

**PART 1 - GENERAL**

1.1 RELATED SECTIONS

- .1 Section 310516 – Aggregate Materials
- .2 Section 321213.16 – Asphalt Tack Coats

1.2 REFERENCES

- .1 ASTM International
  - .1 ASTM C 88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
  - .2 ASTM C 117-04, Standard Test Method for Material Finer Than 0.075 (No. 200) mm Sieve in Mineral Aggregates by Washing.
  - .3 ASTM C 123-04, Standard Test Method for Lightweight Particles in Aggregate.
  - .4 ASTM C 127-07, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
  - .5 ASTM C 128-07a, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.
  - .6 ASTM C 131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .7 ASTM C 136-06, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .8 ASTM D 698-07e1, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>2</sup>) (600 kN-m/m<sup>2</sup>).
  - .9 ASTM D 995-95b(2002), Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
  - .10 ASTM D 1557-09, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>2</sup>) (2,700 kN-m/m<sup>2</sup>).
  - .11 ASTM D 1559-89, Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.
  - .12 ASTM D 2419-09, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
  - .13 ASTM D 3203-05, Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.
  - .14 ASTM D 4318-10, Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
  - .15 ASTM D 4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
- .2 Asphalt Institute (AI)
  - .1 AI MS-2-94, Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.

- .3 Canadian General Standards Board (CGSB)
      - .1 CAN/CGSB-8.1-88, Sieves Testing, Woven Wire, Inch Series.
      - .2 CAN/CGSB-8.2-M88, Sieves Testing, Woven Wire, Metric.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS
  - .1 Submit product data in accordance with Section 013300 - Submittal Procedures.
  - .2 Submit asphalt concrete mix design to Departmental Representative for approval.
  - .3 Materials to be tested by testing laboratory approved by Departmental Representative.
  - .4 Submit test certificates showing suitability of materials at least 4 weeks prior to commencing work.
  - .5 Submit samples in accordance with Section 013300 - Submittal Procedures.
  - .6 Inform Departmental Representative of proposed source of aggregates and provide access for sampling at least 4 weeks prior to commencing work.
  - .7 Submit samples of following materials proposed for use at least 4 weeks prior to commencing work:
    - .1 One 5 L container of asphalt cement.
- 1.4 BASIS OF PAYMENT
  - .1 Superpave 12.5 Asphalt Pavement (PG 58-34) - The work includes the supply, placing and compaction of performance graded hot mixed, hot laid asphaltic concrete as specified in the Contract Drawings. The application of tack coat on curb faces and all vertical joints is included as part of the work. The asphalt cement to be used shall be performance graded. The Contractor shall provide "tickets" electronically prepared from a commercial source. The lump sum price bid shall be full compensation for supply, delivery, placing, shaping, compaction, tack coat and all associated works.
  - .2 Superpave 19.0 Asphalt Pavement (PG58-34) - The work includes the supply, placing and compaction of performance graded hot mixed, hot laid asphaltic concrete as specified in the Contract Drawings. The application of tack coat on curb faces and all vertical joints is included as part of the work. The asphalt cement to be used shall be performance graded. The Contractor shall provide "tickets" electronically prepared from a commercial source. The lump sum price bid shall be full compensation for supply, delivery, placing, shaping, compaction, tack coat and all associated works.

## **PART 2 - PRODUCTS**

- 2.1 MATERIALS
  - .1 Granular base and sub-base material: to Section 310516 - Aggregate Materials and following requirements:

- .1 Crushed or screened stone, gravel or sand to OPSS Granular A and B Type II specifications.
- .2 Gradations: within OPSS limits.
- .2 Mineral filler for asphalt concrete:
  - .1 Shall be according to OPSS 1003.
- .3 Asphalt cement: performance graded asphalt cement per OPSS 1101.
- .4 Asphalt prime: to CAN/CGSB-16.1, grade RM-20 CAN/CGSB-16.2, grade SS-1.
- .5 Sand blotter: clean granular material passing 4.75 mm sieve and free from organic matter or other deleterious materials.
- .6 Asphalt tack coat: to CAN/CGSB-16.2, grade SS-1.

## 2.2 EQUIPMENT

- .1 Pavers: mechanical grade controlled self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated.
- .2 Rollers: sufficient number of rollers of type and weight to obtain specified density of compacted mix.
- .3 Vibratory rollers for parking lots and driveways:
  - .1 Minimum drum diameter: 750 mm.
  - .2 Maximum amplitude of vibration (machine setting): 0.5 mm for lifts less than 40 mm thick.
- .4 Haul trucks: of sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:
  - .1 Boxes with tight metal bottoms.
  - .2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.
  - .3 In cool weather or for long hauls, insulate entire contact area of each truck box.
- .5 Suitable hand tools.

## 2.3 MIX DESIGN

- .1 Mix design to OPSS 1151.04.02.
- .2 Job mix formula to be approved by Departmental Representative.
- .3 Do not change job-mix without prior approval of Departmental Representative. When change in material source proposed, new job-mix formula to be approved by Departmental Representative.

## **PART 3 - EXECUTION**

### 3.1 SUBGRADE SURFACE PREPARATION AND INSPECTION

- .1 Confirm grades of items set in paving area for conformity with elevations and sections before placing granular base and sub-

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- base material.
- .2 Obtain approval of subgrade by Departmental Representative before placing granular sub-base and base.
- 3.2 GRANULAR SUB-BASE AND GRANULAR BASE
- .1 Place granular base and sub-base material on clean unfrozen surface, free from snow and ice.
- .2 Place granular base and sub-base to compacted thicknesses as indicated. Do not place frozen material.
- .3 Place in layers not exceeding 150 mm compacted thickness. Compact to density not less than 100% maximum dry density in accordance with ASTM D 698.
- .4 Finished base surface to be within 10 mm of specified grade, but not uniformly high or low.
- 3.3 ASPHALT PRIME
- .1 Cutback asphalt:
- .1 Heat asphalt prime for pumping and spraying in accordance with CAN/CGSB-16.1.
- .2 Apply cutback asphalt prime to granular base, at rate directed by Departmental Representative, but do not exceed 2.2 L/m<sup>2</sup>.
- .3 Apply on dry surface, unless otherwise directed by Departmental Representative.
- .2 Emulsified asphalt:
- .1 Dilute asphalt emulsion with clean water at 1:1 ratio for application. Mix thoroughly by pumping or other method approved by Departmental Representative.
- .2 Apply diluted asphalt emulsion at rate directed by Departmental Representative but do not exceed 5 L/m<sup>2</sup>.
- .3 Apply on damp surface unless otherwise directed by Departmental Representative.
- .3 Do not apply prime when air temperature is less than 5 degrees C or when rain is forecast within 2 hours.
- .4 If asphalt prime fails to set within 24 hours, spread sand blotter material in amounts required to absorb excess material. Sweep and remove excess blotter material.
- 3.4 ASPHALT TACK COAT
- .1 In accordance with Section 321213.16 - Asphalt Tack Coats.
- 3.5 PLANT AND MIXING REQUIREMENTS
- .1 In accordance with ASTM D 995.
- 3.6 ASPHALT CONCRETE PAVING
- .1 Obtain approval from Departmental Representative before placing asphalt mix.
- .2 Place asphalt mix only when base or previous course is dry and air temperature is above 7 degrees C.
- .3 Place asphalt concrete in compacted layers not exceeding 50

mm (one lift).

- .4 Compact each course with roller as soon as it can support roller weight without undue cracking or displacement.
- .5 Compact parking lot and driveway asphalt concrete to required density. Roll until roller marks are eliminated.
- .6 Keep roller speed slow enough to avoid mix displacement and do not stop roller on fresh pavement.
- .7 Moisten roller wheels with water to prevent pick up of material.
- .8 Compact mix with hot tampers or other equipment approved by Departmental Representative, in areas inaccessible to roller.
- .9 Finish surface to be within 10 mm of design elevation and with no irregularities greater than 10 mm in 4.5 m.
- .10 Repair areas showing checking, rippling or segregation as directed by Departmental Representative.

### 3.7 JOINTS

- .1 Remove surplus material from surface of previously laid strip. Do not deposit on surface of freshly laid strip.
- .2 Paint contact surfaces of existing structures such as manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.
- .3 For cold joints, cut back to full depth vertical face and tack face with hot asphalt.
- .4 For longitudinal joints, overlap previously laid strip with spreader by 25 to 50 mm.

### 3.8 TESTING

- .1 Inspection and testing of asphalt pavement will be carried out by designated testing laboratory in accordance with Section 014500 - Quality Assurance.

### 3.9 PROTECTION

- .1 Keep vehicular traffic off newly paved areas until paving surface temperature has cooled below 38 degrees C. Do not permit stationary loads on pavement until 24 hours after placement.
- .2 Provide access to buildings as required. Arrange paving schedule so as not to interfere with normal use of premises.

**\*\*\* END OF SECTION \*\*\***

