NATURAL RESOURCES CONSERVATION SERVICE

DOCUMENTATION REQUIREMENTS

IRRIGATION LAND LEVELING

CODE 464

REFERENCES

Methods used in the survey, design, and construction of this standard should reference:

- Louisiana FOTG IV Conservation Practice Standard for this practice.
- NEH Part 640, Technical Release 62, Engineering Layout, Notes, Staking and Calculations
- NEH - Part 650, Engineering Field Handbook (EFH) Chapter 1 Engineering Surveys.
- National O&M Manual, Part 500
- National Engineering Handbook (NEH), Part 623, Section 15 Irrigation, Chapter 12 Land Leveling
- or the Louisiana Irrigation Guide

PRELIMINARY INVESTIGATION

A preliminary investigation shall be conducted to determine the feasibility of the practice in regards to the purpose and applicability of the conservation practice relative to the site conditions, topography, soils, cost, etc. The designer shall review the criteria in the conservation practice standard prior to the preliminary investigation and during the final design to insure the implementation of this practice addresses the intended resource concerns.

During the preliminary investigation, sufficient data must be gathered and analyzed to determine whether to proceed with the practice.

DESIGN SURVEY

Pre-Survey Field Condition. Field shall be reasonably smooth, firm, dry and free of irregularities (i.e. rows, large clods, ruts). Weathered rows no more than three inches in height are acceptable. Disking and/or planing may be required.

Design Survey. Make a complete topographic survey by the grid method or other acceptable means of data gathering to develop the topography of the site. All surveys shall be tied to temporary or permanent benchmarks (assumed or actual) that will not be damaged during construction.

DESIGN

Design in accordance with the design criteria in the conservation practice standard for this practice.

State Office approved software shall be used in the design of this practice.

Determine planned elevation and grades, cuts and fills, and volume of earth to be moved.

Prepare cut sheet, which shows the planned cuts and fills, and give to farmer or contractor for his use during the earth moving process.

PLANS AND SPECIFICATIONS

Specifications. A copy of the Conservation Practice Standard and the Construction Specifications for this practice shall be provided to the cooperator. The specifications shall provide sufficient details to facilitate a quality installation and reflect the intent of the designer.

Plans. The engineering drawings that represent the location, shape, size, and configuration of the engineering practice to be installed with sufficient detail to support a quality installation shall be provided to the cooperator. Plans shall be in accordance with policy stated in 210-V-NEM §541. As a

minimum plans shall be provided that include the following (information on LA-ENG-32, LA-ENG-33 may be sufficient):

1. Planned location of the proposed land leveling. Also benchmarks used in the design surveys shall be shown on the plan drawings.
2. A cut sheet showing the planned cuts and fills.
3. Locations of any additional borrow areas from which materials will be taken to supplement the fills required on the cut sheet.

REVIEW AND APPROVAL OF PLANS AND SPECIFICATIONS BY LANDOWNER

A copy of the Conservation Practice Standard, the Construction Specifications for this practice and project specific plans shall be reviewed and approved by the cooperator in accordance with 210-V-NEM LA501.00-80.

CONSTRUCTION LAYOUT

A sufficient number of setup/reference points (RP's) (recommend 2 RP's per 20 acres), laser alignment points and section markers shall also be provided as needed. The exact requirements will vary from contractor to contractor and the field office will have to work with the various contractors to determine what those requirements are.

CONSTRUCTION CHECK

If stakes have been set in field and a slope is planned for fields which have been leveled with operator-guided equipment, as a minimum, check the leveling for completion by taking profile elevation, adjacent to the original stakes, on each fifth row of stakes in a field. Fields which have been leveled with laser-guided equipment shall be checked by taking a minimum of 1 elevation per acre plot. Elevations shall be taken adjacent to stakes in the field in order to determine the finished slope and elevation of the field. The checker shall also determine by visual observation and /or elevations that a satisfactory job has been accomplished in the vicinity of the intersection of the diagonals. Discrepancies will dictate the need for more extensive surveys and investigation.

Permissible variation of the finished slope from the planned slopes shall be 0.10 foot, plus or minus at any point in the field. The elevation at the upper and lower ends of the field may exceed the permissible variation of 0.1 foot as long as slopes are within the allowable slopes and drainage will not be impeded. After leveling, a maximum of 10% of the area shall not be more than 0.1 foot above or below the finished grade. In no case will depressions be allowed unless they are located near the outlet where drainage can be easily achieved.

If payment is to be made on a yardage basis, and the original planned grades were changed by others after construction started, then the designer shall recalculate the yardage, based on the final plane. Federal Cost Share Payment will be made on the original yardage or recomputed yardage, whichever is less.

RECORDING DATA

Engineering field notes shall conform to the National Engineering Handbook (NEH) Part 640, Technical Release No. 62 (TR-62) Engineering Layout, Notes, Staking and Calculations.

When survey data is gathered electronically, conventional field notes shall also be recorded to capture any survey information not electronically captured. This type of information may include but not be limited to project name, practice name, purpose of survey (i.e. design, construction layout, etc.), survey party members and their assignments, benchmark descriptions and general location sketch of the project, surveyor comments regarding observations in the field relative to the conservation practice being planned or applied.

Record field notes and design data on Form LA-ENG-32, or LA-ENG-33, Land Leveling or Grading Data Sheet. For large fields the notes may be recorded in bound or loose-leaf field notebooks and design data placed on standard cross section sheets. Such cross section sheets shall be stapled to form LA-ENG-32 or LA-ENG-33. Hard copies of electronically generated survey and design data shall also

be attached to the form LA-ENG-32 or LA-ENG-33.

Check the field notes carefully to determine all specifications have been met. Date and sign statement, “This practice meets specifications.” Note any exceptions.

CERTIFYING QUANTITIES

After it has been determined and documented that the practice meets NRCS plans and specifications, it can be reported and certified. The extent of this practice to be certified for cost share payments shall be the planned cut yardage. Yardage shall not be certified in excess of that actually moved.

RECORDING COMPLETED PRACTICE

Outline area graded with solid red line on field office copy of the conservation plan map, or, if not available, on aerial photograph or overlay. (See Standard Conservation Symbols). An overlay may be used in lieu of the conservation plan map to avoid overcrowding. Number, if more than one area on the farm is graded. Show acres, and date work completed in black ink.

FILING NOTES AND RECORDS

See General Manual 120, Administrative Services; Part 408, Records; Subpart D, Exhibits; 210, Engineering; 210-11, Conservation Practices.

A hard copy of all conventional and electronic survey notes and design information shall be retained and filed in the engineering folder.

All electronic files shall also be filed in the client’s Engineering Folder of the Customer Service Toolkit.