

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 14 13 – Soil Stripping and Stockpiling.

1.2 REFERENCES

- .1 Ontario Provincial Standard Specifications (OPSS)
 - .1 OPSS.MUNI 1010 – November 2013, Material Specification for Aggregates – Base, Subbase, Select Subgrade and Backfill Material.
- .2 Geotechnical Investigation Pavement Rehabilitation, Canadian Food Inspection Agency 3851 Fallowfield Road, Ottawa, Ontario, dated September 21, 2015 Project: 15-149, prepared by Houle Chevrier Engineering Ltd.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for aggregate materials and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Transportation and Handling: handle and transport aggregates to avoid segregation, contamination and degradation.
- .3 Storage: store washed materials or materials excavated from underwater 24 hours minimum to allow free water to drain and for materials to attain uniform water content.
- .4 Deliver aggregate material to and from project area properly secured and covered. Remove mud tracked onto roads to avoid dust generation.
- .5 Minimize dump heights when loading aggregate material into trucks.
- .6 Use vehicles and equipment equipped with effective muffling devices. All construction equipment to meet standards and regulations regarding noise emissions where noise may cause potential disruptions.

Part 2 Products

2.1 MATERIALS

- .1 Granular material to: OPSS.MUNI 1010.
- .2 Pipe Bedding material to be Granular A.

- .3 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, free from adherent coatings and injurious amounts of disintegrated pieces or other deleterious substances.
- .4 Flat and elongated particles of coarse aggregate to: OPSS.MUNI 1010.
 - .1 Greatest dimension to exceed 5 times least dimension.
- .5 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:
 - .1 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
 - .2 Reclaimed asphalt pavement.
 - .3 Reclaimed concrete material.
- .6 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:
 - .1 Crushed rock.
 - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
 - .3 Light weight aggregate, including slag and expanded shale.
 - .4 Reclaimed asphalt pavement.
 - .5 Reclaimed concrete material.

2.2 SOURCE QUALITY CONTROL

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

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions are acceptable for topsoil stripping.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with topsoil stripping only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .1 Topsoil stripping: Section 31 14 13.
- .2 Aggregate source preparation:
 - .1 Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as directed by Departmental Representative.
 - .2 Where clearing is required, leave screen of trees between cleared area and roadways as directed.
 - .3 Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
 - .4 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.
 - .5 Trim off and dress slopes of waste material piles and leave site in neat condition.
 - .6 Provide silt fence or other means to prevent contamination of existing watercourse or natural wetland features.
- .3 Processing:
 - .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
 - .2 Blend aggregates, as required, including reclaimed materials that meet physical requirements of specification is permitted in order to satisfy gradation requirements for material and, percentage of crushed particles, or particle shapes specified.
 - .1 Use methods and equipment approved in writing by Departmental Representative.
 - .4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate gradation.
 - .5 Where necessary, screen, crush, wash, classify and process aggregates with suitable equipment to meet requirements.
 - .1 Use only equipment approved in writing by Departmental Representative.
 - .6 Stockpiling: Section 31 14 13.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.
- .4 Leave any unused aggregates in neat compact stockpiles as directed by Departmental Representative.
- .5 Waste Management: separate waste materials for reuse and recycling.

- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .6 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.
- .7 Restrict public access to temporary or permanently abandoned stockpiles by means acceptable to Departmental Representative.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Ontario Provincial Standard Specifications (OPSS)
 - .1 OPSS 201 – November 2011, Construction Specification for Clearing, Close Cut Clearing, Grubbing, and Removal of Surface and Piled Boulders.

1.2 BASIS OF PAYMENT

- .1 The Clearing and Grubbing will be measured per unit price bid and will be for full compensation for all labour, materials, accessories and equipment to do the work.

1.3 DEFINITIONS

- .1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.
- .2 Close-cut clearing consists of cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.
- .3 Grubbing consists of excavation and disposal of stumps and roots boulders and rock fragments of specified size to not less than specified depth below existing ground surface.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Samples:
 - .1 Submit 3 samples of each material listed below for approval prior to delivery of materials to project site.
 - .2 Tree wound paint: one liter can with manufacturer's label.
 - .3 Herbicide: one liter can with manufacturer's label.
- .2 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .3 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Safety Requirements: worker protection.
 - .1 Workers must wear gloves, respirators, long sleeved clothing, and eye protection when applying herbicide materials.
 - .2 Workers must not eat, drink or smoke while applying herbicide material.
 - .3 Clean up spills of preservative materials immediately with absorbent material and safely discard to landfill.

- .3 Species at Risk (SAR):
 - .1 Train all staff to identify SAR that could potentially occur in the area.
 - .2 Provide all site personnel with City of Ottawa SAR handbook.
 - .3 Conduct daily visual inspections of work site throughout the construction period. If SAR are encountered, let animal leave site on its own. If the animal does not leave, stop work and contact the Canadian Wildlife Service of Environmental Canada (416)739-4214 and the MNR/Kemptonville office (613)258-8418. A permit is required for removal.

1.6 STORAGE AND PROTECTION

- .1 Prevent damage to fencing, trees, natural features, bench marks, existing buildings, existing pavement, utility lines, site appurtenances, water courses, and root systems of trees which are to remain.
 - .1 Repair damaged items to approval of Departmental Representative.
 - .2 Replace trees designated to remain, if damaged, as directed by Departmental Representative.
- .2 Do not knowingly harm any wildlife during construction. Wildlife encountered during construction activities shall not be harm. Stop construction until animal leaves or relocate the animal off the project site.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling.
- .2 Consider felled timber from which saw logs, pulpwood, posts, poles, ties, or fuel wood can be produced as saleable timber.
 - .1 Stockpile adjacent to site.
- .3 Do not bury rubbish and waste materials on site.

Part 2 Products

2.1 MATERIALS

- .1 Bituminous based paint of standard manufacture specially formulated for tree wounds.
- .2 Herbicide: effective for killing annual and perennial weeds, and bamboo grass, by being absorbed through roots and foliage.
 - .1 Spray applied on non-crop land areas.
- .3 Soil Material for Fill:
 - .1 Excavated soil material: free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, deleterious, or objectionable materials.
 - .2 Remove and store soil material for reused.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Submit temporary erosion and sedimentation control plan as per Section 01 33 00 – Submittal Procedures.
- .2 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to sediment and erosion control drawings.
- .3 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .4 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 PREPARATION

- .1 Inspect site and verify with Departmental Representative, items designated to remain.
- .2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
 - .1 Notify Departmental Representative immediately of damage to or when unknown existing utility lines are encountered.
 - .2 When utility lines which are to be removed are encountered within area of operations, notify Departmental Representative in ample time to minimize interruption of service.
- .3 Notify utility authorities before starting clearing and grubbing.
- .4 Keep roads and walks free of dirt and debris.
- .5 Conduct daily visual survey for species during active seasons for turtles, reptiles, and amphibians (April 1 to October 30). Lift boards, rocks, materials, or equipment where possible before grading or grubbing in order to confirm species are no hiding.

3.3 APPLICATION

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

3.4 CLEARING

- .1 Clearing includes felling, trimming, and cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within cleared areas.
- .2 Clear as indicated, by cutting at height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.
- .3 Apply herbicide in accordance with manufacturer's label to top surface of stumps designated not to be removed.

- .4 Refrain from clear cutting trees during nesting season for bats and migratory birds (between April 15 and August 15). Follow Environment Canada guidance on avoidance (www.ec.gc.ca/paom-itmb). Retain a Qualified Avian Biologist to conduct a non-intrusive nesting survey within 5 days prior to clearing; if active nesting of migratory birds or bats are identified, a setback or buffer to the active nest should be established.
- .5 Remove root system from identified trees that have been removed within the project.

3.5 GRUBBING

- .1 Remove vegetation and material to what is required within the proposed works.
- .2 Remove and dispose of roots larger than 7.5 cm in diameter, matted roots, and designated stumps from indicated grubbing areas.
- .3 Grub out stumps and roots to not less than 200 mm below ground surface.
- .4 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m³.
- .5 Fill depressions made by grubbing with suitable material and to make new surface conform to existing adjacent surface of ground.

3.6 REMOVAL AND DISPOSAL

- .1 Remove cleared and grubbed materials off site.
- .2 Cut timber greater than 125 mm diameter. Stockpiled timber becomes property of Departmental Representative.
- .3 Dispose of cleared and grubbed materials by burying.
- .4 Bury to approval of Departmental Representative by:
 - .1 Consolidating.
 - .2 Covering with minimum 500 mm of mineral soil.
 - .3 Finishing surface.
- .5 Mulch and spread cleared and grubbed vegetative material on site as directed by Departmental Representative.
- .6 Remove trees affected by the Dutch Elm Disease or Emerald Ash Borer in accordance with CFIA regulations and standards. Departmental Representative will direct location on site for disposal. Affected trees cannot leave the site.
- .7 Remove root systems of trees affected by the Dutch Elm Disease or Emerald Ash Borer in accordance with CFIA regulations and standards. Departmental Representative will direct location on site for disposal. Affected trees cannot leave the site.

3.7 FINISHED SURFACE

- .1 Leave ground surface in condition suitable for immediate grading operations to approval of Departmental Representative.

3.8 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 RELATED REQUIREMENTS

- .1 Section 31 11 00 – Clearing and Grubbing.
- .2 Section 31 22 13 – Rough Grading.
- .3 Section 32 15 60 – Roadway Dust Control.
- .4 Section 32 91 19.13 – Topsoil Placement and Grading.

1.2 REFERENCES

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the Environment
 - .1 PN1340-2005, Guidelines for Compost Quality.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

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.
- .2 Direct overland flow generated from runoff/precipitation within the site towards silt fence and/or straw bales (sediment removal treatment features).
- .3 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .4 Designate an area within the working limits and 30 m away from any watercourse to be used exclusively for fuelling construction equipment.
- .5 Have an emergency spill plan and kit on site to prevent any contaminants from entering Black Rapids Creek. Submit Emergency spill plan as per Section 01 33 00 – Submittal Procedures.
- .6 Develop and implement an Emergency Response Plan in the event of a sediment release or spill of a deleterious substance. Submit Emergency Response Plan as per Section 01 33 00 – Submittal Procedures.
- .7 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

- .8 Inspect, clean, maintain, and repair equipment periodically to ensure proper function.
- .9 Avoid unnecessary idling of vehicles.
- .10 Install silt fence to prevent reptiles and amphibians from accessing the construction site.

3.2 STRIPPING OF TOPSOIL

- .1 Remove topsoil before construction procedures commence to avoid compaction of topsoil.
- .2 Handle topsoil only when it is dry and warm.
- .3 Remove vegetation from targeted areas by non-chemical means and dispose of stripped vegetation off-site.
- .4 Remove brush from targeted area by non-chemical means and dispose of off-site. Do not bury rubbish and waste materials on site.
- .5 Strip topsoil to depths as indicated by Departmental Representative.
 - .1 Avoid mixing topsoil with subsoil.
- .6 Dispose of unused topsoil off-site.
- .7 Protect stockpiles from contamination and compaction.
- .8 Cover topsoil that has been piled for long term storage, with trefoil or grass to maintain agricultural potential of soil.
- .9 Properly secure and cover material transported to and from the project area. Remove mud tracked onto roads to avoid dust generation.

3.3 STOCKPILING OF TOPSOIL

- .1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Departmental Representative. Do not stockpile on completed pavement surfaces.
- .2 Stockpile excavated material and/or fill material in a proper shape and cover or stabilize to avoid dust generation.
 - .1 Stockpile height not to exceed 2m.
- .3 Stockpile aggregates in sufficient quantities to meet project schedules.
- .4 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
- .5 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.
- .6 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.
- .7 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within 48 hours of rejection.
- .8 Stockpile materials in uniform layers of thickness as follows:
 - .1 Maximum 1.5 m for coarse aggregate and base course materials.
 - .2 Maximum 1.5 m for fine aggregate and sub-base materials.

- .3 Maximum 1.5 m for other materials.
- .9 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
- .10 Do not cone piles or spill material over edges of piles.
- .11 Do not use conveying stackers.
- .12 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.
- .13 Suppress dust from exposed soils and excavated areas with water.

3.4 PREPARATION OF GRADE

- .1 Verify that grades are correct and notify Departmental Representative if discrepancies occur, do not begin work until instructed by the Departmental Representative.
 - .1 Grade area only when soil is dry to lessen soil compaction.
 - .2 Grade soil establishing natural contours and eliminating uneven areas and low spots, ensuring positive drainage.

3.5 PLACING OF TOPSOIL

- .1 Place topsoil only after Departmental Representative has accepted subgrade.
- .2 Spread topsoil during dry conditions in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.
- .3 Establish traffic patterns for equipment to prevent driving on topsoil after it has been spread to avoid compaction.
- .4 Cultivate soil following spreading procedures.

3.6 SUB-SOILING

- .1 Apply sub-soil, following spreading and cultivating procedures to designated areas to improve drainage and agricultural potential of soil.
- .2 Work sub-soil area following natural grade contour lines, with vibrating sub-soiler to depth of 40 cm.
- .3 Cross sub-soil the area following the first pass.
- .4 Cultivate the soil with a chain harrow to de-clod the soil.

3.7 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 RELATED REQUIREMENTS

- .1 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
- .2 Ontario Provincial Standard Specifications (OPSS)
 - .1 OPSS.MUNI 206 - November 2013, Construction Specification for Grading.
 - .2 OPSS.MUNI 501 - November 2014, Construction Specification for Compacting.
- .3 Geotechnical Investigation Pavement Rehabilitation, Canadian Food Inspection Agency 3851 Fallowfield Road, Ottawa, Ontario, dated September 21, 2015 Project: 15-149, prepared by Houle Chevrier Engineering Ltd.
- .4 Federal Canadian Council of Ministers of Environment (CCME) Soil Quality Guidelines for agricultural use.

1.3 CONDITIONS

- .1 Examine subsurface investigation report which is available for inspection from the Departmental Representative.
- .2 Known underground and surface utility lines and buried objects are as indicated on site plan.
- .3 Refer to dewatering in Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .4 Conduct daily visual survey for species during active seasons for turtles, reptiles, and amphibians (April 1 to October 30). Lift boards, rocks, materials, or equipment where possible before grading or grubbing in order to confirm species are not hiding.

1.4 BASIS FOR PAYMENT

- .1 The Rough Grading will be measured per unit price bid and will be for full compensation for all labour, materials, accessories and equipment to do the work.

Part 2 Products

2.1 MATERIALS

- .1 Fill material: in accordance with of Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .2 Excavated or graded material existing on site suitable to use as fill for grading work if approved by Departmental Representative.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for rough grading installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.
 - .4 Locate with Department Representative utility structures (storm and sanitary manholes, water valves) requiring adjustments.

3.2 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Rough grade to following depths below finish grades:
 - .1 100 mm for grassed areas.
 - .2 400 mm for flowerbeds.
 - .3 100 mm for shrub beds.
 - .4 See pavement structure for asphalt and gravel paving.
- .3 Slope rough grade away from building as indicated on grading drawings.
- .4 Grade ditches to depth as indicated on grading and plan and profile drawings.
- .5 Prior to placing fill over existing ground, scarify surface to depth of 150 mm minimum before placing fill over existing ground. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .6 Compact filled and disturbed areas to meet requirement of the Geotechnical Investigation Pavement Rehabilitation, Canadian Food Inspection Agency 3851 Fallowfield Road, Ottawa, Ontario, dated September 21, 2015 Project: 15-149, prepared by Houle Chevrier Engineering Ltd.
- .7 Do not disturb soil within branch spread of trees or shrubs to remain.
- .8 Import soil as per Federal Canadian Council of Ministers of Environment (CCME) Soil Quality Guidelines for agricultural use.
- .9 Retain demarcate trees at the drip line to protect from construction activities.
- .10 Revegetate exposed soils using a seed mix composed of native species, native trees and shrubs which are appropriate for the site conditions.

3.3 TESTING

- .1 Inspection and testing of soil compaction will be carried out by qualified professional.
- .2 Submit testing procedure, frequency of tests to Departmental Representative approval.

3.4 CLEANING

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

3.5 PROTECTION

- .1 Maintain access roads to prevent accumulation of construction related debris on roads.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 31 05 16 – Aggregate Materials.
- .2 Section 31 14 13 – Soil Stripping and Stockpiling.
- .3 Section 33 41 00 – Storm Utility Drainage Piping.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 OPSS.MUNI 501 - November 2014, Construction Specification for Compacting.
 - .2 OPSS 401 - November 2015, Construction Specification for Trenching, Backfilling, And Compacting.
 - .3 OPSS.MUNI 1010 – November 2013, Material Specification for Aggregates – Base, Subbase, Select Subgrade and Backfill Material.
- .2 Geotechnical Investigation Pavement Rehabilitation, Canadian Food Inspection Agency 3851 Fallowfield Road, Ottawa, Ontario, dated September 21, 2015 Project: 15-149, prepared by Houle Chevrier Engineering Ltd.

1.3 DEFINITIONS

- .1 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .2 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Preconstruction Submittals:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
 - .2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field.

1.5 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work 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.
- .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
- .5 Prior to beginning excavation Work, notify applicable Departmental Representative establish location and state of use of buried utilities and structures. Departmental Representative to clearly mark such locations to prevent disturbance during Work.
- .6 Confirm locations of buried utilities by careful test excavations or soil hydrovac methods.
- .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.
- .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing. Costs for such Work to be paid by Departmental Representative.
- .9 Record location of maintained, re-routed and abandoned underground lines.
- .10 Confirm locations of recent excavations adjacent to area of excavation.
- .2 Existing buildings and surface features:
 - .1 Conduct, with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
 - .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Departmental Representative.
 - .3 Where required for excavation, cut roots or branches as directed by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Fill material: properties to Section 31 05 16 – Aggregate Materials.
- .2 Granular materials to: OPSS.MUNI 1010.
- .3 Select Subgrade Materials to: OPSS.MUNI 1010.

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 sediment and erosion control drawings.
- .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 SITE PREPARATION

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

3.3 PREPARATION/PROTECTION

- .1 Protect existing features in accordance with applicable local regulations.
- .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 Departmental Representative 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.

3.4 STRIPPING OF TOPSOIL

- .1 Soil Stripping and Stockpiling: Section 31 14 13.

3.5 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Provide for Departmental Representative details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.
- .3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 - .1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Dispose of water in accordance with environmental procedures not detrimental to public and private property, or portion of Work completed or under construction.
 - .1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
- .6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.6 EXCAVATION

- .1 Excavate to lines, grades, elevations and dimensions as indicated.
- .2 Excavation must not interfere with bearing capacity of adjacent foundations.

- .3 Do not disturb soil within branch spread of trees or shrubs that are to remain.
 - .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .4 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.
- .5 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .6 Restrict vehicle operations directly adjacent to open trenches.
- .7 Dispose of surplus and unsuitable excavated material off site.
- .8 Do not obstruct flow of surface drainage or natural watercourses.
- .9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .10 Notify Departmental Representative when bottom of excavation is reached.
- .11 Obtain Departmental Representative approval of completed excavation.
- .12 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.
- .13 Correct unauthorized over-excavation as follows:
 - .1 Fill under bearing surfaces and footings with fill concrete.
 - .2 Fill under other areas with Type 2 fill compacted to not less than 95 % of maximum dry density.
- .14 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density of undisturbed soil.
 - .2 Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.

3.7 BEDDING AND SURROUND OF UNDERGROUND SERVICES

- .1 Place and compact granular A material for bedding and surround of underground services as to OPSS.MUNI 1010.
- .2 Place bedding and surround material in unfrozen condition.

3.8 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved installations.
 - .2 Departmental Representative has inspected and approved of construction below finish grade.
 - .3 Inspection, testing, approval, and recording location of underground utilities.
 - .4 Removal of concrete formwork.

- .5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
 - .3 Place layers simultaneously on both sides of installed Work to equalize loading.
 - .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
 - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from Departmental Representative.
 - .2 If approved by Departmental Representative, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Departmental Representative.
- .6 Place recycled fill in areas as indicated.
- .7 Consolidate and level unshrinkable fill with internal vibrators.
- .8 Install drainage system in backfill as indicated.

3.9 RESTORATION

- .1 Replace topsoil as indicated.
- .2 Reinstall lawns to elevation which existed before excavation.
- .3 Reinstall pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .4 Clean and reinstall areas affected by Work as directed by Departmental Representative.
- .5 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.
- .6 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION