

LAND RECLAMATION, TOXIC DISCHARGE CONTROL CONSTRUCTION SPECIFICATION

1. SCOPE

The work shall consist of furnishing materials and installing all components necessary, for the purpose of reconstructing areas to control toxic discharges from abandoned coal mines or coal mine waste, as outlined in this specification and the drawings.

2. MATERIALS

All materials used shall conform to the quality and grade noted on the plans, set forth in Section 8, or as otherwise listed below:

a. TOPSOIL:

Soil material, suitable for final use, shall be free of all debris and rocks over six inches (6") in diameter. The contractor shall be responsible for assessing the consistency, nature, and quality of the soil material to be used. Soil testing shall be required for any material in question, of the intended use.

The moisture content of the topsoil material shall be maintained within the limits required to:

- prevent bulking or dilatance of the material under the action of the hauling and spreading equipment,
- prevent the adherence of the material to the treads and tracks of the equipment, and
- to ensure the crushing and blending of the topsoil clods into a reasonably homogeneous mass.

b. GEOTEXTILES:

Geotextile fabrics shall be used where appropriate as a means of erosion control, subsurface drainage, stabilization, or as a separator between aggregate or access road material and soil to prevent migration of soil particles from the subgrade, through the aggregate or fill material.

Geotextiles shall meet the requirements of PennDot specifications, Section 735, for the appropriate class defined in Section 212. Certification from the manufacturer shall be provided by the contractor that the geotextile meets these requirements.

c. LINERS:

Geosynthetic flexible membrane, soil dispersant, clay, and bentonite liners shall be used where appropriate as a means of controlling seepage for liquid containment.

Geosynthetic flexible membrane, soil dispersant, and bentonite liners shall meet or exceed the criteria in Standard 521, Pond Sealing or Lining.

The clay liner shall consist of the material designated in Section 8 or in the drawings. Clay material shall be tested prior to using as a liner material. The material shall be free from wood, brush, rubbish, and other matter that may decay. It should also be free from stones over two inches in diameter where compacted by hand or mechanical tampers, or over six inches in diameter where compacted by rollers or other driven equipment. Frozen material shall not be used as liner material. The method of placement and the compactive effort needed is as described in Section 8.

d. AGGREGATE:

Aggregates used for drainfill, access road material, or as part of the treatment process shall meet the requirements of PennDot Specifications, Section 703.2, Type A, Coarse Aggregate. The aggregate shall be durable and obtained

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from sources listed in PennDot Bulletin 14. The size and gradation shall be as specified in Section 8 or on the drawings.

e. **ROCK:**

Rock used for waterway and channel stabilization shall be obtained from sources listed in PennDot Bulletin 14 or as otherwise approved by the engineer. The size and gradation of rock shall comply with the requirements set forth by the National Crushed Stone Association, or as specified in Section 8 or as shown on the drawings.

Rock used for Rock fill material shall be durable and resistant to weathering and shall meet any requirements set forth in Section 8.

f. **CONCRETE:**

Portland cement used in the construction of external restraints, shall be Type I, IA, II, or IIA and conform to ASTM-C150, unless otherwise set forth in Section 8. If Type I or II is used, an air-entrainment agent shall be used.

Concrete shall have a 28-day compressive strength of 4000 psi. or greater.

All reinforcement bars shall be of grade 60 steel or higher, unless otherwise specified in Section 8 or on the drawings.

Precast concrete units shall be in conformance with PennDot specifications for such units and/or comply with ACI-525 and 533.

g. **LUMBER:**

All lumber used for external restraint purposes, shall be pressure treated. Pressure treated wood products shall be Douglas Fir, Southern Yellow Pine, or as otherwise specified in Section 8. They shall be treated with preservatives in accordance with the American Wood Preservers Association (AWPA), Standard C16 for "wood used on farms", pressure treatment. Non-CCA preservative pressure treated lumber shall be used where aquatic life is a concern.

Wood shall be graded and stamped by an agency accredited by the American Lumber Standards Committee, as meeting the required species, grade, and moisture content.

h. **PIPE:**

All pipe shall be of PVC type and shall meet the requirements of Schedule 40 (ASTM-D1785). A type of equal or greater strength may be substituted as approved by the engineer, or as otherwise stated in Section 8 or on the drawings.

3. SITE PREPERATION

All trees, brush, fences, and other debris shall be cleared so as not to interfere with the reclamation of the abandoned mine land and related discharges. All material removed by the clearing and grubbing operation shall be disposed of by either burning, chipping, off-site disposal, or any combination thereof.

Materials encountered that contain high concentrations of heavy metals must be removed and buried. These soils shall be buried to a depth below the root zone, or suitable kinds and amounts of soil amendments must be added.

All materials that are determined to have inadequate strength requirements, shall be removed from the site and replaced by suitable material with sufficient strength capabilities.

Access roads shall be constructed, if necessary, to facilitate reclamation activities. The access road shall be constructed with the required materials and methods, as specified in Section 8 or on the drawings.

4. SAFETY

All positive responses from the Pennsylvania One Call System should be shown on the drawings and the Pennsylvania One Call serial number and date noted on the plans. It is the Contractor's or Landowner's responsibility to Contact the affected utility for marking at the time of construction or earthmoving activities.

5. EARTH FILL, GRADING, AND SHAPING

Soil surfaces shall be graded to the lines or sections shown on the drawings and/or staked in the field. Earth fill material that is required to be imported to the site shall be similar to or better than, and placed at a density equal to, that of the adjacent soils; except that areas to be vegetated shall receive topsoil.

Earth fill material shall be spread in successive layers of not more than one foot (1') thick, unless otherwise specified in Section 8. Each layer shall be compacted with a minimum of two passes of the hauling and spreading equipment.

Final grading shall provide for positive drainage of surface water. All areas shall be shaped to blend with the adjacent landscape, unless otherwise specified in Section 8.

All earth fill material must have sufficient strength capabilities for the intended purpose, unless another means of stability or anchoring is applied, i.e.; external restraints.

6. EROSION AND POLLUTION CONTROL

Construction operations shall be carried out in such a manner that erosion and air and water pollution will be minimized. State and local laws concerning pollution abatement must be followed.

The runoff from the upslope watershed must be analyzed and any diversions and/or water courses shall be sized and out-letted accordingly.

7. VEGETATION

Vegetation shall be established at the locations shown on the drawings and/or staked in the field. Unless otherwise approved by the Engineer, the application of seed, soil amendments, fertilizer, and mulch shall be done by mechanical methods that ensure uniform coverage.

Soil amendments shall be specified in Section 8, or approved by the Engineer.

All seeding shall be in accordance with the Critical Area Planting Standard and Specifications (342).

8. ADDITIONAL CONDITIONS WHICH APPLY TO THIS PROJECT ARE: