

PART 1 GENERAL

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| <u>1.1 REFERENCES</u> | .1 | ASTM International |
| | .1 | ASTM D698-[07e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft;) (600kN-m/m;). |
| | .2 | CSA International |
| | .1 | CSA A23.1/A23.2-[09], Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete. |
| | .3 | U.S. Environmental Protection Agency (EPA)/Office of Water |
| | .1 | EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices. |
| <u>1.2 ACTION AND INFORMATIONAL SUBMITTALS</u> | .1 | Submit in accordance with Section [01 33 00 - Submittal Procedures]. |

PART 2 PRODUCTS

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| <u>2.1 MATERIALS</u> | .1 | As per specification section 31 23 33.01 - Excavating, Trenching and Backfilling. |
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PART 3 EXECUTION

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| <u>3.1 EXAMINATION</u> | .1 | Verification of Conditions: |
| | .1 | Examine soil report in this specification. |
| | .2 | Before commencing work verify locations of buried services on and adjacent to site. |
| | .2 | Evaluation and Assessment: |
| | .1 | Arrange with appropriate authority for relocation of buried services that |

- interfere with execution of work. Pay costs of relocating services.
- .2 Testing of materials and compaction of backfill will be carried out by testing laboratory designated by Departmental Representative.
- .3 Not later than 1 week before backfilling or filling, provide to designated testing agency, 23 kg sample of backfill materials proposed for use.
- .4 Not later than 48 hours before backfilling or filling with approved material, notify typical so that compaction tests can be carried out by designated testing agency.
- .5 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

3.2 PREPARATION

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Use 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, in accordance with requirements of authorities having jurisdiction.
 - .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.
- .2 Protection of in-place conditions:
 - .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 Departmental Representative's 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 to remain undisturbed.

.3 Removal:

- .1 Remove obsolete buried services within 2 m of foundations. Cap cut-offs.
- .2 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .3 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.
- .4 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.
- .5 Remove stumps and tree roots below footings, slabs, and paving, and to [600] mm below finished grade elsewhere.

3.3 EXCAVATION

- .1 Shore and brace excavations, protect slopes and banks and perform work in accordance with Provincial and Municipal regulations.
- .2 Topsoil stripping:
 - .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
 - .2 Strip topsoil to tall depths as required. Avoid mixing topsoil with subsoil.
 - .3 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.
 - .4 Stockpile in locations as directed by Departmental Representative.
 - .5 Dispose of topsoil as directed by Departmental Representative off site.
- .3 Excavate as required to carry out work, in

all materials met.

- .1 Do not disturb soil or rock below bearing surfaces. Notify Departmental Representative when excavations are complete.
- .2 If bearing surfaces are unsatisfactory to the Geotechnical testing firm, additional excavation will be authorized in writing and paid for as additional work.
- .3 Fill excavation taken below depths shown without Departmental Representative's written authorization with concrete of same strength as for footings.
- .4 Excavate for slabs and paving to subgrade levels.
 - .1 Remove topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

3.4 SITE QUALITY CONTROL

- .1 Fill material and spaces to be filled to be inspected and approved by Departmental Representative.

3.5 BACKFILLING

- .1 Start backfilling only after inspection and receipt of written approval of fill material and spaces to be filled from Departmental Representative.
- .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. Fill excavated areas with selected subgrade material compacted as specified for fill.
- .5 Placing:
 - .1 Place backfill, fill and basecourse material in 150 mm lifts. Add water as required to achieve specified density.
- .6 Compaction: compact each layer of material to

following densities for material to [ASTM D698]:

- .1 To underside of basecourses: 95%.
- .2 Basecourses: 100%.
- .3 Elsewhere: 90%.
- .7 Under slabs and paving:
 - .1 Use type 3 fill up to bottom of granular base courses.
 - .2 Use type 1 fill for base courses.
- .8 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.
- .9 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.
- .10 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 to ensure that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by Departmental Representative. Grade to be gradual between finished spot elevations as indicated.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Dispose of cleared and grubbed material off site daily.
- .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 recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 1 GENERAL

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| 1.1 MEASUREMENT
PROCEDURES | .1 | Excavated materials will not be measured separately. |
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| | .1 | Common Unclassified excavation quantities measured will be actual volume removed within following limits: <ul style="list-style-type: none">.1 Width for trench excavation as indicated..2 Width for excavation for structures as indicated..3 Depth from ground elevation and surface of pavement surface of sidewalk immediately prior to excavation, to elevation as indicated as directed by Departmental Representative. |
| | .2 | Rock quantities measured will be actual volume removed within following limits: <ul style="list-style-type: none">.1 Width for trench excavation as required..2 Depth from rock surface elevations immediately prior to excavation, to elevation as indicated..3 Volume of individual boulders and rock fragments will be determined by measuring three maximum mutually perpendicular dimensions. |
| | .2 | Placing and spreading of topsoil will not be measured separately. |
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| 1.2 REFERENCES | .1 | American Society for Testing and Materials International (ASTM) <ul style="list-style-type: none">.1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing..2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates..3 ASTM D422-632002, Standard Test Method for Particle-Size Analysis of Soils..4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft² ;) (600 kN-m/m² ;). |
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- .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ ;) (2,700 kN-m/m³ ;).
- .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.
 - .2 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .4 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
 - .1 Rock : solid material in excess of 1.00 m³ ; and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket . Frozen material not classified as rock. .
 - .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.
- .3 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 1 inch in any dimension.
- .4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .6 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.
- .7 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:
 - .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136 : Sieve sizes to CAN/CGSB-8.1
CAN/CGSB-8.2.
 - .2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45
 - .3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.
- .8 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

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- 1.4 SUBMITTALS
- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Quality Control: in accordance with Section 01 45 00 - Testing and Quality Control:
 - .1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.
 - .2 Submit for review by Departmental Representative proposed dewatering and heave prevention methods as described in PART 3 of this Section.
 - .3 Submit to Departmental Representative written notice at least 7 days prior to excavation work, to ensure cross sections are taken.
 - .4 Submit to Departmental Representative written notice when bottom of excavation is reached.
 - .5 Submit to Departmental Representative testing inspection results and report as described in PART 3 of this Section.
 - .3 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 clearance record from utility authority location plan of relocated and abandoned services, as required.
 - .4 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Inform Departmental Representative at least 4 weeks prior to beginning Work, of proposed source of fill unshrinkable fill materials and provide access for sampling.
 - .3 Submit 70 kg samples of type of fill specified including representative samples of excavated material.
 - .4 Ship samples prepaid to Departmental Representative, in tightly closed containers to prevent contamination and exposure to elements.
 - .5 At least 4 weeks prior to beginning Work, inform Departmental Representative

source of materials and submit samples to Departmental if used.

1.5 QUALITY ASSURANCE

- .1 Qualification Statement: submit proof of insurance coverage for professional liability.
- .2 Where Departmental Representative is employee of Contractor, submit proof that Work by Departmental Representative is included in Contractor's insurance coverage.
- .3 Submit design and supporting data at least 2 weeks prior to beginning Work.
- .4 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Newfoundland and Labrador, Canada.
- .5 Keep design and supporting data on site.
- .6 Engage services of qualified professional Engineer who is registered or licensed in Province of Newfoundland and Labrador, Canada in which Work is to be carried out to design and inspect shoring, bracing and underpinning required for Work.
- .7 Do not use soil material until written report of soil test results are reviewed and approved by Departmental Representative.
- .8 Health and Safety Requirements:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Divert excess aggregate materials from landfill to local quarry for reuse as directed by Departmental Representative.

1.7 EXISTING CONDITIONS

- .1 Examine soil report attached to this specification.

.2 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 and establish location and state of use of buried utilities and structures. Departmental Representative Engineer Consultant authorities having jurisdiction to clearly mark such locations to prevent disturbance during Work.
- .6 Confirm locations of buried utilities by careful test excavations.
- .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
- .8 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative Engineer Consultant 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.

.3 Existing buildings and surface features:

- .1 Conduct, with Departmental Representative a, 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 Type 1 and Type 2 fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:
- .1 Crushed, pit run or screened stone, gravel or sand.
- .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
- .3 Table:
- | Sieve Designation | % Passing
Type 1 | Type 2 |
|-------------------|---------------------|--------|
| 75 mm | - | 100 |
| 50 mm | - | - |
| 37.5 mm | - | - |
| 25 mm | 100 | - |
| 19 mm | 75-100 | - |
| 12.5 mm | - | - |
| 9.5 mm | 50-100 | - |
| 4.75 mm | 30-70 | 22-85 |
| 2.00 mm | 20-45 | - |
| 0.425 mm | 10-25 | 5-30 |
| 0.180 mm | - | - |
| 0.075 mm | 3-8 | 0-10 |
- .2 Type 3 fill: selected material from excavation or other sources, approved by Departmental Representative Engineer Consultant for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.
- .3 Unshrinkable fill: proportioned and mixed to provide:
- .1 Maximum compressive strength of 0.4 MPa at 28 days.
- .2 Maximum cement content of 25 kg/m³ ; with 40 % by volume fly ash replacement: to CSA-A3001, Type GU.
- .3 Minimum strength of 0.07 MPa at 24 h.
- .4 Concrete aggregates: to CSA-A23.1/A23.2.

- .5 Cement: Type GU.
- .6 Slump: 160 to 200 mm.

PART 3 EXECUTION

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| <u>3.1 TEMPORARY
EROSION AND
SEDIMENTATION
CONTROL</u> | <ul style="list-style-type: none"> .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 requirements of authorities having jurisdiction. .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. |
| <u>3.2 SITE
PREPARATION</u> | <ul style="list-style-type: none"> .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated. |
| <u>3.3 PREPARATION/
PROTECTION</u> | <ul style="list-style-type: none"> .1 Protect existing features in accordance with Section 01 10 10 - General Instructions and Enclosures and 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. |

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| 3.4 STRIPPING OF TOPSOIL | .1 | Begin topsoil stripping of areas as required after area has been cleared of brush weeds and grasses and removed from site. |
| | .2 | Strip topsoil to depths as required. |
| | .1 | Do not mix topsoil with subsoil. |
| | .3 | Stockpile in locations as directed by Departmental Representative. |
| | .1 | Stockpile height not to exceed 2 m and should be protected from erosion. |
| | .4 | Dispose of unused topsoil to location as directed by Departmental Representative off site. |
| 3.5 STOCKPILING | .1 | Stockpile fill materials in areas designated by Departmental Representative. |
| | .1 | Stockpile granular materials in manner to prevent segregation. |
| | .2 | Protect fill materials from contamination. |
| | .3 | Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies. |
| 3.6 COFFERDAMS, SHORING, BRACING AND UNDERPINNING | .1 | Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29.06 - Health and Safety Requirements Health and Safety Act for the Province of Newfoundland and Labrador. |
| | .1 | Where conditions are unstable, Departmental Representative to verify and advise methods. |
| | .2 | Construct temporary Works to depths, heights and locations as indicated or directed by Departmental Representative approved by Departmental Representative. |
| | .3 | During backfill operation: |
| | .1 | Unless otherwise indicated or directed by Departmental Representative, remove sheeting and shoring from excavations. |
| | .2 | Do not remove bracing until backfilling has reached respective levels of such bracing. |

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- .3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.
 - .4 When sheeting is required to remain in place, cut off tops at elevations as indicated.
 - .5 Upon completion of substructure construction:
 - .1 Remove cofferdams, shoring and bracing if installed.
 - .2 Remove excess materials from site and restore as directed by Departmental Representative.
- 3.7 DEWATERING
AND HEAVE
PREVENTION
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- .1 Keep excavations free of water while Work is in progress.
 - .2 Provide for Departmental Representative review approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs if required.
 - .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 Section 01 35 43 - Environmental Procedures to approved runoff areas and in manner 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.
- 3.8 EXCAVATION
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- .1 Advise Departmental Representative at least 7 days in advance of excavation operations.

- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Remove concrete masonry paving walks demolished foundations and rubble and other obstructions encountered during excavation.
- .4 Excavation must not interfere with bearing capacity of adjacent foundations.
- .5 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.
- .6 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.
- .7 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Departmental Representative.
- .8 Restrict vehicle operations directly adjacent to open trenches.
- .9 Dispose of surplus and unsuitable excavated material in approved location off site.
- .10 Do not obstruct flow of surface drainage or natural watercourses.
- .11 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .12 Notify Departmental Representative when bottom of excavation is reached.
- .13 Obtain Departmental Representative approval of completed excavation.
- .14 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Departmental Representative.
- .15 Correct unauthorized over-excavation as follows:

- .1 Fill under bearing surfaces and footings with concrete specified for footings.
- .2 Fill under other areas with Type 2 fill compacted to not less than 95 % of corrected Standard Proctor maximum dry density.
- .16 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 at least equal to undisturbed soil.
 - .2 Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.

3.9 FILL TYPES AND COMPACTION

- .1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D698.
 - .1 Exterior side of perimeter walls: use Type 3 fill to subgrade level. Compact to 95 % of corrected maximum dry density.
 - .2 Within building area: use Type 2 to underside of base course for floor slabs. Compact to 100% of corrected maximum dry density.
 - .3 Under concrete slabs: provide 150 mm compacted thickness base course of Type 1 fill to underside of slab. Compact base course to 100%.
 - .4 Place unshrinkable fill in areas as required.

3.10 BACKFILLING

- .1 Vibratory compaction equipment: Bomag plate tamper or better.
- .2 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.
- .3 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .4 Do not use backfill material which is frozen or contains ice, snow or debris.
- .5 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .6 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. Difference not to exceed 0.5 m.
 - .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 or:
 - .2 If approved by Departmental Representative, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Departmental Representative.
- .7 Place unshrinkable fill in areas as required.
- .8 Consolidate and level unshrinkable fill with internal vibrators.

3.11 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal , trim slopes, and correct defects as directed by Departmental Representative.

- .2 Replace topsoil as directed by Departmental Representative.
- .3 Reinstate lawns to elevation which existed before excavation or to new grades indicated.
- .4 Clean and reinstate areas affected by Work as directed by Departmental Representative.
- .5 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.