

Practice: 428 - Irrigation Ditch Lining

Scenario #1 - Concrete Lining

**Scenario Description:**

Construct quarter mile of concrete (1.5 inch in thickness) lining in an existing ditch alignment to convey water from the source of supply to a field or fields in a farm distribution system. Typical scenario includes filling the old ditch with on-site fill material, compacting, and constructing an 10 ft pad with on site fill material. This scenario does not include any check or outlets gates. A trapezoidal trencher forms the ditch (typical cross-section: 1 ft bottom, 20 inch depth including freeboard, and 1:1 side slope) and lining with concrete slip forms (total width = 6.372 ft).Resource Concerns: Insufficient water - Inefficient use of irrigation water; Soil erosion - Excessive bank erosion from streams shorelines or channels.Associated Practices: 320-Irrigation Canal or Lateral; 388-Irrigation Field Ditch; 443-Irrigation System, Surface or Subsurface Water; 533-Pumping Plant; 430-Irrigation Pipeline; 587-Structure for Water Control.

**Before Situation:**

Leaky and erosive earthen irrigation ditch.

**After Situation:**

Impervious lining prevents seepage, reduces energy use and improves water quality and irrigation efficiency.

**Feature Measure:** Volume of Concrete

**Scenario Unit::** Cubic Yard

**Scenario Typical Size:** 39

**Total Scenario Cost:** \$17,350.68

**Scenario Cost/Unit:** \$444.89

**Cost Details:**

Component Name	ID	Description	Unit	Cost	QTY	Total
<b>Equipment Installation</b>						
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yard	\$101.59	39	\$3,962.01
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$2.01	257	\$516.57
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	\$3.81	978	\$3,726.18
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	\$47.69	80	\$3,815.20
<b>Labor</b>						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$19.35	32	\$619.20
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$21.53	80	\$1,722.40
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$40.55	32	\$1,297.60
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$211.44	8	\$1,691.52