

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**

**February 23, 2023**

**CONSTRUCTION BULLETIN No. 23-01**

**SUBJECT: Standard G Noise Abatement Wall Modifications**

The Illinois Tollway Construction Bulletin No. 23-01 modifies the extent of the smooth finish at the end of the bottom panel on the back side of the ground mounted noise abatement wall (NAW) within Standard G. Also included with this bulletin is updated structural detailing that will be released with the 2023 Illinois Tollway standards updates.

Construction Bulletin No. 23-01 updates the Standard G sheets to the following:

**G12-04 STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS:** Add spacing of steel plates and minimum number required to Illinois Tollway Constant Slope Barrier - Details, update miscellaneous steel quantities. Revised Panel Connection to Post Detail from 1"x3.5"x0.25" bent plate to 3/4" x 3 1/2" x 1/4" plate and typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs.

**G13-04 CENTRAL TRI-STATE STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS:** Revised dimension from top of post to top bent plate in Illinois Tollway Constant Slope Barrier - Details from 6" to 8", update miscellaneous steel quantities. Revised Panel Connection to Post Detail from 1"x3.5"x0.25" bent plate to 3/4" x 3 1/2" x 1/4" plate and typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs.

**G14-04 CENTRAL TRI-STATE BUMP-OUT MOUNTED NOISE ABATEMENT WALL DETAILS:** Revised dimension from top of post to top bent plate on Side View from 6" to 8" and reduced bent plates in Base Plate and Post Detail 1 & 2 to accommodate panel installation. Revised typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs and added noise blocking assembly detail.

**G15-04 NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS:** Revised clearance to #6 bars to be centered in the panel. Increase smooth finish from 2" to 1'-2" on back face of unbalanced soil load panel. Revised typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs and dimension gap in 90° Turn Detail at 1/2" minimum.

**G16-04 CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS:** Remove the 1'-0" minimum dimension to ground line and add 6" minimum dimension from proposed grade to bottom of wall. Increase thickness of bent plate for cohesionless soils to 1/2". Increase smooth finish from 3 5/8" to 1'-2" on back face of panel. Revised typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs and dimension gap in 90° Turn Detail at 1/2" minimum.

This Construction Bulletin is applicable to all contracts with noise abatement walls shop drawings not yet approved or as directed by the Engineer to use this bulletin.

*Attached document:*

Standard G with modified table designated.

  
Manar Nashif (Feb 23, 2023 11:14 CST)

Manar Nashif, P.E.  
Chief Engineering Officer

**02/23/2023**

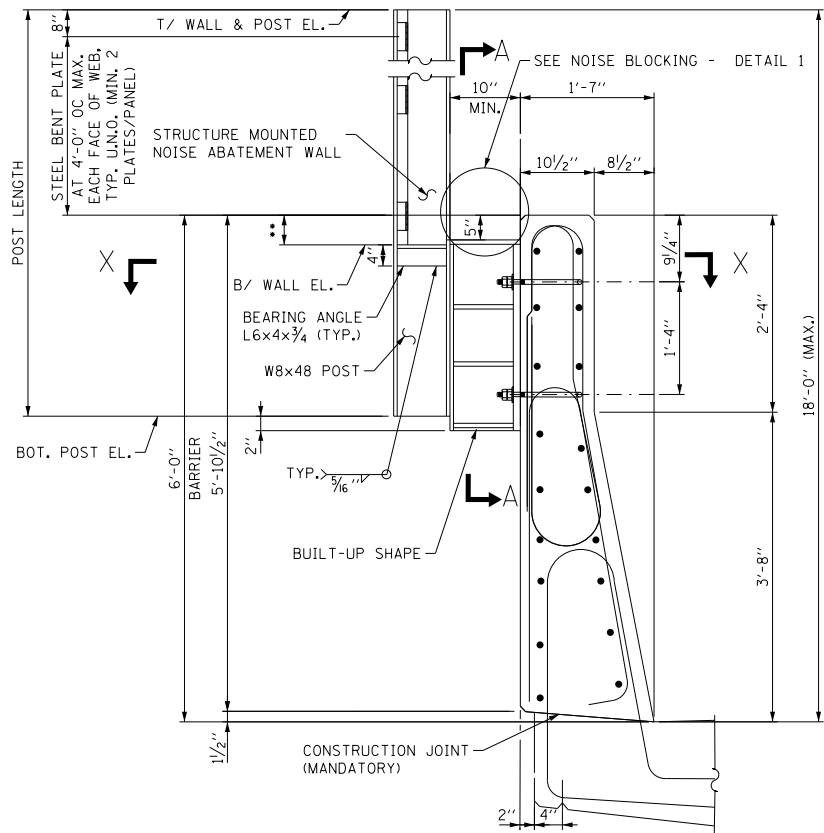
Date

Illinois Tollway Standard Drawing Revisions

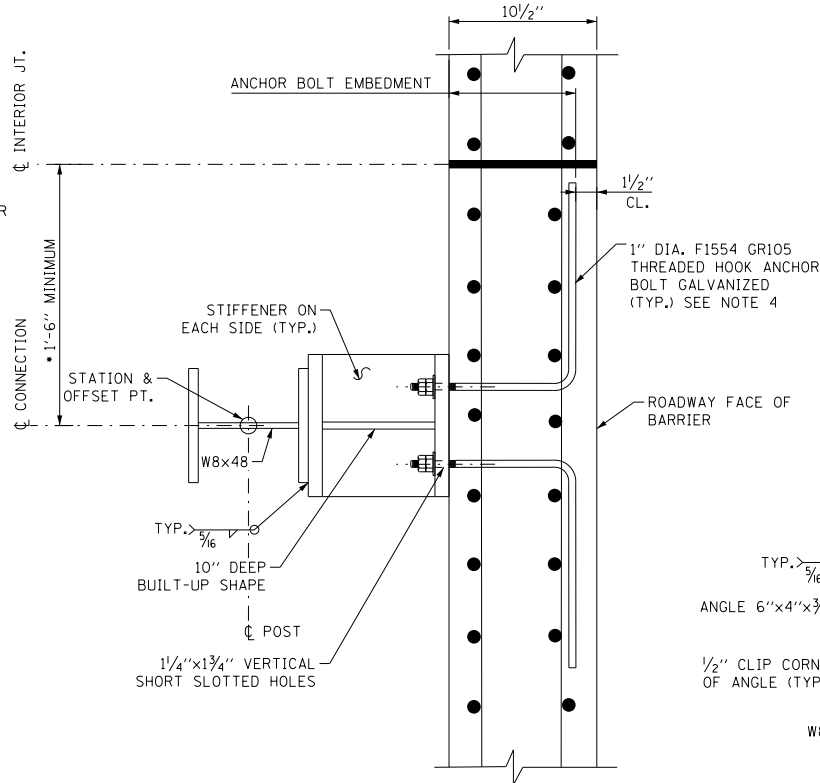
Section G	Structural		
	Standard	Modification Summary	Effective: 02-23-2023
	G12-04	STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS	
	Sheet 1	Add spacing of steel plates and minimum number required to Illinois Tollway Constant Slope Barrier - Details, update miscellaneous steel quantities.	
	Sheet 2	Revised Panel Connection to Post Detail from 1"x3.5"x0.25" bent plate to 3/4"x3.5"x0.25" plate and typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs.	
	G13-04	CENTRAL TRI-STATE STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS	
	Sheet 1	Revised dimension from top of post to top bent plate in Illinois Tollway Constant Slope Barrier - Details from 6" to 8", update miscellaneous steel quantities.	
	Sheet 2	Revised Panel Connection to Post Detail from 1"x3.5"x0.25" bent plate to 3/4"x3.5"x0.25" plate and typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs.	
	G14-04	CENTRAL TRI-STATE BUMP-OUT MOUNTED NOISE ABATEMENT WALL DETAILS	
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	Sheet 2	Revised typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs and added noise blocking assembly detail.	
	G15-04	NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS	
	Sheet 2	Revised clearance to #6 bars to be centered in the panel.	
		Increase smooth finish from 2" to 1'-2" on back face of unbalanced soil load panel.	
	Sheet 3	Revised typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs and dimension gap in 90° Turn Detail at 1/2" minimum.	
	G16-04	CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS	
	Sheet 1	Remove the 1'-0" minimum dimension to ground line and add 6" minimum dimension from proposed grade to bottom of wall.	
		Increase thickness of bent plate for cohesionless soils to 1/2".	
	Sheet 2	Increase smooth finish from 3⅝" to 1'-2" on back face of panel.	
	Sheet 3	Revised typical lifting insert detail to #4 under 8,000lbs and #6 under 16,000lbs and dimension gap in 90° Turn Detail at 1/2" minimum.	

New Sheet

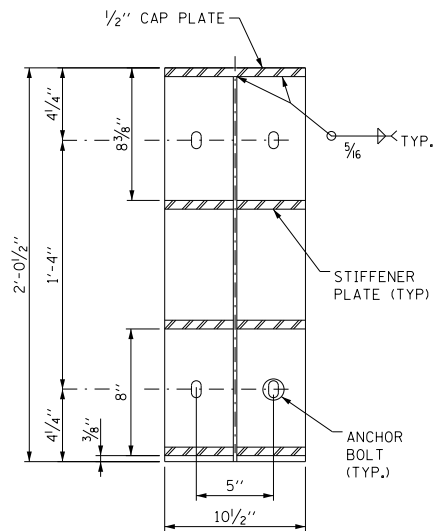
Retired Standard



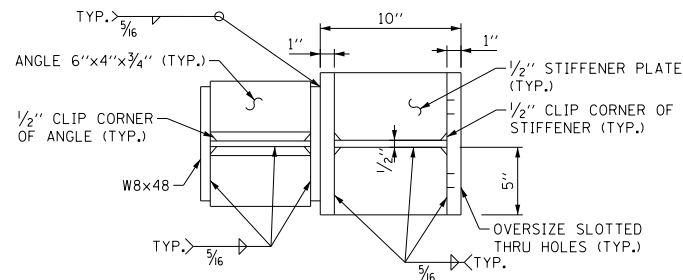
• BEARING SEAT IS 6" MAX. BELOW TOP OF BARRIER OR 3" MAX. ABOVE TOP OF BARRIER.



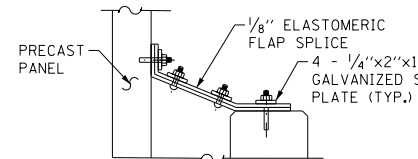
• USE 4'-10" MINIMUM FROM FULL HEIGHT JOINTS ON BRIDGES, OTHERWISE USE 1'-10" MINIMUM FOR END POSTS AND POSTS LOCATED ON APPROACH SLABS OR MOMENT SLABS.



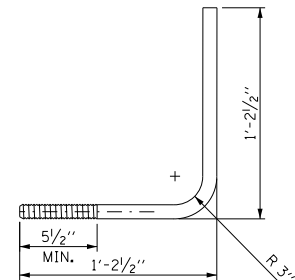
SECTION A-A



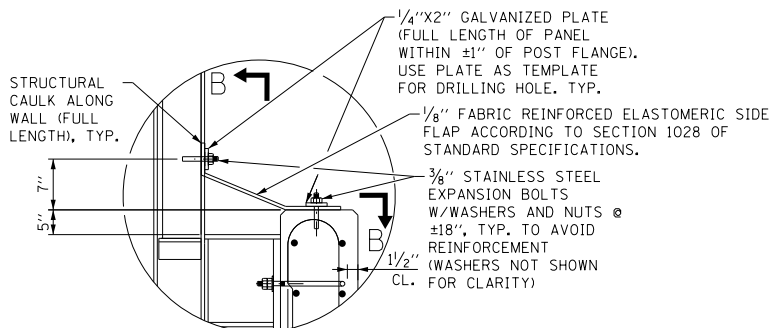
BUILT UP SHAPE



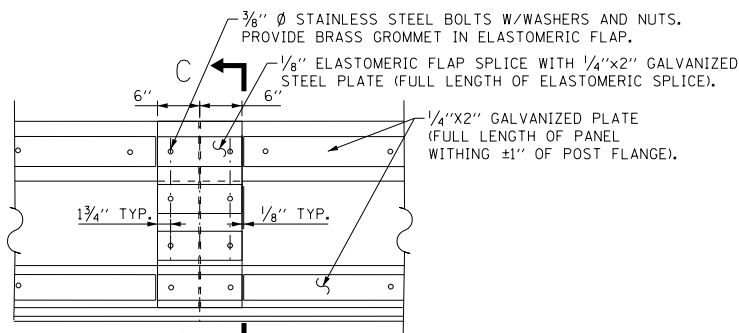
SECTION C-C



BENT ANCHOR BOLT



DETAIL 1  
NOISE BLOCKING ASSEMBLY

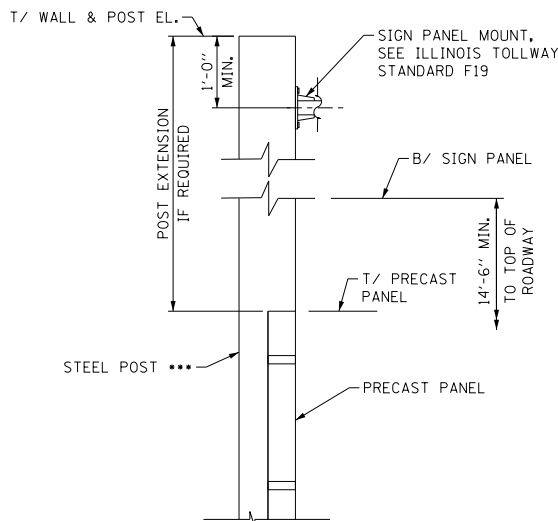


VIEW B-B  
AT ASSEMBLY SPLICE

## ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER - DETAILS

NOTES:

- STEEL POST MAXIMUM SPACING IS 11'-8".
- SLIPFORMING OF THE BARRIER IS NOT PERMITTED.
- REFER TO ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL FOR SHOWN DECK REINFORCEMENT, JOINT DETAILS AND OTHER MISCELLANEOUS DETAILS NOT DETAILED IN THIS STANDARD.
- 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.
- 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'-3 1/2" POST WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19

## GENERAL NOTES

- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
- REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- 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.
- 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	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.

SHEET 1 OF 2



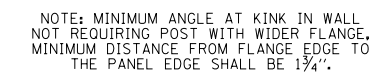
STRUCTURE MOUNTED  
NOISE ABATEMENT WALL  
DETAILS

STANDARD G12-04

DATE	REVISIONS
2-23-2023	ADD STEEL PL. SPA. & MIN. NUMBER, REV. BENT PL., STEEL QUANTITIES AND LIFTING INSERT NOTES
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT CHANGE BENT PLATE TO 1" AND CLARIFY NOISE BLOCKING PL. LENGTH



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".



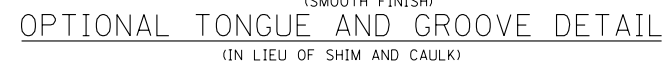
MIN ANGLE BETWEEN  
PANELS AT TYP POST

- 
- Diagram illustrating the reinforcement detail for a sloped bar. The bar is labeled "#4 GALVANIZED BAR WITH BEARING ANGLE (EACH END)". The bar is positioned at a 25°0'0" angle. The horizontal distance from the bar's vertical projection to the panel edge is 24" MIN. The vertical distance from the bar's horizontal projection to the panel edge is 1 1/2" CLR. The bar is shown within a panel of 24" MIN. width. A note indicates: "(2) ADDITIONAL #4 (E) BARS REQUIRED WITHIN BOTTOM 6" OF PANEL".

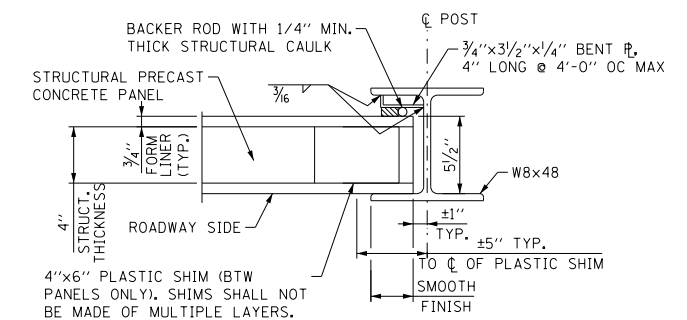
BOTTOM PANEL BEARING DETAIL



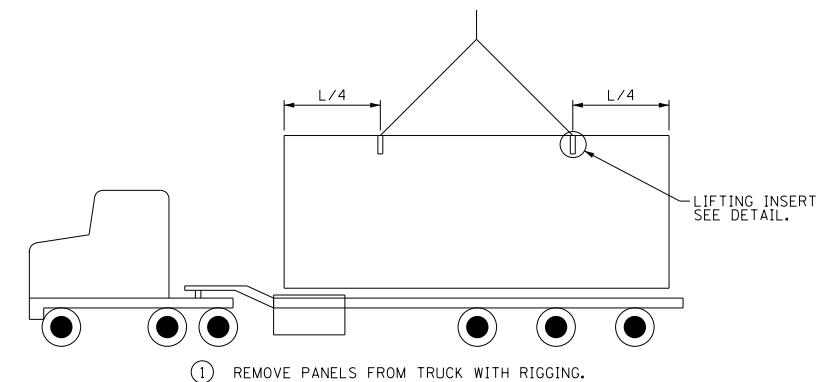
•• ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED



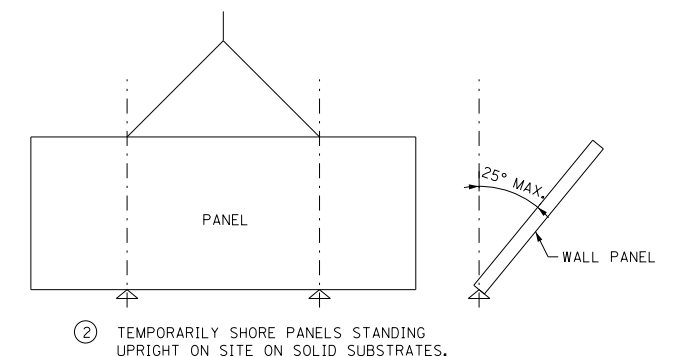
## BENT PLATE DETAILS



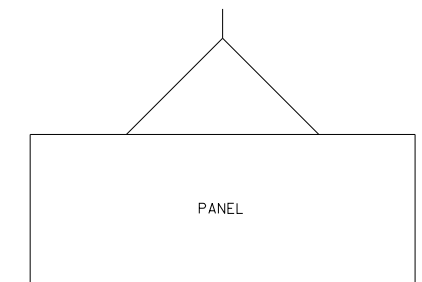
### PANEL CONNECTION TO POST DETAIL



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

•• MAXIMUM DIMENSION OF BEARING ANGLE BELOW BARRIER IS 6" AND 3" ABOVE THE TOP OF THE BARRIER.

SHEET 2 OF 2



# STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

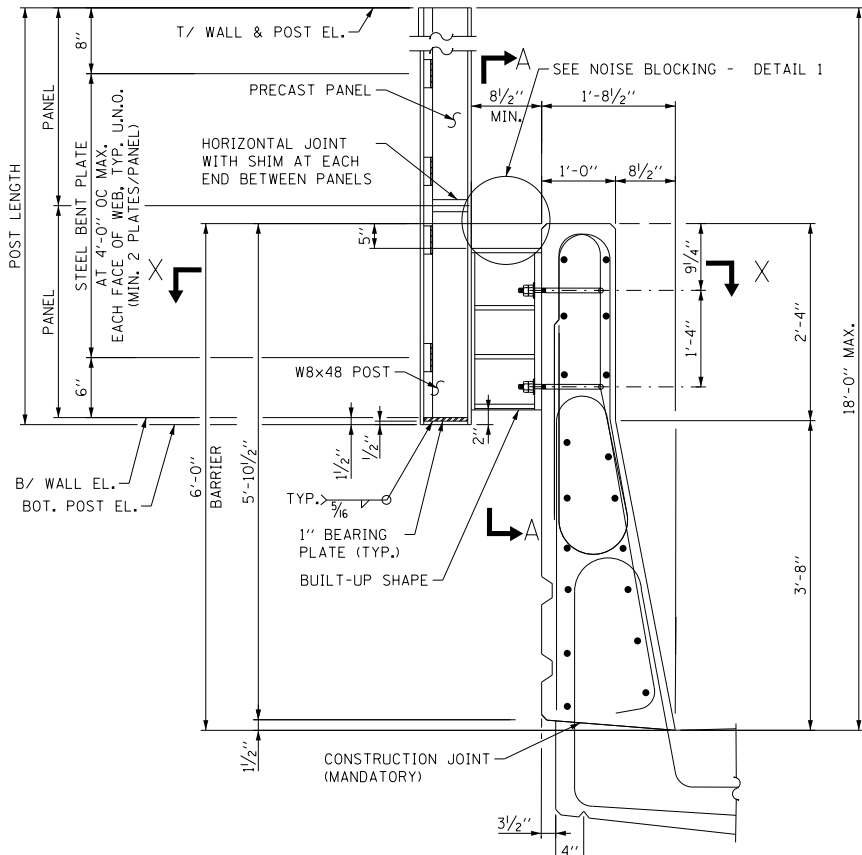
STANDARD G12-04

APPROVED BY:

DATE: \_\_\_\_\_

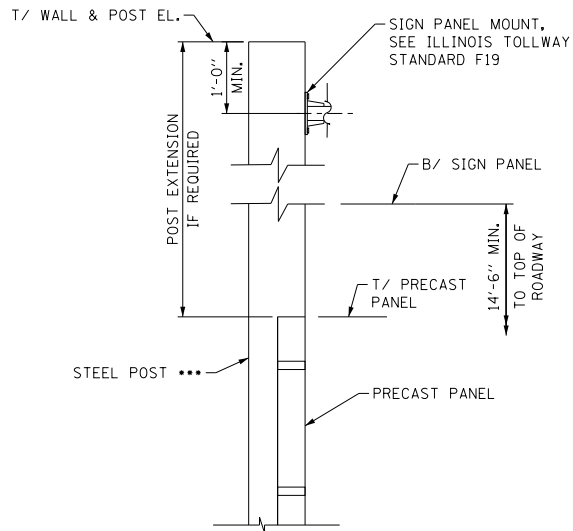
*Manan Nashif*  
CHIEF ENGINEERING OFFICER

02/23/2023



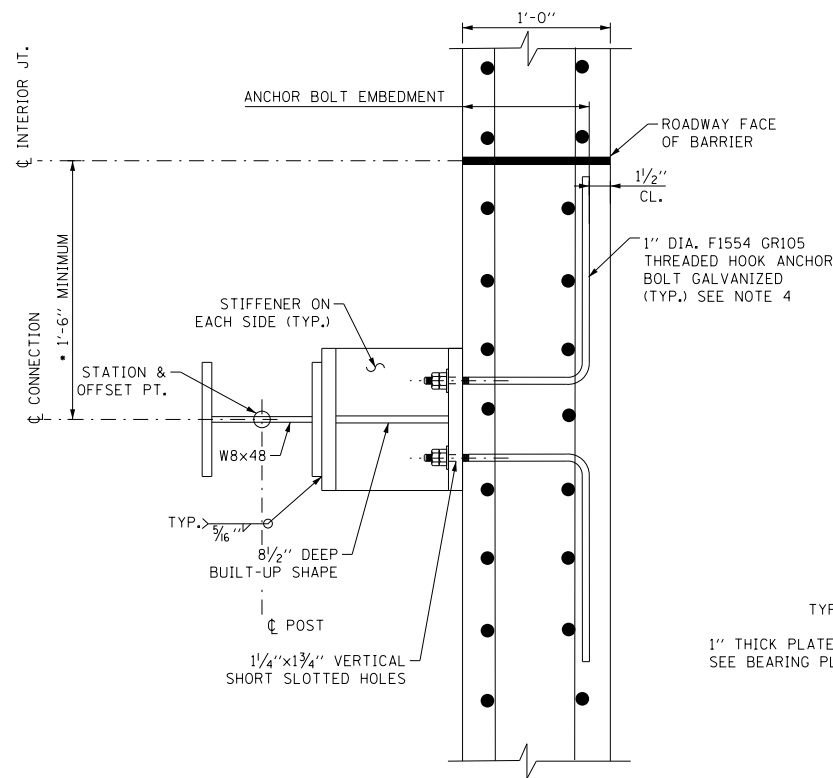
## ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER - DETAILS

- 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.



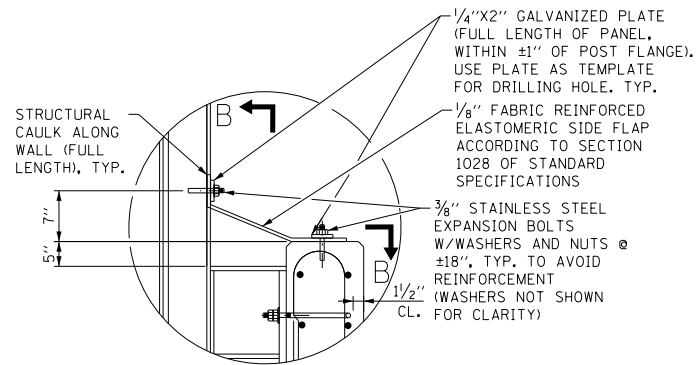
### SIGN PANEL MOUNT POST EXTENSION DETAIL

...STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A 17'-7 1/2" POST WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19

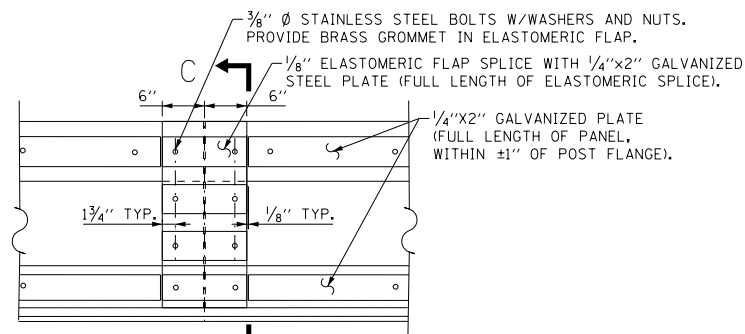


### SECTION X-X

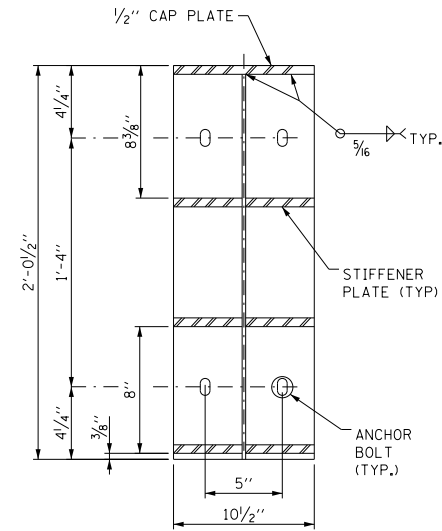
- USE 4'-10" MINIMUM FROM FULL HEIGHT JOINTS ON BRIDGES, OTHERWISE USE 1'-10" MINIMUM FOR END POSTS AND POSTS LOCATED ON APPROACH SLABS OR MOMENT SLABS.



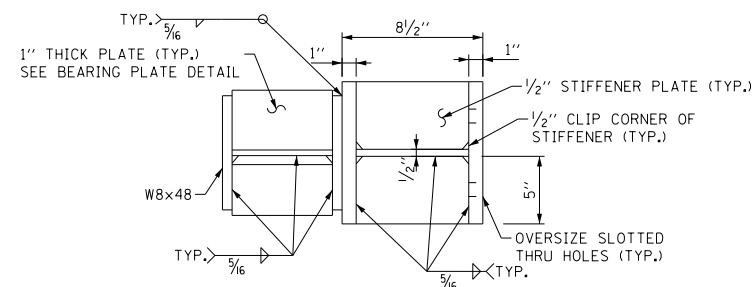
### DETAIL 1 NOISE BLOCKING ASSEMBLY



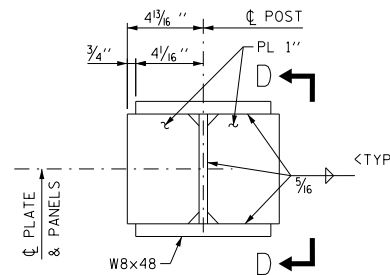
### VIEW B-B AT ASSEMBLY SPLICE



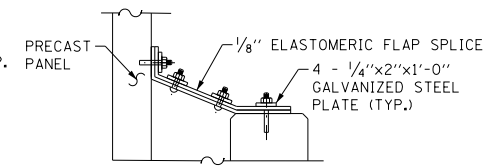
### SECTION A-A



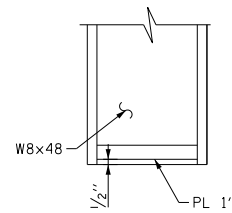
### BUILT UP SHAPE



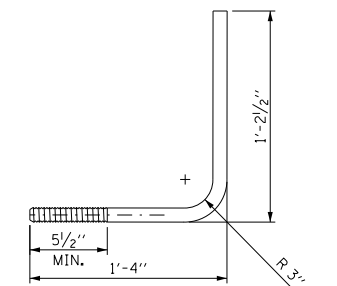
### BEARING PLATE DETAIL



### SECTION C-C



### VIEW D-D



### BENT ANCHOR BOLT

## GENERAL NOTES

- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
- REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
- REINFORCEMENT BARS DESIGNATED "E" SHALL BE EPOXY COATED.
- 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.
- 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)  
 $f_y$  = 60,000 PSI (REINFORCEMENT)

GRADE 50,  $F_y$  = 50,000 PSI, ASTM A709 (AASHTO M270) - STRUCTURAL STEEL POST  
GRADE 36,  $F_y$  = 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.

SHEET 1 OF 2



CENTRAL TRI-STATE  
STRUCTURE MOUNTED  
NOISE ABATEMENT WALL  
DETAILS

STANDARD G13-04

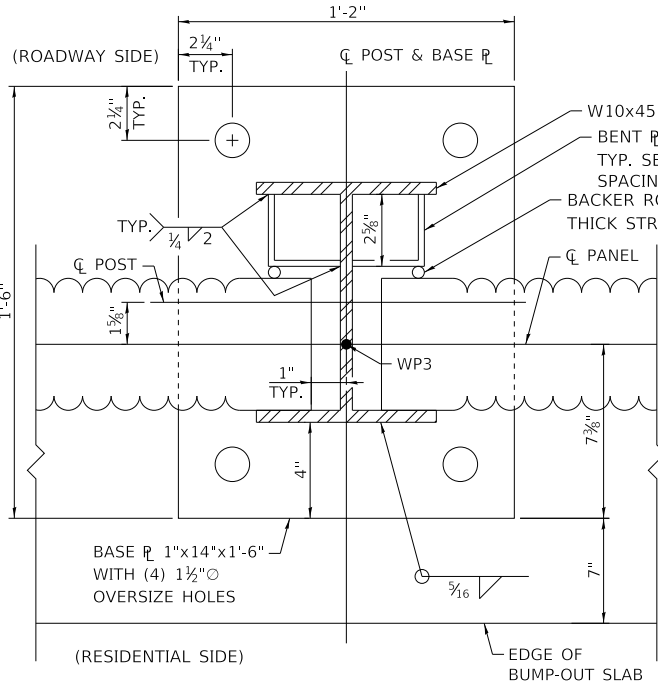
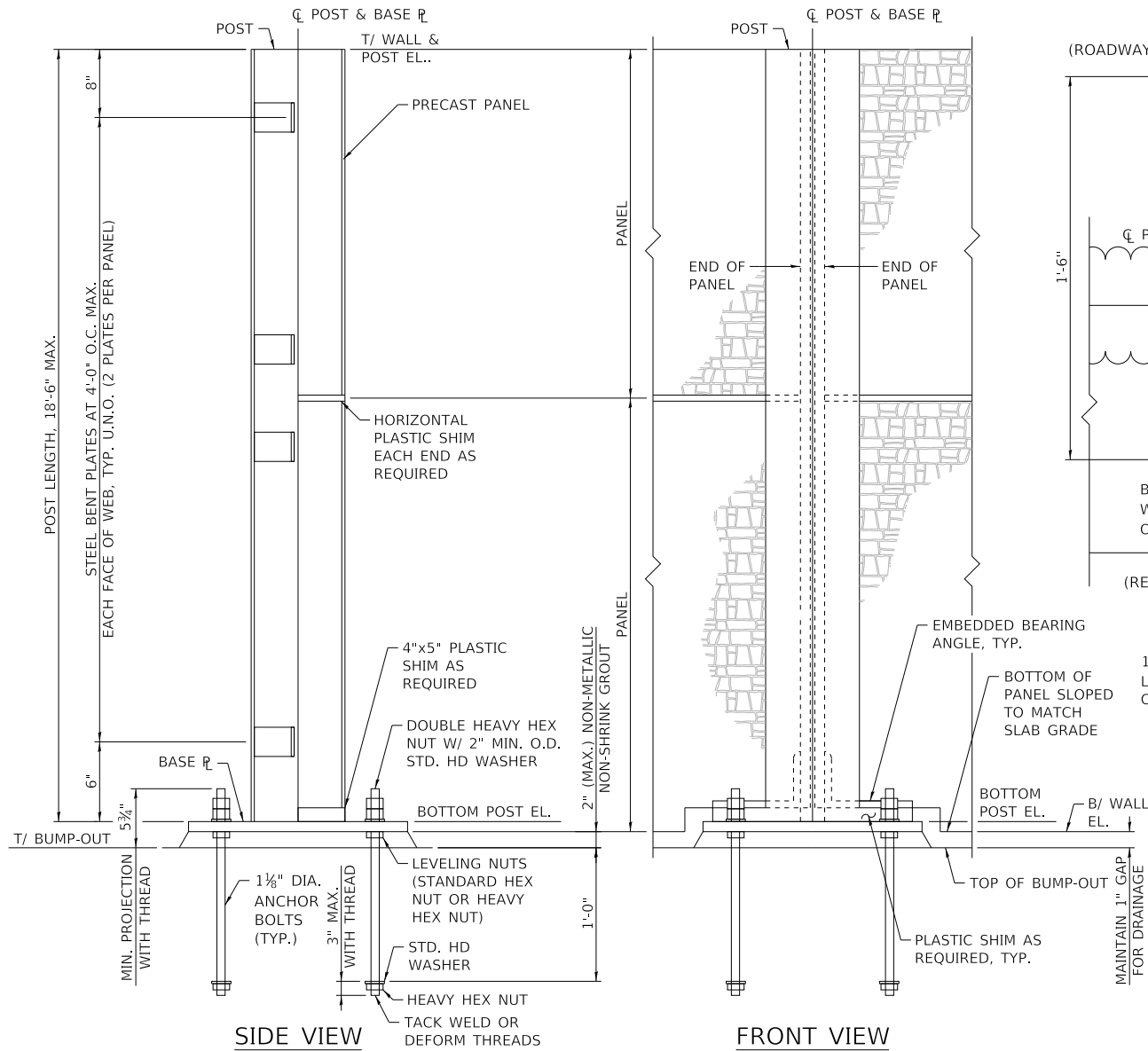
DATE	REVISIONS
2-23-2023	REV. DIM. TO BENT PL., BENT PL. SIZE, CONN. QUANTITIES & UPDATE LIFTING INSERT DETAIL NOTES
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT CHANGE BENT PLATE TO 1" AND CLARIFY NOISE BLOCKING PL. LENGTH

APPROVED BY:  
*Manar Nashif*  
CHIEF ENGINEERING OFFICER

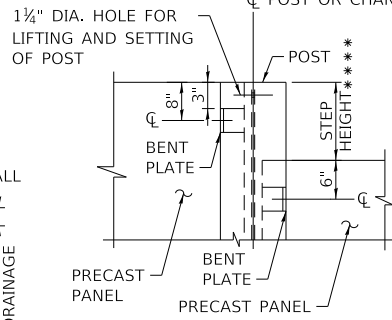
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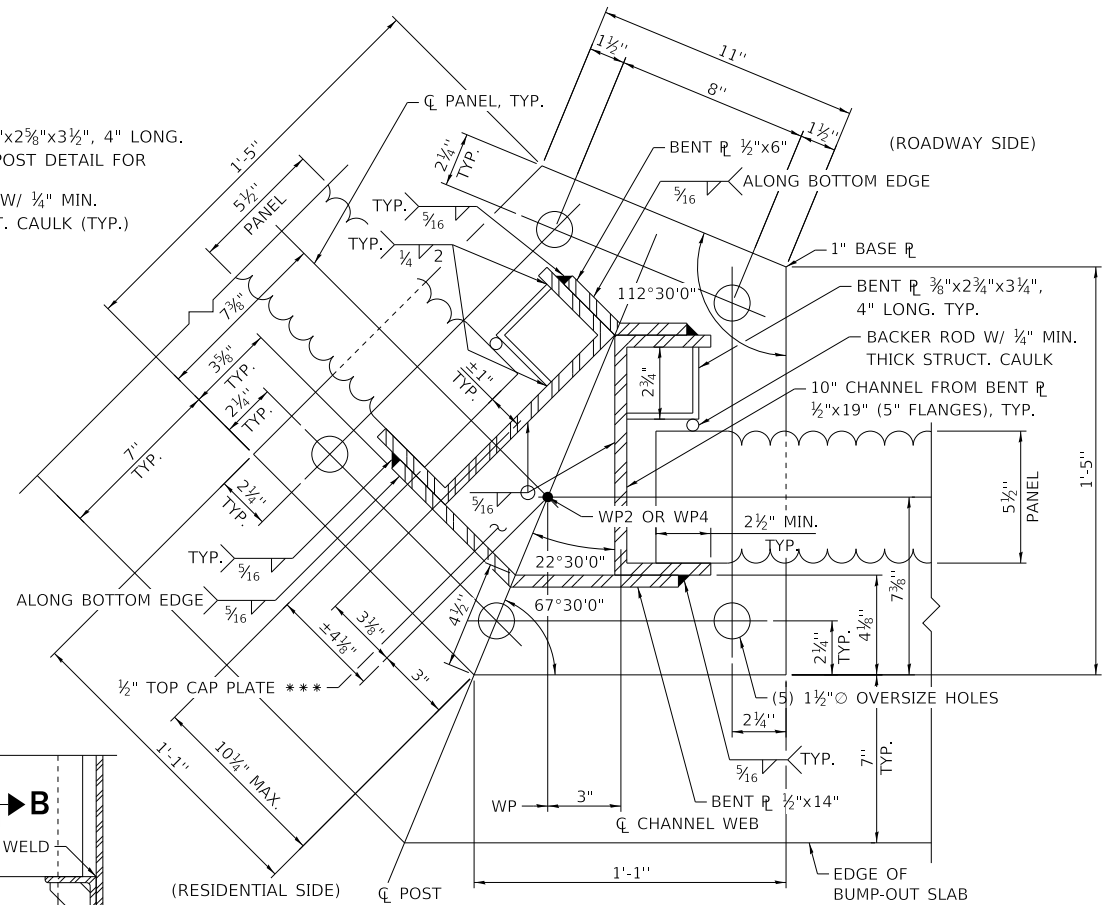
BASE PLATE AND POST DETAIL 1



STEP DETAIL

AT BUMP-OUT ONLY  
\*\*\*STEP IN 6" INCREMENTS UP TO 2'-0" IF NECESSARY.

DESIGN STRESSES

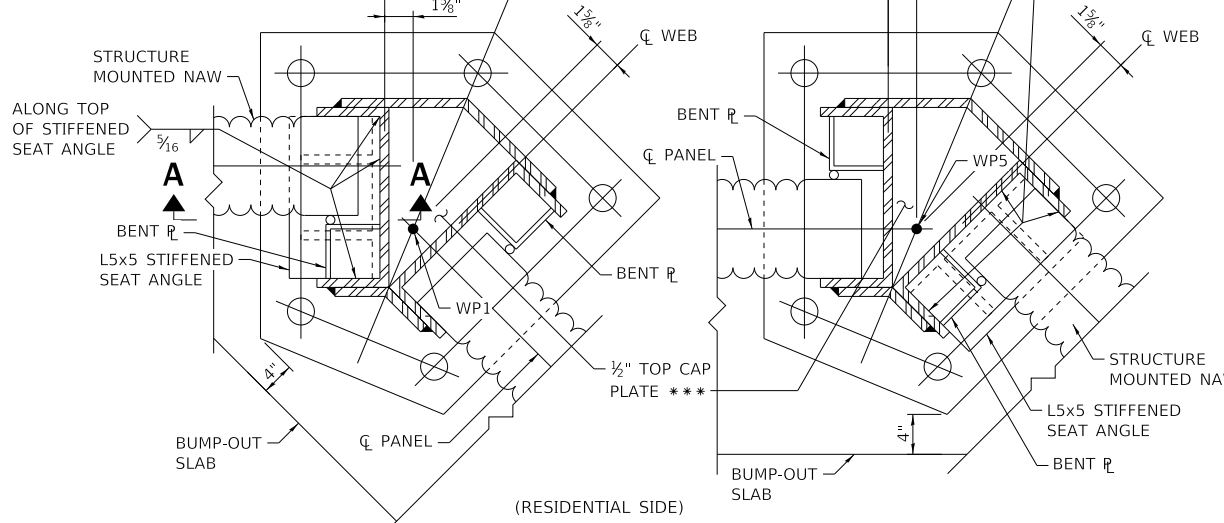


BASE PLATE AND POST DETAIL 2

\*\*\* TOP CAP PLATE (NOT SHOWN) WELDED ALL AROUND PERIMETER USING 1/4" FILLET WELD TO COMPLETELY SEAL POST INTERIOR. SEE DETAIL BELOW.

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.

SHEET 1 OF 2

GENERAL NOTES

- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. NO CHAMFER WILL BE ALLOWED AT HORIZONTAL JOINTS BETWEEN PANELS.
- REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
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- REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
- CONSTRUCTION CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
- 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.
- 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).
- STRUCTURAL CAULK - SIKADUR 51 NS FLEXIBLE EPOXY CONTROL -JOINT SEALER / ADHESIVE OR EQUIVALENT. CAULK SHALL BE APPLIED PER MANUFACTURER'S SPECIFICATION AND RECOMMENDATIONS.
- BACKER ROD: MILE HIGH FOAM PRODUCT SIZED PER BACKER ROD MANUFACTURING, INC OR EQUIVALENT.
- NON -STRUCTURAL CAULK SEALANT: SIKAFLEX 15 LM PER MANUFACTURER'S STANDARD OR EQUIVALENT.
- SHIMS: VERS-A-SHIM HIGH IMPACT PLASTIC SHIMS ASTM D792 & D695. SHIMS SHALL NOT BE MADE OF MULTIPLE LAYERS.
- GROUT SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1024.02 OF THE STANDARD SPECIFICATIONS. GROUT UNDER POSTS PRIOR TO INSTALLATION OF THE PANELS.
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ANY PROPOSED HOLES IN THE BUILT-UP POST FOR GALVANIZING AND/OR ERECTION.

DESIGN LOADS

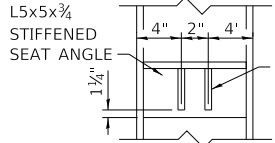
WIND LOAD = 50 PSF (STR. III)  
= 15 PSF (SERV I)

DEFLECTION:

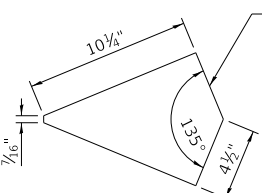
PANEL = L/180  
POST = H/360

DESIGN SPECIFICATIONS

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION DATED SEPTEMBER 2017.



SECTION B-B



TOP CAP PLATE

DATE	REVISIONS
2-23-2023	REV. DIM. TO BENT PL., REDUCE BENT PL. LEG, REV. LIFTING
	INSERT NOTES & ADD NOISE BLOCKING DETAIL
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT

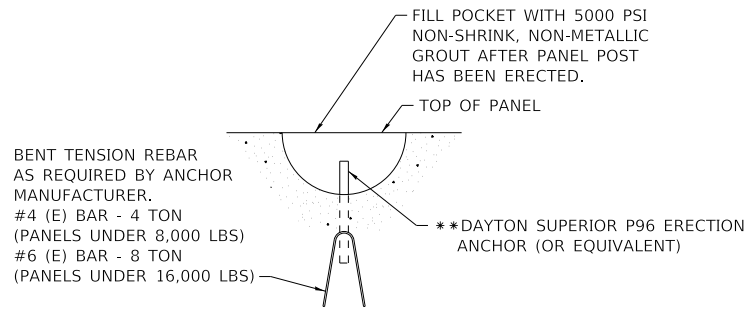


CENTRAL TRI-STATE  
BUMP-OUT MOUNTED  
NOISE ABATEMENT WALL  
DETAILS

STANDARD G14-04

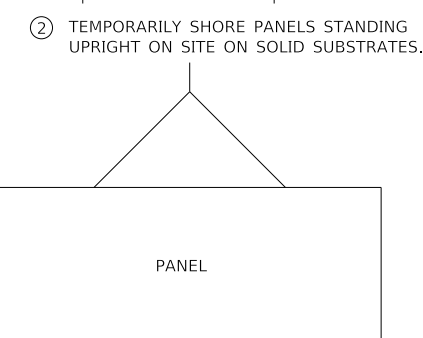
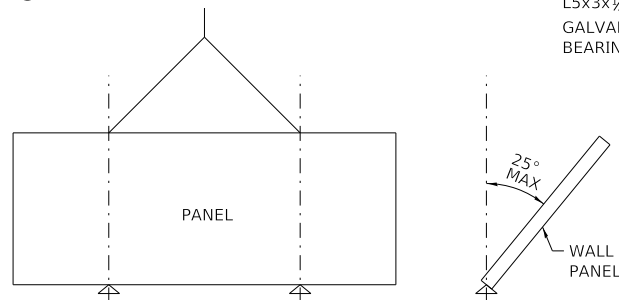
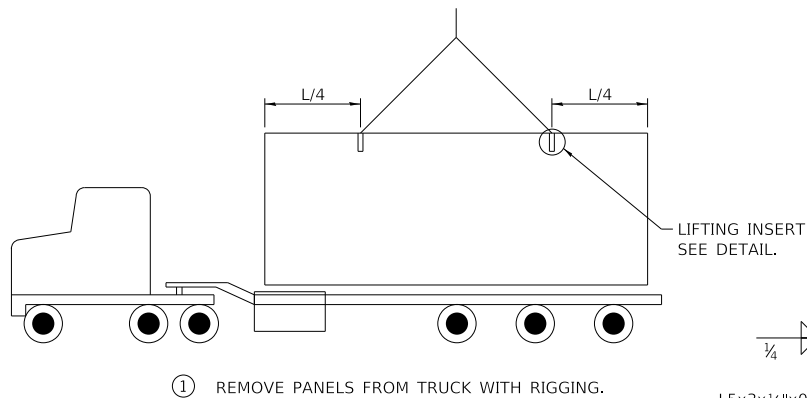
APPROVED BY:  
*Mamun Nashif*  
CHIEF ENGINEERING OFFICER

DATE:  
02/23/2023



### TYPICAL LIFTING INSERT DETAIL

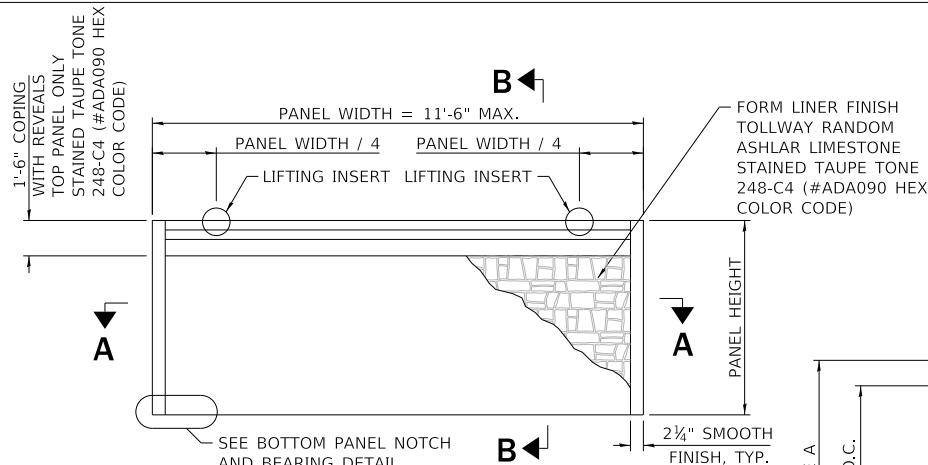
\*\*ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED



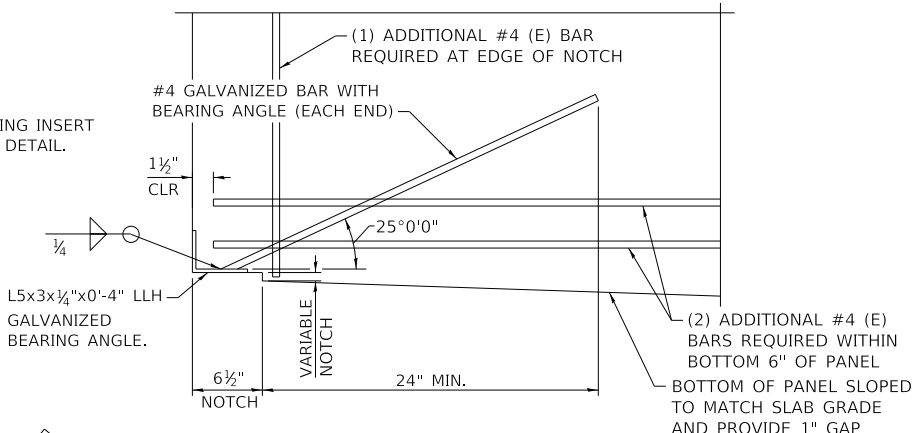
### SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

#### NOTES:

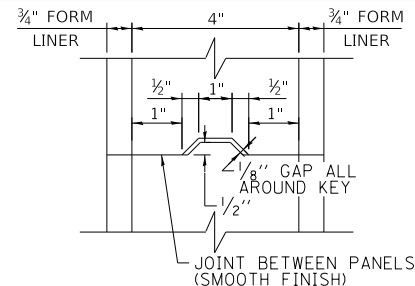
1. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
2. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.



### TYPICAL NOISE WALL PANEL DETAIL

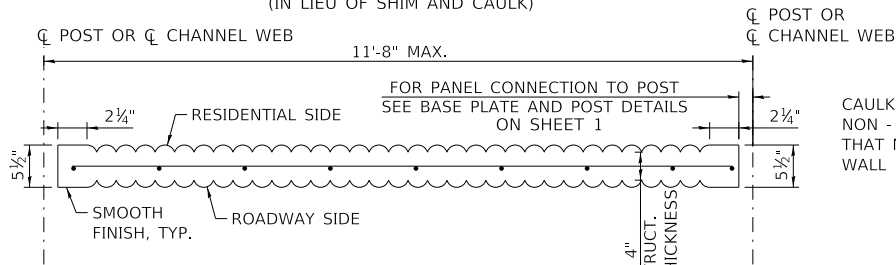


### BOTTOM PANEL NOTCH AND BEARING DETAIL



### OPTIONAL TONGUE AND GROOVE DETAIL

(IN LIEU OF SHIM AND CAULK)



### TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

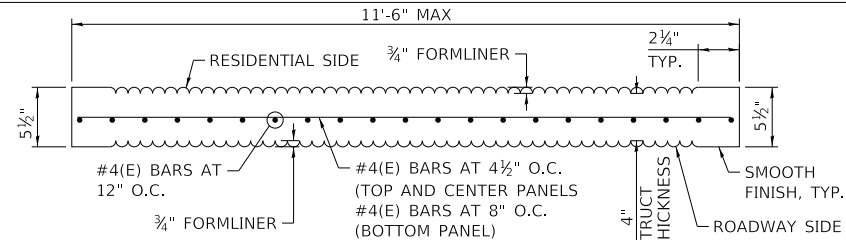
### MISCELLANEOUS STEEL QUANTITY

#### W POST

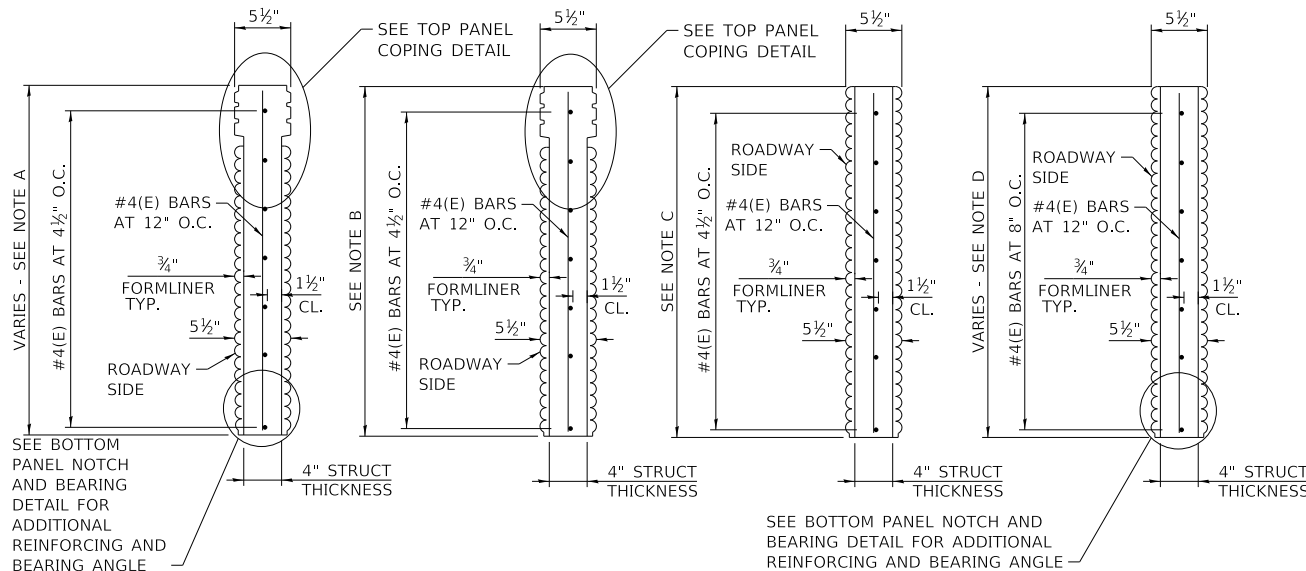
DESCRIPTION	WEIGHT
BASE PLATE	71 LBS.
BENT PLATE ALLOWANCE (16 PIECES)	44 LBS.
ANCHOR BOLT ASSEMBLY (4 EACH)	32 LBS.
TOTAL	147 LBS.

#### 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\"/>

#### NOTE B

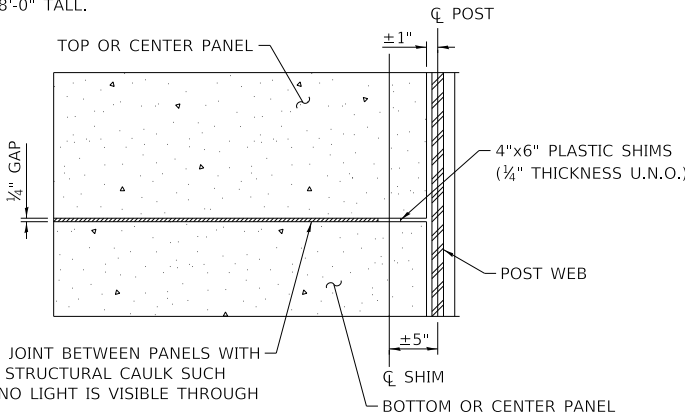
TO ACCOMMODATE VARYING HEIGHT NAW, TOP PANEL IS PERMITTED TO BE 4'-0\", 5'-0\", 6'-0\", 7'-0\" OR 8'-0\" TALL.

#### NOTE C

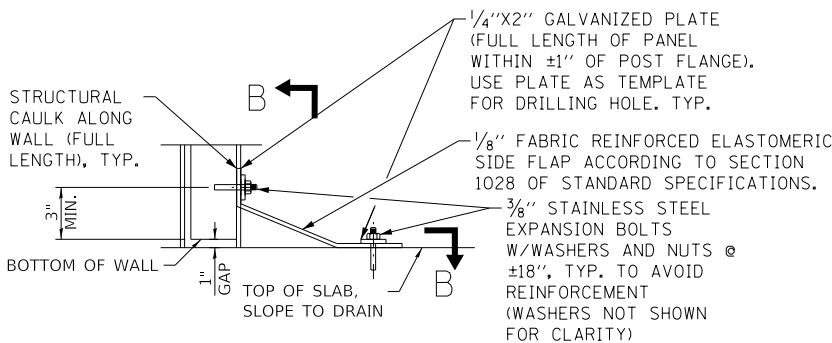
TO ACCOMMODATE VARYING HEIGHT NAW, CENTER PANEL IS PERMITTED TO BE 4'-0\" OR 4'-6\" TALL. CONTRACTOR MAY INCREASE THE STANDARD CENTER PANEL HEIGHTS, MAXIMUM 8FT, TO MINIMIZE THE NUMBER OF JOINTS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.

#### NOTE D

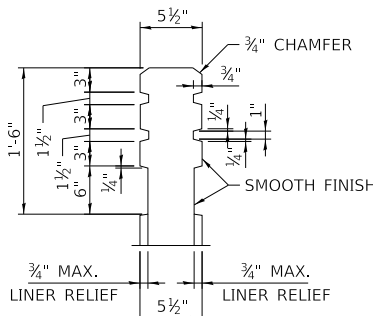
TO ACCOMMODATE VARYING SLAB GRADES, BOTTOM PANEL HEIGHT WILL VARY TO FOLLOW SLOPE ON BUMP-OUT SLAB AND TO MAINTAIN A 1\"/>



### HORIZONTAL JOINT DETAIL



### NOISE BLOCKING ASSEMBLY



### TOP PANEL COPING DETAIL

APPROVED BY: *Mamun Nashif* DATE: 02/23/2023  
CHIEF ENGINEERING OFFICER

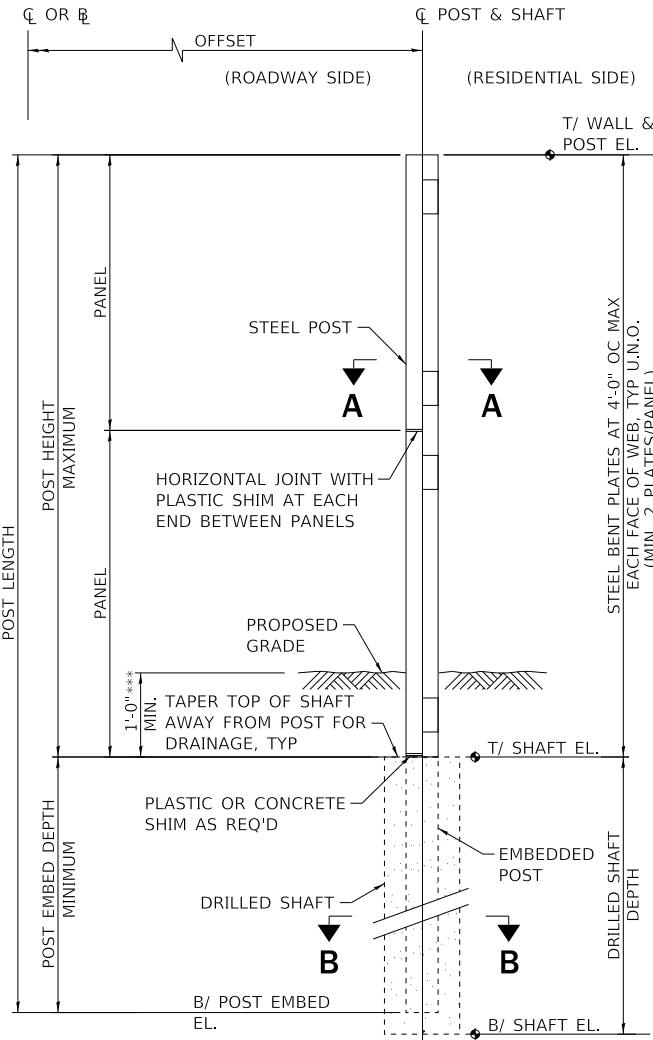
SHEET 2 OF 2



CENTRAL TRI-STATE  
BUMP-OUT MOUNTED  
NOISE ABATEMENT WALL  
DETAILS

STANDARD G14-04

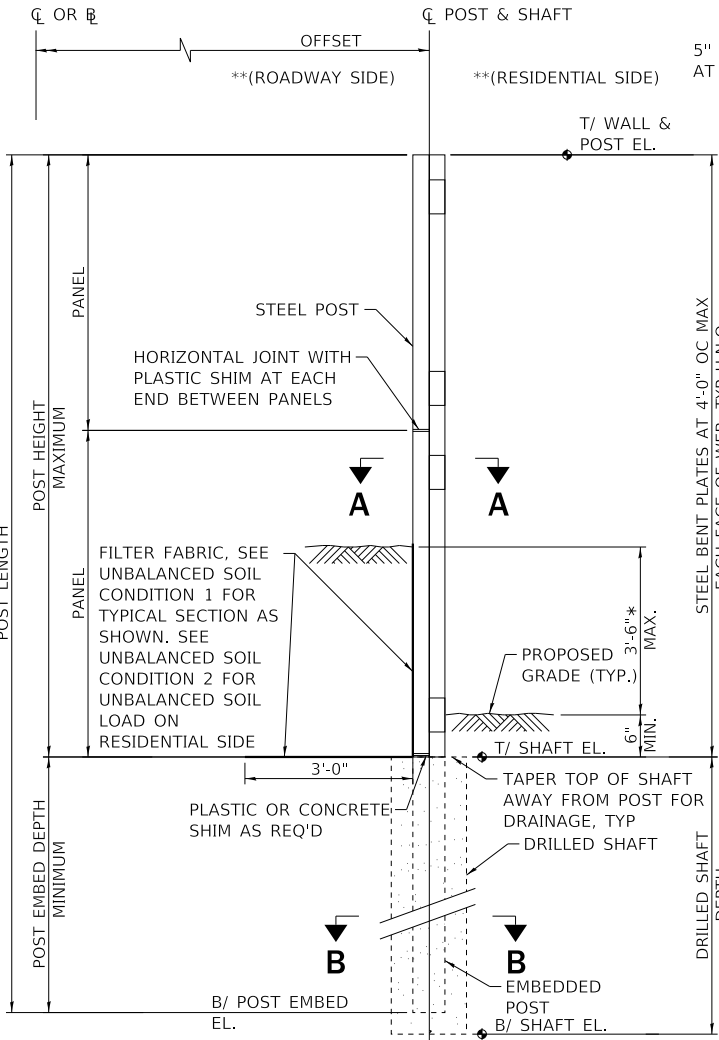




### TYPICAL CROSS SECTION

(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.

## POST & DRILLED SHAFT DESIGN FOR COHESIVE SOILS

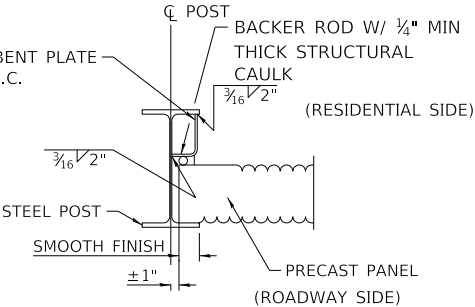
NAW TYPE	MAX POST HEIGHT	MIN POST EMBED DEPTH	MAX DRILLED SHAFT SPACING	DRILLED SHAFT DEPTH	STEEL POST SIZE	Y	BENT PLATE M x N1 x THICK.	N2	Z	DIA	A	B
NON-CRASHWORTHY GROUND MOUNTED I	15'-0"	10'-0"	20'-0"	12'-0"	W18X35	3'1 5/16"	7"x2 3/8"x3/8"	3 1/2"	5 5/8"	2'-6"	90°00'00"	180°00'00"
NON-CRASHWORTHY GROUND MOUNTED II	20'-0"	13'-0"	20'-0"	16'-0"	W21X50	5 3/8"	10"x2 3/4"x3/8"	3 3/8"	4 1/8"	2'-6"	86°01'13"	172°02'26"
NON-CRASHWORTHY GROUND MOUNTED III	25'-0"	12'-6"	20'-0"	15'-0"	W21X68	5 3/8"	10"x3 1/2"x3/8"	3 1/2"	6 5/8"	3'-0"	86°25'00"	172°50'00"
NON-CRASHWORTHY GROUND MOUNTED IV	28'-0"	13'-6"	20'-0"	15'-6"	W21X83	5 3/8"	10"x3 1/2"x3/8"	3 1/2"	9 1/2"	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

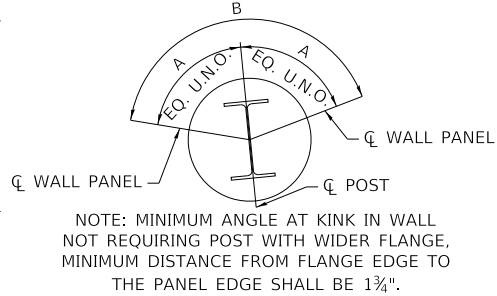
## POST & DRILLED SHAFT DESIGN FOR COHESIONLESS SOILS

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	5 3/8"	10"x2 3/4"x3/8"	3 1/8"	4 1/8"	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 1 3/16"	12 3/4"x2 1/8"x3/8"	3 3/8"	2 1 1/16"	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 1 3/16"	15 1/2"x4 3/8"x3/8"	4 3/8"	3 3/4"	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	9 5/8"	18 1/2"x4 3/8"x3/8"	4 5/8"	5 3/8"	3'-6"	85°33'22"	171°06'44"

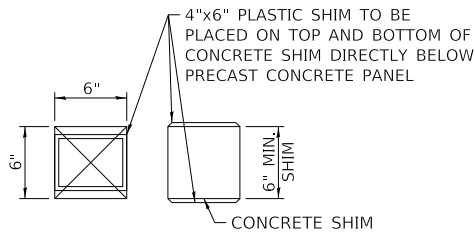
^^ USE W21x68 FOR NON-CRASHWORTHY GROUND MOUNTED I AND W24x76 FOR NON-CRASHWORTHY GROUND MOUNTED II WHEN SIGN PANEL MOUNT POST EXTENSION IS USED TO ACCOMMODATE A SIGN PANEL ATTACHED TO POST



### PANEL TO POST CONNECTION DETAIL

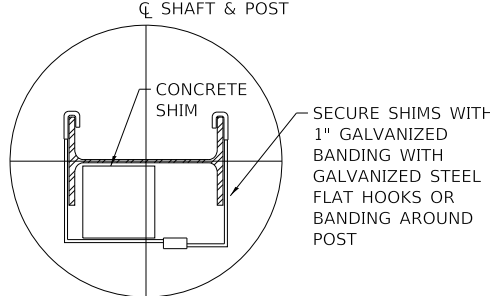


### MIN ANGLE BETWEEN PANELS AT TYP POST

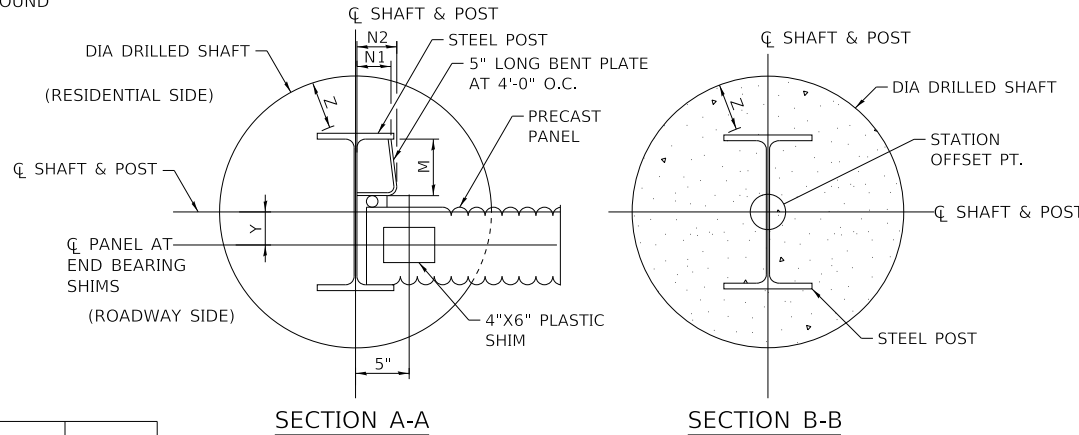


### CONCRETE SHIM DETAIL 1

SHIMS TO BE SECURED TO THE POST, SEE DETAIL 2.



### SHIM TO POST CONNECTION DETAIL 2



SECTION A-A

SECTION B-B

## GENERAL NOTES

- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" 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.
- REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- 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.
- CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
- END POSTS SHALL HAVE NO BENT PLATES ON EXPOSED SIDE.
- 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)

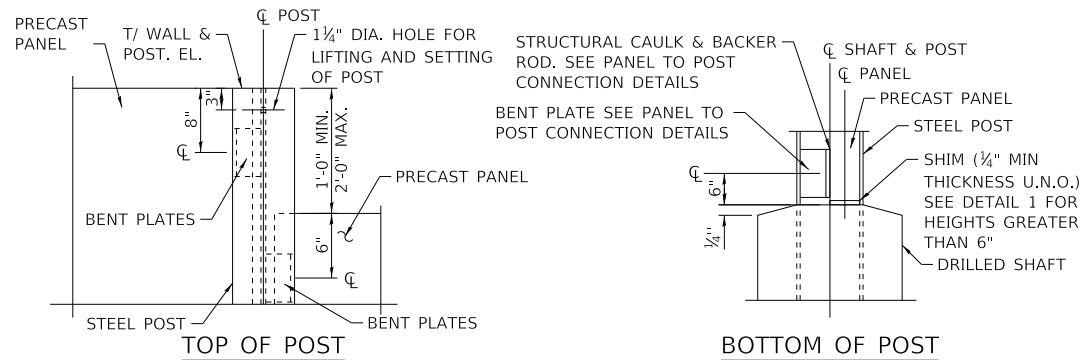
RETAINED EARTH:  
SOIL HORIZONTAL LOAD = 120PCF

DEFLECTION:  
PANEL = L/240  
POST = H/360

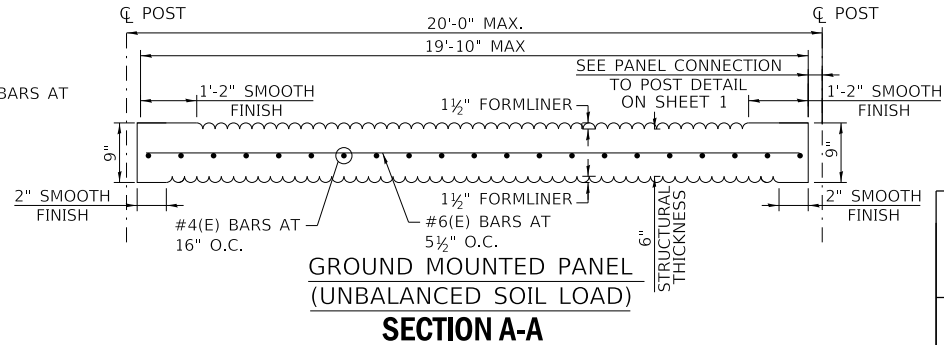
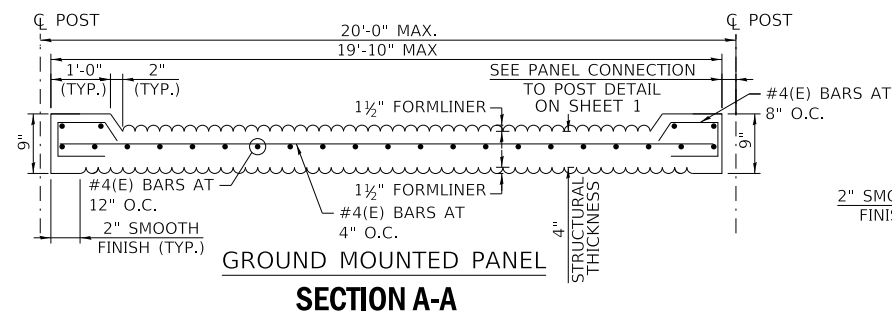
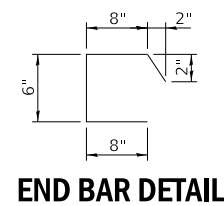
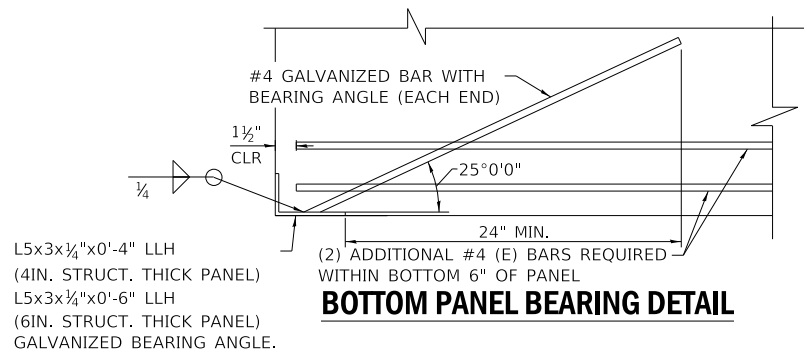
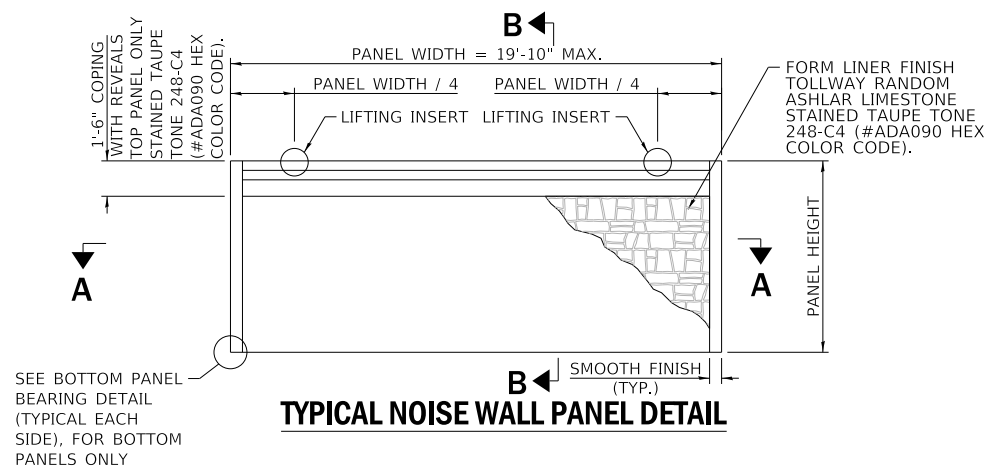
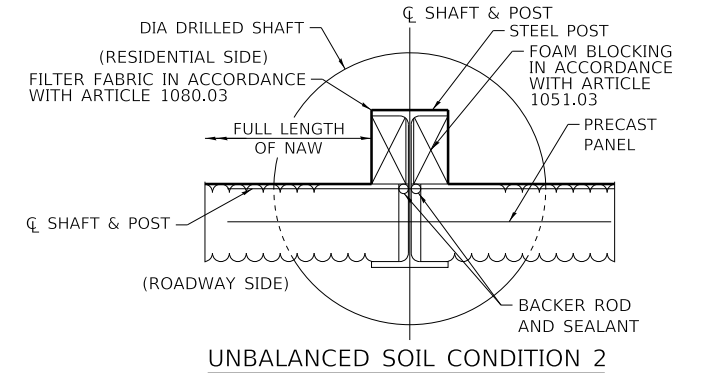
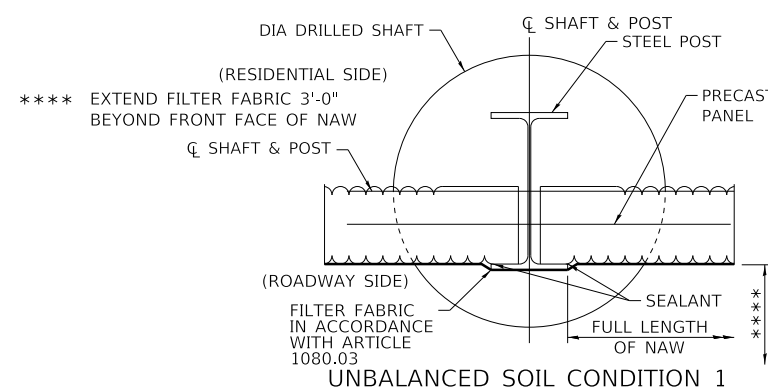
## DESIGN STRESSES

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)

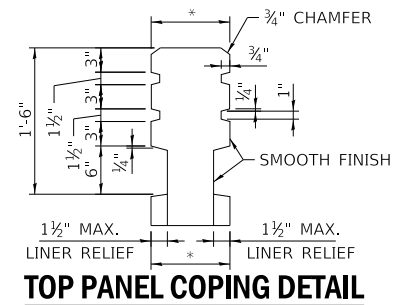
DATE	REVISIONS
2-23-2023	REV. LIFTING INSERT NOTES, DIM. GAP IN 90 DEG. TURN DETAIL & INC. SMOOTH DIM. ON BACK FACE TO MATCH ALL PANELS
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT



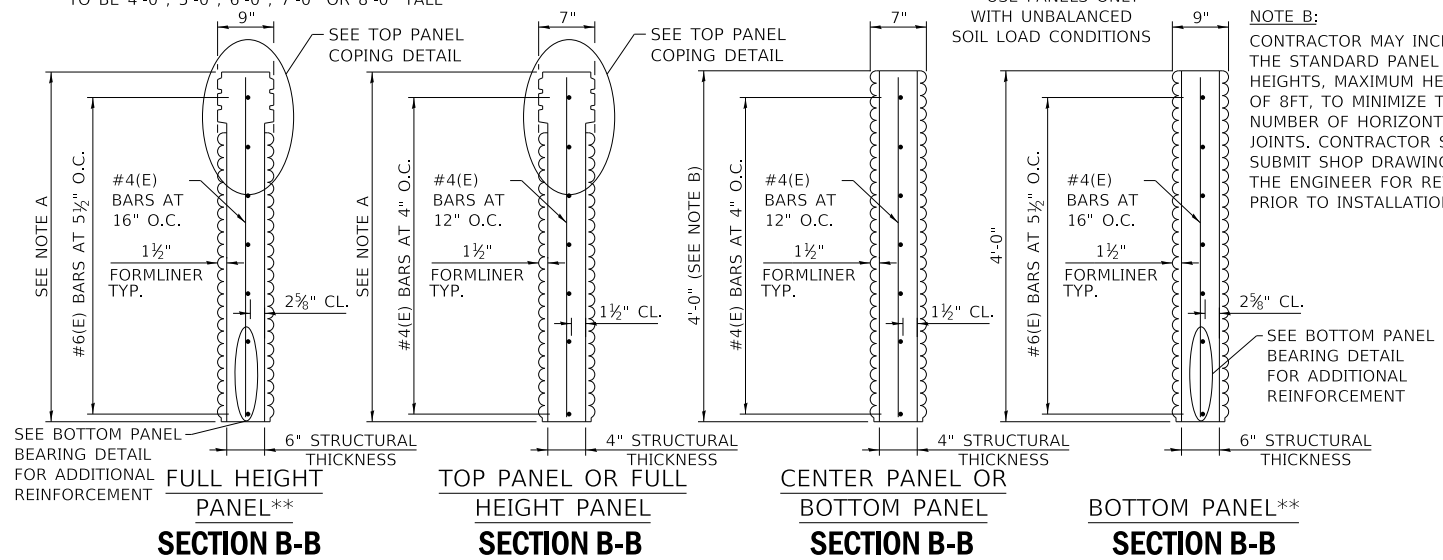
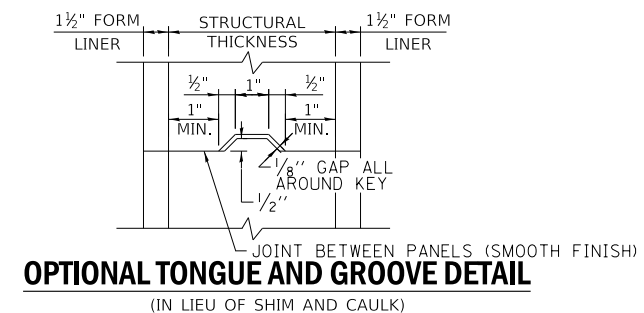
**BENT PLATE DETAILS**

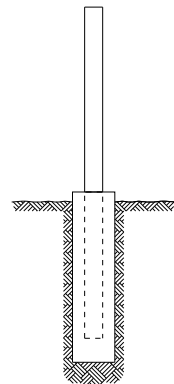
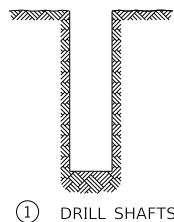


\* 9" FOR UNBALANCED SOIL LOADS OR 7" FOR ALL OTHER CONDITIONS

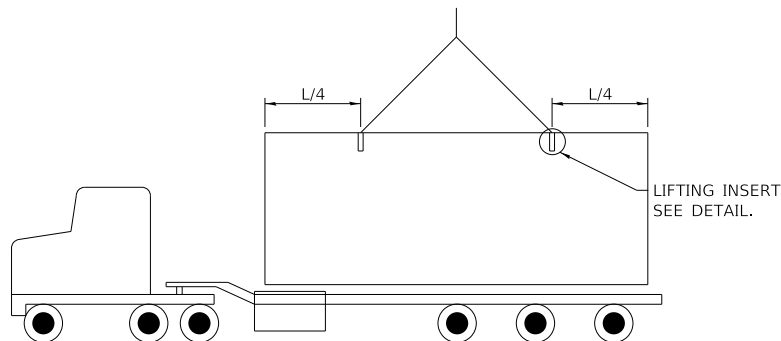


NOTE A:  
TO ACCOMMODATE VARYING HEIGHT NAW, FULL HEIGHT AND TOP PANELS ARE PERMITTED TO BE 4'-0", 5'-0", 6'-0", 7'-0" OR 8'-0" TALL

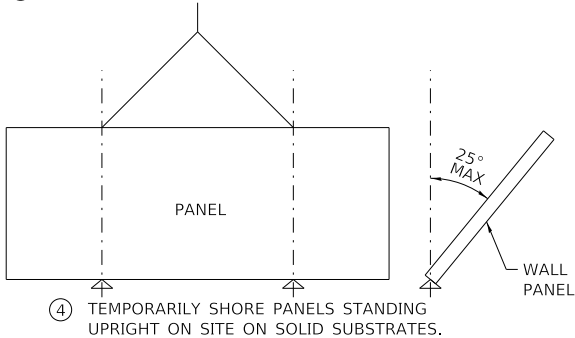




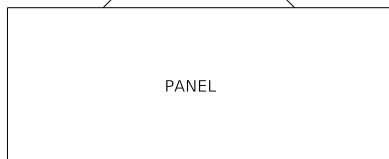
② POUR CONCRETE AND SET EMBEDDED POSTS



③ REMOVE PANELS FROM TRUCK WITH RIGGING.



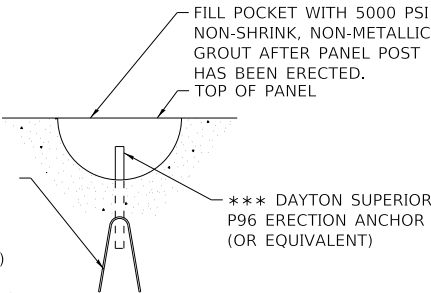
④ TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.



⑤ ERECT PANELS BETWEEN POSTS

### SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

BENT TENSION REBAR AS REQUIRED BY ANCHOR MANUFACTURER.  
#4 (E) BAR - 4 TON (PANELS UNDER 8,000 LBS)  
#6 (E) BAR - 8 TON (PANELS UNDER 16,000 LBS)

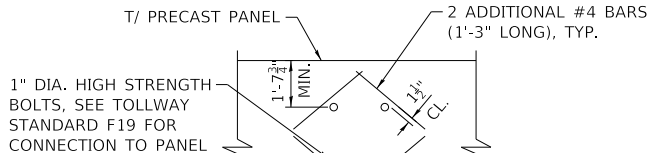


### TYPICAL LIFTING INSERT DETAIL

\*\*\* ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

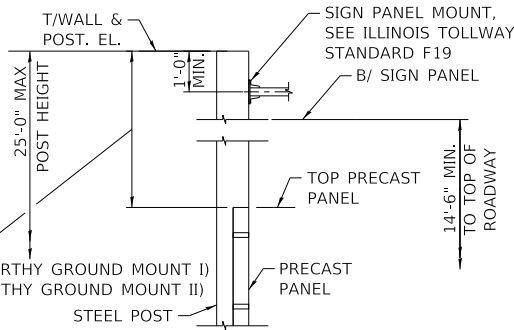
#### NOTES:

- LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
- 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.



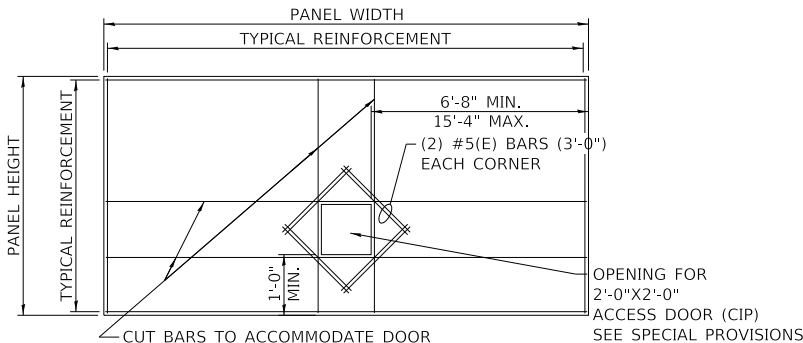
### SIGN PANEL MOUNT TO PANEL DETAIL

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".

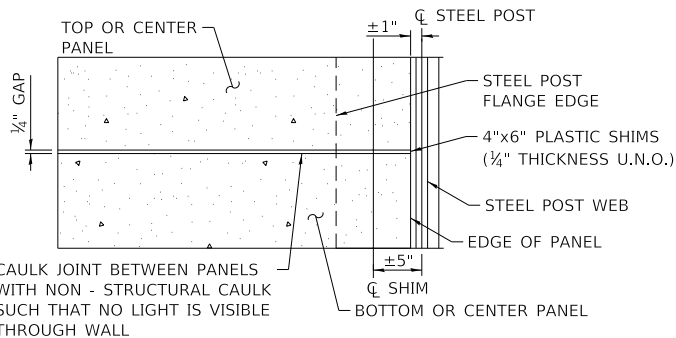


### SIGN PANEL MOUNT POST EXTENSION DETAIL

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"



### FIRE HYDRANT ACCESS OPENING DETAIL



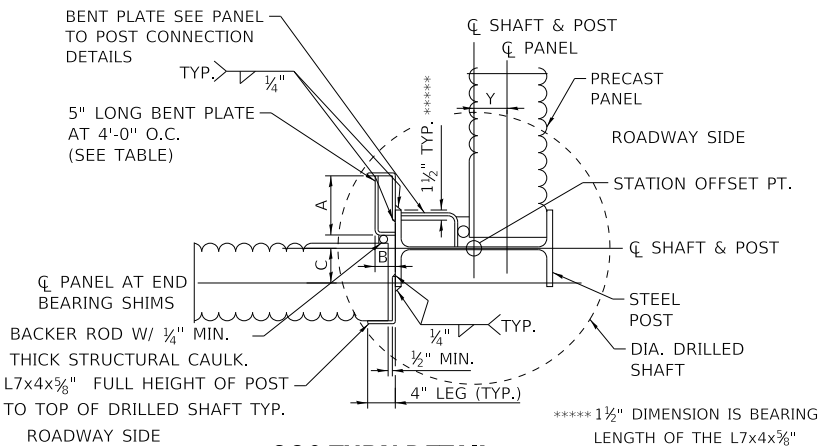
### HORIZONTAL JOINT DETAIL

### 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"x3/8"	3 3/8"
NON-CRASHWORTHY GROUND MOUNTED II	6 1/2"x3"x3/8"	3 5/8"
NON-CRASHWORTHY GROUND MOUNTED III	8 1/2"x3"x3/8"	4 1/2"
NON-CRASHWORTHY GROUND MOUNTED IV	8 1/2"x3"x3/8"	4 9/16"

### 90° TURN BENT PLATE TABLE FOR COHESIONLESS SOILS

NAW TYPE	BENT PLATE A x B x THICK.	DIM. C
NON-CRASHWORTHY GROUND MOUNTED I	6 1/2"x3"x3/8"	3 3/8"
NON-CRASHWORTHY GROUND MOUNTED II	7"x3"x3/8"	3 7/8"
NON-CRASHWORTHY GROUND MOUNTED III	10"x3"x3/8"	5 3/8"
NON-CRASHWORTHY GROUND MOUNTED IV	10 1/4"x3"x3/8"	5 9/16"



### 90° TURN DETAIL

APPROVED BY:  
*Mamun Nasir*  
CHIEF ENGINEERING OFFICER

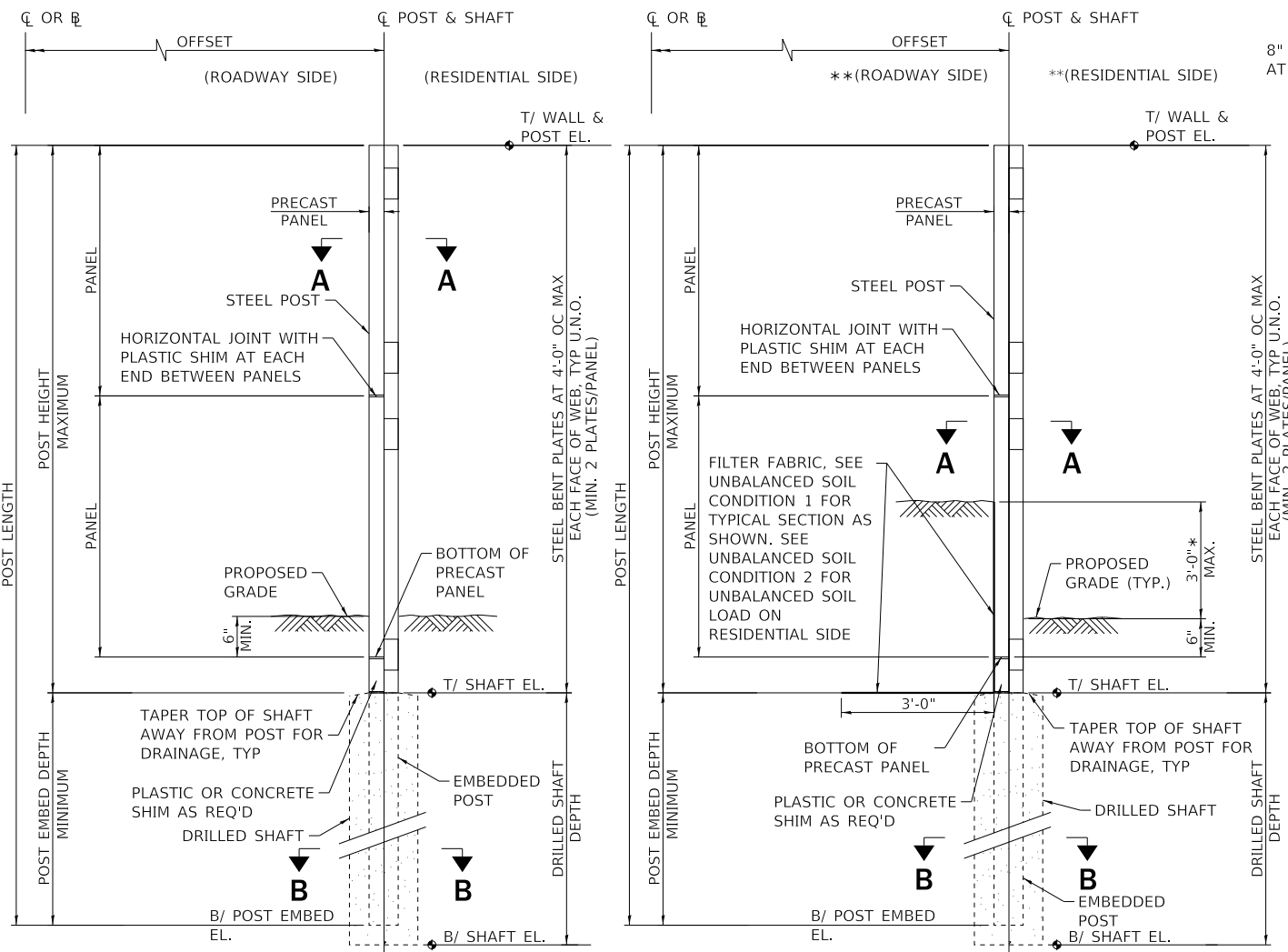
DATE:  
02/23/2023



NON-CRASHWORTHY  
GROUND MOUNTED  
NOISE ABATEMENT WALL  
DETAILS

STANDARD G15-04





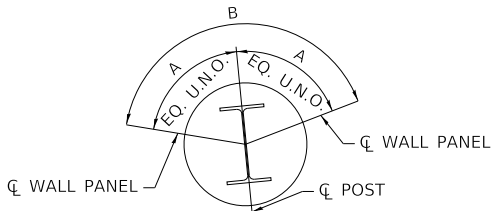
**TYPICAL CROSS SECTION**  
(BALANCED SOIL LOAD)

**TYPICAL CROSS SECTION**  
(UNBALANCED SOIL LOAD)

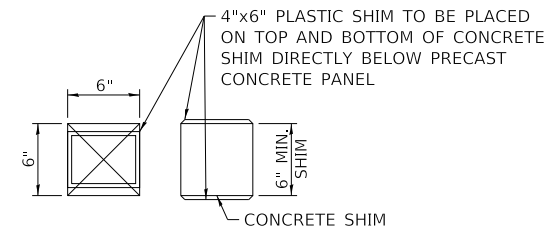
\*\* TYPICAL SECTION SHOWS ROADWAY ON THE HIGH SIDE. DETAILS OF POST FOR ROADWAY ON THE LOW SIDE ARE MIRRORED.

\* 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**

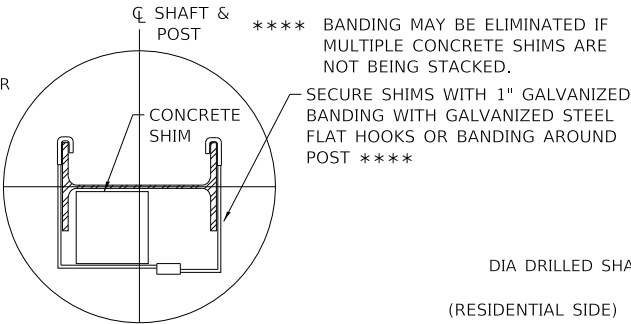


**MIN ANGLE BETWEEN PANELS AT TYP POST**



**CONCRETE SHIM DETAIL 1**

SHIMS TO BE SECURED TO THE POST SEE DETAIL 2



**SHIM TO POST CONNECTION DETAIL 2**

**GENERAL NOTES**

- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" 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.
- REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- 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.
- CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.
- END POSTS SHALL HAVE NO BENT PLATES ON EXPOSED SIDE.
- 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:**

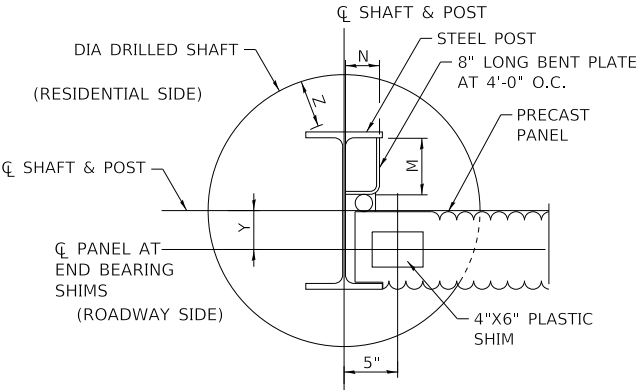
fy = 60,000 PSI (EPOXY COATED)

**DESIGN SPECIFICATIONS**

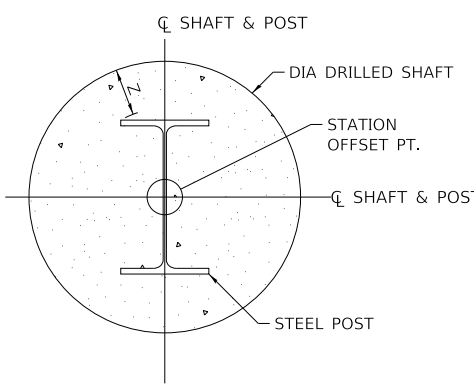
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 9TH EDITION DATED APRIL 2020.

ILLINOIS TOLLWAY STRUCTURE DESIGN MANUAL, LATEST EDITION

ILLINOIS TOLLWAY GEOTECHNICAL MANUAL, LATEST EDITION



**SECTION A-A**



**SECTION B-B**

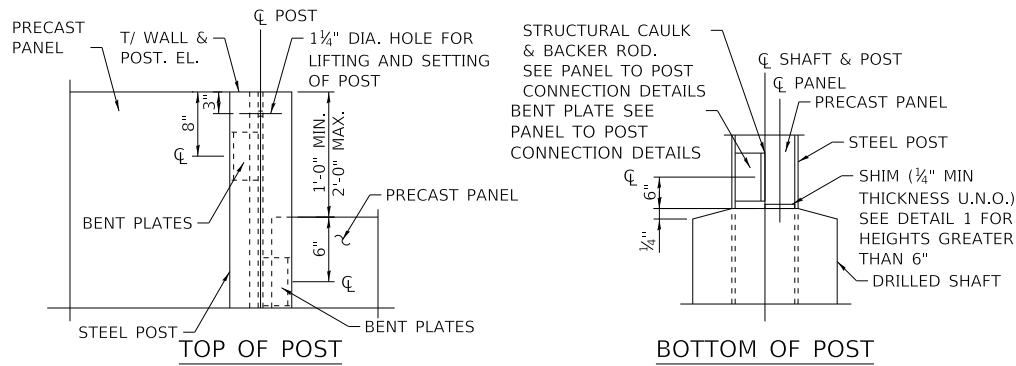
**POST & DRILLED SHAFT DESIGN FOR COHESIVE SOILS**

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"	8 1/2"x3 1/2"x 1/2"	6 5/8"	3'-0"	86°25'00"	172°50'00"

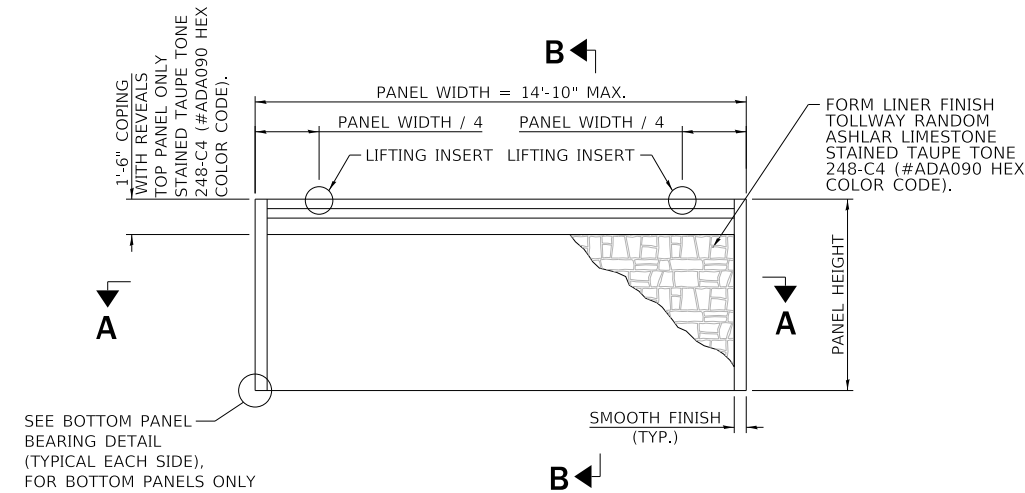
**POST & DRILLED SHAFT DESIGN FOR COHESIONLESS SOILS**

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 1/16"	14 1/4"x4 3/8"x 1/2"	3 3/4"	3'-0"	86°25'25"	172°50'50"

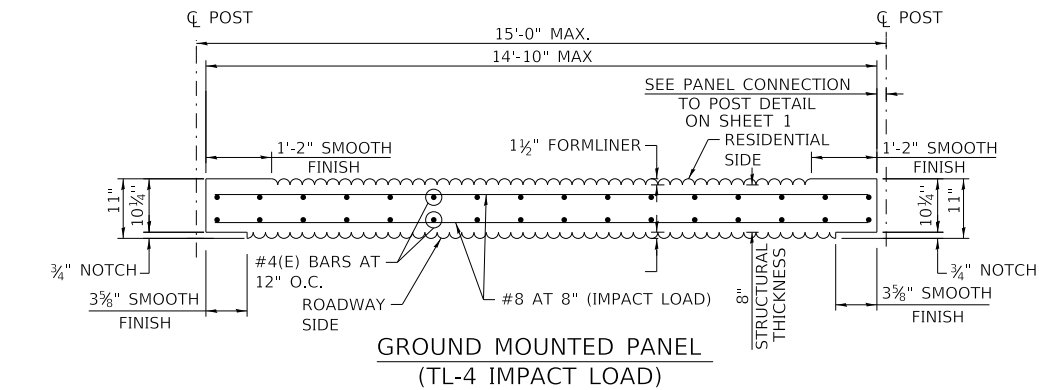




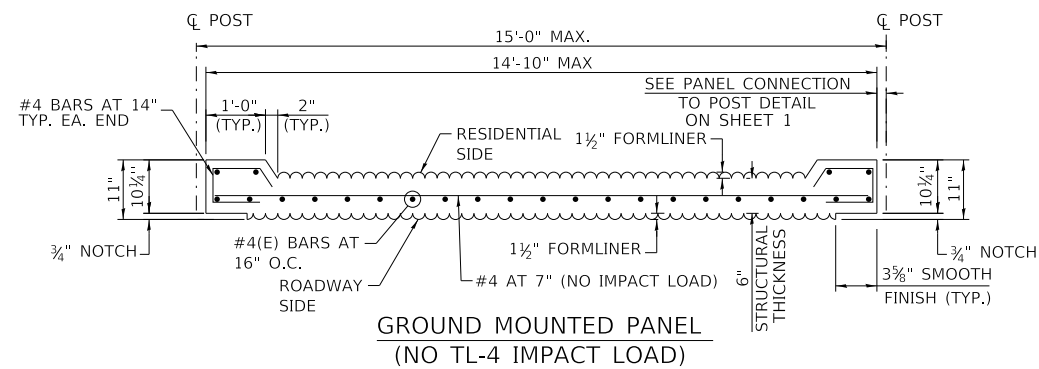
**BENT PLATE DETAILS**



**TYPICAL NOISE WALL PANEL DETAIL**

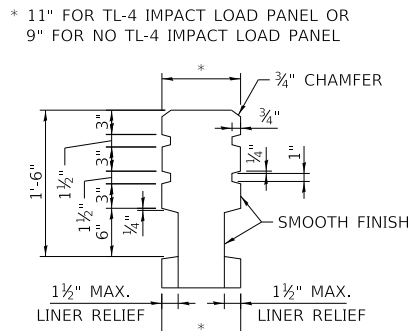


**GROUND MOUNTED PANEL  
(TL-4 IMPACT LOAD)**



**GROUND MOUNTED PANEL  
(NO TL-4 IMPACT LOAD)**

**SECTION A-A**



**TOP PANEL COPING DETAIL**

SEE BOTTOM PANEL BEARING  
DETAIL FOR ADDITIONAL  
REINFORCEMENT

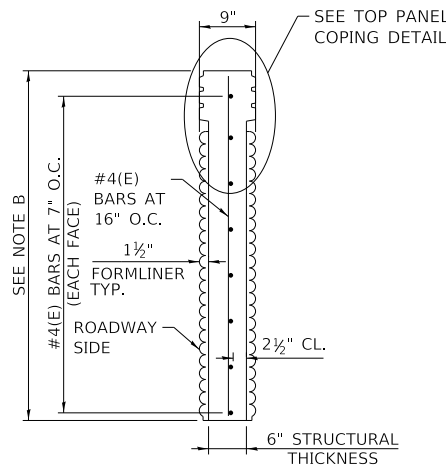
**FULL HEIGHT PANEL  
(TL-4 IMPACT LOAD)  
SECTION B-B**

**TOP PANEL  
(TL-4 IMPACT LOAD)  
SECTION B-B**

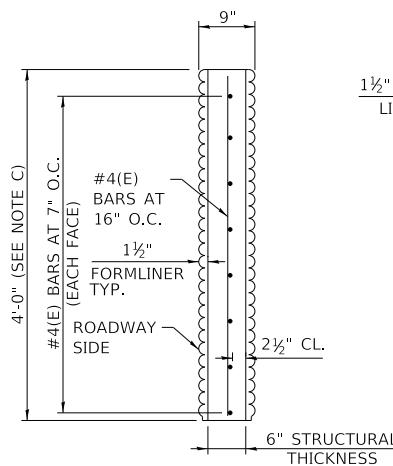
**CENTER PANEL  
(TL-4 IMPACT LOAD)  
SECTION B-B**

**BOTTOM PANEL  
(TL-4 IMPACT LOAD)  
SECTION B-B**

**NOTE A:**  
TO ACCOMMODATE VARYING HEIGHT NAW PANELS ARE  
PERMITTED TO BE 6'-0", 7'-0", 8'-0" OR 9'-0" TALL



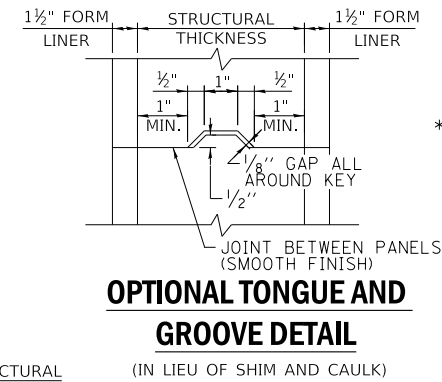
**TOP PANEL  
(NO TL-4 IMPACT LOAD)  
SECTION B-B**



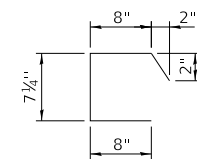
**CENTER PANEL  
(NO TL-4 IMPACT LOAD)  
SECTION B-B**

**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

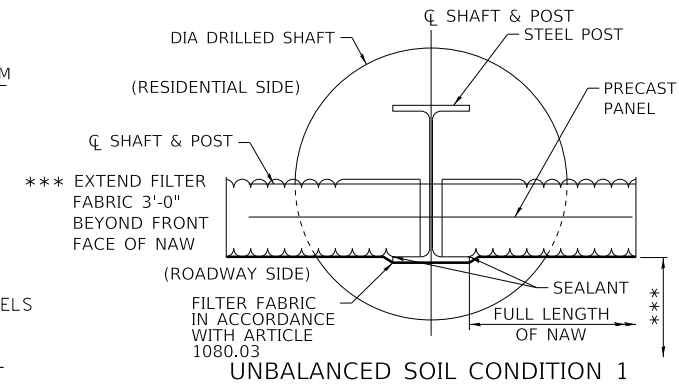
**NOTE C:**  
CONTRACTOR MAY INCREASE THE STANDARD PANEL HEIGHTS, MAXIMUM HEIGHT  
OF 9FT, TO MINIMIZE THE NUMBER OF HORIZONTAL JOINTS. CONTRACTOR SHALL  
SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.



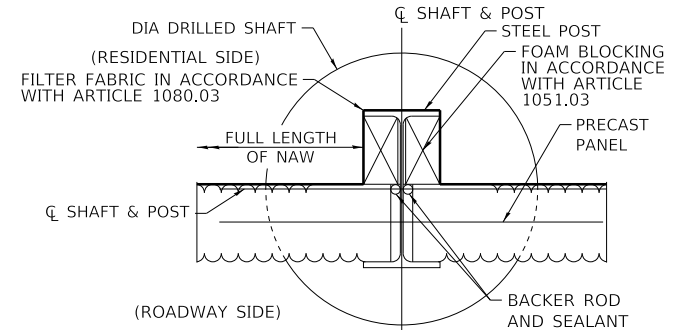
**OPTIONAL TONGUE AND  
GROOVE DETAIL  
(IN LIEU OF SHIM AND CAULK)**



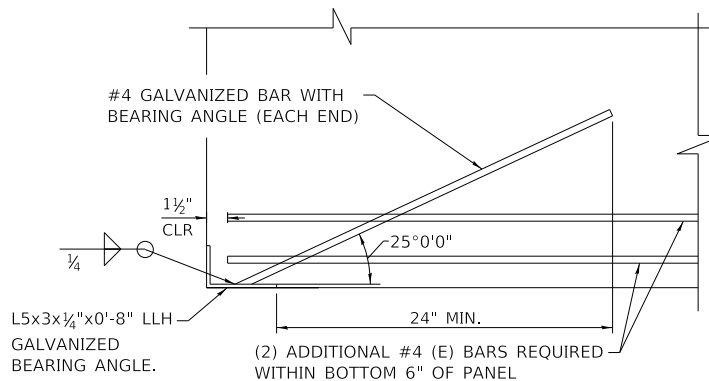
**END BAR DETAIL**



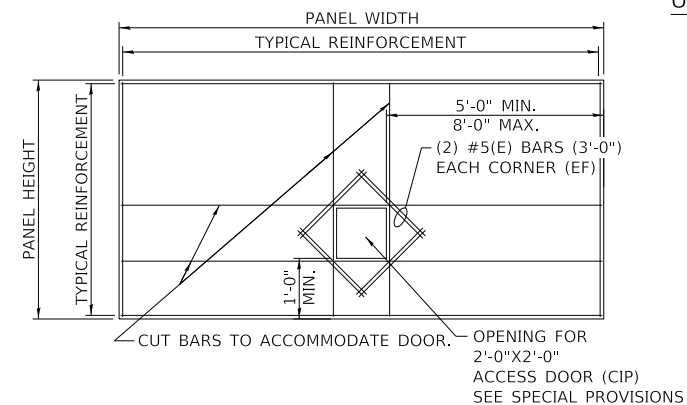
**UNBALANCED SOIL CONDITION 1**



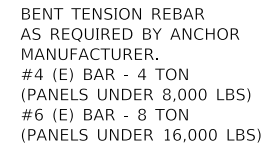
**UNBALANCED SOIL CONDITION 2**



**BOTTOM PANEL BEARING DETAIL**

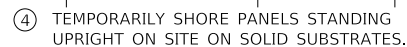
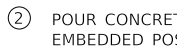


**FIRE HYDRANT ACCESS OPENING DETAIL**

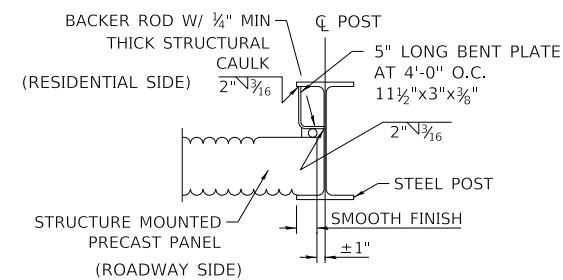


\*\* ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

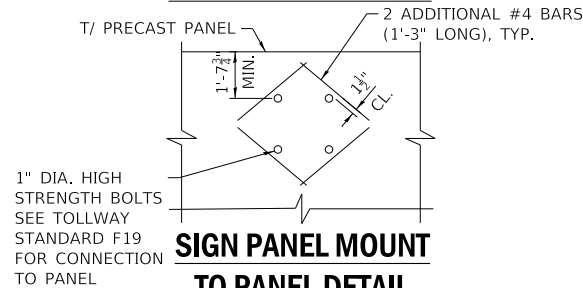
1. LIFTING INSERTS SHALL HAVE A FACTOR OF SAFETY OF 4:1
2. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE SAFETY OF CONSTRUCTION APPLICABLE TO THIS WORK.



### **SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE**

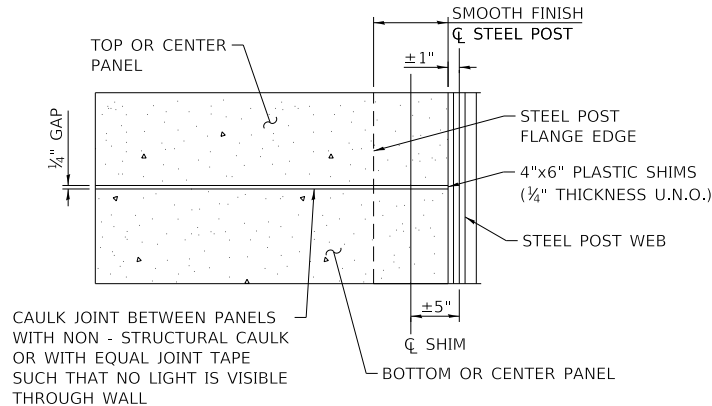


### STRUCTURE MOUNTED PANEL TO POST CONNECTION DETAIL

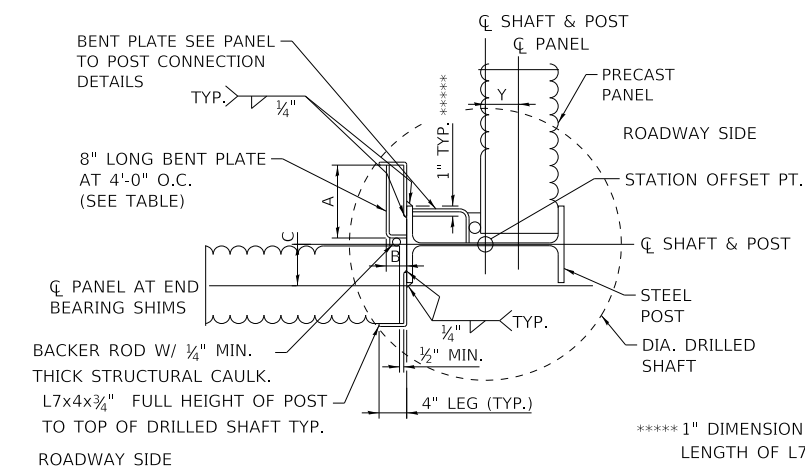


## **SIGN PANEL MOUNT TO PANEL DETAIL**

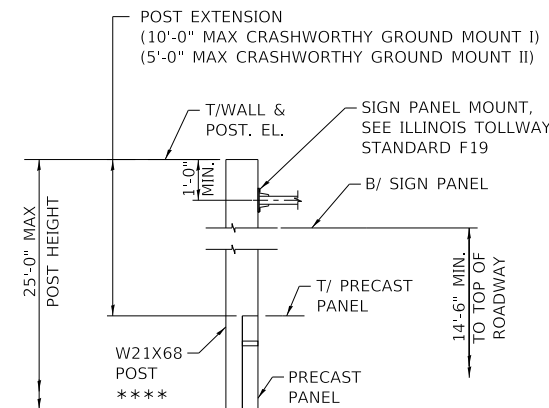
\*\*\* PRECAST PANELS HAVE BEEN DESIGNED TO ACCOMMODATE  
SIGN PANEL MOUNT WITH MAX 32 SF SIGN AREA IN  
ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19. MIN.  
PANEL HEIGHT SUPPORTING SIGN SHALL BE 5'-0".



## HORIZONTAL JOINT DETAIL

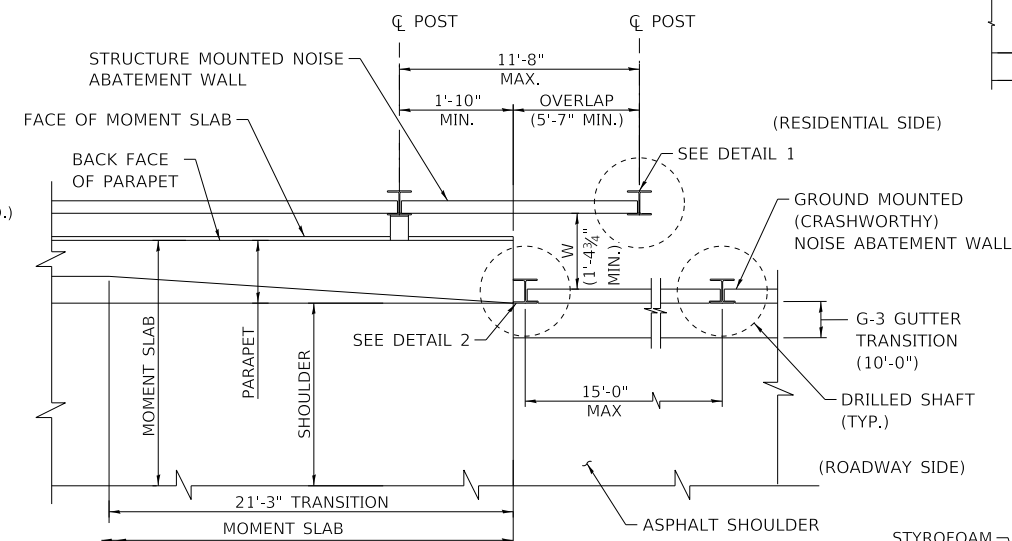


## 90° TURN DETAIL



### SIGN PANEL MOUNT POST EXTENSION DETAIL

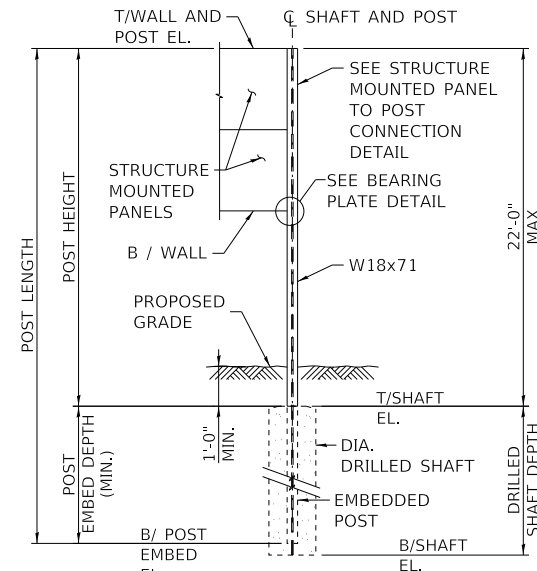
\*\*\*\* W18X71 POSTS HAVE BEEN DESIGNED TO  
ACCOMMODATE A POST EXTENSION WITH  
MAX 32 SF SIGN AREA IN ACCORDANCE WITH  
ILLINOIS TOLLWAY STANDARD F19 UP TO A  
MAXIMUM POST HEIGHT OF 25'-0"



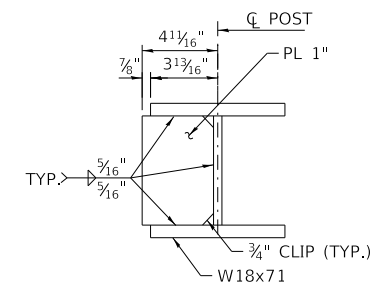
## NAW TRANSITION DETAIL

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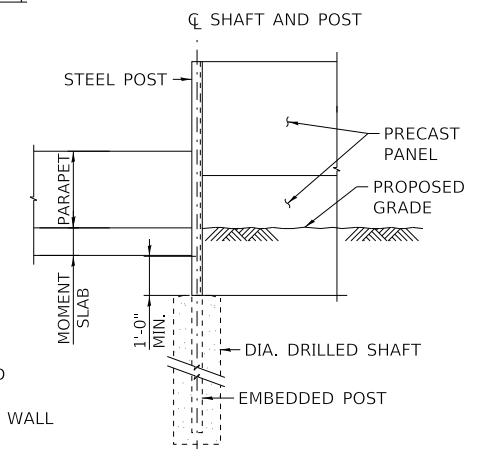
### PLAN



### DETAIL 1

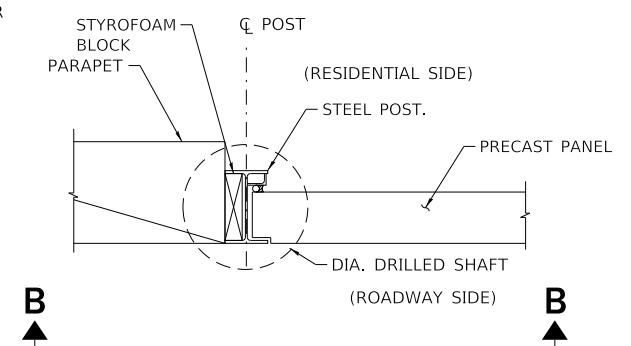


### BEARING PLATE DETAIL



**VIEW B-B**

(STRUCTURE MOUNTED NAW)  
NOT SHOWN FOR CLARITY



## 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"x⅜"	4½"
W27x84	9½"x3"x⅜"	5½"



## CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G16-04