This document contains the Plans and Specifications for

Sanitary Sewer Improvements
Stanton, North Dakota
IE# B20-00-029

The Specifications are contained in pages 3-116 and are set up to print two-sided (duplex) on 8½" x 11" paper. The plan sheets are on Pages 117-140 and are set up to print on 11"x17" paper, either single or double-sided.

If your printer has the option to choose the paper source by PDF page size you may select it and the complete document will print single-sided to the correct sizes all at once.

SUBMITTED BID MUST CONTAIN THE FOLLOWING INFORMATION:

All bids must be placed in a sealed envelope upon the outside of which there is disclosed the following information:

a) The work covered by the bid as described in Advertisement for Bid
b) The name of the person, firm or corporation submitting the bid
c) The date and hour of the bid opening
d) Acknowledgement of each Addendum

All bids must contain a separate bid bond envelope attached to the actual bid envelope. The bid bond envelope shall contain the following information:

a) The bid bond for the project
b) The contractor's license

** The above listed items must be in the bid bond envelope located outside the actual bid envelope. If any of these items are not located in the bid bond envelope, the actual bid will not be opened.

The actual Bid envelope must contain:

a) Bidder's Proposal made on a form prepared by the Engineer

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PLANS AND SPECIFICATIONS

FOR

SANITARY SEWER IMPROVEMENTS

PROJECT B20-00-029

DISTRICT 2020-2

CITY OF STANTON, NORTH DAKOTA

I, Charles J. Hankins, hereby certify that these Plans and Specifications were prepared by me or under my direct supervision. I further certify that I am a Registered Professional Engineer under the laws of the State of North Dakota.

Charles J. Hankins, PE

Date April 23, 2020

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INDEX

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SECTION 101
ADVERTISEMENT FOR BIDS

Notice is hereby given that sealed bids will be received for the Stanton Sewer Improvement District No. 2020-2, Stanton, North Dakota IE #B20-00-029. Bids will be received by the City Auditor, Chonny Braithwaite, at the office of the Auditor until 6:30 pm. on May 14, 2020 and then at said office all bids properly submitted will be publicly opened and read aloud.

Digital copies of the Bidding Documents are available at www.interstateeng.com or www.questcdn.com for a fee of $30.00. These documents may be downloaded by selecting this project from the “Bid Documents” tab and by entering Quest Project Number 7017469 on the “Search Projects” page. For assistance and free membership registration, contact QuestCDN at (952) 233-1632 or info@questcdn.com. Paper copies of the Bidding Documents may be obtained from Docunet Corp. located at 2435 Xenium Lane North, Plymouth, MN 55441, phone (763) 475-9600, for a fee of $60.00 per set. The bidding and contract documents may also be examined at the Interstate Engineering office located at 117 Highway 49 North, Beulah, North Dakota. Any technical questions may be directed to Travis Frey at (701) 873-2266.

The project will consist of the following approximate quantities:
4200 LF of 8” Sewer Main Replacement, 200 LF of 10” Sewer Main replacement, 400 LF of 12” Sewer Main replacement, associated service connection replacements, 4,800 SY of asphalt removal, 1,100 tons of Hot Bituminous Pavement, and 4 manhole replacements, and incidental items thereto.

Each bid will be submitted on the basis of a cash payment for work. It will be enclosed in a sealed envelope addressed to the above mentioned City Auditor, 109 Harmon Ave. PO Box 156, Stanton, ND 58571, and shall be designated that the bid is for “Stanton Sewer Improvement District No. 2020-2, Stanton, North Dakota IE #B20-00-029” The bid shall be accompanied by a Bidder’s Bond in a separate envelope in the amount of five percent (5%) of the full amount of the bid, executed by the Bidder as Principal and by a Surety Company authorized to do business in North Dakota. If the Principal’s bid is accepted by the OWNER and the contract awarded, the principal, within ten (10) days after the Notice of Award, will be required to execute and effect a contract in accordance with the terms of the principal’s bid and any requirements and conditions of the OWNER.

A Contractor's Bond, as required by Section 48-01.2-10 of the North Dakota Century Code, shall be included with the executed Contract Documents. The Bid Security shall be as required in Section 48-01.2-05 of the North Dakota Century Code.

All bidders must be licensed for the highest amount of their bids, as required by Section

43-07-05 of the North Dakota Century Code and a copy of the license or certificate of renewal thereof issued shall be enclosed in the required bid bond envelope.

No bid will be read or considered which does not fully comply with the above provisions as to Bond and Licenses, and any deficient bid submitted will be resealed and returned to the Bidder immediately.

The OWNER retains the right to reject any or all of the bids submitted and to waive any informality in any bid and to hold all bids for a period not to exceed thirty (30) days from said date of opening and to hold the three low bids and bid securities for a period not to exceed sixty (60) days from said date of bid opening.

The work on the improvements is to commence upon a date to be specified by the OWNER, notice of which will be given to the successful bidder ten (10) days in advance of the start of construction. The Contractor will be required to commence construction, and in an approved sequence, complete the project by August 15, within 10 working days.

By order of the Owner
Stanton, North Dakota
Chonny Braithwaite
City Auditor Stanton, North Dakota

Dated this 13 day of April, 2020.

SECTION 102
INFORMATION FOR BIDDERS

102-1 Sealed bids will be received by the OWNER as specified in the Advertisement for Bids for performing work as set forth in the Plans and Specifications. At the time and place indicated, the bids will be publicly opened and read.

102-2 FORM: Each proposal shall be made on a form prepared by the ENGINEER and included as one of the Contract Documents, and shall be submitted in a sealed envelope bearing the title of the work, the name of the Bidder, the license number and class of license of the bidder, and date and hour of the bid opening. Proposals must be filled in, in ink or typewritten. No alterations or interlineations will be permitted, unless made before submission and initialed and dated.

102-3 DISCREPANCIES: In case of a difference between the extended price and the unit price of the proposal, the unit price shall govern.

102-4 PROPOSAL GUARANTEE: All bids are to be submitted on the basis of cash payment for the work and are to be enclosed in a sealed envelope addressed to the undersigned Authorized Representative accompanied by a bidder's bond for a sum equal to five (5) percent of the full amount of the bid, executed by the bidder as Principal and by a Surety Company authorized to do business in this state, conditioned that if the Principal's bid be accepted and the contract awarded to him, he will, within ten days after Notice of Award, execute and effect a contract in accordance with the terms of his bid and a Contractor's bond. Bid security shall be as required in Section 48-01.1-05 of the North Dakota Century Code as amended.

All bidders must be licensed for the highest amount of their bids, as required by Section 43-07-05 of the North Dakota Century Code.

No bid will be read or considered which does not fully comply with the above provisions as to bonds and licenses, and any deficient bid submitted will be resealed and returned to the bidder immediately.

As soon as the bid prices have been compared, the OWNER will return the bid securities of all except the three (3) lowest responsible bidders. When the Contract is awarded, the bid securities of the two remaining unsuccessful bidders will be returned. The bond of the successful bidder will be retained until the Agreement and Surety Bond have been executed and approved, after which it will be returned.

102-5 CONTRACT AND BOND: The party to whom the Contract is awarded will be required to execute the Agreement and a Performance Payment Bond within ten (10) calendar days from the date when the written "Notice of Award" is mailed to the Bidder at the address given by him. If any Bidder to whom a contract is awarded fails or refuses to enter into such Agreement when requested to do so, the bond accompanying his bid shall be retained by the OWNER as liquidated damages for such failure. The bond shall be delivered to the OWNER and shall be credited by him to the fund from which the consideration for such work is payable. The sufficiency of any bond filed by a bidder shall be determined by the governing body at the time it considers the bids.

102-6 PERFORMANCE AND PAYMENT BOND: A Performance and Payment Bond in the amount of one hundred percent (100%) of the Contract price with a Corporate Surety approved by the OWNER and the ENGINEER will be required for the faithful performance of the Contract, and the bidder shall state in the proposal the name and address of the Surety or Sureties who will sign this bond in case the Contract is awarded to him. The Contract Bond shall be as required by Section 48-02-06.2 of the North Dakota Century Code as amended.

A maintenance guarantee for the repair of all damages due to improper materials or workmanship for a period of one year after the acceptance of the work by the OWNER will also be required.

102-7 AWARD OR REJECTION: The Contract will be awarded to the lowest and/or best qualified responsible Bidder complying with these instructions and with the Advertisement. The OWNER reserves the right to reject any or all Proposals or to

waive any formality or technicality in any Proposal. The OWNER reserves the right to hold all bids and bid securities for a period not to exceed thirty (30) days and to hold the three low bids and bid securities for a period not to exceed sixty (60) days, from the date of the bid opening.

102-8 CONTRACTOR QUALIFICATIONS: Before the award of the Contract, any bidder may be required to furnish evidence, satisfactory to the OWNER and to the ENGINEER, of the necessary facilities, ability and pecuniary resources to fulfill the conditions of the said Contract. Before contracts are executed by the OWNER, the CONTRACTOR will furnish the OWNER'S ENGINEER with a list of Subcontractors for his review, so as to conform to Section 226 of the General Conditions.

102-9 MODIFICATIONS: Alternate proposals will not be considered unless called for. Oral proposals or modifications will not be considered.

102-10 EXAMINATION OF DOCUMENTS AND SITE VISIT: Before submitting a Proposal, Bidders shall carefully examine the Drawings, read the Specifications, and the other Contract Documents, shall visit the site of work, and shall fully inform themselves as to all existing conditions and limitations. The CONTRACTOR shall accept such conditions and limitations as the same are eventually found to exist, and to waive all claims for extra compensation arising from unforeseen difficulties, except as may be expressly provided for in the Specifications. Professions of ignorance regarding the work may in no way serve to nullify the provisions of the contract or specifications.

102-11 DOCUMENT NUMBER: Each set of Plans, Specifications and Construction Drawings will have a document number, assigned by the ENGINEER, and the number of each set with the name of the purchaser will be recorded by the ENGINEER. Bids will be accepted only from the original purchasers or from another qualified Bidder to whom such a set has been transferred by the original purchaser, provided that in the event of such transfer the ENGINEER shall receive from the original purchasers, at least five (5) days prior to the scheduled bid opening, written notice of such transfer, together with the name of the party to whom the transfer has been made.

102-12 OWNER INFORMATION OBLIGATION: The Construction Agreement and the detailed specifications contain the provisions required for the construction of the project. No information obtained from any officer, agent, or employee of the OWNER on any such matters shall in any way affect the risk or obligations assumed by the CONTRACTOR, or relieve him from fulfilling any of the conditions of the Contract, except to the extent provided in Paragraph 102-13.

102-13 INTERPRETATIONS OF DOCUMENTS: If any person contemplating submitting a Proposal is in doubt as to the true meaning of any part of the Drawings, Specifications, or other Contract Documents, or finds discrepancies in or omissions from the Drawings or Specifications, he may submit to the ENGINEER a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the documents will be made only by Addendum duly issued and a copy of the Addendum will be mailed or delivered to each person receiving a set of the Contract Documents. Neither the OWNER nor the ENGINEER will be responsible for any other explanations or interpretations of the Contract Documents.

102-14 UNACCEPTABLE BIDS: Bids which are incomplete, unbalanced, conditioned or obscure or which contain additions not called for, erasures, alterations or irregularities of any kind, or which do not comply with the Information for Bidders may be rejected at the option of the OWNER.

If the OWNER so elects, proposals may be issued for projects in combination and/or separately, so that bids may be submitted either on the combinations or on separate units of the combinations. The OWNER reserves the right to make awards on combination bids or separate bids to the best advantage of the OWNER.

Proposals will not be considered if the Bidder adds any provisions reserving the right to accept or reject an award or enter into a Contract pursuant to an award.

102-15 BID SUBMITTAL CONDITIONS: All bids must be placed in a sealed envelope upon the outside of which there is disclosed the following information:

a) The work covered by the bid.
b) The name of the person, firm or corporation submitting the bid.
c) A copy of the license or certificate of renewal thereof issued shall be enclosed in the required bid bond envelope.
d) Acknowledgement of each Addendum.

No contract will be awarded to any CONTRACTOR unless he is the holder of a license in the class within which the value of the project shall fall. A CONTRACTOR must be the holder of a license at least ten (10) days prior to the date set for receiving bids to be a qualified bidder.

Proposals shall be delivered by the time and to the place stipulated in the Advertisement for Bids. It is the sole responsibility of the Bidder to see that his proposal is received in proper time. Any proposal received after the scheduled closing time for receipt of proposals shall be returned to the Bidder unopened.

102-16 WITHDRAWAL: A bidder may withdraw any proposal he has submitted at any time prior to the hour set for the opening of the bids, provided the request for withdrawal is signed in a manner identical to the proposal being withdrawn. No withdrawal or modification will be permitted after the hour designated for the opening of the bids.

102-17 ADDENDA: Any addenda issued during the time of bidding, or forming a part of the Contract Documents loaned to the bidder for the preparation of his proposal, shall be covered in the proposal and shall be made a part of the Contract. Receipt of each Addendum shall be acknowledged in the proposal and upon the outside of the Bid Envelope.

102-18 MORE THAN ONE PROPOSAL: No person, firm or corporation shall be allowed to make, file or to be interested in more than one proposal for the same work,

unless alternate proposals are called for. A person, firm, or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices on materials to a bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

102-19 NORTH DAKOTA STATE TAX CLEARANCE: The successful CONTRACTOR shall file with the OWNER prior to award of the Contracts a current statement of income tax clearance from the North Dakota Tax Department in accordance with Section 43-07-11.1 North Dakota Century Code as amended.

102-20 GENERAL CONDITIONS: General Conditions of the Contract as bound herewith, are hereby made a part of the Contract Documents.

102-21 ESTIMATE QUANTITIES: Approval of quantities that will be the basis for payment estimates, both monthly and final, will be made by the ENGINEER.

102-22 CONFERENCES: The CONTRACTOR will be notified by the ENGINEER of any conferences that require his attendance. A date and time for said conferences will be set by the ENGINEER.

102-23 GOVERNMENT REQUIREMENTS: The CONTRACTOR shall comply with all "Government Requirements" as found in Section 300, if applicable, contained herein.

Dated this ___ day of _____, 20_____.

_____

OWNER

_____

BY

_____

TITLE

SECTION 103
BIDDER'S PROPOSAL

103-1 PROPOSAL: In compliance with your Advertisement for Bids and subject to all the conditions thereof, the undersigned _____ hereby proposes to furnish and do everything required by the Contracts to which this refers for the construction of all structures listed at the unit prices shown for each bid item on the following Bid Schedule. (The Bid Schedule attached lists the various divisions of construction contemplated in the Plans and Specifications, together with an estimate of the units of each. With these units as the basis, the bidder will extend such item, using the cost he inserts in the unit column. Any total cost found inconsistent with the unit cost when the bids are examined will be deemed in error and corrected to agree with the unit cost, which shall be considered correct.)

103-2 PROJECT: This project consists of _____ _____ as shown in the Advertisement for Bids.

103-3 EXAMINATION OF DOCUMENTS AND SITE VISIT: The undersigned has examined the location of the proposed work, the Drawings, Specifications and other Contract Documents and is familiar with the local conditions and limitations at the place where the work is to be performed.

103-4 ADDENDA: The Receipt of Addenda __ through ____ is hereby acknowledged.

103-5 BASIS OF PROPOSAL: All various phases of work enumerated in the Detailed Specifications with their individual jobs and overhead, whether specifically mentioned, included by implication or appurtenant thereto, are to be performed by the CONTRACTOR under one of the items listed in the bid schedule, irrespective of whether it is named in said list, and that the OWNER may specify any number or combination of units that the ENGINEER may deem necessary for the construction of the Project.

103-6 TAXES: Along with 103-5 above, the undersigned agrees that the prices in this Contractor's Proposal includes provisions for the payment of all monies which will be payable by the Bidder or the OWNER in connection with the construction of Project on account of taxes imposed by any taxing authority upon the sale, purchase or use of materials, supplies or equipment to be incorporated in the Project. The Bidder agrees to pay all such taxes and to furnish the appropriate taxing authorities all required information and reports pertaining thereto.

103-7 COLLUSION: The undersigned bidder does hereby declare and stipulate that this proposal is made in good faith, without collusion or connection with any other person or persons bidding for the same work, and that it is made in pursuance of and subject to all the terms and conditions of the Information for Bidders, the Construction Agreement, the Detailed Specifications, and the Plans pertaining to the work to be done, all of which have been examined by the undersigned.

103-8 PROPOSAL GUARANTEE: Accompanying this Proposal is a Bidder's Bond payable to the OWNER in the amount of five percent (5%) of this bid, in accordance with the Information for Bidders, Section 102-4.

103-9 PERFORMANCE AND PAYMENT BOND: As shown in Section 102-6, the undersigned bidder agrees to execute the Agreement and a Performance and Payment Bond for the amount of the total of this bid within ten (10) calendar days from the date when the written notice of the award of the Contract is delivered to him at the address given on this proposal. The name and address of the corporate surety with which the Bidder proposes to furnish the specified Performance and Payment Bond is as follows:

_____

103-10 CONTRACTOR'S LICENSE: The undersigned hereby warrants it possesses Contractor's License Class _____ No. _____ for the State of _____, in which the project is located and said license expires on _____, 20__.

103-11 CONTRACT TIME: Bidder hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the project August 15, 2020. Bidder further agrees to pay as liquidated damages the sum of $1000 for each calendar day that the CONTRACTOR shall be in default of the time specified. This is as provided in Section 215 of the General Conditions.

103-12 OWNER'S RIGHTS RESERVED: The undersigned understands that the OWNER reserves the right to reject any or all Proposals or to waive any formality or technicality in any Proposal in the interest of the OWNER.

103-13 PAYMENT: This bid is submitted on the basis of cash payment for work. Payment for work performed will be in accordance with the Bid Schedule, subject to changes as provided for in the Construction Contract.

103-14 BIDDER'S PROPOSAL: L & M = Labor & Materials

Stanton Sewer Improvement District 2020-1

Item No.	Description	Unit	Quantity	Unit Price L&M	Extended Price L&M
1	Mobilization	LS	1		
2	Pavement Removal and Disposal	SY	4800		
3	Aggregate Base Course	Ton	1500		
4	Hot Bituminous Pavement	Ton	1074		
5	Remove Curb and Gutter	LF	200		
6	Replace Curb and Gutter	LF	200		
7	Remove Valley Gutter	SY	100		
8	Replace Valley Gutter	SY	100		
9	8" SDR 35 Sewer Replacement	LF	4215		
10	10" SDR 35 Sewer Replacement	LF	182		
11	12" SDR 35 Sewer Replacement	LF	380		
12	4" Wye and Service Connections	EA	32		
13	6" Wye and Service Connections	EA	4		
14	Testing Laboratory Services	LS	1		
15	Manhole Replacements	EA	4		
16	Manhole Connections and Cleaning with no vertical adjustment required	EA	14		
17	Seeding	LS	1		
18	Traffic Control	LS	1		

103-15 MODIFICATIONS OF BASE BID - only approved materials will be considered.

If the CONTRACTOR is allowed to use _____
(Name Alternate Material)
for _____ deduct $_____
(System Component)
add $_____ from base bid.

If the CONTRACTOR is allowed to use _____
(Name Alternate Material)
for _____ deduct $ _____
(System Component)
add $_____ from base bid.

If the CONTRACTOR is allowed to use _____
(Name Alternate Material)
for _____ deduct $ _____
(System Component)
add $_____ from base bid.

103-16 THE ABOVE PROPOSAL IS HEREBY RESPECTFULLY SUBMITTED BY:

_____
(CONTRACTOR)

_____ _____
(By) (Title)

_____
(Business Address) (City) (State)

_____ _____
(Date) (Telephone Number)

ATTEST: (SEAL)

_____
Corporate Secretary

(The Proposal must be signed with the full name of the Bidder. In the case of a partnership, the Proposal must be signed in the firm name of each partner. In the case of a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the corporation.)

SECTION 104

NOTICE OF AWARD

TO: _____

_____

_____

Description of Work: _____

_____for the _____. The OWNER, represented by the undersigned, has considered the Proposal submitted by you for the above described work in response to its "Advertisement for Bids" dated _____, ____ and Information for Bidders.

It appearing that it is in the best interest of said OWNER to accept your proposal in the amount of _____ _____ DOLLARS ($_____), you are hereby notified that _____ Proposal has been accepted for items _____ _____. You are required by Section 102 Information for Bidders to execute the agreement with the undersigned OWNER and to furnish the required Contractor's Performance and Payment Bond within ten (10) days from the date of the sending of this notice to you.

If you fail to execute said agreement and to furnish said bond within ten (10) days from the date of the sending of this notice, said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your proposal, as abandoned, and to award the work covered by your Proposal to another, or to re-advertise the work or otherwise dispose thereof as the OWNER may see fit.

Dated this _____ day of _____, 20____.

OWNER: _____

BY: _____

TITLE: _____

(SEAL)

ATTEST:

_____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award
is hereby acknowledged this
_____ day of _____, 20__.

_____

By:_____

Title:_____

SECTION 105
CONSTRUCTION AGREEMENT

THIS AGREEMENT, Made this _____ day of _____, 20_____, at _____ State of _____ by and between the _____, hereinafter called the "OWNER", and_____, hereinafter called the "Contractor" to complete the following work: _____

_____

WITNESSETH THAT:
In consideration of the mutual covenants and conditions hereinafter set forth, the OWNER and Contractor hereby agree as follows:

105-1 SCOPE OF WORK: The Contractor shall furnish and pay the cost, including sales tax and all other applicable taxes and fees, of all the necessary materials not furnished by the OWNER and shall furnish and pay for all the superintendence, labor, tools, equipment and transportation and perform all the work required for the construction of all structures listed and itemized under the bid schedule of the Bidder's Proposal attached hereto in strict accordance with the General Conditions; Special Conditions, Governmental Requirements, the Plans, which include all maps, plats, blueprints, and other drawings and printed or written explanatory matter therein; the Specifications and Contract Documents as prepared by Interstate Engineering, Inc., herein called "ENGINEER", and any amendments thereto and such supplemental Plans and Specifications as may hereafter be approved.

All addendums ____ through ____ are hereby made part of this Contract.

105-2 COMPLETION OF WORK: The Contractor shall commence the work covered by this Agreement within _____ calendar days after the date of the Notice to Proceed and shall complete the same by _____ unless the period for completion is extended as hereinafter provided.

105-3 CONTRACT SUM: The OWNER shall pay the Contractor for the performance of said work as set forth by Section 105-1 above, _____ _____ DOLLARS ($_____). Breakdown of above mentioned contract amount is as follows:

105-4 MAINTENANCE: The Contractor shall guarantee the repair of all damages or defects due to faulty materials or workmanship done by the Contractor or subcontractors. This guarantee shall remain in effect for a period of one year after acceptance of the project by the OWNER according to the General Conditions.

105-5 PAYMENT: Payment shall be made to the Contractor for work performed under this Agreement for the quantities of work as determined in accordance with the General Conditions.

105-6 SUB-CONTRACTORS: The Contractor agrees to bind every sub-contractor by the terms of the Contract Documents. The Contract Documents shall not be construed as creating any contractual relation between any sub-contractor and the OWNER.

105-7 SUCCESSORS AND ASSIGNS: This Agreement and all of the covenants hereof shall insure to the benefit of and be binding, upon the OWNER and the CONTRACTOR respectively and his partners, successors, assigns and legal representatives. Neither the OWNER nor the CONTRACTOR shall have the right to assign, transfer or sublet his interests or obligations hereunder without written consent of the other party.

105-8 SOURCE AND MANNER OF PAYMENT: All payments shall be made in warrants drawn on the construction account of the funds of the _____ _____and said warrants shall bear no interest, and shall be payable immediately on issuance.

105-9 OWNER'S RIGHT TO SUSPEND WORK: The OWNER by resolution duly adopted by the governing body, shall have the right to suspend the work at any time for

improper construction, and to relet the contract therefore, or to order the reconstruction of the work as to any part thereof improperly done. This right shall be additional to the rights, powers, and privileges reserved to the OWNER in the several provisions of the plans and specifications.

105-10 OWNER ASSUMES NO GENERAL LIABILITY: It is expressly agreed and understood that the OWNER assumes and incurs no general liability under the contract for the payment of any compensation to the CONTRACTOR, or any other person; the OWNER'S obligation hereunder being limited solely to the administration and application of the funds of said _____, in accordance with the law, and the provisions of this Agreement.

105-11 ENGINEER'S FAILURE TO REJECT WORK: Failure of the ENGINEER to reject work and materials which are not up to specifications and acceptance of the job by the ENGINEER shall not release the CONTRACTOR from liability for any failure on his part to perform work or furnish materials in accordance with the plans and specifications.

105-12 INDEMNIFICATION: To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the OWNER, ENGINEER, ENGINEER'S consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expenses attributable to bodily injury, sickness, disease or death, or injury to or destruction of tangible property (other than the Work itself) including loss of use resulting there from, but only to the extent caused in whole or in part by negligent acts or omissions of the CONTRACTOR, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.

105-13 SERVICE OF NOTICE: All notices required to be given hereunder shall be mailed or delivered in the case of the OWNER to _____ and in the case of the CONTRACTOR to_____.

IN WITNESS WHEREOF, the parties hereto have caused these present to be executed the day and year first above written.

(SEAL) OWNER:_____

ATTEST:_____ BY:_____

TITLE:_____ TITLE:_____

(SEAL) CONTRACTOR:_____

ATTEST:_____ BY:_____

TITLE:_____ TITLE:_____

SECTION 106

PERFORMANCE - PAYMENT BOND

THE STATE OF _____

COUNTY OF _____

KNOW ALL MEN BY THESE PRESENTS: That we (1) _____ (2) _____ of _____ hereinafter called Principal and (3) _____ of _____ State of _____, hereinafter called the Surety, are held and firmly bound unto (4) _____, hereinafter called OWNER, and unto all persons, firms, and corporations who may furnish materials for, or perform labor upon the building or improvements hereinafter referred to in the penal sum _____ _____ DOLLARS ($_____) in lawful money of the United States to be paid in (5) _____ County, North Dakota, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with (6) _____which is dated the ___ day of _____ 20 ____, a copy of which is hereto attached and made a part hereof for the construction of _____

_____

_____

NOW THEREFORE, the principal shall (1) well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said contract and any extension thereof that may be granted by the OWNER with or without notice to the surety, and during the life of the one year guaranty required under the contract, and (2) promptly make payment to all persons supplying labor and materials including supplies used for machinery and equipment, performed,

furnished and used in and about the performance of the contract to the principal or to any subcontractor of the principal in the prosecution of the work provided for in said contract (failing which such persons shall have a direct right of action against the principal and surety under this obligation), also such payment shall include interest in the amount authorized under Section 13-01-14 of the North Dakota Century Code on all bills and claims not paid within ninety (90) days and (3) well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made and promptly make payment to all persons supplying labor and materials including supplies used for machinery and equipment, performed, furnished and used in and about the performance of the contract to the principal or to any subcontractor to the principal in the prosecution of the work provided for in such modifications (failing which such persons shall have a direct right of action against the principal and surety under this obligation), notice to the surety of all duly authorized modifications being hereby waived, and (4) make, prior to the commencement of any work by himself or any subcontractor under the contract, full and true report to Workforce Safety & Insurance of the payroll expenditures for the employees to be engaged in such work and pay the premium thereon prior to the commencement of such work, and (5) the Contractor will pay or cause to be paid all sales and use taxes payable as a result of the performance of the contract for which the bond is given, as well as the payment of gasoline and special motor fuels taxes used in the performance of the contract, and all motor vehicle fees required for commercial motor vehicles used in connection with the performance of such contract then this obligation to be void; otherwise to remain in full force and effect.

In case of a default on the part of the principal herein in the performance of the work as provided in the above contract, the sum of this bond as set out above shall be taken and held to be fixed and liquidated damages in favor of the OWNER, and said full amount may be recovered from the principal and surety in an action against them on this bond.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each

one of which shall be deemed an original, this the _____ day of _____, 20___.

ATTEST: Principal: (7)_____

_____ By: _____

Secretary or Principal Title: _____

(CORPORATE SEAL) Address: _____

Surety: _____

By: _____
Attorney-in-Fact

ATTEST:

_____
Secretary of Surety (CORPORATE SEAL)

Full Name of Surety Company _____

Home Office Address _____

Name of Attorney-in-Fact _____

Name of Local Agency _____

Address of Local Agency _____

A copy of the Power of Attorney of the Attorney-in-fact showing that it remains in force as of the date of the Bond must be attached to the Bond.

.....

NOTE: Date of Bond must not be prior to date of Contract.

(1) Correct name of Contractor
(2) A Corporation, a Partnership or an Individual as case may be.
(3) Correct Name of Surety
(4) Correct Name of OWNER
(5) County
(6) OWNER
(7) If Contractor is Partnership, all partners should execute Bond.

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SECTION 107

ADDITIONAL DOCUMENTS OF CONTRACT

(To be supplied after award)

107-1 Acknowledgment of Principal

107-2 Power of Attorney

107-3 Liability Insurance (See Section 221 of General Conditions)

107-4 Current Workmen's Compensation Certificate of Premium Paid

107-5 Contractor's Certificate of North Dakota Income and Sales Tax Clearance

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SECTION 108

NOTICE TO PROCEED

TO:_____ DATE:_____

_____ PROJECT:_____

_____ _____

_____ _____

_____ _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 20____, on or before _____, 20____, and you are to complete the WORK within _____ consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 20____.

_____

OWNER

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged

_____

This the ____day of _____, 20__.

By:_____

Title: _____

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SECTION 200
GENERAL CONDITIONS
OF THE CONTRACT

201 DEFINITIONS

201-1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

201-2 ADDENDA- Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

201-3 BID- The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

201-4 BIDDER- Any person, firm or corporation submitting a BID for the WORK.

201-5 BONDS- Bid, Performance, and other instruments of security, furnished by the CONTRACTOR and his Surety in accordance with the CONTRACT DOCUMENTS.

201-6 CHANGE ORDER- A written order to the CONTRACTOR authorizing an addition, deletion or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE OF CONTRACT TIME.

201-7 CONTRACT DOCUMENTS- The contract, including Advertisement for Bids, Information for Bidders, BID, Bid Bond, Agreement, Performance Bond, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS and ADDENDA.

201-8 CONTRACT PRICE- The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

201-9 CONTRACT TIME- The number of calendar days, or weather working days, stated in the CONTRACT DOCUMENTS for the completion of the WORK.

201-10 CONTRACTOR- The person, firm or corporation with whom the OWNER has executed the Agreement.

201-11 DRAWINGS- The part of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.

201-12 ENGINEER- INTERSTATE ENGINEERING, INC., Jamestown, North Dakota, or its representative, duly authorized in writing to act for the ENGINEER.

201-13 FIELD ORDER- A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

201-14 NOTICE OF AWARD- The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

201-15 NOTICE TO PROCEED- Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.

201-16 OWNER- A public or quasi-public body or authority, corporation, association, partnership or individual for whom the WORK is to be performed.

201-17 PROJECT- The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

201-18 RESIDENT PROJECT REPRESENTATIVE- The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.

201-19 SHOP DRAWINGS- All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER, or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

201-20 SPECIFICATIONS- A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

201-21 SUBCONTRACTOR- An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

201-22 SUBSTANTIAL COMPLETION- That date as certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.

201-23 SUPPLEMENTAL GENERAL CONDITIONS- Modifications to General Conditions required by a Federal Agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable tribal or federal law.

201-24 SUPPLIER- Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design.

201-25 WORK- All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

201-26 WRITTEN NOTICE- Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the WORK.

202 ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

202-1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

202-2 The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

203 SCHEDULES, REPORTS AND RECORDS

203-1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress-schedules, payrolls, reports, estimates, records and other data where applicable as required by the CONTRACT DOCUMENTS for the WORK to be performed.

203-2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry out the WORK, including dates at which he will start the various portions of the WORK, estimated date of completion of each part and, as applicable:

203-2.1 The dates at which special detail drawings will be required; and

203-2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and installation of materials, supplies and equipment.

203-3 The CONTRACTOR shall also submit a schedule of payments that he anticipates he will earn during the course of the WORK.

204 DRAWINGS AND SPECIFICATIONS

204-1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

204-2 In case of conflict between the DRAWINGS, and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

204-3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

204-4 Ownership of DRAWINGS and SPECIFICATIONS: All original or duplicated DRAWINGS and SPECIFICATIONS and other data prepared by the ENGINEER shall remain the property of the ENGINEER, and they shall not be reused on other work, but shall be returned to him upon completion of the WORK.

205 SHOP DRAWINGS

205-1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER, which shall likewise require approval by the Federal Contracting Officer.

205-2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

205-3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A

copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

205-4 EQUIPMENT DATA- The CONTRACTOR shall submit for the ENGINEER'S review complete catalog data for every manufactured item of equipment and all components to be used in the work, including specific performance data, material description, rating, capacity, working pressure, material gauge or thickness, brand name, catalog number and general type. This submission shall be compiled by the CONTRACTOR and reviewed by the ENGINEER before any equipment is ordered.

206 MATERIALS, SERVICES AND FACILITIES

206-1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

206-2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

206-3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

206-4 Materials, supplies and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

206-5 Materials, supplies or equipment to be incorporated into the WORK shall not be purchased by the CONTRACTOR or the SUB-CONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

206-6 MATERIALS FURNISHED BY THE OWNER- Materials specifically indicated shall be furnished by the OWNER. The fact that the OWNER is to furnish material is conclusive evidence of its acceptability for the purpose intended and the CONTRACTOR may continue to use it until otherwise directed. If the CONTRACTOR discovers any defect in material furnished by the OWNER, he shall notify the ENGINEER. Unless otherwise noted or specifically stated, materials furnished by the OWNER, which are not of local occurrence, are considered to be f.o.b., the nearest railroad station. The CONTRACTOR shall be prepared to unload and properly protect all such material from damage or loss. The CONTRACTOR shall be responsible for material loss or damage after receipt of material at the point of delivery.

206-6.1 INDEX- Each data sheet or catalog in the submission shall be indexed according to SPECIFICATION section and paragraph for easy reference.

206-6.2 RELATION TO CONTRACT DOCUMENTS- Catalog data for equipment reviewed by the ENGINEER shall not supersede the ENGINEER'S CONTRACT DOCUMENTS. The review of the ENGINEER shall not relieve the CONTRACTOR from responsibility for deviations from DRAWINGS of SPECIFICATIONS, unless he has in writing called the ENGINEER'S attention to such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any sort in the items submitted. The CONTRACTOR shall check the WORK described in the catalog data with the ENGINEER'S CONTRACT DOCUMENTS for deviations and errors.

206-6.3 CONTRACTOR'S CERTIFICATION- Equipment data shall be submitted by the CONTRACTOR with a covering letter indicating that he has reviewed, checked and approved the data submitted, that they are in harmony with the requirements of the PROJECT and with the provisions of the CONTRACT DOCUMENTS and that he has verified all field measurements and construction criteria, materials, catalog numbers and similar data. CONTRACTOR shall also certify that the WORK represented by the SHOP DRAWINGS is recommended by the CONTRACTOR and that his GUARANTY will fully apply.

207 INSPECTION AND TESTING

207-1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

207-2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

207-3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

207-4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

207-5 Inspections, tests or approvals by the ENGINEER or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

207-6 The OWNER and the ENGINEER and his representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

207-7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

207-8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

208 SUBSTITUTIONS

208-1 Whenever a material, article or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalog number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalog number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

209 PATENTS

209-1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringements of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however, if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

210 SURVEYS, PERMITS, REGULATIONS

210-1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of

bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS, unless otherwise specified in the CONTRACT DOCUMENTS, the OWNER shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

210-2 The CONTRACTOR shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

210-3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR observes that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 213, CHANGES IN THE WORK.

211 PROTECTION OF WORK, PROPERTY AND PERSONS

211-1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

211-2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify OWNER of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for those acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

211-3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury, or loss. He will give

the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

212 SUPERVISION BY CONTRACTOR

212-1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

213 CHANGES IN THE WORK

213-1 The OWNER may at any time, as the need arises, order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

213-2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter, the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes, pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER, provided, that all such change orders must also be approved by the Federal Contracting Officer.

214 CHANGES IN CONTRACT PRICE

214-1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below, and not to exceed 25% of the CONTRACT AMOUNTS. If requested by CONTRACTOR in writing:

1. Unit prices previously approved.
2. An agreed lump sum.
3. The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition, there shall be added a percentage to be agreed upon of the actual cost of the WORK to cover the cost of general overhead and profit.

215 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

215-1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

215-2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

215-3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS. Liquidated damages shall be as shown in the Specifications.

215-4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following, and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

215-4.1 To any preference, priority or allocation order duly issued by the OWNER.

215-4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

215-4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in Paragraphs 215-4.1 and 215-4.2 of this article.

216 CORRECTION OF WORK

216-1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS whether destroyed or damaged by such removal or replacement.

216-2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

217 SUBSURFACE CONDITIONS

217-1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

217-1.1 Subsurface or latent physical conditions of the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

217-1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

217-2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

218 SUSPENSION OF WORK, TERMINATION AND DELAY

218-1 The OWNER may suspend the WORK or any portion thereof, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension, which is not attributable to fault of the CONTRACTOR.

218-2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER.

Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

218-3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

218-4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the CONTRACT. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

218-5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days WRITTEN NOTICE to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

218-6 If the performance of all or any portion of the WORK is suspended, delayed or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

219 PAYMENTS TO CONTRACTOR

219-1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such

supporting data, satisfactory to the OWNER, as will establish the OWNER'S title to the material and equipment and protect his interests therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may take the necessary corrections and resubmit the partial payment estimate. The OWNER will, within thirty (30) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The retainage shall be an amount equal to ten percent (10%) of said estimate until fifty percent (50%) of the work has been completed. At fifty percent (50%) completion, further partial payments shall be made in full to the CONTRACTOR and no additional amounts may be retained unless the ENGINEER certifies that the job is not proceeding satisfactorily, but amounts previously retained shall not be paid to the CONTRACTOR. At fifty percent (50%) completion or any time thereafter when the progress of the WORK is not satisfactory, additional amounts may be retained but in no event shall the total retainage be more than ten percent (10%) of the value of the work completed. Upon substantial completion of the work, any amount retained may be paid to the CONTRACTOR. When the WORK has been substantially completed except for WORK which cannot be completed because of weather conditions, lack of materials or other reasons which in the judgment of the OWNER are valid reasons for non-completion, the OWNER may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the WORK still to be completed. On completion and acceptance of a part of the WORK on which the price is stated separately in the CONTRACT DOCUMENTS, payment may be made in full, including retained percentages, less authorized deductions.

219-2 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

219-3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

219-4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damages WORK except such as may be caused by agents or employees of the OWNER.

219-5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

219-6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTOR'S, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

219-7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the rate of 6% By Annum commencing on the first day after said payment is due and continuing until payment is received by the CONTRACTOR.

220 ACCEPTANCE OF FINAL PAYMENT AS RELEASE

220-1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the PERFORMANCE BOND.

220-2 CLEANING UP - The CONTRACTOR shall remove from the OWNER'S property, and from all public and private property, all temporary structures, rubbish, and waste materials resulting from his operation or caused by his employees, and shall remove all surplus materials leaving the site smooth, clean and true to line and grade.

220-3 ACCEPTANCE AND FINAL PAYMENT - When the CONTRACTOR shall have completed the WORK in accordance with the terms of the CONTRACT DOCUMENTS, he shall certify completion of the WORK to the OWNER and submit a final REQUEST FOR PAYMENT, which shall be the CONTRACT AMOUNT plus all approved additions less all approved deductions and less previous payments made. The CONTRACTOR shall furnish evidence (See Attached Affidavit) that he has fully paid all debts for labor, materials, and equipment incurred in connection with the WORK, and upon acceptance by the OWNER, the OWNER will release the CONTRACTOR except as to the conditions of the CONTRACT

BOND, any legal rights of the OWNER, required guaranties, and Correction of Faulty Work After Final Payment, and will pay the CONTRACTOR'S final Request for Payment. The CONTRACTOR shall allow sufficient time between the time of completion of the WORK and approval of the final Request for Payment for the ENGINEER to assemble and check the necessary data.

221 INSURANCE

221-1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

221-1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts:

221-1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

221-1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

221-1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

221-1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.

221-2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled unless at least fifteen (15) days prior WRITTEN NOTICE has been given to the OWNER.

221-3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified:

221-3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the CONTRACT DOCUMENTS, whether such operations be by himself or by any SUBCONTRACTOR under him, or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR under him. Insurance shall be written with a limit of liability of not less than $500,000 for all damages arising out of bodily injury, including death, at any time resulting there from, sustained by any one person in any one accident; and a limit of liability of not less than $1,000,000 aggregate for any such damages sustained by two or more persons in any one

accident. Insurance shall be written with a limit of liability of not less than $100,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $200,000 aggregate for any such damage sustained by two or more persons in any one accident.

221-3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

221-4 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed. Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

221-5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured, the CONTRACTOR, the ENGINEER, and the OWNER.

221-6 RAILROAD INSURANCE COVERAGE - The CONTRACTOR and his SUBCONTRACTORS shall provide adequate insurance to cover limits set forth by the railroad company for working adjacent to crossing their tracks. (When applicable)

222 CONTRACT SECURITY

222-1 The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the State in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The

expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other Surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

223 ASSIGNMENTS

223-1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise, dispose of the CONTRACT or any portion thereof, or of his right, title or interest therein, or his obligations there under, without written consent of the other party.

224 INDEMNIFICATION

224-1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting there from; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

224-2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

224-3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

225 SEPARATE CONTRACTS

225-1 The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution of results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the

ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

225-2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

225-3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefore as provided in Sections 214 and 215.

226 SUBCONTRACTING

226-1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

226-2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s), in excess of fifty (50%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.

226-3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

226-4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

226-5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

227 ENGINEER'S AUTHORITY

227-1 The ENGINEER shall act as the OWNER'S representative during the construction period. He shall decide questions which may rise as to quality and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The ENGINEER will make visits to the site

and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

227-2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

227-3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

227-4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

228 LAND AND RIGHTS-OF-WAY

228-1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

228-2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

228-3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

229 GUARANTY

229-1 The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (1) year from the date of acceptance by the OWNER. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of acceptance by the OWNER of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

230 TAXES

230-1 The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the WORK is performed.

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SECTION 300
GOVERNMENT REQUIREMENTS

300-1 EMPLOYMENT PREFERENCE IN CONTRACT

The Contractor must give preference to the employment of bona fide North Dakota residents, with preference given first to honorably discharged disabled veterans and veterans of the armed forces of the United States, who are deemed to be qualified in the performance of said work. Such preference shall not apply to engineering, superintendence, management, or office or clerical work. No contract shall be let to any person, firm, association, cooperative, corporation, or limited liability company refusing to execute an agreement containing the aforementioned provisions. This preference in employment is mandated by Section 43-07-20 of the NDCC.

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SECTION 401
SEWERS

401 - GRAVITY SANITARY SEWERS

401-1 DESCRIPTION: This item shall consist of pipe of the type, classes, size, depth and dimensions required by the plans and specifications, furnished and installed at the locations shown on the plans and profiles or by the ENGINEER.

The bid price per linear foot of pipe in place shall include the cost of excavation and backfill, the cost of furnishing and installing all trench bracing, all fittings required to complete the sewer pipe, and the material for the making of all joints, including all connections to existing sewer pipe and manholes.

401-2 MATERIALS

401-2.1 General: The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following applicable requirements.

401-2.2 Vitrified Clay Pipe: Vitrified Clay Pipe shall be of such internal diameter as shown on the detailed plans and schedule of work. The pipe furnished shall be Vitrified Clay Sewer Pipe in accordance with A.S.T.M. C 200 for extra strength clay pipe.

401-2.3 Ductile Iron Pipe: Ductile Iron Pipe when specified, in the work shall conform to the classification "Class 150" as specified in the following Specification: A.S.A. A21.6 (A.W.W.A. C 106), A.S.A. 21.51 (A.W.W.A. C 151) and Federal Specifications WW-P-42 Lb. Interior Bituminous Coating shall conform to Specifications A.S.A. A21.6 (A.W.W.A. C 106) Section 6-8.3.

401-2.4 Concrete Sewer Pipe: Concrete Sewer Pipe, when specified, standard non-reinforced, shall conform to the requirements of A.S.T.M. C 14. Concrete sewer pipe, reinforced, shall conform to the requirements of A.S.T.M. C 76.

401-2.5 Asbestos-Cement Sewer Pipe: Asbestos-Cement Sewer Pipe, when specified, shall conform to the requirements of Federal Specification SS-P-331 and A.S.T.M. C 428.

401-2.6 Polyvinyl Chloride Sewer Pipe: Polyvinyl Chloride Sewer Pipe, when specified, shall conform to the requirements of A.S.T.M. D 3034, SDR 35, for Type PSM, PVC Sewer Pipe and Fittings. PVC Sewer Pipe and PVC Sewer Service Pipe shall have the elastometric gasket type joint providing a watertight seal. PVC wye branches shall be of the Factory Assembled Type.

401-2.7 Polyethylene Sewer Pipe: Polyethylene Sewer Pipe, when specified, shall meet the Standards of the Plastic Pipe Institute and carry the NSF Seal of Approval. It shall be DR-11 capable of an internal pressure of 160 psi. Joints shall be thermal butt fusion. Pipe shall be Sclairpipe or approved equal.

401-2.8 Oakum Packing: Oakum packing for joints in bell and spigot pipe shall conform to the requirements of Federal Specifications HH-P-117.

401-2.9 Rubber Gasket Joints: Rubber-type gaskets for concrete non-pressure pipe shall conform to the requirements of A.S.T.M. C 443.

401-2.10 Composition Gasket Joints: Factory fabricated jointing connections using materials having resilient properties on vitrified clay pipe shall conform to the requirements of A.S.T.M. C 425.

401-2.11 Joint-Sealing Compound: Joint-sealing compound used in filling joints, of bell and spigot sewer pipe shall conform to the requirements of Federal Specifications SS-S-169 or SS-S-210.

401-2.12 Mortar: Mortar for connections to manholes shall be composed of one (1) part, by volume, of Portland Cement and two (2) parts of mortar sand. The Portland Cement shall conform to the requirements of Sub-Section 601-2.2. The sand shall conform to the requirements of Sub-Section 601-2.4. Hydrated lime may be added to the mixture of sand and cement in an amount equal to 10% of the weight of cement used.

401-2.13 P.V.C. Sewer Pipe Joint Cement: The Polyvinyl Chloride Sewer Pipe Joint Cement shall consist of a viscous, brushable solution of polyvinyl chloride in suitable active solvents. The cement shall be purchased from the pipe manufacturer and used in accordance with the manufacturer's instructions. It shall produce a joint of sufficient strength to permit normal installation handling within five minutes after jointing when exercising reasonable care.

401-2.14 O-Ring Rubber Gasket Joint for P.V.C. Sewer Pipe: O-Ring Rubber Gaskets for P.V.C. Sewer Pipe Joints shall be of the elastometric type and provide a watertight seal.

401-2.15 Concrete: Concrete for pipe cradles and saddle shall be Class B conforming to the requirements of Section 601.

401-2.16 Pitrun Gravel: The bedding gravel shall be a granular material with 100% passing a 1½" sieve, 60% to 100% passing a 3/4" sieve and 40% to 80% passing a ¼" sieve.

401-3 CONSTRUCTION REQUIREMENTS

401-3.1 Equipment: All equipment necessary and required for the proper construction of sanitary sewer shall be on the project in first class working conditions and reviewed by the ENGINEER before construction is permitted to start.

The CONTRACTOR shall provide suitable lifting equipment to handle the unloading and placing into final position of pipe used on this project.

The CONTRACTOR shall provide hand tampers and pneumatic tampers to obtain the compaction of the pipe bedding and backfill as specified.

401-3.2 Excavation and Trench Preparation: The trench shall be excavated to the alignment and depth required and only as far in advance of pipe laying as the ENGINEER will permit. The trench shall be braced and drained so that workmen may work there safely and efficiently. The discharge from pumps shall be led to natural drainage channels or storm sewer.

The trench width may vary depending upon the depth of the trench and the nature of the excavated material, but in all cases shall be of ample width to permit the pipe to be laid and joined properly and the backfill to be placed and compacted to the required density. The minimum width of trench shall be thirty (30) inches and for pipe eighteen (18) inches or larger at least twelve (12) inches greater than the outside diameter of the pipe barrel. The maximum width of trench shall not be more than forty-two (42) inches and for pipe eighteen (18) inches or larger no more than twenty-four (24) inches greater than the outside diameter of the pipe barrel. The trench walls may be backsloped from a point one (1) foot above the top of the pipe if approved by OSHA regulations.

The trench shall be excavated below the required grade so that the pipe may be laid on 4" of pitrun gravel.

Soft, spongy or otherwise unstable materials, which may not provide suitable foundation for pipe, shall be called to the attention of the ENGINEER prior to removal to be deemed extra work and be eligible for payment under the provisions of Sub-Section 214-1 of these specifications. Removal and replacement of questionable material will be authorized only if dewatering methods are unsuccessful in stabilizing the trench bottom. If removal of unsuitable material is authorized by the ENGINEER, replace with crushed rock or clean pitrun gravel as specified for pipe bedding material. Extra compensation shall not be allowed for extra excavation and gravel used for seepage and ground water control.

Whenever necessary, to prevent caving, excavations in sand, gravel, sandy soil or other unstable material shall be adequately sheathed and braced. Where sheathing and bracing are used, the trench width shall be increased accordingly. Trench sheathing will be required on all ditches where necessary to prevent damage to utilities above or below ground. Trench sheathing shall remain in place until the pipe has been laid and the joint properly constructed and the backfill material thoroughly compacted to a depth over the pipe sufficient to protect any utility structures or adjacent paving, curb and gutter, sidewalks or trees which might be damaged by caving of the trench walls. The cost of sheeting, shoring or bracing shall be incidental to the item unit bid price unless otherwise noted.

All pipe-laying work shall be executed in a dry trench. The CONTRACTOR shall provide equipment for removing water encountered. Dewatering shall be used so that no pipe is laid on excessively wet soil. Dewatering shall be incidental to the item unit bid price for sewer pipe unless otherwise noted.

Trees shall be protected unless their removal is authorized by the ENGINEER. Only trees in direct conflict with trench alignment may be removed. Tunnel or hand excavate under roots of trees near the trench. Tree removal includes grubbing and removing roots and stump, backfill and disposal of debris. The cost of removal shall be included in the price bid per linear foot of sewer pipe unless listed separately in the proposal.

Fences, poles, mail boxes and all other property shall be protected unless their removal is authorized by the ENGINEER. These damages shall be restored by the CONTRACTOR to the satisfaction of the ENGINEER at no cost to the OWNER.

Pavements, sidewalks and/or curb and gutter shall be removed to a minimum of one foot from the trench. Undercutting shall not be permitted. Sidewalk and curb and gutter shall be removed to the nearest joint. Sidewalk shall be replaced with four inch thick sidewalk finished to match existing sidewalks except that 6" shall be placed where traffic crosses. Curb and gutter shall be replaced with a section matching the existing curb and gutter. Pavement shall be replaced with a section to match existing pavement unless otherwise specified on the plans or in the specifications. All broken pavement, sidewalk and/or curb and gutter shall be removed from the site of work and deposited at a place selected by the ENGINEER.

Pavement, sidewalks and/or curb and gutter removal shall be considered incidental to the price bid for pipe or manhole installation. Pavement, sidewalk and/or curb and gutter replacement shall be considered incidental to the price bid for pipe or manhole installation unless listed separately in the proposal.

The CONTRACTOR is assumed to be familiar with all Federal, State and local laws, codes, ordinances and regulations which in any manner, affect those engaged or employed in the work, the material or equipment used in or upon the site, or in any way affect the conduct of the work. No pleas of misunderstanding or ignorance on the part of the CONTRACTOR will, in any way, serve to modify the provisions of the Contract. The CONTRACTOR shall provide and maintain on a 24 hour basis all necessary safeguards such as watchmen, warning signs, barricades and night lights at his own expense.

Excavation for pipe laying operations shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the CONTRACTOR shall provide suitable bridges at street intersections and driveways. Hydrants under pressure, valve boxes, curb stop boxes and other utility controls shall be left unobstructed and accessible during the construction period.

Adequate provisions shall be made for the flow of sewers, drains and water courses encountered during construction and the structures which may have been disturbed shall be satisfactorily restored upon completion of the work.

401-3.3 Rock Excavation: All rock found in the trench area which cannot be removed by a trenching machine or by workmen with a pick, spade or shovel shall be classified as solid rock and measured for payment if of one-half cubic yard in contents or more per each individual rock, boulder or continuous ledge rock. Solid rock shall be measured for payment on the basis of and limited the maximum trench width allowed under Sub-Section 401-3.2, "Excavation and Preparation of Trench". If solid rock extends below the necessary depth of excavation it shall be measured for payment to a horizontal plane six (6) inches below the bottom of the pipe. All rocks smaller in volume than one-half cubic yard or rock than can be removed by a trenching machine and/or by workmen with pick, spade or shovel without the aid of blasting, wedging, sledging or barring shall not be classified as solid rock, but shall be termed excavation and the cost for the removal thereof included in the unit price bid for the item for which the excavation is made.

Blasting for excavation will be permitted only after securing the approval of the ENGINEER and only when proper precautions are taken for the protection of person and property. The hours of blasting will be fixed by the ENGINEER and any damage caused by blasting shall be repaired by the CONTRACTOR at his own expense. The CONTRACTOR's methods of procedure relative to blasting shall conform to local and state laws and municipal ordinances.

Whenever ledge rock is encountered the CONTRACTOR shall strip from the same all overlying earth and he shall then notify the ENGINEER that rock is ready for measurement. The ENGINEER may then take levels upon the surface of the rock or he may at his discretion defer measurement until after the excavation is completed. In any event, the CONTRACTOR shall not refill any trench where rock is encountered until he is notified by the ENGINEER that measurement has been made. He will not be allowed any payment for any rock claimed unless the same shall have been measured as herein provided. The rock shall be excavated to a depth of 6" below the bottom of the pipe and the trench shall be refilled to the proper grade with pitrun gravel.
All rock found in the trench having greater diameter than eight (8) inches shall not be used for backfill within two (2) feet of the top of the pipe or within four (4) feet from finish grade.

401-3.4 Pipe Laying: Proper implements, tools and equipment satisfactory to the ENGINEER shall be provided and used by the CONTRACTOR for the safe and convenient prosecution of the work. All pipe and fittings shall be carefully lowered into the trench piece by piece by means of a derrick, ropes or other suitable tools or equipment in such a manner as to prevent damage to the pipe. Under no circumstance shall pipe be dropped or dumped into the trench.

After the trench has been excavated to the proper grade, the first pipe at the outlet end of the sewer shall be bedded to the proper line and grade with the bell end upstream. All pipes shall be laid to line and grade by using a laser system or batter boards. If batter boards are used then use three or more grade boards for grade and the alignment of the pipe at the bottom of the trench shall be controlled by use of a plumb bob so that the pipe is kept plumb with grade line. The pipe shall be held in place by backfilling along the bottom and sides of the pipe section with pitrun gravel thoroughly tamped up to the centerline of the pipe.

All joints shall be installed in accordance with the pipe manufacturer's instructions.

No attempt shall be made to make joints underwater. The trench must be kept dry until the joint has set.

The interior of the pipe shall be cleaned as the work progresses. The manholes and sewer pipe shall be flushed with clean water prior to final acceptance.

Whenever possible, sewers shall be laid at least 10 feet horizontally from any existing or proposed water main.

Where both water and sewer are of new construction, no additional protection is needed if water main crosses at least five (5) feet above the sewer. If the water main crosses within three (3) to five (5) feet above the sewer, a full length of water main shall be centered over the sewer. If the water main crosses within three (3) feet above the sewer, a full length of water main shall be centered over the sewer and the sewer joints within ten (10) feet of the closing shall be able to withstand 25 psi internal pressure.

Where water main crosses over an existing sewer no additional protection is needed if the water main is at least three (3) feet above the sewer. If crossing is within three (3) feet above the sewer, a full length of water main must be centered over the sewer main.

Where water main crosses under the sewer additional protection shall be provided by centering a full length of water main under the sewer main. All sewer joints located within ten (10) feet of the crossing shall be able to withstand 25 psi internal pressure.

Any materials or labor required to meet vertical and horizontal separation requirements stated above shall be incidental to the price bid for sanitary sewer pipe.

401-3.5 Installation of PE Pipe by Pipe Bursting (If Applicable): Prior to insertion of the liner pipe, the CONTRACTOR shall locate existing services. The pipe shall be pulled into the sewer by use of winches and pulling heads. Pushing of the pipe into the sewer will not be allowed.

Where installation of liner pipe is to be in "pulling pits", the existing sewer shall be exposed to springline for the full length of the pit prior to removal of the crown portion of a section of the existing main. The flow line shall be continuous. If any sags are seen in the line, these sags shall be fixed prior to bursting.

A power winch shall then be connected to the end of the PE pipe by use of a metal pulling head, so the PE pipe can be fed into the existing sewer. Precautions shall be taken not to damage the PE pipe or break any of the joints. It may also be necessary to put guards over the edges of the existing pipe at the inlet end to prevent their gouging the polyethylene pipe during the insertion procedure.

Length of the P.E. pipe to be pulled into an existing sewer at any one time shall be governed by the size of sewer being burst and condition of the existing sewer. The CONTRACTOR shall not begin pulling a new length of PE pipe until all service connections are completed on the previous pull.

The pulling operation will tend to stretch the pipe, and excessive stretching (more than 1.5%) should be avoided. The pulling speed is unlikely to exceed about 300 mm/s (1 ft/s), and slower speeds will be necessary under the more difficult conditions. Once started, the operation should continue without interruption until completed.

On reaching the exit point, the pipe should be pulled beyond this point as advised by the coordinator at the entrance point. Stretching of about 1% of the total length pulled will often be observed. This stretching will be recovered over a period of time about equal to the length of time it took to complete the pull. If the work is done during warm weather, an additional contraction may also be observed. This can be as much as 20 mm/30 m-5°C (1 in/100 ft-10°F) difference in temperature between the pipe before and after installation and this should be allowed for in the length of insertion pipe used.

When stabilization is complete, anchoring and grouting (if necessary) can be done.

401-3.6 Fusion Jointing: Joining shall be by the heating and butt-fusion method and in strict conformance with the manufacturer's recommendations and A.S.T.M. D 2657. Polyethylene pipe lengths to be fused shall be of the same type, grade, and class of polyethylene compound and supplied by the same raw material supplier.

Joining of the pipes and fittings shall be performed in accordance with the procedures recommended by the pipe manufacturer. Depending upon the installation requirements and site location, joining shall be performed within or outside the excavation. Joints between pipe sections shall be smooth on the inside and internal projection beads shall not be greater than 3/16 inch. Unacceptable joints shall be cut out and the joint redone.

The tensile strength at yield of the butt-fusion joints shall not be less than that of the pipe. A specimen of pipe cut across the butt-fusion joints shall be tested in accordance with A.S.T.M. D 638.

401-3.7 Connections to Existing System: Connections to existing manholes shall be made by cutting a hole in the existing manhole at the elevation shown on the plans. The new sewer pipe shall be inserted flush with the inside of the manhole and grouted into place. The bottom of the existing manhole shall be reconstructed to meet the new conditions. Connections to existing sewer pipe shall be done using appropriate adaptor if different material. All connections to existing system shall be considered incidental to the price bid for sanitary sewer pipe.

401-3.8 Backfilling Trenches: After the pipe has been laid to line and grade, the trench shall be backfilled under and along the sides of the pipe up to the centerline of the pipe by thoroughly compacting pitrun gravel into place so as to form a uniform bed for the pipe. This compaction may be obtained by any approved method or equipment which will produce a uniform density meeting the requirement to obtain not less than 85% maximum dry density at optimum moisture made in accordance with AASHTO T-180. Care shall be exercised not to displace the pipe or injure the pipe during the compaction operations. If the material in the trench is sand or gravel and acceptable to the ENGINEER, it will not be necessary to furnish any other material than that found within the trench to backfill up to the centerline of the pipe. If sand or gravel is not found within the trench the CONTRACTOR will be required to furnish pitrun gravel. It will be required to keep the gravel backfill completed within three (3) lengths of the last pipe being laid and shall all be completed at the end of each day's work.

The remaining trench shall be backfilled in accordance with the specifications for the class of backfill as set forth in Sub-Section 401-3.9. The areas for each class of backfill specified shall be as designated on the plans.

All excess dirt and rock shall be removed from the streets and disposed of at such places provided by the CONTRACTOR and approved by the ENGINEER.

Any deficiency in the quantity of material or amount of moisture necessary for backfilling the trenches shall be supplied by the CONTRACTOR incidental to the project.

The CONTRACTOR shall restore all shrubbery, fences, sod or other surfaces disturbed to a condition equal to that before the work began, furnishing all labor and material incidental thereto.

401-3.9 Backfill Classification:

A. Class A Backfill: Class A backfill shall be used in areas where the trenches fall beneath improved areas or areas to be improved.

After the pipe has been inspected and bedded with pitrun gravel, the trench shall be backfilled to a point one (1) foot above the top of the pipe. Material for backfill shall be carefully placed, finely divided job excavated material free from debris, organic matter, stones and frozen material. Any approved method or equipment which will produce a uniform density meeting the requirements to obtain not less than 90% of the maximum density as determined by AASHTO T-180 may be used.

The remaining trench shall be backfilled in layers not to exceed 12 inches and compacted by any approved method or equipment, which will produce a uniform density meeting the requirement to obtain not less than 90% maximum density in accordance with AASHTO T-180.

B. Class B Backfill: Class B backfill shall be used in area where the trenches fall beneath improved areas or areas to be improved.

After the pipe has been inspected and bedded with pitrun gravel, the trench shall be backfilled to a point one (1) foot above the top of the pipe. Material for backfill shall be carefully placed, finely divided job excavated material free from debris, organic matter, stones and frozen material. Any approved method or equipment which will produce a uniform density meeting the requirements to obtain not less than 95% of the maximum density as determined by AASHTO T-99 may be used.

The remaining trench shall be backfilled in layers not to exceed 12 inches and compacted by any approved method or equipment, which will produce a uniform density meeting the requirement to obtain not less than 95% maximum density in accordance with AASHTO T-99.

C. Class C Backfill: Class C backfill shall be used in unimproved areas.

After the pipe has been inspected and bedded with pitrun gravel, the trench shall be backfilled to a point one (1) foot above the top of the pipe. Material for backfill shall be carefully placed, finely divided job excavated material free from debris, organic matter, stones and frozen material. Any approved method or equipment which will produce a uniform density meeting the requirements to obtain not less than 80% of the maximum density as determined by AASHTO T-99 may be used.

The remaining trench shall be backfilled in layers not to exceed 30 inches as compacted by any approved method or equipment, which will obtain a uniform density.

401-3.10 Existing Utilities: The CONTRACTOR is fully responsible for liaison with utility companies and for repairing utilities damaged by him at no expense to the OWNER. Utility mains in conflict with sewer shall be relocated by the CONTRACTOR or he shall make arrangements with the utility to perform the work.

Temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers, water mains, home service connection for both sewer and water and other obstructions encountered in the progress of the work shall be furnished by the CONTRACTOR all at his own expense under the direction of the ENGINEER.

All utility lines that are cut or broken by the CONTRACTOR shall be repaired or replaced by the CONTRACTOR at his own expense.

401-3.11 Tests: Conduct infiltration test on sewers located below the ground water table and exfiltration tests on sewers located above the ground water table. The CONTRACTOR shall furnish and install all plugs, measuring devices and other equipment to conduct the tests. Visible leakage at joints or leakage in excess of that specified shall be repaired at the CONTRACTOR's expense. The maximum length of test sections shall be 1,000 feet.

Infiltration tests shall be run in accordance with Standard Drawing 2004. The maximum allowable infiltration shall be 200 gallons per mile per inch diameter of sewer per day.

Exfiltration tests shall be arranged so that the minimum head is four (4) feet on the test section. These tests shall be run in accordance with Standard Drawing 2005. The maximum allowable exfiltration shall be 200 gallons per mile per inch diameter of pipe per day.

401-4 MEASUREMENT AND PAYMENT

401-4.1 (Size) Inch Vitrified Clay Sewer Pipe ((Depth) Cut): shall be measured by the linear foot (L.F.) from the centerline of manhole to centerline of manhole. (Depth) cut shall be incremental as shown on the proposal and shall be measured from ground elevation to pipe invert as shown on the cut sheets. "(Size) Inch Vitrified Clay Sewer Pipe ((Depth) Cut)" shall be paid for at the unit price bid, complete in place and accepted by the ENGINEER.

401-4.2 (Size) Inch Concrete Sewer Pipe ((Depth) Cut): shall be measured by the linear foot (L.F.) form centerline of manhole to centerline of manhole. (Depth) Cut shall be incremental as shown on the proposal and shall be measured from ground elevation to pipe invert as shown on the cut sheets. "(Size) Inch Concrete Sewer Pipe ((Depth Cut)" shall be paid for at the unit price bid, complete in place and accepted by the ENGINEER.

401-4.3 (Size) Inch Asbestos Cement Sewer Pipe ((Depth) Cut): shall be measured by the linear foot (L.F.) from centerline of manhole to centerline of manhole. (Depth) Cut shall be incremental as shown on the proposal and shall be measured from ground elevation to pipe invert as shown on the cut sheets. (Size) Inch Asbestos Cement Sewer Pipe ((Depth) Cut)" shall be paid for at the unit price bid, complete in place and accepted by the ENGINEER.

401-4.4 (Size) Inch Polyvinyl Chloride Sewer Pipe ((Depth) Cut): shall be measured by the linear foot (L.F.) from centerline of manhole to centerline of manhole. (Depth) Cut shall be incremental as shown on the proposal and shall be measured from ground elevation to pipe invert as shown on the cut sheets. "(Size) Inch Polyvinyl Chloride Sewer Pipe ((Depth) Cut)" shall be paid for at the unit price bid, complete in place and accepted by the ENGINEER.

401-4.5 (Size) Inch Polyethylene Sewer Pipe ((Depth) Cut): shall be measured by the linear foot (L.F.) from centerline of manhole to end of outfall. "(Size) Inch Polyethylene Sewer Pipe" shall be paid for at the unit price bid, complete in place and accepted by the ENGINEER.

401-4.6 (Size) Inch Wye and Service: Wye branches shall be of the same material as the sewer pipe and measured on an individual unit basis (Ea.) and paid for at the unit price bid for "(Size) Inch Wye and Service" complete in place and accepted by the ENGINEER.

401-4.7 Rock Excavation: Rock excavation shall be measured by the cubic yard (C.Y.) and paid for at the unit price bid for "Rock Excavation" completed and approved by the ENGINEER.

401-4.8 Concrete Manholes: Concrete Manholes shall be measured and paid for under Sub-Section 402-4.

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SECTION 402
MANHOLES

402-1 DESCRIPTION

This item shall consist of the construction of manholes, in accordance with these specifications and conforming to the lines, grades and dimensions shown on the plans and standard drawings or as required by the ENGINEER.

402-2 MATERIALS

402-2.1 Concrete: Plain and reinforced concrete used in this work shall be Class B conforming to the requirements of Section 601, "Portland Cement Concrete".

402-2.2 Mortar: Mortar shall be a combination of one part Portland Cement to two parts of sand by volume to which lime can be added not to exceed ten (10%) percent of cement by weight.

402-2.3 Pre-cast Reinforced Concrete Pipe Manholes: Pre-cast Reinforced Concrete Manhole risers and eccentric reducing top sections shall conform to A.S.T.M. C 478, Wall B. The dimensions shall be as shown on Standard Drawing 2001.

402-2.4 Manhole Steps: Manhole Steps furnished and installed shall be cast iron or steel reinforced fiberglass.

402-2.5 Manhole Castings and Covers: Manhole Castings and Covers shall be grey cast iron with a minimum clear opening of twenty-four inches, Neenah Foundry Company Number R-1733 with solid Type "C" cover and one Type "A" lift hole or approved equal. Castings shall be machined and thoroughly covered with pitch before they are delivered to the job.

402-2.6 Reinforcing Steel: Reinforcing Steel used in this work shall conform to Sub-Section 601-2.8.

402-2.7 Concrete Manhole Bases: Concrete Manhole Bases shall be poured in place or pre-cast.

402-2.8 Manhole Infiltration Barrier: The manhole pipe joints and adjustment rings shall be wrapped with an exterior self-adhesive HDPE wrap to prevent infiltration.

402-3 CONSTRUCTION REQUIREMENTS

402-3.1 Excavation: Excavation for manholes shall be done in a manner to provide adequate room for the construction of the item according to details as shown on the plans or stated in the specifications. When necessary the excavation shall be adequately shored or sheeted to ensure safe and satisfactory construction and backfilling.

402-3.2 Pre-cast Reinforced Concrete Pipe Manholes: Unless otherwise specified, standard reinforced concrete sewer pipe shall be used for this purpose. When this type of construction is used, the bottom pre-cast section shall be set in a full mortar bed and the joints around pipes shall be filled with mortar. Joints between sections shall be sealed with Kent Seal #2 or equal.

402-3.3 Concrete Construction (Cast in Place): The composition, consistency, placing, form work, curing and protection of the concrete shall conform to the requirements of Section 601. No finishing of the concrete will be required except the filling of honeycombed areas.

402-3.4 Concrete Base: The bottoms of all manholes shall be of concrete. The thickness and other dimensions of the base shall be as specified on the plans. The invert channel shall be the true shape of the lower half of the pipe or sewer. Pipe or tile placed in concrete for inlet or outlet connections shall extend through the walls a sufficient distance to allow for connections and the concrete shall be carefully constructed around them so as to prevent leakage along their outer surface. The inside ends shall be flush with the inside walls, and the pipe shall be of the same size and kinds as those with which they connect on the outside. The bottom of manhole shall be shaped to drain into invert channel.

402-3.5 Placing Castings: Castings shall be set in full mortar beds. Castings shall be set accurately to correct elevation so that no subsequent adjustment will be needed. The maximum distance from the top of the pre-cast reinforced concrete pipe manhole to the top of the casting shall be one and one-half (1½) feet. Building up shall be done with pre-cast manhole rings.

402-3.6 Backfill: Backfill shall be deposited in horizontal layers not over twelve (12) inches in depth (loose) and each layer compacted, this process being repeated to the elevation of the finished grade as designated on the plans. Compaction shall be secured by watering each layer if dry (the water content of the material used shall not exceed the optimum moisture content) and tamping with approved mechanical rammers. The backfill shall be compacted to a density equal to the requirements specified for the pipe trench common to the manhole.

402-3.7 Cleaning: All manholes shall be thoroughly cleaned of any accumulations of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of the final inspection.

402-4 MEASUREMENT AND PAYMENT

402-4.1 Concrete Manhole: Concrete Manholes shall be measured by the vertical foot (V.F.) from the lowest pipe invert to the top of the eccentric reinforced concrete pipe reducing section and paid for at the unit price bid for "Concrete Manhole" complete in place and accepted by the ENGINEER.

402-4.2 Concrete Drop Structure: Concrete Drop Structure shall be measured on an individual unit basis (Ea.) and paid for at the unit price bid for "Concrete Drop Structure" complete in place and accepted by the ENGINEER. This item shall include all items shown on Standard Drawing 2002 except those items measured on a unit basis under Section 402.

402-4.3 Concrete Base: Concrete Base shall be measured on an individual unit basis (Ea.) and paid for at the unit price bid for "Concrete Base" complete in place and accepted by the ENGINEER.

402-4.4 Manhole Casting and Cover: Manhole Casting and Cover shall be measured on an individual unit basis (Ea.) and paid for at the unit price bid for "Manhole Casting and Cover" complete in place and accepted by the ENGINEER. This item shall include furnishing and installing pre-cast adjusting rings and setting and adjusting castings to grade.

402-4.5 Sewer Cleanout: This item shall consist of furnishing labor and materials necessary to construct the sewer cleanout as required by these specifications and plans. Construction shall be in accordance with Standard Drawing 2009 and shall be as required by the ENGINEER. Polyvinyl Chloride Sewer Pipe, as specified in Section 401-2.6, shall be used to construct sewer cleanouts. Sewer cleanouts will be measured on an individual basis (Ea.) and paid for at the unit price bid for "Sewer Cleanout" complete in place and accepted by the ENGINEER.

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SECTION 404
SANITARY SEWER SERVICE CONNECTIONS AND RISERS

404-1 DESCRIPTION

This item shall consist of furnishing and installing sanitary sewer service connections from the main lines to the right-of-way property line and risers from the mains to a height specified by the ENGINEER. The materials, equipment, and construction methods shall be in full compliance with the State Plumbing Code, regulations set forth by the State Health Department and in accordance with these specifications and Standard Drawings.

404-2 MATERIALS

404-2.1 Cast Iron Sewer Pipe: Cast Iron Sewer Pipe shall conform to Sub-Section 401-2.3.

404-2.2 Vitrified Clay Sewer Pipe: Vitrified Clay Sewer Pipe shall be of such internal diameter as shown on the detailed plans and Bidder's Proposal. The pipe furnished shall be in accordance with A.S.T.M. C 13 for Standard Strength Clay Pipe.

404-2.3 Concrete Sewer Pipe: Concrete Sewer Pipe shall conform to Sub-Section 401-2.4.

404-2.4 Asbestos-Cement Sewer Pipe: Asbestos-Cement Sewer Pipe shall conform to Sub-Section 401-2.5.

404-2.5 Polyvinyl Chloride Sewer Pipe: Polyvinyl Chloride Sewer Pipe shall conform to Sub-Section 401-2.6.

404-2.6 Joint Materials: Joint Materials for sewer pipe shall conform to Sub-Section 401-2.7 through 401-2.10.

404-2.7 Concrete: Concrete for pipe cradles and saddles shall be Class B conforming to the requirements of Section 601.

404-3 CONSTRUCTION REQUIREMENTS

Construction requirements shall conform to Sub-Section 401-3. Construction shall be done in accordance with Standard Drawing 2003, 2003A, and 2003B. Class of backfill shall be as shown on the plans for sewermain.

404-4 MEASUREMENTS AND PAYMENT

404-4.1 (Size) Inch Cast Iron Sewer Service Pipe: Cast Iron Sewer Service Pipe shall be measured by the linear foot (LF) from centerline of sewer main to plugged end and shall be paid for at the unit price bid for "(Size) Inch Cast Iron Sewer Service Pipe", complete in place and accepted by the ENGINEER. Price bid shall include watertight cap, 45° short bend and 2" x 4" marker as shown on Standard Drawing 2003.

404-4.2 (Size) Inch Vitrified Clay Sewer Service Pipe: Vitrified Clay Sewer Service Pipe shall be measured by the linear foot (LF) from centerline of sewer main to plugged end and shall be paid for at the unit price bid for "(Size) Inch Vitrified Clay Sewer Service Pipe", complete in place and accepted by the ENGINEER. Price bid shall include watertight cap, 45° short bend and 2" x 4" marker as shown on Standard Drawing 2003.

404-4.3 (Size) Inch Concrete Sewer Service Pipe: Concrete Sewer Service Pipe shall be measured by the linear foot (LF) from centerline of sewer main to plugged end and shall be paid for at the unit price bid for "(Size) Inch Concrete Sewer Service Pipe", complete in place and accepted by the ENGINEER. Price bid shall include watertight cap, 45° short bend and 2" x 4" marker as shown on Standard Drawing 2003.

404-4.4 (Size) Inch Asbestos-Cement Sewer Service Pipe: Asbestos-Cement Sewer Service Pipe shall be measured by the linear foot (LF) from centerline of sewer main to plugged end and shall be paid for at the unit price bid for "(Size) Inch Asbestos-Cement Sewer Service Pipe", complete in place and accepted by the ENGINEER. Price bid shall include watertight cap, 45° short bend and 2" x 4" marker as shown on Standard Drawing 2003.

404-4.5 (Size) Inch Polyvinyl Chloride Sewer Service Pipe: Polyvinyl Chloride Sewer Service Pipe shall be measured by the linear foot (LF) from centerline of sewer main to plugged end and shall be paid for at the unit price bid for "(Size) Inch Polyvinyl Chloride Sewer Service Pipe" complete in place and accepted by the ENGINEER. Price bid shall include watertight cap, 45° short bend and 2" x 4" marker as shown on Standard Drawing 2003.

404-4.6 (Size) Inch Polyvinyl Chloride Sewer Riser Pipe: Polyvinyl Chloride Sewer Riser Pipe shall be measured by the linear foot (LF) from centerline of sewer main to plugged end and shall be paid for at the unit price bid for "(Size) Inch Polyvinyl Chloride Sewer Riser Pipe" complete in place and accepted by the ENGINEER. Price bid shall include watertight cap, 45° short bend and 2" x 4" marker as shown on Standard Drawing 2003A.

SECTION 701
EXCAVATION, EMBANKMENT AND SUBGRADE PREPARATION

701-1 DESCRIPTION

This item shall consist of excavating, removing and satisfactorily disposing of all materials within the limits of the work in accordance with these specifications and in conformity with the dimensions and typical sections shown on the plans and with the lines and grades established by the ENGINEER.

All suitable materials taken from excavation shall be used in the formation of embankment, subgrade, and for backfilling as indicated on the plans or as directed by the ENGINEER.

When the volume of the excavation exceeds that required to construct the embankments to the grades indicated, the excess shall be stockpiled on site as directed by the ENGINEER. When the volume of excavation is not sufficient for constructing the fill to the grades indicated, the deficiency shall be supplied from borrow sources at locations designated by the CONTRACTOR and approved by the ENGINEER or in the Special Conditions.

701-2 CLASSIFICATION

All material excavated shall be defined as "Unclassified Excavation" unless in the proposal form, prices are asked and bids are taken for "Borrow Excavation".

"Unclassified Excavation" shall include all excavation performed under this item regardless of the material encountered.

"Borrow Excavation" shall consist of approved material required for the construction of embankments or for other portions of the work, and shall be obtained from approved sources. Unless otherwise, designated in the contract, the CONTRACTOR shall make his own arrangements for obtaining borrow, and shall pay all costs involved.

The CONTRACTOR shall notify the ENGINEER sufficiently in advance of opening any borrow areas so that the borrow material can be tested before being used. Sufficient time for testing the borrow shall be allowed.

701-3 CONSTRUCTION REQUIREMENTS

701-3.1 General. The rough excavation shall be carried to the necessary depth to obtain the specified depth of subgrade compaction.

Likewise, on embankments, the depth of subgrade compaction shall be as specified. Should the CONTRACTOR, through negligence or other fault, excavate below the designated lines, he shall replace the excavation with approved materials, in an approved manner and condition, at his own expense.

The ENGINEER shall have complete control over the excavation, moving, placing and disposition of all material and shall determine the suitability of material to be placed in embankments. All material determined unsuitable shall be disposed of in waste areas or as directed. Topsoil shall not be used in fills or in subgrades but shall be stockpiled and placed as directed.

The CONTRACTOR shall inform and satisfy himself as to the character, quantity, and distribution of all material to be excavated. No payment will be made for any excavated material, which is used for purposes other than those, designated. All spoil areas shall be leveled to a uniform line and section, spread with topsoil and seeded as directed by the ENGINEER. The surface elevation of spoil areas shall not extend above the surface elevation of adjacent or contiguous usable areas unless approved by the ENGINEER.

Those areas outside of the grade raise areas in which the top layer of soil material becomes compacted, due to hauling or to any other activity of the CONTRACTOR, shall be scarified and disked to a depth of four (4) inches, as directed, to loosen and pulverize the soil.

If it is necessary to interrupt existing surface drainage, sewers, or underdrainage, conduits, utilities, or similar underground structures, or parts thereof, the CONTRACTOR shall be responsible for and shall take all necessary precautions to protect and preserve or provide temporary services. When such facilities are encountered, the CONTRACTOR shall notify the ENGINEER, who shall arrange for their removal, if necessary. The CONTRACTOR shall at his own expense, satisfactorily repair all damage to such facilities or structures, which may result from any of his operations during the period of the contract.

701-3.2 Excavation. Excavation shall be performed as indicated on the contract plans to the lines, grades, and elevation shown, or as directed by the ENGINEER, and shall be made so that the requirements for formation of embankments can be followed. All material encountered within the limits indicated shall be removed and disposed of as directed. During the process of excavation, the grade shall be maintained so that it will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the work.

If, at the time of excavation, it is not possible to place any material in its proper section of the permanent construction, it shall be stockpiled in approved areas for later use.

Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for subgrades, street, roads, shoulders, intermediate areas, or any areas intended for turfing shall be excavated to minimum depth of six (6) inches, or to the depth specified by the ENGINEER, below the contemplated surface of the subgrade or the designated grades. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified, to provide a satisfactory foundation. Unsatisfactory materials shall be disposed of at locations obtained by the CONTRACTOR and approved by the ENGINEER. All materials so excavated shall be paid for at the contract unit price per cubic yard for "Unclassified Excavation". The portion so excavated shall be refilled with suitable selected material as specified obtained from the grading operations or borrow area and thoroughly compacted by rolling. The necessary refilling will constitute a part of the embankment. Where rock cuts are made and refilled with selected material, or where trenching out is done to provide for a course of pavement, the depths thus created shall be ditched at frequent intervals to provide adequate drainage.

The CONTRACTOR shall make the distribution as indicated on the plans. Widening or narrowing of the section and raising or lowering of the grade to avoid haul will not be permitted. The right is reserved to make minor adjustments or revisions in lines or grades, if found necessary, as the work progresses due to discrepancies in the plans or to obtain satisfactory construction.

In cut areas, the subgrade under areas to be paved shall be compacted to the depths and to the densities at optimum moisture as shown on the plans or as specified in the specifications, or when not otherwise shown or specified, to a minimum depth of six (6) inches and to a density of not less than 90% of the maximum dry density at optimum moisture as determined by the compaction control tests specified in AASHTO T-180. Any unsuitable materials encountered shall be removed and paid for as specified.

No payment or measurement for payment will be made for suitable materials removed, manipulated, and replaced in order to obtain density. Any removal, manipulation, aeration, replacement, and recompaction of suitable materials necessary to obtain the required density shall be considered as incidental to the excavation and embankment operations, and shall be performed by the CONTRACTOR at no additional cost to the project.

Stones or rock fragments larger than four (4) inches in their greatest dimension will not be permitted in the top six (6) inches of the subgrade. The finished grading operations conforming to the typical cross section shall be completed and maintained at least one (1) block ahead of the paving operations.

In cuts, all loose or protruding rocks on the back slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut-and-fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the plans or as directed by the ENGINEER.

701-3.3 Borrow Excavation. When provided for in the proposal, borrow excavation shall consist of excavation made from borrow areas outside the normal grading limits. Borrow excavation shall be made only at locations approved by the ENGINEER. On completion of borrow operations, the borrow area shall be finished to a neat and uniform grade acceptable to the ENGINEER. CONTRACTOR shall then cover the area with 6" of topsoil and seed in a manner acceptable to the ENGINEER.

The borrow excavation shall be handled and placed as specified in these specifications for excavation and embankment.

701-3.4 Stripping. All vegetation such as brush, heavy sods, heavy growth of grass, decayed vegetable matter, rubbish and any other unsuitable material within the area upon which embankment is to be placed shall be stripped or otherwise removed before the embankment is started, and in no case shall such objectionable material be allowed in or under the embankment. Stripping shall be incidental to the price bid for "Unclassified Excavation".

Topsoil shall be considered unsuitable material and shall be stripped and removed before the embankment is started. The topsoil shall be stockpiled at a site approved by the ENGINEER. While the topsoil is stockpiled the CONTRACTOR shall take adequate measures to prevent loss of any topsoil due to wind erosion and water erosion.

Replacement of the topsoil shall be in accordance with Section 1801 of these specifications.

Stripping and stockpiling of the topsoil shall be incidental to the price bid for "Unclassified Excavation".

701-3.5 Formation of Embankments. Embankments shall be formed of satisfactory materials placed in successive horizontal layers of not more than twelve (12) inches in loose depth for the full width of the cross section.

The grading operations shall be conducted, and the various soil strata shall be placed, to produce a soil structure as shown on the typical cross section or as directed by the ENGINEER. All materials entering the embankment shall be reasonably free of organic matter such as leaves, grass, roots and any other objectionable material. Soil, granular material, shale, and any other material permitted for use in embankment shall be spread in successive layers as specified.

Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing weather, or other unsatisfactory conditions of the field. The CONTRACTOR shall drag, blade, or slope the embankment to provide proper surface drainage.

The materials in the layers shall be of the proper moisture content before rolling to obtain the prescribed compaction. Wetting or drying of the material and manipulation when necessary to secure a uniform moisture content throughout the layer shall be required. Should the material be too wet to permit proper compaction or rolling, all work on all portions of the embankment thus affected shall be delayed until the material has dried to the required moisture content. Sprinkling shall be done with approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times. Samples of all embankment materials for testing both before and after placement and compaction will be taken at frequent intervals. From these tests, corrections, adjustments, and modifications of methods, materials, and moisture content will be made to construct the embankment.

Rolling operation shall be continued until the embankment is compacted to not less than 95% of the maximum dry density, at optimum moisture, as determined by Standard Proctor Density (ASTM 0698). Under all areas to be paved, the embankment shall be compacted to a minimum depth of twelve (12) inches and to a density of not less than 95% of the maximum dry density at optimum moisture as determined by Standard Proctor Density (ASTM 0698). On all areas outside of the pavement, curb and gutter, and sidewalk areas, no compaction will be required on the top four (4) inches. Any areas inaccessible to a roller shall be consolidated and compacted by mechanical tampers.

During construction of the embankment, the CONTRACTOR shall route his equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

In the construction of embankments, starting layers shall be placed in the deepest portion of the fill; as placement progresses, layers shall be constructed approximately parallel to the finished pavement grade line.

Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material.

The CONTRACTOR shall be responsible for the stability of all embankments made under the contract and shall replace any portion which, in the opinion of the ENGINEER, has become displaced due to carelessness or negligence on the part of the CONTRACTOR.

There will be no separate measurement or payment for compacted embankment, and all costs incidental to placing in layers, compacting, disking, watering, mixing, sloping, and other necessary operations of the embankments will be included in the contract price for excavation, borrow, embankment or other items.

701-3.6 Equipment. The CONTRACTOR may use any type of earth moving, compaction, and watering equipment he may desire or has at his disposal, provided the equipment is in a satisfactory condition and is of such capacity that the construction schedule can be maintained as planned by the CONTRACTOR and as approved by the ENGINEER in accordance with the total calendar days or working days bid for the construction. The CONTRACTOR shall furnish, operate, and maintain such equipment as is necessary to control uniform density, layers, section, and smoothness of grade.

701-3.7 Preparation and Protection of the Top of the Subgrade. On areas to be paved, the specified depth in cut areas and the top of embankment shall be compacted to the density specified. When completed, the surface shall be true to the lines, grades, and cross section shown on the plans or as directed by the ENGINEER. After all drains, structures, ducts, and other underground appurtenances along the edges or under the pavement have been completed, the subgrade shall be compacted to a depth of six (6) inches at not less than 95% of the maximum dry density, at optimum moisture, as determined by AASHTO T-99. Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at these places and adding, removing, or replacing material until the surface is smooth and uniform. Any portion of the area, which is not accessible to a roller, shall be compacted in lifts not to exceed six (6) inches to the required density by approved mechanical tampers. The material shall be sprinkled with water during rolling or tamping, when directed by the ENGINEER.

All soft and yielding material and material, which, will not compact, readily when rolled or tamped shall be removed as directed by the ENGINEER and replaced with suitable material. After grading operations are complete, all loose stones larger than two (2) inches in their greatest dimensions shall be removed from the surface of all proposed graded gravel areas and disposed of as directed by the ENGINEER.

At all times, the top of the subgrade shall be kept in such condition that it will drain readily and effectively. In handling materials, tools, and equipment, the CONTRACTOR shall protect the subgrade from damage by laying planks when directed and shall take other precautions as needed. In no case will vehicles be allowed to travel in a single track. If ruts are formed, the subgrade shall be reshaped and recompacted to required density. Storage or stockpiling of materials on the top of the subgrade will not be permitted. Until the subgrade has been checked and approved, no subbase, base, surface course, or pavement shall be laid thereon.

701-3.8 Haul. No payment will be made separately or directly for haul on any part of the work. All hauling will be considered a necessary and incidental part of the work and its cost shall be considered by the CONTRACTOR and included in the contract unit price for the pay items of work involved.

701-3.9 Tolerances. In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a sixteen (16') foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of one-half (½) inch, or shall not be more than 0.05 of a foot from true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials, reshaping and recompacting to required density by sprinkling and rolling.

On areas to be turfed under the project or in the future outside the sidewalk, curb and gutter and pavement limits the surface shall be of such smoothness that it will not vary more than 0.10 of a foot from grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

701-4 MEASUREMENT AND PAYMENT

701-4.1 Unclassified Excavation. Unclassified Excavation shall be measured by the cubic yard (CY) as determined by the average end area method unless otherwise stated in the Special Conditions. In areas that are currently unpaved, the average end area method shall use the area between the original ground position and the final excavated area position. In areas that are currently paved, the average end area method shall use the area between the bottom of the existing pavement and the final excavated area position. Measurements shall not include the yardage of material excavated without authorization beyond normal slope lines, or the yardage of material used for purposes other than those directed. Payment shall be made at the unit price bid per cubic yard for "Unclassified Excavation", unless otherwise stated in the Special Conditions. Plan quantities shall be considered final quantities unless significant changes are made to the area to be improved.

701-4.2 Borrow Excavation. Borrow Excavation, if listed in the proposal, shall be measured by the cubic yard (CY) in its initial position and payment shall be made at the unit price bid per cubic yard for "Borrow Excavation".

701-4.3 Subgrade Preparation. Subgrade preparation shall be measured by the square yard (SY) and paid for at the unit price bid for "Subgrade Preparation", complete and accepted by the ENGINEER.

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SECTION 740
MOBILIZATION

740-1 SCOPE

The work shall consist of the mobilization of the CONTRACTOR's forces and equipment necessary for performing the work required under the contract.

It shall include the purchase of contract bonds; transportation of personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary facilities at the site, and other preparatory work at the site.

It shall not include mobilization for any specific item of work for which payment for mobilization is provided elsewhere in the contract.

The specification covers mobilization for work required by the contract at the time of award. If additional mobilization costs are incurred during performance of the contract as a result of changed or added items of work for which the CONTRACTOR is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

740-2 PAYMENT

Payment will be made as the work proceeds, after presentation of invoices by the CONTRACTOR showing his own mobilization costs and evidence of the charges of suppliers, subcontractors, and others for mobilization work performed by them. If the total of such payments is less than the contract lump sum for mobilization, the unpaid balance will be included in the final contract payment. Total payment will be the lump sum contract price for mobilization, regardless of actual cost to the CONTRACTOR.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

Payment of the lump sum contract price for mobilization will constitute full compensation for all labor, materials, equipment and all other items necessary and incidental to completion of the work.

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SECTION 803
AGGREGATE BASE COURSE

803-1 DESCRIPTION

This item shall consist of constructing aggregate base course on a prepared base. The thickness and width shall be as shown on the plans or as directed by the ENGINEER.

803-2 MATERIALS

803-2.1 **Aggregate**. The material shall conform to the requirements for Class 5 Aggregate as specified in "Standard Specifications for Road and Bridge Construction", 2002 Edition as published by the NDDOT, and all supplemental specifications.

803-2.2 **Sampling and Testing**. Only approved materials, conforming to the requirements of these specifications shall be used in the work. They may be subjected to inspection and tests at any time during the progress of their preparation or use. The source of supply for each of the materials shall be approved by the ENGINEER before delivery or use is started. Representative preliminary samples of the materials shall be submitted by the CONTRACTOR, to an independent testing lab at no cost to the OWNER when required, for examination and test. Materials shall be stored and handled to insure the preservation of their quality and fitness for use.

The CONTRACTOR shall notify the ENGINEER of the source of the coarse aggregate, which is proposed for use on the contract. Sufficient time shall be allowed so that sampling and testing can be completed prior to the beginning of construction. During the construction period the CONTRACTOR shall, at all times, make available to the ENGINEER samples of aggregate. All aggregate shall meet the requirements of these specifications.

803-3 CONSTRUCTION REQUIREMENTS

All equipment used in the performance of the work in this section shall be maintained in a satisfactory working condition at all times and shall be subject to the approval of the ENGINEER.

The subbase shall be shaped by using a blade. Any soft or yielding areas shall be removed and replaced with suitable soil by the CONTRACTOR at no expense to the OWNER. The subbase shall have a uniform density in accordance to Section 701 before the base course is placed.

The base course shall be placed to obtain a compacted depth as shown on the plans or directed by the ENGINEER. A blade and adequate compaction equipment shall be used to obtain surface smoothness so that there is no deviation in excess of one (1) inch in any ten (10) feet when tested with a ten (10) foot straightedge.

The base course shall be compacted to 95% dry density according to AASHTO T-180. Moisture content to be ± 2% of optimum.

803-4 MEASUREMENT AND PAYMENT

803-4.1 Aggregate Base Course. Aggregate Base Course shall be measured by the cubic yard (CY) as measured in place and shall be paid for at the unit price bid for "Aggregate Base Course (Class 5)", complete in place and accepted by the ENGINEER. CONTRACTOR's bid price shall include all items specified above. Failure to meet acceptance parameters will result in deducts being applied as described in the “Standard Specifications for Road and Bridge Construction," 2002 edition as published by the NDDOT and the Supplemental Specifications.

SECTION 901
HOT BITUMINOUS PAVEMENT

901-1 DESCRIPTION

This item shall consist of a hot bituminous mixture composed of mineral aggregate and bituminous material, mixed in a central mixing plant and placed on a prepared base course or existing pavement in accordance with these specifications and in conformance with the dimensions and typical cross sections shown on the plans and with the lines and grades established by the ENGINEER. The mixture shall be used for base course, overlays, leveling course and pavement construction.

The hot bituminous surface course shall be constructed as shown on the plans in lifts not to exceed two (2) inches in thickness.

The two (2) inch maximum lift thickness will be waived if the CONTRACTOR is able to demonstrate, by means of a test section, that compaction, texture and surface tolerance can be obtained for a thicker lift. If the results of the test are satisfactory, the ENGINEER will authorize the CONTRACTOR in writing to construct the thicker lift.

901-2 MATERIALS

901-2.1 Aggregate. The aggregate shall conform to the requirements for Class 29 Aggregate as specified in the "Standard Specifications for Road and Bridge Construction", 2014 edition as published by the NDDOT and the supplemental Specification.

The aggregate shall be tough, durable, and sound and shall consist of angular fragments reasonably uniform in density and quality. The aggregate shall be free of dirt and other objectionable matter and shall not contain more than 8% of thin and elongated pieces nor more than 5% of soft pieces.

The coarse aggregate shall not show evidence of disintegration nor show a total loss greater than 12% when subjected to five (5) cycles of the sodium sulfate accelerated soundness test as specified in ASTM C 88.

The fine aggregate, including any blended filler, shall have a plasticity index of not more than six (6) as determined by ASTM D 424 and a liquid limit of not more than twenty-five (25) as determined by ASTM D 423.

901-2.2 Filler. If filler, in addition to that naturally present in the aggregate, is necessary, it shall consist of stone dust, loose Portland Cement, hydrated lime, or other approved mineral matter. The filler material shall meet the requirements of ASTM D 242.

901-2.3 Bituminous Material. The bituminous material shall be accepted by certification. The asphalt supplier will certify that the product furnished to the project complies with the SHRP binder specification for a PG 58-28 binder. In order to supply asphalt material to this project by certification, the supplier shall submit a letter to the ENGINEER stating that the supplier has an established quality control plan. This Control plan must be in accordance with the January 1999 publication "Combined State Binder Group". Results of the required tests shall be sent to Interstate Engineering, Inc. P.O. Box 742 Beulah, ND 58523.

901-2.4 Job-Mix Formula. The CONTRACTOR shall submit for the ENGINEER'S approval, a job-mix formula for each mixture to be supplied for the project. The job-mix formula with the allowable tolerances shall be within the master range specified for the particular type of mixture. The job-mix formula for each mixture shall be in effect until modified in writing by the ENGINEER. The job-mix formula for each mixture shall establish a single percentage of aggregate passing each required sieve size, a single percentage of bituminous material to be added to the aggregate, and a single temperature at which the mixture is to be delivered at the point of discharge. The job-mix formulas shall be supplied by an independent testing laboratory acceptable to the ENGINEER at the CONTRACTOR'S expense.

After the job-mix formula is established, all mixtures furnished for the project shall conform thereto within the following ranges of tolerances:

Aggregate passing sieves No. 4 and larger	± 7 percent
Aggregate passing sieves No. 10, 50 & 100	± 4 percent
Aggregate passing sieve No.200	± 2 percent
Asphalt cement	± 0.4 percent
Temperature of mixing and placing	± 20°F.

The CONTRACTOR shall furnish to the testing laboratory, bituminous material from the supplier for the project. If he changes suppliers, another job mix formula shall be completed by him with this supplier's material at no cost to the OWNER.

901-3 COMPOSITION OF MIXTURE

The mineral aggregate for the hot bituminous surface course shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation specified. The percent by weight for the bituminous material shall be within the limits given. The bituminous content of the mixture shall be calculated on a percentage basis by weight of the total mix.

The composition limits tabulated shall govern, but a closer control, appropriate to the job materials will be required for the specific project in accordance with job-mix formula. The final gradations decided on, within the limits designated in the table, shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves or vice versa.

For the aggregate gradations, the mixture shall meet the requirements of the following ASTM tests, plus the stated limitations on voids, and swell:

MARSHALL STABILITY	ASTM D 1559
Number of blows each end of specimen	50
Stability (Min.)	1500
Flow (Max.) hundredths of an inch	18
Flow (Min.) hundredths of an inch	8
Percent Voids	3 to 5

A sample of the coarse and fine aggregates shall be washed to determine the percentage of the total material passing the No. 200 mesh sieve; of the amount of the material passing the No. 200 mesh sieve, at least one-half (½) shall pass the No. 200 mesh sieve by dry sieving.

The percentage of bituminous material, by weight, to be added to the aggregate shall be specified by the ENGINEER on the basis of preliminary laboratory tests and field sieve analysis furnished by the CONTRACTOR.

901-4 EQUIPMENT

901-4.1 Equipment and Organization. All methods and equipment, tools, plants, and machinery used for handling materials and executing any part of the work shall be subject to the approval of the ENGINEER before the work is started. If unsatisfactory, they shall be changed and improved as required.

901-4.2 Bituminous Mixing Plant.

General. Adequate storage space shall be provided to prevent intermingling of stockpiles containing separated aggregate sizes until the aggregates are delivered into the plant. The various units of the plant shall be designed and coordinated to permit uniform, uninterrupted production under the normal operating conditions. The plant shall be provided with means for readily obtaining representative samples and for calibrating and checking the proportions of each ingredient used in the mixture.

(a) Requirements for All Plants. Mixing plants shall be of sufficient capacity and coordinated to adequately handle the proposed bituminous construction.

(1) Plant Scales. Scales shall be accurate to within 0.5% of the required maximum load. Poises shall be designed to be locked in any position to prevent unauthorized change of position. In lieu of plant and truck scales, the CONTRACTOR may provide an approved automatic printer system to print the weights of the material delivered, provided the system is used in conjunction with an approved automatic batching and mixing control system. Such weights shall be evidenced by a weigh ticket for each load. Scales shall be inspected and sealed as often as the ENGINEER may deem necessary to assure their continued accuracy. The CONTRACTOR shall have on hand not less than ten (10) fifty (50) pound weights for testing the scales.

(2) Equipment for Preparation of Bituminous Material. Tanks for the storage of bituminous material shall be equipped to heat and hold the material at the required temperatures. Heating shall be accomplished by steam coils, electricity, or other approved means so that flame(s) will not contact the tank. The circulating system for the bituminous material shall be designed to assure proper and continuous circulation during the operating period. Provision shall be made for measuring and sampling storage tanks.

(3) Feeder for Drier. The plant shall be provided with accurate mechanical means for uniformly feeding the aggregate into the drier to obtain uniform production and temperature.

(4) Drier. The plant shall include a drier(s), which continuously agitates the aggregate during the heating and drying process.

(5) Screens. Plant screens, capable of screening all aggregate to the specified sizes and proportion and having normal capacities in excess of the full capacity of the mixer, shall be provided.

(6) Bins. The plant shall include storage bins of sufficient capacity to supply a mixer operating at full capacity. Bins shall be arranged to assure separate and adequate storage of appropriate fractions of the mineral aggregates. When used, separate dry storage shall be provided for filler or hydrated lime and the plant shall be equipped to feed such material into the mixer. Each bin shall be provided with overflow pipes of such size and at such locations to prevent backup of material into other compartments or bins. Each compartment shall be provided with its own individual outlet gate, constructed so as to prevent leakage. The gates shall cut off quickly and completely. Bins shall be so constructed that samples may be obtained readily. Bins shall be equipped with adequate telltale devices, which indicate the position of the aggregates in the bins at the lower quarter points.

(7) Bituminous Control Unit. Satisfactory means, either by weighing or metering, shall be provided to obtain the specified amount of bituminous material in the mix. Means shall be provided for checking the quantity or rate of flow of bituminous material into the mixer.

(8) Thermometric Equipment. Dual armored thermometers of adequate range shall be fixed in the bituminous feed line at a suitable location near the charging valve of the mixer unit.

The plant shall also be equipped with an approved thermometric instrument placed at the discharge chute of the drier to indicate the temperature of the heated aggregates. The ENGINEER may require replacement of any thermometer by an approved temperature recording apparatus for better regulation of the temperature of aggregates.

(9) Dust Collector. The plant shall be equipped with a dust collector to waste or return uniformly to the hot elevator all or any part of the material collected.

(10) Safety Requirements. Adequate and safe stairways to the mixer platform and sampling points shall be provided, and guarded ladders to other plant units shall be placed at all points where accessibility to plant operations is required. Accessibility to the top of truck bodies shall be provided by a suitable device to enable the ENGINEER to obtain samples and mixture temperature data. Means shall be provided to raise and lower scale calibration equipment, sampling equipment, and other similar equipment between the ground and the mixer platform. All gears, pulleys, chains, sprockets, and other dangerous moving parts shall be thoroughly guarded. Ample and obstructed passage shall be maintained at all times in and around the truck loading area. This area shall be kept free of drippings from the mixing platform.

(b) Cold Feed Control. The CONTRACTOR may elect to operate the hot plant without plant screens. The basic requirements of this method of operation are to remove all plant screens with the exception of the scalping screen. Permission to continue under this option may be rescinded upon failure to maintain production within the specified gradation limits.

The volume or tonnage placed in each of the two (2) or more stockpiles shall be such a significant portion of the whole tonnage produced, as to enable adequate control of the gradation within the job-mix formula.

Each individual aggregate shall be fed through a separate feeder that has a positive feed and that can be easily and accurately calibrated. The feed shall be quick adjusting and shall maintain a constant and uniform flow throughout the range of its calibration.

(1) Batch Plants and Continuous Mix Plants. The point of acceptance for the physical properties of the aggregates will be in the stockpiles at the plant site. Acceptance testing for aggregate gradation will be performed just prior to the addition of bituminous material to the mixture.

In batch mix plants, a surge bin shall be provided between the drier and the batch plant and the discharge into the weigh hopper shall be from one bin only which shall discharge into the center of the weigh hopper. The amount of aggregate stored in the bin at any one time shall not exceed one batch in weight and shall be fed into the bin in a manner that will prevent sluffing and segregation.

In continuous mix plants, a surge bin and mechanical feeder shall be provided. The storage in each bin shall be limited in amount so that sluffing and segregations will not occur. If more than one (1) bin is used, separation shall be accomplished in such a manner as to ensure flow to each bind and preclude segregation of the total material as obtained from the individual bins.

(c) Dryer Drum Plants. An approved dryer drum mixing process will be permitted in lieu of pug mill mixing. The system shall provide positive weight control of the cold aggregate feed, by use of a belt scale or other device, which will automatically regulate the feed gate and permit instant correction of variations in load. The cold feed flow shall be automatically coupled with the bitumen flow to maintain the required proportions. Proportioning shall be within the tolerances specified in the job-mix formula. The system shall be equipped with automatic burner controls and shall provide for temperature sensing of the bituminous mixture at discharge.

The moisture contents of the bituminous mixture at discharge from the mixer shall not exceed three (3) percent.

The temperature of the bituminous mixture at discharge from the mixer shall not exceed 300°F. The temperature of the mix at lay down shall be not less than 180°F. The actual mixing temperature shall be adjusted as directed by the Engineer within the allowable limitations to best suit construction conditions.

901-4.3 Hauling Equipment. Trucks used for hauling bituminous mixtures shall have tight, clean, smooth metal beds, which have been lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material to prevent the mixture from adhering to the beds. In adverse weather, each truck shall have a suitable cover to protect the mixture.

901-4.4 Bituminous Pavers. Bituminous Pavers shall be self-contained, power propelled units, provided with an activated screed or strike-off assembly, heated if necessary. It shall be capable of spreading and finishing courses of bituminous plant mix material, which will meet the specified thickness, smoothness, and grade. The paver shall be capable of spreading and finishing courses of bituminous plant mix material in lanes not less than ten (10) feet in width and shall be capable of operating at forward speeds consistent with satisfactory laying of the mixture.

The paver shall have a receiving hopper of sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed.

The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture.

901-4.5 Rollers. Rollers shall be in good condition, capable of reversing without backlash and shall operate at slow speeds to avoid displacement of the bituminous mixture. The number, type, and weight of rollers used shall be sufficient, to compact the mixture while the mixture is still in a workable condition. The use of equipment, which results in excessive crushing of the aggregate, will not be permitted.

901-4.6 Field Laboratory. The Field Laboratory if required shall have at least one hundred forty (140) square feet of floor space and shall be suitably weatherproofed, heated and ventilated. It shall be equipped with a sink, cold running water, an adequate supply of electricity, and benches and tables as required by the ENGINEER. A first aid kit and suitable fire extinguishers shall also be furnished.

The Field Laboratory shall have at least two (2) windows, one of which must offer a clear and unobstructed view of plant mix proportioning operations at all times.

The following items shall be furnished with the Field Laboratory:

Dial thermometers
Brass wire brush
Camel hair brush
Electric aggregate shaker
Sufficient sieves to test specified aggregate
Small containers, pans, buckets
Heavy-duty fine mesh sample sacks
Sample splitters

The Field Laboratory shall be placed on the job site prior to the start of construction and remain at the job site until the project is complete. The Field Laboratory shall be furnished incidental to the price bid for Hot Bituminous Surface Course unless otherwise stated in the Special Conditions.

901-5 CONSTRUCTION REQUIREMENTS

901-5.1 Weather and Seasonal Limitations. The Hot Bituminous Surface Course shall be constructed only when the surface is dry, the atmospheric temperature is above 40°F. and the weather is not foggy or rainy. The temperature requirement may be waived, but only when so directed by the ENGINEER.

901-5.2 Preparation of Bituminous Material. The Bituminous Material shall be heated to the mixing temperature specified in Sub-Section 901-2.3 in a manner that will avoid local overheating and provide a continuous supply of the bituminous material to the mixer at a uniform temperature at all times.

901-5.3 Preparation of Mineral Aggregate. The aggregate for the mixture shall be dried and heated at the paving plant before entering the mixer. When introduced into the mixer, the combined aggregate shall not contain more than 0.5% moisture. Water in the aggregate shall be removed by heating to the extent that there is no subsequent foaming in the mixture prior to the placing of material. The aggregate shall be heated to temperature as designated by the job-mix formula within the job tolerance specified. The maximum temperature and rate of heating shall be such that no permanent damage occurs to the aggregates. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by heating. The aggregate shall be screened to specified sizes and conveyed into separate bins ready for mixing with bituminous material.

901-5.4 Preparation of Bituminous Mixture. Before delivery, the aggregate shall be mixed with the bituminous material at a central mixing plant. The mixture shall be prepared at a temperature as shown in Sub-Section 901-2.3.

The dry aggregates, prepared as specified in 901-5.3 shall be combined in the plant in proportionate amounts of each fraction of aggregate required to meet the specified gradation. The quantity of aggregate for each batch shall be determined, measured and conveyed into the mixer. In case of volumetric proportioning, the size of the grate openings shall be determined, and the gates locked in position.

The quantity of bituminous material for each batch of calibrated amount shall be determined by the ENGINEER. The bituminous material shall be measured by weight or volume and introduced into the mixer at the specified temperature, using the lowest range possible for adequate mixing and spreading. For batch mixers, all mineral aggregates shall be in the mixer before the bituminous material is added. The exact temperature within the specified range shall be fixed by the ENGINEER. As determined by the ENGINEER the mixing shall continue for the time necessary to coat all particles uniformly. This time is dependent upon the mix designs and the type of mixing equipment used.

901-5.5 Transportation and Delivery of the Mixture. The mixture shall be transported from the mixing plant to the point of use in vehicles such as described in Sub-Section 901-4.3.

The mixture shall be placed at a minimum temperature of 225°F. When mixture is being placed during warm weather and the ENGINEER has determined that satisfactory results can be obtained at lower temperatures, he may direct that the mixture be mixed and delivered at the lower temperatures.

Loads shall not be sent out so late as to interfere with spreading and compacting the mixture during daylight unless artificial light, satisfactory to the ENGINEER, is provided. The mixture shall be delivered at a temperature within the tolerance specified in the approved job-mix formula.

901-5.6 Spreading and Laying.

(a) Preparation for Placing. Immediately before placing the bituminous mixture, the existing underlying course shall be cleaned of loose or deleterious materials and tacked in accordance with Section 902.

The mixture shall be laid only upon an approved underlying course, which is dry and only when weather conditions are suitable. No mixture shall be placed when air temperature away from the artificial heat is 40°F. or lower, unless so directed by the ENGINEER. The ENGINEER may, however, permit work of this character to continue when overtaken by sudden rains, up to the amount, which may be in transit from the plant at the time, provided the mixture is within the temperature limits specified.

Placing shall commence at the point(s) farthest from the mixing plant and progress continuously toward the plant, unless otherwise ordered by the ENGINEER. Hauling over material already placed shall not be permitted until the material has been thoroughly compacted as specified and allowed to cool to atmospheric temperature.

(b) Machine Spreading Hot Bituminous Surface Course. Upon arrival, the Hot Bituminous Surface Course mixture shall be dumped into an approved bituminous paver and immediately spread to the full width required. It shall be struck off in a uniform layer of such depth that, when the work is completed, it will have the required thickness and will conform to the grade and surface contour required. The speed of the paver shall be regulated to eliminate the pulling and tearing of the bituminous mat.

The mixture shall be placed in strips of uniform width. To ensure proper drainage, the spreading shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope. After the first strip or width has been compacted, the second width shall be placed, finished and compacted in the same manner as the first width. After the second strip has been placed and rolled, a ten (10) foot straightedge shall be placed across the longitudinal joint to determine if the surface conforms to grade and contour requirements.

Exposed vertical edges of paved strips shall be free of all accumulations of dirt or other foreign material before any mixture is spread in an adjacent lane. If joint faces become dry or dusty, the contact surfaces shall be given a brush coat of asphalt. In lieu of painting the contact surfaces, the CONTRACTOR may use a joint heater approved by the ENGINEER. If the spreading machine should drift from an adjacent lane during construction, the unfilled space shall be carefully filled with fresh hot mixture obtained from truck or the hopper of the spreading machine. Stealing mixture from that already spread to fill up these areas shall not be permitted.

In areas where due to irregularities or unavoidable obstacles, the use of mechanical spreading and finishing equipment is not practical, the mixture may be hand spread.

901-5.7 Compaction of Mixture. The hot bituminous surface course shall be compacted by one of the following methods:

(a) Method A. Breakdown rolling shall consist of one (1) complete coverage with a tandem type steel wheel roller with a fully ballasted gross weight of ten (10) tons or more. Intermediate rolling shall be performed with the same roller. For intermediate rolling the passes of the roller shall overlap each other by one half (½) the width of the lead steel roller and a minimum of two (2) complete passes shall be made.

Finish rolling shall be performed with a self-propelled pneumatic roller. This roller shall be equipped with not less than seven (7) wheels with smooth tread tires of equal size and uniformly inflated. The wheels shall be staggered on the front and rear axles to provide a complete coverage of the area the roller covers. This rolling shall continue until all roller marks and other paving irregularities are removed.

Roller operating conditions shall be approved by the ENGINEER. All rollers shall be equipped with a system to uniformly moisten compaction wheels and tires without excessive water.

(b) Method B. Initial rolling shall consist of one (1) to four (4) complete passes of a vibratory steel face roller, depending on depth and as established by the ENGINEER. The front drum of the roller shall be steel and have a minimum width of seven (7) feet. The amplitude shall be variable with a maximum dynamic force of at least 27,000 pounds.

The CONTRACTOR shall test roll a section to establish a satisfactory amplitude of operation under the surveillance of the ENGINEER. This test section may be a portion of the project and shall be paid for at the price bid for Hot Bituminous Surface Course.

The intermediate rolling shall use the same roller except that the amplitude shall be reduced. A minimum of two (2) complete passes with a minimum of six (6) inches overlap shall be required.

Finish rolling shall be performed with a self-propelled pneumatic roller. This roller shall be equipped with not less than seven (7) wheels with smooth tread tires of equal size and uniformly inflated. The wheels shall be staggered on the front and rear axles to provide a complete coverage of the area the roller covers. This rolling shall continue until all roller marks and other paving irregularities are removed.

Roller operating conditions shall be approved by the ENGINEER. All rollers shall be equipped with a system to uniformly moisten compaction wheels and tires without excessive water.

901-5.8 Joints.

(a) General. The mixture at the joints shall comply with the surface requirements and present the same uniformity of texture, density, smoothness, etc., as other sections of the course. In the formation of all joints, provision shall be made for proper bond with the adjacent course for the specified depth on the course. Joints shall be formed by cutting back on the previous day's run to expose the full depth of the course. The exposed edge shall then be given a light paint coat of asphalt, as required by the ENGINEER, and the fresh mixture raked against the joint.

(b) Transverse. The placing of the course shall be as continuous as possible. The roller shall pass over the unprotected end of the freshly laid mixture only when discontinuing the laying of the course.

(c) Longitudinal. The placing of the course shall be as specified and in such a manner that the joint is exposed for the shortest period possible. The joint shall be placed so that it will not coincide with that in the base, binder or existing course by at least one (1) foot.

901-5.9 Shaping Edges. While the surface is being compacted and finished the CONTRACTOR shall carefully trim the outside edges of the pavement to the proper alignment. The edge so formed shall be beveled while still hot with the back of the rake or a smoothing iron.

901-5.10 Surface Tests. Tests for conformity with the specified crown and grade shall be made by the CONTRACTOR immediately after initial compression. Any variation shall be corrected by the removal or addition of materials and by continuous rolling.

The finished surface shall not vary more than 3/8 inch when tested with a ten (10) foot straightedge applied parallel with, or at right angles to, the centerline.

After the completion of final rolling, the smoothness of the course shall again be tested; the humps or depressions exceeding the specified tolerances or that retain water on the surface shall be corrected immediately as directed by the ENGINEER; this shall be done at the CONTRACTOR'S expense.

901-5.11 Bituminous and Aggregate Material Contractor's Responsibility. Samples of the bituminous and aggregate materials that the CONTRACTOR proposes to use, together with a statement of their source and character, shall be submitted to the ENGINEER; approval must be obtained before the use of such material begins. The CONTRACTOR shall require the manufacturer or producer of the bituminous and aggregate materials to furnish material subject to this and all other pertinent requirements of the contract. Only those materials that have demonstrated performance under the proposed design requirements will be accepted.

The ENGINEER or his authorized representative shall have access, at all times, to all parts of the paving plant for the purpose of inspecting equipment, conditions and operation of the plant, for verification of weights or proportions and character of materials, and to determine temperatures maintained in the preparation of the mixtures.

The CONTRACTOR shall furnish vendor's certified test reports for each carload or equivalent of bitumen shipped to the project. The report shall be delivered to the ENGINEER before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of materials received for use on the project. Two (2) one (1) pint can samples for each transport load delivered to the project shall be taken by the CONTRACTOR under the supervision of the ENGINEER and stored by the ENGINEER for the warrantee period.

901-6 MEASUREMENT AND PAYMENT

901-6.1 <u>Bituminous Material</u>: Bituminous material shall be measured by the ton and paid for at the unit price bid for “Bituminous Material, PG 58-28” complete, in place and accepted by the ENGINEER. Only bituminous material incorporated into accepted pavement will be paid for.

901-6.2 <u>Hot Bituminous Pavement – Class 29</u>: Hot Bituminous Pavement – Class 29 shall be measured by the ton and paid for at the unit price bid for “Hot Bituminous Pavement – Class 29” complete, in place and accepted by the ENGINEER. Recorded batch weights or truck scale weights will be used to determine the basis for the tonnage. Failure to meet acceptance parameters will result in deducts being applied as described in the “Standard Specifications for Road and Bridge Construction," 2014 edition as published by the NDDOT and the Supplemental Specifications.

SECTION 1801
SEEDING

DESCRIPTION: This item shall consist of seeding the areas specified or directed by the ENGINEER in accordance with these specifications.

MATERIALS

1801-2.1 Seed: Seed and seeding mixtures shall be free of all prohibited noxious weed seed and shall not contain more than five-tenths (0.5%) percent by weight of restricted noxious weed seeds. Prohibited and restricted noxious weeds shall be those classified by the State Seed Department.

All seed containers shall be sealed and labeled to comply with existing North Dakota Seed Laws and Regulations or in accordance with U. S. Department of Agriculture Rules and Regulations under the Federal Seed Act, if shipped in Interstate Commerce.

Seed which has become wet, moldy or otherwise damaged in transit or storage will not be acceptable.

The rate of seed application per acre shall be as follows:

4 lbs. Rye Grass
6 lbs. Kentucky Blue Grass
6 lbs. Slender Wheat Grass
6 lbs. Brome Grass

1801-2.2 Topsoil: Topsoil shall consist of loose, friable, loamy topsoil that is free of excess acid and alkali. It shall be free from objectionable amounts of sod, hard lumps, gravel, subsoil or other undesirable material, which will prevent the formation of a suitable seedbed. Topsoil shall, prior to being stripped, have demonstrated by the occurrence upon it of healthy crops, grass or other vegetable growth that is of good quality, and that is reasonably well drained.

CONSTRUCTION REQUIREMENTS

1801-3.1 General: Seeding shall be accomplished before July 1st and after September 1st of each year. The areas to be seeded shall be cleared of all debris, rank vegetation and other material that is detrimental to the preparation of a seedbed. The stockpiled topsoil shall be placed on the areas thus cleared and shaped or bladed by approved equipment to a minimum depth of four (4) inches and to the plan cross section, or to such cross section that best fits the existing conditions. The areas thus prepared shall be disked, harrowed, raked, or worked by some other approved method, into a reasonable smooth, even seedbed. The surface of the prepared seedbed shall be firm enough to take and hold the seed without undue loss from high winds or ordinary rain-fall. If rolling is necessary to secure this, it shall be done prior to the seeding and with an approved roller, the weight of which shall be dependent upon the particular soil conditions.

Seed shall be sown by means of a force feed drill with a grass seed attachment, except that on slopes steeper than three to one or on areas too small to be seeded with a force feed drill, seed may be sown by power sprayers, blowers or other approved methods. All equipment shall be in good working order and shall be approved by the ENGINEER.

No seed shall be sown during winds that are strong enough to prevent it from being properly embedded into the surface.

Areas to be seeded shall include all natural grass areas disturbed by construction including embankments slopes and berm shaped areas.

MEASUREMENT AND PAYMENT

1801-4.1 Seeding: Seeding shall be measured by the Lump Sum (LS) and paid for at the unit price bid for “Seeding” complete in place and accepted by the ENGINEER.

SECTION 1808
TESTING LABORATORY SERVICES

1808-1 DESCRIPTION

1808-1.1 Work Included: From time to time during progress of the Work, the OWNER may require that testing be performed to determine that materials provided for the Work meet the specified requirements; such testing includes, but is not necessarily limited to:

1. Soil Compaction;
2. Aggregate Testing;
3. Materials related to hot bituminous pavement.

1808-1.2 Related Work Described Elsewhere: Requirements for testing may be described in various sections of the Specifications; where no testing requirements are described but the OWNER decides that testing is required, the OWNER may require testing to be performed under current pertinent standards for testing.

1808-1.3 Work Not Included:

A. Selection of testing laboratory: The ENGINEER will select a pre-qualified independent testing laboratory.

B. Payment for initial testing services: The OWNER will not pay for job mix formulas and mix designs specified else where.

C. Concrete Testing: Concrete testing described elsewhere shall be incidental to those bid items it is incorporated into.

1808-1.4 Quality Assurance:

A. Qualifications of testing laboratory: The testing laboratory will be qualified to the OWNER'S approval in accordance with applicable ASTM Standards.

B. Codes and Standards: Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.

1808-1.5 Product Handling: Promptly process and distribute all required copies of test reports and related instructions to ensure all necessary retesting and/or replacement of materials with the least possible delay in progress of the Work.

1808-1.6 Cooperation with Testing Laboratory: Representatives of the testing laboratory shall have access to the Work at all times; provide facilities for such access in order that the laboratory may properly perform its functions.

1808-1.7 Schedules for Testing:

A. Establishing schedule:

1. By advance discussion with the testing laboratory selected, determine the time required for the laboratory to perform its tests and to issue each of its findings.
2. Provide all required time within the construction schedule.

B. Revising schedule: When changes of construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.

C. Adherence to schedule: When the testing laboratory is ready to test according to the determined schedule but is prevented from testing or taking specimens due to incompleteness of the Work, all extra costs for testing attributable to the delay may be back-charged to the CONTRACTOR and shall not be borne by the OWNER.

1808-1.8 Taking Specimens: All specimens and samples for testing, unless otherwise provided in these Contract Documents, will be taken by the testing laboratory; all sampling equipment and personnel will be provided by the testing laboratory; and all deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.

1808-2 PAYMENT

1808-2.1 Payment for Testing Services:

A. Initial services:

1. The OWNER will pay for all initial testing services requested by the ENGINEER.
2. When initial tests indicate non-compliance with the Contract Documents, the costs of initial tests associated with that non-compliance shall be paid for by the CONTRACTOR and will not be reimbursed to the CONTRACTOR by the OWNER.
3. A lump sum is included in the Bidder's Proposal for testing laboratory services. The CONTRACTOR shall pay the testing laboratory and he will be reimbursed from this lump sum in accordance with legitimate invoices submitted by the testing laboratory. The final lump sum amount will vary from that shown in the Bidder's Proposal and will be dependent on the costs of approved tests required.

B. Retesting: When initial tests indicate non-compliance with the Contract Documents, all subsequent retesting occasioned by the non-compliance, shall be performed by the same testing laboratory and the costs thereof will not be reimbursed to the CONTRACTOR.

C. Code Compliance Testing: Inspections and tests required by codes or ordinances, or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the CONTRACTOR, unless otherwise provided in the Contract Documents.

D. Contractor's Convenience Testing: Inspection or testing performed exclusively for the CONTRACTOR'S convenience shall be the sole responsibility of the CONTRACTOR.

SECTION 1900
SPECIAL PROVISIONS

1900-1 GENERAL: The Special Conditions stated hereinafter shall supercede any conflicting variances stated in these specifications.

1900-2 TECHNICAL SPECIFICATIONS: Technical Specifications for the work items referred to are the "North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction", adopted October, 2014, except as amended herein. Where the word "Director" is used, replace with "Stanton City Council"; the "ENGINEER" shall be Interstate Engineering, Inc.

1900-3 UTILITY COMPANIES: Notice to utilities shall be given by the CONTRACTOR. This notice shall state his contemplated starting date, construction schedule and areas to be disturbed.

Utilities known to exist in the project area are:

Utility	OWNER
Water	City of Stanton
Sewer	City of Stanton
Telephone	West River Telephone
Cable TV	Midcontinent Communications
Electrical	City of Stanton

This list is not meant to be inclusive and other utilities may exist within the project area. The CONTRACTOR is required to give 48 hour notice to all utilities within the project area of pending construction.

The utilities shown on the plans were obtained from the various utility companies' as-built drawings and the utility locations shown are to be considered approximate locations. Existing utilities may exist at locations not shown on the plans.

1900-4 CONTRACTOR RESPONSIBILITY: The CONTRACTOR shall take due care to protect surfaces surrounding the work areas to avoid damage to public or personal property. Any concrete drives, sidewalks, shrubbery, trees, sprinkler systems, mailboxes, or other adjacent items damaged by the CONTRACTOR and not considered part of the repairs under this project shall be repaired or replaced in kind at the CONTRACTOR'S expense.

The CONTRACTOR is responsible to contact representatives of nearby counties or other local governments to determine available haul roads, restrictions on those roadways, and work and materials required to maintain and restore those roadways. Costs of maintenance and restoration are considered incidental to other items of work.

The CONTRACTOR shall make personal contact with each resident in the work areas at least 48 hours prior to the work taking place to notify them of the project impacting access to their property, their temporary connections and its use, and to allow time to move any vehicles. The CONTRACTOR shall be responsible to inform all residents in the area where sewer main and service lines are being installed and construction activities are taking place in order to have vehicles moved off the streets around the project area, and proper planning may take place to allow for temporary access to their property during construction. Should private mailboxes be impacted by the project operations, the CONTRACTOR shall notify the resident that the mailbox will be removed and replaced to its previous condition per the requirements of these Specifications, and should any mailbox become damaged during/due to construction operations the CONTRACTOR is responsible for replacing it in kind. The OWNER is not responsible for insuring private mailboxes impacted by this project will be usable for the private property owner(s) and the CONTRACTOR shall insure that each resident impacted by the project are still capable of receiving their mail.

As per Section 215 of these specifications, the CONTRACTOR shall proceed with the work and complete within the time allotted. Delays caused by weather, contractual, or other problems on other projects will not be considered as unforeseeable causes on this project, and no release from this project or time extension will be granted to allow the CONTRACTOR to complete work elsewhere.

1900-5 MOBILIZATION: This item shall consist of any and all necessary means to mobilize the CONTRACTOR'S forces for performing the work required under the contract. It shall include the purchase of contract bonds; transportation of personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary facilities at the site, and other preparatory work at the site.

It shall not include mobilization for any specific item of work for which payment for mobilization is provided elsewhere in the contract.

The specification covers mobilization for work required by the contract at the time of award. If additional mobilization costs are incurred during performance of the contract as a result of changed or added items of work for which the CONTRACTOR is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the items of work changed or added.

Payment will be made as the work proceeds, after presentation of invoices by the CONTRACTOR showing his own mobilization costs and evidence of the charges of suppliers, subcontractors, and others for mobilization work performed by them. If the total of such payments is less than the contract lump sum for mobilization, the unpaid balance will be included in the final contract payment. Payment for this item will be at the unit price bid per LSUM, regardless of the actual cost to the CONTRACTOR.

1900-6 CONSTRUCTION SIGNING & TRAFFIC CONTROL: This item shall consist of barricades, lane closure & warning signs, street closure & warning signs, lights, and flagging for the protection of the work and safety of the public. All devices shall conform to "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD) as published by the Federal Highway Administration. Barricades, street closure & warning signs, temporary signals and other protective devices shall be considered incidental to the project.

The CONTRACTOR shall coordinate with the OWNER and ENGINEER when planning road closures & traffic control during the construction operations. Prior to starting the work, a traffic control plan shall be submitted to the ENGINEER for approval. Additional guidelines are provided in this Specification.

Construction signing shall be considered an integral part of the work being performed and no work will be permitted until adequate construction signing has been erected & established. The CONTRACTOR shall provide the ENGINEER and OWNER a Traffic Control Plan prior to the start of any work, and primary control shall be shown as follows:

a. During operations along North Dakota Highway 31 and within its right-of-way, traffic control shall be in place during all operations and lane closures as per the plans and specifications.
b. Residential traffic shall be routed around the active work area via other streets or avenues so that residents can access their homes. Alley ways shall remain open to allow secondary access to residents.

1900-7 PAVEMENT REMOVAL

1900-7.1 General: Pavement removal shall consist of removing and disposing of the asphalt from around manholes to be installed or adjusted and from above pipelines to be installed.

1900-7.2 Construction Requirements: The CONTRACTOR shall mark the area of asphalt to be removed for each manhole which is to be replaced. Pavement removal shall be accomplished by utilizing a saw cut through the full depth of the pavement. This saw cut shall be in a straight line and shall be cut to form a neat edge. Asphalt removed shall be disposed of at a site provided by the CONTRACTOR and reviewed by the ENGINEER.

The CONTRACTOR shall follow all OSHA requirements regarding trench safety including, width and trench side slopes. The CONTRACTOR may use a trench box or sheeting to minimize trench width or to stay within the width allowance described in Sub-Section 1900-22.3.

1900-7.3 Measurement and Payment: Asphalt removal shall be measured by the square yard (S.Y.) and paid for at the unit price bid for "Pavement Removal" complete in place and accepted by the ENGINEER. Where a single pipe is being replaced, a pavement section 15 ft wide will be the maximum width paid for unless the existing pavement edge is within 2 feet of the removal or the plans call out a larger width due to

depth of excavation. If the CONTRACTOR removes less than a 15 foot width, then the lesser width shall be measured and used to calculate the square yards of pavement removal for that area. Pavement removed in excess of 15 feet shall be the responsibility of the CONTRACTOR and will not be paid for by the OWNER, unless the existing pavement edge is within 2 feet of the removal area. No adjacent curb and gutter can be removed and if necessary the CONTRACTOR shall narrow his trench and provide adequate support incidental to removal. The only exception to this width restriction shall be in areas noted on the plans.

Around manholes that require the removal and replacement of the manhole, the asphalt removed shall be a maximum of thirty (30) feet by thirty (30) feet with the manhole as the center shall be paid for at each manhole installation location. If, for the installation of a manhole, the CONTRACTOR removes less than a 30 foot width of pavement, then the lesser width shall be measured and used to calculate the square yards of pavement removal for that area. Pavement removed in excess of 30 feet in this area shall be the responsibility of the CONTRACTOR and will not be paid for by the OWNER.

The cost of meeting OSHA requirements for trench safety and the cost of trench sheeting and/or use of a trench box shall be the responsibility of the CONTRACTOR.

1900-8 REMOVAL OF EXISTING SEWER

1900-8.1 DESCRIPTION: This item shall include the removal and disposal of existing sewer pipes.

1900-8.2 CONSTRUCTION REQUIREMENTS. The CONTRACTOR shall remove and dispose of all existing sewer pipes at locations of new sewer pipes as shown on the plans. All materials removed shall be disposed offsite in accordance with all local and governmental laws and regulations.

1900-8.3 MEASUREMENT AND PAYMENT. Removal and disposal of existing sewer pipe shall be incidental to the installation of new sewer pipes.

1900-9 BACKFILL SETTLEMENT

Where the CONTRACTOR has installed backfill in trenches or other excavations, and where settlement has occurred prior to the CONTRACTOR'S bond expiration date, the CONTRACTOR shall return the surface to required grade. In paved areas, the CONTRACTOR shall add paving materials in a method satisfactory to the ENGINEER. If no satisfactory method of adding pavement exists, the CONTRACTOR shall remove the pavement, recompact the subgrade and repave the area. In turfed areas, the area of settlement shall be filled with black dirt and the area seeded or sodded replaced. In aggregate areas, additional aggregate shall be added to the depressed area to return the depression to grade. All costs associated with correcting settlement shall be the expense of the CONTRACTOR.

1900-10 TEMPORARY STREET REPAIR

1900-10.1 Temporary Street Repair: Immediately after completing pipe or manhole installation the CONTRACTOR shall backfill the trench as per the specifications to the subgrade level. The CONTRACTOR shall then place compacted, aggregate base course material to the level of the surrounding pavement and shall maintain said aggregate until paving operations on that segment commence. Immediately prior to paving operations, the CONTRACTOR shall remove any excess aggregate base course material from the trench and recompact the remaining aggregate base course material if necessary to achieve specified base course compaction. The excess material shall remain the property of the CONTRACTOR. The CONTRACTOR will be paid for six inches of aggregate base as depicted in Section 1900-18 of these specifications, or as approved by the ENGINEER. The cost of the extra material and its placement, removal and stockpiling shall be incidental to the project.

1900-11 BACKFILL CLASS

Backfill shall be Class B for all areas under improved streets or alley ways. Class C shall be used in unimproved areas.

1900-12.5 Installation Responsibilities:

1900-12.5.1 Cleaning of Sewer Lines. The CONTRACTOR shall be responsible for removing any and all debris out of the sewer line that will interfere with the installation of the cured-in-place pipe or the connection of new and old sewer mains or services. This shall include all root removals and protruding taps from the pipe.

1900-12.5.2 Bypassing Sewers. The CONTRACTOR shall provide for the flow of sewage around the sections of pipe designated for repair as required by the CONTRACTOR'S schedule. The bypass shall be made by plugging the line at an upstream manhole and pumping the flow around the repair site to a downstream manhole.

1900-12.5.3 Inspection of Pipelines. Inspection of pipeline prior to installation shall be performed by experienced personnel trained in locating breaks, obstacles, and service connecting by closed circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of cured-in-place pipe into pipelines, and it should be noted so that those conditions can be corrected. A digital file and suitable log shall be kept for later reference by the OWNER.

1900-12.5.5 Public Notification. The CONTRACTOR shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be out of service, the maximum amount of time of no service shall be 12 hours for any property served by the sewer. A public notification program shall be implemented, and shall as a minimum require the CONTRACTOR to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. The CONTRACTOR shall also provide the following:

Written Notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the CONTRACTOR that the property owner can call to discuss the project or any problems which could arise.

Personal contact with any home or business which cannot be re-connected within the time stated shall be in the written notice.

1900-13 TEMPORARY SEWAGE BYPASS

At no time will raw sewage be allowed to be dumped on private property or in the street right-of-way. The CONTRACTOR shall bypass the sewage around the section or sections off line that are to be lined or replaced. The bypass shall be made by plugging an existing upstream manhole if necessary and pumping the sewage into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. Sewage shall be bypassed around construction activities with no interruptions. The cost of the temporary sewage bypass shall be considered incidental to the price of the bid item requiring the bypass. If sewage backup occurs and enters buildings, the CONTRACTOR shall be responsible for cleanup, repair and damage claims.

1900-14 SANITARY SEWER SERVICE CONNECTIONS AND RISERS

1900-14.1 DESCRIPTION

This item shall consist of furnishing and reconnecting existing sanitary sewer service connections from the main lines to the existing sewer service pipes. The materials, equipment, and construction methods shall be in full compliance with the State Plumbing Code, regulations set forth by the North Dakota DEQ and in accordance with these specifications and plans.

1900-14.2 MATERIALS

Polyvinyl Chloride Sewer Pipe shall conform to Sub-Section 401-2.6. Transition adapters for connections between clay tile and ductile pipe to PVC pipe shall be manufactured by Fernco or approved equal with stainless steel accessories.

1900-14.3 CONSTRUCTION REQUIREMENTS

Construction requirements shall be done in accordance with plans and conform to Sub-Section 401-3. Connections to existing sewer services shall be done using appropriate wyes, bends, service and riser pipe and adaptors as needed to facilitate the connections.

1900-14.4 MEASUREMENTS AND PAYMENT

Connection of existing sewer services to the new sewer pipes, installation of bends, adapters, and all service and riser pipes shall be incidental to the installation of the new sewer wye and service. Sewer wyes and services will be measured and paid for according to 401-4.6.

1900-15 PIPECLEANING/TELEVISING

Cleaning and televising of sanitary sewer pipe shall be performed after the pipe work is complete at all locations where the CONTRACTOR has performed any pipe work (open-cut, spot repairs, lining, and top hat installation). This cleaning and televising shall be from the nearest upstream manhole to the nearest downstream manhole, not just the location of the repair/work. Videos must be in color; the camera shall be self-leveling and the camera shall be able to pan/tilt to rotate and check on services. Water for cleaning activities shall be supplied by the City. Material removed from the sewers shall be disposed of at a location reviewed by the ENGINEER. The CONTRACTOR shall furnish one (1) televising report and one (1) digital format copy to the ENGINEER for each pipe cleaned and televised, the cost of which shall be incidental to the price bid for sewer main work. All labor, materials, water and equipment required to properly clean and televise sanitary sewers shall be incidental to the repair bid item for that sewer pipe.

1900-16 RECONNECT SANITARY SEWER PIPE

1900-16.1 Description. This item shall consist of connecting the new sanitary sewer pipe to the existing sanitary sewer main pipe or directly into the manhole.

All materials, equipment and construction methods shall be in full compliance with the state plumbing code regulations and the North Dakota DEQ and in accordance with their specifications.

1900-16.2 Materials. All material shall conform to Section 401 and 402 of these specifications. Transition adapters for connections between clay tile or concrete pipe to PVC pipe shall be manufactured by Fernco or approved equal with stainless steel accessories.

1900-16.3 Construction Requirements. Construction requirements shall conform to Section 401 and 402 of these specifications.

1900-16.4 MEASUREMENT AND PAYMENT

1900-16.4.1 Reconnection of the new sanitary sewer pipe to the existing sanitary sewer pipe or into the manhole shall be considered incidental to the installation of the new sewer pipe.

1900-17 GROUT MANHOLE INVERT

Manhole inverts shall be grouted in areas shown on the plans and as specified in the specifications. The manhole invert shall be thoroughly cleaned prior to grout being added. Grout shall be placed as specified in section 402 of these specifications.

Grouting the manhole invert shall be measured on an individual unit basis (EA) and paid for at the unit price bid for “Grout Manhole Invert”, complete and accepted by the ENGINEER. All labor and materials necessary to complete the grouting process shall be included in this line item.

1900-18 AGGREGATE SURFACING

This item shall consist of supplying and installing aggregate surfacing material to repair road and driveways. It shall not include material to provide aggregate base or temporary aggregate surfacing as specified elsewhere.

All materials installed shall conform to Section 803 of these specifications.

Aggregate surfacing shall be measured by the cubic yard in place (CY) and paid for at the unit price bid for “Aggregate Surfacing” complete in place and accepted by the ENGINEER. Only material in areas authorized and observed by the ENGINEER will be allowed for payment under this item. Any material delivered or installed when the ENGINEER is not on site and observing shall not be measured or paid for.

1900-19 HOT BITUMINOUS PAVEMENT

1900-19.1 Description: These items shall consist of installing aggregate base and pavement as shown on the plans and in accordance with these specifications.

1900-19.2 Materials:

1900-19.2.1 Aggregate Base Course: Aggregate base course shall conform to the requirements of 803.

1900-19.2.2 Hot Bituminous Base Course: Hot bituminous base course shall conform to the requirements of 901-2.

1900-19.2.3 Hot Bituminous Surface Course: Hot bituminous surface course shall conform to the requirements of 901-2.

1900-19.2.4 Tack Oil: Tack oil shall be SS-1h and conform to the requirements of 902-2.

1900-19.2.5 Fog Seal Coat: Fog Seal Coat shall be CRS-2 and conform to the requirements of 904-2. Blotter shall be used where necessary.

1900-19.3 Construction Requirements:

1900-19.3.1 Subgrade Preparation: The subgrade shall be brought to bottom of base elevation and compacted to meet the requirements for the trench. The subgrade must be smooth and uniform. Any soft or yielding areas shall be removed and replaced with suitable soil by the CONTRACTOR at no additional expenses to the OWNER.

1900-19.3.2 Valve Boxes and Castings: Prior to the start of any paving, all valve boxes and manhole castings shall be adjusted to match final pavement elevation. If required, adapters or adjusting rings shall be installed. This work is considered incidental to pavement removal and replacement.

1900-19.3.3 Tack Coat: Prior to paving a tack coat of 0.07 gallons per square yard shall be applied to the subgrade and edge of existing pavement in such a manner as to assure uniform coverage.

A tack coat of 0.05 gallons per square yard shall be applied between the hot bituminous base course and the hot bituminous surface course.

1900-19.3.4 Aggregate Base Course: Aggregate base course shall conform to the requirements of Section 803.

1900-19.3.5 Hot Bituminous Base Course: The hot bituminous base course shall conform to the requirements of Section 901. Prior to placement of hot bituminous base course, the existing pavement shall have a vertical face.

1900-19.3.6 Hot Bituminous Surface Course: The hot bituminous surface course shall conform to the requirements of Section 901.

1900-19.3.7 Fog Seal Coat: The Fog seal coat shall be CRS-2 and conform to the requirements of the NDDOT Standard Specifications. An application rate of 0.06 Gallon/SY shall be used. This shall be diluted 50/50 with water and applied in 2 passes.

1900-19.3.8 Pavement Section: The replacement pavement section shall be as follows:

Prepared Subgrade
6" Aggregate Base Course
2" Hot Bituminous Base Course
Tack Coat
2" Hot Bituminous Surface Course
Fog Coat

1900-19.3.9 Completion Date: The CONTRACTOR shall place the hot bituminous material and fog seal coat and shall be completed by September 30th, 2020.

1900-19.3.10 Temporary Street Repair: Immediately after completing pipe or manhole installation the CONTRACTOR shall backfill the trench as per the specifications to the subgrade level. The CONTRACTOR shall then place compacted, aggregate base course material to the level of the surrounding pavement and shall maintain said aggregate until paving operations on that segment commence. Immediately prior to paving operations, the CONTRACTOR shall remove any excess aggregate base course material from the trench and recompact the remaining aggregate base course material if necessary to achieve specified base course compaction. The excess material shall remain the

property of the CONTRACTOR. The cost of the extra material and its placement, removal and stockpiling shall be incidental to the price bid for “Pavement Replacement”.

1900-19.3.11 Measurement and Payment: Pavement replacement shall be measured by the ton and paid for at the unit price bid for "Pavement Replacement” complete in place and accepted by the ENGINEER. Measurement shall only be along pipe placed under pavement and at manholes as described in section 1900-7.

1900-20 PERMITS:

The CONTRACTOR is responsible for obtaining all necessary permits from the state or other agencies prior to construction operations. The CONTRACTOR shall contact the North Dakota DEQ for information regarding any storm water permits that may be required. The North Dakota DEQ can be contacted at:

North Dakota Department of Environmental Quality
Division of Water Quality
1200 Missouri Avenue, Room 203
PO Box 5520
Bismarck, ND 58506-5520
Telephone: (701) 328-5210
http://www.health.state.nd.us/wq/Storm/StormWaterHome.htm

It is mandatory that the CONTRACTOR fulfill all requirements as directed by the North Dakota DEQ.

Any costs associated with obtaining the necessary permits shall be considered incidental to the project.

1900-21 UTILITIES ADJUSTMENTS

1900-21.1 Description: This item shall include the resetting of manhole frames and covers, water works, valve access covers, boxes or any other accessory items requiring adjustment to new lines and grades in accordance with the plans or as directed by the ENGINEER. The items to be adjusted shall be reconstructed and patch areas.

Items to be adjusted shall be carefully removed and re-installed by the CONTRACTOR. If the height of the manhole structure walls is to be increased, the addition shall be of precast rings. Gate valve access cover risers shall be turned to be flush with top surface of completed asphalt work.

In the event that the top part of any existing structure is weak and faulty, it shall be replaced as directed by the ENGINEER and the extension completed. Where manhole castings, gratings or covers are to be lowered, the masonry or concrete shall be removed to a sufficient depth to provide a seat with the proper dimensions to receive the casting, grating or cover at the new grade. Upon completion of the adjustment, all structures shall be thoroughly cleaned of any accumulation of silt, debris, or foreign mater and shall be free of all such accumulations at the time of final inspection.

Manhole castings to be raised shall be adjusted by rings manufactured by Neenah or approved equal.

1900-21.2 Measurement and Payment: All Utilities adjustments will be considered incidental to the paving and patching of these areas.

1900-22 MANHOLE AND SEWERMAIN SIZE VERIFICATION

The CONTRACTOR shall be responsible for verifying all pipe sizes prior to ordering any materials, including lining operations. The CONTRACTOR shall also verify all manhole dimensions and locations prior to ordering, including depth and knockout locations.

1900-23 PRECONSTRUCTION CONFERENCE

A preconstruction conference shall be held prior to any work on the project. All subcontractors shall be in attendance. The CONTRACTOR shall have a construction schedule, list of suppliers and proposed testing laboratory service company.

1900-24 EXISTING SANITARY SEWER TELEVISING TAPES AND REPORTS

All of the sanitary sewer mains with proposed repairs or lining have been televised by the City of Stanton, North Dakota except in those areas where obstructions exist. A hard drive with the sewer video and sewer reports can be obtained at Interstate Engineering, Inc., Beulah, North Dakota upon payment of $100.00 for each hard drive.

1900-25 MANHOLE LINING

1900-25.1 General:

1900-25.1.1 Description: This specification shall govern all labor, materials, equipment and supplies necessary for the sanitary sewer manhole interior rehabilitation for the purpose of eliminating infiltration and inflow, providing corrosion protection, repair of cracks and voids and restoration of the structural integrity of the manhole as a result to the application of a monolithic fiber-reinforced structural/structurally enhanced cementitious liner to the wall, ceiling and bench surfaces of concrete, brick or any other masonry construction material.

1900-25.1.2 Quality Assurance:

A. Use, mix, apply and cure all products in accordance with the manufacturer's recommendations and instructions.

B. Provide recommended daily or lot test specimens for compressive strength and other testing per applicable ASTM standards.

1900-25.2 Products:

1900-25.2.1 Materials:

A. Patching Mix:

1. A quick-setting, fiber-reinforced cementitious material for patching and filling voids and cracks.

2. Material shall have the following minimum requirements:

Compressive Strength	ASTM C-109	6hr 1,400 psi
Shrinkage	ASTM C-596	0% at 90% R.H.
Bond	ASTM C-321	28 day 150 psi
Cement	Sulfate resistant	
Density, when applied	105 +/- pcf	

B. Infiltration Control Mix:

1. A rapid setting cementitious product specifically formulated for infiltration control.

2. Material shall have the following minimum requirements:

Compressive Strength	ASTM C-109 24 hr	1000 psi
Bond	ASTM C-321 24 hr	80 psi

C. Grouting Mix: A rapid-setting cementitious grout specifically formulated for stopping very active infiltration and filling voids.

D. Liner Mix:

1. A fiber-reinforced cementitious liner material shall be wet mixed and low-pressure spray applied to form the structural/structurally enhanced monolithic liner covering all interior manhole surfaces.

2. Material shall be pre-mixed and specially formulated to withstand abrasion in sewer networks.

3. Material shall have the following minimum requirements:

Compressive Strength	ASTM C-109	28 day> 8,000 psi
Flexural Strength	ASTM C-78	28 day > 1400 psi
Shrinkage	ASTM-596	0% at 90% R.H.

E. Bonding Compound:

Material shall be a modified cementitious bonding compound that protects exposed reinforcement steel and enhances bond of overlay to substrate.

F. Water:

Water shall be clean and potable.

1900-25-3.1 Execution:

Manhole Preparation:

A. Place covers over sewer inverts to prevent extraneous material from entering the sewer lines.

B. Remove foreign, loose and unsound concrete and masonry material from the interior surfaces of the manhole by means of high pressure (1,500 psi minimum) water spray.

C. Loose, unsound, and protruding concrete and masonry material not able to be removed by high pressure water spray may require the use of mason's or mechanical tools for removal.

D. Clean the interior surfaces of the manhole with high pressure (1,500 psi minimum) water spray, using detergent, muriatic acid, antibacterial agent or other chemicals to remove grease, oil and other contaminants that would prevent good bond between the existing manhole interior surface and the liner material.

E. Active hydrostatic leaks (infiltration) shall be stopped using the rapid-setting specially formulated infiltration control mix.

F. Very active hydrostatic leaks (infiltration) shall be stopped using one of the rapid-setting grouting mixes specially formulated for control of very active infiltration.

G. Clean and prepare exposed reinforcement steel, and apply and cure bonding compound, in accordance with the product manufacturer's instructions and recommendations.

H. Prepare cracks and voids to be patched and filled, and apply and cure patching mix, in accordance with the product manufacturer's instructions and recommendations.

I. Areas of manholes that are found to be structurally damaged and in need of repair beyond the scope of this specification shall be brought to the attention of the Engineer. A suitable repair method shall be developed for each area and submitted to the Engineer for review prior to commencing the repair.

J. Prepare, clean and repair manhole benches and inverts in the same manner as prescribed above.

1900-25.3.3 Cleaning: Clean manhole interiors and remove all construction-related materials, equipment and appliances from the manholes prior to reinstatement of the manholes to service.

1900-25.4 Measurement and Payment: Interior manhole lining shall be measured by the vertical foot (V.F.) from the lowest pipe invert to the top of the area improved (bottom of the casting), and paid for at the unit price bid for “Manhole Repair (Lining)”, complete and accepted by the ENGINEER. This bid price shall include manhole preparation, liner application, curing, testing, cleaning and all other labor and materials necessary to complete the manhole lining.

1900-26 CONSTRUCTION REQUIREMENTS: All equipment necessary and required for the proper construction of sewer mains shall be on the project in first class working condition and approved by the ENGINEER before construction is permitted to start.

The CONTRACTOR shall provide suitable lifting equipment to handle the unloading and placing into final position of pipe on this project.

The CONTRACTOR shall provide hand tampers and pneumatic tampers to obtain the compaction of the pipe bedding and backfill as specified.

1900-27.2 EXCAVATION AND TRENCH PREPARATION: The trench shall be excavated to the alignment and depth required and only as far in advance of pipe laying as the ENGINEER will permit. The trench shall be braced and drained so that workmen may work there safely and efficiently. The discharge from pumps shall be led to natural drainage channels or storm sewer.

The trench width may vary depending upon the depth of the trench and the nature of the excavated material, but in all cases shall be of ample width to permit the pipe to be laid and joined properly and the backfill to be placed and compacted to the required density. The minimum width of trench shall be thirty (30) inches and for pipe eighteen (18) inches or larger at least twelve (12) inches greater than the outside diameter of the pipe barrel. The maximum width of trench shall not be more than forty-two (42) inches and for pipe eighteen (18) inches or larger no more than twenty-four (24) inches greater than the outside diameter of the pipe barrel. If approved by the ENGINEER, the trench walls may be backsloped from a point one (1) foot above the top of the pipe.

The trench shall be excavated below the required grade so that the pipe may be laid on 4" of pitrun gravel. The required depth to the top of sewer main shall be eight (8) feet unless otherwise noted on the plans.

Soft, spongy, or otherwise unstable material, which may not provide suitable foundation for pipe, shall be called to the attention of the ENGINEER prior to removal to be deemed extra work and be eligible for payment under the provisions of Sub-Section 214-1 of these specifications. Removal and replacement of questionable material will be authorized only if dewatering methods are unsuccessful in stabilizing the trench bottom. If removal of unsuitable material is authorized by the ENGINEER, replace with clean pitrun gravel as specified for pipe bedding material. Extra compensation shall not be allowed for extra excavation and gravel used for seepage and ground water control.

Whenever necessary, to prevent caving, excavations in sands, gravel, sandy soil or other unstable material shall be adequately sheathed and braced. Where sheathing and bracing are used, the trench width shall be increased accordingly. Trench sheathing will be required on all trenches where necessary to prevent damage to utilities above or below ground. Trench sheathing shall remain in place until the pipe has been laid and the joint properly constructed and the backfill material thoroughly compacted to a depth over the pipe sufficient to protect any utility structures or adjacent paving, curb and gutter, sidewalks or trees which might be damaged by caving of the trench walls. The cost of sheeting, shoring or bracing shall be incidental to the item unit bid price unless otherwise noted.

All pipe laying work shall be executed in a dry trench. The CONTRACTOR shall provide equipment for removing water encountered. Dewatering shall be used so that no pipe is laid on excessively wet soil. Dewatering shall be incidental to the item unit bid price for water mains unless otherwise noted.

Trees shall be protected unless their removal is authorized by the ENGINEER. Only trees in direct conflict with trench alignment may be removed. Tunnel or hand excavate under roots of trees near the trench. Tree removal includes grubbing and removing roots and stump, backfill and disposal of debris. The cost of removal shall be included in the price bid per linear foot of pipe unless listed separately in the proposal.

Fences, poles, mailboxes and all other property shall be protected unless their removal is authorized by the ENGINEER. These damages shall be restored by the CONTRACTOR to the satisfaction of the ENGINEER at no cost to the OWNER.

Pavements, sidewalks and/or curb and gutter shall be removed to a minimum of one (1) foot from the trench. Undercutting shall not be permitted. Sidewalk and curb and gutter shall be removed to the nearest joint. Sidewalk shall be replaced with four (4) inch thick sidewalk finished to match existing sidewalks except that six (6) inches shall be placed where traffic crosses. Curb and gutter shall be replaced with a section matching the existing curb and gutter. Pavement shall be replaced with a section to match existing pavement unless otherwise specified on the plans or in the specifications. All broken pavement sidewalk and/or curb and gutter shall be removed from the site of the work and deposited at a place selected by the ENGINEER.

Pavement, sidewalks and/or curb and gutter removal shall be considered incidental to the price bid for pipe or manhole installation. Pavement, sidewalk and/or curb and gutter replacement shall be considered incidental to the price bid for water mains installation unless listed separately in the proposal.

The CONTRACTOR is assumed to be familiar with all Federal, State and Local laws, codes, ordinances and regulations which in any manner, affect those engaged or employed in the work, the material or equipment used in or upon the site, or in any way affect the conduct of the work. No pleas of misunderstanding or ignorance on the part of the CONTRACTOR will, in any way, serve to modify the provisions of the Contract. The CONTRACTOR shall provide and maintain on a 24 hour basis all necessary safeguards such as watchmen, warning signs, barricades and night-lights at his own expense.

Excavation for pipe laying operations shall be conducted in a manner to cause the least interruption to traffic. Where traffic must cross open trenches, the CONTRACTOR shall provide suitable bridges at street intersections and driveways. Hydrants under pressure, valve boxes, curb stop boxes and other utility controls shall be left unobstructed and accessible during the construction period.

Adequate provisions shall be made for the flow of sewers, drains and water courses encountered during construction and the structures, which may have been disturbed, shall be satisfactorily restored upon completion of the work.

1900-28 SEEDING CLASS II: This item shall be placed at the locations shown and as per the plans in accordance with Section 251 of the Specifications. Payment for this item will be at the unit price bid per ACRE complete in place and accepted by the ENGINEER.

1900-29 TERMS AND CONDITIONS OF CONTRACT

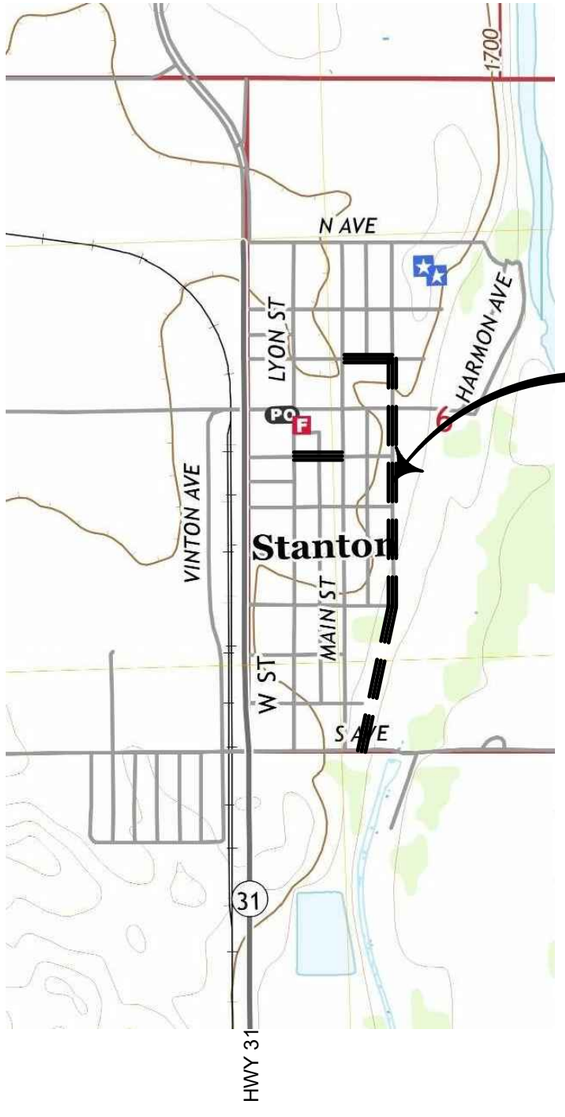
All terms, conditions, and provisions of this Contract shall be interpreted and governed by the laws of the State of North Dakota and any dispute arising out of this Contract shall be governed by the laws of the State of North Dakota. Any legal action arising out of this Contract shall be venued in Mercer County, North Dakota.

CONSTRUCTION PLANS

FOR

SANITARY SEWER SYSTEM IMPROVEMENTS

STANTON, NORTH DAKOTA



PROJECT LOCATION

VICINITY MAP

N

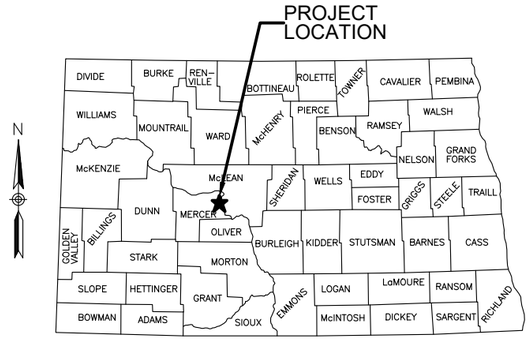
IE PROJECT# B20-00-029

DISTRICT: 2020-2

APRIL, 2020

CITY COUNCIL

MAYOR	RON BOYKO
MEMBER	MARVIN BALLENSKY
MEMBER	GARY KALMBACK
MEMBER	TOM SAYLER
MEMBER	RYAN VIGESSA
CITY AUDITOR	CHONNY BRAITHWAITE
PUBLIC WORKS SUPERINTENDENT	NICOLAS CHAPMAN



STATE OF NORTH DAKOTA

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Plan Index

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Revision No.	Date	By	Description

CITY OF STANTON
STORM SEWER IMPROVEMENTS
BEULAH, NORTH DAKOTA

PLAN INDEX

Drawn By: J.D.N
Checked By: T.F.J
Project No.: B20-00-029
Date: APRIL 2020

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Other offices in Minnesota, Montana, North Dakota and South Dakota

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C-0
SHEET NO.

LEGEND

SANITARY SEWER EXISTING

WATER MAIN EXISTING

REMOVE AND REPLACE MAIN with 8" PVC

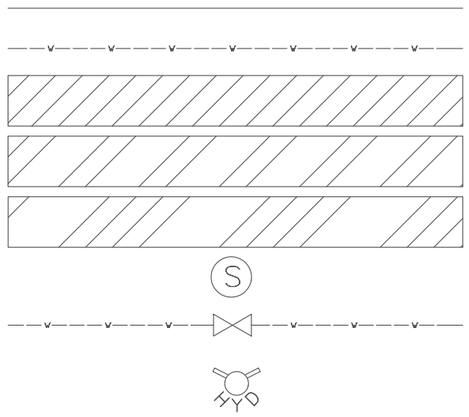
REMOVE AND REPLACE MAIN with 10" PVC

REMOVE AND REPLACE MAIN with 12" PVC

MANHOLE

GATE VALVE

FIRE HYDRANT



ABBREVIATIONS

ALT	ALTERNATE
BIT	BITUMINOUS
BLDG	BUILDING
C&G	CURB & GUTTER
CIP	CAST IRON PIPE
CO	CLEANOUT
CSP	CORRUGATED STEEL PIPE
EL OR ELEV	ELEVATION
EX	EXISTING
INV	INVERT
MAX	MAXIMUM
MH	MANHOLE
FMMH	FLOW MEASUREMENT MANHOLE
MIN	MINIMUM
PE	POLYETHYLENE PIPE
P&P	PLAN & PROFILE
PP	POWER POLE
PVC	POLYVINYL CHLORIDE SEWER PIPE
RCP	REINFORCED CONCRETE PIPE
R&R	REMOVE & REPLACE
RR	RAIL ROAD
R/W	RIGHT OF WAY
SAN	SANITARY SEWER
SS	STAINLESS STEEL
STA	STATION
SW	SIDEWALK
SY	SQUARE YARD
TEL PED	TELEPHONE PEDESTAL
VCP	VITRIFIED CLAY PIPE
WMV	WATER MAIN VALVE

NOTE 1:

NOTICE TO UTILITIES SHALL BE GIVEN BY THE CONTRACTOR. THIS NOTICE SHALL STATE HIS CONTEMPLATED STARTING DATE, CONSTRUCTION SCHEDULE AND AREAS TO BE DISTURBED. UTILITIES KNOWN TO EXIST IN THE PROJECT AREA ARE.

UTILITY	OWNER
WATER	CITY OF STANTON
SEWER	CITY OF STANTON
CABLE TV	MIDCONTINENT
ELECTRICAL	CITY OF STANTON
TELEPHONE	WEST RIVER TELEPHONE

THIS LIST IS NOT MEANT TO BE INCLUSIVE AND OTHER UTILITIES MAY EXIST WITHIN THE PROJECT AREA. THE CONTRACTOR IS REQUIRED TO GIVE 48 HOUR NOTICE TO ALL UTILITIES WITHIN THE PROJECT AREA OF PENDING CONSTRUCTION.

THE UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM VARIOUS UTILITY COMPANIES AS-BUILT DRAWINGS AND THE UTILITY LOCATIONS SHOWN ARE TO BE CONSIDERED APPROXIMATE LOCATIONS. EXISTING UTILITIES MAY EXIST AT LOCATIONS NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES IN THE FIELD PRIOR TO COMMENCING ANY WORK. EXISTING SEWER MAINS ARE VITRIFIED CLAY PIPE BASED ON VIDEO SURVEY PROVIDED BY OTHERS.

AREA OF WORK: WITH IN SECTION 6, T144N, R84W

NOTE 2:

MANHOLES WILL BE REUSED FOR THIS PROJECT. ELEVATIONS WILL BE ADJUSTED ON PORTIONS OF THE PROJECT. GRADE RINGS SHALL BE ADDED BUT NOT TO EXCEED MORE THAN 10" OF GRADE ADJUSTMENT. SEWER MAIN LINES IN AREAS OF NON-CONSTRUCTION WILL HAVE TO BE BORED INTO THE MANHOLE. IF THE INVERT EXCEEDS THE SUMP ELEVATIONS BY MORE THAN 24", A DROP STRUCTURE MUST BE ADDED TO THE MANHOLE. SIZE CHANGES AT THE MANHOLE FROM EXISTING

NOTE 3:

CONTRACTOR TO VERIFY IF EXISTING SERVICES ARE ACTIVE. SEWER SERVICES WILL BE PAID AS PER THE UNIT PRICE BID,INSTALLED IN THE FIELD AND ACCEPTED BY THE ENGINEER. SERVICE REPLACEMENTS WILL BE DONE AS FACTORY JOINTS AND CONNECTION TO EXISTING SERVICES WILL BE DONE AS PER SPECIFICATIONS.

EXISTING SEWER MAINS ARE VITRIFIED CLAY PIPE BASED ON VIDEO SURVEY PROVIDED BY OTHERS.

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Revision No.	Date	By	Description

CITYOFSTANTTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

LEGEND AND GENERAL PROJECT NOTES

Drawn By: J.D.N
Checked By: T.F.J
Project No.: B20-06-029
Date: APRIL 2020

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C-1
SHEET NO.

QUANTITIES

Item No.	Description	Unit	Quantity
1	Mobilization	LS	1
2	Pavement Removal and Disposal	SY	4800
3	Aggregate Base Course	Ton	1500
4	Hot Bituminous Pavement	Ton	1074
5	Remove Curb and Gutter	LF	200
6	Replace Curb and Gutter	LF	200
7	Remove Valley Gutter	SY	100
8	Replace Valley Gutter	SY	100
9	8” SDR 35 Sewer Replacement	LF	4215
10	10” SDR 35 Sewer Replacement	LF	182
11	12” SDR 35 Sewer Replacement	LF	380
12	4” Wye and Service Connections	EA	32
13	6” Wye and Service Connections	EA	4
14	Testing Laboratory Services	LS	1
15	Manhole Replacements	EA	4
16	Manhole Connections and Cleaning with no vertical adjustment required	EA	14
17	Seeding	LS	1
18	Traffic Control	LS	1

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CITY OF STANTON
STORM SEWER IMPROVEMENTS
BEULAH, NORTH DAKOTA

QUANTITIES

Drawn By: J.D.N
Checked By: T.F.J
Project No.: B20-00-029
Date: APRIL 2020

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C-2
SHEET NO.

Base Bid

Lift Station #2
STA: 0+00.00
Rim Elev.: 1685.66
(Assumed, See note 6 Sheet P-1)
Slump Elev.: 1670.00

MH #1

STA:	0+50.07	
Rim Elev.:	+/- 1685.50 FIELD VERIFY	
Following Assumed See Notes P-1		
Sump:	1699.90’	
N Inlet:	1672.00’	8” PVC
W Inlet:	1672.00’	8” PVC
S Outlet:	1671.90’	8” PVC

MH#2

STA:	4+15.54	
Rim Elev.:	1684.74’	
Sump:	1675.47’	
Following Assumed See Notes P-2		
N Inlet:	1675.49’	8” PVC
W Inlet:	1680.77’	4” PVC
S Outlet:	1675.29’	8” PVC

MH#3

STA:	7+96.08	
Rim Elev.:	1691.02’	
Sump:	1678.00’	
E Inlet:	1678.26’	8” PVC
S Outlet:	1678.06’	8” PVC

MH#4

STA:	9+91.86	
Rim Elev.:	1685.45’	
Sump:	1679.00’	
N Inlet:	1679.95’	8” PVC
W Outlet:	1679.75’	8” PVC

MH#5

STA:	13+75.25	
Rim Elev.:	1688.24’	
Sump:	1682.00’	
N Inlet:	1682.86’	8” PVC
W Inlet:	1682.85’	10” PVC
S Outlet:	1682.66’	8” PVC

MH#7

STA:	17+54.38	
Rim Elev.:	1697.12’	
Sump:	1684.38’	
N Inlet:	1685.59’	8” PVC
S Outlet:	1685.39’	8” PVC

MH#8

STA:	21+34.40	
Rim Elev.:	1701.69’	
Sump:	1688.20’	
N Inlet:	1687.31’	8” PVC
W Inlet:	1689.31’	10” PVC
S Outlet:	1687.11’	8” PVC

MH#9

STA:	25+10.34	
Rim Elev.:	1701.32’	
Sump:	1689.30’	
N Inlet:	1689.01’	8” PVC
S Outlet:	1688.81’	8” PVC

MH#10

STA:	28+94.04	
Rim Elev.:	1702.05’	
Sump:	1690.27’	
N Inlet:	1690.74’	8” PVC
E Inlet:	1693.52’	8” PVC
W Inlet:	1691.34’	8” PVC
S Outlet:	1690.54’	8” PVC

MH#11

STA:	32+73.49	
Rim Elev.:	1703.27’	
Sump:	1691.26’	
E Inlet:	1695.22’	8” PVC
W Inlet:	1692.29’	8” PVC
S Outlet:	1692.26’	8” PVC

MH#36

STA:	33+00.00	
Rim Elev.:	1703.88’	
Sump:	1687.83’’	
N Inlet:	1689.98’	8” PVC
E Inlet:	1689.88’	8” PVC
S Outlet:	1689.83’	8” PVC

MH#35

STA:	34+94.28	
Rim Elev.:	1700.64’	
Sump:	1686.91’	
N Inlet:	1688.91’	8” PVC
W Inlet:	1690.60’	6” PVC
S Outlet:	1688.91’	8” PVC

MH#32

STA:	36+79.77	
Rim Elev.:	1700.33’	
Sump:	1685.93’’	
N Inlet:	1688.09’	8” PVC
S Inlet:	1688.09’	10” PVC
E Outlet:	1687.93’	8” PVC

MH#33

STA:	40+60.33	
Rim Elev.:	1700.96’	
Sump:	1684.14’’	
N Inlet:	1688.26’	8” PVC
W Inlet:	1686.19’	8” PVC
E Outlet:	1686.14’	10” PVC

MH#43

STA:	42+00.00	
Rim Elev.:	1706.78’	
Sump:	1693.42’	
S Inlet:	1695.45’	10” PVC
E Outlet:	1695.42’	12” PVC

MH#44

STA:	45+80.41	
Rim Elev.:	1706.20’	
Sump:	1692.52’	
W Inlet:	1694.53’	12” PVC
S Outlet:	1694.52’	10” PVC
N Outlet:	1698.40’	8” PVC

MH#14

STA:	46+00.00	
Rim Elev.:	1699.54’	
Sump:	1691.83’	
W Inlet:	1693.84’	8” PVC
S Inlet:	1693.85’	8” PVC
E Outlet:	1693.83’	10” PVC

MH#13

STA:	47+81.61	
Rim Elev.:	1702.65’	
Sump:	1691.15’	
W Inlet:	1693.20’	10” PVC
N Inlet:	1693.25’	10” PVC
E Outlet:	1693.15’	8” PVC

LS #1

STA:	49+50.00	
Rim Elev.:	1695.74’	
Sump:	1678.00’	
W Inlet:	UNKNOWN	8” PVC
N Inlet:	UNKNOWN	8” PVC
E Outlet:	Unknown	10” PVC

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Revision No.	Date	By	Description

CITY OF STANTAN
STORM SEWER IMPROVEMENTS
BEULAH, NORTH DAKOTA

MANHOLE INFORMATION

Project No.: B20-06-029
Date: APRIL 2020
Drawn By: J.D.N
Checked By: T.F.J

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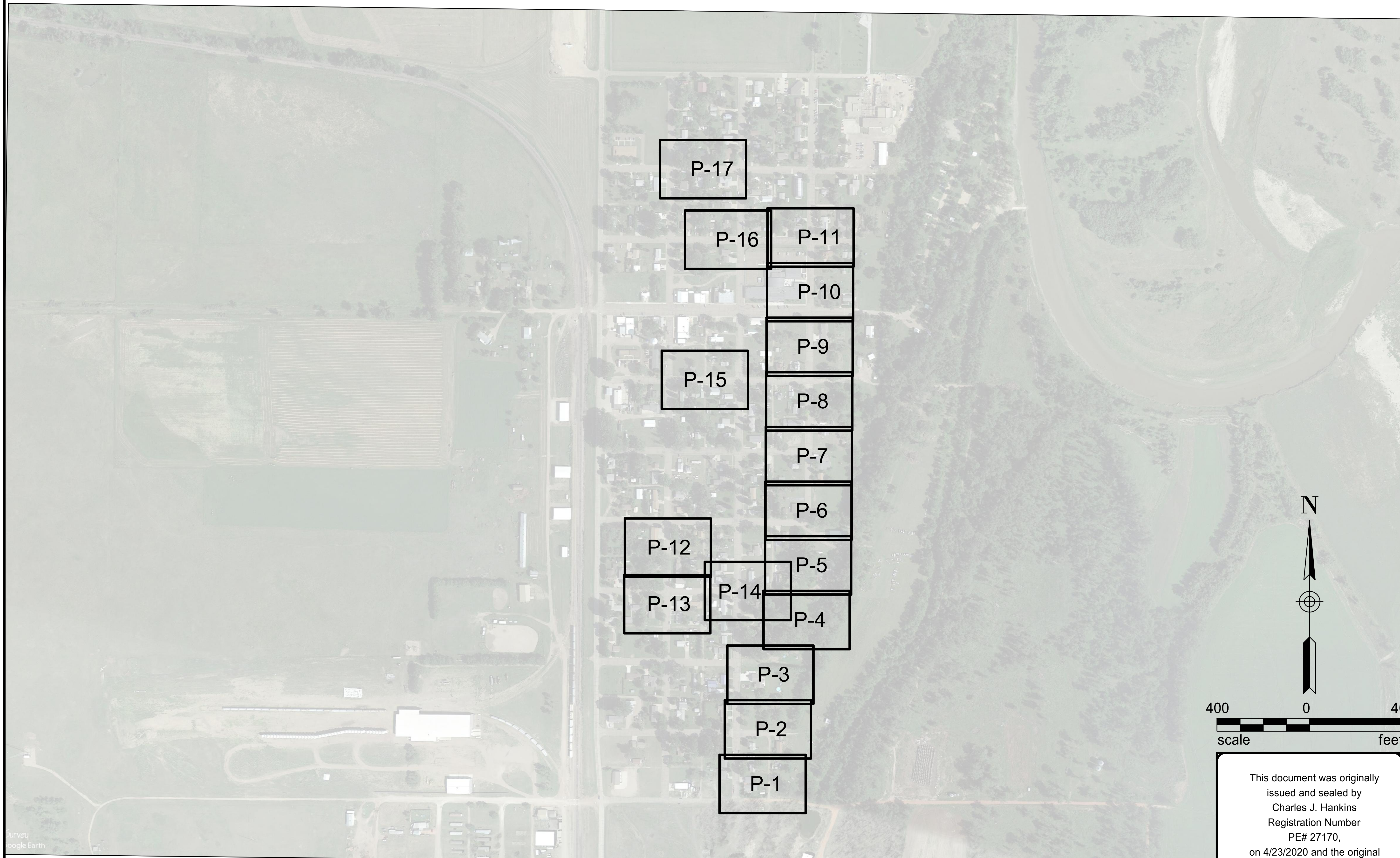
C-3
SHEET NO.



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Revision No.	Date	By	Description

CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

PROJECT PLAN SHEET LAYOUT

Drawn By: T.F.;J.N.
Checked By: CHECKEDBY
Project No.: B20-00-029
Date: APRIL2020

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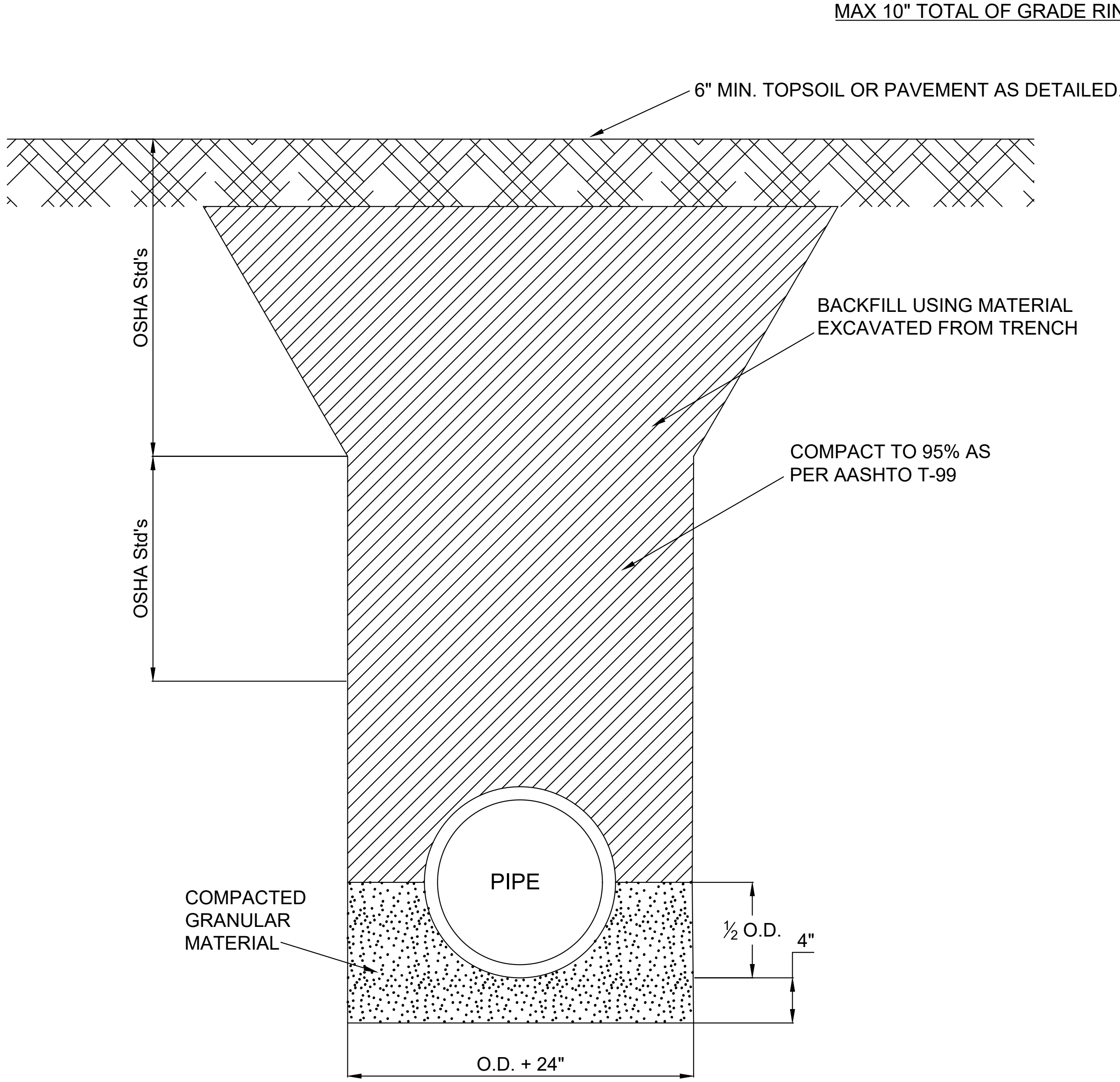
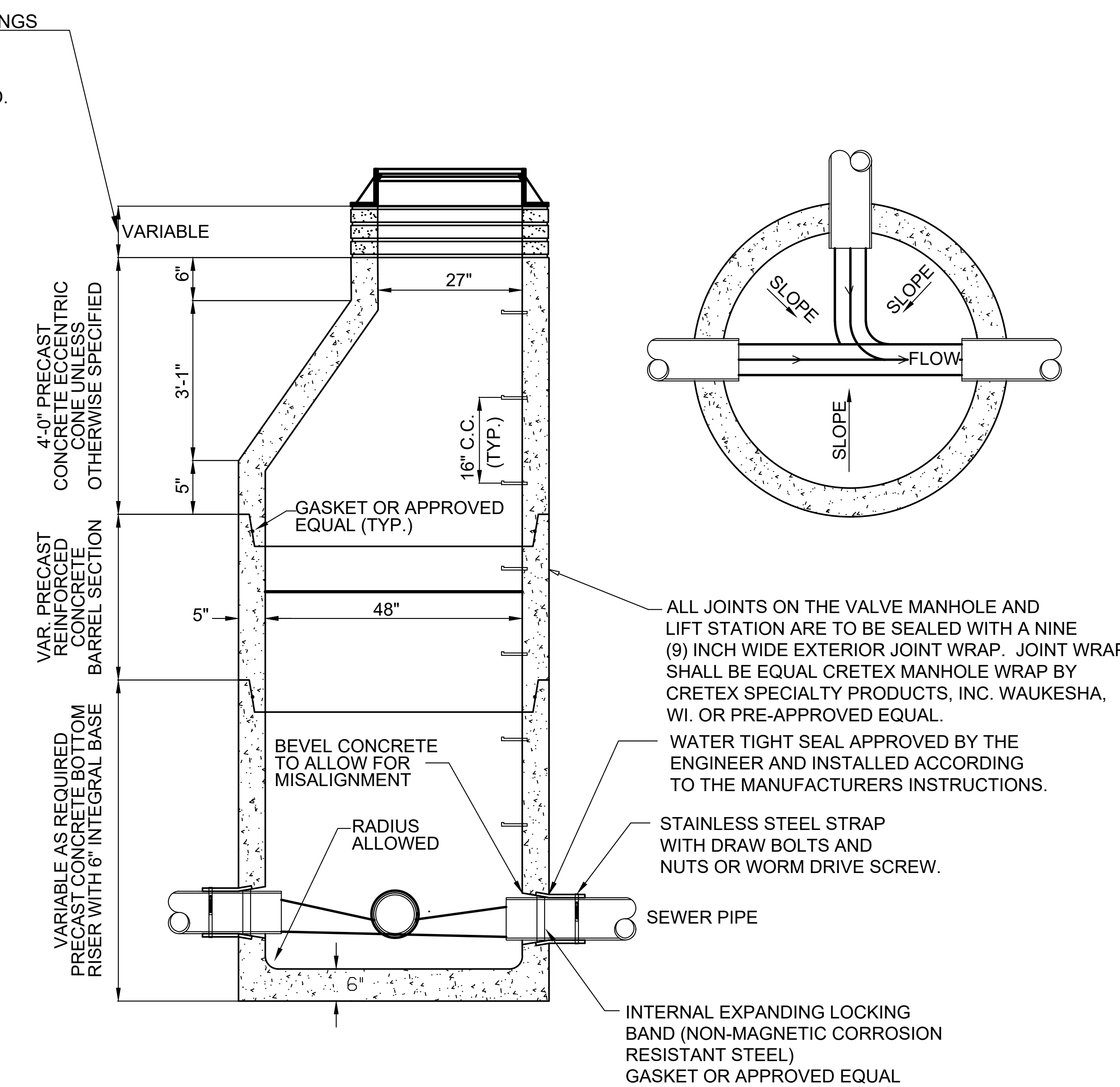
C-4
SHEET NO.



1 / D1 BEDDING AND BACKFILL FOR PIPE

NOT TO SCALE



2 / D1 SANITARY SEWER MANHOLE DETAIL

NOT TO SCALE

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CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA
DETAILS

Drawn By: J.D.N. Project No.: B20-00-029
Checked By: T.J.F. Date: APRIL 2020

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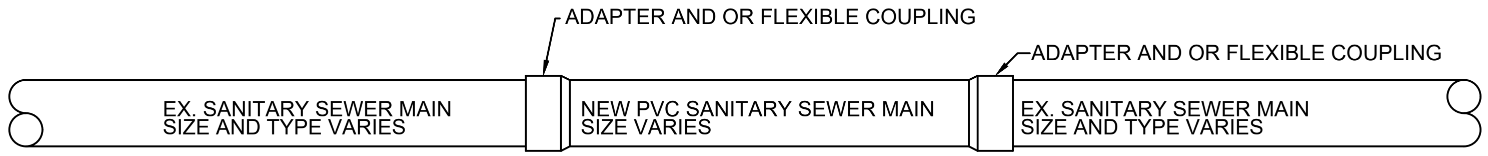
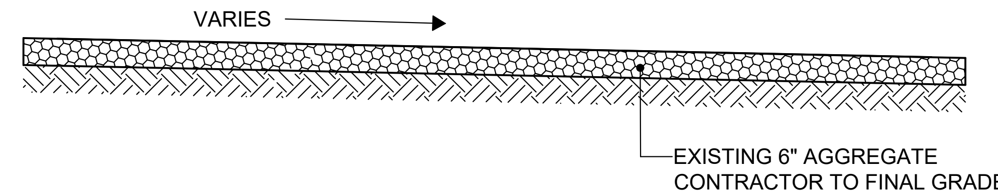
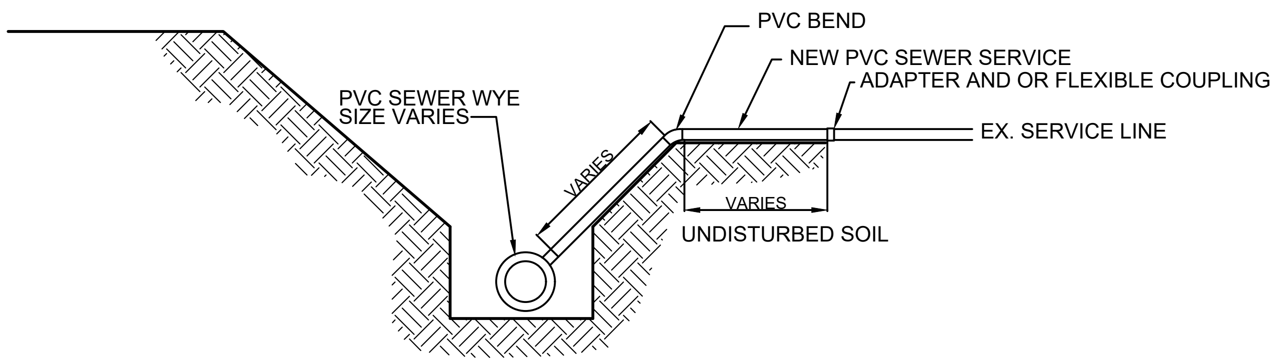
D-1
SHEET NO.



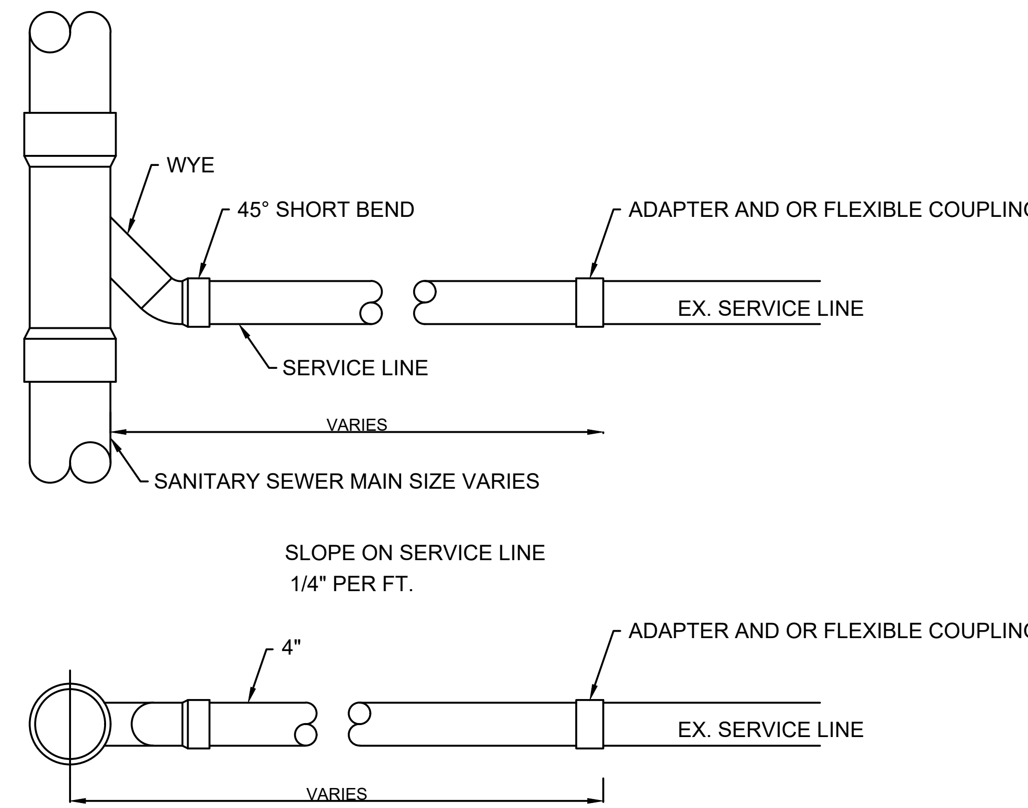
1/D2 EX. SANITARY SEWER MAIN RECONNECTION DETAIL
NOT TO SCALE



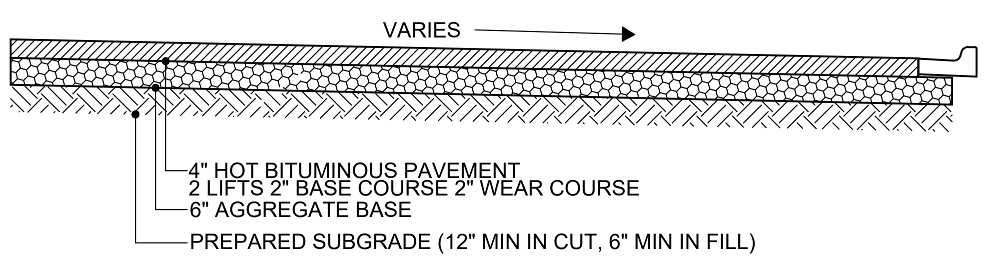
4/D2 TYPICAL SECTION AGGREGATE SURFACING
NOT TO SCALE



2/D2 RISER SERVICE DETAIL
NOT TO SCALE



5/D2 EX. SANITARY SEWER SERVICE LINE RECONNECTION DETAIL
NOT TO SCALE



3/D2 TYPICAL SECTION PAVEMENT REMOVAL AND REPLACEMENT
NOT TO SCALE

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Revision No.	Date	By	Description

CITY OF STANTON
STORM SEWER IMPROVEMENTS
BEULAH, NORTH DAKOTA
DETAILS

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D-2
SHEET NO.

NOTES:

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3) All Sanitary Sewer Service lines shown approximated. Sizes and locations were provided by others. Contractor shall verify each location and size in the field.
4) All utilities shown are approximate and additional utilities may exist. Contractor shall verify location of all utilities in the field prior to commencing any work
5) No sanitary video was possible past first 35 FT from MH2. The alignment of the 8" sewer main is assumed as shown in this plan. Contractor to field verify the alignment and slope upon exposing the pipe during construction and establish alignment and grade for this section of pipe. Coordination shall be made with the Engineer before placement of new pipe.
6) No sanitary video was possible for this leg of the sanitary network. The alignment of the 8" sewer main is assumed as shown in this plan. Contractor to field verify the alignment and slope upon exposing the pipe during construction and establish alignment and grade for this section of pipe. Coordination shall be made with the Engineer before placement of new pipe.

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CITY OF STANTON
STORM SEWER IMPROVEMENTS
BEULAH, NORTH DAKOTA

P-1

Project No.: B20-00-029
Date: APRIL 2020
Drawn By: T.F.,J.N.
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Sheet P-3
Match Line

Existing Sanitary Service Line
+/- STA 05+62

Remove and Replace 8" PVC Pipe
(381 LF @ 0.68% Slope)

5+00

NOTES:

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MH2
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)
Clean Out South Inv Outlet to Restore Elevation Drop to 1675.29'
See Note 5)

Fogarty Ave.

PI: 4+15.54

4+00

Main Street

Remove and Replace 8" PVC Pipe
(366 LF @ Min. 1.00% Slope)
(Field Verify Slope Required)
(See Note 5)

3+00

Sheet P-1
Match Line

N

30 0 30
scale feet

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BEULAH,NORTHDAKOTA

P-2

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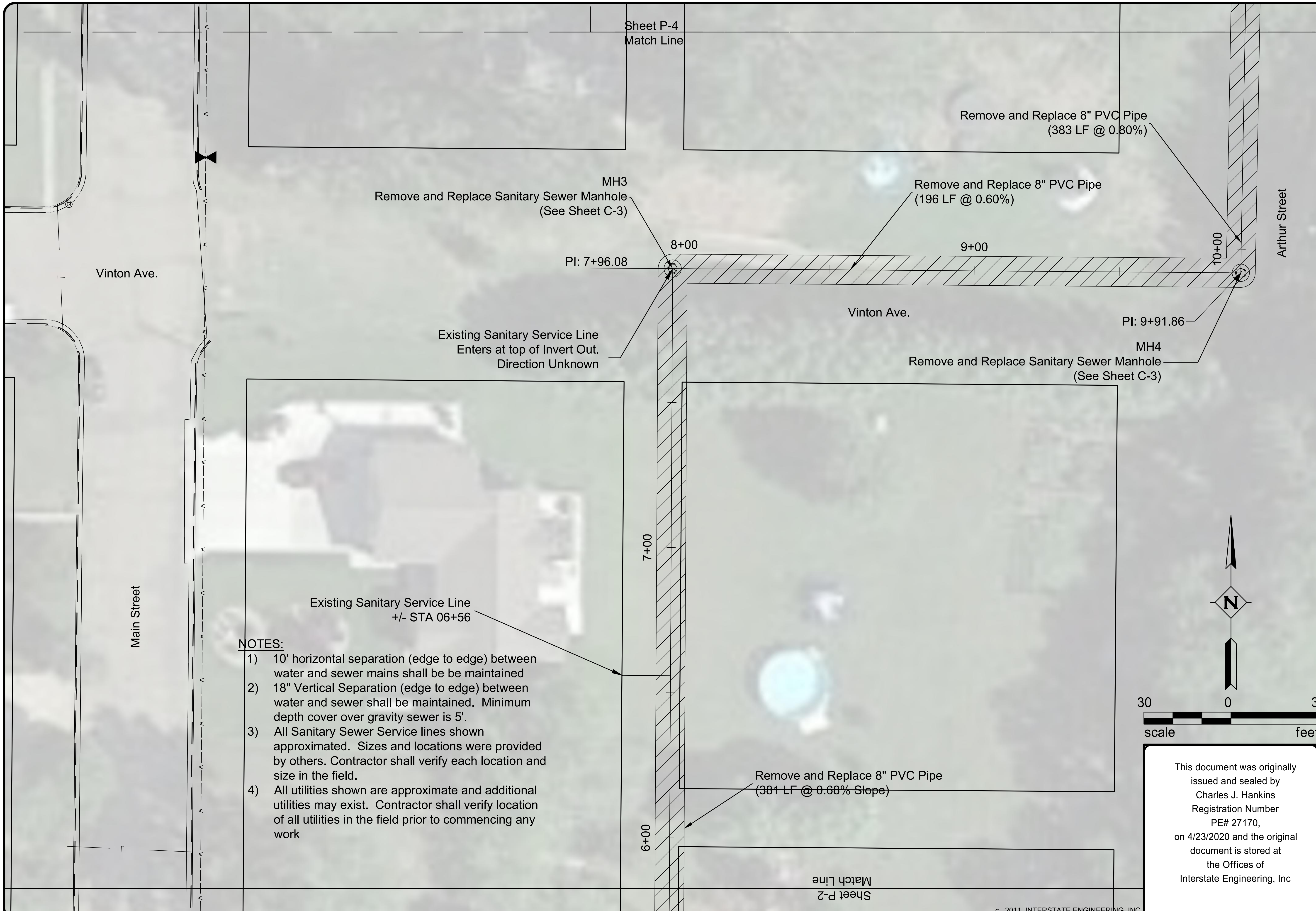
P-2
SHEET NO.



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Revision No.	Date	By	Description

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CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

P-3

Drawn By: T.F.;J.N. Project No.: B20-00-029
Checked By: CHECKEDBY Date: 2/21/2020

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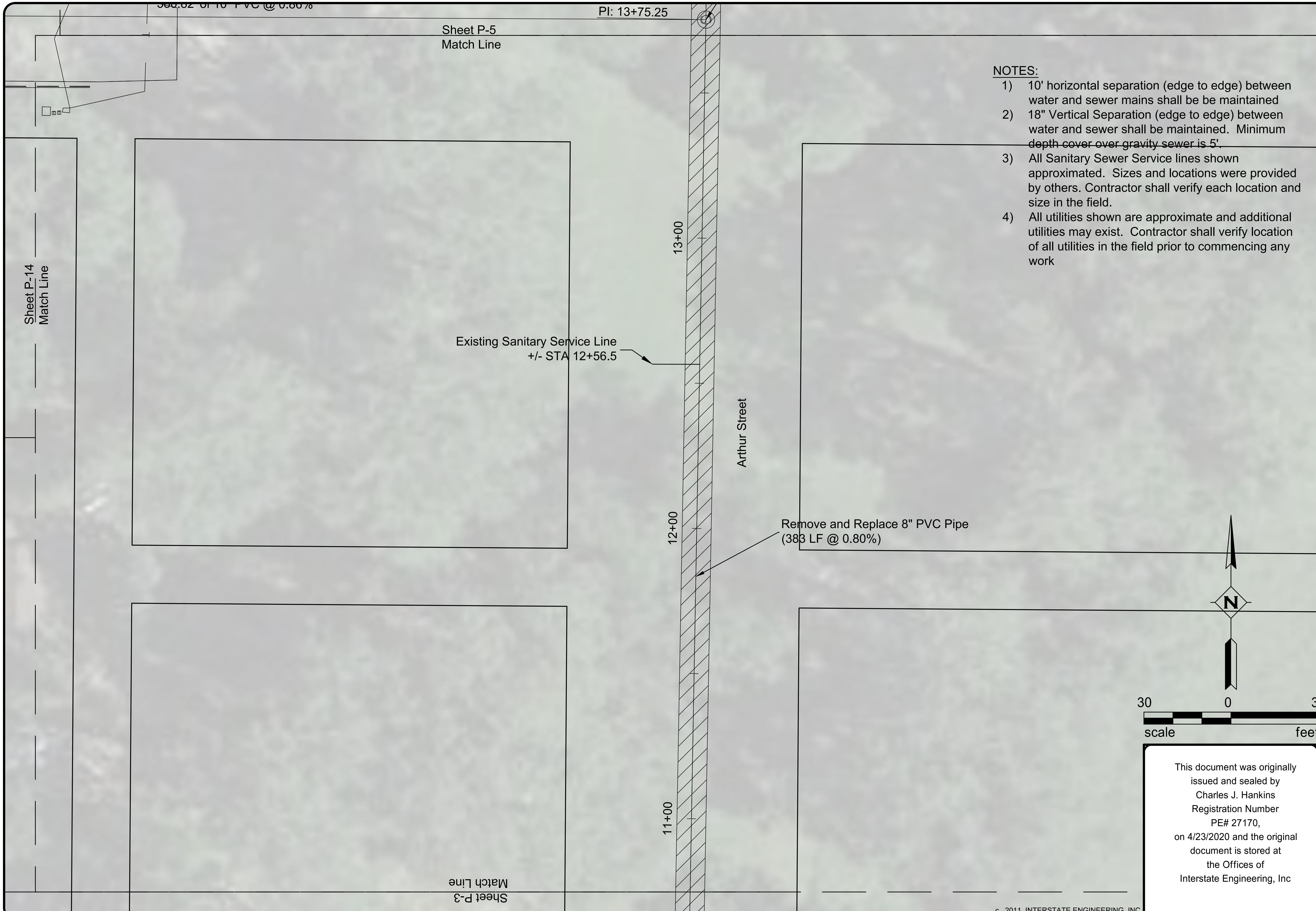
P-3
SHEET NO.



360.82' of 10" PVC @ 0.80%
PI: 13+75.25
Sheet P-5
Match Line
Sheet P-14
Match Line
13+00
12+00
11+00
Existing Sanitary Service Line
+/- STA 12+56.5
Arthur Street
Remove and Replace 8" PVC Pipe
(383 LF @ 0.80%)
Sheet P-3
Match Line
NOTES:
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N
30
0
30
scale
feet

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CITY OF STANTON
STORM SEWER IMPROVEMENTS
BEULAH, NORTH DAKOTA
P-4

Project No.: B20-00-029
Date: APRIL 2020
Drawn By: T.F./J.N.
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P-4
SHEET NO.

Sheet P-6
Match Line

16+00

15+00

14+00

Arthur Street

Sheet P-14
Match Line

Remove and Replace 8" PVC Pipe
(379 LF @ 067%)

Existing Sanitary Service Line
+/- STA 14+92

MH5
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)
Clean Out to Re-Establish Elevation
of South Inv. Outlet 1682.66'

380.82' of 10" PVC @ 0.86%

Miller Ave.
PI: 13+75.25

Sheet P-4
Match Line

NOTES:

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N

30 0 30
scale feet

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P-5

Drawn By: T.F.;J.N.
Checked By: CHECKEDBY
Project No.: B20-00-029
Date: APRIL 2020

P-5
SHEET NO.

Sheet P-7
Match Line

Arthur Street

19+00

18+00

17+00

NOTES:

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Remove and Replace with 8" PVC Pipe
(380 LF @ 0.40%)

MH7
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)

PI: 17+54.38

McGarh Ave.

Existing Sanitary Service Line
+/- STA 17+03

Remove and Replace 8" PVC Pipe
(379 LF @ 067%)

N

30 0 30
scale feet

Sheet P-5
Match Line

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P-6

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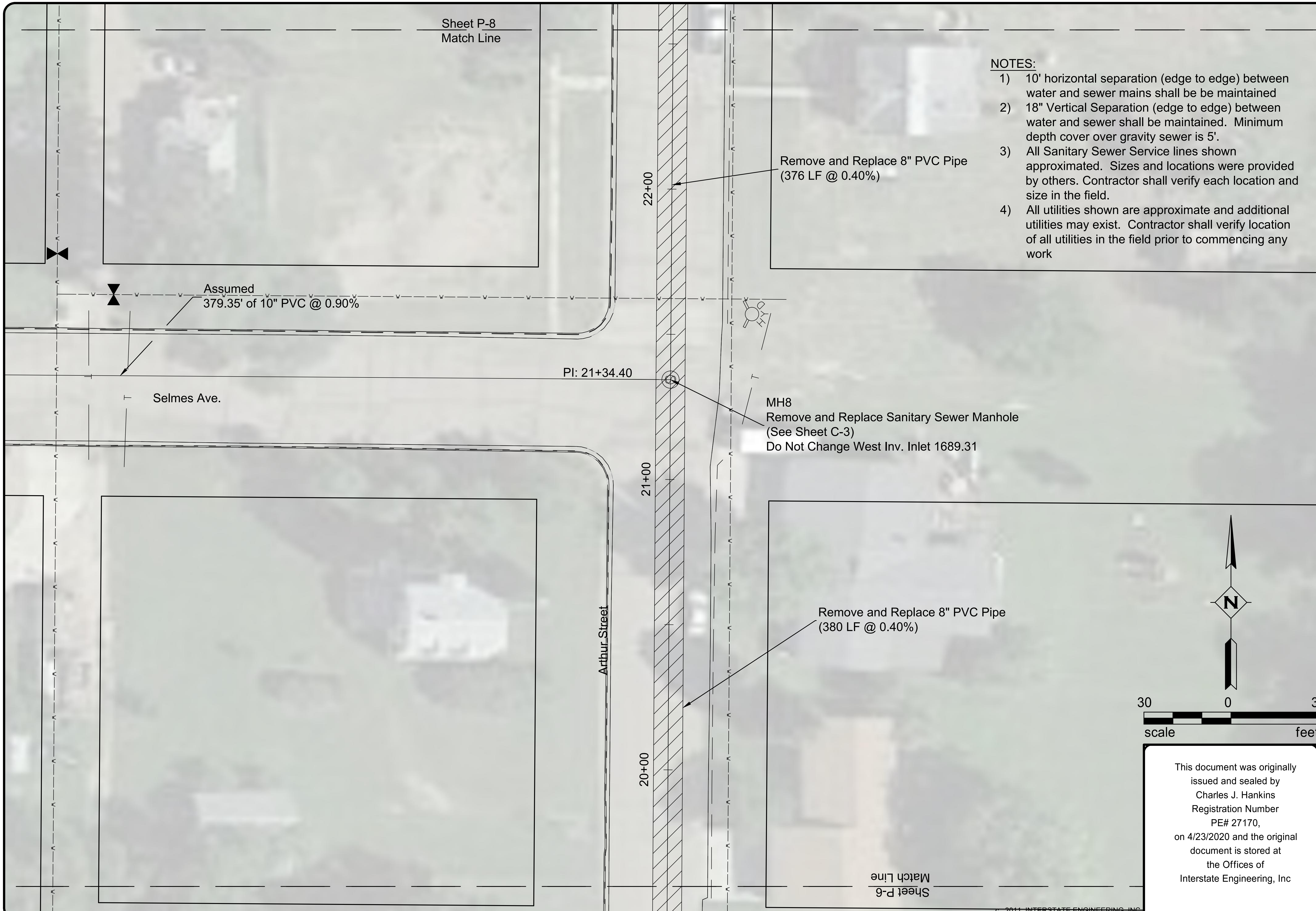
P-6
SHEET NO.



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BEULAH,NORTHDAKOTA

P-7

Drawn By: T.F.;J.N. Project No.: B20-00-029
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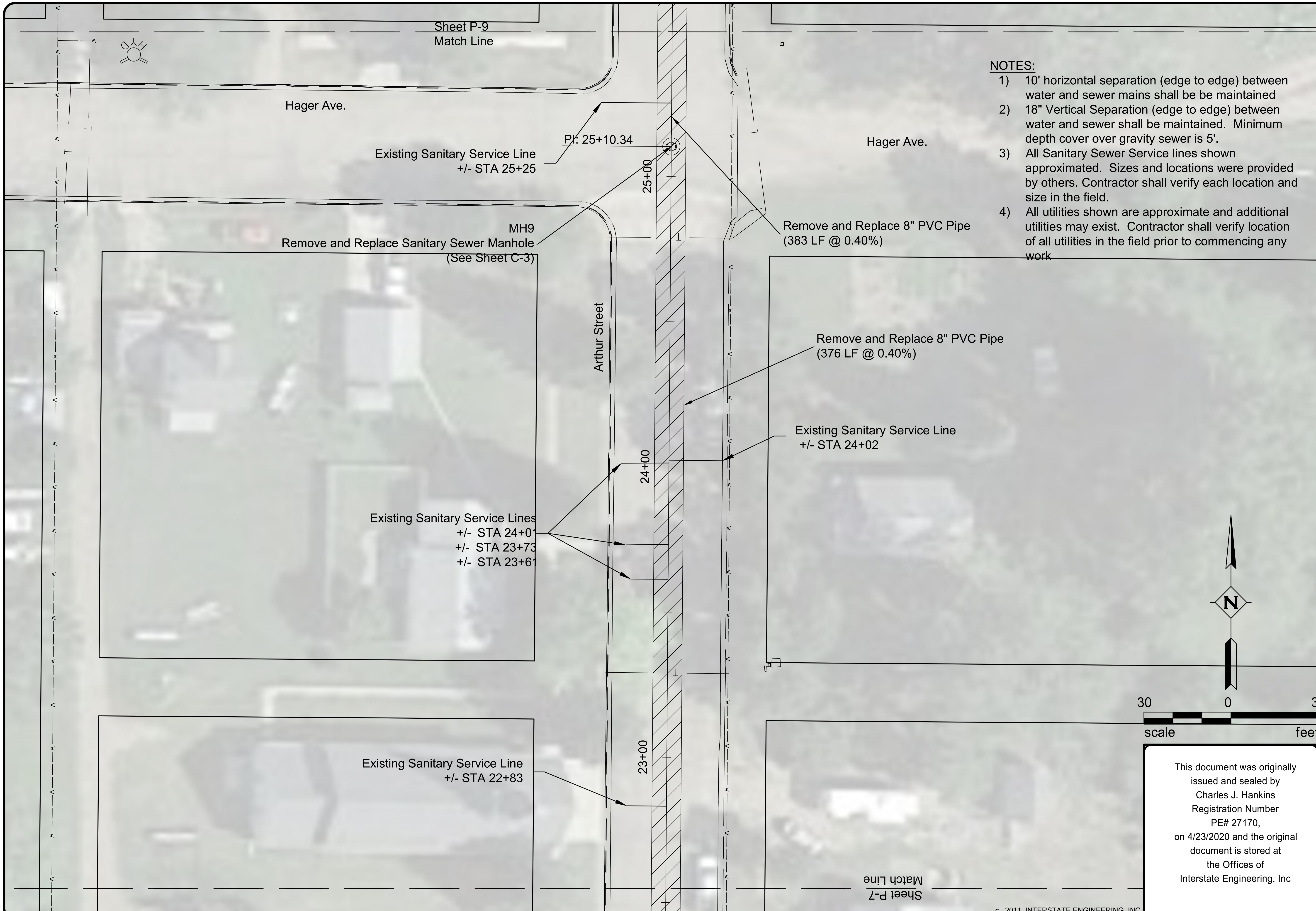
P-7
SHEET NO.



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CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

P-8

Drawn By: T.F.;J.N.
Project No.: B20-00-029
Checked By: CHECKEDBY
Date: APRIL2020

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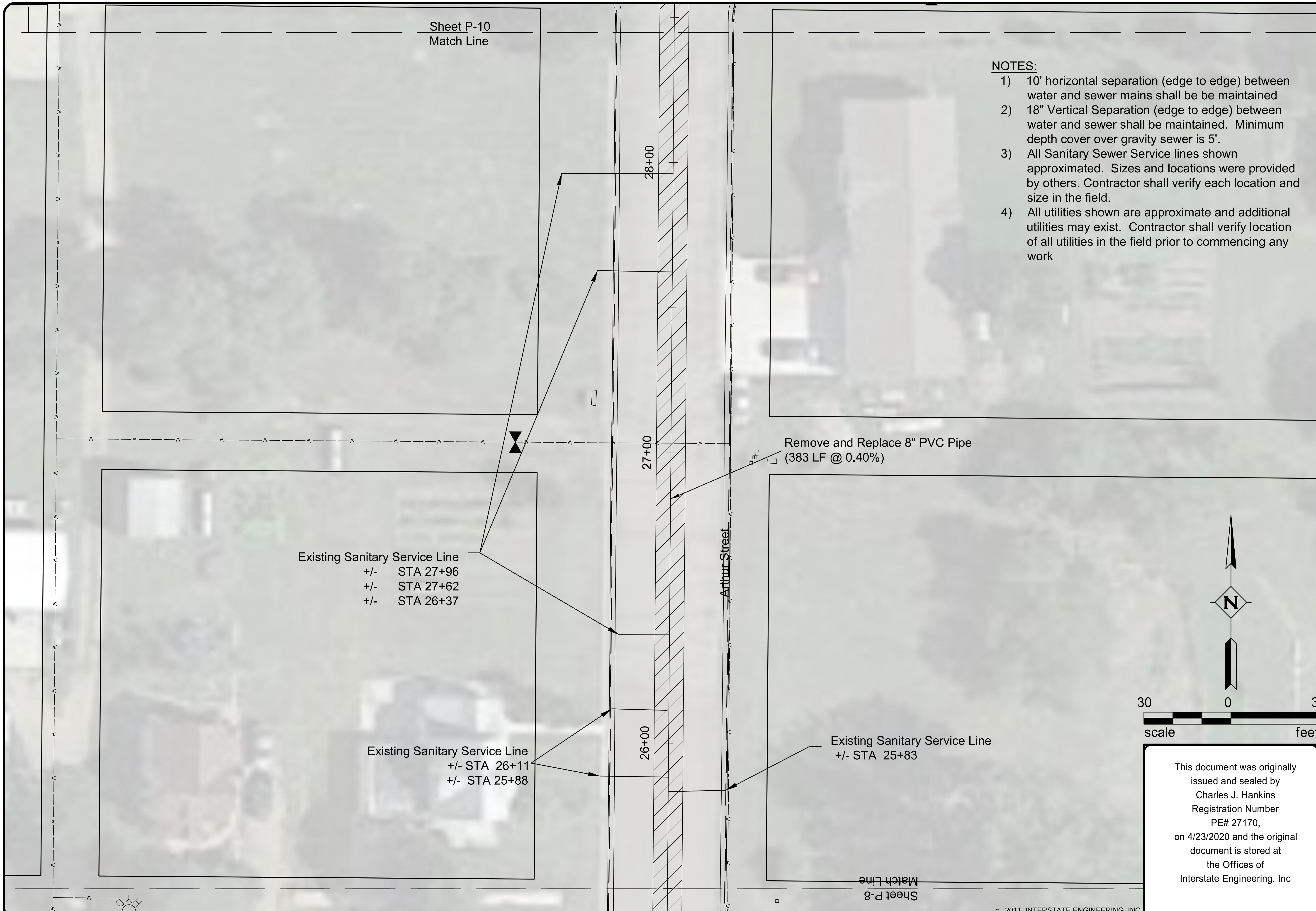
P-8
SHEET NO.



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STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA
P-9

Drawn By: T.F.,J.N
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P-9
SHEET NO.

Sheet P-11
Match Line

Existing Sanitary Service Line
+/- STA 31+16

Existing Sanitary Service Line
+/- STA 30+78

Existing Sanitary Service Line
+/- STA 30+43

Remove and Replace 8" PVC Pipe
(379 LF @ 0.40%)

NOTES:

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31+00

30+00

29+00

Arthur Street

Existing Sanitary Service Line
+/- STA 29+52

Remove and Replace 8" PVC Pipe
(50 LF @ 0.38%)
West Along Harmon Ave @ Existing slope

MH10
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)
Maintain West Inv. Inlet 1691.34
Adjust North Inv. Inlet to 1690.74

PI: 28+94.04

Assumed
380.27' of 8" PVC @ 0.38%

Harmon Ave.

Sheet P-9
Match Line

N

30 0 30
scale feet

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BEULAH,NORTHDAKOTA

P-10

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P-10
SHEET NO.

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Sheet P-16
Match Line

380.26' of 8" PVC @ 0.35%

EP: 47+81.61

47+82

MH13
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)

MH11
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)
Finish Project

HM12

198.161' of 8" PVC @ .43%

EP: 32+73.49

32+73

201.76' of 8" PVC @ 0.48%

Lamborn Ave.

Remove and Replace 10" PVC Pipe
(182 LF @ 0.32%)

32+00

Arthur Street

Remove and Replace 8" PVC Pipe
(379 LF @ 0.40%)

30 0 30
scale feet

Sheet P-10
Match Line

Revision No.	Date	By	Description

CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

P-11

Drawn By: T.F.J.N. Project No.: B20-00-029
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P-11
SHEET NO.

McGarth Ave.

33+00

BP: 33+00.00

Assumed
187.69' of 8" PVC @ 3.12%

MH39

MH36
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)

Remove and Replace 8" PVC Pipe
(194 LF @ 0.47%)

Existing Sanitary
Service Line
+/- STA 33+98
+/- STA 34+76

34+00

Lyon Street

NOTES:

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MH35
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)

MH35A

208.86' of 6" PVC @ 0.86%

35+00

PI: 34+94.26

N

30 0 30
scale feet

Remove and Replace 8" PVC Pipe
(186 LF @ 0.44%)

Existing Sanitary Service Line
+/- STA 35+84

Sheet P-13
Match Line

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CITYOFSTANTON
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BEULAH,NORTHDAKOTA

P-12

Drawn By: T.F.-J.N. Project No.: B20-00-029
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P-12
SHEET NO.

Sheet P-12
Match Line

36+00

Remove and Replace 8" PVC Pipe
(186 LF @ 0.44%)

Existing Sanitary Service Line
+/- STA 36+15

Existing Sanitary Service Line
+/- STA 38+19

Sheet P-14
Match Line

Existing Sanitary Service Line
+/- STA 36+62

PI: 36+79.79

MH32
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)

37+00

38+00

Miller Ave.

Remove and Replace 8" PVC Pipe
(381 LF @ 0.46%)

Existing Sanitary Service Line
+/- STA 38+24
+/- STA 38+64

Lyon Street

379.49' of 10" PVC @ 0.61%

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N

30 0 30
scale feet

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CITYOFSTANTON
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BEULAH,NORTHDAKOTA

P-13

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P-13
SHEET NO.

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Main Street

Assumed 378.75' of 8" PVC @ 2.49%

Sheet P-5 Match Line

Remove and Replace 8" PVC Pipe (381 LF @ 0.46%)

MH33
Remove and Replace Sanitary Sewer Manhole (See Sheet C-3)

39+00

40+00

PI: 40+60.36

EP: 41+00.36

380.82' of 10" PVC @ 0.86%

Miller Ave.

41+00

41+00

After MH33 Remove and Replace 10" PVC (50 LF @0.86%)

Sheet P-13 Match Line

Sheet P-4 Match Line

Existing Sanitary Service Line
+/- STA 39+07
+/- STA 40+19

N

30 0 30
scale feet

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Revision No.	Date	By	Description

CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

P-14

Drawn By: T.F.;J.N. Project No.: B20-00-029
Checked By: CHECKEDBY Date: APRIL 2020

Interstate Engineering, Inc.
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Beulah, ND 58523
Ph (701) 873-2266
www.interstateeng.com
Other offices in Minnesota, Montana, North Dakota and South Dakota

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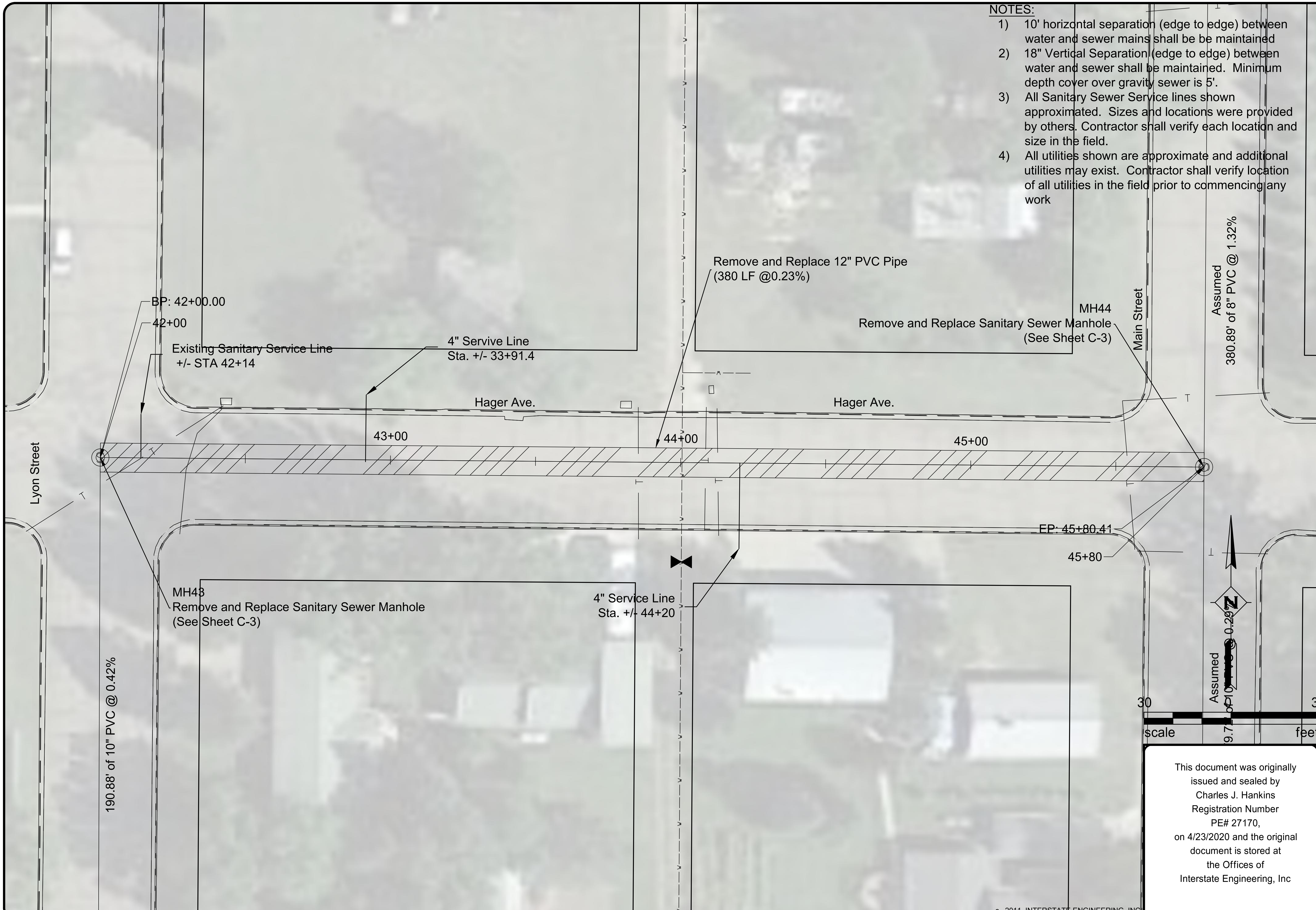
P-14
SHEET NO.

NOTES:

1) 10' horizontal separation (edge to edge) between water and sewer mains shall be be maintained
2) 18" Vertical Separation (edge to edge) between water and sewer shall be maintained. Minimum depth cover over gravity sewer is 5'.
3) All Sanitary Sewer Service lines shown approximated. Sizes and locations were provided by others. Contractor shall verify each location and size in the field.
4) All utilities shown are approximate and additional utilities may exist. Contractor shall verify location of all utilities in the field prior to commencing any work



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Revision No.	Date	By	Description

CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

P-15

Drawn By: T.F.;J.N.
Checked By: CHECKEDBY
Project No.: B20-00-029
Date: APRIL2020

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Sheet P-11
Match Line

BP: 46+00.00

46+00

MH14
Remove and Replace Sanitary Sewer Manhole
(See Sheet C-3)

47+00

380.30' of 8" PVC @ 0.31%

Lamborn Ave.

Main Street

189.62' of 8" PVC @ 0.41%

Existing Sanitary Service Line
+/- STA 36+79

Remove and Replace 10" PVC Pipe
(182 LF @ 0.32%)

30 0 30
scale feet

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Revision No.	Date	By	Description

CITYOFSTANTON
STORMSEWERIMPROVEMENTS
BEULAH,NORTHDAKOTA

P-16

Drawn By: T.F.J.N. Project No.: B20-00-029
Checked By: CHECKEDBY Date: APRIL 2020

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P-16
SHEET NO.