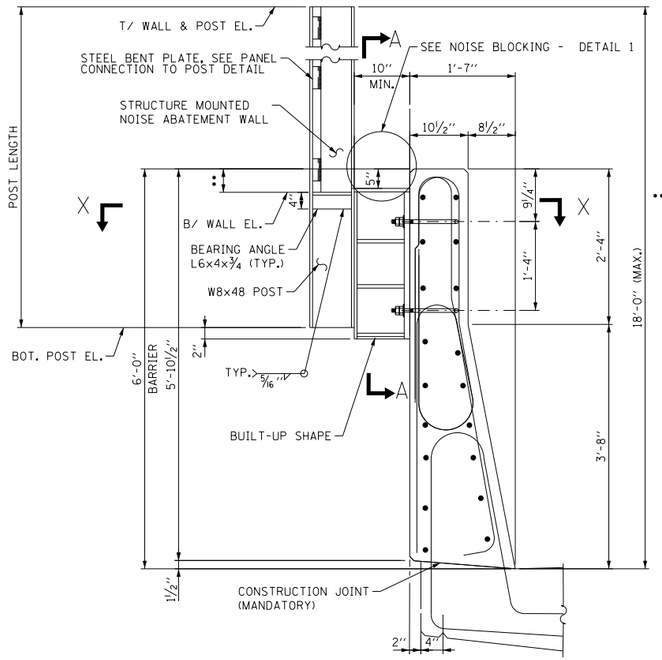
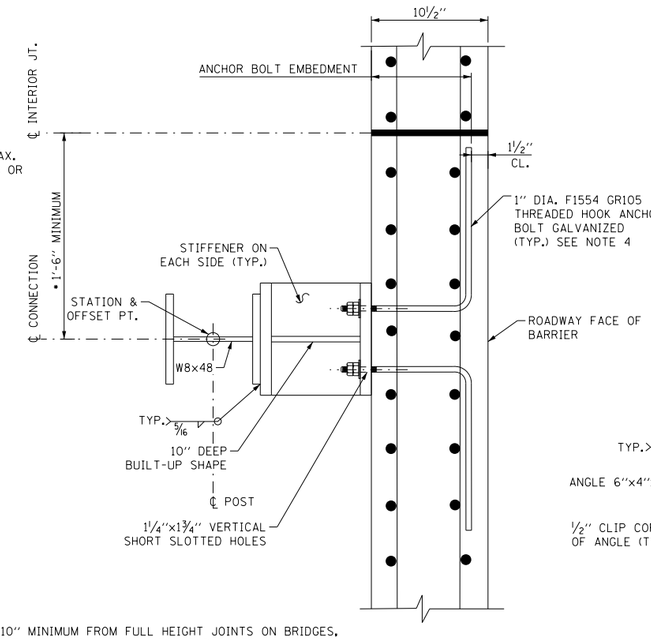
Illinois Tollway Standard Drawing Revisions

Section G	Structural	
	Standard	**Modification Summary** **Effective: 03-01-2022**
	G12-03	**Structure Mounted Noise Abatement Wall Details**
	Sheet 1	Callout plate in noise blocking assembly withing +/- 1" of the post flange
	Sheet 2	Revise anchor callout in Typical Lifting Insert Detail and change bent plate to 1"
	G13-03	**Central Tri-State Structure Mounted Noise Abatement Wall Details**
	Sheet 1	Callout plate in noise blocking assembly withing +/- 1" of the post flange
	Sheet 2	Revise anchor callout in Typical Lifting Insert Detail and change bent plate to 1"
	G14-03	**Central Tri-State Bump-Out Mounted Noise Abatement Wall Details**
	Sheet 2	Revise anchor callout in Typical Lifting Insert Detail
	G15-03	**Non-Crashworthy Ground Mounted Noise Abatement Wall Details**
	General	G15 has been revised to have 3 sheets to accommodate additional details for cohesionless soil. Details on 2021 standard remain unchanged, except noted below, but move to different sheets
	Sheet 1	Added foundation details for cohesionless soil and updated note 8. Minor revisions to note 6, 7 and unbalanced soil load. Moved bent plate details and unbalanced soil condition detail to sheet 2.
	Sheet 2	No change except for some details moved to the newly added sheet 3
	Sheet 3	Revise anchor callout in Typical Lifting Insert Detail and added 90 deg turn table for cohesionless soils. Added 'Edge of Panel' Callout to the Horizontal Joint Detail.
	G16-03	**Crashworthy Ground Mounted Noise Abatement Wall Details**
	Sheet 1	Added foundation details for cohesionless soil and updated note 8. Minor revisions to note 6 and 7. Post and Drilled Shaft Design tables are reduced to single row. Moved bent plate details and unbalanced soil condition detail to sheet 2
	Sheet 2	No change except for some details moved to sheet 3
	Sheet 3	Revise anchor callout in Typical Lifting Insert Detail and added 90 deg turn table for different steel posts

New Sheet Retired Standard

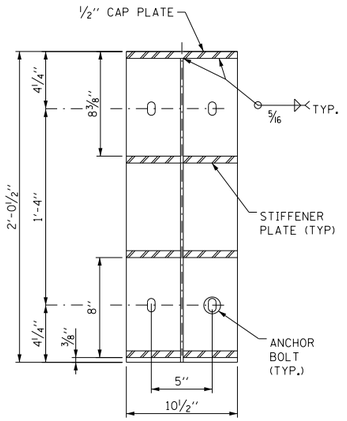


•• BEARING SEAT IS 6" MAX. BELOW TOP OF BARRIER OR 3" MAX. ABOVE TOP OF BARRIER.

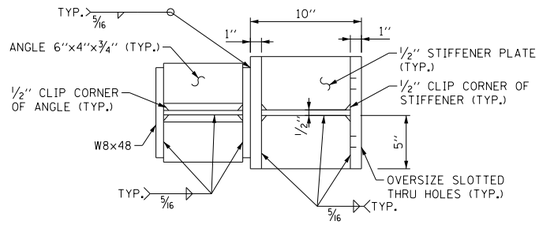


• USE 4'-10" MINIMUM FROM FULL HEIGHT JOINTS ON BRIDGES, OTHERWISE USE 1'-10" MINIMUM FOR END POSTS AND POSTS LOCATED ON APPROACH SLABS OR MOMENT SLABS.

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.
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.

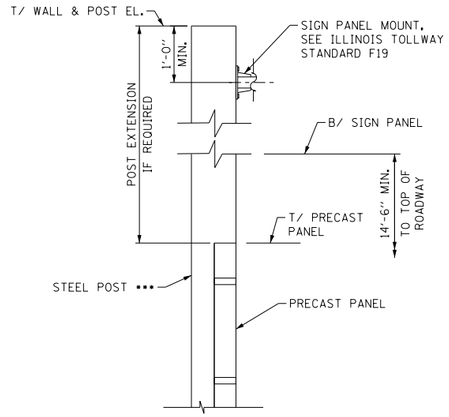
PRECAST PANEL MAX. ALLOWABLE DEFLECTION - L/180

STEEL POST MAX. ALLOWABLE DEFLECTION - H/360

ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER - DETAILS

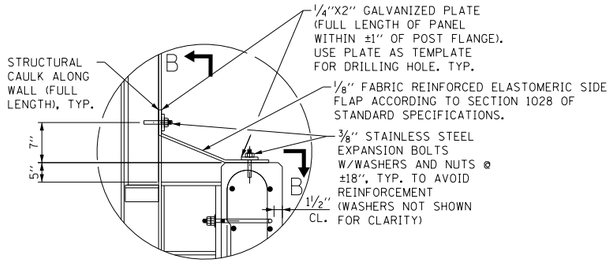
NOTES:

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 SHOWN 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 TO CENTERLINE OF LIGHT POLE IS 4'-7" DESIRABLE AND 3'-7" MINIMUM.

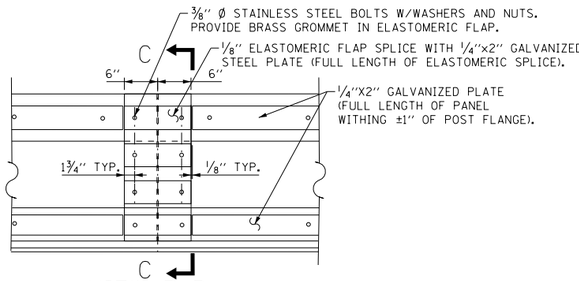


SIGN PANEL MOUNT
POST EXTENSION DETAIL

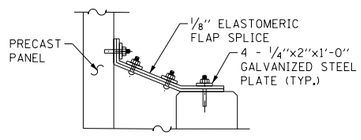
••• STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A 17'-3½" POST WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19



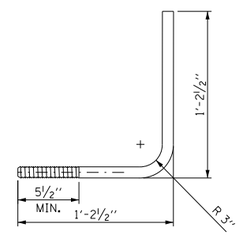
DETAIL 1
NOISE BLOCKING ASSEMBLY



VIEW B-B
AT ASSEMBLY SPLICE



SECTION C-C



BENT ANCHOR BOLT

MISCELLANEOUS STEEL CONNECTION QUANTITY

DESCRIPTION	WEIGHT
BUILT-UP SHAPE	219 LBS.
BEARING ANGLE (2 ANGLES)	32 LBS.
BENT PLATE ALLOWANCE (8 PLATES)	11 LBS.
ANCHOR BOLT ASSEMBLY (4 BOLTS)	26 LBS.
TOTAL	288 LBS.
NOISE BLOCKING ASSEMBLY BETWEEN POSTS (2 PLATES)	3.4 PLF
NOISE BLOCKING ASSEMBLY SPLICE (4 PLATES)	7 LBS.

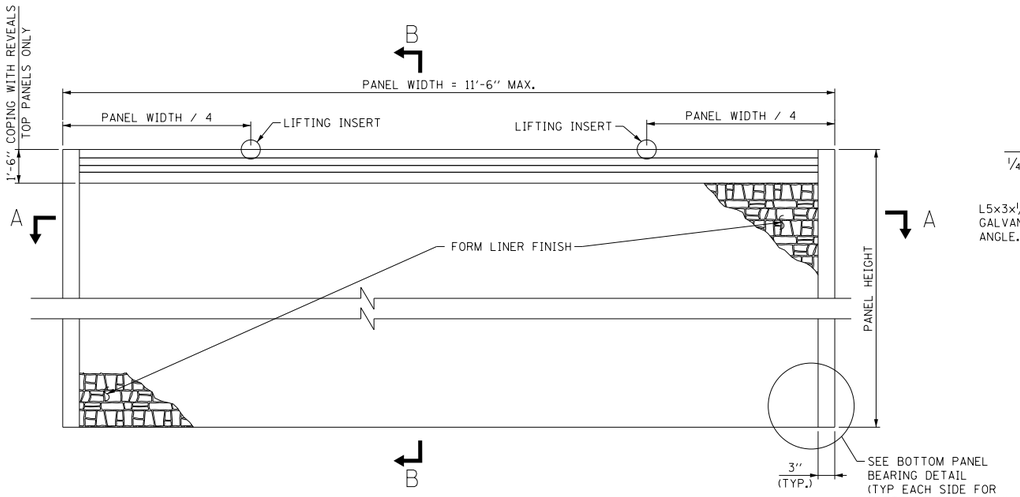
DATE	REVISIONS
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT
	CHANGE BENT PLATE TO 1" AND
	CLARIFY NOISE BLOCKING PL. LENGTH
3-01-2021	MOVE TOP BENT PLATE, ADD
	LIFTING HOLE AND REVISED BEARING
	ANGLE WIDTH
7-17-2020	REVISE NOTE 1 AND CLARIFIED NO
	CHAMFER AT HORIZONTAL JOINTS,
	NOTE 10" NAW OFFSET AS MIN.,
	ADD MAX. SEAT LIMITS ABOVE AND
	BELOW BARRIER IN TYP. SECTION,
	REV. CONTRACT. JT. TO INTERIOR JT.,
	HOLE FOR BENT ANCHOR REV. TO 1¼",
	CHANGE 4'-10" SPA. REQUIRE FOR
	BRIDGES ONLY, DIM. FORM LINER ON
	PANEL TO POST DET., ADD DET. FOR
	TONGUE AND GROOVE, REMOVE REVEAL
	CALL OUT AND REVISE NOTE B, INC.
	MIN. ANGLE AT POST AND PANELS,

Paul Kovacs
APPROVED ..... DATE 7-17-2020
CHIEF ENGINEERING OFFICER

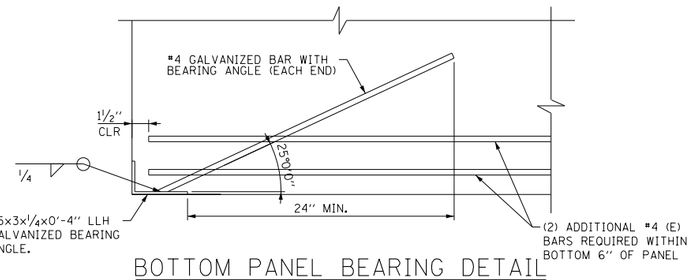
Illinois Tollway

STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

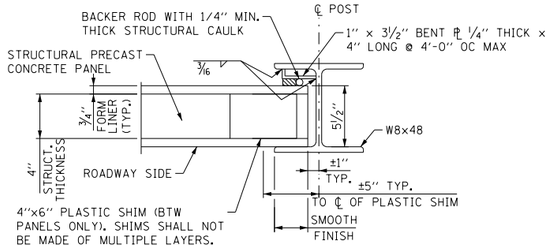
STANDARD G12-03



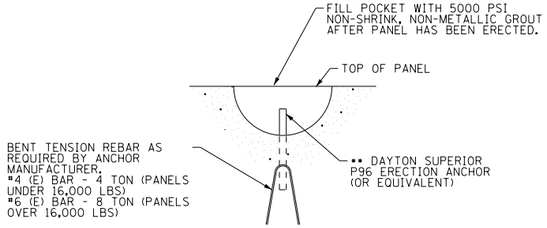
TYPICAL NOISE WALL PANEL DETAIL



BOTTOM PANEL BEARING DETAIL

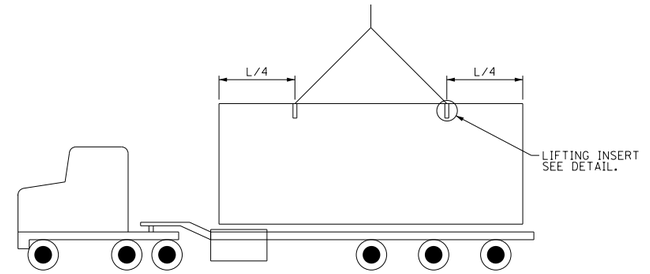


PANEL CONNECTION TO POST DETAIL

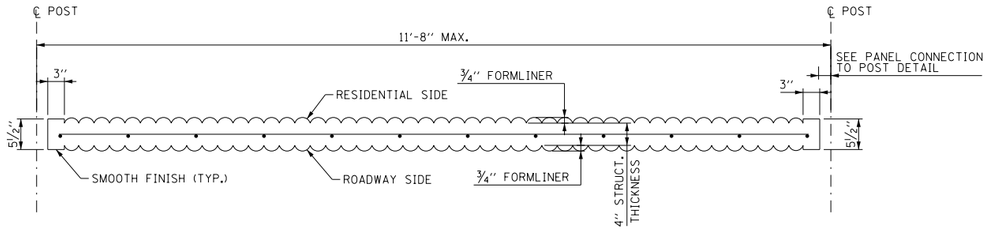


TYPICAL LIFTING INSERT DETAIL

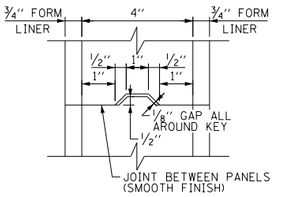
•• ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED



① REMOVE PANELS FROM TRUCK WITH RIGGING.

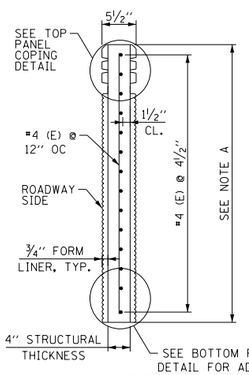


TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

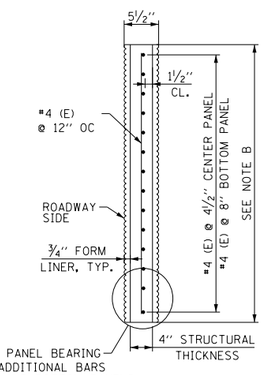


OPTIONAL TONGUE AND GROOVE DETAIL

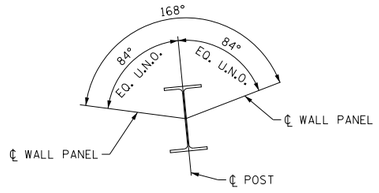
(IN LIEU OF SHIM AND CAULK)



TOP PANEL OR FULL HEIGHT PANEL SECTION B-B

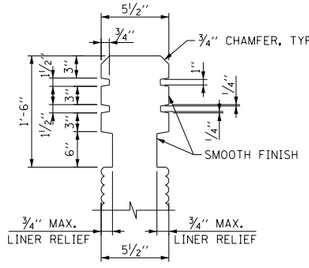


CENTER OR BOTTOM PANEL SECTION B-B

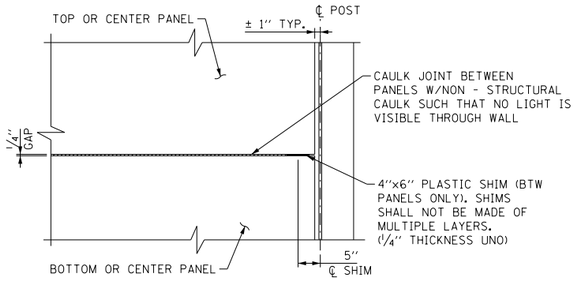


NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

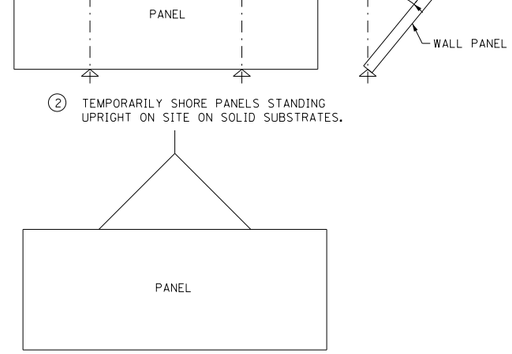
MIN ANGLE BETWEEN PANELS AT TYP POST



TOP PANEL COPING DETAIL



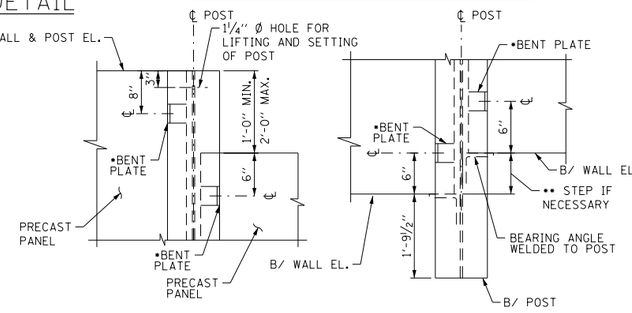
HORIZONTAL JOINT DETAIL



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



TOP OF POST AT BEARING ANGLE BENT PLATE DETAILS

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.

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".

• 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.

Paul Kovacs
APPROVED ..... DATE 7-17-2020
CHIEF ENGINEERING OFFICER

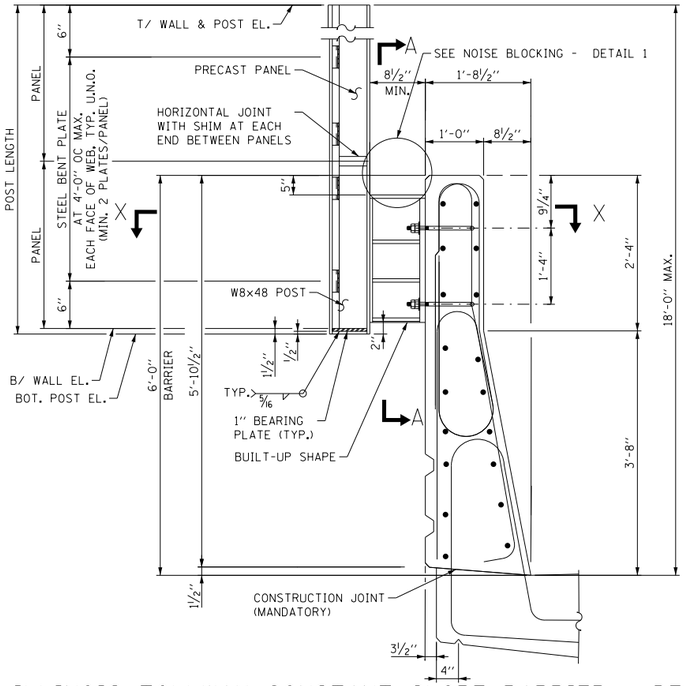
SHEET 2 OF 2

Illinois Tollway

STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

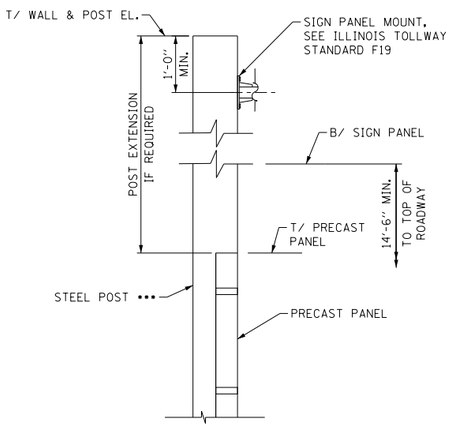
STANDARD G12-03

ILLINOIS TOLLWAY CONSTANT SLOPE BARRIER - DETAILS



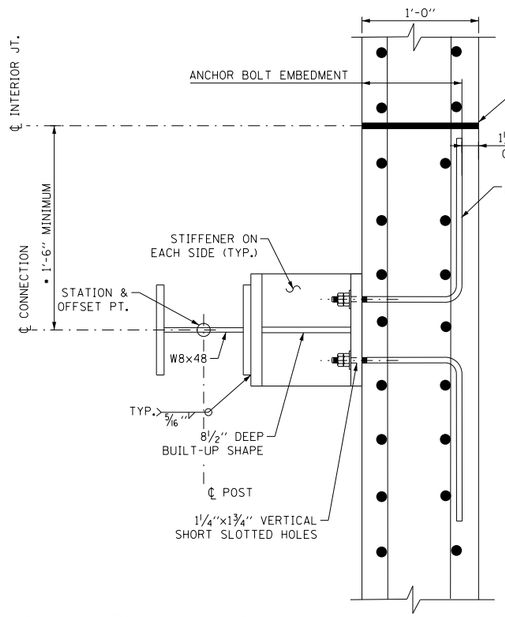
NOTES:

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.



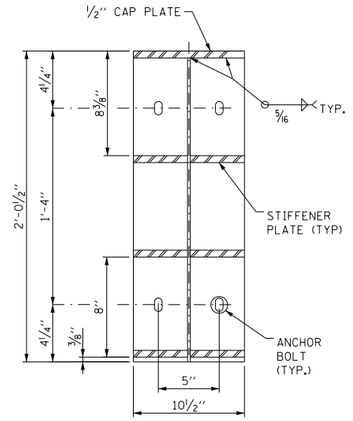
SIGN PANEL MOUNT POST EXTENSION DETAIL

••• STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A 17'-7½" POST WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19

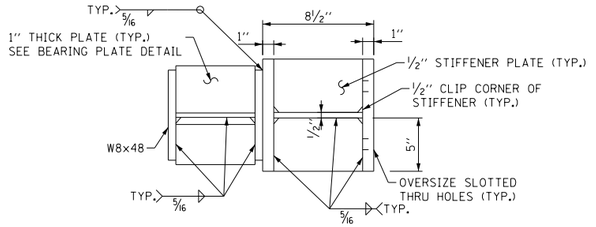


• USE 4'-10" MINIMUM FROM FULL HEIGHT JOINTS ON BRIDGES, OTHERWISE USE 1'-10" MINIMUM FOR END POSTS AND POSTS LOCATED ON APPROACH SLABS OR MOMENT SLABS.

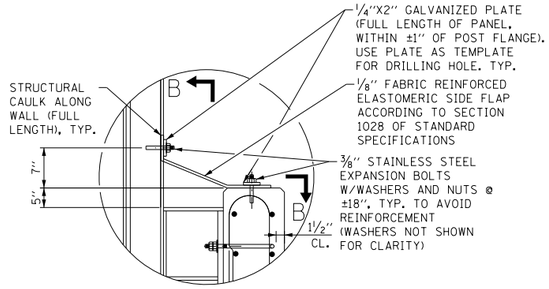
SECTION X-X



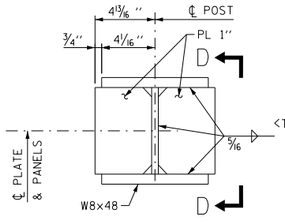
SECTION A-A



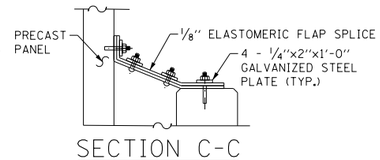
BUILT UP SHAPE



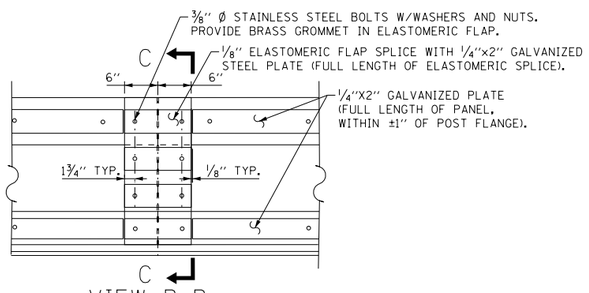
DETAIL 1 NOISE BLOCKING ASSEMBLY



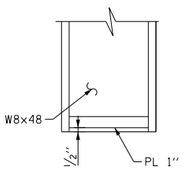
BEARING PLATE DETAIL



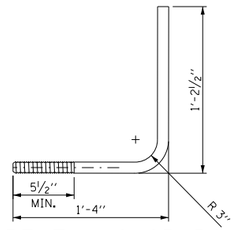
SECTION C-C



VIEW B-B AT ASSEMBLY SPLICE



VIEW D-D



BENT ANCHOR BOLT

GENERAL NOTES

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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)	40 LBS.
BENT PLATE ALLOWANCE (8 PIECES)	14 LBS.
ANCHOR BOLT ASSEMBLY (4 BOLTS)	29 LBS.
TOTAL	288 LBS.
NOISE BLOCKING ASSEMBLY BETWEEN POSTS (2 PLATES)	3.4 PLF
NOISE BLOCKING ASSEMBLY SPLICE (4 PLATES)	7 LBS.

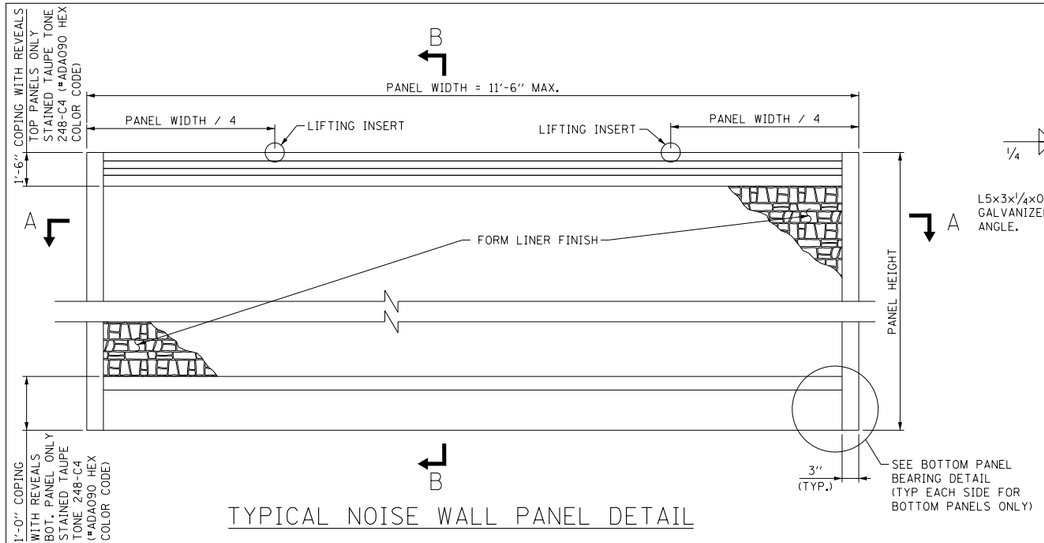
Paul Kovacs
APPROVED ..... DATE 7-17-2020
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT
	CHANGE BENT PLATE TO 1" AND
	CLARIFY NOISE BLOCKING PL. LENGTH
3-01-2021	MOVE TOP BENT PLATE, ADD LIFTING
	HOLE AND REV. BEARING WIDTH ANGLE
7-17-2020	REVISE NOTE 1 AND CLARIFIED NO
	CHAMFER AT HORIZONTAL JOINTS,
	NOTED 8.5" NAW OFFSET AS MIN.,
	REV. CONTRACT. JT. TO INTERIOR JT.,
	HOLE FOR BENT ANCHOR REV. TO 1¼",
	CHANGE 4'-10" SPA. REQUIRE FOR
	BRIDGES ONLY, DIM. FORM LINE ON
	PANEL TO POST DET., ADD DET. FOR
	TONGUE AND GROOVE, REMOVE REVEAL
	CALL OUT, REVISE NOTE C, INC.
	MIN. ANGLE AT POST AND PANELS.

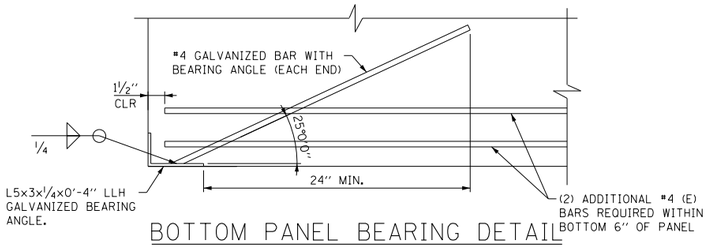
Illinois Tollway

CENTRAL TRI-STATE STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

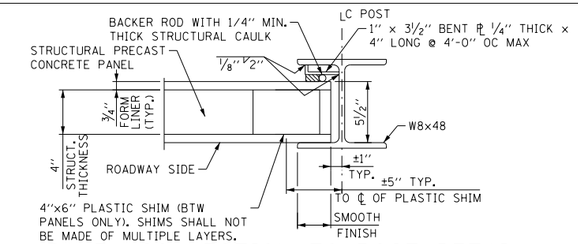
STANDARD G13-03



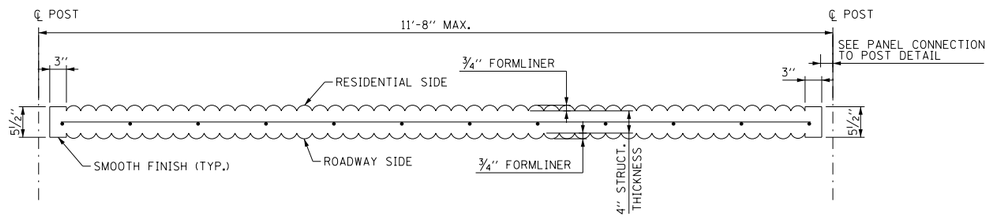
TYPICAL NOISE WALL PANEL DETAIL



BOTTOM PANEL BEARING DETAIL

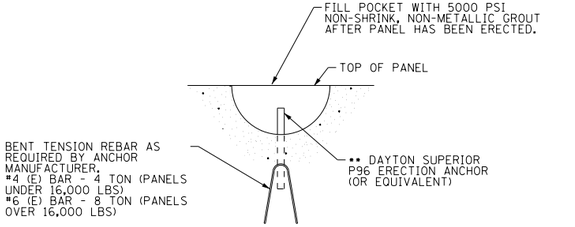


PANEL CONNECTION TO POST DETAIL



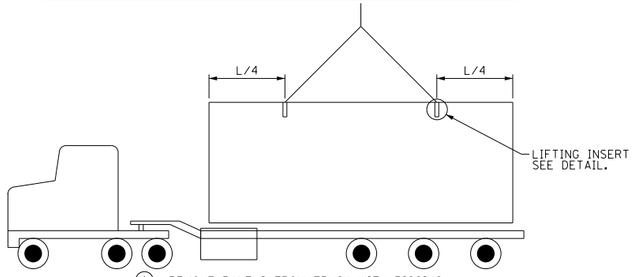
TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

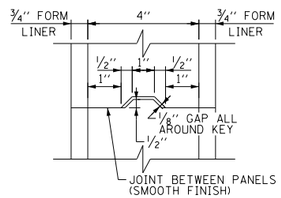
SECTION A-A



TYPICAL LIFTING INSERT DETAIL

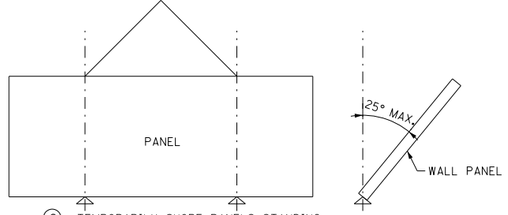
** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

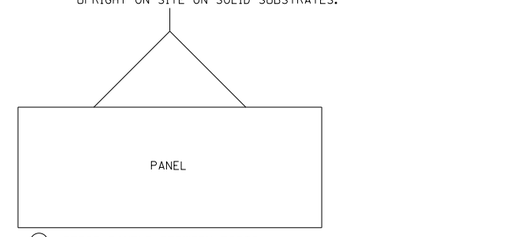




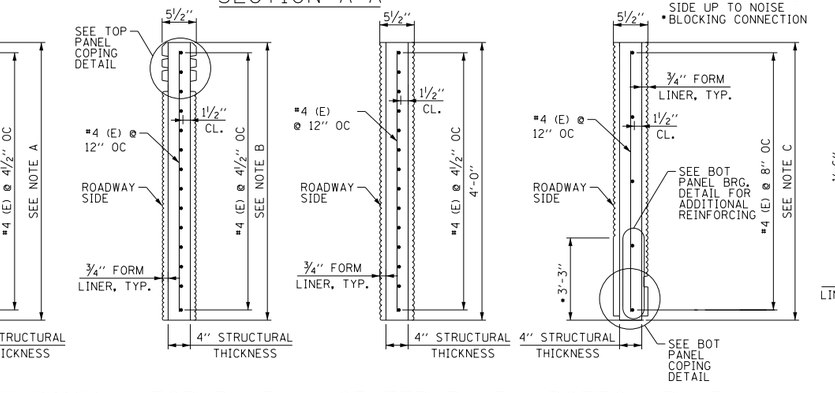
OPTIONAL TONGUE AND GROOVE DETAIL

(IN LIEU OF SHIM AND CAULK)





SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

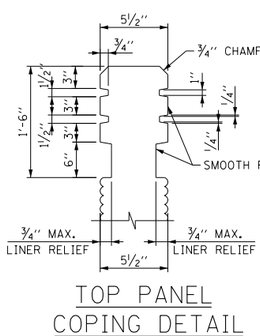


FULL HEIGHT PANEL SECTION B-B

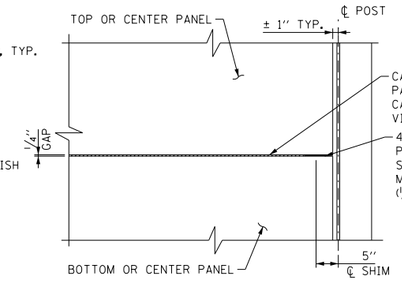
TOP PANEL SECTION B-B

CENTER PANEL SECTION B-B

BOTTOM PANEL SECTION B-B



TOP PANEL COPING 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

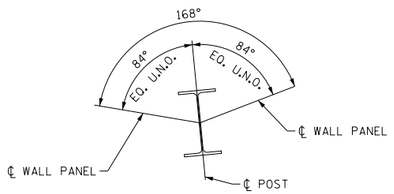
TO ACCOMMODATE VARYING HEIGHT NAW WITHIN ONE PANEL WITH TOP AND BOTTOM COPING, FULL HEIGHT PANEL IS PERMITTED TO BE 4'-0", 4'-6", 5'-0", 5'-6", 6'-0", 6'-6", 7'-0", 7'-6", OR 8'-0" TALL

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

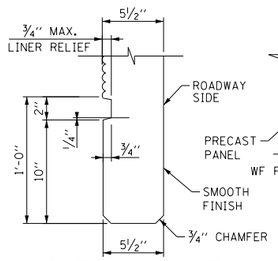
NOTE C

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.

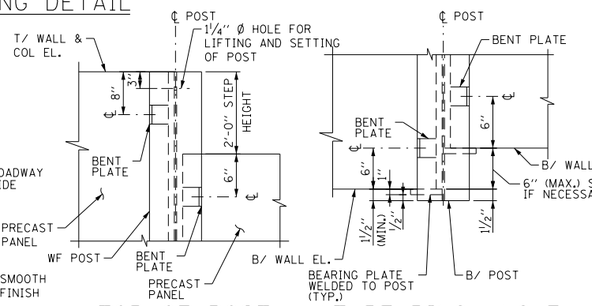


NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE. MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

MIN ANGLE BETWEEN PANELS AT TYP POST



BOTTOM PANEL COPING DETAIL



TOP OF POST

AT BEARING ANGLE

BENT PLATE DETAILS

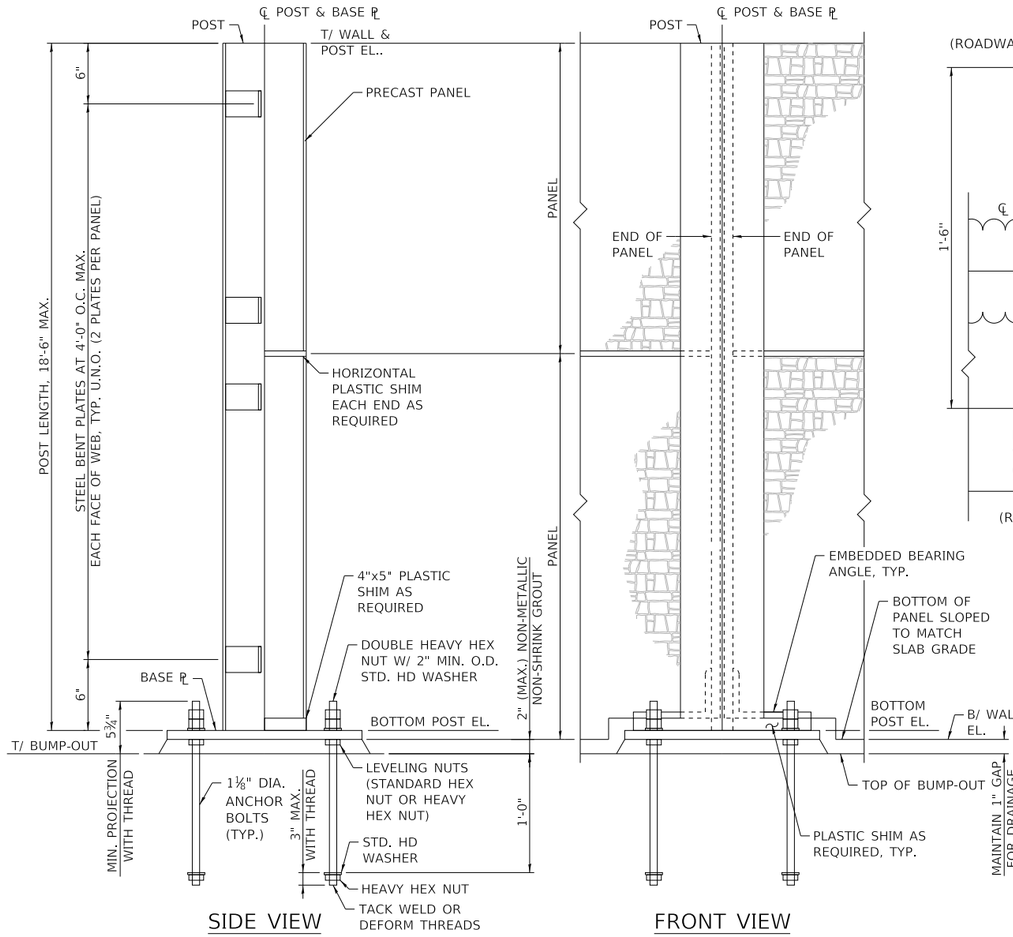
SHEET 2 OF 2

APPROVED Paul Kovacs DATE 7-17-2020
CHIEF ENGINEERING OFFICER

Illinois Tollway

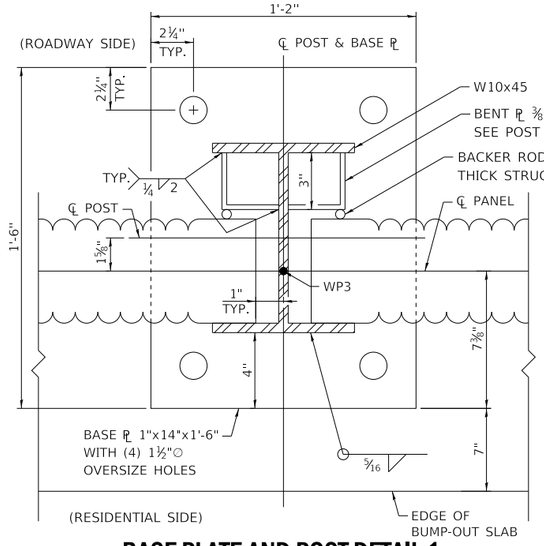
CENTRAL TRI-STATE STRUCTURE MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G13-03

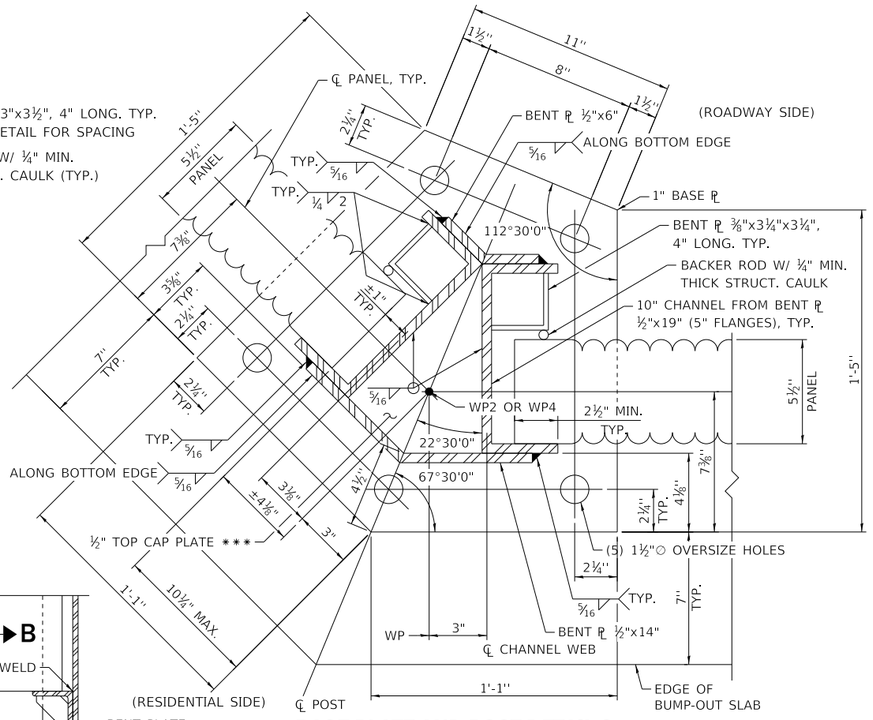


POST DETAIL*

*TYPICAL POST SHOWN, OTHERS SIMILAR

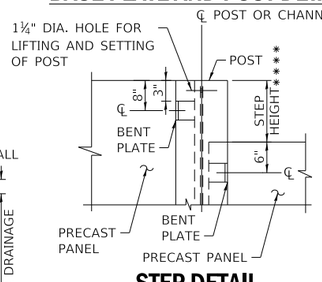


BASE PLATE AND POST DETAIL 1



BASE PLATE AND POST DETAIL 2

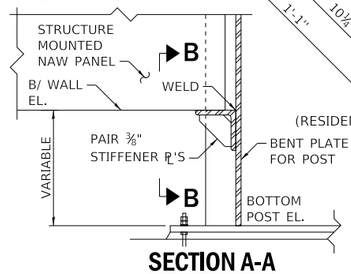
*** TOP CAP PLATE (NOT SHOWN) WELDED ALL AROUND PERIMETER USING ¼" FILLET WELD TO COMPLETELY SEAL POST INTERIOR. SEE DETAIL BELOW.



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)

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.

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

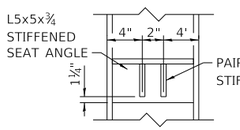
PRECAST CONCRETE:
f'c = 5,000 PSI AT 28 DAYS (CLASS PC)
f'c = 3,500 PSI AT 5 DAYS (SHIPPING)
DENSITY = 150 PCF

STEEL POST:
ASTM A709 (AASHTO M270)
GRADE 50, fy = 50 KSI
ALL STEEL POSTS TO BE HOT DIPPED GALVANIZED

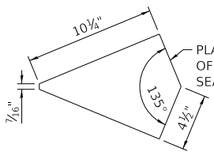
BENT PLATE AND BEARING ANGLES:
ASTM A709 (AASHTO M270)
GRADE 50, fy = 50 KSI U.N.O.
ALL STEEL TO BE HOT DIPPED GALVANIZED

ANCHOR BOLT ASSEMBLY:
BOLT: ASTM F1554, GRADE 105
HEAVY HEX NUTS: ASTM A563, DH3
HARDENED WASHERS: ASTM F436
ASSEMBLY PIECES SHALL BE HOT - DIP

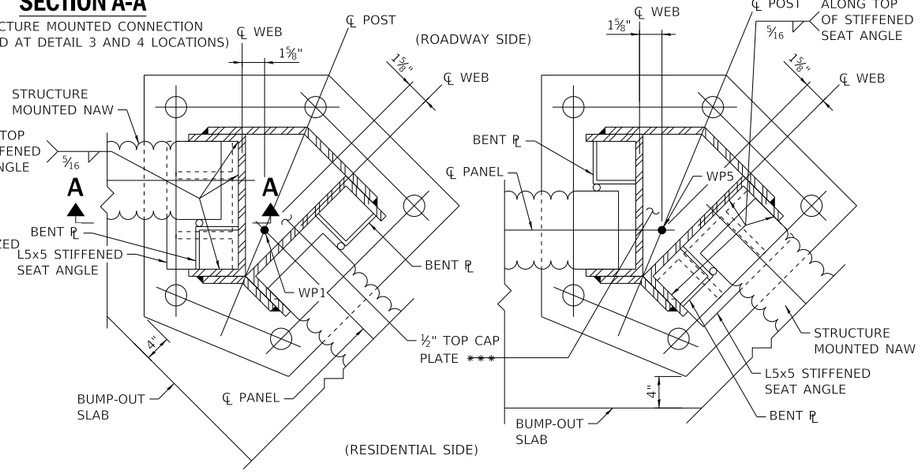
REINFORCING STEEL:
ASTM A709 (AASHTO M270)
fy = 60,000 PSI (EPOXY COATED)



SECTION B-B



TOP CAP PLATE



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.

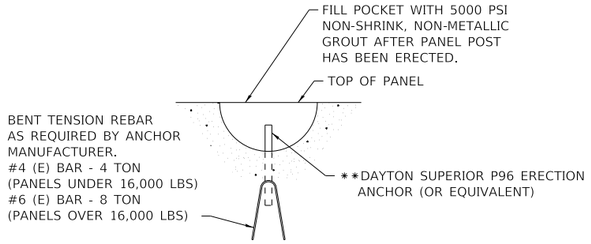
APPROVED Paul Kovacs DATE 7-17-2020
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT
3-01-2021	REVISE CHANNEL PL. TO 19" WITH 5" FLANGES AND CLARIFIED CL. DIM.
	MOVE TOP BENT PLATE AND ADD LIFTING HOLE TO TOP OF POST
7-17-2020	REVISE NOTE 1, ADD TONGUE AND GROOVE DETAIL AND REVISE NOTE C

Illinois Tollway

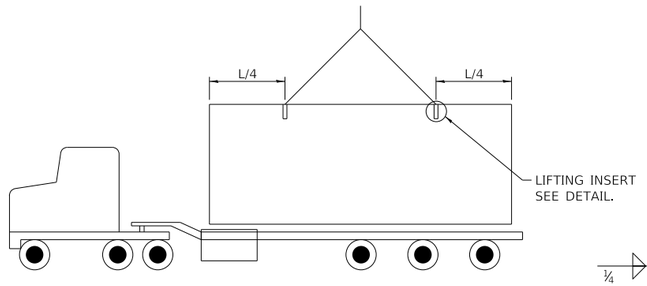
CENTRAL TRI-STATE BUMP-OUT MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G14-03

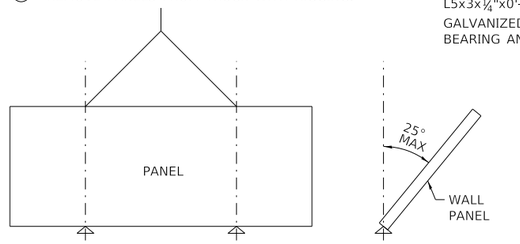


TYPICAL LIFTING INSERT DETAIL

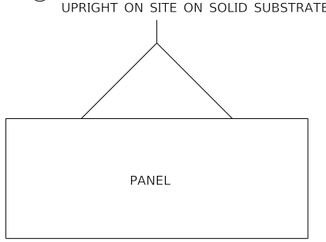
**ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED



① REMOVE PANELS FROM TRUCK WITH RIGGING.



② TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.

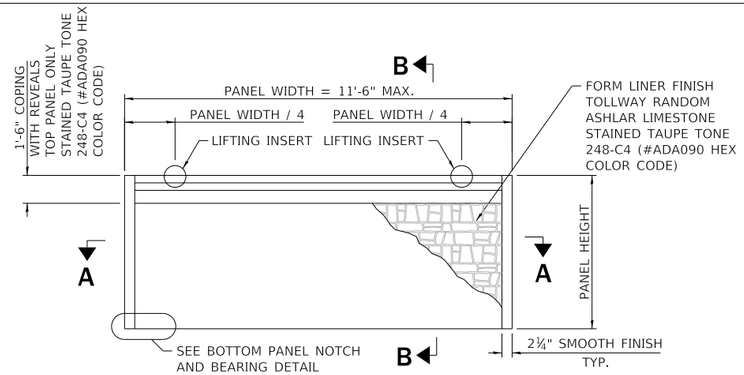


③ ERECT PANELS BETWEEN POSTS

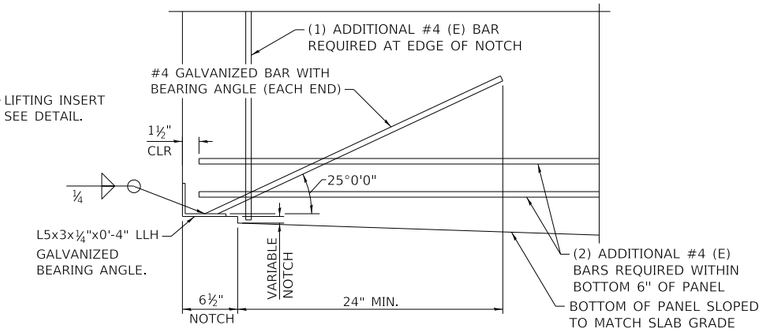
SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

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

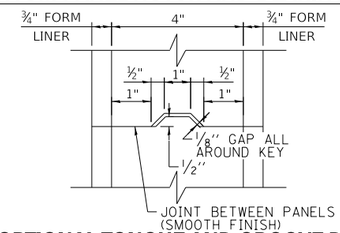
2. THE NAW INSTALLATION PROCEDURES SHOWN ON THIS SHEET PROVIDE GENERAL INSTALLATION SEQUENCE AND PROCEDURES FOR THE CONTRACTOR. THE CONTRACTOR SHALL RETAIN SOLE RESPONSIBILITY FOR THE MEANS, METHODS, AND TECHNIQUES OF CONSTRUCTION OF THE NAW FOR COMPLIANCE WITH LAWS, REGULATIONS, AND CODES, AND FOR THE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



TYPICAL NOISE WALL PANEL DETAIL

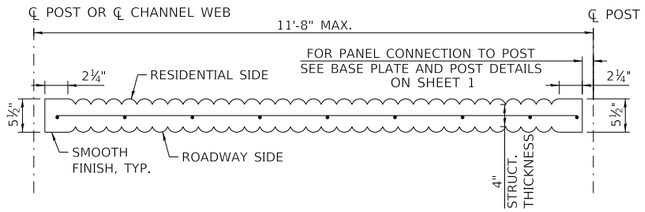


BOTTOM PANEL NOTCH AND BEARING DETAIL



OPTIONAL TONGUE AND GROOVE DETAIL

(IN LIEU OF SHIM AND CAULK)



TYPICAL PLAN VIEW THRU NOISE ABATEMENT WALL

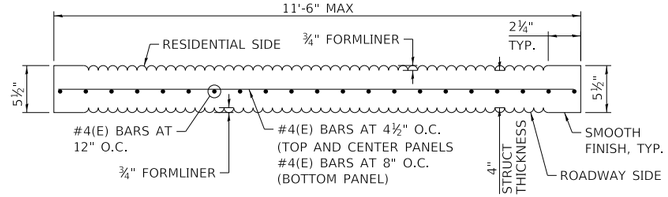
MISCELLANEOUS STEEL QUANTITY

W POST

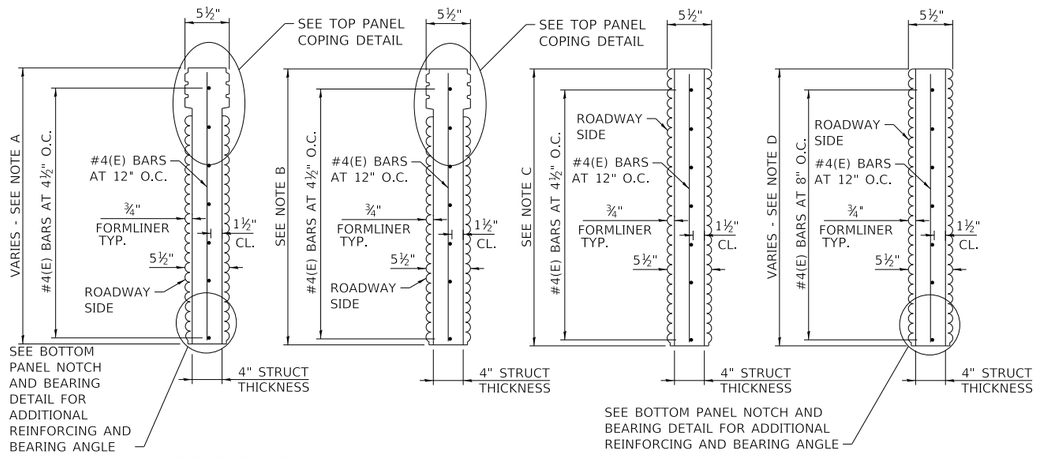
DESCRIPTION	WEIGHT
BASE PLATE	71 LBS.
BENT PLATE ALLOWANCE (16 PIECES)	44 LBS.
ANCHOR BOLT ASSEMBLY (4 EACH)	32 LBS.
TOTAL	147 LBS.

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



FULL HEIGHT PANEL

SECTION B-B

TOP PANEL

SECTION B-B

CENTER PANEL

SECTION B-B

BOTTOM PANEL

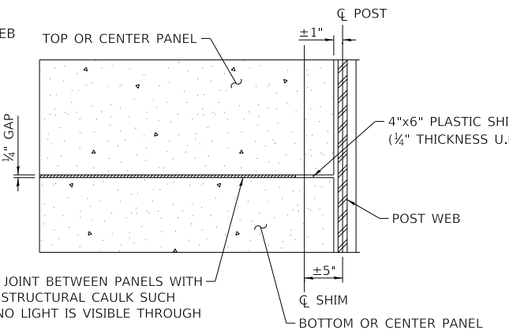
SECTION B-B

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.

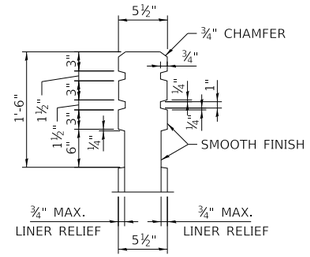
NOTE B
TO ACCOMMODATE VARYING HEIGHT NAW, TOP PANEL IS PERMITTED TO BE 4'-0", 5'-0", 6'-0", 7'-0" OR 8'-0" TALL.

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

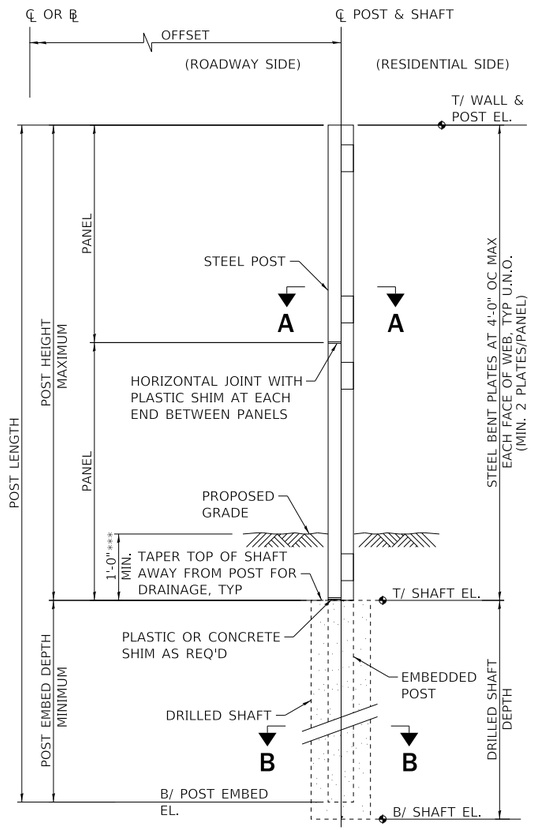
SHEET 2 OF 2

APPROVED Paul Kovacs CHIEF ENGINEERING OFFICER DATE 7-17-2020

Illinois Tollway

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

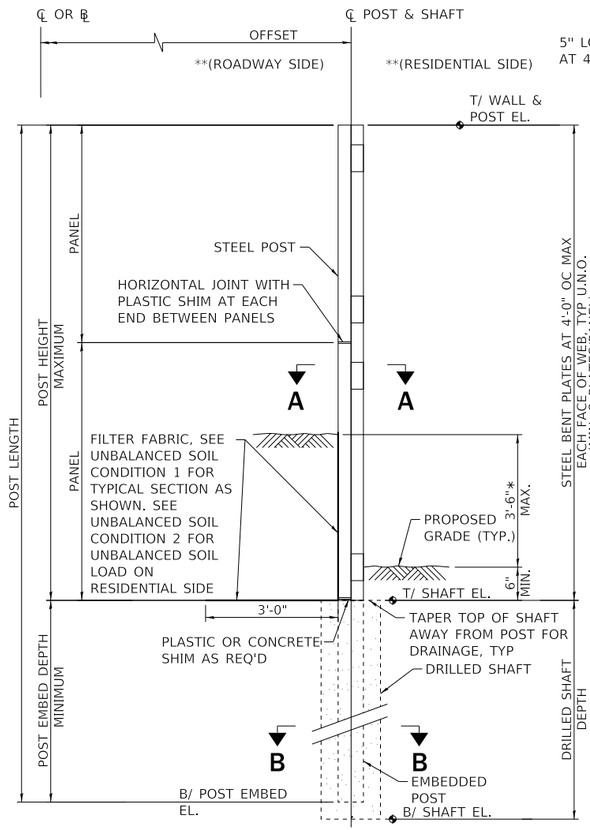
STANDARD G14-03



TYPICAL CROSS SECTION

(BALANCED SOIL LOAD)

*** BALANCED SOIL CONDITION CAN ACCOMMODATE UP TO A 9" UNBALANCED SOIL LOAD

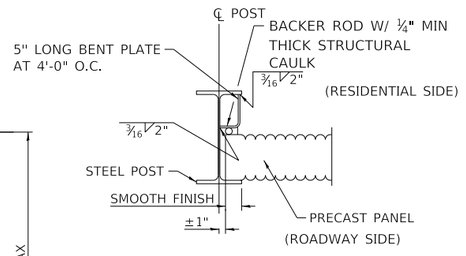


TYPICAL CROSS SECTION

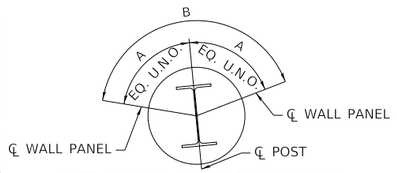
(UNBALANCED SOIL LOAD)

** 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.

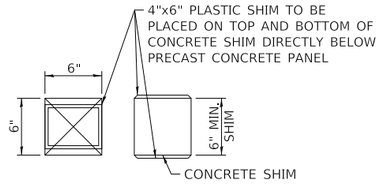


PANEL TO POST CONNECTION DETAIL



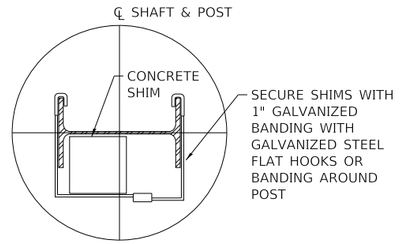
NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

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

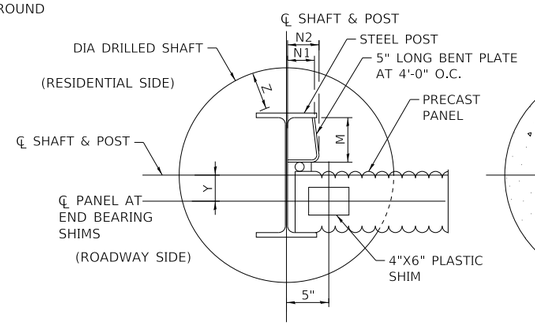
NAW TYPE	MAX POST HEIGHT	MIN POST EMBED DEPTH	MAX DRILLED SHAFT SPACING	DRILLED SHAFT DEPTH	STEEL POST SIZE	Y	BENT PLATE M x N1 x THICK.	N2	Z	DIA	A	B
NON-CRASHWORTHY GROUND MOUNTED I	15'-0"	10'-0"	20'-0"	12'-0"	W18X35 ^	3 15/16"	7"x2⅝"x⅜"	3½"	5⅝"	2'-6"	90°00'00"	180°00'00"
NON-CRASHWORTHY GROUND MOUNTED 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

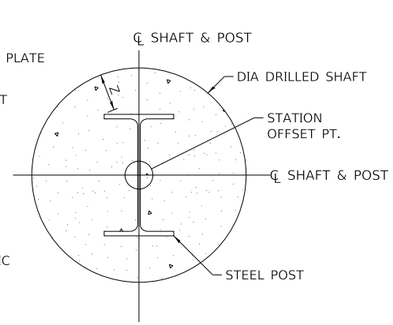
POST & DRILLED SHAFT DESIGN FOR COHESIONLESS SOILS

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"	12⅜"x2⅞"x⅜"	3⅜"	2 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 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"x4⅜"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

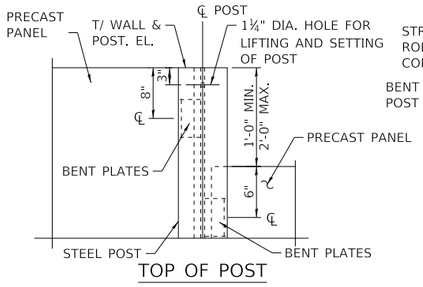
DATE	REVISIONS
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT
3-01-2021	CLARIFIED 90 DEG. DET., ADDED DIM. C,
	REVISED CL. ON 4" PANELS TO 1.5", MOVE
	TOP BENT PLATE, ADD LIFTING HOLE AND REV.
	BEARING WIDTH ANGLE
7-17-2020	REVISE NOTE 1, ADD FILTER FABRIC DET., ADD
	NOTE THAT TYP. SECT. ACCOMMODATES 9"
	UNBALANCED SOIL, REV. CONC. SHIMS TO 6"
	MIN., INC. MIN. ANGLE BETW. POST AND PANEL
	REMOVE REDUNDANT DIS. IN SECT. B-B,
	CLARIFY 1.5" DIM. IN 90 DEG. DET., ADD
	TONGUE AND GROOVE DET., ADD NOTE B

Illinois Tollway

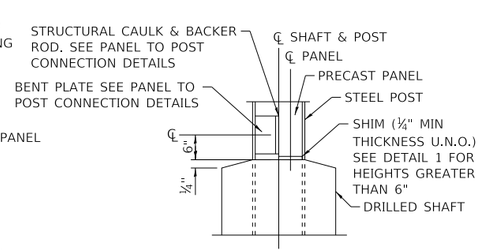
NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G15-03

Paul Kovacs
APPROVED . . . . . DATE 7-17-2020
CHIEF ENGINEERING OFFICER

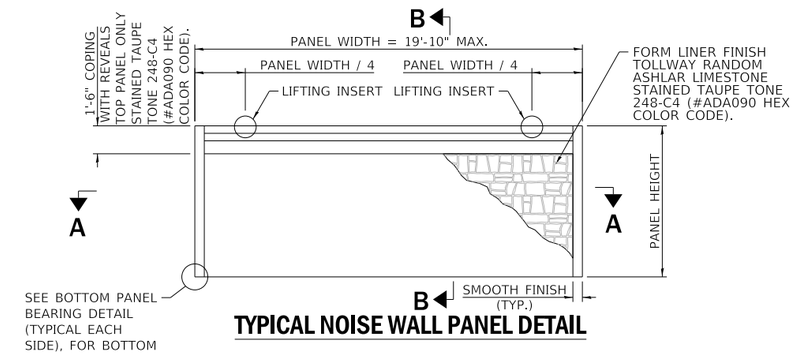


TOP OF POST

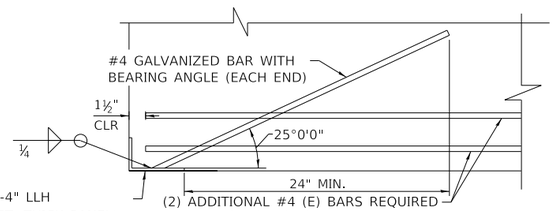


BOTTOM OF POST

BENT PLATE DETAILS

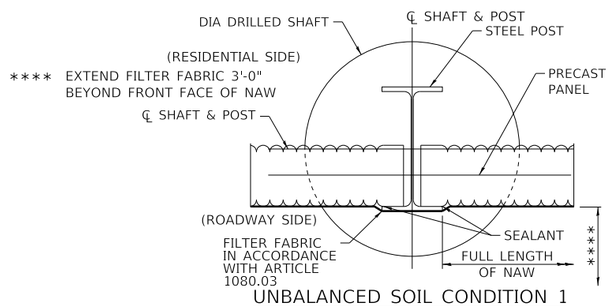


TYPICAL NOISE WALL PANEL DETAIL

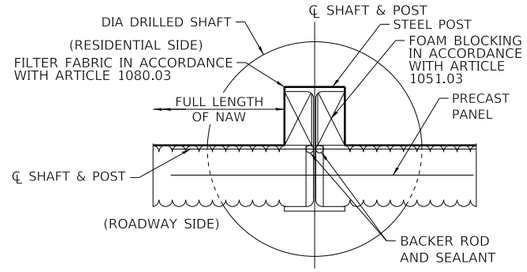


L5x3x¼"x0'-4" LLH
(4IN. STRUCT. THICK PANEL)
L5x3x¼"x0'-6" LLH
(6IN. STRUCT. THICK PANEL)
GALVANIZED BEARING ANGLE.

BOTTOM PANEL BEARING DETAIL

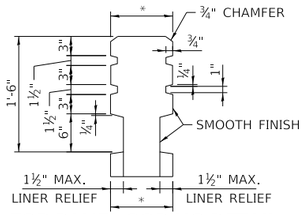


UNBALANCED SOIL CONDITION 1

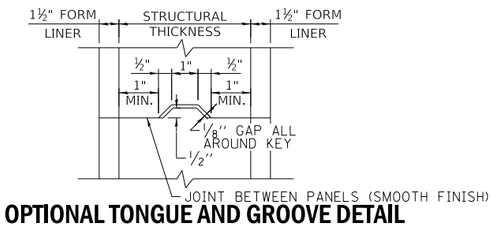


UNBALANCED SOIL CONDITION 2

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



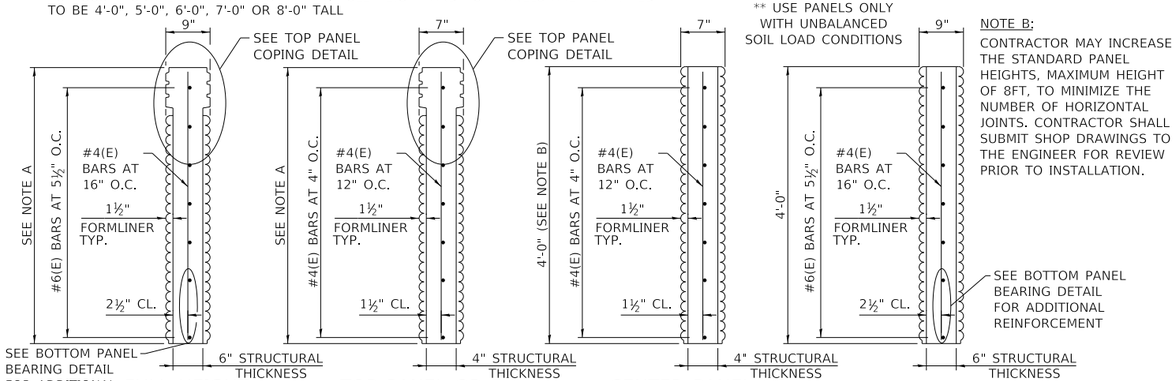
TOP PANEL COPING DETAIL



OPTIONAL TONGUE AND GROOVE DETAIL

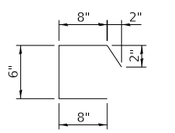
(IN LIEU OF SHIM AND CAULK)

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

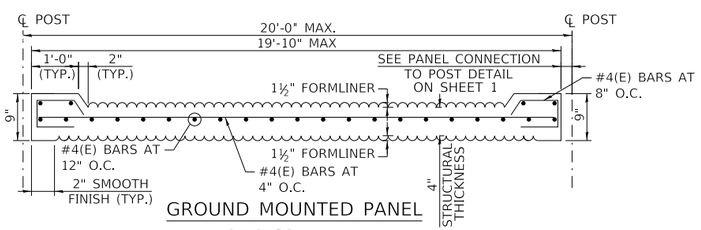


SECTION B-B | SECTION B-B | SECTION B-B | SECTION B-B

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.

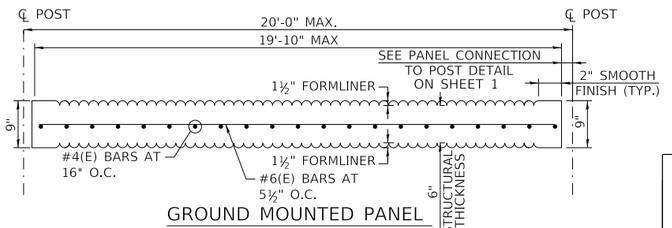


END BAR DETAIL



GROUND MOUNTED PANEL

SECTION A-A



GROUND MOUNTED PANEL
(UNBALANCED SOIL LOAD)

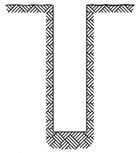
SECTION A-A

Illinois Tollway

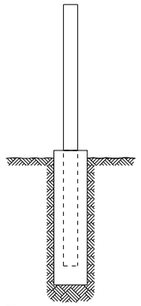
NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G15-03

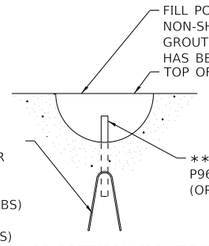
Paul Kovacs
APPROVED . . . . . DATE 7-17-2020
CHIEF ENGINEERING OFFICER



① DRILL SHAFTS



② POUR CONCRETE AND SET EMBEDDED POSTS

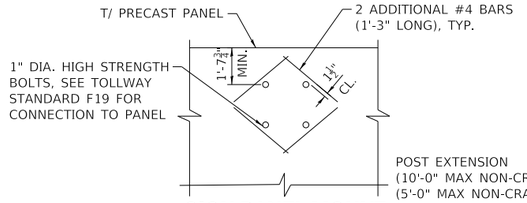


TYPICAL LIFTING INSERT DETAIL

*** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

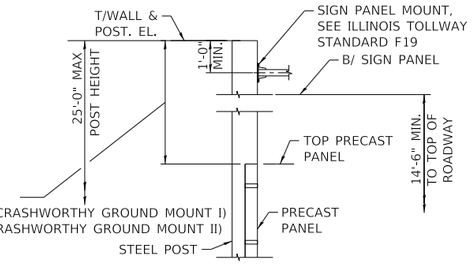
NOTES:

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.



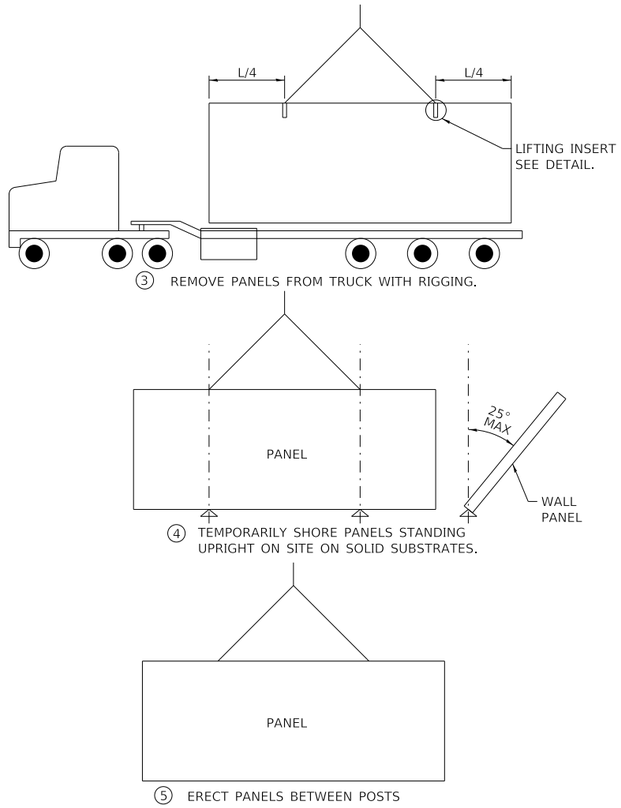
SIGN PANEL MOUNT TO PANEL DETAIL

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".

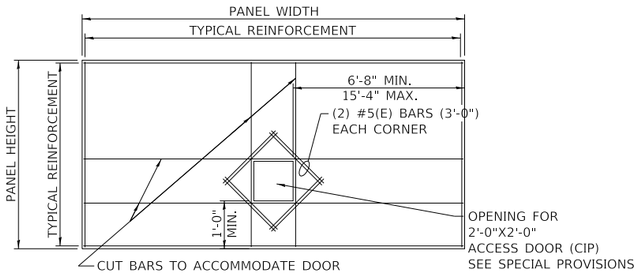


SIGN PANEL MOUNT POST EXTENSION DETAIL

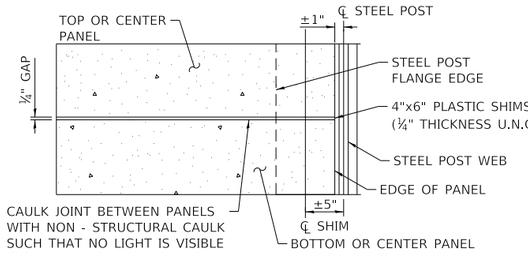
STEEL POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A POST EXTENSION WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19 UP TO A MAXIMUM POST HEIGHT OF 25'-0"



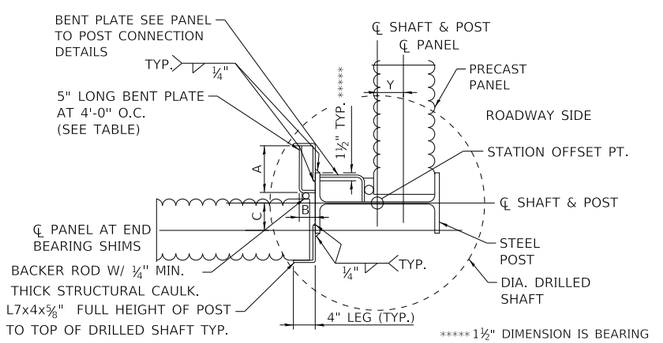
SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE



FIRE HYDRANT ACCESS OPENING DETAIL



HORIZONTAL JOINT DETAIL



***** 1½" DIMENSION IS BEARING LENGTH OF THE L7x4x⅜" ANGLE ON THE POST FLANGE

90° TURN 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"x⅜"	3⅜"
NON-CRASHWORTHY GROUND MOUNTED II	6½"x3"x⅜"	3⅜"
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

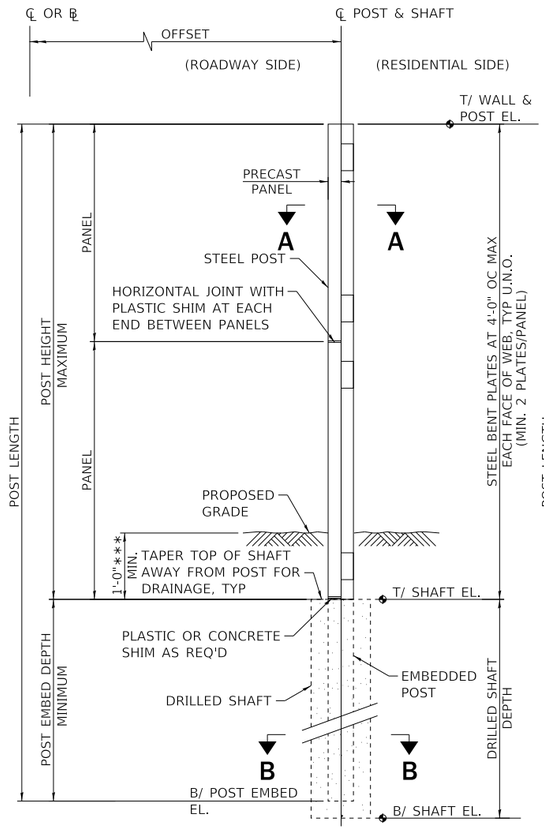
NAW TYPE	BENT PLATE A x B x THICK.	DIM. C
NON-CRASHWORTHY GROUND MOUNTED I	6½"x3"x⅜"	3⅜"
NON-CRASHWORTHY GROUND MOUNTED II	7"x3"x⅜"	3⅞"
NON-CRASHWORTHY GROUND MOUNTED III	10"x3"x⅜"	5⅜"
NON-CRASHWORTHY GROUND MOUNTED IV	10¼"x3"x⅜"	5⁹⁄₁₆"

Paul Kovacs
APPROVED ..... DATE 7-17-2020
CHIEF ENGINEERING OFFICER

Illinois Tollway

NON-CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

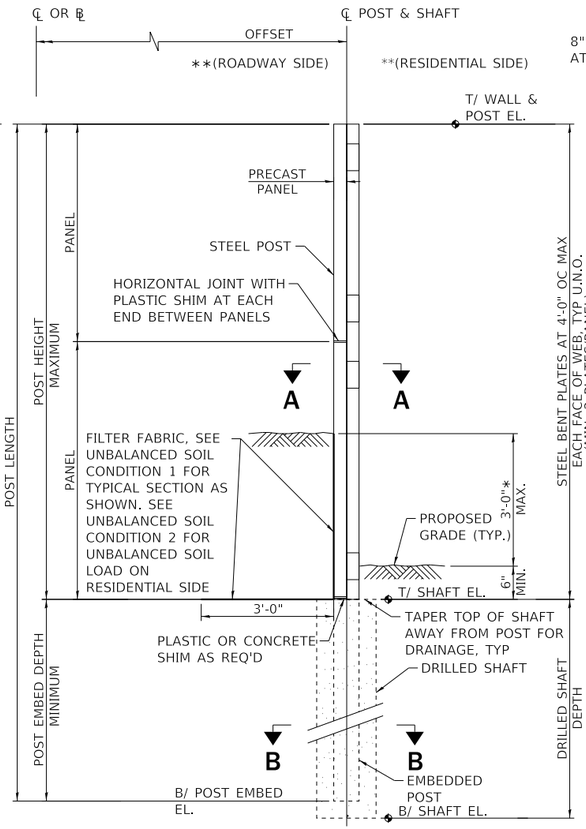
STANDARD G15-03



TYPICAL CROSS SECTION

(BALANCED SOIL LOAD)

*** INCREASE TO ACCOMMODATE GUTTER WHEN NEEDED

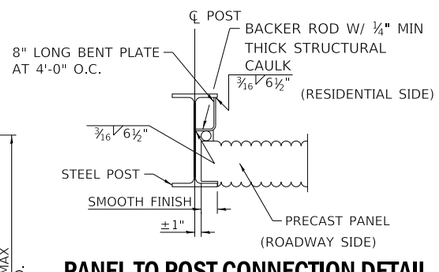


TYPICAL CROSS SECTION

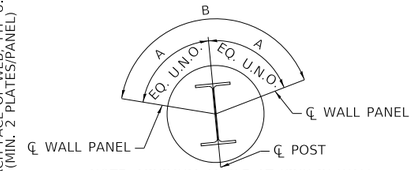
(UNBALANCED SOIL LOAD)

** 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.

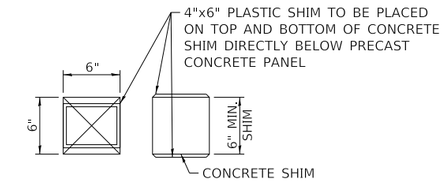


PANEL TO POST CONNECTION DETAIL



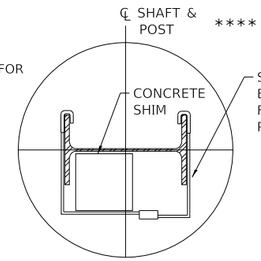
NOTE: MINIMUM ANGLE AT KINK IN WALL NOT REQUIRING POST WITH WIDER FLANGE, MINIMUM DISTANCE FROM FLANGE EDGE TO THE PANEL EDGE SHALL BE 1¾".

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

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

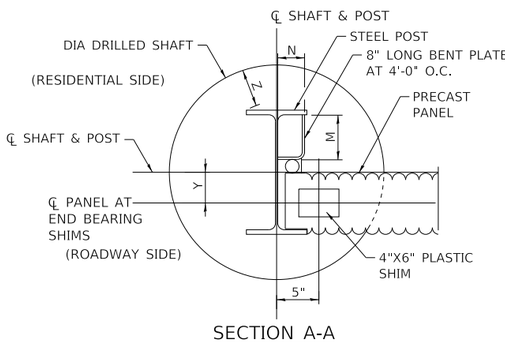
REINFORCING STEEL:
fy = 60,000 PSI (EPOXY COATED)

DESIGN SPECIFICATIONS

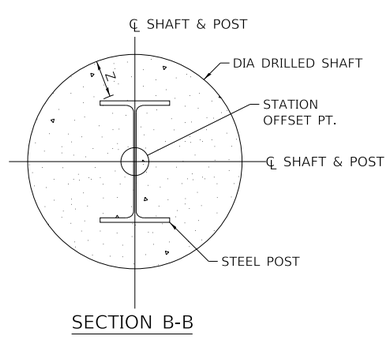
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 9TH EDITION DATED APRIL 2020.

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"	6⅜"	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"	14½"x4⅜"x⅜"	3¾"	3'-0"	86°25'25"	172°50'50"

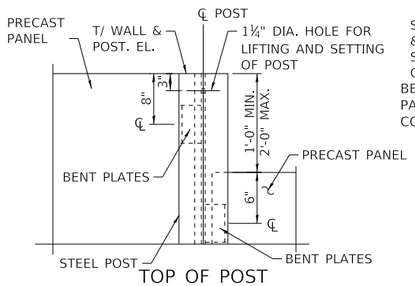
DATE	REVISIONS
3-01-2022	UPDATE ERECTION ANCHOR CALLOUT
3-01-2021	CLARIFIED 90 DEG. DET., REMOVE BENT PL. TABLE, MOVE TOP BENT PL., ADD LIFTING HOLE, CHANGE M DIM., REVISE BEARING ANGLE WIDTH AND ADD BRG. PL. CLIP DIM.
7-17-2020	REV. NOTE 1, ADD FILTER FABRIC DET., REV. CONC. SHIMS TO 6" MIN., INC. MIN. ANGLE BETW. POST AND PANEL, REMOVE REDUNDANT DIMS. IN. SECT. B-B, REV. END BAR SPACING TO 14" IN SECT. A-A, CLARIFY 1" DIM. IN 90 DEG. DET., REV. POST SIZE IN POST EXTENSION DET. ADD TONGUE AND GROOVE DET. AND ADDED NOTE C

Paul Kovacs
APPROVED ..... DATE 7-17-2020
CHIEF ENGINEERING OFFICER

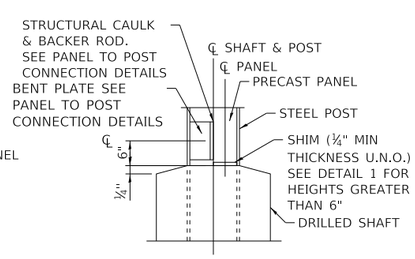
Illinois Tollway

CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G16-03

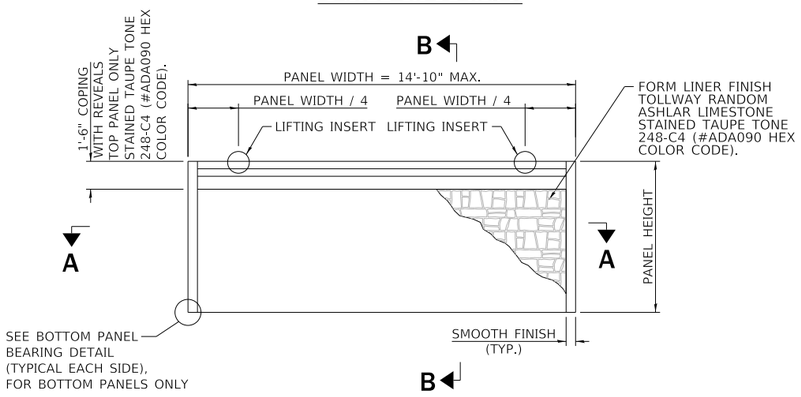


TOP OF POST

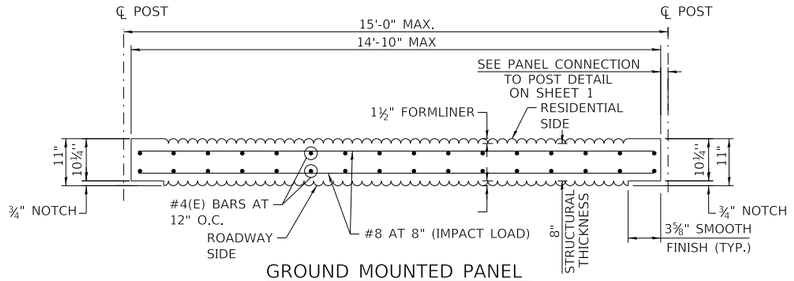


BOTTOM OF POST

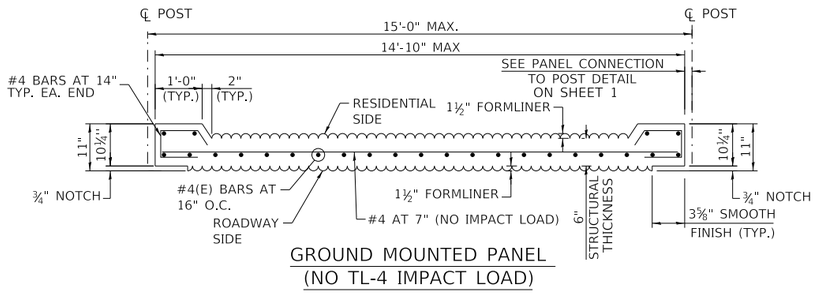
BENT PLATE DETAILS



TYPICAL NOISE WALL PANEL DETAIL



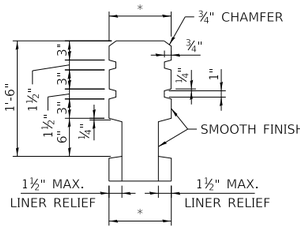
GROUND MOUNTED PANEL
(TL-4 IMPACT LOAD)



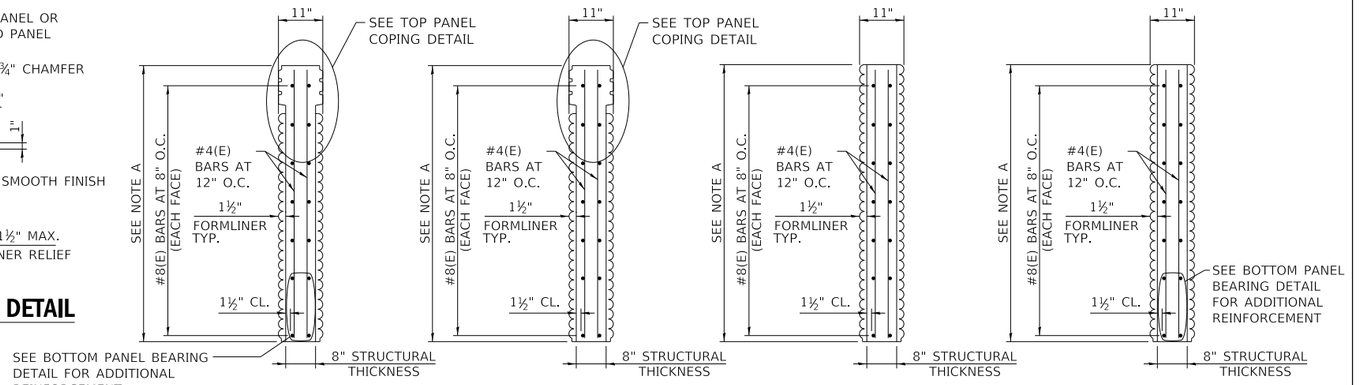
GROUND MOUNTED PANEL
(NO TL-4 IMPACT LOAD)

SECTION A-A

* 11" FOR TL-4 IMPACT LOAD PANEL OR
9" FOR NO TL-4 IMPACT LOAD PANEL



TOP PANEL COPING DETAIL



FULL HEIGHT PANEL
(TL-4 IMPACT LOAD)

SECTION B-B

TOP PANEL
(TL-4 IMPACT LOAD)

SECTION B-B

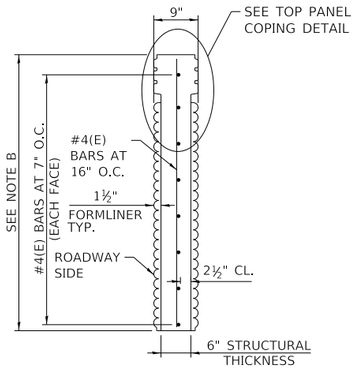
CENTER PANEL
(TL-4 IMPACT LOAD)

SECTION B-B

BOTTOM PANEL
(TL-4 IMPACT LOAD)

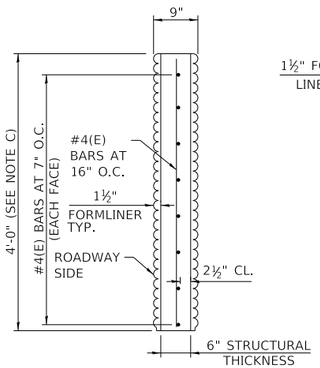
SECTION B-B

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

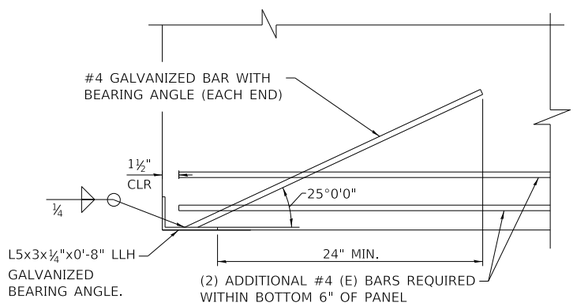


CENTER PANEL
(NO TL-4 IMPACT LOAD)

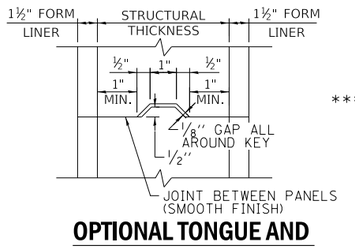
SECTION B-B

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.

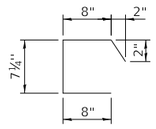


BOTTOM PANEL BEARING DETAIL

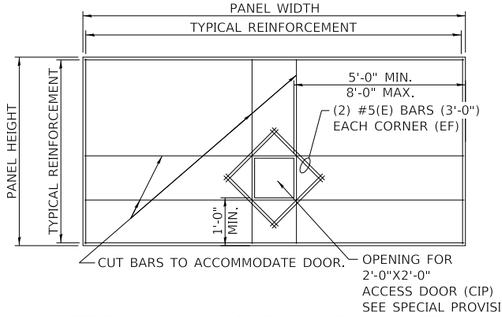


OPTIONAL TONGUE AND GROOVE DETAIL

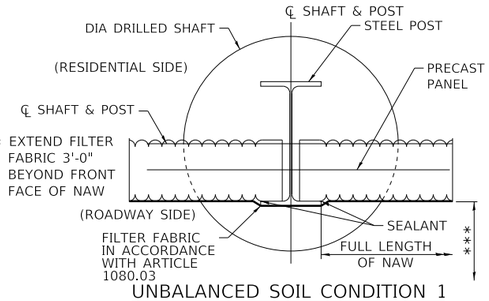
(IN LIEU OF SHIM AND CAULK)



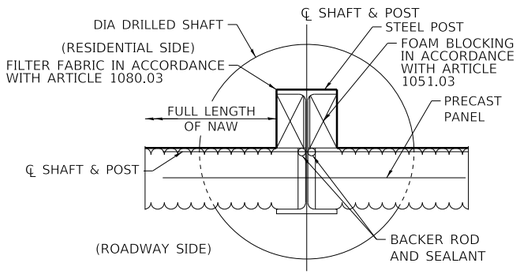
END BAR DETAIL



FIRE HYDRANT ACCESS OPENING DETAIL



UNBALANCED SOIL CONDITION 1



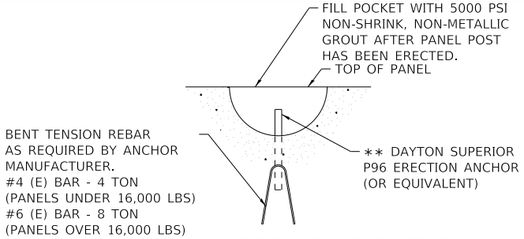
UNBALANCED SOIL CONDITION 2

Paul Kovacs
APPROVED . . . . . DATE 7-17-2020
CHIEF ENGINEERING OFFICER

Illinois Tollway

CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G16-03



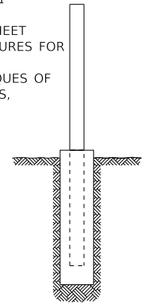
TYPICAL LIFTING INSERT DETAIL

** ERECTION ANCHORS SHALL BE HOT-DIPPED GALVANIZED

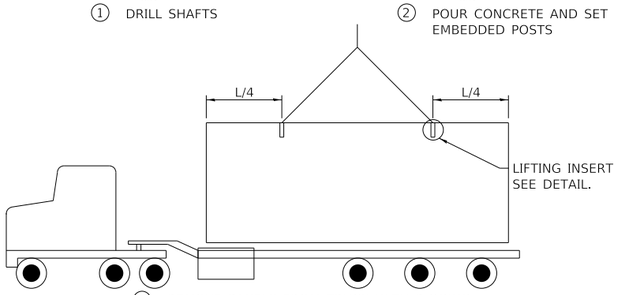
NOTES:

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.

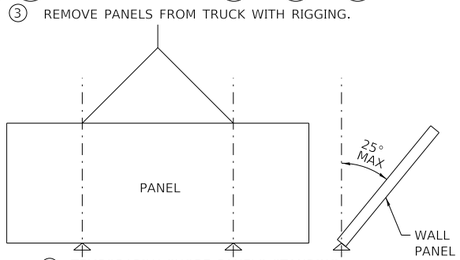
① DRILL SHAFTS



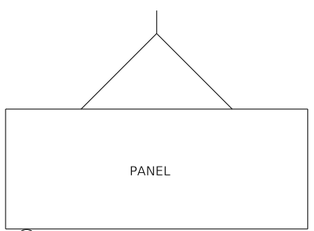
② POUR CONCRETE AND SET EMBEDDED POSTS



③ REMOVE PANELS FROM TRUCK WITH RIGGING.

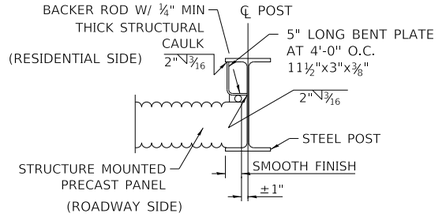


④ TEMPORARILY SHORE PANELS STANDING UPRIGHT ON SITE ON SOLID SUBSTRATES.

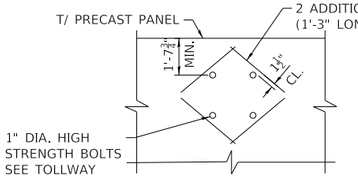


⑤ ERECT PANELS BETWEEN POSTS

SUGGESTED TYPICAL NOISE ABATEMENT WALL INSTALLATION SEQUENCE AND PROCEDURE

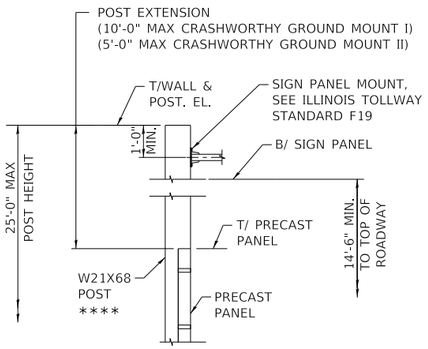


STRUCTURE MOUNTED PANEL TO POST CONNECTION DETAIL



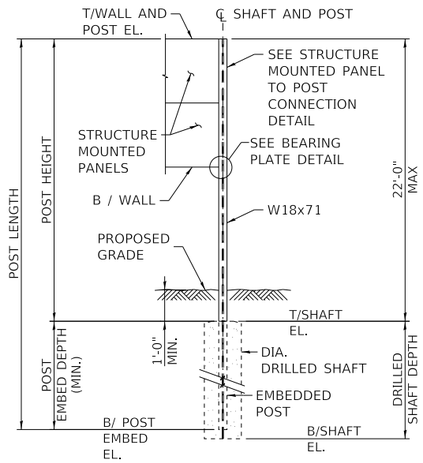
SIGN PANEL MOUNT TO PANEL DETAIL

*** 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".

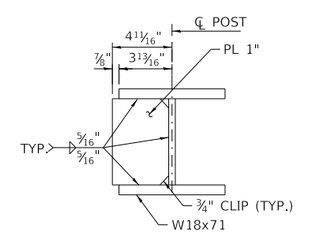


SIGN PANEL MOUNT POST EXTENSION DETAIL

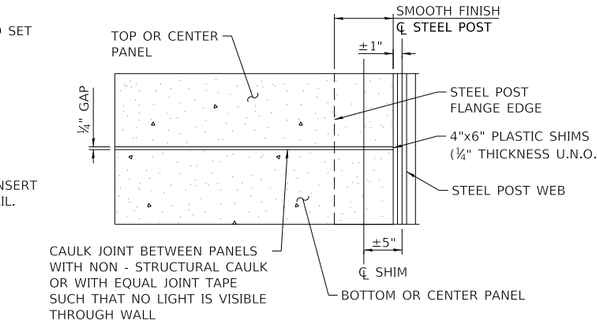
**** W18X71 POSTS HAVE BEEN DESIGNED TO ACCOMMODATE A POST EXTENSION WITH MAX 32 SF SIGN AREA IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD F19 UP TO A MAXIMUM POST HEIGHT OF 25'-0"



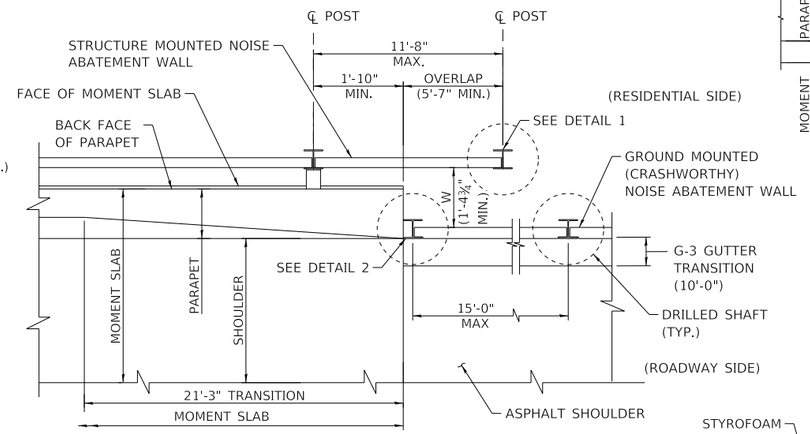
DETAIL 1



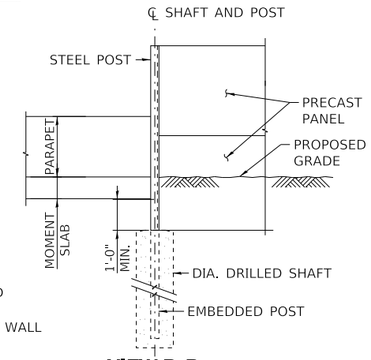
BEARING PLATE DETAIL



HORIZONTAL JOINT DETAIL

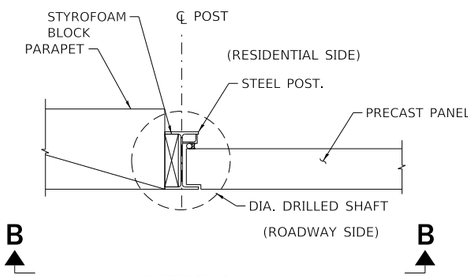


NAW TRANSITION DETAIL PLAN



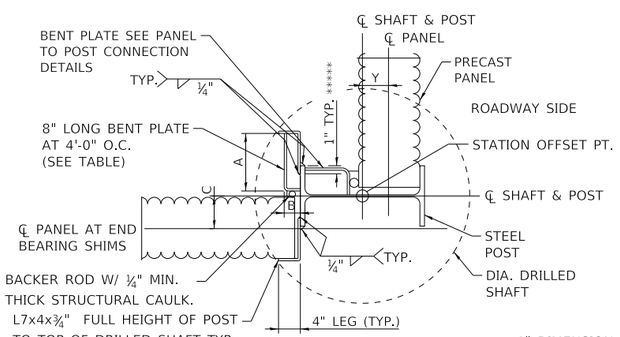
VIEW B-B

(STRUCTURE MOUNTED NAW) NOT SHOWN FOR CLARITY



DETAIL 2

CRASHWORTHY GROUND MOUNTED NAW TRANSITION TO PARAPET



***** 1" DIMENSION IS BEARING LENGTH OF L7x4x¾" ANGLE ON THE POST FLANGE

90° TURN DETAIL

90° TURN BENT PLATE TABLE

STEEL POST TYPE	BENT PLATE A x B x THICK.	DIM. C
W21x68	7¾"x3"x⅜"	4⅜"
W27x84	9½"x3"x⅜"	5½"

Paul Kovacs
APPROVED . . . . . DATE 7-17-2020
CHIEF ENGINEERING OFFICER

Illinois Tollway

CRASHWORTHY GROUND MOUNTED NOISE ABATEMENT WALL DETAILS

STANDARD G16-03