



JOHN ELIAS BALDACCI  
GOVERNOR

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

DAVID A. COLE  
COMMISSIONER

June 20, 2008  
Subject: **Madrid**  
State Project No. 010019.00  
**Amendment No. 3**

Dear Sir/Ms:

Make the following change to the Bid Documents:

In the Bid Book; **REMOVE** the "SCHEDULE OF ITEMS", pages 3 through 9 (6 pages dated 080515) and **REPLACE** with the attached, new "SCHEDULE OF ITEMS", 8 pages dated 080616.

In the Bid Book, after page 41, **ADD** the attached SPECIAL PROVISION, SECTION 203, EXCAVATION AND EMBANKMENT (5 pages dated June 10, 2008).

In the Bid Book, **REMOVE** "SPECIAL PROVISION, SECTION 308, FULL DEPTH RECYCLED PAVEMENT, (With Bituminous Stabilizer)" pages 43 through 46 (4 pages dated January 5, 2006).

In the Bid Book, **REMOVE** "SPECIAL PROVISION, SECTION 308, (Recycled Pavement with Bit. stabilizer)" page 47 (1 page dated April 30, 2008).

In the Bid Book, after SPECIAL PROVISION, DIVISION 400, PAVEMENTS (page 68), **ADD** the attached "SPECIAL PROVISION, SECTION 401, HOT MIX ASPHALT PAVEMENTS, (Hot Bituminous Stabilized Base), 2 pages dated June 16, 2008.

In the Bid Book, after "SPECIAL PROVISION, DIVISION 400, PAVEMENTS" (page 68 and after the previous addition), **ADD** the attached "SPECIAL PROVISION, SECTION 401, HOT MIX ASPHALT PAVEMENTS", (Hot Bituminous Stabilized Base w/additive), 3 pages dated June 16, 2008.

In the Bid Book, **REMOVE** "SPECIAL PROVISION, SECTION 403, HOT MIX ASPHALT" (page 69 and 70, 2 pages dated May 19, 2008) and **REPLACE** with the attached, new "SPECIAL PROVISION, SECTION 403, HOT MIX ASPHALT" (2 pages dated June 16, 2008).

In the Plans, TYPICAL SECTIONS, **REMOVE SHEET 1 OF 3** and **REPLACE** with the attached (and mailed or FEDEXED) new TYPICAL SECTIONS, SHEET 1 OF 3. (Plan changes will be FEDEXED to street address and mailed to PO Boxes.)



PRINTED ON RECYCLED PAPER

In the Plans, GENERAL NOTES, SHEET 1 OF 1, CONSTRUCTION NOTES, **ADD** Note 40 to read as follows; "Item 603.209 changed from 59m to 49m due to pipe at station 1+350 reduced from 19.2m to 9.6 m (walking path only)."

In the Plans, ESTIMATED QUANTITIES & EARTHWORK SUMMARY, ESTIMATED QUANTITIES, **CHANGE** the ESTIMATED QUANTITIES to reflect the attached, new "SCHEDULE OF ITEMS". Make this change in pen and ink.

The following questions have been received:

**Question:** It is impossible to confirm the exact quantity for item #308.35 with the information that we have been given. It is also difficult, with the information given, to insure there is enough product coming from the project to complete the task given. How do we quantify both items?

**Response:** Item 308.35 has been eliminated in this amendment.

**Question:** How does one place this material (item#308.35) without either wasting recycled material on the shoulders if place first, or installing a gravel berm (shoulder) prior to placing the rap when the thickness exceeds 18 inches in place?

**Response:** Item 308.35 has been eliminated in this amendment.

**Question:** The cross sections have a cut slope similar to your presplit detail but there is no pay item for presplit. Do you want these items presplit? If so, will you add a pay item?

**Response:** Refer to SPECIAL PROVISION 203 added this amendment.

**Question:** Reference the GENERAL CONSTRUCTION NOTES in the Plans. Note #35 calls for existing guardrail to be removed. How much footage needs to be removed? There is no bid item 606.265, should there be?

**Response:** Note #35 is in reference to the abandoned section of roadway near the beginning of the project. There are some signs and some old cable guardrail that needs to be removed. The payment for removal of these items shall be incidental to common excavation.

Consider these changes and information prior to submitting your bid on **June 25, 2008**.

Sincerely,

Handwritten signature in black ink, appearing to read "S. Bickford" followed by the word "FOR" in a slightly larger, bold font.

Scott Bickford  
Contracts & Specifications Engineer

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 010019.00

PROJECT(S): 010019.00

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
SECTION 0001 PROJECT ITEMS						
0010	201.11 CLEARING	8.000 HA				
0020	201.12 SELECTIVE CLEARING AND THINNING	1.000 HA				
0030	202.15 REMOVING MANHOLE OR CATCH BASIN	1.000 EA				
0040	203.20 COMMON EXCAVATION	98000.000 M3				
0050	203.21 ROCK EXCAVATION	15500.000 M3				
0060	203.212 SPECIAL PERIMETER CONTROL BLASTING	9000.000 M				
0070	203.242 DIRTY BORROW	4300.000 M3				
0080	203.25 GRANULAR BORROW	670.000 M3				
0090	206.061 STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES, BELOW GRADE	100.000 M3				

SCHEDULE OF ITEMS

REVISED:

CONTRACT ID: 010019.00

PROJECT(S): 010019.00

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0100	206.07 STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	120.000 M3				
0110	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	30800.000 M3				
0120	403.207 HOT MIX ASPHALT 19.0 MM NOMINAL MAX SIZE	2600.000 MG				
0130	403.208 HOT MIX ASPHALT 12.5 MM, SURFACE	5650.000 MG				
0140	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	55.000 MG				
0150	403.211 HOT MIX ASPHALT (SHIM)	180.000 MG				
0160	403.213 HOT MIX ASPHALT 12.5 MM, BASE	6900.000 MG				
0170	409.15 BITUMINOUS TACK COAT APPLIED	11700.000 L				
0180	425.30 HOT STABILIZED ASPHALT BASE	2600.000 MG				
0190	425.31 HOT STABILIZED ASPHALT BASE W/ ADDITIVES	5200.000 MG				
0200	502.302 STRUCTURAL CONCRETE BOX CULVERT, REPAIR @ Sta. 4+780	LUMP	LUMP			

SCHEDULE OF ITEMS

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0210	534.71 PRECAST CONCRETE BOX CULVERT Extension @ STA 4+780	LUMP	LUMP			
0220	534.71 PRECAST CONCRETE BOX CULVERT STA 4+120	LUMP	LUMP			
0230	534.71 PRECAST CONCRETE BOX CULVERT STA 4+410	LUMP	LUMP			
0240	603.159 300 MM CULVERT PIPE OPTION III	M 45.000				
0250	603.16 375 MM CULVERT PIPE OPTION I	M 66.000				
0260	603.17 450 MM CULVERT PIPE OPTION I	M 12.000				
0270	603.179 450 MM CULVERT PIPE OPTION III	M 100.000				
0280	603.18 525 MM CULVERT PIPE OPTION I	M 26.000				
0290	603.189 525 MM CULVERT PIPE OPTION III	M 16.000				
0300	603.19 600 MM CULVERT PIPE OPTION I	M 76.000				
0310	603.199 600 MM CULVERT PIPE OPTION III	M 101.000				

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0320	603.209 750 MM CULVERT PIPE OPTION III	49.000 M				
0330	603.219 900 MM CULVERT PIPE OPTION III	80.000 M				
0340	603.229 1050 MM CULVERT PIPE OPTION III	21.000 M				
0350	603.42 762 MM REINFORCED CONCRETE PIPE CLASS IV	29.000 M				
0360	603.45 1219 MM REINFORCED CONCRETE PIPE CLASS IV	36.000 M				
0370	605.09 150 MM UNDERDRAIN TYPE B	340.000 M				
0380	605.10 150 MM UNDERDRAIN OUTLET	60.000 M				
0390	605.11 300 MM UNDERDRAIN TYPE C	510.000 M				
0400	606.1722 BRIDGE TRANSITION - TYPE 2	4.000 EA				
0410	606.23 GUARDRAIL TYPE 3C - SINGLE RAIL	2770.000 M				
0420	606.232 GUARDRAIL TYPE 3C - OVER 4.5 M RADIUS	31.000 M				

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REVISED:

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0430	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	84.000 EA				
0440	606.356 UNDERDRAIN DELINEATOR POST	6.000 EA				
0450	606.47 SINGLE WOOD POST	2.000 EA				
0460	606.79 GUARDRAIL 350 FLARED TERMINAL	34.000 EA				
0470	610.08 PLAIN RIPRAP	4700.000 M3				
0480	610.16 HEAVY RIPRAP	360.000 M3				
0490	610.18 STONE DITCH PROTECTION	1200.000 M3				
0500	610.210 STREAM CHANNEL ROCKS	20.000 M3				
0510	610.211 STREAM CHANNEL GRAVEL	30.000 M3				
0520	613.319 EROSION CONTROL BLANKET	3450.000 M2				
0530	618.1401 SEEDING METHOD NUMBER 2 - PLAN QUANTITY	590.000 UN				



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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0540	618.1411 SEEDING METHOD NUMBER 3 - PLAN QUANTITY	280.000 UN				
0550	619.1201 MULCH - PLAN QUANTITY	870.000 UN				
0560	620.54 STABILIZATION GEOTEXTILE	3000.000 M2				
0570	620.58 EROSION CONTROL GEOTEXTILE	9900.000 M2				
0580	627.711 WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE (PLAN QUANTITY )	17920.000 M				
0590	627.76 TEMPORARY PAVEMENT MARKING LINE, WHITE OR YELLOW	LUMP	LUMP			
0600	629.05 HAND LABOR, STRAIGHT TIME	50.000 HR				
0610	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	30.000 HR				
0620	631.13 BULLDOZER (INCLUDING OPERATOR)	20.000 HR				
0630	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	40.000 HR				
0640	631.18 CHAIN SAW RENTAL (INCLUDING OPERATOR)	10.000 HR				

SCHEDULE OF ITEMS

REVISED:

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CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0650	631.22 FRONT END LOADER (INCLUDING OPERATOR)	20.000 HR				
0660	639.18 FIELD OFFICE TYPE A	1.000 EA				
0670	652.31 TYPE I BARRICADE	20.000 EA				
0680	652.312 TYPE III BARRICADE	20.000 EA				
0690	652.33 DRUM	100.000 EA				
0700	652.34 CONE	200.000 EA				
0710	652.35 CONSTRUCTION SIGNS	75.000 M2				
0720	652.361 MAINTENANCE OF TRAFFIC CONTROL DEVICES	LUMP	LUMP			
0730	652.38 FLAGGER	8000.000 HR				
0740	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP	LUMP			
0750	659.10 MOBILIZATION	LUMP	LUMP			

SCHEDULE OF ITEMS

REVISED:

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PROJECT(S): 010019.00

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0760	660.21 ON-THE-JOB TRAINING (BID)	2000.000 HR				
	SECTION 0001 TOTAL					
	TOTAL BID					

SPECIAL PROVISION  
SECTION 203  
EXCAVATION AND EMBANKMENT

Amend Section 203 as follows:

Rock slopes shall be classified as critical and non-critical rock slopes. Critical rock slopes shall be slopes higher than 1.8 meters (6 ft) with an overburden slope steeper than 3H:1V, and all slopes greater than 3 meters (10 ft) high. Controlled blasting shall be required on all critical slopes.

203.042 Controlled Blasting Controlled blasting techniques as covered herein shall be used for forming highway rock cut slopes defined as “critical” in Section 203.01 b. or as shown on the plans or called for in the Special Provisions.

Controlled blasting is defined as a blasting method which utilizes a line of closely spaced, lightly loaded blastholes that are fired either before or after the main production blast to define a break line on the perimeter of the excavation.

The purpose of the Controlled blasting is to create a stable rock face with a fall zone to protect the traveling public from rockfall hazard, and to protect existing structures, adjacent and nearby properties, and the public from damage or injury.

1. All blasting operations including the storage and handling of explosives and blasting agents shall be performed in accordance with the applicable provisions of the standard Specifications and all other pertinent Federal, State and local regulations.
2. The Contractor shall observe the entire blast area to guard against potential hazards before commencing work in the cut. The Contractor shall not be allowed to store explosives on the project site or on State owned property unless prior approval is granted by the Department.
3. In case of conflict between regulations or between regulations and this Specification, the Contractor shall comply with the strictest applicable codes, regulations, or Specifications.
4. General Requirements
  - a. The Resident will, at all times, have the authority to prohibit or halt the Contractor’s blasting operations if it is apparent that through the methods being employed, the required slopes are not being obtained in a stable condition, or the safety and convenience of the public is being jeopardized.
  - b. Explosives shall be stored, handled and employed in accordance with Federal, State and Local regulations. No explosives, caps, detonators or fuses shall be stored on the project site during non-working hours.
  - c. The overburden shall be removed or trenches shall be excavated through the overburden at the intervals directed by the Resident, normally 7.6 meters (25 ft) but in no case closer than 13 meters (10 ft) apart to permit

cross sectioning of the rock in its original position. Rock removed prior to sectioning will be considered as Common Excavation.

## 5. SUBMITTALS

- a. Advance submittal – Not less than two weeks prior to commencing drilling and blasting operations, or at any time the Contractor proposes to changes drilling and blasting methods, the Contractor shall submit a Blasting Plan to the Resident for review. The Blasting Plan shall contain full details of the drilling and blasting patterns and controls the Contractor proposes to use for both the controlled and production blasting. Review of the Blasting Plan by the Department shall not relieve the Contractor of his responsibility for the safety, accuracy and adequacy of the Plan when implemented in the field. The Blasting Plan shall contain the following information.
  - i. Station limits of proposed shots.
  - ii. Plan and section views of the proposed drill pattern, including free face, burden, blasthole spacing, blasthole diameters, blasthole angles, lift height, and subdrill depth.
  - iii. Loading diagram showing type and amount of explosives, primers, initiators, and location and depth of stemming.
  - iv. Initiators sequence of blastholes including delay times and delay system.
  - v. Manufacturers' data sheets for all explosives, primers and initiators to be used.
    1. The delay elements in blasting caps are known to deteriorate with age. For this reason, it is required that all blasting caps used on the project be less than one year of age. No blasting product will be brought to the job site if the date codes are missing.
    2. When in the opinion of the Resident any blasting product is either of excessive age or in what appears to be a deteriorated condition, all work will cease until the product's age or quality can be determined.
    3. Explosives containing Perchlorate compounds shall not be used on Department projects.
  - vi. Details of the audible advance signal system to be employed at the job site.
- b. Daily Blasting Logs – The Contractor shall provide the Resident with a daily log of blasting operations, submitted on a weekly basis. The log shall be updated at the close of each working day. The log shall include the number of blasts, times, and dates of blasts, the blasting locations and patterns, and all information shown below:
  - i. Station limits of the shot.
  - ii. Plan and section views of drill pattern, including free face, burden blasthole spacing, blasthole diameters, lift height, and subdrill depth.
  - iii. Loading diagram showing type and amount of explosive, primers, initiators, and location and depth of stemming.
  - iv. Initiators sequence of blastholes including delay times and delay system in each blasthole.
  - v. Mats or other protection used.
  - vi. Signature of the Blaster in charge.

- c. The Contractor shall report to the Resident in writing all blasting complaints received by the Contractor within 24 hours of receipt. Each blast complaint report shall include the name and address of the complainant, time received, date and time of blast complained about, and a description of the circumstances which led to the complaint.
6. **BLAST VIBRATION CONTROL AND MONITORING**
- a. The Contractor shall be required to monitor blasting vibrations (both ground and air concussions) and shall provide a Pre-Blast Condition survey of all structures that may be affected.
  - b. When nearby structures, utilities, or adjacent slopes may be subject to damage from blast-induced ground vibrations, the ground vibrations shall be controlled by the use of properly designed delay sequences and appropriate charge weights per delay.
  - c. When vibration damage to adjacent structures is possible, the Contractor shall monitor each blast with an approved seismograph located, as approved, between the blast area and the closest structure subject to blast damage. The seismograph used shall be capable of recording particle velocity for three mutually perpendicular components of vibration in the range generally found with controlled blasting.
7. **FLYROCK CONTROL** Before the firing of any blast in areas where flying rock or debris may result in personal injury or damage to property, the rock to be blasted shall be covered with approved blasting mats, soil, or other equally serviceable material to prevent flyrock. The method of flyrock control shall be subject to approval by the Resident.
8. **CONTROLLED BLASTING METHODS**
- a. Production blasting refers to the main fragmentation blasting resulting from widely spaced production holes drilled throughout the main excavation area adjacent to the presplit line. Production holes shall be detonated in a controlled delay sequence.
  - b. Presplitting is defined as the establishment of a free surface of a shear plane in rock by the controlled usage of explosives and blasting accessories in appropriately aligned and spaced drill holes so that the resulting split rock is not affected by subsequent blasting and excavation operations. The purpose of presplitting is to minimize damage to the rock backslope and to help ensure long term stability. When presplitting, the detonation of the presplit line shall be before the detonation of any production holes.
    - i. Prior to drilling, all overburden and all loose and disintegrated rock shall be removed down to solid rock in the vicinity of the presplit lines. Potentially dangerous boulders beyond the excavation limits shall also be removed as directed by the Resident.
    - ii. Presplitting shall extend a minimum of 9 meters (30 feet) ahead of the limits of production blasting within the section or to the end of the cut as applicable.
    - iii. All drilling equipment used to drill the presplit holes shall have electromechanical or electronic devices affixed to that equipment to accurately determine the angle at which the drill steel enters the rock. Presplit hole drilling will not be permitted if these devices are missing or inoperative.
    - iv. The length of the presplit holes shall not exceed 9 meters (30 feet) in depth unless approved by the Resident. Rock deeper than 9 meters (30

- feet) shall usually be presplit in lifts, but no lift shall be less than 3 meters (10 feet) in depth. When the cut height will require more than one lift, a maximum 0.6 meter (2-foot) offset between lifts shall be permitted to allow for equipment clearance. No payment will be made for additional excavated quantity caused by offsetting of presplit lines for less than 6.1 meter (20 foot) lifts. Drilling 0.6 meters (2 feet) below ditch bottom will be allowed to facilitate removal of the toe berm.
- v. Before placing charges, the contractor shall determine that the hole is free of obstructions for its entire depth. All necessary precautions shall be exercised so that placing the charges will not cause caving of material from the walls of the holes.
  - vi. The diameter of the explosives used in presplit holes shall not be greater than ½ the diameter of the hole.
  - vii. Continuous column cartridge explosives manufactured especially for presplitting shall be used for all presplitting. The bottom charge of a presplit hole may be larger than the line charges, but shall not be large enough to cause overbreak. The top charge of the presplitting hole shall be placed far enough below the collar, and reduced sufficiently, to avoid overbreaking and heaving. The upper portion of all presplit holes, from the top charge to the hole collar, shall be stemmed.
  - viii. The presplit slope face shall not deviate more than 0.3 meters (one foot) from a plane passing through adjacent drillholes, except where the character of the rock is such that, as determined by the Resident, irregularities are unavoidable. The 0.3 meter (one-foot) plane shall be measured perpendicular to the plane of the slope. In no case shall any portion of the slope encroach on the roadbed.
- c. Cushion blasting. Where the horizontal distance from the existing rock face to the cut face is less than 4.6 meters (15 feet), or if rock conditions warrant this approach, the contractor may use cushion blast in lieu of presplitting. Cushion blasting is similar to presplitting except that the detonation along the cut face occurs after the detonation of all production holes. With the exception of the above criteria, requirements previously given for presplitting shall also apply to cushion blasting.
  - d. Sliver Cuts – For sliver cuts, pioneering the top of cuts and preparing a working platform to begin the controlled blasting may require unusual work methods and use of equipment. The contractor may use angle drilled holes during the initial pioneering operations to obtain the desired rock face. Hole spacing shall not exceed 760 mm (30 inches).
9. Method of Measurement. Controlled Blasting shall be paid by the linear meter of presplitting holes and extra drilled holes without explosives, measured from the top of the drill hole at the rock surface to the bottom of the hole or to the elevation of the required subgrade (whichever is higher) or to an established bench elevation. Portions of holes not meeting the requirements of Subsection 8 will not be measured. Production holes will not be measured. Presplitting holes and extra drilled holes without explosives drilled where presplitting is not required by this specification will not be measured. Where presplitting is required, excavated rock will be paid only to the slope and depth lines shown on the plans or as ordered by the Resident. Where the Resident determines that the removal of additional rock is necessary due to conditions clearly not attributable to the Contractor's methods of operations, the payment lines will be adjusted to the limits ordered, to include only rock actually removed within such limits.

Madrid, Letter E Twp, Sandy River

PIN 10019.00

June 10, 2008

10. Basis of Payment. The accepted quantity of presplitting rock will be paid for at the contract unit price per linear meter under Pay Item 203.212. All costs incurred by the Contractor in preparing an approved blasting plan, in maintaining a blasting log, and in adopting revised blasting methods necessary to produce an acceptable test shot shall be considered incidental to the contract unit prices for rock excavation and presplitting rock.

Add Pay Item

Unit

203.212 Special Perimeter Control Blasting

Linear Meter



**SPECIAL PROVISION**  
**SECTION 401**  
**HOT MIX ASPHALT PAVEMENTS**  
(Hot Bituminous Stabilized Base)

The Special Provision 401 – Hot Mix Asphalt Pavement, has been modified with the following revisions. All sections not revised by this Special Provision shall be as outlined in the Special Provision 400 Pavements, dated 3-12-2008, section 401 – Hot Mix Asphalt Pavement.

401.01 Description This work shall consist of the removal of all bituminous pavement from the existing roadway, hauling the bituminous pavement to an approved location, and processing as per this Specification. The gravel base of the existing roadway shall be regarded and compacted to the tolerances shown on the typicals, or as directed by the Resident. The placement, grading and compaction of additional gravel base shall be paid under the appropriate aggregate base item.

All Hot Bituminous Stabilized Base shall be placed in one or more courses on an approved base and in accordance with these specifications, and in reasonably close conformity with the lines, grades and thicknesses indicated on the plans, or as established by the Resident. Excess recycled material not used in the Hot Bituminous Stabilized Base process will become the property and responsibility of the contractor.

**MATERIALS**

401.03 Composition of Mixtures – (paragraph 1) - 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 T312 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). The Contractor shall submit designs for approval utilizing a minimum of **20%** to a maximum of **40%** of recycled asphalt pavement (RAP) in any Hot Bituminous Stabilized Base course unless otherwise directed by the Department. The Hot Bituminous Stabilized Base shall be designed for an Air Void Target of 6.0 % at 75 Gyrations. All recycled asphalt pavement (RAP) utilized in the Hot Bituminous Stabilized Base shall be salvaged from the project, unless otherwise authorized by the Department.

**REVISED TABLE 1: VOLUMETRIC DESIGN CRITERIA**

Design ESAL's (Millions )	Required Density (Percent of G <sub>mm</sub> )			Voids in the Mineral Aggregate (VMA)(Minimum Percent)					Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
				Nominal Maximum Aggregate Size (mm)						
	N <sub>initial</sub>	N <sub>design</sub>	N <sub>max</sub>	25 [1 inch]	19 [¾ in]	12.5 [½ in]	9.5 [⅜ in]	4.75 [#4]		
<0.3	≤91.5								70-80	0.6-1.4
0.3 to <3	≤90.5								65-78	
3 to <10		96.0	≤98.0	12.0	13.0	14.0	15.0	16.0	65-75*	
10 to <30	≤89.0									
≥ 30										

\*For 9.5 mm [⅜ in] nominal maximum aggregate size mixtures, the maximum VFB is 76.

\*For 4.75 mm [#4] nominal maximum aggregate size mixtures, the maximum VFB is 80.

401.05 Performance Graded Asphalt Binder Unless otherwise noted in Special Provision 403 - Hot Bituminous Pavement, PGAB shall be 64-28 or 58-28. The PGAB shall meet the applicable requirements of AASHTO M320 - Standard Specification for PGAB. The Contractor shall provide the Department with an approved copy of the Quality Control Plan for PGAB in accordance with AASHTO R 26-01 Certifying Suppliers of PGAB.

401.052 Repairs Repairs and maintenance for the Hot Bituminous Stabilized Base, during and after the placing operation, resulting from damage caused by traffic, weather or environmental conditions, or caused by the Contractor's operations or equipment, shall be completed at no additional cost to the Department.

Low areas will be repaired using a hot mix asphalt shim course. Areas up to 25mm [1 in] high can be repaired by milling or shimming with hot mix asphalt. Areas higher than 25mm [1 in] will be repaired using a hot mix asphalt shim. All repair work will be done with the Resident's approval at the Contractor's expense.

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 401.11, 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.

The accepted quantity of Hot Bituminous Stabilized Base will be paid under the contract unit price per Mg [Ton], complete in-place which price will be full compensation for furnishing all equipment and labor for removing existing pavement, regrading and compacting existing gravel base, processing, mixing, testing, placing, and compacting, excess material relocation, and for all incidentals necessary to complete the work. The placement, grading and compaction of additional gravel base shall be paid under the appropriate aggregate base item.

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.

401.222 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: Method C Testing criteria

Payments will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
425.30 – Hot Bituminous Stabilized Base	Ton [Mg]

**SPECIAL PROVISION**  
**SECTION 401**  
**HOT MIX ASPHALT PAVEMENTS**  
 (Hot Bituminous Stabilized Base w/ additive)

The Special Provision 401 – Hot Mix Asphalt Pavement, has been modified with the following revisions. All sections not revised by this Special Provision shall be as outlined in the Special Provision 400 Pavements, dated 3-12-2008, section 401 – Hot Mix Asphalt Pavement.

401.01 Description This work shall consist of the removal of all bituminous pavement from the existing roadway, hauling the bituminous pavement to an approved location, and processing together with a Warm Mix Asphalt Additive as per this Specification. The gravel base of the existing roadway shall be regarded and compacted to the tolerances shown on the typicals, or as directed by the Resident. The placement, grading and compaction of additional gravel base shall be paid under the appropriate aggregate base item.

All Hot Bituminous Stabilized Base with Additive shall be placed in one or more courses on an approved base and in accordance with these specifications, and in reasonably close conformity with the lines, grades and thicknesses indicated on the plans, or as established by the Resident. Excess recycled material not used in the Hot Bituminous Stabilized Base process will become the property and responsibility of the contractor.

**MATERIALS**

401.03 Composition of Mixtures – (paragraph 1) - The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), **Warm Mix Additive**, and mineral filler if required. The mixture shall be designed and tested according to AASHTO T312 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). The Contractor shall submit designs for approval utilizing a minimum of **20%** to a maximum of **40%** of recycled asphalt pavement (RAP) in any Hot Bituminous Stabilized Base course unless otherwise directed by the Department. The Hot Bituminous Stabilized Base shall be designed for an Air Void Target of **6.0 % at 75 Gyration**s. **Warm Mix Additives** shall be introduced into the mixture at a in a manner and rate recommended by the additive manufacturer. All recycled asphalt pavement (RAP) utilized in the Hot Bituminous Stabilized Base shall be salvaged from the project, unless otherwise authorized by the Department.

REVISED TABLE 1: VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions )	Required Density (Percent of G <sub>mm</sub> )			Voids in the Mineral Aggregate (VMA)(Minimum Percent)					Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
				Nominal Maximum Aggregate Size (mm)						
	N <sub>initial</sub>	N <sub>design</sub>	N <sub>max</sub>	25 [1 in]	19 [¾ in]	12.5 [½ in]	9.5 [⅜ in]	4.75 [#4]		
<0.3	≤91.5								70-80	0.6-1.4
0.3 to <3	≤90.5								65-78	
3 to <10		96.0	≤98.0	12.0	13.0	14.0	15.0	16.0	65-75*	
10 to <30	≤89.0									
≥ 30										

\*For 9.5 mm [⅜ in] nominal maximum aggregate size mixtures, the maximum VFB is 76.

\*For 4.75 mm [#4] nominal maximum aggregate size mixtures, the maximum VFB is 80.

#### 401.031 Warm Mix Additive

Option A - The use of organic additives such as a paraffin wax and or a low molecular weight esterified wax available in 2, 5, 20 or 600 kg [5, 10, 50 or 1250 lb] bags, is required. Wax derived additives shall be introduced at the rate recommended by the manufacture, typically 3 percent by weight (3%) of the mix to gain the desired reduction in viscosity, and should not exceed 4 percent due to the possible impact on the binder's low temperature properties. Wax derived additives shall be introduced into the hot asphalt binder at the asphalt plant and fully blended using a tank agitator / stirrer. Wax additives shall have a melting point of approximately 99° C [210° F]. Minimum placement temperatures shall be as per manufactures recommendations. A Quality Control Plan shall be submitted for approval by the Department.

Option B – The use of a manufactured synthetic zeolite (Sodium Aluminum Silicate), available in a very fine powdered form in 25 or 50 kg [55 or 110 lb] bags, or in bulk for silos. Sodium aluminum silicate additives shall be introduced at a rate recommended by the manufacturer, typically 0.3 percent by mass of the mix. Sodium aluminum silicate additives shall be introduced into the hot mix plant mixing chamber by mechanical means that can be controlled and tied directly to the hot mix asphalt plants rate of production. Minimum placement temperatures shall be as per manufactures recommendations. A Quality Control Plan shall be submitted for approval by the Department.

Option C – The use of a chemical additive technology and a "Dispersed Asphalt Technology" delivery system shall be required. This process utilizes chemical technology delivered into a dispersed asphalt phase (emulsion). The asphalt emulsion with chemical package is used in place of the traditional asphalt binder. The emulsion is mixed with the aggregate in the HMA plant at a rate recommended by the manufacturer. This additive shall be introduced into the hot mix plant mixing chamber by mechanical means that can be controlled and tied directly to the hot mix asphalt plants rate of production. Minimum placement temperatures shall be as per manufactures recommendations. A Quality Control Plan shall be submitted for approval by the Department.

Option D – Other products / processes approved by the Department.

401.05 Performance Graded Asphalt Binder Unless otherwise noted in Special Provision 403 - Hot Bituminous Pavement, PGAB shall be 64-28 or 58-28. The PGAB shall meet the applicable requirements of AASHTO M320 - Standard Specification for PGAB. The Contractor shall provide the Department with an approved copy of the Quality Control Plan for PGAB in accordance with AASHTO R 26-01 Certifying Suppliers of PGAB.

401.052 Repairs Repairs and maintenance for the Hot Bituminous Stabilized Base with Additive, during and after the placing operation, resulting from damage caused by traffic, weather or environmental conditions, or caused by the Contractor's operations or equipment, shall be completed at no additional cost to the Department. Low areas will be repaired using a hot mix asphalt shim course. Areas up to 25mm [1 in] high can be repaired by milling or shimming with hot mix asphalt. Areas higher than 25mm [1 in] will be repaired using a hot mix asphalt shim. All repair work will be done with the Resident's approval at the Contractor's expense.

401.06 Weather Limitations The plant mixed recycled asphalt pavement shall be performed when:

- a. Operations will be allowed between May 15<sup>th</sup> and September 15<sup>th</sup> inclusive.
- b. The atmospheric temperature, as determined by an approved thermometer placed in the shade at the recycling location, is 10°C [50<sup>0</sup>F] and rising.
- c. When there is no standing water on the surface.
- d. During generally dry conditions, or when weather conditions are such that proper pulverizing, adding, mixing, and curing can be obtained using proper procedures, and when compaction can be accomplished as determined by the Resident.
- e. When the surface is not frozen and when overnight temperatures are expected to be above 0°C [32<sup>0</sup>F].

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 401.11, 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.

The accepted quantity of Hot Bituminous Stabilized Base with Additive will be paid under the contract unit price per Mg [Ton], complete in-place which price will be full compensation for furnishing all equipment and labor for removing existing pavement, regrading and compacting existing gravel base, processing, mixing, testing, placing, and compacting, excess material relocation, and for all incidentals necessary to complete the work. The placement, grading and compaction of additional gravel base shall be paid under the appropriate aggregate base item.

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.

401.222 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: Method C Testing criteria

Payments will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
425.31 – Hot Bituminous Stabilized Base w / Additive	Ton [Mg]

**SPECIAL PROVISION**  
**SECTION 403**  
**HOT MIX ASPHALT**

<b>Desc. of Course</b>	<b>Grad. Design</b>	<b>Item Number</b>	<b>Bit Cont. % of Mix</b>	<b>Total Thick</b>	<b>No. Of Layers</b>	<b>Comp. Notes</b>
<b><u>165mm HMA Overlay</u></b>						
<b><u>Normal Mainline Travelway Sections - Full Construction Areas</u></b>						
Wearing	12.5mm	403.208	N/A	40mm	1	1,5,9,12,22
Base	12.5mm	403.213	N/A	50mm	1	1,5,9
Base	19.0mm	ref: note 25	N/A	75mm	1/more	1,5,9,13,25
<b><u>165mm HMA Overlay</u></b>						
<b><u>Normal Shoulders - Full Construction Areas</u></b>						
Wearing	12.5mm	403.208	N/A	40mm	1	1,5,9,12
Base	12.5mm	403.213	N/A	50mm	1	1,5,9
Base	19.0mm	ref: note 25	N/A	75mm	1/more	1,5,9,13,25
<b><u>Shim</u></b>						
Shim	9.5mm	403.211	N/A	variable	1/more	2,5,10, 11
<b><u>Drives, Misc.</u></b>						
Wearing	9.5 mm	403.209	N/A	50mm	2/more	2,3,10,11,14

**COMPLEMENTARY NOTES**

- The required PGAB for this mixture will meet a **PG 58-28** to **PG 64-28** grading. The Contractor must stipulate the which PGAB grading will be used to construct the entire HMA pavement structure prior to starting work.
- The density requirements are waived.
- The design traffic level for mix placed shall be <0.3 million ESALS.
- 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 **75 gyrations**.
- Section 106.6 Acceptance, Method C.
- Section 106.6 Acceptance, (2) Method D.
- 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.
- A mixture meeting the gradation of 9.5 mm hot mix asphalt may be used at the option of the contractor.
- The combined aggregate gradation required for this item shall be classified as a 19.0mm “**fine graded**” mixture (using the Primary Control Sieve control point) as defined in 703.09.
- A mixture meeting the requirements of section 703.09 Grading ‘D’, with a minimum PGAB content of 6%, and the limits of Special Provision 401, Table 9 (Drives and Sidewalks) for PGAB content and gradation may be substituted for this item. A job mix formula shall be submitted to the department for approval.
- Any areas reconstructed and exposed to traffic over winter suspension shall have the full depth, full width layers of 19.0 mm HMA base, and the 12.5mm HMA base layers placed prior to the winter suspension of work on the project. All work associated with this item will be required to be done within the standard seasonal limitations, and evaluated in accordance with all applicable specifications. Any work performed outside the seasonal limitations dates will be considered temporary, and removed and replaced at no cost to the Department when work resumes in the next working season.

**Madrid**  
**PIN 10019.00**  
**Route 4**  
**Highway Reconstruction**  
**June 16, 2008**

22. The final pavement surface shall be evaluated for smoothness in accordance with Special Provision Section 402 – Pavement Smoothness dated 3-12-08. Acceptance limits shall be as outlined under the **Level II** classification.
25. This layer shall consist of a standard 19.0mm HMA control section, a 19.0mm Hot Bituminous Stabilized Base section (Item 425.30), and two 19.0mm Hot Bituminous Stabilized Base with additive sections (Item 425.31). The length of the project will be broken into 4 approximately equal sections of the contractor's choosing for use as the Base Test Sections. Unless otherwise authorized by the Department, the individual sections should be continuous sections.

Tack Coat

A tack coat of emulsified asphalt, RS-1, Item #409.15 shall be applied to any existing pavement at a rate of approximately 0.08 L/m<sup>2</sup>, and on milled pavement approximately 0.2 L/m<sup>2</sup>, prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim / intermediate course and the surface course, at a rate not to exceed 0.08 L/m<sup>2</sup>.

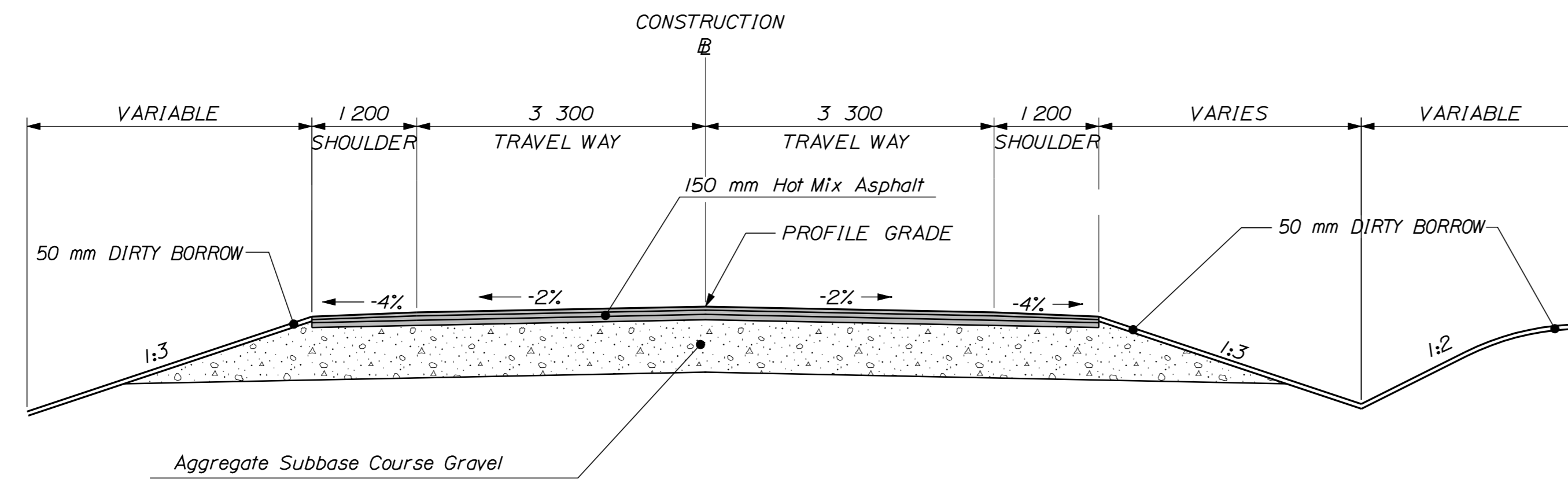
Tack used between layers of pavement will be paid for at the contract unit price for Item 409.15 Bituminous Tack Coat.

**METRIC**

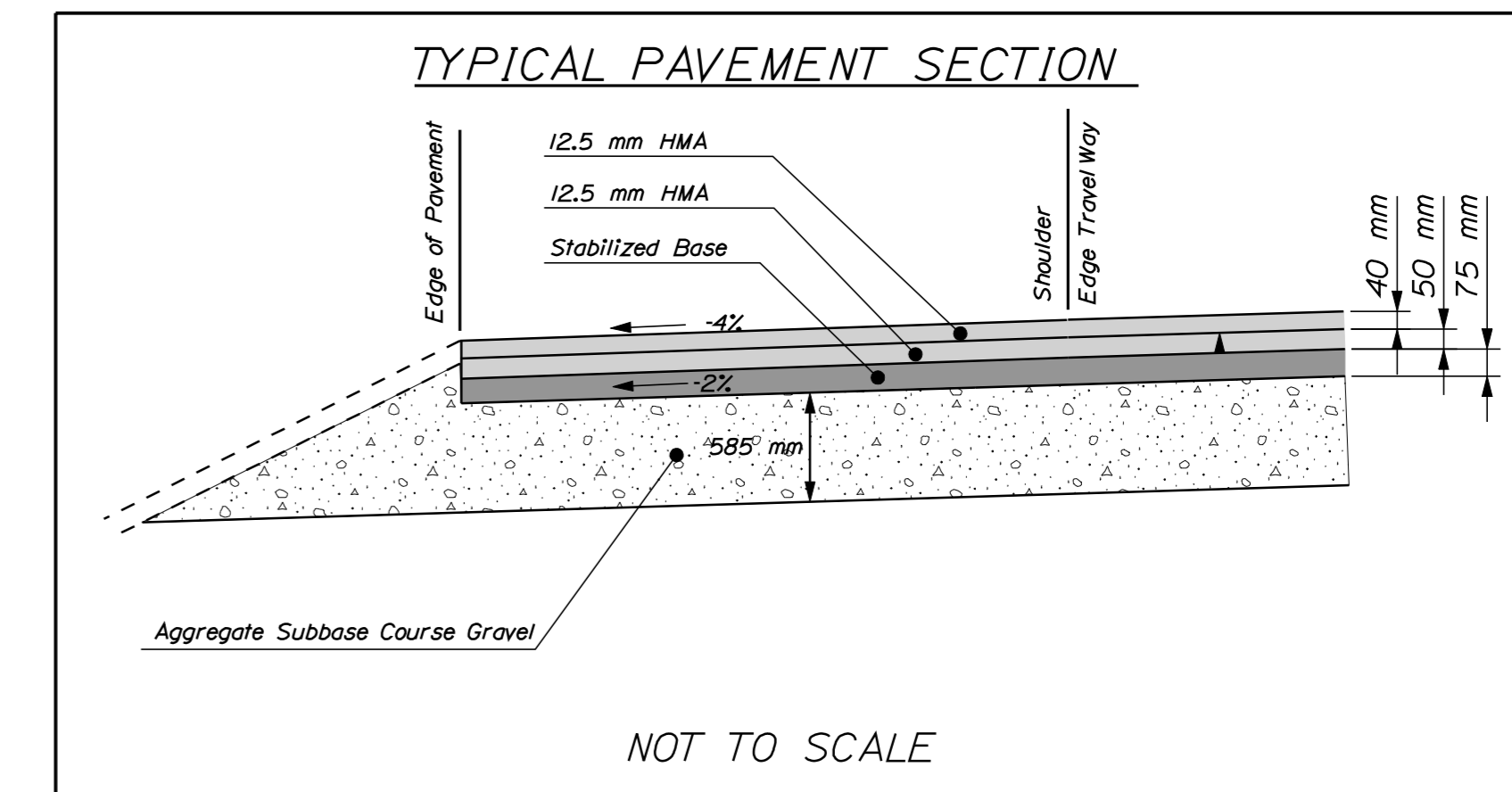
1. All dimensions are in millimeters unless otherwise noted.  
2. All elevations and stations are in meters.

FHWA REG. NO.	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
1	MAINE	PIN 10019.00	2	302

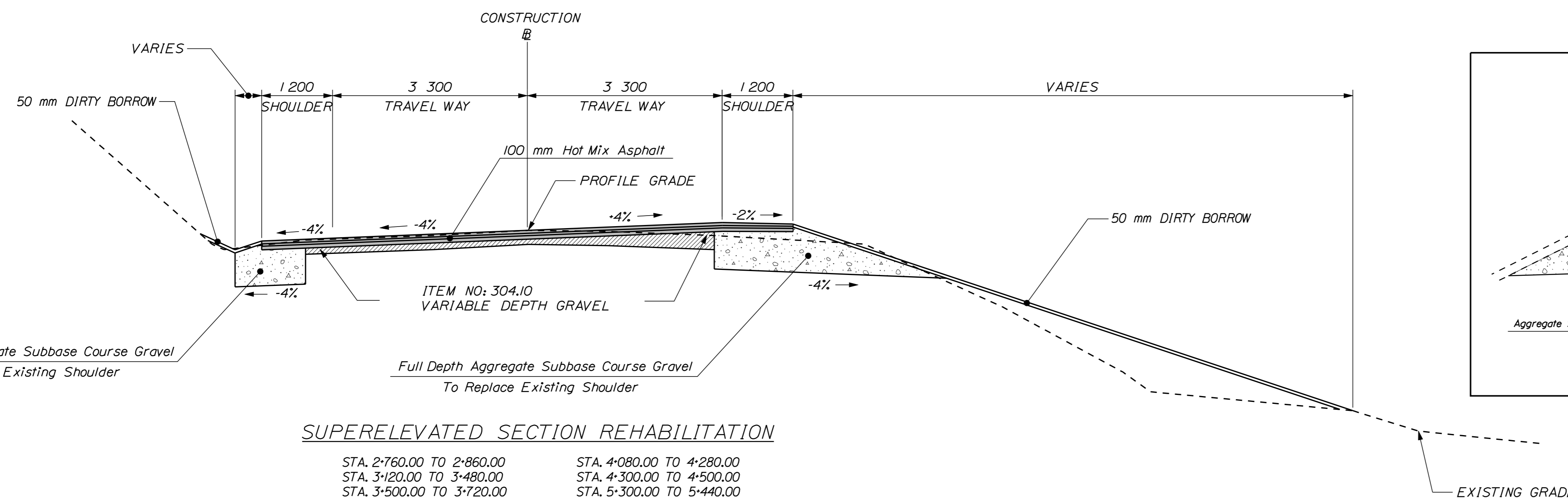
10019.00



TYPICAL PAVEMENT SECTION

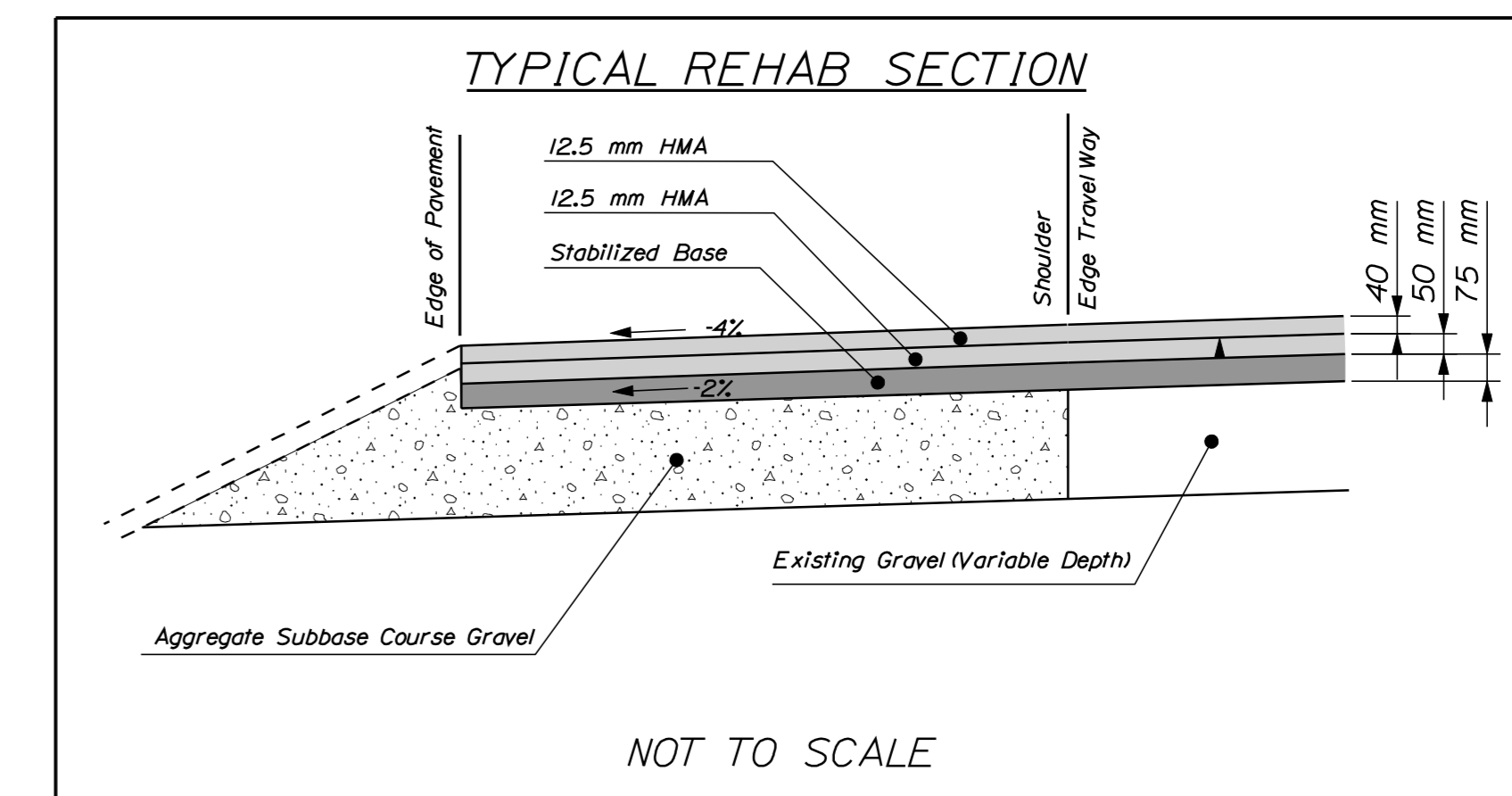


NOT TO SCALE

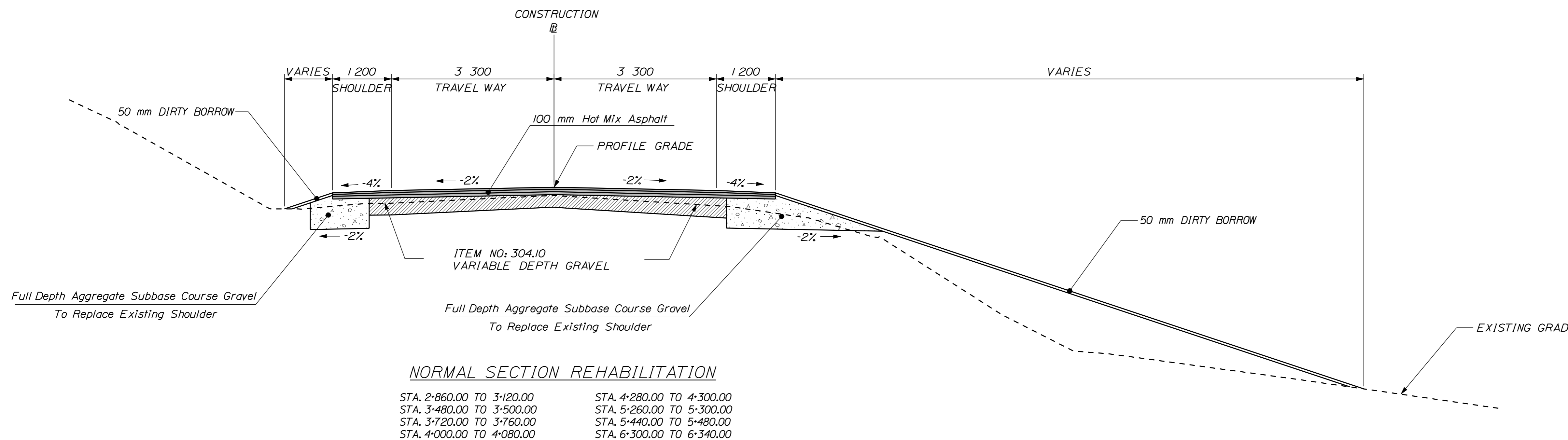


SUPERELEVATED SECTION REHABILITATION

STA. 2-760.00 TO 2-860.00	STA. 4-080.00 TO 4-280.00
STA. 3-120.00 TO 3-480.00	STA. 4-300.00 TO 4-500.00
STA. 3-500.00 TO 3-720.00	STA. 5-300.00 TO 5-440.00
STA. 3-760.00 TO 4-000.00	STA. 5-480.00 TO 5-700.00
	STA. 6-340.00 TO 6-540.00



NOT TO SCALE



NORMAL SECTION REHABILITATION

STA. 2-860.00 TO 3-120.00	STA. 4-280.00 TO 4-300.00
STA. 3-480.00 TO 3-500.00	STA. 5-260.00 TO 5-300.00
STA. 3-720.00 TO 3-760.00	STA. 5-440.00 TO 5-480.00
STA. 4-000.00 TO 4-080.00	STA. 6-300.00 TO 6-340.00

Date: 6/16/2008

Username: rhobe.moulton

Division: HIGHWAY

Filename: ... \HIGHWAY\MSTA\002\_Typical.dgn

PROJECT DESIGN ENGINEER	BY	DATE
S. BRIDGE	R. MOULTON	FEB 2006
DESIGN-DETAILED		
CHECKED		
REVISIONS		
FIELD CHANGES		

PLANS

STATE OF MAINE  
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

MADRID

ROUTE 4

NOT TO SCALE