

Practice: 443 - Irrigation System, Surface and Subsurface

Scenario: #1 - Flood Floor Irrigation

Scenario Description:

The scenario consists of a concrete floor and under floor water distribution system. The plants receive water from the flooded floor through the root zone. Only needed water is taken up by the soil medium. After irrigation completed all water is cycled to the holding tank and is reused for the next irrigation cycle. For pumps - use 533 - Pumping Plant , for piping use 430 - Irrigatin Pipeline. Based on flood floor design.

Before Situation:

The greenhouse plants are watered by hand or by sprinkler system. Water drips onto the floor and sinks into the earthen floor, runs off or evaporates. Water is lost to the plants and can become contaminated with fertilizers or pesticides.

After Situation:

Greenhouse irrigation water is supplied by a Flood-Floor irrigation system. Water is taken up by the soil medium. All remaining water is recycled for reuse. No water is wasted or contaminated.

Scenario Feature Measure: Square foot of flooded area

Scenario Unit: Square Foot

Scenario Typical Size: 21,600

Scenario Cost: \$92,767.53

Scenario Cost/Unit: \$4.29

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Micro Irrigation, chemical injection equipment	1987	Chemical Injector Pump, plus chemigation check valve, injector ports, and appurtenances, Installation included.	Each	\$1,419.30	1	\$1,419.30
Concrete, CIP, slab on grade, reinforced	37	Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$158.17	300	\$47,451.00
Labor						
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	\$24.48	128	\$3,133.44
Skilled Labor	230	Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc.	Hour	\$39.49	48	\$1,895.52
Materials						
Micro Irrigation, screen filter, < 100 gpm	1617	Screen filter for Micro Irrigation used in small systems. Includes filter. No controls are included or needed.	Each	\$46.31	1	\$46.31
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	\$1,277.01	2	\$2,554.02
Tank, Float Valve Assembly	1077	Float Valve, Stem, Swivel, Float Ball	Each	\$23.94	1	\$23.94
Tank, Poly enclosed Storage, 300-1000 gal	1074	Water storage tanks. Includes materials and shipping only.	Gallon	\$0.89	14000	\$12,460.00
Pipe, PVC, 8", SCH 40	981	Materials: - 8" - PVC - SCH 40 - ASTM D1785	Foot	\$9.92	2125	\$21,080.00
Pipe, PVC, 6", SCH 40	980	Materials: - 6" - PVC - SCH 40 - ASTM D1785	Foot	\$6.76	400	\$2,704.00

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Scenario: #2 - Flood (Ebb and Flow) Bench Irrigation

Scenario Description:

The scenario consists of an aluminum flood bench system. The plants receive water from the flooded bench through the root zone. Only needed water is taken up by the soil medium. After irrigation completed all water is cycled to the holding tank and is reused for the next irrigation cycle. For pumps - use 533 - Pumping Plant, for holding tank use 436 - Irrigation Reservoir, for piping use 430 - Irrigation Pipeline. The component includes the piping and manifold distribution system for the benches. Also includes the return piping to the holding tank.

Before Situation:

The greenhouse plants are watered by hand or by sprinkler system. Water drips onto the floor and sinks into the earthen floor, runs off or evaporates. Water is lost to the plants and can become contaminated with fertilizers or pesticides.

After Situation:

Greenhouse plants are irrigated with an aluminum flood bench (Ebb and Flow) system. The plants receive water from the flooded bench through the root zone. Water is taken up by the soil medium. All remaining water is recycled for reuse. No water is wasted or contaminated.

Scenario Feature Measure: Square foot of bench installed

Scenario Unit: Square Foot

Scenario Typical Size: 2,000

Scenario Cost: \$9,657.01

Scenario Cost/Unit: \$4.83

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Irrigation Flood Bench system	2231	Sliding benches or troughs used for potted plant irrigation. Distribution system is included in benches. Includes materials, labor, and equipment costs.	Square Foot	\$4.19	2000	\$8,380.00
Materials						
Micro Irrigation, control valves and timers	1485	Automatic controller and timer, to turn on and off the sets for micro irrigation, installation and valves. Based on control unit, not number of valves controlled.	Each	\$1,277.01	1	\$1,277.01