

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Unauthorized excavation consists of excavation below sub-grade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by NSP Construction Manager, shall be without additional compensation.
- B. Do not interrupt existing utilities serving facilities occupied by Owner or others unless permitted in writing by NSP Construction Manager and then only after arranging to provide temporary utility services according to requirements indicated.
- C. **TREE REMOVAL – If a tree is within five feet of the foundation of the home, that tree may be cut down, de-stumped, and removed from the site on a case by case basis. Additionally, limbs overhanging the home shall be cut down and removed from the site.**
- D. **The Contractor shall fill or grade around the structure(s) and or building(s) to provide proper drainage of all water from the structure(s) to prevent standing water. Further, the Contractor shall not grade the lot in a way to adversely affect the adjacent property.**
- E. **Minimize long-term environmental damage to the building lot during the construction process.**
 - 1. **Provide tree barricades around all trees to remain during construction.**
 - 2. **Where possible, limit disturbance and compaction to existing soils to the area associated with the existing driveway.**
 - 3. **Restore all areas compacted during construction to natural compacted profile.**
- F. **Reduce impacts resulting from erosion of soils by wind and water.**
 - 1. **Protect all on-site and adjacent inlets and outfalls with hay bales, silt fencing, or comparable measures.**
 - 2. **Stabilize areas that are disturbed by construction by hydro-seeding, sod, rye grass, or comparable measures.**
- G. **See NSP Green Building Practices Handbook, Section 1.1 – Erosion Control Measures and Section 1.2 Minimize Site Disturbance for further requirements.**

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.
- B. Unsatisfactory Soil: ASTM D 2487 Soil Classification Groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- C. Backfill and Fill: Satisfactory soil materials.
- D. **Sub-base Material:** Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least **90 percent** passing a **1-1/2-inch** sieve and not more than **12 percent** passing a **No. 200 sieve**.
- E. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with **100 percent** passing a **1-inch** sieve and not more than 8 percent passing a **No. 200 sieve**.
- F. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading **Size 57**; with **100 percent** passing a **1-1/2-inch** sieve and **0 to 5 percent** passing a **No. 8 sieve**.
- G. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Protect and maintain erosion and sedimentation controls during earth moving operations.
- B. Protect sub-grades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
- C. Prevent surface water and ground water from entering excavations, from ponding on prepared sub-grades, and from flooding Project site and surrounding area.
- D. Excavate to sub-grade elevations regardless of character of materials and obstructions encountered.
- E. Excavate for structures, building slabs, pavements, and walkways. Trim sub-grades to required lines and grades.
- F. Utility Trenches: Excavate trenches to indicated slopes, lines, depths, and invert elevations. Maintain **12 inches** of working clearance on each side of pipe or conduit.

1. Place, compact, and shape bedding course to provide continuous support for pipes and conduits over rock and other unyielding bearing surfaces and to fill unauthorized excavations.
 2. Place and compact initial backfill of satisfactory soil material or sub-base material, free of particles larger than **1 inch**, to a height of **12 inches** over the utility pipe or conduit. Place and compact final backfill of satisfactory soil material to final sub-grade.
- G. Plow strip or break up sloped surfaces steeper than **1 vertical to 4 horizontal** to receive fill.
- H. Proof-roll sub-grade below the building slabs and other structural areas including driveways and sidewalks with a pneumatic-tired **and** loaded 10-wheel, tandem-axle dump truck weighing **not** less than **15 tons** to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated sub-grades.
- I. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface, pulverize, moisture-condition or aerate soil, and re-compact.
- J. Place backfill and fill in layers not more than **12 inches** in loose depth at optimum moisture content. Compact each layer under structures, building slabs, pavements, and walkways to **95 percent** of maximum dry unit weight according to ASTM D 698; elsewhere to **90 percent**.
- K. Grade areas to a smooth surface to cross sections, lines, and elevations indicated. Grade lawns, walkways, and unpaved sub-grades to tolerances of plus or minus **2 inch** and pavements and areas within building lines to plus or minus **1 inch**.
- L. Under pavements and walkways, place sub-base course material on prepared sub-grades and compact at optimum moisture content to required grades, lines, cross sections, and thicknesses.
- M. Under slabs-on-grade, place drainage course on prepared sub-grade and compact to required cross section and thickness.
- N. Allow testing agency to inspect and test each sub-grade and each fill or backfill layer and verify compliance with requirements.
- O. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000