



DEPARTMENT OF TRANSPORTATION

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

FOR

CITY WATER AND SANITARY SEWER IMPROVEMENTS

CITY

PROJECT NO.

**2014-1 ()
(PCN X02R)**

5TH AVENUE

IN DAVISON 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 May 21, 2014, 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 31, 2014.**

The DBE goal for this project is: **None.**

Work Type for this project is: **Work Type 2 or Work Type 5 or Work Type 14.**

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, specifications for the work may be obtained at:
<http://apps.sd.gov/hc65bidletting/ebslettings1.aspx>

Specifications for the work are 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 31, 2014** 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. 12/19/13

SPECIAL PROVISIONS

PROJECT NUMBER(S): 2014-1 () PCN: X02R

TYPE OF WORK: CITY WATER AND SANITARY SEWER IMPROVEMENTS

COUNTY: DAVISON

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.

Jean Anderson is the official in charge of the Mitchell Career Center for Davison County.

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Instructions for Bidders

Special Provision Regarding Combination Bids, dated 4/23/14.

Special Provision Regarding the City Portion for Subletting, dated 4/23/14.

Technical Specifications

Special Provision for Contractor Administered Preconstruction Meeting, dated 4/18/13.

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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2014-1 (), PCN X02R
CITY WATER AND SANITARY SEWER IMPROVEMENTS
5TH AVENUE

INSTRUCTIONS FOR BIDDERS

- (1) 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.
- (2) This City Water and Sanitary Sewer Improvements Project will be let, awarded and contracted by the South Dakota Department of Transportation.
- (3) Plans, specifications for the work may be obtained at <http://apps.sd.gov/hc65bidletting/ebslettings1.aspx>
- (4) All bid bonds shall be made out to the Department of Transportation.
- (5) Department of Transportation procedures regarding letting and awarding of contracts shall be followed.
- (6) Bidders submitting a bid on this project shall also submit a bid on Project P 3698(02), PCN 02FG, Davison County. Award of these projects will be to the same bidder based on the total of the two projects.
- (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 Mitchell.
- (8) The contract completion date for this project will be the same as specified for Project P 3698(02), PCN 02FG, Davison County. Any delays in completing this contract will not be a basis for an extension of the contract completion time for PCN 02FG, Davison County.
- (9) Payments for this City Water and Sanitary Sewer Improvements project will be made to the Contractor by the City of Mitchell.
- (10) Construction engineering for this contract will be performed by the City of Mitchell.

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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION REGARDING
COMBINATION BIDS**

**2014-1 (), PCN X02R
CITY WATER AND SANITARY SEWER IMPROVEMENTS
DAVISON COUNTY**

APRIL 23, 2014

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

P 3698(02), PCN 02FG
5TH AVENUE
ASPHALT CONCRETE, BASE COURSE, STORM SEWER, CURB & GUTTER,
SIDEWALK, SIGNING
DAVISON COUNTY

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

Work on PCN (02FG) 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**

**2014-1 (), PCN X02R
DAVISON COUNTY**

APRIL 23, 2014

This project is being let in combination with State Project Number P 3698(02) PCN 02FG. The provisions of section 8.1 of the Standard Specifications for Roads & Bridges, 2004 ed., requiring Contractor to perform work amounting to not less than 50% of the total contract cost with his own organization does not apply to the work to be performed on this contract.

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TECHNICAL
SPECIFICATIONS

FOR

FIFTH AVENUE
WATER AND SANITARY SEWER
UPGRADES

MITCHELL, SOUTH DAKOTA

SPN #13885

NOVEMBER 2013

SPN

& Associates

ENGINEERS-PLANNERS- SURVEYORS

2100 NORTH SANBORN BLVD, PO BOX 398
MITCHELL, SOUTH DAKOTA 57301

PHONE 605-996-7761

FAX 605-996-0015

5TH AVENUE
WATER AND SANITARY SEWER UPGRADES

MITCHELL, SOUTH DAKOTA

DOT PCN X02R
CITY #2014-1
SPN # 13885

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



By _____
Camden A. Hofer, P.E.

Registration Number _____ 8322

SCHMUCKER, PAUL, NOHR & ASSOCIATES
CONSULTING ENGINEERS - SURVEYORS
2100 NORTH SANBORN BLVD, PO BOX 398
MITCHELL, SOUTH DAKOTA 57301

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

PROJECT
5th AVENUE WATER AND SANITARY SEWER UPGRADES
MITCHELL, SOUTH DAKOTA

I. 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.

II. MODIFICATIONS

DIVISION I – GENERAL PROVISIONS

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

"Design Engineer" or "Project Engineer" – Schmucker, Paul, Nohr and Associates located at 2100 North Sanborn Boulevard with a mailing address of PO Box 398, Mitchell, South Dakota 57301 and a telephone number of (605) 996-7761.

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

"Owner" or "City" – The City of Mitchell, South Dakota , as represented by its proper authorities and with the mailing address of 612 North Main Street, Mitchell, South Dakota 57301.

DIVISION IV – UNDERGROUND UTILITIES TECHNICAL SPECIFICATIONS

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

SECTION 01010 - SUMMARY OF WORK
SECTION 01025 - MEASUREMENT AND PAYMENT
SECTION 01040 - COORDINATION
SECTION 01045 - CUTTING AND PATCHING
SECTION 01051 - GRADES, LINES AND LEVELS
SECTION 01170 - SPECIAL PROJECT PERMITS
SECTION 01200 - PROGRESS MEETINGS AND JOB SITE ADMINISTRATION
SECTION 01310 - PROGRESS SCHEDULES AND REPORTS

SECTION 01340 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
SECTION 01400 - QUALITY CONTROL
SECTION 01500 - TEMPORARY FACILITIES
SECTION 01505 - MOBILIZATION
SECTION 01560 - TEMPORARY CONTROLS
SECTION 01600 - MATERIAL AND EQUIPMENT
SECTION 01700 - PROJECT CLOSEOUT

2. The following shall be added as DIVISION IV B – SITE WORK:

SECTION 02010 - SUBSURFACE INVESTIGATIONS
SECTION 02020 - EXISTING UTILITIES
SECTION 02160 - SHEETING, SHORING, AND BRACING
SECTION 02224 - TRENCHING, BACKFILLING AND COMPACTING
SECTION 02605 - MANHOLES AND CASTINGS
SECTION 02640 - VALVES AND APPURTENANCES
SECTION 02645 - HYDRANTS
SECTION 02665 - WATER PIPING AND FITTINGS
SECTION 02666 - WATER SERVICE PIPING, FITTINGS AND VALVES
SECTION 02667 - MECHANICAL THRUST RESTRAINT
SECTION 02675 - CLEANING AND DISINFECTION OF WATER DISTRIBUTION SYSTEMS
SECTION 02676 - TESTING OF WATER DISTRIBUTION SYSTEMS
SECTION 02730 - WASTEWATER PIPING AND FITTINGS
SECTION 02731 - PIPELINE TESTING
SECTION 02732 - CLEANING OF SANITARY SEWER SYSTEMS

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010 - SUMMARY OF WORK

SECTION 01025 - MEASUREMENT AND PAYMENT

SECTION 01040 - COORDINATION

SECTION 01045 - CUTTING AND PATCHING

SECTION 01051 - GRADES, LINES AND LEVELS

SECTION 01170 - SPECIAL PROJECT PERMITS

SECTION 01200 - PROGRESS MEETINGS AND JOB SITE ADMINISTRATION

SECTION 01310 - PROGRESS SCHEDULES AND REPORTS

SECTION 01340 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

SECTION 01400 - QUALITY CONTROL

SECTION 01500 - TEMPORARY FACILITIES

SECTION 01505 - MOBILIZATION

SECTION 01560 - TEMPORARY CONTROLS

SECTION 01600 - MATERIAL AND EQUIPMENT

SECTION 01700 - PROJECT CLOSEOUT

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SECTION 01010 SUMMARY OF WORK

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 DEFINITIONS

- A. "Project Engineer," "Engineer," - Schmucker, Paul, Nohr & Associates located at 2100 North Sanborn Blvd, Mitchell, South Dakota, with a mailing address of PO Box 398, Mitchell SD 57301; telephone number: (605) 996-7761; and web site: www.spn-assoc.com.
- B. "Owner" or "City" - The City of Mitchell South Dakota, as represented by its proper authorities and with the mailing address of PO Box 612 N Main Street, Mitchell, South Dakota 57301.
- C. "Written Notice" - Written notice or order shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm, or to an officer of the corporation for whom it is intended or if delivered at or sent by registered mail to the last known address of the addressee.

1.03 ARRANGEMENTS OF DETAILED SPECIFICATIONS AND DRAWINGS

- A. The detailed specifications arrangement is based upon the 1980 CSI format and incorporates the following Divisions:

Division 1 General Requirements
Division 2 Site Work

- B. The contract drawings or plans which depict the contract work of the project and upon which the contract is based are those drawings or sheets listed on Sheet I of the drawings. Each sheet bears the following general title:

- - - 5TH AVENUE WATER AND SANITARY SEWER UPGRADES - - -
MITCHELL, SOUTH DAKOTA

- C. The drawings referred to above are supplemented by drawings bound in this book of specifications and by additional shop and dimension drawings to be prepared by the Contractor as set forth in the specifications.
- D. Division of Work as made by the contract drawings and specifications is for the purpose of specifying all work which is required. There is no attempt to make complete classification according to trade or any agreements which may exist between Contractors or groups of contractors and trade unions. Such division and classification of the work shall be the Contractor's responsibility.

1.04 LOCATION OF THE WORK

- A. The work under this contract is located within the City of Mitchell, Davision County, South Dakota, on properties for which easements and/or title have been obtained by the Owner.

1.05 WORK COVERED

- A. The broad scope of the project includes, but is not limited to, The installation of approximately 1,870 feet of 10-inch PVC water main; 2,070 feet of 8-inch PVC sanitary sewer main; six sanitary sewer manholes; multiple valves, fittings, hydrants and connections; service line pipe with service valves, fittings and connections; and other associated work. The street surfacing removal and replacement is not included in this contract. The elements associated with this project are described in the Bid Schedule(s).

1.06 CONTRACTS

- A. The work shall be performed under one Contract.

1.07 CONSTRUCTION SEQUENCING

- A. The Contractor shall note the requirements of Paragraph 1.09B of this section.
- B. Each Contractor shall schedule their work with the Owner, the other Contractors and Subcontractors on the project so that the respective completion dates can be obtained. The Contractor is required to coordinate with the Contractor of the street project as needed to complete the different phases of the work.
- C. The contractor shall refer to Section 01500, Paragraph 3.06 for requirements relating to temporary potable water service to all users of the Owner's water distribution system

1.08 CONTRACTOR'S RESPONSIBILITIES AND DUTIES

A. General:

1. Each Contractor must satisfy himself by personal examination of each site as to all local conditions affecting the performance of his contract. The Contractor is deemed to accept such conditions as found to exist.
2. All construction activities shall be confined within the areas shown on the drawings. Construction easements, as needed, have been obtained by the Owner. If additional area is needed, it shall be the Contractor's responsibility to obtain said area.
3. See the reference to "Existing Structures" as found in the applicable paragraphs of this Division I.

B. Continuous Operation:

1. The Contractor must receive the approval of the Owner prior to any scheduled intermittent, partial or complete shut-down of the existing facilities.
2. Each Contractor shall note that the Owner must continue the operation of the existing water distribution and wastewater collection systems.

3. Each Contractor shall schedule all required work so as to minimize the interruption of the continuous operation of the existing facilities and functions.
 4. When it is necessary to take a certain portion of the existing facilities or systems out of service, the Contractor shall submit to the Engineer a description of the procedure and schedule of the work proposed. The schedule and procedure shall be reviewed and approved by the Engineer, and the Owner prior to commencement of these operations.
 5. The Contractor shall be responsible for notifying each individual user of the Owner's water distribution system of any scheduled interruption of water service to the user. Notification shall be provided not less than 12 hours or more than 24 hours prior to the scheduled interruption. The notification shall consist of a printed document delivered at the point of use or a personal contact with the user. The notification shall contain information as to the expected time the interruption is to begin, the expected duration of the interruption and the time the service is to be resumed. In no event shall the interruption of service be allowed to be greater than 8 hours in length. In the event an interruption to any user is greater than 8 hours in length, the Contractor shall be responsible for furnishing all labor, equipment and material necessary to provide temporary service to the affected user(s). All costs related to providing temporary service shall be considered incidental to the project.
 6. The Contractor shall be responsible for furnishing all labor, equipment and material to install, operate and maintain temporary water service on a continuous 24-hour per day, 7-day per week basis to those users of the water distribution system. Compensation for providing temporary service shall be considered incidental to other items on the Bid Schedules. The material required for the temporary service shall remain the property of the Contractor.
 5. Under any emergency condition or where partial shutdown of the existing facilities is involved, the modifications and connections shall be pursued on a 24-hour-per-day basis and 7 days per week schedule to minimize disruption of service unless otherwise provided in the technical specifications. The Contractor shall provide at no additional cost to the Owner all temporary connections, parallel temporary lines or bypasses as may be required.
 6. All materials shall be on the job and ready for installation for these items. All arrangements, measurements and planning shall be done in advance of taking existing facilities out of service.
- C. Existing Utilities:
1. Refer to Section 02020 of the Specifications.
- D. Existing Structures:
1. Each Contractor shall take complete field measurements affecting all existing construction, wiring, piping, and equipment in this contract, and he shall be solely responsible for proper fit between his work and existing structures and other equipment. He shall examine all work to which he will connect; and if any misalignment is found, he shall so arrange his work that the misalignment is corrected to the satisfaction of the Engineer.
 2. Dimensions given on the drawings related to the existing structures are based on existing construction drawings, and it shall be the responsibility of the Contractor to verify the

accuracy of these dimensions. Any discrepancies shall be brought to the attention of the Engineer prior to start of new construction.

3. Each Contractor will be held responsible for any damage to existing structures, work, materials, or equipment because of his operations and shall repair or replace any damaged structures, work, materials, or equipment to the satisfaction of, and at no additional cost to the Owner.
4. Each applicable Contractor shall be responsible for all damage to streets, curbs, sidewalks, ditches, lawns, culverts or other public or private property, which may be caused by transporting equipment, materials, or men to or from work. The Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

E. Unfavorable Construction Conditions:

1. During unfavorable weather, wet ground, or other unsuitable construction conditions, the Contractor shall confine his operations to work which will not be affected adversely thereby. No portion of the work shall be constructed under conditions which would affect adversely the quality efficiency thereof, unless special means or precautions are taken by the Contractor to perform the work in a proper and satisfactory manner.

F. Preservation of Monuments and Stakes

1. In case of his destruction thereof, the Contractor will be charged with the expense of replacement and shall be responsible for any mistake or loss of time that may be caused. The Contractor shall furnish materials and assistance for the proper replacement of such monuments or bench marks.

G. Methods of Operation:

1. Each Contractor shall inform the Engineer in advance concerning his plans for carrying on each part of the work, but the contractor alone shall be responsible for the safety, adequacy, and efficiency of his plant, equipment, and methods.
2. Any method of work suggested by the Owner or Engineer, but not specified, shall be used at the risk and responsibility of the Contractor. The Engineer and Owner will assume no responsibility therefor.
3. Review by the Owner or Engineer of any plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility therefor, and such review shall not be considered as an assumption of any risk or liability by the Owner, Engineer, or any officer, agent, or employee thereof. The Contractor shall have no claim on account of the failure or inefficiency of any plan or method so reviewed.

H. Conduct of Work:

1. Each Contractor shall observe that the Owner reserves the right to do other work in connection with the project or adjacent thereto by contract or otherwise, and he shall at all times conduct his work so as to impose no hardship on the Owner or others engaged in the work, nor cause any unreasonable delay or hindrance thereto.

2. Each Contractor shall be responsible to others engaged in the work or work adjacent thereto for all damage or injury to work, to persons or property, or for loss caused by failure to finish the work within the specified time for completion. He shall adjust, correct, and coordinate his work with the work of others so that no discrepancies shall result in the whole work.
3. The work of this contract includes the furnishing and necessary installation of all tools, machinery, scaffolds, false work, forms and centers for the execution of the work, except as may be otherwise specified. Equipment provided shall be adequate. The Contractor shall obtain all necessary measurements for the work and shall check dimensions, levels, and construction and layout and supervise the construction for correctness of all of which he shall be responsible.
4. Where work of one trade joins to, or is on other work, there shall be no discrepancy when the work is completed. The Contractor must anticipate relation of all parts of the work, and at the proper time provide and set required anchors and blocking. Anchors, blocking, sleeves, and inserts necessary for each trade shall be a part of same except where stated otherwise. Assistance required by the Engineer in obtaining measurements or information on the work shall be furnished accurately and fully by the Contractor without additional cost to the Owner.

1.09 PARTIAL OWNER OCCUPANCY

- A. It is anticipated that portions of the facilities will be in operation before final construction is completed. The Owner, therefore, reserves the right to operate the installed equipment following startup. This continued operation shall in no way indicate final acceptance prior to completion of the project.

1.10 PERMITS AND REGULATIONS

- A. Refer to Section 01170 – Special Project Permits and the DOT Special Provisions.

* * * END OF SECTION * * *

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SECTION 01025 MEASUREMENT AND PAYMENT

PART I GENERAL

1.01 GENERAL

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. The intention of the Bid Form is to include full compensation for all labor, materials, equipment, supervision, and other incidental items necessary for the performing and completion of the items of work in place, in accordance with the Specifications for payment therefor, and also to include all work which may be reasonably inferable from the Specifications as being necessary to produce the intended results. All items of work NOT specifically contained in the Bid Form but necessary to produce the intended results shall be considered incidental work without allowance for separate, additional compensation.
- C. All cost of all work described in Division 1, unless otherwise specified shall be considered incidental with no separate measurement or payment.
- D. Related requirements specified elsewhere:
 - 1. Progress schedules and reports - Section 01310
 - 2. Schedule of values - Section 01370

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 MEASUREMENT

- A. The determination of final quantities of Work performed under the Contract will be made by the Engineer, based upon measurements made by him or his assistants. Measurement of completed work shall be in units as shown on the Bid Form for unit price items or completion of Work items listed and shown on the accepted schedule of values for lump sum items.
- B. The Contractor shall participate in the measurement of completed Work unless otherwise agreed.
- C. Specific differences in measurement or classification of Work are to be resolved at the time of measurement.
- D. All measurements shall be completed on a regular basis.

3.02 APPLICATION FOR PAYMENT

- A. The Contractor shall prepare and submit progress payment requests on forms provided by or approved by the Owner.

- B. All submissions shall be made in accordance with the requirements of the DOT Contract and Special Provisions.

3.03 PAYMENT

- A. All payments shall be made in accordance with the requirements of the DOT.
- B. Payment will be made in accordance with the respective unit or lump sum prices as shown on the Bid Form and the accepted Schedule of Values.

3.04 PAYMENTS TO BE WITHHELD

- A. All payments due the Contractor including payment for stored material shall be subject to retainage and withholding due to uncompleted work in accordance with the provisions of the DOT.

3.05 PAYMENT ITEMS

- A. Payment items shall be as listed on the Bid Form.

* * * END OF SECTION * * *

SECTION 01040 COORDINATION

PART I GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere.
 - 1. Summary of Work - Section 01010.
 - 2. Cutting and Patching - Section 01045.
 - 3. Project Meetings and Job Site Administration - Section 01200.
 - 4. Progress Schedules and Reports - Section 01310.

1.02 SCOPE AND DESCRIPTION

- A. This section describes the general coordination required between each of the Contractors and the Owner. This section is not intended to cover every item or aspect of the necessary coordination.

1.03 PAYMENT

- A. Coordination is considered incidental Work with no separate measurement or payment to be made.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL

- A. All Contractors or subcontractors working on specific portions of the project shall so schedule and conduct their Work so as to not impede unnecessarily any Work being done by others on or adjacent to his Work.
- B. Each Contractor and Subcontractor shall be responsible for coordinating his Work with the appropriate representative of the Owner so as to avoid or minimize any interruption of the functions and facilities of said agency.

3.02 SITE WORK COORDINATION

- A. The location of all facilities, structures, piping and related appurtenances, both temporary and final shall be coordinated among Contractors, the Owner and the Engineer.

- B. It shall be the responsibility of each Contractor to initiate the procedures necessary to coordinate his work with that of other Contractors and the Owner.
- C. Contractors completing initial Work shall temporarily cap piping and mark the location of all buried piping to facilitate completion of final Work.

* * * END OF SECTION * * *

SECTION 01045 CUTTING AND PATCHING

PART I GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Summary of Work - Section 01010.
 - 2. Coordination - Section 01040.

1.02 SCOPE AND DESCRIPTION

- A. This section describes the necessary coordination, materials and labor associated with cutting and patching of completed Work or connection of specified Work to existing facilities.

1.03 SUBMITTALS

- A. Prior to cutting which may affect the structural integrity of any structure, facility or portion of the project, or Work of another Contractor, or completed Work or existing facilities, the Contractor shall submit written notice to the Engineer requesting consent to proceed with the cutting. The notice shall designate the location, date and time the Work will be exposed for observation and cutting will be initiated and completed.

1.04 PAYMENT FOR COSTS

- A. The cost of cutting and patching to complete Work as specified and shown on the Drawings shall not be measured and paid directly but shall be considered incidental to the project as bid.
- B. The costs of cutting and patching, including the cost of additional Engineering costs, resulting by defective or ill-timed Work, or Work not conforming to the Specifications shall be the responsibility of the Contractor.
- C. Additional Work not covered by the Specifications that was done without the approval of the Owner shall be borne by the Contractor.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All materials for cutting and patching shall comply with the Specifications for the type of Work to be done.

PART 3 EXECUTION

3.01 GENERAL

- A. Cutting (including excavating), fitting or patching of Work shall be executed as required to:
 - 1. Uncover Work to provide for installation of ill-timed Work.
 - 2. Remove and replace defective Work
 - 3. Install and properly fit specified Work in existing construction, facilities or structures.
 - 4. Remove and replace Work not conforming to requirements of Plans or Specifications.
 - 5. Remove samples of installed Work as specified for testing.
- B. The Work of another Contractor, Work already completed, or existing facilities shall not be cut without the consent of the Engineer.

3.02 INSPECTION

- A. Representatives of the Contractor, Owner and Engineer shall, before starting Work on that portion of the project, inspect and record the existing conditions of Work, including elements subject to movement or damage during:
 - 1. Cutting and patching
 - 2. Excavating and backfilling
- B. After uncovering the Work, the Contractor and Engineer shall inspect Work and note all conditions affecting installation of new products.

3.03 PREPARATION

- A. The Contractor shall be responsible for providing shoring, backing and support as required to maintain structural integrity of the Work, protect other work, and provide protection from the elements.

3.04 PERFORMANCE

- A. The fitting and adjustment of products and material shall be executed to provide a finished installation that will comply with specified tolerances and finishes.
- B. All cutting and demolition shall be executed by methods which will prevent damage to other Work, and will provide the proper surfaces to receive installation of repairs and new Work.

* * * END OF SECTION * * *

SECTION 01051 GRADES, LINES AND LEVELS

PART 1 GENERAL

1.01 GENERAL

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Topography and profiles showing existing ground elevations and features were obtained by topographic survey.
- C. The Engineer will furnish construction staking to prosecute the Work as described below. The Contractor shall make timely demands of the Engineer for such staking. A notice of not less than five working days will be required in advance of setting stakes. The Contractor shall not proceed with the Work until construction stakes have been provided.
 - 1. Stakes showing line and grade, where required, will be furnished by the Engineer for the construction of the sewer. Stakes will be furnished on an off-set agreed upon by the Engineer and Contractor at all changes in pipeline grade and at intervals of not less than 50 feet. Elevations will be provided at all hydrant locations or other benchmarks will be provided.
 - 2. Stakes showing the line, where required, will be furnished by the Engineer for the construction of the water main. Stakes will be furnished on an offset agreed upon by the Engineer and Contractor at intervals as required.
 - 3. Stakes to indicate subgrade surface elevations and base course surface elevations will be furnished by the Engineer for the construction of the street surfacing and related improvements. Stakes will be furnished on the centerline of the street at all changes in grade and at intervals of not more than 50 feet.
 - 4. Should the Contractor request the setting of stakes in excess of those described above, the Contractor shall be responsible for the extra cost which will be prorated on the basis of the total number of stakes set.
- D. The Contractor shall be responsible for transferring from the grade and line stakes all distances and elevations necessary for the execution of the Work including but not limited to establishing limits of embankments and excavations, slopes, etc.
- E. The Contractor shall preserve all construction stakes, reference points, and other survey points. In case of their loss or destruction, the Contractor shall be liable for and charged with the cost of their replacement and of any expense resulting from their loss or disturbance.
- F. Should the Engineer be required to reset construction stakes, the cost for such resetting will be at the then current per diem rates. The charges for such Work will be deducted by the Owner from the progress payments to the Contractor for the month in which the surveying Work is done by the Owner and thereon paid to the Engineer.

* * * END OF SECTION * * *

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SECTION 01170 SPECIAL PROJECT PERMITS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

- A. The provisions of the Temporary Dewatering Permit issued by the South Dakota Department of Environment and Natural Resources (SD DENR) to the City, in compliance with the provisions of the South Dakota Water Pollution Control Act and the administrative rules of the State of South Dakota shall apply to the applicable portions of the work.
- B. The provisions of the Storm Water Discharge Permit issued by the SD DENR to the City under SWD General Permit issued in compliance with the Clean Water Act shall apply to all portions of the work.

1.02 SCOPE

- A. This Section identifies the special project conditions and procedures required by the above referenced permits.
- B. The Contractor shall be responsible for implementing and conforming to all special project procedures and requirements as identified herein.

1.03 MEASUREMENT AND PAYMENT

- A. Refer to Section 01025.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL PERMITS

- A. The Contractor shall comply with all Federal, State, County and local laws, ordinances, rules and regulations relating to the performance of the work. Nonconformance to any of these requirements will subject the Contractor to termination.
- B. The Contractor shall, at his own expense, procure all other permits, certificates and licenses required of him by law for the execution of the Work.

3.02 TEMPORARY DEWATERING PERMIT REQUIREMENTS

- A. A copy of the Temporary Dewatering Permit requirements may be obtained upon request after the project is awarded.

3.02 STORM WATER DISCHARGE PERMIT REQUIREMENTS

- A. A copy of the Storm Water Discharge Permit requirements will be made available to the contractor upon request after the project is awarded.
- B. A Storm Water Pollution Prevention Plan has been prepared for this project and is included in the plans.

* * * END OF SECTION * * *

SECTION 01200 PROGRESS MEETINGS AND JOB SITE ADMINISTRATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Coordination - Section 01040
 - 2. Progress Schedules and Reports - Section 01310

1.02 SCOPE

- A. The intent of this Section is to provide a general description of the project meetings required of the Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL

- A. All meetings shall be coordinated among the respective Contractors, Owner, Engineer and governmental agencies.
- B. The individual requesting the meeting shall contact the persons to be in attendance in writing providing the following:
 - 1. Date, time and place of the meeting
 - 2. Purpose of the meeting
 - 3. Names of people invited to the meeting
 - 4. Additional information as necessary

3.02 PRECONSTRUCTION CONFERENCE

- A. The DOT will arrange and schedule a pre-construction conference with the representatives of the contractors, subcontractors, together with representatives of all agencies and utilities that will be involved with the proposed Work in order to assure an efficient and workable method of scheduling the project.
- B. General topics to be covered are as follows:
 - 1. Contract-Legal Documents and Specifications
 - 2. Drawings
 - 3. General construction requirements
 - 4. Coordination of different contractors

5. Pay request procedure
6. Shop drawing submittal
7. Project observation and inspection
8. Coordination with affected governmental agencies and utility companies.

3.03 PROGRESS MEETINGS

- A. Routine progress meetings will be scheduled on a basis and time to be selected by mutual agreement between the Owner, the Contractors, the Engineer, and affected governmental agencies. These meetings shall be to discuss the progress and the planning of the Work of the various parties. This meeting shall be under the direction of the Engineer and shall be attended by representatives of the various contractors and subcontractors whose Work may be in progress at the time or whose presence may be required for any purpose. Contractors shall be represented at these meetings as appropriate to assist in the necessary project scheduling and discussion of related problems. Scheduling of required attendance shall meet with the approval of the Engineer.

* * * END OF SECTION * * *

SECTION 01310 PROGRESS SCHEDULES AND REPORTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Coordination - Section 01040
 - 2. Cutting and Patching - Section 01045
 - 3. Progress Meetings and Job Site Administration - Section 01200

1.02 DESCRIPTION OF WORK

- A. This section is intended to provide a description of the general requirements for the preparation and submittal of:
 - 1. A list of proposed subcontractors and suppliers
 - 2. A proposed construction schedule
 - 3. Monthly progress reports

PART 2 PRODUCTS - None

PART 3 EXECUTION

3.01 LIST OF SUBCONTRACTORS AND SUPPLIERS

- A. Prior to the execution and delivery of the Agreement, the successful bidder, if requested, shall comply with the following:
 - 1. Submit to Engineer a list of all Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by the Engineer.
- B. In any event, the Contractor shall submit, prior to moving on the site, a complete list of all subcontractors and suppliers with whom he proposes to contract. The list shall be in addition to the list described in Paragraph A, above shall be divided into sections corresponding to the specification divisions and shall state name, address, and telephone numbers together with work or items to be furnished.
- C. This list is subject to approval of the Engineer and Owner. After approval is given, the list cannot be revised without written approval. This approval does not relieve the Contractor of responsibility for compliance with specified requirements.

3.02 SCHEDULE OF OPERATIONS

- A. A construction schedule shall be prepared and submitted to the Engineer.
 - 1. The form of the schedule shall be not less than 8½" x 11" nor more than 11" x 17" in size with the information legibly written or typewritten thereon.
 - 2. The schedule shall contain the following:
 - a. Sequence of work;
 - b. Time of start and completion of each part of the work;
 - c. Delivery of material and coordination between other schedules and phases of work;
 - d. Name of overall job superintendent and the names of individual(s) responsible (foreman) for individual crews and/or subcontractors;
 - e. A general list of personnel and equipment anticipated for each crew and/or subcontractor.
- B. The schedule shall be submitted to the Engineer seven (7) days prior to the pre-construction conference. A revised schedule, if required, shall be resubmitted within seven (7) days of the receipt of the returned schedule.
- C. The submitted schedule will be reviewed by the Owner and Engineer for approval.
- D. If conditions beyond the control of the Contractor justify and an extension of time is approved, the Contractor shall revise the construction schedule in accordance with the approved extensions.

3.03 MONTHLY PROGRESS REPORTS

- A. The Contractor shall submit a written monthly progress report for review by the Owner and Engineer.
- B. The written report shall be in a format provided or approved by the Owner.

* * * END OF SECTION * * *

SECTION 01340 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This Section covers the submission, review and distribution requirements of shop drawings, product data and samples.

1.03 PAYMENT

- A. Refer to Section 01025 - Measurement And Payment

PART 2 PRODUCTS

2.01 SHOP DRAWINGS

- A. The shop drawings submitted for review shall contain pertinent information for the Engineer to review the proposed equipment or materials for acceptance.
 - 1. Submit additional information as specified in the individual technical specifications.
 - 2. All shop drawings and materials shall be identified by reference to specification section and/or drawing detail number.
 - 3. Minimum drawing size shall be 8-1/2" x 11".

2.02 PRODUCT DATA

- A. Manufacturer's standard schematic drawings shall be identified by reference to Section number and modified to delete information which is not applicable to the Work. Standard information shall be supplemented to provide additional information applicable to the Work.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data that are submitted for review shall be clearly marked to identify pertinent materials, products or models, show dimensions and clearances required, show performance characteristics and capacities, and show wiring diagrams and controls.

2.03 SAMPLES

- A. All samples submitted for review shall be identified by reference to section number and shall provide pertinent information for the Engineer to review the proposed materials for acceptance.

PART 3 EXECUTION

3.01 SHOP DRAWINGS AND PRODUCT DATA

- A. The review and submittal process for shop drawings and product data shall be in accordance with the requirements of the DOT.
- B. A minimum of five (5) copies of all shop drawings and product data shall be submitted. If the Contractor requires more than two (2) copies of the reviewed shop drawings and product data to be returned, he shall submit additional copies. Digital copies of the shop drawings may be submitted by email or other means.
- C. All shop drawings shall be submitted through the prime Contractor and be accompanied by a letter of transmittal. The prime Contractor shall approve all shop drawings before transmitting them for review.

3.02 SAMPLES

- A. Submit in accordance with the requirements of the DOT a minimum of four (4) samples of materials, finishes, colors, etc., as identified in the technical specifications for review.
- B. If the Contractor requires more than two (2) samples of material to be returned, additional samples shall be submitted.

* * * END OF SECTION * * *

SECTION 01400 QUALITY CONTROL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Specific requirements are also presented in the detailed sections of these specifications.

1.02 SCOPE

- A. This Section is intended to describe the Contractor's responsibilities regarding quality control.

1.03 PAYMENT

- A. Refer to Section 01025 - Measurement and Payment

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 TESTING LABORATORY SERVICES

- A. Where tests or inspections by an independent testing laboratory are required by these specifications, the Contractor shall employ and arrange for, at his expense, the services of an approved independent testing laboratory, satisfactory to the Owner and Engineer, to perform the tests or inspections utilizing recognized standard procedures and criteria.
- B. The Contractor shall submit reports and certificates of all inspections and tests in triplicate to the Engineer. The reports and certificates shall become the property of the Owner.
- C. The Contractor shall furnish all sample materials required for these tests and shall deliver same to the testing laboratory or other designated agency when and where directed by them.
- D. Any additional tests necessary beyond those required under this specification may be ordered by the Engineer to settle disagreements with the Contractor regarding quality of work done. If the Work is defective, the Contractor shall pay all costs of the extra tests and shall correct the Work. If Work is satisfactory, Owner will pay for extra tests.

3.02 FACTORY TESTS

- A. Factory tests of mechanical and electrical equipment relative to performance, capacity, rating, efficiency, function, or special requirements shall be conducted in the factory or shop for each item when this type of test is specified and/or required by the Engineer. These tests shall be performed in accordance with applicable standards and test codes.

- B. Factory tests shall be set up and accomplished by the equipment manufacturer who shall provide all shop space, tools, equipment, instruments, personnel, and other facilities required for the satisfactory completion of each test.
- C. Factory tests may be witnessed by representatives of the Owner and such witnessing, unless otherwise specified in the technical specifications, will be paid for by the Owner.
- D. Where factory tests are required or specified for process equipment under other headings of this specification, reports of the test results shall be submitted to the Engineer for review prior to shipment of the equipment.

3.03 FIELD TESTS

- A. Refer to the Technical Specifications.

* * * END OF SECTION * * *

SECTION 01500 TEMPORARY FACILITIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This section describes the temporary facilities to be provided by the Contractor during the Work.

1.03 PAYMENT

- A. Refer to Section 01025 - Measurement and Payment

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 TEMPORARY ELECTRICAL

- A. It will be the Contractor's responsibility to make arrangements for, provide, obtain and pay for temporary construction power as required for lighting and construction needs.

3.02 TEMPORARY WATER

- A. It will be the Contractor's responsibility to provide, obtain and pay for all water required for potable consumption and construction, flushing, testing, disinfection and other needs as may be required.
- B. All potable water facilities shall conform to the Federal, State and local health regulations.

3.03 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide and maintain in a sanitary condition, suitable temporary toilet facilities on the site for use by all persons. Temporary sanitary facilities shall be removed from the site when no longer necessary.
- B. Each temporary toilet shall be equipped, constructed and maintained in a manner that will conform to the applicable Federal, State and local regulations and requirements.
- C. Provisions for routinely servicing and cleaning all toilets and disposing of the sewage shall be established before placing toilet facilities into operation. The method of sewage disposal and location selected shall be in accordance with Federal, State, and local health regulations.

3.04 ROADS

- A. Each Contractor shall maintain the existing roads in usable condition during his construction of the facilities.
- B. The Contractor shall obtain the approval of the appropriate township, county, state or federal officials prior to constructing any temporary roads. All construction shall conform to the requirements of said officials.

3.05 SIGNS

- A. No signs, billboards, or other advertisements shall be erected on the premises by the General Contractor or the subcontractors without Engineer's permission. Each General Contractor shall furnish and maintain all necessary temporary signs required for the prosecution of the Work such as "Office," "Men Working," "Danger," "High Voltage," etc.

3.06 TEMPORARY POTABLE WATER SERVICE

- A. The Contractor shall be responsible for furnishing and installing all equipment, piping, fitting, materials and other items required to provide potable water to the affected customers as shown on the plans and as directed by the Owner and Engineer.
- B. The Contractor shall provide qualified supervision at all times during the period that temporary potable water service is required to insure that continuous service is provided on an uninterrupted basis.

3.07 TEMPORARY ENCLOSURES, LIGHTING, AND HEAT

- A. Each Contractor shall provide temporary enclosures and closures in order to retain heat so that specified temperatures can be maintained and the Work can proceed. He shall provide temporary closures over wall and floor openings, etc., to enclose the Work. Temperature inside the enclosures and/or enclosed part or parts of the structure shall be: not less than 60 degrees F for 48 hours prior to and during the time when and where concrete work, cement finish, or masonry work are being done or cured. Not less than 50 degrees F where only other trades, such as electricians, plumbers, etc., are working.
- B. Each contractor shall pay for any additional temporary heating facilities necessary to meet the above requirements, and the fuel, and the attendance required, until the structure is enclosed.
- C. Each Contractor shall provide all temporary lighting as may be required to illuminate the Work area. The lighting shall meet all safety codes and regulations. Lighting shall be not less than 20 footcandles. Additional light shall be installed for hazardous areas, for security applications, and for construction processes where visual acuity is required.
- D. All temporary lighting and power shall use U.L. approved devices and all systems shall meet safety requirements of the National Electrical Code and other applicable ordinances.

3.08 TEMPORARY OPERATIONS

- A. When it becomes necessary to utilize temporary pumping or other mechanical arrangements during construction, the Contractor shall provide qualified supervision at the construction site at all times. The Contractor shall be fully responsible for the operation and maintenance of all temporary equipment and all associated costs shall be included in the prices bid.

3.09 SITE CLEAN-UP

- A. Each Contractor shall clean the working area each day, shall remove all trash and waste materials, and shall maintain the site in a neat and orderly condition throughout the construction period.
- B. At the completion of the project, each Contractor shall clean out all pits, pipes, chambers, or conduits; shall remove all temporary structures built by him; and shall remove all rubbish from the areas which he has occupied, leaving them in a clean condition.

* * * END OF SECTION * * *

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SECTION 01505 MOBILIZATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This item shall consist of preparatory work and operations, including, but not limited to, the necessary movement of personnel, equipment, and incidentals to the project site; for the establishment of offices, buildings and other facilities necessary for work on the project; and for work and operations which must be performed, and for cost incurred before starting work on the various contract items on the project site.

1.03 PAYMENT

- A. When an item for Mobilization is included in the proposal, payment will be made at the contract lump sum price, and be considered full compensation for costs incidental thereto. Based on the lump sum contract price for Mobilization, partial payments therefor will be made on the basis of the following schedule:
 - 1. When the contract has been fully executed by parties thereto, an amount not greater than 10% of the amount bid for mobilization may be paid.
 - 2. When five (5) percent, or more, of the total contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to twenty-five (25) percent of the amount bid.
 - 3. When ten (10) percent, or more, of the total contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to fifty (50) percent of the amount bid.
 - 4. When twenty-five (25) percent, or more, of the total contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to sixty (60) percent of the amount bid.
 - 5. When fifty (50) percent, or more, of the original contract amount is earned, an additional amount will be paid to bring the total payment for mobilization to eighty (80) percent of the amount bid.
 - 6. When the project is substantially complete, a final payment will be made to bring the total payment for mobilization to one hundred (100) percent of the amount bid.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

* * * END OF SECTION * * *

SECTION 01560 TEMPORARY CONTROLS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This section is intended to describe the temporary controls to be provided by the Contractor.

1.03 PAYMENT

- A. The temporary controls are considered incidental work with no separate measurement and payment to be made.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall be responsible for maintaining the site and environment at an acceptable standard throughout the duration of the project.

3.02 NOISE CONTROL

- A. Each Contractor shall maintain all equipment, particularly the muffling systems on internal combustion engines, so that acceptable noise levels are not exceeded. Each Contractor shall make every effort to locate noise producing equipment in areas where the sound will be least offensive. Sound barriers are to be provided if needed.

3.03 DUST CONTROL

- A. Each Contractor will provide dust control operations at the time, location, and in such manner that will prevent, or at least minimize, the production of dust in a harmful or annoying amount. Water or dust preventative shall be used for dust control as required.

3.04 WATER CONTROL

- A. Each Contractor shall make the appropriate provisions for the proper drainage of the site. Standing pools of surface water and excavations shall be drained as soon as practical. Disposal of said water shall be in accordance with all applicable local, state, and federal laws and regulations.

- B. Flushing water or water pumped from dewatering of various elements of the Work which may be necessary during construction shall be conducted by temporary pipelines away from the work area to natural drainageways. Flushing or drainage shall not be conducted in such a manner as to cause erosion or flooding of adjacent land not owned or controlled by the Owner, except by special permission in writing by the Owner and affected land owner.
- C. The Contractor shall assure that water discharged to any location during construction does not damage the natural environment or wildlife. The Contractor shall be responsible for any environmental damage which results from his activities.
- D. The Contractor shall follow the requirements of the Storm Water Discharge Permit. Refer to Section 01170.

3.05 EROSION AND SEDIMENT CONTROL

- A. The Contractor shall be familiar with and follow the Storm Water Pollution Prevention Plan and erosion control details presented in the plans.
- B. Each Contractor shall be responsible for taking such measures as may be appropriate for the control of erosion and sediment from the project site. Such measures may include but are not limited to the following temporary and permanent measures:
 - 1. Topsoil should be removed and stockpiled for later use whenever possible before grading begins.
 - 2. The exposure of the soil should be minimized in both terms of area and time.
 - 3. Use temporary vegetation to protect cleared, graded, or disturbed areas that will otherwise be exposed to erosion for prolonged periods before the permanent vegetation and landscaping can be established. Apply needed ground cover on exposed areas within 15 days of exposure except on those sites where construction will begin within 30 days. If construction plans are suspended, areas should be seeded or mulched without delay. When it is not practical to plant temporary vegetation, spread mulch materials (such as grain straw) on the soil surface to provide desired protection.
 - 4. Natural vegetation should be retained whenever feasible.
 - 5. Appropriate structural or agronomic practices to control runoff and sedimentation should be provided during and after construction.
 - 6. Early completion of stabilized drainage system (temporary and permanent systems) will substantially reduce erosion potential.
 - 7. Roadways and parking lots should be paved or otherwise stabilized as soon as feasible.
 - 8. 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.

3.06 SOLID WASTE CONTROL

- A. Each Contractor shall be responsible for taking such measures as may be appropriate for the control and disposal of solid wastes through the duration of the project.

- B. All solid waste generated by construction related activities shall be disposed at an appropriately permitted solid waste disposal facility.

3.07 FIRE PREVENTION

- A. The Contractor shall perform all work in a fire safe manner.
- B. The Contractor shall furnish and maintain on site adequate fire fighting equipment capable of extinguishing incipient fires.
- C. It is recommended that the Contractor install spark arrestors on muffler systems on construction equipment to reduce the risk of fire.

* * * END OF SECTION * * *

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SECTION 01600 MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This Section is intended to describe the Contractor's general responsibilities for the handling, storage and protection of materials and equipment as well as the Contractor's options in the selection of products and manufacturers.
- B. Specific procedures for handling and storage of materials and equipment are presented in the appropriate section of the technical specifications.

1.03 PAYMENT

- A. All costs incurred by the contractor for the execution of the Work specified herein is considered incidental Work with no separate measurement or payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 TRANSPORTATION AND HANDLING

- A. Each Contractor shall have a representative at the site to accept delivery of equipment and material. Material shall be shipped with adequate protection to prevent damage due to handling and reasonable storage procedures.
- B. Pipe shall be transported from the factory to the job site with front ends tarped and covered. Pipe shall be delivered on pallets with protective boards to prevent damage from banding. Bands and boards shall be placed according to the manufacturer's standard arrangement so as to provide adequate support for material. No loose or unpalletted pipe shall be delivered to the project site.

3.02 PROTECTION OF WORK AND EQUIPMENT

- A. Loose granular materials for concrete or mortar are to be stored on solid surfaces such as paved areas, plywood or sheet materials to prevent mixing with foreign matter. Provide surface drainage to prevent flow or ponding of rainwater. Mixing of refuse or chemically injurious materials or liquids with the stored material shall be prevented.
- B. All storage shall be arranged in a manner to provide easy access for inspection.
- C. A periodic inspection of stored products on a scheduled basis shall be conducted to assure that:

1. State of storage facilities is adequate to provide required conditions;
 2. Required environmental conditions are maintained on a continuing basis;
 3. Surfaces of products exposed to elements are not adversely affected. Any weathering of products, coatings, and finishes is not acceptable.
- D. Equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on exterior of package. Comply with manufacturer's instructions on a scheduled basis.

* * * END OF SECTION * * *

SECTION 01700 PROJECT CLOSEOUT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This Section is intended to describe the procedures and Contractor's responsibilities for substantial and final completion of the Work and final closeout of the Project.

1.03 PAYMENT

- A. Refer to Section 01025 - Measurement And Payment

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CLEANUP

- A. The Contractor shall leave the site clean and ready for occupancy by the Owner. Early acceptance of process equipment shall not waiver cleanup prior to final acceptance.
- B. Flushing water or water pumped from dewatering of various elements of the Work which may be necessary during construction shall be conducted by temporary pipelines or ditches away from the work area to natural drainageways. Flushing or drainage shall not be conducted in such a manner as to cause erosion or flooding of adjacent land not owned or controlled by the Owner, except by special permission in writing by the Owner and affected land owner.
- C. The Contractor shall assure that water discharged to any location during construction does not damage private property. The Contractor shall be responsible for any environmental damage which results from his activities.
- D. Each Contractor shall provide cleaning of all surfaces, systems, and fixtures, including removal of labels, tags, grease, oil, dirt stains, etc., prior to final acceptance of the work.

3.02 PROJECT RECORDS

- A. One copy of all project documents shall be delivered to the Engineer for the Owner upon completion of the project. Quality and completeness of all drawings and records must be such that the Engineer may accurately transfer the information to a complete set of drawings of construction records.

- B. Copies of project documents to be furnished to the Engineer include, but are not limited to, the following:
 - 1. Soil density tests;
 - 2. Concrete slump and compressive strength tests;
 - 3. Pressure test data;
 - 4. Plan sheets with notations and sketches showing all changes made during the construction Process.

3.03 FINAL INSPECTION

- A. After the cleaning up of the work, premises, manholes, and all other areas and structures connected with the performance of the contract, the work as a whole shall be inspected by the Engineer, and any workmanship or materials found not meeting the requirements of the specifications shall be removed by and at the expense of the Contractor and good and satisfactory workmanship or material substituted therefor. All settlement, defects, or damage upon any part of the work shall be remedied and made good by the Contractor.
- B. The final inspection shall be scheduled at a time such that the Engineer, Contractor, Owner, representatives of all applicable governing agencies and the Resident Project Representative shall have an opportunity to be in attendance.
- C. Any costs and expenses incurred by the Engineer or Resident Project Representative in conducting additional inspections due to the Contractor's knowingly misrepresenting the project or any portion thereof as being ready for final inspection shall be compensated for by the Contractor prior to final payment.
- D. Any deficiencies identified after the final inspection and acceptance, such as backfill settlement, shall be considered after the fact and shall be recognized as maintenance under the Contractor's maintenance requirements.

3.04 GUARANTEE

- A. Guarantee on equipment placed into operation prior to final acceptance shall start from the date of written acceptance by the Engineer and Owner.
- B. The Contractor shall warrant all trenches against settlement for a period of one (1) year and shall promptly repair any settlement reported to him during this period.
- C. The Contractor shall be responsible for any and all damage claims filed with or court actions brought against the Owner for an on account of any damage(s) directly or indirectly caused by his actions.
- D. The Contractor shall make or cause to be made all necessary backfill replacement and repairs or replacement appurtenant thereto, within seven (7) days from and after due notification by the Owner or Engineer of backfill settlement or erosion and resulting damage at any designated location(s). Such replacements and repairs shall be made immediately upon due notification by the Engineer or Owner if the settlement or erosion is of a nature to endanger life or property.

- E. It is understood the repairs, due to faulty workmanship or materials, shall be covered by the Performance and Maintenance Bond. However, certain emergencies must be repaired immediately.

3.05 LIENS

- A. Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete release of all liens arising out of this Contract, or receipts in lieu thereof; and, if required in either case, an affidavit that so far as he has knowledge or information, the releases and receipts include all the labor and materials for which a lien can be filed. But Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify the Owner against any claim by lien or otherwise. If any lien and/or claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging such lien and/or claim, including all costs and attorney's fees.

* * * END OF SECTION * * *

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DIVISION 2 - SITE WORK

SECTION 02010 - SUBSURFACE INVESTIGATIONS

SECTION 02020 - EXISTING UTILITIES

SECTION 02160 - SHEETING, SHORING, AND BRACING

SECTION 02224 - TRENCHING, BACKFILLING AND COMPACTING

SECTION 02605 - MANHOLES AND CASTINGS

SECTION 02640 - VALVES AND APPURTENANCES

SECTION 02645 - HYDRANTS

SECTION 02665 - WATER PIPING AND FITTINGS

SECTION 02666 - WATER SERVICE PIPING, FITTINGS AND VALVES

SECTION 02667 - MECHANICAL THRUST RESTRAINT

SECTION 02675 - CLEANING AND DISINFECTION OF WATER DISTRIBUTION SYSTEMS

SECTION 02676 - TESTING OF WATER DISTRIBUTION SYSTEMS

SECTION 02730 - WASTEWATER PIPING AND FITTINGS

SECTION 02731 - PIPELINE TESTING

SECTION 02732 - CLEANING OF SANITARY SEWER SYSTEMS

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SECTION 02010 SUBSURFACE INVESTIGATIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE AND DESCRIPTION

- A. This section describes the Contractor's requirements relative to the subsurface investigations to be completed on this project.

1.03 SOIL INFORMATION

- A. For the contractors information and use in preparing the bid, the Contractor is referred to the attached report of surfacing and subgrade.
 - 1. The samples obtained and test results reported in the above referenced investigation are not guaranteed to be indicative of any ground or subsurface condition except at the particular time of investigation and exact location of the sample or test. No claim shall be made or be considered resulting from any deviations from the sample or test data. The above referenced information is made available to the Contractor for his own use and is in no event considered as a part of the contract.
- B. The Contractor shall accept the project site in its present condition. It shall be the Contractor's responsibility to determine to his own satisfaction the location and nature of all surface and sub-surface obstacles and the soils and water conditions which will be encountered during the construction of the proposed project.
- C. Additional test borings and other exploratory operations as may be desired shall be made by the Contractor at no cost to the Owner.

PART 2 PRODUCTS - Not Applicable

PART 3 EXECUTION

3.01 General

- A. Unless otherwise required, the Contractor shall return all areas disturbed by him to their original grade and seed in accordance with the specifications.
- B. All testing or borings completed by the Contractor shall be scheduled and performed with the permission of the Owner.

* * * END OF SECTION * * *

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SECTION 02020 EXISTING UTILITIES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 SCOPE

- A. This Section describes, but is not limited to, the relationship of the Project to existing underground utilities and the Work associated with the location, adjustment and repair of such utilities.

1.03 MEASUREMENT AND PAYMENT

- A. The cost to relocate or repair any utilities or other obstructions damaged by the Contractor's activities shall be considered incidental Work with no separate measurement and payment to be made.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 GENERAL

- A. Existing utilities, as shown on the drawings, are located in accordance with available data, but locations may vary and cannot be guaranteed. The exact locations shall be determined by each Contractor as the Work proceeds. All work shall be done carefully so as to avoid damaging the existing utilities and Work. The Contractor shall be responsible for locating, or having located, all utilities, whether shown or not on the plans or in these specifications.
- B. Each Contractor shall provide for protection, temporary removal and replacement or relocation of obstructions as required for the performance of this Work required in these specifications.
- C. Other obstructions not shown on the plans and requiring relocation shall be exposed by the Contractor without injury; or if injured, shall be repaired by Contractor at his expense. Removal of such obstruction or its relocation shall be made by the Contractor at no cost to the Owner.

3.02 UTILITY CONTACT

- A. In accordance with South Dakota state law, no excavator may begin any excavation without first notifying the One-Call Notification Center at 1-800-781-7474 of any proposed excavation. For your convenience the local "One Call Center" can be reached by dialing 811.

B. Prior to Work in a specific area affecting underground utilities, the following individuals shall be notified as appropriate:

1. TELEPHONE:

(Name of Company) CenturyLink
Telephone Number: (800) 833-0825

(Name of Company) Mitchell Telecom
(Mailing Address) 1801 North Main Street
(City, State, Zip Code) Mitchell SD 57301

Contact Person: Mark Wilson
Telephone Number: (605) 990-1120

(Name of Company) Midcontinent Communications
(Mailing Address) 1901 North Main Street
(City, State, Zip Code) Mitchell SD 57301

Contact Person: John Adams
Telephone Number: (605) 292-2930

2. ELECTRIC:

(Name of Company) NorthWestern Energy
(Mailing Address) 514 North Main Street
(City, State, Zip Code) Mitchell SD 57301

Contact Person: Jamie Hajek
Telephone Number: (605) 999-2434

3. GAS:

(Name of Company) NorthWestern Energy
(Mailing Address) 514 North Main Street
(City, State, Zip Code) Mitchell SD 57301

Contact Person: Jamie Hajek
Telephone Number: (605) 999-2434

4. WATER:

(Name of Company) City of Mitchell
(Mailing Address) 612 North Main Street
(City, State, Zip Code) Mitchell SD 57301

Contact Person: Terry Johnson
Telephone Number: (605) 770-7912

5. SEWER:

(Name of Company) City of Mitchell
(Mailing Address) 612 North Main Street
(City, State, Zip Code) Mitchell SD 57301

Contact Person: Terry Johnson
Telephone Number: (605) 770-7912

6. STREETS:

(Name of Company) City of Mitchell
(Mailing Address) 612 North Main Street
(City, State, Zip Code) Mitchell SD 57301
Contact Person: Ron Olson
Telephone Number: (605) 995-8465

- C. The failure of any utility to be present for any reason, at the Preconstruction Conference, if held, or the failure to be included in the listing of Paragraph 'B' above shall not relieve the Contractor of any responsibility described herein.

3.03 UTILITY REPAIR

- A. When an existing utility is exposed or damaged, the Contractor shall comply with the repair requirements of the affected utility.
- B. When an underground utility is exposed, the Contractor shall compact the backfill beneath the exposed utility before completion of the backfill operation.

3.04 SEWER AND WATER MAIN SEPARATION

A. Horizontal Separation

1. Sewers shall be laid at least 10 feet horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, a deviation may be allowed if approved by the engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer.
2. If it is impossible to obtain proper horizontal separation as described above, both the water main and sewer shall be constructed of slip-on or mechanical joint pipe complying with public water supply design standards and be pressure tested where possible to 150 psi to assure watertightness.

B. Vertical Separation

1. Sewers Crossing Under Water Mains – The sewer shall be laid to provide a minimum of 18 inches from the top of the sewer to the bottom of the water main. The crossing shall be arranged so the sewer joints will be equidistant and as far as possible from the water main.
2. Sewers Crossing Over Water Mains – Either the water main or the sewer main must be encased in a watertight carrier pipe that extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be PVC and the ends sealed with a rubber gasket or boot.

- C. Special Conditions – When it is impossible to obtain the proper horizontal and vertical separation as stipulated above, one of the following methods shall be specified:

1. Water Pipe – The sewer shall be designed and constructed equal to water pipe and shall be pressure tested where possible at 150 psi prior to backfilling to assure watertightness; or;

2. Carrier Pipe – Either the water main or the sewer main may be encased in a watertight carrier pipe that extends 10 feet (3.0 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be PVC and the ends sealed with a rubber gasket or boot.

D. The following is additional information for storm sewers that must also be included:

1. A reinforced concrete pipe (RCP) storm sewer may cross below a water main with a separation of less than 18 inches or at any height above a water main provided the joints on the RCP within 10 feet of either side of the water main are assembled with one or more of the following:
 - a. Preformed butyl rubber sealant meeting federal specification #SS-S-210A and AASHTO M 198, and each of these joints are encased with a minimum 2-foot wide by 6-inch thick concrete collar centered over the joint and reinforced with the equivalent steel area as that in the RCP. Encasement of the water main will not be required when the RCP joints are collared within the 20-foot section.
 - b. An O-ring that conforms to ASTM C 443 specifications. O-rings are manufactured for concrete pipe with diameters up to 18 inches.
 - c. A strip of impermeable material held in place with stainless steel bands and tested to 5 psi prior to the storm sewer being put into use.

* * * END OF SECTION * * *

SECTION 02160 SHEETING, SHORING, AND BRACING

PART I GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Trenching, Backfilling and Compacting - Section 02224.

1.02 DESCRIPTION OF WORK

- A. Furnish and install all necessary sheeting, shoring, and bracing to adequately protect all new and existing structures, all existing piping as may be required during construction period, and all new piping.

1.03 MEASUREMENT AND PAYMENT

- A. Sheeting, shoring, and bracing left in place to protect footings, structures, or piping shall be incidental to the contract unit prices as shown on the Bid Form.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All sheeting, shoring, and bracing shall be in good or new condition and shall conform to the requirements of current safety codes and guidelines.

PART 3 EXECUTION

3.01 METHODS

- A. Contractor shall be responsible for the design, installation and maintenance of all sheeting, shoring and bracing as necessary to furnish safe working conditions conforming to the current codes, regulations, and guidelines; to prevent any shifting and movement of material which may endanger personnel; to prevent damage to structures, or other work; and to avoid delay to the work.
- B. Bracing shall be so arranged as not to place any strain on portions of existing structures or utilities or completed work until the general construction has proceeded far enough to provide ample strength.
- C. Trench sheeting shall remain in place until proposed materials have been placed, tested for defects, and repaired if necessary, and the earth around it compacted as required by the specifications.

- D. In general, the sheeting and bracing shall be removed as the excavation is refilled in such a manner as to avoid the caving in of the bank or disturbance to adjacent areas or structures. The voids left by the withdrawal of the sheeting shall be carefully filled and compacted in accordance with the specifications.
- E. No sheeting, shoring, and bracing which is within three feet of the surface of the finished grade may be left in place without the written permission of the Engineer.
- F. It shall be the duty and responsibility of the Contractor to be familiar with all local, state, and federal regulations relating to this type of work and to comply with those regulations.
- G. Contractor shall have "competent person(s)" as defined by OSHA standards 29 CFR 1926.650, 1926.651 and 1926.652; Subpart P – Excavations, on the job site whenever trenching is in progress or open trenches are within the project site.

* * * END OF SECTION * * *

SECTION 02224 TRENCHING, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related Requirements specified elsewhere:
 - 1. Special Project Permits – Section 01170
 - 2. Existing Utilities - Section 02020
 - 3. Sheet piling, Shoring and Bracing - Section 02160

1.02 SCOPE

- A. This section covers the excavation of all necessary trenching for underground utilities, and backfilling same, after the pipe and related material and structures have been properly placed, inspected and tested all in accordance with applicable federal, state and local laws and regulations.
- B. The term "structures" as used in these specifications shall include but not be limited to manholes, cleanouts, fittings, valves, fire hydrants and related appurtenances.

1.03 QUALITY ASSURANCE

- A. When requested by the Engineer or Resident Project Representative, the Contractor shall excavate and expose the pipe previously laid at any point.
- B. The Owner will conduct in-place moisture and density tests of the water, sanitary sewer and storm sewer trench backfill. The Owner will conduct such tests, observations and measurements as may be deemed appropriate for the Owner's own information and use to determine general conformance and compliance with the general intent of the plans and specifications. The results of the tests, observations and measurements made by the Owner shall not relieve the Contractor from any responsibility for completing the work in conformance with the plans and specifications.
- C. The Contractor shall be responsible for conducting such additional tests, observations and measurements as he deems necessary to demonstrate conformance with the requirements of the plans and specifications.

1.04 MEASUREMENT AND PAYMENT

- A. Trenching, backfilling and compacting are considered incidental work with no separate measurement and payment to be made.
- B. Should rock (solid material not removable without blasting or power hammer) be encountered, one of the following procedures will be followed upon agreement between the Owner, Contractor and Engineer:
 - 1. The line or structure will be relocated; or

2. Excavation will continue at a negotiated price, or the unit price as shown on the Bid Form. Measurement will be on the basis of actual length, depth and width. The maximum width allowed for payment shall be nominal pipe diameter plus 16 inches at the trench bottom and depth six (6) inches below the proposed invert elevation as shown on the plans.
- C. All boulders containing a volume of more than one (1) cubic yard will be considered solid rock excavation. Shale, regardless of the nature of deposit, will not be considered as rock excavation unless so designated on the plans. The responsibility and cost of satisfactorily demonstrating to the Engineer that the material being considered for rock excavation cannot be removed by means other than drilling and/or blasting shall be the obligation of the Contractor.
- D. Where over excavation and backfill or other trench bottom stabilization measures are required, the areas requiring stabilization will be measured and paid for at a price negotiated between the Owner and Contractor as per the procedures set forth in the Contract Documents, provided the unstable trench bottom conditions are not due to the fault or neglect of the Contractor.
- E. Dewatering is not anticipated on this project. Dewatering will not be measured for payment and will be considered as subsidiary work pertaining to the Contract. When dewatering is required and paid for, it shall be considered as dewatering only in accordance with the requirements of Paragraph 3.06 of this Section.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL EXCAVATION

- A. All material encountered shall be excavated to the lines and grades as shown on the plans, set by the Engineer or as specified herein.
- B. Unless otherwise shown on the plans, trenches for sewer and water lines shall be of a depth that will provide a minimum cover of not less than six (6) feet over the top of the pipe as measured from the proposed ground surface.
- C. Where pipe elevation is determined by minimum depth only, the excavation shall be sufficient at all points to grade the pipes on the tangents and vertical curves as dictated by the minimum bending radius of the pipe and fittings as recommended by the manufacturers.
- D. The trenches shall be sufficiently straight between designated angle points to permit the pipe to be laid true to line in the approximate center of the trench.
- E. Intersections with and crossings of other underground utilities shall be as shown on the plans and/or in accordance with applicable state and local laws and regulations. Refer to Section 02020 for additional requirements.
- F. All excavated material suitable for backfilling shall be placed in an area away from the trench edges so as to avoid overloading, sliding and cave-ins.
- G. The areas immediately adjacent to the trench shall be graded as required to prevent surface water from entering the trenches.

3.02 EXCAVATION AT STRUCTURES

- A. A minimum of twelve (12) inches shall be left between the trench wall and the outside surface of the structure.

3.03 SHEETING, SHORING AND BRACING

- A. Refer to Section 02160 of these specifications.

3.04 ROAD, STREET AND DRIVEWAY CROSSINGS

- A. At such road and all other crossings as may be designated by the Engineer, the trenches are to be mechanically tamped and filled in such a manner as to prevent any serious interruption of traffic upon the roadway or crossing.
- B. Not more than one street or road crossing may be obstructed by the same trench at any one time except by permission of the Engineer and Owner.

3.05 ROCK EXCAVATION

- A. Rock excavation shall be completed to a minimum of eight (8) inches below and on each side of all structures.
- B. Excess excavation shall be backfilled with compacted material conforming to the bedding material required for the material being used.

3.06 DEWATERING

- A. Where water is encountered in a trench, water shall be removed by pumping to lower the water level to such elevation that the pipe may be laid dry at the grade shown on the plans.
- B. All water pumped from the trench shall be disposed of in a manner so as not to cause any damage to adjacent property.
- C. When dewatering is paid for, it shall be considered as dewatering only when a manifold or pump and system of well points is installed to lower ground water such that excavation and construction can take place.
- D. The process of pumping water out of the trench with a suction hose and pump will not be considered as dewatering.
- E. Where seepage of water into the trench occurs that can be removed using standard pumping procedures, it shall not be deemed sufficient cause for installing a system of manifolds and well points and classified as dewatering in order to obtain remuneration under the bid item - Dewatering.
- F. In the event the water from the dewatering procedures can reach the waters of the state, the permit requirements of the general dewatering permit or temporary storm water discharge permit shall be followed as applicable. The Contractor is referred to Section 01170 – Special Project Permits for information relating to the permit(s). To obtain information on the permit(s) the Contractor should contact the South Dakota Department of Environment and Natural Resources at (605) 773-3351.

3.07 TRENCH BOTTOM PREPARATION

- A. The sides of all trenches shall be vertical from the bottom of the trench to a point one (1) foot above the top of the pipe.
- B. The width of the trench shall be greater than six (6) inches but less than twelve (12) inches on each side of the pipe bell.
- C. The bottom of all trenches for underground piping shall be carefully and accurately formed to the lines and grades as shown on the plans, set by the Engineer or as specified herein.
- D. Removal of rock, boulders, and large stones, or other manmade material shall be completed in accordance with Paragraph 3.05 of this specification.
- E. If the trench bottom is inadvertently excavated deeper than necessary, it shall be backfilled to the proper grade with compacted bedding material.

3.08 UNSTABLE TRENCH BOTTOM

- A. Whenever wet, soft or unstable soils incapable of properly supporting the pipe, or other appurtenances are encountered in the trench, the Contractor shall be required to remove the unsuitable materials and backfill to the proper grade with concrete, granular material or other suitable approved material as directed by the Engineer.
- B. Backfill material shall be compacted to a minimum density of 95% of maximum Standard Proctor Density (ASTM D698) at not less than 4% below optimum nor more than 4% above optimum moisture content.

3.09 BACKFILLING AND COMPACTING

- A. Any trenches improperly backfilled or showing excessive settlement shall be reopened to a depth required for proper compaction.
- B. Backfill material shall be free of boulders, frozen clods, large roots, excessive sod or other vegetation, construction debris.
- C. No backfilling shall take place in freezing weather without written permission from the Engineer.
- D. Bedding material shall consist of borrowed granular material and shall conform to the requirements of Sections 02665 and/or 02730.
- E. The embedment material above the bedding material shall be finely divided material free from debris, organic material, and clods, lumps or stones larger than 1-1/2 inches maximum diameter. The material shall be borrowed material or job site excavated material. Embedment material shall be placed in uniform layers not more than eight inches (8") thick and compacted to 95% maximum density as determined by ASTM D698 and a moisture content of between 4% below and 4% above optimum moisture until the pipe has a cover of not less than one foot (1').
- F. The remainder of the backfill above the embedment material shall consist of selected material from excavation or borrow, and shall be free from cinders, ashes, refuse, organic and frozen material, boulders or other materials that are unsuitable. This material shall be placed from 12 inches above the top of the pipe to 6 inches below the ground surface, unless otherwise specified, or to the subgrade elevation for streets or paved surfaces. Under no circumstances

shall backfill material that is placed within two feet of the top of the pipe be allowed to contain stones, rocks or other solid debris that is greater than three (3) inches in size.

- G. After completing the bedding and embedment of the pipe as specified, the remainder of the backfill material shall:
1. In areas beneath unpaved areas, be placed in uniform layers not exceeding one foot (1') and compacted throughout the entire depth of the backfill to at least 95% of the maximum density as determined by ASTM D698 and a moisture content of between 4% below and 4% above optimum moisture obtainable at optimum moisture content for those areas under and within 10 feet of a roadway. Those areas where the utility is crossing open fields and yards shall be compacted to 90% of the maximum density as determined by ASTM D698 and a moisture content of between 4% below and 4% above optimum moisture.
 2. In areas under road surfacing, sidewalks, curb and gutter, and other adjacent improvements to a point 8 feet (8') from the edge of the road surface and as otherwise noted on the plans, be placed in uniform layers and compacted throughout the entire depth of the backfill. Each layer, except the upper 6 inches of subgrade underlying the pavement, shall be spread uniformly and tamped with a hand tamper or other approved device until thoroughly compacted to at least 95% of the maximum density obtainable at optimum moisture content as determined by ASTM D698 and a moisture content of between 4% below and 4% above optimum moisture. The upper 6-inch layer, forming the subgrade for surfacing shall be compacted to at least 95% of the maximum density obtainable at optimum moisture content for flexible pavements and to at least 90% of the maximum density obtainable at optimum moisture content for rigid pavements and gravel. Density of backfill shall be determined based on Standard Proctor Test, ASTM Test Designation D698.
- H. The Contractor shall moisten or aerate the backfill material to obtain the moisture content required to obtain the specified compaction.
- I. Any settlement of the trench within a period of 1 year from the date of substantial completion shall be brought back to the finished grade with the appropriate cover material. The Contractor shall be responsible for all costs related to this work.
- J. Where sufficient excavated material is not available for backfilling and grading, the Contractor shall at no additional cost to the Owner, be responsible for locating, obtaining and placing additional materials as may be requested. Borrow of topsoil by stripping areas adjacent to the trench will not be allowed.
- K. No more than 300 feet of trench shall be left open at any time. Open trenches shall be properly marked and/or attended. Trenches shall be closed at the end of each day.

3.10 EXCESS EXCAVATION

- A. Materials shall not be wasted without the permission of the Engineer. No payment will be made for any excavated material which is used for purposes other than those designated. All spoil areas shall be leveled or shaped to:
1. the designated uniform line and section as directed by the Owner;
 2. provide for proper drainage of the spoil area and surrounding area;
 3. a condition and slope to allow maintenance by the Owner; and,

4. present a neat appearance before project acceptance by the Owner
- B. The contractor shall be responsible for securing and maintaining an adequate area where excess material can be stockpiled for future use or waste.
- C. The Owner's approval of the site selection shall be required.
- D. The Contractor shall be responsible for the final cleanup of the site chosen. The site shall be cleaned to the satisfaction of the property owner, and a lien waiver or a letter of satisfaction written by the property owner and addressed to the Owner.
- E. Excess material not required for embankment shall be removed from the project site or stockpiled at a site designated by the Owner for later use. Such removal, disposal and/or stockpiling shall be at the Contractor's expense.

3.11 TOPSOIL

- A. All topsoil shall be removed, stockpiled and replaced for its full depth, width and length of the areas disturbed by the construction procedures. All lawns and boulevard areas shall be left smooth with a minimum of four (4") inches of compacted black dirt throughout the entire area disturbed by the trench.
- B. Lawns, boulevards, or other areas designated on the plans shall be reseeded to the full width and length of areas disturbed during construction.
- C. Prior to topsoiling and finish grading, all rough grades shall be corrected, adjusted and brought to the required elevations.
- D. The subgrade surface shall be prepared for topsoiling by cross-discing to a depth of two (2) inches or more to permit bonding of the topsoil to the subgrade.
- E. All stones and other debris greater than two (2) inches in any dimension shall be removed from the surface of the subgrade prior to the placement of the topsoil.
- F. Topsoil material shall not be placed when the topsoil or subgrade is frozen or wet enough to cause clodding.
- G. Topsoiling operations shall be considered complete when the finished surface is:
 1. Free of sticks, stones and other material one (1) inch or more in any dimension.
 2. Smooth and true to required grades with a maximum allowable deviation of 0.1 foot.

* * * END OF SECTION * * *

SECTION 02605 MANHOLES AND CASTINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related Work Specified Elsewhere:
 - 1. Trenching, Backfilling and Compacting - Section 02224
 - 2. Wastewater Piping and Fittings - Section 02730

1.02 DESCRIPTION OF WORK

- A. The Work covered under these specifications shall include the furnishing of all material, labor, tools, and equipment necessary to furnish, install, and construct complete in place all manholes as shown on the drawings and specified herein.
- B. When the term "manhole" is used in these specifications, it shall mean a structure which is placed on the sewer line to permit entry, inspection, cleaning, and repair of the sewer, and shall apply to all types of manholes.

1.03 MEASUREMENT

- A. Manholes and castings shall be measured in units as specifically called for in the Bid Form.

1.04 BASIS OF PAYMENT

- A. The price bid for manholes, complete in place, shall be full compensation for furnishing all materials, labor, equipment, and incidentals necessary to construct and place in satisfactory operating condition the manholes, including seals, excavation, backfill, and concrete foundations.
- B. The price bid shall include and constitute full compensation to furnish and install the base, barrel section(s), cone section, adjusting ring(s) and other appurtenances as required therein.
- C. Inside manhole drop system will be paid for on the basis of each drop installed. Payment shall be considered full compensation to furnish and install all necessary materials and equipment required for the installation of the inside drop system.
- D. The removal and disposal of existing manholes shall be measured and paid for based on the unit price listed in the Bid Form. The payment shall include compensation for all costs associated with removal, hauling and disposal of the materials.
- E. The price bid for manhole castings shall be full compensation for furnishing and installing the casting and lid as required to the proper elevation.

1.05 JOB CONDITIONS

- A. Existing underground utilities, as shown on the drawings, are located in accordance with available data, but locations may vary and cannot be guaranteed. The exact locations shall be determined by the Contractor as work proceeds. Excavation work shall be done carefully so as to avoid damaging existing work.
- B. Contractor shall provide for protection, temporary removal and replacement or relocation of said obstructions as required for the performance of the work required in these contract documents.

1.06 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for the materials as specified herein in accordance with the requirements of Section 01340.

PART 2 PRODUCTS

2.01 MANHOLES

- A. Manholes shall be constructed of concrete or precast concrete with bases, rings, and covers according to the dimensions and details as shown on the plans or as called for in the specifications.
- B. The materials used for precast manhole section and bases shall be of the size as shown on the drawings and shall conform to ASTM C-478.

2.02 MANHOLE CASTINGS

- A. Gratings and covers shall be of the standard design of the manufacturer. All castings shall be of uniform quality, free from blow holes, shrinkage, cracks, distortion, or other defects affecting strength and appearance. They shall be smooth and well cleaned.
- B. Metal used in the manufacture of castings shall conform to ASTM A48-76, Class 35B for gray iron or ASTM A536-80, Grade 65-45-12 for ductile iron.
- C. All castings shall be manufactured true to pattern; component parts shall fit together in a satisfactory manner. Round frames and covers shall have continuously machined bearing surfaces to prevent rocking and rattling.
- D. All cast dimensions may vary 1/2 the maximum shrinkage possessed by the metal or plus or minus 1/16 inch per foot.
- E. All weights shall not exceed the manufacturer's published weights by plus or minus 5%.
- F. All castings shall meet the load bearing requirements as shown on the plans. The proof load test results shall be furnished upon request. The proof load test procedure shall be in accordance with Federal Specification RR-F-621C.
- G. The manhole casting shall be Model R-1733 (7") as manufactured by Neenah Foundry Company; Model 1261, as manufactured by Deeter Foundry Company; or approved equal. Covers shall be solid with concealed pick holes.

2.03 INSIDE DROP SYSTEM

- A. The inside manhole drop system shall consist of PVC pipe and fittings in conformance with Section 02730 and as shown in the plans. All fasteners, bolts and straps shall be stainless steel.

2.04 MANHOLE WALL JOINT SEALANT

- A. Flexible gasket material for sealing manhole wall joints shall be RAM-NEK as manufactured by K.Y. Snyder Company, Inc., Houston Texas; ConSeal CS-202 as manufactured by Concrete Sealants, Inc., New Carlisle, Ohio; or approved equal.

2.05 MANHOLE WALL - CASTING SEALANT

- A. Unless otherwise shown on the plans, sealant material meeting the requirements of Paragraph 2.04-A above shall be used to make a watertight seal between the manhole wall and casting.

2.06 PIPE OPENING GASKET

- A. Unless otherwise shown on the plans, the pipe opening in the manhole wall shall be made watertight with a rubber gasket assembly meeting the requirements of ASTM C-923 and the following:

GASKET	
	Minimum Thickness of Gasket Material
8" Holes thru 16" Hole Sizes	290" +/- .025
18" Holes and Larger Hole Sizes	300" +/- .025
Minimum Compound Tensile Strength of Rubber	1800 PSI
Elongation of Rubber	450% - 550%
Shore A Durometer of Rubber	42 +/- 5
EXPANSION SLEEVE	
Material	Type 304 Stainless Steel
Tensile Strength of Steel	85,000 PSI
Yield Strength of Steel	35,000 PSI
8" thru 26" Hole Sizes	1.5" Wide 11 Gauge
28" Hole Sizes and Larger	1.5" Wide 10 Gauge
TAKE UP CLAMPS	
Materials	Stainless Steel
Band, Saddle and Housing	Type 302
Screw	Type 305

PART 3 EXECUTION

3.01 LOCATIONS

- A. Manholes shall be constructed at the locations and grades indicated on the plans.

3.02 EXCAVATION

- A. The requirements of Section 02224 shall apply to the excavation, backfilling and compaction for manholes.

3.03 GENERAL CONSTRUCTION

- A. Concrete shall be placed and shaped in all manholes or storm water inlet structures in such a manner so as to create a smooth, accurately shaped invert channel in accordance with the plan elevations. The floor and invert channel of the manhole and storm water inlet structure shall be constructed in such a manner as to drain into the invert properly.
- B. Sanitary sewer invert channels may be:
 - 1. Preformed directly in the concrete of the manhole base;
 - 2. Formed using a section of PVC of the required size, shape and length and pouring concrete in accordance with Paragraph A above; or
 - 3. Constructed by laying full section sewer pipe straight through the manhole and cutting out the top half after the manhole floor is constructed and sufficiently set in accordance with Paragraph A above.
- C. Manholes shall be built up so that the cover, when placed, will be at the grade required in the plans or as set by the Engineer.

3.04 PRECAST CONCRETE MANHOLES

- A. Monolithic precast concrete manholes shall be constructed in accordance with the details shown on the plans, as required by ASTM specification C478 and as specified hereinafter.
- B. Monolithic concrete and precast concrete manholes shall have offset cones; that is, one side shall be vertical.
- C. Precast base sections may be a base riser section and separate base slab or base section with integral floor. Cast in place bases shall be furnished as shown on the plans.
- D. Precast concrete manholes shall be placed using present acceptable construction methods.
- E. The openings in monolithic precast manhole sections shall be sealed using a rubber sleeve gasket to make a flexible water tight connection.
- F. All lifting holes in the manhole walls shall be carefully grouted with non-shrunk grout prior to backfilling.

3.05 BACKFILLING

- A. After completion of footings, walls, and other construction below the elevation of the final grades and prior to backfilling, all forms shall be removed and the excavation cleaned of all trash and debris.

- B. The Contractor shall protect the manhole from all elements and from displacement during backfill operations. If any displacement of a manhole occurs, the Contractor shall repair all resulting damage and return the manhole to the original position required at his own expense.
- C. The backfill material shall conform to the requirements of Section 02224.

3.06 CASTING PLACEMENT

- A. The manhole casting and cover shall be carefully centered and sealed in the opening manhole wall-casting. Sealant methods and material shall be as shown on the plans and as specified herein. Concrete adjusting rings shall be used as required to set the casting to the proposed grade.

3.07 SURFACE FINISH

- A. The surface of the area shall be finished and smoothed to the lines and grades as shown on the plans.
- B. The requirements for the surface finish of the surrounding area shall conform to the requirements of the specifications relating to the surface to be replaced.

* * * END OF SECTION * * *

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SECTION 02640 VALVES AND APPURTENANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Water Piping and Fittings - Section 02665
 - 2. Mechanical Thrust Restraints - Section 02667

1.02 DESCRIPTION OF WORK

- A. This section covers the furnishing and installation of valves and appurtenances as specified herein and as shown on the plans.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All valves and related appurtenances shall be shipped in accordance to the appropriate requirements of the AWWA. Valve ends shall be sealed to prevent the entry of foreign matter into the valve body. The boxes and crates in which valves are shipped shall completely enclose and protect the valve and accessories from foreign matter.
- B. Valves and accessories shall be stored in a manner so as to be protected from weather, moisture and other possible damage. Materials shall not be stored directly on the ground.
- C. All material shall be handled in a manner that will prevent damage to the interior and exterior surfaces.

1.04 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for materials specified herein in accordance with the requirements of Section 01340 and the requirements as hereinafter specified.
- B. Certification of performance, leakage, and hydrostatic tests, as described in AWWA C515 shall be furnished when requested by the Engineer.

1.05 MEASUREMENT AND PAYMENT

- A. All valves shall be measured and paid for at the contract unit price for the size and type of valve specified. Payment for each valve shall be full compensation for furnishing material, labor and incidentals as required to install the valve, thrust restraints and valve boxes with adaptors. Valve removals shall also be measured and paid for at the contract unit price. The price paid for removal of valves shall include the costs associated with removal and disposal of the valve.

PART 2 PRODUCTS

2.01 GATE VALVES

- A. Gate valves shall be resilient wedge type manufactured to meet all applicable requirements of AWWA Standard for Resilient Seated Gate Valve C515. Gate valves shall be furnished with mechanical joint connections. Bolts and nuts for valve to pipe connection shall be stainless steel.
- B. All valves shall have non-rising stems, opening by turning left and provided with 2 inch "square" nut with arrow cast in metal to indicate direction of opening.
- C. Ductile iron wedge shall have sealing surfaces of the wedge permanently bonded with resilient material to meet ASTM tests for rubber to metal bond ASTM D429-73. Each valve shall have a smooth unobstructed waterway free from any sediment pockets. Stuffing boxes shall be O Ring seal type with 2 rings located in stem above thrust collar and one below.
- D. Body and cover bolts and nuts shall be type 304 stainless steel. Interior and exterior shall be coated with a fusion bonded epoxy coating that is non-toxic and safe for potable water. Interior coating shall conform to AWWA C550 (latest revision) Standard for Protective Epoxy Interior Coatings for Valves and Hydrants.
- E. Non-rising stems shall be in full compliance with AWWA specification with cast integral stem collar and furnished of bronze conforming to ASTM B584. Stem nuts shall be independent of wedge and shall be made of solid bronze or copper alloy conforming to ASTM B62 or ASTM B763.
- F. Valves shall have hydrostatic shell test of 500 psi and shut-off test of 250 psi. At the 250 psi shut-off test, valve must be bubble-tight with a zero (0) leakage allowance.
- G. Resilient wedge gate valves shall be American Flow Control model 2500; or approved equal to conform to the City's existing inventory.

2.02 VALVE BOXES

- A. Valve boxes shall be cast iron, 5-1/4" inside diameter, adjustable valve boxes of the screw type with sufficient length for the pipe bury as shown.
- B. Covers for water valves shall have the word "WATER" cast on the top.
- C. Valve boxes and covers shall be as manufactured by Tyler Pipe Utilities Division, Tyler, Texas; Mueller Co., Decatur, Illinois; Clow Corporation, Oak Brook, Illinois; or approved equal.
- D. Valve boxes shall be installed on the valve with the use of valve box adaptor manufactured from a rubber compound. The valve box adaptor shall be Valve Box Adaptor II as manufactured by Adaptor, Inc. or approved equal.

PART 3 EXECUTION

3.01 VALVE INSTALLATION

- A. All valves shall be installed in locations as shown on the plans or as directed by the Owner's Resident Project representative.
- B. The valve and joints shall be installed in accordance with the manufacturer's recommendations. The bolts and nuts used to install the valves shall be stainless steel.
- C. Valves installed in buried locations shall be encased in low density polyethylene. The polyethylene material shall have a minimum thickness of not less than 8 mils. The polyethylene material shall be marked and installed according to AWWA C105.

3.02 VALVE BOX INSTALLATION

- A. All foreign material and debris shall be removed from the top of the valve operator prior to setting the valve box.
- B. Valve boxes shall be centered and plumb over the operating nut of the valve and shall be set so that no shock or stress will be transmitted to the valve.
- C. Tops of the valve boxes shall be set flush with the proposed surface unless otherwise directed.

* * * END OF SECTION * * *

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SECTION 02645 HYDRANTS

PART I GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Water Piping and Fittings - Section 02665
 - 2. Mechanical Thrust Restraints – Section 02667

1.02 DESCRIPTION OF WORK

- A. This section covers the furnishing and installation of hydrants as specified herein and as shown on the Drawings.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All hydrants shall be prepared for shipping and handled during shipping in accordance with the requirement of AWWA C502.
- B. Hydrants shall be stored in areas protected from weather, moisture and possible damage. Hydrants and related materials shall not be stored directly on the ground.
- C. Hydrants and related material shall be handled in a manner that will not damage interior or exterior surface.

1.04 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for materials specified herein in accordance with the requirements of Section 01340 and the requirements as hereinafter specified.
- B. Certification of performance, leakage, and hydrostatic tests, as described in Section 5 of AWWA C502, shall be furnished when requested by the Engineer.

1.05 MEASUREMENT AND PAYMENT

- A. All hydrants, hydrant removals and related appurtenances as described herein shall be measured and payment made at the units and prices bid on the Bid Form.

PART 2 PRODUCTS

2.01 FIRE HYDRANTS

- A. Hydrants shall be Model B-84-B as manufactured by American Darling Valve Division, or approved equal to match the City's existing inventory. Hydrants shall be furnished with mechanical joint base elbow. Connecting bolts shall be composed of stainless steel.

- B. Hydrant shall be dry barrel types as manufactured in accordance with AWWA Standard C502. Hydrant shall be designed for 250 pounds working pressure and shop tested to 500 pounds hydrostatic pressure prior to shipment to the project site.
- C. Hydrant body shall be constructed from cast or ductile iron. Hydrants shall be of the "break-away" design. Valves, when closed, shall remain reasonably tight when the upper portion of the barrel and operating mechanism is broken away. The barrel sections shall be bolted, not screwed, to the lower section. Hydrant body shall be of proper length to provide a minimum of 6' of bury or the specified depth of cover over the service main. The base elbow flange connection bolts shall be type 304 stainless steel.
- D. The main valve seat ring and drain ring shall be bronze. The main valve shall be compression type. Hydrant shall be furnished with a stop nut to prevent over travel and compression of the main valve. The hydrant shall be constructed in a manner which permits removal of internal working parts without digging or destruction of barrel or casing.
- E. Valve opening shall be at least 5¼" diameter and be designed so that removal of all working parts can be accomplished without excavating.
- F. Each hydrant shall have one or more drain holes to drain the barrel. Construction shall be such that the drain holes will be closed when the main valve is open and open when the main valve is closed.
- G. The direction of the opening shall be to the left and markings shall be cast on the head thereof to so indicate.
- H. Hydrant shall have one 4-1/2" steamer nozzle and two 2-1/2" hose nozzles. Nozzle threads shall conform to the pattern and type currently used by the Owner. Operating nuts and nozzle lugs shall conform to the size and pattern currently used by the Owner. The Contractor shall be responsible for verifying sizes, types and patterns prior to ordering material. Permanent chains connected to the nozzle caps shall be provided.
- I. Hydrants shall be furnished with External surfaces above grade factory coated with catalyzed two-part epoxy primer and red polyurethane top coating.

PART 3 EXECUTION

3.01 HYDRANT INSTALLATION

- A. All hydrants shall be installed in locations as shown on the plans or as directed by the Owner.
- B. Care shall be taken to thoroughly clean valves and hydrants of sticks, stones, dirt, or trash of any kind prior to setting.
- C. All moving parts shall be examined and found to be in working order prior to setting.
- D. Hydrants shall be set truly vertical upon flat prefabricated concrete blocks with the minimum thickness of 4 inches and not less than 16 inches square. A thrust block, consisting of prefabricated concrete block(s), shall be placed between the backside of the hydrant and the undisturbed trench wall.

- E. Approximately ten (10) cubic feet of crushed rock which is free of cementing material shall be placed below the hydrant and above the hydrant drain holes.
- F. Hydrants shall be set in all cases at such a location and grade that a minimum of 18" clearance is maintained between the ground line grade and the centerline of the lowest nozzle.
- G. Backfill shall be carefully placed and compacted to insure no displacement of a properly set hydrant.
- H. The portion of the hydrant that is below ground shall be encased in low density polyethylene. The polyethylene material shall have a minimum thickness of 8 mils. The polyethylene material shall be marked and installed according to AWWA C105, latest revision.

* * * END OF SECTION * * *

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SECTION 02665 WATER PIPING AND FITTINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related Work Specified Elsewhere:
 - 1. Trenching, Backfilling and Compacting - Section 02224
 - 2. Valves and Appurtenances - Section 02640
 - 3. Mechanical Thrust Restraints - Section 02667
 - 4. Cleaning and Disinfection of Water Distribution Systems - Section 02675
 - 5. Testing of Water Distribution Systems - Section 02676

1.02 DESCRIPTION OF WORK

- A. The work covered under these specifications shall include the furnishing of all labor, material, tools, and equipment necessary to furnish and install, complete in place, all piping and fittings as shown on the drawings and as specified herein.

1.03 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for materials specified herein in accordance with the requirements of Section 01340 and the requirements as hereinafter specified.
- B. Certificates, upon request, from the manufacturer that the materials meet or exceed specified requirements.
- C. The manufacturer's installation recommendations, upon request, including types and amounts of gasket lubricant, where applicable, to be used.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All materials shall be packed, loaded, transported, unloaded and handled in such a manner so as to prevent damage to the materials. Pipe shall be transported from the factory to the job site with front ends tarped and covered. Pipe shall be delivered on pallets with protective boards to prevent damage from banding. Bands and boards shall be placed according to the manufacturer's standard arrangement so as to provide adequate support for material. No loose or unpalletted pipe shall be delivered to the project site.
- B. All material shall be loaded and unloaded by lifting with slings or hoists or skidding so as to avoid shock or damage. Dropping or rolling will not be permitted. The use of end hooks to install or move piping will not be allowed.
- C. All materials shall be stored on the site in accordance with the manufacturer's recommendations. Do not store materials directly on the ground.

- D. All materials shall be kept clean and dry. The insides of all piping and fittings shall be kept free of dirt and debris.

1.05 MEASUREMENT AND PAYMENT

- A. Piping of the different types and classes as called for on the Bid Form shall be measured and paid for on a lineal foot in place basis at the unit prices bid on the Bid Form.
- B. Bedding material will be considered incidental to the unit price bid with no separate measurement or payment.
- C. Incidental items associated with the piping materials for which no separate measurement and payment will be made include but are not limited to:
 - 1. Gaskets
 - 2. Lubricants
 - 3. Protective Coatings
 - 4. Linings
 - 5. Poly wrap
- D. Fittings shall be measured and payment made at the contract unit price as shown on the Bid Form.
- E. Connections to existing water mains and/or appurtenances of different sizes as called for on the Bid Form shall be measured and paid for at the unit price as shown on the Bid Form. Payment shall be compensation for furnishing all material, equipment and labor to make the necessary connections.
- F. Tracer wire will not be measured. Payment for tracer wire will be considered incidental and included in the unit prices for piping as appropriate. All fasteners splice kits and other appurtenances shall be considered incidental.
- G. Tracer wire access boxes will be measured on a per each basis. Payment for tracer wire access boxes will be on the basis of each tracer box installed as called for on the Bid Form. PVC conduit, wire fasteners, splice kits, adjusting to grade and other appurtenances shall be considered incidental to tracer wire access boxes.
- H. Temporary water service shall not be measured for payment. Payment for temporary water service will be considered incidental and included in the unit prices for piping and appurtenances as appropriate.
- I. The removal and disposal of existing water piping and fittings will not be measured for payment but shall be considered incidental to the project.

PART 2 PRODUCTS

2.01 DUCTILE IRON FITTINGS

- A. Ductile iron fittings shall conform to the requirements of ANSI Specifications A21.10 or A21.53.
- B. Ductile iron fittings to be installed underground shall be mechanical joint type conforming to the requirements of ANSI A21.11 unless shown otherwise. Bolts and nuts shall be stainless steel.

- C. All ductile iron fittings shall be lined with cement mortar in accordance with ANSI Specification A21.4. The exterior finish on fittings to be installed in buried locations shall be a coal tar varnish coating not less than 1 mil. thick.

2.02 PRESSURIZED POLYVINYL CHLORIDE (PVC) PIPE

- A. Polyvinyl Chloride pipe shall be C900 pressure Class 235, DR 18 rated pipe conforming to the requirements of AWWA C-900.
- B. The pipe shall be made from Type 1, Grade 1, Class 12454B compounds conforming to ASTM D1784.
- C. All pipe shall be marked with the following: Nominal pipe size, material code designation, DR, pressure rating, manufacturer's name or trademark, NSF seal and ASTM numbers.
- D. The PVC pipe shall be furnished in 20 foot laying lengths. Longer lengths will be allowed only if the Contractor certifies that he will provide equipment on the project to fully support the pipe while being transported and distributed over the project.
- E. All PVC pipe shall be furnished with gasket joints conforming to ASTM D3139. Rubber gaskets shall conform to the requirement of ASTM F477.
- F. Manufacturer's proof of design tests and joint dimensions shall be submitted to the Engineer for gasket joints which do not maintain SDR throughout the joint.
- G. Gasket joint couplings used for plain end pipe shall have a pressure rating equal to the pipe on which used. Centering of pipe within the coupling will be assured by means of an integral positive stop in the coupling. All couplings must be of the double gasket type. Couplings requiring welds will not be allowed.
- H. All gasketed joints shall have a seating depth equal to at least 50% of the nominal pipe diameter.
- I. The ends of the pipe to be inserted into couplings or joints shall be factory marked to allow field checking of the depth of setting of the pipe in the joint socket.
- J. The gasket lubricant shall be furnished by and approved for the intended use by the pipe manufacturer.

2.03 FITTINGS FOR PRESSURIZED PVC PIPE

- A. Fittings for use on PVC pipe shall be ductile iron fittings conforming to the requirements of Paragraph 2.01 above.

2.04 COUPLINGS

- A. Couplings shall be gasketed, sleeve type of a diameter to properly fit the pipes being joined. Each coupling shall consist of one (1) steel sleeve, two (2) end ring followers, two (2) rubber compound gaskets and sufficient bolts to properly compress the gaskets to make a watertight coupling.

- B. The sleeve shall be ASTM A53, ASTM 512 or carbon steel or ASTM 536 ductile iron with a minimum yield of 30,000 psi. The steel sleeve shall have a minimum wall thickness of one quarter (1/4) inch and a minimum length of seven (7) inches. The carbon steel sleeves shall be furnished with a fusion bonded epoxy with a minimum dry thickness of 12 mils suitable for potable water service. Ductile iron sleeves may be furnished with the manufacturer's standard shop coating.
- C. The end rings shall be Ductile Iron, ASTM A536 or steel, AISI C1018, and of such design to provide confinement of the gaskets. The end rings shall be furnished with fusion bonded epoxy with a minimum dry thickness of 12 mils.
- D. The coupling bolts and nuts shall be stainless steel. The manufacturer shall furnish information as to recommended torque for the proper tightening of the bolts.
- E. Gaskets shall be minimum grade 30 gaskets composed of new crude or synthetic rubber base compounded with other products to produce a material which will not deteriorate from age, from heat, or exposure to air under normal storage conditions. It shall also possess the quality of resilience and ability to resist cold flow of the material so that the joint will remain sealed and tight indefinitely when subjected to shock, vibration, pulsation and temperature or other adjustments of the pipe line.
- F. The couplings shall be assembled on the job in a manner to insure permanently tight joints under all reasonable conditions of expansion, contraction, shifting and settlement, unavoidable variations in trench gradient, etc. The coupling shall be Dresser, Style 38, as manufactured by Dresser Manufacturing Division; Rockwell, Style 411, as manufactured by Rockwell International; Ford, Style FC3, as manufactured by Ford Meter Box Company; or JCM Style 201 as manufactured by JCM Industries.

2.05 BEDDING MATERIAL

- A. Borrowed granular bedding material shall conform to the gradation indicated below.

SIEVE OPENING	BEDDING MATERIAL (Percent Passing)
No. 4	95-100
No. 16	45-85
No. 50	10-40
No. 100	2-10
No. 200	< 5

- B. Borrowed granular bedding material for unstable trench bottom shall conform to the gradation indicated of size 67 Course Aggregate, ASTM C33 which is indicated below.

<u>Sieve Opening</u>	<u>Bedding Material (Percent Passing)</u>
1"	100
3/4"	90-100
3/8"	20-55
No. 4	0-10
No. 8	0-5

2.06 TRACER WIRE

- A. Tracer Wire shall be a direct bury wire that meets or exceeds the following requirements:
- B. Conductor: 12 AWG solid strand soft drawn copper per ASTM B-3, or B-8. The breaking pounds of the wire shall be a minimum of 124 with an O.D. of 0.154. All wire shall be spark tested at 7500 VAC.
- C. Insulation: Conductor shall be insulated with low density high molecular weight polyethylene insulation suitable for direct bury applications per ASTM D-1248. The minimum insulation thickness shall be 0.045. The color of the insulation shall be blue with a print line saying "water".
- D. Splices and or Connectors: Splices and or Connectors should be capable of handling from 2 to 4 wires per connector and designated as "water-proof". PVC adhesives or sealing compounds are not acceptable.
- E. Tracer Wire Access Box: Tracer wires shall be terminated using a small terminal box suitable for flush burial with a 2½ inch cast iron top, integral stainless terminals and a minimum 12 inch long ABS bottom section.
- F. Tracer Wire System Manufactures:
 - Tracing Wire – Kris Tech Wire Co. Inc., Paige Electric Corporation, or equal.
 - Splice Kit/Connectors -3M epoxy type compounds, fusible heat shrink tubing, 3M DBY connectors, or Snaploc LV 9000 direct bury wire connectors, or equals.
 - Tracer Wire Access Box – Valvco Pipe Tracer Wire Terminal Box or equal. Access Box shall be labeled "WATER"
- G. The terminal box shall be rated for an H-20 load rated. The cast iron casting shall be manufactured in accordance with ASTM A 48 Class 30. The ABS pipe shall be manufactured in accordance with ASTM D 1788.

PART 3 EXECUTION

3.01 GENERAL

- A. The areas to receive piping shall be examined for defects that may adversely affect the execution and quality of Work. Prior to the start of piping installation, all measurements shall be checked for deviations from allowable tolerances for piping.

3.02 BURIED PIPING INSTALLATION

- A. All piping and fittings shall be laid true to line and grade as shown on the plans. Each section of pipe shall be so laid and fitted together that when complete the piping will have a smooth uniform flow line. The inside of all pipe shall be cleaned before installation and kept thoroughly clean during and after the laying. Pipe ends shall be cleaned inside and outside.
- B. All pipe and fitting shall be examined for defects before being lowered into the trench. The interior and exterior protective coating shall be inspected and field repaired, if required and

possible in accordance with applicable standards. If repair is not possible, the defective pipe section shall be removed.

- C. The pipe shall be handled and installed in accordance with manufacturer's recommendations and the requirements of ASTM D2774 for PVC pressure piping .
- D. When pipe laying is not in progress, including the noon hours, the open ends of pipe shall be closed. No trench water, animals, or foreign material shall be permitted to enter the pipe.
- E. Bedding material shall be used with all piping. After each pipe has been graded, aligned, and placed in final position on the bedding material and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and alignment during subsequent pipe joining and embedment operations.
- F. The pipe shall be laid upon properly placed bedding material so that the barrel of the pipe will have a bearing for its full length. Bell holes and depressions for joints shall be excavated after the trench bedding has been graded.
- G. The Contractor shall provide and maintain all necessary means and devices at all times to remove and dispose of all water entering the trench during the process of pipe laying. The trench shall be kept dry until the pipe laying and jointing are completed. Removal of water shall comply with Section 02224.
- H. Thrust blocks or restraining fittings shall be used as specified in Section 02667.
- I. All piping and fittings shall be installed in the locations as shown on the plans and directed by the Resident Project Representative. Each section of pipe shall be so laid and fitted together that when complete the piping will have a smooth uniform flow line. The inside of all pipes shall be cleaned before installation and kept thoroughly clean during and after the installation. Pipe ends shall be cleaned inside and outside.
- J. No dirt, vegetation or other foreign material shall be in the bell. If there is any evidence of dirt, vegetation or other foreign material in the pipe joints, the Contractor shall disconnect the piping to remove the material prior to placing the pipe in the trench. If the carrier pipe was field cut, the end must be beveled prior to installation.

3.03 MECHANICAL JOINTS AND COUPLINGS

- A. Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned, and reassembled or replaced. Overtightening bolts to compensate for poor installation practice will not be permitted.
- B. The holes in mechanical joints with tie rods shall be carefully aligned to permit installation of the tie rods. In flange and mechanical joint pieces, holes in the mechanical joint bells and the flanges shall straddle the top (or side for vertical piping) centerline. The top (or side) centerline shall be marked on each flange and mechanical joint piece at the foundry.

3.04 TESTING

- A. All piping shall be tested in accordance with Section 02676.

- B. All piping shall be cleaned and flushed in accordance with the requirements of Section 02675.

3.05 TRACER WIRE

- A. Tracer wire, ground rods and access boxes shall be installed in accordance with the details shown in the plans or as directed by the Engineer.
- B. The tracer wire shall be installed along with the pipe. The wire shall be installed along the top of the pipe and shall be securely anchored to the pipe at a minimum on both sides of every joint and at intervals not longer than ten (10) feet as detailed in the plans. Tracer wire shall be installed along all water mains.
- C. Terminal boxes shall be installed in the boulevard area at locations approved by the Engineer. Where applicable, both the upstream and downstream tracer wires shall be installed in the box. The wire shall be extended at least three (3) feet above the top of the access box. The contractor shall connect the wire to the access box lid and carefully fold the wires for insertion into the access box for storage. The wires shall be easily accessible for connecting to for subsequent tracing of the pipeline.
- D. All tracer wire connections shall be accomplished with "pig tails". All splices and "pig-tails" shall be made by stripping the wires to be connected, twisting the wires together, securing the connection by using an appropriately sized wire nut and installing a direct bury splice kit.

* * * END OF SECTION * * *

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SECTION 02666 WATER SERVICE PIPING, FITTINGS AND VALVES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Trenching, Backfilling and Compacting - Section 02224
 - 2. Water Distribution Piping and Fittings - Section 02665
 - 3. Cleaning and Disinfection of Water Distribution System - Section 02675
 - 4. Testing of Water Distribution Systems - Section 02676

1.02 DESCRIPTION OF WORK

- A. The Work covered under these specifications shall include the furnishing of all labor, materials, tools and equipment necessary to furnish and install, complete in place, all water service piping, fittings, valves and related appurtenances as shown on the drawings and as specified herein.

1.03 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for materials specified herein in accordance with the requirements of Section 01340 and the requirements as hereinafter specified.
- B. Certificates from the manufacturer that the materials meet or exceed specified requirements shall be submitted upon request.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All materials shall be packed, loaded, transported, unloaded and handled in such a manner so as to prevent damage to the materials.
- B. All material shall be loaded and unloaded so as to avoid shock or damage. Dropping or rolling will not be permitted. The use of end hooks to install or move piping will not be allowed.
- C. All materials shall be stored on the site in accordance with the manufacturer's recommendations. Do not store materials directly on the ground.
- D. All materials shall be kept clean and dry. The inside of all piping and fittings shall be kept free of dirt and debris.

1.05 MEASUREMENT AND PAYMENT

- A. Piping of the different sizes, type and classes as called for on the Bid Form shall be measured and payment made at the Contract Unit Price on a lineal foot in place basis. Measurement will be made to the nearest foot.

- B. Valves of the different types and sizes as called for on the Bid Form shall be measured and payment made at the Contract Unit Price on a per each in place basis.
- C. All fittings of the different types and sizes as called for on the Bid Form shall be measured and payment made at the Contract Unit Price on a per each in place basis. When not specifically called for on the Bid Form, fittings and related appurtenances shall be considered incidental and included in the unit prices bid for piping and appurtenances as appropriate with no separate payment made.
- D. Connection to existing service lines shall be measured and paid for on a unit basis as called for on the Bid Form.

PART 2 PRODUCTS

2.01 WATER SERVICE PIPE

- A. Water service pipe to be installed between the new water main piping and the existing services shall be Type K soft copper where shown in the plans.
- B. PVC pipe conforming to Section 02665 shall be used where indicated in the plans.

2.02 SERVICE SADDLES

- A. Water service saddle bodies shall be cast from high strength ductile iron. The body shall be coated with a fusion bonded epoxy coating not less than 12 mils total thickness. Saddle body shall be furnished with AWWA Type CC corporation threads conforming to AWWA C800 (latest revision) Standard for Underground Service Line Valves and Fittings.
- B. Saddle band shall be stainless steel with a minimum width of 2". Nuts, washers and bolts shall be Type 304 Stainless Steel.
- C. Water service saddles shall be Style FC202 as manufactured by Ford Meter Box Company, Inc., Style 101N as manufactured by Romac Industries or approved equal.

2.03 CORPORATION STOPS

- A. Corporation stop valves shall be ball type valves of the size as shown on the plans or as directed by the Engineer. Valves shall be as manufactured by Ford Meter Box Company, Inc., or approved equal.
- B. Corporation stop valves shall conform to the requirements of AWWA C800 (latest revision) Standard for Underground Service Line Valves and Fittings.
- C. Inlet threads of the corporation stop shall be AWWA Type CC. Outlet connection shall be furnished with flared copper outlet as appropriate for the service line material size and type to be connected to the valve.

2.04 SERVICE LINE VALVES/CURB STOPS

- A. Service line valves shall be ball type valves of the size as shown on the plans or as directed by the Engineer. Valves shall be as manufactured by Ford Meter Box Company, Inc., or approved equal.

- B. Service line valves shall conform to the requirements of AWWA C800 (latest revisions) Standard for Underground Service line Valves and Fittings.
- C. Valves shall be furnished with flare type connections on both inlet and outlet. The connections shall be appropriate for the service line material size and type to be connected to the valve.
- D. Service line valves shall be Minneapolis pattern.

2.05 SERVICE LINE VALVES BOXES

- A. Valve boxes for service line valves shall be furnished for Minneapolis pattern. Valve boxes shall be manufactured by the manufacturer of the service valves.
- B. Valve boxes shall be furnished with 1 1/4" steel pipe upper section and cast iron base and lid. Boxes shall be coated with asphalt base paint. Valve box lids shall be provided with a pentagon head plug.

2.06 MISCELLANEOUS COUPLINGS

- A. Couplings for water service pipe and tubing shall be brass body with flare connections on both ends. The connections shall be appropriate for the service line materials size and type to be connected.
- B. Couplings shall be as manufactured by Ford Meter Box Company, Inc., or approved equal.

PART 3 EXECUTION

3.01 GENERAL

- A. The areas to receive piping shall be examined for defects that may adversely affect the execution and quality of work. Prior to the start of piping installation, all measurements shall be checked for deviations from allowable tolerances for piping.

3.02 BURIED PIPING INSTALLATION

- A. All piping and fittings shall be laid true to line and grade as shown on the plans. All pipe and fittings shall be examined for defects before being lowered into the trench. The inside of all pipe shall be cleaned before installation and kept thoroughly clean during and after the laying. Pipe ends shall be cleaned inside and outside.
- B. When pipe laying is not in progress, including the noon hours, the open ends of pipe shall be closed. No trench water, animals or foreign material shall be permitted to enter the pipe.
- C. The Contractor shall provide and maintain all necessary means and devices at all times to remove and dispose of all water entering the trench during the process of pipe laying. The trench shall be kept dry until the pipe laying and jointing are completed. Removal of water shall comply with Section 02224.

3.03 SADDLE AND CORPORATION STOP INSTALLATION

- A. All saddles and corporation stops shall be installed in the locations as shown on the plans or as directed by the Owner. Saddles and corporation stops shall be installed in accordance with the details shown on the plans and the manufacturer's recommendations.

3.04 CURB STOP INSTALLATION

- A. All curb stops and service line valves shall be installed in the locations as shown on the plans or as directed by the Owner. Curb stops and service line valves shall be installed in accordance with the details shown on the plans and the manufacturer's recommendations.

3.05 CURB STOP/SERVICE LINE VALVE BOX INSTALLATION

- A. All foreign material and debris shall be removed from the top of the valve operator prior to setting the valve box. Valve boxes shall be centered and plumb over the operating nut of the valve.
- B. The tops of the curb stops/service line valve boxes shall unless otherwise directed by the Owner, be installed flush with the surrounding surface.

3.06 TESTING

- A. All piping shall be cleaned and disinfected in accordance with the requirements of Section 02675.
- B. All piping shall be tested in accordance with Section 02676.

3.07 COMPACTION METHOD INSTALLATION - (OPTIONAL)

- A. This type of installation may be completed by a pneumatic piercing tool "Hole-Hog" and/or by pulling a reaming cone to create a pre-bored hole.
- B. The maximum diameter of the pre-bored hole shall be 1.5 times the diameter of the carrier pipe.
- C. Damage caused by the boring operation to underground utilities shall be repaired by the contractor as required by the utility owner.
- D. The boring shall be adjusted as necessary to stay within tolerances of 2 feet in horizontal alignment and 0.5 feet in vertical alignment as called for on the plans or as otherwise approved by the engineer.

* * * END OF SECTION * * *

SECTION 02667 MECHANICAL THRUST RESTRAINTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related requirements specified elsewhere:
 - 1. Valves and Appurtenances - Section 02640
 - 2. Hydrants - Section 02645
 - 3. Water Piping and Fittings - Section 02665

1.02 DESCRIPTION OF WORK

- A. This Section covers the furnishing and installation of thrust restraints and concrete blocks where necessary.

1.03 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for mechanical restraints, if required, as specified herein in accordance with the requirements of Section 01340 and the requirements as hereinafter specified.

1.04 LOCATION

- A. Thrust restraints and concrete blocks shall be furnished at locations including, but not limited to, the following:
 - 1. Tees
 - 2. Crosses
 - 3. Elbows
 - 4. Valves
 - 5. Hydrants
 - 6. Dead ends

1.05 MEASUREMENT AND PAYMENT

- A. Concrete blocks are considered incidental to the cost of the project with no separate measurement and payment to be made.
- B. Mechanical thrust restraint devices will be considered incidental to the cost of the project with no separate measurement and payment to be made.

PART 2 PRODUCTS

2.01 CONCRETE

- A. All Concrete shall be Class M-6 concrete conforming to Section 462- Concrete for Incidental Construction of the South Dakota Department of Transportation Standard Specifications for Roads and Bridges, latest revision.

2.02 PVC PIPE RESTRAINTS

- A. Restraints for PVC pipe shall be designed for use on pipe material being installed. Bolts and nuts shall be stainless steel. Mechanical joint restraint glands for PVC pipe shall be Series 2000 PV mechanical joint restraint gland as manufactured by EBAA Iron Sales, Inc., Eastland, Texas; or equal
- B. PVC bell restraint shall be used where specified. The restraint shall be manufactured of ductile iron conforming to ASTM A536. A split serrated ring shall be utilized behind the pipe bell. A split serrated ring shall be used to grip the pipe, and a sufficient number of stainless steel bolts shall be used to connect the bell ring to the gripping ring. The restraint devices shall be fusion bonded epoxy coated. The restraint shall be the Series 1500, as manufactured by EBAA Iron, Inc., or equal.

PART 3 INSTALLATION

3.01 THRUST BLOCK INSTALLATION

- A. The thrust blocks shall be constructed and/or placed so that the bearing surface is in direct line with the major force created by the pipe or fitting.
- B. Cast-in-place thrust blocks shall be constructed by pouring concrete between the fitting and the undisturbed trench shall be the bearing surface. The concrete shall not be allowed to cover the bolts of any fitting or anchor.
- C. Concrete blocks shall be provided to support fittings and valves as detailed in the plans.

3.02 THRUST RESTRAINT INSTALLATION

- A. All locations listed in Paragraph 1.04 shall be mechanically restrained in accordance with the manufacturer's recommendations, AWWA C600 and all other applicable AWWA standards. The restraint lengths indicated below shall be provided. Any joints within the length indicated below from the fitting shall be mechanically restrained.

Fitting Type	Pipe/Fitting Size		Restraint Length	
	Nominal, Large or Run (in)	Branch or Small (in)	Each Side of Elbow or Valve, Large Side of Reducer or Run Side of Tee (ft)	Branch Side of Tee (ft)
Dead End, Hydrant or Valve	4	-	23	-
	6	-	32	-
	8	-	42	-
	10	-	51	-
Tee	10	4	2	2
	10	6	3	3
Reducer	6	4	17	-
	10	6	31	-

*** END OF SECTION ***

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SECTION 02675 CLEANING AND DISINFECTION OF WATER DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 DESCRIPTION OF WORK

- A. This section covers flushing of new and existing water lines, and disinfection of the installed piping.
- B. The Contractor shall furnish all water required for flushing and disinfection work as specified in the temporary facilities section.
- C. The Contractor shall provide, at his own expense, all means required for draining and disposing of water used in flushing and disinfection. This shall include, but not be limited to, additional drain valves, temporary piping and pumping equipment. Waste water shall be stored and/or treated, if required, so as to cause the water quality to meet the requirements of the S.D. Department of Environment & Natural Resources for discharge. Refer to the Temporary Discharge Permit referenced in Section 01170.

1.03 SUBMITTALS

- A. Copies of all bacteriological test reports shall be furnished to the Engineer and Resident Project Representative.

1.04 MEASUREMENT AND PAYMENT

- A. Cleaning and disinfection will be considered incidental work pertaining to the contract with no direct measurement or compensation made for this work.

PART 2 PRODUCTS

2.01 CHLORINE

- A. Liquid chlorine shall conform to the latest edition of AWWA Specification B-301.
- B. Hypochlorites shall conform to the latest edition of AWWA Specification B-300.

PART 3 EXECUTION

3.01 CLEANING AND FLUSHING

- A. All lines shall be thoroughly flushed at a minimum flow velocity of 2.5 ft/sec prior to acceptance. If flushing water source conditions are inadequate to allow the minimum flow velocity of 2.5 ft/sec to be reached, the Contractor shall be required to clean the water main with a cleaning

pig to assure that all traces of construction materials, soil or other foreign matter have been removed.

- B. Flushing shall continue until the turbidity of the flushed water is equal to or less than 0.5 NTU or until the turbidity of the flushed water equals the turbidity of the source water.
- C. The Contractor shall take all necessary measurements to protect adjacent facilities and property. Damages caused by flushing water or water carried material shall be the responsibility of the Contractor.
- D. All flushing shall be completed prior to the initiation of the disinfection process described herein.
- E. When flushing the new water lines, the water used for flushing the water line must not reach a stream, river or other waterway if chlorine is detected in the water. Dechlorination shall be required before discharge to any such waterway. Contact the department's Surface Water Quality Program at (605) 773-3351 for more information.

3.02 PIPELINE DISINFECTION

- A. Each unit of completed supply line and distribution system shall be sterilized with chlorine before acceptance.
- B. The amount of chlorine applied shall be such as to provide a dosage of not less than 50 parts per million. The chlorinating material shall be introduced to the water lines and distribution system in an approved manner. If possible to do so, the lines shall be thoroughly flushed before introduction of the chlorinating material.
- C. After a contact period of not less than 24 hours, the system shall be flushed with clean water until the residual chlorine content is equal to or less than the chlorine content of the flushing water supply but in no case shall the chlorine content of the flushed water be less than 1.0 parts per million. All valves in the lines being sterilized shall be opened and closed several times during the contact period.
- D. Prior to final flushing, the treated water shall contain at least 25 ppm chlorine as per the latest edition of AWWA Specification C651.
- E. After disinfection, the water lines must be flushed and the disinfected line must be sampled. Two consecutive samples of water from the end of the disinfected line must be collected at least 24 hours apart. These samples must be submitted to the State Health Laboratory in Pierre, or other laboratory acceptable to the department and tested for coliform bacteria. The samples must be free of coliform bacteria before the system is placed into service. Should the sample collected indicate a positive test indicating the presence of coliform bacteria, the disinfection process shall be repeated until negative samples are obtained.
- F. When flushing the new water lines, the water used for disinfecting the water line must not reach a stream, river or other waterway if chlorine is detected in the water. Dechlorination shall be required before discharge to any such waterway. Contact the department's Surface Water Quality Program at (605) 773-3351 for more information.

* * * END OF SECTION * * *

SECTION 02676 TESTING OF WATER DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 DESCRIPTION OF WORK

- A. All water distribution piping and related appurtenances shall be subjected to pressure and/or leakage tests as specified herein and as directed by the Engineer.
- B. The required pressure and leakage tests shall be made by the Contractor and witnessed by the Engineer. All tests shall be completed after all pipe installation has been completed. All concrete reaction blocks and bracing shall be in place at least 7 days before the initial pressure testing of the lines, except where mechanical thrust restraint devices are used.
- C. The Contractor shall perform the necessary work to fill the pipeline with test water as specified. The Contractor shall furnish all water, pumping equipment, water meter, pressure gage and other equipment, materials and facilities required for the tests.

1.03 SUBMITTALS

- A. Prior to filling and testing the system, the proposed procedures shall be submitted for review by the Engineer.
- B. Pressure test forms completed in the field shall be submitted to the Engineer and Owner.

1.04 MEASUREMENT AND PAYMENT

- A. Pipeline testing will not be measured for direct payment and will be considered subsidiary work pertaining to the contract.

PART 2 PRODUCTS - None

PART 3 EXECUTION

3.01 TEST SECTIONS

- A. The pressure and leakage tests shall be applied to all sections of the line. The maximum length of any section being tested shall be 1,500 feet unless otherwise authorized by the Engineer.
- B. The Contractor shall be solely responsible for any and all damage to the pipeline, and to public and private property, which may result from defective material or workmanship.

3.02 FILLING AND VENTING OF WATER MAINS

- B. The section of line to be tested shall be slowly filled with water and all air expelled from the pipe. Care shall be taken that all valves and facilities for the venting of air from the pipeline are installed and open in the section being filled. Care is to be taken to insure that the rate of filling does not exceed the venting capacity of the air venting devices.

3.03 TEST EQUIPMENT AND FACILITIES

- A. Test pressures shall be applied by means of a force pump of such design and capacity that the required pressure can be applied and maintained without interruption for the duration of each test.
- B. The water meter and the pressure gage shall be accurately calibrated and shall be subject to the approval of the Engineer.

3.04 PRESSURE TEST

- A. Test pressures shall be applied to each section of pipeline with all connections, valves and fittings along the length of the test section in place.
- B. The pressure test shall be initiated by bringing the hydrostatic pressure in the section being tested to a minimum of 120 psi, as measured at the highest point of the section being tested.
- C. After the section of the line to be tested has been filled with water and brought to the specified level, the test pressure shall be maintained for a period of not less than one hour, or for whatever longer period as may be necessary for the Engineer to complete the inspection of the line under test, or for the Contractor to locate any and all defective joints and pipeline materials.
- D. If repairs are needed, such repairs shall be made, the line refilled and the test pressure applied as before; this operation shall be repeated until the line and all parts thereof withstand the test pressure in a satisfactory manner.

3.05 LEAKAGE TEST

- A. After the specified pressure test has been completed, the line being tested shall be subjected to a leakage test under the same hydrostatic pressure specified. The pressure shall be maintained constant (within a maximum variation, plus or minus, of 5%) during the entire time that line leakage measurements are being made so that the allowable leakage rate may be determined accurately from the leakage rate formula.
- B. Leakage testing shall not be started until a constant test pressure has been established. After the test pressure has been established and stabilized, the line leakage shall be measured by means of a water meter installed on the line side of the force pump.

- C. Line leakage is defined as the total amount of water introduced into the line as measured by the meter during the leakage test. The pipeline or tested section thereof will not be accepted if and while it has a leakage rate in excess of the rate as determined by the following formula set forth in AWWA Section C605 for PVC piping:

$$Q = \frac{LD(P)^{0.5}}{148,000}$$

in which: Q = Maximum permissible leakage rate, in gallons per hour, throughout the entire length of line being tested.

L = Length of line under test in feet.

D = Nominal diameter (in inches) of the pipe in the line.

P = The average test pressure, in psig, in the tested portion of the line.

- D. Where the leakage rate is in excess of the permissible maximum, the Contractor shall be responsible for the location and the repair of all leaks to the extent required to reduce the total leakage to an acceptable amount.
- E. All joints in piping in non-buried locations shall be watertight and free from visible leaks during the prescribed tests.
- F. Each and every leak which may be discovered at any time prior to the expiration of one year from and after the date of final acceptance of the work by the Owner shall be located and repaired by and at the expense of the Contractor regardless of any amount that the total line leakage rate during the specified leakage test may be below the specified maximum rate.

* * * END OF SECTION * * *

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SECTION 02730 WASTEWATER PIPING AND FITTINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.
- B. Related Work Specified Elsewhere:
 - 1. Trenching, Backfilling and Compacting - Section 02224
 - 2. Pipeline Testing - Section 02731
 - 3. Cleaning of Sanitary Sewer Systems -Section 02732

1.02 DESCRIPTION OF WORK

- A. The work covered under these specifications shall include the furnishing of all labor, material, tools, and equipment necessary to furnish and install, complete in place, all piping and fittings as shown on the drawings and as specified herein.

1.03 SUBMITTALS

- A. The Contractor shall submit for review copies of shop drawings for materials specified herein in accordance with the requirements of Section 01340 and the requirements as hereinafter specified.
- B. Certificates from the manufacturer that the materials meet or exceed specified requirements shall be submitted upon request.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All materials shall be packed, loaded, transported, unloaded and handled in such a manner so as to prevent damage to the materials.
- B. All material shall be loaded and unloaded by lifting with slings or hoists or skidding so as to avoid shock or damage. Dropping or rolling will not be permitted. The use of end hooks to install or move piping will not be allowed.
- C. All materials shall be stored on the site in accordance with the manufacturer's recommendations. Do not store materials directly on the ground.
- D. All materials shall be kept clean and dry. The insides of all piping and fittings shall be kept free of dirt and debris.

1.05 MEASUREMENT AND PAYMENT

- A. Piping of the different types and classes as called for on the Bid Form shall be measured and paid for on a lineal foot, complete in place. Measurement shall be to the nearest lineal foot. Payment shall be made at the unit prices bid as shown on the Bid Form.

- B. All fittings, caps, plugs and other appurtenances shall, unless specifically called for on the Bid Form, be considered incidental and included in the unit prices bid for piping as appropriate with no separate payment made.
- C. Incidental items associated with the piping materials for which no separate measurement and payment will be made include but are not limited to:
 - 1. Gaskets
 - 2. Lubricants
 - 3. Protective Coatings and Encasements
 - 4. Linings
 - 5. Bedding Material
- D. Connections to existing lines of the different sizes as called for on the Bid Form shall be paid for each connection actually made.
- E. Connections to existing service lines of the different sizes will be paid for as called for on the Bid Form. Payment shall be paid for each connection actually made.
- F. Payment for temporary bypass pumping shall be full compensation for all labor, materials and equipment required to provide a bypass of the sewage in order to allow the installation of the open trench. Payment shall be made at the lump sum price indicated on the Bid Form and shall be inclusive for the entire project.
- G. The removal and disposal of existing sanitary sewer piping and fittings will not be measured for payment but shall be considered incidental to the project.
- H. Tracer wire will not be measured. Payment for tracer wire will be incidental to the sewer service pipe. All fasteners splice kits and other appurtenances shall also be considered incidental.
- I. Tracer wire access boxes will be measured on a per each basis. Payment for tracer wire access boxes will be on the basis of each tracer box installed as called for on the Bid Form. Tracer wire, PVC conduit, wire fasteners, splice kits, adjusting to grade and other appurtenances shall be considered incidental to tracer wire access boxes.

PART 2 PRODUCTS

2.01 GRAVITY PVC SEWER PIPE

- A. Polyvinyl Chloride (PVC) gravity sewer pipe shall be SDR 35 conforming to the requirements of ASTM Specification D 3034 for Rigid Poly (Vinyl Chloride) Sewer pipe.
- B. Gasketed type joints shall be made with rubber gaskets conforming to the requirements of ASTM F-477.
- C. The pipe shall be capable of withstanding trench loads imposed on it.

2.02 GRAVITY PVC SEWER FITTINGS

- A. Fittings for Polyvinyl Chloride (PVC) Gravity sewer fittings shall be of PVC with material and dimensions conforming to the requirements of ASTM Specification D 3034.

- B. Gaskets for elastomeric joints shall conform to the requirements of ASTM F-477.

2.03 TRANSITION COUPLINGS FOR GRAVITY PIPING

- A. Couplings used for transitions between piping of different materials shall be made from elastomeric polyvinyl chloride (PVC). Clamp bands, band screw and housing shall be made from stainless steel. Couplings shall provide an infiltration and exfiltration proof and root proof joint. Couplings shall be designed as a flexible coupling specifically for the sizes and types of materials being joined.
- B. Transition couplings and adaptors for new and existing piping shall be RC Series “Strong-Back” as manufactured by Fernco, Inc.

2.04 BEDDING MATERIAL

- A. Borrowed granular bedding material shall conform to the gradation indicated below.

<u>Sieve Opening</u>	<u>Bedding Material (Percent Passing)</u>
No. 4	95-100
No. 16	45-85
No. 50	10-40
No. 100	2-10
No. 200	< 5

- B. Borrowed granular bedding material for unstable trench bottom shall conform to the gradation listed in Section 02665.

2.05 TRACER WIRE

- A. Tracer Wire and access boxes shall conform to the requirements of Section 02665 except the color of the wire insulation shall be green with a print line saying “Sewer” and the cover of the access box shall be labeled with the Word “Sewer”.

PART 3 EXECUTION

3.01 GENERAL

- A. The areas to receive piping shall be examined for defects that may adversely affect the execution and quality of Work. Prior to the start of piping installation, all measurements shall be checked for deviations from allowable tolerances for piping.

3.02 BURIED PIPING INSTALLATION

- A. All piping and fittings shall be laid true to line and grade as shown on the plans. Each section of pipe shall be so laid and fitted together that when complete the piping will have a smooth uniform flow line. The inside of all pipe shall be cleaned before installation and kept thoroughly clean during and after placing the pipe. Pipe ends shall be cleaned inside and outside.

- B. All pipe and fitting shall be examined for defects before being lowered into the trench. The interior and exterior protective coating shall be inspected and field repaired, if required, and possible accordance with applicable standards.
- C. The pipe shall be handled and installed in accordance with manufacturer's recommendations and the requirements of ASTM 2321 for PVC gravity sewer piping.
- D. When pipelaying is not in progress, including the noon hours, the open ends of pipe shall be closed. No trench water, animals, or foreign material shall be permitted to enter the pipe.
- E. Borrowed granular bedding material shall be used with all piping and installed according to the detail in the plans.
- F. The bedding material under and around the pipe shall be deposited in layers not to exceed six inches (6") and carefully compacted to a degree of compaction at least equal to 90% maximum dry density as determined by Standard Proctor Test, ASTM Test Designation D698 throughout the entire depth of each layer. Where the pipe has a protective coating, care shall be taken not to damage the coating.
- G. The pipe shall be laid upon properly placed bedding material so that the barrel of the pipe will have a bearing for its full length. Bell holes and depressions for joints shall be excavated after the trench bedding has been graded.
- H. After each pipe has been graded, aligned, and placed in final position on the bedding material and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and alignment during subsequent pipe joining and embedment operations.
- I. The Contractor shall provide and maintain all necessary means and devices at all times to remove and dispose of all water entering the trench during the process of pipelaying. The trench shall be kept dry until the pipelaying and jointing are completed. Removal of water shall comply with Section 02224.

3.03 TRACER WIRE INSTALLATION

- A. The tracer wire and access box installation shall be as detailed in the plans and as specified in Section 02665.

3.04 BYPASS PUMPING

- A. The Contractor shall provide temporary bypass pumping as required to allow for the construction of the sanitary sewer main and manhole while maintaining the City's sanitary sewer in continuous operation.
- B. The Contractor shall be responsible for any damage resulting from a back-up of sewage during the installation of the facilities.
- C. Wastewater flows shall not be conveyed in open trenches or in the trench excavation, and at no time shall wastewater be allowed on the ground surface, streets, gutters, storm sewers, or other places which may constitute a health hazard.

3.05 TESTING AND CLEANING

- A. All piping shall be tested in accordance with Section 02731.
- B. All piping shall be cleaned and flushed in accordance with the requirements of Section 02732.

* * * END OF SECTION * * *

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SECTION 02731 PIPELINE TESTING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 DESCRIPTION OF WORK

- A. All piping and related appurtenances shall be subjected to alignment and pressure and/or leakage tests as specified herein and as directed by the Engineer.
- B. The Engineer will complete the test for displacement of gravity sewer lines as specified herein. The Contractor will be responsible for all subsequent tests as specified herein.
- C. The required pressure and leakage tests shall be made by the Contractor and witnessed by the Engineer. All tests shall be completed after all pipe laying has been completed.
- D. The Contractor shall perform the necessary work to fill the pipeline with test water as specified. The Contractor shall furnish all water, pumping equipment, water meter, pressure gage, and other equipment, materials, and facilities required for the tests.

1.03 SUBMITTALS

- A. Prior to filling, flushing and testing the system, the proposed procedures shall be submitted for review by the Engineer.
- B. Pressure test forms completed in the field shall be submitted to the Engineer and Owner.

1.04 MEASUREMENT AND PAYMENT

- A. Pipeline testing will not be measured for direct payment and will be considered subsidiary work pertaining to the contract.
- B. No direct compensation will be made for this work. Payment will be included in the contract bid prices as shown on the Bid Form.

PART 2 PRODUCTS - None

PART 3 EXECUTION

3.01 TEST SECTIONS

- A. The alignment tests of all gravity sewer lines shall be carried out on sections of sewer line located between manholes.

- B. The pressure and leakage tests shall be applied to all sections of the line with a section being the shortest practical length between manholes.
- C. The Contractor shall be solely responsible for any and all damage to the pipeline, and to public and private property, which may result from defective material or workmanship.

3.02 TEST EQUIPMENT AND FACILITIES

- A. Test pressures shall be applied by means of a force pump of such design and capacity that the required pressure can be applied and maintained without interruption for the duration of each test.
- B. The water meter and the pressure gage shall be accurately calibrated and shall be subject to the approval of the Engineer.

3.03 GRAVITY SEWER LINE DISPLACEMENT AND DEFLECTION

- A. All tests for alignment and displacement of the gravity sewer lines will be made not sooner than thirty (30) days after the pipe has been laid and the trench backfilled and compacted as specified.
- B. The test procedure shall consist of a light being shined between manholes by means of a flashlight or by reflecting sunlight with mirrors.
- C. If the illuminated interior of the gravity sewer line shows apparent displaced pipe or misalignment which prevents seeing less than 50% of the pipe opening at the other end of the section being tested, the Contractor, unless otherwise approved by the Owner and Engineer, shall be required to remedy the defect at his own expense.
- D. The Contractor shall conduct such tests as may be necessary to insure that the long term pipe deflection does not exceed 5%. Pipe deflections exceeding 5% will require corrective action by the Contractor at his own expense.
- E. Acceptable methods for testing deflection are:
 - 1. Electronic deflectometer.
 - 2. Rigid "Go - No Go" device of the size, dimensions and construction as recommended by the pipe manufacturer for the pipe size being tested.
- F. The Engineer may require the Contractor to conduct random deflection tests between successive manholes in areas where unstable trench walls or bottoms, heavy rainfall, frozen soil, high ground water levels, deep lines or difficulty in achieving compaction is experienced.

3.04 GRAVITY SEWER LINE INFILTRATION TEST

- A. The gravity sewer line, sewer service lines, its connections and manholes shall be subjected to an infiltration test when the ground water levels are two (2) feet or more above the top of sewer pipe and the appurtenance being tested.

- B. The maximum allowable rate of infiltration shall be 50 U.S. gallons per mile of sewer per inch of diameter for twenty-four (24) hours as measured by a flow measuring device acceptable to the Engineer.

3.05 GRAVITY SEWER LINE EXFILTRATION TEST

- A. An exfiltration test of the gravity sewer line will be accepted when the ground water table is less than two feet below the top of the pipe or appurtenance being tested.
- B. The maximum allowable rate of exfiltration shall be 50 U.S. gallons per mile of sewer per inch of diameter for twenty-four (24) hours.
- C. During the exfiltration testing, the internal water head must be two (2) feet higher than the top of the pipe, or ground water level, whichever is higher at the highest point of the test section. At no time may the internal-external pressure differential exceed 25 feet (10.8 psi) at the lowest point on the system being tested.
- D. The exfiltration test process shall be conducted for a period of not less than 2 hours on each section being tested.

3.06 GRAVITY SEWER LINE AIR TEST

- A. In lieu of an infiltration/exfiltration test, a low pressure air test may be used to evaluate the watertightness of the gravity sewer line. The low pressure air test shall conform to the requirements of the recommended practice for low pressure air testing of installed sewer pipe, Uni-Bell Plastic Pipe Assoc. specification UNI-B-6-98.
- B. The monitoring gauge shall be accessible from the ground surface and shall provide a maximum psig interval of 0.5 psig.
- C. When the tested pipe invert is below the groundwater table, the normal test starting pressure must be adjusted by the following formula:

$$P = 3.5 \text{ psig} + \frac{W}{2.31}$$

Where P = Test Starting Pressure (psig)

W = Average vertical height of groundwater above the invert of the sewer pipe to be tested (ft).

NOTE: In no case shall the test pressure exceed 9.0 psig.

- D. A constant pressure of 4.0 psig (greater than the average groundwater back pressure) shall be maintained for at least 2 minutes prior to beginning the test.
- E. The test may begin any time that the test pressure is between 3.5 psig and 4.0 psig.
- F. Maximum allowable air loss shall be $Q = 0.0015$ cubic feet per minute per square foot of internal surface area.

- G. The minimum allowable time (T), in seconds, for the air pressure to drop 1.0 psig shall be based on the following:

$$T = \frac{[0.085 DK]}{Q}$$

Where K = 0.000419 DL, but not less than 1.0
Q = 0.0015 cubic feet/min/sq.ft. of internal surface
D = Nominal pipe diameter in inches
L = Length of pipe being tested in feet

NOTE: If a 0.5 psig pressure drop is used, the appropriate required test times shall be exactly half as long as those using the above equation. If there has been no leakage (zero psig drop) after one hour of testing, the test section shall be accepted and the test complete.

3.07 MANHOLE TESTING

- A. Sanitary sewer manholes must be tested by the Contractor before final acceptance. The maximum allowable exfiltration will be 0.1 gallon per hour foot of diameter per foot of head in the manhole. Head shall be measured as the depth of the water from the top of the concrete manhole structure to the invert of the sewer in the manhole
- B. In lieu of an exfiltration test for sanitary sewer manholes, a vacuum test may be used when performed in accordance with the following procedures.
1. Each manhole shall pass two tests; the first test shall be after assembly but prior to backfilling and the second shall be after backfilling.
 2. The vacuum shall include testing to the top of the manhole, excluding the adjusting rings and the cast iron rings.
 3. Plug all pipes entering the manhole at least eight inches (8") into the sewer pipe. The plug must be inflated at a location past the manhole/pipe gasket.
 4. Brace all plugs to prevent the plug or pipe from being dislodged and drawn into the manhole.
 5. A vacuum of at least ten and one-half inches (10½") of mercury shall be drawn on the manhole. Shut the valve on the vacuum line to the manhole and disconnect the vacuum line. Open the vacuum line valve and adjust the vacuum to ten inches (10") of mercury.
 6. The pressure gauge shall be liquid filled having a 3.5 inch diameter face with a reading from zero to 30 inches of mercury.

7. The time for the vacuum to drop from ten inches of mercury to nine inches of mercury must be equal to or greater than the following values for the manhole to be considered as passing the vacuum test:

Minimum Test Times for Various Manhole Diameters in Seconds									
Depth (ft.)	Diameter, in.								
	30	33	36	42	48	54	60	66	72
	Time, in seconds								
8	11	12	14	17	20	23	26	29	33
10	14	15	18	21	25	29	33	36	41
12	17	18	21	25	30	35	39	43	49
14	20	21	25	30	35	41	46	51	57
16	22	24	29	34	40	46	52	58	67
18	25	27	32	38	45	52	59	65	73
20	28	30	35	42	50	53	65	72	81
22	31	33	39	46	55	64	72	79	89
24	33	36	42	51	59	64	78	87	97
26	36	39	46	55	64	75	85	94	105
28	39	42	49	59	69	81	91	101	113
30	42	45	53	63	74	87	98	108	121

8. If a manhole fails the vacuum test, the manhole shall be uncovered and patched on the exterior of the manhole, retested prior to backfilling when the leak has been patched and retested after the backfill is completed.
9. Manhole vacuum tester assembly and vacuum pumps shall be as manufactured by Cherne Industries Inc., P.A. Glazier Inc., or approved equal.
10. Pneumatic plugs shall be provided and installed in accordance with the manufacturer's recommendations.

*** END OF SECTION ***

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SECTION 02732 CLEANING OF SANITARY SEWER SYSTEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Provisions as set forth in the SD DOT Standard Specifications for Road and Bridges, 2004 Edition, as supplemented and amended shall apply to and govern the work of all persons engaged in the performance of the contract and shall form a part of the contract.

1.02 DESCRIPTION OF WORK

- A. This section covers cleaning and flushing of the new sewer lines.
- B. The Contractor shall furnish all water and facilities required for flushing and cleaning work as specified hereinafter.
- C. The Contractor shall provide, at his own expense, all means required for draining and disposing of water used in flushing and cleaning. This shall include, but not be limited to, additional drain valves, temporary piping and pumping equipment. Waste water shall be stored and/or treated, if required, so as to cause the water quality to meet the requirements of the S. D. Department of Environment & Natural Resources for discharge.

1.03 MEASUREMENT AND PAYMENT

- A. Cleaning and flushing will be considered incidental work pertaining to the Contract with no direct measurement or compensation made for this work.

PART 2 PRODUCTS - None

PART 3 EXECUTION

3.01 CLEANING AND FLUSHING

- A. All lines shall be thoroughly flushed and cleaned before acceptance until all traces of construction materials, soil or other foreign matter have been removed.
- B. The Contractor shall take all necessary measures to protect adjacent facilities and property. Damages caused by flushing water or water carried material shall be the responsibility of the Contractor.
- C. All flushing and cleaning shall be completed prior to the initiation of the testing process described in Section 02731.

* * * END OF SECTION * * *

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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
CONTRACTOR ADMINISTERED PRECONSTRUCTION MEETING**

APRIL 18, 2013

I. DESCRIPTION

This work consists of the Contractor scheduling and conducting a preconstruction meeting prior to beginning work on this contract. Additionally this work consists of the Contractor providing the Area Engineer a completed list of required submittals.

II. MATERIALS (Not Specified)

III. CONSTRUCTION REQUIREMENTS

For the purposes of this special provision, a business day is any calendar day except Saturdays, holidays, and days designated by the Governor of this State as an administrative leave day for state employees.

The Department will provide the Contractor a list of required submittals and the Authorization Form for Preconstruction Meeting (Form DOT-270) within five (5) business days of the date of the Notice to Proceed.

The Contractor's Required Submittals Form (Form DOT-272) is a document outlining information required prior to the completion of the project. This list will include two types of submittals; 1) information required before scheduling a preconstruction meeting and 2) information required before the Contractor begins related work. The Department reserves the right to request additional information not included in the original list of required submittals. The list of required submittals will include, but is not limited to, proposed sequence changes, shop drawings, permits, certifications, mix designs, labor compliance, equal employment opportunity, and disadvantaged business enterprise documents.

Prior to scheduling the preconstruction meeting, the Contractor will complete and provide the Area Engineer all items on the list of required submittals that are required as described in 1) above. If the Contractor cannot complete and provide a submittal item required prior to scheduling the preconstruction meeting, the Contractor will contact the Area Engineer to establish a mutually agreed upon

date when the required submittal will be completed and provided to the Area office.

The Contractor will not begin work on an item until the Contractor has provided the Area Engineer with all required information for the applicable work item and the appropriate office has approved the information, if necessary. The Contractor will make every reasonable effort to deliver the required submittals at the earliest possible time.

The Contractor's authorized representative as indicated on the Signature Authorization Form (Form DOT-209) will complete, in its entirety, the first page of the Authorization Form for Preconstruction Meeting and will initial each proceeding section. By initialing each section, the Contractor is confirming comprehension of each section.

When the Contractor has provided the Area Engineer all required submittals, unless the Contractor and Department have established an agreement in writing providing future dates of outstanding required submittal items, the Contractor will schedule a preconstruction meeting with the Area Engineer.

Within two (2) business days following the Contractor scheduling the preconstruction meeting, the Area Engineer will prepare and send the Contractor a meeting confirmation and the Preconstruction Meeting Outline (Form DOT-271) of discussion items including specific Department items.

The Contractor will complete the Contractor's portion of the Preconstruction Meeting Outline and will add additional discussion items as needed. The Contractor will send the meeting notice and final Preconstruction Meeting Outline to the Area Engineer, all subcontractors, utility companies, and all suppliers at least five (5) business days prior to the preconstruction meeting.

The Area Engineer will send the notice of the meeting and the final Preconstruction Meeting Outline of discussion items to any other government entities and other principle stakeholders involved in the project at least three (3) business days prior to the preconstruction meeting.

At the discretion of the Area Engineer, the preconstruction meeting may be held in person, videoconference, or over the phone. The Contractor's competent superintendent, as required by Section 5.5, who will be working on this project, is required to attend the preconstruction meeting.

The Contractor will lead the meeting discussion as described in the Preconstruction Meeting Outline. The Area Engineer will prepare the meeting minutes including any unresolved items and distribute them to all attendees and principle stakeholders within five (5) business days following the preconstruction meeting.

IV. METHOD OF MEASUREMENT

The Department will not make a separate measurement for the preconstruction meeting.

V. BASIS OF PAYMENT

The Department will not make a separate payment for the preconstruction meeting. All costs associated with the preconstruction meeting will be incidental to other contract items.

* * * * *

**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

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**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.

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**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**

**SPECIAL PROVISION
FOR
STANDARD TITLE VI ASSURANCE**

JANUARY 15, 2004

TITLE VI – NONDISCRIMINATION:

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 or State assisted programs of the South Dakota 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 origin, 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.

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**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.

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**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
------	------	-------	-------	-------	------	------

- 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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