

# PRESERVATION FRIENDLY DESIGN

**David W. Fish, P.E.**

**Managing Engineer, Bridge Engineering  
Rhode Island Department of Transportation**

**Thomas H. Pechillo, Jr., P.E.**

**Regional Manager  
COLLINS ENGINEERING, Inc.**

**Kevin Viveiros, P.E.**

**Vice President  
PARE CORPORATION**

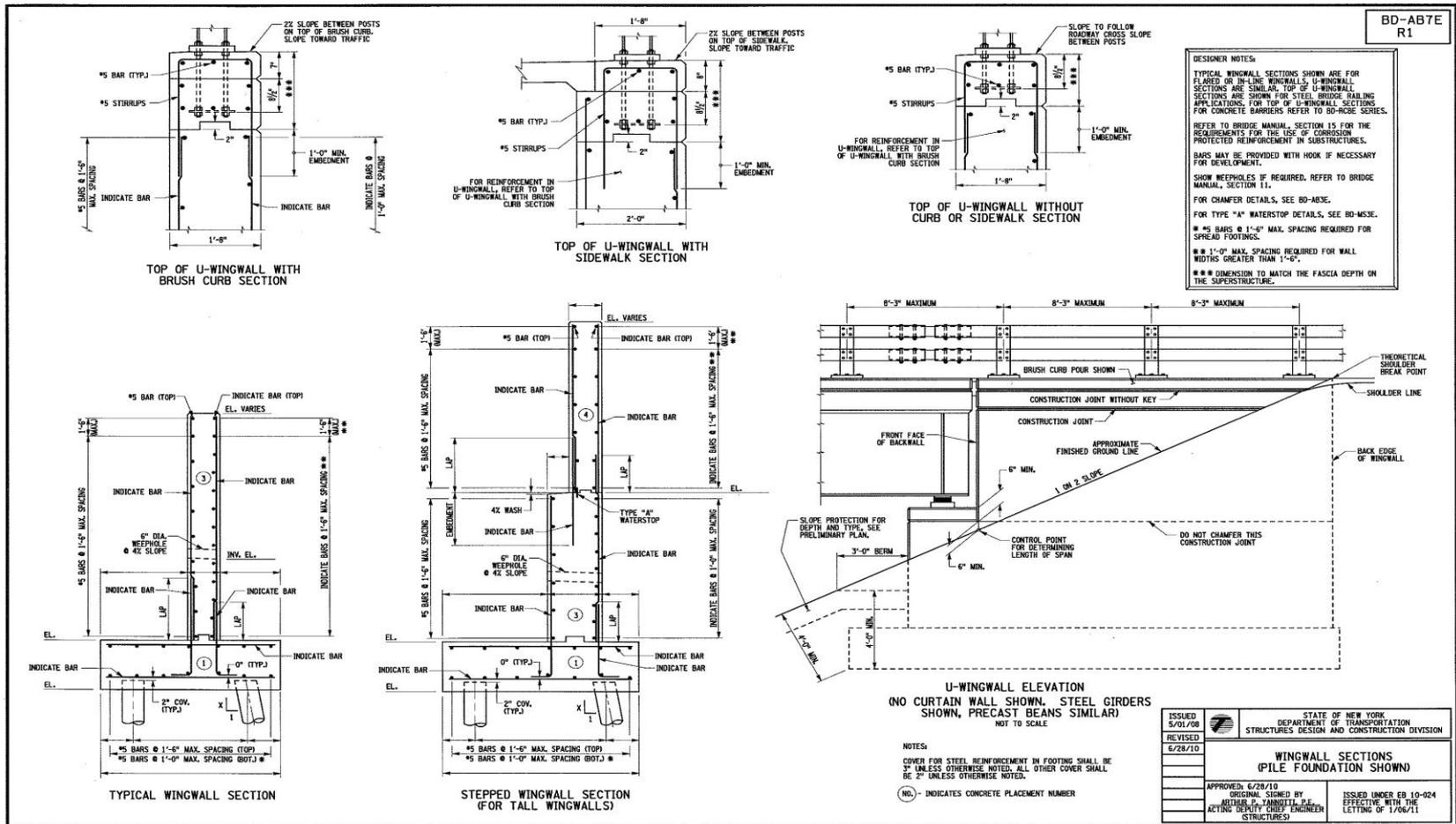
# PRESERVATION FRIENDLY DESIGN

## PROJECT APPROACH

- ▣ REVIEW STATE STANDARD DETAIL DRAWINGS
- ▣ PREPARE LONGEVITY SURVEY

# PRESERVATION FRIENDLY DESIGN

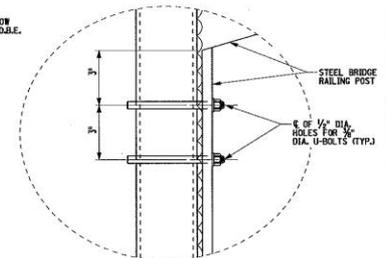
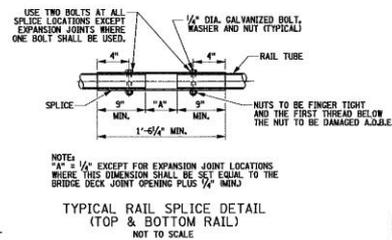
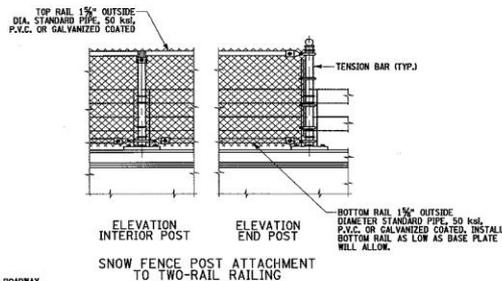
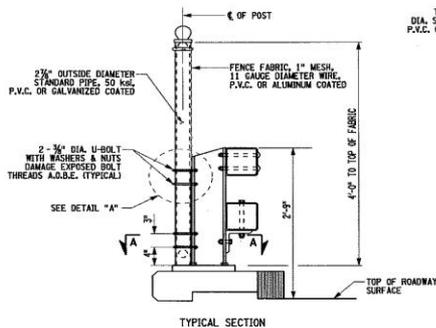
## Berm @ Bearing Area for Inspection - NY



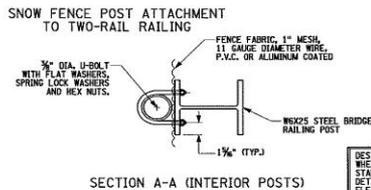
# PRESERVATION FRIENDLY DESIGN

## Snow Fence - NY

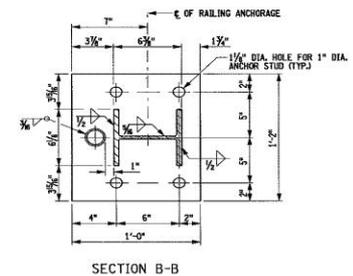
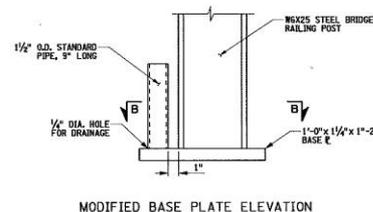
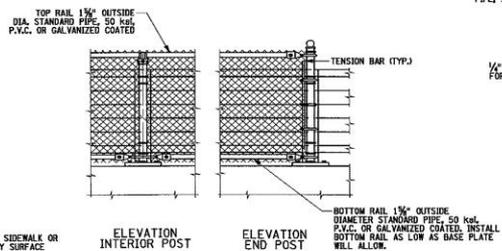
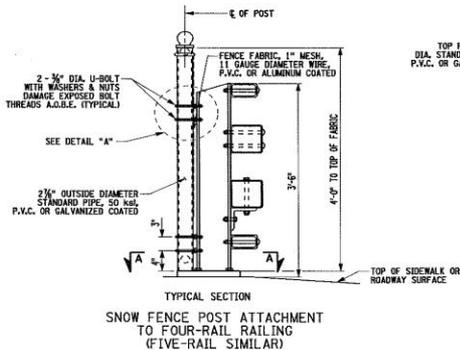
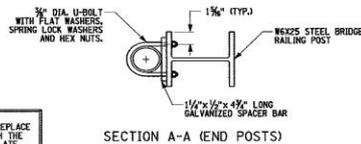
BD-FD1E



NOTE TO DESIGNER: INDICATE DESIRED FINISH ON FENCING, POSTS, RAILS, BRACES AND FITTINGS, IF P.V.C. COATING IS DESIRED, DENOTE COLOR.



DESIGNER: WHEN SNOW FENCING IS REQUIRED, REPLACE STANDARD RAILING BASE PLATE WITH THE DETAILS FOR THE MODIFIED BASE PLATE ELEVATION AND SECTION A-A FOUND ON THIS SHEET.

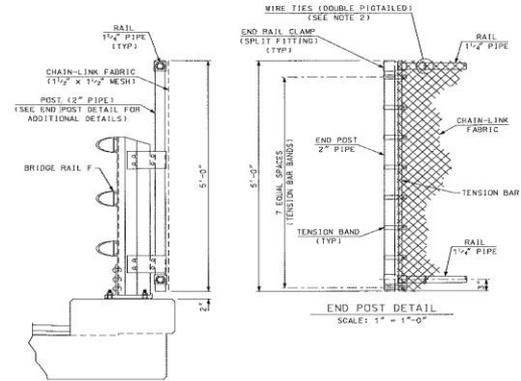
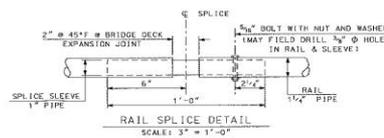
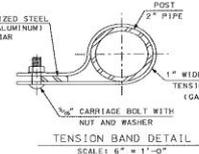
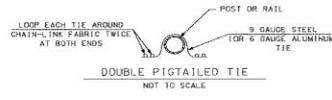
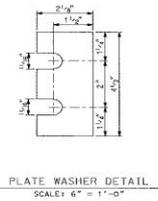
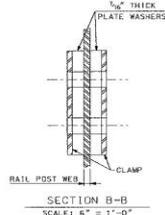
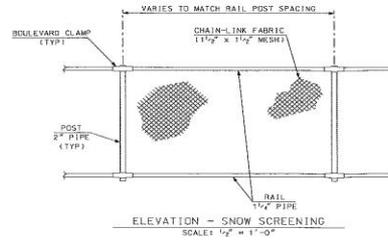
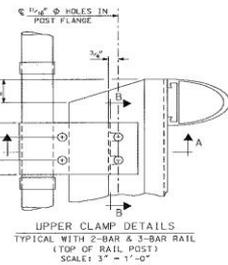
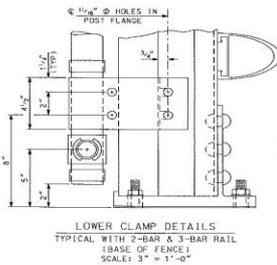
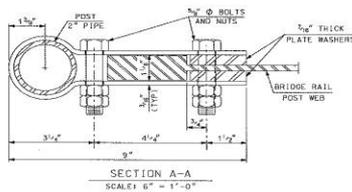
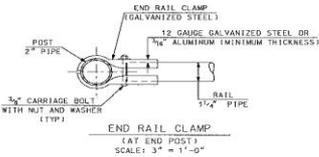
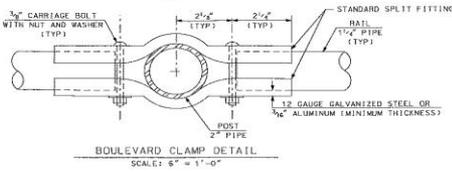


NOTES: DETAILS ON THE DRAWINGS LABELED AS "NOT TO SCALE" ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY. ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.

ISSUED 5/01/08	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION OFFICE OF STRUCTURES
REVISED	
<b>SNOW FENCING DETAILS FOR TWO AND FOUR RAIL BRIDGE RAILING</b>	
APPROVED: 1/18/08 ORIGINAL SIGNED BY GEORGE A. CHRISTIAN, P.E. DEPUTY CHIEF ENGINEER (STRUCTURES)	ISSUED UNDER EB 08-002 EFFECTIVE WITH THE LETTING OF 1/08/09

# PRESERVATION FRIENDLY DESIGN

## Snow Fence - NH



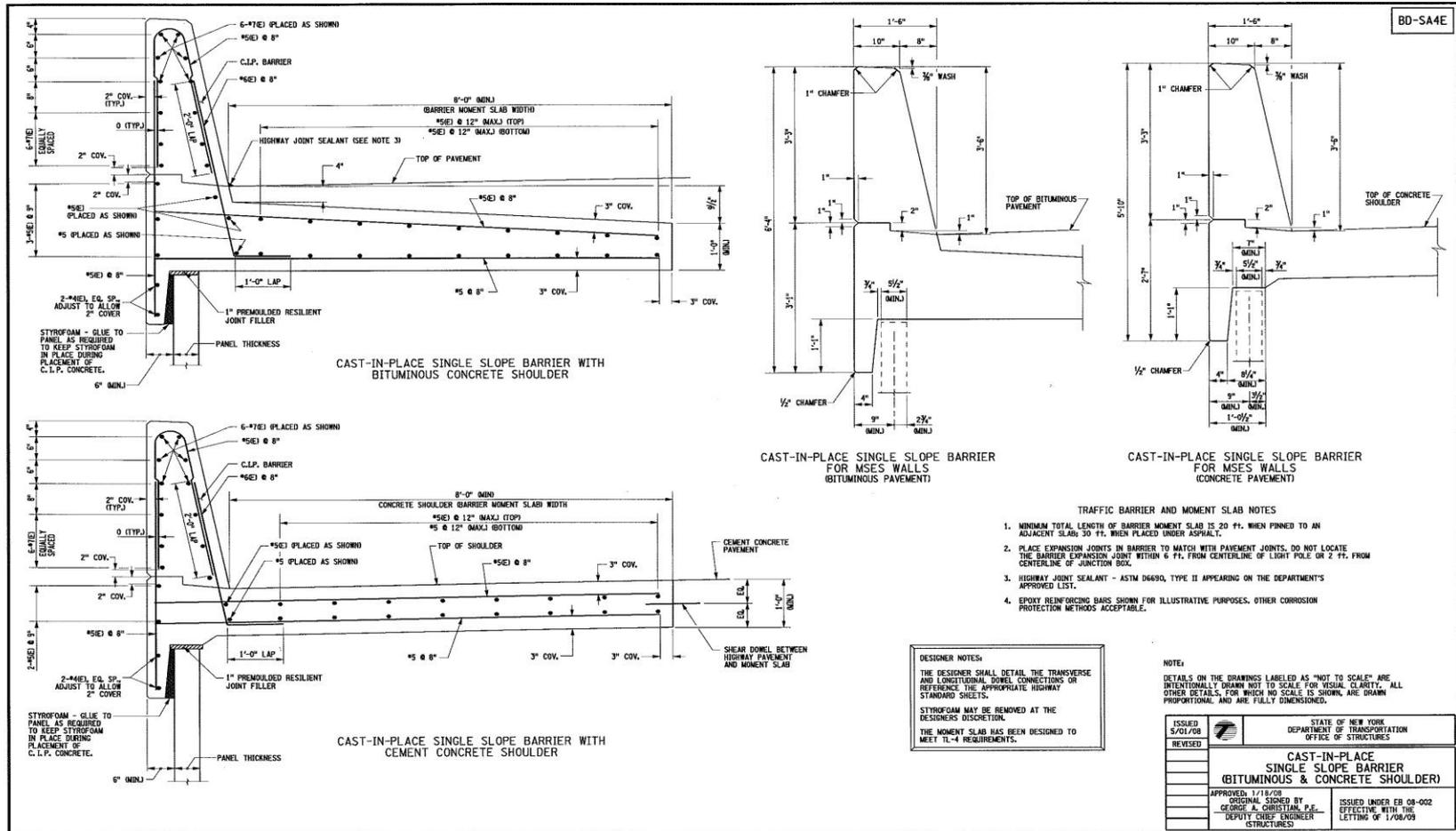
### GENERAL NOTES

- CHAIN-LINK FABRIC SHALL BE 9 GAUGE STEEL, ZINC-COATED CONFORMING TO AASHTO M 181, TYPE I, CLASS D (ASTM A 392), ALUMINUM-COATED CONFORMING TO AASHTO M 181, TYPE II (ASTM A 491) OR 6 GAUGE ALUMINUM ALLOY CONFORMING TO AASHTO M 181, TYPE III (ASTM F 1183). CHAIN-LINK FABRIC SHALL BE ENKLED ON TOP AND BOTTOM. THE SIZE OF WIRE MESH (FABRIC) SHALL BE 1 1/2".
- WIRE TIES SHALL BE STANDARD ROUND 9 GAUGE ZINC-OR ALUMINUM-COATED STEEL OR 6 GAUGE ALUMINUM ALLOY CONFORMING TO ASTM F 626. ALL TIES SHALL BE WRAPPED AROUND CHAIN-LINK FABRIC TWICE (DOUBLE PIGTAILED) AT BOTH ENDS. SPACE TIES @ 6" O.C. TO BOTTOM RAIL, AND @ 12" O.C. TO ALL POSTS AND OTHER RAILS.
- POST AND RAIL PIPE SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO AASHTO M 181, GRADE I (ASTM F 1083) OR ALUMINUM ALLOY CONFORMING TO AASHTO M 181 (ASTM A 429), ALLOY 6063-T6. ALL PIPE SHALL BE SCHEDULE 40, STANDARD WEIGHT, NOMINAL PIPE SIZES ARE SHOWN ON THE DRAWING.
- TENSION BARS, BAR BANDS, BOULEVARD AND END RAIL CLAMPS SHALL BE STEEL OR ALUMINUM ALLOY CONFORMING TO AASHTO M 181 (ASTM F 626). STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111 (ASTM A 123) OR AASHTO M 232 (ASTM A 153) AS APPLICABLE.
- ALL BOLTS AND NUTS SHALL BE STEEL CONFORMING TO ASTM A 307 AND ASTM A 563 GRADE A RESPECTIVELY. WASHERS SHALL BE HARDENED STEEL COMMERCIAL TYPE A PLAIN AND SHALL MEET THE DIMENSIONAL REQUIREMENTS OF ANSI B18.22. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111 (ASTM A 123) OR AASHTO M 232 (ASTM A 153) AS APPLICABLE.
- RAIL SPLICES SHALL BE PROVIDED AT BRIDGE DECK EXPANSION JOINTS AND BRIDGE RAIL SPLICES AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
- RAIL MAY BE FIELD CUT (SAW) TO FIT POST SPACING. GALVANIZED RAIL, CUT OR DRILLED AS ALLOWED, SHALL BE TOUCHED-UP IN ACCORDANCE WITH 563-3.2.2-2.
- ALL COSTS FOR CHAIN-LINK FABRIC, POSTS, RAILS AND APPURTENANCES SHALL BE INCLUDED IN ITEM 563-723, BRIDGE RAIL F (3-BAR) WITH SNOW SCREENING (F), OR ITEM 563-723, BRIDGE RAIL F (3-BAR) WITH SNOW SCREENING (F).
- SEE BRIDGE RAIL SHEET FOR ADDITIONAL DETAILS.

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION • BUREAU OF BRIDGE DESIGN									
TOWN	BRIDGE NO.		STATE PROJECT						
LOCATION									
<b>SNOW SCREEN WITH ALUMINUM BRIDGE RAIL</b>									
DESIGNED	INSPCTD	DRAWN	CHECKED	NOTED	DATE	BY			
ISSUED	CM/APP	6/86	CHECKED	PIPMGL	6/86	OR			
QUANTITY	CHECKED								
ISSUE DATE	4/21/06	FISCAL YEAR	06/06	BRIDGE NO.	TOTAL SHEETS				
REV. DATE	8/20/06								

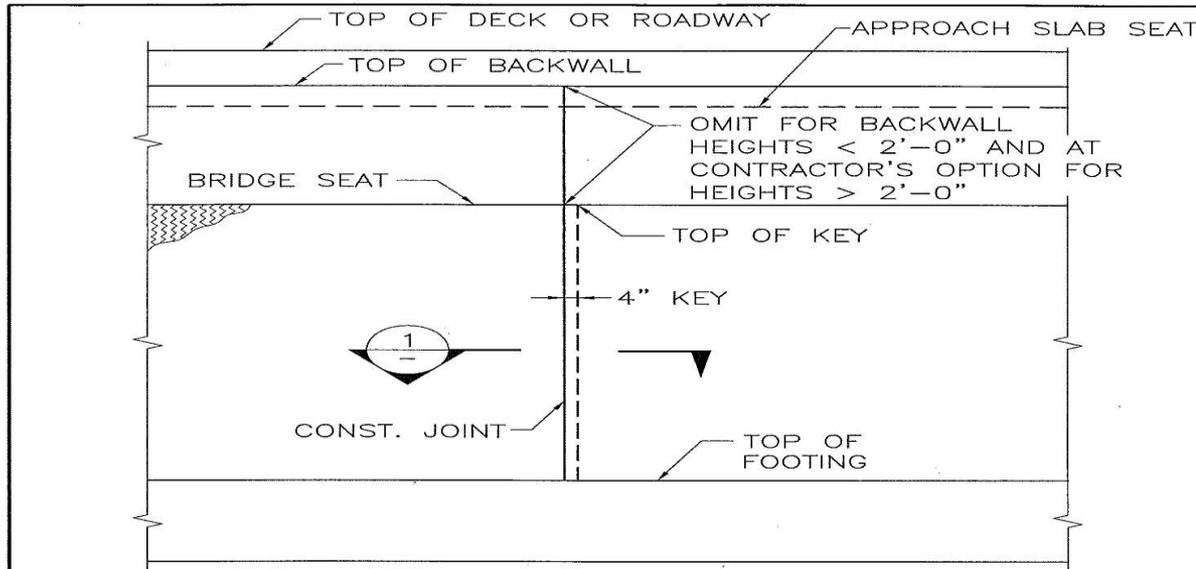
# PRESERVATION FRIENDLY DESIGN

## BARRIER OVER MSE WALL DETAIL - NY



# PRESERVATION FRIENDLY DESIGN

## WATER STOP DETAIL - MA

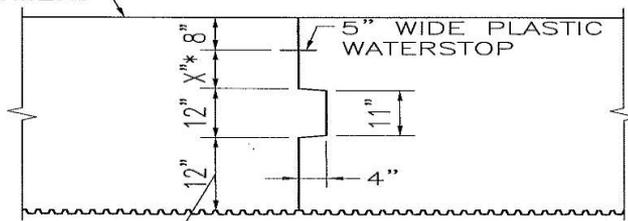


**ELEVATION OF ABUTMENT**

SCALE:  $\frac{1}{4}" = 1'-0"$

BACK FACE OF ABUTMENT

\* Denotes dimension that varies for gravity abutment



See Note 3 on Dwg. No. 3.1.8

**SECTION 1**

SCALE:  $\frac{1}{2}" = 1'-0"$

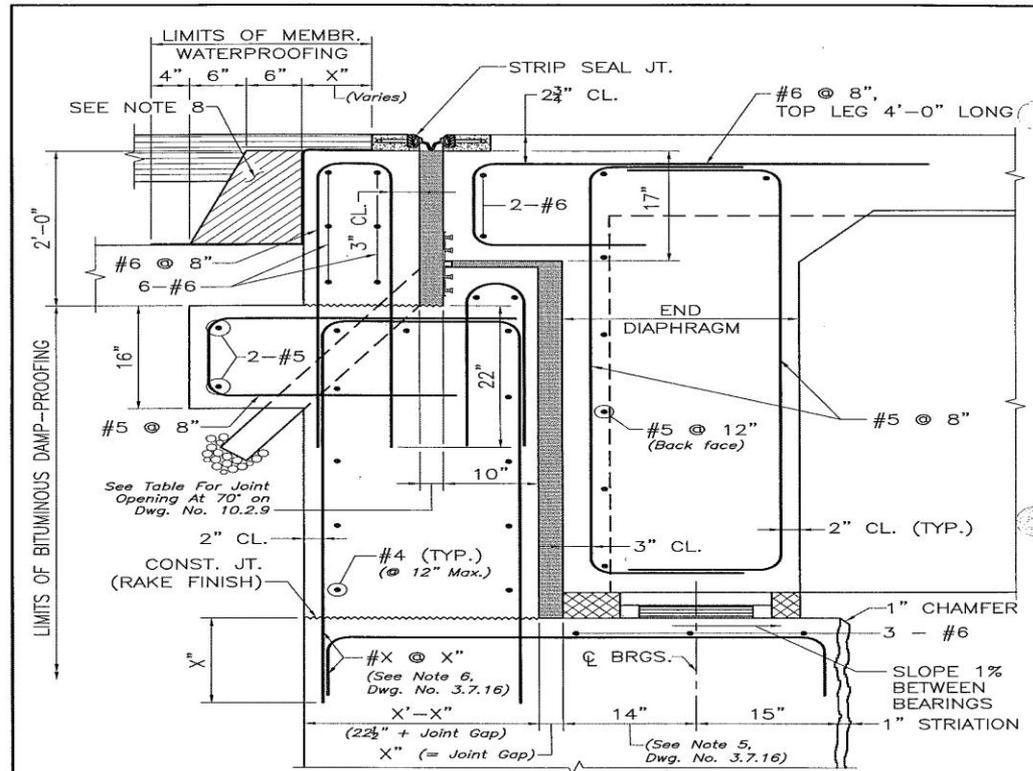
**massDOT**  
Massachusetts Department of Transportation  
 LRFD BRIDGE  
 MANUAL

**CONSTRUCTION JOINT  
 DETAILS**  
 ABUTMENT DETAILS

DATE OF ISSUE  
 OCTOBER 2009  
 DRAWING NUMBER  
**3.1.7**

# PRESERVATION FRIENDLY DESIGN

## BACKWALL DRAIN - MA



- NOTES:**
1. See Dwg. No. 3.7.22 for Notes to be included on Construction Drawings.
  2. Refer to Dwg. No. 3.7.19 for dimensions and information not shown here.
  3. This detail shall be used with Approach Slab Type I, modified as shown.

**DETAILS AT ABUTMENT — EXPOSED CONCRETE DECK**  
SCALE: 1" = 1'-0"

**massDOT**  
LRFD BRIDGE  
MANUAL

**EXP. DECK RDWY. SECTION  
WITH STRIP SEAL JOINT  
END OF DECK DETAILS**

DATE OF ISSUE  
NOVEMBER 2010  
DRAWING NUMBER  
**3.7.21**

# PRESERVATION FRIENDLY DESIGN

## DETAILING PRACTICES FOR LONGEVITY - SURVEY

2. Please indicate the types of membrane that your state typically incorporates on new or replacement bridge decks.

New Decks:

Spray-on

Sheet

Other (please indicate type):

Replacement Decks:

Spray-on

Sheet

Other (please indicate type):

3. Does your state utilize standard details for treatments of membrane at the gutterlines?

Yes      No

4. Does your state typically utilize deck weepholes?

Yes

No

5. Does your state typically utilize stay-in-place forms?

Yes      No

If so, are the flutes filled with Styrofoam to reduce weight? Yes      No

**AASHTO TSP-2**

**Northeast Bridge Preservation Partnership**

**Design for Bridge Preservation Subcommittee**

**David Fish, P.E. – Chair**

**State Agency Survey on Detailing Practices for Longevity**

**July 23, 2012**

1. Please indicate the types of overlays that your state typically incorporates on new or replacement bridge decks.

New Decks:

Standard bituminous      Thickness = \_\_\_\_”

Superpave      Thickness = \_\_\_\_”

Latex modified concrete      Thickness = \_\_\_\_”

Epoxy      Thickness = \_\_\_\_”

Other (please indicate type and thickness):

Replacement Decks:

Standard bituminous      Thickness = \_\_\_\_”

Superpave      Thickness = \_\_\_\_”

Latex modified concrete      Thickness = \_\_\_\_”

Epoxy      Thickness = \_\_\_\_”

Other (please indicate type and thickness):

# PRESERVATION FRIENDLY DESIGN

## DETAILING PRACTICES FOR LONGEVITY - SURVEY

(if stainless steel is used, please indicate grade):

Bottom Mat: Black                    Cover = \_\_\_\_”  
 Epoxy-coated                    Cover = \_\_\_\_”  
 Galvanized                        Cover = \_\_\_\_”  
 Stainless steel clad              Cover = \_\_\_\_”  
 MMFX                                Cover = \_\_\_\_”  
 Stainless Steel                    Cover = \_\_\_\_”

(if stainless steel is used, please indicate grade):

7. Please indicate whether your state typically uses sealant on its bridge decks and/or parapets:

Bridge Decks:	Yes	No	If yes, type:
Parapets:	Yes	No	If yes, type:

8. Please indicate your state's preferred expansion joint type for various ranges of thermal expansion:

Range 1	____” to ____”	Joint Type:
Range 2	____” to ____”	Joint Type:
Range 3	____” to ____”	Joint Type:
Range 4	____” to ____”	Joint Type:

9. Does your state routinely utilize integral abutment bridges?

Yes            No

If yes, please indicate maximum allowable span = \_\_\_\_ feet and skew = \_\_\_\_ degrees.

10. Does your state routinely utilize “slab over backwall” or similar types of details?

6. Please indicate the types of reinforcing and associated cover that your state uses in its bridge decks.

New Decks:

Top Mat:	Black	Cover = ____”
	Epoxy-coated	Cover = ____”
	Galvanized	Cover = ____”
	Stainless steel clad	Cover = ____”
	MMFX	Cover = ____”
	Stainless Steel	Cover = ____”

(if stainless steel is used, please indicate grade):

Bottom Mat:	Black	Cover = ____”
	Epoxy-coated	Cover = ____”
	Galvanized	Cover = ____”
	Stainless steel clad	Cover = ____”
	MMFX	Cover = ____”
	Stainless Steel	Cover = ____”

(if stainless steel is used, please indicate grade):

Replacement Decks:

Top Mat:	Black	Cover = ____”
	Epoxy-coated	Cover = ____”
	Galvanized	Cover = ____”
	Stainless steel clad	Cover = ____”
	MMFX	Cover = ____”
	Stainless Steel	Cover = ____”

# PRESERVATION FRIENDLY DESIGN

## DETAILING PRACTICES FOR LONGEVITY - SURVEY

Bottom Mat: Black Cover = \_\_\_\_"  
 Epoxy-coated Cover = \_\_\_\_"  
 Galvanized Cover = \_\_\_\_"  
 Stainless steel clad Cover = \_\_\_\_"  
 MMFX Cover = \_\_\_\_"  
 Stainless Steel Cover = \_\_\_\_"

(if stainless steel is used, please indicate grade):

13. For concrete substructures, please indicate what your state typically uses for treatments:

Bridge Seat:

Top cover: \_\_\_\_"

Reinforcing type: Black Epoxy Coated Other

Front face of abutment stems in splash/salt zone:

Cover: \_\_\_\_"

Reinforcing type: Black Epoxy Coated Other

Front face of abutment stems outside splash/salt zone:

Cover: \_\_\_\_"

Reinforcing type: Black Epoxy Coated Other

Pier columns/walls in splash/salt zone:

Cover: \_\_\_\_"

Reinforcing type: Black Epoxy Coated Other

Pier columns/walls outside splash/salt zone:

Cover: \_\_\_\_"

Reinforcing type: Black Epoxy Coated Other

Yes No  
 If yes, please indicate maximum allowable span = \_\_\_\_ feet and skew = \_\_\_\_ degrees

11. For steel superstructures, please indicate how often your state utilizes the following types of protection:

Painted Steel:	Nearly Always	Frequently	Occasionally	Rarely	Never
Weathering Steel:	Nearly Always	Frequently	Occasionally	Rarely	Never
Galvanized Steel:	Nearly Always	Frequently	Occasionally	Rarely	Never
Other:	Nearly Always	Frequently	Occasionally	Rarely	Never

If other, please indicate type:

If your state uses weathering steel, please indicate if you provide the following:

Painted Girder Ends

Drip Bars at low end(s) of girders

12. For concrete superstructures, please indicate the types of reinforcing and associated cover that your state uses.

Top Mat: Black Cover = \_\_\_\_"  
 Epoxy-coated Cover = \_\_\_\_"  
 Galvanized Cover = \_\_\_\_"  
 Stainless steel clad Cover = \_\_\_\_"  
 MMFX Cover = \_\_\_\_"  
 Stainless Steel Cover = \_\_\_\_"

(if stainless steel is used, please indicate grade):

# PRESERVATION FRIENDLY DESIGN

## DETAILING PRACTICES FOR LONGEVITY - SURVEY

14. Please indicate the type of scour protection your state typically uses:

Abutments on piles:	Rip-rap	Articulated Concrete Block	Other
Abutments on spread footings:	Rip-rap	Articulated Concrete Block	Other
Piers on piles:	Rip-rap	Articulated Concrete Block	Other
Piers on spread footings:	Rip-rap	Articulated Concrete Block	Other

15. Please indicate if your state routinely uses other types of preservation-friendly design details, and if so, briefly explain: