

## **CONTRACT DOCUMENTS**

**Parks Canada Agency**

**Cookson Road Repairs  
Prince Albert National Park**



**September 2018**

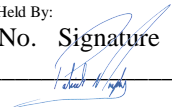
CONTRACT SPECIFICATIONS


FOR

COOKSON ROAD REPAIRS – PRINCE ALBERT NATIONAL PARK  
PARKS CANADA AGENCY



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Date:	Sept 14, 2018

Prepared by Associated Engineering (Sask.) Ltd.

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**Part 1            General**

**1.1                WORK COVERED BY CONTRACT DOCUMENTS**

- .1        Work included in this Contract includes roadway repairs along the Cookson Road, located along the south boundary of Prince Albert National Park. In general, work shall consist of general roadway reshaping, grading, compaction, and placement of granular pit run and traffic gravel in areas illustrated in the Contract Drawings.

**1.2                CONTRACT METHOD**

- .1        Construct Work under a unit price contract.

**1.3                HOURS OF WORK**

- .1        Obtain written permission of Departmental Representative before undertaking holiday work or night work.

**1.4                DRAWINGS AND SPECIFICATIONS**

- .1        Departmental Representative will provide four (4) copies of drawings and specifications to Contractor.
- .2        Additional copies of drawings and specifications are available upon request at an additional cost.
- .3        Maintain at Site a complete set of drawings and specifications. Make available to Departmental Representative at any time.

**1.5                SUPPLEMENTARY DRAWINGS**

- .1        Departmental Representative may furnish supplementary drawings to assist proper execution of work. Such drawings will be issued for clarification only and will have same meaning and intent as if included with plans referred to in Contract Documents.

**1.6                CONTRACTOR USE OF PREMISES**

- .1        Unrestricted use of site.
- .2        Ascertain boundaries of Site within which work must be confined.
- .3        Co-ordinate use of premises under direction of Departmental Representative.
- .4        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.
- .5        Order of work may be governed by relocation of utilities, and approvals and restrictions of regulatory agencies. No direct compensation will be paid for moving within contract limits or staging of work.
- .6        At completion of operations, condition of existing work must be: equal to or better than that which existed before new work started.

**1.7 EXISTING SERVICES**

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Provide alternative routes for pedestrian and vehicular traffic.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .4 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .5 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .6 Protect or maintain existing active services.
- .7 Record locations of maintained, re-routed and abandoned service lines.

**1.8 PROJECT CLOSEOUT**

- .1 Final Cleaning
  - .1 When the Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
  - .2 Remove waste materials and debris 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.
- .2 Inspection/Takeover Procedures
  - .1 Prior to application for Certificate of Total Performance, carefully inspect the Work and ensure it is complete, that all construction deficiencies are complete and, defects are corrected. Notify Departmental Representative, in writing, of completion of the Work and request an inspection.
  - .2 During Departmental Representative inspection, a list of deficiencies and defects will be tabulated and corrected.

**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                MEASUREMENT FOR PAYMENT**

- .1      For each unit price item, Departmental Representative will calculate payment based on tendered unit price and Departmental Representative's determination of units of work item completed.
- .2      For lump sum price item, Departmental Representative will calculate payment based on tendered price and Departmental Representatives' estimate of percentage of work completed.
- .3      Method of measurement to be used is detailed in the section of the specification covering each work item.
- .4      Where a method of measurement for payment for a work item is not specified, payment for that item will be deemed to be included in another pay item or other pay items.

**1.2                CHANGE ORDERS**

- .1      Complete and promptly return all change order price requests issued by the Departmental Representative, quoting unit and/or lump sum prices as requested. Include appropriate supporting documentation to verify prices.
- .2      Do not proceed with work affected by price request until authorized to do so by Change Order.
- .3      Make no change in Work unless Change Order issued. Change Order is only valid when signed by Departmental Representative, Owner and Contractor.

**1.3                PROGRESS PAYMENT**

- .1      Departmental Representative will issue to Contractor as per the Terms of Payment after receipt of an application for payment, certificate for payment in the amount applied for or in such other amount as Departmental Representative determines to be due. If Departmental Representative amends application, Departmental Representative will give notification in writing giving reason for amendment.

**1.4                PROGRESSIVE RELEASE OF HOLDBACK**

- .1      Where legislation permits, if Departmental Representative has certified that Work of subcontractor or supplier has been performed, Owner shall pay holdback amount retained for such subcontractor Work, or products supplied by each supplier, on day following expiration of holdback period of such Work stipulated in lien legislation applicable to Place of Work.
- .2      In addition to provisions of preceding paragraph, and certificate wording, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

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**1.5 FINAL PAYMENT**

- .1 Submit application for final payment when Work is completed.
- .2 Departmental Representative will, no later than 10 days after receipt of application for final payment, review Work to verify validity of application. Departmental Representative will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.
- .3 Departmental Representative will issue final certificate of payment when application for final payment is found valid.

**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 PRECONSTRUCTION MEETING**

- .1 Within 10 days after award of Contract, provide a representative to attend a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor and major Subcontractors will 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:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work.
  - .3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences.
  - .4 Delivery schedule of specified equipment and materials.
  - .5 Site security.
  - .6 Contractor's site specific safety plan.
  - .7 Contractor's draft traffic accommodation plans.
  - .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .9 Proposed aggregate sources.
  - .10 Record drawings.
  - .11 Take-over procedures, acceptance, warranties.
  - .12 Monthly progress claims, administrative procedures, photographs, hold backs.
  - .13 Appointment of inspection and testing agencies or firms.

**1.2 PROGRESS MEETINGS**

- .1 During course of Work, attend monthly progress meetings. Additional meeting to be held 2 weeks prior to project completion.
- .2 Contractor, major Subcontractors involved in Work, and Departmental Representative are to be in attendance, and authorized to act on behalf of the party each represents.

**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 ADMINISTRATIVE**

- .1 Submit to Departmental Representative for review the submittals listed. Submit with reasonable promptness and in an 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 and sample in SI Metric units.
- .4 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 coordinated with requirements of the Work and Contract Documents. Submittals not stamped, signed, dated and identified as to the specific project will be returned without being examined and will be considered rejected.
- .5 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify that field measurements and affected adjacent Work are coordinated.
- .7 Contractor's responsibility for errors and omissions in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .8 Keep one reviewed copy of each submission on site.
- .9 Adjustments made on submittals by Departmental Representative are not intended to change the scope of work. If adjustments affect the value of Work, state such in writing to Departmental Representative prior to proceeding with the work.

**1.2 PRODUCT DATA**

- .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of Work.
- .2 Accompany submission with 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.
- .3 Submissions shall include:
  - .1 Project title and number.
  - .2 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.

- .4 Submit product data sheets and brochures for requirements requested in specifications Sections and as requested by Departmental Representative.
- .5 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, installation of work may proceed.
- .6 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .7 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .8 Keep one reviewed copy of each submission on Site.

**1.3 SAMPLES**

- .1 Submit for review, samples in duplicate as requested in respective specification Sections.
- .2 Deliver samples prepaid to Departmental Representative's business address.
- .3 Adjustments made on samples 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.

**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               RELICS AND ANTIQUITIES**

- .1       Relics and antiquities and items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found on site or in buildings to be demolished, remain property of Owner. Protect such articles and request directives from Departmental Representative.
- .2       Notify Departmental Representative immediately if evidence of archeological finds is encountered and await their written instructions before proceeding with work in area.

**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            REFERENCES**

- .1        Ministry of Highways and Infrastructure, Traffic Control Devices Manual for Work Zones.
- .2        Manual of Uniform Traffic Control Devices for Canada, current edition, as published by National Committee on Uniform Traffic Control and distributed by the Transportation Association of Canada.

**1.2            MEASUREMENT AND PAYMENT**

- .1        Traffic accommodation is a lump sum item and will be paid monthly as a percentage of the total work completed based on the unit bid price.
- .2        Payment for traffic management will be at the lump sum bid price for Traffic Accommodation including but not limited to the preparation of the traffic accommodation plan, supply and erect temporary construction signs, delineators, barricades and miscellaneous warning devices, check signs daily for legibility, damage, suitability and location, clean, repair or replace to ensure clarity and reflectance and removing or covering signs which do not apply to conditions existing from day to day.

**1.3            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 present minimum of 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        Do not close any lanes of road without approval of Departmental Representative. Before re-routing traffic erect suitable signs and devices.
- .4        Keep travelled way graded, free of pot holes and of sufficient width for required number of lanes of traffic.
- .5        Provide gravelled detours or temporary roads to facilitate passage of traffic around restricted construction area:
- .6        Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, unless other means of road access exist that meet approval of Departmental Representative.

#### **1.4 INFORMATIONAL AND WARNING DEVICES**

- .1 Provide and maintain signs, 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 as specified in Part D, Temporary Conditions Signs and Devices, of UTCD manual.
- .3 Place signs and other devices in locations recommended in UTCD manual.
- .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 by:
  - .1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - .2 Removing or covering signs which do not apply to conditions existing from day to day.
- .6 Contractor shall be responsible for safety and traffic accommodations in the construction area 24 hours a day, 7 days a week.

#### **1.5 CONTROL OF PUBLIC TRAFFIC**

- .1 Provide competent flag persons, trained in accordance with, and properly equipped as specified in UTCD manual in following situations:
  - .1 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
- .2 Where roadway, carrying two-way traffic, is restricted to one lane, for 24 hours each day, provide portable traffic signal system. Adjust, as necessary, and regularly maintain system during period of restriction. Signal system to meet requirements of Part IV of Manual of Uniform Traffic Control Devices for Streets and Highways.

#### **1.6 OPERATIONAL REQUIREMENTS**

- .1 Contractor is required to submit traffic accommodation plan at least 1 week prior to construction for review and approval of Departmental Representative.

#### **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 Saskatchewan:
  - .1 Occupational Health and Safety Act, 1993, S.S. - Updated 2012.

### **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 operation found in work plan.
- .3 Submit electronic copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors to Departmental Representative.
- .5 Submit copies of incident and accident reports.
- .6 Keep a copy of WHMIS MSDS - Material Safety Data Sheets in site office.
- .7 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.
- .8 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.
- .9 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.
- .2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award. Contractor to submit written acknowledgement to CSST along with Ouverture de Chantier Notice.
- .3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

#### **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 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.

#### **1.7 RESPONSIBILITY**

- .1 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.
- .2 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.

#### **1.8 COMPLIANCE REQUIREMENTS**

- .1 Comply with Occupational Health and Safety Regulations, Most Current.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

#### **1.9 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.
- .2 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

#### **1.10 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have site-related working experience specific to activities associated with bridge construction.
  - .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.

**1.11 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.

**1.12 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.

**1.13 BLASTING**

- .1 Blasting or other use of explosives is not permitted.

**1.14 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**

Not Used.

**Part 3 Execution**

Not Used.

**END OF SECTION**

**Part 1            General**

**1.1            FIRES**

- .1       Fires and burning of rubbish on site is not permitted.

**1.2            DISPOSAL OF WASTES**

- .1       Do not dispel waste material and hazardous substances into the environment.
- .2       All construction debris and waste products must be stored appropriately and transported to the Prince Albert Landfill for proper disposal. Documentation must be provided.
- .3       Waste must not be buried or burned.

**1.3            DRAINAGE**

- .1       Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2       Do not pump water containing suspended materials into waterways or drainage systems.
- .3       Control runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements. Maintain existing drainage facilities affected by work in good operating condition at all times during construction.
- .4       Re-contoured ditches must be re-vegetated with weed-free native seed mixture approved by the Departmental Representative as soon as possible after disturbance. Erosion and sediment control must be maintained until vegetation is established.

**1.4            SITE CLEARING AND PLANT PROTECTION**

- .1       Vegetation Clearing
  - .1       Protect trees and plants on site and adjacent properties where indicated.
  - .2       Minimize stripping of topsoil and vegetation.
  - .3       Restrict tree and vegetation removal to areas indicated by Departmental Representative.
  - .4       Tree and vegetation clearing must occur outside of Environment Canada's restricted timing windows for migratory breeding birds, outside of May 1<sup>st</sup> to July 31<sup>st</sup>.
  - .5       If any vegetation clearing is proposed between May 1<sup>st</sup> and July 31<sup>st</sup>, nest sweeps must be conducted 7-10 days prior to clearing and grubbing activities.
  - .6       If any nest or dens are discovered during work, the area must be flagged and work temporarily ceased, until Departmental Representative has taken appropriate action.
  - .7       All works shall be undertaken in a manner that prevents the introduction or minimizes the spread of invasive alien species and noxious weeds.

.2 Soil Stripping

- .1 Soil horizons must be excavated and stored separately. Organics and topsoil should be salvaged and replaced in the reverse order of excavation over mineral soils during re-contouring activities, wherever possible.
- .2 Soils must be stored in separate piles on an impervious surface within temporary workspaces approved by the Departmental Representative. If soil storage is required for an extended period (greater than 7 days) or if heavy rain or wind is forecast, soil piles must be covered to reduce erosion loss.
- .3 Any soils removed from sloped areas must maintain the specified slope gradient, be capped with appropriate topsoil and reseeded as soon as possible. Erosion control must be installed until vegetation is established.

**1.5 WORK ADJACENT TO WATERWAYS**

- .1 Do not operate construction equipment in waterways unless specifically authorized by Departmental Representative.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material, debris or other extraneous material in waterways, under any circumstances.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Silt fencing must be erected parallel to the work area along the length of waterways (including wetlands and stream) and 15 m perpendicular to waterway crossings.

**1.6 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Spills or releases of hazardous materials or deleterious substances that may cause damage to the environment or human health shall be immediately reported to the Departmental Representative and, if required, to the Saskatchewan Environment Spill Control Centre.
- .4 The Contractor shall take all reasonable measures to contain all spills. The Contractor shall repair any damage at their expense.
- .5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .6 All equipment must be properly maintained, in sound mechanical condition and free of any fuel, oil, and hydraulic fluid or coolant leaks.
- .7 Equipment must be free of external grease, loose dirt or oil and the machinery must be pressure washed prior to the start of the project.
- .8 All machinery must be equipped with emergency spill kits large enough to contain 110% of any possible spills or leaks of oil, fuel, hydraulic fluid or coolant during the project.
- .9 The operators of the equipment must be familiar with how to properly use the spill kits in the event of an emergency.

- .10 Fuel, oils, lubricants, chemicals, and any potentially hazardous material must not be dispelled into the environment.
- .11 Machinery and vehicles must keep to roads, trails, or designated temporary workspaces and turnaround points. The Departmental Representative will identify approved off-road workspaces.
- .12 Rutting and/or compaction of ground surfaces should be avoided as much as possible by keeping to designated work areas and away from wet locations.
- .13 All areas with rutting damage or noticeable compaction from heavy equipment must be re-graded and back-filled if necessary.
- .14 Any holes or depressions caused by site preparation or construction will be back-filled and compacted to an appropriate degree.
- .15 Refuelling stations and fuel storage must be placed at a minimum of 100 m from any water body.
- .16 Refuelling of equipment and vehicles must occur over an impervious surface or an absorbent spill pad.

#### **1.7 MATERIALS TO BE SALVAGED**

- .1 Remove, clean, deliver, unload and neatly stockpile at site materials which are specified or designated by Departmental Representative to be salvaged.
- .2 Repair or replace at Contractor's expense salvaged materials damaged during removal, unloading or in transit.

#### **1.8 RESTORATION**

- .1 To reduce the spread of invasive species, all disturbed areas with bare soil must be reseeded with a weed-free native seed mixture representative of the surrounding habitat as soon as possible after disturbance.
- .2 Erosion control measures must be implemented and maintained until vegetation re-establishes.
- .3 Re-vegetation and erosion control plans must be approved by the Departmental Representative.

### **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            INSPECTION**

- .1        Refer to GC 7 – Inspection of Work.

**1.2            TESTING PERFORMED BY CONTACTOR**

- .1        The Contractor is responsible for the required sieve analyses during the production of all granular materials for the project, and his own quality control materials testing. Cost of such services will be borne by the Contractor.
- .2        Provide access to testing agencies for executing inspection and testing onsite.
- .3        Where tests or inspections by designated testing laboratory reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.

**1.3            TESTING PERFORMED BY OWNER**

- .1        Quality control testing to be performed by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the Owner. Specific material testing shall include:
  - .1        Random quality assurance testing on sieve analysis for granular materials.
  - .2        All proctor testing and field densities.

**1.4            ACCESS TO WORK**

- .1        Contractor shall allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants. Co-operate to provide reasonable facilities for such access.

**1.5            PROCEDURES**

- .1        Notify the appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2        Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays 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.

**1.6            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 the opinion of the Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

**1.7 REPORTS**

- .1 Submit one (1) copy of sieve analysis at least one (1) week prior to commencing work.  
.2 Promptly submit to the Departmental Representative one copy of all inspection and test reports.

**1.8 TESTS AND MIX DESIGNS**

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

**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                SURVEY PERFORMED BY DEPARTMENT REPRESENTATIVE**

- .1      Provide control alignment staking throughout the project limits.
- .2      Provide one (1) set of slope stakes, and one (1) set of second grade stakes throughout the project limits.
- .3      Perform preliminary and final surveys required for quantity calculations.

**1.2                SURVEY REQUIREMENTS BY CONTRACTOR**

- .1      Locate, confirm and protect control points and legal survey markers prior to starting site work. Preserve permanent reference points during construction.
- .2      Report to Departmental Representative when a reference point or legal survey marker is lost, destroyed, or requires relocation because of necessary changes in grades or locations.
- .3      Replacement of survey stakes previously placed by Departmental Representative that are carelessly destroyed during the work.

**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                SITE STORAGE/LOADING**

- .1        Confine work and operations of employees to work areas identified in the Contract Documents. Do not unreasonably encumber premises with products.

**1.2                CONSTRUCTION PARKING**

- .1        Parking will be permitted on site provided it does not disrupt performance of Work or public traffic.
- .2        Provide and maintain adequate access to project site.

**1.3                EQUIPMENT, TOOL AND MATERIALS STORAGE**

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

**1.4                SANITARY FACILITIES**

- .1        Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2        Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

**1.5                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        Store materials resulting from demolition activities that are salvageable.
- .4        Stack stored new or salvaged material not in construction facilities.

**Part 2            Products**

**2.1                Water Source**

- .1        The Contractor will furnish a source of water for dust control and compaction if required.
- .2        The water shall be free from undesirable quantities of organic matter and mineral salts. The quality will be subject to the approval of the Departmental Representative.
- .3        If water is furnished from hydrants, the Contractor shall conform to all regulations set forth by the municipal authorities. The Contractor shall furnish special equipment required for obtaining water from hydrants at no direct expense to the Departmental Representative.



**Part 3            Execution**

**3.1                NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION**

**.1 Mobilization**

- .1 Mobilization shall consist of preparatory work and operations including, but not limited to, those necessary to the movement of personnel, equipment, supplies and incidentals to Site; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various items on Site.

**.2 Demobilization**

- .1 Demobilization shall consist of cleanup work and operations including, but not limited to, those necessary to the removal of personnel, equipment, and incidentals from Site.

**1.2 PAYMENT**

- .1 Payment for mobilization and demobilization will be made at the lump sum price shown in Bid Form. 50% of the lump sum price will be paid on the first progress payment certificate due after Contractor has established the operations and facilities specified. The remaining 50% will be paid upon completion of the contract and removal of equipment and cleanup of the work areas to the satisfaction of Departmental Representative.
- .2 Payment will be full compensation for all costs associated with the mobilization and demobilization of equipment.
- .3 The lump sum price shall include all mobilization and demobilization required to complete the project.

**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       American Society for Testing and Materials International (ASTM)
  - .1       ASTM C127, Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
  - .2       ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).

**1.2                DEFINITIONS**

- .1       Corrected maximum dry density is defined as:
  - .1        $D = D1 \times D2 / (F1 \times D2) + (F2 \times D1)$
  - .2        $D = (F1 \times D1) + (0.9 \times D2 \times F2)$
  - .3       Where: D = corrected maximum dry density kg/m<sup>3</sup>.
    - .1       F1 = fraction (decimal) of total field sample passing 4.75 mm sieve
    - .2       F2 = fraction (decimal) of total field sample retained on 4.75 mm sieve (equal to 1.00 - F1)
    - .3       D1 = maximum dry density, kg/m<sup>3</sup> of material passing 4.75 mm sieve determined in accordance with Method of ASTM D1557.
    - .4       D2 = bulk density, kg/m<sup>3</sup>, of material retained on 4.75 mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127.
  - .4       For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253 when directed by Departmental Representative.

**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                REFERENCES**

- .1        ASTM International
  - .1        ASTM D4791, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

**1.2                DELIVERY, STORAGE AND HANDLING**

- .1        Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.
- .2        Materials must be stored in an approved location on an impervious, previously disturbed site.

**Part 2            Products**

**2.1                MATERIALS**

- .1        Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
- .2        Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
  - .1        Natural sand.
  - .2        Manufactured sand.
  - .3        Screenings produced in crushing of quarried rock, boulders, gravel or slag.
- .3        Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
  - .1        Crushed rock.
  - .2        Gravel and crushed gravel composed of naturally formed particles of stone.

**Part 3            Execution**

**3.1                PREPARATION**

- .1        Processing
  - .1        Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
  - .2        Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, particle shapes, as specified. Use methods and equipment approved by Departmental Representative.

- .3 Wash aggregates, if required to meet specifications. Use only equipment approved by Departmental Representative.
- .4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
- .2 Handling
  - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- .3 Storage
  - .1 Materials must be stored in an approved location on an impervious, previously disturbed site.

**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION**

- .1 The work shall consist of clearing and grubbing from within the right-of-way and from such other areas on the plans or as designated by the Departmental Representative.

**1.2 MEASUREMENT AND PAYMENT**

- .1 Clearing and grubbing will be considered subsidiary to the contract.

**1.3 DEFINITIONS**

- .1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- .2 Clearing isolated trees consists of cutting off to not more than specified height above ground of designated trees, and disposing of felled trees and debris.
- .3 Underbrush clearing consists of removal from treed areas of undergrowth, deadwood, and trees smaller than 50 mm trunk diameter and disposing of all fallen timber and surface debris.
- .4 Grubbing consists of excavation and disposal of stumps and roots, boulders and rock fragments of specified size, to not less than specified depth below existing ground surface.

**1.4 STORAGE AND PROTECTION**

- .1 Prevent damage to fencing, trees, natural features, bench marks, utility lines, site appurtenances, water courses, root systems of trees which are to remain.
  - .1 Repair damaged items to approval of Departmental Representative.
  - .2 Replace damaged trees designated to remain, as directed by Departmental Representative. The replacement will not be paid for directly but will be considered as a subsidiary obligation of the contractor.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 PREPARATION**

- .1 Inspect site and verify with Departmental Representative, items designated to remain.

- .2 Clearing and grubbing activities must follow procedures outlined in Section 01 35 43 – Environmental Procedures.
- .3 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
  - .1 Notify Departmental Representative immediately of damage to or when unknown existing utility lines are encountered.
- .4 Notify utility authorities before starting clearing and grubbing.
- .5 Keep roads and walkways free of dirt and debris.

### **3.2 CLEARING**

- .1 Clear as directed by Departmental Representative, by cutting at height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.
- .2 Cut off branches and cut down trees overhanging area cleared as directed by Departmental Representative.
- .3 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

### **3.3 GRUBBING**

- .1 Grub out stumps and roots to not less than 200 mm below ground surface.
- .2 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m<sup>3</sup>.
- .3 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

### **3.4 REMOVAL AND DISPOSAL**

- .1 Timber greater than 75mm diameter shall be salvaged, cut to 3000 mm lengths, and stockpiled within the right of way in locations designated by the Departmental Representative. Stockpiled timber becomes property of the Owner.
- .2 Cleared material not required to be salvaged, and grubbed material, shall be piled within the right of way and later buried in disposal pits at locations designated by the Departmental Representative. The Departmental Representative will determine when acceptable material from disposal pits can be used in the construction of embankments. Surplus material from disposal pits shall be disposed of as directed by the Departmental Representative.
- .3 Bury to approval of Departmental Representative by:
  - .1 Consolidating.
  - .2 Covering with minimum 500 mm of mineral soil.
  - .3 Finishing surface.

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**3.5 FINISHED SURFACE**

- .1 Leave ground surface in condition suitable for stripping of topsoil to approval of Departmental Representative.

**END OF SECTION**



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**Part 1            General**

**1.1            DESCRIPTION**

- .1        The work shall consist of mixing, shaping and compacting the existing subgrade to the required grade, cross section and density.

**1.2            MEASUREMENT AND PAYMENT**

- .1        Measure Surface Preparation and Compaction in square metres of work completed.
- .2        Payment for Surface Preparation and Compaction will be at the applicable contract unit price per square metre as specified on the Bid Form. The contract unit price shall be full compensation for completing required work including but not limited to scarifying, mixing, blading, spreading, shaping, trimming and compacting, drying, adding water if required, final rolling and finishing the subgrade to the required grade, cross section and density.

**Part 2           Products**

**2.1           NOT USED**

- .1        Not used.

**Part 3           Execution**

**3.1           SCARIFYING AND RESHAPING**

- .1        Scarify subgrade to full width as directed by Departmental Representative and to depth of 150 mm minimum.
- .2        Only those materials present in the subgrade are required for subgrade preparation. No materials are required to be loaded and hauled as part of the shaping of the subgrade.
- .3        The contractor may be required to use other materials, subject to the approval of the Departmental Representative, as backfill for subgrade failures. The specification for the materials used will apply.
- .4        Pulverize and break down scarified material to 50 mm maximum soil clod size, except that stones larger than this size may be left intact as directed by Departmental Representative. Stones larger than 100 mm in any direction shall be removed from subgrade and disposed of.
- .5        Blade and trim pulverized material to elevation and cross section dimensions as shown on construction drawing or as directed by Departmental Representative.
- .6        Trim as directed by Departmental Representative.
- .7        Surplus material shall be removed as directed by Departmental Representative.

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### **3.2 COMPACTING**

- .1 The top 150 mm of the existing subgrade shall be compacted to not less than ninety eight percent (98%) of the maximum dry density in accordance with ASTM D698, for the material comprising the layer.
- .2 Shape and roll alternately to obtain smooth, even and uniformly compacted subgrade surface.
- .3 The Departmental Representative will determine, from the test results, the section of the road to be considered for evaluation. The road section will be considered satisfactory when test results average not less than ninety eight (98%) percent of maximum dry density
- .4 If the moisture existing in the soil is insufficient for compacting to the specified density and for finishing, the Contractor may elect to add water at no direct expense to the Owner.
- .5 If material is excessively moist, the final fifteen centimetres (15 cm) of the subgrade shall be dried, to the optimum moisture content in accordance with ASTM D698, at no direct expense to the Owner.
- .6 Final compaction of the subgrade surface shall be completed using pneumatic-tire rollers. Rolling shall be continued until all loose soil is properly compacted to grade and cross section.

### **3.3 SITE TOLERANCES**

- .1 The subgrade shall be true to grade and cross section and the top fifteen centimetres (15 cm) shall be compacted as specified before covered with geotextile or granular material.

### **3.4 PROTECTION**

- .1 Protect and maintain reshaped surface in condition conforming to this Section until succeeding material is placed.

**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION**

- .1 The work shall consist of excavating earth materials from the right-of-way and ditches, and finishing and compacting earth material in ditches and sideslopes. The work shall be completed to the lines, grades and dimensions as shown on the plans or as designated by the Departmental Representative.

**1.2 DEFINITIONS**

- .1 Waste Excavation: ditch cut or other material unsuitable for embankment or material surplus to requirements.
- .2 Subgrade elevation: elevation immediately below the surfacing structure.

**1.3 MEASUREMENT AND PAYMENT**

- .1 Waste Excavation:
  - .1 Waste Excavation obtained from ditch cuts, and other unusable material, is to be disposed of in the location shown on the Contract Drawings or as directed by the Departmental Representative.
  - .2 The volume of waste excavation, will be measured in cubic metres in its original position and after excavation. The volume will be calculated using average end-area method.
  - .3 Payment for Waste Excavation, Including Haul will be at the contract unit price per cubic metre as specified on the bid form.
  - .4 The unit price will be full compensation for all associated work, including but not limited to all labour, equipment and tools for excavating, loading, hauling, dumping, sorting of trees and branches, and leveling and shaping of disposed material. The unit price shall also include work required to shape and compact ditches created during removal of Waste Excavation.

**Part 2 Execution**

**2.1 EXCAVATING**

- .1 General:
  - .1 Advise Departmental Representative at least 48 hours in advance of excavation operations for initial cross sections to be taken.
  - .2 If evidence of prior contamination (odours or staining) is encountered, cease excavation and contact Departmental Representative.
  - .3 Notify Engineer when unsuitable materials below the proposed subgrade are encountered and remove to depth and extent directed.

- .2 Drainage:
  - .1 Maintain profiles, crowns and cross slopes to provide good surface drainage.
  - .2 Provide ditches as work progresses to provide drainage.
  - .3 Construct interceptor ditches as indicated or as directed by Departmental Representative before excavating or placing embankment in adjacent area.

## **2.2 CLEANING**

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
- .3 Waste Management: separate waste materials for reuse or recycling.

## **2.3 PROTECTION**

- .1 Maintain finished surfaces in condition conforming to this section until acceptance by Departmental Representative.

**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION**

- .1 The work shall consist of supply and installation of geotextiles for use in the roadway embankment.

**1.2 MEASUREMENT AND PAYMENT**

- .1 Measure geotextiles in square meters of surface covered by material. No allowance will be made for seams and overlap.
  - .1 Payment for Supply and Install Geotextile will be at the contract unit price per square metre as specified on the Bid Form. The contract unit price shall be full compensation for completing required work including but limited to supply of all materials and installation.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM D4595-86(2001), Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
    - .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
    - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
    - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes – Bursting Strength of Geotextiles Under No Compressive Load.
    - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.

**1.4 SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, manufacturer product specification sheet at least 1 week prior to beginning work.

**1.5 DELIVERY, STORAGE AND HANDLING**

- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

**Part 2 Products**

**2.1 MATERIAL**

- .1 Geotextile: woven synthetic fibre fabric, supplied in rolls.
  - .1 Winfab 2x2 HF or equivalent
  - .2 Width: 4 m minimum.
  - .3 Length: 90 m minimum.
  - .4 Tensile strength and elongation (in any principal direction): to ASTM D4595
    - .1 Tensile strength (grab): minimum 1200 N, wet condition
    - .2 Elongation at future: 15%.
    - .3 UV Resistance at 500 hrs: 90% minimum

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Geotextiles:
  - .1 Prepare subgrade by shaping to the lines, grades and slopes shown on the construction drawings.
  - .2 Place geotextile material after subgrade is inspected and approved by the Departmental Representative.
  - .3 Place geotextile material by unrolling onto graded surfaces so that seams are parallel to the roadway centerline.
  - .4 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
  - .5 Place geotextile material over full width of the roadway, as shown on the drawings.
  - .6 Overlap each successive strip of geotextile 500 mm over previously laid strip.
  - .7 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
  - .8 After installation, cover with overlying layer within 4 hours of placement.
  - .9 Replace damaged or deteriorated geotextile at contractors cost to approval of Departmental Representative.

**3.2 WASTE MANAGEMENT AND DISPOSAL**

- .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner at appropriate facilities.

**END OF SECTION**

**Part 1 General**

**1.1 DESCRIPTION**

- .1 The work shall consist of supplying, hauling, dumping, spreading, and blading traffic gravel material on a prepared surface at locations indicated in the contract drawings.

**1.2 MEASUREMENT AND PAYMENT**

- .1 Traffic Gravel will be measured in the vehicle in cubic metres.
- .2 Payment for Traffic Gravel in Place, Contractor Supplied will be at the contract unit price per cubic metre as specified on the Bid Form. The contract unit price shall be full compensation for all associated work, including but not limited to supply of all material, equipment and labour required for the supply, crushing, processing, handling, hauling, placing, watering, and shaping of traffic gravel material as specified in the contract documents and as shown on the drawings.
- .3 The unit price will also be full compensation for specified aggregate testing that the Contractor is responsible for performing.

**1.3 DEFINITIONS**

- .1 Acceptance limit: The maximum or minimum value for a test result above or below which the section of roadway shall be rejected.
- .2 Acceptance Testing: The testing performed to determine compliance with the specification regarding certain requirements, limits and tolerances for the quality of materials and workmanship to be supplied.
- .3 Mean: The arithmetic average of a set of 'n' test results constituting the sample.
- .4 Moving average: The arithmetic mean of 3 consecutive test results.

**1.4 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 C136-[06], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D4318-[10], Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

**1.5 SUBMITTALS**

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

- .2 Submit to Department Representative sieve analysis, Atterberg Limits, percent fractured faces and percent lightweight pieces of materials proposed for use at least two (2) weeks prior to commencing work.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Traffic gravel materials shall meet the following requirements:
  - .1 The aggregate shall be composed of sound, hard and durable particles of sand, gravel and rock free from injurious quantities of elongated, soft or flaky particles, shale, loam, clay balls and organic or other deleterious material.
  - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C11.7.
    - .1 Traffic gravel gradation to meet the following:

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING CANADIAN METRIC SIEVE SERIES
22.4 mm	100.0
18.0 mm	63.0 – 92.0
5.0 mm	0.0 – 60.0
2.0 mm	0.0 – 45.0
Fractured Face %	50.0 Minimum

- .2 The percentage passing the designated sieve size for any representative sample, when plotted on a semi-log grading chart, shall show a free flowing concave curve without sharp breaks, within the limits specified.

## **Part 3 Execution**

### **3.1 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and stockpile, aggregates as noted below.
  - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
  - .2 No stockpiling of aggregate to be permitted on site unless otherwise directed by the Department Representative. Do not stockpile on completed pavement surfaces.
  - .3 Stockpile aggregates in sufficient quantities to meet project schedules.

### **3.2 PLACING**

- .1 Haul Traffic Gravel to site after Subgrade is inspected and approved by Department Representative in writing.



- .2 Place Traffic Gravel as designated in the contract drawings.
  - .1 Ensure no frozen material is placed.
  - .2 Place material only on clean unfrozen surface, free from snow and ice.
  - .3 Place material using methods which do not lead to segregation or degradation of aggregate.
- .3 Compact traffic gravel, and grade to slopes and grades indicated.

**END OF SECTION**

## **1 General**

### **1.1 DESCRIPTION**

- .1 The work shall consist of supplying, spreading, and compacting granular pit run aggregate on a prepared subgrade surface at locations indicated on the contract drawings.

### **1.2 MEASUREMENT AND PAYMENT**

- .1 Measurement will be measured in cubic metres of granular pit run material hauled in place.
- .2 Payment for Granular Pit Run in Place, Contractor Supplied shall be at the contract unit price per cubic metre as specified on the Bid Form. The contract unit price shall be full compensation for all associated work, including but not limited to supply of all material, equipment and labour required for the supply, handling, hauling, placing, watering if required, compacting and shaping as specified in the contract documents and as shown on the drawings.

### **1.3 SUBMITTALS AND SAMPLES**

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

## **2 Products**

### **2.1 MATERIALS**

- .1 Granular pit run aggregate shall be composed of sound, hard, and durable particles of sand, gravel and rock free from injurious quantities of soft or flaky particles, shale, loam, clay balls and organic or other deleterious material in accordance with the following requirements:
  - .1 Crushed, pit run or screened stone, gravel or sand.
  - .2 Gradation to meet the following:

<b>Sieve Designation</b>	<b>% Passing</b>
75.0 mm	100.0
75 um	0 – 15.0

- .3 Other Properties as follows:
  - .1 Liquid Limit: to ASTM D4318, Maximum 25.
  - .2 Plasticity Index: to ASTM D4318, Maximum 6.

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### **3 Execution**

#### **3.1 PLACING**

- .1 Place material after subgrade is inspected and approved by Engineer.
- .2 Construct to depth and grade in areas indicated.
- .3 Ensure no frozen material is placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.
- .5 Begin spreading material on crown line or high side of one-way slope.
- .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Engineer may authorize thicker lifts (layers) if specified compaction can be achieved.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .8 Remove and replace portion of layer in which material has become segregated during spreading.
- .9 Granular pit run courses shall be compacted until no further settlement is apparent and the particles are well keyed into place. The course shall be free from any rutting or deformations before the placement of the next course.

#### **3.2 COMPACTION**

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .3 Apply water as necessary during compaction.
- .4 If excess moisture originating from external causes including but not limited to precipitation and/or Contractor's operation is present in the course and/or underlying material prior to the acceptance of the completed surfacing structure; the Contractor shall dry the granular material and/or the underlying material to the optimum moisture content and compact the pit run and/or underlying material to not less than the specified density or the optimum density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by the Engineer.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

### **3.3 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 maximum.
- .2 Obtain approval from Engineer to use non standard proof rolling equipment.
- .3 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.
- .4 Where proof rolling reveals areas of defective subgrade:
  - .1 Remove pit run and subgrade material to depth and extent as directed by Engineer.
  - .2 Backfill excavated subgrade with approved granular material and compact.
  - .3 Replace pit run material and compact.
  - .4 Areas of defective subgrade shall be repaired at no extra cost.
- .5 Where proof rolling reveals areas of defective pit run:
  - .1 Remove and replace in accordance with this section at no extra cost.

### **3.4 SITE TOLERANCES**

- .1 Finished granular pit run surface to be within 10 mm of elevation as indicated but not uniformly high or low.

### **3.5 PROTECTION**

- .1 Maintain finished surface in condition conforming to this section until acceptance of the completed traffic gravel surface is provided in writing by the Engineer.

**END OF SECTION**