

Department of Environmental Protection
Bureau of Conservation and Restoration
Watershed Restoration Section
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TECHNICAL SPECIFICATION NO. 14 - AEROBIC WETLAND AND VERTICAL FLOW POND CONSTRUCTION

14.1 SCOPE:

The work covered by this Specification consists of providing all labor, equipment and materials necessary to construct the two (2) aerobic wetlands and two (2) vertical flow ponds in accordance with this Specification and as indicated on the Drawings.

Earthwork and disposal of any excess material necessary for wetland and vertical flow pond construction shall be performed and will be paid for under Technical Specification No. 9 entitled, "Grading."

14.2 MATERIALS:

All materials shall be furnished by suppliers who are approved by the Department.

A. Spent Mushroom Substrate - The material shall be carefully selected to minimize foreign material. The spent mushroom substrate shall contain a maximum of one percent (1%) foreign material. A spent mushroom substrate supplier, Campbell's Mushrooms in Evansville, PA (Peter Johnston, 1-610-926-4101), has been identified as a potential source for this product. Alternative spent mushroom substrate suppliers may be utilized as approved by the Department.

B. Wetland Plant Material - Plant material will consist of the following:

Common Name	Botanical Name	Form	Spacing	Plants/acre
Common Cattail	Typha lattifolia	Bare Root	3 Feet	2300
Soft Rush	Juncus effuses	Bare Root	3 Feet	2300

Supplied by Donna L. Carnahan | Water Pollution Biologist

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The Contractor shall make every effort to obtain sufficient quantities of the selected wetland species. In the event a species cannot be obtained at the time of planting, subject to approval of the Department, the Contractor may add other similar wetland plant material to the mixture to secure a satisfactory stand of wetland plants, but at no additional cost to the Department

All plant material shall conform with regulations of the Department of Agriculture, Bureau of Plant Industry. Certification of purity and viability must be supplied to the Department.

Root stock shall be furnished fully tagged and delivered by separate varieties, separately packaged or bagged. No root stock shall be used unless it has been inspected and sampled under Department supervision. Plant material which has become moldy, wilted or otherwise damaged in transit or storage will not be accepted.

The time for the planting shall be selected by the Contractor who shall be responsible for securing a satisfactory stand of wetland vegetation. Root stocks shall be planted as soon as possible, after delivery, to ensure viability and success of planting.

14.3 PROCEDURE:

A. Spent Mushroom Substrate - The spent mushroom substrate for the vertical flow ponds and wetlands shall be placed at the locations and to the dimensions shown on the Drawings.

B. Wetland Planting - Water from the AMD discharge shall be directed into the treatment cells to obtain water levels within two inches (2") of the surface of the substrate layer. The water level shall be maintained prior to and during planting of root stock. The root stock shall be planted in the substrate at the spacing specified above. The species of root stock planted at each location shall be randomly selected. The root stock shall be hand planted by forming a hole, approximately two inches (2") in diameter and four inches (4") deep, placing an individual plant (root first) into the hole, and compressing the spent mushroom substrate around the plant.

After planting is complete and approval by the Department, additional AMD discharge shall be directed into the wetland cells to the required water level, which is approximately six inches (6") above the substrate.

14.4 MAINTENANCE:

The Contractor shall maintain the planted areas for a period of one month following planting by monitoring the plant material. Dislodged plants shall be returned to appropriate locations and/or replaced if damaged.

Within the one (1) year remedy guarantee period, as specified in Subsection 5.18 of the General Conditions, the Contractor shall replant in accordance with these Specifications any areas where satisfactory growth has not been obtained, in the opinion of the Department.

14.5 MEASUREMENT:

The item, "Aerobic Wetland and Vertical Flow Pond Construction," when satisfactorily completed and approved by the Department's Representative, will be measured as follows: "Spent Mushroom Substrate," will be measured by the number of cubic yards satisfactorily placed to the dimensions shown on the Drawings for the two (2) aerobic wetlands and two (2) vertical flow ponds; "Wetland Plant Material," when satisfactorily completed and approved by the Departments Representative, will be measured as a job.

14.6 PAYMENT:

This item, "Aerobic Wetland and Vertical Flow Pond Construction," will be paid for as follows:

- A. At the Contract unit price per cubic yard bid for "Spent Mushroom Substrate."
- B. At the Contract lump sum price bid for "Wetland Plant Material."

All payments shall constitute full compensation for furnishing all labor, plant, equipment and materials required to perform the work described for the particular bid item including any incidentals.