NATURAL RESOURCES CONSERVATION SERVICE

CONSTRUCTION SPECIFICATIONS

COMMERCIAL FISHPONDS

1. Scope

Work shall consist of constructing the fishpond and levees and include all clearing, excavation, fill placement, installation for pipe spillway, drains, and other features to lines, grades, and elevations as specified on the drawings and staked in the field. The location of the embankment shall be as shown on furnished drawings or as staked in the field.

2. Site Preparation

The pool and levee area shall be cleared to the extent desired and as shown on the plans. Trees shall be cut as flush with the ground as practical and burned or buried at designated locations.

Clearing of the staked foundation, spillway, and borrow area(s) shall include removal of logs, stumps, roots, sod, and other trash that would prevent a good bond between the foundation and fill material.

3. Excavation

Topsoil from foundation, emergency spillway, and borrow area(s) shall be stockpiled for spreading on the completed dam, levee, and spillway as needed to help establish vegetation.

Existing stream channels crossing the foundation area shall be deepened and widened, as necessary, to remove all stones, gravel, sand, sediment, stumps, roots, organic matter, and other objectionable material and to accommodate compaction equipment. Side slopes of the channels and other foundation surfaces shall be left no steeper than 1:1. The foundation area shall be thoroughly scarified before placement of the fill material. Moisture shall be added and soil compacted as necessary so that the first layer of fill material will be bonded to the foundation.

The cutoff trench shall be excavated to the depths, bottom width, and side slopes shown on the plans.

Excavated ponds shall be constructed to conform to the shapes, lines, and grades shown on the drawings or as staked in the field. The material excavated from the pond shall be placed so that its weight will not endanger the stability of the pond side slopes and so that it will not be washed back into the pond by rainfall.

4. Fill Placement

The material placed in the fill and levees shall be free of all sod, roots, frozen soil, stones over six inches in diameter, and other objectionable material.

Placing and spreading of the fill material shall begin at the lowest point of the foundation and brought up in approximately horizontal layers not exceeding eight inches thick. These layers shall be reasonably uniform in thickness and shall extend over the entire area of the fill. The earth hauling or compacting equipment shall be operated over each layer so that reasonable compaction of the fill material will be obtained. A minimum of 5 percent shall be added to fill and levee heights constructed with compaction equipment or having each layer covered by the wheel track of construction equipment during the fill placement process. Without compaction or wheel track coverage, 10 percent added fill and levee heights shall be required.

The distribution and gradation of materials throughout the fill shall be such that there will be no lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material. Where it is necessary to use material of varying texture and gradation, the more

impervious material shall be placed in the upstream and center portions of the fill. Construction of the fill and levee shall be undertaken only at such times when the moisture content of the fill material will permit a satisfactory degree of compaction and bonding or when moisture can be satisfactorily added and incorporated in dry soil material as it is being placed. The embankment, levees, emergency spillway, and borrow areas shall be finished to a smoothness so the surface can be readily traveled upon by farm type equipment.

Final construction shall be considered satisfactory when:

Excavation elevations are within + 0.2 foot of design grade or modified grade. Excavation slopes may be flatter than designed, but not steeper.

Fill elevations are not less than design height plus settlement. Fill above the required settlement elevation will require extra fill material to maintain side slopes within design limits.

Fill slopes may be flatter than designed, but may not be steeper, and shall be uniform throughout their length. Allowance for anticipated settlement may be considered when calculating side slopes for construction check.

Selected backfill material shall be placed around structures, pipe conduits, and drainfill or antiseep collars at about the same rate on all sides to prevent damage from unequal loading. Fill adjacent (within one foot) to these components shall be compacted to a density equivalent to that of the surrounding fill by hand tamping or by using manually-directed power tampers or plate vibrators. Care shall be taken during backfill around pipe conduit to prevent uplift of pipe. Preparation of a shaped bed with one inch of moist, loose soil supporting about one-third of pipe circumference will help ensure the pipe-to-soil contact.

Drainfill material placed next to the pipe conduit or other structural features shall be kept free of contaminating fill materials by either placing in a cleanly excavated trench or by keeping the drainfill at least one foot above the adjacent earthfill.

5. Construction Materials

Pipe conduit shall conform to appropriate American Society for Testing and Materials (ASTM) and federal specifications. Antiseep collars shall be of materials compatible with that of the pipe and shall be installed so that they are watertight. The pipe shall be installed according to the manufacturer's instructions and be firmly and uniformly bedded throughout its length to the specified line and grade shown on the drawings.

Used welded steel pipe shall be of good quality and free of pits, dents, or other items that might reduce the durability, capacity, or planned life of the structural measure.

Spillway conduit installations shall be considered satisfactory when the conduit is within + 0.2 foot of design grade, has a positive slope toward the outlet, has the required appurtenances (bands, antiseep collars, risers, cathodic protection, etc.) attached, has all surface coating damage repaired, and has adequate backfill and compaction applied.

Concrete used for antiseep collars, riser base, riser crest perimeter protection, or pipe inlet protection shall consist of a mix containing a minimum design strength of 3,000 psi at 28 days with a maximum net water content of 6.5 gallons/bag of cement. A minimum 24 hours curing time shall be allowed before fill material is placed against the concrete. Concrete shall be placed and finished in an acceptable manner. Reinforcing steel shall be placed as indicated on the plans and shall be held securely in place during concrete placement. Subgrades and forms shall be installed to line and grade, and the forms shall be mortartight and unyielding as the concrete is placed.

6. Protection

A protective cover of vegetation shall be established over all the exposed surfaces of the embankment, levees, spillway, excavation disposal, and borrow area(s). Temporary vegetation may

be used until permanent vegetation can be established. The embankment, levee, and/or spillway shall be fenced as needed to protect vegetation from livestock.

Surface drainage shall be provided around excavation disposal areas and other areas for non-erosive entry of runoff into the pond or for non-erosive disposal of runoff away from the pond embankment.

7. Measurement

Excavation volumes from core trench, foundation stripping, stream channel cleanout, etc., shall be calculated from design sections, surveyed cross sections, or other acceptable methods. Fill material in the embankment or levee shall be calculated to the neat lines of the design section and added to the excavation volume for total borrow volume needed. No additional volume will be added for settlement. Calculations will be to the nearest 1.0 cubic yard.

Measurement of conduit and conduit riser shall be the purchased length. Each antiseep collar, connecting band, riser fabrication, and anti-vortex baffle will be individually itemized and accounted for.

Concrete for the riser base, antiseep collar(s), and riser crest protection shall be measured to the neat lines of the design dimensions. Reinforcement steel, wire mesh, and any forming required will be included in payment for the concrete. Concrete will be calculated to the nearest 0.1 cubic yard.

Measurement for vegetative plantings area will cover all disturbed areas (embankment, levee, emergency spillway, borrow area, etc.). Areas will be measured to the nearest 0.1 acre.

8. Vegetation Details

Documentation will be on the approved Form KS-ECS-4.

9. Construction Details

Practice application will be documented on field sheet, Form KS-ECS-4, and other approved engineering job sheets.