

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Materials and installation for asphalt concrete paving for roads and parking lots.
- .2 Work includes fine grading, supply and placement of prime or tack coat and hot mix asphalt concrete.

1.2 RELATED SECTIONS

- .1 Section 31 23 33.01 -Excavating, Trenching and Backfilling.
- .2 Section 32 16 15 - Concrete Walks Curbs and Gutters.

1.3 REFERENCES

- .1 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.
 - .3 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.
 - .4 CAN/CGSB-16.3-M90, Asphalt Cements for Road Purposes.
- .2 City of St. John's Department of Engineering Specifications Book (Latest Edition).

1.4 PRODUCT DATA

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit asphalt concrete mix design and trial mix test results to Departmental Representative for approval at least 4 weeks prior to beginning Work.

1.5 QUALITY CONTROL

- .1 While the Departmental Representative will make results of any quality assurance test available to the contractor, the Contractor shall be responsible for the necessary quality testing and adjustments to produce uniform, acceptable hot-mix asphalt mixes in conformance with the Contract documents.
 - .2 Contractor shall conduct quality control testing to meet Provincial Standards. No payment will be made for asphalt paving until satisfactory quality control results have been submitted by the Contractor.
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PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Asphalt materials to Standard Specification and as indicated on the drawings.

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 type and weight to obtain specified density of compacted mix.
- .3 Vibratory rollers:
 - .1 Minimum drum diameter: 750 mm.
 - .2 Maximum amplitude of vibration (machine setting): 0.5mm for lifts less than 40 mm thick.
- .4 Haul trucks: 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.
 - .4 Use only trucks which can be weighed in single operation on scales supplied.
- .5 Hand tools:
 - .1 Suitable hand tools.

2.3 MIX DESIGN

- .1 Mix design to be approved by Departmental Representative.
 - .2 Mix design to Standard Specification and type as indicated on drawings.
 - .3 Mix design shall meet the most recent requirements of the Standard Specification.
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ASPHALT AGGREGATE MIXTURES			
Sieve Size (mm)	Percent Passing by Dry Weight		
	Base Course	Surface Course	Leveling Course
22.0mm	100	100	100
19.0mm	100	100	100
12.5 mm	80-100	100	100
4.75 mm	35-75	55-75	55-75
2.00mm	20-60	35-55	35-55
425µm	10-35	18-30	18-30
75µm (note 1)	4-10	4-10	4-10
Asphalt Cement (% by weight of total mixture)	5.0-7.0	5.0-7.0	5.0-7.0

Note 1: The dust/effective asphalt ratio of all mixes shall be between 0.6 and 1.2. Dust is defined as material passing the 75µm sieve.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Granular Sub-base as per Section 32 11 16.01 - Granular Sub-Base.
- .2 Granular Base as per Section 32 11 23 - Aggregate Base Courses.
- .3 Prior to placing asphalt surface course:
 - .1 Adjust manhole covers and catchbasin frames to match asphalt surface, using manufactured grade rings.
 - .2 Adjust valve boxes to finished asphalt surface. Raise or lower top sections of valve boxes.
- .4 Prior to laying mix, clean surfaces of loose and foreign material.

3.2 PLACING

- .1 Use workers skilled in placing asphalt concrete.
 - .2 Obtain Departmental Representative approval of all materials prior to placing asphalt.
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- .3 Place asphalt concrete to thicknesses, grades and lines as indicated on the Drawings and as approved by the Departmental Representative.
- .4 Placing conditions:
 - .1 Place asphalt mixtures only when air temperature is above 5 degrees C.
 - .2 When temperature of surface on which material is to be placed falls below 10 degrees C, provide extra rollers as necessary to obtain required compaction before cooling.
 - .3 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 Place asphalt concrete in compacted lifts of thickness as follows:
 - .1 Levelling course to thicknesses required but not exceeding 50 mm.
 - .2 Lower course in layers maximum of 100 mm each.
 - .3 Surface course in layers of maximum 60 mm each.
- .6 Minimum 135°C mix temperature required when spreading.
- .7 Maximum 160°C mix temperature permitted at anytime.

3.3 COMPACTING

- .1 Compact all paved areas to a density of not less than 95% of density obtained with Marshall specimens prepared in accordance with ASTM D 1559-89 from samples of mix being used. Roll until roller marks are eliminated.
- .2 General:
 - .1 Start rolling operations as soon as placed mix can bear weight of roller without excess displacement of material or cracking of surface.
 - .2 Operate roller slowly initially to avoid displacement of material. Do not exceed 5 km/h for breakdown and intermediate rolling for static steel-wheeled and pneumatic tired rollers. Do not exceed 9 km/h for finish rolling.
 - .3 Overlap successive passes of roller by minimum of 200 mm and vary pass lengths.
 - .4 Keep wheels of roller slightly moistened with water to prevent pick-up of material but do not over-water.
 - .5 Do not stop vibratory rollers on pavement that is being compacted with vibratory mechanism operating.
 - .6 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.
 - .7 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 equal numbers of passes of compactors.

- .8 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.
- .9 Compact mix with hot tampers or other equipment approved by Departmental Representative, in areas in accessible to Roller.

3.4 JOINTS

- .1 General:
 - .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.
- .2 Transverse joints:
 - .1 Offset transverse joint in succeeding lifts by at least 600 mm.
 - .2 Cut back to full depth vertical face and tack face with thin coat of hot asphalt prior to continuing paving.
 - .3 Compact transverse joints to provide smooth riding surface. Use methods to prevent rounding of compacted surface at joints.
- .3 Longitudinal joints:
 - .1 Offset longitudinal joints in succeeding lifts by at least 150 mm.
 - .2 Cold joint is defined as joint where asphalt mix is placed, compacted and left to cool below 100 degrees C prior to paving of adjacent lane.
 - .1 If cold joint can not be avoided, cut back by saw cutting previously laid lane, by at least 150 mm, to full depth vertical face, and tack face with thin coat of hot asphalt of adjacent lane.
 - .3 Overlap previously laid strip with spreader by 25 to 50 mm.
 - .4 Before rolling, carefully remove and discard coarse aggregate in material overlapping joint with lute or rake.
 - .5 Roll longitudinal joints directly behind paving operation.
 - .6 When rolling with static or vibratory rollers, have most of drum width ride on newly placed lane with remaining 150 mm extending onto previously placed and compacted lane.

3.5 FINISH TOLERANCES

- .1 Finished asphalt surface to be within 6 mm of design elevation but not uniformly high or low.
 - .2 Finished asphalt surface not to have irregularities exceeding 6 mm when checked with 3 m straight edge placed in any direction.
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3.6 DEFECTIVE WORK

- .1 Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required. If irregularities or defects remain after final compaction, remove surface course promptly and lay new material to form true and even surface and compact immediately to specified density.
- .2 Repair areas showing checking, rippling, or segregation.
- .3 Adjust roller operation and screed settings on paver to prevent further defects such as rippling and checking of pavement.

3.7 PROTECTION

- .1 Keep vehicular traffic off newly paved areas until paving surface temperature has cooled below 38°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.