

**Electrical System Upgrade****Larry's River****Guysborough County, NS****Project No. R.094341.001**

Aggregates General

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PART 1 - GENERAL1.1 Related Work

- .1 Refer to other Specification Sections for related information.
- .2 Refer to **Section 01 33 00** for Shop Drawing/Submission requirements.

1.2 Source Approval

- .1 Source of materials to be incorporated into work or stockpiled requires acceptance.
- .2 Inform *Departmental Representative* of proposed source of aggregates and provide access for sampling at least 4 weeks prior to commencing production.
- .3 If, in opinion of *Departmental Representative*, materials from the proposed source do not meet, or cannot reasonably be processed to meet specified requirements, procure an alternative source to demonstrate that materials from source in question can be processed to meet specified requirements.
- .4 Should a change of material source be proposed during work, advise *Departmental Representative* 4 weeks in advance of proposed change to allow sampling and testing.
- .5 Acceptance of material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

1.3 Production Sampling

- .1 Aggregate will be subject to continual sampling during production.
- .2 Provide *Departmental Representative* with ready access to source and processed material for purpose of sampling and testing.

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**1.4 Measurement for  
Payment**

- .1 This item will not be measured separately.

**PART 2 - PRODUCTS****2.1 Materials**

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material or other deleterious substances.
- .2 Flat and elongated particles are those whose greatest dimension exceeds four times their least dimension.
- .3 Fine aggregates satisfying requirements of applicable section shall be one, or a blend of following:
- .1 Natural sand
  - .2 Manufactured sand
  - .3 Screening produced in crushing of quarried rock, boulders, gravel or slag
  - .4 Coarse aggregates satisfying requirements of applicable section shall be one of following:
    - .1 Crushed rock or slag
    - .2 Gravel composed of naturally formed particles of stone.

**PART 3 - EXECUTION****3.1 Development of  
Aggregate Source**

- .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 the *Departmental Representative*.
- .2 Clear, grub and strip an area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.

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|     | .3                 | When operating in stratified deposits use excavation equipment and methods that will produce a uniform, homogeneous aggregate.                                       |
|     | .4                 | When excavation is completed, 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 a neat condition.  |
| 3.2 | <u>Processing</u>  |  |
|     | .1                 | Process aggregate uniformly using methods that prevent contamination, segregation and degradation.   |
|     | .2                 | Blend aggregate if required to obtain gradation requirements specified. Use approved methods and equipment.  |
|     | .3                 | Blending to increase percentage of crushed particles or decrease percentage of flat and elongated particles is permitted.  |
|     | .4                 | Wash aggregates if required to meet specifications. Use only equipment accepted by <i>Departmental Representative</i> .  |
| 3.3 | <u>Handling</u>    |  |
|     | .1                 | Handle and transport aggregates to avoid segregation, contamination and degradation.   |
| 3.4 | <u>Stockpiling</u> |  |
|     | .1                 | Stockpiling aggregates on stabilized, clean and well drained surfaces.   |
|     | .2                 | To ensure that no material other than stockpiled aggregate is used, do not incorporate bottom 250 mm of stockpile into work, if aggregates are stockpiled on ground. |
|     | .3                 | Stockpile far enough apart to prevent intermixing.   |
|     | .4                 | Reject intermixed or contaminated materials. Remove and dispose of rejected materials as directed within 48 hours of rejection.                                      |

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- .5 Stockpile materials in uniform layers of thickness as follows:
    - .1 Max 1 m for coarse aggregate and base course materials.
    - .2 Max 2 m for fine aggregate and subbase materials.
    - .3 Max 1.5 m for other materials.
  - .6 Complete each layer over entire stockpile area before beginning next layer.
  - .7 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
  - .8 Coning of piles or spilling of material over edges of pile will not be permitted.
  - .9 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

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Sitework, Demolition and Removals

Page 1

PART 1 - GENERAL

- 1.1 Description of Work This Section includes but is not limited to the following:
- .1 All normal removals as required to complete the work. All items to be verified by a site visit prior to submission of a tender. All available plans of the existing structure are available for viewing at the Project Manager's office, 2nd floor, 1713 Bedford Row, Halifax, N.S.
  - .2 Any derricks, gas lines or buildings to be removed by others unless otherwise indicated.
- 1.2 Related Work
- .1 Refer to other specification sections for related information.
  - .2 Refer to **Section 01 33 00** for Shop Drawing/Submission requirements.
- 1.3 Submissions
- .1 Methodology:
    - .1 When requested provide methodology for carrying out the work
  - .2 Provide submission in accordance with **Section 01 33 00**.
- 1.4 Protection
- .1 Prevent movement, settlement or damage of adjacent structures. Provide bracing and shoring as required. In event of damage, immediately replace such items or make repairs to approval of *Departmental Representative* and at no additional cost to *Departmental Representative*.
  - .2 Prevent debris from going adrift and becoming a menace to navigation.
  - .3 All damage to existing structures, roadways, pipelines, electrical systems not specified for removal to be repaired at the

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Sitework, Demolition and Removals

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Contractor's cost to the satisfaction of the  
*Departmental Representative.*

1.5 Measurement for  
Payment

- .1 Sitework, demolition and removals will be measured in accordance with **Section 01 29 00.**

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.1 Preparation

- .1 Inspect site and verify with *Departmental Representative* items designated for removal and items to be preserved.
- .2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.
- .3 Provide temporary power and lighting as shown on the plan or as required by the *Departmental Representative.*
- .4 Existing fill and vent pipes, oil waste tanks and underground storage tanks to be protected from any damages. All repairs to damages as a result of Contractor's operations to be at his cost and to the satisfaction of the *Departmental Representative.*

3.2 Removal

- .1 Remove items indicated.
- .2 Do not disturb adjacent structures designated to remain in place.
- .3 At end of each day's work, leave work in safe condition so no part is in danger of toppling or falling.

3.3 Disposal of  
Material

- .1 Disposal of materials not designated for salvage or re-use in work, will be the contractor's responsibility, and must be disposed of off-site.

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- .2 The material to be disposed is to be transported and disposed of in an environmentally acceptable manner to the satisfaction of the *Departmental Representative*, and in accordance with any local, Municipal, Provincial and Federal restrictions and regulations.

3.4 Restoration

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work. Match condition of adjacent, undisturbed areas.

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## Excavating and Backfilling

Page 1

PART 1 - GENERAL

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|-----|--|----|---|
| 1.1 | <u>Description</u>                     | .1 | This section specifies requirements for excavating and backfilling.   |
| 1.2 | <u>Reference Standards</u>             | .1 | ASTM D698-91 (or latest edition) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft) - Method C.   |
|     |  | .2 | AASHTO T99-94 (or latest edition) Moisture-Density Relations of Soils Using a 5.5-lb. Rammer  |
| 1.3 | <u>Related Work</u>                    | .1 | Refer to other Specification Sections for related information.  |
| 1.4 | <u>Definitions</u>                     | .1 | Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having individual volume in excess of 1.5 m <sup>3</sup> .                                   |
|     |  | .2 | Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation including dense tills, hardpan, frozen materials and partially cemented materials such as asphalt which can be ripped and excavated with heavy construction equipment. |
| 1.5 | <u>Protection of Existing Features</u> | .1 | Existing buried utilities and structures:   |
|     |  | .1 | Prior to commencing any excavation work, notify applicable owner or authorities, establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.  |
|     |  | .2 | Existing buildings and surface features:  |



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|------------------------------------|----|--|
|                                    | .1 | Protect existing buildings and surface features which may be affected by work from damage while work is in progress and repair damage resulting from work. |
| 1.6 <u>Shoring and Bracing</u>     | .1 | Comply with applicable local regulations to protect existing features.   |
| 1.7 <u>Samples</u>                 | .1 | At least 2 weeks prior to commencing work, inform <i>Departmental Representative</i> of proposed source of fill materials and provide access for sampling. |
| 1.8 <u>Measurement for Payment</u> | .1 | Work performed under this Section will be incidental to work involved in other sections of this specification.   |

PART 2 - PRODUCTS

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|----------------------|----|--|
| 2.1 <u>Materials</u> | .1 | Granular Sub-Base material in accordance with <b>Section 32 11 19.</b> |
|                      | .2 | Granular Base material in accordance with <b>Section 32 11 23.</b>     |

PART 3 - EXECUTION

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|-----------------------------|----|---|
| 3.1 <u>Site Preparation</u> | .1 | Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.   |
| 3.2 <u>Stockpiling</u>      | .1 | Stockpile fill materials in areas approved by <i>Departmental Representative</i> . Stockpile granular materials in manner to prevent segregation. |
| 3.3 <u>Dewatering</u>       | .1 | Keep excavations free of water while work is in progress.   |
|                             | .2 | Protect open excavations against flooding and damage due to surface run-off.  |
|                             | .3 | Dispose of water in a manner not detrimental to public and private property, or any   |

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		portion of work completed or under construction.
3.4	<u>Excavation</u>	<ul style="list-style-type: none"><li>.1 Excavate to lines, grades, elevations and dimensions indicated or as directed by <i>Departmental Representative</i>.</li><li>.2 Dispose of surplus and unsuitable excavated material in approved location off site.</li><li>.3 Do not obstruct flow of surface drainage or natural watercourses.</li><li>.4 Stockpile suitable excavated materials required for backfill in approved location.</li><li>.5 Dispose of surplus and unsuitable excavated material off site.</li></ul>
3.5	<u>Trench Bottom Preparation</u>	<ul style="list-style-type: none"><li>.1 Where required due to removal of unsuitable material or unauthorized over-excavation bring bottom of excavation to design grade with approved material.</li><li>.2 Compact trench bottom to density at least equal to density of adjacent surrounding soil.</li></ul>
3.6	<u>Pre-Installation Inspection</u>	<ul style="list-style-type: none"><li>.1 Excavations require inspection and approval prior to commencement of installation operations.</li></ul>
3.7	<u>Backfilling</u>	<ul style="list-style-type: none"><li>.1 Do not proceed with backfilling operations until <i>Departmental Representative</i> has inspected and approved installations.</li><li>.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.</li><li>.3 Do not use backfill material which is frozen or contains ice, snow or debris.</li><li>.4 Backfilling around installations:<ul style="list-style-type: none"><li>.1 Place bedding and surround material as specified elsewhere.</li><li>.2 Place material by hand under, around, and over installations until 300 mm of cover is provided. Dumping material directly on installations will not be</li></ul></li></ul>

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permitted.

- .5 Place backfill material in uniform layers not exceeding 150 mm in thickness up to subgrade elevation or top of trench. Compact each layer before placing succeeding layer.
- .6 Compact common backfill materials:
  - .1 In non-pavement areas, to a density at least equal to density of adjacent, undisturbed soil.
  - .2 In pavement areas, compact to a minimum of 90% for cohesive soils and 95% for cohesionless soils of corrected maximum dry density, maximum density ASTM D698, AASHTO T99, Method C.
- .7 Compact granular backfill material to a minimum 95% of corrected maximum dry density, maximum density AASHTO T99-74 (or latest edition), Method C.
- .8 Compact using approved mechanical tamping devices, or by hand tamping to achieve specified compaction.

3.8 Restoration

- .1 Upon completion of work, remove surplus materials and debris and correct defects noted by *Departmental Representative*.
- .2 Clean and reinstate areas affected by work as directed by *Departmental Representative*.

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PART 1 - GENERAL

- |     |                                |    |  |
|-----|--------------------------------|----|--|
| 1.1 | <u>Related Work</u>            | .1 | Refer to other Specification Sections for related information.   |
| 1.2 | <u>References</u>              | .1 | ASTM D4595-86(1996)(or latest edition), Tensile Properties of Geotextiles by the Wide-Width Strip Method.  |
|     |                                | .2 | CAN/CGSB-4.2 No.4.2-M87 (or latest edition), Textile Test Methods.   |
|     |                                | .3 | CAN/CGSB-148.1 No 14-M93 (or latest edition), Methods of Testing Geotextiles and Geomembranes.   |
|     |                                | .4 | ASTM D4751-95, Determining Apparent Opening Size of a Geotextile.  |
| 1.3 | <u>Mill Certificates</u>       | .1 | At least two weeks prior to start of work, furnish <i>Departmental Representative</i> with copies of mill test data and certificate that filter fabric delivered to job site meets requirements of this section. |
| 1.4 | <u>Approval</u>                | .1 | Obtain written approval of <i>Departmental Representative</i> for filter fabric before installation of material in work.   |
| 1.5 | <u>Measurement for Payment</u> | .1 | Filter fabric will be measured in accordance with <b>Section 01 29 00.</b>   |

PART 2 - PRODUCTS

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| 2.1 | <u>Materials</u> | .1 | Synthetic fiber: rot proof, unaffected by action of oil or salt water and not subject to attack by insects or rodents. |
|     |                  | .2 | Fabric: nonwoven polyester and/or polypropylene fabric.  |
|     |                  | .3 | Seams: sewn in accordance with manufacturer's recommendations.   |

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## Filter Fabric

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- .4 Physical properties: to ASTM D4595, CAN/CGSB-4.2 No.4.2, CAN/CGSB-148.1 No 14 and ASTM D4751 ;
- .1 Tensile Strength 900 N
- .2 Tear Strength 360 N
- .3 Elongation at break 50%
- .4 Filtration Opening Size = 100 - 80um.
- .5 Permeability =  $2 \times 10^{-1}$  cm sec.

PART 3 - EXECUTION3.1 Preparation  
of Base

- .1 Fine grade area to be covered with filter fabric to a uniform surface area. Fill depressions with suitable material.

3.2 Placing  
Filter Fabric

- .1 Place filter fabric on prepared surface loosely from top of the slope to the bottom allowing fabric to conform easily to contours of the slope.
- .2 Allow one (1) metre of fabric for overlapping and anchoring purposes, 700 mm at the top and 300 mm at the bottom of the slope.
- .3 Longitudinal seems will have a minimum of 450 mm overlap and will be pinned every 600 mm with 100 mm nails.
- .4 Anchor top of fabric at 1 metre intervals with 15mm diameter steel rods 600 mm in length. Anchor bottom of fabric by folding fabric and placing fill on top.
- .5 Place granular base material over filter fabric to a depth of 200 mm. No equipment will be permitted on fabric.

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PART 1 - GENERAL

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|------------------------------------|---|
| 1.1 <u>Related Work</u>            | .1 Refer to other Specification Sections for related information.   |
|                                    | .2 Refer to <b>Section 01 33 00</b> for Shop Drawing/Submission requirements.   |
| 1.2 <u>Reference Standards</u>     | .1 ASTM C127-88(1993)e1 (or latest edition) Specific Gravity and Absorption of Coarse Aggregate   |
|                                    | .2 AASHTO T85-88 (or latest edition) Specific Gravity and Absorption of Coarse Aggregate  |
| 1.3 <u>Submissions</u>             | .1 Product Data/Samples:<br>.1 Provide samples of materials proposed for the work.  |
|                                    | .2 Methodology:<br>.1 Provide methodology for carrying out the work.  |
|                                    | .3 Provide submissions in accordance with <b>Section 01 33 00</b> .   |
| 1.4 <u>Measurement for Payment</u> | .1 Rock Fill will be measured in accordance with <b>Section 01 29 00</b> .  |
|                                    | .2 Prices will include the entire cost of supplying and placing the material in the work, rough grading as necessary, the levelling and finish grading of the crib seat mattress, taking soundings, diving inspections, all as shown on the drawings, and as specified. |

PART 2 - PRODUCTS

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| 2.1 <u>Materials</u> | .1 Hard durable crushed quarried rock, free from silt, clay, organic matter and other foreign substances and free from splits, seams or defects likely to impair its |
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## Rock Fill

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soundness during handling or under action of water.

- .2 Specific gravity of not less than 2.65 when tested to ASTM C127 or AASHTO T85.
- .3 Rock fill shall be well graded 300 mm maximum size, free from fines and suitable for placement of granular materials on top.

PART 3 - EXECUTION3.1 Preparation

- .1 Remove existing material as required to complete work.

3.2 Placement

- .1 Do not place rock fill until area has been accepted by *Departmental Representative*.
- .2 Place material to avoid segregation of material sizes. Do not drop material through water.
- .3 Do not place material under poor weather conditions.
- .4 Level top surface of rock fill to specified grade employing methods to acceptance of *Departmental Representative*.

3.3 Tolerances

- .1 Surface of rock fill layer to be within 50 mm of elevation indicated and variation in elevation over whole area of bearing layer not to exceed 75 mm.

3.4 Protection

- .1 Take into account anticipated weather conditions and degree of exposure of site in setting requirements for protection.
- .2 Schedule and carry out construction so that each phase of work is not left exposed longer than necessary.

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Rock Fill

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- .3 The Contractor should note that the work site is subject to water level variations due to tidal action.
  - .4 The Contractor will be responsible to replace any material lost due to storms, tidal erosion or by his own activities.