

| STATE OF        | PROJECT          | SHEET | TOTAL |
|-----------------|------------------|-------|-------|
| SOUTH<br>DAKOTA | 090 E-451, etc.  | 1     | 30    |
|                 | )ate: 04/13/2015 |       |       |

INDEX OF SHEETS

| Sheet  | 1:     | Title Sheet            |
|--------|--------|------------------------|
| Sheets | 2-13:  | Estimate of Quantities |
|        |        | & Plan Notes           |
| Sheets | 14-15: | Plan Sheets            |
| Sheets | 16-18: | PCCP Repair Details    |
| Sheets | 19-30: | Standard Plates        |
|        |        |                        |



LE - ... NRC CONCRETE REPAIR 2015 TITLE. DG

### **ESTIMATE OF QUANTITIES**

### PCN i3te – I-90 EB

| Bid Item<br>Number | Item                               | Quantity | Unit |
|--------------------|------------------------------------|----------|------|
| 009E0010           | Mobilization                       | Lump Sum | LS   |
| 390E0200           | Repair Type A Spall                | 31.5     | SqFt |
| 634E0100           | Traffic Control                    | 607      | Unit |
| 634E0120           | Traffic Control, Miscellaneous     | Lump Sum | LS   |
| 634E0420           | Type C Advance Warning Arrow Panel | 1        | Each |

### PCN it3f - I-90 EB

| Bid Item<br>Number | Item                                                                 | Quantity | Unit |
|--------------------|----------------------------------------------------------------------|----------|------|
| 009E0010           | Mobilization                                                         | Lump Sum | LS   |
| 380E5030           | Nonreinforced PCC Pavement Repair                                    | 148.0    | SqYd |
| 380E6000           | Dowel Bar                                                            | 12       | Each |
| 380E6110           | Insert Steel Bar in PCC Pavement                                     | 384      | Each |
| 380E6200           | Tie Bar Retrofit, Stitching                                          | 105      | Each |
| 380E6310           | Seal Random Cracks in PCC Pavement                                   | 210      | Ft   |
| 633E0010           | Cold Applied Plastic Pavement Marking, 4"                            | 10       | Ft   |
| 633E1200           | Waterborne Pavement Marking Paint with High<br>Grade Polymer, White  | 0.5      | Gal  |
| 633E1205           | Waterborne Pavement Marking Paint with High<br>Grade Polymer, Yellow | 0.1      | Gal  |
| 633E5000           | Grooving for Cold Applied Plastic Pavement<br>Marking, 4"            | 10       | Ft   |
| 634E0100           | Traffic Control                                                      | 687      | Unit |
| 634E0120           | Traffic Control, Miscellaneous                                       | Lump Sum | LS   |
| 634E0420           | Type C Advance Warning Arrow Panel                                   | 1        | Each |
| 634E0640           | Temporary Pavement Marking                                           | 122      | Ft   |

### PCN i3tg – I-90 WB

| Bid Item<br>Number | Item                                                                | Quantity | Unit |
|--------------------|---------------------------------------------------------------------|----------|------|
| 009E0010           | Mobilization                                                        | Lump Sum | LS   |
| 380E5030           | Nonreinforced PCC Pavement Repair                                   | 216.0    | SqYd |
| 380E6000           | Dowel Bar                                                           | 60       | Each |
| 380E6110           | Insert Steel Bar in PCC Pavement                                    | 204      | Each |
| 380E6200           | Tie Bar Retrofit, Stitching                                         | 36       | Each |
| 380E6310           | Seal Random Cracks in PCC Pavement                                  | 72       | Ft   |
| 633E1200           | Waterborne Pavement Marking Paint with High<br>Grade Polymer, White | 0.9      | Gal  |
| 634E0100           | Traffic Control                                                     | 218      | Unit |
| 634E0120           | Traffic Control, Miscellaneous                                      | Lump Sum | LS   |
| 634E0420           | Type C Advance Warning Arrow Panel                                  | 1        | Each |
| 634E0640           | Temporary Pavement Marking                                          | 162      | Ft   |

### PCN i3th - SD 445

| Bid Item<br>Number | Item                               | Quantity | Unit |
|--------------------|------------------------------------|----------|------|
| 009E0010           | Mobilization                       | Lump Sum | LS   |
| 380E5030           | Nonreinforced PCC Pavement Repair  | 26.7     | SqYd |
| 380E6110           | Insert Steel Bar in PCC Pavement   | 40       | Each |
| 390E0200           | Repair Type A Spall                | 45.5     | SqFt |
| 634E0100           | Traffic Control                    | 1,023    | Unit |
| 634E0120           | Traffic Control, Miscellaneous     | Lump Sum | LS   |
| 634E0420           | Type C Advance Warning Arrow Panel | 2        | Each |

### PCN i3tj – SD 44

| Bid Item<br>Number | Item                               | Quantity | Unit |
|--------------------|------------------------------------|----------|------|
| 009E0010           | Mobilization                       | Lump Sum | LS   |
| 390E0200           | Repair Type A Spall                | 89.5     | SqFt |
| 634E0100           | Traffic Control                    | 1,023    | Unit |
| 634E0120           | Traffic Control, Miscellaneous     | Lump Sum | LS   |
| 534E0420           | Type C Advance Warning Arrow Panel | 2        | Each |

### PCN i3tk - US 16B WB

| Bid Item<br>Number | Item                                                                | Quantity | Unit |
|--------------------|---------------------------------------------------------------------|----------|------|
| 009E0010           | Mobilization                                                        | Lump Sum | LS   |
| 380E5030           | Nonreinforced PCC Pavement Repair                                   | 96.4     | SqY  |
| 380E6110           | Insert Steel Bar in PCC Pavement                                    | 130      | Each |
| 380E6200           | Tie Bar Retrofit, Stitching                                         | 46       | Each |
| 380E6310           | Seal Random Cracks in PCC Pavement                                  | 90       | Ft   |
| 390E0200           | Repair Type A Spall                                                 | 2.0      | SqF  |
| 633E1200           | Waterborne Pavement Marking Paint with High<br>Grade Polymer, White | 0.3      | Gal  |
| 634E0100           | Traffic Control                                                     | 226      | Unit |
| 634E0120           | Traffic Control, Miscellaneous                                      | Lump Sum | LS   |
| 634E0640           | Temporary Pavement Marking                                          | 64       | Ft   |

### PCN i3tl – US 16B EB

| Bid Item<br>Number | Item                                                                | Quantity | Unit |
|--------------------|---------------------------------------------------------------------|----------|------|
| 009E0010           | Mobilization                                                        | Lump Sum | LS   |
| 110E0300           | Remove Concrete Curb and Gutter                                     | 21       | Ft   |
| 110E1100           | Remove Concrete Pavement                                            | 19.8     | SqYd |
| 110E7150           | Remove Sign for Reset                                               | 2        | Each |
| 110E7152           | Remove Delineator for Reset                                         | 6        | Each |
| 120E0010           | Unclassified Excavation                                             | 35       | CuYd |
| 260E2060           | Gravel Cushion, Modified                                            | 33.1     | Ton  |
| 380E0060           | 8.5" Nonreinforced PCC Pavement                                     | 105.1    | SqYd |
| 380E5030           | Nonreinforced PCC Pavement Repair                                   | 98.4     | SqYd |
| 380E6000           | Dowel Bar                                                           | 53       | Each |
| 380E6110           | Insert Steel Bar in PCC Pavement                                    | 144      | Each |
| 632E2100           | Reset Delineator                                                    | 6        | Each |
| 632E3500           | Reset Sign                                                          | 2        | Each |
| 633E1200           | Waterborne Pavement Marking Paint with High<br>Grade Polymer, White | 0.4      | Gal  |
| 634E0100           | Traffic Control                                                     | 777      | Unit |
| 634E0120           | Traffic Control, Miscellaneous                                      | Lump Sum | LS   |
| 634E0420           | Type C Advance Warning Arrow Panel                                  | 2        | Each |
| 634E0640           | Temporary Pavement Marking                                          | 67       | Ft   |
| 650E0085           | Type B68.5 Concrete Curb and Gutter                                 | 6        | Ft   |
| 734E0010           | Erosion Control                                                     | Lump Sum | LS   |
| 734E0154           | 12" Diameter Erosion Control Wattle                                 | 260      | Ft   |
| 900E0012           | Refurbish Double Mailbox                                            | 1        | Each |

### **SPECIFICATIONS**

Standard Specifications for Roads & Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal

### **SEQUENCE OF OPERATIONS**

- 8. Remove traffic control.

### **ENVIRONMENTAL COMMITMENTS**

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

### COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

### **Action Taken/Required:**

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

### COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

### Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

| ST | STATE OF        | PROJECT         | SHEET | TOTAL |
|----|-----------------|-----------------|-------|-------|
|    | SOUTH<br>DAKOTA | 090 E-451, etc. | 2     | 30    |

1. Set up traffic control to close one lane. 2. Complete Repairs on PCC Pavement. 3. Install Temporary Pavement Marking. 4. Switch traffic control to close adjacent lane. 5. Complete Repairs on PCC Pavement. 6. Install Temporary Pavement Marking. 7. Install Permanent Pavement Marking.

### COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

### Action Taken/Required:

Construction and/or 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 from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

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 Project Engineer.

### COMMITMENT H: WASTE DISPOSAL SITE (CONTINUED)

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 and/or 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 and/or 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 74:27:10:06.

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.

### **COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES**

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

### Action Taken/Required:

*All* earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

### COMMITMENT K: RAPID CITY AREA AIR QUALITY CONTROL ZONE

Administrative Rule of South Dakota (ARSD) 74:36:18:03 states that "no state facility or state contractor may engage in any construction activity or continuous operation activity within the Rapid City air quality control zone which may cause fugitive emissions of particulate to be released into the ambient air without first obtaining a permit issued by the board or the secretary."

Construction activity is defined as any temporary activity at a state facility, which involves the removal or alteration of the natural or pre-existing cover of one acre or more of land. One acre of surface area is based on a cumulative area of disturbance to be completed for the entire project. Construction activity shall include, but not be limited to, stripping of topsoil, drilling, blasting, excavation, dredging, ditching, grading, street maintenance and repair, or earth moving. Construction activity is generally completed within one year. It also includes stockpiles, access roads, and disposal areas. An off-site disposal area of excess material will require an additional permit.

### Action Taken/Required:

Phone: 605-773-3151

In order to be considered eligible for authorization to conduct a construction activity under the terms and conditions of this permit, the owner operator must submit a Notice of Intent (NOI) form. The form must be submitted to the address below at least seven business days prior to the anticipated date of beginning the construction activity.

South Dakota Department of Environment and Natural Resources Air Quality Program 523 East Capitol, Joe Foss Building Pierre, SD 57501-3181 The permit requires the Contractor to use reasonably available technology to control fugitive dust emissions. The Contractor is required to use control measures for track out, paved areas, unpaved roads, unpaved parking lots, disturbed areas, and for material handling and storage. The control measures that the Contractor is required to use are listed in the permit.

### **UTILITIES**

The Contractor shall be responsible for locating and protecting any utility that would conflict with any work. Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the contractor shall contact the project engineer to determine modifications that will be necessary to avoid utility impacts.

Any damage done to a utility will be the Contractor's responsibility to repair.

Utilities within the limits of the proposed construction shall be adjusted by the owner unless otherwise indicated in these plans.

### **EXISTING PCC PAVEMENT**

The aggregate in the existing PCC Pavement is limestone.

The existing pavement from I-90 MRM 58.326 WB to MRM 58.440 WB is 9" Nonreinforced PCC Pavement.

Existing contraction joints are spaced at approximately 20'. Longitudinal joints are reinforced with No. 5 x 30" deformed tie bars spaced 30" to 48" centers. Transverse joints are reinforced with 1 1/4" plain round dowel bars spaced 12" center to center.

The existing pavement from I-90 MRM 60.233 EB to MRM 60.405 EB is 10" Nonreinforced PCC Pavement.

Existing contraction joints are spaced at approximately 20'. Longitudinal joints are reinforced with No. 5 x 30" deformed tie bars spaced 30" to 48" centers. Transverse joints are reinforced with 1 1/4" plain round dowel bars spaced 12" center to center.

The existing paven Pavement.

Existing contraction joints are spaced at approximately 20'. Longitudinal joints are reinforced with No. 5 x 30" deformed tie bars spaced 30" to 48" centers. Transverse joints are reinforced with 1 1/4" plain round dowel bars spaced 12" center to center.

The existing pavement from I-90 MRM 41.939 EB to MRM 45.072 EB is 9" PCC Pavement reinforced with welded wire fabric.

The welded wire fabric weighs not less than 60 pounds per 100 square feet, the longitudinal wires are No. 1 gauge and are spaced 6" center to center and the transverse wires are No. 4 gauge and are spaced 12" center to center.

| STATE OF        | PROJECT         | SHEET | TOTAL |
|-----------------|-----------------|-------|-------|
| SOUTH<br>DAKOTA | 090 E-451, etc. | 3     | 30    |

The existing pavement at I-90 MRM 67.400 is 9" Nonreinforced PCC

### **EXISTING PCC PAVEMENT (CONTINUED)**

Existing contraction joints are spaced at approximately 60'. Longitudinal joints are reinforced with No. 5 x 30" deformed tie bars spaced 48" center to center (except at ends of panels). Transverse joints are reinforced with  $1\frac{14}{2}$ " x 18" plain round dowel bars spaced 12" center to center.

The PCC Pavement on SD 445 is 10" nonreinforced with dowels MRM 74.29 to MRM 76.

The existing contraction joints are spaced at approximately 20'. Longitudinal joints are reinforced with No. 5 x 24" deformed tie bars spaced 30" to 48" centers. Transverse joints are reinforced with 1  $\frac{1}{4}$ " x 18" plain round dowel spaced 12" to 18" centers.

The existing pavement on SD 44 from MRM 46.507 WB to MRM 46.512 WB and from 47.104 EB to MRM 47.090 EB is 10" Nonreinforced PCC Pavement.

The existing contraction joints are spaced at approximately 15'. Longitudinal joints are reinforced with No. 4 x 24" deformed tie bars 30" to 48" centers. Transverse joints are nonreinforced.

The existing pavement on US 16B from MRM 64.545 EB to MRM 64.679 EB is 8.5" Nonreinforced PCC Pavement

The existing contraction joints are spaced at approximately 15'. Longitudinal joints are reinforced with No. 4 x 24" deformed tie bars spaced 30" to 48" centers. Transverse joints are reinforced with 1" 1/4" x 18" plain round dowel spaced 12" on center.

The existing pavement on US 16B from MRM 67.608 EB to MRM 67.679 EB is 9.5" Nonreinforced PCC Pavement

The existing contraction joints are spaced at approximately 20'. Longitudinal joints are reinforced with No. 4 x 24" deformed tie bars spaced 30" to 48" centers. Transverse joints are reinforced with 1" 1/4" x 18" plain round dowel spaced 12" on center.

### **REMOVAL OF EXISTING CONCRETE PAVEMENT**

The Contractor shall dispose of the concrete pavement at a site approved by the Engineer.

### PLACING TOPSOIL - US 16B MRM 64.545 EB & MRM 64.679 EB

The top 4" of topsoil shall be salvaged and stockpiled prior to excavation for and placement of gravel cushion and 8.5" PCC Pavement at the two intersections on Highway 16B. Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil shall be spread evenly over the disturbed areas and level with the new top of surfacing.

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.

### UNCLASSIFIED EXCAVATION – US 16B MRM 64.545 EB & MRM 64.679 EB

Unclassified Excavation is provided on the project for excavating material from the area where new Gravel Cushion, Modified and PCC Pavement will be placed in accordance with the plans. Any excess material shall be handled as waste. The estimate of quantities provides 35 cubic yards of Unclassified Excavation for performing this work.

Payment for Unclassified Excavation shall be plans quantity and field measurement will not be required.

If changes are made in the field during construction, measurements shall be taken and the quantity shall be adjusted accordingly.

### TABLE OF UNCLASSIFIED EXCAVATION MRM 64.545 EB & MRM 64.679 EB

|                      | Quantity |
|----------------------|----------|
| Station to Station   | CuYd     |
| US 16B MRM 64.545 EB | 18       |
| US 16B MRM 64.679 EB | 17       |
| Total                | 35       |

### <u>RESTORATION OF GRAVEL CUSHION – PCC PAVEMENT REPAIR</u> LOCATIONS

An inspection of the gravel cushion subgrade shall be made after removing concrete from each pavement replacement area. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose and excess material shall be removed. Each replacement area shall be leveled and compacted to the satisfaction of the Engineer.

All costs associated with this work shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

### **ALKALI SILICA REACTIVITY**

Fine aggregate shall conform to Section 800.2.D Alkali Silica Reactivity (ASR) Requirements.

Fine aggregate with a 14 day expansion value of 0.400 and greater shall not be used.

Below is a list of know corresponding 14 day

### Source

Bachman B&B ready Mix Birdsall S&G Birdsall S&G Birdsall S&G Birdsall S&G Bitterman **Concrete Materials** Emme Sand & Gravel Fischer S&G Fischer S&G Fischer S&G Fischer S&G Fuchs Henrick & Son Higman Higman Hilde Jensen L.G. Everist L.G. Everist L.G. Everist McLaughlin Mission Hills Morris - Richards pit Morris – Schmitgen Myrl & Roys Paving-Nel Northern Concrete Agg Northern Concrete Agg Opperman - Gunvordah Opperman - Cahoy Pit **Opperman - Jones Pit** Opperman – Randall Pi Sisseton Ready Mix Thorpe Pit Wagner Building Suppl

\* These sources will require Type V cement in the concrete mix design and Class F (Modified) fly ash as specified.

The Department will use the running average of the last three known expansion test results or less for determining acceptability of source and the required Type of cement. These expansion results are reported in the preceding table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with acceptable test values (less than 0.250) is discovered after letting to require Type V cement (greater than 0.250) the Department will accept financial responsibility for the change from Type II to Type V cement.

Type II or Type V cement will not change the requirement for the fly ash. The cost for either type of cement shall be subsidiary to the contract item.

|                     | STATE OF            | PROJECT            | SHEET       | TOTAL<br>SHEETS |
|---------------------|---------------------|--------------------|-------------|-----------------|
|                     | SOUTH<br>DAKOTA     | 090 E-451, etc.    | 4           | 30              |
|                     |                     |                    |             |                 |
|                     |                     |                    |             |                 |
| ~                   |                     |                    |             |                 |
| wn fine aggreg      | ate sourc           | es and the average |             |                 |
| y expansion va      | alues:              |                    |             |                 |
|                     | 1                   |                    |             |                 |
|                     | Location            | Expansion value    |             |                 |
| Win                 | ner. SD             | 0.3                | 335*        |                 |
| Flan                | dreau, SD           | 0.1                | 13          |                 |
| Blun                | it, SD              | 0.2                | 223         |                 |
| Cres                | ston, SD            | 0.1                | 70          |                 |
| Oral                | , SD                | 0.1                | 36          |                 |
| Was                 | ta, SD              | 0.1                | 77          |                 |
| Deir                | nont, SD            | 0.3                | 314°        |                 |
| Cors                | il Nobrock          | 0.1                | 00<br>017   |                 |
| Fort                | Yates ND            | a 0.2              | 217<br>264* |                 |
| Ran                 | id City SD          | 0.0                | 192         |                 |
| Spe                 | arfish. SD          | 0.0                | )53         |                 |
| Was                 | sta                 | 0.1                | 52          |                 |
| Pick                | stown, SD           | 0.2                | 275*        |                 |
| Bigs                | tone, SD            | 0.1                | 40          |                 |
| Akro                | on, IA              | 0.1                | 94          |                 |
| Hud                 | son, SD             | 0.1                | 87          |                 |
| Mad                 | ison, SD            | 0.1                | 10          |                 |
| Broc                | ieu, SD<br>kings SD | 0.2                | 123         |                 |
| Haw                 | arden IA            | 0.1                | 179         |                 |
| Sum                 | imit                | 0.1                | 63          |                 |
| Wat                 | ertown, SD          | 0.1                | 24          |                 |
| Yan                 | kton, SD            | 0.2                | 261*        |                 |
| Onic                | la                  | 0.2                | 214         |                 |
| Onic                | la                  | 0.1                | 58          |                 |
| Ison Pit Siou       | IX Falls            | 0.1                | 58          |                 |
| . Rau               | ville, SD           | 0.1                | 05          |                 |
| LUV6                | erne, Min           | 0.1                | 24          |                 |
| II FIL DUIN<br>Herr | rick SD             | 0.3                | 307*        |                 |
| Burk                | e SD                | 0.3                | 329*        |                 |
| t Pick              | stown . SD          | 0.2                | 211         |                 |
| Siss                | eton, SD            | 0.1                | 06          |                 |
| Britt               | on, SD              | 0.0                | )98         |                 |
| es Wag              | jner, SD            | 0.2                | 241         |                 |
|                     |                     |                    |             |                 |

### **GRAVEL CUSHION, MODIFIED**

Gravel Cushion, Modified shall conform to the following applicable gradation:

|                 |           | Limestone |
|-----------------|-----------|-----------|
|                 |           | Ledge     |
|                 |           | Rock      |
|                 | Gravel    | Gravel    |
|                 | Cushion,  | Cushion,  |
| Sieve           | Modified  | Modified  |
| Passing 1"      | 100%      | 100%      |
| Passing 3/4"    | 80-100%   | 80-100%   |
| Passing 1/2"    | 68-91%    | 68-90%    |
| Passing No. 4   | 46-70%    | 42-70%    |
| Passing No. 8   | 34-58%    | 29-53%    |
| Passing No. 40  | 13-35%    | 10-28%    |
| Passing No. 200 | 3.0-12.0% | 3.0-12.0% |

All other requirements for Gravel Cushion shall apply.

An inspection of the remaining gravel cushion subgrade shall be made after removing concrete and excavating. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose and excess material shall be removed. The area shall be leveled and compacted to the satisfaction of the Engineer.

Additional required gravel cushion material shall be, placed and compacted to the satisfaction of the Engineer.

Water for Granular Material is estimated at the rate of 20 gallons of water per cubic yard of Gravel Cushion, Modified.

All costs associated with this work including Water for Granular Material shall be incidental to the contract unit price per ton yard for Gravel Cushion, Modified.

### 8.5" NONREINFORCED CONCRETE PAVEMENT – US 16B MRM 64.545 EB & MRM 64.679 EB

The fine aggregate shall be screened over a 1 inch square opening screen just prior to introduction into the concrete paving mix.

There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement. Trimming shall be performed as required by Section 380.3 C. of the Specifications.

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement.

All joints (longitudinal and transverse) through and around the 8.5" Nonreinforced Concrete Pavement areas shall be sawed and sealed with Hot Poured Elastic Joint Sealer

Concrete used in Portland cement concrete pavement shall conform to the Special Provision for Contractor Furnished Mix Design for PCC Pavement.

Stationing based on US 16B Median Centerline Alignment.

The concrete shall be placed with equipment operating from a preset grade line.

In addition to traditional field inspection of reinforcement, a Ground Penetrating Radar (GPR) unit may be used to verify reinforcement locations in the hardened concrete. The GPR may be used any time prior to the Acceptance of Field Work being issued. All costs related to corrective measures, including but not limited to concrete removal or cutting of reinforcement, price deducts, and delays to the project schedule shall be the responsibility of the Contractor.

| Table of 8.5" Nor | reinforced | Concrete Paven | nent - US 1 | L6B EB | & Wellingt | on - PCN i3t |
|-------------------|------------|----------------|-------------|--------|------------|--------------|
|                   |            | 8.5"           |             |        | Insert     |              |
|                   | Remove     | Nonreinforced  | Gravel      |        | Steel Bar  |              |
|                   | Concrete   | Concrete       | Cushion,    |        | in PCC     | Dowel        |
|                   | Pavement   | Pavement       | Modified    | #5 Bar | Pavement   | Bar          |
| MRM               | (SqYd)     | (SqYd)         | (Ton)       | (Each) | (Each)     | (Each)       |
| 64.545 EB         | 13.1       | 54.3           | 17.1        | 16     | 16         | 12           |
| 64.679 EB         | 6.7        | 50.8           | 16.0        | 16     | 16         | 15           |
| Total             | 19.8       | 105.1          | 33.1        | 32     | 32         | 27           |

### NONREINFORCED PCC PAVEMENT REPAIR

Locations and size (length or width) of concrete repair areas are subject to change in the field, at the discretion of the Engineer. There will be no increase in the contract unit price bid for these changes. Payment will be based on the actual area replaced.

Existing concrete pavement shall be sawed full depth at the beginning and end of the PCCP repair areas. When either the beginning or end of a PCCP repair area falls close to an existing joint or crack, the PCCP repair area shall be extended to eliminate the existing joint or crack. New working joints shall be adjacent to existing working joints where possible.

Existing concrete pavement in the replacement areas shall be removed by the lift out method or by means that minimize damage to the base and sides of remaining in place concrete. All removed material shall be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor's operations shall be removed and replaced at the Contractor's expense.

If the pavement replacement area is entirely on either side of the existing contraction joint, the location of one of the working joints will be at the original location.

Concrete placed adjacent to asphalt shoulders shall be formed full depth to match the width of existing concrete pavement. Asphalt shoulders adjacent to concrete pavement replacements shall be repaired with Asphalt Concrete Composite. If rumble strips exist, they shall be formed in the asphalt to match existing.

At repair locations where the new working joint is not opposite the existing working joint, the Contractor shall place a ¼ inch preformed asphalt expansion joint material along the longitudinal joint from the existing working joint to the new working joint. The expansion joint material shall meet the requirements of AASHTO M33. Cost for this material shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

New pavement thickness shall match existing pavement thickness.

The slump requirement will be limited to 3" maximum after water reducer is added and the concrete shall contain 4.5% to 7.0% entrained air. Coarse aggregate shall be crushed ledge rock, Size No. 1, unless an alternative gradation is approved by the concrete engineer as part of the mix design submittal. The concrete mixture shall contain a minimum of 50% coarse aggregate by weight. The concrete mix shall contain at least 600 lbs. of type I, II or III cement per cubic yard. The minimum 28 day compressive strength shall be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor may need to modify the mix design to meet contract time requirements on the project. The Contractor shall submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

The use of a water reducer at manufacturer's recommended dosage will be required.

Concrete shall be cured with white pigmented curing compound (AASHTO M148, Type 2) applied as soon as practical at a rate of 125 square feet per gallon. Concrete shall be cured for a minimum of 48 hours before opening to traffic. The 48 hours is based upon a concrete surface temperature of 60 degrees Fahrenheit or higher throughout the cure period. If the concrete temperature falls below 60 degrees Fahrenheit, the cure time shall be extended or other measures shall be taken, at no additional cost to the State. In addition to the curing requirements, a compressive strength of 4,000 psi must be obtained prior to opening to traffic.

In the event of cooler weather conditions, concrete shall be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic at the direction of the Engineer. Insulation blanket shall have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket shall be left in place until the concrete has obtained a strength of 4,000 psi. The initial contraction joint sawing shall be performed as soon practical to avoid random cracking. Insulation blanket shall be overlapped on to the existing concrete.

All longitudinal and tr and sealed.

Joints shall not be sealed unless they are thoroughly clean and dry. Cleaning shall be accomplished by sand blasting and other tools as necessary. Just prior to sealing, each joint shall be blown out using a jet of compressed air to remove all trace of dust.

Transverse joints shall be sealed with Hot Poured Elastic Joint Sealer. Longitudinal joints shall be sealed with Hot Poured Elastic Joint Sealer.

All costs for performing this work including sawing and removing concrete, furnishing and placing concrete, #5 tie bars cast in place, curing, sawing and sealing joints, repairing asphalt shoulders, labor, tools and equipment shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

| STATE OF        | PROJECT         | SHEET | TOTAL<br>SHEETS |
|-----------------|-----------------|-------|-----------------|
| SOUTH<br>DAKOTA | 090 E-451, etc. | 5     | 30              |

All longitudinal and transverse joints at concrete repair areas shall be sawed

### **STEEL BAR INSERTION**

Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor shall insert the steel bars  $(1\frac{1}{4}^{"} \times 18^{"})$  epoxy coated plain round dowel bars and No. 9 x 18" epoxy coated deformed tie bars for transverse joints and No. 5 x 24" epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

Steel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing will not be permitted.

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3).

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement shall be located at mid-depth of the slab and true and normal. The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer's designated rate and be equipped with an automatic shut-off. The pump shall shut off when any of the components are not being metered at the designated rate.

Fill the drilled holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion by the dipping method will not be allowed.

Cost for the epoxy resin adhesive, steel bars, drilling of holes, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

### LONGITUDINAL TINING

All PCC Pavement shall be longitudinally tined.

| SOUTH<br>DAKOTA 090 E-451, etc. 6 30 | STATE OF        | PROJECT         | SHEET | TOTAL<br>SHEETS |
|--------------------------------------|-----------------|-----------------|-------|-----------------|
|                                      | SOUTH<br>DAKOTA | 090 E-451, etc. | 6     | 30              |

### TABLE OF NONREINFORCED PAVEMENT REPAIR

|               | Table of Nonreinforced PCC      | Pavemen | t Repaiı | - Westbound I-      | 90 - PCN | N i3tg |            |              |        |
|---------------|---------------------------------|---------|----------|---------------------|----------|--------|------------|--------------|--------|
|               |                                 |         |          | Nonreinforced       |          |        |            | Insert Steel |        |
|               |                                 |         |          | <b>PCC</b> Pavement |          |        |            | Bar in PCC   | Dowel  |
|               |                                 | Length  | Width    | Repair              | # 9 Bar  | #5 Bar | 1-1/4" Bar | Pavement     | Bar    |
| MRM           | Description                     | (ft)    | (ft)     | (SqYd).             | (Each)   | (Each) | (Each)     | (Each)       | (Each) |
| <u>58.440</u> | Exit 58 WB Off-Ramp Lt. Panel   | 20      | 12       | 26.7                |          | 8      | 24         | 32           |        |
| <u>58.440</u> | Exit 58 WB Off-Ramp Rt. Panel   | 6       | 12       | 8.0                 | 24       | 2      |            | 26           |        |
| <u>58.365</u> | Exit 58 WB Off-Ramp Both Panels | 6       | 24       | 16.0                | 24       | 2      | 24         | 50           |        |
| <u>58.360</u> | Exit 58 WB Off-Ramp Rt. Panel   | 72      | 12       | 96.0                | 12       | 28     | 12         | 52           | 36     |
| 58.326        | Exit 58 WB Off-Ramp Rt. Panel   | 52      | 12       | 69.3                | 12       | 20     | 12         | 44           | 24     |
|               |                                 |         | Total    | 216.0               | 72       | 60     | 72         | 204          | 60     |

|               | Table of Nonreinforced PCC      | Paveme | nt Repa | ir - Eastbound I- | 90 - PCN | i3tf   |            |              | I          |
|---------------|---------------------------------|--------|---------|-------------------|----------|--------|------------|--------------|------------|
|               |                                 |        |         | Nonreinforced     |          |        |            | Insert Steel |            |
|               | ,                               | 1      | '       | PCC Pavement      |          |        |            | Bar in PCC   | Dowel      |
|               |                                 | Length | Width   | Repair            | #9 Bar   | #5 Bar | 1-1/4" Bar | Pavement     | Bar        |
| MRM           | Description                     | (ft)   | (ft)    | (SqYd).           | (Each)   | (Each) | (Each)     | (Each)       | (Each)     |
| <u>60.233</u> | Exit 60 EB Off-Ramp Lt. Panel   | 6      | 15      | 10.0              | 15       | 2      | 15         | 32           |            |
| <u>60.301</u> | Exit 60 EB Off-Ramp Lt. Panel   | 10     | 12      | 13.3              | 12       | 4      | 12         | 28           | [          |
| <u>60.301</u> | Exit 60 EB Off-Ramp Rt. Panel   | 6      | 15      | 10.0              | 30       | 2      | 0          | 32           | <u> </u> ' |
| <u>60.373</u> | Exit 60 EB Off-Ramp Mid Panel   | 6      | 12      | 8.0               | 12       | 2      | 12         | 26           | ['         |
| <u>60.405</u> | Exit 60 EB Off-Ramp Both Panels | 6      | 24      | 16.0              | 24       |        | 24         | 48           | <u> </u> ' |
| <u>67.400</u> | Exit 67B EB Off-Ramp Lt. Panel  | 20     | 12      | 26.7              |          | 8      | 24         | 32           | 12         |
| 44.867        | Eastbound Driving Lane          | 6      | 12      | 8.0               | 12       | 2      | 12         | 26           | <b></b>    |
| <u>44.937</u> | Eastbound Driving Lane          | 12     | 12      | 16.0              | 12       | 4      | 12         | 28           |            |
| <u>44.979</u> | Eastbound Driving Lane          | 6      | 12      | 8.0               | 12       | 4      | 12         | 28           |            |
| <u>44.986</u> | Eastbound Driving Lane          | 6      | 12      | 8.0               | 12       | 4      | 12         | 28           | 1          |
| <u>45.000</u> | Eastbound Passing Lane          | 6      | 12      | 8.0               | 12       | 4      | 12         | 28           |            |
| <u>45.072</u> | Eastbound Both Lanes            | 6      | 24      | 16.0              | 24       | 0      | 24         | 48           |            |
|               |                                 |        | Total   | 148.0             | 177      | 36     | 171        | 384          | 12         |

|        | Table of Nonreinforced PCC Pavement Repair - Westbound 16B - PCN i3tk |        |       |               |        |        |            |                     |  |
|--------|-----------------------------------------------------------------------|--------|-------|---------------|--------|--------|------------|---------------------|--|
|        |                                                                       |        |       | Nonreinforced |        |        |            | <b>Insert Steel</b> |  |
|        |                                                                       |        |       | PCC Pavement  |        |        |            | Bar in PCC          |  |
|        |                                                                       | Length | Width | Repair        | #9 Bar | #5 Bar | 1-1/4" Bar | Pavement            |  |
| MRM    | Description                                                           | (ft)   | (ft)  | (SqYd).       | (Each) | (Each) | (Each)     | (Each)              |  |
| 67.608 | Westbound to Southbound Off-Ramp Lt. Panel                            | 20     | 18    | 40.0          |        | 8      | 36         | 44                  |  |
| 67.676 | Westbound to Northbound Off-Ramp Both Panels                          | 12     | 24    | 32.0          | 24     | 8      | 24         | 56                  |  |
| 67.679 | Westbound to Northbound Off-Ramp Lt. Panel                            | 20     | 11    | 24.4          | 0      | 8      | 22         | 30                  |  |
|        |                                                                       |        | Total | 96.4          | 24     | 24     | 82         | 130                 |  |

| DAKOTA 090 E-451, etc. 7 30 | STATE OF | PROJECT         | SHEET | TOTAL<br>SHEETS |
|-----------------------------|----------|-----------------|-------|-----------------|
|                             | DAKOTA   | 090 E-451, etc. | 7     | 30              |

### TABLE OF NONREINFORCED PAVEMENT REPAIR (CONTINUED)

|        | Table of Nonreinforced F                   | PCC Pave                              | ment R | epair - Eastboun | d 16B - / | PCN i3ť |            |              |        |
|--------|--------------------------------------------|---------------------------------------|--------|------------------|-----------|---------|------------|--------------|--------|
|        |                                            | · · · · · · · · · · · · · · · · · · · |        | Nonreinforced    |           | (       |            | Insert Steel |        |
|        |                                            | 1 '                                   | 1 '    | PCC Pavement     | 1 '       | 1 '     | '          | Bar in PCC   | Dowel  |
|        |                                            | Length                                | Width  | Repair           | #9 Bar    | #5 Bar  | 1-1/4" Bar | Pavement     | Bar    |
| MRM    | Description                                | (ft)                                  | (ft)   | (SqYd).          | (Each)    | (Each)  | (Each)     | (Each)       | (Each) |
| 67.660 | Eastbound to Northbound Off-Ramp Rt. Panel | 6                                     | 18     | 12.0             | 18        | 2       | 18         | 38           |        |
| 67.661 | Eastbound to Northbound Off-Ramp Lt. Panel | 15                                    | 12     | 20.0             | [7        | 6       | 24         | 30           | [      |
| 67.680 | Southbound to Eastbound On-Ramp Lt. Panel  | 46                                    | 13     | 66.4             | 26        | 18      | []         | 44           | 26     |
|        |                                            | ·                                     | Total  | 98.4             | 44        | 26      | 42         | 112          | 26     |

| Table of Nonreinforced PCC Pavement Repair - NB SD445 - i3th |                                          |        |       |               |        |            |                     |
|--------------------------------------------------------------|------------------------------------------|--------|-------|---------------|--------|------------|---------------------|
|                                                              |                                          |        |       | Nonreinforced |        |            | <b>Insert Steel</b> |
|                                                              |                                          |        |       | PCC Pavement  |        |            | Bar in PCC          |
|                                                              |                                          | Length | Width | Repair        | #5 Bar | 1-1/4" Bar | Pavement            |
| MRM                                                          | Description                              | (ft)   | (ft)  | (SqYd).       | (Each) | (Each)     | (Each)              |
| 76.51                                                        | Ramp Intersection Northbound Center Lane | 20     | 12    | 26.7          | 16     | 24         | 40                  |
|                                                              |                                          |        | Total | 26.7          | 16     | 24         | 40                  |

### **REPAIR TYPE A SPALL**

Locations and size (length or width) of concrete spall repair areas are subject to change in the field, at the discretion of the Engineer, at no additional cost to the state. The minimum dimension of the repair area shall be 6". Payment will be based on actual area replaced.

Type A Spalls shall conform to Section 390 with the following exceptions:

The concrete patching material used for spall repair shall be a bagged MNDOT 3U18 patching material that includes Air Entraining Agent. The product shall be submitted and be approved by the Concrete Engineer. A product known to meet this requirement is Spec Mix/TCC Materials "Air Entrained Concrete Patching Mix".

Grout for bonding the concrete patching material to the existing concrete shall consist of two parts by weight of Portland Cement and one part sand, mixed with sufficient water to form a creamy slurry. Grout shall be applied on all of the existing concrete surfaces within the removal area immediately prior to placement of the concrete patching material. The grout shall be scrubbed into the surface with a stiff bristle brush in a thin and uniform coat. Care shall be taken to ensure that excess grout does not collect in low areas, that the grout is confined only to the immediate area in which concrete patching material is to be placed, and that the rate of application is limited to an amount such that the grout will be covered with concrete patching material before the grout dries.

The concrete patching material shall be mixed and placed in accordance with the manufacturer's technical data sheet. The Contractor shall provide a manufacturer's technical data sheet to the Engineer prior to performing the work. The concrete patching material shall be maintained at or above 45°F (7°C) for at least 72 hours after placement.

Patched areas shall be sprayed with curing compound as per Section 390. An additional coat of curing compound shall be applied not less than 20 minutes and not more than 1 hour after the first application.

Repair areas can be opened to traffic once the repair material meets 3,000 psi as long as the above requirement for temperature can be met.

An initial cylinder shall be made and the Engineer shall calibrate a Swiss Hammer to it. All subsequent strength tests shall be by Swiss Hammer.

The Engineer will test the repair areas after an initial cure period by Swiss Hammer. No section is to be opened to traffic without the permission of the Engineer.

No additional work zones will be set up until strength requirement is met. If strength requirement has not been met by 36 hours after placement, the patches shall be removed and replaced at no cost to the State.

Material used to form the joint shall be a foam core board, waxed cardboard. or other stiff material capable of standing without deflection. The Contractor shall fill the area (with the foam core board or other approved material in place) with an approved patching material. The patching material shall be vibrated with a small hand held vibrator capable of thoroughly consolidating the patching compound into the area. The top surface of the filled area shall be trowel finished and cured.

After screeding and finishing, the same bonding grout shall be used to paint the edges of the repair. Any saw cuts that extend beyond the patch perimeter shall be filled with patching material and must also have the surface painted with bonding arout.

After removal of the form material, the repaired length of the joint(s) shall be sealed. Cost for removing the form material and sealing the joint(s) shall be incidental to the contract unit price per square foot for Repair Type A Spall.

Spalls which are repaired according to plans and specifications and exhibit partial respalling or cracking, shall be repaired to the satisfaction of the Engineer at no additional cost to the Department of Transportation.

### **TABLE OF REPAIR TYPE A SPALL**

| Tab    | le of Repair Type A Spal | I - EB 19 | 0 - PCN | i3te             |
|--------|--------------------------|-----------|---------|------------------|
|        |                          | Longth    | Width   | Repair<br>Type A |
| MRM    | Description              | (ft)      | (ft)    | (SqFt)           |
| 41.939 | Driving Lane             | 1.0       | 1.0     | 1.0              |
| 41.939 | Passing Lane             | 1.0       | 0.5     | 0.5              |
| 41.939 | Passing Lane             | 2.0       | 1.0     | 2.0              |
| 42.208 | Driving Lane             | 10.0      | 1.0     | 10.0             |
| 42.384 | Driving Lane             | 5.0       | 0.5     | 2.5              |
| 42.642 | Driving Lane             | 4.0       | 1.0     | 4.0              |
| 42.642 | Passing Lane             | 2.0       | 0.5     | 1.0              |
| 43.109 | Driving Lane             | 6.0       | 1.0     | 6.0              |
| 43.132 | Driving Lane             | 3.0       | 0.5     | 1.5              |
| 43.262 | Driving Lane             | 3.0       | 1.0     | 3.0              |
|        |                          |           | Total   | 31.5             |

| STATE OF        | PROJECT         | SHEET | TOTAL |
|-----------------|-----------------|-------|-------|
| SOUTH<br>DAKOTA | 090 E-451, etc. | 8     | 30    |

### TABLE OF REPAIR TYPE A SPALL (CONTINUED)

| Table of Repair Type A Spall - WB 16B - PCN i3tk |                                                        |                    |                    |                      |  |  |
|--------------------------------------------------|--------------------------------------------------------|--------------------|--------------------|----------------------|--|--|
|                                                  |                                                        |                    |                    | Repair               |  |  |
|                                                  |                                                        |                    |                    | Туре А               |  |  |
|                                                  |                                                        | Length             | Width              | Spall                |  |  |
|                                                  |                                                        |                    |                    |                      |  |  |
| MRM                                              | Description                                            | (ft)               | (ft)               | (SqFt)               |  |  |
| <b>MRM</b><br>67.667                             | Description<br>Westbound Off Ramp                      | <b>(ft)</b><br>1.0 | (ft)<br>1.0        | <b>(SqFt)</b><br>1.0 |  |  |
| MRM<br>67.667<br>67.680                          | Description<br>Westbound Off Ramp<br>Westbound On-Ramp | (ft)<br>1.0<br>1.0 | (ft)<br>1.0<br>1.0 | (SqFt)<br>1.0<br>1.0 |  |  |

| Table  | Table of Repair Type A Spall - Hwy 44 EB - PCN i3tj |        |       |        |  |  |
|--------|-----------------------------------------------------|--------|-------|--------|--|--|
|        |                                                     |        |       | Repair |  |  |
|        |                                                     |        |       | Туре А |  |  |
|        |                                                     | Length | Width | Spall  |  |  |
| MRM    | Description                                         | (ft)   | (ft)  | (SqFt) |  |  |
| 47.104 | Passing Lane                                        | 11.0   | 0.5   | 5.5    |  |  |
| 47.102 | Passing Lane                                        | 11.0   | 1.0   | 11.0   |  |  |
| 47.101 | Both Lanes                                          | 22.0   | 0.5   | 11.0   |  |  |
| 47.099 | Both Lanes                                          | 22.0   | 0.5   | 11.0   |  |  |
| 47.096 | Passing Lane                                        | 11.0   | 1.0   | 11.0   |  |  |
| 47.095 | Passing Lane                                        | 11.0   | 0.5   | 5.5    |  |  |
| 47.090 | Both Lanes                                          | 22.0   | 0.5   | 11.0   |  |  |
| 47.080 | Driving Lane                                        | 11.0   | 0.5   | 5.5    |  |  |
|        |                                                     |        | Total | 71.5   |  |  |

| Table of Repair Type A Spall - Hwy 44 WB - PCN i3tj |              |        |       |        |  |
|-----------------------------------------------------|--------------|--------|-------|--------|--|
|                                                     |              |        |       | Repair |  |
|                                                     |              |        |       | Туре А |  |
|                                                     |              | Length | Width | Spall  |  |
| MRM                                                 | Description  | (ft)   | (ft)  | (SqFt) |  |
| 46.507                                              | Driving Lane | 11.0   | 0.5   | 5.5    |  |
| 46.509                                              | Driving Lane | 11.0   | 0.5   | 5.5    |  |
| 46.511                                              | Driving Lane | 11.0   | 0.5   | 5.5    |  |
| 46.512                                              | Driving Lane | 3.0    | 0.5   | 1.5    |  |
|                                                     |              |        | Total | 18.0   |  |

|        |               | Length | Width | Repair<br>Type A<br>Spall |
|--------|---------------|--------|-------|---------------------------|
| MRM    | Description   | (ft)   | (ft)  | (SqFt)                    |
| 74.290 | Driving Lane  | 2.0    | 1.0   | 2.0                       |
| 74.330 | Driving Lane  | 12.0   | 0.5   | 6.0                       |
| 74.340 | Passsing Lane | 0.5    | 15.0  | 7.5                       |
| 74.670 | Driving Lane  | 2.0    | 1.0   | 2.0                       |
| 74.680 | Driving Lane  | 1.0    | 1.0   | 1.0                       |
| 74.700 | Passsing Lane | 5.0    | 0.5   | 2.5                       |
| 74.710 | Driving Lane  | 2.0    | 1.0   | 2.0                       |
| 74.720 | Passsing Lane | 2.0    | 1.0   | 2.0                       |
| 74.740 | Driving Lane  | 5.0    | 0.5   | 2.5                       |
| 74.760 | Passsing Lane | 5.0    | 1.0   | 5.0                       |
| 76.485 | Turn Lane     | 2.0    | 1.0   | 2.0                       |
| 76.490 | Turn Lane     | 2.0    | 1.0   | 2.0                       |
| 76.495 | Turn Lane     | 2.0    | 1.0   | 2.0                       |
| 76.500 | Turn Lane     | 2.0    | 0.5   | 1.0                       |
| 76.505 | Turn Lane     | 2.0    | 1.0   | 2.0                       |
|        |               |        | Total | 41.5                      |

| Table of Repair Type A Spall - SD 445 SB - PCN i3th |             |        |       |        |  |  |
|-----------------------------------------------------|-------------|--------|-------|--------|--|--|
|                                                     |             |        |       | Repair |  |  |
|                                                     |             |        |       | Туре А |  |  |
|                                                     |             | Length | Width | Spall  |  |  |
| MRM                                                 | Description | (ft)   | (ft)  | (SqFt) |  |  |
| 74.390                                              | Lt. Turn    | 2.0    | 0.5   | 1.0    |  |  |
| 74.350                                              | Lt. Turn    | 1.0    | 0.5   | 0.5    |  |  |
| 74.310                                              | Lt. Turn    | 3.0    | 0.5   | 1.5    |  |  |
| 74.290                                              | Lt. Turn    | 2.0    | 0.5   | 1.0    |  |  |
|                                                     |             |        | Total | 4.0    |  |  |

### **RETROFITTING TIE BARS, STITCHING**

Tie Bar Retrofit, Stitching shall be done on longitudinal joints and random cracks as marked out by the Engineer.

The Contractor shall insert No. 5 epoxy coated deformed tie bars into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole. A rotary drill or other approved drill shall be used that will not damage the concrete surface. The diameter of the disturbed surface from drilling shall be less than 2 inches. A rigid frame or mechanical device will be required to guide the drill to ensure the proper angle of the steel bars in the drilled holes.

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3). The dried color of the epoxy shall be gray or black.

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. The holes shall be drilled at an angle alternating from opposite sides of the joint to produce a cross-stitching pattern. The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection. Damage to pavement shall be repaired to the satisfaction of the Engineer at the Contractor's expense.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer's designated rate and be equipped with an automatic shut-off. The pump shall shut-off when any of the components are not being metered at the designated rate.

Fill the drilled holes sufficiently with epoxy prior to the insertion of the tie bar such that the epoxy will be level with the top of the concrete pavement after insertion of the tie bar. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping method will not be allowed. The top of the drilled hole shall be filled with epoxy or excess epoxy removed such that the epoxy is level with the existing pavement.

No bars shall be inserted within 15" of an existing transverse contraction joint. Any bars not functioning or damaged shall be repaired or replaced at the Contractor's expense.

Cost for the epoxy resin adhesive, tie bars, drilling of holes, debris or loose material removal, applying the adhesive, inserting the tie bars into the drilled holes and incidentals necessary for the insertion of the tie bars shall be included in the contract unit price per each for Tie Bar Retrofit, Stitching.

| STATE OF        | PROJECT         | SHEET | TOTAL |
|-----------------|-----------------|-------|-------|
| SOUTH<br>DAKOTA | 090 E-451, etc. | 9     | 30    |

### TABLE OF RETROFIT TIE BARS, STITCHING

|        | Table of Retrofitting Tie Bars, Stitching - 1-90 WB - PCN i3tg |        |           |        |  |  |  |
|--------|----------------------------------------------------------------|--------|-----------|--------|--|--|--|
|        |                                                                |        | Tie Bar   | Seal   |  |  |  |
|        |                                                                |        | Retrofit, | Random |  |  |  |
|        |                                                                | Length | Stitching | Cracks |  |  |  |
| MRM    | Description                                                    | (Ft)   | (Each)    | (Ft)   |  |  |  |
| 58.440 | I90 WB Exit 58 Off Ramp Lt. Panel                              | 32.0   | 16        | 32.0   |  |  |  |
| 58.360 | I90 WB Exit 58 Off Ramp Rt. Panel                              | 40.0   | 20        | 40.0   |  |  |  |
|        | Total                                                          | 72.0   | 36        | 72.0   |  |  |  |

| Table of Retrofitting Tie Bars, Stitching I-90 EB - PCN i3tf |                                                  |        |           |        |  |
|--------------------------------------------------------------|--------------------------------------------------|--------|-----------|--------|--|
|                                                              |                                                  |        | Tie Bar   | Seal   |  |
|                                                              |                                                  |        | Retrofit, | Random |  |
|                                                              |                                                  | Length | Stitching | Cracks |  |
| MRM                                                          | Description                                      | (Ft)   | (Each)    | (Ft)   |  |
| 60.216                                                       | 190 EB Exit 60 Off-Ramp Lt. Panel                | 75.0   | 37        | 75.0   |  |
| 60.421                                                       | 190 EB Exit 60 Off-Ramp Lt. Panel                | 55.0   | 28        | 55.0   |  |
|                                                              |                                                  |        |           |        |  |
| 67.410                                                       | 190 EB Exit 67B Off-Ramp Rt. Panel - 2 Locations | 80.0   | 40        | 80.0   |  |

|        | Table of Retrofitting Tie Bars, Stitching US 16B - i3tk |        |           |        |  |  |  |
|--------|---------------------------------------------------------|--------|-----------|--------|--|--|--|
|        |                                                         |        | Tie Bar   | Seal   |  |  |  |
|        |                                                         |        | Retrofit, | Random |  |  |  |
|        |                                                         | Length | Stitching | Cracks |  |  |  |
| MRM    | Description                                             | (Ft)   | (Each)    | (Ft)   |  |  |  |
| 67.675 | Southbound to WB/EB On-Ramp                             | 20.0   | 10        | 20.0   |  |  |  |
| 67.021 | Northbound to EB/WB On-Ramp                             | 35.0   | 18        | 35.0   |  |  |  |
| 67.091 | Northbound to EB/WB On-Ramp                             | 35.0   | 18        | 35.0   |  |  |  |
|        |                                                         |        |           |        |  |  |  |

### **ROADWAY CLEANING**

The Contractor shall be responsible for removing the router tailings from the roadway surface, including shoulders, intersecting roads, median crossovers and as directed by the Engineer. Roadway cleaning shall be done daily when router tailings are produced

### SEAL RANDOM CRACKS IN PCC PAVEMENT

Random cracks shall be repaired in accordance with the detail for Sealing Random Cracks. Reservoir dimensions may vary slightly from the details, due to the nature of this operation. However, any variance due to Contractor negligence will be repaired at the Contractor's expense.

Only those random cracks in the existing concrete pavement that are open and accept water and incompressible materials as selected by the Engineer shall be prepared and sealed with Hot Poured Elastic Joint Sealer.

Prior to sealing, each random crack shall be routed and thoroughly cleaned with compressed air or by other methods satisfactory to the Engineer. Routing shall be performed with a saw designed for that purpose.

Random cracks narrower than 1/2 inch shall be routed and sealed 1/2 inch wide by 1/2 inch deep. Random cracks wider than 1/2 inch may require the placement of a backer rod prior to sealing.

Sealant shall be placed in the routed reservoir with equipment and by methods that insure complete and uniform filling. Hot Poured Elastic Joint Sealer shall be placed level with the driving surface of the concrete.. Any excess or overrun of sealant shall be removed by the Contractor at no additional cost to the state.

Seal Random Cracks in PCC Pavement will be measured by the foot to the nearest 0.1 foot of random cracks sealed and accepted on the project, and will be paid for at the contract unit price per foot measured for payment. Payment shall be full compensation for all labor, equipment, material and incidentals required for crack routing, cleaning, furnishing and installing backer rod when necessary, furnishing and placing sealant and removing routed and foreign material from the roadway.



### REMOVE AND RESET SIGNS AND DELINEATORS – US 16B MRM 64.545 EB & MRM 64.679 EB

A street sign and several delineators will need to be removed and reset at each location.

Signs and delineators shall be reset in accordance with MUTCD standards.

Any damage caused to the signs and/or delineators during construction operations shall be the responsibility of the Contractor at no additional cost to the State.

All costs for removing and resetting signs shall be paid for at the contract unit price per each for Remove Sign for Reset and Reset Sign.

All costs for removing and resetting delineators shall be paid for at the contract unit price per each for Remove Delineator for Reset and Reset Delineator.

### **TRAFFIC CONTROL – GENERAL NOTES**

- 1. Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence shall be submitted for review a minimum of one week prior to potential implementation.
- 2. Unless otherwise stated in these plans, no work will be allowed during hours of darkness. Hours of darkness are defined as 1/2 hour after sunset until 1/2 hour before sunrise.

- of the Contractor.
- Miscellaneous.
- breakaway supports.

| STATE OF        | PROJECT         | SHEET | TOTAL |
|-----------------|-----------------|-------|-------|
| SOUTH<br>DAKOTA | 090 E-451, etc. | 10    | 30    |

3. Storage of vehicles and equipment shall be as near the right-of-way as possible. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage of the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

4. Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility

5. All non-applicable existing signing and temporary traffic control devices shall be covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 7 calendar days. The cost of removing or covering non-applicable signs and temporary traffic control devices shall be incidental to the contract lump sum price for Traffic Control,

6. Construction signing mounted on portable supports shall not be used for a duration of more than 3 days, unless approved by the Engineer. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted,

7. For each PCN the quantity of traffic control units paid for will be for the greatest number of installations per sign in place at any one time regardless of the number of set-ups on the project.

8. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

9. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.

10. The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

11. The Contractor shall be required to have a person available 24 hour/day, 7 days/week to maintain traffic control devices. The name and cellular telephone number of this individual shall be given to the Engineer at the preconstruction meeting.

12. The Contractor or designated traffic control subcontractor shall make night inspections at the initial set up of traffic control and every week thereafter to ensure the adequacy, legibility and reflectivity of each sign and device. A written summary of each inspection shall be given to the Engineer within 24 hours after completion of the inspection. The cost for the nighttime inspection work shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

### TRAFFIC CONTROL – GENERAL NOTES (CONTINUED)

- 13. Vehicles working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions. The amber light shall be mounted on the uppermost part of the Contractor's vehicle. Lights must have peak intensity within the range of 40 to 400 candelas and must flash at 75 ± 15 flashes per minute. Vehicle flasher/hazard lights are not acceptable. All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.
- 14. All construction operations shall be conducted in the general direction of traffic movement.
- 15. If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD - whichever is more stringent shall be used, as determined by the Engineer.
- 16. Temporary Road Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.
- 17. Drums are required in all lane closure tapers. All costs for drums shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.
- 18. Traffic shall be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment shall be repaired at no expense to the State.
- 19. A Type III Barricade shall be installed as per the details in these plans and at a minimum spacing of 2000' within the lane closure. 3 drums shall be placed across the lane closure in front of any open concrete panel repair area, as directed by the Engineer.
- 20. Lane closures in excess of 3 miles shall not be allowed.
- 21. There shall be a minimum of 3 miles between lane closures, not including tapers.

### **INVENTORY OF TRAFFIC CONTROL DEVICES**

### PCN i3te – I-90 EB

| SIGN<br>CODE                                              | DESCRIPTION                                                                                                                                                                     | NUMBER                     | SIGN SIZE                                                                               | UNITS<br>PER<br>SIGN                   | UNITS                                    |  |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------|--|
| R2-1<br>R2-6aP<br>W3-5<br>W4-2<br>W20-1<br>W20-5<br>G20-2 | SPEED LIMIT<br>FINES DOUBLE (plaque)<br>SPEED REDUCTION AHEAD ( MPH)<br>LEFT or RIGHT LANE ENDS (symbol)<br>ROAD WORK AHEAD<br>LEFT or RIGHT LANE CLOSED AHEAD<br>END ROAD WORK | 5<br>1<br>2<br>2<br>2<br>1 | 36" x 48"<br>36" x 24"<br>48" x 48"<br>48" x 48"<br>48" x 48"<br>48" x 48"<br>48" x 24" | 29<br>20<br>34<br>34<br>34<br>34<br>24 | 145<br>20<br>102<br>68<br>68<br>68<br>24 |  |
| - TYPE 3 BARRICADE - 8' double sided 2 56 TOTAL UNITS     |                                                                                                                                                                                 |                            |                                                                                         |                                        |                                          |  |

### PCN i3tf – I-90 EB

| SIGN<br>CODE | DESCRIPTION                        | NUMBER | SIGN SIZE | UNITS<br>PER<br>SIGN | UNITS |
|--------------|------------------------------------|--------|-----------|----------------------|-------|
| R2-1         | SPEED LIMIT                        | 5      | 36" x 48" | 29                   | 145   |
| W3-5         | SPEED REDUCTION AHEAD ( MPH)       | 2      | 48" x 48" | 34                   | 68    |
| W4-2         | LEFT or RIGHT LANE ENDS (symbol)   | 2      | 48" x 48" | 34                   | 68    |
| W5-4         | RAMP NARROWS                       | 1      | 48" x 48" | 34                   | 34    |
| W13-4P       | ON RAMP (plaque)                   | 1      | 30" x 30" | 21                   | 21    |
| W20-1        | ROAD WORK AHEAD                    | 3      | 48" x 48" | 34                   | 102   |
| W20-5        | LEFT or RIGHT LANE CLOSED AHEAD    | 2      | 48" x 48" | 34                   | 68    |
| G20-2        | END ROAD WORK                      | 2      | 48" x 24" | 24                   | 48    |
| -            | TYPE 3 BARRICADE - 8' double sided | 2      |           | 56                   | 112   |
|              |                                    |        | TOTAL     | UNITS                | 687   |

### PCN i3tg – I-90 WB

| SIGN<br>CODE                       | DESCRIPTION                                                              | NUMBER           | SIGN SIZE                                        | UNITS<br>PER<br>SIGN | UNITS                |
|------------------------------------|--------------------------------------------------------------------------|------------------|--------------------------------------------------|----------------------|----------------------|
| W5-4<br>W13-4P<br>W20-1<br>G20-5aP | AMP NARROWS<br>ON RAMP (plaque)<br>ROAD WORK AHEAD<br>WORK ZONE (plaque) | 2<br>2<br>2<br>2 | 48" x 48"<br>30" x 30"<br>48" x 48"<br>36" x 24" | 34<br>21<br>34<br>20 | 68<br>42<br>68<br>40 |
|                                    |                                                                          |                  | TOTAL                                            | UNITS                | 218                  |

PCN i3th - SD 445

| SIGN<br>CODE | DESCRIPTION                        | NUMBER | SIGN SIZE | UNITS<br>PER<br>SIGN | UNITS |
|--------------|------------------------------------|--------|-----------|----------------------|-------|
| R1-1         | STOP                               | 1      | 30" x 30" | 21                   | 21    |
| W4-2         | LEFT or RIGHT LANE ENDS (symbol)   | 1      | 48" x 48" | 34                   | 34    |
| VV9-3        |                                    | 2      | 48" x 48" | 34                   | 68    |
| VV20-1       |                                    | 5      | 48 X 48   | 34                   | 170   |
| VV20-5       | LEFT OF RIGHT LANE CLOSED AHEAL    | 3      | 48" x 48" | 34                   | 102   |
| G20-2        | END ROAD WORK                      | 4      | 36" x 18" | 17                   | 68    |
| -            | TYPE 3 BARRICADE - 8' double sided | 10     |           | 56                   | 560   |
|              |                                    |        | TOTAL L   | JNITS                | 1023  |

### PCN i3tj – SD 44

| SIGN<br>CODE | DESCRIPTION                        | NUMBER | SIGN SIZE | UNITS<br>PER<br>SIGN | UNITS |
|--------------|------------------------------------|--------|-----------|----------------------|-------|
| R1-1         | STOP                               | 1      | 30" x 30" | 21                   | 21    |
| W4-2         | LEFT or RIGHT LANE ENDS (symbol)   | 1      | 48" x 48" | 34                   | 34    |
| W9-3         | CENTER LANE CLOSED AHEAD           | 2      | 48" x 48" | 34                   | 68    |
| W20-1        | ROAD WORK AHEAD                    | 5      | 48" x 48" | 34                   | 170   |
| W20-5        | LEFT or RIGHT LANE CLOSED AHEAD    | 3      | 48" x 48" | 34                   | 102   |
| G20-2        | END ROAD WORK                      | 4      | 36" x 18" | 17                   | 68    |
| -            | TYPE 3 BARRICADE - 8' double sided | 10     |           | 56                   | 560   |
|              |                                    | -      | TOTAL U   | NITS                 | 1023  |

### PCN i3tk – US 16B WB

| SIGN<br>CODE                     | DESCRIPTION                                                          | NUMBER           | SIGN SIZE                                        | UNITS<br>PER<br>SIGN | UNITS                |
|----------------------------------|----------------------------------------------------------------------|------------------|--------------------------------------------------|----------------------|----------------------|
| W5-4<br>W13-4P<br>W20-1<br>G20-2 | RAMP NARROWS<br>ON RAMP (plaque)<br>ROAD WORK AHEAD<br>END ROAD WORK | 2<br>2<br>2<br>2 | 48" x 48"<br>30" x 30"<br>48" x 48"<br>48" x 24" | 34<br>21<br>34<br>24 | 68<br>42<br>68<br>48 |
|                                  |                                                                      |                  | TOTAL L                                          | INITS                | 226                  |

### PCN i3tL – US 16B EB

| SIGN<br>CODE | DESCRIPTION                        | NUMBER | SIGN SIZE | UNITS<br>PER<br>SIGN | UNITS |
|--------------|------------------------------------|--------|-----------|----------------------|-------|
| R1-1         | STOP                               | 1      | 36" x 36" | 27                   | 27    |
| W4-2         | LEFT or RIGHT LANE ENDS (symbol)   | 1      | 48" x 48" | 34                   | 34    |
| W5-4         | RAMP NARROWS                       | 2      | 48" x 48" | 34                   | 68    |
| W13-4P       | ON RAMP (plaque)                   | 2      | 30" x 30" | 21                   | 42    |
| W20-1        | ROAD WORK AHEAD                    | 8      | 48" x 48" | 34                   | 272   |
| W21-5        | SHOULDER WORK                      | 3      | 48" x 48" | 34                   | 102   |
| G20-2        | END ROAD WORK                      | 5      | 48" x 24" | 24                   | 120   |
| -            | TYPE 3 BARRICADE - 8' double sided | 2      |           | 56                   | 112   |
|              |                                    |        | TOTAL L   | INITS                | 777   |

### **TYPE C ADVANCE WARNING ARROW PANEL**

For each PCN the quantity of Type C Advance Warning Arrow Panels paid will be the most installations in place at any one time regardless of the number of set-ups on the project.

### **TEMPORARY PAVEMENT MARKING**

The Contractor shall be responsible for maintaining a visible and reflective centerline throughout the project. Any marking covered or damaged shall be replaced prior to the end of the day. All costs associated with this work shall be incidental to the contract unit price per mile for Temporary Pavement Marking.

All costs for temporary pavement marking including furnishing, applying, maintenance, removal and disposing of tabs shall be incidental to the contract unit price per mile for Temporary Pavement Marking.

| STATE OF        | PROJECT         | SHEET | TOTAL<br>SHEETS |
|-----------------|-----------------|-------|-----------------|
| SOUTH<br>DAKOTA | 090 E-451, etc. | 11    | 30              |

Temporary Road Markers shall be used for temporary pavement marking.

### PERMANENT PAVEMENT MARKINGS

The location of the existing pavement marking shall be documented prior to removal, so that replacement can be at the existing location.

Application of permanent pavement marking shall be completed within 14 calendar days following completion of the pavement repair.

Median edgelines shall be replaced with High Grade Polymer, Yellow where concrete repair has been completed.

Outside edgelines shall be replaced with High Grade Polymer, White where concrete repair has been completed

Centerline skip lines shall be replaced where necessary with white Cold Applied Plastic Pavement Marking, 4".

### COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor shall apply the Cold Applied Plastic Pavement Marking material as per manufacturer's instructions.

Cold applied plastic pavement markings shall be placed into a recessed groove on the surface.

Final locations of markings will be determined by Engineer.

### **GROOVE PAVEMENT FOR COLD APPLIED PLASTIC MARKINGS**

The grooving shall be completed within the following tolerance:

Depth of Groove: 110 mils ± 10 mils.

The bottom of the groove shall be uniform and free of loose material. The groove shall be flat and of uniform depth for the entire width of the groove.

Existing grooves that do not meet the 110 mil depth requirement shall be regrooved. In areas where the existing groove depth meets the 110 mil depth requirements and portions of the existing markings are still in place, the existing markings shall be removed. All costs for materials, labor, and equipment necessary to remove the existing markings shall be incidental to the contract unit price per foot for Grooving for Cold Applied Plastic Marking, 4".

Markings that fall outside of the groove shall be removed (at least 90%) using additional methods approved by the Engineer. All costs for materials, labor, and equipment necessary to remove the existing markings shall be incidental to the contract unit price per foot for Grooving for Cold Applied Plastic Marking, 4".

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state.

### PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

This material shall consist of a durable high build, low VOC, fast drying, waterborne traffic paint with an acrylic polymer emulsion and with reflective media adhered to the paint. The reflective media shall consist of glass beads as well as bonded core reflective elements.

The bonded core reflective elements shall contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. All microcrystalline ceramic beads bonded to reflective elements shall have a minimum index of refraction of 1.8 when tested using the liquid oil immersion method.

The Department will take retro-reflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retro-reflectometer conforming to 30-meter geometry. Retro-reflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

Pavement markings not conforming to the Retro-reflectivity requirements shall be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor shall schedule subject work to be completed no later than June 15<sup>th</sup> in the following year. Upon replacement, the retro-reflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edgeline including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retro-reflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial Readings (within 3 - 30 days of the line application):

Yellow

| Pavement Marking Color | Minimum Value  |
|------------------------|----------------|
|                        |                |
| White                  | 350 mcd/m2/lux |

275 mcd/m2/lux

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and shall be removed and replaced. Additional retro-reflectivity readings will be taken by the Department to determine the limits of removal. The removal shall be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process shall remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width shall be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings shall be at Contractor's expense, with no cost incurred by the State.

### RATES OF MATERIALS FOR HIGH GRADE POLYMER PAINT

Solid 4" Line = 27.8 Gals/Mile Glass Beads – 5.3 Lbs/Gal Composite Reflective Elements - 2.1 Lbs/Gal

All cost for materials, labor, and equipment necessary to furnish and install the pavement markings shall be incidental to the contract unit price per gallon for Waterborne Pavement Marking Paint with High Grade Polymer, White or Yellow.

| Table of | Paveme   |
|----------|----------|
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          |          |
|          | Total Le |
|          |          |
|          |          |
|          |          |
|          |          |
| Table    | e of Pa  |
| Table    | e of Pav |

|                                |               | STATE OF<br>SOUTH |               |              | SHEET     | SHEETS |
|--------------------------------|---------------|-------------------|---------------|--------------|-----------|--------|
|                                |               | DAKOTA            | 090           | E-451, €tC.  | 12        | 30     |
|                                |               |                   |               |              |           |        |
|                                |               |                   |               |              |           |        |
| ABLE OF PERM                   | ANENT PAVE    | MENT MAR          | RKING ITEN    | <u>IS</u>    |           |        |
| Table of Pave                  | ement Marking | Items- Westb      | ound I-90 - P | CN i3tg      | 7         |        |
|                                | 0             |                   |               | Waterborn    | e         |        |
|                                |               |                   |               | Pavement     | :         |        |
|                                |               |                   |               | Marking      | -         |        |
|                                |               |                   |               | Paint with   | n         |        |
|                                |               |                   |               | High Grad    | e         |        |
|                                |               |                   |               | Polymer,     |           |        |
| Total Length of White Required |               |                   |               | White        |           |        |
| (Ft)                           |               |                   |               |              | -         |        |
| 162 0.9                        |               |                   |               |              |           |        |
| 162 0.9                        |               |                   |               |              |           |        |
|                                |               |                   |               |              |           |        |
| Table of                       | Pavement Ma   | arking Items      | s - Eastboun  | d I-90 - PCN | i3tf      |        |
|                                | Waterborne    |                   | Grooving      |              | Waterbo   | rne    |
|                                | Pavement      | Cold              | For Cold      |              | Paveme    | nt     |
|                                | Marking       | Applied           | Applied       |              | Markin    | g      |
|                                | Paint with    | Plastic           | Plastic       | Total        | Paint wi  | th     |
|                                | High Grade    | Pavement          | Pavement      | Length of    | High Gra  | de     |
| Total Length of                | Polymer,      | Marking,          | Marking,      | Yellow       | Polyme    | r,     |
| White Required                 | White         | 4"                | 4"            | Required     | Yellow    | '      |
| (Ft)                           | (Gal)         | (Ft)              | (Ft)          | (Ft)         | (Gal)     |        |
| 100                            | 0.5           | 10                | 10            | 12           | 0.1       |        |
| 100                            | 0.5           | 10                | 10            | 12           | 0.1       |        |
|                                |               |                   |               |              |           |        |
|                                |               |                   |               |              |           |        |
| Table of Pa                    | avement Mark  | ing Items -       | Westbound     | 16B - PCN i  | 3tk       | 4      |
|                                |               |                   |               | W            | aterborne |        |

| Table of | Pave  |
|----------|-------|
|          |       |
|          |       |
|          |       |
|          |       |
|          |       |
|          |       |
|          | Total |
|          |       |
|          |       |

|                            | Marking<br>Paint with<br>High Grade<br>Polymer, |
|----------------------------|-------------------------------------------------|
| I Length of White Required | white                                           |
| (Ft)                       | (Gal)                                           |
| 64                         | 0.3                                             |
| 64                         | 0.3                                             |

### TABLE OF PERMANENT PAVEMENT MARKING ITEMS (CONTINUED)

| Table of Pavement Marking Items - Eastbound 16B - PCN i3tl |            |  |
|------------------------------------------------------------|------------|--|
|                                                            | Waterborne |  |
|                                                            | Pavement   |  |
|                                                            | Marking    |  |
|                                                            | Paint with |  |
|                                                            | High Grade |  |
|                                                            | Polymer,   |  |
| Total Length of White Required                             | White      |  |
| (Ft)                                                       | (Gal)      |  |
| 67                                                         | 0.4        |  |
| 67                                                         | 0.4        |  |

| Table of Curb and Gutter - US 16B EB - PCN i3tl |          |          |  |  |
|-------------------------------------------------|----------|----------|--|--|
|                                                 | Remove   | Туре     |  |  |
|                                                 | Concrete | B68.5    |  |  |
|                                                 | Curb and | Curb and |  |  |
|                                                 | Gutter   | Gutter   |  |  |
| MRM                                             | (Ft)     | (Ft)     |  |  |
| US 16B 64.545 EB                                | 20.6     | 6.0      |  |  |

### **EROSION CONTROL WATTLE**

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at underdrain outlets noted in the table of Subgrade Repair 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.

Erosion control wattles shall remain on the project to decompose.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

### http://sddot.com/business/certification/products/Default.aspx

It is anticipated that 260 feet of 12" Erosion Control Wattle will be required for the two intersecting street locations that are receiving new concrete on US 16B.

### **EROSION CONTROL**

Areas disturbed or damaged during subgrade repairs shall be seeded and mulched.

All permanent seed shall be planted in the topsoil at a depth of 1/4" to 1/2".

All seed broadcast must be raked or dragged in (incorporated) within the top  $\frac{1}{4}$ " to  $\frac{1}{2}$ " of topsoil when possible. Hand raking may be required. 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:

| Grass Species                               | Variety                           | Pure Live Seed<br>(PLS)<br>(Pounds/Acre) | The fiber mulch used |
|---------------------------------------------|-----------------------------------|------------------------------------------|----------------------|
| Western Wheatgrass                          | Flintlock, Rodan, Rosana          | 7                                        |                      |
| Green Needlegrass                           | Lodorm                            | 4                                        | Product              |
| Sideoats Grama                              | Butte, Killdeer, Pierre, Trailway | 3                                        | Mat-Fiber Plus       |
| Blue Grama                                  | Bad River, Willis                 | 2                                        |                      |
| Oats or Spring Wheat:<br>April through May; |                                   | 10                                       |                      |
| Winter Wheat: August through November       |                                   |                                          | Conwed Hydro Mulch   |
|                                             | Total:                            | 26                                       |                      |

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 Bindex Wood WT 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.

Approximately 2600 square feet of permanent seeding will be required for the two intersecting street locations that are receiving new concrete on US 16B. The Engineer may adjust this quantity up or down depending on damage to the area surrounding the project.

|                                        | STATE OF        | PROJECT                                                                                    | SHEET    | TOTAL<br>SHEETS |
|----------------------------------------|-----------------|--------------------------------------------------------------------------------------------|----------|-----------------|
|                                        | SOUTH<br>DAKOTA | 090 E-451, etc.                                                                            | 13       | 30              |
|                                        |                 |                                                                                            | <u> </u> |                 |
|                                        |                 |                                                                                            |          |                 |
| The fiber mulch used on this project   | t shall be      | one from the list below:                                                                   |          |                 |
| Product                                | Mar             | ufacturer                                                                                  |          |                 |
| Mat-Fiber Plus                         |                 | Mat, Inc.<br>Floodwood, MN<br>Phone: 1-888-477-3028<br>www.matinc.biz                      |          |                 |
| Conwed Hydro Mulch 2000                |                 | Profile Products LLC<br>Buffalo Grove, IL<br>Phone: 1-800-366-1180<br>www.conwedfibers.com |          |                 |
| EcoFibre Plus Tackifier                |                 | Profile Products LLC<br>Buffalo Grove, IL<br>Phone: 1-800-366-1180<br>www.profile-eco.com  |          |                 |
| Terra Wood<br>with Tacking Agent 3     |                 | Profile Products LLC<br>Buffalo Grove, IL<br>Phone: 1-800-726-6371<br>www.terra-mulch.com  |          |                 |
| Bindex Wood WT                         |                 | American Excelsior Co.<br>Arlington, TX<br>Phone: 1-800-777-7645<br>www.curlex.com         |          |                 |
| Second Nature Wood<br>Fiber Mulch Plus |                 | Central Fiber LLC<br>Canton, OH<br>Phone: 1-888-452-2630<br>www.centralfiber.com           |          |                 |

All costs associated with permanent seeding and fiber mulching shall be incidental to the contract lump sum for price for Erosion Control.



|            | STATE OF        | PROJECT           | SHEET | TOTAL<br>SHEETS |                                         |
|------------|-----------------|-------------------|-------|-----------------|-----------------------------------------|
|            | SOUTH<br>DAKOTA | 090 E-451, etc.   | 14    | 30              |                                         |
| $\bigcup$  | Plotting D      | ate: 04/13/2015   |       |                 |                                         |
| $\bigcirc$ |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 | $\langle \rangle$ |       |                 | ſ                                       |
|            |                 | P                 |       |                 | -<br>1E                                 |
|            |                 |                   |       |                 | NAN                                     |
|            | -               |                   |       |                 | LOT                                     |
| 1          |                 |                   |       |                 |                                         |
| 1          |                 |                   |       |                 |                                         |
| Ĺ          |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
| 3          |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
| 1          |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 | 0GN                                     |
|            |                 |                   |       |                 | N1.C                                    |
|            |                 |                   |       |                 | PLA                                     |
|            |                 |                   |       |                 | TON                                     |
|            |                 |                   |       |                 | ING                                     |
|            |                 |                   |       |                 | VELL                                    |
|            |                 |                   |       |                 | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
|            |                 |                   |       |                 | NON.                                    |
|            |                 |                   |       |                 | <b>CAT</b>                              |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 | Ш                                       |
|            |                 |                   |       |                 | FIL                                     |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |
|            |                 |                   |       |                 |                                         |



# NONREINFORCED PCC PAVEMENT REPAIR

TYPICAL REPAIR AREAS I-90 & US 16B



### NOTES:

- () Where possible, transverse joints shall be constructed full roadway width.
- (2) All edges of repair areas that are adjacent to asphalt concrete shall be formed to match the width of the existing concrete pavement and replaced with new asphalt

### Legend:

- Drilled in 1 1/4 " x 18" epoxy coated plain round dowel bar
- --- Drilled in No. 9 x 18" epoxy coated deformed tie bars
- Dowel Bar Assembly (for repair areas greater than 20' in length)
- ---- L ---- Longitudinal Construction Joint Without Tie Bars (Keyway Joint)
- \_\_\_\_\_LT\_\_\_\_ Longitudinal Construction Joint With Tie Bars (Do not tie more than 48' width of pavement)

| STATE OF   | PROJECT          | SHEET | TOTAL<br>SHEETS |
|------------|------------------|-------|-----------------|
| DAKOTA     | 090 E-451, etc.  | 16    | 30              |
| Plotting [ | Date: 04/13/2015 |       |                 |

round dowel bar d tie bars r than 20' in length Bars (Keyway Joint) rs



\*\* Compression Relief Form Material shall be removed by sawing or other means approved by the Engineer. Spall repaired joints shall then be sealed with Hot Poured Elastic Joint Sealer.

PI UT SCAL

PLOTTED FROM - TRRC12608

|           | STATE OF        | PROJECT          |     | SHEET<br>NO: | TOTAL<br>SHEETS |
|-----------|-----------------|------------------|-----|--------------|-----------------|
|           | SOUTH<br>DAKOTA | 090 E-451, e     | tc. | 17           | 30              |
|           | Plotting        | Date: 04/13/2015 |     |              |                 |
|           |                 |                  |     |              |                 |
|           |                 |                  |     |              |                 |
|           |                 |                  |     |              |                 |
|           | a spa           | ALLS             |     |              |                 |
|           |                 |                  |     |              |                 |
| IES (PLA  |                 | $\sim$           |     |              | c               |
| (,        |                 | •)               |     |              |                 |
|           |                 |                  |     |              |                 |
|           |                 |                  |     |              | ŀ               |
|           |                 |                  |     |              | à               |
|           |                 |                  |     |              |                 |
|           |                 |                  | 1   |              |                 |
|           |                 | $\checkmark$     |     |              |                 |
|           |                 |                  |     |              |                 |
|           | Form            |                  |     |              |                 |
|           | Vlaterial       |                  |     |              |                 |
|           |                 |                  |     |              |                 |
|           |                 | /                |     |              |                 |
|           |                 | L                | 7   |              |                 |
|           |                 |                  |     |              |                 |
|           |                 |                  |     |              |                 |
|           | b ⊃ 3"          |                  |     |              |                 |
|           |                 |                  |     |              |                 |
| Ú V       | · Δ ·           |                  |     |              |                 |
| · · · △   | · . • 4         |                  |     |              |                 |
| · Δ · · < |                 |                  |     |              |                 |
| PCC       |                 | Form             |     |              |                 |
|           |                 | Material         |     |              |                 |
|           | · ·             |                  |     |              |                 |
| 13"       |                 | L                |     |              | L<br>L          |
|           |                 |                  |     |              | i               |
|           |                 |                  |     |              |                 |
| <u> </u>  | Existing        |                  |     |              |                 |
| / •       | Joint           |                  |     |              |                 |
|           |                 |                  |     |              |                 |
|           |                 | Ν                |     |              |                 |
|           |                 |                  |     |              |                 |

## TIE BAR RETROFIT (STITCHING)

# TIE BAR RETROFIT (STITCHING)



PLAN VIEW



| TABLE OF STITCHING DIMENSIONS |              |              |                      |  |  |  |
|-------------------------------|--------------|--------------|----------------------|--|--|--|
| Т                             | А            | В            | Length of<br>Tie Bar |  |  |  |
| 8"                            | 5"           | 11⁄2"±       | 10"                  |  |  |  |
| 81⁄2"                         | 5¼"          | 1%"±         | 11"                  |  |  |  |
| 9"                            | 5%"          | 11⁄4"±       | 12"                  |  |  |  |
| 91⁄2"                         | 6"           | 1%"±         | 12½"                 |  |  |  |
| 10"                           | 6 <u>%</u> " | 11⁄2"±       | 13½"                 |  |  |  |
| 101⁄2"                        | 6¾"          | 1¾"±         | 14½"                 |  |  |  |
| 11"                           | 7"           | 11⁄4"±       | 15½"                 |  |  |  |
| 11½"                          | 7%"          | 1 <b>%"±</b> | 16"                  |  |  |  |
| 12"                           | 7¾"          | 1%"±         | 16½"                 |  |  |  |
| 121⁄2"                        | 8½"          | 11⁄4"±       | 17½"                 |  |  |  |

| STA |      | PROJECT         | SHEET<br>NO. | TOTAL<br>SHEETS |
|-----|------|-----------------|--------------|-----------------|
|     | KOTA | 090 E-451, etc. | 18           | 30              |









| STAT      | E OF       | PROJECT         | SHEET | TOTAL |
|-----------|------------|-----------------|-------|-------|
| SO<br>DAK | UTH<br>OTA | 090 E-451, etc. | 20    | 30    |

| DETAIL A<br>TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Sawed joint filled with Hot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                   |
| In Place PCC Pavement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |
| Drilled Hole —/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5                                                 |
| GENERAL NOTES:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5                                                 |
| The term "In Place PCC Pavement" in the above drawing indicates that the in pavement was placed on a previous project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | place PCC                                         |
| See sheet 2 of 2 of this standard plate to determine if Detail A shall be us                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ed.                                               |
| The tie bars shall be embedded a minimum depth of 9 inches into the in plac<br>and anchored with an epoxy resin adhesive.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | e PCC pavement                                    |
| No.9 epoxy coated deformed tie bars shall be used in 10 inch thickness and<br>Pavement and No.11 epoxy coated deformed tie bars shall be used in 10.5 inc<br>and greater PCC Pavement. The tie bar spacing shall be 18 inches center to<br>and shall be a minimum of 3 inches and a maximum of 9 inches from the pave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | less PCC<br>h thickness<br>center<br>ement edges. |
| TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS<br>Transverse joint shall be<br>used on new PCC pavement<br>plates 380.05 or 380.06.<br>In Place PCC Pavement<br>New PCC Pavement<br>New PCC Pavement<br>Prilled Hole<br>Form Oiled or Greated<br>Full Depth Saw Cut<br>T = In Place PCC Pavement and New PCC Pavement Thickness<br>The term "In Place PCC Pavement" in the above drawing indicates that the in<br>pavement was placed on a previous project or current project.<br>See sheet 2 of 2 of this standard plate to determine if Detail B shall be us<br>The plain round dowel bars shall be embedded a minimum depth of 9 inches interplace PCC pavement and anchored with an epoxy resin adhesive.<br>The epoxy coated plain round dowel bar size, number, and spacing shall be the<br>detailed on the corresponding dowel bar assembly standard plate (380.01, 380) | the same type<br>t. See standard                  |
| or 380.04). The epoxy coated plain round dowel bars shall be a minimum of 3 i<br>maximum of 6 inches from the pavement edges.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | September 6, 2013                                 |
| PCC PAVEMENT TRANSVERSE CONSTRUCTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PLATE NUMBER<br>380.08                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                   |







|                                | S |  |
|--------------------------------|---|--|
|                                | D |  |
|                                | D |  |
| Published Date: 1st Atr. 2015  | 0 |  |
| runiisiicu naic. ISI Uli. 2013 |   |  |

|                                           | STATE OF                            | PROJECT                               |                                              | SHEET  | TOTAL |
|-------------------------------------------|-------------------------------------|---------------------------------------|----------------------------------------------|--------|-------|
|                                           | SOUTH<br>DAKOTA                     | 090 E-45                              | 1, etc.                                      | 22     | 30    |
|                                           |                                     |                                       |                                              | ,      |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
| JOINT W                                   | ITH TIE B                           | ARS                                   |                                              |        |       |
| IOLITHICALL'                              | Y)                                  |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           | New P(                              | CC Pavement 4                         |                                              |        |       |
| A A A                                     |                                     |                                       | <u>;                                    </u> |        |       |
|                                           | 15" -                               | · · · · · · · · · · · · · · · · · · · |                                              |        |       |
| A                                         | Δ                                   | Δ <sup>Δ</sup> Δ Δ Δ                  | • .                                          |        |       |
|                                           | ine of Fract                        | ure<br>Tia Bara                       |                                              |        |       |
| роху соат                                 | ed Detormed                         | He Bars                               |                                              |        |       |
| ent Thickn                                | 955                                 |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     | •••                                   |                                              |        |       |
| l be spaced                               | l in accordar                       | nce with the                          | tollowing                                    |        |       |
| pacing 48" M                              | laximum                             |                                       |                                              |        |       |
| ontraction<br>acing                       | Number of<br>Tie Bars               |                                       |                                              |        |       |
| 10'                                       | 2                                   |                                       |                                              |        |       |
| 14'                                       | 3                                   |                                       |                                              |        |       |
| 22'                                       | 5                                   |                                       |                                              |        |       |
| 15 inchos                                 | from the tr                         | CONSURTED DO                          | otraction                                    |        |       |
|                                           |                                     |                                       |                                              |        |       |
| n in the to<br>f 48 inches<br>thin each p | ble shall be<br>center to<br>banel. | uniformly sp<br>center. The i         | aced<br>naximum                              |        |       |
| all be a mir<br>ng the saw                | nimum of 1/3<br>v cut to pro        | the thicknes<br>ovide the wid         | ss of<br>th for                              |        |       |
| , JOINT SEQ                               | TEL IS NECES                        | sur y.                                |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     |                                       |                                              |        |       |
|                                           |                                     | ,                                     | August 31                                    | , 2013 |       |
|                                           |                                     | ΙΝΔΙ                                  | PLATE NUL                                    |        |       |
| PCC PAVEME                                | -NI INNGUIN                         |                                       |                                              | U      |       |
| PCC PAVEME<br>JOINTS N                    | NI LONGITUD.<br>VITH TIE BARS       |                                       |                                              |        |       |





| ST      | ATE OF        | PROJECT         | SHEET | TOTAL |
|---------|---------------|-----------------|-------|-------|
| S<br>DA | OUTH<br>AKOTA | 090 E-451, etc. | 23    | 30    |





S

D D

0

T



|                                                         |                                                 |                                                 |                                                                                                    |                                        |  | ł |   | ţ |
|---------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------|--|---|---|---|
|                                                         |                                                 |                                                 |                                                                                                    |                                        |  |   |   |   |
| Truck<br>consic<br>wheth<br>lane v                      | off<br>Jerec<br>er t<br>vidth                   | -track<br>d wher<br>he 10<br>is ac              | king sha<br>n deterr<br>-foot m<br>dequate.                                                        | ould be<br>nining<br>inimum            |  |   |   |   |
| shall b<br>contro<br>The cl<br>be dru<br>traff<br>overn | be us<br>ol mu<br>hann<br>ums<br>ic co<br>ight. | sed if<br>ist re<br>elizinç<br>or 42'<br>ontrol | traffic<br>main ov<br>device<br>cones<br>must re                                                   | c<br>ernight<br>s shall<br>if<br>emain |  |   | I |   |
| Тетро                                                   | rary                                            | pave                                            | ment ma                                                                                            | orkings                                |  |   |   | V |
| • P(<br>** N<br>b<br>Hi                                 | avem<br>eed<br>e de<br>ighwa                    | ent M<br>and s<br>termir<br>ay Aut              | arking<br>afe spe<br>hed by<br>hority.                                                             | ed to<br>the                           |  |   |   |   |
| ■ Cr                                                    | hann<br>" Whit                                  | elizinç<br>te Tem                               | ) Device<br>nporary                                                                                |                                        |  |   |   |   |
| 60 - 6<br>70 - 7                                        | 65<br>75                                        | (A)<br>(A)                                      | 000<br>(B)<br>1500                                                                                 | 1125                                   |  |   |   |   |
| Spee<br>Prior<br>Work<br>(M.P.H<br>45 - 5               | d Ac<br>to<br>(<br>1.)<br>50                    | dvance<br>Si<br>(Fe<br>(A<br>5                  | Warnin<br>gns<br>eet)<br>(B)<br>(B)<br>(CO<br>(CO)<br>(CO)<br>(CO)<br>(CO)<br>(CO)<br>(CO)<br>(CO) | <sup>IG</sup> L<br>(Feet)<br>600       |  | Î |   | ţ |















| <ul> <li>GENERAL NOTES:</li> <li>At cut or fill slope installations, wattle perpendicular to the water flow.</li> <li>At ditch installations, point A must be for flows over the wattle and not around.</li> <li>The Contractor shall dig a 3" to 5" trend that daylight can not be seen under the from the trench against the wattle or the stakes shall be 1"x2" or 2"x2" wood s rebar may be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.</li> <li>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.</li> <li>The Contractor and Engineer shall insperies week and within 24 hours after every is contractor shall remove, dispose, or resine necessary as determined by the Engine.</li> <li>Sediment removal, disposal, or necessary All costs for removing accumulated sed shaping shall be incidental to the control.</li> <li>All costs for furnishing and installing the quipment, and materials shall be incidental to the control.</li> <li>All costs for removing the erosion control.</li> <li>All costs for removing the erosion control.</li> </ul> | <ul> <li>GENERAL NOTES:</li> <li>At cut or fill slope installations, wattle perpendicular to the water flow.</li> <li>At ditch installations, point A must be flows over the wattle and not around.</li> <li>The Contractor shall dig a 3" to 5" trend that daylight can not be seen under the from the trench against the wattle or.</li> <li>The stakes shall be 1"x2" or 2"x2" wood s rebar may be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.</li> <li>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.</li> <li>Where installing running lengths of wat wattle tightly against the first and shall costs for removing accumulated sedit shaping shall be incidental to the contractor shall remove, dispose, or resinecessary as determined by the Engine.</li> <li>Sediment removal, disposal, or necessary All costs for furnishing and installing the equipment, and materials shall be incident for the corresponding erosion control.</li> <li>All costs for removing the erosion control.</li> </ul> | <pre>GENERAL NOTES:<br/>At cut or fill slope installations, wattle<br/>perpendicular to the water flow.<br/>At ditch installations, point A must be in<br/>flows over the wattle and not around<br/>The Contractor shall dig a 3" to 5" trend<br/>that daylight can not be seen under the<br/>from the trench against the wattle or<br/>The stakes shall be 1"x2" or 2"x2" wood s<br/>rebar may be used only if approved by<br/>6" from the ends of the wattles and the<br/>shall be 3' to 4'.<br/>Where installing running lengths of wat<br/>wattle tightly against the first and sh<br/>The Contractor and Engineer shall inspe<br/>week and within 24 hours after every in<br/>Contractor shall remove, dispose, or resinecessary as determined by the Engine.<br/>Sediment removal, disposal, or necessary<br/>All costs for removing accumulated sed<br/>shaping shall be incidental to the contractor<br/>Sediment".<br/>All costs for furnishing and installing the<br/>equipment, and materials shall be inciden<br/>for the corresponding erosion control<br/>All costs for removing the erosion cont<br/>equipment, and materials shall be inciden<br/>"Remove Erosion Control Wattle".</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul> <li>GENERAL NOTES:</li> <li>At cut or fill slope installations, wattle perpendicular to the water flow.</li> <li>At ditch installations, point A must be flows over the wattle and not around.</li> <li>The Contractor shall dig a 3" to 5" trend that daylight can not be seen under the from the trench against the wattle or The stakes shall be 1"x2" or 2"x2" wood s rebar may be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.</li> <li>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.</li> <li>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.</li> <li>Sediment removal, disposal, or necessary as determined by the Engine.</li> <li>Sediment removal, disposal, or necessary All costs for removing accumulated sedi shaping shall be incidental to the contractor the corresponding erosion control.</li> <li>All costs for furnishing and installing tequipment, and materials shall be incidental to the corresponding erosion control.</li> <li>All costs for removing the erosion control.</li> <li>All costs for removing the erosion control.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul> <li>GENERAL NOTES:</li> <li>At cut or fill slope installations, wattle perpendicular to the water flow.</li> <li>At ditch installations, point A must be a flows over the wattle and not around.</li> <li>The Contractor shall dig a 3" to 5" trend that daylight can not be seen under the from the trench against the wattle or.</li> <li>The stakes shall be 1"x2" or 2"x2" wood s rebar may be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.</li> <li>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.</li> <li>The Contractor and Engineer shall insperived by the Engine.</li> <li>Sediment removal, disposal, or necessary as determined by the Engine.</li> <li>Sediment removal, disposal, or necessary all costs for removing accumulated sedisabaping shall be incidental to the control.</li> <li>All costs for furnishing and installing tequipment, and materials shall be incidental to the corresponding erosion control.</li> <li>All costs for removing the erosion control.</li> </ul> |                          |                                         |                                        |                               |                                |                              |                         |                                       |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------|----------------------------------------|-------------------------------|--------------------------------|------------------------------|-------------------------|---------------------------------------|----------------|
| At cut or fill slope installations, wattle<br>perpendicular to the water flow.<br>At ditch installations, point A must be h<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under th<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and th<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every is<br>contractor shall remove, dispose, or resi<br>necessary as determined by the Engine.<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".            | At cut or fill slope installations, wattle<br>perpendicular to the water flow.<br>At ditch installations, point A must be h<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under th<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and th<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every to<br>Contractor shall remove, dispose, or resi<br>necessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                     | At cut or fill slope installations, wattle<br>perpendicular to the water flow.<br>At ditch installations, point A must be f<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under th<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and th<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every in<br>Contractor shall remove, dispose, or resin<br>necessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>action for the control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | At out or fill slope installations, wattle<br>perpendicular to the water flow.<br>At ditch installations, point A must be f<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under th<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and th<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every in<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>all costs for removing the erosion control<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | At cut or fill slope installations, wattle<br>perpendicular to the water flow.<br>At ditch installations, point A must be in<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every in<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>shaping shall be incidental to the contractor<br>Sediment".<br>All costs for furnishing and installing the<br>quipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>All costs for removing the erosion control<br>acquipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                  | GEN                      | ERAL N                                  | OTES:                                  |                               |                                |                              |                         |                                       |                |
| At ditch installations, point A must be h<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspen<br>week and within 24 hours after every for<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contractor<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be incident<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>all costs for removing the erosion control<br>and materials shall be incident<br>"Remove Erosion Control Wattle".                                                | At ditch installations, point A must be for the contractor shall dig a 3" to 5" trend that daylight can not be seen under the from the trench against the wattle or The stakes shall be 1"x2" or 2"x2" wood s rebar may be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be 3' to 4'.<br>Sediment removal, disposal, or necessary as determined by the Engine.<br>Sediment removal, disposal, or necessary All costs for furnishing and installing the quipment, and materials shall be incident for the corresponding erosion control.<br>All costs for removing the erosion control of the corresponding the erosion control wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | At ditch installations, point A must be h<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspect<br>week and within 24 hours after every to<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be incident<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | At ditch installations, point A must be h<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under H<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and H<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every n<br>Contractor shall remove, dispose, or resi<br>necessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | At ditch installations, point A must be h<br>flows over the wattle and not around<br>The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every of<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be incident<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>all costs for removing the erosion control<br>all costs for removing the erosion control<br>and materials shall be incident                                                                                                                                                       | At<br>per                | cut or<br>pendic                        | r fills<br>sular t                     | slope<br>o th                 | inst<br>e wa                   | allat<br>ter                 | ions,<br>flow           | watti                                 | э              |
| The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle on<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every in<br>Contractor shall remove, dispose, or resine<br>necessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>and materials shall be incident<br>remove Erosion Control Wattle".                                                                                                                                                                                       | The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspen<br>week and within 24 hours after every of<br>Contractor shall remove, dispose, or resine<br>necessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sed<br>is haping shall be incidental to the contractor<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                       | The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspen<br>week and within 24 hours after every of<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>and materials shall be incident<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe-<br>week and within 24 hours after every in<br>Contractor shall remove, dispose, or resine<br>necessary as determined by the Engine.<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi-<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont-<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The Contractor shall dig a 3" to 5" trend<br>that daylight can not be seen under the<br>from the trench against the wattle or<br>The stakes shall be 1"x2" or 2"x2" wood s<br>rebar may be used only if approved by<br>6" from the ends of the wattles and the<br>shall be 3' to 4'.<br>Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe-<br>week and within 24 hours after every of<br>Contractor shall remove, dispose, or resinecessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated seding<br>shall be incidental to the contractor<br>sediment".<br>All costs for furnishing and installing the<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                       | At<br>flo                | ditch<br>ws ove                         | install<br>er the                      | atior<br>wat                  | ns,po<br>tle a                 | int<br>Ind r                 | A mu<br>not c           | st be<br>pround                       | ł              |
| The stakes shall be 1"x2" or 2"x2" wood since and y be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be contractor and Engineer shall insperies week and within 24 hours after every in Contractor shall remove, dispose, or residencessary as determined by the Engineer Sediment removal, disposal, or necessary All costs for removing accumulated sedi shaping shall be incidental to the contractor shall remove for the corresponding erosion control of the corresponding erosion control of the corresponding the erosion control wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The stakes shall be 1"x2" or 2"x2" wood since and the ends of the wattles and the shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be and within 24 hours after every in Contractor shall remove, dispose, or resinecessary as determined by the Engineer Sediment removal, disposal, or necessary All costs for removing accumulated sedi shaping shall be incidental to the contrest Sediment".<br>All costs for furnishing and installing the equipment, and materials shall be incident for the corresponding erosion control wattle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The stakes shall be 1"x2" or 2"x2" wood since and the ends of the wattles and the shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be and within 24 hours after every nortractor shall remove, dispose, or real necessary as determined by the Engineer Sediment removal, disposal, or necessary All costs for removing accumulated sedi shaping shall be incidental to the control of the corresponding erosion control of the corresponding erosion control of the control of the corresponding the erosion control of the corresponding the erosion control of the control of the control of the corresponding the erosion control of the corresponding the erosion control of the control of the corresponding the erosion control of the corresponding the erosponding the erosponding | The stakes shall be 1"x2" or 2"x2" wood since the may be used only if approved by 6" from the ends of the wattles and the shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be and within 24 hours after every the contractor shall remove, dispose, or respondencessary as determined by the Engineer Sediment removal, disposal, or necessary All costs for removing accumulated sedi shaping shall be incidental to the contraction for the corresponding erosion control to the corresponding erosion control to the corresponding the erosion control wattle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | The stakes shall be 1"x2" or 2"x2" wood since and the ends of the wattles and the shall be 3' to 4'.<br>Where installing running lengths of wat wattle tightly against the first and shall be and within 24 hours after every montractor shall remove, dispose, or resinecessary as determined by the Engineer Sediment removal, disposal, or necessary All costs for removing accumulated sedi shaping shall be incidental to the contractor the corresponding erosion control of the corresponding the erosion control of the corresponding the erosion control of the corresponding the erosion control of the control of the corresponding the erosion control of the corresponding the erosion control of the control of the corresponding the erosion control of the corresponding the erosion control of the erosion control wattle".                                                                                                                                                                                                                                                                                                                                                                                                                       | The<br>tha<br>fra        | e Contr<br>at dayl<br>om the            | ractor<br>light c<br>trend             | sha<br>an n<br>ch ag          | II dig<br>ot be<br>gains-      | a 3<br>e se<br>t th          | "to<br>en u<br>e wa     | 5"trer<br>nder<br>ttle o              | וכ<br>לל       |
| Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engineer<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion control<br>and materials shall be inciden<br>for the corresponding the erosion control<br>and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                | Where installing running lengths of wat-<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engineer<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Where installing running lengths of wat<br>wattle tightly against the first and sh<br>The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engineer<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contro-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul> <li>Where installing running lengths of watwattle tightly against the first and shift wattle tightly against the first and shift week and within 24 hours after every montractor shall remove, dispose, or restructor shall removel, dispose, or restructors for removing accumulated sedies shaping shall be incidental to the contract Sediment.</li> <li>All costs for furnishing and installing the equipment, and materials shall be incident for the corresponding erosion control of the corresponding the erosion control of the contract shall be inciden for the corresponding the erosion control of the corresponding the erosion control of the erosion control of the control of the control of the erosion control of the control of the control of the erosion contr</li></ul> | <ul> <li>Where installing running lengths of watwattle tightly against the first and she that the contractor and Engineer shall inspere week and within 24 hours after every montactor shall remove, dispose, or rest necessary as determined by the Engineer Sediment removal, disposal, or necessary All costs for removing accumulated seditions shall be incidental to the contracted sediment".</li> <li>All costs for furnishing and installing the equipment, and materials shall be incident for the corresponding erosion control of the corresponding the erosion control of the equipment, and materials shall be incident "Remove Erosion Control Wattle".</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | The<br>ret<br>6" f       | e stake<br>bar ma<br>From t<br>all be 3 | es sha<br>y be u<br>he end<br>5' to 4' | II be<br>used<br>ds of<br>•   | l"x2"<br>only<br>the           | or<br>if c<br>wa             | 2"x2"<br>ppro<br>ttles  | wood a<br>oved b<br>and f             | s<br>y<br>tr   |
| The Contractor and Engineer shall inspe<br>week and within 24 hours after every a<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engine<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion control<br>and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engined<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engined<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engined<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contra-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | The Contractor and Engineer shall inspe<br>week and within 24 hours after every r<br>Contractor shall remove, dispose, or rest<br>necessary as determined by the Engined<br>Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contro-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Whe<br>wat               | ere ins<br>ttle ti                      | stalling<br>ghtly                      | ) run<br>again                | ning<br>Ist ti                 | lenç<br>he f                 | irst                    | of wa<br>and s                        | t<br>h         |
| Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contr<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contro<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contro<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contro<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sediment removal, disposal, or necessary<br>All costs for removing accumulated sedi<br>shaping shall be incidental to the contro-<br>Sediment".<br>All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control of<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | The<br>wee<br>Cor<br>neo | e Contr<br>ek and<br>atracto<br>cessar  | ractor<br>withir<br>or sho<br>y as c   | and<br>24<br>III rer<br>Ieter | Engi<br>hour<br>nove,<br>minec | neer<br>s af<br>disp<br>d by | ter<br>bose,<br>the     | all insp<br>every<br>or re:<br>Engine | e<br>r<br>st   |
| All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control v<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | All costs for furnishing and installing t<br>equipment, and materials shall be inciden<br>for the corresponding erosion control<br>All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Sec<br>All<br>sho<br>Sec | diment<br>costs<br>oping s<br>diment"   | remov<br>for r<br>hall be              | al,di<br>emovi<br>e inci      | sposo<br>ing a<br>dent         | al, or<br>ccur<br>al to      | r nec<br>nulat<br>> the | cessar<br>ed sec<br>cont              | y<br>Jii<br>ra |
| All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All costs for removing the erosion cont<br>equipment, and materials shall be inciden<br>"Remove Erosion Control Wattle".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | All<br>equ<br>for        | costs<br>uipment                        | for f<br>, and<br>corres               | urnis<br>matei<br>spond       | hing<br>rials<br>ing e         | and<br>sha<br>rosi           | inst<br>II be<br>on c   | alling<br>incide<br>ontrol            | +<br>n<br>\    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | All<br>equ<br>"Re        | costs<br>Jipment<br>move E              | for r<br>, and<br>Frosior              | emovi<br>mater<br>n Con       | 'ng t<br>rials<br>trol         | he e<br>sha<br>Watt          | erosio<br>II be<br>Ie". | on cor<br>incide                      | n<br>U         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |                                         |                                        |                               |                                |                              |                         |                                       |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |                                         |                                        |                               |                                |                              |                         |                                       |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |                                         |                                        |                               |                                |                              |                         |                                       |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |                                         |                                        |                               |                                |                              |                         |                                       |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |                                         |                                        |                               |                                |                              | c                       |                                       |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Duhli                    | inhad D                                 | ata, 1at                               | 0+* 9                         | 015                            |                              | 3<br>D<br>D<br>O        |                                       |                |

|                                                                | STATE OF                                | PROJEC                                              | Г                            | SHEET  | TOTAL<br>SHEETS |
|----------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------|------------------------------|--------|-----------------|
|                                                                | SOUTH<br>DAKOTA                         | 090 E-45                                            | 51, etc.                     | 29     | 30              |
|                                                                |                                         | -                                                   |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
| shall be insta                                                 | illed alor                              | ng the contour                                      | r and                        |        |                 |
| igher than poi<br>he ends.                                     | nt B to                                 | ensure that w                                       | vater                        |        |                 |
| n, install the w<br>e wattle, and<br>the uphill side           | attle tig<br>then com<br>See Det        | ghtly in the tr<br>ipact the soil<br>tail B.        | rench so<br>excavated        |        |                 |
| akes,however,<br>the Engineer.<br>e spacing of t               | other ty<br>The stak<br>the stak        | ypes of stake<br>es shall be plo<br>es along the v  | s such as<br>aced<br>wattles |        |                 |
| les, the Contro<br>all not overlap                             | actor sh<br>the end                     | all butt the s<br>Is.See Detail C.                  | econd<br>•                   |        |                 |
| t the erosion<br>ainfall event g<br>ape the accum<br>r.        | control<br>greater -<br>nulated s       | wattles once than $\frac{1}{2}$ . The sediment when | every                        |        |                 |
| shaping shall t<br>nent, disposal o<br>ct unit price           | pe as dir<br>of sedime<br>per cubi      | ected by the<br>int, and necess<br>c yard for "Ri   | Engineer.<br>sary<br>emove   |        |                 |
| ne erosion con<br>al to the con <sup>-</sup><br>attle bid item | itrol wat <sup>.</sup><br>tract un<br>• | tles including<br>it price per f                    | labor,<br>oot                |        |                 |
| ol wattle from<br>al to the con-                               | m the pr<br>tract un                    | oject including<br>it price per f                   | g labor,<br>oot for          |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     |                              |        |                 |
|                                                                |                                         |                                                     | December 23                  | 3,2004 |                 |
|                                                                |                                         |                                                     | PLATE NU                     | MBER   |                 |
| EROSION CON                                                    | TROL WAT                                | TLE                                                 | / 54.0                       | 0      |                 |
|                                                                |                                         |                                                     | Sheet 2 d                    | of 2   |                 |
|                                                                |                                         |                                                     |                              |        |                 |



