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1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises general construction to complete the following:
 - excavate and remove damaged road pavement on Balsam Street(Area 1) and Lakeview Drive (Area 2)
 - excavate and remove depth of 600 mm gravel road base for Area 1 located on Balsam Street
 - repair one storm sewer manhole riser on Balsam Street,
 - In Area 1 replace 600 mm gravel base in compacted layers of 150 mm lifts to 98% Proctor
 - In Area 2 inspect area, where required remove poor base and replace with suitable granular aggregate, compact road base to 98% Proctor
 - supply all labour, equipment and materials to install new asphalt road pavement (100 mm final compacted thickness) for Both Balsam Street (Area 1) and Lakeview Drive (Area 2)
 - supply all materials, equipment and labour required to complete the work and site clean-up when work is completed
- .2 Storm Sewer manhole repair at the intersection of Balsam Street and lane.

1.02 CONTRACT METHOD

- .1 Construct Work under stipulated unit price contract.

1.03 EXISTING SERVICES

- .1 Notify utility companies of intended excavation of services and obtain required permission.
- .2 Provide road closures and alternative route directions as needed for pedestrian and vehicular traffic as necessary.
- .3 Establish location and extent of service lines in work area before starting Work. Notify Parks Canada Agency Representative of findings.
- .4 Submit schedule to and obtain approval from Parks Canada Agency Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Provide barricades around trenches required to cross sidewalks or roads to protect or "close" normal pedestrian and vehicular traffic.
- .6 Where unknown services are encountered, immediately advise Parks Canada Agency Representative and confirm findings in writing.

- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.
- .9 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.04 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Specifications.
 - .2 Addenda.
 - .3 Change Orders.
 - .4 Other Modifications to Contract.
 - .5 Field Test Reports.
 - .6 Copy of Approved Work Schedule.
 - .7 Health and Safety Plan and Other Safety Related Documents.
 - .8 Other documents as specified.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-1994, Stipulated Price Contract.
- .2 Project Supplementary Conditions

1.02 CASH ALLOWANCES

- .1 Refer to CCDC 2, GC 4.1.
- .2 Include in Contract Price specified cash allowances.
- .3 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage and other authorized expenses incurred in performing Work.
- .4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
- .5 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
- .6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
- .7 Include progress payments on accounts of work authorized under cash allowances in monthly certificate for payment.
- .8 Prepare schedule jointly with Contractor and Sub-Contractors to show when items called for under cash allowances must be authorized by Parks Canada Agency Representative for ordering purposes so that progress of Work will not be delayed.
- .9 Amount of each allowance, for Work specified in respective specification Sections is as follows:
 - .1 Section 312333.1 include allowance of \$ 5,000 for purchase of Compaction Density testing services.
 - .2 Section 321216.01 include allowance of \$ 5,000 for purchase of Asphalt Quality and compaction services.
 - .3 Section 310516 include allowance of \$ 5,000 for purchase of Aggregate testing services.

ROAD REPAIRS	ALLOWANCES	SECTION 01 21 00
BALSAM STREET, WASKESIU LAKE		PAGE 2
SPECIFICATION		2014-05-28

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 Owner/Contract or Agreement.
- .2 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC, Stipulated Price Contract.

1.02 APPLICATIONS FOR PROGRESS PAYMENT

- .1 Refer to CCDC 2.
- .2 Make applications for payment on account on monthly basis as Work progresses.
- .3 Date applications for payment last day of agreed month payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.
- .4 Submit to Parks Canada Agency Representative at least 14 days before first application for payment. Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.

1.03 PREPARING SCHEDULE OF UNIT PRICE TABLE ITEMS

- .1 Submit separate schedule of unit price items of Work requested in Bid form.
- .2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:
 - .1 Cost of material.
 - .2 Delivery and unloading at site.
 - .3 Sales taxes.
 - .4 Installation, overhead and profit.
- .3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.04 PROGRESS PAYMENT

- .1 Refer to CCDC 2.
- .2 Parks Canada Agency Representative will issue to Owner, no later than 10 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Parks Canada Agency Representative determines to be due. If Canada Agency Representative amends application, Canada Agency Representative will give notification in writing giving reasons for amendment.

1.05 SUBSTANTIAL PERFORMANCE OF WORK

- .1 Refer to CCDC 2.

- .2 Prepare and submit to Parks Canada Agency Representative comprehensive list of items to be completed or corrected and apply for a review by Parks Canada Agency Representative to establish Substantial Performance of Work or substantial performance of designated portion of Work when. Failure to include items on list does not alter responsibility to complete Contract.
- .3 No later than 10 days after receipt of list and application, Parks Canada Agency Representative will review Work to verify validity of application, and no later than 7 days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.
- .4 Canada Agency Representative state date of Substantial Performance of Work or designated portion of Work in certificate.
- .5 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Parks Canada Agency Representative, establish reasonable date for finishing Work.

1.06 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

- .1 Refer to CCDC 2.

1.07 PROGRESSIVE RELEASE OF HOLDBACK

- .1 Refer to CCDC 2.

1.08 FINAL PAYMENT

- .1 Refer to CCDC 2, GC 5.7.
- .2 Submit application for final payment when Work is completed.
- .3 Parks Canada Agency Representative will, no later than 10 days after receipt of application for final payment, review Work to verify validity of application. Canada Agency Representative will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.
- .4 Parks Canada Agency Representative will issue final certificate for payment when application for final payment is found valid.

2 PRODUCTS

2.01 NOT USED

3 EXECUTION

3.01 NOT USED

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section

1.02 APPOINTMENT AND PAYMENT

- .1 Contractor will appoint and pay for services of testing laboratory except follows:
 - .1 Inspection and testing performed exclusively for Quality Control and Assurance to assist Contractor and Parks Canada Agency.
 - .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Parks Canada Agency Representative to verify acceptability of corrected work.

1.03 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide access to Work for inspection and testing.
- .2 Facilitate inspections and tests.
- .3 Make good Work disturbed by inspection and test.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section CLOSEOUT SUBMITTALS 01 78 00.
- .3 Section 01 56 00 - Temporary Barriers and Enclosures

1.02 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Parks Canada Agency Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Parks Canada Agency Representative.
- .4 Preside at meetings.
- .5 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .6 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants Parks Canada Agency Representative.
- .7 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.03 PRECONSTRUCTION MEETING

- .1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of Parks Canada Agency Representative, Contractor, major Subcontractors, field inspectors and supervisors 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: in accordance with - Critical Path Method.
 - .3 Schedule of submission of submittals. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures .
 - .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .6 Owner provided products.
 - .7 Record drawings in accordance Section 01 33 00 - Submittal Procedures.

- .8 Monthly progress claims, administrative procedures, photographs, hold backs.
- .9 Appointment of inspection and testing agencies or firms.
- .10 Insurances, transcript of policies.

1.04 PROGRESS MEETINGS

- .1 During course of Work and schedule progress meetings bi-weekly.
- .2 Contractor, major Subcontractors involved in Work and Parks Canada Agency Representative are to be in attendance.
- .3 Notify parties minimum 4 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 the 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 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section HEALTH & SAFETY REQUIREMENTS SECTION 01 35 29
- .2 Section ENVIRONMENTAL PROCEDURES SECTION 01 35 43

1.02 REFERENCES

- .1 [_____].

1.03 ADMINISTRATIVE

- .1 Submit to Parks Canada Agency Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present product data in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Parks Canada Agency 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 Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Parks Canada Agency Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Parks Canada Agency Representative review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Parks Canada Agency Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.04 PRODUCT DATA

- .1 Refer to CCDC 2 GC 3.11.
- .2 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each product sample.
 - .5 Other pertinent data.

- .3 Submissions 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 Performance characteristics.
 - .2 Standards.
 - .3 Relationship to work.
 - .6 After Parks Canada Agency Representative review, distribute copies.
 - .7 Submit electronic copies of product data sheets for requirements requested in specification Sections and as requested by Parks Canada Agency Representative where shop drawings will not be prepared due to standardized manufacture of product.
 - .8 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Parks Canada Agency Representative.
 - .1 Report signed by authorized official of testing laboratory that material, or product identical to material, or product to be provided has been tested in accord with specified requirements.
 - .9 Delete information not applicable to project.
 - .10 Supplement standard information to provide details applicable to project.

1.05 CERTIFICATES AND TRANSCRIPTS

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

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.

1.02 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.

1.03 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.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Parks Canada Agency Representative weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets
- .7 Parks Canada Agency Representative will review Contractor's site-specific Health and Safety Plan. Revise plan as appropriate and resubmit plan to Parks Canada Agency Representative within 7 days after receipt of comments from Parks Canada Agency Representative.
- .8 Parks Canada Agency Representative 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 Parks Canada Agency Representative.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.04 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.
- .3 Work zone locations include:
 - .1 Balsam Street and Lakeview Drive near Balsam Street in Waskesiu Lake, Saskatchewan.
- .4 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.05 SAFETY ASSESSMENT

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

1.06 MEETINGS

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

1.07 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Vehicular Traffic and Pedestrian Traffic

1.08 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.
- .2 Parks Canada Agency Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.09 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.

1.10 COMPLIANCE REQUIREMENTS

- .1 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.
- .2 Comply with Occupational Health and Safety Regulations, 1996.

- .3 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 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 Parks Canada Agency 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 coordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Parks Canada Agency Representative verbally and in writing.

1.12 HEALTH AND SAFETY COORDINATOR

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

1.13 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 Saskatchewan having jurisdiction, and in consultation with Parks Canada Agency Representative.

1.14 CORRECTION OF NON-COMPLIANCE

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

1.15 BLASTING

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

1.16 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Parks Canada Agency Representative

1.17 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.

2 PRODUCTS

2.01 NOT USED

- .1 Not used.

3 EXECUTION

3.01 NOT USED

- .1 Not used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.

1.02 REFERENCES

- .1 Definitions:
 - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
 - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.
- .2 Reference Standards:
 - .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2008 Stipulated Price Contract.
 - .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-[92], Storm Water Management for Construction Activities, Chapter 3.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review by Parks Canada Agency Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .6 Include in Environmental Protection Plan:
 - .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan.
 - .2 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 erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations [and EPA 832/R-92-005, Chapter 3].
 - .3 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.
 - .4 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.

- .5 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .6 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

1.04 FIRES

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

1.05 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[, EPA 832/R-92-005, Chapter 3] [US EPA General Construction Permit].
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan as needed.
- .3 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .4 Ensure pumped water 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 local authority requirements.

1.06 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties.

1.07 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Waterways to be kept free of excavated fill, waste material and debris.

1.08 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 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.09 NOTIFICATION

- .1 Parks Canada Agency 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 Parks Canada Agency Representative of proposed corrective action and take such action for approval by Parks Canada Agency Representative.
 - .1 Take action only after receipt of written Parks Canada Agency Representative.
- .3 Parks Canada Agency 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.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11 - Cleaning].
- .4 Waste Management: separate waste materials for reuse when possible

END OF SECTION

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1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 21 00 - Allowances

1.02 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)

1.03 INSPECTION

- .1 Refer to CCDC 2, GC 2.3.
- .2 Allow Parks Canada Agency Representative 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.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Parks Canada Agency Representative instructions, or law of Place of Work.
- .4 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.
- .5 Parks Canada Agency Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Parks Canada Agency Representative shall pay cost of examination and replacement.

1.04 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Contractor and reimbursed with Cash Allowance provision for Inspection services.
- .2 Allocated costs: to Section 01 21 00 - Allowances.
- .3 Provide equipment required for executing inspection and testing by appointed agencies.
- .4 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .5 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Parks Canada Agency Representative at no additional cost to Parks Canada Agency Representative. Pay costs for retesting and re-inspection.

1.05 ACCESS TO WORK

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

1.06 PROCEDURES

- .1 Notify appropriate agency Parks Canada Agency 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.

1.07 REJECTED WORK

- .1 Refer to CCDC, GC 2.4.
- .2 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 Parks Canada Agency Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .3 Make good other Contractor's work damaged by such removals or replacements promptly.
- .4 If in opinion of Parks Canada Agency 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 Parks Canada Agency Representative.

1.08 REPORTS

- .1 Submit 2 copies of inspection and test reports to Parks Canada Agency Representative.
- .2 Provide copies to subcontractor of work being inspected or tested.

1.09 TESTS AND MIX DESIGNS

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

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures

1.02 REFERENCES

- .1 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures
- .2 Submit site-specific Temporary Barriers and Enclosures Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Temporary Barriers and Enclosures Plan must include:
 - .1 Plan showing location of all Barriers and signage to be used to control and inform all Pedestrian and Vehicular traffic

1.04 INSTALLATION AND REMOVAL

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

1.05 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.

1.06 FIRE ROUTES

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

1.07 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 due to lack of or improper protection.

1.08 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Contractor's Waste Management Plan.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section [_____].

1.02 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2, Stipulated Price Contract.

1.03 SURVEY REFERENCE POINTS

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, establish, 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 Parks Canada Agency Representative.
- .4 Report to Parks Canada Agency Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

1.04 SURVEY REQUIREMENTS

- .1 Establish temporary bench marks on site. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake for grading, fill placement.

1.05 EXISTING SERVICES

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

1.06 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.

1.07 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit name and address of Surveyor to Parks Canada Agency Representative.
- .2 On request of Parks Canada Agency Representative, submit documentation to verify accuracy of field engineering work.
- .3 Submit certificate signed by surveyor certifying those elevations and locations of completed Work that conform with Contract Documents.

1.08 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Parks Canada Agency Representative determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Efficiency, maintenance, or safety of operational elements.
 - .2 Visual qualities of sight-exposed elements.
 - .3 Work of Owner.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting or alteration.
 - .6 Effect on Work of Owner
 - .7 Date and time work will be executed.

1.03 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.04 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.05 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Remove and replace defective and non-conforming Work.
- .4 Execute Work by methods to avoid damage to other Work, and which will provide

ROADWAY REPAIRS	EXECUTION	SECTION 01 73 00
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proper surfaces to receive patching and finishing.

- .5 Restore work with new products in accordance with requirements of Contract Documents.

1.06 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Contractor's Waste Management Plan.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 312333 - Excavating, Trenching and Backfilling
- .2 Section 321216 - Asphalt Paving
- .3 Section 01 33 00 - Submittal Procedures

1.02 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-94, Stipulated Price Contract.

1.03 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Parks Canada Agency Representative. Do not burn waste materials on site, unless approved by Parks Canada Agency Representative.
- .3 Dispose of waste materials and debris at a licensed in Saskatchewan Sanitary Landfill.

.1 Asphalt may be ground into granular material 25 mm or less and stockpiled at the "Townsite Bypass Road" Staging area.

.2 Asphalt in sizes larger than 25 mm must be disposed at a Government of Saskatchewan Licensed Landfill or site approved by the Parks Canada Agency Representative.

.3 Contaminated Granular Sub-base Excess must be disposed at a Government of Saskatchewan Licensed Landfill or site approved by the Parks Canada Agency Representative.

.4 Excess granular sub-base from the Balsam Street excavation and accepted as clean by the Parks Canada Agency Representative can be stockpiled at the "Townsite Bypass Road" Staging Area or a location approved site approved by the Parks Canada Agency Representative.

1.04 FINAL CLEANING

- .1 When Work is Substantially Performed, 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.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by mm must be disposed at a Government of Saskatchewan Licensed Landfill or site approved by the Parks Canada Agency Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Sweep and wash clean paved areas.

1.05 WASTE MANAGEMENT AND DISPOSAL

- .1 Waste Management Plan to be developed by Prime Contractor and submitted for review to the Parks Canada Agency Representative before work is to commence.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures

1.02 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-[2008], Stipulated Price Contract.

1.03 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Parks Canada Agency Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Parks Canada Agency Representative inspection.
 - .2 Parks Canada Agency Representative Inspection:
 - .1 Parks Canada Agency Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Parks Canada Agency Representative, and Contractor.
 - .2 When Work incomplete according to Parks Canada Agency Representative, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Parks Canada Agency Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .7 Final Payment:
 - .1 When Parks Canada Agency Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 Refer to CCDC 2 DOC 14 DOC 15: when Work deemed incomplete by Parks Canada Agency Representative, complete outstanding items and request re-inspection.
 - .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.04 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 31 19 - Project Meetings.
- .2 Section 01 33 00 - Submittal Procedures

1.02 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with contractor's representative and Parks Canada Agency Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Parks Canada Agency Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide evidence, if requested, for type, source and quality of products supplied.

1.04 FINAL SURVEY

- .1 Submit final site survey certificate certifying elevations and locations of completed Work.

1.05 WARRANTIES AND BONDS

- .1 Conduct joint 3 month and 11 month warranty inspection, measured from time of acceptance, by Parks Canada Agency Representative.
- .2 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of Certificates of Warranty.
 - .3 Contractor's plans for attendance at 3 and 11 month post-construction warranty inspections.

- .3 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .4 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Parks Canada Agency Representative to proceed with action against Contractor.

2 PRODUCTS

2.01 NOT USED

- .1 Not Used.

3 EXECUTION

3.01 NOT USED

- .1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 ASTM International
 - .1 ASTM D 4791-10, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.02 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 aggregate materials and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit 2 sample test results.
 - .2 Allow continual sampling by Inspection Services Consultant during production and delivery.
 - .3 Provide Inspection Services Consultant with access to source and processed material for sampling.
 - .4 Install sampling facilities at discharge end of production conveyor, to allow Inspection Services Consultant to obtain representative samples of items being produced. Stop conveyor belt when requested by Inspection Services Consultant to permit full cross section sampling.
 - .5 Provide front end loader or other suitable equipment including trained operator for stockpile sampling as necessary. Move samples to storage place as directed by Inspection Services Consultant.
 - .6 Supply new or clean sample bags or containers according appropriate to aggregate materials.
 - .7 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.
- .4 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage opportunities.
 - .2 Erosion and Sedimentation Control: submit copy of erosion and sedimentation control plan in accordance with Parks Canada Agency Representative.

1.03 DELIVERY, STORAGE AND HANDLING

- .1 Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.
- .2 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.

2 PRODUCTS

2.01 MATERIALS

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.
- .2 Flat and elongated particles of coarse aggregate: to ASTM D 4791.
 - .1 Greatest dimension to exceed [5] times least dimension.
- .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
 - .1 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
 - .2 Reclaimed asphalt pavement.
 - .3 Reclaimed concrete material.
- .4 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.
 - .3 Light weight aggregate, including slag and expanded shale.
 - .4 Reclaimed asphalt pavement.
 - .5 Reclaimed concrete material.

2.02 SOURCE QUALITY CONTROL

- .1 Inform Parks Canada Agency Representative of proposed source of aggregates and provide access for sampling results 1 weeks minimum before starting production.
- .2 If materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate alternative source.
- .3 Advise Parks Canada Agency Representative 1 weeks minimum in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify that conditions are acceptable for road pavement stripping.
 - .1 Visually inspect substrate in presence of Parks Canada Agency Representative.
 - .2 Inform Parks Canada Agency Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with road pavement stripping, only after unacceptable conditions have been remedied.

3.02 PREPARATION

- .1 Processing:
 - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
 - .2 Blend aggregates, as required, including reclaimed materials that meet physical requirements of specification is permitted in order to satisfy gradation requirements for material and, percentage of crushed particles, or particle shapes specified.
- .2 Stockpiling:
 - .1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Parks Canada Agency Representative. Do not stockpile on completed pavement surfaces.
 - .2 Stockpile aggregates in sufficient quantities to meet project schedules.
 - .3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
 - .4 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Parks Canada Agency Representative within 48 hours of rejection.
 - .5 Stockpile materials in uniform layers of thickness as follows:
 - .1 Maximum 1.5 m for coarse aggregate and base course materials.
 - .2 Maximum 1.5 m for fine aggregate and sub-base materials.
 - .3 Maximum 1.5 m for other materials.
 - .6 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
 - .7 Do not cone piles or spill material over edges of piles.

3.03 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 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Leave any unused aggregates in neat compact stockpiles as directed by Parks Canada Agency Representative.
- .5 Waste Management: separate waste materials for reuse when possible

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 45 00 - Quality Control
- .3 Section 32 11 16 - Granular Sub- Base
- .4 Section 32 11 23 - Aggregate Base Courses

1.02 MEASUREMENT PROCEDURES

- .1 Excavated materials will not be weighed for payment. A 600 mm road bed is to be reconstructed and payment will be based on a square meter of final paved area.
- .2 Additional Granular aggregate supplied will be paid on a "per tonne" basis based on approved "weigh scale" tickets.

1.03 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C 117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C 136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D 422-63, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D 698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ü) (600 kN-m/m ü).
 - .5 ASTM D 1557-[02e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ü) (2,700 kN-m/m ü).
 - .6 ASTM D 4318-[05], 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.
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.04 DEFINITIONS

- .1 Excavation classes:
 - .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
 - .2 Waste material: excavated material unsuitable for use in.
 - .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas.

- .2 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D 4318, and gradation within limits specified when tested to ASTM D 422 and ASTM C 136: Sieve sizes to CAN/CGSB-8.1
 - .2 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

1.05 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality Control: in accordance with Section 01 45 00 - Quality Control:
 - .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
 - .2 Submit for review by Parks Canada Agency Representative proposed dewatering methods as described in PART 3 of this Section.
 - .3 Submit to Parks Canada Agency Representative written notice at least 7 days prior to excavation work.
 - .4 Submit to Parks Canada Agency Representative written notice when bottom of excavation is reached.
 - .5 Submit to Parks Canada Agency Representative testing results and report as described in PART 3 of this Section.
- .3 Preconstruction Submittals:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
 - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field; clearance record from utility authority, as required.
- .5 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Inform Parks Canada Agency Representative at least 2 weeks prior to beginning Work, of proposed source of fill materials and provide sampling results.

1.06 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Submit asphalt design and supporting data at least 2 weeks prior to beginning Work.
- .3 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Saskatchewan, Canada.
- .4 Keep design and supporting data on site.
- .5 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section Provincial and Federal Health and Safety Requirements.

1.07 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse in accordance with Contractor's Waste Management Plan.

1.08 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work verify or establish location of buried services on and adjacent to site.
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Costs for relocation Work to be paid by Parks Canada Agency.
 - .3 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .2 Existing surface features:
 - .1 Conduct, with Parks Canada Agency Representative, condition survey of existing infrastructure and facilities which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Parks Canada Agency Representative.
 - .3 Where required for excavation cut roots.

2 PRODUCTS

2.01 MATERIALS

- .1 Type 1 and Type 2 fill: properties to Section 31 05 16 - Aggregate Materials
- .2 Type 3 fill: selected material from excavation or other sources, as approved by Parks Canada Agency Representative.

3 EXECUTION

3.01 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 EPA 832/R-92-005 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.

3.02 SITE PREPARATION

- .1 Remove obstructions from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.03 PREPARATION/ PROTECTION

- .1 Protect existing features in accordance with Parks Canada Agency Representative.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .4 Protect buried services that are required to remain undisturbed.

3.04 STOCKPILING

- .1 Stockpile fill materials in areas approved by Parks Canada Agency Representative.
 - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.05 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for Parks Canada Agency Representative review details of proposed dewatering methods, including dikes, well points, etc.
- .3 Avoid excavation below groundwater table if quick condition is likely to occur.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures to in a manner not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions.

3.06 EXCAVATION

- .1 Advise Parks Canada Agency Representative at least [7 days] in advance of excavation operations.
- .2 Contractor to establish and excavate to grades, elevations and dimensions as per existing conditions.
- .3 Remove concrete, paving, walks, rubble, and other obstructions encountered during excavation.

- .4 Excavation must not interfere with bearing capacity of adjacent foundations.
- .5 Keep excavated and stockpiled materials safe distance away from edge of excavation as directed by Parks Canada Agency Representative.
- .6 Restrict vehicle operations directly adjacent to open excavations.
- .7 Dispose of surplus and unsuitable excavated material in approved location.
- .8 Do not obstruct flow of surface drainage or natural watercourses.
- .9 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Parks Canada Agency Representative.
- .10 Correct unauthorized over-excavation as follows:
 - .1 Fill with fill compacted to not less than 98 % of Standard Proctor.
- .11 Make firm and remove loose material and debris from excavations.
 - .1 Compact base soil to density at least equal to undisturbed soil 98 % of Standard Proctor density.

3.07 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Parks Canada Agency Representative has inspected and approved sub-base compaction.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to surface. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
 - .1 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 0.4 m.

3.08 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Parks Canada Agency Representative.
- .2 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .3 Clean and reinstate areas affected by Work as directed by Parks Canada Agency Representative.
- .4 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

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1 GENERAL

1.01 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

- .1 Granular based material: supplied by road salvage and contractor.

1.02 RELATED REQUIREMENTS

- .1

1.03 MEASUREMENT AND PAYMENT

- .1 Measure granular sub-base in square meters of excavated and compacted material incorporated into Work and accepted by Parks Canada Agency Representative. Excavation to depth of 600 mm or as approved by Parks Canada Agency Representative. When Excavations greater than 600 mm are directed by Parks Canada Agency Representative square meter rate shall be adjusted in direct proportion of increased depth and volume.
- .3 If additional granular aggregate required - Measure hauling granular sub-base material in tonnes based on approved weigh scale tickets.

1.04 REFERENCES

- .1 ASTM International
 - .1 ASTM C 117-[04], Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C 131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C 136-[06], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D 422-[63(2007)], Standard Test Method for Particle-Size Analysis of Soils.
 - .5 ASTM D 698-[07e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft²) (600kN-m/m²).
 - .6 ASTM D 1557-[09], Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft²) (2,700kN-m/m²).
 - .7 ASTM D 1883-[07e2], Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .8 ASTM D 4318-[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.
- .3 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.05 ACTION AND INFORMATIONAL SUBMITTALS

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

2 PRODUCTS

2.01 MATERIALS

- .1 Granular sub-base material: in accordance with Section 31 05 16 - Aggregate Materials:
 - .1 Crushed, pit run or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to [ASTM C 136] and [ASTM C 117]. Sieve sizes to [CAN/CGSB-8.1] [CAN/CGSB-8.2].
 - .3 Other properties as follows:
 - .1 Liquid Limit: to ASTM D 4318, Maximum 25.
 - .2 Plasticity Index: to ASTM D 4318, Maximum 6.
 - .3 Los Angeles degradation: to ASTM C 131.
 - .1 Maximum loss by mass: 50 %.

3 EXECUTION

3.01 EXAMINATION

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

3.02 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 the Parks Canada Agency Representative.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.03 PLACING

- .1 Place granular sub-base after bottom of excavation is inspected and approved by Parks Canada Agency Representative.

- .2 Construct granular sub-base 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 sub-base material on crown line or high side of one-way slope.
- .6 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .7 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness.
- .8 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
- .9 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .10 Remove and replace portion of layer in which material has become segregated during spreading.

3.04 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density of not less than 98% Standard Proctor density.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.05 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 written approval from Parks Canada Agency Representative to use non standard proof rolling equipment.
- .3 Proof roll at level in sub-base as indicated.
- .4 If non standard proof rolling equipment is approved, Parks Canada Agency Representative will determine level of proof rolling.
- .5 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.

- .6 Where proof rolling reveals areas of defective subgrade:
 - .1 Remove sub-base and subgrade material to depth and extent as directed by Parks Canada Agency Representative.
 - .2 Backfill excavated subgrade with sub-base material and compact in accordance with this section.
 - .3 Replace sub-base material and compact.
- .7 Where proof rolling reveals areas of defective sub-base, remove and replace in accordance with this section at no extra cost.

3.06 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.

3.07 SITE TOLERANCES

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

3.08 PROTECTION

- .1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Parks Canada Agency Representative.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 31 05 16 - Aggregate Materials.

1.02 MEASUREMENT PROCEDURES

- .1 Measure reshaping existing roadbed on Lakeview Drive to be measured in square metres
- .2 Measure new granular base material incorporated into work in tonnes of material to be based on approved weigh scale tickets.
- .3 Repair of soft areas will be excavated to 600 mm and replaced with compacted aggregate in 150 mm lifts and will be measured in square metres as part of Unit price item "600 mm deep Road base excavation and replacement"

1.03 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C 117-[03], Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C 131-[03], Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C 136-[01], Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D 698-[00a], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/mü).
 - .5 ASTM D 4318-[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.

1.04 WASTE MANAGEMENT AND DISPOSAL

- .1 Excess materials are to be diverted from landfill to site approved by Parks Canada Agency Representative.

2 PRODUCTS

2.01 MATERIALS

- .1 Granular base material: to Section 31 05 16 - Aggregate Materials and following requirements:
 - .1 Crushed stone or gravel consisting of hard, durable, angular particles, free from clay lumps, cementation, organic material and other deleterious materials.
 - .2 Graduations within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1.

- .3 Other properties as follows:
 - .1 Liquid limit: ASTM D 4318, maximum 25.
 - .2 Plasticity index: ASTM D 4318, maximum 6.
 - .3 Los Angeles Degradation: ASTM C 131, maximum % loss by weight 45.
 - .4 Crushed particles: at least 50 % of particles by mass within 19.0 mm to 4.75 mm sieve designation range to have at least 1 freshly fractured face. Material divided into ranges using methods of ASTM C 136.

3 EXECUTION

3.01 SEQUENCE OF OPERATION

- .1 Scarifying and reshaping:
 - .1 Scarify roadbed to width as indicated unless directed otherwise by Parks Canada Agency Representative and to minimum depth of 100 mm.
 - .2 Pulverize and break down scarified material to 100 mm maximum particle size.
 - .3 Blade and trim pulverized material to elevation and cross section dimensions as indicated unless directed otherwise by Parks Canada Agency Representative.
 - .4 Where deficiency of material exists, add and blend in new granular base material as directed by Parks Canada Agency Representative. Ensure no frozen material is used.
- .2 Compaction equipment:
 - .1 Compaction equipment capable of obtaining required material densities.
- .3 Compacting:
 - .1 Compact to density minimum 98% Proctor Density.
 - .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 Parks Canada Agency 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 of 600 mm or depth and extent directed by Parks Canada Agency Representative.
 - .2 Replace with material acceptable to Parks Canada Agency Representative and compact to specified 98% Proctor Density.
 - .3 Maintain reshaped surface in condition conforming to this section until succeeding material is applied.

3.02 SITE TOLERANCES

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

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 312333 - EXCAVATING, TRENCHING AND BACKFILLING

1.02 MEASUREMENT AND PAYMENT

- .1 Measure and payment of contractor supplied granular base in tonnes of material incorporated into Work and accepted in writing by Parks Canada Agency Representative.

1.03 REFERENCES

- .1 ASTM International
 - .1 ASTM C 117-[04], Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C 131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C 136-[06], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D 698-[07e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft²) (600kN-m/m²).
 - .5 ASTM D 1557-[09], Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft²) (2,700kN-m/m²).
 - .6 ASTM D 1883-[07e2], Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .7 ASTM D 4318-[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.
- .3 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section [01 33 00 - Submittal Procedures].
- .2 Erosion and Sedimentation Control: submit copy of erosion and sedimentation control plan in accordance with EPA 832/R-92-2005 authorities having jurisdiction.

1.05 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 31 05 16 - Aggregate Materials.
- .2 Storage and Handling Requirements:
 - .1 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 MATERIALS

- .1 Granular base: material in accordance with Section 31 05 16 - Aggregate Materials and following requirements:
 - .1 Crushed stone or gravel.
 - .2 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117 . Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2 .
 - .1 Gradation to Saskatchewan Highways and Transportation Type 8 and Type 33:

Grain Size (mm)	Percent Passing	Percent Passing
	Base Course Type 33	Sub-Base Course Type 8
50.0	---	100
18.0	100	---
12.5	75 – 100	---
5.0	50 – 75	---
2.0	32 - 52	0 - 90
0.900	20 - 35	---
0.400	12 - 25	0 - 60
0.160	8 - 15	0 - 25
0.071	6 - 11	0 - 15
Plasticity Index (%)	0 - 6	0 - 6
% Fracture (min)	50	---

- .2 Material to level surface depressions to meet gradation limits in accordance with Type 33.

3 EXECUTION

3.01 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 Parks Canada Agency Representative.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
 - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.02 PLACEMENT AND INSTALLATION

- .1 Place granular base after sub-base surface is inspected and approved in writing by Parks Canada Agency Representative.

- .2 Placing:
 - .1 Construct granular base to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.
 - .3 Place material only on clean unfrozen surface, free from snow and ice.
 - .4 Begin spreading base material on crown line or on high side of one-way slope.
 - .5 Place material using methods which do not lead to segregation or degradation of aggregate.
 - .6 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness.
 - .7 Place material to full width in uniform layers not exceeding [150] mm compacted thickness.
 - .1 Parks Canada Agency Representative may authorize thicker lifts if specified compaction can be achieved.
 - .8 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
 - .9 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.
- .4 Compacting:
 - .1 Compact to density not less than 98% corrected maximum dry density ASTM D 698 ASTM D 1557.
 - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
 - .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] [DCC Representative] [Consultant].
 - .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 Parks Canada Agency 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, Parks Canada Agency 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 areas of defective subgrade:
 - .1 Remove base, sub-base and subgrade material to depth and extent as directed by Parks Canada Agency Representative.
 - .2 Backfill excavated subgrade with common material and compact sub-base material and compact in accordance with Section 32 11 16.01 - Granular Sub-Base.
 - .3 Replace sub-base material and compact in accordance with Section 32 11 16.01 - Granular Sub-base.
 - .4 Replace base material and compact in accordance with this Section.

- .6 Where proof rolling reveals defective base or sub-base, remove defective materials to depth and extent as directed by Parks Canada Agency Representative and replace with new materials in accordance with Section 32 11 16.01 - Granular Sub-base and this section at no extra cost.

3.03 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.

3.04 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.

3.05 PROTECTION

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

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.

1.02 MEASUREMENT PROCEDURES

- .1 Asphalt tack coat will NOT be measured for payment.

1.03 REFERENCES

- .1 American Association of State Highway and Transportation Officials (AASHTO)
 - .1 AASHTO M081-92-UL-04, Standard Specification for Cutback Asphalt.
- .2 ASTM International
 - .1 ASTM D 140/D 140M-09, Standard Practice for Sampling Bituminous Materials.
 - .2 ASTM D 633-11, Standard Volume Correction Table for Road Tar.
 - .3 ASTM D 1250-08, Standard Guide for Use of the Petroleum Measurement Tables.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

1.04 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 tack coat and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Construction Waste Management:
 - .1 Submit Project Waste Management Plan.

1.05 QUALITY ASSURANCE

- .1 Upon request from Parks Canada Agency Representative, submit manufacturer's test data and certification that asphalt prime material meets requirements of this Section.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

- .4 Deliver, store and handle materials in accordance with ASTM D 140.
- .5 Provide, maintain and restore asphalt storage area.
- .6 Develop Construction Waste Management Plan

2 PRODUCTS

2.01 MATERIALS

- .1 Anionic emulsified asphalt: to CAN/CGSB-16.2 , grade: SS-1.
- .2 Cut-back asphalt; to AASHTO M081-92-UL, grade RC-70 or RC-250.
- .3 Water: clean, potable, free from foreign matter.

2.02 EQUIPMENT

- .1 Equipment required for Work of this Section to be in satisfactory working condition and maintained for duration of Work.
- .2 Pressure distributor:
 - .1 Designed, equipped, maintained and operated so that asphalt material can be:
 - .1 Maintained at even temperature.
 - .2 Applied uniformly on variable widths of surface up to 5 m.
 - .3 Applied at readily determined and controlled rates from 0.2 to 5.4 L/m with uniform pressure, and with allowable variation from any specified rate not exceeding 0.1 L/m.
 - .4 Distribute in uniform spray without atomization at temperature required.
 - .2 Equipped with meter, registering travel in metres per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.
 - .3 Equipped with pump having flow meter graduated in units of [5] L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.
 - .4 Equipped with easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
 - .1 Measure temperature to closest whole number.
 - .5 Equipped with accurate volume measuring device or calibrated tank.
 - .6 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
 - .7 Equipped with nozzle spray bar, with operational height adjustment in increments of 0.6 metres and capable of being raised or lowered.
 - .8 Cleaned if previously used with incompatible asphalt material.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt tack coat installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Parks Canada Agency Representative.

- .2 Inform Parks Canada Agency Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 APPLICATION

- .1 Apply asphalt tack coat only on clean and dry surface.
- .2 Dilute asphalt emulsion with water at 1:1 ratio for application.
 - .1 Mix thoroughly by pumping or other method approved by Parks Canada Agency Representative.
 - .2 Apply asphalt tack coat evenly to pavement surface at rate not to exceed 0.7 L/sq.m.
- .3 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.
- .4 Apply asphalt tack coat only when air temperature greater than 10 degrees C and when rain is not forecast within 2 hours minimum of application.
- .5 Apply asphalt tack coat only on unfrozen surface.
- .6 Evenly distribute localized excessive deposits of tack coat by brooming as directed by Parks Canada Agency Representative.
- .7 Keep traffic off tacked areas until asphalt tack coat has set.
- .8 Re-tack contaminated or disturbed areas as directed by Parks Canada Agency Representative.
- .9 Permit asphalt tack coat to set before placing asphalt pavement.
- .10 Submit summary report within 7 days minimum of date of application and include information as follows:
 - .1 Total area tack coated.
 - .2 Quantity of tack coat used.
 - .3 Mean application rate.
 - .4 Actual product quantity used when using equipment on pressure distributors.
 - .5 Dipstick measurements or electronic printouts are acceptable.
- .11 Carry out measurements in presence of Parks Canada Agency Representative upon request.
- .12 Inspect tack coat application to ensure uniformity.
 - .1 Re-spray areas of insufficient or non-uniform tack coat coverage as directed by Parks Canada Agency Representative.
 - .2 Ensure tack coating performed using hand held devices is consistent in appearance with adjacent areas of machine applied material.

3.03 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 Waste Management: separate waste materials in accordance with Contractor's Waste Management Plan.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Processes

1.02 MEASUREMENT PROCEDURES

- .1 Asphalt prime will be measured in square metres at 15 degrees C of cutback asphalt actually applied.
- .2 Application of Blotter Sand: application of blotter sand will NOT be measured.

1.03 REFERENCES

- .1 ASTM International
 - .1 ASTM D 140/D 140M-09, Standard Practice for Sampling Bituminous Materials.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-16.1-[M89], Cutback Asphalts for Road Purposes.
 - .2 CAN/CGSB-16.2-[M89], Emulsified Asphalts, Anionic Type, for Road Purposes.

1.04 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 prime coat and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Sample asphalt prime coat materials in accordance with ASTM D 140.
- .4 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage opportunities.

1.05 QUALITY ASSURANCE

- .1 Upon request from Parks Canada Agency Representative, submit manufacturer's test data and certification that asphalt prime material meets requirements of this Section.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Storage and Handling Requirements:

- .1 Deliver, store and handle materials to ASTM D 140.
- .2 Replace defective or damaged materials with new.
- .3 Develop Waste Management Plan

2 PRODUCTS

2.01 MATERIAL

- .1 Asphalt material: to CAN/CGSB-16.1 grade: MC30 CAN/CGSB-16.2 grade: SS-1.
- .2 Sand blotter: clean granular material passing 4.75 mm sieve and free from organic matter or other deleterious materials.
- .3 Water: clean, potable, free from foreign matter.

2.02 EQUIPMENT

- .1 Pressure distributor:
 - .1 Designed, equipped, maintained and operated so that asphalt material can be:
 - .1 Maintained at even temperature.
 - .2 Applied uniformly on variable widths of surface up to 5 m.
 - .3 Applied at controlled rates from 0.2 to 5.4 L/sq.m. with uniform pressure, and allowable variation from any specified rate not exceeding 0.1 L/sq.m.
 - .4 Distributed in uniform spray without atomization at temperature required.
 - .2 Equipped with meter registering travel distance in metres per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.
 - .3 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator.
 - .1 Pump power unit to be independent of truck power unit.
 - .4 Equipped with easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
 - .1 Temperature to be measured to nearest whole number.
 - .5 Equipped with accurate volume measuring device or calibrated tank.
 - .6 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
 - .7 Equipped with nozzle spray bar, with operational height adjustment in increments of 0.6 metres and capable of being raised or lowered.
 - .8 Cleaned if previously used with incompatible asphalt material.
- .2 Aggregate Spreader:
 - .1 Apply blotter sand to primed surfaces using roll type spreader, or rotating disc sander capable of applying aggregate at variable widths and at variable rates.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt prime coat installation in accordance with manufacturer's written instructions.

- .1 Visually inspect substrate in presence of [Departmental Representative] [DCC Representative][Consultant].
- .2 Inform Parks Canada Agency Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 APPLICATION

- .1 Proceed with application of tack coat only after receipt of written approval of granular base surface from Parks Canada Agency Representative.
- .2 Cutback asphalt:
 - .1 Apply asphalt prime to granular base at rate not to exceed 2 L/sq.m.
 - .2 Apply on dry surface unless otherwise directed by Parks Canada Agency Representative.
- .3 Anionic emulsified asphalt:
 - .1 Dilute asphalt emulsion with clean water at 1:1 ratio for application.
 - .2 Mix thoroughly by pumping or other method approved by Parks Canada Agency Representative.
 - .3 Apply diluted asphalt emulsion at rate not to exceed 5 L/sq.m.
 - .4 Apply diluted asphalt emulsion on damp surface unless otherwise directed by Parks Canada Agency Representative.
- .4 Apply asphalt prime only on unfrozen surface.
- .5 Apply asphalt tack coat only when air temperature is greater than 10 degrees C and when rain is not forecast within 2 hours minimum of application.
- .6 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt prime material.
- .7 Where traffic is to be maintained, treat no more than one-half width of surface in one application.
- .8 Prevent overlap at junction of applications.
- .9 Do not prime surfaces that will be visible when paving is complete.
- .10 Apply additional material to areas not sufficiently covered as directed by Parks Canada Agency Representative
- .11 Keep traffic off primed areas until asphalt prime has set.
 - .1 Control traffic in accordance with Section 01 56 00.
- .12 Permit prime to set before placing asphalt paving.

3.03 USE OF SAND BLOTTER

- .1 If asphalt prime fails to penetrate within [24] hours, spread sand blotter material in amounts required to absorb excess material.
- .2 Allow sufficient time for excess prime to be absorbed.
- .3 Apply second application of sand blotter as required.
- .4 Do not roll blotter sand.
- .5 Sweep and remove excess blotter material.

3.04 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 Waste Management: separate waste materials for reuse in accordance with Contractor's Waste Plan.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 11 - Cleaning
- .3 Section 31 05 16 - Aggregate Materials.
- .4 Section 32 11 17 - Reshaping Granular Roadbed
- .5 Section 32 12 13.23 - Asphalt Prime Coats
- .6 Section 32 12 13.16 - Asphalt Tack Coats

1.02 PRODUCTS SUPPLIED BUT NOT INSTALLED UNDER THIS SECTION

- .1 Notify Parks Canada Agency Representative of proposed date for use of materials; order and schedule shipments to coincide with construction schedule.

1.03 MEASUREMENT AND PAYMENT

- .1 Measure asphalt concrete paving in square meters placed in compacted 100 mm thickness of compacted asphalt concrete actually incorporated into Work.

1.04 REFERENCES

- .1 American Association of State Highway and Transportation Officials (AASHTO)
 - .1 AASHTO M320, Standard Specification for Performance Graded Asphalt Binder.
 - .2 AASHTO R29, Standard Specification for Grading or Verifying the Performance Graded of an Asphalt Binder.
 - .3 AASHTO T245, Standard Method of Test for Resistance to Plastic flow of Bituminous Mixtures Using Marshall Apparatus.
- .2 Asphalt Institute (AI)
 - .1 AI MS-2 Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.
- .3 ASTM International
 - .1 ASTM C 88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
 - .2 ASTM C 117-04, Standard Test Method for Material Finer Than 0.075mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .3 ASTM C 123, Standard Test Method for Lightweight Particles in Aggregate.
 - .4 ASTM C 127, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
 - .5 ASTM C 128-07a, Standard Test Method for Density, Relative Density, and Absorption of Fine Aggregate.
 - .6 ASTM C 131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .7 ASTM C 136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

- .8 ASTM D 995, Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
- .9 ASTM D 2419, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
- .10 ASTM D 3203, Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.
- .11 ASTM D 4791, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.
- .4 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.
- .5 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.05 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 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 prior to beginning Work.
- .3 Samples:
 - .1 Inform Parks Canada Agency Representative of proposed source of aggregates and provide test results 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 manufacturer's test data and certification that hydrated lime meets specified requirements.
 - .3 Submit asphalt concrete mix design and trial mix test results to Parks Canada Agency Representative for review weeks prior to beginning Work.
 - .4 Submit printed record of mix temperatures at end of each week.
- .5 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage opportunities.

1.06 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and stockpile aggregates in accordance with Section 31 05 16 - Aggregate Materials.
- .2 When necessary to blend aggregates from one or more sources to produce required gradation, do not blend in stockpiles.

- .3 Stockpile fine aggregate separately from coarse aggregate, although separate stockpiles for more than two mix components are permitted.

2 PRODUCTS

2.01 MATERIALS

- .1 Performance graded asphalt cement: to AASHTO M320, grade PG 58 - 28 when tested to AASHTO R29.
- .2 Aggregates: in accordance with requirements as follows:
- .1 Crushed stone or gravel.
- .2 Gradations: within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1, CAN/CGSB-8.2.
- .3 Table:

<u>Sieve Designation</u>	<u>% Passing</u>	<u>% Passing</u>
	Lower Course	Surface Course
25 mm	100	---
19 mm	---	---
12.5 mm	70 - 85	100
9.5 mm	---	---
4.75 mm	40 - 65	55 - 75
2.00 mm	30 - 50	35 - 55
0.425 mm	15 - 30	15 - 30
0.180	5 - 20	5 - 20
0.075 mm	3 - 8	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 C 136.
- .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 D 2419. Min: 50 .
- .8 Magnesium Sulphate soundness: to ASTM C 88. Max % loss by mass:
- .1 Coarse aggregate surface course: 12 %.
- .2 Coarse aggregate lower course: 12%.
- .3 Fine aggregate, surface course: 16 .%.
- .4 Fine aggregate, lower course: 16%.
- .9 Los Angeles degradation: Grading B, to ASTM C 131. Max % loss by mass:
- .1 Coarse aggregate, surface course: 25 %.
- .2 Coarse aggregate, lower course: 35%.
- .10 Absorption: to ASTM C 127. Max % by mass:
- .1 Coarse aggregate, surface course: 1.75 %.
- .2 Coarse aggregate, lower course: 2.00 %.
- .11 Loss by washing: to ASTM C 117. 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 C 123. Max % by mass less than 1.95 relative density:
- .1 Surface course: 1.5 %.
- .2 Lower course: 3.0 %.

- .13 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 C 136.
- | <u>Passing</u> | | <u>Retained on</u> |
|----------------|----|--------------------|
| 25 mm | to | 12.5 mm |
| <u>12.5 mm</u> | to | <u>.075 mm</u> |
- .14 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 Parks Canada Agency Representative are thoroughly dry and free from lumps.
- .2 Add mineral filler when necessary to meet job mix aggregate gradation or as directed by Parks Canada Agency 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 C 207 type N.
- .1 Add lime at rate of approximately 2-3 % of dry weight of aggregate.
- .5 Water: to approval of Parks Canada Agency Representative.

2.02 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.
- .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 cm² for compacting material along curbs, gutters and other structures inaccessible to roller. Mechanical compaction equipment, when approved by [Departmental Representative] [DCC Representative] [Consultant], may be used instead of tamping irons.
- .3 Straight edges, 4.5 m in length, to test finished surface.

2.03 MIX DESIGN

- .1 Mix design to be provided.
- .2 Mix design to be developed by testing laboratory.
- .3 Design of mix: by Marshall method to requirements below.
 - .1 Compaction blows on each face of test specimens: 50.
 - .2 Mix physical requirements:

Property	Roads Surface Coarse	Roads Lower Coarse
Marshall Stability at 60 degrees C kN minimum	5.5	4.5
Flow Value mm	2-4	2-4
% Air Voids in Mixture	3-5	2-6
Aggregate, % min	15	13
Index of Retained Stability % minimum	75	75

- .3 Measure physical requirements as follows:
 - .1 Marshall load and flow value: to AASHTO T245.
 - .2 Compute void properties on basis of bulk specific gravity of aggregate to ASTM C 127 and ASTM C 128. Make allowance for volume of asphalt absorbed into pores of aggregate.
 - .3 Air voids: to ASTM D 3203.
 - .4 Voids in mineral aggregates: to AI MS2.
- .4 Do not change job-mix without prior approval of course Parks Canada Agency Representative. When change in material source proposed, new job-mix formula will be provide to be reviewed by Parks Canada Agency Representative.
- .5 Return plant dust collected during processing to mix in quantities acceptable to Parks Canada Agency Representative.

3 EXECUTION

3.01 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 Parks Canada Agency Representative.
 - .2 Inform Parks Canada Agency Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Parks Canada Agency Representative.

3.02 PLANT AND MIXING REQUIREMENTS

- .1 Batch and continuous mixing plants:
 - .1 To ASTM D 995.
 - .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] [DCC Representative] [Consultant] 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 required. Do not heat asphalt cement above maximum temperature indicated on temperature-viscosity chart].
 - .9 Make available current asphalt cement viscosity data at plant. With information relative to viscosity of asphalt being used, Parks Canada Agency Representative to review 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.
- .2 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.
- .3 Mixing tolerances:
 - .1 Permissible variation in aggregate gradation from job mix (percent of total mass).

4.75 mm sieve and larger

2.00 mm sieve

0.425 mm sieve

0.180 mm sieve

0.075 mm sieve 2.0%
 - .2 Permissible variation of asphalt cement from job mix: 0.25%.
 - .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.

3.03 PREPARATION

- .1 Reshape granular roadbed in accordance with Section 32 11 17 - Reshaping Granular Roadbed.
- .2 Apply prime coat and tack coat in accordance with Section 32 12 13.23 - Asphalt Prime Coats and Section 32 12 13.16 - Asphalt Tack Coats prior to paving.
- .3 Prior to laying mix, clean surfaces of loose and foreign material.

3.04 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, Parks Canada Agency 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] [DCC Representative] [Consultant], but not less than [135] degrees C.

3.05 PLACING

- .1 Obtain Parks Canada Agency Representative approval of base and existing surface and tack coat and prime coat prior to placing asphalt.
- .2 Place asphalt concrete to thicknesses, grades and lines as indicated.
- .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 follows:
 - .1 Leveling courses to thicknesses required but not exceeding 50 mm.
 - .2 Lower course in one layer of 50 mm.
 - .3 Surface course in one layer of maximum 60 mm.
- .5 Where possible do tapering and leveling where required in lower lifts.
 - .1 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.
 - .2 Correct irregularities in alignment left by paver by trimming directly behind machine.
 - .3 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.
 - .4 Do not throw surplus material on freshly screeded surfaces.

3.06 COMPACTING

- .1 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 leveling 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 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.
- .2 Breakdown rolling:
 - .1 Begin breakdown rolling with 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.
- .4 Use only experienced roller operators.
- .3 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.
- .4 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 Parks Canada Agency Representative.
 - .2 Conduct rolling operations in close sequence.

3.07 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 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.

3.08 FINISH TOLERANCES

- .1 Finished asphalt surface not to have irregularities exceeding 5 mm when checked with 4.5 m straight edge placed in any direction.

3.09 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.
- .3 Waste Management: separate waste materials for reuse.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 31 23 33.01 - Excavating Trenching and Backfilling.
- .2 Section 01 74 11 - Cleaning

1.02 MEASUREMENT PROCEDURES

- .1 Measure - one existing manhole requires adjusting top ring and repair.

1.03 REFERENCES

- .1 ASTM International
 - .1 ASTM C 478M-[13], Standard Specification for Precast Reinforced Concrete Manhole Sections (Metric).
- .4 CSA Group
 - .1 CSA A23.1/A23.2-[09], Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA-A165 Series-[04(R2009)], CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3).
 - .3 CAN/CSA-A3000-[08], Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

2 PRODUCTS

2.01 MATERIALS

- .1 Adjusting rings: to ASTM C 478M. Supplied By Parks Canada Agency

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Current Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for maintenance holes and catch basin structures installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Parks Canada Agency Representative.
 - .2 Inform Parks Canada Agency Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 EXCAVATION AND BACKFILL

- .1 Excavate and backfill in accordance with Section 31 23 33.01 - Excavating Trenching and Backfilling and as indicated.

3.03 INSTALLATION

- .1 Make each successive joint watertight with Parks Canada Agency Representative approved bituminous compound, cement mortar, epoxy resin cement, or combination of these materials. Clean surplus mortar and joint compounds from interior surface of unit as work progresses.
- .2 Place frame and cover on top section to elevation as indicated.
 - .1 If adjustment required use concrete ring(s) supplied by Parks Canada Agency Representative.
- .3 Clean units of debris and foreign materials.
 - .1 Remove fins and sharp projections.
 - .2 Prevent debris from entering system.

3.04 ADJUSTING TOPS OF EXISTING UNITS

- .1 Remove existing gratings, frames and store for re-use at locations designated by Parks Canada Agency Representative.
- .2 Sectional units:
 - .1 Raise or lower straight walled sectional units by adding or removing precast sections as required.
 - .1 When amount of raise is less than 600 mm use standard maintenance grade rings supplied by Parks Canada Agency Representative.

3.05 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 Waste Management: separate waste materials for reuse in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION