ESTIMATE OF QUANTITIES

<table>
<thead>
<tr>
<th>Bid Item Number</th>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>00060010</td>
<td>Mobilization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10060020</td>
<td>Clear and grub tree</td>
<td>2</td>
<td>each</td>
</tr>
<tr>
<td>11061690</td>
<td>Remove Sediment</td>
<td>0.3</td>
<td>cuyd</td>
</tr>
<tr>
<td>12061210</td>
<td>Uncutted Excavation</td>
<td>210</td>
<td>cuyd</td>
</tr>
<tr>
<td>23060100</td>
<td>Remove and Replace Topsoil</td>
<td>14000</td>
<td>cuyd</td>
</tr>
<tr>
<td>26060101</td>
<td>Back Course</td>
<td>4.2</td>
<td>ton</td>
</tr>
<tr>
<td>32061200</td>
<td>Asphalt Concrete</td>
<td>4.4</td>
<td>ton</td>
</tr>
<tr>
<td>45060112</td>
<td>18&quot; RCP Class 2, Fmns</td>
<td>66</td>
<td>ft</td>
</tr>
<tr>
<td>45060210</td>
<td>18&quot; RCP, Install</td>
<td>66</td>
<td>ft</td>
</tr>
<tr>
<td>45060200</td>
<td>18&quot; RCP Flat End, Fmns</td>
<td>1</td>
<td>each</td>
</tr>
<tr>
<td>67060200</td>
<td>18&quot; RCP Flat End, Infil</td>
<td>1</td>
<td>each</td>
</tr>
<tr>
<td>17360100</td>
<td>Erosion Control</td>
<td>157</td>
<td>slyd</td>
</tr>
<tr>
<td>73460104</td>
<td>Type 4 Erosion Control, Blanket</td>
<td>157</td>
<td>slyd</td>
</tr>
<tr>
<td>73460154</td>
<td>12&quot; Diameter Erosion Control, Wattle</td>
<td>174</td>
<td>ft</td>
</tr>
</tbody>
</table>

CLEARING

Before clearing activities begin, the Contractor shall contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor's expense.

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following:

1. Construction/demolition debris shall be managed and reclaimed in accordance with the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

2. The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction/demolition debris consisting of concrete, asphalt, concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:3.10:06. Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.
UNCLASSIFIED EXCAVATION

Unclassified Excavation is provided for the construction of the outlet ditch.

Excess material not required shall be handled as waste.

The Contractor shall add water as needed to meet the moisture content and density requirements as directed by the Engineer.

The outlet end of the outlet ditch shown is an approximation and may require further excavation to provide positive drainage of the ditch. The Contractor is urged to visit the project site prior to preparing a bid. No field measurement of Unclassified Excavation will be required and plans quantity shall be the basis of payment.

SAWING

The existing surface will be sawed full depth to a true line with a vertical face where asphalt concrete is to be placed adjacent to existing asphalt or concrete.

All costs associated with this work shall be incidental to the contract unit price per cubic yard for Unclassified Excavation.

REMOVE AND REPLACE TOPSOIL

Prior to beginning ditch grading operations, topsoil shall be stripped from the ditch construction area. Following completion of excavation operations, topsoil shall be bladed back down the ditch slopes and bottom.

The estimated amount of topsoil to be removed and replaced is 40 CuYd.

All cost associated with removing and replacing the topsoil along areas to be resurfaced shall be incidental to the lump sum price for "Remove and Replace Topsoil".

BASE COURSE

All requirements of the Standard Specifications for Base Course shall apply, except that Base Course for Backfill shall be compacted to the satisfaction of the Engineer.

Base Course shall be placed 6" deep adjacent to in-place base course for repair of the road bed where the culvert is being installed.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements of the Standard Specifications for Class E, Type 1 specifications.

All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

The asphalt binder used in the mixture shall be PG 64-22, PG 64-28 or PG 64-34 Asphalt Binder.

Asphalt Concrete Composite shall be placed 6" deep adjacent to in-place base course for repair of the road bed where the culvert is being installed.

18” RCP AND FLARED END

This project will require 66 feet of 18” RCP and 1-18” RCP Flared End Section.

MAINTENANCE OF TRAFFIC

Maintenance of traffic for this project will be provided by the SDDOT.

The Contractor shall notify the SDDOT two weeks prior to beginning construction to coordinate traffic control for the project.

TABLE OF TYPE M MEDIAN DRAINS

(Quantities Shown for Information Only)

<table>
<thead>
<tr>
<th>Station</th>
<th>Class M8 Concrete (CuYd)</th>
<th>Reinforcing Steel (Lb)</th>
<th>Type M Frame and Grate Assembly (Each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+13.30</td>
<td>1.25</td>
<td>86.25</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>1.25</td>
<td>86.25</td>
<td>1</td>
</tr>
</tbody>
</table>

TYPE 4 EROSION CONTROL BLANKET

Type 4 Erosion Control Blanket shall be installed 16 feet wide at the location noted on the plans and at locations determined by the Engineer during construction.

The Type 4 Erosion Control Blanket provided shall be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

http://apps.sd.gov/Applications/HC54ApprovedProducts/main.asp

The Contractor shall install Type 4 Erosion Control Blanket according to the manufacturer’s installation instructions.

The outlet end of the outlet ditch shown is an approximation and may require additional Type 4 Erosion Control Blanket. The Contractor is urged to visit the project site prior to preparing a bid. Plans quantity shall be the basis of payment.

EROSION CONTROL

Areas disturbed during construction of this project with the exception of the roadway surface shall be seeded, fertilized and mulched.

All permanent seed shall be planted in the topsoil at a depth of ¼” to ½”.

All seed broadcast must be raked or dragged in (incorporated) within the top ¼ to ½” of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

Type F Permanent Seed Mixture shall consist of the following:

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Variety</th>
<th>Pure Live Seed (PLS) (Pounds/1000 SqFt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Wheatgrass</td>
<td>Flintlock, Rodan, Rosana</td>
<td>1.3</td>
</tr>
<tr>
<td>Green Needlegrass</td>
<td>Lodom</td>
<td>0.8</td>
</tr>
<tr>
<td>Sideoats Grama</td>
<td>Butte, Killdeer, Pierre, Trailway</td>
<td>0.6</td>
</tr>
<tr>
<td>Blue Grama</td>
<td>Bad River, Willis</td>
<td>0.4</td>
</tr>
<tr>
<td>Oats or Spring Wheat: April through July; Winter Wheat: August through November</td>
<td>1.9</td>
<td></td>
</tr>
</tbody>
</table>

A commercial fertilizer with a minimum guaranteed analysis of 13-13-13, 18-46-0, 11-52-0, or an approved alternate fertilizer sold for use as a lawn starter fertilizer shall be applied to all areas designated for permanent seeding. The application rate of fertilizer shall be 3 pounds per 1000 SqFt.

Fiber mulch shall be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier shall be added to the fiber mulch product selected from the list below. If the product selected has guar gum tackifier included, then the additional 2% of tackifier shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier shall be synthetic.

Fiber mulch shall be applied at the rate of 2000 pounds per acre.

The Contractor shall allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials shall be incidental to the contract lump sum price for Erosion Control.
EROSION CONTROL (CONTINUED)

The fiber mulch used on this project shall be one from the list below:

<table>
<thead>
<tr>
<th>Product</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mat-Fiber Plus</td>
<td>Mat, Inc. Floodwood, MN</td>
</tr>
<tr>
<td>Conwed Hydro Mulch 2000</td>
<td>Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 <a href="http://www.conwedfibers.com">www.conwedfibers.com</a></td>
</tr>
<tr>
<td>EcoFibre Plus Tackifier</td>
<td>Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 <a href="http://www.profile-eco.com">www.profile-eco.com</a></td>
</tr>
<tr>
<td>Terra Wood</td>
<td>Profile Products LLC Buffalo Grove, IL Phone: 1-800-726-6371 <a href="http://www.terra-mulch.com">www.terra-mulch.com</a></td>
</tr>
<tr>
<td>Bindex Wood WT</td>
<td>American Excelsior Company Arlington, TX Phone: 1-800-777-7645 <a href="http://www.amerexcel.com">www.amerexcel.com</a></td>
</tr>
<tr>
<td>Second Nature Wood</td>
<td>Central Fiber LLC Canton, OH Phone: 1-888-452-2630 <a href="http://www.centralfiber.com">www.centralfiber.com</a></td>
</tr>
</tbody>
</table>

---

EROSION CONTROL Wattles

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

An additional quantity of 30 feet of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control.

The erosion control wattles provided shall be from the list shown below:

<table>
<thead>
<tr>
<th>Product</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEC Premier Straw Wattles</td>
<td>American Excelsior Company</td>
</tr>
<tr>
<td>Excel Straw Logs</td>
<td>Western Excelsior Corporation</td>
</tr>
<tr>
<td>Earth Saver Rice Straw</td>
<td>R.H. Dyck Inc.</td>
</tr>
<tr>
<td>Amber Waves Straw Wattles</td>
<td>GroNatural</td>
</tr>
</tbody>
</table>

Approximately 2900 SqFt will require permanent seeding. All costs associated with permanent seeding, fertilizing, and fiber mulching shall be incidental to the contract lump sum for price for Erosion Control.

The outlet end of the outlet ditch shown is an approximation and may require additional Erosion Control

It is the Contractor’s responsibility to verify estimated acreage. No adjustment in quantity will be allowed unless additional work is ordered by the Engineer.

---

TABLE OF EROSION CONTROL WATTLE

<table>
<thead>
<tr>
<th>Station</th>
<th>L/R</th>
<th>Diameter (inch)</th>
<th>Location</th>
<th>Quantity (Ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+80 to 1+40</td>
<td>L/R</td>
<td>12</td>
<td>Around the Type 4 Erosion Control Blanket as shown on the Erosion Control sheet.</td>
<td>144</td>
</tr>
<tr>
<td>Additional Quantity:</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total:</td>
<td>174</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HORIZONTAL ALIGNMENT

<table>
<thead>
<tr>
<th>Type</th>
<th>Station</th>
<th>Northing</th>
<th>Easting</th>
</tr>
</thead>
<tbody>
<tr>
<td>POB 0+00.00</td>
<td>223919.428</td>
<td>997751.568</td>
<td></td>
</tr>
<tr>
<td>PI 0+09.03</td>
<td>223928.455</td>
<td>997751.696</td>
<td></td>
</tr>
<tr>
<td>PI 0+81.03</td>
<td>224000.448</td>
<td>997752.718</td>
<td></td>
</tr>
<tr>
<td>POE 1+36.30</td>
<td>224055.712</td>
<td>997753.503</td>
<td></td>
</tr>
</tbody>
</table>

Additional Erosion Control Wattles

EarthTec Erosion Control Wattles

Bio Logs

Stenlog Erosion Control Blanket Riverton, MB Phone: 1-866-280-7327 www.erosioncontrolblanket.com

Winters Wattles

Patriot Straw Wattles

0+13.30 Install Type M Median Drain
0+15.03 to 0+81.03 Install 66' of 18" RCP
0+81.03 Install 15" RCP Placed End
0+81.03 to 1+40 (approximate) Construct ditch to daylight point as directed by the Engineer.

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

0+00 Install 66' of 18" RCP

0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

0+00 Install 66' of 18" RCP

0+00 Install 15" RCP Placed End

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SDDOT Maintenance Facility

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SDDOT Maintenance Facility

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SDDOT Maintenance Facility

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0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

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SDDOT Maintenance Facility

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SDDOT Maintenance Facility

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SDDOT Maintenance Facility

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Property Line

Shape surface to drain toward Type M Median Drain

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0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

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0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

0+00 Install 66' of 18" RCP

0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

0+00 Install 66' of 18" RCP

0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

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0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

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SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

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0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

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0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

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SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

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0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.

SDDOT Maintenance Facility

Crescent Drive

Property Line

Shape surface to drain toward Type M Median Drain

0+00 Install Type M

0+00 Install 66' of 18" RCP

0+00 Install 15" RCP Placed End

0+00 to 0+81.03 (approximate) Construct ditch to daylight point as directed by the Engineer.
Inlet Elevation = 4447.5

Shape surface to drain toward Type M Median Drain

Flowline Elevation = 4444.7
Flowline Elevation = 4444.0
Station 0+13.30
Type M Median Drain

Inlet Elevation = 4447.5

Horizontal Scale 1" = 10'
Vertical Scale 1" = 5'
0+00 to 0+40
Install 50 SqYd of Type 4 Erosion Control Blanket

0+80 to 1+40 (approximate)
Install 107 SqYd of Type 4 Erosion Control Blanket

0+80 to 1+40 (approximate)
Install 144 ft of 12" Diameter Erosion Control Waffles

Type 4 Erosion Control Blanket

12" Erosion Control Wattle
GENERAL NOTES:
The bolts shall conform to ASTM A307, Grade C. Nuts shall be heavy hex, conforming to ASTM A563. Washers shall conform to ASTM F436.

Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.
Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.

Adjustable Eye Bolt Tie

Pipe Sleeve:
- Outside Edge of Joint

ASTM A307 Tie Bolt with 2 Heavy Hex Nuts and 2 Washers

GENERAL NOTES:
Angles shall conform to ASTM A36.
Bolts shall conform to ASTM A307. Nuts shall be heavy hex, conforming to ASTM A563. Washers shall conform to ASTM F436.
Galvanize, angles, bolts, nuts, and washers in accordance with ASTM A153.

Angle and Bolt Tie

GENERAL NOTES:
In lieu of tie bolts detailed above, teaktonius fasteners or other type tie bolt connections may be installed if approved by the Engineer.

The first three sections (both inlet and outlet of RCP, and RCP, Arch up to and including the TP diameter or equivalent pipe shall be tied with tie bolts. Pipe sizes larger than 78’ diameter or equivalent diameter shall have all sections tied. Each end section is considered as one section.

There will be no separate measurement or payment for tie bolts, The cost of the tie bolts shall be prorated to the contract unit price per cost for the corresponding old item for RCP, or RCP, Arch.

September 14, 2012

TIE BOLTS FOR R.C.P. END SECTIONS
STANDARD DITCH SECTION

SLOPED DITCH SECTION

GENERAL NOTES:
Prior to placement of the erosion control blanket, the area shall be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" deep by 12" wide. The trench shall be backfilled and compacted to the appropriate elevation.

Bury upslope end of erosion control blanket in a trench 6" deep by 12" wide. The trench shall be backfilled and compacted to the appropriate elevation.

Bury upslope end of erosion control blanket in a trench 6" deep by 12" wide. The trench shall be backfilled and compacted to the appropriate elevation.

PIECE END DETAIL

December 21, 2004

Erosion Control Blanket

Published Date: 1st Qtr. 2012

PLATE NUMBER 734.01

Sheet 1 of 1
GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow. At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3' x 5' trench, install the wattle tightly in the trench so that light cannot be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1' x 3' or 2' x 3' wood stakes, however, other types of stakes such as "rebar" may be used only if approved by the Engineer. The stakes shall be placed 6' from the ends of the wattles and the spacing of the stakes along the wattles shall be 3 to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 0.25 inches. The Contractor shall remove, replace, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer.

All costs for removing, disassembling, or reshaping the wattles shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".