4

Connecting South Dakota and the Nation

DEPARTMENT OF TRANSPORTATION

NOTICE TO CONTRACTORS,

PROPOSAL, SPECIAL PROVISIONS,

CONTRACT AND CONTRACT BOND

FOR

GRADING, SURFACING, & CITY UTILITIES

CITY **PROJECT NO.** **21309 0101( ), 21309 .02.01( )**
(PCN X03H, X03V)

US HIGHWAY 12

IN GRANT COUNTY(IES)

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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Project Number: 21309 0101( ), 21309 .02.01( )

Revised 12/19/13

PCN X03H, X03V

NOTICE TO CONTRACTORS

Electronic Bids for this project will be received by the South Dakota Department of Transportation (SDDOT) via the SDDOT secure bid submission site at http://apps.sd.gov/hc65bidletting/bidsubmittallogin.aspx until 10 A.M. Central time, on February 18, 2015, at which time the SDDOT will open bids. All bids will be checked for qualifications with results posted on the SDDOT website. The South Dakota Transportation Commission will consider all bids at a scheduled Commission meeting.

The work for which proposals are hereby requested is to be completed: **ON OR BEFORE OCTOBER 30, 2015.**

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

Work Type for this project is: **Work Type 3.**

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

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

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

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

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

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

PROPOSAL Revised 8/10/11

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION, STATE OF SOUTH DAKOTA:

Ladies / Gentlemen:

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

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

On the basis of the plans, Specifications, Special Provisions and form of contract proposed for use, the undersigned proposes to furnish all necessary machinery, tools, apparatus and other means of construction, to do all the work and furnish all the materials in the manner specified, to finish the entire project **ON OR BEFORE OCTOBER 30, 2015** and to accept as full compensation therefore the amount of the summation of the products of the actual quantities, as finally determined, multiplied by the unit prices bid.

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

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

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

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

REV. 5/15/14

SPECIAL PROVISIONS

PROJECT NUMBER(S): 21309 0101( ), 21309 .02.01( ) PCN: X03H, X03V

TYPE OF WORK: GRADING, SURFACING, & CITY UTILITIES

COUNTY(IES): GRANT

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.

Sue Bogen is the official in charge of the Watertown Career Center for Grant County(ies).

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Instructions for Bidders, dated 1/22/15.

Special Provision Regarding Combination Bids, dated 1/22/15.

Special Provision Regarding the City Portion for Subletting, dated 1/22/15.

Technical Specifications for PCN X03H & X03V.

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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21309 0101( ), 21309 .02.01( ), PCN X03H, X03V
GRADING, SURFACING, & CITY UTILITIES
US HIGHWAY 12

INSTRUCTIONS FOR BIDDERS

January 22, 2015

1) This Grading, Surfacing, & City Utilities Project will be let and awarded by the South Dakota Department of Transportation.

2) Department of Transportation procedures regarding letting and awarding of contracts shall be followed.

3) Bidders submitting a bid on this project shall also submit a bid on Project NH 0012(151)389 PCN 028T, Grant County. Award of these projects will be to the same bidder based on the total of the two projects.

4) A prospective bidder must request any explanation regarding the meaning or interpretation of the bidding package in adequate time to allow a Department reply to reach all prospective bidders before submission of final bid proposals. The bidder will contact the Department by submitting a request for explanation to the project Q&A forum.

5) All bid bonds shall be made out to the Department of Transportation

6) The contract completion date for this project will be the same as specified of Project Project NH 0012(151)389 PCN 028T, Grant County. Any delays in completing this contract will not be a basis for an extension of the contract completion time for PCN 028T, Grant County.

7) After award of contract, the Contractor shall furnish satisfactory proof of coverage of insurance required. Copies of Certificates of Insurance shall be furnished to the Department of Transportation AND City of Milbank.

8) The contractor is required to schedule and conduct a preconstruction meeting that shall be held jointly with the preconstruction meeting for the state contract. Additionally the contractor is responsible for contacting the city for a list of required submittals upon receiving Notice of Award of the contract.

9) Construction engineering for this contract will be performed by the City of Milbank.

10) Payment for this Utilities project will be made to the Contractor by the City of Milbank.

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STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION REGARDING
COMBINATION BIDS

21309 0101( ), 21309 .02.01( ), PCN X03H, X03V
GRADING, SURFACING, & CITY UTILITIES
GRANT COUNTY

JANUARY 22, 2015

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

21309 0101( ), 21309 .02.01( ), PCN X03H, X03V
US HIGHWAY 12
GRADING, SURFACING, & CITY UTILITIES
GRANT COUNTY

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

Work on PCN (028T) 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

21309 0101( ), 21309 .02.01( ), PCN X03H, X03V
GRANT COUNTY

JANUARY 22, 2015

This project is let in combination with State Project Number NH 0012(151)389 PCN 028T. The provisions of section 8.1 of the specifications requiring the Contractor to perform work amounting to not less than 50% of the total contract cost with the Contractor's own organization will not apply to the work on this contract.

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SECTION 01 0000 - GENERAL REQUIREMENTS

PART 1 - SUMMARY OF THE WORK

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of Contract.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: US Hwy 12 Phase II Utility Improvements, PCN X03H
4th Street Improvements (City Project), PCN X03V

1. Project Location: Milbank, South Dakota, Grant County, SEC12, T120N, R49W and SEC 7, T120N, R40W.

B. Owner: City of Milbank

C. Engineer: Banner Associates, Inc.
409 22nd Avenue South
Brookings, SD 57006

D. The Work consists of the following:

1. The Work to be performed under this Contract consists of sanitary sewer collection and water distribution system improvements. This project is a non-qualifying utility project and is bid in conjunction with SDDOT Project NH 0012 (151) 389.
2. Construction shall include the following improvements as detailed on the Drawing and specified herein:

a. Replace approximately 2,500 LF of 4” to 12” dia. sanitary sewer, services and structures;
b. Replace approximately 2,500 LF of 6” dia. watermain, services and fittings;
c. Install approximately 3,800 LF 12” dia. PVC water transmission line and fittings;
d. Install approximately 1,000 LF 42” dia. RC storm sewer pipe, junction boxes, and inlets;
e. Install approximately 700 tons of asphalt concrete;
f. Install approximately 1,850 LF of concrete curb and gutter;
g. Miscellaneous concrete work including 8” mainline PCCP, sidewalks, driveways, and fillets; and
h. Erosion control and site restoration.

1.4 TYPE OF CONTRACT

A. Project will be constructed under a unit price bid schedule.

1.5 CHARACTER OF WORK

A. It is intended that the Contract Documents include all items requisite and necessary to finish the entire work properly, even though every item necessarily involved may not be particularly mentioned. All work when finished shall be turned over to the Owner in complete and undamaged state. The work shall be executed in the best and most workmanlike manner by qualified and efficient mechanics, in strict accordance with the Contract Documents.

1.6 USE OF SITE

A. The Contractor shall confine operations to those areas indicated in the Contract Documents and permitted by law, ordinances and permits. The Contractor shall not unreasonably encumber the site with any materials or equipment, and shall not occupy sites without prior approval of the Owner.

1.7 USE OF COMPLETED PORTIONS - OWNER OCCUPANCY

A. The Owner shall have the right to take possession of and use any completed or partially completed portions of the work. Such taking possession and use shall not be deemed as acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost or delays to the work, the Contractor shall be entitled to such extra compensation, or extension of time, or both, as the Engineer may determine.

1.8 DRAWINGS

A. The Drawings, consisting of sheets prepared by Banner Associates, Inc., are a part and parcel hereof, and wherever the word Contract appears herein, the same shall be held to include the Drawings.

1.9 SURVEYS

A. The Owner shall have the Engineer provide the grade stakes, benchmarks, and control points necessary for the Contractor to complete the work for 4th Street (all portions) and the sanitary sewer and water main on Hwy 12. However, if the Contractor destroys the stakes, the Contractor shall be responsible for re-staking.

B. The Contractor shall provide competent engineering personnel to execute the work in accordance with the Contract requirements. The Contractor shall verify the figures shown on the survey and approved drawings before undertaking any construction work and shall be responsible for the accuracy of the finished work.

C. The Contractor shall protect and preserve the established bench marks and monuments and shall make no changes in locations without approval of the Engineer.

PART 2 - PROGRESS AND PAYMENT

2.1 SCHEDULE OF PAYMENT

A. Prior to submitting the first request for payment, the Contractor shall submit to the Engineer a schedule itemizing the various portions of the work aggregating any unit price bid scheduled Contract price. The schedule will constitute the format for the request for payment and shall provide sufficient detail for the Engineer to check and approve the Contractor's request for payment. As a minimum, the schedule shall have breakdowns for each area as delineated on the Plans and/or as detailed in the Specification Divisions and Sections.

2.2 PROGRESS PAYMENTS

A. On or about the first day of each month the Contractor shall submit to the Engineer a request for payment for the work performed during the previous month. The request shall indicate the value of the work done including materials delivered for and stored on the site of the work. The Engineer shall check the request and recommend the amount of the payment to be made. Progress payments and retention from the progress payments shall be made according to conditions outlined in the General Conditions which form a part of these Specifications. Progress payments on materials and/or equipment installed shall not exceed 90% of aggregate contract price until approved Shop Drawings are received.

PART 3 - SUBMITTALS

3.1 SUBCONTRACTORS AND SUPPLIERS

A. Within ten days after receipt of the Notice to Proceed, the Contractor shall submit to the Engineer a list, including names and addresses, of the subcontractors proposed to be used on the project and the suppliers of major equipment or material items.

3.2 CONSTRUCTION SCHEDULES

A. Within ten days after receipt of the Notice to Proceed, the Contractor shall submit to the Engineer a schedule showing the proposed progress of the construction. The schedule shall show the proposed starting and completion dates for the various stages of the construction and shall be prepared such that it can be used to plot actual progress against proposed progress. No progress payments will be made until the construction schedule is received.

3.3 “OR-EQUAL” PRODUCTS

A. Whenever in the Drawings or Specifications any material or process is indicated or specified by patent or proprietary name and/or by name of manufacturer, such Specifications shall be deemed to be used for the purpose of facilitating description of the material and/or process desired and shall be deemed to be followed by the words "or equal", and the Contractor may offer any material or process which shall be equal in every respect to that so indicated or specified; provided, however, that if the material, process, or article offered by the Contractor is not, in the opinion of the Engineer, equal in every respect, then the Contractor must furnish the material, process or article specified or one that, in the opinion of the Engineer, is equal thereof in every respect.

3.4 SHOP DRAWINGS AND SAMPLES

A. GENERAL

1. The Contractor shall submit three (3) copies of shop drawings and/or samples as required by these Specifications prior to incorporating the items contained into the work. The shop drawings shall be complete, including drawings, diagrams, illustrations, performance charts, brochures or other data necessary to demonstrate compliance of the item with the requirements of the Specifications. Samples shall represent the actual material or item to be furnished and shall include such necessary certification or documentation as to fully demonstrate compliance with the Specifications. Submittals for shop drawings and samples shall be as specified under the appropriate section for the item and/or as listed in the Appendix attached to this Section.

B. ENGINEER'S REVIEW

1. Engineer's review action stamp, appropriately completed, will appear on all shop drawings of Contractor when returned by Engineer.
2. Checking is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the Drawings and Specifications. Contractor is responsible for: Dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades and the satisfactory performance of his work.
3. Review status designations listed on Engineer's action stamp are defined as follows:
4. "No Exception Taken": Signifies equipment or material represented by the submittal conforms with the design concept and complies with the intent of the Contract Documents and can be incorporated into the Work. Contractor is to proceed with fabrication or procurement of the items and with related Work.
5. "Make Corrections Noted": Signifies equipment or materials represented by the submittal conforms with the design concept and complies with the intent of the Contract Documents and can be incorporated into the Work in accordance with Engineer's notations. Contractor is to proceed with the Work in accordance with Engineer's notations and is to submit a revised submittal responsive to notations marked on the returned submittal or written in the letter of transmittal.
6. "Revise and Resubmit": Signifies equipment or material represented by the submittal does not conform with the design concept or comply with the intent of the Contract Documents and cannot be incorporated into the Work. Contractor is to submit compliance submittals responsive to the Contract Documents.
7. "Submit Specified Item": Signifies submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. Contractor is to submit such additional information to permit layout and related activities to proceed.
8. "For Reference Only": Signifies submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins, and similar data, all of which are useful to Engineer and Owner in design, operation, or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. Engineer reviews such submittals for general content but not for substance.
9. "Distribution Copy": Signifies submittals which have been previously reviewed and are being distributed to Contractor, Owner, Resident Project Representative, and others for coordination and construction purposes.

PART 4 - TESTING LABORATORY SERVICES

4.1 SERVICES

A. The services of an approved independent testing laboratory shall be secured by the Contractor, at his own expense, to provide the following tests which are specified elsewhere:

1. Division 31; Section "Trenching Excavation and Backfilling" for soil proctor and compaction tests (Unit Price provided in Bid).

B. The Contractor shall secure an approved independent testing laboratory to perform the necessary tests as specified herein. Two (2) certified copies of the test results shall be submitted to the Engineer for review.

C. Frequency of testing shall comply with the South Dakota Department of Transportation Materials Manual.

PART 5 - TEMPORARY FACILITIES AND TRAFFIC CONTROLS

5.1 CONSTRUCTION AREA

A. The Contractor shall limit his construction operations to the areas indicated on the Drawings as construction areas. This shall include the operation and storage of equipment and the storage of materials for use on the project. The construction areas shall be maintained in a neat and orderly condition at all times.

5.2 SECURITY

A. The Contractor shall provide security as required at the site. It shall be the Contractor's responsibility to provide such additional security as may be required to protect the construction and any materials and/or equipment stored on the site.

5.3 ACCESS ROAD

A. Access roads within the project area shall be kept open and maintained in a passable condition at all times.

5.4 TEMPORARY TRAFFIC CONTROL

A. The Contractor shall erect and maintain necessary traffic control. The Contractor shall take all necessary precautions for the protection of the work and safety of the public. Highways and streets closed to traffic shall be protected by barricades. Obstructions shall be illuminated during hours of darkness. Warning signs shall be provided to control and direct traffic.

B. The Contractor shall erect warning signs in advance of the project where operations may interfere with the use of the road by traffic. Signage will be required to be relocated to coordinate with the construction phasing.

C. All traffic control devices and methods shall conform with the Manual on Uniform Traffic Control Devices for Streets and Highways issued by the United States Department of Transportation and adopted by the South Dakota Department of Transportation.

D. Payment for traffic control devices shall be made at the Contract unit price per unit for “Traffic Control”. Payment for maintenance and relocation of traffic control devices as shown on the Drawings shall be paid for at the Lump Sum price for "Traffic Control, Miscellaneous", as stipulated in the Bid, which price and payment shall be full compensation for costs necessary to complete this item.

PART 6 - MATERIAL AND EQUIPMENT

6.1 STORAGE AND PROTECTION

A. The Contractor shall, at all times, carefully and properly protect all materials and equipment, both before and after being used on the job, and all work performed by him, and provide any special protection from weather deemed necessary without additional cost to the Owner. The Contractor shall coordinate with the Engineer for designating storage areas and for the requirements for storage and protection. Storage of materials and equipment shall be within the area designated on the Drawings as the Construction Area.

6.2 MATERIALS SOURCES

A. It shall be the responsibility of the Contractor to locate sources for all materials specified herein and for any other material or item required to produce or complete the materials and/or work specified. The Contractor shall bear all costs in connection with acquisition, transportation, preparation, fabrication and/or installation of the material or item in the final work.

PART 7 - CONSTRUCTION SEQUENCE

7.1 GENERAL

A. During the construction of or relocation of the sanitary sewer improvements, the Contractor shall maintain operation of existing sanitary sewer services. Temporary pumping of wastewater shall be to an existing sanitary sewer line of sufficient size not to cause surcharges upstream or downstream. Contractor shall provide 24 hour supervision during bypass pumping operations. Pumps shall not cause undue noise and sound attenuating equipment may be required. Prior to start of bypass pumping, Contractor shall submit plans for and obtain approval of the Engineer. Sanitary sewage shall not be pumped to the storm sewer system or on top of the street.

B. During the construction of the water distribution system improvements, the Contractor shall schedule operations to maintain the operation of the existing water supply system. Any scheduled interruptions in water service shall be coordinated with and approved by the Owner at least 48 hours prior to interrupting water service. Any water service interruptions shall be kept within a maximum duration of two hours. If possible, service interruptions shall be scheduled to occur during minimum demand periods.

C. The existing storm sewer system shall remain operational throughout all construction.

D. The construction sequence for the various aspects of the project must be scheduled and coordinated to minimize service interruptions. The sequence of construction shall be completed in a methodical manner.

E. Contractor shall maintain adequate equipment and personnel to provide dust control to all portions of the work. All costs associated with providing dust control shall be incidental to other items of work.

F. Construction will require a carefully planned sequence of construction in order to minimize interruptions to the property owners and to handle the storm runoff. The contractor shall coordinate his work with the street superintendent in order to provide access for emergency vehicles. During portions of the work it is expected that the street will be entirely closed to traffic and such access may have to be provided on private property from the rear property lines.

G. The Contractor shall provide reasonable access for local residents and businesses throughout construction. If these areas need to be closed for brief periods of time the contractor shall coordinate that closure to ensure minimal inconvenience. The Contractor shall also provide access for the fire department at all times. The Contractor shall coordinate any interruptions to access with the fire chief.

H. Work shall be performed during off peak times to the greatest extent possible.

I. Refer to General Notes pages of the Drawings for additional requirements.

PART 8 - PROJECT CLOSEOUT

8.1 PROJECT RECORD DRAWINGS

A. The Contractor shall keep one set of Plans and Specifications on the job, in good order, which shall be labeled "Record Copy". This set of Plans and Specifications shall be filed separately, kept clean and readable, and protected. Whenever changes and/or deviations from the original Contract Documents are made, the Contractor shall record such changes and deviations on the Record Copy and upon completion of the work shall certify and forward the Record Copy to the Engineer as "Construction Plans of Record Documents".

8.2 CLEAN-UP

A. Upon completion of the work, the Contractor shall clean up the construction site and all of the facilities constructed thereon in such a manner that the site and facilities will be acceptable to the Owner for placing the work in service. The clean-up shall include the removal of all debris and matter not intended to be left on the site or in or around the site facilities. All areas and facilities shall be thoroughly cleaned and all work specified shall be completed prior to final acceptance of the project.

8.3 ACCEPTANCE OF THE WORK

A. After clean-up of the completed job, a final inspection shall be conducted by the Engineer and the Contractor to ascertain that all items of the work are complete and in conformance with the requirements of the Contract Documents in all respects. In the event any discrepancies are found in the work, these discrepancies shall be rectified prior to acceptance of the work. At such time as all items of the work, including clean-up of the work, are acceptable to the Engineer and the Owner, the Contractor shall be so notified in writing and the period of posting and publication prior to final payment shall begin.

8.4 COMPLETION OF THE WORK

A. The Contractor shall begin and complete the work within the times stated in theContract. The capacity of the Contractor's construction plan and the forces employed shall be such as to insure the completion of the work within the specified period of time. The damages that may result from any delay in completion of the work by the time agreed upon will be difficult to ascertain. If the work, or any part of it, is not completed on or before the date fixed for its completion by terms of the Contract, the Contractor shall pay the Owner liquidated damages in the amount as determined by the terms of the Contract.

8.5 GUARANTEE AND COMPLETION OF THE CONTRACT

A. All work under this Contract will have a normal one year warranty after the date specified in the Certificate of Substantial Completion and/or the date of final acceptance by the Owner.

B. During the warranty period, the Contractor shall be responsible for all repairs arising out of defective workmanship or materials, or both, which in the judgment of the Owner, shall become necessary during such period. If, within ten days after the mailing of a notice in writing to the Contractor or his agent, the said Contractor shall neglect to make, or undertake with due diligence, to make the aforesaid repairs, the Owner is hereby authorized to make such repairs at the Contractor's expense; providing however, that in case of an emergency where, in the judgment of the Owner, delay would cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the Contractor shall pay the cost thereof. The terms of the Contract shall not be deemed to be completed until such time that the warranty period has ended and any remedial action required by the warranty has been performed by the Contractor. The Contractor's performance and payment bond shall remain in full force until such completion of the Contract.

8.6 OPERATION AND MAINTENANCE DATA

A. The Contractor shall submit to the Engineer complete and detailed operation and maintenance data for the required items of equipment incorporated in the work. The data shall provide sufficient information for the Owner to properly and correctly operate and maintain the facilities with a minimum of expense and down time. Operation and maintenance data shall be submitted for the items which are specified elsewhere and which are listed in the Appendix attached to this Section. Six (6) copies shall be submitted.

APPENDIX A

ITEMS REQUIRING PRIOR APPROVAL

None Required

APPENDIX B

ITEMS REQUIRING SHOP DRAWING SUBMITTALS

US HWY 12 and 4TH STREET

SECTION 31 2300 - Bedding Material Gradation, Trench Stabilization Material

SECTION 33 1000 - Watermain Pipe, Fittings, Service Saddles, Corp. Stop, Curb Stops, Hydrants, Valves, Valve Boxes, Valve Box Adapter, Steel Encasement Pipe, PVC Encasement Pipe, Encasement Pipe end Seals

SECTION 33 3300 - Gravity Sewer Pipe, Manholes, Manhole Frames and Covers, Fittings

4TH STREET ONLY

SECTION 320 (SD DOT Standard Specifications) – Asphalt Concrete Mix

SECTION 450 (SD DOT Standard Specifications) – Storm Sewer Pipe

SECTION 651 (SD DOT Standard Specifications) – Detectable Warning Panels

SECTION 670 (SD DOT Standard Specifications) – Drop Inlets, Castings, Junction Boxes

SECTION 730 (SD DOT Standard Specifications) – Seed Mixture

SECTION 731 (SD DOT Standard Specifications) – Fertilizer

SECTION 732 (SD DOT Standard Specifications) – Fiber Mulch

SECTION 734 (SD DOT Standard Specifications) – Inlet Sediment Control Device

SECTION 882 (SD DOT Standard Specifications) – Base Course Gradation

SECTION 831 (SD DOT Standard Specifications) – Woven Geotextile Fabric

APPENDIX C

ITEMS REQUIRING OPERATION AND MAINTENANCE DATA SUBMITTALS

None Required

END OF SECTION 01 0000

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SECTION 01 7113 – MOBILIZATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this Section.

1.2 SUMMARY

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.

1.3 STANDARD SPECIFICATIONS REFERENCE

A. The work to be performed under this Contract shall be governed by the South Dakota Department of Transportation "Standard Specifications for Roads and Bridges", 2004 Edition and Required Provisions, Supplemental Specifications, and Special Provisions, which specifications shall apply as though printed in full with these Contract Documents.

B. Any reference to State, State of South Dakota, or Department of Transportation with regard to work or services to be completed or furnished shall be taken to mean the City of Milbank, South Dakota, herein referred to as Owner, for purposes of this project.

C. Any reference to the Engineer shall mean the firm of Banner Assoc. Inc., Consulting Engineers, Brookings, South Dakota, for the purpose of this project.

PART 2 - BASIS OF PAYMENT

2.1 Payment shall be made at the Contract Lump Sum price for "Mobilization", as stipulated in the Bid, which price and payment shall be considered full compensation for all mobilization and/or re-mobilization costs. Partial payments for mobilization shall be made in accordance with SDDOT Standard Specifications for Roads and Bridges, current Edition, **Section 9.10 – Mobilization.**

END OF SECTION 01 7113

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SECTION 31 2300 – TRENCHING EXCAVATION AND BACKFILLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Excavating and backfilling for utility trenches.

B. Related Sections include the following:

1. Division 33; Section "Water Utilities" for watermain pipe, water service pipe, fittings, valves, fire hydrants, and other appurtenances.
2. Division 33; Section "Sanitary Sewerage Utilities" for gravity sewer pipe, fittings, manholes, manhole frames and covers.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Granular embedment placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Bedding Material: Aggregate course placed over the excavated subgrade in a trench before laying pipe.

C. Trench Stabilization Material: Aggregate used where soft, spongy, unstable or other similar material is encountered and removed upon which the granular embedment material or pipe is to be places.

D. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment without systematic drilling, ram hammering, ripping, or blasting, when permitted.

E. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

F. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Engineer and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify Engineer not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Engineer's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.5 TESTING AND INSPECTION SERVICE

A. It shall be the responsibility of the Contractor to employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

1.6 GUARANTEE

A. During a period of one year from and after the date specified in the Certificate of Substantial Completion of the work embraced by this Contract, the Contractor shall make all needed repairs or replace as necessary any damage caused by settlement, at no additional cost to the Owner.

1.7 DEWATERING PERMIT

A. Prior to dewatering, the Owner shall obtain a "Notice of Intent" permit for temporary dewatering. Upon completion, the Owner shall furnish a "Notice of Termination" for temporary dewatering. The permits and termination notices shall be obtained from the Department of Environment and Natural Resources, Pierre, South Dakota. Information concerning a dewatering permit can be obtained from DENR Surface Water Quality program by calling (605) 773-3351. The permit application forms can be found in these specifications. The Owner shall be responsible for obtaining the permit and any costs relating thereto.

1.8 TEMPORARY WATER RIGHT PERMIT

A. A temporary water right permit may be required if the following types of water need to be pumped out of the construction site:

1. Ground Water
2. Surface Water

B. A permit is **not required** if dewatering construction site due to precipitation, provided the facility has a General Surface Water Permit for Storm Water Discharges.

C. Dewatering the construction site due to precipitation **will** require a permit if there is **no** General Surface Water Discharge Permit for Storm water Discharges.

D. Permit applications can be filled out on-line and submitted to SD DENR. On-line permit application can be found at: http://www.state.sd.us/denr/des/waterrights/temp_form.htm.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, SM, and CL or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Select Backfill: Material from excavation or imported material consisting of earth free from large stones, frozen material vegetation, cinders, ashes and other organic material. Select material shall be sufficiently pulverized to permit proper compaction.

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

F. Select Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

G. Bedding Material: Aggregate shall be crushed rock in accordance with SDDOT coarse aggregate, Section 820.2D, size number one.

H. Trench Stabilization Material: Aggregate shall be crushed rock in the size range from ¾” to 1 1/2”.

I. Topsoil: Friable clay loan surface soil free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.

J. Fill Concrete: Minimum 28-day compressive strength shall be 2500 psi.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

1. The Engineer will establish construction lines and designate all trees, shrubs, plants and other things to remain. All surface objects and all trees, stumps, roots and other obstructions not designated to remain, shall be cleared as required and properly disposed of.
2. The Contractor shall be responsible for the proper removal, care and resetting of all portable culverts, drainage pipe and other minor structures authorized by the Engineer for temporary relocation from alignment of the work.
3. Removal of surface improvements were not indicated to be removed on the plans such as street paving, curbs, gutters and sidewalks shall be held to a minimum. When it is necessary to excavate through existing asphalt or concrete paving, sidewalks, or curb and gutter; before excavating, the cut shall be first made with a concrete saw for the full depth of the existing surface. All material removed and the method employed to replace the surface improvement to its original grade, depth and alignment shall be first authorized and approved by the Engineer. Rubble material shall be considered property of the Contractor and be disposed of by the Contractor at a permitted site or a site provided by the Owner.

B. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Drainage:

1. The Contractor shall at all times during the construction of the work provide and maintain ample equipment to remove and dispose of all water entering the excavation or other parts of the work. The excavation shall be kept dry until all work therein has been completed and backfilling commenced. All grading in the vicinity of the excavation shall be performed in such a manner as to provide positive surface drainage away from the site and to prevent surface water from flowing into the excavation.
2. No reinforcing steel shall be placed in water, and no water shall be allowed to rise over any reinforcing steel before the concrete has been placed. No water will be allowed to come in contact with any concrete within twenty-four (24) hours after placement unless shown on the Drawings or authorized by the Engineer.

C. Dewatering

1. Trench Dewatering: During trenching operations for installation of utilities, when groundwater is encountered in sufficient quantities to require continuous pumping with well points or other special handling in order to maintain a satisfactory dry trench condition, it shall be considered wet trench. In such case, the Contractor shall submit to the Engineer for approval, his proposed method of disposing of the water prior to initiating the dewatering procedure. The Contractor shall be responsible for any damage occurring from disposal of water. Trenches for utilities shall be dewatered to an elevation of at least one (1) foot below the pipe invert elevation. Payment for dewatering shall be made at the Lump Sum price for “Dewatering.”
2. Structure Excavation Dewatering: During excavation for structures other than utility trenches, the Contractor shall provide suitable equipment including, if necessary, pumping with well points or other special handling to keep the excavation dry as required by Trench Dewatering, above. The Contractor shall be responsible for any damage occurring from disposal of water. Excavation for

structures shall be dewatered to an elevation of at least two (2) feet below the bottom of the excavation. Payment for dewatering shall be made at the Lump Sum price for "Dewatering."

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 ADJUST MANHOLE

A. Existing manholes which are to remain are to be adjusted by the Contractor. Under this item of work, the approximate quantity of adjustments are as shown in the Bid. The Engineer may increase or decrease the number of manholes to be adjusted. In performing this work, the Contractor shall, if necessary, add or remove concrete rings or upper course of brick and buildup the manhole rims to an elevation flush with the top of the finished pavement.

B. All costs due to damaged, cracked or misaligned manholes and covers, due to the carelessness of the Contractor, shall be the responsibility of the Contractor.

3.5 PROTECTION OF EXCAVATION

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

B. The Contractor shall provide adequate signs, barricades, flashing lights, and watchmen and take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be protected at night by flashing signal lights in proper working order, which shall be kept burning from sunset to sunrise. Barricades shall be of substantial construction with reflective markings to increase their visibility at night. Suitable signs shall be so placed as to show in advance where construction, barricades, or detours exist.

C. The Contractor shall at all times so conduct his work as to insure the least possible obstruction to traffic and inconvenience to the general public and shall at all times maintain access to existing public and private property.

3.6 PROTECTION OF EXISTING UTILITIES

A. Existing utilities shall be protected from damage during the excavation and backfilling operations. If damaged, the Contractor shall immediately contact the appropriate utility company. Any damage shall be repaired by the Contractor, at his expense or by the utility company, at possible expense to the Contractor. It shall be the Contractor's responsibility to arrange with each utility company known to maintain utilities in the area of work to have all underground facilities located and staked by the utility company prior to excavation.

B. It is understood and agreed that the Contractor has considered in the bid the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans. Additional compensation will not be allowed for delays, inconvenience or damage sustained due to interference from the utility appurtenances or the operation of moving them.

3.7 RESPONSIBILITY

A. It shall be the responsibility of the Contractor to provide all materials, including borrow, earth cover, and topsoil.

3.8 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

a. 24 inches outside of concrete forms other than at footings.
b. 6 inches beneath bottom of concrete slabs on grade.
c. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 36 inches wide.

3.9 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspection.

B. Excavation for underground tanks, basins, manholes, and mechanical or electrical appurtenances. Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavation intended for bearing surface.

3.10 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations. All excavation shall be made by open cut method unless otherwise shown on the Drawings.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches each side of pipe or conduit.

C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Under no circumstances will it be permissible to leave a pipeline excavation unprotected or unguarded when work is not actually in progress on the pipeline. If it becomes necessary for the Contractor to leave

the pipeline excavation for any reason, it shall be the Contractor's responsibility to leave one of his employees at the site to watch the site so unauthorized personnel do not enter the excavation.

E. Unless otherwise required, the pipeline excavation shall be completely backfilled at the end of each days operation, and reopened when work resumes on this portion of the line. The Contractor shall be responsible to mark the end of the pipe in such a manner that it may be easily found when the ditch is reopened.

F. Excavation for structures and accessories, including manholes, shall be of sufficient size so as to leave at least twelve (12) inches of clear space between the outer surface of the structure and the embankment or sheathing and bracing which may be used to hold and protect them. Unless otherwise shown on the Drawings or authorized by the Engineer, the bottom of the excavation shall not be undercut below the grades established. Manhole installations shall be completed and completely backfilled the same day in which the excavation was started.

3.11 FIELD QUALITY CONTROL

A. Allow testing agency to inspect and test each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.

B. Perform field in-place density tests according to ASTM D1556 (sand cone method), ASTM D 2167 (rubber ballon method), or ASTM D 2937 (drive cylinder method), as applicable. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, refer to the calibration curves furnished with the moisture gauges according to ASTM D 3017. A schedule of density tests may be submitted to the Engineer for approval.

C. When testing agency reports that backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, re-compact and retest until required density is obtained. In the event of a compaction test that does not meet the required density, the Contractor will be required to correct all areas that have been compacted since the last passing test at no cost to the Owner. The Contractor has the option of performing additional compaction tests between the last passing and the failing compaction test at no cost to the Owner.

D. All costs for removal, replacement, re-compaction and retesting of the material shall be paid for by the Contractor.

E. Frequency of testing shall follow requirements set forth by SD DOT Materials Manual.

3.12 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavations under other construction or utility pipe as directed by Engineer.

3.13 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations.

3.14 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact granular embedment on trench bottoms and where indicated. Shape granular embedment to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Place and compact final backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the granular embedment material.

1. Carefully compact final backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

D. Backfill voids with satisfactory soil while installing and removing shoring and bracing.

E. Place and compact final backfill of satisfactory soil to final subgrade elevation.

F. At intervals of no more than 300 feet, the Contractor shall be required to place, within the pipe bedding zone, a 12 inch thick clay fill dam. This dam shall extend through the previous bedding material and into the normal backfill and sides of the trench to prevent the conveyance of water through the bedding material. If the normal backfill material is not suitable for construction of these clay dames, the Contractor will be required to obtain material from other outside sources for this purpose. Clay dams should not be constructed at or near the bell of the pipe but should be constructed near the center of full length of pipe. Clay dams will not be paid for directly but will be considered to be included in the cost of pipe bedding.

3.15 UTILITY STRUCTURES BACKFILL

A. Backfill, or fill, as the case may be, for precast or cast-in-place structures, such as, but not limited to, manholes, transition structures, junction structures, vaults, and valve boxes shall start at the subgrade for the structure.

B. Except where the pipe must remain exposed for leakage and exfiltration tests and subject to the provisions herein, the Contractor shall proceed as soon as possible with backfilling operations. Care shall be exercised so that the structure or pipe will not be damaged or displaced. If the pipe is supported by concrete cradle placed between the trench wall and the pipe, backfill above the concrete bedding shall not be placed nor sheeting pulled for at least 24 hours after placement of the concrete.

C. Unless otherwise specified or authorized by the Engineer, backfill against or over the top of any cast-in-place structure shall not be placed prior to seven (7) days after completion of concrete placement.

D. Voids left by the removal of sheeting, piles and similar sheeting supports shall be immediately backfilled with clean sand which shall be jetted into place to assure dense and complete filling of the voids.

E. Where it is necessary for any reason to undercut below the bottom of concrete poured in place structures, the void below the bottom of the structure shall be filled with concrete at the same time and of the same quality as that of the structure itself, unless otherwise shown on the Drawing or approved by the Engineer.

3.16 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent (+/-) of optimum moisture content. Optimum moisture will be determined in accordance with SD104.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.17 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Compaction by bucket packing is not allowed.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Compact backfill of fill layers in unimproved areas to a density at least equal to that of the surrounding soil.
2. Compact backfill or fill layers in areas containing surface improvements or future surface improvements at the following percent maximum dry density:

   a. Initial and Final Backfill at 97 percent.

3.18 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

3.19 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Engineer; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

1. All material generated by this project must be disposed of at a permitted site. Depending on what material is generated and whether it is contaminated or uncontaminated will determine which permitted facility can accept it. Permitted facilities include construction and demolition debris sites, restricted use sites, and regional landfills. Contact the SDDENR Waste Management Program at (605) 773-3153 to identify locally permitted disposal sites for various categories of contaminated and uncontaminated materials.
2. Before final acceptance of the work the Contractor shall clear the entire work site of equipment, unused materials, and rubbish so as to present a satisfactory clean and neat appearance. Agricultural areas shall be scarified with a farm type disc and smoothed out with an agriculture type drag. The final surface shall be smooth and free of rocks and debris.

PART 4 - MEASUREMENT AND PAYMENT

4.1 EXCAVATION, BEDDING, BACKFILLING AND INCIDENTALS

A. All excavation of every description; site preparation; sheeting and shoring; backfilling; compaction; water for compaction; moving and resetting fences, portable culverts and minor structures; grading; shaping; salvaging, site cleanup and other "incidentals" required to complete the work shall not be measured for payment separately, but shall be considered as a subsidiary obligation of the Contractor in the installation of pipe, structures, specials and other items of measurement; and the entire cost thereof shall be included in the Contract unit prices bid for furnishing and installing pipe, structures, specials or other items for which payment is established.

4.2 CLEARING OF THE CONSTRUCTION AREA

A. Clearing of the construction area shall be measured by the unit shown for each of the removal items listed in the Bid. Payment shall be at the Contract unit price for “Remove Fire Hydrant”, “Remove Gate Valve,” “Remove Valve Box”, and “Remove Manhole”, complete, as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools, materials and equipment required to complete the work including all removal, hauling, crushing, rubbelizing and disposal of all items designated for removal in accordance with the Drawings and Specifications.

4.3 DEWATERING

A. As required to complete the installation of underground utilities as authorized by the Engineer. Payment shall be made at the contract Lump Sum price for “ Dewatering” as stipulated in the Bid, which price and payment shall be full compensation for furnishing, installing, and operating temporary wells, sandpoints and pumping systems necessary to dewater the trench or excavation in accordance with the

Specifications. No payment for trench dewatering shall be allowed if sump pump in the trench are used for dewatering. Dewatering for the construction of underground electrical control, water, water service lines, or other utilities shall not be measured or paid for separately, but shall be considered incidental to price for the Dewatering.

4.4 UTILITY TRENCH COMPACTION TESTNG

A. Payment shall be made at the Contract lump sum price for "Utility Trench Compaction Testing" as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools and equipment for sampling materials, performing compaction and tests and providing certified test results in a satisfactory manner.

4.5 BEDDING MATERIAL

A. Imported bedding material furnished and placed as authorized bedding material shall be measured to the nearest lineal foot, based on lineal foot of pipe satisfactorily installed, of material satisfactorily furnished and placed. Payment shall be made at the Contract unit price per lineal foot for "Bedding Material" as stipulated in the Bid, which price and payment shall be full compensation for furnishing granular materials and tools, labor and equipment required to haul and install the bedding in accordance with the Drawings and Specifications. Granular embedment material required to replace unauthorized excavated materials, or for the control of water shall be furnished and installed by the Contractor at his cost without further compensation. No payment shall be made for granular embedment where the material used for embedment has been taken from the excavation stockpile.

4.6 TRENCH STABILIZATION MATERIAL

A. Imported trench stabilization material furnished and placed as authorized foundation material shall be measured to the nearest one-tenth (0.1) ton, based on weight tickets provided by the Contractor, of trench stabilization material satisfactorily furnished and placed. Payment shall be made at the Contract unit price per ton for “Trench Stabilization Material”, as stipulated in the Bid, which price and payment shall be full compensation for furnishing granular material and all tools, labor and equipment required to haul and install the material in accordance with the Specifications. Trench stabilization material required to replace unauthorized excavated materials, or for the control of water shall be furnished and installed by the Contractor at his cost without further compensation.

4.7 ADJUST MANHOLE

A. Adjustment of manholes and covers will be measured by the number of manholes and covers satisfactorily adjusted to grade. Payment shall be made at the Contract unit price per each for “Adjust Manhole” as stipulated in the Bid, which price and payment shall be full compensation for all materials, labor, tools, equipment and other incidentals required to complete the item of work in accordance with the Drawings and Specifications.

END OF SECTION 31 2300

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SECTION 33 1000 – WATER UTLITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.

1.2 SUMMARY

A. The Section includes the following:

1. Water distribution pipe;
2. Water service pipe;
3. Water distribution/ service fittings;
4. Fire Hydrants;
5. Valves, valve boxes, and valve box adaptors;
6. Encasement Pipe;
7. Manufactured Chocks;
8. Tracer Wire;
9. Miscellaneous appurtenances.

B. Related Sections include the following:

1. Division 31; Section “Trench Excavation and Backfilling” for soil materials, excavating, and backfilling.

1.3 SHOP DRAWINGS

A. Three (3) copies of shop drawings shall be submitted to the engineer for the following items:

1. All pipe, fittings, hydrants, valves, and valve boxes with dimensions, valve box adaptors, encasement pipes and appurtenances, details and materials of construction.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. General: Pipe furnished for installation on this project shall be of size shown on the Drawings. The pipe shall be manufactured from one of the materials designated for specified line and application as shown in the following Subsections.

B. Class 235, C900 PVC Pipe:

1. Polyvinyl chloride pressure pipe and fittings shall conform to the requirements of AWWA C900 "Poly Vinyl Chloride (PVC) Pressure Pipe", Class 235 meeting the requirements of DR18.
2. Outside pipe diameter shall be the same as that of cast iron pipe of similar nominal size.
3. Pipe materials shall conform to "Standard Specification for Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds" (ASTM D-1784).
4. The pipe shall bear the National Sanitation Seal for potable water pipe.
5. Provisions must be made for expansion and contraction at each joint with an elastomeric ring.
6. The bell shall consist of an integral wall section with a solid cross-section elastomeric ring which meets the requirements of ASTM D1869. The bell section shall be designed to be at least as strong as the pipe wall.
7. Each length of pipe, including integral bell, shall be pressure tested to four times the class pressure of the pipe for a minimum of five (5) seconds.
8. Pipe and fittings must be assembled with a non-toxic lubricant.
9. Standard lengths shall be 20 feet for all sizes.
10. Pipe may be furnished with separate couplings in lieu of integral bell in order to achieve high deflection.
11. Separate couplings shall pass a hydrostatic integrity test at the factory at four times the pressure class of the coupling for five seconds.

2.2 WATER SERVICE LINES

A. Water Service Lines 1-inch Diameter and Under

1. Water service lines 1-inch diameter and under shall be annealed, Type K, copper tubing conforming with the standard specifications for seamless copper water tube, ASTM B88.

B. Water Service Lines Greater than 1-inch Diameter:

1. Water service lines greater than 1-inch diameter shall be PVC pipe and with the provisions of the American Society for Testing and Materials Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-rated Pipe (SDR Series), ASTM D2241. ASTM 2241 PVC pipe shall be manufactured of Type I, Grade 1, 12454-B, with a hydrostatic design basis of 4,000 psi, per ASTM 2837 and with a service factor of 0.5 for hydrostatic design stress of 2,000 psi. Pipe shall be designated as PVC 1120 conforming to the requirements of ASTM 1784, Rigid Poly (Vinyl Chloride) (PVC) compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) compounds. Pipe shall bear the National Sanitation Foundation (NSF) seal of approval. ASTM 2241 PVC pipe shall be of the size designated on the Plans and specified in the BID. ASTM D2241 PVC pipe class and standard dimension ratio (SDR) shall be as follows:

Class	SDR
200	21

2. Pipe joints shall be push-on joints conforming to the provisions of ASTM D 3139, sealed by means of a rubber ring seated in an integral bell or a coupling. Couplings shall be a twin gasket coupling with a positive stop in the middle that will position the pipe ends within the coupling. Rubber rings shall conform to the requirements of ASTM F 477.
3. Pipe Fittings 3-inch and smaller shall be manufactured in one piece of injection molded PVC compound meeting ASTM D1784. Fittings shall be Class 200 or greater and conform to requirements of DR of pipe being installed. Fittings shall be designed to withstand a minimum of 630 psi quick burst pressure at 73 degrees F, tested in accordance with ASTM D1599. Fittings shall be gasketed joint conforming to ASTM D3139 with gaskets conforming to ASTM F477.

2.3 PIPE SYSTEM APPURTENANCES

A. Pipe Fittings and Specials:

1. Specials and fittings constructed of ductile iron shall be provided for use with all water line piping and at locations shown on the Drawings.
2. Mechanical joint ductile iron fittings shall conform to the requirements of AWWA C110 or AWWA C153.
3. Flanged fittings shall conform to the requirements of ANSI/AWWA C110/A21-10.
4. Flanges shall be ANSI B16.1 125lb. Class B.
5. Bolts for all flanged fittings shall be stainless steel. Bolts for mechanical joint fittings shall be Cor-Blue, or Engineer approved equal.
6. The outside of all ductile iron fittings shall be coated with a bituminous coating.
7. The inside of the ductile iron fittings shall be coated with a standard thickness cement mortar lining.
8. Direct buried ductile iron specials and fittings shall be wrapped with polyethylene encasement material conforming to the requirements of AWWA C105.

B. Pipe Sleeves

1. Pipe sleeves shall be of ductile iron, long body, mechanical joint, gasketed, sleeve type, with diameter to properly fit the new water main pipe to the existing watermain or provide transition between different pipe materials as shown on the Drawings. All transition couplings shall be ductile iron meeting the requirements of “Pipe Fittings and Specials” of these Specifications. The sleeve shall be wrapped on the exterior with polyethylene wrapping in accordance with AWWA C105. Bolts shall be Cor-Blue or Engineer approved equal.

C. Mechanical Joint Restraints

1. Mechanical joint restraints shall be incorporated in the design of the follower gland. The restraint mechanism shall consist of a plurality of individually actuated gripping surfaces to maximize restraint capability. Glands shall be manufactured of ductile-iron conforming to ASTM A536-80. The gland shall be such that it can replace the standardized mechanical joint gland and can be used with the standardized mechanical joint bell conforming to ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.53 of latest revision. Twist-off nuts, sized the same as tee head bolts, shall be used to insure proper actuating of restraining devices. Bolts shall be Cor-Blue. The restraining glands shall have a pressure rating equal to that of the pipe on which it is used and shall be EBAA Iron, Inc., Romac or Engineer approved equal.
2. Restraint Devices for bell and spigot joints of PVC Pipe shall consist of a solid or split restraint ring installed on the spigot, connected to a solid back-up ring seated behind the bell. The split restraint ring shall incorporate a series of serrations on the inside diameter to provide positive restraint, exact fit and 360° contact and support of the pipe wall. The solid back-up ring shall have a beveled leading edge to assure exact fit behind the pipe bell. Restraint Devices shall be of ductile iron, ASTM A536, Grade 65-45-12, or ASTM A36 structural steel. Connecting bolts shall be high strength, in accordance with ANSI/AWWA C111/ A21.11. Twist-off nuts, sized the same as tee head bolts, shall be used to insure proper actuating of restraining devices. Bolts shall be Cor-Blue. All Restraint Devices shall carry a water working pressure rating equal to the full rated pressure of the PVC Pipe they are installed on, with a minimum 2:1 safety factor in any nominal pipe size. In addition, they shall meet or exceed the requirements of Uni-B-13-94, Recommended Performance Specification For Joint Restraint Devices For Use With Polyvinyl Chloride (PVC) Pipe. Restraint devices for bell and spigot joints of PVC pipe shall be UniFlange Block Buster 1350 or Engineer approved equal. All restrained joints shall be wrapped with polyethylene encasement material.

2.4 VALVES AND GATES

A. Gate Valves: Gate valves shall be resilient wedge type designed for a minimum water working pressure of not less than 250 psi. Gate valves shall conform to AWWA Standard C515. All gate valves shall be manual operated by 2-inch operating nut. Gate valves shall have a stationary stem and shall provide a smooth unobstructed waterway and shall be opened by turning counter clockwise. The operating nut shall have an arrow, cast in the metal, indicating the direction of opening. Each valve shall have the maker's monogram or initials, pressure rating and year of manufacture cast on the body. Valves shall be furnished with joints compatible with the pipe to which they are connected.

1. Gate valves shall be ductile iron and mechanical jointed to be incorporated with mechanical joint restraints.
2. The seal plate shall be fitted with O-ring seals above and below the thrust collar. The modified wedge disc must be fully supported. The disc or wedge shall provide an angular mounting surface for the resilient rubber seat.
3. The valve interior and exterior shall be fully coated with a material approved for potable water in accordance with applicable AWWA Specifications. Each valve shall be tested for zero leakage past the seat at 250 psi and hydrostatically shell tested at 500 psi.
4. Direct buried valves and boxes shall be wrapped with polyethylene encasement conforming to AWWA C105.
5. Bonnet bolts shall be stainless steel.
6. Valves installed in structures shall be flanged with hand wheel operator.
7. The valves shall be American Flow Control; Clow; AVK; or Engineer approved equal.

B. Valve Boxes: Valve boxes for gate valves shall be a multiple piece, Class 35B, cast iron, buffalo type (screw), with a 5-1/4 inch shaft diameter. Valve box castings shall be hot coated inside and outside with a rust resisting coating. The bottom part of the box shall have a bell conforming to the perimeter of the valve. The valve box covers shall be extra deep and fit the valve box snugly to prevent rattles or tipping due to traffic. Covers shall be provided with slots for easy and quick removal and supplied with the word "WATER" cast into the lid.

1. Valve boxes shall be furnished with rubber Valve Box Adapter II as manufactured by Adaptor, Inc. or Engineer approved equal.

2.5 CORPORATION STOPS AND SERVICE SADDLES

A. Corporation stops shall be constructed of bronze alloy and furnished with tapered inlet thread for connection to service saddle and with pack joint ends suitable for connecting to the type of water service line specified. Corporation stops shall be ball type meeting AWWA C-800 standards. Service saddle bodies shall be stainless steel with tapered thread for connecting to corporation stop.

B. Service saddles shall be provided with stainless steel bolts for connecting to C900 PVC water pipe. Saddles shall be furnished with a Buna-N rubber gasket, cemented in place. The service saddles shall be Ford FS303; A.Y. McDonald; or Engineer approved equal.

C. The corporation stops shall be compatible with the water service line material specified. Ford FB1000, FB1001, FB1002; A.Y. McDonald; or Engineer approved equal.

D. The cutting tool used to make service connections shall be a shell type (hole) cutter which will retain the coupon and be designed to accommodate walls as heavy as DR 14. The equipment used shall attach to the corporation stop and permit the cutting tool to be fed through the corporation stop to cut a hole in the pipe. The Contractor shall take care to prevent filings from entering the pipe.

2.6 CURB STOPS

A. Curb stops shall be brass, Minneapolis pattern, and furnished with pack joint ends suitable to make the connection to type of water service line specified. Curb stops shall be ball valve type provided with body sealing and port sealing "O" rings or rubber seats. Curb stops shall meet AWWA C-800 standards.

B. The curb stops shall be Ford Ball Valve or A.Y. McDonald compatible with the water service line material specified. Series B44-XXXM, B66-XXXM, B77-XXXM or Engineer approved equal.

2.7 CURB BOXES

A. Curb boxes shall be constructed of cast iron conforming to the requirements of ASTM A48 for Class 20 or higher tensile strength and shall be the extension type with tapped lower section for the service stop. Extended length of service box shall be 7 feet. The word "Water" shall be cast in the lid of the service box. Boxes shall have a minimum inside diameter of 1-1/4 inches.

2.8 SERVICE COUPLING ADAPTERS

A. Service coupling adapters shall be compression type and constructed of brass with Buna N beveled gasket specifically designed for underground bury. The adaptor(s) shall join the new service piping to the existing service.

2.9 STEEL ENCASEMENT PIPE

A. Steel Casing Pipe: Steel casing pipe shall conform with requirements of ANSI B36.10 with minimum yield strength of 35,000 psi and a minimum wall thickness as follows or as noted on the Plans.

Diameter of Pipe (Inches)	Minimum Thickness (Inches)
14 and Under	0.188
16	0.281
18	0.312
20 and Greater	0.350

1. Joints shall be welded all around the casing pipe of the size necessary to fully develop the tensile and shear strength of the casing pipe being used. Welds shall be continuous and without gaps.

B. Pipe within the encasement pipe shall be supported by manufactured chock units. Metal components of Casing Spacers shall be type 304 stainless steel of a minimum 14 gauge thickness Casing Spacers. The liner shall be heavy duty PVC or neoprene rubber. The runners shall be UHMW Polyethylene or approved equal with high abrasion resistance and low coefficient friction. Spacer shall be similar and equal to models manufactured by Cascade Model CCS or equal. The pipe support method used shall provide support for the pipe at the center and at each end of each length of pipe and shall satisfy the manufacturer's recommendations. The materials to be used for pipe support shall be approved by the Engineer. The ends of the encasement pipes shall be sealed with an approved manufactured casing pipe seal.

2.10 ENCASEMENT PIPE (PVC)

A. Encasement pipe for sewer lines that cross over or within 18" below water lines shall be Class 160 Polyvinyl Chloride pipe.

1. All pipe must meet the requirements as set forth in "Polyvinyl Chloride (PVC) Pressure-Rate Pipe (SDR Series)" ASTM D2241 with a standard dimension ratio (SDR) of 26.
2. All PVC pipe shall be gasket jointed for meeting the requirements of "Standard Specification for Elastomeric Seals for Joining Plastic Pipe" with ASTM D3139, "Standard Specification for Joints for Plastic Pressure Pipe Using Flexible Elastomeric Seals".
3. Pipe materials shall conform to "Standard Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds (ASTM D1784).
4. The encasement pipe shall extend no less than ten (10) feet on each side of the waterline which is being crossed.
5. Pipe within the encasement pipe shall be supported by manufactured chock units.
6. Flexible reducing couplings for use on the Class 160 PVC encasement pipe shall be as manufactured by FERNCO or Engineer approved equal.

2.11 POLYETHYLENE ENCASEMENT MATERIAL

A. Polyethylene encasement must meet or exceed the minimum standards established by AWWA C105, Current Edition. Nominal film thickness shall be 8 mil.

B. Polyethylene encasement shall meet minimum size requirements per TABLE 3 of Section 2.15 of DIPRA's Installation Guide for Ductile Iron Pipe.

C. Polyethylene encasement shall be furnished in tube form for installation on pipe and pipe-shaped appurtenances such as bends, reducers, etc. Sheet film shall be provided and used for encasing all odd-shaped appurtenances such as tees, valves, crosses, etc.

D. Test results from an independent testing agency certifying that the polyethylene encasement meets all criteria established by AWWA C105, current edition, shall be submitted to the Engineer prior to approval of the polyethylene encasement for use.

E. A 2-inch wide plastic adhesive tape, such as Calpico Vinyl, Polyken 900, or Engineer approved equal, shall be used for sealing seams, cuts, or tears in polyethylene encasement. **Duct tape shall not be allowed**.

2.12 FIRE HYDRANTS

A. Fire hydrants shall be single dry-barrel non-jacket type conforming to AWWA Standard C502. Each hydrant shall be furnished with two 2-1/2 inch hose nozzles and one pumper connection. The thread patterns shall be compatible with City of Milbank fire fighting equipment. The hydrants shall be designed for a working pressure of 150 pounds per square inch and tested at 300 pounds per square inch hydrostatic test pressure. Working parts shall be bronze. Bolts shall be stainless steel.

1. The main valve shall be compression type designed to close and open against main pressure. All operating parts, including the valve seat, shall be removable through the hydrant barrel with the hydrant in place. The operating threads shall be oil or grease lubricated. A safety flange shall be located near the ground line to prevent barrel breakage should the hydrant be struck by vehicles. Hydrants shall be connected to mains with 6-inch diameter pipe. Hydrants shall open counterclockwise and have No. 5 pentagon operating nut. Minimum cover from ground line to the

top of the connecting pipe shall be 6.5 feet. Nozzle caps shall be furnished with No. 5 pentagon nut and be provided with chains attached to hydrants.

2. Hydrants shall be painted with one coat of primer and two finish coats of approved red paint. The buried portion of the hydrant shall be wrapped with polyethylene wrapping in accordance with AWWA C105.
3. Hydrants shall be American Flow Control, Waterous Pacer, Clow, AVK, or Engineer approved equal.

2.13 MANUFACTURED CHOCKS

A. Pipe within the encasement pipe shall be supported by manufactured chock units. Metal components of manufactured chock units shall be type 304 stainless steel. The liner shall be heavy duty PVC or neoprene rubber. The chock runner shall be UHMW polyethylene or approved equivalent with high abrasion resistance and low coefficient of friction. The manufactured chock units shall be similar and equal to the models manufactured by Powerseal Corporation, Raci, or equivalent. The pipe support method used shall provide support for the pipe at the center and each en do each length of pipe. The materials used for pipe support shall be approved by the Engineer.

2.14 TRACER WIRE

A. Direct Burial: Tracer wire shall conform with the following specifications:

1. Wire Size: #12 AWG
2. Wire Type: Solid Copper, Copper Clad Steel (CCS), Stainless Steel. <u>THHN wire is not an acceptable alternative.</u>
3. Average Tensile Break Load: 380 lbs
4. Jacket Color: Blue
5. Jacket Coating Type: HDPE, HMWPE complying with ASTM D-1248. <u>Nylon PVC jacket coating is not an acceptable alternative.</u>
6. Jacket Thickness (Min.): 30 mil
7. Voltage Rating: 30V
8. Splice Type: Waterproof Connector - 3M DBR, Copperhead SnakeBite or Engineer approved equal.

PART 3 - INSTALLATION

3.1 GENERAL

A. The Contractor shall saw cut and remove surface improvements, excavate and trench, remove water, bed, backfill, and restore surface improvements in accordance with the requirements outlined in the provision for Earthwork for Site Utilities and details shown on the Drawings.

B. At all times when work is not in progress all open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substance will enter the pipe.

C. If the maximum width of the trench at the top of the pipe specified in **Section 31 2300** is exceeded for any reason other than by direction of the Engineer, the Contractor shall, at his own cost, install such concrete encasement or granular embedment material as may be required to satisfactorily support the added backfill load.

3.2 LAYING PIPE

A. The installation of water pipe shall conform to the applicable sections of the "AWWA PVC Pipe, Design and Installation, Manual of Water Supply Practices (AWWA No. M23)", AWWA C605, Uni-Bell Plastic Pipe Association and manufacturer's recommendations.

B. No other pipe or material of any kind shall be placed inside a pipe or fitting. The interior of the pipe shall be thoroughly cleaned of foreign matter before being lowered into the trench, and shall be kept clean during laying operations by plugging or other approved methods. The full length of each section of pipe shall rest solidly upon the pipe bed with the recesses to accommodate bells and joints, shaped by hand. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe. Pipe shall not be laid in water, or when a trench or weather conditions are unsuitable for work. Water shall be kept from the trench until the joints have been completed in a satisfactory manner.

C. Pipe shall be carefully inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it is laid, it shall be repaired or replaced by the Contractor. Any corrective work shall be approved by the Engineer and shall be at the expense of the Contractor without additional cost to the Owner. The Engineer shall be given the opportunity to inspect existing pipe before connection to new pipe is made.

D. If less than four feet of cover is expected (including under a storm sewer pipe or structure), insulation shall be used to protect the pipe from freezing. Cover between four and six feet will be evaluated on a case by case situation for insulation requirements. Whenever insulation is required for pipe, individual water services should be evaluated for insulation requirements. The insulation work shall be in accordance with the special provisions, drawings, and manufacturer’s recommendations.

3.3 BLOCKING

A. Fittings at bends in the pipeline shall be firmly wedged against the vertical face of the trench and blocked with concrete as detailed on the Drawings or as directed by the Engineer.

3.4 CUTTING PIPE

A. Cutting of pipe shall be done in a neat and workmanlike manner without damage to the pipe. Cutting shall be done by means of an approved type of mechanical cutter.

3.5 COUPLINGS AND FITTINGS

A. Pipe, couplings and fittings shall be handled and installed in accordance with the recommendations of the pipe manufacturer.

3.6 JOINTING

A. The type of joint used shall conform to the requirement for the applicable type of pipe. Jointing operations shall be carried out in strict adherence to the manufacturer's recommendations. When joining PVC pipe to ductile iron fittings, the bevel on the PVC shall be made the same as the bevel required for the ductile iron fitting (normally shorter and steeper than factory pipe bevel). When joining to mechanical joint fittings, there shall be <u>no</u> pipe bevel.

3.7 JOINT RESTRAINTS

A. Joint Restraints shall be installed on the pressure pipe fittings and valves at the locations shown on the Drawings.

3.8 FUTURE CONNECTIONS

A. Pipe ends left for future connections shall be valved, plugged, or capped and anchored as shown on the Drawings or as directed by the Engineer.

3.9 RAISING OR LOWERING OF WATER LINES

A. Water lines will be raised or lowered by the Contractor in those locations shown on the Plans, or where directed by the Engineer to avoid interference with new utilities. Water line adjustments shall be constructed to provide a minimum of six and a half (6.5) feet of cover over the adjusted water line. Water line adjustments shall not be made until the Utility which owns the water line has authorized such work. The adjusting of water service lines shall be considered incidental.

3.10 WATER AND SEWER MAIN SEPARATION

A. Horizontal Separation: Whenever possible, watermain should be laid at least 10 feet, horizontally, from any existing or proposed sewer. Should local conditions prevent a lateral separation of 10 feet, a watermain may be laid closer than 10 feet to a sewer if:

1. It is laid in a separate trench; or
2. It is laid in the same trench with the water main located at one side on a bench of undisturbed earth;
3. In either case, the elevation of the crown of the sewer is at least 18 inches below the bottom of the water main.
4. Prior approval must be obtained from Engineer, Owner, and DENR.

B. Vertical Separation: Whenever sewers must cross under water mains, the water main shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. If the sewer line is less than 18 inches below the watermain, or is above the watermain, either the sewer pipe or watermain shall be fully encased for a distance of ten (10) feet each side of the crossing. The encasement shall be closed at the ends with flexible reducing couplings.

C. 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:

1. Performed 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.
2. On O-ring that conforms to ASTM C 443 specifications. O-rings are manufactured for concrete pipe with diameters up to 18 inches.
3. 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.

3.11 CONCRETE CRADLES

A. The pipe shall be supported on concrete cradles where directed by the Engineer. The concrete shall meet a minimum 28-day compressive strength of 2500 psi for Fill Concrete.

3.12 SETTING VALVES, VALVE BOXES AND FIRE HYDRANTS

A. Valves, valve boxes and fire hydrants shall be installed where shown on the Plans and as directed by the Engineer in accordance with AWWA Standard C500 for valves and C600 for fire hydrants except as further specified herein.

1. Valve boxes shall be centered on the valves. Earth fill shall be carefully tamped around each valve box to a distance of four (4) feet horizontally and full depth of the valve box.
2. The isolation valve in the fire hydrant lead shall be set to have 6.5' cover.
3. The hydrant shall be set upon a slab of concrete not less than four (4) inches thick and not less than fifteen (15) inches square. The back of the hydrant, opposite the pipe connection, shall be firmly wedged against the vertical face of the trench to prevent the hydrant from blowing off the line.
4. Not less than one (1) cubic yard of broken stone or coarse gravel shall be placed around the base of the hydrant to insure drainage.
5. The backfill around hydrants shall be thoroughly compacted to the grade line in accordance with **Section 31 2300** of these Specifications.
6. Hydrants and valves shall have the interiors cleaned of all foreign matter before installation. Stuffing boxes shall be tightened and the hydrant or valves shall be inspected in opened and closed positions to insure that all parts are in working condition.
7. All underground ductile iron valves, fittings and fire hydrant bodies shall be installed with polyethylene encasement material installed in accordance with AWWA Standard C105.

3.13 TRACER WIRE

A. Contractor shall install the tracer wire in compliance with the following requirements:

1. Tracer wire shall be installed to properly trace all water distribution pipes without loss or deterioration of signal or without the signal migrating off the tracer wire.
2. Tracer wire shall be installed in the same trench and inside horizontal bored holes and casing with pipe during pipe installation.
3. Tracer wire shall be secured to the pipe at 10-ft intervals to insure that the tracer wire remains adjacent to the pipe.
4. NO SPLICE will be allowed in horizontal bored holes or casing with pipe.
5. Approved splice connections shall be waterproof connections such as 3M DBR, Copperhead SnakeBite or Engineer approved equal.
6. Except for approved spliced in connections, tracer wire shall be continuous and without splices from each access/termination point.
7. Tracer wire access points shall be within the public right-of-way or public utility easement.
8. Tracer wire access points shall be no more than 500 feet apart. Longer distances between access points shall be approved by the Engineer prior to establishing the access point.
9. Continuity tests shall be conducted by the Contractor in the presence of and to the satisfaction of the Engineer, Resident Project Representative, or Owner. The Contractor shall provide sufficient advance notice of any testing.
10. Contractor shall supply all the necessary testing equipment and materials to perform the continuity tests. After the Contractor has confirmed and demonstrated that the tracer wire system if

functioning properly, the Owner shall test for functionality and final acceptance of the tracer wire system.

3.14 DISINFECTION

A. Each unit of completed potable water line shall be disinfected with chlorine and tested for bacteriological quality before acceptance for domestic operation.

B. The Contractor shall furnish all materials and perform the disinfecting, flushing, and testing as necessary for meeting the water quality requirements.

1. Method: Disinfection shall be completed in accordance with American Water Works Association Standard C651, current edition Tablet Method for Disinfecting Water mains.

a. The Tablet Method consists of placing either calcium hypo-chlorite granules or tablets in the water main as it is being installed and filling the main with potable water when installation is completed.
b. This method may be used only if the pipes and appurtenances are kept clean and dry during construction.
c. The Tablet Method shall give an average chlorine dose of 25 mg/1.

1) Placing of Calcium Hypochlorite Granules: During construction, calcium hypochlorite granules shall be placed at the upstream end of each branch main, at the upstream end of the first section of pipe, and at 500-foot intervals. The quantity of granules shall be as shown in the following table:

TABLE OF
OUNCES OF CALCIUM HYPOCHLORITE GRANULES TO BE PLACED
AT BEGINNING OF MAIN AND AT EACH 500-FOOT INTERVAL

Pipe Diameter (Inches)	Calcium Hypochlorite Granules (Ounces)
4	1.7
6	3.8
8	6.7
10	10.5
12	15.1
14 and larger	D^2x15.1(where D is inside pipe diameter in feet.)

WARNING: The above mentioned procedure must not be used on solvent-welded plastic or screwed-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite.

2) Placing of Calcium Hypochlorite Tablets: During construction, 5-gram calcium hypochlorite tablets shall be placed in each section of pipe and also one such tablet shall be placed in each hydrant, hydrant branch, and other appurtenances. The number of 5-gram tablets required for each pipe section shall be 0.0012 D^2L rounded to the next highest integer, where D is the inside pipe diameter, in inches,

and L is the length of the pipe section, in feet. The following table shows the number of 5-gram tablets required for commonly used sizes of pipes:

TABLE OF
NUMBER OF 5-GRAM CALCIUM HYPOCHLORITE TABLETS
REQUIRED FOR DOSE OF 25 MG/L*

Pipe Diameter (Inches)	Length of Pipe Section 13 or Less	18	20	30	40
	Number of 5-gram Hypochlorite Tablets				
4	1	1	1	1	1
6	1	1	1	2	2
8	1	2	2	3	4
10	2	3	3	4	5
12	3	4	4	6	7
16	4	6	7	10	13

*Based on 3.25 grams available chlorine per tablet.

a) The tablets shall be attached by an adhesive Permatix* or equal. There shall be no adhesive on the tablet except on the broad side attached to the surface of the pipe. Attach all tablets inside and at the top of the main, with approximately equal numbers of tablets at each end of a given pipe length.

3) Filling and Contact: When installation has been completed, the main shall be filled with water at a rate such that water within the main will flow at a velocity no greater than 1 foot per second. This water shall remain in the pipe for at least 24 hours. If the water temperature is less than 41 degrees F, the water shall remain in the pipe for at least 48 hours. Valves shall be positioned so that the strong chlorine solution in the treated main will not flow into water mains in active service.

4) Final Flushing:

a) Clearing the Main of Heavily Chlorinated Water: After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

b) Disposing of Heavily Chlorinated Water: Water used for disinfection must not reach a stream, river, or other waterway of the state if chlorine is detected in the water. Contact SDDENR Surface Water Quality Program at (605) 773-3351 for more information.

C. Bacteriological Tests: 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 of Environment and Natural Resources. The samples must be free of coliform bacteria before the system is placed into service.

D. Redisinfection: If the initial disinfection fails to produce satisfactory bacteriological samples, the main may be reflushed and shall be resampled. If check samples show the presence of coliform organisms,

then the main shall be rechlorinated by the Continuous Feed Method or Slug Method in accordance with AWWA, C651, current edition.

E. Alternate Methods: The Contractor may, at his option, use either the Continuous Feed or Slug Method in lieu of the specified Tablet Method. The procedures for the alternate methods are described in AWWA C651, current edition.

1. It should be noted that the specified Tablet Method shall be used only if the pipes and appurtenances are kept clean and dry during construction.

3.15 HYDROSTATIC TESTING FOR WATER LINES

A. General: It is the intent of this Specification that all joints in piping be watertight and that all joints which are found either by observation or any specified test to leak shall be made watertight by the Contractor. The water main shall be tested in accordance with AWWA C605 or as specified herein.

B. Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to the hydrostatic pressure listed below at the point of testing.

1. Pressure gauge shall be a standard pressure gauge that registers 0-200 psi with 1 psi increments. Dial size shall be 4 ½ - inch diameter.
2. Test Pressure Restrictions: Test pressures shall be:

   a. Not be less than 100 psi.
   b. Not exceed pipe or thrust restraint design pressures.
   c. Be of at least 2-hour duration.
   d. Not vary by more than± 5 psi.
   e. Not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants.
   f. Not exceed the rated pressure of the valves if resilient-seated butterfly valves are used.

3. Pressurization: Each valved section of pipe shall be filled with water slowly and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gage, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer.
4. Air Removal: Before applying the specified test pressure, air shall be expelled completely from the pipe, valves and hydrants. If permanent air vents are not located at all high points, the Contractor shall install corporation stops at such points so that air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be left in-place.
5. Examination: All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.

C. Leakage Test:

1. General: A leakage test shall be conducted concurrently with the pressure test.

   a. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test

pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

2. Allowable Leakage: No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND\,(p)^{1/2}}{7{,}400}$$

Where

L = The allowable leakage in gallons per hour.
N = Number of joints.
D = The nominal pipe diameter in inches.
p = The average test pressure during the leakage test in psi gage.

a. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallon per hour per inch of nominal valve size shall be allowed.
b. When hydrants are in the test section, the test shall be made against the closed hydrant.

3. Acceptance of Installation: Acceptance shall be determined on the basis of allowable leakage. If any test of pipe discloses leakage greater than that specified in "Allowable Leakage", above, the Contractor shall, at his expense, locate and repair the defective material until the leakage is within the specified allowance.

a. All visible leaks are to be repaired regardless of the amount of leakage.

3.16 MAINTAINING WATER SERVICE

A. During the replacement of existing water mains and installation of new water mains the water service shall be maintained during construction, except for brief shutdowns to connect into existing water mains. The shutdowns for "cut-in" shall be during low demand periods and adequate notice shall be given to the affected water consumers. During the replacement of an existing watermain, the Contractor shall supply water to the consumers by a temporary above ground piping system. The necessary pipe, fittings, valves etc. required for the temporary water services shall be considered incidental to the “Temporary Water Service” bid item and individual pipe, pipe fittings and other pipe appurtenance and will not be measured for payment separately.

3.17 POLYETHYLENE ENCASEMENT

A. Polyethylene encasement shall be installed per ANSI/AWWA C105/A21.5, Method ‘A’ in accordance with section 2.15 of DIPRA’s Installation Guide For Ductile Iron Pipe.

B. A fabric type of padded sling shall be used when handling polyethylene encased pipe to prevent damage to the polyethylene encasement.

C. All seams in the polyethylene encasement shall be sealed completely with approved 2- inch wide plastic adhesive tape.

D. Extreme care shall be taken to ensure that all rips or tears in the polyethylene encasement are properly repaired with additional tape and film as described in ANSI/AWWA C105/ A21.5.

E. Extreme care shall be taken when backfilling to avoid damaging the polyethylene encasement.

F. It is the Contractor's sole responsibility to ensure the polyethylene encasement is properly installed in condition to serve its normal service life.

3.18 ABANDONMENT & REMOVAL OF EXISTING WATERMAIN

A. Watermain, fire hydrants, water services, valves, etc. shall be abandoned or removed as indicated on the plans. Contractor shall be responsible for proper disposal of all un-salvaged water mains, valves, fittings, fire hydrants, etc.

3.19 CLEAN-UP

A. Upon completion of the work, the Contractor shall remove all surplus construction materials and debris resulting from the work, and all areas of work shall be left in an orderly manner.

PART 4 - MEASUREMENT AND PAYMENT

4.1 GENERAL

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

4.2 WATER MAIN PIPE

A. Pipe for water main shall be measured in lineal feet along the centerline of the pipe without deducting for fittings or valves for the various sizes of water main satisfactorily furnished and installed. Payment for pipe for water main shall be made at the Contract unit price per lineal foot for "Water main", as stipulated in the Bid for the various sizes and types shown, which price and payment shall be full compensation for all labor, materials, tools, and equipment for furnishing and installing the pipe and tracer wire, including hauling, handling, excavation, removal of existing water main, laying, jointing, dewatering, backfilling, compaction, removal and replacement of fences and culverts, protection and adjustment of utilities and landscaping which may be encountered by the work, disinfection, and re-disinfection, hydrostatic testing and retesting, disposal of excess excavation, clean-up, and testing of the finished pipeline in accordance with these Drawings and Specifications.

4.3 WATER MAIN PIPE SPECIALS AND FITTINGS

A. Water main pipe specials and fittings shall be measured by the number of each kind and size actually installed. Payment for this item shall be made at the Contract unit price each for specials and fittings of the various kinds and sizes as stipulated in the Bid, which price and payment shall be full compensation

for all labor, tools, equipment and materials for furnishing and installation of the items including handling, excavation, jointing, joint restraints, polyethylene encasement, dewatering, backfilling, testing and disinfection, all in accordance with these Drawings and Specifications.

4.4 GATE VALVES

A. Gate valves and boxes shall be measured by the number of each size actually installed. Payment for this item shall be made at the Contract unit price for each "Gate Valve with Box" of various sizes as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools, equipment and materials for furnishing and installation of the items including handling, excavation, jointing, joint restraints, valve boxes, valve box adaptors, dewatering, backfilling, compaction, testing and disinfection, all in accordance with these Drawings and Specifications.

4.5 FIRE HYDRANTS

A. Fire hydrants shall be measured by the number actually installed. Payment for this item shall be made at the Contract unit price for each "Standard Fire Hydrant" as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools, equipment and materials for furnishing and installation of the items including handling, excavation, jointing, joint restraints, dewatering, drainage rock, backfilling, compaction, testing and disinfection, all in accordance with these Drawings and Specifications.

4.6 CONCRETE FOR ENCASEMENT, BLOCKS AND CRADLES

A. Concrete used for pipe encasement, cradles, thrust blocks and similar supports required for other reasons than faulty construction methods or negligence on the part of the Contractor will be measured in cubic yards. The unit price per cubic yard shown in the Bid for "Concrete for Casing, Blocks and Cradles" shall be full compensation for furnishing materials, labor, tools and equipment necessary to install the concrete in final position including all forming or other means of support and curing required to complete the placement of the concrete in a satisfactory method. If the Contractor uses precast concrete block, payment for those shall be incidental to the project cost.

4.7 WATER SERVICE LINE

A. Water service lines shall be measured in lineal feet along the centerline of the pipe. Payment for this item shall be made at the Contract unit price per lineal foot, of the various sizes and types as stipulated in the Bid, which price and payment shall be full compensation for all labor, materials, tools and equipment required for furnishing and installing water service line and tracer wire, including hauling, handling, excavation or trenching, laying, jointing, couplings, reducers, transition adapters, connections to existing services, backfilling, compaction, testing and disinfection all in accordance with these Drawings and Specifications.

4.8 CORPORATION STOPS AND SERVICE SADDLES

A. Corporation stops and service saddles shall be measured by the actual number of various sizes installed in the system, including pretapped holes or field tapping, with service saddle. Payment for this item shall be made at the Contract unit price for each "Corporation Stop with Tapping Saddle" as stipulated in the Bid, which price and payment shall be full compensation for all labor, materials, tools, and equipment required for furnishing and installing the corporation stops in approved pretapped holes or in field tapped holes

with service saddles at proper locations, including handling, tapping, jointing, testing and disinfection, all in accordance with these Drawings and Specifications.

4.9 CURB STOP AND BOX

A. Curb stops and boxes shall be measured by the actual number of the various sizes actually installed in the system. Payment for this item shall be made at the Contract unit price for each "Curb Stop with Box", as stipulated in the Bid, which price and payment shall be full compensation for all labor, materials, tools, and equipment required for furnishing and installing the curb stops and boxes at the proper locations, including handling, jointing, blocking, testing and disinfection, all in accordance with these Drawings and Specifications.

4.10 STEEL ENCASEMENT PIPE

A. The steel encasement pipe shall be measured in lineal feet along the centerline of such encasement pipe satisfactorily furnished and installed. Payment for encasement pipe shall be made at the Contract unit price per lineal foot for "Steel Encasement Pipe", as stipulated in the Bid for the various sizes and types shown, which price and payment shall be full compensation for furnishing all labor, materials, tools, insurance and equipment required to install the encasement pipe including hauling, handling, excavation, laying, jointing, manufactured chocks, backfilling, sealing, clean-up and incidentals required to complete the item of work in accordance with the Drawings and Specifications. The furnishing and installation of the water pipe within the encasement pipe shall be measured and paid for as water pipe according to the applicable portions of these Specifications.

4.11 PVC ENCASEMENT PIPE

A. The PVC encasement pipe used to carry the watermain where it crosses the sanitary or storm sewer shall be measured in lineal feet along the centerline of such pipe satisfactorily furnished and installed. Payment for PVC encasement pipe shall be made at the Contract unit price per lineal foot for "PVC Encasement Pipe", of the various diameters as stipulated in the Bid, which price and payment shall be full compensation for furnishing all labor, materials, tools and equipment required to install the encasement pipe including hauling, excavation, laying, jointing, backfilling, sealing, encasement pipe, chocks, clean-up and incidentals required to complete the item of work in accordance with these Drawings and the Specifications. The furnishing and installation of the watermain within the encasement pipe shall be measured and paid for as watermain according to applicable portions of these Specifications.

4.12 TEMPORARY WATER SERVICE

A. Temporary water service will be measured by the amount satisfactorily performed. The necessary pipe, fittings, valves, restraints, installation, disinfection required for temporary water service, maintenance and disassembly and re-assembly shall be included in the unit price bid for Temporary Water Service. Payment shall be made at the Contract unit price for each “Temporary Water Service”, at the various locations, as stipulated in the Bid, which price and payment shall be full compensation for all materials, labor, tools, equipment and other incidentals required to complete the item in accordance with the Drawings and Specifications.

B. The method, route and connection points used to provide Temporary Water Service shall be approved in advance by the Owner and Engineer.

4.13 TRACER WIRE

A. No separate measurement or payment will be made for the furnishing, installing and testing the tracer wire system.

4.14 ABANDONMENT AND REMOVAL OF EXISTING WATERMAIN AND WATER SERVICES

A. No separate measurement or payment will be made for abandoning and removing existing watermains, water services, valves and fittings.

4.15 ADJUSTING WATER MAINS

A. The cost of adjusting watermains and water services shall be included in the cost of water main pipe for which payment is specified.

END OF SECTION 33 1000

SECTION 33 3000 - SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Gravity Sewer Pipe
2. Encasement Pipe
3. Manufactured Chocks
4. Sanitary Sewer Manholes
5. Manhole Frames and Covers
6. PVC Fittings and Specials
7. Manhole Connections

B. Related Sections include the following:

1. Division 31; Section “Trenching Excavation and Backfilling’ for soil materials, excavating, and backfilling.

1.3 SHOP DRAWINGS

A. Shop drawings shall be submitted in accordance with **Section 01 0000** "General Requirements" for the following items:

1. Pipe, fittings and appurtenances with dimensions, details, materials of construction, and load tables for the class of pipe furnished.
2. Manholes, manhole frames and covers with details, dimensions and materials of construction.

1.4 SEWAGE LEAKS OR SPILLS

A. The Contractor shall notify SD DENR and be responsible for all clean up costs for sewage leaks and spills. Spill reporting requirements are to the following numbers.

1. National Response Center 800-424-8802
2. SD Notification 605-773-3296
3. After Hours 605-773-3231

Sewage spills shall be reported to SD DENR regarding municipal waste spills at 1-800-GET-DENR (1-800-438-3367).

PART 2 - PRODUCTS

2.1 GRAVITY SEWER PIPE

A. General: Pipe furnished for installation on this project shall be of the size and type shown on the Drawings. The pipe shall be manufactured from one of the materials designated for the specified line and application as described in the following subsections.

B. Polyvinyl Chloride (PVC) Sewer Pipe (SDR35/26):

1. General Requirements:

a. Polyvinyl Chloride sewer pipe in sizes 4”-15" shall be type PSM conforming with the "Standard Specification for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings" (ASTM D3034).
b. Wall thickness of pipe and pipe stiffness (F/ΔY) at 5% deflection shall meet the minimum requirements for PS 46 psi for SDR 35 pipe or PS 115 psi for SDR 26 pipe.

1) 4” pipe size shall be SDR 26.
2) 6” to 15” pipe sizes shall be SDR 35.

c. Standard lengths shall be per manufacturer’s standard length.
d. Joints shall be elastomeric gasket type.
e. The bell shall consist of an integral wall section with a solid cross-section elastomeric ring which meets the requirements of "Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe", (ASTM F477).
f. Solvent cement joints will not be allowed.

2.2 POLYVINYL CHLORIDE (PVC) SPECIALS AND FITTINGS:

A. General: PVC fittings and specials furnished for installation on this project shall be of the size and type shown on the Drawings.

1. General Requirements:

a. All tees, wyes, service line bends, plugs, etc. shall be elastomeric gasket type.
b. All PVC fittings and specials shall be **SDR 26**.
c. All gasketed specials and fittings shall be installed in accordance with the manufacturer’s recommendations.

2.3 REPAIR COUPLINGS:

A. Connections to existing sewer pipes shall be made with a repair coupling. Couplings shall be used to connect pipes of different materials.

B. Shear rings and clamps shall be constructed of stainless steel. Couplings shall be Fernco Strong Back RC series repair couplings or Engineer approved equal.

2.4 ENCASEMENT PIPE (PVC)

A. Encasement pipe for sewer lines that cross over or within 18" below water lines shall be Class 160 Polyvinyl Chloride pipe.

1. All pipe must meet the requirements as set forth in "Polyvinyl Chloride (PVC) Pressure-Rate Pipe (SDR Series)" ASTM D2241 with a standard dimension ratio (SDR) of 26.
2. All PVC pipe shall be gasket jointed for meeting the requirements of "Standard Specification for Elastomeric Seals for Joining Plastic Pipe" with ASTM D3139, "Standard Specification for Joints for Plastic Pressure Pipe Using Flexible Elastomeric Seals".
3. Pipe materials shall conform to "Standard Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds (ASTM D1784).
4. The encasement pipe shall extend no less than ten (10) feet on each side of the waterline which is being crossed.
5. Pipe within the encasement pipe shall be supported by manufactured chock units.
6. Flexible reducing couplings for use on the Class 160 PVC encasement pipe shall be as manufactured by FERNCO or Engineer approved equal.

2.5 MANUFACTURED CHOCKS

A. Pipe within the encasement pipe shall be supported by manufactured chock units.

1. Metal casing spacers shall be Type 304 per ASTM A240 or carbon steel per ASTM A36.
2. Approved manufacturers for stainless steel or carbon steel spacers are:

   a. Cascade Waterworks Mfg;
   b. Power Seal Pipeline Products Corp, or;
   c. Engineer approved equal.

3. Casing spacers made from high density polyethylene (HDPE) are an acceptable spacer.
4. Approved manufacturer for HDPE spacers are:

   a. Raci North America;
   b. CCI Pipeline Systems, or;
   c. Engineer approved equal.

5. The pipe support method used shall provide support for the pipe at the center and at each end of each length of pipe in accordance with the spacer manufacturers recommendation.
6. The ends of the encasement pipes shall be sealed with an approved manufactured casing pipe seal.

2.6 MANHOLES

A. Manholes shall be constructed of precast concrete sections with cast iron frames and covers and in accordance with the Drawings.

1. The invert channels shall be smooth and semicircular in shape conforming to the inside of the adjacent sewer section.
2. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit.
3. Changes in size and grade of the channels shall be made gradually and evenly.

4. The invert channels may be formed directly in the concrete of the manhole base, may be half pipe laid in concrete, or may be constructed by laying a full section of sewer pipe through the manhole and cutting out the top half after the surrounding concrete has hardened.
5. The floor of the manhole outside the channels shall be smooth and shall slope toward the channels not less than one (1) inch per foot and not more than two (2) inches per foot.

B. It is required that manholes be completely water-tight. Therefore, flexible manhole sleeves approved by the Engineer shall be used at pipe unions with manhole bases and walls. Precast reinforced concrete manhole sections shall conform to ASTM C478.

C. All joints and lift holes shall be completely filled with mortar and shall be smooth and free from surplus mortar on the inside of the manhole. Joints between precast manhole sections shall be sealed by use of Gasketed Sections in accordance with ASTM Specification C443.

1. The exterior joints between precast manhole sections shall be wrapped with a polyolefin backed exterior joint wrap in accordance with ASTM E-1745 and C-990 specifications.
2. Prior to placement of the exterior joint wrap, a water-based adhesive surface primer shall be applied to enhance bonding between the concrete surface and exterior joint wrap.

D. There shall be at least one (1) 2-inch adjusting ring and a maximum of 12 inches precast adjusting rings used on every manhole. The manhole frame shall be set in full mortar bed to the elevation set by the Engineer.

2.7 MANHOLE FRAMES AND COVERS

A. Frames and covers shall be made of cast iron conforming to ASTM A48, Class 35.

1. Standard castings differing in non-essential details and approved by the Engineer will be acceptable.
2. The manhole frame and cover shall be a Neenah R-1733, East Jordan Iron Works 1205, or Deeter 1260 with self-sealing solid lid.
3. The manhole covers and frames shall be set so the top of the cover will be flush with, above or below the finished grade as directed by the Engineer.
4. Manhole covers and frames shall have machined bearing surfaces.
5. Covers shall be solid with no vent holes.
6. An improved concealed pick hole shall be provided as detailed.

PART 3 - EXECUTION

3.1 GENERAL

A. The contractor shall saw cut and remove surface improvements, excavate and trench, remove water, bed, backfill, and restore surface improvements in accordance with the requirements outlined in **Section 31 2400** of these Specifications and details shown on the Drawings.

B. At all times when work is not in progress, all open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substance will enter the pipe.

C. If the maximum width of the trench at the top of the pipe specified in **Section 31 2300** is exceeded for any reason other than by direction of the Engineer, the Contractor shall, at his own cost, install such concrete encasement or granular embedment material as may be required to satisfactorily support the added backfill load.

3.2 LAYING PIPE

A. The installation of pipe shall conform to the applicable sections of the "Standard Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe" (ASTM D2321), Uni-Bell PVC Pipe Association Specification UNI-B-3, "Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Pressure Pipe), and manufacturer's recommendations.

B. Pipe shall be carefully inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it is laid, it shall be repaired or replaced by the Contractor. Any corrective work shall be approved by the Engineer and shall be at the expense of the Contractor without additional cost to the Owner.

C. The Engineer shall be given the opportunity to inspect existing pipe before connection to new pipe is made. Pipe shall be laid upgrade. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe. As the work progresses, the interior of the pipe shall be cleaned of all dirt and superfluous materials of every description.

3.3 JOINTING

A. The type of joint used shall conform to the requirements for the applicable type of pipe specified. Jointing operations shall be carried out in strict adherence to the manufacturer's recommendations.

3.4 WATER AND SEWER MAIN SEPARATION

A. Horizontal Separation: Whenever possible, sewers should be laid at least 10 feet, horizontally, from any existing or proposed watermain. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a watermain if:

1. It is laid in a separate trench; or
2. It is laid in the same trench with the water main located at one side on a bench of undisturbed earth;
3. In either case, the elevation of the crown of the sewer is at least 18 inches below the bottom of the water main.
4. Prior approval must be obtained from Engineer, Owner, and DENR.

B. Vertical Separation: Whenever sewers must cross under watermains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. If the sewer line is less than 18 inches below the watermain, or is above the watermain, either the sewer pipe or watermain shall be fully encased for a distance of ten (10) feet each side of the crossing. The encasement shall consist of PVC encasement pipe closed at the ends with flexible reducing couplings. Concrete shall be used around all fittings which need to be encased, otherwise, the PVC encasements shall be used. The minimum thickness of the concrete shall be six (6) inches.

3.5 RAISING OR LOWERING OF WATER LINES

A. Water lines will be raised or lowered by the Contractor in those locations shown on the Plans, or where directed by the Engineer to avoid interference with new utilities. Water Line adjustments shall be constructed to provide a minimum of six (6) feet of cover over the adjusted water line. Water line adjustments shall not be made until the Utility which owns the water line has authorized such work. The adjusting of water service lines shall be considered incidental.

3.6 CONCRETE CRADLES

A. The pipe shall be supported on concrete cradles where directed by the Engineer. The concrete shall meet a minimum 28-day compressive strength of 2500 psi for Fill Concrete.

3.7 CONNECTIONS

A. The Contractor shall make all connections to existing piping and structures from which wastewater is to be received or discharged.

3.8 MANHOLES

A. Manholes shall be installed at the locations shown and in conformance with the details shown on the Drawings or as directed by the Engineer.

3.9 TESTING

A. Gravity Sewers

1. General: Prior to testing, all sewer lines shall be cleaned and inspected for major defects. Pre-cleaning by appropriately sized sewer cleaning ball or high velocity jet or other method may be necessary. All sewer lines shall be inspected visually to verify accuracy of alignment and freedom from debris and obstructions. The full diameter of the pipe for straight alignments shall be visible when viewed between consecutive manholes.

   a. Tests for water tightness shall be made in the presence of the Engineer. Plugs, caps and branch connections must be secured against blow-off during leakage test.
   b. The Contractor shall furnish all the necessary equipment and be responsible for conducting all tests. The cost of testing is incidental to the unit price for sewer pipe.
   c. If a section of sewer fails to meet the testing requirements, the Contractor shall determine, at his own expense, the source or sources of leakage, and he shall repair or replace all defective materials and/or workmanship to the satisfaction of the Engineer. The extent and type of repair which may be allowed, as well as results, shall be subject to the approval of the Engineer. The completed pipe installation shall then be retested and required to meet the requirements of the referenced test. Acceptance tests for leakage shall be satisfactory before the sewer will be accepted by the Owner. Contractor shall pay for all failed tests.

2. Air Testing: Air testing shall be completed in accordance with Uni-Bell PVC Pipe Association Manual "UNI-B-6", Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe. The test shall be completed at a pressure between 3.5 and 4.0 psig (greater than the average groundwater back pressure). The minimum duration permitted for a 1.0 psig pressure drop between two consecutive manholes should not be less than that provided in Table I of the Uni-Bell Recommended Practice "UNI-B-6".

   a. Lateral sewers (house services) connected to the collector line shall be ignored unless the test section fails to pass the air test. If the section fails, the test time shall be recomputed using the formula listed in Section 9.4 of UNI-B-6.
   b. If the pressure drops 1.0 psig before the appropriate time shown in the referenced Table has elapsed, the air loss rate shall be considered excessive and the section of pipe has failed the test.
   c. Safety precautions regarding air testing shall be taken in accordance with "Uni-Bell Recommended Practice UNI-B-6".

Table (Air Testing)

Nominal Pipe Diameter, in.	Minimum Time, min:s	Length for Minimum Time, ft.	Time for Longer Length, s
4	3:46	597	0.380 L
6	5:40	398	0.854 L
8	7:34	298	1.520 L
10	9:26	239	2.374 L
12	11:20	199	3.418 L
15	14:10	159	5.342 L
18	17:00	133	7.692 L
21	19:50	114	10.470 L
24	22:40	99	13.674 L
27	25:30	88	17.306 L
30	28:20	80	21.366 L
33	31:10	72	25.852 L
36	34:00	66	30.768 L

3. Manhole Testing: During the construction of the manholes, the Contractor shall, in accordance with good practice, insure that no earth, sand, rocks or other foreign material exists on the joint surfaces during assembly of the sections.

   a. The Engineer shall visually check each manhole, both exterior and interior, for flaws, cracks, holes, or other inadequacies which might affect operation or watertight integrity of the manhole. Should any inadequacies be found, the Contractor, at his expense, shall make any repairs deemed necessary by the Engineer.
   b. Prior to testing, all lines leading into or out of the manhole shall be tightly plugged. The manhole shall be filled with water to its maximum level. The water shall be allowed to stand for two hours to allow for normal absorption into the manhole material. At the end of the two-hour stabilization period, if the water level in the manhole has dropped below the top ring joint, additional water will be added to bring the level above the joint as before. Any visible external leakage noted within the one hour test period shall constitute failure and the Contractor shall, at his own expense, repair the manhole and retest until satisfactory tightness is obtained.

      1) Manhole Vacuum Testing: The manhole vacuum test shall be performed in accordance with ASTM C1244. The following procedure is summarized from ASTM C1244 and shall be followed in conjunction with ASTM C1244 unless modified by the Engineer. The vacuum test shall include testing the top of the manhole, excluding the adjusting rings and manhole frame and cover. Testing will be allowed after backfilling has occurred or as specified in the Special Provisions. Manhole vacuum tester assembly and vacuum pumps shall be as manufactured by Cherne Industries, Inc. or approved equal. Repair of leaks may require the removal and replacement of manhole sections. The use of grout to repair leaks will not be allowed.

         Procedure

         a) All lift holes shall be plugged.
         b) All pipes entering the manhole shall be temporarily plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into the manhole.
         c) The test head shall be placed at the top of the manhole in accordance with the manufacturer's recommendations.

d) A vacuum of 10-inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop to 9-inches of mercury.

e) The manhole shall pass if the time for the vacuum reading to drop from 10-inches of mercury to 9-inches of mercury meets or exceeds the values indicated in Table (Manhole Vacuum Test).

f) If the manhole fails the initial test, necessary repairs shall be made by an approved method. The manhole shall then be retested until a satisfactory test is obtained.

Table (Manhole Vacuum Test)
Minimum Test Times for
Various Manhole Diameters in Seconds

Depth, (ft)	48" Dia.	60" Dia.	72" Dia.
		Time, in seconds	
8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

4. Deflection Testing: Deflection tests shall be performed by the Contractor on all PVC sewers. Deflection tests shall be conducted after the final backfill has been in place at least 30 days. Deflection tests shall be made using a deflection gauge (mandrel) device or other approved method. The diameter of the deflection gauge device shall be 95% of the undeflected inside diameter of the flexible pipe. The Contractor shall be required to install the pipe in such a manner so that the diametric deflection of the pipe shall not exceed 5 percent. All pipe exceeding the 5 percent deflection within the one year warranty period shall be relaid or replaced by the Contractor at no additional cost to the Owner.

5. Television Inspection: In lieu of air testing, the Contractor shall have the option to perform an inspection of the completed sewer line through the use of a television camera. If defective workmanship of material or construction is noted, the deficiency shall be corrected by the Contractor at no expense to the Owner. The Contractor shall perform additional television inspections, provide the Owner with a written report, and video documentation that the repairs were made properly and in accordance with the Specifications. The expense of television inspections shall be considered incidental to the sanitary pipe installation.

   a. Television inspection shall be performed only when the Resident Project Representative (RPR) is present.
   b. The Contractor shall be responsible for all related costs, including concrete or asphalt resurfacing if the street has been surfaced. The Contractor shall be required to repair all areas of infiltration and other deficiencies.

3.10 CLEAN-UP

A. The Contractor shall maintain the work area in a clean and presentable condition during his work operation and shall clear the area of surplus construction materials, debris and rubbish resulting from his operations. The site shall be left in a satisfactory clean and neat appearance.

3.11 ABANDONMENT & REMOVAL OF EXISTING SANITARY SEWER

A. Sanitary sewer pipe, manholes, sewer services, etc. shall be abandoned or removed as indicated on the plans. All materials removed shall be disposed of by the Contractor at a site provided by the Contractor. Existing sanitary sewer pipe to be abandoned shall be plugged at the ends with concrete. Existing sanitary sewer manholes to be abandoned shall have minimum 2.5 feet removed from the top, existing sewer main into manhole plugged with concrete and manhole filled with gravel material.

3.12 CONNECT INTO EXISTING MANHOLE

A. Penetration for gravity sewer connection into existing manhole shall be coredrilled to size as indicated on Drawings. New pipe shall be installed with mechanical seal to provide a water tight seal.

PART 4 - MEASUREMENT AND PAYMENT

4.1 GENERAL

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

4.2 GRAVITY SEWER PIPE

A. The sewer pipe shall be measured along the horizontal projection of the pipe in lineal feet from center to center of manholes, cleanouts or fittings, and from point of connection without deduction for fittings to center of manhole for sewer pipe satisfactorily installed. Payment for sewer pipe shall be made at the Contract unit price per lineal foot for "Sewer Pipe", as stipulated in the Bid, for the various sizes, which price and payment shall be full compensation for furnishing all labor, tools, equipment and materials required to construct the sewer lines, fittings, connections to new or existing lines, including excavation, trenching, dewatering, by-pass pumping, laying and jointing pipe, backfilling, compaction, removal and replacement of fences and culverts, protection and adjustment of utilities and landscaping which may be encountered by the work, disposal of excess excavation, clean-up, and testing of the gravity sewer pipeline in accordance with the Drawings and Specifications.

4.3 SANITARY SEWER SERVICES

A. Sanitary Sewer service connections shall be measured by the number of each size actually installed. Payment for this item shall be made at the Contract unit price for each "Pipe Wye", for the various sizes as stipulated in the Bid, which price and payment shall be full compensation for furnishing all labor, tools, equipment and materials, including in-line wye, fittings and plugs for furnishing and installation of items including excavation,

dewatering, laying and jointing, connections to existing service lines, backfilling, compaction, protection and adjustment of utilities which may be encountered by the work, disposal of excess excavation, clean-up, and other incidentals required to complete the work in accordance with the Drawings and Specifications. Sewer service pipe shall be measured and paid for as “Sewer Pipe" as specified in **paragraph 4.2**.GRAVITY SEWER PIPE.

4.4 SANITARY SEWER PIPE SPECIALS AND FITTINGS

A. Sanitary sewer pipe specials and fittings shall be measured by the number of each kind and size actually installed. Payment for this item shall be made at the Contract unit price each for specials and fittings of the various kinds and sizes as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools, equipment and materials for furnishing and installation of the items including handling, excavation, jointing, dewatering, backfilling, and testing all in accordance with these Drawings and Specifications.

4.5 MANHOLES

A. Manholes shall be measured by the number of each size and type satisfactorily furnished and installed complete in place. Payment shall be made at the Contract unit price for each "48” Manhole", of the various sizes and types as stipulated in the Bid, for depths up to eight (8.0) feet measured from the invert of the outlet pipe to the top of the cover which price and payment shall be full compensation for furnishing all labor, tools, equipment and materials required to construct the manholes, including excavation, dewatering, by-pass pumping, trenching, backfilling, compaction, drop pipe and fittings, concrete, stub outs, casting and frame, disposal of excess material, clean-up and other incidentals required to complete the item of work in accordance with the Drawings and Specifications.

4.6 ADDITIONAL VERTICAL FEET OF MANHOLE

A. For manholes that measure greater than eight (8.0) feet from the outlet invert to the rim of the casting, the additional feet of manhole depth shall be paid for at the Contract unit price per lineal foot for “Extra Depth for 48” Manhole” as stipulated in the Bid, which measurement shall be made to the nearest one-tenth (0.1) foot and which price and payment shall be full compensation for furnishing all labor, tools, equipment and materials required to construct the additional vertical feet of manhole in accordance with these Drawing and Specifications.

4.7 CONNECT INTO EXISTING MANHOLE

A. Connections into existing manholes shall be measured by the number of connections made satisfactorily and completely as stipulated in the drawings. Payment shall be made at the Contract unit price for each connection made for “Connect Into Existing Manhole”, as stipulated in the Bid, which price and payment shall be full compensation for all labor, tools, materials, and equipment required to complete the work including excavation, dewatering, by-pass pumping, coredrilling, water tight pipe seals, grout, backfill, compaction, clean-up and other incidentals required to complete the work accordance with the Drawings and Specifications.

4.8 SEWER BYPASS PUMPING

A. Payment for By-Pass pumping shall be included in the contract lump sum price for “Sewer ByPass Pumping” and shall include all pumps, hose, pipe, and incidentals needed for the satisfactory pumping of existing flows around the various construction areas. No separate payment will be made for moving the pumping operation.

END OF SECTION 33 3000

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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.

* * * * *

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISON
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.

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STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISON
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 original, sex, age or disability.

(4) Information and Reports: The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the South Dakota Department of Transportation or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the South Dakota Department of Transportation, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain this information.

(5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the South Dakota Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including but not limited to:

(a) withholding of payments to the contractor under the contract until the contractor complies, and/or
(b) cancellation, termination or suspension of the contract, in whole or in part.

(6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the South Dakota Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for non-compliance. Provided, however, that, in the event of a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the South Dakota Department of Transportation to enter into such litigation to protect the interest of the State, and, in addition, the contractor may request the United States to enter such litigation to protect the interests of the United States.

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

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

	* SUSD2013-001
Agency:	U.S. DOL
Wage Decision Number:	**SD130009 SD9**
Counties:	Statewide: All Counties in South Dakota
Wage Decision Date:	**08/30/2013**

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

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

A COPY OF THIS DOCUMENT, COLORED SOLAR YELLOW, MUST BE CONSPICUOUSLY POSTED AT THE PROJECT SITE

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

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

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

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

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

END OF GENERAL DECISION

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION FOR
ERRATA

MARCH 3, 2010

MAKE THE INDICATED CORRECTIONS TO THE FOLLOWING SPECIFIED SECTIONS:

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

(square meter).

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

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

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

Removal of Anchor Assembly will be measured by the each.

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

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

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

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

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

L. Luminaires: Luminaires shall be adjusted on the support so the laminar 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 clams 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.

Sieve Size	% Passing
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.

Sieve Size	% Passing
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 175º F (80º 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 day lighted 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.

Sieve Size	% Passing
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.

Sieve Size	% Passing
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:

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

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% $\pm$ 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 ± 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:

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

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:

	(English)	
Depth of Groove	80 mils	+ 10 mils
	(Metric)	
Depth of Groove	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 poainted 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 manualMaterials 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).

Section 810.1 B – Page 439 – Delete the sieve analysis specification for the No. 200 (75 µm) sieve and replace with the following:

No. 200 (75 µm)	- - -	0 to 25.0

Section 820.2 E – Page 443 – Delete SD 218 from the list and replace with the following:

SD 218 *

Section 820.2 E – Page 443 – Delete SD 216 from the list and replace with the following:

SD 216 *

Section 820.2 E – Page 443 – Add the following to the end of this section:

* Not required for crushed ledge rock (Quarry Stone).

Section 821.1 A – Page 444 – Delete and replace with the following:

A. Burlap Cloth made from Jute or Kenaf……AASHTO M 182

White non-woven polypropylene geotextile conforming to the following requirements may be used in lieu of burlap for horizontal applications only. This material is not to be used for curing vertical surfaces.

Property	Test Method	Unit	Min. Ave. Roll Value
Weight	ASTM D 5261	Oz/Sq. Yd.	8.0

Section 821.1 B – Page 444 – Add the following sentence to this Section:

The compound shall be stored at temperatures above 35º F (2º C). Compound stored for a period in excess of six months will require resampling and testing for compliance prior to use.

Section 821.1 D.2 – Page 444 – Delete the second sentence and replace with the following:

Compound stored for a period in excess of six months will require resampling and testing for compliance prior to use.

Section 870.1 A – Page 452 – Delete this section and replace with the following:

A. Hot Poured Elastic Joint Sealer: The sealant shall conform to the requirements of ASTM D 6690 Type II or Type IV or be on the Departments approved products list for Joint Sealants for Asphalt Over Long Jointed Concrete Pavement.

Hot poured elastic joint sealer meeting the requirements of ASTM D 6690 Type IV shall not weigh more than 9.35 lbs/gal (1.12 kg/L).

Test methods shall conform to ASTM D 5329, except the fine aggregate used in preparing the concrete test blocks shall conform to Section 800. The Contractor shall furnish a certificate of compliance for hot poured elastic joint sealer not listed on the approved products list.

Section 880.2 A – Page 455 – Delete this section and replace with the following:

A. Mineral Aggregate: The mineral aggregate job mix formula, without the addition of hydrated lime, shall conform to the requirements shown in Table 1. The single percentage aggregate gradation established in the job mix formula for Class D, E, and G asphalt concrete mixes shall be within the limits in Table 1. The single percentage aggregate gradation established in the job mix formula for Class S asphalt concrete mixes will be the center of the gradation band in Table 1. The Class S gradation will include mineral fillers or other approved additives.

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		
½" (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 ¾ 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 @ 50ºF (10ºC):

(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:

	WHITE	YELLOW
Lead, parts per million max. ASTM D 3335 or X-ray fluorescence	100	100
Pigment, percent by weight	60.0 - 62.5	58.5 – 61.0
Pigment, 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. $Ti0_2$ tested in accordance with ASTM D 1394 or ASTM D 4764	1.00 lb/gal min.	0.20 lb/gal min.
Total Solids, percent by weight; min. when tested in accordance with ASTM D 3723	77.0	76.1
Non-volatile Vehicle, percent by weight vehicle; min. when tested in accordance with FTMS 141c (Method 4051.1)	42.5	42.5
Consistency. 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.

Weight per Gallon, pounds minimum when tested in accordance with ASTM D 1475 (See Note 3)	Rohm & Haas Dow DT 250NA	13.85 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.

Fineness of Dispersion Hegman Scale, min. when tested in accordance with ASTM D 1210	2 min. "B" Cleanliness"	2 min B" Cleanliness
Drying Time, 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 ± 3%, the temperature 73.5 ± 3.5°F (23 ± 2°C), and air flow less than one foot (1') per minute.	12max.	12max.
Drying Time, 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 ± 3%, and the temperature 23 ± 2°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.

Field Drying Time, 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

Directional Reflectance, minimum. 85 50
when applied at a wet film thickness of 15 mils and when tested in accordance with ASTM E 1347 (Illuminate C 2°)

pH, minimum. 9.80 9.80
when tested in accordance with ASTM E70

Dry Opacity, Contrast ratio, min. 0.955 0.880
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°)

Volatile Organic Content (VOC), max. 115 g/liter 115 g/liter
in accordance with ASTM D 3960

Flash Point, 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.

*** * * * ***