



Department of Transportation

Office of Project Development

700 E Broadway Avenue

Pierre, South Dakota 57501-2586 605/773-3268

FAX: 605/773-6608

June 6, 2014

ADDENDUM NO. 2

RE: Item #2, June 11, 2014 Letting - P 0044(149)40, P 0044(00)40, PCN 6925, 04QJ, Pennington County - Grading, Storm Sewer, Curb & Gutter, PCC Paving, Lighting and Signals

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: NO CHANGE

BID ITEM FILE: *Bidders must log in to retrieve the addendum bid item file that must be loaded into the SDEBS to incorporate the revisions listed here.*

Bid Items were added:

Bid Item 380E1120 "Miscellaneous PCC Pavement"

Quantities for Bid Items were changed:

Bid Item 110E0700 "Asphalt Concrete Composite" changed from 1,823.1 to 1,822.7 Ton

Bid Items were removed:

Bid Item 380E5030 "Nonreinforced PCC Pavement Repair"

PLANS: Please destroy sheets A2, B2, C3, C4, F2, F3, F5, F7, and F15 and replace with the enclosed sheets, dated 6/5/14 and 6/6/14.

Sheet A2: Surfacing – Section F PCN 6925 Bid Item 110E0700 "Asphalt Concrete Composite" was changed from 1087.7 Ton to 1087.3 Ton and Bid Item 380E1120 "Miscellaneous PCC Pavement" was added.

Surfacing – Section F PCN 04QJ Bid Item 380E5030 "Nonreinforced PCC Pavement Repair" was removed.

Sheet B2: GRADING OPERATIONS note was revised.

Sheet C2: TRAFFIC CONTROL – GENERAL NOTES (CONT'D) Item 30 was revised.

Sheet C3: PHASE 2A, Item 3 was revised.

Sheet F2: SECTION F ESTIMATE OF QUANTITIES – P 0044(149), PCN 6925, Bid Item 110E0700 “Asphalt Concrete Composite” changed from 1,087.7 to 1,087.3 Ton and Bid Item 380E1120 “Miscellaneous PCC Pavement” was added.

Surfacing – Section F PCN 04QJ Bid Item 380E5030 “Nonreinforced PCC Pavement Repair” was removed.

Sheet F3: 9” NONREINFORCED CONCRETE PAVEMENT note was revised.

Sheet F5: UNSTABLE SUBGRADE note was revised.

Sheet F7: TABLE OF ADDITIONAL QUANTITIES was revised.

Sheet F15: PCC PAVEMENT JOINT LAYOUT was revised.

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Todd Seaman, Rapid City Region Engineer
Gary Engel, Rapid City Area Engineer

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

| | | | |
|-----------------------|---------------|-------|--------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
| | P 0044(149)40 | A2 | A4 |

Plotting Date: 06/05/2014
 Revised Date: 06/05/2014 MDJ

Erosion and Sediment Control – Section D

| Bid Item Number | Item | Quantity | Unit |
|-----------------|---|----------|------|
| 110E1690 | Remove Sediment | 200.0 | CuYd |
| 110E1693 | Remove Erosion Control Wattle | 500 | Ft |
| 110E1695 | Remove Sediment Filter Bag | 3,328 | Ft |
| 110E1700 | Remove Silt Fence | 2,564 | Ft |
| 120E6300 | Water for Vegetation | 342.0 | MGal |
| 230E0010 | Placing Topsoil | 2,123 | CuYd |
| 730E0206 | Type D Permanent Seed Mixture | 490 | Lb |
| 731E0100 | Fertilizing | 3,915 | Lb |
| 732E0250 | Fiber Mulching | 3,500 | Lb |
| 733E0100 | Sodding | 19,025 | SqYd |
| 734E0042 | Soil Stabilizer | 3,765.0 | SqYd |
| 734E0150 | 6" Diameter Erosion Control Wattle | 2,000 | Ft |
| 734E0165 | Remove and Reset Erosion Control Wattle | 500 | Ft |
| 734E0170 | Temporary Sediment Barrier | 9,780 | Ft |
| 734E0180 | Sediment Filter Bag | 3,328 | Ft |
| 734E0604 | High Flow Silt Fence | 2,564 | Ft |
| 734E0610 | Mucking Silt Fence | 178 | CuYd |
| 734E0620 | Repair Silt Fence | 641 | Ft |
| 734E0845 | Sediment Control at Inlet with Frame and Grate | 38 | Each |
| 734E0847 | Sediment Control at Type S Reinforced Concrete Drop Inlet | 559 | Ft |
| 734E3000 | Water Pollution Control | Lump Sum | LS |
| 734E5000 | Dewatering | 30 | Hour |
| 734E5010 | Sweeping | 8 | Hour |

Structure – Section E

| Bid Item Number | Item | Quantity | Unit |
|-----------------|--------------------------------------|----------|------|
| 120E7000 | Select Granular Backfill | 291.2 | Ton |
| 260E2010 | Gravel Cushion | 33.0 | Ton |
| 420E0300 | Structure Excavation, Retaining Wall | 308 | CuYd |
| 462E0100 | Class M6 Concrete | 143.8 | CuYd |
| 480E0200 | Epoxy Coated Reinforcing Steel | 8,996 | Lb |
| 680E0040 | 4" Underdrain Pipe | 466 | Ft |

Surfacing – Section F

| Bid Item Number | Item | Quantity | Unit |
|-----------------|----------------------------------|----------|------|
| 009E3320 | Checker | Lump Sum | LS |
| 110E1640 | Remove Granular Material | 7,245.9 | CuYd |
| 120E6200 | Water for Granular Material | 275.3 | MGal |
| 260E0010 | Subbase | 5,063.8 | Ton |
| 260E2060 | Gravel Cushion, Modified | 17,886.0 | Ton |
| 320E1200 | Asphalt Concrete Composite | 1,087.3 | Ton |
| 320E2000 | Maintenance Patching | 50.0 | Ton |
| 320E2500 | Asphalt Concrete Curb | 280 | Ft |
| 380E0070 | 9" Nonreinforced PCC Pavement | 40,619.0 | SqYd |
| 380E1120 | Miscellaneous PCC Pavement | 41.0 | SqYd |
| 380E3020 | 6" PCC Driveway Pavement | 1,089.9 | SqYd |
| 380E5010 | Fast Track Concrete | 2,232.3 | SqYd |
| 380E6000 | Dowel Bar | 25,339 | Each |
| 380E6110 | Insert Steel Bar in PCC Pavement | 80 | Each |
| 380E9010 | Temporary Gravel Crossing | 5 | Each |
| 831E0300 | MSE Geotextile Fabric | 9,243 | SqYd |

Surfacing – Section F 04QJ*

| Bid Item Number | Item | Quantity | Unit |
|-----------------|----------------------------------|----------|------|
| 120E6200 | Water for Granular Material | 18.3 | MGal |
| 260E2060 | Gravel Cushion, Modified | 1,523.2 | Ton |
| 320E1200 | Asphalt Concrete Composite | 735.4 | Ton |
| 380E0070 | 9" Nonreinforced PCC Pavement | 706.8 | SqYd |
| 380E6000 | Dowel Bar | 396 | Each |
| 380E6110 | Insert Steel Bar in PCC Pavement | 33 | Each |

*All items are Non-Participating

Signal & Lighting – Section L

| Bid Item Number | Item | Quantity | Unit |
|-----------------|---|----------|------|
| 110E1530 | Remove Signal Pole Footing | 8 | Each |
| 110E5110 | Salvage Signal Equipment | Lump Sum | LS |
| 635E0050 | Breakaway Base Luminaire Pole with Arm, 50' Mounting Height | 33 | Each |
| 635E2025 | Signal Pole with 25' Mast Arm | 2 | Each |
| 635E2130 | Signal Pole with 30' Mast Arm and Luminaire Arm | 1 | Each |
| 635E2135 | Signal Pole with 35' Mast Arm and Luminaire Arm | 1 | Each |
| 635E2140 | Signal Pole with 40' Mast Arm and Luminaire Arm | 2 | Each |
| 635E2150 | Signal Pole with 50' Mast Arm and Luminaire Arm | 1 | Each |
| 635E3340 | Roadway Luminaire, 400 Watt with Photoelectric Cell | 38 | Each |
| 635E4030 | 3 Section Vehicle Signal Head | 23 | Each |
| 635E4040 | 4 Section Vehicle Signal Head | 6 | Each |
| 635E4050 | 5 Section Vehicle Signal Head | 2 | Each |
| 635E5020 | 2" Diameter Footing | 273.0 | Ft |
| 635E5030 | 3" Diameter Footing | 78.0 | Ft |
| 635E5302 | Type 2 Electrical Junction Box | 23 | Each |
| 635E5303 | Type 3 Electrical Junction Box | 8 | Each |
| 635E5304 | Type 4 Electrical Junction Box | 11 | Each |
| 635E5400 | Electrical Service Cabinet | 4 | Each |
| 635E5430 | Traffic Signal Controller | 2 | Each |
| 635E5515 | Signal Head Battery Backup and Flash System | 2 | Each |
| 635E5530 | Preformed Detector Loop | 26 | Each |
| 635E5550 | Detector Unit | 10 | Each |
| 635E5562 | Siren Emergency Vehicle Preemption System | 2 | Each |
| 635E5900 | Pedestrian Push Button | 14 | Each |
| 635E5910 | Pedestrian Push Button Pole | 14 | Each |
| 635E5922 | Pedestrian Signal Head with Countdown Timer | 14 | Each |
| 635E5930 | Pedestrian Crossing Sign | 14 | Each |
| 635E6950 | Install Luminaire | 1 | Each |
| 635E7000 | Install Luminaire Pole | 1 | Each |
| 635E8120 | 2" Rigid Conduit, Schedule 40 | 12,050 | Ft |
| 635E8150 | 5" Rigid Conduit, Schedule 40 | 45 | Ft |
| 635E8220 | 2" Rigid Conduit, Schedule 80 | 940 | Ft |
| 635E8230 | 3" Rigid Conduit, Schedule 80 | 765 | Ft |
| 635E9011 | 1/C #1 AWG Copper Wire | 13,485 | Ft |
| 635E9014 | 1/C #4 AWG Copper Wire | 7,175 | Ft |
| 635E9016 | 1/C #6 AWG Copper Wire | 5,945 | Ft |
| 635E9020 | 1/C #10 AWG Copper Wire | 12,810 | Ft |
| 635E9502 | 2/C #14 AWG Copper Tray Cable, K2 | 140 | Ft |
| 635E9504 | 4/C #14 AWG Copper Tray Cable, K2 | 3,035 | Ft |
| 635E9505 | 5/C #14 AWG Copper Tray Cable, K2 | 280 | Ft |
| 635E9507 | 7/C #14 AWG Copper Tray Cable, K2 | 1,070 | Ft |
| 635E9524 | 24/C #14 AWG Copper Tray Cable, K2 | 1,190 | Ft |
| 635E9600 | #16 AWG Copper Twisted Shielded Pair | 1,590 | Ft |
| 635E9710 | 2/C #10 AWG Copper Pole and Bracket Cable | 2,605 | Ft |
| 635E9948 | 48 Strand Fiber Optic Cable | 6,210 | Ft |

SECTION B ESTIMATE OF QUANTITIES

| Bid Item Number | Item | Quantity | Unit |
|-----------------|-------------------------------------|----------|------|
| 009E0010 | Mobilization | Lump Sum | LS |
| 009E3230 | Grade Staking | 6.533 | Mile |
| 009E3250 | Miscellaneous Staking | 1.324 | Mile |
| 009E3280 | Slope Staking | 1.324 | Mile |
| 009E3290 | Structure Staking | 3 | Each |
| 009E3300 | Three Man Survey Crew | 40.0 | Hour |
| 100E0100 | Clearing | Lump Sum | LS |
| 110E0300 | Remove Concrete Curb and Gutter | 1,484 | Ft |
| 110E0400 | Remove Drop Inlet | 28 | Each |
| 110E0460 | Remove Manhole | 2 | Each |
| 110E1010 | Remove Asphalt Concrete Pavement | 6,443.5 | SqYd |
| 110E1100 | Remove Concrete Pavement | 37,908.6 | SqYd |
| 110E1140 | Remove Concrete Sidewalk | 3,729.2 | SqYd |
| 120E0010 | Unclassified Excavation | 28,464 | CuYd |
| 120E2000 | Undercutting | 17,838 | CuYd |
| 250E0020 | Incidental Work, Grading | Lump Sum | LS |
| 380E2554 | 4" Barrier Type Median PCC Pavement | 10.8 | SqYd |
| 380E3520 | 6" PCC Approach Pavement | 951.3 | SqYd |
| 380E3540 | 8" PCC Approach Pavement | 103.9 | SqYd |
| 380E4070 | 9" PCC Fillet Section | 1,233.2 | SqYd |
| 450E0102 | 12" RCP Class 2, Furnish | 42 | Ft |
| 450E0110 | 12" RCP, Install | 42 | Ft |
| 450E0122 | 18" RCP Class 2, Furnish | 3,306 | Ft |
| 450E0130 | 18" RCP, Install | 3,306 | Ft |
| 450E0142 | 24" RCP Class 2, Furnish | 1,866 | Ft |
| 450E0150 | 24" RCP, Install | 1,866 | Ft |
| 450E0162 | 30" RCP Class 2, Furnish | 624 | Ft |
| 450E0170 | 30" RCP, Install | 624 | Ft |
| 450E0182 | 36" RCP Class 2, Furnish | 212 | Ft |
| 450E0190 | 36" RCP, Install | 212 | Ft |
| 450E0192 | 42" RCP Class 2, Furnish | 1,358 | Ft |
| 450E0200 | 42" RCP, Install | 1,358 | Ft |
| 450E0400 | 12" RCP Bend, Furnish | 1 | Each |
| 450E0401 | 12" RCP Bend, Install | 1 | Each |
| 450E0408 | 18" RCP Bend, Furnish | 2 | Each |
| 450E0409 | 18" RCP Bend, Install | 2 | Each |
| 450E0700 | RCP Tee, Furnish | 1 | Each |
| 450E0701 | RCP Tee, Install | 1 | Each |
| 450E2000 | 12" RCP Flared End, Furnish | 1 | Each |
| 450E2001 | 12" RCP Flared End, Install | 1 | Each |
| 450E2016 | 24" RCP Flared End, Furnish | 1 | Each |
| 450E2017 | 24" RCP Flared End, Install | 1 | Each |
| 450E2032 | 42" RCP Flared End, Furnish | 2 | Each |
| 450E2033 | 42" RCP Flared End, Install | 2 | Each |
| 450E3012 | 24" RCP Arch Class 2, Furnish | 66 | Ft |
| 450E3020 | 24" RCP Arch, Install | 66 | Ft |
| 450E3022 | 30" RCP Arch Class 2, Furnish | 122 | Ft |
| 450E3030 | 30" RCP Arch, Install | 122 | Ft |
| 450E3032 | 36" RCP Arch Class 2, Furnish | 32 | Ft |
| 450E3040 | 36" RCP Arch, Install | 32 | Ft |
| 450E3042 | 42" RCP Arch Class 2, Furnish | 72 | Ft |
| 450E3050 | 42" RCP Arch, Install | 72 | Ft |
| 450E3328 | 42" RCP Arch Bend, Furnish | 2 | Each |
| 450E3329 | 42" RCP Arch Bend, Install | 2 | Each |
| 450E4757 | 18" CMP 12 Gauge, Furnish | 90 | Ft |
| 450E4760 | 18" CMP, Install | 90 | Ft |
| 462E0100 | Class M6 Concrete | 247.8 | CuYd |
| 480E0100 | Reinforcing Steel | 46,666 | Lb |
| 530E0300 | Type C Concrete Retaining Wall | 142 | SqFt |
| 600E0300 | Type III Field Laboratory | 1 | Each |
| 621E0080 | 8' Chain Link Fence with Top Rail | 111 | Ft |
| 650E0090 | Type B69 Concrete Curb and Gutter | 2,136 | Ft |
| 650E2100 | Special Concrete Curb and Gutter | 11,253 | Ft |

SECTION B ESTIMATE OF QUANTITIES (CONTINUED)

| Bid Item Number | Item | Quantity | Unit |
|-----------------|---|----------|------|
| 650E4689 | Modified Type P9 Concrete Gutter | 644 | Ft |
| 650E4690 | Type P9 Concrete Gutter | 80 | Ft |
| 651E0040 | 4" Concrete Sidewalk | 68,417 | SqFt |
| 651E0140 | 4" Reinforced Concrete Sidewalk | 629 | SqFt |
| 651E7000 | Type 1 Detectable Warnings | 816 | SqFt |
| 670E1200 | Type B Frame and Grate Assembly | 29 | Each |
| 670E2200 | Type C Frame and Grate | 8 | Each |
| 670E5340 | 4' x 11' Precast Concrete Type S Drop Inlet Lid | 41 | Each |
| 670E5400 | Precast Drop Inlet Collar | 29 | Each |
| 671E6009 | Type A9 Manhole Frame and Lid | 3 | Each |
| 671E7010 | Adjust Manhole | 1 | Each |
| 700E0210 | Class B Riprap | 132.0 | Ton |
| 831E0110 | Type B Drainage Fabric | 103 | SqYd |
| 900E0010 | Refurbish Single Mailbox | 7 | Each |
| 900E0012 | Refurbish Double Mailbox | 1 | Each |
| 900E0020 | Remove and Reset Neighborhood Mailbox | 1 | Each |

SECTION B ESTIMATE OF QUANTITIES - 04QJ*

| Bid Item Number | Item | Quantity | Unit |
|-----------------|---|----------|------|
| 009E0010 | Mobilization | Lump Sum | LS |
| 009E3230 | Grade Staking | 0.175 | Mile |
| 009E3250 | Miscellaneous Staking | 0.044 | Mile |
| 009E3280 | Slope Staking | 0.044 | Mile |
| 110E0300 | Remove Concrete Curb and Gutter | 369 | Ft |
| 110E1010 | Remove Asphalt Concrete Pavement | 1,738.5 | SqYd |
| 110E1100 | Remove Concrete Pavement | 427.1 | SqYd |
| 110E1140 | Remove Concrete Sidewalk | 288.6 | SqYd |
| 120E0010 | Unclassified Excavation | 848 | CuYd |
| 120E2000 | Undercutting | 848 | CuYd |
| 380E3520 | 6" PCC Approach Pavement | 120.0 | SqYd |
| 450E0122 | 18" RCP Class 2, Furnish | 38 | Ft |
| 450E0130 | 18" RCP, Install | 38 | Ft |
| 462E0100 | Class M6 Concrete | 11.1 | CuYd |
| 480E0100 | Reinforcing Steel | 1,842 | Lb |
| 650E0090 | Type B69 Concrete Curb and Gutter | 23 | Ft |
| 650E2100 | Special Concrete Curb and Gutter | 265 | Ft |
| 650E4690 | Type P9 Concrete Gutter | 120 | Ft |
| 651E0040 | 4" Concrete Sidewalk | 11,435 | SqFt |
| 651E0540 | 4" Colored Concrete Sidewalk | 1,672 | SqFt |
| 670E1200 | Type B Frame and Grate Assembly | 2 | Each |
| 670E5340 | 4' x 11' Precast Concrete Type S Drop Inlet Lid | 1 | Each |
| 670E5400 | Precast Drop Inlet Collar | 2 | Each |
| 671E6009 | Type A9 Manhole Frame and Lid | 1 | Each |

* All items are Non-Participating

STREET NAME ABBREVIATION

One street name referenced in these plans is at times abbreviated. This street and its abbreviation is: Canyon Lake Drive (CLD)

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 31 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

Special ditch grades and other sections of the roadway different than the typical section(s) shall be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer regarding the proposed change.

TYPE III FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer.

The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items shall be incidental to the contract unit price per each for "Type III Field Laboratory".

UTILITIES

The Contractor shall note that the existing utilities shown on the plan sheets were surveyed prior to the design of this project. These existing utilities may either be relocated prior to or during construction, may not require adjustment and remain in its existing location or may be replaced by a new facility prior to or during the construction of the project. The Contractor shall contact each individual utility owner and confirm the status of all existing and new utility facilities. Utility contact information is shown elsewhere in the plans or bidding documents.

Subsurface utility explorations were done for this project prior to and during the design of this project. The findings can be found in the SUBSURFACE UTILITY LOCATIONS table elsewhere in the plans. The table is provided to aid the Contractor during construction. All information in the table is approximate and shall be verified by the Contractor prior to construction in those areas.

Contractor is to provide 1 week notice to the Engineer and Landowner when disturbing private utilities within the State of South Dakota Right Of Way.

| | | | |
|-----------------------------|---------------|-------|-----------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
| | P 0044(149)40 | C3 | C80 |

Revised 6/6/14 blf

TRAFFIC CONTROL – GENERAL NOTES (CONT'D)

23. The speed limit on Jackson Blvd. shall be 25 mph when lane closures are in place.
24. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.
25. 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.
26. The Contractor shall contact the City of Rapid City Traffic Division one week prior to pavement marking operations and phase changes as the traffic signal timings may need to be adjusted.
27. Traffic on Jackson Blvd. shall not be stopped for a period longer than 2 minutes.
28. Traffic shall be maintained in 10 ft. minimum lane width at all times, including turn lanes.
29. All construction phasing for the City of Rapid City utility project SSW10-1837, PCN X02U shall coincide with construction phasing for this project.
30. Grading and paving operations shall be conducted such that access to individual entrances shall be maintained at all times throughout the life of the project unless written permission is obtained from the property owner and the Engineer for alternate access. Entrances shall be graded simultaneously with roadway embankment and excavations.
31. The changeable message panels shall display a message to advise of a traffic pattern change 7 days prior to the beginning of work on the project, street closures, and/or changing to the next phase of work.

SEQUENCE OF OPERATIONS

PHASE 1A

Storm sewer drop inlets, cross pipe, longitudinal pipe, permanent and temporary outfall pipe and complete temporary tie-ins of existing storm sewer pipe between Sta. 42+48 and 67+84 Rt. See Section B for permanent storm sewer pipe, temporary outfalls, temporary tie-in installation details. See Section F for gravel cushion and asphalt concrete composite quantities. See standard plates and 5-Lane Special Details for traffic control.

1. Set up traffic control using 5-Lane Special Details drawing. Set up pedestrian detours to maintain access.
2. Remove concrete surfacing, install cross pipes at the locations noted below and restore the driving surface with 8" of gravel cushion and 6" of asphalt concrete composite. Cross pipes shall be backfilled at the end of the day. At each pipe excavation, flaggers shall be required.
 - a. At Sta. 42+45 Rt. set the permanent drop inlet, tie existing storm sewer into the back of the new inlet. Install cross pipe up to centerline and temporarily tie into existing cross pipe. Install longitudinal pipe from new inlet to drop inlet at Sta. 44+09 Rt.
 - b. At Sta. 44+09 Rt. install permanent drop inlet, cross pipe up to centerline, longitudinal pipe to Sta. 44+90 Rt. and tie into existing storm sewer.
 - c. At Sta. 47+50 Rt. set the permanent drop inlet, cross pipe up to centerline, and make a temporary tie-in between the existing longitudinal storm sewer at Sta. 47+50 Rt. and the new cross pipe.
 - d. At Sta. 49+06 Rt. set the permanent drop inlet, cross pipe up to centerline, longitudinal pipe to new junction box at Sta. 50+60 Rt., and temporarily tie existing storm sewer to new longitudinal pipe at Sta. 50+05 Rt.
 - e. Sta. 50+60 Rt. set new junction box, outlet pipe, and longitudinal pipe to drop inlet at Sta. 51+56 Rt.
 - f. Sta. 51+56 Rt. set new drop inlet and longitudinal pipe to new drop inlet at Sta. 52+00 Rt.
 - g. At Sta. 52+00 Rt. set drop permanent drop inlet and install cross pipe up to centerline, tie in longitudinal pipe on the west side of the new inlet.
 - h. Sta. 58+64 Rt. set permanent drop inlet, install cross pipe up to centerline, install permanent longitudinal pipe from east side of drop inlet and temporarily tie into the existing drop inlet at Sta. 59+02 Rt.

- i. At Sta. 61+44 Rt. set permanent drop inlet, install cross pipe up to centerline, start longitudinal pipe run to the east approximately 80 ft., install a bend and temporary outfall pipe to Sta. 62+30 – 65' Rt. Install erosion control devices.
- j. At Sta. 64+62 Rt. set permanent drop inlet, install cross pipe up to centerline. From the back side of the drop inlet install temporary outfall pipe to Sta. 64+62 – 60' Rt. Install erosion control devices.
- k. At Sta. 67+84 Rt. set permanent drop inlet, install cross pipe up to centerline, start longitudinal pipe run to the east approximately 100 ft., install a bend and temporary outfall pipe to Sta. 69+00 – 65' Rt.. Install erosion control devices.

3. Restore pedestrian route adjacent to the eastbound lanes to an asphalt surface. Remove pedestrian detour route.

PHASE 1B – Meadowbrook Golf Course

Storm sewer work entering the perimeter of the Meadowbrook Golf Course at Sta. 47+50 Rt and Sta. 50+60 Rt.

1. Coordinate work with the Parks and Recreation Department to coincide with their proposed landscaping project and the storm sewer work in the City of Rapid City utility project SSW10-1837, PCN X02U.
2. Remove a portion of the existing chain link fence according to the details in Section B at storm sewer locations that tie into the new storm sewer on the south side of Jackson Blvd.
3. Set up erosion control devices and complete storm sewer work.
4. Restore vegetation and install new chain link fence.

| | | | |
|-----------------------------|---------------|-------|-----------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
| | P 0044(149)40 | C4 | C80 |

Revised 6/6/14 blf

SEQUENCE OF OPERATIONS (CONT'D)

PHASE 2A & 2B Concurrent Work

Eastbound lanes of Jackson Blvd from Sta. 40+00 Rt. to Sta. 46+00 Rt. PCC pavement, curb and gutter, and erosion control. See plan sheets for Traffic Control Phase 2A & 2B Concurrent Work.

1. Maintain existing surfacing in the westbound lanes between Sta. 40+00 and Sta. 49+50 for 2-way traffic and the temporary traffic weave.
2. Refer to sequence notes Phase 2A and Phase 2B for traffic control set up details.
3. Work limits for Phase 2A will be modified to allow completion of the eastbound lanes in Phase 2B from Sta. 40+00 to Sta. 46+00 Rt.
4. Remove existing surfacing in the eastbound lanes to construct the new PCC concrete lanes between Sta. 40+00 and 46+00 Rt.
5. Install a longitudinal temporary asphalt concrete composite tie-in between new eastbound lanes and existing westbound lanes from Sta. 40+00 to Sta. 43+50. Refer to Section F for surfacing details and bid items.
6. Install a transverse temporary asphalt concrete composite tie-in at Sta. 46+00 between the new and existing PCC pavements in the eastbound lanes. Refer to Section F for surfacing details and bid items.

PHASE 2A

Westbound lanes of Jackson Blvd from Sta. 43+00 Lt. to Sta. 70+88 Lt. PCC pavement, curb and gutter, erosion control, storm sewer, sidewalk, and side street surfacing. See plan sheets for Traffic Control Phase 2A.

1. Use 5-Lane Special Detail to set up traffic control devices and to complete work within this phase. Work limits for Phase 2A will be temporarily modified to allow concurrent work to begin in Phase 2B from Sta. 40+00 to 46+00 in the eastbound lanes.
2. After completion of the eastbound lanes from Sta. 40+00 to Sta. 46+00, install temporary traffic weave between Sta. 40+00 and Sta. 43+00 to move traffic from the existing eastbound lanes onto the existing westbound lanes to allow the continuation of work in Phase 2B. Work limits for Phase 2A shall be extended to Sta. 43+00 in the westbound lanes.
3. Side street closures will be allowed during this phase and shall be limited to a maximum of three, at any one time. Side streets in this phase shall be defined as 1st through 7th, and 38th Street.
4. Set up pedestrian detour as shown in Section C to maintain pedestrian access.
5. Install erosion control devices.
6. Remove existing surfacing (including curb and gutter and approach pavement) and granular material on Jackson Blvd. and intersecting side streets.
7. Construct storm sewer.
8. Undercut, grade, place gravel cushion, trim, pave new PCC pavement and curb and gutter.
9. Saw and seal all PCC pavement joints.
10. Construct permanent sidewalk, boulevard areas, topsoil and/or permanent seed.
11. Install temporary centerline to carry a single lane in each direction on Jackson Blvd. in the new westbound lanes during work in Phase 3A.

PHASE 2B

Eastbound lanes of Jackson Blvd from Sta. 29+00 to Sta. 46+00. PCC pavement, curb and gutter, erosion control, storm sewer, traffic signal items, and roadway lighting. See plan sheets for Traffic Control Phase 2B.

Work at Park Drive is included in this phase but described in the sub phase - Phase 2B Park Drive. Portions of Jackson Blvd. are shown in the sub phase to illustrate the maintenance of traffic on Park Drive at all times.

1. Use 5-Lane Special Details drawing to complete work within this phase.
2. Install temporary centerline and traffic control devices to carry a single lane of traffic for each direction on the existing westbound lanes on Jackson Blvd. Install temporary stop bars at Park and Jackson Blvd. De-energize the signals at Park Drive and install an all way stop condition. Move Jackson Blvd. traffic onto the westbound lanes.
3. Set up pedestrian detour as shown in Section C to maintain pedestrian access.
4. Install erosion control devices.
5. Remove existing surfacing (including curb and gutter) and granular base material.
6. Construct storm sewer.
7. Undercut, grade, place gravel cushion, trim, pave new PCC pavement and curb and gutter.
8. Saw and seal all PCC pavement joints.
9. Construct permanent sidewalk, boulevard areas, topsoil and/or permanent seed.
10. Install roadway lighting structures.
11. Install asphalt concrete composite as a temporary surfacing tie-in at the west end of the new eastbound lanes at Sta. 29+00.
12. Install temporary centerline to carry a single lane of traffic for each direction on the eastbound lanes during work in Phase 3B.

SECTION F ESTIMATE OF QUANTITIES – P 0044(149)40, PCN 6925

| Bid Item Number | Item | Quantity | Unit |
|-----------------|----------------------------------|----------|------|
| 009E3320 | Checker | Lump Sum | LS |
| 110E1640 | Remove Granular Material | 7,245.9 | CuYd |
| 120E6200 | Water for Granular Material | 275.3 | MGal |
| 260E0010 | Subbase | 5,063.8 | Ton |
| 260E2060 | Gravel Cushion, Modified | 17,886.0 | Ton |
| 320E1200 | Asphalt Concrete Composite | 1,087.3 | Ton |
| 320E2000 | Maintenance Patching | 50.0 | Ton |
| 320E2500 | Asphalt Concrete Curb | 280 | Ft |
| 380E0070 | 9" Nonreinforced PCC Pavement | 40,619.0 | SqYd |
| 380E1120 | Miscellaneous PCC Pavement | 41.0 | SqYd |
| 380E3020 | 6" PCC Driveway Pavement | 1,089.9 | SqYd |
| 380E5010 | Fast Track Concrete | 2,232.3 | SqYd |
| 380E6000 | Dowel Bar | 25,339 | Each |
| 380E6110 | Insert Steel Bar in PCC Pavement | 80 | Each |
| 380E9010 | Temporary Gravel Crossing | 5 | Each |
| 831E0300 | MSE Geotextile Fabric | 9,243 | SqYd |

SECTION F ESTIMATE OF QUANTITIES – P 0044(00)40, PCN 04QJ

| Bid Item Number | Item | Quantity | Unit |
|-----------------|----------------------------------|----------|------|
| 120E6200 | Water for Granular Material | 18.3 | MGal |
| 260E2060 | Gravel Cushion, Modified | 1,523.2 | Ton |
| 320E1200 | Asphalt Concrete Composite | 735.4 | Ton |
| 380E0070 | 9" Nonreinforced PCC Pavement | 706.8 | SqYd |
| 380E6000 | Dowel Bar | 396 | Each |
| 380E6110 | Insert Steel Bar in PCC Pavement | 33 | Each |

Bid items for P 0044(00)40, PCN 04QJ will be non-participating

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

SAWING IN EXISTING SURFACING

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

TABLE OF IN-PLACE SURFACING

| STATION | OFFSET (Ft) | Left or Right | EXISTING THICKNESSES | | |
|---------|-------------|---------------|----------------------|------------------|-----------|
| | | | PCCP (In) | Asphalt Mix (In) | BASE (In) |
| 6+50 | 20.0 | Rt. | | 5.0 | 19.0 * |
| 12+00 | 21.0 | Rt. | 9.0 | | 7.25 |
| 18+00 | 19.5 | Rt. | 9.0 | | 7.0 |
| 24+00 | 27.0 | Lt. | 8.75 | | 8.0 |
| 31+00 | 20.0 | Lt. | 9.0 | | 8.0 |
| 38+00 | 21.0 | Lt. | 9.0 | | 8.25 |
| 43+00 | 20.0 | Rt. | 9.0 | | 6.5 |
| 51+50 | 20.0 | Rt. | 9.0 | | 15.0 * |
| 59+50 | 20.0 | Rt. | 8.75 | | 15.25 * |
| 67+00 | 20.0 | Rt. | 8.75 | | 15.25 * |

TABLE OF IN-PLACE SURFACING (CONTINUED)

* Depth to bottom of the base was not able to be accurately determined because of underlying gravels. A total depth of 24 inches at these sites was used for calculating the surfacing thicknesses shown in this table. The base depth average of the remaining borings (7.5 ") was used to estimate the excavation quantities. This is closer to the listed thickness in the Needs Book and should provide a better estimate of usable salvage.

REMOVE GRANULAR MATERIAL

| Location of Removal Areas | * Remove Granular Material |
|---------------------------|----------------------------|
| | CuYds |
| SD 44 Mainline | |
| Sta. 4+30 to Sta. 8+43.5 | 617.0 |
| Sta. 8+43.5 to Sta. 70+88 | 6,263.7 |
| | |
| Miscellaneous Areas | 365.2 |
| | |
| TOTAL | 7,245.9 |

* Plans quantity will be the basis of measurement and payment for the above mentioned work. Refer to the typical sections for location and depth of granular material.

RECLAIMED MATERIAL

Asphalt Concrete Pavement removed from within the project limits may be crushed and reused as Gravel Cushion, Modified provided it is blended at a ratio not exceeding 1 part asphalt concrete material to 1 part either virgin granular material, granular material removed from project, or reclaimed concrete aggregate. Quantity is based on a unit weight of 1.89 tons per cubic yard for the reclaimed asphalt concrete aggregate. Refer to typical sections for location and depth of Asphalt Concrete Removal

Portland Cement Concrete Pavement removed from within the project limits may be crushed and reused as Gravel Cushion, Modified or Subbase. Quantity is based on a unit weight of 118 lbs. per cubic foot for the reclaimed concrete aggregate. Refer to typical sections for location and depth of PCCP Removal.

Granular Material removed from within the project limits may be reused as Gravel Cushion, Modified or Subbase. Quantity is based on a unit weight of 1.89 tons per cubic yard for the reclaimed granular aggregate. Refer to the typical sections for location and depth of granular material.

Reclaimed material to be used Gravel Cushion, Modified or Subbase on this project must meet plan note requirements and the Engineer's approval. All costs associated with the placement of reclaimed material shall be incidental to the contract unit price per ton for Gravel Cushion, Modified or Subbase.

Reclaimed Material that remains after the final surfacing has been brought to the typical section shall be disposed of by the Contractor at a site approved by the Engineer. The Contractor will be required to remove the excess material to the satisfaction of the Engineer at no additional cost to the State.

| | | | |
|-----------------------|------------------------------|-----------|--------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET NO. | TOTAL SHEETS |
| | P 0044(149)40 & P 0044(00)40 | F2 | F34 |

Revised: 5 Jun 14, RML

RECLAIMED MATERIAL (For informational purposes only)

| Location of Removal Areas | Reclaimed Material |
|---|--------------------|
| | Tons |
| Remove Asphalt Concrete | |
| Mainline - Sta. 4+30 to Sta. 8+43.5 | 583.1 |
| Miscellaneous Areas (Int. St., Driveways) | 1,052.6 |
| Remove Granular Material | |
| Mainline - Sta. 4+30 to Sta. 8+43.5 | 1,166.1 |
| Mainline - Sta. 8+43.5 to Sta. 70+88 | 11,838.4 |
| Miscellaneous Areas (Int. St., Driveways) | 690.2 |
| Remove PCC Pavement | |
| Mainline - Sta. 8+43.5 to Sta. 70+88 | 13,816.0 |
| Miscellaneous Areas (Curb & Gutter) | 129.1 |
| Miscellaneous Areas (Driveways) | 77.7 |
| TOTAL | 29,353.2 |

GRAVEL CUSHION, MODIFIED

Gravel Cushion, Modified shall be furnished by the Contractor and/or may be produced from the reclaimed material removed from the project per the plan note requirements.

If the asphalt concrete removed from the project is used, the Contractor shall establish a percentage (\pm 5% tolerance) for each material to be blended during production of the Gravel Cushion, Modified. The stockpile(s) shall be uniformly blended at a Contractor furnished site.

Gravel Cushion, Modified shall conform to the following gradation:

| Sieve | % Passing |
|-----------------|-----------|
| Passing 1" | 100% |
| Passing 3/4" | 80-100% |
| Passing 1/2" | 68-91% |
| Passing No. 4 | 46-70% |
| Passing No. 8 | 34-58% |
| Passing No. 40 | 13-35% |
| Passing No. 200 | 3.0-12.0% |

All other requirements for Gravel Cushion shall apply.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1. All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

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

Asphalt Concrete Composite will be paid for at the contract unit price per ton. Payment shall be full compensation for furnishing and installing the Asphalt Concrete Composite.

MANHOLE BOX-OUT DETAILS

The Contractor shall construct box-outs for all manholes in the 9.0" Concrete Pavement according to the Box-Out Detail. Locations of Proposed Manholes and water valve boxes are shown in Section B.

CHECKING SPREAD RATES

The Contractor shall be responsible for checking the Gravel Cushion, Modified spread rates and taking the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor shall compute the required spread rates for each typical surfacing section and create a spread chart prior to the start of material delivery and placement. The Engineer will review and check the Contractor's calculations and spread charts. The station to station spread shall be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each day's shift, the Contractor shall verify the following:

- All tickets are present and accounted for,
- The quantity summary for each item is calculated,
- The amount of material wasted if any,
- Each day's ticket summary is marked with the corresponding 'computed by',
- The ticket summary is initialed and certified that the delivered and placed quantity is correct.

All daily tickets and the summary by item shall be given to the Engineer no later than the following morning.

If the checker is not properly and accurately performing the required duties, the Contractor shall correct the problem or replace the checker with an individual capable of performing the duties to the satisfaction of the Engineer. Failure to do so will result in suspension of the work.

The Department will perform depth checks. The Contractor shall be responsible for placement of material to the correct depth unless otherwise directed by the Engineer. If the placed material is not within a tolerance of $\pm 1/2$ inch of the plan shown depth, the Contractor shall correct the problem at no additional cost to the Department. Excess material above the tolerance will not be paid for. Achieving the correct depth may require picking up and moving material or other action as required by the Engineer.

All costs for providing the Contractor furnished checker and performing all related duties shall be incidental to the contract lump sum price for the CHECKER. No allowances will be made to the contract lump sum price for CHECKER due to authorized quantity variations unless the quantities for the material being checked vary above or below the estimated quantities by more than 25 percent. Payment for the Checker shall then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

ALKALI SILICA REACTIVITY

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

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.

Below is a list of known fine aggregate sources and the average corresponding 14 day expansion values:

TABLE OF KNOWN FINE AGGREGATE SOURCES

| <u>Source</u> | <u>Location</u> | <u>Expansion Value</u> |
|-------------------------------|-----------------|------------------------|
| Bachman | Winner, SD | 0.335* |
| Birdsall S&G | Creston, SD | 0.158 |
| Birdsall S&G | Oral, SD | 0.131 |
| Birdsall S&G | Wasta, SD | 0.170 |
| Bitterman | Delmont, SD | 0.314* |
| Concrete Materials | Corson, SD | 0.170 |
| Croell – Cheyenne River Pit | Hot Springs, SD | 0.089 |
| Emme Sand & Gravel | Oneil, NE | 0.217 |
| Fischer S&G | Rapid City, SD | 0.092 |
| Fischer S&G | Spearfish, SD | 0.053 |
| Fuchs | Pickstown, SD | 0.275* |
| Higman | Akron, IA | 0.198 |
| Higman | Hudson, SD | 0.187 |
| Hilde | Madison, SD | 0.116 |
| Jensen | Herried, SD | 0.276* |
| L.G. Everist | Brookings, SD | 0.153 |
| L.G. Everist | Hawarden, IA | 0.166 |
| L.G. Everist | Summit, SD | 0.141 |
| Morris | Blunt, SD | 0.192 |
| Morris - Richards pit | Onida, SD | 0.188 |
| Myrl & Roys Paving-Nelson Pit | Sioux Falls, SD | 0.158 |
| Northern Concrete Agg. | Rauville, SD | 0.104 |
| Northern Concrete Agg. | Luverne, MN | 0.124 |
| Opperman - Gunvordahl Pit | Burke, SD | 0.337* |
| Opperman - Cahoy Pit | Herrick, SD | 0.307* |
| Opperman - Jones Pit | Burke, SD | 0.321* |
| Opperman - Randall Pit | Pickstown, SD | 0.226 |
| Thorpe Pit | Britton, SD | 0.098 |
| Wagner Building Supplies | Wagner, SD | 0.241 |
| Wasta Sand & Gravel | Wasta, SD | 0.159 |

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

9.0" NONREINFORCED CONCRETE PAVEMENT

The fine aggregate may require screening as determined by the Engineer.

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

The concrete mix shall conform to the special provision for Contractor Furnished Mix Design for PCC Pavement.

In lieu of an automatic subgrader operating from a preset line, a motor grader or other suitable equipment may be used to bring the Gravel Cushion, Modified to final grade prior to placement of concrete. There will be no direct payment for trimming of the Gravel Cushion, Modified 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 Standard Specifications.

A minimum of 1 pavement blockouts may be required at various locations on this project to facilitate traffic during the paving activity.

The vibration monitoring device requirement of Section 380.3.B.4 for contracts which have a minimum of 50,000 square yards will not be required for this project.

The surface of the mainline paving shall be finished with a heavy carpet drag only. PCC Pavement shall be cured with Linseed Oil Base Emulsion Curing Compound.

Automatic dowel bar inserters will not be allowed on this project.

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

The transverse contraction joints shall be perpendicular to the centerline as detailed in the standard plates 380.01 and 380.09. In multilane areas the transverse contraction joints shall be perpendicular to the centerline and be in a straight line across the width of the pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. All nonconforming transverse contraction joints that are not pre-approved shall be removed at the Contractor's expense. Any method of placement that cannot produce these requirements shall not be allowed to continue.

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 anytime 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.

TIE BARS AND LONGITUDINAL JOINTS

The use of automatic tie bar inserters will only be allowed on the vertical edge of longitudinal construction joints. The use of automatic tie bar inserters will not be allowed on sawed longitudinal joints.

Tie bars or tie bar baskets shall be held in the specified position parallel to the slab surface and perpendicular to the centerline by a supporting device. Tie bars or tie bar baskets shall be securely staked to the roadbed and shall hold the bar at the correct spacing, alignment, and elevation.

Tie bars will not require supports if inserted into the side of the pavement during slip form paving of the longitudinal construction joint operation. Failure to acquire the correct tie bar locations in the construction joint shall require the bars to be corrected and a change made to the operation which may include drilling and epoxy bars or other methods as approved by the Engineer.

The final position of each tie bar shall be within the following tolerances:

-- Vertical Placement: $\pm T/6$ for any part of the tie bar (T = slab thickness)

-- Transverse Placement (side shift): ± 3 inches when measured perpendicular to the longitudinal joint line

If the tie bar does not meet the requirements and tolerances specified, corrective action shall be performed at the Contractor's expense to the satisfaction of the engineer.

TABLE OF DOWEL BARS

| Location | 1 1/4" Dowel Bars |
|------------------------------------|-------------------|
| | (Each) |
| Sta. 4+30 to Sta. 70+88 Mainline | 24,412 |
| Intersecting Streets and Entrances | 1,323 |
| Total Dowel Bars | 25,735 |

LOCATION OF CONCRETE PAVEMENT JOINTS

The location of joints, as shown on the "PCC Pavement Layout" sheets, are only approximate locations to be used as a guide in the final location of joints and to afford bidders a basis for estimating the construction costs of the joints. The final locations of the joints are to be designated by the Engineer during construction.

STEEL BAR INSERTION

The Contractor shall insert the Steel Bars (1 1/4 inch x 18 inch epoxy coated plain round dowel 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.

The steel bars shall be cut to the specified length by sawing or shearing and shall be free from burring or other deformations.

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.

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 of the bars by the dipping method will not be allowed.

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

Epoxy coated plain round steel bars shall be inserted on 12 inch centers in the transverse joint. The first steel bar shall be placed a minimum of 3 inches and a maximum of 9 inches from the outside edge of the slab.

TABLE OF STEEL BAR INSERTION

| LOCATION | 1-1/4" x 18" Plain Round Dowel Bars |
|------------------|-------------------------------------|
| | Each |
| Sta. 7+57 Rt. | 36 |
| Sta. 24+94.8 Lt. | 33 |
| Sta. 70+88 | 44 |
| Total | 113 |

UNSTABLE SUBGRADE

Geotextile Specification

The geotextile will conform to the specification for Geotextiles and Impermeable Plastic Membrane, MSE Geotextile Fabric (Section 831.1 of the Standard Specifications). The geotextile will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

Geotextile will be paid for at the contract unit price per sq. yd. for MSE Geotextile Fabric. Payment quantities will be based on area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the geotextile only. 9,243 sq. yds. of MSE Geotextile have been included in the materials quantities for bidding purposes. Granular backfill materials will be paid for under a different bid item.

Granular Material

Granular Material will conform to the specification for Aggregates for Granular Bases and Surfacing, Subbase (Section 882 of the Standard Specifications). Included in the Estimate of Quantities are 5,063.8 tons of Subbase and 60.8 MGal of Water for Granular Material for use in this application at locations to be designated by the Engineer. This quantity is based on 1 foot of coverage for 8,037.8 sq. yds. of subgrade. Granular Material will be paid for at the contract unit price per ton for Subbase. Payment will be full compensation for furnishing and placing this material.

MAINTENANCE OF MAINLINE SURFACE

The Contractor shall be required to maintain the surface with asphalt patching, at the Engineers discretion, while traffic is in a Head-to-Head configuration. The Contractor shall perform this work for the entire length and duration of the project. The contractor shall complete patching operations between the hours of 8:00 PM and 6:00 AM, and within 24 hours notification of an area needing patching. The contractor's plan shall be submitted to the engineer prior to patching operations.

The material used for Maintenance Patching shall conform to Section 320 of the SDDOT Standard Specifications for Asphalt Concrete Composite. Quantity for Maintenance Patching is estimated at 50 tons.

All costs for labor, equipment, and materials for pavement removals and patching to maintain the mainline surface for the length and duration of the project shall be incidental to the contract unit price per ton for Maintenance Patching.

The cost for installing and maintaining traffic control devices, and flagging hours shall be paid for by the corresponding bid items.

TABLE OF ADDITIONAL QUANTITIES

| Location-Description | Water for Granular Material | Gravel Cushion, Modified | Asphalt Concrete Composite 1 st / 2 nd Lift |
|---|-----------------------------------|-----------------------------|---|
| | MGal | Ton | Ton |
| Mainline Transition Areas | | | |
| Sta. 4+30.0 to Sta. 6+05.0 | 4.2 | 347.1 | --- |
| Sta. 68+53.97 to Sta. 70+88.0 | 5.4 | 446.4 | --- |
| Intersecting Streets | | | |
| Sta. 7+57 Rt. | 1.4 | 119.8 | --- |
| Sta. 18+94 Rt. | 2.6 | 215.3 | 46.1 / 36.9 |
| Sta. 24+94.77 Lt. | 4.1 | 341.4 | --- |
| Sta. 24+94.77 Rt. | 3.2 | 264.5 | 54.8 / 43.9 |
| Sta. 36+81 Rt. | 4.2 | 353.7 | 52.7 / 42.1 |
| Sta. 44+74 Lt. | 1.7 | 140.5 | 24.9 / 20.0 |
| Sta. 49+19 Lt. | 2.7 | 225.3 | 51.6 / 41.3 |
| Sta. 52+38 Lt. | 2.6 | 216.0 | 47.3 / 37.9 |
| Sta. 55+63 Lt. | 2.2 | 183.8 | 41.9 / 33.5 |
| Sta. 58+78 Lt. | 2.5 | 210.9 | 47.4 / 38.0 |
| Sta. 62+02 Lt. | 1.4 | 116.3 | 21.5 / 17.2 |
| Sta. 65+17 Lt. | 1.6 | 133.7 | 25.5 / 20.4 |
| Sta. 68+37 Lt. | 1.9 | 157.5 | 30.4 / 24.3 |
| Entrances – SD 44 (Jackson Blvd) | | | |
| Sta. 5+59 Lt. | 0.1 | 8.1 | 1.8 |
| Sta. 7+57 Lt. | 0.6 | 50.6 | 9.3 |
| Sta. 10+04 Lt. | 0.5 | 38.9 | 6.4 |
| Sta. 13+15 Rt. | 0.4 | 37.4 | 4.9 |
| Sta. 15+25 Lt. | 1.1 | 93.5 | 20.0 |
| Sta. 18+00 Lt. | 2.0 | 169.4 | 71.3 |
| Sta. 23+26 Lt. | 0.5 | 39.9 | 15.0 |
| Sta. 26+04 Lt. | 0.6 | 50.7 | --- |
| Sta. 26+91 Lt. | 0.3 | 24.8 | 7.9 |
| Sta. 30+13 Lt. | 0.1 | 11.0 | --- |
| Sta. 32+81 Lt. | 0.1 | 9.3 | 1.5 |
| Sta. 33+78 Lt. | 0.1 | 8.9 | 1.7 |
| Sta. 34+68 Lt. | 0.3 | 22.6 | 8.4 |
| Sta. 35+62 Lt. | 0.8 | 67.0 | --- |
| Sta. 36+28 Lt. | 0.4 | 34.0 | --- |
| Sta. 36+77 Lt. | 0.2 | 20.8 | --- |

TABLE OF ADDITIONAL QUANTITIES (CONTINUED)

| Location-Description | Water for Granular Material | Gravel Cushion, Modified | Asphalt Concrete Composite 1 st / 2 nd Lift |
|--|-----------------------------------|-----------------------------|---|
| | MGal | Ton | Ton |
| Entrances – SD 44 (Jackson Blvd) | | | |
| Sta. 38+06 Lt. | 0.2 | 16.7 | --- |
| Sta. 38+81 Lt. | 0.4 | 29.4 | --- |
| Sta. 39+98 Lt. | 0.2 | 19.7 | --- |
| Sta. 40+94 Lt. | 0.3 | 22.0 | 5.5 |
| Sta. 42+55 Lt. | 0.3 | 21.5 | 5.3 |
| Sta. 46+75 Lt. | 1.0 | 79.6 | --- |
| Sta. 47+74 Lt. | 0.1 | 11.0 | 2.0 |
| Sta. 48+31 Lt. | 0.2 | 15.4 | --- |
| Sta. 49+19 Lt. – Ah. | 0.4 | 36.4 | --- |
| Sta. 51+50 Lt. | 0.1 | 9.6 | --- |
| Sta. 53+82 Lt. | 0.3 | 22.6 | --- |
| Sta. 54+00 Rt. | --- | 3.7 | --- |
| Sta. 54+53 Lt. | 0.3 | 25.2 | --- |
| Sta. 55+64 Rt. | 0.3 | 25.4 | 5.1 |
| Sta. 57+10 Lt. | 0.2 | 15.9 | --- |
| Sta. 57+40 Lt. | 0.1 | 9.2 | --- |
| Sta. 57+98 Lt. | 0.1 | 10.0 | --- |
| Sta. 60+42 Lt. | 0.3 | 23.3 | --- |
| Sta. 61+00 Rt. | 0.2 | 18.3 | 3.7 |
| Sta. 65+17 Lt.-Ah. | 0.1 | 6.8 | --- |
| Sta. 67+40 Lt. | 0.1 | 12.5 | --- |
| Sta. 68+51 Lt. – Ah. | 0.1 | 4.7 | --- |
| Entrances – Canyon Lake Drive | | | |
| Sta. 2+71 Rt. | 0.3 | 22.3 | --- |
| Sta. 2+71 Lt. | 0.3 | 25.9 | 8.9 |
| Sta. 3+36 Lt. | 0.7 | 55.2 | 22.0 |
| Sta. 3+70 Rt. | 0.1 | 7.5 | --- |
| Existing to New Pavement Tie-ins * | | | |
| | 16.3 | 1,360.0 | 679.0 |
| Parking Lot Tie-in, Northwest Corner of Canyon Lake Drive and Jackson Blve. | | | |
| | --- | --- | 6.4 |
| TOTAL | 73.0 | 6,084.5 | 1,685.7 |

Intersecting Streets: 9" PCC Pavement has 5" of Gravel Cushion, Modified and 4.5" Asphalt Concrete (2.5" and 2" lifts) has 9.5" of Gravel Cushion, Modified.

Entrances: 9" PCC Pavement has 5" of Gravel Cushion, Modified, 6" PCC Approach Pavement has 4" of Gravel Cushion, Modified, 3" Asphalt Concrete has 7" of Gravel Cushion, Modified, and granular material only has 10" of Gravel Cushion, Modified.

* 6" Asphalt Concrete Composite and 10" Gravel Cushion, Modified shall be used at locations directed by the Engineer.

PCC PAVEMENT JOINT LAYOUT

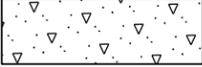
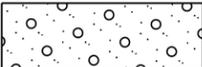
| | | | |
|-----------------------|------------------------------|-------|--------------|
| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
| | P 0044(149)40 & P 0044(00)40 | F15 | F34 |

Plotting Date: 06/05/2014

Revised: 5 Jun 14, RML

Scale 1 Inch = 40 Feet
Sheet 4 of 12 Sheets

Sta. 4+15.5 (Canyon Lake Drive)
End 9" Nonreinforced PCC Pavement
Begin Existing Pavement

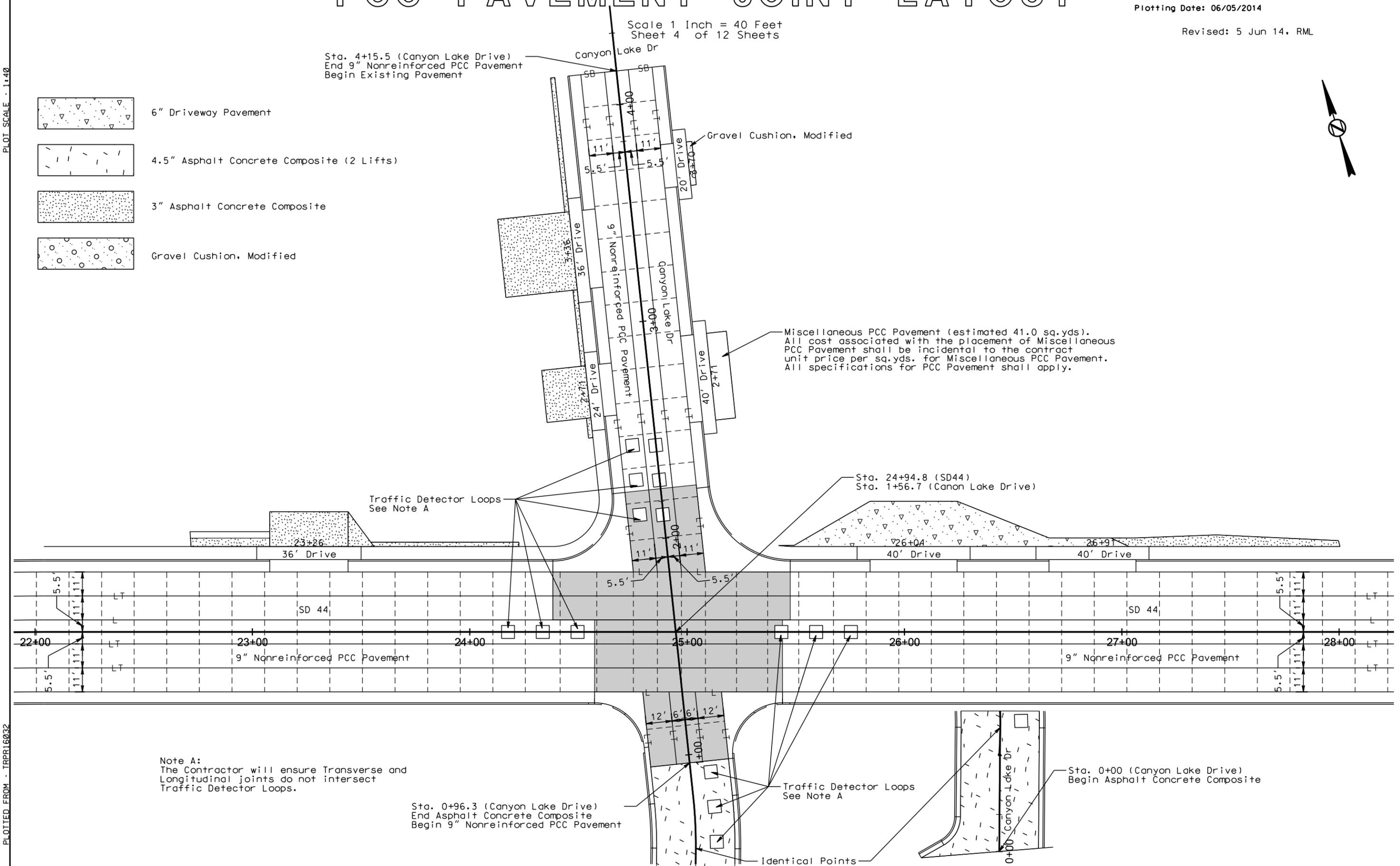
-  6" Driveway Pavement
-  4.5" Asphalt Concrete Composite (2 Lifts)
-  3" Asphalt Concrete Composite
-  Gravel Cushion, Modified



PLOT SCALE - 1:40

PLOT NAME - 9

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN



Note A:
The Contractor will ensure Transverse and Longitudinal joints do not intersect Traffic Detector Loops.

Sta. 0+96.3 (Canyon Lake Drive)
End Asphalt Concrete Composite
Begin 9" Nonreinforced PCC Pavement

Miscellaneous PCC Pavement (estimated 41.0 sq.yds).
All cost associated with the placement of Miscellaneous PCC Pavement shall be incidental to the contract unit price per sq.yds. for Miscellaneous PCC Pavement.
All specifications for PCC Pavement shall apply.

Traffic Detector Loops
See Note A

Sta. 0+00 (Canyon Lake Drive)
Begin Asphalt Concrete Composite

Identical Points