

Annex A - Statement of Work

Painting and Minor Crack Sealing Akimina Parkway, 5/6 Highway, Entrance Road, and Townsite Lines – Waterton Lakes National Park

1.0 SCOPE

1.1 DESCRIPTION OF THE WORK

The Work of this contract is generally described below:

The work consists of preparation and applying and re-tracing longitudinal pavement marking paint at various locations within Waterton Lakes National Park, in accordance with the applicable specifications. The work also consists of Crack Sealing on various Parkways and Highways within Waterton Lakes National Park, in accordance with the applicable specifications.

1.2 LINE PAINTING

1.2.1 REQUIRED LINE PAINTING SECTIONS

Line painting is required on three (3) roads within Waterton Lakes National Park: Chief Mountain Parkway (22km), Red Rock Parkway & Highways 5&6 and Akamina Parkway and Entrance Road. Additional line touch-ups will also be required in the Waterton Townsite (specific locations to be determined at contract start). The specific locations and line kilometers may vary but will be finalized ahead of services. We have estimated line kilometers at:

Year 1 – Chief Mountain Parkway (This includes all pull offs and parking areas)

1. Yellow Lines – 50km
2. White Lines – 55km
3. Townsite Touch Ups:
 - a. Yellow 15km
 - b. White 15km

Option Year 1 (if exercised) – Red Rock Parkway & Highways 5&6

1. Yellow Lines – 40km
2. White Lines – 45km
3. Townsite Touch Ups
 - a. Yellow 15km
 - b. White 15km

Option Year 2 (if exercised) – Akamina Parkway and Entrance Road

1. Yellow Lines – 50km
2. White Lines – 55km
3. Townsite Touch Ups
 - a. Yellow 15km
 - b. White 15km

The painting services are anticipated to be completed mid Spring to early summer of each year. Townsite touch up will include everything from parking lot spaces, to crosswalks, to centerlines.

1.2.2 DETAILS OF WORK

The contractor is to supply all equipment and materials necessary for the preparation and application of longitudinal pavement markings to Parks Canada within Waterton Lakes National Park.

In general, the Contractor is overlaying existing longitudinal paint lines, all lines must be painted as previously applied. The Contractor must paint lane lines, continuity lines, edge lines and directional dividing lines on the highway sections, interchanges and intersections specified. This includes Federal access roads to and through specific areas within the townsites.

1.2.3 MATERIALS

1.2.3.1 Paint

The Contractor must use, unless otherwise approved by the Project Authority, a water-based traffic paint in accordance with the Recognized or Approved Products List (or pre-approved equivalent) from at least one of the following agencies:

- Manitoba Infrastructure,
- Saskatchewan Ministry of Transportation,
- Alberta Ministry of Transportation,
- Ministry of Transportation Ontario

1.2.4 EQUIPMENT

1.2.4.1 General

Equipment required for this Work must be in satisfactory working condition and maintained for the duration of the Work.

Equipment must be on site and available for inspection and acceptance before the Work commences.

1.2.5 CONSTRUCTION

1.2.5.1 Surface Preparation

Existing surface must be dry, clean, free from dust, dirt and other unacceptable material prior to the application of paint.

1.2.5.2 Paint Application

All pavement markings must be accurately spaced and present a clean-cut, uniform appearance. Paint must be applied at a rate which results in a uniform wet film thickness of 15 wet mil.

Paint application must meet all Canadian Federal Guidelines and date restrictions as outlined at <https://www.canada.ca/en/environment-climate-change/services/managing-pollution/sources-industry/volatile-organic-compounds-consumer-commercial/architectural-coatings/traffic-marking-coating-factsheet.html>

1.2.5.2.1 Traffic Paint

Approved Traffic Paints must not be applied outside the recommended manufacturer's specifications for application temperature and humidity.

1.2.5.3 Weather Limitations

Painting **must not** be performed during the following conditions:

- When the air temperature is outside manufacturer's specified parameters.
- When wind conditions cause overspray.
- When the visibility is less than 700 metres.
- During periods of precipitation.

1.2.5.4 Operational Limitations

All painting must be carried out during hours of daylight between ½ hour after sunrise and ½ hour before sunset.

Operation of the painting truck against the flow of traffic will not be permitted.
Loading paint onto the painting truck is not permitted on a roadway surface.

Any repair or adjustments on any equipment is not permitted on a roadway surface.

The Contractor's Supervisor must have their own separate vehicle and be on site at all times to monitor proper application, specifications and overall crew safety.

The Contractor will co-operate with the Province and any other contractors providing services to the Province in the Pavement Marking Service Area and in areas adjacent to the Pavement Marking Service Area.

Any deviation to the above will have to be approved in advance by the Project Authority.

1.2.6 QUALITY CONTROL

The inspections and tests required to support conformance with the Contract must be performed by the Contractor (or his designated agent) and made available to the Project Authority.

The Contractor must assign the responsibilities for specific Quality Control functions.

The Contractor must ensure that materials and the constructed Work meet Contract requirements and perform test and inspections in accordance the procedures defined in the Contract.

1.2.7 QUALITY ASSURANCE

1.2.7.1 General

The Project Authority will conduct Quality Assurance testing and inspection for paint, and quality of line markings.

The Project Authority may test for any property outlined in the Contract. The Contractor will be provided with results from the completed tests.

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The inability of the Project Authority to provide Quality Assurance test results within the time provided in this Specification must not relieve the Contractor of their obligation to remedy any defect.

1.2.8 ACCEPTANCE CRITERIA

1.2.8.1 General

The acceptance of the paint, and quality of line markings must be based on the following criteria from the Quality Assurance test results:

If the acceptance test results on a section of road fall in rejection, refer to Corrective Actions for the required repair.

1.2.8.2 Paint

Each line-km of painted lines must be visually inspected by the Project Authority to ensure that the paint is being uniformly applied at a rate of 15 wet mil for paint, and are free from any line defects and the paint line dimensions are in accordance with the drawings.

All paint will be tested and referenced to ensure they meet the Recognized or Approved Products List and specifications set out in *Section 2.1 Paint*.

Verification of wet film thickness will be in accordance with *ASTM D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages*.

Ensure the following retro-reflectivity properties are achieved when painting at a wet thickness of not less than 15 mils:

Table 7.2 Retro Reflectivity Properties

Colour	Initial (for at least 15 days from time of application)	End of Season
White	275 millicandela m-2·lux-1	150 millicandela m-2·lux-1
Yellow	200 millicandela m-2·lux-1	100 millicandela m-2·lux-1

1.2.8.3 Quality of Line Markings

1.2.8.3.1 Line Dimensions

All painted lines must not exceed a dimensional width of 110 mm for specified 100 mm wide line. No tolerance below 100 mm is allowed for the specified 100 mm wide line.

All painted lines must not exceed a dimensional width of 210 mm for specified 200 mm wide line. No tolerance below 200 mm is allowed for the specified 200 mm wide line.

All painted direction dividing, lane dividing or continuity lines must not exceed a maximum length deviation of +/- 100 mm for specified 3.96 m length of line.

All spaces between painted direction dividing, lane dividing or continuity lines must not exceed a maximum length deviation of +/- 100 mm for specified 8.23 m length of space.

All paint must be applied at the proper locations in accordance with the drawings or as directed by the Project Authority.

1.2.8.3.2 Line Defects

Line defects include but are not limited to non uniform application, tire tracking, splatter, excessive overspray and other defects. All line defects are subject to corrective actions at the discretion of the Project Authority.

1.2.9 CORRECTIVE ACTIONS

All painted lines that do not meet the requirements of this specification must be removed and correctly applied or repaired by the Contractor.

In cases where the paint is “tracked” by vehicles tires as determined by the Project Authority, the lines may be repaired by reapplying paint to the damaged areas.

In cases where incorrectly painted lines need to be removed, the Contractor must use methods and equipment that will totally eliminate the pattern of the lines without damaging the integrity of the pavement surface. The methods and equipment used for such work must be reviewed and accepted by the Project Authority prior to their use.

Removing incorrectly painted lines through the use of paint, liquid asphalt, slurry seal, or other similar materials will not be permitted.

The repair or removal of incorrectly painted roadway lines will be considered incidental to the Work and no separate or additional payment will be made.

1.2.10 METHOD OF MEASUREMENT

Measurement of painted roadway lines will be made in kilometres of painted 100mm line. At locations such as truck turnouts and points of interest turnouts, where additional lines are required beyond normal limits, individual lines will be measured and paid for under the applicable bid item.

1.3 CRACK SEALING

The work consists of routing, cleaning and drying cracks in pavement surfaces supplying crack sealant material and routing & sealing or cleaning & sealing the cracks with the sealant. The cracks requiring sealing will be communicated by the Project Authority to the contractor in early spring.

Crack sealing is required on three (3) roads within Waterton Lakes National Park each year. The crack sealing services are anticipated to be completed mid Spring to early summer of each year.

Year 1 – Chief Mountain Parkway (This includes all pull offs and parking areas), Red Rock Parkway & Highways 5&6 and Akamina Parkway and Entrance Road:

4. Rout & Seal – 1000 m
5. Clean & Seal – 1350 m

Option Year 1 (if exercised) – Chief Mountain Parkway (This includes all pull offs and parking areas), Red Rock Parkway & Highways 5&6 and Akamina Parkway and Entrance Road:

4. Rout & Seal – 1000 m
5. Clean & Seal – 1350 m

Option Year 2 (if exercised) – Chief Mountain Parkway (This includes all pull offs and parking areas), Red Rock Parkway & Highways 5&6 and Akamina Parkway and Entrance Road:

4. Route & Seal – 1000 m
5. Clean & Seal – 1350 m

1.3.2 MATERIALS

1.3.2.1 Crack Sealant

The Contractor must supply Deery 101 ELT hot pour rubberized crack sealant material or equivalent material from the proven products of the AT Products List and approved by the PCR.

The Contractor must verify that all crack sealant delivered and used in the Work is the type and grade ordered.

Quality Control, including the provision of Quality Control test results for the crack sealant materials, is the responsibility of the Contractor. The Contractor must provide copies of the material supplier Quality Control testing for each batch of material supplied. The Contractor must supply material samples to the PCR for Quality Assurance testing purposes when requested.

1.3.2.2 Blotting Agents

When necessary, the Contractor must supply one of the following blotting agents:

- screened sand with a maximum top size of 2 mm
- cement
- fly-ash

The use of other blotting agents is subject to approval by the Project Authority.

1.3.3 EQUIPMENT

The Contractor must supply all equipment necessary for completion of the Work including but not limited to the melting kettle, air compressor unit, hot compressed air lance, routing and crack sealing equipment and all related equipment such as fork lifts, hoists, and transport vehicles.

The melting kettle must consist of a double jacketed oil bath kettle with thermometric controls which automatically control the product temperatures and with continuous agitation equipment to prevent localized variations in temperature. The kettle must be equipped with two calibrated thermometers to monitor the temperature of the crack sealant and the temperature of the heat transfer oil.

The compressed air unit must be equipped with water and oil traps and must produce sufficient air volume and pressure to remove all debris from the cracks. It must be capable of delivering a continuous stream of clean, dry air at 600 kPa and 4.5 m³/min.

Application equipment must be capable of regulating the application of crack sealant directly to the road and must be equipped with a thermometer to monitor the temperature of the material as it is applied.

1.3.4 CONSTRUCTION

1.3.4.1 Preparation

The work area is within Waterton Lakes National Park.. No Work is to be performed during rain or snow or when the pavement surface is wet. The crack sealant must not be applied when the pavement temperature is below 10° Celsius. Unless otherwise directed by the Project Authority, when cracks are less than 2mm the contractor is to determine whether a crack requires route & seal or clean & seal. When cracks exceed 2mm the crack is to be routed & sealed.

Prior to the application of crack sealant, the entire road surface must be cleaned ensuring all loose material and moisture is removed from the cracks and surrounding areas. The routed cracks must be treated with the hot compressed air lance until the pavement in the routed crack is dry and slightly darkened. There must be a maximum time period of 2 minutes between cleaning and drying the routed cracks and the application of the crack sealant.

1.3.4.2 Routing and Sealing

Crack sealant must be heated and applied in accordance with the manufacturer's recommendations. Excessive crack sealant must be removed from the pavement surface immediately following application. Traffic must be kept off sealed cracks until the crack sealant has cured. At locations such as intersections where this is not practical, the Contractor must prevent tracking by applying a blotting agent to the crack sealant. When a blotting agent is used, it must not be applied until the sealant has cooled sufficiently to prevent inclusion of the blotting agent into the sealant.

1.3.4.3 Clean & Seal

Apply the crack sealant at the temperature recommended by the manufacturer in order to properly penetrate the cracked area. The crack sealer is squeegeed to spread the sealer evenly in and onto the failed area to form a bond with the surrounding asphalt pavement surface. A smooth overlap of sealant is needed to bond the seal with the surrounding pavement. The width of the overlap at the crack should be a minimum of 25mm and a maximum of 40mm on each side of the crack.

1.3.4.4 Finishing and Acceptance

Evaluation of the Work is based on a visual inspection by the Project Authority. To be acceptable, the Work must conform with the following:

- The rout conforms to the path of the crack with no part of the crack outside or touching the edge of the rout cross-section,
- All routed cracks have been sealed, and
- At least 95% of the cracks treated have been filled with an adequate amount of crack sealant material.

Failure to comply with the acceptance criteria will result in the Contractor re-treating all failed cracks at his own expense.

1.3.5 MEASUREMENT

Measurement will be made in lineal metres of cracks for which crack routing & sealing or Cleaning & sealing has been performed.

1.4 START UP MEETING

The Contractor must attend a meeting with the Project Authority before beginning work, at a mutually agreed upon date, to discuss the project. The meeting must be initiated by the Contractor and be held in advance of commencing field operations. Topics to be discussed will include, but is not limited to, the detailed work schedule; traffic management plan; design application rates; Contractor's quality management plan; and schedule of equipment calibration.

1.5 STORAGE LOCATIONS

It is the responsibility of the Contractor to obtain storage and permissions for locations for materials and Equipment and can be discussed with the project manager.

1.6 BLACK OUT DATES

Unless otherwise permitted by the Department, the Contractor must cease all construction operations during the following periods:

- On all Statutory or Civic Holidays
- On weekends on which Friday is a Statutory or Civic Holiday from 3:00 P.M. Thursday to sunrise Monday
- On weekends on which the Monday is a Statutory or Civic Holiday from 3:00 P.M. Friday to sunrise Tuesday

1.7 HOURS OF WORK

The Contractor must give a minimum of forty-eight (48) hours notice prior to changing the hours of work from that agreed upon at the Start-up Meeting.

Unless otherwise permitted by the Project Authority, the Contractor must cease all construction operations during the following periods:

- Between 30 minutes before official sunset and after sunrise
- Any project workplace conditions determined to be unsafe by the Project Authority
- 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. Line painting on highways with relatively high traffic volumes must be performed between Monday and Thursday or upon the approval of the Project Authority.
- The Contractor will work with the Project Authority to schedule around periods of special events.
- The Contractor must follow Provincial and Federal Hours of Service Regulations

1.8 TRAFFIC CONTROL

Notwithstanding and in addition to the Specifications for Traffic Control, the following must apply:

- Traffic control is to be supplied by the Contractor.
- The contractor will supply a minimum of traffic control as outlined in the Alberta Traffic Accommodation in Work Zones 2018 (<https://manuals.transportation.alberta.ca/TAS/Pages/home.aspx>)
- Painting on all divided highways require a crash attenuator, as per Provincial Regulations.
- Painting on all two-lane road must be signed as per Provincial Regulations.

All work must meet the approval of the Project Authority.

No additional payment will be made for providing traffic control as described above as this must be considered incidental to the Contract.

10.0 National Park Regulations

The Contractor must ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the National Parks Act.

A Parks Canada business licence must be purchased for Waterton Lakes National Park.

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All Contractor's business and private vehicles are required to obtain a vehicle work pass from Parks Canada. These passes will be provided by the Departmental Representative.

11.0 Waste Disposal

The Contractor must dispose of all waste material such as paint, drums, etc. at a facility outside the National Parks. No separate payment will be made for waste disposal. The cost of this work must be considered incidental to the contract.

12.0 WARRANTY

The warranty will be for 60 days after application. Contractor's Warranty and Final Acceptance will occur upon visual inspection up to 60 days after paint application. The painted roadway line condition must meet minimum 90% Relative Percent of Substrate Covered as per ASTM D913 Standard Practice for Evaluating Degree of Pavement Marking Line Wear. The Contractor, if requested by Canada to do so, must replace, repair or correct, at its own option and expense any work that becomes defective or fails to conform to this requirement of the Contract.