The following items of the Contract Documents are modified as part of this Addendum:

**Technical Clarifications**

1. Is the 8x6 box culvert embedded? The profile on drawing C4 looks like it might be embedded. Please confirm.
   - Yes. The 8x6 box culvert is embedded.

2. Prime is required per the typical section on drawing C1. Can a pay item be added for this?
   - Per Specification Section 310.4.B, Bituminous Prime is not measured for separate payment. Also refer to Section 412.5.

3. Will all disturbed areas get permanent grassing? No sod is required on the project, correct? If sod is required, please add a pay item.
   - No sod is required, only grassing

4. Will this project be a unit price or lump sum contract?
   - The contract will be a unit price contract.

5. Is there any DBE requirement for this project?
   - No. DBE is not required.

6. Do Davis Bacon Wages apply to this project?
   - Yes. Davis Bacon Wages apply to this project.

7. Is the project completion 180 days from NTP or 60 days from NTP? Page 15 of the RFB says 60 and page 3 says 180.
   - Construction contract time is 180 days

**Technical Specifications**

- *Section 00300, Bid Form*

  Bid item 163-0232 has been added to sheet 2 of the bid form. This item will add Temporary Grassing to the project. Changes to the bid form are shown in bold and italics.

  Bid item 163-0240 has been added to sheet 2 of the bid form. This item will add Mulch to the project. Changes to the bid form are shown in bold and italics.

  Quantities for bid item 511-1000 on sheet 4 of the bid form has been revised to 11,300 lb Bar Reinforcement Steel. Changes to the bid form are shown in bold and italics.
Bid item 603-2997 has been added to sheet 5 of the bid form. This item will add Plastic Filter Blanket to the project. Changes to the bid form are shown in bold and italics.

Bid item 700-7000 has been added to sheet 5 of the bid form. This item will add Agricultural Lime to the project. Changes to the bid form are shown in bold and italics.

Bid item 700-8000 has been added to sheet 5 of the bid form. This item will add Fertilizer Mixed Grade to the project. Changes to the bid form are shown in bold and italics.

Bid item 700-8100 has been added to sheet 6 of the bid form. This item will add Fertilizer Nitrogen Content to the project. Changes to the bid form are shown in bold and italics.

A copy of the updated Section is attached and is to replace the previous Section 00300, Bid Form in its entirety.

 Section 01025, Measurement and Payment

A measurement and payment item for Temporary Grassing has been added as Part 3.01 on page 2. All subsequent items have been renumbered. Changes to the bid form are shown in bold and italics.

A measurement and payment item for Mulch has been added as Part 3.02 on page 2. All subsequent items have been renumbered. Changes to the bid form are shown in bold and italics.

Part 3.23 Rip Rap on page 9 has been revised to have the following text removed “Plastic filter fabric will be measured as the area of rip rap placed and accepted. No separate measurement will be made for fabric overlap joints, seams, or vertical sections at toe of slopes.” Changes to the bid form are shown in bold and italics.

A measurement and payment item for Plastic Filter Fabric has been added as Part 3.24 on page 9. All subsequent items have been renumbered. Changes to the bid form are shown in bold and italics.

A copy of the updated Section 01025, Measurement and Payment is attached and is to replace the previous Section 01025, Measurement and Payment in its entirety.

 Section 163 – Miscellaneous Erosion Control Items

Part 163.3.05.D has been revised for clarification (revisions are shown in bold and italics):

D. Sediment Barrier
   Construct sediment barrier according to the Plan details.
   The following items may be used for sediment barriers:
   1. Type NS Silt Fence.
   2. Type S Silt Fence.

Part 163.3.05.Q has been revised for clarification (revisions are shown in bold and italics):

Q. Temporary Sediment Traps
   Construct temporary sediment traps of the material selected as shown in the
approved erosion and sediment control plan.  
Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.  
A temporary sediment trap shall remain in place until final stabilization of the area which drains toward it is achieved and its removal is approved by the Engineer.

Part 163.4 Measurement sections D-H, J, Q have been revised for clarification and addition of temporary grass and temporary mulch (revisions are shown in bold and italics):

**D. Sediment Barriers**
Sediment barriers are measured by the linear foot.

**E. Other Temporary Structures**
Other temporary structures are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

**F. Temporary Grass**
Temporary grass is measured for payment by the acre. Lime, when required, is measured by the ton.

**G. Temporary Mulch**
Mulch is measured for payment by the ton. The weight for measurement will be the product of the number of bales used and the average weight per bale as determined on scales provided by the contractor or state certified scales. The contractor shall provide written documentation to the Engineer as to the average weight of the bales.

**H. Miscellaneous Erosion Control Items Not Shown on the Plans**
These items are not measured for payment. The cost for construction, materials, and removal is included in the price bid for other contract items.

**J. Check Dams**
Stone, sand bags, baled wheat straw, and compost filter stock check dams are measured per each which includes all work necessary to construct the check dam including woven plastic filter fabric placed beneath the stone check dams. Fabric check dams are measured per linear foot.

**Q. Temporary Sediment Traps**
Temporary sediment traps are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

Part 163.5 Payment, sections D-H, J and Q have been revised for clarification and addition of temporary grass and temporary mulch (revisions are shown in bold and italics):

**D. Sediment Barriers**
Sediment barriers are paid for by the linear foot. Price and payment are full compensation for work and supervision to construct, and remove the sediment barrier, including final clean-up.

**E. Other Temporary Structures**
Other temporary structures are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and
removal is included in the price bid for the drainage structure or for other Contract items.

F. Temporary Grass
Temporary grass is paid for by the acre. Payment is full compensation for all equipment, labor, ground preparation, materials, fertilizer, mulch, and other incidentals except Lime. Lime (when required) is paid for by the ton.

G. Temporary Mulch
Mulch is paid for by the ton. Payment is full compensation for all materials, labor, maintenance, equipment and other incidentals.

H. Miscellaneous Erosion Control Items Not Shown on the Plans
These items are not paid for separately. They are included in the price bid for other contract items.

J. Check Dams
Payment is full compensation for all materials, construction, and removal. Stone plain riprap, sand bag, baled wheat straw, or compost filter socks check dams are paid for per each. The required woven filter fabric required under each stone check dam is included in the bid price. Fabric check dams are paid for per linear foot.

Q. Temporary Sediment Traps
Temporary sediment traps are paid for per each required. This includes the entire structure at each location and all the work necessary for construction.

The items in the section (that are paid for separately and not included in other contract items) are made as partial payments as follows:
☐ When the item is installed and put into operation the Contractor will be paid 75 percent of the Contract price.
☐ When the Engineer instructs the Contractor that the Item is no longer required and is to remain in place or is removed, whichever applies, the remaining 25 percent will be paid.
Temporary devices may be left in place at the Engineer’s discretion at no change in cost.

A copy of the updated Section 163, Miscellaneous Erosion Control Items is attached and is to replace the previous 163, Miscellaneous Erosion Control Items in its entirety.

END OF ADDENDUM NO. 1
BID FORM

Parkway Extension – Phase 2 Improvements
For The Park 53 Industrial and Technology Complex
for the
Barrow County Board of Commissioners
and the Winder-Barrow Industrial Building Authority

THIS BID IS SUBMITTED TO:

Winder-Barrow Industrial Building Authority
and Barrow County Board of Commissioners
30 North Broad Street
P. O. Box 456
Winder, GA  30680
(Hereinafter called "Owner")

THIS BID IS SUBMITTED BY:

(Name)
(Address)

(Telephone) (Hereinafter called "Bidder")

BIDDER, in compliance with the Advertisement for Bids for the construction of this project, having examined the Drawings and Specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labor, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the price(s) stated below. This price(s) is to cover all expenses including overhead and profit incurred in performing the Work required under the CONTRACT DOCUMENTS, of which this proposal is a part.
The Contractor is directed to Section 01025 “Measurement and Payment” for the methods and limits for payments to the Contractor for the pay items listed below.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Est. No. of Units</th>
<th>Unit Price Bid</th>
<th>Total for Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>163-0232</td>
<td>Temporary Grassing</td>
<td>AC</td>
<td>3.20</td>
<td>Dollars and Cents</td>
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<tr>
<td>163-0240</td>
<td>Mulch</td>
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<td>Dollars and Cents</td>
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<td>163-0300</td>
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<td>163-0535</td>
<td>Construct and Remove Temporary Sediment Trap</td>
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<td>165-0030</td>
<td>Maintenance of Temporary Silt Fence, Type S</td>
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<td>3,920</td>
<td>Dollars and Cents</td>
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<td>165-0101</td>
<td>Maintenance of Construction Exit</td>
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<td>165-0105</td>
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</table>
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<th>Total for Item</th>
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<tbody>
<tr>
<td>167-1000</td>
<td>Water Quality Monitoring and Sampling</td>
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<td>167-1500</td>
<td>Water Quality Inspections</td>
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<td>171-0030</td>
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<td>207-0203</td>
<td>Foundation Backfill Material, Type II</td>
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<td>210-0100</td>
<td>Grading Complete</td>
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<td>310-5060</td>
<td>Graded Aggregate Base Course, 6 Inch, Including Material (Curb &amp; Gutter)</td>
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<td>310-5120</td>
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<td>402-3121</td>
<td>Recycled Asphaltic Concrete 25 mm Superpave, Gp 1 or 2, Incl Bitum Matl &amp; H Lime</td>
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<td>402-3130</td>
<td>Recycled Asphaltic Concrete 12.5 mm Superpave, Gp 2 Only, Incl Bitum Matl &amp; H Lime</td>
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</table>
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<th>Total for Item</th>
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<td>413-1000</td>
<td>Bituminous Tack Coat</td>
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<td>441-0600</td>
<td>Concrete Headwall</td>
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<td>441-6022</td>
<td>Concrete Curb &amp; Gutter, 6 IN X 30 IN, Type 2</td>
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<td>500-3002</td>
<td>Class AA Concrete, (Box Culvert and Wingwalls, Toewalls, and Parapets for Box Culvert)</td>
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<td>Bar Reinforcement Steel</td>
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</table>
BID SCHEDULE

Parkway Extension – Phase 2 Improvements for the Park 53 Industrial and Technology Complex for the Winder-Barrow Industrial Building Authority and Barrow County Board of Commissioners

The Contractor is directed to Section 01025 “Measurement and Payment” for the methods and limits for payments to the Contractor for the pay items listed below.

<table>
<thead>
<tr>
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<th>Est. No. of Units</th>
<th>Unit Price Bid</th>
<th>Total for Item</th>
</tr>
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<tbody>
<tr>
<td>550-1300</td>
<td>Storm Drain Pipe, 30 IN, H 1-10</td>
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<tr>
<td>603-2181</td>
<td>Stone Dumped Rip Rap, Type 3, 18 IN</td>
<td>SY</td>
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<td>603-7000</td>
<td><strong>Plastic Filter Fabric</strong></td>
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<td>668-1100</td>
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<td>668-1110</td>
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<td>668-4300</td>
<td>Storm Sewer Manhole, Type 1</td>
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<td>700-6910</td>
<td>Permanent Grassing</td>
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<td>2.2</td>
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<td>(Unit Price in Words)</td>
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<tr>
<td>700-7000</td>
<td><strong>Agricultural Lime</strong></td>
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<td>3.5</td>
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<td>(Unit Price in Words)</td>
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<tr>
<td>700-8000</td>
<td><strong>Fertilizer Mixed Grade</strong></td>
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<td>(Unit Price in Words)</td>
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</tbody>
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<th>Unit Price Bid</th>
<th>Total for Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-8100</td>
<td>Fertilizer Nitrogen Content</td>
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<td>716-2000</td>
<td>Erosion Control Mats, Slopes</td>
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<td>02227.00</td>
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<td>02645.00</td>
<td>Fire Hydrants</td>
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<td>02645.01</td>
<td>Fire Hydrant Assemblies</td>
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<td>02660.00</td>
<td>Water Distribution System</td>
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<td>02660.01</td>
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<td>02660.02</td>
<td>12” C900 DR 14 PVC Waterline</td>
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<td>02660.03</td>
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<td>12” dia. Restrained Joints, by field order only</td>
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<td>8</td>
<td>Dollars and Cents</td>
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</tbody>
</table>
BID SCHEDULE

Parkway Extension – Phase 2 Improvements
for the Park 53 Industrial and Technology Complex
for the
Winder-Barrow Industrial Building Authority
and Barrow County Board of Commissioners

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<th>Unit Price Bid</th>
<th>Total for Item</th>
</tr>
</thead>
</table>

Total Amount Base Bid: $__________________________

________________________________________

(Price in Words)

NOTE: Amounts shall be shown in words and figures; the amount written in words shall take precedence.
BID SCHEDULE

Parkway Extension – Phase 2 Improvements
for the Park 53 Industrial and Technology Complex
for the
Winder-Barrow Industrial Building Authority
and Barrow County Board of Commissioners

The Contractor is directed to Section 01025 “Measurement and Payment” for the methods and limits for payments to the Contractor for the pay items listed below.

BIDDER hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete WORK within a total construction time of one hundred eighty (180) consecutive calendar days of the date specified in this "Notice to Proceed".

BIDDER acknowledges receipt of the following addenda:

<table>
<thead>
<tr>
<th>Addendum No.</th>
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BIDDER agrees to perform all of the construction of the project complete with appurtenances and accessory work described in the Specifications and shown on the Drawings for the above scheduled price(s).

The above scheduled price(s) shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

BIDDER understands that OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding.

BIDDER agrees that his bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.
The Contractor is directed to Section 01025 “Measurement and Payment” for the methods and limits for payments to the Contractor for the pay items listed below.

Upon receipt of the written notice of the acceptance of this bid, BIDDER will execute the formal Contract attached within ten (10) days and deliver a surety bond or bonds, as required by the General Conditions. The bid security attached in the sum of five (5%) percent of the total bid is to become the property of the OWNER in the event the Contract and bond are not executed within the time set forth, as liquidated damages for the delay and additional expense to the OWNER caused thereby.

Respectfully Submitted: 

Name: ____________________________________________

Address: _________________________________________

_________________________________________________

Phone No.: _______________________________________

Fax No.: _________________________________________

Email Address.: __________________________________

Dun & Bradstreet Data Universal Numbering System (DUNS) No: ____________________________

FEDERAL TAX NO. OR SOCIAL SECURITY NO.: _______________________________________

Signature of Principal: ____________________________________________

Title: _______________________________________________

Date: _______________________________________________

Telephone: ___________________________________________

ATTEST: 

Signature: ___________________________________________

Corporate Secretary/Partner/Notary (SEAL)

Name: _______________________________________________

(Please type)
BID SCHEDULE

Parkway Extension – Phase 2 Improvements
for the Park 53 Industrial and Technology Complex
for the
Winder-Barrow Industrial Building Authority
and Barrow County Board of Commissioners

The Contractor is directed to Section 01025 “Measurement and Payment” for the methods and limits for payments to the Contractor for the pay items listed below.

NOTE: Attest for a corporation must be by the corporate secretary; for a partnership by another partner; for an individual by a Notary.

END OF SECTION
SECTION 01025
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section describes the methods by which measurement will be made of the quantities for which payment will be made for the PROJECT.

B. The project is to be bid as one (1) contract.

1.02 MEASUREMENT OF WORK

A. WORK shall be measured by the ENGINEER or his representative, with assistance from the CONTRACTOR prior to preparation of a payment request by the CONTRACTOR.

B. Unit quantities that are measured in place shall be measured monthly. The CONTRACTOR shall give the ENGINEER a minimum of two days notice for making all required measurements.

C. Materials that must be measured as delivered shall be measured at the time of delivery by the ENGINEER or his representative; the CONTRACTOR shall provide sufficient advance notice so that such measurements can be made.

D. WORK completed shall be measured for completion against the schedule of values provided by the CONTRACTOR in accordance with the General Conditions. Related work necessary for a complete and operational job, such as relocation of mail boxes, removal of trees, relocation of utilities, field engineering, clearing and grubbing, traffic control, etc., not specifically identified as a pay item shall be included in the unit price bid. No additional payments will be made for such activities.

1.03 PROGRESS PAYMENTS

A. Progress payments shall be based on the quantity of units installed.

B. All items of WORK not specifically listed in the Bid Schedule shall be considered incidental to the construction, and the cost of all such work and material shall be included in the prices bid for various items listed.

C. All items listed for measurement and payment shall include all machinery, plant, materials and labor, etc., to successfully and satisfactorily complete WORK specified.

D. Payment: The CONTRACTOR will receive payment only for the items listed in the Bid Schedule of his contract, and no separate payments will be made for the work under any section of the CONTRACT DOCUMENTS except as provided for in the Bid Form. Where measurements are required to be made by the ENGINEER, for the payment of a pay item, the failure of the CONTRACTOR to give the adequate notification or failure of
the CONTRACTOR to give the ENGINEER assistance for the measurement shall result in the forfeiture of payment for the work or item which was not measured.

E. WORK to be paid for as a "Lump Sum" shall be measured for completion against the "Schedule of Values" provided by the CONTRACTOR. The "Schedule of Values" shall be submitted at the preconstruction conference and shall include quantities and prices of items aggregating the total "Lump Sum" and will subdivide the work into component parts in sufficient detail to serve as the basis for progress payments during construction.

PART 2 PRODUCTS

2.01 STORED MATERIALS

Partial payment shall be made for approved materials stored at the project site, provided invoices for said materials are furnished in accordance with payment request submittal.

PART 3 EXECUTION

3.01 TEMPORARY GRASSING (SECTION 163)

Temporary grass is measured for payment by the acre. Lime, when required, is measured by the ton. Mulch and fertilizer are measured separately for payment.

Temporary grass is paid for by the acre. Payment is full compensation for all equipment, labor, ground preparation, materials, wood fiber mulch, polyacrylamide, and other incidentals. Lime (when required) is paid for by the ton. Mulch and fertilizer are paid for separately.

3.02 MULCH (SECTION 163)

Mulch (straw or hay, or erosion control compost) is measured for payment by the ton.

Mulch is paid for by the ton. Payment is full compensation for all materials, labor, maintenance, equipment and other incidentals.

The weight for payment of straw or hay mulch will be the product of the number of bales used and the average weight per bale as determined on certified scales provided by the contractor or state certified scales. Provide written documentation to the Engineer stating the average weight of the bales.

The weight of erosion control compost mulch will be determined by weighing each loaded vehicle on the required motor truck scale as the material is hauled to the roadway, or by using recorded weights if a digital recording device is used. The contractor may propose other methods of providing the weight of the mulch to Engineer for approval.

3.03 CONSTRUCTION EXIT (SECTION 163)

Construction exits are measured per each which will include all work necessary to construct the exit including the required geotextile fabric placed beneath the aggregate.

Construction exits are paid for per each. Payment is full compensation for all materials including the required geotextile, construction, and removal.
3.04 CONSTRUCT AND REMOVE TEMPORARY SEDIMENT TRAP (SECTION 163)

Sediment traps are measured for payment by the entire structure complete, including construction, maintenance, and removal. Measurement also includes: earthwork, drainage, spillways, baffles, rip rap, and final cleaning to remove the basin.

Sediment traps, measured according to the above, are paid for by the unit, per each, for the type specified on the Plans. Price and payment are full compensation for work and supervision to construct, and remove the sediment trap, including final clean-up.

3.05 CONSTRUCT AND REMOVE INLET SEDIMENT TRAP (SECTION 163)

Inlet sediment traps, regardless of the material selected, are measured per each which includes all work necessary to construct the trap including any incidentals and providing the excavated area for sediment storage.

Inlet sediment traps are paid for per each. Payment is full compensation for all materials, construction, and removal.

3.06 MAINTENANCE OF TEMPORARY SILT FENCE, TYPE S (SECTION 165)

Maintenance of temporary silt fence, Type NS or S, is the actual linear feet of silt fence, measured in place, where sediment is removed.

Maintenance of temporary silt fence, Type NS or S, is paid for at the contract unit price bid per linear foot.

3.07 MAINTENANCE OF CONSTRUCTION EXIT (SECTION 165)

Maintenance of construction exit at the location specified on the Plans, or as directed by the Engineer is measured per each.

Maintenance of the construction exit at the location specified on the Plans or as added by the Engineer is paid for at the contract unit price per each.

3.08 MAINTENANCE OF INLET SEDIMENT TRAP (SECTION 165)

Maintenance of inlet sediment trap at the location specified on the Plans, or as added by the Engineer is measured per each.

Maintenance of the inlet sediment trap at the location specified on the Plans or at the location specified by the Engineer is paid for at the contract unit price per each.

3.09 MAINTENANCE OF TEMPORARY SEDIMENT TRAP (SECTION 165)

Maintenance of temporary sediment traps as specified on the Plans, is measured as a single unit.

Maintenance of temporary sediment traps as specified on the Plans is paid for at the contract unit price bid per each.
3.10 WATER QUALITY MONITORING AND SAMPLING (SECTION 167)

Water Quality Monitoring and Sampling are measured per each. When the monitoring location is receiving water, the upstream and downstream samples constitute one sample. When the monitoring location is an outfall, a single outfall sample constitutes one sample.

Payment for Water Quality Monitoring and Sampling will be made as follows: Water Quality Monitoring and Sampling per each is full compensation for meeting the requirements of the monitoring sections of the NPDES permit and Specification Section 167, obtaining samples, analyzing samples, any and all necessary incidentals, and providing results of turbidity tests to the Engineer, within the time frame required by the NPDES Infrastructure permit, and Specification Section 167. This item is based on the rainfall events that require sampling as described in Part IV.D.5 of the permit. Barrow County will not pay for samples taken and analyzed for rainfall events that are not qualifying events as compared to the daily rainfall data supplied by the Worksite Erosion Control Supervisor.

3.11 WATER QUALITY INSPECTIONS (SECTION 167)

Water Quality Inspections in accordance with the inspection and reports sub-sections will be measured for payment by the month up to the time the Contract Time expires. Required inspections and reports after Contract Time has expired will not be measured for payment.

Water Quality Inspections will be paid at the Contract Price per month. This is full compensation for performing the requirements of the inspection section of the NPDES permit and Specification Section 167, any and all necessary incidentals, and providing results of inspections to the Engineer, within the time frame required by the NPDES Infrastructure permit and Specification Section 167.

3.12 TEMPORARY SILT FENCE, TYPE S (SECTION 171)

The quantity of silt fence, silt fence ditch checks to be paid for is the actual number of linear feet of silt fence, measured in place from end post to end post of each separate installation. The silt fence must be complete and accepted.

Silt fence Type NS or S measured as defined above, is paid for at the Contract Unit Price bid per linear foot. Payment is full compensation for the following: furnishing materials, erecting the fence, dressing and grassing, when required, removing the fence, when required. Payment for this item is made as follows: Seventy-five percent of the Contract Price bid per linear foot is paid when each fence is complete in place. Twenty-five percent is paid at removal or acceptance. If the silt fence must be repaired or removed, as the result of neglect or damage, perform the work at no additional cost to Barrow County.

3.13 FOUNDATION BACKFILL MATERIAL, TYPE II (SECTION 207)

A. Excavation
The following considerations are not measured for payment: Excavation for minor structures, including undercut for backfill materials as shown on the Plans, Excavation for an imperfect trench which is required at locations specified in the Plans but which is not measured for payment, Removal of water, Removal of material from any area
B. Extra Depth Excavation
The following extra depth excavations are not measured for payment:
1. Extra depth excavation because of Contractor negligence
2. Extra depth excavation (required by the Engineer) below the original Plan elevation of the bottom of the footing or the flow line of a culvert pipe that does not exceed 3 ft.
If the Engineer relocates the structure or orders the elevation of the bottom of the footing or the flow line of the pipe to be lowered or undercut more than 3 ft., the Contractor will be compensated for the extra depth excavated below the 3 ft. limit according to Subsection 104.04 and Subsection 109.05. Calculate the width of extra depth excavation using the diameter of the pipe or the width of the footing plus 2 ft. The length of extra depth excavation is equal to the length of that portion of the structure that is lowered more than 3 ft. below Plan elevation. Sheetimg and bracing will not be paid for separately unless these materials are left in place at the written direction of the Engineer. In this case, the Contractor will be paid at invoice cost plus 10 percent.

C. Backfill Materials Types I, II, and III
1. Types I and II
These materials (in place and accepted) are measured in cubic yards compacted. Lateral measurements are confined to an area bounded by vertical planes lying not more than 1 ft. outside of and parallel to the limits of the structure. Length and depth measurements are confined to the dimensions of compacted material in place as specified by the Engineer. Materials placed outside the above limitations are not measured for payment.
2. Type III
Barrow County measures Type III material (complete, in place, and accepted) in cubic yards.
Lateral measurements of Type III material are confined to an area bounded by vertical planes lying directly above the outside walls of the structure. Longitudinal measurements are confined to the length of treatment installed as specified. Measurements of depth are the dimensions shown on the Plans or as directed.
Backfill material Type I, (measured as shown in Subsection 207.4.C.1) will be paid for according to Section 205 or Section 206. Barrow County will pay for Types II and III separately at the Contract Unit Price per cubic yard. This payment is full compensation for furnishing the materials from sources inside or outside the right-of-way, loading, unloading, hauling, handling, placing, and compacting the material.

D. Normal Backfill
This Item is not measured separately, but is included in the measurement of the Items of excavation from which normal backfill materials are obtained. This Item will not be paid for directly but will be paid at the Unit Price for the applicable excavation item from which the normal backfill materials are obtained.

3.14 GRADING COMPLETE (SECTION 210)
A. Grading Complete
The Work under this Item is not measured separately for payment. This Item completed and accepted will be paid for at the Lump Sum Price bid. Payment is full compensation for all work and materials specified in this Section.
B. Grading Per Mile
This Item is measured in linear miles along the centerline of the road or the median, including ramps where shown on the Plans. This Item will be paid for at the Contract Unit Price per linear mile complete in place and accepted. This price is full compensation for furnishing the materials and performing the work specified in this Section.

C. Undercut Excavation
The amount of undercut excavation (when directed by the Engineer and not addressed in the Plans) measured for payment is the product of the length, width, and depth of excavation. Replacement material for undercut excavation is not measured for payment. There will be no separate payment for undercut excavation required by the Plans or rock excavation required under Subsection 205.3. Undercutting areas not shown in the Plans when directed by the Engineer will be paid for at the rate of $7.50 per cubic yard for quantities up to 750 yd³. Quantities exceeding 750 yd³ will be considered Extra Work as defined in Subsection 109.05, and will be paid for accordingly. Payment is full compensation for excavating and disposing of undesirable material and supplying, placing, and compacting replacement material.

3.15 GRADED AGGREGATE BASE COURSE (SECTION 310)

A. Graded Aggregate
Where specified for payment by the ton, graded aggregate base, subbase or shoulder materials are measured in tons, mixed and accepted. When hauling material to the roadway, the actual weight of each loaded vehicle is determined with an approved motor truck scale. Where specified for payment by the square yard for a certain thickness, the surface length is measured along the centerline, and the width is specified on the Plans. Measure irregular areas, such as turnouts and intersections, by the square yard. Graded aggregate base, subbase, or shoulder course will be paid for at the Contract Unit Price per ton or per square yard, complete, in place, and accepted. This payment shall be full compensation for: Materials, Shaping and compacting the existing roadbed, Loading, hauling, and unloading, Crushing and processing, Mixing, Spreading, Watering, Compacting and shaping, Maintenance, Priming, when required, and All incidentals necessary to complete The Work.

B. Bituminous Prime
Bituminous prime is not measured for separate payment.

3.16 RECYCLED ASPHALTIC CONCRETE (SECTION 402)

Recycled asphaltic concrete mixture, complete in place and accepted, is measured in tons. The weight is determined by recorded weights if an approved recording device is used. Or, the weight is determined by weighing each loaded vehicle on an approved motor truck scale as the material is hauled to the roadway.

The work performed and the materials furnished as described in this Specification will be paid for at the Contract Unit Price per ton. Payment is full compensation for providing materials, hauling and necessary crushing, processing, placing, rolling and finishing the recycled mixture, and providing labor, tools, equipment, and incidentals necessary to complete the work, including hauling and stockpiling RAP or RAS material.
3.17 BITUMINOUS TACK COAT (SECTION 413)

Bituminous materials for tack coat applied and accepted are measured as outlined in Subsection 109.02, “Measurement of Bituminous Materials.” Diluting emulsified tack coat is not ordinarily allowed except when used underneath slurry seal and approved by the Engineer. The composition of diluted emulsified tack coat defined in Subsection 427.3.05, “Construction” is measured by the gallon of diluted mix.

The accepted volume of bituminous material will be paid for at the Contract Unit Price per gallon for bituminous tack coat of the type and grade approved by the Engineer, complete in place. Payment is full compensation for preparing, cleaning, furnishing, hauling, applying material, and providing incidentals to complete the work.

3.18 CONCRETE HEADWALL (SECTION 441)

Headwalls are measured for payment according to Subsection 500.4.01.B, “Payment per Cubic Yard” and Subsection 500.5.01.E, “Filler Concrete.” Filler concrete, where required, will be paid for at 60 percent of the Contract Unit Price for Class B concrete.

These Items, measured as specified above, will be paid for at the Contract Unit Price per cubic yard.

3.19 CONCRETE CURB & GUTTER (SECTION 441)

Concrete curb and gutter is measured by the linear foot (meter) along the face of the curb.

These Items, measured as specified above, will be paid for at the Contract Unit Price per linear foot.

3.20 BOX CULVERT AND WINGWALLS, TOEWALLS, & PARAPETS (SECTION 500)

This work is measured for payment per cubic yard.

This work will be paid for at the Contract Price per cubic yard, each complete in place and accepted. Payment is full compensation for all things, including incidentals, and direct and indirect costs, to complete the work.

3.21 BAR REINFORCEMENT STEEL (SECTION 511)

The work is measured for payment in pounds of accepted bar reinforcement steel. Barrow County reserves the right to revise bar reinforcement steel quantities to correct errors and reflect changes on the Plans.

The work will be paid for at the Contract Price per pound of bar reinforcement steel, each complete in place.
3.22 STORM DRAIN PIPE (SECTION 550)

A. Excavation and Backfill
Backfill materials types II and III are measured according to Subsection 207.4, “Measurement.” There will be no separate payment for backfill material. Barrow County shall furnish G.A.B. backfill material for HDPE storm drain pipe bedding.

B. Flat Bottom and Circular Pipe (All Types)
The overall length of pipe installed, excluding tapered inlets, is measured in linear feet, along the central axis of the diameter of the pipe. Wyes, tees, and bends are included in this measurement. Pipe installations complete in place and accepted will be paid for at the Contract Price for each item. This payment is full compensation for excavating, furnishing, and hauling materials; installing, cutting pipe where necessary; repairing or replacing damaged sections; post installation inspection, making necessary connections; strutting, elongating, providing temporary drainage; joining an extension to an existing structure where required; and removing, disposing of, or using excavated material as directed by the Engineer.

1. Smooth Flow Pipe
The quantity of each diameter and steel thickness of smooth flow pipe as measured will be paid for at the Contract Unit Price per linear foot bid for the various sizes. Payment is full compensation for furnishing labor, materials, tools, O-ring mechanical joints, equipment, and incidentals to complete this Item, including removing and disposing excavation material.

2. Flared-End Sections
Flared-end sections, measured as specified above, will be paid for at the Contract Unit Price for each section of the specified size. Payment will also include sawing, removing, and replacing existing pavement removed to install a new drainage structure.

C. Pipe-Arches
The overall length of pipe-arch installed is measured in linear feet, along the bottom center line of the pipe.

D. Multiple Installations
In multiple installations, each single line of culvert structure is measured separately.

E. Tapered Pipe Inlets
Tapered pipe inlet sections are measured as a unit; do not include them in the overall length of the pipe.

F. Flared-End Sections
Flared-end sections are measured separately by the unit and not included in the overall pipe length.

G. Smooth-Flow Pipe
Smooth-flow pipe is measured by the linear foot along the pipe invert.

H. Elliptical Pipe
Elliptical pipe is measured in linear feet along the bottom center line of the pipe.

I. Post Installation Inspection
No measurement will be made for post installation inspection. No separate payment will be made for this work. Include the cost in the bid submitted for this pay item. Payment for this item is made as follows: One hundred percent of the Contract Price bid per linear foot is paid when the pipe is installed per the specifications including the required material documentation. The Contract Price is paid before post installation inspection.

3.23 RIP RAP (SECTION 603)

This work is measured for payment in square yards of accepted material of the specified thickness. Area measurements are made parallel to the surface on which the material is placed. Plastic filter fabric will be measured as the area of rip rap placed and accepted. No separate measurement will be made for fabric overlap joints, seams, or vertical sections at toe of slopes. No separate measurement is made for grout or cushioning sand. Plan dimensions are figured by the use of filled bags 12 by 18 by 6 in. thick. When filled bags are less than Plan dimensions or are of varying lengths or width, Plan square yards will be used to determine pay quantities, if overall dimensions are equal to or greater than those shown on the Plans.

This work will be paid for at the Contract Price per square yard of material complete in place.

3.24 PLASTIC FILTER FABRIC (SECTION 603)

Plastic filter fabric will be measured as the area of rip rap placed and accepted. No separate measurement will be made for fabric overlap joints, seams, or vertical sections at toe of slopes.

This work will be paid for at the Contract Price per square yard of material complete in place.

3.25 DRAINAGE STRUCTURES (SECTION 668)

Catch basins, drop inlets, manholes, junction boxes, drain inlets, special inlets, and safety grates, complete in place and accepted, are measured for payment according to the following:

A. Catch Basins and Drop Inlets

Each catch basin or drop inlet is grouped for measurement as follows:

Group 1: Structures connected to pipe 36 in or less in diameter, regardless of the pipe skew
Group 2: Structures connected to pipe over 36 in diameter regardless of the pipe skew

Catch basins or drop inlets, complete in place and accepted, are measured by the unit. In addition, each catch basin or drop inlet deeper than 6 ft is measured for additional payment. The extra depth is measured in linear feet.

B. Manholes

Manholes are measured for payment as follows:

1. Sanitary and Storm Sewer Manholes

Sanitary sewer manholes and storm sewer manholes are measured separately and divided into two types:

Type 1: Structures connected to pipe 42 in or less in diameter regardless of the pipe skew
Type 2: Structures connected to pipe 48 in to 84 in diameter regardless of the pipe skew

Each manhole is measured by the unit.

2. Manhole Additional Depth

In addition to Types 1 and 2 above, each Manhole deeper than 6 ft is measured for additional payment, termed “manhole additional depth.” This additional depth is
measured in linear feet and does not include the upper 6 ft. Manhole additional depth is classed as follows:

Manhole Additional Depth, Class 1: Applies to each manhole deeper than 6 ft, but not deeper than 10 ft. Class 1 payment is for the manhole depth between 6 ft and 10 ft.

Manhole Additional Depth, Class 2: Applies to each manhole deeper than 10 ft, but not deeper than 20 ft. Class 2 payment is for the manhole depth between 6 ft and 20 ft.

Manhole Additional Depth, Class 3: Applies to each manhole deeper than 20 ft, but not deeper than 30 ft. Class 3 payment is for the manhole depth between 6 ft and 30 ft.

Manhole Additional Depth, Class 4: Applies to each manhole deeper than 30 ft, but not deeper than 45 ft. Class 4 payment is the manhole depth between 6 ft and 45 ft.

Manhole additional depth is measured for payment at the class that includes the greatest depth below the original 6 ft.

For example, a manhole 32 ft deep would be measured and paid for as follows:

Storm (or sanitary) sewer manhole, type_____ Per each

Storm (or sanitary) sewer manhole, type_____, additional Depth Class 4 26 linear feet

C. Junction Boxes, Spring Boxes, and Drain Inlets

Junction boxes, spring boxes, and drain inlets are measured by the unit.

1. Each junction box will be complete according to Plan details.

2. Each drain inlet will consist of a pipe elbow or tee, concrete collar, and casting of the required diameter.

3. Each spring box will be complete according to Plan details.

D. Safety Grates

Safety grates fabricated and installed according to Plan details are measured by the square foot, computed from the overall surface dimensions of each grate.

E. Special Inlets for Safety Grates

Special inlets, complete in place, are measured for payment in cubic yards according to Section 500.

F. Vertical Tee Sections (or Saddles)

Vertical tee sections are not measured for separate payment.

Payment for the various structures under this Section will be made as follows:

A. Catch Basins and Drop Inlets

Catch basins or drop inlets will be paid for at the Contract Price per each. Depth in excess of 6 ft will be paid for at the Contract Price per linear foot. Payment is full compensation for the following:

- Furnishing castings
- Making pipe connections regardless of skew
- Providing materials, making forms, and disposing of surplus material

B. Manholes

Sanitary sewer and storm sewer manholes, complete in place, will be paid for at the Contract Price per each. Manhole additional depth of the appropriate class will be paid for at the Contract Price per linear foot. Payment is full compensation for the following:

- Furnishing castings, fittings, and other appurtenances called for on the Plans to complete the Item
- Making pipe connections regardless of skew
• Providing materials, making forms, and disposing of surplus material

NOTE: No additional payment will be made for connecting manholes to existing or new sewer lines. Include costs related to connections in the Contract Price for the structure.

C. Junction Boxes, Spring Boxes, and Drain Inlets
Junction boxes, spring boxes, or drain inlets will be paid for at the Contract Price per each. Payment is full compensation for the following:
- Furnishing castings, fittings, and other appurtenances called for on the Plans to complete the Item
- Making pipe connections regardless of skew
- Providing materials, making forms, and disposing of surplus material

D. Pipe
Pipe entering or exiting catch basins, drop inlets, manholes, junction boxes, spring boxes, or drain inlets, will be paid for under the section of the Specifications governing the pipe.

E. Sand Bedding Material for Precast Structures
No separate payment will be made for this material. Its cost is included in the Contract Price for the structure under which it is used.

F. Excavation and Normal Backfill
No separate payment will be made for excavation and normal backfill. Their cost is included in the Contract Price for the structure being excavated.

G. Safety Grates
Safety grates will be paid for at the Contract Price per square foot.

H. Inlets for Safety Grates
Inlets for safety grates will be paid for at the Contract Price per cubic yard of Class “A” concrete, including reinforcing steel.

I. Vertical Tee Sections (or Saddles)
Vertical tee sections will be included in payment for the section of structure they are incorporated in. No separate payment will be made for excavation, backfill, and disposal of surplus material.

3.26 GRASSING (SECTION 700)

A. Permanent Grassing
Permanent Grassing will be measured for payment by the acre.

B. Mulches
Straw or hay mulch applied to permanent grassing areas will be measured by the ton. Wood fiber mulch furnished by the Contractor for permanent grassing is not measured for separate payment.

C. Quantity of Sod
Sod is measured for payment by the number of square yards, surface measure, completed and accepted.

D. Water
Water furnished and applied to promote a satisfactory growth is not measured for payment.

E. Quantity of Lime and Fertilizer Mixed Grade
Lime and fertilizer are measured by the ton. Lime used as a filler in fertilizer is measured by the ton.

F. Quantity of Nitrogen Used for Permanent Grassing
Nitrogen is measured in pounds based on the weight of fertilizer used and its nitrogen content.

G. Replanting and Plant Establishments
No measurement for payment is made for any materials or work required under Subsection 700.3.06 and Subsection 700.3.07.

H. Temporary Grass
Temporary grass is measured for payment by the acre according to Section 163.

I. Seeded Native Restoration Areas, Multitropic Native Planting Areas, Riparian Areas, Stream Restoration Areas, and Wetland and Stream Mitigation Areas
Seeded Native Restoration Areas, Multitropic Native Planting Areas, Riparian areas, Stream Restoration area, and Wetland and Stream Mitigation areas will be measured by the acre and included under the pay item “Native Restoration and Riparian Seeding”.

As grassing and planting progress, the Contractor will receive full measurement and payment on regular monthly estimates provided the work complies with the Specifications.

A. Permanent Grassing
Permanent grassing will be paid for at the Contract Price per acre, complete and in place. Payment is full compensation for preparing the ground, seeding, wood fiber mulch, polyacrylamide, and providing plant establishment, soil tests and other incidentals.

B. Straw or Hay Mulch
Straw or hay mulch required for Permanent Grassing will be paid for according to Section 163.

C. Fertilizer Mixed Grade
Fertilizer mixed grade will be paid for at the Contract Price per ton. Payment is full compensation for furnishing and applying the material.

D. Lime
Lime will be paid for at the Contract Price per ton. Lime used as filler in fertilizer will be paid for per ton. Payment is full compensation for furnishing and applying the material.

E. Nitrogen
Nitrogen will be paid for at the Contract Price per pound of nitrogen content. Payment is full compensation for furnishing and applying the material.
F. Sod
Sod will be paid by the square yard in accordance with the following schedule of payments. Payment is full compensation for ground preparation, including addition of topsoil, furnishing and installing live sod, and for Plant Establishment.
1. 70% of the Contract Price per square yard will be paid at the satisfactory completion of the installation.
2. 20% of the Contract Price will be paid upon satisfactory review of sod which is healthy, weed free and viable at the inspection made at the end of the first spring after installation.
3. 10% of the contract price will be paid upon satisfactory review of sod that is healthy, weed free and viable at the Final Acceptance.

G. Temporary Grass
Temporary Grass will be paid for under Section 163.

H. Seeded Native Restoration Areas, Multitropic Native Planting Areas, Riparian Areas, Stream Restoration Areas, and Wetland and Stream Mitigation Areas
Seeded Native Restoration Areas, Multitropic Native Planting Areas, Riparian areas, Stream Restoration area, and Wetland and Stream Mitigation areas will be paid for at the Contract Price per acre, complete and in place. Payment is full compensation for preparing the ground, seeding, and providing plant establishment and other incidentals included under the pay item “Native Restoration and Riparian Seeding”.

3.27 EROSION CONTROL MATS, SLOPES (SECTION 716)

Erosion control mats (Slopes) are measured according to the Specification sections referenced in Subsection 716.3.05.

Erosion control mats (Slopes), measured as specified in Section 712, Section 713, or Section 714 will be paid for at the Contract Unit Price per square yard. This payment is full compensation for constructing the mat (blanket) and providing materials, equipment, tools, labor, and incidentals needed to maintain mats (blankets) for the life of the Contract or until a stand of grass has developed enough to prevent erosion.

3.28 SITE PREPARATION (Section 02100)

No separate measurement or payment will be made for site preparation of water lines or other pipes, nor for any other appurtenance facilities such as valves, fire hydrants, etc. Payment for all work shall be included in the unit prices bid per linear foot of the various sizes and type of pipe laid or for the number of units installed for valves, fire hydrants, etc. as provided for in contract bid Schedule.

3.29 EARTHWORK FOR UTILITIES (Section 02225)

No separate measurement or payment will be made for trench earth excavation for sewers, waterlines or other pipes, nor for any other appurtenant facilities such as wet wells, manholes, valves, fire hydrants, piers and pipe protection or encasement. Payment for all such excavation shall be included in the unit prices bid per linear foot of the various sizes and type of pipe laid as provided for in contract Bid Schedule. Where special bedding or cradles are shown on Drawings,
or required by ENGINEER, no allowance shall be made for extending earth excavation in
trenches to the bottom of such bedding or cradles.

3.30 ROCK REMOVAL (Section 02227)

A. Quantities for rock removal shall be expressed in cubic yards, as defined below, in
accordance with the plans and specifications.

B. If rock is encountered, the CONTRACTOR is to expose the rock for the length of the
proposed trench. The OWNER or ENGINEER shall then attain sufficient topographic
data to establish the limits of the rock to be excavated. CONTRACTOR is not entitled to
payment for rock removal without allowing the Engineer to establish the limits of the
rock to be excavated.

C. The quantity of rock to be paid for shall be calculated from the upper surface data
obtained to one foot below the pipe invert multiplied by a maximum three foot trench
width. No additional payment shall be made for manhole excavation or benching. The
price for this work shall be included in the unit price bid for rock excavation.

3.31 FIRE HYDRANTS (Section 02645)

A. The quantity of the size and type of fire hydrants will be the actual number installed by
the CONTRACTOR and approved by the ENGINEER.

B. The price bid shall include all related appurtenances to construct and install the fire
hydrants from the in-line tee to the fire hydrant itself. This price shall include the fire
hydrant, all labor, necessary equipment, valve fittings, restrained hydrant couplings,
blocking, valve box and collar, hydrant valve and tee, and all other related appurtenances.
Fire hydrants shall be paid for at the unit price bid.

3.32 WATERLINES (Section 02660)

A. The quantities of the various sizes and types of watermain will be measured along the
centerline of the pipe from center of fitting to center of fitting or to the end of the
pipeline. No deduction will be made for fittings or valves.

B. The price bid shall include, but not be limited to, the pipe material indicated, all fittings,
gaskets, bolts, glands, concrete blocking, detection tape and wire, all labor, equipment,
clearing and removal and disposal of clearing debris, stripping, storing, and replacement
of top soil in lawn and garden areas, excavation, dewatering of trenches, removal and
replacement of signs and mailboxes in the path of construction activities, replacement of
mailbox approaches, fences, curb and gutter, etc., protection of existing utilities (both
overhead and underground), storm pipes, culverts, drainage ditches, all benching,
sheeting and bracing, crushed stone bedding, tamping and compaction and backfilling,
traffic maintenance and protection, dressing and final grading, testing, cleanup, and all
other work incidental to place the water line as shown or indicated in the CONTRACT
DOCUMENTS.

3.33 VALVES (Section 02660)
A. The quantities of the various sizes and types of valves will be the actual number installed by the CONTRACTOR and approved by the ENGINEER.

B. The price bid shall include, but not be limited to, the valve, all labor, necessary equipment, fittings, joint restraints, blocking, concrete pad, valve box or manhole. Valves shall be paid for at the unit price bid.

3.34 FITTINGS (Section 02660)

No separate measurement or payment will be made for fittings. Fittings shall be included in the cost of the pipe line.

3.35 CONCRETE RESTRAINT ANCHORS (Section 02660)

No separate measurement or payment will be made for concrete restraint anchors. Concrete restraint anchors shall be included in the cost of the waterline, abandonment, valves, hydrants, etc.

3.36 RESTRAINED JOINTS (Section 02660)

A. Payment for restrained joints shall be the actual number installed by the CONTRACTOR and approved by the ENGINEER.

B. The price bid shall include all labor, equipment, and materials necessary to complete the installation as per the contract drawings and specifications.

C. This item refers to restraining gaskets for ductile iron pipe or PVC as specified in Section 02660 and called for at specific locations on contract drawings, or approved or recommended elsewhere by ENGINEER at his discretion only.

D. The CONTRACTOR shall not charge any fees to the OWNER for unused restrained joints.

3.37 PROTECTION, RELOCATION AND RESTORATION OF EXISTING UTILITIES (Section 02750)

No separate measurement or payment will be made for protection, relocation and restoration of existing utilities for water lines or other pipes, nor for any other appurtenant facilities such as valves, fire hydrants, etc. Payment for all such work shall be included in the unit prices bid per linear foot of the various sizes and type of pipe laid as provided for in contract Bid Schedule.

3.38 SITE RESTORATION (Section 02905)

No separate measurement or payment will be made for site restoration. Payment for all such work shall be included in the unit prices bid per linear foot of the various sizes and types of pipe laid as provided for in the contract Bid Schedule.

END OF SECTION
Section 163—Miscellaneous Erosion Control Items

163.1 General Description
This work includes constructing and removing:

- Silt control gates
- Temporary erosion control slope drains shown on the Plans or as directed
- Temporary sediment basins
- Sediment barriers and check dams
- Rock filter dams
- Stone filter berms
- Stone filter rings
- Temporary sediment traps
- Other temporary erosion control structures shown on the Plans or directed by the Engineer

This work also includes applying mulch (straw, hay, erosion control compost), and temporary grass.

163.1.01 Related References
A. Standard Specifications
   Section 109—Measurement and Payment
   Section 161—Control of Soil Erosion and Sedimentation
   Section 171—Temporary Silt Fence
   Section 500—Concrete Structures
   Section 603—Rip Rap
   Section 700—Grassing
   Section 711—Turf Reinforcement Matting
   Section 716—Erosion Control Mats (Slopes)
   Section 720—Triangular Silt Barrier
   Section 800—Coarse Aggregate
   Section 801—Fine Aggregate
   Section 822—Emulsified Asphalt
   Section 860—Lumber and Timber
   Section 863—Preservative Treatment of Timber Products
   Section 881—Fabrics
   Section 890—Seed and Sod
   Section 893—Miscellaneous Planting Materials

B. Referenced Documents
   AASHTO M252
   AASHTO M294

163.1.02 Submittals
Provide written documentation to the Engineer as to the average weight of the bales of mulch.

163.2 Materials
Provide materials shown on the Plans, such as pipe, spillways, wood baffles, and other accessories including an anti-seep collar, when necessary. The materials shall remain the Contractor’s property after removal, unless otherwise shown on the Plans.
Materials may be new or used; however, the Engineer shall approve previously used materials before use. Materials shall meet the requirements of the following Specifications:

<table>
<thead>
<tr>
<th>Material Section</th>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mulch</td>
<td></td>
<td>893.2.02</td>
</tr>
<tr>
<td>Temporary Silt Fence</td>
<td></td>
<td>171</td>
</tr>
<tr>
<td>Concrete Aprons and Footings shall be Class A</td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Rip Rap</td>
<td></td>
<td>603</td>
</tr>
<tr>
<td>Temporary Grass</td>
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<td>Triangular Silt Barrier</td>
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<td>Lumber and Timber</td>
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<td>860.2.01</td>
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<tr>
<td>Preservative Treatment of Timber Products</td>
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<td>863.1</td>
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<tr>
<td>Corrugated Polyethylene Temporary Slope Drain Pipe</td>
<td></td>
<td>AASHTO M252 or M294</td>
</tr>
</tbody>
</table>

163.2.01 Delivery, Storage, and Handling
General Provisions 101 through 150.

163.3 Construction Requirements

163.3.01 Personnel
General Provisions 101 through 150.

163.3.02 Equipment
General Provisions 101 through 150.

163.3.03 Preparation
General Provisions 101 through 150.

163.3.04 Fabrication
General Provisions 101 through 150.

163.3.05 Construction
A. Silt Control Gates
   If silt control gates are required or are directed by the Engineer, follow these guidelines to construct them:
   1. Clear and grade only that portion of the roadway within the affected drainage area where the drainage structure will be constructed.
   2. Construct or install the drainage structure and backfill as required for stability.
   3. Install the silt control gate at the inlet of the structure. Use the type indicated on the Plans.
   4. Vary the height of the gate as required or as shown on the Plans.
5. Finish grading the roadway in the affected drainage area. Grass and mulch slopes and ditches that will not be paved. Construct the ditch paving required in the affected area.
6. Keep the gate in place until the work in the affected drainage area is complete and the erodible area is stabilized.
7. Remove the Type 1 silt gate assembly by sawing off the wood posts flush with the concrete apron. Leave the concrete apron between the gate and the structure inlet in place. The gate shall remain the property of the Contractor.

**B. Temporary Slope Drains**

If temporary slope drains are required, conduct the roadway grading operation according to Section 161 and follow these guidelines:
1. Place temporary pipe slope drains with inlets and velocity dissipaters (straw bales, silt fence, or aprons) according to the Plans.
2. Securely anchor the inlet into the slope to provide a watertight connection to the earth berm. Ensure that all connections in the pipe are leak proof.
3. Place temporary slope drains at a spacing of 350 ft. maximum on a 0% to 2% grade and at a spacing of 200 ft. maximum on steeper grades, or more frequently as directed by the Engineer. Keep the slope drains in place until the permanent grass has grown enough to control erosion.
4. Remove the slope drains and grass the disturbed area with permanent grass. However, the temporary slope drains may remain in place to help establish permanent grass if approved by the Engineer.

**C. Temporary Sediment Basins**

Construct sediment basins according to the Plans at the required location, or as modified by the Engineer.
1. Construct the unit complete as shown, including:
   - Grading
   - Drainage
   - Rip rap
   - Spillways
   - Anti-seep collar
   - Temporary mulching and grassing on internal and external slopes
   - Accessories to complete the basin
2. When the sediment basin is no longer needed, remove and dispose of the remaining sediment.
3. Remove the sediment basin. Grade to drain and restore the area to blend with the adjacent landscape.
4. Mulch and permanently grass the disturbed areas according to Section 700.

**D. Sediment Barrier**

Construct sediment barrier according to the Plan details.
The following items may be used for sediment barriers:
1. Type NS Silt Fence.
2. Type S Silt Fence.
4. Triangular Silt Barrier.
5. Synthetic Fiber: Use synthetic fiber bales of circular cross section at least 18 in. in diameter. Use synthetic bales of 3 ft or 6 ft in length that are capable of being linked
together to form a continuous roll of the desired total length. Use bales that are enclosed in a geotextile fabric and that contain a pre-made stake hole for anchoring.

6. Coir: Use coir fiber bales of circular cross section at least 16” in diameter. Use coir bales of 10 ft, 15 ft, or 20 ft in length. Use coir baled with coir twine netting with 2 in. X 2 in. openings. Use coir bales with a dry density of at least 7 lb/ft³. Anchor in place with 2 in. X 4 in. wooden wedges with a 6 in. nail at the top. Place wedges no more than 36 in. apart.

7. Excelsior: Use curled aspen excelsior fiber with barbed edges in circular bales of at least 18 in. in diameter and nominally 10 ft in length. Use excelsior baled with polyester netting with 1 in. X 1 in. triangular openings. Use excelsior bales with a dry density of at least 1.4 lb/ft³. Anchor in place with 1 in. diameter wooden stakes driven through the netting at intervals of no more than 2 ft.

6. Compost Filter Sock: Use general use compost (see Subsection 893.2.02.A.5.b) in circular bales at least 18 in. diameter. Use compost baled with photo-degradable plastic mesh 3 mils thick with a maximum 0.25 in. X 0.25 in. openings. Anchor in place with 1 in. diameter wooden stakes driven through the netting at intervals of no more than 2 ft. The sock shall be dispersed on site when no longer required, as determined by the Engineer. Do not use Compost Filter Socks in areas where the use of fertilizer is restricted.

7. Compost Filter Berm: Use erosion control compost (see Subsection 893.2.02) to construct an uncompacted 1.5 ft to 2 ft high trapezoidal berm which is approximately 2 ft to 3 ft wide at the top and minimum 4 ft wide at the base. Do not use Compost Filter Berms in areas where the use of fertilizer is restricted.

The construction of the compost filter berm includes the following:
   a. Keeping the berm in a functional condition.
   b. Installing additional berm material when necessary.
   c. Removing the berm when no longer required, as determined by the Engineer. At the Engineer’s discretion, berm material may be left to decompose naturally, or distributed over the adjacent area.

E. Other Temporary Structures
   When special conditions occur during the design stage, the Plans may show other temporary structures for erosion control with required materials and construction methods.

F. Temporary Grass
   Use a quick growing species of temporary grass such as rye grass, millet, or a cereal grass suitable to the area and season.

   Use temporary grass in the following situations:
   • When required by the Specifications or directed by the Engineer to control erosion where permanent grassing cannot be planted.
   • To protect an area for longer than mulch is expected to last (60 calendar days), plant temporary grass as follows:
     1. Use seeds that conform to Subsection 890.2.01, “Seed.” Perform seeding according to Section 700; except use the minimum ground preparation necessary to provide a seed bed if further grading is required.
     2. Prepare areas that require no further grading according to Subsection 700.3.05.A, “Ground Preparation.” Omit the lime unless the area will be planted with permanent grass without further grading. In this case, apply the lime according to Section 700.
3. Apply mixed grade fertilizer at 400 lbs/acre. Omit the nitrogen. Mulch (with straw or hay) temporary grass according to Section 700. (Erosion control compost Mulch will not be allowed with grassing.)

4. Before planting permanent grass, thoroughly plow and prepare areas where temporary grass has been planted according to Subsection 700.3.05.A, “Ground Preparation”.

5. Apply Polyacrylamide (PAM) to all areas that receive temporary grassing.

6. Apply PAM (powder) before grassing or PAM (emulsion) to the hydroseeding operation.

7. Apply PAM according to manufacturer specifications.

8. Use only anionic PAM.

For projects that consist of shoulder reconstruction and/or shoulder widening, refer to Section 161.3.05H for Wood Fiber Blanket requirements.

G. Temporary Mulch

When stage construction or other conditions prevent completing a roadway section continuously, apply mulch (straw or hay or erosion control compost) to control erosion. Mulch may be used without temporary grassing for 60 calendar days or less. Areas stabilized with only mulch (straw/hay) shall be planted with temporary grass after 60 calendar days.

Apply mulch as follows:

1. Mulch (Hay or Straw) - Without Grass Seed
   a. Uniformly spread the mulch over the designated areas from 2 in. to 4 in. thick.
   b. After spreading the mulch, walk in the mulch by using a tracked vehicle (preferred method), empty sheep foot roller, light disk, or other means that preserves the finished cross section of the prepared areas. The Engineer will approve of the method.
   c. Place temporary mulch on slopes as steep as 2:1 by using a tracked vehicle to imbed the mulch into the slope.
   d. When grassing operations begin, leave the mulch in place and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.

2. Erosion control compost - Without Grass Seed
   a. Uniformly spread the mulch (erosion control compost) over the designated areas 2 in. thick.
   b. When rolling is necessary, or directed by the Engineer, use a light corrugated drum roller.
   c. When grassing operations begin, leave the mulch in place and plow the mulch into the soil during seed bed preparation. The mulch will become beneficial plant food for the newly planted grass.
   d. Plant temporary grass on area stabilized with mulch (erosion control compost) after 60 calendar days.
   e. Do not use Erosion Control Compost in areas where the use of fertilizer is restricted.

H. Miscellaneous Erosion Control Not Shown on the Plans

When conditions develop during construction that were unforeseen in the design stage, the Engineer may direct the Contractor to construct temporary devices such as but not limited to:

- Bulkheads
- Sump holes
- Half round pipe for use as ditch liners
- U-V resistant plastic sheets to cover critical cut slopes
The Engineer and the Contractor will determine the placement to ensure erosion control in the affected area.

I. Diversion Channels
When constructing a culvert or other drainage structure in a live stream that requires diverting a stream, construct a diversion channel.

J. Check Dams
Check dams are constructed of the following materials:
- Stone plain rip rap according to Section 603 (Place woven plastic filter fabric on ditch section before placing rip rap.)
- Sand bags as in Section 603 without Portland cement.
- Fabric (Type S silt fence)
- Baled wheat straw
- Hay Bales
Temporary check dams shall be constructed according to plan details and shall remain in place until the permanent ditch protection is in place or being installed and the removal is approved by the Engineer.

K. Construction Exits
Locate construction exits at any point where vehicles will be leaving the project onto a public roadway. Install construction exits at the locations shown in the plans and in accordance with plan details.

L. Retrofit
Add the retrofit device to the permanent outlet structure as shown on the Plan details. When all land disturbing activities that would contribute sediment-laden runoff to the basin are complete, clean the basin of sediment and stabilize the basin area with vegetation. When the basin is stabilized, remove the retrofit device from the permanent outlet structure of the detention pond.

M. Inlet Sediment Trap
Inlet sediment traps consist of a temporary device placed around a storm drain inlet to trap sediment. An excavated area adjacent to the sediment trap will provide additional sediment storage.
Inlet sediment traps may be constructed of Type C silt fence, plastic frame and filter, hay bales, baffle box, or other filtering materials approved by the Engineer.
Construct inlet sediment traps according to the appropriate specification for the material selected for the trap.
Place inlet sediment traps as shown on the Plans or as directed by the Engineer.

N. Rock Filter Dams
Construct rock filter dams of the material selected as shown in the approved erosion and sediment control plan.
Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.
Rock filter dams shall remain in place until the permanent ditch protection is in place or is being installed and their removal is approved by the Engineer.

O. Stone Filter Berms
Construct stone filter berms of the material selected as shown in the approved erosion and sediment control plan.
Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.
Stone filter berms shall remain in place until the permanent slope protection is in place or is being installed and their removal is approved by the Engineer.

**P. Stone Filter Rings**
Construct stone filter rings of the material selected as shown in the approved erosion and sediment control plan.
Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.
A stone filter ring shall remain in place until final stabilization of the area which drains toward it is achieved and its removal is approved by the Engineer.

**Q. Temporary Sediment Traps**
Construct temporary sediment traps of the material selected as shown in the approved erosion and sediment control plan.
Construct and place this item in accordance with the approved erosion control construction detail(s) and Standard Specification Section 603.
A temporary sediment trap shall remain in place until final stabilization of the area which drains toward it is achieved and its removal is approved by the Engineer.

163.3.06 Quality Acceptance
General Provisions 101 through 150.

163.3.07 Contractor Warranty and Maintenance
General Provisions 101 through 150.

163.4 Measurement

**A. Silt Control Gates**
Silt control gates are measured for payment by the entire structure constructed at each location complete in place and accepted. Silt control gates constructed at the inlet of multiple lines of drainage structures are measured for payment as a single unit.

**B. Temporary Slope Drains**
Temporary slope drains are measured for payment by the linear foot of pipe placed. When required, the inlet spillway and outlet apron and/or other dissipation devices are incidental and not measured separately.

**C. Temporary Sediment Basins**
Sediment basins are measured for payment by the entire structure complete, including construction, maintenance, and removal. Measurement also includes:
- Earthwork
- Drainage
- Spillways
- Baffles
- Rip rap
- Final cleaning to remove the basin
Permanent and temporary grassing for sediment basins is measured separately for payment.
D. Sediment Barriers
Sediment barriers are measured by the linear foot.

E. Other Temporary Structures
Other temporary structures are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

F. Temporary Grass
Temporary grass is measured for payment by the acre. Lime, when required, is measured by the ton.

G. Temporary Mulch
Mulch is measured for payment by the ton. The weight for measurement will be the product of the number of bales used and the average weight per bale as determined on scales provided by the contractor or state certified scales. The contractor shall provide written documentation to the Engineer as to the average weight of the bales.

H. Miscellaneous Erosion Control Items Not Shown on the Plans
These items are not measured for payment. The cost for construction, materials, and removal is included in the price bid for other contract items.

I. Diversion Channels
Diversion channels are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

J. Check Dams
Stone, sand bags, baled wheat straw, and compost filter stock check dams are measured per each which includes all work necessary to construct the check dam including woven plastic filter fabric placed beneath the stone check dams. Fabric check dams are measured per linear foot.

K. Construction Exits
Construction exits are measured per each which will include all work necessary to construct the exit including the required geotextile fabric placed beneath the aggregate.

L. Retrofits
Retrofit will be measured for payment per each. The construction of the detention pond and permanent outlet structure will be measured separately under the appropriate items.

M. Inlet Sediment Traps
Inlet sediment traps, regardless of the material selected, are measured per each which includes all work necessary to construct the trap including any incidentals and providing the excavated area for sediment storage.

N. Rock Filter Dams
Rock filter dams are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

O. Stone Filter Berms
Stone filter berms are measured for payment per linear foot required. This includes the entire structure at each location and all the work necessary for construction.

P. Stone Filter Rings
Stone filter rings are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.
Q. Temporary Sediment Traps
Temporary sediment traps are measured for payment per each required. This includes the entire structure at each location and all the work necessary for construction.

163.4.01 Limits
General Provisions 101 through 150.

163.5 Payment

A. Silt Control Gates
The specified silt control gates are paid for at the Contract Unit Price per each. Payment is full compensation for:
- Furnishing the material and labor
- Constructing the concrete apron as shown on the Plans
- Excavating and backfilling to place the apron
- Removing the gate

B. Temporary Slope Drains
Temporary slope drains are paid for by the linear foot. Payment is full compensation for materials, construction, removal (if required), inlet spillways, velocity dissipaters, and outlet aprons.
When temporary drain inlets and pipe slope drains are removed, they remain the Contractor’s property and may be reused or removed from the Project as the Contractor desires. Reused pipe or inlets are paid for the same as new pipe or inlets.

C. Temporary Sediment Basins
Sediment basins, measured according to Subsection 163.4,C “Measurement,” are paid for by the unit, per each, for the type specified on the Plans. Price and payment are full compensation for work and supervision to construct, and remove the sediment basin, including final clean-up.

D. Sediment Barriers
Sediment barriers are paid for by the linear foot. Price and payment are full compensation for work and supervision to construct, and remove the sediment barrier, including final clean-up.

E. Other Temporary Structures
Other temporary structures are not measured for payment. Costs for the entire structure complete, including materials, construction (including earthwork), and removal is included in the price bid for the drainage structure or for other Contract items.

F. Temporary Grass
Temporary grass is paid for by the acre. Payment is full compensation for all equipment, labor, ground preparation, materials, fertilizer, mulch, and other incidentals except Lime. Lime (when required) is paid for by the ton.

G. Temporary Mulch
Mulch is paid for by the ton. Payment is full compensation for all materials, labor, maintenance, equipment and other incidentals.

H. Miscellaneous Erosion Control Items Not Shown on the Plans
These items are not paid for separately. They are included in the price bid for other contract items.

I. Diversion Channel
Diversion channels are not paid for separately. They are included in the price bid for the drainage structure or for other contract items.

J. Check Dams
Payment is full compensation for all materials, construction, and removal. Stone plain riprap, sand bag, baled wheat straw, or compost filter socks check dams are paid for per each. The required woven filter fabric required under each stone check dam is included in the bid price. Fabric check dams are paid for per linear foot.

K. Construction Exits
Construction exits are paid for per each. Payment is full compensation for all materials including the required geotextile, construction, and removal.

L. Retrofits
This item is paid for at the Contract Unit Price per each. Payment is full compensation for all work, supervision, materials (including the stone filter), labor and equipment necessary to construct and remove the retrofit device from an existing or proposed detention pond outlet structure.

M. Inlet Sediment Trap
Inlet sediment traps are paid for per each. Payment is full compensation for all materials, construction, and removal.

N. Rock Filter Dams
Rock filter dams are paid for per each. Payment is full compensation for all materials, construction, and removal for each. Clean reused stone Type 3 riprap and #57 stone are paid for on the same basis as new items. Plastic woven filter fabric is required under rock filter dams and is included in the price bid for each.

O. Stone Filter Berms
Stone filter berms are paid for per linear foot. Payment is full compensation for all materials, construction, and removal for each. Clean reused stone Type 3 riprap and #57 stone are paid for on the same basis as new items. Plastic woven filter fabric is required under rock filter berms and is included in the price bid for linear foot.

P. Stone Filter Rings
Stone filter rings are paid for per each. Payment is full compensation for all materials, construction, and removal for each. Clean reused stone Type 3 riprap and #57 stone are paid for on the same basis as new items. Plastic woven filter fabric is required under stone filter rings and is included in the price bid for each.

Q. Temporary Sediment Traps
Temporary sediment traps are paid for per each required. This includes the entire structure at each location and all the work necessary for construction. The items in the section (that are paid for separately and not included in other contract items) are made as partial payments as follows:
- When the item is installed and put into operation the Contractor will be paid 75 percent of the Contract price.
- When the Engineer instructs the Contractor that the Item is no longer required and is to remain in place or is removed, whichever applies, the remaining 25 percent will be paid. Temporary devices may be left in place at the Engineer’s discretion at no change in cost.
Payment is made under:

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<thead>
<tr>
<th>Item No. 163</th>
<th>Description</th>
<th>Unit</th>
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<tr>
<td></td>
<td>Construct and remove silt control gate, type__</td>
<td>Per each</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Construct and remove temporary pipe slope drain</td>
<td>Per linear foot</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Construct and remove temporary sediment barrier</td>
<td>Per linear foot</td>
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<td>Item No. 163</td>
<td>Construct and remove sediment basin</td>
<td>Per each</td>
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<tr>
<td>Item No. 163</td>
<td>Construct and remove check dams except fabric dam</td>
<td>Per each</td>
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<td>Construct and remove fabric check dam</td>
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<td>Construct and remove construction exit</td>
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<td>Item No. 163</td>
<td>Construct and remove retrofit</td>
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<tr>
<td>Item No. 163</td>
<td>Construct and remove rock filter dams</td>
<td>Per each</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Construct and remove stone filter berm</td>
<td>Per linear foot</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Construct and remove stone filter ring</td>
<td>Per each</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Construct and remove inlet sediment trap</td>
<td>Per each</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Construct and remove temporary sediment trap</td>
<td>Per each</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Temporary Grass</td>
<td>Per acre</td>
</tr>
<tr>
<td>Item No. 163</td>
<td>Temporary Mulch</td>
<td>Per ton</td>
</tr>
</tbody>
</table>

163.5.01 Adjustments
General Provisions 101 through 150.