

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #1 - Concrete HUA**

**Scenario Description:**

Installation of a concrete heavy use pad to provide a stable, non-eroding surface for areas frequently used by livestock, people or vehicles.

**Before Situation:**

A 30 head cow/calf operation with a frequently used area that is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion and compaction.

**After Situation:**

The stabilization of areas frequently and intensively used by livestock by installing a concrete surface to reduce soil erosion, improve water quality, air quality, and livestock health. Typical size is 3,900 square feet. The base consists of 4" of gravel. The concrete is a reinforced slab on grade with a thickness of 5". Payment incorporates site preparation through grading and shaping, concrete pad and gravel. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of reinforced concrete

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 3,900

**Scenario Cost:** \$11,731.12

**Scenario Cost/Unit:** \$3.01

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$165.60	61	\$10,101.60
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	\$2.15	72	\$154.80
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	48	\$1,215.84
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #2 - Geocell and Gravel HUA**

**Scenario Description:**

Installation of a geocell and gravel heavy use pad to provide a stable, non-eroding surface for areas frequently used by livestock, people or vehicles.

**Before Situation:**

A 30 head cow/calf operation with a frequently used area that is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion.

**After Situation:**

The stabilization of an area frequently and intensively used by people, animals or vehicles by installing a gravel surface with geocells to reduce soil erosion and improve livestock health. Typical size is 3900 square feet. 4" of gravel is placed into a 4" geocell "matting material" and surfaced with a 3" layer of fines. Payment incorporates site preparation through grading and shaping, gravel (7" depth total with gravel and fines) and geoweb "matting material". An additional 8 hours of general labor is added to put the geocells in place. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of rock-gravel GeoCell GeoTex

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 3,900

**Scenario Cost:** \$12,848.50

**Scenario Cost/Unit:** \$3.29

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$2.15	72	\$154.80
<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	\$20.32	8	\$162.56
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	85	\$2,153.05
GeoCell, 4"	1054	Precast Manhole with base and top delivered. 4' diameter x 4' depth. Materials only.	Square Yard	\$23.37	433	\$10,119.21
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

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**Scenario: #3 - Fly Ash on Geotextile**

**Scenario Description:**

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with Fly Ash on a geotextile fabric foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice. The stabilized area will address the resource concerns of soil erosion and water quality degradation.

**Before Situation:**

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

**After Situation:**

The stabilized area is surfaced with approximately 630 square feet of Fly Ash on approximately 70 square yards of geotextile fabric foundation material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

**Scenario Feature Measure:** Area of Fly Ash

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 630

**Scenario Cost:** \$1,234.84

**Scenario Cost/Unit:** \$1.96

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.28	70	\$159.60
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	\$2.15	4	\$8.60
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$125.87	4	\$503.48
<b>Labor</b>						
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	\$26.97	4	\$107.88
<b>Materials</b>						
Fly Ash, BAB	52	Fly Ash, Bottom Ash Blend, includes material and delivery	Cubic yard	\$24.55	8	\$196.40
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #4 - Bituminous Concrete Pavement**

**Scenario Description:**

The stabilization of areas around facilities that are frequently and intensively used by people, animals or vehicles by surfacing with bituminous concrete pavement on aggregate gravel foundation to provide a stable, non-eroding surface. Installation includes all materials, equipment, and labor to install this practice. The stabilized area will address the resource concerns of soil erosion and water quality degradation.

**Before Situation:**

This practice applies to agricultural, urban, recreational and other frequently and/or intensively used areas requiring treatment to address soil erosion and water quality degradation.

**After Situation:**

The stabilized area is surfaced with approximately 630 square feet of bituminous concrete pavement on 8 cubic yards of aggregate gravel material for surfacing areas around facilities that are frequently and intensively used by people, animals or vehicles and will address soil erosion and water quality degradation. All needed roads must use Access Road (560). Any needed treatment of stream crossings must use Stream Crossing (578). Any needed vegetation of disturbed areas must use Critical Area Planting (342). Provisions to collect, store, utilize, and or treat contaminated runoff must use Sediment Basin (350), Waste Storage Facility (313), or Waste Treatment (629) as appropriate. To reduce the potential for air quality problems from particulate matter associated with heavy use areas, consider the use of Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (603).

**Scenario Feature Measure:** Area of Bituminous Pavement

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 630

**Scenario Cost:** \$1,742.72

**Scenario Cost/Unit:** \$2.77

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$2.15	4	\$8.60
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	8	\$202.64
Asphalt, pavement	1867	Bituminous Concrete, includes materials, equipment and labor for 4" layer, base not included.	Square Foot	\$2.02	630	\$1,272.60
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #5 - Winter Feeding station with gravel**

**Scenario Description:**

Installation of a concrete (slab on grade over gravel) pad with reinforced concrete curbing, surrounded by gravel on three sides, to provide a stable, non-eroding surface, and allow for collection of manure, for areas frequently used by livestock.

**Before Situation:**

A 50 head cow/calf operation with an intensively used area in a pasture for winter feeding. This area is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion.

**After Situation:**

The stabilization of areas frequently and intensively used by pastured livestock during winter feeding. A concrete (slab on grade over gravel) pad with reinforced concrete curbing, surrounded by gravel on three sides, to provide a stable, non-eroding surface, and allow for collection of manure, will be installed to reduce soil erosion, improve water quality, air quality, and livestock health. Typical total size is 4,324 square feet. There is a 2,624 square feet of reinforced slab on grade concrete, which is 5" thick. This concrete is placed over a 3" base of gravel. The 32'x 58' feeding area has formed concrete roll curbs to allow for capturing of animal waste. The 24' x 32' stacking area has 4' reinforced concrete walls to store captured animal waste. Approximately 1,700 square feet of gravel 8" thick placed over light geotextile fabric surrounds three sides of the concrete pad. Payment incorporates site preparation through grading and shaping, concrete pad and curbing and gravel. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of concrete and gravel

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 4,324

**Scenario Cost:** \$20,338.78

**Scenario Cost/Unit:** \$4.70

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$2.15	72	\$154.80
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.28	206	\$469.68
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	\$165.60	29	\$4,802.40
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$360.59	36	\$12,981.24
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	66	\$1,671.78
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #6 - Winter Feeding Station**

**Scenario Description:**

Installation of a concrete (slab on grade over gravel) pad with reinforced concrete curbing to provide a stable, non-eroding surface, and allow for collection of manure, for areas frequently used by livestock.

**Before Situation:**

A 50 head cow/calf operation with an intensively used area in a pasture for winter feeding. This area is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion.

**After Situation:**

The stabilization of areas frequently and intensively used by pastured livestock during winter feeding. A concrete (slab on grade over gravel) pad with reinforced concrete curbing to provide a stable, non-eroding surface, and allow for collection of manure, will be installed to reduce soil erosion, improve water quality, air quality, and livestock health. Typical total size is 2,624 square feet. There is a 2,624 square feet of reinforced slab on grade concrete, which is 5" thick. This concrete is placed over a 3" base of gravel. The 32'x 58' feeding area has formed concrete roll curbs to allow for capturing of animal waste. The 24' x 32' stacking area has 4' reinforced concrete walls to store captured animal waste. Payment incorporates site preparation through grading and shaping, concrete pad and curbing. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of Concrete

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 2,624

**Scenario Cost:** \$18,805.24

**Scenario Cost/Unit:** \$7.17

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$165.60	29	\$4,802.40
Concrete, CIP, formed reinforced	38	Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic yard	\$360.59	36	\$12,981.24
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	\$2.15	72	\$154.80
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	24	\$607.92
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #7 - Gravel with Geotextile, Thick**

**Scenario Description:**

Installation of a gravel heavy use pad to provide a stable, non-eroding surface for areas frequently used by livestock, people or vehicles.

**Before Situation:**

A 30 head cow/calf operation with a frequently used area that is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion and compaction.

**After Situation:**

The stabilization of areas frequently and intensively used by livestock by installing a gravel surface to reduce soil erosion, improve water quality, air quality, and livestock health. Typical size is 3,900 square feet. Gravel, 8" deep, is placed over light geotextile fabric and surfaced with a 3" layer of fines. Payment incorporates site preparation through grading and shaping, gravel and layer of fines and light geotextile fabric. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of gravel

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 3,900

**Scenario Cost:** \$5,532.05

**Scenario Cost/Unit:** \$1.42

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.28	433	\$987.24
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$125.87	6	\$755.22
<b>Labor</b>						
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	\$26.97	6	\$161.82
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	133	\$3,368.89
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #8 - Gravel without Geotextile, Thick**

**Scenario Description:**

Installation of a gravel heavy use pad to provide a stable, non-eroding surface for areas frequently used by livestock, people or vehicles.

**Before Situation:**

A 30 head cow/calf operation with a frequently used area that is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion and compaction.

**After Situation:**

The stabilization of areas frequently and intensively used by livestock by installing a gravel surface to reduce soil erosion, improve water quality, air quality, and livestock health. Typical size is 3,900 square feet. Gravel, 8" deep, is surfaced with a 3" layer of fines. Payment incorporates site preparation through grading and shaping, gravel and layer of fines. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of gravel

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 3,900

**Scenario Cost:** \$4,544.81

**Scenario Cost/Unit:** \$1.17

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$125.87	6	\$755.22
<b>Labor</b>						
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	\$26.97	6	\$161.82
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	133	\$3,368.89
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #9 - Gravel with Geotextile, Regular Thickness**

**Scenario Description:**

Installation of a gravel heavy use pad to provide a stable, non-eroding surface for areas frequently used by livestock, people or vehicles.

**Before Situation:**

A 30 head cow/calf operation with a frequently used area that is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion and compaction.

**After Situation:**

The stabilization of areas frequently and intensively used by livestock by installing a gravel surface to reduce soil erosion, improve water quality, air quality, and livestock health. Typical size is 3,900 square feet. Gravel, 5" deep, is placed over light geotextile fabric and surfaced with a 2" layer of fines. Payment incorporates site preparation through grading and shaping, gravel and layer of fines and light geotextile fabric. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of gravel

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 3,900

**Scenario Cost:** \$4,316.21

**Scenario Cost/Unit:** \$1.11

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.28	433	\$987.24
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$125.87	6	\$755.22
<b>Labor</b>						
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	\$26.97	6	\$161.82
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	85	\$2,153.05
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88

**Practice: 561 - Heavy Use Area Protection**

**Scenario: #10 - Gravel without Geotextile, Regular Thickness**

**Scenario Description:**

Installation of a gravel heavy use pad to provide a stable, non-eroding surface for areas frequently used by livestock, people or vehicles.

**Before Situation:**

A 30 head cow/calf operation with a frequently used area that is unstable with an eroding surface. The area lacks vegetation and has severe compaction concerns as well as deep mud. Concentration of nutrients cannot be spread on adjacent fields due to the unstable surface. Livestock health is compromised as additional energy is being used to travel through mud. A need exists to improve water quality, air quality, livestock health, as well as reduce soil erosion and compaction.

**After Situation:**

The stabilization of areas frequently and intensively used by livestock by installing a gravel surface to reduce soil erosion, improve water quality, air quality, and livestock health. Typical size is 3,900 square feet. Gravel, 5" deep, is surfaced with a 2" layer of fines. Payment incorporates site preparation through grading and shaping, gravel and layer of fines. Cost data is applicable to organic and conventional agricultural production systems.

**Scenario Feature Measure:** Area of gravel

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 3,900

**Scenario Cost:** \$3,328.97

**Scenario Cost/Unit:** \$0.85

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$125.87	6	\$755.22
<b>Labor</b>						
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	\$26.97	6	\$161.82
<b>Materials</b>						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$25.33	85	\$2,153.05
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$258.88	1	\$258.88