

- Part 1 General**
- 1.1 RELATED SECTIONS**
- .1 Section 01 35 31 - Special Procedures for Traffic Control.
 - .2 Section 33 42 13 – Supply and Install Pipe Culverts.
 - .3 Section 01 45 00 – Quality Control.
 - .4 Section 01 71 00 – Examination and Preparation.
 - .5 Section 01 74 11 – Cleaning.
 - .6 Section 31 00 99 – Earthwork for Minor Work.
 - .7 Section 31 05 17 – Supply of Asphalt Mix Aggregates.
 - .8 Section 31 24 14 – Roadway Excavation, Embankment and Compaction.
 - .9 Section 32 12 15 – Supply and Apply Emulsified Tack Coat and Prime Coat
- 1.2 REFERENCES**
- .1 BC MoTI Specifications Section 202.
- 1.3 WORK DESCRIPTION**
- .1 The Contractor shall supply and place 25 mm crushed well graded base (WGB) from his own source. WGB material shall be placed over the culvert replacement areas and used for shouldering. The Contractor shall maintain existing shoulder width at each culvert replacement area.
 - .2 The production and construction of the granular base shall be in accordance with BC MoTI Specifications, Section 202.
 - .3 At each culvert replacement areas 450 mm of crushed granular base shall be placed as shown on Drawing D-05. The layer will be compacted in three lifts of 150 mm to replace the previously removed materials at the time of open excavation.
 - .4 Prime coat shall be placed over the culvert replacement areas prior to placing hot mix asphalt.
- 1.4 MEASUREMENT FOR PAYMENTS**
- .1 Supply and Placement of Crushed Granular Base shall be paid under **“Unit Price Item 6 – Supply and Place Crushed Granular Base”**. Only material incorporated into work and accepted by Departmental Representative is included. Payment includes: all survey layout including grading, excavating, crushing, supply of aggregates, stockpiling, loading, hauling, placing, shaping, watering, compacting as well as shouldering in the vicinity of culverts replacement areas.
 - .2 Traffic Control required for this Work shall be paid under **“Lump Sum Price Item 2 – General Traffic Accommodation”**.

- .3 Supply and apply of prime coat shall be paid under **“Unit Price Item 7 – Supply and Apply Emulsified Tack Coat and Prime Coat”**.
- .4 Cost associated with pit development activities are incidental to the Contract. No separate payment for pit development activities.
- .5 Crushed Granular Base shall be used for shouldering at culvert replacement locations. No separate payment for shouldering.
- .6 Contractor shall be responsible for construction layout surveys and establishing grades and cross section.
- .7 Haul and overhaul is incidental to the Works and no payment will be made.

Part 2 Products**2.1 MATERIAL**

- .1 Crushed Granular Base aggregates shall be in accordance with BC MoTI Specifications, Section 202.
- .2 The aggregates shall be composed of inert, clean, tough, durable particles of crushed rock, gravel, sand and fines capable of withstanding the deleterious effects of exposure to water freeze-thaw, handling, spreading and compacting.
- .3 The aggregate particles shall be uniform in quality and free from excess of flat or elongated pieces.
- .4 Evaluation of Acid Roack Drainage and Metal Leaching Potential per Section 31 05 17 shall apply for material produced under this Section.

Part 3 Execution**3.1 SEQUENCE OF OPERATION**

- .1 Sequence of operation shall be in accordance with the BC MoTI Specifications, Section 202.

3.2 SITE TOLERENCES

- .1 Finished base surface to be within plus or minus 20 mm of established grade and cross section.
- .2 Finished gravel shoulder grade to be within plus or minus 10 mm of finished asphalt pavement surface.

3.3 PROTECTION

- .1 Maintain finished base course surface in condition conforming to this section until succeeding material is applied or until acceptance by Departmental Representative. No separate payment will be made for maintenance or dust control.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 32 11 24 – Supply and Crushed Granular Base.
- .4 Section 32 12 16 – Supply, Haul Place and Compact Hot Mix Asphalt (EPS).
- .5 Section 01 35 31 – Special Procedures for Traffic Control.
- .6 Section 02 41 13.14 – Asphalt Pavement Cold Milling.

1.2 REFERENCES

- .1 BC MoTI Specifications.

1.3 WORK DESCRIPTION

- .1 Contractor shall supply and apply anionic emulsified tack coat and prime coat. Supply shall include ordering, scheduling, delivering, supplying storage facilities, handling, storing, heating, sampling, testing, and other related work.
- .2 The emulsified tack coat and tack coat supplied by the Contractor shall be a product listed in the British Columbia Ministry of Transportation's Recognized Products List.
- .3 Prime coat shall be placed over the culvert replacement areas prior to placing hot mix asphalt.
- .4 All work under this Section shall be in accordance with BC MoTI Specifications Section 502 and Section 952.

1.4 MEASUREMENT FOR PAYMENT

- .1 Supply, deliver and application of emulsified tack coat shall be paid according to the "**Unit Price Item 7 – Supply and Apply Emulsified Tack Coat and Prime Coat**". Storing, heating, hauling, sampling, testing and other related work will be considered incidental to the Unit Price for supply and apply emulsified tack coat.

1.5 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit two - 1 L samples of asphalt tack coat and 1 L sample of asphalt prime coat material proposed for use in clean, airtight, sealed, wide mouth plastic lined cans to the Departmental Representative, at least four (4) weeks prior to beginning Work.

- .3 Sample emulsified tack coat and prime coat material to: ASTM D140.
 - .4 Provide access on tank truck for Departmental Representative to sample asphalt cement to be incorporated into Work, in accordance with ASTM D140.
 - .5 Provide safe, convenient access for inspection and sampling of asphalt cement. Sampling valves shall be designed and located to enable safe, representative sampling into 1 litre containers.
 - .6 Sampling and testing for compliance verification purposes will be in accordance with ASTM D 140-93, Practice for Sampling Bituminous Materials.
- 1.6 QUALITY CONTROL**
- .1 Conduct all quality control tests and submit testing results per the BC MoTI Specifications, Section 502 and Section 952.
- 1.7 QUALITY ASSURANCE**
- .1 Submit to Departmental Representative manufacturer's test data and certification that emulsified tack coat and prime coat material meets requirements of this Section.
- 1.8 DELIVERY, STORAGE AND HANDLING**
- .1 Deliver, store and handle materials in accordance with ASTM D140.
 - .2 Provide, maintain and restore asphalt storage area.
- 1.9 WASTE MANAGEMENT AND DISPOSAL**
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43 -Environmental Procedures and with the Waste Reduction Work Plan.
 - .2 Divert unused asphalt materials to facility capable of recycling materials.
- Part 2 Products**
- 2.1 MATERIALS**
- .1 Anionic emulsified tack coat and prime coat type SS1-h shall be used for this Specifications.
 - .2 Water used shall be clean, potable, and free from foreign matter.
- Part 3 Execution**
- 3.1 EQUIPMENT**
- .1 All equipment and plant shall be in good mechanical condition and be capable of performing the Work in accordance with this section.
 - .2 Pressure distributor for emulsified tack coat application to be:

- .1 Designed, equipped, maintained and operated so that asphalt material can be:
 - .1 Maintained at even temperature.
 - .2 Applied uniformly on variable widths of surface up to 5 metres.
 - .3 Applied at readily determined and controlled rates from 0.2 to 5.4 l/m² with uniform pressure, and with an allowable variation from any specified rate not exceeding 0.1 l/m².
 - .4 Distributed in uniform spray without atomization at temperature required.
- .2 Equipped with meter, registering meters of travel per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.
- .3 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.
- .4 Equipped with an easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
- .5 Equipped with accurate volume measuring device or calibrated tank.
- .6 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
- .7 Equipped with nozzle spray bar, with operational height adjustment.
- .8 Cleaned if previously used with incompatible asphalt material.

3.2 APPLICATION

- .1 Obtain Departmental Representative's approval of surface before applying emulsified tack coat and prime coat.
- .2 Apply emulsified tack coat only on clean and dry surface. The surface to be tack coated shall be cleaned of dirt or other foreign material.
- .3 The application of emulsified tack coat and prime coat shall meet manufacturer's requirements.
- .4 Dilute asphalt emulsion with water at 1:1 ratio for application. Mix thoroughly by pumping or other method approved by Departmental Representative
- .5 Apply emulsified tack coat evenly to pavement surface at rate between 0.25 and 0.3 L/m² but do not exceed 0.3 L/m².

- .6 Apply emulsified prime coat evenly to a compacted granular surface at rate between 0.7 and 0.8 L/m² but do not exceed 0.9 L/m².
- .7 The emulsified tack coat and prime coat shall be applied when surface and weather conditions are favourable. Do not apply emulsified tack coat or prime coat when air temperature is less than 10°C or when rain is forecast within 2 hours of application.
- .8 Apply emulsified tack coat and prime coat only to surfaces that are expected to be overlaid on same day.
- .9 Emulsified tack coat shall not be applied on sections of roadway longer than will be covered by one day of asphalt plant production.
- .10 Evenly distribute localized excessive deposits of emulsified tack coat or prime coat by brooming as directed by Departmental Representative.
- .11 The emulsified tack coat and prime coat shall be sprayed within the temperature range specified by the supplier.
- .12 The spray bars shall produce double coverage at one pass, with uniform spray and even pressure with application rates controlled to within ±25% of the specified application rate. Spray bar nozzles shall be of the same type and size, set to produce uniformly fan-shaped sprays without atomization.
- .13 Any spraying faults shall be corrected by the Contractor.
- .14 Traffic shall not be permitted on tack coat until it has cured and on prime coat until the primer has been absorbed into the granular surfacing. Where traffic is to be maintained, treat no more than one half of width of surface in one application.
- .15 Re-tack contaminated or disturbed areas as directed by Departmental Representative.
- .16 Prime coats shall be allowed to cure for a minimum of 24 hours or to the satisfaction of the Departmental Representative prior to the placing of hot mix asphalt and tack coats shall be allowed to cure to a state that minimizes tracking prior to the placing of hot asphalt mix.
- .17 Permit emulsified tack coat to set before placing asphalt pavement.

END OF SECTION

Part 1**General****1.1****RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 35 31 – Special Procedures for Traffic Control.
- .3 Section 01 35 43 – Environmental Protection.
- .4 Section 02 41 13.14 – Asphalt Pavement Cold Milling.
- .5 Section 02 41 13.15 – Use of Reclaimed Asphalt Pavement (RAP).
- .6 Section 32 12 15 – Supply and Apply of Emulsified Tack Coat.
- .7 Section 31 05 17 – Supply of Asphalt Mix Aggregates.
- .8 Section 33 42 13 – Supply and Install Pipe Culverts.

1.1**REFERENCE**

- .1 BC MoTI Specifications and associated amendments.

1.2**WORK DESCRIPTION**

- .1 Hot mix asphalt shall consist of asphalt mix aggregates, RAP and asphalt cement, combined in a hot mix plant, placed and compacted on a prepared surface in conformity to the lines, grades, dimensions and cross-sections. The use of RAP in the hot mix asphalt is optional but if used shall conform to specifications requirement.
- .2 Hot mix asphalt shall be Class 1, 16 mm medium mix, and shall be subject to all provisions of the BC MoTI Specifications, Section 502, except as modified in these specifications.
- .3 The Contractor shall supply PG 58-28 or PEN Grade 120/150A asphalt cement meeting the requirements of Section 952 of the BC MoTI Specifications.
- .4 Final lift of hot mix asphalt shall be placed at a rate of 145 kg/m² for a total thickness of 60 mm as shown on Drawings D-03 and D-04.
- .5 At culvert replacement areas a layer of 50 mm hot mix asphalt shall be placed prior to the 60 mm final lift as shown on Drawing D-05.
- .6 An anti-strip additive, chosen by the Contractor from the British Columbia Ministry of Transportation's "Recognized Products List", shall be added to all asphalt mix used in the Work, at an application rate between 0.3% to 0.5% additive by weight of asphalt cement. All costs associated with supplying, storing and blending the additive into the asphalt mixes shall be incidental to the prices bid for "**Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**". The Contractor shall notify the Departmental Representative of the type of anti-stripping agent and the percent by weight being added.

- .7 Hot mix asphalt shall be in accordance with Marshall Mix Design Criteria for Class 1 Road.
- .8 Trial mix shall not be incorporated in this project unless approved by the Departmental Representative.
- .9 A maximum of 500 tonnes of levelling course may be used as directed by Departmental Representative at locations with severely distorted cross-slopes. This allowance has been included in the estimated quantity for this work.
- .10 The Contractor shall place and compact hot mix asphalt without causing damage to existing concrete barriers shown in the Table below. If the Contractor decides to move the barriers prior to paving, they shall be returned to their original location prior to leaving the work zone unattended. Contractor shall properly reinstall these barriers in accordance with BC MoTI Specifications.

Location (km)	Direction	Estimated Length (m)
1.500	Right	80
4.600	Left	130
4.600	Right	130
8.200	Left	220
8.200	Right	210
8.900	Left	15
12.900	Left	230
16.200	Left	60
19.300	Left	140
19.300	Right	140
20.700	Left	90

- .11 In the event the barriers cannot be restored, the Contractor shall provide temporary protection of the affected areas in accordance with Section 01 35 30, Section 01 35 31 and Section 01 56 00.
- .12 Asphalt plant to be used on this project, regardless of location, shall have a minimum capacity of 200 tonne per hour production plant, equipped with a dry bag system for pollution control, in addition to, or in replacement of standard cyclone dust collectors, to effectively eliminate emissions of dust and smoke pollutants into the atmosphere. Use of secondary dust collection systems, requiring discharge of dust polluted water into settling ponds or drainage system will not be permitted. In addition, asphalt plant must comply with all environmental pollution control regulations applicable in the asphalt plant area. The plant operator must make daily inspections of the emission control components, to ensure proper working order and provide the most recent stack

monitoring results for viewing by the Departmental Representative or his designate.

1.3

MEASUREMENT FOR PAYMENT PROCEDURES, PAYMENT ADJUSTMENTS AND PENALTY ASSESSMENTS

- .1 Accepted hot mix asphalt will be measured in tonnes and will be paid for at the unit price for "**Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**" subject to unit price adjustments and assessments hereinafter specified. Payment shall be compensation in full for hot mix asphalt including supply of asphalt cement, storage and heating of asphalt cement, processing, loading, mixing, hauling, spreading, compacting, finishing surface, safety and maintenance.
- .2 Supply of asphalt mix aggregate shall be in accordance with **Section 31 05 17 – Supply of Asphalt Mix Aggregate**.
- .3 Paving over the open cut area for culverts replacement shall be paid for at "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**".
- .4 Supply, installation and maintenance and calibration of weight scales and a scale house at the plant by the Contractor shall be considered incidental to "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**" for the asphalt placed and no additional payment will be made.
- .5 Preparing asphalt mix design shall be considered incidental to "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**" for the type of asphalt placed and no additional payment will be made.
- .6 Onsite movement of equipment and crew shall be considered incidental to "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**". A move is defined as the Contractor moving equipment and crew to the next section to pave after having completed, in its totality, the previous section.
- .7 Costs associated with working around or moving and reinstalling concrete barriers to their original location shall be incidental to "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**" and no separate payment shall be made.
- .8 Hauling of hot mix asphalt will be considered incidental to "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**".
- .9 Supply anti-stripping agent, if required and approved by the Departmental Representative shall be incidental to "**Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)**". It is the Contractor's responsibility to pre-determine the aggregate source and to verify the mix design in order to establish if use of the anti-stripping agent is required.

- .10 The supply and delivery asphalt cement shall be considered incidental to **“Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)”** for the type of asphalt placed and no additional payment will be made.
- .11 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization/Demobilization”** and no additional payment will be made.
- .12 Traffic Control required for this Work shall be paid under **“Lump Sum Price Item 2 – General Traffic Accommodation”**.
- .13 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.
- .14 All Quality Control required for this Work shall be incidental to **“Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)”**
- .15 The following end product Unit Price Adjustments for **“Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)”** will be measured for acceptance as per BC MoTI Specifications.
- .1 Pavement Density (Marshall).
 - .2 Application Rate.
 - .3 Asphalt Content.
 - .4 Aggregate Gradation.
 - .5 Segregation.
 - .6 Smoothness.
- .16 End Product Unit Price Adjustments shall only apply to the final 60 mm Hot Mix Asphalt lift placed in accordance with Drawings D-03 and D-04.
- .17 Payment for adjustments of water valves, manholes, catch basins, and all other utilities found on travelled portion of the roadway shall be incidental to **“Unit Price Item 8 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)”**.

Part 2 Products

2.1 MATERIALS

- .1 Materials used shall be in accordance with BC MoTI Specifications, Section 502 and Section 952.
- .2 Asphalt Cement shall be PG 58-28 or PEN Grade 120/150A asphalt binder.

Part 3 Execution

3.1 EQUIPMENT, PLANT AND MIXING REQUIREMENTS

- .1 Execution of the Work shall be in accordance with BC MoTI Specifications, Section 502 and Section 952.

END OF SECTION

- Part 1 General**
- 1.1 RELATED SECTIONS**
- .1 Section 01 35 31 - Special Procedure for Traffic Control
 - .2 Section 01 35 43 – Environmental Procedures.
 - .3 Section 01 74 11 – Cleaning.
 - .4 Section 02 41 13.14 – Asphalt Pavement Cold Milling.
 - .5 Section 02 61 33 – Hazardous Materials.
 - .6 Section 32 12 16 – Supply, Haul, Place and Compact Hot Mix Asphalt (EPS)".
 - .7 Section 33 42 13 – Supply and Install Pipe Culvert.
- 1.1 REFERENCE**
- .1 BC MoTI Specifications, Section 321 Traffic Marking Paint and Special Markings.
- 1.2 SAMPLES**
- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures
 - .2 Submit to Departmental Representative the following material samples at least four (4) weeks prior to commencing work.
 - .1 Two samples of each type of paint.
 - .2 One sample of glass beads
 - .3 Sampling to CGSB1-GP-71.
 - .3 Mark samples with name of project and its location, paint manufacturer's name and address, name of paint, CGSB specification number and formulation number and batch number.
- 1.3 WORK DESCRIPTION**
- .1 **Temporary Marking:**
 - .1 The Contractor shall supply and place temporary pavement marking tape on newly constructed asphalt pavement throughout the Project, re-establishing centerline and all lane-dividing lines prior to being opened to traffic, and shall maintain such markings until permanent markings have been placed.
 - .2 Temporary pavement marking tape is not required for lane edge lines (fog lines) unless otherwise directed for specific areas by the Departmental Representative.
 - .3 Painted temporary lines are not permitted on the final surface. The Contractor may paint temporary lines on the milled surface prior to paving the final surface.

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- .4 Marking dimensions, spacing, colour, layout and other characteristics shall follow the recommendations of the British Columbia Ministry of Transportation Traffic Control Manual unless otherwise specified herein or approved by the Departmental Representative.
- .2 **Permanent Pavement Marking:**
- .1 The Contractor shall supply and paint permanent line marking on newly constructed hot mix asphalt throughout the Project. Prior to any work effecting existing pavement markings, the Contractor shall pick-up survey all key control points of existing markings at intersections, turn slots, exit tapers and similar features and, upon completion of the paving, re-establish those points. Layout of centreline and lane line markings at other locations (e.g. between intersections) is not required.
- .2 Further to the key control point pick-up, the Contractor shall also pick-up all existing pavement crosshatch, turn arrows, Intersection lines and painted islands upon completion of the final paving lift and re-establish those points.
- .3 Key control points are as follows on all paint lines, including centerline, lane lines, islands, etc.:
- .1 Curvature points: EC, BC, TS, SC, CS, ST, and any other points of deflection.
- .2 Intersections: PI for design control lines; curvature points (EC, BC, TS, SC, CS, ST) and any other points of deflection.
- .3 Intermediate points on centerline, on tangents, curves and spirals, at maximum 100 m spacing.
- .4 Layout for permanent markings shall be done with white or yellow centerline paint which will be clearly visible after exposure to all site conditions.
- .5 Key control points shall be marked at their design location within tolerances of ± 50 mm transversely and ± 100 mm longitudinally. Longitudinal tolerances for intermediate points, when required, are ± 10 m.
- .6 In those areas where permanent markings have been applied the Contractor shall remove the temporary pavement marking tape.
- .3 **Permanent Pavement Line Painting:**
- .1 The Contractor shall supply and install the final pavement line painting which includes directional diving and two edge lines within the project limits.

- .2 The Contractor shall supply and install intersection lines, pavement crosshatch, Turn arrows and painted islands at locations shown on the Table below.

km	Intersection Marking	Pavement Crosshatch	Turn Arrows	Painted Island
3.700	1	2	2	1
7.400	1	-	-	2
9.400	1	2	5	-
11.200	1	2	2	-
11.600	1	2	2	-
14.600	1	2	4	-
15.200	1	2	2	-
16.500	1	2	2	-
16.700	1	2	2	-
16.900	1	2	2	-
17.600	1	2	2	-
18.200	1	2	2	-
21.100	1	2	2	-
Total	13	24	29	3

1.4

MEASUREMENT FOR PAYMENT

- .1 Temporary pavement marking shall be considered incidental to “**Lump Sum Price Item 2 – General Traffic Accommodation**”, and will not be measured for payment.
- .2 Permanent marking shall be considered incidental to “**Unit Price Item 9 – Pavement marking and Painting**”, and will not be measured for payment.
- .3 The removal of temporary pavement markings that replicate permanent line markings and all other temporary markings will be considered incidental to “**Unit Price Item 9 – Pavement Marking and Painting**” and no additional payment will be made.
- .4 Measurement for payment for supply and install of final pavement marking and painting of directional diving and two edge lines shall be in kilometer painted measured along the centerline of the roadway for the length of the roadway painted, and shall include the length of road through intersections. Payment will be made under “**Unit Price Item 9 – Pavement Marking and Painting**”.
- .5 Measurement for payment for supply and install of intersection lines, pavement crosshatch, turn arrows and painted islands will be in accordance with **Unit Price Item 9**.

- .6 Additional intersection lines other than the quantities shown on the Unit Price Table shall be incidental to **“Unit Price Item 9 – Pavement Marking and Painting – Supply and Install Intersection Lines”**.
- .7 All Quality Control required for this Work shall be incidental to **“Unit Price Item 9 – Pavement Marking and Painting”**.
- .8 Traffic Control required for this Work shall be paid under **“Lump Sum Price Item 2 – General Traffic Accommodation”**.
- .9 These payments will be full compensation for inspecting the areas to be painted; costs for surface preparation, sweeping and cleaning the surfaces to be painted; supplying and applying the paint, glass beads, material supply, related material manufacturer’s requirements; and all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative.

Part 2 Products

2.1 MATERIAL

- .1 Materials used shall be in accordance with BC MoTI Specifications, Section 321.

2.2 SUPPLY, STORAGE AND HANDLING

- .1 Storage and handling shall meet the requirements of Section 01 3 5 43 – Environmental Procedures and Section 02 81 01 - Hazardous Materials.
- .2 The Contractor shall make all arrangements for the supply and delivery of paint and glass beads and shall provide the Departmental Representative with records of all materials received and/or returned, on a daily basis.
- .3 The Contractor shall provide, maintain and reclaim all material storage sites.
- .4 No paint formulation shall be diluted or mixed with a different formulation or with any other material, without the specific approval of the Departmental Representative.
- .5 The Contractor shall take all necessary steps to prevent contamination of the materials.
- .6 Paint shall be protected from freezing.
- .7 The Contractor shall be responsible for the proper clean up of waste or spilled material, and the proper disposition of containers.

Part 3 Execution

- 3.1** Execution shall be in accordance with the BC MoTI Specifications, Section 321 and Traffic Control Manual.

3.2 CONDITION OF SURFACE

- .1 Surface to be dry, free from water, frost, ice, dust, oil, grease and other foreign materials.

3.3 TRAFFIC CONTROL

- .1 In accordance with Section 01 35 31 and Contractor's Traffic Management Plan.

3.4 APPLICATION

- .1 Pavement markings and final pavement line painting to be laid out by Contractor.
- .2 Apply reflectors in accordance with manufacturer's directions.
- .3 Apply paint only when air temperature is above 10°C, wind speed is less than 60 km/h and no rain is forecast within next 4 hours.
- .4 Paint lines to be of uniform colour and density with sharp edges.
- .5 Thoroughly clean distributor tank before refilling with paint of different colour.

3.5 TOLERANCE

- .1 Paint markings to be within plus or minus 12 mm of existing locations.
- .2 Remove incorrect markings as directed by the Departmental Representative.

3.6 QUALITY CONTROL INSPECTION PLAN

- .1 The Contractor is responsible for quality control inspection throughout every stage of the work to ensure that materials and workmanship comply with the requirements of the BC MoTI specifications, Section 321.
- .2 The Contractor shall develop and submit a Quality Control Inspection Program (QCIP) that addresses all the elements that affect the quality of the line painting including, but not limited to:
 - .1 Paint application rates,
 - .2 Glass bead application rates,
 - .3 Pavement surface and atmospheric conditions, and
 - .4 Line widths, line lengths and space lengths.
- .3 The Contractor shall maintain records of QCIP data, complaints from the public, and other details relevant to the Work and shall provide these records to the Departmental Representative daily.

3.7 HIGHWAY OPERATIONS

- .1 Highway operation shall be in accordance with the Contractor's Traffic Management Plan and shall meet the following requirements:
 - .1 General
 - .1 Painting shall be carried out during hours of daylight between 1/2 hour after sunrise and 1/2 hour before sunset. Generally, the Contractor may paint lines during any day of

- the week but is cautioned that traffic volumes are usually higher on all highways on Friday, Saturday and Sunday.
- .2 Operation of the painting truck against the flow of traffic will not be permitted.
 - .3 Loading glass beads or paint onto the painting truck is not permitted on a roadway surface.
- .2 Operation of companion vehicles.
- .1 When the roadway to be painted is open to public traffic, the Contractor shall operate a crash attenuator vehicle and a pilot vehicle in conjunction with the painting truck during the painting of all longitudinal lines. Companion vehicle operators shall not attempt to control traffic from inside the vehicle.
 - .2 The actual operating parameters of the companion vehicles will be determined by the Contractor to safely accommodate traffic and will be based on site specific conditions such as sight distances, highway geometrics and traffic patterns and volumes. Typical operating parameters are as follows:
 - .3 The crash attenuator vehicle shall be equipped with a crash attenuator which meets National Cooperative Highway Research Program, Report 350 Test Criterion, Test Level 3 for 100 km/hr. The vehicle shall follow behind the painting truck at a distance of 50 to 400 m.
 - .4 The pilot vehicle shall be driven in the same travel lane as the paint machine, following it at a constant distance of approximately two (2) kilometres.
 - .5 The crash attenuator vehicle, pilot truck and the painting truck are to display the same message at all times. The painting truck and the companion vehicles shall be equipped with a two-way radio for communication and overhead revolving beacon with an amber lens.

3.8**PROTECTION OF COMPLETED WORK**

- .1 Protect pavement markings until dry.

END OF SECTION