

## Construction Specification 200 – Irrigation Land Leveling

### 1. Scope

- a) The work shall consist of excavating, transporting, and spreading earth materials to precision grades within fields as shown on the cut/fill design sheet.
- b) All work will be constructed only on land that has been irrigated 2 out of the last 5 years according to NRCS program policy.

### 2. Site Preparation

- a) All lands to be leveled shall be cleared of brush, crop residue, trash, and excessive vegetative material to the extent that such material will not inhibit earth moving operations. The land must be smoothed or floated to firm the soil and permit an accurate design and checkout survey.
- b) Except as shown on drawings, trash and brush materials shall be removed from the site and disposed of in a manner as approved by the NRCS Representative. Other waste materials may be disposed of onsite as approved by NRCS Representative.

### 3. Excavation and Fill Materials

Earth materials used for fill shall be obtained from areas within the field or other designated borrow areas marked as cut and placed in areas within the field marked as fill. Fill material shall contain no heavy sod, large rocks or other objectionable material.

### 4. Construction and Finish

- a) The land shall be leveled to the designated grades shown on the NRCS APPROVED cut/fill sheet prior to construction.
- b) Excavation and fill material for, or obtained from such structures as drainage ditches, irrigation ditches, and roadways will be planned and obtained as part of the overall leveling job, and the appropriate yardage included when balancing cuts and fills with computations submitted with design sheet for review.
- c) Export yardage for road shall be no more than the cross section of 2ft fill x 12ft top x 2:1 slopes (1.2 cy/lf) times the length along three sides of the field. See Arkansas Supplement of Chapter 6 of Part 652 of the National Engineering Handbook Irrigation Guide
- d) For single plane design with slopes of 0.0 to 0.4 ft/100ft, maximum deviation from design cuts or fill shall be + or – 0.1 foot with no reverse grades. For design slopes over 0.4 percent, maximum deviation from design cuts or fill shall be + or – 0.2 feet with no reverse grades. For maximum design slope, see 464 - Irrigation Landleveling Conservation Standard.
- e) For multi plane design, maximum slope in direction of irrigation is 0.5ft/100ft and the minimum slope in the direction of irrigation shall be 0.05ft/100ft with no reverse grades. The maximum permissible slope change is the difference between the flattest and the steepest design slope along the length of run.
- f) Fills shall be placed in layers not more than six inches thick with equipment routed for maximum compaction.
- g) Leveling operations shall not be performed during wet or frozen soil conditions that will result in excessive compaction or destruction of soil structure.
- h) Leveling shall be accomplished to the extent that water will not be ponded more than 0.10 foot in depth at any place in the designed field.
- i) If an adjustment to the plane or field boundary is needed, then a revised cut/fill sheet must be submitted to the NRCS representative and pre-approved before construction.
- j) Ditches constructed around zero grade fields shall be constructed with a depth no greater than 2' and side slopes no steeper than 2:1 and bottom width 0 ft - 6 ft. Excavation material from ditch should be used in the construction of the field border unless calculations have been done and written approval has been obtained from an NRCS Engineer for this yardage to be used in the balancing of the cut/fill of the field. See Arkansas Supplement of Chapter 6 of Part 652 of the National Engineering Handbook Irrigation Guide

### 5. Approval and Checkout

- a) After cuts and fills have been complete, the land shall be plowed or disked, and the entire area smoothed by land levers, graders or similar equipment to remove minor irregularities.
- b) A final cut/fill sheet is to be submitted to the NRCS representative for check out and certification.

### 6. Documentation

All design, construction and checkout sheets provided to NRCS should clearly show: existing grades; planned grades and cut/fill/neutral; cut/fill ratio; location of outlet(s); direction of slope; yardage per acre; export or import yardage along with how these yardages were calculated; and location of permanent bench mark.

### 7. Environmental Concerns

Construction must be completed in a manner that will minimize erosion and/or air and water pollution.