

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION



ISLAND FALLS  
AROOSTOOK COUNTY  
INTERSTATE 95 SOUTHBOUND  
BRIDGE REHABILITATION PROJECTS

NHPP-2263(300)  
BRIDGE NUMBERS:  
6163, 6175, 6176, 6177, 6178

**SPECIFICATIONS**

Design: Load and Resistance Factor Design per AASHTO LRFD Bridge Design Specifications, Seventh Edition 2014 with 2016 Interim Revisions.

**MATERIALS**

Concrete (Unless noted otherwise).....Class "A"  
Concrete (Joint Replacements, Curbs & Transition Barriers)..... Class "LP"  
Reinforcing Steel.....ASTM A 615/A 615M, Grade 60  
Structural Steel: All Material.....ASTM A 36/A 36M

**BASIC DESIGN STRESSES**

Concrete..... $f'_c = 4,000$  psi  
Reinforcing Steel..... $f_y = 60,000$  psi

**MAINTENANCE OF TRAFFIC**

One lane of traffic will be maintained during phased construction.

**LIST OF DRAWINGS**

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<b>PROJECT LOCATION:</b>	Deck, Wearing Surface, and Joint Repairs to be completed prior to I-95 Southbound Paving Project WIN 20425.00 - Bridge #s 6176, 6177, 6178, 6175, 6163
<b>PROGRAM AREA:</b>	Bridge Preservation
<b>OUTLINE OF WORK:</b>	Wearing Surface Replacements, Deck Rehabilitations, and Joint Modifications

NHPP-2263(300) WIN 22633.00

INTERSTATE 95 SOUTHBOUND  
ISLAND FALLS  
AROOSTOOK COUNTY  
TITLE SHEET

SHEET NUMBER

1

OF 7



Michael Wright  
SIGNATURE  
8089  
P.E. NUMBER  
3/15/2016  
DATE

PROGRAM	BRIDGE
PROJECT MANAGER	MICHAEL WRIGHT
DESIGNER	JOSHUA HASBROUCK
CONSULTANT	
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION  
APPROVED  
COMMISSIONER: [Signature]  
CHIEF ENGINEER: [Signature]

DATE: 3/15/16  
3-23-16

ITEM NO.	DESCRIPTION	ESTIMATED BRIDGE QUANTITIES					TOTAL	UNIT
		QUANTITY Route 159 over West Branch Mattawamkeag River Br. No. 6163	QUANTITY Route 159 over I-95 Br. No. 6175	QUANTITY I-95 Southbound over Old Patten Road and B.A.R.R. Br. No. 6176	QUANTITY I-95 Southbound over Fish Stream and Bog Brook Road Br. No. 6177	QUANTITY I-95 Southbound over West Branch Mattawamkeag River Br. No. 6178		
202.127	REMOVE EXISTING BITUMINOUS PAVEMENT (SY)	686	1268	15	48	8	1	LS
202.202	REMOVING PAVEMENT SURFACE	78	156		192	8	434	SY
403.208	HOT MIX ASPHALT 12.5 MM HMA SURFACE			2	27	1	30	T
403.2081	HOT MIX ASPHALT 12.5 MM HMA SURFACE	84	157				241	T
403.211	HOT MIX ASPHALT 9.5 MM SHIM		5				5	T
403.213	HOT MIX ASPHALT 12.5 MM HMA BASE	4			37		41	T
409.15	BITUMINOUS TACK COAT	22	46	1	11	1	81	G
508.14	HIGH PERFORMANCE WATERPROOFING MEMBRANE (SY)	686	1,268		48		1	LS
518.50	REPAIR OF UPWARD FACING SURFACES - TO REINFORCING STEEL < 8 IN.	200	150				350	SF
518.51	REPAIR OF UPWARD FACING SURFACES - BELOW REINFORCING STEEL < 8 IN.	25	25				50	SF
520.241	BRIDGE JOINT MODIFICATION TYPE 1	1		2		1	4	EA
520.245	BRIDGE JOINT MODIFICATION TYPE 5				2		2	EA
526.301	TEMPORARY CONCRETE BARRIER TYPE 1 (1000 LF)						1	LS
527.34	WORK ZONE CRASH CUSHIONS	2	2	1	1	1	7	UN
627.733	4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	744	1365	5	150	5	2269	LF
627.76	TEMPORARY PAVEMENT MARKING LINE, WHITE OR YELLOW (700 LF)						1	LS
627.77	REMOVING PAVEMENT MARKINGS				250		250	SF
629.05	HAND LABOR, STRAIGHT TIME	10	10	10	10	10	50	HR
631.10	AIR COMPRESSOR (INCLUDING OPERATOR)	10	10	10	10	10	50	HR
631.11	AIR TOOL (INCLUDING OPERATOR)	10	10	10	10	10	50	HR
631.112	WELDING MACHINE (INCLUDING OPERATOR)	8		8		8	24	HR
643.72	TEMPORARY TRAFFIC SIGNAL AT: ROUTE 159 & BRIDGE *6163	1					1	LS
643.72	TEMPORARY TRAFFIC SIGNAL AT: ROUTE 159 & BRIDGE *6175		1				1	LS
652.312	TYPE III BARRICADE	6	6				12	EA
652.33	DRUM	10	10	50	50	50	170	EA
652.34	CONE	50	50				100	EA
652.35	CONSTRUCTION SIGNS	300	300	350	350	350	1650	SF
652.361	MAINTENANCE OF TRAFFIC CONTROL DEVICES (CD)	15	15	5	20	5	1	LS
652.38	FLAGGER	100	75				175	HR
652.41	PORTABLE CHANGEABLE MESSAGE SIGN	2	2				4	EA
656.75	TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL						1	LS
659.10	MOBILIZATION						1	LS

**Notes:**

1. Estimated Quantities for each bridge are provided here for reference purposes only.

**STRUCTURAL**

- Payment for the selective demolition and recasting of existing concrete end posts, approach curbs, and bridge curbs will be considered incidental to item 520.245.
- Reinforcing steel schedules will be the responsibility of the Contractor. Refer to Subsection 503.03 of the Standard Specifications for more information. Payment for all work associated with developing reinforcing steel schedules will be considered incidental to related Contract items.
- An NCHRP350 compliant impact attenuation system shall be installed concurrently with the placement of each run of concrete barrier.
- Any damage to existing concrete or reinforcing steel resulting from the work performed, shall be repaired or replaced by a method approved by the Resident at no cost to the Department.
- All reinforcing steel that is to be exposed and reused shall be cleaned by a method approved by the Resident. Payment shall be incidental to related contract items.
- The integrity of existing approach pavement and subbase gravel shall be maintained during removal of backwall concrete. Payment for any repair or damages shall be incidental to related contract items.
- Seal(s) for the Heavy Duty or compression seal(s) shall be approved by the Resident prior to installation of joint armor.
- All expansion joints shall be fabricated so the expansion joints construction joints align with the bridge phasing. New seals shall be installed full length after all sections of the joint armor have been installed.
- All existing materials which are removed from the work area shall be removed from the site and properly disposed of by the Contractor in a manner approved by the Resident. These existing materials include, but are not limited to, concrete, metal casing, reinforcing steel, pavement, silt and other debris on or attached to the structure within the work areas. The cost of removal and disposal shall be incidental to the cost of the work items for which these removals are required.
- Contractor shall form a one inch V-groove on the fascias at the horizontal joint between the curb and slab.
- Reinforcing steel shall have a 2 inch minimum cover unless otherwise noted.
- Mortar for bedding and for joints in the granite curb shall contain an approved non-shrink additive.
- If the depth of the deteriorated concrete is below the reinforcing steel then remove the concrete to a minimum depth of 1 inch below the bars.

14. Where bridge rail posts are required to be relocated new hot dip galvanized anchor rods conforming to ASTM F1554 Grade 50 shall be furnished and drilled and anchored into the proposed curb. The depth of embedment shall be sufficient to develop an ultimate tension capacity of 33 kips per anchor rod. This work may also require replacement or repair of rail clamp bars, and replacement of bolts, where the bolt or clamp bar threads are damaged during the rail disassembly process. Where the Contractor elects to repair the damaged mounting bars the existing threads shall be repaired through the use of a stainless steel heli-coil insert. The proposed repair shall be completed in a manner which maintains the original fastener size and diameter. Payment for bridge rail post relocation and associated materials, equipment, labor and incidentals necessary to complete the work will be considered incidental to Item 520.245, Bridge Joint Modification Type 5.

15. All transverse reinforcing steel in the deck and backwall shall be structurally continuous along the full width of the bridge. Payment for lap splices and threaded couplers will not be paid for directly, but shall be considered incidental to the related contract items.

16. The reinforcing steel and anchor rod anchoring material shall be selected from Maine DOT's Qualified Products List. The Contractor shall submit the proposed system to the resident for approval. The selected anchoring material shall be installed in strict accordance with the manufacturer's recommendations. Reinforcing steel and anchor rods, drilled and anchored into existing concrete, shall be embedded to develop 125% of the yield strength of the bar.

17. All proposed anchor rods shall be hot dip galvanized.

18. For Interstate bridges, when a new joint is being installed or an existing joint is being substantially modified, and field conditions permit, the approach side of the joint shall be set 1/8" - 1/4" higher than the departure side of the joint. Under no circumstances shall the departing side of the joint be higher than the approach side of the joint.

19. Where provided, nominal joint openings are measured perpendicular to the joint opening. Adjustments provided in the seal adjustment charts shall be measured along the centerline of the bridge, not perpendicular to the joint opening.

**MOVEMENT RATING FOR COMPRESSION SEAL**

BRIDGE NO.	DISTANCE
6163	7/8"
6175	1/4"
6178	1/4"

**GENERAL**

1. A temporary ramp shall be constructed with HMA at the ends of the roadway section paved or milled each day. The use of millings or RAP will not be allowed, but cold patch may be temporarily utilized until HMA plants are open for the season.

For Interstate Highways or roadways with speed limits exceeding 50 mph, temporary ramps shall be constructed with one foot of length for every 1/8" of transition depth on the leading end, and one foot of length for every 1/4" of transition depth on the trailing end.

For all other roadways with speed limits less than 50 mph, temporary ramps shall be constructed with one foot of length for every 1/4" of transition depth on the leading and the trailing end.

Materials, placement, maintenance, and removal shall be incidental to contract items.

2. All joints between existing and proposed hot mix asphalt shall be butted. Payment shall be made under Item 202.202.

3. Any necessary cleaning of existing pavement prior to paving or milling shall be incidental to the related items.

4. All spoils, HMA & millings shall be cleaned daily from project to the satisfaction of the Resident prior to the contractor leaving for the shift.

5. The millings shall become the property of the Contractor.

6. Existing bridge plans may be accessed at the web address below. The plans are reproductions of the original drawings as prepared for the construction of the bridges. It is very unlikely that the plans will show any construction field changes or any alterations which may have been made to the bridge.  
<http://www.maine.gov/mdot/contractors/>

7. All dimensions, angles and stationing shown on existing plans are taken from as-built construction drawings from 1966 through 1991, supplemented by limited field measurements and are not guaranteed to be correct. All existing bridge information shall be verified in the field by the Contractor prior to commencing any work.

**CONSTRUCTION PHASING**

1. Contractor shall install longitudinal pavement joints at crown lines or lane lines.

2. Placement of the high performance membrane shall be in accordance with standard specifications and manufacturers published recommendations. Contractor shall submit proposed membrane overlap details at the longitudinal joints to the Resident for review and approval. Details shall include proposed methodology for bond breaker for the overlaps between construction phases as well as procedures for infilling and removal of bituminous material without damage to the membrane.

3. Contractor is responsible for all maintenance of traffic required for all work including ramp traffic control.

4. Long term lane closures required for bridge work shall be protected with temporary concrete barrier at the work zones.

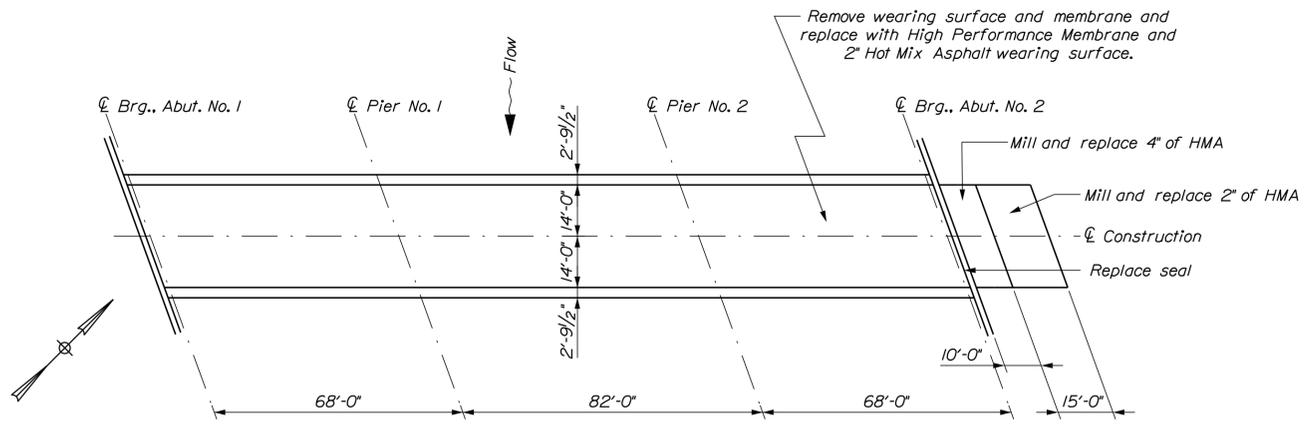
**UTILITIES**

1. Utilities in this contract are listed in Special Provision Section 104, Utilities.

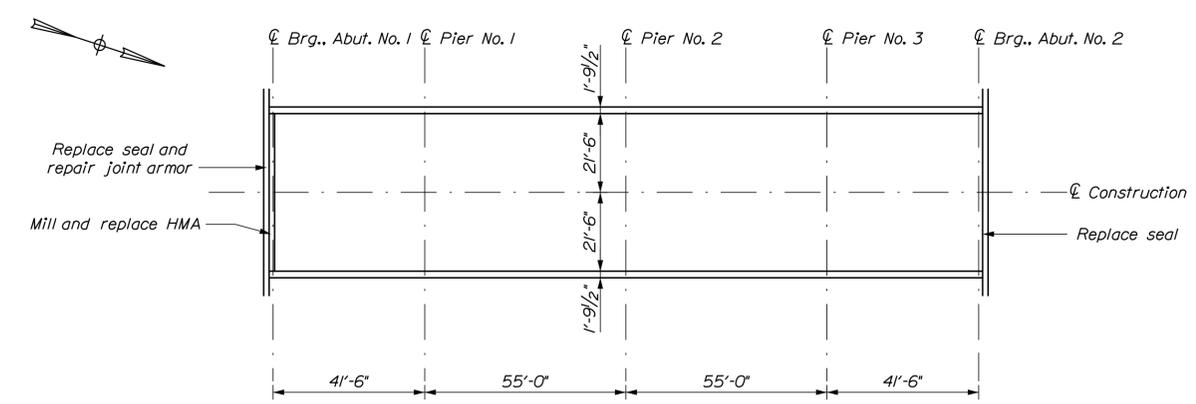
2. All utility facilities shall be adjusted by the respective utilities unless otherwise noted. No utility adjustment is anticipated.

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		NHP-2263(300)		WIN 22633.00		BRIDGE NOS. 6163, 6175, 6176, 6177 and 6178		BRIDGE PLANS	
INTERSTATE 95 SOUTHBOUND		BRIDGE WEARING SURFACE REHABILITATION		ISLAND FALLS AROOSTOOK COUNTY		ESTIMATED BRIDGE QUANTITIES		&		GENERAL NOTES	
SHEET NUMBER		2		OF 7							

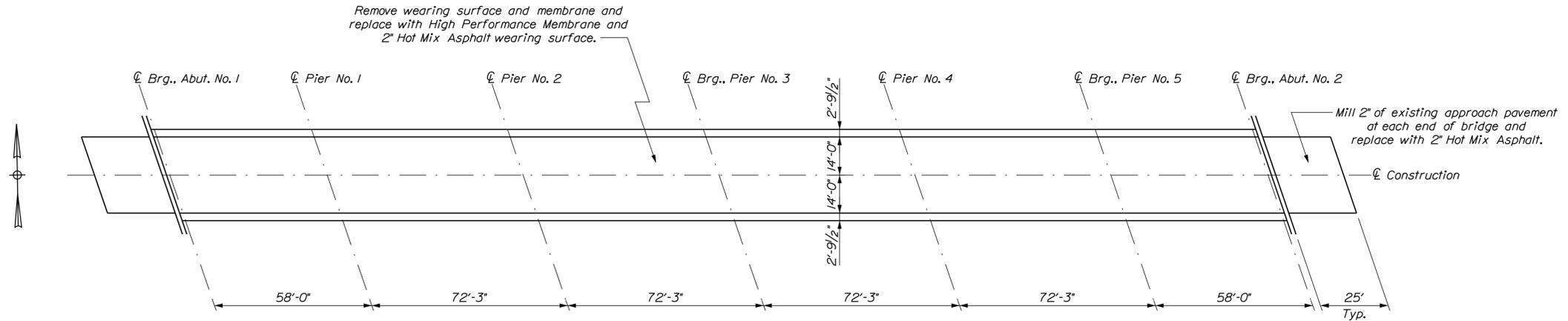
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 Division: BRIDGE  
 Username: William.T.Rohman  
 Date: 3/17/2016



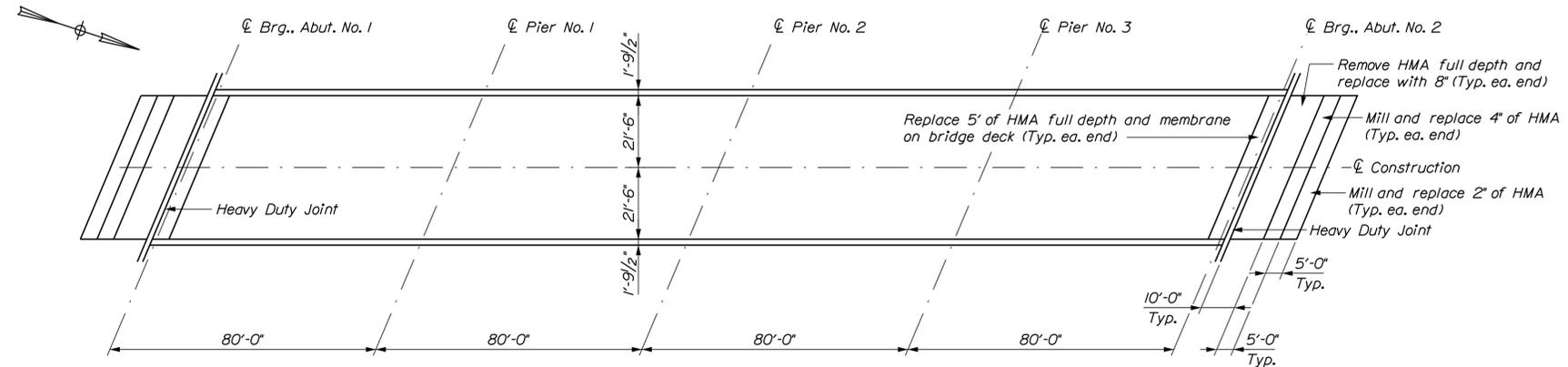
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 Bridge No. 6163



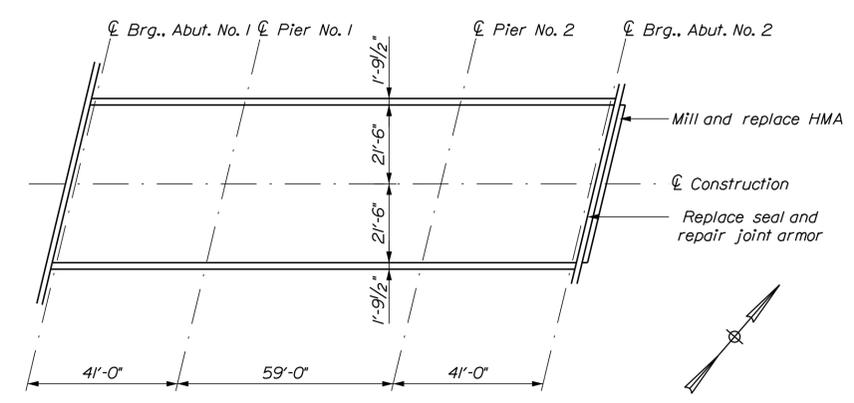
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 Bridge No. 6176



**ROUTE 159 OVER INTERSTATE 95**  
 Bridge No. 6175



**INTERSTATE 95 SOUTHBOUND OVER FISH STREAM AND BOG BROOK ROAD**  
 Bridge No. 6177

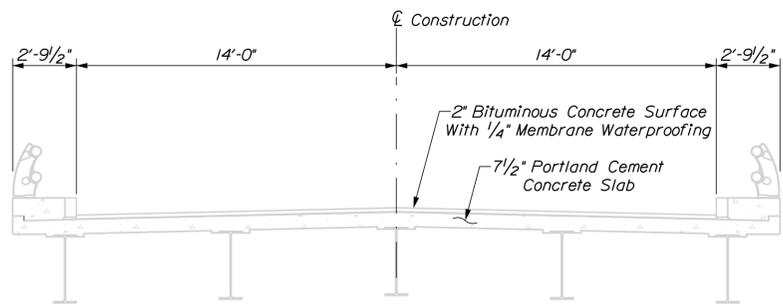


**INTERSTATE 95 SOUTHBOUND OVER WEST BRANCH MATTAWAMKEAG RIVER**  
 Bridge No. 6178

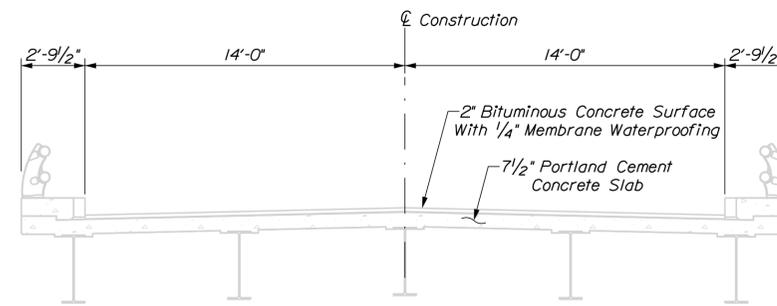
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INTERSTATE 95 SOUTHBOUND		BRIDGE WEARING SURFACE REHABILITATION		ISLAND FALLS		AROOSTOOK COUNTY		PLANS		SHEET NUMBER	
										3	
										OF 7	

PROJ. MANAGER	DATE	BY	DATE
DESIGN DETAILED		J. HASBROUCK	
CHECKED-REVIEWED		D. SHAW	
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DESIGNS DETAILED			
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

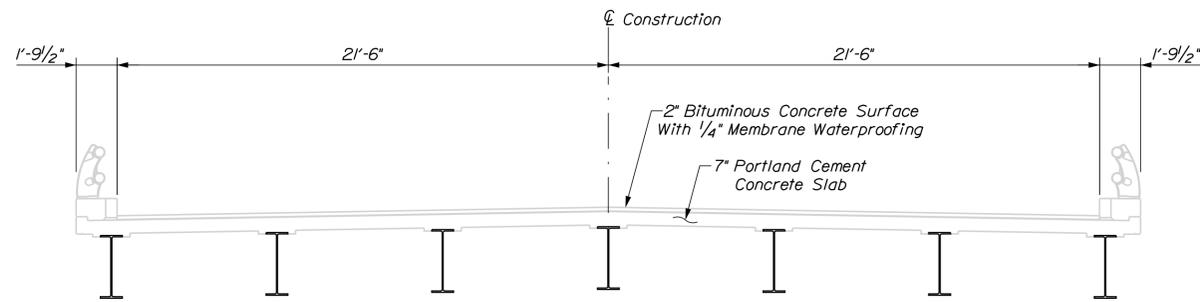
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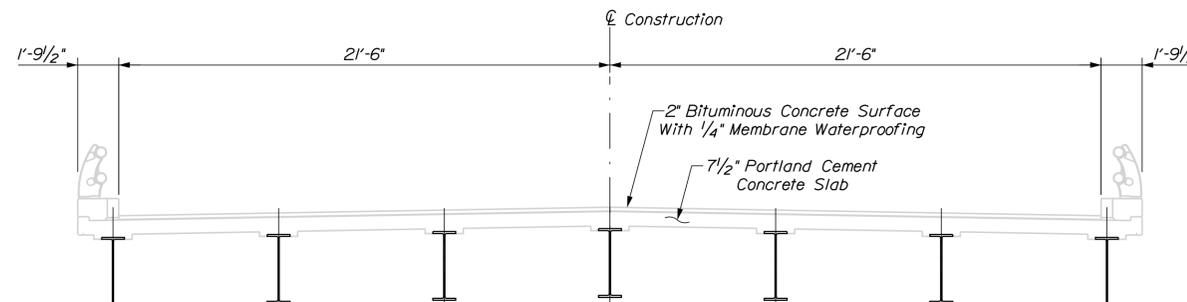
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**WEST BRANCH MATTAWAMKEAG RIVER**  
 Bridge No. 6163



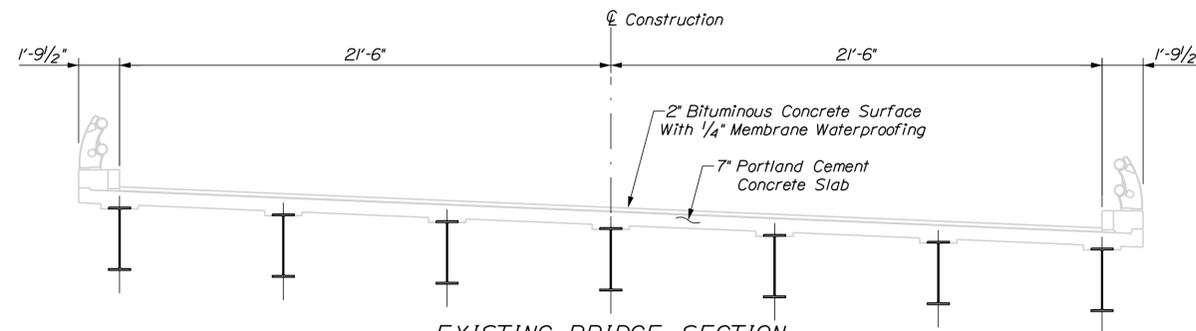
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**INTERSTATE 95 N.B. AND S.B.**  
 Bridge No. 6175



**EXISTING BRIDGE SECTION**  
**INTERSTATE 95 SOUTHBOUND OVER**  
**OLD PATTEN ROAD**  
 Bridge No. 6176



**EXISTING BRIDGE SECTION**  
**INTERSTATE 95 SOUTHBOUND OVER**  
**FISH STREAM AND BOG BROOK ROAD**  
 Bridge No. 6177



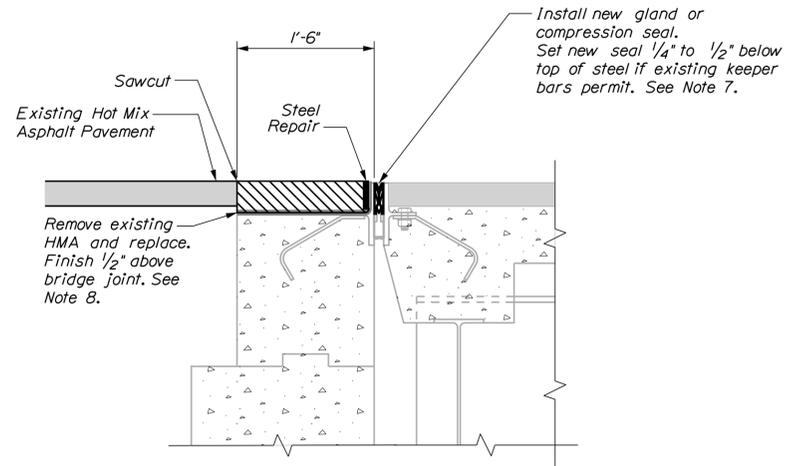
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**INTERSTATE 95 SOUTHBOUND OVER**  
**WEST BRANCH MATTAWAMKEAG RIVER**  
 Bridge No. 6178

STATE OF MAINE  
 DEPARTMENT OF TRANSPORTATION  
 NHPP-2263(300)  
 WIN 22633.00  
 BRIDGE NOS. 6163, 6175, 6176, 6177 and 6178  
 BRIDGE PLANS

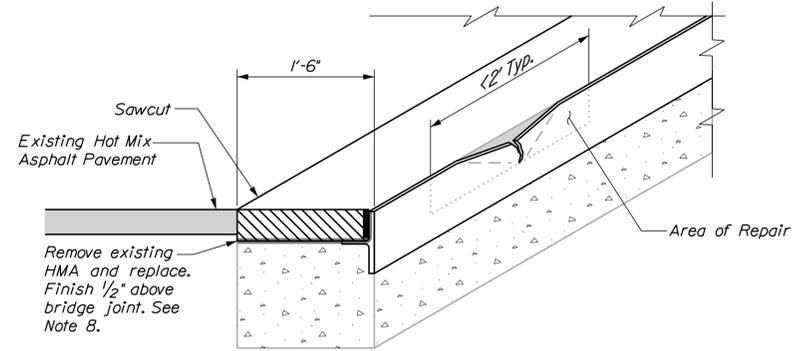
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CHECKED-REVIEWED			
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DESIGN-DETAILED			
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REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

INTERSTATE 95 SOUTHBOUND  
 BRIDGE WEARING SURFACE REHABILITATION  
 ISLAND FALLS AROOSTOOK COUNTY  
**SECTIONS**

SHEET NUMBER  
**4**  
 OF 7



TYPICAL JOINT CROSS-SECTION



TYPICAL STEEL REPAIR DETAIL

**REPAIR NOTES**

1. Refer to Standard Details Section 520 for details and information not shown.
2. The Contractor shall be fully responsible for selecting the appropriate seal from the Qualified Products List based on the movement rating.
3. Bridge joint armor and extrusion modifications shall extend to the limits described on the respective joint modification details and as directed by the Resident. Damage may be repaired by replacing existing steel or by bending existing steel back to its original shape using a method approved by the Resident.
4. All new steel supplied for the bridge joint modification shall be uncoated.
5. Welding shall be completed as a series of skip welds to minimize welding distortion.
6. If the base metal temperature falls below 32 degrees Fahrenheit, the base metal shall be heated to a minimum of 80 degrees Fahrenheit before welding. If the base metal temperature falls below 50 degrees Fahrenheit, the base metal shall be heated to remove any moisture. A welding procedure and listing of proposed welding consumables shall be submitted to the Resident for approval.
7. Keeper bars shall be positioned to allow top of compression seal to sit 1/4" to 1/2" below top of armor. If existing keeper bar does not permit the seal to set at the specified depth, the Contractor shall notify the Resident.
8. Where any pavement removal is necessary to repair the joint, mill 2" of the approach pavement a minimum of 18" from the joint armor, for the full transverse width of the joint. The milled surface shall be clean, dry, and free of all loose and debonded material, with a layer of mastic from an approved bridge membrane system applied to the joint armor prior to re-paving.
9. Seal replacement and steel repair shall be paid for under Pay Item No. 520.241, Bridge Joint Modification Type I. HMA pavement removal and replacement shall be paid for under the related contract items.

STATE OF MAINE  
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BRIDGE NOS. 6163, 6175, 6176, 6177 and 6178  
BRIDGE PLANS

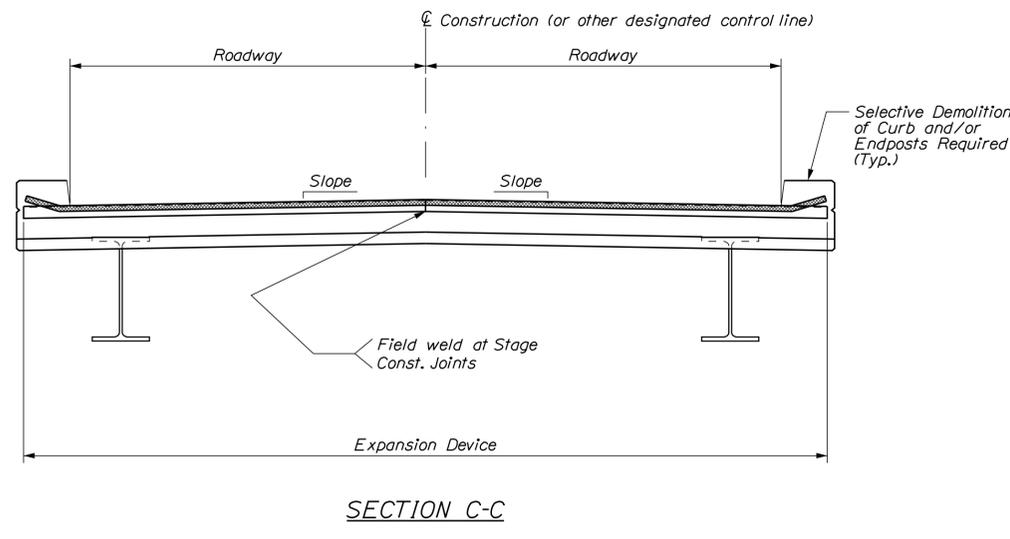
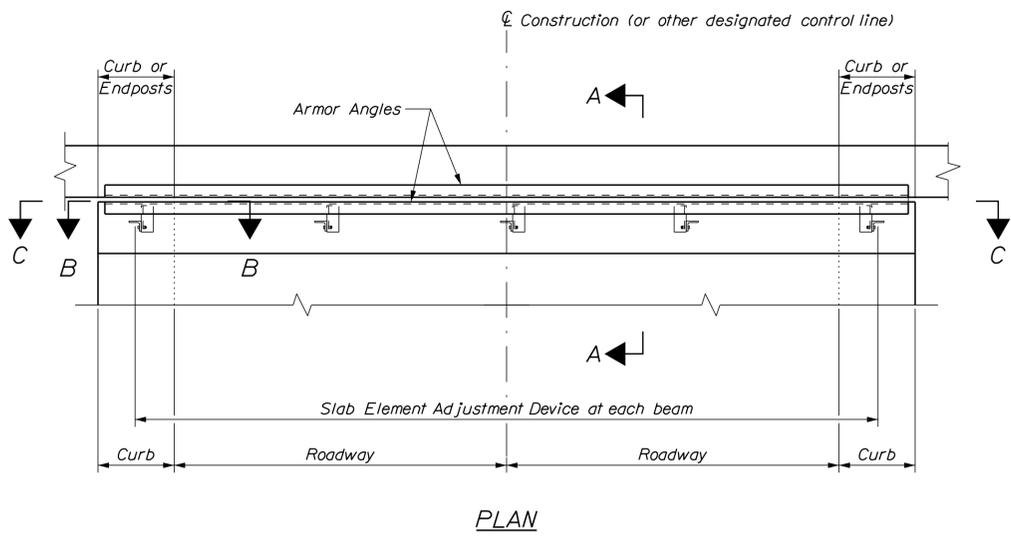
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CHECKED-REVIEWED  
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DESIGN-DETAILED  
REVISIONS 1  
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REVISIONS 3  
REVISIONS 4  
FIELD CHANGES

DATE  
BY  
M. WIGHT  
J. HASBROUCK  
D. SHAW  
SIGNATURE  
P.E. NUMBER  
DATE

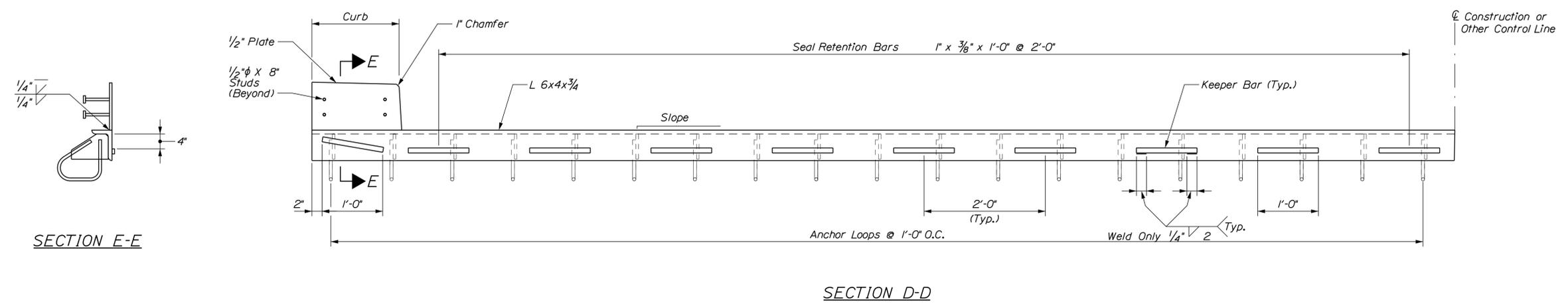
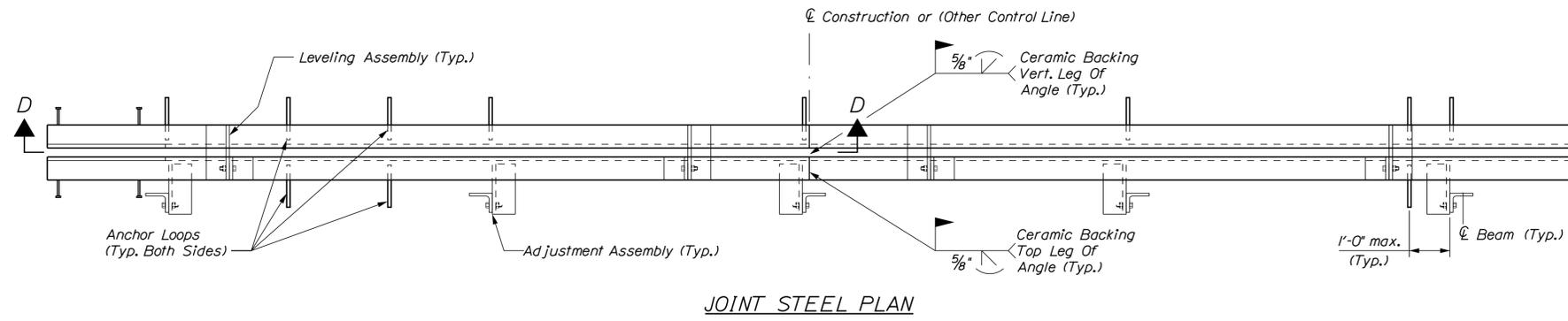
INTERSTATE 95 SOUTHBOUND  
Varies  
ISLAND FALLS AROOSTOOK COUNTY  
JOINT MODIFICATION DETAILS I

SHEET NUMBER  
5  
OF 7

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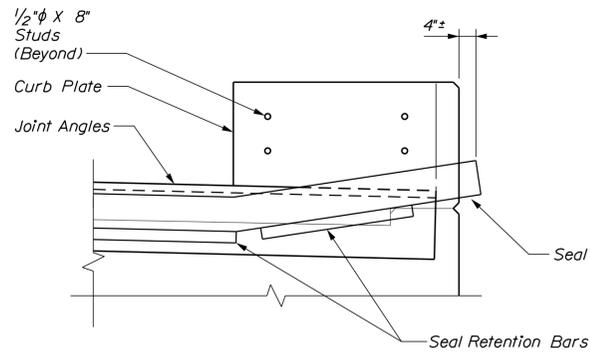
- HEAVY DUTY JOINT NOTES**
1. The Contractor shall field measure the existing deck and joint and adjust the joint shop drawings accordingly. The curb plates shall be flush or slightly recessed from the concrete faces to avoid catching plows.
  2. The Expansion Device shall be fabricated to be installed normal to grade.
  3. The joint armor shall be furnished and installed un-galvanized.
  4. Use a seal from the approved list in Special Provision 520 Expansion Devices - Non-Modular (Heavy Duty Joint) and with a 2" movement rating. Submit the selected seal to the Department with the shop drawings.
  5. Prior to the installation of the seal the steel surfaces to receive the adhesive shall be blast cleaned and solvent washed per the seal manufacturer's instructions.
  6. Heavy Duty Bridge Joint shall be paid for under Pay Item No. 520.245, Bridge Joint Modification Type 5.



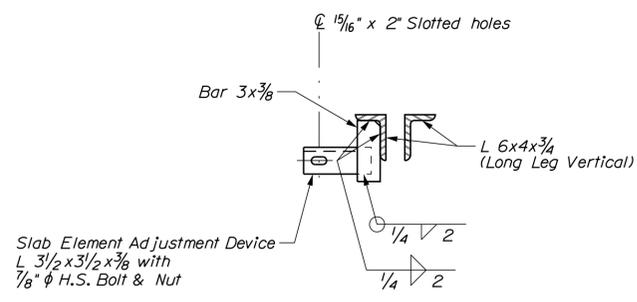
**HEAVY DUTY BRIDGE JOINT**

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		NHP-2263(300)		WIN 22633.00		BRIDGE NOS. 6163, 6175, 6176, 6177 and 6178		BRIDGE PLANS	
INTERSTATE 95 SOUTHBOUND		ISLAND FALLS		AROOSTOOK COUNTY		JOINT MODIFICATION DETAILS II		SHEET NUMBER		6	
PROJ. MANAGER	M. WIGHT	BY	D. SHAW	DATE		SIGNATURE		P.E. NUMBER		DATE	
DESIGN-DETAILED	J. HASBROUCK	CHECKED-REVIEWED									
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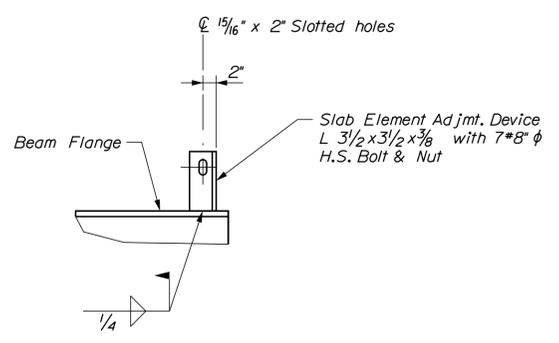
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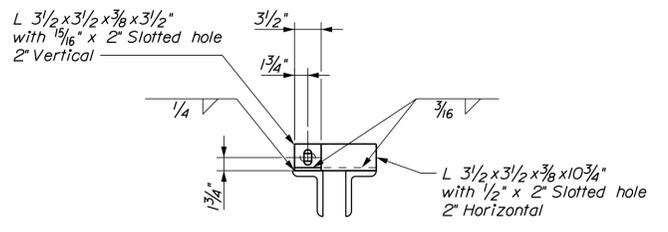
SECTION B-B



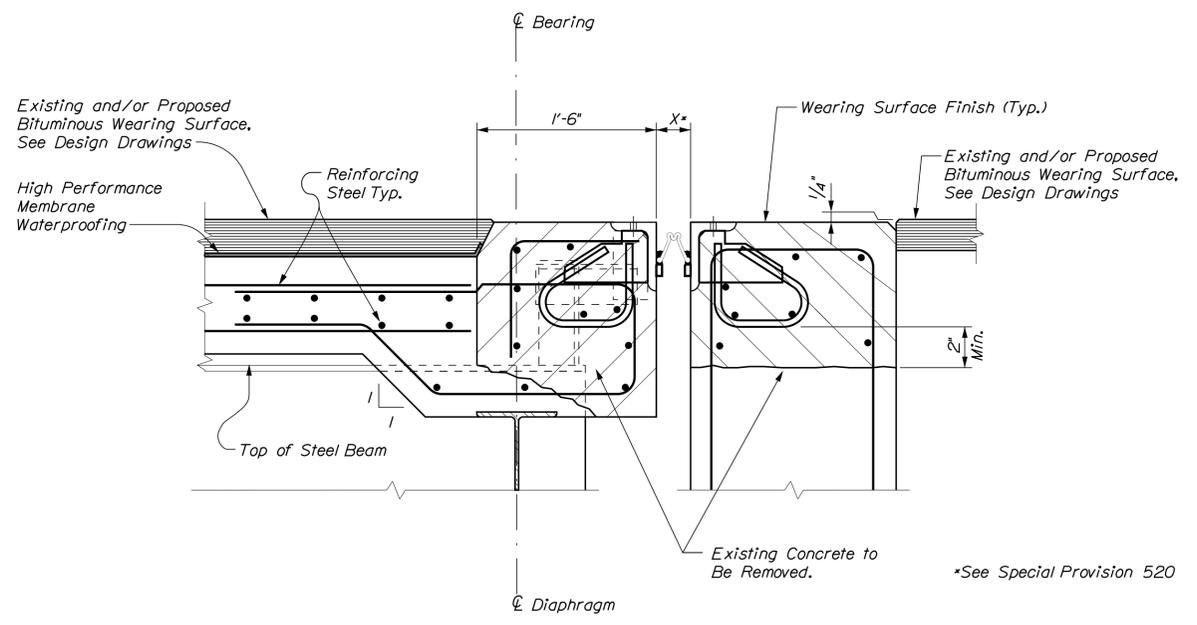
SLAB ELEMENT ADJUSTMENT DEVICE



SLAB ADJUSTMENT DEVICE ATTACHMENT



LEVELING ASSEMBLY



SECTION A-A

**Joint Opening**

The Expansion Device shall be set to an opening of "X" inches in the fabrication shop. The joint opening shall be adjusted for temperature in the field at the time of installation using the following formula:

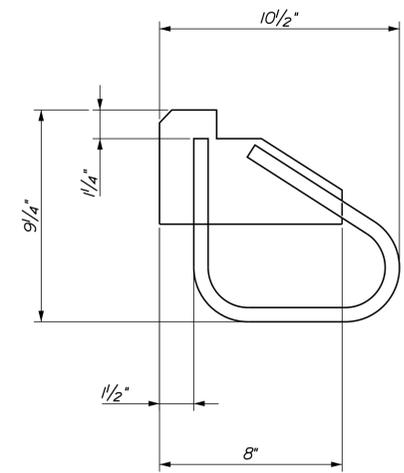
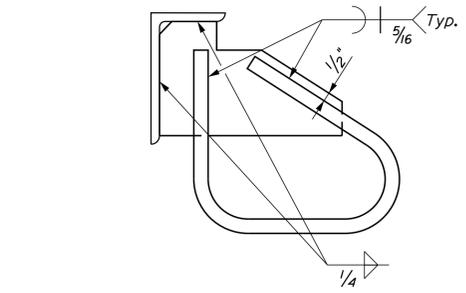
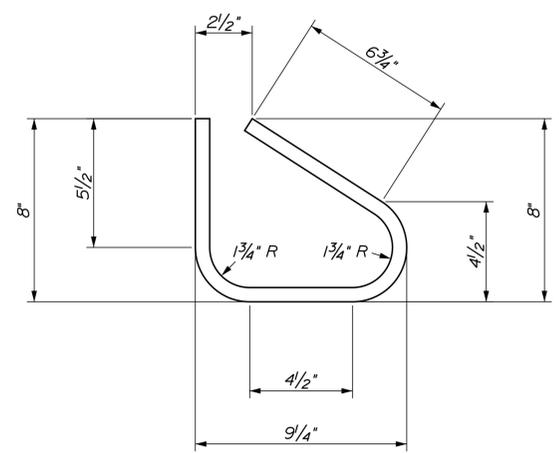
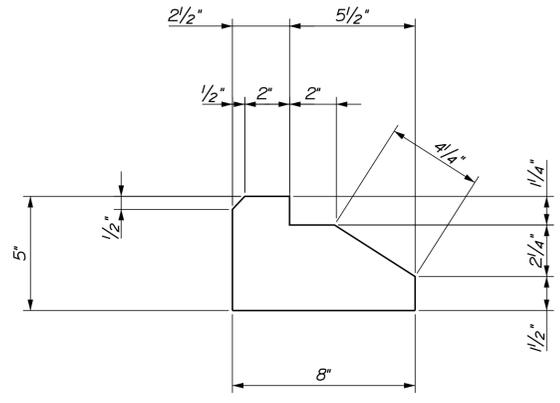
$$0.00008 \times "D" \times "\Delta T" = \text{Adjustment (in inches)}$$

"D" is the distance in feet between the backwall and the nearest fixed bearing (for joints at abutments) or between the fixed bearings at either side of the expansion joint (for joints at piers).  
 "ΔT" is the difference between the temperature of the bridge girders and 45° F.

A structure temperature above 45° F will result in a smaller joint opening.

**CONCRETE HEADER NOTES**

1. Do not damage existing reinforcing steel during concrete removal.
2. All reinforcing steel shall be #5 bar unless noted otherwise.
3. All rebar splices shall be 20" min.
4. All adjustment angles shall be welded after final position adjustments are made.
5. Welding to reinforcing steel is allowed in the top of the abutment backwall above the block-out joint.
6. Concrete removal limits depend on the existing bridge and may not match what is shown here. Refer to existing bridge plans and field measurements. Limits may be reduced with the approval of the Resident.



ANCHOR LOOP DETAILS

**HEAVY DUTY BRIDGE JOINT**

STATE OF MAINE		DEPARTMENT OF TRANSPORTATION		NHP-2263(300)		WIN 22633.00		BRIDGE NOS. 6163, 6176, 6177 and 6178		BRIDGE PLANS	
INTERSTATE 95 SOUTHBOUND		Varies		AROSTOOK COUNTY		ISLAND FALLS		JOINT MODIFICATION DETAILS III		SHEET NUMBER	
PROJ. MANAGER	M. WIGHT	BY	D. SHAW	DATE		SIGNATURE		P.E. NUMBER		DATE	
DESIGN-DETAILED	J. HASBROUCK	CHECKED-REVIEWED									
DESIGN-DETAILED		DESIGN-DETAILED									
REVISIONS 1		REVISIONS 1									
REVISIONS 2		REVISIONS 2									
REVISIONS 3		REVISIONS 3									
REVISIONS 4		REVISIONS 4									
FIELD CHANGES											