



Janet T. Mills
GOVERNOR

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Bruce A. Van Note
ACTING COMMISSIONER

January 29, 2019
Subject: Bridge Replacements &
Highway Construction
State WINs: 017280.00, 017912.00,
021691.00 & 023849.00
Location: Fryeburg
Amendment No. 3

Dear Sir/Ms.:

Please make the following changes to the Bid Documents:

In the Bid Book:

REMOVE, Proposal Schedule of Items (from Amendment No. 2, 15 pages, dated 1/23/2019, and **REPLACE** with the attached, revised Proposal Schedule of Items, 15 pages, dated 1/29/2019.

REMOVE pages 95 – 96, SPECIAL PROVISION – SECTION 202 – REMOVING STRUCTURES AND OBSTRUCTION (Removing Pavement Surface), 2 pages, dated January 20, 2016 and **REPLACE** with the attached, revised SPECIAL PROVISION – SECTION 202 – REMOVING STRUCTURES AND OBSTRUCTION (Removing Pavement Surface), 3 pages, dated January 25, 2019.

REMOVE pages 121 – 124, SPECIAL PROVISION – SECTION 401 – HOT MIX ASPHALT PAVEMENT, 4 pages, dated December 18, 2017 and **REPLACE** with the attached, revised SPECIAL PROVISION – SECTION 401 – HOT MIX ASPHALT PAVEMENT, 25 pages, dated January 23, 2019.

REMOVE SPECIAL PROVISION – SECTION 403 – HOT MIX ASPHALT – Alternate 1 (from Amendment No. 1), 3 pages, dated January 10, 2019, and **REPLACE** with the attached, revised SPECIAL PROVISION – SECTION 403 – HOT MIX ASPHALT – Alternate 1, 2 pages, dated January 28, 2019.

REMOVE SPECIAL PROVISION – SECTION 403 – HOT MIX ASPHALT – Alternate 2 (from Amendment No. 1), 3 pages, dated January 10, 2019, and **REPLACE** with the attached, revised SPECIAL PROVISION – SECTION 403 – HOT MIX ASPHALT – Alternate 2, 2 pages, dated January 28, 2019.

In the Plan Set:

The following sheets are to be **ADDED** to the existing plan set:

ADD sheet	
365	TYPICAL SECTIONS (ALTERNATE 2: HMA OPTION)
366	TYPICAL SECTIONS
367	TYPICAL SECTIONS
368	TYPICAL SECTIONS
369	TYPICAL SECTIONS
370	TYPICAL SECTIONS
371	TYPICAL SECTIONS
372	TYPICAL SECTIONS
373	TYPICAL SECTIONS
374	TYPICAL SECTIONS
375	TYPICAL SECTIONS

The following questions have been received:

Question: Special Provision Section 403, (page 1 of 3), indicates 7" HMA Overlay areas on Mainline, Travel way, and Shoulders (As indicated in typicals). Will typicals be provided for item 403.2072?

Response: See above changes to Plan Set.

Question: Please provide a typical section detail for the alternate #2 paving option.

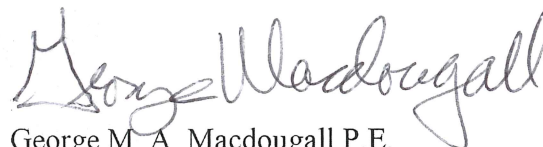
Response: See above changes to Plan Set.

Question: Item 834.322, Dry Hydrant, was left off the Amendment #2 Schedule of Items. Was this an oversight? Is this item now incidental?

Response: See above changes to Proposal Schedule of Items.

Consider these changes and information prior to submitting your bid on **January 30, 2019**.

Sincerely,



George M. A. Macdougall P.E.
Contracts & Specifications Engineer

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Proposal Schedule of Items

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Proposal ID: 017280.00

Project(s): 017280.00, 017912.00, 021691.00,
023849.00

SECTION: 1 Project Items

Alt Set ID:

Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0010	107.531 BI-WEEKLY UPDATES	1.000 LS				
0020	201.11 CLEARING	9.000 AC				
0030	201.23 REMOVING SINGLE TREE TOP ONLY	114.000 EA				
0040	201.24 REMOVING STUMP	121.000 EA				
0050	202.15 REMOVING MANHOLE OR CATCH BASIN	14.000 EA				
0060	202.19 REMOVING EXISTING BRIDGE - Eddy Flats Br.	LUMP SUM				
0070	202.19 REMOVING EXISTING BRIDGE - Shortridge Br.	LUMP SUM				
0080	202.202 REMOVING PAVEMENT SURFACE	220.000 SY				
0090	203.20 COMMON EXCAVATION	500.000 CY				
0120	203.21 ROCK EXCAVATION	700.000 CY				
0130	203.211 PRESPLITTING ROCK	500.000 LF				
0140	203.213 DRILLING AND BLASTING OF SOLID ROCK SUBGRADE	800.000 SY				

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0150	203.2312 HEALTH AND SAFETY PLAN	LUMP SUM				
0160	203.2333 DISPOSAL TREATMENT OF SPECIAL EXCAVATION	50.000 T				
0170	203.24 COMMON BORROW	20.000 CY				
0180	203.25 GRANULAR BORROW	2,617.000 CY				
0190	203.33 SPECIAL FILL	80.000 CY				
0200	206.061 STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES, BELOW GRADE	156.000 CY				
0210	206.082 STRUCTURAL EARTH EXCAVATION - MAJOR STRUCTURES	630.000 CY				
0220	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	396.000 CY				
0270	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	8,522.000 T				
0280	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	1,050.000 T				
0290	403.211 HOT MIX ASPHALT (SHIMMING)	6.000 T				

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SECTION: 1 Project Items

Alt Set ID:

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Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0300	403.213 HOT MIX ASPHALT 12.5 MM BASE	14,309.000 T				
0310	409.15 BITUMINOUS TACK COAT - APPLIED	36.000 G				
0340	411.10 UNTREATED AGGREGATE SURFACE COURSE (TRUCK MEASURE)	100.000 CY				
0350	501.231 DYNAMIC LOADING TEST	4.000 EA				
0360	501.50 STEEL H-BEAM PILES 89 LBS/FT, DELIVERED	1,625.000 LF				
0370	501.501 STEEL H-BEAM PILES 89 LBS/FT, IN PLACE	1,547.000 LF				
0380	501.90 PILE TIPS	18.000 EA				
0390	501.91 PILE SPLICES	28.000 EA				
0400	501.92 PILE DRIVING EQUIPMENT MOBILIZATION	LUMP SUM				
0410	502.219 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	LUMP SUM				
0420	502.261 STRUCTURAL CONCRETE ROADWAY & SIDEWALK SLAB ON CONCRETE BRIDGE	LUMP SUM				

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Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0430	502.31 STRUCTURAL CONCRETE APPROACH SLABS	LUMP SUM	LUMP	SUM	_____	_____
0440	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALKS	LUMP SUM	LUMP	SUM	_____	_____
0450	503.12 REINFORCING STEEL, FABRICATED AND DELIVERED	39,100.000 LB	_____	_____	_____	_____
0460	503.13 REINFORCING STEEL, PLACING	39,100.000 LB	_____	_____	_____	_____
0470	503.17 MECHANICAL WELDED SPLICE	134.000 EA	_____	_____	_____	_____
0480	503.26 STAINLESS STEEL REINFORCEMENT - FABRICATED & DELIVERED	32,200.000 LB	_____	_____	_____	_____
0490	503.27 STAINLESS STEEL REINFORCEMENT - PLACING	32,200.000 LB	_____	_____	_____	_____
0500	507.0821 STEEL BRIDGE RAILING, 3 BAR	LUMP SUM	LUMP	SUM	_____	_____
0510	508.13 SHEET WATERPROOFING MEMBRANE	LUMP SUM	LUMP	SUM	_____	_____
0520	508.14 HIGH PERFORMANCE WATERPROOFING MEMBRANE	LUMP SUM	LUMP	SUM	_____	_____
0530	511.07 COFFERDAM: Abut. #1 - Eddy Flat Br.	LUMP SUM	LUMP	SUM	_____	_____

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0540	511.07 COFFERDAM: Abut. #1 - Shortridge Br.	LUMP SUM	LUMP	SUM	_____	_____
0550	511.07 COFFERDAM: Abut. #2 - Eddy Flat Br.	LUMP SUM	LUMP	SUM	_____	_____
0560	511.07 COFFERDAM: Abut. #2 - Shortridge Br.	LUMP SUM	LUMP	SUM	_____	_____
0570	511.07 COFFERDAM: Downstream - Rte.302 Hwy.	LUMP SUM	LUMP	SUM	_____	_____
0580	511.07 COFFERDAM: Downstream - Kimball Brook	LUMP SUM	LUMP	SUM	_____	_____
0590	511.07 COFFERDAM: Upstream - Kimball Brook	LUMP SUM	LUMP	SUM	_____	_____
0600	511.07 COFFERDAM: Upstream - Rte.302 Hwy.	LUMP SUM	LUMP	SUM	_____	_____
0610	514.06 CURING BOX FOR CONCRETE CYLINDERS	2.000 EA	_____	_____	_____	_____
0620	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES	LUMP SUM	LUMP	SUM	_____	_____
0630	520.232 EXPANSION DEVICE - ASPHALTIC PLUG JOINT	136.000 LF	_____	_____	_____	_____
0640	524.301 TEMPORARY STRUCTURAL SUPPORT - Shortridge Br.	LUMP SUM	LUMP	SUM	_____	_____

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0650	524.301 TEMPORARY STRUCTURAL SUPPORT Eddy Flats Br.	LUMP SUM	LUMP	SUM	_____	_____
0660	526.301 TEMPORARY CONCRETE BARRIER TYPE I	LUMP SUM	LUMP	SUM	_____	_____
0670	526.305 TEMPORARY CONCRETE BARRIER, BRACED TYPE 1	LUMP SUM	LUMP	SUM	_____	_____
0680	526.34 PERMANENT CONCRETE TRANSITION BARRIER	8.000 EA	_____	_____	_____	_____
0690	527.34 WORK ZONE CRASH CUSHIONS	12.000 UN	_____	_____	_____	_____
0700	534.71 PRECAST CONCRETE BOX CULVERT - Hwy.	LUMP SUM	LUMP	SUM	_____	_____
0710	534.71 PRECAST CONCRETE BOX CULVERT - Kimball Brook Br.	LUMP SUM	LUMP	SUM	_____	_____
0720	535.622 PRESTRESSED STRUCTURAL CONCRETE NEXT BEAM	LUMP SUM	LUMP	SUM	_____	_____
0730	603.16 15 INCH CULVERT PIPE OPTION I	694.000 LF	_____	_____	_____	_____
0740	603.169 15 INCH CULVERT PIPE OPTION III	104.000 LF	_____	_____	_____	_____
0750	603.17 18 INCH CULVERT PIPE OPTION I	30.000 LF	_____	_____	_____	_____

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0760	603.175 18 INCH REINFORCED CONCRETE PIPE CLASS III	978.000 LF				
0770	603.179 18 INCH CULVERT PIPE OPTION III	536.000 LF				
0780	603.195 24 INCH REINFORCED CONCRETE PIPE CLASS III	64.000 LF				
0790	603.199 24 INCH CULVERT PIPE OPTION III	256.000 LF				
0800	603.205 30 INCH REINFORCED CONCRETE PIPE CLASS III	64.000 LF				
0810	603.215 36 INCH REINFORCED CONCRETE PIPE CLASS III	248.000 LF				
0820	603.239 48 INCH CULVERT PIPE OPTION III	152.000 LF				
0830	603.275 72 INCH REINFORCED CONCRETE PIPE CLASS III	136.000 LF				
0840	603.55 CONCRETE PIPE TIES	52.000 GP				
0850	604.072 CATCH BASIN TYPE A1-C	14.000 EA				
0860	604.092 CATCH BASIN TYPE B1-C	14.000 EA				
0870	604.243 CATCH BASIN TYPE F3-C	1.000 EA				

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			Dollars	Cents	Dollars	Cents
0880	604.247 CATCH BASIN TYPE F5-C	1.000 EA				
0890	605.09 6 INCH UNDERDRAIN TYPE B	11,231.070 LF				
0900	605.10 6 INCH UNDERDRAIN OUTLET	336.000 LF				
0910	605.11 12 INCH UNDERDRAIN TYPE C	990.000 LF				
0920	605.13 18 INCH UNDERDRAIN TYPE C	1,111.000 LF				
0930	605.15 24 INCH UNDERDRAIN TYPE C	221.000 LF				
0940	606.1301 31" W-BM GR, MID-WAY SPLICE-SGL FACED	7,133.000 LF				
0950	606.1303 31" W-BM GR, MID-WAY SPLICE-15' RAD AND LESS	300.000 LF				
0960	606.1304 31" W-BM GR, MID-WAY SPLICE-OVER 15' RAD	63.000 LF				
0970	606.1305 31" W-BM GR, MID-WAY SPLICE FLARED TERMINAL	21.000 EA				
0980	606.1306 31" W-BM GR, MID-WAY SPLICE TANGENT TERMINAL	1.000 EA				

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SECTION: 1 Project Items

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Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0990	606.1307 BRIDGE TRANSITION (ASYMMETRICAL) - TYPE 1	14.000 EA	_____	_____	_____	_____
1000	606.265 TERMINAL END - SINGLE RAIL - GALVANIZED STEEL	14.000 EA	_____	_____	_____	_____
1010	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	87.000 EA	_____	_____	_____	_____
1020	606.356 UNDERDRAIN DELINEATOR POST	12.000 EA	_____	_____	_____	_____
1030	606.47 SINGLE WOOD POST	24.000 EA	_____	_____	_____	_____
1040	606.51 MULTIPLE MAILBOX SUPPORT	4.000 EA	_____	_____	_____	_____
1050	608.08 REINFORCED CONCRETE SIDEWALK	303.333 SY	_____	_____	_____	_____
1060	608.26 CURB RAMP DETECTABLE WARNING FIELD	92.000 SF	_____	_____	_____	_____
1070	609.11 VERTICAL CURB TYPE 1	1,298.000 LF	_____	_____	_____	_____
1080	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	50.000 LF	_____	_____	_____	_____
1090	609.234 TERMINAL CURB TYPE 1 - 4 FOOT	27.000 EA	_____	_____	_____	_____
1100	609.238 TERMINAL CURB TYPE 1 - 8 FOOT	40.000 EA	_____	_____	_____	_____

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Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1110	609.31 CURB TYPE 3	7,600.000 LF				
1120	609.38 RESET CURB TYPE 1	300.000 LF				
1130	610.08 PLAIN RIPRAP	3,410.000 CY				
1140	610.09 HAND LAID RIPRAP	2.000 CY				
1150	610.18 STONE DITCH PROTECTION	50.000 CY				
1160	610.210 STREAM CHANNEL ROCK	45.000 CY				
1170	613.319 EROSION CONTROL BLANKET	5,737.000 SY				
1180	613.40 TURF REINFORCEMENT MAT - (TRM)	1,200.000 SY				
1190	615.07 LOAM	5,996.000 CY				
1200	618.13 SEEDING METHOD NUMBER 1	57.000 UN				
1210	618.14 SEEDING METHOD NUMBER 2	858.000 UN				
1220	619.12 MULCH	915.000 UN				
1230	619.14 EROSION CONTROL MIX	6,117.000 CY				

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Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1240	620.54 STABILIZATION/REINFORCEMENT GEOTEXTILE	500.000 SY	_____	_____	_____	_____
1250	620.58 EROSION CONTROL GEOTEXTILE	3,882.000 SY	_____	_____	_____	_____
1260	620.66 DRAINAGE GEOCOMPOSITE	172.000 SY	_____	_____	_____	_____
1270	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	71,620.000 LF	_____	_____	_____	_____
1280	627.744 6" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	100.000 LF	_____	_____	_____	_____
1290	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	770.000 SF	_____	_____	_____	_____
1300	627.77 REMOVING PAVEMENT MARKINGS	2,500.000 SF	_____	_____	_____	_____
1310	627.78 TEMPORARY 4 INCH PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW	140,000.000 LF	_____	_____	_____	_____
1320	629.05 HAND LABOR, STRAIGHT TIME	290.000 HR	_____	_____	_____	_____
1330	631.10 AIR COMPRESSOR (INCLUDING OPERATOR)	50.000 HR	_____	_____	_____	_____
1340	631.11 AIR TOOL (INCLUDING OPERATOR)	50.000 HR	_____	_____	_____	_____

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Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1350	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	70.000 HR	_____	 _____	_____	 _____
1360	631.121 HEAVY DUTY ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	40.000 HR	_____	 _____	_____	 _____
1370	631.14 GRADER (INCLUDING OPERATOR)	20.000 HR	_____	 _____	_____	 _____
1380	631.15 ROLLER, EARTH AND BASE COURSE (INCLUDING OPERATOR)	20.000 HR	_____	 _____	_____	 _____
1390	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	120.000 HR	_____	 _____	_____	 _____
1400	631.20 STUMP CHIPPER (INCLUDING OPERATOR)	50.000 HR	_____	 _____	_____	 _____
1410	631.22 FRONT END LOADER (INCLUDING OPERATOR)	50.000 HR	_____	 _____	_____	 _____
1420	639.18 FIELD OFFICE TYPE A - Hwy.	1.000 EA	_____	 _____	_____	 _____
1430	639.19 FIELD OFFICE TYPE B - Kimball Brook Br.	1.000 EA	_____	 _____	_____	 _____
1440	643.72 TEMPORARY TRAFFIC SIGNAL - Hwy Rte.302	LUMP SUM	LUMP SUM		_____	 _____

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			Dollars	Cents	Dollars	Cents
1450	643.72 TEMPORARY TRAFFIC SIGNAL - Bridge	LUMP SUM				
1460	645.103 DEMOUNT GUIDE SIGN	49.000 EA				
1470	645.106 DEMOUNT REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	95.000 EA				
1480	645.113 REINSTALL GUIDE SIGN	31.000 EA				
1490	645.116 REINSTALL REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	21.000 EA				
1500	645.291 ROADSIDE GUIDE SIGNS TYPE II	81.000 SF				
1510	645.292 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS TYPE II	639.000 SF				
1520	652.30 FLASHING ARROW BOARD	2.000 EA				
1530	652.312 TYPE III BARRICADE	14.000 EA				
1540	652.33 DRUM	320.000 EA				
1550	652.34 CONE	520.000 EA				

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Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
1560	652.35 CONSTRUCTION SIGNS	2,170.000 SF				
1570	652.36 MAINTENANCE OF TRAFFIC CONTROL DEVICES	344.000 CD				
1580	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES - Kimball Brook Br.	LUMP SUM		LUMP SUM		
1590	652.38 FLAGGER	19,360.000 HR				
1600	652.381 TRAFFIC OFFICER	300.000 HR				
1610	652.41 PORTABLE CHANGEABLE MESSAGE SIGN	12.000 EA				
1620	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM		LUMP SUM		
1630	659.10 MOBILIZATION	LUMP SUM		LUMP SUM		
1640	660.21 ON-THE-JOB TRAINING (BID)	2,000.000 HR				
1650	801.03 TEST PITS	6.000 EA				
1660	834.322 DRY HYDRANT - INSTALL ONLY	LUMP SUM		LUMP SUM		
Section: 1			Total:			

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SECTION: 2 Alt. 1 - FDR w/ Emulsion

Alt Set ID: AL

Alt Mbr ID: 1

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0100	203.20 COMMON EXCAVATION	71,600.000 CY	_____	_____	_____	_____
0230	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	63,000.000 CY	_____	_____	_____	_____
0250	307.332 FULL DEPTH RECYCLED PAVEMENT(W EMULSIFIED ASPHALT STABILIZER) 5 IN. DEPTH	62,800.000 SY	_____	_____	_____	_____
0320	409.15 BITUMINOUS TACK COAT - APPLIED	4,740.000 G	_____	_____	_____	_____
Section: 2			Total:		_____	_____

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Project(s): 017280.00, 017912.00, 021691.00,
023849.00

SECTION: 3 Alt. 2 - HMA

Alt Set ID: AL

Alt Mbr ID: 2

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0110	203.20 COMMON EXCAVATION	76,100.000 CY	_____	_____	_____	_____
0240	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	65,000.000 CY	_____	_____	_____	_____
0260	403.2072 19 MM ASPHALT RICH BASE MIXTURE	10,800.000 T	_____	_____	_____	_____
0330	409.15 BITUMINOUS TACK COAT - APPLIED	6,600.000 G	_____	_____	_____	_____
Section: 3			Total:		_____	_____
			Total Bid:		_____	_____

SPECIAL PROVISIONS
SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS
(Removing Pavement Surface)

The November 2014 Revision of the Standard Specifications, Section 202-Removing Structures and Obstructions, subsection 202.061-Removing Pavement Surface, has been removed and replaced in its entirety by the following:

202.061 Removing Pavement Surface The equipment for removing the bituminous surface shall be a power operated milling machine or grinder capable of removing bituminous concrete pavement to the required depth, transverse cross slope, and profile grade using an automated grade and slope control system. The controls shall automatically increase or decrease the pavement removal depth as required, and readily maintain desired cross slope, to compensate for surface irregularities in the existing pavement course. The equipment shall be capable of accurately establishing profile grades by referencing from a fixed reference such as a 30 foot minimum contact ski (floating beam), 24 foot non-contact ski (floating beam) with 3 or more sensors; or 3 non-contact sensors directly affixed at the fore, mid, and aft points of the milling machine. Grade control sensors shall all be located on the same side. A single sensor, contact or otherwise, shall not be permitted unless otherwise approved by the Department.

The rotary drum shall utilize carbide tip tools at a minimum triple wrap configuration. The difference in height from the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed 1/4 inch. The forward speed of the milling machine shall be adjusted to produce a milled surface meeting the groove spacing, groove depth, and surface tolerance requirements of this specification. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture. The Department may evaluate the texture of the milled surface for information purposes by performing the Sand Patch test according to ASTM E 965.

The Contractor shall locate and remove all objects in the pavement through the work area that would be detrimental to the planing or grinding machine. Any structures or obstructions left within the travel lane or shoulders shall have tapers installed according to Standard Detail 202(01). The finished milled surface will be inspected before being accepted, and any deviations in the profile exceeding 1/2 inch under a 16 foot string line or straightedge placed parallel to the centerline will be corrected. Any deviations in the cross-slope that exceed 3/8 inch under a 10 foot string line or straightedge placed transversely to centerline will be corrected. All corrections will be made with approved methods and materials. Any areas that require corrective measures will be subject to the same acceptance tolerances. Excess material that becomes bonded to the milled surface will be removed to the Resident's satisfaction before the area is accepted.

On roadways with adjoining lanes carrying traffic, the Contractor shall remove the pavement surface in each lane per the conditions in Table 1, unless otherwise noted by the Department in Special Provision, Section 105 – Limitations of Operations.

TABLE 1: MILLING CONDITIONS FOR ADJOINING LANES

Depth (At Centerline)	Milling Conditions
Vertical Longitudinal Joint	
2" and less	The Contractor may remove the pavement on a single travel lane width for each production day and will be required to mill the adjacent section of travel lane before the end of the following calendar day.
Greater than 2"	The Contractor shall remove the pavement over the full width of the traveled way section being paved that day.
12:1 Tapered Centerline Joint	
1 ½" to 2"	The Contractor may remove the pavement on a single travel lane width for each production day and will be required to mill the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint length of 0.5 miles will be permitted over the weekend.
Greater than 2"	The Contractor shall remove the pavement on a single travel lane width for each production day and will be required to mill the adjacent section of travel lane before the end of the following calendar day.

The Contractor will be required to remove the pavement over the full width of the mainline traveled way, regardless of highway type, cut depth, or longitudinal joint type prior to Memorial Day, July 4th, Labor Day, suspensions exceeding three days, or other dates as specified by Special Provision, Section 105 – Limitations of Operations.

The Contractor will also be responsible for installing additional warning signage that clearly defines the centerline elevation differential hazard. Unless otherwise addressed in the contract, the Contractor shall install additional centerline delineation such as a double RPM application, or temporary painted line. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile for the entire length of effected roadway section. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items.

On roadways with immediately adjacent shoulders, the Contractor shall remove the pavement surface in each lane per the conditions in Table 2, unless otherwise noted by the Department in Special Provision, Section 105 – Limitations of Operations.

TABLE 2: MILLING CONDITIONS FOR THE EDGE OF TRAVELED WAY

Depth (At Edge of Traveled Way)	Conditions
2" and less	The Contractor may leave a vertical edge joint exposed for up to 21 days after milling is performed. The Contractor shall treat vertical edge joints exposed beyond 21 days per the criteria below.
Greater than 2"	The Contractor shall treat vertical edge joints exposed beyond 21 days per the criteria below.

When required by Table 2, the Contractor shall treat vertical edge joints through one of the options below:

1. The vertical edge shall be tapered to a zero edge by means of milling a 12:1 transition from the edge of traveled way onto the shoulder before opening the lane to traffic. Tapers shall be removed to form a vertical edge prior to the placement of the new pavement course. No additional payment will be made for tapers, or taper removal.
2. An additional 2 feet of pavement shall be removed from the shoulder to eliminate the vertical edge at the edge of travelway before opening the lane to traffic. Unless otherwise authorized by the Department, no additional payment will be made for the additional milling.
3. A pavement layer shall be placed to reduce the vertical edge to 1 inch or less before opening the lane to traffic.

As a minimum, the use of temporary painted line, or RPMs placed along the edge of traveled way at 200 foot intervals is required for all elevation differentials. When pavement milling is extended into the shoulder (including milled tapers), appropriate channelization devices shall be placed 2 feet outside the edge of the vertical face at intervals not exceeding 600 feet, and RPMs shall be placed on the remaining pavement surface along the vertical edge at 200 foot intervals. Uneven pavement signs shall be placed at a maximum spacing of ½ mile when any pavement milling operations leaves an exposed uneven pavement surface.

Weepers shall be ground across the full width sections adjacent shoulders or remaining pavement surface matching the milled travel way or shoulder milled depth to minimize water ponding in any lanes carrying traffic. Weepers shall typically be 18 – 24” inches in width, installed along each lane, at a frequency of approximately one per half mile at locations as directed by the Resident or in areas that will provide drainage for the milled areas. Installation of weepers will not be paid for directly but will be considered incidental to the contracts pavement removal item. The replacement of mix in the weeper locations shall be performed concurrently within the pavement placement operation closure using the appropriate HMA item produced for the Contract or a MaineDOT approved 9.5mm HMA. There will be no separate payment for repaving the weeper locations as they are considered incidental to the square yard price of the contracts pavement removal item.

Any areas of concern, such as de-lamination or pot-holing shall be identified on a continuous basis as milling progresses. Proper corrective action will be determined by the Resident and paid for under the appropriate contract items, and if required, completed prior to opening lane to traffic. Any issues that arise up to 7 calendar days after being milled will be the responsibility of the MaineDOT unless otherwise noted in Special Provision Section 105 – Limitations Of Operations.

Pay Item

Pay Unit

202.202 Removing Pavement Surface

S.Y.

SECTION 401 - HOT MIX ASPHALT PAVEMENT

401.01 Description The Contractor shall furnish a uniformly blended, homogeneous mixture placed as one or more courses of Hot Mix Asphalt Pavement (HMA) on an approved base in accordance with the contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections shown on the plans or established by the Resident. The Department will accept this work under Quality Assurance provisions, in accordance with these specifications and the requirements of Section 106 – Quality, the provisions of AASHTO M 323 except where otherwise noted in sections 401 and 703 of these specifications, and the MaineDOT Policies and Procedures for HMA Sampling and Testing.

401.02 Materials Materials shall meet the requirements specified in Section 700 - Materials:

Asphalt Cement	702.01
Aggregates for HMA Pavement	703.07
RAP for HMA Pavement	703.08
HMA Mixture Composition	703.09

401.03 Composition of Mixtures The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. HMA shall be designed and tested according to AASHTO R35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF). Unless otherwise noted in Special Provision 403 - Hot Mix Asphalt Pavement, the design, verification, Quality Control, and Acceptance tests for this mix will be performed at 65 gyrations.

The Contractor shall submit for Department approval a JMF to the Asphalt Pavement Engineer for each mixture to be supplied. The Department shall then have 15 calendar days in which to process a new design before approval. The JMF shall establish a single percentage of aggregate passing each sieve size within the limits shown in section 703.09. The mixture shall be designed and produced, including all production tolerances, to comply with the allowable control points for the particular type of mixture as outlined in 703.09. The JMF shall state the original source, gradation, and percentage to be used of each portion of the aggregate including RAP when utilized, and mineral filler if required. It shall also state the proposed PGAB content, the name and location of the supplier, the source of PGAB submitted for approval, the type of PGAB modification if applicable, and the location of the terminal if applicable.

In addition, the Contractor shall provide the following information with the proposed JMF:

- Properly completed JMF indicating all mix properties (Gmm, VMA, VFB, etc.)
- Stockpile Gradation Summary
- Design Aggregate Structure Consensus Property Summary
- Design Aggregate Structure Trial Blend Gradation Plots (0.45 power chart)
- Trial Blend Test Results for at least three different asphalt contents
- Design Aggregate Structure
- Test results for the selected aggregate blend at a minimum of three binder contents
- Recommended mixing and compaction temperatures from the PGAB supplier
- Safety Data Sheets (SDS) For PGAB
- Asphalt Content vs. Air Voids trial blend curve
- Test report for Contractor's Verification sample

At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 150 ton for coarse aggregate stockpiles and 75 ton for fine aggregate stockpiles before the JMF may be submitted. The Contractor shall provide aggregate

samples to the Department unless otherwise required. The Contractor shall also make available to the Department the PGAB proposed for use in the mix in sufficient quantity to test the properties of the asphalt and to produce samples for testing of the mixture. The JMF will be approved by the Department in accordance with the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement.

The Contractor shall be allowed to submit aim changes for a JMF within 24 hours of receipt of the first Acceptance test result. Should all of the Acceptance samples of a Lot be obtained prior to the reporting of the first Acceptance result, the Department will not allow the aim changes to be applied to that Lot. Adjustments will be allowed of up to 2% on the percent passing the 2.36 mm sieve through the 0.075 mm and 3% on the percent passing the 4.75 mm or larger sieves. Adjustments will be allowed on the %PGAB of up to 0.2%. Adjustments will be allowed on G_{mm} of up to 0.010.

The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. The cold feed percentage for RAP may be reduced up to 10 percentage points from the amount listed on the JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application under any circumstances.

TABLE 1: VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Million s)	Required Density (Percent of G _{mm})			Voids in the Mineral Aggregate (VMA)(Minimum Percent)					Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
				Nominal Maximum Aggregate Size (mm)						
	N _{initial}	N _{design}	N _{max}	25	19	12.5	9.5	4.75		
<0.3	≤91.5	96.0	≤98.0	13.0	14.0	15.0	16.0	16.0	70-80	0.6-1.2
0.3 to <3	≤90.5								65-80	
3 to <10	≤89.0								65-80*	
10 to <30										
> 30										

*For 9.5 mm nominal maximum aggregate size mixtures, the maximum VFB is 82.

*For 4.75 mm nominal maximum aggregate size mixtures, the maximum VFB is 84.

401.031 Warm Mix Technology The Contractor may place Hot Mix Asphalt Pavement produced with an accepted WMA technology if approved by the Department. Methods or technologies shall generally be at the Contractors option, but will be limited to proven, Agency and Industry accepted practice. Mixture production, placement and volumetric testing details, including temperatures, shall be included in the project specific QCP, and submitted to the Department for approval prior to any work.

401.04 Temperature Requirements After the JMF is established, the temperatures of the mixture shall conform to the following tolerances unless otherwise authorized by the Department:

In the truck at the mixing plant – allowable range 275 to 325°F
At the Paver – allowable range 275 to 325°F

The JMF and the mix subsequently produced shall meet the requirements of Tables 1 and Section 703.07.

401.05 Performance Graded Asphalt Binder The Contractor shall utilize either a PG58-28, PG64-28, or other grade as specified in the 403 Special Provision. The Contractor shall utilize a PG64-28 if no liquid grade is specified within the 403 Special Provision.

401.06 Weather and Seasonal Limitations The State is divided into two paving zones as follows:

- a. **Zone 1** Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
- b. **Zone 2** Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

TABLE 2: SEASONAL AND TEMPERATURE LIMITATIONS

Use	Minimum Ambient Air Temperature	Zone 1 Allowable Placement Dates	Zone 2 Allowable Placement Dates
Surface course (travelway & adjacent shoulders) less than 1 in. thick placed during conditions defined as “night work”	50°F	June 1 to Saturday following September 1	
Surface course (travelway & adjacent shoulders) less than 1 in. thick	50°F	May 15 to Saturday following September 15	
Travelway surface course greater than or equal to 1 in. thick	50°F	May 1 to Saturday following October 1	April 15 to Saturday following October 15
HMA for surface course on bridge decks	50°F	May 1 to Saturday following October 1	April 15 to Saturday following October 15
HMA for base or shim course on bridge decks	50°F	April 15 to November 15	
HMA for use other than travelway surface course	40°F	April 15 to November 15	
HMA for curb, driveways, sidewalks, islands, or other incidentals	40°F	N/A	N/A
HMA produced with an approved WMA technology for base or shim course	35°F	April 15 to November 15	

The ambient air temperature shall be determined by an approved thermometer placed in the shade at the paving location. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface regardless of the ambient air temperature. The Hot Mix Asphalt Pavement produced with an approved WMA technology shall meet the requirements of section 401.04 - Temperature Requirements, unless otherwise approved by the Department. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes.

401.07 Hot Mix Asphalt Plant

401.071 General Requirements HMA plants shall conform to AASHTO M156-97.

- a. **Additives** Additives (WMA, anti-strip, etc.) not directly introduced into the binder at the terminal shall be introduced into the HMA plant per the supplier’s recommendations and shall be approved by the Asphalt Pavement Engineer, Pavement Quality Manager, or their authorized representative. The system for introducing additives shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. Additive introduction systems shall be controlled by a proportioning device to the amount required on the JMF plus or minus 0.1% of the target. Additive introduction systems shall be interlocked with the plant and the recordation (batch tickets or drum recordation) shall display the additive and the weight and percentage added.

b. Stockpiles HMA plants shall have sufficient space for stockpiles, with a minimum of supply for 2 days production of all aggregate products used in MaineDOT approved mix designs currently under production for the facility at all times. A minimum stockpile supply of 100 ton (70 yards) shall be maintained at all times no matter the production rate for the HMA plant. Stockpiles shall be separated and built to minimize segregation.

c. Preparation of Aggregates The Contractor shall dry and heat the aggregates for the HMA to the required temperature. The Contractor shall properly adjust flames to avoid physical damage to the aggregate and to avoid depositing soot on the aggregate.

d. Mixing The Contractor shall combine the dried aggregate in the mixer in the amount of each fraction of aggregate required to meet the JMF. The Contractor shall measure the amount of PGAB and introduce it into the mixer in the amount specified by the JMF. The Contractor shall produce the HMA at the temperature established by the JMF.

The Contractor shall dry the aggregate sufficiently so that the HMA will not flush, foam excessively, or displace excessively under the action of the rollers. The Contractor shall introduce the aggregate into the mixer at a temperature of not more than 25°F above the temperature at which the viscosity of the PGAB being used is 0.150 Pa·s.

The Contractor shall store and introduce into the mixer the Performance Graded Asphalt Binder at a uniformly maintained temperature at which the viscosity of the PGAB is between 0.150 Pa·s and 0.300 Pa·s. The aggregate shall be coated completely and uniformly with a thorough distribution of the PGAB. The Contractor shall determine the wet mixing time for each plant and for each type of aggregate used. The resultant material shall be a uniformly blended, homogeneous HMA mixture.

401.072 Automation of Batching Batch plants shall be automated for weighing, recycling, and monitoring the system. In the case of a malfunction of the printing system, the requirements of Section 401.074 c. of this specification will apply.

The batch plant shall accurately proportion the various materials in the proper order by weight. The entire batching and mixing cycle shall be continuous and shall not require any manual operations. The batch plant shall use auxiliary interlock circuits to trigger an audible alarm whenever an error exceeding the acceptable tolerance occurs. Along with the alarm, the printer shall print an asterisk on the delivery slip in the same row containing the out-of-tolerance weight. The automatic proportioning system shall be capable of consistently delivering material within the full range of batch sizes. When RAP is being used, the plant must be capable of automatically compensating for the moisture content of the RAP.

All plants shall be equipped with an approved digital recording device. The delivery slip load ticket shall contain information required under Section 108.1.3 - Provisions Relating to Certain Measurements, Mass and paragraphs a, b, and c of Section 401.073

401.073 Automatic Ticket Printer System on Automatic HMA Plant An approved automatic ticket printer system shall be used with all approved automatic HMA plants. The requirements for delivery slips for payment of materials measured by weight, as given in the following Sections, shall be waived: 108.1.3 a., 108.1.3 b., 108.1.3 c., and 108.1.3 d. The automatic printed ticket will be considered as the Weight Certificate.

The requirements of Section 108.1.3 f. - Delivery Slips, shall be met by the weigh slip or ticket, printed by the automatic system, which accompanies each truckload, except for the following changes:

- a. The quantity information required shall be individual weights of each batch or total net weight of each truckload.
- b. Signatures (legible initials acceptable) of Weighmaster (required only in the event of a malfunction as described in 401.074 c.).
- c. The MaineDOT designation for the JMF.

401.074 Scales and Weight Checks When the HMA is to be weighed on scales meeting the requirements of Section 108 - Payment, the scales shall be inspected and sealed by the State Sealer (or approved alternative) as often as the Department deems necessary to verify their accuracy based upon the criteria below. Plant scales shall be checked prior to the start of the paving season, and each time a plant is moved to a new location. Subsequent checks will be made as determined by the Resident. The Contractor will have at least ten 50 pound masses for scale testing at batch plants. At least twice during each 5 days of production either of the following checks will be performed:

- a. A loaded truck may be intercepted and weighed on a platform scale that has been sealed by the State Sealer of Weights and Measures within the past 12 months. The inspector will notify the producer to take corrective action on any discrepancy over 1.0%. The producer may continue to operate for 48 hours under the following conditions.
 1. If the discrepancy does not exceed 1.5%; payment will still be governed by the printed ticket.
 2. If the discrepancy exceeds 1.5%, the plant will be allowed to operate as long as payment is determined by truck platform scale net weight.

If, after 48 hours the discrepancy has not been addressed and reduced below 1.0%, than plant operations will cease. Plant operation may resume after the discrepancy has been brought within 1.0%.

- b. Where platform scales are not readily available, a check will be made to verify the accuracy and sensitivity of each scale within the normal weighing range and to assure that the interlocking devices and automatic printer system are functioning properly.
- c. In the event of a malfunction of the automatic printer system, production may be continued without the use of platform truck scales for a period not to exceed the next two working days, providing total weights of each batch are recorded on weight tickets and certified by a Licensed Public Weighmaster.

401.08 Hauling Equipment Units hauling HMA shall have tight, clean, and smooth metal bodies, which have been thinly coated with a small amount of approved release agent to prevent the mixture from adhering to the bodies. Release agents that dissolve or strip asphalts, including diesel fuel, will not be allowed.

All mix haul units shall have a cover of canvas or other water repellent material capable of heat retention, which completely covers the mixture. The cover shall be securely fastened on the truck, unless unloading. All mix haul units shall have an opening on both sides, which will accommodate a thermometer stem. The opening shall be located near the midpoint of the body, at least 12 in above the bed.

401.09 Pavers The Contractor shall use pavers meeting the requirements of this section unless otherwise authorized by the Department. Pavers shall be self-contained, self-propelled units with an activated heated screed capable of placing courses of Hot Mix Asphalt Pavement in full lane widths specified in the contract on the main line, shoulder, or similar construction.

Pavers shall be of sufficient class and size to place Hot Mix Asphalt Pavement over the full width of the mainline travel way with a 10 ft minimum main screed with activated extensions.

The Contractor shall place Hot Mix Asphalt Pavement on the main line with a paver using an automatic grade and slope controlled screed, unless otherwise authorized by the Department. The controls shall automatically adjust the screed and increase or decrease the layer thickness to compensate for irregularities in the preceding course. The controls shall maintain the proper transverse slope and be readily adjustable so that transitions and superelevated curves can be properly paved. The controls shall operate from a fixed or moving reference such as a grade wire or ski type device (floating beam) with a minimum length of 30 ft, a non-contact grade control with a minimum span of 24 ft, except that a 40 ft reference shall be used on Expressway projects.

The Contractor shall operate the paver in such a manner as to produce a visually uniform surface texture and a thickness within the requirements of Section 401.11 - Surface Tolerances. The paver shall have a receiving hopper with sufficient capacity for a uniform spreading operation and a distribution system to place the mixture uniformly, without segregation in front of the screed. The screed assembly shall produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screeds shall have auger extensions and tunnel extenders as per the manufacturer's recommendations, a copy of which shall be available if requested.

The Contractor shall have the paver at the project site sufficiently before the start of paving operations to be inspected and approved by the Department. The Contractor shall repair or replace any paver found worn or defective, either before or during placement, to the satisfaction of the Department. Pavers that produce an unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MaineDOT projects.

On a daily basis, the Contractor shall perform density testing across the mat being placed, prior to being compacted by equipment at 12 in intervals. If the density values vary by more than 2.0% from the mean, the Contractor shall make adjustments to the screed until the inconsistencies are remedied. Failure to replace or repair defective placement equipment may result in a letter of suspension of work and notification of a quality control violation resulting in possible monetary penalties as governed by Section 106 - Quality

401.10 Rollers Rollers shall be static steel, pneumatic tire, oscillatory, or approved vibrator type. Rollers shall be in good mechanical condition, capable of starting and stopping smoothly, and be free from backlash when reversing direction. Rollers shall be equipped and operated in such a way as to prevent the picking up of hot mixed material by the roller surface. The use of rollers, which result in crushing of the aggregate or in displacement of the HMA will not be permitted. Any Hot Mix Asphalt Pavement that becomes loose, broken, contaminated, shows an excess or deficiency of Performance Graded Asphalt Binder, or is in any other way defective shall be removed and replaced at no additional cost with fresh Hot Mix Asphalt Pavement, which shall be immediately compacted to conform to the adjacent area.

The Contractor shall repair or replace any roller found to be worn or defective, either before or during placement, to the satisfaction of the Department. Rollers that produce grooved, unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MaineDOT projects. The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided specification densities are attained and with the following requirements:

- a. On variable-depth courses, the first lift of pavement over gravel, reclaimed pavement, on irregular or milled surfaces, or on bridges, at least one roller shall be 16 ton pneumatic-tired. Pneumatic-tired rollers

shall be equipped with skirting to minimize the pickup of HMA materials from the paved surface. When required by the Resident, the roller shall be ballasted to 20 ton.

b. Compaction with a vibratory or steel wheel roller shall precede pneumatic-tired rolling, unless otherwise authorized by the Department.

c. Vibratory rollers shall not be operated in the vibratory mode when checking or cracking of the mat occurs, or on bridge decks.

d. Any method, which results in cracking or checking of the mat, will be discontinued and corrective action taken.

e. The use of an oscillating steel roller shall be required to compact all mixtures placed on bridge decks.

The maximum operating speed for a steel wheel or pneumatic roller shall not exceed the manufacturer's recommendations, a copy of which shall be available if requested.

401.11 Surface Tolerances The Department will check the following surface tolerances:

a.) Longitudinally: The pavement surface profile shall be free of deviations in excess of +/- ¼ inches from the required pavement surface profile grade. To verify the surface tolerance a straight plane shall be established using 16 foot straight edge or a taught string line placed parallel to the direction of travel and checked continuously across the width of the lane.

b.) Transversely: The pavement surface profile shall be free of deviations in excess of 0 inches below and ¼ inches above the required cross sectional profile grade. To verify the surface tolerance a straight plane shall be established using a 10 foot straight edge or taught string line placed perpendicular to the direction of travel and checked continuously along the length of the lane.

The Contractor shall correct defective areas by removing defective work and replacing it with new material as directed by the Department. The Contractor shall furnish a 10 foot straightedge for the Department's use.

401.12 Preparation of Existing Surface The Contractor shall thoroughly clean the surface upon which Hot Mix Asphalt Pavement is to be placed of all objectionable material. When the surface of the existing base or pavement is irregular, the Contractor shall bring it to uniform grade and cross section. All surfaces shall have a tack coat applied prior to placing any new HMA course. Tack coat shall conform to the requirements of Section 409 – Bituminous Tack Coat, Section 702 – Bituminous Material, and all applicable sections of the contract.

401.13 Spreading and Finishing On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the Contractor shall spread, rake, and lute the HMA with hand tools to provide the required compacted thickness. Release agents that dissolve or strip asphalts, including diesel fuel, will not be allowed.

On roadways with adjoining lanes carrying traffic, the Contractor shall place each course per the conditions in Table 3, unless otherwise noted by the Department in Section 403 - Hot Mix Asphalt Pavement.

TABLE 3: PLACEMENT CONDITIONS FOR ADJOINING LANES

Depth (at centerline)	Placement Conditions
Vertical Longitudinal Joint	
¾" and less (incl. shim)	The Contractor may place the HMA course over the full single travel lane width for each production day.
1" to 1 ¼"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension.
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.
Greater than 2"	The Contractor shall place each course over the full width of the traveled way section being paved that day.
Notched-Wedge Longitudinal Joint	
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint length of 0.5 miles will be permitted over the weekend.
Greater than 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.

The Contractor will be required to place the specified course over the full width of the mainline traveled way being paved, regardless of use, depth, or longitudinal joint type prior to Memorial Day, July 4th, Labor Day, paving suspensions exceeding three days, or other dates as specified by special provision.

The Contractor will also be responsible for installing additional warning signage that clearly defines the centerline elevation differential hazard. Unless otherwise addressed in the contract, the Contractor shall install additional centerline delineation such as a double RPM application, or temporary painted line. The Traffic Control Plan shall be amended to include this option and the additional requirements. All signs and traffic control devices will conform to Section 719.01, and Section 652, and will be installed prior to the work, at a maximum spacing of 0.50 mile for the entire length of effected roadway section. If this option is utilized, all additional signing, labor, traffic control devices, or incidentals will not be paid for directly, will be considered incidental to the appropriate 652 items.

401.14 Hot Mix Asphalt Placement on Bridge Decks Hot mix asphalt pavement placed on bridges shall also conform to Section 508.04 and the following requirements.

- The bottom course shall be placed with an approved rubber mounted paver of such type and operated in such a manner that the membrane waterproofing will not be damaged in any way.
- The top course shall not be placed until the bottom course has cooled sufficiently to provide stability.
- The Contractor will not be required to cut sample cores from the compacted pavement on the bridge deck, unless otherwise directed by Special Provision.

- d. After the top course has been placed, the shoulder areas shall be sealed 3 ft wide with two applications of an emulsified bituminous sealer meeting the requirements of Section 612.03 – Sealing and Section 702.12 - Emulsified Bituminous Sealing Compound. The first application shall be pre-mixed with fine, sharp sand, similar to mortar sand, as needed to fill all voids in the mix in the area being sealed. The second application may be applied without sand. The sealer shall be carried to the curb at the gutter line in sufficient quantity to leave a bead or fillet of material at the face of the curb. The area to be sealed shall be clean, dry and the surface shall be at ambient temperature.
- e. The furnishing and applying of the required quantity of sealer for the bridge shoulder areas shall be incidental to placing the hot mix asphalt pavement.
- f. The minimum production and placement temperature for the Hot Mix Asphalt placed over membrane shall conform to the manufacturer's recommendations.

The area between the edge of the membrane and the vertical surface shall be completely sealed with hot-applied rubberized asphalt material, meeting the requirements of Type 4 crack seal; shall be applied to form a complete seal between the membrane and the vertical surface and shall extend up the vertical surface to within ½ inch of the top of the HMA wearing surface. This work shall be considered incidental to the contract pavement items unless 508 membrane items are included in the contract.

401.15 Compaction Immediately after the Hot Mix Asphalt Pavement has been spread, struck off, and any surface irregularities adjusted, the Contractor shall thoroughly and uniformly compact the HMA by rolling.

The Contractor shall roll the surface when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving. The Contractor shall prevent adhesion of the HMA to the rollers or vibrating compactors without the use of fuel oil or other petroleum based release agents. Solvents designed to strip asphalt binders from aggregates will not be permitted as release agents on equipment, tools, or pavement surfaces.

The Contractor shall immediately correct any displacement occurring as a result of the reversing of the direction of a roller or from other causes to the satisfaction of the Department. Any operation other than placement of variable depth shim course that results in breakdown of the aggregate shall be discontinued. Any new pavement that shows obvious cracking, checking, or displacement shall be removed and replaced for the full lane width as directed by the Resident at no cost to the Department.

Along forms, curbs, headers, walls, and other places not accessible to the rollers, the Contractor shall thoroughly compact the HMA with mechanical vibrating compactors. The Contractor shall only use hand tamping in areas inaccessible to all other compaction equipment. On depressed areas, the Contractor may use a trench roller or cleated compression strips under a roller to transmit compression to the depressed area.

Any HMA that becomes unacceptable due to cooling, cracking, checking, segregation or deformation as a result of an interruption in mix delivery shall be removed and replaced, with material that meets contract specifications at no cost to the Department.

401.16 Joints The Contractor shall construct wearing course transverse and longitudinal joints in such a manner that minimum tolerances shown in Section 401.11 - Surface Tolerances are met when measured with a straightedge.

The paver shall maintain a uniform head of HMA during transverse and longitudinal joint construction.

The HMA shall be free of segregation and meet temperature requirements outlined in Section 401.04. Transverse joints of the wearing course shall be straight and neatly trimmed. The Contractor may form a vertical face exposing the full depth of the course by inserting a header, by breaking the bond with the underlying course, or by cutting back with hand tools.

The Contractor shall apply a coating of emulsified asphalt immediately before paving all joints to the vertical face and 3 in of the adjacent portion of any pavement being overlaid except those formed by pavers operating in echelon. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces, or in the event of a malfunction of the spray apparatus, but for a period of not more than one working day.

Where pavement under this contract joins an existing pavement, or when the Department directs, the Contractor shall cut the existing pavement along a smooth line, producing a neat, even, vertical joint. The Department will not permit broken or raveled edges. The cost of all work necessary for the preparation of joints is incidental to related contract pay items.

Longitudinal joints shall be generally straight to the line of travel, and constructed in a manner that best ensure joint integrity. Methods or activities that prove detrimental to the construction of straight, sound longitudinal joints will be discontinued.

The Contractor may utilize an approved notched wedge joint device on all HMA layers 1 ½ inches in depth or greater. A notched wedge joint shall be constructed as shown in Figure 1 using a device that is attached to the paver screed and is capable of independently adjusting the top and bottom vertical notches.

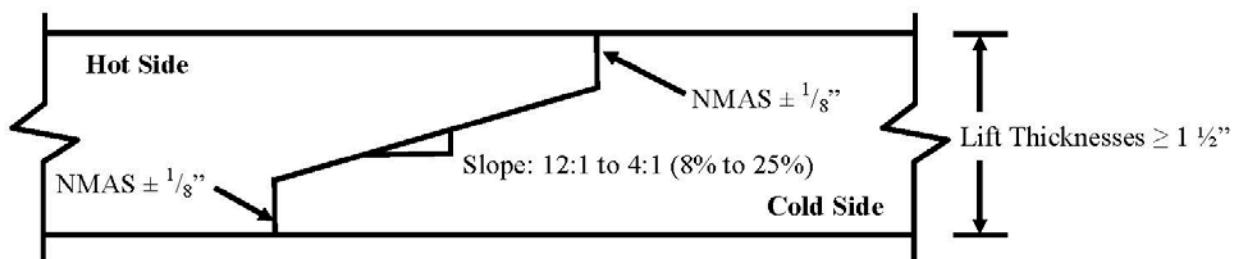


FIGURE 1: Notched Wedge Joint

Notes

1. An emulsified tack coat shall be applied to the vertical edges and the wedge surface so that the total rate is 0.05 G/SY plus the normal specified rate prior to placing the adjacent layer. The Contractor may elect to apply the emulsified tack coat in one or multiple passes.
2. Dimensions shown are compacted depths (after rolling is complete).

The Department reserves the right to have centerline cores cut by the Contractor's QC personnel for informational purposes to monitor the density along the joint. Informational cores at the centerline joint will be taken centered over the tapered part of the wedge joint.

Any notched wedge joint constructed areas that become cracked or broken shall be trimmed back to the limits affected prior to placing the adjoining lane. Any materials that become unbound or separated from the wedge or tapered joint section, or contaminated by materials determined by the Department as being detrimental to the

construction of a sound construction joint, shall be removed by sweeping, compressed air and lance, or by hand tools as required. This work, if necessary, will not be paid for directly, but shall be considered incidental to the related contract items.

The Contractor shall apply a coating of emulsified asphalt on the vertical and tapered surface of the longitudinal centerline joint immediately before paving if the notched wedge joint device is used. The total rate of application shall be 0.050 G/SY plus the normal specified tack coat rate. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces.

401.17 Hot Mix Asphalt Documentation The Contractor and the Department shall agree on the amount of Hot Mix Asphalt Pavement that has been placed each day. All delivery slips shall conform to the requirements of 401.073.

401.18 Quality Control Method A, B & C The Contractor shall operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The QCP shall meet the requirements of Section 106.6 - Acceptance and this Section. The Contractor shall not begin paving operations until the Department approves the QCP in writing.

Prepave Meeting Prior to placing any mix, the Department and the Contractor shall hold a Pre-paving conference to discuss the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, random sampling, project lots and sublots and traffic control. A copy of the density QC random numbers to be used on the project shall be provided to the Resident. The Departments' random numbers for Acceptance testing shall be generated and on file with the Resident and the Project Manager. All personnel of the Department and the Contractor who have significant information relevant to the paving items shall attend, including the responsible onsite paving supervisor for the Contractor. The Resident will prepare minutes of the conference and distribute them to all attendees. Any requests to revise the minutes must be made to the Resident within 7 Days of Receipt. These minutes will constitute the final record of the Pre-paving conference.

On the first day of paving and whenever there is a change in the onsite paving foreman or paving inspector, the Department and the Contractor shall hold an informal onsite meeting to review the minutes of the Pre-paving conference, Project Specific QCP, Plans, Typical, Special Provisions and communication process. This meeting shall be held prior to placing any mix. The onsite paving supervisor, QCT, Superintendent, Resident and/or paving inspector shall attend.

Quality Control Plan The QCP shall address any items that affect the quality of the Hot Mix Asphalt Pavement including, but not limited to, the following:

- a. JMF(s)
- b. Hot mix asphalt plant details
- c. Stockpile Management (to include provisions for how the requirements of 401.071b will be met)
- d. Make and type of paver(s)
- e. Make and type of rollers including weight, weight per inch of steel wheels, and average contact pressure for pneumatic tired rollers
- f. Name of QCP Administrator, and certification number
- g. Name of Process Control Technician(s) and certification number(s)
- h. Name of Quality Control Technicians(s) and certification number(s)

- i. Mixing & transportation including process for ensuring that truck bodies are clean and free of debris or contamination that could adversely affect the finished pavement
- j. Testing Plan
- k. Laydown operations including longitudinal joint construction, procedures for avoiding paving in inclement weather, type of release agent to be used on trucks tools and rollers, compaction of shoulders, tacking of all joints, methods to ensure that segregation is minimized, procedures to determine the maximum rolling and paving speeds based on best engineering practices as well as past experience in achieving the best possible smoothness of the pavement. Solvent based agents developed to strip asphalts from aggregates will not be allowed as release agents.
- l. Examples of Quality Control forms including a daily plant report, daily paving report, and delivery slip template for any plant to be utilized.
- m. Silo management and details (can show storage for use on project of up to 36 hours)
- n. Provisions for varying mix temperature due to extraordinary conditions or production limitations. If a warm-mix technology is utilized, a proposed target production temperature range (not to exceed 50°F) will be provided for each mix design.
- o. Name and responsibilities of the Responsible onsite Paving Supervisor.
- p. Method for calibration/verification of Density Gauge
- q. A note that all testing will be done in accordance with AASHTO and the MaineDOT Policies and Procedures for HMA Sampling and Testing.
- r. A detailed description of RAP processing, stockpiling and introduction into the plant as well as a note detailing conditions under which the percent of RAP will vary from that specified on the JMF.
- s. A detailed procedure outlining when production will be halted due to QC or Acceptance testing results.
- t. A plan to address the change in PGAB source or supplier and the potential co-mingling of differing PGAB's.
- u. A procedure to take immediate possession of acceptance samples once released by MaineDOT and deliver said samples to the designated acceptance laboratory.
- v. Provisions for how the QCP will be communicated to the Contractor's field personnel

The QCP shall include the following technicians together with following minimum requirements:

- a. QCP Administrator - A qualified individual shall administer the QCP. The QCP Administrator must be a full-time employee of or a consultant engaged by the Contractor or paving subcontractor. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful operation of the QCP. The QCP Administrator (or its designee in the QCP Administrator's absence) shall be available to communicate with the Department at all times. The QCP Administrator shall be certified as a Quality Assurance Technologist certified by the New England Transportation Technician Certification Program (NETTCP).
- b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements, and that delivery slips and plant recordation accurately reflects the mix being produced with all the required information. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.
- c. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the JMF(s). The QCT shall inspect all equipment

utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The QCP shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a Paving Inspector by the NETTCP.

The QCP shall detail the coordination of the activities of the Plan Administrator, the PCT and the QCT. The Project Superintendent shall be named in the QCP, and the responsibilities for successful implementation of the QCP shall be outlined.

Quality Control Testing The Contractor shall have a testing lab at the plant site, equipped with all testing equipment necessary to complete the tests in Table 4. The Contractor shall locate an approved Gyratory Compactor at the plant testing lab. The Contractor shall generate QC sampling random numbers for each approved mix design. A copy of the random numbers shall be emailed to the QC.mainedot@maine.gov email address and remain on-file (in print) and be available for inspection at the QC laboratory. The Contractor shall sample, test, and evaluate Hot Mix Asphalt Pavement in accordance with the following minimum frequencies per each approved mix design:

TABLE 4: MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Temperature of mix	6 per day at street and plant	-
Temperature of mat	4 per day	-
%TMD (Surface)	1 per 125 ton	AASHTO T355 or AASHTO T343
%TMD (Base)	1 per 250 ton	AASHTO T355 or AASHTO T343
Fines / Effective Binder	1 per 500 ton	AASHTO T 312*
Gradation	1 per 500 ton	AASHTO T30
PGAB content	1 per 500 ton	AASHTO T164 or AASHTO T308
Voids at N_{design}	1 per 500 ton	AASHTO T 312*
Voids in Mineral Aggregate at N_{design}	1 per 500 ton	AASHTO T 312*
Rice Specific Gravity	1 per 500 ton	AASHTO T209
Coarse Aggregate Angularity	1 per 5,000 ton	ASTM D5821
Flat and Elongated Particles	1 Per 5,000 ton	ASTM D4791
Fine Aggregate Angularity	1 Per 5,000 ton	AASHTO T304

*Method A and B only

The Contractor shall monitor plant production on each approved mix design using running average of three control charts as specified in Section 106 - Quality. Control limits shall be as noted in Table 5 below. The UCL and LCL, shall not exceed the allowable gradation control points for the particular type of mixture as outlined in Table 1 of Section 703.09.

TABLE 5: CONTROL LIMITS

Property	UCL and LCL
Passing 4.75 mm and larger sieves	Target +/-4.0
Passing 2.36 mm sieve	Target +/-2.5
Passing 0.075 mm sieve	Target +/-1.0
PGAB Content*	Target +/-0.25
Voids in the Mineral Aggregate	LCL = LSL + 0.2
Air Voids	JMF Target +/-1.2
Theoretical Maximum Specific Gravity	JMF Target +/-0.020

*Based on AASHTO T 308

The Contractor shall submit all HMA QC test reports, inspection reports and updated control charts to the Resident and QC.mainedot@maine.gov by email. The HMA QC test reports, inspection reports and updated control charts shall be signed by the appropriate technician and be submitted to the Department by 1:00 P.M. on the next working day, except when otherwise noted in the QCP and approved by the Department.

The Contractor shall also retain splits of the previous 5 QC tests, with QC results enclosed for random selection and testing by the Department during inspections of the HMA production facility. Test results of splits that do not meet the Dispute Resolution Variance Limits in Table 15 shall trigger an investigation by the MaineDOT Independent Assurance Unit, and may result in that lab losing NETTCP certification and the ability to request a dispute [Section 401.223 - Process for Dispute Resolution (Methods A, B and C only)].

The Contractor shall make density test results, including randomly sampled densities, available to the Department onsite. Summaries of each day's results, including a daily paving report, shall be recorded and signed by the QCT and provided to the QC.mainedot@maine.gov email address and Resident in writing by 1:00 p.m. the next working day. The Contractor shall fill all holes in the pavement resulting from cutting cores by the Contractor or the Department with a properly compacted, acceptable mixture no later than the following working day. Before filling, the Contractor shall carefully clean the holes and apply a coating of emulsified asphalt. The Contractor may only cut additional cores for verification of the densometer, at a rate not to exceed 3 per day or 2 per 1000 ton placed.

If the Contractor's control chart shows the process for a given mix design to be out of control (defined as a single point outside of the control limits on the running average of three chart) on any property listed in Table 5: Control Limits, the Contractor shall notify the Resident of all affected projects in writing of the corrective action by 1:00 PM the next working day. The written description shall detail what action is being taken by the Contractor to bring the property in question back within control limits. Subsequent quality control results are expected to demonstrate an improvement and regression towards the aim. The Department reserves the right to take action, to include cessation of production, in the case of repeated results outside the Table 5 control chart control limits.

The Contractor shall cease paving operations whenever one of the following occurs:

- The quality level for density using all quality control tests for the current Lot is less than 60 PWL.
- The Coarse Aggregate Angularity or Fine Aggregate Angularity value falls below the requirements of Table 3: Aggregate Consensus Properties Criteria in Section 703.07 for the design traffic level.
- The Flat and Elongated Particles value exceeds 10% by ASTM D4791.
- There is any visible damage to the aggregate due to over-densification other than on variable depth shim courses.
- The Contractor fails to follow the approved QCP.

The Contractor shall notify the Resident in writing as to the reason for shutdown, as well as the corrective action, by the end of the work day. Failure to do so will be treated as a second incident under 106.4.6 QCP Non-compliance. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production. The Department retains the exclusive right, with the exception of the first day's production of a new JMF, to determine whether the resumption of production involves a significant change to the production process. If the Department so determines, then the current lot will be terminated, a pay factor established, and a new lot will begin.

The Contractor may utilize innovative equipment or techniques not addressed by the Contract documents to produce or monitor the production of the mix, subject to approval by the Department.

401.19 Quality Control Method D Unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement, the Contractor shall submit a modified QC Plan detailing, how the mix is to be placed, what equipment is to be used, and what HMA plant is to be used for Items covered under Method D. All mix designs (JMF) shall be approved and verified by MaineDOT prior to use. Certified QC personnel shall not be required. The Contractor shall certify the mix and the test results for each item by a Certificate of Compliance.

401.20 Acceptance Method A, B & C These methods utilizes Quality Level Analysis and pay factor specifications. For Hot Mix Asphalt Pavement designated for acceptance under Quality Assurance provisions, the Department will sample once per subplot on a statistically random basis, test, and evaluate in accordance with the following Acceptance Criteria:

TABLE 6: ACCEPTANCE CRITERIA

Properties	Point of Sampling	Test Method
Gradation	Paver Hopper	AASHTO T30
PGAB Content	Paver Hopper	AASHTO T308
%TMD (Surface)	Mat behind all Rollers	AASHTO T269
%TMD (Base or Binder)	Mat behind all Rollers	AASHTO T269
Air Voids at N_d	Paver Hopper	AASHTO T 312
%VMA at N_d	Paver Hopper	AASHTO T 312
Fines to Effective Binder	Paver Hopper	AASHTO T 312
%VFB	Paver Hopper	AASHTO T 312

In the event the Department terminates a Lot prematurely but fails to obtain the required number of acceptance samples to calculate the volumetric property pay factor under the test method specified in the contract, the pay factor shall be calculated using the number of samples actually obtained from the contract. Should the number of acceptance samples taken total less than three, the resulting pay factor shall be 1.0 for mixture properties. A minimum of three cores will be used for a density pay factor using the contract's specified Acceptance method, if applicable, for quantities placed to date.

Should the Contractor request a termination of the Lot in progress prior to three acceptance samples being obtained, and the Department agrees to terminate the Lot, then the pay factor for mixture properties shall be 0.80. A minimum of three cores will be used to determine a density pay factor using the contract's specified Acceptance method, if applicable, for quantities placed to date.

Lot Size For purposes of evaluating all acceptance test properties, a lot shall consist of the total quantity represented by each item listed under the lot size heading.

Sublot size Refer to Sections 401.201, 401.202, and 401.203 for minimum size and number of sublots. The quantity represented by each sample will constitute a sublot.

If there is less than one-half of a sublot remaining at the end, then it shall be combined with the previous sublot. If there is more than one-half sublot remaining at the end, then it shall constitute the last sublot and shall be represented by test results. If it becomes apparent partway through a Lot that, due to an underrun, there will be insufficient mix quantity to obtain the minimum number of sublots needed, the Resident may adjust the size of the remaining sublots and select new sample locations based on the estimated quantity of material remaining in the Lot.

Acceptance Testing The Department will obtain samples of Hot Mix Asphalt Pavement in conformance with AASHTO T168 Sampling Bituminous Paving Mixtures, and the MaineDOT Policies and Procedures for HMA Sampling and Testing, which will then be transported by the Contractor to the designated MaineDOT Laboratory within 48 hours (except when otherwise noted in the project specific QCP and approved by the Department), as directed by MaineDOT in approved transport containers to be provided by the Department, unless otherwise directed by the Resident. Failure to deliver an acceptance sample to the designated acceptance laboratory will be considered the second incident under 106.4.6-QCP Non-Compliance.

The Department will take the sample randomly within each sublot. Target values shall be as specified in the JMF. The Department will use Table 6 for calculating pay factors for gradation, PGAB Content, Air Voids at N_{design} , VMA, Fines to Effective Binder and VFB. The Department will withhold reporting of the test results for the Acceptance sample until 7:00 AM, on the second working day of receipt of the sample, or after receipt of the Contractors results of the Acceptance sample split. Upon conclusion of each lot, where there is a minimum of four sublots, results shall be examined for statistical outliers, as stated in Section 106.7.2 - Statistical Outliers.

Isolated Areas During the course of inspection, should it appear that there is an isolated area that is not representative of the lot based on a lack of observed compactive effort, excessive segregation, a change in process or any other questionable practice, that area may be isolated and tested separately. An area so isolated that has a calculated pay factor below 0.80 for Method A and C or below 0.86 for Method B, based on three random tests shall be removed and replaced at the expense of the Contractor for the full lane width and a length not to be less than 150 ft.

Pavement Density The Department will measure pavement density using core samples tested according to AASHTO T-166. The Department will randomly determine core locations. The Contractor shall cut 6 inch diameter cores at no additional cost to the Department by the end of the working day following the day the pavement is placed, and immediately give them to the Department. Cores for Acceptance testing shall be cut such that the nearest edge is never within 9 inches of any joint. The cores will be placed in a transport container provided by the Department and transported by the Contractor to the designated MaineDOT Lab as directed by the Department. Pre-testing of the cores will not be allowed. At the time of sampling, the Contractor and the Department shall mutually determine if a core is damaged. If it is determined that the core(s) is damaged, the Contractor shall cut new core(s) at the same offset and within 3 ft of the initial sample. At the time the core is cut, the Contractor and the Department will mutually determine if saw cutting of the core is needed, and will mark the core at the point where sawing is needed. The core will be saw cut by the Department in a MaineDOT Lab without disturbing the layer being tested to remove lower layers of Hot Mix Asphalt Pavement, gravel, or RAP. No recuts are allowed at a test location after the core has been tested. Upon conclusion of each lot, density results shall be examined for statistical outliers as stated in Section 106.7.2.

On all sections of overlay with wearing courses designed to be 3/4 in or less in thickness, there shall be no pay adjustment for density otherwise noted in Section 403 - Hot Mix Asphalt Pavement. For overlays designed to be 3/4 in or less in thickness, density shall be obtained by the same rolling train and methods as used on mainline travelway surface courses with a pay adjustments for density, unless otherwise directed by the Department.

There shall be no pay adjustment for density on shoulders unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. Density for shoulders shall be obtained by the same rolling train and methods as used on mainline travelway, unless otherwise directed by the Department. Efforts to obtain optimum compaction will not be waived by the Department unless it is apparent during construction that local conditions make densification to this point detrimental to the finished pavement surface course.

The Contractor shall cease paving operations whenever one of the following occurs on a lot in progress:

- a. Method A: The Pay Factor for VMA, Voids @ Nd, Percent PGAB, composite gradation, VFB, fines to effective binder or density using all Acceptance tests for the current lot is less than 0.85.
- b. Method B: The Pay Factor for VMA, Voids @ Nd, Percent PGAB, composite gradation, VFB, fines to effective binder or density using all Acceptance tests for the current lot is less than 0.90.
- c. Method C: The Pay Factor for Percent PGAB, percent passing the nominal maximum sieve, percent passing 2.36 mm sieve, percent passing 0.300 mm sieve, percent passing 0.075 mm sieve or density using all Acceptance tests for the current lot is less than 0.85. No ceasing of paving operations shall be required for percent passing the nominal maximum sieve, percent passing 2.36 mm sieve, percent passing 0.300 mm sieve, or percent passing 0.075 mm sieve if the mean test value is equal to the LSL or USL and $s = 0$.
- d. Each of the first 2 Acceptance tests for a Method A or B lot fall outside the upper or lower limits for VMA, Voids @ Nd, or Percent PGAB; or under Method C, each of the first 2 Acceptance tests for the lot fall outside the upper or lower limits for the nominal maximum, 2.36 mm, 0.300 mm or 0.075 mm sieves, or percent PGAB.

In cases where the Contractor is to cease paving operations based upon an Acceptance result or payfactor, the Contractor will submit a corrective action plan to the Department. The Department will only allow the continuation of paving operations when it is satisfied the corrective action will result in an improvement in results. The Department may require the submittal of a passing verification sample to allow further production.

401.201 Method A Lot Size will be the entire production per JMF for the project, or if so agreed at the Pre-paving Conference, equal lots of up to 4500 tons, with unanticipated over-runs of up to 1500 ton rolled into the last lot. Sublot sizes shall be 750 ton for mixture properties, 500 ton for base or binder densities and 250 ton for surface densities. The minimum number of sublots for mixture properties shall be four, and the minimum number of sublots for density shall be five.

TABLE 7: METHOD A ACCEPTANCE LIMITS

Property	USL and LSL
Percent Passing 4.75 mm and larger sieves	Target +/-7%
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/-4%
Percent Passing 0.60 mm	Target +/-3%
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/-2%
PGAB Content	Target +/-0.4%
Air Voids	4.0% +/-1.5%
Fines to Effective Binder	0.9 +/-0.3
Voids in the Mineral Aggregate	LSL Only from Table 1
Voids Filled with Binder	Table 1 values plus a 4% production tolerance for USL only
% TMD (In-place Density)	95.0% +/- 2.5%

401.202 Method B Lot Size will be the entire production per JMF for the project and shall be divided into three equal sublots for Mixture Properties and five equal sublots for density.

TABLE 8: METHOD B ACCEPTANCE LIMITS

Property	USL and LSL
Percent Passing 4.75 mm and larger sieves	Target +/-7%
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/-5%
Percent Passing 0.60 mm	Target +/-4%
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/-3%
PGAB Content	Target +/-0.5%
Air Voids	4.0% +/-2.0%
Fines to Effective Binder	0.9 +/-0.3
Voids in the Mineral Aggregate	LSL from Table 1
Voids Filled with Binder	Table1 plus a 4% production tolerance for USL.
% TMD (In-place Density)	95.0% +/- 2.5%

401.203 Method C Lot Size will be the entire production per JMF for the project, or if so agreed at the Pre-paving Conference, equal lots of up to 4500 tons, with unanticipated over-runs of up to 1500 ton rolled into the last lot. Sublot sizes shall be 750 ton for mixture properties, 500 ton for base or binder densities and 250 ton for surface densities. The minimum number of sublots for mixture properties shall be four, and the minimum number of sublots for density shall be five.

TABLE 9: METHOD C ACCEPTANCE LIMITS

Property	USL and LSL
Passing 4.75 mm and larger sieves	Target +/-7%
Passing 2.36 mm to 1.18 mm sieves	Target +/-5%
Passing 0.60 mm	Target +/-4%
Passing 0.30 mm to 0.075 mm sieve	Target +/-2%
PGAB Content	Target +/-0.4%
% TMD (In place density)	95.0% +/- 2.5%

401.204 Method D For hot mix asphalt items designated as Method D in Section 403 - Hot Mix Asphalt Pavement, one sample will be taken from the paver hopper or the truck body per 250 ton per pay item. The mix will be tested for gradation and PGAB content. Disputes will not be allowed. If the mix is within the tolerances listed in Table 10: Method D Acceptance Limits, the Department will pay the contract unit price.

Contractor shall cut two 6 in cores, which shall be tested for percent TMD per AASHTO T-269 unless otherwise noted in Section 403 - Hot Mix Asphalt Pavement. If the average for the two tests falls below 92.5% the disincentive shall apply. If the test results for each 250 ton increment are outside these limits, the following deductions (Table 11) shall apply to the HMA quantity represented by the test.

TABLE 10: METHOD D ACCEPTANCE LIMITS

Property	USL and LSL
Percent Passing 4.75 mm and larger sieves	Target +/-7%
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/-5%
Percent Passing 0.60 mm	Target +/-4%
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/-3%
PGAB Content	Target +/-0.5%
% TMD (In-place Density)	95.0% +/- 2.5%

TABLE 11: METHOD "D" PRICE ADJUSTMENTS

Property	Pay Adjustment
PGAB Content	-5%
Percent Passing 2.36 mm sieve	-2%
Percent Passing 0.30 mm sieve	-1%
Percent Passing 0.075 mm sieve	-2%
% TMD (In-place Density)	-10%

401.21 Method of Measurement The Department will measure Hot Mix Asphalt Pavement by the ton in accordance with Section 108.1 - Measurement of Quantities for Payment.

401.22 Basis of Payment The Department will pay for the work, in place and accepted, in accordance with the applicable sections of this Section, for each type of HMA specified.

The Department will pay for the work specified in Section 401.12, for the HMA used, except that cleaning objectionable material from the pavement and furnishing and applying bituminous material to joints and contact surfaces is incidental. Payment for this work under the appropriate pay items shall be full compensation for all labor, equipment, materials, and incidentals necessary to meet all related contract requirements, including design of the JMF, implementation of the QCP, obtaining core samples, transporting cores and samples, filling core holes, applying emulsified asphalt to joints, and providing testing facilities and equipment.

The Department will make a pay adjustment for quality as specified below.

401.221 Pay Adjustment The Department will sample, test, and evaluate Hot Mix Asphalt Pavement in accordance with Section 106 - Quality and Section 401.20 - Acceptance, of this Specification.

In addition, for 9.5 mm NMAS mixtures the following pay adjustment shall also apply:

The average percent passing for the 0.075 mm sieve shall be evaluated for each Lot. If the average is greater than 6.5%, a pay adjustment according to Table 12 below shall apply in addition to the other pay adjustments for the given method of testing.

TABLE 12: 0.075 MM SIEVE PAY ADJUSTMENT

Average Percent Passing 0.075 mm Sieve	Pay Adjustment
6.6% - 7.0%	-5%
> 7.0%	-10%

The Department shall notify the Contractor whenever the average of at least three samples in a given Lot is greater than 6.5%.

401.222 Pay Factor (PF) The Department will use the following criteria for pay adjustment using the pay adjustment factors under Section 106.7 - Quality Level Analysis:

Density If the pay factor for Density falls below 0.80 for Method A or C or 0.86 for Method B, all of the cores will be randomly re-cut by Sublot. A new pay factor will be calculated that combines all initial and retest results. If the resulting pay factor is below 0.80 for Method A or C or below 0.86 for Method B, the entire Lot shall be removed and replaced with material meeting the specifications at no additional cost to the Department, except that the Department may, when it appears that there is a distinct pattern of defective material, isolate any defective material by investigating each mix sample sublot and require removal of defective mix sample sublots only, leaving any acceptable material in place if it is found to be free of defective material. Pay factors equal to or greater than the reject level will be paid accordingly.

Gradation For HMA evaluated under Acceptance Method A or B, the Department will determine a composite pay factor (CPF) using applicable price adjustment factors “f” from Table 13: Table of Gradation Composite “f” Factors, and Acceptance limits from Table 7: Method A Acceptance Limits, for Method A or Table 8: Method B Acceptance Limits, for Method B. The Department will not make price adjustments for gradation on Methods A and B except for 9.5mm NMAS mixtures as outlined in Table 12. Gradations for Methods A and B shall be monitored as shutdown criteria.

TABLE 13: TABLE OF GRADATION COMPOSITE "f" FACTORS (Methods A and B)

Constituent		"f" Factor			
		19 mm	12.5 mm	9.5 mm	4.75 mm
Gradation	25 mm	-	-	-	-
	19 mm	4	-	-	-
	12.5 mm		4	4	-
	9.50 mm				4
	2.36 mm	6	6	6	8
	1.18 mm				
	0.60 mm	2	2	2	2
	0.30 mm	2	2	2	2
	0.075 mm	6	6	6	8

For HMA evaluated under Acceptance Method C, the Department will determine a pay factor using acceptance limits from Table 9: Method C Acceptance Limits.

Mix Properties The Department will determine a pay factor (PF) using the applicable Acceptance Limits. If any single pay factor for PGAB Content, VMA, or Air Voids falls below 0.80 for Method A, then the composite pay factor for PGAB Content, VMA, and Air Voids shall be 0.55. If any single pay factor for PGAB Content, VMA, or Air Voids falls below 0.86 for Method B, then the composite pay factor for PGAB Content, VMA, and Air Voids shall be 0.70. If the PGAB content falls below 0.80 for Method C, then the PGAB pay factor shall be 0.55.

The following variables will be used for pay adjustment:

PA = Pay Adjustment
 Q = Quantity represented by PF in ton
 P = Contract price per ton
 PF = Pay Factor

Pay Adjustment Methods A, B & C The Department will determine a pay adjustment using Table 14: Pay Adjustment Calculations in conjunction with Tables 7, 8, & 9 as follows:

TABLE 14: PAY ADJUSTMENT CALCULATIONS

Acceptance Method	Mix Properties / Gradation	Density
METHOD A	$PA = (\text{voids @ } N_d \text{ PF} - 1.0)(Q)(P) \times 0.20 + (\text{VMA @ } N_d \text{ PF} - 1.0)(Q)(P) \times 0.20 + (\text{PGAB PF} - 1.0)(Q)(P) \times 0.10$	$PA = (\text{density PF} - 1.0)(Q)(P) \times 0.50$
METHOD B	$PA = (\text{voids @ } N_d \text{ PF} - 1.0)(Q)(P) \times 0.20 + (\text{VMA @ } N_d \text{ PF} - 1.0)(Q)(P) \times 0.20 + (\text{PGAB PF} - 1.0)(Q)(P) \times 0.10$	
METHOD C	$PA = (\% \text{ Passing Nom. Max PF} - 1.0)(Q)(P) \times 0.05 + (\% \text{ passing 2.36 mm PF} - 1.0)(Q)(P) \times 0.05 + (\% \text{ passing 0.30 mm PF} - 1.0)(Q)(P) \times 0.05 + (\% \text{ passing 0.075 mm PF} - 1.0)(Q)(P) \times 0.10 + (\text{PGAB PF} - 1.0)(Q)(P) \times 0.25$	

Pay Adjustment Method D The Department will use density, Performance Graded Asphalt Binder content, and the screen sizes listed in Table 10 for the type of HMA represented in the JMF. If test results do not meet the Table 10 requirements, deducts as shown in Table 11 shall be applied to the quantity of mix represented by the test.

401.223 Process for Dispute Resolution (Methods A, B, & C only)

a. Dispute Resolution sampling At the time of Hot-Mix Asphalt sampling, the Department will obtain a split sample of each Acceptance test random sample for possible dispute resolution testing. The Contractor shall also obtain a split sample of the HMA at this same time. If the Contractor wishes to retain the option of requesting dispute testing of the initial Acceptance sample, the Contractor will test their split of the Acceptance sample and shall report their results to the Resident, with a copy to Contractor.mainedot@maine.gov by 7:00 AM, on the second working day from time of QA sampling, otherwise dispute resolution will not be initiated. The Department's dispute resolution split sample will be properly labeled and stored for a period of at least two weeks after it has been reported, or until the sample is tested.

b. Disputing Acceptance results The Contractor may dispute the Department's Acceptance results and request (Methods A, B, & C) that the dispute resolution split sample be tested by notifying the Department's Resident and the QA Engineer in writing within two working days after the results of the Acceptance test are reported. The following shall be provided in the request:

- Acceptance sample reference number
- The specific test result(s) or property(ies) being disputed, and
- The complete, signed report of the Contractor's testing (In a lab certified by the NETTCP and MaineDOT) of their split of the Acceptance sample indicating that the variances in Table 15: Dispute Resolution Variance Limits, for the specific test result(s) or property(ies) were exceeded.

c. Disputable items For Methods A and B: The Contractor may dispute any or all of the following test results when the difference between the Department's value and the Contractor's value for that test equals or exceeds the corresponding allowable variation in Table 15: Dispute Resolution Variance Limits, PGAB content, G_{mb} , and G_{mm} . In addition, if the allowable variation for the G_{mb} or G_{mm} is not met or exceeded, the Contractor may dispute either or both of the following material properties provided the difference between results for them equals or exceeds the corresponding allowable variation in Table 15: Voids at N_{design} , and VMA. The Contractor may dispute the 0.075 mm sieve test result when a 9.5 mm NMAS mixture is used.

For Method C only: The results for PGAB content and the screen sizes used for pay adjustment may be disputed.

d. Outcome The value of any disputed result or property reported for the initial Acceptance sample shall stand if the value reported for the dispute resolution sample is not closer to the value the Contractor reported for their split sample than to the value reported for the initial Acceptance sample. If the value reported for the dispute resolution falls precisely half-way between the other two values the value reported for the dispute resolution will replace the original acceptance value. Otherwise, the value reported for the dispute resolution sample will replace the value reported for the initial Acceptance sample, and will be used to re-calculate any other affected results or properties.

TABLE 15: DISPUTE RESOLUTION VARIANCE LIMITS

Property	Variance Limits
PGAB Content	+/-0.4%
G_{mb}	+/-0.030
G_{mm}	+/-0.020
Voids @ N_d	+/-0.8%
VMA	+/-0.8%
Passing 4.75 mm and larger sieves	+/- 4.0%
Passing 2.36 mm to 0.60 mm sieves	+/- 3.0%
Passing 0.30 mm to 0.15	+/- 2.0 %
0.075 mm sieve	+/- 0.8%

SECTION 402 - PAVEMENT SMOOTHNESS

402.00 Smoothness Projects Projects to have their pavement smoothness analyzed in accordance with this Specification will be so noted in Special Provision 403 - Hot Mix Asphalt Pavement.

402.01 Pavement Smoothness The final pavement surface shall be evaluated for smoothness using a Class I or Class II profiler as defined by ASTM E950 (94). Smoothness measurements will be expressed in terms of the International Roughness Index (IRI) as defined by the World Bank, in units of inches/mile.

402.02 Lot Size Lot size for smoothness will be 3000 lane-feet. A subplot will consist of 50 lane-feet. Partial lots will be included in the previous lot if less than one-half the size of a normal lot. If equal to or greater than one-half the normal lot size, it will be tested as a separate lot.

402.03 Acceptance Testing The Department will conduct Acceptance testing following completion of the surface course. Sections to be excluded from testing include the following:

- Bridge decks and joints (no smoothness measurements will be taken within 100 ft of bridge joints)
- Acceleration and deceleration lanes
- Shoulders and ramps
- Side streets and roads
- Within 100 ft of transverse joints at the beginning and end of the project
- Within 100 ft of railroad crossings
- Urban areas with speed limits of 30 mph or lower

Each lot shall have 2 measurements made in each wheel path. The average of the 4 measurements will determine the smoothness for that lot. The smoothness measurements will be statistically evaluated for pay factors as described in Subsection 106.7 - Quality Level Analysis, using the specification limits shown below.

TABLE 1: ACCEPTANCE LIMITS

Level	USL
I	50 in/mile
II	60 in/mile
III	70 in/mile

Computation of Smoothness Pay Adjustment:

$$PA = (PF-1.0)(Q)(P)$$

where:

Q = Quantity of surface course in the Lot (excluding shoulders, side streets, bridge decks, ramps, acceleration and deceleration lanes)

PF = smoothness pay factor for the Lot

P = Contract unit price for surface pavement

PA = pay adjustment

402.04 Unacceptable Work In the event that any Lot is found to have a pay factor less than 0.80, the Contractor shall take whatever remedial action is required to correct the pavement surface in that Lot at no additional expense to the Department. Such remedial action may include but is not limited to removal and replacement of the unacceptable pavement. In the event remedial action is necessary, the Contractor shall submit a written plan to the Resident outlining the scope of the remedial work. The Resident must approve this

plan before the remedial work can begin. Following remedial work, the Lot shall be retested, and will be subject to the specification limits listed above. The resulting pay factor, if within the acceptable range, will be used in the final pay adjustment. The Contractor shall pay the cost of retesting the pavement following corrective action.

Localized surface tolerance defects will be subject to the provisions outlined in Section 401.11 Surface Tolerances.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
402.10 Incentive/Disincentive - Pavement Smoothness	Lump Sum

SECTION 403 - HOT MIX ASPHALT PAVEMENT

403.01 Description This work shall consist of constructing one or more courses of Hot Mix Asphalt pavement on an approved base in accordance with these specifications, and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the plans or established. The HMA pavement shall be composed of a mixture of aggregate, filler if required, and asphalt material.

403.02 General The materials and their use shall conform to the requirements of Section 401 - Hot Mix Asphalt Pavement.

403.03 Construction The construction requirements shall be as specified in Section 401 - Hot Mix Asphalt Pavement.

403.04 Method of Measurement Hot mix asphalt pavement will be measured as specified in Section 401.21-Method of Measurement.

403.05 Basis of Payment The accepted quantities of hot mix asphalt pavement will be paid for at the contract unit price per ton for the mixtures, including hot mix asphalt material complete in place. Method A, Method B, Method C and Method D shall be used for acceptance as specified in Section 401 - Hot Mix Asphalt Pavements. (See Complementary Notes, Section 403 - Hot Mix Asphalt Pavement, for Method location).

Payment will be made under:

	<u>Pay Item</u>	<u>Pay Unit</u>
403.102	Hot Mix Asphalt Pavement for Special Areas	Ton
403.206	Hot Mix Asphalt, 25 mm Nominal Maximum Size	Ton
403.207	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size	Ton
403.2071	Hot Mix Asphalt , 19.0 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2072	Asphalt Rich Hot Mix Asphalt, 19.0 mm Nominal Maximum Size (Asphalt Rich Base and Intermediate course)	Ton
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	Ton
403.2081	Hot Mix Asphalt - 12.5 mm Nominal Maximum Size (Polymer Modified)	Ton

403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	Ton
403.210	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	Ton
403.2101	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Polymer Modified)	Ton
403.2102	Asphalt Rich Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Asphalt Rich Intermediate course)	Ton
403.2104	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Thin Lift Surface Treatment)	Ton
403.211	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	Ton
403.2111	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming, Polymer Modified))	Ton
403.212	Hot Mix Asphalt, 4.75 mm Nominal Maximum Size	Ton
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.2131	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course, Polymer Modified)	Ton
403.2132	Asphalt Rich Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton
403.214	Hot Mix Asphalt, 4.75 Nominal Maximum Size (5/8" Surface Treatment)	Ton

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
<u>Route 302 - 4" HMA Overlay Areas</u>					
<u>Mainline Travelway & Shoulders (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,19,22,26,28,30
Base	12.5 mm	403.213	2 ½"	1	1,4,7,15,26
<u>Route 302 - 4" HMA Overlay Areas</u>					
<u>Sta. 74+14 to Sta. 79+00 Parking/Shoulder Area (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,24,28,30
Base	12.5 mm	403.213	2 ½"	1	1,4,7,15,24
<u>Route 302 - Bridge Approaches - 6" HMA Overlay Areas</u>					
<u>Mainline Travelway (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,19,22,26,28,30
Base	12.5 mm	403.213	2 ½"	1	1,4,7,15,26
Base	12.5 mm	403.213	2"	1	1,4,7,15
<u>Bridge Deck(s) - 3" HMA Overlay Areas</u>					
<u>Mainline Travelway & Shoulders (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	2,5,7,28,30
Base	12.5 mm	403.213	1 ½"	1	2,4,8,15,30
<u>Approach Roads - 4" Overlay Areas</u>					
<u>Mainline Travelway & Shoulders (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,28,30
Base	12.5 mm	403.213	2 ½"	1	1,4,7,15
<u>Drives, Islands, Off Street Parking Areas, Misc.</u>					
Wearing	9.5 mm	403.209	2" – 3"	1/more	2,3,10,11,14,16

COMPLEMENTARY NOTES

1. The required PGAB for this mixture will meet a **PG 64-28** grading.
2. The incentive/disincentive provisions for density shall not apply. Rollers shall meet the requirements of this special provision. The use of an oscillating steel roller shall be required to compact all mixtures pavements placed on **bridge decks**.
3. The design traffic level for mix placed shall be <0.3 million ESALS. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
4. The design traffic level for mix placed shall be 0.3 to <3 million ESALS. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
5. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
7. Section 106.6 Acceptance, (1) Method A.
8. Section 106.6 Acceptance, (2) Method B. The Contractor may request a contract modification to change to testing method "A" prior to work starting on this item.
10. Section 106.6 Acceptance, (2) Method D.

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Route 302
Rehabilitation & Bridge Replacements
January 28, 2019

11. The combined aggregate gradation required for this item shall be classified as a 9.5mm “**fine graded**” mixture, (using the Primary Control Sieve control point) as defined in 703.09.
14. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.
15. The entire HMA base pavement section (consisting of all base layers) shall be completed before winter suspension. Any surface or base HMA placed after the seasonal limitations shall be considered temporary and removed and replaced the following construction season. The Department will not be responsible for costs or time related to the placement, removal or replacement of temporary pavement.
16. Compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **3-5 ton** vibratory roller. Areas less than 2 feet wide shall be compacted with a minimum of a **150 pound** plate compactor. An approved release agent is required to ensure the mixture does not adhere to hand tools, rollers, pavers, and truck bodies. The use of petroleum based fuel oils, or asphalt stripping solvents will not be permitted.
19. The Contractor may, at their option, use a Material Transfer Vehicle (MTV) for **all mainline travelway and adjacent shoulders surface course** if paved in the same operation. See Special Provision 401 – Material Transfer Vehicle for specifics.
22. The final pavement surface shall be evaluated for smoothness in accordance with the most current 400 Standard Specification section 402 – Pavement Smoothness. Acceptance limits shall be as outlined under the **Level II** classification.
24. The entire roadway (from curb to curb, including parking areas and bike lanes) shall be considered mainline travelway for density testing purposes according to the specified testing method.
26. Centerline joint density testing shall be applied to the specified HMA layer. See Special Provision 401 – Hot Mix Asphalt Longitudinal Joint Density for project specifics.
28. The mixture shall meet the minimum requirements of Special Provision 401 – HMA Hamburg Wheel Tracker Specification.
30. The required PGAB shall be a storage-stable, homogeneous, polymer modified asphalt binder that meets **PG 64E-28** grading requirements in AASHTO M 332. All polymer modified asphalt grades utilized on the Project shall be treated with an approved liquid anti-strip. PG binders shall be treated either at the asphalt source terminal with the required dose rate on the delivery documentation, or at the hot mix asphalt plant utilizing a system integrated with the plants controls that will introduce a minimum 0.50 percent anti-strip by weight of asphalt binder used unless a rate is otherwise recommended by the anti-strip manufacturer. The PGAB and anti-strip blend shall meet the **PG 64E-28** requirements. The Contractor shall provide supporting test data showing the PGAB and anti-strip blend meet the required criteria.

Tack Coat

A tack coat of emulsified asphalt, RS-1, RS-1h, CRS-1 or CRS-1h, Item 409.15 shall be applied to any existing pavement at a rate of approximately 0.030 gal/yd², and on milled pavement approximately 0.05 gal/yd² prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim /base courses and surface course as well as to any bridge membrane prior to the placement of HMA layers at a rate not to exceed 0.030 gal/yd². Tack used will be paid for at the contract unit price for Item 409.15 Bituminous Tack Coat.

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
<u>Route 302 - 7" HMA Overlay Areas</u>					
<u>Mainline Travelway & Shoulders (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,19,22,26,28,30
Intermediate	12.5 mm	403.213	2 ½"	1	1,4,7,15,26
Base	19.0 mm	403.2072	3"	1	1,4,7,15
<u>Route 302 - 4" HMA Overlay Areas</u>					
<u>Sta. 74+14 to Sta. 79+00 Parking/Shoulder Area (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,24,28,30
Base	12.5 mm	403.213	2 ½"	1	1,4,7,15,24
<u>Route 302 - Bridge Approaches - 7" HMA Overlay Areas</u>					
<u>Mainline Travelway (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,19,22,26,28,30
Intermediate	12.5 mm	403.213	2 ½"	1	1,4,7,15,26
Base	19.0 mm	403.2072	3"	1	1,4,7,15
<u>Bridge Deck(s) - 3" HMA Overlay Areas</u>					
<u>Mainline Travelway & Shoulders (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	2,5,7,28,30
Base	12.5 mm	403.213	1 ½"	1	2,4,8,15,30
<u>Approach Roads - 4" Overlay Areas</u>					
<u>Mainline Travelway & Shoulders (As Indicated in Typical)</u>					
Wearing	12.5 mm	403.2081	1 ½"	1	5,7,28,30
Base	12.5 mm	403.213	2 ½"	1	1,4,7,15
<u>Drives, Islands, Off Street Parking Areas, Misc.</u>					
Wearing	9.5 mm	403.209	2" – 3"	1/more	2,3,10,11,14,16

COMPLEMENTARY NOTES

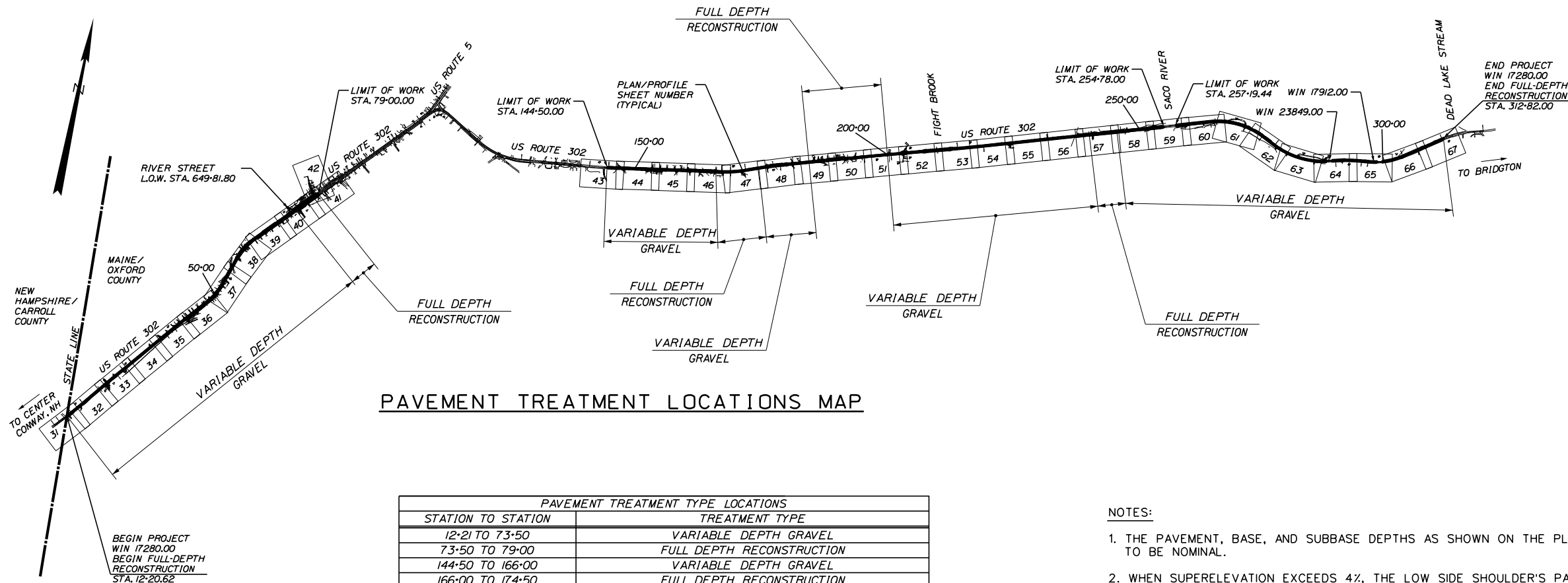
1. The required PGAB for this mixture will meet a **PG 64-28** grading.
2. The incentive/disincentive provisions for density shall not apply. Rollers shall meet the requirements of this special provision. The use of an oscillating steel roller shall be required to compact all mixtures pavements placed on **bridge decks**.
3. The design traffic level for mix placed shall be <0.3 million ESALS. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
4. The design traffic level for mix placed shall be 0.3 to <3 million ESALS. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
5. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **65 gyrations**.
7. Section 106.6 Acceptance, (1) Method A.
8. Section 106.6 Acceptance, (2) Method B. The Contractor may request a contract modification to change to testing method "A" prior to work starting on this item.

10. Section 106.6 Acceptance, (2) Method D.
11. The combined aggregate gradation required for this item shall be classified as a 9.5mm “**fine graded**” mixture, (using the Primary Control Sieve control point) as defined in 703.09.
14. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.
15. The entire HMA base pavement section (consisting of all base layers) shall be completed before winter suspension. Any surface or base HMA placed after the seasonal limitations shall be considered temporary and removed and replaced the following construction season. The Department will not be responsible for costs or time related to the placement, removal or replacement of temporary pavement.
16. Compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **3-5 ton** vibratory roller. Areas less than 2 feet wide shall be compacted with a minimum of a **150 pound** plate compactor. An approved release agent is required to ensure the mixture does not adhere to hand tools, rollers, pavers, and truck bodies. The use of petroleum based fuel oils, or asphalt stripping solvents will not be permitted.
19. The Contractor may, at their option, use a Material Transfer Vehicle (MTV) for **all mainline travelway and adjacent shoulders surface course** if paved in the same operation. See Special Provision 401 – Material Transfer Vehicle for specifics.
22. The final pavement surface shall be evaluated for smoothness in accordance with the most current 400 Standard Specification section 402 – Pavement Smoothness. Acceptance limits shall be as outlined under the **Level II** classification.
24. The entire roadway (from curb to curb, including parking areas and bike lanes) shall be considered mainline travelway for density testing purposes according to the specified testing method.
26. Centerline joint density testing shall be applied to the specified HMA layer. See Special Provision 401 – Hot Mix Asphalt Longitudinal Joint Density for project specifics.
28. The mixture shall meet the minimum requirements of Special Provision 401 – HMA Hamburg Wheel Tracker Specification.
30. The required PGAB shall be a storage-stable, homogeneous, polymer modified asphalt binder that meets **PG 64E-28** grading requirements in AASHTO M 332. All polymer modified asphalt grades utilized on the Project shall be treated with an approved liquid anti-strip. PG binders shall be treated either at the asphalt source terminal with the required dose rate on the delivery documentation, or at the hot mix asphalt plant utilizing a system integrated with the plants controls that will introduce a minimum 0.50 percent anti-strip by weight of asphalt binder used unless a rate is otherwise recommended by the anti-strip manufacturer. The PGAB and anti-strip blend shall meet the **PG 64E-28** requirements. The Contractor shall provide supporting test data showing the PGAB and anti-strip blend meet the required criteria.

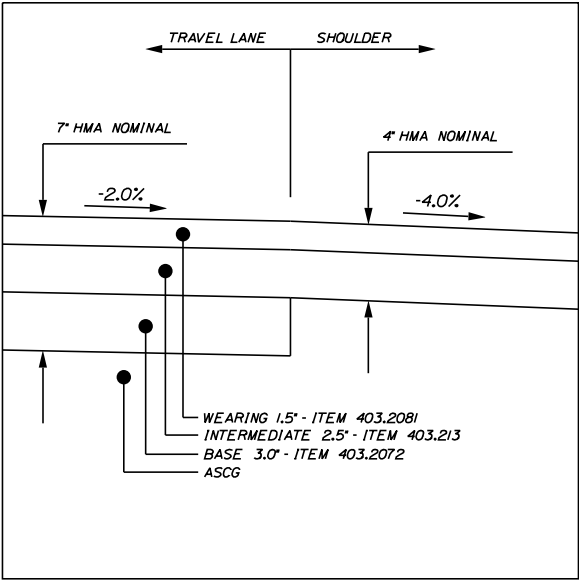
Tack Coat

A tack coat of emulsified asphalt, RS-1, RS-1h, CRS-1 or CRS-1h, Item 409.15 shall be applied to any existing pavement at a rate of approximately 0.030 gal/yd², and on milled pavement approximately 0.05 gal/yd² prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim /base courses and surface course as well as to any bridge membrane prior to the placement of HMA layers at a rate not to exceed 0.030 gal/yd². Tack used will be paid for at the contract unit price for Item 409.15 Bituminous Tack Coat.

ALTERNATE 2: HMA OPTION



PAVEMENT DETAIL



SCALE OF FEET



NOTES:

1. THE PAVEMENT, BASE, AND SUBBASE DEPTHS AS SHOWN ON THE PLANS ARE INTENDED TO BE NOMINAL.
2. WHEN SUPERELEVATION EXCEEDS 4%, THE LOW SIDE SHOULDER'S PAVEMENT SHALL HAVE THE SAME CROSS SLOPE AS THE TRAVEL WAY.
3. CROWNS FOR BOTH NORMAL AND SUPERELEVATION SECTIONS FOR ALL COURSES OF SUBBASE AND PAVEMENT SHALL BE STRAIGHT.
4. THE GRAVEL QUANTITY CALCULATION IS BASED ON A 2" LOAM DEPTH. THE ACTUAL DEPTH MAY VARY. SEE THE GENERAL NOTES.
5. THE ALGEBRAIC DIFFERENCE BETWEEN THE SHOULDER AND TRAVELWAY CROSS SLOPES "ROLLOVER" SHALL NOT EXCEED 8%.
6. THE STATIONING IN THE TYPICAL SECTION TABLES IS APPROXIMATE.
7. HMA - HOT MIX ASPHALT
ASCG - AVAILABLE EXISTING AGGREGATE EXCAVATION USED FOR ACHIEVING GRADE OR CROSS SLOPE SHALL MEET SPECIFICATION SECTION 308.021. NEW AGGREGATE SHALL BE MEASURED AND PAID FOR UNDER ITEM 304.10. AGGREGATE SUBBASE COURSE TYPE D SHALL BE USED ABOVE 24 INCHES BELOW FINISHED GRADE. AGGREGATE SUBBASE COURSE TYPE E SHALL BE USED BELOW 24 INCHES BELOW FINISHED GRADE.
PG - PROFILE GRADE
CL - CONSTRUCTION CENTER LINE
8. THE BREAK IN CROSS SLOPE BETWEEN TRAVELWAY AND SHOULDER ALONG US 302 SHALL BE AT 12' OFFSET FROM THE CENTERLINE. THE SUBGRADE SLOPE BREAK IN SUPERELEVATION ALSO OCCURS AT THIS OFFSET.
9. 3:1 BACKSLOPE USED IN LAWN AREAS INSTEAD OF 2:1.
10. USE OF CURB TYPE 3 MOLDS 2 AND 3 ON US ROUTE 302:
-TYPE 3 MOLD 2: STATION 24+50 TO 161+00
-TYPE 3 MOLD 3: ALL OTHER LOCATIONS
SEE CONSTRUCTION NOTES FOR LOCATIONS.
11. BACKSLOPE ROUNDING ACCORDING TO MAINEDOT STANDARD DETAIL 203(03).
12. TYPE D GRAVEL PLACED BELOW 24" FROM FINISH GRADE MAY MEET THE REQUIREMENTS OF TYPE E GRAVEL.

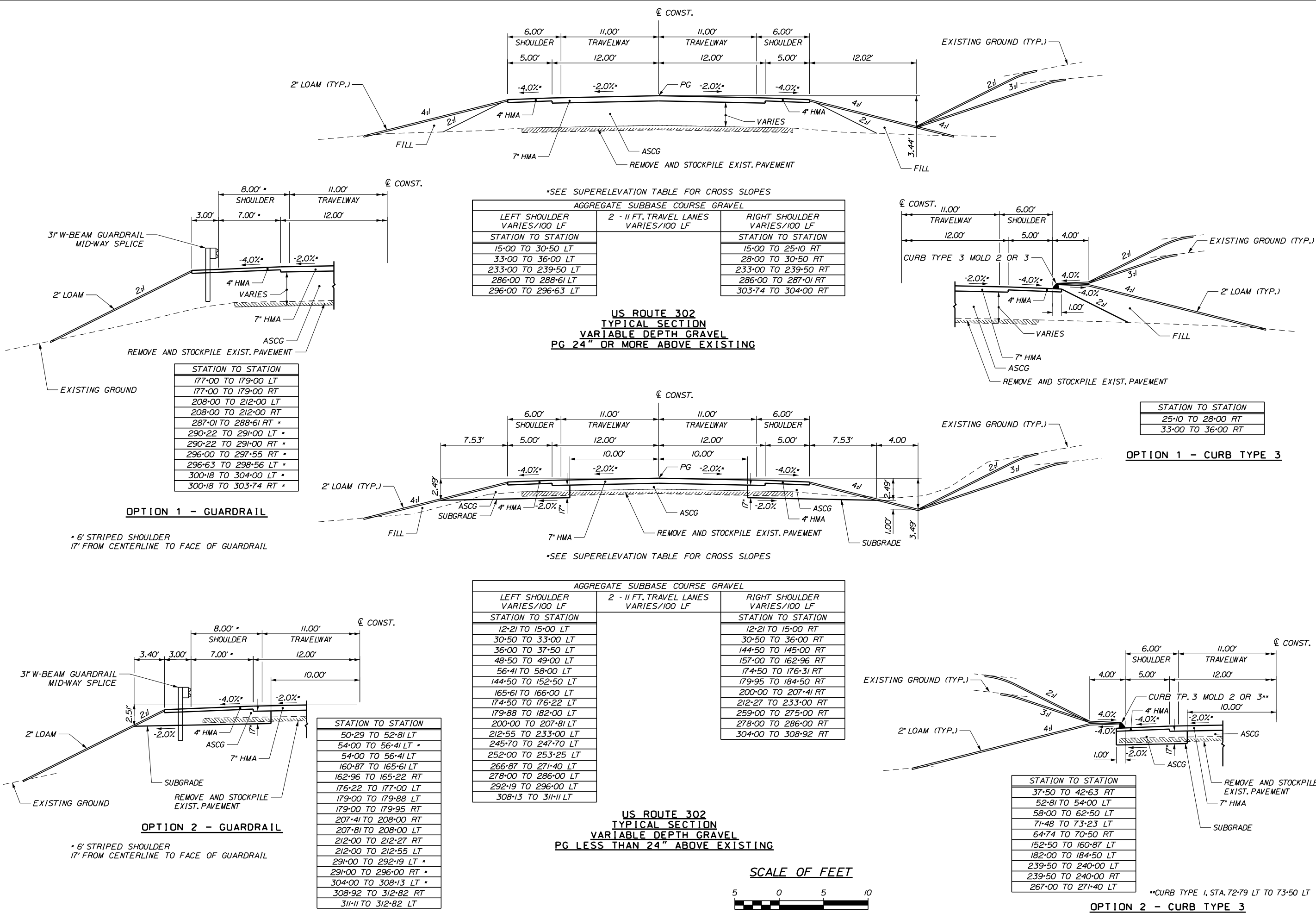
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN DETAIL	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
R. CARRELL	M. DEBOWSKI							
DATE	BY	SIGNATURE	P.E. NUMBER	DATE				

Date:1/14/2019

Username: mdebowski

Division: HIGHWAY

Filename: ...\\MSTA\\366_Typical_Sections.dgn

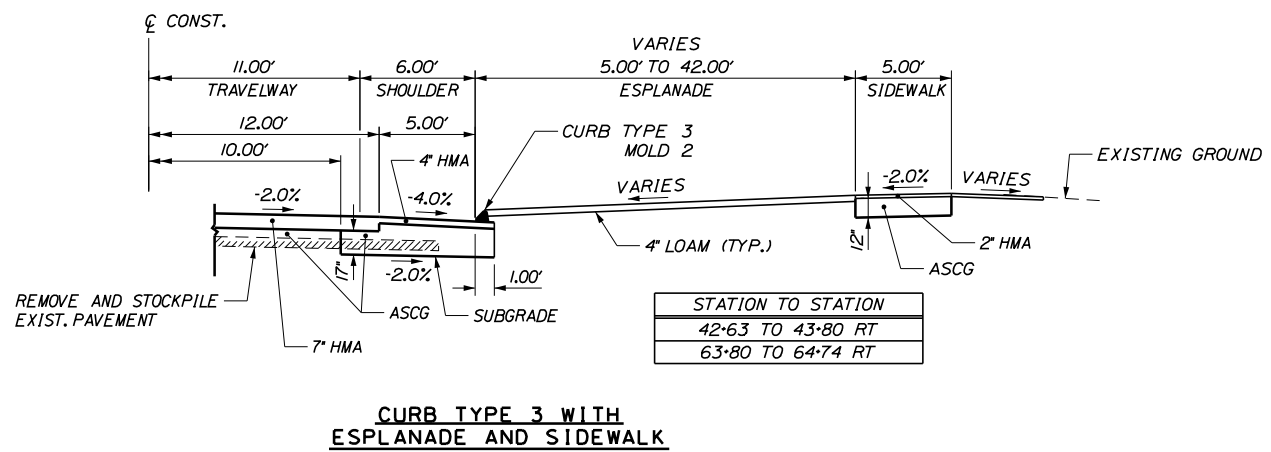
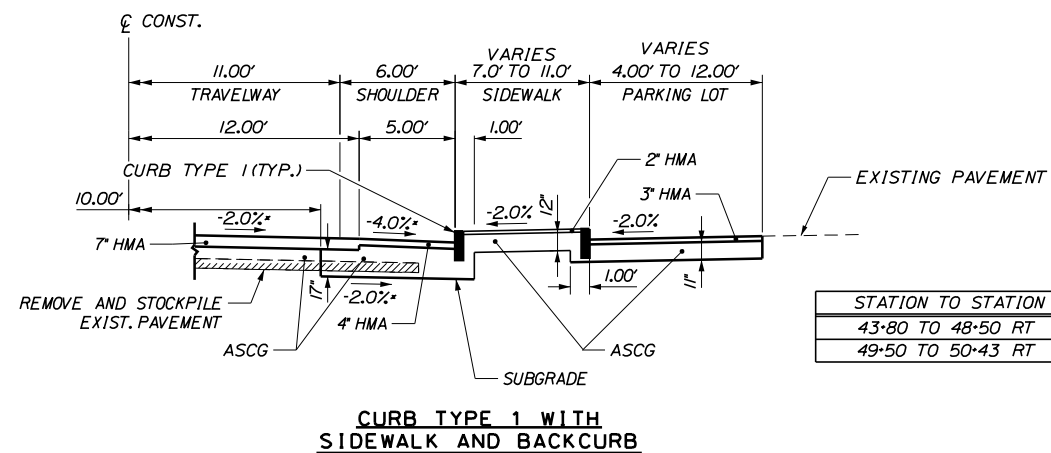
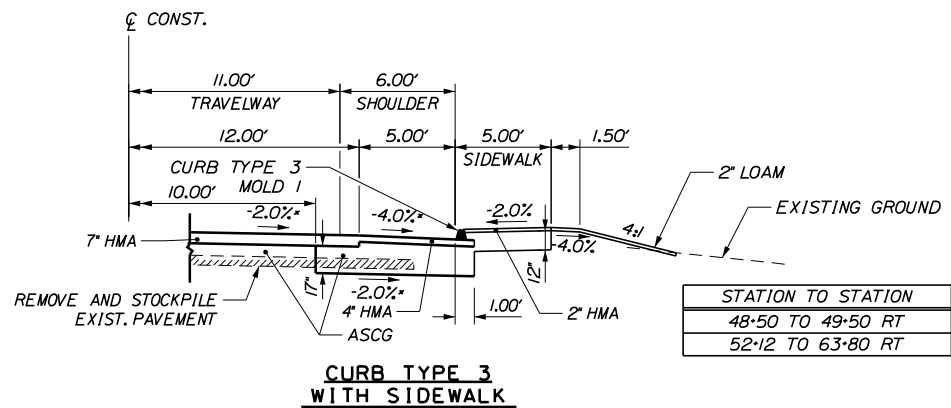
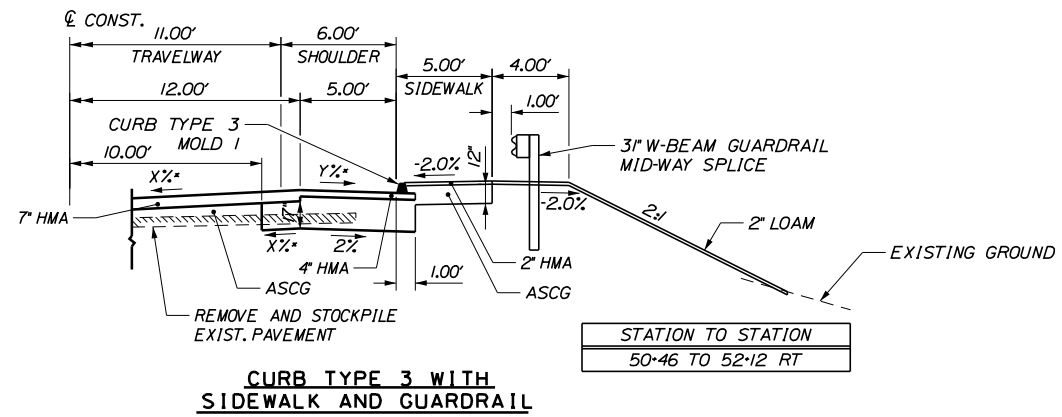
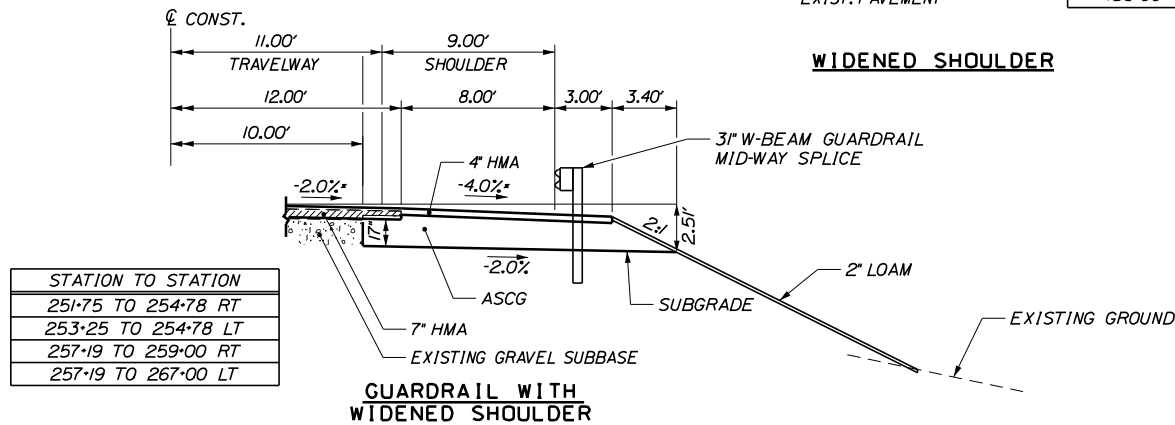
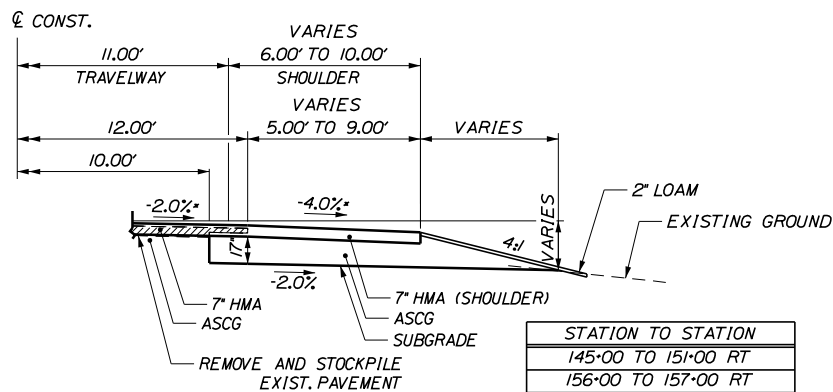
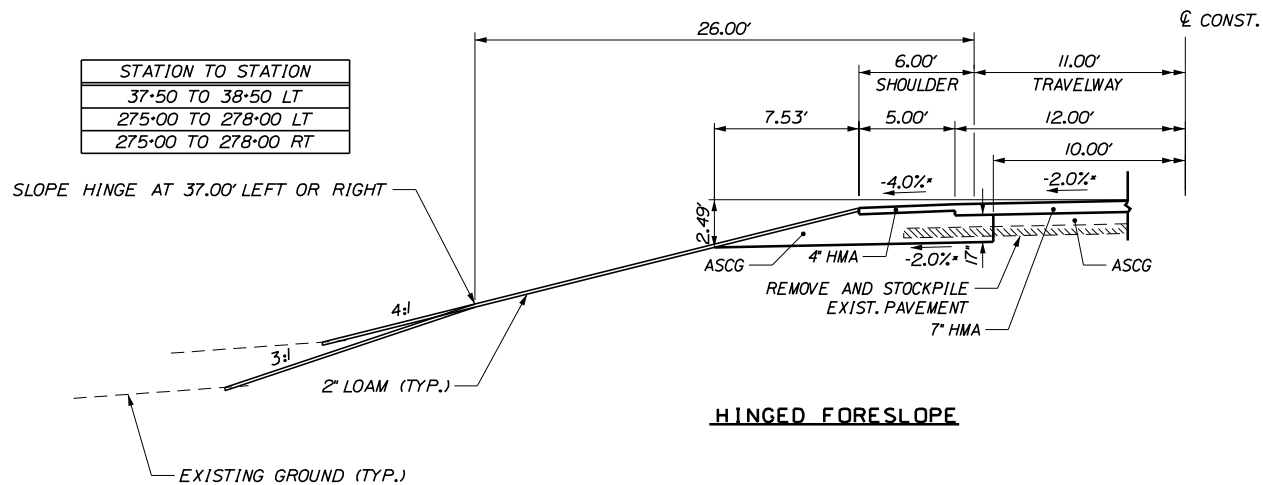
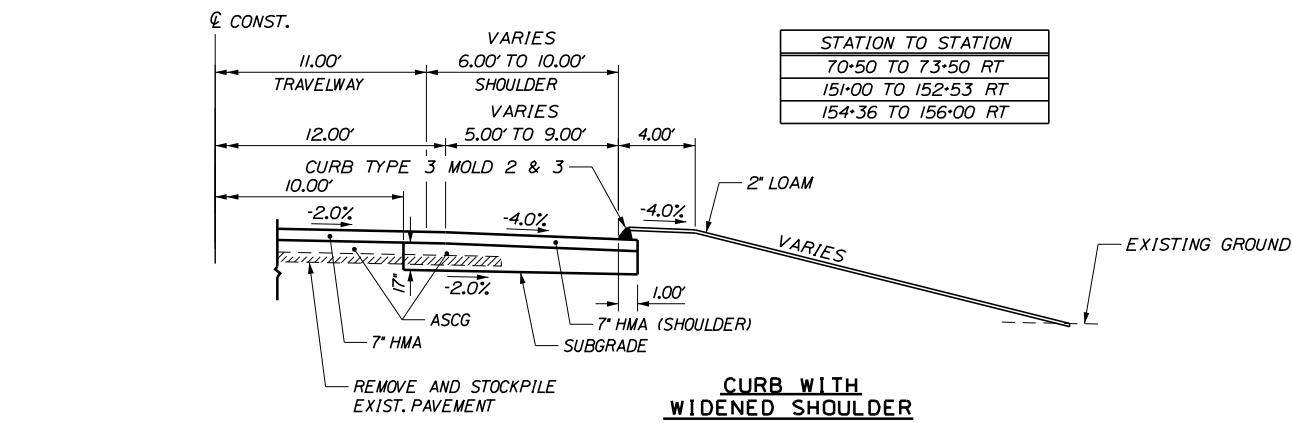


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Division: HIGHWAY

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US ROUTE 302
TYPICAL SECTIONS
VARIABLE DEPTH GRAVEL

SCALE OF FEET



*SEE SUPERELEVATION TABLE FOR CROSS SLOPES

DATE	SIGNATURE	P.E. NUMBER	DATE

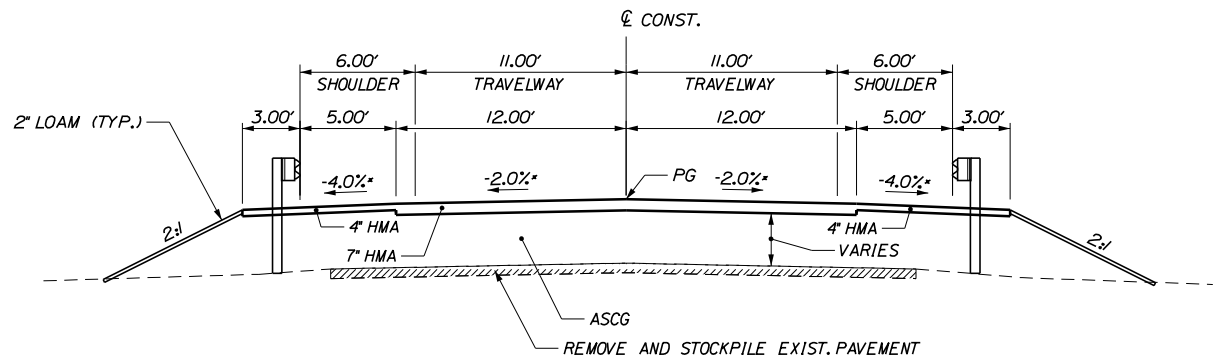
PROJ. MANAGER	BY	DATE	REVISIONS
R. CARRELL	M. DEBOWSKI		
DESIGN-DETAILED			
CHECKED-REVIEWED			
DESIGN DETAIL			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

Date:1/14/2019

Username: mdebowski

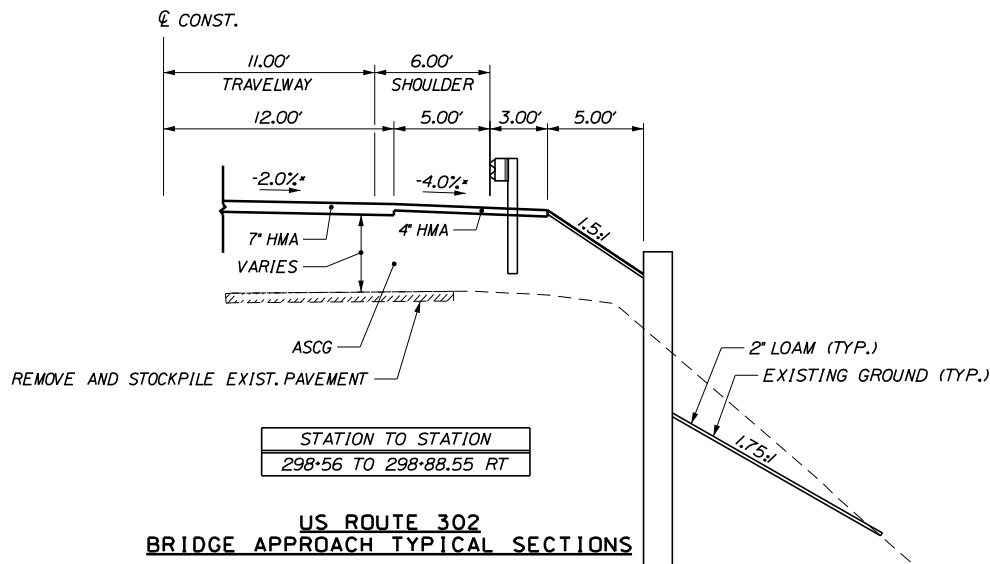
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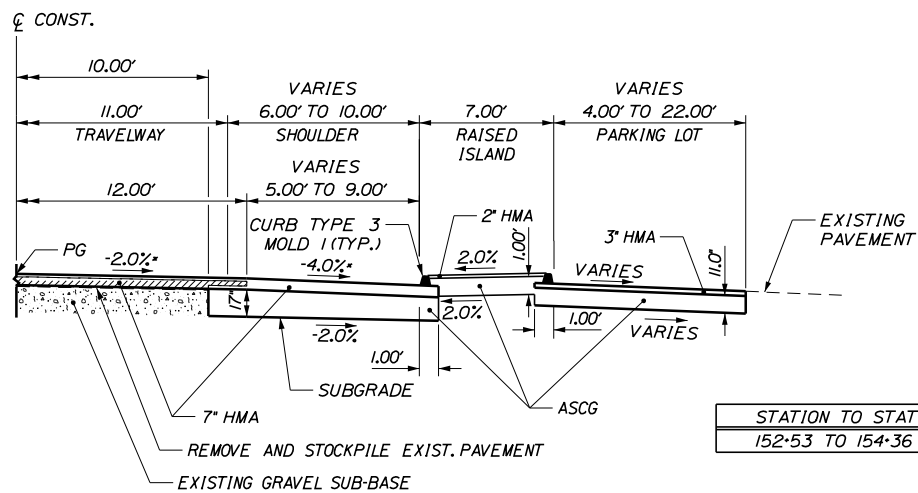


US ROUTE 302
BRIDGE APPROACH TYPICAL SECTIONS

STATION TO STATION
288+61 TO 288+92.35 LT/RT
289+89.65 TO 290+22 LT/RT
298+56 TO 298+88.55 LT
299+85.44 TO 300+18 LT/RT



US ROUTE 302
BRIDGE APPROACH TYPICAL SECTIONS

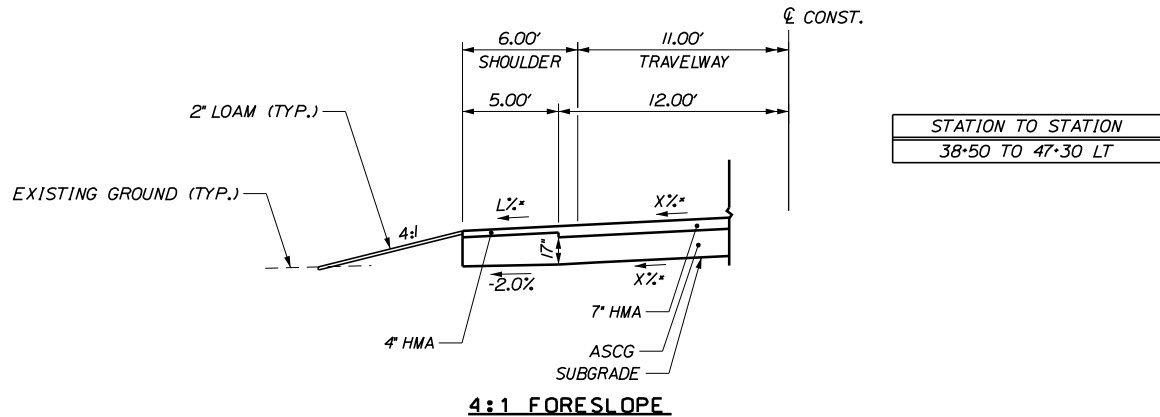


CURB TYPE 3 WITH RAISED
ISLAND AND BACKCURE

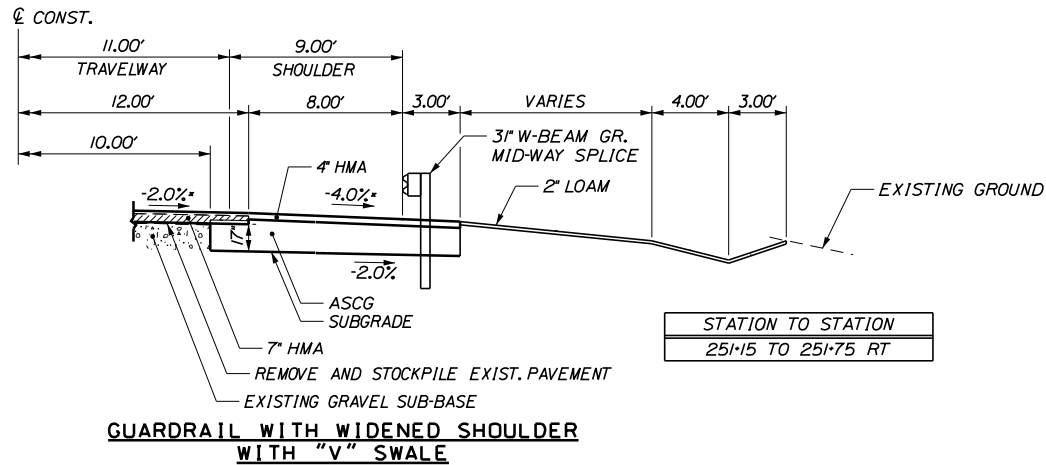
STATION TO STATION
152+53 TO 154+36 RT

US ROUTE 302
TYPICAL SECTIONS
VARIABLE DEPTH GRAVEL

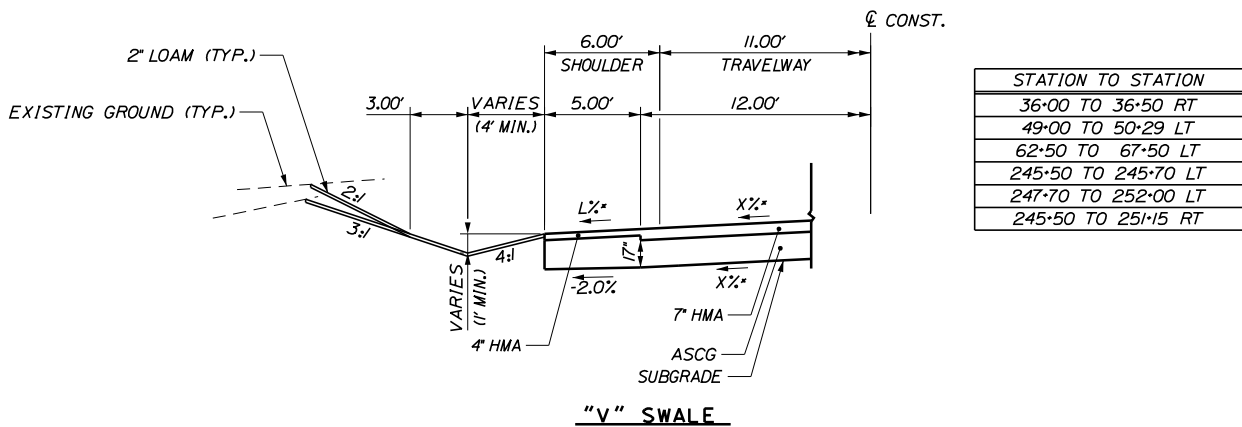
*SEE SUPERELEVATION TABLE FOR CROSS SLOPES



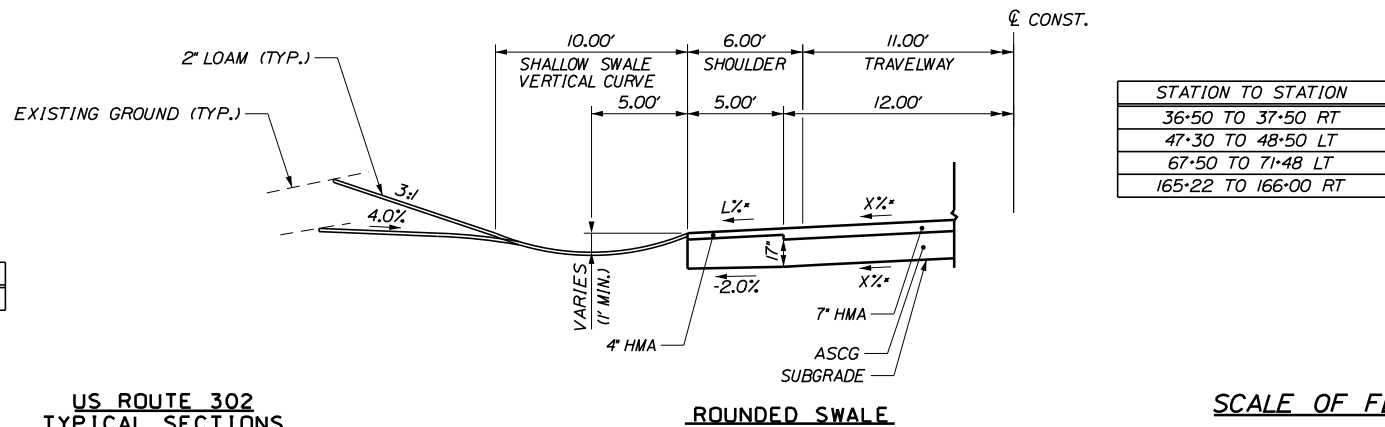
4:1 FORESLOPE



GUARDRAIL WITH WIDENED SHOULDER
WITH "V" SWALE



"V" SWALE



ROUNDED SWALE

SCALE OF FEET



PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN DETAIL	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
R. CARRELL	M. DEBOWSKI							
DATE	BY	DATE	BY	DATE	BY	DATE	BY	DATE
SIGNATURE	P.E. NUMBER	DATE	SIGNATURE	P.E. NUMBER	DATE	SIGNATURE	P.E. NUMBER	DATE

SHEET NUMBER

368

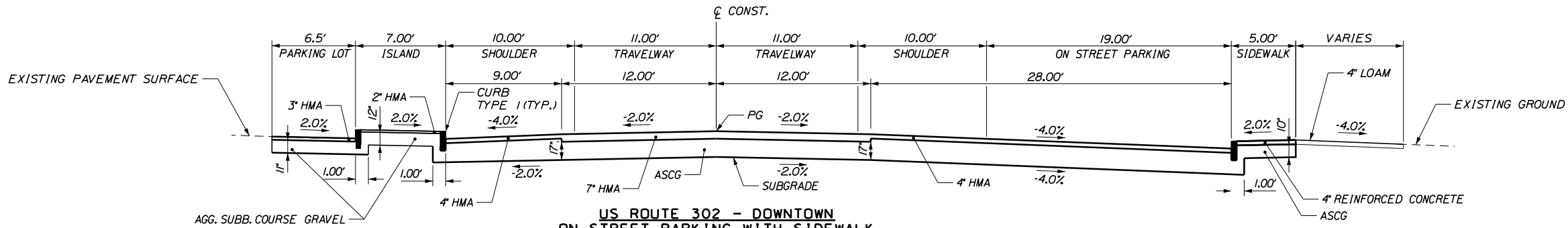
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Date:1/14/2019

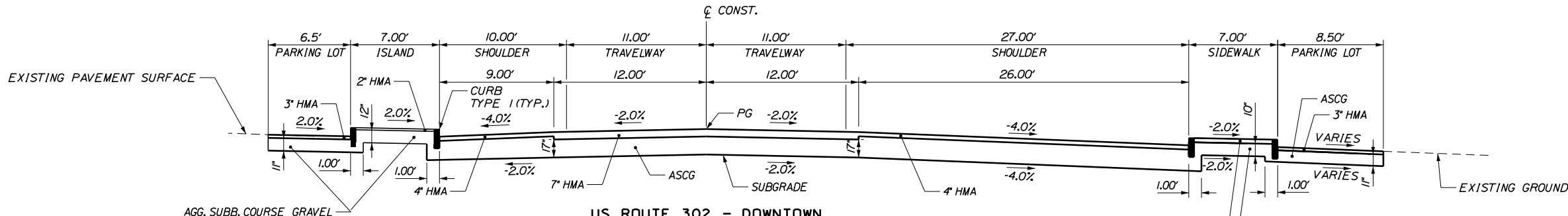
Username: mdebowski

Division: HIGHWAY

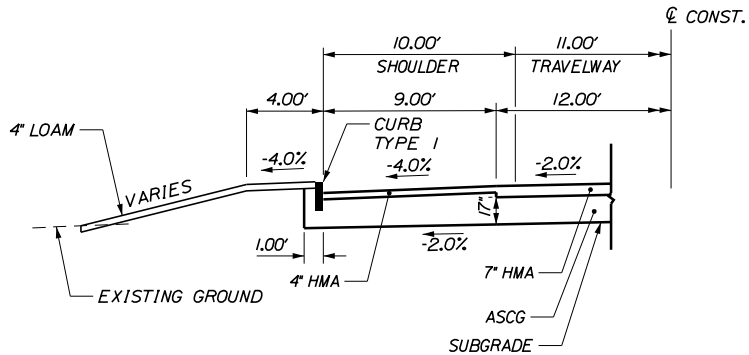
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AGGREGATE SUBBASE COURSE GRAVEL		
LEFT SHOULDER 56.67 CY/100 LF	2 - 11 FT. TRAVEL LANES VARIES/100 LF	RIGHT SHOULDER 144.23 CY/100 LF
STATION TO STATION		STATION TO STATION
75+60 TO 76+98 LT		75+60 TO 76+98 RT

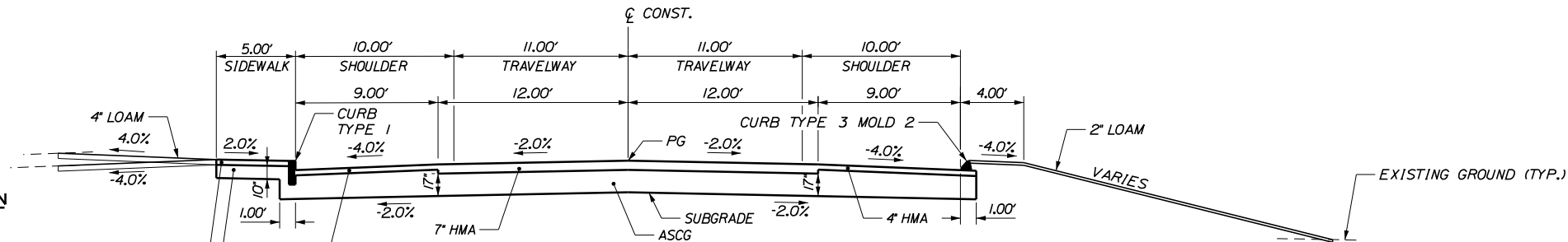


AGGREGATE SUBBASE COURSE GRAVEL		
LEFT SHOULDER 56.67 CY/100 LF	2 - 11 FT. TRAVEL LANES VARIES/100 LF	RIGHT SHOULDER 56.67 CY/100 LF
STATION TO STATION		STATION TO STATION
74+14 TO 75+60 LT		74+14 TO 75+60 RT



AGGREGATE SUBBASE COURSE GRAVEL	
LEFT SHOULDER	63.06 CY/100 LF
STATION TO STATION	
74+02 TO 74+14 LT	

US ROUTE 302 - DOWNTOWN
SHOULDER WITH CURB TYPICAL SECTION



AGGREGATE SUBBASE COURSE GRAVEL		
LEFT SHOULDER 63.06 CY/100 LF	2 - 11 FT. TRAVEL LANES 101.85 CY/100 LF	RIGHT SHOULDER 62.65 CY/100 LF
STATION TO STATION		STATION TO STATION
73+23 TO 74+02 LT		73+50 TO 74+14 RT

US ROUTE 302 - DOWNTOWN
SHOULDER WITH SIDEWALK TYPICAL SECTION

SCALE OF FEET



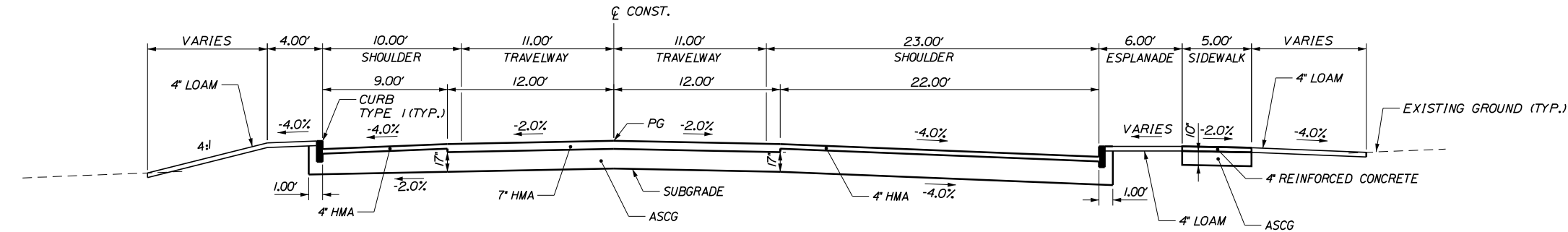
PROJ. MANAGER	R. CARRELL	BY	DATE	
DESIGN-DETAILED		M. DEBOWSKI		SIGNATURE
CHECKED-REVIEWED				
DESIGN-DETAILED				P.E. NUMBER
REVISIONS 1				
REVISIONS 2				
REVISIONS 3				
REVISIONS 4				DATE
FIELD CHANGES				

Date:1/14/2019

Username: mdebowski

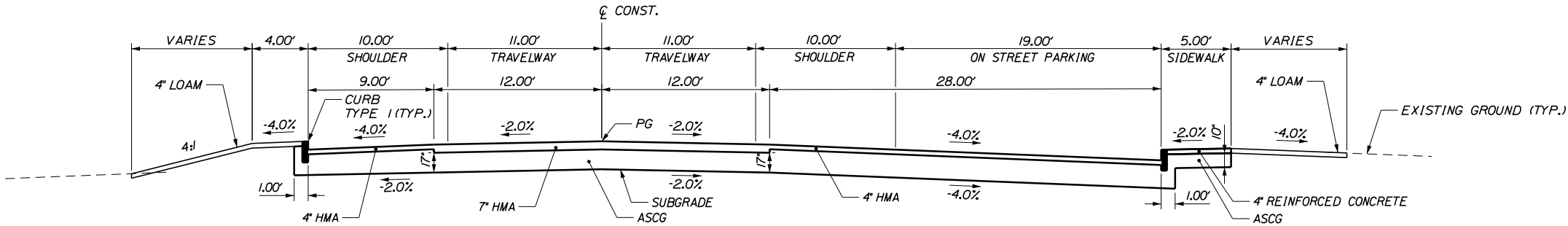
Division: HIGHWAY

Filename: ...\\MSTA\370_Typical_Sections.dgn



AGGREGATE SUBBASE COURSE GRAVEL		
LEFT SHOULDER 63.05 CY/100 LF	2 - 11 FT. TRAVEL LANES 101.85 CY/100 LF	RIGHT SHOULDER 153.85 CY/100 LF
STATION TO STATION		STATION TO STATION
78+84 TO 79+00 LT		78+84 TO 79+00 RT

US ROUTE 302 - DOWNTOWN
WIDE SHOULDER WITH RIGHT SIDEWALK
AND ESPLANADE TYPICAL SECTION



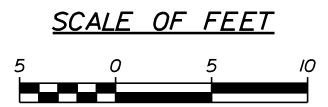
AGGREGATE SUBBASE COURSE GRAVEL		
LEFT SHOULDER 63.06 CY/100 LF	2 - 11 FT. TRAVEL LANES 101.85 CY/100 LF	RIGHT SHOULDER 182.29 CY/100 LF
STATION TO STATION		STATION TO STATION
76+98 TO 78+84 LT		76+98 TO 78+84 RT

US ROUTE 302 - DOWNTOWN SIDEWALKS
WITH ON STREET PARKING TYPICAL SECTION

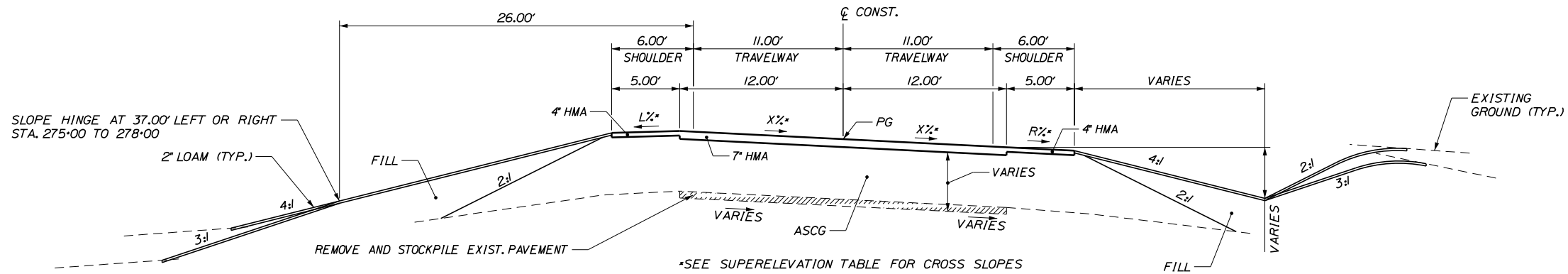
SCALE OF FEET



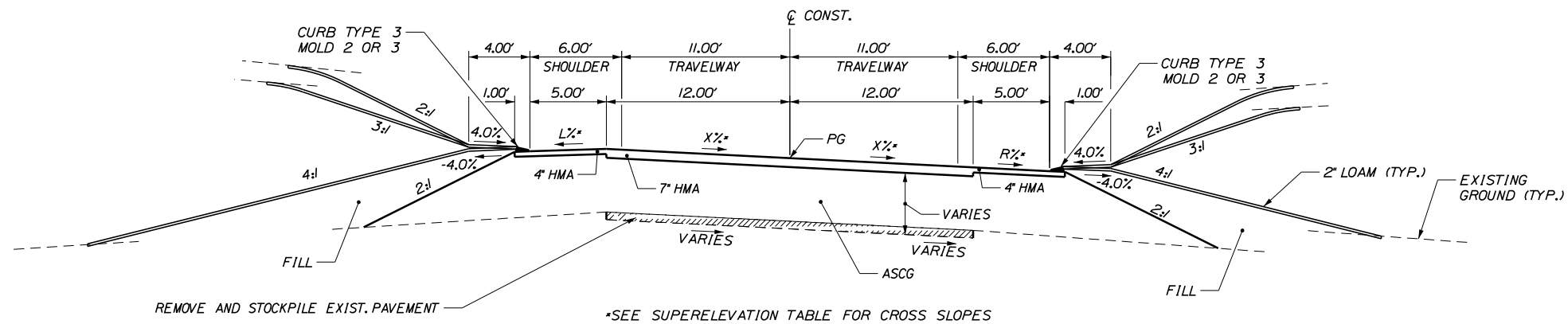
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN-DETAILED	DESIGN-DETAILED	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
R. CARRELL	M. DEBOWSKI								
DATE	BY	SIGNATURE	P.E. NUMBER	DATE					



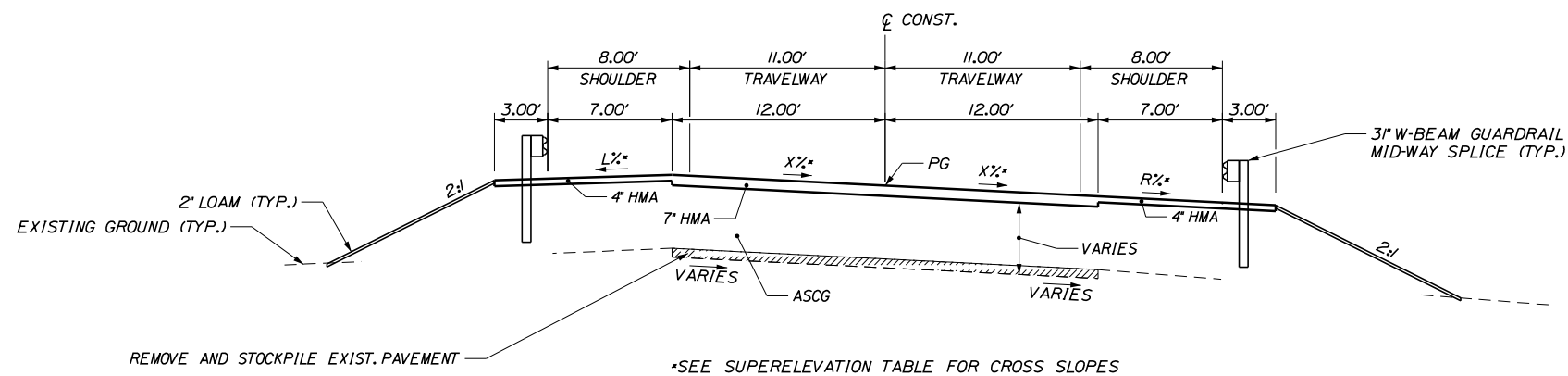
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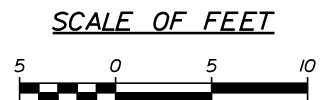
**US ROUTE 302
SUPERELEVATED
VARIABLE DEPTH GRAVEL
PG 24" OR MORE ABOVE EXISTING**



**US ROUTE 302
SUPERELEVATED CURBED
VARIABLE DEPTH GRAVEL
PG 24" OR MORE ABOVE EXISTING**

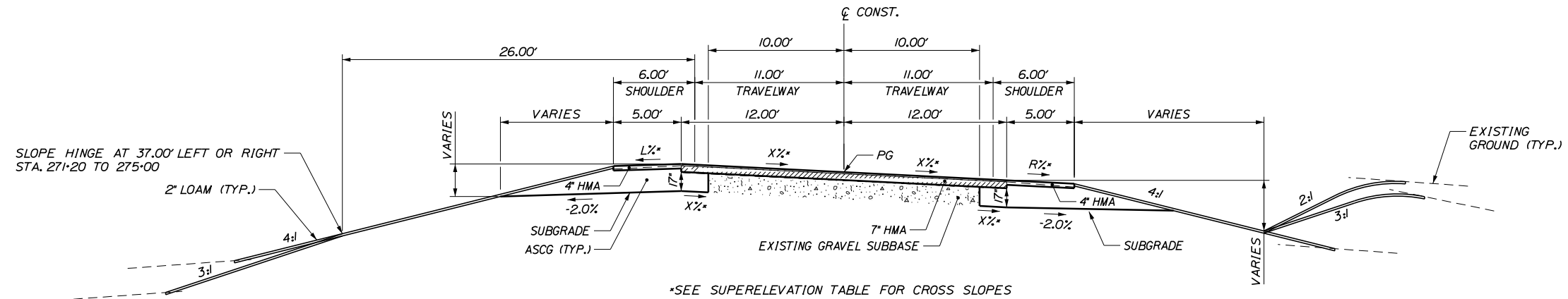


**US ROUTE 302
SUPERELEVATED GUARDRAIL
VARIABLE DEPTH GRAVEL
PG 24" OR MORE ABOVE EXISTING**



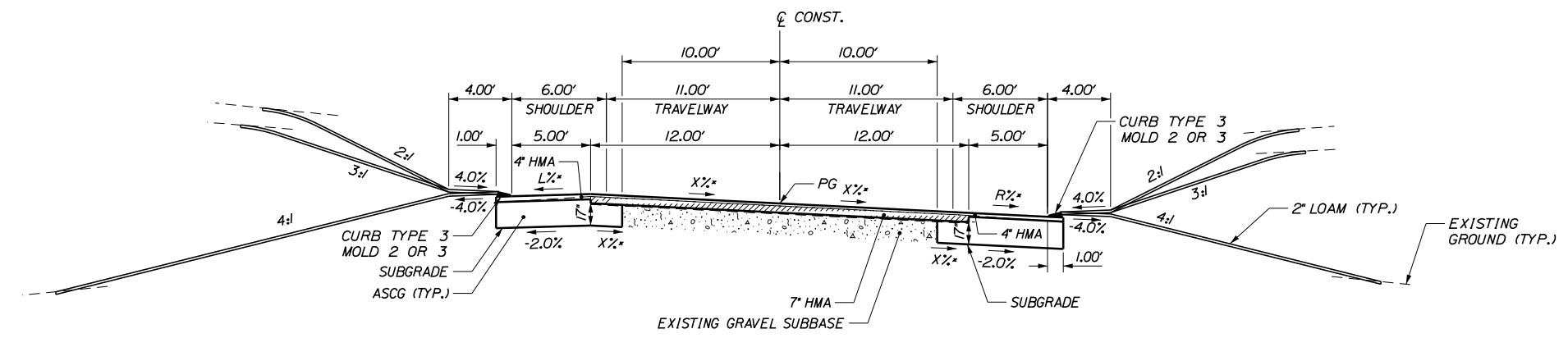
PROJ. MANAGER	DESIGN-DETAILED	CHECKED-REVIEWED	DESIGN DETAIL	DESIGN DETAIL	REVISIONS 1	REVISIONS 2	REVISIONS 3	REVISIONS 4	FIELD CHANGES
R. CARRELL	M. DEBOWSKI								
DATE	BY	SIGNATURE	P.E. NUMBER	DATE					

Filename: ...\\MSTA\\374_Typical_Sections.dgn Division: HIGHWAY Username: mdebowski Date: 1/14/2019



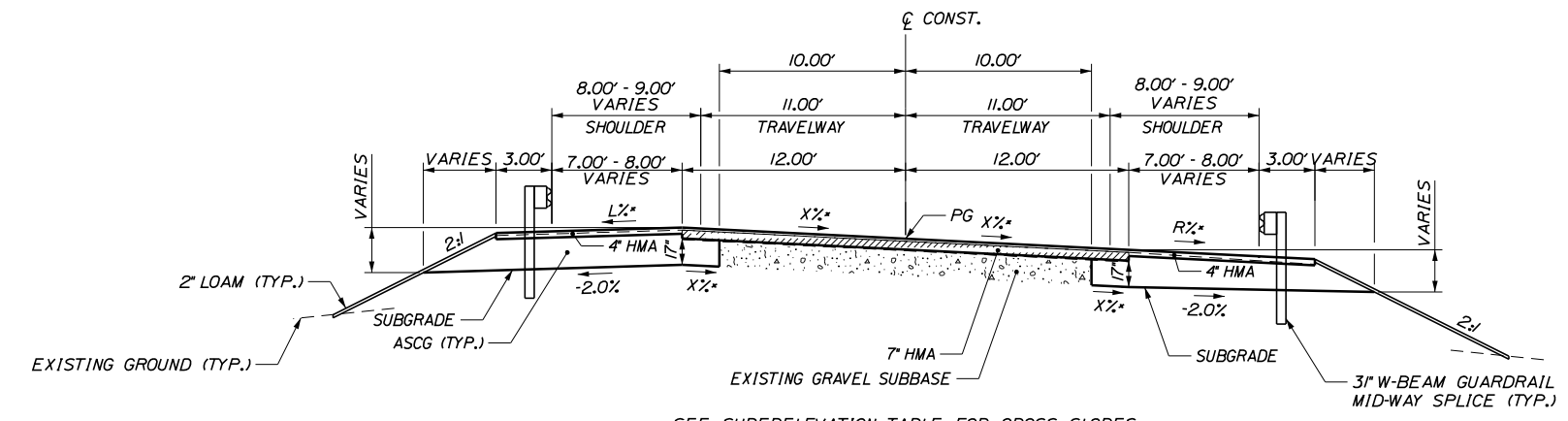
*SEE SUPERELEVATION TABLE FOR CROSS SLOPES

US ROUTE 302
SUPERELEVATED
VARIABLE DEPTH GRAVEL
PG LESS THAN 24" ABOVE EXISTING



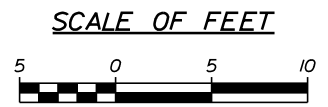
*SEE SUPERELEVATION TABLE FOR CROSS SLOPES

US ROUTE 302
SUPERELEVATED CURBED
VARIABLE DEPTH GRAVEL
PG LESS THAN 24" ABOVE EXISTING



*SEE SUPERELEVATION TABLE FOR CROSS SLOPES

US ROUTE 302
SUPERELEVATED GUARDRAIL
VARIABLE DEPTH GRAVEL
PG LESS THAN 24" ABOVE EXISTING



STATE OF MAINE				DEPARTMENT OF TRANSPORTATION				NH-1728(000)E				WIN				17280.00				HIGHWAY PLANS			
PROJECT MANAGER				DESIGN-DETAILED				CHECKED-REVIEWED				DESIGN DETAIL				REVISIONS 1				REVISIONS 2			
PROJ. MANAGER				R. CARRELL				BY				DATE				SIGNATURE				P.E. NUMBER			
DATE				DATE				DATE				DATE				DATE				DATE			
Fryeburg				US ROUTE 302				TYPICAL SECTIONS				SHEET NUMBER				374				OF 374			