

**DOCUMENTING PLANNING, DESIGN, CONSTRUCTION AND CHECKOUT OF
ENGINEERING CONSERVATION PRACTICES GUIDE**

Aquaculture Ponds, Code 397

I. References

A. Design Criteria

1. Alabama FOTG Section IV, conservation practice standard, Aquaculture Ponds, Code 397.

B. Design/Layout Surveys

1. TR-62 Engineering Layout, Notes, Staking & Calculations.
2. NEFH Part 650, Chapter 1, Engineering Surveys.

C. Computer Software Design Aids

1. NRCS Computer Program "Sites".
2. NRCS Computer Program "Winpond."
3. USDA – NRCS Hydraulics Formula.

II. Documentation

A. Preliminary Investigation

Make a preliminary investigation to determine the feasibility of the practice, considering soils, topography, water quality, water availability, structure requirements, availability of outlets, etc. Check requirements of state laws for permitting and notify landowner of his/her responsibility. In many cases a permit may be required prior to construction.

B. Engineering Surveys

The majority of commercial fishponds can be designed and constructed by combining the design survey and construction layout survey into one operation. For small jobs, record design and layout data on form SCS-ENG-28 and -29. For large complex jobs, record survey data for design, layout and construction in the engineering field book or in the electronic field book.

1. Set and describe one permanent bench mark for future reference. Bench marks to NGVD should be used if possible.
2. Make a survey of the area. The extent of the survey will be based on the complexity of the project and site conditions. For small simple jobs, a few rod readings will be adequate. For large or complex jobs and jobs with more than one pond, a detailed topographical survey will be needed. Where the topography is irregular and earth work quantity is needed, survey a sufficient number of cross sections for determining cut and fill volumes.
3. Set reference stakes for relocation of fishpond.
4. Note the location of any utilities or utility markers.

C. Design

1. Complete soils investigation report and construction recommendations including spoil placement and record on form SCS-ENG-538.
2. Perform hydrologic design using "Winpond" or other methods to establish structure elevations.

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3. Determine pond length, width and depth. Record design data on NRCS-ENG-523A (or equivalent) form AL-ENG-2, AL-ENG-3, or AL-ENG-7.
4. Design structures needed to control runoff and discharge from the pond.
5. Compute earth fill and excavation quantities and preliminary cost estimate where needed.
6. Develop engineering plans and specifications. As a minimum the plans and specifications shall include:
 - a. Location map of fishpond with topographic information.
 - b. Typical cross sections of pond showing the elevations and dimensions.
 - c. Details of all control structures including size, location, material type and elevations.
 - d. Compaction requirements for earth fill.
 - e. Disposal of any excess excavated material.
 - f. Location and type of fence, if required.
 - g. Vegetative requirements.
 - h. Location of utilities and notification requirements.
7. Develop a site specific O&M Plan for the practice.

D. Construction Layout (Excavated Ponds)

Review the plans and specifications with the landowner and contractor prior to the start of construction. Ensure the landowner/contractor thoroughly understand their responsibilities including obtaining all permits, easements, etc.

Record layout information in the engineering field book or in the electronic field book.

1. The extent of layout required will depend on site conditions, complexity of the job and the necessity of determining volume of excavation. Record layout information on form AL-ENG-2, AL-ENG-3, or AL-ENG-7 or in the engineering field book or in the electronic field book. The forms may be completed and given to the landowner for constructing the pond.
2. For excavated ponds set a sufficient number of stakes to outline the top dimensions of the pond(s). Set slope stakes, as required, to enable the contractor to excavate the pond and place the spoil to planned lines and grades.

E. Construction

Adequate site visits and checks shall be made during construction to verify that the plans and specifications are followed.

Any changes in the design must be reviewed and concurred by the landowner and shall be approved by the designer and person with appropriate engineering design job approval authority.

F. Construction Checkout (Excavated Ponds)

1. Record check-out data on forms AL-ENG-2, AL-ENG-3, AL-ENG-7, in the engineering field book, or in the electronic field book, as appropriate.
 - a. Survey at least one longitudinal and one lateral cross section of the pond at the location that represents the weakest section. Where the spoil is shaped,

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extend the cross sections from the outside toe of the spoil on one side to the outside toe of the spoil on the other side.

- b. Check constructed grades against planned grades and note difference.
 - c. Record elevations and lengths of all structures installed.
 - d. Where required, compute actual earth work quantities.
2. Ponds will be acceptable where the following conditions are met.
 - a. The top width and length are at least 97 percent of the planned dimensions.
 - b. The depth of the pond is no shallower than 0.1 foot of the planned dimension.
 - c. The excavated material placed around the pond is within + 0.5 foot of the planned spoil height and is shaped as specified in the specifications.
 - d. The as-built cross sectional area equals or exceeds the planned cross sectional area. Where unforeseen physical conditions prohibit completion of the pond as originally planned, and an alternate design that will meet specifications is possible, a new planned earth work quantity should be computed and cleared with all interested parties.
 3. If the practice meets NRCS standards and specifications, then the statement "This practice meets NRCS practice standards and specifications" shall be placed on the checkout document and signed and dated by the responsible person with appropriate level of engineering job approval authority.

G. Construction Layout and Checkout for Embankment ponds

See Pond, Code 378, Embankment Type, for construction layout and checkout requirements for embankment ponds.

H. Reporting and/or Certifying

After it has been determined and documented that the practice meets NRCS plans and specifications, it can be reported and certified. The extent of these practices to be reported is the acres of ponds constructed. The extent of the practice certified shall be the quantities used as the basis of payment.