



PARKS CANADA AGENCY

# Technical Specifications for Mount Revelstoke National Park

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## Mount Revelstoke Campground Paving Addition

July 2020

## **PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP**

### **DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

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Part 1            **Part 1 General**

**1.1 BACKGROUND OF WORK**

- .1 Background of work for Parks Canada. See attached—Mount Revelstoke National Park - Campground Road Photos.
  - .1 Parks Canada constructed the new Snowforest Campground in Mount Revelstoke National Park from 2018 to 2020, including a mixed offering of campsites including pull-through, back-in and tenting sites. The majority of the campground roads are compacted base course aggregate, with a small portion of road and parking areas previously paved with asphalt concrete.
  - .2 Parks Canada is proposing to pave two sections of road within the campground that were not previously paved as part of the campground construction project.

**1.2 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 Work of this unit price Contract comprises civil construction activities, as described in contract drawings and specifications, including but not limited to the following items:
  - .1 General Requirements
  - .2 Base course preparation
  - .3 Asphalt paving
- .2 The Project Work is located in Mount Revelstoke National Park, on the Meadows in the Sky Parkway, prior to the park entrance kiosk.

**1.3 PRECEDENCE**

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specifications and specification sections in other Divisions of this Project Manual.
- .2 The most current revision of codes and standards referenced in this project manual shall be used unless specifically noted otherwise.

**1.4 MILESTONE DATES**

Anticipated Start Date: October 13, 2020

Substantial Completion: November 2, 2020

Final Completion: November 20, 2020

\*Contractor may conduct work prior to October 13, however, the Contractor will need to get approval from Parks Canada prior to starting. Any additional costs associated with an early start date (e.g. traffic control measures, snow removal, additional environmental protection requirements, etc.) will be borne by the Contractor.

**1.5 WORK BY OTHERS**

- .1 Co-operate with other Contractors/subcontractors in carrying out their respective works and carry out instructions from Departmental Representative.
- .2 Co-ordinate work with that of other Contractors/subcontractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

- .3 Co-ordinate work with, including but not limited to, Parks Canada staff.

## **1.6 SETTING OUT OF WORK**

- .1 Departmental Representative will provide
  - .1 Design details, where required.
- .2 Contractor to:
  - .1 Set all layout and work stakes necessary to complete work.
  - .2 To provide measurement for payment.

## **1.7 WORK SCHEDULE**

- .1 Contractor shall prepare a proposed baseline construction schedule. Subsequent schedules shall have the baseline schedule shown for comparison.
- .2 When baseline schedule has been approved by Departmental Representative, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.

## **1.8 MEASUREMENT AND PAYMENT**

- .1 For any work listed in Division One Sections there will be no separate payment but is considered incidental unless noted otherwise.

## **1.9 ACCESS TO SITE**

- .1 Maintain and control Public traffic through work zones in accordance with Section 01 35 00 06 Special Procedures: Traffic Control.
- .2 Allow Departmental Representative unrestricted access to review and/or inspect all phases of the Work.
- .3 Maintain fire, police and emergency access to work areas.
- .4 Maintain access to Private, Public and Commercial facilities for Contract duration.

## **1.10 CONTRACTOR USE OF PREMISES**

- .1 Unrestricted use of site until Substantial Performance.
- .2 Limit use of premises for Work and for storage to allow:
  - .1 Intermittent owner occupancy.
  - .2 Work by others, including but not limited to BC Hydro and Telus.
- .3 Co-ordinate use of premises under direction of Departmental Representative.
- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

.8 For the purpose of this contract, Contractor will not be permitted to set up camp or otherwise occupy space in Mount Revelstoke National Park.

.9 Parks Canada regulations prohibit anyone working with the Park from using campground facilities.

#### **1.10 OWNER OCCUPANCY**

.1 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

#### **1.11 EXISTING SERVICES**

.1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.

.3 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.4 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.5 Record locations of maintained, re-routed and abandoned service lines.

.6 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

#### **1.12 NATIONAL PARK REGULATIONS**

.1 Contractor and all sub-contractors shall ensure that all work is performed in accordance with ordinances, laws, rules and regulations set out in the Canada National Parks Act.

.2 Contractor and all sub-contractors shall obtain business licenses from Parks Canada's Administration Office in Revelstoke prior to commencement of work.

.3 Contractor and all sub-contractors shall comply with all laws and government regulations applicable to work under this contract.

.4 All Contractor's and all sub-contractor's business and private vehicles are required to obtain vehicle passes from Parks Canada Administration Office in Revelstoke.

.5 Contractor to equip all service vehicles and supervisory vehicles with Emergency Spill Kit DOT-E-10102 or equivalent.

.6 Contractor is responsible to ensure all sub-contractors comply with ordinances, laws, rules and regulations set out in the Canada National Parks Act.

#### **1.13 DOCUMENTS REQUIRED**

.1 Maintain at job site, one copy each document as follows:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed Shop Drawings.

- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.

Part 2 **Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

Part 3 **Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

Part 1      **Part 1 General**

**1.1      ACCESS AND EGRESS**

- .1      Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial, federal, and other regulations.

**1.2      USE OF WORK SITE**

- .1      The Departmental Representative will specify the Work Site and it shall only be used for the purposes of the Work. The Work Site will be made available to the Contractor for its exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents.
- .2      Office trailer, if needed, may be set up at a location specified by the Departmental Representative.
- .3      While the Work Site is under the Contractor's control, the Contractor shall be entirely responsible for the security of the Work Site and of the Work.
- .4      The Contractor shall keep the Work Site clean and free from accumulation of waste materials and rubbish regardless of the source. The Contractor shall remove snow/ice as necessary for the performance, inspection, and/or review of the Work.
- .5      The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and the Environmental Procedures for this project. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
- .6      Any damage to the Work Site caused by the Contractor shall be repaired by the Contractor at its expense.
- .7      The Contractor may work 24 hours per day, seven days per week with the following restrictions:
  - .1      No work interferes with traffic during Statutory Holiday Weekends between Noon Friday and 7:00am Tuesday.
  - .2      No hauling of material during inclement weather.
- .8      Execute work with least possible interference or disturbance to normal use of premises. Arrange with Departmental Representative to facilitate work as stated.
- .9      Where work reduces security, provide temporary means to maintain security.
- .10     Closures: protect work temporarily until permanent enclosures are completed.

**1.3      WORK CONDUCTED IN AND ADJACENT TO WATERWAYS**

- .1      All components of the Work shall be in accordance with Section 01 35 43 Environmental Procedures.
  - .2      The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.
-

#### **1.4 SPECIAL REQUIREMENTS**

- .1 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic, and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress.
- .3 Ingress and egress of Contractor vehicles at site is limited to the single entrance/exit point (access road).

#### **1.5 SUPERVISORY PERSONNEL**

- .1 Within five Days after award notification, the Contractor shall submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.

The following personnel shall be included in the list:

- .1 Project Superintendent;
- .2 Safety Representative.

The above personnel shall perform the following duties:

- .1 The Project Superintendent shall be employed full time and shall be present on the Work Site each work day that Work is being performed, from the commencement of Work to Total Performance of the Work;
- .2 Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence;
- .3 Safety Representative shall possess safety experience in general construction. Duties shall encompass all matters of safety activities from commencement of Work until Total Performance of the Work.

#### **1.6 USE OF PUBLIC AREAS**

- .1 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas. All vehicles and equipment leaving the Work Site and entering public roadways shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle. All vehicles arriving at or leaving the Work Site and transporting materials shall be loaded in a manner which will prevent dropping of materials or debris on the roadways, and, where contents may otherwise be blown off during transit, such loads shall be covered by tarpaulins or other suitable covers. Spills of material, including rocks and debris from loaded trucks, shall be removed or cleaned immediately by the Contractor at no cost to the Owner. All activities shall be in accordance with Section 01 35 43 Environmental Procedures and the Environmental Protection Plan prepared by the contractor for the project. Hauling units on public highways shall not exceed legal highway load limits. The Contractor is responsible for ensuring all equipment accessing the Highway meets all requirements for vehicles traveling on Public Highways in the Province.

#### **1.7 SMOKING ENVIRONMENT**

- .1 Comply with applicable smoking regulatory restrictions.
-



Part 2            **Part 2 Products**

**2.1                NOT USED**

.1            Not Used.

Part 3            **Part 3 Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 General Conditions and Project Supplementary Conditions

**1.2 PRIME COST SUM**

- .1 Include in Contract Price a total Prime Cost Sum of: \$15,000.00
- .2 Do not include in the Contract Price, additional contingency allowances for products, installation, overhead or profit.
- .3 Prime Cost Sum provided for in the Lump Sum Arrangement Table is not a sum due to the Contractor. Rather, payment will be made against it for miscellaneous work not included in the unit price table under the General Conditions of the Contract.
- .4 No interpretation of the items listed under Prime Cost Sum Allowances shall indicate that work will be included under the Prime Cost Sum. Items, tasks, and activities included in the Works elsewhere in the Contract, including Unit price and Lump Sum Items, shall be paid as indicated in those sections and not under the Prime Cost Sum.
- .5 Any and all additional work must be approved in writing by the Departmental Representative prior to commencement.
- .6 All expenditures must be substantiated with verified invoices and/or accepted daily extra work reports as noted in Measurement and Payment Procedures below.
- .7 The intent for this item is to pay for unforeseen extra work that is not identified in this Contract. Unforeseen work may include, but it not limited to the following:
  - .1 Alterations to excavations and earthworks boundaries;
  - .2 Unforeseen site conditions prior to construction leading to additional site work;
  - .3 Changes in the building, civil, site utilities, or landscaping design related to unforeseen site conditions;
  - .4 Site contamination and/or dewatering;
  - .5 Archaeological finds; and
  - .6 Miscellaneous work not included in the unit price table under the General Conditions of the Contract
- .8 The Contract Price, and not Prime Cost Sum, includes Contractor's overhead and profit in connection with the Work.

**1.3 MEASUREMENT PROCEDURES**

- .1 Payment for Work under the “**Lump Sum Price Item 3 - Prime Cost Sum**” will be made using negotiated rates or by material, labour and equipment rates as per the following:
- .2 Rental rates will be in accordance with current B.C. Roadbuilders & Heavy Construction Association's rate schedule, and will be all inclusive and fully operated.

- .3 Vehicles (ie. Pickup trucks) will be paid either at daily rates as per the B.C. Roadbuilders & Heavy Construction Association's or by mileage using National Joint Council (NJC) rates. The Contractor will not be permitted to claim both daily rental and mileage rates.
- .4 Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits. Transportation time to and from site to be reimbursed only if equipment is used exclusively for additional work.
- .5 Equipment paid on standby will be paid on 50% of the relevant Less Operator rates to a maximum of 10 hrs per day.
- .6 When based upon actual costs for additional works under Prime Cost Sum, payment will be based upon supplied invoices and other work records.
- .7 The Prime Contractor may apply a 10% mark-up to subcontractor or supplier invoices only, as accepted by the Departmental Representative. No mark-up will be allowed on relevant equipment and labour rates.
- .8 A claim for additional payment will be considered submitted when all required documentation has been received by the Departmental Representative.
- .9 The Departmental Representative's signature on extra work reports is an agreement to the hours worked that day. Labour and equipment rates are to be reviewed by the Departmental Representative against the appropriate accepted rates when submitted for payment.

**Part 2 Products**

- .1 Products shall be in accordance with the stated specification's current standard.

**Part 3 Execution**

- .1 Work shall be in accordance with the stated specification's current standard.

**END OF SECTION**

**Part 1            General**

**1.1            MEASUREMENT AND PAYMENT - GENERAL**

- .1        Payments will be made based on the lump sum prices bid and the unit prices bid in the Tender, and in accordance with the Terms and Conditions of the Contract.
  - .2        The prices bid for various items of work, unless specifically noted otherwise, shall include the supply of all labour, material, plant, equipment, profit and overhead necessary to construct the work in accordance with the drawings and specifications.
  - .3        The prices bid for supply of materials and installation of materials unless specifically noted in the Schedule of Prices and shall be full compensation of supplying, hauling, installing, cleaning, testing, and placing in service together with all other work subsidiary and incidental thereto for which separate payment is not provided elsewhere.
  - .4        The method of measurement of the quantities for payment and the basis for payment will be in accordance with the following items of this section. The Contractor is responsible for all measurement, using generally accepted field survey methods and will be verified by the Departmental Representative.
  - .5        All materials on site whether existing structures, vegetation, topsoil, gravel, sand or other excavated, or piled materials are the property of the Owner or the owner of the land on which the work is located. Only those materials specifically noted in the specification or on drawings as belonging to the Contractor shall become the Contractor's property.
  - .6        Where there are excess excavated materials, unsuitable materials excavated or materials of any kind that are excavated but not used in the work, such materials are not the property of the Contractor unless authorized in writing by the Departmental Representative or specified to be disposed of by the Contractor.
  - .7        Each unit price shall be the full and only amount payable for the unit and all things directly or indirectly required to complete it in accordance with the contract, such as, but not limited to delivering, erecting, handling, re-handling, storing, consumable items, temporary facilities, scaffolding, protecting, painting, setting out, disposing, clean up, measuring, calculating, scheduling, administration, supervising, inspection, testing, overhead, profit and ancillary/incidental items thereto for which separate payment is not elsewhere provided.
  - .8        Each item will be measured for payment in the unit stated in the Schedule of Prices. The unit prices in the Schedule shall remain unchanged notwithstanding differences between the actual quantities and quantities shown herein.
  - .9        The items listed in the Schedule of Prices shall, when all considered together, cover the entire Scope of the Work required by the Tender Documents at the time of tendering. The scope of each item is, and shall be, interpreted accordingly.
  - .10        Provisional items as identified in the Schedule of Prices are discretionary and will be determined by the Owner if they are to be constructed as part of the work following the award of this Contract.
-

## **Part 2                    Measurement and Payment Items**

### **2.1                    MOBILIZATION AND DEMOBILIZATION (Item 1.1)**

- .1      This Lump Sum Price will include all costs associated in mobilizing, maintaining, and demobilizing the site, required to execute the work including:
  - .1          Specified insurance, equipment, operating overhead, mobilization, and demobilization costs required to maintain the workforce on site.
  - .2          Provide the necessary bonds, permits and business licence.
  - .3          Safeguarding work areas including safety program, provision of temporary access roadways, temporary paths, temporary barriers, delineators, barricades, flashing lights, signage, flagmen and other measures required to protect the public from the worksite and to provide access at intersecting streets, including maintenance of such items. Note that fencing and signage protecting the construction site from public access is to be included in General Requirements.
  - .4          Temporary material storage and handling.
  - .5          Maintenance of stockpile and material conditioning sites including restoration.
  - .6          Notification of BCOneCall and other private sources necessary to obtain all underground utility locations.
  - .7          Location of existing utilities by Hydro-vacating or other approved means.
  - .8          Accommodation of vehicle and pedestrian traffic affected by the work, including planning, signage, temporary pavement markings, barricades, traffic control and public notification.
  - .9          Environmental management as required in the contract documents.
  - .10        Dust and sediment control throughout the project duration.
  - .11        Assume role and responsibility of Prime Contractor under the Workers Compensation Health and Safety Act.
  - .12        Construction Survey requirements including all labour, materials and coordination required to complete Construction Surveys for the Project.
  - .13        Materials Testing and Quality Control as specified in Section 01 45 00 - Quality Control.
  - .14        Supply, maintenance, and utility costs for field offices as specified in Section 01 52 00 – Construction Facilities.
  - .15        The Contractor's responsibilities and requirements as outlined in all specification sections which are not included elsewhere.
- .2      Measurement: The Owner will base payment for this lump sum item on a percentage of work completed in dollars.
- .3      Payment: Lump Sum price bid.

## **2.2 SITE PREPARATION & ASPHALT PAVING**

### **SCARIFY AND COMPACT BASE COURSE AGGREGATE (Item 2.1)**

- .1 The Unit Price shall be full compensation for scarifying, mixing, moisture conditioning, rolling, spreading, shaping and compacting to the specified depths and density.
- .2 Measurement: Field measured in horizontal square metres of the base course preparation neat line areas before placement of asphalt concrete pavement. No payment will be made for base course preparation completed outside the specified limits.
- .3 Payment: Unit price bid per horizontal square meter which shall be full compensation for all labour, materials, and equipment necessary to complete the work.

### **GRAVEL BASE AND ASPHALT PAVEMENT (Items 2.2 & 2.3)**

- .1 The Unit Price for these items shall be full compensation for supply, hauling, placement, spreading, shaping and compaction in the areas described in the drawings and specifications to the specified depths and density.
- .2 Measurement: Truck slips delivered to the Departmental Representative with the actual tonnage, date of delivery, type of material. No payment will be made for material without the appropriate truck slip.
- .3 Payment: Unit price bid per metric tonnes by weighed truck slip will be full compensation for all labour, materials, and equipment necessary to complete the work.

## **2.3 PRIME COST SUM**

- .1 The Prime Cost Sum information is shown under Section 01 21 00 "Allowances".
- .2 Measurement and payment: All expenditures must be substantiated with verified invoices and/or accepted daily extra work reports as noted in Measurement and Payment Procedures below

**END OF SECTION**

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**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Coordination Work with other contractors and work by Owner under administration of the Departmental Representative.
- .2      Meetings.

**1.2            RELATED SECTIONS**

- .1      Section 01 32 00 - Construction Progress Documentation.
- .2      Section 01 33 00 - Submittal Procedures.
- .3      This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3            COORDINATION**

- .1      Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of, under instructions of Departmental Representative.

**1.4            PROJECT MEETINGS**

- .1      Schedule and administer bi-weekly project meetings throughout progress of Work as determined by Departmental Representative.
- .2      Schedule and administer pre-installation meetings when specified in sections and when required to coordinate related or affected Work.
- .3      Departmental Representative to prepare agenda for meetings.
- .4      Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.
- .5      Provide physical space and make arrangements for meetings.
- .6      Preside at meetings.
- .7      Record minutes. Include significant proceedings and decisions. Identify action by parties.
- .8      Reproduce and distribute copies of minutes within 3 days after each meeting and transmit to meeting participants not in attendance.

**1.5            CONSTRUCTION ORGANIZATION AND START-UP**

- .1      Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
  - .2      Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
  - .3      Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
  - .4      Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
  - .5      Agenda to include following:
    - .1      Appointment of official representative of participants in Work.
-

- .2 Schedule of Work, progress scheduling as specified in Section 01 32 00.
- .3 Schedule of submission of shop drawings, samples, colour chips as specified in Contract Documents.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences as specified in Section 01 33 00.
- .5 Delivery schedule of specified equipment as specified in Section 01 32 00.
- .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .7 Owner-furnished Products.
- .8 Record drawings as specified in Section 01 78 40.
- .9 Monthly progress claims, administrative procedures, photographs, and holdbacks.
- .10 Insurances and transcript of policies.
- .6 Comply with Departmental Representative's allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
- .7 During construction, coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
- .8 Comply with instructions of Departmental Representative for use of temporary utilities and construction facilities.
- .9 Coordinate field engineering and layout work with Departmental Representative.

## **1.6 ON-SITE DOCUMENTS**

- .1 Maintain at job site, one copy each of the following:
  - .1 Contract drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed shop drawings.
  - .5 Change orders.
  - .6 Other modifications to Contract.
  - .7 Field test reports.
  - .8 Copy of approved Work schedule.
  - .9 Manufacturers' installation and application instructions.
  - .10 Labour conditions and wage schedules.
  - .11 Applicable current editions of municipal regulations and by-laws. Current building codes, complete with addenda bulletins applicable to the Place of the Work.



## **1.7 SCHEDULES**

- .1 Submit preliminary construction progress schedule as specified in Section 01 32 00 to Departmental Representative coordinated with Departmental Representative's project schedule.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.
- .3 During progress of Work revise and resubmit as directed by Departmental Representative.

## **1.8 CONSTRUCTION PROGRESS MEETINGS**

- .1 During course of Work and weeks prior to project completion, schedule progress meetings.
- .2 Departmental Representative, Contractor, major subcontractors involved in Work are to be in attendance.
- .3 Notify parties minimum 5 days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.
- .5 Agenda to include following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Corrective measures and procedures to regain projected schedule.
  - .6 Revision to construction schedule.
  - .7 Progress schedule, during succeeding work period.
  - .8 Review submittal schedules: expedite as required.
  - .9 Maintenance of quality standards.
  - .10 Review proposed changes for affect on construction schedule and on completion date.
  - .11 Review site security issues.
  - .12 Other business.

## **1.9 SUBMITTALS**

- .1 Prepare and issue submittals to Departmental Representative for review.
  - .2 Submit preliminary Shop Drawings, product data and samples for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Departmental Representative.
  - .3 Submit requests for payment for review, and for transmittal to Departmental Representative.
  - .4 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.
  - .5 Process substitutions through Departmental Representative.
  - .6 Process change orders through Departmental Representative.
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- .7 Deliver closeout submittals for review and preliminary inspections, for transmittal to Departmental Representative.

**1.10 CLOSEOUT PROCEDURES**

- .1 Notify Departmental Representative when Work is considered ready for Substantial Performance.
- .2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with Departmental Representative's instructions for correction of items of Work listed in executed certificate of Substantial Performance.
- .4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1       Schedules, form, content, submission.
- .2       Submittals schedule.

**1.2            RELATED SECTIONS**

- .1       Section 01 33 00 - Submittal Procedures.
- .2       This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3            SCHEDULES**

- .1       Schedule Format.
    - .1       Prepare schedule in form of a horizontal Gantt bar chart.
    - .2       Provide a separate bar for each major item of work.
    - .3       Split horizontally for projected and actual performance.
    - .4       Provide horizontal time scale identifying first Working Day of each week.
    - .5       Format for listings: Table of Contents of the Project Manual.
    - .6       Identification of listings: By specification Section numbers.
  - .2       Schedule Submission.
    - .1       Submit initial schedule within 15 days after award of Contract.
    - .2       Submit schedules in electronic format, forward as PDF files.
    - .3       Departmental Representative will review schedule and return review copy within 10 days after receipt.
    - .5       Resubmit finalized schedule within 7 days after return of review copy.
    - .6       Submit revised progress schedule with each application for payment.
    - .7       Distribute copies of revised schedule to:
      - .1       Job site office.
      - .2       Subcontractors.
      - .3       Other concerned parties.
    - .8       Instruct recipients to report to Contractor within 10 days, any problems anticipated by timetable shown in schedule.
-

#### **1.4 CONSTRUCTION PROGRESS SCHEDULING**

- .1 Submit initial schedule in duplicate within 15 days after date of Owner-Contractor Agreement.
- .2 Revise and resubmit as required.
- .3 Submit revised schedules with each Application for Payment, identifying changes since previous version.
- .4 Submit a computer generated chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- .5 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- .6 Indicate estimated percentage of completion for each item of Work at each submission.
- .7 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
- .8 Include dates for commencement and completion of each major element of construction as follows.
  - .1 Mobilization.
  - .2 Base preparation and compaction.
  - .3 Asphalt Paving.
  - .4 Demobilization.
- .9 Indicate projected percentage of completion of each item as of first day of month.
- .10 Indicate progress of each activity to date of submission schedule.
- .11 Indicate changes occurring since previous submission of schedule:
  - .1 Major changes in scope.
  - .2 Activities modified since previous submission.
  - .3 Revised projections of progress and completion.
  - .4 Other identifiable changes.
- .12 Provide a narrative report to define:
  - .1 Problem areas, anticipated delays, and impact on schedule.
  - .2 Corrective action recommended and its effect.
  - .3 Effect of changes on schedules of other prime contractors.

#### **1.5 PROGRESS PHOTOGRAPHS**

- .1 Digital Photography:
    - .1 Submit electronic copy of digital photography in format.
    - .2 Identification: Name and number of project and date of exposure indicated.
  - .3 Number of Viewpoints: Locations of viewpoints determined by Departmental Representative.
  - .4 Frequency: Monthly with progress statement.
-

**1.6 SUBMITTALS SCHEDULE**

- .1 Include schedule for submitting shop drawings, product data, and samples.
- .2 Indicate dates for submitting, review time, resubmission time, and last date for meeting fabrication schedule.
- .3 Include dates when submittals will be required for Owner-furnished products.
- .4 Include dates when reviewed submittals will be required from Departmental Representative.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Shop drawings and product data.
- .2 Samples.
- .3 Certificates and transcripts.

**1.2 RELATED SECTIONS**

- .1 Section 01 32 00 - Construction Progress Documentation.
- .2 Section 01 78 10 - Closeout Procedures.
- .3 Other sections requesting submittals.
- .4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3 ADMINISTRATIVE**

- .1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Present Shop Drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not manufactured or produced in SI Metric units, converted values within the metric measurement tolerances are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.
- .6 Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.
- .7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Verify field measurements and affected adjacent Work are coordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .11 Keep 1 reviewed copy of each submission on site.

**1.4 SHOP DRAWINGS AND PRODUCT DATA**

- .1 The term "Shop Drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
  - .3 Allow 10 days for Departmental Representative's review of each submission.
  - .4 Adjustments made on Shop Drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
  - .5 Make changes in Shop Drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.
  - .6 Accompany submissions with duplicate transmittal letter, containing:
    - .1 Date.
    - .2 Project title and number.
    - .3 Contractor's name and address.
    - .4 Identification and quantity of each shop drawing, product data and sample.
    - .5 Other pertinent data.
  - .7 Submissions shall include:
    - .1 Date and revision dates.
    - .2 Project title and number.
    - .3 Name and address of:
      - .1 Subcontractor.
      - .2 Supplier.
      - .3 Manufacturer.
    - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
    - .5 Details of appropriate portions of Work as applicable:
      - .1 Fabrication.
      - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
      - .3 Setting or erection details.
      - .4 Capacities.
      - .5 Performance characteristics.
      - .6 Standards.
      - .7 Operating weight.
      - .8 Wiring diagrams.
      - .9 Single line and schematic diagrams.
      - .10 Relationship to other parts of the Work.
  - .8 After Departmental Representative's review, distribute copies.
  - .9 Submit Shop Drawings in PDF format for each requirement requested in specification sections and as Departmental Representative may reasonably request.
-

- .10 Submit product data sheets or brochures in PDF format or requirements requested in specification sections and as requested by Departmental Representative where Shop Drawings will not be prepared due to standardized manufacture of product.
- .11 Delete information not applicable to project.
- .12 Supplement standard information to provide details applicable to project.
- .13 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, the Shop Drawing will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and re-submission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

#### **1.5 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

**END OF SECTION**



**Part 1 General**

**1.1 MEASUREMENT AND PAYMENT**

- .1 Cost of traffic control will not be paid for directly, but shall be considered incidental to contract unit prices tendered

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Before commencing construction activities or delivery of materials to site, submit traffic management plan for review and approval by Departmental Representative.
- .3 Include in Traffic Management Plan: Required temporary access roadways, temporary paths, temporary barriers, delineators, barricades, flashing lights, signage, flagmen and all other traffic controls and measures required to protect the public from the worksite and to provide access at intersecting private driveways, streets, including maintenance of such items. Traffic regulation shall be in accordance with the TAC Manual of Uniform Traffic Control Devices.

**1.3 REFERENCES**

- .1 British Columbia Ministry of Transportation and Infrastructure
  - .1 TAC Manual of Uniform Traffic Control Devices.

**1.4 CONTRACTOR COORDINATION**

- .1 The Meadows in the Sky Parkway shall be open to the General Public throughout the duration of the construction. Co-operate with other Contractors/subcontractors in carrying out their respective works, if applicable, and carry out instructions from Departmental Representative.

**1.5 CONTROL OF PUBLIC TRAFFIC**

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to Manual of Uniform Traffic Control Devices for Streets and Highways for situations as follows:
  - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
  - .2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
  - .3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
  - .4 Where temporary protection is required while other traffic control devices are being erected or taken down.
  - .5 For emergency protection when other traffic control devices are not readily available.
  - .6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
  - .7 Delays to public traffic due to contractor's operators: 15 minutes' maximum.

## **1.6 PROTECTION OF PUBLIC TRAFFIC**

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
  - .1 Place equipment in position to minimize interference and hazard to travelling public.
  - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
  - .3 Do not leave equipment on travelled way overnight.
- .3 Close lanes of road only after receipt of written approval from Departmental Representative.
  - .1 Before re-routing traffic erect suitable signs and devices to Manual of Uniform Traffic Control Devices for Streets and Highways.
- .4 Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.
  - .1 Provide 7 m wide minimum temporary roadway for traffic in two-way sections through Work and on detours.
  - .2 Provide 5 m wide minimum temporary roadway for traffic in one-way sections through Work and on detours.
- .5 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist that meet approval of Departmental Representative.

## **1.7 INFORMATIONAL AND WARNING DEVICES**

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices to Manual of Uniform Traffic Control Devices for Streets and Highways.
- .3 Place signs and other devices in locations recommended in Manual of Uniform Traffic Control Devices for Streets and Highways.
- .4 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .5 Continually maintain traffic control devices in use:
  - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - .2 Remove or cover signs which do not apply to conditions existing from day to day.

## **1.8 CONTROL OF PARKING LOT TRAFFIC**

- .1 Repair damage done to existing parking lots caused by any construction activities of this project.
  - .2 Erect signs, delineators, barricades and miscellaneous warning devices as required to protect materials stored in campground.
-

- .3 Provide and maintain “access to” and “egress from” Mount Revelstoke National Park.

**Part 2**

**Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3**

**Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of British Columbia
  - .1 Workers Compensation Act, latest version.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operations.
  - .3 Mitigations to prevent the spread of COVID-19 among staff and public at the work site.
  - .3 Radio communication plan: There is cellular communication available at the site.
- .3 Submit PDF copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial, and Territorial health and safety inspectors.
- .5 Submit to Departmental Representative copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 4 days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .10 Submit to Departmental Representative a PDF copy of on-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

**1.3 FILING OF NOTICE**

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

**1.4 SAFETY ASSESSMENT**

- .1 Perform site specific safety hazard assessment related to project.
-

**1.5 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

**1.6 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

**1.7 GENERAL REQUIREMENTS**

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications, and must include COVID-19 mitigations that meet provincial health authority guidelines.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

**1.8 RESPONSIBILITY**

- .1 The Contractor will assume all roles and responsibilities of Prime Contractor as described by Workers Compensation Act of British Columbia.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

**1.9 COMPLIANCE REQUIREMENTS**

- .1 Comply with WorkSafeBC Safety Regulation,
- .2 Comply with R.S.Q., c. S-2.1, an Act respecting Health and Safety, and c. S-2.1, r.4 Safety Code for the Construction Industry.
- .3 Comply with Canada Labour Code Pt 2, Canada Occupational Safety and Health Regulations.

**1.10 UNFORSEEN HAZARDS**

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

**1.11 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Safety Representative. Safety Representative must:
    - .1 Have site-related working experience.
    - .2 Have working knowledge of occupational safety and health regulations.
    - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
    - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
-

- .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

#### **1.12 POSTING OF DOCUMENTS**

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

#### **1.13 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

#### **1.14 BLASTING**

- .1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

#### **1.15 POWDER ACTUATED DEVICES**

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

#### **1.16 WORK STOPPAGE**

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not used.

### **Part 3 Execution**

#### **3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

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Part 1      **Part 1 General**

**1.1      NATIONAL PARKS, FISHERIES, and SPECIES AT RISK ACT**

- .1      It is the responsibility of the Contractor to ensure that all Project works are conducted in accordance with all applicable regulations and approvals including, but not limited to, the Fisheries Act, Species at Risk Act and Canada National Parks Act. Perform work in accordance with the ordinances and laws set out in the National Parks Act and Regulations.
- .2      Refer to the requirements stated in the Basic Impact Assessment (BIA) dated September 18, 2017 which are outlined in Section 1.14 within this Division. A full copy of this report will be provided upon Contract Award.

**1.2      ACTION AND INFORMATIONAL SUBMITTALS**

- .1      Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .2      Product Data:
    - .1      Submit manufacturer's instructions, printed product literature and data sheets for materials to be installed and include product characteristics, performance criteria, physical size, finish and limitations.
    - .2      Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
  - .3      Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
  - .4      All staff employed at the construction site will be required to attend an environmental briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. This information will be available on site and provided to any new workers and/or subcontractors such that subsequent environmental briefings can be presented by arrangement with the Environmental Surveillance Officer (ESO) through Departmental Representative.
  - .5      Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
  - .6      Address topics at level of detail commensurate with environmental issue and required construction tasks.
  - .7      Include in Environmental Protection Plan (EPP):
    - .1      Names of persons responsible for ensuring adherence to Environmental Protection Plan.
    - .2      Names and qualifications of persons responsible for training site personnel.
    - .3      Descriptions of environmental protection personnel training program.
    - .4      Erosion and Sediment Control Plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with the Land Development Guidelines for the Protection of Aquatic Habitat provided by the Department of Fisheries and Oceans (DFO) or requirements of authorities having jurisdiction, whichever is more stringent. Refer to Article 1.8.
    - .5      Drawings indicating locations of proposed temporary excavations or
-

- embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
- .6 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
  - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
- .7 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
  - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .8 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
  - .1 Dispose of waste materials and debris outside of Mt. Revelstoke National Park.
  - .2 On site waste containers must prohibit wildlife from accessing waste.
- .9 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .10 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .11 Historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands – if applicable.

### **1.3 FIRE AND FIRE PROTECTION**

- .1 Fires and burning of rubbish on site is not permitted.
- .2 A fire prevention plan which describes the fire prevention equipment (fire extinguishers etc.) and procedures on site in the event of a fire. Should a fire occur, Jasper Dispatch and the Fire Duty Officer must be notified immediately

### **1.4 ENVIRONMENTAL IMPACT ASSESSMENT**

- .1 Review and conform to the requirements outlined in the Environmental Impact Assessment(s) to be provided upon Contract Award.

### **1.5 REDUCING SITE DISTURBANCES**

- .1 During construction, the Contractor shall take all possible care to avoid disturbance to existing trees and vegetation. The Contractor shall coordinate with a Departmental Representative prior to removing any trees or vegetation.
- .2 When work is on or adjacent to a previously undisturbed area comply with following requirements:
  - .1 Avoid major alterations to sensitive topography, vegetation and wildlife habitat in areas indicated.
  - .2 Minimize disturbances to watershed using site water management measures to ensure that watersheds and groundwater will be preserved.



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- .3 Take measures to avoid soil compaction.

**1.6 DISPOSAL OF WASTE**

- .1 All garbage must be stored and handled in conformance with National Parks Garbage Regulations.
- .2 Dispose of waste materials and debris outside of Mount Revelstoke National Park.
- .3 All domestic garbage should be stored over the short term in wildlife-proof dumpsters. Domestic recycling should be put in appropriate facilities. Contaminated materials are to be taken out of the Park.
- .4 Do not bury rubbish and waste materials on site.
- .5 Maintain the site in a tidy condition, free of waste material, debris and litter.

**1.7 DRAINAGE**

- .1 Develop and submit Erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, whichever is most stringent.
- .2 Erosion and Sediment Control Plan shall conform to the Land Development Guidelines for the Protection of Aquatic Habitat provided by the Department of Fisheries and Oceans (DFO).
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure water pumped into waterways, sewer or drainage systems is free of suspended materials.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with Parks Canada requirements and in conformance with the Environmental Contaminants Act for Management of Hazardous and Toxic Wastes at Federal Establishments.
- .6 Construct and erect erosion barriers to locations indicated and as directed by Departmental Representative.

**1.8 SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

- .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

- .4 Minimize stripping of topsoil and vegetation.

**1.09 WORK ADJACENT TO WATERWAYS**

- .1 Construction equipment to be operated on land only.
-

- .2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative.
- .3 Waterways to be kept free of excavated fill, waste material and debris.
- .4 There is to be no construction or crossings carried out within any waterways in the contract limits.
- .5 All vehicles shall be parked at least 10 m from any watercourse and on hardened surfaces.

#### **1.10 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
  - .1 Provide temporary enclosures where directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

#### **1.11 HISTORICAL/ARCHAEOLOGICAL CONTROL**

- .1 In the event that historical, archaeological, cultural resources, biological resources or wetlands are accidentally discovered on-site the Contractor is to immediately cease work and notify the Departmental Representative.

#### **1.12 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
  - .1 Take action only after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

#### **1.13 ADDITIONAL PROJECT SPECIFIC MEASURES**

The Contractor will adhere to following measures:

- .1 Prepare an Emergency Response Plan that outlines procedures to follow in the case of an emergency (wildlife encounter, equipment malfunction/failure, fire, motor vehicle accident, etc.).
- .2 All re-paving and asphalt work shall comply with the following:
  - a. Trucks for hauling asphalt mixture shall have tight, clean, smooth metal beds that have been sprayed with a minimum amount of fuel oil to prevent the mixture from adhering and causing waste asphalt. The

vehicle covers shall be securely fastened. Excess truck box lubricants such as light oil, detergent or lime solutions shall not be allowed to contaminate the mix, and, shall be disposed of in an environmentally acceptable manner. Truck box lubricant application shall be carried out within adequate containment (i.e. bermed)

- b. Asphalt plant operation must comply with all environmental pollution control regulations applicable in the plant area
  - c. c. The Contractor shall be responsible for the purchase and the safe delivery/storage/handling of asphalt cement and emulsions to the asphalt plant site. Excess hot mix or reject asphalt shall be temporarily stored as directed by the Departmental Representative, and removed from the Park, prior to completion of the contract a later date. All costs for removal and disposal shall be the responsibility of the Contractor and no separate payment shall be made.
  - d. Ground asphalt material shall be removed, recycled, or properly stored at a location approved by the Departmental Representative.
  - e. The Contractor shall ensure that there is enough room between the stockpiles and the asphalt plant for a loader in the event of a spill at the asphalt plant. A containment berm with an associated liner made of occlusive material (e.g. plastic of a thickness approved by the Departmental Representative) and covered with absorbent sand or clay shall be installed under the asphalt storage tank to ensure containment of 110% of the tank's capacity
- .3 In addition to what is outlined in this Division, all other applicable Best Management Practices should be followed if they apply, this may include but is not limited to:
- a. MRG BMP 1.01 Vegetation Removal (June 2015)
  - b. PCA National BMP – Roadway, Highway, Parkway and Related Infrastructure (May 2015)
  - c. PCA National BMP – Trail Maintenance and Modification (August 2016)
  - d. PCA National BMP – Campground and Day Use Areas (August 2016)
  - e. PCA National BMP – Common Activities (March 2017)
  - f. MRG Accidental Finds Protocol (2016)

Part 2 **Part 2 Products**

**2.1 NOT USED**

.1 Not Used.

Part 3 **Part 3 Execution**

**3.1 NOT USED**

.1 Not Used.

**END OF SECTION**

Part 1      **Part 1 General**

**1.2      NATIONAL PARK REGULATIONS**

- .1 Contractor and all sub-contractors shall ensure that all work is performed in accordance with ordinances, laws, rules and regulations set out in the Canada National Parks Act.
- .2 Contractor and all sub-contractors shall obtain business licenses from Parks Canada Administration Office in Revelstoke, BC, prior to commencement of work.
- .3 Contractor and all sub-contractors shall comply with all laws and government regulations applicable to work under this contract.
- .4 All Contractor's and all sub-contractor's business and private vehicles are required to obtain vehicle passes from Parks Canada Administration Office in Revelstoke, BC.
- .5 Contractor to equip all service vehicles and supervisory vehicles with Emergency Spill Kit DOT-E-10102 or equivalent.
- .6 Contractor is responsible to ensure all sub-contractors comply with the Canada National Parks Act.

**1.4      SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions and municipal by-laws.

Part 2      **Part 2 Products**

**2.1      NOT USED**

- .1 Not Used.

Part 3      **Part 3 Execution**

**3.1      NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 References and standards.
- .2 Standards producing industry organizations and their addresses.

**1.2 RELATED SECTIONS**

- .1 Section 01 61 00 - Product Requirements.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3 REFERENCES**

- .1 For Products or quality specified by association, trade, or other references or consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- .2 Conform to reference standard by except where a specific date is established or required by code.
- .3 Obtain copies of standards where required by product specification sections.
- .4 Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Departmental Representative shall be altered from the Contract Documents by mention or inference otherwise, in any reference document.

**1.4 STANDARDS PRODUCING INDUSTRY ORGANIZATIONS**

- .1 The following associations and organizations are cited in specification sections.  
Acronym, name, address, and Internet URL: addresses are as follows.
  - .2 Industry Organizations:

ANSI	American National Standards Institute	(202) 293-8020
	<a href="http://www.ansi.org">www.ansi.org</a>	
ASTM	ASTM International	(610) 832-9585
	(American Society for Testing and Materials International)	
	<a href="http://www.astm.org">www.astm.org</a>	
CSA	Canadian Standards Association	(800) 463-6727
	<a href="http://www.CSA.ca">www.CSA.ca</a>	

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1            Quality assurance criteria.

**1.2            RELATED SECTIONS**

- .1            Section 01 45 00 - Quality Control.
- .2            This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3            REFERENCES**

- .1

**1.4            QUALITY ASSURANCE**

- .1            Testing organization services as specified in Sections.
- .2            Testing organization: Current member in good standing of their respective professional or industry organization and certified to perform specified services.
- .3            Comply with applicable procedures and standards of the certification sponsoring association.
- .4            Perform services under direction of supervisor qualified under certification requirements of sponsoring association.
- .5            Qualifications:
  - .1            Provide adequate workforce training through meetings and demonstrations.
  - .2            Have someone on site with deconstruction experience throughout project for consultation and supervision purposes.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Inspection and testing, administrative and enforcement requirements.
- .2      Tests and mix designs.

**1.2            RELATED SECTIONS**

- .1      Section 01 21 00 - Allowances.
- .2      Section 01 43 00 - Quality Assurance.
- .3      This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3            REFERENCES**

- .1      ISO/IEC 17025-2005 - General Requirements for the Competence of Testing and Calibration Laboratories.
- .2      SCC (Standards Council of Canada).

**1.4            INSPECTION BY AUTHORITY**

- .1      Allow Authorities Having Jurisdiction access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2      Give timely notice requesting inspection whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by law in the Place of the Work.
- .3      If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

**1.5            REVIEW BY DEPARTMENTAL REPRESENTATIVE**

- .1      Departmental Representative may order any part of the Work to be reviewed or inspected if Work is suspected to be not in accordance with Contract Documents.
- .2      If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.
- .3      If such Work is found in accordance with Contract Documents, Owner will pay cost of review and replacement.

**1.6            INDEPENDENT INSPECTION AGENCIES**

- .1      All base quality control testing to satisfy the requirements of the specifications for quality control and is to be at the Contractor's cost. PCA will engage independent testing facility should the testing results from the contractor's quality control show inconsistencies.
  - .2      Provide equipment required for executing inspection and testing by appointed agencies.
-

- .3 Employment of inspection and testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Owner. Paycosts for retesting and re-inspection.

#### **1.7 ACCESS TO WORK**

- .1 Allow inspection and testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Cooperate to provide reasonable access and facilities for such access.

#### **1.8 PROCEDURES**

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

#### **1.9 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price the difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

#### **1.10 REPORTS**

- .1 Submit 4 paper copies of signed inspection and test reports to Departmental Representative.
- .2 Provide signed paper copies to Subcontractor of work being inspected or tested.

#### **1.11 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as may be requested.
- .2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Departmental Representative and may be authorized as recoverable.

**END OF SECTION**

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**Part 1 General**

**1.1 BARRICADES**

- .1 Provide, erect, and maintain adequate temporary barricades and warning signs for the protection of staff, students and public at all closures, detours, and points of work to the requirements of WorkSafe BC, and/or local authorities having jurisdiction.

**1.2 CONSTRUCTION SAFETY AND ACCIDENT PREVENTION PROGRAM**

- .1 Refer also to the Owner's special requirements for occupational health and safety regulations and emergency first aid procedures.
- .2 The Contractor will indemnify the Owner and the Facility and hold the Owner and Facility harmless from any manner of claims, demands, costs, losses, penalties and proceedings arising out of, or in any way related to, unpaid WorkSafe BC assessments owing any person or corporation engaged in the performance of this Contract, or arising out of, or in any way related to, a failure to observe safety rules, regulations, practices, of Work Safe BC.
- .3 The Contractor shall designate a Construction Safety Coordinator for the Work as may be required by municipal or Provincial Health Services Authority requirements.
- .4 The Construction Safety Officer shall provide a Construction Safety Program in accordance with By-Law requirements. In addition the Construction Safety Officer shall ensure that each Subcontractor appoints a Trades Safety Coordinator as may be required by municipal or Ministry requirements.
- .5 Take precautions to prevent the overloading of any part of the existing structures, or scaffolding during the progress of the Work, make good any damage and any claims resulting from such overloading.
- .6 No new or existing load bearing structural members shall be cut, drilled or sleeved without the written approval of the Departmental Representative.
- .7 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the Work.

**1.3 ACCESS TO SITE**

- .1 Provide and maintain sidewalk crossings, ramps and construction runways as may be required for access to the Work and to maintain public access to existing facilities.
- .2 Locate proper access to the site for delivery of materials.
- .3 Comply with requirements of traffic restrictions of the Owner and obtain approval from the Owner for use of parking and delivery facilities, etc., relevant to this contract.
- .4 Maintain access for fire trucks to site during the construction period to the satisfaction of the Owner and other local authorities having jurisdiction.
- .5 Keep adjacent roadways and parking lots clear at all times.

**1.4 SANITARY FACILITIES**

- .1 Contractor to provide on-site washroom facilities for construction staff.
-

- .2 Maintain in clean condition.

## **1.5 TEMPORARY WATER SUPPLY**

- .1 No charge will be made for cost of water for temporary use when drawn from existing service. Be responsible for hook-up to the approved temporary water supply connection point and for all distribution systems from the connection point as required to facilitate the completion of the Work, including all the requisite piping connections, valves, hoses and storage facilities. Make same available for the use of all trades, check source and alter, adapt, maintain and remove on completion as necessary. There is a limited supply of water in the reservoir where large volumes of water are to be used for construction activities. The contractor is to arrange and pay for this water to be brought to the site.
- .2 Before making any connections to the existing water service obtain approval from the Owner.

## **1.6 TEMPORARY POWER AND LIGHT**

- .1 Provide temporary electrical equipment and distribution systems necessary for temporary power services. Coordinate with Owner's representative.
- .2 Temporary power services shall conform to the Canadian Electrical Code standards and applicable By-Laws. Make same available for the use of all trades. Alter, adapt, connect, disconnect and remove as necessary.
- .3 Temporary service shall be energized only after the Owner's approval.
- .4 The Contractor shall not use existing power source for heavy power tools or welding equipment and shall ensure existing electrical circuits are not overloaded by the use of temporary power supply.

## **1.7 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by Owner's insurance companies, by the City and local authorities having jurisdiction, and governing codes, regulations and bylaws.
-

- .2 Take all necessary precautions to eliminate fire hazards and instruct Superintendent to make periodic inspections to ensure proper preventative measures are being complied with by all personnel working on the site.
- .3 Comply with the Owner's, Provincial and City fire safety requirements during the period of construction and other regulations pertaining to fire protection during construction work.
- .4 Precautions shall be taken at all times to prevent fire by spontaneous combustion.

## **1.8 SECURITY**

- .1 Be responsible for security as required to suit construction progress
- .2 Subcontractors shall make their own arrangements to ensure the security of their own equipment, materials and work, in cooperation with the Contractor.
- .3 Neither the Departmental Representative, nor the Owner will be responsible for any loss or damage to the building, to materials, equipment or other property of the Contractor.
- .4 The Contractor shall indemnify and save harmless the Owner and the Departmental Representative and protect its own interests against:
  - .1 Theft, burglary or robbery of, and loss or damage to, all materials and equipment brought to the site for use in the Work, whether or not such materials and equipment are incorporated in the Project at the time that any such theft, burglary, robbery, loss or damage occurs.
  - .2 Fire, theft or burglary of, and loss or damage to any of its own plant and equipment being used on the Project and/or stored on the Site.
- .5 Security forces, if provided by the Owner or Contractor, shall not relieve the Contractor and his Subcontractors of the above obligations.
- .6 The Owner may install card identification and/or other security check systems to control all access to the site. The Contractor shall ensure that all firms and persons employed on the Work comply with the Owner's security policies and procedures as these are established.

## **1.9 FIRST AID**

- .1 Provide First Aid facilities on site, to requirements of Industrial Health and Safety Regulations of Work Safe BC.
- .2 Provide and maintain an accident prevention program to the requirements of the Contractor's Work Safety program and Work Safe BC. Subcontractors shall comply with the requirements of this accident prevention program and shall cooperate with the Contractor and Owner's representative in its execution.

## **1.10 PROJECT CLEANLINESS**

- .1 Deposit waste material and debris in waste containers and remove daily from the Site.

## **Part 2 Products**

- .1 Not Used.

## **Part 3 Execution**

- .1 Not Used.

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**END OF SECTION**

**Part 1 General**

**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

**1.2 INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation – if applicable.
- .2 Identify areas which must be graveled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities to execute work expeditiously.
- .5 Remove from site all such work after use.

**1.3 SITE STORAGE/LOADING**

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.4 CONSTRUCTION PARKING**

- .1 Parking will be permitted on site provided it does not disrupt performance of Work or normal operations of the National Park. Parking areas must be approved by Departmental Representative.
- .2 Provide and maintain adequate access to project site.

**1.5 SECURITY**

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

**1.6 OFFICES**

- .1 If required by Contractor, provide office of sufficient size to accommodate required work activities of Contractor and all Sub-Contractors. Departmental Representative to approve location of office.
- .2 Provide marked and fully stocked first-aid case in a readily available location for each office.

**1.7 EQUIPMENT, TOOL, AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds/containers for storage of tools, equipment, and materials.
- .2 Locate materials not required to be stored in weatherproof sheds/containers on site in manner to cause least interference with work activities.

**1.8 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.

.3

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic on Meadows in the Sky Parkway, if required.

.8 Dust control: adequate to ensure safe operation at all times.

.9

**1.12 CLEAN-UP**

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Stack stored new or salvaged material not in construction facilities.

**Part 2 Products**

**2.1 NOT USED**

.1 Not Used.

**Part 3 Execution**

**3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

.1 Temporary erosion and sedimentation controls to be provided, in accordance with Erosion and Sediment Control Plan, including:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Erosion and Sediment Control Plan, specific to site, that complies with DFO Land Development Guidelines for the Protection of Aquatic Habitat or requirements of authorities having jurisdiction, whichever is more stringent.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

**END OF SECTION**

**Part 1            General**

**1.1                INSTALLATION AND REMOVAL**

- .1      Provide temporary controls in order to execute Work expeditiously.
- .2      Remove from site all such work after use.

**1.4                DUST TIGHT SCREENS**

- .1      Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2      Maintain and relocate protection until such work is complete.

**1.5                PUBLIC TRAFFIC FLOW**

- .1      Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

**1.6                FIRE ROUTES**

- .1      Maintain access to property including overhead clearances for use by emergency response vehicles.

**1.7                PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1      Protect surrounding private and public property from damage during performance of Work.
- .2      Be responsible for damage incurred.

**1.8                PROTECTION OF BUILDING FINISHES**

- .1      Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2      Provide necessary screens, covers, and hoardings.
- .3      Be responsible for damage incurred due to lack of or improper protection.

**Part 2            Products**

**2.1                NOT USED**

- .1      Not Used.

**Part 3            Execution**

**3.1                NOT USED**

- .1      Not Used.

**END OF SECTION**

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**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Field engineering survey services to measure and stake site.
- .2      Recording of subsurface conditions found.
- .3      Survey services to determine measurement inverts for the Work.
- .4      Requirements and limitations for cutting and patching the Work.

**1.2            RELATED SECTIONS**

- .1      This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3            REFERENCES**

- .1      Owner's identification of existing survey control points and property limits.

**1.4            SUBMITTALS**

- .1      Submit name and address of Surveyor to Departmental Representative.
- .2      On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.
- .3      Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

**1.5            QUALIFICATIONS OF SURVEYOR**

- .1      Qualified registered land surveyor, licensed to practise in the Place of the Work, acceptable to Departmental Representative.

**1.6            SURVEY REFERENCE POINTS**

- .1      Existing base horizontal and vertical control points are designated on Drawings.
- .2      Locate, confirm and protect control points prior to starting site Work. Preserve permanent reference points during construction.
- .3      Make no changes or relocations without prior written notice to Departmental Representative.
- .4      Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5      Require surveyor to replace control points in accordance with original survey control.

**1.7            SUBSURFACE CONDITIONS**

- .1      Promptly notify Departmental Representative in writing if discovered surface or subsurface conditions at Place of Work differ materially from those indicated in Contract Documents.
  - .2      Advise the Departmental Representative of a reasonable assumption of probable conditions when determined.
-

- .3 After prompt investigation, should Departmental Representative determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes or Change Orders set out in Section 01 29 00.
- .4 Advise Departmental Representative if garbage and debris are found within the site excavation. Material depth and size is to be surveyed and logged for review.

#### **1.8 EXAMINATION**

- .1 Inspect existing conditions, including elements or adjacent Work subject to irregularities, damage, movement, including Work during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of the Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.

#### **1.9 PREPARATION**

- .1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .2 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

#### **1.10 EXISTING SERVICES**

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

#### **1.11 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

#### **1.12 SURVEY RECORD**

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

**END OF SECTION**

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**Part 1            General**

**1.1            SECTION INCLUDES**

- .1        Progressive cleaning.
- .2        Cleaning prior to acceptance.

**1.2            RELATED SECTIONS**

- .1        Section 01 74 19 – Construction Waste Management and Disposal.
- .2        This section describes requirements applicable to all Sections within Divisions 02 to 49.

**Part 3           Execution**

**3.1            PROGRESSIVE CLEANING**

- .2        Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .3        Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .4
- .5        Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6        Containers:
  - .1            Provide on-site containers for collection of waste materials and debris.
  - .2            Provide and use clearly marked, separate bins for recycling.
- .7        Remove waste material and debris from site and deposit in waste container at end of each working day.
- .8        Dispose of waste materials and debris off site. Materials will not be permitted to be disposed of on project property.
- .11       Provide adequate ventilation during use of volatile or noxious substances. Use of enclosure ventilation systems is not permitted for this purpose.

**3.2            CLEANING PRIOR TO ACCEPTANCE**

- .1        Prior to applying for Substantial Performance of the Work, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
  - .2        Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
  - .3        Prior to final review, remove surplus products, tools, construction machinery and equipment.
  - .4        Remove waste products and debris other than that caused by Owner or other Contractors.
  - .5        Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved
-

by Departmental Representative.

- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Rake clean other surfaces of grounds.
- .8 Remove dirt and other disfiguration from exterior surfaces.
- .9 Sweep and wash clean paved areas.

**END OF SECTION**

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**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Inspections and declarations.
- .2      Closeout submittals.
- .5      Recording actual site conditions.
- .6      Record (as-built) documents and samples.
- .8      Final survey.
- .9      Warranties and bonds.

**1.2            RELATED SECTIONS**

- .1      Section 01 33 00 - Submittal Procedures.
- .2      Section 01 45 00 - Quality Control.
- .4      This section describes requirements applicable to all Sections within Divisions 02 to 49.

**1.3            INSPECTIONS AND DECLARATIONS**

- .1      Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1          Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
    - .2          Request Departmental Representative's Inspection.
  - .2      Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify defects or deficiencies. Correct defective and deficient Work accordingly.
  - .3      Completion: Submit written certificate that following have been performed:
    - .1          Work has been completed and inspected for compliance with Contract Documents.
    - .2          Defects have been corrected and deficiencies have been completed.
    - .3          Equipment and systems have been tested, adjusted and are fully operational.
    - .4          Certificates required by authorities having jurisdiction have been submitted.
    - .5          Operation of systems have been demonstrated to Owner's personnel.
    - .6          Work is complete and ready for Final Inspection.
  - .4      Final Inspection: When items noted above are completed, request final inspection of Work by Owner, and Contractor. If Work is deemed incomplete by Owner, complete outstanding items and request re-inspection.
-

- .5 Declaration of Substantial Performance: when Owner consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Substantial Performance of the Work.
- .6 Commencement of Warranty Periods: the date of Substantial Performance of the Work shall be the date for commencement of the warranty period.
- .7 Commencement of Lien Periods: the date of publication of the certificate of Substantial Performance of the Work shall be the date for commencement of the lien period, unless required otherwise by the lien legislation applicable at the Place of the Work.
- .8 Final Payment: When Owner and Departmental Representative consider final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.
- .9 Payment of Hold-back: After issuance of certificate of Substantial Performance of the Work, submit an application for payment of hold-back amount.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection with Departmental Representative's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, 3 final copies of operating and maintenance manuals in Canadian English.
- .5 If requested, furnish evidence as to type, source and quality of products provided.
- .6 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .7 Pay costs of transportation.

#### **1.5 RECORDING ACTUAL SITE CONDITIONS**

- .1 Record information on set of black line opaque drawings, and within the Project Manual, provided by Departmental Representative.
- .2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.
- .3 Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.
- .4 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
  - .1 Field changes of dimension and detail.
  - .2 Changes made by change orders.
  - .3 Details not on original Contract Drawings.
  - .4 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
  - .1 Changes made by Addenda and change orders.
- .6 Other Documents: Maintain manufacturer's certifications required by individual specifications sections.

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**1.6 RECORD (AS-BUILT) DOCUMENTS AND SAMPLES**

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative, one record copy of:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Change Orders and other modifications to the Contract.
  - .5 Reviewed shop drawings, product data, and samples.
  - .6 Field test records.
  - .7 Inspection certificates.
  - .8 Manufacturer's certificates.
- .2 Store as-built documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document AS-BUILT DOCUMENTS in neat, large, printed letters.
- .4 Maintain as-built documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.
- .5 Keep as-built documents and samples available for inspection by Departmental Representative.

**1.7 FINAL SURVEY**

- .1 Submit final site survey certificate in accordance with Section 01 70 00, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.
- .2 Inaccurate or neglectful information shall become a liability of the Contractor.

**1.8 WARRANTIES AND BONDS**

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work.
- .4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittals.

**END OF SECTION**

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**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Refer to Division 1, General Requirements.
- .2 All contract documents form an integral part of this section

**1.2 MEASUREMENT PROCEDURES**

- .1 Measure scarify and compact base course aggregate in square metres.
- .2 Refer to Section 01 29 00.01 Measurement and Payment for Site Preparation & Asphalt Paving.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM C117-[03], Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C131-[03], Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 ASTM C136-[01], Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4 ASTM D698-[00a], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m<sup>3</sup>).
  - .5 ASTM D4318-[00], Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 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.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Granular base material in accordance to Section 31 05 16 - Aggregate Materials and Section 32 11 23 Aggregate Base Courses 2.1.1.

**Part 3 Execution**

**3.1 SEQUENCE OF OPERATION**

- .1 Scarifying and reshaping:
  - .1 Scarify base course aggregate to width as directed by Departmental Representative and to minimum depth of 100 mm.
  - .2 Blade and trim pulverized material to elevation and cross section dimensions as indicated unless directed otherwise by Departmental Representative.
  - .3 Where deficiency of material exists, add and blend in new granular base material as directed by Departmental Representative. Ensure no frozen material is used.

- .2      Compaction equipment:
  - .1      Compaction equipment capable of obtaining required material densities.
  - .2      Provide Departmental Representative with proof of equipment efficiency for unspecified equipment.
    - .1      Efficiency of proposed equipment equal to specified equipment.
    - .2      Obtain approval Departmental Representative before use.
- .3      Compacting:
  - .1      Compact to density minimum 100% Standard Proctor maximum dry density in accordance with ASTM D698.
  - .2      Shape and roll alternately to obtain smooth, even and uniformly compacted base.
  - .3      Apply water as necessary during compaction to obtain specified density.
  - .4      Use mechanical tampers, approved by Departmental Representative to compact areas not accessible to rolling equipment to specified density.
- .4      Repair of soft areas:
  - .1      Correct soft areas by removing defective material to depth and extent directed by Departmental Representative. Replace with material acceptable to Departmental Representative and compact to specified density.
  - .2      Maintain reshaped surface in condition conforming to this section until succeeding material is applied or until acceptance by Departmental Representative.

### **3.2      SITE TOLERANCES**

- .1      Reshaped compacted surface within plus or minus 10 mm of elevation as indicated.

**END OF SECTION**

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**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Refer to Division 1, General Requirements.
- .2 All contract documents form an integral part of this section

**1.2 MEASUREMENT AND PAYMENT**

- .1 Refer to Section 01 29 00.01 Measurement and Payment

**1.3 REFERENCES**

- .1 ASTM International
  - .1 ASTM C117-[04], Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 ASTM C136-[06], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4 ASTM D698-[07e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft<sup>3</sup>) (600kN-m/m<sup>3</sup>).
  - .5 ASTM D1557-[09], Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft<sup>3</sup>) (2,700kN-m/m<sup>3</sup>).
  - .6 ASTM D1883-[07e2], Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .7 ASTM D4318-[10], Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 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.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Sustainable Design Submittals:
  - .1 Erosion and Sedimentation Control: submit copy of erosion and sedimentation control plan in accordance with authorities having jurisdiction.

**Part 2 Products**

**2.1 MATERIALS**

- .1 19mm Minus Granular base: material in accordance with the following requirements:
    - .1 Crushed stone or gravel.
    - .2 Gradations to be within limits specified when tested to ASTM C136 & C117. Sieve sizes to CAN/CGSB-8.1 & CAN/CGSB-8.2.
-



.1 Gradation Method #1 to:

Sieve Designation	% Passing
100 mm	-
75 mm	-
50 mm	
37.5 mm	
25 mm	-
19 mm	100
12.5 mm	75-100
9.5 mm	60-90
4.75 mm	40-70
2.36 mm	27-55
1.18 mm	16-42
0.300 mm	5-20
0.075 mm	2-8

- .2 Liquid limit: to [ASTM D4318], maximum 25
- .3 Plasticity index: to [ASTM D4318], maximum 6.
- .4 Los Angeles degradation: to [ASTM C131]. Max. % loss by weight: 45
- .5 Crushed particles: at least 50% of particles by mass within each of following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C136.

### Part 3 Execution

#### 3.1 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
  - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control plan, specific to site, that complies with requirements of the Best Management Practices.
  - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
  - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

#### 3.2 PLACEMENT AND INSTALLATION

- .1 Place granular base 10:1 shoulder taper after asphalt pavement surface and granular base course shoulder is inspected and approved in writing by Departmental Representative.
- .2 Placing:
  - .1 Prepare shoulder surface by scarifying existing base course aggregate to widths of 10:1 shoulder taper as indicated on the drawings to a depth of 75mm.
  - .2 Place new granular base course aggregate and mix with existing loosened shoulder material.
  - .3 Shape combined granular base course aggregate into 10:1 shoulder taper in areas indicated, directly abutted to vertical edge of asphalt concrete pavement.
  - .4 Ensure no frozen material is placed.
  - .5 Place material only on clean unfrozen surface, free from snow and ice.
  - .6 Begin spreading base material on crown line or on high side of one-way slope.

- 
- .7 Place material using methods which do not lead to segregation or degradation of aggregate.
  - .8 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in tapered layers of required thickness.
  - .9 Place material to full width in a tapered layer not exceeding 150 mm compacted thickness at the thickest point and not less than 75mm compacted thickness at the thinnest point.
    - .1 Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
  - .10 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
  - .11 Remove and replace that portion of layer in which material becomes segregated during spreading.
  - .3 Compaction Equipment:
    - .1 Ensure compaction equipment is capable of obtaining required material densities.
    - .2 Efficiency of equipment not specified to be proved at least as efficient as specified equipment at no extra cost and written approval must be received from Departmental Representative before use.
    - .3 Equipped with device that records hours of actual work, not motor running hours.
  - .4 Compacting:
    - .1 Compact to density not less than 100% Standard Proctor maximum dry density.
    - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base, flush with adjacent asphalt pavement surface.
    - .3 Apply water as necessary during compacting to obtain specified density.
    - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved in writing by Departmental Representative.
    - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
  - .5 Proof rolling:
    - .1 For proof rolling use standard roller of 45400 kg gross mass with four pneumatic tires each carrying 11350 kg and inflated to 620 kPa. Four tires arranged abreast with centre to centre spacing of 730 mm.
    - .2 Obtain written approval from Departmental Representative to use non-standard proof rolling equipment.
    - .3 Proof roll at level in granular base as indicated.
      - .1 If use of non-standard proof rolling equipment is approved, Departmental Representative to determine level of proof rolling.
    - .4 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.
    - .5 Where proof rolling reveals defective base or sub-base, remove defective materials to depth and extent as directed by Departmental Representative and replace with new materials in accordance with this section at no extra cost.

### 3.3 SITE TOLERANCES

- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.
-

**3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**3.5 PROTECTION**

- .1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Departmental Representative.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Refer to Division 1, General Requirements.
- .2 All contract documents form an integral part of this section

**1.2 MEASUREMENT AND PAYMENT**

- .1 Refer to Section 01 29 00.01 Measurement and Payment

**1.3 REFERENCES**

- .1 Asphalt Institute (AI)
  - .1 AI MS-2-[1994] [Sixth Edition], Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.
- .2 ASTM International
  - .1 ASTM C88-[05], Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
  - .2 ASTM C117-[04], Standard Test Method for Material Finer Than 0.075mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .3 ASTM C123-[04], Standard Test Method for Lightweight Particles in Aggregate.
  - .4 ASTM C127-[07], Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
  - .5 ASTM C128-[07a], Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.
  - .6 ASTM C131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .7 ASTM C136-[06], Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .8 ASTM C207-[2006], Standard Specification for Hydrated Lime for Masonry Purposes.
  - .9 ASTM D995-[-95b(2002)], Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
  - .10 ASTM D2419-[09], Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
  - .11 ASTM D3203-[94(2005)], Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.
  - .12 ASTM D4791-[05e1], Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
- .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.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section [01 33 00 - Submittal Procedures].
-

- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt mixes and aggregate design and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit viscosity-temperature chart for asphalt cement to be supplied showing either Saybolt Furol viscosity in seconds or Kinematic Viscosity in centistokes, temperature range 105 to 175 degrees C [4] weeks prior to beginning Work.
- .3 Samples:
  - .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling 4 weeks prior to beginning Work.
  - .2 Submit samples of following materials proposed for use 4 weeks prior to beginning Work.
- .4 Test and Evaluation Reports:
  - .1 Submit manufacturer's test data and certification that asphalt cement meets specification requirements.
  - .2 Submit asphalt concrete mix design and trial mix test results to Departmental Representative for review at least 4 weeks prior to beginning Work.
- .5 Sustainable Design Submittals:
  - .1 Erosion and Sedimentation Control: submit copy of erosion and sedimentation control plan in accordance with authorities having jurisdiction.

## Part 2 Products

### 2.1 MATERIALS

- .1 Performance graded asphalt cement: to CGSB-16.3.M90, Grade 80-100.
- .2 Aggregates: in accordance with Section 31 05 16 - Aggregate Materials: General and requirements as follows:
  - .1 Crushed stone or gravel consisting of hard, durable, angular particles, free from clay lumps, cementation, organic materials, frozen material and other deleterious materials.
  - .2 Gradations: within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1
  - .3 Table:

Sieve Designation	% Passing
	Surface Course
200 mm	-
75 mm	-
50 mm	-
38.1 mm	-
25 mm	
19 mm	100
12.5 mm	84-89
9.5 mm	73-88
4.75 mm	50-68
2.36 mm	35-55
1.18 mm	27-46
0.600 mm	18-36

0.300 mm	10-26
0.150 mm	4-17
0.075 mm	3-8

- .4 Coarse aggregate: aggregate retained on 4.75 mm sieve and fine aggregate is aggregate passing 4.75 mm sieve when tested to ASTM C136.
- .5 When dryer drum plant or plant without hot screening is used, process fine aggregate through [4.75] mm sieve and stockpile separately from coarse aggregate.
- .6 Do not use aggregates having known polishing characteristics in mixes for surface courses.
- .7 Sand equivalent: ASTM D2419. Min: 40.
- .8 Magnesium Sulphate soundness: to ASTM C88. Max % loss by mass
  - .1 Fine aggregate: 18 %.
- .9 Los Angeles degradation: Grading B, to ASTM C131. Max % loss by mass:
  - .1 Coarse aggregate, surface course: 25 %.
  - .2 Coarse aggregate, lower course: 35 %.
- .10 Absorption: to ASTM C127. Max % by mass:
  - .1 Coarse aggregate, surface course: 1.75 %.
  - .2 Coarse aggregate, lower course: 2.00 %.
- .11 Loss by washing: to ASTM C117. Max % passing 0.075 mm sieve:
  - .1 Coarse aggregate, surface course: 1.5 %.
  - .2 Coarse aggregate, lower course: 2.0 %.
- .12 Lightweight particles: to ASTM C123. Max % by mass less than 1.95 relative density:
  - .1 Surface course: 1.5 %.
  - .2 Lower course: 3.0 %.
- .13 Flat and elongated particles: to ASTM D4791, (with length to thickness ratio greater than 5): Max % by mass:
  - .1 Coarse aggregate, surface course: 10 %.
  - .2 Coarse aggregate, lower course: 10 %.
- .14 Crushed fragments: at least 60 % of particles by mass within each of following sieve designation ranges, to have 1 minimum freshly fractured face. Material to be divided into ranges, using methods of ASTM C136.

Passing	Retained on	
25 mm	to	12.5 mm
12.5 mm	to	4.75 mm

- .15 Regardless of compliance with specified physical requirements, fine aggregates may be accepted or rejected on basis of past field performance.
- .3 Mineral filler:
  - .1 Ensure finely ground particles of limestone, hydrated lime, Portland cement or non-plastic mineral matter approved by Departmental Representative are thoroughly dry and free from lumps.
  - .2 Add mineral filler when necessary to meet job mix aggregate gradation or as directed by Departmental Representative to improve mix properties.
  - .3 Ensure mineral filler is dry and free flowing when added to aggregate.

- .4 Anti-stripping agent: hydrated lime to ASTM C207 type N.
  - .1 Add lime at rate of approximately [2-3] % of dry weight of aggregate.
- .5 Water: to approval of Departmental Representative.

## 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 Drum diameter: 1200 mm minimum.
  - .2 Amplitude of vibration (machine setting): 0.5 mm maximum 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 Lutes or rakes with covered teeth for spreading and finishing operations.
  - .2 Tamping irons having mass 12 kg minimum and bearing area not exceeding 310 cm<sup>2</sup> for compacting material along curbs, gutters and other structures inaccessible to roller. Mechanical compaction equipment, when approved by, may be used instead of tamping irons.
  - .3 Straight edges, 3.0 m in length, to test finished surface.
- .6 Plant testing facility: provide laboratory space at plant site for exclusive use of Departmental Representative, for performing tests, keeping records and making reports.

## 2.3 MIX DESIGN

- .1 Mix design to be provided and approved in writing by Departmental Representative.
- .2 Mix design to be developed by testing laboratory approved in writing by Departmental Representative.
- .3 Design of mix: by Marshall method to requirements below.
  - .1 Compaction blows on each face of test specimens: 75.
  - .2 Mix physical requirements:

Property	Roads
Marshall Stability at 60 degrees C kN min	5.5 surface course/ 6.4 lower course
Flow Value mm	2-4
Air Voids in Mixture, %	3-5 surface course/ 3-6 lower course
Voids in Mineral Aggregate, % min	14 surface course/ 13 lower course

Index of Retained Stability % minimum	75
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- .3 Measure physical requirements as follows:
  - .1 Marshall load and flow value: to ASTM D1559.
  - .2 Compute void properties on basis of bulk specific gravity of aggregate to ASTM C127 and ASTM C128. Make allowance for volume of asphalt absorbed into pores of aggregate.
  - .3 Air voids: to ASTM D3203.
  - .4 Voids in mineral aggregates: to AI MS2.
- .4 Do not change job-mix without prior approval of Departmental Representative. When change in material source proposed, new job-mix formula will be provided [to be approved by Departmental Representative.
- .5 Return plant dust collected during processing to mix in quantities acceptable to Departmental Representative.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt paving in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied

#### **3.2 PLANT AND MIXING REQUIREMENTS**

- .1 Batch and continuous mixing plants:
  - .1 To ASTM D995.
  - .2 Feed aggregates from individual stockpiles through separate bins to cold elevator feeders.
    - .1 Do not load frozen materials into bins.
  - .3 Feed cold aggregates to plant in proportions to ensure continuous operations.
  - .4 Calibrate bin gate openings and conveyor speeds to ensure mix proportions are achieved.
  - .5 Before mixing, dry aggregates to moisture content not greater than 1 % by mass or to lesser moisture content if required to meet mix design requirements. Heat to temperature required to meet mixing temperature as directed by Departmental Representative after combining with RAP.
  - .6 Immediately after drying, screen aggregates into hot storage bins in sizes to permit recombining into gradation meeting job-mix requirements.
  - .7 Store hot screened aggregates in manner to minimize segregation and temperature loss.
  - .8 Heat asphalt cement and aggregate to mixing temperature directed by Departmental Representative. Do not heat asphalt cement above maximum temperature indicated on temperature-viscosity chart.



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- .9 Make available current asphalt cement viscosity data at plant. With information relative to viscosity of asphalt being used, Departmental Representative to approve temperature of completed mix at plant and at paver after considering hauling and placing conditions.
  - .10 Maintain temperature of materials within 5 degrees C of specified mix temperature during mixing.
  - .11 Mixing time:
    - .1 In batch plants, both dry and wet mixing times as directed by Departmental Representative. Continue wet mixing as long as necessary to obtain thoroughly blended mix but not less than 30s or more than 75s.
    - .2 In continuous mixing plants, mixing time as directed by Departmental Representative but not less than 45s.
    - .3 Mixing time as directed by Departmental Representative.
  - .2 Dryer drum mixing plant:
    - .1 To ASTM D995.
    - .2 Load aggregates from individual stockpiles to separate cold feed bins. Do not load frozen materials into bins.
    - .3 Feed aggregates to burner end of dryer drum by means of multi-bin cold feed unit and blend to meet job-mix requirements by adjustments of variable speed feed belts and gates on each bin.
    - .4 Meter total flow of aggregate using electronic weigh belt system with indicator that can be monitored by plant operator and which is interlocked with asphalt pump to ensure proportions of aggregate and asphalt entering mixer remain constant.
    - .5 Allow for easy calibration of weighing systems for aggregates without having material enter mixer.
    - .6 Calibrate bin gate openings and conveyor speeds to ensure mix proportions are achieved.
      - .1 Calibrate weigh bridge on charging conveyor by weighing amount of aggregate passing over weigh bridge in set amount of time.
      - .2 Difference between this value and amount shown by plant computer system to differ by not more than plus or minus [2] %.
    - .7 Make provision for conveniently sampling full flow of materials from cold feed.
    - .8 Provide screens or other suitable devices to reject oversize particles or lumps of aggregate from cold feed prior to entering drum.
    - .9 Provide system interlock stop on feed components if either asphalt or aggregate from bin stops flowing.
    - .10 Accomplish heating and mixing of asphalt mix in approved parallel flow dryer-mixer in which aggregate enters drum at burner end and travels parallel to flame and exhaust gas stream.
      - .1 Control heating to prevent fracture of aggregate or excessive oxidation of asphalt.
      - .2 Equip system with automatic burner controls and provide for continuous temperature sensing of asphalt mixture at discharge, with printing recorder that can be monitored by plant operator.
      - .3 Submit printed record of mix temperatures at end of each day.
    - .11 Ensure mixing period and temperature to produce uniform mixture in which particles are thoroughly coated, and moisture content of material as it leaves mixer is 2 % maximum.
-

- .3 Temporary storage of hot mix:
- .1 Provide mix storage of sufficient capacity to permit continuous operation and designed to prevent segregation.
- .2 Do not store asphalt mix in storage bins in excess of 3 hour.
- .4 While producing asphalt mix for this Project, do not produce mix for other users unless separate storage and pumping facilities are provided for materials supplied to this project.
- .5 Mixing tolerances:
- .1 Permissible variation in aggregate gradation from job mix (percent of total mass).
- |                          |     |
|--------------------------|-----|
| 4.75 mm sieve and larger | 5.5 |
| 2.36 mm sieve            | 4.5 |
| 0.600 mm sieve           | 3.5 |
| 0.150 mm sieve           | 2.5 |
| 0.075 mm sieve           | 1.5 |
- .2 Permissible variation of asphalt cement from job mix: 0.25%.
- .3 Permissible variation of mix temperature at discharge from plant: 5 degrees C.
- .6 Addition of anti-stripping agent:
- .1 Plant to be equipped with pug mill to thoroughly mix aggregates and lime prior to entering the plant.
- .2 Plant to be equipped with suitable conveyor systems capable of supplying aggregates and lime at constant rate.
- .3 Plant and equipment used for addition of lime to be equipped with covers to control loss of lime.
- .4 Plant to be equipped to control rate of lime incorporation to within 1/4%.
- .5 Add water to aggregate prior to entering pug mill.
- .6 Add water to lime sufficiently in advance to permit time to slake prior to entering pug mill.

### 3.3 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction and sediment and erosion control plan, specific to site, that complies with requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .2 Reshape granular roadbed in accordance with Section 32 11 17 - Reshaping Granular Roadbed.
- .3 When paving over existing asphalt surface, clean pavement surface.
- .1 When levelling course is not required, patch and correct depressions and other irregularities to approval of Departmental Representative before beginning paving operations.
- .4 Apply tack coat in accordance with Section 32 12 13.16 - Asphalt Tack Coats prior to paving.

- .5 Prior to laying mix, clean surfaces of loose and foreign material.

### **3.4 TRANSPORTATION OF MIX**

- .1 Transport mix to job site in vehicles cleaned of foreign material.
- .2 Paint or spray truck beds with limewater, soap or detergent solution, or non-petroleum based commercial product, at least daily or as required.
  - .1 Raise truck bed and thoroughly drain, and ensure no excess solution remains in truck bed.
- .3 Schedule delivery of material for placing in daylight, unless Departmental Representative approves artificial light for night placing.
- .4 Deposit mix from surge or storage silo to trucks in multiple drops to reduce segregation.
  - .1 Do not dribble mix into trucks.
- .5 Deliver material to paver at uniform rate and in an amount within capacity of paving and compacting equipment.
- .6 Deliver loads continuously in covered vehicles and immediately spread and compact.
  - .1 Deliver and place mixes at temperature within range as directed by Departmental Representative, but not less than 135 degrees C.

### **3.5 PLACING**

- .1 Obtain Departmental Representative's approval of base and existing surface prior to placing asphalt.
  - .2 Place asphalt concrete to thicknesses, grades and lines as indicated in Contract Documents and as directed by Departmental Representative.
  - .3 Placing conditions:
    - .1 Place asphalt mixtures only when air temperature is 5 degrees C minimum.
    - .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.
  - .4 Place asphalt concrete in compacted lifts of thickness as indicated on drawings.
  - .5 Where possible do tapering and levelling where required in lower lifts. Overlap joints by not less than 300 mm.
  - .6 Place individual strips no longer than 500 m.
  - .7 On roads and parking lots commence spreading at high side of pavement or at crown and span crowned centerlines with initial strip.
  - .8 Spread and strike off mixture with self propelled mechanical finisher.
    - .1 Construct longitudinal joints and edges true to line markings.
      - .1 Departmental Representative to establish lines for paver to follow parallel to centerline of proposed pavement. Position and operate paver to follow established line closely.
    - .2 When using pavers in echelon, have first paver follow marks or lines, and second paver follow edge of material placed by first paver.
-

- .1 Work pavers as close together as possible and in no case permit them to be more than 30 m apart.
- .3 Maintain constant head of mix in auger chamber of paver during placing.
- .4 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.
- .5 Correct irregularities in alignment left by paver by trimming directly behind machine.
- .6 Correct irregularities in surface of pavement course directly behind paver.
  - .1 Remove excess material forming high spots using shovel or lute.
  - .1 Fill and smooth indented areas with hot mix.
  - .2 Do not broadcast material over such areas.
- .7 Do not throw surplus material on freshly screeded surfaces.
- .9 When hand spreading is used:
  - .1 Use approved wood or steel forms, rigidly supported to assure correct grade and cross section.
    - .1 Use measuring blocks and intermediate strips to aid in obtaining required cross-section.
  - .2 Distribute material uniformly without broad casting material.
  - .3 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes.
    - .1 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.
  - .5 Provide heating equipment to keep hand tools free from asphalt.
    - .1 Control temperature to avoid burning material.
    - .2 Do not use tools at higher temperature than temperature of mix being placed.

### 3.6 COMPACTING

- .1 Do not change rolling pattern unless mix changes or lift thickness changes.
  - .1 Change rolling pattern only as directed by Departmental Representative.
- .2 Roll asphalt continuously to density not less than 97 % of 75 blow Marshall density to ASTM D1559.
- .3 General:
  - .1 Provide at least 2 rollers and as many additional rollers as necessary to achieve specified pavement density. When more than 2 rollers are required, 1 roller must be pneumatic tired type.
  - .2 Start rolling operations as soon as placed mix can bear weight of roller without excess displacement of material or cracking of surface.
  - .3 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.
  - .4 Use static compaction for levelling coarse less than 25 mm thick.

- .5 For lifts 50 mm thick and greater, adjust speed and vibration frequency of vibratory rollers to produce minimum of 25 impacts per metre of travel. For lifts less than 50 mm thick, impact spacing not to exceed compacted lift thickness.
- .6 Overlap successive passes of roller by minimum of 200 mm and vary pass lengths.
- .7 Keep wheels of roller slightly moistened with water to prevent pick-up of material but do not over-water.
- .8 Do not stop vibratory rollers on pavement that is being compacted with vibratory mechanism operating.
- .9 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.
- .10 After traverse and longitudinal joints and outside edge have been compacted, start rolling longitudinally at low side and progress to high side.
  - .1 Ensure that all points across width of pavement receive essentially equal numbers of passes of compactors.
- .11 When paving in echelon, leave unrolled 50 to 75 mm of edge which second paver is following and roll when joint between lanes is rolled.
- .12 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.
- .4 Breakdown rolling:
  - .1 Begin breakdown rolling with static steel wheeled roller or vibratory roller immediately following rolling of transverse and longitudinal joint and edges.
  - .2 Operate rollers as close to paver as necessary to obtain adequate density without causing undue displacement.
  - .3 Operate breakdown roller with drive roll or wheel nearest finishing machine. When working on steep slopes or super-elevated sections use operation approved by Departmental Representative.
  - .4 Use only experienced roller operators.
- .5 Intermediate rolling:
  - .1 Use pneumatic-tired, steel wheel or vibratory rollers and follow breakdown rolling as closely as possible and while paving mix temperature allows maximum density from this operation.
  - .2 Rolling to be continuous after initial rolling until mix placed has been thoroughly compacted.
- .6 Finish rolling:
  - .1 Accomplish finish rolling with two-axle or three-axle tandem steel wheeled rollers while material is still warm enough for removal of roller marks.
    - .1 If necessary to obtain desired surface finish, use pneumatic-tired rollers as directed by Departmental Representative.
  - .2 Conduct rolling operations in close sequence.

### **3.7 JOINTS**

- .1 General:
  - .1 Remove surplus material from surface of previously laid strip.
    - .1 Do not deposit on surface of freshly laid strip.

- .2 Construct joints between asphalt concrete pavement and Portland cement concrete pavement as indicated.
- .3 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 For airfield runway paving, avoid cold joint construction in mid 30 m of runway.
    - .2 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.
- .4 Construct feather joints so that thinner portion of joint contains fine graded material obtained by changed mix design or by raking out coarse aggregate in mix.
  - .1 Place and compact joint to ensure joint is smooth and without visible breaks in grade.
  - .2 Locate feather joints as indicated.
- .5 Construct butt joints as indicated.

### **3.8 FINISH TOLERANCES**

- .1 Finished asphalt surface to be within 5 mm of design elevation but not uniformly high or low.
- .2 Finished asphalt surface not to have irregularities exceeding 5 mm when checked with 3.0 m straight edge placed in any direction.

### **3.9 DEFECTIVE WORK**

- .1 Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required.
  - .1 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.

**3.10 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**