

Practice: 516 - Livestock Pipeline

Scenario: #2 - Small Diameter, ≤ 2 inch (KS/NE)

Scenario Description:

Description: The 1,500 foot 1 1/4" PE pipeline installed at a depth of 48" will meet the needs of domestic animals. This type of installation is only appropriate in the warmer climate of the northern plains region (KS & NE). This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: fittings, anchors, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

Before Situation:

Inadequate water supply for domestic animals located on grazed range, pasture, or grazed forest in the warmer climate of the northern plains region (KS & NE).

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the NE and KS (warmer climate). The 1,500 feet of 1 1/4" diameter PE pipe will be installed below ground at a depth of 48" to 60" to meet the water quantity requirements of domestic animals.

Scenario Feature Measure: Length of Pipe Installed

Scenario Unit: Foot

Scenario Typical Size: 1,500

Scenario Cost: \$4,062.88

Scenario Cost/Unit: \$2.71

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Trenching, Pipeline Plowing	1096	Includes equipment and labor for plowing small diameter lines in common earth (< 3")	Foot	\$1.11	1500	\$1,665.00
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	\$18.99	8	\$151.92
Materials						
Pipe, PE, 1 1/4", DR 9	998	Materials: - 1 1/4" - PE - 160 psi - ASTM D3035 DR 9	Foot	\$1.02	1650	\$1,683.00
Freeze Proof Hydrant, ≤ 3' Bury	240	Freeze Proof Hydrant, 3 foot or less bury. Materials only.	Each	\$45.52	1	\$45.52
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	2	\$517.44

Practice: 516 - Livestock Pipeline

Scenario: #4 - Large Diameter, 2.5-8 inch

Scenario Description:

Description: The 5,000 feet of 3" PVC pipeline installed at a depth of 72" will meet the needs of domestic animals. This type of installation is appropriate in the the northern plains region. This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains region (ND & SD). The 5,000 feet of 3" diameter PVC pipe will be installed below ground at a depth of greater than 60" to meet the water quantity requirements of domestic animals.

Scenario Feature Measure: Length of Pipe Installed

Scenario Unit: Foot

Scenario Typical Size: 5,000

Scenario Cost: \$20,328.88

Scenario Cost/Unit: \$4.07

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Trencher, 8"	936	Equipment and power unit costs. Labor not included.	Hour	\$90.21	32	\$2,886.72
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.65	32	\$724.80
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	\$18.99	60	\$1,139.40
Materials						
Freeze Proof Hydrant, ≤ 3' Bury	240	Freeze Proof Hydrant, 3 foot or less bury. Materials only.	Each	\$45.52	1	\$45.52
Pipe, PVC, 3", SCH 40	977	Materials: - 3" - PVC - SCH 40 - ASTM D1785	Foot	\$2.73	5500	\$15,015.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	2	\$517.44

Practice: 516 - Livestock Pipeline

Scenario: #5 - Small Diameter, backhoe

Scenario Description:

Description: The 2,640 feet 2" PVC pipeline installed at a depth of 60" in rocky conditions to meet the needs of domestic animals. Trencher installation is not possible due to site conditions. This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, expansion joints, anchors, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains. The 2,640 feet of 2" diameter PVC pipe will be installed in rocky conditions at a depth of 60" or more to meet the water quantity requirements of domestic animals.

Scenario Feature Measure: Length of Pipe Installed

Scenario Unit: Foot

Scenario Typical Size: 2,640

Scenario Cost: \$13,221.18

Scenario Cost/Unit: \$5.01

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$56.19	80	\$4,495.20
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	\$18.99	80	\$1,519.20
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.65	80	\$1,812.00
Materials						
Freeze Proof Hydrant, ≤ 3' Bury	240	Freeze Proof Hydrant, 3 foot or less bury. Materials only.	Each	\$45.52	1	\$45.52
Earthfill Material, purchased, common	2060	Purchased earthfill materials includes both silt or clay. Material only.	Cubic Yard	\$19.39	50	\$969.50
Pipe, PVC, 2", SCH 40	976	Materials: - 2" - PVC - SCH 40 - ASTM D1785	Foot	\$1.33	2904	\$3,862.32
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	2	\$517.44

Practice: 516 - Livestock Pipeline

Scenario: #7 - Boring, ≤ 3 inch diameter

Scenario Description:

Description: 200 feet of 2" PVC pipeline installed by boring through road bed or under streams to meet the needs of domestic animals. Typical trencher or plowing installation is not possible due to site disturbance or environmental concerns. This item includes installation, all materials, appurtenances, and labor required to construct and install the pipeline. Appurtenances include: couplings, fittings, expansion joints, anchors, thrust blocks, gate valves, air release valves, drain valve, and pressure relief valve, and are included in the cost of pipe material. Revegetation is not included.

Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

Associated Practices: Critical Area Planting (342), Pumping Plant (533), Watering Facility (614), and Water Harvesting Catchment (636), Spring Development (574), and Prescribed Grazing (528).

Before Situation:

Water supplies need to be conveyed through pipelines for use by livestock or wildlife. Resource Concerns: Inadequate Livestock Water, Inefficient Energy Use.

After Situation:

Pipeline(s) convey and/or distribute water to storage and/or watering facilities, for use by livestock or wildlife. Pipeline will supply adequate water for domestic animals on grazed range, pasture, or grazed forest in the northern plains. The 200 feet of 2" diameter PVC pipe will be installed under roads or streams at a depth of 60" or more to avoid unnecessary disturbance and to meet the water quantity requirements of domestic animals.

Scenario Feature Measure: Length of Pipe Installed

Scenario Unit: Linear Foot

Scenario Typical Size: 200

Scenario Cost: \$9,871.44

Scenario Cost/Unit: \$49.36

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Horizontal Boring, ≤ 3" diameter	1131	Includes equipment, labor and setup.	Foot	\$45.44	200	\$9,088.00
Materials						
Pipe, PVC, 2", SCH 40	976	Materials: - 2" - PVC - SCH 40 - ASTM D1785	Foot	\$1.33	200	\$266.00
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.72	2	\$517.44