

Montgomery County Public Schools Facilities Guide

DIVISION 2 - SITE WORK

**Conditions of Use/ Responsibility of Data**

These “guideline” specifications are to be used by the A/E as a base document in the development of project/site-specific Division 2 – SITE WORK specifications for Montgomery County Public Schools Construction Projects. They may or may not be complete, correct and/or appropriate for use for any given project. It is the responsibility of the A/E to review these “guideline” specifications and to edit and/or supplement them as required to ensure that they represent the full, complete, correct and code-compliant specifications required for all construction of the project to which they apply. The use of these “guideline” specifications, and/or any information herein, in no way releases the A/E from their Contractual responsibility to prepare and provide the full, complete and correct code-compliant Contract documents, plans and/or specifications required for construction.

Review and editing of these “guideline” specifications shall be performed by appropriately licensed Maryland professional engineer. Specifications are to be prepared in Microsoft Word, edited using the “Track Changes” feature of that software and submitted to MCPS electronically on a compact Disk for review.

**SECTION 02110 - BUILDING EARTHWORK**

**PART 1 - GENERAL:**

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1, specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Section specifies materials, equipment and work required to perform building earthwork operations.

1.3 TESTING AND INSPECTIONS

- A. Refer to Section 02100 "Earthwork and Grading".
- B. Earthwork procedures shall be performed in presence of Soils Engineer. Give adequate (24 hours) notice when Soils Engineer's services are required. Soils Engineer's duties will include, but not be limited to the following:
  - 1. Observation, testing, and approval of sub-grade for footings before placement of concrete.
  - 2. Observation and approval of floor sub-grade and fill placement before placement of underfloor granular base.
  - 3. Testing of proposed import fill material and verification of correlation of import material to laboratory test samples. Test results shall be forwarded to the seeding and sodding Contractor.

4. Verification of removal of sediment from sediment control basins and testing of sub-grade in basins prior to fill placement.

1.4 RELATED SECTIONS:

- A. Refer to Section 02000 "Clearing", Section 02100 "Earthwork and Grading".

1.5 CODES:

- A. Refer to Section 02100 "Earthwork and Grading".

1.6 STANDARDS:

- A. Refer to Section 02100 "Earthwork and Grading".

1.7 SUBMITTALS:

- A. Refer to Section 02100 "Earthwork and Grading" and as noted.
- B. Product Samples: Submit samples of borrowed material and structural fill material to Soils Engineer. Sample size to be fifty pounds. Number of samples to be determined by Soils Engineer.

1.8 DEFINITIONS:

- A. Refer to Section 02100 "Earthwork and Grading".

1.9 PROJECT CONDITIONS:

- A. Refer to Section 02100 "Earthwork and Grading".

1.10 CONSTRUCTION SURVEYS:

- A. General: Retain services of a registered land surveyor or professional engineer to provide horizontal and vertical alignment stakes required to perform building earthwork operations to sub-grade elevations indicated or specified, and horizontal and vertical alignment stakes required to construct footings and foundations.
- B. Earthwork Balance Conditions: Refer to Section 02100 "Earthwork and Grading".

**PART 2 - PRODUCTS:**

2.1 MATERIALS:

- A. Fill Material: ASTM D 2487, Unified Soils Classification SM or better. Liquid limit not to exceed forty (40). Plasticity Index not to exceed twenty (20). Maximum particle size to be 2-1/2 inches. Free of debris, organic materials, waste materials and frozen materials. Obtain and transport fill materials from project site or borrow areas at no increase to Contract Sum.
- B. Samples: Submit fill material samples for testing and approval to Soils Engineer. Do not place fill until written approval is obtained. Sample approval will not relieve Contractor of responsibility to have material placed conform to approved samples.

- C. Porous Fill: ASTM C 33 Coarse Aggregate, size number 467 (1-1/2 inch to No. 4), blast furnace slag prohibited.
  - 1. Size to be AASHTO M 43, size 57.
- D. Backfill Material: Refer to Section 02100 "Earthwork and Grading".

**PART 3 - EXECUTION:**

**3.1 PROTECTION AND RESTORATION:**

- A. Refer to Section 02100 "Earthwork and Grading" and as noted. Provide support systems (e.g. sheeting, shoring, sheet piling, cribbing, etc.) at no increase to Contract Sum. Protect footing, foundation and slab sub-grades, with insulating materials, to prevent frost penetration. Restore sub-grades damaged from the lack of protection. Restoration work as directed by the Soils Engineer.

**3.2 DEWATERING:**

- A. Refer to Section 02100 "Earthwork and Grading" and as noted. Perform building earthwork operations to prevent water accumulations detrimental to stability of footing and foundation sub-grades.

**3.3 EXCAVATION:**

- A. Refer to Section 02100 "Earthwork and Grading" and as noted.
- B. Foundation Excavation: Excavate to footing and foundation elevations indicated or specified. Extend excavations horizontally beyond footings and foundations to permit formwork placement and removal, support system placement and removal, foundation drainage system installation, building utility installations, waterproofing and inspection. Do not place concrete until completion of inspections, testing and approval by Soils Engineer. Trim and shape excavations by manual methods, prior to concrete placement.
- C. Slab Excavation: Excavate to slab sub-grade elevations indicated or specified. Excavate slab sub-grades to smooth and even surfaces, free of voids and depressions. Prepare exposed sub-grades as specified for paved areas, Section 02100 "Earthwork and Grading". Do not place concrete or porous fill until completion of inspection, testing and approval by Soils Engineer. Inspection, testing and approval of sub-grade shall be performed immediately prior to placement of porous fill and concrete.
- D. Below Slab Utility Excavation: Refer to Section 02200 "Utility Standards" and as noted.
  - 1. Trench width below and 12 inches above top of utility not to exceed 12-inch clearance on each side of utility.

**3.5 OVER-EXCAVATION:**

- A. Refer to Section 02100 "Earthwork and Grading" except as noted. Correct over-excavated areas as directed by the Soils Engineer or Owner's Representative.

**3.6 UNSUITABLE EARTH:**

- A. Refer to Section 02100 "Earthwork and Grading" except as noted. Soils Engineer shall determine the least costly restoration method.
  - 1. Restore excavated areas by lowering footings and foundations to bottom of excavated area.

2. Restore excavated area by backfilling with approved compacted fill material to design sub-grade elevations.
- B. Payment for unsuitable earth removal below design grade and associated restoration operations will be by Change Order.
- 3.7 EXCAVATED MATERIAL STORAGE:
- A. Refer to Section 02100 "Earthwork and Grading".
- 3.8 FILL:
- A. Refer to Section 02100 "Earthwork and Grading", except as noted.
  - B. Earth Fill: Prepare exposed sub-grades as specified for paved areas, Section 02100 "Earthwork and Grading". Place fill material in loose lifts not exceeding eight inches and at moisture content within plus or minus two percentage points of optimum moisture content, and compact to 95 percent maximum dry density. Top 18 inches below foundations and slabs shall be compacted to 98 percent maximum dry density. Density test method: ASTM D 1557.
    1. Compacted fill material shall extend at least ten feet beyond building lines for lateral support.
    2. Do not place concrete or porous fill until completion of inspection, testing and approval by the Soils Engineer. Inspection, testing and approval of sub-grade shall be performed immediately prior to placement of porous fill and concrete.
  - C. Porous Fill: Upon approval of prepared sub-grade, place porous fill in uniform lifts and compact to 70 percent relative density.
- 3.9 BACKFILL:
- A. Refer to Section 02100 "Earthwork and Grading". Place and compact backfill as specified for fill, except as noted.
  - B. Backfill excavations as promptly as work permits, but not until completion of formwork removal, foundation drainage system installation, building utility installations, waterproofing, termite treatment, trash and debris removal, support system removal, temporary and/or permanent wall bracing installation, and inspection and approval by Soils Engineer.
  - C. Exercise care in placement of backfill material adjacent to structure. Place backfill evenly and in a manner to prevent wedging action against structure. Place backfill uniformly around structure in lifts of equal elevation. Correct damage from improper backfilling operations, as directed by Soils Engineer or Owner's Representative, at no increase to Contract Sum.
  - D. Backfill placement operations to be tested and approved by Soils Engineer.
- 3.10 TESTING:
- A. Refer to Section 02100 "Earthwork and Grading" and as noted.
  - B. Foundation Sub-grade Testing: For each stratum of soil, on which foundations will be placed, conduct one test to verify required design bearing capacities. Conduct a minimum of one test beneath each wall. Subsequent verification and approval of each foundation sub-grade may be based on a visual comparison of each sub-grade with related tested strata. Additional testing shall be conducted as required by Soils Engineer.

3.11 MAINTENANCE:

- A. Refer to Section 02100 "Earthwork and Grading" and as noted.
- B. Tests, inspections, and approvals specified will be conducted in accordance with applicable Division One Sections regarding "Testing Services".

**END OF SECTION**