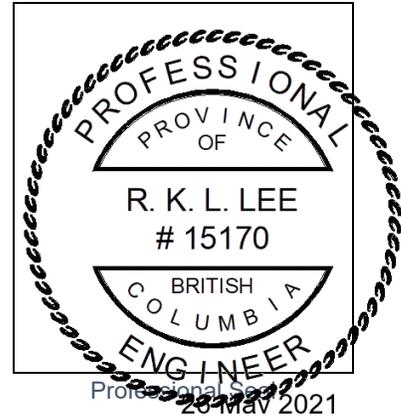




## SEALS PAGE

THE FOLLOWING CONSULTANTS' SEAL REFER TO SPECIFIC SECTIONS OF THE SPECIFICATION LISTED BELOW.

Ron Lee, P.Eng.	15170
_____ Name, Title	_____ Professional Registration No.
 26 May 2021	_____ Date
_____ Signature	



END OF SECTION

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### Appendix

Appendix A - Culvert Installation Permit Application (Application to install a Culvert within District of Chetwynd Road Right of Way)

### Drawings

C000 – Cover Sheet

C001 – Site Overview

SK # 5757.00 – Topographic Survey by PSPC

**END OF SECTION**

## SECTION 01 11 00 SUMMARY OF WORK

### **PART 1 GENERAL**

#### **1.1 SCOPE AND INTENT**

- .1 This section presents an overview of the Work detailed in this tender package. It includes the title and description of Work, Project Location, Contract Method, Work by Others, and the Work Sequence.
- .2 The Chetwynd Parking Lot Upgrade Project is intended to repair damaged sections of concrete and asphalt and to improve drainage of the Chetwynd RCMP Detachment including, but not limited to, repairing panels in a concrete sidewalk, patching a section of asphalt driveway, and rehabilitating exterior drains and swales.

#### **1.2 PRECEDENCE**

- .1 For Federal Government projects, General Conditions take precedence over technical specifications.

#### **1.3 RELATED SECTIONS**

- .1 All sections.

#### **1.4 PROJECT LOCATION**

- .1 The project is located at the Chetwynd RCMP Detachment (5424 Hospital Rd, Chetwynd, BC).

#### **1.5 WORK COVERED BY CONTRACT DOCUMENTS**

- .1 In preparation for and during the Work at the Chetwynd RCMP Detachment, an "Environmental Protection Plan" (EPP) is to be prepared by the successful Contractor to meet the requirements of Section 01 35 43 – Environmental Procedures to ensure the desired minimal adverse effects are achieved. The Departmental Representative and Environmental Surveillance Officer (ESO) will refer to the approved EPP in determining compliance with the plan and contract specifications. The EPP will form part of the contract.
- .2 Mobilization and Demobilization of all manpower, equipment, materials, and other resources necessary to execute the Work.
- .3 Manage the project and carry out the Work in the order of priority specified, or as determined by the Departmental Representative.
- .4 Prepare and submit all required submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .5 Responsibility for all aspects of site safety in accordance with Section 01 35 33 – Health and Safety Requirements.

#### **1.6 WORK BY OTHERS**

- .1 The Contractor for this Work is Prime Contractor.

#### **1.7 WORK SEQUENCE**

- .1 Commence mobilization immediately upon award of Contract.
- .2 Work can take place as long as safe working conditions exist.
- .3 Works are to cease on September 30, 2021.
- .4 Site demobilization and closeout work will be completed expeditiously upon completion of on-site work.

**1.8 ACTION REQUIRED BY CONTRACTOR**

- .1 The Contractor will take whatever measures necessary to complete the Work prior to October 30, 2021.

**1.9 CONTRACTOR USE OF PREMISES**

- .1 The Contractor has unrestricted use of the Site until the Contract Completion date, subject to Section 01 14 00– Work Restrictions.

**1.10 OWNER FURNISHED ITEMS**

- .1 The Owner will not supply any labour, equipment, or material resources for this project.

**1.11 EXECUTION**

- .1 The Contractor shall execute Work in an efficient and expeditious manner. The Departmental Representative reserves the right to order the removal from the Site any employee of the Contractor who fails to work in a safe, efficient, or expeditious manner. This may include but is not limited to the Project Superintendent. This shall be strictly enforced.
- .2 The Departmental Representative reserves the right to order removal from the Site, any piece of equipment that is not in good operation condition and the Contractor shall immediately rectify or replace faulty equipment with an equivalent unit within 24 hours.
- .3 The Contractor shall maintain sufficient spare equipment to ensure continuous availability for the Work to continue. In the event of the failure of any equipment on the work site the Contractor shall repair or replace with spare equipment within 24 hours.
- .4 Scope and Description of the Site
  - .1 The Site is illustrated and described in the Drawings located in Appendix A

**END OF SECTION**

## **SECTION 01 14 00 WORK RESTRICTIONS**

### **PART 1 GENERAL**

#### **1.1 FACILITY OPERATIONS AND SECURITY PROCEDURES**

- .1 All construction staff shall become thoroughly familiar with and abide by all provisions and requirements of the facility, Safety and Security Procedures and Restrictions.
  - .1 The parking area(s) to be used by construction employees will be designated by the Departmental Representative. Parking in other locations will be prohibited and vehicles may be subject to removal.
  - .2 Speed limits are posted on site. Failure to abide by site speed limits may result in removal of employee and vehicle from site.

#### **1.2 FACILITY POWER AND MECHANICAL SERVICES SHUT-DOWN REQUIREMENTS**

- .1 All construction staff shall become thoroughly familiar with and abide by all provisions and requirements for the shut-down of power services and/or mechanical services to the facility.
  - .1 All power services and/or mechanical services (water, gas, drain, heat, ventilation and fire protection) shut-downs (building-wide or partial) shall be confirmed and coordinated with the users (e.g. RCMP detachment commander) at minimum 72 hours prior to the start of work.
  - .2 At no time during regular working hours of the facility, the building will be without power. If a building-wide power shut-down needs to occur during regular working hours of the facility, the Contractor shall provide a temporary generator to accommodate the entire facility for the duration of the work.
  - .3 RCMP at any time may cancel a pre-scheduled power and/or mechanical services shut-down due to operation situations that may arise. The Contractor shall always contact users (e.g. RCMP detachment commander) immediately before any shut-down and confirm if a pre-scheduled shut-down may proceed as planned.

#### **1.3 SITE ACCESS REQUIREMENTS**

- .1 General
  - .1 To ensure that the security of the project construction and RCMP operation is maintained at all times.
  - .2 All personnel engaged in the execution of the work on the interior or exterior of an RCMP occupied building shall have at a minimum, the requisite RCMP Facility Access Level 2 (FA2) clearance in order to be allowed access to the site. Individuals who do not have RCMP FA2 clearance will not be allowed on site.
  - .3 Immediately upon contract award, Contractor shall prepare and submit all the requisite forms and documents for all the personnel engaged in the project and submit to RCMP to obtain RCMP FA2 clearance. Ensure all necessary forms and documents are completed as required by RCMP to prevent any delays in the review process.
  - .4 Once the required RCMP clearances are obtained, Contractor and his employees will have as much freedom of action and movement as is possible and as determined by RCMP to perform the Work
  - .5 It is the responsibility of the Contractor to ensure that the RCMP security requirements are met throughout the performance of the work.

.2 Restrictions

- .1 A 72-hour notice is required for any access to security and high security zones within the premises to allow RCMP to arrange for a staff member to accompany the Contractor. Security and high security areas include Cell Block, Record Rooms, Exhibit Rooms, Special Project Rooms, IT Room, Comm. Room and Security Room.
- .2 Entry to the RCMP Property will be refused to any person there may be reason to believe to be a security risk.
- .3 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by RCMP staff members to ensure that established security requirements are met.
- .4 RCMP site staff may request at any time that the Contractor, his employees, sub-contractors and their employees not enter the site or leave the work site immediately due to a security situation occurring within the RCMP property. The Contractor's site supervisor will note the name of the staff member giving the instruction, the time of the request and obey the order as quickly as possible.

**1.4 ACCESS AND EGRESS**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant Federal, municipal, provincial and other regulations.
- .2 Provide hoarding, and scaffolding plan for Departmental Representative to review 5 business days prior to installation.

**1.5 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work, provide temporary means to maintain security as per Departmental Representatives direction.
- .4 Closures: protect work temporarily until permanent enclosures are completed.
- .5 Coordinate with Departmental Representative in scheduling operations to minimize conflict and to facilitate use of space.

**1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to Facility operations, occupants, and normal use. Arrange with Departmental Representative to facilitate execution of work.

**1.7 EXISTING SERVICES**

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 3 working days of notice for necessary interruption of civil, mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
  - .1 Optimize and plan shut-downs so that services are restored in time for normal facility operation hours. Coordinate all shut-downs with utility providers and facility users.

- .2 Contractor shall be held responsible for damages to facility equipment as the result of service shut-downs.
  - .3 Contractor shall be held responsible for any and all unscheduled shut-downs of building utilities and services.
  - .4 Contractor will not be allowed to connect to Departmental existing data and communication services.
  - .5 Obtain permission from Departmental Representative for access to restricted areas outside the construction zones 3 working days in advance.
- .3 Provide for personnel and vehicular traffic.
  - .4 Construct barriers, hoardings, gates, etc. to protect the public and private property from injury or damage.

**1.8 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions.

**1.9 NOISE CONTROL**

- .1 Comply with applicable municipal by-law for noise control.

**1.10 DUST CONTROL**

- .1 Comply with applicable government regulations, provincial and or city by-law, Work Safe BC for dust control in the construction and affected areas.

**END OF SECTION**

## SECTION 01 33 00 SUBMITTAL PROCEDURES

### PART 1 GENERAL

#### 1.1 RELATED REQUIREMENTS

- |    |                  |                                 |
|----|------------------|---------------------------------|
| .1 | Section 03 30 20 | Concrete Walks                  |
| .2 | Section 03 30 53 | Cast-in-Place Concrete          |
| .3 | Section 32 12 16 | Hot Mix Asphalt Concrete Paving |

#### 1.2 REFERENCE STANDARDS

- .1 not used

#### 1.3 ADMINISTRATIVE

- .1 Submit to Departmental 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 shop drawings, product data, samples and mock-ups 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 Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental 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 co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

#### 1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in British Columbia, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that

such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

- .4 Allow 5 (five) working days review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in [duplicate], containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 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 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - .2 Testing must have been within 2 (two) years of date of contract award for project.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Delete information not applicable to project.
- .15 Supplement standard information to provide details applicable to project.
- .16 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .17 The review of shop drawings by Public Works and Government Services Canada (PSPC) is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that PSPC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
  - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

## **1.5 SAMPLES**

- .1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

#### **1.6 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic copy of digital photography in jpg format, as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Frequency of photographic documentation: as directed by Departmental Representative.
  - .1 Upon completion of: framing and services before concealment, excavation, as directed by Departmental Representative.

#### **1.7 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit WorkSafe BC status.

**END OF SECTION**

## SECTION 01 35 33 HEALTH AND SAFETY REQUIREMENTS

### PART 1 GENERAL

#### 1.1 SCOPE AND INTENT

- .1 This section provides Health and Safety considerations required to ensure that the Owner shows due diligence towards health and safety on construction sites, and meets both federal and provincial legislative requirements.
- .2 The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons, property and the environment on or near the Work Site.

#### 1.2 PRECEDENCE

- .1 For Federal Government projects, General Conditions take precedence over technical specifications.

#### 1.3 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 55 26 – Traffic Control.

#### 1.4 REFERENCES

- .1 Government of Canada
- .2 WorkSafe BC
  - .1 Canada Labour Code – Part II
  - .2 Canada Occupational Health and Safety Regulations
- .3 National Building Code of Canada (NBC)
  - .1 Part 8, Safety Measures at Construction and Demolition Sites
- .4 The Canadian Electric Code (as amended)
- .5 Canadian Standards Association (CSA) as amended
  - .1 CSA Z797-2009 Code of Practice for Access Scaffold
  - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
  - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
  - .4 CSA Z1006-10 Management of Work in Confined Spaces
  - .5 CSA Z462 Workplace Electrical Safety Standard
- .6 National Fire Code of Canada 2010 (as amended)
  - .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required
- .7 American National Standards Institute (ANSI)
  - .1 ANSI A10.3, Operations – Safety Requirements for Powder-actuated Fastening Systems
- .8 Province of British Columbia
  - .1 Worker's Compensation Act Part 3 – Occupational Health and Safety

.2 Occupational Health and Safety Regulations

.9 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

**1.5 SUBMITTALS**

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

.1 Work effected by submittal shall not proceed until review is complete

.2 The Contractor shall submit a site-specific Health and Safety Plan a minimum of five (5) days prior to mobilization to site. Develop the plan in collaboration with all subcontractors. Ensure the work/activities of subcontractors are included in the hazard assessment and are reflected in the plan. Health and Safety Plan must include:

.1 Contractor's corporate health and safety policy and manual.

.2 Contractor's Drug and Alcohol policy.

.3 Contractor's Fatigue Management policy.

.4 WorkSafe BC Clearance Letter.

.5 Confirmation of WorkSafe BC Notification of Project.

.6 Identification of applicable compliance obligations.

.7 Organization chart and corresponding description of each individual's position and health and safety responsibilities for the project.

.8 Site-specific safety hazard assessment related to project.

.9 General site safety rules for project including site access and Personal Protective Equipment PPE, smoking, re-fuelling, etc.

.10 Job specific safe work procedures and communications plan.

.11 Site inspection policy and procedures.

.12 Incident reporting and investigation policy and procedures.

.13 Site-specific Emergency Response Plans including emergency contact details and flow chart.

.14 Occupational Health and Safety Committee/Representative procedures.

.15 Schedule of Occupational Health and Safety meetings including tool-box and other meetings as indicated in this Section 01 35 33.

.16 Occupational Health and Safety communications and record keeping procedures.

.17 Results of preliminary site-specific hazard and risk analysis for site tasks and operation. This risk analysis is to be updated immediately upon mobilising to site and continuously through the execution of the work when conditions change.

.18 Proof of competency (WHMIS, TDG, First Aid Certificates etc.) of all operators / workers onsite including but not limited to Health and Safety Representative, First aid attendant and heavy equipment operators.

.19 A list of all controlled products to be brought onto site and corresponding copies of Safety Data Sheets (SDS) and retain a hard copy onsite.

.20 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.21 List hazardous materials to be brought on site as required by work.

.22 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.23 Identify personal protective equipment (PPE) to be used by workers.

- .24 Identify personnel and alternates responsible for site safety and health.
- .25 Identify personnel training requirements and training plan, including site orientation for new workers.
- .3 The Departmental Representative will review the Contractor's site-specific Health and Safety Plan and provide comments to the Contractor within five (5) days after receipt of plan. The Contractor shall revise the plan as appropriate and resubmit it to the Departmental Representative within five (5) days after receipt of comments.
- .4 The Contractor shall submit an electronic version or two (2) paper copies of a weekly Work Site Health and Safety Inspection Report prepared by the Contractor's authorized Safety Representative to the Departmental Representative on a weekly basis during the execution of the work.
- .5 The Contractor shall submit and post copies of reports or directions issued by Federal and Provincial health and safety inspectors to the Departmental Representative on the same day as issued.
- .6 The Contractor shall provide an email report to the Departmental Representative by the end of shift of any incidents or accidents. This is to be followed by an investigation report within 48 hours. In extenuating circumstances, this period may be extended following a discussion with the Departmental Representative. WorkSafe BC reportable accidents and incidents shall be reported in accordance with WorkSafe BC regulations.
- .7 Medical surveillance – where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative
- .8 Submission of the Site-Specific Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purpose only. It shall not:
  - .1 Be construed to imply approval by the Departmental representative.
  - .2 Be interpreted as a warranty of being complete, accurate, and legislatively compliant.
  - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

#### **1.6 FILING OF NOTICE**

- .1 The Contractor shall file Notice of Project with Provincial authorities prior to beginning Work.
- .2 Provide copies of all notices to the Departmental Representative.

#### **1.7 MEETINGS**

- .1 The Contractor shall schedule, document and oversee a Health and Safety meeting with the Departmental Representative prior to commencement of Work.
- .2 Contractor to conduct daily safety inspections, site orientation and toolbox meetings.
- .3 Contractor to schedule and conduct site safety inspection accompanied by Departmental Representative every two weeks.
- .4 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

## **1.8 REGULATORY REQUIREMENTS**

- .1 The Contractor shall comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 The Contractor shall comply with all applicable health and safety regulations of BC including, but not limited to, Workers Compensation Act.
- .3 Public Works and Government Services of Canada Departmental Policy DP 073 - Occupational Health and Safety - Construction.
- .4 If there is a conflict between one or more regulations the regulation which has jurisdiction in the area will be used.

## **1.9 WORK PERMITS**

- .1 Obtain specialty permit[s] related to project before start of work.

## **1.10 WORKERS' COMPENSATION BOARD COVERAGE**

- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

## **1.11 COMPLIANCE WITH REGULATIONS**

- .1 Departmental Representative may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

## **1.12 PROJECT/SITE CONDITIONS**

- .1 Work at site will involve contact with:
  - .1 Multi-employer work site.
  - .2 Federal employees and general public.

## **1.13 UTILITY CLEARANCES**

- .1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work.
- .2 The Contractor will not rely solely upon the Reference Drawings or other information provided for utility locations.

## **1.14 GENERAL REQUIREMENTS**

- .1 Where deficiencies or concerns are noted, the Departmental Representative may alert the Contractor in writing, and may request correction of deficiencies or concerns in a timely manner.
- .2 Contractor to provide radios to equipment operators and to Departmental Representatives onsite.
- .3 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

- .4 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
- .5 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
- .6 Secure site at night time as deemed necessary to protect site against entry.

#### **1.15 RESPONSIBILITY**

- .1 Assume responsibility as the Prime Contractor for work under this contract.
- .2 The Contractor is responsible for all Health, Safety and Environmental controls at the Work Site.
- .3 All site personnel are 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.
- .4 The Contractor shall 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.

#### **1.16 RIGHT TO REFUSE UNSAFE WORK**

- .1 Should a worker refuse unsafe work, follow procedures in place for Employee's Right to Refuse Work in accordance with WorkSafe BC Regulations, and advise the Departmental Representative verbally and in writing immediately following.

#### **1.17 EMERGENCY PREPARATION**

- .1 Contractor to provide site first aid in accordance with WorkSafe BC regulations.
- .2 Contractor to provide and maintain adequate firefighting equipment and spill kits.
- .3 Contractor to supply and maintain air horns at all muster stations.
- .4 Conduct Emergency Response Plan (ERP) drill or tabletop exercise monthly (first one at the start of the project).
- .5 Identify and mark muster locations and emergency access and egress points.
- .6 Contractor to identify and prove effective communication in emergency situations.
- .7 Following site-specific inspection, ERP to be reviewed to ensure adequacy.

#### **1.18 EMERGENCY PROCEDURES**

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
  - .1 Designated personnel from own company.
  - .2 Regulatory agencies applicable to work and as per legislated regulations.
  - .3 Local emergency resources.
  - .4 Departmental Representative [site staff].
- .2 Include the following provisions in the emergency procedures:
  - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
  - .2 Evacuate all workers safely.

- .3 Check and confirm the safe evacuation of all workers.
- .4 Notify the fire department or other emergency responders.
- .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
- .6 Notify Departmental Representative.
- .7 Provide written rescue/evacuation procedures as required for, but not limited to:
- .8 Work at high angles.
- .9 Work in confined spaces or where there is a risk of entrapment.
- .10 Work with hazardous substances.
- .11 Underground work.
- .12 Work on, over, under and adjacent to water.
- .13 Workplaces where there are persons who require physical assistance to be moved.
- .14 Design and mark emergency exit routes to provide quick and unimpeded exit.

#### **1.19 HEALTH AND SAFETY REPRESENTATIVE**

- .1 The Contractor shall employ and assign to the Work, a qualified and authorized Health and Safety Representative for each shift. The Health and Safety Representative must:
  - .1 Have working knowledge of British Columbia's Occupational Safety and Health regulations.
  - .2 Be responsible for completing the Contractor's Health and Safety Training Sessions and orientations and ensuring that personnel that have not completed required training are not permitted to enter site to perform Work.
  - .3 Conduct site orientation of all new personnel on the site.
  - .4 Be responsible for implementing, enforcing, and monitoring the Contractor's site-specific Health and Safety Plan.
  - .5 Conduct daily toolbox meetings.
  - .6 Schedule, conduct and record site safety inspection, accompanied by Departmental Representative, every two weeks. Following inspection, a copy of the report shall be submitted to the Departmental Representative.
  - .7 Schedule and oversee a site safety meeting with all key stakeholders every two weeks.
  - .8 Conduct and document investigations for accidents and incidents.
  - .9 Be on site during execution of Work and report directly to and be under direction of Site Supervisor.
  - .10 Be responsible for coordinating Emergency Response Plan drills.
  - .11 Coordinate to ensure an inspection has been completed on any new equipment arriving to site.
  - .12 Provide proof of competency of all new employees and sub-contractors onsite.

#### **1.20 HAZARDOUS PRODUCTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

- .2 Where use of hazardous and toxic products cannot be avoided:
  - .1 Advise Departmental Representative beforehand of the project(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00 Submittal Procedures.
  - .2 The Contractor shall ensure that the product is applied as per manufacturers recommendations.
  - .3 The Contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

#### **1.21 SILICA**

- .1 Carry out work in accordance with WorkSafeBC regulations.

#### **1.22 OVERLOADING**

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

#### **1.23 POWDER-ACTUATED DEVICES**

- .1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

#### **1.24 FIRE SAFETY AND HOT WORK**

- .1 Obtain Departmental Representative's authorization before any welding, cutting, or any other hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

#### **1.25 FIRE SAFETY REQUIREMENTS**

- .1 Store oily/paint-soaked rags, waste products, empty containers, and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
- .3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the Departmental Representative is required prior to any gas or diesel tank being brought onto the work site.

#### **1.26 FIRE PROTECTION AND ALARM SYSTEM**

- .1 Fire protection and alarm systems shall not be:
  - .1 Obstructed.
  - .2 Shut off.
  - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes, and hose systems for purposes other than firefighting.
- .3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

#### **1.27 UNFORESEEN HAZARDS**

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

#### **1.28 POSTING OF DOCUMENTS**

- .1 The Contractor shall ensure applicable items, rules, articles, notices and orders are posted in a conspicuous location on site in accordance with WorkSafeBC:
  - .1 Site Specific Health and Safety Plan.
  - .2 Sequence of work.
  - .3 Emergency procedures.
  - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
  - .5 Notice of Project.
  - .6 Floor plans or site plans.
  - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
  - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
  - .9 Material Safety Data Sheets (MSDS)
- .2 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .3 Material Safety Data Sheets (MSDS) are to be posted in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .4 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

#### **1.29 CORRECTION OF NON-COMPLIANCE**

- .1 The Contractor shall immediately address health and safety non-compliance issues identified by the authority having jurisdiction or by the Departmental Representative.
- .2 The Contractor shall provide the Departmental Representative with a written report of action taken to correct non-compliance of health and safety issues identified.
- .3 The Departmental Representative may stop Work if non-compliance of the Health and Safety Regulations is not immediately corrected.
- .4 In the event that work is temporarily stopped either by the Departmental Representative, or by the authority having jurisdiction, it will not relieve the Contractor of his responsibilities under this Contract. Standby time and all costs associated with a Stop Work Order due to safety considerations is considered incidental to the contract.

### **PART 2 MEASUREMENT**

- .1 All health and safety requirements are considered incidental to the Contract and shall not be measured for payment.

**END OF SECTION**

## **SECTION 01 35 43 ENVIRONMENTAL PROCEDURES**

### **PART 1 GENERAL**

#### **1.1 SCOPE AND INTENT**

- .1 This section provides environmental requirements for working at the RCMP Chetwynd Detachment including general and task-specific information. The Contractor, and all personnel involved in the project must conduct activities and operations in such a way as to minimize the impact on the environment, and must comply with applicable environmental legislation, regulations, permits, licenses, and agreements that apply to the work under this project:
- .2 This specification is intended to provide procedures and requirements for protection of the environment as outlined in the below references.

#### **1.2 PRECEDENCE**

- .1 For Federal Government projects, General Conditions take precedence over technical specifications.

#### **1.3 RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 23 – Cleaning.

#### **1.4 REFERENCES**

- .1 Applicable legislation, regulations, bylaws and guidelines may include the following:
  - Fisheries Act;
  - Species at Risk Act;
  - Canadian Environmental Protection Act;
  - Impact Assessment Act
  - Migratory Birds Convention Act;
  - BC Water Sustainability Act;
  - BC Wildlife Act;
  - BC Environmental Management Act;
  - Heritage Conservation Act;
  - CCME Water Quality Guidelines for the Protection of Aquatic Life;
  - BC Water Quality Guidelines for the Protection of Aquatic Life.

#### **1.5 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 humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes

management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

- .3 Environmental Protection Plan: is prepared by Contractor and describes in writing all the environmental protection and mitigation measures that will be applied throughout the life of the Project by the Contractor to avoid or minimize the potential effects on the environment associated with the Project

## 1.6 MEASUREMENTS PROCEDURES

- .1 Preparation and implementation of an Environmental Protection Plan (EPP) in accordance with this Section 01 35 43 – Environmental Procedures will not be measured separately for payment and will be considered incidental to the Work.
- .2 The Contractor shall maintain one up-to-date copy of the EPP at the job site.

## 1.7 SUBMITTALS

- .1 The Contractor is required to prepare an EPP in accordance with the information outlined in this section. Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative. Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.
- .2 The EPP shall include, but is not limited to the following:
  - .1 Work limit requirements.
  - .2 Erosion and Sediment Control Plan which identifies 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.
  - .3 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
  - .4 Idle reduction measures.
  - .5 Fire prevention and control measures applicable to the timing and nature of work.
  - .6 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
  - .7 Names and qualifications of persons responsible for manifesting contaminated materials and hazardous waste to be removed from site.
  - .8 Names and qualifications of persons responsible for training site personnel.
  - .9 Descriptions of environmental protection personnel training program.
  - .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
  - .11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.
  - .12 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
  - .13 Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering

- of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .14 The contractor shall contain dust, debris and tailings from drilling/coring activities using wetting and HEPA vacuum.
  - .15 Provide temporary dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of work and the public.
  - .16 The procedures for stopping the work and implementing changes to the construction methods should the contractor not be achieving the environmental requirements as outlined in these specifications.
  - .17 The procedures for stopping work should the Contractor encounter archaeological anomalies or human remains.
- .3 The EPP shall be submitted in accordance with the requirements of Section 01 33 00 Submittal Procedures.

#### **1.8 START UP AND ENVIRONMENTAL BRIEFING**

- .1 An Environmental Surveillance Officer (ESO) shall be provided by the Contractor.
- .2 The ESO must attend the site to monitor the construction activity for conformance with the EPP. The ESO's main duties are to monitor the progress of the construction on a project step basis to ensure compliance with environmental protection measures and to provide guidance through the Departmental Representative, in the event of unanticipated environmental problems. Although the ESO has authority to enforce any violations, direction to the Contractor will be the duty of the Departmental Representative.
- .3 The Contractor ESO will present the Environmental Briefings.
- .4 All staff employed at the construction site will be subject to an Environmental Briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. All employees must attend the Environmental Briefing before beginning their work at the site. The ESO will maintain an attendance record for all Environmental Briefings.
- .5 New employees may join the Contractors' work force after the initial Environmental Briefing. In that case and as required, subsequent Environmental Briefings can be presented as numbers warrant, by arrangement with the ESO through the Departmental Representative.
- .6 Some sub-trades may be present at the site for a short time, to perform once-only duties. In these cases, the Environmental Briefing will be replaced by the Contractor explaining the environmental sensitivity of the work location to the sub-trade worker(s), and reviewing highlights of personal conduct expected, with reference to a one-page briefing summary to be provided to the Contractor by the ESO. A copy of this summary will be provided to each sub-trade worker joining the work force. The Contractor shall maintain an attendance record for these Environmental Briefings.

#### **1.9 CONSTRUCTION SITE ACCESS AND PARKING**

- .1 The Contractor shall review short-term and long-term construction access requirements with the Departmental Representative, at start-up and throughout.
- .2 Workers' personal vehicles are to remain within the construction footprint while parked. The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers' vehicles or construction machinery and shall instruct workers so that the "footprint" of the project is kept within defined boundaries.

### **1.10 PROTECTION OF WORK LIMITS**

- .1 The EPP shall instruct the Contractor in how to mark Work limits and contain procedures that prevent trespass outside these limits, to the satisfaction of the Departmental Representative and the ESO. The Contractor shall ensure that the environment beyond the Work limits is not negatively affected or damaged by workers' vehicles or construction machinery and shall instruct workers on the defined boundaries.
- .2 The Work limits shall be identified by stake and ribbon or other methods approved by the Departmental Representative.
- .3 Equipment and vehicle movement shall be restricted to the Work limits. Unless authorized by the Departmental Representative, activities beyond the Work limits are not permitted.
- .4 When, in the opinion of the ESO or Departmental Representative, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at its expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, and other vegetation to the satisfaction of the Departmental Representative and ESO.

### **1.11 EROSION CONTROL**

- .1 The EPP shall include an Erosion Control Plan to the satisfaction of the Departmental Representative and ESO.
- .2 Sediment and erosion control measures to mitigate excess sediment from entering, transferring across, or leaving the construction site shall be implemented by the Contractor.
- .3 On-site sediment control measures shall be constructed and functional prior to initiating activities that may generate sediment or deleterious runoff.
- .4 Regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. Control measures that are not functioning effectively are to be repaired. The Departmental Representative and ESO also will monitor erosion control performance and notify the Contractor of any deficiencies that require rectification.
- .5 The Site shall be protected against erosion during periods of construction inactivity.

### **1.12 HAZARDOUS PRODUCTS AND SPILL MANAGEMENT**

- .1 A Spill Response Plan shall be prepared as part of the EPP and shall include a list of products and materials to be used or brought to the construction site that are hazardous or toxic to the environment. Hazardous products shall be stored no closer than 100 metres from any surface water. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, asphalt cement, sand blasting agents, and petroleum-based products. The Spill Response Plan shall detail containment and storage, security, handling, use, and disposal of empty containers, surplus product, or waste generated through use of products to the satisfaction of the Departmental Representative and the ESO and in accordance with all applicable Federal and Provincial legislation. The Spill Response Plan must include an emergency response procedure for spills of deleterious substances.
- .2 The Contractor shall provide spill kits at re-fueling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order at all times. The ESO and Departmental Representative must approve these spill kits prior to project start-up. The Contractor and site staff shall be informed of the location of the spill response kits and be trained in their use.

- .3 Timely and effective action shall be taken to stop, contain, and clean up all spills as long as the site is safe to enter. The Departmental Representative and the ESO shall be notified immediately of any spill.
- .4 In the event of a major spill, all other work shall be stopped, and all personnel devoted to spill containment and clean up.
- .5 The costs involved in a spill incident (the control, clean up, disposal of contaminants, and site remediation to pre-spill conditions) shall be the responsibility of the Contractor. The site will be inspected to ensure completion to the expected standard and to the satisfaction of the Departmental Representative and ESO.
- .6 Furthermore, the Contractors shall:
  - .1 Take due care to ensure no deleterious materials enter watercourses or any surface drainage pathways located in the project area.
  - .2 Ensure all construction equipment brought onto the site will be clean and properly maintained.
  - .3 Ensure any equipment maintenance must occur in a designated area and must be conducted away from any surface water drains or collection points.
  - .4 Ensure any equipment remaining on site overnight shall have appropriately placed drip pans.
  - .5 Ensure waste generate will be prevented from entering the environment.
  - .6 Prevent discharges containing asphalt, grout, concrete or other waste materials from reaching storm drains.

### **1.13 EQUIPMENT MAINTENANCE, FUELING, AND OPERATION**

- .1 The Contractor shall ensure that all soil, seeds, and any debris attached to construction equipment to be used on the project site shall be removed (e.g., by power washing) before delivery to the Work Site. Project cleanliness and waste management will be in accordance with Section 01 74 23 Cleaning.
- .2 Equipment fueling sites shall be identified by the Contractor and approved by the Departmental Representative and the ESO.
- .3 Fueling personnel shall maintain presence at and immediate attention to fueling operations.
- .4 Mobile fuel containers (e.g., slip tanks, small fuel carboys) shall remain in the service vehicle at all times while not used for fueling equipment.
- .5 Oil changes, lubricant changes, greasing, and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. Waste lubrication products (e.g., oil filters, used containers, used oil) shall be secured in spill-proof containers and properly recycled or disposed at an approved facility. No waste petroleum, lubricant products, or related materials are to be discarded, buried, or disposed at the project site as per section 1.17 Waste Materials Storage and Removal.
- .6 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order. Leaking equipment will be ordered off site immediately and shall be replaced by the Contractor at their own expense.
- .7 Fuel containers, lubricant products, or other potentially deleterious substances shall be stored only in secure locations and be secured in tamperproof containers. Alternatively, the Contractor may hire security personnel to prevent unauthorized access or damage.

#### **1.14 IDLING REDUCTION**

- .1 The Contractor's EPP shall include procedures outlining how drivers and equipment operators will be engaged in idle reduction practices.
- .2 The Contractor is encouraged to develop innovative and practical methods to influence workers to participate in this program. The following are sample idle reduction strategies grouped within four areas of opportunity which may be applicable to the Project and that can be used as a basis for the Contractor to develop the Idle Reduction Plan
  - .1 Location of staging areas to minimize impact of emissions
  - .2 Idling time restrictions
  - .3 Outreach and Communications
  - .4 Idle Reduction Technologies

#### **1.15 FIRE PREVENTION AND CONTROL**

- .1 A Fire Prevention Plan shall be prepared as part of the EPP and shall describe the fire prevention equipment (e.g., fire extinguishers) and procedures on-site in the event of a fire to the satisfaction of the Departmental Representative and the ESO and in accordance with all applicable Federal and Provincial legislation and Section 01 35 33 Health and Safety Requirements.
- .2 A fire extinguisher shall be carried and available for use on each machine and equipment.
- .3 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire if safe to do so. The ESO and Departmental Representative shall be notified of any fire immediately.
- .4 Fires or burning of waste materials is not permitted.

#### **1.16 RELICS, FOSSILS, AND ANTIQUITIES**

- .1 Cultural and archaeological artifacts, relics, fossils, antiquities, and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets, and similar objects found on the work site shall be reported to the Departmental Representative immediately. The Contractor and workers shall wait for instructions before proceeding with their work.
- .2 Archaeological Resource Chance Find Procedure to include:
  - .1 Protect any archaeological or heritage objects discovered and immediately report the discovery to the Departmental Representative. Protection of archaeological or heritage objects may require rescheduling of work activities or relocation of resources.
  - .2 If an archaeological site is encountered, stop work and notify the Departmental Representative immediately.
  - .3 Ensure that employees and contractors involved in project construction are aware of and comply with, requirements regarding discovery of any archaeological/heritage resources.

#### **1.17 WASTE MATERIALS STORAGE AND REMOVAL**

- .1 The Contractor shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act, applicable Provincial regulations, and the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.
- .2 Waste material storage and removal shall be conducted in accordance with Section 01 35 33 Health and Safety Requirements.

- .3 All wastes originating from construction, trade, hazardous, and domestic sources shall be kept separate for disposal in separate waste streams where available or required.

**1.18 MANAGING INVASIVE PLANT VEGETATION**

- .1 Keep equipment clean and avoid parking, turning around or staging equipment in known invasive species infested areas, or mow prior to use.
- .2 Wash equipment prior to mobilization to site.
- .3 Minimize unnecessary disturbance of roadside aggregates or soil, and retain desirable roadside vegetation whenever possible.
- .4 Where possible, begin mowing or brushing in “invasive plant free” areas and end in infested areas.
- .5 Where possible, use only clean fill material from an “invasive plant free” source.

**1.19 WILDLIFE**

- .1 Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.
- .2 Notify the Departmental Representative immediately about dens, litters, nests. Carcasses (road kills), bear activity or encounters on or around the site. Other wildlife related encounters are to be reported within 24 hours.

**1.20 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing of observed non-compliance 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 shall inform the Departmental Representative of their proposed corrective action and take such action for approval by the Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 There will be no time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

**END OF SECTION**

## **SECTION 01 45 00 QUALITY CONTROL**

### **PART 1 GENERAL**

#### **1.1 RELATED REQUIREMENTS**

- .1 Section 03 30 20 Concrete Walks
- .2 Section 03 30 53 Cast-In-Place Concrete
- .3 Section 32 12 16 Hot-Mix Asphalt Paving

#### **1.2 REFERENCE STANDARDS**

- .1 not used

#### **1.3 INSPECTION**

- .1 Allow Departmental 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.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions.
- .3 Departmental 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, Departmental Representative shall pay cost of examination and replacement.

#### **1.4 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

#### **1.5 ACCESS TO WORK**

- .1 Allow inspection/testing agencies access to Work.
- .2 Co-operate to provide reasonable facilities for such access.

#### **1.6 PROCEDURES**

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

- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

#### **1.7 REJECTED WORK**

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

#### **1.8 REPORTS**

- .1 Submit inspection and test reports to Departmental Representative.

#### **1.9 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 Departmental Representative and may be authorized as recoverable.

**END OF SECTION**

## **SECTION 01 55 26 TRAFFIC CONTROL**

### **PART 1 GENERAL**

#### **1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 13 Selective Site Demolition
- .2 Section 32 12 16 Hot-Mix Asphalt Paving

#### **1.2 REFERENCE STANDARDS**

- .1 British Columbia Ministry of Transportation and Infrastructure (BC MOTI)
  - .1 Traffic Management Manual for Work on Roadways - 2020 edition.

#### **1.3 PROTECTION OF PUBLIC TRAFFIC**

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
  - .1 Place equipment in position to minimize interference and hazard to travelling public.
  - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
  - .3 Do not leave equipment on travelled way overnight.
- .3 Close lanes of road only after receipt of written approval from Departmental Representative.
  - .1 Before re-routing traffic erect suitable signs and devices.
- .4 Provide and maintain road access and egress to property that meet approval of Departmental Representative.

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

- .1 Provide and maintain signs, and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Continually maintain traffic control devices in use:
  - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - .2 Remove or cover signs which do not apply to conditions existing from day to day.

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

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to the BC MOTI Traffic Management Manual for Work on Roadways, 2020 Edition.

**END OF SECTION**

## SECTION 01 74 23 CLEANING

### PART 1 GENERAL

#### 1.1 SCOPE AND INTENT

- .1 This section includes requirements for progressive cleaning and final cleaning for the duration of the Work.

#### 1.2 PRECEDENCE

- .1 For Federal Government projects, General Conditions take precedence over technical specifications.

#### 1.3 RELATED SECTIONS

- .1 Section 01 35 33 - Health and Safety Requirements.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 01 77 00 - Closeout Procedures.

#### 1.4 MEASUREMENT

- .1 Clean work areas are considered part of the Contractor's general housekeeping in meeting the minimum Health and Safety requirements for the scope of work, and are incidental to the Contract and will not be measured for payment.

#### 1.5 PROJECT CLEANLINESS

- .1 Keep Work area and site office in clean, tidy condition, free from accumulation of waste products and debris, including that caused by the site tenant, the Public, or other contractors. Clean road surface as needed to minimize dust or as directed by the Departmental Representative.
- .2 Comply with local ordinances and anti-pollution laws.
- .3 Conduct daily cleaning and disposal operations. Remove waste materials and debris from site at the end of each work day.
- .4 No washing out of concrete trucks is permitted on site.
- .5 Do not burn waste materials on site.
- .6 Dispose of waste materials and debris off site in approved facilities.
- .7 Clear snow and ice from work areas during active construction period.
- .8 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .9 Store volatile waste in covered metal containers, and remove from the premises at the end of each work day.
- .10 Provide adequate ventilation during use of volatile or noxious substances and handling should be undertaken using the appropriate PPE.
- .11 Use only cleaning materials recommended by the manufacturer of the surface to be cleaned, and use as instructed by the cleaning material manufacturer.

#### 1.6 FINAL CLEANING

- .1 When Work is considered Substantially Complete, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

**END OF SECTION**

## SECTION 01 77 00 CLOSEOUT PROCEDURES

### PART 1 GENERAL

#### 1.1 SCOPE AND INTENT

- .1 This section includes requirements for closeout of the project including the Contractor's Inspection, the Departmental Representative's Inspection, and Final Inspection.

#### 1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 23 – Cleaning.

#### 1.3 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to the contract and will not be measured for payment.

#### 1.4 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: The Contractor and all subcontractors shall conduct an inspection of the Work, identify deficiencies and defects, and repair as required to conform to the Contract Documents. Once the Contractor's Inspection is complete:
  - .1 Notify the Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  - .2 Request the Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: The Departmental Representative and Contractor will perform an inspection of the Work to identify obvious defects or deficiencies. Contractor shall correct the Work accordingly.
- .3 Completion: The Contractor shall submit a written certificate that the following have been performed:
  - .1 Work has been completed and inspected for compliance with Contract Documents.
  - .2 Defects have been corrected and deficiencies have been completed.
- .4 Interim Holdback Release: Upon receipt of the Certificate of Substantial Performance, an Interim Holdback release shall be issued in the amount of the Holdback, less the cost to complete the Work (deficiencies) as estimated by the Departmental Representative. This amount shall be retained until such time as the Certificate of Completion is issued, and all deficiencies have been remedied to the satisfaction of the Departmental Representative.
- .5 Final Inspection: When items noted above are completed, the Contractor shall request a Final Inspection of the Work by the Departmental Representative and the Contractor. If the Work is deemed incomplete by the Departmental Representative, the Contractor shall complete outstanding items and request re-inspection.

**END OF SECTION**

## SECTION 02 41 13 SELECTIVE SITE DEMOLITION

### **PART 1 GENERAL**

#### **1.1 RELATED REQUIREMENTS**

- .1 Section 01 74 23 Cleaning
- .2 Section 03 30 20 Concrete Walk

#### **1.2 MEASUREMENT AND PAYMENT**

- .1 Payment will not be measured separately and shall be made by lump sum.

#### **1.3 REFERENCE STANDARDS**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

#### **1.4 DEFINITIONS**

- .1 Demolition: includes excavation and removal of all existing concrete curb and sidewalk, soils at landscape, ditch, and culvert areas, as shown on the Drawings.
- .2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.
- .3 Waste Audit (WA): detailed inventory of materials in building. Indicates quantities of reuse, recycling and landfill.
  - .1 Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project.
  - .2 Indicates quantities of reuse, recycling and landfill.
- .4 Waste Management Coordinator (WMC): Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .5 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

#### **1.5 ADMINISTRATIVE REQUIREMENTS**

- .1 Site Meetings.
- .2 Arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work, prior to start of Work.
- .3 Hold project meetings every week.
- .4 Ensure key personnel, subcontractor representatives, project manager, and site supervisor attend.

#### **1.6 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Hazardous Materials:
  - .1 Provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

.3 Waste Reduction Workplan:

- .1 Prior to beginning of Work on site submit detailed Waste Reduction Workplan and indicate:
  - .1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
  - .2 Name and address of waste receiving organizations and waste facilities.

.4 Certificates:

- .1 Submit copies of certified receipts from authorized disposal sites and reuse and recycling facilities for material removed from site upon request of Departmental Representative.
- .2 Written authorization from Departmental Representative is required to deviate from receiving organizations/facilities listed in Waste Reduction Workplan.

**1.7 QUALITY ASSURANCE**

- .1 Regulatory Requirements: ensure Work is performed in compliance with applicable Provincial/Territorial regulations.

**1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Store and manage hazardous materials in accordance with Section 01 35 43- Environmental Procedures.
- .2 Storage and Protection.
  - .1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Departmental Representative and at no cost to Departmental Representative.
  - .2 Remove and store materials to be salvaged, in manner to prevent damage.
  - .3 Store and protect in accordance with requirements for maximum preservation of material.
  - .4 Handle salvaged materials as new materials.

**1.9 SITE CONDITIONS**

- .1 Site Environmental Requirements.
  - .1 Perform work in accordance with Section 01 35 43- Environmental Procedures.
  - .2 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
  - .3 Do not dispose of waste of volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
  - .4 Ensure proper disposal procedures are maintained throughout the project.
  - .5 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
  - .6 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities as directed by Departmental Representative.
  - .7 Protect trees, plants and foliage on site and adjacent properties where indicated.

**PART 2 PRODUCTS**

**2.1 EQUIPMENT**

- .1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

**PART 3 EXECUTION**

**3.1 PREPARATION**

- .1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities, in particular gas, water, and sanitary sewer crossing service connections. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting work.
- .4 Locate, expose, and daylight culverts, record invert elevations as shown on the Drawings.
- .5 Complete the Application to Install a Culvert Within District of Chetwynd Road Right of Way form included in the Appendix.
- .6 Daylight and verify weeping tile drain locations at locations shown on the Drawings and record invert elevations.
- .7 Provide recorded locations and invert data to Departmental Representative.
- .8 Allow ten (10) working days for Departmental Representative review prior to flush and snake all weeping tiles

**3.2 FLUSH AND SNAKE ALL WEEPING TILES**

- .1 Flush and snake all weeping tiles and relay sections of weeping tiles as shown on the Drawings.
- .2 High velocity cleaning equipment to be capable of providing a minimum flow of 4.0 litres per second at 13,800 kPa. A 30 degree bullet cleaning nozzle at 4.5 l/s is to be hydraulically or hydro-dynamically propelled. The equipment to include a water tank, pumps and hydraulically driven hose reel.
- .3 Debris removal equipment to consist of a vacuum pump complete with positive displacement pumps or fans producing a minimum of 700 l/s air movement. Equipment to be capable of removing debris at a minimum of 4.5 metres vertical head. Suction hose to be a minimum of 150 mm diameter. Debris tank to be water tight and capable of returning the liquid portion of the debris to the sewer.
- .4 Debris cutting equipment to be an accessory or attachment to hydraulic cleaning equipment. Equipment to be capable of removing heavy roots and solid debris such as encrustation and grease.
- .5 Intruding sewer service pipe removal equipment to include remote controlled hydraulically driven cutters and reamers and remotely controlled routers or grinders capable of cutting back intruding sewer service pipes.
- .6 Weeping tiles to be cleaned in the direction of flow. Remove debris by vacuum pumping at sumps and outlet areas. Do not allow debris to enter the municipal ditch or drainage system.
- .7 Use root cutter head appropriately sized for the diameter of the weeping tile.

- .8 Remove foreign material from pipeline and related appurtenances by flushing with water. Flush main at water velocities as high as can be obtained from available water sources. Minimum velocity to be 0.8 m/s and/or in accordance with AWWA C651. Continue flushing at least until flow from most distant point has reached discharge point and until water discharged is clean and clear

### 3.3 REMOVAL OF HAZARDOUS WASTES

- .1 Remove contaminated or dangerous materials defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

### 3.4 REMOVAL OPERATIONS

- .1 Remove items as indicated.
- .2 Do not disturb items designated to remain in place.
- .3 Removal of pavements, curbs and walks:
  - .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Departmental Representative.
  - .2 Protect adjacent joints and load transfer devices.
  - .3 Protect underlying and adjacent granular materials.
- .4 Prevent contamination with base course aggregates, when removing asphalt pavement for subsequent incorporation into hot mix asphalt concrete paving,
- .5 Disposal of Material:
  - .1 Dispose of materials not designated for salvage or reuse on site at authorized facilities approved in Waste Reduction Workplan.
- .6 Silica containing material:
  - .1 When silica-containing materials are to be disturbed and/or removed (e.g., coring through concrete slabs, demolition of pavement, removal of ceramic tiles or concrete units), ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by BC Reg. 296/97 (Cristobalite and Quartz – each 0.025 mg/m<sup>3</sup>). This would include, but not be limited to, the following:
    - .1 Providing workers with respiratory protection
    - .2 Wetting the surface of the materials, use of water or dust suppressing agents to prevent dust emissions
    - .3 Providing workers with facilities to properly wash prior to exiting the work area.

### 3.5 REMOVAL FROM SITE

- .1 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.
- .2 Transport material designated for alternate disposal using approved receiving organizations and facilities listed in Waste Reduction Workplan and in accordance with applicable regulations.
  - .1 Written authorization from Departmental Representative is required to deviate from receiving organizations and facilities listed in Waste Reduction Workplan.

.3 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

.1 Disposal Facilities: approved and listed in Waste Reduction Workplan.

.2 Written authorization from Departmental Representative is required to deviate from disposal facilities listed in Waste Reduction Workplan.

### **3.6 RESTORATION**

.1 Restore areas and existing works outside areas of demolition to conditions that existed prior to beginning of Work.

.2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

### **3.7 CLEANING**

.1 Progress Cleaning: clean in accordance with Section 01 74 23 Cleaning.

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of Work

.3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 23 Cleaning.

### **3.8 PROTECTION**

.1 Repair damage to adjacent materials or property caused by selective site demolition.

**END OF SECTION**

## SECTION 03 30 20 CONCRETE WALKS

### PART 1 GENERAL

- .1 Portions of the Master Municipal Construction Documents Volume II (Printed 2009, as amended prior to the Closing Date) apply to this Contract. Only those MMCD excerpts specifically referenced in this Contract are applicable to the Work and, except as noted below, no other portions of the MMCD are applicable. The intent is that the MMCD technical requirements be met, but that they are executed within the framework of this contract.
- .2 This Section 03 30 20- Concrete Walks is adopted from the MMCD 03 30 20 Concrete Walk, Curbs and Gutters.

#### 1.1 RELATED WORK

- .1 Selective Site Demolition Section 02 41 13
- .2 Cast-in-Place Concrete Section 03 30 53

#### 1.2 REFERENCES

- .1 The abbreviated standard specifications for testing, materials, fabrication and supply, referred to herein, are described in Section 03 30 53 Cast-in-Place Concrete

#### 1.3 MEASUREMENT AND PAYMENT

- .1 Payment will not be measured separately and shall be made by lump sum.

#### 1.4 INSPECTION AND TESTING

- .1 Refer to Quality Control 01 45 00

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- .1 Granular subbase: Shown as "Granular Type 2" on the Drawings are described as "MMCD Crushed Granular Sub-base", shall be 75 mm crushed gravel conforming to the following gradations:

Sieve Designation	Percent Passing		
80 mm			
75 mm			100
38 mm	60	-	100
25 mm		-	
19 mm	35	-	80
12.5 mm		-	
9.5 mm	26	-	60
4.75 mm	20	-	40
2.36 mm	15	-	30
1.18 mm	10	-	20
0.6 um	5	-	15
0.3 um	3	-	10
0.18 um		-	
0.15 um		-	
0.075 um	0	-	5

- .2 Granular base: Shown as “Granular Type 1” on the Drawings are described as “MMCD “Granular Base”, shall be 19mm crushed gravel conforming to the following gradations:

Sieve Designation	Percent Passing
19 mm	100
12.5 mm	75 - 100
9.5 mm	60 - 90
4.75 mm	40 - 70
2.36 mm	27 - 55
1.18 mm	16 - 42
0.600 mm	8 - 30
0.300 mm	5 - 20
0.075 mm	2 - 8

- .3 Reinforcing steel: to CSA G30.18M Grade 400R.  
 .4 Welded Steel wire fabric: to CSA G30.5  
 .5 Bi-axial geogrid: to meet the following specifications:

Parameter	ASTM Test Method	Value
Minimum Tensile Strength @5% Strain Machine Direction <sup>1</sup>	D6637	≥8.5 kN/m
Tensile Strength @ 5% Strain in Cross Machine Direction <sup>1</sup>	D6637	≥12.5 kN/m
Maximum Aperture Size		50 mm
Minimum Aperture Size		15 mm
Minimum Joint Design Strength		4 kN/m
Flexural Rigidity (Resistance to Bending) <sup>1</sup>	D5732	≥250 g-cm
Roll Width		4.0 ± 0.1m
Note 1: Minimum Average Roll Values		

- .6 Non-woven geotextile to meet the following specifications:

Parameter	ASTM Test Method	Minimum Average Roll Value (MARV)	
		Machine Direction (MD)	Cross Machine Direction (XD)
Tensile Strength (at ultimate)	D4595	52.5 kN/m	47.3 kN/m
Tensile Strength (at 5% strain)	D4595	21.9 kN/m	22.8 kN/m

Flow Rate	D4491	1630 L/min/m <sup>2</sup>
Permittivity	D4491	0.9 sec <sup>-1</sup>
Apparent Opening Size (AOS)*	D4751	0.600 mm
Note 1: All values minimum average roll value except AOS which is maximum average value		

- .7 Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water soluble soap.
- .8 Concrete mixes and materials: to Section 03 30 30. - Cast-in-Place Concrete with the following criteria specific to this Section:
  - .1 Hand-formed and hand-placed concrete:
    - Slump: 80mm.
    - Air entrainment: 5 – 8%.
    - Maximum aggregate size: 20mm.
    - Minimum cement content: 335 kg/m<sup>3</sup>.
    - Minimum 28 day compressive strength: 32 MPa.
- .9 Joint filler and Curing Compound: to Section 03 30 53 - Cast-in-Place Concrete.

**PART 3 EXECUTION**

**3.1 SUBGRADE PREPARATION**

- .1 Excavate or fill to design subgrade as shown on the Drawings
- .2 Compact subgrade to 95% Modified Proctor density. .

**3.2 GRANULAR SUBBASE AND BASE**

- .1 Place subbase and minimum of 100 mm granular base material to design grade as shown on Drawings.
- .2 Compact subbase and base to minimum 95% Modified Proctor density.
- .3 Obtain Departmental Representative’s approval of compacted base prior to placing forms or control devices for extruding equipment.

**3.3 FORMWORK**

- .1 Ensure steel forms of approved design and free from twists and warp.
- .2 Ensure wood forms of select dressed lumber, straight and free from defects and thoroughly cleaned.
- .3 Use flexible forms for all curves less than 60 m radius.
- .4 After obtaining Departmental Representative’s approval of compacted base, set forms to line and grade as shown on Drawings, free from waves or irregularities in line or grade.
- .5 Set special isolation forms as required around drains, poles or other objects as shown on Drawings or as directed by Departmental Representative.
- .6 Forms to be to shape, lines and full dimensions of work being formed.
- .7 Adequately brace forms to maintain specified tolerances after concrete is placed.

- .8 Treat forms lightly with approved form release agent and remove surplus agent.

### 3.4 INSPECTION

- .1 Immediately prior to placement of concrete, carefully inspect all formwork to ensure forms are properly set at required horizontal and vertical alignment, sufficiently rigid, clean, surface treated and ready for placement of concrete. Obtain Departmental Representative's approval of formwork and compacted base.

### 3.5 CONCRETE PLACEMENT

- .1 Place concrete to Section 03 30 53 - Cast-in-Place Concrete and the following criteria specific to this Section.
- .2 Do not place concrete during rain or on ponded water or frozen base.
- .3 Do not place concrete when air temperature appears likely to fall below 5°C within 24 h, unless specified precautions are taken and approved by Departmental Representative.
- .4 Schedule concrete placement to ensure sufficient daylight hours available to permit edging and finishing or provide adequate illumination.
- .5 Moisten granular base immediately prior to placing concrete.
- .6 Place concrete within 1.5 h of batching time
- .7 Place concrete in forms, ensuring no segregation of aggregate and consolidate with approved mechanical vibrator or power screed.
- .8 Place concrete in continuous operation until entire panel or section completed. Do not place fresh concrete on concrete which has achieved partial set.
- .9 Incorporate all castings into concrete at time of placement
- .10 Discontinue placement at expansion, construction or isolation joints only.
- .11 Remove face forms as soon as practical to permit face finishing. Do not leave face forms in place overnight

### 3.6 TOLERANCES

- .1 Maximum horizontal deviation = 6 mm.
- .2 Maximum vertical deviation = 6 mm.
- .3 Maximum deflection from horizontal or vertical alignment to be 6 mm in 3 m.

### 3.7 EXPANSION JOINTS

- .1 Form transverse expansion joints at a maximum spacing as shown on the Drawings.
- .2 Extend through full depth of concrete.
- .3 Fill with 13 mm premoulded hardboard joint material

### 3.8 CONTROL JOINTS

- .1 In sidewalks, construct control joints at intervals as shown on the Drawings.
- .2 Use a 120mm parting tool to prepare 10mm wide control joint.
- .3 After minimum 28 day curing time, fill with approved polyurea control joint filler material

### **3.9 ISOLATION JOINTS**

- .1 Form isolation joints around all poles, hydrants, manholes and all structures or fixed objects located within the concrete section by using specified joint filling material.
- .2 Use 13 mm premoulded hardboard joint material to form isolation joints between sidewalks and abutting walls and structures.

### **3.10 FINISHING**

- .1 Finish surface of concrete sidewalks to smooth surface with magnesium or wood float and brush or broom to provide uniform non-skid surface.
- .2 Broom or brush crossways or as otherwise required to match adjacent finish.
- .3 Round edges with steel edging tool to a width of 50 mm around perimeter of each panel.
- .4 Under no circumstances is concrete to be overworked by trowelling, dusted with dry cement or finished with a mortar coat.
- .5 Ensure finished surface as specified.

### **3.11 PROTECTION**

- .1 .Protect freshly finished concrete from dust, rain or frost by using tarpaulins or other suitable protective coverings. Keep clear of finished surface.
- .2 Place and maintain suitable barriers to protect finished concrete from equipment, vehicles or pedestrian traffic.
- .3 Provide personnel as required to prevent vandalism until concrete has set.
- .4 Do not run vehicles or construction equipment on concrete for at least 3 days.

### **3.12 CURING**

- .1 Apply approved curing compound to all exposed concrete surfaces at rate recommended by manufacturer or alternatively, use moist curing procedures for a minimum of 7 days.
- .2 .When temperature is below 5°C, maintain all concrete at temperature not less than 10°C for at least 72 h and protect from freezing for at least another 72 h or such time as required to ensure proper curing of concrete. Admixtures are not to be used for prevention of freezing.

### **3.13 ACCEPTANCE**

- .1 Before acceptance of finished concrete remove all irregular, cracked, vandalized or otherwise defective sections and replace in accordance with specifications.
- .2 Minimum area of replacement of defective sidewalk is one panel section.

**END OF SECTION**

## SECTION 03 30 53 CAST-IN-PLACE CONCRETE

### PART 1 GENERAL

- .1 Portions of the Master Municipal Construction Documents Volume II (Printed 2009, as amended prior to the Closing Date) apply to this Contract. Only those MMCD excerpts specifically referenced in this Contract are applicable to the Work and, except as noted below, no other portions of the MMCD are applicable. The intent is that the MMCD technical requirements be met, but that they are executed within the framework of this contract.
- .2 This Section 03 30 53 is adopted from the MMCD 03 30 00 Cast-in-Place Concrete.
- .3 Except where specifically stated otherwise, all materials and methods in this Section to conform to requirements of the latest version of CAN/CSA-A23.1.

### 1.1 RELATED WORK

- .1 Concrete Walks Section 03 30 20

### 1.2 REFERENCE STANDARDS

- .1 CSA International
  - .1 CAN/CSA-A23.1, Concrete Materials and Methods for Concrete Construction.
  - .2 CAN/CSA-A23.2, Methods of Test and Standard Practices for Concrete.
- .2 ASTM International
  - .1 ASTM C260/C260M, Standard Specification for Air-Entraining Admixtures for Concrete.
  - .2 ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - .3 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
  - .4 ASTM C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
  - .5 ASTM D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

### 1.3 CERTIFICATION

- .1 Minimum 14 days prior to starting concrete work submit to Departmental Representative manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
  - .1 Portland cement
  - .2 Blended hydraulic cement.
  - .3 Supplementary cementing materials.
  - .4 Grout.
  - .5 Admixtures.
  - .6 Aggregates.
  - .7 Water.

.8 Joint filler.

- .2 Provide certification acceptable to Departmental Representative that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.
- .3 Provide certification acceptable to Departmental Representative that mix proportions selected will produce concrete of specified quality, durability and yield and that strength will comply with CAN/CSA-A23.1.

#### **1.4 CONSTRUCTION QUALITY CONTROL**

- .1 Submit proposed quality control procedures for Departmental Representative's approval.

#### **1.5 MEASUREMENT AND PAYMENT**

- .1 Payment will not be measured separately and shall be made by lump sum.

#### **1.6 INSPECTION AND TESTING**

- .1 Refer to Quality Control 01 45 00. Testing to conform to requirements of CAN/CSA-A23.1.
- .2 Refer to CSA 283 Qualification Code for Concrete Testing Laboratories.

### **PART 2 PRODUCTS**

#### **2.1 MATERIALS**

- .1 Portland cement: to CAN/CSA-A5
- .2 Supplementary cementing materials: to CAN/CSA-A23.5
- .3 Water: to CAN/CSA-A23.1
- .4 Aggregates: to CAN/CSA-A23.1
- .5 Air entraining admixture: to CAN/CSA-A266.1
- .6 Chemical admixtures: to CAN/CSA-A266.2 Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .7 Grouts:
  - .1 Provide grout certification prior to use.
  - .2 To be as specified in Contract Documents. Alternatives to be approved by the Departmental Representative prior to use.
  - .3 Use in accordance with manufacturer's recommendations.
- .8 Curing compound:
  - .1 To be spray applied, liquid type conforming to ASTM C309 containing a fugitive dye.
  - .2 To be applied in accordance with manufacturer's recommendations.
  - .3 Other curing methods such as sheet material and burlap mats, subject to Departmental Representative's approval.
- .9 Premoulded joint fillers: Bituminous impregnated fibre board: ASTM D1751

#### **2.2 CONCRETE MIXES**

- .1 Proportion concrete in accordance with CAN/CSA-A23.1, Table 11.

#### **2.3 FORMS**

- .1 Forms to CAN/CSA-A23.1.11.

- .2 Free from surface defects for all concrete faces exposed to view.
- .3 Form ties to be metal and of type such that no metal left within 25 mm of concrete surface when forms removed.

#### **2.4 FORM RELEASE AGENT**

- .1 Non-staining material type form release agent: chemically active release agents containing compounds that react with free lime to provide water soluble soap

### **PART 3 EXECUTION**

#### **3.1 GENERAL**

- .1 Do cast-in-place concrete work, including surface tolerances, finishing and field quality control, in accordance with CAN/CSA-A23.1. except where specifically stated otherwise.

#### **3.2 FORMWORK**

- .1 Formwork to conform to shape, lines and dimensions shown on Drawings.
- .2 Formwork to be substantial, sufficiently tight to prevent leakage of mortar and braced and tied to maintain position and shape.
- .3 Formwork to be unlined unless specified otherwise.

#### **3.3 WORKMANSHIP**

- .1 Obtain Departmental Representative's approval before placing concrete. Provide minimum 24 h notice prior to placing of concrete.
- .2 Pumping of concrete is permitted only after Departmental Representative's approval of equipment and mix.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing. Ensure placement and compaction procedures to CAN/CSA-A23.1. and to approval of Departmental Representative.
- .5 Protect exposed surfaces from weather and vandalism during initial set period.
- .6 Strip forms ensuring no damage to concrete.
- .7 Ensure curing procedures consistent with weather and temperature conditions.
- .8 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .9 Do not place load upon new concrete until authorized by Departmental Representative.

#### **3.4 JOINT FILLERS**

- .1 Furnish filler for each joint in single piece for depth and width required for joint, unless authorized otherwise by Departmental Representative. When more than one piece is required for a joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.
- .2 Locate and form all joints as shown on Drawings or as otherwise required. Install joint filler where applicable.

- .3 Use 13 mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to finished slab surface unless indicated at bottom.

**END OF SECTION**

## SECTION 32 12 16 HOT-MIX ASPHALT CONCRETE PAVING

### PART 1 GENERAL

#### 1.1 RELATED WORK

- .1 Quality Control Section 01 45 00
- .2 Traffic Control Section 01 55 26

#### 1.2 MEASUREMENT AND PAYMENT

- .1 Payment will not be measured separately and shall be made by lump sum.

#### 1.3 REFERENCE STANDARDS

- .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 C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
  - .2 ASTM C117, Standard Test Method for Material Finer Than 0.075mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .3 ASTM C123, Standard Test Method for Lightweight Particles in Aggregate.
  - .4 ASTM C127, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.
  - .5 ASTM C128, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.
  - .6 ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .7 ASTM C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .8 ASTM C207, Standard Specification for Hydrated Lime for Masonry Purposes.
  - .9 ASTM D995, Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
  - .10 ASTM D2419, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
  - .11 ASTM D3203, Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.
  - .12 ASTM D4791, 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, Sieves Testing, Woven Wire, Inch Series.
- .2 CAN/CGSB-8.2, Sieves Testing, Woven Wire, Metric.

#### 1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt mixes and aggregate and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit viscosity-temperature chart for asphalt cement to be supplied showing either Saybolt Furol viscosity in seconds or Kinematic Viscosity in centistokes, temperature range 105 to 175 degrees C 4 weeks prior to beginning Work.
- .3 Samples:
  - .1 Inform Departmental Representative of proposed source of aggregates and provide access for sampling [one] weeks prior to beginning Work.
- .4 Test and Evaluation Reports:
  - .1 Submit asphalt concrete mix design and trial mix test results to Departmental Representative for [review] at least 4 weeks prior to beginning Work.
  - .2 Submit printed record of mix temperatures at end of each day.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- .1 Asphalt cement: to CGSB-16.3-M90, Grade 80-100.
- .2 RAP:
  - .1 Crushed and screened to ensure 100% of RAP material passes 37.5 mm screen before mixing.
- .3 Aggregates: in accordance with requirements as follows:
  - .1 Crushed stone or gravel.
  - .2 Gradations: within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.
  - .3 Gradation Table:

Sieve Designation	% Passing
25 mm	--
19 mm	100
12.5 mm	84 - 99
9.5 mm	73 - 88

Sieve Designation	% Passing
4.75 mm	50 - 68
2.36 mm	35 - 55
1.18 mm	27 - 46
0.600 mm	18 - 36
0.300 mm	10 - 26
0.150 mm	4 - 17
0.075 mm	3-8

- .4 Coarse aggregate: aggregate retained on 4.75mm sieve and fine aggregate is aggregate passing 4.75mm sieve when tested to ASTM C136.
- .5 When dryer drum plant or plant without hot screening is used, process fine aggregate through 4.75mm sieve and stockpile separately from coarse aggregate.
- .6 Do not use aggregates having known polishing characteristics in mixes for surface courses.
- .7 Sand equivalent: [ASTM D2419]. Min: 40.
- .8 Magnesium Sulphate soundness: to ASTM C88. Max % loss by mass:
  - .1 Coarse aggregate: 15%.
  - .2 Fine aggregate: 18%.
- .9 Los Angeles degradation: Grading B, to ASTM C131. Max % loss by mass:
  - .1 Coarse aggregate, surface course: 25%.
  - .2 Coarse aggregate, lower course: 35%.
- .10 Absorption: to ASTM C127. Max % by mass:
  - .1 Coarse aggregate, surface course: 1.75%.
  - .2 Coarse aggregate, lower course: 2.00%.
- .11 Loss by washing: to ASTM C117. Max % passing 0.075 mm sieve:
  - .1 Coarse aggregate, surface course: 1.5%.
  - .2 Coarse aggregate, lower course: 2.0%.
- .12 Flat and elongated particles: to ASTM D4791, (with length to thickness ratio greater than 3): Max % by mass:
  - .1 Coarse aggregate, surface course: 10%.
  - .2 Coarse aggregate, lower course: 10%.
- .13 Crushed fragments: at least 60% of particles by mass within each of following sieve designation ranges, to have at least two freshly fractured face. Material to be tested according to ASTM C136 and ASTM C117.

Determination of amount of fractured material will be in accordance with Ministry of Transportation and Highways' Specification 1-11, Fracture Count for Coarse Aggregate, Method "B", which determines fractured faces by mass.

Passing		Retained On
25 mm	to	12.5 mm
12.5 mm	to	4.75 mm

.14 Regardless of compliance with specified physical requirements, fine aggregates may be accepted or rejected on basis of past field performance.

.4 Mineral filler:

- .1 Ensure finely ground particles of limestone, hydrated lime, Portland cement or non-plastic mineral matter are thoroughly dry and free from lumps.
- .2 Add mineral filler when necessary to meet job mix aggregate gradation.
- .3 Ensure mineral filler is dry and free flowing when added to aggregate.

## 2.2 EQUIPMENT

- .1 Pavers: mechanical grade controlled self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated on the Drawings.
- .2 Rollers: sufficient number of rollers of type and weight to obtain specified density of compacted mix.
- .3 Vibratory rollers:
  - .1 Drum diameter: 1200mm minimum.
  - .2 Amplitude of vibration (machine setting): 0.5mm maximum for lifts less than 40 mm thick.
- .4 Haul trucks: sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:
  - .1 Boxes with tight metal bottoms.
  - .2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.
  - .3 In cool weather or for long hauls, insulate entire contact area of each truck box.
  - .4 Use only trucks which can be weighed in single operation on scales.
- .5 Hand tools:
  - .1 Lutes or rakes with covered teeth for spreading and finishing operations.
  - .2 Tamping irons having mass 12 kg minimum and bearing area not exceeding 310 cm<sup>2</sup> for compacting material along curbs, gutters and other structures inaccessible to roller. Mechanical compaction equipment, when approved by Departmental Representative, may be used instead of tamping irons.
  - .3 Straight edges, 3.0m in length, to test finished surface.

## 2.3 MIX DESIGN

- .1 Mix design to be approved in writing by Departmental Representative.

- .2 Mix design to be developed by testing laboratory approved in writing by Departmental Representative].
- .3 Mix to contain maximum 20% by mass of RAP without a special mix design.
- .4 Design of mix: by Marshall method to requirements below.
  - .1 Compaction blows on each face of test specimens: 75.
  - .2 Mix physical requirements:

Property		Pavement Course
Marshall Stability at 60 degrees C	kN minimum	5.5 surface course
Flow Value	mm	2-4
Air Voids in Mixture	%	3-5 surface course
Voids in Mineral Aggregate,	% minimum	14 surface course
Index of Retained Stability	% minimum	75

- .6 Measure physical requirements as follows:
  - .1 Marshall load and flow value: to ASTM D1559
  - .2 Compute void properties on basis of bulk specific gravity of aggregate to ASTM C127 and ASTM C128. Make allowance for volume of asphalt absorbed into pores of aggregate.
  - .3 Air voids: to ASTM D3203.
  - .4 Voids in mineral aggregates: to [AI MS2].
  - .5 Index of Retained Stability: measure in accordance with Marshall Immersion Test (ASTM D1559).
- .7 Do not change job-mix without prior approval of Departmental Representative. When change in material source is proposed, new job-mix formula to be reviewed by Departmental Representative.

**PART 3 EXECUTION**

**3.1 PLANT AND MIXING REQUIREMENTS**

- .1 Batch and continuous mixing plants:
  - .1 To ASTM D995.
  - .2 Feed aggregates from individual stockpiles through separate bins to cold elevator feeders.
  - .3 Do not load frozen materials into bins.
  - .4 Feed cold aggregates to plant in proportions to ensure continuous operations.

- .5 Calibrate bin gate openings and conveyor speeds to ensure mix proportions are achieved.
- .6 Before mixing, dry aggregates to moisture content not greater than 0.5% by mass or to lesser moisture content if required to meet mix design requirements.
- .7 Immediately after drying, screen aggregates into hot storage bins in sizes to permit recombining into gradation meeting job-mix requirements.
- .8 Store hot screened aggregates in manner to minimize segregation and temperature loss.
- .9 Heat asphalt cement and aggregate to mixing temperature. Do not heat asphalt cement above maximum temperature indicated on temperature-viscosity chart.
- .10 Make available current asphalt cement viscosity data at plant. With information relative to viscosity of asphalt being used, Departmental Representative to review temperature of completed mix at plant and at paver after considering hauling and placing conditions.
- .11 Maintain temperature of materials within 5 degrees C of specified mix temperature during mixing.
- .12 Mixing time:
  - .1 In batch plants, dry mix for not less than 10s. Continue wet mixing as long as necessary to obtain thoroughly blended mix but not less than 30s or more than 75s.
  - .2 In continuous mixing plants, mixing time as required but not less than 45s.
- .13 Where RAP is to be incorporated into mix:
  - .1 Feed from separate cold feed bin specially designed to minimize consolidation of material. Provide 37.5 mm scalping screen on cold feed to remove oversized pieces of RAP.
  - .2 Ensure positive and accurate control of RAP cold feed by use of hydraulic motor or electric clutch and equip with anti rollback device to prevent material from sliding backward on feed belt.
  - .3 Combine RAP and new aggregates in proportions. Dry mix thoroughly, until uniform temperature within plus or minus 5 degrees C of mix temperature is achieved prior to adding new asphalt cement. Do not add new asphalt cement where temperature of dried mix material is above 160 degrees C.
- .2 Dryer drum mixing plant:
  - .1 To ASTM D995.
  - .2 Load aggregates from individual stockpiles to separate cold feed bins. Do not load frozen materials into bins.
  - .3 Feed aggregates to burner end of dryer drum by means of multi-bin cold feed unit and blend to meet job-mix requirements by adjustments of variable speed feed belts and gates on each bin.
  - .4 Where RAP is to be incorporated into mix, dryer drum mixer is to be designed to prevent direct contact of RAP with burner flame or with exhaust gases hotter than 180 degrees C.
  - .5 Feed RAP from separate cold feed bin designed to minimize reconsolidation of material.

- .6 Meter total flow of aggregate and RAP using electronic weigh belt system with indicator that can be monitored by plant operator and which is interlocked with asphalt pump to ensure proportions of aggregate and RAP and asphalt entering mixer remain constant.
- .7 Allow for easy calibration of weighing systems for aggregates and RAP without having material enter mixer.
- .8 Calibrate bin gate openings and conveyor speeds to ensure mix proportions are achieved.
  - .1 Calibrate weigh bridge on charging conveyor by weighing amount of aggregate passing over weigh bridge in set amount of time.
  - .2 Difference between this value and amount shown by plant computer system to differ by not more than plus or minus 2%.
- .9 Make provision for conveniently sampling full flow of materials from cold feed.
- .10 Provide screens or other suitable devices to reject oversize particles or lumps of aggregate and RAP from cold feed prior to entering drum.
- .11 Provide system interlock stop on feed components if either asphalt or aggregate from bin stops flowing.
- .12 Accomplish heating and mixing of asphalt mix in approved parallel flow dryer-mixer in which aggregate enters drum at burner end and travels parallel to flame and exhaust gas stream.
  - .1 Control heating to prevent fracture of aggregate or excessive oxidation of asphalt.
  - .2 Equip system with automatic burner controls and provide for continuous temperature sensing of asphalt mixture at discharge, with printing recorder that can be monitored by plant operator.
  - .3 Submit printed record of mix temperatures at end of each day.
- .13 Ensure mixing period and temperature to produce uniform mixture in which particles are thoroughly coated, and moisture content of material as it leaves mixer is 0.5% maximum.
- .3 Temporary storage of hot mix:
  - .1 Provide mix storage of sufficient capacity to permit continuous operation and designed to prevent segregation.
  - .2 Do not store asphalt mix in storage bins in excess of 12 hours.
- .4 While producing asphalt mix for this Project, do not produce mix for other users unless separate storage and pumping facilities are provided for materials supplied to this project.
- .5 Mixing tolerances:
  - .1 Permissible variation in aggregate gradation from job mix (percent of total mass).

4.75 mm sieve and larger	5.5
2.36 mm sieve	4.5
0.600 mm sieve	3.5
0.150 mm sieve	2.5

0.075 mm sieve	1.5
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- .2 Permissible variation of asphalt cement from job mix: 0.3 %.
- .3 Permissible variation of mix temperature at discharge from plant: 5 degrees C.
- .6 Addition of anti-stripping agent:
  - .1 Plant to be equipped with pug mill to thoroughly mix aggregates and lime prior to entering the plant.
  - .2 Plant to be equipped with suitable conveyor systems capable of supplying aggregates and lime at constant rate.
  - .3 Plant and equipment used for addition of lime to be equipped with covers to control loss of lime.
  - .4 Plant to be equipped to control rate of lime incorporation to within 1/4%.
  - .5 Add water to aggregate prior to entering pug mill.
  - .6 Add water to lime sufficiently in advance to permit time to slake prior to entering pug mill.

### 3.2 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 01 35 43-Environmental Procedures.
  - .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.
- .2 Re-shape and compact granular roadbed to obtain smooth, even and uniformly compacted base to not less than 95% Modified Proctor density.
- .3 Repair any soft areas by removing and replacing unsuitable material to depth and extent required to achieve the specific density.
- .4 Apply pavement geogrid and prime coat prior to paving.
- .5 Pavement geogrid shall be a product listed in the latest edition of the British Columbia Ministry of Transportation and Infrastructure (BC MOTI) Recognized Products List.
- .6 Prior to laying mix, clean surfaces of loose and foreign material.

### 3.3 TRANSPORTATION OF MIX

- .1 Transport mix to job site in vehicles cleaned of foreign material.
- .2 Paint or spray truck beds with limewater, soap or detergent solution, or non petroleum based commercial product, at least daily or as required.
  - .1 Raise truck bed and thoroughly drain, and ensure no excess solution remains in truck bed.
- .3 Schedule delivery of material for placing in daylight, unless Departmental Representative approves artificial light for night placing.

- .4 Deposit mix from surge or storage silo to trucks in multiple drops to reduce segregation.
  - .1 Do not dribble mix into trucks.
- .5 Deliver material to paver at uniform rate and in an amount within capacity of paving and compacting equipment.
- .6 Deliver loads continuously in covered vehicles and immediately spread and compact.
  - .1 Deliver and place mixes at temperature within specified range, but not less than 125 degrees C.

### 3.4

#### PLACING

- .1 Obtain Departmental Representative's approval of base prior to placing asphalt.
- .2 Place asphalt concrete to thicknesses, grades and lines as indicated on drawings
- .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 shown on the Drawings:
  - .1 Levelling course to thicknesses required but not exceeding 100 mm each.
  - .2 Lower course in layers of 100 mm each
  - .3 Surface course in layers of maximum 60 mm each
- .5 Spread and strike off mixture with self propelled mechanical finisher.
  - .1 Maintain constant head of mix in auger chamber of paver during placing.
  - .2 If segregation occurs, immediately suspend spreading operation until cause is determined and corrected.
  - .3 Correct irregularities in alignment left by paver by trimming directly behind machine.
  - .4 Correct irregularities in surface of pavement course directly behind paver.
    - .1 Remove excess material forming high spots using shovel or lute.
    - .2 Fill and smooth indented areas with hot mix.
    - .3 Do not broadcast material over such areas.
  - .5 Do not throw surplus material on freshly screeded surfaces.
- .6 When hand spreading is used:
  - .1 Use approved wood or steel forms, rigidly supported to assure correct grade and cross section.
    - .1 Use measuring blocks and intermediate strips to aid in obtaining required cross-section.
  - .2 Distribute material uniformly without broadcast material.
  - .3 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes.

- .1 Reject material that has formed into lumps and does not break down readily.
- .4 After placing and before rolling, check surface with templates and straightedges and correct irregularities.
- .5 Provide heating equipment to keep hand tools free from asphalt.
  - .1 Control temperature to avoid burning material.
  - .2 Do not use tools at higher temperature than temperature of mix being placed.

### **3.5 COMPACTING**

- .1 Roll asphalt continuously to density not less than 97% of 75 blow Marshall density in accordance with ASTM D1559 with no individual test less than 95%.
- .2 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 9km/h for finish rolling.
  - .4 Use static compaction for levelling course 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 20impacts 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 at least half width of roller 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.
- .3 Breakdown rolling:
  - .1 Begin breakdown rolling 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.
- .4 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.
- .5 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.
  - .2 Conduct rolling operations in close sequence.

### 3.6

#### JOINTS

- .1 General:
  - .1 Remove surplus material from surface of previously laid strip. Do not deposit on surface of freshly laid strip.
  - .2 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 150mm.
  - .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 100 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.

### 3.7

#### FINISH TOLERANCES

- .1 Finished asphalt surface to be within 6 mm of design elevation but not uniformly high or low.
- .2 Finished asphalt surface not to have irregularities exceeding 6 mm when checked with 3 m straight edge placed in any direction.

**3.8 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.

**3.9 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 23 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 23 Cleaning.

END OF SECTION

**APPENDIX A:**  
**Culvert Installation Permit  
Application**



# APPLICATION TO INSTALL A CULVERT WITHIN DISTRICT OF CHETWYND ROAD RIGHT OF WAY

Permit Number

Cul

Civic Address: \_\_\_\_\_

The works comprising of: culvert size & length: \_\_\_\_\_

Legal description: \_\_\_\_\_

Are hereby approved in so far as they relate to the use of District lands, interference with public works, or other matter under the jurisdiction of the District of Chetwynd, and permission to construct, use, and maintain the said work is hereby granted to: \_\_\_\_\_

The said approval and permission to construct, use and maintain works is, however, at all times subject to the following conditions:

1. That the construction and maintenance of the said works is carried out to the satisfaction of the Director of Engineering and Public works.
2. That, before opening up any roadway or interfering with any public work, notification in writing of the intention to do so must be given to the Director of Engineering and public works at least seven clear days before the work is begun.
3. That, prior to construction of the said works, the person or persons for whom these works are being constructed is to call BC One Call for utility locates.
4. That any person appointed by the Director of Engineering and Public Works, for the purpose shall have free access to all parts of the works for the purpose of inspecting the same.
5. That the construction of the said works shall be commenced on or before the \_\_\_\_\_ and shall be prosecuted with due diligence and to the satisfaction of the Director of Engineering and Public Works, and shall be completed on or before the \_\_\_\_\_
6. (a) The roadway must, at all times, be kept open to traffic and must be completely restored to full traffic flow as soon as possible. At all times the permittee must safeguard the traveling public.  
(b) All trenches and excavations shall be shored, if necessary, according to Workers' Compensation requirements. Care shall be taken to protect adjacent property.  
(c) That all excavations shall be carefully back-filled with suitable material, which is to be tamped into place, and that the permittee shall restore the surface of the road and shoulders and ditches at his own expense. All surplus material is to be removed from the road right of way, or deposited where and as required by the Director of Engineering and Public works. The permittee is financially responsible for any maintenance works required on said ditch for a period of one year. The District of Chetwynd will carry out the necessary remedial work and invoice the permittee monthly.
7. That when necessary all excavations, materials, or other obstructions are to be efficiently fenced, lit, and watched, and at all times every possible precaution is to be taken to ensure the safety of the public.
8. That the person or persons for whom these works are being constructed, or by whom these works are maintained, shall at all times accept full responsibility for any accident that may occur or damage that may be done to any person or property whatsoever caused directly or indirectly by these works, and shall save harmless and keep indemnified the District from all claims and demands whatsoever in respect of the works.



# APPLICATION TO INSTALL A CULVERT WITHIN DISTRICT OF CHETWYND ROAD RIGHT OF WAY

Permit Number

Cul

9. That after receiving notice in writing that the structure is in need of replacement, that owner shall within six weeks move or alter such work at his or their own expense to such new positions or in such manner as may be necessitated by the District of Chetwynd.
10. That while reasonable care will be taken on the part of the District of Chetwynd to do as little damage as possible to any private work in the carrying-out of the construction, extension, alterations, improvement, repair, or maintenance of any public work adjacent thereto, the District of Chetwynd can accept no responsibility for any kind of such damage.
11. This permit is valid only for the specific works stated herein. Any alterations or additions must be covered by a separate permit.
12. This permit may be canceled, at the discretion of the Director of Engineering and Public Works without recourse, should the permittee fail to comply with all the terms of the permit. Thirty days' notice will be given before cancellation.
13. When the requirements of the District of Chetwynd necessitate use of the said lands for Municipal purposes, at the discretion of the Director of Engineering and Public Works, this permit may be cancelled.
14. Installation of the culvert shall be as specified in the attached document, "culvert installation detail."
15. If the works performed does not meet the required specifications, the District of Chetwynd reserves the right to remove the works and invoice the owner.

Permit Fee is \$32.00 and is to be paid at the Municipal office before permit will be issued.

I hereby acknowledge that I have read this application and understand the requirements:

\_\_\_\_\_  
District Employee Signature

\_\_\_\_\_  
Owner Signature

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
District Employee Title

\_\_\_\_\_  
Date (yyyy/mm/dd)

\_\_\_\_\_  
Date (yyyy/mm/dd)

\_\_\_\_\_  
Daytime Phone Number

Permit Fee Paid

Receipt Number \_\_\_\_\_

Inspected by: \_\_\_\_\_

Inspection Date: \_\_\_\_\_  
(yyyy/mm/dd)