

**SECTION 31 10 00****SITE CLEARING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 02 41 00 - Demolition: Removal of built elements and utilities.
- C. Section 31 22 00 - Grading: Topsoil removal.
- D. Section 31 22 00 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- E. Section 31 23 23 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

**1.03 REFERENCE STANDARDS****1.04 QUALITY ASSURANCE**

- A. Clearing Firm: Company specializing in the type of work required.
  - 1. Minimum of 3 years of documented experience.

**1.05 PROJECT CONDITIONS**

- A. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

**PART 2 PRODUCTS****2.01 MATERIALS**

- A. Fill Material: As specified in Section 31 22 00 - Grading

**PART 3 EXECUTION****3.01 SITE CLEARING**

- A. Comply with other requirements specified in Section 01 70 00.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

**3.02 EXISTING UTILITIES AND BUILT ELEMENTS**

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

**3.03 VEGETATION**

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by construction activity, paving, lawns, and planting beds. Retain and protect trees as noted on drawings.
- B. Do not remove or damage vegetation beyond the following limits:
  - 1. 2 feet outside grading limits.
- C. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Ohio Department of Rehabilitation & Correction.

#### **3.04 DEBRIS**

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

**SECTION 31 22 00****GRADING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Removal of topsoil.
- B. Rough grading for the site and for site paving & regrading to accommodate paving.
- C. Finish grading.

**1.02 RELATED REQUIREMENTS**

- A. Section 31 10 00 - Site Clearing.
- B. Section 31 23 16 - Excavation.
- C. Section 31 23 23 - Fill: Filling and compaction.
- D. Section 32 92 19 - Seeding: Finish ground cover.

**1.03 QUALITY ASSURANCE**

- A. Perform Work in accordance with State of Ohio, Highway Department standards.
  - 1. Maintain one copy on site.

**1.04 PROJECT CONDITIONS**

- A. Protect above- and below-grade utilities that remain.
- B. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from grading equipment and vehicular traffic.

**PART 2 PRODUCTS****2.01 MATERIALS**

- A. Topsoil: Conforming to State of Ohio, Highway Department standards.
- B. Other Fill Materials: See Section 31 23 23.

**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 as indicated on the drawings.

**3.03 ROUGH GRADING**

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.

- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. See Section 31 23 23 for filling procedures.
- G. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

#### **3.04 SOIL REMOVAL**

- A. Stockpile topsoil to be re-used on site in areas directed by the Ohio Department of Rehabilitation and Correction.; remove remainder from site.
- B. Stockpiles: Use areas designated on site; pile depth not to exceed 4 feet; protect from erosion.

#### **3.05 FINISH GRADING**

- A. Before Finish Grading:
  - 1. Verify trench backfilling has 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 in areas where seeding and planting is indicated.
- F. Place topsoil where required to level finish grade.
- G. Place topsoil to nominal depth of 6 inches.
- H. Place topsoil to the following compacted thicknesses:
  - 1. Areas to be Seeded with Grass: 6 inches.
- I. Place topsoil during dry weather.
- J. Remove roots, weeds, rocks, and foreign material while spreading.
- K. Near plants spread topsoil manually to prevent damage.
- L. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- M. Lightly compact placed topsoil.

#### **3.06 TOLERANCES**

- A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 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. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

#### **3.08 CLEANING**

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

**END OF SECTION**

**SECTION 31 23 16****EXCAVATION****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Excavating for drainage trench volume below grade and paving.
- B. Trenching for utilities outside the building to utility main connections.

**1.02 RELATED REQUIREMENTS**

- A. Section 31 22 00 - Grading: Grading.
- B. Section 31 23 23 - Fill: Fill materials, filling, and compacting.

**1.03 PROJECT CONDITIONS**

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Protect lawns and other features to remain.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

**PART 2 PRODUCTS - NOT USED****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 locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.
- C. Notify utility company to remove and relocate utilities as noted on drawings.
- D. Protect bench marks, survey control points, existing structures, fences, sidewalks, and paving from excavating equipment and vehicular traffic.

**3.03 EXCAVATING**

- A. Underpin adjacent structures that could be damaged by excavating work.
- B. Excavate to accommodate construction and construction operations.
- C. Notify Jester Jones Schifer Architects of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- D. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Cut utility trenches wide enough to allow inspection of installed utilities.
- G. Hand trim excavations. Remove loose matter.
- H. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 23 23.
- I. Grade top perimeter of excavation to prevent surface water from draining into excavation.

- J. Remove excavated material that is unsuitable for re-use from site.
- K. Remove excess excavated material from site.

**3.04 PROTECTION**

- A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

**END OF SECTION**

**SECTION 31 23 23****FILL****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Filling, backfilling, and compacting for building volume below grade.
- B. Backfilling and compacting for utilities outside the building to utility main connections.
- C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

**1.02 RELATED REQUIREMENTS**

- A. Section 31 22 00 - Grading: Site grading.
- B. Section 31 23 16 - Excavation: Removal and handling of soil to be re-used.
- C. Section 03 30 00 - Cast-in-Place Concrete.

**1.03 REFERENCE STANDARDS**

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 2001 (2004).
- B. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
- C. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)); 2007.
- D. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
- E. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2007.
- F. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2008.
- G. ASTM D 2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2006.
- H. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 2005.
- I. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
- J. ASTM D 4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2005.
- K. ODOT - Ohio Department of Transportation Standards.

**1.04 DEFINITIONS**

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.
- C. Subgrade Elevations: 6 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Samples: 10 lb sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- E. Compaction Density Test Reports.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
  - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
  - 2. Prevent contamination.
  - 3. Protect stockpiles from erosion and deterioration of materials.
- C. Verify that survey bench marks and intended elevations for the Work are as indicated.

**PART 2 PRODUCTS****2.01 FILL MATERIALS**

- A. General Fill - Fill Type ODOT Item 204: Conforming to State of Ohio Highway Department standard.
- B. Concrete for Fill: Lean concrete.
- C. Granular Fill - Fill Type ODOT #57 Stone: Coarse aggregate, conforming to State of Ohio Highway Department standard.
- D. Topsoil: Conforming to State of Ohio Highway Department standard.

**2.02 SOURCE QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

**PART 3 EXECUTION****3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. See Section 31 22 00 for additional requirements.
- D. Verify structural ability of unsupported walls to support imposed loads by the fill.

**3.02 PREPARATION**

- A. Scarify subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

### 3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
  - 1. Load-bearing foundation surfaces: Fill with concrete.
  - 2. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 100 percent of maximum dry density.
  - 3. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
  - 1. Under slabs-on-grade and similar construction: 97 percent of maximum dry density.
  - 2. At other locations: 95 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.

### 3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. At Foundation Walls and Footings:
  - 1. Use Granular Fill.
  - 2. Fill up to 18 inches below finish grade elevation.
  - 3. Do not backfill against unsupported foundation walls.
  - 4. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- C. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:
  - 1. Drainage fill and geotextile fabric: Section 33 46 00.
  - 2. Cover drainage fill with granular fill.
  - 3. Fill up to subgrade elevation.
  - 4. Compact to 95 percent of maximum dry density.
- D. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches:
  - 1. Bedding: Use general fill.
  - 2. Cover with general fill.
  - 3. Fill up to subgrade elevation.
  - 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
- E. At Lawn Areas:

1. Use general fill.
  2. Fill up to 6 inches below finish grade elevations.
  3. Compact to 95 percent of maximum dry density.
- F. At French Drains:
1. Use granular fill.
  2. Fill up to 8 inches below finish grade.
  3. Compact to 95 percent of maximum dry density.
- G. Under Monolithic Paving:
1. Compact subsoil to 95 percent of its maximum dry density before placing fill.
  2. Use general fill.
  3. Fill up to 11 inches below finish paving elevation.
  4. Compact to 95 percent of maximum dry density.

### 3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

### 3.06 FIELD QUALITY CONTROL

- A. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.
- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

### 3.07 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

**END OF SECTION**