

Due to a software update, the bid item file for this project will not be available until the close of business on January 21, 2015.



DEPARTMENT OF TRANSPORTATION

**NOTICE TO CONTRACTORS,
PROPOSAL, SPECIAL PROVISIONS,
CONTRACT AND CONTRACT BOND**

FOR

SANITARY SEWER AND WATER MAIN IMPROVEMENTS

CITY

PROJECT NO.

**2015 1()
(PCN X03E)**

4TH STREET SE

IN LAKE COUNTY

NOTICE TO ALL BIDDERS

TO REPORT BID RIGGING ACTIVITIES, CALL: 1-800-424-9071

THE U.S. DEPARTMENT OF TRANSPORTATION (DOT) OPERATES THE ABOVE TOLL-FREE "HOTLINE" MONDAY THROUGH FRIDAY, 8:00 A.M. TO 5:00 P.M., EASTERN TIME. ANYONE WITH KNOWLEDGE OF POSSIBLE BID RIGGING, BIDDER COLLUSION, OR OTHER FRAUDULENT ACTIVITIES SHOULD USE THE "HOTLINE" TO REPORT SUCH ACTIVITIES.

THE "HOTLINE" IS PART OF THE DOT'S CONTINUING EFFORT TO IDENTIFY AND INVESTIGATE HIGHWAY CONSTRUCTION CONTRACT FRAUD AND ABUSE AND IS OPERATED UNDER THE DIRECTION OF THE DOT INSPECTOR GENERAL.

ALL INFORMATION WILL BE TREATED CONFIDENTIALLY AND CALLER ANONYMITY WILL BE RESPECTED.

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PLANS, PROPOSALS AND ADDENDA

AFTER AWARD OF CONTRACT, THE LOW BIDDER WILL RECEIVE TEN (10) COMPLIMENTARY SETS OF PLANS, PROPOSALS, AND ADDENDA FOR FIELD AND OFFICE USE. AN ELECTRONIC COPY WILL ALSO BE PROVIDED. ANY ADDITIONAL COPIES REQUIRED WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

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NOTICE TO CONTRACTORS

Electronic Bids for this project will be received by the South Dakota Department of Transportation (SDDOT) via the SDDOT secure bid submission site at <http://apps.sd.gov/hc65bidletting/bidsubmittallogin.aspx> until 10 A.M. Central time, on February 4, 2015, at which time the SDDOT will open bids. All bids will be checked for qualifications with results posted on the SDDOT website. The South Dakota Transportation Commission will consider all bids at a scheduled Commission meeting.

The work for which proposals are hereby requested is to be completed: **ON OR BEFORE OCTOBER 23, 2015.**

The DBE goal for this project is: **NOT SPECIFIED.**

Work Type for this project is: **Work Type 2 or Work Type 5.**

All proposals shall be prepared and submitted accordance with the Special Provision of Electronic Bidding Requirements. Any proposal otherwise submitted will be deemed informal, irregular and not subject to or worthy of consideration in the award of the contract.

Plans and the proposal package for the work may be obtained at::
<http://apps.sd.gov/hc65bidletting/ebslettings1.aspx>

City specifications for the City Utility work are provided and referenced within the advertised contract documents. All work not covered under the City utility specifications shall be completed in accordance with the Standard Specifications for Roads and Bridges, most recent edition. An electronic version of the Standard Specifications for Roads and Bridges may be obtained at <http://www.sddot.com/business/contractors/specs/Default.aspx>

The electronic bid proposal must be submitted by a valid bidder as designated on the [Bidding Authorization Form](#). The Bidder ID and Password, coupled with a previously Department assigned Company ID, will serve as authentication that an individual is a valid bidder and will assure the secure electronic delivery of bid proposals to the Department. This authorization shall remain in full force and effect until written notice of termination of this authorization is sent by an Officer of the company and received by the Department.

No proposal will be considered unless a guaranty in amount of five percent of the total amount of the bid is secured by the Contractor and received by the Department with the bid or prior to opening of the bids. Satisfactory proposal guaranties include certified checks, cashier's checks, bank drafts issued upon a National or State Bank, or a bid bond issued in accordance with the laws of South Dakota. If electronic bid bonds are used, the Contractor is required to submit the bid bond identification number with the Contractor's bid. Unless otherwise specified in the proposal book, the proposal guaranty shall be made payable at sight to the Department of Transportation, State of South Dakota.

The South Dakota Transportation Commission reserves the right to reject any or all Proposals.

PROPOSAL

Revised 8/10/11

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION, STATE OF SOUTH DAKOTA:

Ladies / Gentlemen:

The following proposal is made on behalf of the undersigned and no others. It is in all respects fair and is made without collusion on the part of any other person, firm or corporation not appearing in the signature to this proposal.

The undersigned certifies that she / he has carefully examined the plans listed herein, the Specifications hereinbefore referred to, the Special Provisions and the form of contract, both of which are attached hereto. The undersigned further certifies that she / he has personally inspected the actual location of the work, together with the local sources of supply and that she / he understands the conditions under which the work is to be performed, or, that if she / he has not so inspected the actual location of the work, that she / he waives all right to plea any misunderstanding regarding the location of the work or the conditions peculiar to the same.

On the basis of the plans, Specifications, Special Provisions and form of contract proposed for use, the undersigned proposes to furnish all necessary machinery, tools, apparatus and other means of construction, to do all the work and furnish all the materials in the manner specified, to finish the entire project **ON OR BEFORE OCTOBER 23, 2015** and to accept as full compensation therefore the amount of the summation of the products of the actual quantities, as finally determined, multiplied by the unit prices bid.

The undersigned understands that the quantities as shown in the Bid Schedule are subject to increase or decrease, and hereby proposes to perform all quantities of work, as increased or decreased, in accordance with the provisions of the specifications, and subject to any applicable special provisions, and at the unit prices bid.

The undersigned understands that the "Total or Gross Amount Bid" as immediately hereinbefore set forth is not the final amount which will be paid if this proposal is accepted and the work done, but that such amount is computed for the purpose of comparison of the bids submitted and the determination of the amount of the contract bond.

The undersigned further proposes to perform all extra work that may be required on the basis provided in the specifications, and to give such work personal attention in order to see that it is economically performed.

The undersigned further proposes to both execute the contract agreement and to furnish a satisfactory contract bond, in accordance with the terms of the specifications, within twenty (20) days after the receipt of notice from the South Dakota Department of Transportation that this proposal has been accepted.

REV. 5/15/14

SPECIAL PROVISIONS

PROJECT NUMBER(S): 2015 1() PCN: X03E

TYPE OF WORK: SANITARY SEWER AND WATER MAIN IMPROVEMENTS

COUNTY: LAKE

The following clauses have been prepared subsequent to the Standard Specifications for Roads and Bridges and refer only to the above described improvement, for which the following Proposal is made. In case of any discrepancy or conflict between said specifications and these Special Provisions, the latter are to govern.

The Contractor's attention is directed to the need for securing from the Department of Environment & Natural Resources, Foss Building, Pierre, South Dakota, permission to remove water from public sources (lakes, rivers, streams, etc.). The Contractor should make his request as early as possible after receiving his contract, and insofar as possible at least 30 days prior to the date that the water is to be used.

Jim Baltzer is the official in charge of the Madison Career Center for Lake County.

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Instructions for Bidders, dated 1/6/15.

Special Provision Regarding Combination Bids, dated 1/6/15.

Special Provision Regarding the City Portion for Subletting, dated 1/6/15.

Technical Specifications for PCN X03E.

Special Provision for Electronic Bidding Requirements, dated 12/18/13.

Special Provision for Differing Site Conditions, dated 12/19/13.

Special Provision for Suspension of Work, dated 2/13/04

Standard Title VI Assurance, dated 1/15/04.

Special Provision For Implementation of Clean Air Act & Federal Water Pollution Control Act, dated 9/1/97.

Supplemental Specification for Errata, dated 3/3/10.

Supplemental Specification to Standard Specifications for Roads and Bridges, dated 3/3/10.

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**2015 1(), PCN X03E
SANITARY SEWER AND WATER MAIN IMPROVEMENTS
4TH STREET SE**

INSTRUCTIONS FOR BIDDERS

January 6, 2015

- 1) This Sanitary Sewer and Water Main Improvements Project will be let and awarded by the South Dakota Department of Transportation.
- 2) Department of Transportation procedures regarding letting and awarding of contracts shall be followed.
- 3) Bidders submitting a bid on this project shall also submit a bid on Project P 6312(18) PCN 03DL, Lake County. Award of these projects will be to the same bidder based on the total of the two projects.
- 4) A prospective bidder must request any explanation regarding the meaning or interpretation of the bidding package in adequate time to allow a Department reply to reach all prospective bidders before submission of final bid proposals. The bidder will contact the Department by submitting a request for explanation to the project Q&A forum.
- 5) All bid bonds shall be made out to the Department of Transportation
- 6) The contract completion date for this project will be the same as specified of Project P 6312(18) PCN 03DL, Lake County. Any delays in completing this contract will not be a basis for an extension of the contract completion time for PCN 03DL, Lake County.
- 7) After award of contract, the Contractor shall furnish satisfactory proof of coverage of insurance required. Copies of Certificates of Insurance shall be furnished to the Department of Transportation AND City of Madison.
- 8) The contractor is required to schedule and conduct a preconstruction meeting that shall be held jointly with the preconstruction meeting for the state contract. Additionally the contractor is responsible for contacting the city for a list of required submittals upon receiving Notice of Award of the contract.
- 9) Construction engineering for this contract will be performed by the City of Madison.
- 10) Payment for this Utilities project will be made to the Contractor by the City of Madison.

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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION REGARDING
COMBINATION BIDS**

**2015 1(), PCN X03E
SANITARY SEWER AND WATER MAIN IMPROVEMENTS
LAKE COUNTY**

JANUARY 6, 2015

Bidders submitting a bid on this project **MUST ALSO** submit a bid on project:

P 6312(18), PCN 03DL
4TH STREET SE
GRADING, CURB & GUTTER, ASPHALT CONCRETE SURFACING,
STORM SEWER, LIGHTING, SIDEWALKS, ADA UPGRADE
LAKE COUNTY

Award of both projects will be to the same bidder based on the total of the two projects.

Work on PCN (03DL) CANNOT be used to meet the DBE Goal established for this project.

After award, the contracts will be administered as entirely separate contracts.

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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION REGARDING
THE CITY PORTION FOR SUBLETTING**

**2015 1(), PCN X03E
LAKE COUNTY**

JANUARY 6, 2015

This project is let in combination with State Project Number P 6312(18) PCN 03DL. The provisions of section 8.1 of the specifications requiring the Contractor to perform work amounting to not less than 50% of the total contract cost with the Contractor's own organization will not apply to the work on this contract.

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Technical Specifications for

4th Street SE From Washington Avenue To Division Avenue – Water Main And Sanitary Sewer Improvements

Madison, South Dakota

PCN # X03E

SEH No. SDDOT 124655

August 2014



Building a Better World
for All of Us®

Engineers | Architects | Planners | Scientists

CERTIFICATION

**4TH STREET SE FROM WASHINGTON AVENUE TO DIVISION AVENUE
WATER MAIN AND SANITARY SEWER IMPROVEMENTS**

MADISON, SOUTH DAKOTA

BID DATE: _____

**SDDOT PCN # X03E
CITY # 2015-1
SEH # SDDOT 124655**

I hereby certify that this specification was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of South Dakota.

Michael R. Kuno, PE

Date: _____

Lic. No. 9089

SECTION 00 11 00
SUPPLEMENTARY SPECIFICATIONS
TO THE
STANDARD SPECIFICATIONS
FOR
ROADS AND BRIDGES
2004 EDITION
AS PUBLISHED BY
SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PROJECT
4TH STREET SE FROM WASHINGTON AVENUE TO DIVISION AVENUE
WATER MAIN AND SANITARY SEWER IMPROVEMENTS
MADISON, SOUTH DAKOTA

1.01 INTRODUCTION

- A. These Supplementary Specifications amend or supplement the Standard Specifications for Roads and Bridges (2004 Edition) as published by the South Dakota Department of Transportation and shall be applicable to the above referenced Project. All provisions which are not so amended or supplemented hereinafter remain in full force and effect.

1.02 MODIFICATIONS

DIVISION I – GENERAL PROVISIONS

- A. The following definition is to be added to Section 1 – Definitions and Terms as Paragraph 1.73:

“Design Engineer” or “Project Engineer – SEH® (Short Elliott Hendrickson Inc.) located at 401 E. 8th Street, Suite 309, Sioux Falls, South Dakota 57103 and a telephone number of 605.330.7000.

- B. The following definition is to be added to Section 1 – Definitions and Terms as Paragraph 1.74:

“Owner” or “City” – The city of Madison, South Dakota, as represented by its proper authorities and with the mailing address of 116 W. Center Street, Madison, South Dakota 57042.

DIVISION IV – UNDERGROUND UTILITIES TECHNICAL SPECIFICATIONS

1. The following shall be added as DIVISION IV A – GENERAL PROJECT REQUIREMENTS:

WM SPECIFICATIONS FOR WATER MAIN CONSTRUCTION
SM SPECIFICATIONS FOR SANITARY SEWER CONSTRUCTION

END OF SECTION

WM - SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

WM-1 SCOPE OF WORK

The Contractor shall furnish all the necessary labor, materials, equipment, tools and supplies that are necessary to install a complete water system, as shown on the plans and/or called for in these specifications or its addenda. It is the intent of these specifications to install a complete system or job; and the Contractor shall furnish everything necessary to do this, whether or not it may be specifically called for in these specifications or on the plans.

WM-2 TERM OF GUARANTEE

The guarantee shall cover the Contract as to workmanship and materials for a period of Two (2) years from the date of final acceptance.

The Contractor shall maintain all trenches and backfill any settlement and provide and place any necessary base and/or surfacing (new or old) needed due to trench settlement for the maintenance period which shall run for two (2) years after the completion of the Contract.

WM-3 MATERIALS

All pipe shall be PVC materials designed to sustain a working pressure of 150 psi with a cover of six (6) feet. The PVC Pipe shall meet AWWA C-900 current standards. PVC Pipe shall be Class 150 with a DR 18 per AWWA standards.

Restrained joint PVC water pipe where specified shall meet the performance requirements of AWWA C-900 and shall be furnished in cast iron pipe equivalent outside diameters with an approved restrained rubber gasketed joint as manufactured by Certainteed Certa-Lok VIP or equivalent.

Fittings shall meet AWWA C110, AWWA C153, or AWWA C111 current standards. Fittings shall be provided with self-restraint connections and blocking as necessary.

WM-4 GATE VALVES

Gate valves shall be manufactured by Waterous, by AVK, or by an approved equal and shall be of the resilient wedge design and conform with the current AWWA C509 standards. Valves shall be designed for a working pressure of 175 psi minimum. The valves shall open counterclockwise and have a non-rising stem & two-inch (2") o-rings to provide seating. All internal ferrous surfaces shall be coated with an epoxy coating. The exterior of the valve shall be coated with a corrosion resistant coating.

WM-5 VALVE BOXES

Valve boxes shall be of an approved design and manufacture and have the strength to withstand the shock and loads of street traffic. Each valve box shall have a rubber or approved equal valve box adjuster that mounts to the valve.

Valve boxes shall be cast or ductile iron, have screw-type adjustment, be three-piece type, 5-1/2" shaft, size DD, standard drop covers marked "WATER" with a maximum of one inch (1") long skirt, and be adjustable for a six foot (6') to eight foot (8') trench.

WM-6 FIRE HYDRANTS

Fire hydrants shall be 6" MJ Waterous Pacer WB-67 with traffic flanges, AVK with traffic flanges, or approved equal that conform to AWWA specifications and be designed for 150 psi working pressure. There shall be required 6 feet of cover on the hydrant leg and the bottom of the traffic flange shall be 2 to 4 inches above ground level. The fire hydrant shall be painted red; have valve opening shall be at least 5-inch diameter; shall be equipped with a break off traffic flange; and have two (2) – 2-1/2" nozzles NST and one – 4" pumper nozzle NST.

Fire hydrants shall be set truly vertical upon a flat rock or slab of concrete, 4 to 6 inches in thickness and 16 to 18 inches square. Base of hydrant below and above "weep holes" shall be surrounded with approximately 10 cubic feet of washed stone which is free from cementing material. Ground like grade should be set in all cases at such a location and such a grade that a spanner wrench will rotate freely counterclockwise to open on all hose connections to the hydrant. Care shall be taken to clean thoroughly valves and hydrants of sticks, stones, dirt, or trash of any kind prior to setting.

Fire hydrants will be measured by units of one, in place and location and in accordance with details shown on the plans and in accordance with the specifications. The price bid for each fire hydrant shall be full compensation for the fire hydrants, concrete or stone base, all labor, materials, equipment, excavations, and backfill necessary to set the hydrants in place and ready for use.

WM-7 CASING PIPE SPACERS AND END SEALS

Casing spacers shall be Model SSI-8 for carrier pipes 24 inches in diameter and smaller and Model SSI-12-2 for carrier pipes 30 inches in diameter and greater as manufactured by Advance Products & Systems, Inc., Lafayette, Louisiana, or an approved equal. Casing spacers shall be constructed of circular T-304 stainless steel segments, which bolt together forming a shell around the carrier pipe. The spacers shall be designed with risers (when needed) and runners to support and center the carrier pipe within the casing pipe and maintain a minimum clearance of 1 inch between the casing pipe inside diameter (ID) and the spacer outside diameter (OD). On carrier pipes with an OD of 16 inches or less, each spacer shall have four riser/runner combinations—two on each half. On carrier pipes with an OD of 20 inches and greater, the number of riser/runner combinations shall be as recommend by the manufacturer, with four being the minimum. T-304 stainless steel bolts and nuts shall be supplied with the spacers.

The band shall be manufactured of 8-inch (SSI-8) or 12-inch (SSI-12-2) wide, 14 gauge T-304 stainless steel. The risers shall be constructed of T-304 stainless steel having a minimum length of 6 inches (SSI-8) or 10 inches (SSI-12-2). Abrasion-resistant runners, having a minimum length of 7 inches (SSI-8) or 11 inches (SSI-12-2), and a minimum width of 2 inches, shall be attached to each riser to minimize friction between the casing pipe and the carrier pipe as it is installed. Runner material shall be of glass reinforced plastic with the following minimum properties: compression strength of 25,000 psi, flexural strength of 32,000 psi, and tensile strength of 22,000 psi. The ends of all runners shall be beveled to facilitate installation over rough weld beads or the welded ends of misaligned or deformed casing pipe.

Interior surfaces of the stainless steel shell shall be lined with EPDM having a minimum thickness of 0.090 inches with a hardness of durometer "A" 85-90. Placement of the spacers shall be a maximum of one foot on each side of the bell joint and one every 6–8 feet thereafter. End seals shall be Model AW Wraparound casing end seals as manufactured by Advance Products & Systems, Inc., Lafayette, Louisiana, or an approved equal. Full conical-shaped wraparound seals made of 1/8-inch-thick neoprene rubber shall be provided for each end of the casing pipe. T-304 stainless steel banding straps with a 100 percent nonmagnetic worm gear mechanism and pressure sensitive butyl mastic strips shall be provided to seal edges.

WM-8 WATER SERVICE MATERIAL

WM-8.1 Service Tube

All copper service tube shall conform to Federal Specifications WM-T-799, Type I, ASTM Designation B-88-58 Type K and AWWA Standard C800-05 Service Line Fittings. Copper service tube shall be connected to the main by a corporation-type stop and double strap brass saddle with a service stop below frost line. Joints for underground work shall be made with fittings meeting approved standards. Tube ends shall be square cut and expanded with a flaring tool.

All polyethylene service pipe shall be ultra high molecular weight high density tube that conforms to AWWA Standard C 901-02, PE 3406, SDR 7, Iron Pipe Size, 160 lb. test. PE service tube shall be connected to the main by a corporation-type stop and double strap brass saddle with a service stop below frost line. Joints for underground work shall be made with compression type fittings meeting approved standards.

WM-8.2 Corporation Stops

Corporation stops shall conform to AWWA Standard C 800-05. Corporation stops shall be as manufactured by Mueller, Ford, or AY McDonald.

WN-8.3 Curb Stops & Boxes

Curb stops shall be of the ball valve design with packed end joints and be of the Minneapolis pattern. Curb stops shall be as manufactured by A Y McDonald #5614,

Mueller H-10300, or Ford B66-444M. Curb boxes shall be of the extension type, specifically designed for the Minneapolis pattern curb boxes and of suitable length for the required depth.

WM-9 WATER TRACER WIRE

WM-9.1 Installation Requirements

Tracer wire shall be installed with PVC and ductile iron water mains and service lines. The wire shall be installed along the lower quadrant of the pipe, but the pipe shall not be laid directly on the wire. Ground rods shall be installed adjacent to connections to the existing piping and in the locations specified on the plans. The tracer wire shall be brought to each fire hydrant and connected to a 60-inch ground rod that extends up to the bottom of the breakaway flange. The tracer wire shall be brought to each curb stop and connected to a terminal box installed adjacent to the curb stop. Should work include installation of service lines to any structure, the Contractor shall also install the tracer wire from the curb stop to the structure. The ground rod shall be taped to the fire hydrant barrel in at least four locations below the ground surface. The tracer wire shall be spliced only if approved by the Engineer. All underground splices shall be inspected by the Engineer prior to backfilling. The tracer wire system is considered to be part of the price bid for water mains.

The Contractor shall be responsible for testing the tracer wire system for conductivity. Testing for conductivity shall be complete after the service lines have been tapped. If the tracer wire system does not function as intended, the Contractor shall repair the system to the satisfaction of the Engineer. Fire hydrants and the tracer wire system shall be installed in conformance with Standard Details.

WM-9.2 Tracer Wire

The components of the tracer wire system shall be suitable for direct bury applications. The conductor shall be 12 AWG, solid-strand, soft-drawn copper per ASTM B3. The conductor shall be insulated with high molecular weight polyethylene. The minimum insulation thickness shall be 0.045 inches and the color shall be blue. Acceptable manufacturers of the tracer wire are Coleman Cable, Kris-Tech Wire, or an approved equal.

WN-9.3 Ground Rods

Ground rods shall be a 3/8-inch diameter, 60-inch-long steel rod uniformly coated with metallically bonded electrolytic copper. Ground rod clamps shall be a high-strength, corrosion-resistant copper alloy.

WN-9.4 Splice Kits/Connectors

Splices and/or connectors shall be capable of handling from two to four wires per connection and be designated as "water proof." Splice kits/connectors shall be Scotchlok DBY by 3M, LV 9000 by SNAPLOC, or an approved equal.

WN-9.5 Terminal Boxes

The tracer wire boxes shall be placed at no more than 1,000 feet apart (along the line of the line of the Tracer Wire) or as specified on the drawings. Terminal Boxes shall be metal and be Light-Duty Snakepit tracing wire access box, Tracer Wire Access Box by Drainage & Water Solutions, Inc., or an approved equal at when not installed in concrete driveways. Terminal Boxes shall be metal and be Concrete/Driveway Snakepit tracing wire access box, Tracer Wire Access Box by Drainage & Water Solutions, Inc., or an approved equal at when installed in concrete driveways.

WM-10 INTERRUPTION OF SERVICE

No valve or other control on the existing system shall be operated for any purpose by the Contractor. The Contractor shall notify all customers affected by an interruption of service at least 24 hours before the interruption. Verbal notification shall be attempted and written notice shall be provided to all customers that will be effected.

Individual residential house(s) interruptions shall be limited to water main and service reconnections. Failure by Contractor to comply with said standards will allow the Engineer to require the Contractor to provide adequate temporary water service to individual residential house(s) at no cost to the City and/or may be subject to liquidated damages.

WM-11 UNDERGROUND INTERFERENCE

The location of underground public or private utilities may or may not be shown on the plans, as reported by the various utility companies and the City, but this does not relieve the Contractor of the responsibility of determining the accuracy or completeness of said locations. The Contractor shall determine the location of all underground ducts, conduits, pipes, cables or structures which will be affected by his excavation, and shall take steps necessary to support, protect, remove, or relocate said structures by any means suitable to the owners of the structure involved and the Engineer. In those instances where their relocation or reconstruction is impracticable, a deviation from line and grade may be ordered by the Engineer.

The Contractor shall be responsible for notifying the various utility companies when his work will expose, affect or endanger any existing utility. All cost of investigation and any necessary protection, support, removal, or relocation of said structures shall be included in the contract bid price for laying pipe. The Contractor SHALL NOT begin construction until all utility companies have been contacted and their respective underground utilities have been located/spotted.

WM-12 EXCAVATION

All trenches shall be excavated to provide a minimum of six (6) feet of cover for water main and water services. Except for emergency situations excavation will not be permitted between November 10 and May 1 unless specific permission is granted by the City Engineer.

Excavation shall be classed as either earth or rock excavation. Rock excavation shall consist of solid rock lying in its natural bed which requires fracturing for its removal, and boulders of one-half yard or more in volume. All other material shall be classed as earth excavation.

WM-13 EARTH EXCAVATION

All water mains shall be built in open cut, except that where conditions warrant, the Engineer may permit the use of short tunnels. In unstable soil the trench shall be supported by shoring or sheeting as required, to prevent caving. Sheeting shall be withdrawn after the pipe has been properly covered.

Whenever in the opinion of the Engineer the bottom of the trench does not afford a reliable or suitable foundation, the trench shall be excavated to such additional depth, as is required and replaced with other suitable earth material, sand, or gravel.

WM-14 REMOVALS, ABANDON WATER MAIN, CONNECT TO EXISTING

Fire Hydrant, Valve Box, Water Main: Fire hydrants, valve boxes and water main shall be removed at the locations shown on the plans or as directed by the Engineer. The removal of valves, fittings, and other appurtenances shall be considered incidental to removal of the hydrant, valve box or water main. Disposal of all items designated for removal shall also be considered incidental.

Abandon Water Main: Contractor shall abandon water main at the locations shown in the plans or as directed by the Engineer. Abandon water main shall include all labor and materials required to install a plug or cap on the existing water main at the abandon location.

Cut and Tie to Existing Water Main: Water main shall be connected to and extended by cutting into the existing water main, preparing the end of the existing water main, and completing the water main connection. Interruption of service to the surrounding properties shall be minimized. The Contractor shall have all materials for the connection on site, and to the extent possible, shall have fittings assembled and tied prior to cutting the existing water main and making the connection. Pipe cutting shall be neat and completed without damage to the pipe. Pipe shall be cleaned and swabbed with bleach solution to minimize contamination.

WM-15 PIPE INSTALLATION

Pipes and fitting shall be laid in the location as shown on the plans, the exact location being designated by the Engineer during construction. Concrete blocks shall be used when required under fittings to insure proper alignment.

Before laying any pipe, it shall be cleaned of all foreign matter and kept clean thereafter. Open ends shall be protected at all times to prevent the entrance of dirt, trench water, animals or foreign matter into the pipe. The bell and spigot shall be wiped clean and sufficient lubrication placed on the gasket and spigot before the pipe is pushed fully into the bell. Field cut spigot ends of push-on joints shall be beveled prior to being pushed into the bell. Every pipe shall be bedded

uniformly throughout its length and care shall be taken to not have any part of the pipe bearing on rocks or stones.

Install restrained joint PVC water pipe in accordance with the pipe manufacturer's recommendations. Special care shall be exercised to level the bottom of the trench to provide a uniform bedding for the pipe. Excavate under joints to provide support for the entire pipe length. Place selected backfill in increments less than 6-inches and carefully tamp into place to the springline of the pipe. Keep stones larger than 1-1/2" away from the pipe to a minimum of 6-inches over the top of the pipe.

Install all pipe in a relatively dry bottom trench condition to assure quality installation. The Contractor shall dewater the trench with suitable equipment in an approved workmanlike manner when directed by the Engineer.

Piping shall be installed in accordance with the latest version of AWWA C-600 Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances or AWWA C-605 Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water, as applicable depending on pipe type.

Should it become necessary for the connections to the existing pipe to utilize unanticipated non-standard fittings the Contractor will be allowed, at the sole discretion of the Engineer with proper and acceptable documentation and other items required by the Engineer, to recoup the cost for the following items: additional fittings; the difference for replacement fittings; for the associated additional installation (labor); and for markups in accordance with the contract documents. Items required by the Engineer may include, but not be limited to, a) itemized invoice from supplier(s) for fittings used and/or exchanged; a breakdown of additional labor hours for installation of said fittings submitted and documented per fitting; and c) a breakdown of any included markups. Ineligible costs include any and all; such as transportation, standby time, and additional shutoff notice costs; except as noted in this paragraph.

WM-16 DISINFECTION

All water mains installed shall be chlorinated as set forth by the AWWA Standard C651 or as directed by the Engineer. Sufficient chlorine tablets or chlorine powder shall be placed in each pipe to furnish a resultant solution of 50 to 100 parts per million of available chlorine. The chlorinated water shall remain in the pipe line at least 24 hours and after this time have a residual chlorine content of at least five (5) parts per million. Any additional cost for placing the chlorine tablets shall be included in the unit bid price for pipe.

The highly chlorinated water used for disinfection shall not be discharged to a lake, stream, or other waterway where danger to fish or other aquatic life may occur. Adequate disinfection shall be demonstrated through bacteriological monitoring. Two samples collected & analyzed by an approved laboratory at the expense of the Contractor for two (2) periods of time 24 hours apart shall show negative for coliform bacteria.

WM-17 TESTING

Upon completion of the pipe laying, the Contractor shall pump the pipe up to a pressure of 120 psi, turn the pump off and retain this 120 psi pressure on the gauge for a period of two (2) hours. The Engineer or Inspector shall observe the pressure gauge before acceptance of the job.

If the Contractor is unable to maintain a pressure of 120 psi for two hours, he shall then measure the leakage rate by pumping water into the line at 120 psi. The allowable rate of leakage for PVC pipe under this test shall be determined by the following formula:

$$L = \frac{ND (P)^{1/2}}{7400}$$

Where: L = Allowable Leakage, gallons per hour
 N = Number of joints in length of pipeline
 D = Nominal diameter of pipe
 P = Test Pressure, PSI Gauge

If any section of pipe will not meet the pressure test or leakage test, the Contractor shall at his own expense locate and repair the defects and retest the line until it meets the specified test. The Contractor shall furnish all pumping equipment, labor and gauges required for this pressure test and any added costs for this test shall be included in the unit price bid for pipe.

WM-18 BACKFILLINGWM-18.1 Hand Backfilling

All water pipe laid in an open trench is to be backfilled, hand tamped, and mechanically tamped to at least 12 inches above the top of the pipe. The backfill is to be placed and tamped evenly on both sides of the pipe so as not to disturb the grade or line of the pipe. The remaining backfill material can be machine placed. Material for this part of the backfilling is to be free of rock and frozen materials. Where no suitable backfill material is available, this part of the backfilling shall be done with pit run gravel that is free from large rocks. Excess material not required for backfilling shall be removed by the Contractor or otherwise disposed of as ordered by the Engineer.

WM-18.2 Backfill Material

All material obtained from the project excavations may be used as backfill unless otherwise shown on the Drawings or specified in these Specifications, provided that all organic material, rubbish, debris, rocks greater than six (6) inches in any dimension, and other objectionable materials are first removed. Broken portland cement concrete and bituminous type pavements obtained from the project excavations will not be permitted in the backfill.

The top three (3) inches of backfill in gravel surfaced street areas shall be compacted granular material conforming to the requirements of the South Dakota Department of

Transportation, Division of Highway, Standard Specifications for Gravel Surfacing, unless otherwise shown on the Drawings or approved by the Engineer.

The top of the compacted backfill below improved surfaced street areas shall be held to the depth of the existing surface treatment, including base course, or twelve (12) inches below finished surface grade, whichever is greater. The surfacing improvements shall be replaced in kind in accordance with the provisions herein. Base course material for use in surfacing improvements shall conform to the requirements of the South Dakota Department of Transportation, Standard Specification for Base Course.

The Contractor shall remove available top soil to surface embankments and excavation backfills of trenches and around structures on the site of the work at the locations requiring top soil. This top soil shall be stockpiled separately and placed on the embankments and backfill after all construction across, over or above such embankments and backfill has been completed. The minimum total depth of top soil shall be 6 inches or of greater depth as may be specified or indicated on the plans.

WM-18.3 Compaction of Backfill

The Contractor shall utilize an independent testing agency to inspect and test each subgrade and each fill or backfill layer as directed by the Engineer. The Contractor shall not proceed until test results for previously completed work verify compliance with requirements.

Backfill shall be mechanically compacted by means of tamping rollers, sheepsfoot roller, pneumatic tire rollers, vibrating rollers, or other mechanical tampers. All such equipment shall be of a size and type approved by the Engineer.

Permission to use specific compaction equipment shall not be construed as guaranteeing or implying that the use of such equipment will not result in damage to adjacent ground, existing improvements or improvements installed under the contract. The Contractor shall make his own determination in this regard.

Material for mechanically compacted backfill shall be placed in lifts which, prior to compaction, shall not exceed the thickness specified below for the various types of equipment:

- (1) Impact, free-fall, or “stomping” equipment - maximum lift thickness of two (2) feet.
- (2) Vibrating equipment, including vibratory plates, vibrating smooth-wheel rollers, and vibratory pneumatic-tired rollers - maximum lift thickness of two (2) feet.
- (3) Rolling equipment including sheepsfoot (both vibratory and non-vibratory), grid, smooth-wheel (non vibratory), pneumatic-tired (non-vibratory), and segmented wheels - maximum lift thickness of one (1) foot.

- (4) Hand-directed mechanical tampers - maximum lift thickness of four (4) inches.

Mechanically compacted backfill shall be placed in horizontal layers of thickness (not exceeding those specified above) compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread, moistened (or dried, if necessary), and then tamped or rolled until the specified relative compaction has been attained.

Compaction adjacent to all manholes, catch basins, valve boxes, curb boxes, end of services and similar structures shall be performed by the use of hand-directed mechanical tampers with lifts not exceeding that specified above.

Backfill in and across parking lots, driveways and roadway areas to include road shoulder areas shall be placed in lifts not to exceed eight-inches (8") in loose depth. Backfill in areas behind curb lines (boulevard areas) shall be placed in lifts not to exceed twelve-inches (12") in loose depth. The backfill in parking lots, driveways, and roadway areas to include road shoulder areas shall be uniformly compacted to a minimum of 95% maximum dry density as defined by ASTM D698 before successive lifts are placed. The backfill in ditches, easement areas, public boulevard areas shall be uniformly compacted to a minimum of 90% maximum dry density as defined by ASTM D698 before successive lifts are placed. All backfill material shall be compacted at a moisture content of no less than four percentage (4%) points below the optimum moisture content. Copies of all tests shall be provided to the Engineer.

Compaction and density test locations shall be randomly selected by the Engineer at an estimated rate of one test per 400 lineal feet of trench length per each two feet of fill bounded by the top of pipe and the top of the subgrade. If failing tests are experienced the Engineer reserves the right to require additional tests at the Contractor's expense to assure that satisfactory results are obtained. If any of the compaction and density tests indicate that the material has not been compacted to the required density, the Contractor shall recompact the material at no additional cost to the Owner. The Engineer shall have the right to require additional compaction tests to insure that the recompacted material is compacted to the required density.

The independent testing agency shall perform field in-place density tests according to ASTM D1556 (sand cone method) or ASTM D2167 (rubber balloon method). Field in-place density tests may also be performed by the nuclear method according to ASTM D2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556. With each density calibration check, refer to the calibration curves furnished with the moisture gauges according to ASTM D3017. A schedule of density tests shall be submitted to the Engineer for approval. This test frequency may be reduced at the discretion of the Engineer. Reduction in or increase in the number of tests shall not be cause for adjustment in unit prices for testing.

Lack of strict adherence to this section may result in withholding of payment, including but not limited to, the cost of testing but may also cause for further reduction in payment due to Contractor as determined by the Engineer.

WM-19 PROTECTION OF EXCAVATION

The Contractor shall provide suitable sheeting, shoring, and bracing to protect all excavations to provide safe working conditions, and in strict conformance with safety regulations. Damage or injury resulting from settlement, slides, cave-ins, water pressure, or other causes shall be the responsibility of the Contractor and damage shall be repaired at his own expense.

The Contractor shall provide the necessary signs, barricades, yellow lights, watchmen, and take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be protected at night by yellow signal lights which shall be kept lit from sunset to sunrise. Suitable warning and traffic signs in conformance with the construction & location requirements of the Manual Uniform Traffic Control Devices (MUTCD) shall be so placed as to properly advise the public for safety purposes.

The Contractor shall at all times so conduct his work as to insure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to insure the protection of persons and property. No road or street shall be closed to the public except with the permission of the proper authority. Any police or other traffic control shall be arranged for by the Contractor and be at his expense. Fire hydrants on or adjacent to the work shall be kept accessible to fire-fighting equipment at all times. Temporary provision shall be made by the Contractor to insure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches, which shall not be obstructed except as approved by the Engineer.

WM-20 SURFACE RESTORATION AND CLEANUP

Unless stated specifically to the contrary in the Special Information the Contractor shall (1) replace all surface materials, (2) dispose of excess material in a manner and location approved by the Engineer, (3) level gutters & repair fences, sod, topsoil, and other items disturbed to a condition equal to that before the work began; furnishing all labor, materials, and equipment necessary to do this work. Traveled streets shall be kept open and maintained by the Contractor after backfilling and before surfacing or final inspection.

WM-21 CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL MEASURES

Every effort shall be made by the Contractor and Subcontractors to prevent and correct problems associated with erosion and runoff processes which could occur during and after project construction. The efforts should be consistent with applicable local ordinances and the EPA Nonpoint Source Pollution Control Guidance.

Wherever appropriate, the Contractor's efforts shall reflect the following engineering principles:

1. When appropriate, land grading and excavating should be kept at a minimum to reduce the possibility of creating runoff and erosion problems which require

extensive measures.

2. Whenever possible, topsoil should be removed and stockpiled before grading begins.
3. Land exposure should be minimized in terms of area and time.
4. Exposed areas subject to erosion should be covered as quickly as possible by means of mulching or vegetation.
5. Natural vegetation should be retained whenever feasible.
6. Appropriate structural or agronomic practices to control runoff and sediment should be provided during and after construction.
7. Early completion of stabilized drainage system (temporary and permanent systems) will substantially reduce erosion potential.
8. Roadways and parking lots should be paved or otherwise stabilized as soon as feasible.
9. Clearing and grading should not be started until a firm construction schedule is known and can be effectively coordinated with the grading and clearing activity.

WM-22 USE AND REPAIR OF STREET

The Contractor shall carry on the work in such a manner as to interfere as little as possible with the use of the street for public travel.

Wherever any paved gutters, pavements, graveled highways or street crossings or other improvements are interfered with or removed, they must be replaced by the Contractor and left in as good condition as previously. The Contractor shall also remove all surplus materials leaving the streets clean and in good order.

No more than three hundred feet (300') of trench will be opened at any one time in advance of the complete construction of the water mains, and the backfilling and restoring of streets shall follow up the building of the water mains at a distance not to exceed two hundred feet (200'), and in any event not more than one intersecting street shall be obstructed at any time on any one line of water main.

All street repairs and cleaning shall be promptly done as the work progresses. The Contractor shall not obstruct any street gutters but shall provide for the passage of surface water along the same at all times.

WM-23 TERM OF GUARANTEE

The guarantee shall cover the Contract as to workmanship and materials for a period of two (2) years from the date of final acceptance.

The Contractor shall maintain all trenches and backfill from any settlement and provide and place any necessary base and/or surfacing (new or old) needed due to trench settlement for the maintenance period which shall run for two (2) years after the completion of the contract.

WM-24 MEASUREMENT & PAYMENT

WM-24.1 Water Main

The length of main to be paid for will be determined by measurement along the centerline of the various types and sizes of pipe furnished and installed from center of fitting to center of fitting and from center of main to center of hydrant. No deduction will be made for the space occupied by valves or fittings.

WM-24.2 Water Main Fittings

Payment for water main fittings shall be made at the unit bid price based on the number actually furnished & installed, for furnishing and installing all materials, equipment, and labor necessary to complete the item of work in accordance with these specifications.

WM-24.3 Water Service

Water services shall be measured by the number actually constructed. New water services shall include a curb stop and valve box along with the water service line as shown on the plans.

Payment for this item shall be at the Contract unit price for each "Water Service" as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools, equipment and materials including piping, corporation stops, saddles, curb valves, valve boxes, and any other incidentals required to complete the work.

WM-24.4 Fire Hydrants

Fire hydrants will be measured by the number actually constructed in place at the locations and in accordance with the details shown on the plans and the written specifications. The bid price for each fire hydrant shall be full compensation for the fire hydrant, stone base, blocking, and other necessary incidentals as well as all labor, equipment, excavation, and backfill necessary to install the hydrant in place and ready for use. Laterals will be measured and paid for as water main.

Payment for this item shall be at the Contract unit price for "Fire Hydrant".

SPECIFICATIONS FOR SANITARY & STORM SEWER CONSTRUCTION

S-1 SCOPE OF WORK

The Contractor shall furnish all the necessary labor, materials, equipment, tools and supplies that are necessary to install a complete sewer system, as shown on the plans and/or called for in these specifications or its addenda. It is the intent to these specifications to install a complete system or job; and the Contractor shall furnish everything necessary to do this, whether or not it may be specifically called for in these specifications or on the plans.

S-2 LINE SANITARY MANHOLE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Restoration and corrosion barrier composite liner for concrete structures. (Spray Liner)

1.2 REFERENCES

- A. ACI 305R - Hot Weather Concreting.
- B. ACI 503R - Use of Epoxy Compounds for Coating Concrete.
- C. ASTM C 78 - Flexural Strength of Concrete (Using Simple Beam With Third-Point Loading).
- D. ASTM C 109 - Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).
- E. ASTM C 157 - Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
- F. ASTM C 876 - Half-Cell Potentials of Uncoated Reinforcing Steel in Concrete.
- G. ASTM D 4138 - Measurement of Dry Film Thickness of Protective Coating Systems by Destructive Means.
- H. International Concrete Repair Institute (ICRI) Technical Guideline No. 03730 - Surface Preparation Guidelines for the Repair of Deteriorated Concrete Resulting From Reinforcing Steel Corrosion.
- I. National Association of Corrosion Engineers International, NACE RP 0188 - Discontinuity (Holiday) Testing of Protective Coatings.

1.3 SUBMITTALS

- A. Provide electronic copies of the following data for review and acceptance a minimum of two weeks prior to installation.
 - 1. Product substitutions to be submitted by Contractor and approved by Engineer at least 10 days before bid date.
- B. Product Data: Submit manufacturer's product data, including physical properties, surface preparation, application instructions, and curing instructions.
- C. Test Reports: Submit manufacturer's test reports of in-place testing performed by an independent testing agency
- D. List of ten Restoration and Corrosion Barrier Composite Liner projects, with at

least five years of successful service history, including project name and location, names of owner and engineer, and description of products used, substrates, and application procedures. As a minimum, at least one of ten projects must be accessible for physical inspection prior to acceptance of restoration mortar/corrosion barrier mortar system.

- E. Written certification that both the Restoration Mortar and Corrosion Barrier Mortar were applied consecutively (essentially simultaneously) on three of the projects submitted (both products applied within 4 hours of each other).
- F. Certification that all products (restoration mortar and corrosion barrier mortar) are from a single source. Single source being defined as a single entity (person or company) that owns all rights to both the restoration mortar and corrosion barrier mortar formulations and testing data.
- G. Applicator Qualifications: Submit qualifications of applicator.
 - 1. Certification by the manufacturer stating that the applicator is trained and approved in the application of the specified products.
- H. Submittal for informational purposes only.
 - 1. Contractors step by step confined space entry protocol, including OSHA compliant entry forms, equipment used for confined space entry, policy and procedures manuals, and standard operating procedures (SOP's) used to prevent workers from exposure to dangerous air contamination and oxygen deficiency in confined spaces.
 - 2. Certification indicating all field staff have been trained to comply with company's confined space entry SOP's
 - 3. Certification indicating all personal protective equipment is in proper working order, properly calibrated, and has not expired.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications:
 - 1. Trained and approved by the manufacturer in the application of the specified products.
 - 2. Employs persons trained for the application of the specified products.
- B. Pre-Application Meeting: Convene a pre-application meeting shall be held two weeks before the start of application of Restoration and Corrosion Barrier Composite Liner. Require attendance of parties directly affecting work of this section, including the Contractor, Engineer, applicator, and manufacturer's representative. Review surface preparation, application, curing, field quality control, and coordination with other work.
- C. Refer to the plan notes for additional coordination meeting requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:

1. Store materials in accordance with manufacturer's instructions.
 2. Keep containers sealed until ready for use.
 3. Store materials in a cool dry environment.
 4. Storage Temperature of Corrosion Barrier Mortar: 40 to 80 degrees F.
- C. Handling: Protect materials during handling and application to prevent damage.

1.6 WARRANTY

- A. Provide three (3) year warranty against defects in material and workmanship from date of final acceptance of the manhole.
- B. Guarantee complete labor and installation for manhole lining system.
- C. Include coverage for sealing system failing to resist penetration of water, except where such failures are the result of structural failures. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.1 RESTORATION AND CORROSION BARRIER COMPOSITE LINER (SPRAY LINER)

- A. General:
 1. Restoration mortar, corrosion barrier coating and manhole frame seal from single manufacturer.
 2. Materials compatible with substrate and with each other. A minimum of five years of successful service history in aggressive sewer environments where the restoration mortar and corrosion barrier coating were applied simultaneously (the same day).
- B. Restoration Mortar:
 1. All restorative liner material shall be specifically designed to for the rehabilitation of manholes and other related wastewater structures.
 2. All cement liners materials must be mixed per manufacturer's written specifications and have a placement thickness between 1/2" to 4" uniform application using equipment specifically designed for the chosen application method.
 3. Restorative liner materials shall be cement based, and contain microsilica, thermoplastic fibers, densifiers, polymer admixtures and other modifiers that produce a high strength, low shrinkage and low permeability mortar. Mortar shall not contain calcium aluminat cements or aggregates. Composition: Blend of hydraulic cements and fillers.
 4. All restorative liner materials shall conform to the following 28-day minimum physical properties:
 - a. Compressive Strength (ASTM C 109): 9,000 psi.
 - b. Tensile Strength (ASTM C 109): 575 psi.
 - c. Flexural Strength (ASTM C 78): 985 psi.
 - d. Shrinkage (ASTM C 157): 0.04%.

- e. Uniaxial Tensile Bond Strength (ACI 503R, Appendix A): Greater than 500 psi over high strength concrete (5000 psi compression strength concrete – bond strength governed by substrate tensile strength). Minimum acceptable bond = 150 psi.
- 5. Approved Manufacturers:
 - a. Mainstay ML-72 Sprayable Microsilica Cement Mortar.
 - b. Engineer approved equivalent
- C. Corrosion Barrier Coating
 - 1. All epoxy coatings shall be designed specifically for the rehabilitation of manholes and other related wastewater structures to stop hydrogen sulfide corrosion.
 - 2. The epoxy coating shall be designed to be applied to newly placed mortar immediately following the placement (by low pressure spray or centrifugal spin casting) and troweling of the mortar.
 - 3. The epoxy coating shall be 100% solids, 2 component, modified epoxy coating with a gloss finish. The epoxy coating shall be capable of application to restorative liner material immediately after the liner has been sprayed, trowel and sponge finished (while the restorative liner is in a soft, uncured state).
 - 4. The epoxy coating shall be off white or light blue.
 - 5. The epoxy coating shall be capable of being applied in one or two coats. The epoxy shall be applied at a minimum of 60 mils.
 - 6. All epoxy coatings shall conform to the minimum physical properties:
 - a. Flexural Strength (ASTM D790): 12,000 psi
 - b. Compressive Strength (ASTM D695): 8,800 psi
 - c. Tensile Strength (ASTM D638): 6,800 psi
 - 7. Approved Manufacturers
 - a. Mainstay DS-5 Ultra High Build Epoxy Coating.
 - b. Engineer approved equivalent

2.2 MANUFACTURER

- A. Madewell Products Corporation, 7561 Industrial Court, Alpharetta, Georgia 30004. Phone (770) 475-8199. Fax (770) 475-8167. Internet: www.madewell.net.
- B. Engineer approved equivalent.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to receive restoration mortar. Notify the Engineer in writing if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.
- B. Provide the Engineer with a minimum of 3 days advance notice of completion of surface preparation and start of application.
- C. Before application of each material, surfaces to be lined will be inspected by

the City's authorized representative. Correct defects or deficiencies before application of subsequent material.

- D. Inspection by the Engineer or the waiver of inspection of any portion of the work shall not relieve the Contractor of responsibility to perform the work as specified.
- E. Place blockouts, pipe extensions and bypass plugs throughout manhole to enable liner to be spun as necessary for any service pipe entries. Preserve diameter and integrity of all piping entries into manhole at all times. Ensure non-disruptive flow when possible. Obtain permission from Owner before plugging any pipes

3.2 SURFACE PREPARATION

- A. Prepare surfaces in strict accordance with manufacturer's instructions.
- B. Cleaning: Clean surfaces by water or abrasive blasting (minimum 3,500 psi water blast), or hand or power tools as required to remove all unsound concrete, contaminants, dirt, debris, and deteriorated reinforcing steel.
- C. Inspection:
 - 1. Inspect cleaned surfaces to identify and mark corroded reinforcing steel; and to locate cracks, leaks, and joints.
- D. Prepare surfaces to have a minimum profile of 1/16 inch, with aggregate exposed.
- E. Inspect surfaces for soundness.
- F. Remove surface protrusions, including steps, to a point that is flush with the manhole surface.
- G. Saturate all surfaces thoroughly with clean water.
- H. Apply restoration mortar as soon as water sheen is no longer visible (saturated surface dry).
- I. Stop visible leaks by a method suitable to the manufacturer and approved by the Engineer. Remove excess or spilled material from concrete surface before application of restoration mortar.
- J. Take care to assure that no debris enters the sewer system.
- K. All materials resulting from the cleaning of the manhole shall be removed prior to application of the restorative liner.

3.3 APPLICATION OF RESTORATION MORTAR

- A. The necessary equipment and application methods to apply the cement based liner materials shall be only as approved by the material manufacturer.
- B. Contractor shall apply the material when the manhole preparation meets liner manufacturer's specifications.
- C. Apply uniformly to substrate to the specified thickness. Do not apply to manhole frame.
- D. Do not trap air in corners, behind exposed reinforcing steel, or between lifts.
- E. Material shall be applied using hand trowels, centrifugally spin casting or spray applying applicator so a uniform thickness is placed on the manhole wall. Concrete shall be brushed to provide a smooth finish.
- F. Material shall be mixed with water in accordance with manufacturer's specifications. Once mixed to proper consistency, the materials shall be pumped

via a rotor-stator style progressive cavity pump through a hose for delivery to the rotating applicator or spray applicator device.

- G. The rotating or spray applicator shall be positioned within the center of the manhole at either the top of the manhole chimney or the lowest elevation at the junction of the manhole bench and walls.
- H. The high speed rotating applicator shall be started and as the mortar begins to be centrifugally cast or spray applied evenly around the interior of the manhole, the rotating applicator head shall be raised and/or lowered at a controlled retrieval speed to provide a uniform material thickness on the manhole walls.
- I. The spray applicator shall control the device so a uniform thickness is placed on the manhole wall.
- J. Controlled multiple passes are made until the specified minimum thickness is achieved. If the procedure is interrupted the applicator head is stopped until flows are restored.
- K. Material thickness may be verified at any point with a depth gauge and shall be no less than 1 inch. If additional material is required at any level, the applicator head shall be placed at that level and application shall commence until that area achieves the specified thickness.
- L. Material shall be applied only when manhole is in a damp state with no visible water dripping or running over the manhole walls.
- M. The centrifugal spin casting head and a low-velocity spray nozzle may be used in conjunction to facilitate uniform application of the mortar material to irregularities in the contour of the manhole walls and bench areas.
- N. Trowel and sponge finishing shall begin immediately following the spray application of the mortar.
- O. Follow manufacturer's recommendations for application temperature. No application shall be applied to frozen surfaces.
- P. Mortar Thickness: Apply a minimum thickness of 1/2 inch above peaks of existing profile after surface preparation in areas of minimum deterioration. Restore remaining areas to the original concrete thickness.
- Q. Finishing: Finish surface with wood float, sponge float, broom, or brush to produce a textured surface upon which to apply Corrosion Barrier Mortar.
- R. Hot Weather Application:
 - 1. Follow manufacturer's instructions to reduce evaporation rate of surface moisture until Corrosion Barrier Mortar can be applied.
 - 2. If conditions prevent application of Epoxy Corrosion Barrier Mortar or primer, refer to ACI 305R-91, Figure 2.1.5 to estimate the evaporation rate of surface moisture from the mortar, based on temperatures, relative humidity, and wind velocity. Cover with plastic film or wet burlap to limit evaporation rate to a maximum of 0.1 pounds per square foot per hour.
- S. Cold Weather Application:
 - 1. Follow manufacturer's instructions for minimum application temperature and minimum number of days to protect from freezing.
 - 2. During periods not defined as cold weather, but when freezing temperatures may occur, protect the mortar against freezing as specified for cold weather for the first 24 hours after application.

3.4 APPLICATION OF EPOXY CORROSION BARRIER COATING

- A. Apply Epoxy Corrosion Barrier Coating in accordance with manufacturer's instructions. Do not apply to manhole frame.
- B. Do not allow surface contamination to the finished restoration mortar before application of Epoxy Corrosion Barrier Coating. Remove any contamination of primed mortar before application of Epoxy Corrosion Barrier Coating by means of high pressure (min. 3,500 psi) water blast.
- C. This process shall begin no more than four hours following the placement of the mortar. The mortar must be in a soft, uncured, plastic state.
- D. Epoxy coating shall be applied meeting manufacturer's requirements so a uniform thickness is achieved over entire manhole wall.
- E. The epoxy hose shall be coupled to the high speed rotating applicator or sprayer and the applicator shall be positioned within the center of the manhole at either the top of the manhole chimney or lowest elevation at the junction of the manhole bench and walls.
- F. If a rotating applicator is used, it shall be started and as the epoxy begins to be centrifugally cast evenly around the interior of the manhole, the rotating applicator head shall be raised and/or lowered to provide a uniform epoxy thickness on the manhole walls.
- G. Make multiple controlled passes until the specified minimum thickness is attained. If the procedure is interrupted for any reason, stop the applicator head until flows are recommenced.
- H. Epoxy thickness shall be no less than a uniform 60 mils. If additional epoxy is required at any level, application shall commence until that area is thickened.

3.5 CURING OF CORROSION BARRIER COATING

- A. Chemical Service: Provide minimum cure time per manufactures recommendations.
- B. Curing Conditions:
 - 1. Continue to protect Composite Liner from freezing throughout protection periods specified for cold weather application.
 - 2. Shelter Composite Liner from direct impingement of water until 1 to 3 hours after application of Corrosion Barrier Coating, depending on substrate temperatures, after which cure sufficiently to be undamaged by water impingement or immersion at ordinary velocities.
 - 3. Sanitary Sewer Systems: It may be necessary to plug services or main lines temporarily in order to achieve these environmental conditions, but bypass pumping should seldom be required.
- C. Immersion Service: Reach a tack-free condition before being immersed.

3.6 FIELD QUALITY CONTROL

- A. Field Quality Control Testing: Performed by the Engineer or a NACE International Certified Coating Inspector at the Owner's expense.
- B. Destructive Dry Film Thickness Tests, ASTM D 4138:

1. Perform 1 test for every 500 square feet of surface lined. If the thickness is correct, no further testing is required for that area.
2. If the initial thickness test does not indicate correct film thickness, an additional 4 measurements will be made, the average of which must equal minimum specified thickness, although individual measurements may under run this amount by a maximum of 20 percent.
3. Any area that does not meet the specified thickness as tested in 1. and 2. above, shall receive additional Epoxy Corrosion Barrier Coating (depending on the time and environment, additional surface preparation may be required).
4. If the areas tested are of proper thickness, destructive test sites shall be repaired with the appropriate barrier mortar at the contractor's expense prior to placing the system into service.

C. Spot Adhesion Testing of Restoration and Corrosion Barrier Composite Liner to Substrate:

1. Perform minimum of 1 uniaxial pull-off adhesion test for every 500 square feet of surface lined.
2. Remove and replace areas not meeting required 145 psi at 28 days minimum adhesion requirement.
3. If the condition of the substrate is such that minimum pull-off adhesion requirement cannot be met by removal of the upper 1/4" of the substrate, work shall not proceed until a course of corrective action has been determined that will effectively produce the required adhesion results. When an effective course of remedial action has been determined, the owner's representative and the contractor shall negotiate a mutually agreeable settlement to cover the costs associated with the surface evaluation and remedial action.

D. Visual and Electrical Inspection for Holidays in Epoxy Corrosion Barrier Coating:

1. Visual Inspection: Perform visual inspection for holidays in Epoxy Corrosion Barrier Coating. Mark areas identified for repair and reapplication of Epoxy Corrosion Barrier Coating.
2. Electrical Inspection: Perform spark testing in accordance with NACE RP 0188 or as recommended by the manufacturer. Mark areas identified for repair and reapplication of Corrosion Barrier Coating.
3. Areas Marked for Repair or reapplication of Epoxy Corrosion Barrier Coating: Sand or grind down to substrate, clean, spray with Madewell 927 primer/sealer, and recoat with specified Mainstay Epoxy Corrosion Barrier Coating.

3.7 CLEANUP

- A. Remove all construction debris and materials and perform any restorative work necessary to return the site to its original condition.
- B. Do not allow solid material to enter sewage flow.

S-3 MANHOLE CONSTRUCTION

All manholes shall be made waterproof and sealed accordingly. The entire manhole and all portions thereof shall be made waterproof in the following manner:

- (1) Casting: Manhole casting shall be of a design approved by the Engineer and shall set in a mortar base to form a tight seal. The pick-hole and seat between the ring and cover shall be self-sealing.

S-4 ADJUSTING RINGS

There shall be at least two (2) 2-inch adjusting rings and a maximum of eight (8) inches of precast adjusting rings used on every manhole. The manhole frame and adjusting rings shall be set in full mortar bed at all times to the elevation set by the Engineer as shown on the grade sheet. Unless otherwise specified, the manhole cover will be set approximately six inches (6") below the finished street elevation by the sewer contractor, to be brought to the finished street elevation by the asphalt contractor prior to blacktopping.

S-5 MEASUREMENT AND PAYMENT

All measurements and payments will be based on complete work performed in strict accordance with the Drawings and Specifications and respective prices and payment shall constitute full compensation for all work completed including incidentals. No separate payment will be made for excavation, trenching, removal of water, bedding, encasement, testing, and backfilling for items of work covered under this section of the Specifications and all such costs pertinent to these items shall be included in the applicable unit prices therefore.

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
ELECTRONIC BIDDING REQUIREMENTS**

DECEMBER 18, 2013

The South Dakota Department of Transportation requires all bid proposals submitted for this project be prepared and submitted using the latest version of the South Dakota Electronic Bidding System (SDEBS).

A prospective bidder may obtain the latest version of the SDEBS software from the SDDOT Website:

<http://apps.sd.gov/hc65bidletting/ebsInstall.aspx>

MAKE THE INDICATED CHANGES TO THE FOLLOWING SPECIFIED SECTIONS OF THE STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES:

Delete Section 2.1 and replace with the following:

2.1

- A. PREQUALIFICATION OF BIDDERS** - Prequalification on state highway construction contracts is required unless the amount being bid is less than \$200,000.

A prospective bidder must be prequalified prior to the time and date specified for bid opening. A prospective bidder may apply for prequalification by completing and executing a Contractor's prequalification statement on a form approved by the Department. This application must be received by the Department's classification and rating committee at least 14 calendar days prior to the letting date.

Once prequalified, the Department will issue a notice to the prospective bidder stating the prospective bidder's approved work classification or work classifications, the prospective bidder's bidding capacity, and the prospective bidder's expiration date for prequalification status.

A prospective bidder may obtain the prequalification requirements contained in South Dakota Administrative Rules from the website:

<http://legis.sd.gov/rules/DisplayRule.aspx?Rule=70:07>

B. ELECTRONIC IDENTIFICATION – A prospective bidder must register as a new user on the Department’s website to obtain a company identification and password. Certain bidding documents will only be available for download with proper company identification and password. Each company will receive one company identification and password.

In addition to the company identification and password, a prospective bidder must obtain a bidder identification and password for each individual who will be authorized to submit a bid proposal on behalf of the company. To authorize an individual to submit a bid proposal on behalf of the company, and obtain the bidder identification(s) and password(s), the company must complete a Bidding Authorization Form (available on the Department’s website), furnishing all required information and all appropriate notarized signatures, and submit the form to the Department no later than 48 hours prior to the bid opening.

The individual receiving this bidder identification and password must be an authorized agent of the company having legal authority to do business for the company.

Delete Section 2.2 and replace with the following:

2.2 CONTENTS OF BIDDING PACKAGE - The bidding package consists of the proposal booklet, plans, electronic design files, specifications, special provisions, supplemental specifications, addenda, project question and answer (Q&A) forum, and electronic bid files. The bidding package will state the location and description of the contemplated construction, show the estimate of the various quantities and type of work to be performed or materials to be furnished, and will have a schedule of items for which unit bid prices are invited. The bidding package will state the time in which the contract work must be completed, the time and date deadline for submitting the required bid proposals, and prequalification requirements.

Prospective bidders must refer to the SDDOT Website to acquire the bidding package. The prospective bidder will be responsible for all costs associated with utilizing the SDEBS and electronic bonds through the bond management company.

The Department will open the project Q&A forum when the project is advertised for letting. Prospective bidders are responsible for periodically checking the project Q&A forum for new questions and answers. The Department will post questions and answers, but will provide no additional notification of posted questions and answers. Prospective bidders may post new questions to the project Q&A forum until 10:00 AM CT on the Friday prior to the letting, at which time prospective bidders will be locked from further posting. The Department may post new questions and answers to the project Q&A forum up until 10:00 AM CT

on the Tuesday prior to the letting, at which time the project Q&A forum will be final and locked from all editing. In submitting a complete and final bid, a prospective bidder must account for any and all information posted to the final project Q&A forum regardless of when the prospective bidder submits a bid proposal.

Delete Section 2.3 and replace with the following:

2.3 ISSUANCE OF BIDDING PACKAGE - The Department will not place restrictions on who may download the bidding package from the website, except that certain documents will require the company identification described in Section 2.1 B. The bidder must verify the bidder's prequalification status prior to bidding. The Department will verify bidder status in accordance with Section 3.1 prior to opening bids.

Delete Section 2.5 and replace with the following:

2.5 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, PROJECT Q&A FORUM, AND SITE OF WORK - The bidder must examine the project site, and the entire bidding package for the work contemplated. The submission of a bid proposal will be considered conclusive evidence the bidder has investigated and is satisfied as to the conditions to be encountered, the character, quality, and quantities of work to be performed, and materials to be furnished, according to all contract documents.

Boring logs and other records of subsurface investigations are available for inspection by prospective bidders. Prospective bidders must understand this information was obtained and is intended for Department design and estimating purposes and the Department cannot guarantee the accuracy of this information. This information is made available so all prospective bidders have access to the same subsurface information available to the Department. The furnishing of this information is not intended as a substitute for the prospective bidder's personal investigation, interpretation, and judgment.

The Department will not be bound by any statement or representation made by any Department employee or agent prior to the execution of the contract, unless included in the bidding package.

A prospective bidder must request any explanation regarding the meaning or interpretation of the bidding package in adequate time to allow a Department reply to reach all prospective bidders before submission of final bid proposals. The bidder will contact the Department by submitting a request for explanation to the project Q&A forum. If the deadline for submitting questions to the project Q&A forum has passed, the bidder will submit the request for explanation to the Department Bid Letting office. The Department may answer the request for explanation on the project Q&A forum or issue an addendum to all prospective

bidders, as appropriate, in the Department's sole discretion. The Department will furnish any addendum to all prospective bidders by electronic addendum before the time specified for opening of bid proposals.

The bidder will not take advantage of any apparent error, omission, or ambiguity in the bidding package. If the bidder discovers an error, omission, or ambiguity, the bidder will immediately notify the Department of the apparent error, omission, or ambiguity and its perceived consequences. The bidder will notify the Department by submitting a question to the project Q&A forum. If the deadline for submitting questions to the project Q&A forum has passed, the bidder will notify the Department Bid Letting office. The Department may certify the error, omission, or ambiguity and may answer the question on the project Q&A forum or issue an addendum to all prospective bidders, as appropriate, in the Department's sole discretion. The Department will furnish any addendum to all prospective bidders by electronic addendum before the time specified for opening of bid proposals.

The Contractor will not take advantage of any apparent error, omission, or ambiguity in the contract. If the Contractor discovers an error, omission, or ambiguity, the Contractor will immediately notify the Department of the apparent error, omission, or ambiguity and its perceived consequences. The Contractor will notify the Engineer. The Engineer will make corrections and interpretations as necessary to fulfill the intent of the Contract.

Delete Section 2.6 and replace with the following:

2.6 PREPARATION OF PROPOSAL - The bidder must submit the proposal using the SDEBS.

The bidder must specify a unit price, in numerals, for each bid item for which a quantity is given. A unit price cannot be "\$0.00."

When the bidding package contains an alternate bid item or group(s) of alternate bid items, the bidder must indicate a choice for each available group by entering unit prices for all bid items within the alternate chosen.

The bidder must complete all required fields in the SDEBS. If the bidder does not completely fill out all required fields the Department may consider the bid irregular and reject the bid proposal in accordance with Section 2.7.

For bidding purposes, in case of a discrepancy between the line number, bid item description, or quantity shown in the SDEBS and the corresponding item shown in the plans, the bid item description and the quantity shown in the SDEBS will govern.

2.7 IRREGULAR BID PROPOSALS – The Department will consider a bid proposal irregular and may reject the bid proposal for any of the following reasons:

- A. The bid proposal is incomplete, or is submitted on a form other than the Department’s latest version of the SDEBS;
- B. The bid proposal contains unauthorized additions, conditional or alternate bids, or other irregularities, which may tend to make the bid proposal incomplete, indefinite, or ambiguous as to its meaning;
- C. The bid proposal contains provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award (this is not intended to exclude a bid proposal limiting the maximum gross amount of awards acceptable to a bidder at one bid letting. The Department will select awards in its sole discretion.);
- D. The bid proposal does not contain a unit price in numerals for each pay item listed, except in the case of authorized alternate pay items;
- E. The bid proposal is signed with an invalid bidder identification;
- F. The Department determines, in its sole discretion, that any of the unit bid prices are significantly unbalanced to the potential detriment of the Department; or,
- G. Confirmation of receipt of all addenda issued by the Department is not included in the bid proposal.

Delete Section 2.8 and replace with the following:

2.8 PROPOSAL GUARANTY - The Department will not consider any bid proposal unless the bidder has furnished the Department a guaranty in the amount of five percent of the total amount of the bid prior to opening of the bids. Satisfactory forms of proposal guaranties are certified checks, cashier’s checks, bank drafts issued upon a national or state bank, and bid bonds issued in accordance with South Dakota law. If the bidder uses an electronic bid bond, the bidder must submit the bid bond identification number with the bid proposal. Unless otherwise specified in the bidding package, the proposal guaranty must be made payable at sight to the “South Dakota Department of Transportation.”

Delete Section 2.9 and replace with the following:

2.9 SUBMISSION OF BID PROPOSALS – A bidder must submit a bid proposal electronically using the SDEBS to the Department’s secure bid submission site prior to the time and date specified by the Notice to Contractors in the bidding

package. The Department will not accept any bid proposal received after the time specified for opening of bids.

Delete Section 2.10 and replace with the following:

2.10 WITHDRAWAL OR REVISION OF PROPOSALS - A bidder may withdraw a proposal after it has been submitted, if the withdrawal is made before the time set for opening the proposals.

A bidder may revise and resubmit a bid proposal any time prior to the time set for opening the proposals. The Department will consider only the last bid proposal submitted as a valid bid proposal for that project. A bidder may revise a bid only through the SDEBS.

Delete Section 3.1 and replace with the following:

3.1 CONSIDERATION OF BID PROPOSALS - After the bids are received, but prior to opening, the Department will verify the bidder is prequalified for the specified work type. After the bids are opened, the Department will verify the bidder's status at that time is sufficient to handle the work for which the bidder submitted a bid. The Department reserves the right to refuse to accept a bid proposal for any of the following reasons:

- A.** Lack of competency or adequate machinery, plant, and other equipment, as shown by the Contractor's Prequalification Statement;
- B.** Uncompleted work which the Department determines, in its sole discretion, may hinder or prevent the prompt completion of additional work;
- C.** Failure to pay or satisfactorily settle any legal obligation due for labor or material on any contract at the time of issuance of proposals;
- D.** Failure to comply with the Department's prequalification regulations;
- E.** Default under any previous contract or contracts;
- F.** Debarment by the Department or the federal government;
- G.** Lack of bidding capacity as established by the Contractor's prequalification statement, considering the uncompleted work currently under contract; or,
- H.** Unsatisfactory performance on previous work or any current contract or contracts consisting of, but not limited to:
 - 1.** Noncompliance with contract specifications, contract requirements, or Engineer's directives;

2. Failure to complete work on time;
3. Instances of substantial corrective work prior to acceptance;
4. Instances of completed work that requires acceptance at reduced pay;
5. Production of work or materials not meeting required specifications, and when applicable, requiring price reductions or corrective work;
6. Failure to provide adequate safety measures or appropriate traffic control that endangers the safety of the work force and public;
7. Questionable moral integrity as determined by the Attorney General of the State, or the Department; or,
8. Failure to reimburse the State for monies owed on any previously awarded contract including any contract where the prospective bidder is a party to a joint venture and the joint venture has failed to reimburse the State for monies owed.

After the bid proposals are opened, the Department will compare the bids on the basis of the summation of the products of the quantities shown in the bid proposal by the unit bid prices. The results of such comparisons will be available to the public via the Department's Internet Website.

The Department reserves the right to reject any bid proposal, the right to waive technicalities, and the right to reject all bid proposals and advertise for new bid proposals, if in the sole judgment of the Department the rejection or waiver will promote the best interest of the Department.

Delete Section 3.4 and replace with the following:

- 3.4 PROPOSAL GUARANTY** - The Department will retain the proposal guaranties of the two lowest responsible and competent bidders. The Department will release the remaining proposal guaranties following opening and checking of bid proposals. The Department will release the proposal guaranties of the two low bidders when the contract has been executed.

Delete Section 5.4 and replace with the following:

- 5.4 COORDINATION OF CONTRACT DOCUMENTS** – The contents of the bidding package are essential parts of the contract. A requirement occurring in one is as binding as though occurring in all. The contents of the bidding package are intended to be complimentary and to describe and provide for a complete work.

If any discrepancy exists, the governing ranking is:

1. Addenda
2. Project Q&A forum
3. Special provisions
4. Plans
5. Supplemental specifications
6. Standard specifications
7. Electronic design files

Notwithstanding the above governing ranking, addenda will govern over the project Q&A forum unless specifically addressed by a Department response in the project Q&A forum.

In case of a discrepancy between questions on the project Q&A forum regarding the same topic, the most recent question and answer will govern over previous questions and answers. Questions will be numbered on the project Q&A forum in order of date and time posted.

In addition, calculated dimensions will govern over scaled dimensions.

Delete Section 570

* * * * *

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
DIFFERING SITE CONDITIONS**

DECEMBER 19, 2013

During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.

Upon written notification, the Engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The Engineer will notify the Contractor of the determination whether or not an adjustment of the contract is warranted.

No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice.

No contract adjustment will be allowed under this clause for any effects caused on unchanged work.

This section does not apply to material sources shown on the plans and as defined in Section 6.

* * * * *

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
SUSPENSION OF WORK**

FEBRUARY 13, 2004

The following shall apply when suspension of the work is ordered by the Engineer.

If the performance of all or any portion of the work is suspended or delayed by the Engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the Contractor believes that additional compensation and/ or contract time is due as a result of such suspension or delay, the Contractor shall submit to the Engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

Upon receipt, the Engineer will evaluate the contractor's request in accordance with Section 5.17 and/or Section 8.6 of the Standard Specifications. If the Engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the Engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The Contractor will be notified of the Engineer's determination whether or not an adjustment of the contract is warranted.

No contract adjustment will be allowed unless the Contractor has submitted the request for adjustment within the time prescribed.

No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

**STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
TITLE VI AND NONDISCRIMINATION ASSURANCE
JULY 14, 2008**

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

- (1) Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended (hereinafter referred to as the "Regulations"), incorporated by reference and made a part of this contract.
- (2) Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, religion, national origin, sex, age or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- (3) Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, religion, national original, sex, age or disability.
- (4) Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the South Dakota Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the South Dakota Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain this information.
- (5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the South Dakota Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including but not limited to:
 - (a) withholding of payments to the contractor under the contract until the contractor complies, and/or
 - (b) cancellation, termination or suspension of the contract, in whole or in part.
- (6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives pursuant thereto.

The contractor shall take such action with respect to any subcontract or procurement as the South Dakota Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for non-compliance. Provided, however, that, in the event of a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the South Dakota Department of Transportation to enter into such litigation to protect the interest of the State, and, in addition, the contractor may request the United States to enter such litigation to protect the interests of the United States.

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION FOR
IMPLEMENTATION OF CLEAN AIR ACT
AND
FEDERAL WATER POLLUTION CONTROL ACT**

SEPTEMBER 1, 1997

By signing this bid, the bidder will be deemed to have stipulated as follows:

- a) That any facility to be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR, Part 15), is not listed on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
- b) That the State Transportation Department shall be promptly notified prior to contract award of the receipt by the bidder of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

* * * *

**Wage and Hour Division
U.S. Department of Labor (DOL)
200 Constitution Avenue, N.W.
Washington, DC 20210**

Davis-Bacon Act Wage Decisions
State: South Dakota
Construction Types: Heavy and Highway
Counties: South Dakota Statewide

Agency: U.S. DOL
Wage Decision Number: **SD130009 SD9**
Counties: Statewide: All
 Counties in South
 Dakota
Wage Decision Date: **08/30/2013**

* SUSD2013-001	
	Rates Fringes
LABORERS	
GROUP GL1 Air Tool Operator; Common Laborer; Landscape Worker; Flagger; Pilot Car Driver; Trucks under 26,000 GVW; Blue-top Checker; Materials Checker	15.08 0.00
GROUP GL2 Mechanic Tender (Helper); Pipe Layer (except culvert); Form Builder Tender; Special Surface Finish Applicator; Striping	16.78 0.00
GROUP GL3 Asphalt Plant Tender; Pile Driver Leadsman; Form Setter; Oiler/Greaser	18.42 0.00
GROUP GL5 Carpenter; Form Builder	21.82 0.00
GROUP GL6 Concrete Finisher; Painter; Grade Checker	20.81 0.00
POWER EQUIPMENT OPERATORS	
GROUP G01 Concrete Paving Cure Machine; Concrete Paving Joint Sealer; Conveyor; Tractor (farm type with attachments); Self Propelled Broom; Concrete Routing Machine; Paver Feeder; Pugmill; Skid Steer	16.15 0.00
GROUP G02 Bull Dozer 80 HP or less; Front End Loader 1.25 CY or less; Self Propelled Roller (except Hot Mix); Sheepsfoot/50Ton Pneumatic Roller; Pneumatic Tired Tractor or Crawler (includes Water Wagon and Power Spray units); Wagon Drill; Air Trac; Truck Type Auger; Concrete Paving Saw	17.62 0.00
GROUP G03 Asphalt Distributor; Bull Dozer over 80 HP; Concrete Paving Finishing Machine; Backhoes/ Excavators 20 tons or less; Crusher (may include internal screening plant); Front End Loader over 1.25 CY; Rough Motor Grader; Self Propelled Hot Mix Roller; Push Tractor; Euclid or Dumpster; Material Spreader; Rumble Strip Machine	19.33 0.00
GROUP G04 Asphalt Paving Machine Screed; Asphalt Paving Machine; Cranes/Derricks/Draglines/Pile Drivers/Shovels 30 to 50 tons; Backhoes/Excavators 21 to 40 tons; Maintenance Mechanic; Scrapers; Concrete Pump Truck	19.73 0.00
GROUP G05 Asphalt Plant; Concrete Batch Plant; Backhoes/Excavators over 40 Tons; Cranes/ Derricks/Draglines/Pile Drivers/Shovels over 50 tons; Heavy Duty Mechanic; Finish Motor Grader; Automatic Fine Grader; Milling Machine; Bridge Welder	21.80 0.00
TRUCK DRIVERS	
GROUP GT1 Tandem Truck without trailer or pup; Single Axle Truck over 26,000 GVW with Trailer	15.88 0.00
GROUP GT2 Semi-Tractor and Trailer; Tandem Truck with Pup	18.29 0.00
ELECTRICIANS	
GROUP E01 Electrician	21.84 0.00

*Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Survey wage rates will remain in effect and will not change until a new survey is conducted.

**Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210**

**Davis-Bacon Act Wage Decisions
State: South Dakota
Construction Types: Heavy and Highway
Counties: South Dakota Statewide**

WELDERS – Receive rate prescribed for craft performing operation to which welding is incidental.
=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award, pursuant to 29 CFR 5.5(a)(1)(ii); contractors are responsible for requesting SDDOT to secure necessary additional work classifications and rates.

For SDDOT Defined Work Classifications, please visit: <http://www.sddot.com/business/contractors/labor/wcwr/Default.aspx>

In the listing above, the "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- an existing published wage determination
- a survey underlying a wage determination
- a Wage and Hour Division letter setting forth a position on a wage determination matter
- a conformance (additional classification and rate)
- ruling on survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and our Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, Project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION FOR
ERRATA

MARCH 3, 2010

MAKE THE INDICATED CORRECTIONS TO THE FOLLOWING SPECIFIED SECTIONS:

Section 491.5 A, B, C, D, E – Page 290 – Add the following to the end of the first sentence of each of these sections:

(square meter).

Section 629.4 C – Page 351 – Replace the first sentence with the following:

Remove Three Cable Guardrail will be measured to the nearest foot (0.1 meter) along the centerline of the cable.

Section 629.4 D – Page 351 – Replace the first sentence with the following:

Removal of Anchor Assembly will be measured by the each.

Section 630.3 D – Page 354 – Replace the fourth sentence with the following:

The drawings shall contain all components of the W beam end terminal.

Section 634.2 – Page 371 – Replace the second paragraph with the following:

Traffic control devices shall meet the crashworthy requirements of the National Cooperative Highway Research Program Report 350 (NCHRP 350) for Category I, II and III devices.

Section 635.3 L – Page 383 – Delete and replace with the following:

L. Luminaires: Luminaires shall be adjusted on the support so the lamina sets level as indicated by a small bubble level. Bolts shall be firmly tightened.

Section 635.4 K – Page 385 – Delete and replace with the following:

K. Luminaires: Measurement will be by the actual count of the various types and sizes of luminaires furnished and installed.

Section 635.5 K – Page 387 – Delete and replace with the following:

K. Luminaires: Payment for luminaires of the various types and sizes will be at their respective contract unit prices per each. Payment will be full compensation for furnishing and installing luminaires.

Section 984.3 H – Page 504 – Replace the first paragraph with the following:

Temporary road markers shall consist of a yellow or white plastic body providing a horizontal width and length of approximately 3 ½ inches (90 mm) in both dimensions and approximately ¾ inches (20

mm) high. If flexible vertical markers are used they shall be approximately 4 inches (100 mm) wide and approximately 2 inches (50 mm) high.

Index – Page 532 – Under Portland Cement Concrete Pavement – Delete “Dowel and Tie Bars...517” and replace with the following:

Dowel and Tie Bars..... 519

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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENTAL SPECIFICATION TO
STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES**

MARCH 3, 2010

All items included in this supplemental specification will govern over the Errata.

MAKE THE INDICATED CHANGES TO THE FOLLOWING SPECIFIED SECTIONS:

Section 2.6 D – Page 11 – Delete and replace with the following:

D. PCN

Section 3.6 – Page 15 – Delete and replace with the following:

3.6 EXECUTION AND APPROVAL OF CONTRACT - The contract shall be signed and returned by the successful bidder, together with the contract bond, within 20 calendar days after the receipt of the Notice of Award. If the contract is not executed by the Department within 15 calendar days following the receipt from the bidder of the signed contract and related documents, the bidder shall have the right to withdraw the bid without penalty. A contract will not be considered in effect until it has been executed by all parties to the contract.

Section 3.7 – Page 15 – Delete the first sentence and replace with the following:

Failure to execute the contract and file acceptable bonds within 20 calendar days after bidder's receipt of the Notice of Award shall be just cause for the cancellation of the award and the forfeiture of the proposal guaranty which shall become the property of the Department, for liquidation of damages sustained.

Section 4.6 – Page 19 – Delete and replace with the following:

4.6 FINAL CLEANING UP - Before Acceptance of Field Work is made by the Area Office, the highway and areas occupied by the Contractor in connection with the work shall be cleaned of rubbish, excess materials, temporary structures, and equipment; and the work left in an acceptable condition, unless otherwise approved by the Engineer.

Section 5.6 – Page 24 – Delete the last sentence of the seventh paragraph and replace with the following:

The depth applies to the existing grade or ditch flowline within the right-of-way.

Section 5.6 – Page 24 – Delete the last two sentences of the eighth paragraph and replace with the following:

Contractors shall give at least 48 hour notice prior to commencement of excavation, excluding Saturdays, Sundays, and legal holidays of the state. South Dakota One Call phone number is **1-800-781-7474** or **811** within the State of South Dakota.

Section 5.6 – Page 24 – Add the following to the list of items on page 25:

Tunneling or Boring
Duration of Excavation
Nearest Cross Street

Section 5.6 – Page 24 – Delete the third sentence of the last paragraph on page 25 and replace with the following:

The utility shall as soon as possible but not longer than two hours from the notification time during the business day and not longer than four hours from the notification time outside of the business day or by the start time on the ticket, whichever is later provide all reasonably available practical information to the Contractor.

Section 5.10 – Page 27 – Add the following sentence to this section:

Neither the Department's authority to inspect all work nor any actual inspections performed by the Department during the course of construction shall constitute an acceptance of work performed, or operate to relieve the Contractor of its obligation to construct the project in compliance with the plans and specifications.

Section 5.14 – Page 28 – Delete the first sentence of the first paragraph and replace with the following:

The Contractor shall maintain the work during construction and until the Area Office issues the Acceptance of Field Work.

Section 5.14 – Page 28 – Delete the last paragraph and replace with the following:

Cost of maintenance work during construction and before the Area Office issues the Acceptance of Field Work shall be included in the unit price bid on the various pay items and the Contractor will not be paid an additional amount for such work.

Section 5.16 – Page 29 – Delete and replace with the following:

5.16 ACCEPTANCE OF FIELD WORK - When the contract work, including authorized modifications and final cleanup has been completed, the Area Engineer or his designee will, within fourteen days, make a final inspection of the work. When provided in the Contract, the Area Engineer or his designee may make inspections following completion of portions of the contract. If the work is found to conform with the requirements of the Contract, the Area Engineer or his designee will issue written notification to the Contractor of Acceptance of Field Work. Such notice is not to be construed as an acceptance by the Area Engineer or his designee of previously noted defective or unauthorized work, or of unauthorized work subsequently determined during the final computations of field measurements. Should the work fail to conform with requirements of the Contract, a written statement of the features to be remedied will be given the Contractor. Final Acceptance will not be made until the Contractor advises the Engineer that the corrections have been made and the requirements have been met.

Section 5.17 – Page 29 – Delete the first paragraph and replace with the following:

5.17 CLAIMS FOR ADJUSTMENT AND DISPUTES - If the Contractor deems that additional compensation is warranted for work or materials not covered in the Contract and not ordered as extra work as defined herein, the Contractor shall give the Area Engineer written notice of the claim for additional compensation.

Section 5.17 – Page 29 – Delete the fourth paragraph and replace with the following:

Under no circumstances will a claim be considered if written notification is made more than 30 days after the final payment is made.

Section 5.17 – Page 30 – Delete the sixth and seventh paragraphs and replace with the following two paragraphs:

The Contractor hereby agrees to waive any claim for additional compensation if timely written notification is not furnished and the Area Engineer is not provided the opportunity to keep account of or determine costs, to incorporate alternate methods of accomplishing the disputed work or to otherwise resolve the claim.

A Claims Documentation Form, furnished by the Department, shall be completed by the Contractor and submitted to the Area Engineer after completion of the work on which the claim is based. The Claims Documentation Form shall be completed within 120 calendar days after completion of the work unless an extension is granted, in writing, by the Area Engineer.

Section 5.17 – Page 30 – Delete the last three paragraphs of this section and replace with the following five paragraphs:

Claims which are properly submitted, but which are not approved, will be automatically escalated to the next higher authority level within the Department for review. The Secretary of Transportation has final resolution authority on all submitted claims.

Claims may be submitted by the Department to a third-party claim investigator for further review and investigation. The report prepared by the claim investigator shall not be shared with the Contractor, nor shall the report be used in subsequent administrative or legal proceedings. Failure to fully cooperate with the third-party investigator may result in

denial of the claim. After the Secretary of Transportation receives the report, the parties, by mutual agreement, may initiate a non-binding mediation to attempt to resolve the claim.

If the claim is determined completely or partially valid, those portions determined valid, plus interest computed at the rate of 4.25% per annum for the time period between the date shown on the Region Engineer's letter of Final Acceptance and the date the claim was resolved, will be paid.

If a claim is determined completely or partially valid in a subsequent proceeding in circuit court and pre-judgment interest is awarded by the court on all or a portion of the judgment, that interest shall be computed at the rate of 4.25% per annum.

Nothing in this section shall be construed as establishing any claim contrary to the terms of Section 4.2.

Section 7.6 – Page 37 – Add the following paragraph to this section:

All workers within the right of way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel intended to provide conspicuity during both daytime and nighttime usage, and meeting the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear".

Section 7.12 – Page 39 – Delete the last sentence of the second paragraph and replace with the following:

The Contractor's responsibility will not be released until completion of the project and Final Acceptance is made, as noted by the date shown on the Region Engineer's letter of Final Acceptance.

Section 7.14 – Page 39 – Delete this section and replace with the following:

7.14 RESPONSIBILITY FOR DAMAGE CLAIMS - The Contractor shall hold harmless and indemnify the Department, its officers and employees, from all suits, actions, or claims of any character brought because of any injuries or damages received or sustained by any person, persons or property arising from the operations of the said Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act", or any other law, ordinance, order, or decree; and so much of the money due the said Contractor under and by virtue of his contract as may be considered necessary by the Department for such purpose may be retained for the use of the State; or in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the Department; money due the Contractor will not be withheld when the Contractor produces satisfactory written confirmation from its insurer that adequate public liability insurance and property damage insurance providing coverage for such particular claims as may be made is in force; a copy of a certificate of insurance, without further confirmation of coverage for the particular claim being made, will not be sufficient to satisfy the requirement of written confirmation.

Section 7.15 – Page 40 – Delete the first sentence and replace with the following:

7.15 LIABILITY INSURANCE - The Contractor shall procure and maintain at the Contractor's expense, during duration of the Contract, liability insurance with an insurance company authorized to do business in the state of South Dakota, for damages imposed by law.

Section 7.16 – Page 40 – Delete the second sentence of the last paragraph and replace with the following:

In such event, the Contractor shall not be relieved of liability or responsibility during the period the work is so opened and prior to Acceptance of Field Work.

Section 7.17 – Page 40 – Delete the first paragraph and replace with the following two paragraphs:

CONTRACTOR'S RESPONSIBILITY FOR WORK - The Contractor is responsible for the work until the Acceptance of Field Work is made by the Area Office, except as set forth in Section 4.4 B.1. The Contractor shall protect the work against injury or damage from all causes, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and replace all work that is injured or damaged prior to the Acceptance of Field Work, at no additional cost to the Department. Damage to work due to unforeseeable

causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, acts of the public enemy, or acts of governmental authorities shall be restored by the Contractor at the Department's expense according to subsection 4.2 or 4.3, as applicable.

Following the Acceptance of Field Work, but prior to Final Acceptance as described in Section 9.9, the Contractor shall be responsible for damage to work resulting from an act, omission, neglect, or misconduct in the Contractor's manner or method of executing the work, or due to defective work or materials at no additional cost to the Department.

Section 8.1 – Page 45 – Delete and replace with the following:

8.1 SUBLETTING OF CONTRACT - The Contractor shall not sublet, sell, transfer, assign, or dispose of the contract or contracts or any portion of them, without written consent of the Engineer. Each request to sublet shall be submitted on the form provided by the Engineer. The Contractor shall submit a request to sublet for any contracting firms a subcontractor proposes to use as a lower tier subcontractor. The Contractor shall obtain approval of each subcontractor before the start of the work performed by the subcontractor.

The Contractor will be permitted to sublet up to 50 percent of the contract amount, based on the contract unit prices, but shall perform work amounting to not less than 50 percent of the total contract amount with his own organization.

The Department will consider the Contractor's own organization to include only workers employed and paid directly by the Contractor, equipment owned or rented by the Contractor, and materials purchased by the Contractor for its use in performing Contract work. This does not include employees, equipment, or materials purchased by or incorporated into work of any subcontractor, assignee, or agent of the Contractor.

The Department will not consider as subcontracting the following; 1) any material produced outside the project limits including but not limited to the production of sand, gravel, crushed stone, batched concrete aggregates, ready mix concrete, off-site fabricated structural steel, other off-site fabricated items, and any materials delivered by established and recognized commercial plants; or 2) delivery of these materials to the work site from an off-site location in vehicles owned or operated by such plants or by recognized independent or commercial hauling companies. Project limits is defined as being within a 1/2 mile radius of the project proper.

Any items designated in the contract as "specialty items" may be performed by subcontract and the cost of designated specialty items performed by subcontract will be deducted from the total contract amount before computing the amount of work required to be performed by the Contractor's own organization.

The Contractor shall give assurance to the Engineer that all pertinent provisions of the prime contract including minimum wage for labor shall apply to the work sublet. Subcontract, or transfer of contract, shall not relieve the Contractor of his responsibilities and liability under the contract and bonds.

Section 8.2 – Page 45 – Delete and replace with the following:

8.2 NOTICE TO PROCEED - The Notice to Proceed shall consist of written notification to the Contractor to proceed with the work. Such notification will be issued within 15 calendar days following the receipt from the bidder of the signed contract and related documents. The contract time will start on the date the Contractor actually starts construction work or 30 calendar days after the date of the Notice to Proceed, whichever date is earlier. The Contractor shall not begin work prior to the date of the Notice to Proceed.

Section 8.6 A – Page 48 – Delete the first paragraph on page 48 and replace with the following:

If for reasons beyond the Contractor's control the work cannot be completed within the contract time as specified or as extended according to the provisions of this section, the Contractor may make a written request for an extension of contract time. The written request shall be made at any time prior to the expiration of the contract time as extended. The Contractor's time extension request shall set forth the reasons which will justify an extension of time.

A Time Extension Request Form, furnished by the Department, shall be completed by the Contractor and submitted to the Area Engineer. If the written request was properly filed in accordance with the requirements of this section, the time extension request will be forwarded through the proper channels, to the Secretary of Transportation for final resolution.

The Time Extension Request Form shall be fully completed and will contain the following:

1. A narrative justification citing the basis for the time extension.
2. A statement of the amount of extra compensation, including liquidated damages, incentive, or disincentive associated with the time extension.
3. A signed and notarized statement that the information furnished is true and fully documented.
4. Permission for the Department or its authorized representative to examine all Contractor records concerning this time extension request.

The Secretary of Transportation may submit the time extension request to a third-party investigator for further review and investigation. The report prepared by the investigator shall not be shared with the Contractor, nor shall the report be used in subsequent administrative or legal proceedings. Failure to fully cooperate with the third-party investigator may result in denial of the time extension request. After the Secretary of Transportation receives the report, the parties, by mutual agreement, may initiate a non-binding mediation to attempt to resolve the time extension request.

Section 8.6 A – Page 48 – Delete the first sentence of the second to last paragraph and replace with the following:

If the Secretary of Transportation finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Secretary may extend the time for completion in such amount as the conditions justify.

Section 8.6 A – Page 48 – Delete the last paragraph and replace with the following:

When Acceptance of Field Work has been duly made as prescribed in Section 5.16, the daily time count/assessment will cease. The daily time count/assessment may resume if the Contractor fails to provide, in a timely manner, required project documentation as ordered by the Area Engineer. The daily time count/assessment may also resume when in accordance with Section 7.17, repairs, rework, or other activities are ordered for work that the Contractor is responsible for.

Section 8.6 B – Page 50 – Delete the second paragraph on page 50 and replace with the following:

If for reasons beyond the Contractor's control the work cannot be completed within the contract time as specified or as extended according to the provisions of this section, the Contractor may make a written request for an extension of contract time. The written request shall be made at any time prior to the expiration of the contract time as extended. The Contractor's time extension request shall set forth the reasons which will justify an extension of time.

A Time Extension Request Form, furnished by the Department, shall be completed by the Contractor and submitted to the Area Engineer. If the written request was properly filed in accordance with the requirements of this section, the time extension request will be forwarded through the proper channels, to the Secretary of Transportation for final resolution.

The Time Extension Request Form shall be fully completed and will contain the following:

1. A narrative justification citing the basis for the time extension.
2. A statement of the amount of extra compensation, including liquidated damages, incentive, or disincentive associated with the time extension.
3. A signed and notarized statement that the information furnished is true and fully documented.
4. Permission for the Department or its authorized representative to examine all Contractor records concerning this time extension request.

The Secretary of Transportation may submit the time extension request to a third-party investigator for further review and investigation. The report prepared by the investigator shall not be shared with the Contractor, nor shall the report be used in subsequent administrative or legal proceedings. Failure to fully cooperate with the third-party investigator may result in denial of the time extension request. After the Secretary of Transportation receives the report, the parties, by mutual agreement, may initiate a non-binding mediation to attempt to resolve the time extension request.

Section 8.6 B – Page 51 – Delete the last sentence of the second to last paragraph and replace with the following:

If the Secretary of Transportation finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Secretary may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect the same as though it were the original time for completion.

Section 8.6 B – Page 51 – Delete the last paragraph and replace with the following:

When Acceptance of Field Work has been duly made as prescribed in Section 5.16, the daily time count/assessment will cease. The daily time count/assessment may resume if the Contractor fails to provide, in a timely manner, required project documentation as ordered by the Area Engineer. The daily time count/assessment may also resume when in accordance with Section 7.17, repairs, rework, or other activities are ordered for work that the Contractor is responsible for.

Section 8.7 – Page 51 – Delete the last sentence of the second paragraph and replace with the following:

This sum shall be considered and treated not as a penalty but as liquidated damages due the Department from the Contractor by reason of added cost of engineering and supervision resulting from failure to complete the work within the time specified in the contract.

Section 9.1 B – Page 56 – Delete the fourth paragraph on page 57 and replace with the following:

Loader Scales - Loader scales will be allowed to be used on contracts when the quantity per line item of granular material to be weighed for payment is less than 10,000 tons (10,000 metric tons).

Section 9.1 B – Page 56 – Add the following sentence to the end of the sixth paragraph on page 57:

The accuracy check shall be performed prior to weighing the material for payment and then once per week thereafter.

Section 9.4 – Page 61 – Delete and replace with the following:

9.4 COMPENSATION FOR ALTERED QUANTITIES - When the accepted quantities of work vary from the estimated quantities in the Contract, the Contractor shall accept as payment in full, payment at the original contract unit prices for the accepted quantities of work. Allowance will not be made for increased expense, except as provided in Section 4.2. Allowance will also not be made for loss of expected reimbursement or loss of anticipated profits.

Section 9.5 D – Page 62 – Delete the first paragraph of this section and replace with the following:

D. Equipment: For machinery or special equipment including fuel and lubricants, plus transportation costs, authorized by the Engineer, the Contractor shall be paid in accordance with the provisions and rates set forth in the South Dakota Equipment Rental Rates Book which is currently established as the “Rental Rate Blue Book” published by EquipmentWatch, a division of Penton Media, Inc. For purposes of determining an hourly rate, the monthly rate divided by 176 shall be used. This rate will be adjusted for regional factors, age and operating expenses as set forth in the “Rental Rate Blue Book”.

Section 9.7 – Page 64 – Add the following sentence to the end of the second to last paragraph:

Progress payments shall not constitute acceptance of the work.

Section 9.9 - Page 65 - Delete this section and replace with the following:

9.9 FINAL ACCEPTANCE AND FINAL PAYMENT - When Acceptance of Field Work has been made as prescribed in Section 5.16, and all project documentation has been provided, the Engineer will prepare the final estimate of the quantities of the various classes of work performed. After the Engineer determines the final estimate, the Contractor will be paid the entire sum found to be due after deducting previous payments and amounts to be retained or deducted under the provisions of the contract.

Prior partial estimates and payments shall be subject to correction in the final estimate of payment. Final payment will be due 120 days after the date shown on the Region Engineer’s letter of Final Acceptance.

Interest will be added to payments in excess of \$2000 which are due the Contractor and remain unpaid 120 days after the date shown on the Region Engineer's letter of Final Acceptance. Interest will accrue at a rate of 4.25% per annum for the time period after the noted 120 days until final payment is made.

Section 9.12 – Page 66 – Delete and replace with the following:

9.12 THIS SECTION INTENTIONALLY LEFT BLANK

Section 120.2 A – Page 73 – Delete and replace with the following:

- A. Unclassified Excavation:** All materials except those classified as rock excavation, unclassified/rock excavation, muck excavation, option borrow excavation, contractor furnished borrow, or borrow unclassified excavation encountered during the construction of the work, regardless of their nature or manner in which they are removed, will be considered unclassified excavation.

Section 120.2 – Page 73 – Add the following to the end of this Section:

- I. Option Borrow Excavation:** Material, furnished by the State, from a pit or other source. The Contractor may use this material at his option.
- J. Contractor Furnished Borrow:** Material, furnished by the Contractor, from a pit or other source.
- K. Borrow Unclassified Excavation:** Material, furnished by the State, from a pit or other source. The Contractor must use this material.

Section 120.3 – Page 74 – Delete the fifth paragraph and replace with the following:

The subgrade shall be finished to within minus 0.04 feet (13 mm) to plus 0.08 feet (25 mm) from the design grade and typical section shown in the plans and to within ± 0.5 percent of the typical section cross slope. The quarter crown within any 12 foot (3.6 m) transverse length shall not exceed 0.04 feet (13 mm) when measured with a straight edge, stringline, or by other suitable equipment.

Section 120.3 B.3.a – Page 77 – Delete the fifth paragraph and replace with the following:

Density shall be determined in accordance with SD 105 (AASHTO T 191), SD 106, or SD 114 (AASHTO T 310).

Section 120.3 B.3.a – Page 78 – Add the following sentence to the end of the second to last paragraph:

If the material does not contain enough fines to allow for conventional density testing (SD 105 or SD 106), the material shall be compacted as specified for A-2-4(0) and A-3 soils.

Section 120.4 – Page 79 – Add the following to the end of this Section:

- I. Borrow Unclassified Excavation:** Borrow unclassified excavation will be measured in its original position by cross sectioning. Volumes will be computed in cubic yards (cubic meters) by the average end area method.

Original cross sections will be taken prior to removal of any material and final sections will be taken following replacement of topsoil. Salvaged topsoil which is stockpiled from the borrow sources will be included as borrow unclassified excavation.

The quantity of topsoil stockpiled and respread on borrow sources will be determined by measuring the stockpiles prior to removal of the material from the stockpiles.

Section 120.5 – Page 81 – Add the following to the end of this Section:

- I. Borrow Unclassified Excavation:** Borrow unclassified excavation will be paid for at the contract unit price per cubic yard (cubic meter). Payment will be full compensation for excavation and furnishing the material on the project, construction and compaction of embankments, shaping of slopes, finishing of surface, completion of subgrade, shoulders, and roadway, and maintenance, and for furnishing materials (except topsoil), labor, and incidentals required for restoration of the pit.

Topsoil which is stockpiled from the borrow source will be respread and paid for at the contract unit price per cubic yard (cubic meter) of borrow unclassified excavation and placing topsoil.

Section 120.5 F – Page 82 – Delete the last sentence and replace with the following:

Topsoil, seed, fertilizer and mulch for the restoration of the pit shall be incidental to the unit price per cubic yard (cubic meter) of contractor furnished borrow.

Section 210.3 – Page 85 – Delete the second to last paragraph and replace with the following:

The subgrade shall be finished to within minus 0.04 feet (13 mm) to plus 0.08 feet (25 mm) from the design grade and typical section shown in the plans and to within ± 0.5 percent of the typical section cross slope. The quarter crown within any 12 foot (3.6 m) transverse length shall not exceed 0.04 feet (13 mm) when measured with a straight edge, stringline, or by other suitable equipment.

Section 260.3 A – Page 93 - Delete the first paragraph and replace with the following:

A. Subbase and Base Course: Roadway shaping shall be performed in accordance with Section 210.3 B prior to placement of the material.

Section 260.3 A – Page 94 - Delete the last paragraph and replace with the following:

Recycled Portland cement concrete pavement used as a granular base material shall not be used for Base Course, Salvaged Base Course, or in areas where drainage fabric, edge drains, or other similar drainage systems are present.

Section 270.1 – Page 97 – Delete and replace with the following:

270.1 DESCRIPTION

This work consists of salvaging, processing or crushing, and stockpiling salvaged material from the existing roadway. Salvaged material shall consist of granular material, asphalt concrete mix material, or asphalt mix and granular base material.

Section 270.2 – Page 97 – Delete this section and replace with the following:

270.2 MATERIALS

The salvaged material shall be processed or crushed to provide material meeting the following gradation.

<u>Sieve Size</u>	<u>% Passing</u>
1 ½ inch (37.5 mm)	100
1 inch (25.0 mm)	95-100

Section 270.3 – Page 97 – Delete and replace with the following:

270.3 CONSTRUCTION REQUIREMENTS

A. Salvage and Stockpile Granular Material or Asphalt Mix and Granular Base Material:

- 1. Salvaging:** The salvaged material shall be moved and loaded in a manner that minimizes waste and avoids contamination of the salvage material with underlying subgrade soil. Scrapers shall not be used for the removing or loading operations, but may be used to haul the material. Salvaging of material shall not exceed two miles (3.2 kilometers) in advance of the grading operation, unless otherwise directed. The material shall be moved toward the center of the road, to the extent necessary to ensure that salvage material is not lost down inslopes.
- 2. Processing:** Processing and blending may be accomplished in place, provided the Contractor's method meets the blending and gradation requirements and has positive depth control.

3. **Stockpiling:** Asphalt concrete mix and granular material shall be processed or crushed and stockpiled together so that a uniform blend is obtained. The salvaged material may be stockpiled at contractor provided sites. Prior to stockpiling, the stockpile site shall be prepared by removal of the top six inches (150 mm) of topsoil and the area bladed smooth.

B. Salvage and Stockpile Asphalt Mix Material:

1. **Salvaging:** The salvaged material shall be moved and loaded in a manner that minimizes waste and avoids contamination of the salvage material. Scrapers shall not be used for the removing or loading operations, but may be used to haul the material. Salvaging of material shall not exceed two miles (3.2 kilometers) in advance of the grading operation, unless otherwise directed. The material shall be moved toward the center of the road, to the extent necessary to ensure that salvage material is not lost down inslopes.
2. **Stockpiling:** Salvaged asphalt mix material shall be processed or crushed and stockpiled so that a uniform blend is obtained. Prior to stockpiling, the stockpile site shall be prepared by removal of the top six inches (150 mm) of topsoil and the area bladed smooth. Stockpiles shall be constructed in accordance with Section 320. The stockpiles shall not contain dirt, grease, oil, brick, paving fabric, clay balls, organic debris, and other foreign material.

Section 270.4 – Page 97 – Delete and replace with the following:

270.4 METHOD OF MEASUREMENT

Salvage and stockpile granular material, salvage and stockpile asphalt mix and granular base material, and salvage and stockpile asphalt mix material will be measured to the nearest 0.1 ton (0.1 metric ton) or 0.1 cubic yard (0.1 cubic meter) at the time it is hauled to the road.

When less than 5000 tons (4500 metric tons) of salvaged material is generated on a project, the material may be measured in a stockpile and converted to tons (metric tons) using a factor of 1.5 tons per Cu. Yd. (1.78 metric tons per cubic meter), in lieu of weighing the material.

Alternate measurement techniques may be allowed if agreed upon by the Contractor and Engineer prior to salvaging operations commencing.

Material stockpiled for future use will be measured in the stockpile and converted to tons (metric tons) using a factor of 1.50 tons per Cu. Yd. (1.78 metric tons per cubic meter).

The unclassified excavation quantities will not be increased or decreased to reflect whether salvaged material was taken from cut or fill sections.

Section 270.5 – Page 97 – Delete and replace with the following:

270.5 BASIS OF PAYMENT

Salvage and stockpile granular material, salvage and stockpile asphalt mix and granular base material, and salvage and stockpile asphalt mix material will be paid for at the contract unit price per ton (metric ton) or cubic yard (cubic meter). Payment will be full compensation for work required to salvage, haul, process or crush, and stockpile the material.

Removal of this material is included in and paid for under the item of unclassified excavation.

Section 280.2 – Page 99 – Delete this section and replace with the following:

280.2 MATERIALS

The asphalt mix and granular material shall be processed to provide material meeting the following gradation.

<u>Sieve Size</u>	<u>% Passing</u>
1 ½ inch (37.5 mm)	100
1 inch (25.0 mm)	95-100

Section 320.3 B.1 – Page 103 – Delete the first sentence of the fourth paragraph and replace with the following:

Burner fuel used for production of asphalt concrete shall be propane, butane, natural gas, Grade 1 fuel oil, Grade 2 fuel oil, Grade 4 fuel oil, Grade 4 (light) fuel oil, Grade 5 (light or heavy) fuel oil, or Grade 6 fuel oil.

Section 320.3 B.1 – Page 103 – Add the following to the end of the seventh paragraph:

An accurate thermometer must be installed in the tank so the temperature can be monitored.

Section 320.3 B.4 – Page 104 – Delete the third sentence of the first paragraph.

Section 320.3 B.4 – Page 105 – Delete the last sentence of the third paragraph and replace with the following:

The system shall be capable of manually controlling the transverse slope and the screed height.

Section 320.3 B.5 – Page 105 – Delete the last sentence of the first paragraph and replace with the following:

The rollers shall be capable of being reversed smoothly, without shoving or tearing the asphalt concrete.

Section 320.3 C.3.d – Page 106 – Delete and replace with the following:

- d. A one-gallon (four liter) sample of asphalt binder intended for use shall be obtained from the designated supplier for the project.

Section 320.3 D – Page 107 – Delete the last sentence of the fifth paragraph and replace with the following:

A water spray system must be installed at the discharge end of the pug mill. This water system must be used when directed by the Engineer to prevent fugitive lime dust from being released into the air.

Section 320.3 E – Page 107 – Add the following after the fourth sentence in the first paragraph:

No material shall be used which could adversely affect the asphalt concrete.

Section 320.3 F – Page 107 – Add the following new paragraph after the first paragraph:

Surfaces which have been primed with cutback asphalt shall be allowed to cure for a minimum of 72 hours prior to being covered.

Section 320.3 F – Page 107 – Add the following to the end of the third paragraph:

In lieu of a self-propelled paver, asphalt concrete may be placed by a shouldering machine on shoulders less than 6 feet (2 m) in width.

Section 320.3 F – Page 110 – Delete the first paragraph at the top of Page 110 and replace with the following:

Irregularities shall be corrected before the temperature of the asphalt mix drops below 175° F (80° C). The longitudinal profile can only be improved by using a grinder with diamond blades mounted on a horizontal shaft and when approved by the Engineer. Areas that have been ground shall not be left smooth or polished, but shall have a uniform texture equal in roughness to the surrounding unground asphalt concrete. Grinding shall be daylighted to the outside edge of the pavement. Ground surfaces shall be flushed sealed. Under no circumstances shall operations continue when it becomes evident final rolling is not producing a smooth, uniform, compacted surface free from roller marks and other irregularities.

Section 320.4 A – Page 111 – Add the following after the first sentence:

Quantities of asphalt binder in excess of the asphalt content listed on the job mix formula plus 0.3% tolerance will not be accepted for payment.

Section 320.4 B – Page 111 – Delete the last two sentences of the first paragraph and replace with the following:

The mixture of mineral aggregate, asphalt binder, and hydrated lime, when required, will be weighed after mixing. No deduction will be made for the weight of the asphalt binder or hydrated lime, when required, included in the mixture.

Section 320.4 E – Page 112 – Add the following after the first sentence:

Quantities of hydrated lime in excess of the lime content listed on the job mix formula plus 0.1% tolerance will not be accepted for payment.

Section 320.5 C – Page 112 – Add the following sentence to the end of the paragraph:

Payment will be full compensation for all labor, equipment, materials, and all other items incidental to sampling and repair of the sample locations to the satisfaction of the Engineer.

Section 321.3 B – Page 113 – Delete and replace with the following:

B. Density: The minimum density requirement shall be 92 percent of the maximum specific gravity of the test specimens prepared in the field in accordance with SD 312. The compacted density of asphalt concrete shall be determined according to SD 311.

Section 324.5 – Page 115 and 116 – Delete the last sentence and replace with the following:

When required, the following shall also be included in the contract unit price per ton (metric ton) for Asphalt Concrete Composite: Asphalt for Prime MC-70, Blotting Sand for Prime, Asphalt for Flush Seal SS-1h or CSS-1h, Sand for Flush seal, Hydrated Lime, equipment, labor and incidentals necessary.

Section 330.2 – Page 121 – Add the following to the end of this section:

D. Sand for Fog Seal: Section 879

Section 330.3 A.2.b – Page 121 – Add the following paragraph after the second paragraph:

Surfaces primed with cutback asphalt shall be allowed to cure for a minimum of 72 hours prior to being overlaid with asphalt concrete.

Section 330.3 F – Page 123 – Delete the first sentence of the fourth paragraph and replace with the following:

When applying fog seal coats, a light application of sand may be ordered by the Engineer to prevent material pickup.

Section 330.4 – Page 124 – Add the following to the end of this section:

D. Sand for Fog Seal: Sand for fog seal will be measured to the nearest 0.1 ton (0.1 metric ton).

Section 330.5 – Page 124 – Add the following to the end of this section:

D. Sand for Fog Seal: Sand for fog seal will be paid for at the contract unit price per ton (metric ton) complete in place. Payment will be full compensation for furnishing, installing, and all incidentals required to complete the work.

Section 332.2 – Page 125 – Delete this section and replace with the following:

332.2 MATERIALS

The material produced by cold milling shall be processed or crushed to provide material meeting the following requirements.

<u>Sieve Size</u>	<u>% Passing</u>
1 ½ inch (37.5 mm)	100
1 inch (25.0 mm)	95-100

Cold milled asphalt concrete material used in hot mixed asphalt as recycled asphalt pavement (RAP) shall have the 1 inch sieve size requirement waived.

Section 332.3 B – Page 125 – Delete the first paragraph and replace with the following:

- B. Equipment:** The equipment for cold milling shall consist of a rotating drum equipped with teeth capable of removing material to a depth of up to three inches (75 mm) in one pass, producing a uniform surface finish.

Section 332.3 C – Page 125 – Delete the last paragraph of this section on page 126 and replace with the following:

When traffic will be exposed to the milled surface, all cold milling asphalt concrete shall be accomplished on one-half of the roadway at a time. The Contractor shall schedule the cold milling asphalt concrete operations so that there are no drop offs, uneven lanes, or windrows of milled material remaining on the roadway overnight. At the end of the day the Contractor shall place cold milled asphalt concrete material to provide temporary ramps as a transition onto or off of the milled surface and the project limits, bridge approaches, and intersecting roads. The resultant transition shall be of sufficient length to provide a slope no steeper than 20:1.

- 1. Cold Milling Asphalt Concrete and Placing Cold Milled Material:** Some areas of the shoulder may require the movement of cold milled asphalt concrete material either ahead or back to achieve the required cross section. No separate payment will be made for the movement of this material.

Material placed on the shoulders shall be compacted according to Section 260.3 B of the Standard Specifications except that a pneumatic tired roller with an effective roller weight of at least 250 pounds per inch (4.5 kilograms per mm) of roller width will be required.

- 2. Cold Milling Asphalt Concrete:** Loose material resulting from the milling shall be immediately picked up, hauled to the stockpile site(s), and stockpiled. Prior to allowing traffic on the milled surface, the surface shall be thoroughly broomed free of remaining loose material.

Cold milled asphalt concrete material shall be processed or crushed and stockpiled so that a uniform blend is obtained. Prior to stockpiling, the stockpile site shall be prepared by removal of the top six inches (150 mm) of topsoil and the area bladed smooth. Stockpiles shall be constructed in accordance with Section 320. The stockpiles shall not contain dirt, grease, oil, brick, paving fabric, clay balls, organic debris, and other foreign material

Section 332.4 – Page 126 – Delete and replace with the following:

332.4 METHOD OF MEASUREMENT

- A. Cold Milling Asphalt Concrete and Placing Cold Milled Material:** Cold Milling Asphalt Concrete and Placing Cold Milled Material will not be measured. Plans quantity will be used. If changes from the plans quantity are ordered these areas will be measured and the plans quantity will be appropriately adjusted.
- B. Cold Milling Asphalt Concrete:** Cold milling Asphalt Concrete will not be measured. Plans quantity will be used. If changes from the plans quantity are ordered these areas will be measured and the plans quantity will be appropriately adjusted.

Section 332.5 – Page 126 – Delete and replace with the following:

332.5 BASIS OF PAYMENT

- A. Cold Milling Asphalt Concrete and Placing Cold Milled Material:** Cold Milling Asphalt Concrete and Placing Cold Milled Material will be paid for at the contract unit price per square yard (square meter) or as indicated in the plans. Payment will be full compensation for the removal of grass, weeds, topsoil, etc. from the placement location, milling, removing, placing, and compaction of the cold milled material and the brooming, equipment, labor, and all incidentals required.
- B. Cold Milling Asphalt Concrete:** Cold Milling Asphalt Concrete will be paid for at the contract unit price per square yard (square meter) or as indicated in the plans. Payment will be full compensation for milling, removing, hauling, stockpiling, processing or crushing the cold milled material, brooming, equipment, labor, and all incidentals required.

Section 350.2 – Page 127 – Delete this section and replace with the following:

The sealant shall conform to the requirements of ASTM D-6690 Type IV.

The sealant material shall have a unit weight no greater than 9.35 lbs./gal (1124 kilograms per cubic meter).

Only products that meet the above requirements and have performed satisfactorily based on Department analysis may be used. A listing of acceptable products meeting ASTM D-6690 Type IV requirements may be obtained from the Department's Approved Products List. Products on the Approved Products list for Joint Sealant for Asphalt Over Long Jointed Concrete Pavement may also be used.

The blocking medium shall be an inert, compressible material, which is compatible with the sealant.

Section 350.4 – Page 129 – Add the following sentence to this section:

Quantities of asphalt concrete crack sealing with a manufacturer's unit weight in excess of the specified unit weight will be reduced to the specified maximum unit weight prior to measurement for payment.

Section 360.3 A – Page 131 – Delete the minimum temperature and seasonal limitations table and replace with the following:

Minimum temperatures and seasonal limitations are as follows:

Cover Aggregates	Air and Surface Temp. (In the Shade and Rising)	Seasonal Limitations (Dates are Inclusive)
Type 1	70° F (21° C)	May 15 - Aug. 31
Type 2	70° F (21° C)	May 15 - Aug. 31
Type 3	70° F (21° C)	May 15 - Sept. 15

Section 360.3 B.3 – Page 131 – Delete the last sentence of this section:

Section 370.2 – Page 135 – Delete the first paragraph of this section and replace with the following:

The RAP material, after processing, shall meet the following gradation.

<u>Sieve Size</u>	<u>% Passing</u>
1 ¼ inch (31.5 mm)	100
1 inch (25.0 mm)	95-100

Section 380.2 – Page 139 – Add the following to the end of this section:

- L. Epoxy Resin Adhesive:** 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).

Section 380.3 B.1 – Page 140 – Delete the first paragraph on page 141 and replace with the following:

When automatic moisture sensing equipment is used for an aggregate component, the batch ticket shall show the percent of moisture for the aggregate component with moisture sensing equipment. The results of the most recent two hour moisture test shall be shown for aggregate components without moisture sensing equipment.

The W/C ratio shall be calculated using the following formula and rounded to the nearest 0.01:

$$W / C \text{ ratio} = \left[\frac{\text{weight of free water} + \text{weight of batch water}}{\text{weight of cement} + \text{weight of supplementary cementitious material}} \right]$$

weight of free water = (% total moisture in aggregate - % absorption of aggregate) x weight of aggregate

weight of batch water = total weight of water added to the batch of concrete either at the plant or in the truck

The weight of free water shall be calculated for both the fine aggregate and the coarse aggregate.

Section 380.3 D – Page 146 – Add the following paragraph to the end of this section:

The amount of batch water and aggregates added to the mix shall be adjusted accordingly using the results of the most recent two hour moisture tests. If automatic moisture sensing equipment is used, the Engineer may allow the use of the automatic moisture sensing results to make adjustments.

Section 380.3 E – Page 146 – Delete the second sentence and replace with the following:

Truck mixing will be permitted only when approved by the Engineer.

Section 380.3 E – Page 146 – Delete the fifth paragraph and replace with the following:

When a concrete batch is transported in a truck mixer or agitator and the batch is smaller than 60 percent of the rated capacity of the truck mixer or agitator, the following percentage of additional cementitious material at the same proportions as listed on the mix design shall be added to the batch:

Section 380.3 E – Page 146 – Delete the paragraph below the table at the top of page 147 and replace with the following:

The above provisions regarding additional cementitious material shall also apply to the mixing of small batches in central plants. Additional cementitious material will not be required when the small batch is mixed in a drum that is sufficiently coated with mortar to withstand the loss of cementitious material. Sufficient mortar coating, as determined by the Engineer, may include mortar coating the drum from a previously mixed batch during continuous mixing operations. Additional cementitious material will be required if more than 30 minutes has passed from the mixing of the previous batch, if the drum has been cleaned following the previous batch, or if the mortar coating the drum has been disturbed following the previous batch.

Section 380.3 E.2 – Page 147 – Delete the second sentence of the second paragraph and replace with the following:

When approved by the Engineer, additional water or cement may be added to the batch after completion of the original mixing, in which case the batch shall be mixed an additional 30 revolutions at mixing speed.

Section 380.3 L – Page 149 – Add the following sentence to the end of this section:

Epoxy coated dowel bars and tie bars shall meet the requirements of Section 480.3 A.

Section 380.3 M.2 – Page 151 – Delete the first sentence of the last paragraph and replace with the following:

The Contractor shall load test five percent of the first 500 tie bars that are drilled and epoxied in place.

Section 380.3 M.3 – Page 151 – Add the following paragraph to this section:

If a soft cut style saw is used, the soft cut shall remain approximately 1” (25mm) from the edges of the concrete slab to control spalling at the edge. Additionally if a soft cut is used, the Contractor shall complete the initial saw cut for the entire width and to the required depth before the end of the 72 hour curing period.

Section 380.3 M.4 – Page 151 – Delete the first sentence of the fourth paragraph and replace with the following:

If an uncontrolled crack develops within six feet (1.8 m) of the contraction joint, a minimum of six feet (1.8 m) of pavement removal and replacement will be required.

Section 380.3 N.6 – Page 153 – Delete this section and replace with the following:

6. **Final Finish:** Before the concrete has attained its initial set, the surface shall be given a final finish with a carpet drag drawn over the surface in a longitudinal direction. The drag shall be mounted on a bridge and shall be sized so that a strip of the carpet approximately two feet (600 mm) wide is in contact with the pavement surface while the drag is operated.

The condition of the drag shall be maintained so the resultant surface is of uniform appearance with corrugations approximately 1/16 inch (2 mm) in depth. Drags shall be maintained clean and free of encrusted mortar. Drags that cannot be cleaned shall be discarded and replaced.

The carpet shall meet the following requirements:

- Facing Material - Molded polyethylene pile face
- Blade Length - 7/8", ±1/8" (22 mm, ±3 mm)
- Total Fabric Weight - 70 oz. per square yard min.
(2.37 kg per square meter min.)

The backing shall be of a strong, durable material, not subject to rot, which is adequately bonded to the facing.

Plain Jointed concrete pavement shall be either longitudinally or transversely tined as specified in the plans.

Continuously reinforced concrete pavement shall be longitudinally tined.

Tining depth and spacing shall be determined according to SD 418.

- a. Transverse Tining:** Immediately following the carpet drag, the surface of the concrete pavement shall be given a transverse metal-tine finish with a separate self-propelled mechanical device. The metal-tine finish shall provide a groove width of 1/8" and a groove depth of 6/32 inch (5 mm) ± 2/32 inch (2 mm). The spacing between the individual tines shall meet the following:

Inches (ten foot tining rake)

2-5/16, 2-15/16, 1-1/4, 2-7/16, 2-1/16, 1-1/4, 13/16, 1, 1-5/16, 1-1/8, 2-5/16
 2-1/2, 2-7/8, 2-3/4, 1-1/8, 2-3/4, 2-1/8, 1-15/16, 13/16, 7/8, 2-5/8, 3-1/16
 3-1/16, 7/8, 9/16, 9/16, 1-5/8, 2-3/8, 1, 1-1/4, 1-9/16, 2-15/16, 1-1/8
 1-15/16, 2-3/16, 2, 2-13/16, 1, 2-11/16, 13/16, 1-7/8, 9/16, 2-5/16, 1-7/8
 2-1/2, 1-5/16, 3-3/16, 1-3/8, 15/16, 7/8, 1-5/8, 9/16, 1-3/4, 2-7/8, 3
 1-5/8, 1-5/8, 7/8, 9/16, 5/8, 2-13/16, 1-5/8, 2-7/16, 13/16, 1-1/4, 11/16
 2-3/4, 2-5/16, 1-1/8

Millimeters (3 meter tining rake)

58, 74, 31, 62, 53, 32, 21, 26, 33, 28, 59
 64, 73, 70, 29, 70, 54, 49, 20, 22, 67, 78
 77, 23, 15, 15, 41, 60, 25, 32, 39, 75, 28
 50, 55, 51, 72, 25, 69, 21, 47, 15, 59, 47
 64, 34, 55, 35, 24, 22, 42, 14, 45, 73, 76
 41, 41, 22, 15, 16, 71, 41, 62, 21, 31, 17
 70, 58, 29

Successive passes of the tining shall not overlap.

Each location, where transverse joint saw cuts are to be made, shall be protected from tining by covering with a metal strip from four inches (100 mm) to six inches (150 mm) or by other methods that produce acceptable results.

Brooming may be used on irregular areas in lieu of the carpet drag and tine finish. The broom shall be drawn transversely across the pavement with adjacent strokes slightly overlapping.

Brooming shall be uniform in appearance and shall produce grooves 1/16 inch (2 mm) deep. Texturing shall be completed while the concrete surface can be broomed without being torn or unduly roughened by the operation.

The finished surface shall be free from rough and porous areas, irregularities, and depressions resulting from improper handling of the broom.

- b. Longitudinal Tining:** Immediately following the carpet drag, the surface of the concrete pavement shall be given a longitudinal metal-tine finish with a wire broom or comb attached to a separate self-propelled mechanical device.

Transverse joints shall not be protected from longitudinal tining, the tining shall be continuous across the joints.

The slab shall not be tined within 3 inches of the edge of the slab, centerline, or rumblestrip.

The longitudinal tining equipment shall have the ability to be raised and lowered, and shall have vertical and horizontal string line controls to ensure straight grooves that are parallel to the longitudinal joint.

The curing unit shall be separate from the tining unit when longitudinal tining is used unless the tining and curing can be accomplished simultaneously with the same piece of equipment at the specified rate to the satisfaction of the Engineer.

The tine bar shall have a single row of tines and shall provide a groove width of 1/8 inch (3 mm) \pm 1/64 inch (0.4 mm) and a groove depth of 6/32 inch (5 mm) \pm 2/32 inch (2 mm). The spacing between the individual tines shall be uniformly spaced at 3/4 inch (20 mm) intervals.

Section 380.3 N.7 – Page 155 – Delete the first sentence of the first paragraph and replace with the following:

After the final finish, and while the concrete is still plastic, the edges of the pavement along each side of the slab, and on each side of transverse construction joints, shall be worked with an approved tool and rounded to the specified radius.

Section 380.3 O – Page 155 – Add the following two sentences to the beginning of this section:

The pavement surface shall be checked for deviations using either a ten foot (3 meter) straightedge or a profilograph (when specified). When the use of a profilograph is specified, the ten foot (3 meter) straightedge check may also be required in locations determined by the Engineer.

Section 380.3 O.2.c.2 – Page 157 – Delete the first paragraph and replace with the following:

Areas excluded from profilograph testing shall be shoulders, transitions, area within 50 feet (15 m) of existing pavement and bridges, existing curb and gutter sections, ramps, pavements on horizontal curves having a centerline radius less than 1,000 feet (300 m) and the superelevation transitions. Pavement sections not subject to profilograph testing shall meet the 10 foot (3 m) straight edge test requirements in Section 380.3 O.1.

Section 380.3 O.2.c.2 – Page 157 – Add the following to the end of the last paragraph:

Grinding shall be day lighted to the outside edge of the pavement.

Section 380.3 O.2.f.1 – Page 158 – Delete this section and replace with the following:

- 1) Satisfactorily correct deficient area by grinding with equipment meeting the requirements of Section 380.3 O.2.c.2.

Section 380.3 O.2.h – Page 158 – Delete the last paragraph of this section.

Section 380.3 R.2 – Page 161 – Delete the first sentence of the third paragraph and replace with the following:

The sealant surface shall be tooled to produce a slightly concave surface below the pavement surface.

Section 380.3 T – Page 162 – Add the following sentence after the first sentence in the second paragraph:

Equipment operated on a previously constructed pavement that has attained a compressive strength of at least 3000 psi (21 Mpa) but less than 4000 psi (28 Mpa) shall be tracked type equipment.

Section 390.2 B – Page 167 – Delete and replace with the following:

B. Concrete Patches: Concrete patching material shall be one of the following:

1. A packaged, dry, rapid-hardening cementitious mortar conforming to the requirements of ASTM C 928, Type R-3 containing no chloride ions.
2. A packaged, dry, rapid-hardening concrete materials conforming to the requirements of ASTM C 928, Type R-3 containing no chloride ions.
3. A patching material meeting the following requirements:
 - a. **Cement:** Cement shall be Type III conforming to Section 750.
 - b. **Air Entraining Admixtures:** Air entraining admixtures shall conform to Section 751.
 - c. **Water:** Water shall conform to Section 790.
 - d. **Fine Aggregate:** Fine aggregate shall conform to Section 800.
 - e. **Coarse Aggregate:** Coarse aggregate shall be crushed quarry stone, size five, conforming to Section 820.
 - f. **Curing Compound:** Curing compound shall conform to Section 821.
 - g. **Proportioning:** Materials for concrete patches shall be mixed at the following proportions:

Fine Aggregate.....165 lbs./bag (75 kg/bag) cement
 Coarse Aggregate.....165 lbs./bag (75 kg/bag) cement
 Cement (min)..... 8.0 bags/c. y.(10.5 bags/cubic meter) concrete
 Water (maximum).....5.0 gallon/bag (19 L/bag) cement

- h. **Air and Slump:** The slump and air shall conform to the following:

Air.....7% ± 2%
 Slump.....1-1/2" (40 mm) maximum

Section 391.2 A – Page 171 – Add the following paragraph to the end of this Section:

Alternate design mixes for the grout may be submitted to the Engineer for approval.

Section 392.2 A – Page 177 – Add the following paragraph to the end of this section:

Alternate jacking slurry design mixes may be submitted to the Engineer for approval.

Section 410.3 G.6 – Page 195 – Add the following section to the end of this section:

- g. The turn-of-nut method for bolt tightening may be used when specified in the plans. When the turn-of-nut installation method is specified, hardened washers are not required except as specified in Section 410.3 G.6.d.

A sufficient number of bolts shall first be placed in the joint and snugged to insure that all faying surfaces are in firm contact, prior to tightening. Snug tight is defined as the tightness attained by a few impacts of an impact wrench or the full effort of a man using an ordinary wrench. Bolts shall be placed in any remaining holes and snugged tight as erection bolts or pins are removed. All bolts in the joint shall then be tightened the amount shown in Table 2 progressing systematically from the center most rigid part of the joint to its free edges. When tightening, the element not turned shall be held with a hand wrench to prevent rotation.

Table 2 Nut Rotation from Snugged Condition^{a,b}			
Geometry of Outer Faces of Bolted Parts			
Bolt Length Measured From Underside of Head to End of Bolt	Both Faces Normal to Bolt Axis	One Face Normal to Bolt Axis and Other Face Sloped Not More Than 1:20, Bevel	Both Faces Sloped Not More Than 1:20 From Normal to Bolt Axis, Bevel Washers Not

		Washer Not Used	Used
Up to and including 4 diameters	1/3 turn	1/2 turn	2/3 turn
Over 4 diameters but not exceeding 8 diameters	1/2 turn	2/3 turn	5/6 turn
Over 8 diameters but not exceeding 12 diameters ^c	2/3 turn	5/6 turn	1 turn

^a Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance should be plus or minus 30 degrees; for bolts installed by 2/3 turn and more, the tolerance should be plus or minus 45 degrees.

^b Applicable only to connections in which all material within grip of the bolt is steel.

^c No research work has been performed by the Research Council Riveted and Bolted Structural Joints to establish the turn-of-nut procedure when bolt lengths exceed 12 diameters. Therefore, the required rotation must be determined by actual tests in a suitable tension device simulating the actual conditions.

Section 421.3 A – Page 213 – Delete the second sentence of the second paragraph and replace with the following:

Backfill shall be compacted to 95% or greater of Maximum Dry Density in horizontal layers not to exceed six inches (150 mm) loose depth.

Section 423.1 – Page 219 – Delete this section and replace with the following:

423.1 DESCRIPTION

This work consists of the design, construction, and subsequent removal of all temporary works including, but not limited to; falsework, formwork, cofferdams, work berms and platforms, temporary traffic and stream diversions, and temporary retaining structures.

Section 421.2 A – Page 213 – Delete the sieve analysis specification for the No. 200 (75 µm) sieve and replace with the following:

No. 200 (75 µm) 0 - 18.0

Section 421.2 B – Page 213 – Delete the sieve analysis specification for the No. 200 (75 µm) sieve and replace with the following:

No. 200 (75 µm) 0 - 10.0

Section 421.3 – Page 213 – Add the following to this section:

D. Extruded Insulation Board (Polystyrene): No equipment will be allowed on the uncovered insulation board. The backfill covering the insulation board shall be spread and compacted in such a manner that the equipment used shall be operated on a minimum of 6 inches (150 mm) of backfill material at all times.

Section 421.4 – Page 214 – Add the following to this section:

C. Extruded Insulation Board (Polystyrene): Extruded insulation board (polystyrene) will be measured to the nearest square yard (square meter).

Section 421.5 – Page 214 – Add the following to this section:

C. Extruded Insulation Board (Polystyrene): Extruded insulation board (polystyrene) will be paid for at the contract unit price per square yard (square meter). Payment shall be full compensation for labor, equipment, and incidentals to furnish and install the extruded insulation board (polystyrene).

Section 423.3 A – Page 219 – Add the following to the end of this section:

All temporary works in streams or wetlands are required to be covered in the Corp of Engineers 404 Permit. At the time of the preconstruction meeting, the Contractor shall submit documentation for all temporary works for the purpose of complying with the 404 Permit requirements. The documentation shall include at a minimum:

1. A written description of the proposed temporary works including types of materials to be used, how the temporary works will be installed, removed, and what portion, if any, will remain in place after construction.
2. Details showing approximate size and location of the temporary works. Details shall include at a minimum, a Plan View and a Cross-Section View of the temporary works. Details shall provide sufficient dimensions such that the approximate size of the temporary works and location of the temporary works from a known point is shown.
3. Estimated quantities of all temporary fill material below the ordinary high water elevation. If the temporary fill is to be placed in a wetland, the estimated quantity shall be the amount of wetland loss, (in acres).

If during the course of construction there is a need for additional temporary works, the documentation shall be submitted to the Engineer at that time.

The Engineer will submit the documentation to the Corp of Engineers for approval. No construction of temporary works below the ordinary high water mark or in wetlands may begin until Corp of Engineer approval is attained by the Engineer.

Section 423.3 B – Page 219 – Delete the first sentence and replace with the following two sentences:

Falsework plans and design calculations for bridges shall be prepared by an Engineer registered in the State of South Dakota. Three (3) copies of the falsework plans and design calculations shall be submitted to the Bridge Construction Engineer for review at least 30 days prior to construction of falsework.

Section 423.5 – Page 221 – Delete this section and replace with the following:

423.5 BASIS OF PAYMENT

No payment will be made for temporary works. All costs involved in designing, constructing, and removing temporary works shall be incidental to the other contract items.

Section 430.2 A. – Page 223 – Delete the last sentence of the second paragraph and replace with the following:

The percentage of material passing a No. 200 (75µm) sieve shall not exceed 2.0 percent.

Section 430.2 B – Page 223 – Delete this section and replace with the following:

B. Granular Bridge End Backfill: The granular bridge end backfill material shall conform to Section 882.

Section 430.3 C – Page 225 – Delete the second and third paragraphs and replace with the following:

Granular bridge end backfill shall not be placed until at least 24 hours after completion of the deck pour. In addition, granular bridge end backfill shall not be placed until the abutments and sills, including wingwalls, have attained full design strength.

Granular bridge end backfill shall be placed in loose lifts not to exceed eight inches (200 mm) and compacted to 97% of maximum dry density. The moisture at the time of compaction shall be within $\pm 4\%$ of optimum moisture. Maximum dry density and optimum moisture will be determined in accordance with SD 104.

Section 430.3 C.1 through 6 – Page 225 and 226 – Delete and replace with the following:

1. Each layer of granular bridge end backfill shall be placed in loose lifts not to exceed eight inches (200 mm). The placement and compaction of each layer must be inspected and approved by the Engineer prior to placement of the next layer.
2. Any equipment used to install the bridge end backfill over the geotextile fabric shall be operated in such a manner that the geotextile fabric is not damaged. To avoid damage to the geotextile fabric, the equipment used to place, spread, and compact the granular bridge end backfill over the geotextile fabric shall not be operated on less than six inches (150 mm) of material.

3. The geotextile fabric may be oriented in any direction. To minimize the horizontal deflection of the mechanically stabilized vertical face, it is extremely important to make sure that the geotextile fabric is taut and free of wrinkles during placement of the granular bridge end backfill.
4. Any geotextile fabric that is torn or punctured shall be repaired or replaced by the Contractor at no additional cost to the Department. The repair shall consist of a patch of the same type of geotextile fabric being placed over the ruptured area such that it overlaps the damaged area a minimum of 3 ft. (1 m) from any damaged edge. A sewn patch meeting the same requirements for seam strength as that of the fabric being repaired is allowed.
5. Seams that are perpendicular to face of the mechanically stabilized backfill may be constructed by overlapping the fabric a minimum of two feet (0.6 m). All other seams, as well as those in which the two foot (0.6 m) minimum overlap cannot be accomplished, shall be sewn. All seams shall be inspected by the Engineer and any deficient seams repaired by the Contractor prior to placement of the next layer of granular bridge end backfill. Geotextile fabric that is joined by sewn seams shall have strength properties at the seam equal to the specified strength requirements of the geotextile fabric. High strength polyester, polypropylene, or kevlar thread shall be used for sewn seams. Nylon threads shall not be used. The edges of the fabric shall be even and shall be completely penetrated by the stitch.
6. During periods of shipment and storage, the geotextile fabric shall be enclosed in a heavy duty opaque wrapping such that the fabric is protected from direct sunlight, ultraviolet rays, dirt or debris. The fabric shall not be subjected to temperatures greater than 140°F (60°C).

Section 430.5 B – Page 227 – Delete the second sentence and replace with the following:

Payment will be full compensation for all labor, equipment, materials, water, and all other items incidental to scarifying, reshaping and recompacting the area to be backfilled, furnishing and installing the polyethylene sheeting, drainage fabric, geotextile fabric, and furnishing, placing, and compacting the porous backfill and granular bridge end backfill to the limits shown on the plans.

Section 450.2 – Page 231 – Add the following to this section:

F. High Density Polyethylene Pipe: Section 990.

Section 450.3 C – Page 231 – Delete and replace with the following:

C. Polyethylene Pipe Culverts: Corrugated polyethylene pipe culverts and high density polyethylene pipe culverts shall be installed according to manufacturer instructions.

Section 450.3 G – Page 232 – Delete and replace with the following:

G. Backfill Above Bedding Grade: Moisture and density requirements for backfill shall be as specified in the plans and shall meet the requirements of Section 120. The backfill material shall be pre-moistened if necessary to obtain uniform moisture.

Selected embankment material shall be placed along the pipe in layers not exceeding six inches (150 mm) in depth and thoroughly compacted by mechanical compactors to the specified density before successive layers are placed. The width of the berms on each side of the pipe shall be twice as wide as the external diameter of the pipe or 12 feet (four meters), whichever is less. This method of backfilling shall be continued until the embankment is at least two feet (600 mm) over the top of the pipe.

In trench installations, backfill width shall be equal to trench width. The backfill shall be brought up evenly on both sides of the pipe for its full length. This method of backfilling shall be continued until the embankment is at least two feet (600 mm) over the top of the pipe.

Section 460.3 A – Page 235 – Delete the first paragraph of this section and replace with the following:

Concrete Quality and Proportion: The Contractor shall design and be responsible for the performance of all concrete mixes used in structures.

All mix designs and any modifications thereto, including changes in admixtures, shall be approved by the Concrete Engineer prior to use. Mix design data and test results shall be recorded on a DOT-24 and submitted to the Engineer.

The mix proportioning selected shall conform to the following requirements:

Section 460.3 A – Page 236 – Delete the second sentence in Note 1 under Table 1.

Section 460.3 A – Page 235 – Delete the second sentence of the first paragraph on page 236 and replace with the following:

The mix design shall be based upon obtaining an average concrete compressive strength 1200 psi above the specified minimum 28 day compressive strength.

Section 460.3 A – Page 235 – Delete the last sentence of the second paragraph on page 236 and replace with the following:

Trial batches shall be conducted in accordance with the American Concrete Institute Publication ACI 211.1, ACI 318, ASTM C192 and the following:

Section 460.3 A – Page 235 – Delete the first paragraph on page 237 and replace with the following:

Concrete mix designs previously used will be considered in compliance with the mix design requirements provided all of the following conditions are met:

Section 460.3 A – Page 235 – Delete the second sentence of item 3 on page 237 and replace with the following:

These test results and associated batch tickets shall be submitted to the Engineer.

Section 460.3 A – Page 235 – Add the following to the list of items on page 237:

4. All supporting information for the mix design including but not limited to, fresh concrete tests and material properties.

Section 460.3 A – Page 235 – Delete the last two paragraphs of this section on page 237:

Section 460.3 B.2 – Page 237 – Delete the last paragraph of this section on page 238 and replace with the following:

If the average compressive strength of the 28 day and the backup cylinder compressive strength is more than 500 psi (3.5 Mpa) below the specified 28 day compressive strength, the concrete represented by the cylinders shall be removed and replaced.

Section 460.3 B.3 – Page 238 – Delete the last paragraph of this section and replace with the following:

If the average core compressive strength is more than 500 psi (3.5 Mpa) below the specified 28 day compressive strength, the concrete represented by the cylinders shall be removed and replaced.

Section 460.3 B.4 – Page 238 – Delete the last paragraph of this section on page 239 and replace with the following:

If the average core compressive strength is more than 500 psi (3.5 Mpa) below the specified 28 day compressive strength, the concrete represented by the cylinders shall be removed and replaced.

Section 460.3 B.5 – Page 239 – Delete the first sentence and replace with the following:

If the Contractor utilizes the option to core as specified in Section 460.3 B.4, the Contractor shall arrange for an independent testing laboratory to perform the coring and compressive testing within 14 calendar days of notification of the failing compressive strength of the backup cylinder.

Section 460.3 B.5 – Page 239 – Delete the last sentence of the second paragraph.

Section 460.3 B.5.a – Page 239 – Delete this section and replace with the following.

- a. Include DOT project number, county, & PCN.

Section 460.3 C.1 – Page 240 – Add the following to the list of items to be included on the printed ticket on page 241:

W/C ratio

Aggregate Moistures (total moisture & absorption)

Section 460.3 C.1 – Page 240 – Add the following after the last paragraph of this section on page 241:

The W/C ratio shall be calculated using the following formula and rounded to the nearest 0.01:

$$W / C \text{ ratio} = \left[\frac{\text{weight of free water} + \text{weight of batch water}}{\text{weight of cement} + \text{weight of supplementary cementitious material}} \right]$$

weight of free water = (% total moisture in aggregate - % absorption of aggregate) x weight of aggregate

weight of batch water = total weight of water added to the batch of concrete either at the plant or in the truck

The weight of free water shall be calculated for both the fine aggregate and the coarse aggregate.

Section 460.3 D – Page 242 – Add the following to this section:

6. The amount of batch water and aggregates added to the mix shall be adjusted accordingly using the results of the most recent two hour moisture tests. If automatic moisture sensing equipment is used, the Engineer may allow the use of the automatic moisture sensing results to make adjustments.

Section 460.3 E – Page 243 – Delete the third paragraph and replace with the following:

When a concrete batch is transported in a truck mixer or agitator and the batch is smaller than 60 percent of the rated capacity of the truck mixer or agitator, the following percentage of additional cementitious material at the same proportions as listed on the mix design shall be added to the batch:

Section 460.3 E – Page 243 – Delete the paragraph below the table on the middle of page 243 and replace with the following:

The above provisions regarding additional cementitious material shall also apply to the mixing of small batches in central plants. Additional cementitious material will not be required when the small batch is mixed in a drum that is sufficiently coated with mortar to withstand the loss of cementitious material. Sufficient mortar coating, as determined by the Engineer, may include mortar coating the drum from a previously mixed batch during continuous mixing operations. Additional cementitious material will be required if more than 30 minutes has passed from the mixing of the previous batch, if the drum has been cleaned following the previous batch, or if the mortar coating the drum has been disturbed following the previous batch.

Section 460.3 K.1 – Page 247 – Delete and replace with the following:

1. The coarse aggregate piles must be flushed with water for a minimum of 24 hours.

Section 460.3 K – Page 248 – Delete the twelfth paragraph and replace with the following:

Barrier curbs will not be allowed to be placed with slipform paving equipment.

Section 460.3 M.4.c – Page 251 – Delete the second sentence of the first paragraph and replace with the following:

Tining depth and spacing shall be measured according to SD 418. The metal-tine finish shall provide a groove width of 1/8" and a groove depth of 6/32 inch (5 mm) ±2/32 inch (3 mm).

Section 465.2 A.3 – Page 265 – Add the following sentence to the end of the paragraph:

Slump loss shall be tested in accordance with SD 423.

Section 465.2 A.6 – Page 265 – Delete this section and replace with the following:

6. The mix design shall establish a maximum water cementitious material ratio for the concrete mix (never to exceed 0.44)

The use of a water reducer will be required to achieve the above properties. Water reducers conforming to AASHTO M194 Type C (Accelerating) and Type E (Water-Reducing and Accelerating) will not be permitted.

Section 480.3 C.1 – Page 280 – Delete the fifth paragraph and replace with the following:

Welding of reinforcing steel shall not be allowed without written approval of the Bridge Construction Engineer. The request for approval shall list the bars to be welded, welding procedure, type of electrode, joint detail, and mill certificate of the reinforcing steel to be welded.

Section 480.4 – Page 281 and 282 – Delete the English and Metric Bar Designation tables and replace with the following:

Bar Designation

Size (English)	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	No. 11	No. 14	No. 18
Weight (lb/ft)	0.376	0.668	1.043	1.502	2.044	2.670	3.400	4.303	5.313	7.65	13.60
Size (Metric)	10	13	16	19	22	25	29	32	36	43	57
Weight (kg/m)	0.560	0.994	1.552	2.235	3.042	3.973	5.060	6.404	7.907	11.38	20.24

Section 550.3 A.2 – Page 303 – Delete the second sentence of the last paragraph and replace with the following:

When backfilling extra depth holes in accordance with Section 550.3 C.1.f.2, a grout admixture shall be added to the grout mixture in accordance with the manufacturer’s recommendations.

Section 550.3 C.1.b – Page 305 – Delete the third sentence of the first paragraph and replace with the following:

After completion of the Type 1A removal, the Engineer will inspect the deck and mark remaining areas of unsound existing overlay.

Section 550.3 C.1.c – Page 306 – Delete and replace with the following:

- c. Type 1B Removal areas will be determined after Type 1A Removal (or Type 2A Removal if specified) has been accomplished. Type 1B Removal shall consist of removing delaminated or unsound concrete by chipping below the Type 1A Removal (or Type 2A Removal if specified) and extending down to the top of the top bar in the top mat of reinforcing steel. Concrete removed below the top of the top bar incidental to Type 1B Removal will be considered a part of the Type 1B Removal.

Section 550.3 C.1.f.2 – Page 306 – Delete the first sentence and replace with the following:

Backfill of Extra Depth Holes: When Type 1D removal is necessary, or when holes deeper than 4” (100mm) below the top of the scarified surface are encountered, they shall be backfilled as follows:

Section 550.3 D.2 – Page 309 – Delete the fourth paragraph and replace with the following:

Concrete placement will not be permitted after October 1 or before May 1 or when the air temperature is above 85°F (29°C) in the shade. It may be necessary to place concrete during evening or early morning hours and not during periods of low humidity and high wind to comply with this requirement.

Section 550.3 E – Page 310 – Delete and replace with the following:

- E. **Proportioning and Mixing Concrete Materials:** Proportioning and mixing shall conform to Section 460.3 F.

Section 560.2 A – Page 317 – Add the following:

- 6. **Cement:** Section 750. Type II cement shall be used, unless otherwise specified.

Section 560.3 A – Page 317 – Add the following paragraph after the first paragraph:

Precast concrete drop inlets shall conform to the requirements of Section 670.

Section 560.3 A.1 – Page 317 – Delete and replace with the following:

1. **Fabrication:** The Fabricator shall notify the Area Engineer prior to the fabrication of precast and prestressed concrete items.

Section 560.3 A.2 – Page 317 – Delete the last sentence of the first paragraph and replace with the following:

When a plant has been in operation and satisfactorily producing material, the Contractor will not be required to submit a concrete mix design for precast concrete, unless changes have been made to the pre-approved mix design or the material used in the mix design. Concrete mix designs shall be submitted for each project on all prestressed concrete products.

Section 560.3 B.1 – Page 319 – Delete the second sentence of the fifth paragraph and replace with the following:

A checked design includes the design calculations and check design calculations performed by an independent Engineer registered in the State of South Dakota.

Section 560.3 B.2.b – Page 321 – Delete the second paragraph and replace with the following:

Acceptance of the precast units shall be in accordance with Section 460.3 B except that the fabricator shall be responsible for the sampling, preparing, and properly curing of all concrete cylinders for concrete compressive strength in accordance with the Materials Manual. The precast units will be accepted when the minimum design concrete compressive strength requirements have been met. Accepted precast units represented by that test group of cylinders may be delivered to the project and will not require the 28 day cylinder test.

Section 600.2 A.17 – Page 333 – Add the following sentence at the end of the paragraph:

The concrete pad must be securely mounted and solidly supported under the laboratory to minimize vibration while operating the Marshall compactor.

Section 600.3 – Page 336 – Delete the fourth and fifth sentence and replace with the following:

On projects that a Type III lab is required, the Engineer may allow a Type I or II lab to be supplied until such a time the Engineer determines the Type III lab is required. If the Engineer allows a temporary Type I or II lab to be furnished, no additional payment for that lab will be made.

Section 605.3 C – Page 339 – Delete the third sentence of the first paragraph and replace with the following:

If fly ash is used, the minimum amount of cement to be replaced is 15 percent and the maximum amount is 20 percent at a 1:1 ratio by weight.

Section 630.4 A – Page 355 – Delete this section and replace with the following:

- A. **Beam Guardrail:** Each class and type will be measured to the nearest 0.1 foot (0.1 meter) along the centerline of the rail. The length in feet (meters) shall be the overall length center to center of end posts or to connections with bridges.

Section 630.4 C – Page 355 – Delete this section and replace with the following:

- C. **Remove Beam Guardrail:** Remove Beam Guardrail will be measured to the nearest 0.1 foot (0.1 meter) along the centerline of the rail.

Section 630.5 A – Page 355 – Delete this section and replace with the following:

- A. **Beam Guardrail:** Beam guardrail will be paid for at the contract unit price per 0.1 foot (0.1 meter) for each class and type installed. Payment will be full compensation for labor, materials, equipment, and incidentals required.

Section 630.5 C – Page 356 – Delete this section and replace with the following:

- C. **Remove Beam Guardrail:** Remove Beam Guardrail will be paid for at the contract unit price per 0.1 foot (0.1 meter). Payment will be full compensation for the backfill of holes and the removal of the guardrail including end terminals, beam guardrail, posts, blocks, and hardware from the project limits.

Section 632.3 H.2.c – Page 361 – Delete and replace with the following:

- c. Anchor bolts shall be provided with leveling nuts, top nuts, and jam nuts. Anchor bolts shall be tightened in accordance with Section 635.3 F.

Section 633.3 D – Page 368 – In the grooving tolerance tables, replace “Depth of Groove” with the following:

Depth of Groove	(English) 80 mils	+ 10 mils
Depth of Groove	(Metric) 2.032 mm	+ 0.25 mm

Section 634.3 A – Page 372 – Delete the first sentence of the fourth paragraph and replace with the following:

All workers within the right of way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel intended to provide conspicuity during both daytime and nighttime usage, and meeting the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled “American National Standard for High-Visibility Safety Apparel and Headwear”.

Section 634.3 A – Page 372 – Delete the first sentence of the fifth paragraph.

Section 634.3 C – Page 374 – Add the following paragraph after the first paragraph:

For 2 lane roadways with average daily traffic volumes of 2500 or less, no passing zones may be identified using DO NOT PASS, PASS WITH CARE, and NO PASSING ZONE signs rather than pavement markings. The DO NOT PASS and NO PASSING ZONE signs shall be used to mark the beginning of each no passing zone, and the PASS WITH CARE signs to mark the end of each zone. These may be utilized in place of the pavement markings normally used to identify no passing zones for no longer than 2 weeks. The placement of the dashed centerline marking and these signs shall be required prior to nightfall.

Section 635.3 C.3 – Page 380 – Add the following sentence at the end of the first paragraph:

The contractor shall not use a machine requiring flowing water for installation of conduit under streets or roadways unless approved by the Engineer.

Section 635.3 F – Page 381 – Delete and replace with the following:

- F. **Anchor Bolts:** Anchor bolts shall be installed in accordance with the following requirements.
 - 1. **General:** Anchor bolts shall be provided with leveling nuts and top nuts. Anchor bolts for light towers shall be provided with leveling nuts, top nuts, and jam nuts.
 - 2. **Anchor Bolt Installation:** A steel template shall be used to accurately locate and hold the anchor bolts plumb and in proper alignment. This template shall be in place during placement of the concrete base and shall remain in place a minimum of 24 hours after the concrete placement has been completed. Out of position anchor bolts and anchor bolts greater than 1:40 out-of-plumb are cause for rejection of the base. Bending of the anchor bolts to straighten or move into position, or alterations of the pole base plate will not be permitted.
 - 3. **Anchor Bolt Tightening:**
 - a. All leveling nuts (bottom nuts) shall be brought to full bearing on the bottom of the base plate. The bottom of the leveling nuts must be kept as close to the concrete base as practical, and shall not be more than one inch above the top of the concrete base. Leveling nuts must be threaded onto the anchor bolt to provide at least ¼ inch (6 mm) projection of the bolt above the top nut or jam nut if required when in its tightened position.
 - b. A softened beeswax or equivalent shall be applied to the top nut bearing face and top nut internal threads prior to placement on the anchor bolt. All top nuts shall be tightened to a snug tight condition. Snug tight

is defined as the tightness attained by the full effort of a person using a wrench with a length equal to 14 times the diameter of the anchor bolt, except the minimum length shall be 18 inches. The use of adjustable wrenches will not be allowed. The full effort required to achieve a snug tight condition, shall be applied as close to the end of the wrench as possible. Pull firmly by leaning back and using full body weight (brace feet to prevent slipping) on the end of the wrench until the nut stops rotating. This snug tightening shall be accomplished in a minimum of two separate passes of tightening. The sequence of tightening in each pass shall be such that the opposite side nut, to the extent possible, shall be subsequently tightened until all the nuts in that pass have been snugged.

Snug tightness of both the top and leveling nuts shall be checked in the presence of Department personnel after the Contractor has completed nut snugging as described above, but prior to final tightening. Snug tightness of the nuts (top and leveling) shall be checked by applying a torque in a range from 20% to 30% of the verification torque. See Table 1 for verification and snug tight torque values.

Table 1

Anchor Bolt Tightening

Anchor Bolt Diameter (in)	Anchor Bolt Stress Area (sq in)	Yield Strength (ksi)	Minimum Tensile Strength (ksi)	Verification Torque (ft-lbs)	30% Snug Tight Torque (ft-lbs)	20% Snug Tight Torque (ft-lbs)
1.00	0.61	36.0	58.0	177	53	35
1.25	0.97	36.0	58.0	351	105	70
1.50	1.41	36.0	58.0	613	184	123
1.75	1.90	36.0	58.0	964	289	193
2.00	2.50	36.0	58.0	1449	435	290
2.25	3.25	36.0	58.0	2120	636	424
2.50	4.00	36.0	58.0	2899	870	580
2.75	4.93	36.0	58.0	3930	1179	786
3.00	5.97	36.0	58.0	5192	1558	1038
1.00	0.61	55.0	75.0	274	82	55
1.25	0.97	55.0	75.0	545	163	109
1.50	1.41	55.0	75.0	951	285	190
1.75	1.90	55.0	75.0	1496	449	299
2.00	2.50	55.0	75.0	2249	675	450
2.25	3.25	55.0	75.0	3289	987	658
2.50	4.00	55.0	75.0	4498	1349	900
2.75	4.93	55.0	75.0	6098	1830	1220
3.00	5.97	55.0	75.0	8056	2417	1611
1.00	0.61	75.0	100.0	366	110	73
1.25	0.97	75.0	100.0	726	218	145
1.50	1.41	75.0	100.0	1268	381	254
1.75	1.90	75.0	100.0	1994	598	399
2.00	2.50	75.0	100.0	2999	900	600
2.25	3.25	75.0	100.0	4386	1316	877
2.50	4.00	75.0	100.0	5998	1799	1200
2.75	4.93	75.0	100.0	8131	2439	1626
3.00	5.97	75.0	100.0	10742	3223	2148
1.00	0.61	105.0	125.0	457	137	91
1.25	0.97	105.0	125.0	908	272	182
1.50	1.41	105.0	125.0	1586	476	317
1.75	1.90	105.0	125.0	2493	748	499
2.00	2.50	105.0	125.0	3749	1125	750
2.25	3.25	105.0	125.0	5482	1645	1096
2.50	4.00	105.0	125.0	7497	2249	1499
2.75	4.93	105.0	125.0	10164	3049	2033

3.00	5.97	105.0	125.0	13427	4028	2685
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- c. At this point, the top nut and leveling nut must be in full bearing on the base plate. If any gap exists between either nut (top or leveling) and the base plate, a beveled washer shall be added between the nut washer and the base plate to eliminate the gap. The beveled washer shall be stainless steel Type 304, the same diameter as the hardened washer, and beveled as required to eliminate the gap between the nut and the base plate. All nuts shall be retightened according to steps (a) and (b) above if beveled washers are added. All costs required to remove and re-erect the structure to install beveled stainless steel washers shall be at the Contractor's expense.
- d. Using a hydraulic wrench rotate all top nuts as indicated in Table 2. The additional turn of the nuts shall be accomplished by tightening all the nuts in two separate passes of equal incremental turns (i.e., for 1/3 turn use 1/6 turn each pass). The sequence of nut tightening in each pass shall be such that the opposite side nut, to the extent possible, shall be subsequently tightened until all the nuts in that pass have been turned. There shall be no rotation of the leveling nut during top nut tightening.

In lieu of a hydraulic wrench, torque wrenches and multipliers may be used to achieve the desired nut rotations and tightness.

- e. Tightness of the nuts shall be checked in the presence of Department personnel. Tightness of the nuts shall be checked within a minimum of 48 hours and a maximum of 96 hours after the nuts have been rotated as indicated in Section 635.3 F.3.d above. Tightness of the top nuts shall be checked by applying the verification torque to the nut. See Table 1 for verification torque.

Table 2

Nut Rotation for Turn-Of-Nut Pretensioning

Anchor Rod Diameter (in)*	Nut Rotation from Snug-Tight Condition a, b	
	F1554 Grade 36, A307	F1554 Grade 55 and 105, A449
< 1 ½	1/6 Turn	1/3 Turn
≥ 1 ½	1/12 Turn	1/6 Turn
a. Nut rotation is relative to anchor rod. The tolerance is plus 20 degrees		
b. Applicable only to double-nut-movement joints.		

Bottom leveling nuts shall be in contact with the base prior to applying the torque. An inability to achieve the verification torque indicates that the threads have stripped and the anchor bolt must be replaced. All costs for replacing anchor bolts shall be at the Contractor's expense.

- f. Install jam nut after verification torque has been applied to top nut. Lubricate threads of jam nut with beeswax or equivalent and tighten to a torque of 100 ft-lb (approximated without the use of a torque wrench).

Section 635.3 H – Page 382 – Delete the first paragraph and replace with the following:

Traffic signal conductors shall be continuous from the controller cabinets to the pole bases. Splicing of conductors will not be allowed in the junction boxes.

Section 635.3 Q.3 – Page 384 – Delete and replace with the following:

- 3. **Preformed Loops:** Each set of loop wires shall be tagged to identify loop. If installation of the loop is for future use the loop wires in the same lane shall be taped together. If installation is on a signal project, tagging shall be done and wires connected in series.

In new roadways, the preformed loops and lead-in conduits shall be placed in the base course, with the top of the conduit flush with the top of the base, and then covered with hot mix asphalt or Portland cement concrete pavement. Preformed loops and lead-in conduits shall be protected from damage prior to and during pavement placement.

In new reinforced concrete structure decks, the preformed loops shall be secured to the top of the uppermost layer of reinforcing steel using nylon wire ties. The loop shall be held parallel to the structure deck by using PVC or polypropylene spacers where necessary. Conduit for lead-in conductors shall be placed below the upper mat of reinforcing steel.

In existing pavement, the preformed loops shall be placed in a saw slot, 1-1/4 inches minimum width, cut into the existing pavement. The top of the conduit shall be 2 inches, minimum, below the top of existing surface. Sawed Slots shall be filled with an approved loop sealant.

On asphalt or concrete resurfacing projects, the preformed loops shall be placed in a saw slot, 1-1/4 inches minimum width, cut into the existing pavement. The top of the conduit shall be 2 inches, minimum, below the top of existing surface after any required surface removal is completed and prior to the placing of the new surface. Sawed Slots shall be filled with an approved loop sealant.

Section 635.3 R.3 – Page 384 – Delete the first sentence in the first paragraph and replace with the following:

All circular red, red arrow, circular yellow, yellow arrow, circular green, green arrow, and pedestrian indications shall be light emitting diode (LED) signal modules.

Section 635.5 E – Page 386 – Delete and replace with the following:

D. Anchor Bolts: Cost for anchor bolts shall be included in the contract unit price for the concrete for which they are incorporated with.

Section 651.2 C – Page 391 – Delete the last sentence of this section and replace with the following:

Not more than 25.0 percent by weight shall pass a No. 200 (75µm) sieve.

Section 670.3 – Page 393 – Delete and replace with the following:

A. General Requirements: Concrete for drop inlets shall be proportioned, mixed, hauled, and placed in accordance with Section 462.

When the foundation for a drop inlet is in new embankment, the embankment shall be constructed to an elevation at least one foot (300 mm) above the footing before the foundation for the drop inlet is prepared. The foundation shall be compacted as specified for the adjacent embankment.

Castings shall be set in full mortar beds or secured as specified. Castings shall be set accurately to the correct elevation so subsequent adjustment will not be necessary.

Inlet and outlet pipe connections shall be of the same size and kind and shall meet the same requirements as the pipe they connect. Pipe sections shall be flush on the inside of the structure wall and project outside sufficiently for proper connection with the next pipe section. Masonry shall fit neatly and tightly around the pipe. Grouting of the pipe connection may be required as directed by the Engineer if voids exist after form removal.

Drop inlets shall be either cast in place or precast. Precast drop inlets shall be defined as those drop inlets cast outside of the project limits. Drop inlets cast within the project limits will be considered cast in place.

B. Cast in Place Drop Inlets: The foundation excavated for drop inlets shall be thoroughly moistened immediately prior to placing concrete.

Steel reinforcement shall be placed in accordance with Section 480.

The finished surface of the concrete shall present a neat and smooth appearance. Concrete shall be protected and cured in accordance with Section 460.3, except the minimum curing time shall be 72 hours.

Upon completion and curing of the unit, the sheeting, bracing, forms, and falsework shall be removed and the excavation backfilled. The unit shall not be backfilled until the completion of the 72 hour curing period, or until the concrete reaches a minimum compressive strength of 3000 psi (21 MPa). Backfill shall be placed in layers not

exceeding six inches (150 mm) thick and compacted to the same degree as specified for the adjacent embankment. Installations shall be finished completed and left in a neat appearing condition.

C. Precast Drop Inlets: Precast drop inlets shall conform to the following requirements:

- 1. Notification:** The Contractor shall notify the Engineer 24 hours in advance of all concrete pours for inspection and observation of Contractor testing:
- 2. Design:** Precast drop inlets shall conform to the configurations of the standard plates. Variations from the standard plates may be accepted provided the AASHTO materials, design, fabrication specifications, and the requirements of this section are complied with.

Precast drop inlets shall be designed to specified load conditions. The Design Engineer of the drop inlets must be registered in the State of South Dakota. The design shall conform to the AASHTO design requirements for the depth of fill, including surfacing, etc., as well as live load or specified loading.

The Contractor shall furnish a checked design with the shop drawings. A checked design shall include the design calculations, and check design calculations performed by an independent Engineer registered in the State of South Dakota.

- 3. Shop Drawings:** Fifteen days prior to fabrication, the Contractor shall furnish shop drawings for Department review. The shop drawings shall consist of fabrication details including reinforcing steel and spacer placement and configurations, total quantities for the complete item, and all information for fabrication and erection.
- 4. Forms:** The forms shall be designed to withstand the fluid pressure of the concrete and the added forces due to vibration and impact without distortion. The forms shall be mortar tight and free from warp.

The form surface area in contact with the concrete shall be treated with an approved form oil or wax before the form is set in position. The forms shall be thoroughly cleaned of all other substances.

- 5. Concrete Cure:** The concrete shall be cured by low pressure steam, radiant heat, or as specified in Section 460.3 N. When curing in accordance with Section 460.3 N., the concrete temperature requirements of Section 460.3 O. shall apply.

Low pressure steam or radiant heat curing shall be done under an enclosure to contain the live steam or the heat and prevent heat and moisture loss. The concrete shall be allowed to attain initial set before application of the steam or heat. The initial application of the steam or heat shall be three hours after the final placement of concrete to allow the initial set to occur. When retarders are used, the waiting period before application of the steam or radiant heat shall be five hours. When the time of initial set is determined by ASTM C 403, the time limits described above may be waived.

During the waiting period, the minimum temperature within the curing chamber shall not be less than 50° F (10° C) and live steam or radiant heat may be used to maintain the curing chamber between 50° F (10° C) and 80° F (27° C). During the waiting period the concrete shall be kept moist.

Application of live steam shall not be directed on the concrete forms causing localized high temperatures. Radiant heat may be applied by pipes circulating steam, hot oil, hot water, or by electric heating elements. Moisture loss shall be minimized by covering exposed concrete surfaces with a plastic sheeting or by applying an approved liquid membrane curing compound to exposed concrete surfaces. The top surface of concrete members for use in composite construction shall be free of membrane curing compound residue unless suitable mechanical means for full bond development are provided.

During the initial application of live steam or radiant heat, the concrete temperature shall increase at an average rate not exceeding 40° F (22° C) per hour until the curing temperature is reached. The maximum concrete temperature shall not exceed 160° F (71° C). The maximum temperature shall be held until the concrete has reached the desired strength. After discontinuing the steam or radiant heat application, the temperature of the concrete shall decrease at a rate not to exceed 40° F (22° C) per hour until the concrete temperature is within 20° F (11° C) of the ambient air temperature. The Contractor will not be required to monitor this cool down temperature when the ambient air temperature is 20° F (11° C) or above.

The test cylinders shall be cured with the unit, or in a similar manner (similar curing method and concrete curing temperature, as approved by the Concrete Engineer) as the unit, until minimum compressive strength has been obtained.

- 6. Surface Finish and Patching:** If a precast or prestressed item shows stone pockets, honeycomb, delamination or other defects which may be detrimental to the structural capacity of the item, it will be subject to rejection at the discretion of the Engineer. Minor surface irregularities or cavities, which do not impair the service of the item, and which are satisfactorily repaired will not constitute cause for rejection. Repairs shall not be made until the Engineer has inspected the extent of the irregularities and has determined whether the item can be satisfactorily repaired. If the item is deemed to be repairable, the repair method and procedures shall be agreed upon by the Department and fabricator prior to the work commencing.

Depressions resulting from the removal of metal ties or other causes shall be carefully pointed with a mortar of sand and cement in the proportions, which are similar to the specific class of concrete in the unit. A sack rub finish is required on prestressed beams except for the bottom of the bottom flange and the top of the top flange. A sack rub finish is also required on sloped surfaces of box culvert end sections.

- 7. Fresh Concrete Testing:** The Contractor shall be responsible for performing all fresh concrete testing in accordance with the materials manual Materials Manual. Tests shall be documented on a DOT-54 form and submitted to the Engineer.
- 8. Concrete Compressive Strength:** The Contractor shall make a minimum of one group of test cylinders for each class of concrete for each day's production, not to exceed 150 cubic yard (125 cubic meters) per group of cylinders.

At a minimum, a group of test cylinders shall consist of the following:

- a. Two test cylinders are required for the 28 day compression test.
- b. Two additional cylinders will be required for determining concrete strength, when the Contractor desires to make delivery and obtain acceptance by the Department prior to the 28 day compression test.

Acceptance of the precast units shall be in accordance with Section 460.3 B. The precast units will be accepted when the minimum design concrete compressive strength requirements have been met. Accepted precast units represented by that test group of cylinders may be delivered to the project and will not require the 28 day cylinder test.

The Engineer will be responsible for breaking of all concrete cylinders for concrete compressive strength in accordance with the Materials Manual.

Section 670.5 – Page 394 – Add the following paragraph after the first paragraph:

Unless otherwise specified in the plans the cost for removal of existing pipe, if necessary, to facilitate the installation of new drop inlets shall be incidental to the associated drop inlet contract unit prices.

Section 671.5 – Page 397 – Add the following paragraph to this section:

Unless otherwise specified in the plans the cost for removal of existing pipe, if necessary, to facilitate the installation of new manholes shall be incidental to the associated manhole contract unit prices.

Section 680.2 A – Page 399 – Delete the last sentence of the second paragraph and replace with the following:

The percentage of material passing a No. 200 (75µm) sieve shall not exceed 2.0 percent.

Section 720.4 – Page 405 – Delete this section and replace with the following:

- A. Bank and Channel Protection Gabions:** Bank and channel protection gabions will be measured to the nearest 0.1 cubic yard (0.1 cubic meter). If a substitution is made, the dimensions of the bank and channel protection installed shall be equal to or greater than the dimensions specified. Payment will be based on plans quantity, unless changes are ordered in writing by the Engineer.

B. Drainage Fabric: Drainage fabric will be measured to the nearest square yard (square meter). The lap at joints will not be included in the measurement.

Section 720.5 – Page 405 – Delete this section and replace with the following:

A. Bank and Channel Protection Gabions: Bank and channel protection gabions will be paid for at the contract unit price per cubic yard (cubic meter). Payment will be full compensation for materials, equipment, labor, excavating, shaping and incidentals required.

B. Drainage Fabric: Drainage fabric will be paid for at the contract unit price per square yard (square meter). Payment will be full compensation for furnishing and installing the drainage fabric as specified. Payment will be for plan quantity unless changes are ordered in writing.

Section 730.2 C – Page 407 – Delete the fourth sentence and replace with the following:

If the seed is not planted within the 9 month period, the Contractor shall have the seed retested for germination, as described above, and a new certified test report shall be furnished prior to starting seeding operations.

Section 734.3 – Page 423 – Add the following paragraph before the first paragraph:

The Contractor shall designate an employee as Erosion Control Supervisor whose responsibility is the construction and maintenance of erosion and sediment control. This person shall be available to be reached by phone 24 hours a day, 7 days a week, and must be able to respond to emergency situations at the job site within 12 hours. The person so designated must have training and be certified by the South Dakota Department of Transportation in the area of erosion and sediment control. The name, phone number, and location of the person shall be provided to the Department at the preconstruction meeting.

Section 734.3 B.2 – Page 424 – Delete the second sentence and replace with the following:

The muck will be removed when the surface of the muck is at approximately one-third the height of the silt fence.

Section 750 – Page 431 – Add the following after the second paragraph:

In addition to the certification requirement specified in SD 416, when limestone is used, the manufacturer shall state in writing the amount thereof, the percentage of Calcium Carbonate in the limestone, and shall supply comparative test data on chemical and physical properties of the cement with and without the limestone. The comparative tests do not supersede the normal testing to confirm that the cement meets chemical and physical requirements.

Section 800.2 D – Page 436 – Add the following sentence to the end of the fourth paragraph:

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

Section 800.2 D – Page 436 – Add the following sentence to the end of the last paragraph:

The expansion value of the blended sources will be used to determine the type of cement required.

Section 800.2 F – Page 437 – Delete the last three sentences of the first paragraph and replace with the following:

If the fineness modulus falls outside this limit the Concrete Engineer shall be notified. A new or adjusted mix design may be provided or approved. The uniformity of grading requirements do not apply to fine aggregate for Low slump Dense Concrete and Class M (I) concrete.

Section 800.2 F – Page 437 – Delete the first sentence of the second paragraph and replace with the following:

For determining the FM deviation from the design mix FM, the average of the five most recent FM test shall be used.

Section 800.2 F – Page 437 – Delete the first sentence of the last paragraph and replace with the following:

Additionally for Portland Cement Concrete Paving conforming to Section 380; the FM of the fine aggregate, as established by the mix design, will be from 2.40 to 3.10 (wide band).

TABLE 1

REQUIREMENTS	CLASS D		CLASS E		CLASS G		CLASS S	
	TYPE 1	TYPE 2	TYPE 1	TYPE 2	TYPE 1	TYPE 2	TYPE 1	TYPE 2
SIEVE	PERCENT PASSING							
1" (25.0 mm)	100		100		100			
3/4" (19.0 mm)	97-100	100	97-100	100	97-100	100		
1/2" (12.5 mm)	75-95	97-100	75-95	97-100	75-95	97-100	86-100	100
3/8" (9.50 mm)							66-80	80-100
No. 4 (4.75 mm)	45-75	60-80	45-75	60-80	45-75	60-80	24-34	24-45
No. 8 (2.36 mm)	30-55	40-60	30-55	40-60	30-55	40-60	10-20	10-22
No. 16 (1.18 mm)	20-45	25-50	20-45	25-50	20-45	25-50		
No. 40 (425 µm)	10-30	15-35	10-30	15-35	10-30	15-35		
No. 200 (75 µm)	3.0-7.0	4.0-8.0	3.0-7.0	4.0-8.0	3.0-7.0	4.0-8.0	4.0-8.0	2.0-5.0
Processing Required	Crushed		Crushed		Crushed		Crushed	
Liquid Limit (max)	25		25		25		25	
Plasticity Index, (max)	3		Non-Plastic		Non-Plastic		Non-Plastic	
L.A. Abra. Loss. (max)	45%		40%		35%		40%	
Sodium Sulfate (Soundness) (Max.)								
+4 (4.75 mm) sieve	15%		15%		12%		12%	
-4 (4.75 mm) sieve	15%		15%		12%		12%	
Lightweight Particles (Max.)								
+4 (4.75 mm) sieve	4.5%		3.0%		1.0%		1.0%	
-4 (4.75 mm) sieve	4.5%		3.0%		1.0%		1.0%	
Crushed Particles (Min.)								
+4 (4.75 mm) sieve	50% 1-FF		70% 2-FF		90% 2-FF		90% 2-FF	
* - 4 Manufactured Fines	NA		20% Min.		70% Min.		95% Min.	

* - Manufactured fines shall be manufactured solely from material retained on the 3/4 inch (19mm) sieve, unless the aggregate material is produced from a ledge rock source.

Section 880.2 B.1 – Page 456 – Delete the second sentence and replace with the following:

The material shall be fine enough that when pulverized for testing, 90 percent by dry weight will pass a No. 40 (425 µm) sieve and 60.0 percent by dry weight will pass a No. 200 (75µm) sieve.

Section 880.2 B.2 – Page 456 – Delete the sieve analysis specification for the No. 200 (75 µm) sieve and replace with the following:

Passing a No. 200 (75 µm) sieve 65.0-100%

Section 882.2 – Page 459 – Delete Table 1 and replace with the following:

Table 1

REQUIREMENT	Subbase	Gravel Cushion	Granular Bridge End Backfill	Aggregate Base Course	Limestone Ledge Rock		Gravel Surfacing
					Base Course	Gravel Cushion	
SIEVE	PERCENT PASSING						
2" (50 mm)	100						
1" (25.0 mm)	70-100		100	100	100		
3/4" (19.0 mm)		100	80-100	80-100	80-100	100	100
½" (12.5 mm)			68-91	68-91	68-90		
No. 4 (4.75 mm)	30-70	50-75	42-70	46-70	42-70	46-70	50-78
No. 8 (2.36 mm)	22-62	38-64	29-58	34-58	29-53	29-53	37-67
No. 40 (425 µm)	10-35	15-35	10-35	13-35	10-28	10-28	13-35
No. 200 (75 µm)	0.0-15.0	3.0-12.0	0.0-5.0	3.0-12.0	3.0-12.0	3.0-12.0	4.0-15.0
Liquid Limit Max		25	25	25	25	25	
Plasticity Index	0-6	0-6	0-6	0-6	0-3	0-3	4-12
L.A. Abra. Loss, max.	50	40	40	40	40	40	40
Foot Notes		2	1,2	1,2			
Processing Required	crushed	crushed	crushed	crushed	crushed	crushed	crushed

Section 890.2 G – Page 465 – In the table, under TESTS ON RESIDUE FROM DISTILLATION TESTS, add the following after Elastic Recovery @ 50°F (10°C):

(see Note 4)

Section 890.2 G – Page 465 – Add the following after Note 3:

Note 4: The Elastic Recovery test shall be in accordance with AASHTO T301, except that the residue will be obtained by distillation, not oven evaporation. The distillation temperature shall be as recommended by the emulsion manufacturer.

Section 972.2 B – Page 479 – Delete the second paragraph and replace with the following:

For bolts that are 1" (M24) (incl.) in diameter and less, the maximum hardness for AASHTO M164 (ASTM A325) bolts shall be 33 Rc.

Section 972.2 C – Page 483 – Add the following paragraph before the second to last paragraph:

Jam nuts shall conform to ASTM A563 Grade A.

Section 972.2 C – Page 483 – Delete the first sentence of the last paragraph and replace with the following:

Bolts and nuts shall be hot dipped galvanized in accordance with ASTM F2329 or mechanically galvanized in accordance with ASTM B695. Washers shall be hot dipped galvanized in accordance with ASTM F2329 or mechanically galvanized in accordance with ASTM B695.

Section 972.2 D – Page 484 – Delete the fourth note under the table as denoted by “***” and replace with the following:**

***** Anchor bolts conforming to ASTM F1554 Grade 55 (380) shall satisfy Supplemental Requirement S4. Anchor bolts conforming to ASTM F1554 Grade 105 (725) shall satisfy Supplemental Requirement S5.

Section 980.1 A.1 – Page 485 – Delete this section and replace with the following:

1. Quantitative Requirements: The finished paint shall meet the following quantitative requirements:

	<u>WHITE</u>	<u>YELLOW</u>
<u>Lead</u> , parts per million max. ASTM D 3335 or X-ray fluorescence	100	100
<u>Pigment</u> , percent by weight	60.0 - 62.5	58.5 – 61.0
<u>Pigment</u> , percent by weight; when tested in accordance with ASTM D 3723 (See Note 1)	60.0 - 62.5	56.1 - 58.6
Note 1: The residual extracted pigment upon analysis shall conform to the following quantitative compositional requirements when tested in accordance with ASTM D 1394 or ASTM D 4764.		
Titanium Dioxide ASTM D 476 Type II Rutile 92% min. TiO ₂ tested in accordance with ASTM D 1394 or ASTM D 4764	1.00 lb/gal min.	0.20 lb/gal min.
<u>Total Solids</u> , percent by weight; min. when tested in accordance with ASTM D 3723	77.0	76.1
<u>Non-volatile Vehicle</u> , percent by weight vehicle; min. when tested in accordance with FTMS 141c (Method 4051.1)	42.5	42.5
<u>Consistency</u> . Krebs-Stormer Shearing rate 200 r.p.m. Grams	190 to 300	190 to 300
Equivalent K.U. when tested in accordance with ASTM D 562 (See Note 2)	80 to 95	80 to 95
Note 2: The consistency of the paint shall be within the stated specification when determined a minimum 48 hours after packaging the material.		
<u>Weight per Gallon</u> , pounds minimum when tested in accordance with ASTM D 1475 (See Note 3)	Rohm & Haas 13.85 Dow DT 250NA 13.75	13.30 13.20
Note 3: In addition to compliance with the minimum, the weight per gallon shall not vary more than ± 0.3 lbs / gal. between batches.		
<u>Fineness of Dispersion</u> Hegman Scale, min. when tested in accordance with ASTM D 1210	2 min. "B" Cleanliness"	2 min B" Cleanliness
<u>Drying Time</u> , No Pick-Up, Minutes, max. when tested in accordance with ASTM D711, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity of $65 \pm 3\%$, the temperature $73.5 \pm 3.5^\circ\text{F}$ ($23 \pm 2^\circ\text{C}$), and air flow less than one foot (1') per minute.	12max.	12max.
<u>Drying Time</u> , Dry-through, Minutes	120max.	120max.

max. when tested in accordance with ASTM 1640, except the wet film thickness shall be 12.5 ± 0.5 mils. The applied film shall be immediately placed in a laboratory drying chamber maintaining the relative humidity at $90 \pm 3\%$, and the temperature $23 \pm 2^\circ\text{C}$. The pressure exerted will be the minimum needed to maintain contact between the thumb and film. A reference-control paint will be run in conjunction with the candidate paint. Rohm and Haas formulation will be referenced-control paint.

Note 4: If either the candidate or reference-control paint exceeds the 120 minute maximum, then the candidate paint shall not exceed the dry time of the reference-control paint by more than 15 minutes.

<u>Field Drying Time</u> , Track-Free, minutes max.	2	2
When applied under the following conditions, the line shall show no visual tracking when viewed from 50 feet after driving a passenger vehicle over the line at a speed of 25-35 mph: Fifteen mils wet film thickness Six lbs. of glass beads per gal. of paint Paint temperature at nozzle between 70 to 120°F Pavement dry, pavement temperature 50 to 120°F Relative humidity of 85% maximum		
<u>Directional Reflectance</u> , minimum. when applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E 1347 (Illuminate C 2°)	85	50
<u>pH</u> , minimum. when tested in accordance with ASTM E70	9.80	9.80
<u>Dry Opacity</u> , Contrast ratio, min. when applied at a wet film thickness of 6 to 7 mils and when tested in accordance with FTMS 141c (Method 4121 Illuminate C 2°)	0.955	0.880
<u>Volatile Organic Content (VOC)</u> , max. in accordance with ASTM D 3960	115 g/liter	115 g/liter
<u>Flash Point</u> , closed cup, min.	115°F	115°F

Color: The paint shall meet the color specification limits and luminance factors listed in Tables 1 & 2 when tested in accordance with ASTM E1347 or ASTM E1349. The paint shall not discolor in sunlight and shall maintain the colors and luminance factors throughout the life of the paint. No Bayferrox 3950, iron oxides or other color enhancers will be permitted to achieve the color chromaticity coordinates.

Table 1*

Color	Chromaticity Coordinates (corner points)								Min. Luminance Factor (Y %)
	X	Y	X	Y	X	Y	X	Y	
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375	35
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400	25

* Daytime Color Specification Limits and Luminance Factors for Pavement Markings Material with CIE 2° Standard Observer and 45/0 (0/45) Geometry and CIE Standard Illuminant D65

Table 2**

Color	Chromaticity Coordinates (corner points)							
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
White	0.480	0.410	0.430	0.380	0.405	0.405	0.455	0.435
Yellow	0.575	0.425	0.508	0.415	0.473	0.453	0.510	0.490

** Nighttime Color Specification Limits for Pavement Marking Retroreflective Material With CIE 2° Standard Observer, Observation Angle = 1.05°, Entrance Angle + 88.76° and CIE Standard Illuminant A.

Section 981.1 – Page 489 – Delete this section and replace with the following:

Glass beads for use with pavement marking paint shall be moisture resistant and shall meet the requirements of AASHTO M 247, Type I. The glass beads shall be without floatation properties. The glass beads shall have dual surface treatment consisting of a moisture resistant silicone treatment, and silane adherence surface treatment. The glass beads shall have a minimum of 80% true spheres. Roundness shall be tested in accordance with SD 510.

Section 983.1 – Page 499 – Delete the third sentence of the first paragraph:

Section 983.1 B – Page 499 – Delete this section in it's entirety.

Section 983.2 B – Page 500 – Delete this section in it's entirety.

Section 985.1 D – Page 506 – Delete the last two sentences of the first paragraph and replace with the following:

Vertical reinforcement shall be deformed unless otherwise noted and shall conform to the requirements of ASTM A 615/AASHTO M 31 Grade 60 (400). Circular ties, stirrups, and spiral reinforcing may be fabricated from deformed bars conforming to the requirements of ASTM A 615/AASHTO M31 Grade 60 (400). Spiral reinforcing may also be fabricated from cold drawn wire conforming to ASTM A 82 or hot rolled plain bars conforming to ASTM A 615/AASHTO M 31 Grade 60 (400).

Section 985.1 G.4 – Page 508 – Delete the first sentence and replace with the following:

Conductor insulation shall be colored in accordance with ICEA S-95-658, Method 1, Table K-2.

Section 985.1 G.5 – Page 508 – Delete the first sentence and replace with the following:

Jackets shall be polyvinyl chloride meeting UL requirements for Class 12 jackets and ICEA S-95-658, Section 4.

Section 985.1 I.1.b – Page 508-509 – Delete the last sentence in the paragraph:

Section 985.1 N – Page 514 – Delete the second sentence in the fifth paragraph and replace with the following:

The flash control circuit shall ensure that remote transfer to flashing from normal stop and go operations occurs during the end of the mainline green interval in the cycle.

Section 985.1 N.1 and 2 – Page 515 – Delete these two sections and replace with the following sentence:

The controller furnished shall meet current NEMA TS2 standards for controllers.

Section 985.1 Q.7 – Page 516 – Delete and replace with the following:

7. Backplates for Signal Heads: Unless otherwise stated on the plans, backplates may be either 0.050 inch (1.27 mm) thick aluminum or 0.125 inch (3.18 mm) thick polycarbonate. The polycarbonate backplates must be made up from no more than two pieces.

Section 990.1 – Page 517 – Add the following to this section:

G. High Density Polyethylene Pipe: High Density Polyethylene pipe, couplings, and fittings shall conform to the requirements of AASHTO M 294.

Section 990.1 A.2.a – Page 517 – Delete and replace with the following:

- a. Portland cement shall conform to Section 750.

Section 990.1 A.2.h – Page 517 – Delete and replace with the following:

- h. Flexible watertight gaskets shall conform to AASHTO M 198.

Section 990.1 A.3 – Page 517 – Delete and replace with the following:

3. **Concrete:** The concrete in special sections shall have a minimum compressive strength of 4000 psi (28 MPa). Special sections are those sections of concrete pipe not covered by the class requirement of AASHTO M 170, M 206, or M 207. The strength shall be determined by test cylinders or by cores.

Section 1010.1 A – Page 519 – Add the following to the end of the first paragraph:

Bar reinforcement shall be deformed, unless otherwise noted.

Section 1010.1 C – Page 519 – Delete the second paragraph and replace with the following:

Dowel bars for concrete pavements shall be epoxy coated and shall conform to AASHTO M 254 Type B except the film thickness shall be from 5 to 12 mils (0.13 to 0.30 mm) after cure. The steel cores shall be plain round bars conforming to AASHTO M 31 Grade 40 or 60, M 227 Grade 70 minimum, or M 255 Grade 75 minimum. The bars shall be the diameter shown in the plans, free from burring or other deformation restricting slippage in the concrete.

Section 1010.1 C – Page 519 – Add the following sentence after the first sentence of the third paragraph:

The cut ends do not have to be coated.

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