0	0	189.9	8.6	264.6	15.4	454.6	24.0	0.9	23.8	1.6	47.5	2.0	71.3	2.2	95.1
26	28.68	5.44	0	0	199.0	9.4	273.6	16.6	472.6	26.0	1.0	24.9	1.8	49.8	2.2	74.7	2.4	99.6
28	27.53	5.67	0	0	207.7	10.3	282.3	17.7	489.9	28.0	1.1	26.0	1.9	52.0	2.4	78.0	2.6	104.0
30	26.51	5.90	0	0	216.0	11.1	290.6	18.9	506.7	30.0	1.2	27.0	2.1	54.1	2.6	81.1	2.8	108.2
32	25.59	6.13	0	0	224.2	12.0	298.7	20.0	522.9	32.0	1.3	28.0	2.3	56.1	2.8	84.2	3.0	112.2
34	24.76	6.34	0	0	232.0	12.9	306.6	21.1	538.6	34.0	1.4	29.0	2.4	58.1	3.0	87.1	3.2	116.2
36	24.02	6.55	0	0	239.7	13.7	314.2	22.3	553.8	36.0	1.5	30.0	2.6	60.0	3.2	90.0	3.4	120.0
38	23.33	6.76	0	0	247.1	14.6	321.6	23.4	568.7	38.0	1.6	30.9	2.7	61.9	3.4	92.8	3.7	123.8
40	22.71	6.96	0	0	254.3	15.5	328.8	24.5	583.1	40.0	1.7	31.8	2.9	63.7	3.6	95.5	3.9	127.4
42	22.13	7.15	0	0	261.4	16.3	335.8	25.7	597.2	42.0	1.8	32.7	3.1	65.4	3.8	98.2	4.1	131.0
44	21.60	7.34	0	0	268.3	17.2	342.7	26.8	611.0	44.0	1.9	33.6	3.2	67.2	4.0	100.8	4.3	134.4
46	21.11	7.53	0	0	275.0	18.1	349.4	27.9	624.4	46.0	2.0	34.4	3.4	68.9	4.2	103.3	4.5	137.8
48	20.65	7.71	0	0	281.6	19.0	356.0	29.0	637.6	48.0	2.1	35.2	3.6	70.5	4.5	105.8	4.7	141.1
50	20.22	7.89	0	0	288.1	19.9	362.4	30.1	650.5	50.0	2.2	36.1	3.7	72.2	4.7	108.3	5.0	144.4
52	19.82	8.06	0	0	294.4	20.7	368.7	31.3	663.1	52.0	2.3	36.9	3.9	73.7	4.9	110.7	5.2	147.6
54	19.44	8.23	0	0	300.6	21.6	374.9	32.4	675.5	54.0	2.4	37.6	4.1	75.3	5.1	113.0	5.4	150.7
56	19.09	8.40	0	0	306.7	22.5	380.9	33.5	687.7	56.0	2.5	38.4	4.2	76.8	5.3	115.3	5.6	153.8
58	18.76	8.56	0	0	312.7	23.4	386.9	34.6	699.6	58.0	2.6	39.2	4.4	78.3	5.5	117.6	5.9	156.8
60	18.44	8.73	0	0	318.6	24.3	392.7	35.7	711.4	60.0	2.7	39.9	4.6	79.8	5.7	119.8	6.1	159.8

TYPE II (50-55 MPH) (RADIUS: 3100')

			POINT LAY-OUT								CHORD OFFSET DATA							
OFFSET	E	B	A		B		C		D		1/8 & 7/8		1/4 & 3/4		3/8 & 5/8		1/2	
			X	Y	X	Y	X	Y	X	Y	0/S	DIST	0/S	DIST	0/S	DIST	0/S	DIST
10	58.28	2.63	0	0	142.5	3.3	217.4	6.7	359.9	10.0	0.4	17.8	0.6	35.6	0.8	53.4	0.8	71.3
12	52.30	2.94	0	0	158.9	4.1	233.8	7.9	392.8	12.0	0.4	19.9	0.8	39.7	1.0	59.6	1.0	79.5
14	47.80	3.22	0	0	174.1	4.9	249.0	9.1	423.1	14.0	0.5	21.8	0.9	43.5	1.1	65.3	1.2	87.1
16	44.25	3.48	0	0	188.3	5.7	263.1	10.3	451.4	16.0	0.6	23.5	1.1	47.1	1.3	70.6	1.4	94.2
18	41.38	3.73	0	0	201.6	6.6	276.4	11.4	478.0	18.0	0.7	25.2	1.2	50.4	1.5	75.6	1.6	100.8
20	38.99	3.96	0	0	214.2	7.4	289.0	12.6	503.2	20.0	0.8	26.8	1.4	53.6	1.7	80.4	1.9	107.2
22	36.96	4.18	0	0	226.2	8.3	301.0	13.7	527.2	22.0	0.9	28.3	1.5	56.6	1.9	84.9	2.1	113.2
24	35.22	4.40	0	0	237.7	9.1	312.5	14.9	550.1	24.0	1.0	29.7	1.7	59.5	2.1	89.2	2.3	118.9
26	33.70	4.60	0	0	248.7	10.0	323.5	16.0	572.1	26.0	1.1	31.1	1.9	62.2	2.3	93.3	2.5	124.4
28	32.36	4.80	0	0	259.3	10.9	334.0	17.1	593.3	28.0	1.2	32.4	2.0	64.9	2.5	97.3	2.7	129.8
30	31.16	4.99	0	0	269.5	11.7	344.2	18.3	613.8	30.0	1.3	33.7	2.2	67.4	2.8	101.2	2.9	134.9
32	30.10	5.17	0	0	279.4	12.6	354.1	19.4	633.6	32.0	1.4	34.9	2.4	69.9	3.0	104.9	3.2	139.9
34	29.13	5.35	0	0	289.0	13.5	363.7	20.5	652.7	34.0	1.5	36.2	2.5	72.3	3.2	108.5	3.4	144.7
36	28.25	5.52	0	0	298.4	14.4	373.0	21.6	671.4	36.0	1.6	37.3	2.7	74.7	3.4	112.0	3.6	149.4
38	27.45	5.69	0	0	307.4	15.3	382.1	22.7	689.5	38.0	1.7	38.5	2.9	76.9	3.6	115.4	3.8	153.9
40	26.72	5.86	0	0	316.3	16.2	390.9	23.8	707.1	40.0	1.8	39.6	3.0	79.1	3.8	118.7	4.0	158.3
42	26.04	6.02	0	0	324.9	17.1	399.5	24.9	724.3	42.0	1.9	40.6	3.2	81.3	4.0	122.0	4.3	162.7
44	25.41	6.17	0	0	333.3	18.0	407.9	26.0	741.1	44.0	2.0	41.7	3.4	83.4	4.2	125.1	4.5	166.9
46	24.83	6.32	0	0	341.5	18.9	416.1	27.1	757.6	46.0	2.1	42.7	3.5	85.5	4.4	128.2	4.7	171.0
48	24.29	6.47	0	0	349.6	19.8	424.1	28.2	773.6	48.0	2.2	43.7	3.7	87.5	4.6	131.3	4.9	175.1
50	23.78	6.62	0	0	357.4	20.7	431.9	29.3	789.4	50.0	2.3	44.7	3.9	89.5	4.8	134.2	5.2	179.0
52	23.31	6.76	0	0	365.2	21.6	439.6	30.4	804.8	52.0	2.4	45.7	4.0	91.4	5.1	137.2	5.4	182.9
54	22.86	6.91	0	0	372.7	22.5	447.2	31.5	819.9	54.0	2.5	46.6	4.2	93.3	5.3	140.0	5.6	186.7
56	22.44	7.04	0	0	380.2	23.4	454.6	32.6	834.8	56.0	2.6	47.6	4.4	95.2	5.5	142.8	5.9	190.5
58	22.05	7.18	0	0	387.5	24.3	461.9	33.7	849.4	58.0	2.7	48.5	4.6	97.0	5.7	145.6	6.1	194.1
60	21.67	7.31	0	0	394.7	25.2	469.1	34.8	863.7	60.0	2.8	49.4	4.7	98.8	5.9	148.3	6.3	197.7

TYPE III (60-65 MPH) (RADIUS: 4400')

			POINT LAY-OUT								CHORD OFFSET DATA							
OFFSET	E	B	A		B		C		D		1/8 & 7/8		1/4 & 3/4		3/8 & 5/8		1/2	
			X	Y	X	Y	X	Y	X	Y	0/S	DIST	0/S	DIST	0/S	DIST	0/S	DIST
10	67.06	2.29	0	0	175.6	3.5	250.5	6.5	426.1	10.0	0.4	21.9	0.7	43.9	0.8	65.8	0.9	87.8
12	60.34	2.54	0	0	195.3	4.3	270.2	7.7	465.5	12.0	0.5	24.4	0.8	48.8	1.0	73.2	1.1	97.7
14	55.24	2.78	0	0	213.5	5.2	288.4	8.8	501.8	14.0	0.6	26.7	1.0	53.4	1.2	80.1	1.3	106.8
16	51.22	3.00	0	0	230.4	6.0	305.3	10.0	535.7	16.0	0.7	28.8	1.1	57.6	1.4	86.4	1.5	115.2
18	47.95	3.21	0	0	246.3	6.9	321.2	11.1	567.5	18.0	0.8	30.8	1.3	61.6	1.6	92.4	1.7	123.2
20	45.22	3.41	0	0	261.4	7.8	336.3	12.2	597.7	20.0	0.9	32.7	1.5	65.4	1.8	98.1	1.9	130.8
22	42.90	3.59	0	0	275.8	8.6	350.6	13.4	626.4	22.0	0.9	34.5	1.6	69.0	2.0	103.5	2.2	137.9
24	40.91	3.77	0	0	289.5	9.5	364.3	14.5	653.8	24.0	1.0	36.2	1.8	72.4	2.2	108.6	2.4	144.8
26	39.16	3.94	0	0	302.6	10.4	377.5	15.6	680.1	26.0	1.1	37.8	2.0	75.7	2.4	113.6	2.6	151.4
28	37.62	4.11	0	0	315.3	11.3	390.1	16.7	705.4	28.0	1.2	39.4	2.1	78.9	2.7	118.3	2.8	157.8
30	36.24	4.27	0	0	327.5	12.2	402.3	17.8	729.9	30.0	1.3	41.0	2.3	81.9	2.9	122.9	3.1	163.9
32	35.01	4.42	0	0	339.4	13.1	414.2	18.9	753.5	32.0	1.4	42.4	2.5	84.9	3.1	127.4	3.3	169.8
34	33.90	4.57	0	0	350.8	14.0	425.6	20.0	776.4	34.0	1.5	43.9	2.6	87.8	3.3	131.7	3.5	175.6
36	32.88	4.72	0	0	362.0	14.9	436.7	21.1	798.7	36.0	1.6	45.3	2.8	90.6	3.5	135.8	3.7	181.1
38	31.95	4.86	0	0	372.8	15.8	447.5	22.2	820.4	38.0	1.7	46.6	3.0	93.3	3.7	139.9	4.0	186.6
40	31.10	5.00	0	0	383.4	16.7	458.1	23.3	841.4	40.0	1.8	47.9	3.1	95.9	3.9	143.9	4.2	191.9
42	30.31	5.13	0	0	393.7	17.6	468.4	24.4	862.0	42.0	1.9	49.2	3.3	98.5	4.1	147.8	4.4	197.0
44	29.59	5.26	0	0	403.7	18.6	478.4	25.4	882.1	44.0	2.0	50.5	3.5	101.0	4.4	151.5	4.6	202.1
46	28.91	5.39	0	0	413.5	19.5	488.2	26.5	901.7	46.0	2.1	51.7	3.7	103.5	4.6	155.2	4.9	207.0
48	28.28	5.52	0	0	423.1	20.4	497.8	27.6	920.9	48.0	2.2	52.9	3.8	105.9	4.8	158.8	5.1	211.8
50	27.68	5.64	0	0	432.6	21.3	507.2	28.7	939.7	50.0	2.3	54.1	4.0	108.2	5.0	162.4	5.3	216.5
52	27.13	5.76	0	0	441.8	22.2	516.4	29.8	958.2	52.0	2.4	55.3	4.2	110.6	5.2	165.9	5.6	221.2
54	26.61	5.88	0	0	450.8	23.2	525.4	30.8	976.3	54.0	2.5	56.4	4.3	112.8	5.4	169.3	5.8	225.7
56	26.12	6.00	0	0	459.7	24.1	534.3	31.9	994.0	56.0	2.6	57.5	4.5	115.0	5.6	172.6	6.0	230.2
58	25.65	6.11	0	0	468.4	25.0	543.0	33.0	1011.5	58.0	2.7	58.6	4.7	117.2	5.9	175.9	6.3	234.6
60	25.21	6.22	0	0	477.0	25.9	551.6	34.1	1028.6	60.0	2.8	59.7	4.9	119.4	6.1	179.1	6.5	238.9

APPROVED BY:

Paul Kovacs

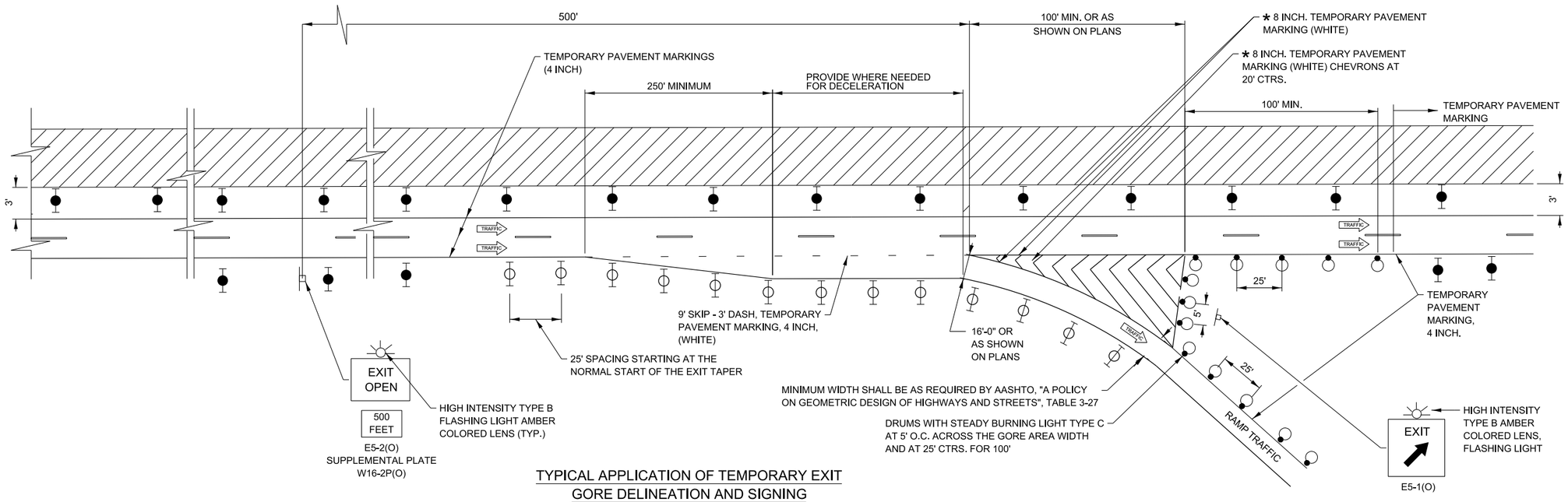
CHIEF ENGINEERING OFFICER

DATE: 03/31/2017

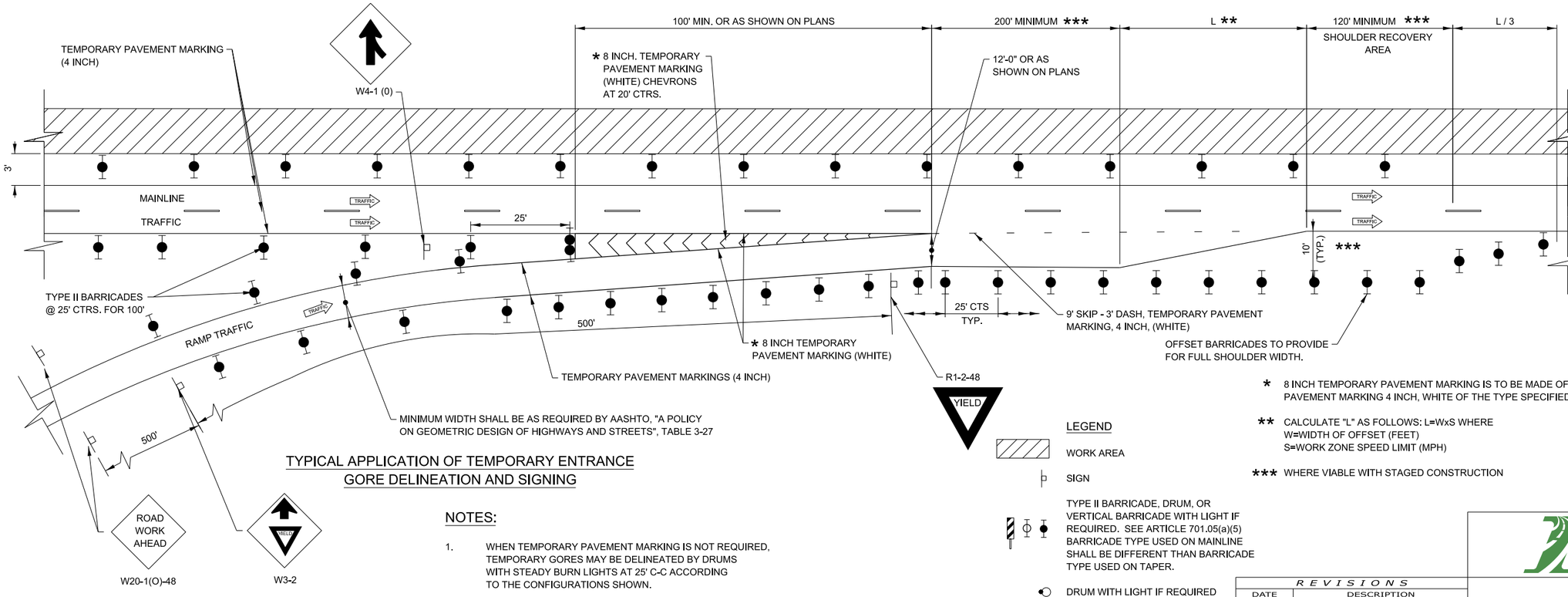
Illinois Tollway

MAINTENANCE OF TRAFFIC REVERSE CURVE

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2017-03	E4-07	2 OF 2



TYPICAL APPLICATION OF TEMPORARY EXIT GORE DELINEATION AND SIGNING



TYPICAL APPLICATION OF TEMPORARY ENTRANCE GORE DELINEATION AND SIGNING

NOTES:

1. WHEN TEMPORARY PAVEMENT MARKING IS NOT REQUIRED, TEMPORARY GORES MAY BE DELINEATED BY DRUMS WITH STEADY BURN LIGHTS AT 25' C-C ACCORDING TO THE CONFIGURATIONS SHOWN.
2. THE TAPER LENGTHS ARE MINIMUMS. EXISTING ACCELERATION, DECELERATION, AND TAPER LENGTHS SHOULD BE PRESERVED TO THE EXTENT POSSIBLE.

LEGEND

- WORK AREA
- SIGN
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH LIGHT IF REQUIRED. SEE ARTICLE 701.05(a)(5) BARRICADE TYPE USED ON MAINLINE SHALL BE DIFFERENT THAN BARRICADE TYPE USED ON TAPER.
- DRUM WITH LIGHT IF REQUIRED SEE ARTICLE 701.05(a)(5)
- TYPE III BARRICADE

* 8 INCH TEMPORARY PAVEMENT MARKING IS TO BE MADE OF 2-TEMPORARY PAVEMENT MARKING 4 INCH, WHITE OF THE TYPE SPECIFIED.

** CALCULATE "L" AS FOLLOWS: L=WxS WHERE
W=WIDTH OF OFFSET (FEET)
S=WORK ZONE SPEED LIMIT (MPH)

*** WHERE VIABLE WITH STAGED CONSTRUCTION

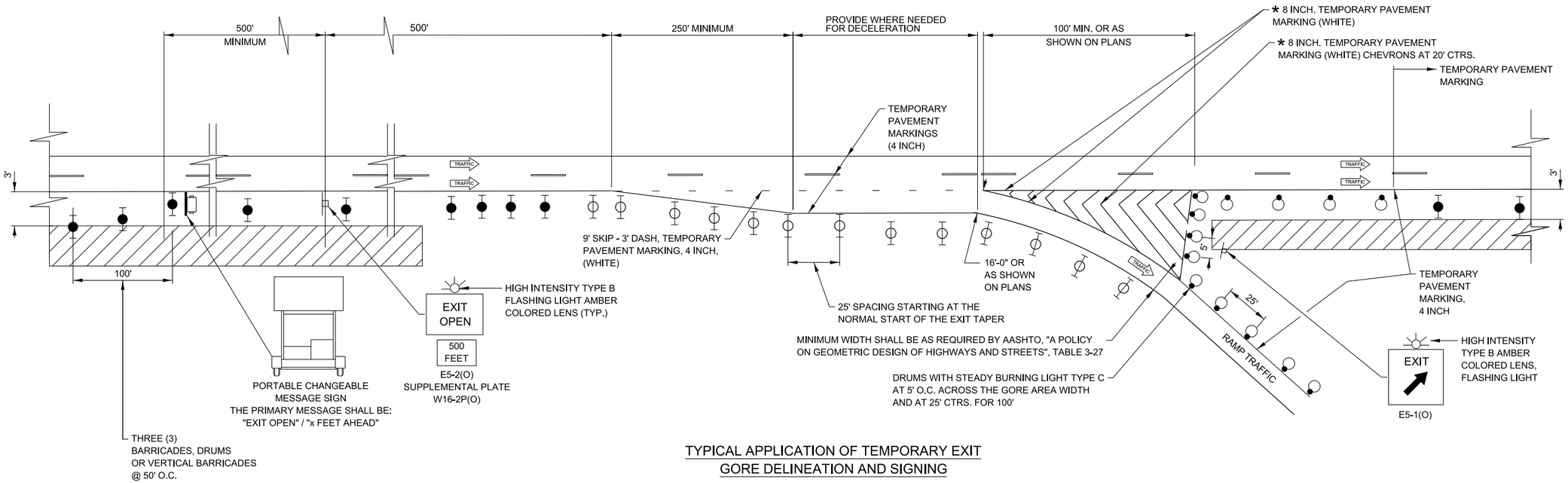
APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REDUCED WORK AREA TO PROVIDE 3 FT BUFFER TO ACTIVE LANES
03-01-2023	REVISED DRUM W/LIGHT ARTICLE NO., REVISED SKIP DASH, REVISED RAMP MINIMUM WIDTH NOTE

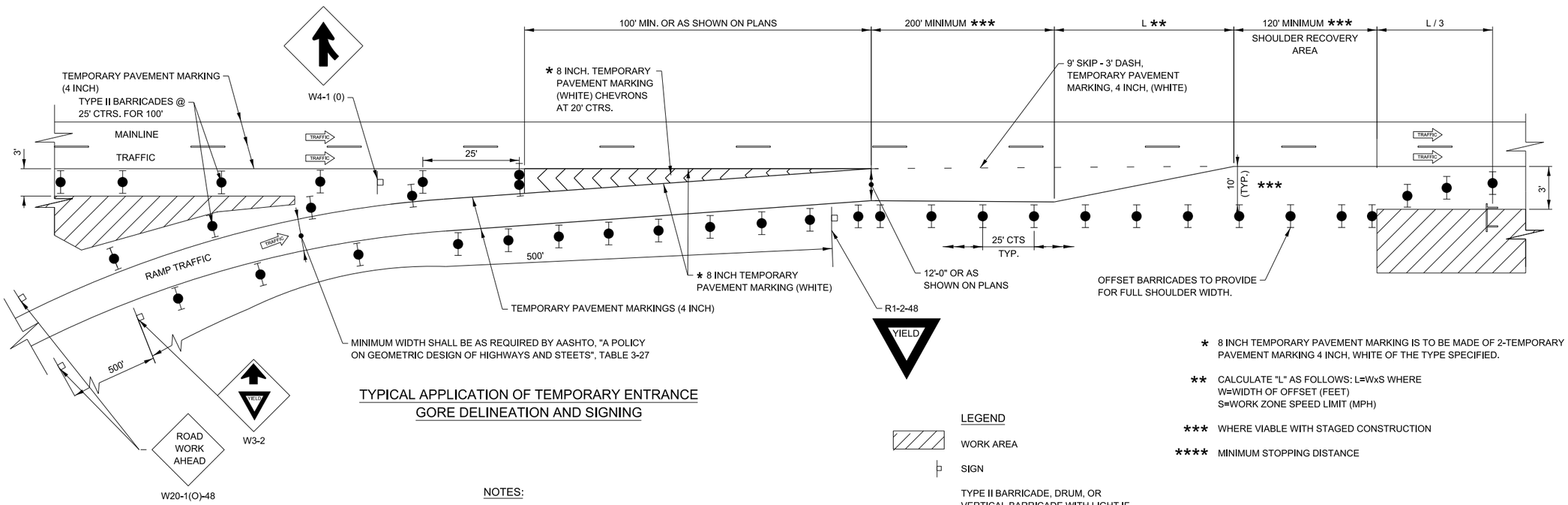
Illinois Tollway

TEMPORARY GORE DETAILS

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TYPICAL APPLICATION OF TEMPORARY EXIT GORE DELINEATION AND SIGNING



TYPICAL APPLICATION OF TEMPORARY ENTRANCE GORE DELINEATION AND SIGNING

NOTES:

1. WHEN TEMPORARY PAVEMENT MARKING IS NOT REQUIRED, TEMPORARY GORES MAY BE DELINEATED BY DRUMS WITH STEADY BURN LIGHTS AT 25' C-C ACCORDING TO THE CONFIGURATIONS SHOWN.
2. THE TAPER LENGTHS ARE MINIMUMS. EXISTING ACCELERATION, DECELERATION, AND TAPER LENGTHS SHOULD BE PRESERVED TO THE EXTENT POSSIBLE.

LEGEND

- WORK AREA
- SIGN
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH LIGHT IF REQUIRED. SEE ARTICLE 701.05(a)(5) BARRICADE TYPE USED ON MAINLINE SHALL BE DIFFERENT THAN BARRICADE TYPE USED ON TAPER.
- DRUM WITH LIGHT IF REQUIRED SEE ARTICLE 701.05(a)(5)
- TYPE III BARRICADE

* 8 INCH TEMPORARY PAVEMENT MARKING IS TO BE MADE OF 2-TEMPORARY PAVEMENT MARKING 4 INCH, WHITE OF THE TYPE SPECIFIED.

** CALCULATE "L" AS FOLLOWS: L=WxS WHERE
W=WIDTH OF OFFSET (FEET)
S=WORK ZONE SPEED LIMIT (MPH)

*** WHERE VIABLE WITH STAGED CONSTRUCTION

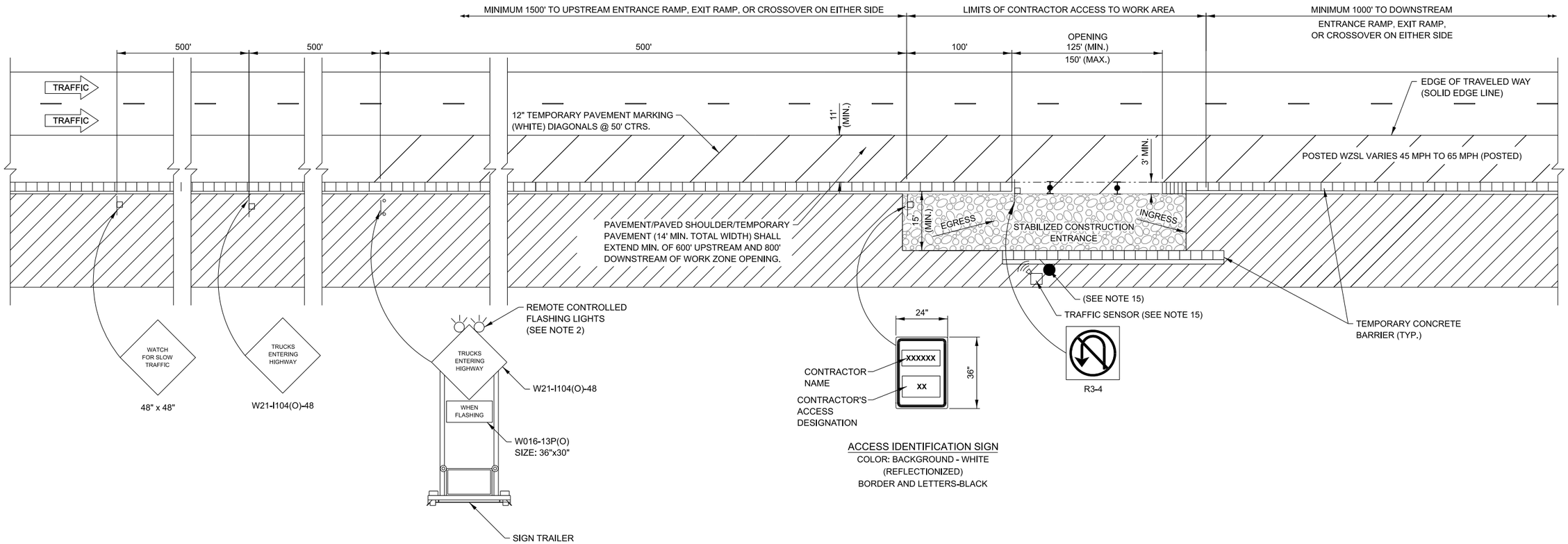
**** MINIMUM STOPPING DISTANCE

APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

TEMPORARY GORE DETAILS

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2025-03	E5-11	2 OF 2



ACCESS IDENTIFICATION SIGN
COLOR: BACKGROUND - WHITE (REFLECTIONIZED)
BORDER AND LETTERS-BLACK

TYPE A : CONTRACTOR ACCESS TO WORK AREA WITH TEMPORARY CONCRETE BARRIER WITH FULL SHOULDER

NOTES:

1. SIGNS DESIGNATED FOR THIS ACCESS TO WORK AREA SHALL BE COVERED OR TURNED AWAY FROM THE TRAFFIC WHEN THE ACCESS OPENINGS ARE NOT IN USE.
2. THE FLASHING WARNING LIGHT SHALL MEET THE REQUIREMENTS OF ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS AND BE OPERATED REMOTELY. THE LIGHTS SHALL BE FLASHING ONLY WHEN A VEHICLE IS ENTERING THE ILLINOIS TOLLWAY.
3. WHEN THREE LANES OR MORE ARE OPENED TO TRAFFIC, ADVANCE WARNING SIGNS AND ASSEMBLIES SHALL BE PROVIDED ON BOTH SIDES OF TRAVELED WAY.
4. WHEN CONTRACTOR ACCESS TO WORK AREA IS ON OPPOSITE SIDE FROM SHOWN, ALL INSTALLATIONS ARE MIRROR IMAGE.
5. FOR NIGHTTIME OPERATIONS, TEMPORARY LIGHTING OF CONSTRUCTION ACCESS TO WORK AREA SHALL BE PROVIDED.
6. TEMPORARY PAVEMENT MARKINGS SHALL BE REPLACED AS OFTEN AS NECESSARY TO DELINEATE OPENINGS.
7. IF POSSIBLE, LANE CLOSURES SHALL BE UTILIZED TO ELIMINATE THE MERGING OF CONSTRUCTION TRAFFIC INTO THROUGH TRAFFIC LANES.
8. A 1'-0" MINIMUM/2'-0" DESIRABLE SHY DISTANCE SHALL BE PROVIDED, MEASURED BETWEEN EDGE OF PAVEMENT LANE MARKING TO THE EDGE OF THE TRAFFIC CONTROL DEVICES.
9. "TRUCKS ENTERING HIGHWAY" SIGN MAY BE SUPPORTED BY OPTIONAL POST OR STAND MOUNTED DEVICES WHEN POSITIONED BEHIND TEMPORARY CONCRETE BARRIER.
10. CONTRACTOR ACCESS LOCATIONS SHALL BE SPACED NO CLOSER THAN HALF A MILE BETWEEN AREAS, EXCEPT FOR BRIDGE WORK WHERE ONE ACCESS LOCATION MAY BE PROVIDED ON EACH SIDE OF THE STRUCTURE. AT THESE LOCATIONS, ONLY ONE ACCESS LOCATION AT A TIME WILL BE ALLOWED TO BE OPEN FOR USE.
11. EXITING THE WORK ZONE AT ANY PLACE OTHER THAN AT WORK ZONE EXIT OPENING WILL BE PROHIBITED.
12. ALL VEHICLES SHALL USE THEIR TURN SIGNALS TO WARN MOTORISTS WHEN ENTERING AND EXITING THE WORK ZONE OPENINGS.
13. FLAGGERS SHALL NOT STOP TRAFFIC OR DIRECT TRAFFIC INTO AN ADJACENT LANE.
14. IN WORK ZONES WITH NO POSITIVE PROTECTION, A TRUCK MOUNTED ATTENUATOR (TMA) SHALL BE PROVIDED WITH A BUFFER AREA BETWEEN THE FRONT OF THE TMA AND WORKERS OR EQUIPMENT. THE BUFFER AREA SHALL BE 200' UNLESS OTHERWISE DETERMINED. WHERE WORKERS OR EQUIPMENT ARE PRESENT BEYOND THE WORK AREA, AN ADDITIONAL TMA SHALL BE PROVIDED FOR EACH WORK AREA. A WORK AREA IS DEFINED AS STARTING AT THE END OF THE BUFFER AREA, EXTENDING 1000 FEET BEYOND THIS POINT.
15. USE OF FLAGGER/SPOTTER IS OPTIONAL WHEN A TRAFFIC SENSOR IS PRESENT. TRAFFIC SENSOR IS NOT REQUIRED IF FLAGGER IS USED.

LEGEND

- FLAGGER
- SPOTTER
- CONSTRUCTION SIGN ON SUPPORT PER ILLINOIS TOLLWAY STANDARD UNLESS NOTED
- TRAFFIC — DIRECTION OF TRAFFIC FLOW
- WORK AREA
- DRUM WITH LIGHT IF REQUIRED SEE ARTICLE 701.05(a)(5)
- TRUCK MOUNTED ATTENUATOR (TMA) (ROLL WITH MOVING OPERATION)

TAPER RATES

WORK ZONE SPEED (mph)	SHY LINE (ft.)	BARRIER INSIDE SHY LINE	BARRIER AT OR BEYOND SHY LINE
65	8.5	28:1	19:1
60	8	26:1	18:1
55	7	24:1	16:1
50	6.5	21:1	14:1
45	6	18:1	12:1
40	5	16:1	10:1
35	4.5	15:1	9:1
30	4	13:1	8:1

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

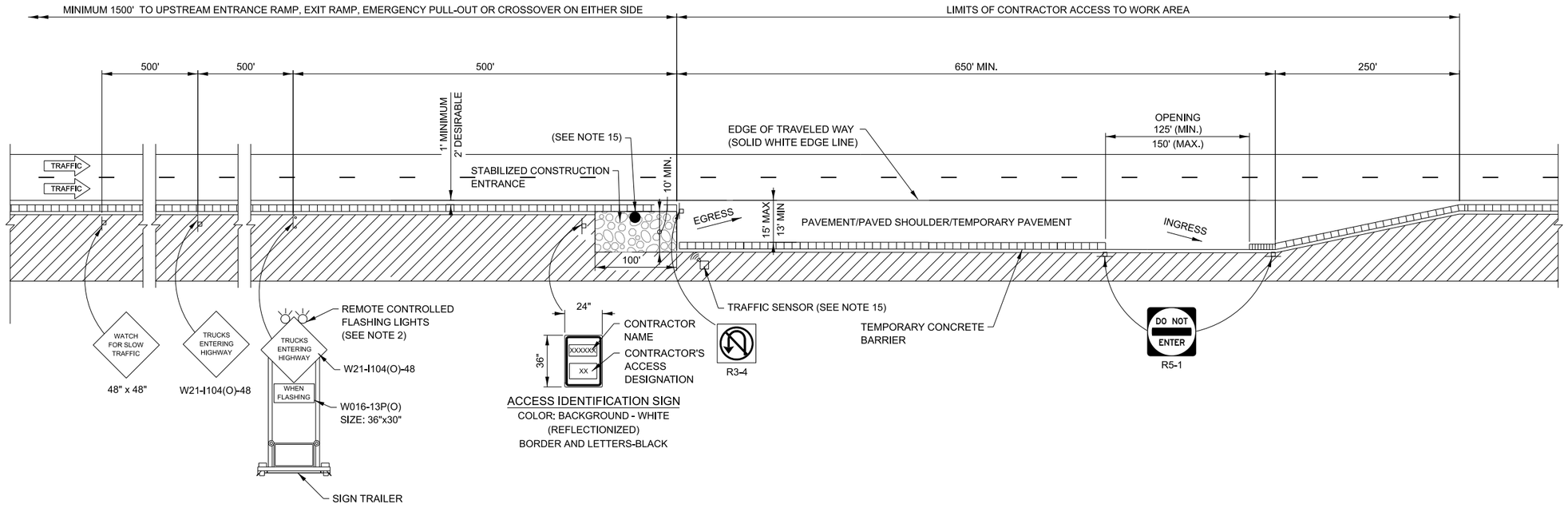
REVISIONS

DATE	DESCRIPTION
03-01-2025	REDESIGNED CONSTRUCTION ENTRANCES
03-01-2024	ADDED NOTE 15 IN CALLOUT
03-01-2023	REVISED DRUM W/LIGHT ARTICLE NO.
03-01-2020	CLARIFIED TMA REQUIREMENTS &
	UPDATED BARRICADE LIGHT REQ.

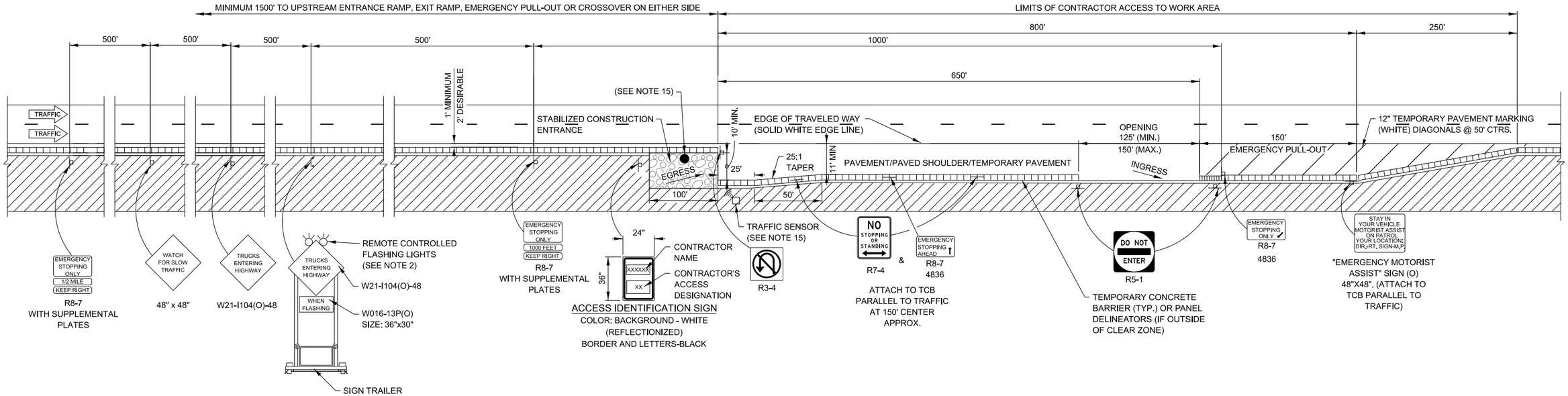
Illinois Tollway

CONTRACTOR ACCESS TO WORK AREA

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TYPE B : CONTRACTOR ACCESS TO WORK AREA WITH TRUCK ACCELERATION LANE



TYPE C : CONTRACTOR ACCESS TO WORK AREA WITH TRUCK ACCELERATION LANE AND EMERGENCY PULL-OUT AREA

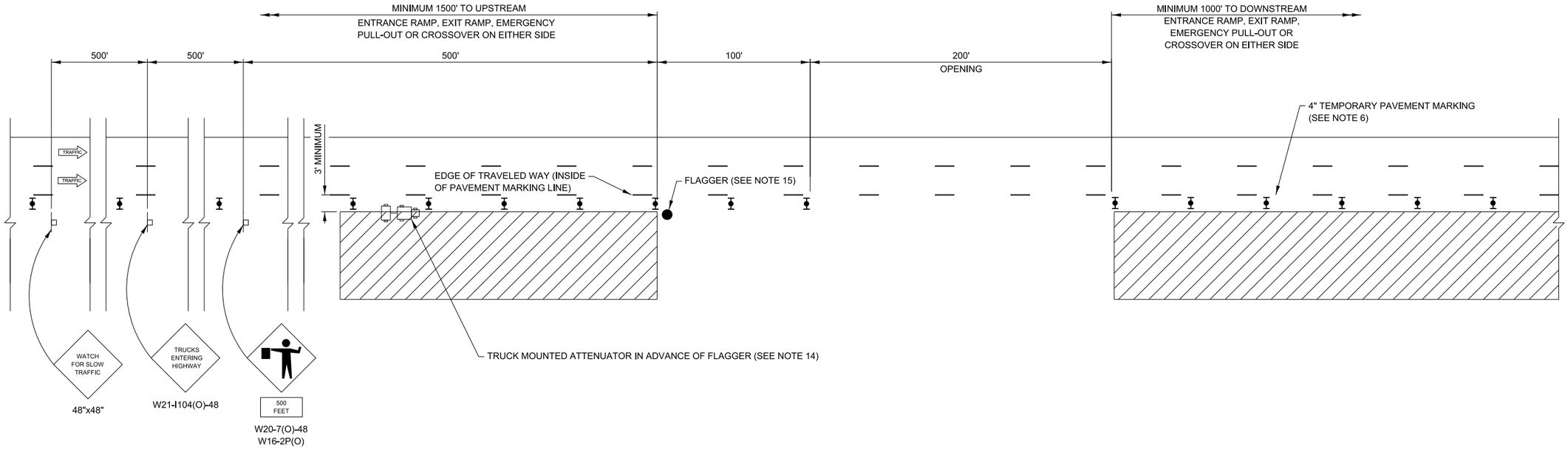
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

CONTRACTOR ACCESS TO WORK AREA

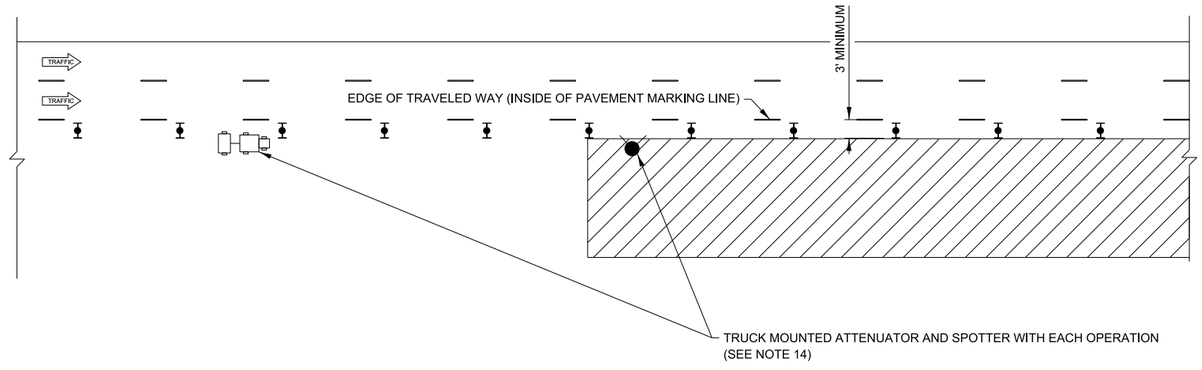
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CONTRACTOR ACCESS TO WORK AREA WITHOUT TEMPORARY CONCRETE BARRIER

LEGEND

- FLAGGER
- SPOTTER
- CONSTRUCTION SIGN ON SUPPORT PER ILLINOIS TOLLWAY STANDARD UNLESS NOTED
- TRAFFIC — DIRECTION OF TRAFFIC FLOW
- WORK AREA
- DRUM WITH LIGHT IF REQUIRED SEE ARTICLE 701.05(a)(5)
- TRUCK MOUNTED ATTENUATOR (TMA) (ROLL WITH MOVING OPERATION)



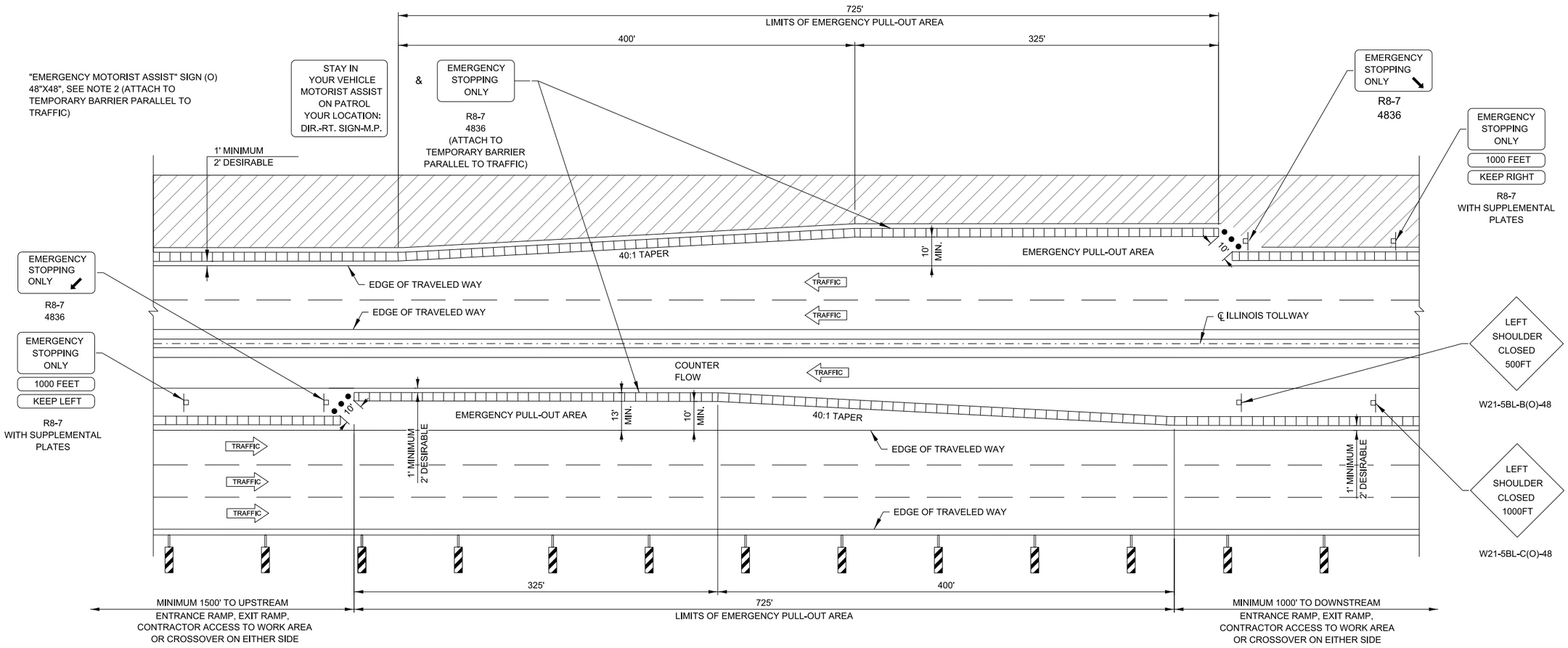
SPOTTER AND TMA AT WORK AREA

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

Illinois Tollway

CONTRACTOR ACCESS TO WORK AREA

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EMERGENCY PULL-OUT AREA

LEGEND

- TEMPORARY CONCRETE BARRIER WITH BARRIER DELINEATORS ON TRAFFIC SIDE
- VERTICAL PANELS @ 100 FT CENTERS ALONG ROADWAY (TANGENT) AND 50 FT CENTERS ALONG TAPERS.
- WORK AREA
- FLEXIBLE DELINEATOR POSTS
- TRAFFIC — DIRECTION OF TRAFFIC FLOW
- CONSTRUCTION SIGN ON SUPPORT PER ILLINOIS TOLLWAY STANDARD UNLESS NOTED.

NOTES:

1. PULL-OUT AREA SPACED PER CONTRACT DOCUMENTS.
2. ENGINEER TO DETERMINE EMERGENCY ASSIST SIGN'S INFORMATION FOR DIRECTION - ROUTE SIGN - MILEPOST ONCE THE LOCATION HAS BEEN ACCEPTED.
3. A 1'-0" MINIMUM/2'-0" DESIRABLE SHY DISTANCE SHALL BE PROVIDED, MEASURED BETWEEN EDGE OF PAVEMENT LANE MARKING TO THE EDGE OF THE TRAFFIC CONTROL DEVICE.
4. FLEXIBLE DELINEATORS TO BE 48" IN HEIGHT ABOVE BASE, TUBULAR POSTS (ORANGE) WITH 360 DEGREES FULL VIEW TWO-4" FLORESCENT ORANGE REFLECTORIZED TAPE BANDS. FLEXIBLE DELINEATORS SHALL BE CAPABLE OF BENDING UNDER REPEATED IMPACTS AND RETURN TO AN UPRIGHT POSITION WITHOUT DAMAGE TO THE IMPACTING VEHICLE OR THE DELINEATORS. THE DELINEATOR'S BASE SHALL BE SECURELY MOUNTED TO THE ROADWAY SURFACE. THE POSTS SHALL BE REMOVABLE FROM THE BASES TO PERMIT REPLACEMENT OF DAMAGED UNITS AS REQUIRED.

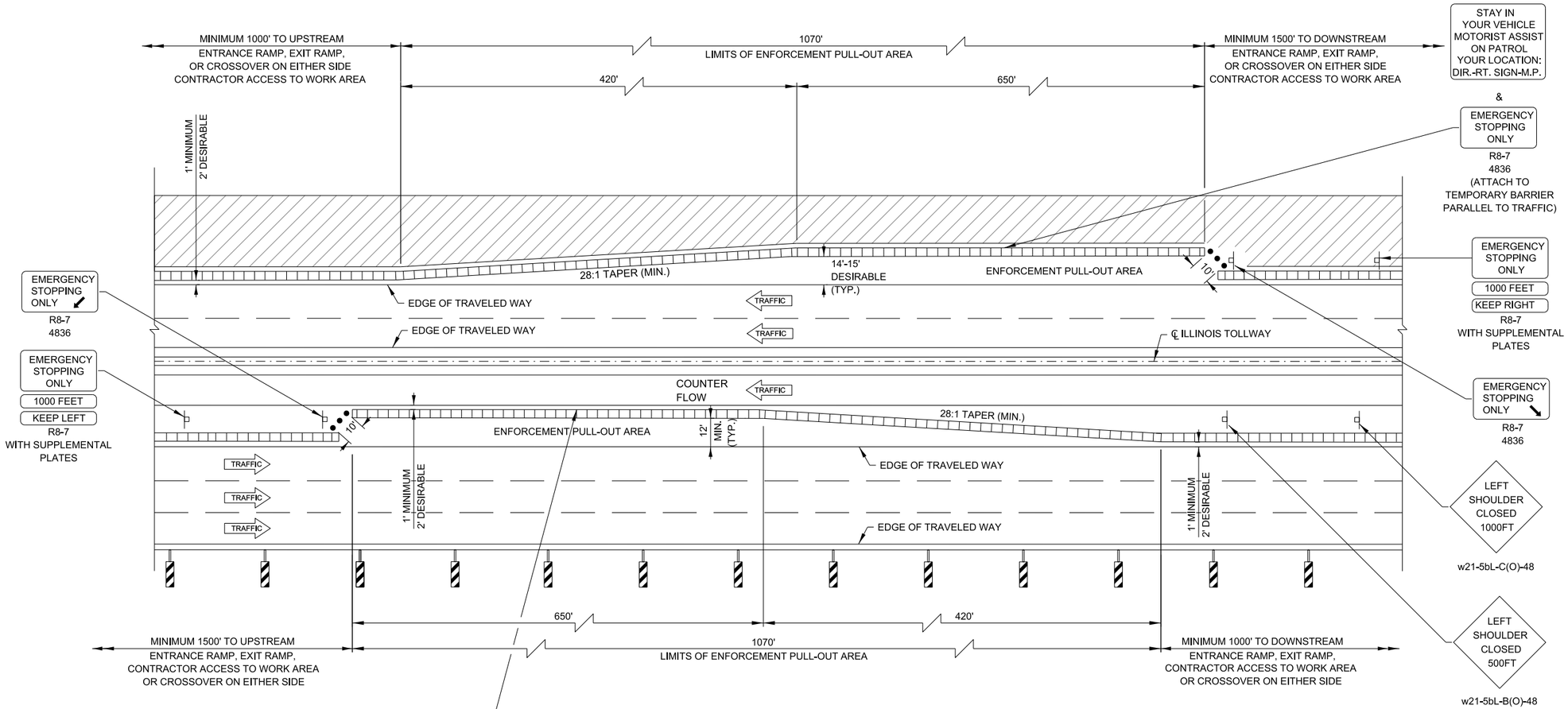
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REDUCED WORK AREA BEHIND TCB
03-01-2020	REMOVED LIGHTS FROM VERTICAL PANELS
03-11-2015	REVISED NOTES
03-31-2014	ADDED ENFORCEMENT PULL-OUT AREA

Illinois Tollway

PULL-OUT AREA

VERSION:	STANDARD:	SHEET:
2025-03	E7-06	1 OF 2



ENFORCEMENT PULL-OUT AREA

SEE SHEET 1 IN THIS SERIES FOR NOTES.

LEGEND

- TEMPORARY CONCRETE BARRIER WITH BARRIER DELINEATORS ON TRAFFIC SIDE
- VERTICAL PANELS @ 100 FT CENTERS ALONG ROADWAY (TANGENT) AND 50 FT CENTERS ALONG TAPERS.
- WORK AREA
- FLEXIBLE DELINEATOR POSTS
- TRAFFIC — DIRECTION OF TRAFFIC FLOW
- CONSTRUCTION SIGN ON SUPPORT PER ILLINOIS TOLLWAY STANDARD UNLESS NOTED.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

PULL-OUT AREA

VERSION:	STANDARD:	SHEET:
2025-03	E7-06	2 OF 2

STANDARD DRAWINGS

SECTION F

SIGN STRUCTURE

MARCH 2025

Illinois Tollway Standard Drawing Revisions

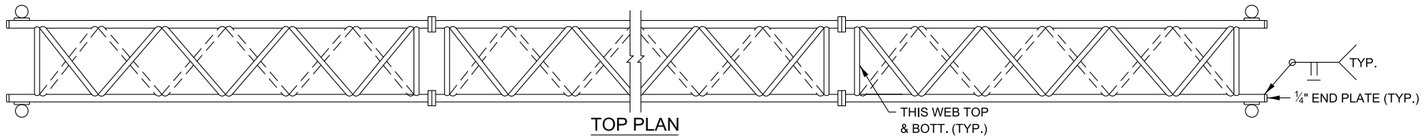
Section F	Sign Structure	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads.
	F1-15	**Overhead Sign Structure Span Type Structure Details**
	Sheet 5	Added vertical clearance of storm sewer to grade beam in End View.
	F4-15	**Overhead Sign Structure Cantilever Type Structure Details**
	Sheet 8	Revised callout for stainless steel U-bolt to go with stainless steel locknut instead of galvanized locknut.
	F8-10	**Overhead Sign Structure Sign, Luminaire and Beacon Supports**
	Sheet 1	Added note 9 to clarify mounted hardware for sign panels shall be supplied by the Contractor.
	F11-07	**Milepost Marker**
	Sheet 1	Added milepost marker callouts.
	F13-10	**Overhead Sign Structure Monotube Type (Steel) Mainline Structure Details**
	Sheet 1	Added callout for median shoulder barrier indicating that details for median barrier is provided on sheet 9 of the standard. Added junction box and the U-bolt attachment details for the junction box.
	Sheet 4	Changed camera angle from 15º to 5º MIN. 10º MAX. Added plastic trim detail and notes.
	Sheet 5	Changed camera angle from 15º to 5º MIN. 10º MAX. Added plastic trim detail and callout.
	Sheet 9	Added new sheet to show median barrier details
	F14-08	**Overhead Sign Structure Butterfly Type Structure Details**
	Sheet 7	Revised callout for stainless steel U-bolt to go with stainless steel locknut instead of galvanized locknut.
	F15-09	**Overhead Sign Structure Monotube Type (Steel) Structure Details AET Ramp**
	Sheet 1	Added junction box and the U-bolt attachment details for the junction box.
	Sheet 2	Increase the span to 60' and updated camber. Extended the IT equipment support pipes to the ends.
	Sheet 3	Extended the IT equipment support pipes to the ends.
	Sheet 4	Changed camera angle from 15º to 5º MIN. 10º MAX. Added plastic trim detail and notes.
	Sheet 5	Changed camera angle from 15º to 5º MIN. 10º MAX. Added plastic trim detail and callout.
	Sheet 7	Clarified that top of barrier is level between monotubes in Elevation View.
	~~F16-07~~	**Overhead Sign Structure Monotube Type (Steel) Structure Details for Cash-IPO Ramp**
		Standard is removed because it is no longer used.
	F17-10	**Overhead Sign Structure Span Type Structure Details**
	Sheet 9	Added vertical clearance of storm sewer to grade beam in End View.

Illinois Tollway Standard Drawing Revisions

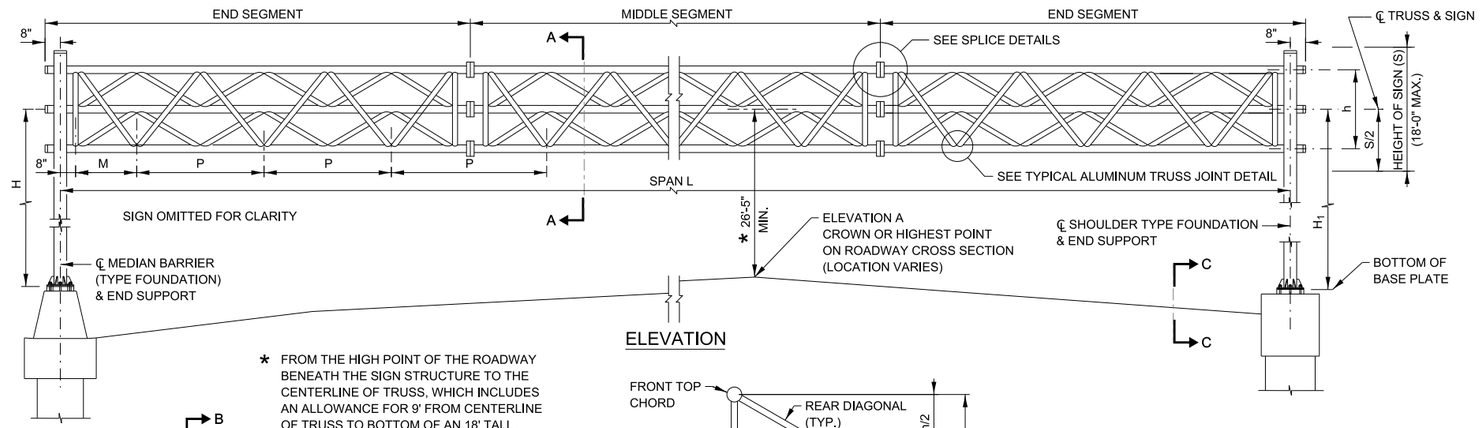
Section F	Sign Structure	
	Standard	**Modification Summary** **Effective: 03-01-2025**
	F21-00	**Overhead Sign Structure AET Ramp Single Monotube Type (Steel) Ground Mounted**
		Added new standard to show standard details for single monotube with foundation placed outside the barriers.
	F22-00	**Overhead Sign Structure AET Ramp Single Monotube Type (Steel) Barrier Mounted**
		Added new standard to show standard details for single monotube with foundation placed in-line with barrier.

New Sheet

Retired Standard

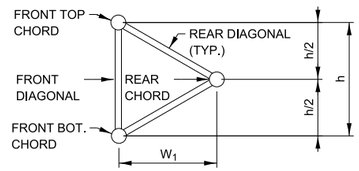


TOP PLAN

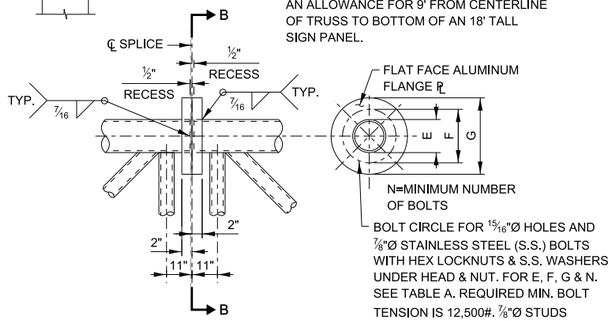


ELEVATION

* FROM THE HIGH POINT OF THE ROADWAY BENEATH THE SIGN STRUCTURE TO THE CENTERLINE OF TRUSS, WHICH INCLUDES AN ALLOWANCE FOR 9' FROM CENTERLINE OF TRUSS TO BOTTOM OF AN 18' TALL SIGN PANEL.

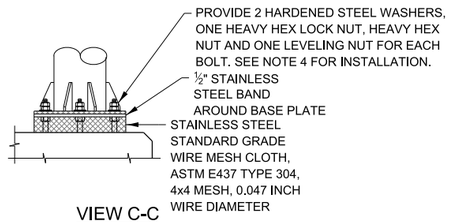


SECTION A-A

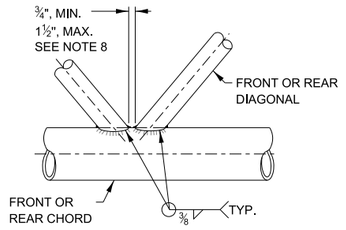


ELEVATION SECTION B-B

SPLICE DETAILS



VIEW C-C



TYPICAL ALUMINUM TRUSS
JOINT DETAIL

SIGN STRUCTURE MEMBER SCHEDULE

TRUSS NO.	DIMENSIONS					ALUMINUM TRUSS *						STEEL END SUPPORT		
	TRUSS SPAN L (MAX.)	P (MAX.)	M	h	W_1	MAXIMUM ALLOWABLE SIGN PANEL AREA	DL (TRUSS) DEFLECTION	MIDDLE SEGMENT OR END SEGMENT				W	HSS COLUMN (NOMINAL DIAMETER)	
								CHORD (O.D.)		DIAGONAL (O.D.)			HSS 12.75x0.500	HSS 14x0.625
								FRONT	REAR	FRONT	REAR		H OR H_1	H OR H_1
T-80	80'-0"	9'-0"	3'-4"	4'-6"	3'-10¾"	900 S.F.	1"	5½"Ø x½"	5½"Ø x½"	2½"Ø x¼"	2½"Ø x¼"	5'-9"	32'-0" (MAX)	38'-0" (MAX)
T-85	85'-0"	9'-6"	3'-10"	4'-9"	4'-1⅜"	955 S.F.	1 1/16"	6⅞"Ø x½"	6⅞"Ø x½"	3"Ø x¼"	3"Ø x¼"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-90	90'-0"	10'-0"	4'-4"	5'-0"	4'-4"	1010 S.F.	1⅛"	6⅞"Ø x½"	6⅞"Ø x½"	3"Ø x¼"	3"Ø x¼"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-95	95'-0"	10'-6"	4'-10"	5'-3"	4'-6⅝"	1065 S.F.	1 3/16"	6⅞"Ø x½"	6⅞"Ø x½"	3"Ø x¼"	3"Ø x¼"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-100	100'-0"	11'-4"	4'-0"	5'-8"	4'-10⅞"	1125 S.F.	1¼"	7"Ø x½"	7"Ø x½"	3½"Ø x¼"	3½"Ø x¼"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-105	105'-0"	12'-0"	3'-10"	6'-0"	5'-2⅜"	1180 S.F.	1 5/16"	7"Ø x½"	7"Ø x½"	3½"Ø x¼"	3½"Ø x¼"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-110	110'-0"	12'-6"	4'-4"	6'-3"	5'-5"	1200 S.F.	1⅜"	7"Ø x½"	7"Ø x½"	3½"Ø x¼"	3½"Ø x¼"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-115	115'-0"	13'-0"	4'-10"	6'-6"	5'-7⅞"	1200 S.F.	1½"	7½"Ø x½"	7½"Ø x½"	3½"Ø x¼"	3½"Ø x¼"	10'-2"	34'-0" (MAX)	40'-0" (MAX)
T-120	120'-0"	13'-8"	4'-8"	6'-10"	5'-11"	1200 S.F.	1 9/16"	7½"Ø x½"	7½"Ø x½"	3½"Ø x¼"	3½"Ø x¼"	10'-2"	34'-0" (MAX)	40'-0" (MAX)
T-130	130'-0"	15'-0"	4'-4"	7'-6"	6'-5⅞"	1200 S.F.	1 9/16"	9"Ø x½"	9"Ø x½"	4"Ø x¼"	4"Ø x¼"	10'-2"	NOT APPLICABLE	40'-0" (MAX)
T-140	140'-0"	16'-3"	4'-4"	8'-2"	7'-0⅞"	1200 S.F.	1 11/16"	10"Ø x½"	10"Ø x½"	4"Ø x¼"	4"Ø x¼"	10'-2"	NOT APPLICABLE	40'-0" (MAX)
T-150	150'-0"	17'-6"	4'-4"	8'-10"	7'-7¾"	1200 S.F.	1 13/16"	11"Ø x½"	11"Ø x½"	4½"Ø x¼"	4½"Ø x¼"	10'-2"	NOT APPLICABLE	40'-0" (MAX)

* SUBSTITUTION OF LARGER TRUSS SIZE IS ACCEPTABLE.

NOTE:
A PAIR OF MAIN HSS COLUMN SIZES FOR EACH SUPPORT SHALL BE SELECTED INDEPENDENTLY BASED ON SPECIFIC NEEDS.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

CAMBER

SPAN IN FEET	CAMBER IN INCHES
80 THRU 95	1½"
96 THRU 110	1⅝"
111 THRU 120	1⅞"
121 THRU 130	1⅞"
131 THRU 140	2"
141 THRU 150	2⅛"

PROVIDE THE ABOVE CAMBER AT MIDDLE OF SPAN OF STRUCTURES

TABLE A

CHORD O.D. E	F	G	N
5½"Ø	10"	13"	8
6⅞"Ø & 7"Ø	11½"	14½"	10
7½"Ø	12½"	15½"	12
9"Ø	13½"	16½"	14
10"Ø	15½"	18½"	16
11"Ø	17½"	20½"	18

GENERAL NOTES:

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURES SPAN TYPE SUMMARY AND TOTAL BILL OF MATERIAL.
2. AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
3. SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN SIGN PANELS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL PERMANENT SIGNS ARE INSTALLED.
4. TRUSS SEGMENTS SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
5. ONLY SIGN PANELS ARE PERMITTED TO BE MOUNTED ON THIS TRUSS.

DESIGN SPECIFICATIONS:

1. 2015 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION WITH 2020 INTERIM REVISIONS, INSTRUCTIONS AND INFORMATION.
2. FOUNDATION DESIGN IS IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020

CONSTRUCTION SPECIFICATIONS:

1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

LOADING:

1. BOTH END SUPPORTS ARE DESIGNED FOR 60% OF THE TOTAL LOAD.
2. WIND LOADING SHALL BE A MINIMUM OF 50 PSF ON SIGN PANELS AND 35 PSF NORMAL TO TRUSS ELEMENTS NOT BEHIND SIGN PANELS.
3. ICE LOAD, OSHA, WALKWAY = 3 P.S.F. APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY.

FABRICATION NOTES:

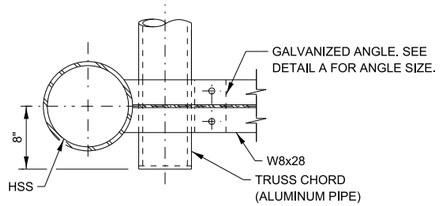
1. NO SPLICES SHALL BE LOCATED WITHIN 0.1xL OF THE CENTERLINE OF THE SPAN.
2. MATERIALS: ALUMINUM SHALL CONFORM TO ASTM B221, ALLOY 6061 TEMPER T6. ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR A106 GRADE B OR API 5L GRADE B OR X42 OR X52. ALL STRUCTURAL STEEL HSS SHALL BE ASTM A500 GRADE B OR C. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A36 (AASHTO M183) OR ASTM A572 GRADE 50. STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304, OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL HSS AND STIFFENING RIBS AT THE BASE PLATE FOR THE COLUMN SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F. (ZONE 2) BEFORE GALVANIZING.
3. WELDING: ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 AND D1.2 STRUCTURAL WELDING CODES (STEEL AND ALUMINUM) AND THE IDOT STANDARD SPECIFICATIONS. ALUMINUM WELD FILLER SHALL BE ALLOY 5556.
4. FASTENERS FOR ALUMINUM TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCK NUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193, GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCK NUTS. BOLTS AND LOCK NUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCK NUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCK NUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04 (f)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
5. U-BOLTS: U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).
6. GALVANIZING: ALL STEEL GRATING, PLATES, SHAPES, HSS AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED.
7. SEE TABLE "SIGN STRUCTURE MEMBER SCHEDULE" FOR "W" AND "W1".
8. DIAGONALS SHALL BE DETAILED TO MINIMIZE OFFSET FOR THEORETICAL PANEL POINT AND PROVIDE ¾ TO 1 ½ INCH CLEARANCE BETWEEN DIAGONALS AND PROVIDE CLEARANCE FOR U-BOLT CONNECTIONS OF SIGNS OR WALKWAY BRACKETS.
9. FOR ANY DESIGN SPAN LENGTH THAT FALLS BETWEEN TWO CONSECUTIVE SPANS PROVIDED IN COLUMN 2 OF TABLE "SIGN STRUCTURE MEMBER SCHEDULE", THE LARGER DESIGN SPAN LENGTH SHALL BE USED (I.E. FOR A 92' SPAN LENGTH FALLING BETWEEN 90' AND 95' DESIGN SPAN LENGTHS IN TABLE, THE 95' DESIGN SPAN LENGTH TRUSS AND POST DETAILS SHALL BE USED).

Illinois Tollway

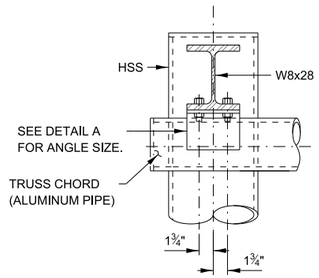
REVISIONS	
DATE	DESCRIPTION
03-01-2025	ADDED UTILITY CLEARANCE REQ.
03-01-2024	ADDED UTILITY CLEARANCE REQ.
03-01-2023	REV. 'N' DIM. IN ELEV. TO 'M', REV.
	NUMBER OF v(E) BARS SHTS. 3 & 4
	& INC. SHAFT, BAR SIZE AND DIMS.
	RELATIVE TO THE SHAFTS ON SHT. 4

OVERHEAD SIGN STRUCTURE SPAN TYPE STRUCTURE DETAILS

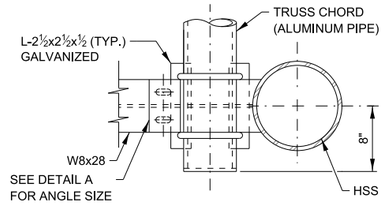
VERSION:	STANDARD:	SHEET:
2025-03	F1-15	1 OF 5



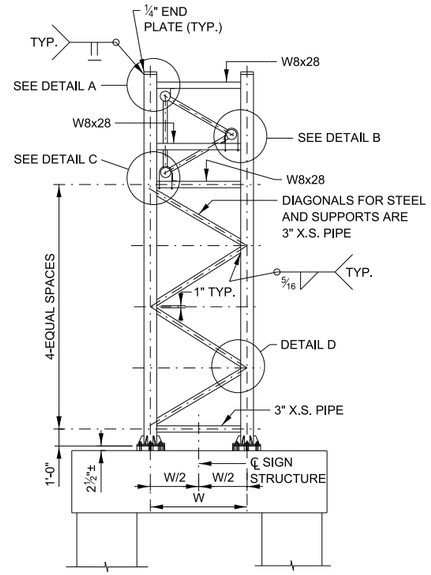
SECTION B-B



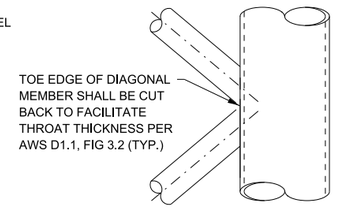
SECTION A-A



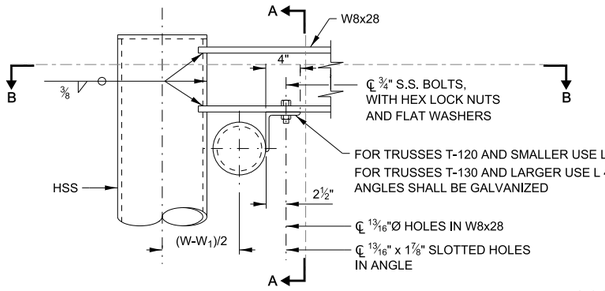
SECTION D-D



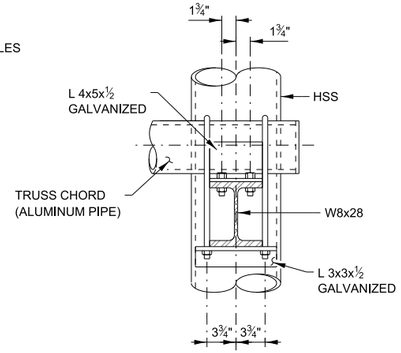
TYPICAL END SUPPORT ELEVATION



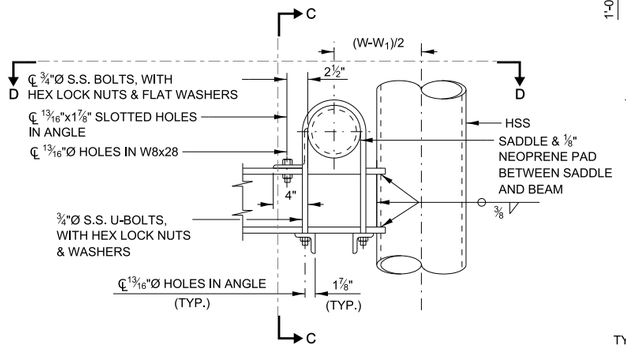
DETAIL D



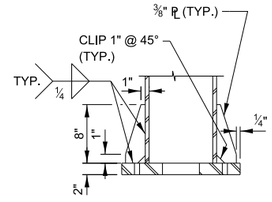
DETAIL A



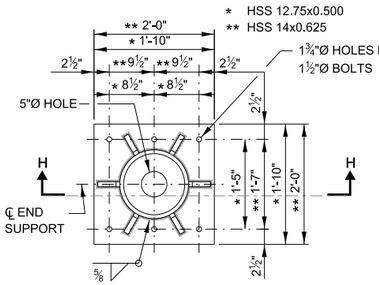
SECTION C-C



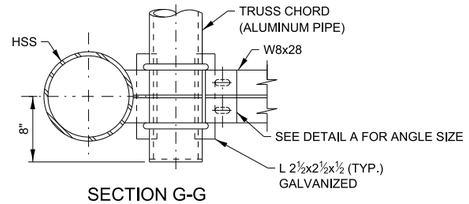
DETAIL B



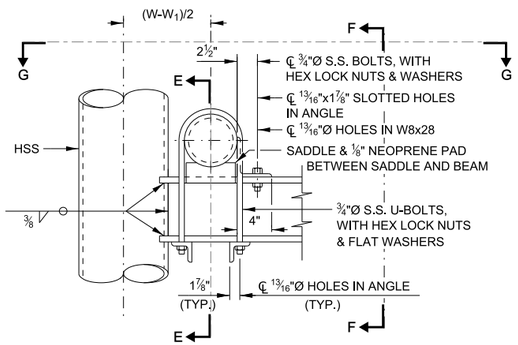
SECTION H-H



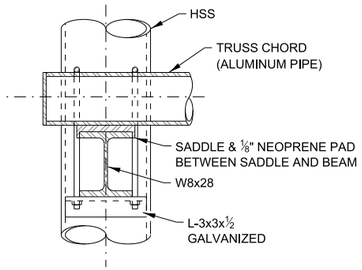
BASE PLATE PLAN



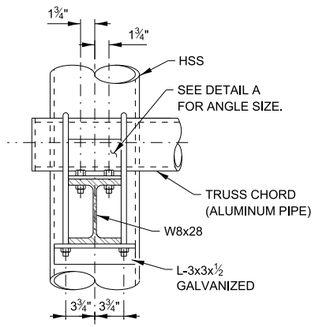
SECTION G-G



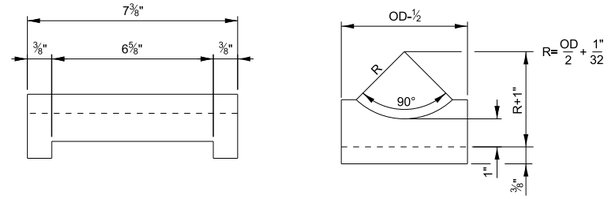
DETAIL C



SECTION E-E



SECTION F-F



SADDLE (SHIM) DETAIL (ALUMINUM)

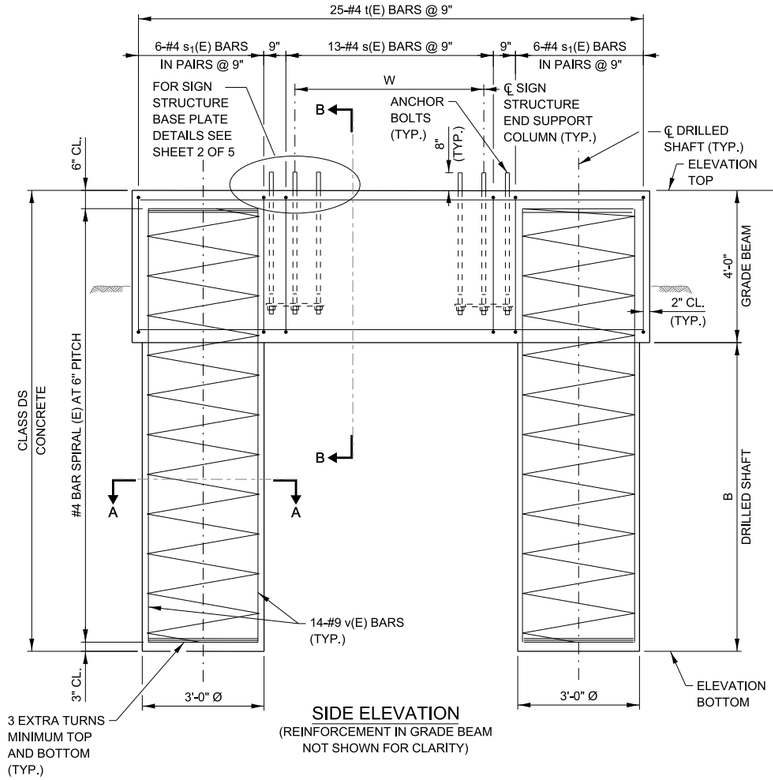
APPROVED BY:
Marco Nastil
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

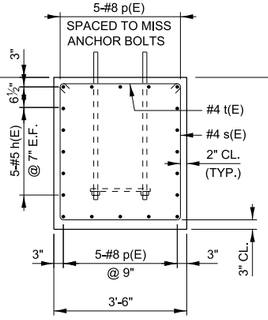
Illinois Tollway

OVERHEAD SIGN STRUCTURE SPAN TYPE STRUCTURE DETAILS

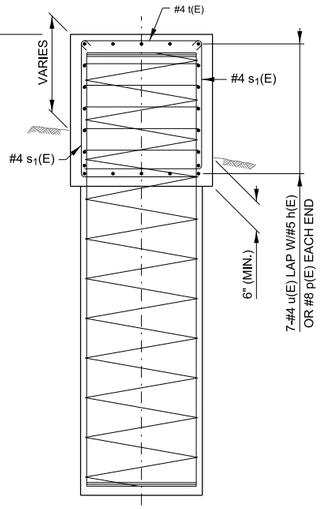
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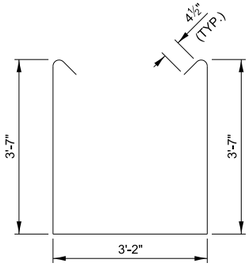
SIDE ELEVATION
(REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY)



SECTION B-B



END VIEW



BAR s(E)

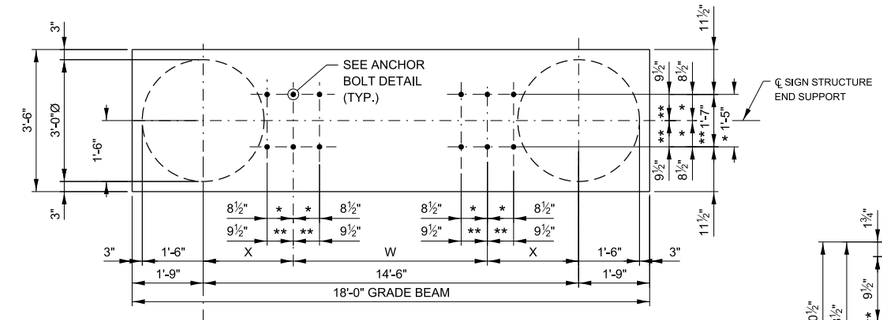
NOTES:

1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE FOUNDATION DIMENSIONS SHOWN SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
2. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M314 OR ASTM F1554 GRADE 55. ALL OTHER MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE IDOT STANDARD SPECIFICATION AND PRIOR TO ERECTION OF SUPPORT COLUMN.
5. A NORMAL SURFACE FINISH FOLLOWED BY A CONCRETE SEALER APPLICATION WILL BE REQUIRED ON CONCRETE SURFACES ABOVE THE LOWEST ELEVATION 6" BELOW FINISHED GROUND LINE.
6. ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.
7. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.
8. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING SHALL NOT BE LEFT IN PLACE BELOW THE ELEVATION WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
9. IF NECESSARY TO INCREASE STEEL END SUPPORT HEIGHT ABOVE THE LIMITATIONS SHOWN IN SIGN STRUCTURE MEMBER SCHEDULE ON SHEET 1 OF THIS SERIES, GRADE BEAM DEPTH SHALL BE INCREASED UP TO 6'-0" WITHOUT CHANGES TO THE DRILLED SHAFT DESIGN. GRADE BEAM REINFORCEMENT, CONCRETE VOLUME AND LENGTH OF ANCHOR BOLTS SHALL BE REVISED ACCORDINGLY.

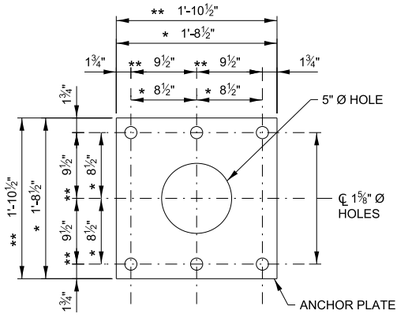
CLASS DS CONC. AND REINF. BARS QUANTITIES SHOWN IN THE TABLE ARE FOR 2 DRILLED SHAFTS AND 1 GRADE BEAM

DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS (QU > 1.25 TON/SQ. FT.)

TRUSS No.	W	X	B	CLASS DS CONC. CY	REINF. BARS POUND
T-80	5'-9"	4'-4½"	40'-0"	30.3	6090
T-85	6'-7"	3'-11½"	50'-0"	35.5	7250
T-90	6'-7"	3'-11½"	50'-0"	35.5	7250
T-95	6'-7"	3'-11½"	50'-0"	35.5	7250
T-100	7'-5"	3'-6½"	50'-0"	35.5	7250
T-105	7'-5"	3'-6½"	50'-0"	35.5	7250
T-110	7'-5"	3'-6½"	50'-0"	35.5	7250
T-115	10'-2"	2'-2"	50'-0"	35.5	7250
T-120	10'-2"	2'-2"	50'-0"	35.5	7250
T-130	10'-2"	2'-2"	55'-0"	38.1	7830
T-140	10'-2"	2'-2"	55'-0"	38.1	7830
T-150	10'-2"	2'-2"	55'-0"	38.1	7830

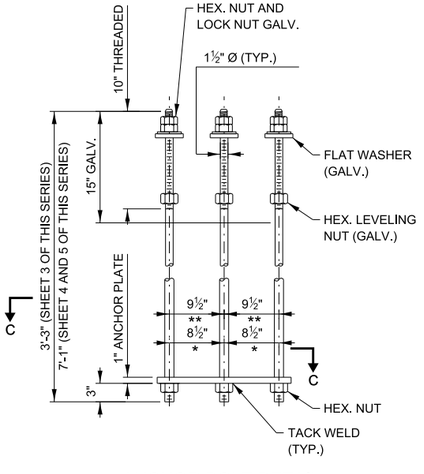


PLAN
(REINFORCEMENT NOT SHOWN FOR CLARITY)

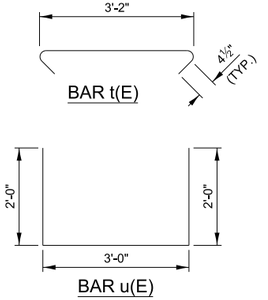


SECTION C-C

* HSS 12.75x0.500
** HSS 14x0.625

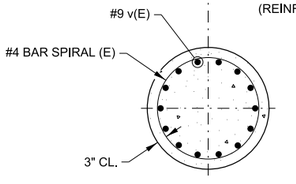


ANCHOR BOLT DETAIL
(TYP. FOR ALL FOUNDATIONS)



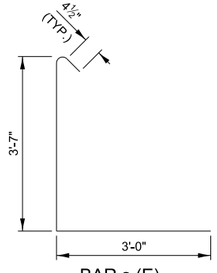
BAR t(E)

BAR u(E)



(TYPICAL BOTH SHAFTS)

SECTION A-A



BAR s1(E)

BAR LIST - EACH FOUNDATION
(2 SHAFT AND 1 GRADE BEAM)

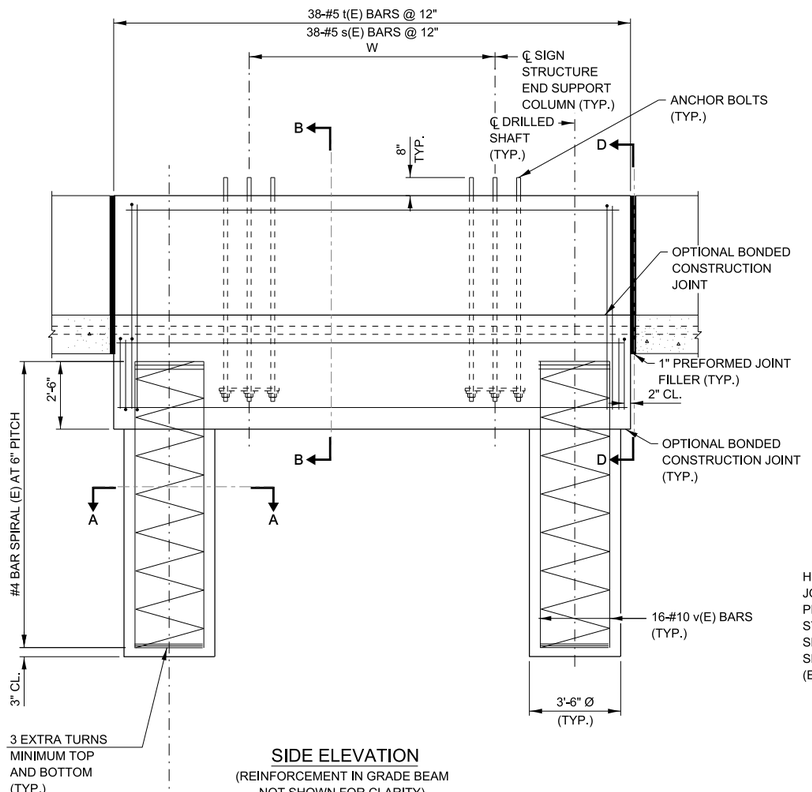
BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	10	#5	17'-8"	
p(E)	10	#8	17'-8"	
s(E)	13	#4	11'-1"	
s1(E)	24	#4	6'-11½"	
t(E)	25	#4	3'-11"	
u(E)	14	#4	7'-0"	
v(E)	28	#9	B ADD 3'-3"	
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION				

APPROVED BY:
Marco Nastif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

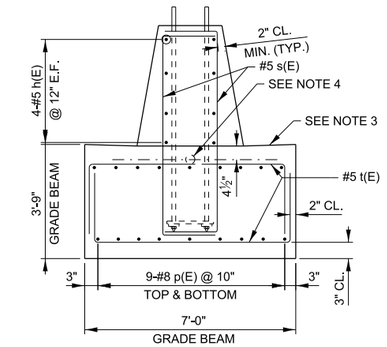
OVERHEAD SIGN STRUCTURE
SPAN TYPE STRUCTURE
DETAILS

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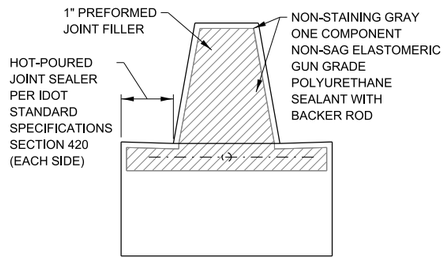


SIDE ELEVATION

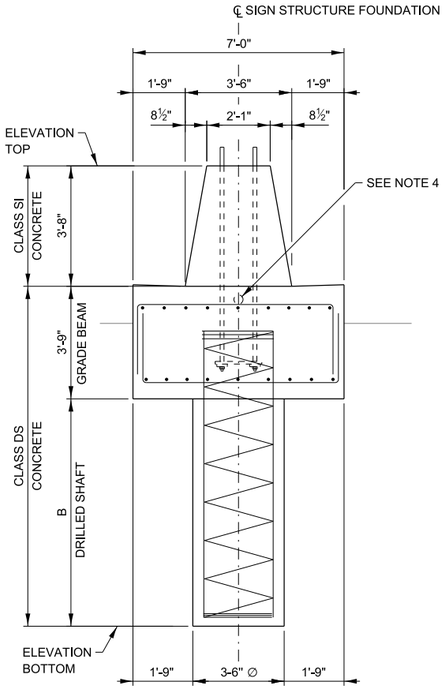
(REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY)



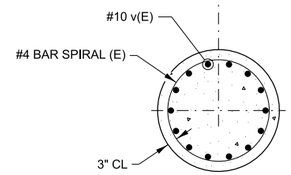
SECTION B-B



SECTION D-D



END VIEW



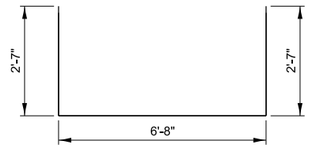
SECTION A-A

(TYPICAL BOTH SHAFTS)

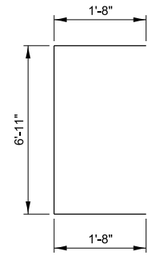
BAR LIST - EACH FOUNDATION

BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	8	#5	17'-8"	——
p(E)	18	#8	17'-8"	——
s(E)	38	#5	10'-3"	⊓
t(E)	38	#5	11'-10"	⊔
v(E)	32	#10	B ADD 2'-3"	——

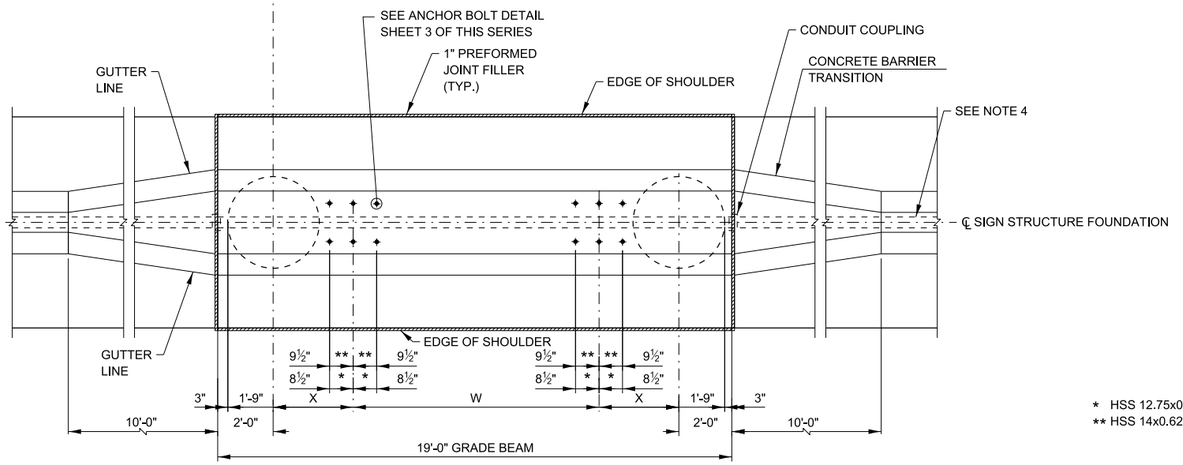
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION



BAR t(E)



BAR s(E)



* HSS 12.75x0.500
** HSS 14x0.625

PLAN

(REINFORCEMENT NOT SHOWN FOR CLARITY)

DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS (QU > 1.25 TON/SQ. FT.)							
TRUSS No.	W	X	B	CLASS DS CONC. CU. YD.	CLASS SI CONC. CU. YD.	REINF. BARS POUND	PROTECTIVE COAT SQ. YD.
T-80	5'-9"	4'-7½"	50'-0"	54.1	7.2	10460	27.5
T-85	6'-7"	4'-2½"	55'-0"	57.7	7.2	11280	27.5
T-90	6'-7"	4'-2½"	55'-0"	57.7	7.2	11280	27.5
T-95	6'-7"	4'-2½"	55'-0"	57.7	7.2	11280	27.5
T-100	7'-5"	3'-9½"	55'-0"	57.7	7.2	11280	27.5
T-105	7'-5"	3'-9½"	55'-0"	57.7	7.2	11280	27.5
T-110	7'-5"	3'-9½"	55'-0"	57.7	7.2	11280	27.5
T-115	10'-2"	2'-5"	55'-0"	57.7	7.2	11280	27.5
T-120	10'-2"	2'-5"	55'-0"	57.7	7.2	11280	27.5
T-130	10'-2"	2'-5"	60'-0"	61.2	7.2	12090	27.5
T-140	10'-2"	2'-5"	60'-0"	61.2	7.2	12090	27.5
T-150	10'-2"	2'-5"	60'-0"	61.2	7.2	12090	27.5

CLASS DS CONC. QUANTITIES SHOWN IN THE TABLE ARE FOR 2 DRILLED SHAFTS AND 1 GRADE BEAM.
CLASS SI CONC. QUANTITIES SHOWN IN THE TABLE ARE FOR 1 TWO-FACE BARRIER OVER GRADE BEAM.
REINF. BAR AND PROTECTIVE COAT QUANTITIES SHOWN IN THE TABLE ARE FOR 2 DRILLED SHAFTS, 1 GRADE BEAM, AND 1 TWO-FACE BARRIER OVER GRADE BEAM.

NOTES:

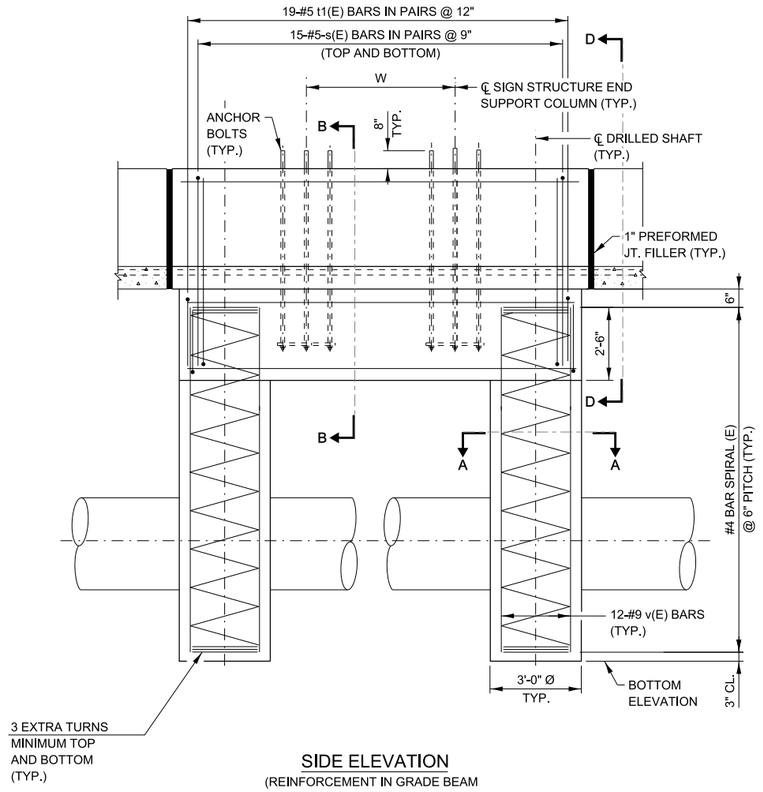
1. SEE SHEET 3 OF THIS SERIES FOR GENERAL NOTES AND DESIGN CRITERIA.
2. FOR SIGN STRUCTURE BASE PLATE DETAIL, SEE SHEET 2 OF THIS SERIES.
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C5 FOR GUTTER SLOPE.
4. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS, CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS, DO NOT CUT REINFORCEMENT BARS.
5. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP FACE OF GUTTER.

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

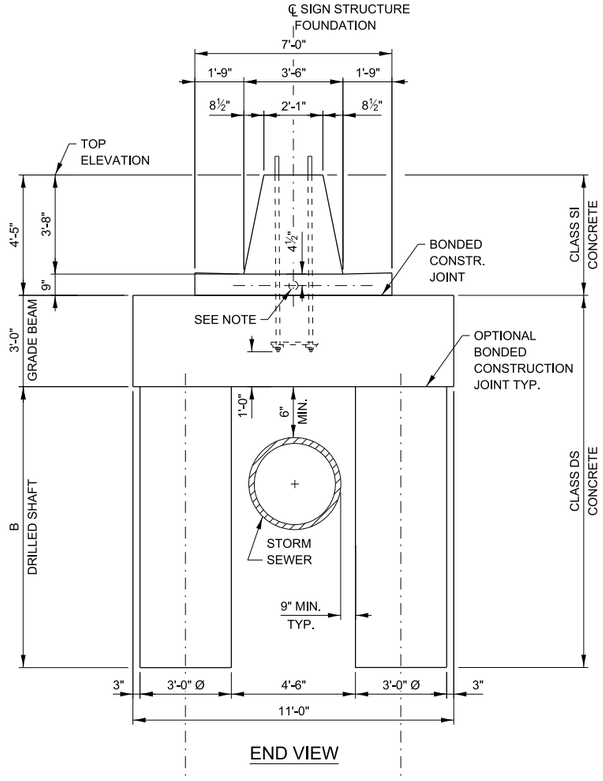
OVERHEAD SIGN STRUCTURE SPAN TYPE STRUCTURE DETAILS

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SIDE ELEVATION

(REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY)



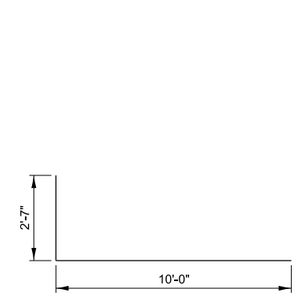
END VIEW

BAR LIST - EACH FOUNDATION

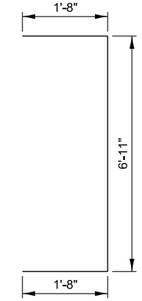
BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	16	#5	13'-8"	
p(E)	30	#8	13'-8"	
s(E)	38	#5	10'-3"	
t(E)	15	#5	6'-8"	
t1(E)	60	#8	12'-7"	
v(E)	48	#9	B ADD 2'-3"	
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION				

DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS (QU > 1.25 TON/SQ. FT.)

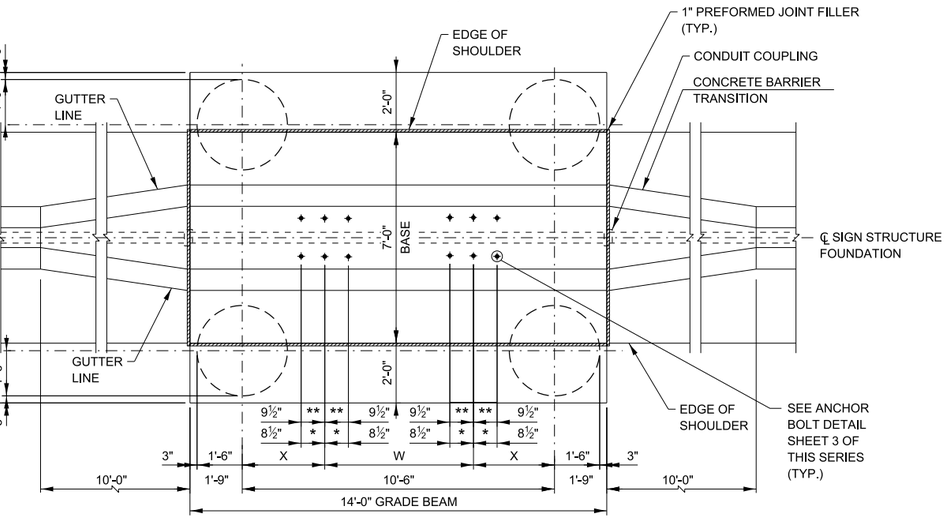
TRUSS No.	W	X	B	CLASS DS CONC. CU. YD.	CLASS SI CONC. CU. YD.	REINF. BARS POUND	PROTECTIVE COAT SQ. YD.
T-80	5'-9"	2'-4½"	25'-0"	43.3	8.0	9570	20.3
T-85	6'-7"	1'-11½"	25'-0"	43.3	8.0	9570	20.3
T-90	6'-7"	1'-11½"	25'-0"	43.3	8.0	9570	20.3
T-95	6'-7"	1'-11½"	25'-0"	43.3	8.0	9570	20.3
T-100	7'-5"	1'-6½"	25'-0"	43.3	8.0	9570	20.3
T-105	7'-5"	1'-6½"	30'-0"	48.5	8.0	10600	20.3
T-110	7'-5"	1'-6½"	30'-0"	48.5	8.0	10600	20.3
T-115	10'-2"	0'-2"	30'-0"	48.5	8.0	10600	20.3
T-120	10'-2"	0'-2"	30'-0"	48.5	8.0	10600	20.3
T-130	10'-2"	0'-2"	35'-0"	53.7	8.0	11630	20.3
T-140	10'-2"	0'-2"	35'-0"	53.7	8.0	11630	20.3
T-150	10'-2"	0'-2"	35'-0"	53.7	8.0	11630	20.3



BAR t1(E)



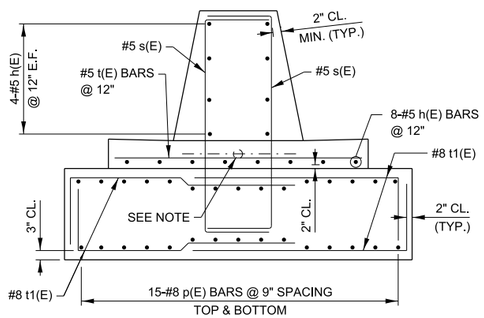
BAR s(E)



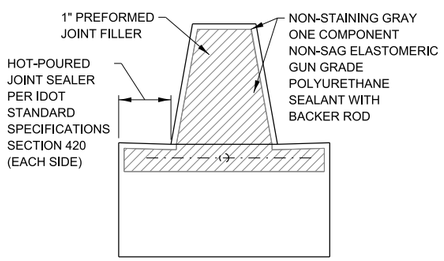
PLAN

(REINFORCEMENT NOT SHOWN FOR CLARITY)

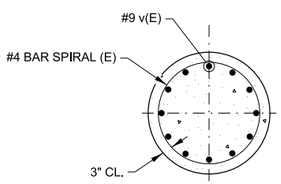
* HSS 12.75x0.500
** HSS 14x0.625



SECTION B-B



SECTION D-D



SECTION A-A

(TYPICAL FOR 4 SHAFTS)

NOTE:
1. SEE NOTES ON SHEET 4 OF THIS SERIES.

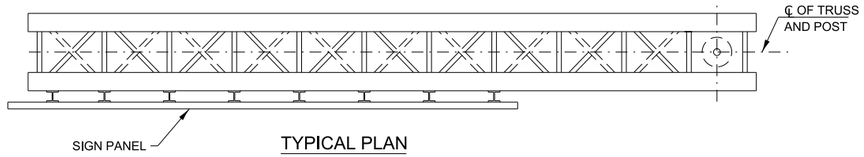
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

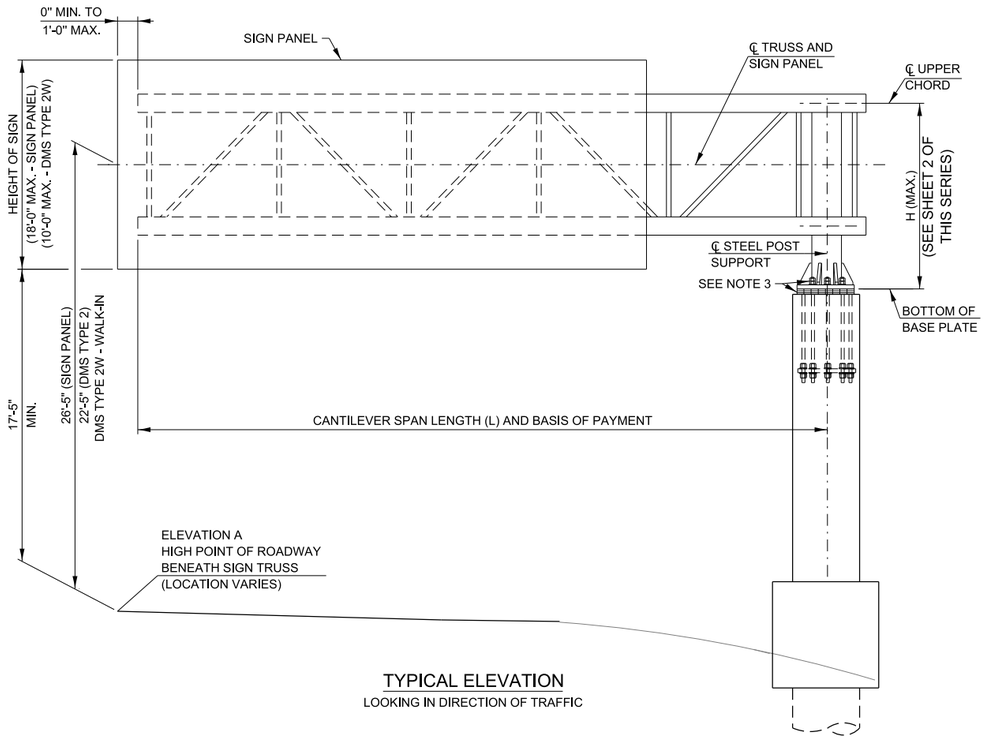
Illinois Tollway

OVERHEAD SIGN STRUCTURE SPAN TYPE STRUCTURE DETAILS

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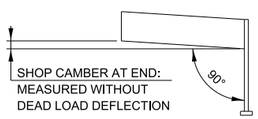
TYPICAL PLAN



TYPICAL ELEVATION
LOOKING IN DIRECTION OF TRAFFIC

SHOP CAMBER TABLE

CANTILEVER LENGTH (L)	SHOP CAMBER AT END
20'	1½"
25'	1½"
30'	2"
35'	2½"
40'	2½"
45'	3"
50'	3½"



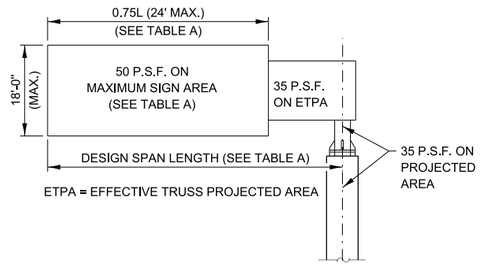
CAMBER DIAGRAM
(FOR FABRICATION ONLY)

TABLE B: MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	MINIMUM YIELD STRENGTH (K.S.I.)	MINIMUM ULTIMATE STRENGTH (K.S.I.)
STRUCTURAL STEEL TUBE, PIPE AND POST	ASTM A500 GRADE B OR GRADE C	42, 46	58, 62
	API 5L GRADE B OR X42 OR X52	35	52
	ASTM A106 GRADE B	35	60
	ASTM A53, TYPE E OR S, GRADE B	35	60
STEEL BAR AND STEEL PLATES	ASTM A572 GRADE 50	50	65
STAINLESS STEEL BOLTS	ASTM A193, CLASS 1, GRADE B8	30	75
STRUCTURAL STEEL BOLTS	ASTM 325 TYPE 1	--	105
STAINLESS STEEL LOCKNUTS	ASTM A194 GRADE 8F ASTM A194 GRADE 2H	--	--
NUTS	ASTM A563 GRADE DH	--	--
STEEL WASHERS	ASTM F436	--	--
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	--	--
STEEL ANCHOR BOLTS	AASHTO M314 OR ASTM F1554	55	75

TABLE A: MAXIMUM LIMITS FOR SIGNS

TRUSS TYPE	DESIGN SPAN LENGTH (FT.)	MAXIMUM SIGN AREA (SQ. FT.)	MAXIMUM SIGN LENGTH (FT.)
20-D	20	270	15
25-D	25	338	18.75
30-D	30	405	22.5
35-D	35	432	24
40-D	40	432	24
45-D	45	432	24
50-D	50	432	24



DESIGN WIND LOADING DIAGRAM

FABRICATION NOTES:

1. MATERIALS: FOR MATERIAL SPECIFICATIONS FOR CANTILEVER SIGN STRUCTURES, SEE TABLE B. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A572 GR. 50. STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F (ZONE 2) BEFORE GALVANIZING.

2. WELDING: ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE CANTILEVER OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-10 FOR TUBULAR, CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL WELDED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH WPS AS PER AWS D1.1-10, TABLE 3.1.

3. FASTENERS FOR STEEL TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449. ASTM A193 GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(f)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.

4. U-BOLTS: U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).

5. GALVANIZING: ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED. ALL FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 OR M232 AS APPROPRIATE FOR THE PRODUCT (EXCEPT STAINLESS STEEL FASTENERS).

GENERAL NOTES:

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE CANTILEVER TYPE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

2. AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.

3. SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN SIGN PANELS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL PERMANENT SIGNS ARE INSTALLED.

4. TRUSSES SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.

5. ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURE WELDING CODE AND THE STANDARD SPECIFICATIONS.

6. ALL STEEL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111.

7. PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND NORMAL SURFACE FINISH ON GRADE BEAM, EXCEPT BOTTOM SURFACE.

8. REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

9. DMS TYPE 2W - WALK-IN IS PERMITTED TO BE INSTALLED ON CANTILEVER TRUSS. DO NOT INSTALL SIGN PANEL IN CONJUNCTION WITH DMS TYPE 2W - WALK-IN. SEE SHEET 9 OF THIS SERIES FOR PERMISSIBLE SIGN SIZE AND WEIGHT.

CONSTRUCTION SPECIFICATIONS:

1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

LOADING:

1. ALL CANTILEVER TRUSSES ARE DESIGNED FOR AN 18'-0" DEEP SIGN PANEL OVER 75% OF THE ARM LENGTH, WITH A MAXIMUM PANEL WIDTH OF 24'-0".

2. ALL CANTILEVER TRUSSES ARE DESIGNED FOR 35 PSF WIND PRESSURE ON TRUSS MEMBERS AND 50 PSF WIND PRESSURE ON SIGN PANEL.

3. WALKWAY SHALL INCLUDE DEAD LOAD LOAD PLUS 500 LB CONCENTRATED LIVE LOAD.

4. WALKWAY HANDRAILS ARE DESIGNED FOR A 200-LB LOAD ON TOP RAIL AND A 150-LB LOAD ON MID RAIL, APPLIED IN ANY DIRECTION.

5. PROVIDE ANCHORAGE FOR ATTACHMENT OF PERSONAL FALL ARREST SYSTEMS PER OSHA SECTION 1926.502(D). ANCHORAGE SHALL BE INSTALLED AS CLOSE TO PANEL POINTS AS POSSIBLE AND SHALL BE CAPABLE OF SUPPORTING AT LEAST 5000 LBS.

6. ICE LOAD OF 3 PSF APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY.

DESIGN SPECIFICATIONS:

2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION, WITH 2020 INTERIM REVISIONS, INSTRUCTIONS AND INFORMATION

CONCRETE COLUMN, GRADE BEAM AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020

DESIGN UNIT STRESSES FOR REINFORCED CONCRETE:

CLASS SI CONCRETE _____ f'c = 3,500 P.S.I.
CLASS DS CONCRETE _____ f'c = 4,000 P.S.I.
REINFORCING STEEL _____ fy = 60,000 P.S.I.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

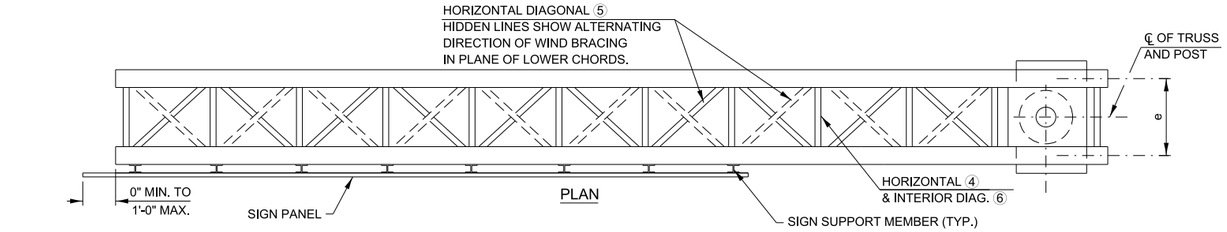
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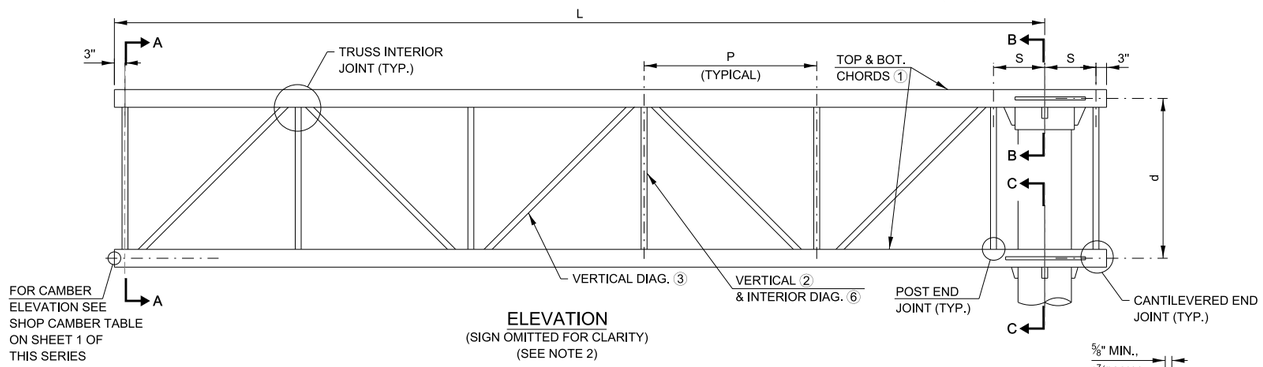
Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2025	CHANGED LOCKNUT MATERIAL.
03-01-2024	REVISED ANCHOR BOLT DETAILS.
03-01-2023	CHANGE COL. SIZES AND 50' TOP, BOTT. & VERT. DIAG. MEMBER SIZES, REMOVE TACK WELD.
03-01-2022	REVISE FABRICATION NOTE 4.

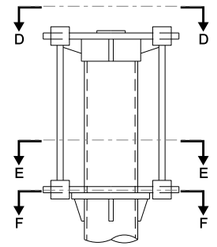
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

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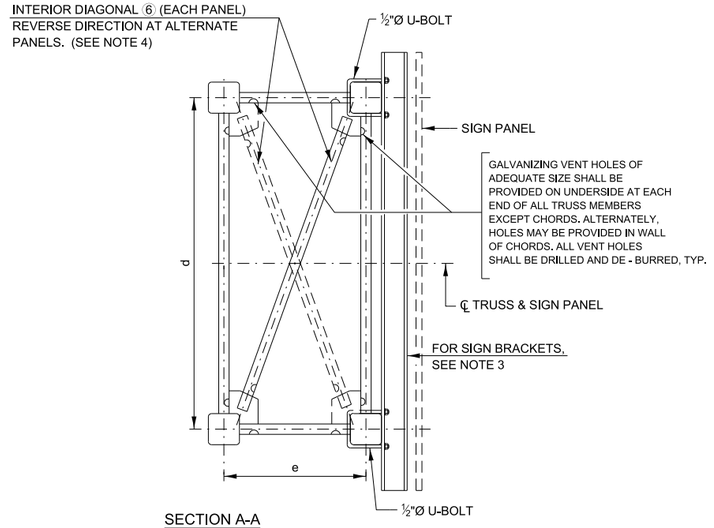




ELEVATION
(SIGN OMITTED FOR CLARITY)
(SEE NOTE 2)

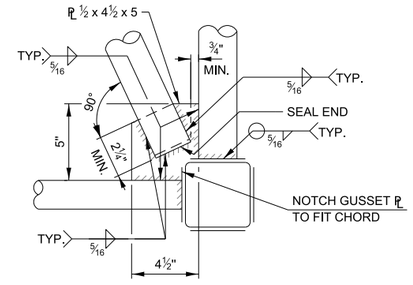


ELEVATION
(END VIEW)
(SEE NOTE 2)

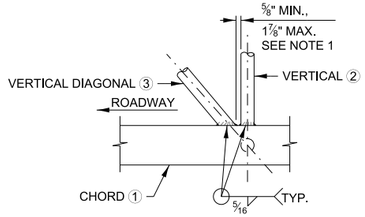


SECTION A-A

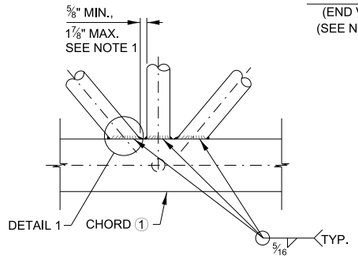
** CONTRACTOR SHALL USE STANDARD DRIVE - FIT CAP TO CLOSE ENDS. AFTER GALVANIZING, DRIVE - FIT CAP SHALL HAVE ⅛" Ø DRAIN HOLES AT LOW EDGE.



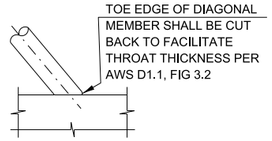
GUSSET PL FOR INTERIOR DIAG. DETAIL



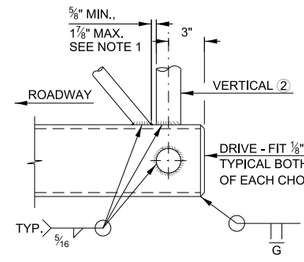
POST END JOINT DETAIL



TRUSS INTERIOR JOINT DETAIL



DETAIL 1



CANTILEVER END JOINT DETAIL

TABLE C: TRUSS AND POST DETAILS FOR 18'-0" (MAX.) SIGN HEIGHT

DESIGN SPAN LENGTH (L)	TRUSS TYPE	TRUSS SIZE		ACTUAL SPAN LENGTH	MAXIMUM SIGN LENGTH	STEEL SUPPORT POST (COLUMN)				TRUSS MEMBERS AND DETAILS														
		e	d			DIAMETER	WEIGHT	WALL THICKNESS	H (MAX.)	TOP & BOTTOM CHORD ①	VERTICAL ②		VERTICAL DIAG. ③		HORIZONTAL ④		HORIZONTAL DIAG. ⑤		INTERIOR DIAG. ⑥		PANELS		
											PIPE	WALL	PIPE	WALL	PIPE	WALL	PIPE	WALL	PIPE	WALL	NO.	P	S
20'	20-D	2'-6"	5'-6"	20'-1"	15'-0"	18"	104.67 (#/FT)	0.562"	12'-0"	HSS 5x5x¼	2½"Ø X.S	0.276"	3"Ø X.S	0.600"	1½"Ø X.S	0.200"	2½"Ø X.S	0.276"	1½"Ø X.S	0.200"	4	4'-7"	1'-6"
25'	25-D	3'-6"	5'-6"	24'-11"	18'-9"	18"	104.67 (#/FT)	0.562"	12'-0"	HSS 5x5x¼	2½"Ø X.S	0.276"	4"Ø X.S	0.600"	2"Ø X.S	0.218"	2½"Ø X.S	0.276"	2"Ø X.S	0.218"	5	4'-7"	1'-9"
30'	30-D	3'-6"	7'-0"	30'-2"	22'-6"	18"	104.67 (#/FT)	0.562"	12'-0"	HSS 6x6x¼	3"Ø X.S	0.300"	4"Ø X.S	0.674"	2"Ø X.S	0.218"	2½"Ø X.S	0.276"	2"Ø X.S	0.218"	5	5'-7"	2'-0"
35'	35-D	4'-0"	7'-0"	35'-0"	24'-0"	24"	171.29 (#/FT)	0.687"	12'-0"	HSS 6x6x¼	3"Ø X.S	0.300"	4"Ø X.S	0.674"	2"Ø X.S	0.218"	2½"Ø X.S	0.276"	2"Ø X.S	0.218"	5	6'-6"	2'-3"
40'	40-D	4'-0"	7'-0"	40'-0"	24'-0"	24"	171.29 (#/FT)	0.687"	12'-0"	HSS 6x6x¼	3"Ø X.S	0.300"	4"Ø X.S	0.674"	2"Ø X.S	0.218"	2½"Ø X.S	0.276"	2"Ø X.S	0.218"	6	6'-3"	2'-3"
45'	45-D	4'-6"	7'-0"	45'-0½"	24'-0"	24"	171.29 (#/FT)	0.687"	12'-0"	HSS 6x6x¼	3"Ø X.S	0.300"	4"Ø X.S	0.674"	2"Ø X.S	0.218"	2½"Ø X.S	0.276"	2"Ø X.S	0.218"	7	6'-0½"	2'-6"
50'	50-D	4'-6"	7'-0"	50'-1"	24'-0"	24"	171.29 (#/FT)	0.687"	12'-0"	HSS 10x10x¼	3"Ø X.S	0.300"	HSS 8.625x0.5	0.465"	2"Ø X.S	0.218"	3"Ø X.S	0.276"	2"Ø X.S	0.218"	8	5'-11"	2'-6"

*

NOTES:

1. TRUSS MEMBERS SHALL BE SPACED A MINIMUM OF 3 TIMES THE WALL THICKNESS OF THE LARGEST CONNECTING MEMBERS TO ENSURE PROPER WELD SPACING.

2. FOR SECTIONS B-B, C-C, D-D, E-E AND F-F SEE SHEET 3 OF THIS SERIES.

3. FOR SIGN SUPPORT DETAILS, SEE ILLINOIS TOLLWAY STANDARD DRAWING F8, FOR DMS TYPE 2W - WALK-IN SIGN SUPPORT DETAILS, SEE SHEET 9 OF THIS SERIES.

4. DIRECTION OF INTERIOR DIAGONALS SHOWN IN SECTION A-A CORRECTLY DEPICTS TRUSSES HAVING AN ODD NUMBER OF PANELS. TRUSSES WITH AN EVEN NUMBER OF PANELS WILL HAVE DIAGONALS IN A REVERSED DIRECTION THAN AS SHOWN.

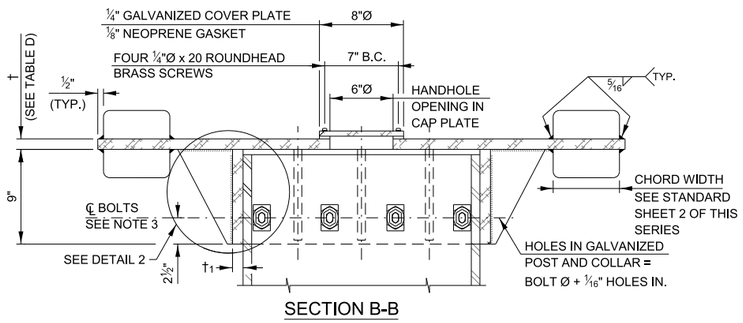
5. FOR ANY DESIGN SPAN LENGTH THAT FALLS BETWEEN TWO CONSECUTIVE SPANS, PROVIDED IN COLUMN 1 OF TABLE C, THE LARGER DESIGN SPAN LENGTH SHALL BE USED (I.E. FOR A 32' SPAN LENGTH FALLING BETWEEN 30' AND 35' DESIGN SPAN LENGTHS IN TABLE C, THE 35' DESIGN SPAN LENGTH TRUSS AND POST DETAILS SHALL BE USED).

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2025

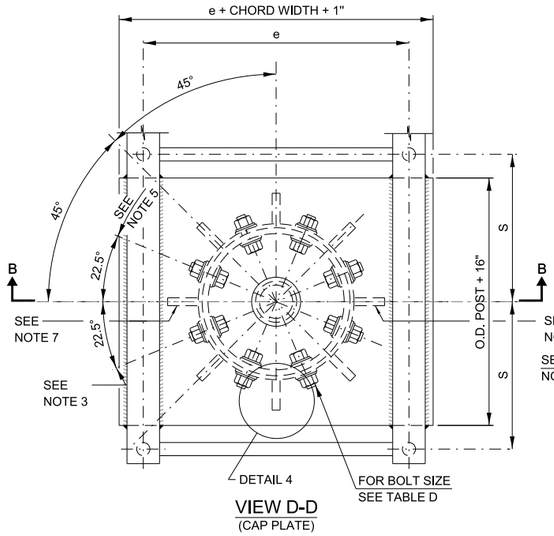
Illinois Tollway

OVERHEAD SIGN STRUCTURE
CANTILEVER TYPE
STRUCTURE DETAILS

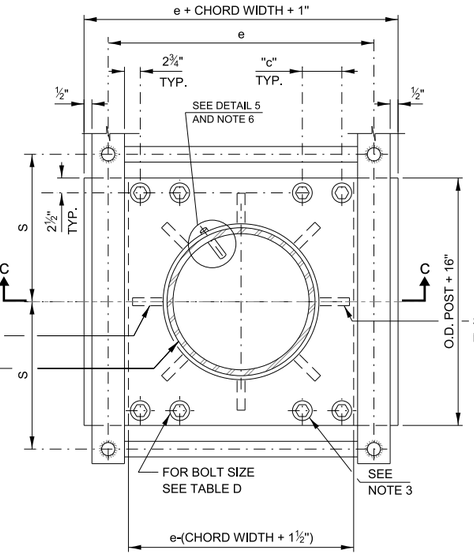
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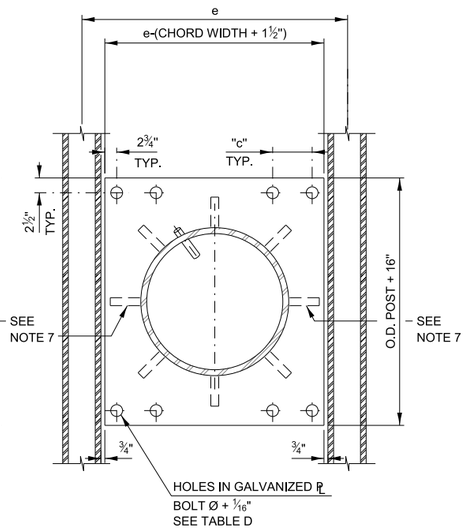
SECTION B-B



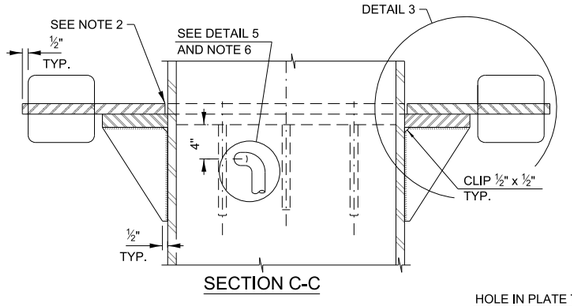
VIEW D-D
(CAP PLATE)



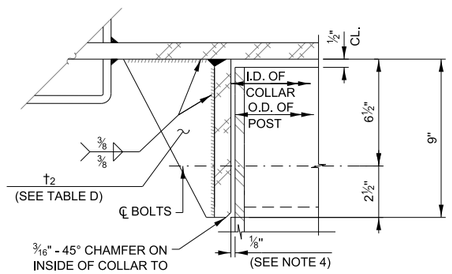
SECTION E-E
(JUNCTURE PLATE)



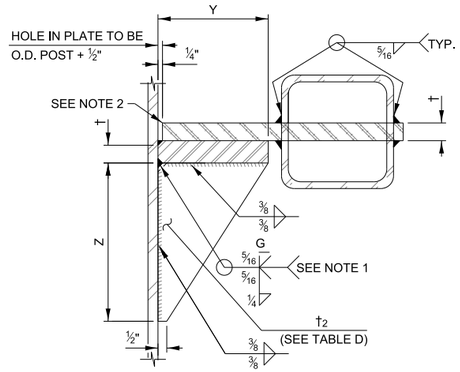
SECTION F-F
(SETTING PLATE)



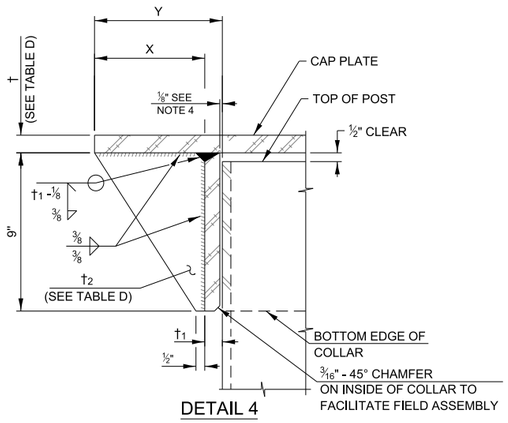
SECTION C-C



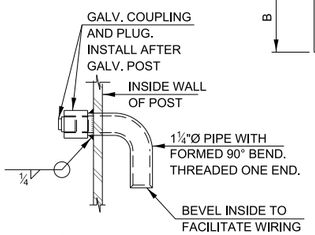
DETAIL 2
(SEE DETAIL 4 FOR ADDITIONAL INFORMATION)



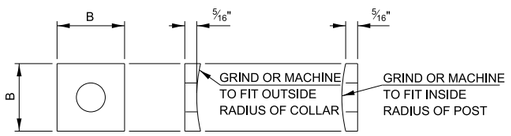
DETAIL 3
(SEE DETAIL 4 FOR ADDITIONAL INFORMATION)



DETAIL 4



DETAIL 5



BOLT SIZE	CONTOURED WASHERS	
	HOLE DIA.	B
1⅛"Ø	1⅛"Ø	2¼"
1¼"Ø	1⅜"Ø	2¼"
1½"Ø	1⅝"Ø	2¼"

CONTOURED WASHERS
(ASTM A240, TYPE 304)

NOTES:

1. GRIND TOP IF REQUIRED TO FULLY SEAT PLATE. REPAIR DAMAGED GALVANIZING BEFORE ASSEMBLY.
2. AFTER TIGHTENING LOWER CONNECTION BOLTS, FILL GAP WITH NON - HARDENING SILICONE CAULK SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.
3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH WITH MATCHING LOCKNUTS. LOWER CONNECTION BOLTS SHALL HAVE 2 FLAT WASHERS EACH.
4. AFTER GALVANIZING, COLLAR I.D. SHALL EQUAL O.D. OF GALVANIZED POST PLUS ⅛" (±1/16") MAXIMUM GAP BETWEEN POST AND COLLAR AT ANY LOCATION SHALL BE ⅛" BEFORE TIGHTENING BOLTS.
5. OPTIONAL FULL PENETRATION WELD IN COLLAR. (TWO LOCATIONS MAXIMUM (180° APART) X-RAY OR UT 100%) ALL BOLTS SHOWN ARE HIGH STRENGTH.
6. ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + ⅛".
7. OMIT INDICATED STIFFENER IN TRUSS TYPE 20-D.

B.C. = BOLT CIRCLE

TABLE D: BOLT SCHEDULE

SPAN LENGTH	POST OUTSIDE DIAMETER	JUNCTURE & COLLAR CONNECTION BOLT DIAMETER	LOWER JUNCTURE BOLT SPACING DIMENSION "c"	PLATE THICKNESS		STIFFENER THICKNESS	NO. OF STIFFENERS	STIFFENERS		
				(t)	(t1)	(t2)		x	y	z
< = 20'	18"	1⅛"	3⅛"	1"	¾"	½"	6	5"	6"	8"
21'-30'	18"	1½"	3¾"	1⅛"	⅞"	¾"	8	5"	6"	8"
31'-40'	24"	1½"	4½"	1¼"	1"	¾"	8	7"	8"	10½"
41'-50'	24"	1½"	4½"	1¼"	1"	¾"	8	7"	8"	10½"

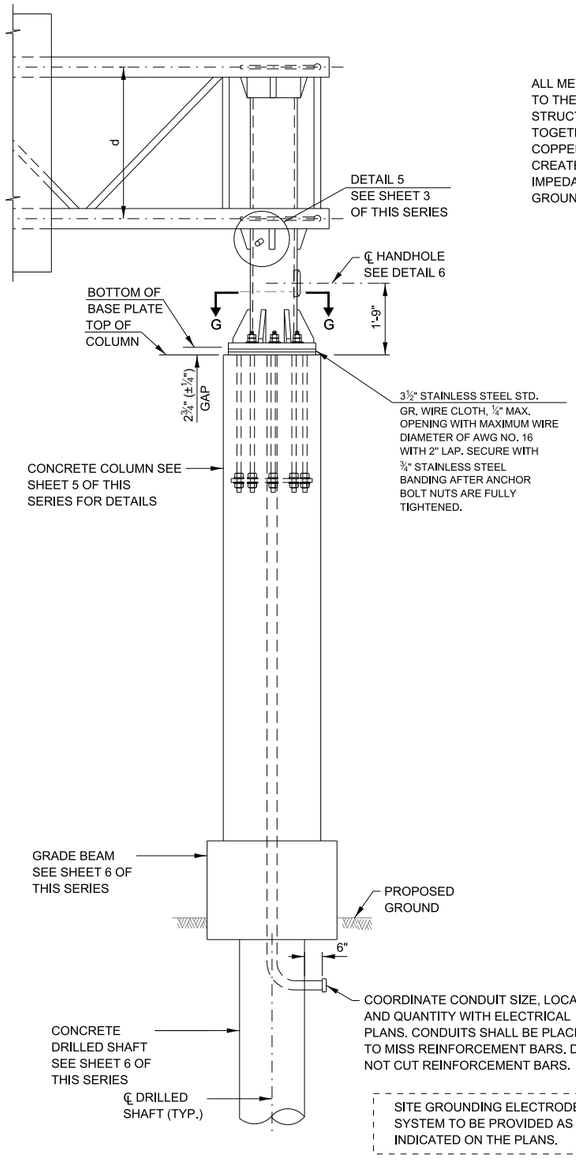
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

Illinois Tollway

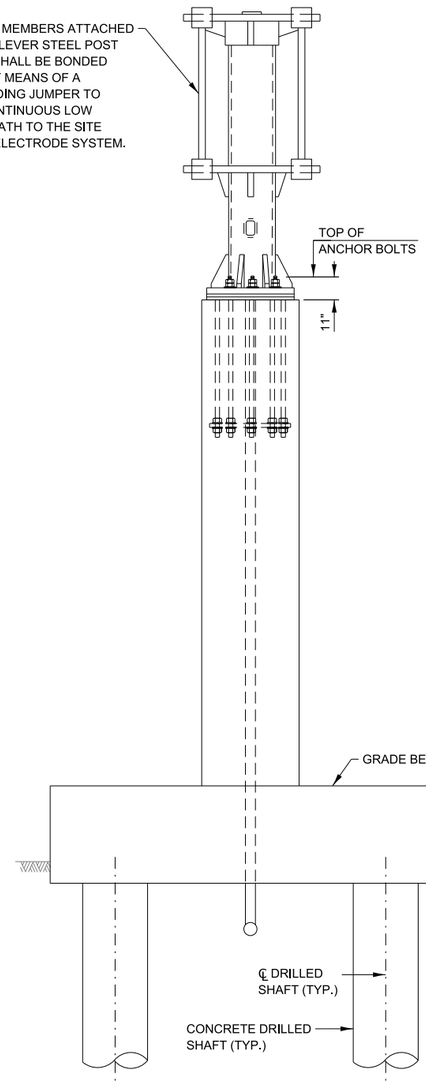
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

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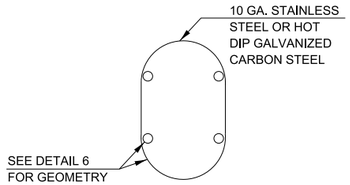


FRONT ELEVATION

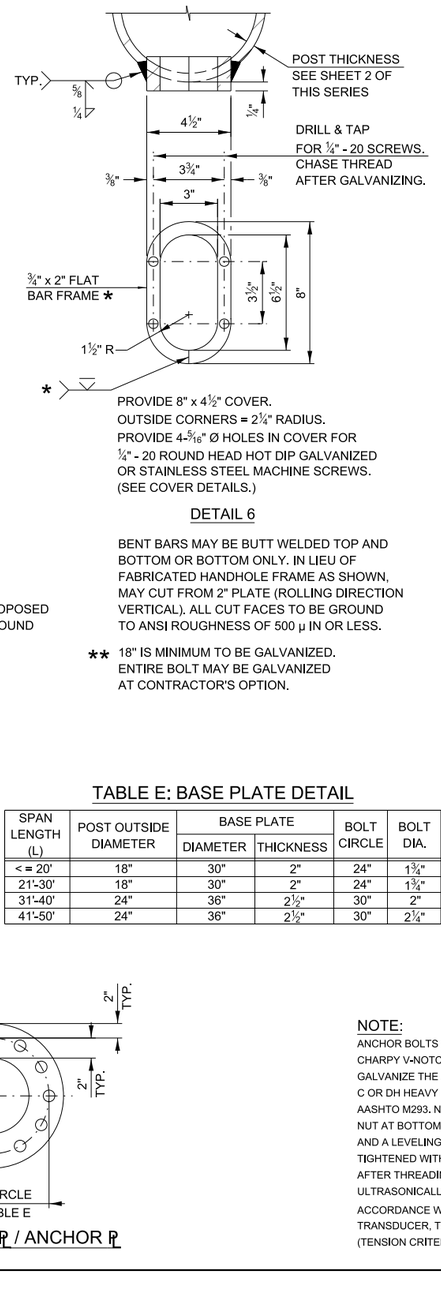
ALL METALLIC MEMBERS ATTACHED TO THE CANTILEVER STEEL POST STRUCTURE SHALL BE BONDED TOGETHER BY MEANS OF A COPPER BONDING JUMPER TO CREATE A CONTINUOUS LOW IMPEDANCE PATH TO THE SITE GROUNDING ELECTRODE SYSTEM.



SIDE ELEVATION



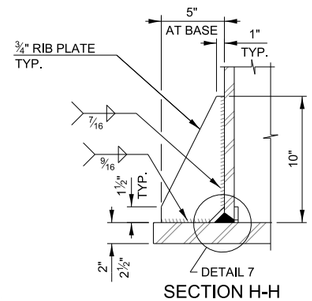
HANDHOLE COVER



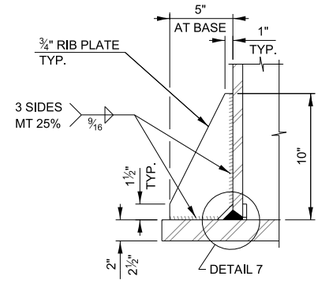
DETAIL 6

BENT BARS MAY BE BUTT WELDED TOP AND BOTTOM OR BOTTOM ONLY. IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500 μ IN OR LESS.

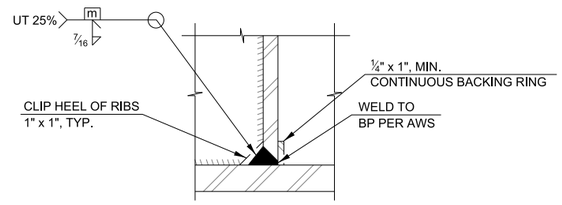
** 18" IS MINIMUM TO BE GALVANIZED. ENTIRE BOLT MAY BE GALVANIZED AT CONTRACTOR'S OPTION.



SECTION H-H
18" DIA. COLUMN



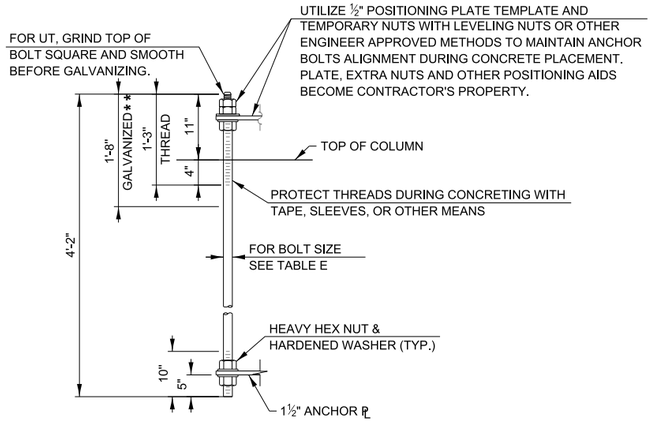
SECTION H-H
24" DIA. COLUMN



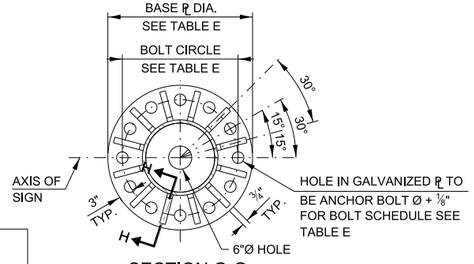
DETAIL 7
(TYPICAL RIB)

TABLE E: BASE PLATE DETAIL

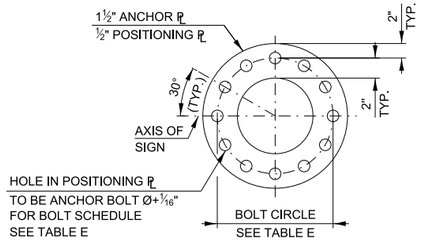
SPAN LENGTH (L)	POST OUTSIDE DIAMETER	BASE PLATE		BOLT CIRCLE	BOLT DIA.
		DIAMETER	THICKNESS		
< = 20'	18"	30"	2"	24"	1¾"
21'-30'	18"	30"	2"	24"	1¾"
31'-40'	24"	36"	2½"	30"	2"
41'-50'	24"	36"	2½"	30"	2¼"



ANCHOR BOLT DETAIL



SECTION G-G



POSITIONING ℄ / ANCHOR ℄

NOTE:

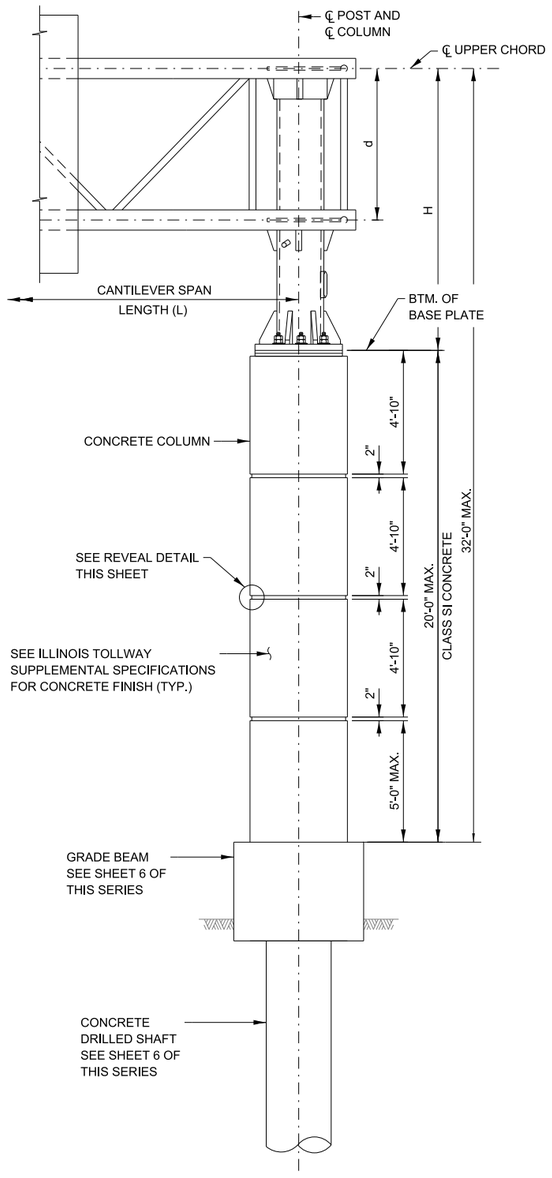
ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 10° F, BEFORE GALVANIZING. GALVANIZE THE UPPER 18" (MINIMUM **) AND ASSOCIATED M291, GRADE A, C OR DH HEAVY HEX NUTS, HEAVY HEX LOCK NUTS AND HARDENED WASHERS PER AASHTO M293. NO WELDING SHALL BE PERMITTED ON BOLTS. PROVIDE AN UNFINISHED NUT AT BOTTOM, A HEXAGON LOCKNUT, HEXAGON NUT AND WASHER ABOVE BASE PLATE AND A LEVELING NUT AND WASHER BELOW BASE PLATE. NUTS SHALL EACH BE TIGHTENED WITH 200 LB.-FT. MINIMUM TORQUE AGAINST BASE PLATE. BEFORE OR AFTER THREADING, BUT BEFORE GALVANIZING, EACH ANCHOR BOLT SHALL BE ULTRASONICALLY TESTED (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORDANCE WITH ANSI GUIDELINES, USING A STRAIGHT BEAM, ½" Ø 3.5 MHZ. TRANSDUCER, TO ENSURE NO REJECTABLE FLAWS EXIST IN THE UPPER 18" (TENSION CRITERIA).

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2025

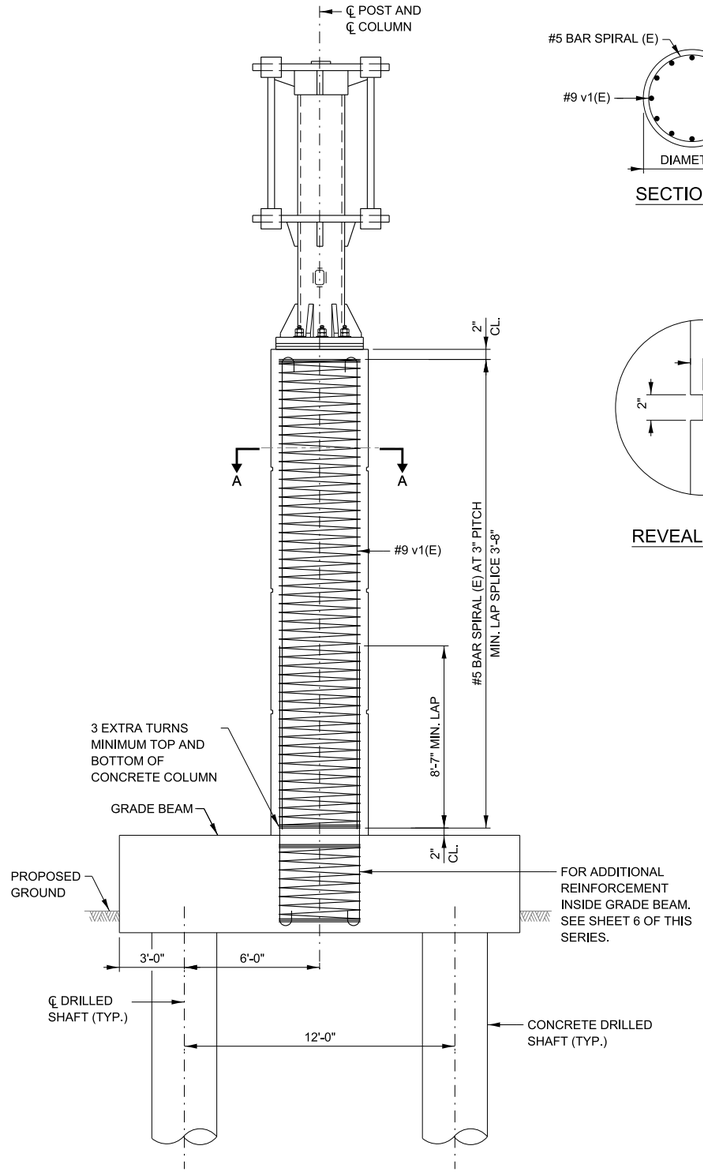
Illinois Tollway

OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

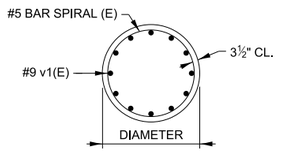
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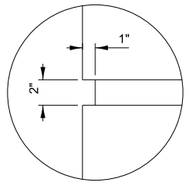
FRONT ELEVATION



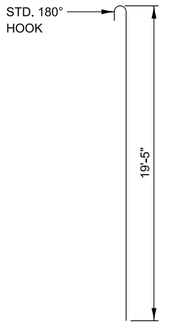
SIDE ELEVATION



SECTION A-A



REVEAL DETAIL



BAR v1(E)

TABLE F: CONCRETE COLUMN DESIGN TABLE

SPAN LENGTH (L)	STEEL POST DIAMETER	CONCRETE COLUMN			
		DIAMETER	VERTICAL BAR v1(E)	CLASS SI CONC. CU. YD*	REINF. BARS POUND *
< = 20'	18"	3'-6"	16-#9	7.1	1,910
21'-30'	18"	3'-6"	16-#9	7.1	1,910
31'-40'	24"	4'-0"	20-#9	9.2	2,330
41'-50'	24"	4'-0"	20-#9	9.2	2,330

* CONCRETE VOLUME AND REBAR WEIGHT ARE DETERMINED FOR 20'-0" CONCRETE COLUMN HEIGHT. ADJUST CONCRETE VOLUME AND REBAR WEIGHT ACCORDINGLY IF CONCRETE COLUMN HEIGHT IS LESS THAN 20'-0".

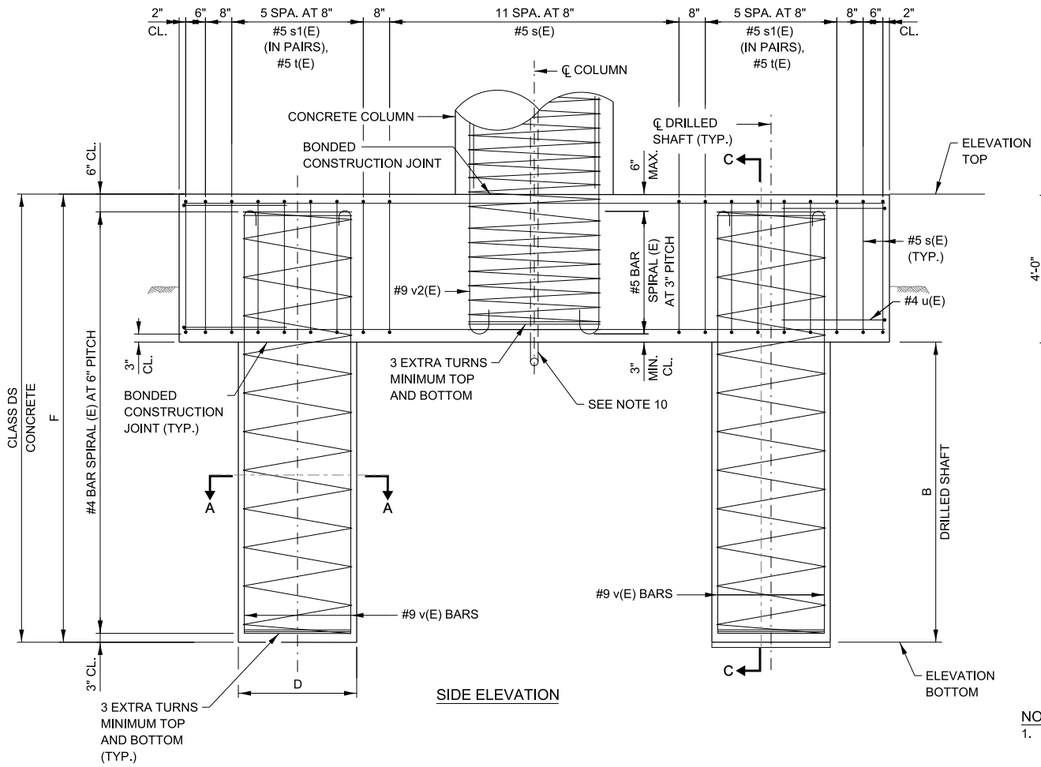
APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

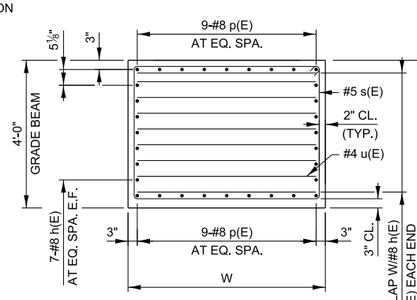
Illinois Tollway

OVERHEAD SIGN STRUCTURE
CANTILEVER TYPE
STRUCTURE DETAILS

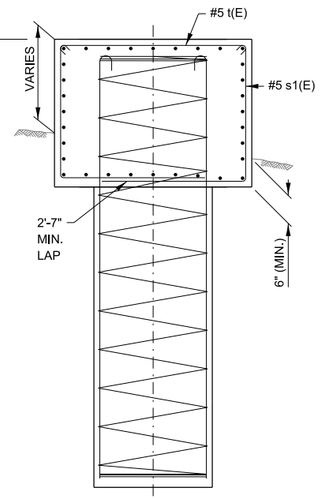
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SIDE ELEVATION



VIEW B-B

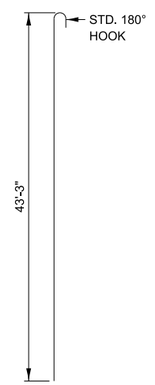


SECTION C-C

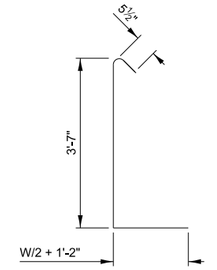
BAR LIST - EACH FOUNDATION

(2 SHAFT AND 1 GRADE BEAM)

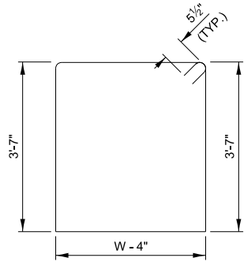
BAR	NUMBER	SIZE	LENGTH D = 3'-0"	LENGTH D = 4'-0"	SHAPE
h(E)	14	#8	17'-8"	17'-8"	
p(E)	18	#8	17'-8"	17'-8"	
s(E)	16	#5	17'-5"	19'-5"	
s1(E)	24	#5	7'-8½"	8'-2½"	
t(E)	12	#5	5'-7"	6'-7"	
u(E)	18	#4	8'-7"	9'-7"	
v(E)	SEE TABLE G	#9	44'-6"		
v2(E)	SEE TABLE G	#9	13'-9"	13'-9"	
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION					
#5 BAR SPIRAL (E) - SEE SIDE ELEVATION					



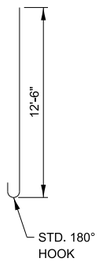
BAR v(E)



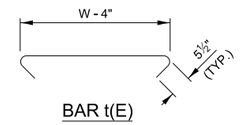
BAR s1(E)



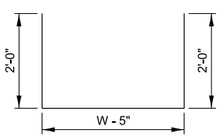
BAR s(E)



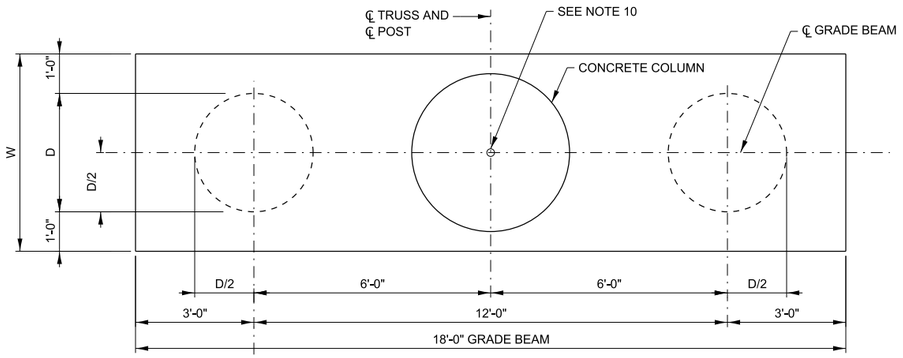
BAR v2(E)



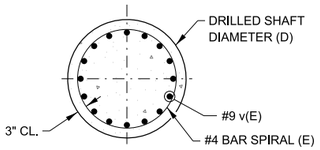
BAR t(E)



BAR u(E)



PLAN *



SECTION A-A

(TYPICAL BOTH SHAFTS)

NOTE:

* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY.

** FOR GRADE BEAM ONLY.

NOTES:

1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
2. ALL MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE STANDARD SPECIFICATION AND PRIOR TO ERECTION OF CONCRETE COLUMN.
5. PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND NORMAL SURFACE FINISH ON GRADE BEAM, EXCEPT BOTTOM SURFACE. COST IS INCLUDED IN THE COST OF "FOUNDATION FOR OVERHEAD SIGN STRUCTURE, CANTILEVER TYPE".
6. ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND STIRRUPS.
7. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING SHALL NOT BE LEFT IN PLACE BELOW THE ELEVATION WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
8. FOR SIZE AND NUMBER OF PVC COATED STEEL CONDUITS, SEE ELECTRICAL CONSTRUCTION DRAWINGS.
9. TYPICAL SIGN STRUCTURE FOUNDATION IS SHOWN ON THIS SHEET. SEE SHEET 7 OF THIS SERIES FOR FOUNDATION LOCATED IN ROADWAY MEDIAN.
10. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.

BAR SPIRAL LAP SPLICE	
BAR	MIN. LAP
#4	2'-11"
#5	3'-8"

TABLE G: DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS

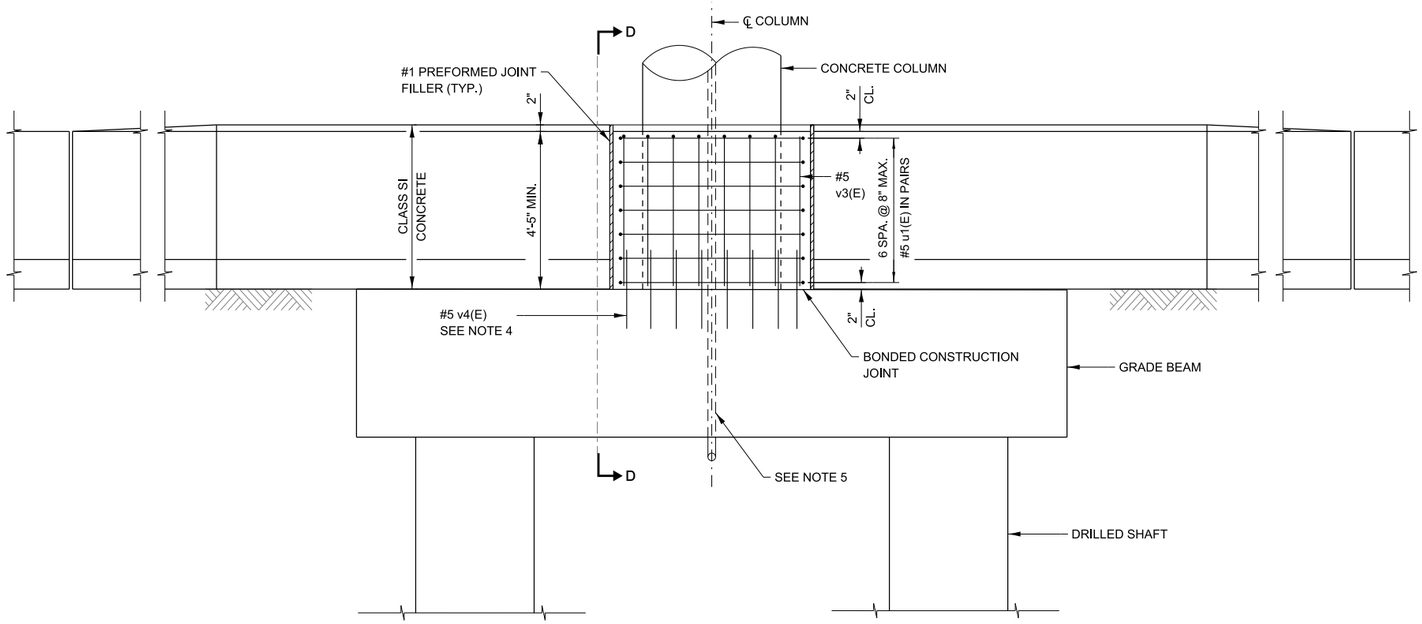
SPAN LENGTH (L)	W	D	B	F	VERTICAL BAR v(E) SHAFT 1	VERTICAL BAR v(E) SHAFT 2	VERTICAL BAR v2(E)	CLASS DS ** CONC. CU. YD.	CLASS DS CONC. CU. YD.	REINF. BARS POUND
< = 20'	5'-0"	3'-0"	40'	44'	12-#9	12-#9	16-#9	13.4	21	4,610
21'-30'	5'-0"	3'-0"	40'	44'	12-#9	12-#9	16-#9	13.4	21	4,610
31'-40'	6'-0"	4'-0"	40'	44'	20-#9	20-#9	20-#9	16	37.3	7,420
41'-50'	6'-0"	4'-0"	40'	44'	20-#9	20-#9	20-#9	16	37.3	7,420

APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

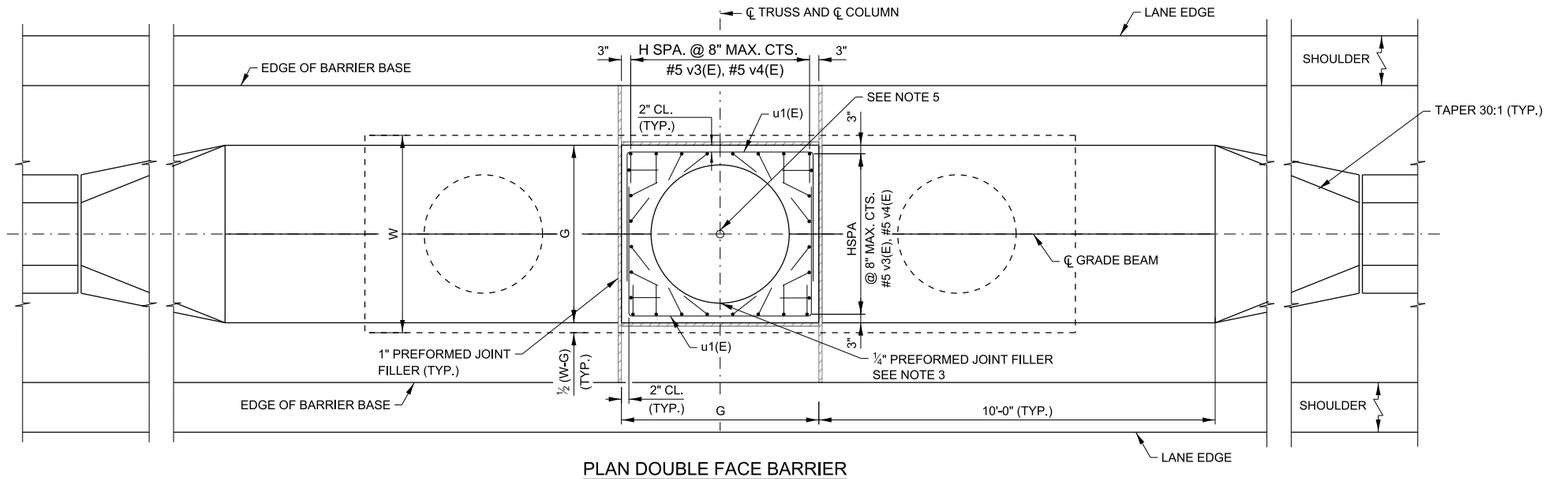
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OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

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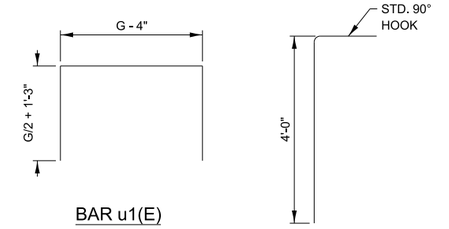
SIDE ELEVATION



PLAN DOUBLE FACE BARRIER

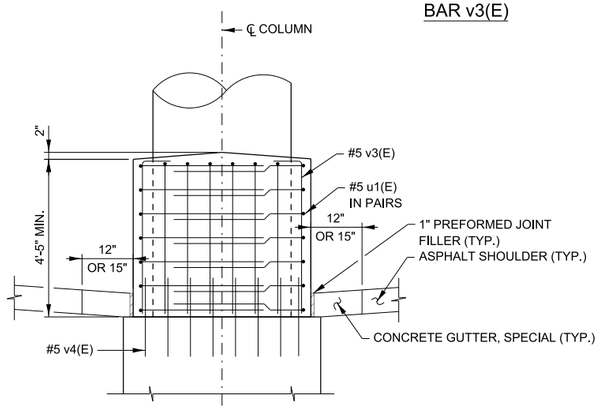
BAR LIST - CRASHWALL

BAR	SIZE	G = 4'-6"		G = 5'-0"		SHAPE
		NUMBER	LENGTH	NUMBER	LENGTH	
u1(E)	#5	14	11'-2"	14	12'-2"	
v3(E)	#5	24	4'-10"	28	4'-10"	
v4(E)	#5	24	2'-0"	28	2'-0"	



BAR u1(E)

BAR v3(E)



SECTION D-D

NOTES:

1. SEE SHEET 6 OF THIS SERIES FOR ADDITIONAL NOTES.
2. GRADE BEAM AND DRILLED SHAFT DIMENSIONS, DETAILS, QUANTITIES AND BAR LIST ARE SHOWN ON SHEET 6 OF THIS SERIES.
3. SEAL EXPOSED SURFACE OF ¼" PREFORMED JOINT FILLER WITH BACKER ROD AND SILICONE SEALER (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE).
4. #5 DRILLED ANCHOR BARS WILL BE EPOXY GROUTED AASHTO M31, GRADE 60 REBAR. PROVIDE 12" MINIMUM EMBEDMENT. INSTALL ANCHORS ACCORDING TO STANDARD SPECIFICATIONS SECTION 584. LOCATE GRADE BEAM REBAR PRIOR TO DRILLING. DO NOT DAMAGE GRADE BEAM REBAR DURING INSTALLATION.
5. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS, DO NOT CUT REINFORCEMENT BARS.
6. PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CRASHWALL.

TABLE H: DESIGN TABLE FOR CRASHWALL

SPAN LENGTH (L)	W	G	H	CLASS SI CONCRETE CU. YD.	REINF. BARS POUND	PROTECTIVE COAT SQ. YD.
< = 20'	5'-0"	4'-6"	6	1.7	340	6.0
21'-30'	5'-0"	4'-6"	6	1.7	340	6.0
31'-40'	6'-0"	5'-0"	7	2.0	350	7.0
41'-50'	6'-0"	5'-0"	7	2.0	350	7.0

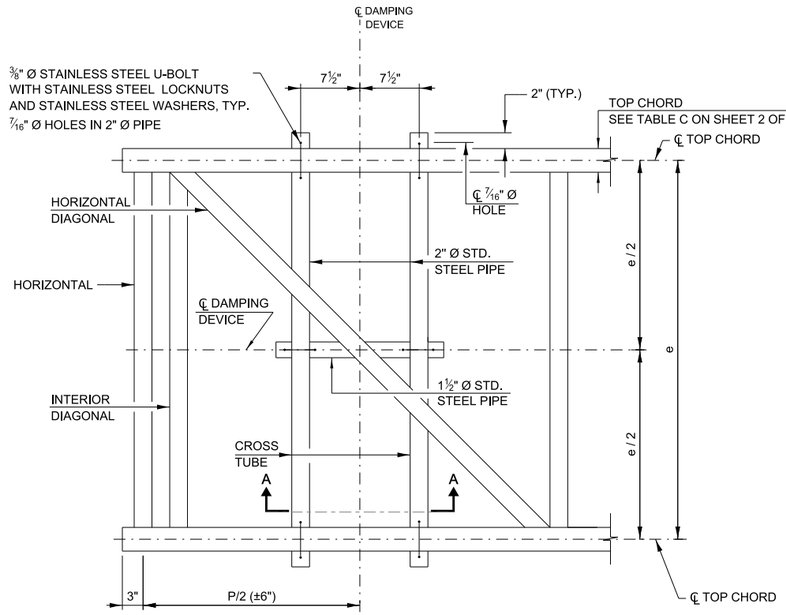
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

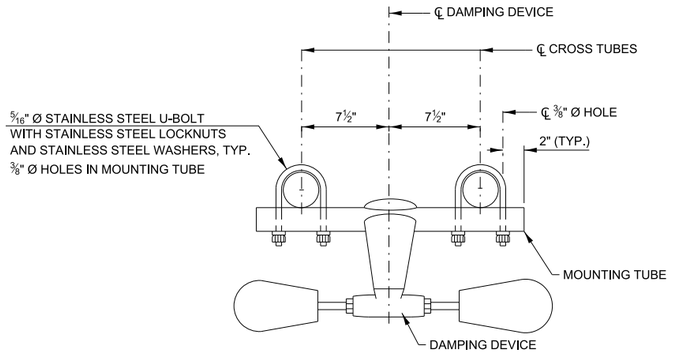
Illinois Tollway

OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

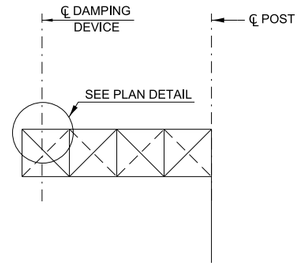
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PLAN DETAIL

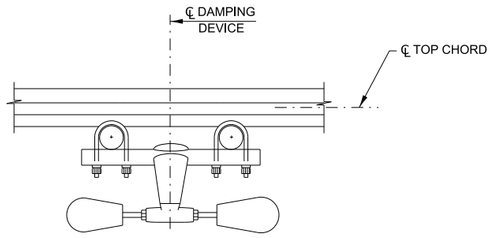


TRUSS DAMPING
DEVICE CONNECTION DETAIL

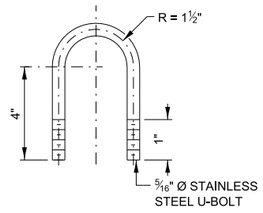


ELEVATION

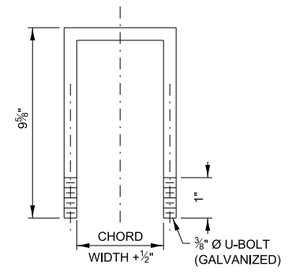
NOTE:
DAMPER: ONE DAMPER PER TRUSS. (31 LBS. STOCKBRIDGE-TYPE 29" MINIMUM BETWEEN ENDS OF WEIGHTS.



SECTION A-A



DAMPING DEVICE MOUNTING
TUBE U-BOLT DETAIL
(TYPICAL)



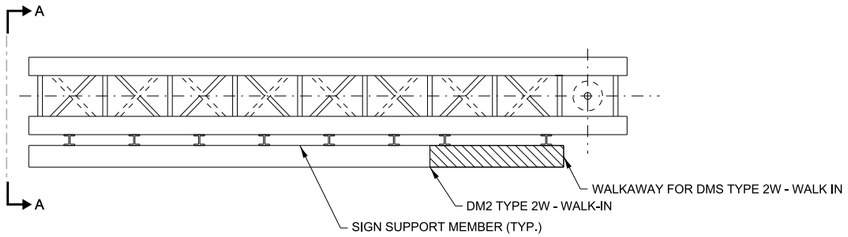
TOP CHORD TO CROSS TUBE
U-BOLT DETAIL
(TYPICAL)

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2025

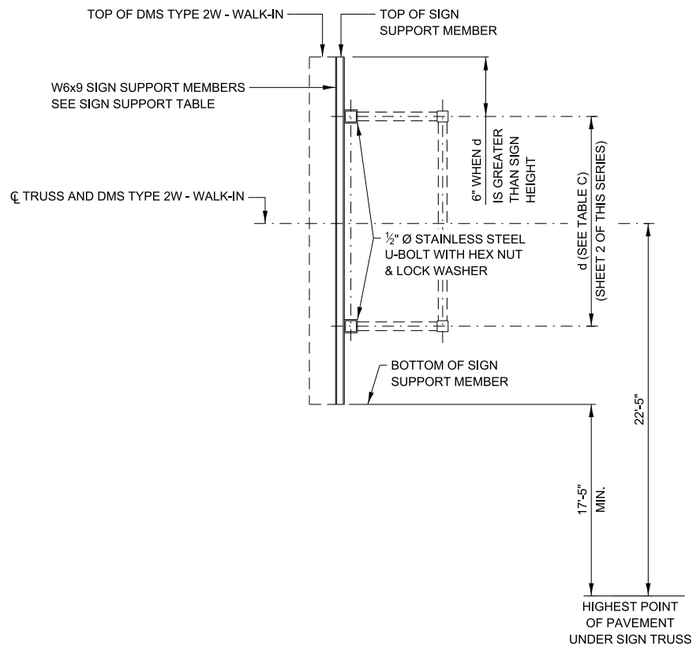
Illinois Tollway

OVERHEAD SIGN STRUCTURE
CANTILEVER TYPE
STRUCTURE DETAILS

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PLAN



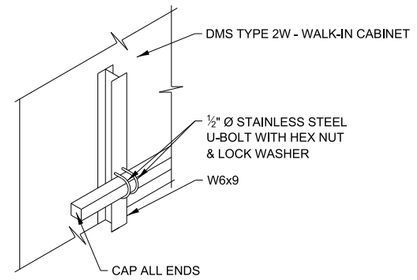
SECTION A-A
DMS TYPE 2W - WALK-IN SUPPORT DETAIL

TABLE I: SIGN SUPPORT TABLE

W6x9		
SIGN WIDTH		NUMBER OF SIGN SUPPORTS REQUIRED
GREATER THAN	LESS THAN OR EQUAL TO	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

TABLE J: DMS TYPE 2W - WALK-IN TABLE

MAXIMUM TRUSS LENGTH				MAXIMUM WEIGHT
	HEIGHT	WIDTH	DEPTH	
40 FEET	8'-0"	26'-6"	3'-4½"	4200 LBS.



STAINLESS STEEL U-BOLT DETAIL

NOTES:

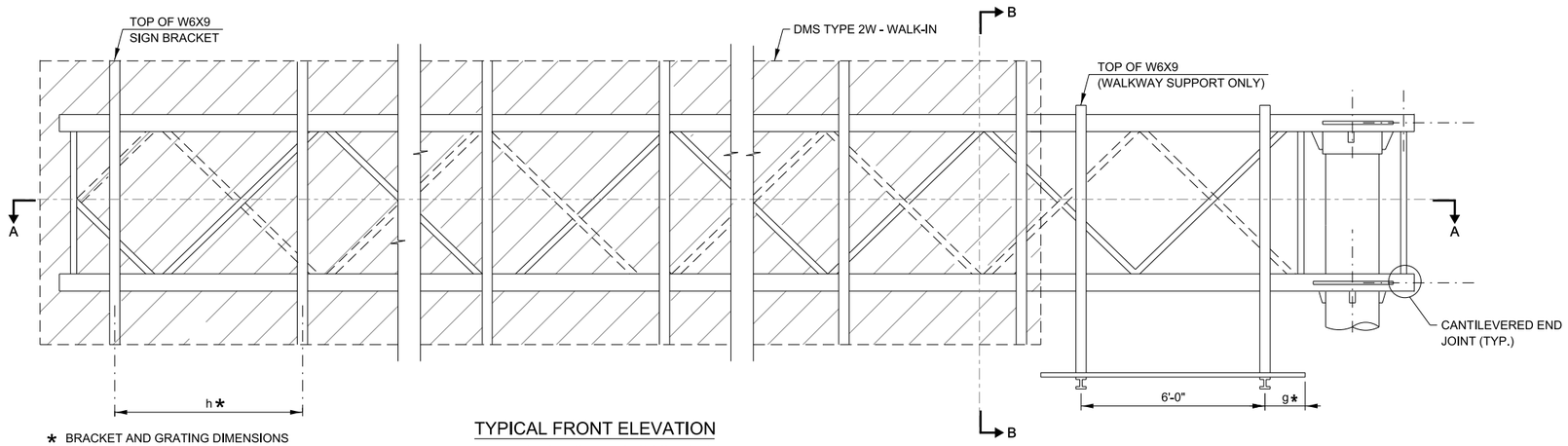
1. DMS TYPE 2W - WALK-IN SHALL BE ATTACHED TO TRUSS AS CLOSE TO PANEL JOINTS AS POSSIBLE.
2. VERIFY SIGN SUPPORT MEMBER LENGTH PRIOR TO FABRICATION.
3. DMS TYPE 2W - WALK-IN MANUFACTURER SHALL DESIGN, PROVIDE AND INSTALL HORIZONTAL MOUNTING MEMBERS. VERTICAL SPACING OF HORIZONTAL MEMBERS SHALL BE DESIGNED BY DMS TYPE 2W - WALK-IN MANUFACTURER. VERIFY VERTICAL SPACING WITH HOLES FOR STAINLESS STEEL U-BOLT.

APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE
CANTILEVER TYPE
STRUCTURE DETAILS

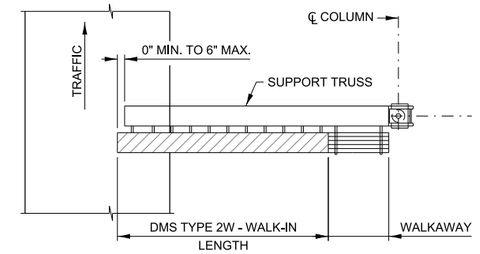
VERSION:	STANDARD:	SHEET:
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* BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2W - WALK-IN DIMENSIONS PLUS MANUFACTURER'S MOUNTING DEVICES.

TYPICAL FRONT ELEVATION

WITH HANDRAIL OMITTED FOR CLARITY.
FOR SECTION B-B, SEE SHEET 11 OF THIS SERIES.



PLAN
WALKWAY AND HANDRAIL SKETCH

(ROAD PLAN BENEATH TRUSS VARIES)
WALKWAY MAY BE LOCATED AT RIGHT OR LEFT END OF TRUSS.

NOTES:
SPACE WALKWAY BRACKETS AND SIGN BRACKETS W6X9 FOR EFFICIENCY AND WITHIN LIMITS SHOWN:

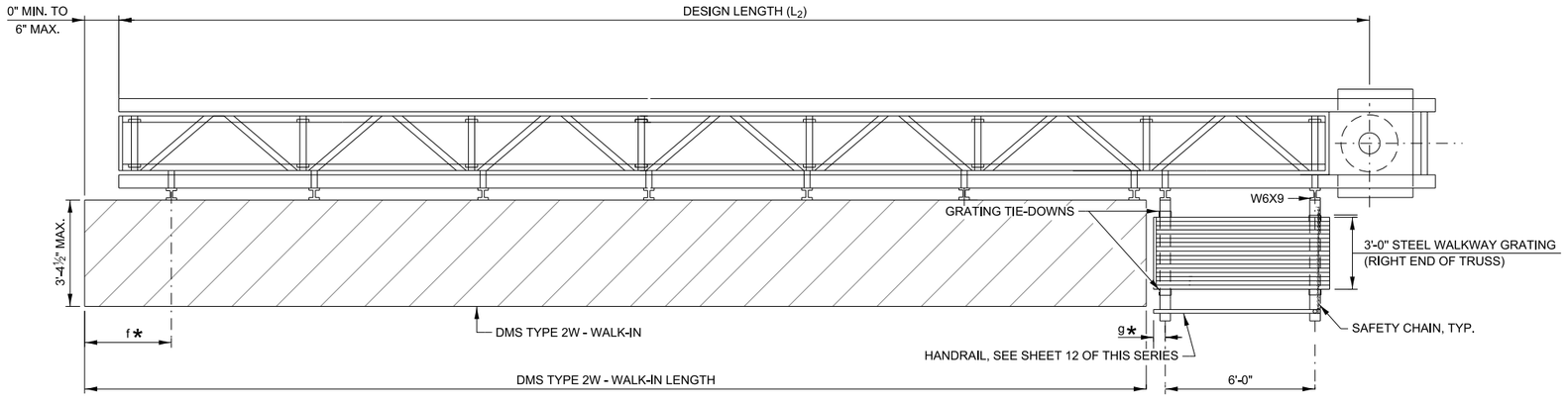
f = 12" MAXIMUM, 4" MINIMUM (END OF SIGN TO ℄ OF NEAREST BRACKET)
g = 12" MAXIMUM, 4" MINIMUM (END OF WALKWAY GRATING TO ℄ OF NEAREST SUPPORT BRACKET)
h = 6'-0" MAXIMUM (℄ TO ℄ SIGN AND/OR WALKWAY SUPPORT BRACKETS, W6X9)

FOR SECTION B-B, SEE SHEET 11 OF THIS SERIES.

WALKWAY AND TRUSS GRATING WIDTH DIMENSIONS ARE NOMINAL AND MAY VARY ± ½" BASED ON AVAILABLE STANDARD WIDTH.

PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

DMS TYPE 2W - WALK-IN SHALL HAVE THE DOOR AT THE END, OPPOSITE THE WALKWAY SECURED IN A CLOSED POSITION.



SECTION A-A

PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

BRACKET TABLE

W6X9		
SIGN WIDTH		NUMBER OF BRACKETS REQUIRED
GREATER THAN	LESS THAN OR EQUAL TO	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

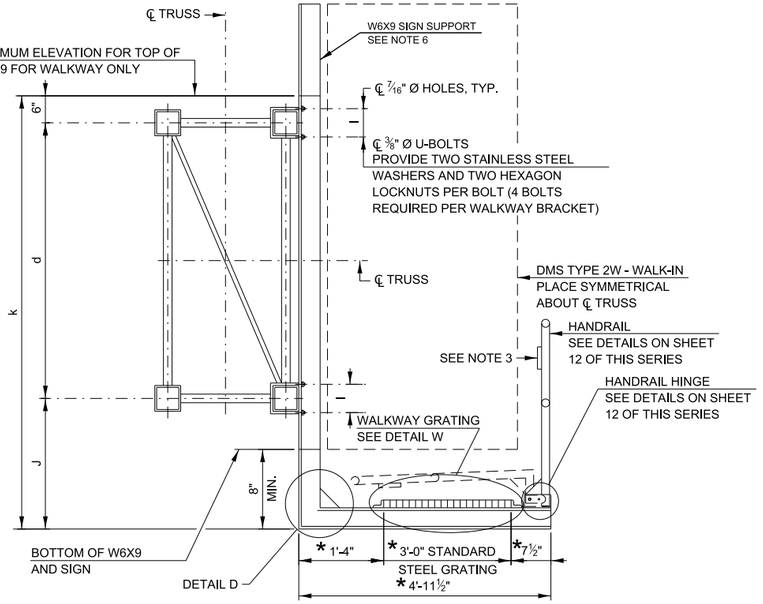
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

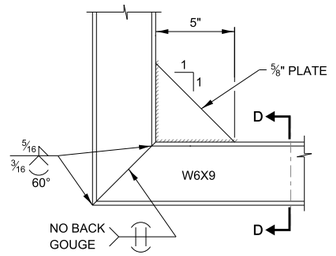
OVERHEAD SIGN STRUCTURE
CANTILEVER TYPE
STRUCTURE DETAILS

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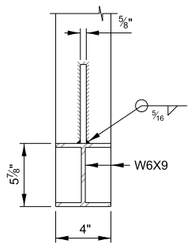


SECTION B-B

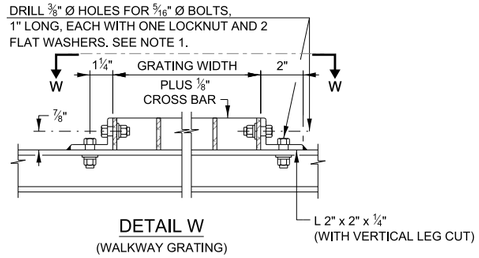
* BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2W - WALK-IN DIMENSIONS PLUS MANUFACTURERS MOUNTING DEVICE



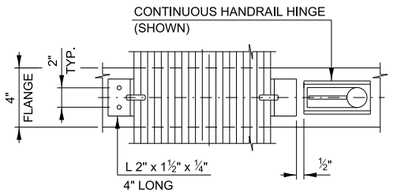
DETAIL D



SECTION D-D



DETAIL W
(WALKWAY GRATING)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

NOTES:

1. DRILLING HOLES IN GRATING MAY BE DONE IN SHOP OR FIELD, BASED ON CONTRACTOR'S PREFERENCE AND SUBJECT TO ACCURATE ALIGNMENT.
2. IF HANDRAIL JOINT PRESENT, WELD ANGLE TO W6X9 AND ¼" EXTENSION BARS. SEE SHEET 12 OF THIS SERIES.
3. PL ⅛" x ½" X 2" WELDED TO HANDRAIL POSTS TO PROTECT LOCATIONS THAT CONTACT GRATING.
4. DMS TYPE 2W - WALK-IN MANUFACTURER SHALL DESIGN AND SUPPLY HARDWARE FOR CONNECTION TO W6X9. BOLTS SHALL BE STAINLESS STEEL OR HOT DIP GALVANIZED HIGH STRENGTH PER IDOT SPECIFICATIONS.

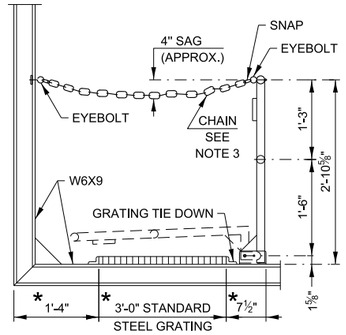
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE
CANTILEVER TYPE
STRUCTURE DETAILS

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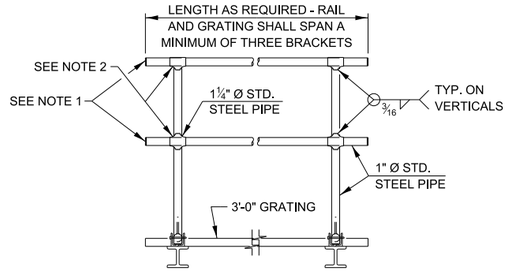


SIDE ELEVATION

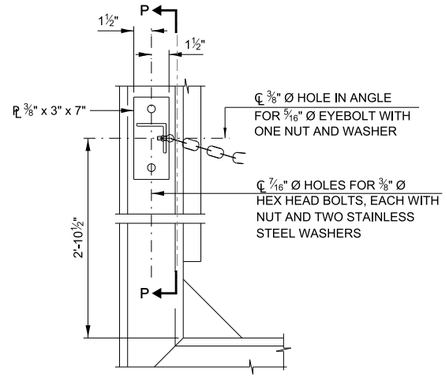
(SHOWING SAFETY CHAIN W/O SIGN)

* BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2W - WALK-IN DIMENSIONS PLUS MANUFACTURERS MOUNTING DEVICE.

HANDRAIL DETAILS

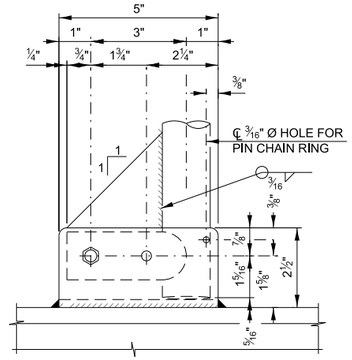


FRONT ELEVATION

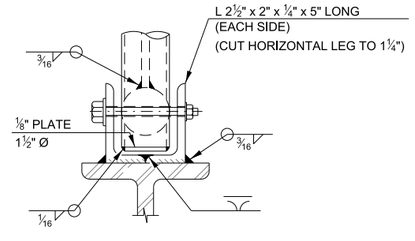


ALTERNATE SAFETY CHAIN ATTACHMENT

ITEMS NOT SHOWN SAME AS "SIDE ELEVATION" OF "HANDRAIL DETAILS"

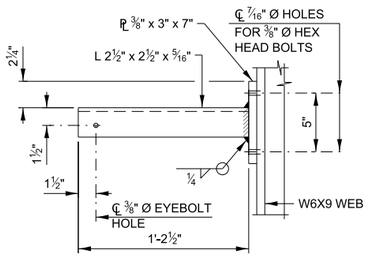


SIDE ELEVATION

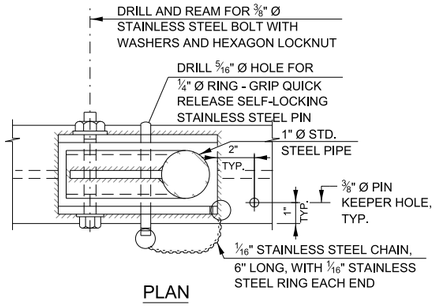


FRONT ELEVATION

DETAILS NOT SHOWN SAME AS "ELEVATION" AT RIGHT.

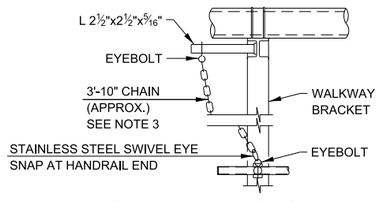


SECTION P-P



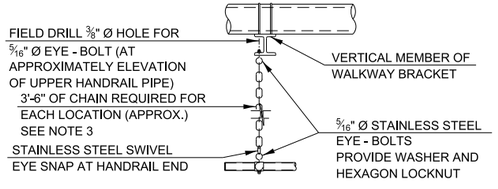
PLAN

DETAIL E HANDRAIL HINGE



ALTERNATE SAFETY CHAIN ATTACHMENT

DETAILS NOT SHOWN SIMILAR TO "SAFETY CHAIN" DETAILS (WALKWAY OMITTED FOR CLARITY)



SAFETY CHAIN

ONE REQUIRED FOR EACH END OF WALKWAY.

NOTES:

1. INSTALL STANDARD FORCE - FIT END CAPS OR WELD ⅛" END PLATES WITH ⅛" C.F.W. AND GRIND SMOOTH. (ALL RAIL ENDS)

2. HORIZONTAL HANDRAIL MEMBER SHALL BE CONTINUOUS THRU 1¼" Ø PIPE. PROVIDE 7/16" Ø HOLE IN 1¼" Ø PIPE FOR ⅜" Ø BOLT. FIELD DRILL 7/16" Ø HOLE IN HORIZONTAL RAIL MEMBER. PROVIDE LOCKNUT AND TWO STAINLESS STEEL WASHERS FOR BOLT. (USE 5/16" EYEBOLTS IN 7/16" Ø HOLES ON TOP RAIL AT ENDS ONLY.)

3. 3/16" TYPE 304L STAINLESS STEEL CHAIN, APPROXIMATELY 12 LINKS PER FOOT.

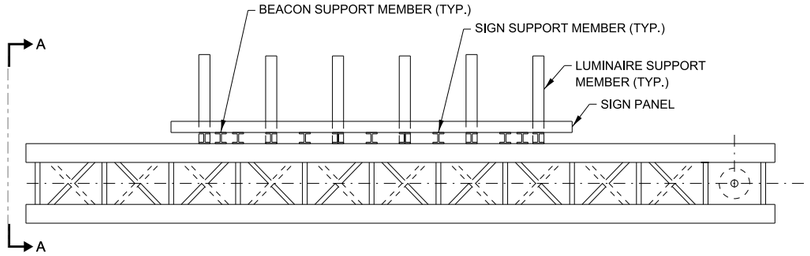
APPROVED BY: Marco Nastil, CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

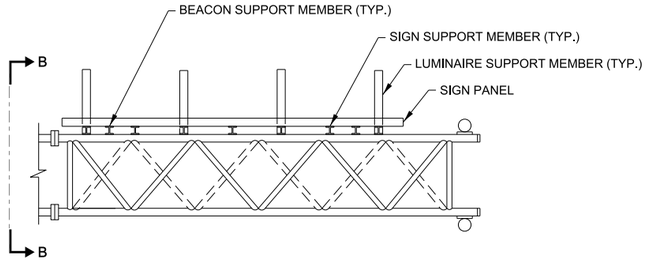
Illinois Tollway

OVERHEAD SIGN STRUCTURE CANTILEVER TYPE STRUCTURE DETAILS

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PLAN

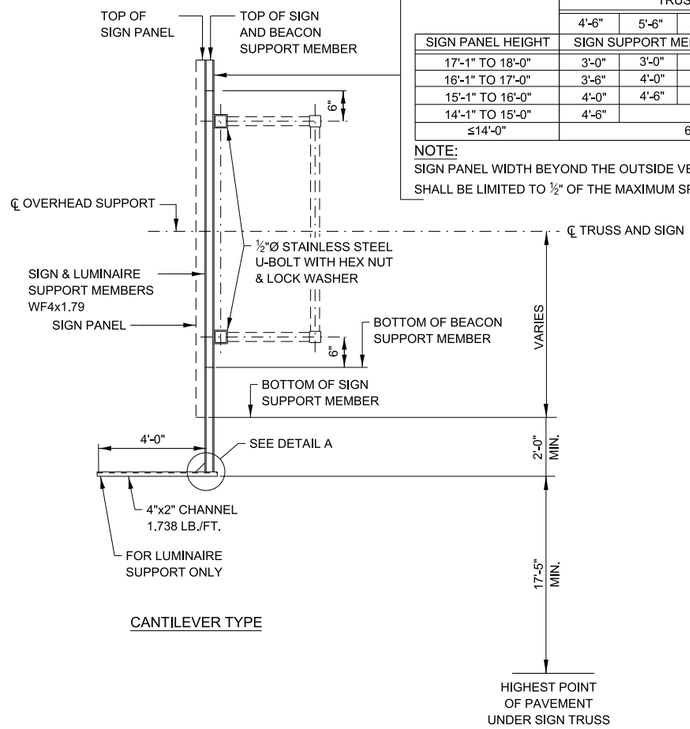


PLAN

SIGN SUPPORT MEMBERS-WF4x1.79

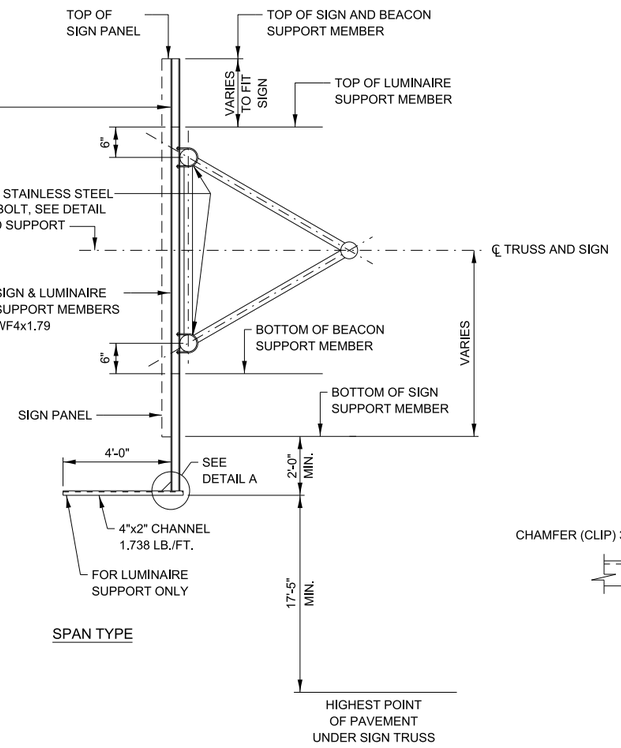
	TRUSS DEPTH				
	4'-6"	5'-6"	7'-0"	8'-2"	8'-10"
SIGN PANEL HEIGHT	SIGN SUPPORT MEMBER MAX. SPACING				
17'-1" TO 18'-0"	3'-0"	3'-0"	4'-6"	5'-6"	6'-0"
16'-1" TO 17'-0"	3'-6"	4'-0"	5'-0"	6'-0"	
15'-1" TO 16'-0"	4'-0"	4'-6"	6'-0"		
14'-1" TO 15'-0"	4'-6"	6'-0"			
≤14'-0"	6'-0"				

NOTE:
SIGN PANEL WIDTH BEYOND THE OUTSIDE VERTICAL MEMBER SHALL BE LIMITED TO ½" OF THE MAXIMUM SPACING



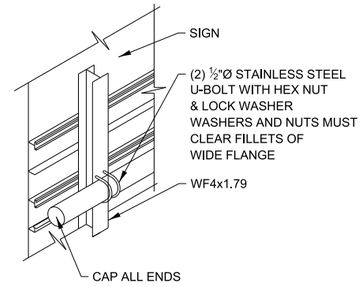
CANTILEVER TYPE

SECTION A-A

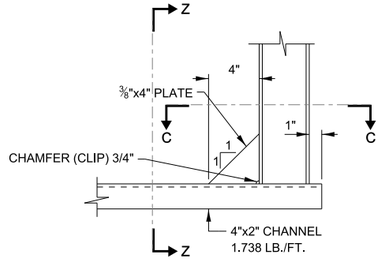


SPAN TYPE

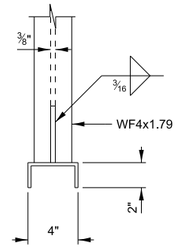
SECTION B-B



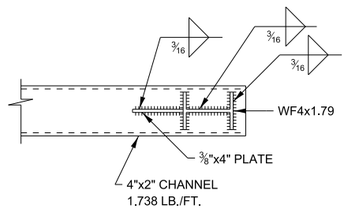
STAINLESS STEEL U-BOLT DETAIL



DETAIL A



SECTION Z-Z



SECTION C-C

SIGN AND LUMINAIRE SUPPORT DETAIL

NOTES:

1. SIGN PANEL SHALL BE ATTACHED TO TRUSS AS CLOSE TO PANEL JOINTS AS POSSIBLE.
2. LUMINAIRE SUPPORT MEMBERS TO BE INSTALLED ONLY WHEN SIGN STRUCTURE IS TO BE ILLUMINATED.
3. BEACON SUPPORT MEMBERS TO BE INSTALLED ONLY WHEN FLASHING BEACON IS REQUIRED.
4. WF4x1.79 AND 4"x2" CHANNEL SHALL BE 6061-T6 ALUMINUM.
5. WELDS MUST BE IN ACCORDANCE WITH AWS D1.2.
6. LUMINAIRES SHALL NOT HAVE A PROJECTED AREA FOR WIND LOADS LARGER THAN 144IN.
7. THE C.G. OF THE LUMINAIRE SHALL NOT EXCEED 6" VERTICALLY OR HORIZONTALLY FROM WHERE IT ATTACHES ON THE 4"x2" CHANNEL.
8. THE MAXIMUM WEIGHT FOR THE LUMINAIRE SHALL BE 15LBS.
9. THE REQUIRED MOUNTING HARDWARE FOR SIGN PANELS SHALL BE FURNISHED BY THE CONTRACTOR.

NOTES:

ALL MATERIAL IS ALUMINUM (UNLESS OTHERWISE NOTED).

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

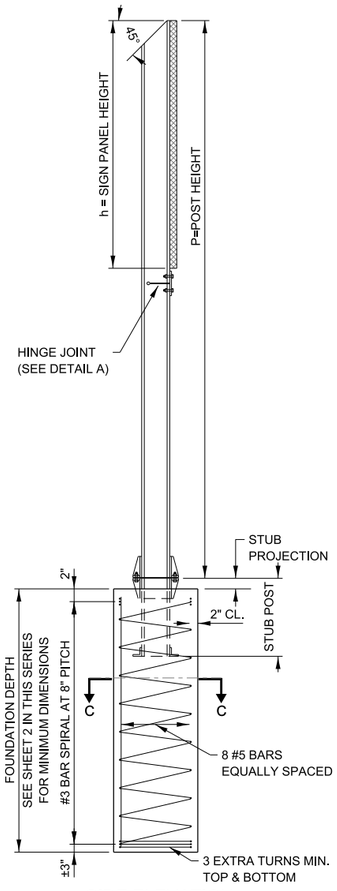
Illinois Tollway

REVISIONS

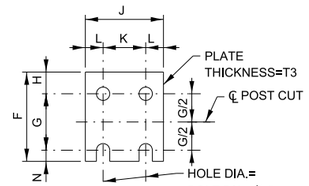
DATE	DESCRIPTION
03-01-2025	ADDED NOTE 9.
03-01-2021	UPDATED DESIGN LOADING AND DESIGN CRITERIA.
03-01-2020	ADDED BEACON DETAILS.
03-01-2019	REVISED NOTE 2.
03-01-2018	ADDED VERTICAL CLEARANCE.

OVERHEAD SIGN STRUCTURE SIGN, LUMINAIRE AND BEACON SUPPORTS

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SIDE ELEVATION
POST & FOUNDATION



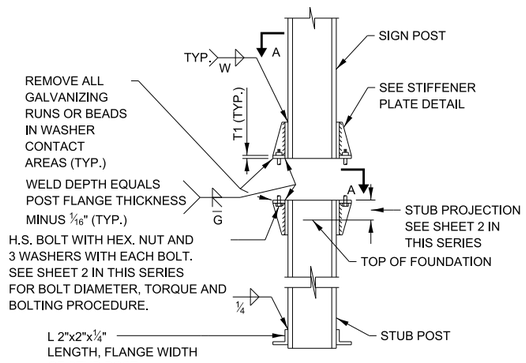
FUSE PLATE DETAIL

INSTALL WITH NOTCHES TOWARDS BASE

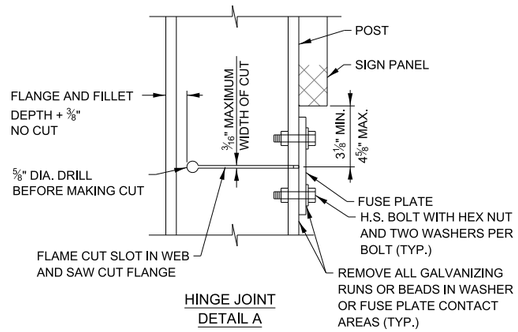
G & H DIM. TABLE		
BOLT DIA.	G	H
½"	2"	1⅛"
⅝"	2¼"	1¼"
¾"	2½"	1⅜"
⅞"	2¾"	1½"
1"	3"	1⅝"
1⅛"	3¼"	1¾"
1¼"	3½"	1⅞"

FABRICATORS NOTES

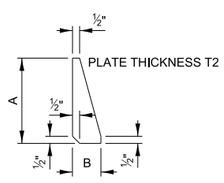
THE SLOT AND THE ⅝" DIA. HOLE IN THE WEB AND THE FUSE PLATE BOLT HOLES IN THE FLANGE SHALL BE MADE BEFORE GALVANIZING. POST FLANGE SHALL BE SAW CUT AFTER GALVANIZING AND BARE METAL SURFACES SHALL BE COATED WITH AN APPROVED ZINC SOLDER OR ZINC-RICH PAINT. THESE SURFACES SHALL NOT BE COATED UNTIL THE FUSE PLATE IS INSTALLED AND BOLTS FULLY TIGHTENED.



ELEVATION
SIGN POST & STUB POST

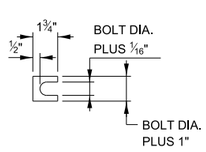


HINGE JOINT
DETAIL A



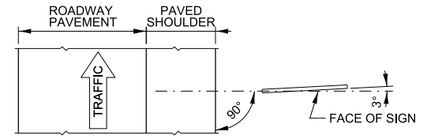
STIFFENER PLATE
DETAIL

SEE SHEET 2 IN THIS
SERIES FOR DIMENSIONS

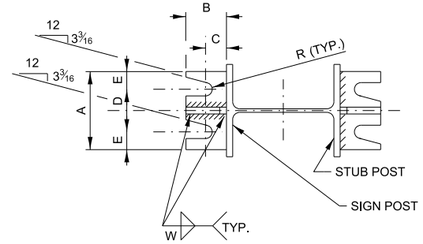


SHIM DETAIL

FURNISH 2-.012" THICK AND
2-.032" THICK SHIMS PER POST.
SHIMS SHALL BE FABRICATED
FROM BRASS SHIM STOCK
CONFORMING TO ASTM B36.



LOCATION SKETCH



SEC. A-A

GENERAL NOTES

DESIGN: 2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION, WITH 2020 INTERIM REVISIONS, INSTRUCTIONS AND INFORMATION

CONSTRUCTION: STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS.

LOADING: FOR 120 MPH WIND VELOCITY PLUS 14% GUST FACTOR NORMAL TO SIGN.

CONTROLLING LOAD COMBINATION (EXTREME 1) PER AASHTO:
1.1DC + 1.0W

DESIGN STRESSES:
STRUCTURAL STEEL - PER AASHTO 36,000 P.S.I.
REINFORCING STEEL - 60,000 P.S.I.
CLASS SI CONCRETE - 3,500 P.S.I.

FOUNDATION:
MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu FOR ALL LAYERS FOR COHESIVE SOILS (CLAYS) SHALL BE 1.25 TON/SQ.FT.

WELDING: ALL WELDING TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS SPECIFICATIONS, AND STANDARD SPECIFICATIONS.

MATERIALS:
ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 AND LRFD SPECIFICATIONS. ALL PLATES SHALL CONFORM TO ASTM A572-GR50.

ALL HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS SHALL CONFORM TO STANDARD SPECIFICATIONS.

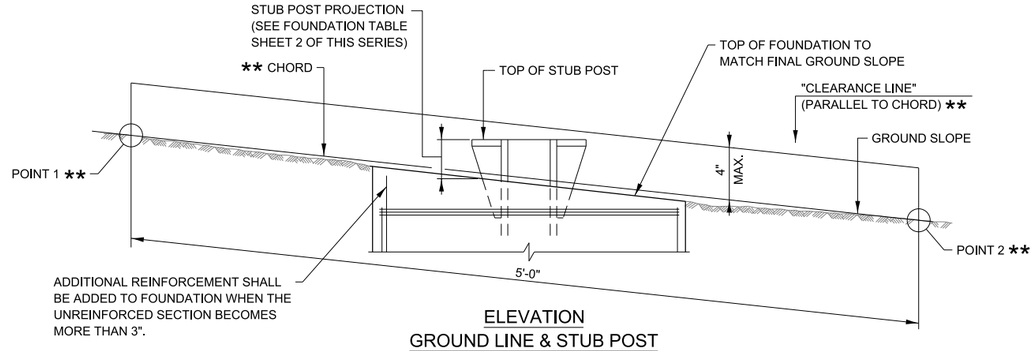
HIGH STRENGTH STEEL BOLTS, NUTS AND HARDENED WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232.

HIGH STRENGTH BOLTS IN BASE PLATES SHALL BE TIGHTENED TO THE TORQUE SHOWN ON SHEET 2 IN THIS SERIES.

AFTER FABRICATION, THE POST, FUSE PLATE, BASE PLATE AND UPPER 6" OF STUB POST SHALL BE HOT - DIP GALVANIZED ACCORDING TO ASTM M111, EXCEPT AS NOTED UNDER FABRICATOR NOTES.



SEC. C-C



ELEVATION
GROUND LINE & STUB POST

** FOR ALL "POINT 1" AND "POINT 2" LOCATIONS, "CLEARANCE LINE" MUST BE AT OR ABOVE TOP OF STUB POST.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2023

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2023	REV. W6x15 & W16x45 AND W10x22
	MAX. PS. SPC. FOR 8'-6" SIGN DEPTH
03-01-2021	UPDATE DESIGN LOADING, CRITERIA
	AND ADDED TABLES FOR SIGN SPACING
03-01-2019	CLARIFIED DESIGN STRESS FOR SOIL
	PRESSURE

BREAKAWAY SIGN SUPPORT DETAILS

VERSION:	STANDARD:	SHEET:
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POST	FOUNDATION TABLE												BASE CONNECTION DATA TABLE									
	FOUNDATION			REINFORCEMENT							STUB POST											
	DIA.	MIN. DEPTH	CY. * CONC.	VERTICAL BARS			BAR SPIRALS			LBS.**	STUB LGTH.	STUB PROJECTION	LBS. ***	BOLT SIZE AND TORQUE	A	B	C	D	E	T1	T2	W	R
				NO.	SIZE	LGTH.	SIZE	O.D.	LGTH.														
W6x9	2'-0"	6'-0"	.70	8	#5	5'-9"	#3	20½"	79'	78	2'-3"	3"	44	⅝" ★ x 3¼" LG. TORQUE = 450" #	6"	2¼"	1¼"	3½"	1¼"	¾"	½"	¼"	11/32"
W6x15	2'-0"	6'-0"	.70	8	#5	5'-9"	#3	20½"	79'	78	2'-6"	3"	71										
W8x18	2'-0"	6'-0"	.70	8	#5	5'-9"	#3	20½"	79'	78	2'-6"	3"	85	¾" ★ x 3¾" LG. TORQUE = 750" #	6"	2½"	1⅜"	3¼"	1⅜"	1"	½"	5/16"	13/32"
W10x22	2'-6"	7'-0"	1.27	8	#5	6'-3"	#3	26½"	105'	92	3'-0"	2½"	110										
W10x26	2'-6"	7'-6"	1.39	8	#5	6'-9"	#3	26½"	112'	98	3'-0"	2½"	137	⅞" ★ x 4" LG. TORQUE = 950" #	7"	2¾"	1½"	4"	1½"	1"	¾"	⅜"	15/32"
W12x26	2'-6"	7'-9"	1.41	8	#5	7'-6"	#3	26½"	119'	107	3'-0"	2½"	140										
W14x30	3'-0"	8'-6"	2.23	8	#5	7'-0"	#3	32½"	145'	113	3'-0"	2½"	150										
W14x38	3'-0"	9'-0"	2.36	8	#5	7'-9"	#3	32½"	153'	122	3'-6"	2½"	208	1" ★ x 4½" LG. TORQUE = 1100" #	7½"	3"	1¾"	4"	1¾"	1¼"	¾"	⅜"	17/32"
W16x45	3'-0"	9'-6"	2.49	8	#5	8'-3"	#3	32½"	162'	130	3'-6"	2½"	233										

* QUANTITY OF CLASS SI CONCRETE CONSISTS OF ALL CONCRETE NECESSARY FOR ONE FOUNDATION. (CUBIC YARDS)

** THIS INCLUDES REINFORCEMENT BARS AND SPIRAL HOOPING REQUIRED FOR ONE FOUNDATION.

*** INCLUDES WEIGHT OF STUB POST WITH ANGLES, GUSSETS, BASE PLATES, BOLTS, NUTS, WASHERS, PLUS BASE PLATES AND GUSSETS ON MAIN POST, PLUS FUSE PLATE (IF ANY) WITH BOLTS, NUTS AND WASHERS. (ONE POST)

EQUIVALENT TORQUE VALUES

450" # = 37.5' #
750" # = 62.5' #
950" # = 79.2' #
1100" # = 91.7' #

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

1. ASSEMBLE POST TO STUB WITH H.S. BOLTS AND ONE OF THE THREE FLAT WASHERS ON EACH BOLT BETWEEN PLATES AS SHOWN.
2. SHIMS MAY BE USED BETWEEN PLATES TO LEVEL POST.
3. TIGHTEN BOLTS IN BASE PLATE IN A SYSTEMATIC ORDER TO THE REQUIRED TORQUE.
4. LOOSEN EACH BOLT AND RETIGHTEN TO THE REQUIRED TORQUE IN SAME ORDER AS INITIAL TIGHTENING.
5. BURR OR CENTER PUNCH THREADS AT JUNCTURE OF BOLT AND NUT TO PREVENT NUT FROM LOOSENING.

POST	FUSE PLATE DATA TABLE				FUSE PLATE BOLT SIZE TABLE										
					SIGN PANEL HEIGHT (h)										
	J	K	L	T3	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'
W6x9	4"	2¼"	⅞"	¼"	½"Øx1½"	½"Øx1½"	½"Øx1½"	—	—	—	—	—	—	—	—
W6x15	6"	3½"	1¼"	⅜"	⅝"Øx2"	⅝"Øx2"	¾"Øx2"	¾"Øx2"	¾"Øx2"	¾"Øx2"	¾"Øx2"	—	—	—	—
W8x18	5¼"	2¾"	1¼"	⅜"	½"Øx1¾"	⅝"Øx2"	¾"Øx2"	¾"Øx2"	¾"Øx2"	¾"Øx2"	¾"Øx2"	⅞"Øx2¼"	⅞"Øx2¼"	—	—
W10x22	5¾"	2¾"	1½"	½"	½"Øx1½"	⅝"Øx2"	¾"Øx2¼"	¾"Øx2¼"	⅞"Øx2¼"	⅞"Øx2¼"	⅞"Øx2¼"	⅞"Øx2¼"	⅞"Øx2¼"	⅞"Øx2¼"	1"Øx2½"
W10x26	5¾"	2¾"	1½"	⅝"	½"Øx2"	⅝"Øx2¼"	¾"Øx2½"	¾"Øx2½"	⅞"Øx2½"	1"Øx2¾"	1"Øx2¾"	1"Øx2¾"	1"Øx2¾"	1"Øx2¾"	1"Øx2¾"
W12x26	6½"	3½"	1½"	⅝"	—	—	—	—	—	⅞"Øx2½"	—	—	1"Øx2½"	1"Øx2½"	1"Øx2½"
W14x30	6¾"	3½"	1⅝"	½"	½"Øx2"	½"Øx2"	⅝"Øx2"	¾"Øx2¼"	¾"Øx2¼"	⅞"Øx2½"	¾"Øx2½"	1"Øx2½"	1"Øx2½"	1"Øx2½"	1"Øx2½"
W14x38	6¾"	3½"	1⅝"	½"	—	½"Øx2"	⅝"Øx2¼"	⅝"Øx2¼"	¾"Øx2½"	⅞"Øx2½"	¾"Øx2½"	1"Øx2½"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"
W16x45	7"	3½"	1¾"	½"	—	—	—	⅝"Øx2¼"	¾"Øx2½"	¾"Øx2½"	¾"Øx2½"	1"Øx2¾"	1"Øx2¾"	1⅛"Øx3"	1¼"Øx3"

POST	FUSE PLATE DATA TABLE				FUSE PLATE BOLT SIZE TABLE										
					SIGN PANEL HEIGHT (h)										
	J	K	L	T3	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	—
W6x9	4"	2¼"	⅞"	¼"	—	—	—	—	—	—	—	—	—	—	—
W6x15	6"	3½"	1¼"	⅜"	—	—	—	—	—	—	—	—	—	—	—
W8x18	5¼"	2¾"	1¼"	⅜"	—	—	—	—	—	—	—	—	—	—	—
W10x22	5¾"	2¾"	1½"	½"	1"Øx2½"	—	—	—	—	—	—	—	—	—	—
W10x26	5¾"	2¾"	1½"	⅝"	1"Øx2¾"	1"Øx2¾"	1"Øx2¾"	—	—	—	—	—	—	—	—
W12x26	6½"	3½"	1½"	⅝"	1"Øx2½"	1"Øx2½"	1⅛"Øx3"	1¼"Øx3"	—	—	—	—	—	—	—
W14x30	6¾"	3½"	1⅝"	½"	1"Øx2½"	1"Øx2½"	1⅛"Øx3"	1¼"Øx3"	1¼"Øx3"	—	—	—	—	—	—
W14x38	6¾"	3½"	1⅝"	½"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	—	—
W16x45	7"	3½"	1¾"	½"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	1¼"Øx3"	—

PROCEDURE FOR FUSE PLATE BOLT TIGHTENING:

ALL FRICTION FUSE BOLTS SHALL BE TIGHTENED IN THE SHOP AS APPROVED BY THE ENGINEER ACCORDING TO ONE OF THE FOLLOWING METHODS:

1. TURN-OF-NUT TIGHTENING,
2. TIGHTENING BY USE OF A DIRECT TENSION INDICATOR.

THE ABOVE METHODS OF INSTALLATION AND TIGHTENING SHALL CONFORM TO THE LATEST ISSUE OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A-325 OR A-490 BOLTS, FOR SLIP - CRITICAL CONNECTIONS AS ISSUED BY THE RESEARCH COUNCIL ON RIVETED AND BOLTED STRUCTURAL JOINTS OF THE ENGINEERING FOUNDATION.

TIGHTENING SHALL BE TO SUCH A DEGREE AS TO OBTAIN THE FOLLOWING MINIMUM RESIDUAL TENSION IN EACH BOLT.

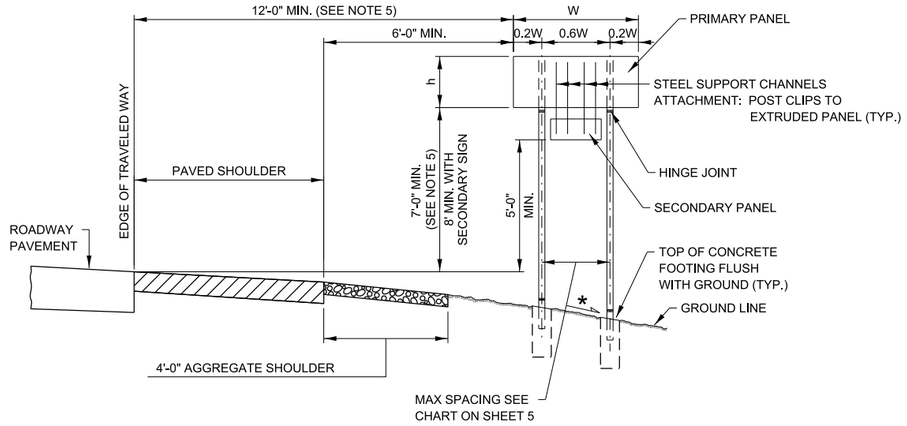
BOLT DIA.	MIN. RESIDUAL BOLT TENSION	BOLT DIA.	MIN. RESIDUAL BOLT TENSION	BOLT DIA.	MIN. RESIDUAL BOLT TENSION
½"	12,050	⅞"	39,250	1¼"	71,700
⅝"	19,200	1"	51,500		
¾"	28,400	1⅛"	56,450		

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2023

Illinois Tollway

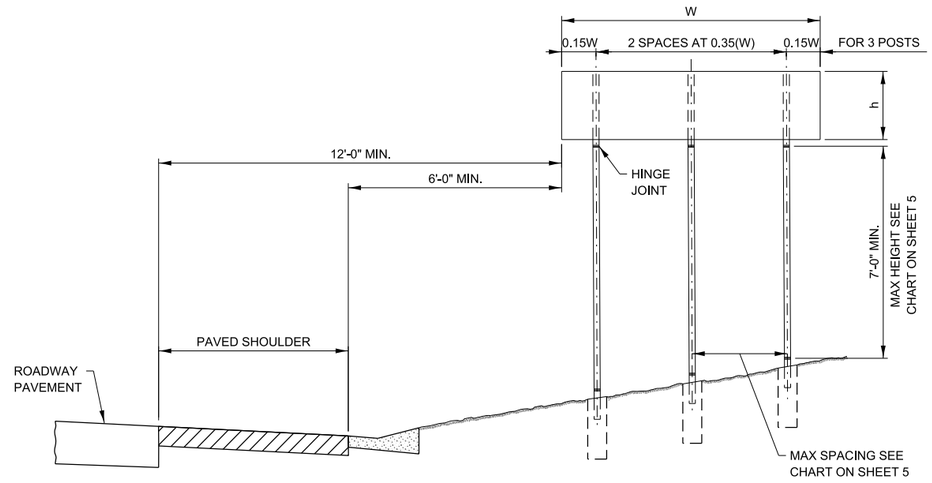
BREAKAWAY SIGN SUPPORT DETAILS

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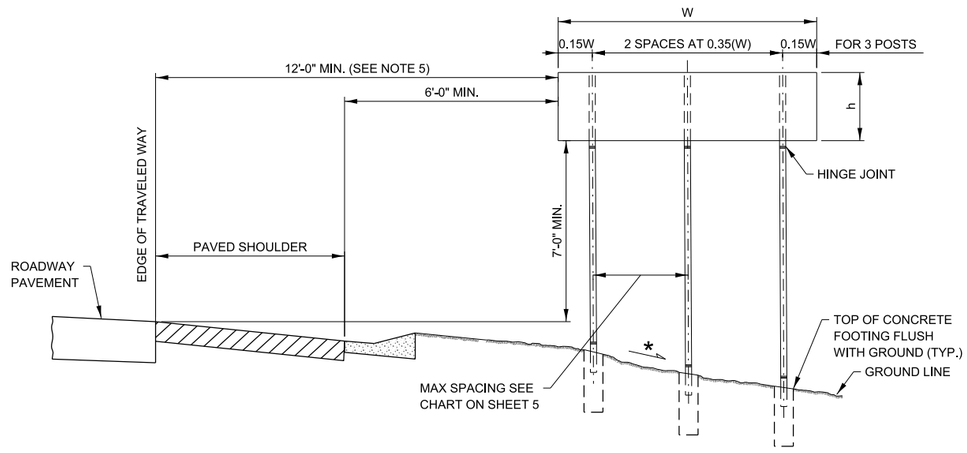


CONDITION 1 - SIGN INSTALLATION

(*) FORESLOPE 1:6 (V:H) OR FLATTER



CONDITION 3 - SIGN INSTALLATION



CONDITION 2 - SIGN INSTALLATION

(*) FORESLOPE 1:6 (V:H) OR FLATTER

UNSHIELDED SLOPE

NOTES:

1. SEE SIGN INSTALLATION SCHEDULE IN CONTRACT PLANS FOR DIMENSIONS.
2. THE DIMENSIONS OF ALL POSTS FOR GROUND MOUNTED SIGNS ARE BASED ON DESIGN CROSS SECTIONS. THE CONTRACTOR SHALL VERIFY REQUIRED POST LENGTHS IN THE FIELD, PRIOR TO SUBMITTING SHOP DRAWINGS AND POST FABRICATION TO MAINTAIN THE CLEARANCES SHOWN.
3. SIGN FOUNDATION ELEVATIONS TO BE BASED ON FINISHED SLOPES.
4. ANY ADDITIONAL SIGN TO BE ADDED LATER MUST BE SUPPORTED BY THE EXISTING SIGN PANEL AND NOT THE SIGN POST. MINIMUM CLEARANCES SHALL BE MAINTAINED.
5. SIGNS THAT ARE PLACED WELL OUTSIDE THE CLEAR ZONE MAY BE INSTALLED WITH A MINIMUM HEIGHT OF 5 FEET, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE HORIZONTAL ELEVATION OF THE NEAR EDGE OF TRAVELED ROADWAY.
6. MINIMUM HEIGHT OF LOWEST POST SHALL BE 7'-0" MEASURED BETWEEN STUB PROJECTION AND HINGE JOINT.
7. FOR TWO POSTS SPACED LESS THAN 7 FEET APART, EACH POST SHALL HAVE A MASS LESS THAN 18 lb/ft.
8. WHEN THE TOTAL COMBINED WEIGHT OF THE TWO POSTS LOCATED WITHIN 7 FEET OF EACH OTHER EXCEEDS 600 lbs., THE SIGN SHALL BE PLACED WELL OUTSIDE THE CLEAR ZONE OR BE SHIELDED FROM VEHICULAR IMPACT.

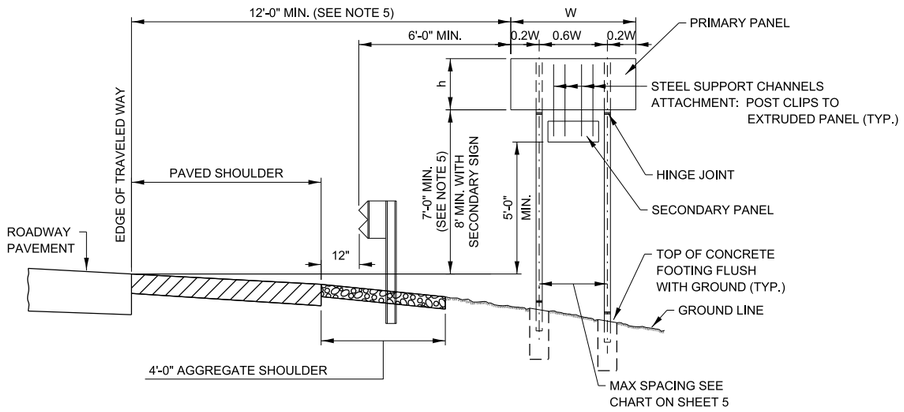
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2023

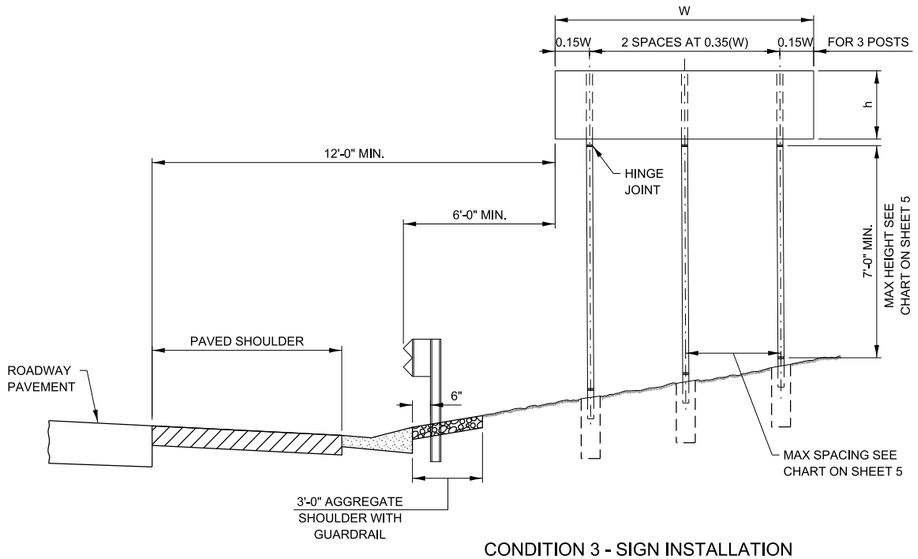
Illinois Tollway

BREAKAWAY SIGN SUPPORT DETAILS

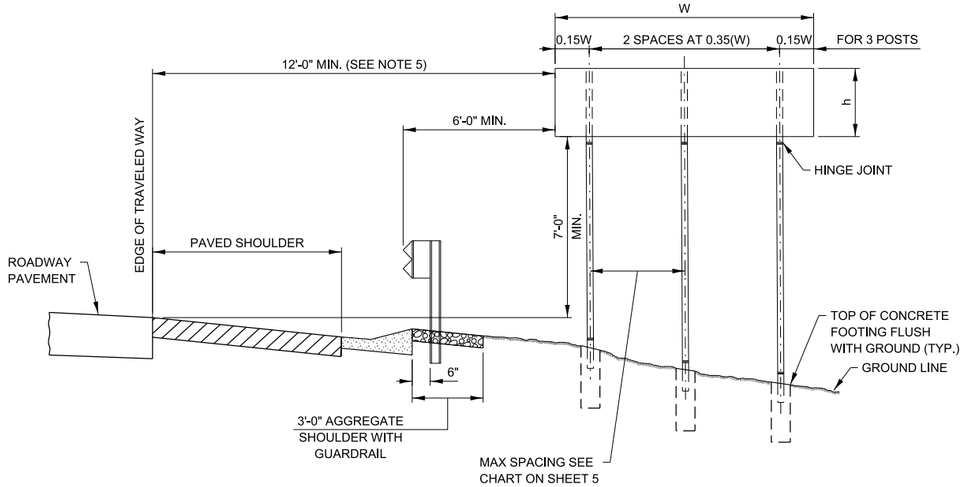
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CONDITION 1 - SIGN INSTALLATION



CONDITION 3 - SIGN INSTALLATION



CONDITION 2 - SIGN INSTALLATION

NOTES:

1. SEE SIGN INSTALLATION SCHEDULE IN CONTRACT PLANS FOR DIMENSIONS.
2. THE DIMENSIONS OF ALL POSTS FOR GROUND MOUNTED SIGNS ARE BASED ON DESIGN CROSS SECTIONS. THE CONTRACTOR SHALL VERIFY REQUIRED POST LENGTHS IN THE FIELD, PRIOR TO SUBMITTING SHOP DRAWINGS AND POST FABRICATION TO MAINTAIN THE CLEARANCES SHOWN.
3. SIGN FOUNDATION ELEVATIONS TO BE BASED ON FINISHED SLOPES.
4. ANY ADDITIONAL SIGN TO BE ADDED LATER MUST BE SUPPORTED BY THE EXISTING SIGN PANEL AND NOT THE SIGN POST. MINIMUM CLEARANCES SHALL BE MAINTAINED.
5. SIGNS THAT ARE PLACED WELL OUTSIDE THE CLEAR ZONE MAY BE INSTALLED WITH A MINIMUM HEIGHT OF 5 FEET, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE HORIZONTAL ELEVATION OF THE NEAR EDGE OF TRAVELED ROADWAY.
6. MINIMUM HEIGHT OF LOWEST POST SHALL BE 7'-0" MEASURED BETWEEN STUB PROJECTION AND HINGE JOINT.
7. FOR TWO POSTS SPACED LESS THAN 7 FEET APART, EACH POST SHALL HAVE A MASS LESS THAN 18 lb/ft.
8. WHEN THE TOTAL COMBINED WEIGHT OF THE TWO POSTS LOCATED WITHIN 7 FEET OF EACH OTHER EXCEEDS 600 lbs., THE SIGN SHALL BE PLACED WELL OUTSIDE THE CLEAR ZONE OR BE SHIELDED FROM VEHICULAR IMPACT.

SHIELDED SLOPE

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2023

Illinois Tollway

BREAKAWAY SIGN SUPPORT DETAILS

VERSION:	STANDARD:	SHEET:
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POST SIZE W6x15	SIGN DEPTH						
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"
CLEAR HEIGHT	POST MAX SPACING						
6'-0"	11'-6"	9'-0"	7'-0"	6'-0"	5'-0"	4'-0"	3'-6"
8'-0"	8'-0"	6'-6"	5'-6"	4'-6"	3'-6"	3'-0"	-
10'-0"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"	-	-
12'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-
14'-0"	3'-6"	3'-0"	-	-	-	-	-
16'-0"	3'-0"	-	-	-	-	-	-

POST SIZE W6x9	SIGN DEPTH		
	4'-0"	5'-0"	6'-0"
CLEAR HEIGHT	POST MAX SPACING		
6'-0"	5'-6"	4'-0"	3'-0"
8'-0"	4'-0"	3'-0"	-
10'-0"	3'-0"	-	-
12'-0"	-	-	-

POST SIZE W14x30	SIGN DEPTH															
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"
CLEAR HEIGHT	POST MAX SPACING															
6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-6"	10'-0"	8'-0"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"
8'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-0"	9'-6"	8'-0"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-
10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-6"	9'-0"	7'-6"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-
12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	8'-6"	7'-6"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-
14'-0"	12'-0"	12'-0"	11'-0"	9'-6"	8'-6"	7'-6"	6'-6"	5'-6"	5'-0"	4'-0"	3'-6"	3'-0"	-	-	-	-
16'-0"	12'-0"	11'-0"	9'-6"	8'-0"	7'-0"	6'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-
18'-0"	10'-6"	9'-0"	8'-0"	7'-0"	6'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-
20'-0"	8'-6"	7'-6"	6'-6"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-
22'-0"	7'-6"	6'-6"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-
24'-0"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-	-	-
26'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-	-	-	-
28'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-	-	-	-	-
30'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-	-	-	-	-	-

POST SIZE W14x38	SIGN DEPTH																			
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	22'-0"	23"-0"	24'-0"
CLEAR HEIGHT	POST MAX SPACING																				
6'-0"	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-6"	9'-0"	7'-6"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-
8'-0"	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-6"	10'-0"	8'-6"	7'-6"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-
10'-0"	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-0"	9'-6"	8'-6"	7'-6"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-
12'-0"	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-6"	9'-0"	8'-0"	7'-0"	6'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-
14'-0"	-	12'-0"	12'-0"	12'-0"	11'-6"	10'-0"	9'-0"	8'-0"	7'-0"	6'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-
16'-0"	-	12'-0"	12'-0"	11'-0"	9'-6"	8'-6"	7'-6"	6'-6"	6'-0"	5'-6"	4'-6"	4'-0"	3'-6"	-	-	-	-	-	-	-	-
18'-0"	-	12'-0"	10'-6"	9'-6"	8'-6"	7'-6"	6'-6"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	-	-	-	-	-	-	-	-	-
20'-0"	-	10'-6"	9'-0"	8'-0"	7'-0"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-	-	-
22'-0"	-	9'-0"	8'-0"	7'-0"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-
24'-0"	-	7'-6"	7'-0"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-
26'-0"	-	6'-6"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-	-
28'-0"	-	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-	-	-
30'-0"	-	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-	-	-	-

POST SIZE W16x45	SIGN DEPTH																			
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	22'-0"	23"-0"	24'-0"
CLEAR HEIGHT	POST MAX SPACING																				
6'-0"	-	-	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-0"	10'-0"	9'-0"	7'-6"	6'-6"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"
8'-0"	-	-	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-6"	10'-0"	8'-6"	7'-6"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"
10'-0"	-	-	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-0"	10'-0"	8'-6"	7'-6"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-
12'-0"	-	-	-	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-0"	9'-6"	8'-6"	7'-6"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-
14'-0"	-	-	-	12'-0"	12'-0"	12'-0"	12'-0"	10'-6"	9'-0"	8'-0"	7'-0"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-
16'-0"	-	-	-	12'-0"	12'-0"	11'-6"	10'-0"	9'-0"	8'-0"	7'-0"	6'-6"	5'-6"	5'-0"	4'-0"	4'-0"	3'-6"	3'-0"	-	-	-	-
18'-0"	-	-	-	12'-0"	11'-0"	10'-0"	9'-0"	8'-0"	7'-0"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-
20'-0"	-	-	-	10'-6"	9'-6"	8'-6"	7'-6"	7'-0"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-
22'-0"	-	-	-	9'-0"	8'-6"	7'-6"	6'-6"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-
24'-0"	-	-	-	8'-0"	7'-6"	6'-6"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-	-
26'-0"	-	-	-	7'-0"	6'-6"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-
28'-0"	-	-	-	6'-6"	6'-0"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-
30'-0"	-	-	-	5'-6"	5'-0"	4'-6"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-

POST SIZE W12x26	SIGN DEPTH														
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"
CLEAR HEIGHT	POST MAX SPACING														
6'-0"	-	-	-	-	-	12'-0"	-	-	8'-0"	6'-6"	5'-6"	4'-6"	4'-0"	3'-0"	3'-0"
8'-0"	-	-	-	-	-	10'-6"	-	-	6'-6"	5'-6"	4'-6"	4'-0"	3'-0"	-	-
10'-0"	-	-	-	-	-	8'-6"	-	-	5'-6"	4'-6"	4'-0"	3'-0"	-	-	-
12'-0"	-	-	-	-	-	7'-0"	-	-	4'-6"	4'-0"	3'-0"	-	-	-	-
14'-0"	-	-	-	-	-	6'-0"	-	-	4'-0"	3'-0"	-	-	-	-	-
16'-0"	-	-	-	-	-	5'-0"	-	-	3'-6"	3'-0"	-	-	-	-	-
18'-0"	-	-	-	-	-	4'-0"	-	-	3'-0"	-	-	-	-	-	-
20'-0"	-	-	-	-	-	3'-6"	-	-	-	-	-	-	-	-	-
22'-0"	-	-	-	-	-	3'-0"	-	-	-	-	-	-	-	-	-
24'-0"	-	-	-	-	-	3'-0"	-	-	-	-	-	-	-	-	-

POST SIZE W10x26	SIGN DEPTH													
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"
CLEAR HEIGHT	POST MAX SPACING													
6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-6"	9'-6"	8'-0"	7'-0"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"
8'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-6"	9'-0"	7'-6"	6'-6"	5'-6"	5'-0"	4'-0"	3'-6"	3'-0"	-
10'-0"	12'-0"	12'-0"	12'-0"	10'-0"	8'-6"	7'-6"	6'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-
12'-0"	12'-0"	11'-6"	9'-6"	8'-0"	7'-0"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-
14'-0"	11'-0"	9'-0"	8'-0"	7'-0"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-
16'-0"	9'-0"	7'-6"	6'-6"	5'-6"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-
18'-0"	7'-6"	6'-6"	5'-6"	5'-0"	4'-0"	3'-6"	3'-6"	3'-0"	-	-	-	-	-	-
20'-0"	6'-6"	5'-6"	5'-0"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-
22'-0"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-
24'-0"	4'-6"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-
26'-0"	4'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-
28'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-	-
30'-0"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-	-	-

POST SIZE W10x22	SIGN DEPTH										
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"
CLEAR HEIGHT	POST MAX SPACING											
6'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-6"	9'-0"	7'-6"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"
8'-0"	12'-0"	12'-0"	11'-0"	10'-0"	8'-6"	7'-0"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"	-
10'-0"	12'-0"	11'-6"	9'-6"	8'-0"	6'-6"	5'-6"	5'-0"	4'-0"	3'-6"	3'-0"	-	-
12'-0"	11'-0"	9'-0"	7'-6"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-
14'-0"	9'-0"	7'-6"	6'-6"	5'-6"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-
16'-0"	7'-0"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-
18'-0"	6'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-
20'-0"	5'-0"	4'-6"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-
22'-0"	4'-6"	3'-6"	3'-6"	3'-0"	-	-	-	-	-	-	-	-
24'-0"	3'-6"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-
26'-0"	3'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-
28'-0"	3'-0"	-	-	-	-	-	-	-	-	-	-	-

POST SIZE W8x18	SIGN DEPTH								
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"
CLEAR HEIGHT	POST MAX SPACING								
6'-0"	12'-0"	12'-0"	10'-6"	8'-6"	7'-0"	5'-6"	4'-6"	4'-0"	3'-0"
8'-0"	12'-0"	10'-0"	8'-0"	6'-6"	5'-6"	4'-6"	4'-0"	3'-0"	-
10'-0"	9'-6"	7'-6"	6'-6"	5'-0"	4'-6"	3'-6"	3'-0"	-	-
12'-0"	7'-6"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"	-	-	-
14'-0"	6'-0"	5'-0"	4'-0"	3'-6"	3'-0"	-	-	-	-
16'-0"	5'-0"	4'-0"	3'-6"	3'-0"	-	-	-	-	-
18'-0"	4'-0"	3'-6"	3'-0"	-	-	-	-	-	-
20'-0"	3'-6"	3'-0"	-	-	-	-	-	-	-
22'-0"	3'-0"	-	-	-	-	-	-	-	-

APPROVED BY:

Manar Nashif

CHIEF ENGINEERING OFFICER

DATE: 03/01/2023

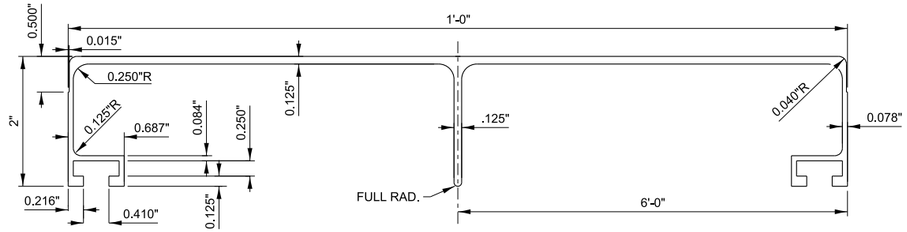
NOTES:

1. CLEAR HEIGHT SHALL BE TAKEN AS THE DISTANCE BETWEEN THE STUB PROJECTION AND THE BOTTOM OF THE SIGN PANEL.

Illinois Tollway

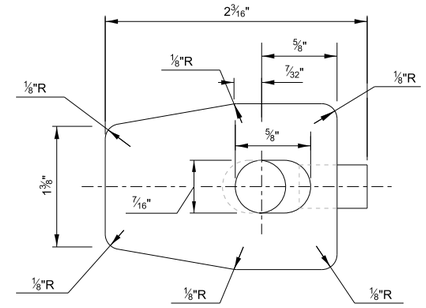
BREAKAWAY SIGN SUPPORT DETAILS

VERSION:	STANDARD:	SHEET:
2023-03	F9-07	5 OF 5

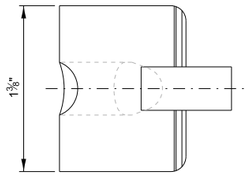


12" PANEL

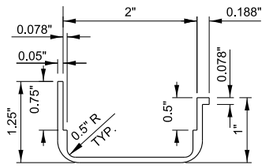
TYPE B SIGN PANEL EXTRUSIONS



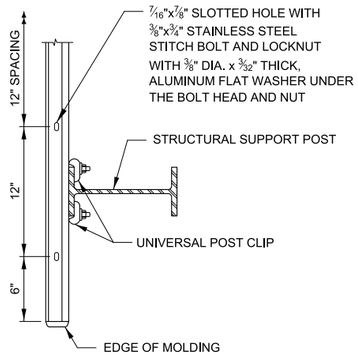
PLAN VIEW



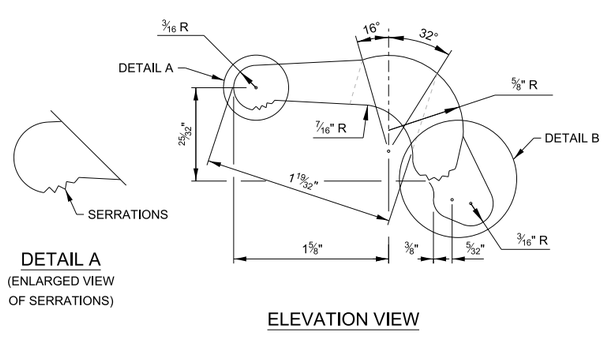
END VIEW



EDGE MOLDING SECTION
FOR SIGN PANEL

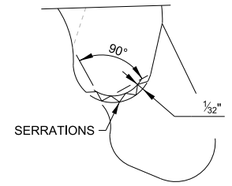


SECTION C-C



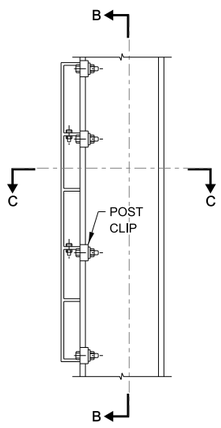
DETAIL A
(ENLARGED VIEW
OF SERRATIONS)

ELEVATION VIEW

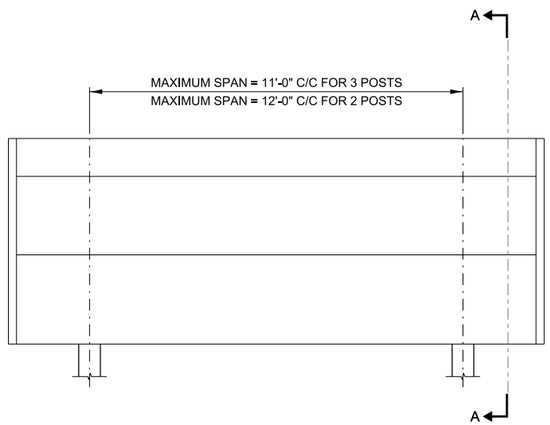


DETAIL B
(ENLARGED DETAIL
OF SERRATIONS)

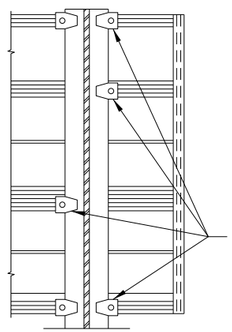
UNIVERSAL POST CLIP DETAIL



SECTION A-A

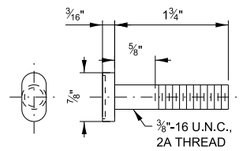


FACE OF SIGN PANEL



PROVIDE TWO (2) POST CLIPS AT TOP AND BOTTOM. ALTERNATE INTERIOR POST CLIPS ON SIGNS UNDER 24 FEET LONG AND OVER HEAD MOUNTED SIGNS. DO NOT ALTERNATE INTERIOR CLIPS ON OTHER SIGNS. A 3/8" DIA. x 3/32" THICK, ALUMINUM FLAT WASHER SHALL BE USED UNDER EACH NUT TO PREVENT GOUGING OF THE CLIP.

SECTION B-B



POST CLIP BOLT
STAINLESS STEEL

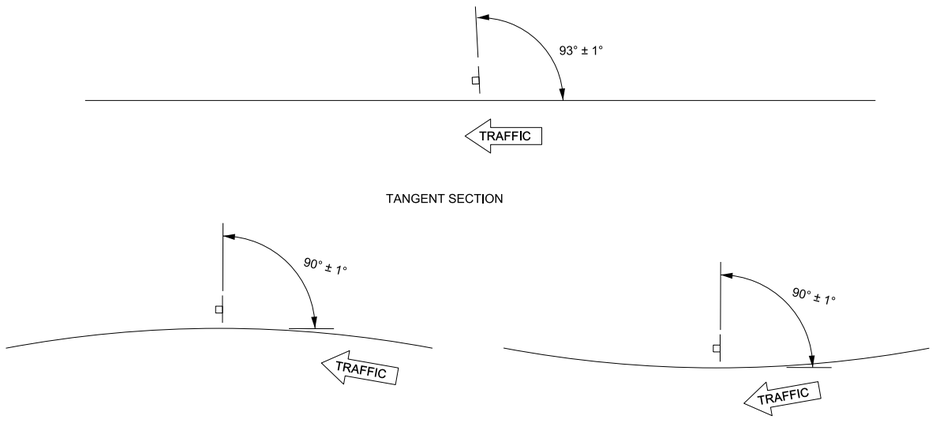
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/11/2015

REVISIONS	
DATE	DESCRIPTION
03-11-2015	ADDED WASHERS TO CONNECTION
	DETAILS
02-07-2012	REMOVED DETAIL FOR MOUNTING 2
	PANEL SIGN.
01-01-2009	MODIFIED TYPE B SIGN PANEL DIM.
	MODIFIED POST CLIP DETAIL.

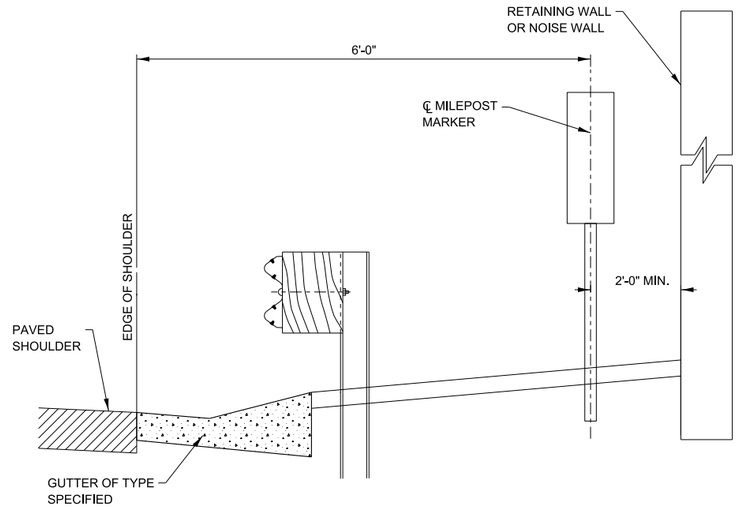
Illinois Tollway

MISCELLANEOUS DETAILS AND ALUMINUM SIGN PANELS

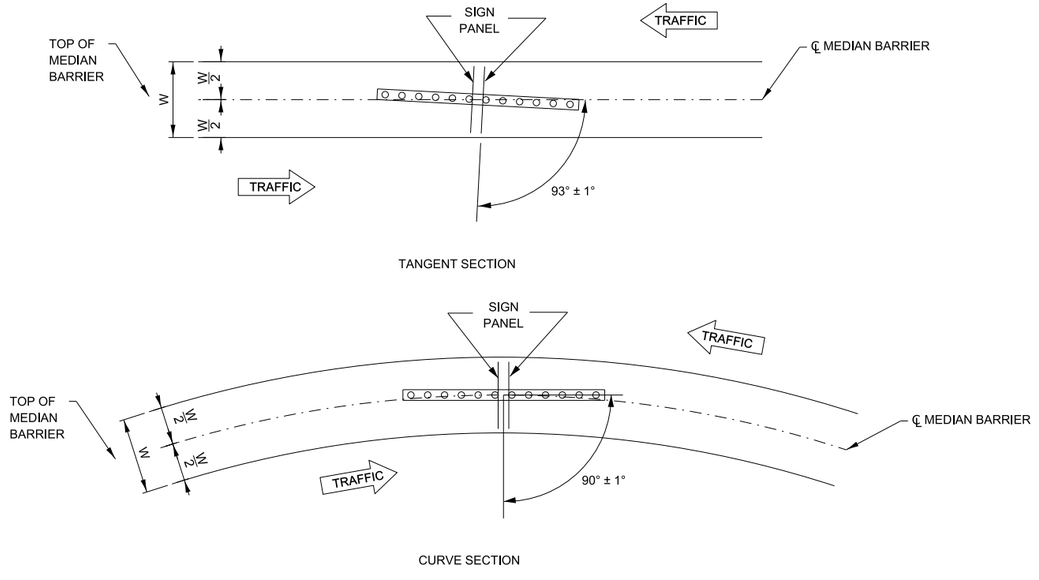
VERSION:	STANDARD:	SHEET:
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GROUND MOUNT SIGN POSITIONING
NOT TO SCALE



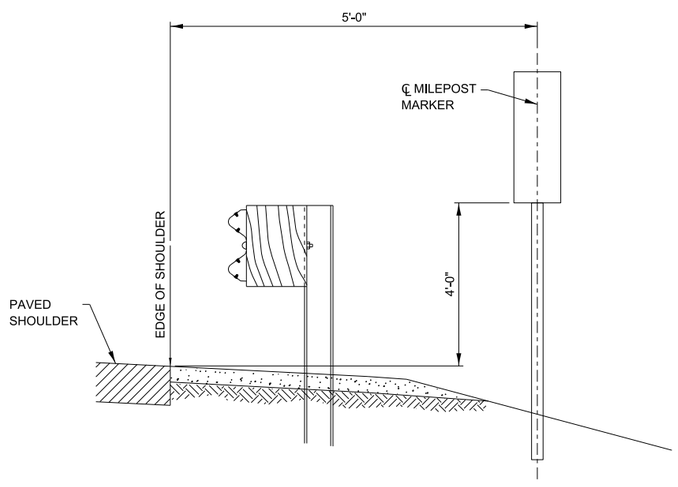
SECTION WITH GUTTER
NOT TO SCALE



MEDIAN BARRIER SIGN POSITIONING
NOT TO SCALE

LEGEND:

TRAFFIC — DIRECTION OF TRAFFIC



SECTION WITHOUT GUTTER
NOT TO SCALE

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

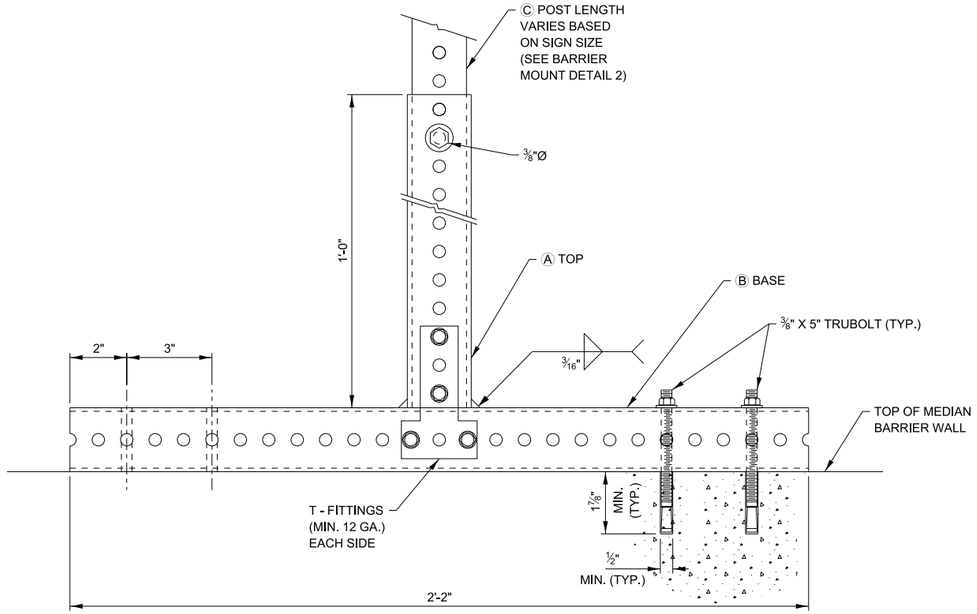
DATE:
03/01/2025

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2025	ADDED MILEPOST MARKER CALLOUTS
03-01-2020	REVISED BARRIER MOUNT DETAIL AND
	GENERAL NOTES, ADDED MILEPOST
03-01-2019	REMOVED "LIGHT POLE/SIGN
	STRUCTURE MOUNTED DETAIL."
03-31-2016	REVISED BOLT NOTE.

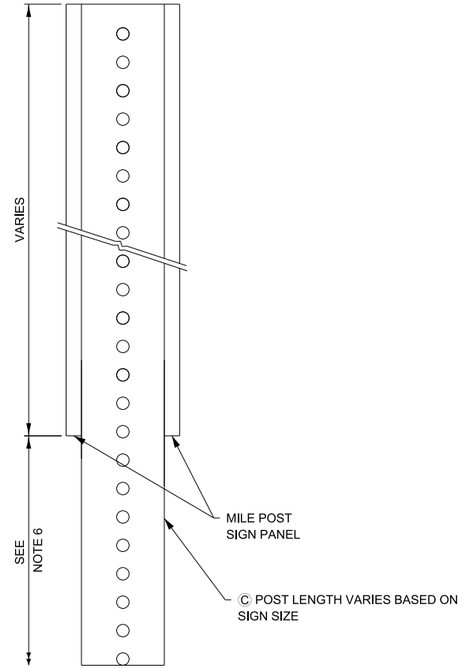
MILEPOST MARKER

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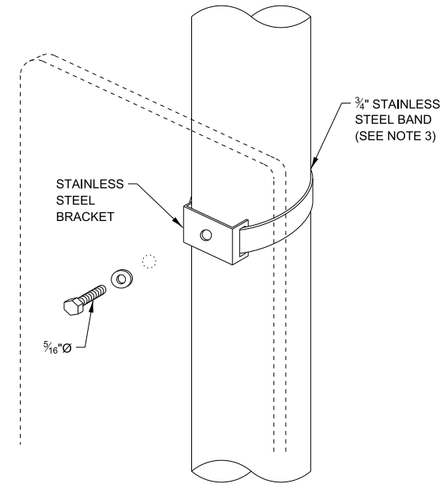
BARRIER MOUNT DETAIL

NOT TO SCALE



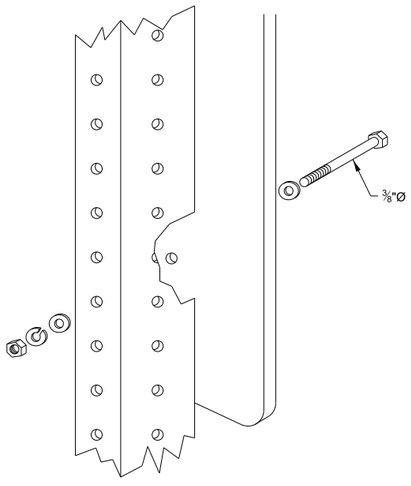
BARRIER MOUNT DETAIL 2

NOT TO SCALE



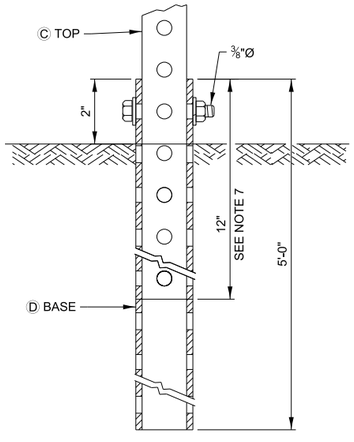
LIGHT POLE/SIGN STRUCTURE MOUNT DETAIL

NOT TO SCALE



TELESCOPING STEEL POSTS

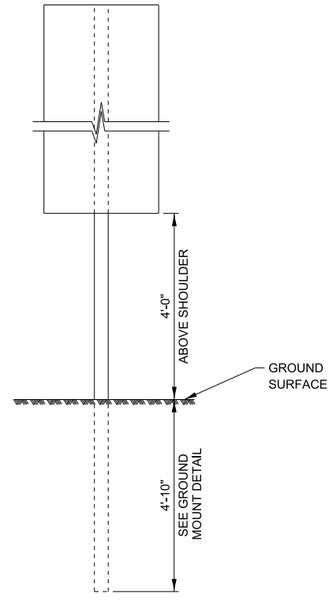
NOT TO SCALE



GROUND MOUNT DETAIL

NOT TO SCALE

A	2¼" x 2¼" x 1'-0" (12 GA.)
B	2¼" x 2¼" x 2'-2" (12 GA.)
C	2" x 2" x VARIES (12 GA.)
D	2¼" x 2¼" x 5'-0" (12 GA.)



ONE POST INSTALLATION

NOT TO SCALE

GENERAL NOTES:

1. ALL ANCHOR BOLTS FOR MEDIAN BARRIER MOUNT DETAIL SHALL BE 3/8" DIA. RED HEAD "TRUBOLT" OR APPROVED EQUAL.
2. ALL DIMENSIONS ARE IN INCHES UNLESS SHOWN OTHERWISE.
3. FOLLOWING ARE THE STEPS FOR FASTENING THE MILEPOST MARKER SIGN PANEL. ALL MOUNTING DETAILS SHOWN ON THIS SHEET APPLY:
   A. CENTER ALL FASTENERS ON THE SIGN PANEL.
   B. START AND FINISH THE FASTENER SPACING USING A MINIMUM OF 3" TO A MAXIMUM OF 6" FROM THE TOP AND BOTTOM EDGE OF THE SIGN PANEL.
   C. THE DISTANCE BETWEEN SUCCESSIVE FASTENERS SHALL NOT EXCEED 2'-0".
4. CENTER THE 5/16" DIA. BOLT IN THE MIDDLE OF THE SIGN.
5. USE THE SAME ATTACHMENT FOR BACK TO BACK MILEPOST MARKER SIGN.
6. DISTANCE FROM THE GROUND TO THE BOTTOM OF THE MILEPOST MARKER SIGN SHALL BE A MINIMUM OF 4'-0" REGARDLESS OF BARRIER TYPE.
7. THE TOP SECTION SHALL BE TELESCOPED INTO THE BASE SECTION 12 INCHES AND FASTENED TOGETHER.
8. FOR ATTACHMENT TO BRIDGE PARAPET USE BARRIER WALL MOUNT DETAIL. ONLY ONE PANEL REQUIRED WHEN ATTACHED TO PARAPET ALONG OUTSIDE SHOULDER.
9. BASE AND POST ASSEMBLY SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111 OR AS SPECIFIED IN THE SPECIAL PROVISION.

APPROVED BY:

Manar Nashif

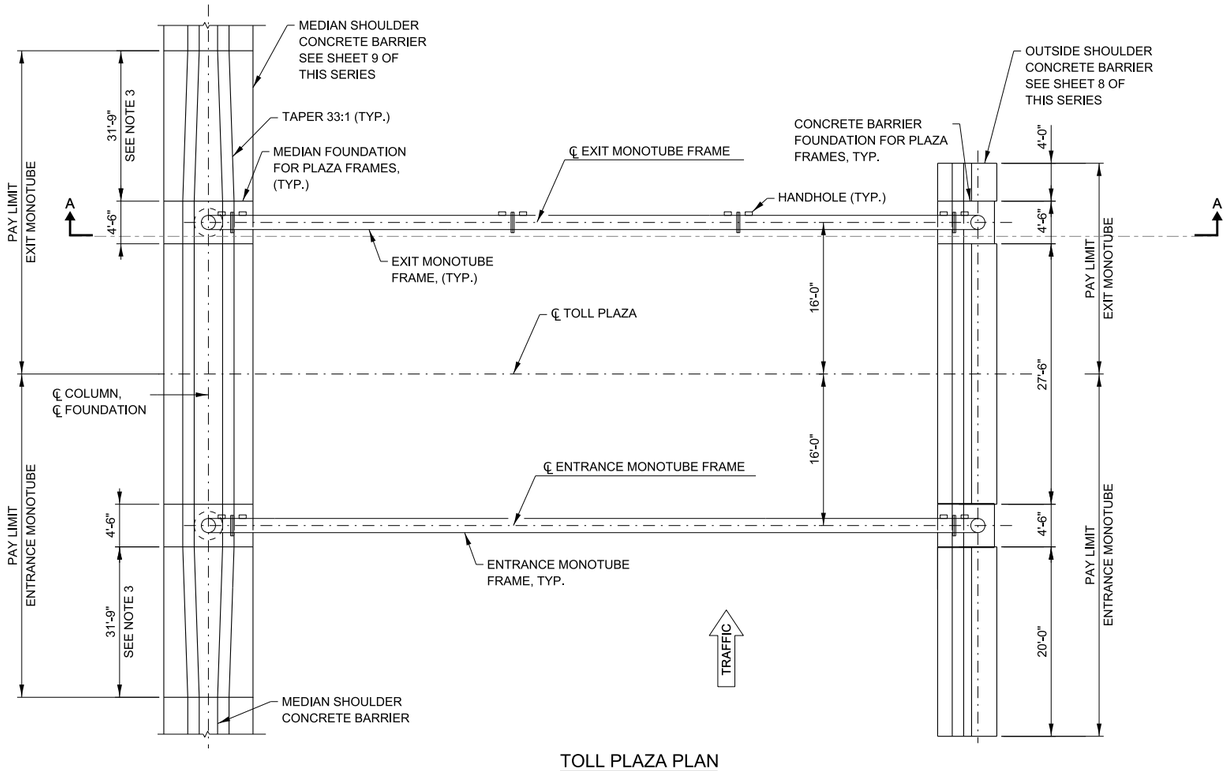
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

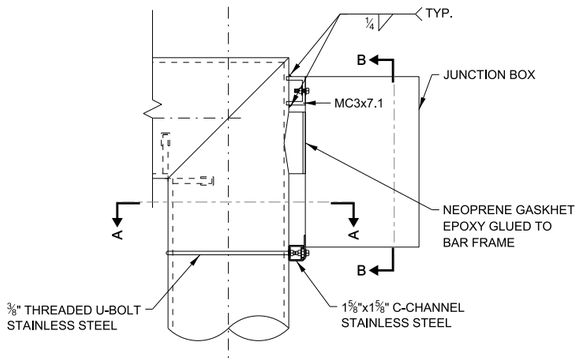
Illinois Tollway

MILEPOST MARKER

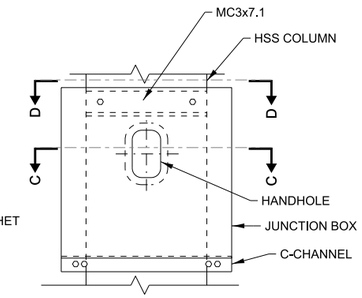
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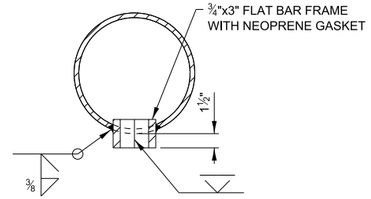
TOLL PLAZA PLAN



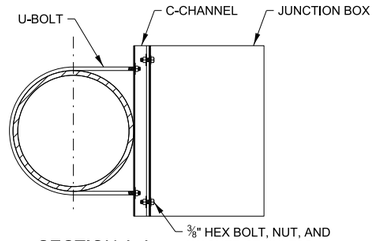
EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



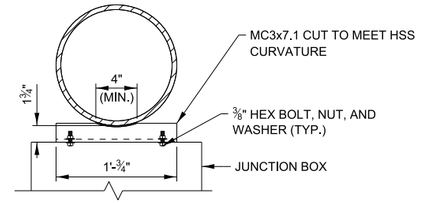
SECTION B-B



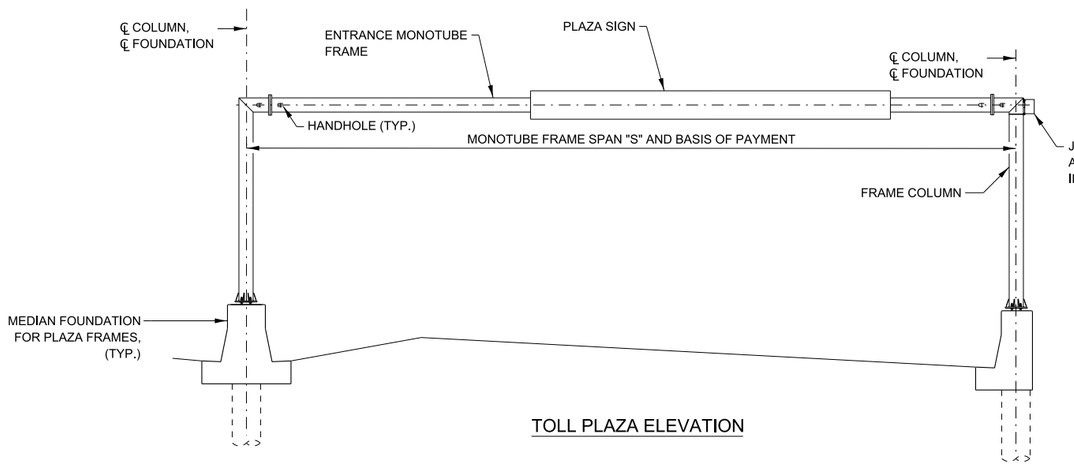
SECTION C-C



SECTION A-A

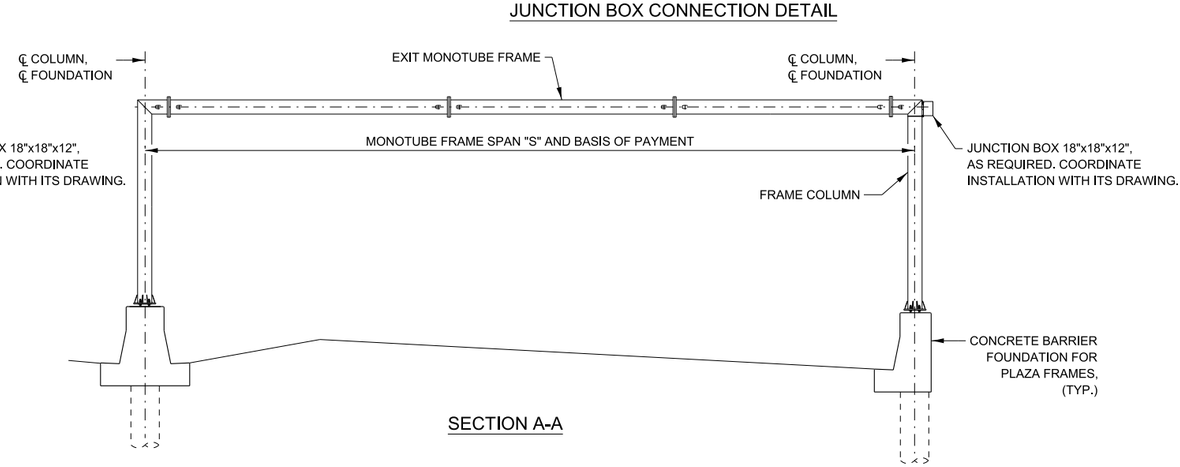


SECTION D-D



TOLL PLAZA ELEVATION

JUNCTION BOX CONNECTION DETAIL



SECTION A-A

NOTES:

1. SEE PLANS FOR SIGN SIZE AND LOCATION.
2. MAXIMUM PLAZA SIGN AREA IS 108 SQ. FT. MAXIMUM PLAZA SIGN LENGTH IS 36 FT.
3. TAPER BARRIER WIDTH AND HEIGHT FULL LENGTH.

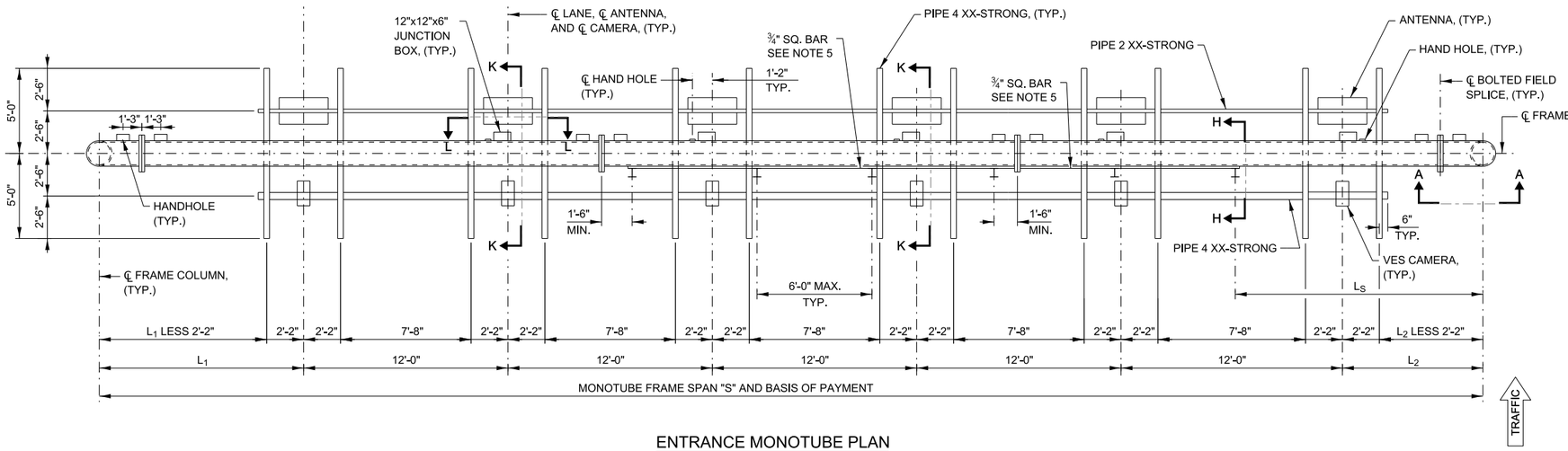
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	ADDED MEDIAN BARRIER, JUNCTION
	BOX, AND PLASTIC TRIM DETAILS.
03-01-2024	ADDED NOTE FOR BARRIER PAYMENT
	CLARIFIED PAY ITEMS FOR MONOTUBES.
03-01-2023	CHANGE HORZ. PIPE TO 4XX-STRONG,
	REVISED MED. BARRIER TAPER WIDTH.

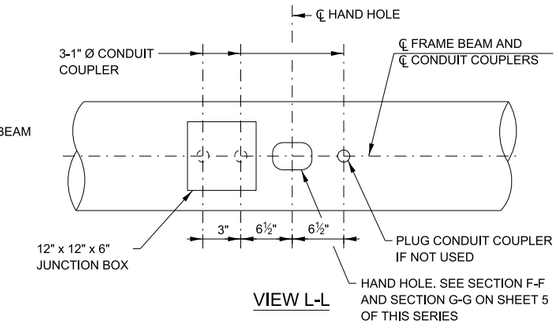
Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

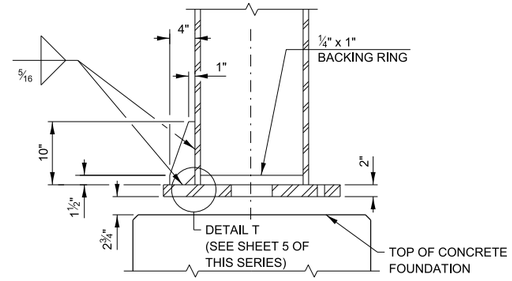
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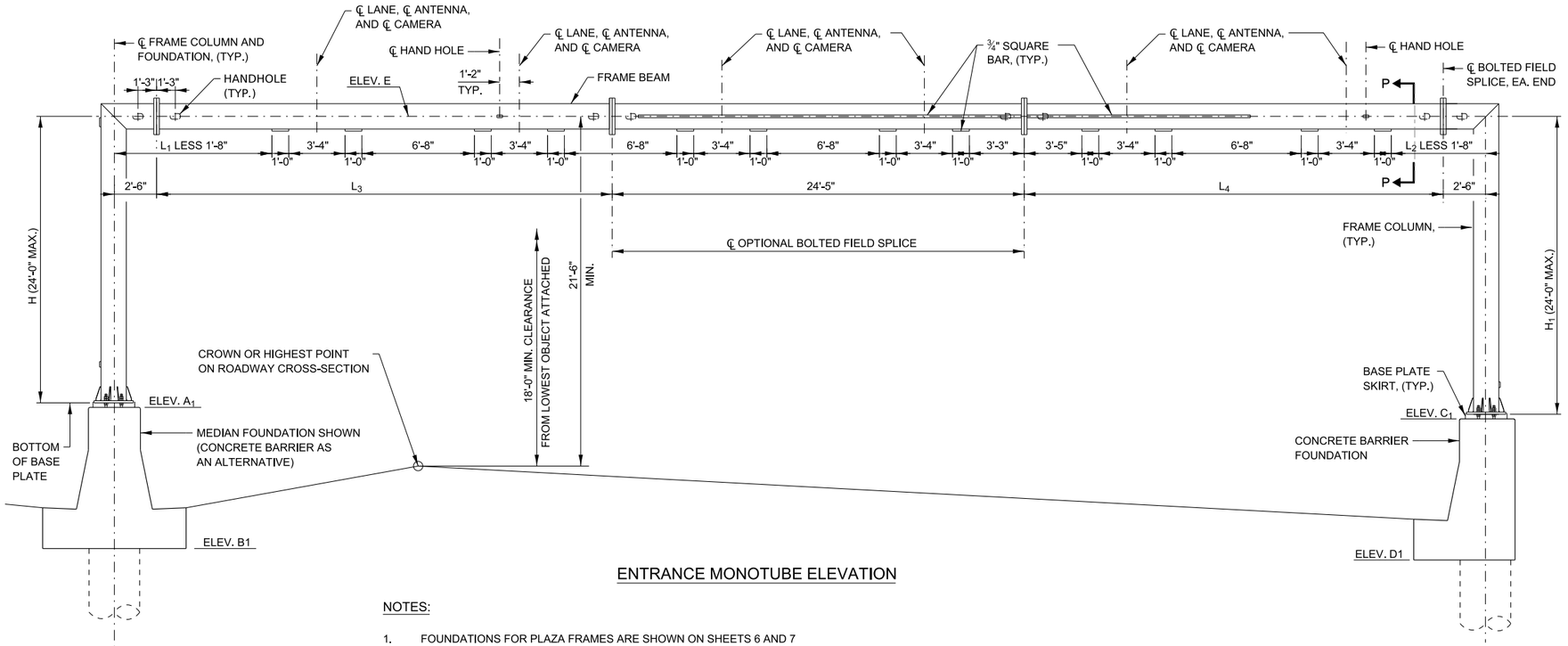
ENTRANCE MONOTUBE PLAN



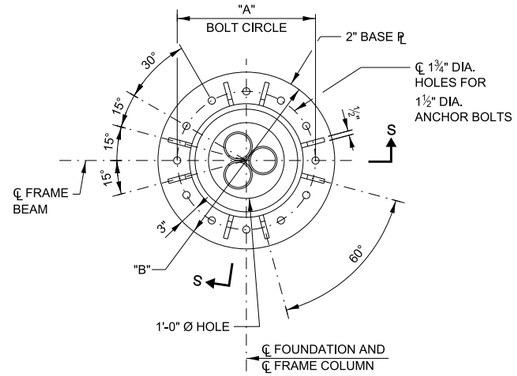
VIEW L-L



SECTION S-S



ENTRANCE MONOTUBE ELEVATION



BASE PLATE PLAN MONOTUBE FRAMES

NOTES:

1. FOUNDATIONS FOR PLAZA FRAMES ARE SHOWN ON SHEETS 6 AND 7 OF THIS SERIES.
2. FOR SECTIONS A-A, H-H, K-K, BASE PLATE SKIRT AND HAND HOLE DETAILS, SEE SHEET 5 OF THIS SERIES.
3. FOR SECTION P-P SEE SHEET 4 OF THIS SERIES.
4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
5. DISCONTINUE ¾" SQUARE BAR TO ALLOW ½" Ø U-BOLT INSTALLATION.
6. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURES ENTRANCE/EXIT MONOTUBE TYPE (STEEL) MAINLINE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

MONOTUBE FRAME TABLE

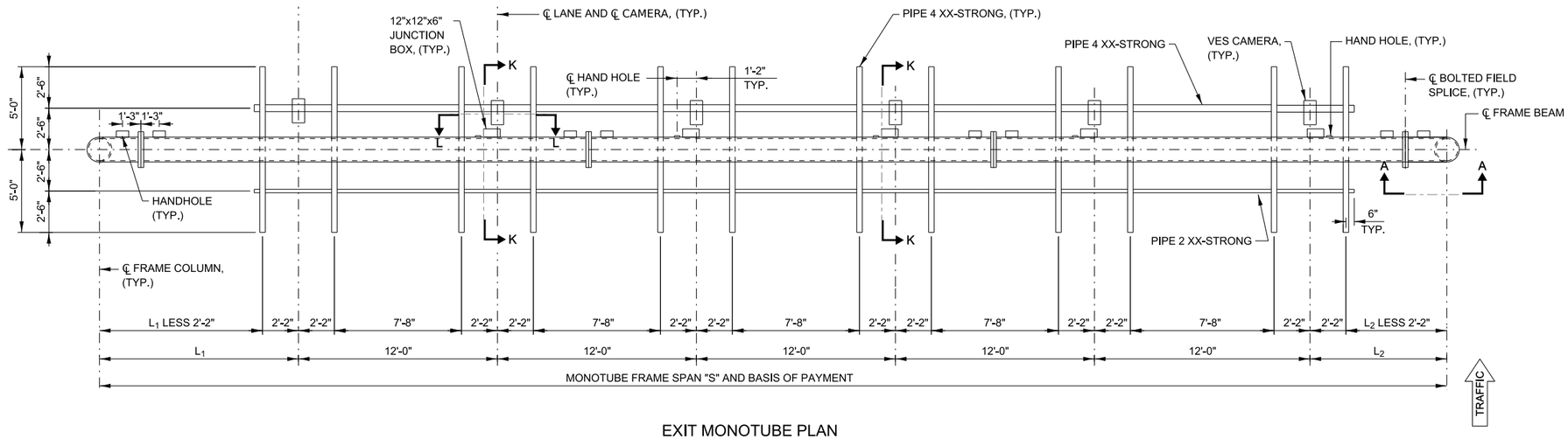
TYPE	SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER	"A"	"B"
I	≤ 70'	HSS 16x0.500	HSS 16x0.500	2¾"	1'-8"	2'-2"
II	71'-80'	HSS 18x0.500	HSS 18x0.500	4"	1'-10"	2'-4"
III	81'-90'	HSS 18x0.500	HSS 18x0.500	4½"	1'-10"	2'-4"

APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

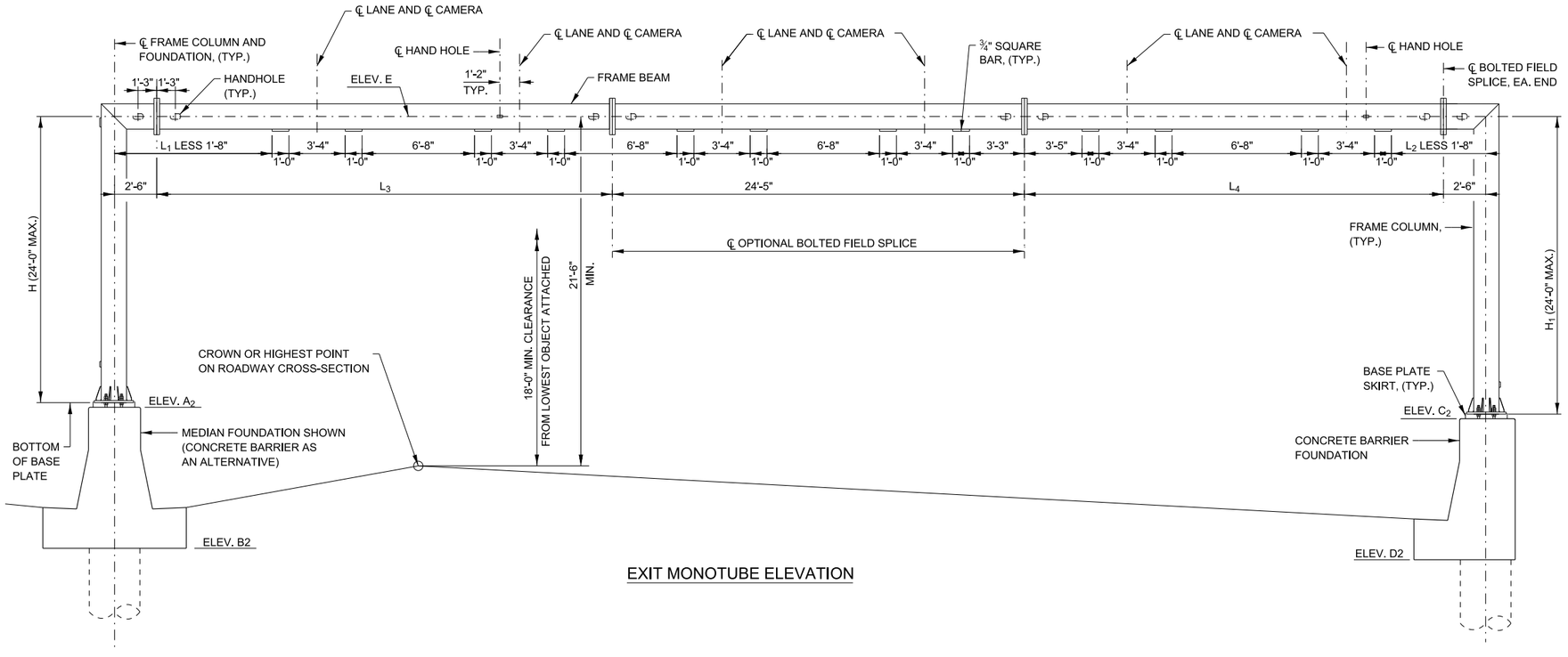
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OVERHEAD SIGN STRUCTURE
MONOTUBE TYPE (STEEL)
MAINLINE STRUCTURE
DETAILS

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EXIT MONOTUBE PLAN



EXIT MONOTUBE ELEVATION

NOTES:

1. SEE SHEET 2 OF THIS SERIES FOR MONOTUBE FRAME TABLE, VIEW L-L, BASE PLATE DETAIL, AND ADDITIONAL NOTES.
2. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURES EXIT MONOTUBE TYPE (STEEL) SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

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GENERAL NOTES:

1. SEE THE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE.

2. AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.

3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.

STRUCTURAL STEEL:

1. MATERIAL FOR THE HSS MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENT OF ASTM A500 GRADE B OR GRADE C. OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.

2. PIPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53 GRADE B.

3. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 (AASHTO M314) GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. INSTALLATION AND INSPECTION OF ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME "STEEL". ANCHORS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232). SEE SHEET 6 OF THIS SERIES FOR GALVANIZED LENGTH.

4. U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).

5. BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 (AASHTO M164). THEY SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232).

6. NUTS SHALL CONFORM TO ASTM A563 GRADE DH AND GALVANIZED ACCORDING TO ASTM A153 (AASHTO M232).

7. HARDENED STEEL WASHERS SHALL CONFORM TO ASTM F436 AND GALVANIZED ACCORDING TO ASTM A153 (AASHTO M232).

8. HSS FOR MONOTUBE FRAME, PIPES, STRUCTURAL STEEL SHAPES AND PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

8. THE MONOTUBE FRAME BEAM, COLUMNS, BASE PLATE MATERIAL, AND SPLICES ARE CONSIDERED TENSION MEMBERS AND SHALL CONFORM TO THE IMPACT TESTING REQUIREMENT, ZONE 2.

10. WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS USING E70-XX ELECTRODES, AND SHALL CONFORM TO AWS D1.1-08 "STRUCTURAL WELDING CODE - STEEL". ALL WELDS ON ARCHITECTURAL EXPOSED STEEL (AES) MEMBERS ARE TO BE GROUND SMOOTH AND FILLED.

DESIGN LOADING:

WIND LOAD CRITERIA:
BASIC WIND SPEED = 120 M.P.H.
G = 1.14
I_F = 1.00
K_Z = 1.00
SIGN PANEL = 50 P.S.F.
COLUMN/BEAM = 35 P.S.F.

SIGN DEAD LOAD = 3 P.S.F.

ICE = 3 P.S.F. (APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY)

EQUIPMENT LOADS:

CAMERA ASSEMBLY W/MOUNTING HARDWARE	40 LB.
ANTENNA W/MOUNTING HARDWARE	24 LB.

DESIGN STRESSES FOR REINFORCED CONCRETE:

f'c = COMPRESSIVE STRENGTH OF CONCRETE AT 14 DAYS (CLASS SI)	= 3,500 P.S.I.
f'c = COMPRESSIVE STRENGTH OF CONCRETE AT 14 DAYS (CLASS DS)	= 4,000 P.S.I.
fy = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60)	= 60,000 P.S.I.

FOUNDATION:

MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.25 TON/SQ.FT. AT PLAZA FRAMES.

DESIGN SPECIFICATIONS:

1. ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION.

2. AASHTO LRFD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 1ST EDITION.

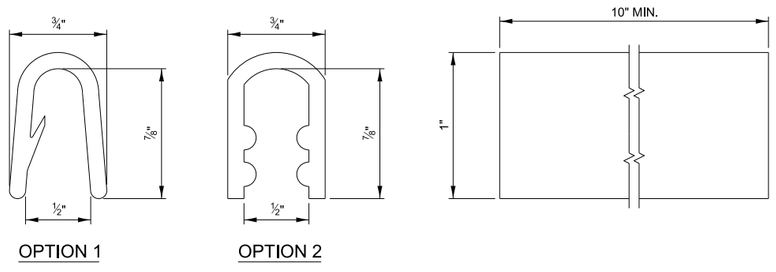
3. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020.

4. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, JANUARY 2012

CONSTRUCTION SPECIFICATIONS:

1. ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

2. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.



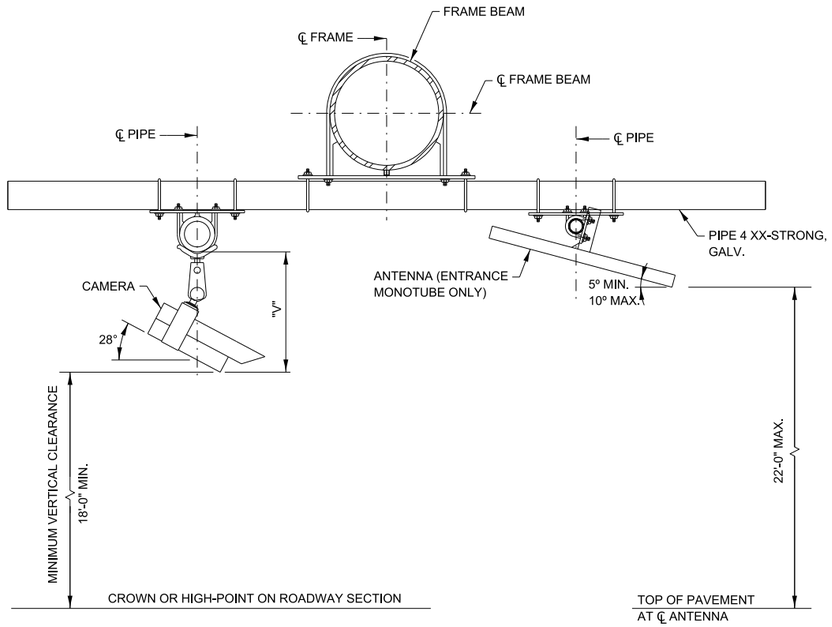
PLASTIC TRIM DETAIL

NOTES:

1. ALL SHARP EDGES OR DRIPS OF ZINC SHALL BE REMOVED FROM ALL STIFFENER PLATES PRIOR TO EPOXY GLUING THE TRIM. THE TRIM SHALL BE EPOXY GLUED TO BOTH SIDES OF THE PLATE. THE COST OF THE TRIM AND EPOXY GLUE SHALL BE INCLUDED IN THE COST OF "OVERHEAD SIGN STRUCTURE, AET RAMP ENTRANCE MONOTUBE TYPE (STEEL)"

2. THE TRIM SHALL BE HEAVY DUTY PLASTIC TRIM (OPTION 1 OR OPTION 2 OR EQUIVALENT) FOR OUTDOOR USE FOR APPLICATION WITH A TEMPERATURE RANGE OF -20°F TO 150°F. THE TRIM SHALL BE CHEMICAL RESISTANT, A HARD RATING AND SHALL MEET FMVSS-302 FOR FEDERAL MOTOR VEHICLE SAFETY STANDARDS FOR FLAMMABILITY.

3. EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



SECTION P-P

NOTE:

VERIFY DIMENSION "V" WITH CAMERA MANUFACTURER.

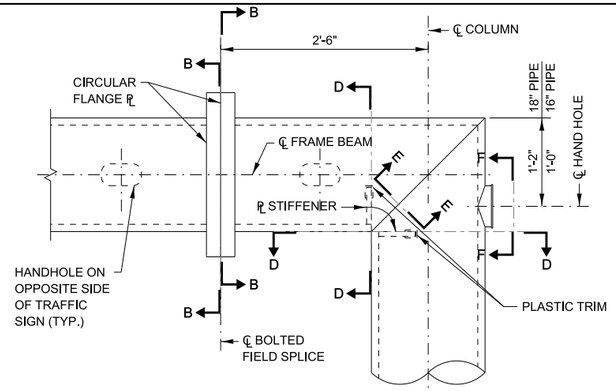
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

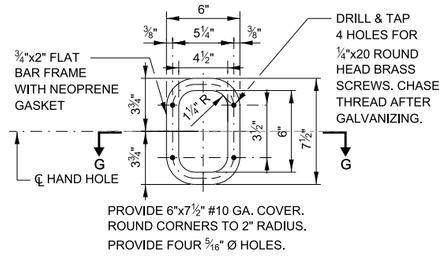
OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

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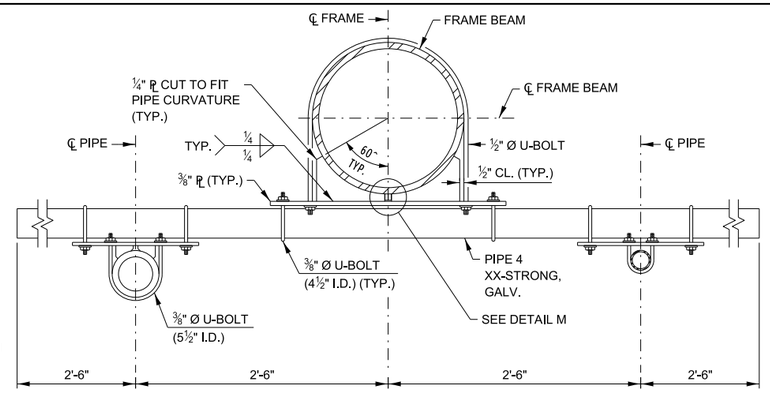


SECTION A-A

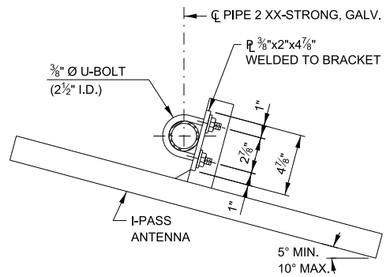
(SEE SHEET 1 OF THIS SERIES FOR LOCATION)



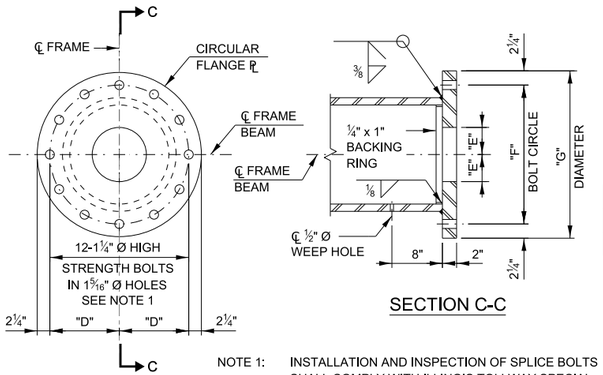
SECTION F-F



SECTION K-K



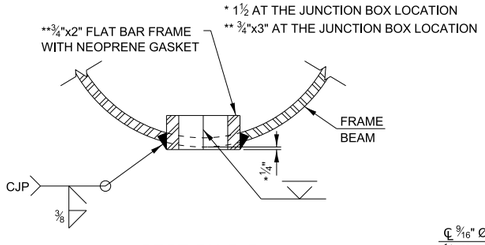
ANTENNA HANGER



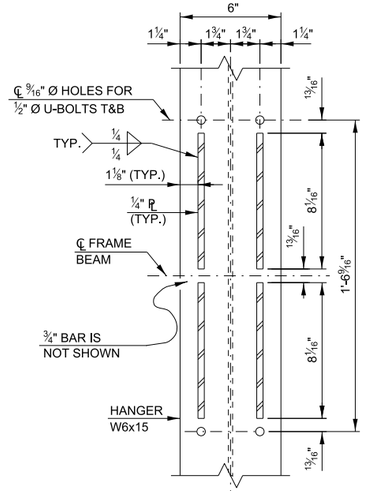
SECTION B-B

SECTION C-C

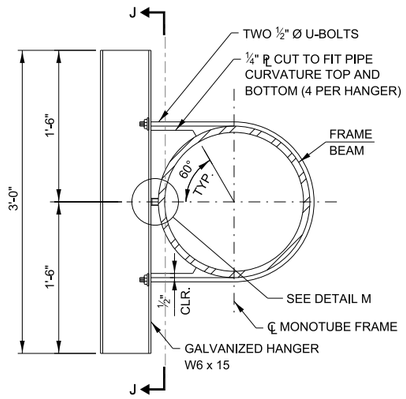
FRAME BEAM	"D"	"E"	"F"	"G"
HSS 16x0.500	10"	6"	1'-8"	2'-0½"
HSS 18x0.500	11"	6"	1'-10"	2'-2½"



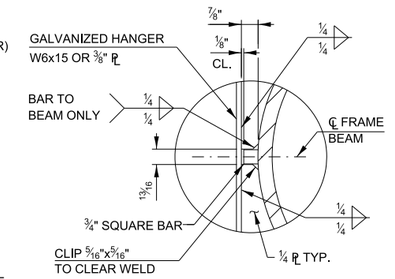
SECTION G-G



SECTION J-J

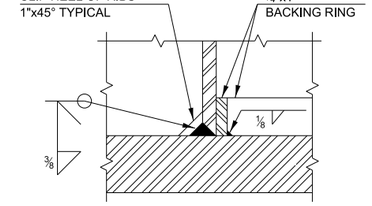


SECTION H-H (SIGN HANGER)

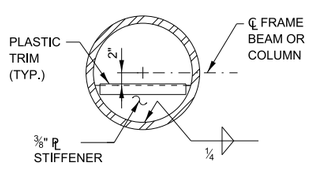


DETAIL M

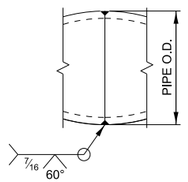
NOTE 1: INSTALLATION AND INSPECTION OF SPLICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".



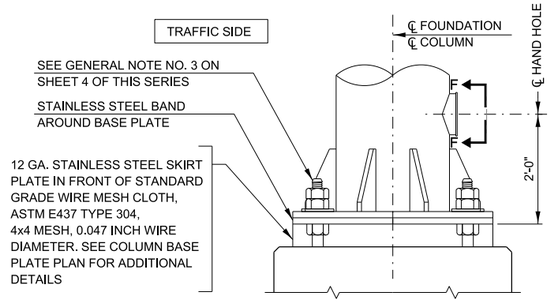
DETAIL T



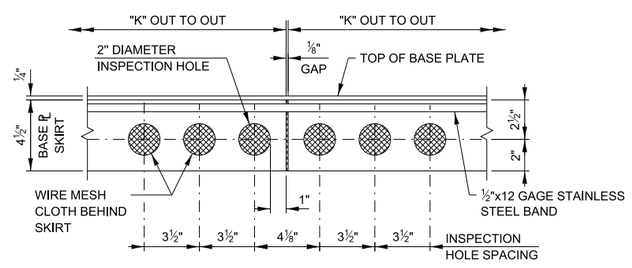
SECTION D-D



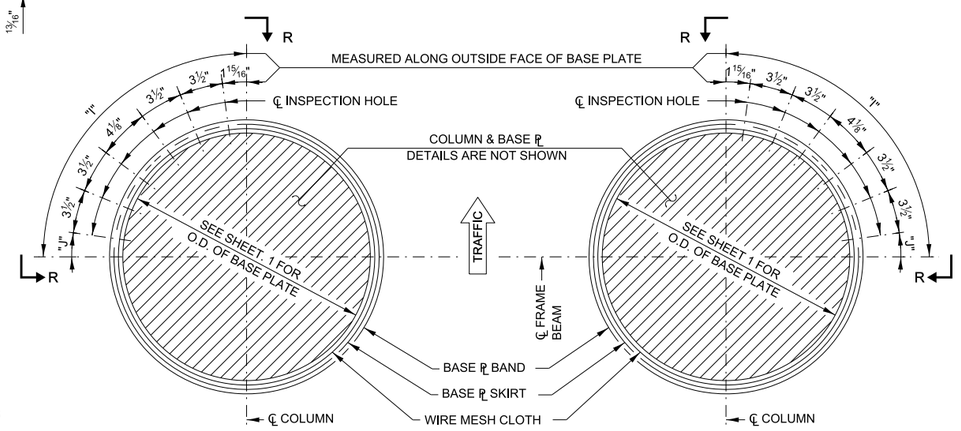
SECTION E-E



COLUMN BASE



VIEW R-R (BASE PLATE SKIRT)



LEFT BASE PLATE

RIGHT BASE PLATE

COLUMN BASE PLATE PLAN

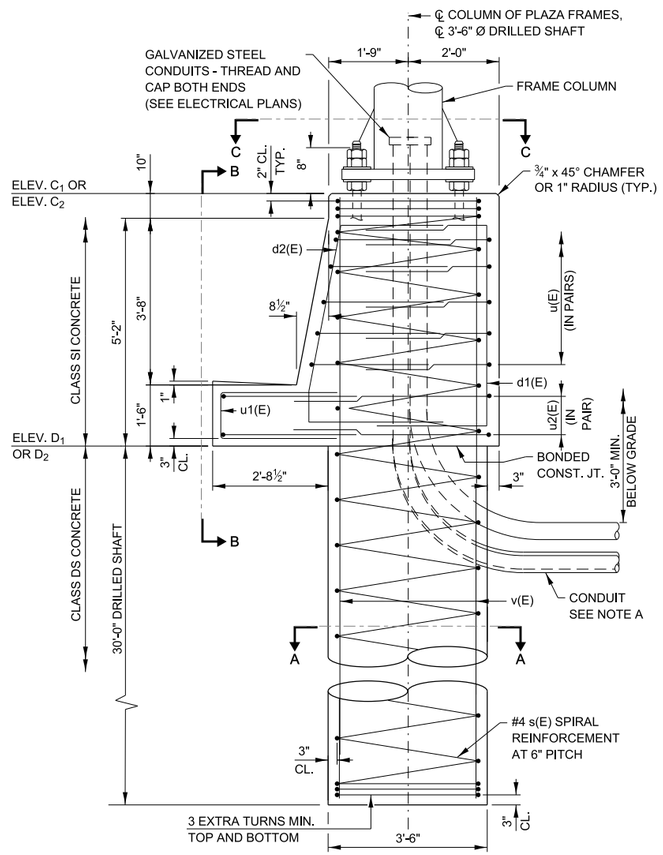
FRAME COLUMN	"I"	"J"	"K"
HSS 16x0.500	1'-8 7/16"	⅜"	6'-9 9/16"
HSS 18x0.500	1'-10"	1 15/16"	7'-3⅞"

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

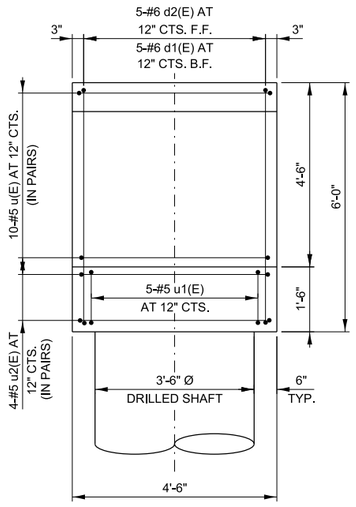
Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

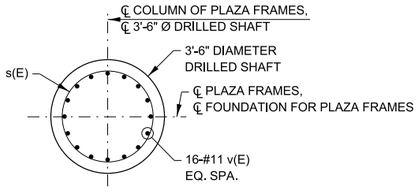
VERSION:	STANDARD:	SHEET:
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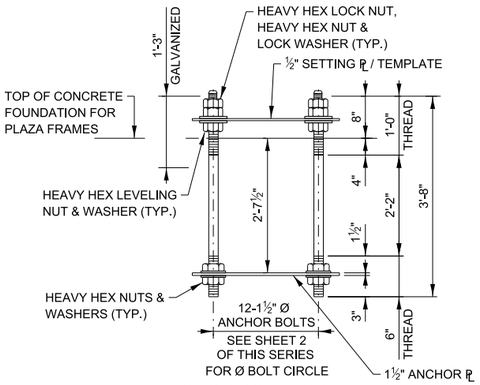
SIDE ELEVATION



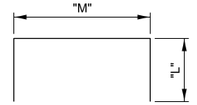
VIEW B-B



SECTION A-A

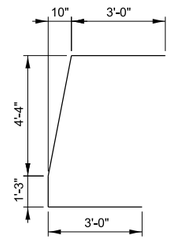


ANCHOR BOLT ASSEMBLY



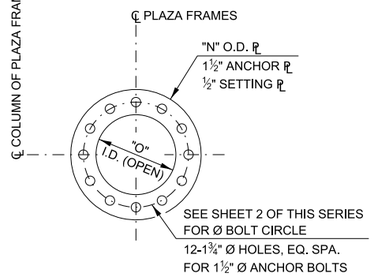
BAR	"L"	"M"
d1(E)	3'-0"	5'-7"
u(E)	3'-0"	4'-2"
u1(E)	3'-6"	1'-1"
u2(E)	4'-1"	4'-2"
u3(E)	5'-10"	4'-2"

BARS d1(E), u(E), u1(E), u2(E) AND u3(E)



BAR d2(E)

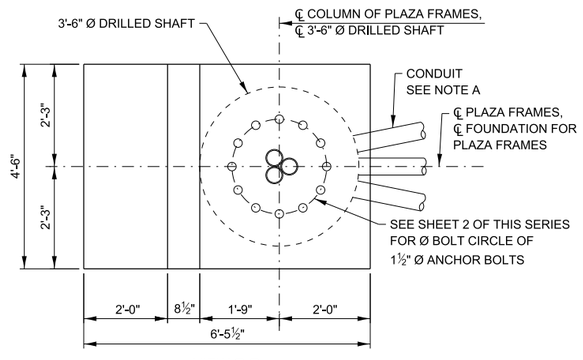
FRAME COLUMN	"N"	"O"
HSS 16x0.500	2'-0"	1'-4"
HSS 18x0.500	2'-2"	1'-6"



ANCHOR ℄ / SETTING ℄

BAR LIST-ONE FOUNDATION

BAR	NO. CONCRETE BARRIER FDN.	NO. MEDIAN BARRIER FDN.	SIZE	LENGTH	SHAPE
d1(E)	5	10	#6	11'-7"	
d2(E)	5	10	#6	11'-8"	
s(E)	1		#4	35'-7"	
s1(E)		1	#4	35'-7"	
v(E)	16		#11	35'-7"	
v1(E)		16	#11	35'-7"	
u(E)	10	10	#5	10'-2"	
u1(E)	5	10	#5	8'-1"	
u2(E)	4		#5	12'-4"	
u3(E)		4	#5	15'-10"	



VIEW C-C

CONCRETE BARRIER FOUNDATION FOR PLAZA FRAMES

NOTE A:
COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.

FOUNDATIONS:
THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

LEGEND:
F.F. - FRONT FACE
B.F. - BACK FACE
CTS. - CENTERS

ESTIMATED QUANTITY

ITEM	UNIT	CONCRETE BARRIER FDN.	MEDIAN BARRIER FDN.
CLASS SI CONCRETE	CU. YD.	4.7	4.9
CLASS DS CONCRETE	CU. YD.	10.7	10.7
REINFORCEMENT BARS EPOXY COATED	POUND	3,890	4,120
PROTECTIVE COAT	SQ. YD.	5.2	7.4

NOTES:

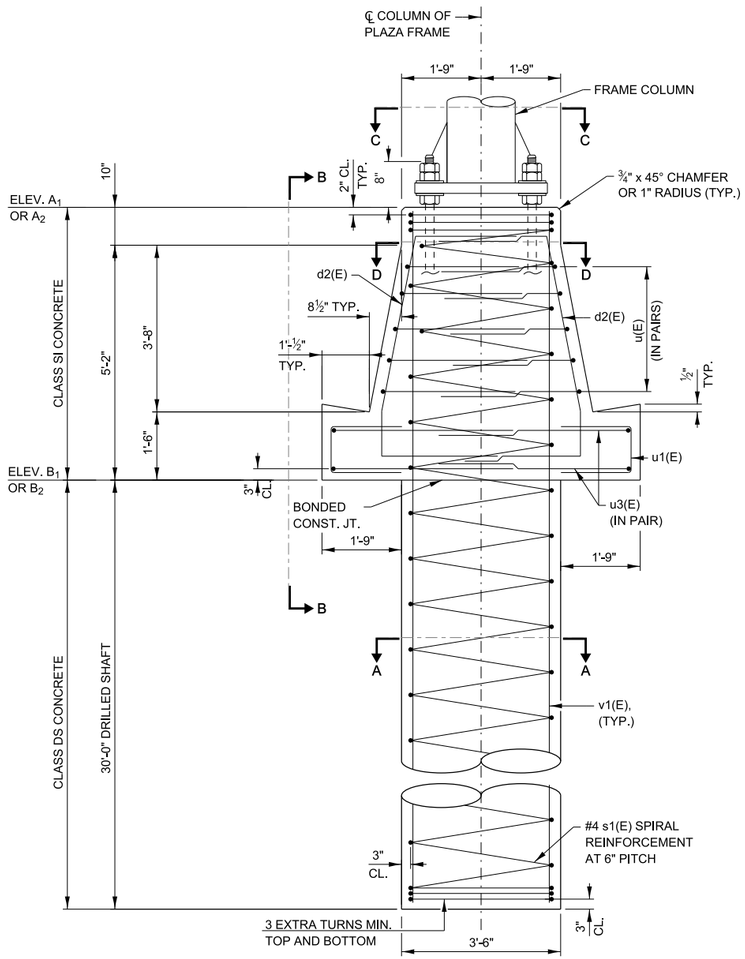
1. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.
2. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP OF GUTTER.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

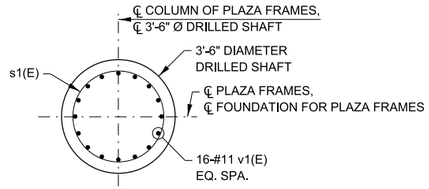
Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

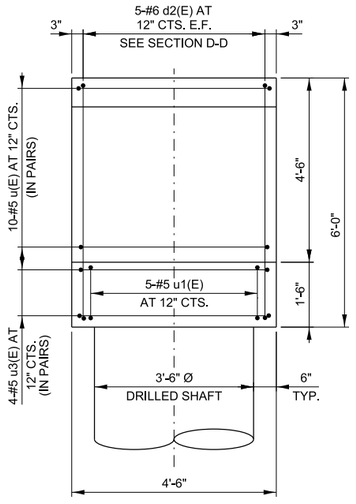
VERSION:	STANDARD:	SHEET:
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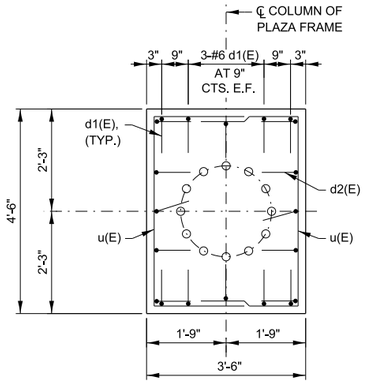
MEDIAN FOUNDATION FOR PLAZA FRAMES



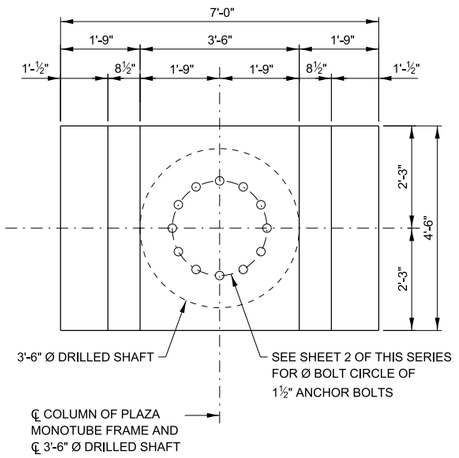
SECTION A-A



VIEW B-B



SECTION D-D



VIEW C-C

NOTES:

1. ANCHOR BOLT ASSEMBLY DETAIL, ANCHOR PLATE DETAIL AND BAR BENDING DIAGRAMS AND QUANTITIES ARE SHOWN ON SHEET 6 OF THIS SERIES.
2. SEE SHEET 6 OF THIS SERIES FOR ADDITIONAL NOTES.
3. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.
4. SEE SHEETS 1 AND 9 FOR BARRIER TAPER DETAILS.

LEGEND:

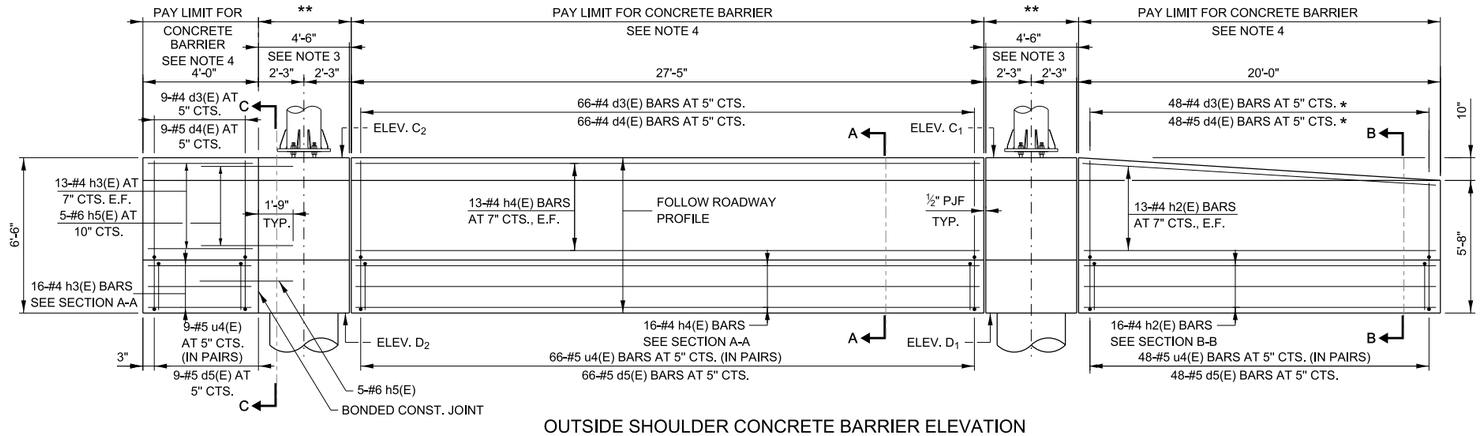
E.F. - EACH FACE
CTS. - CENTERS

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

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OUTSIDE SHOULDER CONCRETE BARRIER ELEVATION

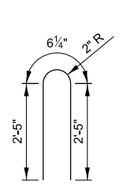
INSIDE FACE BARRIER IS SHOWN

* CUT IN FIELD AS REQUIRED TO FIT TAPER

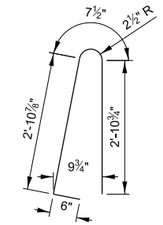
** PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE

BAR LIST - ONE BARRIER

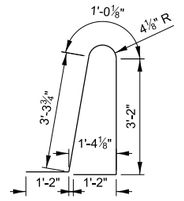
BAR	NO.	SIZE	LENGTH	SHAPE
d3(E)	123	#4	5'-5"	
d4(E)	123	#5	7'-0"	
d5(E)	123	#5	9'-10"	
h2(E)	29	#4	19'-7"	
h3(E)	29	#4	3'-8"	
h4(E)	29	#4	27'-1"	
h5(E)	10	#6	3'-9"	
u4(E)	246	#5	9'-3"	



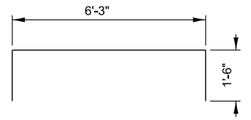
BAR d3(E)



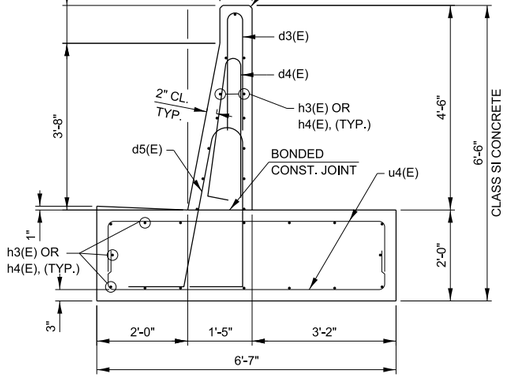
BAR d4(E)



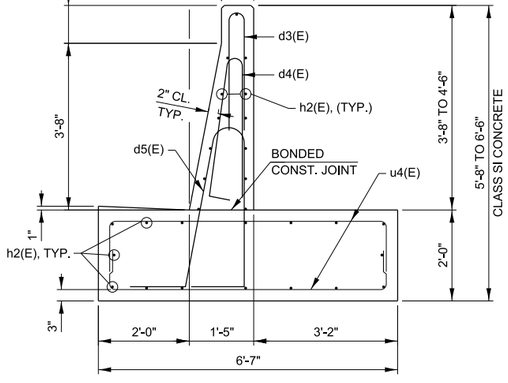
BAR d5(E)



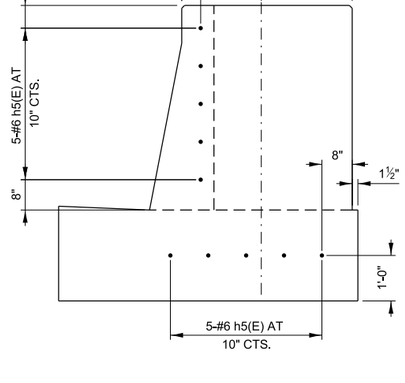
BAR u4(E)



SECTION A-A



SECTION B-B



SECTION C-C

ESTIMATED QUANTITY

	ITEM	UNIT	ENTRANCE MONOTUBE	EXIT MONOTUBE	TOTAL
OUTSIDE SHOULDER CONCRETE BARRIER	CONCRETE STRUCTURES	CU. YD.	21.8	11.6	33.4
	REINFORCEMENT BARS, EPOXY COATED	POUND	3,920	2,090	6,010
	PROTECTIVE COAT	SQ. YD.	26.8	14.3	41.1
MEDIAN SHOULDER CONCRETE BARRIER (SEE SHEET 9 OF 9)	CONCRETE BARRIER MEDIAN TRANSITION, DOUBLE FACE, AT PLAZA MONOTUBE	FOOT	31.8	31.8	63.5
	CONCRETE BARRIER MEDIAN, DOUBLE FACE, AT PLAZA MONOTUBE	FOOT	13.8	13.8	27.5
	PROTECTIVE COAT	SQ. YD.	60.2	60.2	120.5

NOTES:

1. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, TOP FACE OF THE GUTTER AND TO THE ENTRANCE SIDE FACE (AT THE BEGINNING OF THE PLAZA PAVEMENT) FOR THE FULL HEIGHT OF THE BARRIER.
2. FOR LOCATION OF ELECTRICAL JUNCTION BOXES ON THE WALL, SEE ELECTRICAL DETAIL SHEETS.
3. FOR CONCRETE BARRIER FOUNDATION DETAILS FOR PLAZA FRAMES SEE SHEET 6 OF THIS SERIES.
4. OUTSIDE SHOULDER CONCRETE BARRIER AND BASE DETAILED ON THIS SHEET WILL BE PAID FOR UNDER THE ITEMS: CONCRETE STRUCTURES, REINFORCEMENT BARS, EPOXY COATED AND PROTECTIVE COAT.
5. ALL CONCRETE BARRIERS LOCATED OUTSIDE THE LIMITS SHOWN ON THESE SHEETS WILL BE PAID SEPARATELY.

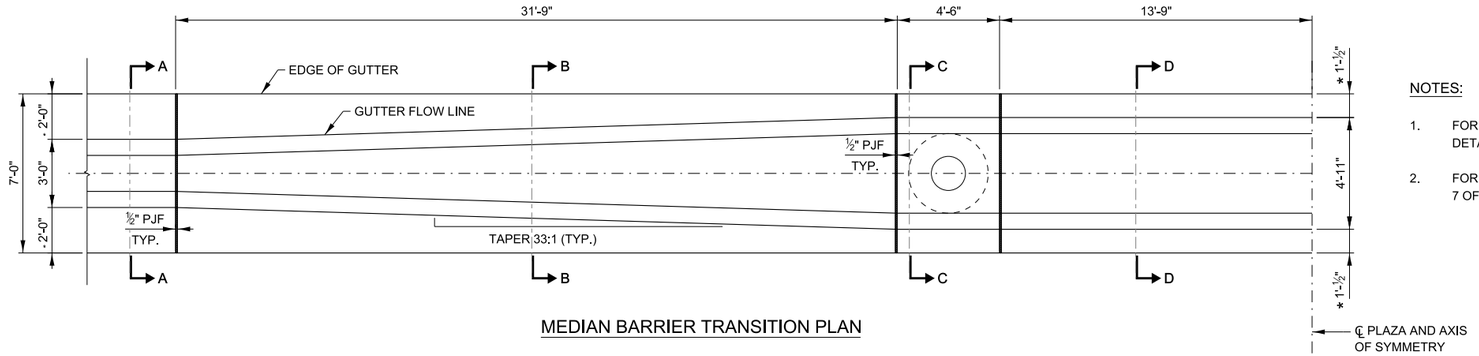
APPROVED BY:
Marco Nastif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

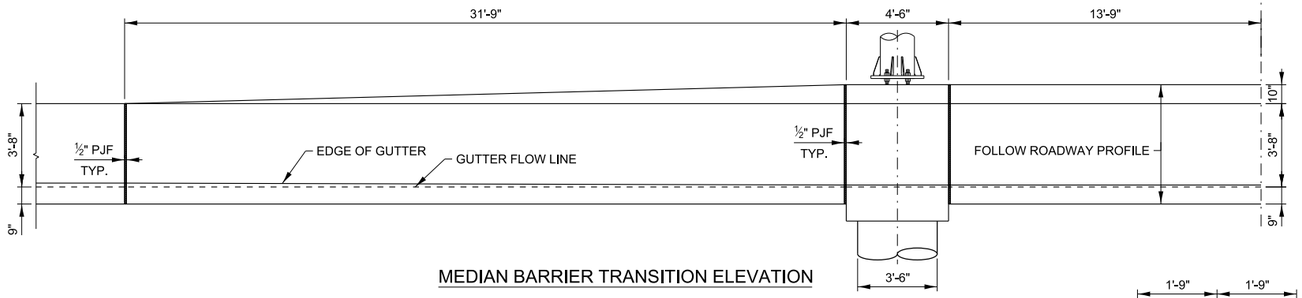
OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

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MEDIAN BARRIER TRANSITION PLAN

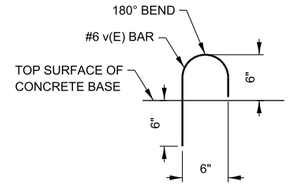
℄ PLAZA AND AXIS OF SYMMETRY



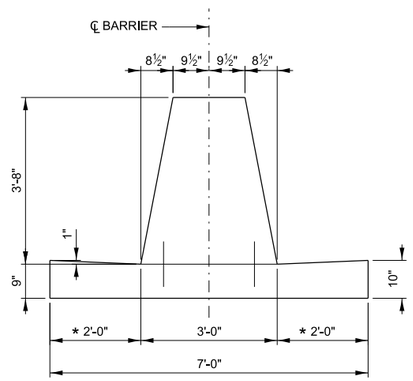
MEDIAN BARRIER TRANSITION ELEVATION

NOTES:

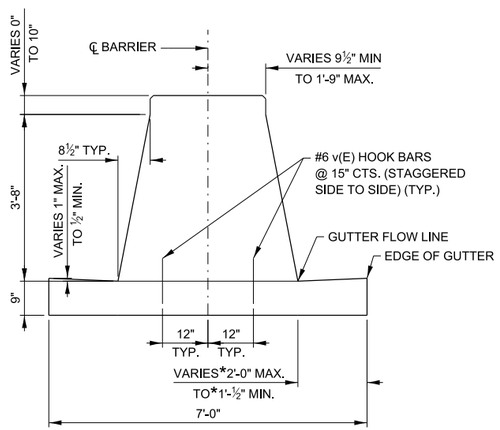
1. FOR LOCATION OF ELECTRICAL JUNCTION BOXES IN THE WALL, SEE ELECTRICAL DETAIL SHEETS.
2. FOR CONCRETE BARRIER FOUNDATION DETAILS FOR PLAZA FRAMES SEE SHEET 7 OF THIS SERIES.



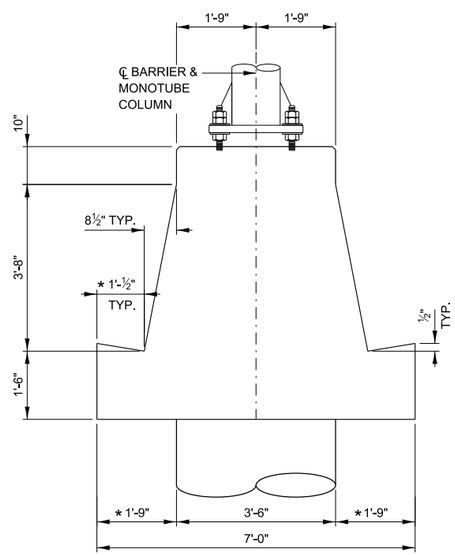
v(E) HOOK BAR (SIDE VIEW)



SECTION A-A

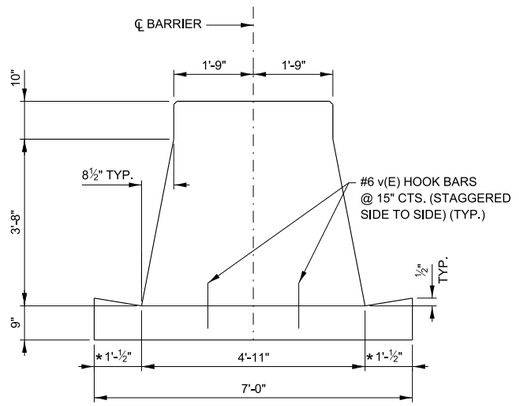


SECTION B-B



SECTION C-C

(MONOTUBE FOUNDATION REINFORCEMENT NOT SHOWN FOR CLARITY)



SECTION D-D

* WHEN THE ADJACENT ROADWAY SHOULDER IS WIDER THAN 14 FEET, THE GUTTER WIDTH SHALL BE WIDENED AS SHOWN ON THE CONTRACT PLANS.

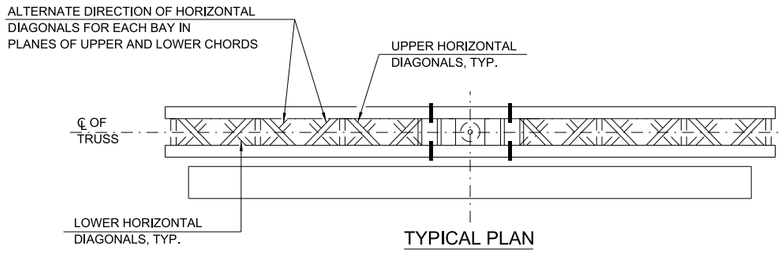
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

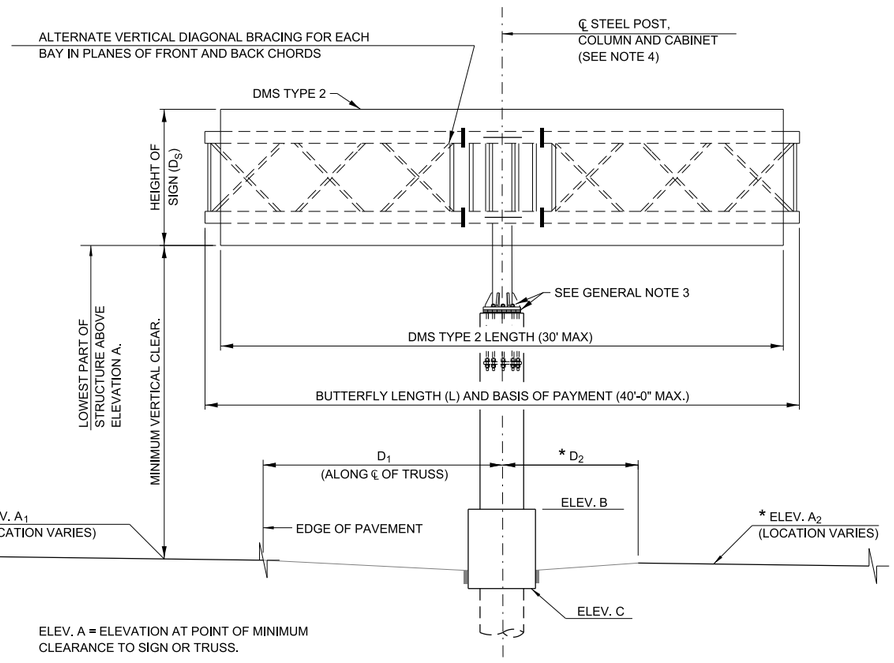
Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) MAINLINE STRUCTURE DETAILS

VERSION:	STANDARD:	SHEET:
2025-03	F13-10	9 OF 9



TYPICAL PLAN



ELEV. A = ELEVATION AT POINT OF MINIMUM CLEARANCE TO SIGN OR TRUSS.

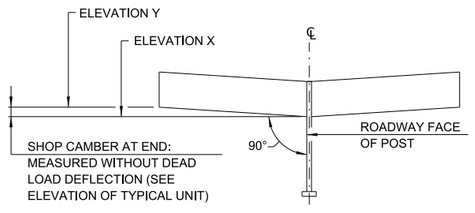
TYPICAL ELEVATION

LOOKING IN DIRECTION OF TRAFFIC

* ELEVATION A_2 AND DIMENSION D_2 NOT USED WHEN BUTTERFLY STRUCTURE IS MOUNTED ON RIGHT SIDE OF THE SHOULDER.

SHOP CAMBER TABLE

UNIT LENGTH L_1 OR L_2	SHOP CAMBER AT END
15'	¼"
20'	½"
25'	¾"

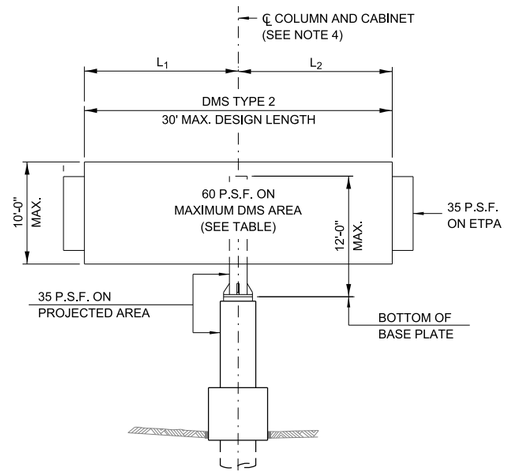


CAMBER DIAGRAM

(FOR FABRICATION ONLY)

DMS TYPE 2 TABLE

TRUSS MOUNTING	MAXIMUM TOTAL AREA	MAXIMUM ALLOWABLE WEIGHT
ONE FACE	300 SQ. FT.	5000 LB. - CENTERED ON STRUCTURE
TWO FACE	300 SQ. FT.	6000 LB. - CENTERED ON STRUCTURE



DESIGN WIND LOADING DIAGRAM

ETPA = EFFECTIVE TRUSS PROJECTED AREA

FABRICATION NOTES:

1. MATERIALS: ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR ASTM A106 GRADE B OR API 5L GRADE X42 OR API 5L GRADE X52 OR ASTM A500 GRADE B OR C. ALL STRUCTURAL STEEL PLATES AND SHAPE SHALL CONFORM TO ASTM A36 (AASHTO M183) OR ASTM A572 GRADE 50. STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304, OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE COLUMN SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F (ZONE 2) BEFORE GALVANIZING.
2. WELDING: ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURAL WELDING CODE AND THE STANDARD SPECIFICATIONS.
3. FASTENERS: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS, THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193, GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(f)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
4. U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).
5. GALVANIZING: ALL STEEL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED.
6. ANCHOR BOLTS: SHALL CONFORM TO AASHTO M314 OR ASTM F1554 GRADE 55.

GENERAL NOTES:

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE (STEEL) SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
2. AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND BOTTOM LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
3. CENTERLINE DMS TYPE 2 SHALL BE LOCATED AT CENTERLINE OF COLUMN.
4. SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN DMS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE VIBRATIONS AND OSCILLATIONS, CONSIDERATION SHOULD BE GIVEN TO ATTACHING TEMPORARY BLANK SIGN PANELS TO THE STRUCTURE.
5. TRUSSES SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THIS MAY REQUIRE ROPES BETWEEN HORIZONTALS AND DIAGONALS OR ENERGY DISSIPATING (ELASTIC) TIES TO THE VEHICLE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
6. PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND ALL SURFACES OF CRASHWALL, EXCEPT BOTTOM SURFACE.
7. REINFORCEMENT BARS: REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. PARAMETERS SHOWN ARE BASIS FOR THIS STANDARD. INSTALLATION NOT WITHIN DIMENSIONAL LIMITS SHOWN REQUIRE SPECIAL ANALYSIS FOR ALL COMPONENTS.
9. IT IS PERMISSIBLE TO MOUNT TWO DMS TYPE 2 ON THE BUTTERFLY TRUSS, ONE ON EACH FACE OF THE TRUSS. THE TOTAL COMBINED DEPTH OF DMS TYPE 2 SHALL NOT EXCEED 4'-4" AND THE TOTAL COMBINED WEIGHT SHALL NOT EXCEED 6000 LB. CENTER THE DMS TYPE 2 ON ~ STEEL POST. DO NOT INSTALL SIGN PANEL IN CONJUNCTION WITH DMS TYPE 2 SIGN CABINETS ON ONE FACE OF THE TRUSS. A SIGN PANEL ON ONE FACE AND DMS TYPE 2 ON THE OTHER IS PERMITTED.
10. SIGN PANEL DIMENSIONS MAY NOT EXTEND BEYOND DMS LIMITS.

CONSTRUCTION SPECIFICATIONS:

1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 AND 734 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

LOADING:

1. WIND LOADING SHALL BE A MINIMUM OF 60 PSF ON DMS TYPE 2 AND 35 PSF NORMAL TO TRUSS ELEMENTS NOT BEHIND DMS TYPE 2.
2. PROVIDE ANCHORAGE FOR ATTACHMENT OF PERSONAL FALL ARREST SYSTEMS PER OSHA SECTION 1926.502(D). ANCHORAGE SHALL BE INSTALLED AS CLOSE TO PANEL POINTS AS POSSIBLE AND SHALL BE CAPABLE OF SUPPORTING AT LEAST 5000 LBS.
3. ICE LOAD OF 3 PSF APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY.

DESIGN SPECIFICATIONS:

2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION WITH 2020 INTERIM REVISIONS, INSTRUCTIONS AND INFORMATION.

CONCRETE COLUMN, CRASH WALL AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020.

DESIGN UNIT STRESSES FOR REINFORCED CONCRETE:

CLASS SI CONCRETE: f'c = 3,500 P.S.I.
CLASS DS CONCRETE: f'c = 4,000 P.S.I.
REINFORCING STEEL: fy = 60,000 P.S.I.

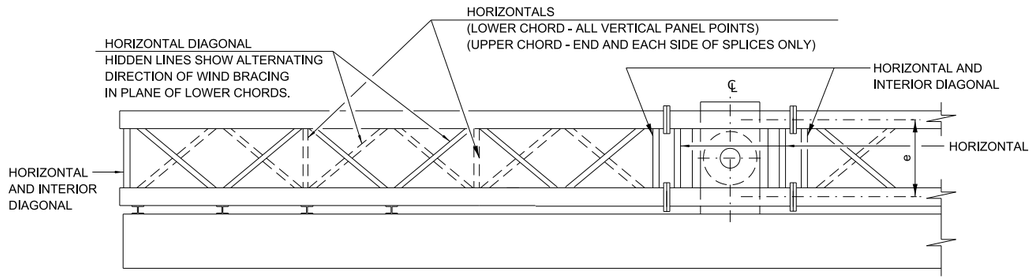
APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REVISED LOCKNUT MATERIAL.
03-01-2022	REVISE FABRICATION NOTES 1 & 4.
03-01-2021	UPDATE DESIGN LOADING AND DESIGN CRITERIA.
03-01-2020	UPDATED CRASH WALL HEIGHT.
	ADDED HEAVY HEX NUT TO ANCHORS.

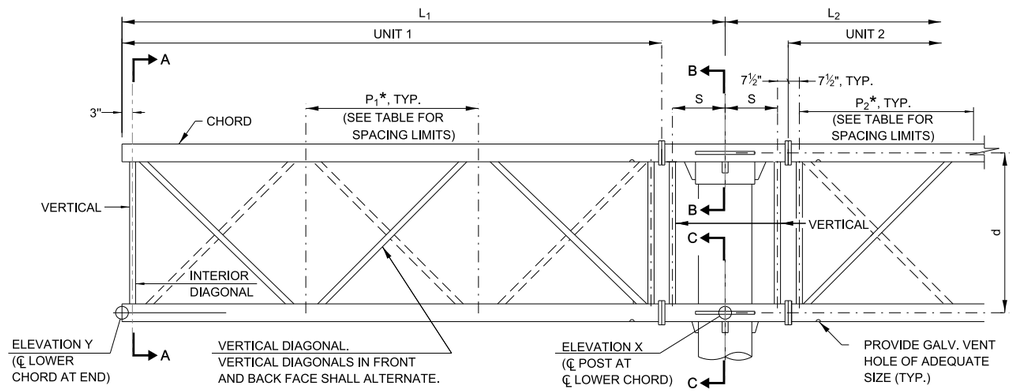
Illinois Tollway

OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE STRUCTURE DETAILS

VERSION:	STANDARD:	SHEET:
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PLAN

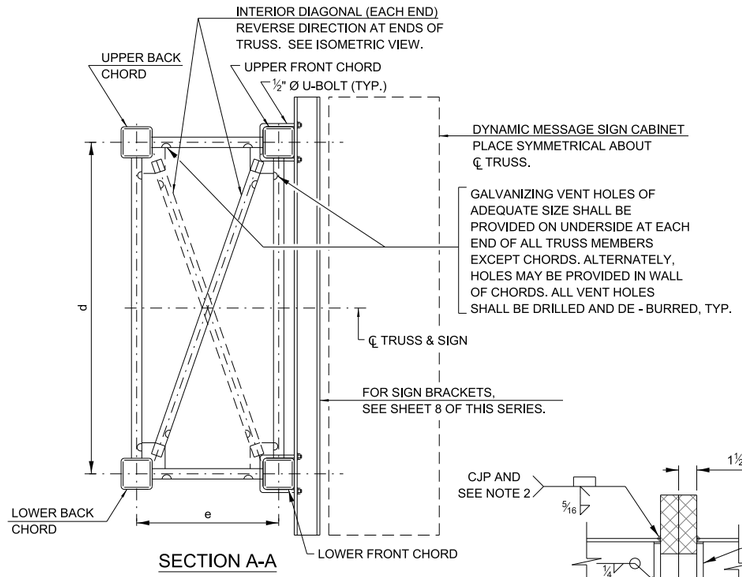


ELEVATION

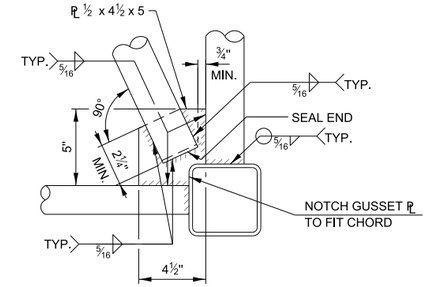
(SIGN OMITTED FOR CLARITY)

TYPICAL TRUSS UNIT

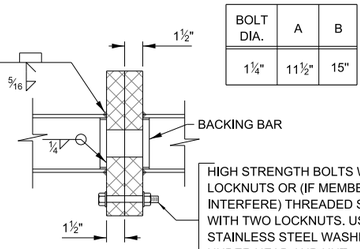
FOR SECTION B-B AND SECTION C-C, SEE SHEET 3 OF THIS SERIES



SECTION A-A

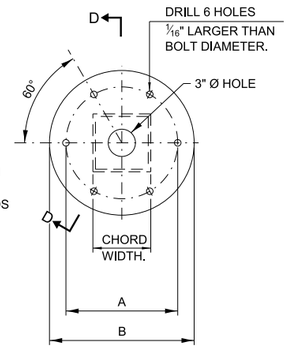


GUSSET ℄ FOR INTERIOR DIAG. DETAIL



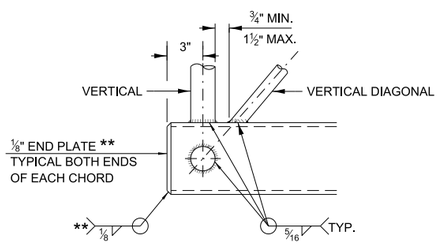
BOLT DIA.	A	B
1¼"	11½"	15"

SECTION D-D



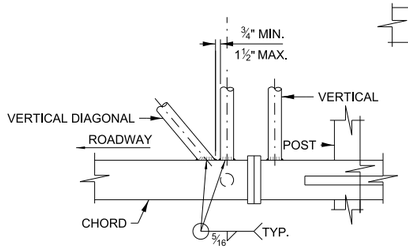
SPLICING FLANGE

DETAIL A

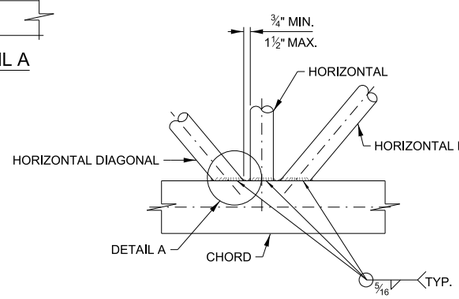


BUTTERFLY END JOINT DETAIL

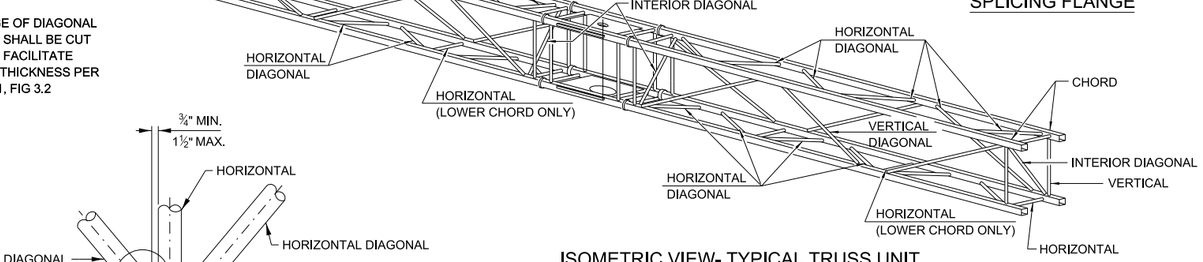
** CONTRACTOR MAY ALTERNATIVELY USE STANDARD STEEL DRIVE - FIT CAP TO CLOSE ENDS. ½" Ø DRAIN HOLE IN END PLATE / DRIVE - FIT CAP.



POST END JOINT DETAIL



TRUSS INTERIOR JOINT DETAIL



ISOMETRIC VIEW- TYPICAL TRUSS UNIT

NOTES:

1. THERE ARE TWICE AS MANY HORIZONTAL DIAGONALS AS THERE ARE VERTICAL DIAGONALS.
2. SPLICING FLANGES SHALL BE ATTACHED TO EACH TRUSS UNIT WITH THE TRUSS SHOP ASSEMBLED TO CAMBER SHOWN ON SHEET 1 OF THIS SERIES. TRUSS UNITS SHALL BE IN PROPER ALIGNMENT AND FLANGE SURFACES SHALL BE SHOP BOLTED INTO FULL CONTACT BEFORE WELDING. SUFFICIENT EXTERNAL WELDS OR TACKS SHALL BE MADE TO SECURE FLANGES UNTIL REMAINING WELDS ARE MADE AFTER DISASSEMBLY. ADJACENT FLANGES SHALL BE "MATCH MARKED" TO INSURE PROPER FIELD ASSEMBLY.
3. NOMINAL WALL THICKNESS SHOWN. THICKER WALL IS PERMITTED UPON ENGINEER'S APPROVAL.

TRUSS UNIT TABLE

TRUSS SIZE		MAXIMUM DMS TYPE 2 SIGN LENGTH	STEEL SUPPORT POST (COLUMN)				TRUSS MEMBERS AND DETAILS							
e	d		DIAMETER	WEIGHT	WALL THICKNESS (SEE NOTE 3)	H (MAX.)	TOP & BOTTOM CHORD	VERTICAL PIPE	VERTICAL DIAG. PIPE	HORIZONTAL PIPE	HORIZONTAL DIAG. PIPE	INTERIOR DIAG. PIPE	LIMITS FOR PANEL SPACING (P) *	DIMENSION S
3'-9"	7'-0"	30'-0"	24"	125.61 (#/FT)	½"	12'-0"	HSS 6x6x5/16	3"Ø X.S	4"Ø X.X.S	2"Ø X.S	2½"Ø X.S	2"Ø X.S	48" MIN. TO 66" MAX.	1'-9"

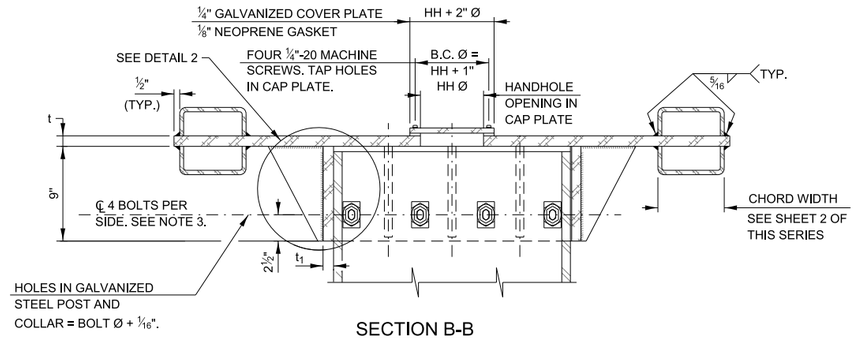
*P = L-S-1'-6" / # PANELS

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

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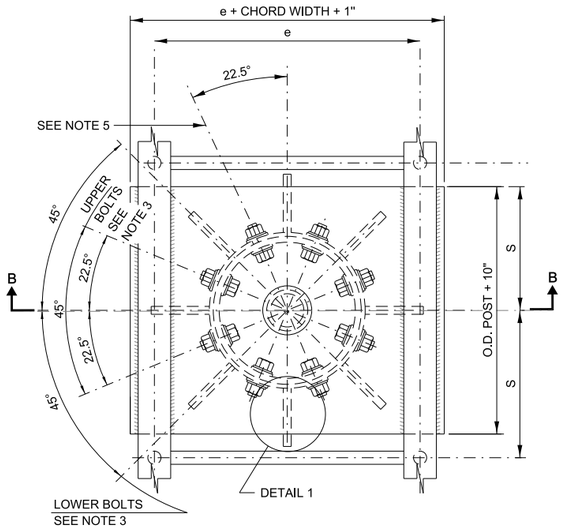
OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE STRUCTURE DETAILS

VERSION:	STANDARD:	SHEET:
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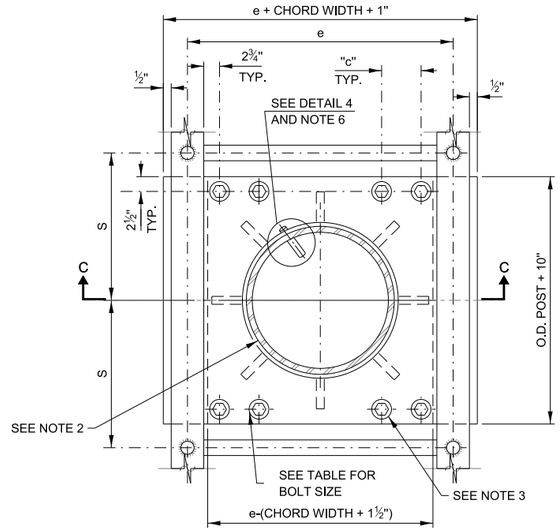


SECTION B-B

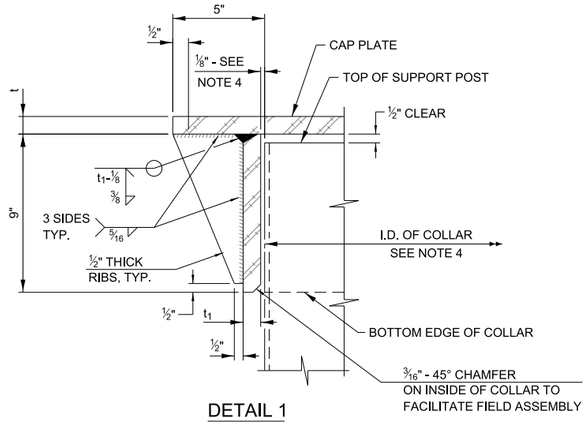
BOLTS SHALL BE HIGH STRENGTH WASHERS (INCLUDING CONTOURED WASHERS), AND LOCKNUTS SHALL BE STAINLESS STEEL.



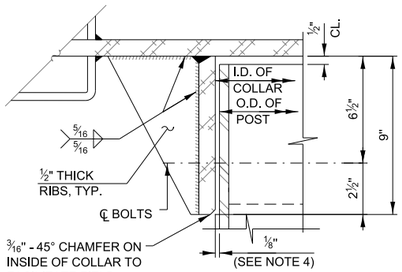
PLAN VIEW - TOP OF COLUMN



SECTION THRU POST ABOVE LOWER CHORDS

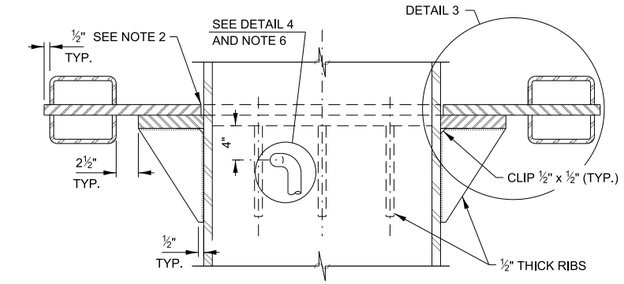


DETAIL 1



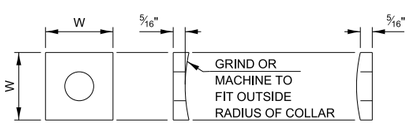
DETAIL 2

(FOR DETAILS NOT SHOWN, SEE DETAIL 3)



SECTION C-C

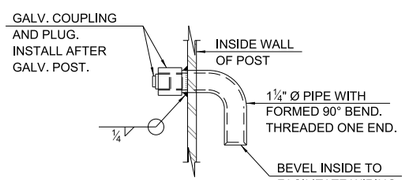
GRIND OR MACHINE TO FIT INSIDE RADIUS OF POST



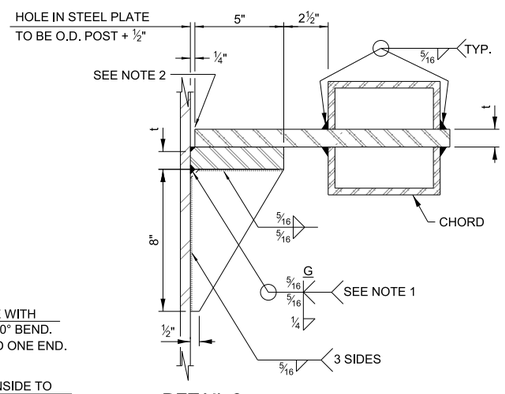
CONTOURED WASHERS

BOLT SIZE	CONTOURED WASHERS	
	HOLE DIA.	W
⅞"	1"	2½"
1"	1⅛"	3"
1¼"	1⅜"	3¼"

(ASTM A240, TYPE 304)



DETAIL 4



DETAIL 3

NOTES:

1. GRIND TOP IF REQUIRED TO FULLY SEAT PLATE. REPAIR DAMAGED GALVANIZING BEFORE ASSEMBLY.
2. AFTER TIGHTENING LOWER CONNECTION BOLTS, FILL GAP WITH NON - HARDENING, SILICONE CAULK SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.
3. CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION SHALL BE HIGH STRENGTH WITH MATCHING LOCKNUTS. CONNECTION BOLTS SHALL HAVE TWO STAINLESS STEEL FLAT WASHERS EACH.
4. COLLAR I.D. SHALL BE MANUFACTURED TO CORRESPOND TO O.D. OF ACTUAL GALVANIZED POST PLUS ⅛" (± 1/16"). MAXIMUM GAP BETWEEN POST AND COLLAR AT ANY LOCATION EQUALS ⅜" BEFORE TIGHTENING BOLTS.
5. OPTIONAL FULL PENETRATION WELD IN COLLAR. (TWO LOCATIONS MAXIMUM (180° APART) X-RAY OR UT 100%)
6. ORIENT PIPE TOWARD WALKWAY SIDE. HOLE IN POST = O.D. PIPE + ⅛".

CONNECTION TABLE

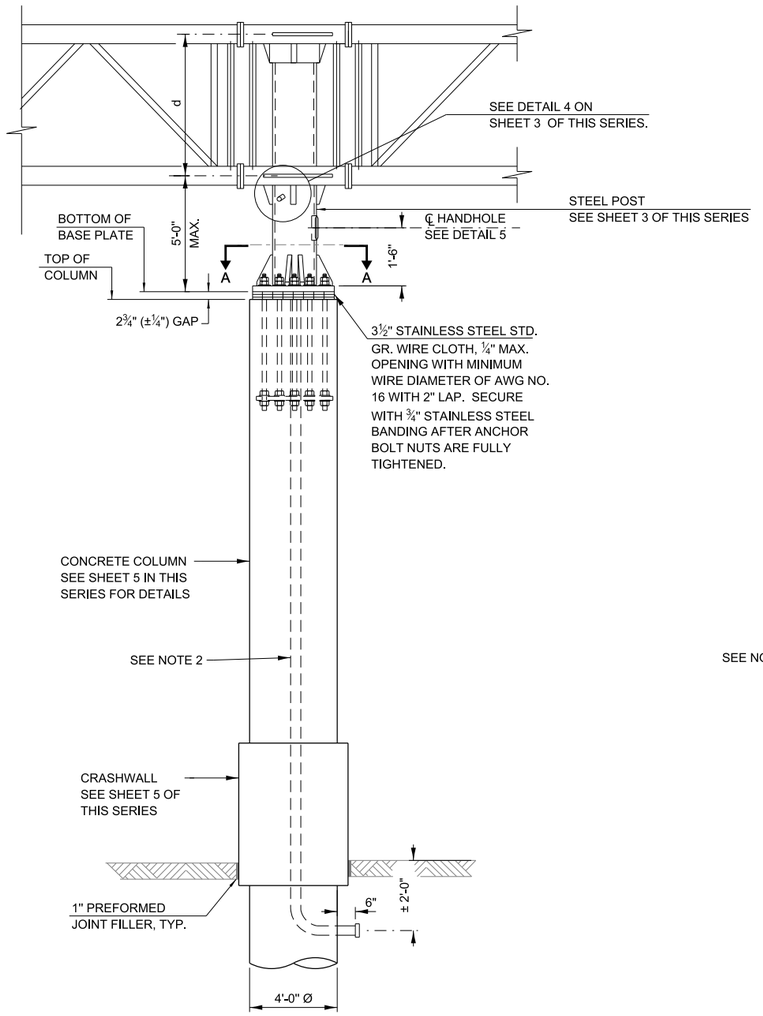
POST OUTSIDE DIAMETER	UPPER & LOWER CONNECTION BOLT DIAMETER (SEE NOTE 3)	LOWER JUNCTURE BOLT SPACING DIMENSION "c" (SEE NOTE 3)	OPENING IN CAP PLATE "HH"	PLATE THICKNESS (t)	COLLAR THICKNESS (t_1)
24"	1¼"	3½"	6"	1"	⅞"

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

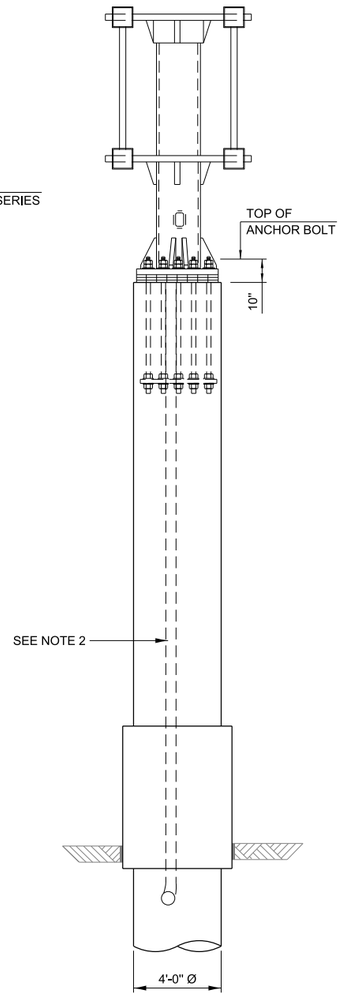
OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE STRUCTURE DETAILS

VERSION:	STANDARD:	SHEET:
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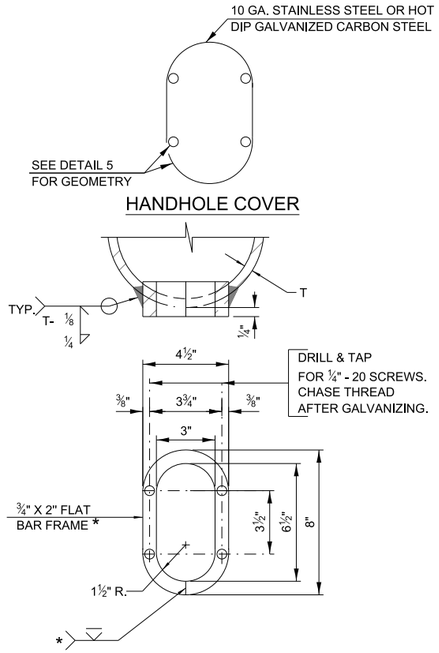


FRONT ELEVATION

SEE SHEET 5 OF THIS SERIES FOR FOUNDATION DETAILS.
(DMS TYPE 2 SIGN CABINET NOT SHOWN FOR CLARITY)



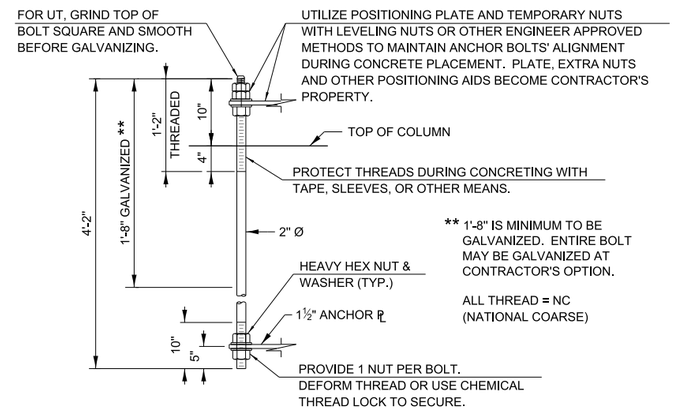
SIDE ELEVATION



PROVIDE 8" X 4" COVER. OUTSIDE CORNERS = 2¼" RADIUS. PROVIDE 4-$\frac{5}{16}$" Ø HOLES IN FOR ¼" - 20 ROUND HEAD HOT DIP GALVANIZED OR STAINLESS STEEL MACHINE SCREWS. (SEE COVER DETAILS.)

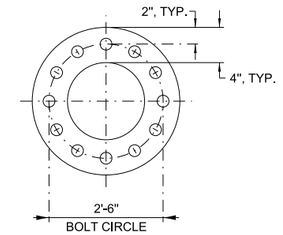
DETAIL 5

* BENT BARS MAY BE BUTT WELDED TOP AND BOTTOM OR BOTTOM ONLY. IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500μ in OR LESS.

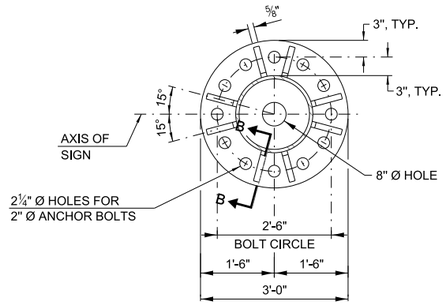


ANCHOR BOLT DETAIL

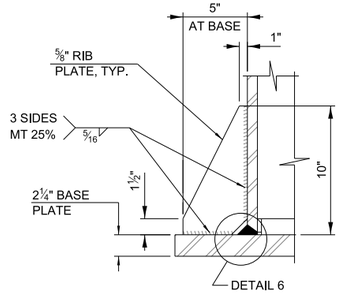
ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 GRADE 55. GALVANIZE THE UPPER 1'-8" (MINIMUM (**) AND ASSOCIATED AASHTO M291, GRADE A, C OR DH HEAVY HEX NUTS AND HARDENED WASHERS PER AASHTO M232. NO WELDING SHALL BE PERMITTED ON BOLTS. PROVIDE A NUT AT BOTTOM, A HEXAGON LOCKNUT AND WASHER ABOVE BASE PLATE AND A LEVELING NUT AND WASHER BELOW BASE PLATE. NUTS SHALL EACH BE TIGHTENED WITH 200 LB.-FT. MINIMUM TORQUE AGAINST BASE PLATE. BEFORE OR AFTER THREADING, BUT BEFORE GALVANIZING, EACH ANCHOR BOLT SHALL BE ULTRASONICALLY TESTED (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORD WITH ANSI GUIDELINES, TO ENSURE NO REJECTABLE FLAWS EXIST IN THE UPPER 18" (TENSION CRITERIA).



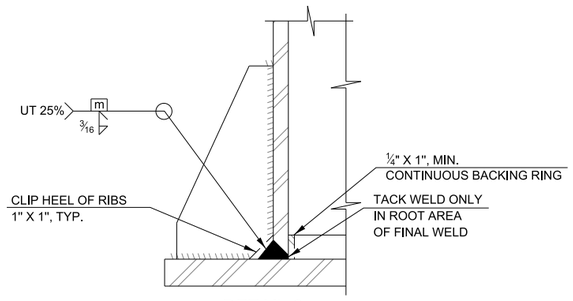
POSITIONING PLATE/ANCHOR ℄



SECTION A-A



SECTION B-B



DETAIL 6
(TYPICAL RIB)

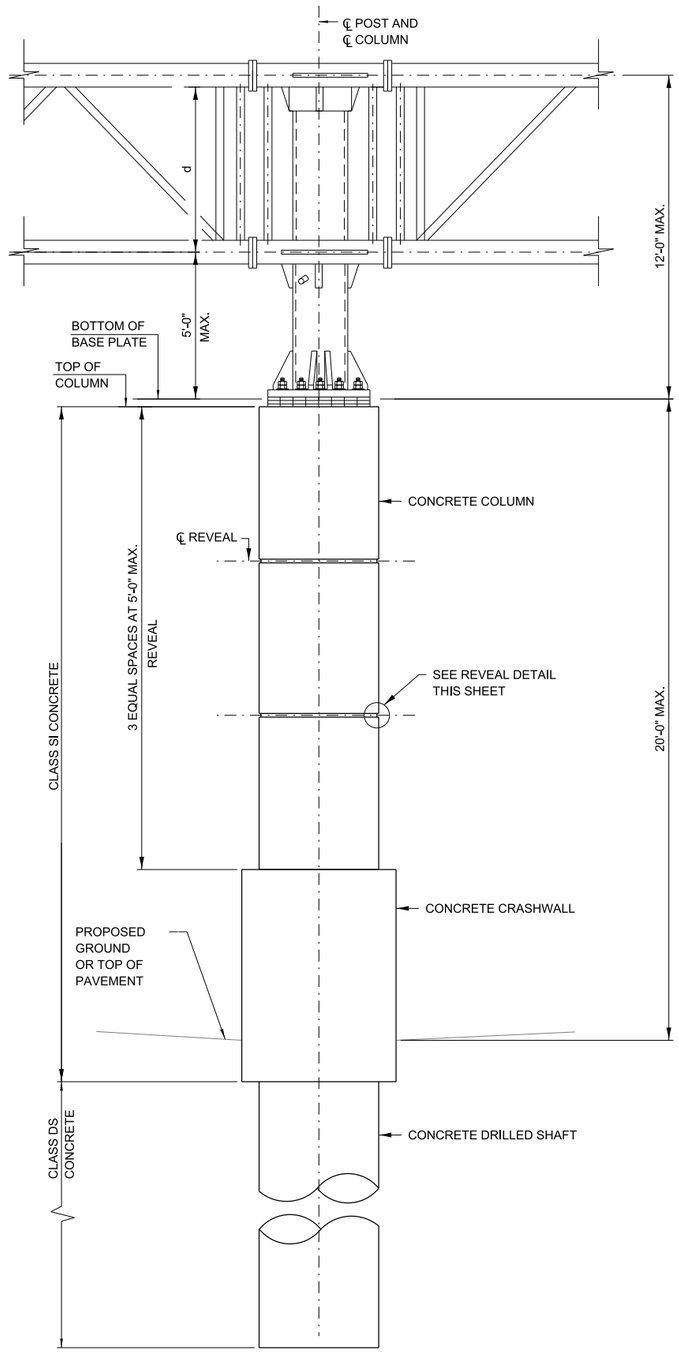
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

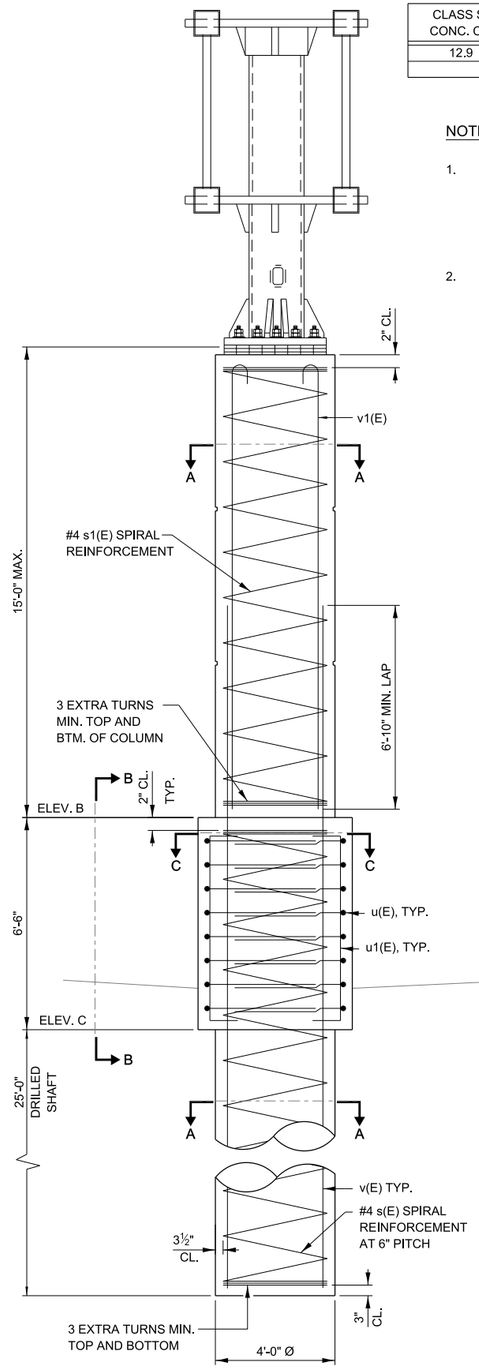
OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE
STRUCTURE DETAILS

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FRONT ELEVATION

DMS TYPE 2 NOT SHOWN
FOR CLARITY



SIDE ELEVATION

BILL OF MATERIAL - EACH FOUNDATION

CLASS SI CONC. CY	CLASS DS CONC. CY	REBAR POUNDS	PROTECTIVE COAT SQ. YD.
12.9	11.7	4,830	6.0

NOTES:

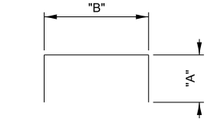
1. COLUMN CONCRETE VOLUME AND BAR s1(E) LENGTH ARE COMPUTED BASED ON 15'-0" COLUMN HEIGHT. IF COLUMN HEIGHT IS NOT EQUAL 15'-0", QUANTITIES SHALL BE CALCULATED BASED ON ACTUAL COLUMN HEIGHT.
2. PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CRASHWALL AND PERIMETER OF THE COLUMN.

BAR LIST - EACH FOUNDATION

(COLUMN, CRASHWALL AND DRILLED SHAFT)

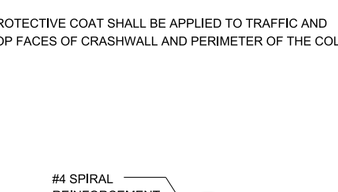
	BAR	NUMBER	SIZE	LENGTH	SHAPE
	v(E)	20	#9	38'-3"	
	v1(E)	20	#9	15'-8"	
*	s(E)	1	#4	31'-1"	
*	s1(E)	1	#4	14'-5"	
	u(E)	16	#5	12'-2"	
	u1(E)	24	#5	8'-7"	

* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL

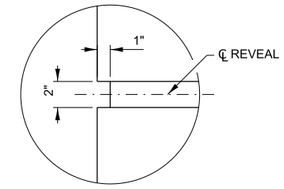


BAR	"A"	"B"
u(E)	3'-9"	4'-8"
u1(E)	1'-3"	6'-1"

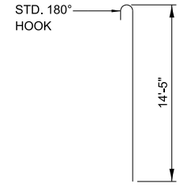
BAR u(E), u1(E)



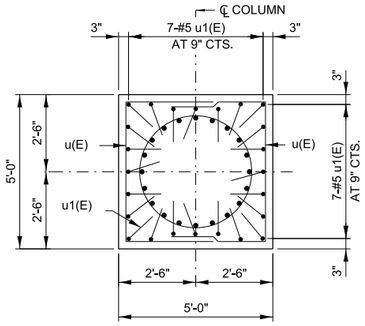
SECTION A-A



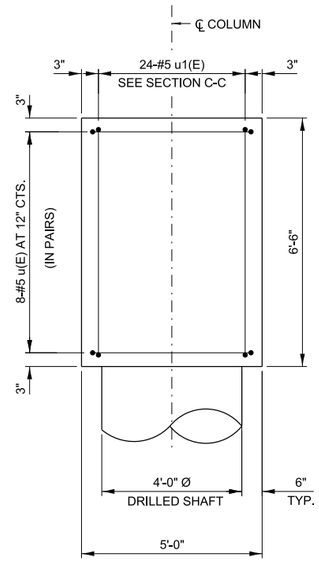
REVEAL DETAIL



BAR v1(E)



SECTION C-C



SECTION B-B

FOUNDATIONS:

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

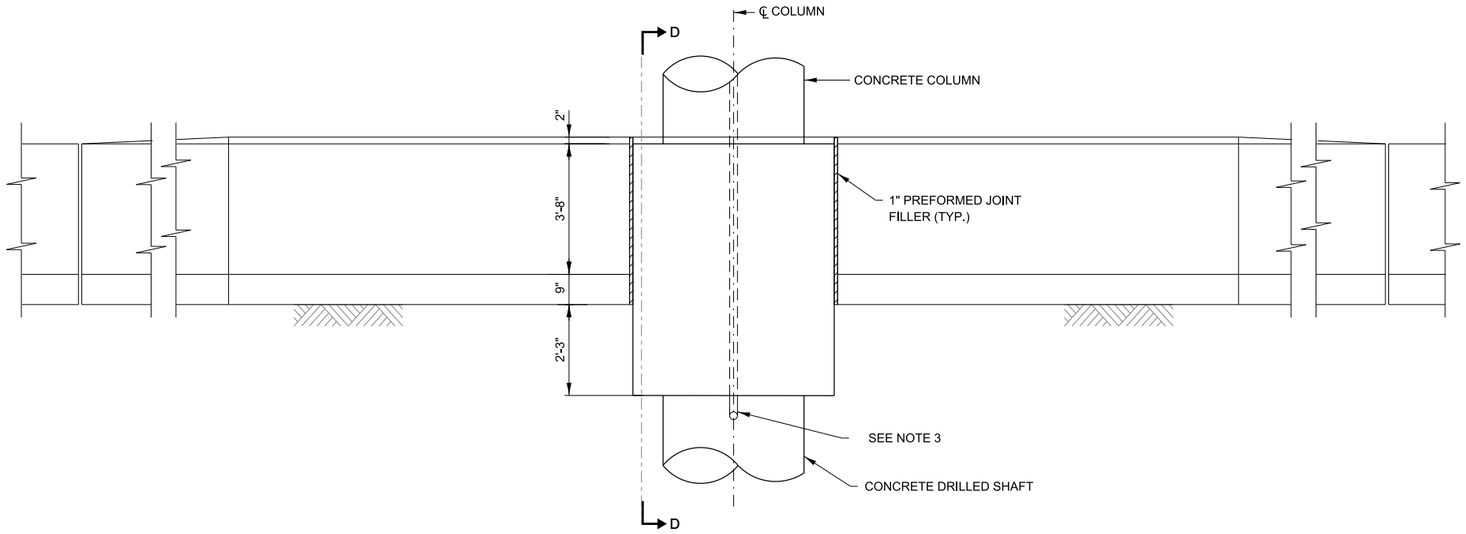
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

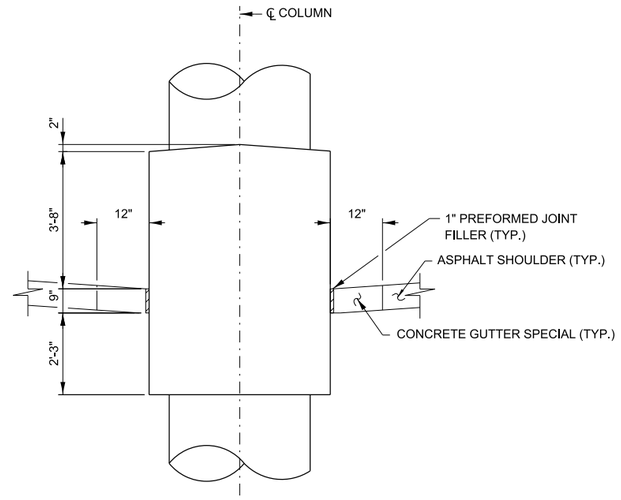
Illinois Tollway

OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE
STRUCTURE DETAILS

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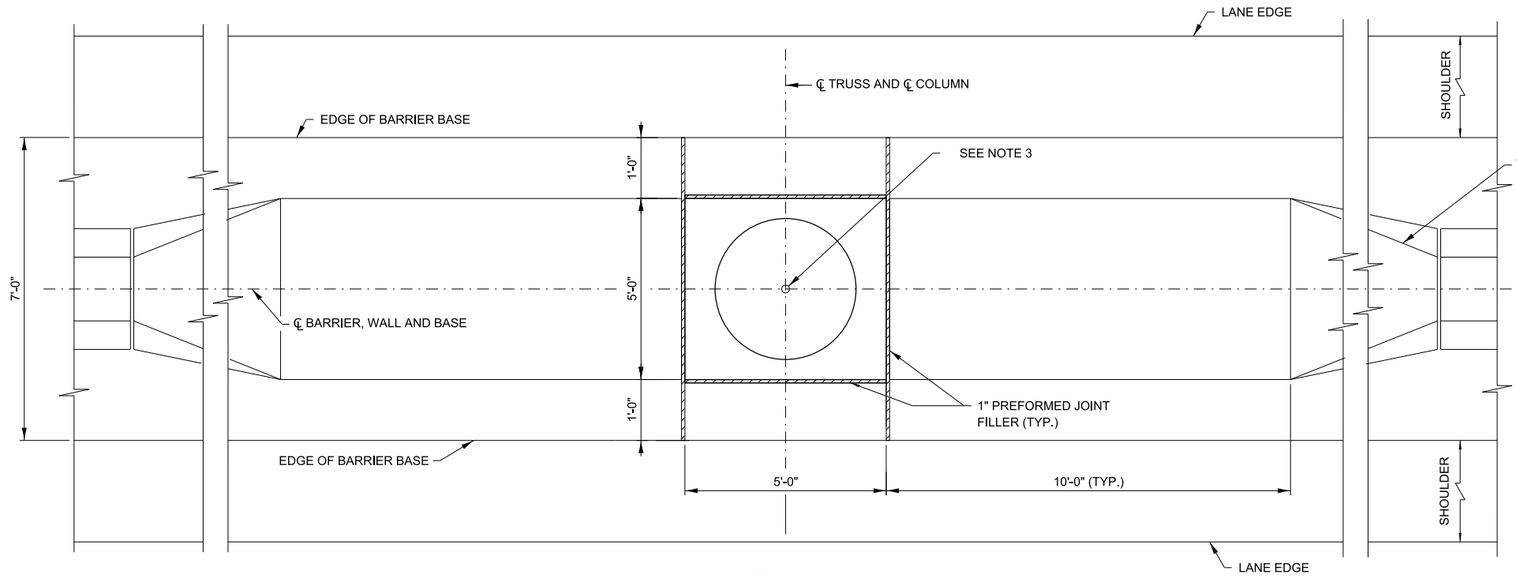


SIDE ELEVATION

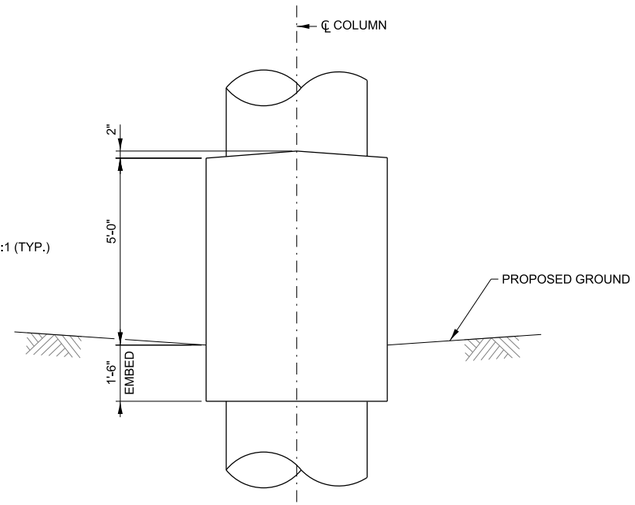


SECTION D-D

FOUNDATION LOCATED IN PAVED ROADWAY MEDIAN



PLAN



SECTION D-D

FOUNDATION LOCATED IN UNPAVED ROADWAY MEDIAN

NOTES:

1. SIDE ELEVATION AND PLAN VIEW ARE SHOWN FOR FOUNDATION LOCATED IN PAVED MEDIAN.
2. SEE SHEET 5 OF THIS SERIES FOR REINFORCEMENT DETAILS.
3. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.

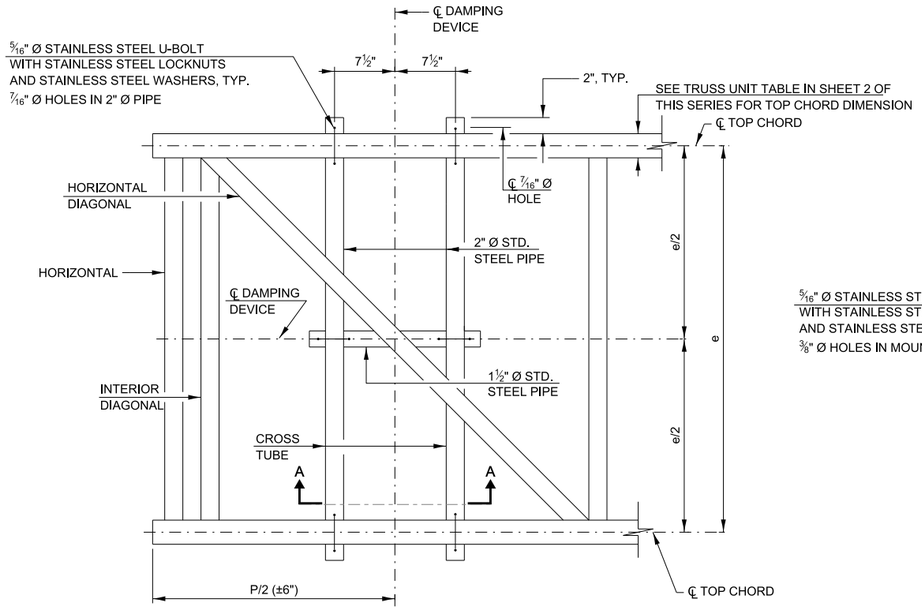
APPROVED BY: Marco Nastif, CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

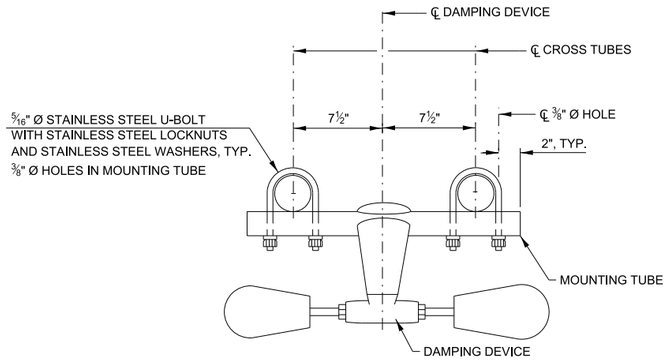
Illinois Tollway

OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE
STRUCTURE DETAILS

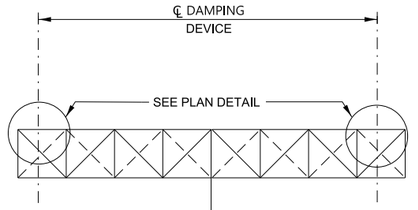
VERSION:	STANDARD:	SHEET:
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PLAN DETAIL

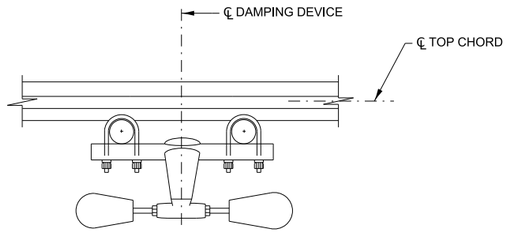


TRUSS DAMPING DEVICE CONNECTION DETAIL

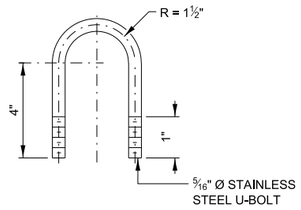


ELEVATION

STEEL BUTTERFLY SIGN STRUCTURE

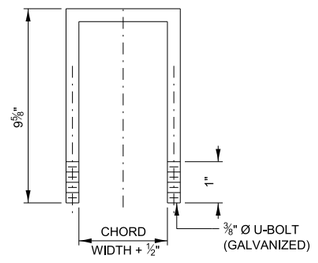


SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL

(TYPICAL)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL

(TYPICAL)

NOTE:

DAMPER: ONE DAMPER PER TRUSS. (31 LBS. STOCKBRIDGE-TYPE 29" MINIMUM BETWEEN ENDS OF WEIGHTS).

APPROVED BY:

Marwan Nashif

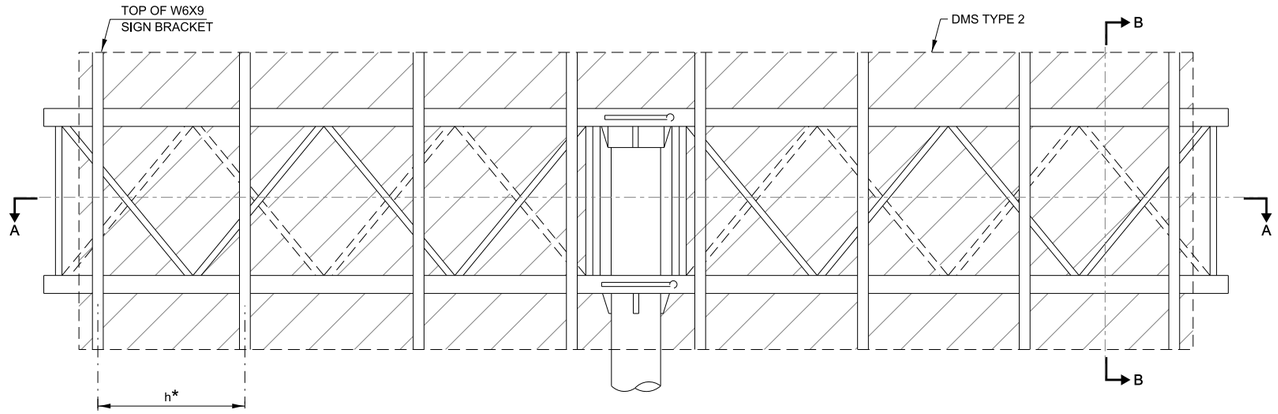
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

Illinois Tollway

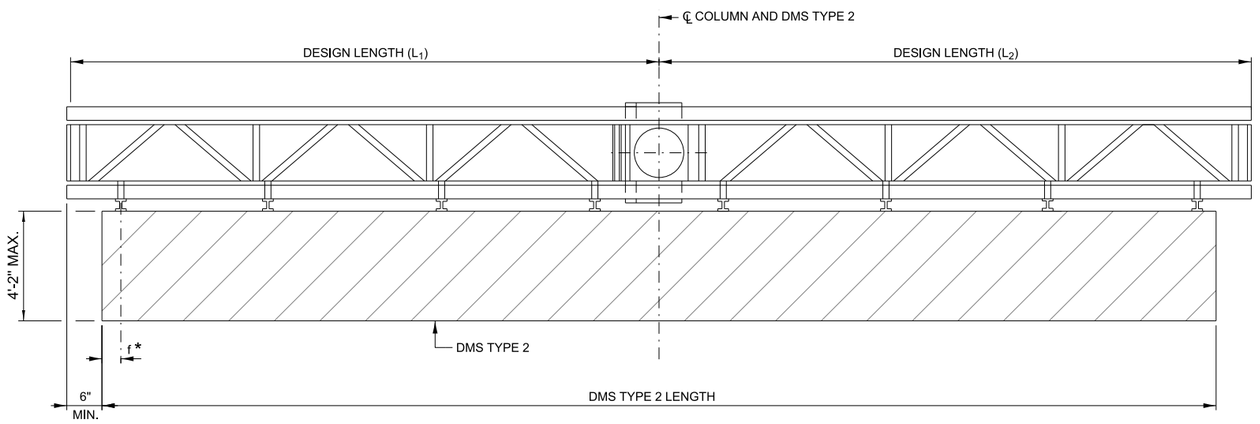
OVERHEAD SIGN STRUCTURE BUTTERFLY TYPE STRUCTURE DETAILS

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* BRACKET DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2 DIMENSIONS PLUS MANUFACTURER'S MOUNTING DEVICES.

TYPICAL FRONT ELEVATION



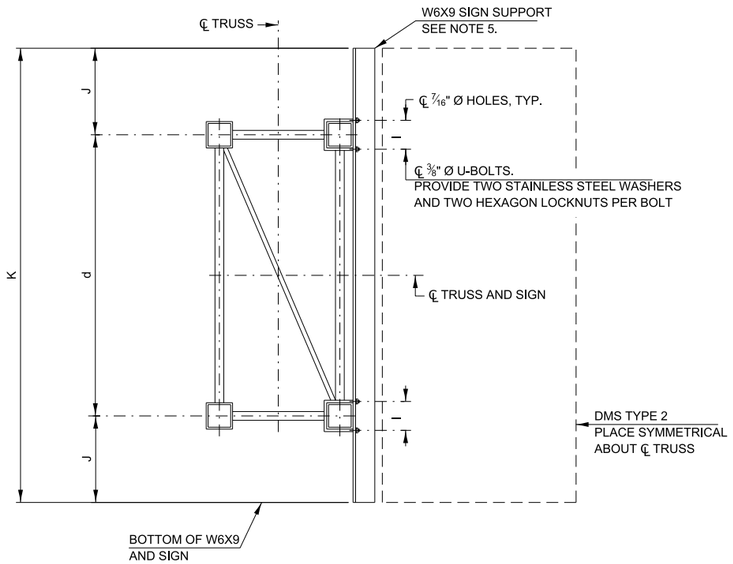
SECTION A-A

PLACE ALL SIGN BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

(ROAD PLAN BENEATH TRUSS VARIES)
BUTTERFLY MAY BE LOCATED IN SHOULDER AREA.

NOTES:

1. SPACE SIGN BRACKETS W6X9 FOR EFFICIENCY AND WITHIN LIMITS SHOWN:
2. f = 12" MAXIMUM, 4" MINIMUM (END OF SIGN TO ℄ OF NEAREST BRACKET)
   h = 6'-0" MAXIMUM (℄ TO ℄ SIGN SUPPORT BRACKETS, W6X9)
3. MAXIMUM DMS TYPE 2 WEIGHT = 5000 LBS.
4. 4'-2" MAXIMUM DEPTH INCLUDES DEPTH OF DMS TYPE 2 PLUS CONNECTION TO W6X9.
5. DMS TYPE 2 MANUFACTURER SHALL DESIGN AND SUPPLY HARDWARE FOR CONNECTION TO W6X9. BOLTS SHALL BE STAINLESS STEEL OR HOT DIP GALVANIZED HIGH STRENGTH PER THE STANDARD SPECIFICATION.



SECTION B-B

BRACKET TABLE

W6X9		
SIGN WIDTH		NUMBER OF BRACKETS REQUIRED
GREATER THAN	LESS THAN OR EQUAL TO	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

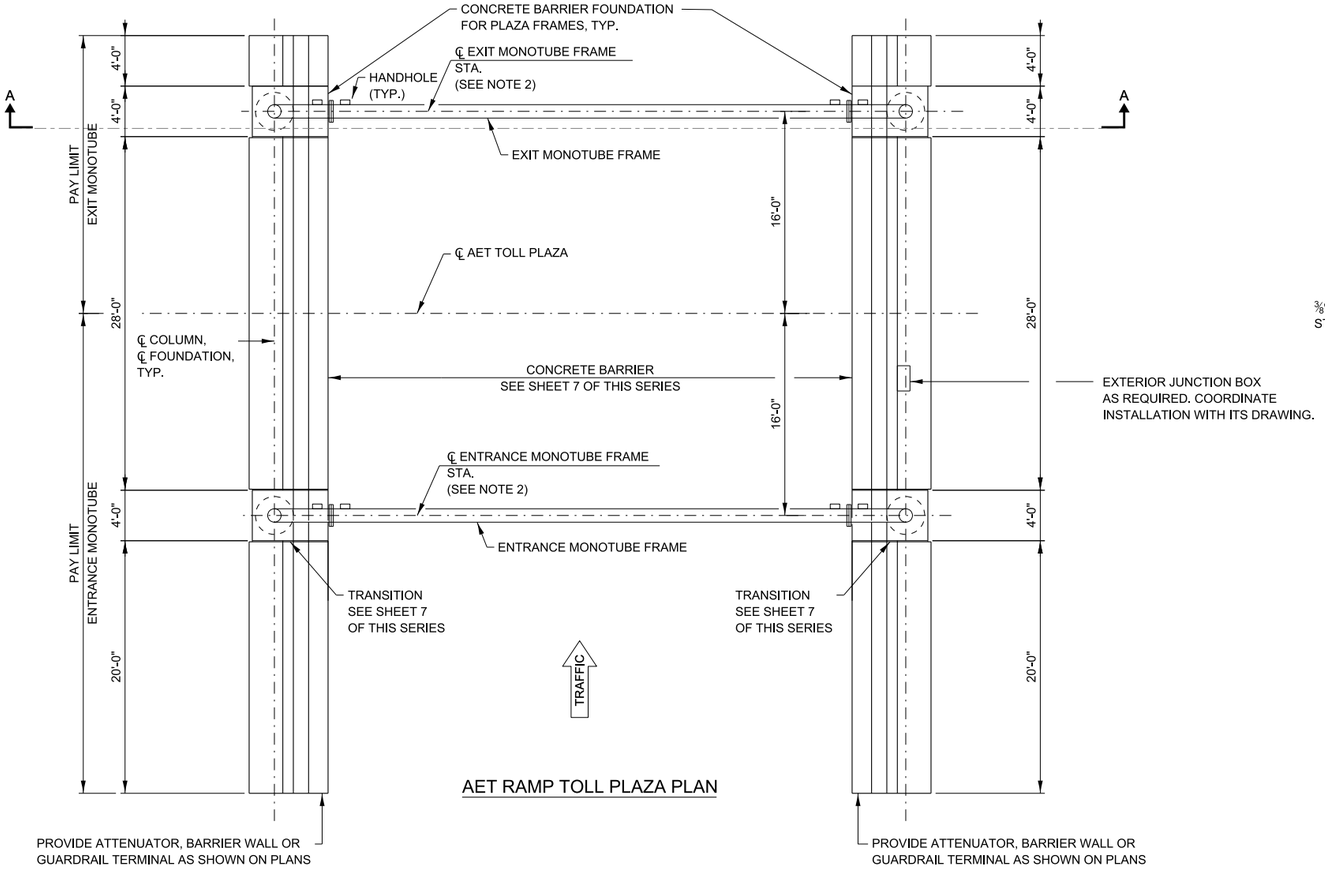
APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

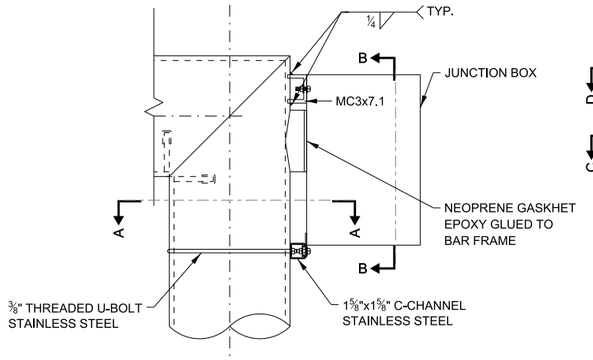
Illinois Tollway

OVERHEAD SIGN STRUCTURE
BUTTERFLY TYPE
STRUCTURE DETAILS

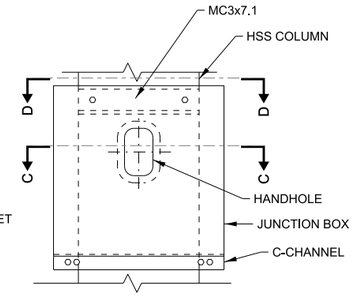
VERSION:	STANDARD:	SHEET:
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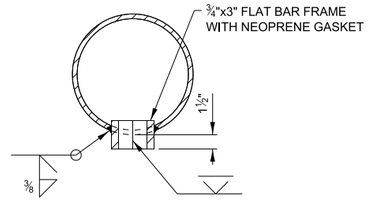
AET RAMP TOLL PLAZA PLAN



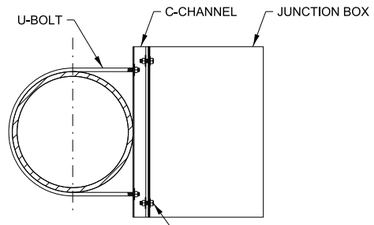
EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



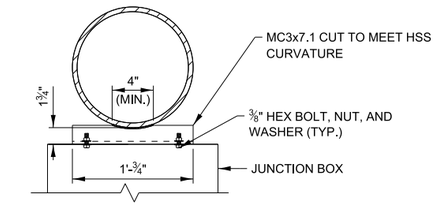
SECTION B-B



SECTION C-C

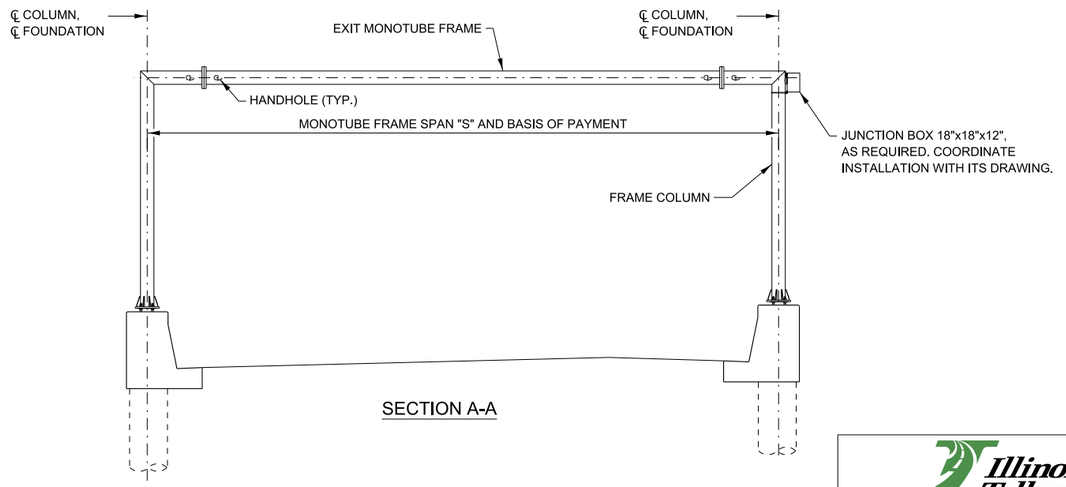


SECTION A-A

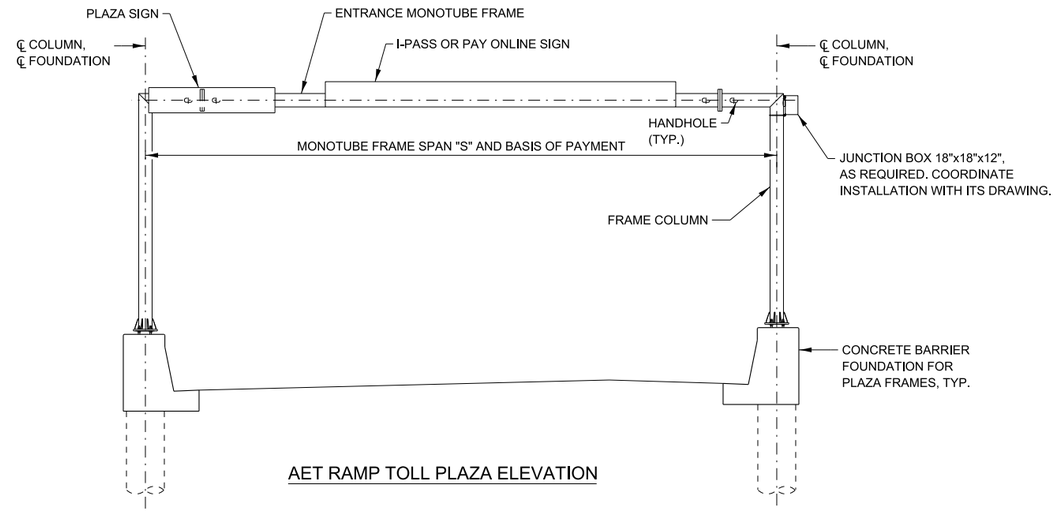


SECTION D-D

JUNCTION BOX CONNECTION DETAIL



SECTION A-A



AET RAMP TOLL PLAZA ELEVATION

SIGN TABLE

SIGN	MAXIMUM AREA	MAXIMUM LENGTH
PLAZA SIGN	24 S.F.	8'-0"
I-PASS OR PAY ONLINE SIGN	60 S.F.	20'-0"

NOTES:

1. SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
2. PROVIDE ENTRANCE AND EXIT MONOTUBE FRAME STATIONS IN CONTRACT PLANS.

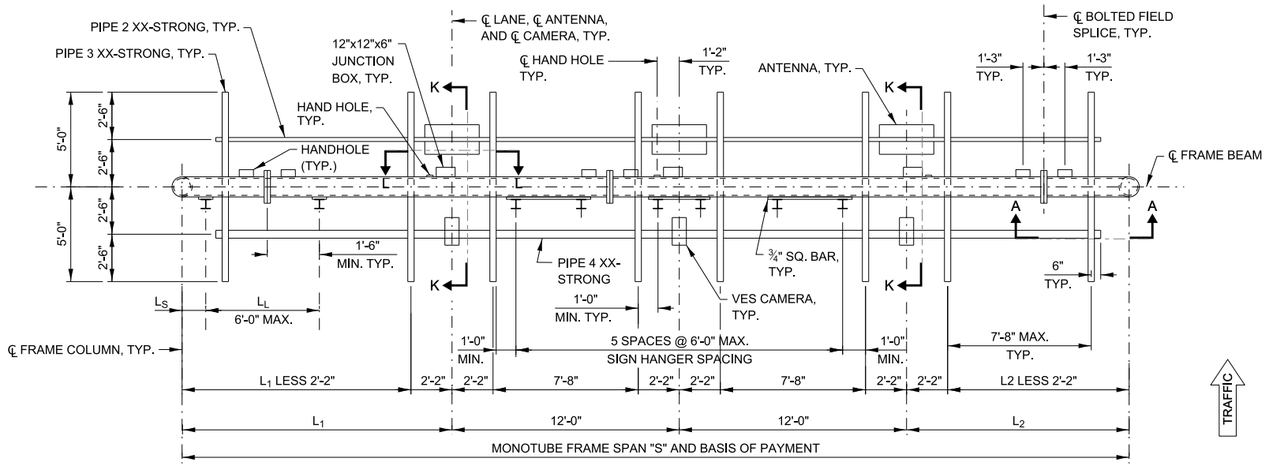
APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	UPDATED JUNCT. BOX & CAM. ANGLES
03-01-2024	ADDED NOTE FOR BARRIER PAYMENT
	CLARIFIED PAY ITEMS FOR MONOTUBES
03-01-2023	CHANGE HORZ. PIPE TO 4XX-STRONG,
	PIPE & REV. NUMBER OF v(E) BARS
03-01-2022	REV. STRUCT. STEEL NOTES 1 & 4,

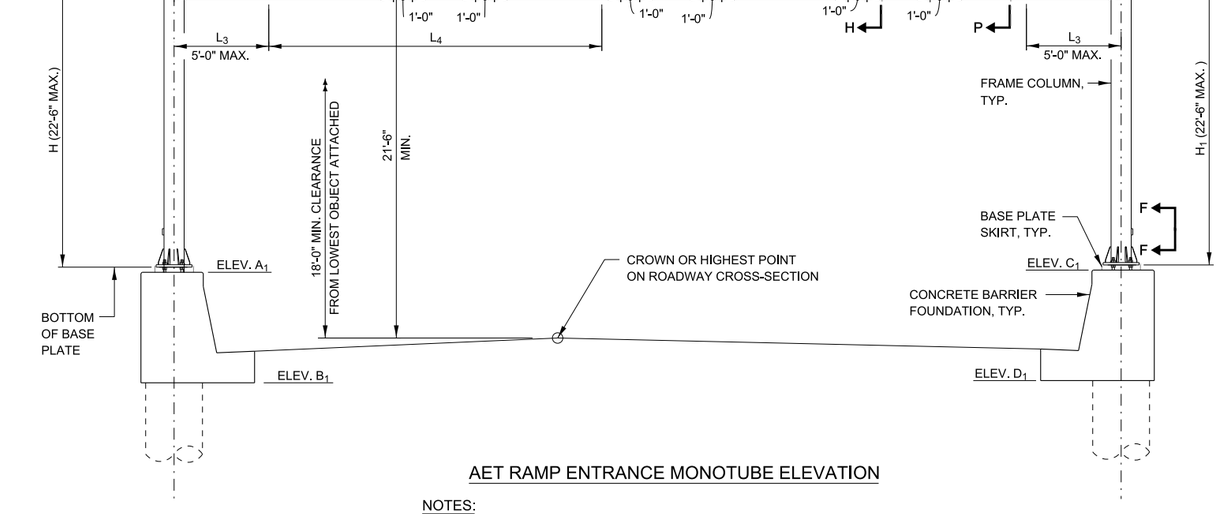
Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

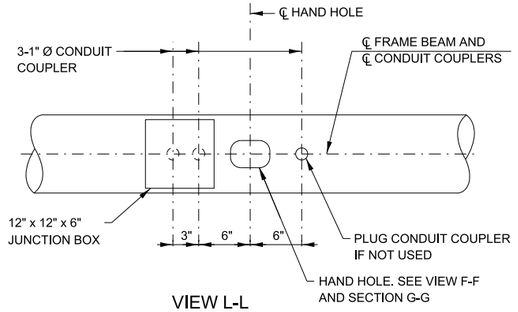
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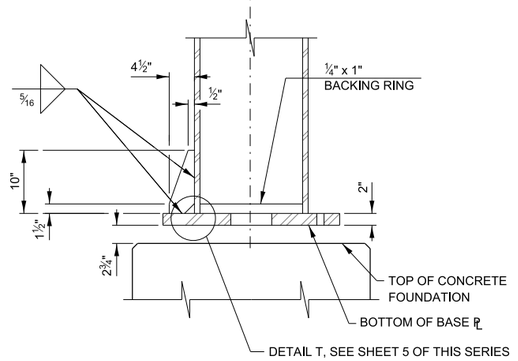
AET RAMP ENTRANCE MONOTUBE PLAN



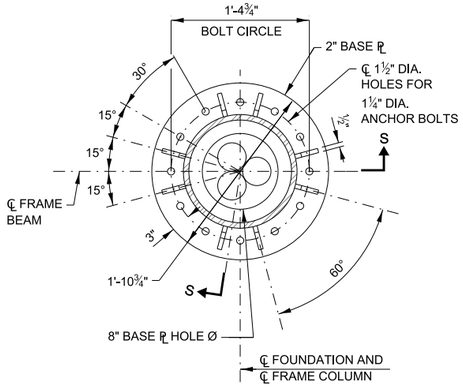
AET RAMP ENTRANCE MONOTUBE ELEVATION



VIEW L-L



SECTION S-S



BASE PLATE PLAN
ENTRANCE AND EXIT MONOTUBE

NOTES:

1. FOUNDATIONS FOR MONOTUBE FRAMES ARE SHOWN ON SHEET 6 OF THIS SERIES.
2. SEE SHEET 5 OF THIS SERIES FOR SECTIONS A-A, G-G, H-H, K-K, VIEW F-F AND BASE PLATE SKIRT.
3. SEE SHEET 4 OF THIS SERIES FOR SECTION P-P.
4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
5. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.
6. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

ENTRANCE MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
60' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	2¼"

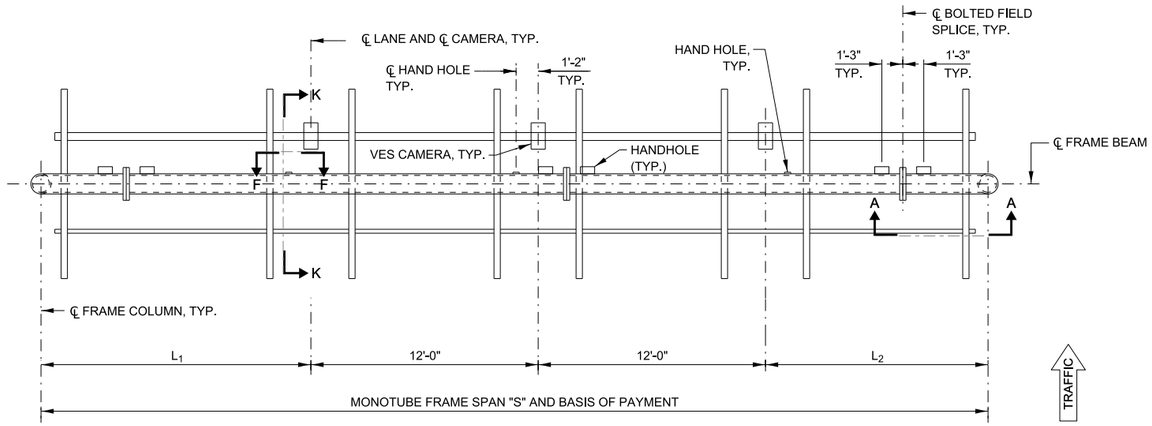
SEE ILLINOIS TOLLWAY STANDARD DRAWING F13 FOR SPANS GREATER THAN 60'.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

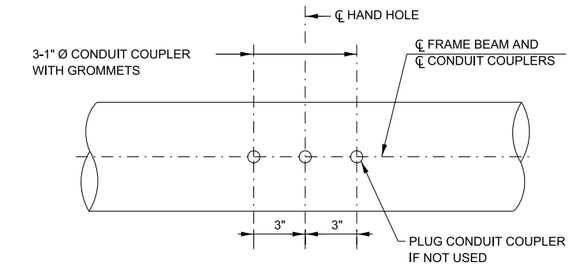
Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

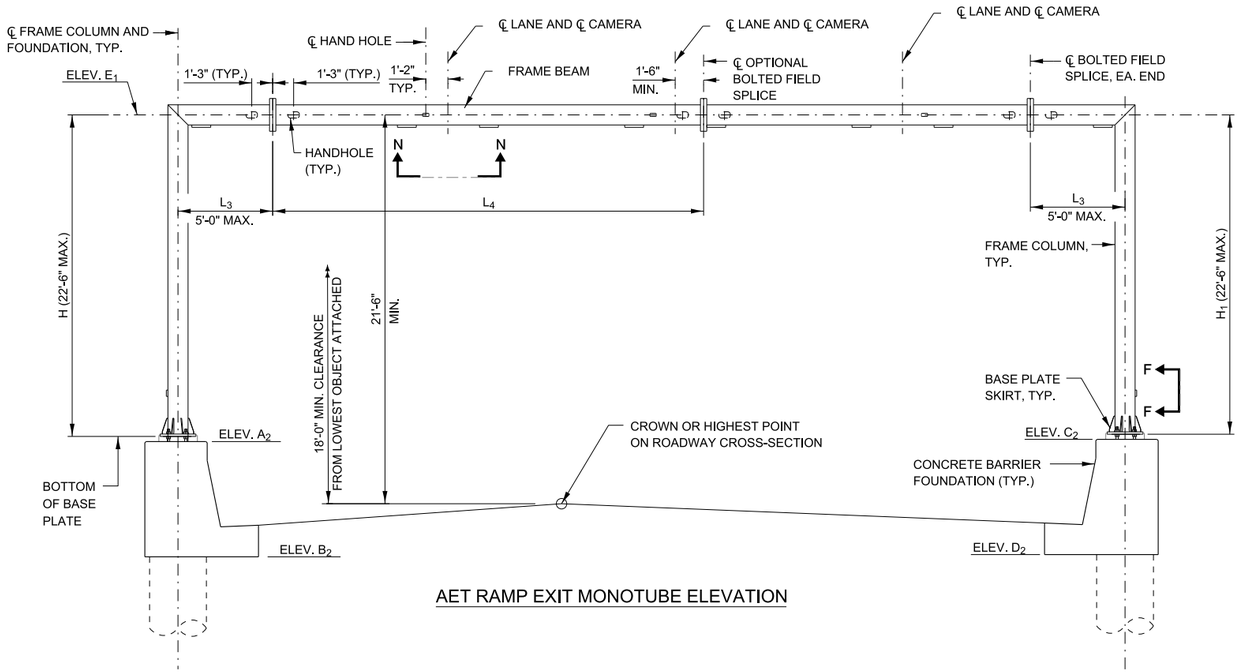
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AET RAMP EXIT MONOTUBE PLAN



VIEW N-N (CONDUIT COUPLER DETAIL)



AET RAMP EXIT MONOTUBE ELEVATION

EXIT MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
60' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	2¼"

SEE STANDARD F13 FOR SPANS GREATER THAN 60'.

NOTES:

1. SEE SHEET 2 OF THIS SERIES FOR SECTION S-S, BASE ` PLAN AND ADDITIONAL NOTES.
2. SEE SHEET 4 OF THIS SERIES FOR SECTION O-O.
3. SEE SHEET 5 OF THIS SERIES FOR SECTIONS A-A AND G-G, AND BASE PLATE SKIRT.
4. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE EXIT MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

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GENERAL NOTES:

1. AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.

2. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.

STRUCTURAL STEEL:

1. MATERIAL FOR THE HSS MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C. BASE PLATE AND STIFFENER PLATE SHALL CONFORM TO ASTM A709 GRADE 50. OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.

2. PIPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53 GRADE B.

3. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 (AASHTO M314) GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. INSTALLATION AND INSPECTION OF ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME "STEEL". ANCHORS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232). SEE SHEET 6 OF THIS SERIES FOR GALVANIZED LENGTH.

4. U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).

5. BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH STEEL BOLTS.

6. HSS FOR MONOTUBE FRAME, PIPES, STRUCTURAL STEEL SHAPES AND PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

7. THE MONOTUBE FRAME BEAM, COLUMNS, BASE PLATE MATERIAL, AND SPLICES ARE CONSIDERED TENSION MEMBERS AND SHALL CONFORM TO THE IMPACT TESTING REQUIREMENT, ZONE 2.

DESIGN LOADING:

WIND LOAD CRITERIA

BASIC WIND SPEED = 120 M.P.H.
G = 1.14
I_F = 1.00
K_Z = 1.00

SIGN PANEL	50 P.S.F.
COLUMN/BEAM	35 P.S.F.

SIGN DEAD LOAD = 3 P.S.F.

ICE = 3 P.S.F. (APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY)

EQUIPMENT LOADS:

CAMERA ASSEMBLY W/MOUNTING HARDWARE	40 LB.
ANTENNA W/MOUNTING HARDWARE	24 LB.

DESIGN STRESSES FOR REINFORCED CONCRETE:

f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS SI)	= 3,500 P.S.I.
f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS DS)	= 4,000 P.S.I.
fy = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60)	= 60,000 P.S.I.

FOUNDATION:

MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.25 TON/SQ.FT. AT MONOTUBE FRAMES.

DESIGN SPECIFICATIONS:

1. ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION.

2. AASHTO LRFD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 1ST EDITION.

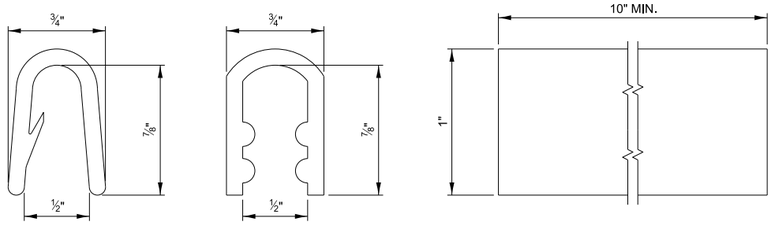
3. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020.

4. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, JANUARY 2012.

CONSTRUCTION SPECIFICATIONS:

ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.



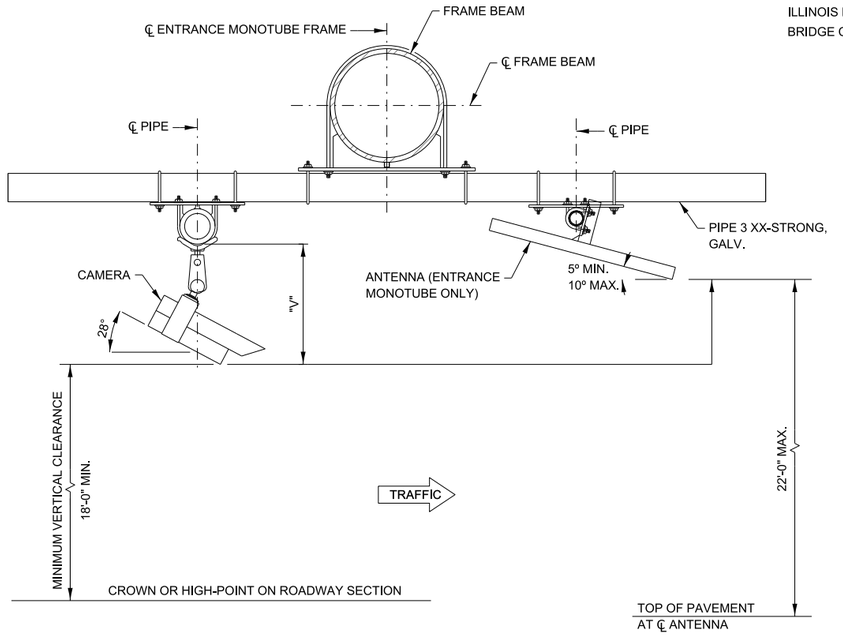
PLASTIC TRIM DETAIL

NOTES:

1. ALL SHARP EDGES OR DRIPS OF ZINC SHALL BE REMOVED FROM ALL STIFFENER PLATES PRIOR TO EPOXY GLUING THE TRIM. THE TRIM SHALL BE EPOXY GLUED TO BOTH SIDES OF THE PLATE. THE COST OF THE TRIM AND EPOXY GLUE SHALL BE INCLUDED IN THE COST OF "OVERHEAD SIGN STRUCTURE, AET RAMP ENTRANCE MONOTUBE TYPE (STEEL)"

2. THE TRIM SHALL BE HEAVY DUTY PLASTIC TRIM (OPTION 1 OR OPTION 2 OR EQUIVALENT) FOR OUTDOOR USE FOR APPLICATION WITH A TEMPERATURE RANGE OF -20°F TO 150°F. THE TRIM SHALL BE CHEMICAL RESISTANT, A HARD RATING AND SHALL MEET FMVSS-302 FOR FEDERAL MOTOR VEHICLE SAFETY STANDARDS FOR FLAMMABILITY.

3. EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



SECTION P-P

NOTE:
VERIFY DIMENSION "V" WITH CAMERA MANUFACTURER.

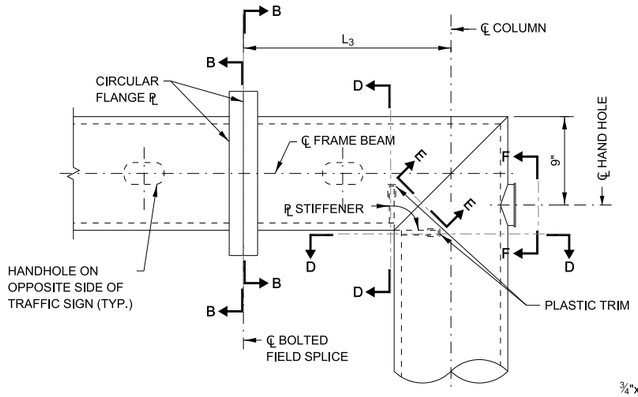
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

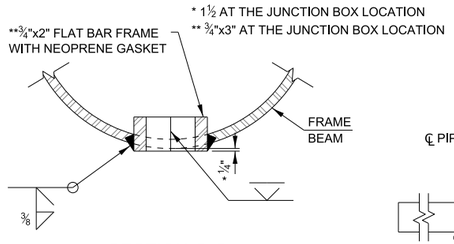
OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

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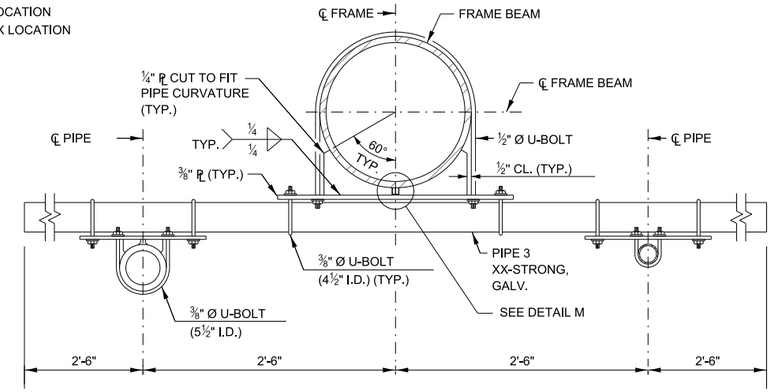


SECTION A-A

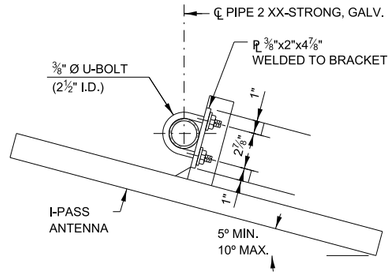
(SEE SHEETS 2 AND 3 OF THIS SERIES FOR LOCATION)



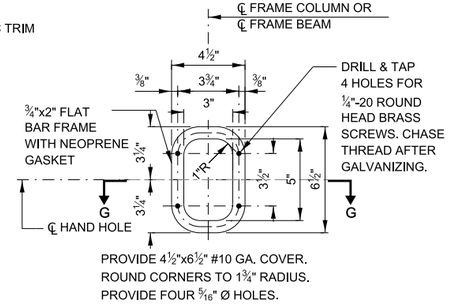
SECTION G-G



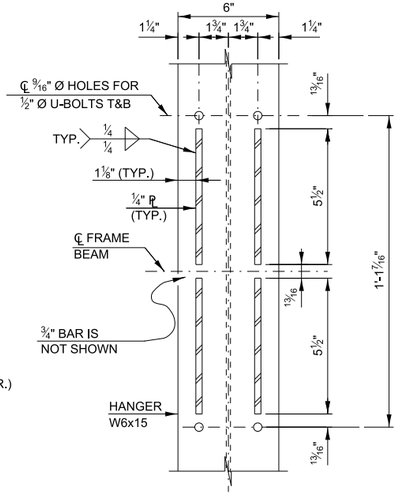
SECTION K-K



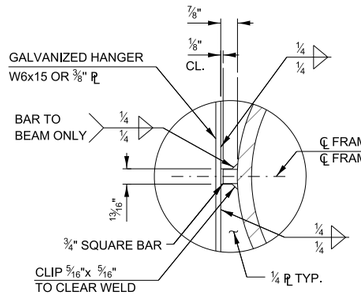
ANTENNA HANGER



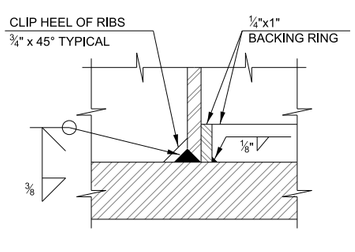
VIEW F-F



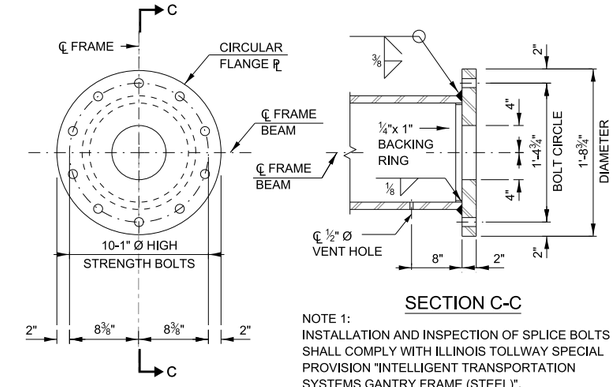
SECTION J-J



DETAIL M



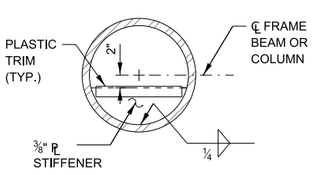
DETAIL T



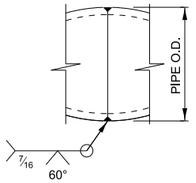
SECTION B-B

SECTION C-C

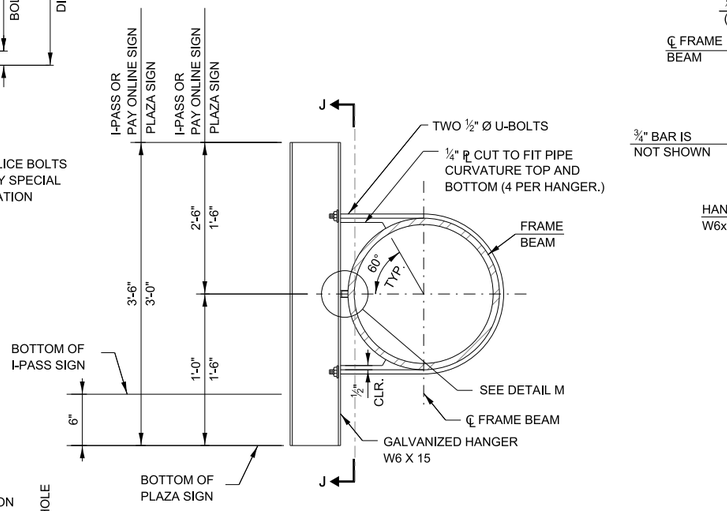
NOTE 1:
INSTALLATION AND INSPECTION OF SPLICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".



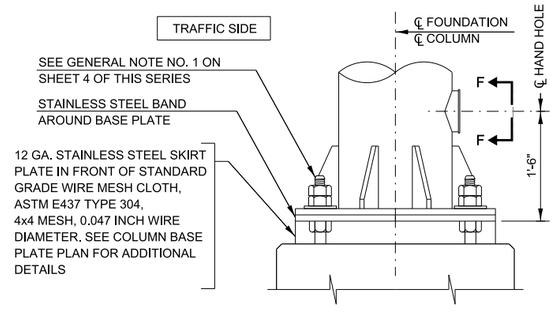
SECTION D-D



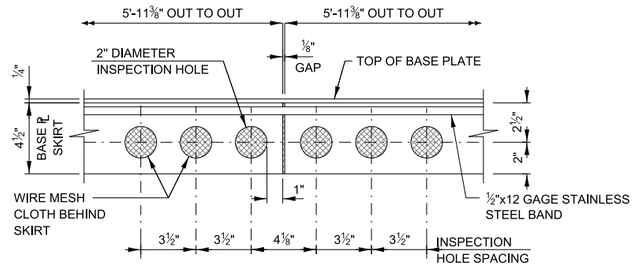
SECTION E-E



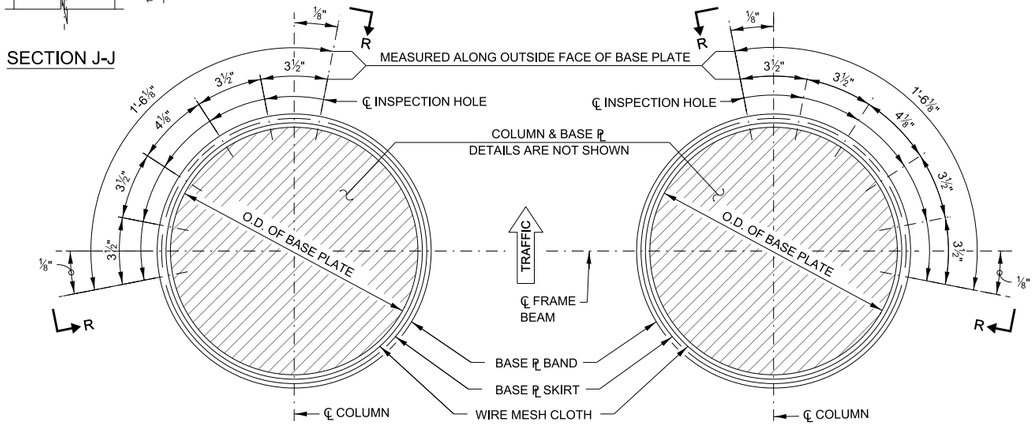
SECTION H-H (SIGN HANGER)



COLUMN BASE



VIEW R-R (BASE PLATE SKIRT)



LEFT BASE PLATE

RIGHT BASE PLATE

COLUMN BASE PLATE PLAN

NOTE:
SEE SHEET 2 OF THIS SERIES FOR BASE PLATE OUTSIDE DIAMETER.

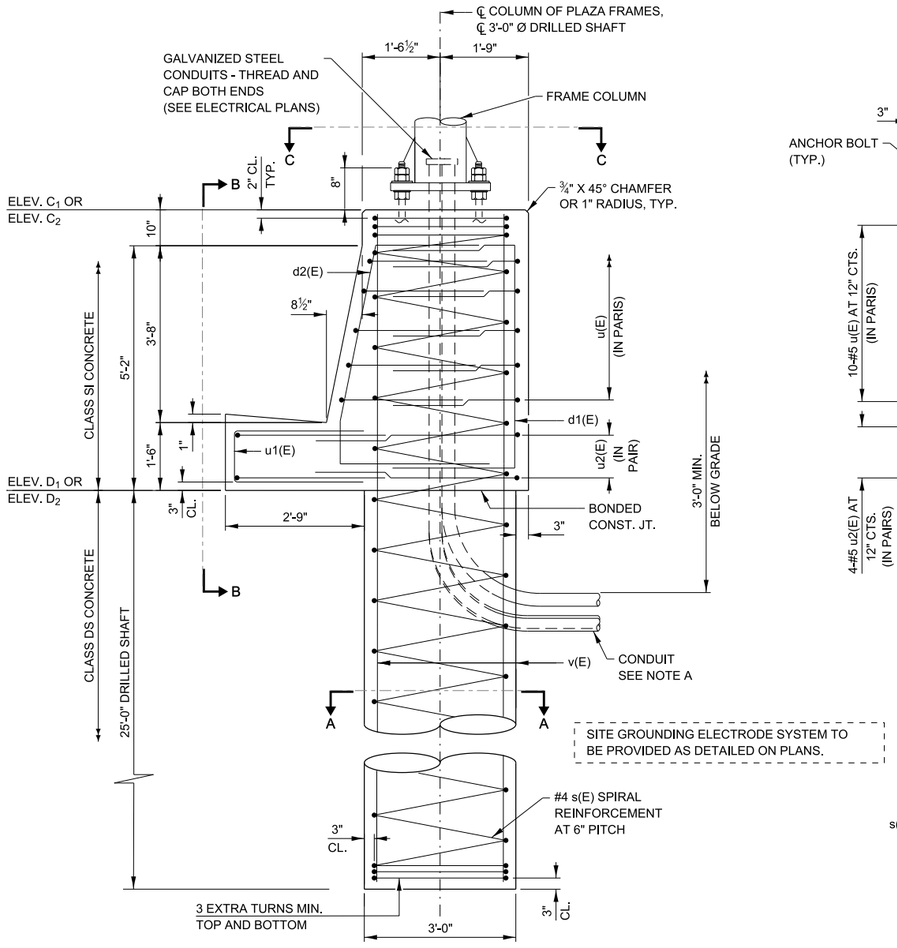
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

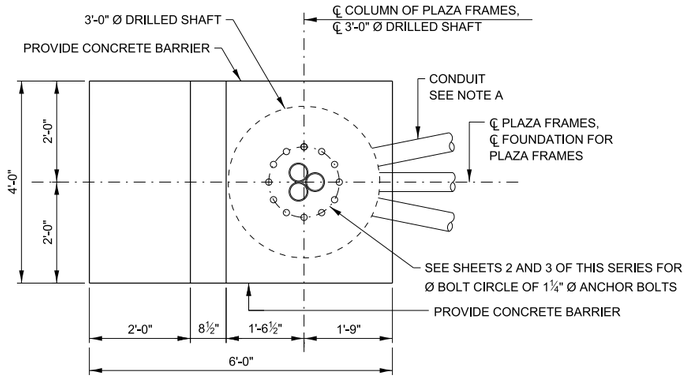
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OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

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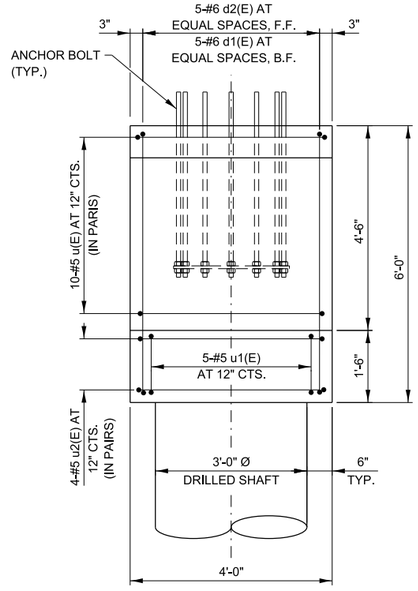
SIDE ELEVATION RIGHT SIDE
(MIRRORED ELEVATION LEFT SIDE)



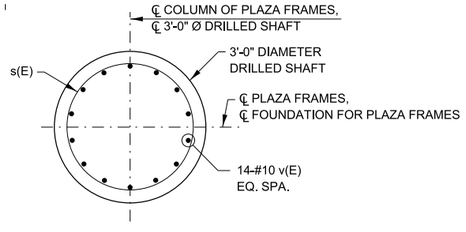
VIEW C-C

CONCRETE BARRIER FOUNDATION FOR PLAZA FRAMES RIGHT SIDE

(MIRRORED ELEVATION LEFT SIDE)



VIEW B-B



SECTION A-A

NOTE A:

1. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. PROVIDE CONDUIT COUPLERS AS REQUIRED.
2. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.

NOTE B:

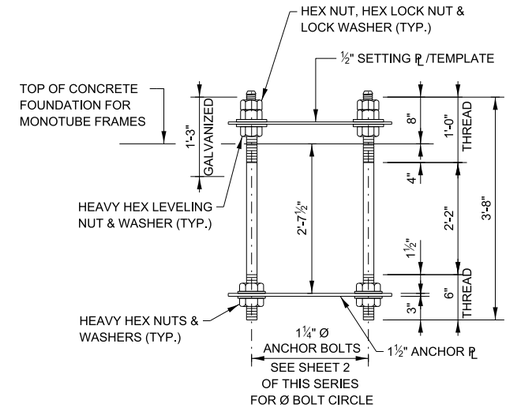
PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP OF GUTTER

FOUNDATION NOTE:

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOB SITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

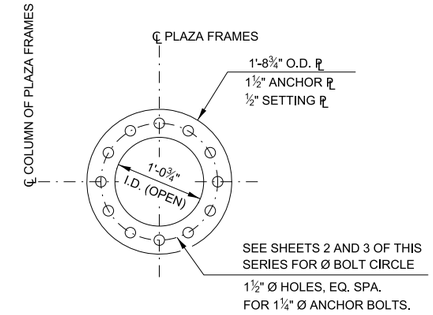
LEGEND:

F.F. - FRONT FACE
B.F. - BACK FACE
CTS. - CENTERS

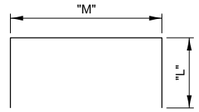


ANCHOR BOLT ASSEMBLY

FRAME COLUMN	ANCHOR BOLT
HSS 12.75x0.500	12

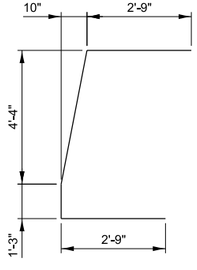


ANCHOR ℄ / SETTING ℄



BAR	"L"	"M"
d1(E)	2'-9"	5'-7"
u(E)	2'-9"	3'-8"
u1(E)	3'-3"	1'-1"
u2(E)	3'-10"	3'-8"

BARS d1(E), u(E), u1(E) AND u2(E)



BAR d2(E)

BAR LIST-ONE FOUNDATION

BAR	NO.	SIZE	LENGTH	SHAPE
d1(E)	5	#6	11'-1"	
d2(E)	5	#6	11'-2"	
s(E)	1	#4	30'-7"	
v(E)	14	#10	30'-7"	
u(E)	10	#5	9'-2"	
u1(E)	5	#5	7'-7"	
u2(E)	4	#5	11'-4"	

ESTIMATED QUANTITY

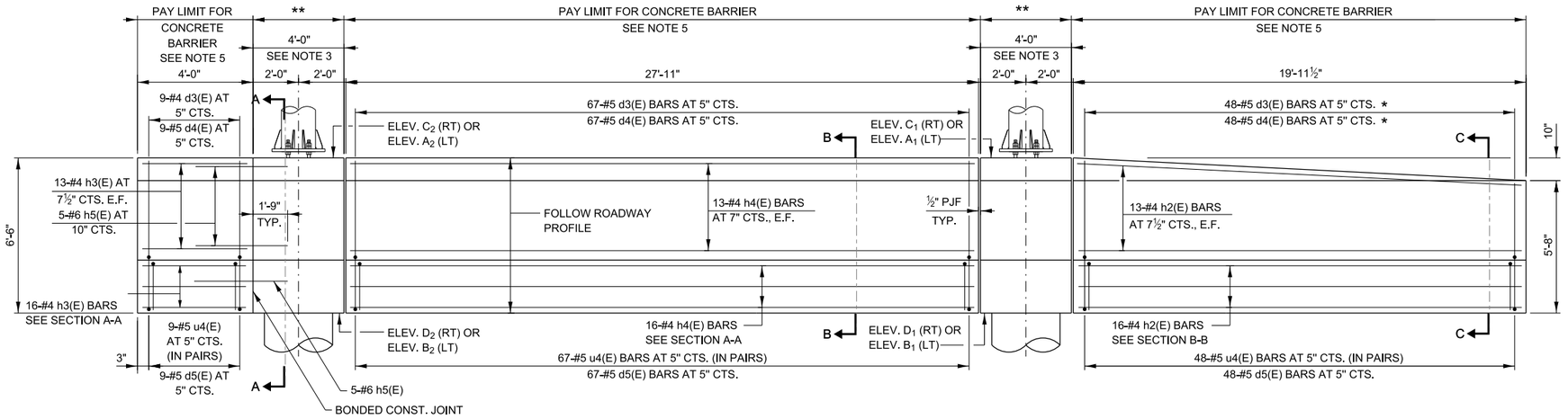
ITEM	UNIT	CONCRETE BARRIER FDN.
CLASS SI CONCRETE	CU. YD.	3.8
CLASS DS CONCRETE	CU. YD.	6.6
REINFORCEMENT BARS, EPOXY COAT	POUND	2,540
PROTECTIVE COAT	SQ. YD.	4.4

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

VERSION:	STANDARD:	SHEET:
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CONCRETE BARRIER AND BARRIER BASE ELEVATION

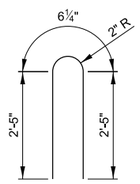
INSIDE FACE OF RIGHT BARRIER IS SHOWN
(MIRROR ELEVATION OF LEFT BARRIER)

* CUT IN FIELD AS REQUIRED TO FIT TAPER

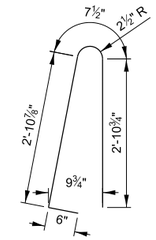
** PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE

BAR LIST - FOR ONE BARRIER

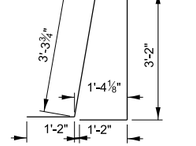
BAR	NO.	SIZE	LENGTH	SHAPE
d3(E)	124	#4	5'-5"	
d4(E)	124	#5	7'-0"	
d5(E)	124	#5	9'-10"	
h2(E)	29	#4	19'-7"	
h3(E)	29	#4	3'-8"	
h4(E)	29	#4	27'-7"	
h5(E)	10	#6	3'-9"	
u4(E)	248	#5	9'-3"	



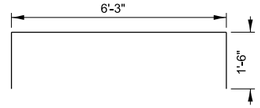
BAR d3(E)



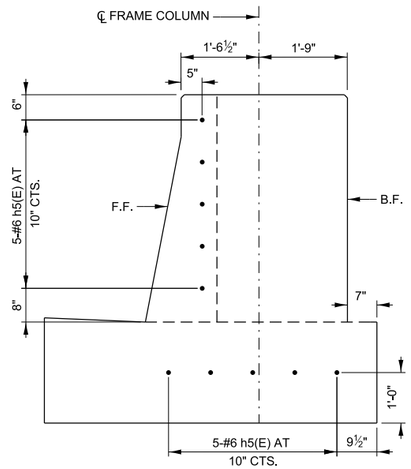
BAR d4(E)



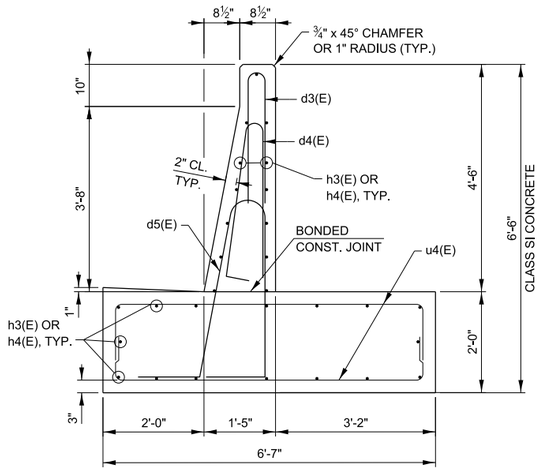
BAR d5(E)



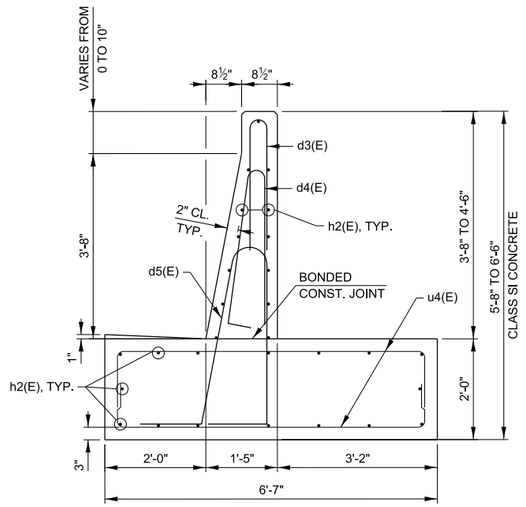
BAR u4(E)



SECTION A-A



SECTION B-B



SECTION C-C

ESTIMATED QUANTITY

(FOR ONE CONCRETE BARRIER)

ITEM	UNIT	ENETERANCE MONOTUBE	EXIT MONOTUBE	TOTAL
CONCRETE STRUCTURES	CU. YD.	22.0	11.7	33.7
REINFORCEMENT BARS, EPOXY COATED	POUND	3,945	2,115	6,060
PROTECTIVE COAT	SQ. YD.	26.9	14.5	41.4

NOTES:

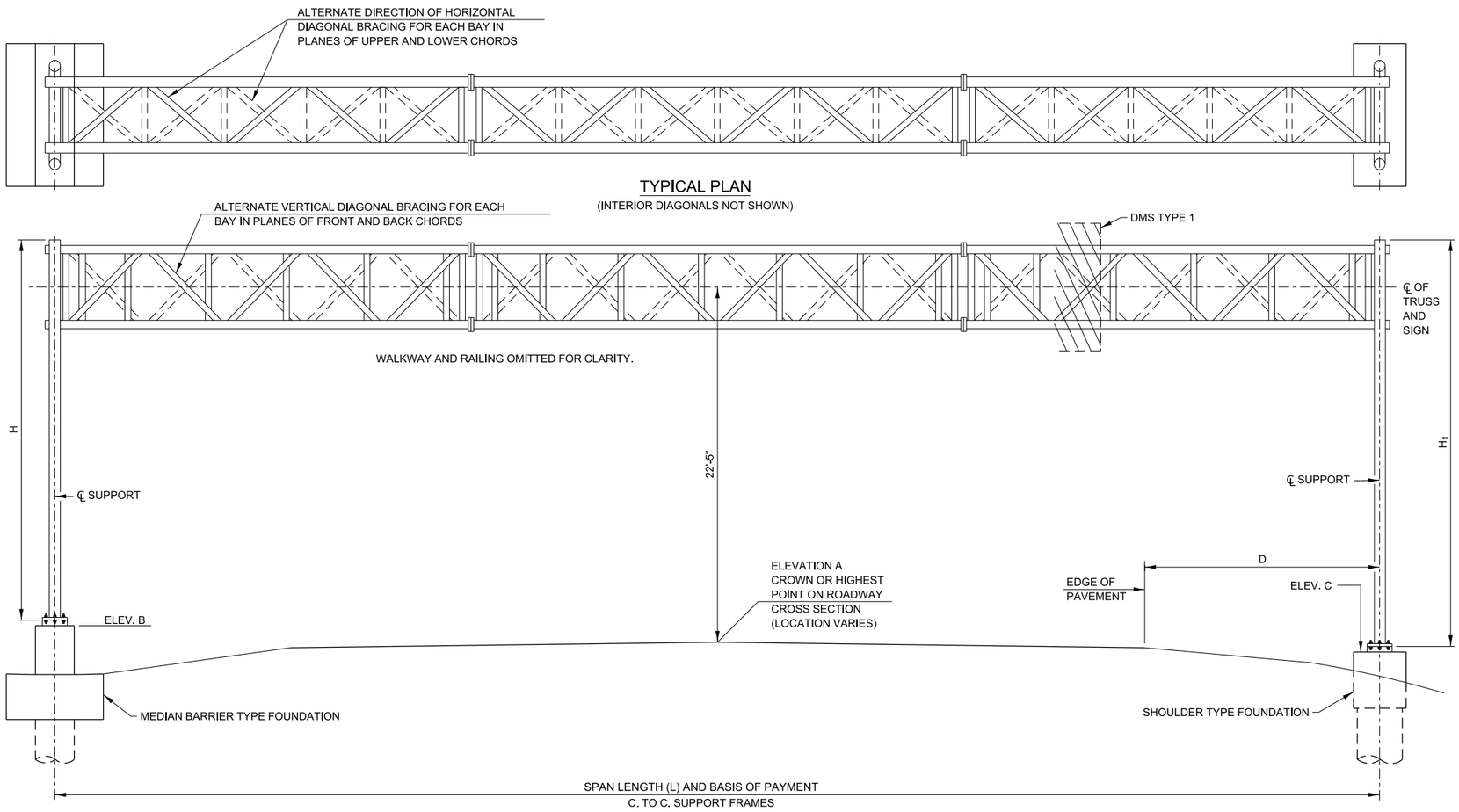
1. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, GUTTER AND TO THE ENTRANCE SIDE FACE (AT THE BEGINNING OF THE RAMP PLAZA PAVEMENT) FOR THE FULL HEIGHT OF THE BARRIER.
2. ELECTRICAL JUNCTION BOXES SHALL BE EXTERIOR MOUNTED ON THE BACK FACE OF BARRIER.
3. FOR CONCRETE BARRIER FOUNDATION DETAILS FOR MONOTUBE FRAMES, SEE SHEET 6 OF THIS SERIES.
4. SEE OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL IN CONTACT PLANS FOR COMPLETE BILL OF MATERIAL.
5. CONCRETE BARRIER AND BASE DETAILED ON THIS SHEET WILL BE PAID FOR UNDER THE ITEMS: CONCRETE STRUCTURES, REINFORCEMENT BARS, EPOXY COATED AND PROTECTIVE COAT.
6. CONCRETE BARRIER LOCATED OUTSIDE THE LIMITS SHOWN ON THESE SHEETS WILL BE PAID FOR SEPARATELY.

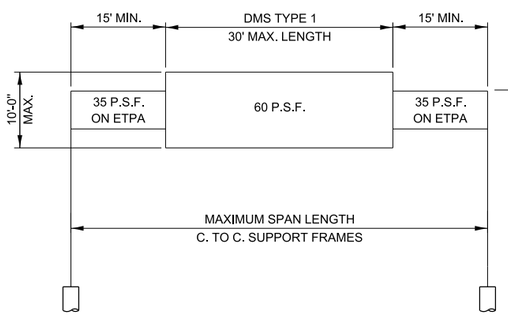
APPROVED BY: Marco Nastif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE MONOTUBE TYPE (STEEL) STRUCTURE DETAILS FOR AET RAMP

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DESIGN WIND LOADING DIAGRAM

ETPA = EFFECTIVE TRUSS PROJECTED AREA.
MAXIMUM DMS WEIGHT = 5000 LBS.

TYPICAL ELEVATION

(LOOKING AT FACE OF SIGN)

ELEV. A = ELEVATION AT POINT OF MINIMUM CLEARANCE TO DMS, WALKWAY SUPPORT OR TRUSS.

MATERIAL SPECIFICATIONS TABLE FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	MINIMUM YIELD STRENGTH (K.S.I.)	MINIMUM ULTIMATE STRENGTH (K.S.I.)
HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500 GRADE B	42	58
STRUCTURAL STEEL PIPE	ASTM A53, TYPE E OR S, GRADE B	35	60
STRUCTURAL STEEL BAR, PLATES AND SHAPES	ASTM A572 GRADE 50	50	65
STAINLESS STEEL BOLTS	ASTM A193 GRADE B8 OR B8M	30	75
STRUCTURAL STEEL BOLTS	ASTM 325, TYPE 1	–	105
STAINLESS STEEL LOCKNUTS	ASTM A194 GRADE 8F ASTM A194 GRADE 2H	–	–
NUTS	ASTM A563 GRADE DH	–	–
STEEL WASHERS	ASTM F436	–	–
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	–	–
STEEL ANCHOR BOLTS	AASHTO M314 OR ASTM F1554	105	125

CONSTRUCTION SPECIFICATIONS:

ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST STANDARD SPECIFICATIONS.

LOADING:

1. SPAN TYPE (STEEL) TRUSS ARE DESIGNED FOR A 10'-0" DEEP DMS, WITH A MAXIMUM LENGTH OF 30'-0" AND AMAXIMUM THICKNESS OF 4'-2".
2. SPAN TYPE (STEEL) TRUSS ARE DESIGNED FOR 35 PSF WIND PRESSURE ON TRUSS MEMBERS AND 60 PSF ON DMS.
3. WALKWAY LOADING SHALL INCLUDE DEAD LOAD PLUS 500 LBS. CONCENTRATED LIVE LOAD.
4. WALKWAY HANDRAILS ARE DESIGNED FOR A 200-LB LOAD ON TOP RAIL AND A 150-LB LOAD ON MID RAIL, APPLIED IN ANY DIRECTION.
5. PROVIDE ANCHORAGE FOR ATTACHMENT OF PERSONAL FALL ARREST SYSTEMS PER OSHA SECTION 1926.502(D). ANCHORAGE SHALL BE INSTALLED AS CLOSE TO PANEL POINTS AS POSSIBLE AND SHALL BE CAPABLE OF SUPPORTING AT LEAST 5000 LBS.
6. ICE LOAD OF 3 PSF APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY.

DESIGN SPECIFICATIONS:

2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION WITH 2020 INTERIM REVISIONS, INSTRUCTIONS AND INFORMATION.

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020

GENERAL NOTES:

1. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) SUMMARY AND BILL OF MATERIAL SHEET.
2. AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
3. SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN DMS IS NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL DMS IS INSTALLED.
4. TRUSS UNITS SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSS UNITS.
5. ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURE WELDING CODE AND THE STANDARD SPECIFICATIONS.
6. INSTALLATIONS NOT WITHIN DIMENSIONAL LIMITS SHOWN REQUIRE SPECIAL ANALYSIS FOR ALL COMPONENTS.
7. ONE DMS TYPE 1 IS PERMITTED TO BE MOUNTED ON A SPAN TRUSS. DO NOT MOUNTSIGN PANELS ON THIS TRUSS.

FABRICATION NOTES:

1. MATERIALS: SEE MATERIAL SPECIFICATIONS TABLE FOR MATERIAL SPECIFICATIONS FOR OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL). STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40 F (ZONE 2) BEFORE GALVANIZING.
2. WELDING: ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE SPAN TYPE OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-15 FOR TUBULAR, CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL WELDED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH WPS PER AWS D1.1-15, TABLE 3.1.
3. FASTENERS FOR STEEL TRUSSES: HIGH STRENGTH BOLTS SHALL SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) SHALL SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193 GRADE B7, OR APPROVED ALTERNATE, AND SHALL HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH SHALL SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS SHALL BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS SHALL HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(f)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
4. U-BOLTS: U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).
5. STEEL GRATING: STEEL BARS FOR GRATING ELEMENTS SHALL CONFORM TO ASTM A36 OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER.
6. GALVANIZING: ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED. ALL FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 OR M232 AS APPROPRIATE FOR THE PRODUCT (EXCEPT STAINLESS STEEL FASTENERS).

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

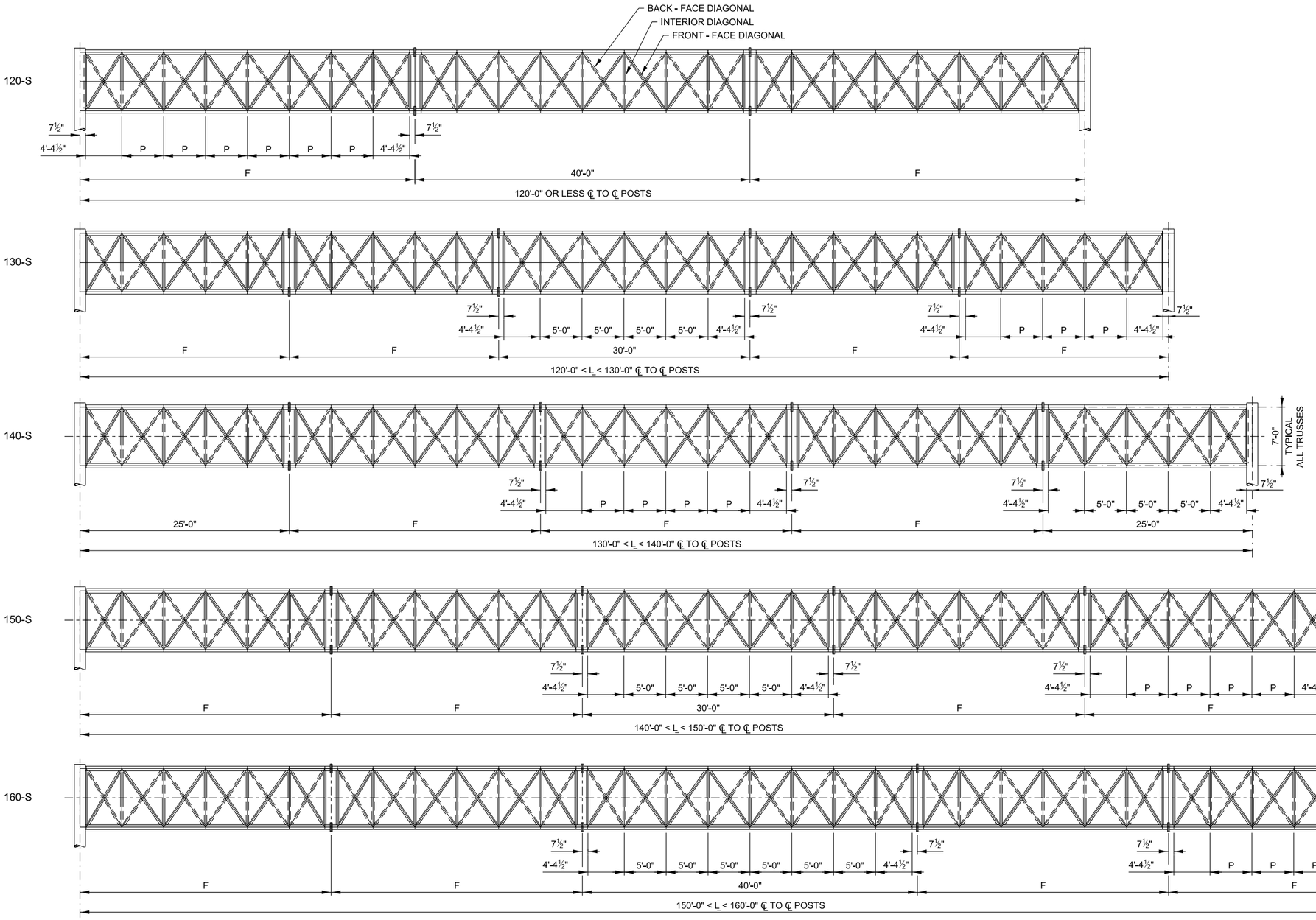
DATE:
03/01/2025

Illinois Tollway

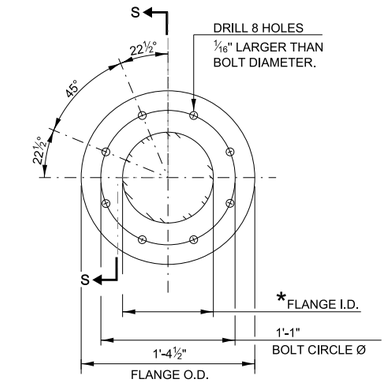
REVISIONS	
DATE	DESCRIPTION
03-01-2025	ADDED UTILITY CLEARANCE REQ.
03-01-2024	ADDED UTILITY CLEARANCE REQ.
03-01-2023	CHANGE VERT. DIAG. & INT. DIAG. TO
	4X-STRONG PIPE, END SUP. DIAG. TO
	4XX-STRONG PIPE, REV. NUM. OF V(E)
	BARS ON SHT. 7 & 8 & INC. SHAFT.

OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

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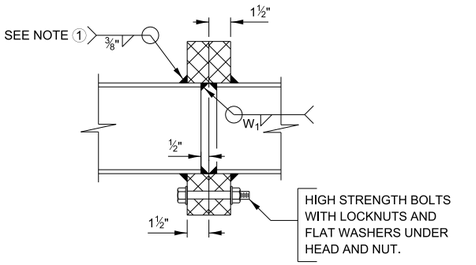


PART ELEVATION VIEWS



SPLICING FLANGES

*TO FIT O.D. OF CHORD WITH MAXIMUM GAP OF 1/16".

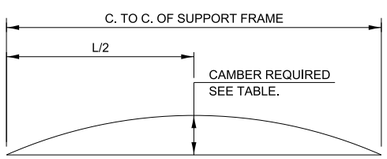


SECTION S-S

NOTE:

① SPLICING FLANGES SHALL BE ATTACHED TO EACH TRUSS UNIT WITH THE TRUSS SHOP ASSEMBLED TO CAMBER SHOWN. TRUSS UNITS SHALL BE IN PROPER ALIGNMENT AND FLANGE SURFACES SHALL BE SHOP BOLTED INTO FULL CONTACT BEFORE WELDING. SUFFICIENT EXTERNAL WELDS OR TACKS SHALL BE MADE TO SECURE FLANGES UNTIL REMAINING WELDS ARE MADE AFTER DISASSEMBLY. ADJACENT FLANGES SHALL BE "MATCH MARKED" TO INSURE PROPER FIELD ASSEMBLY.

SPAN LENGTH (L)	CAMBER
120' OR LESS	2¾"
120' < L ≤ 130'	3¼"
130' < L ≤ 140'	4"
140' < L ≤ 150'	4¼"
150' < L ≤ 160'	5"



CAMBER DIAGRAM

NOTE:
1. FABRICATE TRUSS WITH CHORDS CURVED SMOOTHLY TO PROVIDE CAMBER.
2. DO NOT CAMBER BY SHIMMING AT TRUSS FIELD SPLICES OR CUTTING AND REWELDING CHORD.

TRUSS MEMBER SCHEDULE

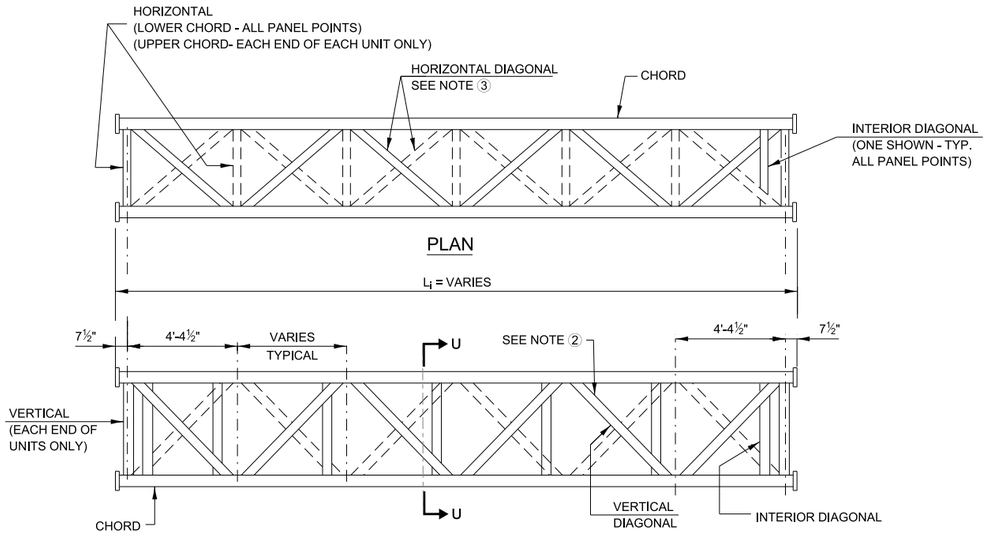
DESIGN TRUSS TYPE	SPAN	CHORDS	VERTICAL DIAGONALS, VERTICALS AND INTERIOR DIAGONALS	HORIZONTAL DIAGONALS	HORIZONTALS	SPLICING FLANGE		
						H.S. BOLTS		WELD SIZE
						NO./SPLICE	DIA.	W_1
120-S	120' OR LESS	HSS 8.625x0.322	PIPE 4 X-STRONG	PIPE 3 XX-STRONG	PIPE 3 X-STRONG	8	1"	1/4"
130-S	120' < L ≤ 130'	HSS 8.625x0.375	PIPE 4 X-STRONG	PIPE 3 XX-STRONG	PIPE 3 X-STRONG	8	1"	5/16"
140-S	130' < L ≤ 140'	HSS 8.625x0.375	PIPE 4 X-STRONG	PIPE 3 XX-STRONG	PIPE 3 X-STRONG	8	1"	5/16"
150-S	140' < L ≤ 150'	HSS 8.625x0.500	PIPE 4 X-STRONG	PIPE 3 XX-STRONG	PIPE 3 X-STRONG	8	1"	7/16"
160-S	150' < L ≤ 160'	HSS 8.625x0.500	PIPE 4 X-STRONG	PIPE 3 XX-STRONG	PIPE 3 X-STRONG	8	1¼"	7/16"

APPROVED BY:
Marco Nastif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

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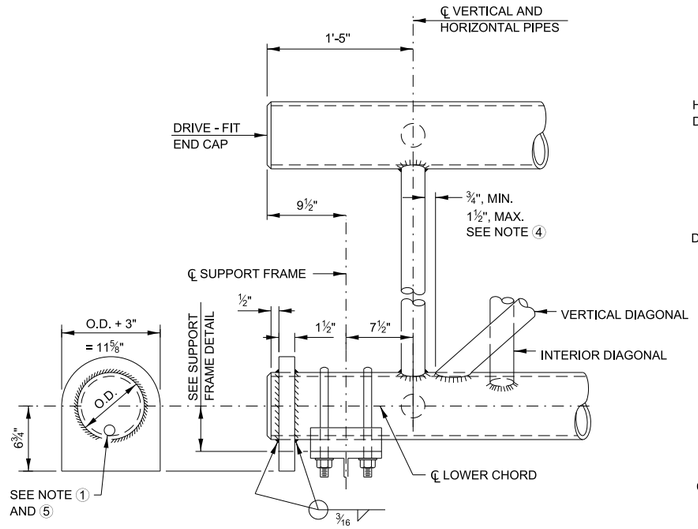
OVERHEAD SIGN STRUCTURE
SPAN TYPE (STEEL)
STRUCTURE DETAILS

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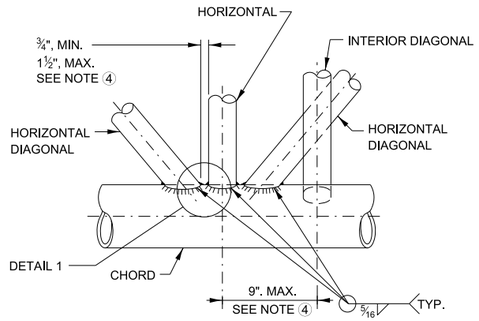


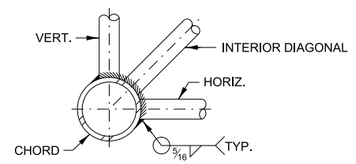
ELEVATION
TYPICAL INTERIOR UNIT

EVEN OR ODD NUMBER OF PANELS/EXTERIOR UNITS ALLOWED.

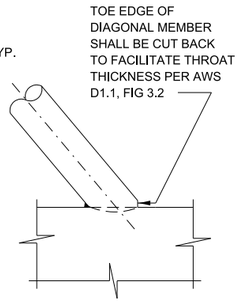


SUPPORT END DETAIL FOR EXTERIOR UNIT

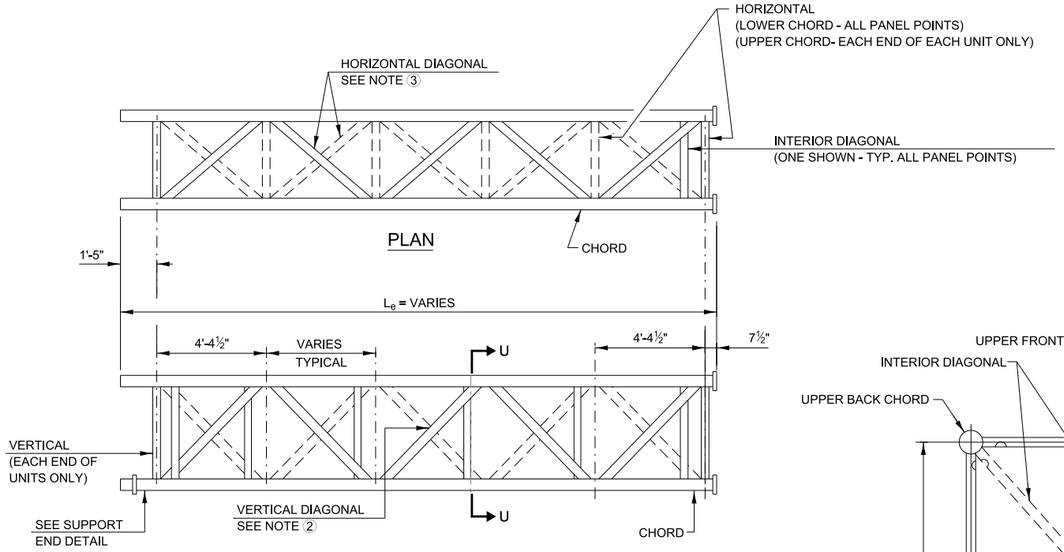




TYPICAL JOINT DETAILS

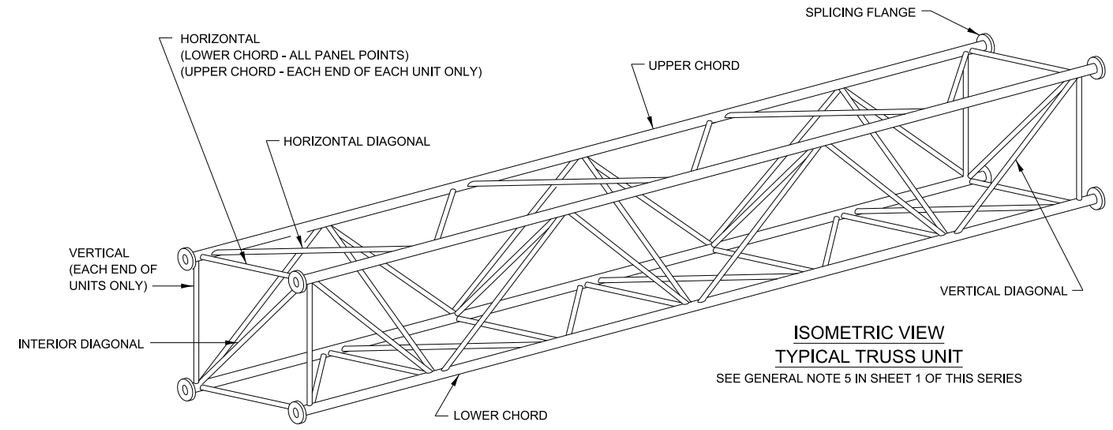


DETAIL 1



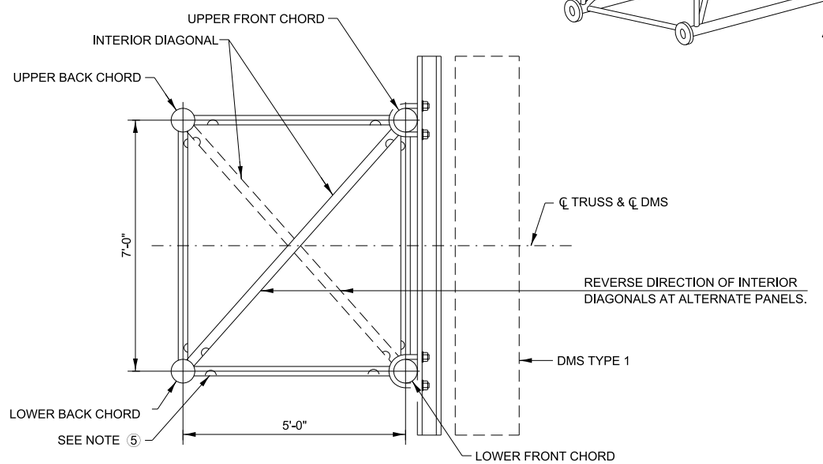
ELEVATION
TYPICAL EXTERIOR UNIT

EVEN OR ODD NUMBER OF PANELS/EXTERIOR UNITS ALLOWED.



ISOMETRIC VIEW
TYPICAL TRUSS UNIT

SEE GENERAL NOTE 5 IN SHEET 1 OF THIS SERIES



SECTION U-U

(VERTICAL AND HORIZONTAL DIAGONALS NOT SHOWN)

NOTES

① CONTRACTOR SHALL USE STANDARD DRIVE - FIT CAP TO CLOSE END. ½" Ø DRAIN HOLE IN DRIVE - FIT CAP INSTALLED AFTER GALVANIZING. (TYP. AT NON - SPLICED ENDS OF CHORDS)

② VERTICAL DIAGONALS IN FRONT AND BACK FACE SHALL ALTERNATE INCLINATION.

③ HIDDEN LINES SHOW WIND BRACING ALTERNATES DIRECTION BETWEEN PLANES OF TOP AND BOTTOM CHORDS.

④ ALL DIAGONALS SHALL BE OFFSET FROM THE PANEL POINT BASED ON THE FOLLOWING: OFFSET SHALL PROVIDE A ¾" MINIMUM TO 1½" MAXIMUM CLEARANCE BETWEEN DIAGONAL AND ANY OTHER DIAGONAL, HORIZONTAL OR VERTICAL MEMBER, AND TO PROVIDE CLEARANCE FOR U-BOLT CONNECTIONS OF DMS TYPE 1 OR WALKWAY BRACKETS.

⑤ GALVANIZING VENT HOLES OF ADEQUATE SIZE SHALL BE PROVIDED ON UNDERSIDE AT EACH END OF TRUSS MEMBERS EXCEPT CHORDS. ALTERNATELY, HOLES MAY BE PROVIDED IN WALL OF CHORDS. ALL VENT HOLES SHALL BE DRILLED AND DE - BURRED, TYP.

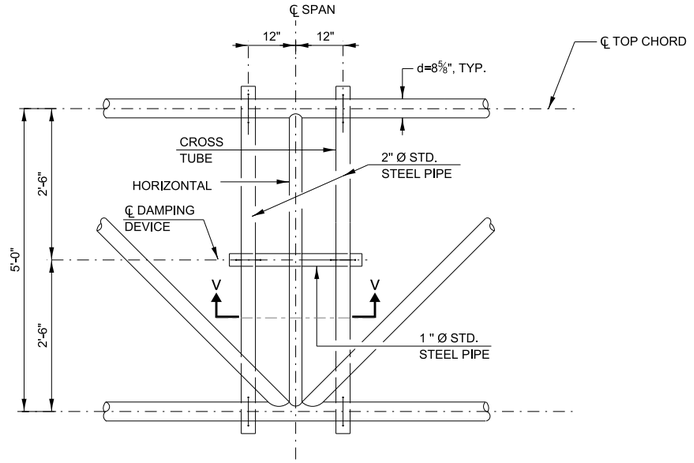
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

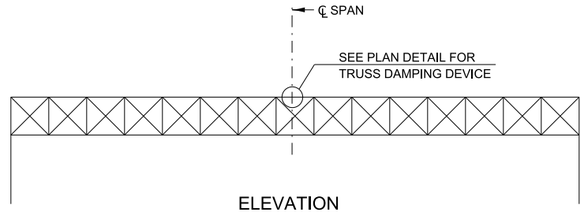
OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

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PLAN DETAIL

℄ SPAN AT PANEL POINTS

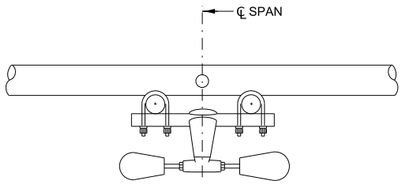


ELEVATION

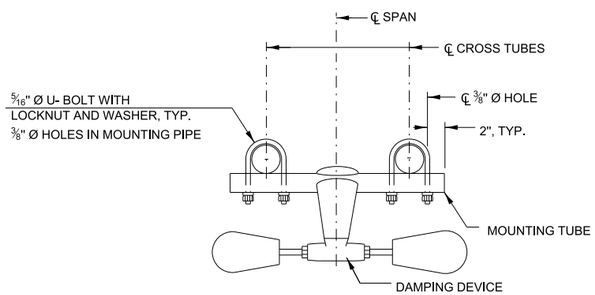
STEEL OVERHEAD SIGN TRUSS

DAMPER NOTE:

ONE DAMPER PER TRUSS. (31 LBS. STOCKBRIDGE-TYPE - 29" MINIMUM BETWEEN ENDS OF WEIGHTS).

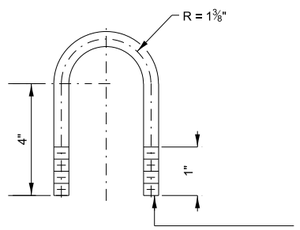


SECTION V-V



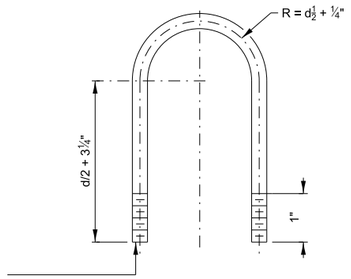
TRUSS DAMPING DEVICE CONNECTION DETAIL

(TYPICAL)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL

(TYPICAL)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL

(TYPICAL)

APPROVED BY:

Manar Nashif

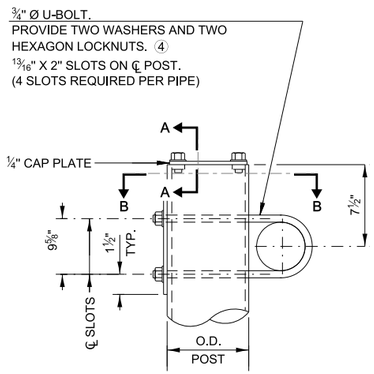
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

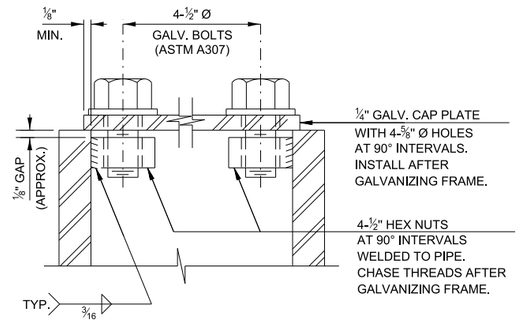
Illinois Tollway

OVERHEAD SIGN STRUCTURE
SPAN TYPE (STEEL)
STRUCTURE DETAILS

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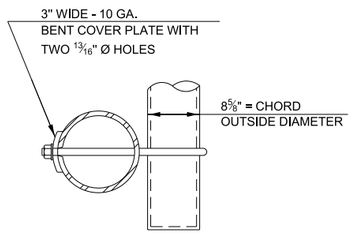


DETAIL A

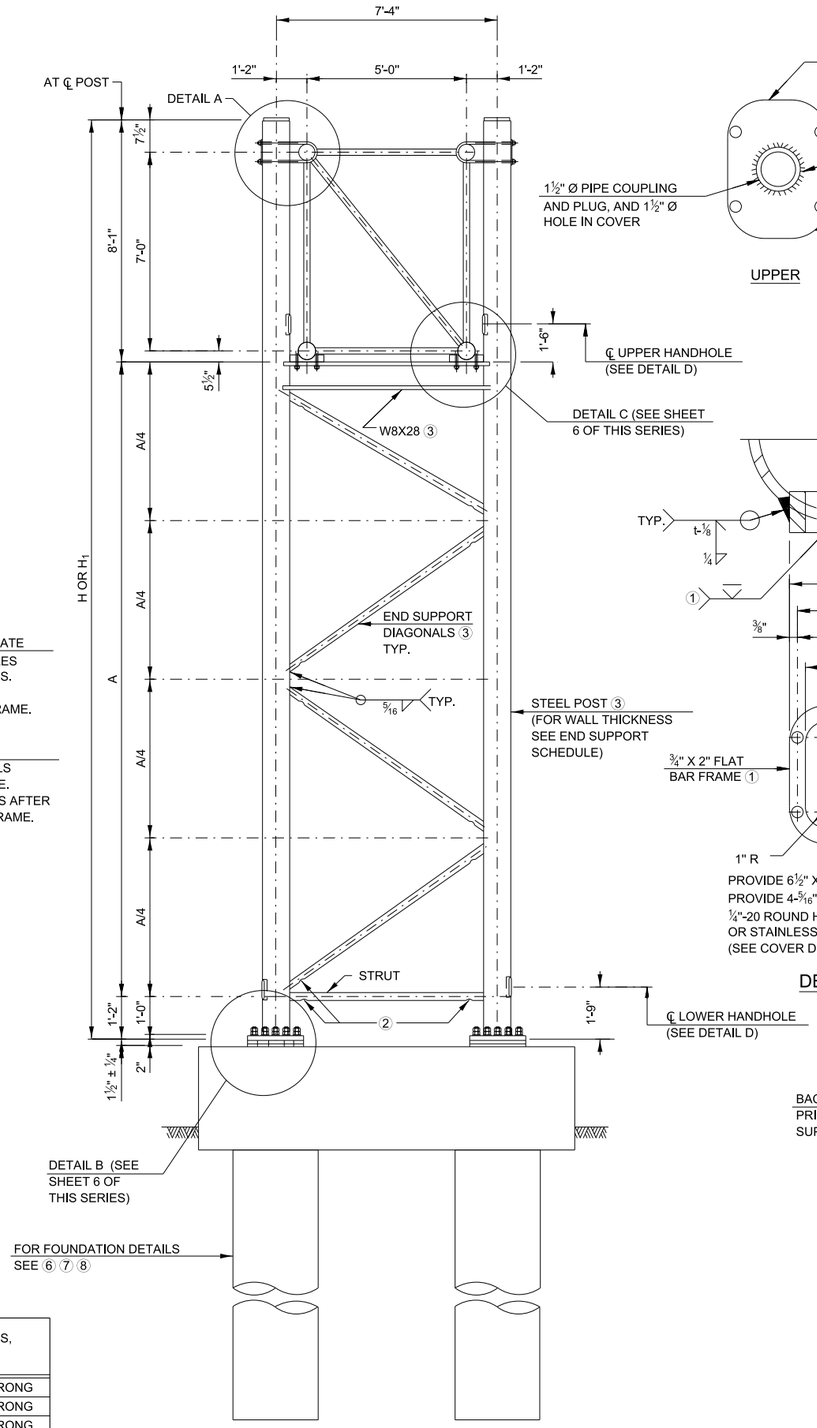


SECTION A-A

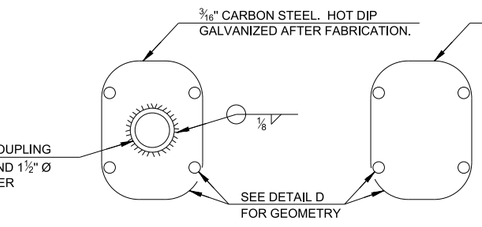
AS AN ALTERNATE TO BOLTS, MAY USE GALVANIZED DRIVE - FIT CAPS INSTALLED AFTER GALVANIZING FRAME.



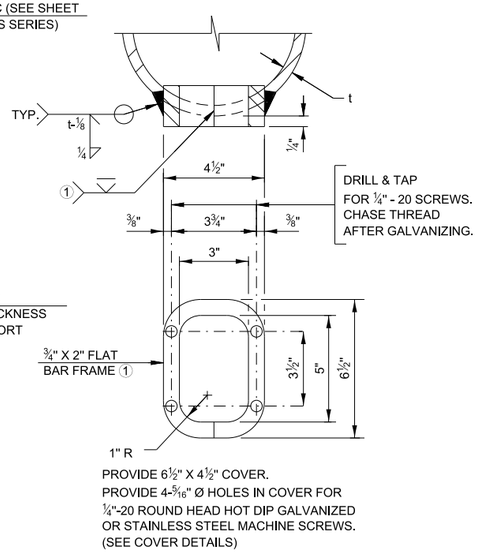
SECTION B-B



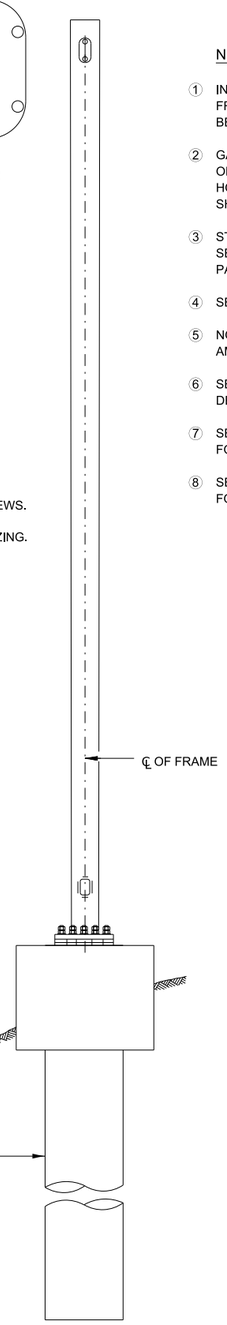
SIDE ELEVATION



HANDHOLE COVERS



DETAIL D



END ELEVATION

END SUPPORT DETAILS

NOTES:

① IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500 μIN OR LESS.

② GALVANIZING VENT HOLES OF ADEQUATE SIZE SHALL BE PROVIDED ON UNDERSIDE AT EACH END OF BRACING PIPES. ALTERNATELY, HOLES MAY BE PROVIDED IN WALL OF PIPE COLUMN. ALL VENT HOLES SHALL BE DRILLED AND DE - BURRED, TYP.

③ STEEL PIPE, PLATE, CARBON STEEL HANDHOLE COVERS AND ROLLED SECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. PAINTING IS NOT PERMITTED. SEE SHEET 1 OF THIS SERIES.

④ SEE GENERAL NOTES FOR FASTENERS.

⑤ NONSTANDARD APPLICATIONS SHALL HAVE DIMENSIONS VERIFIED OR AMENDED AS APPROPRIATE.

⑥ SEE SHEET 7 OF THIS SERIES FOR SHOULDER TYPE FOUNDATION DETAILS.

⑦ SEE SHEET 8 OF THIS SERIES FOR MEDIAN BARRIER TYPE FOUNDATION DETAILS.

⑧ SEE SHEET 9 OF THIS SERIES FOR MEDIAN BARRIER TYPE FOUNDATION DETAILS WHEN EXISTING UTILITY IS PRESENT.

END SUPPORT SCHEDULE

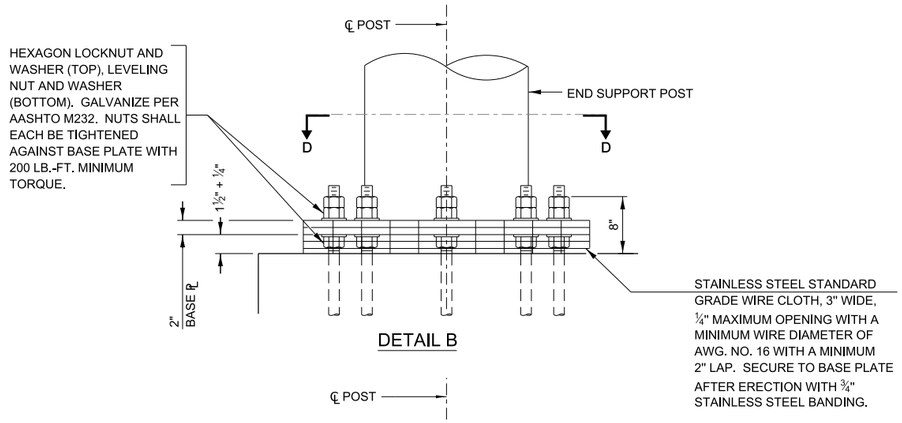
DESIGN TRUSS TYPE	H OR H_1	t	POSTS	DIAGONALS, STRUT
120-S	34' MAX.	½"	HSS 12.75x0.500	PIPE 4 XX-STRONG
130-S	34' MAX.	½"	HSS 14x0.500	PIPE 4 XX-STRONG
140-S	34' MAX.	½"	HSS 14x0.500	PIPE 4 XX-STRONG
150-S	36' MAX.	½"	HSS 16x0.500	PIPE 4 XX-STRONG
160-S	36' MAX.	½"	HSS 16x0.500	PIPE 4 XX-STRONG

APPROVED BY: Marco Nastif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

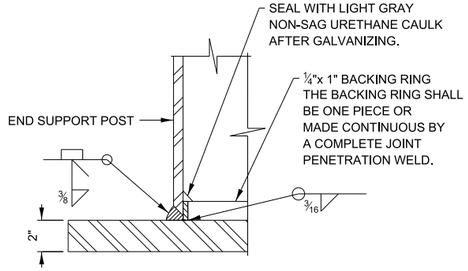
Illinois Tollway

OVERHEAD SIGN STRUCTURE
SPAN TYPE (STEEL)
STRUCTURE DETAILS

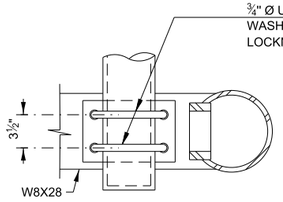
VERSION:	STANDARD:	SHEET:
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DETAIL B

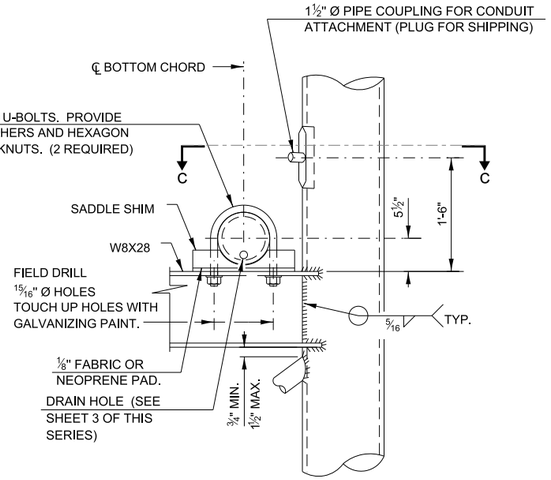


SECTION E-E

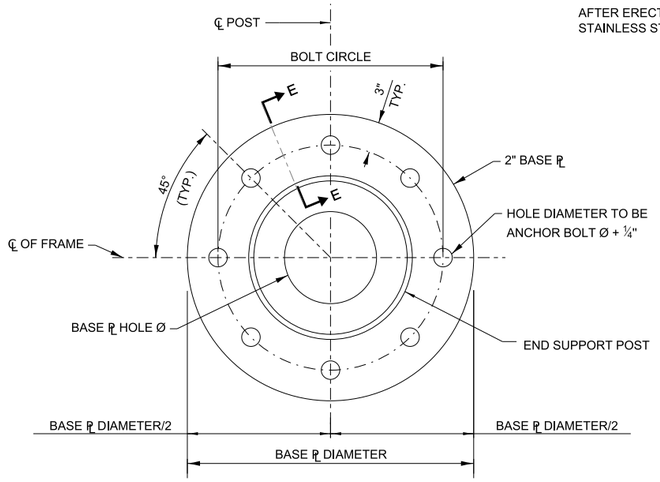


SECTION C-C

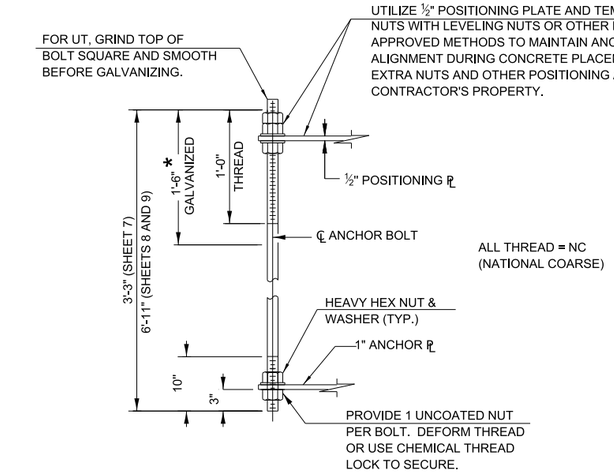
(HANDHOLE COVER NOT SHOWN)



DETAIL C



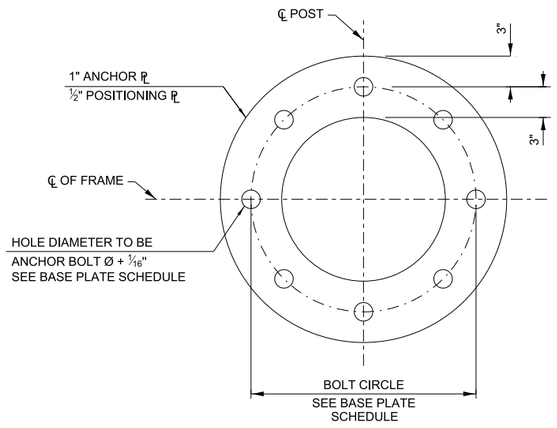
SECTION D-D



ANCHOR BOLT DETAIL

ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 GRADE 105 AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F. GALVANIZE UPPER 18" PER AASHTO M232. NO WELDING SHALL BE PERMITTED ON BOLTS.

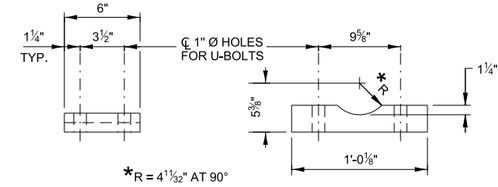
* 18" IS MINIMUM TO BE GALVANIZED. ENTIRE BOLT MAY BE GALVANIZED AT CONTRACTOR'S OPTION.



POSITIONING PLATE AND ANCHOR PLATE

BASE PLATE SCHEDULE

DESIGN TRUSS TYPE	END SUPPORT POST OUTSIDE DIAMETER	BASE PLATE		BOLT CIRCLE	ANCHOR BOLT DIA.
		DIAMETER	HOLE }		
120-S	1'-0¾"	2'-0¾"	6.75"	1'-6¾"	1½"
130-S	14"	2'-2"	8"	1'-8"	1½"
140-S	14"	2'-2"	8"	1'-8"	1½"
150-S	16"	2'-4"	8"	1'-10"	1½"
160-S	16"	2'-4"	8"	1'-10"	1¾"



*R = 4 11/32" AT 90°

SADDLE SHIM DETAIL

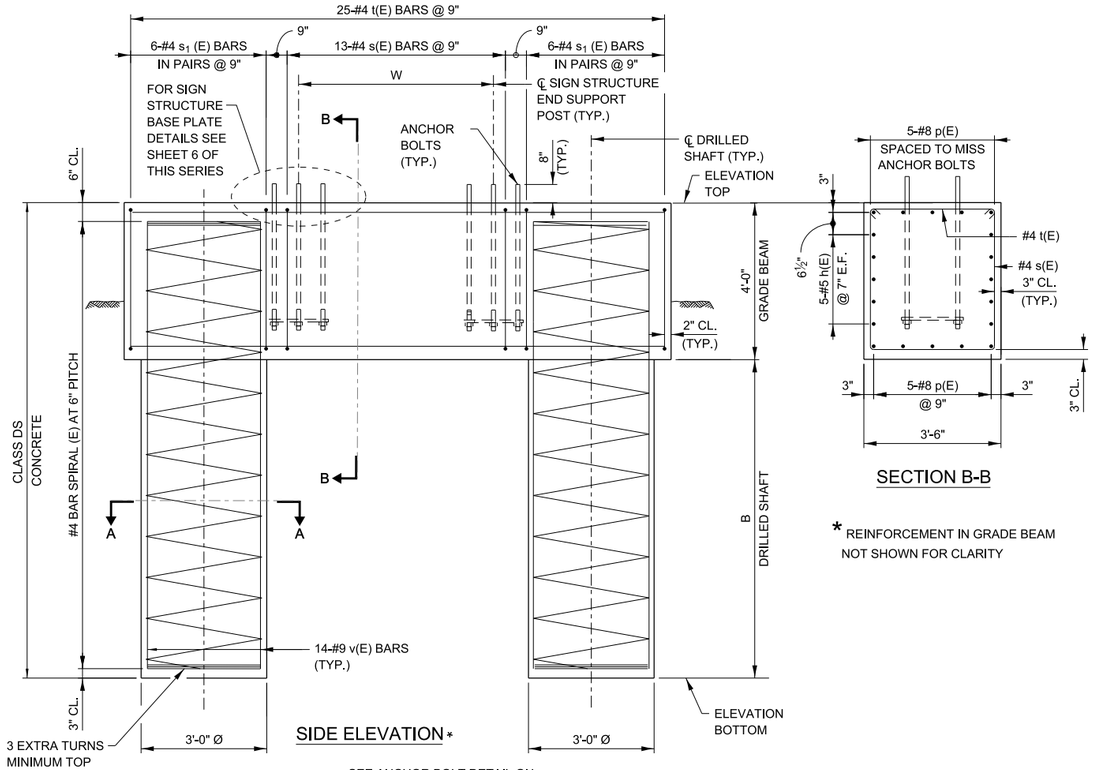
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

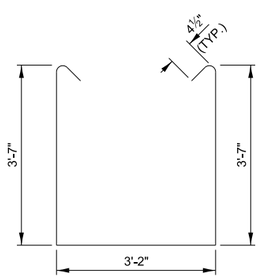
OVERHEAD SIGN STRUCTURE
SPAN TYPE (STEEL)
STRUCTURE DETAILS

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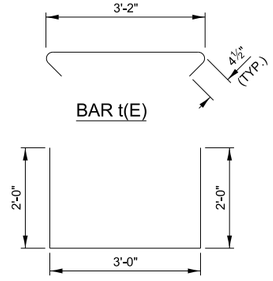


NOTES:

1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
2. ALL MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE IDOT STANDARD SPECIFICATION AND PRIOR TO ERECTION OF END SUPPORT POST.
5. PROVIDE NORMAL SURFACE FINISH, FOLLOWED BY CONCRETE SEALER APPLICATION ON ALL CONCRETE SURFACES EXCEPT BOTTOM OF GRADE BEAM AND DRILLED SHAFTS.
6. ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.
7. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING SHALL NOT BE LEFT IN PLACE BELOW THE ELEVATION WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
8. IF NECESSARY TO INCREASE STEEL END SUPPORT HEIGHT ABOVE THE LIMITATIONS SHOWN IN SIGN STRUCTURE MEMBER SCHEDULE ON SHEET 5 OF THIS SERIES, GRADE BEAM DEPTH ON THIS SHEET SHALL BE INCREASED UP TO 6'-0" WITHOUT CHANGES TO THE DRILLED SHAFT DESIGN. GRADE BEAM REINFORCEMENT, CONCRETE VOLUME AND LENGTH OF ANCHOR BOLTS SHALL BE REVISED ACCORDINGLY.

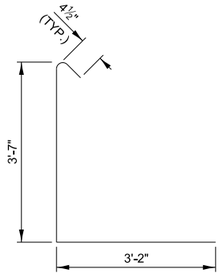


BAR s(E)



BAR t(E)

BAR u(E)



BAR s_1(E)

BAR LIST - EACH FOUNDATION

(2 SHAFT AND 1 GRADE BEAM)

BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	10	#5	17'-8"	
p(E)	10	#8	17'-8"	
s(E)	13	#4	11'-1"	
s_1(E)	24	#4	6'-11½"	
t(E)	25	#4	3'-11"	
u(E)	14	#4	7'-0"	
v(E)	28	#9	B ADD 3'-3"	
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION				

SHOULDER FOUNDATION SCHEDULE

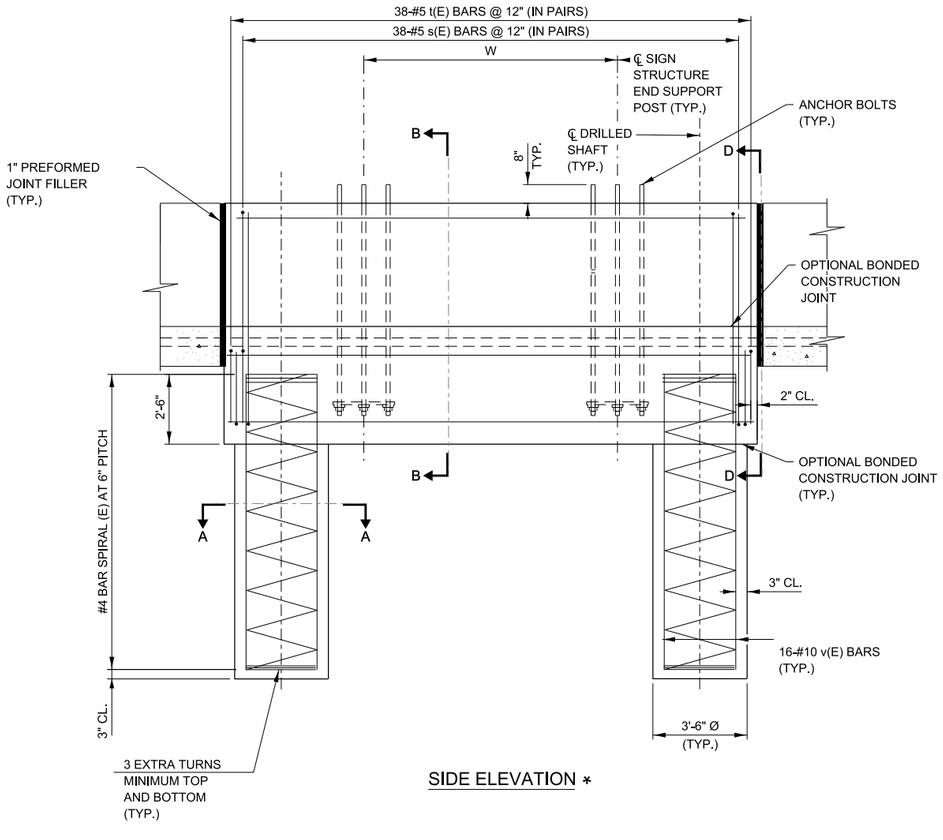
DESIGN TRUSS TYPE	W	X	B	CLASS DS CONCRETE (CU YD)	REINFORCEMENT BARS (POUNDS)
120-S	7'-4"	3'-7"	50'-0"	35.5	7,250
130-S	7'-4"	3'-7"	55'-0"	38.1	7,830
140-S	7'-4"	3'-7"	55'-0"	38.1	7,830
150-S	7'-4"	3'-7"	55'-0"	38.1	7,830
160-S	7'-4"	3'-7"	55'-0"	38.1	7,830

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

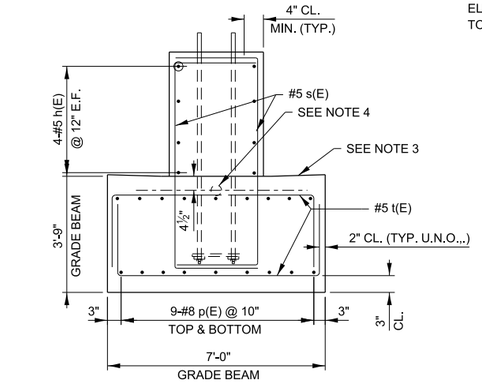
Illinois Tollway

OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

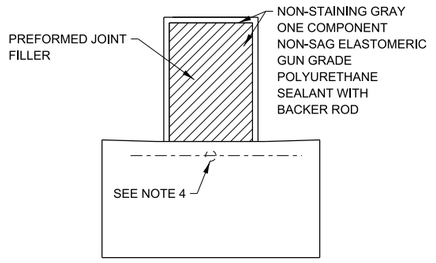
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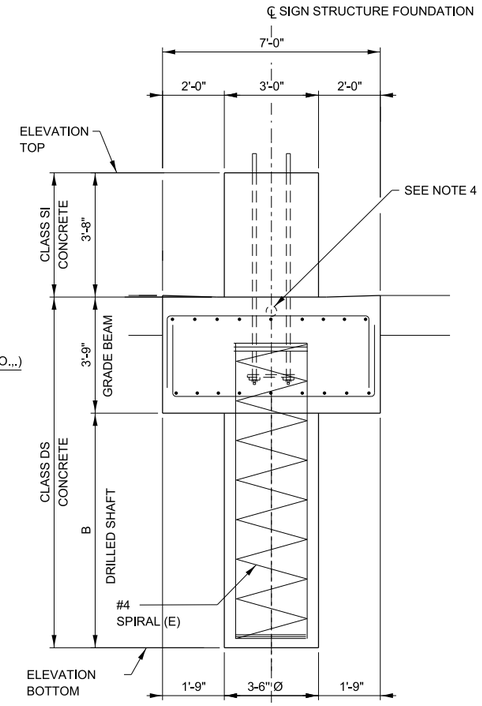
SIDE ELEVATION *



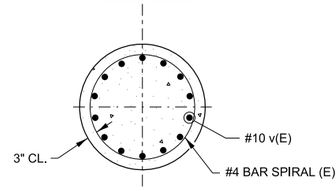
SECTION B-B



SECTION D-D



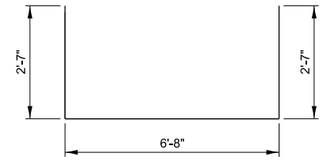
END VIEW



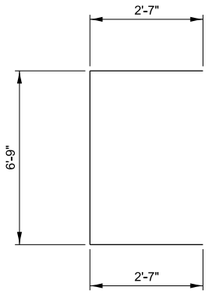
SECTION A-A
(TYPICAL BOTH SHAFTS)

BAR LIST - EACH FOUNDATION

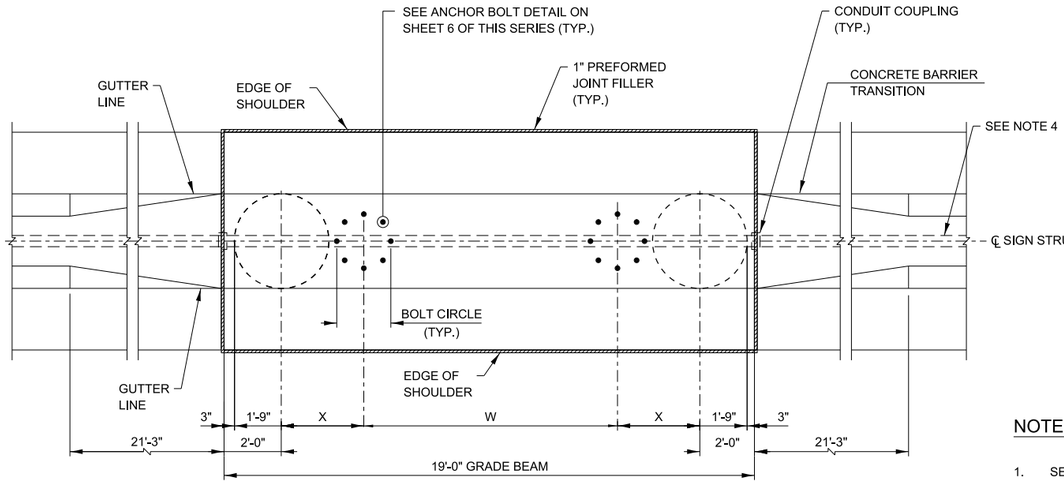
BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	8	#5	17'-8"	——
p(E)	18	#8	17'-8"	——
s(E)	38	#5	11'-3"	⊓
t(E)	38	#5	11'-10"	⊔
v(E)	32	#10	B ADD 2'-3"	——
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION				



BAR t(E)



BAR s(E)



PLAN *

* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY

MEDIAN BARRIER FOUNDATION SCHEDULE

DESIGN TRUSS TYPE	W	X	B	CLASS SI CONCRETE (CU YD)	CLASS DS CONCRETE (CU YD)	REINFORCEMENT BARS (POUNDS)	PROTECTIVE COAT (SQ YD)
120-S	7'-4"	3'-10"	55'-0"	7.7	57.7	11320	30.3
130-S	7'-4"	3'-10"	55'-0"	7.7	57.7	11320	30.3
140-S	7'-4"	3'-10"	60'-0"	7.7	61.2	12130	30.3
150-S	7'-4"	3'-10"	65'-0"	7.7	64.8	12950	30.3
160-S	7'-4"	3'-10"	65'-0"	7.7	64.8	12950	30.3

NOTES:

1. SEE SHEET 7 OF THIS SERIES FOR FOUNDATION NOTES AND DESIGN CRITERIA.
2. FOR SIGN STRUCTURE BASE PLATE DETAIL, SEE SHEET 6 OF THIS SERIES.
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C5 FOR GUTTER SLOPE.
4. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.
5. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF BARRIER AND TOP FACE OF GUTTER.

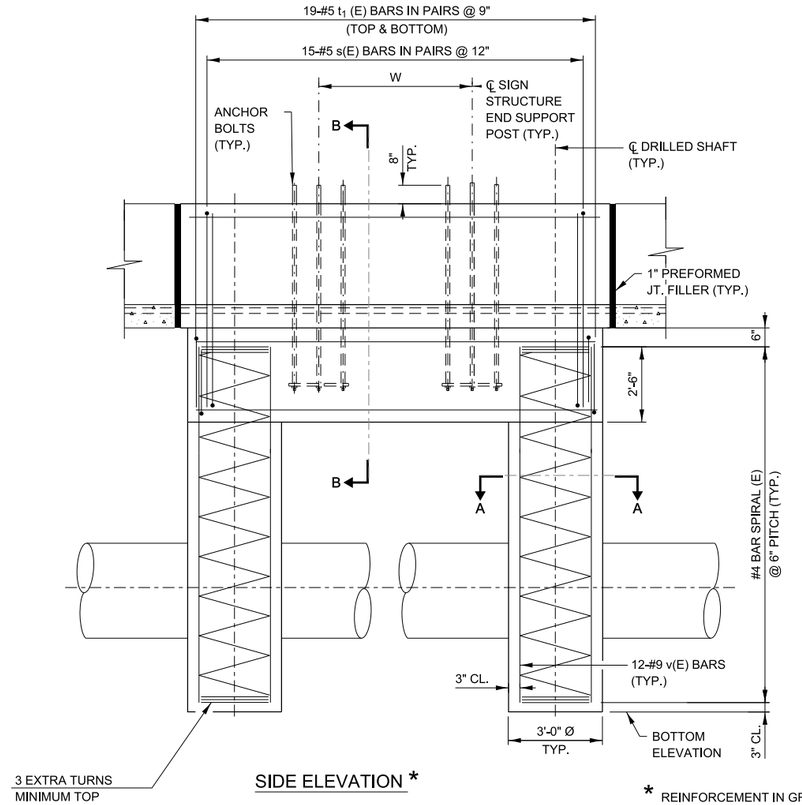
SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED ON PLANS.

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

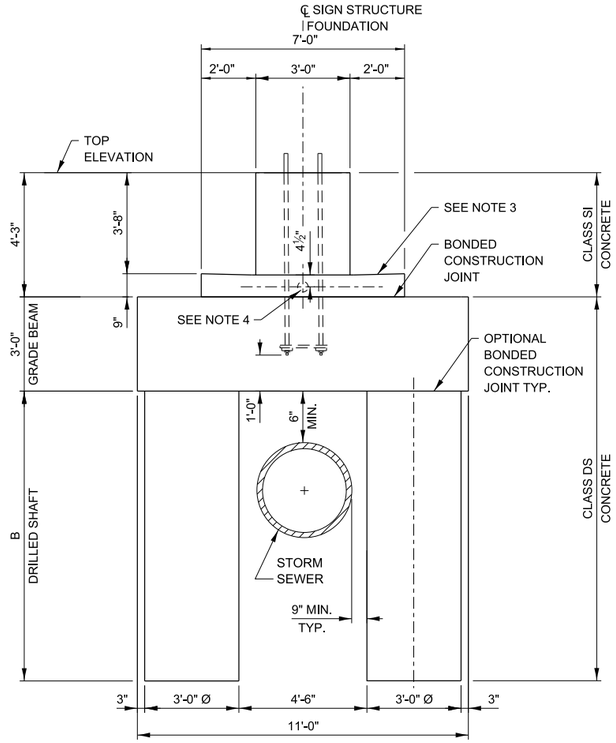
Illinois Tollway

OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

VERSION:	STANDARD:	SHEET:
2025-03	F17-10	8 OF 13



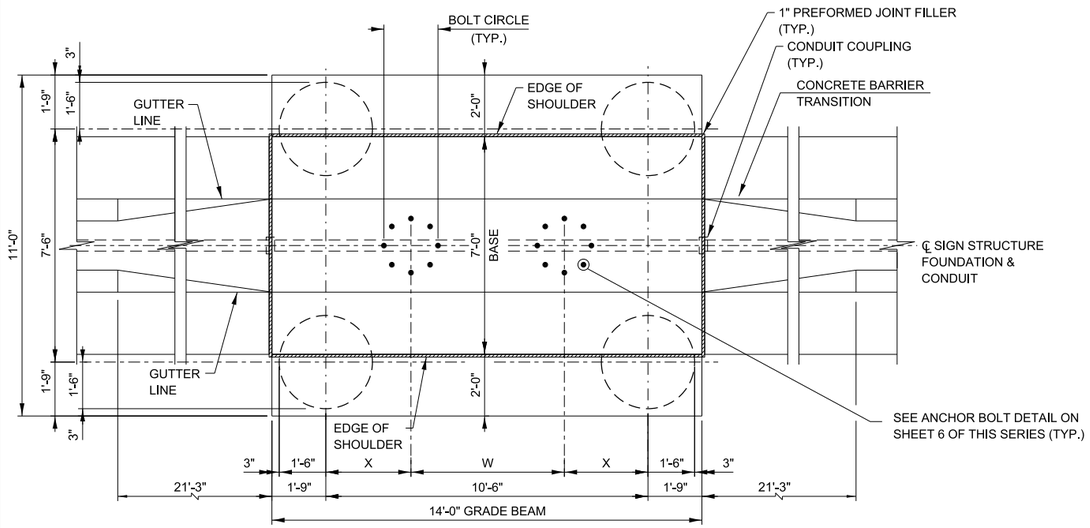
SIDE ELEVATION *



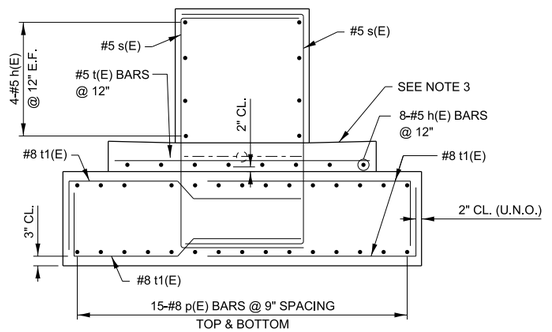
END VIEW

* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY

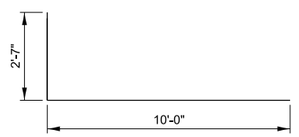
SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED ON PLANS.



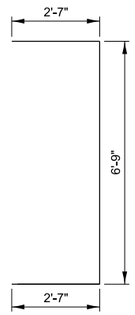
PLAN *



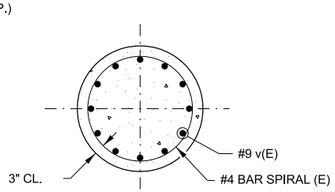
SECTION B-B



BAR t1(E)



BAR s(E)



SECTION A-A
(TYPICAL FOR 4 SHAFTS)

BAR LIST - EACH FOUNDATION

BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	16	#5	13'-8"	
p(E)	30	#8	13'-8"	
s(E)	30	#5	11'-3"	
t(E)	15	#5	6'-8"	
t1(E)	76	#8	12'-7"	
v(E)	48	#9	B ADD 2'-3"	
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION				

MEDIAN BARRIER FOUNDATION SCHEDULE

DESIGN TRUSS TYPE	W	X	B	CLASS SI CONCRETE (CU YD)	CLASS DS CONCRETE (CU YD)	REINFORCEMENT BARS (POUNDS)	PROTECTIVE COAT (SQ YD)
120-S	7'-4"	1'-7"	40'-0"	8.5	59.0	13130	22.3
130-S	7'-4"	1'-7"	40'-0"	8.5	59.0	13130	22.3
140-S	7'-4"	1'-7"	45'-0"	8.5	64.2	14160	22.3
150-S	7'-4"	1'-7"	50'-0"	8.5	69.5	15190	22.3
160-S	7'-4"	1'-7"	50'-0"	8.5	69.5	15190	22.3

NOTES:

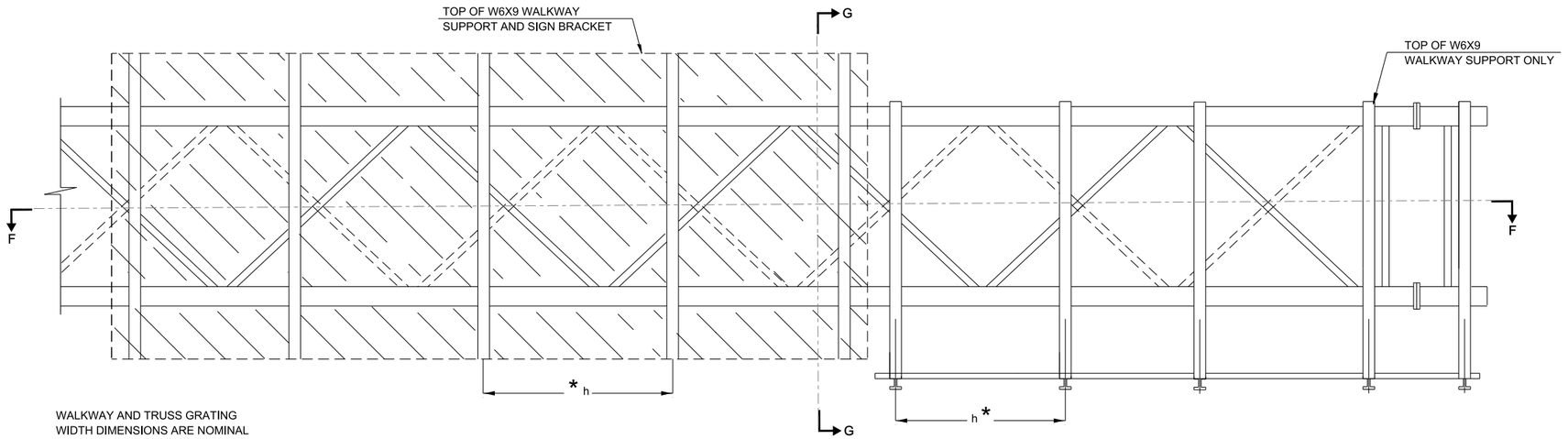
1. SEE SHEET 7 FOR FOUNDATION NOTES AND DESIGN CRITERIA.
2. FOR SIGN STRUCTURE BASE PLATE DETAIL, SEE SHEET 6 OF THIS SERIES.
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C5 FOR GUTTER SLOPE.
4. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.
5. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF BARRIER AND TOP FACE OF GUTTER.

APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

VERSION:	STANDARD:	SHEET:
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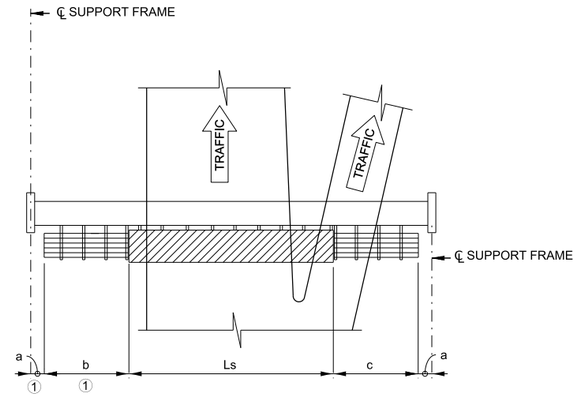


WALKWAY AND TRUSS GRATING WIDTH DIMENSIONS ARE NOMINAL AND MAY VARY ±½" BASED ON AVAILABLE STANDARD WIDTHS.

TYPICAL FRONT ELEVATION

WITH HANDRAIL OMITTED FOR CLARITY.

BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS DIMENSIONS PLUS MANUFACTURER'S MOUNTING DEVICES.

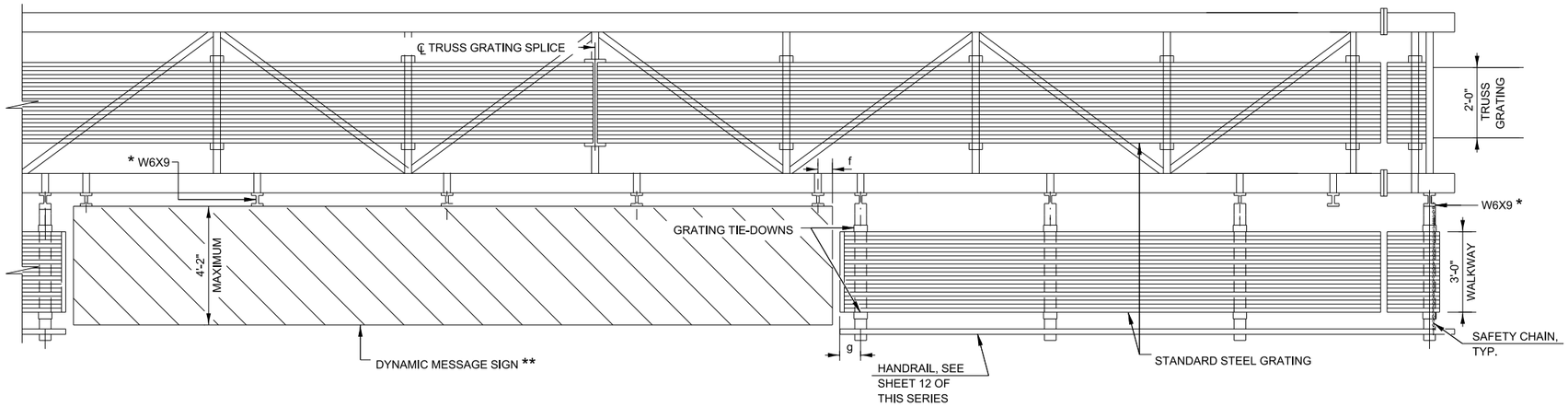


PLAN
WALKWAY AND HANDRAIL SKETCH

(ROAD PLAN BENEATH TRUSS VARIES)

BRACKET TABLE

W6X9		
SIGN WIDTH		NUMBER BRACKETS REQUIRED
GREATER THAN	LESS THAN OR EQUAL TO	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6



SECTION F-F

HANDRAIL AND WALKWAY SHALL SPAN A MINIMUM OF THREE BRACKETS BETWEEN SPLICES AND/OR GAP JOINTS.
PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.
GRATING AND HANDRAIL SPLICES PLACED AS NEEDED.

NOTES:

* SPACE W6X9 WALKWAY BRACKETS AND SIGN BRACKETS FOR EFFICIENCY AND WITHIN LIMITS SHOWN:

f = 12" MAXIMUM, 4" MINIMUM (END OF SIGN TO ℄ OF NEAREST BRACKET)
g = 12" MAXIMUM, 4" MINIMUM (END OF WALKWAY GRATING TO ℄ OF NEAREST SUPPORT BRACKET)
h = 6'-0" MAXIMUM (℄ TO ℄ SIGN AND/OR WALKWAY SUPPORT BRACKETS, W6X9)

** MAXIMUM DMS WEIGHT = 5000 LBS. 4'-2" MAXIMUM THICKNESS INCLUDES THICKNESS OF DMS TYPE 1 PLUS CONNECTION TO W6X9.

FOR SECTION G-G AND GRATING SPLICE DETAILS, SEE SHEET 11 OF THIS SERIES. FOR HANDRAIL SPLICE DETAILS, SEE SHEET 12 OF THIS SERIES.

TRUSS GRATING TO FACILITATE INSPECTION SHALL RUN FULL LENGTH (CENTER TO CENTER OF SUPPORT FRAMES) |12" ON OVERHEAD TRUSSES.

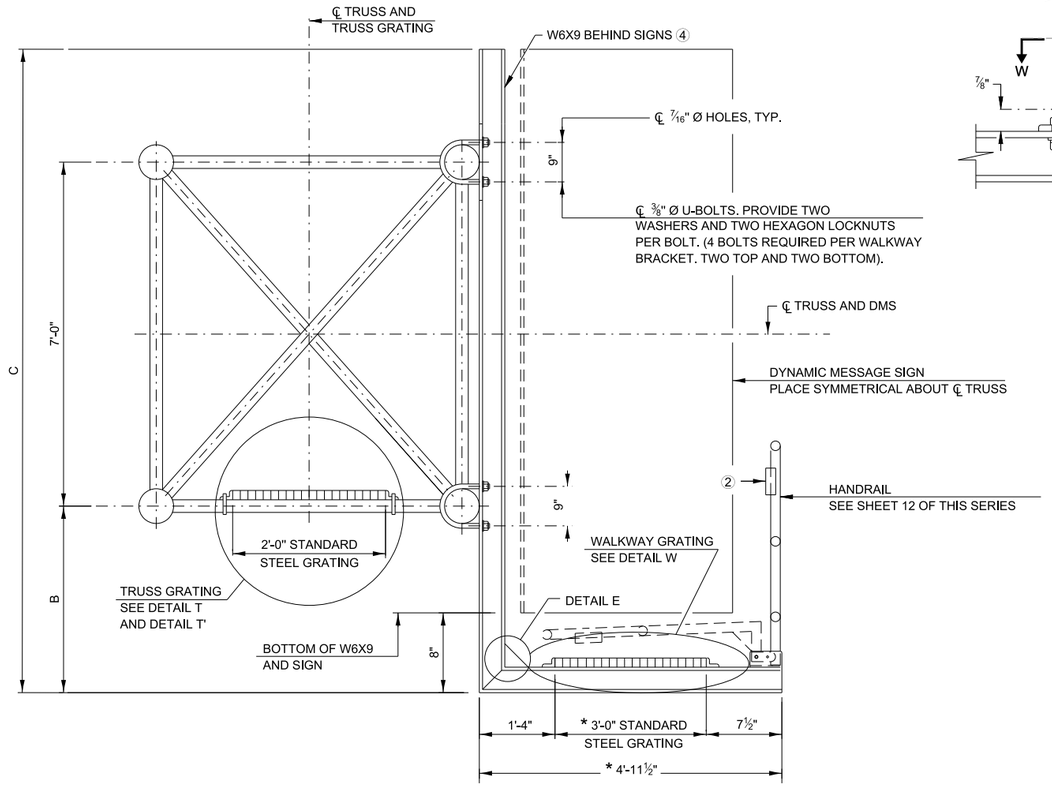
(1) IF WALKWAY IS REQUIRED LEFT OF THE DMS, a = 1'-6" AND b = WALKWAY LENGTHS. IF WALKWAY IS NOT REQUIRED LEFT OF THE DMS, b = 0 AND "a" IS DIMENSION FROM LEFT SUPPORT FRAME TO LEFT END OF DMS.

APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

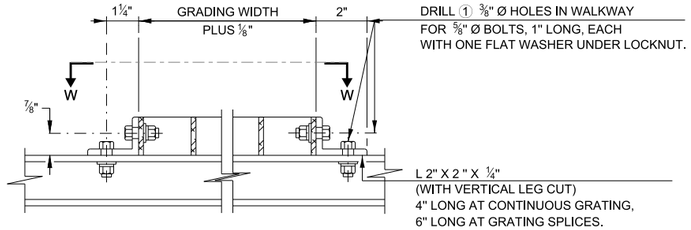
Illinois Tollway

OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

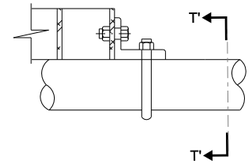
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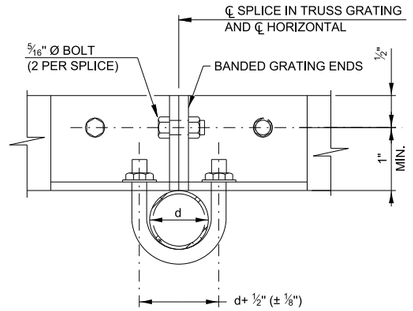
SECTION G-G



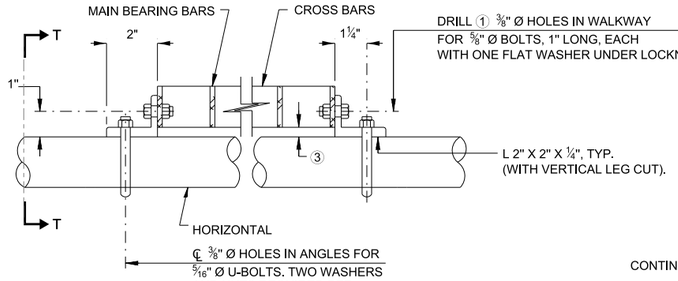
DETAIL W
(WALKWAY GRATING)



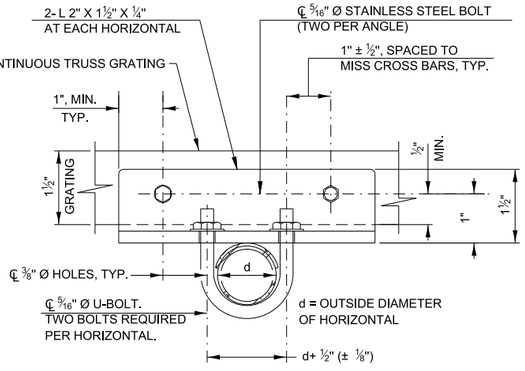
DETAIL T'
(TRUSS GRATING SPLICE)
DETAILS NOT SHOWN SAME AS DETAIL T.
ALTERNATE MATERIALS MAY BE USED SUBJECT TO THE ENGINEER'S REVIEW AND APPROVAL.



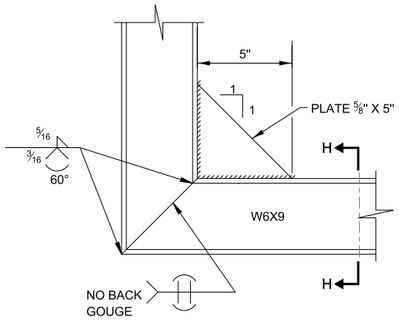
SECTION T'-T'



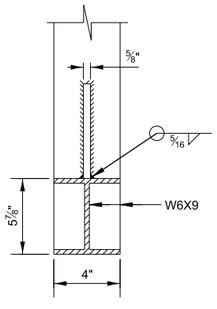
DETAIL T
(CONTINUOUS TRUSS GRATING)



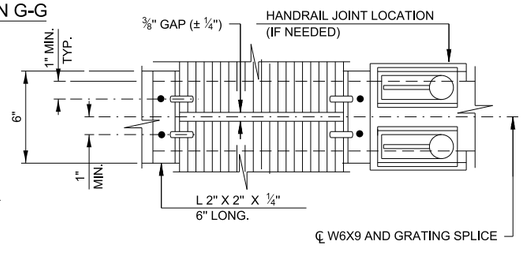
SECTION T-T



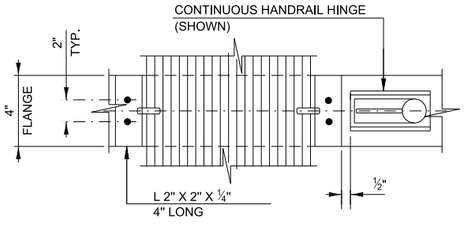
DETAIL E



SECTION H-H



(AT WALKWAY GRATING SPLICE)



(CONTINUOUS WALKWAY GRATING)

SECTION W-W

BARS SIZES FOR STANDARD STEEL GRATING

TRUSS GRATING:	MAIN BEARING BARS 3/16" X 1½" ON 1 3/16" CENTERS.
	CROSS BARS 3/16" X 1½" ON 4" CENTERS.
WALKWAY GRATING:	MAIN BEARING BARS 3/16" X 1½" ON 1 3/16" CENTERS.
	CROSS BARS 3/16" X 1½" ON 4" CENTERS.

NOTES:

① DRILLING HOLES IN GRATING MAY BE DONE IN SHOP OR FIELD, BASED ON CONTRACTOR'S PREFERENCE AND SUBJECT TO ACCURATE ALIGNMENT.

② PL ⅛" X ½" X 2" WELDED TO HANDRAIL POSTS TO PROTECT LOCATIONS THAT CONTACT GRATING.

③ PIPE TO GRATING GAP MAY VARY FROM 0 TO ½", MAX. TO ALIGN WALKWAY, ALLOW FOR CAMBER, ETC.

④ DMS MANUFACTURER SHALL DESIGN AND SUPPLY HARDWARE FOR CONNECTION OF DMS TO W6x9. BOLTS SHALL BE STAINLESS STEEL OR HOT DIP GALVANIZED HIGH STRENGTH PER ILLINOIS TOLLWAY SPECIFICATIONS.

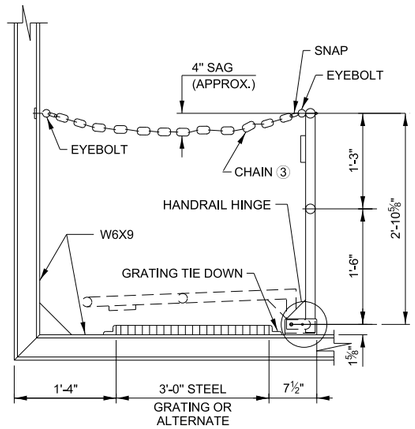
* BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS DIMENSIONS PLUS MANUFACTURER'S MOUNTING DEVICES.

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

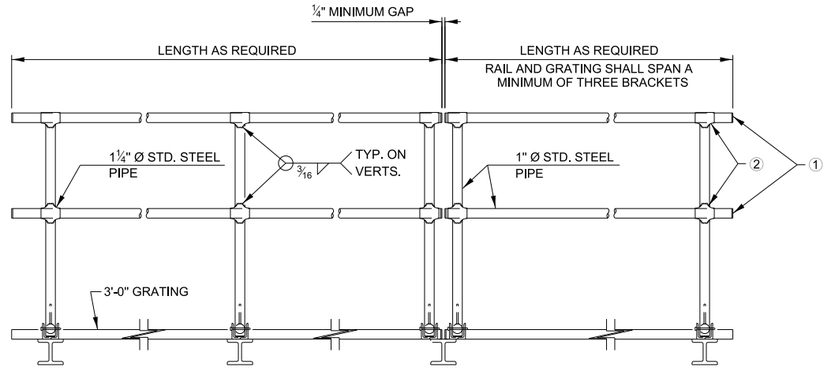
OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

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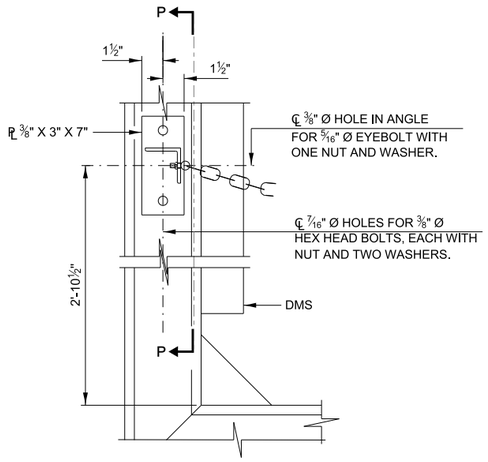
SIDE ELEVATION

(SHOWING SAFETY CHAIN W/O SIGN)



FRONT ELEVATION

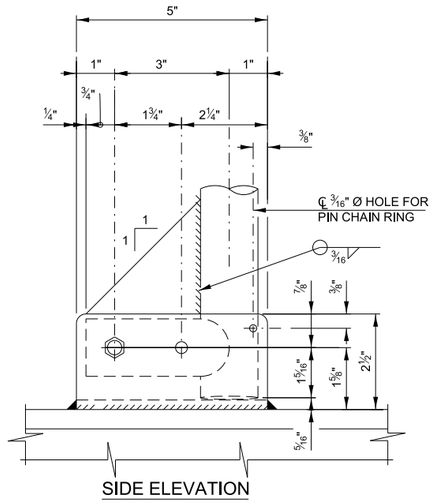
HANDRAIL DETAILS



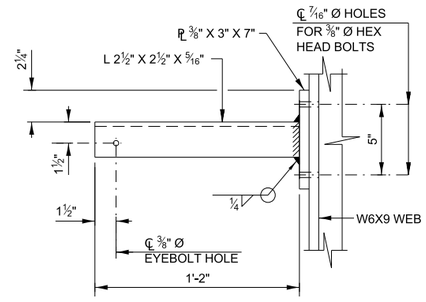
ALTERNATE SAFETY CHAIN ATTACHMENT

(WITH SIGN PRESENT)

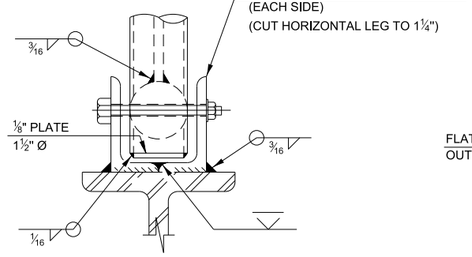
ITEMS NOT SHOWN SAME AS "SIDE ELEVATION" OF "HANDRAIL DETAILS"



SIDE ELEVATION

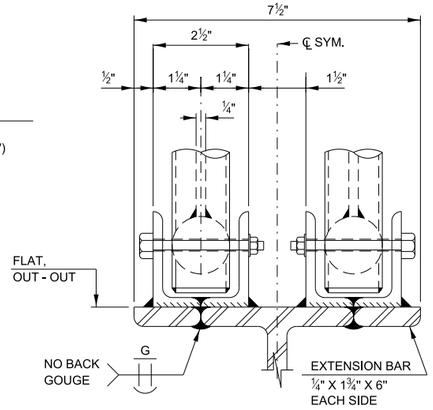


SECTION P-P

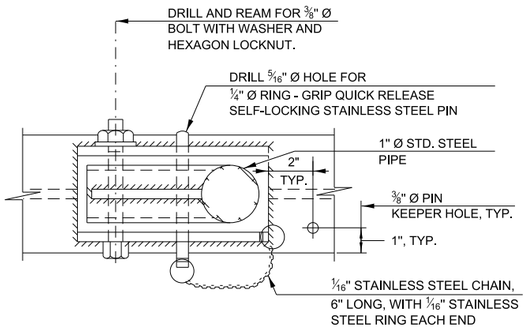


FRONT ELEVATION

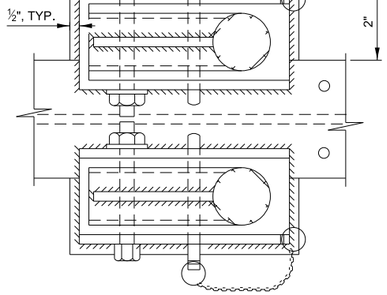
SEE "ELEVATION" AT RIGHT FOR DIMENSIONS.



ELEVATION AT HANDRAIL JOINT

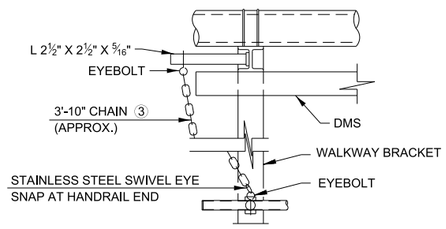


PLAN AT HANDRAIL HINGE



PLAN AT HANDRAIL JOINT

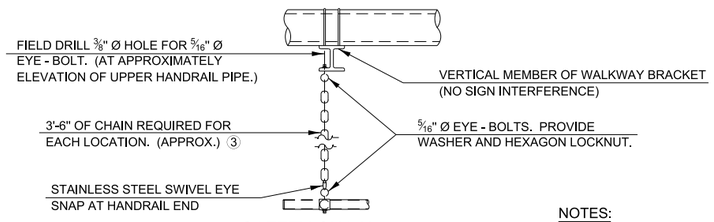
DETAILS NOT SHOWN SAME AS "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT

DETAILS NOT SHOWN SIMILAR TO "SAFETY CHAIN" DETAILS

(WALKWAY OMITTED FOR CLARITY)



SAFETY CHAIN

ONE REQUIRED FOR EACH END OF EACH WALKWAY.

NOTES:

① INSTALL STANDARD FORCE - FIT END CAPS OR WELD ⅛" END PLATES WITH ⅛" C.F.W. AND GRIND SMOOTH. (ALL RAIL ENDS)

② HORIZONTAL HANDRAIL MEMBER SHALL BE CONTINUOUS THRU 1¼" Ø PIPE. PROVIDE 7/16" Ø HOLE IN 1¼" Ø PIPE FOR ⅜" Ø BOLT. FIELD DRILL 7/16" Ø HOLE IN HORIZONTAL RAIL MEMBER. PROVIDE WASHER AND LOCKNUT FOR BOLT. (USE 5/16" EYEBOLTS IN 7/16" Ø HOLES ON TOP RAIL AT ENDS ONLY.)

③ 3/16" TYPE 304L STAINLESS STEEL CHAIN, APPROXIMATELY 12 LINKS PER FOOT.

APPROVED BY:

Marco Nastal

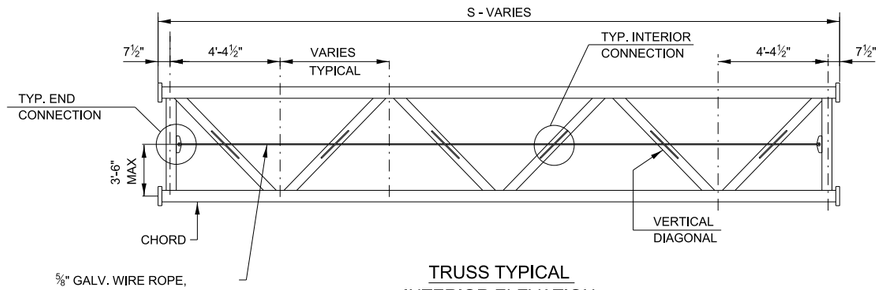
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

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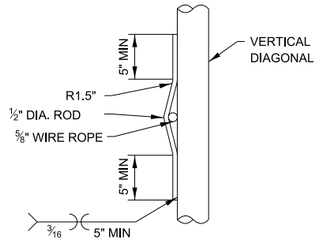
OVERHEAD SIGN STRUCTURE SPAN TYPE (STEEL) STRUCTURE DETAILS

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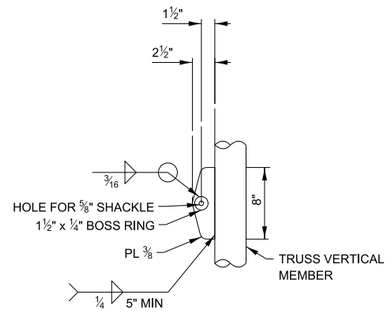


TRUSS TYPICAL INTERIOR ELEVATION

EVEN OR ODD NUMBER OF PANELS/EXTERIOR UNITS ALLOWED.



TYP INTERIOR CONNECTION



TYP END CONNECTION

APPROVED BY:

Manar Nashif

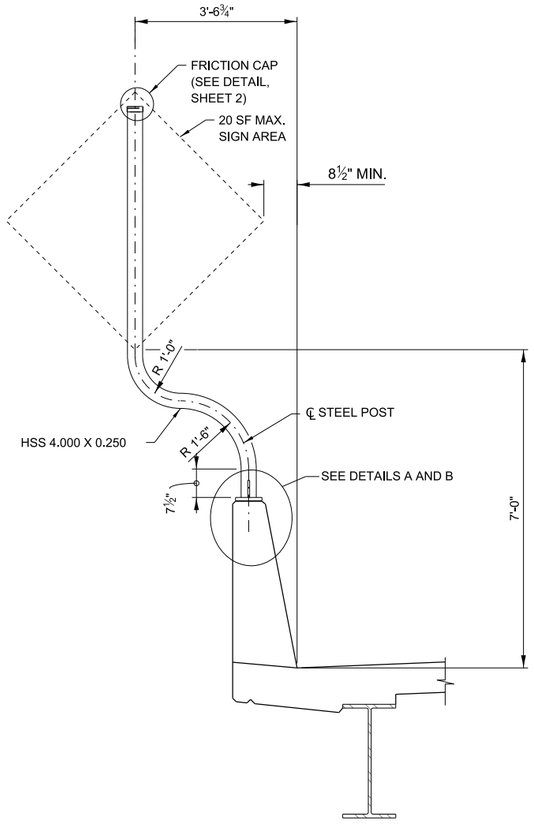
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

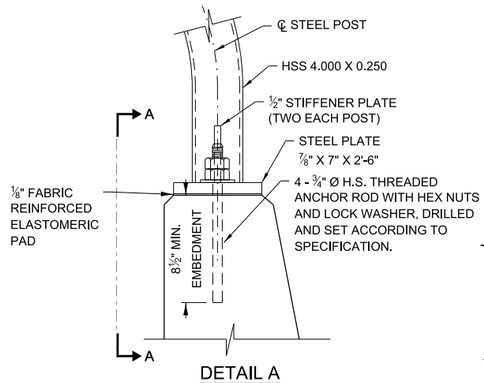
Illinois Tollway

OVERHEAD SIGN STRUCTURE
SPAN TYPE (STEEL)
STRUCTURE DETAILS

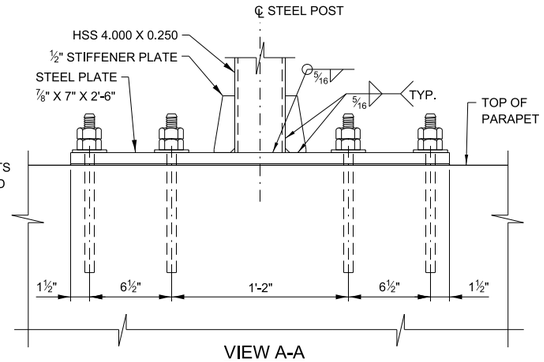
VERSION:	STANDARD:	SHEET:
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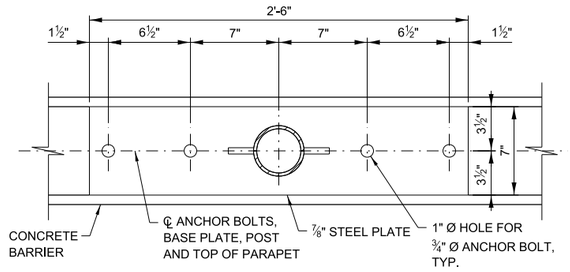
PARAPET MOUNTED SIGN
(MAXIMUM SIGN AREA 20 SF)



DETAIL A

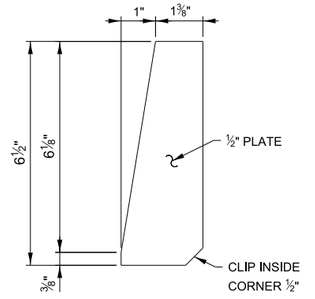


VIEW A-A

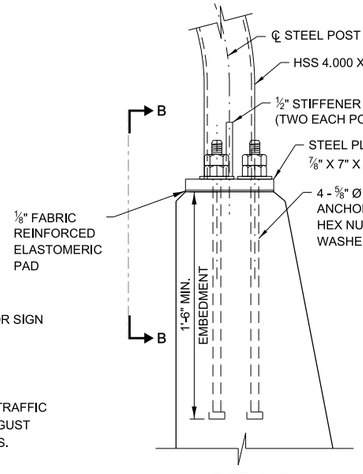


BASE PLATE DETAIL
(FOR POST INSTALLED CONDITION)

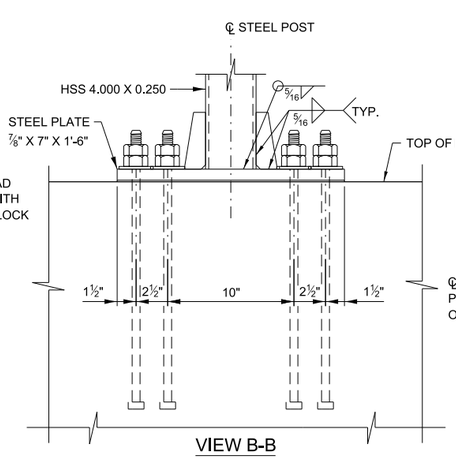
POST INSTALLED DETAIL
(MAXIMUM SIGN AREA 20 SF)



STIFFENER PLATE DETAIL

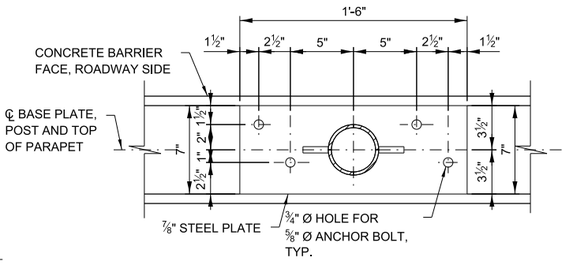


DETAIL B



VIEW B-B

CAST-IN-PLACE DETAIL
(MAXIMUM SIGN AREA 20 SF)



BASE PLATE DETAIL
(CAST-IN-PLACE INSTALLATION)

NOTES:

1. FOR MATERIAL, FABRICATION, ERECTION, AND OTHER REQUIREMENTS, REFER TO ILLINOIS TOLLWAY "STRUCTURAL SUPPORT FOR SIGN PANELS" SPECIAL PROVISION.
2. THESE DETAILS ARE NOT INTENDED FOR PORTABLE AND/OR PRECAST BARRIER.
3. DESIGN CONFORMS TO THE 2015 EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS WITH 2017 INTERIM SPECIFICATIONS THERETO. DESIGN WIND SPEEDS OF 3-S GUST WITH SPEED OF 120 MPH PLUS 14% GUST FACTOR, AND A WIND IMPORTANCE FACTOR OF 1.0 (50 YEAR MEAN RECURRENCE INTERVAL) FOR THE SUPPORTING STRUCTURES.
4. THE PARAPET WALL SHALL BE DESIGNED TO SAFELY SUPPORT THE PROPOSED SIGN PANELS IN ACCORDANCE WITH NOTE 3.
5. WELDED PLATES MAY BE USED IN LIEU OF THE BENT PLATE OF MOUNTING PLATE SHOWN. ALL STEEL ELEMENTS SHALL BE GALVANIZED AFTER FABRICATION.
6. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURES MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. THE CONTRACTOR SHALL LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS. DRILLED HOLES FOR ANCHOR RODS SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH EXISTING REINFORCEMENT.
7. NO ANCHOR BOLT SHALL BE PLACED CLOSER THAN 12" FROM PARAPET WALL EXPANSION JOINT.
8. TWO STIFFENER PLATES (ONE ON EACH SIDE OF POST) SHALL BE WELDED AS SHOWN ON PLANS IN DIRECTION PERPENDICULAR TO SIGN.
9. INSTALLATION SHALL BE DONE IN ACCORDANCE WITH ILLINOIS TOLLWAY SPECIAL PROVISION "SIGN INSTALLATION".
10. THIS STANDARD SHALL BE UTILIZED TO MOUNT SIGN SUPPORT ON SINGLE FACE PARAPETS CONSTRUCTED ON BRIDGES, WALLS AND MOMENT SLABS.

MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL AND FASTENERS

ELEMENTS OF STRUCTURE	MINIMUM YIELD STRENGTH (K,S.I.)	MINIMUM ULTIMATE STRENGTH (K,S.I.)
STRUCTURAL STEEL HSS	42	58
STEEL ANCHOR BOLTS	36	58

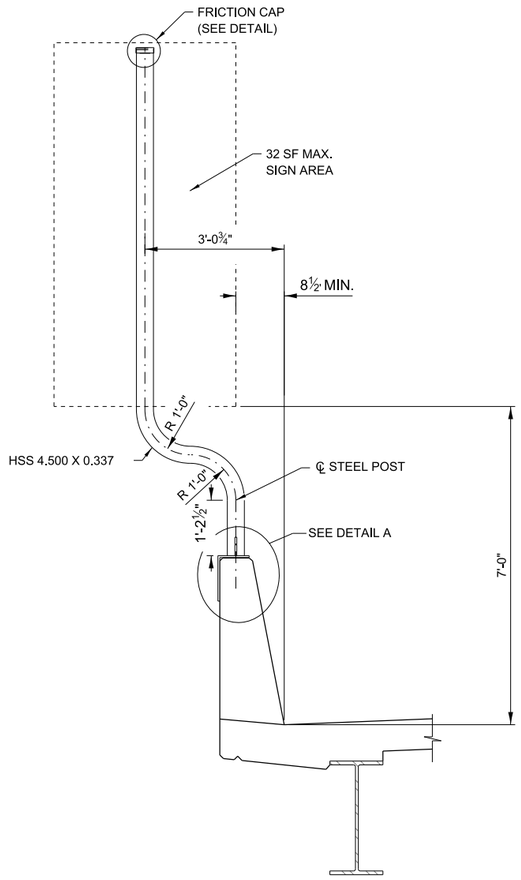
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

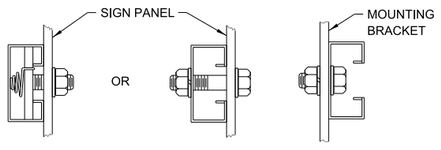
REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED CALLOUTS TO HSS

PARAPET MOUNTED SIGN SUPPORT

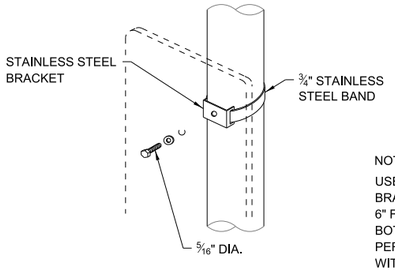
VERSION: 2022-03 | STANDARD: F18-01 | SHEET: 1 OF 2



PARAPET MOUNTED SIGN
(MAXIMUM SIGN AREA 32 SF)



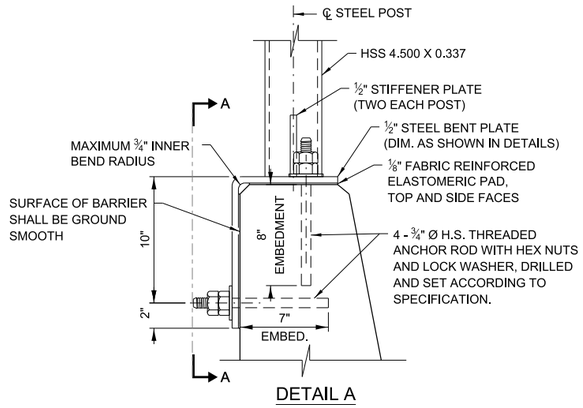
DETAIL B DETAIL C



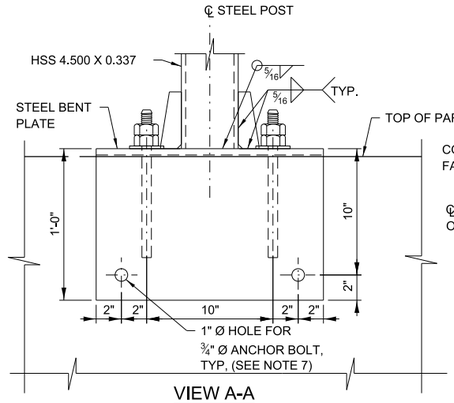
SIGN PANEL 36" WIDE OR LESS

NOTE:
USE A MINIMUM OF 2 BRACKETS (LOCATED 6" FROM TOP AND BOTTOM OF SIGN) PER INSTALLATION WITH MAXIMUM SPACING OF 3'-0".

MOUNTING BRACKET DETAILS

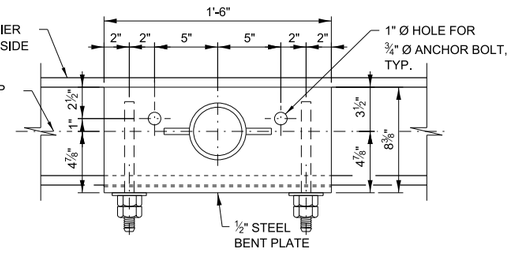


DETAIL A

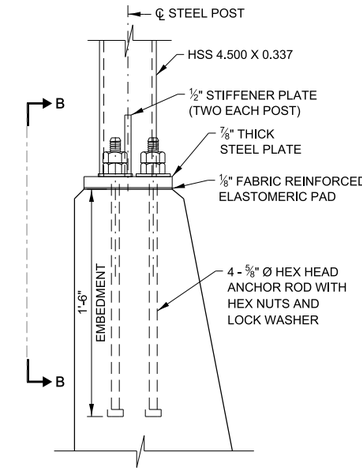


VIEW A-A

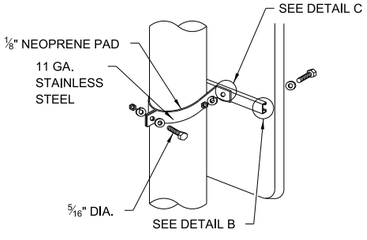
POST INSTALLED DETAIL
(MAXIMUM SIGN AREA 32 SF)



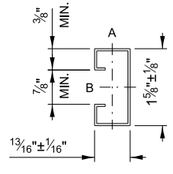
BASE PLATE DETAIL
(FOR POST INSTALLED CONDITION)

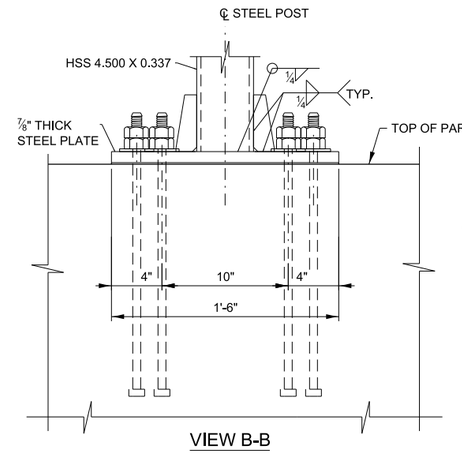


DETAIL A



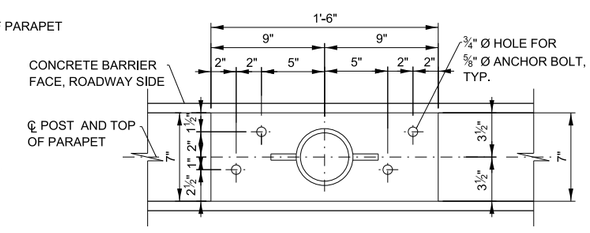
SIGN PANEL OVER 36" WIDE



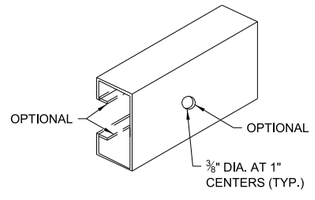


VIEW B-B

CAST-IN-PLACE DETAIL
(MAXIMUM SIGN AREA 32 SF)

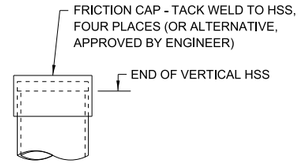


BASE PLATE DETAIL
(CAST-IN-PLACE INSTALLATION)



SUPPORTING CHANNEL DETAILS

SUPPORTING CHANNEL SECTION MODULUS (MINIMUM)	Axis A	Axis B
STEEL	0.050 in.^{3}	0.105 in.^{3}
ALUMINUM	0.150 in.^{3}	0.315 in.^{3}



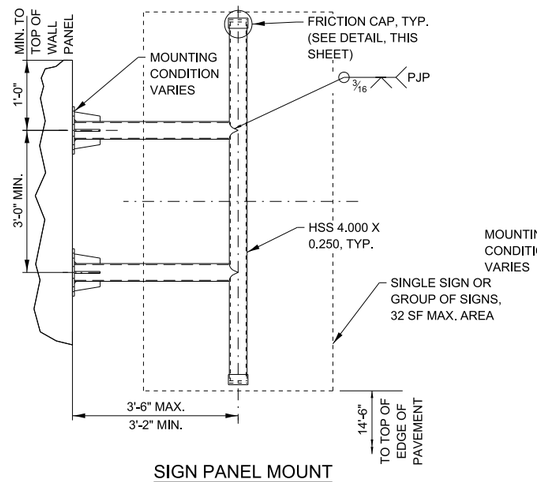
FRICTION CAP DETAIL

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

Illinois Tollway

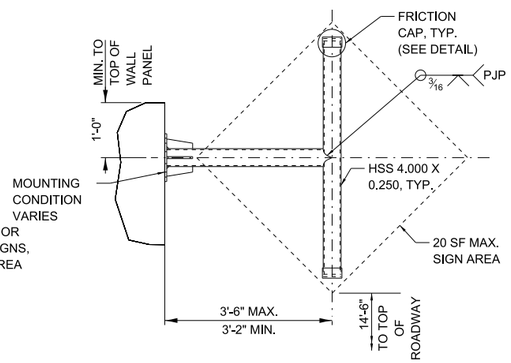
PARAPET MOUNTED SIGN SUPPORT

VERSION:	STANDARD:	SHEET:
2022-03	F18-01	2 OF 2



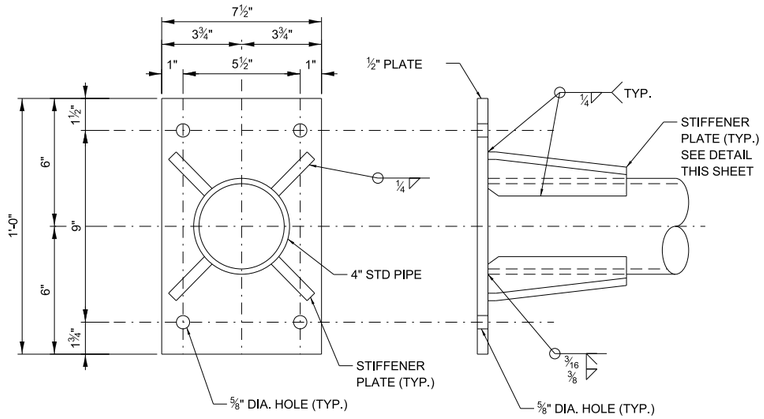
SIGN PANEL MOUNT

(MAXIMUM SIGN AREA 32 SF)

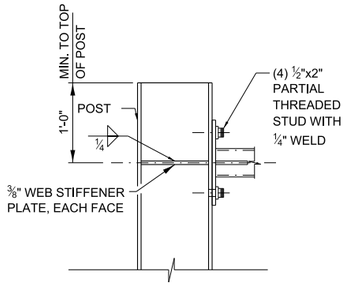


SIGN PANEL MOUNT

(MAXIMUM SIGN AREA 20 SF)

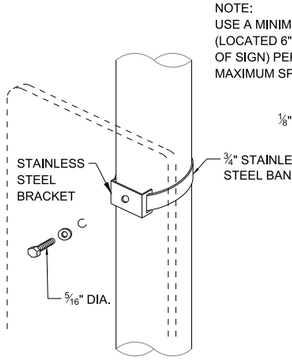


BASE PLATE DETAILS (POST CONNECTION)



CONNECTION TO POST

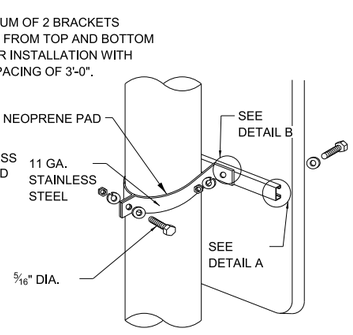
(APPLIES WHERE CONNECTION TO WALL PANEL IS NOT FEASIBLE DUE TO 14'-6" CLEARANCE REQUIREMENT)



SIGN PANEL 36" WIDE OR LESS

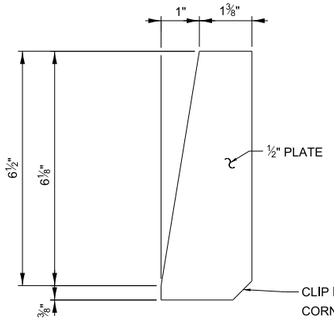
MOUNTING BRACKET DETAIL

NOTE:
USE A MINIMUM OF 2 BRACKETS (LOCATED 6" FROM TOP AND BOTTOM OF SIGN) PER INSTALLATION WITH MAXIMUM SPACING OF 3'-0".

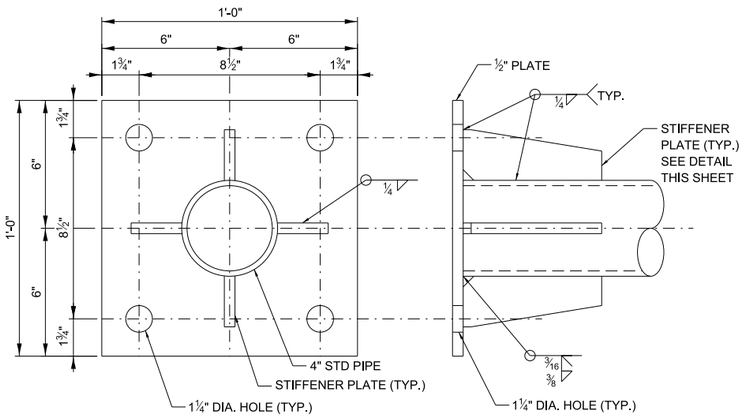


SIGN PANEL OVER 36" WIDE

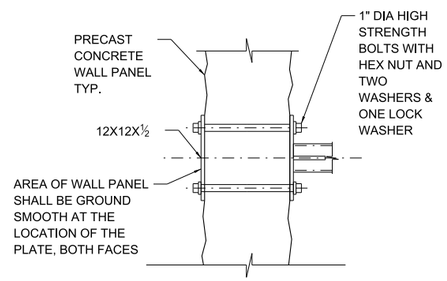
MOUNTING BRACKET DETAIL



STIFFENER PLATE DETAIL



BASE PLATE DETAILS (PANEL CONNECTION)

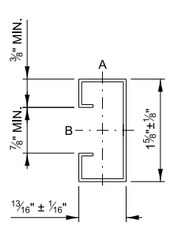


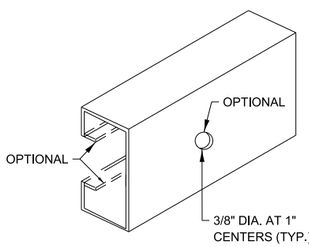
CONNECTION TO PANEL

NOTES:

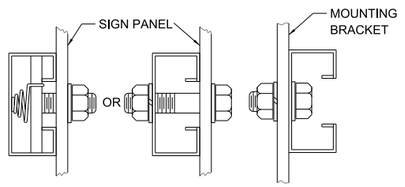
1. FOR MATERIAL, FABRICATION, ERECTION, AND OTHER REQUIREMENTS, REFER TO ILLINOIS TOLLWAY "STRUCTURAL SUPPORT FOR SIGN PANELS" SPECIAL PROVISION.
2. DESIGN CONFORMS TO THE 2015 EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS WITH 2017 INTERIM SPECIFICATIONS THERETO. DESIGN WIND SPEEDS OF 3-S GUST WITH SPEED OF 120 MPH PLUS 14% GUST FACTOR, AND A WIND IMPORTANCE FACTOR OF 1.0 (50 YEAR MEAN RECURRENCE INTERVAL) FOR THE SUPPORTING STRUCTURES.
3. ALL FABRICATION SHALL BE COMPLETE AND READY FOR ASSEMBLY BEFORE GALVANIZING. NO PUNCHING, DRILLING, CUTTING, NOR WELDING SHALL BE PERMITTED AFTER GALVANIZING.
4. THE WALL PANELS AND/OR POSTS SHALL BE DESIGNED TO SAFELY SUPPORT THE PROPOSED SIGN PANELS IN ACCORDANCE WITH NOTE 2.
5. FOR SIGN CONNECTION TO MOUNTING BRACKET, SHOP DRILL HOLES ON SIGN IN ACCORDANCE WITH THE CURRENT STANDARD HIGHWAY SIGN DESIGNS FOR ILLINOIS. ADDITIONAL HOLE(S) NEEDED TO MEET A STIPULATED TYPE MOUNTING MAY BE FIELD DRILLED.
6. ALL THREADED RODS SHALL CONFIRM TO ASTM F1554 GRADE 105, EACH WITH ONE PLATE WASHER AND LOCKNUT AND BE HOT DIP GALVANIZED PER ASTM A153 (AASHTO M232). THEY SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 1211 OF ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE IDOT STANDARD SPECIFICATIONS.
7. PARTIAL THREADED STUDS SHALL BE TYPE A MILD STEEL, 61,000 PSI MINIMUM ULTIMATE AND 49,000 PSI MINIMUM YIELD STRENGTH.
8. A NYLON WASHER SHALL BE PLACED BETWEEN THE SIGN FACE AND ANY OTHER WASHER REQUIRED ON SIGNS CONSTRUCTED OF ASTM TYPE III OR IV SHEETING.
9. CONTRACTOR SHALL VERIFY APPLICABLE FIELD DIMENSIONS BEFORE FABRICATION. HOLES DRILLED THROUGH NOISE ABATEMENT WALL SHALL BE DRILLED WITH ROTARY (CORING OR MASONRY DRILL) TYPE EQUIPMENT. PERCUSSION (STAR) DRILLING SHALL NOT BE ALLOWED.
10. CENTER LINE OF BOLTS INTO NOISE ABATMENT WALL SHALL BE AT LEAST 12" TO CENTER LINE OF OPEN JOINT IN WALL.

SUPPORTING CHANNEL SECTION MODULUS (MINIMUM)	Axis A	Axis B
STEEL	0.050 $in.^3$	0.105 $in.^3$
ALUMINUM	0.150 $in.^3$	0.315 $in.^3$

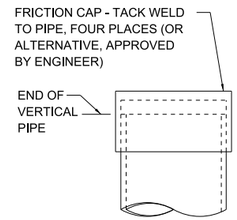




SUPPORTING CHANNEL DETAILS



DETAIL A DETAIL B



FRICTION CAP DETAIL

APPROVED BY:

Manar Nashif

CHIEF ENGINEERING OFFICER

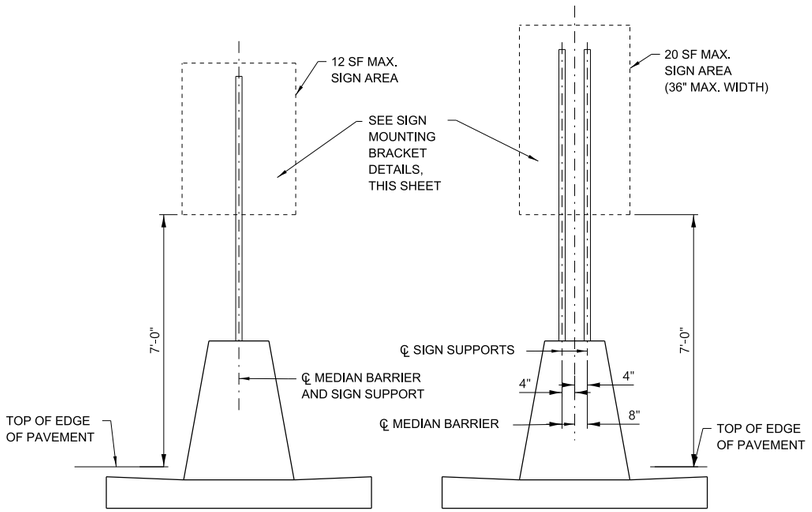
DATE: 03/01/2023

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2023	SPECIFY LENGTH AND WELD SIZE FOR PARTIAL THREADED STUD
03-01-2021	ADD MATERIAL NOTE FOR PARTIAL THREADED STUDS.
07-17-2020	REVISE BASE PLATE DETAILS FOR POST AND PANEL CONNECTIONS.

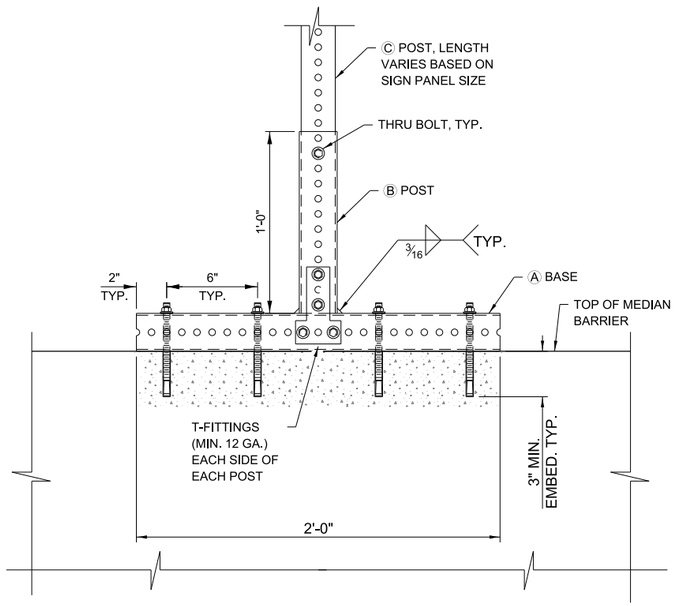
NOISE ABATEMENT WALL MOUNTED SIGN SUPPORT

VERSION: 2023-03 | STANDARD: F19-03 | SHEET: 1 OF 1



ONE POST INSTALLATION

TWO POSTS INSTALLATION



SIDE ELEVATION - BARRIER MOUNT DETAIL

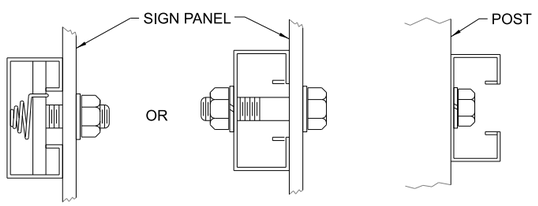
(LOOKING PERP. TO TRAFFIC)

NOTES:

1. ALL ANCHOR BOLTS FOR MEDIAN BARRIER MOUNTED SIGN SUPPORT ASSEMBLY SHALL BE ⅜" DIA. EXPANSION ANCHORS.
2. THE TOP SECTION SHALL BE TELESCOPED INTO THE BASE SECTION 12 INCHES AND FASTENED TOGETHER.
3. DESIGN CONFORMS TO THE 2015 EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS WITH 2011 INTERIM SPECIFICATIONS THERETO. DESIGN WIND SPEEDS OF 3-s GUST WITH SPEED OF 120 MPH PLUS 14% GUST FACTOR, AND A WIND IMPORTANCE FACTOR OF 1.0 (50 YEAR MEAN RECURRENCE INTERVAL) FOR THE SUPPORTING STRUCTURES.
4. NO ANCHOR BOLT SHALL BE PLACED CLOSER THAN 12" FROM CENTER LINE OF MEDIAN BARRIER JOINT.
5. SIGN FABRICATION AND INSTALLATION SHALL BE DONE IN ACCORDANCE WITH ILLINOIS TOLLWAY SPECIAL PROVISION "SIGN INSTALLATION".
6. BASE AND POST ASSEMBLY SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASTHO M111 OR AS SPECIFIED IN THE SPECIAI PROVISION "TELESCOPING STEEL SIGN SUPPORT, BARRIER ASSEMBLY".
7. ALL MATERIALS FOR THE SIGN SUPPORT ASSEMBLY SHALL BE INCLUDED IN THE COST OF "TELESCOPING STEEL SIGN SUPPORT, BARRIER ASSEMBLY".

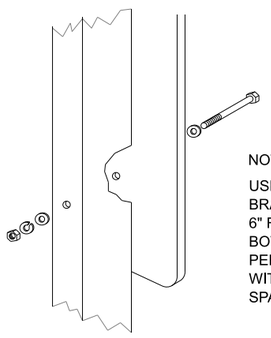
MEMBER DETAILS

Ⓐ	2½" x 2½" x 2'-0" (12 GA.)
Ⓑ	2½" x 2½" x 1'-0" (12 GA.)
Ⓒ	2¼" x 2¼" x VARIES (12 GA.)



DETAIL A

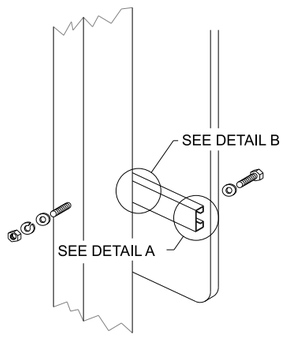
DETAIL B



NOTE:

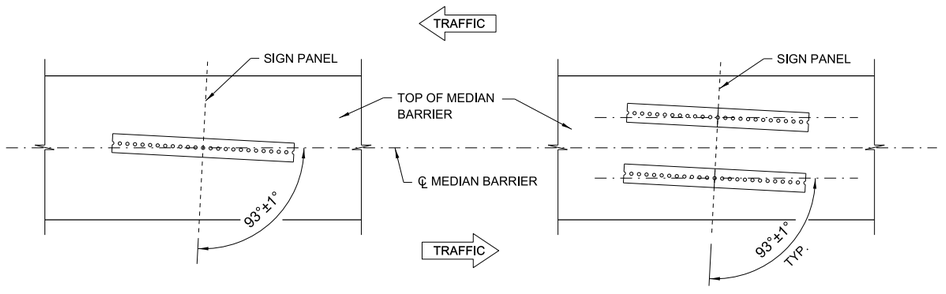
USE A MINIMUM OF 2 BRACKETS (LOCATED 6" FROM TOP AND BOTTOM OF SIGN) PER INSTALLATION WITH MAXIMUM SPACING OF 3'-0".

SIGN PANEL 36" WIDE OR LESS



SIGN PANEL OVER 36" WIDE

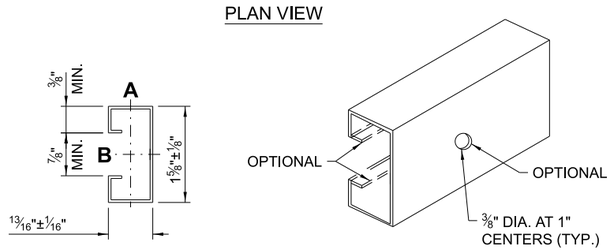
MOUNTING BRACKET DETAILS



ONE POST INSTALLATION

TWO POSTS INSTALLATION

PLAN VIEW



SUPPORTING CHANNEL DETAILS

SUPPORTING CHANNEL SECTION MODULUS (MINIMUM)	Axis A	Axis B
STEEL	0.050 in.	0.105 in.
ALUMINUM	0.150 in.	0.315 in.

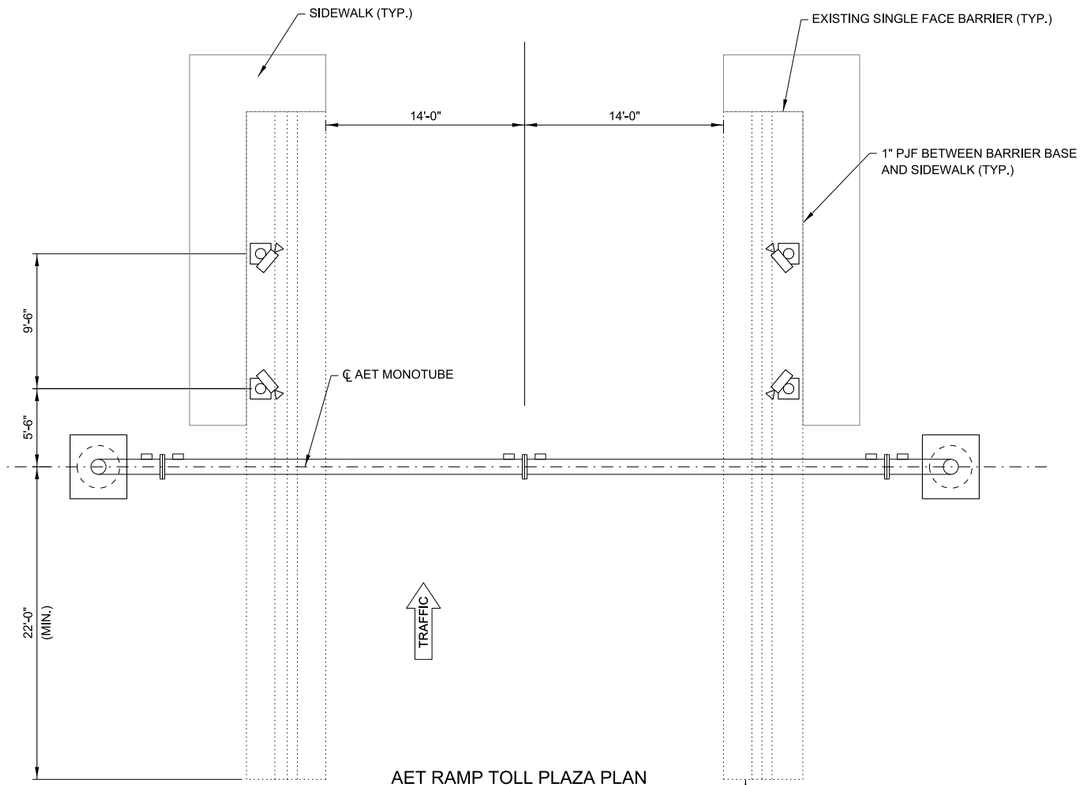
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2020

REVISIONS	
DATE	DESCRIPTION

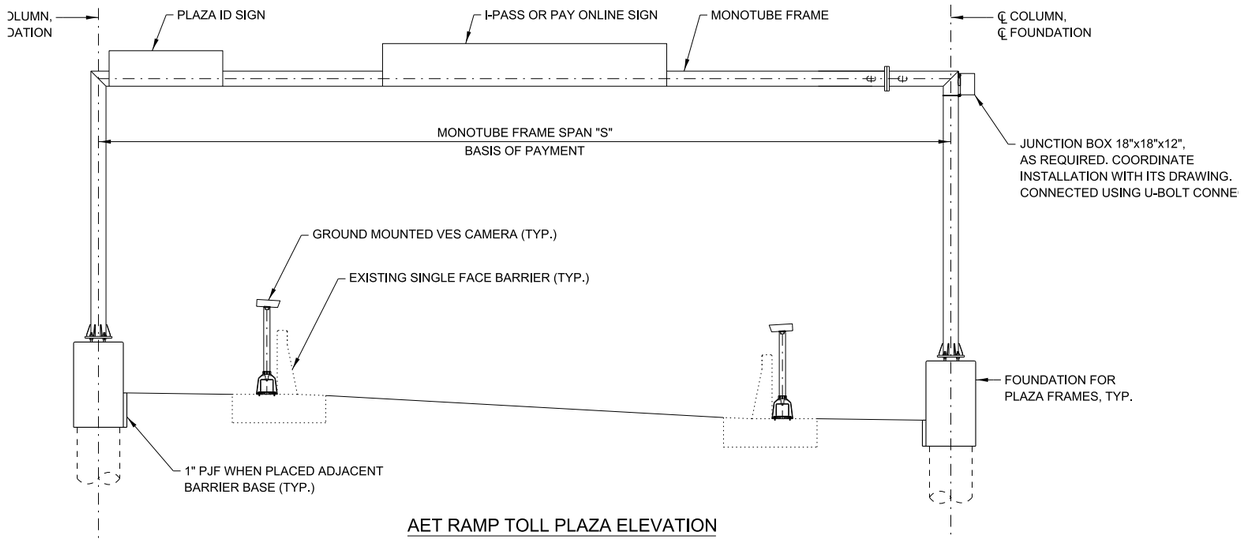
Illinois Tollway

MEDIAN BARRIER MOUNTED SIGN SUPPORT

VERSION:	STANDARD:	SHEET:
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AET RAMP TOLL PLAZA PLAN

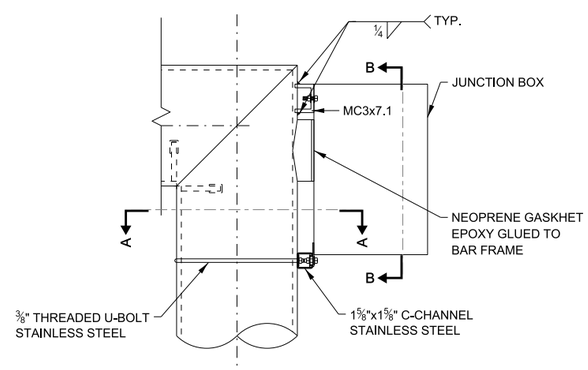


AET RAMP TOLL PLAZA ELEVATION

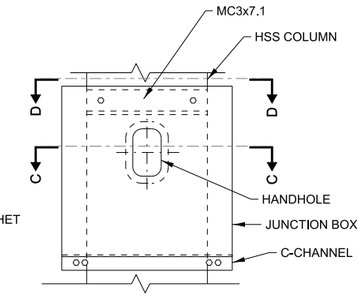
SIGN TABLE

SIGN	MAXIMUM AREA	MAXIMUM LENGTH
PLAZA SIGN	20 S.F.	8'-0"
I-PASS OR PAY ONLINE SIGN	60 S.F.	20'-0"

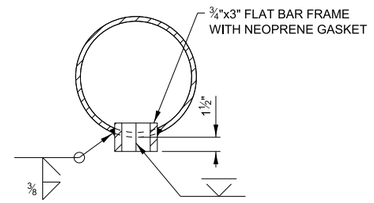
NOTES:
1. SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
2. PROVIDE MONOTUBE FRAME STATIONS IN CONTRACT PLANS.



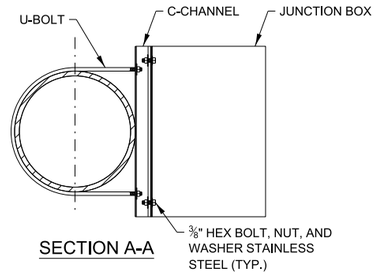
EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



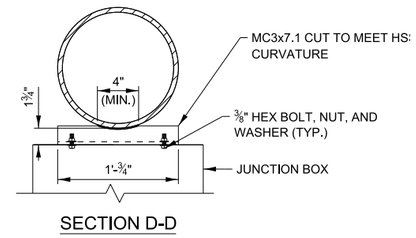
SECTION B-B



SECTION C-C



SECTION A-A



SECTION D-D

JUNCTION BOX CONNECTION DETAIL

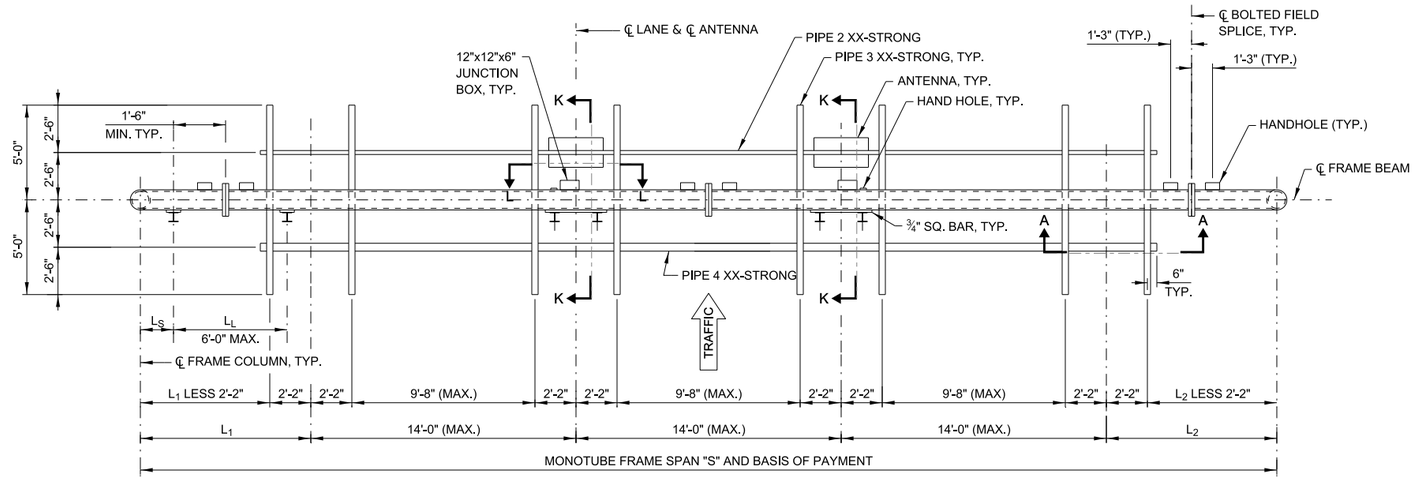
APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

Illinois Tollway

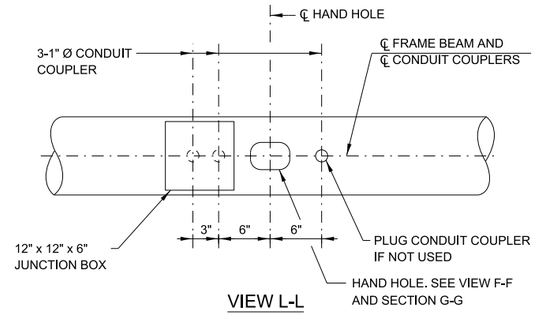
REVISIONS	
DATE	DESCRIPTION

OVERHEAD SIGN STRUCTURE
AET RAMP MONOTUBE TYPE
(STEEL) GROUND MOUNTED

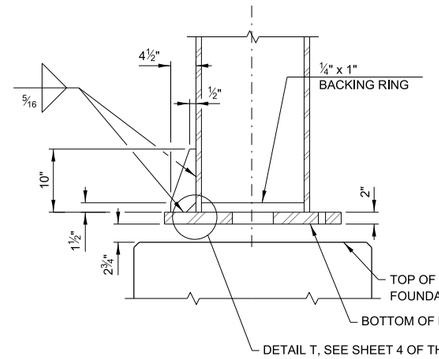
VERSION:	STANDARD:	SHEET:
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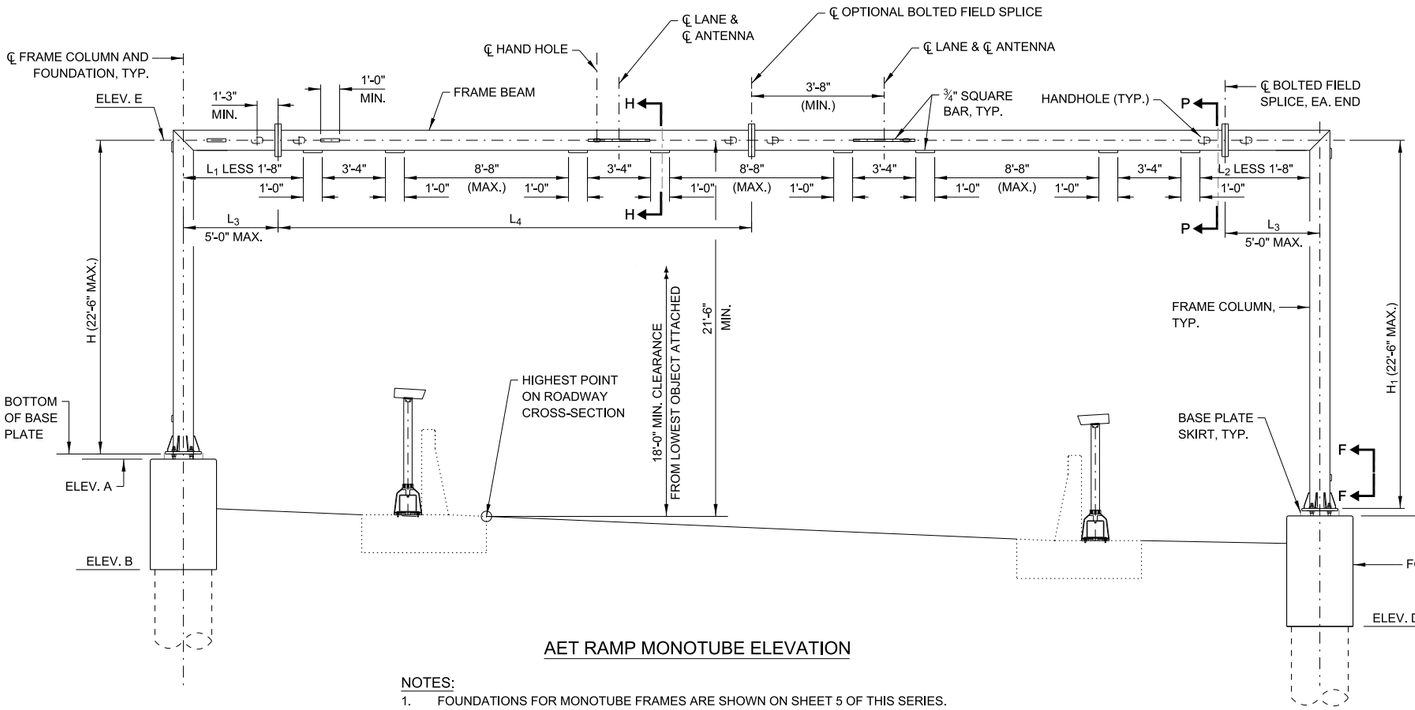
AET RAMP MONOTUBE PLAN



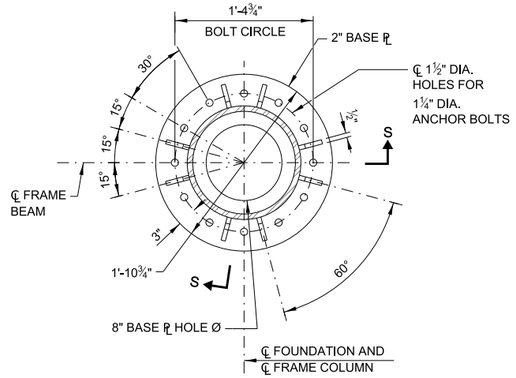
VIEW L-L



SECTION S-S



AET RAMP MONOTUBE ELEVATION



BASE PLATE PLAN MONOTUBE

NOTES:

1. FOUNDATIONS FOR MONOTUBE FRAMES ARE SHOWN ON SHEET 5 OF THIS SERIES.
2. SEE SHEET 4 OF THIS SERIES FOR SECTIONS G-G, H-H, K-K, VIEW A-A AND F-F AND BASE PLATE SKIRT.
3. SEE SHEET 3 OF THIS SERIES FOR SECTION P-P.
4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
5. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.
6. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) GROUND MOUNTED SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
60' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	2¼"

SEE ILLINOIS TOLLWAY STANDARD DRAWING F13 FOR SPANS GREATER THAN 60'.

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) GROUND MOUNTED

VERSION:	STANDARD:	SHEET:
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GENERAL NOTES:

1. AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.

2. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.

STRUCTURAL STEEL:

1. MATERIAL FOR THE HSS MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C. BASE PLATE AND STIFFENER PLATE SHALL CONFORM TO ASTM A709 GRADE 50. OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.

2. PIPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53 GRADE B.

3. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 (AASHTO M314) GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. INSTALLATION AND INSPECTION OF ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME "STEEL". ANCHORS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232). SEE SHEET 6 OF THIS SERIES FOR GALVANIZED LENGTH.

4. U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).

5. BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH STEEL BOLTS.

6. HSS FOR MONOTUBE FRAME, PIPES, STRUCTURAL STEEL SHAPES AND PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

7. THE MONOTUBE FRAME BEAM, COLUMNS, BASE PLATE MATERIAL, AND SPLICES ARE CONSIDERED TENSION MEMBERS AND SHALL CONFORM TO THE IMPACT TESTING REQUIREMENT, ZONE 2.

DESIGN LOADING:

WIND LOAD CRITERIA

BASIC WIND SPEED = 120 M.P.H.
G = 1.14
I_F = 1.00
K_Z = 1.00
SIGN PANEL 50 P.S.F.
COLUMN/BEAM 35 P.S.F.

SIGN DEAD LOAD = 3 P.S.F.

ICE = 3 P.S.F. (APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY)

EQUIPMENT LOADS:

ANTENNA W/MOUNTING HARDWARE 24 LB.

DESIGN STRESSES FOR REINFORCED CONCRETE:

f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS SI) = 3,500 P.S.I.
f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS DS) = 4,000 P.S.I.
fy = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60) = 60,000 P.S.I.

FOUNDATION:

MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.25 TON/SQ.FT. AT MONOTUBE FRAMES.

DESIGN SPECIFICATIONS:

1. ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION.

2. AASHTO LRFD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 1ST EDITION.

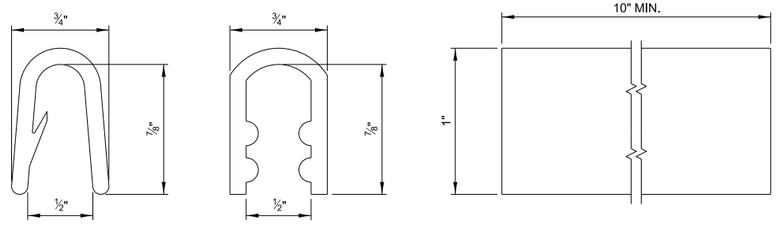
3. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020.

4. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, LATEST EDITION.

CONSTRUCTION SPECIFICATIONS:

1. ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

2. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.



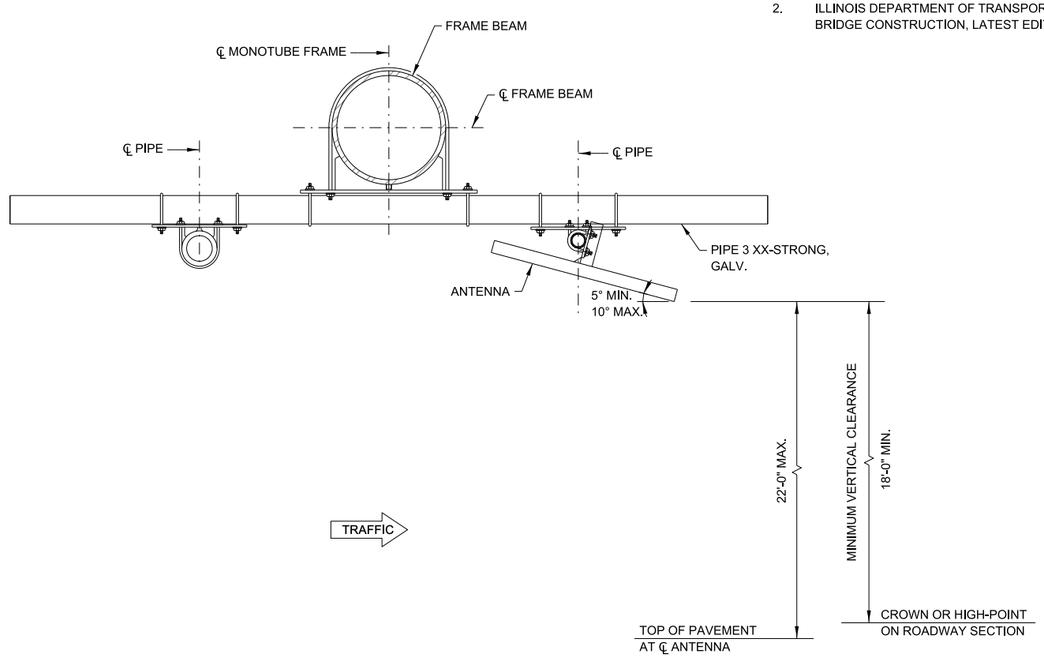
PLASTIC TRIM DETAIL

NOTES:

1. ALL SHARP EDGES OR DRIPS OF ZINC SHALL BE REMOVED FROM ALL STIFFENER PLATES PRIOR TO EPOXY GLUING THE TRIM. THE TRIM SHALL BE EPOXY GLUED TO BOTH SIDES OF THE PLATE. THE COST OF THE TRIM AND EPOXY GLUE SHALL BE INCLUDED IN THE COST OF "OVERHEAD SIGN STRUCTURE, AET RAMP ENTRANCE MONOTUBE TYPE (STEEL)"

2. THE TRIM SHALL BE HEAVY DUTY PLASTIC TRIM (OPTION 1 OR OPTION 2 OR EQUIVALENT) FOR OUTDOOR USE FOR APPLICATION WITH A TEMPERATURE RANGE OF -20°F TO 150°F. THE TRIM SHALL BE CHEMICAL RESISTANT, A HARD RATING AND SHALL MEET FMVSS-302 FOR FEDERAL MOTOR VEHICLE SAFETY STANDARDS FOR FLAMMABILITY.

3. EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



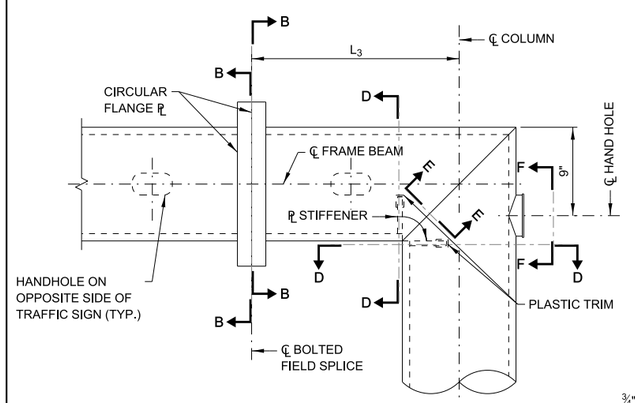
SECTION P-P

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

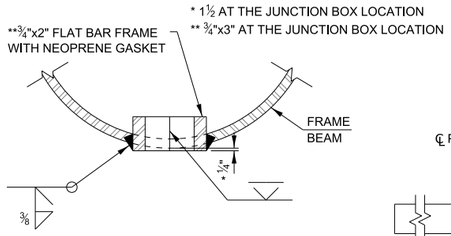
OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) GROUND MOUNTED

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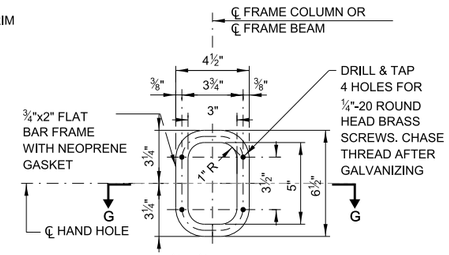


SECTION A-A

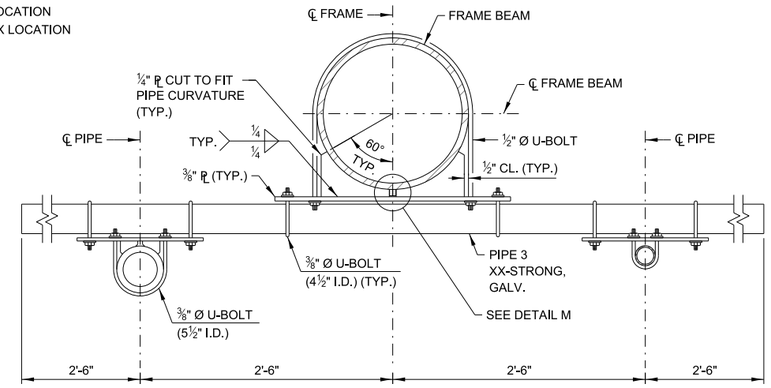
(SEE SHEETS 2 AND 3 OF THIS SERIES FOR LOCATION)
(PIPES NOT SHOWN FOR CLARITY)



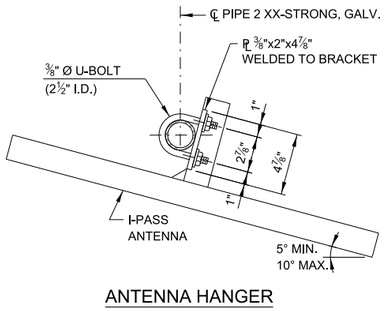
SECTION G-G



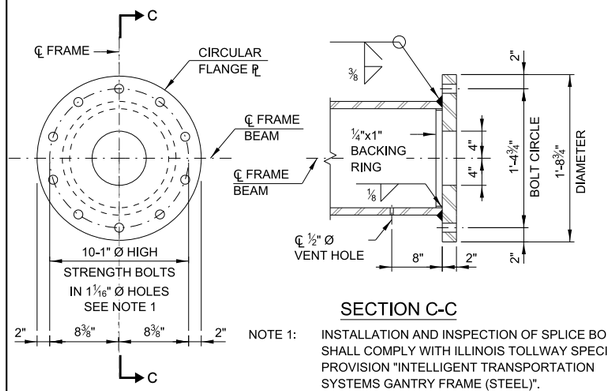
VIEW F-F



SECTION K-K



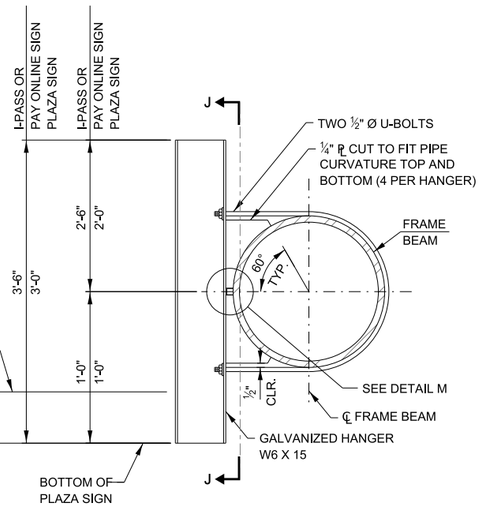
ANTENNA HANGER



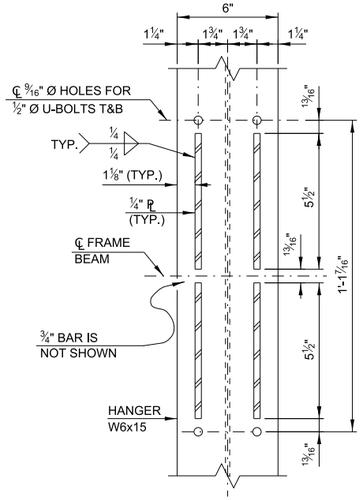
SECTION B-B

SECTION C-C

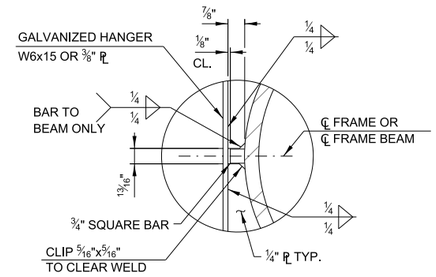
NOTE 1: INSTALLATION AND INSPECTION OF SPLICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".



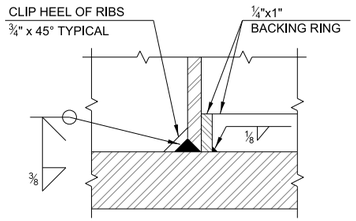
SECTION H-H (SIGN HANGER)



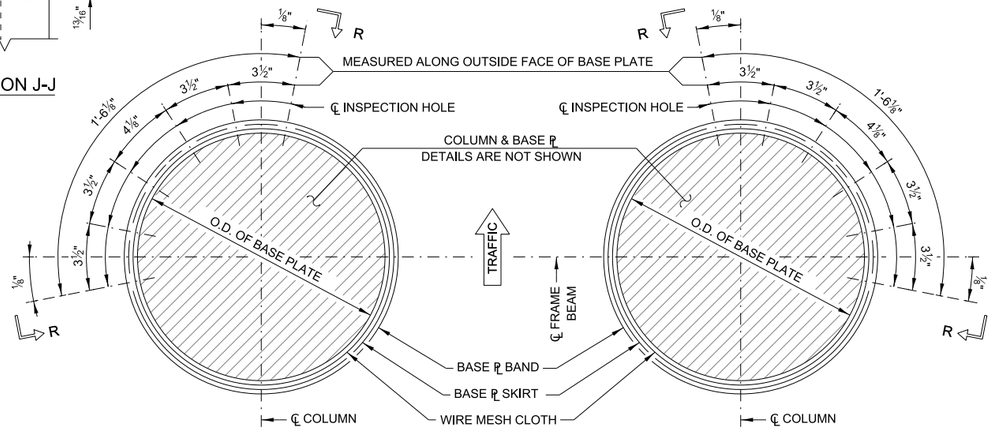
SECTION J-J



DETAIL M



DETAIL T

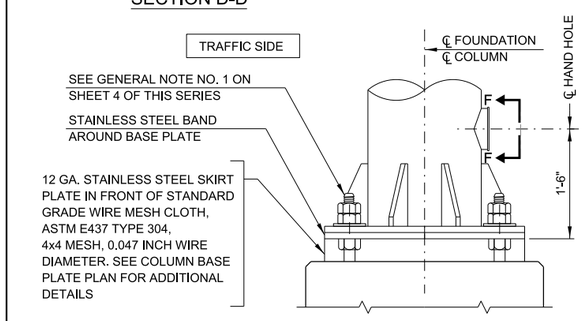


LEFT BASE PLATE

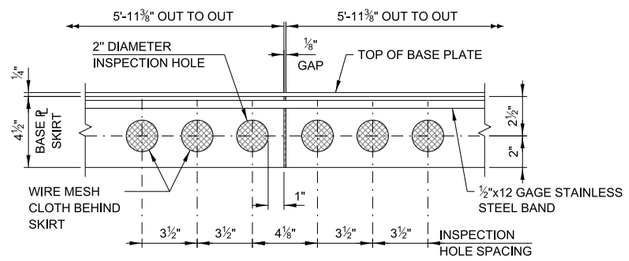
RIGHT BASE PLATE

COLUMN BASE PLATE PLAN

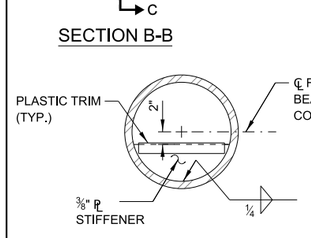
NOTE:
SEE SHEET 2 OF THIS SERIES FOR BASE PLATE OUTSIDE DIAMETER.



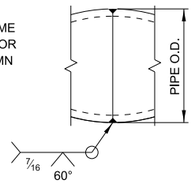
COLUMN BASE



VIEW R-R (BASE PLATE SKIRT)



SECTION D-D



SECTION E-E

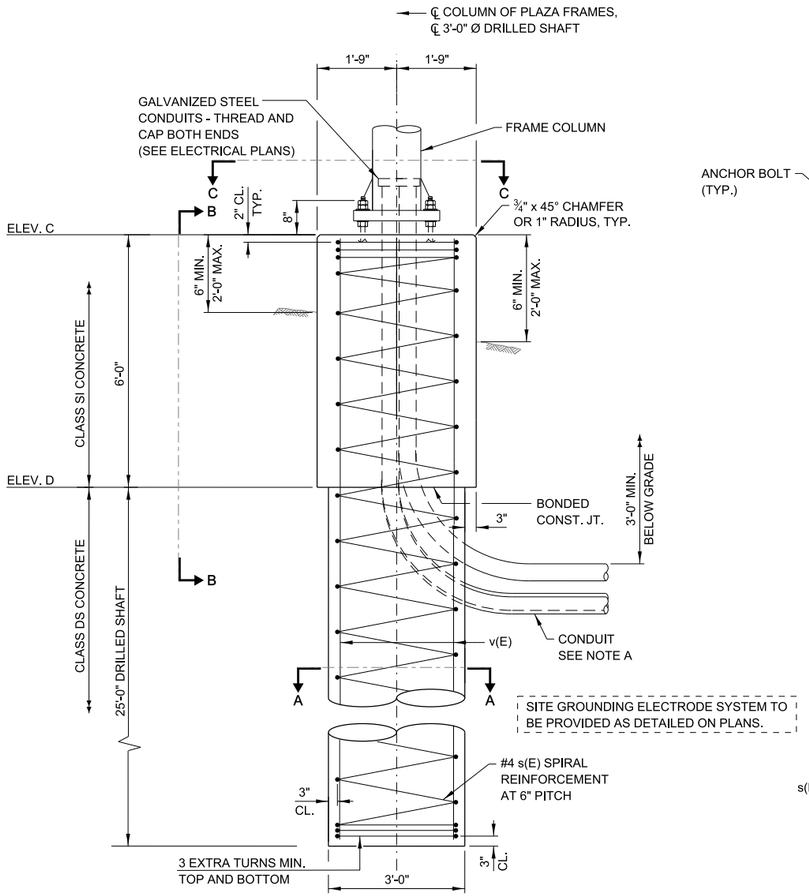
APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

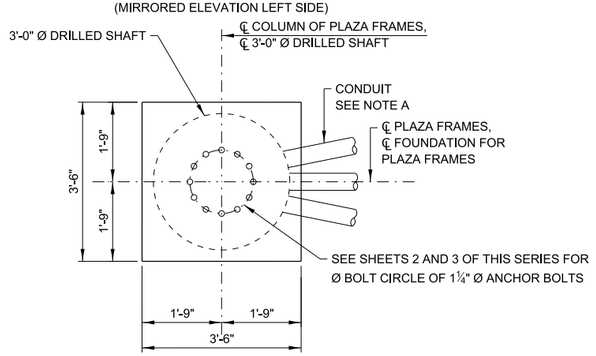
Illinois Tollway

OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) GROUND MOUNTED

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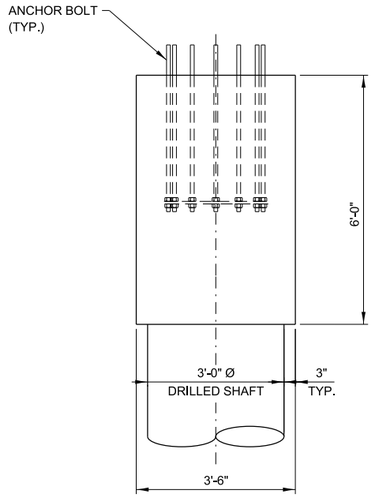


SIDE ELEVATION RIGHT SIDE
(MIRRORED ELEVATION LEFT SIDE)

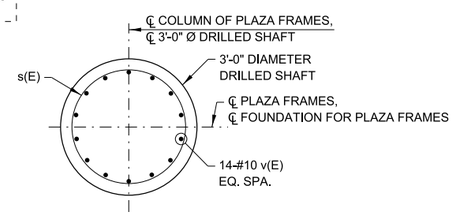


VIEW C-C

CONCRETE BARRIER FOUNDATION FOR PLAZA FRAMES



VIEW B-B

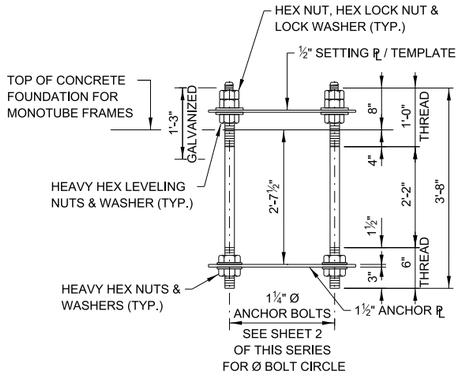


SECTION A-A

NOTE A:
1. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. PROVIDE CONDUIT COUPLERS AS REQUIRED.
2. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.

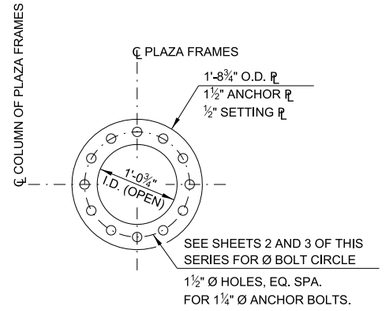
FOUNDATION NOTE:
THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOB SITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

LEGEND:
F.F. - FRONT FACE
B.F. - BACK FACE
CTS. - CENTERS



ANCHOR BOLT ASSEMBLY

FRAME COLUMN	ANCHOR BOLT
HSS 12.75x0.500	12



ANCHOR ℄ / SETTING ℄

BAR LIST-ONE FOUNDATION

BAR	NO.	SIZE	LENGTH	SHAPE
s(E)	1	#4	30'-7"	
v(E)	14	#10	30'-7"	

ESTIMATED QUANTITY

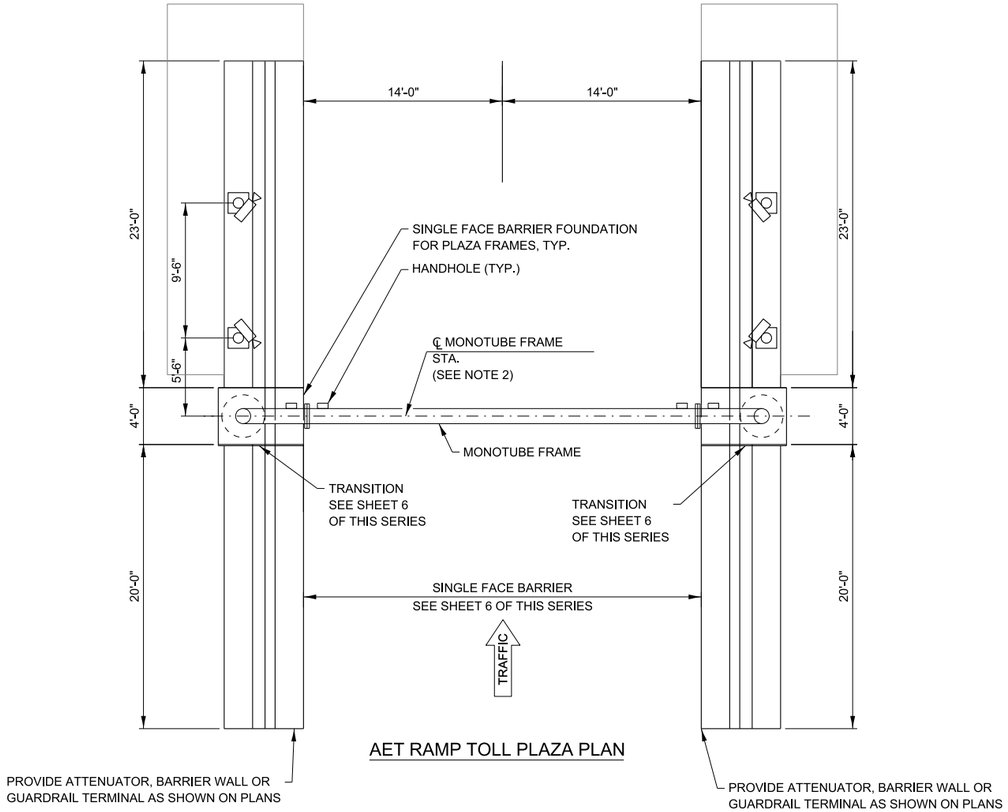
ITEM	UNIT	CONCRETE FOUNDATION
CLASS SI CONCRETE	CU. YD.	2.7
CLASS DS CONCRETE	CU. YD.	6.5
REINFORCEMENT BARS, EPOXY COAT	POUND	2,195

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

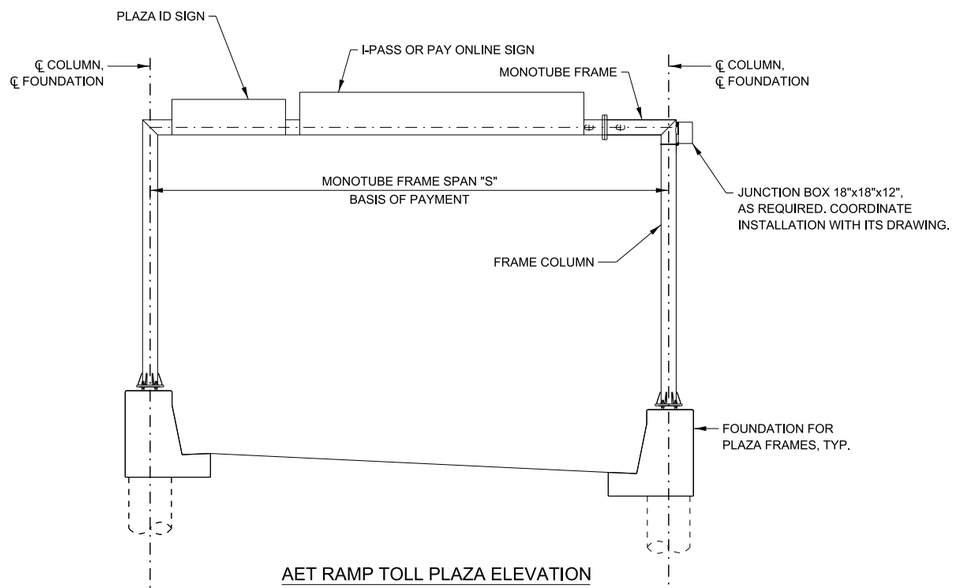
Illinois Tollway

OVERHEAD SIGN STRUCTURE
AET RAMP MONOTUBE TYPE
(STEEL) GROUND MOUNTED

VERSION:	STANDARD:	SHEET:
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AET RAMP TOLL PLAZA PLAN



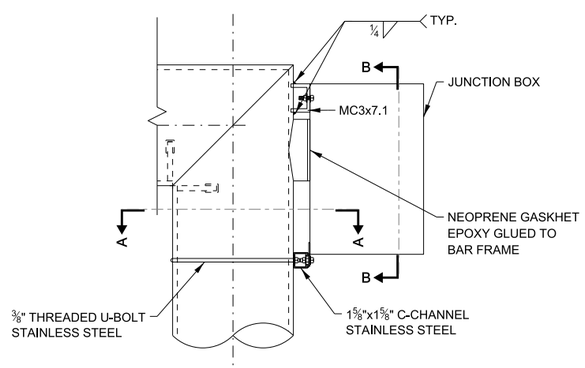
AET RAMP TOLL PLAZA ELEVATION

NOTE:

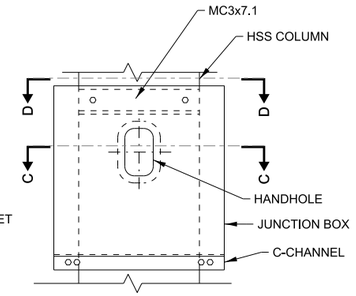
1. SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
2. PROVIDE MONOTUBE FRAME STATION IN CONTRACT PLANS.

SIGN TABLE

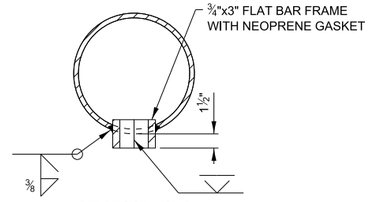
SIGN	MAXIMUM AREA	MAXIMUM LENGTH
PLAZA SIGN	20 S.F.	8'-0"
I-PASS OR PAY ONLINE SIGN	60 S.F.	20'-0"



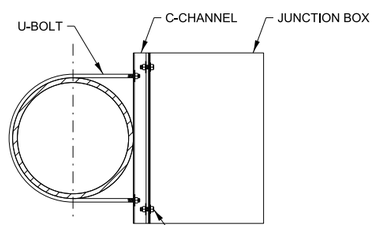
EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



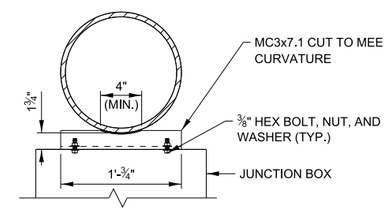
SECTION B-B



SECTION C-C



SECTION A-A



SECTION D-D

JUNCTION BOX CONNECTION DETAIL

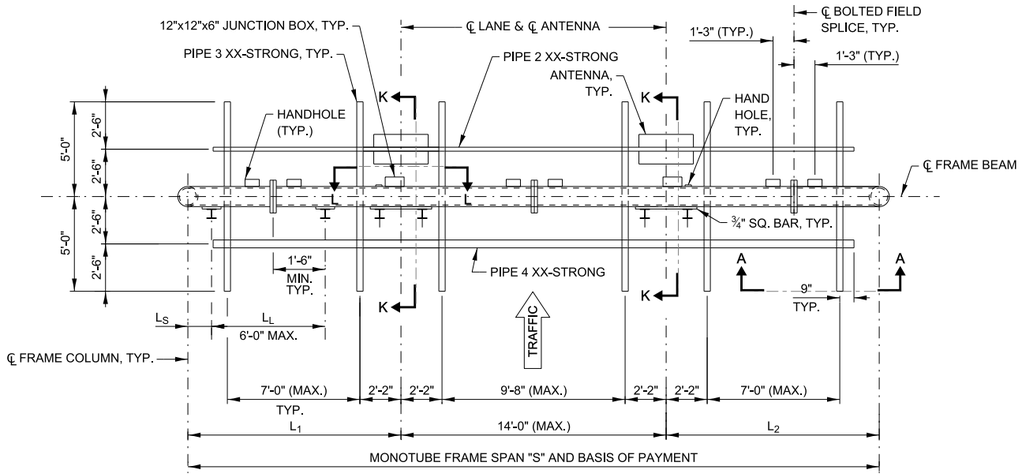
APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION

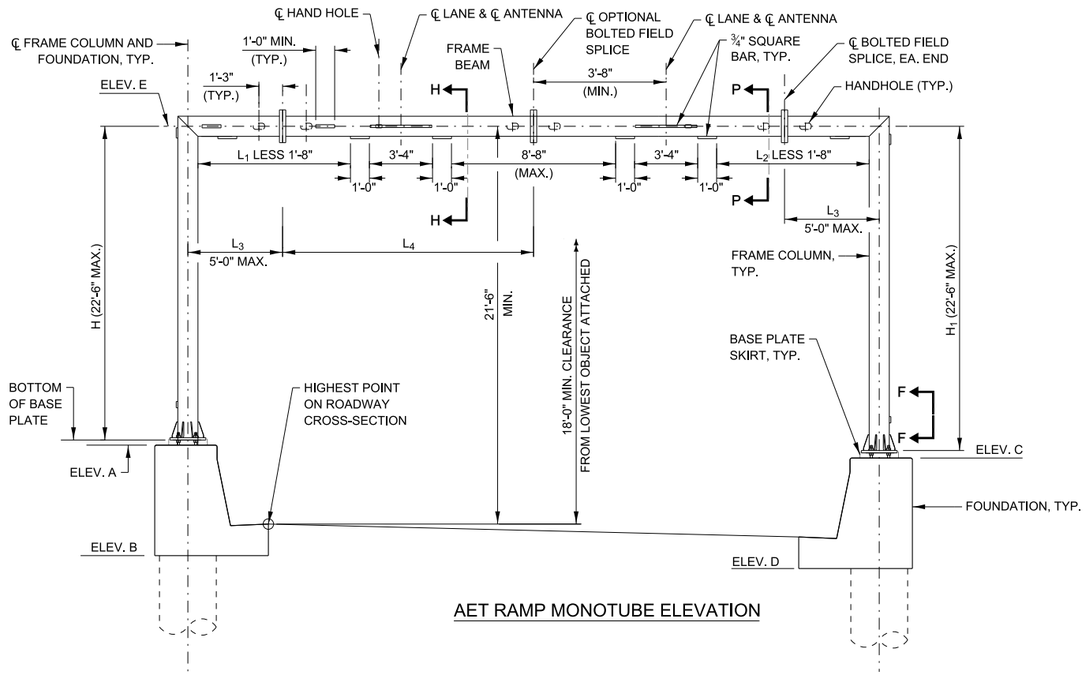
Illinois Tollway

OVERHEAD SIGN STRUCTURE
AET RAMP MONOTUBE TYPE
(STEEL) BARRIER MOUNTED

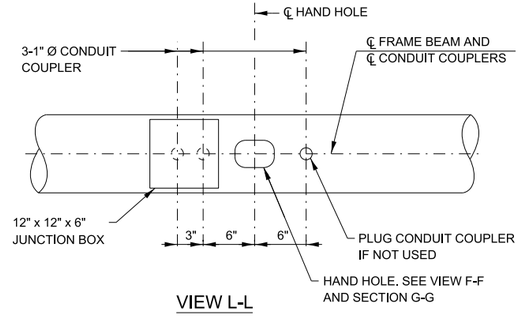
VERSION:	STANDARD:	SHEET:
2025-03	F22-00	1 OF 6



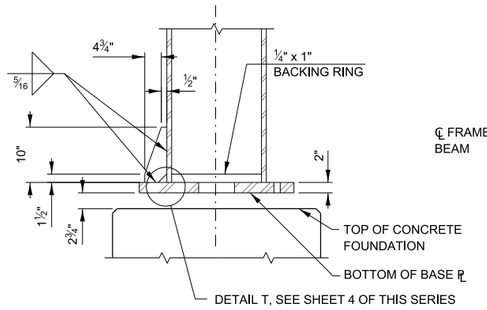
AET RAMP MONOTUBE PLAN



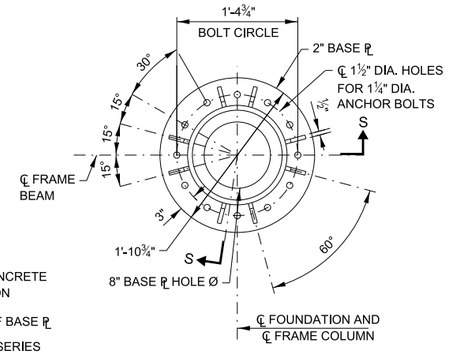
AET RAMP MONOTUBE ELEVATION



VIEW L-L



SECTION S-S



BASE PLATE PLAN
MONOTUBE FRAME

MONOTUBE FRAME TABLE

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
36.5' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	0.75"

NOTES:

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) BARRIER MOUNTED, SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
2. FOUNDATION FOR MONOTUBE FRAME IS SHOWN ON SHEET 5 OF THIS SERIES.
3. SEE SHEET 4 OF THIS SERIES FOR SECTIONS G-G, H-H AND K-K, VIEWS A-A AND F-F, AND HAND HOLE DETAILS.
4. SEE SHEET 3 OF THIS SERIES FOR SECTION P-P.
5. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
6. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE
AET RAMP MONOTUBE TYPE
(STEEL) BARRIER MOUNTED

VERSION:	STANDARD:	SHEET:
2025-03	F22-00	2 OF 6

GENERAL NOTES:

1. AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.

2. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.

STRUCTURAL STEEL:

1. MATERIAL FOR THE HSS MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C. BASE PLATE AND STIFFENER PLATE SHALL CONFORM TO ASTM A709 GRADE 50. OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.

2. PIPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53 GRADE B.

3. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 (AASHTO M314) GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. INSTALLATION AND INSPECTION OF ANCHOR BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME "STEEL". ANCHORS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232). SEE SHEET 6 OF THIS SERIES FOR GALVANIZED LENGTH.

4. U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).

5. BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH STEEL BOLTS.

6. HSS FOR MONOTUBE FRAME, PIPES, STRUCTURAL STEEL SHAPES AND PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

7. THE MONOTUBE FRAME BEAM, COLUMNS, BASE PLATE MATERIAL, AND SPLICES ARE CONSIDERED TENSION MEMBERS AND SHALL CONFORM TO THE IMPACT TESTING REQUIREMENT, ZONE 2.

DESIGN LOADING:

WIND LOAD CRITERIA

BASIC WIND SPEED = 120 M.P.H.
G = 1.14
I_F = 1.00
K_Z = 1.00
SIGN PANEL 50 P.S.F.
COLUMN/BEAM 35 P.S.F.

SIGN DEAD LOAD = 3 P.S.F.

ICE = 3 P.S.F. (APPLIED WITH A FACTOR OF 1.0 FOR STRENGTH I ONLY)

EQUIPMENT LOADS:

ANTENNA W/MOUNTING HARDWARE 24 LB.

DESIGN STRESSES FOR REINFORCED CONCRETE:

f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS SI) = 3,500 P.S.I.
f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS DS) = 4,000 P.S.I.
fy = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60) = 60,000 P.S.I.

FOUNDATION:

MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.25 TON/SQ.FT. AT MONOTUBE FRAMES.

DESIGN SPECIFICATIONS:

1. ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION.

2. AASHTO LRFD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 1ST EDITION.

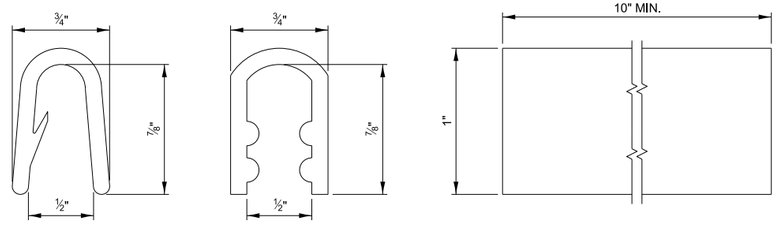
3. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, 2020.

4. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, LATEST EDITION.

CONSTRUCTION SPECIFICATIONS:

1. ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

2. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.



OPTION 1 OPTION 2

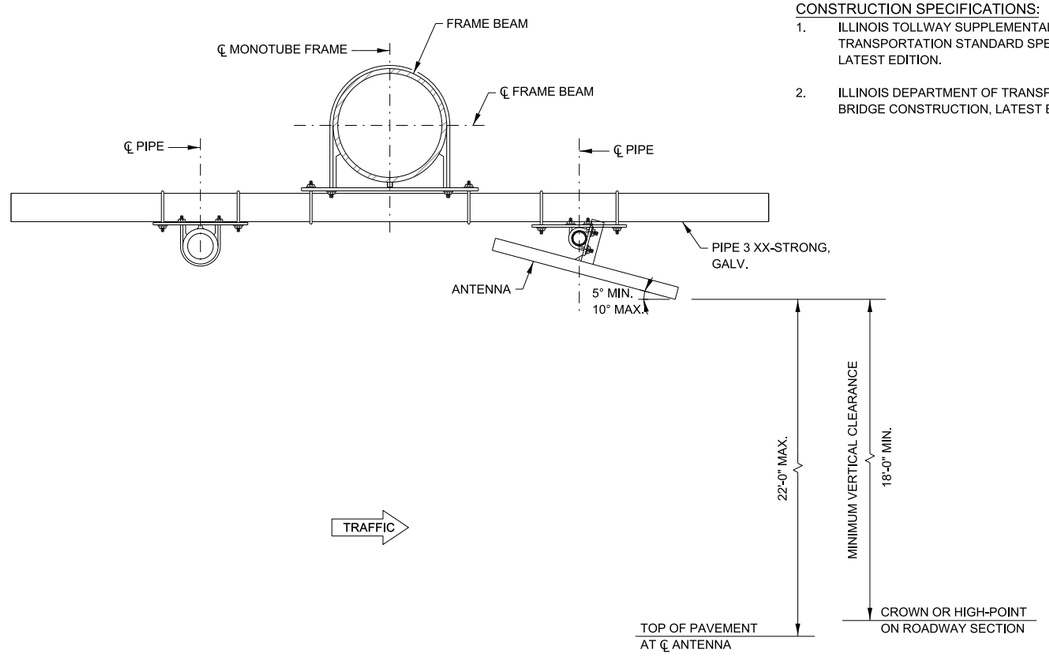
PLASTIC TRIM DETAIL

NOTES:

1. ALL SHARP EDGES OR DRIPS OF ZINC SHALL BE REMOVED FROM ALL STIFFENER PLATES PRIOR TO EPOXY GLUING THE TRIM. THE TRIM SHALL BE EPOXY GLUED TO BOTH SIDES OF THE PLATE. THE COST OF THE TRIM AND EPOXY GLUE SHALL BE INCLUDED IN THE COST OF "OVERHEAD SIGN STRUCTURE, AET RAMP ENTRANCE MONOTUBE TYPE (STEEL)"

2. THE TRIM SHALL BE HEAVY DUTY PLASTIC TRIM (OPTION 1 OR OPTION 2 OR EQUIVALENT) FOR OUTDOOR USE FOR APPLICATION WITH A TEMPERATURE RANGE OF -20°F TO 150°F. THE TRIM SHALL BE CHEMICAL RESISTANT, A HARD RATING AND SHALL MEET FMVSS-302 FOR FEDERAL MOTOR VEHICLE SAFETY STANDARDS FOR FLAMMABILITY.

3. EPOXY GLUE SHALL BE FOR OUTDOOR USE WITH A TEMPERATURE RANGE OF -20°F TO 150°F AND SHALL BE SUITABLE FOR METAL AND PLASTIC WITH A SHEAR STRENGTH GREATER THAN 2300 PSI.



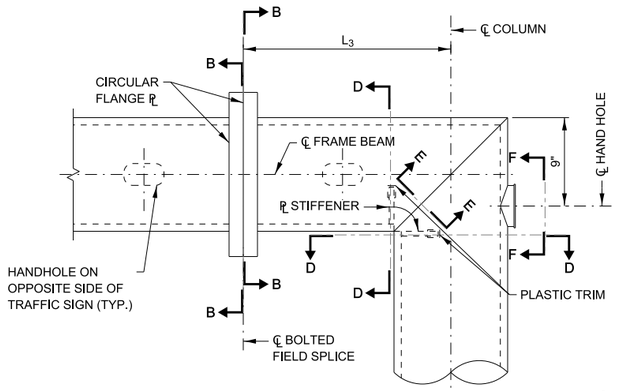
SECTION P-P

APPROVED BY: Manar Nashif CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

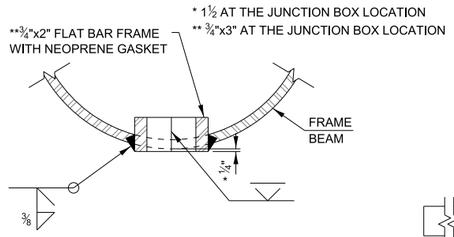
OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) BARRIER MOUNTED

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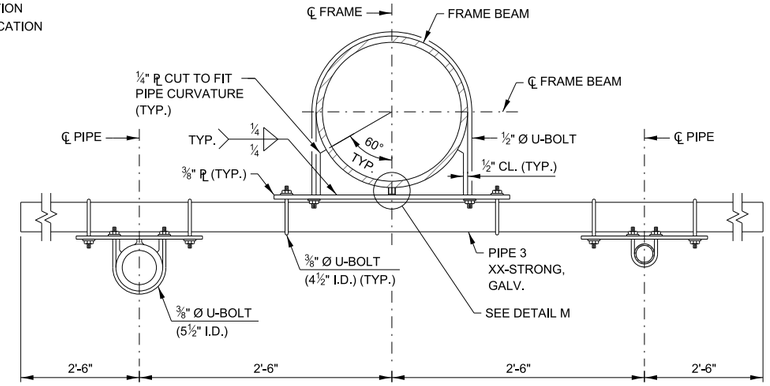


SECTION A-A

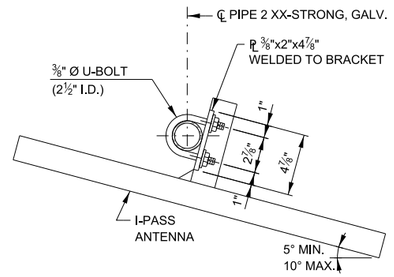
(SEE SHEETS 2 AND 3 OF THIS SERIES FOR LOCATION)
(PIPES NOT SHOWN FOR CLARITY)



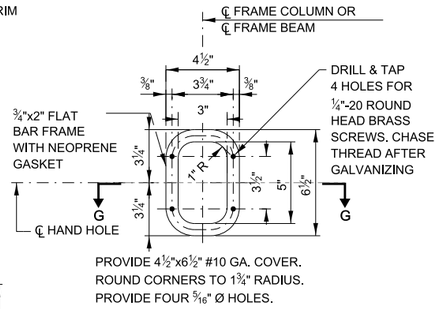
SECTION G-G



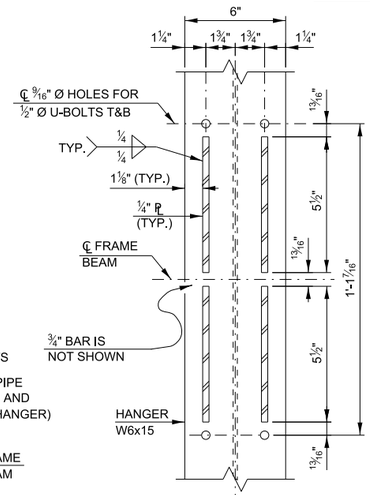
SECTION K-K



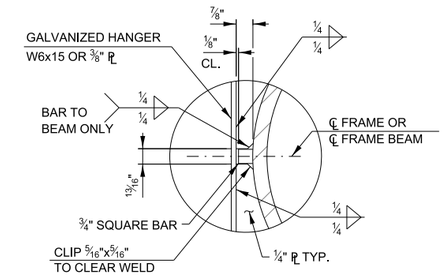
ANTENNA HANGER



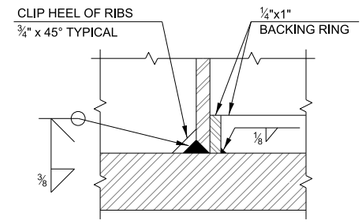
VIEW F-F



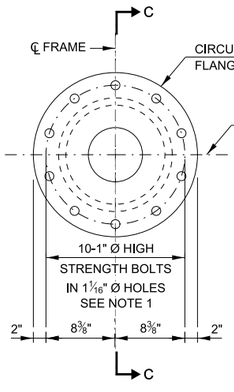
SECTION J-J



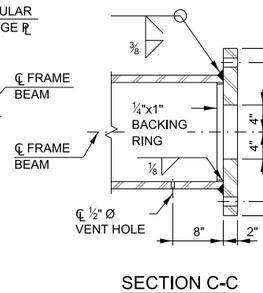
DETAIL M



DETAIL T

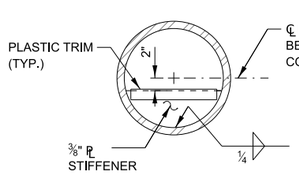


SECTION B-B

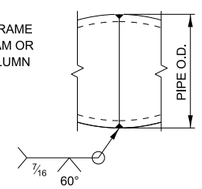


SECTION C-C

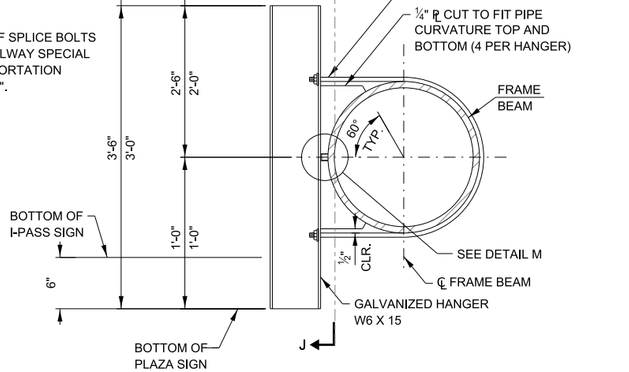
NOTE 1: INSTALLATION AND INSPECTION OF SPLICE BOLTS SHALL COMPLY WITH ILLINOIS TOLLWAY SPECIAL PROVISION "INTELLIGENT TRANSPORTATION SYSTEMS GANTRY FRAME (STEEL)".



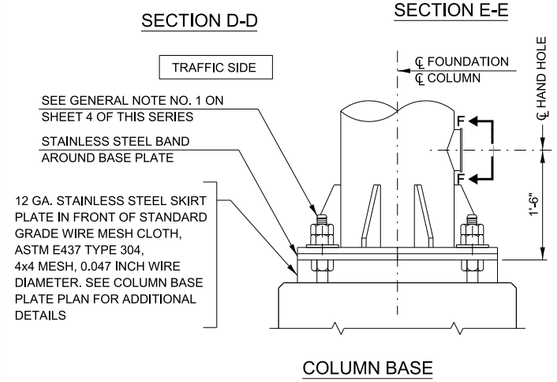
SECTION D-D



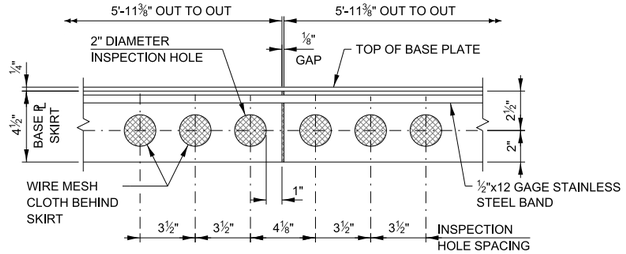
SECTION E-E



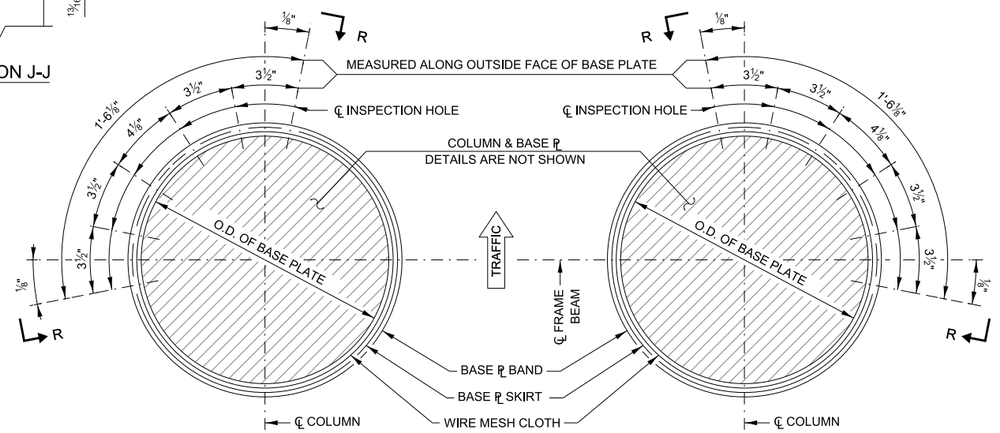
SECTION H-H (SIGN HANGER)



COLUMN BASE



VIEW R-R (BASE PLATE SKIRT)



NOTE:
SEE SHEET 2 OF THIS SERIES FOR BASE PLATE OUTSIDE DIAMETER.

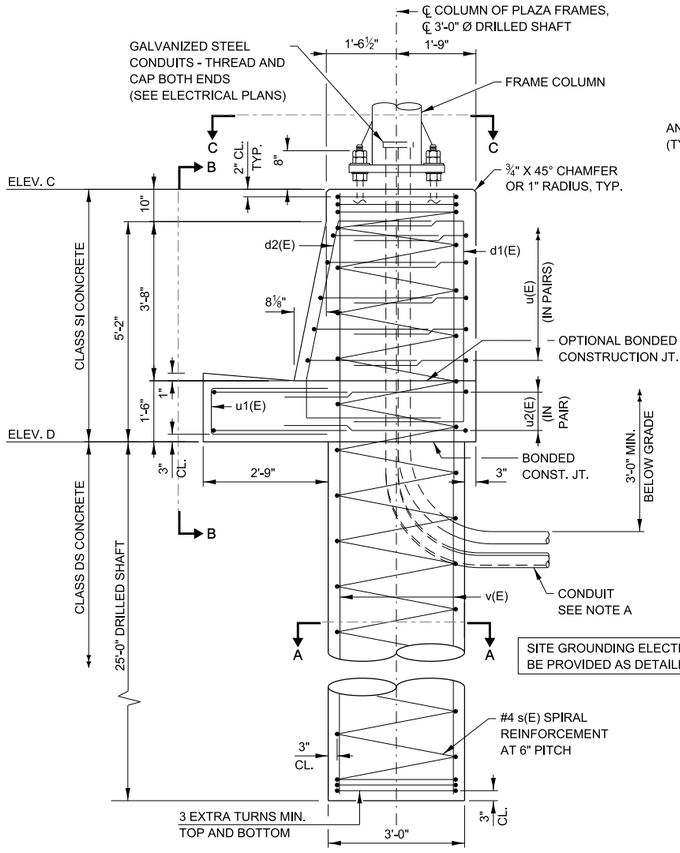
COLUMN BASE PLATE PLAN

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

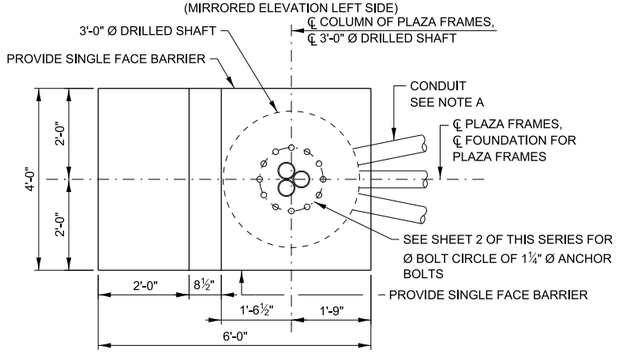
OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) BARRIER MOUNTED

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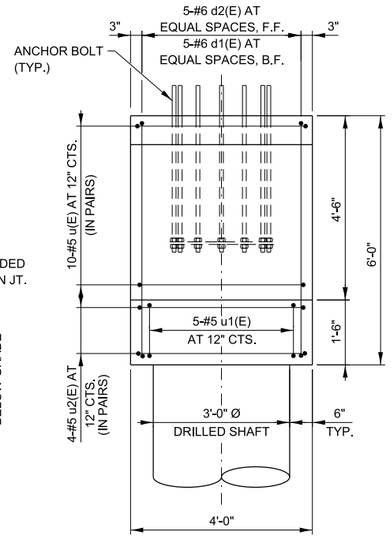
SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS DETAILED ON PLANS.

SIDE ELEVATION RIGHT SIDE
(MIRRORED ELEVATION LEFT SIDE)

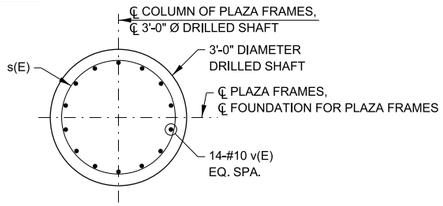


VIEW C-C

SINGLE FACE BARRIER FOUNDATION FOR PLAZA FRAMES



VIEW B-B



SECTION A-A

NOTE A:

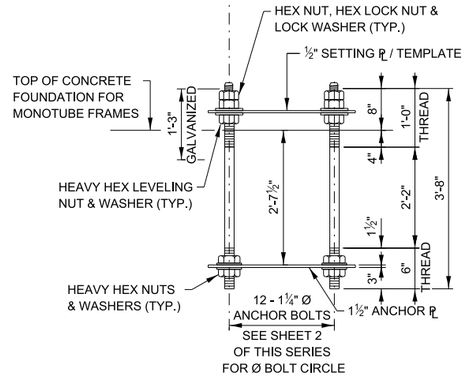
1. COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. PROVIDE CONDUIT COUPLERS AS REQUIRED.
2. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.
3. COST INCLUDED IN FOUNDATION FOR OVERHEAD SIGN STRUCTURE, RAMP MONOTUBE TYPE.
4. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF BARRIER AND TOP OF GUTTER.

FOUNDATIONS:

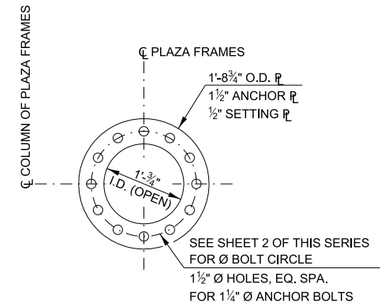
THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

LEGEND:

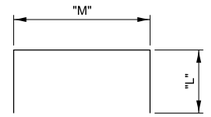
F.F. - FRONT FACE
B.F. - BACK FACE
CTS. - CENTERS



ANCHOR BOLT ASSEMBLY

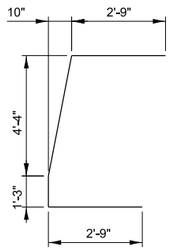


ANCHOR ℄ / SETTING ℄



BAR	"L"	"M"
d1(E)	2'-9"	5'-7"
u(E)	2'-9"	3'-8"
u1(E)	3'-3"	1'-1"
u2(E)	3'-10"	3'-8"

BARS d1(E), u(E), u1(E) AND u2(E)



BAR d2(E)

REINFORCEMENT BAR SCHEDULE

FOR ONE FOUNDATION

BAR	NO.	SIZE	LENGTH	SHAPE
d1(E)	5	#6	11'-1"	⌐
d2(E)	5	#6	11'-2"	◺
s(E)	1	#4	30'-7"	WWW
v(E)	14	#10	30'-7"	——
u(E)	10	#5	9'-2"	⌐
u1(E)	5	#5	7'-7"	⌐
u2(E)	4	#5	11'-4"	⌐

ESTIMATED QUANTITY

ITEM	UNIT	SINGLE FACE BARRIER FDN.
CLASS SI CONCRETE	CU. YD.	3.8
CLASS DS CONCRETE	CU. YD.	6.6
REINFORCEMENT BARS, EPOXY COATED	POUND	2,540
PROTECTIVE COAT	SQ. YD.	4.4

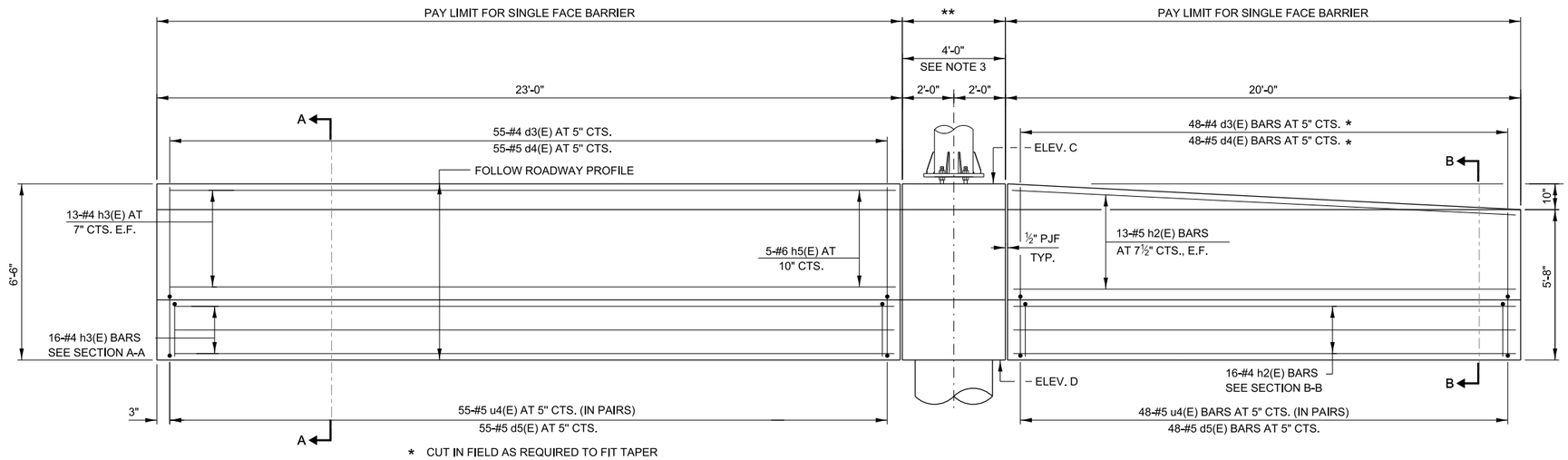
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE
AET RAMP MONOTUBE TYPE
(STEEL) BARRIER MOUNTED

VERSION:	STANDARD:	SHEET:
2025-03	F22-00	5 OF 6



* CUT IN FIELD AS REQUIRED TO FIT TAPER

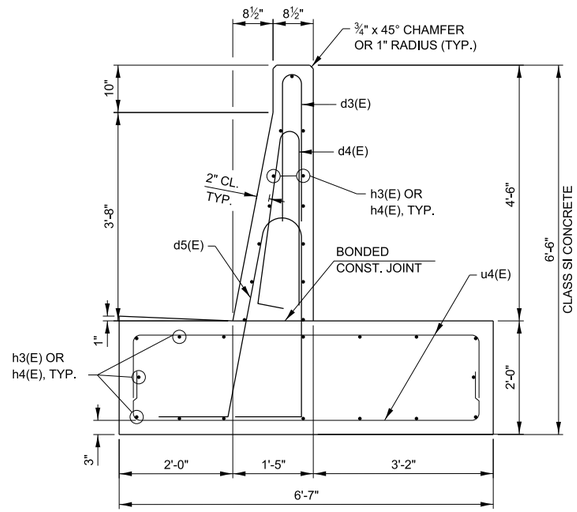
** PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE

SINGLE FACE BARRIER ELEVATION

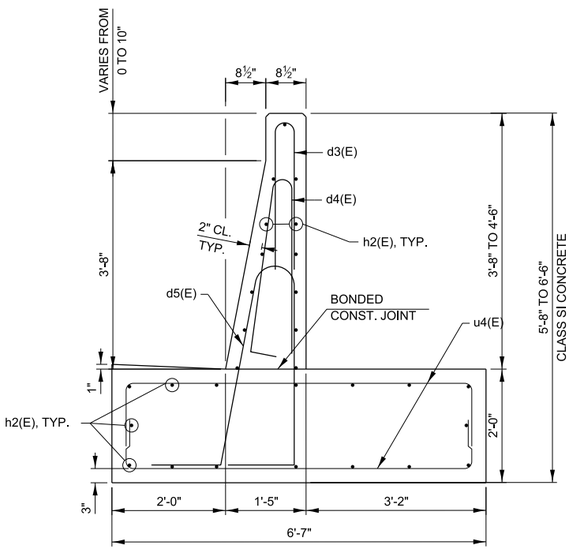
INSIDE FACE OF RIGHT BARRIER IS SHOWN
(MIRROR ELEVATION OF LEFT BARRIER)

BAR LIST - ONE BARRIER

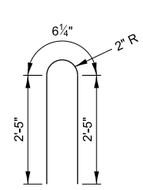
BAR	NO.	SIZE	LENGTH	SHAPE
d3(E)	103	#4	5'-5"	
d4(E)	103	#5	7'-0"	
d5(E)	103	#5	9'-10"	
h2(E)	29	#4	19'-6"	
h3(E)	29	#4	22'-6"	
u4(E)	206	#5	9'-3"	



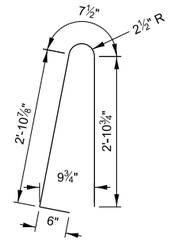
SECTION A-A



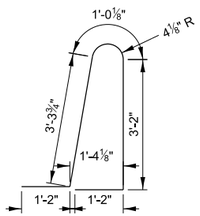
SECTION B-B



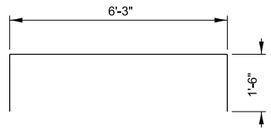
BAR d3(E)



BAR d4(E)



BAR d5(E)



BAR u4(E)

ESTIMATED QUANTITY

(FOR ONE SINGLE FACE BARRIER)

ITEM	UNIT	TOTAL
CONCRETE STRUCTURES	CU. YD.	27.9
REINFORCEMENT BARS, EPOXY COATED	POUND	2,820
PROTECTIVE COAT	SQ. YD.	33.9

NOTES:

1. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, GUTTER AND TO THE ENTRANCE SIDE FACE (AT THE BEGINNING OF THE RAMP PLAZA PAVEMENT) FOR THE FULL HEIGHT OF THE BARRIER.
2. ELECTRICAL JUNCTION BOXES SHALL BE EXTERIOR MOUNTED ON THE BACK FACE OF BARRIER.
3. FOR SINGLE FACE BARRIER FOUNDATION DETAILS FOR MONOTUBE FRAMES, SEE SHEET 5 OF THIS SERIES.
4. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) BARRIER MOUNTED SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

OVERHEAD SIGN STRUCTURE AET RAMP MONOTUBE TYPE (STEEL) BARRIER MOUNTED

VERSION:	STANDARD:	SHEET:
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STANDARD DRAWINGS

SECTION G

STRUCTURAL

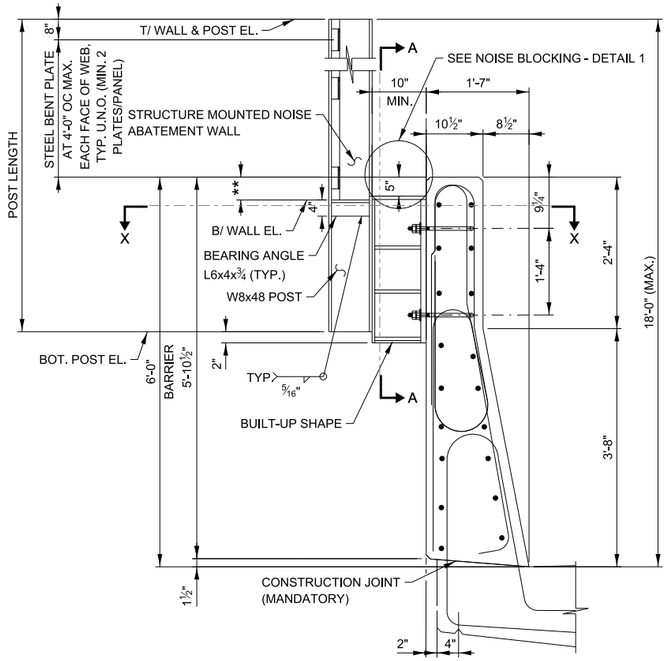
MARCH 2025

Illinois Tollway Standard Drawing Revisions

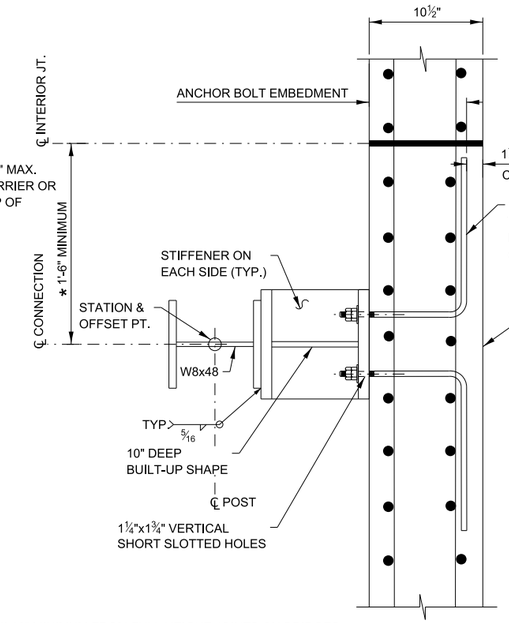
Section G	Structural	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads.
	G12-05	**STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS**
	Sheet 1	Updated design specification to AASHTO 9th Edition. Removed Note 3 of Illinois Tollway Constant Slope Barrier - Details.

New Sheet

Retired Standard

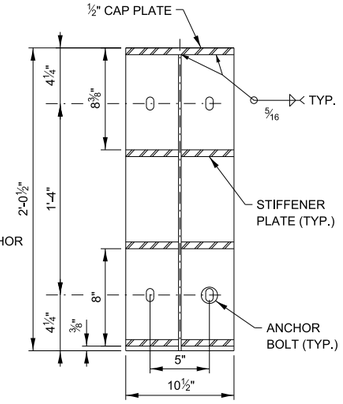


** BEARING SEAT IS 6" MAX. BELOW TOP OF BARRIER OR 3" MAX. ABOVE TOP OF BARRIER.

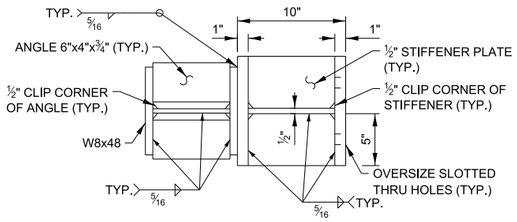


* USE 4'-10" MINIMUM FROM FULL HEIGHT JOINTS ON BRIDGES, OTHERWISE USE 1'-10" MINIMUM FOR END POSTS AND POSTS LOCATED ON APPROACH SLABS OR MOMENT SLABS.

SECTION X-X



SECTION A-A



BUILT UP SHAPE

GENERAL NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
2. REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
4. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.
5. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
6. CONSTRUCTION CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
9TH EDITION, 2020.

DESIGN STRESSES

f'c = 4,000 PSI (CLASS BS). (BARRIERS)
f'c = 5,000 PSI AT 28 DAYS (CLASS PC)
(PRECAST CONCRETE NAW PANELS)
fy = 60,000 PSI (REINFORCEMENT)

GRADE 50, Fy = 50,000 PSI, ASTM A709 (AASHTO M270) - STRUCTURAL STEEL POST
GRADE 36, Fy = 36,000 PSI, ASTM A709 (AASHTO M270) ALL OTHER STEEL (UNLESS NOTED OTHERWISE)
ALL STEEL SHALL BE HOT - DIP GALVANIZED

DESIGN LOADING

CONCRETE = 150 PCF
STEEL = 490 PCF
WIND LOADS = 50PSF (STR III)
= 15PSF (SERV I)
VEHICLE IMPACT - 4KIPS APPLIED AT THE HIGHEST POINT UP TO 14FT ABOVE SURFACE OF PAVEMENT IN FRONT OF BARRIER.

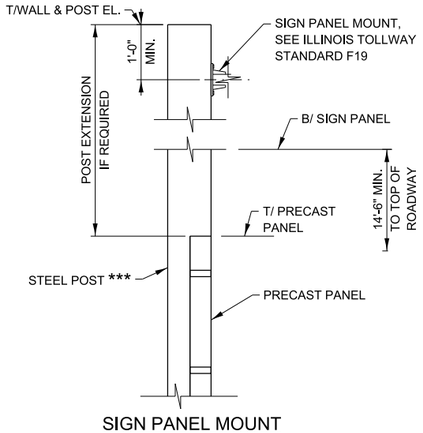
PRECAST PANEL MAX. ALLOWABLE DEFLECTION - L/180

STEEL POST MAX. ALLOWABLE DEFLECTION - H/360

ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER - DETAILS

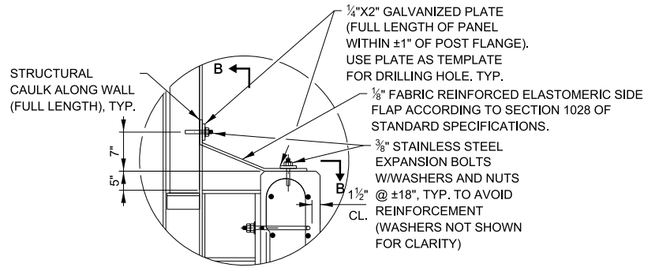
NOTES:

1. STEEL POST MAXIMUM SPACING IS 11'-8".
2. SLIPFORMING OF THE BARRIER IS NOT PERMITTED.
3. ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE SUPPLIED BY THE FABRICATOR OF AN ADVANCE PROCUREMENT CONTRACT FOR THE STRUCTURAL STEEL POSTS. BENT ANCHOR BOLTS SHALL BE INSTALLED WITH ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER. SEE SPECIAL PROVISION FOR FURNISHING NOISE ABATEMENT WALL STRUCTURAL STEEL.
4. MINIMUM DISTANCE BETWEEN CENTERLINE OF POST TO CENTERLINE OF LIGHT POLE IS 4'-7" DESIRABLE AND 3'-7" MINIMUM.

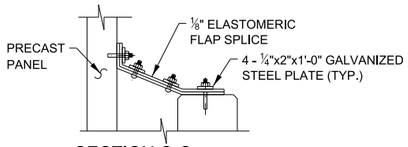


SIGN PANEL MOUNT
POST EXTENSION DETAIL

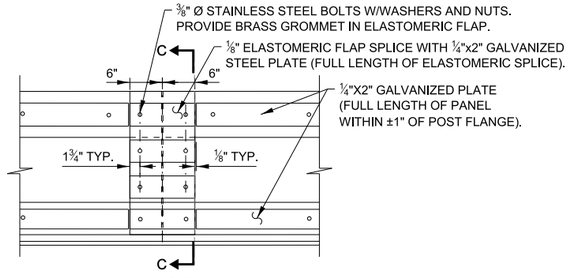
*** STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A 17'-3½" POST WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19



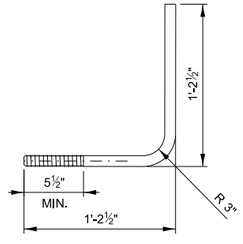
DETAIL 1
NOISE BLOCKING ASSEMBLY



SECTION C-C



VIEW B-B
AT ASSEMBLY SPLICE



BENT ANCHOR BOLT

MISCELLANEOUS STEEL CONNECTION QUANTITY

DESCRIPTION	WEIGHT
BUILT-UP SHAPE	219 LBS.
BEARING ANGLE (2 ANGLES)	28 LBS.
STEEL BENT PLATE ALLOWANCE (8 PLATES)	29 LBS.
ANCHOR BOLT ASSEMBLY (4 BOLTS)	26 LBS.
TOTAL	302 LBS.
NOISE BLOCKING ASSEMBLY BETWEEN POSTS (2 PLATES)	3.4 PLF
NOISE BLOCKING ASSEMBLY SPLICE (4 PLATES)	7 LBS.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

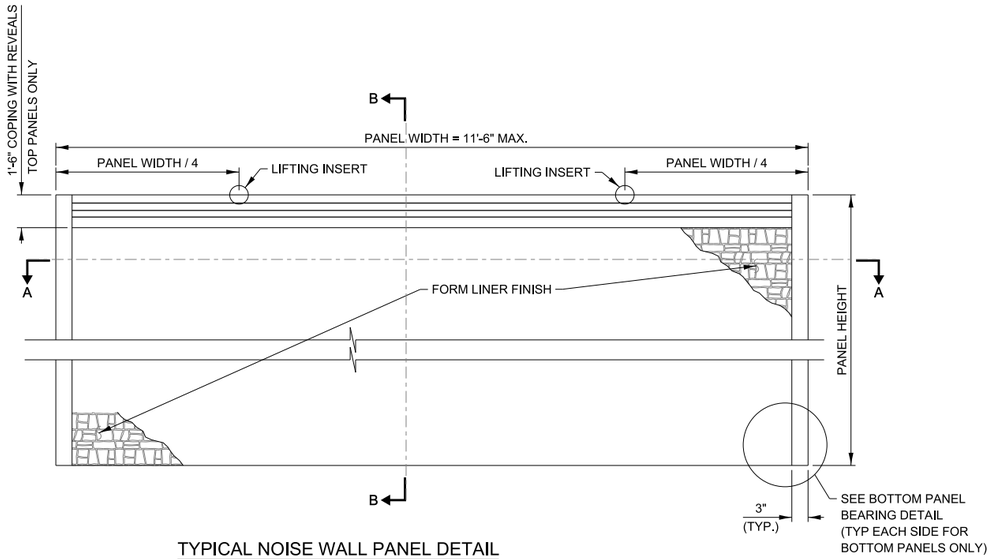
DATE:
03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	REMOVED BARRIER NOTE 3,
	UPDATED AASHTO VERSON.
02-23-2023	ADD STEEL PL. SPA. & MIN. NUMBER.
	REV. BENT PL., STEEL QUANTITIES.
03-01-2022	UPDATE ERECTION ANCHOR CALLOUT
	CHANGE BENT PLATE TO 1".

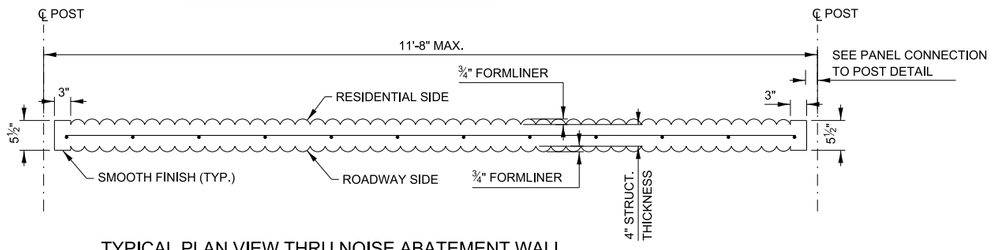
Illinois Tollway

STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

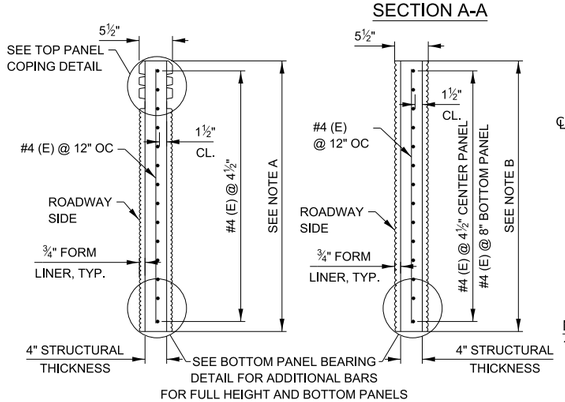
VERSION:	STANDARD:	SHEET:
2025-03	G12-05	1 OF 2



TYPICAL NOISE WALL PANEL DETAIL



TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

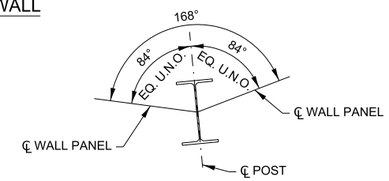


TOP PANEL OR FULL HEIGHT PANEL SECTION B-B

CENTER OR BOTTOM PANEL SECTION B-B

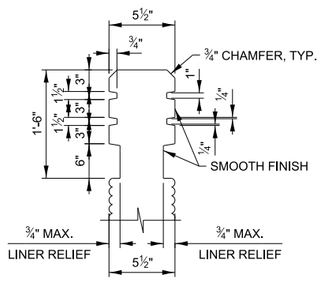
NOTE A
TO ACCOMMODATE VARYING HEIGHT NAW, TOP PANEL HEIGHTS ARE PERMITTED TO BE 4'-0", 5'-0", 6'-0", 7'-0", OR 8'-0". FULL HEIGHT PANELS ARE PERMITTED TO BE 4'-0", 4'-6", 5'-0", 5'-6", 6'-0", 6'-6", 7'-0", 7'-6" OR 8'-0".

NOTE B
BOTTOM PANEL HEIGHTS ARE PERMITTED TO BE 4'-0" OR 4'-6". CONTRACTOR MAY INCREASE BOTTOM PANEL HEIGHTS AND USE UP TO AN 8FT (NON-STANDARD) MAXIMUM HEIGHT PANEL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. CENTER PANEL HEIGHT IS 4'-0".



NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

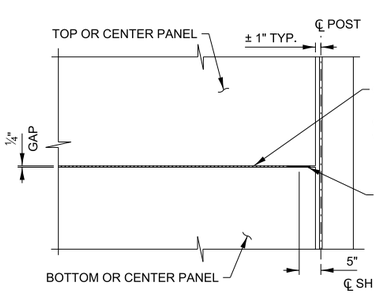
MIN ANGLE BETWEEN PANELS AT TYP POST



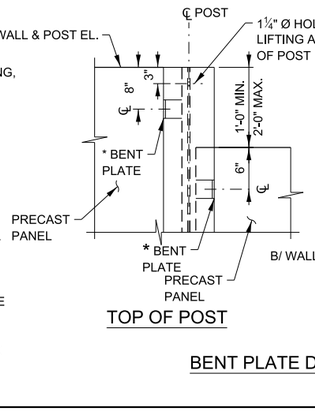
TOP PANEL COPING DETAIL

NOTES:

1. STRUCTURAL CAULK - SIKADUR 51 NS FLEXIBLE EPOXY CONTROL -JOINT SEALER / ADHESIVE OR EQUIVALENT. CAULK SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATION AND RECOMMENDATIONS.
2. BACKER ROD: MILE HIGH FOAM PRODUCT SIZED PER BACKER ROD MANUFACTURING, INC OR EQUIVALENT.
3. NON - STRUCTURAL CAULK SEALANT: SIKAFLEX 15 LM PER MANUFACTURERS STANDARD OR EQUIVALENT.
4. SHIMS: VERSA-A-SHIM HIGH IMPACT PLASTIC SHIMS ASTM D792 & ASTM D695
5. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
6. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.
7. THE OPTIONAL TONGUE AND GROOVE DETAIL MAY BE USED IN LIEU OF THE CAULK SHOWN IN THE HORIZONTAL JOINT DETAIL.



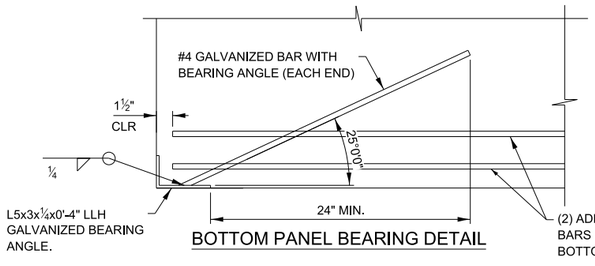
HORIZONTAL JOINT DETAIL



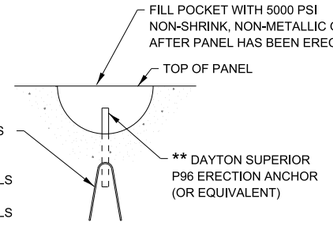
TOP OF POST

AT BEARING ANGLE

BENT PLATE DETAILS

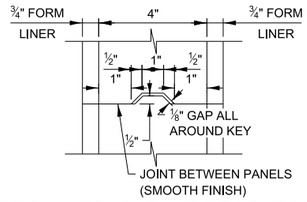


BOTTOM PANEL BEARING DETAIL



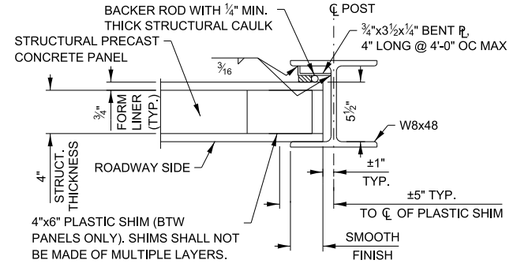
TYPICAL LIFTING INSERT DETAIL

** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

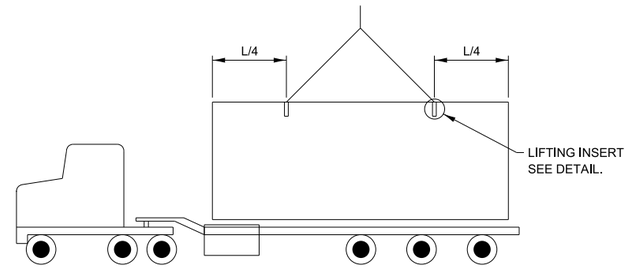


OPTIONAL TONGUE AND GROOVE DETAIL

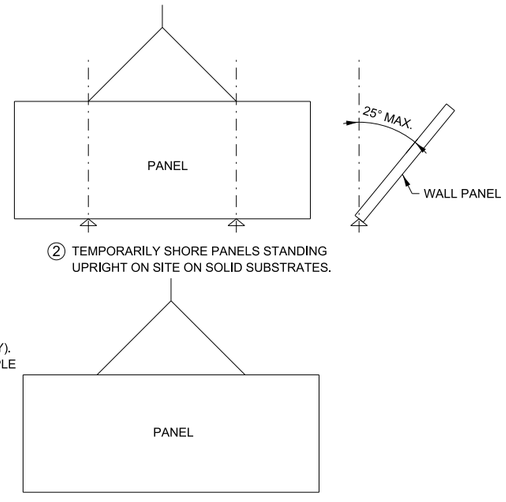
(IN LIEU OF SHIM AND CAULK)



PANEL CONNECTION TO POST DETAIL



① REMOVE PANELS FROM TRUCK WITH RIGGING.



② TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.

③ ERECT PANELS BETWEEN POSTS

SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

* STEEL BENT PLATE AT 4'-0" OC MAX. EACH FACE OF WEB, TYP. U.N.O. (MIN. 2 PLATES/PANEL)

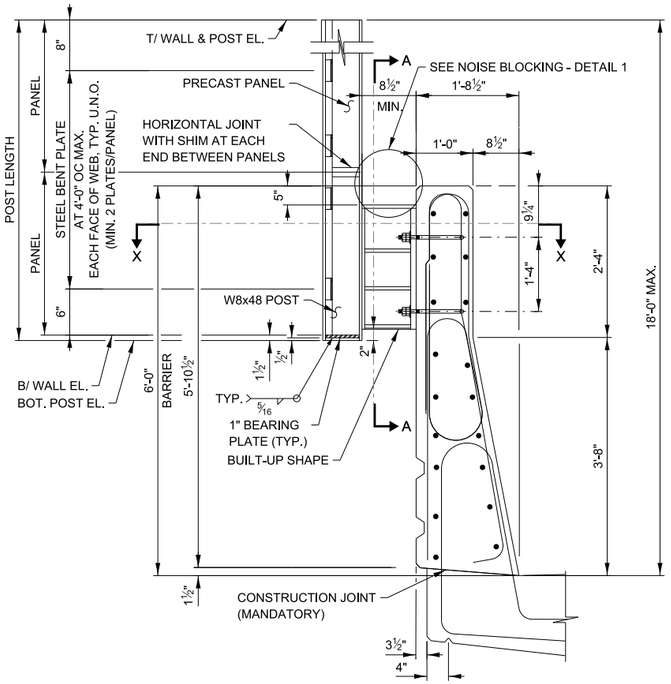
** MAXIMUM DIMENSION OF BEARING ANGLE BELOW BARRIER IS 6" AND 3" ABOVE THE TOP OF THE BARRIER.

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

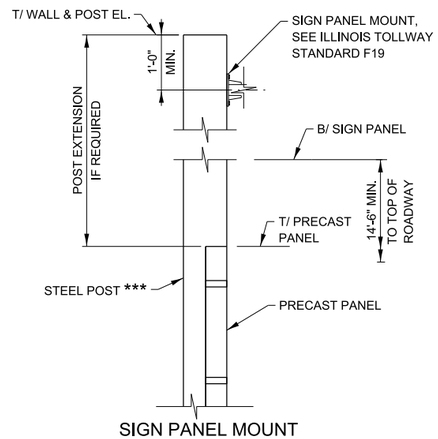
VERSION:	STANDARD:	SHEET:
2025-03	G12-05	2 OF 2



ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER - DETAILS

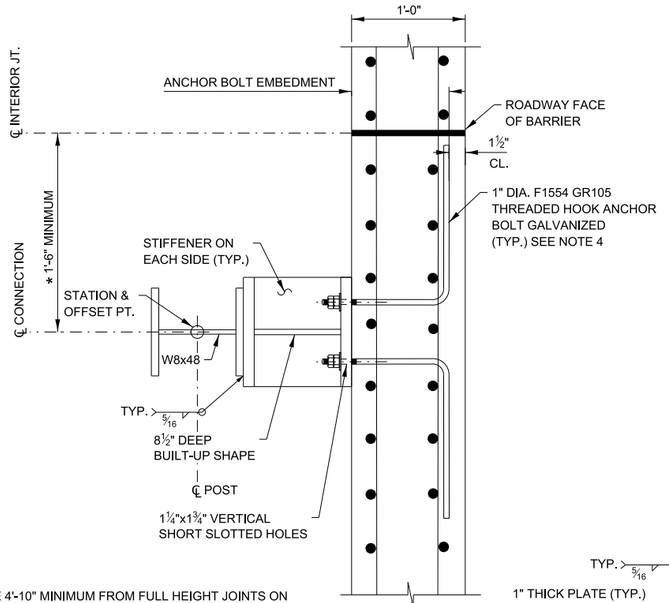
NOTES:

1. STEEL POST MAXIMUM SPACING IS 11'-8".
2. SLIPFORMING OF THE BARRIER IS NOT PERMITTED.
3. REFER TO ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR DECK REINFORCEMENT, JOINT DETAILS AND OTHER MISCELLANEOUS DETAILS NOT DETAILED IN THIS STANDARD.
4. ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE SUPPLIED BY THE FABRICATOR OF AN ADVANCE PROCUREMENT CONTRACT FOR THE STRUCTURAL STEEL POSTS, BENT ANCHOR BOLTS SHALL BE INSTALLED WITH ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER. SEE SPECIAL PROVISION FOR FURNISHING NOISE ABATEMENT WALL STRUCTURAL STEEL.
5. MINIMUM DISTANCE BETWEEN CENTERLINE OF POST AND CENTERLINE OF LIGHT POLE IS 4'-7" DESIRABLE AND 3'-7" MINIMUM.



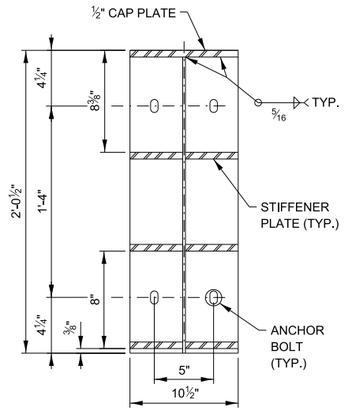
SIGN PANEL MOUNT POST EXTENSION DETAIL

*** STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A 17'-7½" POST WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19

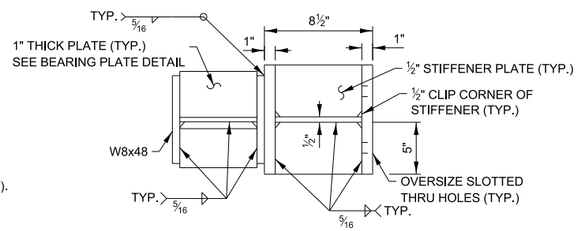


* USE 4'-10" MINIMUM FROM FULL HEIGHT JOINTS ON BRIDGES, OTHERWISE USE 1'-10" MINIMUM FOR END POSTS AND POSTS LOCATED ON APPROACH SLABS OR MOMENT SLABS.

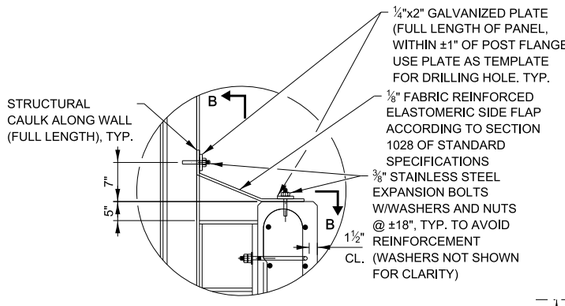
SECTION X-X



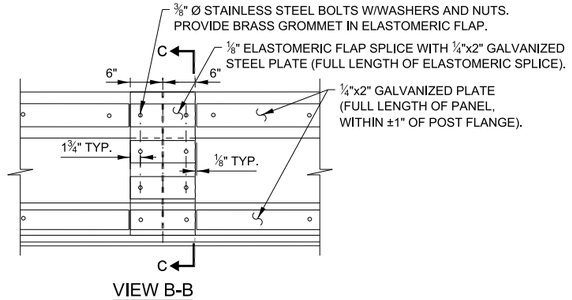
SECTION A-A



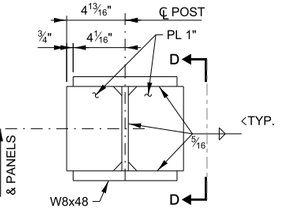
BUILT UP SHAPE



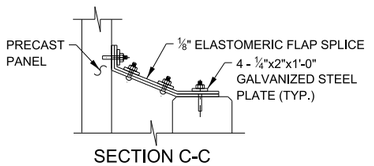
DETAIL 1 NOISE BLOCKING ASSEMBLY



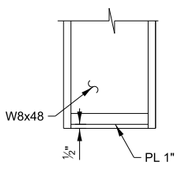
VIEW B-B AT ASSEMBLY SPLICE



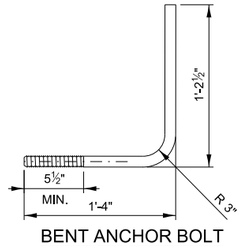
BEARING PLATE DETAIL



SECTION C-C



VIEW D-D



BENT ANCHOR BOLT

GENERAL NOTES

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
2. REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
4. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.
5. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
6. CONSTRUCTION CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
8TH EDITION DATED SEPTEMBER 2017.

DESIGN STRESSES

f'c = 4,000 PSI (CLASS BS). (BARRIERS)
f'c = 5,000 PSI AT 28 DAYS (CLASS PC)
(PRECAST CONCRETE NAW PANELS)
fy = 60,000 PSI (REINFORCEMENT)

GRADE 50, Fy = 50,000 PSI, ASTM A709 (AASHTO M270) - STRUCTURAL STEEL POST
GRADE 36, Fy = 36,000 PSI, ASTM A709 (AASHTO M270) ALL OTHER STEEL (UNLESS NOTED OTHERWISE)
ALL STEEL SHALL BE HOT - DIP GALVANIZED

DESIGN LOADING

CONCRETE = 150 PCF
STEEL = 490 PCF
WIND LOADS = 50PSF (STR III)
= 15PSF (SERV I)
VEHICLE IMPACT - 4KIPS APPLIED AT THE HIGHEST POINT UP TO 14FT ABOVE SURFACE OF PAVEMENT IN FRONT OF BARRIER.

PRECAST PANEL MAX. ALLOWABLE DEFLECTION - L/180

STEEL POST MAX. ALLOWABLE DEFLECTION - H/360

MISCELLANEOUS STEEL CONNECTION QUANTITY

DESCRIPTION	WEIGHT
BUILT-UP SHAPE	205 LBS.
BEARING PLATE (2 PIECES)	19 LBS.
STEEL BENT PLATE ALLOWANCE (8 PIECES)	29 LBS.
ANCHOR BOLT ASSEMBLY (4 BOLTS)	27 LBS.
TOTAL	280 LBS.
NOISE BLOCKING ASSEMBLY BETWEEN POSTS (2 PLATES)	3.4 PLF
NOISE BLOCKING ASSEMBLY SPLICE (4 PLATES)	7 LBS.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

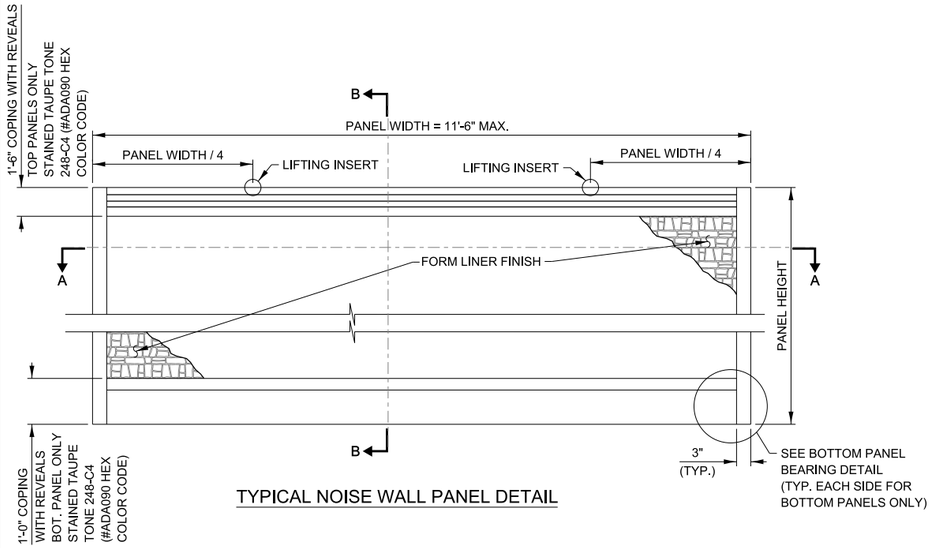
DATE:
02/23/2023

REVISIONS	
DATE	DESCRIPTION
02-23-2023	REV. DIM. TO BENT PL., BENT PL. SIZE, CONN. QUANTITIES & UPDATE LIFTING INSERT DETAIL NOTES
03-01-2022	UPDATE ERECTION ANCHOR CALLOUT CHANGE BENT PLATE TO 1" AND CLARIFY NOISE BLOCKING PL. LENGTH

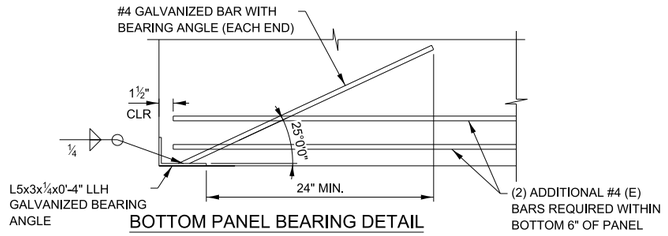
Illinois Tollway

CENTRAL TRI-STATE STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

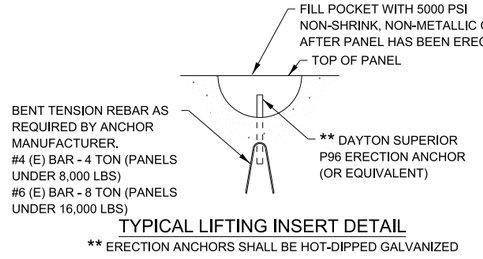
VERSION:	STANDARD:	SHEET:
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TYPICAL NOISE WALL PANEL DETAIL

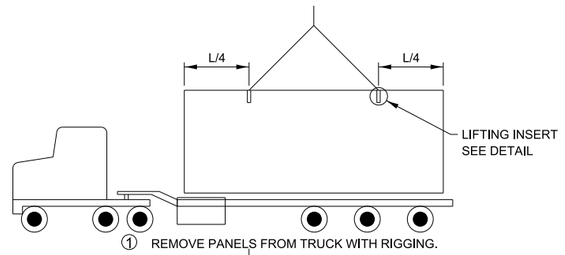


BOTTOM PANEL BEARING DETAIL

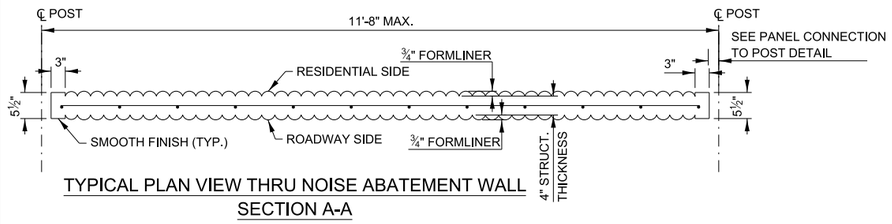


TYPICAL LIFTING INSERT DETAIL

** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

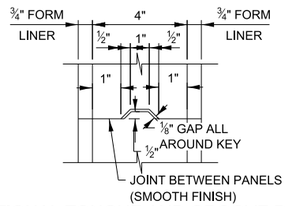


SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE



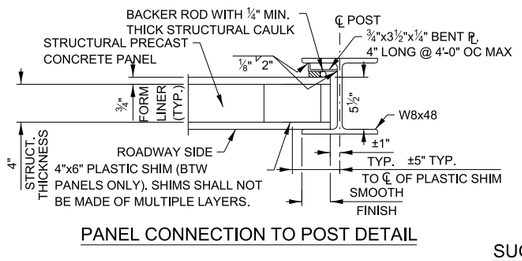
TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

SECTION A-A

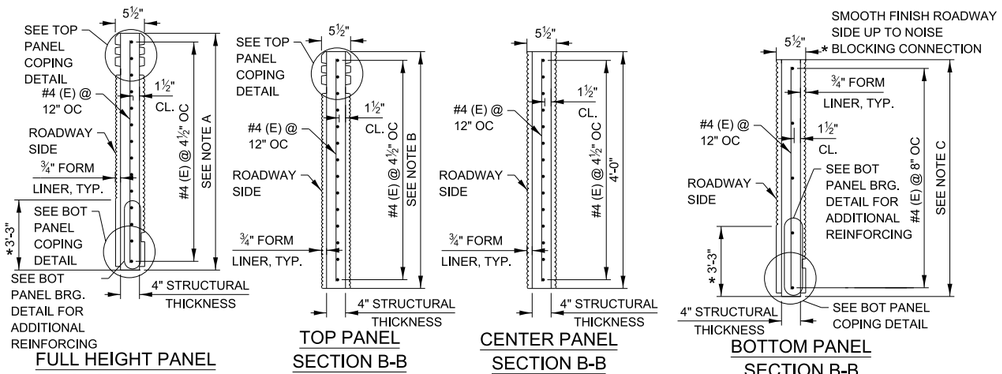


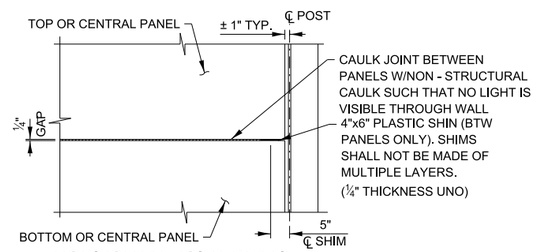
OPTIONAL TONGUE AND GROOVE DETAIL

(IN LIEU OF SHIM AND CAULK)



PANEL CONNECTION TO POST DETAIL





HORIZONTAL JOINT DETAIL

NOTES:

1. STRUCTURAL CAULK - SIKADUR 51 NS FLEXIBLE EPOXY CONTROL -JOINT SEALER / ADHESIVE OR EQUIVALENT. CAULK SHALL BE APPLIED PER MANUFACTURER5#32S SPECIFICATION AND RECOMMENDATIONS.
2. BACKER ROD: MILE HIGH FOAM PRODUCT SIZED PER BACKER ROD MANUFACTURING, INC OR EQUIVALENT.
3. NON - STRUCTURAL CAULK SEALANT: SIKAFLEX 15 LM PER MANUFACTURERS STANDARD OR EQUIVALENT.
4. SHIMS: VERSA-A-SHIM HIGH IMPACT PLASTIC SHIMS ASTM D792 & ASTM D695
5. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
6. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.
7. THE OPTIONAL TONGUE AND GROOVE DETAIL MAY BE USED IN LIEU OF THE CAULK SHOWN IN THE HORIZONTAL JOINT DETAIL.

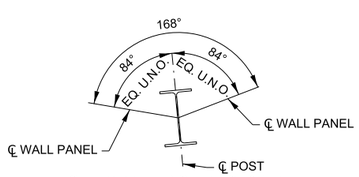
NOTE A
TO ACCOMMODATE VARYING HEIGHT NAW WITHIN ONE PANEL WITH TOP AND BOTTOM COPING, FULL HEIGHT PANEL IS PERMITTED TO BE 4'-0", 4'-6", 5'-0", 5'-6", 6'-0", 6'-6", 7'-0", 7'-6", OR 8'-0" TALL

NOTE B
TO ACCOMMODATE VARYING HEIGHT NAW, TOP PANEL WITH ONLY TOP COPING IS PERMITTED TO BE 4'-0", 5'-0", 6'-0", 7'-0" OR 8'-0" TALL

NOTE C
TO ACCOMMODATE BOTTOM STEPS IN PANEL, BOTTOM PANEL IS PERMITTED TO BE 4'-0" OR 4'-6" TALL. CONTRACTOR MAY INCREASE BOTTOM PANEL HEIGHTS AND USE UP TO AN 8FT (NON-STANDARD) MAXIMUM HEIGHT PANEL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

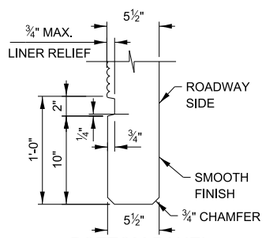
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
02/23/2023

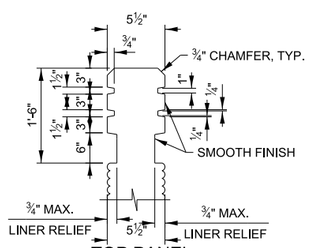


NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

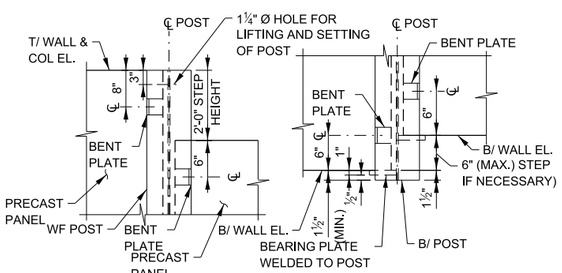
MIN ANGLE BETWEEN PANELS AT TYP POST



BOTTOM PANEL COPING DETAIL



TOP PANEL COPING DETAIL



TOP OF POST

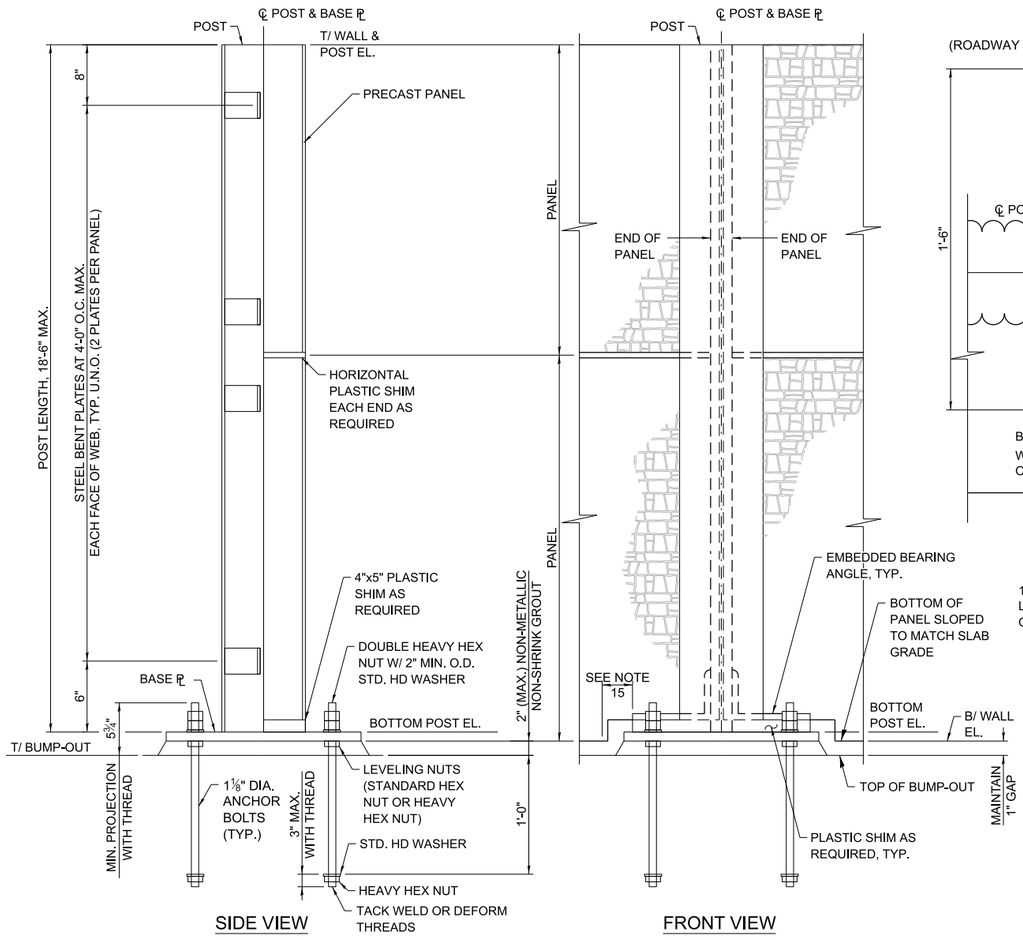
AT BEARING ANGLE

BENT PLATE DETAILS

Illinois Tollway

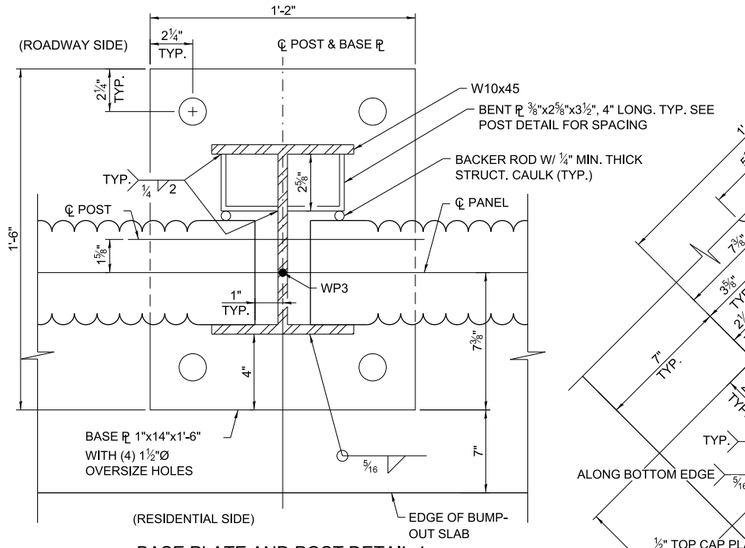
CENTRAL TRI-STATE STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

VERSION:	STANDARD:	SHEET:
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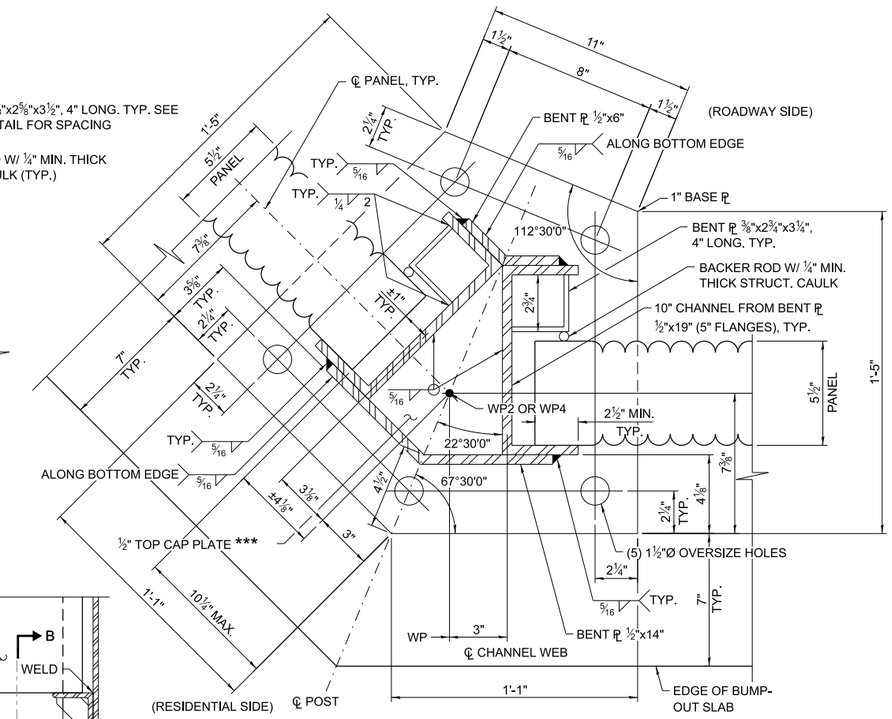


POST DETAIL*

* TYPICAL POST SHOWN, OTHERS SIMILAR

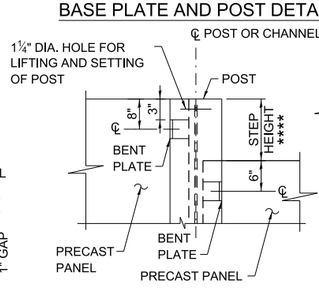


BASE PLATE AND POST DETAIL 1



BASE PLATE AND POST DETAIL 2

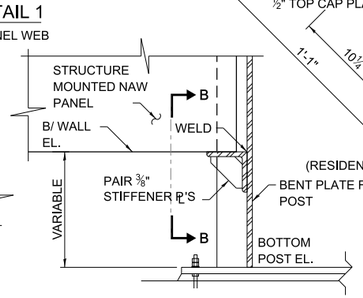
*** TOP CAP PLATE (NOT SHOWN) WELDED ALL AROUND PERIMETER USING ¼" FILLET WELD TO COMPLETELY SEAL POST INTERIOR. SEE DETAIL BELOW.



STEP DETAIL

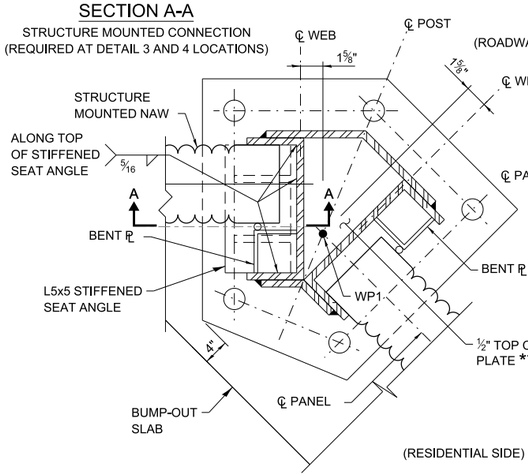
AT BUMP-OUT ONLY

**** STEP IN 6" INCREMENTS UP TO 2'-0" IF NECESSARY.

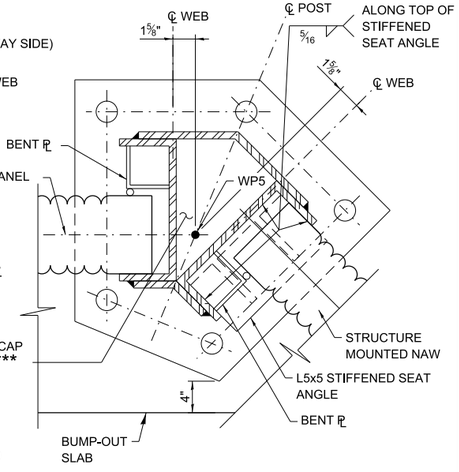


SECTION A-A

STRUCTURE MOUNTED CONNECTION (REQUIRED AT DETAIL 3 AND 4 LOCATIONS)



BASE PLATE AND POST DETAIL 3**



BASE PLATE AND POST DETAIL 4**

** BASE PLATE AND POST DETAILS 3 AND 4 ARE SIMILAR TO BASE PLATE AND POST DETAIL 2, EXCEPT AS NOTED.

GENERAL NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
2. REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
4. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.
5. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
6. CONSTRUCTION CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
7. STRUCTURAL STEEL SHALL BE PAINTED USING A TOLLWAY APPROVED TWO - COAT PAINT SYSTEM MANUFACTURED BY IDOT APPROVED PRODUCERS. THE FIRST COAT SHALL BE EPOXY POLYAMIDE MEETING THE REQUIREMENTS OF ARTICLE 1008.05 (d) OF THE STANDARD SPECIFICATIONS. THE SECOND COAT SHALL BE ALIPHATIC URETHANE MEETING THE REQUIREMENTS OF ARTICLE 1008.05 (e) OF THE STANDARD SPECIFICATIONS. THE PAINT SYSTEM SHALL BE APPLIED ACCORDING TO THE APPLICABLE PORTIONS OF SECTION 506 AND THE GALVANIZE AND PAINT MANUFACTURER'S RECOMMENDATIONS.
8. THE COLOR OF THE STRUCTURAL STEEL FINAL COAT PAINT SHALL MATCH THE COLOR OF THE PRECAST CONCRETE PANEL STAIN OF SHERWIN-WILLIAMS 7633, TAUPE TONE 248-C4 (#ADA090 HEX COLOR CODE).
9. STRUCTURAL CAULK - SIKADUR 51 NS FLEXIBLE EPOXY CONTROL -JOINT SEALER / ADHESIVE OR EQUIVALENT. CAULK SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATION AND RECOMMENDATIONS.
10. BACKER ROD: MILE HIGH FOAM PRODUCT SIZED PER BACKER ROD MANUFACTURING, INC OR EQUIVALENT.
11. NON -STRUCTURAL CAULK SEALANT: SIKAFLEX 15 LM PER MANUFACTURER'S STANDARD OR EQUIVALENT.
12. SHIMS: VERS-A-SHIM HIGH IMPACT PLASTIC SHIMS ASTM D792 & D695. SHIMS SHALL NOT BE MADE OF MULTIPLE LAYERS.
13. GROUT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1024.02 OF THE STANDARD SPECIFICATIONS. GROUT UNDER POSTS PRIOR TO INSTALLATION OF THE PANELS.
14. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ANY PROPOSED HOLES IN THE BUILT-UP POST FOR GALVANIZING AND/OR ERECTION.
15. PROVIDE 3" GAP IN NOISE BLOCKING ASSEMBLY AT END POSTS.

DESIGN LOADS

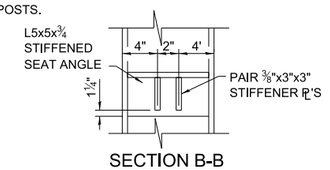
WIND LOAD = 50 PSF (STR. III)
= 15 PSF (SERV I)

DEFLECTION:
PANEL = L/180
POST = H/360

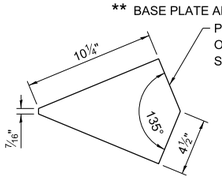
DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. 8TH EDITION DATED SEPTEMBER 2017.

DESIGN STRESSES



SECTION B-B



TOP CAP PLATE

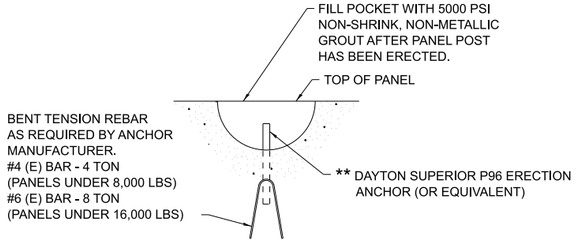
APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER — DATE: 03/01/2023

REVISIONS	
DATE	DESCRIPTION
03-01-2023	REV. DIM. TO BENT PL., REDUCE BENT PL. LEG, REV. LIFTING INSERT NOTES & ADD NOISE BLOCKING DETAIL
03-01-2022	UPDATE ERECTION ANCHOR CALLOUT

Illinois Tollway

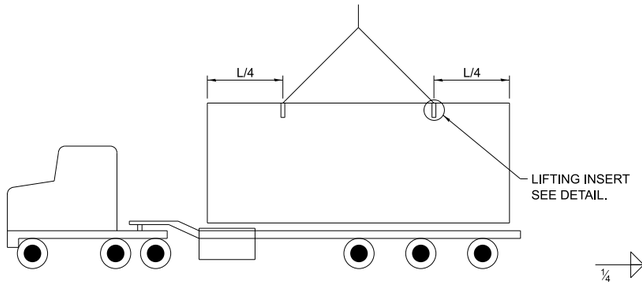
CENTRAL TRI-STATE BUMP-OUT MOUNTED NOISE ABATEMENT WALL DETAILS

VERSION:	STANDARD:	SHEET:
2023-03	G14-04	1 OF 2

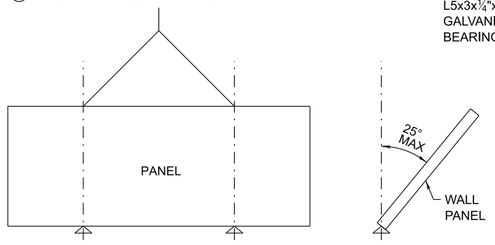


TYPICAL LIFTING INSERT DETAIL

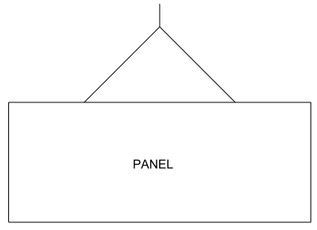
** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED



① REMOVE PANELS FROM TRUCK WITH RIGGING.



② TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.

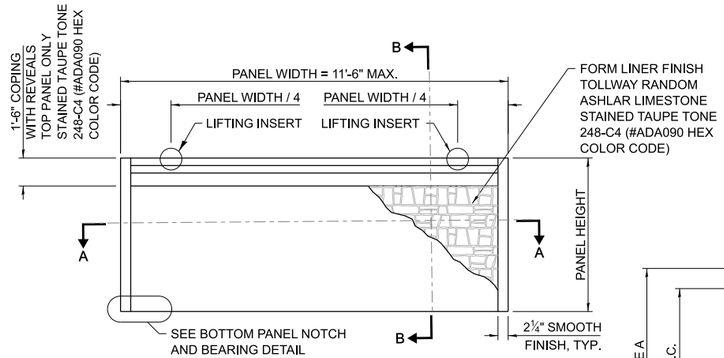


③ ERECT PANELS BETWEEN POSTS

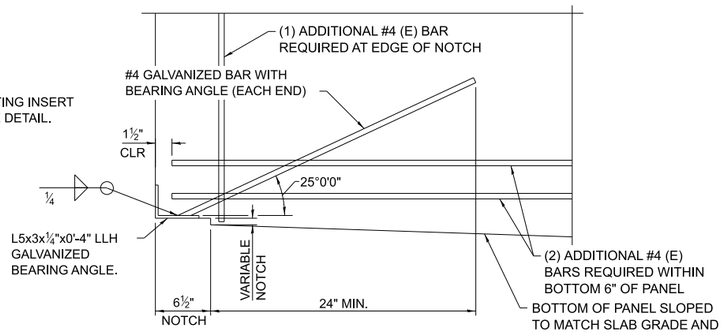
SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

NOTES:

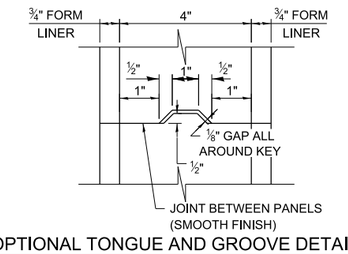
1. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
2. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.



TYPICAL NOISE WALL PANEL DETAIL

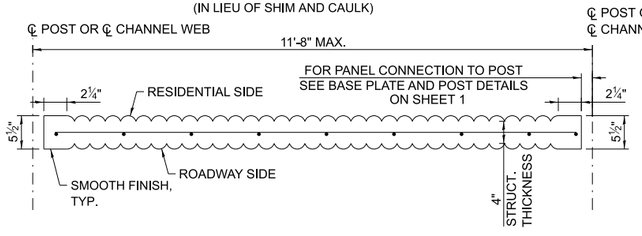


BOTTOM PANEL NOTCH AND BEARING DETAIL



OPTIONAL TONGUE AND GROOVE DETAIL

(IN LIEU OF SHIM AND CAULK)



TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

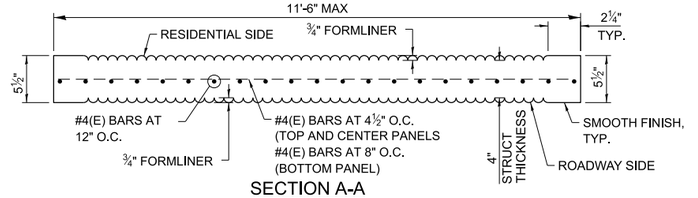
MISCELLANEOUS STEEL QUANTITY

W POST

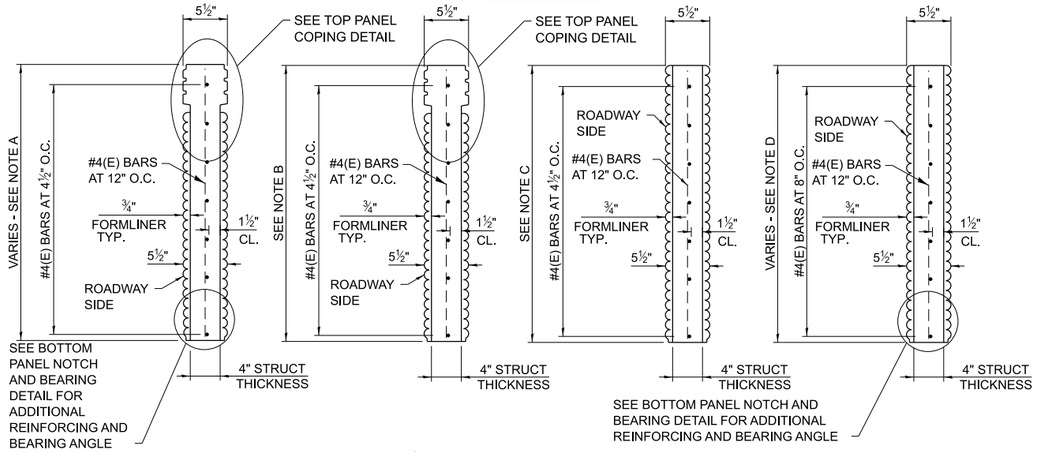
DESCRIPTION	WEIGHT
BASE PLATE	71 LBS.
BENT PLATE ALLOWANCE (16 PIECES)	44 LBS.
ANCHOR BOLT ASSEMBLY (4 EACH)	32 LBS.
TOTAL	147 LBS.

BUILT-UP POST

DESCRIPTION	WEIGHT
BASE PLATE	95 LBS.
TOP CAP PLATE	7 LBS.
BENT PLATE ALLOWANCE (16 PIECES)	44 LBS.
ANCHOR BOLT ASSEMBLY (5 EACH)	39 LBS.
STRUCTURE MOUNTED CONNECTION	21 LBS.
TOTAL	206 LBS.



SECTION A-A



SECTION B-B

SECTION B-B

SECTION B-B

SECTION B-B

NOTE A

TO ACCOMMODATE VARYING SLAB GRADES, FULL HEIGHT PANEL WILL VARY TO FOLLOW SLOPE ON BUMP-OUT SLAB AND TO MAINTAIN A 1" GAP.

NOTE B

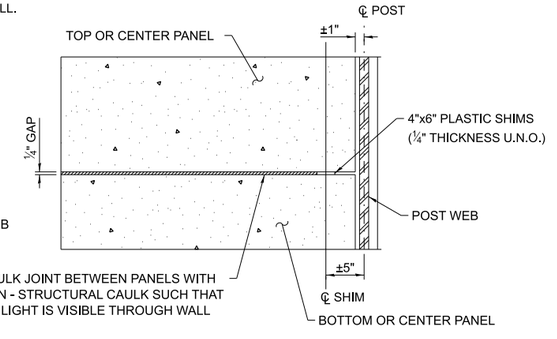
TO ACCOMMODATE VARYING HEIGHT NAW, TOP PANEL IS PERMITTED TO BE 4'-0", 5'-0", 6'-0", 7'-0" OR 8'-0" TALL.

NOTE C

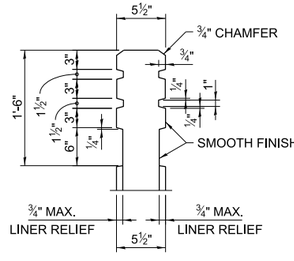
TO ACCOMMODATE VARYING HEIGHT NAW, CENTER PANEL IS PERMITTED TO BE 4'-0" OR 4'-6" TALL. CONTRACTOR MAY INCREASE THE STANDARD CENTER PANEL HEIGHTS, MAXIMUM 8FT, TO MINIMIZE THE NUMBER OF JOINTS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

NOTE D

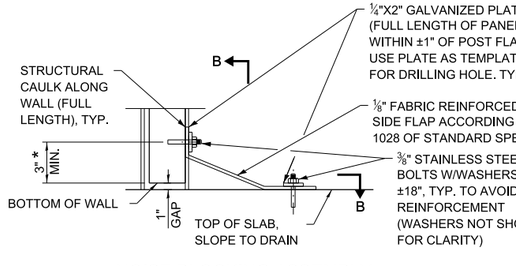
TO ACCOMMODATE VARYING SLAB GRADES, BOTTOM PANEL HEIGHT WILL VARY TO FOLLOW SLOPE ON BUMP-OUT SLAB AND TO MAINTAIN A 1" GAP. PANEL HEIGHT SHOULD NOT EXTEND ABOVE BOTTOM OF STRUCTURE MOUNTED BOTTOM PANEL.



HORIZONTAL JOINT DETAIL



TOP PANEL COPING DETAIL



NOISE BLOCKING ASSEMBLY

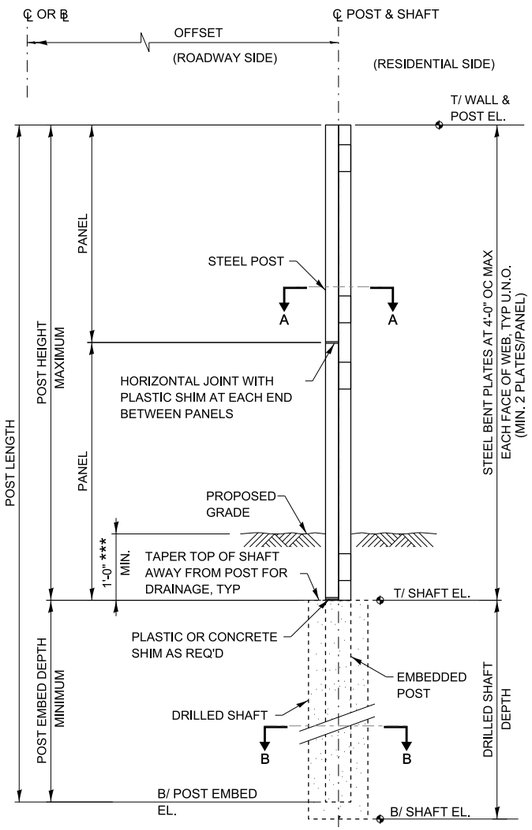
* ADJUST THE HEIGHT OF THE NOISE BLOCKING ASSEMBLY TO PROVIDE 1% SLOPE TOWARDS THE 3" OPENING AT THE END POSTS.

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2023

Illinois Tollway

CENTRAL TRI-STATE BUMP-OUT MOUNTED NOISE ABATEMENT WALL DETAILS

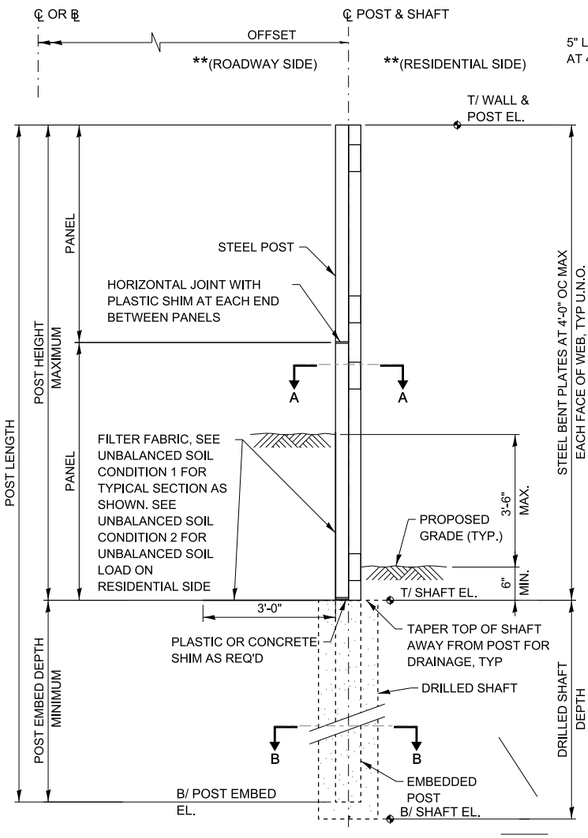
VERSION:	STANDARD:	SHEET:
2023-03	G14-04	2 OF 2



TYPICAL CROSS SECTION

(BALANCED SOIL LOAD)

*** BALANCED SOIL CONDITION CAN ACCOMMODATE UP TO A 9" UNBALANCED SOIL LOAD

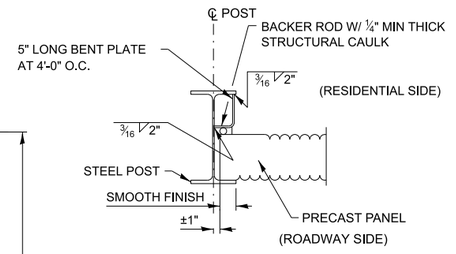


TYPICAL CROSS SECTION

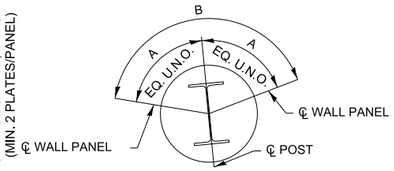
(UNBALANCED SOIL LOAD)

** TYPICAL SECTION SHOWS ROADWAY ON THE HIGH SIDE. DETAILS OF POST FOR ROADWAY ON THE LOW SIDE ARE MIRRORED.

* UNBALANCED SOIL LOAD VARIES 9" (MIN.) AND 3'-6" (MAX.) WHEN NAW IS PLACED OUTSIDE CLEAR ZONE. FOR NAW'S WITHIN CLEAR ZONE ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL AND TRAFFIC BARRIER GUIDELINES FOR TEST LEVEL AND DROP OFF REQUIREMENTS SHALL APPLY.

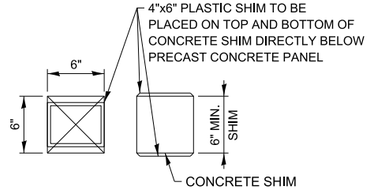


PANEL TO POST CONNECTION DETAIL



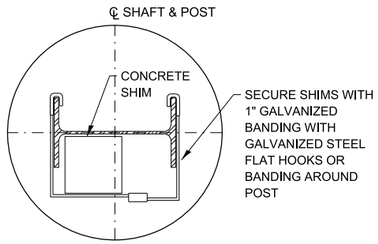
NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

MIN ANGLE BETWEEN PANELS AT TYP POST



CONCRETE SHIM DETAIL 1

SHIMS TO BE SECURED TO THE POST, SEE DETAIL 2.



SHIM TO POST CONNECTION DETAIL 2

GENERAL NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
2. REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
4. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.
5. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
6. CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
7. END POSTS SHALL HAVE NO BENT PLATES ON EXPOSED SIDE.
8. THE FOUNDATION DETAILS SHOWN ARE SOIL DEPENDENT. THE FOUNDATION DETAILS FOR COHESIVE SOILS ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TONS/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOB SITE. THE FOUNDATION DETAILS FOR COHESIONLESS SOILS ARE BASED ON THE PRESENCE OF MOSTLY COHESIONLESS CLEAN SANDS, WITH FINES CONTENT LESS THAN 12% AND AN AVERAGE FRICTION ANGLE (PHI) GREATER THAN 30 DEGREES, WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. THE IDOT GEOTECHNICAL MANUAL SHALL BE USED TO CORRELATE AVERAGE STANDARD PENETRATION RESISTANCE "N - VALUES"(BLOW COUNTS PER FOOT) TO FRICTION ANGLES (PHI), TAKING INTO ACCOUNT FIELD CORRECTIONS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. 9TH EDITION DATED APRIL 2020.

ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION

ILLINOIS TOLLWAY GEOTECHNICAL MANUAL, LATEST EDITION

DESIGN LOADS

GROUND MOUNTED

WIND LOAD =35 PSF (STR. III)
=15 PSF (SERV I)

RETAINED EARTH:
SOIL HORIZONTAL LOAD = 120PCF

DEFLECTION:
PANEL = L/240
POST = H/360

DESIGN STRESSES

PRECAST CONCRETE (GROUND MOUNTED NAW):
f'c = 5,000 PSI AT 28 DAYS (CLASS PC)
f'c = 3,500 PSI AT 5 DAYS (SHIPPING)
DENSITY = 150 PCF

FOUNDATION CONCRETE CLASS SI:
f'c = 3,500 PSI AT 14 DAYS PER SECTION 1020 OF IDOT STANDARD SPECIFICATIONS.

STEEL POSTS:
ASTM A709 (AASHTO M270)
GRADE 50, fy = 50 KSI
ALL STEEL POSTS SHALL BE HOT - DIP GALVANIZED

BENT PLATE AND BEARING ANGLES:
ASTM A709 (AASHTO M270)
GRADE 36, fy = 36 KSI U.N.O.
ALL STEEL SHALL BE HOT - DIP GALVANIZED

REINFORCING STEEL:
fy = 60,000 PSI (EPOXY COATED)

POST & DRILLED SHAFT DESIGN FOR COHESIVE SOILS

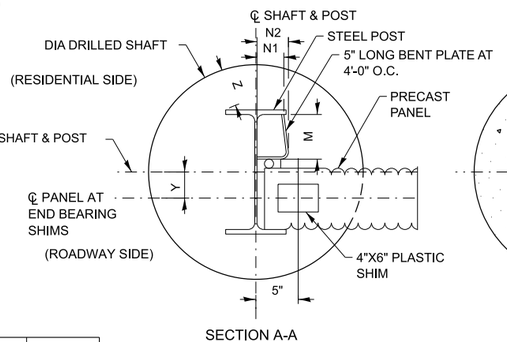
NAW TYPE	MAX POST HEIGHT	MIN POST EMBED DEPTH	MAX DRILLED SHAFT SPACING	DRILLED SHAFT DEPTH	STEEL POST SIZE	Y	BENT PLATE M x N1 x THICK.	N2	Z	DIA	A	B
NON-CRASHWORTHY GROUND MOUNTED I	15'-0"	10'-0"	20'-0"	12'-0"	W18X35 ^	3 15/16"	7"x2 5/8"x 3/8"	3½"	5⅝"	2'-6"	90°00'00"	180°00'00"
NON-CRASHWORTHY GROUND MOUNTED II	20'-0"	13'-0"	20'-0"	16'-0"	W21X50 ^	5⅜"	10"x2¾"x⅜"	3⅜"	4⅛"	2'-6"	86°01'13"	172°02'26"
NON-CRASHWORTHY GROUND MOUNTED III	25'-0"	12'-6"	20'-0"	15'-0"	W21X68	5⅜"	10"x3½"x⅜"	3½"	6⅝"	3'-0"	86°25'00"	172°50'00"
NON-CRASHWORTHY GROUND MOUNTED IV	28'-0"	13'-6"	20'-0"	15'-6"	W21X83	5⅜"	10"x3½"x⅜"	3½"	9½"	3'-6"	86°49'09"	173°38'18"

^ USE W18x65 FOR NON-CRASHWORTHY GROUND MOUNTED I AND W21X68 FOR NON-CRASHWORTHY GROUND MOUNTED II WHEN SIGN PANEL MOUNT POST EXTENSION IS USED TO ACCOMMODATE A SIGN PANEL ATTACHED TO POST

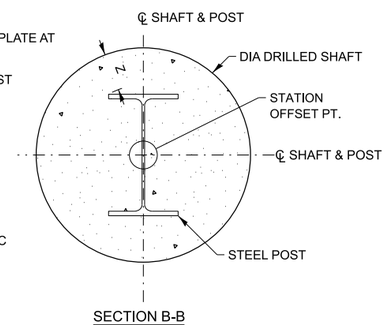
POST & DRILLED SHAFT DESIGN FOR COHESIONLESS SOILS

NAW TYPE	MAX POST HEIGHT	MIN POST EMBED DEPTH			MAX DRILLED SHAFT SPACING	DRILLED SHAFT DEPTH			STEEL POST SIZE	Y	BENT PLATE M x N1 x THICK.	N2	Z	DIA	A	B
		PHI=30°-34°	PHI=35°-39°	PHI=40°+		PHI=30°-34°	PHI=35°-39°	PHI=40°+								
NON-CRASHWORTHY GROUND MOUNTED I	15'-0"	12'-6"	11'-6"	10'-0"	20'-0"	14'-6"	12'-6"	11'-6"	W21X44^^	5⅜"	10"x2¾"x⅜"	3⅛"	4⅛"	2'-6"	90°00'00"	180°00'00"
NON-CRASHWORTHY GROUND MOUNTED II	20'-0"	13'-6"	12'-0"	11'-0"	20'-0"	16'-0"	14'-0"	12'-6"	W24X55^^	6 13/16"	12¾"x2 7/8"x⅜"	3⅜"	2 11/16"	2'-6"	86°12'14"	172°24'28"
NON-CRASHWORTHY GROUND MOUNTED III	25'-0"	14'-0"	12'-6"	11'-6"	20'-0"	17'-6"	15'-0"	13'-6"	W27X84	8 13/16"	15½"x4⅜"x⅜"	4⅜"	3¾"	3'-0"	86°37'46"	173°15'22"
NON-CRASHWORTHY GROUND MOUNTED IV	28'-0"	14'-0"	12'-6"	11'-6"	20'-0"	17'-0"	15'-0"	13'-6"	W30X90	9⅝"	18½"x4⅝"x⅜"	4⅝"	5⅜"	3'-6"	85°33'22"	171°06'44"

^^ USE W21x68 FOR NON-CRASHWORTHY GROUND MOUNTED I AND W24X76 FOR NON-CRASHWORTHY GROUND MOUNTED II WHEN SIGN PANEL MOUNT POST EXTENSION IS USED TO ACCOMMODATE A SIGN PANEL ATTACHED TO POST



SECTION A-A



SECTION B-B

APPROVED BY:

Manar Nashif

CHIEF ENGINEERING OFFICER

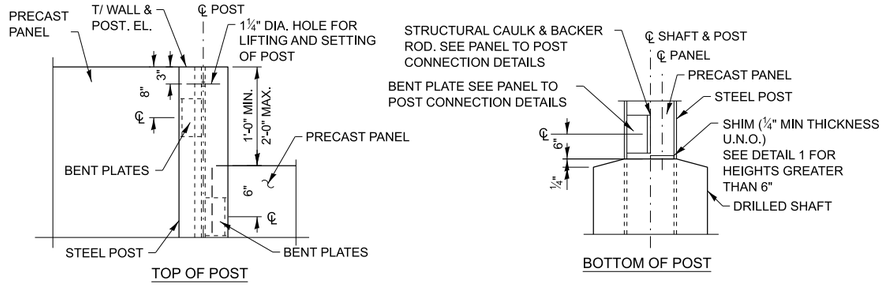
DATE: 02/23/2023

REVISIONS	
DATE	DESCRIPTION
02-23-2023	REV. LIFTING INSERT NOTES, DIM.
	GAP IN 90 DEG. TURN DETAIL &
	INC. SMOOTH DIM. ON BACK FACE
	TO MATCH ALL PANELS
03-01-2022	UPDATE ERECTION ANCHOR
	CALLOUT

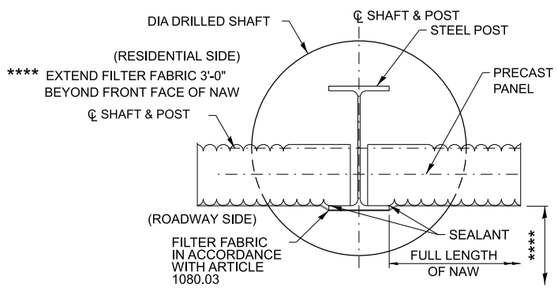
Illinois Tollway

NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

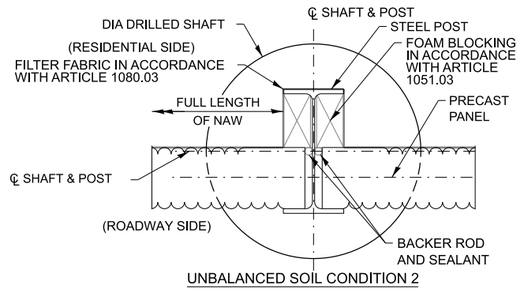
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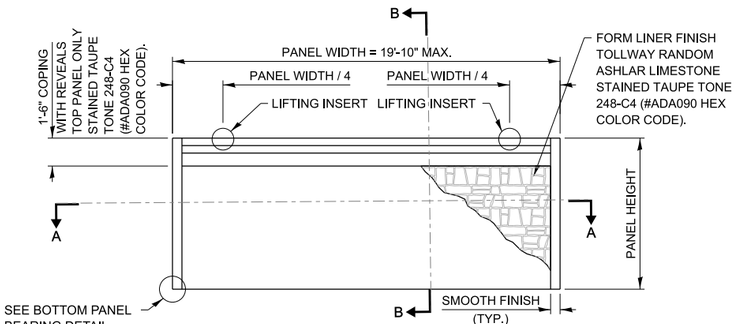
BENT PLATE DETAILS



UNBALANCED SOIL CONDITION 1

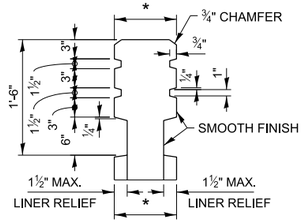


UNBALANCED SOIL CONDITION 2

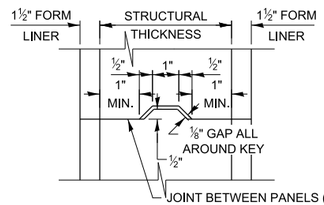


TYPICAL NOISE WALL PANEL DETAIL

* 9" FOR UNBALANCED SOIL LOADS OR 7" FOR ALL OTHER CONDITIONS



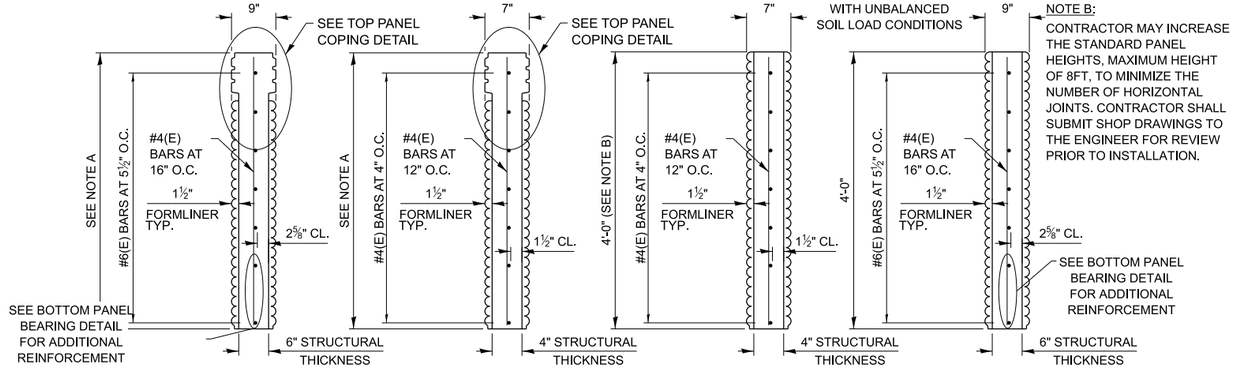
TOP PANEL COPING DETAIL



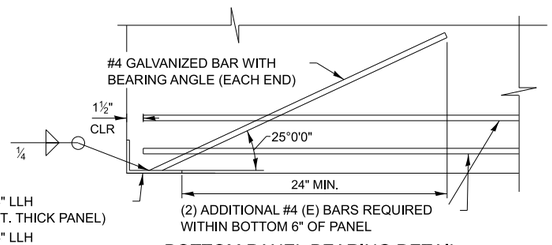
OPTIONAL TONGUE AND GROOVE DETAIL

(IN LIEU OF SHIM AND CAULK)

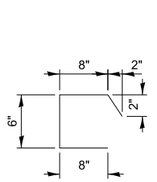
NOTE A:
TO ACCOMMODATE VARYING HEIGHT NAW, FULL HEIGHT AND TOP PANELS ARE PERMITTED TO BE 4'-0", 5'-0", 6'-0", 7'-0" OR 8'-0" TALL



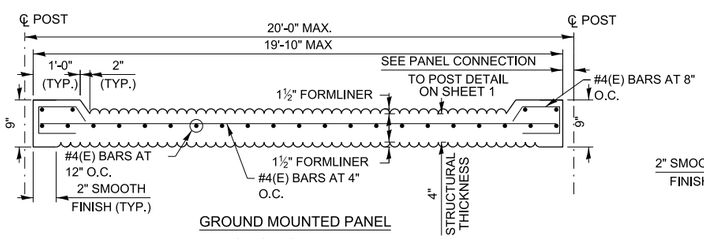
NOTE B:
CONTRACTOR MAY INCREASE THE STANDARD PANEL HEIGHTS, MAXIMUM HEIGHT OF 8FT, TO MINIMIZE THE NUMBER OF HORIZONTAL JOINTS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.



BOTTOM PANEL BEARING DETAIL

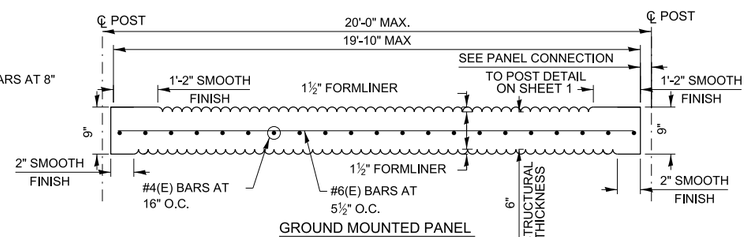


END BAR DETAIL



GROUND MOUNTED PANEL

SECTION A-A



GROUND MOUNTED PANEL (UNBALANCED SOIL LOAD)

SECTION A-A

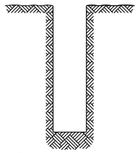
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
02/23/2023

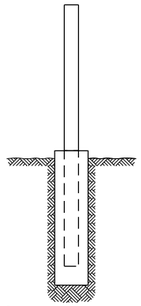
Illinois Tollway

NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

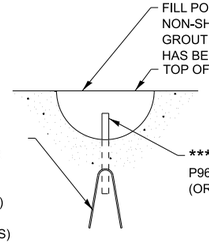
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① DRILL SHAFTS



② POUR CONCRETE AND SET EMBEDDED POSTS

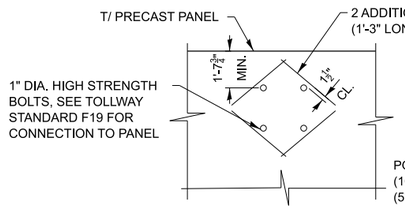


TYPICAL LIFTING INSERT DETAIL

*** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

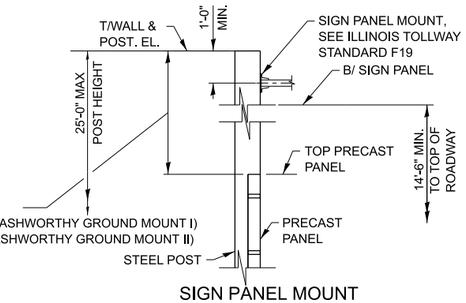
NOTES:

1. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
2. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.



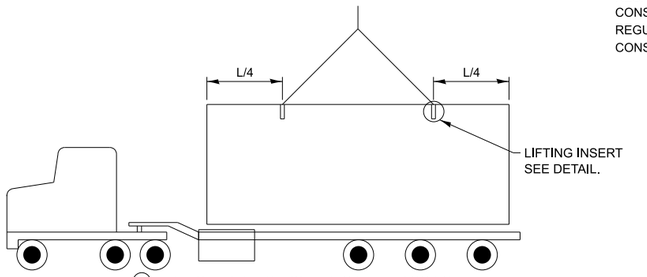
SIGN PANEL MOUNT TO PANEL DETAIL

PRECAST PANELS HAVE BEEN DESIGNED TO ACCOMMODATE SIGN PANEL MOUNTED WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19. MIN. PANEL HEIGHT SUPPORTING SIGN SHALL BE 5'-0".

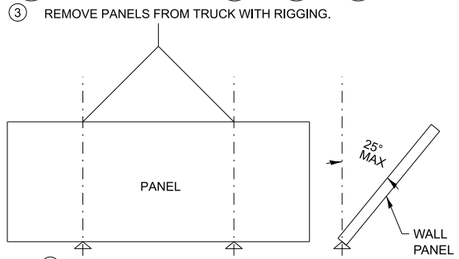


SIGN PANEL MOUNT POST EXTENSION DETAIL

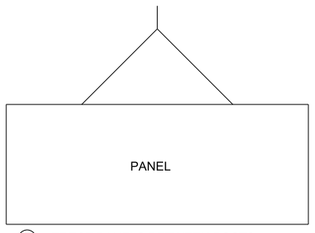
STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A POST EXTENSION WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19 UP TO A MAXIMUM POST HEIGHT OF 25'-0"



③ REMOVE PANELS FROM TRUCK WITH RIGGING.

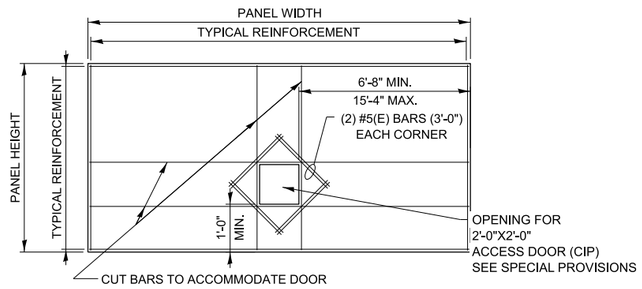


④ TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.

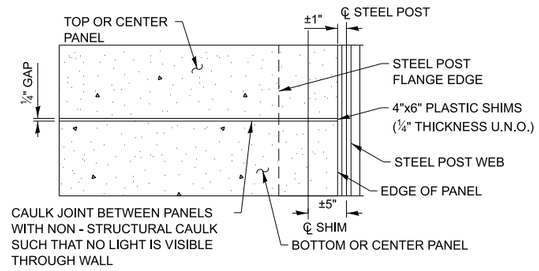


⑤ ERECT PANELS BETWEEN POSTS

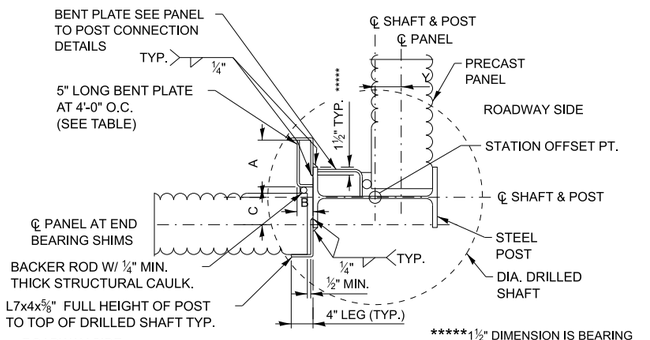
SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE



FIRE HYDRANT ACCESS OPENING DETAIL



HORIZONTAL JOINT DETAIL



90° TURN DETAIL

*****1½" DIMENSION IS BEARING LENGTH OF THE L7x4x⅝" ANGLE ON THE POST FLANGE

90° TURN BENT PLATE TABLE FOR COHESIVE SOILS

NAW TYPE	BENT PLATE A x B x THICK.	DIM. C
NON-CRASHWORTHY GROUND MOUNTED I	6"x3"x⅜"	3⅜"
NON-CRASHWORTHY GROUND MOUNTED II	6½"x3"x⅜"	3⅝"
NON-CRASHWORTHY GROUND MOUNTED III	8½"x3"x⅜"	4½"
NON-CRASHWORTHY GROUND MOUNTED IV	8½"x3"x⅜"	4⁹⁄₁₆"

90° TURN BENT PLATE TABLE FOR COHESIONLESS SOILS

NAW TYPE	BENT PLATE A x B x THICK.	DIM. C
NON-CRASHWORTHY GROUND MOUNTED I	6½"x3"x⅜"	3⅝"
NON-CRASHWORTHY GROUND MOUNTED II	7"x3"x⅜"	3⅞"
NON-CRASHWORTHY GROUND MOUNTED III	10"x3"x⅜"	5⅜"
NON-CRASHWORTHY GROUND MOUNTED IV	10¼"x3"x⅜"	5⁹⁄₁₆"

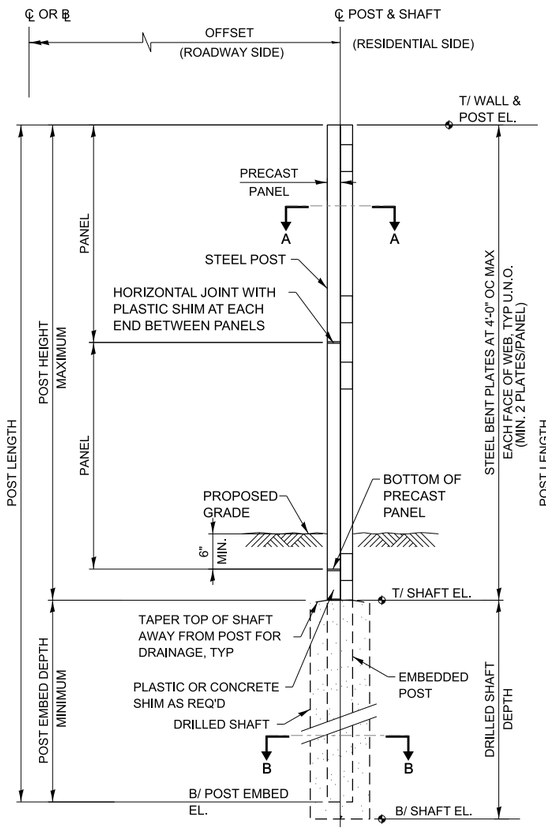
APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER

DATE: 02/23/2023

Illinois Tollway

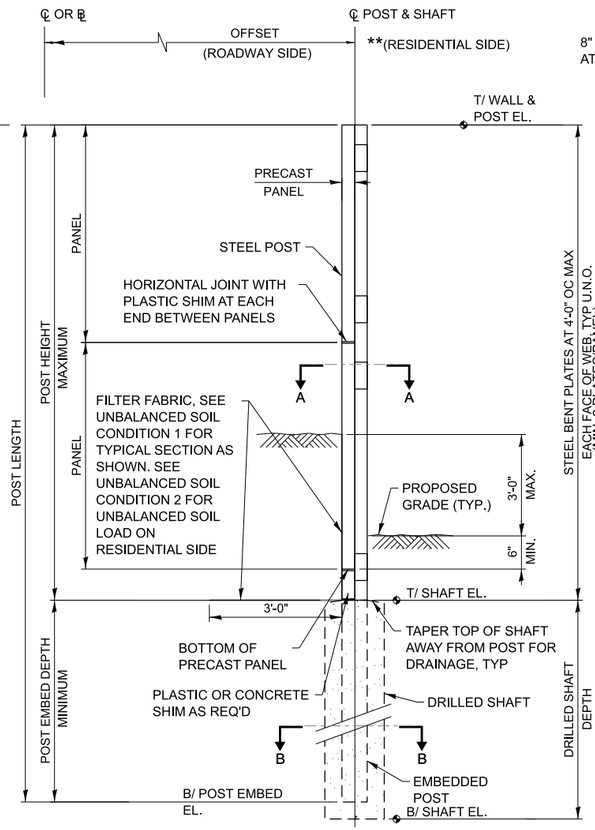
NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

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TYPICAL CROSS SECTION

(BALANCED SOIL LOAD)

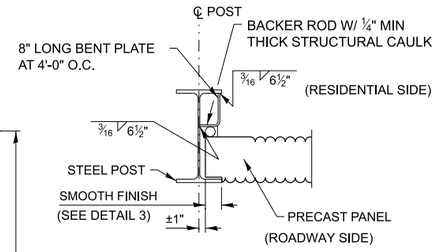


TYPICAL CROSS SECTION

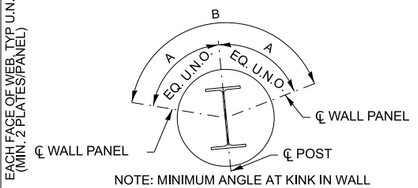
(UNBALANCED SOIL LOAD)

** TYPICAL SECTION SHOWS ROADWAY ON THE HIGH SIDE. DETAILS OF POST FOR ROADWAY ON THE LOW SIDE ARE MIRRORED.

* 3'-0" IS MAX. UNBALANCED SOIL LOAD WHEN NAW IS PLACED INSIDE CLEAR ZONE TO MAINTAIN TL-4 TEST LEVEL.

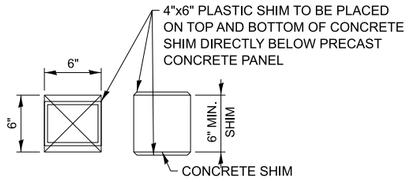


PANEL TO POST CONNECTION DETAIL



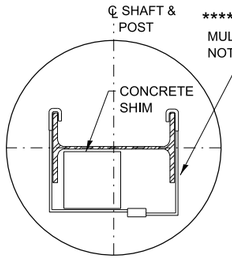
NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

MIN ANGLE BETWEEN PANELS AT TYP POST



CONCRETE SHIM DETAIL 1

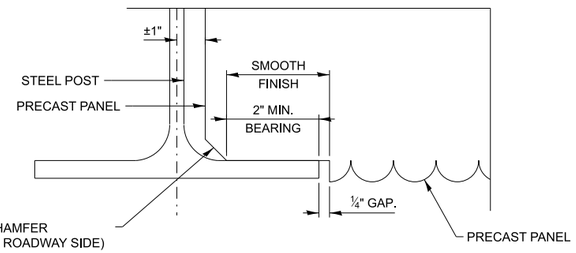
SHIMS TO BE SECURED TO THE POST SEE DETAIL 2



**** BANDING MAY BE ELIMINATED IF MULTIPLE CONCRETE SHIMS ARE NOT BEING STACKED.

SECURE SHIMS WITH 1" GALVANIZED BANDING WITH GALVANIZED STEEL FLAT HOOKS OR BANDING AROUND POST ****

SHIM TO POST CONNECTION DETAIL 2



DETAIL 3

GENERAL NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
2. REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
4. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.
5. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
6. CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
7. END POSTS SHALL HAVE NO BENT PLATES ON EXPOSED SIDE.
8. THE FOUNDATION DETAILS SHOWN ARE SOIL DEPENDENT. THE FOUNDATION DETAILS FOR COHESIVE SOILS ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TONS/SQ. FT. WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOB SITE. THE FOUNDATION DETAILS FOR COHESIONLESS SOILS ARE BASED ON THE PRESENCE OF MOSTLY COHESIONLESS CLEAN SANDS, WITH FINES CONTENT LESS THAN 12% AND AN AVERAGE FRICTION ANGLE (PHI) GREATER THAN 30 DEGREES, WHICH SHALL BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. THE IDOT GEOTECHNICAL MANUAL SHALL BE USED TO CORRELATE AVERAGE STANDARD PENETRATION RESISTANCE "N - VALUES"(BLOW COUNTS PER FOOT) TO FRICTION ANGLES (PHI), TAKING INTO ACCOUNT FIELD CORRECTIONS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

DESIGN LOADS

CRASHWORTHY GROUND MOUNTED

WIND LOAD = 35 PSF (STR. III)
= 15 PSF (SERV I)

RETAINED EARTH:
HORIZONTAL SOIL LOAD = 120 PCF
LIVE LOAD SURCHARGE = 2FT

TL-4 VEHICLE COLLISION LOADING:
54 KIP APPLIED AT 6'-0"
ABOVE ROADWAY PAVEMENT

SECONDARY IMPACT (NO TL-4 IMPACT):
4 KIP APPLIED AT THE HIGHEST POINT UP TO 14FT ABOVE SURFACE OF PAVEMENT IN FRONT OF NAW

DEFLECTION:
PANEL = L/240
POST = H/360

DESIGN STRESSES

PRECAST CONCRETE (GROUND MOUNTED NAW):
f'c = 5,000 PSI AT 28 DAYS (CLASS PC)
f'c = 3,500 PSI AT 5 DAYS (SHIPPING)
DENSITY = 150 PCF

FOUNDATION CONCRETE CLASS SI:
f'c = 3,500 PSI AT 14 DAYS PER SECTION 1020 OF IDOT STANDARD SPECIFICATIONS.

STEEL POSTS:
ASTM A709 (AASHTO M270)
GRADE 50, fy = 50 KSI
ALL STEEL POSTS SHALL BE HOT - DIP GALVANIZED

BENT PLATE AND BEARING ANGLES:
ASTM A709 (AASHTO M270)
GRADE 36, fy = 36 KSI U.N.O.
ALL STEEL SHALL BE HOT - DIP GALVANIZED

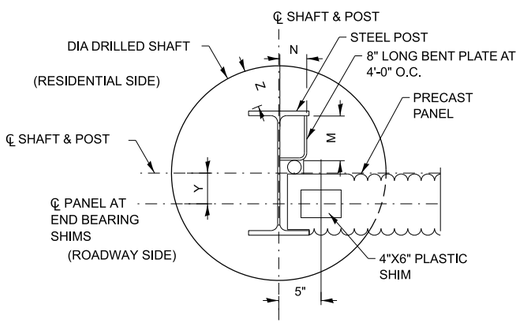
REINFORCING STEEL:
fy = 60,000 PSI (EPOXY COATED)

DESIGN SPECIFICATIONS

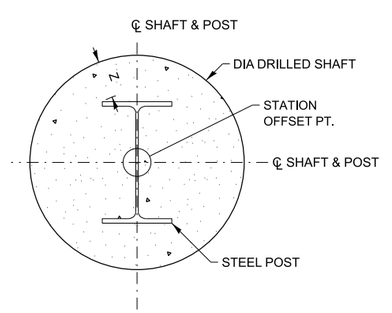
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 9TH EDITION DATED APRIL 2020.

ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION

ILLINOIS TOLLWAY GEOTECHNICAL MANUAL, LATEST EDITION



SECTION A-A



SECTION B-B

POST & DRILLED SHAFT DESIGN FOR COHESIVE SOILS

NAW TYPE	MAX POST HEIGHT	MIN POST EMBED DEPTH	MAX DRILLED SHAFT SPACING	DRILLED SHAFT DEPTH	STEEL POST SIZE	Y	BENT PLATE M x N x THICK.	Z	DIA	A	B
CRASHWORTHY GROUND MOUNTED	28'-0"	16'-6"	15'-0"	19'-0"	W21x68	5 1/16"	8½"x3½"x½"	6⅝"	3'-0"	86°25'00"	172°50'00"

POST & DRILLED SHAFT DESIGN FOR COHESIONLESS SOILS

NAW TYPE	MAX POST HEIGHT	MIN POST EMBED DEPTH			MAX DRILLED SHAFT SPACING	DRILLED SHAFT DEPTH			STEEL POST SIZE	Y	BENT PLATE M x N x THICK.	Z	DIA	A	B
		PHI=30°-34°	PHI=35°-39°	PHI=40°+		PHI=30°-34°	PHI=35°-39°	PHI=40°+							
CRASHWORTHY GROUND MOUNTED	28'-0"	17'-0"	14'-6"	13'-0"	15'-0"	21'-0"	18'-0"	15'-0"	W27X84	7 15/16"	14¼"x4⅜"x½"	3¾"	3'-0"	86°25'25"	172°50'50"

APPROVED BY:

Marian Nashif

CHIEF ENGINEERING OFFICER

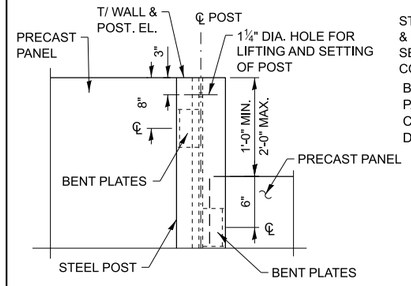
DATE: 03/01/2024

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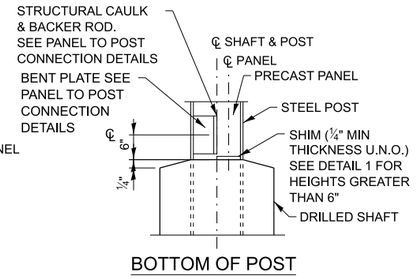
REVISIONS	
DATE	DESCRIPTION
03-01-2024	UPDATED POST SIZE NAW DETAIL
	ADDED DETAIL 3 SMOOTH FINISH
02-23-2023	REM. 1 FT MIN. DIM. TO GROUND, ADD 6"
	MIN. DIM. TO PANEL, INC. COHESIONLESS
	PL. TO 1/2", REV. LIFT. INSERT NOTE, DIM.

CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

VERSION: 2024-03 | STANDARD: G16-05 | SHEET: 1 OF 3

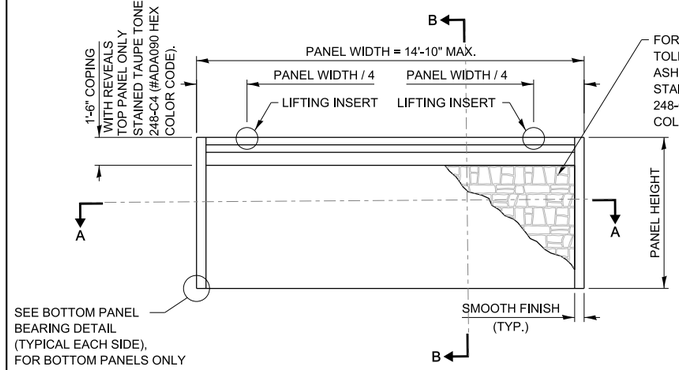


TOP OF POST

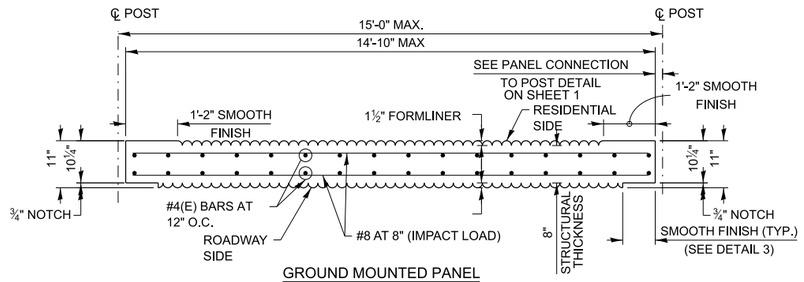


BOTTOM OF POST

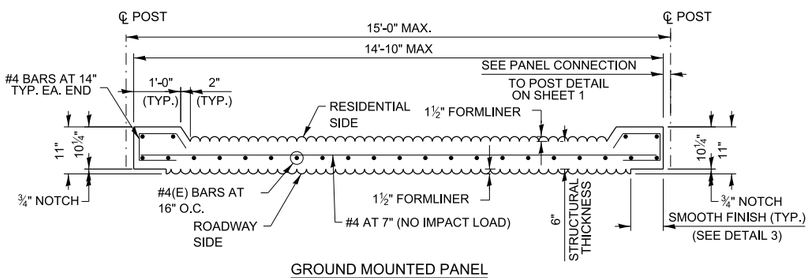
BENT PLATE DETAILS



TYPICAL NOISE WALL PANEL DETAIL



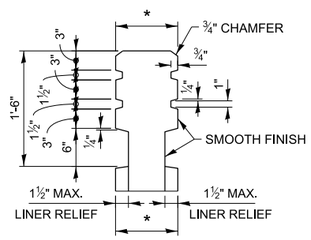
GROUND MOUNTED PANEL
(TL-4 IMPACT LOAD)



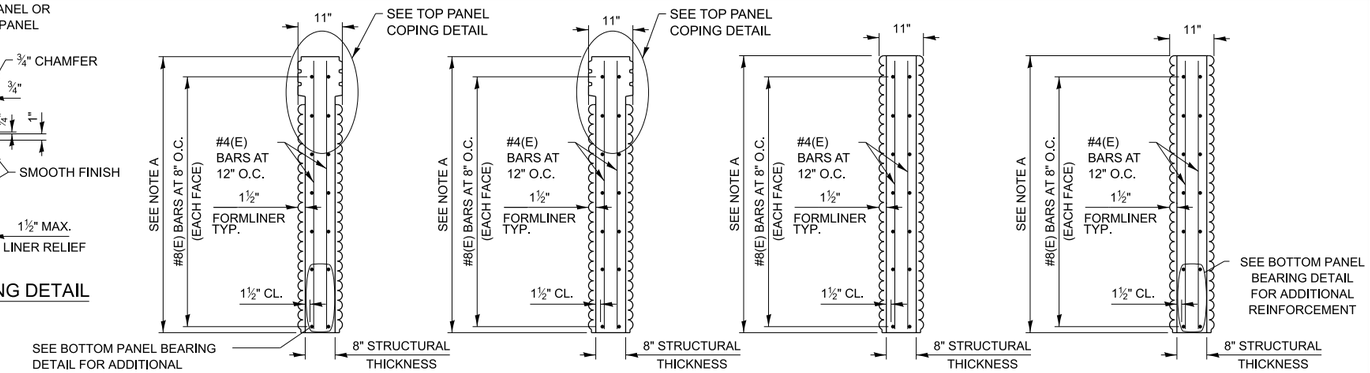
GROUND MOUNTED PANEL
(NO TL-4 IMPACT LOAD)

SECTION A-A

* 11" FOR TL-4 IMPACT LOAD PANEL OR
9" FOR NO TL-4 IMPACT LOAD PANEL



TOP PANEL COPING DETAIL



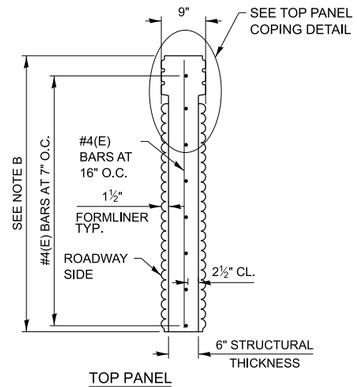
SECTION B-B
FULL HEIGHT PANEL
(TL-4 IMPACT LOAD)

SECTION B-B
TOP PANEL
(TL-4 IMPACT LOAD)

SECTION B-B
CENTER PANEL
(TL-4 IMPACT LOAD)

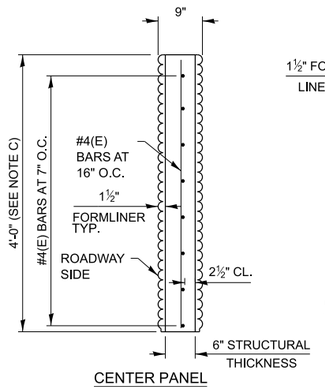
SECTION B-B
BOTTOM PANEL
(TL-4 IMPACT LOAD)

NOTE A:
TO ACCOMMODATE VARYING HEIGHT NAW PANELS ARE PERMITTED TO BE 6'-0", 7'-0", 8'-0" OR 9'-0" TALL



TOP PANEL
(NO TL-4 IMPACT LOAD)

SECTION B-B

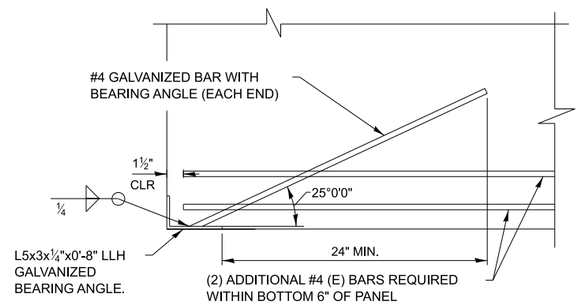


CENTER PANEL
(NO TL-4 IMPACT LOAD)

SECTION B-B

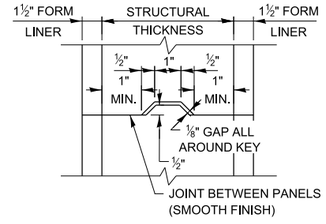
NOTE B:
TO ACCOMMODATE VARYING HEIGHT NAW, TOP PANEL (NO TL-4 IMPACT LOAD) IS PERMITTED TO BE 5'-0", 6'-0", 7'-0", 8'-0" OR 9'-0" TALL

NOTE C:
CONTRACTOR MAY INCREASE THE STANDARD PANEL HEIGHTS, MAXIMUM HEIGHT OF 9FT, TO MINIMIZE THE NUMBER OF HORIZONTAL JOINTS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

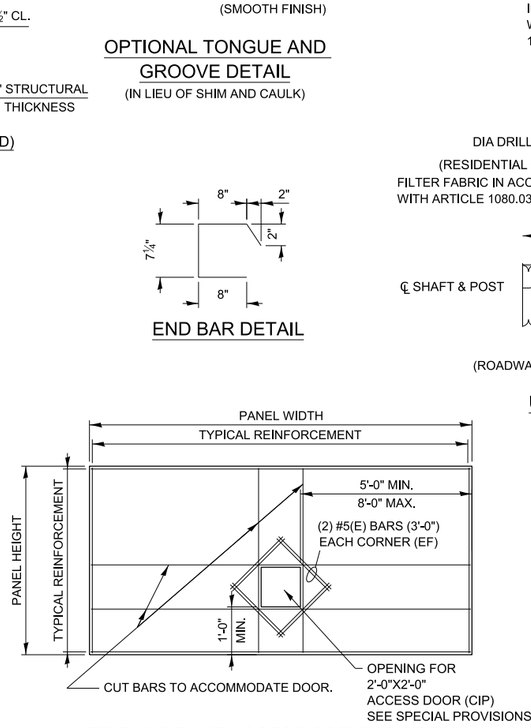


BOTTOM PANEL BEARING DETAIL

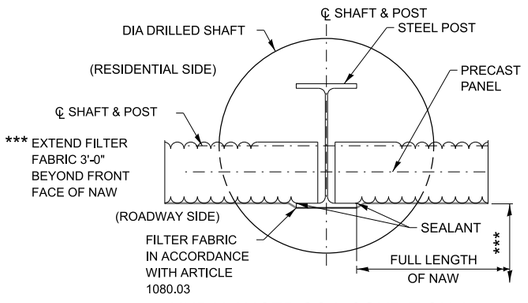
END BAR DETAIL



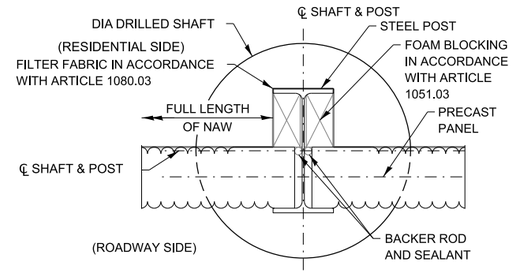
OPTIONAL TONGUE AND GROOVE DETAIL
(IN LIEU OF SHIM AND CAULK)



FIRE HYDRANT ACCESS OPENING DETAIL



UNBALANCED SOIL CONDITION 1



UNBALANCED SOIL CONDITION 2

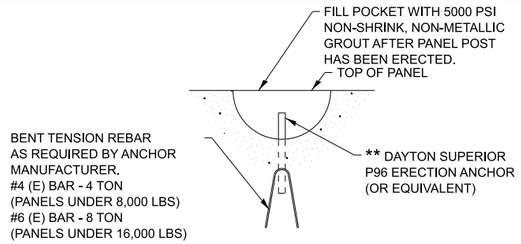
APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

Illinois Tollway

CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

VERSION:	STANDARD:	SHEET:
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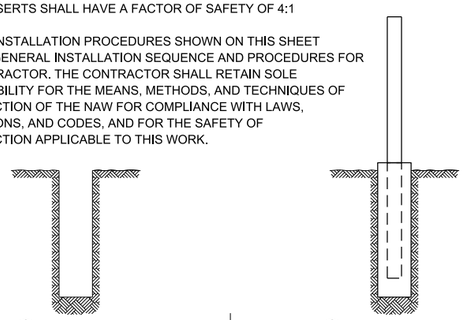


TYPICAL LIFTING INSERT DETAIL

** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

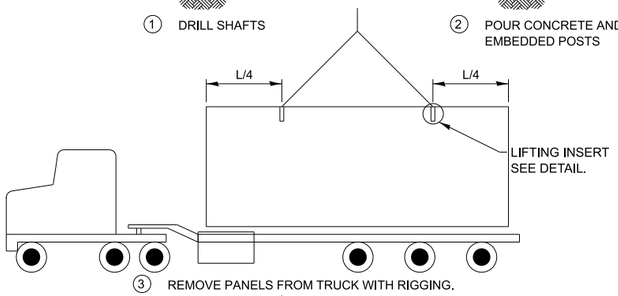
NOTES:

1. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
2. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.

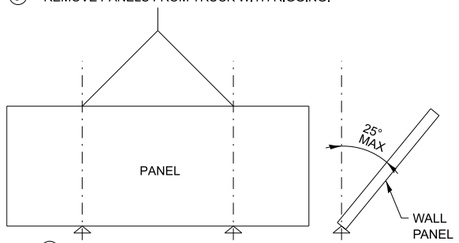


① DRILL SHAFTS

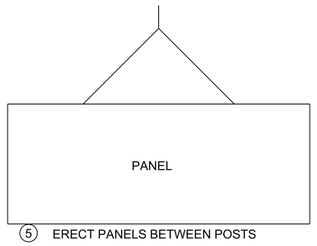
② POUR CONCRETE AND SET EMBEDDED POSTS



③ REMOVE PANELS FROM TRUCK WITH RIGGING.

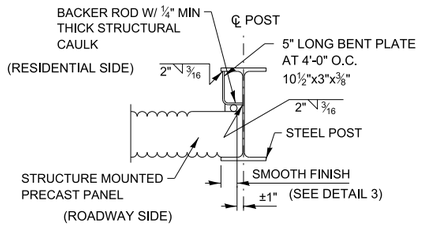


④ TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.

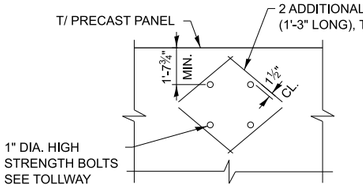


⑤ ERECT PANELS BETWEEN POSTS

SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

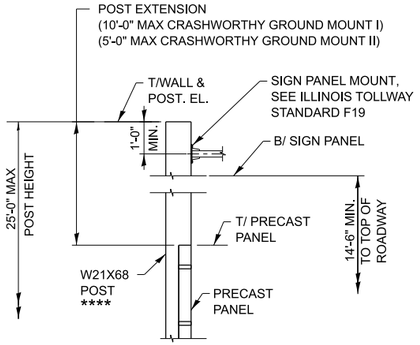


STRUCTURE MOUNTED PANEL TO POST CONNECTION DETAIL



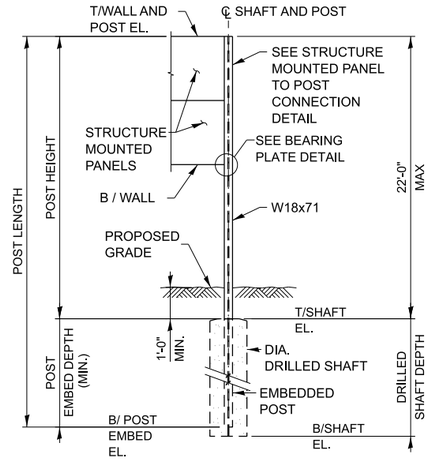
SIGN PANEL MOUNT TO PANEL DETAIL

*** PRECAST PANELS HAVE BEEN DESIGNED TO ACCOMMODATE SIGN PANEL MOUNT WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19. MIN. PANEL HEIGHT SUPPORTING SIGN SHALL BE 5'-0".

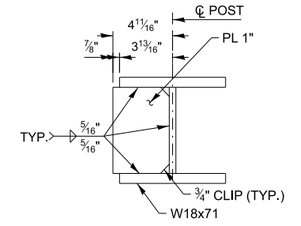


SIGN PANEL MOUNT POST EXTENSION DETAIL

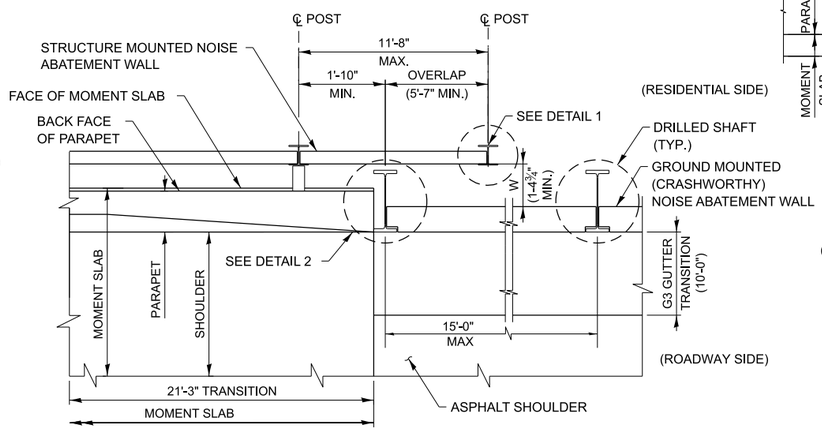
****W18X71 POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A POST EXTENSION WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19 UP TO A MAXIMUM POST HEIGHT OF 25'-0"



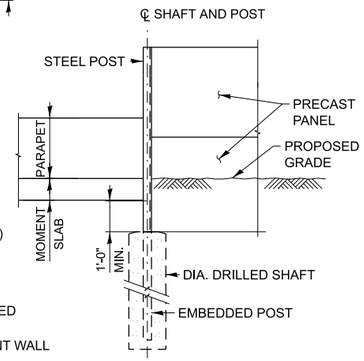
DETAIL 1



BEARING PLATE DETAIL

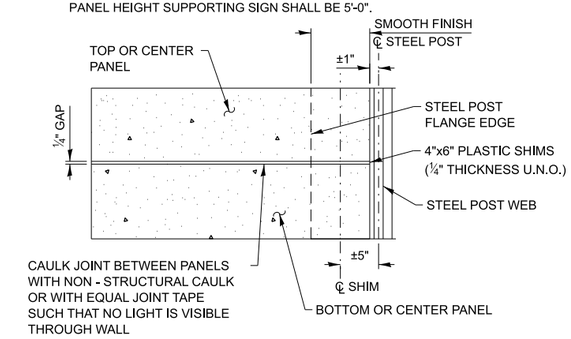


NAW TRANSITION DETAIL PLAN

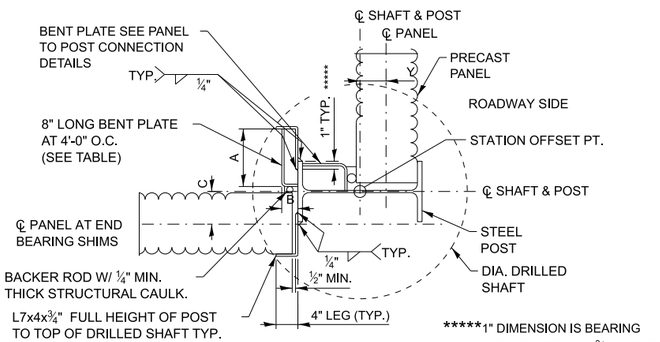


VIEW B-B

(STRUCTURE MOUNTED NAW)
NOT SHOWN FOR CLARITY

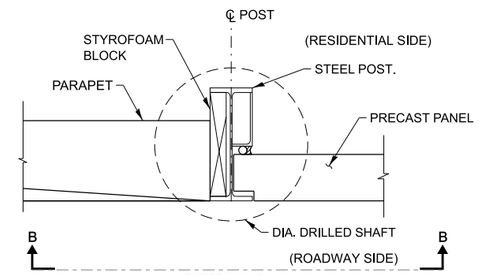


HORIZONTAL JOINT DETAIL



*****1" DIMENSION IS BEARING LENGTH OF L7x4x¾" ANGLE ON THE POST FLANGE

90° TURN DETAIL



DETAIL 2

CRASHWORTHY GROUND MOUNTED NAW TRANSITION TO PARAPET

90° TURN BENT PLATE TABLE

STEEL POST TYPE	BENT PLATE A x B x THICK.	DIM. C
W21x68	7¾"x3"x ⅜"	4⅝"
W27x84	9½"x3"x ⅜"	5½"

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

Illinois Tollway

CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

VERSION:	STANDARD:	SHEET:
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STANDARD DRAWINGS

SECTION H

ROADWAY LIGHTING

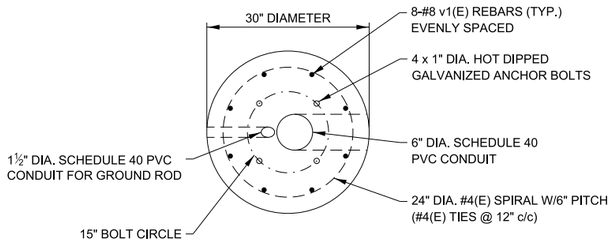
MARCH 2025

Illinois Tollway Standard Drawing Revisions

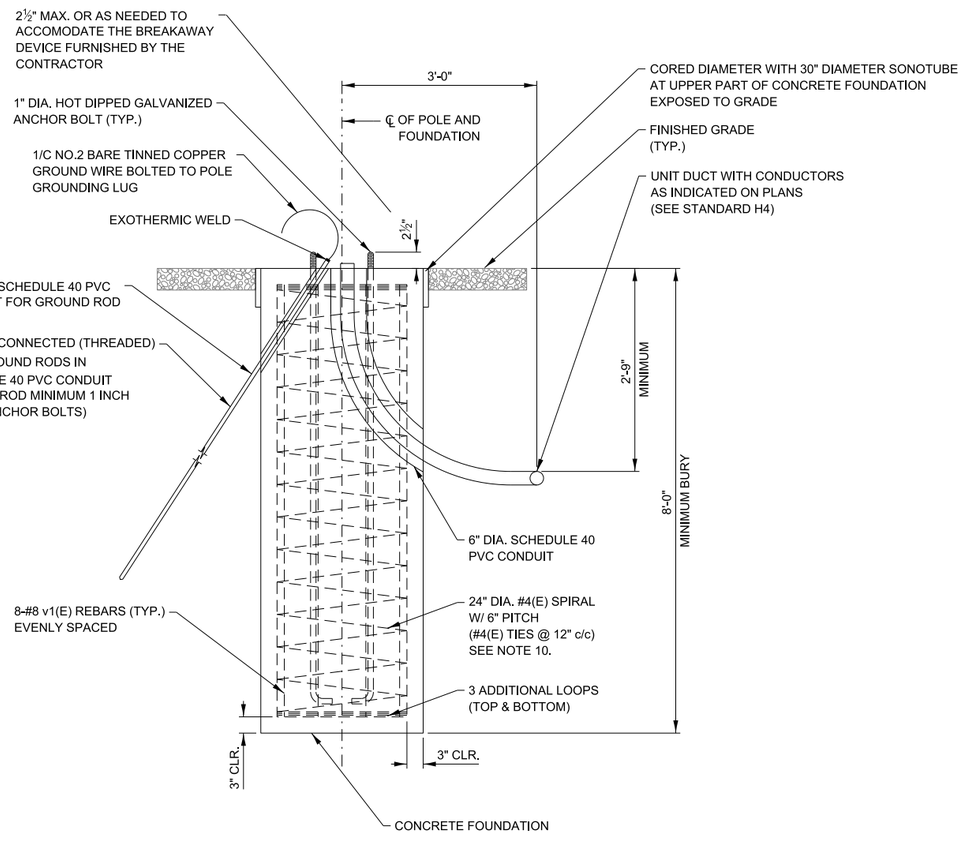
Section H	Roadway Lighting	
	Standard	**Modification Summary** **Effective: 03-01-2025**
		This set of standard drawings has been converted from v8i to OpenRoads.
	H1-13	**LIGHT STANDARD FOUNDATION**
	Sheet 1	Added Note 12 indicating the soil conditions used for foundation design.
	Sheet 3	Corrected d(E) bar length to provide appropriate concrete cover.
	H7-04	**EXTERIOR CONTROL CONSOLE FOUNDATION DETAIL**
	Sheet 2	Revised the type B control console foundation.

New Sheet

Retired Standard



PLAN



ELEVATION

NOTES:

1. AT LOCATIONS NOT SHIELDED BY A GUARDRAIL, THE LIGHT POLE FOUNDATION SHALL BE FLUSH WITH SURROUNDING AGGREGATE PAD AS DETAILED ON SHEETS 7 AND 8 OF THIS STANDARD. CROSS SLOPES OF THE AGGREGATE PAD SHALL BE PER THE FOLLOWING TABLE:

ADJACENT ROADWAY SIDESLOPE	REQUIRED CROSS SLOPE OF PAD
FORESLOPE 1:6H OR FLATTER	MATCH PROPOSED ROADWAY SIDESLOPE
FORESLOPE STEEPER THAN 1:6H	1:6H CROSS SLOPE
BACKSLOPE 1:4H OR FLATTER	MATCH PROPOSED ROADWAY SIDESLOPE
BACKSLOPE STEEPER THAN 1:4H	1:4H CROSS SLOPE

2. AGGREGATE PADS SHALL BE CONSTRUCTED OF AGGREGATE SHOULDERS WITH FILTER FABRIC, TYPE B, 4".

3. PROVIDE SEEDING, POTASSIUM FERTILIZER NUTRIENT, AND EROSION CONTROL BLANKET AS REQUIRED.

4. THE TOP OF FOUNDATION SHALL BE AT THE SAME ELEVATION AS THE GRADED AGGREGATE PAD AT THE CENTER OF THE LIGHT POLE WHEN SLOPED AS DESCRIBED IN NOTE 1.

5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

6. ALL GROUND MOUNTED LIGHT POLES SHALL BE PROVIDED WITH AN ACCEPTED FHWA BREAKAWAY BASE OR DEVICE PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 1070.

7. FOR DETAILS OF FUSE HOLDER, POLE BASE WIRING AND CONDUCTOR SPLICE SEE STANDARD H2.

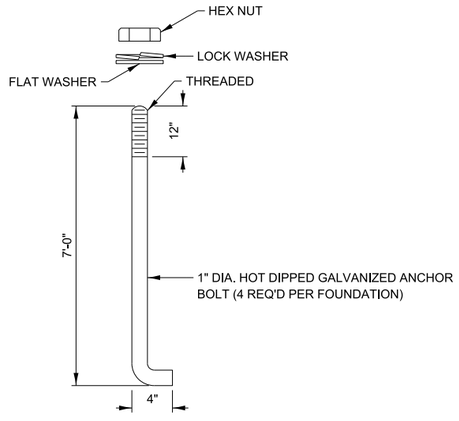
8. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED.

9. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.

10. FOR ALL MEDIAN BARRIER FOUNDATIONS, THE ANCHOR BOLTS SHALL BE CENTERED AROUND THE MEDIAN BARRIER WALL CENTERLINE.

11. ADJUST SPIRAL BAR SPACING AS NEEDED TO ACCOMMODATE CONDUIT ENTRANCE.

12. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.



ANCHOR BOLT DETAIL

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

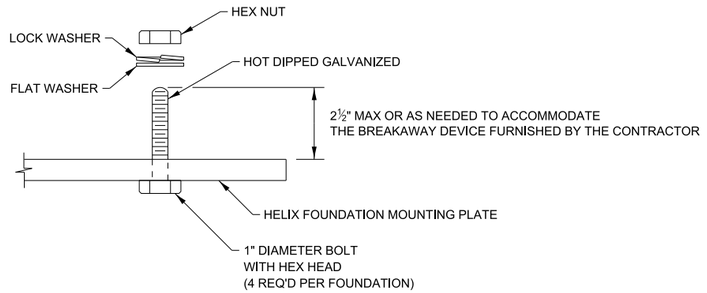
LIGHT STANDARD FOUNDATION DETAILS - CONCRETE
(GROUND MOUNTED UNITS)

REVISIONS	
DATE	DESCRIPTION
03-01-2025	ADDED DESIGN SOIL CONDITIONS NOTES.
	REV. d1(E) BAR LENGTH AND WEIGHT.
03-01-2024	REV. THE BOLT PROJ. DIM. FROM 3½" TO
	2½", REV.DIM. OF THE MED. BARRIER, REV.
	ALL REF. TO AGG. FROM LVL, REV.
	GRADING DETAILS AND NOTES.

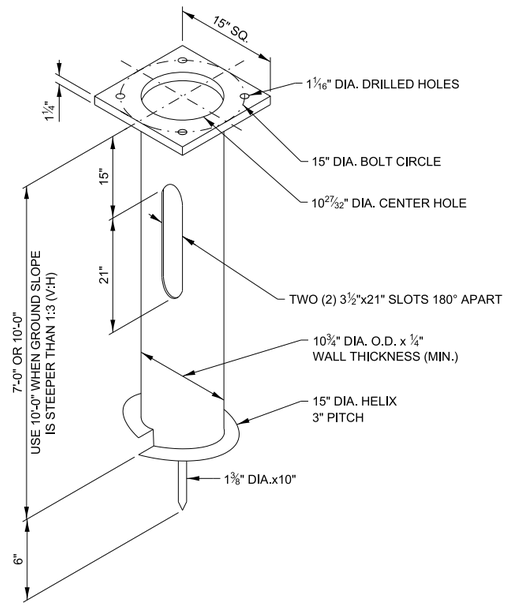
Illinois Tollway

LIGHT STANDARD FOUNDATION

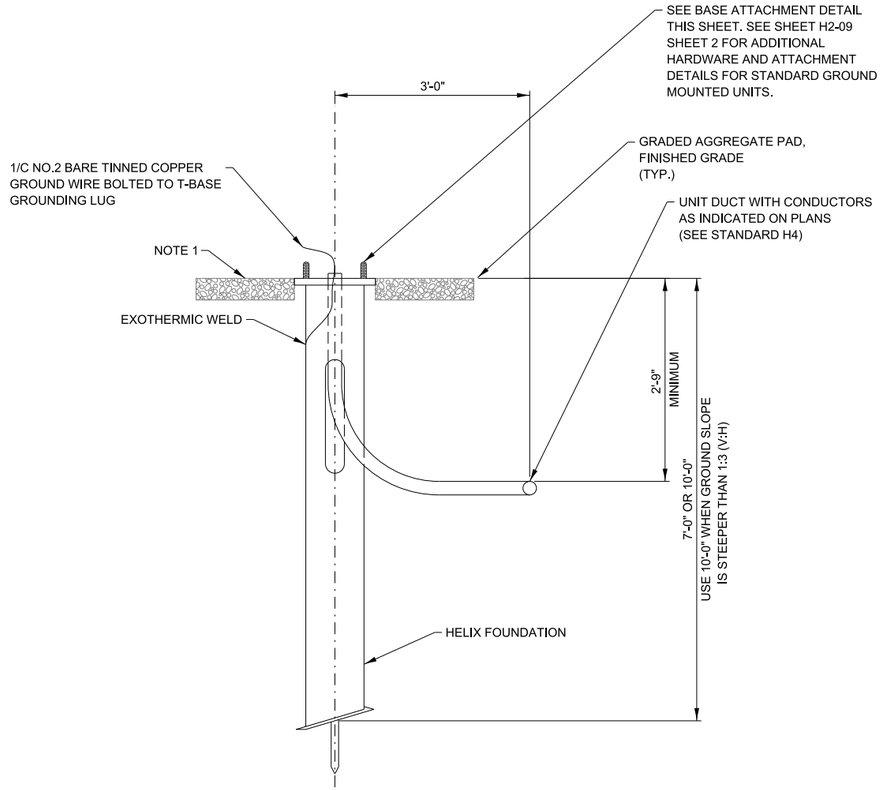
VERSION:	STANDARD:	SHEET:
2025-03	H1-13	1 OF 10



BASE ATTACHMENT DETAIL



ISOMETRIC



ELEVATION

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

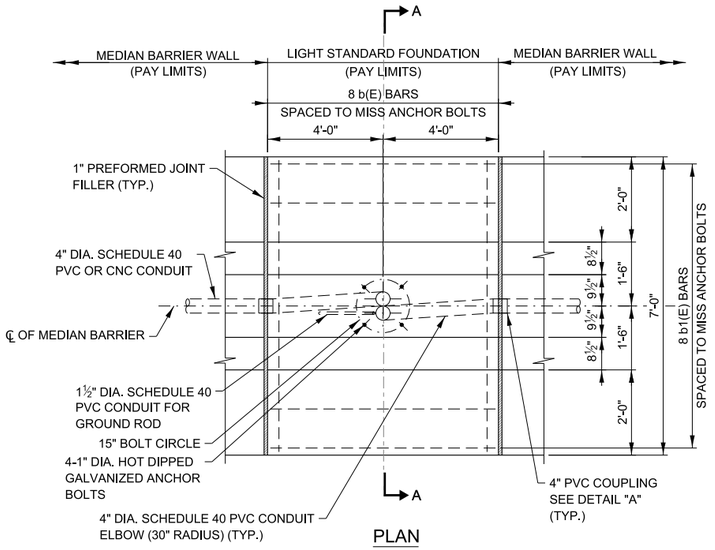
LIGHT STANDARD FOUNDATION DETAILS - HELIX
(GROUND MOUNTED UNITS)

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

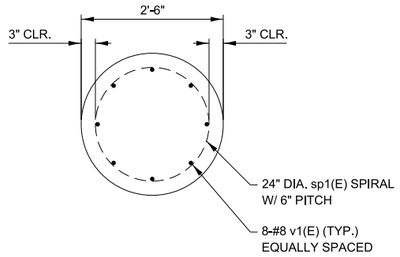
Illinois Tollway

LIGHT STANDARD FOUNDATION

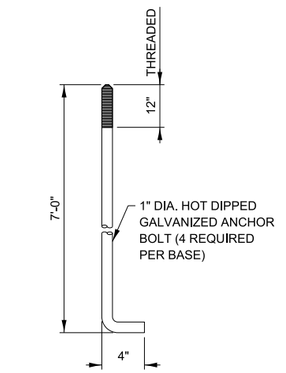
VERSION:	STANDARD:	SHEET:
2025-03	H1-13	2 OF 10



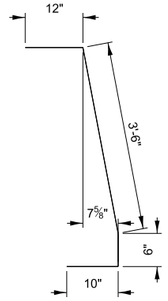
PLAN



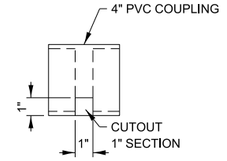
SECTION B-B



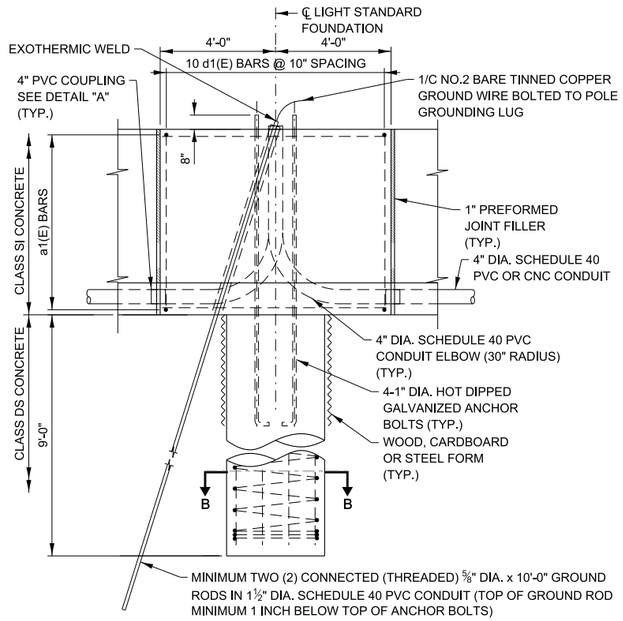
ANCHOR BOLT DETAIL



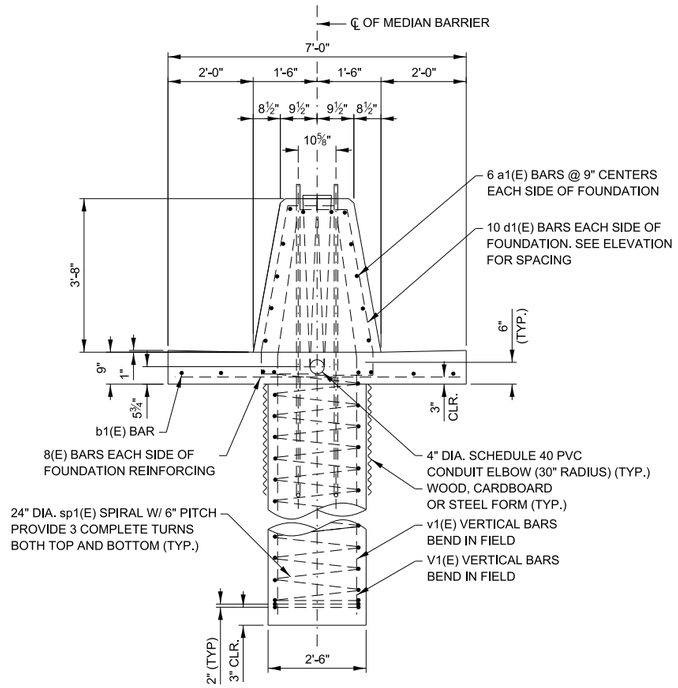
d1(E) BAR



DETAIL A



ELEVATION



SECTION A-A

REINFORCEMENT BARS SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
a1(E)	12	#4	7'-6"	60	——
b(E)	8	#4	6'-6"	35	——
b1(E)	8	#4	7'-8"	41	——
d1(E)	20	#4	5'-10"	78	L
sp1(E)	1	#4	*	99	≋
v1(E)	8	#8	11'-9"	251	——

* SEE SECTION A-A

NOTES:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.
2. FOR SLIP FORM, SEE SHEET 6 OF THIS SERIES.

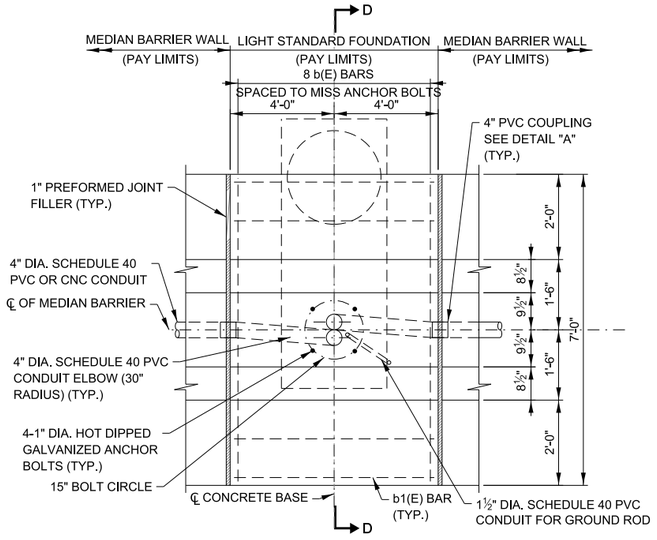
APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER
(TYPE 1 CENTERED CAISSON, 44" BARRIER)

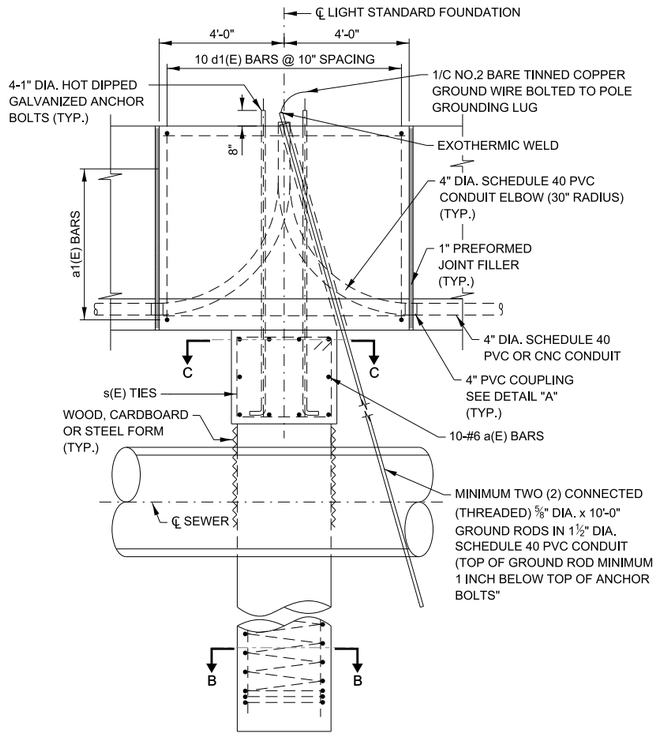
Illinois Tollway

LIGHT STANDARD FOUNDATION

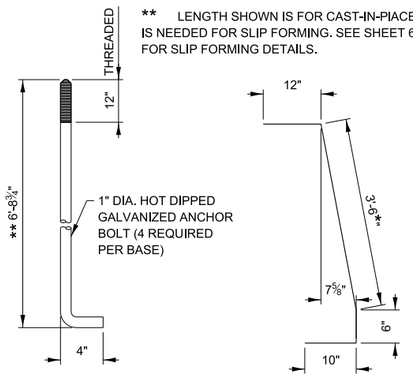
VERSION:	STANDARD:	SHEET:
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PLAN



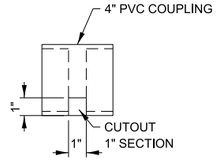
ELEVATION



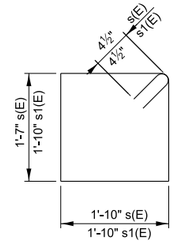
ANCHOR BOLT DETAIL

** LENGTH SHOWN IS FOR CAST-IN-PIACE. ADJUSTMENT IS NEEDED FOR SLIP FORMING. SEE SHEET 6 OF THIS SERIES FOR SLIP FORMING DETAILS.

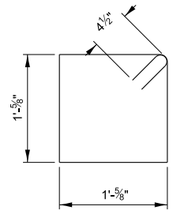
d1(E) BAR



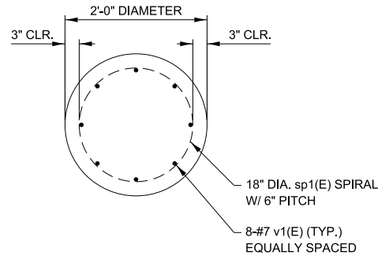
DETAIL A



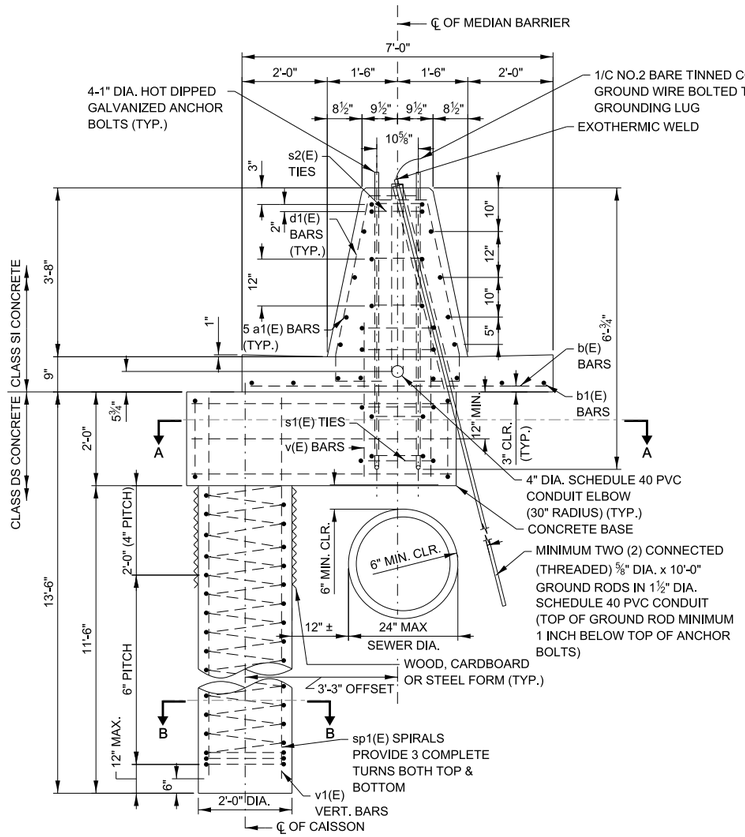
BARS s(E) AND s1(E)



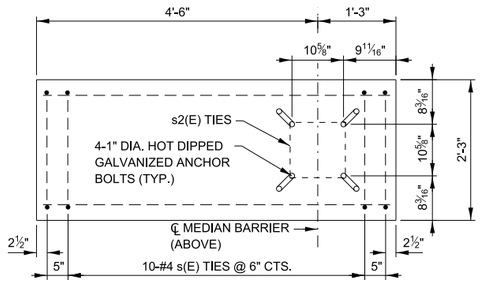
BAR s2(E)



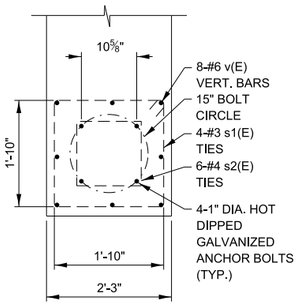
SECTION B-B



SECTION D-D



SECTION A-A



SECTION C-C

REINFORCEMENT BARS SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
a(E)	10	#6	5'-6"	83	
a1(E)	10	#4	7'-6"	50	
b(E)	8	#4	6'-6"	35	
b1(E)	8	#4	7'-8"	41	
d1(E)	20	#4	5'-10"	78	
s(E)	12	#4	7'-7"	61	
s1(E)	4	#4	8'-1"	22	
s2(E)	6	#4	5'-0"	20	
sp1(E)	1	#4	*	92	
v(E)	8	#6	3'-2"	38	
v1(E)	8	#7	12'-6"	205	

* SEE D-D

NOTES:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.
2. FOR SLIP FORM, SEE SHEET 6 OF THIS SERIES.

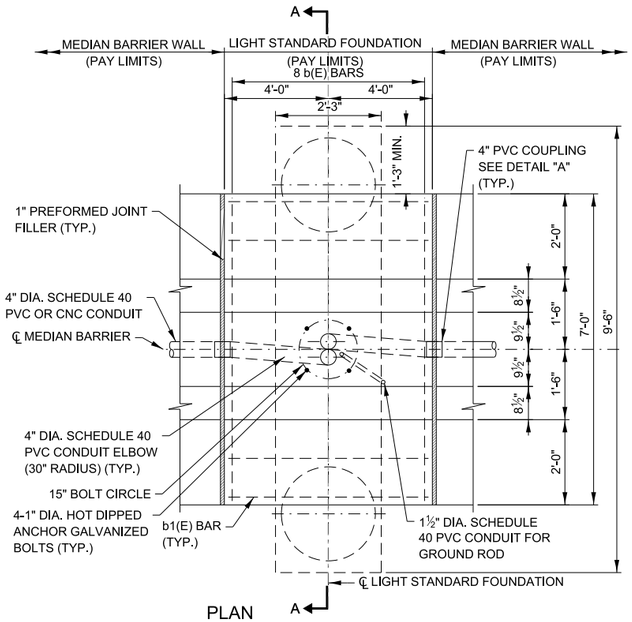
APPROVED BY: Marco Nastif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

Illinois Tollway

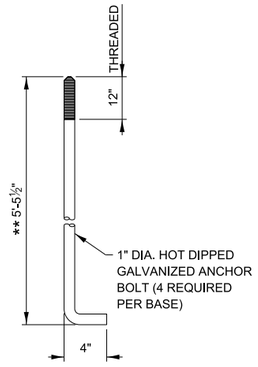
LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER
(TYPE 2 OFFSET CAISSON, 44" BARRIER)

LIGHT STANDARD FOUNDATION

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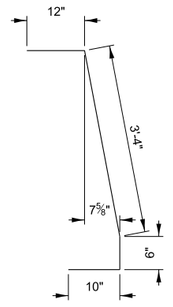


PLAN

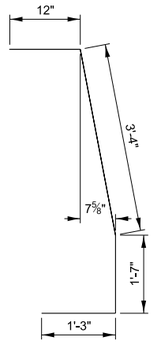


** LENGTH SHOWN IS FOR CAST-IN-PIACE. ADJUSTMENT IS NEEDED FOR SLIP FORMING. SEE SHEET 6 OF THIS SERIES FOR SLIP FORMING DETAILS.

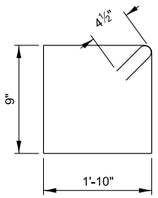
ANCHOR BOLT DETAIL



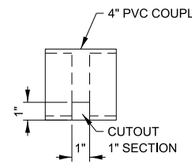
d1(E) BAR



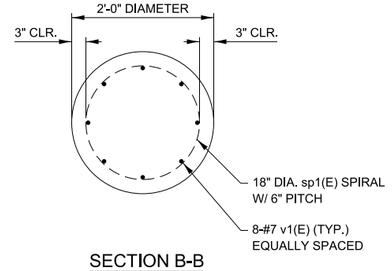
d2(E) BAR



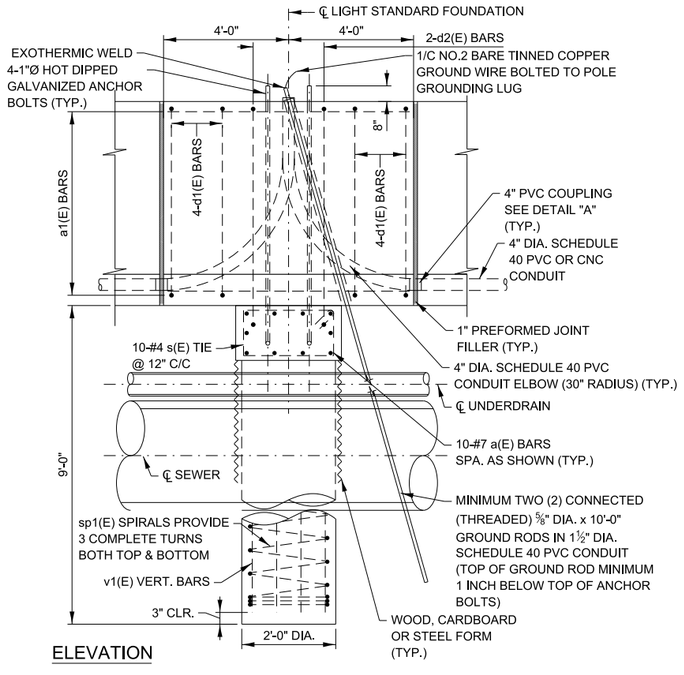
s(E) BAR



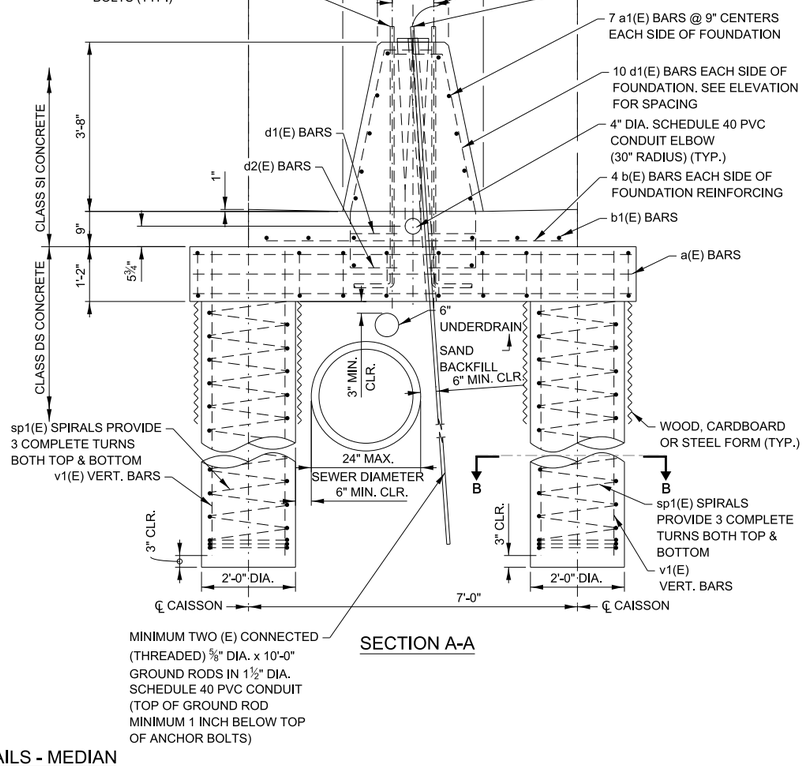
DETAIL A



SECTION B-B



ELEVATION



SECTION A-A

REINFORCEMENT BARS SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
a(E)	10	#7	9'-0"	184	——
a1(E)	14	#4	7'-6"	70	——
b(E)	8	#4	6'-6"	35	——
b1(E)	4	#4	7'-8"	21	——
d1(E)	16	#4	5'-8"	62	⌊
d2(E)	4	#4	7'-2"	20	⌊
s(E)	10	#4	5'-11"	40	◻
sp1(E)	2	#4	*	134	≋
v1(E)	16	#7	9'-9"	319	——

* SEE ELEVATION

NOTES:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.
2. FOR SLIP FORM, SEE SHEET 6 OF THIS SERIES.

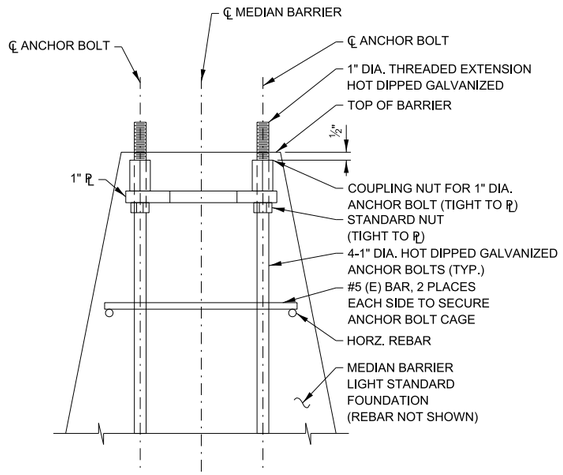
APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2025

LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER (TYPE 3 STRADDLED CAISSON, 44" BARRIER)

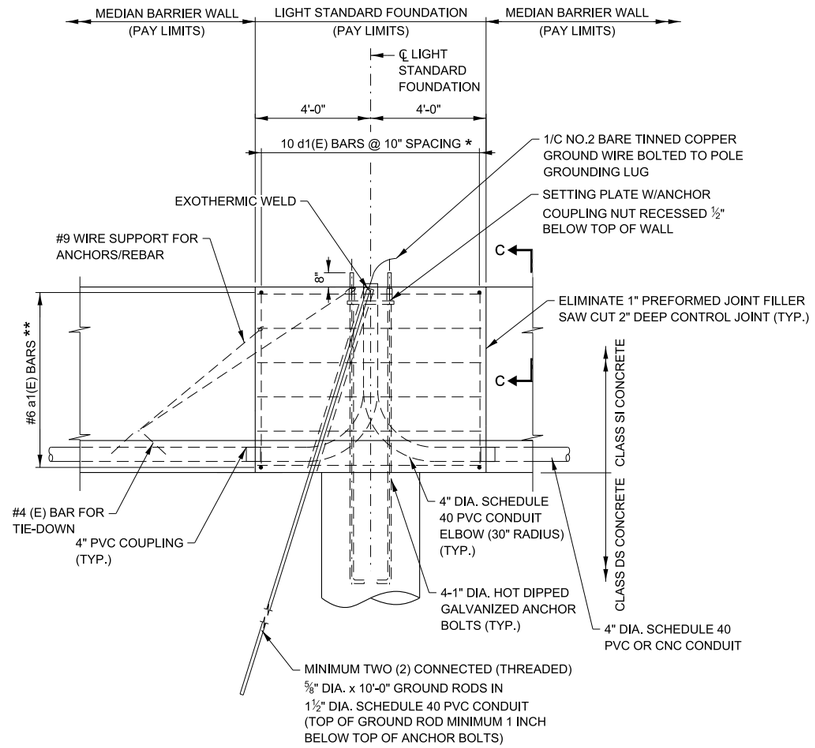
Illinois Tollway

LIGHT STANDARD FOUNDATION

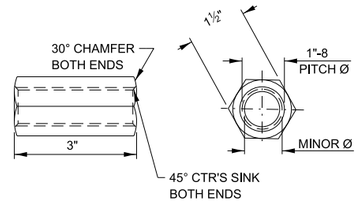
VERSION:	STANDARD:	SHEET:
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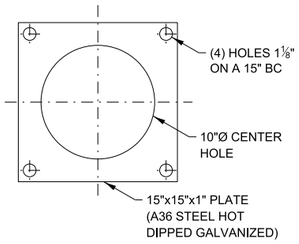
SECTION C-C



ELEVATION



COUPLING NUT



SETTING PLATE

* #6 d1(E) BAR REPLACES #4 d1(E) BAR
** #6 a1(E) BAR REPLACES #4 a1(E) BAR

APPROVED BY:
Marco Nastif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

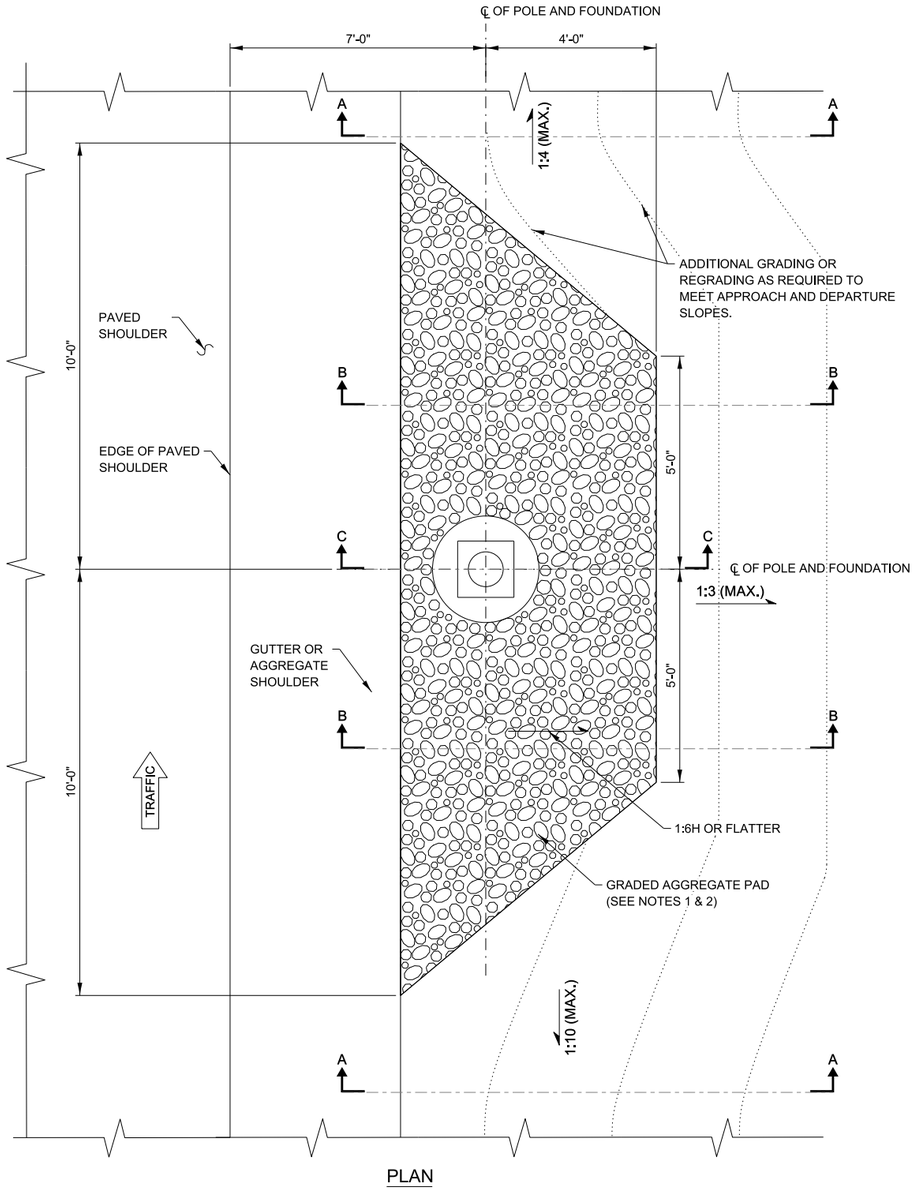
LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER
(MODIFICATIONS FOR SLIPFORM POUR, 44" BARRIER)

NOTES:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.
2. PLUG TOP OF COUPLER WITH PLASTIC PLUG OR COVER WHILE PLACING CONCRETE.

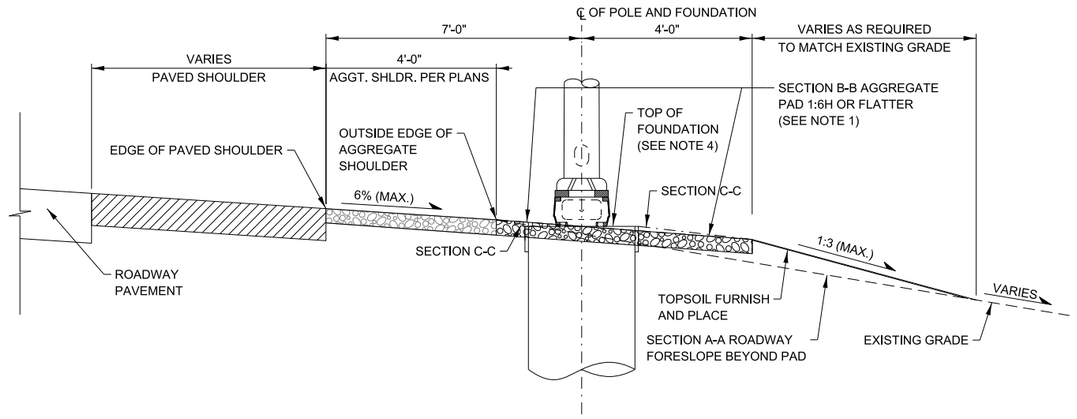
Illinois Tollway

LIGHT STANDARD FOUNDATION

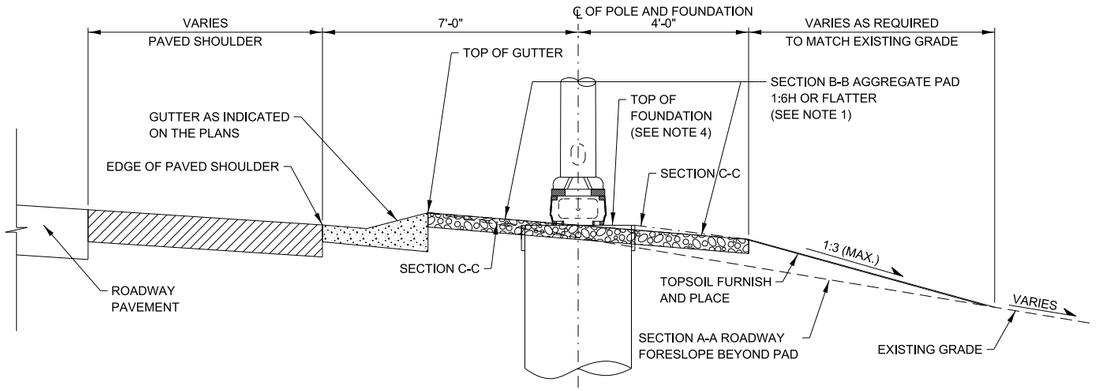
VERSION:	STANDARD:	SHEET:
2025-03	H1-13	6 OF 10



PLAN



LIGHT STANDARD FOUNDATION
ADJACENT TO AGGREGATE SHOULDER



LIGHT STANDARD FOUNDATION
ADJACENT TO GUTTER

LIGHT STANDARD FOUNDATION DETAILS - GRADING W/ FORESLOPE
(GROUND MOUNTED UNITS)

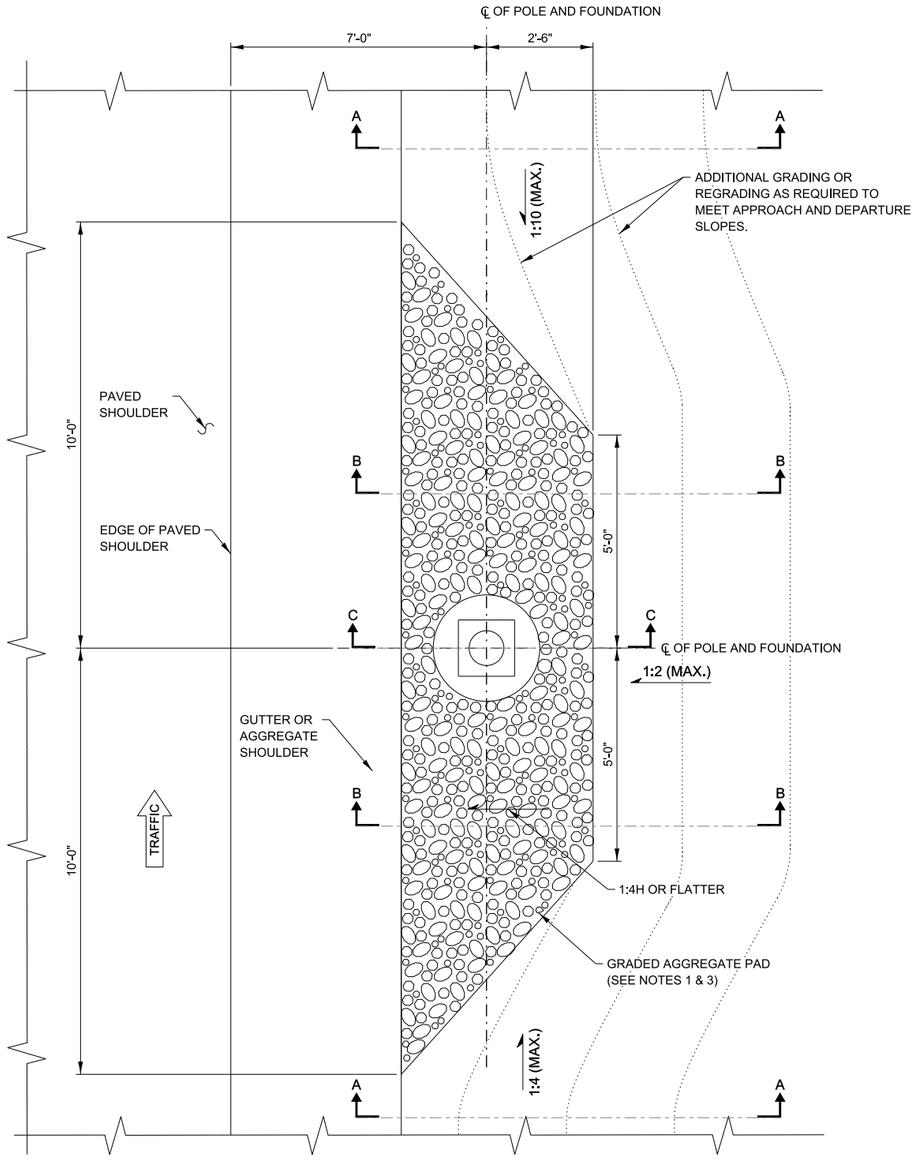
NOTE:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

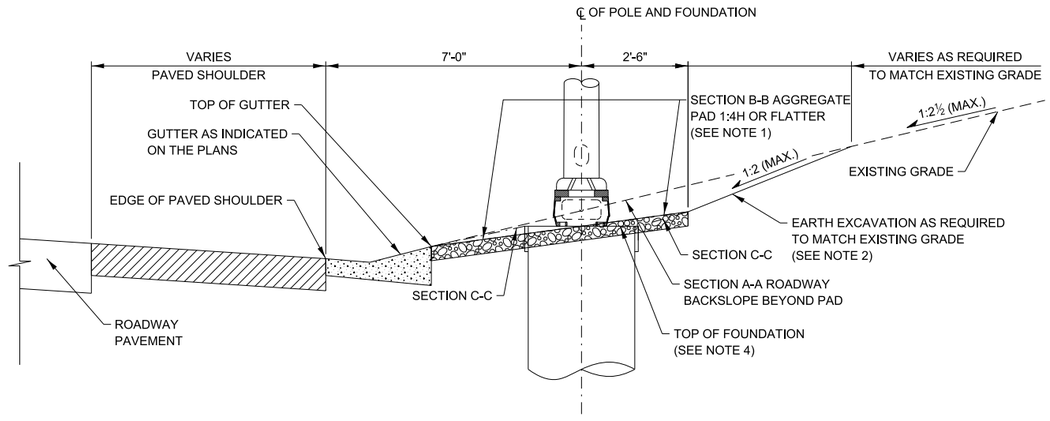
Illinois Tollway

LIGHT STANDARD FOUNDATION

VERSION:	STANDARD:	SHEET:
2025-03	H1-13	7 OF 10



PLAN



LIGHT STANDARD FOUNDATION
ADJACENT TO GUTTER

LIGHT STANDARD FOUNDATION DETAILS - GRADING W/ BACKSLOPE (GROUND MOUNTED UNITS)

NOTE:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.

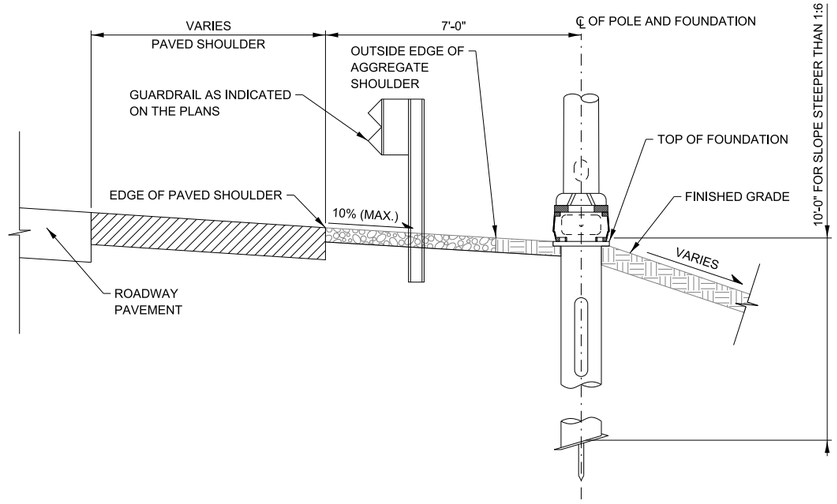
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

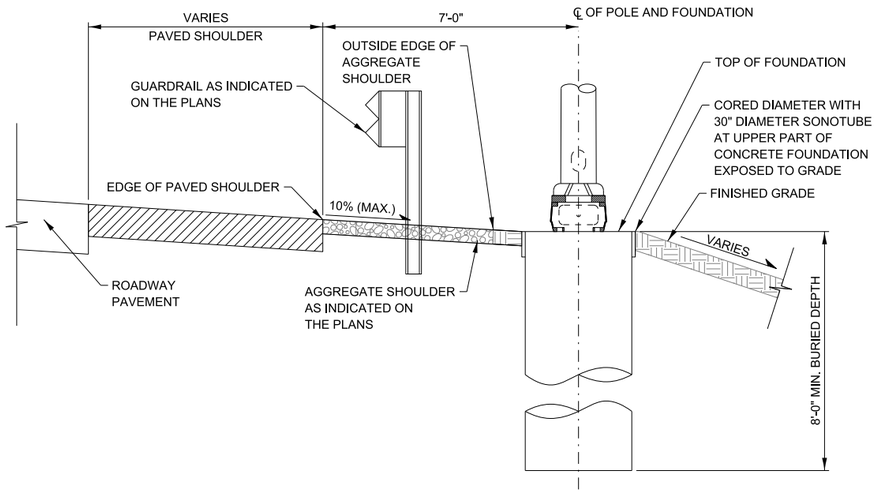
Illinois Tollway

LIGHT STANDARD FOUNDATION

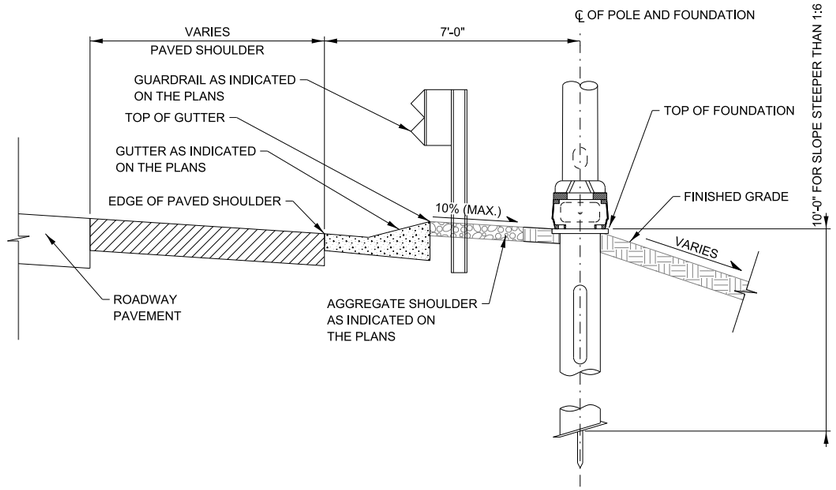
VERSION:	STANDARD:	SHEET:
2025-03	H1-13	8 OF 10



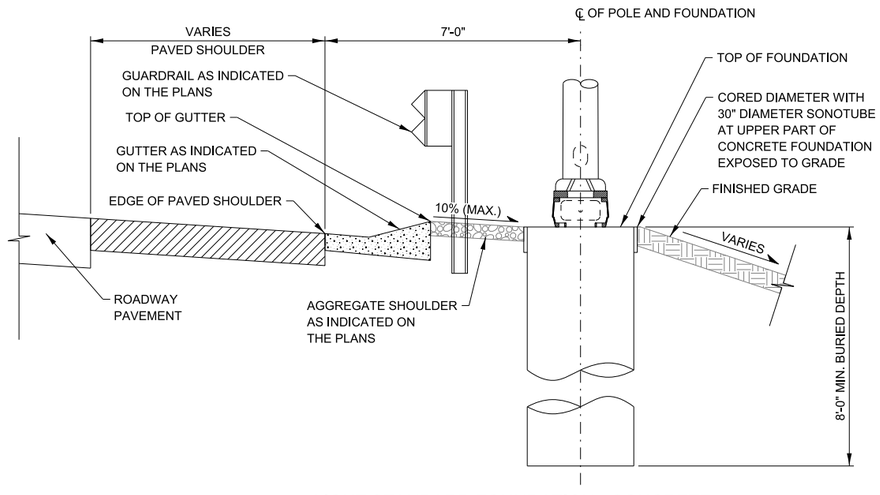
LIGHT STANDARD FOUNDATION - HELIX
ADJACENT TO AGGREGATE SHOULDER



LIGHT STANDARD FOUNDATION - CONCRETE
ADJACENT TO AGGREGATE SHOULDER



LIGHT STANDARD FOUNDATION - HELIX
ADJACENT TO GUTTER



LIGHT STANDARD FOUNDATION - CONCRETE
ADJACENT TO GUTTER

LIGHT STANDARD FOUNDATION DETAILS - ADJACENT TO GUARDRAIL
(GROUND MOUNTED UNITS)

NOTE:
1. SEE SHEET 1 OF THIS SERIES FOR NOTES.

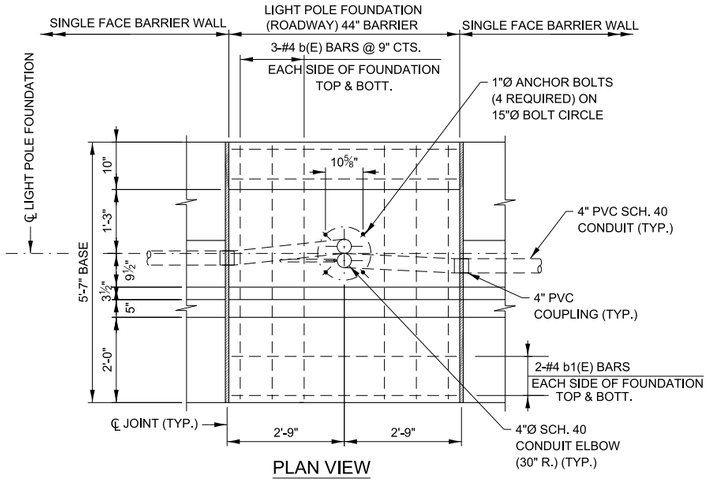
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

LIGHT STANDARD FOUNDATION

VERSION:	STANDARD:	SHEET:
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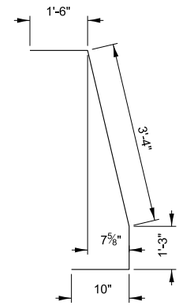
PLAN VIEW

NOTES:

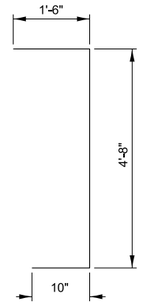
1. ALL BARS SHALL BE EPOXY COATED.
2. CONCRETE, REINFORCEMENT BARS, ANCHOR BOLTS, AND ALL OTHER COMPONENTS OF THE LIGHT POLE FOUNDATION ARE INCLUDED IN THE COST OF LIGHT POLE FOUNDATION (ROADWAY) 44" BARRIER.

REINFORCING BAR SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LBS.	SHAPE
a1(E)	12	#4	5'-0"	40	
b(E)	12	#4	5'-1"	41	
b1(E)	8	#4	5'-2"	28	
d1(E)	6	#4	6'-11"	28	
d2(E)	6	#4	7'-0"	27	
sp1(E)	*	#4	*	97	
v1(E)	8	#8	12'-6"	267	

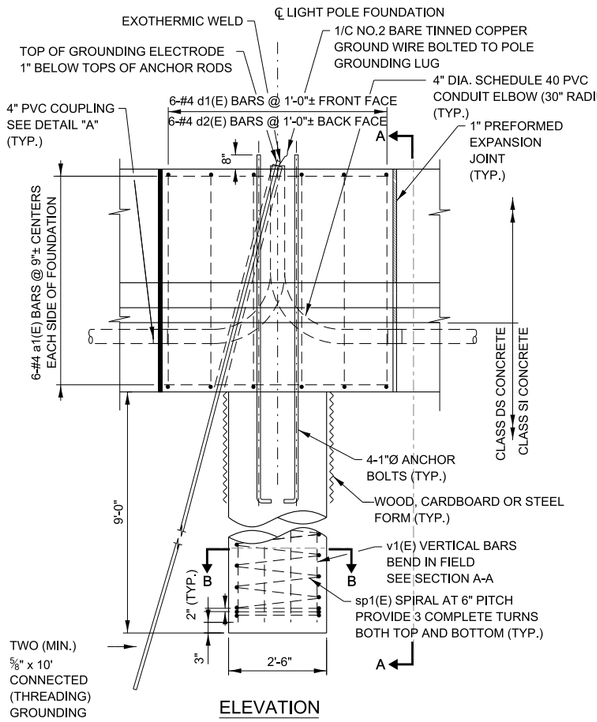
* SEE SECT. A-A



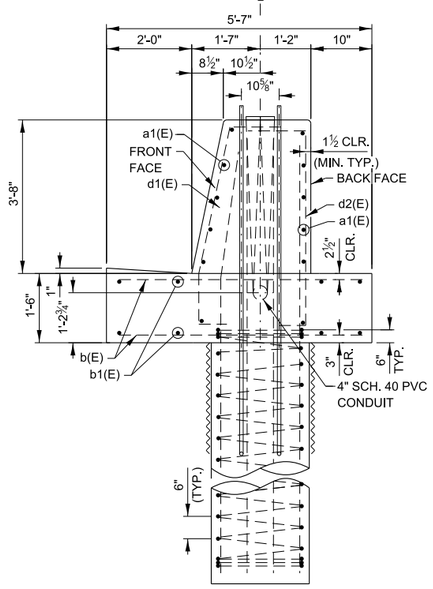
d1(E) BAR



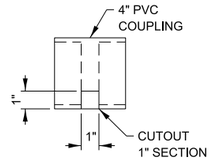
d2(E) BAR



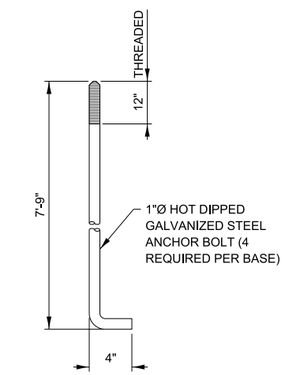
ELEVATION



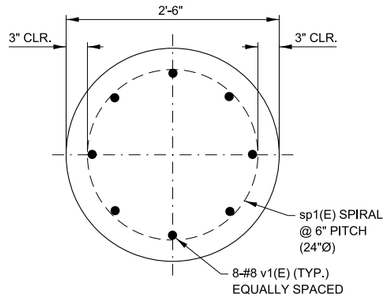
SECTION A-A



DETAIL A



ANCHOR BOLT DETAIL



SECTION B-B

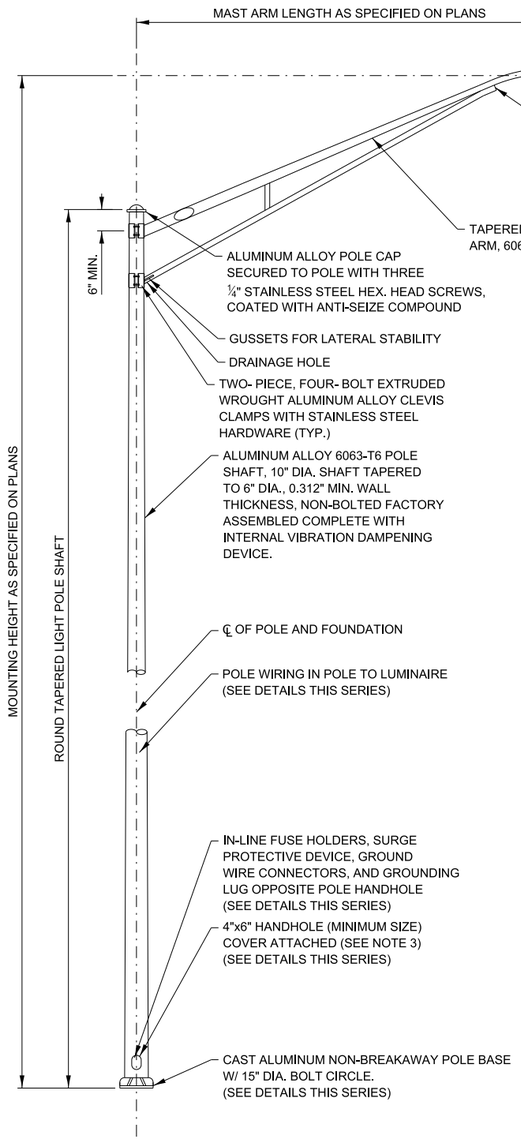
LIGHT STANDARD FOUNDATION DETAILS - SINGLE FACE BARRIER

APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

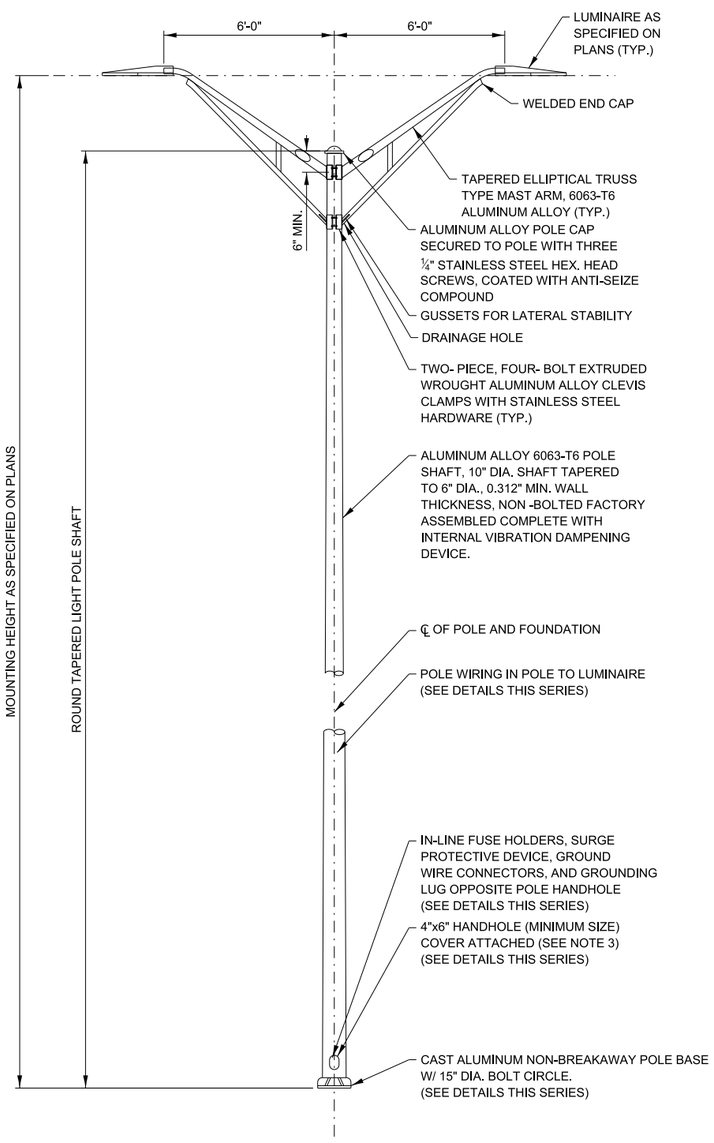
Illinois Tollway

LIGHT STANDARD FOUNDATION

VERSION:	STANDARD:	SHEET:
2025-03	H1-13	10 OF 10



LIGHT STANDARD - SINGLE MAST ARM

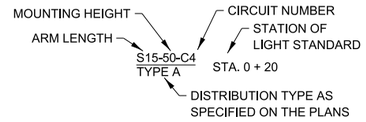


LIGHT STANDARD - TWIN MAST ARM

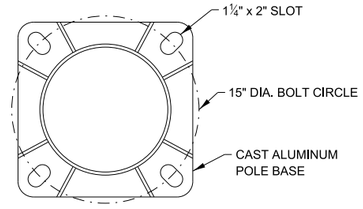
LIGHT STANDARD DETAILS

NOTES:

1. ALL LIGHT STANDARDS, BOTH NEW AND EXISTING, ARE SHOWN ON PLANS WITH THE SAMPLE DESCRIPTIONS SHOWN ON THIS SHEET.
2. FOR FOUNDATION DETAILS SEE STANDARD H1. FOR STRUCTURAL PARAPET FOUNDATION DETAILS, SEE STRUCTURAL PLANS.
3. HANDHOLE COVERS SHALL BE FASTENED USING TWO STAINLESS STEEL SCREWS WITH CAPTIVE STAINLESS STEEL NUTS OR INSERTS, PER ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATION SECTION 1069.
4. PROVIDE A 24" LONG POLYETHYLENE TUBE TO PROTECT CABLES WHERE THEY PASS THROUGH THE GROMMETTED OPENING AT THE POLE/MAST ARM JUNCTION.
5. ALL GROUND MOUNTED LIGHT POLES SHALL BE PROVIDED WITH AN ACCEPTED FHWA BREAKAWAY BASE OR DEVICE PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 1070.
6. EACH BRIDGE MOUNTED LIGHT STANDARD SHALL BE PROVIDED WITH ISOLATION VIBRATION PADS, NUTS, WASHERS, LEVELING PLATE AND WIRE MESH FOR INSTALLATION ON THE FOUNDATION AS SHOWN ON THE PLANS.
7. LIGHT STANDARD WIRING DETAIL FOR INSTALLATION WITH CONCRETE FOUNDATION SHOWN. DETAIL FOR INSTALLATION WITH HELIX FOUNDATION IS SIMILAR.
8. LIGHT STANDARD WIRING DETAILS SHOWN FOR TWIN MAST ARM (2 LUMINAIRES PER POLE) INSTALLATIONS. SINGLE MAST ARM (1 LUMINAIRE PER POLE) INSTALLATIONS SHALL OMIT TWO (2) IN-LINE FUSE HOLDERS AND ASSOCIATED WIRING.
9. CONDUCTORS EXTENDED INTO LIGHT POLE BASE SHALL BE OF SUFFICIENT LENGTH TO WITHDRAW SPLICES AND/OR INSULATED JOINTS A MINIMUM 18" OUT OF THE POLE HANDHOLE.
10. ALL CONDUCTORS ORIGINATING IN POLE SHALL BE A 1/C NO. 10 AWG UNLESS OTHERWISE NOTED.
11. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
12. WASHERS BETWEEN HEX NUTS AND POLE BASES SHALL BE 2.5" OUTER DIAMETER. WASHERS ON PARAPET OR MEDIAN MOUNTED LIGHT POLES SHALL BE MINIMUM ¼" THICK. BENT OR DEFORMED WASHERS OR DAMAGED POLE BASES WILL NOT BE ACCEPTED. MULTIPLE STACKED WASHERS SHALL NOT BE SUBSTITUTED FOR APPROPRIATELY SIZED WASHERS.
13. ANCHOR BOLTS SHALL EXTEND OVER THE TOP OF HEX NUTS AND SHALL HAVE SUFFICIENT THREAD EXPOSED FOR LOCK NUT TABS TO MAKE CONTACT.



LIGHT STANDARD DESCRIPTION



POLE BASE

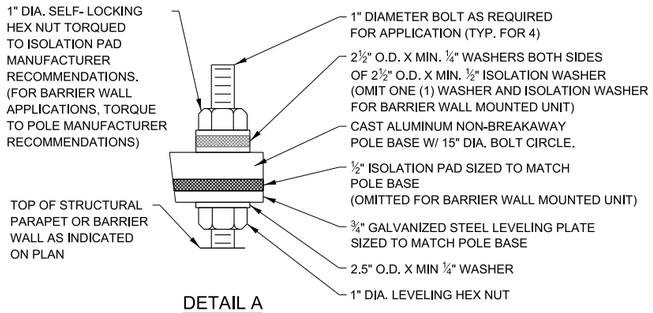
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REMOVED REFERENCES TO HPS.
	REVISIONS TO NOTES. REVISED
	CALL-OUTS FOR LIGHT STANDARD
	MOUNTING DETAIL GROUND MOUNTED
	UNITS. REMOVED SURGE PROTECTORS
	AND ADDED A DEDICATED NEUTRAL.

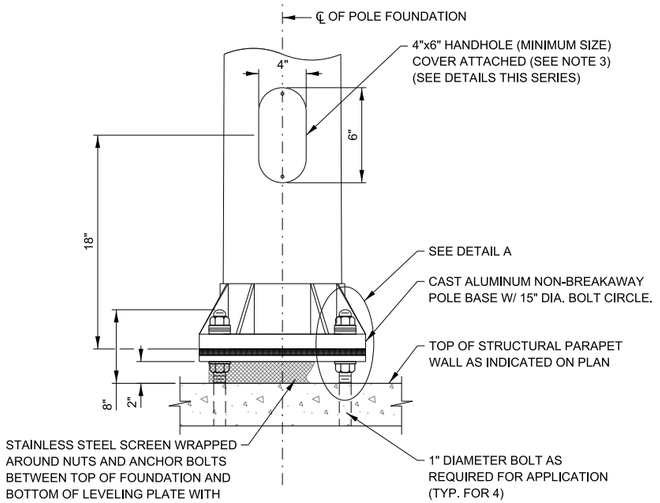
Illinois Tollway

LIGHT STANDARD DETAILS

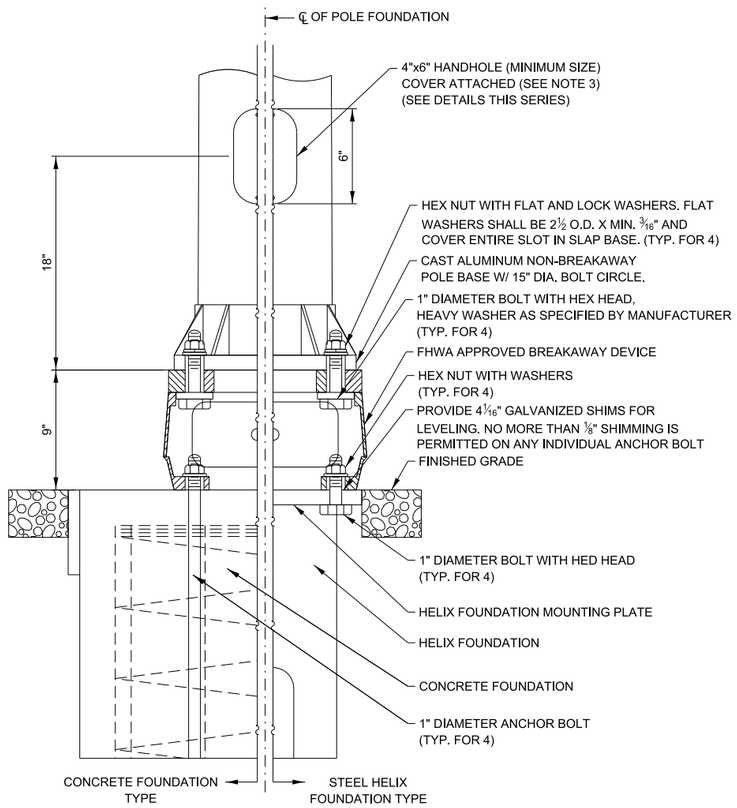
VERSION:	STANDARD:	SHEET:
2024-03	H2-10	1 OF 3



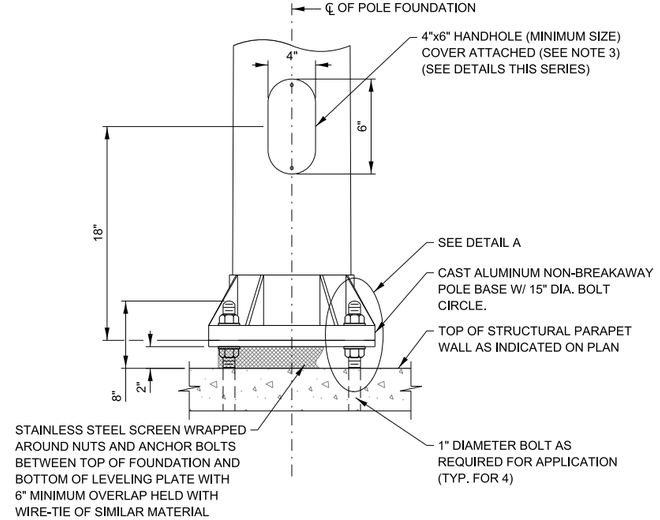
DETAIL A



LIGHT STANDARD MOUNTING DETAIL
(BRIDGE MOUNTED UNITS)

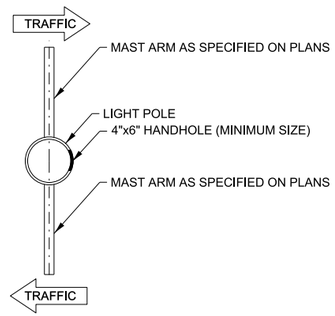


LIGHT STANDARD MOUNTING DETAIL
(GROUND MOUNTED UNITS)

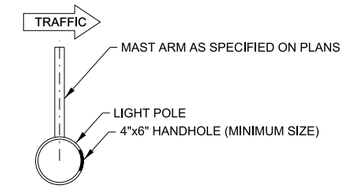


LIGHT STANDARD MOUNTING DETAIL
(BARRIER WALL MOUNTED UNITS)

LIGHT STANDARD MOUNTING DETAILS



MEDIAN BARRIER WALL MOUNTED UNITS



SHOULDER GROUND AND STRUCTURAL
PARAPET WALL MOUNTED UNITS

LIGHT STANDARD HANDHOLE
ORIENTATION DETAIL

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

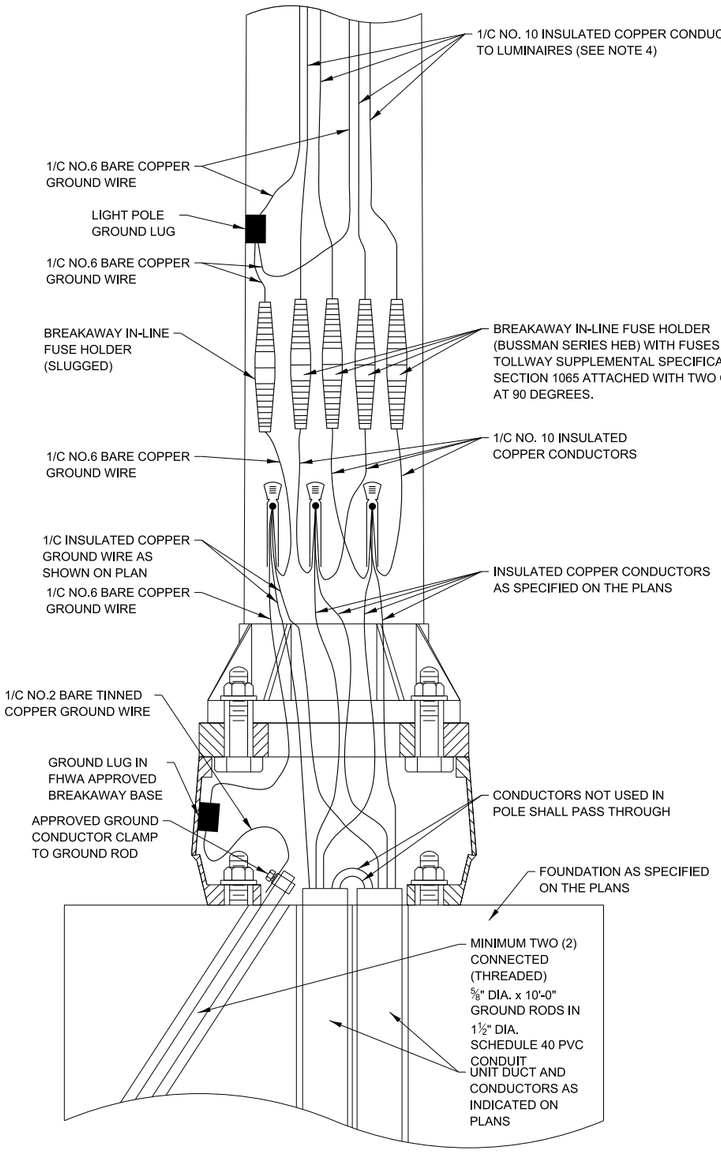
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

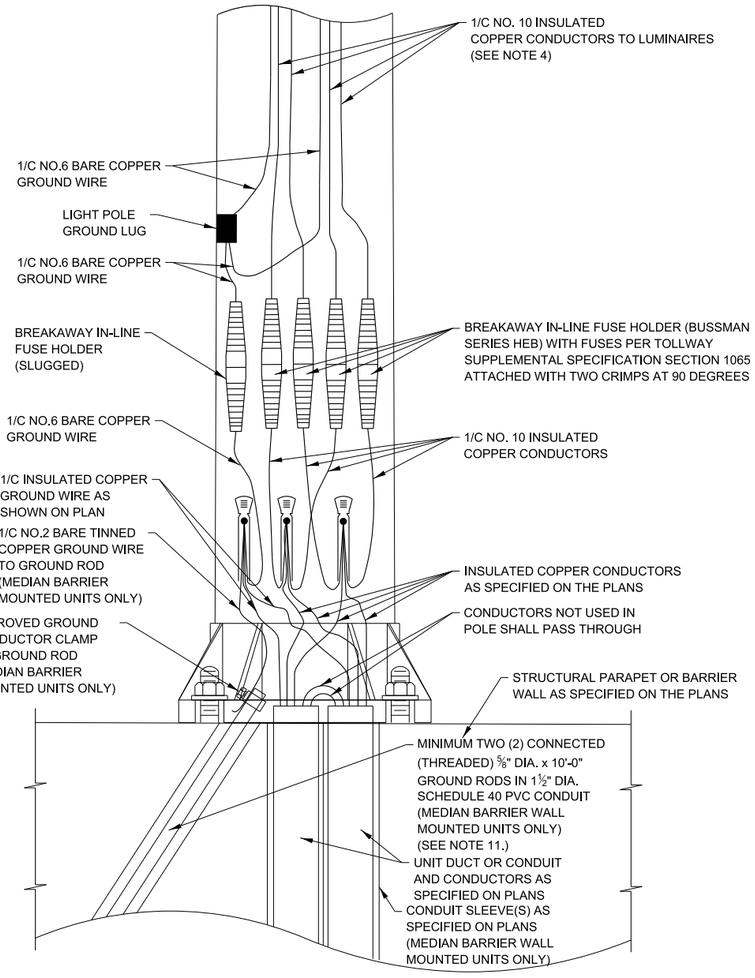
Illinois Tollway

LIGHT STANDARD DETAILS

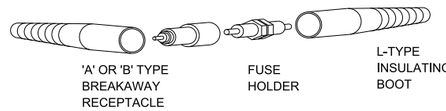
VERSION:	STANDARD:	SHEET:
2024-03	H2-10	2 OF 3



LIGHT STANDARD WIRING DETAIL
(GROUND MOUNTED UNITS)
(SEE NOTES 7 & 8)



LIGHT STANDARD WIRING DETAIL
(STRUCTURAL AND BARRIER WALL MOUNTED UNITS)



IN-LINE FUSE HOLDER WITH
BREAKAWAY FEATURE DETAIL

LIGHT STANDARD WIRING DETAILS

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

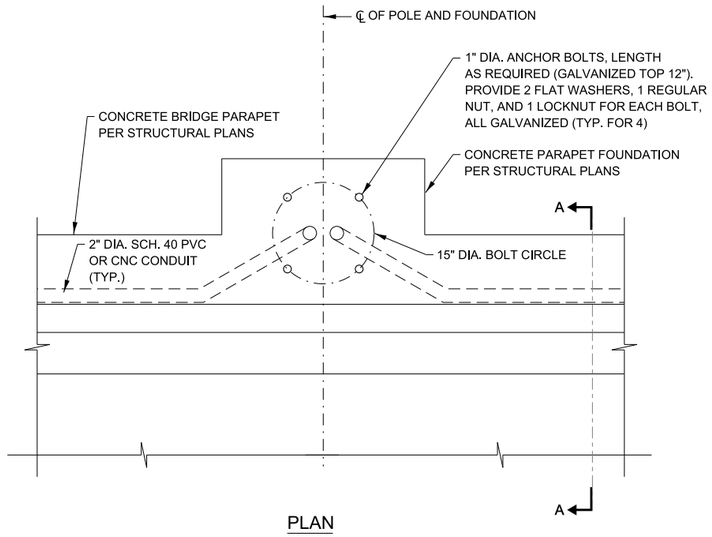
DATE:
03/01/2024

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

Illinois Tollway

LIGHT STANDARD DETAILS

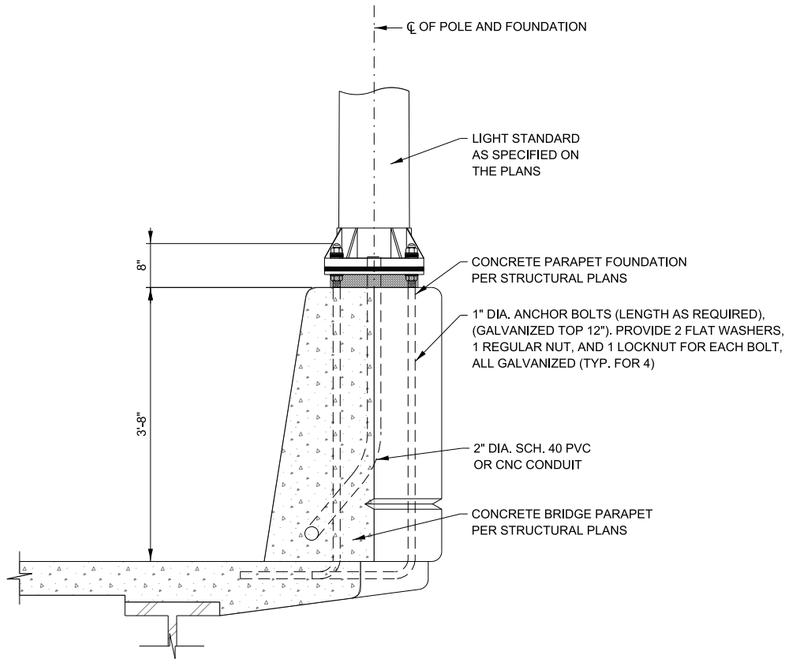
VERSION:	STANDARD:	SHEET:
2024-03	H2-10	3 OF 3



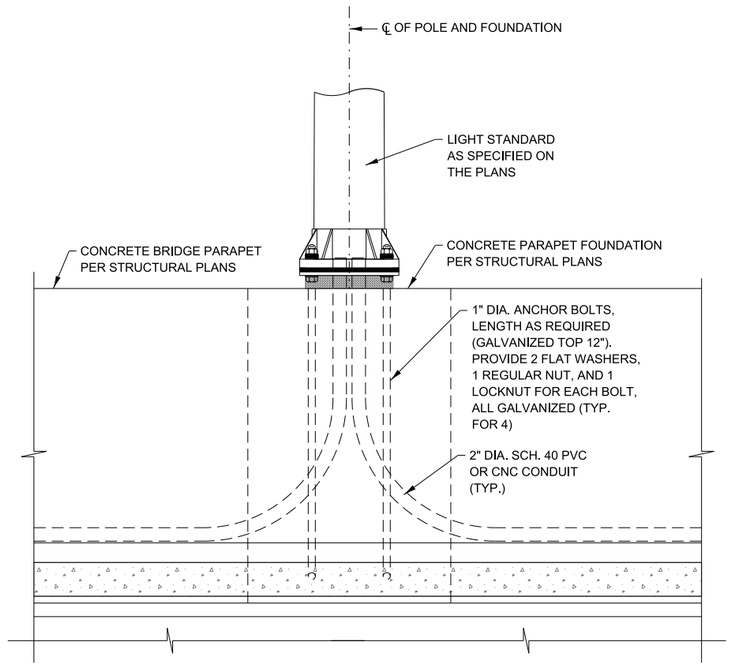
PLAN

NOTES:

1. FOR STRUCTURAL PARAPET FOUNDATION DETAILS, SEE STRUCTURAL PLANS.
2. THE END 4'-0" SECTION OF WINGWALL/PARAPET SHALL BE KEPT FREE FROM ANY ATTACHMENTS TO AVOID CONFLICT FROM TRAFFIC BARRIER TERMINAL.
3. ALL CONDUIT, JUNCTION BOXES AND APPURTENANCES MOUNTED TO STRUCTURE SHALL BE OFFSET FROM THE FACE OF THE STRUCTURE A MINIMUM OF ONE (1) INCH BY MEANS OF A STAINLESS STEEL C-CHANNEL. C-CHANNEL SHALL BE SECURED TO BRIDGE PARAPET WITH ½" DIA. EXPANSION ANCHORS (MIN. 2" LONG). EXPANSION ANCHORS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION AND SHALL BE MADE BY PARABOLT, KWIK-BOLT OR WEJ-IT. CONDUIT SHALL BE SECURED WITH APPROVED CLAMPS A MINIMUM OF 5 FEET FROM CENTER AND A MINIMUM OF 2 FEET FROM ANY CHANGE IN DIRECTION OR JUNCTION BOX.
4. THE BARREL IN THE EXPANSION JOINT FITTING SHALL BE FULLY EMBEDDED IN THE CONCRETE ON ONE SIDE OF THE EXPANSION JOINT. ONE HALF THE LENGTH OF THE DEFLECTION FITTING SHALL BE EMBEDDED IN THE CONCRETE ON THE OTHER SIDE OF THE EXPANSION JOINT.
5. EXPANSION/DEFLECTION JOINTS SHALL BE PROVIDED AT ALL BRIDGE EXPANSION JOINTS.
6. ALL CLAMPS AND HARDWARE FOR CONDUIT MOUNTING SHALL BE OF LIKE MATERIAL AS THE CONDUIT.
7. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.



SECTION A-A



ELEVATION

CONDUIT EMBEDDED IN BRIDGE PARAPET

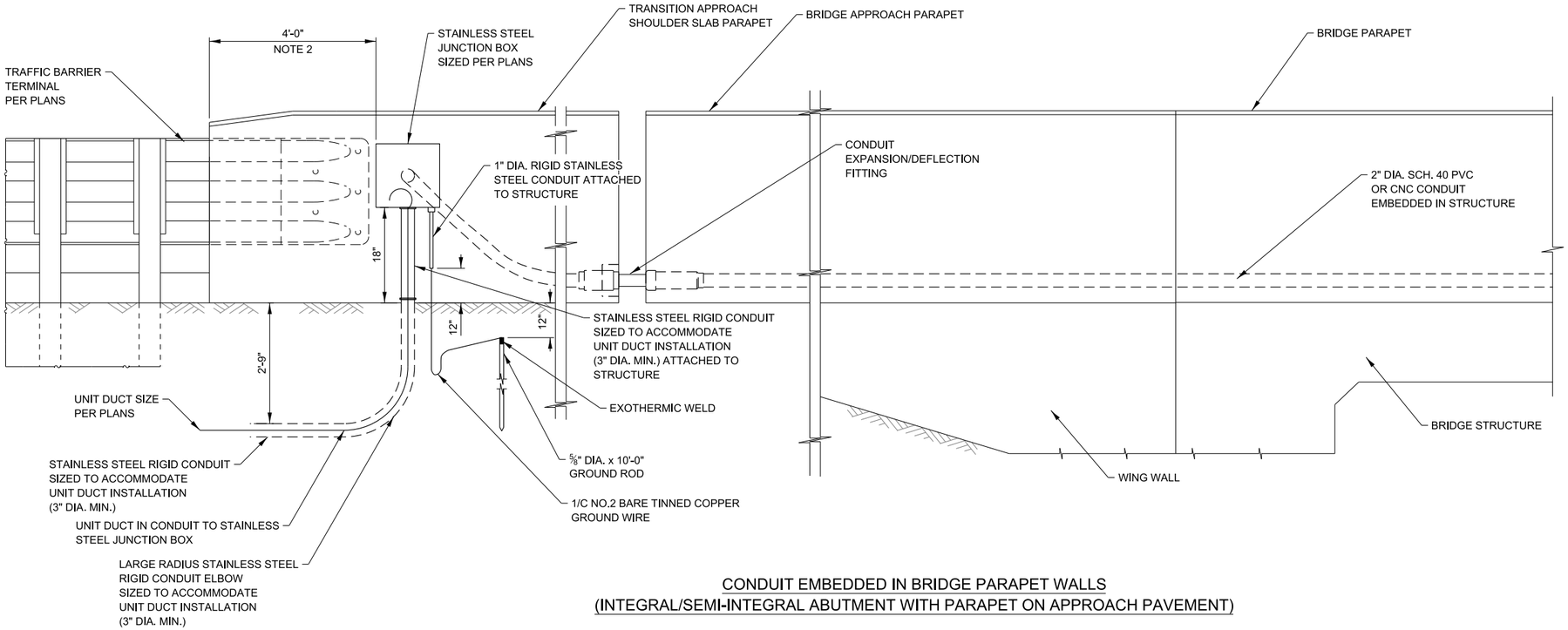
APPROVED BY: Marco Nastif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REMOVED THE DIMENSION OF THE ANCHOR BOLT FROM THE SECTION A-A VIEW. ADDED THE TRANSITION SLAB DETAIL. REVISED CALL-OUTS FOR SECTION A-A VIEW. REVISED CALL-OUTS TO THE ELEVATION VIEW.

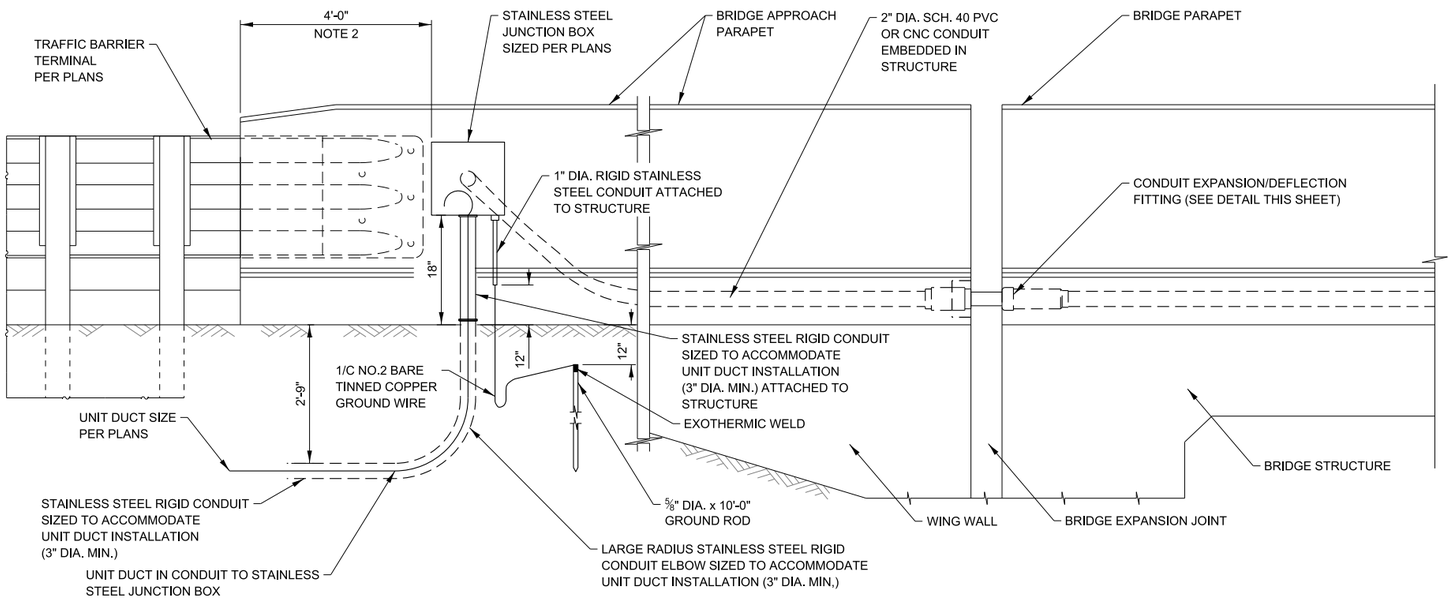
Illinois Tollway

BRIDGE CONDUIT DETAILS

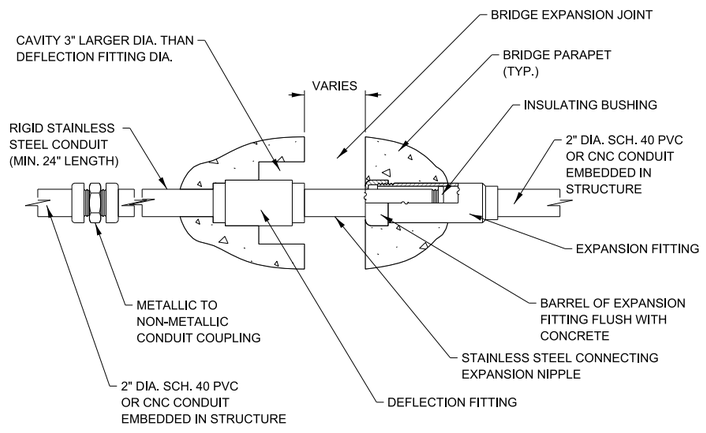
VERSION: 2024-03 | STANDARD: H3-08 | SHEET: 1 OF 4



CONDUIT EMBEDDED IN BRIDGE PARAPET WALLS
(INTEGRAL/SEMI-INTEGRAL ABUTMENT WITH PARAPET ON APPROACH PAVEMENT)



CONDUIT EMBEDDED IN BRIDGE PARAPET WALLS
(JOINTED ABUTMENT WITH PARAPET ON APPROACH PAVEMENT)



COMBINATION EXPANSION/ DEFLECTION FITTING
(SEE NOTES 4 & 5)

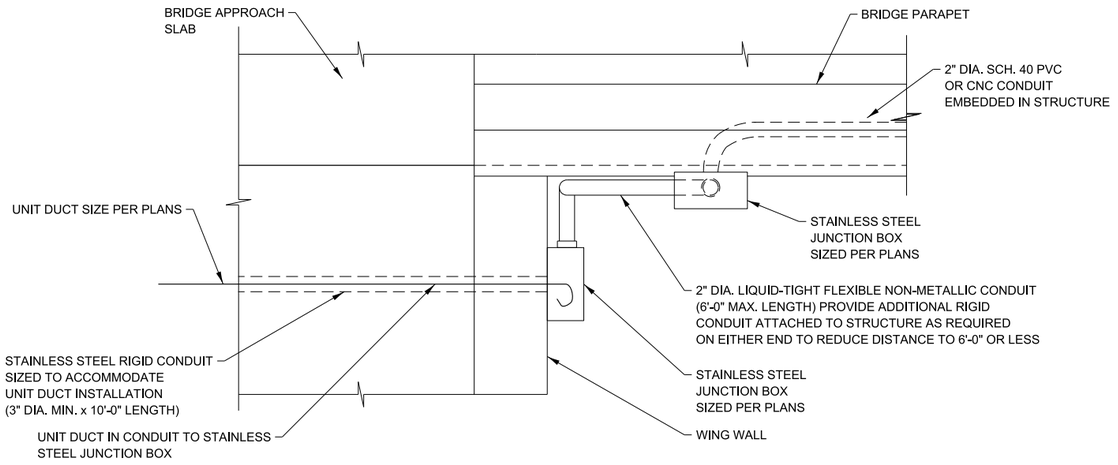
NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

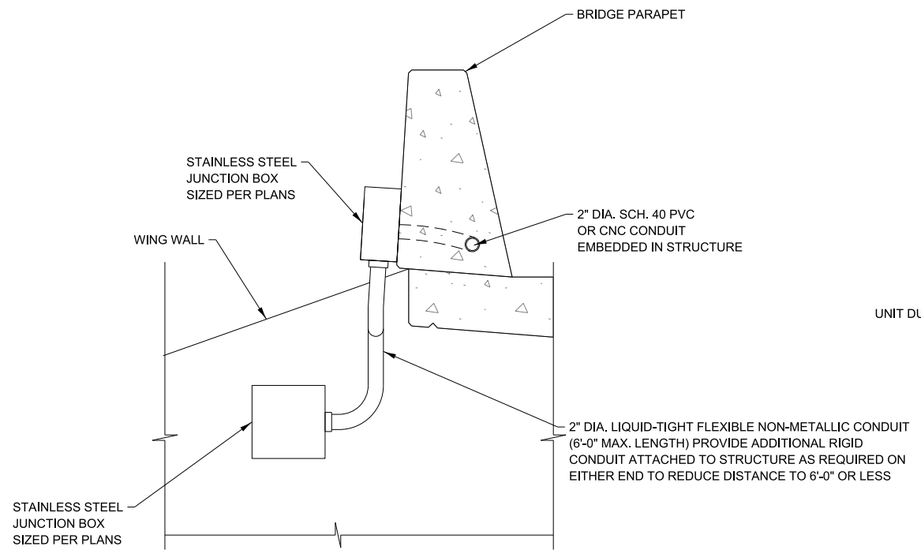
Illinois Tollway

BRIDGE CONDUIT DETAILS

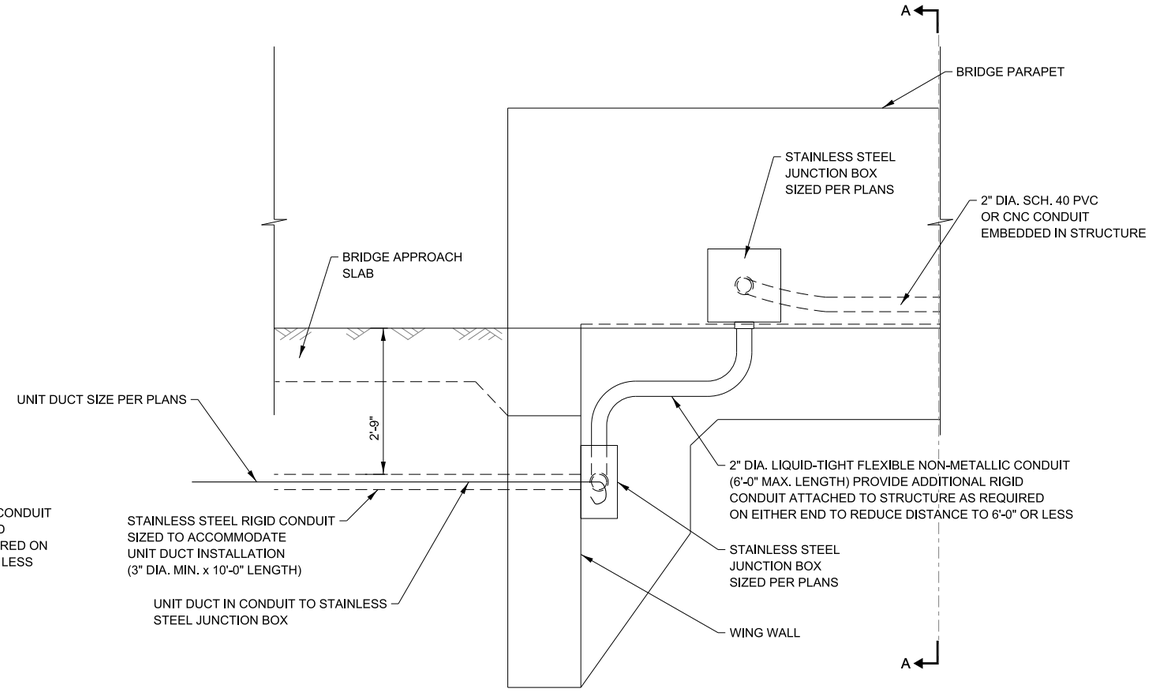
VERSION:	STANDARD:	SHEET:
2024-03	H3-08	2 OF 4



PLAN



SECTION A-A



ELEVATION

APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

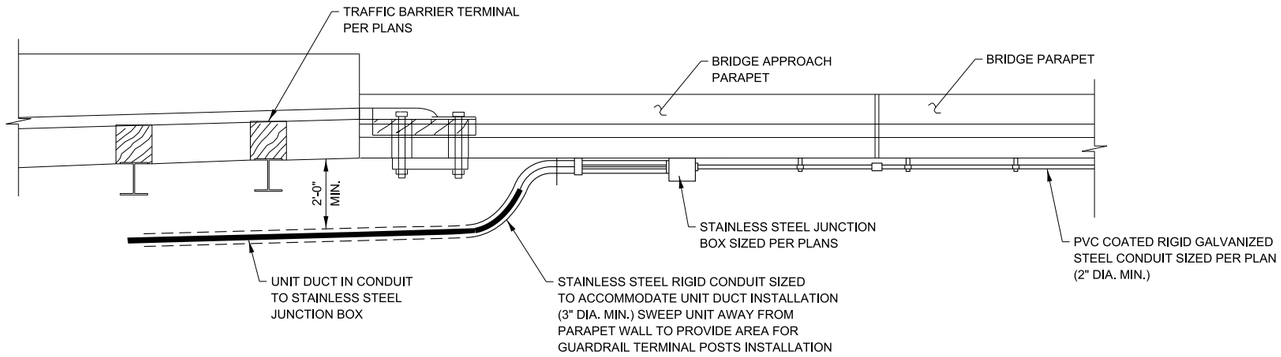
CONDUIT EMBEDDED IN BRIDGE PARAPET WALLS
(INTEGRAL/SEMI-INTEGRAL ABUTMENT WITH PARAPET ENDING ON BRIDGE DECK)

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

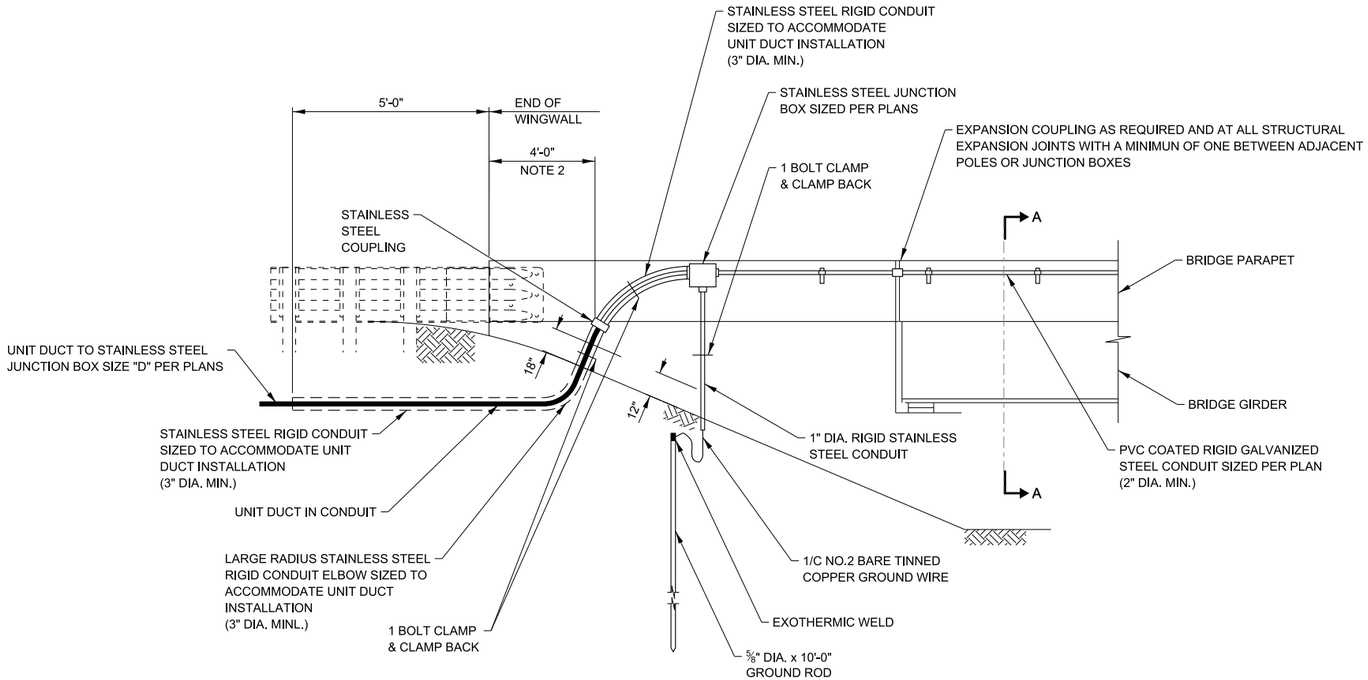
Illinois Tollway

BRIDGE CONDUIT DETAILS

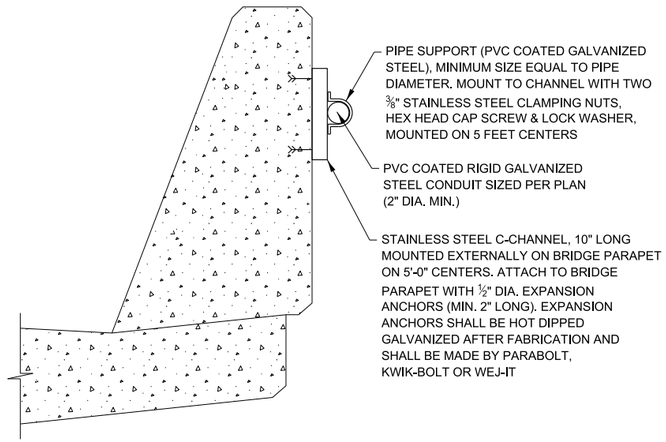
VERSION:	STANDARD:	SHEET:
2024-03	H3-08	3 OF 4



PLAN VIEW



ELEVATION OF TYPICAL WINGWALL CONDUIT TRANSITION



SECTION A-A

CONDUIT ATTACHED TO BRIDGE PARAPET

NOTE:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

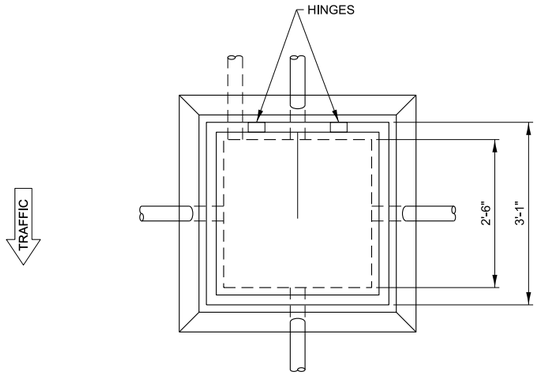
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

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BRIDGE CONDUIT DETAILS

VERSION:	STANDARD:	SHEET:
2024-03	H3-08	4 OF 4



PLAN



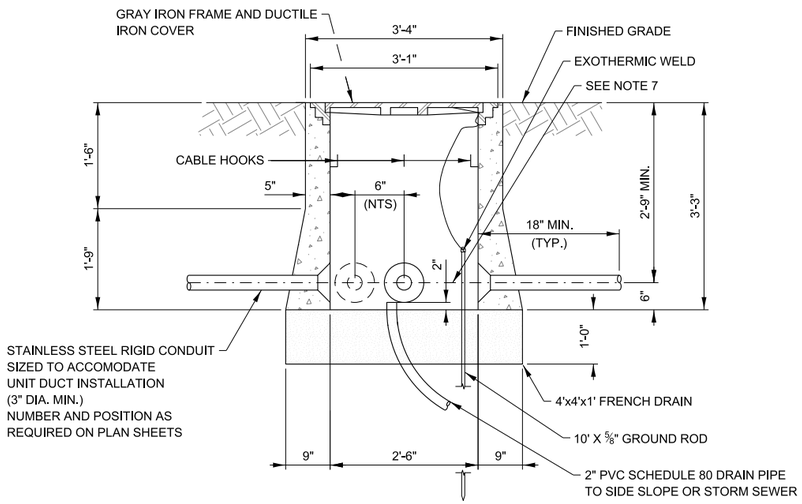
EAST JORDAN
EJ 8216



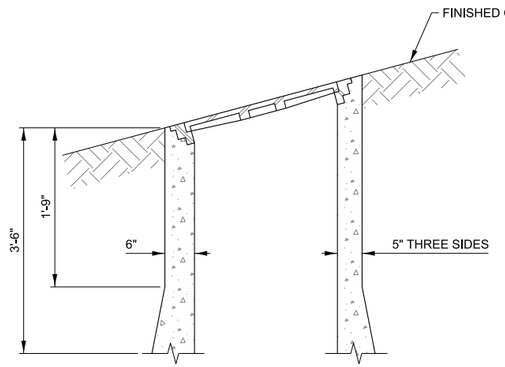
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NOTES:

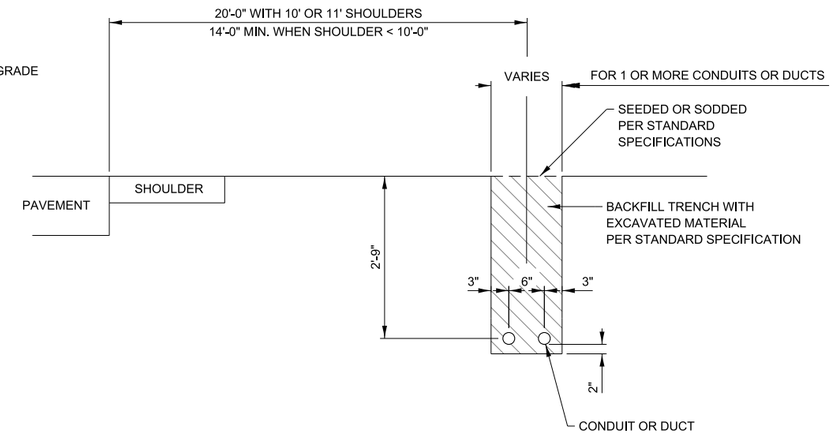
1. HEAVY-DUTY HANDHOLE LOCATED IN UNPAVED AREAS AND NOT SHIELDED BY GUARDRAIL SHALL BE CONSTRUCTED WITH THE TOP FLUSH WITH THE ADJACENT SLOPE.
2. HEAVY-DUTY HANDHOLE SHALL BE CONSTRUCTED IN NON-PAVED AREAS. THE FRAME AND HINGED COVER SHALL BE EITHER NEENAH FOUNDRY R-6662-PS WITH TYPE G LIFTING HANDLE OR EAST JORDAN IRON WORKS EJ 8216 WITH MPIC OR APPROVED EQUAL. THE HINGED COVER SHALL BE PROVIDED WITH A LIFT ASSIST MECHANISM. THERE SHALL BE TWO SETS OF HINGES AND THE DESIGN SHALL ALLOW FOR THE COVER TO OPEN > 90 DEGREES. THE COVER SHALL BE PROVIDED WITH A HOLD OPEN SAFETY ARM THAT CATCHES TO PREVENT ACCIDENTAL CLOSURE. THE COVER SHALL ALSO BE ABLE TO BE MADE FULLY REMOVABLE. THE FRAME COVER SHALL BE INSTALLED WITH THE HINGES TO THE SIDE FACING APPROACHING TRAFFIC.
3. AGGREGATE FOR FRENCH DRAIN SHALL BE PER ARTICLE 1003.04 OF THE STANDARD SPECIFICATIONS.
4. 10 FEET OF EXTRA CABLE SHALL BE COILED IN EACH HANDHOLE.
5. ALL METALLIC COMPONENTS OF THE HANDHOLE SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 814, THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
6. THE HANDHOLE COVER SHALL BE LETTERED "ELECTRIC". LETTERING SHALL BE 2" FLAT FACE GOTHIC AND BE FLUSH WITH THE SLIP RESISTANT SURFACE.
7. CONDUCTOR SPLICES SHALL BE MADE ONLY WITHIN ACCESSIBLE ABOVE GRADE LOCATIONS, SUCH AS WITHIN POLE BASES, JUNCTION BOXES AND WITHIN ENCLOSURES. BELOW GRADE CONDUCTOR SPLICING SHALL ONLY BE ACCEPTABLE AT THE APPROVAL OF THE TOLLWAY. IF A BELOW GRADE SPLICE IS APPROVED FOR USE BY THE TOLLWAY, THE SPLICES SHALL BE WATERPROOF OF THE RESIN EPOXY ENCAPSULATED TYPE.



ELEVATION



SLOPE INSTALLATION



TRENCHING FOR CONDUIT IN NON-PAVED AREAS

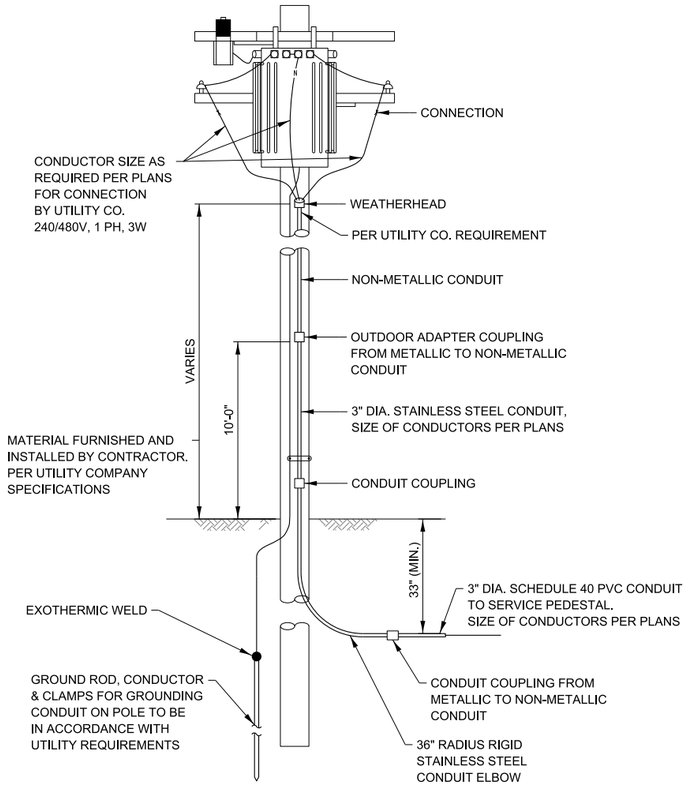
APPROVED BY: Marwa Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REVISED TO REFERENCE DETAILS FOR BURIED WIRING. ADDED NOTE 7
03-01-2021	REMOVED SAND FROM CONDUIT TRENCH. GROUND ROD SHOWN IN ELEV. VIEW.
03-31-2017	REVISED NOTES. REMOVED GROUND ROD FROM DETAIL.

Illinois Tollway

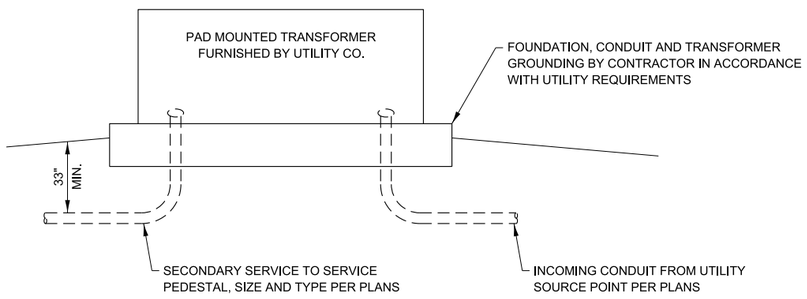
HEAVY-DUTY HANDHOLE AND BURIED WIRING DETAILS

VERSION:	STANDARD:	SHEET:
2024-03	H4-06	1 OF 1



UTILITY SERVICE POLE

SUBJECT TO UTILITY COMPANY APPROVAL

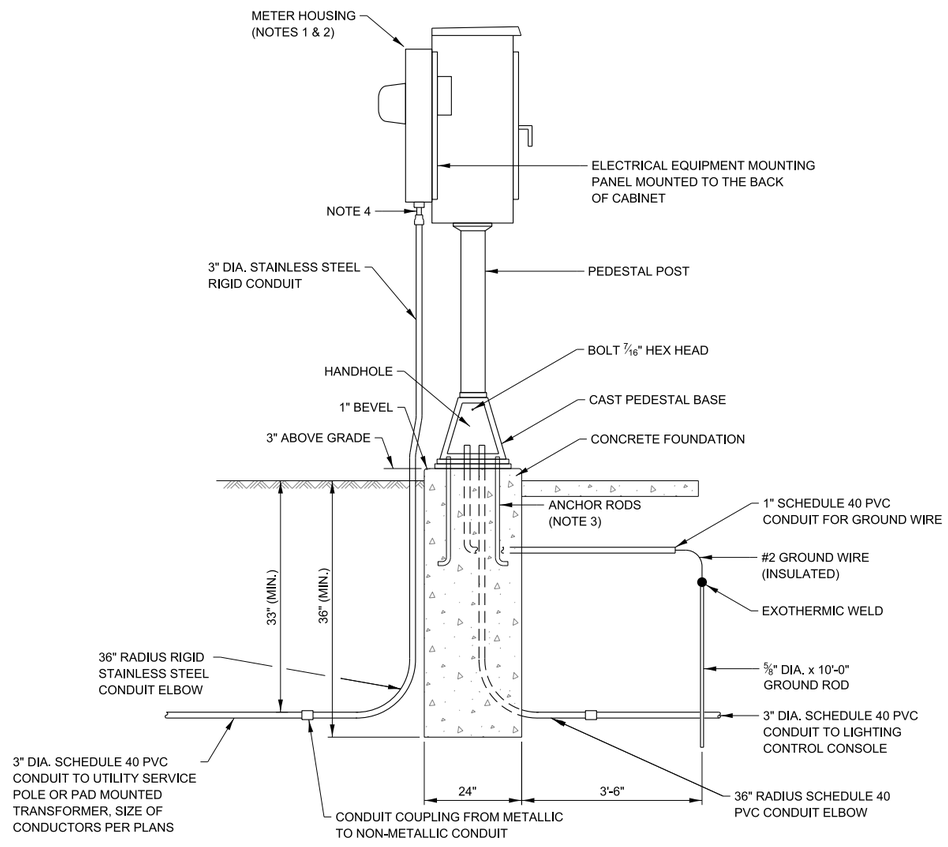


UTILITY PAD MOUNTED TRANSFORMER

SUBJECT TO UTILITY COMPANY APPROVAL

NOTES:

1. METER HOUSING SHALL BE MOUNTED TO BACK WALL OF CONTROL CABINET. PROVIDE A GATE IN R.O.W. FENCE TO ALLOW UTILITY ACCESS TO READ THE METER.
2. CABLES FROM METER HOUSING SHALL PASS THROUGH BACK WALL OF CONTROL CABINET.
3. CONTRACTOR MUST COORDINATE WITH PEDESTAL BASE SUPPLIER AND FURNISH THE NECESSARY ANCHOR RODS.
4. PROVIDE A 2½" CONDUIT HUB, 2½" NIPPLE AND 2½" TO 3" CONDUIT REDUCER FITTING.
5. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.



SERVICE PEDESTAL WITH METER DETAIL

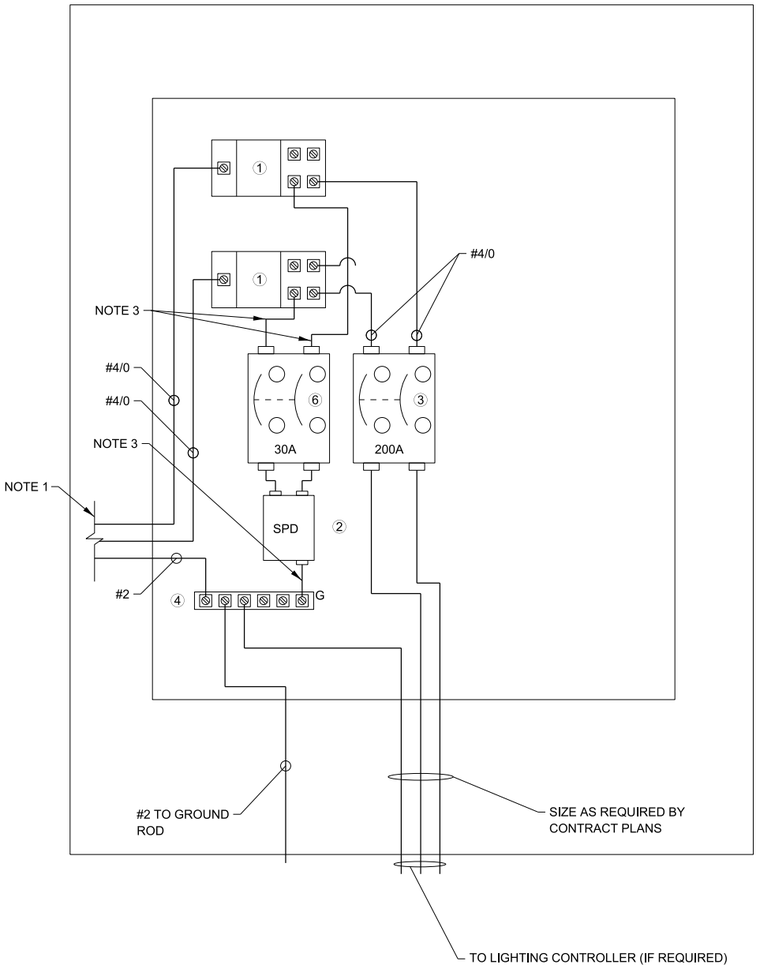
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2021

REVISIONS	
DATE	DESCRIPTION
03-01-2021	ADDED COMBINED LIGHTING/ITS PEDESTAL.
03-01-2018	TYPOGRAPHICAL CORRECTIONS.
03-31-2017	ADDED EQUIPMENT LAYOUTS.
03-31-2016	REVISED CONDUIT DEPTH.

Illinois Tollway

SERVICE POLE AND PEDESTAL DETAILS

VERSION:	STANDARD:	SHEET:
2021-03	H5-06	1 OF 3



SERVICE PEDESTAL INTERIOR ELECTRIC EQUIPMENT LAYOUT & WIRING DIAGRAM

ROADWAY ITS

SERVICE PEDESTAL INTERIOR ELECTRIC EQUIPMENT LAYOUT & WIRING DIAGRAM

ROADWAY LIGHTING

ITEM DESCRIPTION

① POWER DISTRIBUTION/TERMINAL BLOCK, WITH INGRESS PROTECTION RATING IP20.

② SURGE PROTECTION DEVICE

③ CIRCUIT BREAKER, 200 AMPERE, 2-POLE, 600 VOLT RATED

④ GROUNDING AND/OR NEUTRAL BUS

⑤ CIRCUIT BREAKER, 30 AMPERE (OR AS REQUIRED BY CONTRACT PLANS), 2-POLE, 600 VOLT RATED

⑥ CIRCUIT BREAKER, 30 AMPERE, 2-POLE, 600 VOLT RATED

NOTES:

1. ELECTRIC SERVICE CONDUCTORS FROM METER HOUSING.
2. ELECTRIC SERVICE CONDUCTORS TO LIGHTING CONTROL CONSOLE. SIZE AS INDICATED ON THE PLANS.
3. SURGE PROTECTION DEVICE CONDUCTORS SIZE SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATION.
4. ELECTRIC CONDUCTORS SHOWN WITH MINIMUM SIZES. LARGER SIZES SHALL BE USED AS REQUIRED OR AS SHOWN ON THE PLANS.
5. CABLES SHALL BE MINIMUM #4 AWG OR AS REQUIRED FOR CIRCUIT BREAKER.

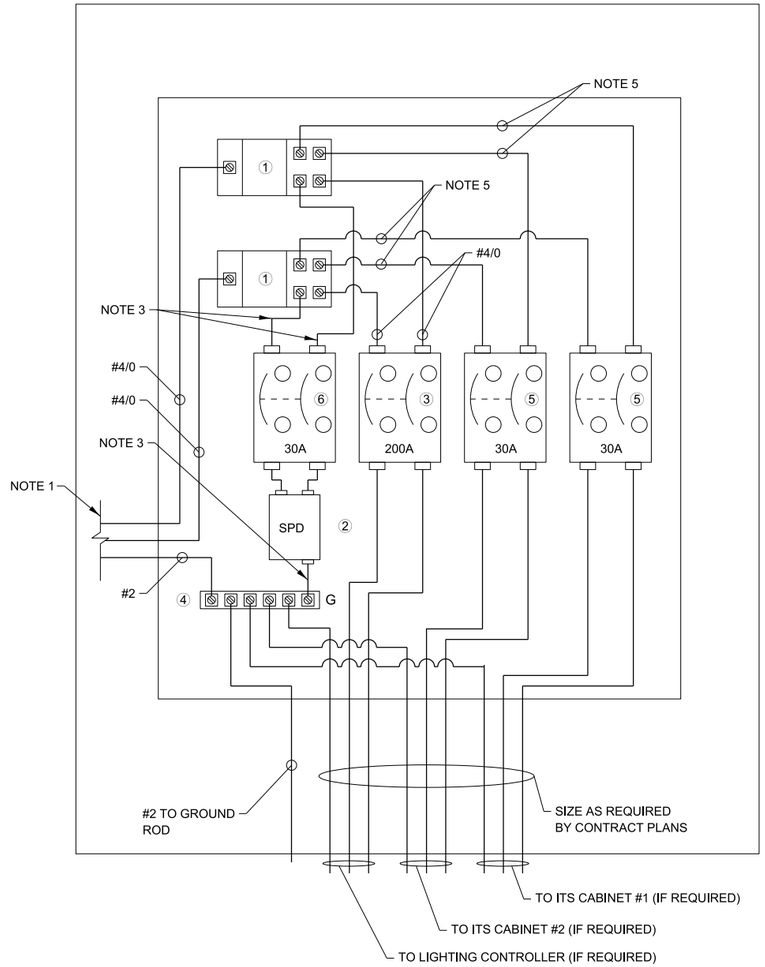
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/01/2021

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SERVICE POLE AND PEDESTAL DETAILS

VERSION:	STANDARD:	SHEET:
2021-03	H5-06	2 OF 3



SERVICE PEDESTAL INTERIOR ELECTRIC EQUIPMENT LAYOUT & WIRING DIAGRAM

COMBINED ROADWAY LIGHTING / ITS

ITEM DESCRIPTION

① POWER DISTRIBUTION/TERMINAL BLOCK, WITH INGRESS PROTECTION RATING IP20.

② SURGE PROTECTION DEVICE

③ CIRCUIT BREAKER, 200 AMPERE, 2-POLE, 600 VOLT RATED

④ GROUNDING AND/OR NEUTRAL BUS

⑤ CIRCUIT BREAKER, 30 AMPERE (OR AS REQUIRED BY CONTRACT PLANS), 2-POLE, 600 VOLT RATED

⑥ CIRCUIT BREAKER, 30 AMPERE, 2-POLE, 600 VOLT RATED

NOTES:

1. ELECTRIC SERVICE CONDUCTORS FROM METER HOUSING.
2. ELECTRIC SERVICE CONDUCTORS TO LIGHTING CONTROL CONSOLE. SIZE AS INDICATED ON THE PLANS.
3. SURGE PROTECTION DEVICE CONDUCTORS SIZE SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATION.
4. ELECTRIC CONDUCTORS SHOWN WITH MINIMUM SIZES. LARGER SIZES SHALL BE USED AS REQUIRED OR AS SHOWN ON THE PLANS.
5. CABLES SHALL BE MINIMUM #4 AWG OR AS REQUIRED FOR CIRCUIT BREAKER.

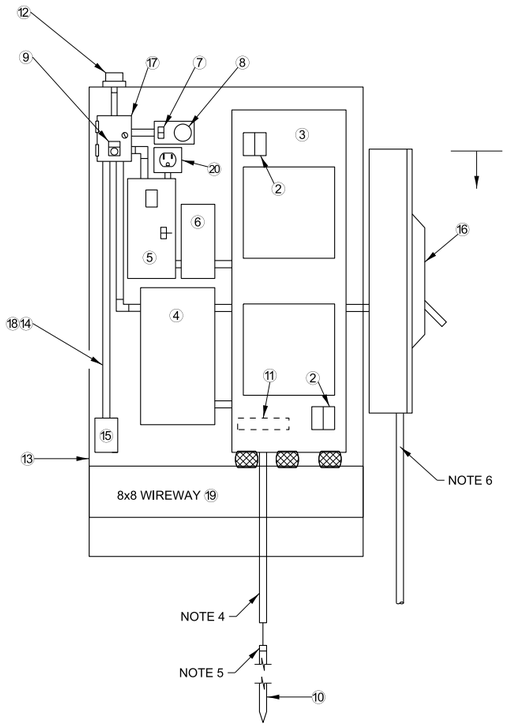
APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER

DATE: 03/01/2021

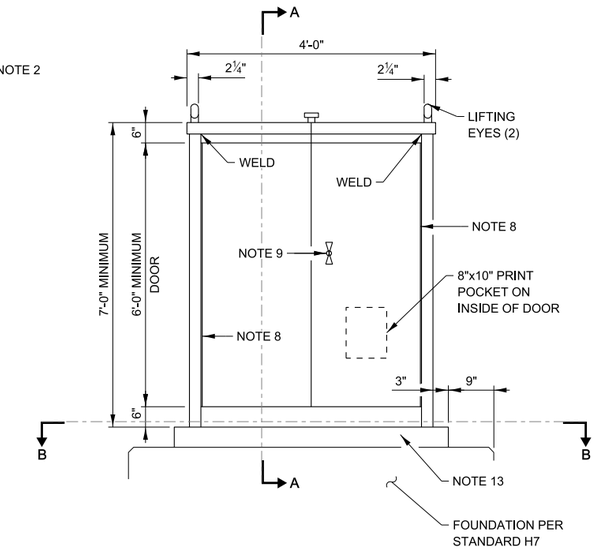
Illinois Tollway

SERVICE POLE AND PEDESTAL DETAILS

VERSION:	STANDARD:	SHEET:
2021-03	H5-06	3 OF 3

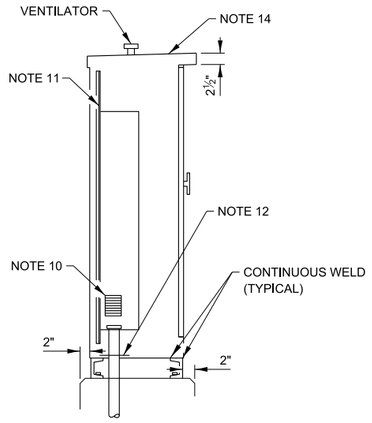


INTERIOR EQUIPMENT LAYOUT

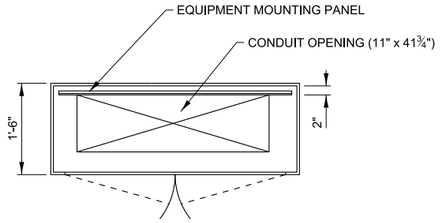


FRONT VIEW

CONTROL CONSOLE DETAILS
(EXTERIOR INSTALLATION)



SECTION A-A



SECTION B-B

NOTES:

1. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
2. 5'-0" MAXIMUM HEIGHT ABOVE GRADE.
3. NOT USED.
4. ¾" PVC CONDUIT IN CONCRETE, SEE FOUNDATION DETAILS (STANDARD H7).
5. EXOTHERMIC WELD NO. 2 BARE TINNED COPPER GROUND CABLE TO GROUND ROD.
6. TO SERVICE PEDESTAL AS INDICATED ON PLANS.
7. NOT USED.
8. CONTINUOUS STAINLESS STEEL PIANO HINGES.
9. 3-POINT LATCH VAULT TYPE HANDLE WITH MASTER KEYED CHICAGO CYLINDER LOCK CATALOG NO. 60
10. SCREENED LOUVERS ON SIDES OF CABINET.
11. 10 GAUGE GALVANIZED STEEL EQUIPMENT MOUNTING PANEL (PAINTED WHITE).
12. REMOVABLE #10 GAUGE 13"x43¾" STAINLESS STEEL PLATE. DRILL PLATE AS REQUIRED FOR CONDUIT ENTRY.
13. 4" x 2½" STAINLESS STEEL CHANNEL (2 REQUIRED-FRONT AND BACK). EXTEND CHANNEL 3" BEYOND ENCLOSURE (CONTINUOUSLY WELD CHANNEL TO ENCLOSURE).
14. TOP SLOPED ½" TO REAR FOR DRAINAGE.
15. FOR WIRING DIAGRAM SEE SHEET 2 OF THIS SERIES.
16. ALL EQUIPMENT WITHIN LIGHTING CONTROLLER SHALL BE SEPARATED A MINIMUM OF THREE (3) INCHES FROM EACH OTHER.
17. MAIN PANELBOARD (ITEM 3) SHALL BE POSITIONED SUCH THAT BOTH DOORS (DOOR-IN-DOOR) OF THE PANELBOARD MAY BE FULLY OPENED WITHIN EXTERIOR ENCLOSURE (ITEM 13) WITHOUT REMOVAL

ITEM DESCRIPTION:

① NOT USED.

② SECONDARY SURGE ARRESTERS, 2 POLE, 650 VOLT.

③ MAIN PANELBOARD IN A NEMA 1 ENCLOSURE, 480/240 VOLT, 1 PHASE, 3 WIRE, 2 SECTION, 200 AMP, 2 POLE MAIN CIRCUIT BREAKER 65,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY WITH CIRCUIT BREAKERS PER SCHEDULE ON PLANS. DOOR HINGES ON RIGHT SIDE.

④ LIGHTING CONTRACTOR, ELECTRICALLY HELD, 480 VOLT, 200 AMP, 2 POLE, 120 VOLT CONTROL, WITH 250 VOLT, 15 AMP CONTROL LINE FUSE, IN A NEMA 1 ENCLOSURE.

⑤ SECONDARY BREAKER, 15 AMPERE TRIP, 120 VOLT, SINGLE POLE, 65,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY IN A NEMA 1 SURFACE MOUNTED ENCLOSURE.

⑥ STEP DOWN TRANSFORMER, 1500 VA, 480 VOLT PRIMARY, 120 VOLT SECONDARY, SINGLE PHASE, 60 HERTZ, DRY TYPE, NEMA 3R ENCLOSURE.

⑦ SINGLE POLE, 15 AMPERE SWITCH, IN A NEMA 1 ENCLOSURE (WITH ITEM 8), RATED AT 120-277 VAC.

⑧ LAMP HOLDER 660W, 600V, MOUNTED ON A NEMA 1 ENCLOSURE (WITH ITEM 7), W/LED LAMP.

⑨ HAND-OFF-AUTO SELECTOR SWITCH WITH LEGEND PLATE. MOUNTED IN THE COVER OF ITEM 17.

⑩ ⅝" DIA. x 10'-0" LONG GROUND ROD DRIVEN EXTERNAL TO THE FOUNDATION WITHIN GROUND WELL.

⑪ GROUND BUS MOUNTED IN PANELBOARD ENCLOSURE.

⑫ PHOTO ELECTRIC CONTROL SWITCH, WITH RECEPTACLE.

⑬ NEMA TYPE 3R STAINLESS STEEL ENCLOSURE WITH DRIP SHIELD AND STAINLESS STEEL HARDWARE. ENCLOSURE SHALL CONFORM TO J.I.C. STANDARDS WITH CELLULAR NEOPRENE GASKETED DOORS, ALL SEAMS CONTINUOUSLY WELDED, 10 GAUGE STAINLESS STEEL BODY, REMOVABLE STEEL (PAINTED WHITE) PANEL INSIDE THE BACK AND A FACTORY INSTALLED DRIP SHIELD. THE ENCLOSURE SHALL HAVE CONTINUOUS HINGED DOORS MEETING IN THE CENTER, OVERLAPPED AND GASKETED, WITH NO CENTER POST. AN OIL TIGHT KEY LOCKING HANDLE WITH 3 POINT LATCH SHALL BE PROVIDED (FURNISH 6 KEYS). EACH END OF THE ENCLOSURE SHALL HAVE A SCREENED, GASKETED VENTILATING LOUVER AND THE TOP OF THE ENCLOSURE SHALL HAVE A VENTILATOR. INTERNAL CONDUIT SHALL HAVE LOCKNUTS, INSULATING BUSHING AND CONDULET FITTINGS AS REQUIRED. INTERNAL WIRING SHALL BE XLP INSULATED NEC TYPE RHH/RHW-2. PROVIDE A WIRING DIAGRAM IN A PRINT POCKET ON THE INSIDE OF THE CABINET DOOR.

⑭ INTERNAL CONTROL WIRING SHALL BE #12 AWG, STRANDED, XLP INSULATED NEC TYPE RHH/RHW-2 RATED 600 VOLT, WITH SUITABLE COLOR CODING TO BE APPROVED BY THE ENGINEER BEFORE CONSTRUCTION.

⑮ 200 WATT, 120 VOLT CABINET HEATER WITH INTEGRAL THERMOSTAT.

⑯ SERVICE SAFETY SWITCH, 200 AMP, 600 VOLT, NON-FUSED, NEMA 4X STAINLESS STEEL ENCLOSURE.

⑰ NEMA TYPE 1, 8"x6"x4" JUNCTION BOX & COVER WITHOUT KNOCKOUTS. ITEM 9 IS MOUNTED IN THE COVER.

⑱ INTERNAL CONDUIT AND FITTINGS SHALL BE ¾" MINIMUM.

⑲ 8"x8" WIREWAY WITH 3-3" NIPPLES.

⑳ GCFI OUTLET.

APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2018

REVISIONS

DATE	DESCRIPTION
03-01-2018	REMOVED CONTRACTOR RELAY, ADDED GCFI OUTLET.
03-31-2017	REMOVED METER HOUSING.
03-31-2016	REVISED NOTE 2.
03-11-2015	REVISED CONDUITS TO STAINLESS STEEL.

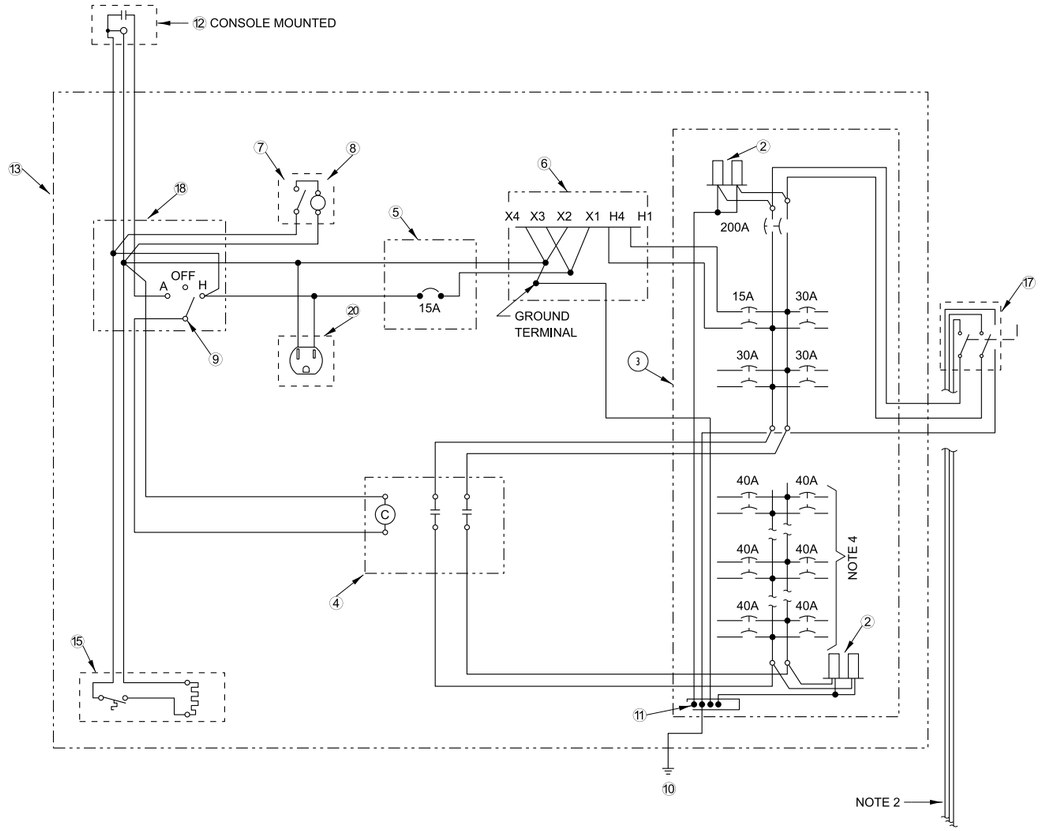
Illinois Tollway

EXTERIOR CONTROL CONSOLE DETAILS

VERSION:	STANDARD:	SHEET:
2018-03	H6-06	1 OF 2

NOTES:

1. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
2. TO SERVICE PEDESTAL, 480/240V, 1 PHASE, 3 WIRE, GROUNDED. SEE STANDARD H5.
3. ITEM NUMBERS REFER TO EQUIPMENT LIST ON SHEET 1 OF THIS SERIES.
4. PROVIDE CIRCUIT BREAKERS PER SCHEDULE ON THE CONTRACT PLANS (MINIMUM OF 12).
5. FOR INTERIOR EQUIPMENT LAYOUT SEE SHEET 1 OF THIS SERIES.



CONTROL CONSOLE WIRING DIAGRAM

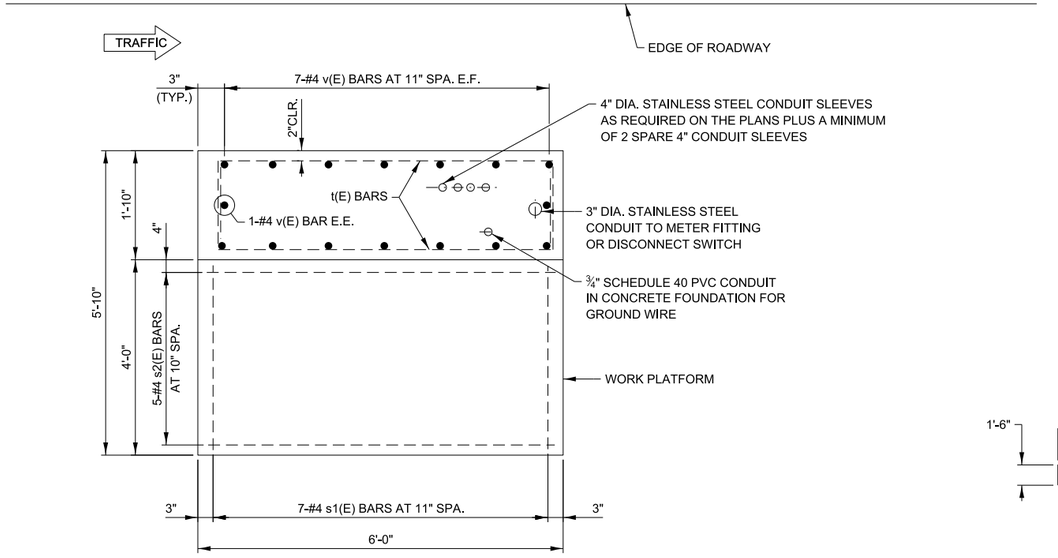
CONTROL CONSOLE DETAILS
(EXTERIOR INSTALLATION)

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

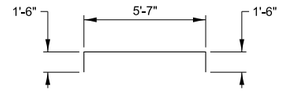
Illinois Tollway

EXTERIOR CONTROL CONSOLE DETAILS

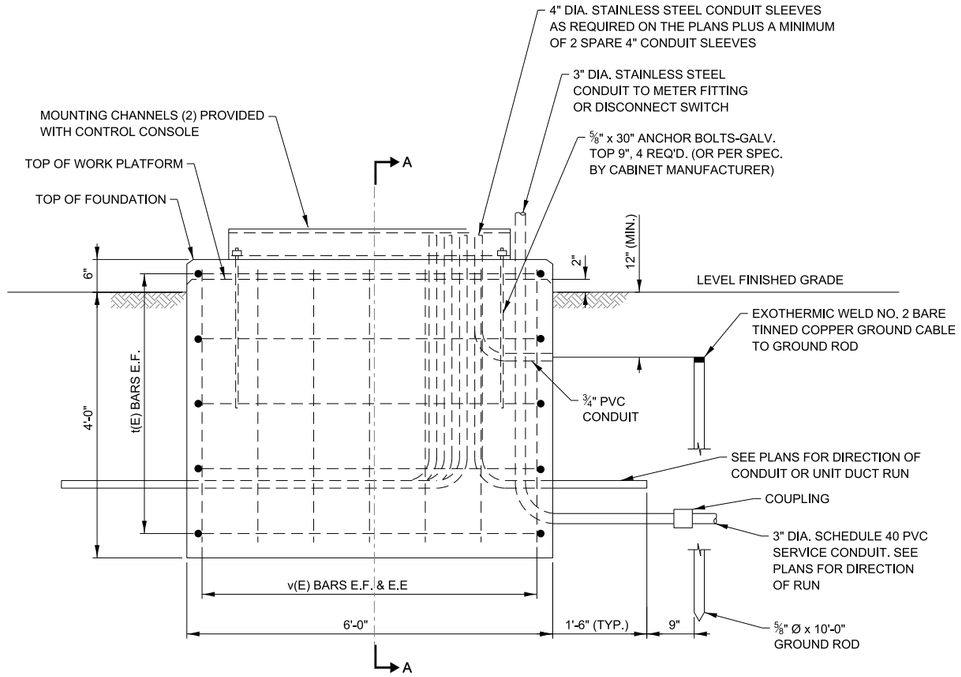
VERSION:	STANDARD:	SHEET:
2018-03	H6-06	2 OF 2



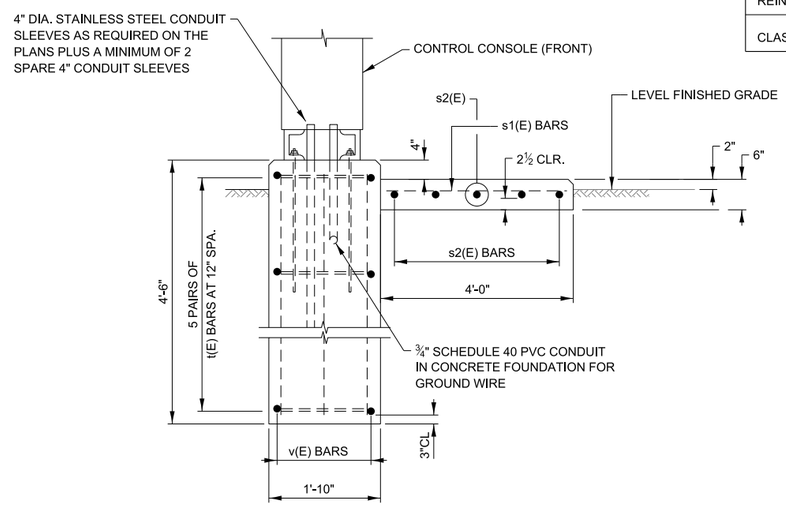
PLAN



t(E) BARS



ELEVATION



SECTION A-A

NOTES:

1. EXPOSED CONCRETE EDGES SHALL HAVE ¾"x45° CHAMFERS EXCEPT WHERE SHOWN OTHERWISE. CHAMFERS ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.
2. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E) AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A615), GRADE 60 DEFORMED BARS.
3. REINFORCEMENT BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.
4. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
5. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR ALL SURFACES UNLESS OTHERWISE SHOWN.
6. FOR CLARITY, CONTROL CONSOLE AND RAILINGS ARE NOT SHOWN IN PLAN VIEW.
7. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
8. FOR TYPE B FOUNDATION REINFORCEMENT, WELDED WIRE MESH 6X6 DI6, Fy=60 KSI CAN BE USED.

REINFORCEMENT BARS SCHEDULE					
BARS	NO.	SIZE	LENGTH	WT. LB.	SHAPE
v(E)	16	#4	4'-0"	43	———
t(E)	10	#4	8'-7"	57	⌐¬
s1(E)	7	#4	3'-8"	17	———
s2(E)	5	#4	5'-8"	19	———

BILL OF MATERIAL		
DESCRIPTION	UNIT	QUANTITY
REINF. BARS, EPOXY COATED	POUND	136
CLASS "SI" CONCRETE	CU. YD.	2.3

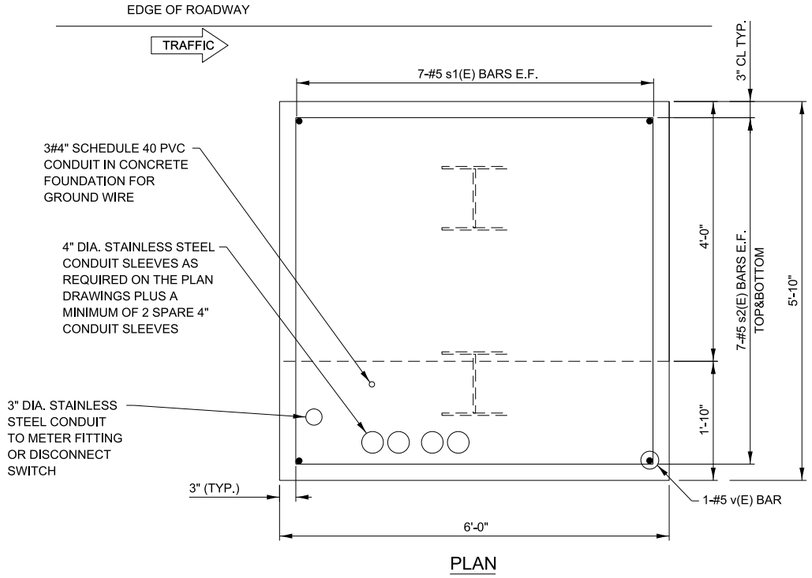
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

REVISIONS	
DATE	DESCRIPTION
03-01-2025	UPDATED FOUNDATION DESIGN.
03-04-2019	REVISED CONDUITS TO MATCH H5.
03-11-2015	REVISED CONDUITS TO STAINLESS STEEL.
02-07-2012	REVISED TYPE A AND TYPE B
	CONTROL CONSOLE FOUNDATIONS.

Illinois Tollway

EXTERIOR CONTROL CONSOLE FOUNDATION DETAILS

VERSION: 2025-03 | STANDARD: H7-04 | SHEET: 1 OF 2

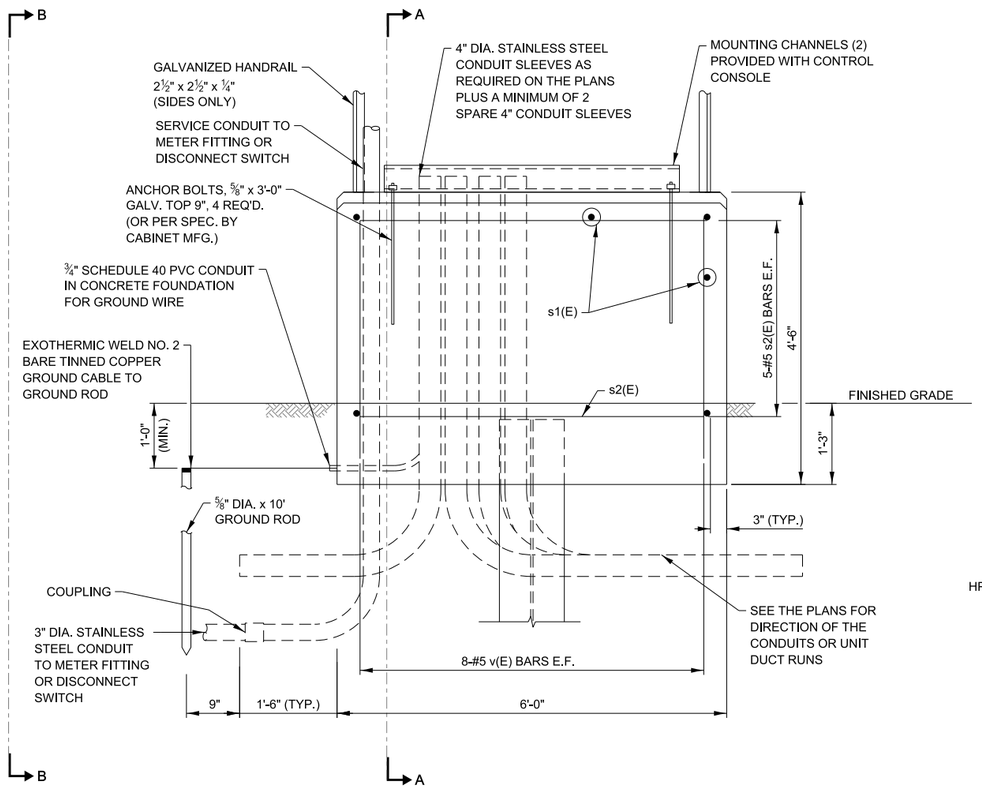


PLAN

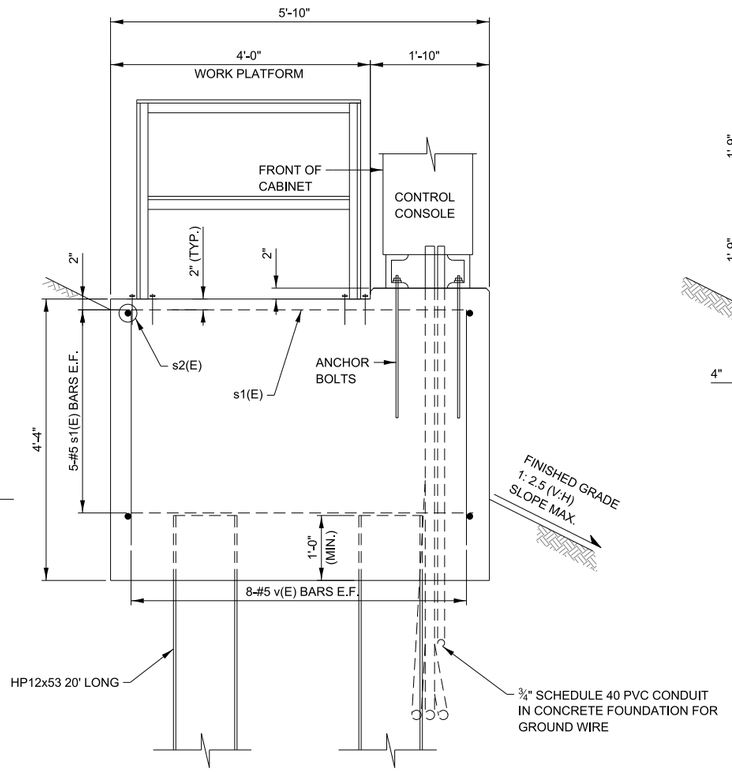
REINFORCEMENT BARS SCHEDULE					
BARS	NO.	SIZE	LENGTH	WT. LB.	SHAPE
v(E)	32	#5	3'-8"	123.8	———
s1(E)	24	#5	5'-4"	134.9	———
s2(E)	24	#5	5'-6"	139.2	———

BILL OF MATERIAL		
DESCRIPTION	UNIT	QTY
REINF. BARS, EPOXY COATED	POUND	398
CLASS "SI" CONCRETE	CU. YD.	5.35
STRUCTURAL STEEL	POUND	158

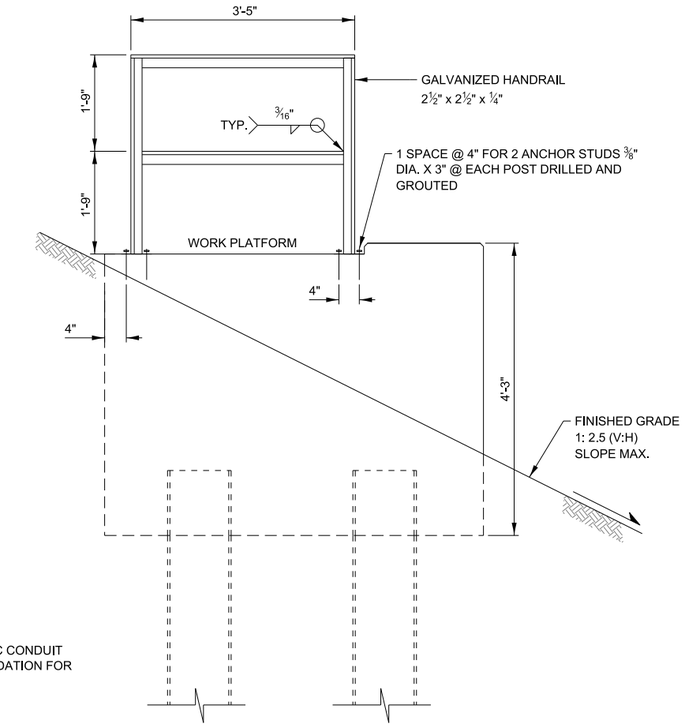
NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.



ELEVATION



SECTION A-A



VIEW B-B

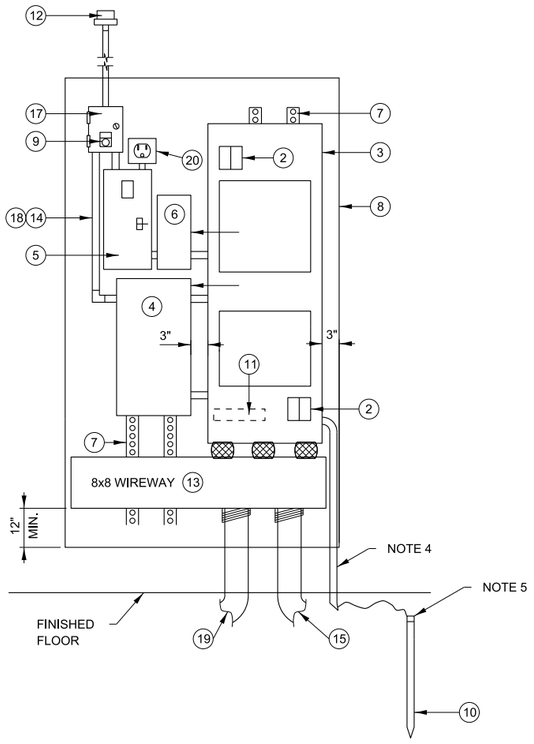
APPROVED BY: Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

TYPE B CONTROL CONSOLE FOUNDATION

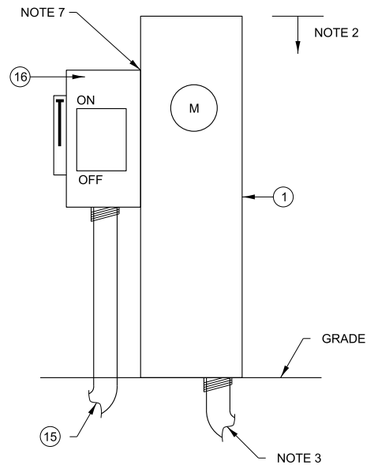
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EXTERIOR CONTROL CONSOLE FOUNDATION DETAILS

VERSION:	STANDARD:	SHEET:
2025-03	H7-04	2 OF 2



INTERIOR EQUIPMENT LAYOUT



SERVICE ENTRANCE DETAIL

CONTROL CONSOLE DETAILS
(INTERIOR INSTALLATION)

NOTES:

1. PROVIDE POWER UTILITY CO. METER HOUSING AS INDICATED ON PLANS.
2. 5'-0" MAXIMUM HEIGHT ABOVE GRADE.
3. STAINLESS STEEL CONDUIT TO UTILITY SERVICE AS INDICATED ON PLANS.
4. ¾" PVC CONDUIT.
5. EXOTHERMIC WELD NO. 2 BARE TINNED COPPER GROUND CABLE TO GROUND ROD 12"-24" BELOW GRADE.
6. TO POWER UTILITY COMPANY, SERVICE AS INDICATED ON PLANS.
7. CONDUIT AND CABLE BETWEEN METER FITTING AND DISCONNECT SWITCH. CONDUIT AND CABLE SHALL BE THE SAME AS THE SERVICE.
8. LABEL ALL EQUIPMENT AS "ROADWAY LIGHTING" + DEVICE AND BUILDING# (IF APPLICABLE).
9. FOR WIRING DIAGRAM SEE SHEET 2 OF THIS SERIES.
10. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.

DESCRIPTION

ITEM

① METER HOUSING, MILBANK U8436-0.

② SECONDARY SURGE ARRESTERS, 2 POLE, 650 VOLT.

③ MAIN PANELBOARD IN A NEMA 1 ENCLOSURE, 480/240 VOLT, 1 PHASE, 3 WIRE, 2 SECTION, 200 AMP, 2 POLE MAIN CIRCUIT BREAKER 65,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY WITH CIRCUIT BREAKERS PER SCHEDULE ON PLANS. DOOR HINGES ON RIGHT SIDE.

④ LIGHTING CONTRACTOR, ELECTRICALLY HELD, 480 VOLT, 200 AMP, 2 POLE, 120 VOLT CONTROL, WITH 250 VOLT, 15 AMP CONTROL LINE FUSE, IN A NEMA 1 ENCLOSURE.

⑤ SECONDARY BREAKER, 15 AMPERE TRIP, 120 VOLT, SINGLE POLE, 65,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY IN A NEMA 1 SURFACE MOUNTED ENCLOSURE.

⑥ STEP DOWN TRANSFORMER, 1500 VA, 480 VOLT PRIMARY, 120 VOLT SECONDARY, SINGLE PHASE, 60 HERTZ, DRY TYPE, NEMA 3R ENCLOSURE.

⑦ 1-¼" X ¾" C-CHANNEL (UNISTRUT) FOR ALL EQUIPMENT STANDOFF

⑧ ½" EQUIPMENT MOUNTING PANEL (4' W X 7' H)

⑨ HAND-OFF-AUTO SELECTOR SWITCH WITH LEGEND PLATE. MOUNTED IN THE COVER OF ITEM 17.

⑩ ROUTED TO BUILDING GROUND SYSTEM. IF NO GROUND AVAILABLE CONTRACTOR SHALL PROVIDE ⅝" DIA. X 10'-0" LONG GROUND ROD WITHIN GROUND WELL.

⑪ GROUND BUS MOUNTED IN PANELBOARD ENCLOSURE.

⑫ PHOTO ELECTRIC CONTROL SWITCH MOUNTED ON SOUTH EXTERIOR SIDE OF BUILDING (VIEW UNOBSTRUCTED).

⑬ 8"x8" WIREWAY WITH 3-3" NIPPLES.

⑭ INTERNAL CONTROL WIRING SHALL BE #12 AWG, STRANDED, INSULATED NEC TYPE THWN/THHN RATED 600 VOLT, WITH SUITABLE COLOR CODING TO BE APPROVED BY THE ENGINEER BEFORE CONSTRUCTION.

⑮ 2" STAINLESS STEEL CONDUIT FROM SERVICE SAFETY SWITCH TO LIGHTING CONTROLLER WIREWAY.

⑯ SERVICE SAFETY SWITCH, 200 AMP, 600 VOLT, NON-FUSED, NEMA 4X STAINLESS STEEL ENCLOSURE.

⑰ NEMA TYPE 1, 8"x6"x4" JUNCTION BOX & COVER WITHOUT KNOCKOUTS. ITEM 9 IS MOUNTED IN THE COVER.

⑱ INTERNAL CONDUIT AND FITTINGS SHALL BE ¾" MINIMUM.

⑲ (2) 4" STAINLESS STEEL CONDUIT TO LIGHTING CONTROLLER HANDHOLE. REFER TO SITE PLAN FOR LOCATION.

⑳ GCFI OUTLET.

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

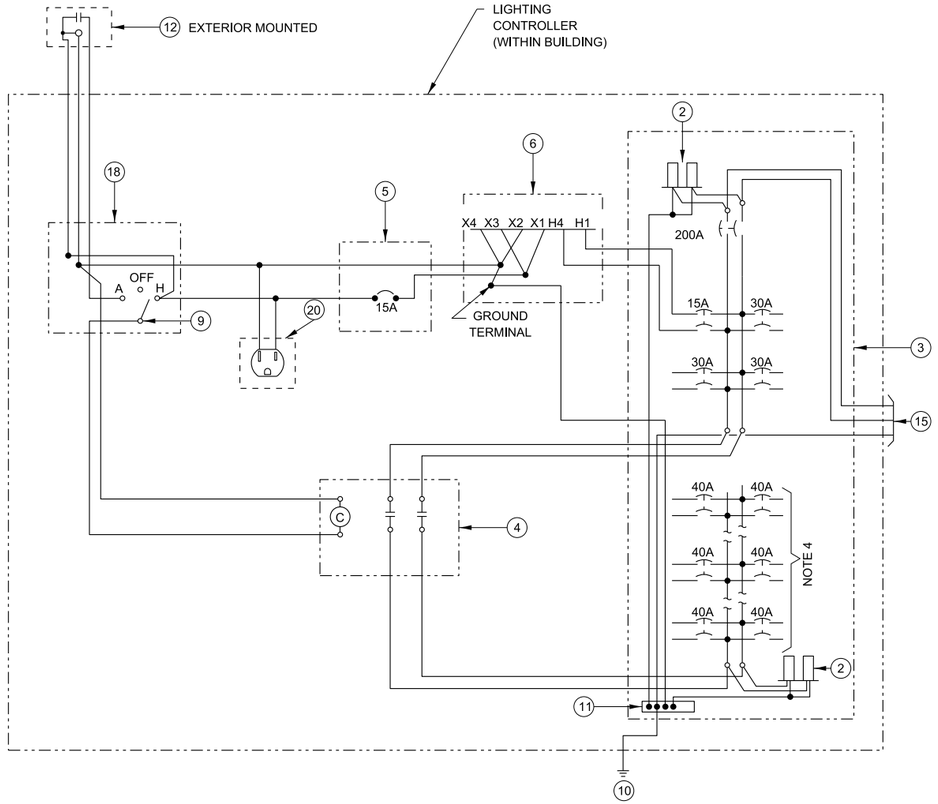
REVISIONS

DATE	DESCRIPTION
03-01-2018	REMOVED CONTRACTOR RELAY, ADDED GCFI OUTLET
03-01-2017	REMOVED MFR. & PART NUMBERS
03-31-2016	REVISED NOTE 2

Illinois Tollway

INTERIOR CONTROL CONSOLE DETAILS

VERSION:	STANDARD:	SHEET:
2018-03	H8-03	1 OF 2



CONTROL CONSOLE WIRING DIAGRAM

NOTES:

1. TO UTILITY SERVICE. 480/240V, 1 PHASE, 3 WIRE, GROUNDED, WHEN A METER HOUSING IS REQUIRED (FED FROM PAD MOUNTED UTILITY TRANSFORMER WITHIN ILLINOIS TOLLWAY RIGHT-OF-WAY).
2. TO SERVICE PEDESTAL, 480/240V, 1 PHASE, 3 WIRE, GROUNDED. SEE STANDARD H5.
3. ITEM NUMBERS REFER TO EQUIPMENT LIST ON SHEET 1 OF THIS SERIES.
4. PROVIDE CIRCUIT BREAKERS PER SCHEDULE ON THE CONTRACT PLANS (MINIMUM OF 12).
5. FOR INTERIOR EQUIPMENT LAYOUT SEE SHEET 1 OF THIS SERIES.
6. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
7. CONDUIT AND CABLE BETWEEN METER FITTING AND DISCONNECT SWITCH ROUTED BETWEEN CONTROL CONSOLE AND CONCRETE FOUNDATION, WHEN A METER HOUSING IS REQUIRED. CONDUIT AND CABLE SHALL BE THE SAME AS THE SERVICE.

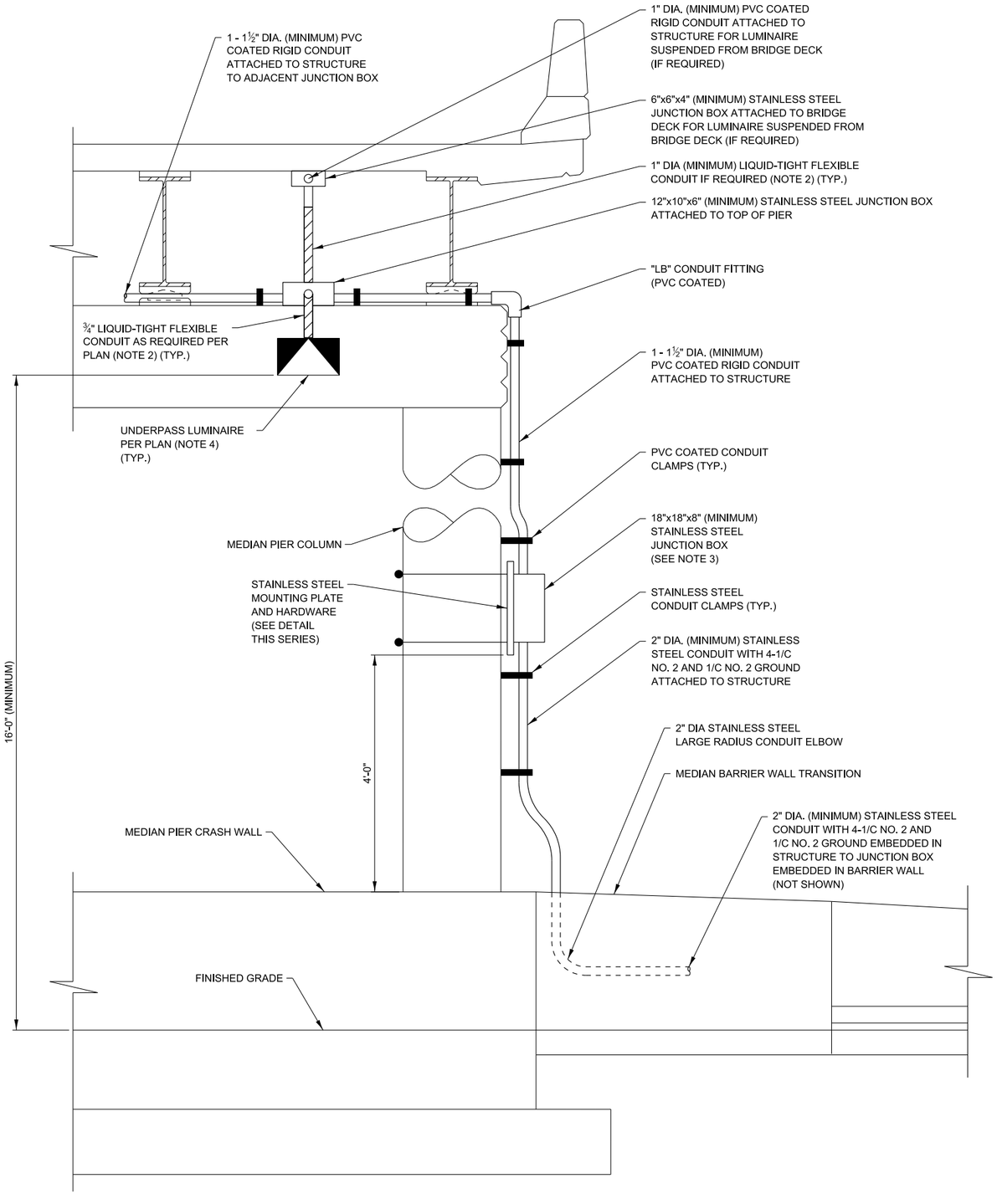
CONTROL CONSOLE DETAILS
(INTERIOR INSTALLATION)

APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2018

Illinois Tollway

INTERIOR CONTROL CONSOLE DETAILS

VERSION:	STANDARD:	SHEET:
2018-03	H8-03	2 OF 2



UNDERPASS LIGHTING
(MEDIAN PIER MOUNTED LUMINAIRE & FEEDER INSTALLATION)

NOTES:

1. USE OF THIS STANDARD DETAIL IS LIMITED TO THE INSTALLATION OF LIGHT EMITTING DIODE LUMINAIRES ONLY. FOR INSTALLATION OF OTHER LIGHT SOURCE TYPES, REFER TO PLAN DETAILS.
2. LIQUID-TIGHT FLEXIBLE CONDUIT, MAXIMUM LENGTH 6'-0", TYPICAL FOR EACH INSTANCE AS SHOWN. PROVIDE SUFFICIENT LENGTH OF PVC COATED RIGID GALVANIZED STEEL CONDUIT AS REQUIRED CONDUIT AS REQUIRED SO THE MAXIMUM LENGTH OF REQUIRED LIQUID-TIGHT DOES NOT EXCEED 6'-0". LIQUID-TIGHT FLEXIBLE CONDUIT.
3. PROVIDE TWO (2) 2-POLE 30A, 600 VOLT CIRCUIT BREAKERS (EATON HFD OR APPROVED EQUAL), TWO (2) SURGE PROTECTION DEVICES (IN ACCORDANCE WITH ARTICLE 1065.02 OF THE STANDARD SPECIFICATIONS) AND SUFFICIENT 30 AMPERE, 600 VOLT TERMINAL BLOCKS TO SPLIT 480 VOLT WIRING FROM CIRCUIT BREAKER TO TWO (2) NO. 10 WIRES FOR EACH LUMINAIRE.
4. WIRING SHALL BE 2-1/C NO. 10 WITH 1/C NO. 10 GROUND OR AS INDICATED ON THE PLANS TERMINATING AT EACH LUMINAIRE. SEE PLANS FOR REMAINING WIRING REQUIREMENTS.
5. THE CONTRACTOR SHALL PROVIDE EXPANSION/DEFLECTION FITTINGS (O-Z/GEDNEY TYPE AXDX) WHERE CONDUITS CROSS STRUCTURE EXPANSION JOINTS.
6. IN NEW BRIDGE DECKS, PROVIDE STAINLESS STEEL SINGLE COIL, FLARED LOOP INSERTS CAST IN THE DECK FOR ¾" DIAMETER STAINLESS STEEL THREADED RODS. IN EXISTING BRIDGE DECKS, PROVIDE DRILLED STAINLESS STEEL EXPANSION TYPE ANCHORS FOR ¾" DIAMETER STAINLESS STEEL THREADED RODS. EXPANSION TYPE ANCHORS SHALL HAVE A MINIMUM OF 500 POUNDS CAPACITY EACH.
7. NOT USED.
8. ALL ITEMS MOUNTED TO BRIDGE PIER SHALL BE OFFSET FROM THE STRUCTURE A MINIMUM OF ONE (1) INCH BY USE OF STAINLESS STEEL C-CHANNEL.
9. WHERE BEAM DEPTH EXCEEDS FIVE (5) FEET, THE DESIGNER SHALL PROVIDE A METHOD FOR ATTACHMENT OF THE HANGER ASSEMBLIES SUCH THAT THE LENGTH OF THE ASSEMBLIES DO NOT EXCEED FIVE (5) FEET.
10. DETAILS SHOWN ARE FOR UNDERPASS LIGHTING INSTALLATIONS FED FROM THE MEDIAN BARRIER WALL. FOR INSTALLATIONS FED FROM A BRIDGE ABUTMENT, REFER TO THE PLAN DETAILS.
11. UNDERPASS LUMINAIRES SUSPENDED FROM BRIDGE DECK SHALL BE INSTALLED CENTERED BETWEEN THE BRIDGE BEAMS. THE LUMINAIRE SHALL BE LOCATED SUCH THAT IT IS SETBACK A MINIMUM OF 1 FOOT FROM THE OUTSIDE EDGE OF THE SHOULDER PAVEMENT WITH THE TOP OF THE LUMINAIRE MOUNTING PLATE A MAXIMUM OF 1 INCH FROM THE BOTTOM OF THE BRIDGE BEAM. IN NO CASE SHALL ANY PORTION OF THE SUSPENDED LUMINAIRE OR SUPPORTING HARDWARE BE LOWER THAN 14'-6" WHEN MEASURED TO THE OUTSIDE EDGE OF THE ADJACENT SHOULDER PAVEMENT.
12. IN NO INSTANCE SHALL ANY UNDERPASS LUMINAIRE OR ANY OTHER ELECTRICAL EQUIPMENT BE INSTALLED BELOW THE ELEVATION OF THE BOTTOM OF THE BRIDGE BEAM WHEN OVER ANY PAVEMENT (ROADWAY OR SHOULDER) WITH EXCEPTION OF THOSE MOUNTED TO THE MEDIAN PIER AT WHICH CASE THE MINIMUM HEIGHT SHALL BE 16'-0" WHEN MEASURED TO THE LOWEST PORTION OF THE LUMINAIRE OR SUPPORTING HARDWARE.
13. LUMINAIRE MOUNTING PLATE FOR LUMINAIRES SUSPENDED FROM BRIDGE DECK SHALL BE OF THE DIMENSIONS NECESSARY AND FIELD DRILLED TO ACCOMMODATE THE SPECIFIC LUMINAIRE PROVIDED AND ASSOCIATE LUMINAIRE HANGER ASSEMBLIES.
14. SEE PLANS FOR UNDERPASS LUMINAIRE LOCATIONS AND MOUNTING HEIGHTS.
15. SEE STRUCTURAL DRAWINGS FOR SPECIFIC STRUCTURE DETAILS.
16. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.

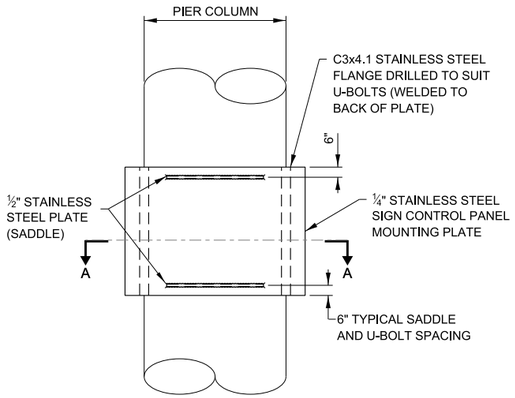
APPROVED BY: Paul Kovacs, CHIEF ENGINEERING OFFICER — DATE: 03/01/2022

Illinois Tollway

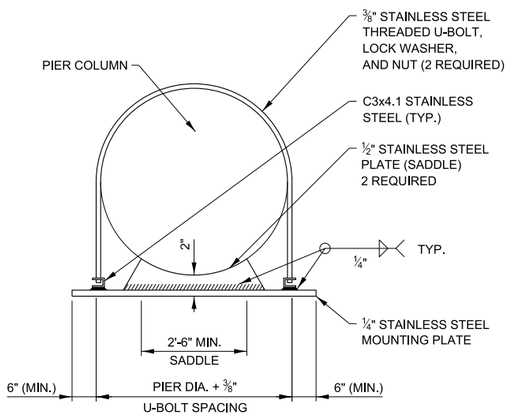
REVISIONS	
DATE	DESCRIPTION
03-01-2022	REVISED CALLOUT FOR STAINLESS STEEL
	VIBRATION DAMPER ASSEMBLY
03-31-2017	REVISED NOTES TO REMOVE
	INCIDENTALS

UNDERPASS LIGHTING INSTALLATION DETAILS

VERSION:	STANDARD:	SHEET:
2022-03	H9-02	1 OF 3

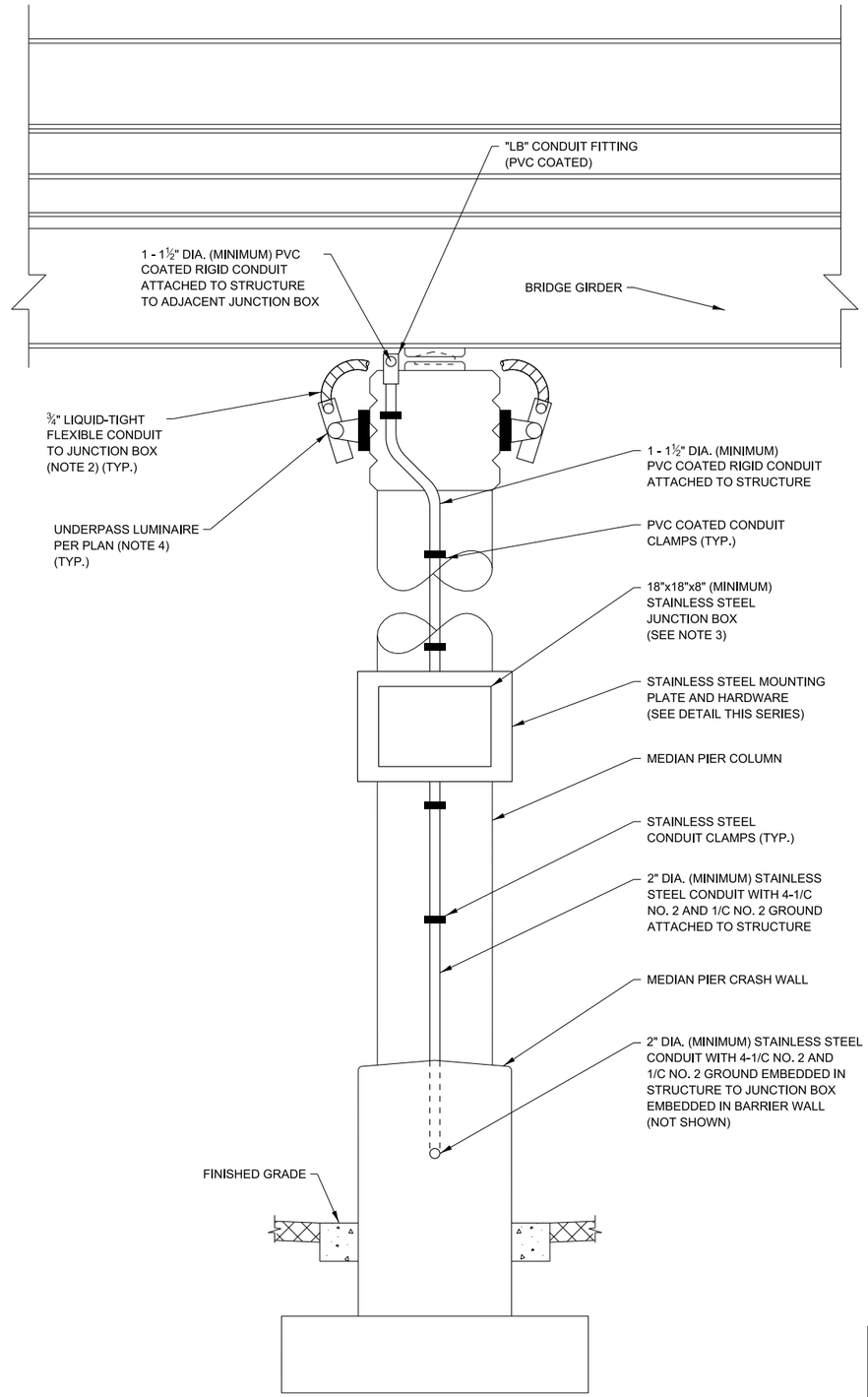


ELEVATION



SECTION A-A

MEDIAN PIER JUNCTION BOX MOUNTING PLATE DETAIL



UNDERPASS LIGHTING
(MEDIAN PIER MOUNTED LUMINAIRE & FEEDER INSTALLATION)

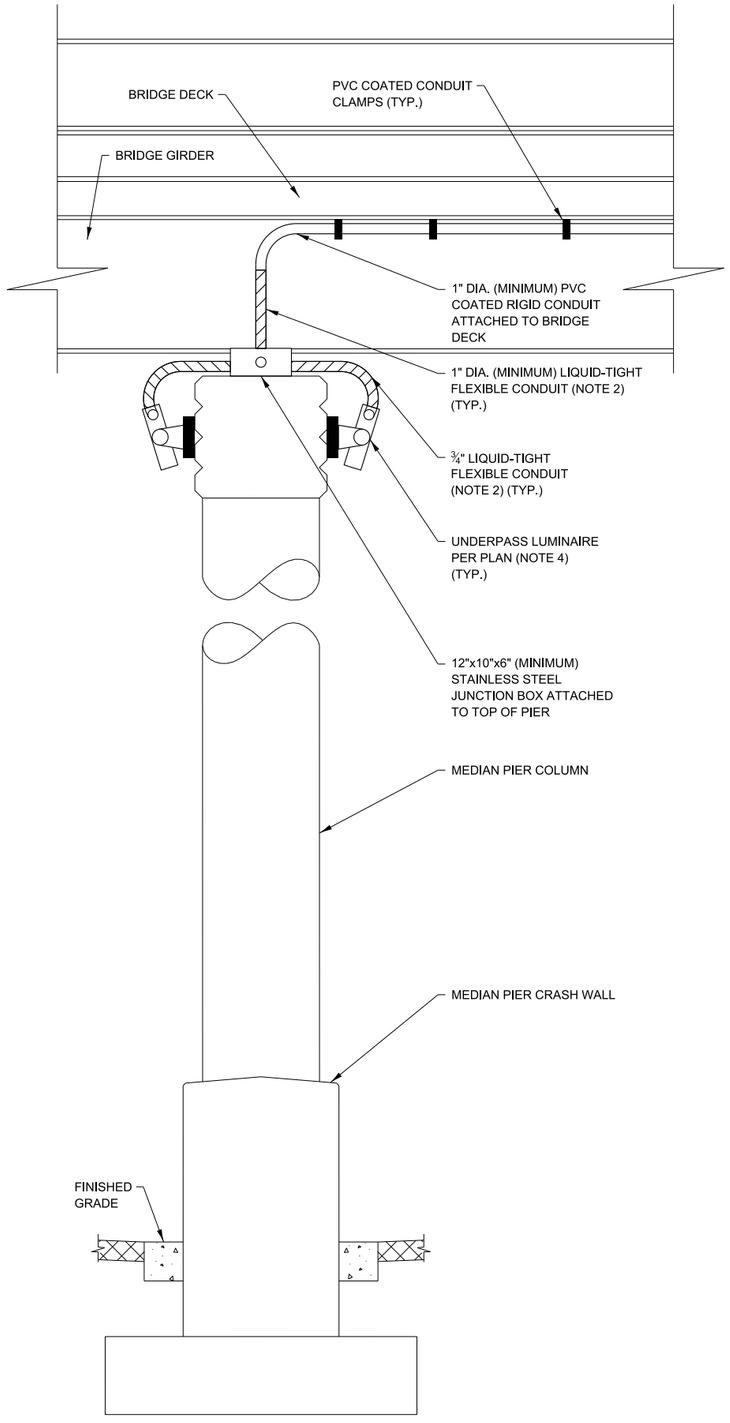
NOTES:
FOR NOTES SEE SHEET 1 OF THIS SERIES.

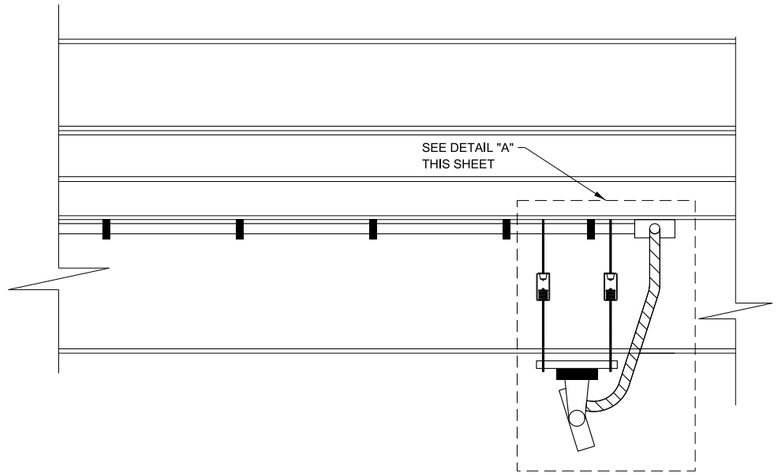
APPROVED BY:
Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

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UNDERPASS LIGHTING INSTALLATION DETAILS

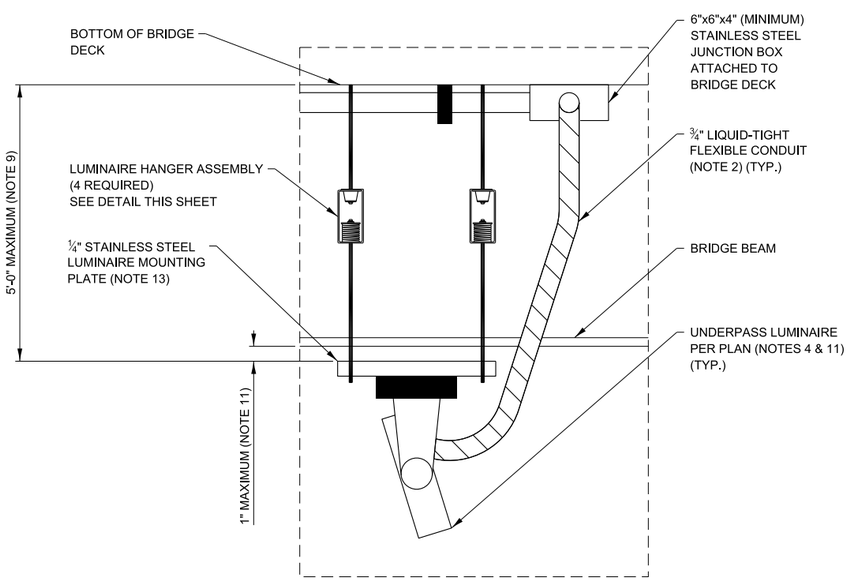
VERSION:	STANDARD:	SHEET:
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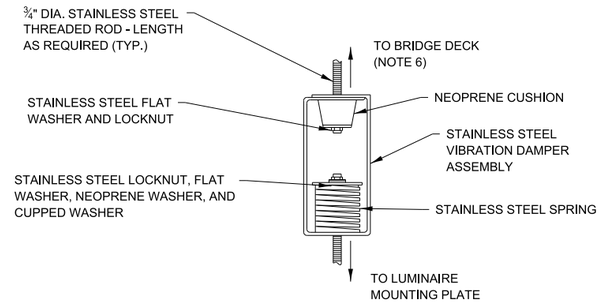




CONDUIT CLAMP DETAIL



DETAIL A



LUMINAIRE HANGER ASSEMBLY DETAIL

NOTE:
FOR NOTES SEE SHEET 1 OF THIS SERIES.

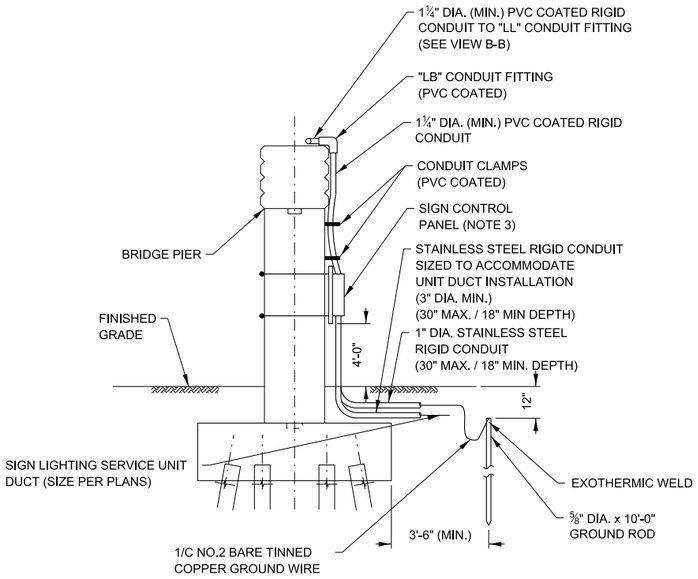
APPROVED BY:
CHIEF ENGINEERING OFFICER
DATE: 03/01/2022

UNDERPASS LIGHTING
(BRIDGE DECK SUSPENDED LUMINAIRE & MISCELLANEOUS DETAILS)

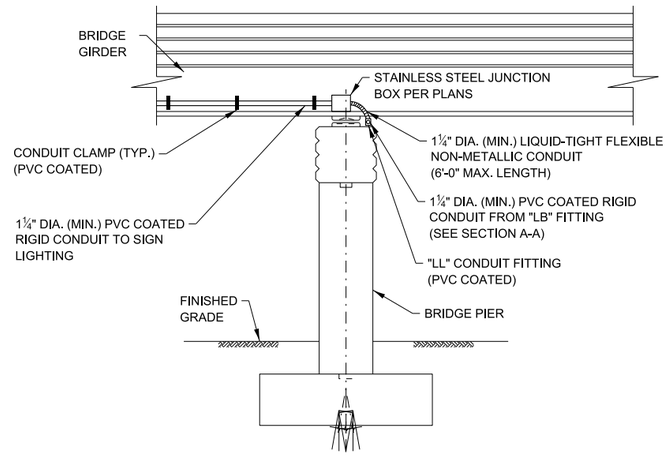
Illinois Tollway

UNDERPASS LIGHTING INSTALLATION DETAILS

VERSION:	STANDARD:	SHEET:
2022-03	H9-02	3 OF 3



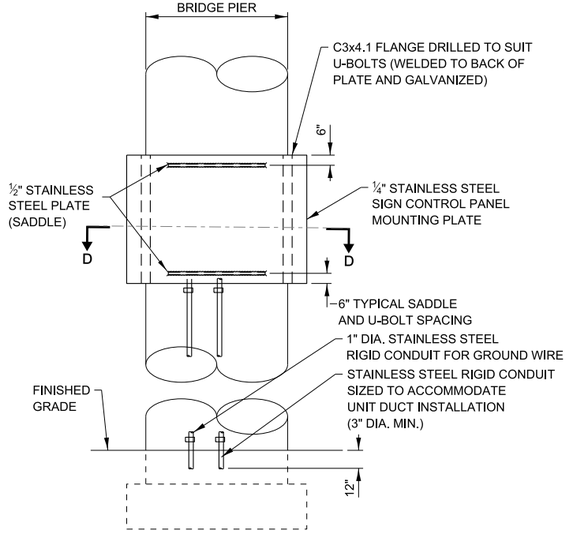
SECTION A-A



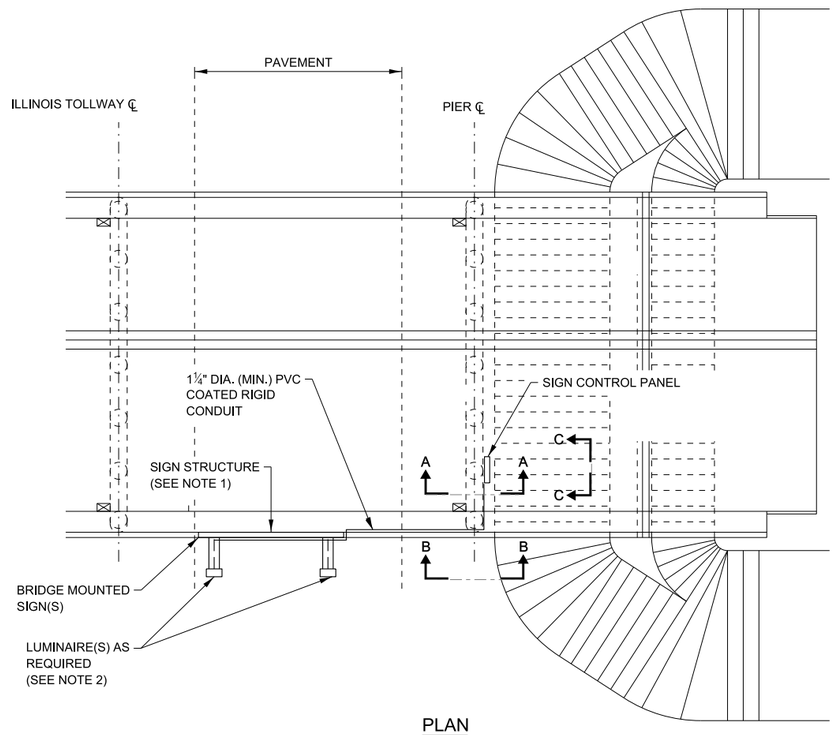
SECTION B-B

NOTES:

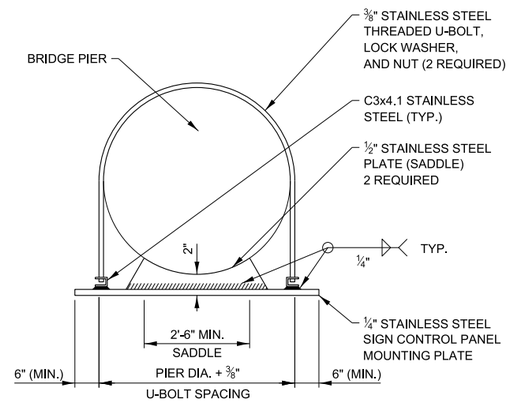
1. FOR SIGN STRUCTURE INSTALLATION DETAILS SEE SHEET 3 OF 3 IN THIS SERIES.
2. FOR SIGN LUMINAIRE INSTALLATION AND WIRING AND FOR INSTALLATION OF CONDUIT IN FIXTURE SUPPORT CHANNEL, SEE STANDARD H14.
3. FOR TYPICAL SIGN CONTROL PANEL DETAILS SEE SHEET 2 OF 3 IN THIS SERIES.
4. DETAILS SHOWN ON THIS SHEET ARE WITHOUT FLASHING BEACON. INSTALLATION OF FLASHING BEACON REQUIRES ADDITIONAL WORK AS SHOWN ON TYPICAL SIGN CONTROL PANEL DETAIL (SHEET 2 OF 3 IN THIS SERIES).
5. LUMINAIRE SUPPORT MEMBERS TO BE INSTALLED ONLY WHEN THE SIGN IS TO BE ILLUMINATED. DESIGNER TO DETERMINE REQUIREMENTS FOR SIGN LIGHTING BASED ON ROADWAY GEOMETRY.
6. PROVIDE 12" FLASHING BEACON ONLY WHERE INDICATED ON PLANS. FLASHING BEACON TO BE ATTACHED TO SUPPORT WITH STAINLESS STEEL SCREWS AND NEOPRENE SPACERS. DRILLED SCREW HOLES TO BE SEALED WATER-TIGHT.
7. SEE STRUCTURAL DRAWINGS FOR DETAILS OF SIGN SUPPORTS AND FIXTURE SUPPORT CHANNELS.
8. CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES ATTACHED TO ALUMINUM STRUCTURAL SUPPORTS SHALL BE PVC COATED ALUMINUM. PVC COATED GALVANIZED STEEL CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES SHALL BE UTILIZED WHERE ATTACHED TO STEEL STRUCTURAL SUPPORTS OR WHERE ATTACHED TO CONCRETE STRUCTURES UNLESS NOTED OTHERWISE HEREIN. THREADED JOINTS BETWEEN DISSIMILAR METALS SHALL BE COATED WITH AN APPROVED THREAD LUBRICANT.
9. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.



VIEW C-C



PLAN



SECTION D-D

BRIDGE MOUNTED SIGN LIGHTING
(BRIDGE PIER MOUNTED FEEDER INSTALLATION)

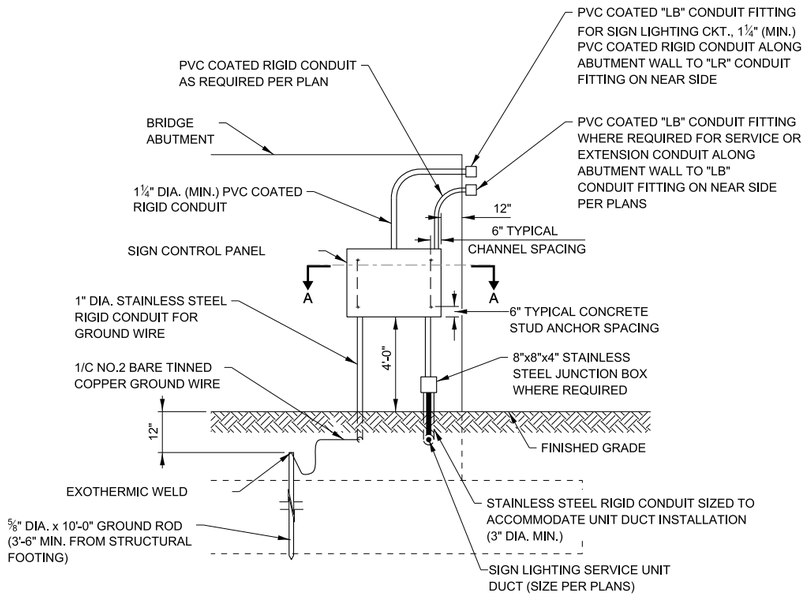
APPROVED BY: Marco Nastal, CHIEF ENGINEERING OFFICER — DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REVISED NOTE 5 TO ADDRESS SIGN LIGHTING UPDATES.
03-01-2019	REVISED TO SHOW SINGLE SLOPE PARAPET.
03-01-2018	ADDED SURGE PROTECTION DEVICE.

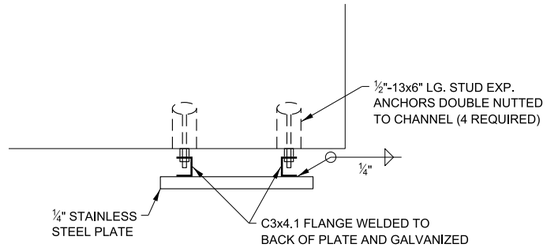
Illinois Tollway

BRIDGE MOUNT SIGN LIGHTING DETAILS

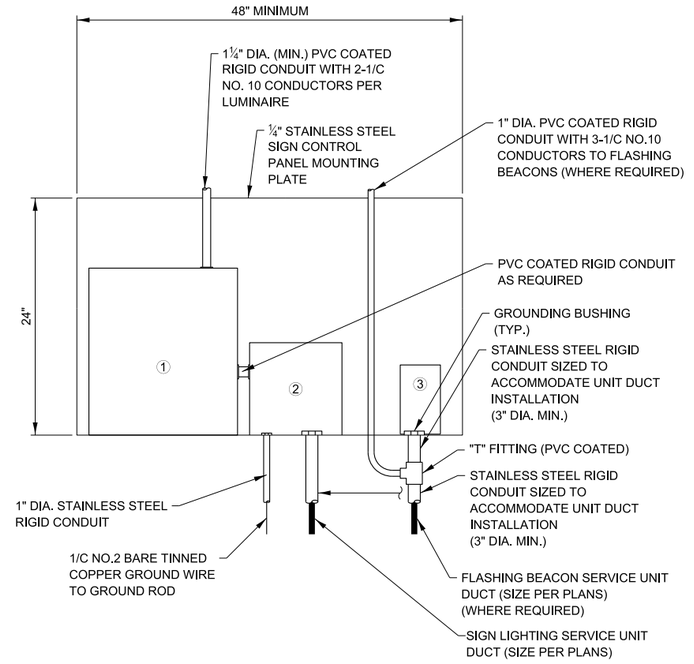
VERSION:	STANDARD:	SHEET:
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FAR SIDE ABUTMENT END ELEVATION



SECTION A-A



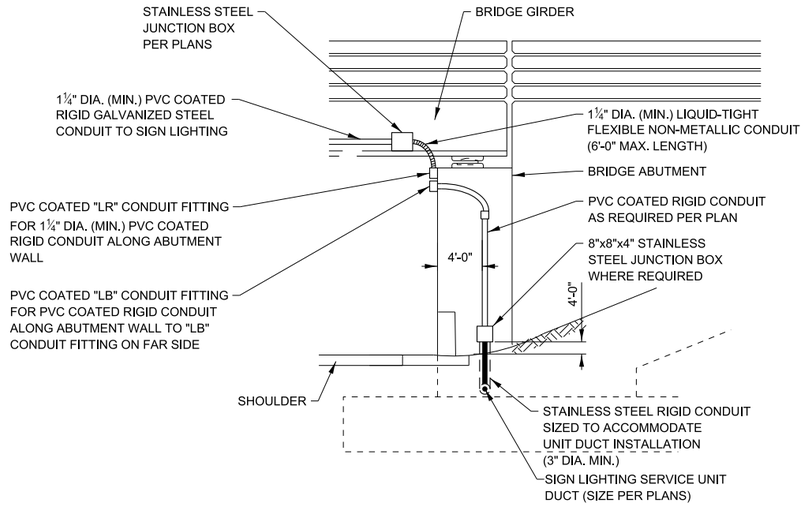
LEGEND:

① 18"x18"x8" STAINLESS STEEL JUNCTION BOX. PROVIDE SUFFICIENT 30 AMPERE, 600 VOLT TERMINAL BLOCKS TO SPLIT 480 VOLT WIRING FROM SIGN SERVICE CIRCUIT BREAKER TO TWO NO. 10 WIRES FOR EACH LUMINAIRE.

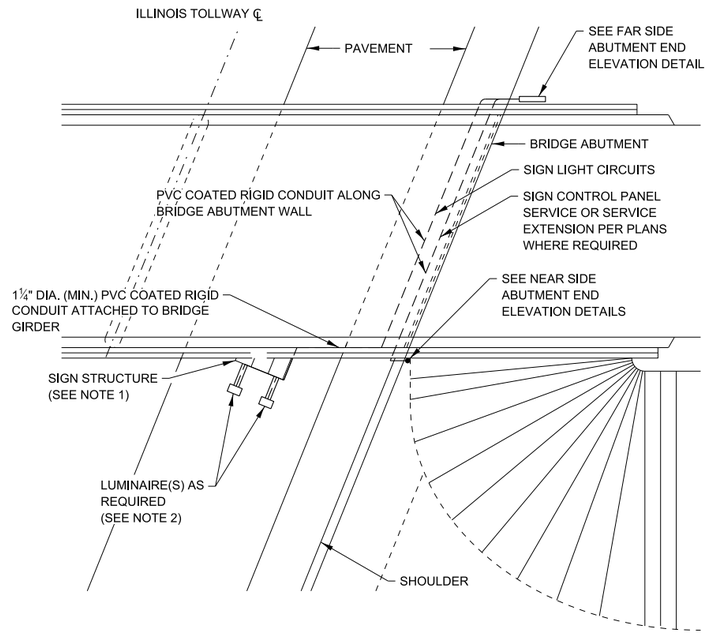
② SIGN LIGHTING SERVICE - CIRCUIT BREAKER (30 AMP/2 POLE) IN NEMA TYPE 4 C.I. ENCLOSURE, OZ TYPE "YW" WITH MOUNTING FEET OR APPROVED EQUAL. PROVIDE SURGE PROTECTION DEVICE (IN ACCORDANCE WITH ARTICLE 1065.02 OF THE STANDARD SPECIFICATIONS).

③ FLASHING BEACON CONTROLLER.

TYPICAL SIGN CONTROL PANEL DETAIL
(FOR TYPICAL WIRING DIAGRAM SEE STANDARD H14)



NEAR SIDE ABUTMENT END ELEVATION



PLAN

NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

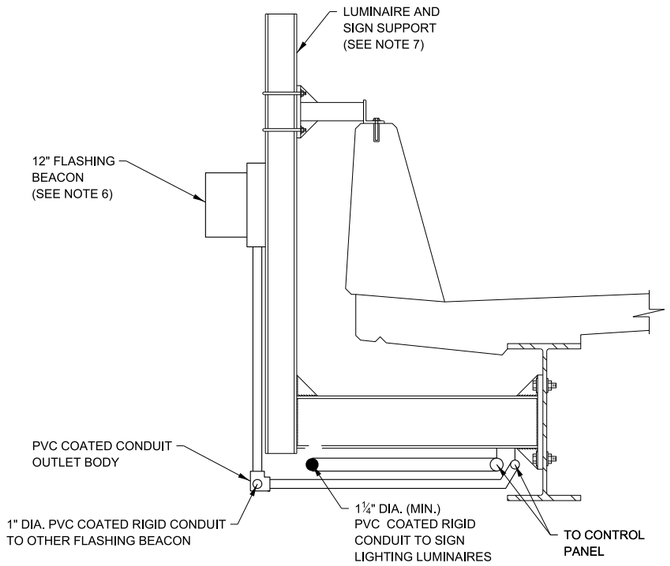
BRIDGE MOUNTED SIGN LIGHTING
(BRIDGE ABUTMENT MOUNTED FEEDER INSTALLATION)

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

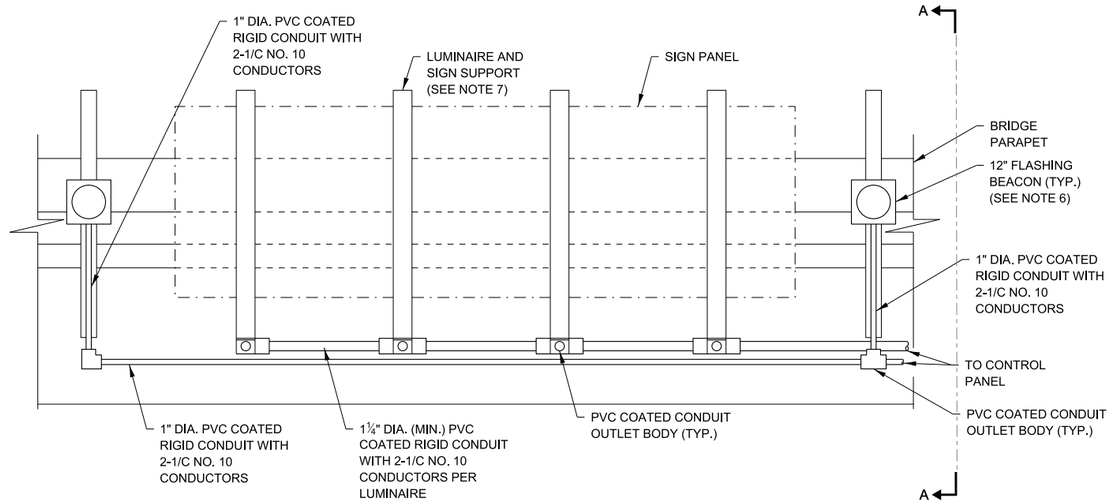
Illinois Tollway

BRIDGE MOUNT SIGN LIGHTING DETAILS

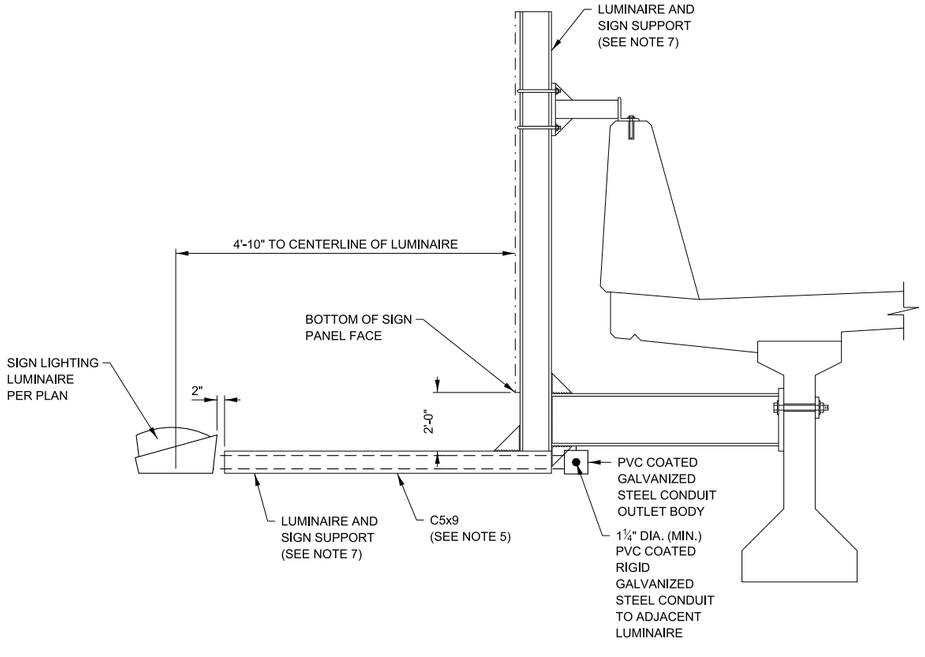
VERSION:	STANDARD:	SHEET:
2024-03	H10-05	2 OF 3



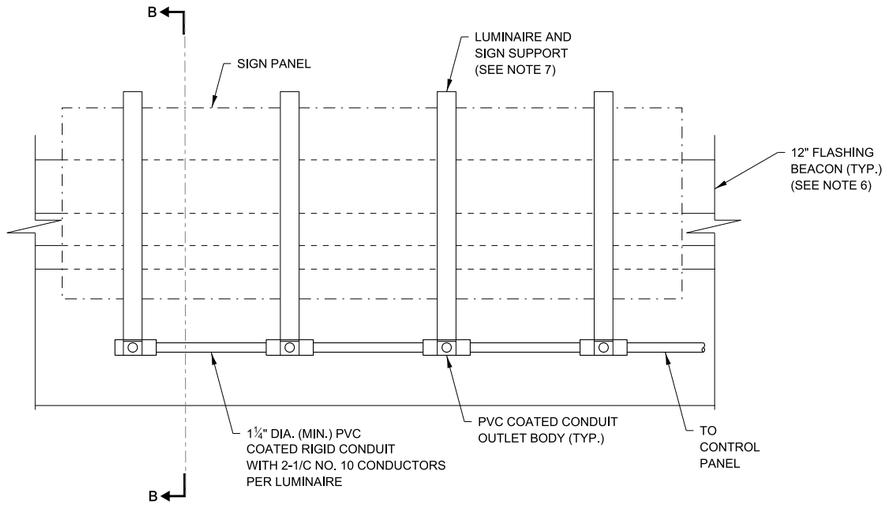
SECTION A-A
(STEEL BRIDGE SHOWN)



TYPICAL FRONT ELEVATION WITH FLASHING BEACON
(LUMINAIRES NOT SHOWN FOR CLARITY)



SECTION B-B
(CONCRETE BRIDGE SHOWN)



TYPICAL FRONT ELEVATION
WITHOUT FLASHING BEACON
(LUMINAIRES NOT SHOWN FOR CLARITY)

BRIDGE MOUNTED SIGN LIGHTING
(LUMINAIRE MOUNTING & CONDUIT DETAILS)

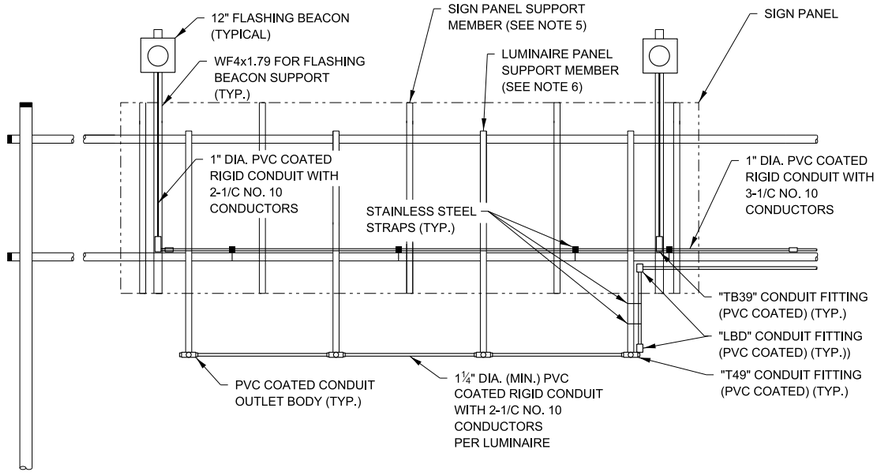
NOTES:
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER
DATE:
03/01/2024

Illinois Tollway

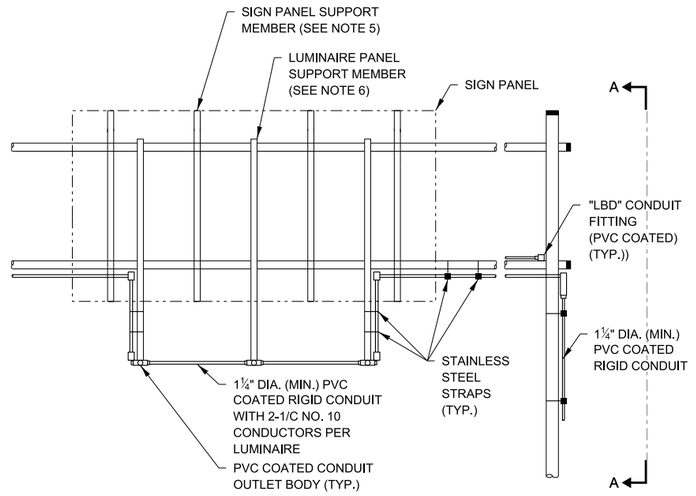
BRIDGE MOUNT SIGN
LIGHTING DETAILS

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FRONT ELEVATION WITH FLASHING BEACON

(LUMINAIRES NOT SHOWN FOR CLARITY)

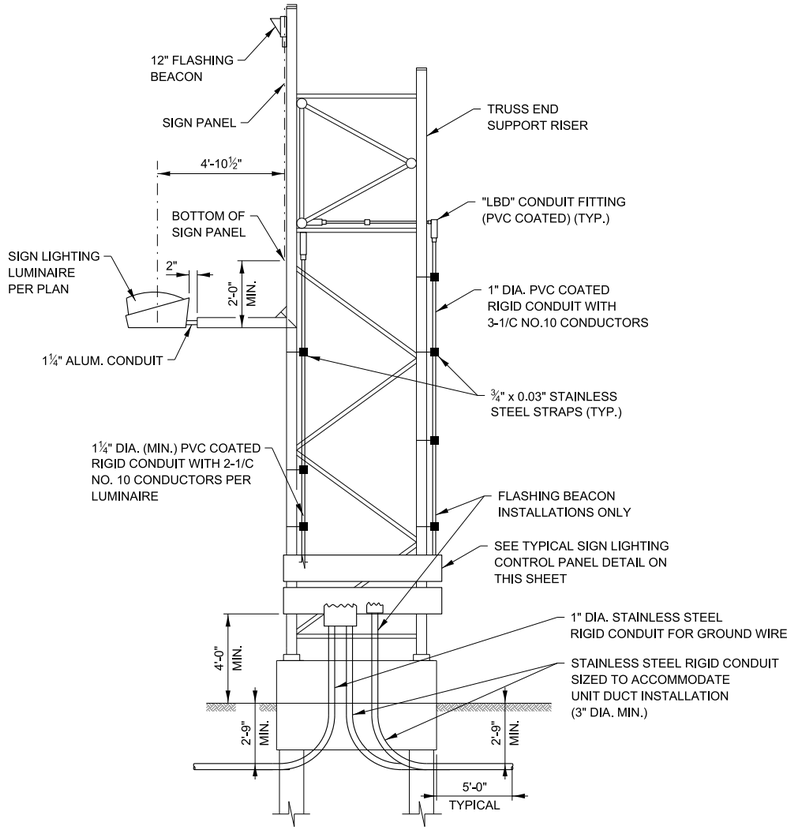


FRONT ELEVATION WITHOUT FLASHING BEACON

(LUMINAIRES NOT SHOWN FOR CLARITY)

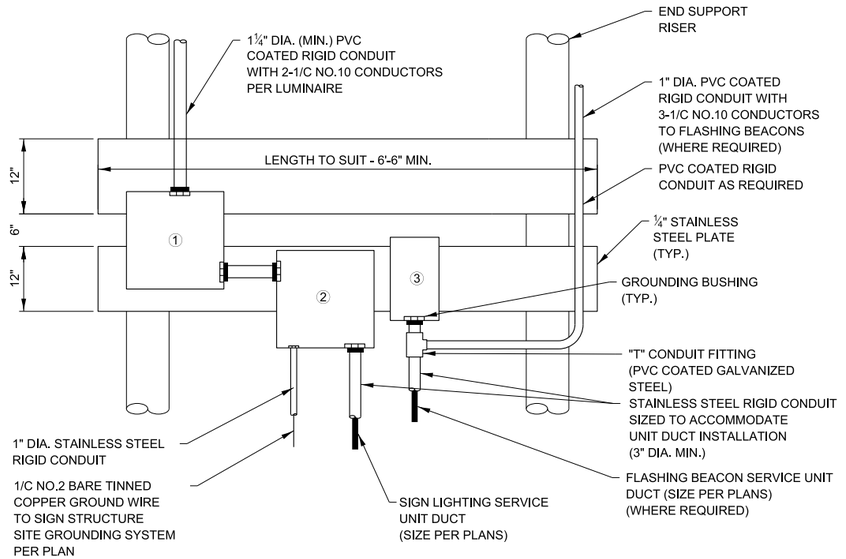
NOTES:

1. CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES ATTACHED TO ALUMINUM STRUCTURAL SUPPORTS SHALL BE PVC COATED ALUMINUM. PVC COATED GALVANIZED STEEL CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES SHALL BE UTILIZED WHERE ATTACHED TO STEEL STRUCTURAL SUPPORTS OR WHERE ATTACHED TO CONCRETE STRUCTURES UNLESS NOTED OTHERWISE HEREIN. THREADED JOINTS BETWEEN DISSIMILAR METALS SHALL BE COATED WITH AN APPROVED THREAD LUBRICANT.
2. PROVIDE 12" FLASHING BEACON ONLY WHERE INDICATED ON PLANS. FLASHING BEACON TO BE ATTACHED TO SUPPORT WITH STAINLESS STEEL SCREWS AND NEOPRENE SPACERS. DRILLED SCREW HOLES TO BE SEALED WATER-TIGHT.
3. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
4. ALL STEEL TO BE HOT DIPPED GALVANIZED AFTER WELDING PER ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATION SECTION 733.
5. SEE STRUCTURAL DRAWINGS FOR DETAILS OF SIGN SUPPORTS AND FIXTURE SUPPORT CHANNELS.
6. LUMINAIRE SUPPORT MEMBERS TO BE INSTALLED ONLY WHEN STRUCTURE IS TO BE ILLUMINATED. DESIGNER TO DETERMINE REQUIREMENTS FOR SIGN LIGHTING BASED ON ROADWAY GEOMETRY.
7. FOR SIGN LUMINAIRE INSTALLATION AND WIRING AND FOR INSTALLATION OF CONDUIT IN FIXTURE SUPPORT CHANNEL, SEE STANDARD H14.



SECTION A-A

FULL ELEVATION (OUTSIDE FOUNDATION)



LEGEND:

① 18"x18"x8" STAINLESS STEEL JUNCTION BOX. PROVIDE SUFFICIENT 30 AMPERE, 600 VOLT TERMINAL BLOCKS TO SPLIT 480 VOLT WIRING FROM SIGN SERVICE CIRCUIT BREAKER TO TWO NO. 10 WIRES FOR EACH LUMINAIRE.

② SIGN LIGHTING SERVICE - CIRCUIT BREAKER (30 AMP/2 POLE) IN NEMA TYPE 4 STAINLESS STEEL TYPE 316 WITH MOUNTING FEET OR APPROVED EQUAL. PROVIDE SURGE PROTECTION DEVICE (IN ACCORDANCE WITH ARTICLE 1065.02 OF THE STANDARD SPECIFICATIONS).

③ FLASHING BEACON CONTROLLER.

TYPICAL SIGN LIGHTING CONTROL PANEL

(FOR TYPICAL WIRING DIAGRAM SEE STANDARD H14)

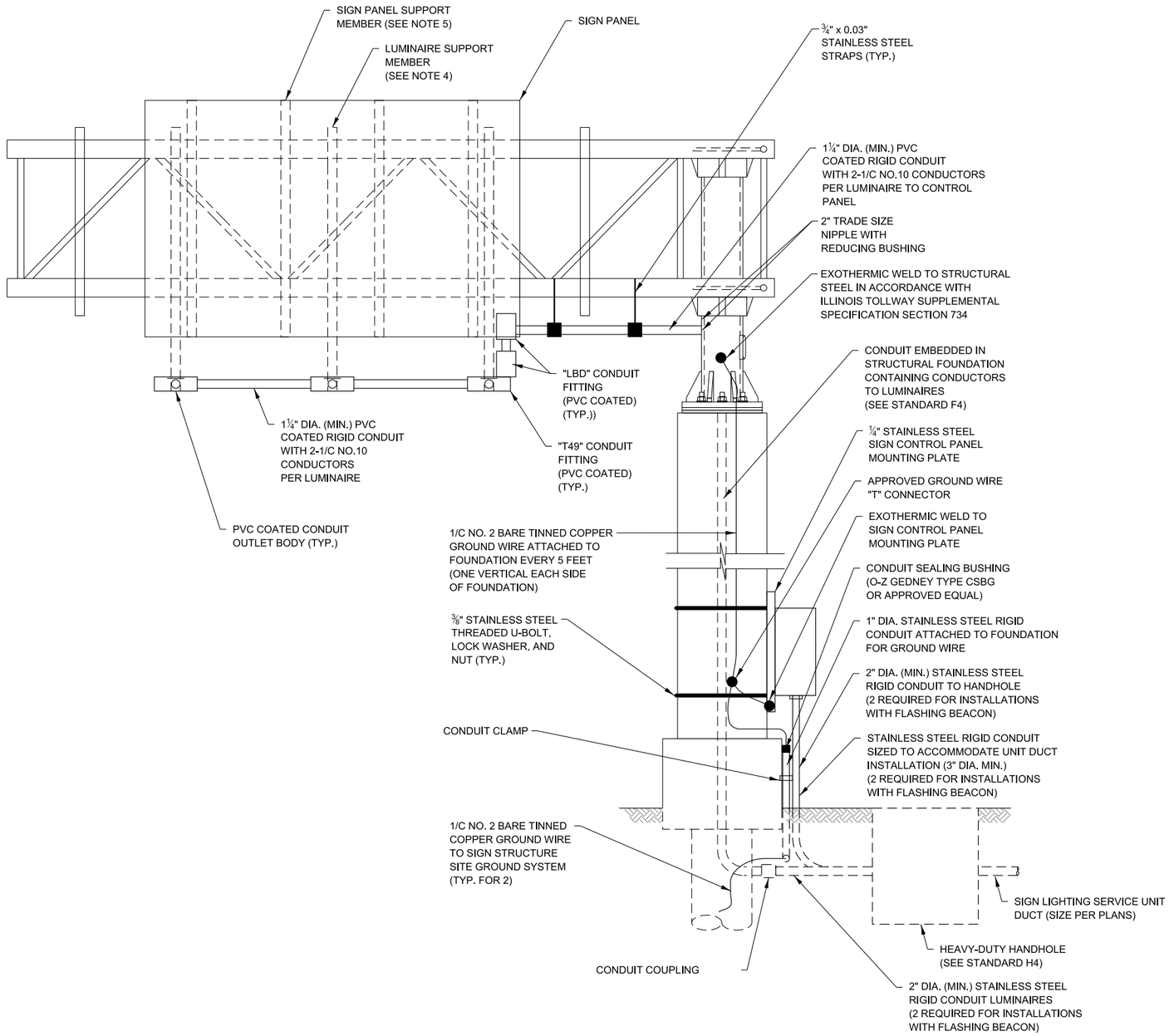
APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REVISED NOTE 6 TO ADDRESS SIGN LIGHTING UPDATES.
03-01-2019	STAINLESS STEEL SERVICE JUNCTION BOX.
03-01-2018	ADDED SURGE PROTECTIVE DEVICE.
03-11-2015	REVISED CONDUIT MATERIALS.

Illinois Tollway

SPAN TYPE STRUCTURE SIGN LIGHTING DETAILS

VERSION:	STANDARD:	SHEET:
2024-03	H11-06	1 OF 1



TYPICAL FRONT ELEVATION WITH FLASHING BEACON

(LUMINAIRES NOT SHOWN FOR CLARITY)

NOTES:

1. A GROUND WIRE (NO. 12 AWG.) WILL BE RUN FROM THE GROUNDING BUSHING (OVERHEAD SUPPORT) TO THE GROUNDING BUSHING IN THE JUNCTION BOX.
2. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
3. CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES ATTACHED TO ALUMINUM STRUCTURAL SUPPORTS SHALL BE PVC COATED ALUMINUM. PVC COATED GALVANIZED STEEL CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES SHALL BE UTILIZED WHERE ATTACHED TO STEEL STRUCTURAL SUPPORTS OR WHERE ATTACHED TO CONCRETE STRUCTURES UNLESS NOTED OTHERWISE HEREIN. THREADED JOINTS BETWEEN DISSIMILAR METALS SHALL BE COATED WITH AN APPROVED THREAD LUBRICANT.
4. LUMINAIRE SUPPORT MEMBERS TO BE INSTALLED ONLY WHEN THE SIGN IS TO BE ILLUMINATED. DESIGNER TO DETERMINE REQUIREMENTS FOR SIGN LIGHTING BASED ON ROADWAY GEOMETRY.
5. SEE STRUCTURAL DRAWINGS FOR DETAILS OF SIGN SUPPORTS AND FIXTURE SUPPORT CHANNELS.
6. FOR SIGN LUMINAIRE INSTALLATION AND WIRING AND FOR INSTALLATION OF CONDUIT IN FIXTURE SUPPORT CHANNEL, SEE STANDARD H14.
7. ALL STEEL TO BE HOT DIPPED GALVANIZED AFTER WELDING PER ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATION SECTION 733.
8. PROVIDE 12" FLASHING BEACON ONLY WHERE INDICATED ON PLANS. FLASHING BEACON TO BE ATTACHED TO SUPPORT WITH STAINLESS STEEL SCREWS AND NEOPRENE SPACERS. DRILLED SCREW HOLES TO BE SEALED WATERTIGHT.

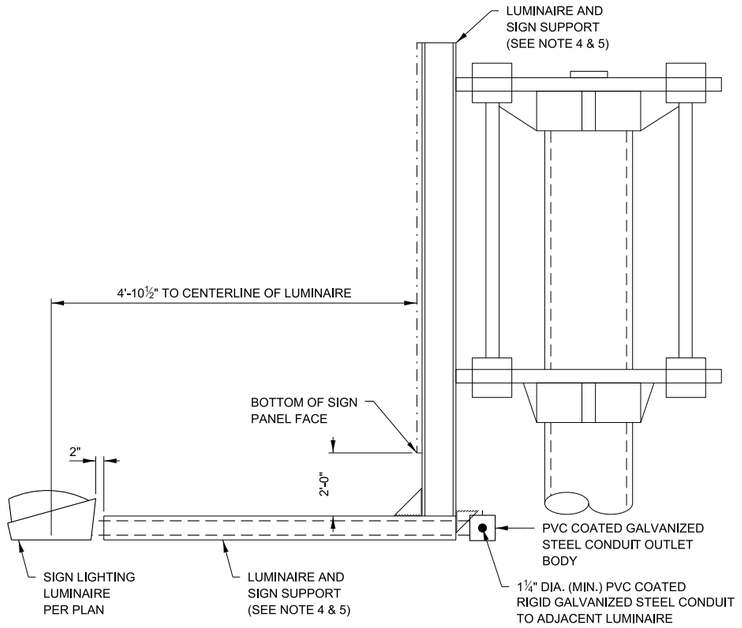
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	REVISED NOTE 4 TO ADDRESS SIGN LIGHTING UPDATES.
03-01-2018	ADDED SURGE PROTECTION DEVICE.
03-11-2015	REVISED CONDUITS TO STAINLESS STEEL.

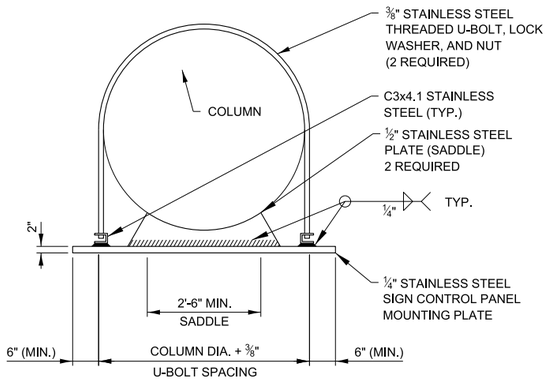
Illinois Tollway

CANTILEVER STRUCTURE SIGN LIGHTING DETAILS

VERSION:	STANDARD:	SHEET:
2024-03	H12-05	1 OF 2

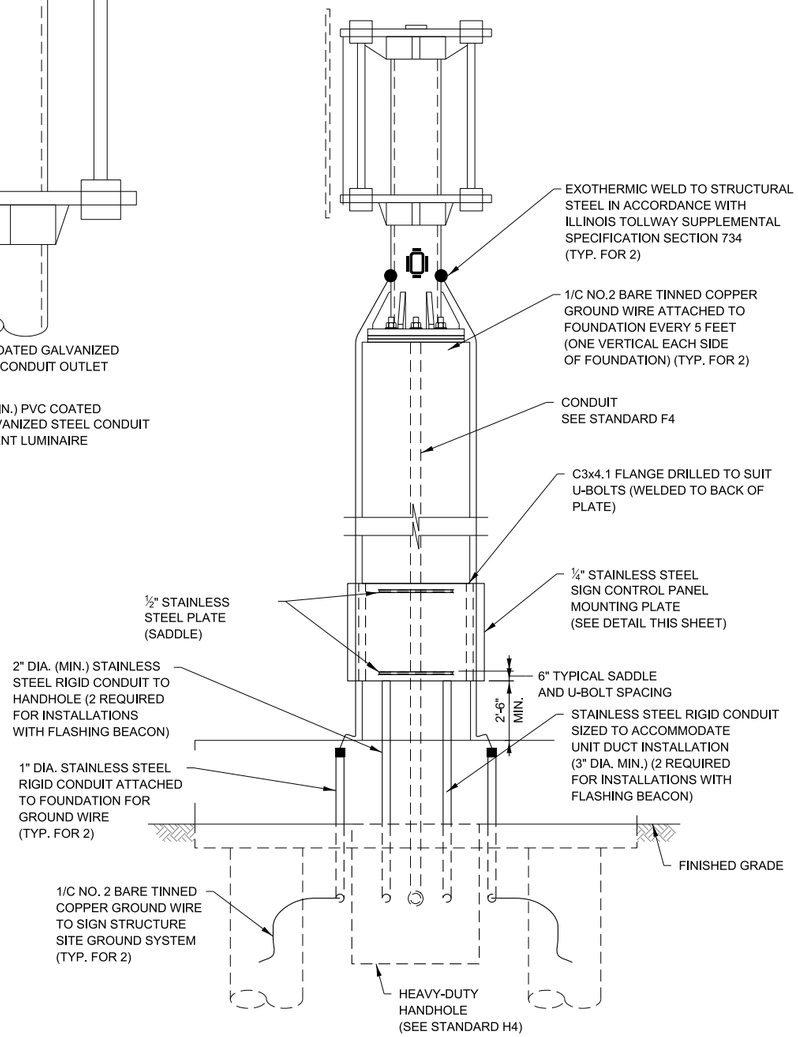


SIGN LUMINAIRE INSTALLATION



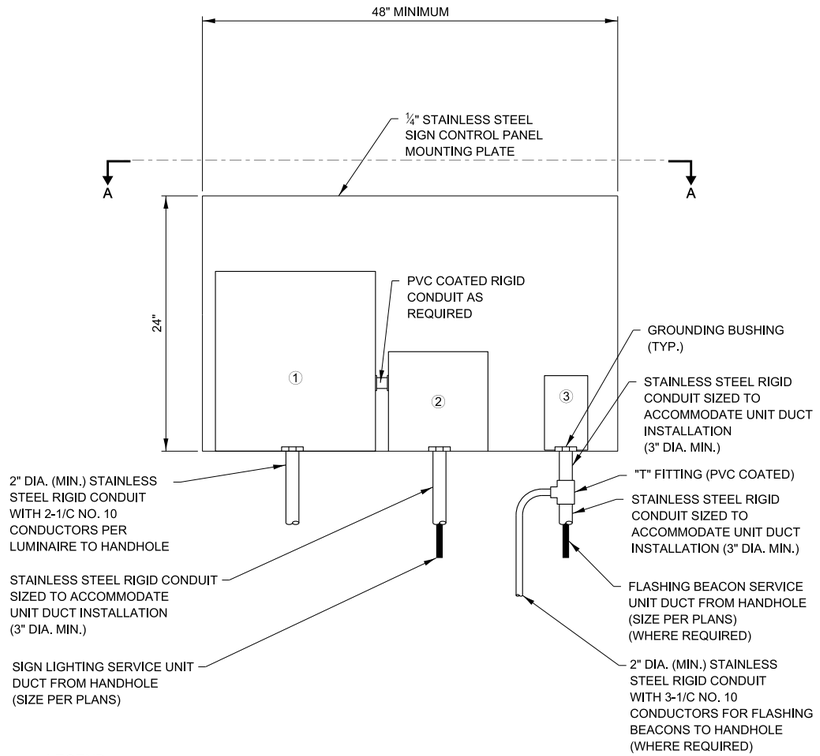
SECTION A-A

(CONTROL EQUIPMENT NOT SHOWN FOR CLARITY)



TYPICAL SIDE ELEVATION

(LUMINAIRES NOT SHOWN FOR CLARITY)



LEGEND:

① 18"x18"x8" STAINLESS STEEL JUNCTION BOX. PROVIDE SUFFICIENT 30 AMPERE, 600 VOLT TERMINAL BLOCKS TO SPLIT 480 VOLT WIRING FROM SIGN SERVICE CIRCUIT BREAKER TO TWO NO. 10 WIRES FOR EACH LUMINAIRE.

② SIGN LIGHTING SERVICE - CIRCUIT BREAKER (30 AMP/2 POLE) IN NEMA TYPE 4 C.I. ENCLOSURE, OZ TYPE "YW" WITH MOUNTING FEET OR APPROVED EQUAL. PROVIDE SURGE PROTECTION DEVICE (IN ACCORDANCE WITH ARTICLE 1065.02 OF THE STANDARD SPECIFICATIONS).

③ FLASHING BEACON CONTROLLER.

TYPICAL SIGN CONTROL PANEL DETAIL

(FOR TYPICAL WIRING DIAGRAM SEE STANDARD H14)

NOTES:

SEE SHEET 1 OF THIS SERIES FOR NOTES.

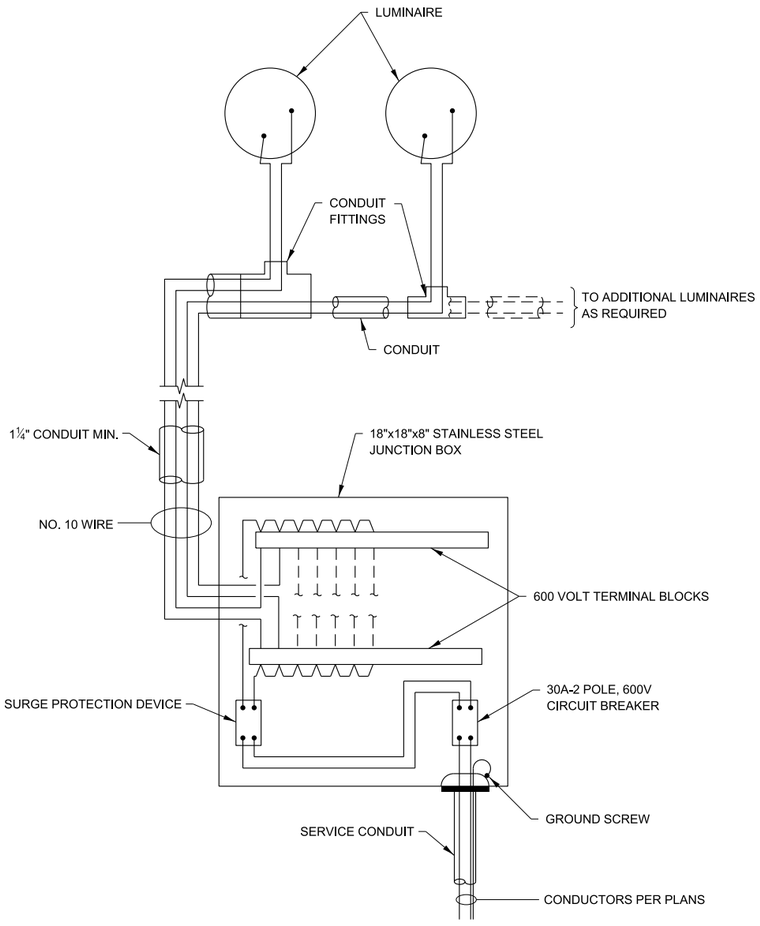
APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER

DATE: 03/01/2024

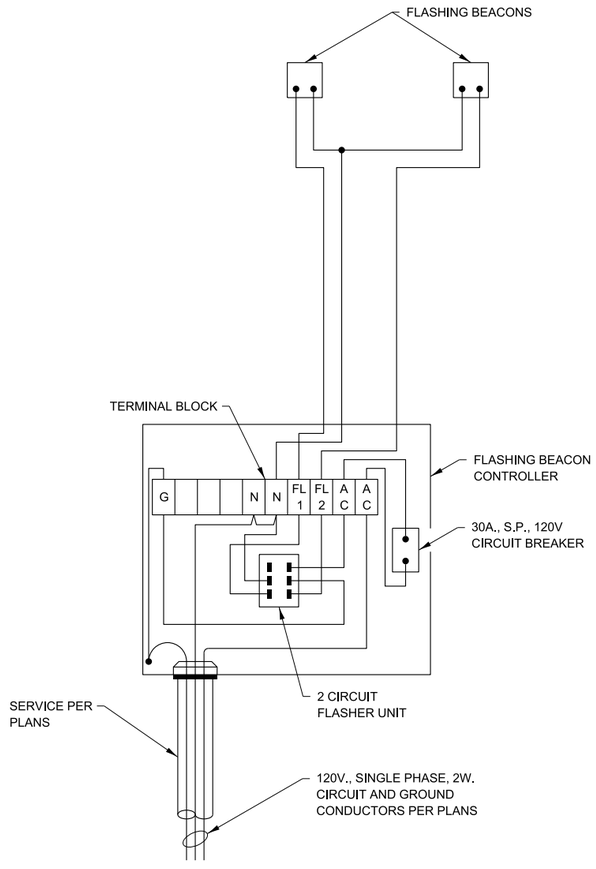
Illinois Tollway

CANTILEVER STRUCTURE
SIGN LIGHTING DETAILS

VERSION:	STANDARD:	SHEET:
2024-03	H12-05	2 OF 2



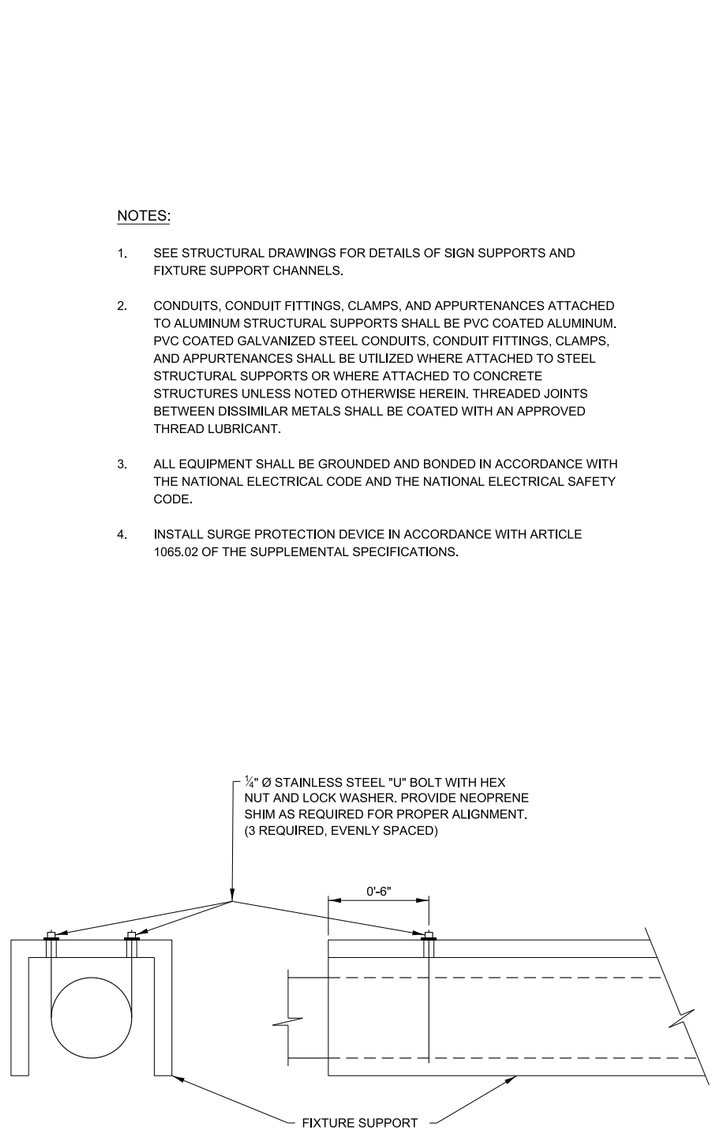
SIGN WIRING DIAGRAM
NO SCALE



FLASHING BEACON WIRING DIAGRAM
NO SCALE

NOTES:

1. SEE STRUCTURAL DRAWINGS FOR DETAILS OF SIGN SUPPORTS AND FIXTURE SUPPORT CHANNELS.
2. CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES ATTACHED TO ALUMINUM STRUCTURAL SUPPORTS SHALL BE PVC COATED ALUMINUM. PVC COATED GALVANIZED STEEL CONDUITS, CONDUIT FITTINGS, CLAMPS, AND APPURTENANCES SHALL BE UTILIZED WHERE ATTACHED TO STEEL STRUCTURAL SUPPORTS OR WHERE ATTACHED TO CONCRETE STRUCTURES UNLESS NOTED OTHERWISE HEREIN. THREADED JOINTS BETWEEN DISSIMILAR METALS SHALL BE COATED WITH AN APPROVED THREAD LUBRICANT.
3. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
4. INSTALL SURGE PROTECTION DEVICE IN ACCORDANCE WITH ARTICLE 1065.02 OF THE SUPPLEMENTAL SPECIFICATIONS.



LUMINAIRE SUPPORT DETAIL
NO SCALE

APPROVED BY: Paul Kovacs
CHIEF ENGINEERING OFFICER
DATE: 03/01/2020

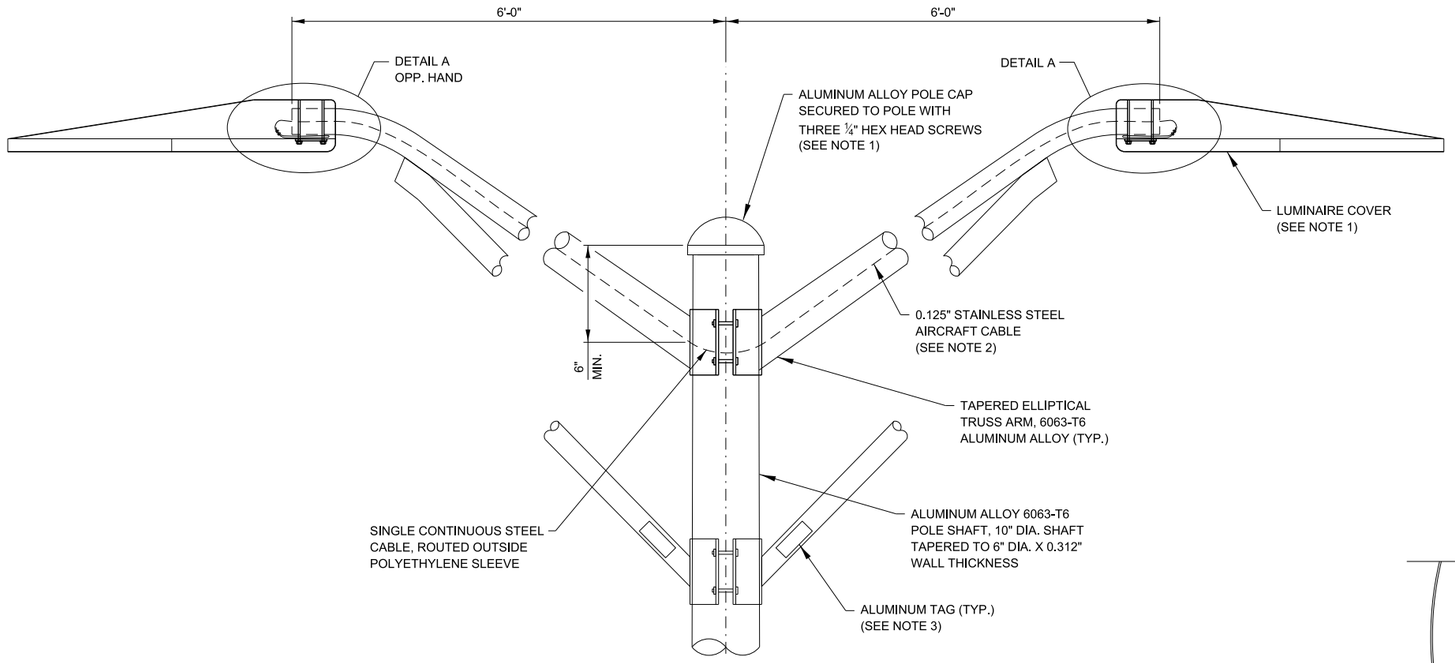
REVISIONS

DATE	DESCRIPTION
03-01-2020	REVISED NOTES.
03-01-2018	TYPOGRAPHICAL CORRECTIONS.
03-11-2015	REVISED NOTES.
02-07-2012	REMOVED CANISTER BALLASTS, NEW JUNCTION BOX AND TERMINAL BLOCKS.

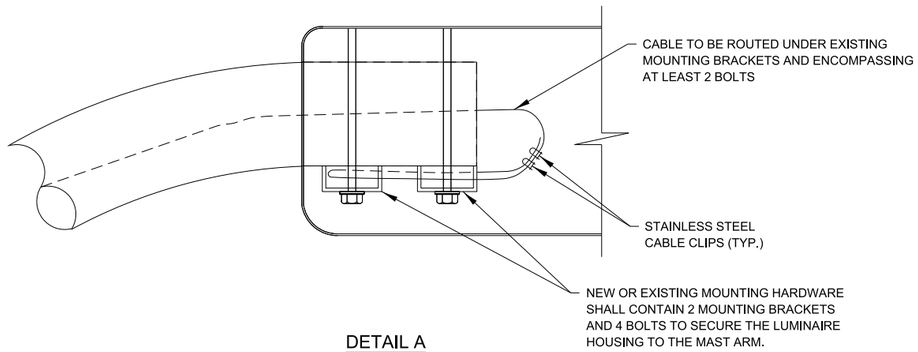
Illinois Tollway

SIGN LUMINAIRE MOUNTING DETAIL AND WIRING DIAGRAMS

VERSION:	STANDARD:	SHEET:
2020-03	H14-04	1 OF 1



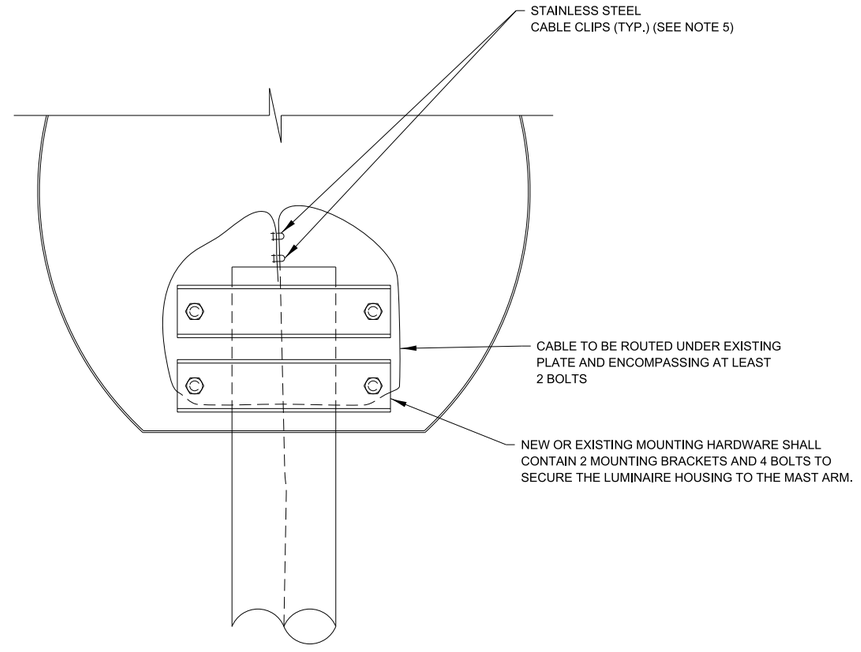
LIGHT STANDARD - TRUSS ARM
(TWIN TRUSS ARM SHOWN, TWIN MAST ARM SIMILAR)
N.T.S.



DETAIL A
N.T.S.

NOTES:

1. POLE CAP TO BE REMOVED AND LUMINAIRE LID TO BE OPENED FOR PLACEMENT OF THE CABLE ASSEMBLY AND PUT BACK IN PLACE. NEW CAP SCREWS SHALL BE USED.
2. THE BREAKING STRENGTH OF THE ASSEMBLED CABLE SHALL BE 1,700 POUNDS MINIMUM. ALLOW FOR 9" TO 12" SLACK IN THE CABLE.
3. ALUMINUM TAG WITH POLE IDENTIFICATION NUMBERS AS PER SPECIAL PROVISIONS.
4. CONTRACTOR SHALL ROUTE CABLE WITHIN LUMINAIRE IN SUCH A WAY THAT IT DOES NOT BECOME PINCHED BETWEEN THE MAST ARM AND MOUNTING BRACKET.
5. CABLE LOOPS SHALL BE CLOSED SUCH THAT EACH END OF THE CABLE PASSES THROUGH CLIPS IN OPPOSING DIRECTIONS.
6. MINIMIZE SLACK WITHIN LUMINAIRE.



BOTTOM VIEW
N.T.S.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED DETAILS REGARDING THE HARDWARE USED TO SECURE THE LUMINAIRE HOUSING.
03-01-2020	REVISED BRACKET AND ROUTING DETAILS.

Illinois Tollway

MAST ARM CABLE ASSEMBLY (TWIN MAST ARM)

VERSION:	STANDARD:	SHEET:
2024-03	H16-02	1 OF 1

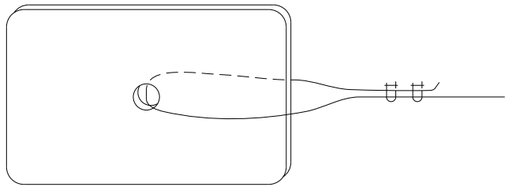
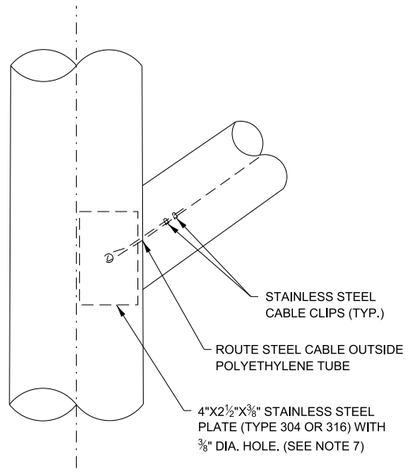
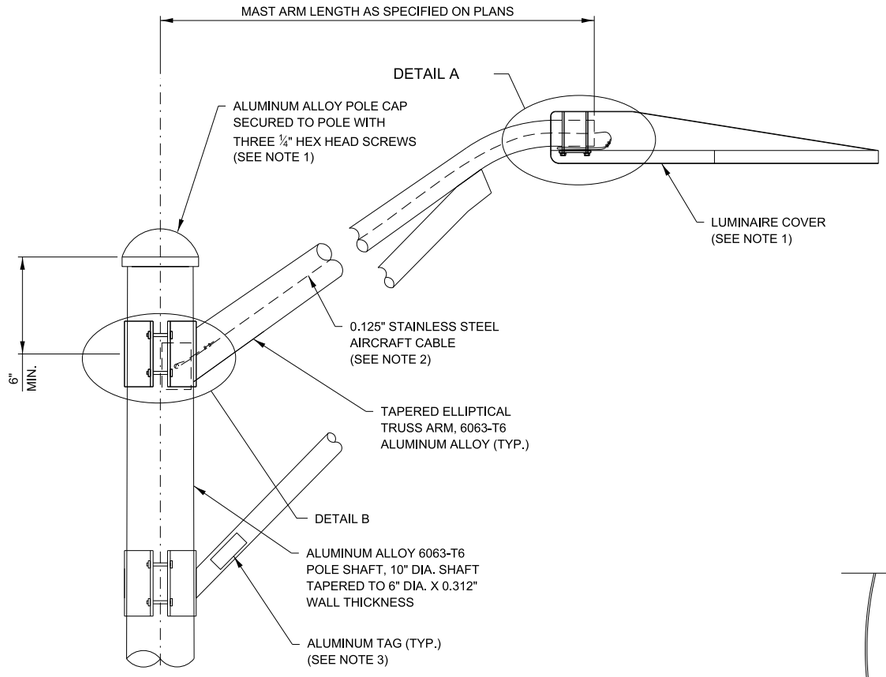


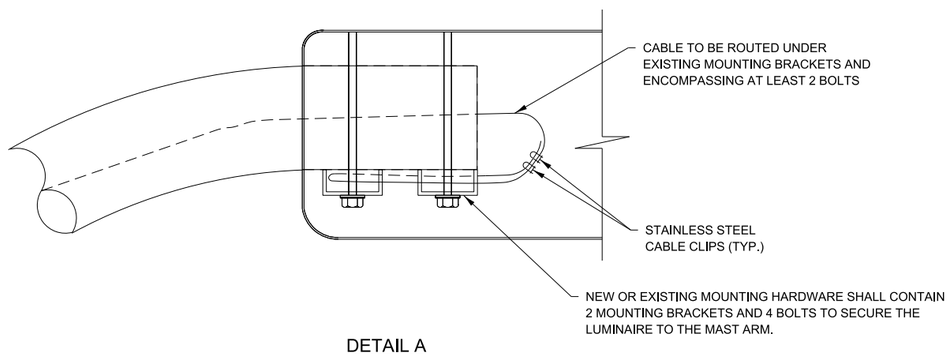
PLATE ATTACHMENT DETAIL



DETAIL B
(BRACKET CLAMPS OMITTED
FOR CLARITY)
N.T.S.



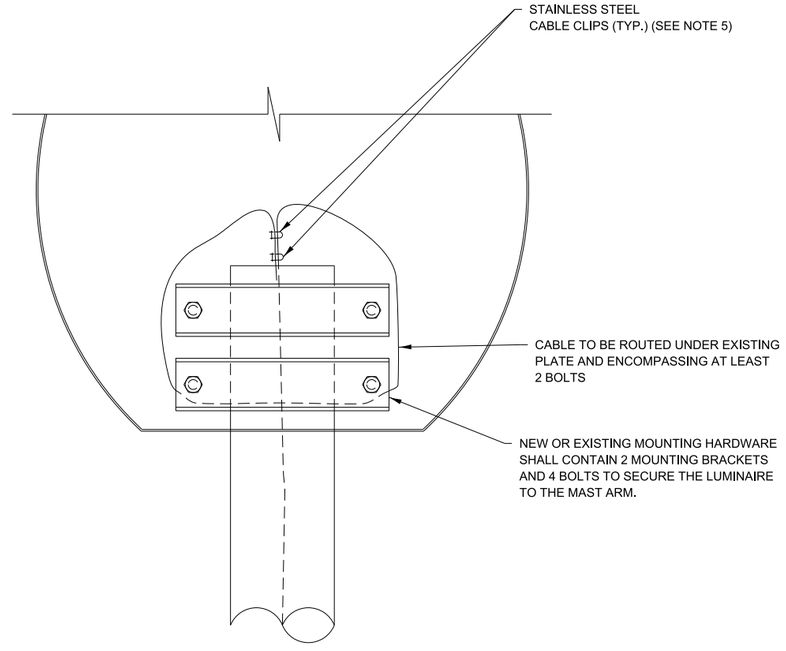
LIGHT STANDARD - TRUSS ARM
(SINGLE TRUSS ARM SHOWN, SINGLE MAST ARM SIMILAR)
N.T.S.



DETAIL A
N.T.S.

NOTES:

1. POLE CAP TO BE REMOVED AND LUMINAIRE LID TO BE OPENED FOR PLACEMENT OF THE CABLE ASSEMBLY AND PUT BACK IN PLACE. NEW CAP SCREWS SHALL BE USED.
2. THE BREAKING STRENGTH OF THE ASSEMBLED CABLE SHALL BE 1,700 POUNDS MINIMUM. ALLOW FOR 9" TO 12" SLACK IN THE CABLE.
3. ALUMINUM TAG WITH POLE IDENTIFICATION NUMBERS AS PER SPECIAL PROVISIONS.
4. CONTRACTOR SHALL ROUTE CABLE WITHIN LUMINAIRE IN SUCH A WAY THAT IT DOES NOT BECOME PINCHED BETWEEN THE MAST ARM AND MOUNTING BRACKET.
5. CABLE LOOPS SHALL BE CLOSED SUCH THAT EACH END OF THE CABLE PASSES THROUGH CLIPS IN OPPOSING DIRECTIONS.
6. MINIMIZE SLACK WITHIN LUMINAIRE.
7. ALL PLATE EDGES SHALL BE SMOOTH.



BOTTOM VIEW
N.T.S.

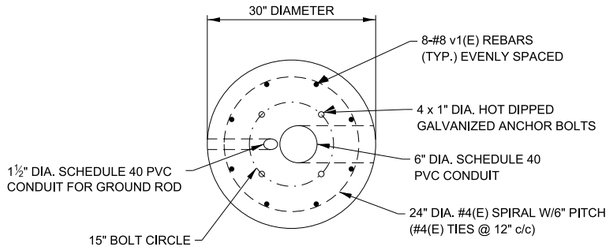
APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER
DATE: 03/01/2024

Illinois Tollway

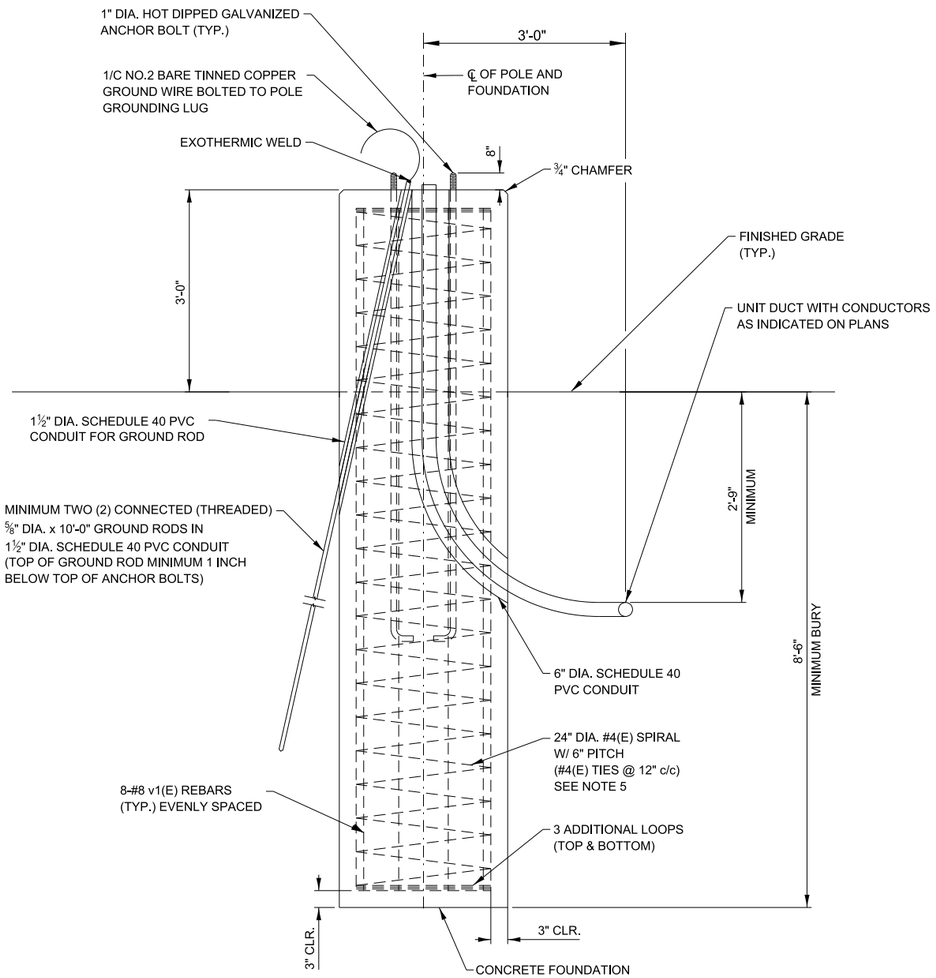
REVISIONS	
DATE	DESCRIPTION
03-01-2024	ADDED DETAILS REGARDING THE
	HARDWARE USED TO SECURE THE
	LUMINAIRE HOUSING.
03-01-2020	REVISED BRACKET AND ROUTING DETAILS.

MAST ARM CABLE ASSEMBLY (SINGLE MAST ARM)

VERSION:	STANDARD:	SHEET:
2024-03	H17-02	1 OF 1



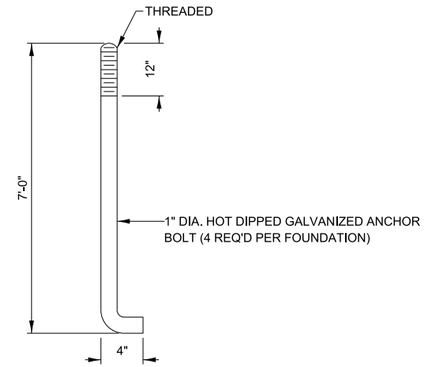
PLAN



ELEVATION

NOTES:

1. FOR DETAILS OF FUSE HOLDER, POLE BASE WIRING AND CONDUCTOR SPLICE SEE STANDARD H2.
2. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED.
3. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
4. POLE SHALL BE MOUNTED AND WIRED PER DETAIL FOR "BARRIER WALL MOUNTED UNITS" ON LIGHT STANDARD DETAILS (STANDARD H2)
5. ADJUST SPIRAL BAR SPACING AS NEEDED TO ACCOMMODATE CONDUIT ENTRANCE.



ANCHOR BOLT DETAIL

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

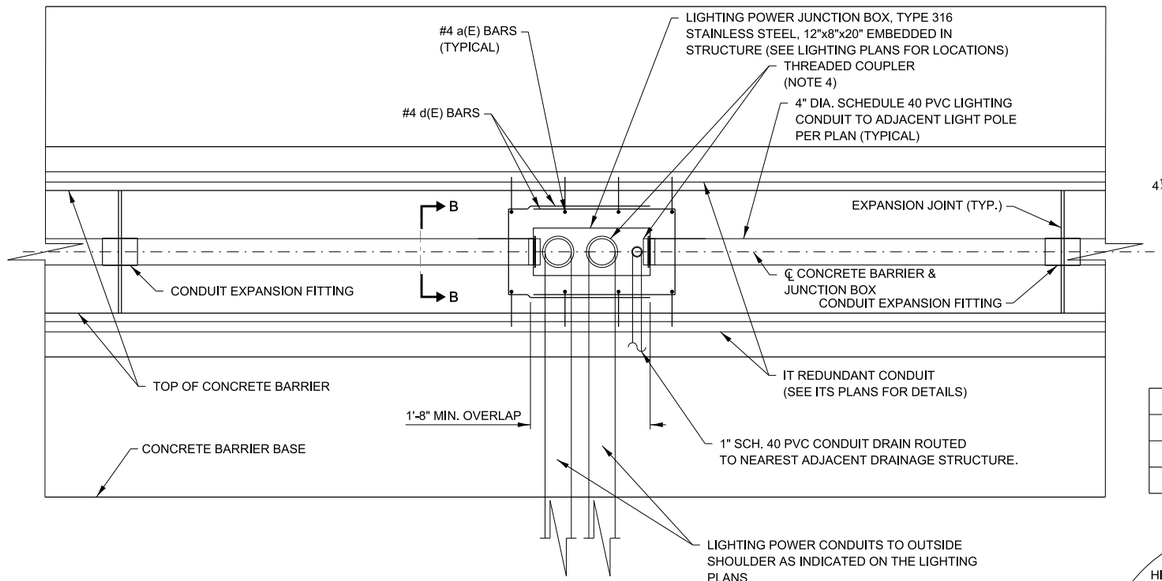
DATE:
03/01/2023

Illinois Tollway

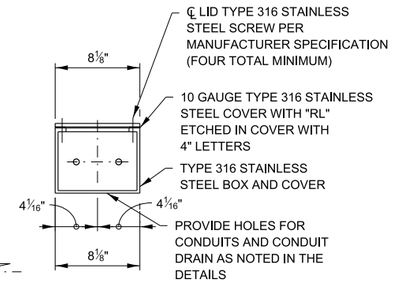
REVISIONS	
DATE	DESCRIPTION
03-01-2023	REVISED v1(E) BARS FROM #6 TO #8
03-01-2022	INCREASED ANCHOR BOLT PROJECTION

PARKING LOT LIGHT FOUNDATION DETAILS

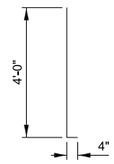
VERSION:	STANDARD:	SHEET:
2023-03	H18-02	1 OF 1



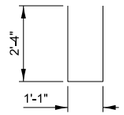
PLAN VIEW
NOT TO SCALE



SECTION B-B
NOT TO SCALE



BAR a(E)

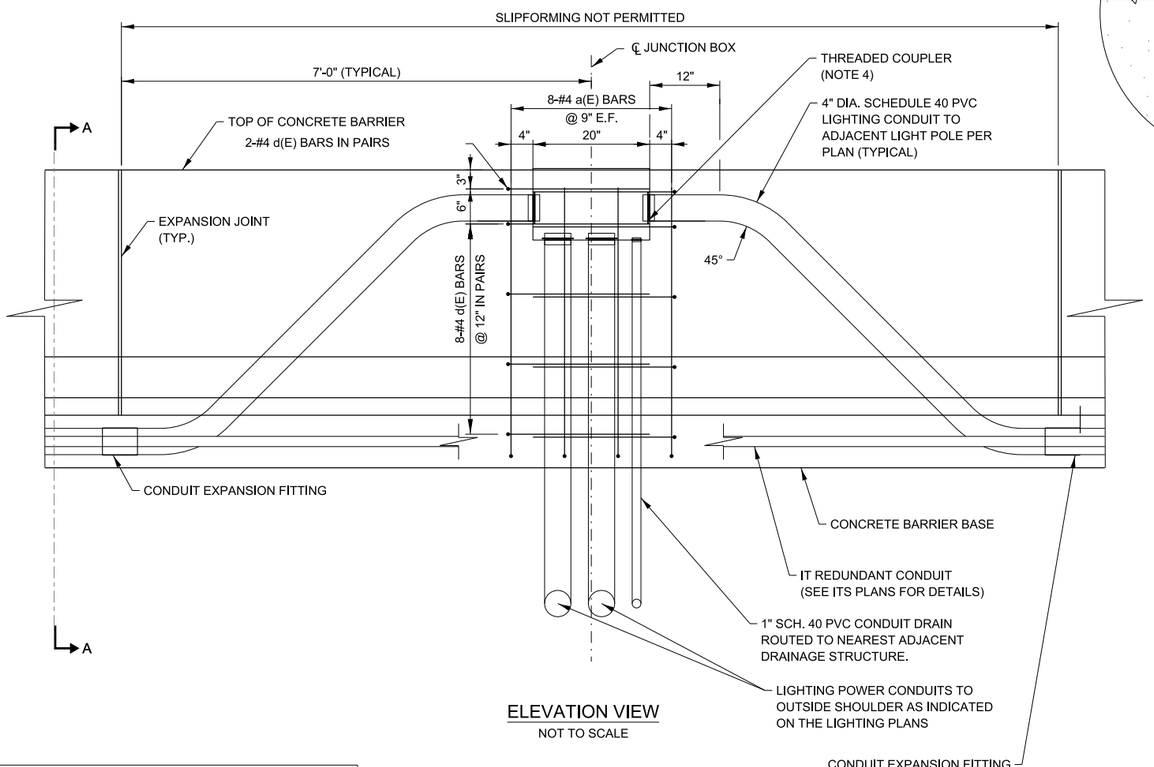


BAR d(E)

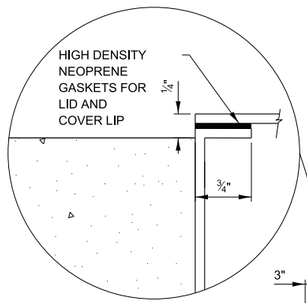
REINFORCEMENT BAR SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
a(E)	8	#4	4'-4"	23	
d(E)	10	#4	5'-9"	45	

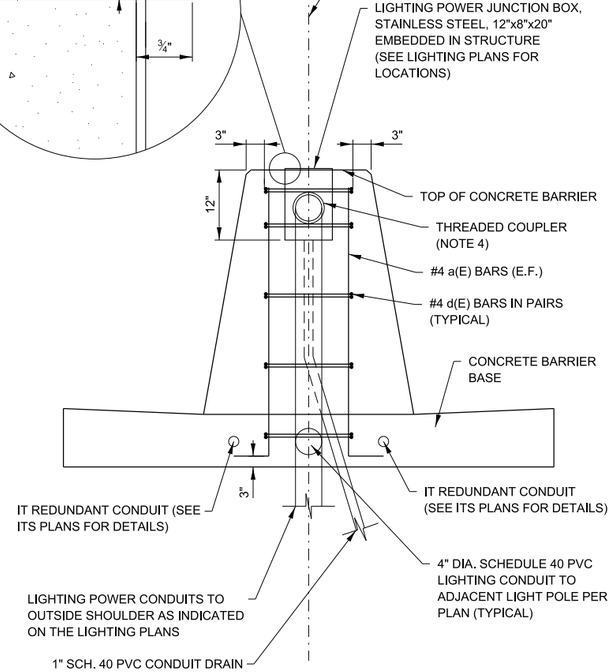
NOTES:

1. THE 1" PVC CONDUIT DRAIN SHALL SWEEP TO AN ADJACENT DRAINAGE STRUCTURE WITH CONTINUOUS DOWN SLOPE (NO LOW POINTS WITHIN CONDUIT SWEEP). CONDUIT DRAIN SHALL CONSIST OF STAINLESS STEEL WIRE MESH, WITH BETWEEN 50% TO 65% OPEN AREA, CLAMPED OVER 1" CONDUIT USING A STAINLESS STEEL WORM GEAR CLAMP. THE CONDUIT DRAIN SHALL BE SET AT THE LOWEST CONDUIT OPENING POINT IN THE JUNCTION BOX AS FLUSH AS POSSIBLE WITH THE BOTTOM OF THE JUNCTION BOX TO MINIMIZE WATER ACCUMULATION. THE CONDUIT DRAIN SHALL BE INCIDENTAL TO THE JUNCTION BOX.
2. CONTRACTOR SHALL INSTALL CONDUIT PLUGS IN EACH CONDUIT ENTERING JUNCTION BOX TO PREVENT WATER/DIRT ENTRY PRIOR TO INSTALLATION. PULL TAPE SHALL BE SECURED AND ACCESSIBLE INSIDE JUNCTION BOXES.
3. PROVIDE CONDUIT EXPANSION FITTINGS AT ALL LOCATIONS WHERE MEDIAN BARRIER EXPANSION JOINTS ARE ENCOUNTERED.
4. PROVIDE THREADED COUPLER FOR ALL CONDUITS ENTERING JUNCTION BOX.
5. REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-3 (ASTM A706) GRADE 60, DEFORMED BARS.
6. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
7. REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315. REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
8. MOVE VERTICAL REINFORCEMENT BARS ALONG THE LENGTH OF THE BARRIER TO ALLOW FOR JUNCTION BOX.
9. MOVE HORIZONTAL REINFORCEMENT BARS TO ACCOMMODATE JUNCTION BOX.
10. CONDUITS WITHIN JUNCTION BOX SHALL BE SPACED EVENLY ALONG INTERIOR WALL OFJUNCTION BOX. MINIMUM SPACING BETWEEN WALL OF JUNCTION BOX AND CONDUITSAND BETWEEN ADJACENT CONDUITS SHALL BE 1".

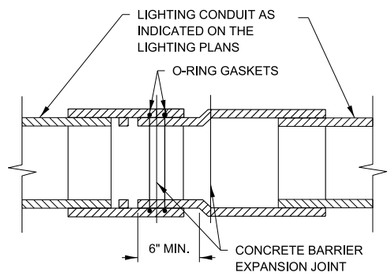


ELEVATION VIEW
NOT TO SCALE





SECTION A-A
NOT TO SCALE



CONDUIT EXPANSION FITTING DETAIL
NOT TO SCALE

APPROVED BY:
Marco Nastal
CHIEF ENGINEERING OFFICER
DATE:
03/01/2024

REVISIONS	
DATE	DESCRIPTION

Illinois Tollway

CONCRETE BARRIER CONDUIT AND JUNCTION BOX DETAILS

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STANDARD DRAWINGS

SECTION K

EROSION CONTROL AND LANDSCAPE

MARCH 2025

Illinois Tollway Standard Drawing Revisions

Section K	Erosion Control & Landscape	
	Standard	**Modification Summary** **Effective: 03-01-2025**
	K1-14	**EROSION CONTROL & LANDSCAPE**
	Sheet 1	Added notes 2 and 5 previously from Erosion and Sediment Control General Notes, reworded note 2, renumbered all subsequent notes. Added info to note 22 related to removal of erosion control measures.

New Sheet

Retired Standard

GENERAL NOTES - EROSION CONTROL & LANDSCAPE

1. THE WORK DESCRIBED ON THESE DRAWINGS IS AN INTEGRAL PART OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) USED TO OBTAIN AN NPDES PERMIT FROM IEPA FOR THE CONSTRUCTION OF THIS PROJECT.

2. THE CONTRACTOR SHALL FOLLOW THE MAINTENANCE GUIDELINES SPECIFIED IN THE SWPPP TO ENSURE THE MEASURES PROTECTING STORMWATER QUALITY ON THIS PROJECT REMAIN IN GOOD AND EFFECTIVE OPERATING CONDITION.

3. THE PURPOSE OF THE EROSION AND SEDIMENT CONTROL MEASURES INCLUDED FOR THIS PROJECT IS TO LIMIT THE SEDIMENT POLLUTION IMPACT OF ANY STORM WATER DISCHARGES THAT ORIGINATE ON THIS SITE OR OFF-SITE FLOWS THAT FLOW OVER THE DISTURBED AREAS.

4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SEDIMENT TRANSPORT OFF THE SITE IS REDUCED BY A COMBINATION OF MINIMIZATION OF EROSION AT THE SOURCE AND INSTALLATION OF SPECIFIC MEASURES TO CONTROL OR REDUCE THE TRANSPORT OF SEDIMENT.

5. THE CONTRACTOR SHALL CONFINE CONSTRUCTION ACTIVITIES WITHIN THE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS. AREAS OUTSIDE THE SHOWN CONSTRUCTION LIMITS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED AND STABILIZED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

6. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN, NOI, SWPPP AND ALL ASSOCIATED REVISIONS, ANY OTHER DOCUMENTS REFERENCED, AND INSPECTION LOG BEING IMPLEMENTED BY THE CONTRACTOR SHALL BE ON THE CONSTRUCTION SITE AT ALL TIMES.

7. TO THE MAXIMUM EXTENT POSSIBLE EROSION SHALL BE MINIMIZED AT THE SOURCE. ALL FLOWS ORIGINATING OFF THE CONSTRUCTION SITE SHALL BE DIVERTED AROUND DISTURBED AREAS OR SHALL BE CONVEYED THROUGH THE SITE IN A MANNER THAT UNTREATED ON-SITE RUNOFF SHALL BE MINIMIZED AND DOES NOT MIX WITH THE OFF-SITE RUNOFF.

8. ALL RUNOFF ORIGINATING ON DISTURBED AREAS ASSOCIATED WITH THIS PROJECT SHALL PASS THROUGH ONE OR MORE MEASURES THAT SHALL MINIMIZE THE OFF-SITE SEDIMENT IMPACTS OF THE CONSTRUCTION ACTIVITY.

9. THE CONTRACTOR SHALL INSTALL INITIAL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO BEGINNING ANY ACTIVITIES WHICH WILL POTENTIALLY CAUSE ERODIBLE CONDITIONS.

10. ALL PERMANENT SEDIMENT BASINS, PERMANENT STORM WATER CONTROL MEASURES, PERIMETER SILT FENCE, AND RUNOFF CONTROL MEASURES REQUIRED TO KEEP OFF-SITE RUNOFF FROM FLOWING OVER THE CONSTRUCTION AREA SHALL BE INSTALLED BEFORE CLEARING AND STRIPPING OF THE SITE PROCEEDS.

11. PRIOR TO PROCEEDING WITH EARTHWORK ON A PROJECT THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A PROPOSED EROSION AND SEDIMENT CONTROL SCHEDULE FOR REVIEW AND APPROVAL.

12. A MAXIMUM OF 10 ACRES IS ALLOWED TO BE IN SOME STAGE OF GRADING AT A SINGLE TIME. ADDITIONAL AREAS (UP TO 10 ACRES) MAY BE CLEARED BUT SHALL NOT BE STRIPPED OF VEGETATION UNTIL THE GRADED AREAS HAVE BEEN PROTECTED FROM EROSION THROUGH INSTALLATION OF EITHER TEMPORARY OR PERMANENT MEASURES. WHENEVER POSSIBLE, THE GRADING SHALL BE COMPLETED TO THE DESIGN GRADE AND THE PERMANENT VEGETATION PLAN IMPLEMENTED PRIOR TO STARTING GRADING ACTIVITIES ON THE NEXT SITE.

    A. WHEN BALANCING EARTHWORK (BORROW FROM A CUT USED AS FILL AT A LOCATION DISTANT FROM THE CUT) THE CHIEF ENGINEER MAY ALLOW MORE THAN 10 ACRES OF CONSTRUCTION WORK AREAS AND STORAGE AREAS.

    B. WHERE NEW INTERCHANGES ARE BEING CONSTRUCTED THE ALLOWABLE AREA BEING GRADED MAY BE LARGER THAN 10 ACRES WHEN THE CONTRACT DRAWINGS AND SWPPP DEFINE SUCH INCREASES.

    C. VARIATIONS TO THE ABOVE MAY BE CONSIDERED BY THE CHIEF ENGINEER UNDER ALL THE FOLLOWING CONDITIONS:

    • IF THE CONTRACTOR FALLS BEHIND SCHEDULE THROUGH NO FAULT OF HIS OWN.

    • THE CONTRACTOR SHALL PRESENT A SCHEDULE DEMONSTRATING THE NEED FOR SUCH VARIATION IN ORDER TO COMPLETE THE WORK ON TIME.

    • THE CONTRACTOR SHALL COMPLY WITH ALL OTHER CONTRACT AND PERMIT REQUIREMENTS.

13. STABILIZATION OF DISTURBED AREAS SHALL, AT A MINIMUM, BE INITIATED IMMEDIATELY WHENEVER ANY CLEARING, GRADING, EXCAVATING, OR OTHER EARTH DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE, OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND SHALL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. STABILIZATION OF DISTURBED AREAS SHALL BE INITIATED WITHIN 1 WORKING DAY OF PERMANENT OR TEMPORARY CESSATION OF EARTH DISTURBING ACTIVITIES AND SHALL BE COMPLETED AS SOON AS POSSIBLE BUT NOT LATER THAN 14 DAYS FROM THE INITIATION OF STABILIZATION WORK IN AN AREA. WHERE THE INITIATION OF STABILIZATION MEASURES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE. THE ENGINEER MAY REQUIRE THAT CRITICAL LOCATIONS BE STABILIZED IMMEDIATELY, AND THE CONTRACTOR SHALL IMPLEMENT TEMPORARY STABILIZATION MEASURES TO THESE AREAS WITHIN 24 HOURS OF SUCH DIRECTIVE, PURSUANT TO ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATION ARTICLE 280.15(C), TO ESTABLISH TEMPORARY COVER.

14. STABILIZATION OF CUT OR FILL SLOPES WITH TEMPORARY OR PERMANENT EROSION CONTROL MEASURES IS REQUIRED WHENEVER THE CUT OR FILL ACTIVITY REACHES 15 FEET VERTICALLY OR THE FINISHED SLOPE EQUALS 50 FEET, WHICHEVER IS MORE RESTRICTIVE. ONCE THE STABILIZATION MEASURES ARE INSTALLED, THE PLACEMENT OF FILL OR EXCAVATION ACTIVITIES ARE ALLOWED TO PROCEED.

15. THE CONTRACTOR SHALL DESIGNATE ONE OF HIS EMPLOYEES AS EROSION AND SEDIMENT CONTROL MANAGER. THIS PERSON SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN ON ALL DISTURBED AREAS. THIS PERSON SHALL POSSESS THE NECESSARY TRAINING AND CERTIFICATION ON EROSION AND SEDIMENT CONTROL MEASURES FOR ACCEPTANCE BY THE ILLINOIS TOLLWAY. THIS EMPLOYEE IS TO HAVE THE AUTHORITY TO CARRY OUT THE IMPLEMENTATION OF ANY INSTRUCTIONS CONCERNING THE EROSION AND SEDIMENT CONTROL PLAN GIVEN BY THE ENGINEER. INSPECTIONS MAY BE REDUCED TO ONCE PER MONTH WHEN CONSTRUCTION ACTIVITIES HAVE CEASED DUE TO FROZEN CONDITIONS. WEEKLY INSPECTIONS SHALL RECOMMENCE WHEN CONSTRUCTION ACTIVITIES ARE RESUMED. SEE TOLLWAY SUPPLEMENTAL SPECIFICATIONS, SECTION 280.02(3).

16. ALL MEASURES SHALL BE INSPECTED BY THIS INDIVIDUAL AND THE ENGINEER ON A REGULAR BASIS (AT LEAST ONCE EVERY 7 DAYS) AND AFTER ANY RAINFALL EVENT GREATER THAN 0.5 INCHES, OR EQUIVALENT SNOWMELT (I.E. + 5").

17. SEDIMENT TRAPS, SEDIMENT BASINS, DITCHES, SILT FENCES, FENCES, STONE OUTLET STRUCTURES, EARTH BERMS, ETC. SHALL BE MAINTAINED DURING THE CONSTRUCTION SEASON AS WELL AS THE WINTER MONTHS AND OTHER TIMES WHEN THE PROJECT IS CLOSED DOWN. TRAPS SHALL BE CLEANED WHEN THEY ARE 50% FILLED. SILT FENCE AND STONE OUTLET STRUCTURES SHALL HAVE SEDIMENT REMOVED WHEN IT REACHES 50% THE HEIGHT OF THE CONTROL DEVICE. THESE SPOILS SHALL BE REMOVED TO AN APPROVED SITE.

18. SALVAGED TOPSOIL SHALL BE PLACED ON WELL DRAINED LAND AWAY FROM INTERMITTENT AND LIVE STREAMS OR WETLANDS WITH THE APPROPRIATE RUNOFF CONTROL AND SEDIMENT CONTROL MEASURES INSTALLED AROUND THE STORAGE SITE. SALVAGED TOPSOIL SHALL BE STABILIZED WITH STRAW MULCH IMMEDIATELY AFTER SHAPING OF THE PILE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS. SILT FENCE SHALL BE PROVIDED AT THE PERIMETER OF THE STOCKPILE.

19. MATERIALS EXCAVATED FOR THE CONSTRUCTION OR CLEAN OUT OF SEDIMENT CONTROLS SHALL NOT BE STOCKPILED IN THE VICINITY OF THE CONTROL MEASURE. IT SHALL BE PLACED IN AN EMBANKMENT OR WASTED AS DIRECTED BY THE ENGINEER.

20. EXCAVATION TO BE USED FOR EMBANKMENTS SHALL NOT BE STOCKPILED UNLESS PERIMETER CONTROLS ARE UTILIZED. WHEN THIS MATERIAL IS STOCKPILED FOR THE CONVENIENCE OF THE CONTRACTOR THE COST OF PROVIDING THE CONTROLS ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF THE MATERIAL IS STOCKPILED AT THE DIRECTION OF THE ENGINEER THE ILLINOIS TOLLWAY SHALL ASSUME THE COSTS OF THE CONTROLS. TEMPORARY SOIL STOCKPILE LOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO TOPSOIL REMOVAL OR OTHER GRADING OPERATIONS BEING PERFORMED.

21. SEDIMENT LADEN DEWATERING DISCHARGE SHALL BE DIRECTED TO AN APPROVED SEDIMENT TRAPPING MEASURE PRIOR TO RELEASE FROM THE SITE.

22. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSIDERED TEMPORARY. THESE MEASURES SHALL BE REMOVED BY THE CONTRACTOR AS DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. SHOULD IT BE NECESSARY TO REMOVE ANY EROSION OR SEDIMENT CONTROLS FOR CONSTRUCTION REASONS, THE CONTRACTOR SHALL FIRST OBTAIN PERMISSION FROM THE ENGINEER AND SHALL REPAIR OR REPLACE THE REMOVED CONTROLS THE SAME DAY. THE COST OF REMOVING AND RE-INSTALLING THE DEVICE SHALL BE INCLUDED IN THE CONTRACT. DISTURBED AREAS SHALL BE RESTORED UPON REMOVAL.

23. WHEN THE CONTRACTOR REQUESTS A CHANGE TO POSTPONE COMPLETION OF THE EXCAVATION OF A SPECIFIC AREA AS A CONTINUOUS OPERATION AND PLACING THE TOPSOIL AS DEFINED IN THE STANDARD SPECIFICATIONS, THE ENGINEER MAY ALLOW THE CONTRACTOR TO STABILIZE THE AREA USING TEMPORARY STABILIZATION WITH STRAW MULCH PROVIDED THE FOLLOWING CONDITIONS ARE MET:

    A. ALL AREAS BEING STABILIZED ARE 1:3 (V:H) SLOPES OR FLATTER.

    B. THE COST OF PREPARING THE SEED BED AND STABILIZING THE AREA WITH TEMPORARY STABILIZATION WITH STRAW MULCH IS THE RESPONSIBILITY OF THE CONTRACTOR.

    C. ALL REQUIRED SEDIMENT CONTROL MEASURES FOR THE SECTION OF ROAD IN QUESTION HAVE BEEN INSTALLED AND ARE BEING MAINTAINED.

24. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN ACCORDANCE WITH THE STANDARD DRAWINGS AND SPECIAL PROVISION (SP) 111, STORM WATER POLLUTION PREVENTION PLAN INCLUDING CONTROLS AND SPILL PREVENTION-MATERIAL MANAGEMENT PRACTICES. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL SIGN THE CONTRACTOR'S CERTIFICATION STATEMENT. LIST THE MATERIALS OR SUBSTANCES EXPECTED TO BE PRESENT ON-SITE IN THE INVENTORY FOR POLLUTION PREVENTION PLAN AND SHALL NAME TWO ADDITIONAL INDIVIDUALS TO ASSIST IN SPILL PREVENTION AND CLEAN UP AT THE PRECONSTRUCTION CONFERENCE. THE CONTRACTOR SHALL SUBMIT THE SUBMITTAL ITEMS SPECIFIED IN S.P. 111.2, STORM WATER POLLUTION PREVENTION PLAN, WHICH SHALL BE INCORPORATED INTO AND BECOME PART OF THE SWPPP.

25. AT THE TIME OF THE PRECONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL THE PROPOSED CONCRETE TRUCK WASHOUT LOCATIONS AS REQUIRED IN SPECIAL PROVISION 111. RUNOFF FROM WASH AREAS SHALL BE CONTAINED IN DESIGNATED AREAS SO THAT RUNOFF DOES NOT REACH THE STORM SEWER OR DITCH SYSTEMS. WASHOUT WATER SHALL BE TAKEN TO AN APPROVED DISCHARGE LOCATION.

26. IF AN ALTERNATIVE SIZE DITCH CHECK IS PROPOSED BY THE CONTRACTOR FOR USE ON THE PROJECT, A CONTRACT DITCH CHECK SPACING SHALL BE RECALCULATED BY THE CONTRACTOR IN ACCORDANCE WITH THE ILLINOIS TOLLWAY EROSION AND SEDIMENT CONTROL, LANDSCAPE DESIGN CRITERIA MANUAL. ANY RESULTING QUANTITY CHANGES SHALL BE APPROVED BY THE ENGINEER PRIOR TO START OF WORK.

27. ALL ABOVE GRADE, UN-SHIELDED SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LOCATED OUTSIDE THE CLEAR ZONE. THE CONTRACTOR SHALL REVIEW THE LOCATIONS OF ALL MEASURES AND PERFORM A BARRIER WARRANT ANALYSIS, IF NECESSARY, TO ENSURE ROADSIDE OBSTACLES ARE NOT CREATED.

28. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

29. THE CONTRACTOR SHALL REFER TO SECTION 280.02 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS FOR PENALTIES FOR NON-CONFORMANCE.

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER — DATE: 03/01/2025

Illinois Tollway

REVISIONS	
DATE	DESCRIPTION
03-01-2025	ADDED NOTES 2 AND 5, ADDED INFO TO NOTE 22, RENUMBERED REMAINING NOTES.
03-01-2024	UPDATED CADD FORMAT, REPLACED REGIONAL WITH NATIONWIDE IN NOTE 34, REPLACED ROOT BALL WITH ROOT FLARE IN SHEET 13.

EROSION CONTROL AND LANDSCAPE

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GENERAL NOTES - EROSION CONTROL & LANDSCAPE

30. THE EROSION AND SEDIMENT CONTROLS SHOWN IN THE PLANS REPRESENT THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED BY THE ENGINEER OR REPRESENTATIVES OF REGULATORY OR PERMITTING AGENCIES. ANY EMERGENCY CONTROL MEASURES REQUESTED BY A REGULATORY OR PERMITTING AGENCY MUST BE INSTALLED IMMEDIATELY.

31. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS, AND THE USE OF TEMPORARY AND/OR PERMANENT MEASURES. TO THE MAXIMUM EXTENT POSSIBLE, EROSION SHALL BE MINIMIZED AT ITS SOURCE.

32. TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. ANY DEVIATION FROM THE TEMPORARY EROSION AND SEDIMENT CONTROL PLAN OR SCHEDULE SHALL BE AT THE DISCRETION OF THE ENGINEER.

33. UNLESS OTHERWISE INDICATED, ALL STABILIZATION AND STRUCTURAL PRACTICES AND OTHER CONTROL MEASURES SPECIFIED IN THE SWPPP SHALL BE CONSTRUCTED ACCORDING TO THE MINIMUM STANDARDS OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS AND THE ILLINOIS URBAN MANUAL (LATEST EDITION).

34. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM ANY SUBCONTRACTORS WHO PERFORM WORK ON THE PROJECT OF THE REQUIREMENTS OF THE SWPPP AND ILR10 PERMIT ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY (IF APPLICABLE).

35. THE CONDITION OF THE CONSTRUCTION SITE FOR WINTER SHUTDOWN SHALL BE ADDRESSED EARLY IN THE FALL GROWING SEASON SO THAT DISTURBED AREAS MAY BE STABILIZED WITH TEMPORARY AND/OR PERMANENT VEGETATIVE COVER FOR EROSION CONTROL. AREAS TO BE WORKED AND DISTURBED BEYOND THE END OF THE GROWING SEASON MUST INCORPORATE TEMPORARY STABILIZATION MEASURES THAT DO NOT RELY ON VEGETATIVE COVER SUCH AS EROSION CONTROL BLANKET.

36. IF THE PROJECT REQUIRES PERMIT(S) FROM THE UNITED STATES ARMY CORPS OF ENGINEERS (USACE 404 PERMIT) AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY (IEPA 401 WATER QUALITY CERTIFICATION THROUGH THE USACE NATIONWIDE PERMIT). IF APPLICABLE, THE PERMIT APPLICATION WILL BE SUBMITTED TO THE USACE AND IEPA BY THE ILLINOIS TOLLWAY. THE CONTRACTOR SHALL NOT DISTURB OR OTHERWISE IMPACT JURISDICTIONAL WETLANDS OR WATERWAYS UNTIL THESE PERMITS ARE RECEIVED AND PROVIDED TO THE CONTRACTOR. NO REMOVALS, TEMPORARY OR PERMANENT CONSTRUCTION ACTIVITIES, OR OTHER WORK THAT WOULD IMPACT THESE RESOURCES, IS ALLOWED UNTIL THESE PERMITS ARE OBTAINED. ON PROJECTS WHICH INCLUDE IN-STREAM WORK, NO WORK IS ALLOWED BEYOND THE PERMITTED AREA.

37. PERMANENT LANDSCAPE ITEMS SHALL BE IMPLEMENTED IN CONJUNCTION WITH CONSTRUCTION STAGING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR PROLONG FINAL GRADING SO THAT THE ENTIRE PROJECT CAN BE PERMANENTLY STABILIZED AT ONE TIME.

38. FOR THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL PROTECT ALL ON-SITE, ADJACENT AND/OR DOWNSTREAM SEWERS, DITCHES, AND WATERCOURSES FROM CONTAMINATION BY WATERBORNE SILTS, SEDIMENTS, FUELS, SOLVENTS, DETERGENTS, LUBRICANTS, OR OTHER TOXIC OR HAZARDOUS POLLUTANTS ORIGINATING FROM ANY WORK DONE ON OR IN SUPPORT OF THE PROJECT.

39. TEMPORARY STABILIZED CONSTRUCTION ENTRANCES, GRAVELED ROADS, ACCESS DRIVES, AND PARKING AREAS OF SUFFICIENT WIDTH AND LENGTH SHALL BE PROVIDED TO PREVENT SOIL FROM BEING TRACKED ONTO PUBLIC OR PRIVATE ROADWAYS. THE LOCATIONS OF ALL STABILIZED ENTRANCES ARE SUBJECT TO APPROVAL BY THE ENGINEER. SUGGESTED OR POTENTIAL LOCATIONS MAY BE SHOWN ON THE PLANS.

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EROSION CONTROL AND LANDSCAPE

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STANDARD SYMBOLS

CLEARING & GRADING LIMITS
(LIMITS OF CONSTRUCTION)

CULVERT INLET
PROTECTION-FENCE

CIP

CULVERT INLET
PROTECTION-STONE

DB

DEWATERING BASINS

DIVERSION DIKE

DRAINAGE DIVIDE

EXISTING DRAINAGE PATH

FIPC

FILTER FABRIC
INLET PROTECTION, COVER TYPE

FIPB

FILTER FABRIC
INLET PROTECTION, BASKET TYPE

SC SC

SILT CURTAIN

IC

INITIAL CONSTRUCTION ITEM

PROPOSED DRAINAGE PATH

RIP

RECTANGULAR INLET
PROTECTION

SEDIMENT BASIN
AGGREGATE BERM

SEDIMENT BASIN

SILT FENCE

STABILIZED
CONSTRUCTION
ENTRANCE

STONE OUTLET STRUCTURE
SEDIMENT TRAP

STREAM DIVERSION

SSF

SUPER SILT FENCE

T

TEMPORARY DITCH CHECK

TEMPORARY PIPE SLOPE DRAIN

TEMPORARY RIPRAP

TEMPORARY ROCK CHECK DAM

TEMPORARY STREAM CROSSING

TS

TEMPORARY SWALE

TP

TREE PROTECTION

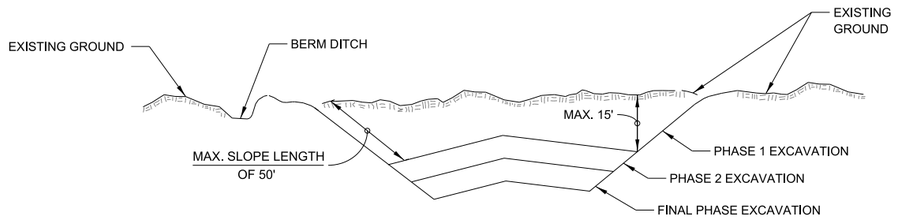
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NOTES:

1. ALL CUT SLOPES SHALL BE EXCAVATED AND STABILIZED (PLACE TOPSOIL, PREPARE SEEDBED, APPLY SEED, PROTECT SLOPE WITH MULCH OR EROSION BLANKET) AS THE WORK PROGRESSES.

2. CONSTRUCTION SEQUENCE:

   A. EXCAVATE AND STABILIZE BERM, SIDE AND OUTLET DITCHES, PROVIDE SEDIMENT TRAPS FOR DITCHES.

   B. PERFORM PHASE 1 EXCAVATION AND STABILIZE SLOPES WITH PERMANENT SEEDING.

   C. PERFORM PHASE 2 EXCAVATION AND STABILIZE SLOPES WITH PERMANENT SEEDING. OVER SEED PHASE 1 SLOPES, IF REQUIRED.

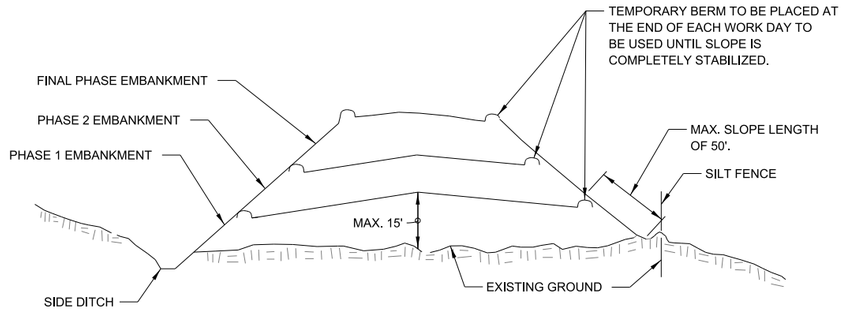
   D. PERFORM FINAL PHASE EXCAVATION, DRESS, SEED AND MULCH SLOPES WITH PERMANENT SEEDING. STABILIZE SURFACE DRAIN DITCHES. OVER SEED PHASE 1 & 2 SLOPES, IF REQUIRED, AS DETERMINED BY THE ENGINEER.

3. IF PERMANENT SEEDING CANNOT BE PLACED DUE TO CONTRACT REQUIREMENTS REGARDING PLANTING SEASONS, THE CUT SLOPE IS TO HAVE TOPSOIL PLACED AND SEEDING PREPARED PRIOR TO USING TEMPORARY STABILIZATION WITH STRAW MULCH OR TEMPORARY SEEDING WITH EROSION BLANKET.

4. THE CONTRACTOR HAS THE OPTION OF DELAYING TOPSOIL SEEDING BEYOND THE 15 FOOT LIMITATION. IF THIS OPTION IS CHOSEN, THE CUT SLOPE MUST BE "TEMPORARY STABILIZED" AT NO COST TO THE ILLINOIS TOLLWAY.

5. ONCE THE EXCAVATION WITHIN A SPECIFIC AREA HAS BEGUN, THE OPERATION SHALL BE CONTINUOUS FROM STRIPPING THROUGH THE COMPLETION OF THE GRADING AND PLACEMENT OF SLOPE STABILIZATION MEASURES. ANY INTERRUPTIONS IN THE OPERATION OF 14 DAYS OR MORE MUST BE APPROVED BY THE ENGINEER. ANY VIOLATION OF THIS REQUIREMENT WILL RESULT IN THE CONTRACTOR ASSUMING THE RESPONSIBILITY OF PLACING TEMPORARY STABILIZATION AT HIS OWN COST AND EXPENSE.

EXCAVATION PHASING PLAN - CUT SECTION



NOTES:

1. THE EMBANKMENT WILL BE MADE IN STAGES NOT TO EXCEED 15' IN HEIGHT OR 50' IN SLOPE LENGTH. THE EMBANKMENT SLOPES WILL BE STABILIZED USING TEMPORARY MEASURES BEFORE BEGINNING NEXT STAGE.

2. AT THE END OF EACH WORK DAY TEMPORARY BERMS (EARTH) AND TEMPORARY PIPE SLOPE DRAINS WILL BE CONSTRUCTED ALONG THE TOP EDGE(S) OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF.

3. CONSTRUCTION SEQUENCE:

   A. EXCAVATE AND STABILIZE SIDE DITCH AND/OR INSTALL PROPOSED PERIMETER CONTROLS AT THE TOE OF SLOPE.

   B. PLACE PHASE 1 EMBANKMENT AND STABILIZE WITH TEMPORARY SEEDING AND MULCH.

   C. PLACE PHASE 2 EMBANKMENT AND STABILIZE WITH TEMPORARY SEEDING AND MULCH.

   D. PLACE FINAL PHASE EMBANKMENT AND STABILIZE WITH PERMANENT VEGETATIVE PLAN ON THE ENTIRE SLOPE.

4. ONCE THE PLACEMENT OF FILL WITHIN A SPECIFIC AREA HAS BEGUN, THE OPERATION SHALL BE CONTINUOUS FROM STRIPPING THROUGH THE COMPLETION OF THE GRADING AND PLACEMENT OF PERMANENT VEGETATIVE PLAN. ANY INTERRUPTIONS IN THE OPERATION OF 14 DAYS OR MORE MUST BE APPROVED BY THE ENGINEER. ANY VIOLATION OF THIS REQUIREMENT WILL RESULT IN THE CONTRACTOR ASSUMING THE RESPONSIBILITY OF PLACING TEMPORARY STABILIZATION AT HIS OWN COST AND EXPENSE.

EMBANKMENT PHASING PLAN - FILL SECTION

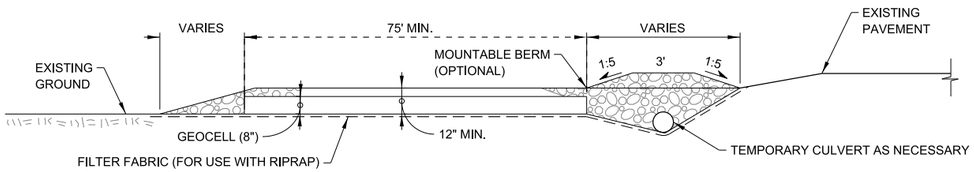
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03/01/2025

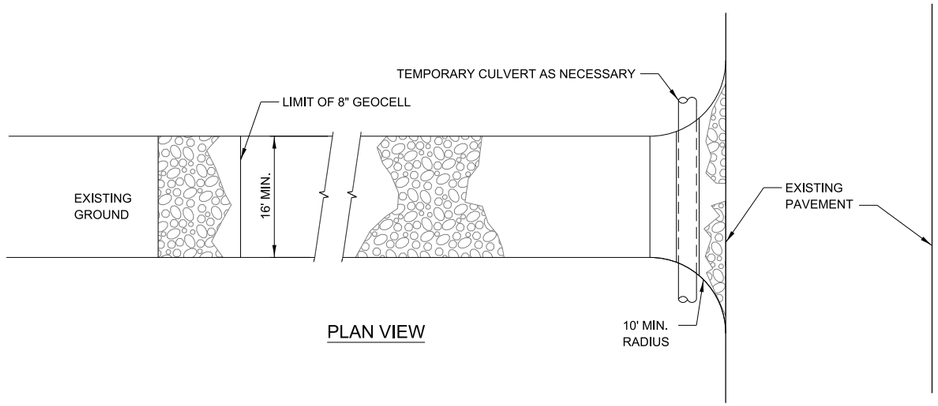
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EROSION CONTROL AND LANDSCAPE

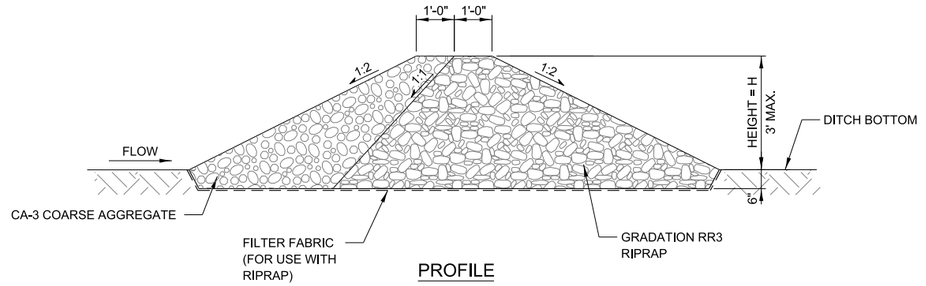
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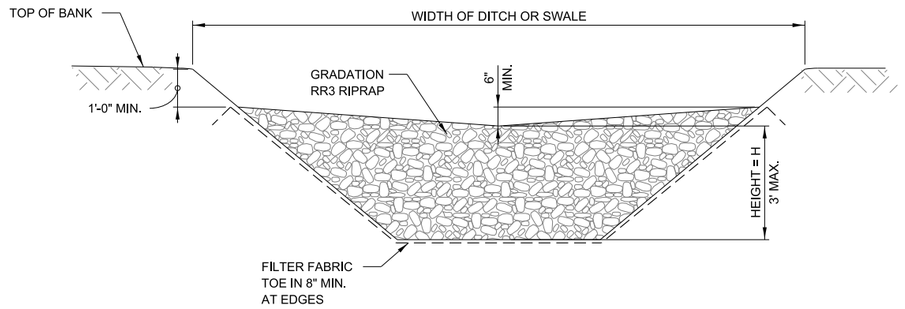
PROFILE



PLAN VIEW



PROFILE



CROSS SECTION
CENTERLINE LOOKING DOWNSTREAM

NOTES:

1. STONE
   A. STONE SIZE - CA-3
   B. LENGTH - AS REQUIRED, BUT NOT LESS THAN 75'.
   C. THICKNESS - NOT LESS THAN 4" ABOVE TOP OF GEOCELL.
2. WIDTH - 16' MINIMUM FOR ONE WAY TRAFFIC; 24' MINIMUM FOR TWO-WAY TRAFFIC; BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
3. GEOCELL NOT LESS THAN 8" IN DEPTH WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
4. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 1:5 SLOPES WILL BE PERMITTED.
5. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY SHALL BE REMOVED IMMEDIATELY.
6. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER HEAVY USE AND EACH RAINFALL EVENT.
7. TO BE USED TO REDUCE OR ELIMINATE TRACKING OF SEDIMENT ONTO PUBLIC STREETS. PLACE AT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS. DISTURBED AREAS TO BE RESTORED UPON REMOVAL.

STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL



NOTES:

1. FOR LOCATIONS AND HEIGHTS OF ROCK CHECK DAMS REFER TO CONSTRUCTION DRAWINGS.
2. TEMPORARY ROCK CHECK DAMS SHALL BE REPLACED WHEN THEY CEASE TO FUNCTION AS INTENDED DUE TO WASHOUT OR CONSTRUCTION TRAFFIC DAMAGE.
3. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 50% OF DAM HEIGHT. THIS PRACTICE IS NOT A SUBSTITUTE FOR MAJOR PERIMETER TRAPPING SUCH AS A TEMPORARY SEDIMENT TRAP OR BASIN.
4. SPACING BETWEEN DAMS SHALL BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS TOP OF RIPRAP AT THE CENTER OF THE DOWNSTREAM DAM.
5. WHEN A TEMPORARY ROCK CHECK DAM IS IN THE CLEAR ZONE, IT MUST BE MADE TRAVERSABLE TO AN ERRANT VEHICLE. THE MAXIMUM UNSHIELDED TRANSVERSE SLOPE ALLOWED TO FACE TRAFFIC SHALL BE 1:10 (V:H) AND THE MAXIMUM TRANSVERSE FACING AWAY FROM TRAFFIC SHALL BE 1:4 (V:H). AN UNSHIELDED TEMPORARY ROCK CHECK DAM SHALL HAVE AN ADDITIONAL LAYER OF CA-3 COURSE AGGREGATE (6" MIN.) PLACED ON THE DOWNSTREAM SIDE OF THE ROCK CHECK DAM. THE FILTER FABRIC SHALL BE PLACED ALONG THE ENTIRE BASE OF THE TEMPORARY ROCK CHECK DAM.

TEMPORARY ROCK CHECK DAM

STANDARD SYMBOL



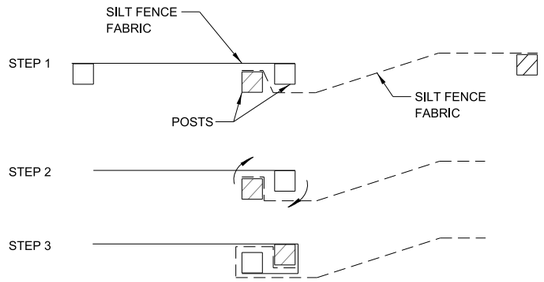
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DATE:
03/01/2025

Illinois Tollway

EROSION CONTROL AND LANDSCAPE

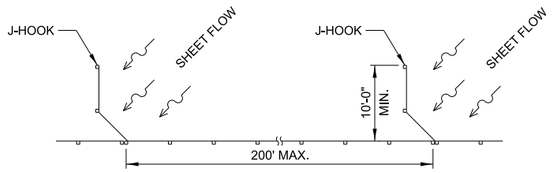
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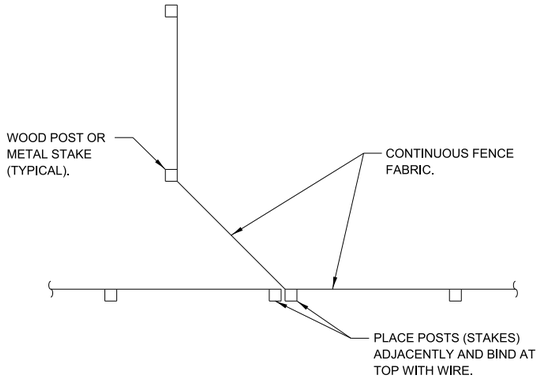
NOTES:

1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS A MINIMUM OF 24" INTO THE GROUND.

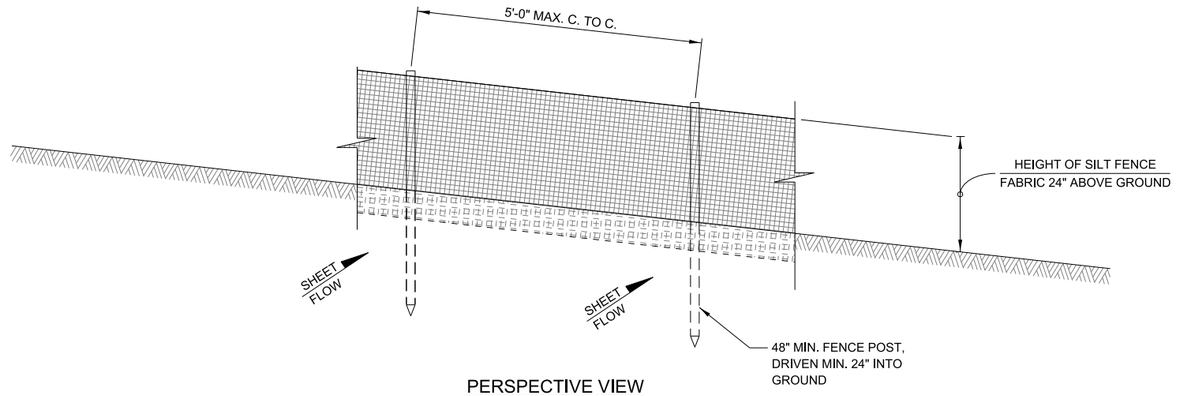
ATTACHING TWO SILT FENCES



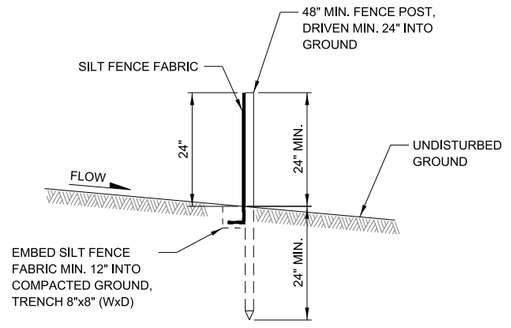
SILT FILTER J-HOOK PLACEMENT



J-HOOK



PERSPECTIVE VIEW



SECTION

NOTES:

1. SILT FENCE FABRIC TO BE FASTENED SECURELY TO FENCE POSTS.
2. WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE SECURELY FASTENED PER THE DETAIL ATTACHING TWO SILT FENCES.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SILT BUILD UP AGAINST FENCE SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT.
4. SUPPORT POSTS SHALL BE 2" X 2" NOMINAL HARDWOOD, 2" SCHEDULE 40 STEEL PIPE OR STEEL SUPPORT POSTS OF A STANDARD T OR U SECTION WEIGHING NOT LESS THAN 1.33 POUNDS PER LINEAL FOOT.
5. THIS DEVICE IS TO CONTROL SHEET FLOW ONLY. DO NOT USE FOR CONCENTRATED FLOWS, DRAINAGE CHANNELS, ABOVE OR BELOW DRAINAGE PIPES.

SILT FENCE (SF)

STANDARD SYMBOL

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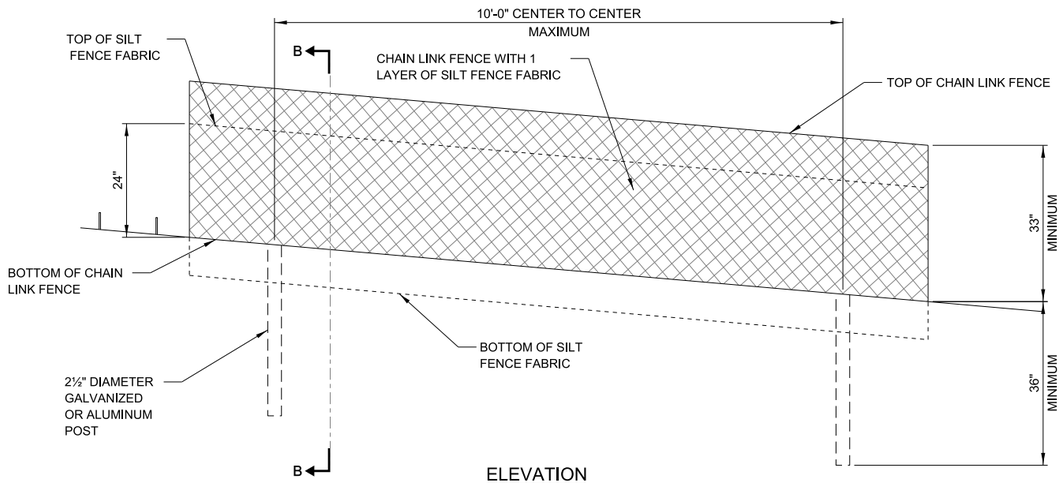
NOTES:

1. FENCING SHALL BE 36" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD DRAWING D1, RIGHT-OF-WAY FENCE, TYPE 1. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 36" FABRIC AND 6' LENGTH POSTS.
2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVER ANCH0RS AND POST CAPS ARE NOT REQUIRED. PULL POSTS, CORNER POSTS, HORIZONTAL BRACING AND TIE RODS ARE NOT REQUIRED.
3. SILT FENCE FABRIC SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
4. WHEN TWO SECTIONS OF SILT FENCE FABRIC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED 2' HORIZONTALLY.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SILT BUILD-UP AGAINST FENCE SHALL BE REMOVED WHEN SILT REACHES 50% OF FENCE HEIGHT.
6. SUPER SILT FENCE IS TO BE USED TO PROTECT ENVIRONMENTALLY SENSITIVE AREAS AND CONTROL SEDIMENT RUNOFF FROM CONSTRUCTION SITES WHEN ADDITIONAL REINFORCEMENT IS REQUIRED DUE TO SLOPE OF SITE OR VOLUME OF STORM WATER RUNOFF.

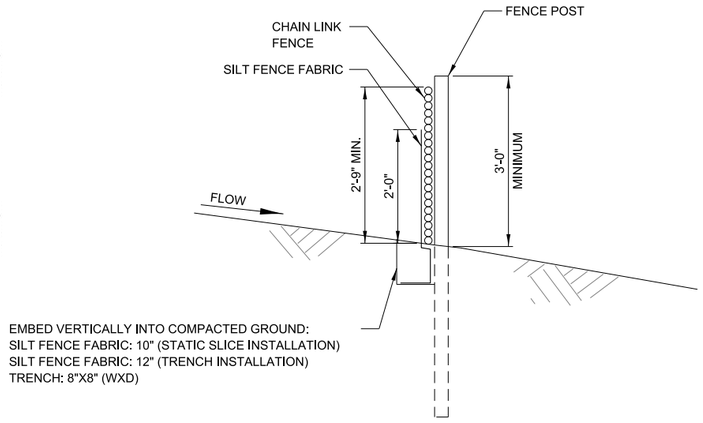
SUPER SILT FENCE (SSF)

STANDARD SYMBOL

SSF



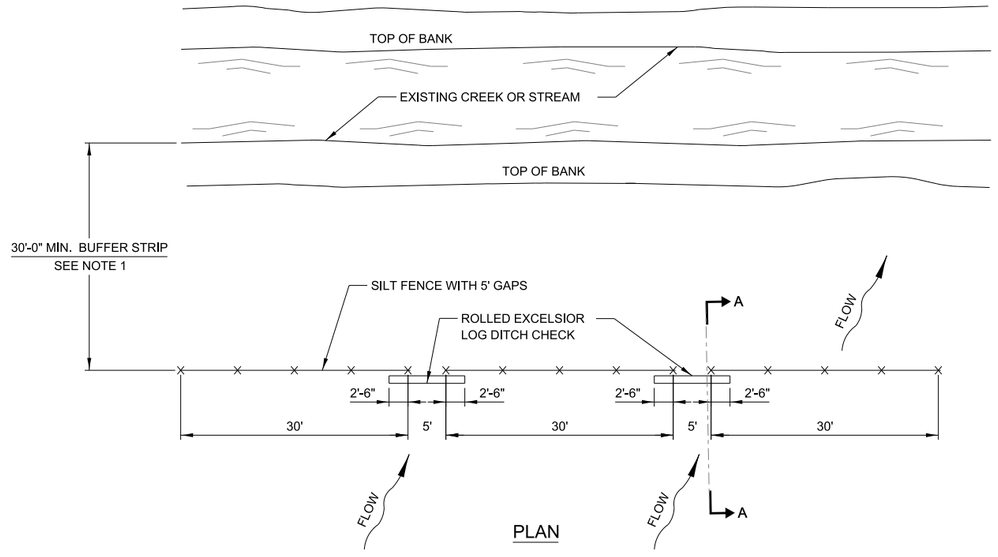
ELEVATION



SECTION B-B

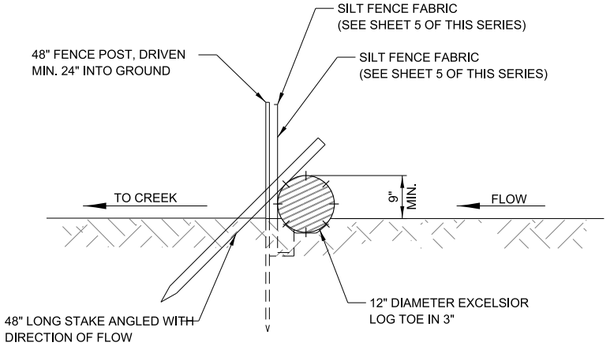
NOTES:

1. A MINIMUM 50' WIDE VEGETATED BUFFER STRIP SHALL BE PRESERVED AND/OR RE-ESTABLISHED WHERE POSSIBLE ALONG EXISTING CHANNELS.
   - A. FOR ANY WATERS OF THE U.S. DETERMINED TO BE A HIGH-QUALITY AQUATIC RESOURCE, THE BUFFER MUST BE A MINIMUM OF 100'.
   - B. FOR ANY WATERS OF THE U.S. THAT DO NOT QUALIFY AS WETLAND (FOR EXAMPLE LAKES, RIVERS, PONDS, ETC.), THE BUFFER MUST BE A MINIMUM OF 50' FROM THE ORDINARY HIGH WATER MARK (OHWM).
   - C. FOR ANY JURISDICTIONAL WETLAND, THE BUFFER MUST BE A MINIMUM OF 50'.
2. THE 5' GAPS IN THE SILT FENCE AND THE 12" DIAMETER TEMPORARY DITCH CHECKS ARE TO ALLOW FLOODWATER FLOW INTO THE CREEK FROM THE SITE WITHOUT DAMAGE TO THE SILT FENCE.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT SHALL BE REMOVED WHEN IT REACHES 50% OF ROLL HEIGHT. WHEN THE ROLLED EXCELSIOR LOG IS REDUCED TO 50% OF ROLL HEIGHT IT SHALL BE REPLACED.



PLAN

CREEK BUFFER STRIP AND SILT FENCE



SECTION A-A

APPROVED BY:

Manar Nashif

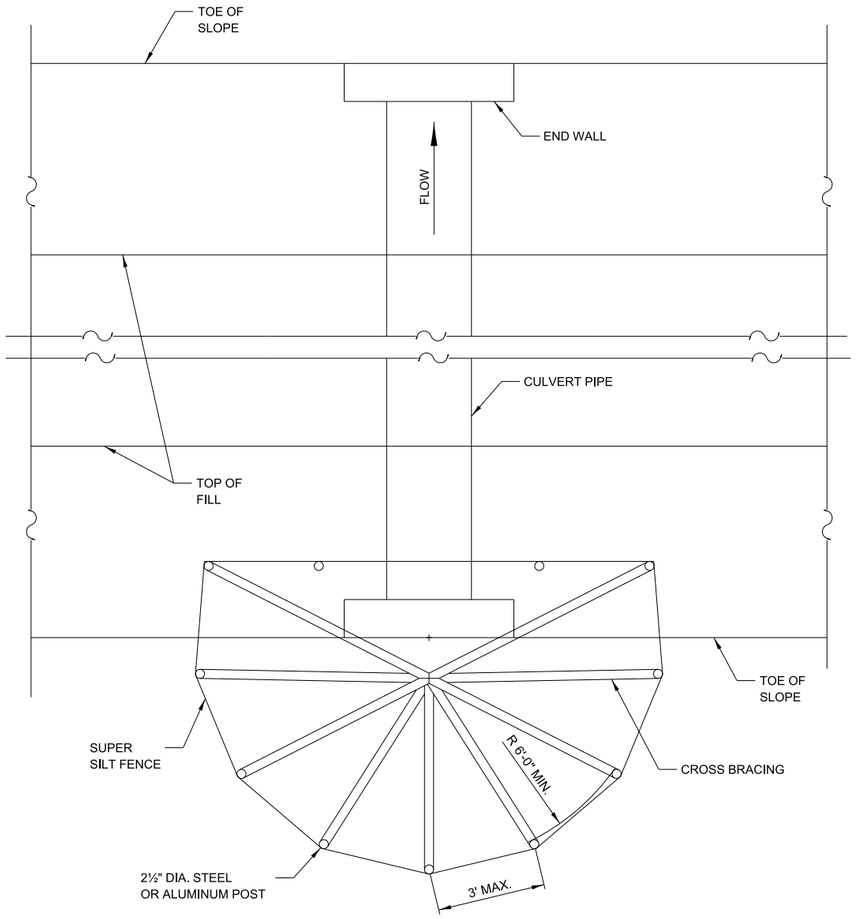
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PLAN VIEW

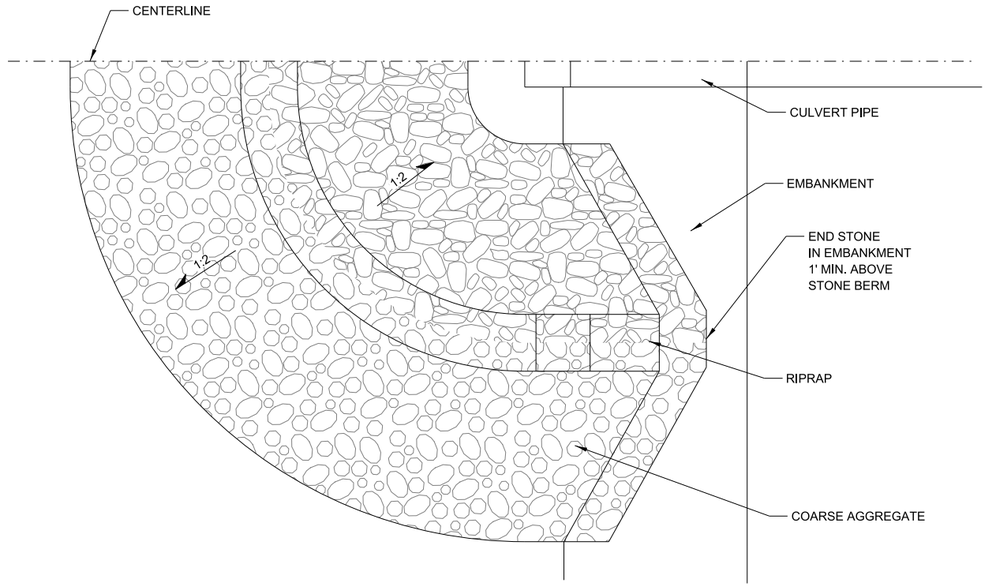
NOTES:

1. CONSTRUCT SUPER SILT FENCE PER SHEET 6 IN THIS SERIES, EXCEPT THE MAXIMUM POST SPACING SHALL BE 3 FEET, THE PLACEMENT OF THE SUPER SILT FENCE SHALL BE A MINIMUM OF 6 FEET FROM THE CULVERT IN THE DIRECTION OF INCOMING FLOW AND THE TOPS OF POSTS SHALL BE CROSS BRACED.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 50% OF THE FENCE HEIGHT.
3. THE CULVERT INLET PROTECTION AND SEDIMENT SHALL BE REMOVED WHEN CONSTRUCTION IS COMPLETE.
4. THE CULVERT INLET PROTECTION FENCE TO BE MEASURED AND PAID FOR AS SUPER SILT FENCE.

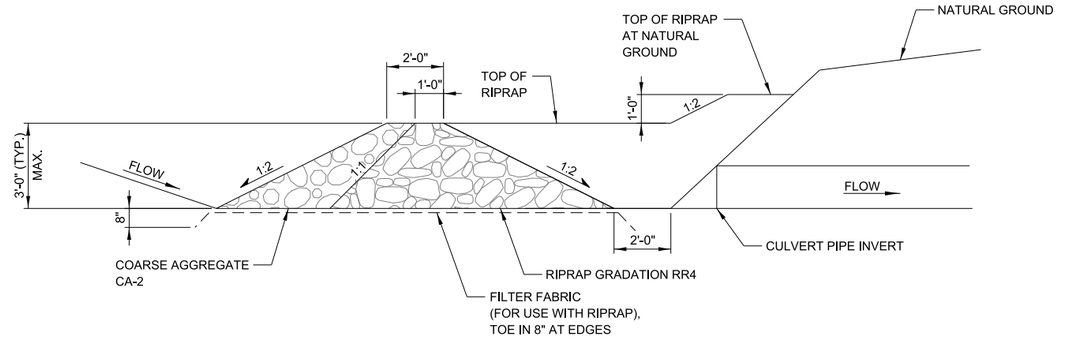
CULVERT INLET PROTECTION - FENCE

STANDARD SYMBOL





HALF PLAN VIEW



CENTERLINE CROSS SECTION

NOTES:

1. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 50% OF THE STONE HEIGHT.
2. THE CULVERT INLET PROTECTION AND SEDIMENT SHALL BE REMOVED WHEN CONSTRUCTION IS COMPLETE.
3. THE CULVERT INLET PROTECTION - STONE TO BE MEASURED AND PAID FOR AS TEMPORARY RIPRAP.

CULVERT INLET PROTECTION - STONE

STANDARD SYMBOL



CIP

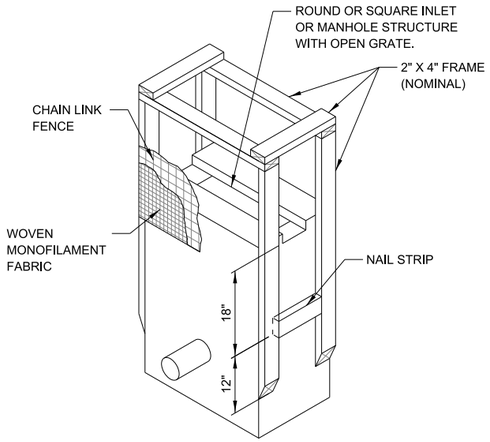
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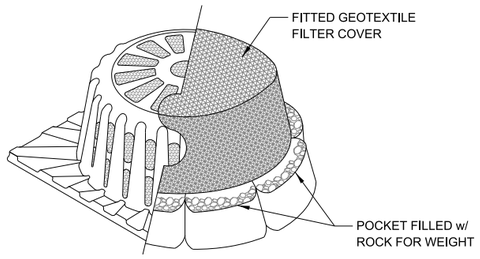
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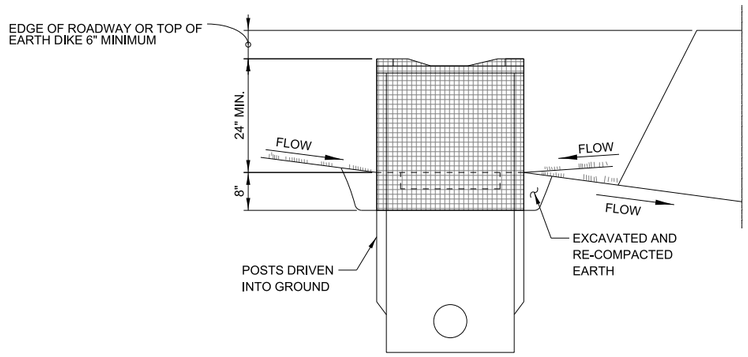
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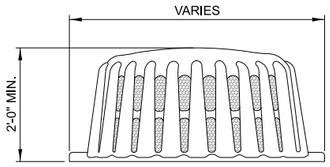
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WOOD FRAME



POLYETHYLENE FRAME

NOTES:

1. WOODEN FRAME IS TO BE CONSTRUCTED OF 2"x4" CONSTRUCTION GRADE LUMBER. AT THE CONTRACTOR'S OPTION, THE WOOD FRAME CAN BE SUBSTITUTED USING 2 1/2" GALVANIZED OR ALUMINUM POSTS INSTALLED AS SPECIFIED FOR SUPER SILT FENCE.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT REMOVED WHEN IT REACHES 50% OF FENCE HEIGHT.
3. TO BE USED TO PROTECT EXISTING AND NEW INLETS, CATCH BASINS AND MANHOLES WITH OPEN LIDS IN NON-PAVED AREAS.

RECTANGULAR INLET PROTECTION

STANDARD SYMBOL

RIP

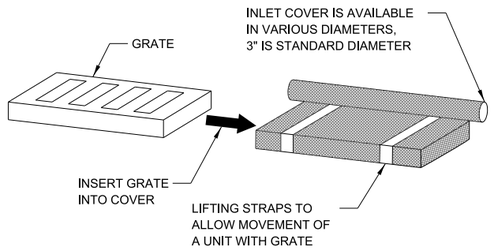
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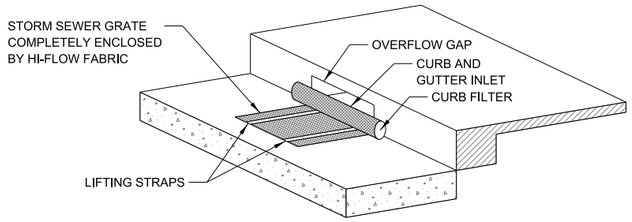
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GRATE AND COVER DETAIL



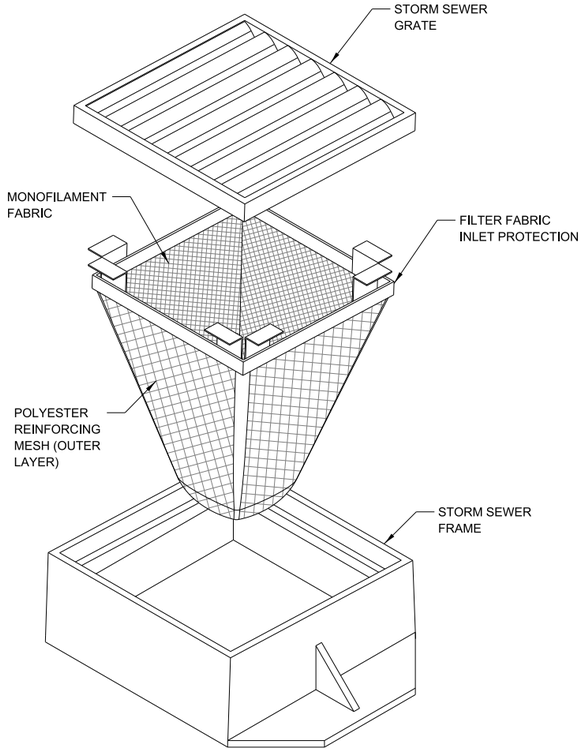
NOTES:

1. COVER TYPE INLET PROTECTION SHALL CONSIST OF FABRIC SLEEVE AND, IF NECESSARY, CURB FILTER.
2. DEVICE SHALL BE EQUIPPED WITH AN OVERFLOW GAP SO DRAINAGE TO INLET IS NOT COMPLETELY BLOCKED IF DEVICE IS FULL OF SILT.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED. REMOVE SILT FROM FABRIC INSERT WHEN SEDIMENT ACCUMULATES, THE FILTER BECOMES CLOGGED, AND/OR PERFORMANCE IS COMPROMISED. WHEN THERE IS EVIDENCE OF SEDIMENT ACCUMULATION ADJACENT THE INLET PROTECTION MEASURE, THE DEPOSITED SEDIMENT SHALL BE REMOVED BY THE END OF THE SAME BUSINESS DAY IN WHICH IT IS FOUND OR BY THE END OF THE FOLLOWING BUSINESS DAY IF REMOVAL THE SAME BUSINESS DAY IS NOT FEASIBLE.
4. STORM SEWER GRATE SHALL BE COMPLETELY ENCLOSED BY FABRIC.
5. GRATE AND FILTER ARE TO BE SET SECURELY BACK IN FRAME.

FILTER FABRIC INLET PROTECTION - COVER TYPE

STANDARD SYMBOL

FIPC



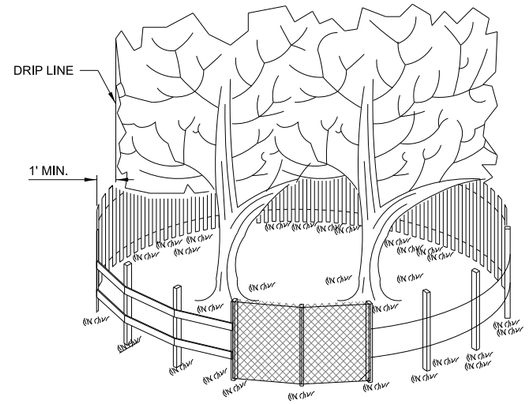
NOTES:

1. MONOFILAMENT FABRIC INLET PROTECTION SHALL CONSIST OF INLET BASKET, FRAME AND FABRIC INSERT.
2. DEVICE SHALL BE EQUIPPED WITH AN OVERFLOW FEATURE SO DRAINAGE TO INLET IS NOT COMPLETELY BLOCKED IF DEVICE IS FULL OF SILT.
3. INLET BASKET IS AVAILABLE TO FIT ROUND, RECTANGULAR, BEEHIVE OR CURB INLET CASTINGS.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED. REMOVE SILT FROM FABRIC INSERT WHEN 50% OF CAPACITY IS REACHED. REMOVE SILT FROM INTERIOR AND EXTERIOR OF INLET COVER WHEN 50% OF COVER HEIGHT IS REACHED. WHEN THERE IS EVIDENCE OF SEDIMENT ACCUMULATION ADJACENT THE INLET PROTECTION MEASURE, THE DEPOSITED SEDIMENT SHALL BE REMOVED BY THE END OF THE SAME BUSINESS DAY IN WHICH IT IS FOUND OR BY THE END OF THE FOLLOWING BUSINESS DAY IF REMOVAL THE SAME BUSINESS DAY IS NOT FEASIBLE.

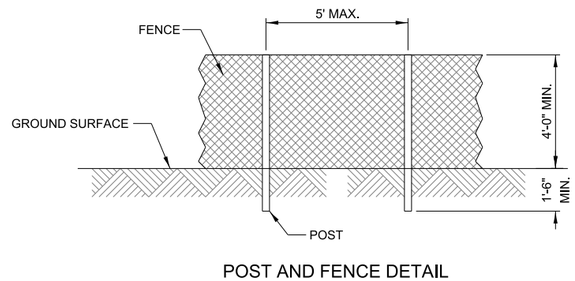
FILTER FABRIC INLET PROTECTION - BASKET TYPE

STANDARD SYMBOL

FIPB



SIDE VIEW



POST AND FENCE DETAIL

NOTES:

1. THE FENCE SHALL BE LOCATED 1 FOOT MINIMUM OUTSIDE THE DRIP LINE OF THE TREE TO BE SAVED AND IN NO CASE CLOSER THAN 5 FEET TO THE TRUNK OF ANY TREE.
2. THE FENCE SHALL BE HIGH VISIBILITY PLASTIC OR WOOD LATH SNOW FENCE TO CLEARLY DELINEATE THE PROTECTION AREA.
3. USED TO PROTECT TREES FROM DISTURBANCE AND FROM EQUIPMENT TRAVELING OVER THE ROOT ZONE.

TREE PROTECTION

STANDARD SYMBOL

TP

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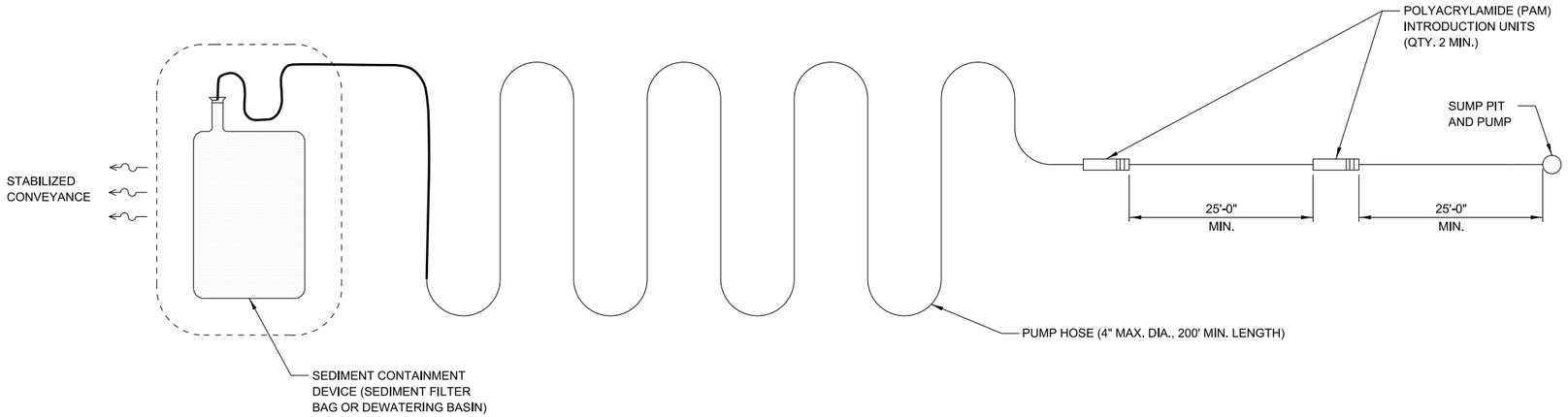
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NOTES:

1. FLOW-THROUGH TREATMENT SYSTEM TO INTRODUCE SITE-SPECIFIC FLOC LOGS (POLYMERS) TO TURBID WATERS IN SUCH A MANNER TO FACILITATE MIXING AND REACTION BETWEEN THE POLYMER AND THE SUSPENDED PARTICLES.
2. FLOC LOGS (SITE-SPECIFIC) SHALL BE SECURED INSIDE POLYMER INTRODUCTION UNITS WHERE THE TURBID WATER ENTERS THE PIPING SYSTEM AND MIXES WITH THE POLYMER.
3. A MINIMUM OF TWO POLYMER INTRODUCTION UNITS SHALL BE INSTALLED IN SERIES, A MINIMUM OF 25 FEET FROM THE PUMP INTAKE AND SPACED A MINIMUM OF 25 FEET APART.
4. A PUMP HOSE SHALL CONNECT THE POLYMER INTRODUCTION UNITS TO A SEDIMENT CONTAINMENT DEVICE AND SHALL BE A MINIMUM OF 200 FEET IN LENGTH.
5. AFTER INTRODUCTION OF THE POLYMER AND NECESSARY MIXING TIME, THE SYSTEM REQUIRES SEDIMENT CONTAINMENT WHICH CAN BE IN THE FORM OF A FILTER BAG, SEDIMENT TRAP, OR OTHER CONTAINMENT DEVICE.
6. SOFT BENDS OR CURVES TO THE DISCHARGE HOSE SHALL BE MAINTAINED TO AVOID OBSTRUCTIONS IN FLOW AND ALTERING THE DESIGN POLYMER MIXING TIME.
7. SYSTEM DESIGN AND LAYOUT SHALL BE BASED ON SITE-SPECIFIC CONDITIONS, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, AND BE COMPLETED BY A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC).
8. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO ENSURE CONTINUOUS SYSTEM PERFORMANCE THROUGHOUT USE.
9. THE DISCHARGE SHALL BE VISIBLY CLEAR FOLLOWING TREATMENT.

IN-LINE FLOCCULATION SYSTEM

STANDARD SYMBOL



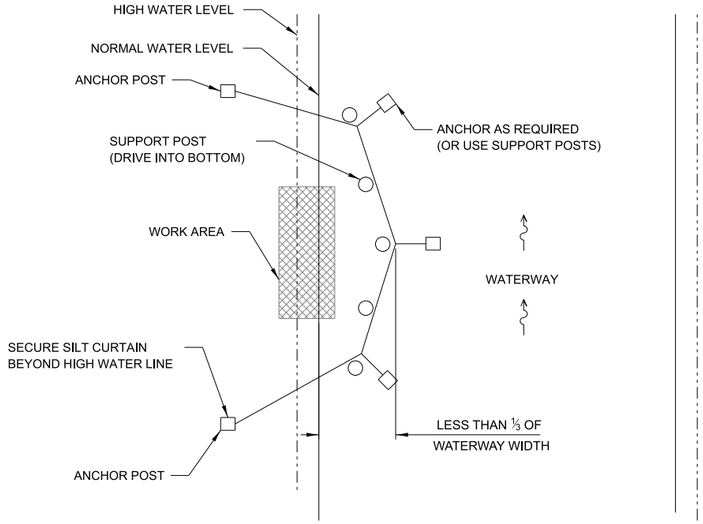
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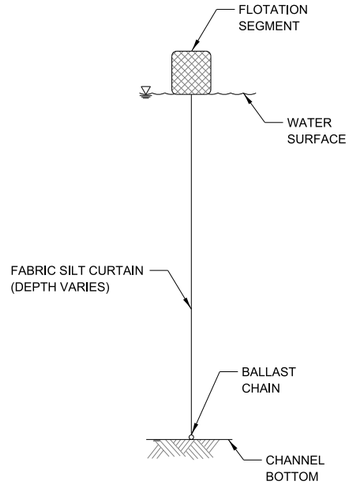
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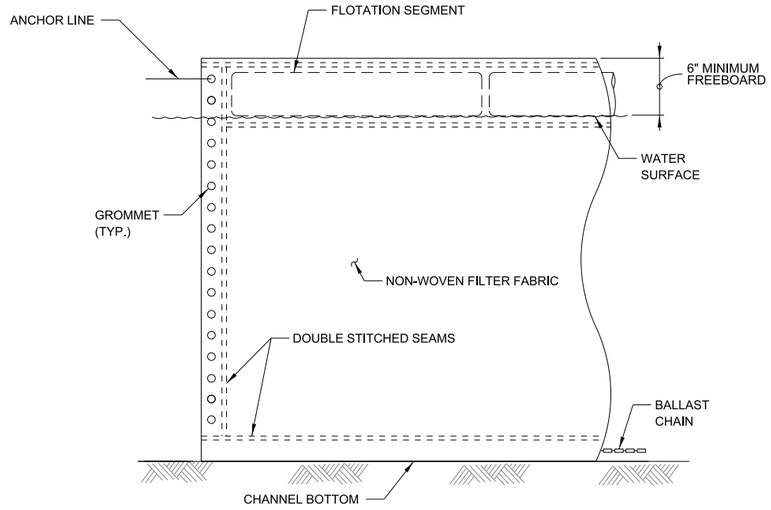
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PLAN VIEW



SECTION



ELEVATION

NOTES:

1. SILT CURTAIN FOR USE IN MOVING WATER SHALL BE ANCHORED TO PREVENT DRIFT SHOREWARD OR DOWNSTREAM. SILT CURTAINS ARE NOT TO BE INSTALLED ACROSS FLOWING BODY OF WATER.
2. SHORE ANCHORS SHALL CONSIST OF A POST WITH DEADMAN OR APPROVED EQUAL. STREAM ANCHORS SHALL BE OF SUFFICIENT SIZE TO STABILIZE THE BARRIER WITH NUMBER AND SPACING DEPENDENT ON WATERWAY VELOCITIES.
3. FABRIC SECTIONS SHALL BE CONNECTED END TO END WITH MINIMUM ⅝" DIAMETER POLYPROPYLENE ROPE AND GROMMETTED HOLES OR WITH A MINIMUM OF TWO LINES OF STITCHING.
4. THE SILT CURTAIN SHALL EXTEND THE FULL DEPTH OF THE WATER BODY EXCEPT WHERE SIGNIFICANT WIND OR WAVE ACTION IS PRESENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED. CONTRACTOR SHALL REMOVE THE CURTAIN AT COMPLETION OF WORK IN A MANNER THAT WILL PREVENT SILTATION OF THE WATERWAY.
6. CONSTRUCTION DEBRIS/MATERIALS SHALL BE REMOVED IMMEDIATELY TO PREVENT DAMAGE TO THE CURTAIN AND ENTRY INTO THE WATERWAY.
7. SILT CURTAIN TO BE USED TO CONTROL TURBIDITY WHEN WORKING IN WATERWAYS.
8. SILT CURTAIN SHALL NOT BE USED WHERE THE ANTICIPATED FLOW VELOCITIES WILL EXCEED 5 FT/SEC. AN ALTERNATE CURTAIN TYPE IS REQUIRED IN SUCH INSTANCES.
9. SUPPORT POSTS AND ANCHOR POSTS SHALL BE DRIVEN INTO BOTTOM OF WATERWAY AND EXTEND ABOVE HIGH WATER LEVEL, HIGH WATER MARK OR BEYOND TOP OF EMBANKMENT AS DETERMINED BY THE ENGINEER.
10. ALL UTILITIES PRESENT UNDERNEATH WATERWAY SHALL BE CLEARLY SHOWN AND LABELED TO AVOID CONFLICTS WITH POSTS OR ANCHORS.

SILT CURTAIN

STANDARD SYMBOL

—SC——— SC—

APPROVED BY:

Marwan Nashif

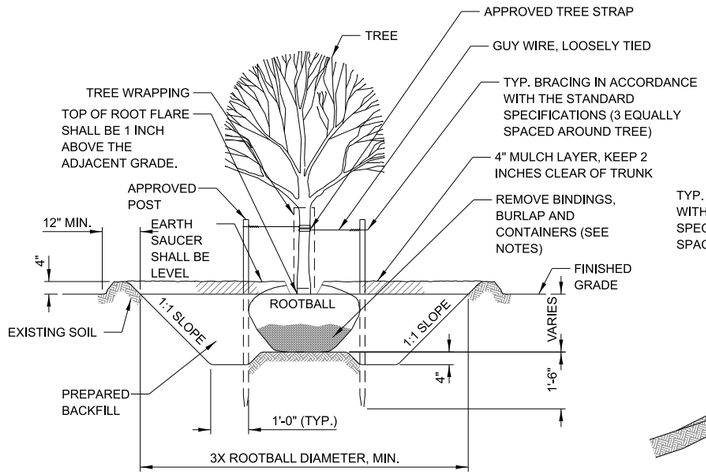
CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

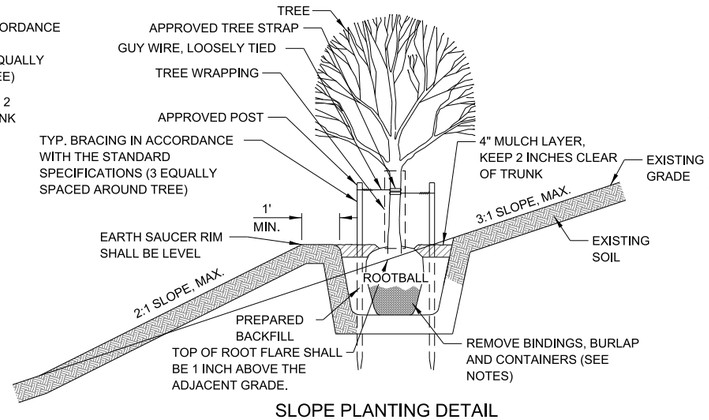
Illinois Tollway

EROSION CONTROL AND LANDSCAPE

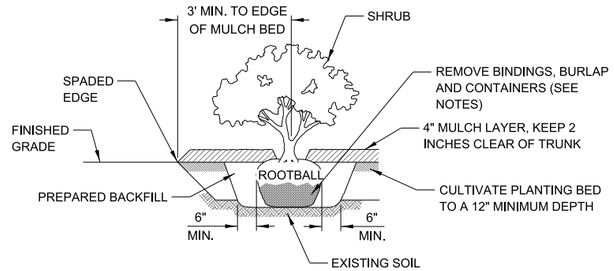
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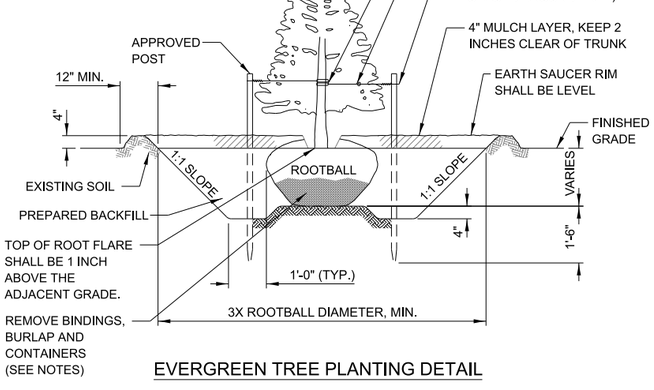
DECIDUOUS TREE PLANTING DETAIL



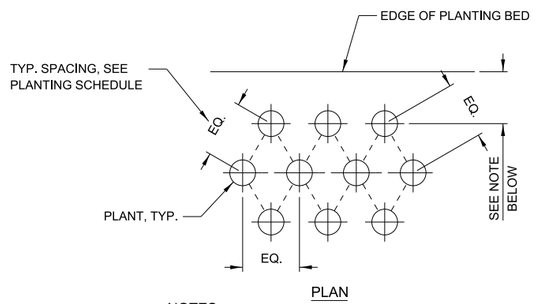
SLOPE PLANTING DETAIL



SHRUB PLANTING DETAIL



EVERGREEN TREE PLANTING DETAIL



PLAN

NOTES:

OFFSET OF PLANTS FROM EDGE OF PLANTING AREA SHALL BE EQUAL TO HALF OF THE PLANT SPACING REQUIREMENT FOR EACH PLANT SPECIES AS SHOWN IN THE PLANTING SCHEDULE, OR 3' MINIMUM, UNLESS OTHERWISE INDICATED.

SHRUB AND GROUND COVER SPACING DETAIL

PLANTING NOTES:

1. MARK THE LOCATIONS OF ALL UNDERGROUND UTILITIES BEFORE BEGINNING WORK. FLAG OR STAKE THE ALIGNMENT OF UTILITY LINES THROUGH TREE AND SHRUB PLANTING BEDS TO CONFIRM REQUIRED OFFSETS. REPORT ANY CONFLICTS TO THE ENGINEER IMMEDIATELY FOR RESOLUTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UNDERGROUND, SURFACE AND OVERHEAD UTILITIES REGARDLESS OF LOCATION OR LACK OF LOCATION ON PLANS.
3. PLANTING PLANS ARE DIAGRAMMATIC. PLANT LOCATIONS SHALL BE REVIEWED BY THE CONTRACTOR AND ENGINEER AND OR ILLINOIS TOLLWAY LANDSCAPE ARCHITECT AND ADJUSTED IN THE FIELD AS NECESSARY PRIOR TO PLANTING.
4. TREES SHALL BE LOCATED CLEAR OF ROADWAY PAVEMENT EDGES, SIXTY (60) FEET MINIMUM.
5. TREE AND SHRUB PLANTINGS SHALL NOT BLOCK ACCESS TO GATES IN FENCES, HYDRANTS ON NOISE WALLS OR OTHER SERVICE ACCESS DOORS.
6. TREES PLANTED IN TURF AREAS SHALL BE LOCATED TEN (10) FEET MINIMUM CLEAR FROM THE EDGE OF PLANTING BEDS.
7. TREE AND SHRUB PLANTINGS SHALL BE OFFSET FROM UTILITY LINES, PIPES AND STRUCTURES A MINIMUM OF 10 FEET AND AS REQUIRED BY UTILITY PROVIDERS. TREES SHALL BE LOCATED TEN (10) FEET MINIMUM CLEAR FROM FENCES, WALLS, BRIDGES AND OTHER STRUCTURES. THIS DISTANCE SHALL BE INCREASED, PER THE PROJECTED MATURE TREE CANOPY SIZE, TO PREVENT OVERHANGING LIMBS ON HIGHWAYS AND BRIDGES.
8. THE VERTICAL CLEAR DISTANCE BETWEEN DITCH BOTTOMS, PLANTINGS AND PLANTING BEDS SHALL BE THREE (3) FEET MINIMUM AND NINE (9) FEET MINIMUM HORIZONTAL DISTANCE FOR DITCHES LESS THAN THREE (3) FEET DEEP.
9. PERFORM PERCOLATION TESTS WITHIN PLANTING AREAS, - ONE TEST PER AREA OR 1000 SF OF PLANTING BED, MAX. EXCAVATE A 12 INCH X 12 INCH X 12 INCH PIT AND FILL WITH WATER. RECORD THE PER HOUR RATE OF WATER DISPERSAL FROM THE PIT. IF PERCOLATION IS LESS THAN 2 INCHES PER HOUR, CONTACT THE ENGINEER FOR FURTHER INSTRUCTIONS. RELOCATE PLANTINGS AS INSTRUCTED BY THE ENGINEER. RESTORE PIT TO SURROUNDING CONDITION.
10. PRUNING SHALL ONLY BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS. IMPROPERLY PRUNED PLANTING WILL BE REJECTED AND REPLACEMENTS SHALL IMMEDIATELY BE MADE BY THE CONTRACTOR.
11. SCARIFY THE SIDES OF PLANTING PITS TO LOOSEN SOIL PRIOR TO PLANTING.
12. WHEN INDICATED ON PLANS, TREE WRAPPING SHALL BE INSTALLED ON ALL DECIDUOUS TREES TO PROTECT FROM DEER AND RODENT DAMAGE. WRAPPING SHALL BE ANCHORED TO GROUND AND EXTEND UP TO LOWEST BRANCH. WRAPPING PLACEMENT SHALL NOT BEAR AGAINST OR INHIBIT GROWTH OF TRUNK OR LOWEST BRANCH.
13. TOP OF ROOT FLARE SHALL BE APPROXIMATELY ONE (1) INCH ABOVE ADJACENT FINISHED GRADE. REMOVE DEBRIS AND MULCH FROM AROUND ROOT COLLAR.
14. SHRUB PLANTINGS, UNLESS OTHERWISE NOTED, SHALL BE PLANTED IN MULCHED BEDS. THE EDGE OF THE MULCHED BEDS SHALL EXTEND A MINIMUM OF THREE (3) FEET BEYOND THE CENTERS OF THE PERIPHERAL PLANTS IN THE BED. THE EDGE OF THE MULCHED BED FOR SHRUB PLANTINGS ADJACENT TO A WALL, FENCE, GUARDRAIL, OR OTHER FIXED OBJECT SHALL EXTEND TO THE OBJECT. THE PERIPHERAL PLANTS IN THE BED SHALL BE PLANTED FIVE (5) FEET CLEAR OF THE OBJECT. WHEN A TREE IS LOCATED IN A SHRUB BED, THE MINIMUM DISTANCE BETWEEN THE TREE AND THE ADJACENT SHRUB SHALL BE SIX (6) FEET.
15. ALL FACILITIES AND LANDSCAPE AREAS ON AND OFF SITE DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION.
16. ALL TREE SUPPORTS INCLUDING STAKES AND GUY WIRES, BRACING STRAPS AND ANCHORS SHALL BE REMOVED AFTER ONE (1) YEAR OR AS DIRECTED BY THE ENGINEER.
17. REMOVE ALL BINDING MATERIALS, CONTAINERS, AND MARKING TAPES FROM PLANTINGS PRIOR TO BACKFILLING. REMOVE SYNTHETIC BURLAP ENTIRELY, REMOVE NATURAL BURLAP, TWINE, AND WIRE BASKETS FROM THE TOP HALF OF ROOT BALLS. THE LOWER HALF OF NATURAL BURLAP SHALL BE FOLDED TOWARD THE BOTTOM OF THE ROOT BALL.
18. PLANTINGS SHALL BE INSTALLED PLUMB WITH THE BEST SIDE FACING THE PRIMARY VIEWING DIRECTION.
19. PLANTS SHALL COMPLY WITH ANSI Z60.1, LATEST EDITION, AND SHALL BE WELL FORMED WITH FULL FOLIAGE MASS. PLANTS SHALL BE HEALTHY, VIGOROUS, FREE OF DISEASE, INSECT PESTS AND THEIR EGGS. BASIS OF PLANT REJECTION INCLUDES BUT IS NOT LIMITED TO: PLANT IS MORE THAN 10% DEAD, ROOT BOUND, IMPROPERLY PRUNED, EXHIBITS DISPROPORTIONAL GROWTH PATTERN OR DOES NOT MEET SPECIFIED SIZE REQUIREMENTS.
20. DO NOT DISTURB OR DAMAGE ROOT BALL WHEN PLANTING. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING PLANTING PITS. WHEN PIT IS HALF FULL OF SOIL, LIGHTLY TAMP, WATER THOROUGHLY. ADD REMAINING SOIL AND WATER FURTHER UNTIL SOIL IS COMPLETELY CONSOLIDATED AND NO MORE WATER IS ABSORBED.
21. PREPARED BACKFILL SHALL CONSIST OF EQUAL PARTS TOPSOIL, COMPOST AND EXISTING SITE SOIL SUITABLE FOR PLANT GROWTH. TOPSOIL SHALL COMPLY WITH SECTION 211 OF THE SPECIFICATIONS.
22. THE CONTRACTOR SHALL COMPLETE FORM A-37 TO DOCUMENT MILESTONE DATES ASSOCIATED WITH PLANT INSTALLATION AND ESTABLISHMENT AS REQUIRED BY THE ILLINOIS TOLLWAY.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

EROSION CONTROL AND LANDSCAPE

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STANDARD DRAWINGS

SECTION L

FIBER OPTIC

MARCH 2025

Illinois Tollway Standard Drawings Revisions

Section L	Fiber Optic	
	Standard	**Modification Summary** **Effective: 03-01-2025**
	L1-07	**Fiber Optic System Typicals and Drawings**
	Sheet 1	Remove “or compression” from Note 3.
		Added “If conduit is not under the maintenance of the contractor, the contractor shall coordinate with the Illinois Tollway Fiber Optic Maintenance Vendor to perform the cutting & splicing of conduit” to Note 3.
		Updated all details to show locate/tracer wire inside its dedicated conduit.
		Updated Note 5 to state “locate/trace wire shall be installed inside of it's dedicated conduit in continuous lengths without splicing”.
		Changed callout in on the “Bored Conduit With Fiber Optic Cable…” detail from “conduit as specified” to “conduit as required and specified”.
	Sheet 2	Remove “or compression” from Note 4.
		Added “If conduit is not under the maintenance of the contractor, the contractor shall coordinate with the Illinois Tollway Fiber Optic Maintenance Vendor to perform the cutting & splicing of conduit” to Note 4.
		Added “Foam plug shall extend inside of casing 12” from end of casing. Cap the casing by placing the foam around the casing, creating an 8” "mushroom" shape plug” to Note 8.
		Updated “Profile View” detail to show the tracer wire inside of the conduit.
		Split the 8” measurement into two 4” measurements for clarity on the “Profile View” detail.
		Updated “Side View” detail to show locate/tracer wire inside its dedicated conduit.
		Reposition the 6” measurement of sand fill from top of casing to bottom of casing in the profile view.
	Sheet 4	Added “for oil or gas utility, a minimum of 18in to 24in separation between pipe and conduit (or as required by utility owner” to Note 2.
		Removed note that stated “minimum 18” to 24” separation for oil, gas utility between pipe and conduit (or as required by utility owner).
		Updated detail to show warning post.
		Removed locate wire from detail.
		Replaced “12” Min” with “See Note 2” on detail.
	Sheet 5	Removed the” compression coupling” detail.
		Removed Note 2 from general notes.
		Removed “new” from Note 1.
	Sheet 6	Removed the “48”x72” Handhole” detail.
		Added details for installing a handhole on a slope.
	Sheet 7	Added “locking bar” callout to Torsion Assist Cover detail.
		Added Note 2.
		Added Note 3.
		Removed statement “for fiber optic cable splice locations and slopes greater than or equal to 1:4”.
	Sheet 8	Removed “Table A”.
		Updated minimum depth below handhole rim from 42” to 48” on detail drawing.
		Deleted cable tags from detail.
		Removed “Sample Cable Tag”.
		Added “reference the ITS Labeling Guide” in Note 1.
		Replaced “meets the values in Table A” with “does not exceed manufacturer specifications” in Note 3.
		Removed note that stated “manufacturer’s specifications of minimum bend supersede Table A”.
		Removed “containing a splice enclosure” from Note 8.
	Sheet 9	Change “pea gravel” to “coarse aggregate” in the “Locate Warning Post” detail.
		Updated “Locate Warning Post” detail to show the ground rod being flushed to the bottom of handhole.

Illinois Tollway Standard Drawings Revisions

Section L	Fiber Optic	
	Standard	**Modification Summary** **Effective: 03-01-2025**
	Sheet 9	Inserted “at maximum, 3ft away from…” to Note 1.
		Inserted “displaying milepost,…” to Note 12.
		Added Note 14.
		Changed “solid” to “stranded” in the callout of the “Box and Cover Section” detail.
		Changed “#8” to “#7” on the “Box and Cover Section detail.
		Updated measurement from “1-1/4” to “2” on the Box and Cover Section detail.
	Sheet 10	Inserted “at maximum, 3ft away from…” to Note 1.
		Updated measurement associated to the warning locate post on the “Third Party Handhole” detail to be consistent with the measurement on the “Illinois Tollway Handhole” detail.
	Sheet 12	Replaced “stainless steel” with “galvanized rigid steel” in Note 1.
		Added callout “PVC, minimum schedule 40 or better” to “Manhole Penetration” detail.
		Replaced “stainless steel” with “galvanized rigid steel” in “Below Grade Penetration” detail.
	Sheet 13	Removed “tri-colored” from all associated details.
		Changed “5’ Max” to “2’ Max” on all associated details for the placement of the marker with respect to the FOC line.
		Added Note 3.
		Removed “warning sticker on pole” from Figure 5.
		Warning Post 2 Stickers were relocated in Figure 5.
	Sheet 14	Inserted “sign &” into the “Installation of Warning Post” note title.
	Sheet 15	Removed “Flush Disc Marker”.

New Sheet

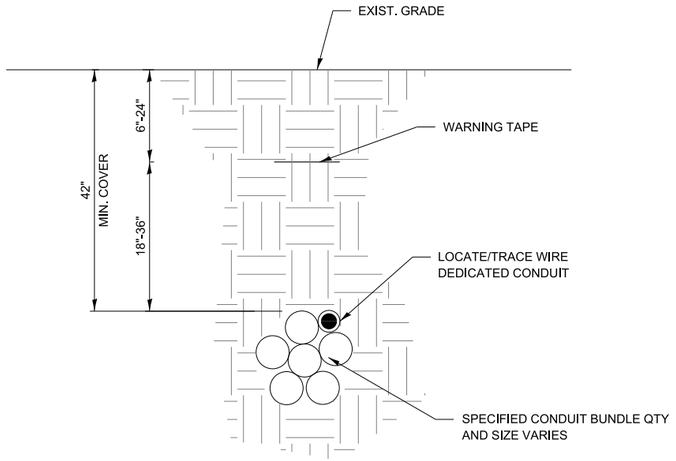
Retired Standard

TYPES OF BURY

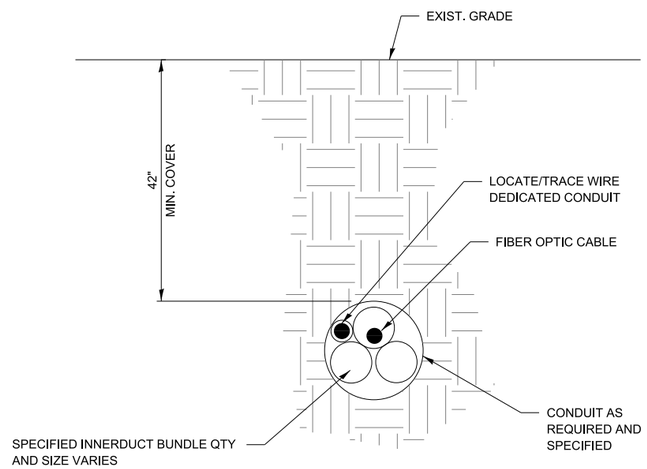
CABLE AND CONDUIT
BORED, TRENCHED, AND PLOWED

GENERAL NOTES:

1. UNDERGROUND CONDUIT SHALL BE PLACED AT 42" MINIMUM COVER UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. UNDERGROUND CONDUIT SHALL BE PLACED AT 48" MINIMUM COVER UNDER STREAM, CREEK AND DRAINAGE DITCHES UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. IF WHILE LOWERING THE CONDUIT THERE IS NOT ENOUGH SLACK, ADDITIONAL CONDUIT SHALL BE ADDED. EMPTY CONDUITS CAN BE CUT AND HAVE NEW CONDUIT FUSED COUPLED ON. CONDUITS WITH FIBER INSTALLED SHALL BE RING CUT WITH A TUBE CUTTER SO AS NOT TO DAMAGE THE FIBER. IF CONDUIT IS NOT UNDER THE MAINTENANCE OF THE CONTRACTOR, THE CONTRACTOR SHALL COORDINATE WITH THE ILLINOIS TOLLWAY FIBER OPTIC MAINTENANCE VENDOR TO PERFORM THE CUTTING & SPLICING OF CONDUIT.
4. CONDUIT USED ABOVE GROUND SHALL BE STAINLESS STEEL OR FIBERGLASS REINFORCED EPOXY (FRE) CONDUIT. UNDERGROUND CASINGS SHALL BE FRE PER THE SPECIAL PROVISIONS OR HDPE.
5. LOCATE/TRACE WIRE SHALL BE INSTALLED INSIDE OF ITS DEDICATED CONDUIT IN CONTINUOUS LENGTHS WITHOUT SPLICING.
6. WHEN AN OPTIC FIBER CONDUIT SEPARATES FROM A CONDUIT BUNDLE OR DUCT BANK, AN ADDITIONAL LOCATE WIRE SHALL BE INSTALLED WITH THAT SEPARATE CONDUIT PATH GOING BACK TO THE PREVIOUS HANDHOLE.
7. ALL LOCATE/TRACE WIRE WILL BE TESTED PRIOR TO ANY FIBER BEING INSTALLED.
8. ALL UNUSED CONDUIT SHALL HAVE 1200 LB MULE TAPE INSTALLED FOR FUTURE USE.



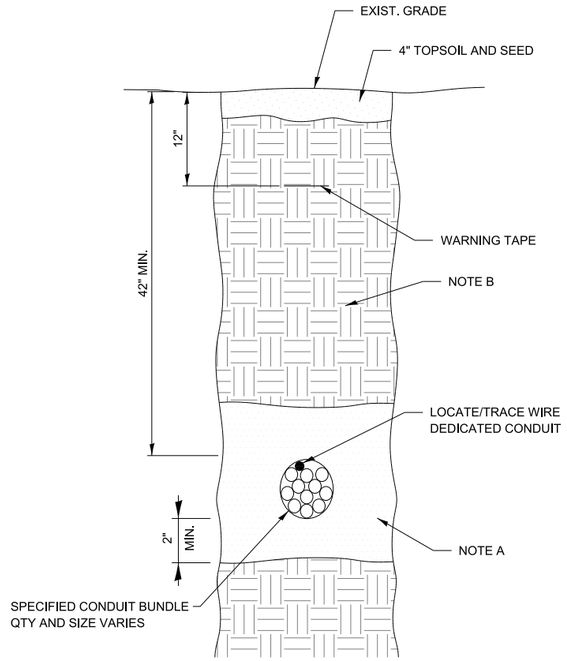
PLOWED CONDUIT BUNDLES
QTY VARIES



BORED CONDUIT WITH FIBER OPTIC CABLE AND/OR MULTIPLE INNERDUCTS AS REQUIRED

NOTE:

THE PICTURE ABOVE IS A CONCEPT LAYOUT.



CONSTRUCTION NOTES TRENCHED CONDUIT BUNDLES

A. A MINIMUM OF 2" OF SAND SHALL BE PLACED UNDER THE CONDUIT. SAND SHALL TRANSITION TO BACKFILL ACCORDING TO NOTE B 4" ABOVE CONDUIT.

B. BACKFILL SHALL BE ACCORDING TO ARTICLE 810.04 OF THE STANDARD SPECIFICATIONS.

TRENCHED CONDUIT BUNDLES

APPROVED BY: Manar Nashif, CHIEF ENGINEERING OFFICER
DATE: 03/01/2025

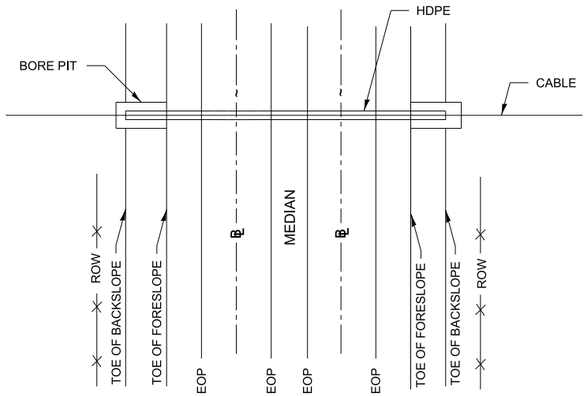
REVISIONS	
DATE	DESCRIPTION
03-01-2025	UPDATED NOTES AND DETAILS

Illinois Tollway

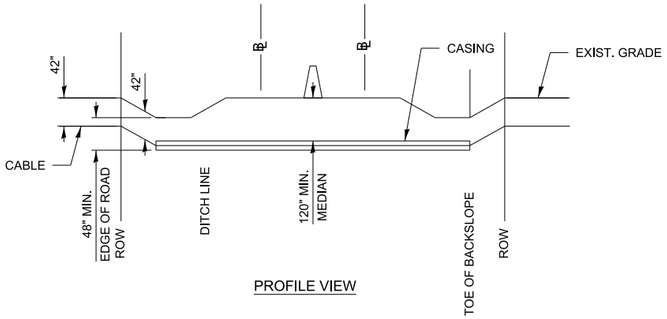
FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

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TYPICAL ROAD CROSSINGS



PLAN VIEW

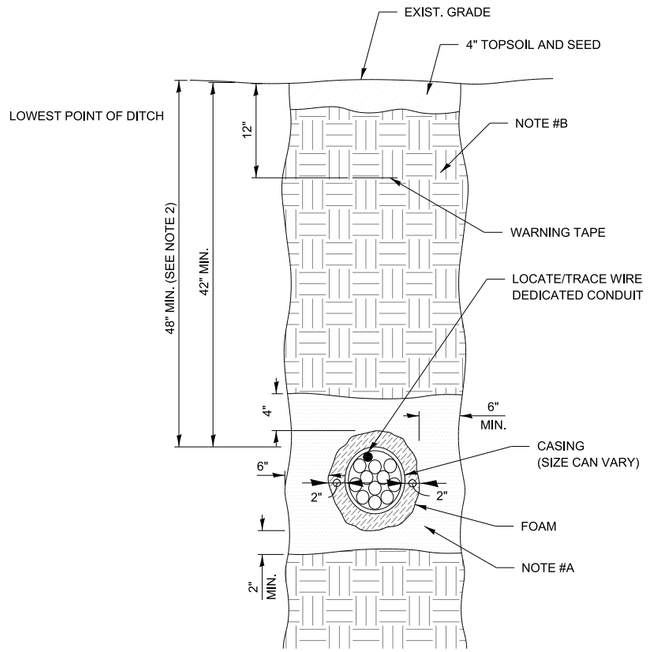


PROFILE VIEW

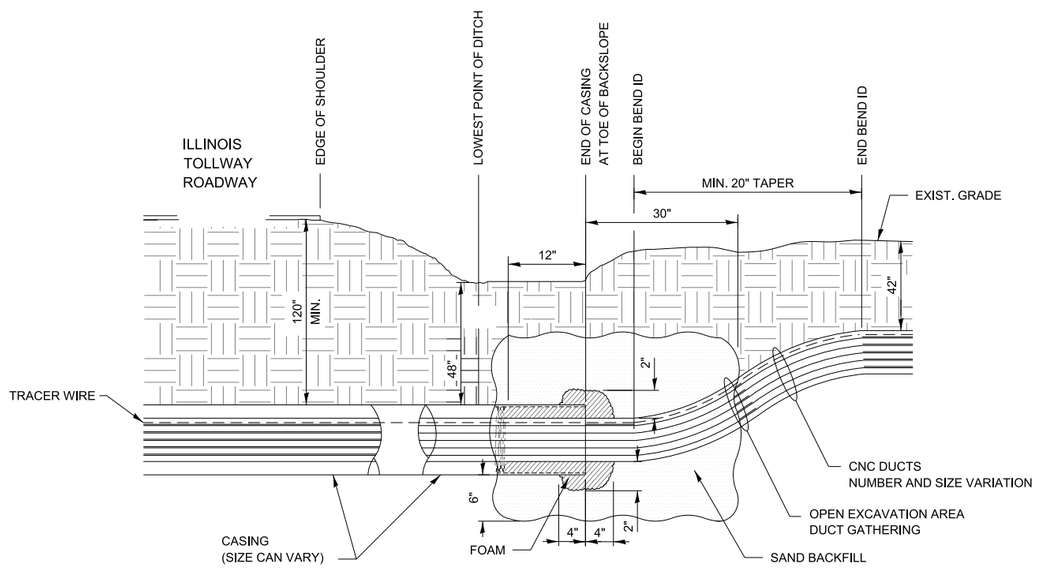
TYPICAL ROAD CROSSING

GENERAL NOTES:

1. UNDERGROUND CONDUIT SHALL BE PLACED AT 42" MINIMUM COVER UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. UNDERGROUND CONDUIT SHALL BE PLACED AT 48" MINIMUM COVER UNDER STREAM, CREEK AND DRAINAGE DITCHES UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. THE MINIMUM COVER UNDER A PUBLIC ROADWAY, ILLINOIS TOLLWAY HIGHWAY AND RAMPS SHALL BE 120" OR SUCH GREATER DEPTH AS MAY BE REQUIRED TO CLEAR THE PAVEMENT STRUCTURE.
4. IF WHILE LOWERING THE DUCTS, THERE IS NOT ENOUGH SLACK IN THE DUCTS, ADDITIONAL DUCT SHALL BE ADDED. EMPTY DUCTS CAN BE CUT AND HAVE NEW DUCT FUSED COUPLED ON. DUCTS WITH FIBER INSTALLED SHALL BE RING CUT WITH A TUBE CUTTER SO AS NOT TO DAMAGE THE FIBER. IF CONDUIT IS NOT UNDER THE MAINTENANCE OF THE CONTRACTOR, THE CONTRACTOR SHALL COORDINATE WITH THE ILLINOIS TOLLWAY FIBER OPTIC MAINTENANCE VENDOR TO PERFORM THE CUTTING & SPLICING OF CONDUIT.
5. HDPE CASING SHALL EXTEND FROM TOE OF BACK SLOPE TO TOE OF BACK SLOPE UNLESS OTHERWISE APPROVED.
6. BORE AND RECEIVING PITS SHALL BE A MINIMUM OF 30 FEET FROM THE EDGE OF SHOULDER ON TOLL HIGHWAYS UNLESS OTHERWISE APPROVED.
7. TOP OF CASING SHALL BE A MINIMUM OF 48" BELOW THE DESIGNED DITCH GRADES ON EACH SIDE OF HIGHWAY.
8. ENDS OF ALL CASING SHALL BE FOAM PLUGGED. (ARNCO HYDRA-SEAL S-60 OR ENGINEER APPROVED EQUAL). FOAM PLUG SHALL EXTEND INSIDE OF CASING 12" FROM END OF CASING. CAP THE CASING BY PLACING THE FOAM AROUND THE CASING, CREATING AN 8" "MUSHROOM" SHAPE PLUG.
9. PITS FOR BORING ARE NOT PERMITTED IN THE HIGHWAY MEDIAN.
10. CONDUIT USED ABOVE GROUND SHALL BE STAINLESS STEEL OR FIBERGLASS REINFORCED EPOXY (FRE) CONDUIT. UNDERGROUND CASINGS SHALL BE FRE PER THE SPECIAL PROVISIONS OR HDPE.
11. HANDHOLES SHALL BE INSTALLED ON BOTH SIDES OF ANY STREAM, CREEK, OR RAILROAD CROSSING.
12. BORE HOLES SHALL BE LIMITED TO THE MINIMUM DIAMETER NECESSARY FOR INSTALLATION OF THE DUCT BUNDLE OR CASING.



SIDE VIEW



PROFILE VIEW

CONSTRUCTION NOTES TRENCHED HDPE BUNDLES

A. A MINIMUM OF 2" OF SAND SHALL BE PLACED UNDER THE CONDUIT. SAND SHALL TRANSITION TO BACKFILL ACCORDING TO NOTE B 4" ABOVE CONDUIT.

B. BACKFILL SHALL BE ACCORDING TO ARTICLE 810.04 OF THE STANDARD SPECIFICATIONS.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

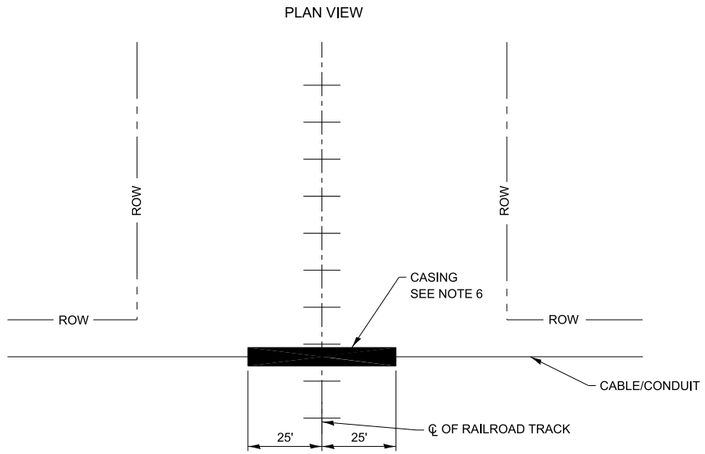
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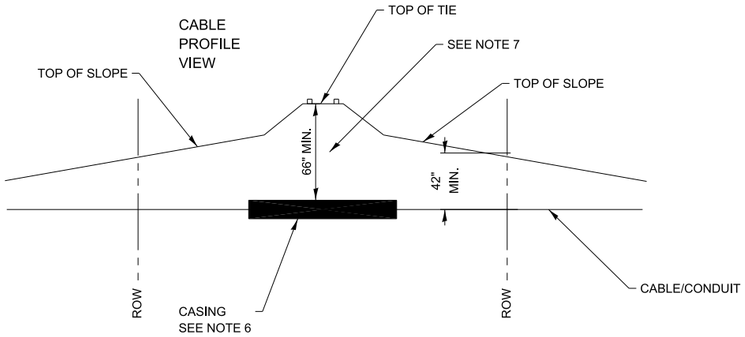
FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

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OUTSIDE PLANT TYPICAL BORES

TYPICAL RAILROAD BORE OR JACK

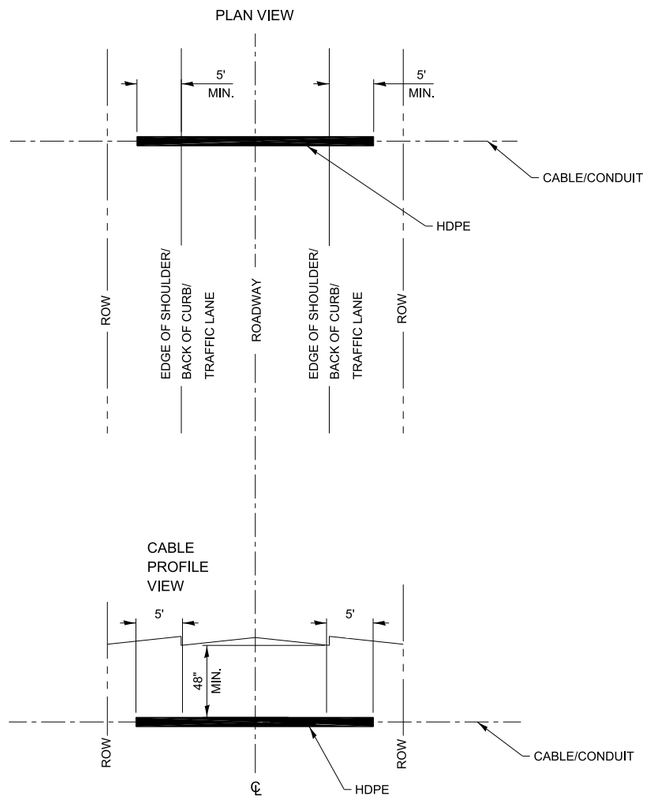




NOTES FOR RAILROAD BORE OR JACK

1. CASING SHALL EXTEND 25 FT. EACH SIDE OF ℄ OF OUTERMOST TRACK OR AS DICTATED BY RAILROAD PERMIT.
2. R.R. BALLAST SHALL NOT BE DISTURBED.
3. BORE AND RECEIVING PITS SHALL NOT BE EXCAVATED CLOSER THAN 10 FT. FROM THE TOE OF SLOPE ON EACH SIDE OF TRACK.
4. ENDS OF ALL CASING SHALL BE FOAM PLUGGED (ARNCO HYDRA-SEAL S-60 OR ENGINEER APPROVAL EQUAL). SEE SHEET 2 OF THIS SERIES.
5. ALL OPERATIONS SHALL MEET REGULATING AGENCY REQUIREMENTS.
6. CASING AS REQUIRED BY CUSTOMER OR RAILROAD OWNER.
7. DEPTH FROM TOP OF CASING TO TOP OF RR TIE MAY BE GREATER THAN 66" AS REQUIRED BY RAILROAD OWNER, NEVER LESS THAN 66".

TYPICAL CITY ST. AND DRIVEWAY BORE OR JACK



NOTES FOR CITY STREET AND DRIVEWAY BORE OR JACK

1. HDPE SHALL EXTEND 5 FT. EACH SIDE OF EDGE OF SHOULDER/BACK OF CURB.
2. BORE AND RECEIVING PITS SHALL NOT BE EXCAVATED WITHIN 5 FT. OF EDGE OF SHOULDER/BACK OF CURB.
3. ENDS OF ALL HDPE SHALL BE FOAM PLUGGED. (ARNCO HYDRA-SEAL S-60 OR ENGINEER APPROVED EQUAL). SEE SHEET 2 OF THIS SERIES.
4. ALL OPERATIONS SHALL MEET REGULATING AGENCY REQUIREMENTS.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

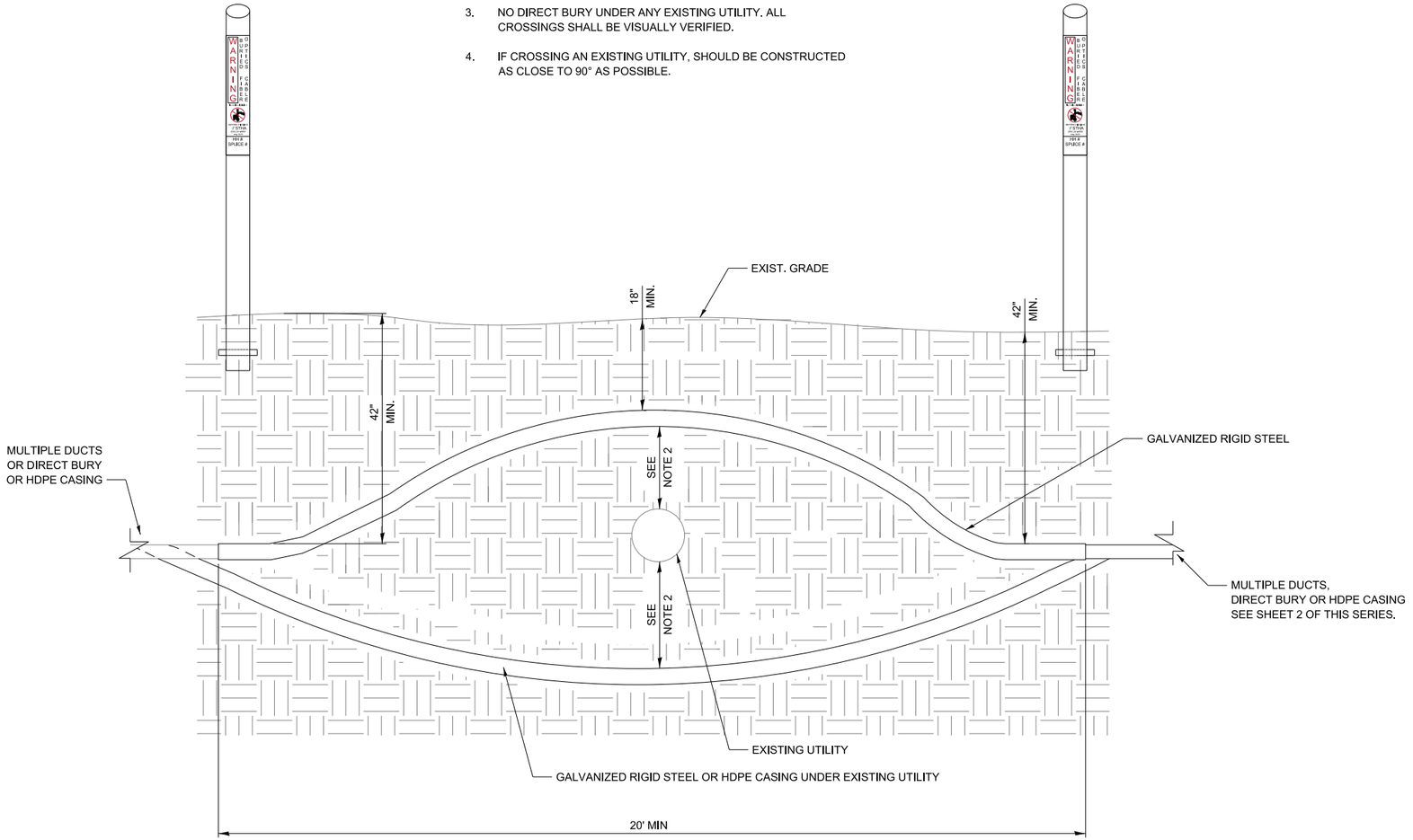
FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

VERSION:	STANDARD:	SHEET:
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UTILITY AVOIDANCE DETAIL

NOTES:

1. IF 18" MIN COVER CANNOT BE ACHIEVED, HDPE(S) MUST BE PLACED UNDER EXISTING UTILITY.
2. 12" MIN SEPARATION MUST BE ADHERED TO BETWEEN GALVANIZED RIGID STEEL/CASING HDPE AND EXISTING UTILITY. FOR OIL OR GAS UTILITY, A MINIMUM OF 18" TO 24" SEPARATION BETWEEN PIPE AND CONDUIT (OR AS REQUIRED BY UTILITY OWNER).
3. NO DIRECT BURY UNDER ANY EXISTING UTILITY. ALL CROSSINGS SHALL BE VISUALLY VERIFIED.
4. IF CROSSING AN EXISTING UTILITY, SHOULD BE CONSTRUCTED AS CLOSE TO 90° AS POSSIBLE.



APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

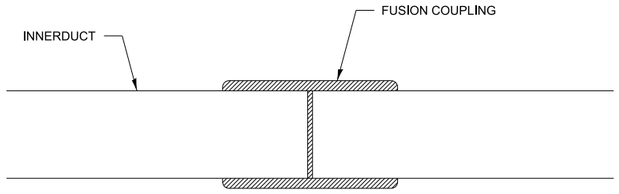
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FIBER OPTIC SYSTEM
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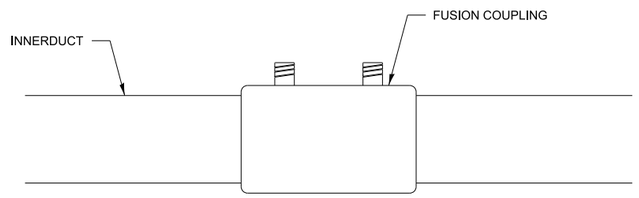
COUPLINGS DETAILS



NOTE:

IN A PROPER ELECTROFUSION JOINT, MOLTEN MATERIAL FLOWS TO THE COLD ZONE WHERE IT SOLIDIFIES AND FREEZES OFF THE ESCAPE PATH. WITH THE MOLTEN MATERIAL CONTAINED, MELT PENETRATION WILL BUILD INTERFACE PRESSURE. WIRE WINDINGS WILL FLOW IN A DESIGNED AND CONTROLLED PATTERN AND A PROPER BONDING OF MATERIALS CAN BE OBTAINED.

PROPER FUSION DETAIL



GENERAL NOTES

1. FUSION COUPLING SHALL BE USED FOR ALL INSTALLATION OF DUCT.

FUSION STANDARD JOINING PROCEDURES

1. SHALL INSTALL PER FUSION COUPLING MANUFACTURER RECOMMENDATIONS.
2. THE PIPE SHALL HAVE A SQUARE EVEN CUT.
3. REMOVE ANY BURRS OR SHAVING FROM THE PIPE ENDS THAT MAY HAVE DEVELOPED DURING THE CUTTING PROCESS.
4. CLEAN PIPE ENDS INSIDE AND OUT WITH A CLEAN CLOTH TO REMOVE ANY DIRT OR CONTAMINANTS.
5. PIPE PREPARATION AND CONTAMINATION ARE VERY IMPORTANT CONSIDERATIONS IN THE ELECTROFUSION PROCESS. THEREFORE, CAREFUL ATTENTION SHALL BE GIVEN TO PROPER SCRAPING AND CLEANING PROCEDURES.
6. SCRAPE PIPE ENDS TO REMOVE ANY OXIDATION OR SURFACE CONTAMINATION. FOR BEST RESULTS, SECURE TOOL ON PIPE AND MAKE TWO REVOLUTIONS.
7. DISCONNECT LEADS FROM FITTING. CLAMPING DEVICE SHALL REMAIN IN PLACE TO SECURE PIPE AND FITTING DURING THE RECOMMENDED COOLING TIME. AFTER REMOVING CLAMP, ADDITIONAL COOLING TIME SHALL BE ALLOWED BEFORE SUBJECTING THE JOINT TO BENDING, BURYING, PRESSURE TESTING, OR SIMILAR HANDLING AND BACKFILL STRESS.

   NOTE: IN THE EVENT OF OUT-OF-ROUND PIPE, IT IS IMPORTANT TO ASSURE AN ADEQUATE AND EVEN SCRAPE IS ACHIEVED AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE. A RUBBER PIPE STOPPER CAN BE PLACED IN THE END OF THE PIPE TO AID IN ROUNDING THE AREA TO BE SCRAPED.
8. MULTIPLE DUCTS FUSION SHALL BE STAGGERED AND AFTER COMPLETION SHALL BE BOUND TOGETHER WITH TY-STRAPS (AT 5' SPACING) SO TO OCCUPY MINIMUM POSSIBLE SPACE AND THEN BACKFILLED.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

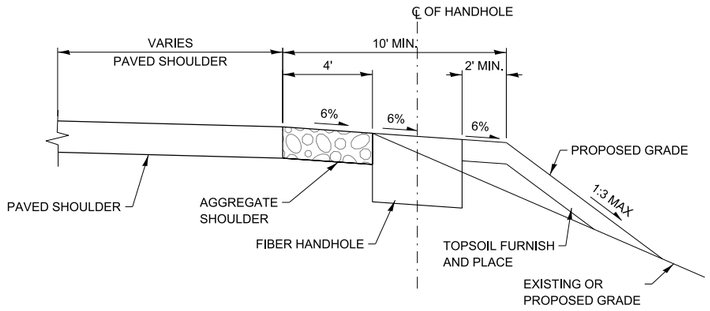
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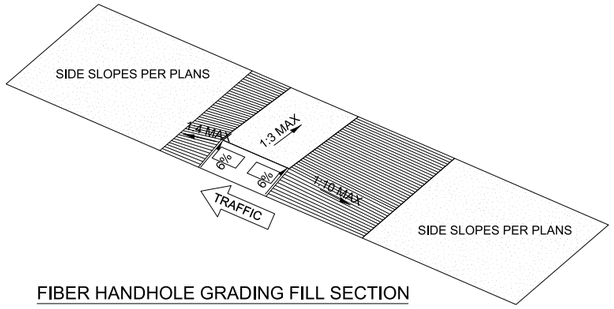
FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

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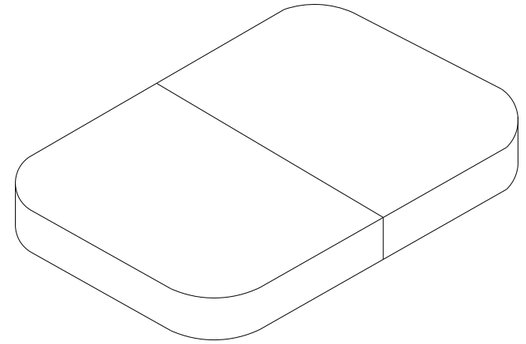
HANDHOLE



FIBER HANDHOLE GRADING FILL SECTION

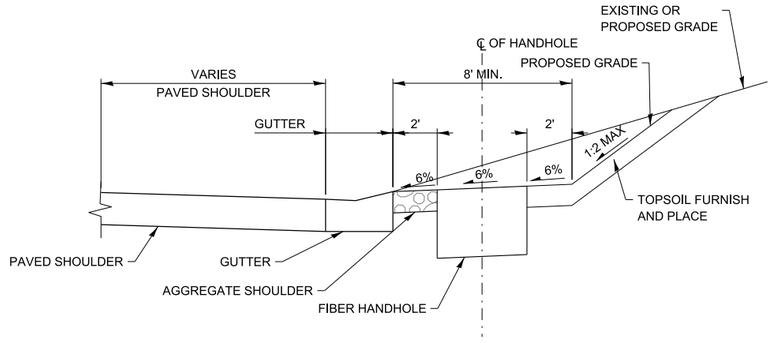


FIBER HANDHOLE GRADING FILL SECTION
(PERSPECTIVE VIEW)

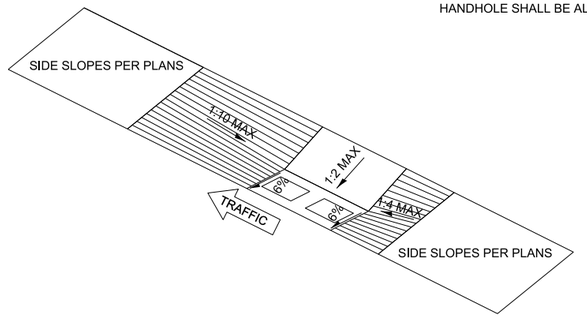


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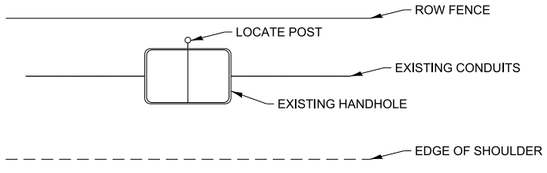
1. NO CORING/DRILLING OR ALTERATION OF HANDHOLE SHALL BE ALLOWED.



FIBER HANDHOLE GRADING CUT SECTION



FIBER HANDHOLE GRADING CUT SECTION

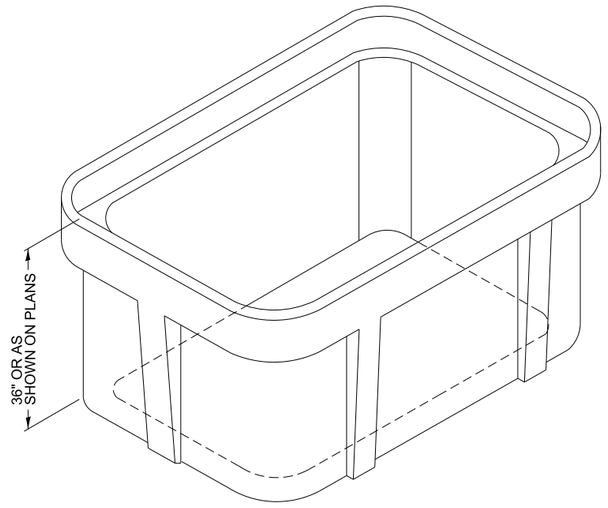


TYPICAL LOCATE POST PLACEMENT
(PLAN VIEW)

NOTES:

1. TRANSITIONAL LONGITUDINAL SLOPE FACES SHALL BE A MAXIMUM OF 1:4 FOR SLOPE FACING AWAY FROM TRAFFIC (TRAILING EDGE OF DETAIL ON A FILL SLOPE CONDITION OR LEADING EDGE OF DETAIL ON A CUT SLOPE CONDITION) AND A MAXIMUM OF 1:10 FOR SLOPE FACING TRAFFIC (LEADING EDGE OF DETAIL ON A FILL SLOPE CONDITION OR TRAILING EDGE OF DETAIL ON A CUT SLOPE CONDITION).

2. WHERE FIBER HANDHOLES ARE INSTALLED ADJACENT TO LIGHT POLES THE HANDHOLE GRADING SHALL BE LENGTHENED TO ACCOMMODATE THE LIGHT POLE GRADING AND CROSS-SLOPE GRADING SHALL BE REVISED TO ZERO-PERCENT (LEVEL GRADED AREA) IN ACCORDANCE WITH LIGHT POLE GRADING REQUIREMENTS OF ILLINOIS TOLLWAY STANDARD DRAWING H1. LEVEL GRADED AREA SHALL BE AGGREGATE SHOULDERS WITH FILTER FABRIC, TYPE B, 4" MEETING OFFSET AND LIMITS REQUIREMENTS OF ILLINOIS TOLLWAY STANDARD DRAWING H1.



36"x60" HANDHOLE

2 SECTION SPLIT LID
LESS THAN 5 DUCTS

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

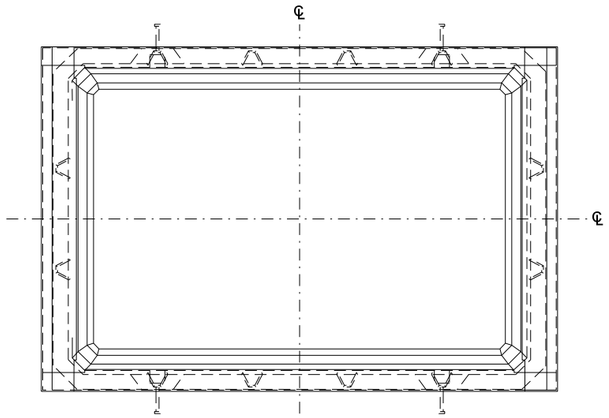
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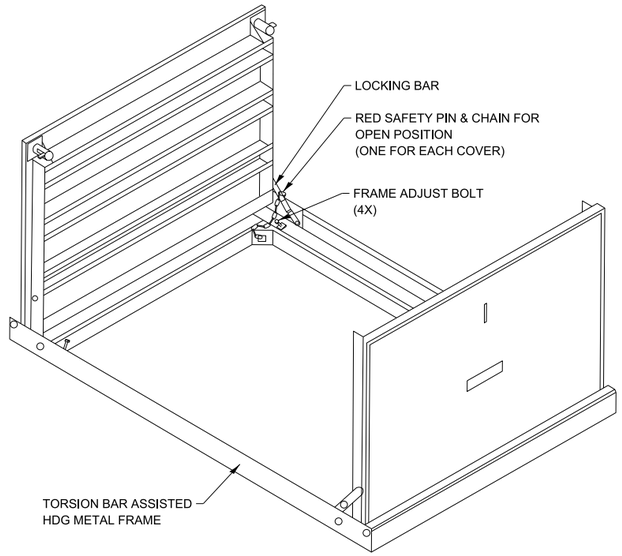
FIBER OPTIC SYSTEM
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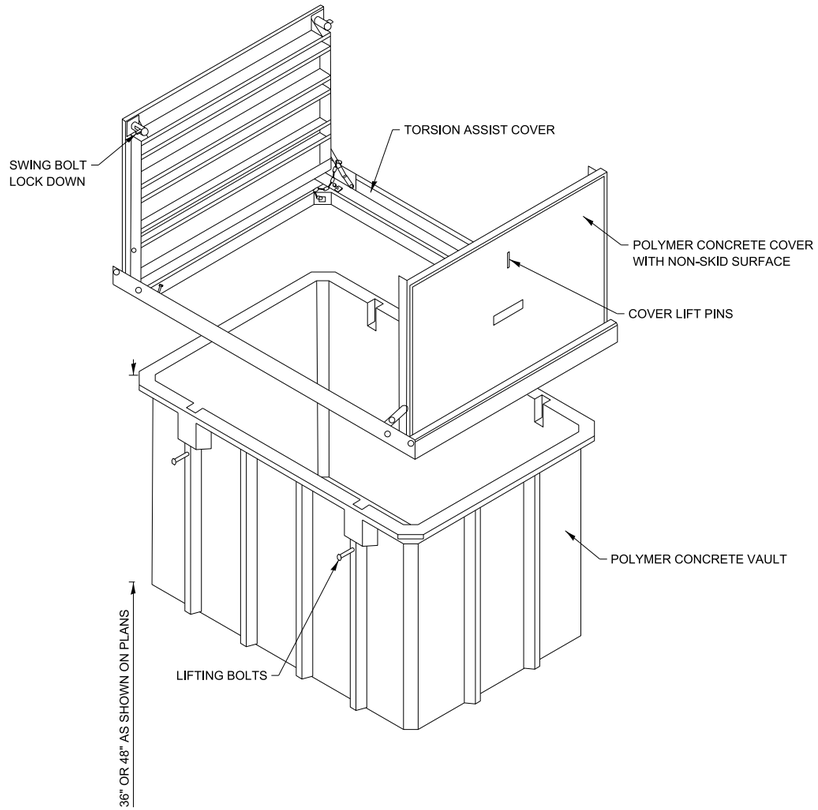
HANDHOLE



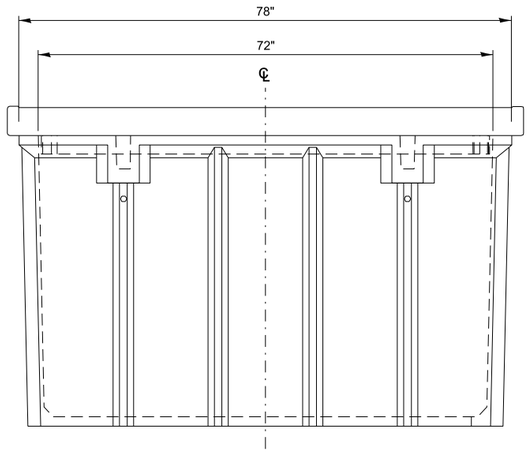
TOP VIEW



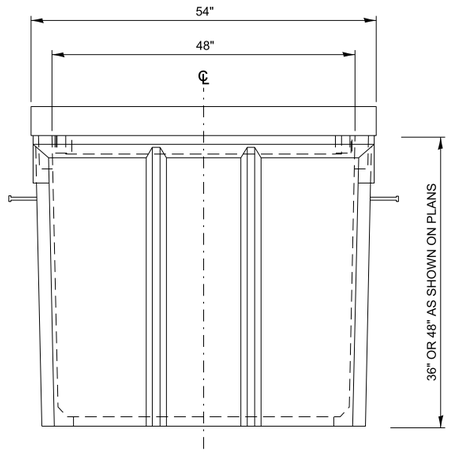
TORSION ASSIST COVER



48"X 72" TORSION ASSIST



SIDE VIEW



END VIEW

NOTES:

1. NO CORING/DRILLING OR ALTERATION OF HANDHOLE SHALL BE ALLOWED
2. IN CONFINED SPACES, RELOCATE THE RED SAFETY PIN & CHAIN, AND LOCKING BAR TO THE SIDE OF THE LID THAT IS OPEN TO TRAFFIC.
3. HAND TIGHTENING OF THE SWING BOLT LOCK DOWN MECHANISM IS RECOMMENDED. DO NOT EXCEED MANUFACTURER SPECIFICATIONS FOR TIGHTENING OF BOLTS.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

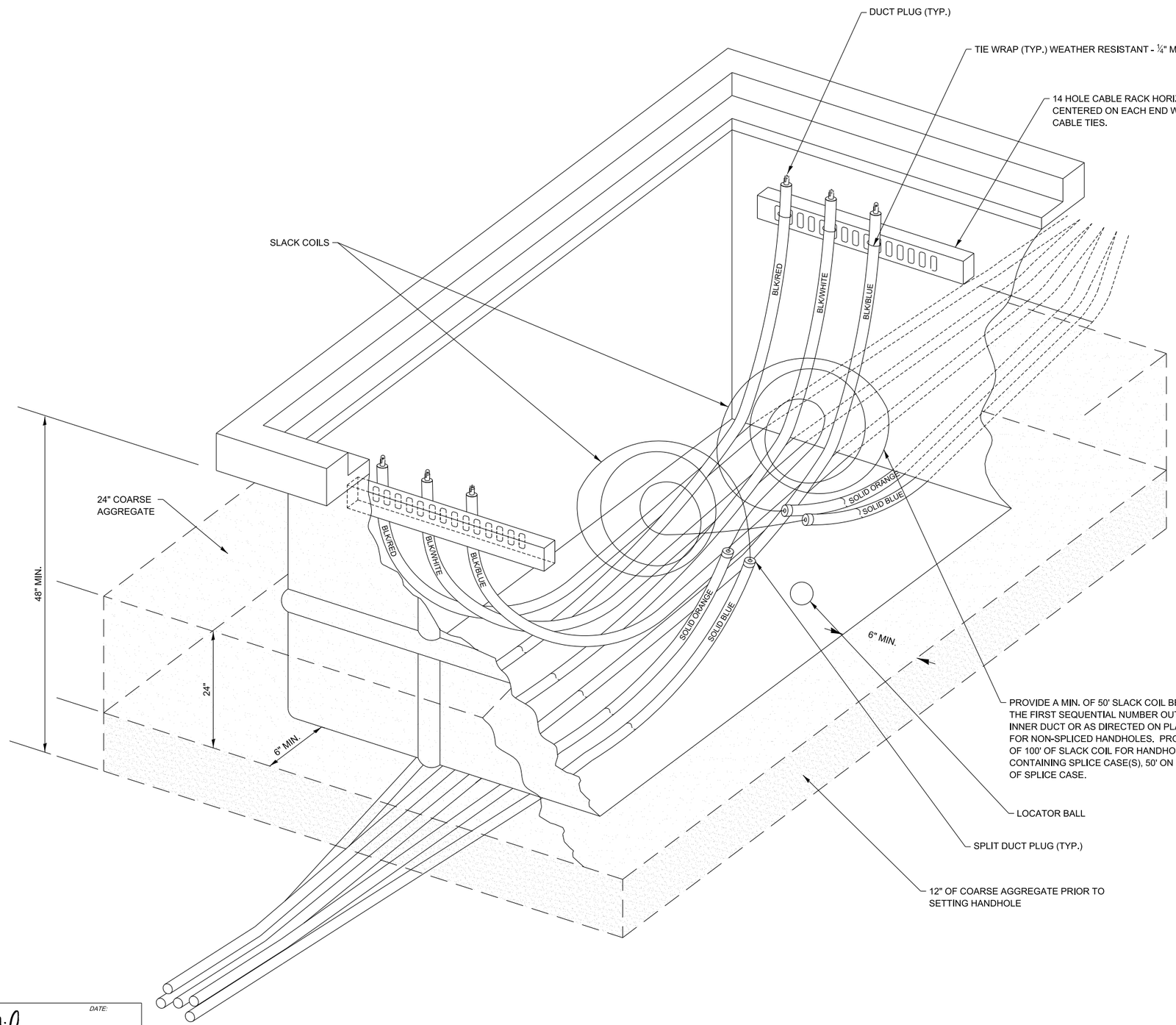
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HDPE AND FIBER OPTIC CABLE PLACEMENT IN HANDHOLE



NOTES:

1. FIBER OPTIC CABLES SHALL HAVE A CABLE I.D. TAG ON BOTH SIDES OF THE SLACK COIL IDENTIFYING THE OWNER, DUCT COLOR, CABLE COUNT, AND DIRECTION. REFERENCE THE ITS LABELING GUIDE.
2. COLOR NOTED ON INNERDUCTS IS FOR REFERENCE ONLY.
3. COIL FIBER CABLE IN HANDHOLE ENSURING THAT THE BEND RADIUS DOES NOT EXCEED MANUFACTURER SPECIFICATIONS.
4. EACH FIBER CABLE COIL SHALL BE TIED TOGETHER IN A SINGLE TIGHT BUNDLE.
5. EACH FIBER COIL BUNDLE SHALL BE COILED TIGHTLY ENOUGH THAT IT IS NOT COMPRESSED WHEN THE HANDHOLE LID IS CLOSED.
6. FIBER SPLICE CONTAINER SHALL BE PLACED IN THE HANDHOLE ALLOWING FOR EASY ACCESS AND LABELED WITH OWNER, END LOCATIONS, FIBER TYPE, AND FIBER COUNT.
7. FIBER CONDUIT SHALL EXTEND INTO THE HANDHOLE 12 TO 18 INCHES WITH THE END TURNED UP AND SEALED TO MINIMIZE WATER ENTERING THE CONDUIT. SPARE CONDUITS SHALL EXTEND TO CABLE RACK ON OPPOSITE WALL.
8. LOCATOR BALL SHALL BE PLACED IN HANDHOLES. PLACE LOCATOR BALL IN THE MIDDLE OF HANDHOLE.

APPROVED BY:
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CHIEF ENGINEERING OFFICER

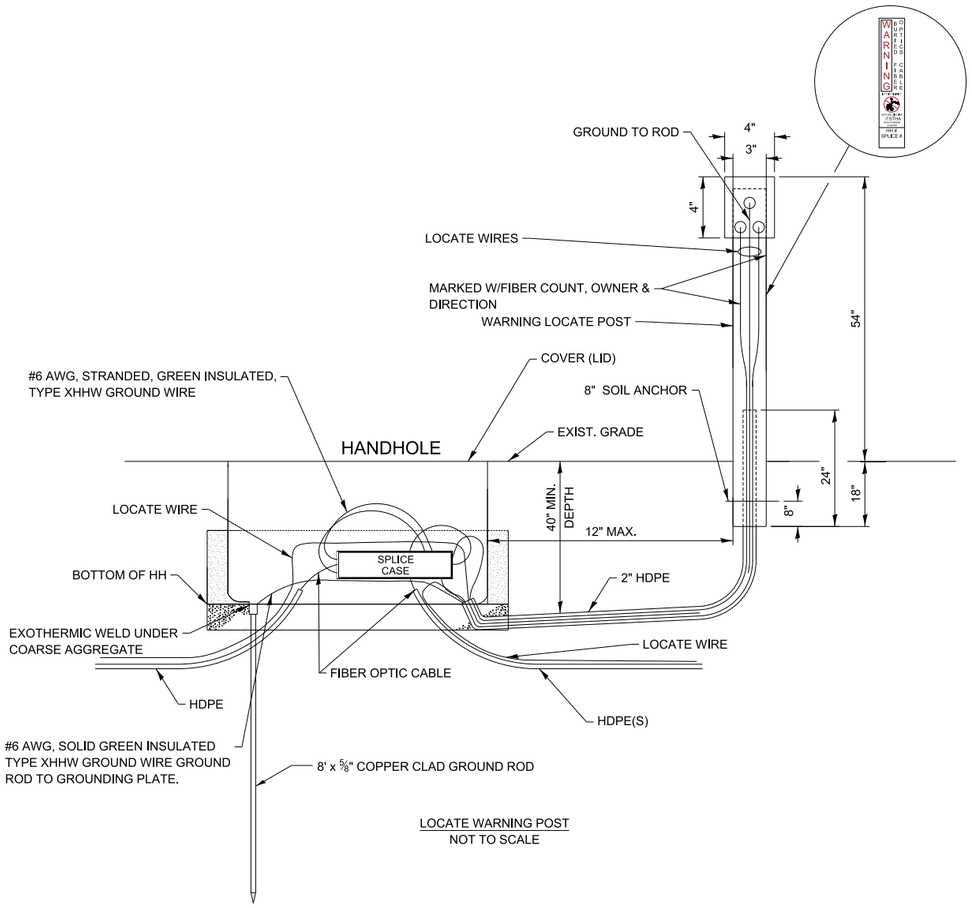
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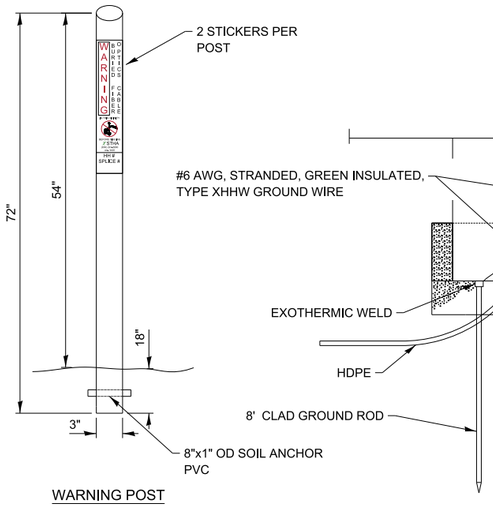
FIBER OPTIC SYSTEM
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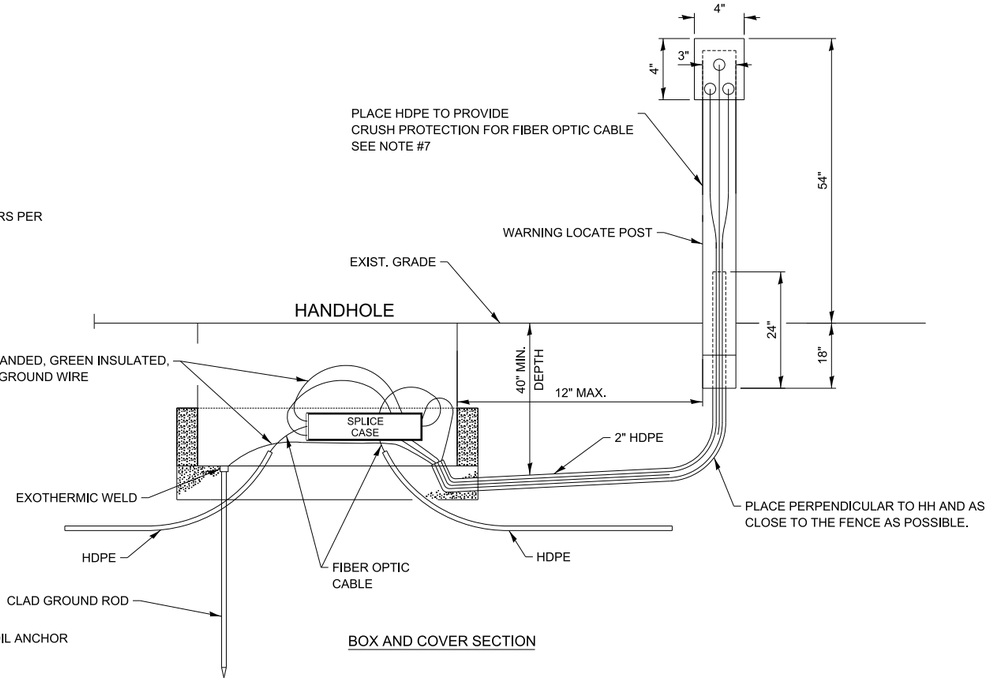
FIBER HANDHOLE SITE DETAIL AND GROUNDING



LOCATE WARNING POST
NOT TO SCALE



WARNING POST



BOX AND COVER SECTION

GENERAL NOTES

1. LOCATE WARNING POST SHALL BE PLACED 1 FOOT FROM HANDHOLE OR AT MAXIMUM 3 FOOT AWAY FROM FENCE LINE OR RIGHT-OF-WAY LINE IF POSSIBLE.
2. AREA AROUND THE HANDHOLE SHALL BE BACKFILLED ONLY TO THE TOP OF THE BOX. FLUSH TO EXISTING GRADE.
3. COIL FIBER CABLE IN HANDHOLE ENSURING THAT THE BEND RADIUS SHALL NOT EXCEED VALUES LISTED IN TABLE A ON SHEET 8.
4. INSTALL GROUND ROD & EXOTHERMIC WELD AS PER MANUFACTURER'S INSTRUCTIONS. PLACE THE #6 GROUND WIRE (TYPE XHHW, SOLID, GREEN INSULATED) THAT HAS BEEN ATTACHED TO THE GROUND ROD AND TO THE CENTER LUG OF THE LOCATE POST.
5. BACKFILL MATERIAL SHALL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER.
6. GROUND WIRE SHALL BE BONDED TO BOTH SHEATHS OF ARMORED FIBER OPTIC CABLE IN THE SPLICE ENCLOSURE USING #6 GROUND STRANDED, GREEN INSULATED WIRE. EACH GROUND SHALL BE ISOLATED WITHIN THE ENCLOSURE.
7. INSTALL 2" HDPE CONDUIT FROM HANDHOLE TO WARNING POST TO ALLOW GROUNDING CABLE AND LOCATE TRACE WIRES TO BE INSTALLED.
8. NO HANDHOLES WILL BE ALLOWED IN PAVED ROADWAYS OR SHOULDERS.
9. THE TOPS OF ALL HANDHOLES SHALL BE FLUSH WITH THE EXISTING GRADE.
10. A WATER PROOF SEALING SIMPLEX DUCT PLUG SHALL BE INSTALLED AROUND THE FIBER OPTIC TO SEAL AROUND THE CONDUIT. A WATER PROOF SEALING PLUG SHALL BE INSTALLED IN ALL VACANT CONDUIT.
11. ANY WORK IN AN EXISTING SINGLE MODE HANDHOLE OR INVOLVING AN EXISTING SINGLE MODE DUCT AND FIBER SHALL BE COORDINATED WITH THE TOLLWAY FIBER OPTIC CONTRACTOR. USING A-36 PROCESS.
12. FOR ALL SPLICE AND HANDHOLE, NUMBER DECALS DISPLAYING MILEPOST SHALL BE APPLIED AFTER INSTALLATION IS COMPLETED.
13. PLACEMENT OF SIGNS IS PREFERRED OVER POSTS. SIGNS SHALL BE USED ON LOCATIONS WHERE FENCE IS VISIBLE FROM ROAD. POSTS SHALL ONLY BE USED WHERE SIGN WOULD NOT BE VISIBLE FROM ROAD.
14. POSTS SHOULD BE PLACED SO THAT IT DOES NOT IMPEDE THE LID FROM OPENING OR SLIDING BACK.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

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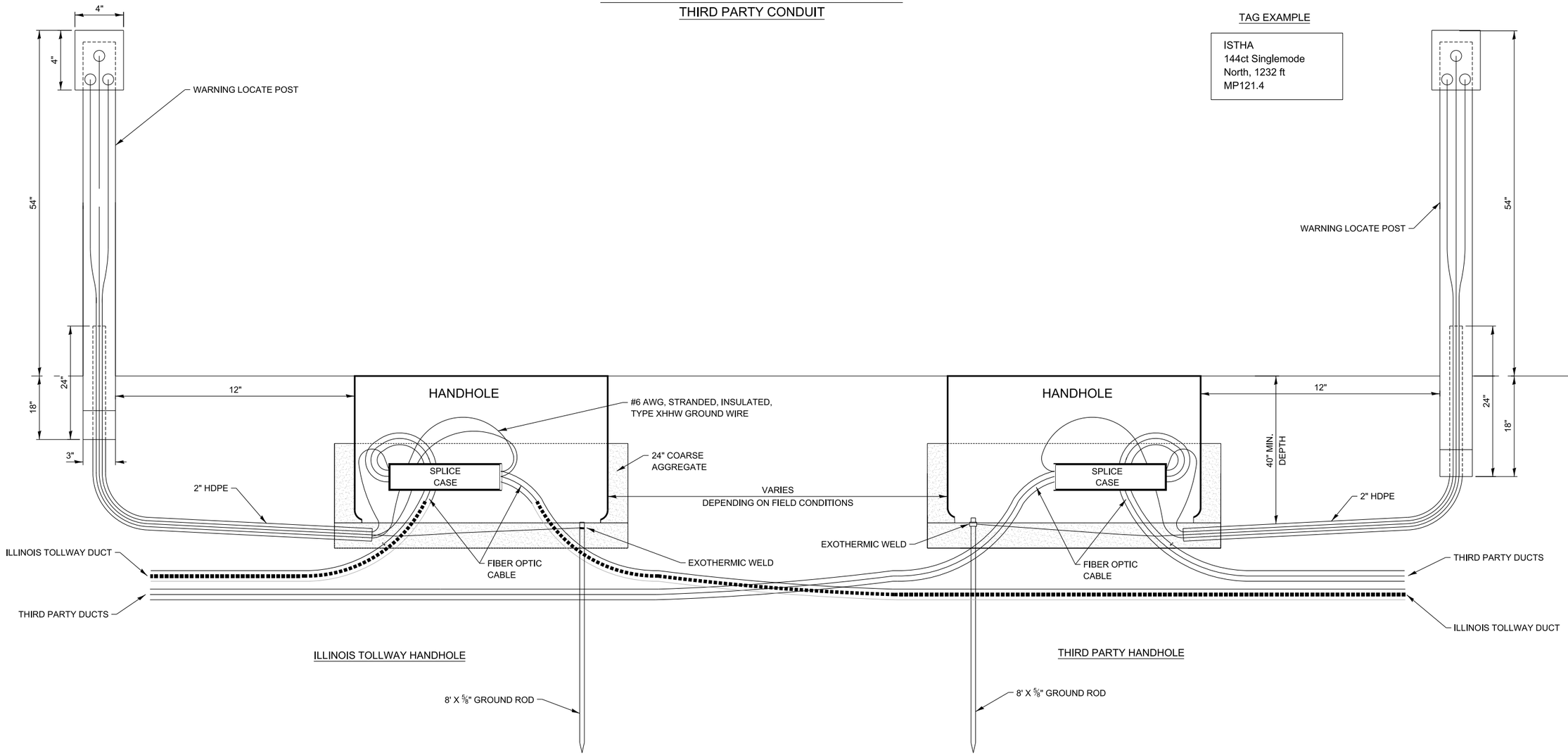
FIBER OPTIC SYSTEM
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FIBER HANDHOLE SITE DETAIL AND GROUNDING
THIRD PARTY CONDUIT

TAG EXAMPLE

ISTHA
144ct Singlemode
North, 1232 ft
MP121.4



NOTES:

1. WARNING LOCATE POST SHALL BE PLACED 1 FOOT FROM HANDHOLE OR AT MAXIMUM 3 FOOT AWAY FROM FENCE LINE IF POSSIBLE.
2. AREA AROUND HANDHOLE SHALL BE BACKFILLED ONLY TO THE TOP OF THE BOX FLUSH TO EXISTING GRADE.
3. INSTALL GROUND ROD & EXOTHERMIC WELD AS PER MANUFACTURER'S INSTRUCTIONS. PLACE THE #6 GROUND WIRE (TYPE XHHW, SOLID, GREEN INSULATED) THAT HAS BEEN ATTACHED TO THE GROUND ROD ON THE CENTER LUG OF THE WARNING LOCATE POST.
4. GROUND WIRE SHALL BE BONDED TO BOTH SHEATHS OF ARMORED FIBER OPTIC CABLE IN THE SPLICE ENCLOSURE USING #6 STRANDED GREEN INSULATED TYPE XHHW GROUND WIRE. EACH GROUND SHALL BE ISOLATED WITHIN THE ENCLOSURE.
5. PLACE HDPE OVER FIBER OPTIC CABLE TO PROVIDE CRUSH PROTECTION EXTEND HDPE 1' INSIDE HANDHOLE.
6. NO HANDHOLES SHALL BE ALLOWED IN PAVED ROADWAYS OR SHOULDERS.
7. THE TOPS OF ALL HANDHOLES SHALL BE FLUSH WITH THE EXISTING GRADE UNLESS THE SLOPE IS GREATER THEN 1:4. IF SO, THE HANDHOLE SHALL BE PLACED LEVEL WITH THE EARTH GRADED AROUND IT SO NO PART OF THE SIDES OF THE HANDHOLE IS EXPOSED.
8. A WARNING LOCATE POST SHALL BE INSTALLED AT ALL HANDHOLES.
9. LOCATE WIRE SHALL BE TESTED FROM HANDHOLE TO HANDHOLE PRIOR TO ANY FIBER BEING INSTALLED IN CONDUIT.
10. LOCATE WIRES SHALL BE TAGGED INSIDE LOCATE POST. THE TAG SHALL SHOW THE FIBER OWNER, FIBER COUNT, FIBER TYPE, DIRECTION (N,S,E,W), DISTANCE TO NEXT LOCATE POST, AND MILE POST AT THAT LOCATION.

APPROVED BY:
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CHIEF ENGINEERING OFFICER

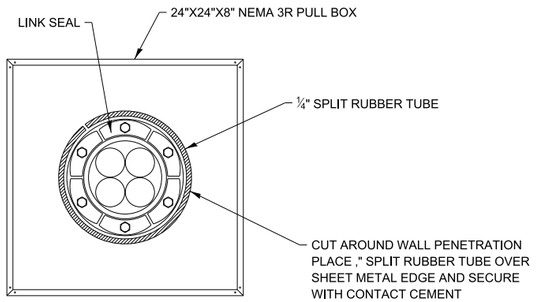
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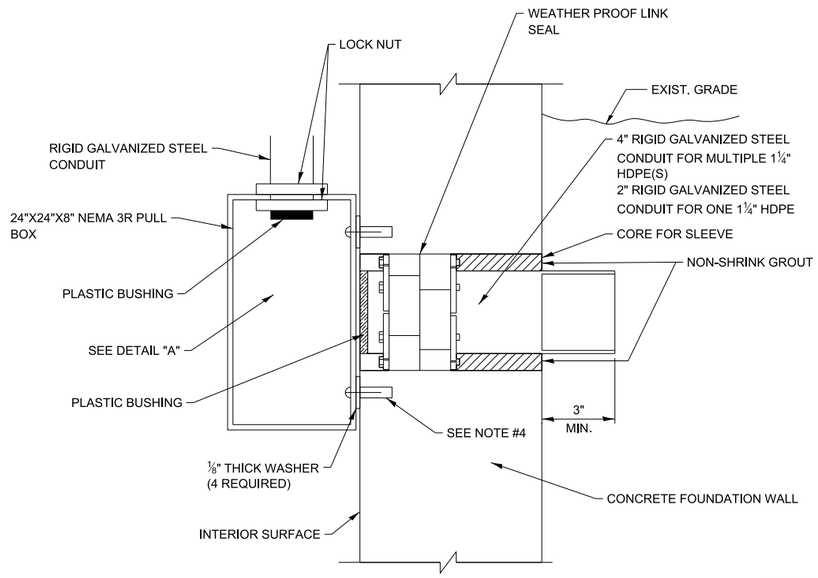
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WALL PENETRATION DETAIL



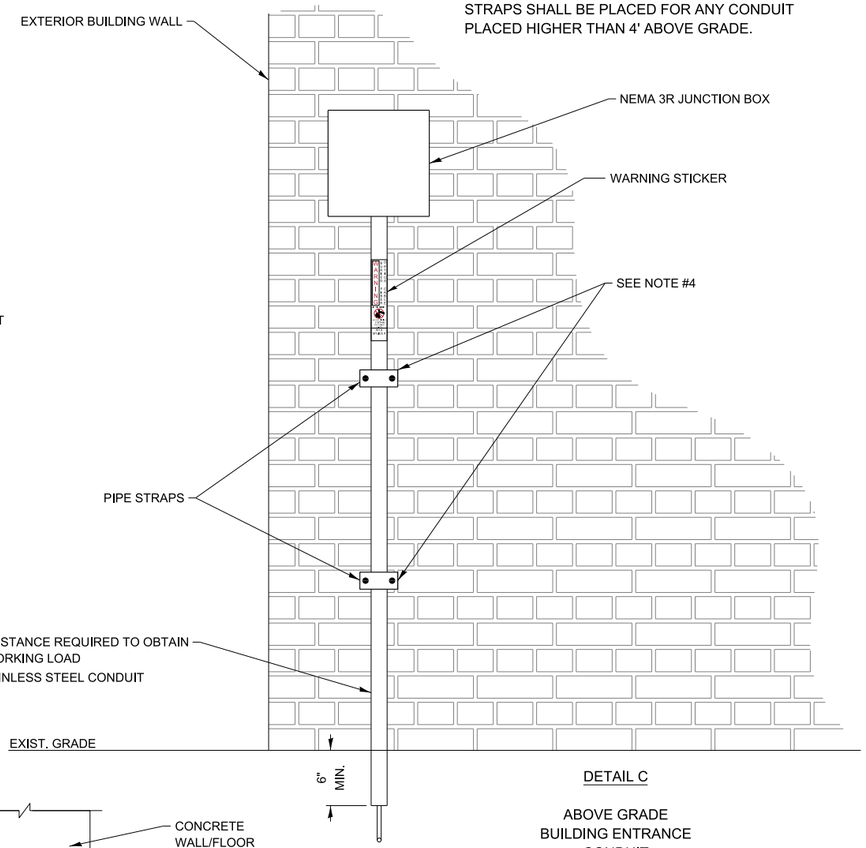
DETAIL A

FRONT VIEW
BELOW GRADE
BUILDING ENTRANCE PULL BOX



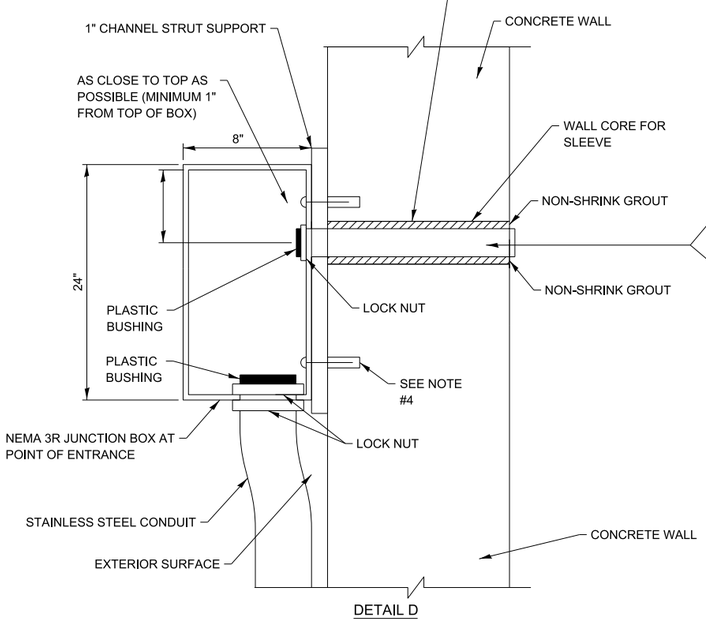
DETAIL B

SIDE VIEW
BELOW GRADE
BUILDING ENTRANCE PULL BOX



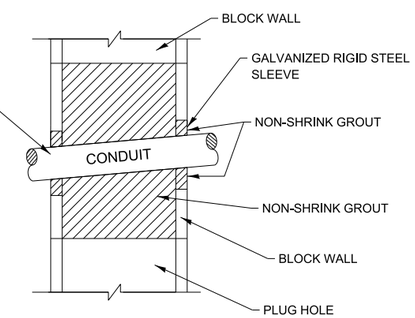
DETAIL C

ABOVE GRADE
BUILDING ENTRANCE
CONDUIT



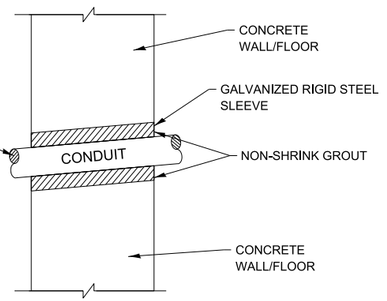
DETAIL D

ABOVE GRADE
BUILDING ENTRANCE PULL BOX



DETAIL E

BLOCK WALL PENETRATION



DETAIL F

CONCRETE WALL/FLOOR PENETRATION BUILDING PENETRATIONS SPECIFIED AS DETAIL F MAY BE A COMBINATION OF POURED OR HOLLOW CONCRETE BLOCK WITH A BRICK EXTERIOR. IF HOLLOW BLOCK IS ENCOUNTERED COMPLETE INSTALLATION PER DETAIL E THIS SHEET.

NOTE:

THE MAXIMUM PIPE STRAP SPACING SHALL BE 30" MAX. VERTICAL AND 18" HORIZONTAL MAXIMUM DISTANCE. A MINIMUM OF TWO PIPE STRAPS SHALL BE PLACED FOR ANY CONDUIT PLACED HIGHER THAN 4' ABOVE GRADE.

GENERAL NOTES:

1. ALL PENETRATIONS SHALL UTILIZE EXISTING UNUSED BUILDING PENETRATIONS TO THE MAXIMUM EXTENT POSSIBLE.
2. ALL EXTERIOR MATERIALS SHALL BE STAINLESS STEEL UNLESS OTHERWISE NOTED.
3. ALL ANCHORS SHALL BE INSTALLED IN SOUND CONCRETE OR MASONRY.
4. USE APPROVED MASONRY ANCHOR.
5. ALL CONDUITS ENTERING THE BUILDING SHALL BE PITCHED AWAY FROM BUILDING.

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

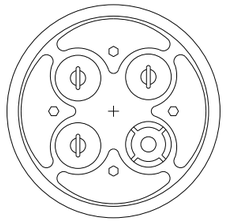
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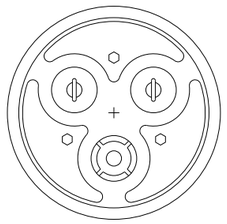
FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

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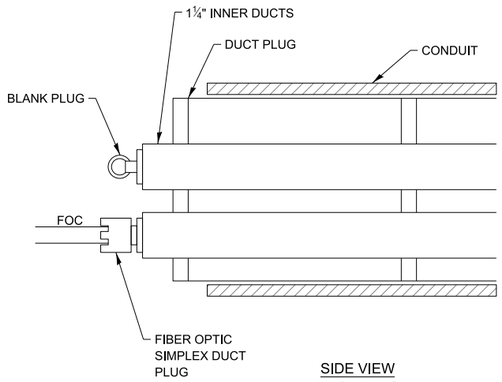
UNDERGROUND PENETRATION DETAIL



FRONT VIEW
QUAD DUCT PLUG



FRONT VIEW
DUCT PLUG



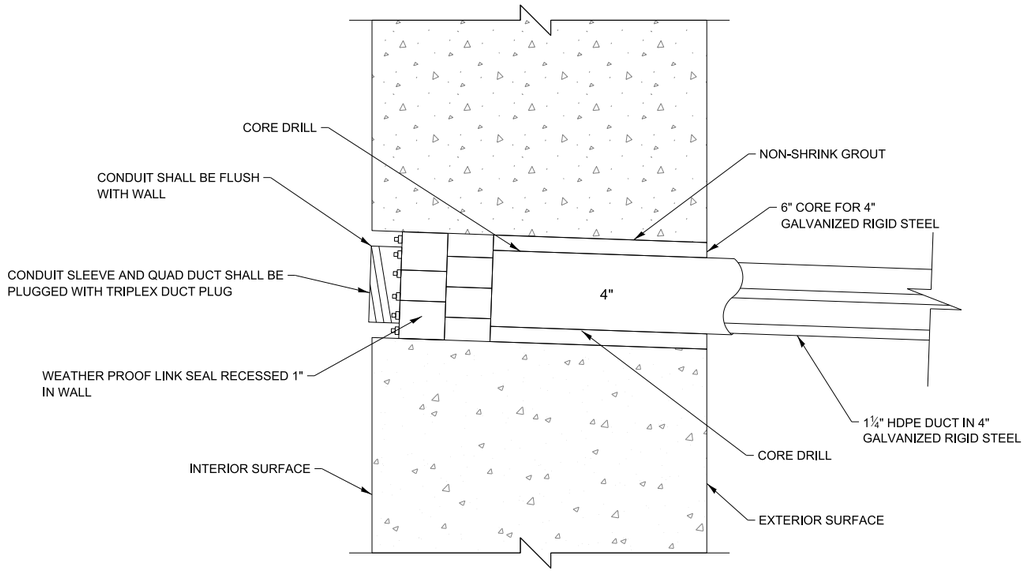
SIDE VIEW
DUCT PLUG

DUCT PLUG DETAIL
NOT TO SCALE

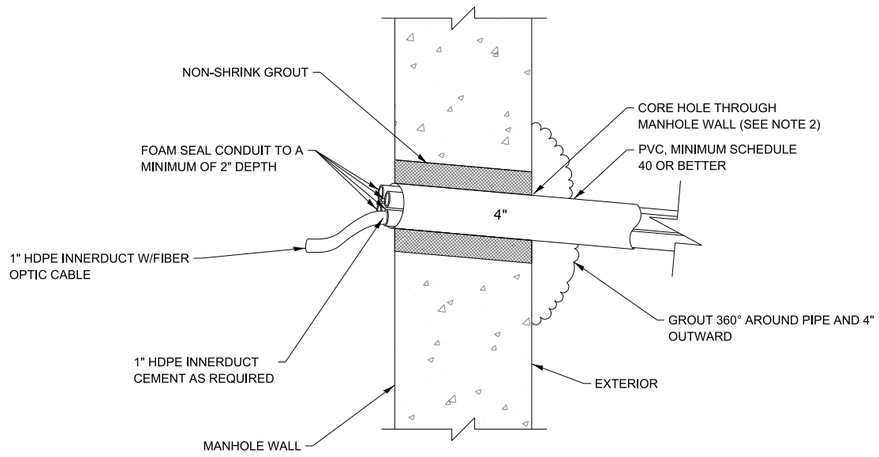
GENERAL NOTES:

1. GALVANIZED RIGID STEEL CONDUIT EXTENDING THROUGH FOUNDATION WALL SHALL BE ONE CONTINUOUS PIECE (NO COUPLINGS), SQUARE WITH BUILDING AT A SLIGHT ANGLE TO THE EXTERIOR TO PREVENT WATER SEEPAGE.

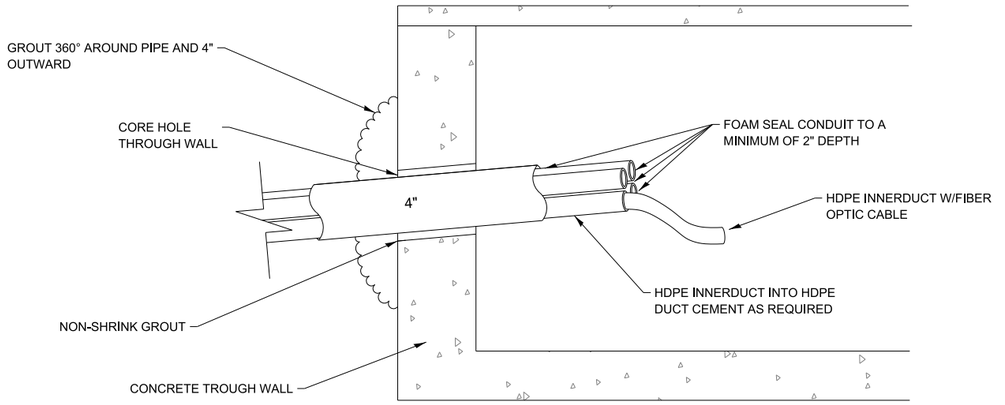
2. MANHOLE CORES SHALL NOT BE THROUGH MANHOLE CONE.



BELOW GRADE PENETRATION BUILDING
NOT TO SCALE



MANHOLE PENETRATION DETAIL
NOT TO SCALE



CONCRETE TROUGH PENETRATION
NOT TO SCALE

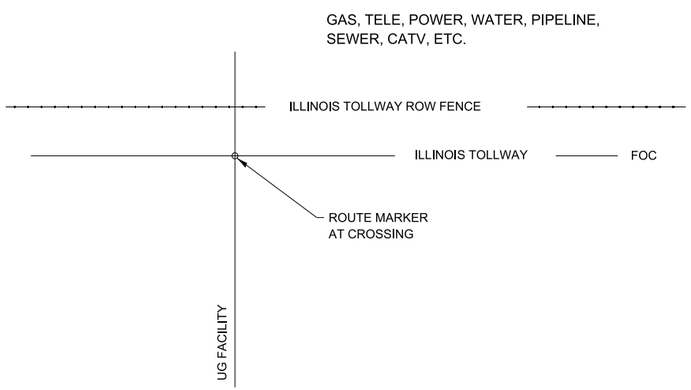
APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

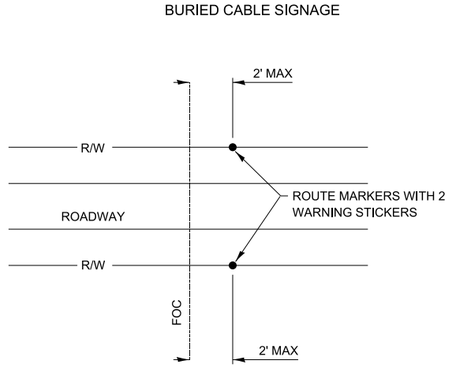
Illinois Tollway

FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

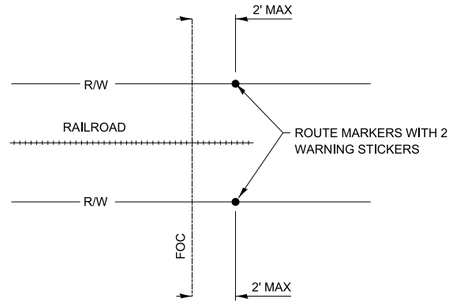
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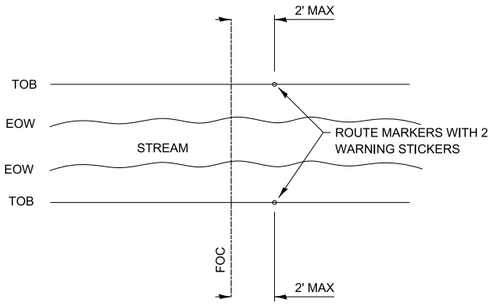
FACILITY CROSSING
FIG. 1



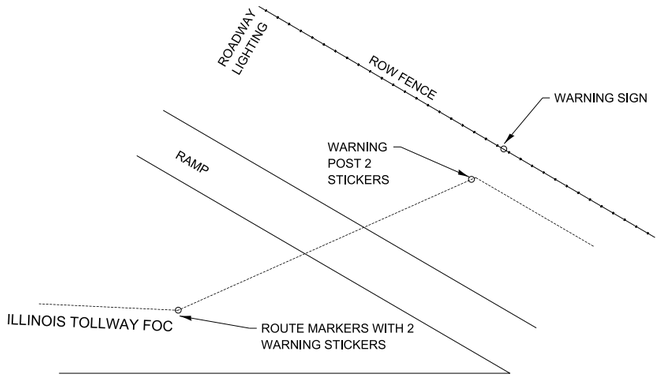
TYPICAL MARKER PLACEMENT AT ROAD AND BRIDGE CROSSING
FIG. 2



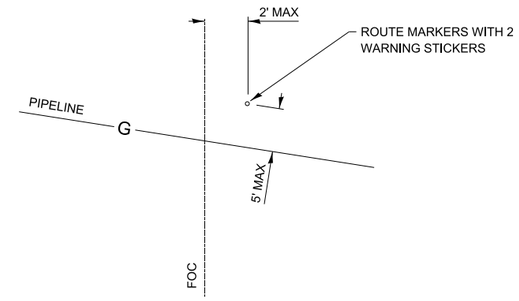
TYPICAL MARKER PLACEMENT AT RAILROAD CROSSING
FIG. 3



TYPICAL MARKER PLACEMENT AT RIVER,
CREEK & DRAINAGE DITCH CROSSING
FIG. 4



ON/OFF RAMP CROSSING
FIG. 5



TYPICAL MARKER PLACEMENT AT PIPELINE CROSSING
FIG. 6

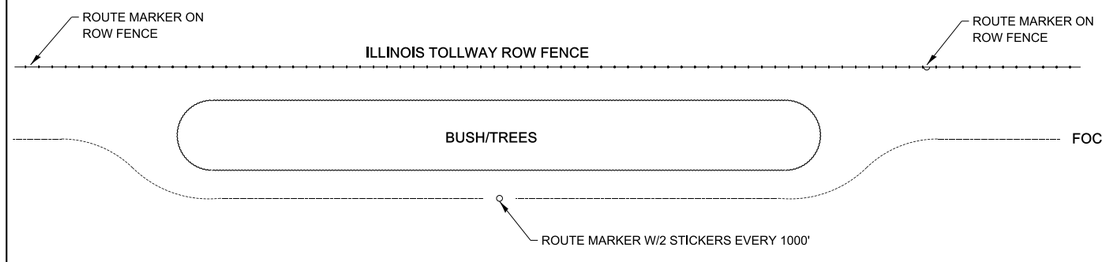
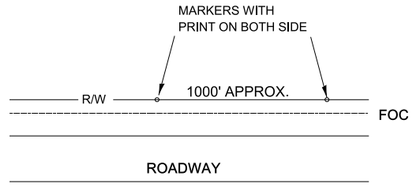


FIG. 7



TYPICAL MARKER PLACEMENT
TO BE PLACED NEXT TO R.O.W. FENCE LINE
FIG. 8

GENERAL NOTES:

1. MAINTAIN A MAXIMUM DISTANCE OF 2' FROM ANY UTILITY POLE OR PEDESTAL SIGN, MARKER POLE, OR ANY OTHER STRUCTURE.
2. WARNING MARKERS SHALL BE PLACED AT 1000' INTERVALS AND AT CHANGES IN CABLE LOCATION/DIRECTION OR AT CROSSING POINT OF OTHER UNDERGROUND FACILITIES. THE CONTRACTOR SHALL ADJUST EXCAVATION AS NECESSARY TO AVOID HIDDEN OBSTACLES AND TO MAINTAIN MAXIMUM DISTANCE FROM THE EDGE OF PAVEMENT. ALL DEVIATIONS SHALL BE APPROVED BY THE ENGINEER.
3. FOR CONGESTED AREAS WITH MULTIPLE UTILITY CROSSINGS WITHIN A SHORT LENGTH, MARKER POSTS SHOULD BE PLACED NO CLOSER THAN 50' APART FROM EACH OTHER ALONG THE RUNNING LINE OF THE FOC.

APPROVED BY:
Marwa Nashif
CHIEF ENGINEERING OFFICER

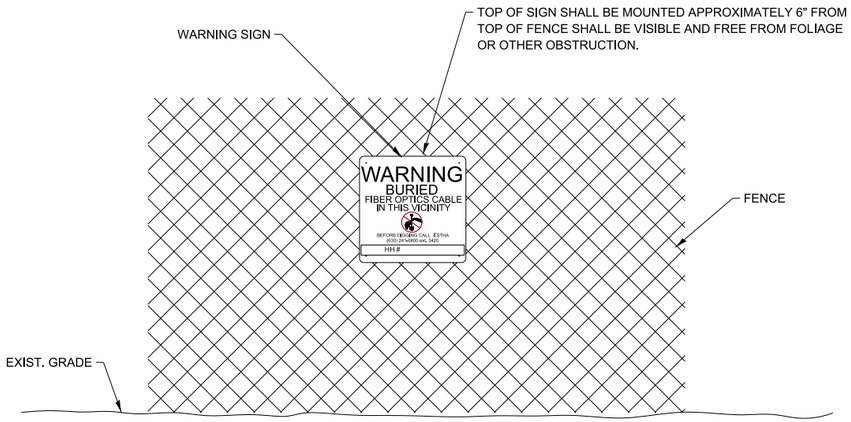
DATE:
03/01/2025

Illinois Tollway

FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

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ROUTE MARKER INSTALLATION PROCEDURE

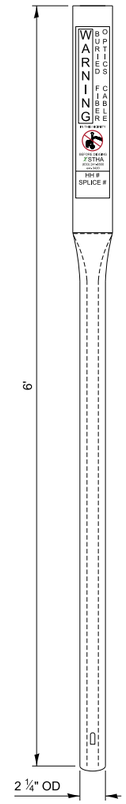


FENCE MOUNTED WARNING SIGN

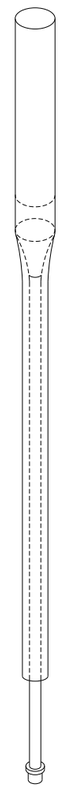
NOT TO SCALE

INSTALLATION OF WARNING SIGN & POST:

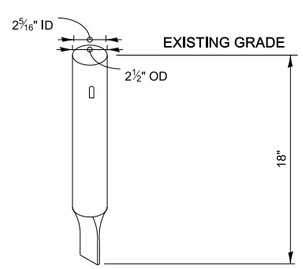
1. INSTALL WARNING POST ACCORDING TO MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
2. PLACEMENT OF POST SHALL NOT INTERFERE WITH THE REMOVAL OF HANDHOLE LIDS
3. WARNING SIGN SHALL BE ATTACHED TO ROW FENCE WHEREVER POSSIBLE. UV STABILIZED BLACK NYLON CABLE TIES (14" LENGTH, .30" WIDTH, 120 LBS TENSILE STRENGTH), (4 EA.) 3 WRAPS EACH TIE, SHALL BE USED TO ATTACH WARNING SIGN TO FENCE.
4. SEE SHEET 15 OF THIS SERIES FOR FIBER WARNING LABEL AND WARNING SIGN DETAILS.



POST



DRIVER



SOIL ANCHOR

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2025

Illinois Tollway

FIBER OPTIC SYSTEM
TYPICALS AND DRAWINGS

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FIBER WARNING LABEL & WARNING SIGN DETAILS



FENCE SIGN

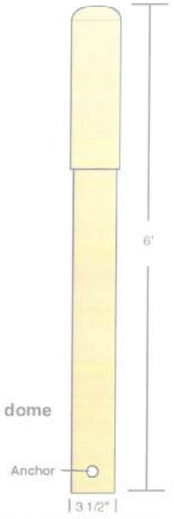
ISTHA

Products provided by:

ACP INTERNATIONAL

Part #: SA-ISTHA
Size: 12" T X 9" W
Material: Polyethyene
Color: Black text with Orange bkgd, with white
Holes: 4 - 3/16"

Part #: PP6-ISTHA
Size: 6'
Material: Polydome
Color: Orange Post and dome



ROUTE MARKER POST

ROUTE MARKER POST DECAL



Part #: PTP466000-ISTHA - 4" X 6,000', 6MIL Orange with black text

WARNING TAPE



Part #: D-314-ISTHA
Size: 14" x 3"
Material: Decal
Color: Orange with black text, Black "Warning" panel with white text, White no dig
Scale: Shown @ 50%

NOTE:

SIGN AND LABEL SHOWN IS AVAILABLE THROUGH ACP INTERNATIONAL. ALTERNATE SIGN LABELS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER.

APPROVED BY: Marwan Nashif, CHIEF ENGINEERING OFFICER

DATE: 03/01/2025

Illinois Tollway

FIBER OPTIC SYSTEM TYPICALS AND DRAWINGS

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ITS CABINET FIBER CONNECTION DETAILS

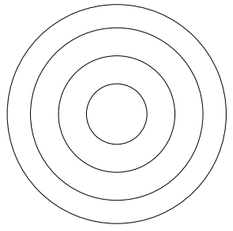
SMFO ISTHA COMMUNICATIONS CABLE TO NEXT UP-STREAM NODE LOCATION

ISTHA BACKBONE fiber cable

HANDHOLE

IN GROUND SPLICE ENCLOSURE

LEAVE 100 FOOT OF FIBER COIL IN ISTHA HANDHOLE



ISTHA BACKBONE Fiber Cable

SMFO ISTHA COMMUNICATIONS CABLE TO NEXT DOWNSTREAM NODE LOCATION

CISCO ETHERNET SWITCH

CCTV CABINET
CCTV+MVDS CABINET

SFP1
SFP2
1 Tx
2 Rx
3 Tx
4 Rx
E10/100 PORTS
5 6 7 8 9 10 11 12
SFP

NOTE:
CONNECT ITS DEVICES, CCTV, DMS, MVDS, VDS, RWIS, AP, OR WIM AS DIRECTED.

J
J
J
J

PANEL MOUNTED INTERCONNECT CENTER

UNUSED PORTS CAPPED ON THE PATCH PANEL FOR FUTURE USE

12 SMFO BREAKOUT CABLE (LATERAL)

P
P
P
P
P
P
P
P
P
P
P
P

BLUE
ORANGE
GREEN
BROWN
SLATE
WHITE
RED
BLACK
YELLOW
VIOLET
ROSE
AQUA

12 SMFO BREAKOUT CABLE (LATERAL)

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER AND THE ILLINOIS TOLLWAY FIBER OPTIC MANAGER FOR FINAL PORT ASSIGNMENTS DURING INSTALLATION AND INTEGRATION.
2. CONTRACTOR SHALL LABEL ALL NETWORK SWITCHES, DATA CABLES, FIBER OPTIC CABLES AND JUMPERS AS PER THE LATEST ILLINOIS TOLLWAY "ITS LABELING GUIDELINE".
3. CONTRACTOR SHALL MAKE ALL NETWORK SWITCH CONNECTIONS, UNLESS OTHERWISE NOTED.
4. THE COLOR VERSION OF THE L2 STANDARD DRAWINGS ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE.
5. CONTRACTOR SHALL COMPLETE AND SUBMIT AN A-36 WATCH AND PROTECT REQUEST WHEN ACCESSING A FIBER HANDHOLE WITHIN ILLINOIS TOLLWAY RIGHT-OF-WAY FOR ANY PURPOSE.

LEGEND

- J — FIBER OPTIC JUMPER, SINGLE MODE
- P — FIBER OPTIC PIGTAIL, SINGLE MODE
- BARE FIBER LEFT COILED IN SPLICE TRAY
- FIBER OPTIC FUSION SPLICE
- FIBER PATCH PANEL, SC CONNECTORS

APPROVED BY:
Marwan Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

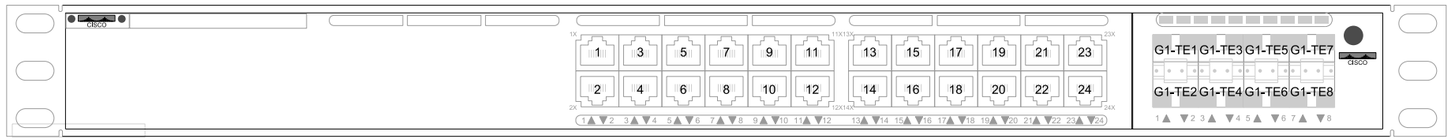
REVISIONS	
DATE	DESCRIPTION
03-01-2024	MODIFIED DRAWING. MODIFIED NOTE 1.
	MODIFIED NOTE 2.
03-01-2022	CHANGED TO 12 FIBER LATERAL.
03-01-2021	UPDATED ETHERNET SWITCH AND
	PANELS.

Illinois Tollway

FIBER OPTIC SPLICING DETAILS

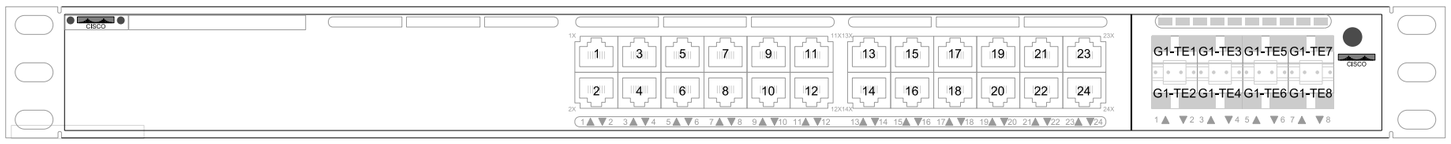
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PROPOSED NETWORK SWITCH PORT ASSIGNMENT SCHEMATIC



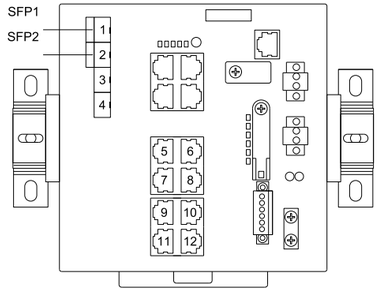
CISCO ETHERNET SWITCH
10/100/1000 ETHERNET AND 10G SFP PORT ARRANGEMENT

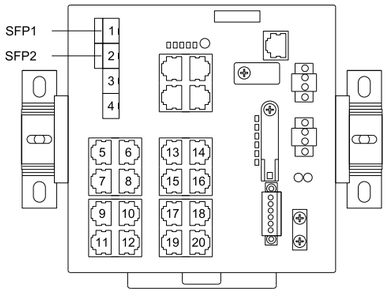
PORT NUMBER	PORT ASSIGNMENT	PORT NUMBER	PORT ASSIGNMENT	PORT NUMBER	PORT ASSIGNMENT	PORT NUMBER	PORT ASSIGNMENT
TENGIGABITETHERNET1/1/1	PRIMARY N/E LAYER 3 UPLINK	GI1/0/1	TECH ACCESS	GI1/0/9	RESERVED - IT DEVICE - TBD	GI1/0/17	OPEN
TENGIGABITETHERNET1/1/2	SECONDARY N/E LAYER 2 UPLINK	GI1/0/2	RESERVED - IT DEVICE - TBD	GI1/0/10	RESERVED - IT DEVICE - TBD	GI1/0/18	OPEN
TENGIGABITETHERNET1/1/3	N/E LAYER 2 - CAMERA AND VDS	GI1/0/3	RESERVED - IT DEVICE - TBD	GI1/0/11	OPEN	GI1/0/19	OPEN
TENGIGABITETHERNET1/1/4	N/E LAYER 2 - ATM/DMS	GI1/0/4	RESERVED - IT DEVICE - TBD	GI1/0/12	OPEN	GI1/0/20	OPEN
TENGIGABITETHERNET1/1/5	N/E LAYER 2 - VWIM	GI1/0/5	RESERVED - IT DEVICE - TBD	GI1/0/13	OPEN	GI1/0/21	OPEN
TENGIGABITETHERNET1/1/6	FUTURE/TBD	GI1/0/6	RESERVED - IT DEVICE - TBD	GI1/0/14	OPEN	GI1/0/22	OPEN
TENGIGABITETHERNET1/1/7	FUTURE/TBD	GI1/0/7	RESERVED - IT DEVICE - TBD	GI1/0/15	OPEN	GI1/0/23	OPEN
TENGIGABITETHERNET1/1/8	SECONDARY N/E TO S/W LAYER 3 UPLINK	GI1/0/8	RESERVED - IT DEVICE - TBD	GI1/0/16	OPEN	GI1/0/24	OPEN



CISCO EXPANSION SWITCH
10/100/1000 ETHERNET AND 10G SFP PORT ARRANGEMENT

PORT NUMBER	PORT ASSIGNMENT	PORT NUMBER	PORT ASSIGNMENT	PORT NUMBER	PORT ASSIGNMENT	PORT NUMBER	PORT ASSIGNMENT
TENGIGABITETHERNET1/1/1	PRIMARY S/W LAYER 3 UPLINK						
TENGIGABITETHERNET1/1/2	SECONDARY S/W LAYER 2 UPLINK	GI1/0/1	TECH ACCESS	GI1/0/9	RESERVED - ITS DEVICE - TBD	GI1/0/17	OPEN
TENGIGABITETHERNET1/1/3	S/W LAYER 2 - CAMERA AND VDS	GI1/0/2	RESERVED - ITS DEVICE - TBD	GI1/0/10	RESERVED - ITS DEVICE - TBD	GI1/0/18	OPEN
TENGIGABITETHERNET1/1/4	S/W LAYER 2 - ATM/DMS	GI1/0/3	RESERVED - ITS DEVICE - TBD	GI1/0/11	OPEN	GI1/0/19	OPEN
TENGIGABITETHERNET1/1/5	S/W LAYER 2 - VWIM	GI1/0/4	RESERVED - ITS DEVICE - TBD	GI1/0/12	OPEN	GI1/0/20	OPEN
TENGIGABITETHERNET1/1/6	FUTURE/TBD	GI1/0/5	RESERVED - ITS DEVICE - TBD	GI1/0/13	OPEN	GI1/0/21	OPEN
TENGIGABITETHERNET1/1/7	FUTURE/TBD	GI1/0/6	RESERVED - ITS DEVICE - TBD	GI1/0/14	OPEN	GI1/0/22	OPEN
TENGIGABITETHERNET1/1/8	SECONDARY S/W TO N/E LAYER 3 UPLINK	GI1/0/7	RESERVED - ITS DEVICE - TBD	GI1/0/15	OPEN	GI1/0/23	OPEN
		GI1/0/8	RESERVED - ITS DEVICE - TBD	GI1/0/16	OPEN	GI1/0/24	OPEN





CISCO ETHERNET SWITCH
10/100/1000 SFP PORT ARRANGEMENT

PORT NUMBER	12 PORT SWITCH (CCTV/VDS/DMS) PORT ASSIGNMENT	12 PORT SWITCH (VWIM) PORT ASSIGNMENT	20 PORT SWITCH (CCTV/VDS/DMS) (SEE NOTE 3) PORT ASSIGNMENT	20 PORT SWITCH (FULL ATM/GANTRY) PORT ASSIGNMENT
GI1/1	UPLINK/DOWNLINK	UPLINK/DOWNLINK	UPLINK/DOWNLINK	UPLINK/DOWNLINK
GI1/2	UPLINK/DOWNLINK	UPLINK/DOWNLINK	UPLINK/DOWNLINK	UPLINK/DOWNLINK
GI1/3	RESERVED	RESERVED	RESERVED	RESERVED
GI1/4	RESERVED	RESERVED	RESERVED	RESERVED
GI1/5	TECH ACCESS	VWIM CONTROLLER	TECH ACCESS	TECH ACCESS
GI1/6	CAMERA #1	VWIM VIRTUAL WEB SERVER	MODEM (IF INSTALLED)	WEST/SOUTH - ATM LCS CONTROLLER #1
GI1/7	CAMERA #2	CAMERA #1	DMS	WEST/SOUTH - ATM LCS CONTROLLER #2
GI1/8	SENSYS AP	CAMERA #2	VWIM	WEST/SOUTH - ATM LCS CONTROLLER #3
GI1/9	DMS CONTROLLER	IP RELAY	RESERVED	WEST/SOUTH - ATM LCS CONTROLLER #4
GI1/10	MVDS #1	UPS	RESERVED	WEST/SOUTH - ATM LCS CONTROLLER #5
GI1/11	MVDS #2/UPS	TECH ACCESS	UPS	WEST/SOUTH - ATM LCS CONTROLLER #6
GI1/12	IP RELAY	TECH ACCESS	IP RELAY	WEST/SOUTH - ATM LCS CONTROLLER SHOULDER
GI1/13	N/A	N/A	CAMERA #1	IP RELAY
GI1/14	N/A	N/A	CAMERA #2	EAST/NORTH - ATM LCS CONTROLLER #1
GI1/15	N/A	N/A	RESERVED	EAST/NORTH - ATM LCS CONTROLLER #2
GI1/16	N/A	N/A	RESERVED	EAST/NORTH - ATM LCS CONTROLLER #3
GI1/17	N/A	N/A	MVDS #1	EAST/NORTH - ATM LCS CONTROLLER #4
GI1/18	N/A	N/A	MVDS #2	EAST/NORTH - ATM LCS CONTROLLER #5
GI1/19	N/A	N/A	MVDS #3	EAST/NORTH - ATM LCS CONTROLLER #6
GI1/20	N/A	N/A	SENSYS AP	EAST/NORTH - ATM LCS CONTROLLER SHOULDER

NOTES:

1. SEE SHEET 1 OF 2 FOR NOTES.
2. ALL NETWORK SWITCH FIBER CONNECTIONS SHOWN ON THIS SHEET SHALL BE PERFORMED BY THE TOLLWAY MAINTENANCE TEAM, IN COORDINATION WITH THE ENGINEER.
3. PORT ASSIGNMENT INCLUDED FOR REFERENCE FOR EXISTING ITS SITES WITH 20 PORT SWITCH.
4. THE CONTRACTOR SHALL MAKE LOCAL/COPPER CAT-6 CONNECTIONS PER THE PORT ASSIGNMENTS SHOWN ON THIS SHEET, OR AS DIRECTED BY THE ENGINEER. THE ENGINEER SHALL VERIFY CORRECT PORT CONNECTIONS HAVE BEEN MADE DURING SITE TESTING.

APPROVED BY:
Manar Nashif
CHIEF ENGINEERING OFFICER

DATE:
03/01/2024

Illinois Tollway

FIBER OPTIC SPLICING DETAILS

VERSION:	STANDARD:	SHEET:
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