Part 1 General

1.1 RELATED SECTIONS

.1 Section 32 12 13.16 – Asphalt Tack Coat

1.2 REFERENCES

.1 American Association of State Highway and Transportation Officials (AASHTO)

- .1 M320-05, Standard Specification for Performance Graded Asphalt Binder.
- .2 PP 28-03, Practice for Designing Superpave Volumetric Design for HMA.
- .3 R29-02, Standard Specification for Grading or Verifying the Performance Graded of an Asphalt Binder.
- .4 R35-04, Standard Practice for Superpave Volumetric Design for Hot Mix Asphalt.
- .5 T40-02, Sampling Bituminous Materials
- .6 T84-00(2004), Specific Gravity and Absorption of Fine Aggregate.
- .7 T85-91(2004), Specific Gravity and Absorption of Coarse Aggregate.
- .8 T166-05, Bulk Specific Gravity of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens.
- .9 T176-02, Plastic Fines in Graded Aggregates and Soils by use of the Sand Equivalent Test.
- .10 T209-05, Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.
- .11 T275-91(2000), Bulk Specific Gravity of Compacted Bituminous Mixtures Using paraffin-Coated Specimens.
- .12 T283-03, Resistance of Compacted Bituminous Mixtures to Moisture Induced Damage.
- .13 T304-96(2004), Uncompacted Void Content of Fine Aggregate.
- .14 T305-97(2001), Determination of Draindown Characteristics in Uncompacted Asphalt Mixtures.
- .15 T312-04, Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor.

.2 American Society for Testing and Materials International (ASTM)

- .1 C88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
- .2 C117-04, Standard Test Method for Material Finer Than 0.075mm (No.200) Sieve in Mineral Aggregates by Washing.
- .3 C127-07, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.

.4 C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.5 C136-06, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

.6 D2419-02, Sand Equivalent Value of Soils and Fine Aggregate.

.7 D3665-07, Standard Practices for Random Sampling of Construction Materials.

.8 D4791-05e1, Flat Particles, Elongated Particles, or Flat and Elongated particles in Coarse Aggregate.

.9 D5821-01(2006), Determining the Percentage of Fractured Particles in Coarse Aggregate.

.10 D6752-03e1, Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method.

.3 Asphalt Institute Publications (AI)

.1 SP-2, Superpave Mix Design Method

1.3 DEFINITIONS

.1 AMRL: AASHTO Materials Reference Library.

.2 CCIL: Canadian Council of Independent Laboratories.

.3 Chip: aggregate product predominantly containing material passing the 6.7 mm sieve and retained on the 4.75 mm, 2.36 mm, and 1.18 mm sieves.

.4 Designated Large Sieve (DLS): sieve size specifically designated for each mix type for gradation testing.

.5 Equivalent Single Axle Load (ESAL): equating the damage to a pavement structure caused by the passage of a non-standard load to a standard 80 kN axle load.

.6 Job Mix Formula (JMF): the percentage passing on each designated sieve for the total mass of aggregate and the amount of asphalt cement as a percentage by mass of the mix that are based on specified mix design procedures that when mixed result in a paving mix that is in accordance with the specifications.

.7 Joint: a vertical contact between a HMA pavement course and any HMApavement or any rigid object that exists at the time that the HMA is laid.

.8 Maximum Aggregate Size: one sieve larger than the nominal maximum size.

.9 Mix Design: design of the proportions of aggregates, asphalt cement, and additives that when uniformly mixed results in an acceptable HMA in accordance with the specified method.

.10 Performance Graded Asphalt Cement (PGAC): asphalt binder that is an asphalt-based cement produced from petroleum residue, either with or without the addition of non-particulate modifiers according to AASHTO M320.

.11 Primary Control Sieve (PCS): sieve defining the break point between fine and coarse graded mixes for each nominal maximum aggregate size.

.12 Quality Assurance (QA): a system or series of activities carried out by the Departmental Representative to ensure that materials or products received from the Contractor meet the

specified requirements.

.13 Quality Control (QC): a system or series of activities carried out the by the Contractor to ensure that materials or products meet the specified requirements.

.14 Superpave: acronym for Superior Performing Asphalt Pavements, an alternate system to the Marshall method for specifying material components and asphalt mix design using the Superpave gyratory compactor.

.15 Vertical Surface: all edges of concrete curbs, longitudinal joints, and transverse joints for application of tack coat.

1.4 INCLUSIONS

.1 Costs associated with the work described in this section must be included in the general lump sum portion of the contract under the fixed price item "Approach Road Works". It shall not be measured.

1.5 SUBMITTALS

.1 Submittals: per Section 01 33 00 - Submittal Procedures.

.2 Submission of Test Data

.1 Supply the Departmental Representative with test results for the PGAC at least 10 business days prior to placement of HMA. The submitted test results shall document conformance with AASHTO R29, Section 7.

.2 Mix Design and JMF Documentation: Submit a copy of the Mix Design and JMF documentation. Have document signed, dated and certified correct by the person responsible for the engineering and management of the laboratory undertaking the Work.

Documentation required is detailed in AASHTO PP28 and includes, but is not limited to, the following:

.1 All test results, mix design work sheets, and graphs.

.2 Material proportions and sources.

.3 Designation of fine and coarse aggregate.

.4 Graph of the temperature-viscosity relationship.

.5 Additives, including source, type, percent by mass of asphalt cement, and test results in accordance with AASHTO T283, with specimens prepared in accordance with AASHTO T312.

.6 Information pertaining to fines that are returned to the mix, aggregate breakdown during production, and the resultant change in the aggregate gradations.

.7 Gradations for fine and coarse aggregates.

.8 Volumetric properties, including graphs for air voids, voids in mineral aggregate, void filled with asphalt, dust-to- asphalt ratio, bulk relative density, maximum relative density, and the gyratory curves of the mix plotted against asphalt cement content.

.9 Aggregate absorptions.

.10 Bulk specific gravity and saturated surface dry density for each aggregate.

.11 Bulk specific gravity of the mix per AASHTO T166.

.12 Theoretical maximum specific gravity per AASHTO T209.

.13 Mixing and compaction temperatures used in the Mix Design.

.14 Typical mix weight to produce a gyratory specimen with a height of 115 mm ± 5 mm.

.3 Have available all test results of the aggregates, filler, and asphalt cement used in the Work. At the request of the Departmental Representative. Make available or submit QC test results prior to the delivery of the material. Test results shall be submitted by either the stockpile method or from pervious tests undertaken within the last 12 months on material from the same stockpile.

.4 Submit documentation confirming that any laboratory undertaking PGAC testing shall have participated in the most recent AASHTO AMRL proficiency sample correlation program for PGAC and shall have obtained acceptable proficiency ratings in the program.

.5 When a liquid-stripping additive is to be incorporated into a PGAC, and when required by the Departmental Representative, submit test results for the PGAC with the anti-stripping additive included. The following information shall also be included:

.1 Amount of anti-stripping additive to be used, as determined in the mix design procedures, expressed as a percentage of the specified aggregate.

.2 Information on how the anti-stripping additive is to be incorporated into the mix.

.3 Verification that the anti-stripping additive shall remain stable in the heated asphalt cement for a minimum of 4 days.

1.6 MIX DESIGN

.1 Asphalt shall be Superpave 12.5 Level C FC1 (PG 64- 34), designed in accordance with AASHTO R35.

.2 Asphalt shall meet the following specifications:

.1 Sieve Size % Passing by Dry Mass of Aggregate

.1 19.0 mm: 100

.2 12.5 mm: 90-100

.3 9.5 mm: 45-90

.4 4.75 mm: 45-60

.5 2.36 mm: 25-58

.6 75 µm: 2-10

.2 Gradation Primary Control Sieve (PCS) shall be the 2.36 mm sieve. PCS Control Point shall be 39% passing.

.3 HMA Volumetric Properties:

.1 N(initial): less than or equal to 89.0

.2 N(design): 96.0

.3 N(maximum): less than or equal to 98.0

.4 % Minimum Voids in Mineral Aggregate (VMA): 14

.5 Compactive Effort

.1 N(initial): 7

.2 N(design): 75

.3 N(maximum): 115

.4 Production air voids shall be between 3% and 5%.

.3 Determine the requirements for anti-stripping additives required per AASHTO T283. Amount of anti-stripping additive required shall provide a minimum of 80% Tensile Strength Ratio as determined by AASHTO T283.

.4 The Mix Design shall be the responsibility of the Contractor. The JMF selected for use by the Contractor shall produce HMA that meets the requirements of this Section.

.5 Use a laboratory that has current CCIL Type A Certification with CCIL Superpave Certified Technicians or AMRL equivalent certification to undertake mix design.

.6 The Mix Design shall include the determination of the density of the blended fine and blended coarse aggregate. The calculation of Voids in Mineral Aggregate (VMA) shall be based on the densities of the blended fine and blended coarse aggregates.

.7 Changes to the JMF and Mix Design

.1 Changes to the JMF shall be permitted when it has been determined that the mix proportions specified in this Section are not being met.

.2 Changes to the material proportions based on process control test results shall be permitted without a new mix design. Submit the revised JMF to the Departmental Representative.

.3 The Departmental Representative shall review the revised JMF for conformance with the mix requirements in this Section. Within one (1) business day of receipt of the revised JMF, the Departmental Representative shall provide, in writing, conditional permission to use the revised HMA or specify the reasons why the revised JMF is rejected.

.4 When the Contractor submits a new mix design, it shall include a Mix Design Report, all supporting documents as required for the original Mix Design, and sample for monitoring purposes (when specified by the Departmental Representative). A new Mix Design and supporting documentation shall be required when:

.1 Any material is eliminated from the original Mix Design.

.2 A new material is added to the Mix Design.

.3 Revisions to the JMF have not corrected any problems or deficiencies with the mix

.4 The net impact of all adjustments to the original JMF exceeds:

.1 ±0.2% asphalt content

.2 ±5.0% passing 26.5 mm, 25.0 mm, 19 mm, and 16 mm sieves.

.3 ±4.0% passing 13.2 mm, 12.5 mm, and 9.5 mm sieves.

.4 ±3.0% passing 4.75 mm, 2.36 mm, and 1.18 mm sieves.

.5 ±1.0% passing the 75µm sieve.

.5 New Mix Designs, new JMF documentation, and all new samples for monitoring purposes shall be delivered to the Departmental Representative. The Departmental Representative shall accept or reject the new Mix Design or JMF within five (5) business days of their delivery to the Departmental Representative.

.8 Samples for Monitoring Purposes

.1 Representative samples of the materials to be used in the Work shall be provided to the Departmental Representative upon request, at the same time as the submission of the Mix Design and JMF documentation.

.2 Samples shall be labeled with material type, material source and date of sampling. Each sample shall be packaged separately in clean sealable containers that will not rupture when lifted or moved. Maximum weight of each container shall be 25 kg.

.3 Minimum samples shall be as follows:

.1 Asphalt cement: 4 l evenly split in two (2) containers

.2 Aggregate: 75 kg of each type

.3 Fines passing the 75µm sieve: 5 kg when mix is produced at a plant that returns fines to the mix

Part 2 Products

2.1 MATERIALS

.1 PGAC shall meet the requirements of AASHTO M320 for the specified mix. Asphalt cement shall meet or exceed specified provincial standards using only materials that are approved for use in Ministry of Transportation of Ontario (MTO) or Ministère des Transports du Québec (MTQ) construction projects. Demonstrate in writing that each product meets or exceeds provincial requirements before being used.

.2 Tack coat shall consist of a slow setting emulsified asphalt diluted with an equal volume of water. The undiluted material shall meet or exceed specified provincial standards using only materials that are approved for use in Ministry of Transportation of Ontario (MTO) or Ministère des Transports du Québec (MTQ) construction projects. Demonstrate in writing that each product meets or exceeds provincial requirements before being used.

.3 Aggregates - General

.1 Aggregates may be sands, gravels, or quarried rock, provided the source is of such a nature as to ensure acceptable processed aggregates of a consistent gradation and quality.

.2 Processed aggregates shall be separated into fine and coarse aggregates and stockpiled separately.

.3 Aggregate sources shall meet or exceed specified provincial standards using only

materials that are approved for use in Ministry of Transportation of Ontario (MTO) or Ministère des Transports du Québec (MTQ) construction projects. Demonstrate in writing that each product meets or exceeds provincial requirements before being used.

.4 Steel slag, nickel slag, and copper slag shall not be used. When the Contractor elects to sample blended aggregates from the cold feed, the blended aggregates shall meet the requirements of this Section.

.5 Regardless of compliance with specified physical requirements, aggregates may be accepted or rejected on basis of past field performance.

.4 Fine Aggregate

.1 Fine aggregates shall be composed of clean, hard, durable particles.

.2 Los Angeles degradation per ASTM C131: 15% maximum loss by mass.

.3 Magnesium Sulphate soundness per ASTM C88: 16% maximum loss by mass.

.4 Uncompacted voids per AASHTO T304: 45% minimum.

.5 Coarse Aggregate

.1 Coarse aggregate shall be produced by crushing bedrock or gravel.

.2 Sand equivalent per AASHTO T176: 45% minimum.

.3 Flat and elongated particles per ASTM D4791: 10% maximum at 5:1.

.4 Fractured particles in coarse aggregate per ASTM D5821: 85/80

.5 Magnesium Sulphate soundness per ASTM C88: 12% maximum loss by mass.

.6 Los Angeles degradation per ASTM C131: 15% maximum loss by mass.

.7 Absorption per ASTM C127: 1.0% by mass.

.8 Loss by washing per ASTM C117: 1.0% maximum passing 75 µm sieve.

.6 Silicone oil shall be less than five (5) ppm of asphalt cement.

.7 Filler

.1 Filler shall consist of mineral filler, hydrated lime, Portland cement, or other material approved by the Departmental Representative.

.2 Filler shall be dry, free from clumps, non-plastic, and shall meet the following gradation:

.1 100% passing the 600 µm sieve

.2 95%-100%m passing the 300 µm sieve

.3 70% to 100% pass the 75 µm sieve.

2.2 EQUIPMENT

.1 Paving Equipment

.1 Pavers shall be self-propelled and capable of laying a consistent satisfactory layer that is true to the crossfall, profile, and alignment specified in the Contract Documents.

.2 Pavers shall be equipped with hoppers and distributing augers capable of placing HMA evenly in front of the screeds. Screeds shall be capable of being heated and adjusted for level and crown.

.3 Pavers shall be equipped with automatic longitudinal and transverse grade and slope controls capable of being operated from either side of the paver. The longitudinal grade control shall permit adjustments to the mat thickness in minute increments without having to stop the paver.

.4 The paver shall be equipped to operate from either a 12 m ski or floating beam, a 3 m ski, or a joint matching shoe. Where the ski is a flexible unit, it shall be equipped with a spring-tensioned wire extending between brackets fitted on and slightly above each end of the ski. The sensing grid shall ride on the wire and not on the ski.

.5 Ploughs or other edge ramping devices that are attached or towed by the screed portion of the paver shall not be permitted.

.6. Pavers shall be equipped with a 3 m straight edge made of metal with a level recessed in its upper surface parallel to the lower wedge.

.2 Rollers

.1 Rollers shall be self-propelled, shall be a combination of steel drum and pneumatic tired, and shall be capable of reversing without backlash.

.2 Steel drum rollers shall have a minimum width of 1.2m, and shall be designated as S1 and S2 as follows:

.1 S1: minimum total mass of 7 tonnes, minimum mass of 3.5 kg/mm over total width of roller.

.2 Pneumatic-tired rollers shall be constructed such that the wheels on either the front or back may oscillate independently or in pairs. The wheels shall be mounted with smooth rubber tires. Minimum tire inflation pressure shall be 350 kpa when the tires are cold. All tired shall have equal pressure. Skirts or windbreaks shall be provided at all times to protect the tires from the cooling effects of atmospheric conditions. Each roller shall be equipped with a suitable gauge to check tire pressure.

.3 Pneumatic-tires rollers shall be designated as R1, R2, and R3 as follows:

.1 R1: minimum total mass of 8 tonnes with a minimum mass per tire of 900 kg.

.2 R2: minimum total mass of 18 tonnes with a minimum mass per tire of 2,500 kg.

.3 R3: minimum total mass of 25 tonnes with a minimum mass per tire of 3,600 kg.

.4 Rolls or drums shall be kept moist with water or non-petroleum based release agents to prevent adhesion of HMA. Excess water or release agents shall not be permitted.

Part 3 Execution

3.1 PRODUCTION

.1 HMA shall be produced to meet the submitted JMF or the revised JMF that was accepted in writing by the Departmental Representative.

.2 Be responsible for the process control of all materials during the production of HMA. Be responsible for determining and making all necessary adjustments in the proportioning materials used to produce HMA to meet the Contract requirements.

.3 HMA shall not be batches nor placed until the Departmental Representative provides permission in writing to proceed with a submitted JMF

.4 Blending of aggregates shall be permitted at the HMA plant.

.5 When delivered to the HMA plant, heated and dried aggregates shall be at a temperature consistent with proper mixing and laying of the mix. Surfaces of all dried aggregates shall be free of carbon and unburnt fuel oil.

.6 Anti-stripping Additives

.1 Anti-stripping additives shall be handled and mixed in accordance with the manufacturer's recommendations.

.2 If a liquid anti-stripping additive is added to the asphalt cement at the refinery or asphalt cement depot, provide the Departmental Representative with documentation of the above in the form of a waybill or bill of lading.

.3 If a liquid anti-stripping additive is added to the asphalt tank at the HMA plant, the liquid agent shall be added by an in-line metering device, provided:

.1 Documentation is given to the Departmental Representative for each batch of asphalt cement to which the agent is added and

.2 Calibration of the in-line metering system is provided to the Departmental Representative.

.3 Hydrated Lime

.1 If hydrated lime is added to the mix, it shall be added to all aggregates requiring an anti-stripping agent by one of the following methods.

.2 Hydrated lime slurry shall be homogeneously mixed with the aggregate in a pugmill or tumble mixer prior to entering the HMA plant;

.3 Hydrated lime shall be homogeneously mixed with wetted aggregates in a pugmill or tumble mixer prior to entering the HMA plants. The wetted aggregate shall have sufficient moisture content to ensure uniform and complete adhesion of lime to aggregate.

.4 Hydrated lime shall be homogeneously mixes with aggregate at the pit of quarry prior to delivery of the limed aggregate to the HMA plant

.4 Regardless of the procedure used, the aggregate must possess a uniform and homogeneous coating of hydrated lime.

.5 Aggregate treated with hydrated lime shall be used in the same construction season that it was treated.

3.2 TRANSPORTATION

.1 HMA shall be transported from the plant to the work in leak-proof truck boxes that have been cleaned of all foreign material.

.2 If required, truck boxes shall be lightly coated with a uniform application of non-petroleum based release agent. Release agents shall not adversely affect the quality of HMA. Truck boxes shall be drained after each application.

.3 Trucks shall be equipped with canvas tarpaulins of sufficient size to completely cover the HMA during transportation.

3.3 PLACEMENT

.1 Schedule delivery of HMA such that spreading and compacting of the HMA is completed by one-half hour after sunset.

.2 Place asphalt mixtures only when air temperature is above five (5) degrees C and rising.

.3 When temperature of surface on which material is to be placed falls below ten (10) degrees C, provide extra rollers as necessary to obtain required compaction before cooling.

.4 Do not place hot-mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.

.5 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.

.6 The temperature of the HMA immediately after spreading and prior to initial rolling shall not be less than 1200C.

.7 Maintain constant head of mix in auger chamber of paver during placing.

.8 Correct irregularities in alignment left by paver by trimming directly behind machine.

.9 Correct irregularities in surface of pavement course directly behind paver. Remove by shovel or lute excess material forming high spots. Fill and smooth indented areas with hot mix. Do not broadcast material over such areas. Adjust roller operation and screed settings on paver to prevent further defects such a rippling and checking of pavement.

.10 Do not throw surplus material on freshly screed surfaces.

.11 Hand Spreading

.1 Use approved wood or steel forms, rigidly supported to assure correct grade and cross section. Use measuring blocks and intermediate strips to aid in obtaining required cross-section.

.2 Distribute material uniformly. Do not broadcast material.

.3 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes. Reject material that has formed into lumps and does not break down readily.

.4 After placing and before rolling, check surface with templates and straightedges and correct irregularities.

3.4 COMPACTION

.1 Determine the correct sequence of rollers to meet the compaction requirements.

.2 Operate roller slowly initially to avoid displacement of material. Do not exceed five (5) km/h for breakdown and intermediate rolling for steel drum and pneumatic tired rollers. Do not exceed ten (10) km/h for finished rolling.

.3 Overlap passes with previous passes by at least 200 mm. Vary length of passes.

.4 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.

.5 Where rolling causes displacement of material, loosen affected areas at once with lutes or shovels and restore to original grade of loose material before re-rolling.

.6 After traverse and longitudinal joints and outside edge have been compacted, start rolling longitudinally at low side and progress to high side. Ensure that all points across width of pavement receive essentially equal numbers of passes of compactors.

.7 Breakdown Rolling

.1 Commence as soon after placing as the HMA can support the roller without checking or undue displacement.

.2 Start longitudinally at the lower edge and proceed towards the high edge, overlapping in successive passes.

.3 Stagger alternate passes of the roller.

.4 Operate breakdown roller with drive roll or wheel nearest paver.

.5 Operate roller as close to paver as necessary to obtain adequate density without causing undue displacement.

.8 Intermediate Rolling

.1 Follow the breakdown rolling as closely as possible.

.2 Overlap passes with previous passes.

.3 Operate roller to prevent picking up HMA on tires.

.9 Finish Rolling

.1 Start longitudinally at the higher edge and proceed to the lower edge.

.2 Accomplish finish rolling with two-axle or three-axle tandem steel drum rollers while material is still warm enough for removal of roller marks.

3.5 QUALITY CONTROL

.1 Be responsible for QC or the HMA to ensure all materials meet the requirements of the Section. Be responsible for obtaining QC samples.

.2 Use laboratories undertaking QC that have current CCIL Type B Certification or AMRL equivalent certification. HMA testing shall be undertaken under the direct supervision of certified technical personnel.

.3 Sampling

.1 Determine the method of QC sampling.

.2 The minimum frequency for sampling and testing shall be one (1) sample per day of paving.

.3 Sample size shall be 20 kg.

.4 All samples shall be marked with location, date and time, and asphalt type.

.4 Compaction

.1 Compaction testing shall be done using a nuclear density test gauge. Removal of cores for testing of compaction shall not be permitted.

.2 Percent compaction shall be determined by comparing the nuclear density in situ BRD to the average plant-produced HMA MRD, both according to AASHTO T209.

.5 Aggregates

.1 Aggregates that have become mixed with foreign matter of any description, or aggregates that have become mixed with each other, shall not be used and shall be immediately removed from the stockpile.

.2 Once a stockpile has been produced, sampled and tested for QC under the procedure for stockpile method, no further materials shall be added to the stockpile.

.3 QC sampling and testing of aggregates can be done as:

.1 done on a stockpile basis and ensuring that each aggregate stockpile meets the requirements of this section, or

.2 After the cold feed bins but before the aggregate is mixes with asphalt cement, when the blended aggregates meet the requirements of this section.

3.6 QUALITY ASSURANCE

.1 The Department Representative shall be responsible for undertaking all HMA QA procedures.

.2 Laboratories undertaking QA for the Departmental Representative shall have current CCIL Type B and C Certification or AMRL equivalent certification. HMA testing shall be undertaken under the direct supervision of certified technical personnel.

.3 Sampling

.1 Be responsible for obtaining, packaging and labelling QA samples on behalf of the Departmental Representative.

.2 QA samples shall be taken as directed by, and in the presence of, the Departmental Representative.

.3 QA samples shall be delivered to a location designated by the Departmental Representative within 24 hours of sampling time.

.4 The Departmental Representative has the option of having QC sampling of aggregates:

.1 done on a stockpile basis and ensuring that eat aggregate stockpile meets the requirements of this section, or

.2 After the cold feed bins but before the aggregate is mixed with asphalt cement, when the blended aggregates meet the requirements of this section.

.4 When the Departmental Representative chooses not to undertake QA sampling and testing, the material shall be accepted as provided. When QA testing has been undertaken, the results shall be used for acceptance purposes.

3.7 CRITERIA FOR ACCEPTANCE OF HMA

.1 Tolerance

.1 Top of finished mat shall be smooth and true to the established crown and grade.

.2 Maximum deviation shall be 3 mm in any direction as measured with a 3 m straight edge.

.3. Areas that do not meet this tolerance shall be removed and replaced with acceptable HMA, to the satisfaction of the Departmental representative, at no additional cost to Canada.

.2 Appearance

.1 Top of finished mat shall be of uniform texture and shall be free of defects such as segregation, fat spots, oil spills, and rollers marks.

.2 Areas that do not meet this tolerance shall be removed and replaced with acceptable HMA, to the satisfaction of the Departmental Representative, at no additional cost to Canada.

.3 Asphalt Cement Content Tolerance from JMF

.1 Acceptable: <0.30%

.2 Borderline: 0.30% to 0.50%

.3 Rejectable: >0.50%

.4 Acceptance of PGAC shall be based on QC test results submitted by the contractor. For acceptance purposes, a minimum of one complete compliance test shall be required per AASHTO R29.

.4 Aggregate Gradation Tolerance from JMF

Sieve	Acceptable	Borderline	Rejectable
4.75 mm	< 5.0%	5.0% to 7.5%	>7.5%
600 µm	<3.5%	3.5% to 5.0%	>5.0%
75 µm	<2.0%	2.0% to 3.0%	>3.0%

.5 Compaction, Based on Maximum Relative Density

.1 Acceptable: 92.0 to 96.5%

.2 Borderline: 96.6 to 97.5%

.3 Rejectable: <92.0 or >97.5%

.6 Air Voids Tolerance from JMF

.1 Acceptable: 3% to 5%

.2 Borderline: ±0.5%

.3 Rejectable: >±0.5%

.7 HMA produced with rejectable results shall be replaced, or shall be subject to payment adjustment, at the discretion of the Departmental Representative.

.1 The Departmental Representative shall determine if any rejectable material may remain in the work without repairs, with an appropriate payment adjustment.

.2 Any costs incurred by the Departmental Representative to determine an appropriate payment reduction shall be borne by the Contractor.

END OF SECTION