

**SECTION 31 22 00**  
**GRADING**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SECTION INCLUDES**

- A. Removal of topsoil.
- B. Rough grading the site for site structures and building pads.
- C. Finish grading.

**1.03 RELATED REQUIREMENTS**

- A. Section 31 10 00 - Site Clearing.
- B. Section 31 23 16 - Excavation.
- C. Section 31 23 23 - Fill: Filling and compaction.

**1.04 SUBMITTALS**

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

**1.05 QUALITY ASSURANCE**

- A. An independent testing agency shall perform field quality test, as specified in Section 014533 - Special Inspections
- B. Employ services of a Geotechnical Consultant, approved by Architect Engineer, for the following services:
  - 1. Develop stripping techniques best suitable to site conditions at the time of construction.
  - 2. Review and advise on size of earthmoving equipment. Verify that soils on Site will not lose strength during earthmoving operations.
  - 3. Observe site grading.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Topsoil: Friable loam.
  - 1. Graded.
  - 2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

**3.02 PREPARATION**

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

- G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- H. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

### **3.03 ROUGH GRADING**

- A. Remove subsoil and topsoil from areas to be filled or further excavated to a depth of 6", without mixing with foreign materials. Separate subsoil from topsoil.
- B. Do not remove topsoil when wet.
- C. When excavating through roots, perform work by hand and cut roots with sharp axe.
- D. See Section 31 23 23 for filling procedures.
- E. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

### **3.04 SOIL REMOVAL**

- A. Stockpile excavated topsoil on site.
- B. Stockpile excavated subsoil on site.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

### **3.05 FINISH GRADING**

- A. Before Finish Grading:
  - 1. Verify building and trench backfilling have been inspected.
  - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.
- E. Place topsoil to the following compacted thicknesses:
  - 1. Areas to be Seeded or Sodded: 4 inches minimum.
- F. Place topsoil during dry weather.
- G. Remove roots, weeds, rocks, and foreign material while spreading.
- H. Near plants spread topsoil manually to prevent damage.
- I. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- J. Lightly compact placed topsoil.
- K. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

### **3.06 TOLERANCES**

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

### **3.07 REPAIR AND RESTORATION**

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect Engineer as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

**3.08 FIELD QUALITY CONTROL**

- A. See Section 31 23 23 for compaction density testing.

**3.09 CLEANING**

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile areas to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

**END OF SECTION**

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