**Special Provisions**

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STSP’S Revised June 7, 2016

**SPECIAL PROVISIONS**

1. General.

Perform the work under this construction contract for Project 8160-03-70 Ashland – Bayfield, Superior Avenue to 7th Street, STH 13, Bayfield County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2017 Edition, as published by the department, and these special provisions.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.

100-005 (20160607)

1. Scope of Work.

The work under this contract shall consist of milling asphaltic surface, full depth shoulder milling, base aggregate items for preparing shoulders and finishing shoulders, HMA pavement, guardrail component updates, permanent signing and pavement marking replacements, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

1. Prosecution and Progress.

Begin work within ten calendar days after the engineer issues a written notice to do so.

Provide the time frame for construction of the project within the 2017 construction season to the engineer in writing within a month after executing the contract but at least 14 calendar days before the preconstruction conference. Assure that the time frame is consistent with the contract completion time. Upon approval, the engineer will issue the notice to proceed within ten calendar days before the beginning of the approved time frame.

To revise the time frame, submit a written request to the engineer at least two weeks before the beginning of the intended time frame. The engineer will approve or deny that request based on the conditions cited in the request and its effect on the department’s scheduled resources.

Submit a schedule and description of clearing operations with the ECIP 14 days prior to any clearing operations. The department will determine, based on schedule and scope of work, what additional erosion control measures shall be implemented prior to the start of clearing operations, and list those additional measures in the ECIP.

Contractor must begin paving within ten calendar days of starting milling operations.

Regarding paving, temporary pavement marking and pavement marking operations: The center joint of each layer of pavement must match the existing centerline of the highway. Temporary centerline pavement marking must be within 6 inches of the existing centerline of the highway. In constructing the surface layer of pavement, work on each side of the centerline must be matched up at the end of each day.

If a material source pit and/or waste pit used for the project is located within the exterior boundaries of the Red Cliff Reservation, the following conditions apply: The pit property must first be cleared for archeological concerns by having an archeological study completed, and this work must be coordinated with the Red Cliff Tribe. If the contractor wishes to dispose of surplus or unsuitable material at a disposal site within the exterior boundaries of the Red Cliff Indian Reservation, regardless of property ownership, the contractor must first obtain approval, get any permits as applicable and get land-use conditions from the Red Cliff Natural Resource Department. The contractor shall contact Jeff Benton at (715) 779-3700 to start the process. The process includes a thorough review of the proposed site by Red Cliff Natural Resource staff, so contact must be made far enough in advance to acceptably complete all requirements prior to using the disposal site. All associated costs and coordination, including those for arch studies, are the responsibility of the contractor.

Contact local bicycle groups before project begins to notify them of start date and approximate schedule. They would especially be interested in milling timing and culvert replacements. Consider inviting a representative to the Preconstruction Meeting. Contact Tom Hart at (715) 779-3132, Joe Groshek (715) 373-2114 joegroshek@centurytel.net and John Murphy (715) 779-3283 or (715) 209-8169 mobile murph007swat@gmail.com to relay this information.

**Little Brown Bat**

Little Brown Bats have the potential to inhabit the project limits. Snags or dying trees shall be cut prior to June 1st, or after August 15th.

1. Traffic.

STH 13 and connecting side roads will be open to two-way traffic during night time hours, and during weekend hours from Friday at 12:00 PM to Monday at 6:00 AM.

The contractor may restrict traffic to a single lane up to one mile in length within construction work zones. This lane shall be kept free of all equipment and materials, and the minimum width shall be 12 feet. Multiple single lane restrictions will be allowed on STH 13 as long as there is at least 4 miles between lane closures. Single lane restrictions will only be allowed during daylight hours from Monday at 6:00 AM until Friday at 12:00 PM each week, and will be controlled by flaggers. Flagger operations shall be in accordance with the Standard Detail Drawing “Traffic Control for Lane Closure (Suitable for Moving Operations)” and the ATSSA Flagger Handbook. The moving work zone operations shall cause no more than a 15 minute delay for the entire project.

Coordinate schedules, including flagging operations, with local emergency services to assure that emergency personnel are aware of local roadways affected by the construction work.

Maintain a driving surface of asphaltic pavement on all segments of STH 13 within the project limits open to through traffic. During non-working hours, STH 13 and all connecting side roads shall be in a condition to safely handle two lanes of traffic.

Maintain access to all residential, field, and commercial entrances at all times, unless written permission can be obtained (by the contractor) from the property owner 48 hours in advance of closing the access.

No equipment or materials shall be parked within 18 feet of the edge of the shoulder unless approved by the engineer. Equipment or material not being used during the actual performance of work shall not be parked or stored within 30 feet of the edge of traveled way.

Furnish the engineer with a traffic control plan for the one-lane operation. The contractor will not implement the one-lane operation without an approval from the engineer.

**Wisconsin Lane Closure System Advance Notification.**

Provide the following advance notification to the engineer for incorporation into the Wisconsin Lane Closure System (LCS).

**TABLE 108-1 CLOSURE TYPE AND REQUIRED MINIMUM ADVANCE NOTIFICATION**

|  |  |
| --- | --- |
| Closure type with height, weight, or width restrictions (available width, all lanes in one direction < 16’) | MINIMUM NOTIFICATION |
| Lane and shoulder closures | 7 calendar days |
| Full roadway closures | 7 calendar days |
| Ramp closures | 7 calendar days |
| Full ramp closures | 7 calendar days |
| Detours | 7 calendar days |
|  |
| Closure type without height, weight, or width restrictions (available width, all lanes in one direction >16’) | MINIMUM NOTIFICATION |
| Lane and shoulder closures | 3 business days |
| System and service ramp closures | 3 business days |
| Modifying all closure types | 3 business days |

Discuss LCS completion dates and provide changes in the schedule to the engineer at weekly project meetings in order to manage closures nearing their completion date.

1. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 13 traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday/special event periods:

* From noon Friday, June 30, 2017 to 6:00 AM Wednesday, July 5, 2017;
* From noon Friday, September 1, 2017 to 6:00 AM Tuesday, September 5, 2017;
* From 6:00 PM Wednesday, October 4, 2017 to 6:00 AM Monday, October 9, 2017 for Bayfield Apple Festival;

107-005 (20050502)

1. Utilities.

This contract comes under the provision of Administrative Rule Trans 220.

107-065 (20080501)

Underground and overhead utility facilities are located within the project limits. Coordinate construction activities with a call to Diggers Hotline or a direct call to the utilities that have facilities in the area as required by state statutes. Use caution to ensure the integrity of underground facilities and maintain code clearances from overhead facilities at all times.

**Bayfield Electric Cooperative** has underground electrical crossings on STH 13 near Station 253+10'N' and near Station 313+25'N'. There is overhead electric on the west side of STH 13 to about Station 355+40'N' where it crosses STH 13 and turns north and east away from the highway. There are several overhead crossings between the Onion River and South Kennedy Road. No conflicts are anticipated.

**CenturyLink** has underground fiber optic and copper cables along the entire project corridor, and many facilities are located in the old railroad grade east of STH 13 right-of-way. There is an overhead crossing at Station 456+90'N'. No conflicts are anticipated.

At guardrail component installations where a CenturyLink facility is present, coordinate with utility representative at least 4 working days prior to digging or post driving within 10 feet of cable, so a representative can be on site.

**Charter Communications** has underground fiber optic, underground coaxial cables, and overhead fiber optic and coaxial cables on Xcel Energy poles in various locations along the project corridor. Underground fiber optic cable follows along the west side of STH 13 from Station 148+00'N' to a crossing at Station 202+40'N', and continues along the easterly side of STH 13 to approximately Station 575+25'N'. At this point, the fiber optic and coaxial cables cross STH 13 on Xcel Energy poles and remain overhead along westerly side of STH 13 to the end of the project.

There is an underground coaxial cable crossing STH 13 near Station 500+10'N' and continuing along the westerly side of STH 13 to a crossing near Station 512+75'N'. The coaxial cable then runs parallel with the fiber optic line to the crossing on Xcel Energy poles described above and continues overhead to the end of the project. No conflicts are anticipated.

At guardrail component installations where a Charter facility is present, coordinate with utility representative at least 4 working days prior to digging or post driving within 10 feet of cable, so a representative can be on site for a 'fiber watch'.

**City of Bayfield Public Works** and Pikes Bay Sanitary District have formed a sanitary commission named the Greater Bayfield Wastewater Treatment Plant Commission. The Greater Bayfield Wastewater Treatment Plant Commission is the owner of a 12-inch sanitary sewer force main along the westerly project corridor from Old San Road to 9th Street. This sewer main crosses STH 13 near Old San Road. The City has an 8-inch sanitary and a 6-inch water main along the north side of STH 13 from Payne Avenue (Old Military Rd) to the end of the project. No conflicts are anticipated.

**Northern Natural Gas Company** has a 3-inch high pressure steel pipeline crossing STH 13 approximately 400 feet north of CTH J near Station 569+90'N', and follows along the west side of project corridor from CTH J south about 1000 feet. The pipeline is approximately five feet deep where it crosses under STH 13. No conflicts are anticipated.

**Norvado** has an underground fiber optic cable on the west side of STH 13 from approximately Station 174+30 and extending northward. It crosses STH 13 near Station 345+00'N', and follows along the east side of STH 13 to Station 496+20'N' where the cable crosses STH 13 and follows along the west side of STH 13. At Station 595+50'N' the fiber optic cable extends northward on the east side of 9th Street.

Norvado plans to lower existing fiber optic cable to 7 feet below grade from Station 206+50-207+25 LT prior to construction. This relocation will remove a conflict with a proposed ditch cut. No other conflicts are anticipated.

At guardrail component installations where a Norvado facility is present, coordinate with utility representative at least 1 week prior to digging or post driving within 10 feet of cable, so a representative can be on site.

**Pikes Bay Sanitary District (PBSD)** has sanitary facilities along the project corridor from Port Superior Road to 7th Street in Bayfield. PBSD has three sanitary force mains crossing STH 13 at Station 565+40'N', 575+60'N', and 584+75'N'. No conflicts are anticipated.

**Washburn Municipal Water & Sewer Utility** has a 8-inch water main in the project corridor near the intersection of STH 13 and Superior Avenue. There is also a 10-inch sanitary sewer line that connects to 8-inch and 4-inch lines in separate manholes near the same intersection. No conflicts are anticipated.

**Xcel Energy** (electric distribution) has overhead electric lines from Superior Avenue to Howell Road primarily on easterly side of STH 13 with several overhead crossings. There are overhead lines on westerly side of STH 13 from just north of Ski Hill Road to 7th Street with several overhead crossings. There are underground electric lines crossing STH 13 at approximate Stations 449+00'N' and 461+45'N'. No conflicts are anticipated, but coordinate with utility representative 14 days in advance of digging or post driving at guardrail component installations.

**Xcel Energy** (gas) has two gas mains on the easterly side of STH 13 from 9th Street in Bayfield to a substation near Station 570+50'N' RT. A single main continues from substation to approximate Station 565+40'N' where it crosses to the westerly side of STH 13. The main continues southerly to approximate Station 474+70'N' where it crosses and remains on easterly side of STH 13 to approximate Station 451+60'N' where it terminates. In Bayfield, there is a gas main on easterly side between 9th Street and 7th Street. No conflicts are anticipated, but coordinate with utility representative 14 days in advance of digging or post driving at guardrail component installations. Do not park heavy equipment over gas lines.

1. Environmental Concerns.

*Supplement subsection 107.20 with the following:*

Install silt fence prior to construction, and install it at the toe of proposed or existing slopes when working adjacent to wetland areas and waterways. When slope or channel disturbance occurs, take immediate action in placement of any required topsoil, fertilizer, seed, mulch and erosion mat in order to minimize the period of exposure to possible erosion.

An eagle nest was observed in the vicinity of proposed work at Station 221+41'N' and at Station 360+27'N'. Project construction management personnel will monitor resident eagles by observing the eagles when construction activities are being performed within a 330-ft radius of the nest from April 1 to June 1. If the nest is within 330 feet of the road, no staging of equipment or idling machinery is permitted within this buffer zone. If eggs or chicks are present, no work will be conducted until one hour after sunrise, and work must cease one hour before sunset until April 15. If eaglets are present, no work will be conducted in the buffer zone during the fledgling period of June 1 through June 30.

The department will apply for a United States Fish and Wildlife Service permit.

1. Sensitive Work Zones.

One recorded archaeology site and one historical site have been identified within the project corridor.

Site 47BA0392 (Pikes Quarry & Dock) is an archaeology site located near Whiting Road and on both sides of STH 13. It is expected that this site will be avoided during construction. However, if there is any ground disturbance beyond the existing toe of slope to the right (southeast) of the highway or beyond the ditch to the left (northwest) of the highway, then a department supplied qualified archaeologist must monitor the construction-related ground disturbing activities. Provide notice to the Bureau of Technical Services - Environmental Process and Document Section (BTS-EPDS), contact Jim Becker (608) 261-0137 or Lynn Cloud (608) 266-0099, at least two weeks before commencement of any ground disturbing activities that requires an archaeologist.

Bayfield Historic District is on the National Registry of Historic Places, and is located within the project's northern terminus. It has been determined that an Architecture/History survey is not needed and no historic properties will be affected. Activities within the historic district are limited to in-kind mill and replacement of pavement and no right of way will be acquired.

None of these recorded sites shall be used for borrow or waste disposal. The site areas not currently capped by asphalt/concrete shall not be used for the staging of personnel, equipment and/or supplies.

1. Information to Bidders, U.S. Army Corps of Engineers Section 404 Permit.

The department has obtained a U.S. Army Corps of Engineers Section 404 permit. Comply with the requirements of the permit in addition to requirements of the special provisions. A copy of the permit is available from the regional office by contacting Amy Adrihan at 715-392-7972.

107-054 (20080901)

1. Construction Over or Adjacent to Navigable Waters.

*Add the following to standard spec 107.19:*

The South Fork and North Fork Sioux River and Onion River are classified as navigable waterways.

107-060 (20150630)

1. Removing Asphaltic Surface Butt Joints.

This special provision describes removing asphaltic surface butt joints in accordance to the pertinent requirements of section 204 of the standard specifications and as hereinafter provided.

For side roads only: If butt joints are not milled transversely across the pavement, saw cuts will be required and asphaltic material must be removed neatly to the proper depth up to the sawed edge; the department will consider this work incidental to bid item 204.0115 “Removing Asphaltic Surface Butt Joints”.

1. Grading, Shaping and Finishing Intersection 01. S. Kennedy Rd, Item 205.9015.S.

**A Description**

This special provision describes excavating, filling, grading, shaping, compacting, and finishing as necessary to construct the intersection as shown on the plans and in accordance to the pertinent requirements of the standard specifications and as hereinafter provided.

**B (Vacant)**

**C Construction**

Dispose of all surplus and unsuitable material in accordance to standard spec 205.3.12.

**D Measurement**

The department will measure Grading, Shaping and Finishing Intersection (Location) as a single complete unit of work.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 205.9015.S | Grading, Shaping and Finishing Intersection 01.S. Kennedy Rd | LS |

Payment is full compensation for all excavating, grading, shaping, and compacting; and for providing and placing fill, topsoil, fertilizer, seed, and mulch.

The base course and surfacing items will be measured and paid for under the pertinent items provided in the contract.

205-015 (20060512)

1. QMP Base Aggregate.

**A Description**

**A.1 General**

(1) This special provision describes contractor quality control (QC) sampling and testing for base aggregates, documenting those test results, and documenting related production and placement process changes. This special provision also describes department quality verification (QV), independent assurance (IA), and dispute resolution.

(2) Conform to standard spec 301, standard spec 305, and standard spec 310 as modified here in this special provision. Apply this special provision to material placed under all of the Base Aggregate Dense and Base Aggregate Open Graded bid items, except do not apply this special provision to material classified as reclaimed asphaltic pavement placed under the Base Aggregate Dense bid items.

(3) Do not apply this special provision to material placed under the Aggregate Detours, Salvaged Asphaltic Pavement Base, Breaker Run, Select Crushed, Pit Run, Subbase, or Riprap bid items.

(4) Provide and maintain a quality control program, defined as all activities related to and documentation of the following:

1. Production and placement control and inspection.

2. Material sampling and testing.

(5) Chapter 8 of the department’s construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes required sampling and testing procedures. The contractor may obtain the CMM from the department’s web site at:

 <http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/default.aspx>

**A.2 Contractor Testing for Small Quantities**

(1) The department defines a small quantity, for each individual Base Aggregate bid item, as a plan quantity of 9000 tons or less of material as shown in the schedule of items under that bid item.

(2) The requirements under this special provision apply equally to a small quantity for an individual bid item except as follows:

1. The contractor need not submit a full quality control plan but shall provide an organizational chart to the engineer including names, telephone numbers, and current certifications of all persons involved in the quality control program for material under affected bid items.

2. Divide the aggregate into uniformly sized sublots for testing as follows:

|  |  |
| --- | --- |
| **Plan Quantity** | **Minimum Required Testing** |
| ≤ 1500 tons | One test from production, load-out, or placement at the contractor’s option[1] |
| > 1500 tons and ≤ 6000 tons | Two tests of the same type, either from production, load-out, or placement at the contractor’s option[1] |
| > 6000 tons and ≤ 9000 tons | Three placement tests[2] [3] |

[1] If using production tests for acceptance, submit test results to the engineer for review prior to incorporating the material into the work. Production test results are valid for a period of 3 years.

[2] For 3-inch material, obtain samples at load-out.

[3] If the actual quantity overruns 9000 tons, create overrun sublots to test at a rate of one additional placement test for each 3000 tons, or fraction of 3000 tons, of overrun.

3. No control charts are required. Submit aggregate load-out and placement test results to the engineer within one business day of obtaining the sample. Assure that all properties are within the limits specified for each test.

4. Department verification testing is optional for quantities of 6000 tons or less.

(3) Material represented by a sublot with any property outside the specification limits is nonconforming. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

**B Materials**

**B.1 Quality Control Plan**

(1) Submit a comprehensive written quality control plan to the engineer at or before the pre‑construction meeting. Do not place base before the engineer reviews and comments on the plan. Construct the project as that plan provides.

(2) Do not change the quality control plan without the engineer’s review. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in each of the contractor’s laboratories as changes are adopted. Ensure that the plan provides the following elements:

1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.

2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication means that will be used, and action time frames.

3. A list of source and processing locations, section and quarter descriptions, for all aggregate materials requiring QC testing.

4. Test results for wear, sodium sulfate soundness, freeze/thaw soundness, and plasticity index of all aggregates requiring QC testing. Obtain this information from the region materials unit or from the engineer.

5. Descriptions of stockpiling and hauling methods.

6. Locations of the QC laboratory, retained sample storage, and where control charts and other documentation is posted.

7. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.

**B.2 Personnel**

(1) Have personnel certified under the department’s highway technician certification program (HTCP) perform sampling, testing, and documentation as follows:

|  |  |
| --- | --- |
| **Required Certification Level:** | **Sampling or Testing Roles:** |
| Aggregate Technician IPPAggregate Sampling TechnicianAggregate Assistant Certified Technician (ACT-AGG) | Aggregate Sampling[1] |
| Aggregate Technician IPPAggregate Assistant Certified Technician (ACT-AGG) | Aggregate Gradation Testing, Aggregate Fractured Particle Testing, Aggregate Liquid Limit and Plasticity Index Testing |

[1] Plant personnel under the direct observation of an aggregate technician certified at level one or higher may operate equipment to obtain samples.

(2) 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.3 Laboratory**

(1) Perform QC testing at a department-qualified laboratory. Obtain information on the Wisconsin laboratory qualification program from:

Materials Management Section

3502 Kinsman Blvd.

Madison, WI 53704

Telephone: (608) 246-5388

<http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/qual-labs.aspx>

**B.4 Quality Control Documentation**

**B.4.1 General**

(1) Submit base aggregate placement documentation to the engineer within 10 business days after completing base placement. Ensure that the submittal is complete, neatly organized, and includes applicable project records and control charts.

**B.4.2 Records**

(1) Document all placement observations, inspection records, and control adjustments daily in a permanent field record. Also include all test results in the project records. Provide test results to the engineer within 6 hours after obtaining a sample. For 3-inch base, extend this 6-hour limit to 24 hours. Post or distribute tabulated results using a method mutually agreeable to the engineer and contractor.

**B.4.3 Control Charts**

(1) Plot gradation and fracture on the appropriate control chart as soon as test results are available. Format control charts according to CMM 8.30. Include the project number on base placement control charts. Maintain separate control charts for each base aggregate size, source or classification, and type.

(2) Provide control charts to the engineer within 6 hours after obtaining a sample. For 3‑inch base, extend this 6-hour limit to 24 hours. Post or distribute charts using a method mutually agreeable to the engineer and contractor. Update control charts daily to include the following:

1. Contractor individual QC tests.

2. Department QV tests.

3. Department IA tests.

4. Four-point running average of the QC tests.

(3) Except as specified under B.8.2.1 for nonconforming QV tests, include only QC tests in the running average. The contractor may plot process control or informational tests on control charts, but do not include these tests, conforming QV tests, or IA tests in the running average.

**B.5 Contractor Testing**

(1) Test gradation, fracture, liquid limit and plasticity index during placement for each base aggregate size, source or classification, and type.

(2) Test gradation once per 3000 tons of material placed. Determine random sample locations and provide those sample locations to the engineer. Obtain samples after the material has been bladed, mixed, and shaped but before compacting; except collect 3‑inch samples from the stockpile at load-out. Do not sample from material used to maintain local traffic or from areas of temporary base that will not have an overlying pavement. On days when placing only material used to maintain local traffic or only temporary base that will not have an overlying pavement, no placement testing is required.

(3) Split each contractor QC sample and identify it according to CMM 8.30. Retain the split for 7 calendar days in a dry, protected location. If requested for department comparison testing, deliver the split to the engineer within one business day.

(4) The engineer may require additional sampling and testing to evaluate suspect material or the technician’s sampling and testing procedures.

(5) Test fracture for each gradation test until the fracture running average is above the lower warning limit. Subsequently, the contractor may reduce the frequency to one test per 10 gradation tests if the fracture running average remains above the warning limit.

(6) Test the liquid limit and plasticity index for the first gradation test. Subsequently, test the liquid limit and plasticity index a minimum of once per 10 gradation tests.

**B.6 Test Methods**

**B.6.1 Gradation**

(1) Test gradation using a washed analysis conforming to the following as modified in CMM 8.60:

 Gradation AASHTO T 27

 Material finer than the No. 200 sieve AASHTO T 11

(2) For 3-inch base, if 3 consecutive running average points for the percent passing the No. 200 sieve are 8.5 percent or less, the contractor may use an unwashed analysis. Wash at least one sample out of 10. If a single running average for the percent passing the No. 200 sieve exceeds 8.5 percent, resume washed analyses until 3 consecutive running average points are again 8.5 percent passing or less.

(3) Maintain a separate control chart for each sieve size specified in standard spec 305 or standard spec 310 for each base aggregate size, source or classification, and type. Set control and warning limits based on the standard specification gradation limits as follows:

1. Control limits are at the upper and lower specification limits.

2. There are no upper warning limits for sieves allowing 100 percent passing and no lower control limits for sieves allowing 0 percent passing.

3. Dense graded warning limits, except for the No. 200 sieve, are 2 percent within the upper and lower control limits. Warning limits for the No. 200 sieve are set 0.5 percent within the upper and lower control limits.

4. Open graded warning limits for the 1-inch, 3/8-inch, and No. 4 sieves are 2 percent within the upper and lower control limits. Upper warning limits for the No. 10, No. 40, and No. 200 sieves are 1 percent inside the upper control limit.

**B.6.2 Fracture**

(1) Test fracture conforming to CMM 8.60. The engineer will waive fractured particle testing on quarried stone.

(2) Maintain a separate fracture control chart for each base aggregate size, source or classification, and type. Set the lower control limit at the contract specification limit, either specified in another special provision or in table 301-2 of standard spec 301.2.4.5. Set the lower warning limit 2 percent above the lower control limit. There are no upper limits.

**B.6.3 Liquid Limit and Plasticity**

(1) Test the liquid limit and plasticity according to AASHTO T 89 and T 90.

(2) Ensure the material conforms to the limits specified in standard spec table 301-2.

**B.7 Corrective Action**

**B.7.1 General**

(1) Consider corrective action when the running average trends toward a warning limit. Take corrective action if an individual test exceeds the contract specification limit. Document all corrective actions both in the project records and on the appropriate control chart.

**B.7.2 Placement Corrective Action**

(1) Do not blend additional material on the roadbed to correct gradation problems.

(2) Notify the engineer whenever the running average exceeds a warning limit. When two consecutive running averages exceed a warning limit, the engineer and contractor will discuss appropriate corrective action. Perform the engineer’s recommended corrective action and increase the testing frequency as follows:

1. For gradation, increase the QC testing frequency to at least one randomly sampled test per 1000 tons placed.

2. For fracture, increase the QC testing frequency to at least one test per gradation test.

(3) If corrective action improves the property in question such that the running average after 4 additional tests is within the warning limits, the contractor may return to the testing frequency specified in B.5.3. If corrective action does not improve the property in question such that the running average after 4 additional individual tests is still in the warning band, repeat the steps outlined above starting with engineer notification.

(4) If the running average exceeds a control limit, material starting from the first running average exceeding the control limit and ending at the first subsequent running average inside the control limit is nonconforming and subject to pay reduction.

(5) For individual test results significantly outside the control limits, notify the engineer, stop placing base, and suspend other activities that may affect the area in question. The engineer and contractor will jointly review data, data reduction, and data analysis; evaluate sampling and testing procedures; and perform additional testing as required to determine the extent of potentially unacceptable material. The engineer may direct the contractor to remove and replace that material. Individual test results are significantly outside the control limits if meeting one or more of the following criteria:

1. A gradation control limit for the No. 200 sieve is exceeded by more than 3.0 percent.

2. A gradation control limit for any sieve, except the No. 200, is exceeded by more than 5.0 percent.

3. The fracture control limit is exceeded by more than 10.0 percent.

**B.8 Department Testing**

**B.8.1 General**

(1) The department will conduct verification testing to validate the quality of the product and independent assurance testing to evaluate the sampling and testing. The department will provide the contractor with a listing of names and telephone numbers of all QV and IA personnel for the project, and provide test results to the contractor within two business days after the department obtains the sample.

**B.8.2 Verification Testing**

**B.8.2.1 General**

(1) The department will have an HTCP technician, or ACT working under a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified in B.2 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.

(2) The department will conduct QV tests of each base aggregate size, source or classification, and type during placement conforming to the following:

1. One non-random test on the first day of placement.

2. At least one random test per 30,000 tons, or fraction of 30,000 tons, placed.

(3) The department will sample randomly, at locations independent of the contractor’s QC work, collecting one sample at each QV location. The department will collect QV samples after the material has been bladed, mixed, and shaped but before compacting; except, for 3-inch aggregates, the department will collect samples from the stockpile at load-out. The department will split each sample, test half for QV, and retain half.

(4) The department will conduct QV tests in a separate laboratory and with separate equipment from the contractor’s QC tests. The department will use the same methods specified for QC testing.

(5) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to the specification, the department will take no further action. If QV test results are nonconforming, add the QV to the QC test results as if it were an additional QC test.

**B.8.3 Independent Assurance**

(1) Independence assurance is unbiased testing the department performs to evaluate the department’s QV and the contractor’s QC sampling and testing including personnel qualifications, procedures, and equipment. The department will perform an IA review according to the department’s independent assurance program. That review may include one or more of the following:

1. Split sample testing.

2. Proficiency sample testing.

3. Witnessing sampling and testing.

4. Test equipment calibration checks.

5. Reviewing required worksheets and control charts.

6. Requesting that testing personnel perform additional sampling and testing.

(2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in B.9.

**B.9 Dispute Resolution**

(1) The engineer and contractor should make every effort to avoid conflict. If a dispute between some aspect of the contractor’s and the engineer’s testing program does occur, seek a solution mutually agreeable to the project personnel. The department and contractor may review the data, examine data reduction and analysis methods, evaluate sampling and testing procedures, and perform additional testing. Use ASTM E 178 to evaluate potential statistically outlying data.

(2) Production test results, and results from other process control testing, may be considered when resolving a dispute.

(3) If the project personnel cannot resolve a dispute, and the dispute affects payment or could result in incorporating non-conforming product, the department will use third party testing to resolve the dispute. The department’s central office laboratory, or a mutually agreed on independent testing laboratory, will provide this testing. The engineer and contractor will abide by the results of the third party tests. The party in error will pay service charges incurred for testing by an independent laboratory. The department may use third party test results to evaluate the quality of questionable materials and determine the appropriate payment. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

**C (Vacant)**

**D (Vacant)**

**E Payment**

(1) Costs for all sampling, testing, and documentation required under this special provision are incidental to this 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.

(2) For material represented by a running average exceeding a control limit, the department will reduce pay by 10 percent of the contract price for the affected Base Aggregate bid items listed in subsection A. The department will administer pay reduction under the Nonconforming QMP Base Aggregate Gradation or Nonconforming QMP Base Aggregate Fracture Administrative items. The department will determine the quantity of nonconforming material as specified in B.7.2.

301-010 (20151210)

1. Reheating HMA Pavement Longitudinal Joints, Item 460.4110.S.

**A Description**

This special provision describes reheating the abutting edge of the previously compacted layer in the adjacent lane while paving mainline asphalt pavements.

**B (Vacant)**

**C Construction**

**C.1 Equipment**

Provide a self-contained heating unit that heats by convection only. Do not use forced air to enhance the flame. Provide a fireproof barrier between the flame and the heater’s fuel source. The heater must produce a uniform distribution of heat within the heat box. Provide automatic controls to regulate the heater output and shutoff the heater when the paver stops or the heater control system loses power.

Mount the heater on the paver inside the paver’s automatic leveling device.

**C.2 Reheating Joints**

Evenly reheat at least an 8 inch (200 mm) wide strip of the previously compacted layer in the adjacent lane as follows:

* Reheat the joint to within 60 degrees F (15 degrees C) of the mix temperature at the paver auger. Measure joint temperature immediately behind the heater.

The engineer may allow the required joint reheat temperatures to be cooler than specified to adjust for weather, wind, and other field conditions. Coordinate the heater output and paver speed to achieve the required joint reheat temperature without visible smoke emission.

**D Measurement**

The department will measure Reheating HMA Pavement Longitudinal Joints by the linear foot acceptably completed as measured along each joint for each layer of asphalt placed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 460.4110.S | Reheating HMA Pavement Longitudinal Joints | LF |

Payment is full compensation for all the work required under this bid item.

460-015 (20140630)

1. 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 Correlation of Nuclear Gauges**

**B.3.2.1 Correlation 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 correlation process. The section does not have to be the same mix design.

(2) Correlate the 2 or more gauges used for density measurement (QC, QV). The QC and QV gauge operators will perform the correlation 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/ft3. 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/ft3 and repeat correlation process from B.3.2.1 (2).

(5) Furnish one of the QC gauges passing the allowable correlation tolerances to perform density testing on the project.

**B.3.2.2 Correlation Monitoring**

(1) After performing the gauge correlation 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 correlation 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/ft3 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/ft3 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 pre-determined 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 |

**Table 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**

(1) 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**

(1) The testers may perform investigation in the work zone by analyzing the testing, calculation, and documentation procedures. The testers may perform gauge correlation according to B.3.2.1.

(2) The testers may use correlation 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-correlated 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) Delete standard spec 460.5.2.3.

(2) If the lot density is greater than the minimum specified in standard spec table 460-3 and all individual air voids test results for that mixture are within +1.0 percent or -0.5 percent of the design target in standard spec table 460-2, the department will adjust pay for that lot as follows:

|  |  |
| --- | --- |
| **Percent Lot Density Above Minimum** | **Pay Adjustment Per Ton** |
| From -0.4 to 1.0 inclusive | $0 |
| From 1.1 to 1.8 inclusive | $0.40 |
| More than 1.8 | $0.80 |

(3) The department will adjust pay under the Incentive Density HMA Pavement bid item. Adjustment under this item is not limited, either up or down, to the bid amount shown on the schedule of items.

(4) If a traffic lane meets the requirements for disincentive, the department will not pay incentive on the integrally paved shoulder.

(5) Submit density results to the department electronically using the MRS software. The department will validate all contractor data before determining pay adjustments.

460-020 (20100709)

1. Asphaltic Surface.

Supplement subsection 465.2 of the standard specifications as follows:

Under the Asphaltic Surface bid item, furnish asphaltic mixture meeting the requirements specified for HMA pavement Type E-3 or greater with asphaltic material AC PG 58-34P or AC PG 64-34P.

1. Removing Signs Type II

This work shall be in accordance with the pertinent requirements of standard spec 638 and as provided here.

Type II signs are the department’s property. All DOT signs removed, and not identified for reuse, shall be separated, plywood from aluminum signs, and the aluminum signs shall be palletized for shipment and handling with a forklift. Contact DTSD Sign Shop Coordinator Steve Allard at (715) 855-7671 at least 3 business days prior to delivery to coordinate shipment to be delivered to the DTSD Sign Shop Distribution Center at one of the following locations:

* Price County Highway Shop, 704 N. Lake Ave, Phillips, WI 54555
* Washburn County Highway Shop, 1600 CTH H, Spooner, WI 54801
1. Pavement Marking Same Day Epoxy 4-Inch and Pavement Marking Epoxy 4-Inch.

This work shall be in accordance with the pertinent requirements of section 646 of the standard specifications and as herein provided.

Placement of Pavement Marking Same Day Epoxy to be completed prior to placement of rumble strips shall be completed at the following application rate of 16.5 gallons per mile (15 mil thickness). After completion of Asphalt Center Line Rumble Strip 2-Lane Rural, the contractor will place Pavement Marking Epoxy 4-Inch at the application rate of 22 gallons per mile (20 mil thickness) in accordance with 646.3.1.2 and within the timeline to be determined by the project engineer.

1. Pavement Marking Grooved Contrast Wet Reflective Epoxy 4-Inch, Item 646.0842.S.

**A Description**

This special provision describes furnishing, grooving, and installing wet reflective epoxy pavement marking as shown on the plans, in accordance with standard spec 646, and as hereinafter provided.

**B Materials**

Furnish a 20 mils application of modified epoxy binder pavement marking, from the Wisconsin’s Approved Products List, in a grooved slot. Provide a double drop system of 5.3 pounds per gallon of wet reflective elements from Wisconsin’s Approved Products List and Utah Performance beads mixture at a drop rate of 12-22 pounds per gallon.

*Replace standard spec 646.2.3 (1) with the following:*

Furnish Utah Performance beads with the following gradation:

Utah Bead Gradation

|  |  |
| --- | --- |
| US Mesh  | Percent Passing (ASTM D1214) |
| 18 | 65-80 |
| 20 |  |
| 25 |  |
| 30 | 30-50 |
| 40 |  |
| 50 | 0-5 |

Beads **shall** achieve a minimum of 275 mcd (dry reading), initial for white and 180 mcd (dry reading) for yellow.

**C Construction**

**C.1 General**

For quality assurance, provide the project engineer and the region’s Marking Section evidence of manufacturer training in the proper placement and installation of the grooved wet reflective epoxy.

Plane the grooved lines in accordance with details in the plan. Use grooving equipment with a free-floating, independent cutting or grinding head. Plane a minimum number of passes to create a smooth groove. Remove lane line and center line pavement markings during the grooving process.

**C.2 Groove Depth**

Cut the groove to a depth of 80 mils ±10 mils from the pavement surface. The department may periodically check groove depths.

**C.4 Groove Width – Longitudinal Markings**

Cut the groove 1inch wider than the width of the pavement marking.

**C.5 Groove Position**

Position the groove edge in accordance with Standard Detail Drawing Pavement Marking (Mainline). If necessary, groove a minimum of 4 inches from both ends of the pavement marking segment. Achieve straight alignment with the grooving equipment.

**C.6 Groove Cleaning**

**C.6.1 Concrete**

Cooling the cutting head with water may be necessary for some applications and equipment. If cooling water is necessary, flush the groove immediately with high-pressure water after cutting to remove any build-up of cement dust and water slurry. If this is not done, the slurry may harden in the groove.

If water is used in the grooving process, allow the groove to dry a minimum of 24 hours after groove cleaning, and prior to pavement marking application. The groove surface shall be clean and dry before applying the marking. Use a high-pressure air blower with at least 185 ft3/min air flow and 120 psi air pressure to clean the groove.

**C. 6.2 Asphalt**

Groove pavement five or more days after paving.

If opening to traffic an asphalt lane that is not grooved, place temporary pavement marking. For asphalt lanes not open to traffic, temporary pavement marking is not required.

Check for structural integrity in supporting grooving operations. If the structural integrity of the asphalt pavement is inadequate to support grooving operations, immediately notify the engineer.

Use a high-pressure air blower with at least 185 ft3/min air flow and 90 psi air pressure to clean the groove.

**D Measurement**

The department will measurePavement Marking Grooved Wet Reflective Epoxy (Width) bid items by the linear foot of line, acceptably completed.

**E** **Payment**

The department will pay for measured quantities at the contract unit price under the following bid items:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 646.0842.S | Pavement Marking Grooved Contrast Wet Reflective Epoxy 4-Inch | LF |

Payment is full compensation for cleaning and preparing the pavement surface; furnishing and installing the epoxy, 3M elements and beads; and for removing existing or temporary marking, if necessary.

646-024 (20160607)

1. Locating No-Passing Zones, Item 648.0100.

For this project, the spotting sight distance in areas with a 55 mph posted speed limit is 0.21 miles (1108 feet).

648-005 (20060512)

1. Construction Staking Resurface Reference.

*Supplement subsection 650.3.10(1) of the standard specifications as follows:*

Offset construction stakes from the actual center line of existing STH 13.

1. Material Transfer Vehicle, Item SPV.0105.01.

**A Description**

This special provision describes furnishing Material Transfer Vehicle (MTV) and an operator for use on this project during HMA upper layer paving operations, as shown in the plans or as directed by the engineer, and hereinafter provided.

**B Materials**

The MTV shall be self propelled, remix and maintain constant temperature, and continually feed the paver hopper. The storage capacity shall be adequate to provide continuous forward movement of the paver. the paver speed shall be coordinated to match the delivery of material and capacity of the MTV to limit stopping of the paver.

**C Construction**

An operator shall remain with the vehicle at all times during moving operations and the paver's hopper shall remain full at all times to avoid segregation of coarse aggregates. No placement of HMA upper layer pavement shall be allowed without the use of the MTV.

**D Measurement**

The department will measure Material Transfer Vehicle by the lump sum for each material transfer vehicle, acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

 ITEM NUMBER DESCRIPTION UNIT

 SPV.0105.01 Material Transfer Vehicle LS

Payment is full compensation for deploying the equipment and its operator; and for furnishing all labor, tools, materials, equipment and incidentals necessary to complete the contract work.

1. Preparation of Foundation for Asphaltic Paving Special, Item SPV.0105.03.

**A Description**

This special provision describes preparation of foundation for asphaltic paving over a surface milled HMA surface in accordance to section 211 of the standard specifications and as hereinafter provided.

**B** **Materials** (Vacant)

**C Construction Methods**

Supplement section 211.3.5 of the standard specifications as follows:

After the surface mill, remove all surplus crack sealing, joint sealing, and asphalt patching materials to a minimum depth of 2 inches below the surface milled pavement. Completely remove unstable patches of asphaltic materials used to fill localized areas of pits, potholes, depressions, badly spalled areas, or disintegrated areas of old pavement. Remove any loose material with incipient spalling within or contiguous to such areas. Prior to refilling, all removal areas shall be cleaned by air blasting or other engineer approved methods.

Prior to placement of the HMA pavement or any wedging or leveling layers, refill these areas of removal, as described above, to the level of the milled surface. Payment for refilling these areas is paid for under bid item 465.0110 Asphaltic Surface Patching.

**D** **Measurement**

The Department will measure Preparation of Foundation for Asphaltic Paving Special as a single complete unit of work.

**E Payment**

Omit and replace subsection 211.5.1 (4) with the following:

This payment will be full compensation for all work under this item including brooming, air blasting, cleaning, crack fill removal, asphaltic material removal, and disintegrated pavement removal.

The department will pay separately for the following work associated with refilling the removal areas under the following contract items:

* Asphaltic Surface Patching for all mix placed under this item.

The department will pay for the measured quantities at the contract unit price under the following bid item:

ITEM NUMBER DESCRIPTION UNIT

SPV.0105.03 Preparation of Foundation for Asphaltic Paving Special LS

1. Removing Asphaltic Surface Milling Full Depth, Item SPV.0180.01.

**A Description**

This work shall be in accordance to the plan, the pertinent requirements of Section 204 of the standard specifications and as hereinafter provided.

**B (Vacant)**

**C (Vacant)**

**D Measurement**

The department will measure Removing Asphaltic Surface Milling Full Depth by the square yard (SY) acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0180.01 | Removing Asphaltic Surface Milling Full Depth | SY |

1. SMA Pavement Compaction Acceptance, Item SPV.0195.01.

**A Description**

This special provision describes the density testing requirements for acceptance of stone matrix asphalt (SMA) pavements. Provide mixture designs, quality management program requirements, and materials as specified in section 460 of the standard specifications, except as required below.

**B Materials**

Furnish materials conforming to section 460.2 of the standard specifications.

**C Construction**

Conform to section 460.3 of the standard specifications, except as follows:

**C.1 Rubber Tired Roller**

Rubber tired roller will not be used for compaction of SMA Pavement layer.

**C.2 Minimum Required Density and Pavement Density Determination**

*Replace section 460.3.3.2 of the standard specifications with the following:*

The initial placement of the first 1,500 feet of SMA Pavement will be accepted by standard compaction methods. After placement of the initial 1,500 feet of SMA Pavement, density will be determined by the control strip methods described below.

After the initial placement of 1,500 feet of SMA pavement construct a control strip at the beginning of work for each layer of SMA to be compacted. Ensure that the control strip, when acceptably compacted and meeting finish and smoothness requirements, remains in place and becomes part of the completed pavement. Ensure that the SMA mixture is composed of the same material with the same mixture design as the rest of the layer.

The control strip shall consist of 1,000 feet of the SMA mixture that contains a minimum of one QC test and 12 sites for nuclear density testing. Within the control strip, the department, using random numbers for stationing, will determine 12 locations for density testing. Relocate any locations determined by random numbers that fall within the wheel paths laterally away from the wheel paths. Upon completion of the desired compaction for the control strip, perform nuclear density tests at the 12 locations. Take nuclear density readings as direct readings without additional materials to aid in seating the gage. Take two cores from the control strip for evaluation of the integrity of the aggregate structure.

Determine the control strip target density by calculating the median value of the random 12 nuclear density locations. Within 24 hours, provide the department with test results for the QC sample and control strip target density. The department will use the control strip target density as the target density for remaining layer acceptance if the air voids from the QC sample falls between 3.5% and 5.0%. If the test results do not meet these minimum requirements, an investigation will result and a new control test strip may be required. The department will base acceptance of the remaining SMA layer on normal department QMP HMA Pavement Nuclear Density procedures using the control strip median density in percentage as the target.

Stop mixture production and initiate an investigation if any of the following conditions occur:

1. There is a change in binder source;

2. The previous day’s maximum specific gravity average from QC testing varies by 0.020 from the value from the initial QC test;

3. The overall blend changes have deviated from the original mix design by 10%;

4. There is a change in the average lot density in two sequential lots either below or above control strip target density by 2.0% inclusive; or

5. Any other condition occurs which in the judgment of the engineer would warrant the establishment of a new control strip density. The engineer may request additional core densities of two per day to verify compaction or to indicate the need for another control test strip.

**D (Vacant)**

**E Payment**

The department will pay for measured quantities in accordance to standard specification 460.5 at the contract unit price under the following bid item:

ITEM NUMBER DESCRIPTION UNIT

SPV.0195.01 SMA Pavement Compaction Acceptance TON

Payment is full compensation for performing all work under this item.

**E.1 Disincentive for SMA Pavements**

For SMA pavement replace section 460.5.2.2 of the standards specifications with the following:

If the lot density is less than the specified control strip target density, the department will reduce pay under the Disincentive Density HMA Pavement and Disincentive Density Asphaltic Material administrative items, as follows:

|  |  |
| --- | --- |
| **Percent Lot Density** | **Payment Factor** |
| **Below Control Strip Target Density** | **(percent of contract price)** |
| From 1.1 to 1.5 inclusive | 98% |
| From 1.6 to 2.0 inclusive | 95% |
| From 2.1 to 2.5 inclusive | 85% |
| From 2.6 to 3.0 inclusive | 70% |
| More than 3.0 | See footnote [\*] |

[\*] Remove and replace the lot with a mixture at the specified density. After acceptable replacement, the engineer will pay for the lot at the contract unit price per ton, or the engineer may permit the unacceptable material to remain in place with a 50% payment factor.

The engineer will apply no disincentive to any test strip constructed in an acceptable manner as described above.

**E.2 Incentive Pay Adjustment for SMA Pavements**

* For SMA pavement, delete subsection 460.5.2.3(1) of the standard specifications.