

PART 1 - GENERAL

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| 1.1 | Related Work | .1 | Refer to other Specification Sections for related information. |
| 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. |

PART 2 - PRODUCTS

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| 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.
- .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 Processing

- .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 Departmental Representative.

- 3.3 Handling
 - .1 Handle and transport aggregates to avoid segregation, contamination and degradation.
- 3.4 Stockpiling
 - .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.
 - .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.

END OF SECTION

PART 1 - GENERAL

- 1.1 Description of Work .1 This Section includes but is not limited to the following:
- .1 All normal removals as required to complete the work.
 - .2 Work will include removal of existing slabs, paving, gravels, pens, gates, troughs, and waterers as required to complete work of the project unless otherwise noted.
- 1.2 Related Work .1 Refer to other specification sections for related information.
- 1.3 Submissions .1 Submit methodology for carrying out the work to the Departmental Representative for review. Methodology to include protection for adjacent and existing works designated to remain.
- 1.4 Protection .1 Prevent movement, settlement or damage of adjacent structures and components of the facility not specifically identified for removal. 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 All damage to existing facilities, structures, roadways, pipelines, electrical systems modified to facilitate work of this project to be repaired at the Contractor's cost to the satisfaction of the Departmental Representative to match pre-construction condition and surrounding finishes.

PART 2 - PRODUCTS

- 2.1 Materials .1 Not Used.

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. Special care is to be taken when digging in the:
- .1 Building 51 Yard (fire hydrant supply).

- .2 Building 51 Pen (waterer electrical/mechanical services).
 - .3 Building 20 Yard (waterer electrical/mechanical services).
 - .3 Provide temporary power and lighting as required by the Departmental Representative.
- 3.2 Removal
 - .1 Remove items indicated. Full removal of component is expected, unless partial removal is specifically noted.
 - .2 Do not disturb adjacent structures designated to remain in place (including those not specifically designated for removal).
 - .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, unless otherwise noted.
 - .2 Existing gates, pens, and waterers removed under work of this project, but not designated to be reinstated, are to be turned over to the Departmental Representative.
 - .3 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 Reinststate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work. Match condition of adjacent, undisturbed areas.

END OF SECTION

PART 1 - GENERAL

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| 1.1 | Description | .1 | This section specifies requirements for excavating and backfilling as required to complete work of this project. |
| 1.2 | Reference Standards | .1 | ASTM D698-12 (or latest edition), Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft ³ (600 kN-m/m ³)) |
| 1.3 | Related Work | .1 | Refer to other Specification Sections for related information. |
| 1.4 | Definitions | .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 ³ . |
| | | .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 | Protection of Existing Features | .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:
.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 | Shoring and Bracing | .1 | Comply with applicable local regulations to protect existing features. |
| 1.7 | Samples | .1 | At least 2 weeks prior to commencing work, inform Departmental Representative of proposed source of fill materials and provide access for sampling. |

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- 1.8 Measurement for Payment .1 Work performed under this Section will be incidental to work involved in other sections of this specification and will not be measured separately.
- PART 2 - PRODUCTS
- 2.1 Materials .1 Granular Sub-Base material in accordance with Section 32 11 19.
- .2 Granular Base material in accordance with Section 32 11 23.
- PART 3 - EXECUTION
- 3.1 Site Preparation .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- 3.2 Stockpiling .1 Stockpile fill materials in areas approved by Departmental Representative. Stockpile granular materials in manner to prevent segregation.
- 3.3 Dewatering .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 portion of work completed or under construction.
- 3.4 Excavation .1 Excavate to lines, grades, elevations and dimensions indicted or as directed by Departmental Representative.
- .2 Dispose of surplus and unsuitable excavated material in approved location off site.
- .3 Do not obstruct flow of surface drainage or natural watercourses.
- .4 Stockpile suitable excavated materials required for backfill in approved location.
- .5 Dispose of surplus and unsuitable excavated material off site.
- 3.5 Excavation Bottom Preparation .1 Where required due to removal of unsuitable material or unauthorized over-excavation bring

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- bottom of excavation to design grade with approved material.
- .2 Compact excavation bottom to density at least equal to density of adjacent surrounding soil.
- 3.6 Pre-Installation Inspection
- .1 Excavations require inspection and approval prior to commencement of installation operations.
- 3.7 Backfilling
- .1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.
- .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 Backfilling around installations:
- .1 Place bedding and surround material as specified elsewhere.
- .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 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.
- .7 Compact granular backfill material to a minimum 100% of corrected maximum dry density, maximum density ASTM D698.
- .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.

END OF SECTION

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| 1.1 | Related Work | .1 | Refer to other Specification Sections for related information. |
| 1.2 | References | .1 | ASTM D4491 - Standard Test Method for Water Permeability of Geotextiles by Permittivity. |
| | | .2 | ASTM D4595-17(or latest edition), Tensile Properties of Geotextiles by the Wide-Width Strip Method. |
| | | .3 | ASTM D4751-16, Standard Test Methods for Determining Apparent Opening Size of a Geotextile. |
| 1.3 | Certificates | .1 | At least two weeks prior to start of work, furnish Departmental Representative with copies of test data and certificate that geotextile delivered to job site meets requirements of this section. |
| 1.4 | Submittals | .1 | Submit product information to Departmental Representative for review before installation of material in work. |

PART 2 - PRODUCTS

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| 2.1 | Materials | .1 | Synthetic fiber: rot proof, unaffected by action of oil or salt water and not subject to attack by insects or rodents. |
| | | .2 | Fabric: polyester and/or polypropylene fabric. |
| | | .3 | Seams: sewn in accordance with manufacturer's recommendations. |
| | | .4 | Physical properties of Medium Weight Geotextile (installed under Type 2 Granular): to ASTM D4595, CAN/CGSB-148.1 and ASTM D4751:
.1 Grab Tensile Strength: 800 N
.2 Mullen Burst: 2000 kPa
.3 Filtration Opening Size: 50 - 150 um.
.4 Hydraulic Conductivity: 0.01 cm/sec. |
| | | .5 | Physical properties of Heavy Weight Geotextile (installed for liner of French Drains): to ASTM D4595, CAN/CGSB-148.1 and ASTM D4751:
.1 Grab Tensile Strength: 1100 N
.2 Mullen Burst: 3000 kPa
.3 Filtration Opening Size: 50 - 150 um.
.4 Hydraulic Conductivity: 0.01 cm/sec. |

PART 3 - EXECUTION

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| 3.1 | Preparation of Base | .1 | Fine grade area to be covered with geotextile to a uniform surface area. Fill depressions with suitable material. |
| 3.2 | Placing Geotextile | .1 | Place Geotextile 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 1000mm of geotextile 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 1000mm intervals with 15mm diameter steel rods 600 mm in length. Anchor bottom of fabric by folding fabric and placing fill on top. |
| | | .5 | Place specified material over geotextile to a depth of 200 mm. No equipment will be permitted on geotextile. |

END OF SECTION