

GUIDANCE DOCUMENT
Irrigation Pipeline, Code 430

I. References

A. Design Criteria

1. Georgia FOTG Section IV, conservation practice standard, Irrigation Pipeline, Code 430.

B. Design Procedures

1. NEH, Part 623, Irrigation.
2. NEH, Part 652, Irrigation Guide, Chapter 7, Farm Distribution Components.

C. Design/Layout Surveys

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

II. Documentation

These instructions apply to a pipeline and appurtenances installed in an irrigation system.

A. Preliminary Investigation

See NEH Part 652, Irrigation Guide, Chapter 6, Irrigation System Design and Chapter 7, Farm Distribution Components.

B. Engineering Surveys

All pipeline designs require topographic information to properly plan the location, size, quantity of all pipelines and required appurtenances. Topographic maps are optional on lands with 0.5 percent slope or flatter. Topographic data used in design shall be by one of the following methods.

1. Surveys

- a. Refer to NEFH Part 650, Chapter 1 and NRCS Technical Release 62 for methods and documentation.
- b. Set and describe a minimum of one temporary bench mark. Bench marks to NGVD should be used if possible.
- c. Profile pipeline only where summits cannot be determined visually. Record location of water supply and elevation of pump discharge pipe. Survey profile rod readings at all highs and lows and the distance between rod readings should not normally exceed 300 feet. The survey must be sufficient to locate summits and establish water management control elevations.

2. Aerial Topographic Maps

These may be used when they are in sufficient detail for all system components to be located and their elevations established within tolerances required by conservation practice standard Irrigation Pipeline, Code 430. Location of summits and control elevations on the pipeline are essential. A copy of the map must be a part of the system design.

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3. Designs Furnished by Contractors and Others

The person preparing the design for NRCS approval is not required to use NRCS survey procedures. They should be informed and understand that the NRCS design approval is based on the assumption that the survey information is accurate.

4. Note the location of any utilities or utility markers.

C. Design

1. Prepare designs in accordance with conservation practice standard Irrigation, Pipeline, Code 430.
2. Pipeline designs may be developed by plotting profiles or by computations. Good judgment must be exercised in determining whether or not profiles should be plotted. When profiles are omitted, the design must include sufficient design data to clearly show critical control points and all planned features of the pipeline. Design shall include design discharge rate, hydraulic gradient or friction losses, appurtenant structures to be installed, showing kind, number, size, location and quantities, and estimated quantity of pipe by sizes and other needed data such as pressure rating, depth of cover, manufacturer's markings, wall thickness, etc. Record all pipe sizing calculations, with references to tables, charts, and graphs used on NRCS-ENG-523A (or equivalent) or using approved computer programs.
3. Prepare engineering plans and specifications. As a minimum the plans and specifications shall include:
 - a. Complete plan layout of pipeline and appurtenances and as necessary profiles of pipeline.
 - b. Material type, size and pressure class for pipe and fittings.
 - c. Depth of cover for each diameter of pipeline.
 - d. Location, size, type and pressure class for appurtenances (drains, vents, valves, outlets, pressure relief, thrust blocks, etc.).
 - e. Pipe trench/backfill requirements.
 - f. Safety features for trenches, when applicable.
 - g. Note the location of any utilities and notification requirement.
4. Record design on form NRCS-ENG523A (or equivalent).
5. Develop a site specific O&M Plan for the practice.

D. Construction Layout

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.

1. Set a sufficient number of construction stakes needed, showing the location and depths of pipelines.
2. State location of other appurtenant structures (e.g. air release valves, thrust blocks, etc.) or furnish the necessary design information to installer.

E. Construction

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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

1. Prior to final certification of completion, obtain a copy of the written certification and guarantee furnished by the contractor to the purchaser, to be made a part of the supporting records. Where the landowner installs the pipe, the installation guarantee is not required.
2. Record construction check data on the engineering plans, in the engineering field book, or other appropriate form. Construction certification shall include the following:
 - a. Lengths and size of pipe installed. The length of pipe will be measured in the field using a chain, calibrated measuring wheel, GPS, or other equivalent method. Record pipe class, pressure rating, etc. for all pipe installed.
 - b. Size and location of all components such as air release valves, pressure release valves, thrust blocks, etc.
 - c. Pipe depth of cover. Check depths at locations least likely to pass. A minimum of one check will be made on each pipeline with a minimum of one check for each 2,000 feet of pipeline installed.
 - d. Pressure test.
3. Prepare as-built drawings showing final construction dimensions, details, etc. when changes were made during construction.
4. 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. 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 the practice to be reported is the length in feet of pipeline installed. The extent of the practice to be certified are the quantities used as the basis of payment such as pipe length by diameter, valves, etc.