

SITE GRADING SPECIFICATIONS:

SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

SUMMARY

This Section includes the following:

Removing above-grade improvements.

Removing below-grade improvements.

PROJECT CONDITIONS

Traffic: Conduct site-clearing operations to ensure minimum interference with the 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.

Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

Improvements on Adjoining Property: Authority for performing removal and alteration work on property adjoining Owner's property will be obtained by Owner prior to award of contract.

Extent of work on adjacent property is indicated on Drawings.

EXISTING SERVICES

General: Indicated locations are approximate; determine exact locations before commencing work.

Arrange and pay for disconnecting, removing, capping, and plugging utility services. Notify affected utility companies in advance and obtain approval before starting this work.

Place markers to indicate location of disconnected services. Identify service lines and capping locations on Project Record Documents.

PART 2 - EXECUTION

SITE CLEARING

General: Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions, as required, to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. The owner will identify any trees & shrubs to remain.

Trees indicated to remain shall have minor roots and branches cut in a clean and careful manner where such roots and branches obstruct installation of new construction.

Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to prevent damage to root system.

Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.

DISPOSAL OF WASTE MATERIALS

Burning on Owner's Property: Burning is not permitted on Owner's property.

Removal from Owner's Property: Remove waste materials and unsuitable or excess topsoil from Owner's property.

EARTHWORK

PART 1 - GENERAL

SUMMARY

This Section includes the following:

Preparing and grading subgrades for slabs-on-grade, walks, pavements, and landscaping.

Excavating and backfilling for buildings and structures.

Drainage and moisture-control fill course for slabs-on-grade.

Subbase course for walks and pavements.

Subsurface drainage backfill for walls and trenches.

Excavating and backfilling trenches within construction limits.

Excavating and backfilling for underground mechanical and electrical utilities and appurtenances.

DEFINITIONS

Excavation: consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.

Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

Borrow: Soil material obtained off site when sufficient approved soil material is not available from excavations.

Subbase Course: The layer placed between the subgrade and surface pavement or walk.

Drainage Fill: Course of washed granular material placed under slab-on-grade to cut off upward capillary flow of pore water toward slab.

Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the owner. Unauthorized excavation, as well as remedial work directed by the owner, shall be at the Contractor's expense.

Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.

Utilities include on-site underground pipes, conduits, ducts, cables, and underground services within building lines.

QUALITY ASSURANCE

Codes and Standards: Perform earthwork complying with requirements of authorities with jurisdiction.

Testing and Inspection Service: Owner will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

PROJECT CONDITIONS

Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the Owner or others except when permitted in writing by the owner and then only after acceptable temporary utility services have been provided.

PART 2 - PRODUCTS

SOIL MATERIALS

General: Provide approved borrow soil materials from off site when sufficient approved soil materials are not available from excavations.

Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW< SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.

Backfill and Fill Materials: Satisfactory soil materials.

Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, ASTM D 2940, with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

Bedding Material: Subbase materials with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a 1-1/2-inch sieve and not more than 5 percent passing a No. 8 sieve.

ACCESSORIES

Detectable Warning Tape: Polyethylene film warning tape encasing a metallic core, 6 inches wide and 4 mils thick minimum, continuously inscribed with a description of the utility shall be installed in trench above all water mains as installed for this development.

PART 3 - EXECUTION

PREPARATION

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

Provide erosion and sedimentation control measures.

DEWATERING

Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

Protect subgrades and foundation soils from softening and damage by rain or water accumulation and from freezing temperatures or frost.

EXCAVATION

Explosives: Do not use explosives.

Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of character of materials and obstructions encountered.

Excavations for structures, pavements, and walks to indicated elevations and dimensions. Widen excavations to permit placing and removing concrete formwork, installing services and other construction, and for inspections. Trim subgrades to required lines and grades to leave solid base to receive other work.

Excavate utility trenches to indicated slopes, lines, depths, and invert elevations of uniform widths to provide a maximum 12 inches of working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than the top of pipe or conduit.

Excavate and shape trench subgrade to provide uniform bearing and continuous support for pipe and conduit. Where encountering rock or other unyielding bearing surface, carry trench excavation 6 inches below invert elevation to receive bedding course.

Approval of Subgrade: When Geotechnical Engineer determines that unfrozen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed. Payment will be made according to the Contract provisions for changes in the work.

The construction site is to be maintained so that the following conditions can be avoided, but if they occur, then the Contractor shall be responsible to reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities.

Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Fill unauthorized excavations under other construction as directed by Geotechnical Engineer.

Store excavated and borrow soil materials acceptable for backfill and fill in shaped, graded, drained, and covered stockpiles. Locate stockpiles away from edge of excavations and outside drip line of remaining trees.

BACKFILLING

Backfill excavations promptly following acceptance of affected work below final grade.

Utility Trench Backfill: Place, compact, and shape bedding course to provide continuous support for pipes and conduits over rock and other unyielding bearing surfaces and to fill unauthorized excavations.

Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.

Place and compact final backfill of satisfactory soil material to final subgrade.

Coordinate backfilling with utilities testing.

Install warning tape directly above water lines, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

Fill Preparation: Plow strip or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.

When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil, and recompact to required density.

Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer to within 2 percent of optimum moisture content before compaction.

Remove and replace, or scarify and air dry, satisfactory soil material that is too wet to compact to specified density.

COMPACTION

Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Place evenly alongside structures and utilities to required elevations.

Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:

Under structures, building slabs, steps, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material to 95 percent.

Under lawn or unpaved areas, compact the top 6 inches below subgrade and each layer of backfill or fill material to 90 percent.

Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material to 95 percent.

GRADING

Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

Grade lawns, walks, and unpaved subgrades to tolerances of plus or minus 0.10 foot and pavements and areas within building lines to plus or minus 1/2 inch.

SUBBASE AND BASE COURSES

Sub base: Under pavements and walks, place sub base course material on prepared subgrades and compact at optimum moisture content to required grades, lines, cross sections, and thickness.

Place shoulders along edges of sub base to prevent lateral movement. Construct shoulders at least 12 inches wide of acceptable soil materials and compact simultaneously with each subbase layer.

Under slabs-on-grade, place drainage fill on prepared subgrade and compact to required cross sections and thickness.

FIELD QUALITY CONTROL (BY GENERAL CONTRACTOR)

Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.

Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2197 (rubber balloon method), ASTM D 2922 (nuclear method) or ASTM D 2937 (drive cylinder method), as applicable.

Footings Subgrades: Test each soil stratum to verify design bearing capacities.

Paved Areas and Building Slabs: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 2,000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.

Foundation Wall Backfill: At each compacted backfill layer, perform at least one field in-place density test for each 100 feet or less of wall length, but in no case fewer than two tests.

Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150 feet or less of trench, but in no case fewer than two tests.

When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact, and retest until obtaining required density.

PROTECTION

Repair and re-establish grades where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction.

Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

DISPOSAL

Transport surplus satisfactory soil to designated stockpiles on the Owner's property. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

**EARTHWORK NOTES:
(ENTIRE SITE OF SOUTHERNSIDE APARTMENTS)**

BULK CUT..... 69,474 + CUBIC YARD

BULK FILL..... 87,816 C.Y. (W/15% SHRINKAGE) + CUBIC YARD

18,342 C.Y. OF BORROW MATERIAL TO BE OBTAINED FROM KELLEN-BECK SITE.

THE ENGINEER HAS CALCULATED THE ABOVE QUANTITIES OF EARTHWORK TO BE REGARDED AS AN ESTIMATE OF THE BULK MOVEMENT OR REDISTRIBUTION OF SOILS ON THIS PROJECT. AS AN ESTIMATE, THESE QUANTITIES ARE INTENDED FOR GENERAL USE, AND THE ENGINEER ASSUMES NO LIABILITY FOR COST OVERRUNS DUE TO EXCESS EXCAVATED MATERIALS OR SHORTAGES OF MATERIALS AND LABOR.

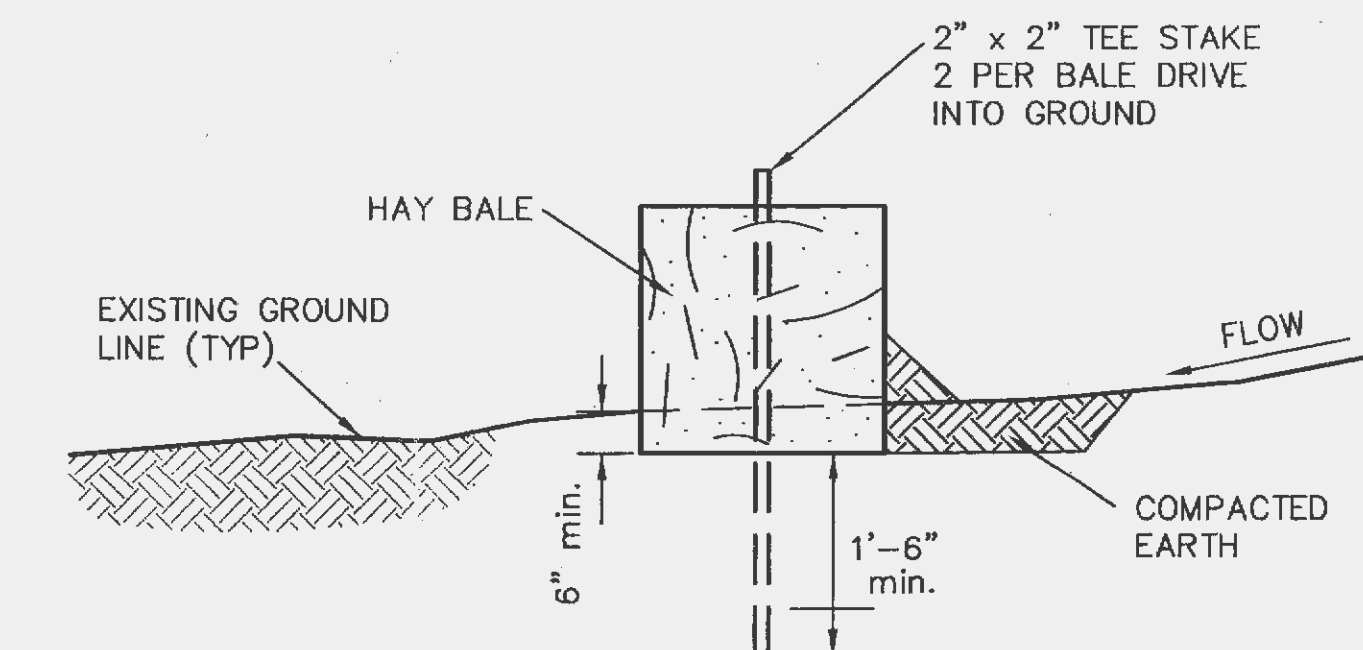
THE QUANTITIES ESTIMATED FOR EACH OF THE IMPROVEMENT ITEMS LISTED ABOVE ARE BASED UPON THE HORIZONTAL AND VERTICAL LOCATION OF THE IMPROVEMENTS AS PROPOSED ON THE SITE ENGINEERING PLANS PREPARED BY J. R. GRIMES CONSULTING ENGINEERS.

ALL QUANTITIES SHALL BE VERIFIED BY THE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL LABOR AND EQUIPMENT NECESSARY TO MOVE REQUIRED QUANTITY OF MATERIALS TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

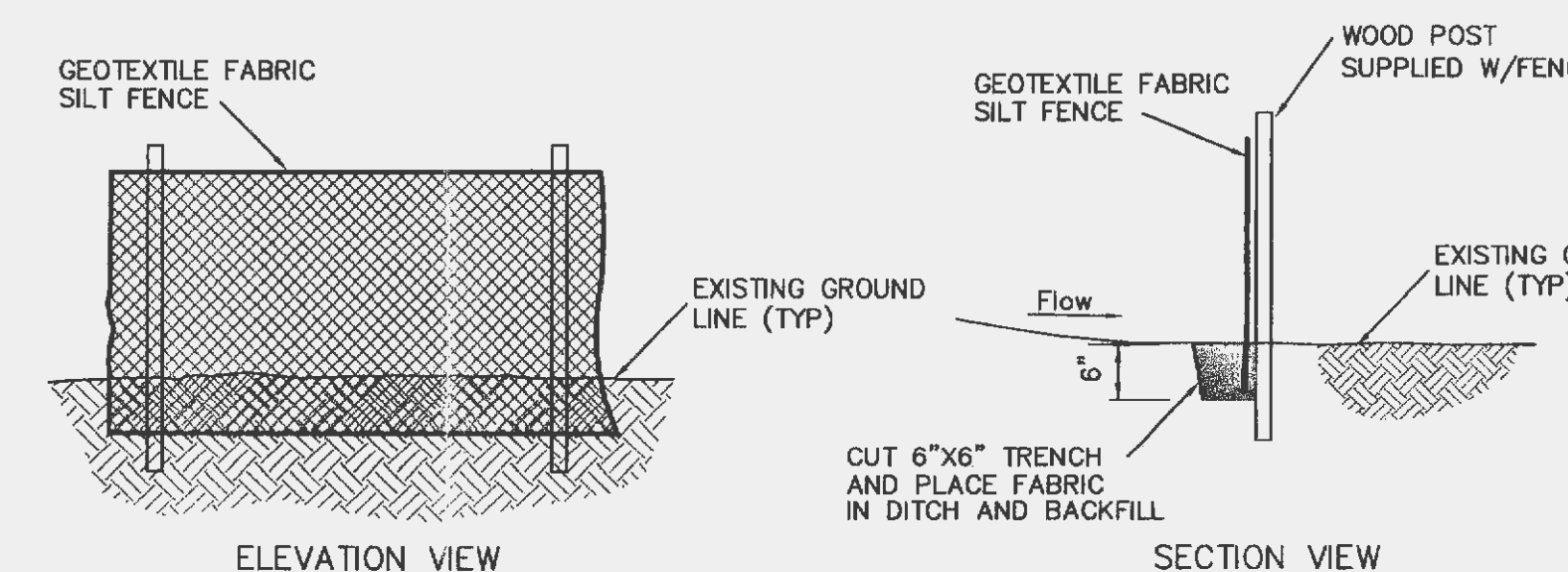
THE ENGINEER'S EARTHWORK ESTIMATE DOES NOT INCLUDE ANY OF THE FOLLOWING ITEMS REQUIRING EARTHWORK THAT MAY BE NECESSARY FOR COMPLETION OF THE PROJECT: MISCELLANEOUS UNDERGROUND CONDUITS, INCLUDING SEWER LINES AND WATER MAINS LESS THAN TWENTY-FOUR INCHES IN DIAMETER, STANDARD MANHOLES, PROCESS OR TRANSFER PIPING, ELECTRICAL OR TELEPHONE CONDUITS, BASES FOR LIGHT STANDARDS, BUILDING FOOTINGS AND FOUNDATIONS, ETC.

THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE ACTUAL SIZE OF THE FIELD EXCAVATIONS MADE FOR THE INSTALLATION OF UNDERGROUND STRUCTURES, AND AS SUCH, THE ACTUAL QUANTITIES OF EARTHWORK FROM SUCH ITEMS MAY VARY FROM THE ESTIMATE SHOWN ABOVE.

THE ENGINEER ASSUMES NO RESPONSIBILITY FOR COSTS INCURRED DUE TO REMOVAL OF UNSUITABLE MATERIAL WHICH MUST BE REMOVED FROM SITE.



SILTATION CONTROL HAY BALE DETAIL



SILTATION CONTROL SILTFENCE DETAIL

NOTE: WHEN JOINING TWO OR MORE SILT FENCES TOGETHER, TIE THE TWO END POSTS TOGETHER WITH EXISTING NYLON CORD.

CITY OF O'FALLON
COMMUNITY DEVELOPMENT DEPARTMENT
ACCEPTED FOR CONSTRUCTION
BY: [Signature] DATE: 8-8-07
PROFESSIONAL ENGINEER'S SEAL
INDICATES RESPONSIBILITY FOR DESIGN



2) 7/27/07 - REVISED DITCH DETAIL & MOVED TO SHEET C4.
1) REVISIONS PER CITY OF O'FALLON COMMENT LETTER DATED 10/13/06.

**ADDENDUM TO
SOUTHERNSIDE APARTMENTS
STORM DRAINAGE DITCH PLAN
SPECIFICATION SHEET 2**

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PROJECT # 184025-N C3
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Big Inspector

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**VEGETATIVE ESTABLISHMENT
FOR URBAN DEVELOPMENT SITES
APPENDIX A**

SEEDING RATES:

PERMANENT:

TALL FESCUE - 30 lbs./ac.
SMOOTH BROME - 20 lbs./ac.
COMBINED FESCUE @ 15 lbs./ac. AND BROME @ 10 lbs./ac.

TEMPORARY:

WHEAT OR RYE - 150 lbs./ac. (3.5 lbs. PER SQUARE FOOT)
OATS - 120 lbs./ac. (2.75 lbs. PER SQUARE FOOT)

SEEDING PERIODS:

FESCUE OR BROME - MARCH 1 TO JUNE 1
AUGUST 1 TO OCTOBER 1
WHEAT OR RYE - MARCH 15 TO NOVEMBER 1
OATS - MARCH 15 TO SEPTEMBER 15

MULCH RATES:

100 lbs. PER 1,000 sq. FEET (4,356 lbs. PER ACRE)

FERTILIZER RATES:

NITROGEN 30 lbs./ac.
PHOSPHATE 30 lbs./ac.
POTASSIUM 600 lbs./ac. ENM*

* ENM - EFFECTIVE NEUTRALIZING MATERIAL AS PER STATE EVALUATION OF QUARRIED ROCK.