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## **PART 1 – GENERAL**

### **1.1 ACCESS AND EGRESS**

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

### **1.2 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.
- .4 Sanitary facilities will not be provided.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

### **1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to nearby building operations and their occupants, as well as the normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

### **1.4 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 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions to a minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel, pedestrian and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

### **1.5 SPECIAL REQUIREMENTS**

- .1 Carry out noise generating Work Monday to Friday from 8:00 to 17:00 hours.
- .2 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .3 Keep within limits of work and avenues of ingress and egress.
- .4 Ingress and egress of Contractor vehicles at site is limited to the site entrance off Portsmouth Avenue.
- .5 Bedrock excavation utilizing blasting will not be permitted.

### **1.6 SECURITY CLEARANCES**

- .1 Personnel employed on this project may be subject to security check. Obtain clearance, as instructed, for each individual who will be required to enter premises.

### **1.7 SECURITY ESCORT**

- .1 Personnel employed on this project must be escorted when executing work in non-public areas during normal working hours. Personnel must be escorted in all areas after normal working hours.
- .2 Submit an escort request to Departmental Representative at least 14 days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.
- .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least 4 hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.
- .4 Calculation of costs will be based on average hourly rate of security officer for minimum of eight hours per day for late service request and of four hours for late cancellations.

### **1.8 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is allowed only in areas indicated.

**END OF SECTION**

## **PART 1 – GENERAL**

### **1.1 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.

### **1.2 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 the Province of Ontario, 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 10 days for Departmental Representative's 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, 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 and 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 3 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 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 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.
- .21 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.
- .1 This review shall not mean that Departmental Representative 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 business address.
- .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.

## **1.7 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic and hard copy of colour digital photography in jpg format, standard resolution monthly with progress statement and as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 2 locations.
  - .1 Position viewpoints so that information shown within photograph adequately depicts intent.
- .4 Frequency of photographic documentation: as directed by Departmental Representative.
  - .1 Upon completion of: excavation, foundation, services before concealment, and as directed by Departmental Representative.



### **1.8 CERTIFICATES AND TRANSCRIPTS**

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

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Ontario
  - .1 Occupational Health and Safety Act, R.S.O. (latest up-date).

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 3 days after receipt of comments from Departmental Representative.
- .7 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement

of Work, and submit additional certifications for any new site personnel to Departmental Representative.

- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

### **1.3 FILING OF NOTICE**

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

### **1.4 SAFETY ASSESSMENT**

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

### **1.5 MEETINGS**

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

### **1.6 REGULATORY REQUIREMENTS**

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

### **1.7 GENERAL REQUIREMENTS**

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

### **1.8 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

### **1.9 COMPLIANCE REQUIREMENTS**

- .1 Comply with Ontario Health and Safety Act, R.S.O.

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

#### **1.10 UNFORSEEN HAZARDS**

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

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

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have site-related working experience specific to activities associated with heavy construction.
  - .2 Have working knowledge of occupational safety and health regulations.
  - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
  - .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

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

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

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

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

**1.14 BLASTING**

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

**1.15 POWDER ACTUATED DEVICES**

- .1 Use powder actuated devices is not permitted.

**END OF SECTION**

## **PART 1 – GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 31 00 00 – Earthwork – Short Form
- .2 Section 01 74 21 – Waste Management and Disposal

### **1.2 REFERENCES**

- .1 Definitions:
  - .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to 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.

### **1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review by Departmental Representative.
- .3 Ensure Environmental Protection Plan includes comprehensive overview of known or potential environmental issues to be addressed during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5 Include in Environmental Protection Plan:
  - .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan.
  - .2 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Ensure plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.

- .3 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

#### **1.4 DRAINAGE**

- .1 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

#### **1.5 SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated on plans.

#### **1.6 POLLUTION CONTROL**

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

#### **1.7 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
  - .1 Do not take action until after receipt of written approval by Departmental Representative.
  - .2 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
  - .3 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

### **3.1 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

**END OF SECTION**



## **PART 1 - GENERAL**

### **1.1 REFERENCES AND CODES**

- .1 Perform Work in accordance with the Ontario Building Code and/or National Building Code of Canada (NBCC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

### **1.2 HAZARDOUS MATERIAL DISCOVERY**

- .1 In the event that hazardous materials and or designated substances are encountered during work:
  - .1 Stop work and immediately notify Departmental Representative and  
    - .1 Departmental Representative and will outline prescriptive course of action.
  - .2 Hazardous materials may include but not be limited to:
    - .1 Polychlorinated Biphenyls (PCB)
    - .2 Petroleum Hydrocarbon Compounds (PHC)
    - .3 Volatile Organic Compounds (VOC)
  - .3 Designated Substances
    - .1 Refer to Ontario Regulation 409/09: Designated Substances (O.Reg. 409/09)

### **1.3 BUILDING SMOKING ENVIRONMENT**

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

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 INSPECTION**

- .1 Allow Departmental Representative and/or Engineer 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 and/or Engineer instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 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.

### **1.2 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.

### **1.3 ACCESS TO WORK**

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

- .2 Co-operate to provide reasonable facilities for such access.

#### **1.4 PROCEDURES**

- .1 Notify appropriate agency, Departmental Representative and/or Engineer 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.

#### **1.5 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 and/or Engineer as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner 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.

#### **1.6 REPORTS**

- .1 Submit electronic copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

#### **1.7 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.

### **1.8 TESTS AND MIX DESIGNS**

- .1 Contractor shall provide (Prior to construction):
1. Concrete Mix Design.
  2. Asphalt Mix Design.
  3. Granular physical/gradation for A+B.
- .2 Contractor shall provide (During construction):
1. 1 QC sample for gradation/physical properties per granular A+B.
  2. 1 QC sample per lift of asphalt.
  3. 1 concrete cylinder per 50m<sup>3</sup> of concrete.
  4. Compaction compliance reports for subgrade and granular lifts.
  5. Testing shall be performed in the presence of Engineer representative.
  6. All costs for QC testing, lab fees, transportation and disposal shall be at the Contractors Expense.

**END OF SECTION**

## **PART 1 – GENERAL**

### **1.1 INSTALLATION AND REMOVAL**

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

### **1.2 HOARDING**

- .1 Erect temporary site enclosures with modular type fencing.
- .2 Provide lockable truck entrance gate(s) as required and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .3 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
- .4 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

### **1.3 GUARD RAILS AND BARRICADES**

- .1 Provide secure, rigid guard rails and barricades around deep excavations.
- .2 Provide as required by governing authorities or as indicated.

### **1.4 ACCESS TO SITE**

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

### **1.5 PUBLIC TRAFFIC FLOW**

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

### **1.6 FIRE ROUTES**

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

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

- .1 Protect surrounding private and public property from damage during performance of Work.

- .2 Be responsible for damage incurred.

### **1.8 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

**END OF SECTION**

## **PART 1 – GENERAL**

### **1.1 REFERENCES**

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

### **1.2 QUALITY**

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

### **1.3 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative and at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

### **1.4 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .7 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

### **1.5 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.



### **1.6 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

### **1.7 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

### **1.8 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

### **1.9 CONCEALMENT**

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

### **1.10 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

#### **1.11 FASTENINGS**

- .1 Prevent electrolytic action between dissimilar metals and materials.
- .2 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .3 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .4 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .5 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

#### **1.12 FASTENINGS – EQUIPMENT**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

#### **1.13 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

#### **1.14 EXISTING UTILITIES**

- 1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, building occupants, and pedestrian and vehicular traffic.

- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Sub- Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Dispose of waste materials and debris off site.
- .7 Clean areas prior to start of finishing work, and maintain areas free of debris and other deleterious during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

### **1.2 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner.

- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .8 Remove dirt and other disfiguration from exterior surfaces.
- .9 Sweep and wash clean paved areas.
- .10 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .11 Remove snow and ice from access to building.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2 Accomplish maximum control of solid construction waste.
- .3 Preserve environment and prevent pollution and environment damage.

### **1.2 RELATED REQUIREMENTS**

- .1 Section 02 41 99 - Demolition
- .2 Section 31 00 00 – Earthworks – Short Form

### **1.3 DEFINITIONS**

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Inert Fill: inert waste - exclusively asphalt and concrete.
- .3 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .4 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .5 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .6 Reuse: repeated use of product in same form but not necessarily for same purpose.  
Reuse includes:
  - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2 Returning reusable items including pallets or unused products to vendors.
  - .3 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
  - .4 Separate Condition: refers to waste sorted into individual types.

- .7 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

#### **1.4 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect surface drainage, mechanical and electrical from damage and blockage.
- .4 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Provide waybills for separated materials.

#### **1.5 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
  - .1 Number and size of bins.
  - .2 Waste type of each bin.
  - .3 Total tonnage generated.
  - .4 Tonnage reused or recycled.
  - .5 Reused or recycled waste destination.
- .4 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

#### **1.6 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility Departmental Representative.

### **1.7 SCHEDULING**

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

### **PART 3 - EXECUTION**

#### **3.1 APPLICATION**

- .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

#### **3.2 CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

### **END OF SECTION**



## **PART 1 - GENERAL**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 01 74 21 – Waste Management and Disposal.

### **1.2 MEASUREMENT PROCEDURES**

- .1 Removal of existing asphalt pavement will be measured in square metres of surface actually removed.
- .2 Payment under this item will include operations involved in removing, hauling, tipping fees and stockpiling designated pavement.

### **1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for and recycling in accordance with Section 01 74 21 - Waste Management And Disposal.
- .2 Divert unused asphalt materials from landfill to local facility approved by Departmental Representative.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- .1 Prior to beginning removal operation, inspect and verify with Departmental Representative areas, depths and lines of asphalt pavement to be removed.

### **3.2 PROTECTION**

- .1 Protect existing pavement not designated for removal, light units and structures from damage. In event of damage, immediately replace or make repairs to approval of Departmental Representative at no additional cost.

### **3.3 REMOVAL**

- .1 Remove existing asphalt pavement to lines and grades as indicated on Site Plan.
- .2 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.
- .3 Provide for suppression of dust generated by removal process.

### **3.4 STOCKPILING OF MATERIAL**

- .1 Dispose of removed asphalt pavement off-site at facility designated by Departmental Representative and/or Engineer.
- .2 Removed asphalt pavement which is to be recycled in hot mix asphalt concrete under this contract may be stockpiled at designated asphalt plant site.

### **3.5 FINISH TOLERANCES**

- .1 Finished surfaces in areas where asphalt pavement has been removed to be within +/-5 mm of grade specified but not uniformly high or low.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA S350-M1980(R1998), Code of Practice for Safety in Demolition of Structures.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures.
- .2 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with 01 33 00 - Submittal Procedures and indicate:
  - .1 Schedule of selective demolition.
  - .2 Number and location of dumpsters.

### **1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

### **1.4 SITE CONDITIONS**

- .1 Review "Designated Substance Report" and take precautions to protect environment.
- .2 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
  - .1 Do not proceed until written instructions have been received from Departmental Representative.
- .3 Notify Departmental before disrupting building or site access or services.

## **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. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
  - .1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.
  - .2 Immediately notify the Engineer should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

### **3.4 SITE REMOVALS**

- .1 Remove items as indicated on Site Plan.
- .2 Removal of Pavements, Curbs and Gutters:
  - .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.

### **3.6 DISPOSAL**

- .1 Dispose of removed materials to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.
- .2 Dispose of excavated earth material in accordance with Section 31 00 00.

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM D 698-[00ae1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft<sup>3</sup>) (600kN-m/m<sup>3</sup>).
- .2 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation
  - OPSS-180[November 2016];
  - OPSS-206[November 2013];
  - OPSS-802[November 2010];
  - OPSS.MUNI-804[November 2014];
  - OPSS-805[November 2015];
  - OPSS.MUNI-1004[November 2012];
  - OPSS.MUNI-1010[April 2013];

### **1.2 WASTE MANAGEMENT AND DISPOSAL**

- .1 Divert waste as per Section 01 74 21 – Waste Management and Disposal and as directed by the Departmental Representative and/or Engineer.
- .1 Divert unused vegetation materials from landfill to local facility as directed by Departmental Representative and/or Engineer.

### **1.3 EXISTING CONDITIONS**

- .1 Prior to commencement of excavation, notify Departmental Representative and Engineer of the date of commencement and provide access to the site in order for the Engineer to inspect the excavated material prior to disposal off-site.
- .2 Contractor to dispose of excavated material only upon recommendation by Engineer and confirmation by Departmental Representative of acceptable location(s) for disposal.
- .3 Contractor to provide receipt of disposal of all excavated material at acceptable facility as approved by Departmental Representative and Engineer.
- .4 Buried services:

- .1 Before commencing work Contractor is to verify location of buried services on and adjacent to site.
- .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.
- .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Granular A and B Type II as per OPSS 1010. Sand as per OPSS 1004.

## **PART 3 - EXECUTION**

### **3.1 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 Site Plan.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### **3.2 PREPARATION/ PROTECTION**

- .1 Protect excavations from freezing.
- .2 Keep excavations clean, free of standing water, and loose soil.
- .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Engineer approval.
- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .5 Protect buried services that are required to remain undisturbed.

### **3.3 CLEARING AND GRUBBING**

- .1 Dispose of cleared and grubbed material off site daily to disposal areas acceptable to authority having jurisdiction.

### **3.4 EXCAVATION**

- .1 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.
- .2 Stockpile topsoil on site for later use.
- .3 Excavate as required to carry out work.
- .4 Do not disturb soil or rock below bearing surfaces.
- .5 Notify Engineer prior to commencement of excavations and when excavations are complete.
- .6 If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work.
- .7 Excavation taken below depths shown without Engineer's written authorization to be filled with concrete of same strength as for footings at Contractor's expense.
- .8 Excavate trenches to provide uniform continuous bearing and support as shown on plans.
- .9 Excavate for slabs and paving to subgrade levels.
- .10 In addition, remove all topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

### **3.5 BACKFILLING**

- .1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by Engineer.
- .2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
- .3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.
- .4 Compaction of subgrade: compact existing subgrade under walks, paving, and slabs on grade, to same compaction as specified for fill.

- .1 Fill excavated areas with selected subgrade material compacted as specified for fill.
- .5 Placing:
  - .1 Place backfill, fill and base course material in 150 mm lifts: add water as required to achieve specified density.
- .6 Compaction: compact each layer of material as noted on plans.
- .7 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material
- .8 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

### **3.6 GRADING**

- .1 Grade so that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas as illustrated on plans.
- .2 Grade to be gradual between finished spot elevations shown on drawings.

### **3.7 FIELD QUALITY CONTROL**

- .1 Testing of materials and compaction of backfill will be carried out by the Contractor. Test results shall be supplied to the Departmental Representative. The testing laboratory must be CCIL accredited.
- .2 Do not begin backfilling or filling operations until material has been approved for use by Engineer.
- .3 Not later than 48 hours before backfilling or filling with approved material, notify Engineer so that compaction tests can be carried out by designated testing agency.

### **3.8 SHORTAGE AND SURPLUS**

- .1 Supply necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.
- .2 Dispose of surplus material off site at Contractor's expense.

### **3.9 FINISH GRADING**

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.



- .2 Prepare loose friable bed by means of cultivation and subsequent raking.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation  
.1 OPSS-1010 (April 2013);

### **1.2 SAMPLES**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Contractor to perform all sampling and testing.
- .3 Contractor to provide all test results shall be supplied to the Departmental Representative. The testing laboratory must be CCIL accredited.
- .4 Contractor to pay cost of sampling and testing of aggregates which fail to meet specified requirements.

### **1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Divert unused granular materials from landfill to local facility as approved by Departmental Representative.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
- .2 Flat and elongated particles of coarse aggregate: to OPSS 1010.
  - .1 Greatest dimension to exceed five times least dimension.
- .3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
  - .1 Natural sand.
  - .2 Manufactured sand.
  - .3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.

- .4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
  - .1 Crushed rock.
  - .2 Gravel composed of naturally formed particles of stone.
  - .3 Light weight aggregate, including slag and expanded shale.

## **2.2 SOURCE QUALITY CONTROL**

- .1 Inform Departmental Representative of proposed source of aggregates at least 4 weeks prior to commencing production.
- .2 If, in opinion of Departmental Representative or Engineer, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .3 Advise Departmental Representative and Engineer 2 weeks in advance of proposed change of material source.
- .4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- .1 Stockpile in locations as directed by Departmental Representative. Stockpile height not to exceed 2 m.
- .2 Aggregate source preparation
  - .1 Prior to excavating materials for aggregate production, strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as approved by authority having jurisdiction.
  - .2 When excavation is completed dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
  - .3 Trim off and dress slopes of waste material piles and leave site in neat condition.

- .3 Handling
  - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- .4 Stockpiling
  - .1 Stockpile aggregates on site in locations as directed by Departmental Representative. Do not stockpile on completed pavement surfaces.
  - .2 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
  - .3 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
  - .4 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Consultant within 48 h of rejection.
  - .5 Stockpile materials in uniform layers of thickness as follows:
    - .1 Max 1.5 m for coarse aggregate and base course materials.
    - .2 Max 1.5 m for fine aggregate and sub-base materials.
    - .3 Max 1.5 m for other materials.
  - .6 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
  - .7 Do not cone piles or spill material over edges of piles.
  - .8 Do not use conveying stackers.
  - .9 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

### **3.2 CLEANING**

- .1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .2 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.

### **END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 Measurement Procedures**

- .1 Measure granular sub-base in tonnes by truck box measurement of material incorporated into Work and accepted by Engineer.

### **1.2 References**

- .1 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation
  - .1 OPSS 314

### **1.3 Waste Management and Disposal**

- .1 Separate and recycle waste materials in accordance with Section 01 35 50 – Waste Management Disposal.
- .2 Divert unused granular material from landfill to local facility as approved by Departmental Representative and/or Engineer.

## **PART 2 - PRODUCTS**

### **2.1 Materials**

- .1 Granular sub-base material: in accordance with Section 31 05 17 – Aggregates General.

## **PART 3 - EXECUTION**

### **3.1 Placing**

- .1 Place granular sub-base after subgrade is inspected and approved by Engineer.
- .2 Construct granular sub-base to depth and grade in areas indicated.
- .3 Ensure no frozen material is placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.
- .5 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

- .8 Remove and replace portion of layer in which material has become segregated during spreading.

### **3.2 Compaction**

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density of not less than 98% corrected maximum dry density in accordance with ASTM D 698.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Engineer.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

### **3.3 Site Tolerances**

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

### **3.5 Protection**

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

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 PRODUCTS SUPPLIED BUT NOT INSTALLED UNDER THIS SECTION**

- .1 Where reclaimed asphalt pavement (RAP) is to be incorporated into mix, use only material obtained from this contract in accordance with Section 02 41 99 - Demolition.

### **1.2 MEASUREMENT PROCEDURES**

- .1 Measure asphalt concrete paving in tonnes of asphalt concrete actually incorporated into Work.

### **1.3 REFERENCES**

- .1 American Association of State Highway and Transportation Officials (AASHTO)
- .2 Asphalt Institute (AI)
- .3 American Society for Testing and Materials International, (ASTM)
- .4 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation  
OPSS-313 (November 2016);

### **1.4 PRODUCT DATA**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's test data and certification that asphalt cement meets requirements of this Section.
- .3 Submit asphalt concrete mix design and trial mix test results to Consultant for approval at least 4 weeks prior to beginning Work.

### **1.5 SAMPLES**

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

### **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and stockpile aggregates in accordance with Section 31 05 17 - Aggregates General.
- .2 Stockpile crushed RAP separately in accordance with Section 31 05 17 - Aggregate General.
- .3 Protect stockpiles of crushed RAP from rain.

## **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management And Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Divert unused aggregate materials from landfill to facility for reuse as approved by Departmental Representative or Engineer.
- .4 Divert unused asphalt from landfill to facility capable of recycling materials.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Performance graded asphalt cement: to AASHTO M320, grade PG 58 - 28 when tested to AASHTO R29.
- .2 Reclaimed asphalt pavement:
  - .1 Crushed and screened so that 100% of RAP material passes 50 mm screen before mixing.
  - .2 Aggregates: in accordance with Section 31 05 17 – Aggregates General.

### **2.2 EQUIPMENT**

- .1 Pavers: mechanical grade controlled, self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated.
- .2 Rollers: sufficient number of type and weight to obtain specified density of compacted mix.
- .3 Haul trucks: sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:
  - .1 Boxes with tight metal bottoms.
  - .2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.
  - .3 In cool weather or for long hauls, insulate entire contact area of each truck box.



- .4 Use only trucks which can be weighed in single operation on scales supplied.
- .4 Hand tools:
  - .1 Lutes or rakes with covered teeth for spreading and finishing operations.
  - .2 Tamping irons having mass not less than 12 kg 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 Engineer, may be used instead of tamping irons.
  - .3 Straight edges, 4.5 m in length, to test finished surface.

## 2.3 MIX DESIGN

- .1 Mix design to be provided by Contractor to Engineer for approval.
- .2 Mix to contain maximum 50% by mass of RAP. Consultant may approve higher proportion of RAP if Contractor demonstrates ability to produce mix meeting requirements of specification.
- .3 Design of mix: by Marshall method to requirements below.
- .4 Mix physical requirements as per OPSS 313.
- .5 Do not change job-mix without prior approval of Consultant. When change in material source proposed, new job-mix formula to be approved by Consultant.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- .1 Reshape granular base in accordance with Section 32 11 16 – Granular Subbase
- .2 Prior to laying mix, clean surfaces of loose and foreign material.

### 3.2 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. Elevate truck bed and thoroughly drain. No excess solution to remain in truck bed.
- .3 Schedule delivery of material for placing in daylight unless Departmental Representative approves artificial light.

- .4 Deposit mix from surge or storage silo to trucks in multiple drops to reduce segregation. 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. Deliver and place mixes at temperature within range as directed by Engineer, but not less than 135 degrees C.

### **3.3 PLACING**

- .1 Obtain Engineer's approval of base, tack coat and prime coat prior to placing asphalt.
- .2 Place asphalt concrete to thicknesses, grades and lines as indicated.
- .3 Placing conditions:
  - .1 Place asphalt mixtures only when air temperature is above 5 degrees C.
  - .2 When temperature of surface on which material is to be placed falls below 10 degrees C, provide extra rollers as necessary to obtain required compaction before cooling.
  - .3 Do not place hot-mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.
  - .4 Place asphalt concrete in compacted lifts of thickness as indicated on Site Plan.
  - .5 Where possible do tapering and levelling where required in lower lifts. Overlap joints by not less than 300 mm.
- .4 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. Remove by shovel or lute excess material forming high spots. Fill and smooth indented areas with hot mix. Do not broadcast material over such areas.

- .5 Do not throw surplus material on freshly screeded surfaces.
- .5 When hand spreading is used:
  - .1 Use approved wood or steel forms, rigidly supported to assure correct grade and cross section. Use measuring blocks and intermediate strips to aid in obtaining required cross-section.
  - .2 Distribute material uniformly. Do not broadcast material.
  - .3 During spreading operation, thoroughly loosen and uniformly distribute material by lutes or covered rakes. 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. Control temperature to avoid burning material. Do not use tools at higher temperature than temperature of mix being placed.

### **3.4 COMPACTING**

- .1 Roll asphalt continuously to density not less than 98 % of 3 blow Marshall density to AASHTO T245.
- .2 General:
  - .1 Provide at least two rollers and as many additional rollers as necessary to achieve specified pavement density. When more than two rollers are required, one roller must be pneumatic tired type.
  - .2 Start rolling operations as soon as placed mix can bear weight of roller without excess displacement of material or cracking of surface.
  - .3 Operate roller slowly initially to avoid displacement of material. Do not exceed 5 km/h for breakdown and intermediate rolling for static steel-wheeled and pneumatic tired rollers. Do not exceed 9 km/h for finish rolling.
  - .4 Use static compaction for levelling 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 25 impacts per metre of travel. For lifts less than 50 mm thick, impact spacing not to exceed compacted lift thickness.

- .6 Overlap successive passes of roller by minimum of 200 mm and vary pass lengths.
  - .7 Keep wheels of roller slightly moistened with water to prevent pick-up of material but do not over-water.
  - .8 Do not stop vibratory rollers on pavement that is being compacted with vibratory mechanism operating.
  - .9 Do not permit heavy equipment or rollers to stand on finished surface before it has been compacted and has thoroughly cooled.
  - .10 After traverse and longitudinal joints and outside edge have been compacted, start rolling longitudinally at low side and progress to high side. Ensure that all points across width of pavement receive essentially equal numbers of passes of compactors.
  - .11 When paving in echelon, leave unrolled 50 to 75 mm of edge which second paver is following and roll when joint between lanes is rolled.
  - .12 Where rolling causes displacement of material, loosen affected areas at once with lutes or shovels and restore to original grade of loose material before re-rolling.
- .3 Breakdown rolling:
- .1 Begin breakdown rolling with vibratory roller immediately following rolling of transverse and longitudinal joint and edges.
  - .2 Operate rollers as close to paver as necessary to obtain adequate density without causing undue displacement.
  - .3 Operate breakdown roller with drive roll or wheel nearest finishing machine. When working on steep slopes or super-elevated sections use operation approved by Engineer.
  - .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. If necessary to obtain desired surface finish, use pneumatic-tired rollers as directed by Engineer.
  - .2 Conduct rolling operations in close sequence.
- .6 Dust entire area of sheet asphalt pavements with hydrated lime immediately after rolling to eliminate tendency to pick-up under traffic.

### 3.5 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 150 mm.
  - .2 Cold joint is defined as joint where asphalt mix is placed, compacted and left to cool below 100 degrees C prior to paving of adjacent lane.

- .1 If cold joint can not be avoided, cut back by saw cutting previously laid lane, by at least 150 mm, to full depth vertical face, and tack face with thin coat of hot asphalt of adjacent lane.
- .3 Overlap previously laid strip with spreader by 25 to 50 mm.
- .4 Before rolling, carefully remove and discard coarse aggregate in material overlapping joint with lute or rake.
- .5 Roll longitudinal joints directly behind paving operation.
- .6 When rolling with static or vibratory rollers, have most of drum width ride on newly placed lane with remaining 150 mm extending onto previously placed and compacted lane.

### **3.6 FINISH TOLERANCES**

- .1 Finished asphalt surface to be within 5 mm of design elevation but not uniformly high or low.
- .2 Finished asphalt surface not to have irregularities exceeding 5 mm when checked with 4.5 m straight edge placed in any direction.

### **3.7 DEFECTIVE WORK**

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

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation
  - OPSS-351 (November 2010);
  - OPSS-353 (September 1996);
  - OPSS-1350 (November 2013);

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Inform Engineer of proposed source of materials at least 4 weeks prior to commencing work.
- .3 If materials have been tested by accredited testing laboratory within previous 2 months and have passed tests equal to requirements of this specification, submit test certificates from testing laboratory showing suitability of materials for this project.

### **1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 50 - Waste Management and Disposal.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Concrete mixes and materials: in accordance with OPSS 1350.
- .2 Granular base: material to Section 31 05 17 - Aggregates General.
- .3 Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water-soluble soap.
- .4 Fill material: to Section 31 05 17 - Aggregates General.

## **PART 3 - EXECUTION**

### **3.1 GRADE PREPARATION**

- .1 Do grade preparation work in accordance with Section 31 00 00 – Earthwork – Short Form

### **3.2 GRANULAR BASE**

- .1 Obtain Engineer's approval of subgrade before placing granular base.
- .2 Place granular base material to lines, widths, and depths as indicated.
- .3 Compact granular base in maximum 150 mm layers to at least 100% of maximum density to ASTM D 698.

### **3.3 CONCRETE**

- .1 Obtain Engineer's approval of granular base prior to placing concrete.
- .2 Do concrete work in accordance with OPSS 351 or 353.
- .3 Immediately after floating, give sidewalk surface uniform broom finish to produce regular corrugations not exceeding 2 mm deep, by drawing broom in direction normal to centre line.
- .4 Provide edging as indicated with 10 mm radius edging tool.
- .5 Slip-form pavers equipped with string line system for line and grade control may be used if quality of work acceptable to Engineer can be demonstrated. Hand finish surfaces when directed by Engineer.

### **3.4 TOLERANCES**

- .1 Finish surfaces to within 3 mm in 3 m as measured with 3 m straightedge placed on surface.

### **3.5 EXPANSION AND CONTRACTION JOINTS**

- .1 Install tooled transverse contraction joints after floating, when concrete is stiff, but still plastic, at intervals of 1.5 m.
- .2 Install expansion joints at intervals of 6 m.
- .3 When sidewalk is adjacent to curb, make joints of curb, gutters and sidewalk coincide.



### **3.6 ISOLATION JOINTS**

- .1 Install isolation joints around manholes and catch basins and along length adjacent to concrete curbs, catch basins, buildings, or permanent structure.
- .2 Install joint filler in isolation joints in accordance with OPSS standards.
- .3 Seal isolation joints with sealant approved by Engineer.

### **3.7 CURING**

- .1 Cure concrete by adding moisture continuously in accordance with CSA-A23.1/A23.2 to exposed finished surfaces for at least 1 day after placing or sealing moisture in by curing compound as directed by Engineer.
- .2 Where burlap is used for moist curing, place two prewetted layers on concrete surface and keep continuously wet during curing period.
- .3 Apply curing compound evenly to form continuous film, in accordance with manufacturer's requirements.

### **3.8 BACKFILL**

- .1 Allow concrete to cure for 7 days prior to backfilling.
- .2 Backfill to designated elevations with material as directed by Engineer.

### **3.9 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 MEASUREMENT FOR PAYMENT**

- .1 Pavement marking: measured by metres of solid lines or painted length of dash lines.
- .2 Symbols and letters: measured in units.

### **1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
- .2 Green Seal Environmental Standards (GS)
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
- .4 Ontario Provincial Standard Specifications (OPSS)/Ontario Ministry of Transportation  
OPSS-710 (November 2010);

### **1.3 SUBMITTALS**

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

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle as per manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return as in accordance with Section 01 35 50 - Waste Management and Disposal.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Paint: In accordance with OPSS 710.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates and surfaces to receive pavement markings previously installed under other Sections or Contracts are acceptable for product installation in accordance with OPSS standards.
- .2 Pavement surface: dry, free from water, frost, ice, dust, oil, grease and other deleterious materials.
- .3 Proceed with Work only after unacceptable conditions have been rectified.

#### **3.2 EQUIPMENT REQUIREMENTS**

- .1 Paint applicator: approved pressure type with positive shut-off distributor capable of applying paint in single, double and dashed lines and capable of applying marking components uniformly, at rates specified, and to dimensions as indicated.

#### **3.3 APPLICATION**

- .1 Pavement markings: laid out as per Site Plan.
- .2 Unless otherwise approved by Engineer, apply paint only when air temperature is above 10 degrees C, wind speed is less than 60 km/h and no rain is forecast within next 4 hours.
- .3 Apply traffic paint evenly at rate of 3 m<sup>2</sup> /L.
- .4 Do not thin paint unless approved by Engineer.
- .5 Symbols and letters to dimensions indicated.
- .6 Paint lines: of uniform colour and density with sharp edges.
- .7 Thoroughly clean distributor tank before refilling with paint of different colour.

#### **3.4 TOLERANCE**

- .1 Paint markings: within plus or minus 12 mm of dimensions indicated.
- .2 Remove incorrect markings in accordance with Section 01 71 11 - Cleaning.

#### **3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 50 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.6 PROTECTION OF COMPLETED WORK**

- .1 Protect pavement markings until dry.
- .2 Repair damage to adjacent materials caused by pavement marking application. dispose of materials at appropriate facility.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 MEASUREMENT PROCEDURES**

- .1 Preparation of sub-grade for placing of topsoil will not be measured for payment.
- .2 Topsoil stripping will not be measured.
- .3 Measure supplying, placing and spreading topsoil in square metres determined actual area placed.
  - .1 Specified depth of topsoil: as specified on Site Plan.

### **1.2 REFERENCES**

- .1 Ontario Provincial Standard Specifications (OPSS)
  - .1 OPSS 802

### **1.3 DEFINITIONS**

- .1 Compost:
  - .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
  - .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
  - .3 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 25), and contain no toxic or growth inhibiting contaminants.
  - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category A.

### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality control submittals :
  - .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.

- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for in accordance with Section 01 74 21 - Waste Management and Disposal.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

## **PART 2 - PRODUCTS**

### **2.1 TOPSOIL**

- .1 Topsoil for seeded areas: mixture of particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth.
  - .1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70% sand, minimum 7% clay, and contain 2 to 10% organic matter by weight.
  - .2 Contain no toxic elements or growth inhibiting materials.
  - .3 Finished surface free from:
    - .1 Debris and stones over 50 mm diameter.
    - .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
  - .4 Consistence: friable when moist.

### **2.2 SOIL AMENDMENTS**

- .1 Fertilizer:
  - .1 Fertility: major soil nutrients present in following amounts:
  - .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
  - .3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.
  - .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.

- .5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
- .6 Ph value: 6.5 to 8.0.
- .2 Peatmoss:
  - .1 Derived from partially decomposed species of Sphagnum Mosses.
  - .2 Elastic and homogeneous, brown in colour.
  - .3 Free of wood and deleterious material which could prohibit growth.
  - .4 Shredded particle minimum size: 5 mm.
- .3 Sand: washed coarse silica sand, medium to coarse textured.
- .4 Organic matter: compost in accordance with CCME PN1340, unprocessed organic matter, such as rotted manure, hay, straw, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.
- .5 Use composts meeting Category B requirements for land fill reclamation and large scale industrial applications.
- .6 Limestone:
  - .1 Ground agricultural limestone.
  - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.
- .7 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

### **2.3 SOURCE QUALITY CONTROL**

- .1 Advise Departmental Representative of sources of topsoil and to be utilized with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to supply topsoil as specified.
- .3 Soil testing by recognized testing facility for PH, P and K, and organic matter.
- .4 Testing of topsoil will be carried out by testing laboratory designated by Departmental Representative.

- .1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

### **PART 3 - EXECUTION**

#### **3.1 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 Site Plan.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

#### **3.2 STRIPPING OF TOPSOIL**

- .1 Begin topsoil stripping of areas as directed by Departmental Representative.
- .2 Stockpile in locations as directed by Departmental Representative.
  - .1 Stockpile height not to exceed 2 m.
- .3 Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill.
- .4 Protect stockpiles from contamination and compaction.

#### **3.3 PREPARATION OF EXISTING GRADE**

- .1 Verify that grades are correct.
  - .1 If discrepancies occur, notify Engineer and do not commence work until instructed by Departmental Representative.
- .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- .3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
  - .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
  - .2 Remove debris which protrudes more than 75mm above surface.
  - .3 Dispose of removed material off site.



- .4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm.
  - .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

### **3.4 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL**

- .1 Place topsoil after Engineer has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 150 mm.
- .3 For sodded areas keep topsoil 15mm below finished grade.
- .4 Spread topsoil as indicated on Site Plan.
- .5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

### **3.5 FINISH GRADING**

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.
  - .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
  - .1 Leave surfaces smooth, uniform and firm against deep footprinting.

### **3.6 ACCEPTANCE**

- .1 Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

### **3.7 SURPLUS MATERIAL**

- .1 Dispose of materials except topsoil not required off site.

### **3.8 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 MEASUREMENT PROCEDURES**

- .1 Payment for seeding will be made at unit price bid per square metre of actual surface seeded. Areas of blending into existing turf grass will not be measured for payment.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Product Data:
  - .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures
- .2 Provide product data for:
  - .1 Seed.
  - .2 Fertilizer.

### **1.3 QUALITY ASSURANCE**

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

### **1.4 SCHEDULING**

- .1 Schedule completion of work immediately prior to hydraulic mulching.

### **1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Waste Management And Disposal.
- .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by Departmental Representative.
- .3 Do not dispose of unused fertilizer into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

## **PART 2 - PRODUCTS**

### **2.1 GRASS SEED**

- .1 Canada "Certified" seed, "Canada No. 1 Lawn Grass Mixture" in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".

- .1 Grass seed mixture.

## **2.2 WATER**

- .1 Free of impurities that would inhibit germination and growth.

## **2.3 FERTILIZER**

- .1 To Canada "Fertilizers Act" and "Fertilizers Regulations".
- .2 Complete synthetic fertilizer with guaranteed minimum analysis as specified.

## **PART 3 - EXECUTION**

### **3.1 QUALITY OF WORK**

- .1 Do not perform work under adverse field conditions as determined by Engineer.
- .2 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site to a licenced contaminated soils disposal site.

### **3.2 SEED BED PREPARATION**

- .1 Verify that grades are correct. If discrepancies occur, notify Engineer and do not commence work until instructed by Departmental Representative.
- .2 Fine grade surface free of humps and hollows to smooth, even grade, at elevations indicated to tolerance of plus or minus 15 mm, surface draining naturally.

### **3.3 SEED PLACEMENT**

- .1 For mechanical seeding:
  - .1 Use "Brillion" type mechanical landscape seeder which accurately places seed at specified depth and rate and rolls in single operation.
  - .2 Use equipment and method acceptable to Departmental Representative.
- .2 For manual seeding:
  - .1 Use "Cyclone" type manually operated seeder.
  - .2 Use manually operated, water ballast.

- .3 Use equipment and method acceptable to Departmental Representative.
- .3 Blend applications 150 mm into adjacent grass areas to form uniform surfaces.
- .4 Sow half of required amount of seed in one direction and remainder at right angles as applicable.
- .5 Incorporate seed by light raking in cross directions.

### **3.4 MAINTENANCE DURING ESTABLISHMENT PERIOD**

- .1 Perform following operations from time of seed application until acceptance by Departmental Representative:
  - .1 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
  - .2 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.

### **3.5 FINAL ACCEPTANCE**

- .1 Seeded areas will be accepted by Departmental Representative provided that:
  - .1 Areas are uniformly established and turf is free of rutted, eroded, bare or dead spots and free of weeds.
  - .2 Areas have been cut at least twice.
  - .3 Areas have been fertilized.
- .2 Areas seeded in fall will be accepted in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

### **3.6 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 Ontario Provincial Standard Specifications (OPSS)
  - .1 OPSS 106

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

### **1.3 QUALITY ASSURANCE**

- .1 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Regulatory Requirements:
  - .1 Perform Work to comply with applicable Provincial/Territorial regulations.
  - .2 Co-ordinate and meet requirements of power supply authority.
    - .1 Ensure availability of power when required.
  - .3 Certificates: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Delivery and Acceptance Requirements:
  - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

- .2 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

## **PART 2 - PRODUCTS**

### **2.2 MATERIALS**

- .1 Underground ducts: rigid type DB2, size as indicated.
- .2 Rigid steel galvanized conduit and fittings: size as indicated.
- .3 Conductors: copper, type RWU-90, size and number of conductors as indicated.
- .4 Meter socket: weatherproof, and approval of supply authority.
- .5 Concrete: to CAN/CSA A23.1/A23.2.
- .6 Backfill: clean and free of debris.
- .7 Pulling Iron:
  - .1 22 mm diameter hot dipped galvanized steel bar with exposed triangular shaped opening.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.2 INSTALLATION**

- .1 Install cables in trenches and in conduit in accordance with OPSS 106.
- .2 Allow adequate conductor length for connection to supply by power supply authority.
- .3 Install meter socket and conduit.

- .4 Allow adequate conductor length for connection to service equipment.
- .5 Make grounding connections in accordance with OPSS 106.
- .6 Install concrete encased ducts for electrical systems as indicated and in accordance with CAN/CSA A23.1.
- .7 Install pulling irons as required.
- .8 Seal ducts and conduits at building entrance location after installation of cable.

### **3.3 FIELD QUALITY CONTROL**

- .1 Site Tests:
  - .1 Perform tests in accordance with OPSS 106.
  - .2 Perform additional tests if required by authority having jurisdiction.
  - .2 Submit written test results to Departmental Representative.

### **3.4 CLEANING**

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

**END OF SECTION**