SECTION 31 10 00 - SITE CLEARING G. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 H. Grade top perimeter of excavation to prevent surface water from draining into excavation. I. Remove excavated material that is unsuitable for re—use from site. PART 1 GENERAL J. Stockpile excayated material to be re-used in area designated on site in accordance with Section 31 1.1 SUMMARY 2200. Limited area on-site may require excavated materials to be hauled off in some instances and A. This Section includes the following: should be coordinated with construction manager. 1. Protection of existing trees to remain. K. Remove excess excavated material from site. 2.Removal of trees and other vegetation. 3. Topsoil stripping and stockpiling. 3.3 FIELD QUALITY CONTROL 4. Clearing and grubbing. A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing. 5.Removing above-grade improvements B. Provide for visual inspection of load—bearing excavated surfaces before placement of foundations. 6.Removing below-grade improvements. B. Related Sections: The following sections contain requirements that relate to this Section: 1. Division 2 Section "Excavation & Fill" for excavation and fill work. 2. Division 2 Section "Seeding". 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. 1.2 QUALITY ASSURANCE A. State and local code requirements shall control the methods used to clear site and procedures for disposal of removed materials. END OF SECTION 31 23 16 B. City of O'Fallon Standards shall govern unless specifically indicated otherwise. C. Examine Contract Documents for all work required and coordinate and cooperate with others so as not to delay or interfere with the work of others. Contractor shall be responsible for obtaining a SECTION 31 23 16.13 - TRENCHING copy of the geotechnical report prepared for this project and performing all excavations or fills according to the recommendations of the report. D. Employ a licensed engineer or surveyor to stake out both horizontal and vertical control for all work PART 1 GENERAL prior to commencing any work operations. 1.1 SECTION INCLUDES 1.3 PROJECT CONDITIONS A. Backfilling and compacting for utilities outside the building to utility main connections. A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction. 1.2 RELATED REQUIREMENTS B. Protection of Existing Improvements and Utilities: Provide protection necessary to prevent damage to A. Refer to Geotechnical Report for information regarding bore hole locations and findings of subsurface existing improvements and utilities indicated to remain in place. C. Locate existing utilities with assistance of local utility companies and public agencies. B. Section 31 2200 - Grading: Site grading. D. Protect improvements on adjoining properties and on Owner's property. C. Section 31 2316 — Excavation: Building and foundation excavating. E. Restore damaged improvements to their original condition and grades, as acceptable to property D. Section 31 2323 — Fill: Backfilling at building and foundations. F. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to E. Section 33 4600 — Subdrainage: Filter aggregate and filter fabric for foundation drainage systems. remain in place, against unnecessary cutting, breaking or skinning of roots and branches, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials 1.3 PRICE AND PAYMENT PROCEDURES within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Do not run heavy equipment over tree root systems. Maintain minimum trench widths near root systems so as A. Excavating Soil Materials: to avoid unnecessary injury. 1. Measurement method: By the cubic foot G. Provide protection for roots over 1-1/2 inch diameter that are cut during construction operations. 2.Includes: Excayating to required elevations, loading and placing materials in stockpile. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on 3.Does Not Include Over-Excavation: Payment will not be made for over-excavated work nor for damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying replacement materials. out; cover with earth as soon as possible. B. General Fill: H. Repair or replace trees and vegetation to remain which are damaged by construction operations, in a 1. Measurement Method: By the cubic foot. manner acceptable to Construction Manager and Owner's Rep. 2.Includes: Excavating existing soil, stockpiling, scarifying substrate surface, placing where required, 1.4 EXISTING UTILITY INFORMATION: and compacting. A. Information on the drawings relating to existing utility lines and services is from the best sources C. Structural Fill: presently available. All such information is furnished only for information and is not guaranteed. 1. Measurement Method: By the cubic foot. Excavate test pits as required to determine exact locations of existing utilities. 2.Includes: Excavating existing soil, stockpiling, scarifying substrate surface, placing where required, and compacting. PART 2 PRODUCTS D. Granular Fill: Not applicable. 1. Measurement Method: By the cubic foot 2.Includes: Excavating existing material, stockpiling, scarifying substrate surface, placing where PART 3 EXECUTION required, and compacting. 3.1LAYOUT E. Aggregates: A. Stake out both horizontal and vertical control for all work prior to commencing work operations. 1. Measurement Method: By the cubic foot. Accurately locate and maintain location of all buildings, roads, paved areas, features, etc. Advise 2.Includes: Excavating existing material, stockpiling, scarifying substrate surface, placing where Owner's Rep. of any Contract Document discrepancies, prior to commencing work. required, and compacting. B. Maintain benchmarks, monuments and other reference points. Re—establish benchmarks if disturbed or destroyed at no cost to Owner. 1.4 DEFINITIONS 3.2 SITE CLEARING A. Finish Grade Elevations: Indicated on drawings. A. General: Locate and suitably identify trees and improvements to remain. Remove trees, shrubs, B. Subarade Elevations: Indicated on drawings. grass and other vegetation, rock/boulders, improvements, or obstructions as required to permit C. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. "Removal" includes transporting off—site and legally disposing of removed non—salvageable D. Finish Grade Elevations: 4 inches above subgrade elevations indicated on drawings, unless otherwise B. Cut minor roots and branches of trees indicated to remain in a clean and careful manner, where such roots and branches obstruct installation of new construction. C. Trees to remain within cleared areas shall be trimmed of all dead branches 1-1/2 inches or more in diameter. Cut close to bole of tree and paint with acceptable tree-wound paint. A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg D. Strip topsoil in all building areas and all areas to be regraded, resurfaced, or paved within Contract (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Limit Lines, to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material B. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006. E. Stockpile topsoil shall be free of trash, brush, rock/boulders over 1 inch diameter and other C. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2007. F. Remove heavy growths of grass from areas before stripping. G. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to D. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone prevent damage to root system. Method; 2007. H. Stockpile topsoil in storage piles in areas indicated or directed. Construct storage piles to provide E. ASTM D 1557 — Standard Test Methods for Laboratory Compaction Characteristics of Soil Using free drainage of surface water, maximum slope to be 3:1. Cover storage piles, if required, to Modified Effort (56,000 ft-lbf/ft3 (2,700 kN m/m3)); 2009. F. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber I. No topsoil shall be removed from the site, until after all topsoil requirements have been met. Balloon Method; 2008. J. Dispose of unsuitable or excess topsoil same as specified for disposal of waste material. G. ASTM D 2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil K. Clearing and Grubbing: Clear site of trees, shrubs and other vegetation, except for those indicated Classification System); 2006. to be left standing. H. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear L. Fell trees to be removed in a controlled safe manner. Trim branches from bole and cut bole into Methods (Shallow Depth); 2005. manageable sections. M. Cut off shrubs and other vegetation, to be removed, flush with original ground surface. I. ASTM D 4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; N. Completely remove stumps, roots, and other debris protruding through ground surface and in area(s) J. ASTM D 6938 - Standard Test Method for In-Place Density and Water Content of Soil and of new foundations, or paved improvement. O. Remove organic and metallic debris to a depth of 3 feet below existing grade to remain or new Soil-Aggregate by Nuclear Methods (Shallow Depth); 2010 finished grade whether lower or higher than existing grade. P. Use only hand methods for grubbing inside drip line of trees indicated to remain. Strip grass 1.6 SUBMITTALS materials under tree canopies and carefully till or scarify existing grading to a maximum depth of 1 A. See Section 01 3000 - Administrative Requirements, for submittal procedures. Q. Fill depressions caused by clearing and grubbing operations with satisfactory soil material according to B. Samples: 10 lb (4.5 kg) sample of each type of fill; submit in air-tight containers to testing the recommendations of the geotechnical report, unless further excavation or earthwork is indicated. R. Place fill material in horizontal layers not exceeding 8" inches loose depth, and thoroughly compact C. Materials Sources: Submit name of imported materials source. to a density as required per the geotechnical report. D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used. S. Removal of Improvements: Remove existing above—grade and below—grade improvements as indicated E. Compaction Density Test Reports. and as necessary to facilitate new construction. T. Remove abandoned utility poles within Contract Limit Lines. Relocate and reinstall designated utility poles. Coordinate and cooperate with local utility company. 1.7 DELIVERY, STORAGE, AND HANDLING U. Removal of abandoned underground piping or conduit interfering with construction is included under A. When necessary, store materials on site in advance of need. this Section. Record existing utility termination points before disconnecting. Close abandoned piping B. When fill materials need to be stored on site, locate stockpiles where indicated. with 8 inch thick concrete plug(s) or mortar jointed masonry bulkhead. 1. Separate differing materials with dividers or stockpile separately to prevent intermixing. V. Remove existing sidewalks, curbs, and paving, including all base material to subgrade, as required to 2. Prevent contamination. accommodate new construction, as shown on drawings. Cut existing sidewalks, curbs, and paving in neat, straight lines to provide uniform, even transition from new to adjacent existing work. Cut back 3. Protect stockpiles from erosion and deterioration of materials. existing paving a sufficient distance to permit forming and installation of new work. W. Remove, temporarily relocate during construction, and reinstall in final location street signs, mail PRODUCTS boxes, and other designated items as shown on Drawings. Coordinate the work with applicable governing authorities. Comply with all requirements concerning temporary installation and permanent 2.1 FILL MATERIALS X. Raise or lower existing catch basin, inlet and manhole structures and valve box covers to A. Refer to Section 31 2000 Earth Moving for general fill materials. accommodate new grade elevations at payed and lawn areas where indicated on Drawinas. Extend structures as required. Reuse existing catch basin, inlet and manhole frames, and covers, unless noted otherwise. 2.2 ACCESSORIES A. Geotextile Fabric: Non-biodegradable, woven fabric. 3.3 DISPOSAL OF WASTE MATERIALS A. Removal of Owner's Spoil Area: Transport non-combustible waste materials and unsuitable topsoil 2.3 SOURCE QUALITY CONTROL materials to designated spoil areas on Owner's property and dispose on—site at direction of A. See Section 01 4000 — Quality Requirements, for general requirements for testing and analysis of soil Construction Manager or as required by governing agencies having jurisdiction of this project. B. Where fill materials are specified by reference to a specific standard, test and analyze samples for 3.4 CLEANING compliance before delivery to site. A. Upon completion of site preparation work, clean areas within contract limits, remove tools, and C. Where fill materials are specified by reference to a specific standard, testing of samples for equipment. Provide site clear, clean, and free of materials and debris and suitable for site work compliance will be provided before delivery to site. D. If tests indicate materials do not meet specified requirements, change material and retest. END OF SECTION 31 10 00 E. Provide materials of each type from same source throughout the Work. **SECTION 31 23 16 - EXCAVATION** 3.1 EXAMINATION A. Verify that survey bench marks and intended elevations for the work are as indicated. Note: the geotechnical report shall be considered part of these specifications. The contractor is responsible for obtaining a copy of the report which shall be used as the basis for construction means 3.2 PREPARATION and methods. A. Identify required lines, levels, contours, and datum locations. B. See Section 31 2200 for additional requirements. 1.1 SECTION INCLUDES C. Locate, identify, and protect utilities that remain and protect from damage. A. Excavating for footings, slabs—on—grade, paving, site structures, and utilities within the building. D. Notify utility company to remove and relocate utilities. E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs 1.2 RELATED REQUIREMENTS from excavating equipment and vehicular traffic. A. Section 01 7000 - Execution and Closeout Requirements: General requirements for dewatering of F. Protect plants, lawns, rock outcroppings, and other features to remain. excavations and water control. B. Section 31 2200 - Grading: Soil removal from surface of site. C. Section 31 2200 - Grading: Grading. D. Section 31 2323 — Fill: Fill materials, filling, and compacting. A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until E. Section 31 2316.13 — Trenching: Excavating for utility trenches outside the building to utility main notified to resume work. B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored. F. Section 33 4600 — Subdrainage: Filter aggregate and filter fabric for foundation drainage systems. C. Do not interfere with 45 degree bearing splay of foundations. G. Section 01575 — Temporary Erosion and Sedimentation Control: Slope protection and erosion control. D. Cut trenches wide enough to allow inspection of installed utilities. E. Hand trim excavations. Remove loose matter. 1.3 PRICE AND PAYMENT PROCEDURES A. Excavating Soil Materials: F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling . Measurement method: By the cubic yard. 2.Includes: Excavating to required elevations, loading and removing from site. G. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. 3.Does Not Include Over-Excavation: Payment will not be made for over excavated work nor for H. Remove excavated material that is unsuitable for re—use from site. replacement materials. I. Stockpile excavated material to be re—used in area designated on site in accordance with Section 31 B. See Section 31 2323 - Fill, for measurement and payment provisions related to fill. J. Remove excess excavated material from site. 1.4 PROJECT CONDITIONS A. Verify that survey bench mark and intended elevations for the Work are as indicated. 3.4 PREPARATION FOR UTILITY PLACEMENT B. Protect plants, lawns, trees, and other features to remain. C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill. from excavating equipment and vehicular traffic. B. Compact subgrade to density equal to or greater than requirements for subsequent fill material. C. Until ready to backfill, maintain excayations and prevent loose soil from falling into excayation. PART 2 PRODUCTS - NOT USED

3.5 BACKFILLING

or spongy subgrade surfaces.

compacted depth.

PART 3

3.1 PREPARATION

EXECUTION

A. Identify required lines, levels, contours, and datum locations.

D. Do not interfere with 45 degree bearing splay of foundations.

A. Excavate to accommodate new structures and construction operations.

E. Cut utility trenches wide enough to allow inspection of installed utilities.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until

C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

B. See Section 312200 for additional requirements.

F. Hand trim excavations. Remove loose matter.

A. Backfill to contours and elevations indicated using unfrozen materials.

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

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted

H. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual

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

B. Fill up to subgrade elevations unless otherwise indicated.

grade changes. Blend slope into level areas.

I. Correct areas that are over—excavated.

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1. Thrust bearing surfaces: Fill with concrete.
     2.Other areas: Use general fill, flush to required elevation, compacted to minimum 98 percent of
      maximum dry density.
   J. Compaction Density Unless Otherwise Specified or Indicated:
    1. Under paving, slabs—on—grade, and similar construction: 100 percent of maximum dry density.
    2.At other locations: 95 percent of maximum dry density unless otherwise indicated or as directed
      by the aeotechnical engineer.
  K. Reshape and re-compact fills subjected to vehicular traffic.
 3.6 BEDDING AND FILL AT SPECIFIC LOCATIONS
  A. Use general fill unless otherwise specified or indicated.
  B. Utility Piping, Conduits, Duct Bank:
     1. Bedding: Blended aggregate 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.
   C. At Pipe Culverts:
     1. Bedding: Use general fill or as specified by the Metropolitan St. Louis Sewer District for storm and
      sanitary sewers.
     2. Place filter fabric specified in Section 33 0513 over compacted bedding.
     3. Cover with general fill.
     4. Fill up to subgrade elevation.
     5.Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
   D. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:
     1. Drainage fill and geotextile fabric: Section 33 4600.
    2.Cover drainage fill with general fill.
    3.Compact to 95 percent of maximum dry density.
  E. 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.
  A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.
  B. Top Surface of Backfilling Under Payed Areas: Plus or minus 1 inch from required elevations.
 3.8 FIFLD QUALITY CONTROL
  A. See Section 01 4000 — Quality Requirements, for general requirements for field inspection and testing.
  B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167,
  C. Evaluate results in relation to compaction curve determined by testing un-compacted material in
     accordance with ASTM D 698 ("standard Proctor"), or AASHTO T 180
   D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
  E. Frequency of Tests: as directed in the geotechnical report.
3.9 CLEANING
  A. Leave unused materials in a neat, compact stockpile.
  B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area
    to prevent standing surface water.
  C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.
                                      END OF SECTION 31 23 16.13
SECTION 31 23 23 - FILL
Note: the geotechnical report shall be considered part of these specifications. The contractor is
 responsible for obtaining a copy of the report which shall be used as the basis for construction means
and methods.
1.1 SECTION INCLUDES
  A. Filling, backfilling, and compacting for footings, slabs—on—grade, paving, site structures, and utilities
    within the building.
1.2 RELATED REQUIREMENTS
  A. Section 31 2200 - Grading: Removal and handling of soil to be re-used.
  B. Section 31 2316 — Excayation: Removal and handling of soil to be re-used.
  C. Section 33 4600 — Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.
  D. Section 01 5713 — Temporary Erosion and Sedimentation Control: Slope protection and erosion
1.3 PRICE AND PAYMENT PROCEDURES
   A. General Fill:
     1. Measurement Method: By the cubic yard.
     2.Includes: Supplying fill, stockpiling, scarifying substrate surface, placing where required, and
  B. Structural Fill:
     1. Includes: Excavating existing soil, stockpiling, scarifying substrate surface, placing where required,
1.4 REFERENCE STANDARDS
  A. ASTM D 698 — Standard Test Methods for Laboratory Compaction Characteristics of Soil Using
     Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2007.
  B. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone
   C. ASTM D 2487 — Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil
     Classification System); 2006.
1.5 DEFINITIONS
  A. Finish Grade Elevations: Indicated on drawings.
  B. Subgrade Elevations: 6 inches below finish grade elevations indicated on drawings, unless otherwise
1.6 SUBMITTALS
  A. See Section 001 3300 - Construction Submittals, for submittal procedures.
  B. Materials Sources: Submit name of imported materials source.
  C. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
  D. Compaction Density Test Reports.
1.7 DELIVERY, STORAGE, AND HANDLING
  A. Provide sufficient quantities of fill to meet project schedule and requirements.
  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
2.1 FILL MATERIALS
  A. General Fill: Subsoil excavated on—site and conforming to the following unless otherwise indicated by
     the geotechnical engineer:
     1. Low-plasticity, cohesive type.
       a. Liquid Limit: Refer to geotechnical report or directly with geotechnical engineer.
      b. Plasticity Index: Refer to geotechnical report or directly with geotechnical engineer.
     2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
     3. Conforming to ASTM D 2487 Group Symbol CL.
   B. Blended Aggregate Fill:
   C. Granular Drainage Fill: Angular crushed washed stone; open-graded, processed aggregate; free of
     shale, clay, friable material and debris; and conforming to the following:
    1. ASTM C33, Class Designation 2S, course aggregate for concrete.
      a. Minimum size: No.8 sieve; 0 to 5 percent passing.
      b. Maximum size: 3/4 inch.
  D. Sand: Natural river or bank sand; Washed; free of silt, clay, loam, friable or soluble materials, and
     1. Grade in accordance with ASTM D 2487 Group Symbol SW.
  E. Topsoil: See Section 31 2200.
2.2 ACCESSORIES
  A. Filter Fabric: Polypropylene type, black non-biodegradable, non-woven, needle punched; "ADS-6600"
     manufactured by Advanced Drainage Systems, Inc..
2.3 SOURCE QUALITY CONTROL
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compliance before delivery to site.

PART 3 EXECUTION

3.1 EXAMINATION

3.2 PREPARATION

3.3 FILLING

D. Provide materials of each type from same source throughout the Work.

A. Scarify and proof roll subgrade surface to a minimum depth of 8 inches prior to placement of new

B. Cut out any soft areas of subgrade observed during the proof roll which are not capable of proper

D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen

F. Granular / Aggregate Fill: Place and compact materials in equal continuous layers not exceeding 6

E. Maintain optimum moisture content of fill materials to attain required compaction density.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

A. Identify required lines, levels, contours, and datum locations.

A. Fill to contours and elevations indicated using unfrozen materials.

C. Employ a placement method that does not disturb or damage other work.

B. Fill up to subgrade elevations unless otherwise indicated.

B. See Section 31 2200 for additional requirements.

compaction in place. Backfill with general fill.

or spongy subgrade surfaces.

inches compacted depth.

2.Other areas: Use general fill, flush to required elevation, compacted to minimum 98 percent of maximum dry density unless otherwise directed by the geotechnical engineer. J. Compaction Density Unless Otherwise Specified or Indicated: 1. Under paving, slabs—on—grade, and similar construction: 98 percent of maximum dry density unless otherwise directed by the geotechnical engineer. 2.At other locations: 90 percent of maximum dry density unless otherwise directed by the aeotechnical enaineer. K. Reshape and re-compact fills subjected to vehicular traffic. 3.4 FILL AT SPECIFIC LOCATIONS A. Use general fill unless otherwise specified or indicated. B. Granular Fill Material, where specified and/or authorized: 1. Relative Density (ASTM D4353 and D4254): 70% 2. Minimum Percent Compaction (ASTM D698): 98% 3.Moisture Content Range, from optimum: Generally -3% to +3% (specific evaluation for each material) or as otherwise directed by the geotechnical engineer 4.If granular material is a coarse sand or gravel, is of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. 5. The gradation of a granular material may affect its stability and the moisture content required for proper compaction. Samples of all proposed fill materials should be submitted to the Geotechnical Engineer for testing and approval prior to use. C. Below Foundations: 1. Low Plasticity Cohesive soil (e.g., lean clay or sandy lean clay) 2.Minimum Percent Compaction (ASTM D698): 100% or as directed by geotechnical engineer. 3. Moisture Content Range, from optimum: -2% to +3% or as otherwise directed by the geotechnical 4. The higher degree of fill compaction below footings should extend laterally beyond the exterior edges of the perimeter footings for at least 8 inches per foot of fill thickness below the footing base D. Subgrade Under Interior Slabs on Grade: 1. Subbase: Use low plasticity cohesive soil a. Liquid limit: refer to geotechnical report or directly with geotechnical engineer b. Plasticity index: refer to geotechnical report or directly with geotechnical engineer c. Or use well graded crushed limestone. d. Depth: 12 inches. e. Compact to 95 percent of maximum dry density. 2.Granular Base: Clean, well-graded crushed stone a. Containing less than 6% passing U.S. No. 200 sieve b. Granular bases serve as leveling courses, capillary moisture breaks, help provide load distribution, and expedite construction. Care will be necessary to avoid contaminating these layers with soil prior to floor slab placement E. Subgrade Under Interior Slabs-On-Grade: 1. Scarify and recompact top 8 inches of existing subsoil to 98 percent of its maximum dry density before placing additional fill. 2.Use general fill at optimum moisture as replacement for unsatisfactory subsoil materials. 3. Fill up to subgrade elevations below capillary barrier. 4. Compact to 98 percent of maximum dry density. F. Capillary Barrier Under Interior Slabs—On—Grade: 1. Use granular drainage fill. 2.Depth: 6 inches deep. 3.Compact to 98 percent of maximum dry density. G. At Foundation Walls and Footings: 1. Use fill as directed by geotechnical engineer 2. Fill up to capillary barrier inside building line. 3. Fill to within 18 inches below finish grade outside building line. 4.Compact each lift as directed by geotechnical engineer and/or as indicated in geotechnical engineer's report 5.Do not backfill against unsupported foundation walls. 6.Backfill simultaneously on each side of unsupported foundation walls until supports are in place. H. Over Subdrainage Piping at Foundation Perimeter: 1. Use granular drainage fill and geotextile fabric: See Section 02620 for additional requirements. 2.Cover drainage fill with sand. 3. Fill to within 18 inches below finish grade elevation. 4.Compact to 95 percent of maximum dry density I. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches: 1. Bedding and Haunching Layers: Use blended aggregate 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. J. Around and Over Underground Tanks: 1. Use initial fill of sand. a. Compact to 95 percent of maximum dry density. 2.Complete with general fill. a. Compact to 95 percent of maximum dry density. K. Pavement Subgrade: 1. Low Plasticity Cohesive soil (e.g. lean clay or sandy lean clay) 2. Minimum Percent Compaction (ASTM D698): a. Upper 12 inches of pavement subgrade: 98% b. Below upper 12 inches of pavement subgrade: 95% 3. Moisture Content Range, from optimum -2% to +3%L. At Lawn Areas: 1. Use general fill. 2. Fill up to 6 inches below finish grade elevations. 3.Compact to 90 percent of maximum dry density. 4. See Section 31 2200 for topsoil placement. M. Under Monolithic Paving: 1. Scarify and recompact top 8 inches of existing subsoil to 95 percent of its maximum dry density before placing additional fill. 2.Use additional general fill as required to achieve final subgrade elevation. a. Maximum compacted depth of each lift: 8 inches. b. Compact to 95 percent of maximum dry density. 3. See Section 32 1123 for aggregate base course placed over fill. 4.Use sand leveling base under concrete sidewalks a. Compacted depth: 2 inches, minimum. b. Compact to 95 percent of maximum dry density. 3.5 TOLERANCES A. Top Surface of General Filling: Plus or minus 1 inch from required elevations. B. Top Surface of Filling Under Payed Areas: Plus or minus 1 inch from required elevations. 3.6 FIELD QUALITY CONTROL A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing. B. Perform compaction density testing on compacted fill in accordance with ASTM D1556. C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"). D. If tests indicate work does not meet specified requirements, remove work, replace and retest. E. Frequency of Tests: Comply with recommendations of geotechnical engineer. F. Proof roll compacted fill at surfaces that will be under slabs—on—grade. 3.7 CLEANING A. Remove unused materials; leave area in a clean and neat condition, properly prepared for subsequent grading operations. END OF SECTION 31 23 23 **SECTION 31 25 13 - EROSION CONTROL** PART 1 GENERAL 1.1 WORK INCLUDED A. All earth areas disturbed by grading, building excavation, or utility installations shall require erosion B. The extent of the area within which the above noted activities require limited erosion control is shown and noted on the drawings and includes but is not limited to: 1. Installation of soil erosion control devices. 2. Maintenance of erosion control. 1.2 REFERENCE SPECIFICATIONS AND STANDARD DETAILS A. See Section 01 4000 — Quality Requirements, for general requirements for testing and analysis of soil A. City of O'Fallon Erosion and Storm Water Run-Off Control Ordinance B. It is the Contractor's responsibility to obtain a copy of the governing standard specifications and B. Where fill materials are specified by reference to a specific standard, test and analyze samples for details, whether at the state, county, or local level. C. If tests indicate materials do not meet specified requirements, change material and retest. PART 2 PRODUCTS 2.1 GENERAL A. All materials shall conform to applicable portions of the Reference Specifications and Details. PART 3 EXECUTION 3.1 GENERAL A. All erosion control shall be installed and continuously maintained by the Contractor until final C. Verify sub—drainage, damp—proofing, or waterproofing installation has been inspected. acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the Construction Manager. D. Verify structural ability of unsupported walls to support imposed loads by the fill.

B. The Construction Manager or his representative will notify the Contractor in writing of any

contractor of his responsibilities to comply with all these specifications.

noncompliance with the provisions of these specifications. The Contractor shall, after receipt of such

authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the

Contractor fails or refuses to comply promptly, the Construction Manager or his representative may

extension of time or for excess costs or damaged by the Contractor unless it was later determined

issue an order stopping all or part of the work until satisfactory corrective action has been taken.

No part of the time lost due to any such stop orders shall be made the subject of a claim for

that the Contractor was in compliance. Absence of any such notification does not relieve the

C. No separate or direct payment will be made for work included under this section and the cost

thereof shall be included in the contractor's lump sum bid and alternate lump sum bids.

notice, immediately take corrective action. Such notice, when delivered to the Contractor or his

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted

H. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual

1.Load-bearing foundation surfaces: Use blended aggregate fill, flush to required bearing elevation,

grade changes. Blend slope into level areas.

compacted to 100 percent of maximum dry density.

I. Correct greas that are over-excavated



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DESCRIPTION: PROGRESS SET PERMIT SET

CITY SUBMITTAL CITY RESUBMITTAL

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10-30-18

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Specification