I. Correct areas that are over—excavated. 1. Thrust bearing surfaces: Fill with concrete. 2.Other areas: Use general fill, flush to required elevation, compacted to minimum 98 percent of J. Compaction Density Unless Otherwise Specified or Indicated by geotechnical engineer: 1. Soil under paving, slabs—on—grade, and similar construction: 95 percent of maximum dry density. 2.At other locations: 95 percent of maximum dry density unless otherwise indicated or as directed by the geotechnical 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 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 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, ASTM D2167, ASTM D3017, or ASTM D6938. 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 prepared by SCI Engineering with a date of June, 2018, 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 - Excavation: Removal and handling of soil to be re-use 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, and compacting. 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 A. General Fill: Subsoil excavated on—site and conforming to the following unless otherwise indicated by the geotechnical engineers 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 organic matter. 1. Grade in accordance with ASTM D 2487 Group Symbol SW. E, Topsoil: See Section 31 2200, 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 A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site. C. If tests indicate materials do not meet specified requirements, change material and retest. D. Provide materials of each type from same source throughout the Work. EXECUTION 3.1 EXAMINATION A. Identify required lines, levels, contours, and datum locations. B. See Section 31 2200 for additional requirements.

C. Verify sub-drainage, damp-proofing, or waterproofing installation has been inspected.

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

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

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

D. Verify structural ability of unsupported walls to support imposed loads by the fill.

compaction in place. Backfill with general fill.

or spongy subgrade surfaces.

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.

3.2 PREPARATION

3.3 FILLING

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

or spongy subgrade surfaces.

grade changes. Blend slope into level areas.

A. Excavate to accommodate new structures and construction operations.

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

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

F. Hand trim excavations. Remove loose matter.

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.

inches compacted depth. 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 grade changes. Blend slope into level areas. 1. Load—bearing foundation surfaces: Use blended aggregate fill, flush to required bearing elevation, compacted to 100 percent of maximum dry density. 2.0ther 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 geotechnical engineer. 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): 95% 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 95 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: 95% b, Below upper 12 inches of payement 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 92 percent of maximum dry density. 4, See Section 31 2200 for topsoil placement, M. Under Monolithic Paying: 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. A. Remove unused materials; leave area in a clean and neat condition, properly prepared for subsequent 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. 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 details, whether at the state, county, or local level. PART 2 PRODUCTS 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 acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the Construction Manager B. The Construction Manager or his representative will notify the Contractor in writing of any noncompliance with the provisions of these specifications. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his 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 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 extension of time or for excess costs or damaged by the Contractor unless it was later determined that the Contractor was in compliance. Absence of any such notification does not relieve the contractor of his responsibilities to comply with all these specifications. 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. 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



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(Design - Build)

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DESCRIPTION:

01/05/22 | Construction Site Plan Submittal 01/14/22 | Permit / Bid Set

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