

SECTION 31 20 00 EARTHWORK

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes the requirements for earthwork including, but not limited to, the following:

1. Site preparation.
2. Excavation.
4. Filling and backfilling.
5. Grading.
6. Soil Disposal.

1.2 SUBMITTALS

A. Unless otherwise noted, submittals shall be made 14 days before commencing the Work specified in this Section. The following shall be submitted.

1. Import Material: The Contractor shall submit the following for each imported material a minimum of 14 days prior to delivery:
 - a. Material source(s);
 - b. Particle size analysis in accordance with ASTM C136
2. Equipment List: The Contractor shall submit a list of equipment to be utilized for the work 7 days prior to mobilization. The list shall include equipment make, model, year, tire or track dimensions, weight and other information.
3. Construction Procedures Plan: The Contractor shall submit a plan that includes, but not be limited to, material excavation, marker surveying and identification tagging, marker removal, marker collar removal, marker transportation and storage, marker re-installation, backfill processing and placement, equipment use, borrow source utilization, and protection to be provided in the event of rain, wind, heat or other potential cause of damage 14 days prior to material construction.
4. Record Drawing Information: Record Drawings including, but not limited to, drawings showing the original and final marker locations. The preconstruction survey of the markers will be submitted to the COR in draft form for use during construction.

PART 2 – PRODUCTS

2.1 MATERIALS

A. SCREENED PLANTING TOPSOIL

1. The planting topsoil shall be a loam, sandy loam, and/or sandy clay loam conforming to ASTM D 5268-07, Standard Specification for Topsoil Used for Landscaping Purposes, with pH range of 6.5 to 7.8, a minimum of 4 percent organic material content and a maximum of 10% organic material content; free of weed seeds, noxious weeds, invasive plants, stones 1 inch or larger in any dimension, foreign matter and

- other extraneous materials harmful to plant growth, including, but not limited to roots, plants, sod, stones, and clay lumps.
2. Topsoil shall not be infested with nematodes, grubs, other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens.
 3. Topsoil shall be friable and with sufficient structure to give good tilth and aeration. Continuous, air-filled, pore-space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.

PART 3 – EXECUTION

3.1 SITE PREPARATION

- A. Trees and Shrubs: Protect from damage, existing trees and shrubs which are not shown to be removed in construction area. Immediately repair damage to existing trees and shrubs by trimming, cleaning and painting damaged areas, including roots, in accordance with standard industry horticultural practice for the geographic area and plant species. Do not store building materials closer to trees and shrubs that are to remain, than the farthest extension of their limbs. If the Contractor is obstructed by tree roots within the drip-line of a standing tree that are 2 inches in diameter or greater, the Contractor shall request an inspection by the COR. The COR will inspect and determine if any roots will be pruned.
- B. Lines and Grades: With the services of a Registered Professional Land Surveyor or Registered Civil Engineer, specified in Site Survey section, the Contractor shall survey and document existing lines and grades and submit for approval new lines and grades in order to achieve grades that provide a smooth surface free from irregular surface changes. The intent here is not to change the overall contour of the gravesites but rather to eliminate any irregular surface changes. Grading shall comply with compaction requirements and grade cross sections, lines, and elevations indicated by the approved survey. Where spot grades are indicated the grade shall be established based on interpolation of the elevations between the spot grades while maintaining appropriate transition at structures and paving and uninterrupted drainage flow into inlets.

3.2 EXCAVATION

- A. The Contractor shall perform excavation of every type of material encountered within the limits of grading to the lines, grades, and elevations indicated and as specified. Grading shall be in conformance with the Site Survey Drawings and the tolerances specified in Paragraph Grade Tolerance. Excavation areas will be cleared of vegetation prior to excavation. Satisfactory excavated materials shall be transported to and placed in fill as indicated. Unsatisfactory materials encountered within the excavation shall be excavated below grade and replaced with satisfactory materials as directed. Surplus excavated material not required for fill shall be disposed offsite.

3.3 SUBGRADE PREPARATION

- A. Ground surface on which fill is to be placed shall be cleared of vegetation.

- B. The subgrade shall be shaped to lines, grades, and sections shown on the Construction Drawings, and compacted as specified. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. Existing low areas and those resulting from removal of unsatisfactory material shall be brought up to required grade with satisfactory materials, and the entire subgrade shall be shaped and compacted as specified.
- C. All subgrade areas shall be moisture conditioned and compacted to not less than 90 percent compaction in accordance with ASTM D2922.
- D. If the Contractor excavates below the lines and grades indicated on the Construction Drawings, the Contractor shall place fill to elevate these areas back to grade at no cost to the Government.
- E. The prepared subgrade surface shall be reasonably smooth, free of holes, depressions greater than 3 inch deep, or protrusion extending above the surface more than 3 inch. No overlying materials shall be placed until the subgrade has been checked and approved. The subgrade surface shall be protected and restored if damaged.

3.5 FILL AND BACKFILL

- A. Fill shall be not be dropped from a height greater than 3 feet nor excessively loaded on markers. The soil shall be placed and compacted in 4 inch deep loose lifts. The moisture content of fill placed shall be adjusted prior to placement. Each lift shall be rough graded prior to compaction. Equipment shall be operated with careful attention to protection of markers. Fill shall not be constructed on surfaces that are muddy, frozen, or contain frost.

3.6 GRADE TOLERANCE

- A. Excavation and finish grades shall be constructed to within plus or minus 0.1 foot of the indicated grades. The finished surface of the excavations and fills shall be free of depressions and shall be reasonably smooth in accordance with the grade tolerances.

3.7 DISPOSAL OF UNSUITABLE AND EXCESS EXCAVATED MATERIAL

- A. Remove from site and legally dispose trash and debris.
- B. Remove from site and legally dispose excess soil after all fill and backfill operations are completed.

3.8 CLEAN UP

- A. Upon completion of earthwork operations, clean all work areas within contract limits, remove tools, and equipment. Provide site clear, clean and free of debris. Remove all debris, rubbish, and excess material from Cemetery Property.

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