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BuildingName
The Description of the Project
P00000000 0000

SPECIFICATION DIVISION 31

NUMBER SECTION DESCRIPTION

DIVISION 31 EARTHWORK
SECTION 312000 – EARTH MOVING

END OF CONTENTS TABLE

DIVISION 31 EARTHWORK
SECTION 312000 – EARTH MOVING

THIS SECTION IS FOR VERY LIMITED EXCAVATION AND BACKFILL PROJECTS. FOR BUILDING ADDITIONS AND OTHER SIGNIFICANT STRUCTURES, USE THE AIA MASTERSPEC SECTION OF SAME NUMBER AND NAME.

2/07 - SUBBASE COMPACTION CHANGED TO FROM 95% TO 98%

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Preparing sub-grades for slabs-on-grade and walks.
2. Excavating.
3. Drainage and moisture-control fill course for slabs-on-grade.
4. Sub-base course for walks.
5. Subsurface drainage backfill for walls and trenches.
6. Excavating and backfilling trenches within building lines.
7. Excavating and backfilling for underground mechanical and electrical utilities and appurtenances.

1.2 DEFINITIONS

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

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

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

B. 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 and other deleterious matter.

C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.

D. Backfill Materials: Satisfactory soil materials.

E. Sub-base Material: MDOT Class II; washed, graded sand, ASTM C 136, with 100 percent passing a 3-inch sieve, not less than 60 percent passing a 1-inch sieve, and not more than 30 percent passing a No. 100 sieve.

F. 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.

G. Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 50 sieve.

H. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and adjacent plant materials from damage caused by earthwork operations.

3.2 EXCAVATION

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot.

1. Excavations for Footings: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Excavation for Walks: Excavate surfaces under walks to indicated cross sections, elevations, and grades.
3. Excavation for Utility Trenches: Excavate trenches to indicated slopes, lines, depths, and invert elevations.
   a. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit.
   b. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit.

ALWAYS INCLUDE NEXT TWO PARAGRAPHS FOR PROJECTS REQUIRING EXCAVATION.

B. During Work activities if suspect contaminated soil, groundwater, or other unknown material is encountered contact both University of Michigan Construction Management Representative and UM OSEH Hazardous Materials and Remediation Services Program (phone no. 743-763-6973) immediately. Suspect contaminated soil may exhibit chemical or unusual odors, staining, unusual coloring, and/or contain man-made debris. Suspect contaminated groundwater may exhibit chemical or unusual odors, unusual coloring, and/or sheen.

C. Immediately cease all excavation, dewatering, transport, or disturbance of the suspect material until given direction by University of Michigan Construction Management Representative.

D. Fill unauthorized excavation under foundations by extending indicated bottom elevation of concrete foundation or footing to excavation bottom.

3.3 UTILITY TRENCH BACKFILL

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

B. Coordinate backfilling with utilities testing.

C. Place and compact final backfill of satisfactory soil material to final sub-grade.

INCLUDE BELOW FOR BACKFILLING AT FOOTING DRAINS.

3.4 SUBSURFACE DRAINAGE BACKFILL

A. Drainage Backfill: Place and compact drainage backfill of filtering material over subsurface drain, in width indicated, to within 12 inches of final sub-grade. Overlay drainage backfill with one layer of filter fabric, overlapping edges at least 6 inches.

B. Impervious Fill: Place and compact impervious fill material over drainage backfill to final sub-grade.

3.5 COMPACTION

A. Place backfill 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.

B. Place backfill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.

C. Compact soil to not less than 95 percent maximum dry density according to ASTM D 1557.

3.6 SUBBASE COURSE

A. Under walks, place sub-base course material on prepared sub-grades.

1. Compact sub-base course at optimum moisture content to required grades, lines, cross sections and thickness to not less than 98 percent of ASTM D 4254 relative density.
2. When thickness of compacted sub-base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.7 DRAINAGE FILL

A. Under slabs-on-grade, place drainage fill course on prepared sub-grade.

1. Compact drainage fill to the required cross sections and thickness.
2. When compacted thickness of drainage fill exceeds 6 inches thick place materials in equal layers, with no layer more than 6 inches thick; less than 3 inches thick when compacted.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

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

END OF SECTION 312000