

Practice: 606 - Subsurface Drain

Scenario: #1 - <= 5in CPP

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a trencher. Scenario describes the construction 2,000 feet of 5-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) grassed waterways have a high failure rate due to the prolonged wetness that prohibits plant germination and/or drowns new growth.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, allowing for sufficient aeration to allow vegetation to establish. Gully erosion and sediment transport are minimized by established vegetation, a direct result of removing excess water from the soil profile. Plant stress due to excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due to increased erosion control.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$4,164.03

Scenario Cost/Unit: \$2.08

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Equipment Installation

| | | | | | | |
|-----------------------------|----|--|------|--------|------|------------|
| Trenching, Earth, 12" x 48" | 53 | Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling | Foot | \$1.26 | 2000 | \$2,527.27 |
|-----------------------------|----|--|------|--------|------|------------|

Mobilization

| | | | | | | |
|--------------------------------|------|---|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |
|--------------------------------|------|---|------|----------|---|----------|

Materials

| | | | | | | |
|-----------------------------------|------|--|------|--------|------|------------|
| Pipe, HDPE, 5", PCPT, Single Wall | 1271 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 5" diameter - ASTM F405. Material cost only. | Foot | \$0.69 | 2000 | \$1,385.14 |
|-----------------------------------|------|--|------|--------|------|------------|

Practice: 606 - Subsurface Drain

Scenario: #2 - 6in CPP

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a trencher. Scenario describes construction of 2,000 feet of 6-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 - Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) grassed waterways have a high failure rate due to the prolonged wetness that prohibits plant germination and/or drowns new growth.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, allowing for sufficient aeration to allow vegetation to establish. Gully erosion and sediment transport are minimized by established vegetation, a direct result of removing excess water from the soil profile. Plant stress due to excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due to increased erosion control.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$5,041.75

Scenario Cost/Unit: \$2.52

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Equipment Installation

| | | | | | | |
|-----------------------------|----|--|------|--------|------|------------|
| Trenching, Earth, 12" x 48" | 53 | Trenching, earth, 12" wide x 48" depth, includes equipment and labor for trenching and backfilling | Foot | \$1.26 | 2000 | \$2,527.27 |
|-----------------------------|----|--|------|--------|------|------------|

Mobilization

| | | | | | | |
|--------------------------------|------|---|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |
|--------------------------------|------|---|------|----------|---|----------|

Materials

| | | | | | | |
|----------------------------------|------|--|------|--------|------|------------|
| Pipe, HDPE, 6", CPT, Single Wall | 1242 | Pipe, Corrugated Plastic Tubing, Single Wall, 6" diameter - ASTM F405. Material cost only. | Foot | \$1.13 | 2000 | \$2,262.86 |
|----------------------------------|------|--|------|--------|------|------------|

Practice: 606 - Subsurface Drain

Scenario: #3 - 8in CPP

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a trencher. Scenario describes the construction 2,000 feet of 8-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 - Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) grassed waterways have a high failure rate due to the prolonged wetness that prohibits plant germination and/or drowns new growth.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, allowing for sufficient aeration to allow vegetation to establish. Gully erosion and sediment transport are minimized by established vegetation, a direct result of removing excess water from the soil profile. Plant stress due to excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due to increased erosion control.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$11,644.40

Scenario Cost/Unit: \$5.82

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Mobilization

| | | | | | | |
|--------------------------------|------|---|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |
|--------------------------------|------|---|------|----------|---|----------|

Materials

| | | | | | | |
|-----------------------------------|------|--|------|--------|------|------------|
| Pipe, HDPE, 8", PCPT, Single Wall | 1272 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 8" diameter - ASTM F667. Material cost only. | Foot | \$1.95 | 2000 | \$3,908.57 |
|-----------------------------------|------|--|------|--------|------|------------|

Equipment Installation

| | | | | | | |
|-----------------------------|------|---|------|--------|------|------------|
| Trenching, Earth, 24" x 60" | 1460 | Trenching, earth, 24" wide x 60" depth, includes equipment and labor for trenching and backfilling. | Foot | \$3.74 | 2000 | \$7,484.20 |
|-----------------------------|------|---|------|--------|------|------------|

Practice: 606 - Subsurface Drain

Scenario: #4 - 10in CPP

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a trencher. Scenario describes the construction 2,000 feet of 10-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 - Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) grassed waterways have a high failure rate due to the prolonged wetness that prohibits plant germination and/or drowns new growth.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, allowing for sufficient aeration to allow vegetation to establish. Gully erosion and sediment transport are minimized by established vegetation, a direct result of removing excess water from the soil profile. Plant stress due to excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due to increased erosion control.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$15,456.97

Scenario Cost/Unit: \$7.73

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Mobilization

| | | | | | | |
|--------------------------------|------|---|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |
|--------------------------------|------|---|------|----------|---|----------|

Materials

| | | | | | | |
|------------------------------------|------|---|------|--------|------|------------|
| Pipe, HDPE, 10", PCPT, Single Wall | 1273 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 10" diameter - ASTM F667. Material cost only. | Foot | \$3.86 | 2000 | \$7,721.14 |
|------------------------------------|------|---|------|--------|------|------------|

Equipment Installation

| | | | | | | |
|-----------------------------|------|---|------|--------|------|------------|
| Trenching, Earth, 24" x 60" | 1460 | Trenching, earth, 24" wide x 60" depth, includes equipment and labor for trenching and backfilling. | Foot | \$3.74 | 2000 | \$7,484.20 |
|-----------------------------|------|---|------|--------|------|------------|

Practice: 606 - Subsurface Drain

Scenario: #5 - 12in CPP

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a trencher. Scenario describes the construction 2,000 feet of 12-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 - Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) grassed waterways have a high failure rate due to the prolonged wetness that prohibits plant germination and/or drowns new growth.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, allowing for sufficient aeration to allow vegetation to establish. Gully erosion and sediment transport are minimized by established vegetation, a direct result of removing excess water from the soil profile. Plant stress due to excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due to increased erosion control.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$17,383.83

Scenario Cost/Unit: \$8.69

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Mobilization

| | | | | | | |
|--------------------------------|------|---|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |
|--------------------------------|------|---|------|----------|---|----------|

Materials

| | | | | | | |
|------------------------------------|------|---|------|--------|------|------------|
| Pipe, HDPE, 12", PCPT, Single Wall | 1274 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 12" diameter - ASTM F667. Material cost only. | Foot | \$4.82 | 2000 | \$9,648.00 |
|------------------------------------|------|---|------|--------|------|------------|

Equipment Installation

| | | | | | | |
|-----------------------------|------|---|------|--------|------|------------|
| Trenching, Earth, 24" x 60" | 1460 | Trenching, earth, 24" wide x 60" depth, includes equipment and labor for trenching and backfilling. | Foot | \$3.74 | 2000 | \$7,484.20 |
|-----------------------------|------|---|------|--------|------|------------|

Practice: 606 - Subsurface Drain

Scenario: #6 - >= 15in CPP

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline, using a trencher. Scenario describes the construction 2,000 feet of 15-inch, twin-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices. Resource Concerns: Excess Water (Seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 - Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) grassed waterways have a high failure rate due to the prolonged wetness that prohibits plant germination and/or drowns new growth.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, allowing for sufficient aeration to allow vegetation to establish. Gully erosion and sediment transport are minimized by established vegetation, a direct result of removing excess water from the soil profile. Plant stress due to excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due to increased erosion control.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$22,310.84

Scenario Cost/Unit: \$11.16

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Mobilization

| | | | | | | |
|--------------------------------|------|---|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |
|--------------------------------|------|---|------|----------|---|----------|

Equipment Installation

| | | | | | | |
|-----------------------------|------|---|------|--------|------|------------|
| Trenching, Earth, 24" x 60" | 1460 | Trenching, earth, 24" wide x 60" depth, includes equipment and labor for trenching and backfilling. | Foot | \$3.74 | 2000 | \$7,484.20 |
|-----------------------------|------|---|------|--------|------|------------|

Materials

| | | | | | | |
|--|------|---|-------|--------|------|-------------|
| Pipe, HDPE, corrugated double wall, GTE115", soil tight, weight priced | 1588 | High Density Polyethylene (HDPE) compound manufactured into double wall corrugated pipe GTE-15" diameter. Materials only. | Pound | \$1.58 | 9200 | \$14,575.01 |
|--|------|---|-------|--------|------|-------------|

Practice: 606 - Subsurface Drain

Scenario: #7 - Enveloped Corrugated Plastic Pipe (CPP), Single-Wall, = 6in

Scenario Description: Description: Below ground installation of perforated HDPE (Corrugated Plastic Pipe) pipeline with Sand-Gravel envelope, using a drainage trencher. Scenario includes the construction of 2,000 feet of 5-inch, Single-Wall, perforated HDPE Corrugated Plastic Pipe (CPP), installed below ground to a minimum depth of 5 feet, and surrounded with a sand-gravel envelope. The unit is in weight of pipe material in pounds. 2,000 feet of 5-inch, Single-Wall, perforated HDPE CPP weighs 0.50 lb/ft, or a total of 1,000 pounds. The typical volume sand-gravel for 2,000 feet of 12"wide x 12" high envelope is 64 cubic yards. Subsurface drainage is installed as a supporting practice for a number of associated conservation practices including (but not limited to) perimeter drainage around a waste storage facility. Resource Concerns: Excess Water (seasonal High Water Table); Degraded Plant Condition; Water Quality Degradation (Nutrients). Associated Practices: 608 - Surface Drain, Main or Lateral; 587 - Structure for Water Control, 533 - Pumping Plant; and 554 - Drainage Water Management; 620 - Underground Outlet; 412 - Grassed Waterway; 638 - Water and Sediment Control Basin; 342 - Critical Area Planting; 484 - Mulching; 410 - Grade Stabilization Structure; 468 - Lined Waterway or Outlet; 313 - Waste Storage Facility

Before Situation: Before installation soil conditions are excessively wet in the spring due to poor internal soil drainage. Excess soil water is causing crop stress and delay of field operations (seed bed preparation, planting, etc.). Conservation practice implementation including (but not limited to) waste storage facilities have a high failure rate due to uplift pressures damaging the integrity of the facility, particularly in high water table areas.

After Situation: The drainage modifications result in reduced water in the upper horizons of the soil profile, preventing uplift pressures from damaging the integrity of installed structures. Excessive wetness caused by a seasonal high water table is minimized, and drainage water quality is improved due decreased erosion.

Scenario Feature Measure: length of pipe

Scenario Unit: Foot

Scenario Typical Size: 2000

Total Scenario Cost: \$8,798.64

Scenario Cost/Unit: \$4.40

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Materials

| | | | | | | |
|---|------|---|------------|---------|------|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic Yard | \$25.57 | 64 | \$1,636.55 |
| Drainage Lateral Connection | 1458 | Connect 3"-6" drainage lateral to main drain, includes excavation to 6' depth, install tee on main line, connect lateral, and backfill. Includes material cost for tee. | Each | \$28.98 | 3 | \$86.95 |
| Pipe, HDPE, corrugated single wall, <= 12" weight priced Compound | 1380 | High Density Polyethylene (HDPE) compound manufactured into single wall corrugated pipe or tubing. Materials only. | Pound | \$1.59 | 1000 | \$1,587.43 |

Labor

| | | | | | | |
|----------------------------|-----|---|------|---------|---|----------|
| Equipment Operators, Heavy | 233 | Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. | Hour | \$28.82 | 8 | \$230.53 |
|----------------------------|-----|---|------|---------|---|----------|

Equipment Installation

| | | | | | | |
|-----------------------------|------|---|------|---------|------|------------|
| Track Loader, 95HP | 935 | Equipment and power unit costs. Labor not included. | Hour | \$86.71 | 8 | \$693.71 |
| Trenching, Earth, 12" x 60" | 1459 | Trenching, earth, 12" wide x 60" depth, includes equipment and labor for trenching, laying 3"-6" CPP drain line with envelope, and backfilling. | Foot | \$1.92 | 2000 | \$3,831.44 |

Mobilization

| | | | | | | |
|--------------------------------|------|--|------|----------|---|----------|
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | \$480.42 | 1 | \$480.42 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$251.62 | 1 | \$251.62 |

Practice: 606 - Subsurface Drain

Scenario: #8 - Secondary Main Retrofit for DWM

Scenario Description: An agricultural field has existing patterned tile system installed at 75 foot spacings. The field is 75 acres in size: 2475' x 1320', with a single main line at the low end of the field (2475'). The laterals are installed perpendicular to the topographic contours. The field has 3.5 feet of fall in the 1/4 mile length of the laterals, so a secondary main will be needed to allow drainage water management to be implemented on the higher half of the field.

Before Situation: The patterned tile drainage system allows free flow of drainage water to a receiving ditch. Drainage water carries nitrogen and phosphorus out of the soil and these nutrients pollute the receiving waters.

After Situation: A 12 inch diameter secondary mainline is retrofitted to the drainage system, located halfway up the field and relatively parallel to the topographic contours. This new mainline is hooked to each individual lateral and continued to a stable outlet. A Drainage Water practice must be completed along with the mainline; typically Structures for Water Control (587) installed at two foot vertical intervals so that water can be retained in the field. This scenario also applies to systems where the secondary main is used to connect drain lines that formerly each exited separately to the ditch, with a structure that distributes the drainage water into the subsurface soil at a vegetated buffer (772) OR a Denitrifying Bioreactor (747) might be installed at the outlet. In combination or singly, one of these practices must be installed with the secondary main.

Scenario Feature Measure: Feet of Pipe

Scenario Unit: Foot

Scenario Typical Size: 3135

Total Scenario Cost: \$23,937.23

Scenario Cost/Unit: \$7.64

Cost Details

| Component Name | Id | Description | Unit | Cost | Qty | Total |
|----------------|----|-------------|------|------|-----|-------|
|----------------|----|-------------|------|------|-----|-------|

Mobilization

| | | | | | | |
|-------------------------------|------|--|------|----------|---|----------|
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | \$480.42 | 1 | \$480.42 |
|-------------------------------|------|--|------|----------|---|----------|

Materials

| | | | | | | |
|------------------------------------|------|---|------|---------|------|-------------|
| Drainage Lateral Connection | 1458 | Connect 3"-6" drainage lateral to main drain, includes excavation to 6' depth, install tee on main line, connect lateral, and backfill. Includes material cost for tee. | Each | \$28.98 | 32 | \$927.49 |
| Pipe, HDPE, 12", PCPT, Single Wall | 1274 | Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 12" diameter - ASTM F667. Material cost only. | Foot | \$4.82 | 3135 | \$15,123.24 |

Equipment Installation

| | | | | | | |
|--|------|--|------|--------|------|------------|
| Trenching, tile line plowing, earth, 60" | 1457 | Plowing in 3"-15" CPP drain line into earth, 60" depth, includes equipment and labor for trenching, laying, and backfilling. | Foot | \$2.36 | 3135 | \$7,406.09 |
|--|------|--|------|--------|------|------------|