

# **Wisconsin Department of Transportation**

November 7, 2017

**Division of Transportation Systems Development** 

Bureau of Project Development 4802 Sheboygan Avenue, Rm 601 P O Box 7916 Madison, WI 53707-7916

Telephone: (608) 266-1631 Facsimile (FAX): (608) 266-8459

# **NOTICE TO ALL CONTRACTORS:**

Proposal #43: 1020-03-81, WISC 2017 621

**Hudson - Baldwin** 

**USH 12 to STH 65 (EB&WB)** 

**IH 94** 

St. Croix County

# Letting of November 14, 2017

This is Addendum No. 01, which provides for the following:

# **Special Provisions:**

	Added Special Provisions
Article No.	Description
25	QMP HMA Pavement Nuclear Density

# **Schedule of Items:**

<b>-</b>					
	Added Bid Item Quantitie	S			
Bid Item	Item Description	Unit	Old	Revised	Proposal
Did itelli	item Description	Ullit	Quantity	Quantity	Total
450.4000	HMA Cold Weather Paving	Ton	0	6,200	6,200

# Plan Sheets:

	Revised Plan Sheets
Plan	Plan Sheet Title (brief description of changes to sheet)
Sheet	Fian Sheet Title (bilet description of changes to sheet)
26	Miscellaneous Quantities ( Removed incorrect duplicate table for item 204.0109.S
26	Removing Concrete Surface Partial Depth)
27	Miscellaneous Quantities ( Added table for item 450.4000 HMA Cold Weather Paving )

The responsibility for notifying potential subcontractors and suppliers of these changes remains with the prime contractor.

Sincerely,

# Mike Coleman

Proposal Development Specialist Proposal Management Section

# **ADDENDUM NO. 01**

#### 1020-03-81

#### **November 7, 2017**

#### **Special Provisions**

# 25. QMP HMA Pavement Nuclear Density.

#### A Description

Replace standard spec 460.3.3.2 (1) and standard spec 460.3.3.2 (4) with the following:

- (1) This special provision describes density testing of in-place HMA pavement with the use of nuclear density gauges. Conform to standard spec 460 as modified in this special provision.
- (2) Provide and maintain a quality control program defined as all activities and documentation of the following:
  - 1. Selection of test sites.
  - 2. Testing.
  - 3. Necessary adjustments in the process.
  - 4. Process control inspection.
- (3) Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes required procedures. Obtain the CMM from the department's web site at:

http://roadwaystandards.dot.wi.gov/standards/cmm/index.htm

(4) The department's Materials Reporting System (MRS) software allows contractors to submit data to the department electronically, estimate pay adjustments, and print selected reports. Qualified personnel may obtain MRS software from the department's web site at:

http://www.atwoodsystems.com/mrs

# **B** Materials

#### **B.1 Personnel**

- (1) Perform HMA pavement density (QC, QV) testing using a HTCP certified nuclear technician I, or a nuclear assistant certified technician (ACT-NUC) working under a certified technician.
- (2) If an ACT is performing sampling or testing, a certified technician must coordinate and take responsibility for the work an ACT performs. Have a certified technician ensure that all sampling and testing is performed correctly, analyze test results, and post resulting data. No more than one ACT can work under a single certified technician.

#### **B.2 Testing**

(1) Conform to ASTM D2950 and CMM 8.15 for density testing and gauge monitoring methods. Perform nuclear gauge measurements using gamma radiation in the backscatter position. Perform each test for 4 minutes of nuclear gauge count time.

# **B.3 Equipment**

#### B.3.1 General

- (1) Furnish nuclear gauges from the department's approved product list at http://www.dot.wisconsin.gov/business/engrserv/approvedprod.htm.
- (2) Have the gauge calibrated by the manufacturer or an approved calibration service within 12 months of its use on the project. Retain a copy of the manufacturer's calibration certificate with the gauge.

(3) Prior to each construction season, and following any calibration of the gauge, the contractor must perform calibration verification for each gauge using the reference blocks located in the department's central office materials laboratory. To obtain information or schedule a time to perform calibration verification, contact the department's Radiation Safety Officer at:

Materials Management Section 3502 Kinsman Blvd. Madison, Wisconsin 53704 Telephone: (608) 243-5998

# **B.3.2 Comparison of Nuclear Gauges**

# **B.3.2.1 Comparison of QC and QV Nuclear Gauges**

- (1) Select a representative section of the compacted pavement prior to or on the first day of paving for the comparison process. The section does not have to be the same mix design.
- (2) Compare the 2 or more gauges used for density measurement (QC, QV). The QC and QV gauge operators will perform the comparison on 5 test sites jointly located. Record each density measurement of each test site for the QC, QV and back up gauges.
- (3) Calculate the average of the difference in density of the 5 test sites between the QC and QV gauges. Locate an additional 5 test sites if the average difference exceeds 1.0 lb/ft<sup>3</sup>. Measure and record the density on the 5 additional test sites for each gauge.
- (4) Calculate the average of the difference in density of the 10 test sites between the QC and QV gauges. Replace one or both gauges if the average difference of the 10 tests exceeds 1.0 lb/ft<sup>3</sup> and repeat comparison process from B.3.2.1 (2).
- (5) Furnish one of the QC gauges passing the allowable comparison tolerances to perform density testing on the project.

# **B.3.2.2 Comparison Monitoring**

- (1) After performing the gauge comparison specified in B.3.2.1, establish a project reference site approved by the department. Clearly mark a flat surface of concrete or asphalt or other material that will not be disturbed during the duration of the project. Perform comparison monitoring of the QC, QV, and all back-up gauges at the project reference site.
- (2) Conduct an initial 10 density tests with each gauge on the project reference site and calculate the average value for each gauge to establish the gauge's reference value. Use the gauge's reference value as a control to monitor the calibration of the gauge for the duration of the project.
- (3) Check each gauge on the project reference site a minimum of one test per day if paving on the project. Calculate the difference between the gauge's daily test result and its reference value. Investigate if a daily test result is not within 1.5 lb/ft<sup>3</sup> of its reference value. Conduct 5 additional tests at the reference site once the cause of deviation is corrected. Calculate and record the average of the 5 additional tests. Remove the gauge from the project if the 5-test average is not within 1.5 lb/ft<sup>3</sup> of its reference value established in B.3.2.2(2).
- (4) Maintain the reference site test data for each gauge at an agreed location.

#### **B.4 Quality Control Testing and Documentation**

#### **B.4.1 Lot and Sublot Requirements**

# **B.4.1.1 Mainline Traffic Lanes, Shoulders, and Appurtenances**

- (1) A lot consists of the tonnage placed each day for each layer and target density specified in standard spec 460.3.3.1. A lot may include partial sublots.
- (2) Divide the roadway into sublots. A sublot is 1500 lane feet for each layer and target density.

- (3) A sublot may include HMA placed on more than one day of paving. Test sublots at the predetermined random locations regardless of when the HMA is placed. No additional testing is required for partial sublots at the beginning or end of a day's paving.
- (4) If a resulting partial quantity at the end of the project is less than 750 lane feet, include that partial quantity with the last full sublot of the lane. If a resulting partial quantity at the end of the project is 750 lane feet or more, create a separate sublot for that partial quantity.
- (5) Randomly select test locations for each sublot as specified in CMM 8.15 prior to paving and provide a copy to the engineer. Locate and mark QC density test sites when performing the tests. Perform density tests prior to opening the roadway to traffic.
- (6) Use Table 1 to determine the number of tests required at each station, depending on the width of the lane being tested. When more than one test is required at a station, offset the tests 10 feet longitudinally from one another to form a diagonal testing row across the lane.

Lane Width	No. of Tests	Transverse Location
5 ft or less	1	Random
Greater than 5 ft to 9 ft	2	Random within 2 equal widths
Greater than 9 ft	3	Random within 3 equal widths
	Tab	le 1

#### B.4.1.2 Side Roads, Crossovers, Turn Lanes, Ramps, and Roundabouts

- (1) A lot represents a combination of the total daily tonnage for each layer and target density.
- (2) Each side road, crossover, turn lane, ramp, and roundabout must contain at least one sublot for each layer.
- (3) If a side road, crossover, turn lane, or ramp is 1500 feet or longer, determine sublots and random test locations as specified in B.4.1.1.
- (4) If a side road, crossover, turn lane, or ramp is less than 1500 feet long, determine sublots using a maximum of 750 tons per sublot and perform the number of random tests as specified in Table 2.

Side Roads, Turn Lanes, Crossovers, Ramps, Roundabouts: Sublot/Layer tonnage	Minimum Number of Tests Required
25 to 100 tons	1
101 to 250 tons	3
251 to 500 tons	5
501 to 750 tons	7
Table 2	

**B.4.2 Pavement Density Determination B.4.2.1 Mainline Traffic Lanes and Appurtenances** 

- (1) Calculate the average sublot densities using the individual test results in each sublot.
- (2) If all sublot averages are no more than one percent below the target density, calculate the daily lot density by averaging the results of each random QC test taken on that day's material.
- (3) If any sublot average is more than one percent below the target density, do not include the individual test results from that sublot when computing the lot average density and remove that sublot's tonnage from the daily quantity for incentive. The tonnage from any such sublot is subject to disincentive pay according to standard spec 460.5.2.2.

#### **B.4.2.2 Mainline Shoulders**

#### **B.4.2.2.1 Width Greater Than 5 Feet**

(1) Determine the pavement density as specified in B.4.2.1.

#### B.4.2.2.2 Width of 5 Feet or Less

- (1) If all sublot test results are no more than 3.0 percent below the minimum target density, calculate the daily lot density by averaging all individual test results for the day.
- (2) If a sublot test result is more than 3.0 percent below the target density, the engineer may require the unacceptable material to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine the limits of the unacceptable material according to B.4.3.

# B.4.2.3 Side Roads, Crossovers, Turn Lanes, Ramps, and Roundabouts

(1) Determine the pavement density as specified in B.4.2.1.

#### **B.4.2.4 Documentation**

(1) Document QC density test data as specified in CMM 8.15. Provide the engineer with the data for each lot within 24 hours of completing the QC testing for the lot.

# **B.4.3 Corrective Action**

- Notify the engineer immediately when an individual test is more than 3.0 percent below the specified minimum in standard spec 460.3.3.1. Investigate and determine the cause of the unacceptable test result.
- (2) The engineer may require unacceptable material specified in B.4.3(1) to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine limits of the unacceptable area by measuring density of the layer at 50-foot increments both ahead and behind the point of unacceptable density and at the same offset as the original test site. Continue testing at 50-foot increments until a point of acceptable density is found as specified in standard spec 460.5.2.2(1). Removal and replacement of material may be required if extended testing is in a previously accepted sublot. Testing in a previously accepted sublot will not be used to recalculate a new lot density.
- (3) Compute unacceptable pavement area using the product of the longitudinal limits of the unacceptable density and the full sublot width within the traffic lanes or shoulders.
- (4) Retesting and acceptance of replaced pavement will be according to standard spec 105.3.
- (5) Tests indicating density more than 3.0 percent below the specified minimum, and further tests taken to determine the limits of unacceptable area, are excluded from the computations of the sublot and lot densities.
- (6) If 2 consecutive sublot averages within the same paving pass and same target density are more than one percent below the specified target density, notify the engineer and take necessary

corrective action. Document the locations of such sublots and the corrective action that was taken.

# B.5 Department Testing B.5.1 Verification Testing

- (1) The department will have a HTCP certified technician, or ACT working under a certified technician, perform verification testing. The department will test randomly at locations independent of the contractor's QC work. The department will perform verification testing at a minimum frequency of 10 percent of the sublots and a minimum of one sublot per mix design. The sublots selected will be within the active work zone. The contractor will supply the necessary traffic control for the department's testing activities.
- (2) The QV tester will test each selected sublot using the same testing requirements and frequencies as the QC tester.
- (3) If the verification sublot average is not more than one percent below the specified minimum target density, use the QC tests for acceptance.
- (4) If the verification sublot average is more than one percent below the specified target density, compare the QC and QV sublot averages. If the QV sublot average is within 1.0 lb/ft³ of the QC sublot average, use the QC tests for acceptance.
- (5) If the first QV/QC sublot average comparison shows a difference of more than 1.0 lb/ft³ each tester will perform an additional set of tests within that sublot. Combine the additional tests with the original set of tests to compute a new sublot average for each tester. If the new QV and QC sublot averages compare to within 1.0 lb/ft³, use the original QC tests for acceptance.
- (6) If the QV and QC sublot averages differ by more than 1.0 lb/ft³ after a second set of tests, resolve the difference with dispute resolution specified in B.6. The engineer will notify the contractor immediately when density deficiencies or testing precision exceeding the allowable differences are observed.

#### **B.5.2 Independent Assurance Testing**

(1) Independent assurance is unbiased testing the department performs to evaluate the department's verification and the contractor's QC sampling and testing including personnel qualifications, procedures, and equipment. The department will perform the independent assurance review according to the department's independent assurance program.

#### **B.6 Dispute Resolution**

- The testers may perform investigation in the work zone by analyzing the testing, calculation, and documentation procedures. The testers may perform gauge comparison according to B.3.2.1.
- (2) The testers may use comparison monitoring according to B.3.2.2 to determine if one of the gauges is out of tolerance. If a gauge is found to be out of tolerance with its reference value, remove the gauge from the project and use the other gauge's test results for acceptance.
- (3) If the testing discrepancy cannot be identified, the contractor may elect to accept the QV sublot density test results or retesting of the sublot in dispute within 48 hours of paving. Traffic control costs will be split between the department and the contractor.
- (4) If investigation finds that both gauges are in error, the contractor and engineer will reach a decision on resolution through mutual agreement.

#### **B.7 Acceptance**

(1) The department will not accept QMP HMA Pavement Nuclear Density if a non-compared gauge is used for contractor QC tests.

- C (Vacant)
- D (Vacant)

# **E** Payment

# **E.1 QMP Testing**

(1) Costs for all sampling, testing, and documentation required under this special provision are incidental to the work. If the contractor fails to perform the work required under this special provision, the department may reduce the contractor's pay. The department will administer pay reduction under the Non-performance of QMP administrative item.

# **E.2 Disincentive for HMA Pavement Density**

(1) The department will administer density disincentives according to standard spec 460.5.2.2.

# **E.3 Incentive for HMA Pavement Density**

(1) The department will administer density incentives according to standard spec 460.5.2.3.

stp-460-020 (20161130)

#### Schedule of Items

Attached, dated November 7, 2017, are the revised Schedule of Items Page 7

#### **Plan Sheets**

The following  $8\frac{1}{2}$  x 11-inch sheets are attached and made part of the plans for this proposal: Revised: 26 and 27.

**END OF ADDENDUM** 

	က				Addendum No. 01	<u> </u>
CACE  O  REMARKS	6 WEIGH SCALE RAMP SHOULDERS	REMARKS * 38' WIDE - MILLED @ 4.5" AND 2" DEPTH ON MAINLINE INTERSTATE WEIGH SCALE RAMP WEIGH SCALE RAMP WEIGH SCALE RAMP WEIGH SCALE RAMP		IRS AND MARKERS 204.0180 FACH REMARKS	ID 1020-03-81 Revised Sheet 26 November 7, 2017	SHEET: 26
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# **Wisconsin Department of Transportation**

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# **Proposal Schedule of Items**

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**Proposal ID:** 20171114043 **Project(s):** 1020-03-81

Federal ID(s): WISC 2017621

**SECTION:** 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0188	SPV.0170	386.000		
	Special 01. Reheating HMA Pavement Longitudinal Joints Special	STA		·
0190	SPV.0180	640.000		
	Special 01. Concrete Pavement Repair Non Doweled Special	SY		·
0200	450.4000	6,200.000		
	HMA Cold Weather Paving	TON	·	·

**Section**: 0001 **Total**: \_\_\_\_\_.

Total Bid: \_\_\_\_\_.\_\_.