

CONTRACT AND SPECIFICATIONS
ASR PHASE IV: WELL 17 DUAL PUMP AND PIPING
CITY OF HASTINGS
Contract No. HU 2026-73

Sealed Proposals Will Be Opened Promptly At
4:00 PM, Wednesday, August 26, 2026

Bid Submitted By: _____



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Contract No. HU 2026-73

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PROFESSIONAL SEALS

ASR Phase IV: Well 17 Dual Pump and Piping

Contract No. HU 2026-73

Professional Engineer Seal (front)	
Professional Engineer – Div. Civil Specification Sect. 1-6	

ADVERTISEMENT FOR BIDS

The City of Hastings, Nebraska, will receive bids for the: **Contract No. HU 2026-73 ASR Phase IV: Well 17 Dual Pump and Piping, Hastings NE.** until 4:00 p.m. at the City of Hastings, 1228 N Denver Ave., Hastings, Nebraska, on Wednesday, August 26, 2026, at which time and place all bids will be publicly opened and read aloud. **Brief description of project: Water Well Work – remove existing vertical turbine and discharge piping and replace with dual pump installation and piping.** If you plan on bidding and are not already on our approved bidders list for this project, you are REQUIRED to fill out the Plan Holders Submittal Form that is located on the City website: <https://www.cityofhastings.org/bids/> .

The Contract Documents, including plans and specifications, are on file at the City of Hastings, 1228 N Denver Avenue, Hastings, Nebraska 68901. Copies of the plans and specifications in electronic (PDF) format may be obtained by visiting the City of Hastings Website: www.cityofhastings.org/bids. A paper copy is available for \$75.00, plus sales tax (\$5.25), plus shipping.

Each bid shall be accompanied by a certified check, drawn on a solvent bank in the State of Nebraska, or a bid bond in an amount of not less than five percent (5%) of the total bid of all contract construction costs, made payable to the City Treasurer of the City of Hastings, Nebraska, as security that the bidder to whom the contract may be awarded will enter into a contract to build all the improvements in accordance with this notice and give bond in the sum hereinafter provided for the construction of improvements.

No bid shall be withdrawn after opening of bids without the consent of the City of Hastings, Nebraska, for a period of sixty (60) days after scheduled time of closing bids.

Time is of the essence in this contract. In evaluating bid(s) received, the City will consider the timelines of completion of prior construction contracts, existing workload of bidders and available manpower that bidder commits to the project.

The successful bidder will be required to furnish a 1-Year Maintenance Bond in the sum of the full amount of the Contract within ten (10) days of the date of award. No additional time will be allowed the Contractor for providing the Maintenance Bond.

DATED AT HASTINGS, NEBRASKA, this 27th day of July 2026.

Tyler Ficken, City Clerk

INSTRUCTIONS TO BIDDERS

All proposal information, including any unit price fill in sheets or other required information, shall be submitted on the proposal forms hereto attached. Copies of addenda, if any, shall be signed and attached. City of Hastings does NOT accept faxed or emailed bid returns.

Bidders shall inform themselves of all relevant matters, and, if awarded the contract, shall not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder might not have fully informed themselves, prior to the bidding.

The Bidder bidding on the Specifications herein, who has exceptions to those called for in the Specifications, must so state in the space provided below and/or attach a letter explaining in detail the exceptions taken to those required in the Specifications. This letter of explanation shall become a part of the bid and shall be attached hereto. Failure by the Bidder to outline his exceptions will require the successful Bidder to comply with these Specifications.

EXCEPTIONS TO SPECIFICATIONS:

The Purchaser will not assume obligations resulting from losses or damages until acceptance of the equipment.

Checks of unsuccessful Bidders will be returned when their bids have been rejected and they will not be retained in excess of sixty (60) days from the date bids are opened. The check of the successful Bidder will be retained until the contract is awarded. Should the successful Bidder fail to perform as the Proposal and Specifications indicate, the City may use the check as liquidated damages within fifteen (15) days after written notice is given to the party who submitted the successful bid.

If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the Specifications or other proposed contract documents, he may submit to Purchaser a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addendum duly issued or delivered to each person receiving a set of such documents. The Purchaser will not be responsible for any other explanation or interpretation of the proposed documents.

All addendums must be signed and attached to bid documents.

QUESTIONS & INQUIRIES

PLEASE CONTACT ANY OF THE FOLLOWING:

Technical Questions

Keith Miller
Engineer
Ph# 402-462-3549
Email: bidquestions@cityofhastings.org

General Questions or Requests

Rena Griess
Engineering Admin Assistant
Ph# 402-462-3665
Email: bidquestions@cityofhastings.org



SUBMITTAL INSTRUCTIONS

Your bid must be returned by means of hand delivery, USPS, FedEx, UPS, or other carrier. City of Hastings DOES NOT ACCEPT bids that are faxed or emailed.

ALL the following documents are REQUIRED TO BE SUBMITTED in your bid packet:

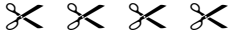
- 1. Cover sheet with your company's name filled in**
- 2. ALL addendums received – must be acknowledged and signed**
- 3. Bid Bond**
- 4. If “exceptions” are taken, include Instructions to Bidders**
- 5. Proposal Page(s)**

Failure to return required bid documents as instructed could subject your bid proposal to be rejected.

IMPORTANT MAILING (OR HAND DELIVERY) INSTRUCTIONS

Please address your return envelope as shown in the example below. All bids must be sealed in a properly marked envelope.

To hand deliver, please drop off between the hours of 8:00am – 5:00pm Monday-Friday.

Your Return Address	
	City of Hastings Attn: Renae Griess 1228 N Denver Avenue Hastings, NE 68901
<u>This Information MUST BE typed or written in the lower left hand corner of return envelope OR SIMPLY CUT OUT AND TAPE ON YOUR RETURN ENVELOPE</u>	
	
BID DOCUMENTS ENCLOSED ATTN: Renae Griess, Administrative Assistant Contract No: HU 2026-73 ASR Phase IV: Well 17 Dual Pump & Piping Bid Opens: Wednesday, August 26, 2026 @ 4:00 PM	

If returning Fed-X or similar carrier, please enclose the bid in an “inner” envelope which is sealed. Please make sure BOTH envelopes are properly marked on the OUTSIDE OF THE ENVELOPE as shown in the example above.

One bid per envelope. Bid submittal via email is not allowed. Bids must be checked in to the City of Hastings prior to 4:00pm deadline.

**FORMAL PROPOSAL FOR
ASR PHASE IV: WELL 17 DUAL PUMP AND PIPING
CITY OF HASTINGS
CONTRACT NO. HU 2026-73**

TO: City of Hastings
1228 N Denver Avenue
Hastings NE 68901

BID OPENS: August 26, 2026 @ 4:00 PM

**SEALED BIDS MUST BE RECEIVED NO LATER
THAN 4:00 PM SAME DAY. BIDS RECEIVED AFTER
THAT TIME WILL NOT BE ACCEPTED.**

We, the undersigned, being familiar with all parts of these documents, being Notice to Bidders, Bid Proposal Price Sheets, Contract Document Forms, Plans and Specifications, Affidavit, Material List, and all other parts of this document, do herein submit our proposal to furnish, install, and perform all tasks required to complete said project area(s) for the total costs; including all necessary state and local sales taxes, and any other required taxes.

**Any modifications of bid proposal will be considered non-conformance of the bid.
All exceptions to the proposal shall be noted as an exception of the bid.**

Activity	Schedule
Bid Opening date	August 26, 2026
Contract award date	NLT Sept. 14, 2026
Pre-Construction Meeting followed by notice to proceed	TBD
Completion date	December 31, 2026
Liquidated Damages	\$100 per day

Item	Description	Quantity	Unit	Unit Price	Total Price
1	MOBILIZATION	1	LS	\$	\$
2	REMOVE VERTICAL TURBINE PUMP	1	LS	\$	\$
3	REMOVE EXISTING PIPING	1	LS	\$	\$
4	DOWN WELL VIDEO LOG	1	LS	\$	\$
5	SURGE BLOCK AND BAIL	1	LS	\$	\$
6	INSTALL NEW WELLHOUSE PIPING, FITTINGS, VALVES	1	LS	\$	\$
7	MAG METER	2	Ea.	\$	\$
8	450 GPM PUMP w/ WIRE	2	Ea.	\$	\$
9	50 HP SUBMERSIBLE MOTOR	2	Ea.	\$	\$
10	DISCHARGE HEAD	1	Ea.	\$	\$
11	6" WELL COLUMN	280	FT	\$	\$
12	6" FOOT VALVE	2	Ea.	\$	\$

**FORMAL PROPOSAL FOR
ASR PHASE IV: WELL 17 DUAL PUMP AND PIPING
CITY OF HASTINGS
CONTRACT NO. HU 2026-73**

Item	Description	Quantity	Unit	Unit Price	Total Price
13	1" THREADED DROP PIPE	140	FT	\$	\$
14	5" CONCRETE	200	SF	\$	\$
15	FLOOR DRAIN	1	LS	\$	\$
16	6" DIP	68	LF	\$	\$
17	6" x 6" MJ TEE	2	EA	\$	\$
18	6" MJ PLUG	2	EA	\$	\$
19	10" x 6" REDUCER	2	EA	\$	\$
20	10" FOSTER ADAPTOR	2	EA	\$	\$
21	THRUST BLOCK	4	EA	\$	\$
Total Price <i>(in words):</i>					\$

For purposes of sales/use tax, this project falls under Nebraska Sales and Use Tax Regulation 1-017 for Contractors. By definition, a contractor is "any person who repairs property annexed to, or who annexes property to, real estate, including leased property, by attaching building materials to the annexed property or improvement being built or repaired, or who arranges for annexation of property." Please refer to www.revenue.nebraska.gov/salestax.html for additional information.

For calculating this proposal:

- All contractors are to include sales/use tax on materials in the bidder's prices if applicable.
- **Option 1 contractors must separately state materials, sales tax, labor, and other charges on all invoices for the project. Any invoices submitted that do not include this required breakdown of the charges will not be accepted for payment. (This requirement does not apply to Option 2 or 3 contractors.)**
- The sales/use tax rate on building materials is 7.0% for projects within Hastings' city limits and 5.5% for projects outside of city limits.
- Contractor labor charges for this proposal are not subject to sales/use tax per the Nebraska Department of Revenue Notice to Contractors effective October 1, 2007.
- In submitting this bid, the bidder certifies that he will comply with all applicable laws, ordinances, and codes of the City of Hastings and the State of Nebraska.
- **The Project is located INSIDE OF CITY LIMITS (7%)**

**FORMAL PROPOSAL FOR
ASR PHASE IV: WELL 17 DUAL PUMP AND PIPING
CITY OF HASTINGS
CONTRACT NO. HU 2026-73**

What contractor option have you registered with the Nebraska Department of Labor (must select one)?
Please refer to <https://dol.nebraska.gov> for additional information.

Option 1 _____

Option 2 _____

Option 3 _____

Is Nebraska Sales/Use Tax included in the above item no. 1 (must select one)?

Yes _____ No _____

Is Nebraska Sales/Use Tax included in the above item no. 2 (must select one)?

Yes _____ No _____

Any modification of bid proposal will be considered non-conformance of the bid. All exceptions to the proposal shall be noted as an exception to the bid.

Exceptions: No ☐ Yes ☐ (If yes, list on ***“Instructions to Bidders”*** page)

City of Hastings may at its own discretion delete any project area prior to award of contract.

In submitting this proposal, it is further understood that the City of Hastings Utilities Department reserves the right to reject any or all proposals, whether the price is the lowest or not, and may waive any informalities and may accept the proposal which best suits its needs. It is further understood that this proposal may not be withdrawn for a period of sixty days (60) days after the bids are opened.

All bid documents, including proposals, bid bonds, etc., must be submitted with original signatures. No copies will be accepted.

OFFICIAL NAME & ADDRESS

Firm Name

Address

City, State, Zip

Phone No.

Fax No.

Signature

Typed or Printed Name

Title

Date

Email Address

AGREEMENT

THIS AGREEMENT, made and entered into this day of , 2026,
by and between the City of Hastings, Party of the First Part, hereinafter called the "Purchaser" or
"City", and , a of (town) in the State
of , Party of the Second Part, hereinafter called the "Contractor".

WITNESSETH: THAT,

WHEREAS: The Purchaser has caused the necessary contract documents to be prepared for
defining material, equipment, and/or labor to be supplied to the City of Hastings, and delivered
complete as specified in the accompanying contract documents.

WHEREAS: The Purchaser has advertised for bids from Contractors, has received said bids,
analyzed same and duly awarded a contract to the "Contractor", "Party of the Second Part", for
material, equipment, and/or labor as hereinafter set forth and as stated more in detail in the
Proposal and related contract documents to wit; Notice to Bidders, Instructions to Bidders,
Specifications; all of which documents are attached hereto and made a part of this Contract.

NOW, THEREFORE: It is hereby agreed that for the sum of . (\$)

to be paid by the Purchaser, within Thirty (30) days after the acceptance of material, equipment,
and/or labor by the Purchaser, to the Contractor, the Contractor agrees to furnish all materials,
equipment, and/or labor as required by the accompanying specifications, and the aforesaid
contract documents, for **Contract No. HU 2026-73: ASR Phase IV: Well 17 Dual Pump and
Piping.**

All materials, equipment, and/or labor shall be in accordance with the accompanying contract
documents and specifications which are as much a part of this Agreement as if repeated verbatim
herein.

It is further agreed that the Contractor will start work promptly, furnish the necessary drawings
promptly and complete the work in the number of days set forth in the Proposal.

AGREEMENT

IN WITNESS WHEREOF: The Parties of the First and Second Parts have hereto set their hands and seals on the day and year above written.

CITY OF HASTINGS
Party of the First Part

By: _____

Date: _____

ATTEST:

City Clerk

SEAL

CONTRACTOR
Party of the Second Part

By: _____

Title: _____

Date: _____

APPROVED TO FORM:

City Attorney

Note: If executed by one other than President, Partner or the individual Owner, a Power-of-Attorney authorizing execution should accompany this Contract.

INSURANCE COVERAGE

The undersigned hereby certifies that Workmen's Compensation, Public Liability and Property Damage, and Automobile Liability and Property Damage Insurance are in force and effect in accordance with the requirements contained in "Instruction to Bidders" which is a part of this document "Bid Proposal and Specifications". We further agree to give ten (10) days notice to the City of Hastings before effective date of cancellation or reduction of any of the above coverage.

This Insurance Coverage applies only to _____

Dated _____

CONTRACTOR

By _____

Title _____

Date _____

INSURANCE COMPANY

By _____

Title _____

Address _____

Date _____

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS That we, _____
_____, hereinafter
called the Principal, and _____

hereinafter called the Surety, are held and firmly bound unto the CITY OF HASTINGS, County
of ADAMS, State of NEBRASKA, hereinafter called the Owner in the sum of _____

Dollars: \$ _____

lawful money of the United States of America, to be paid to the CITY OF HASTINGS,
NEBRASKA, for the payment whereof the Principal and Surety hold themselves, their heirs,
executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has, by means of a written agreement dated _____

20 _____, entered into a contract with the CITY OF HASTINGS, NEBRASKA, for the

Contract No. HU 2026-73: ASR Phase IV: Well 17 Dual Pump and Piping

a copy of which contract is by reference made a part hereof.

NOW, THEREFORE, the conditions of this obligation are such that

FIRST: If the Principal shall faithfully perform the contract on his part, and satisfy all claims
and demands incurred for the same and shall fully indemnify and save harmless the CITY OF
HASTINGS, NEBRASKA, from all cost and damage which said Owner may suffer by reason of
failure so to do, and shall fully reimburse and repay said Owner all outlay and expense which
said Owner may incur in making good any such default, and shall pay all persons who have
contracts directly with the Principal for labor and materials, and

SECOND: The Principal shall protect and hold harmless the CITY OF HASTINGS,
NEBRASKA, from any and all suits and actions of every description that may be brought
against said Owner on account of injuries to or death of persons or damage to property received
or sustained by any person or persons through the negligence of the Principal or his agents; and

THIRD: The Principal shall warrant the work constructed under his contract and keep in good repair at no cost to the Owner for a period of ONE (1) year(s) from date of formal acceptance by said Owner, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

The Principal and Surety or Sureties on this bond hereby agree to pay all persons, firms, or corporations having contracts directly with the Principal or with subcontractors, all just claims due them for labor performed or material furnished in the performance of the contract on account of which this bond is given, when the same are not satisfied out of the portion of the contract price which the public corporation is required to retain until the completion of the public improvement, but the Principal and Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established by law.

Every surety on this bond shall be deemed and held, any contract to the contrary notwithstanding, to consent without notice:

1. To any extension of time to the Contractor in which to perform the contract.
2. To any change in the plans, specifications or contract, when such change does not involve an increase or more than twenty percent (20%) of the total contract price, and shall then be released only as to such excess increase.
3. That no provision of this bond or of any other contract shall be valid which limits to less than five years from time of acceptance of the work the right to sue on this bond for defects in workmanship or material not discovered or known to the obligee at the time such work was accepted.

SIGNED AND SEALED THIS _____ day of _____ 20____

IN PRESENCE OF:

(Principal)

By _____
(Name) (Title)

Countersigned:

(Surety)

Resident Agent

By _____
(Attorney-in-fact)

Filed in my office this _____ day of _____ 20____

(Clerk)

AFFIDAVIT

[illegible]

I _____, _____
Name Title
of _____
Firm Name

do hereby certify that all subcontractors, vendors, persons or firms who have furnished labor or material for the _____

have been fully paid and that all taxes have been paid.

Signature

Date _____

Subscribed and sworn to me this _____ day of _____, 20_____

Notary Public

My commission expires _____.

A signed and notarized copy of affidavit must be in City of Hastings file before final payment may be made.

Copy of forms will be supplied by City of Hastings prior to final payment.

SECTION 1

GENERAL CONDITIONS

SECTION 1-1 - DEFINITION OF WORDS AND TERMS

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

1.101 Advertisement. The advertisement for work or materials on which bids are to be received.

1.102 Award. The decision of the City to accept the proposal of the lowest responsible bidder for the work, subject to the execution and approval of a satisfactory contract thereof and bond to secure the performance thereof, and to such other conditions as may be specified or otherwise required by law.

1.103 Bidder. Any individual, firm, or corporation formally submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

1.104 Calendar Day. Every day shown on the calendar, except weekends and holidays included: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving, Friday after Thanksgiving, ½ Day Christmas Eve, and Christmas Day.

1.105 Change Order. A written order to the Contractor, signed by the Engineer, ordering a change in the work from that originally shown in the plans and specifications.

1.106 City. The word "City" as used in these specifications refers to City of Hastings, Nebraska.

1.107 Contract. The written agreement executed between the City and the Contractor, covering the performance of the work and the furnishing of labor and materials, by which the Contractor is bound to perform the work and furnish the labor and materials, and by which the City is obligated to compensate him therefore at the mutually established and accepted rate or price.

The contract shall include the "Notice to Bidders", these specifications, the Contractor's Bond, the general and detailed plans, the Proposal, Special Provisions, and Supplemental Agreements.

1.108 Contract Item. An item of work specifically described and for which a price, either unit or lump sum, is provided. It includes the performance of all work and the furnishing of all labor, equipment, and materials described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specification or special provision of the contract.

1.109 Contract Period. The period from the date specified in the contract for the commencement of work to the date specified for its completion, both dates inclusive.

SECTION 1- GENERAL CONDITIONS

1.110 Contractor. The party of the second part to the contract; the individual, firm, or corporation undertaking the execution of the work under the terms of the contract and acting directly or through his, their, or its agents or authorized employees.

1.111 Easement (Right-of-Way). A right acquired by public authority to use or control property for a designated purpose.

1.112 Engineer. The Director of Engineering, acting either directly or through an assistant or other representative duly authorized by the Director of Engineering, such assistant or representative acting within the scope of the particular duties assigned him, or of the authority given him.

1.113 Extra Work. Work performed by the Contractor in order to complete the contract in an acceptable manner but for which there is no basis of payment provided in the contract.

1.114 Inspector. An authorized representative of the Engineer assigned to make detailed inspection of any or all portions of the work performed and materials furnished by the Contractor.

1.115 Laboratory. The testing laboratory of the City or any other testing laboratory which may be designated by the Engineer.

1.116 Maintenance Bond. Insures the owner of a completed construction project for a specified time period against defects and faults in materials, workmanship and design.

1.117 Notice to Bidders. The provisions, requirements, and instructions pertaining to the work to be awarded, manner and time of submitting proposals, quantities of the major items or work required, as prepared for the information of bidders.

1.118 Performance Bond. The approved form of security, executed by the Contractor and his surety or sureties, guaranteeing complete execution of the contract and all supplemental agreements pertaining thereto and the payment of all legal debts pertaining to the construction of the project.

1.119 Plans. The official plans, profiles, working drawings, and supplemental drawings, or exact reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications.

1.120 Project. The specific section of the street together with all appurtenances and construction to be performed thereon under the contract.

1.121 Proposal. The offer of the bidder, submitted on the prescribed proposal form, to perform the work and to furnish the labor and materials at the prices quoted by the bidder.

1.122 Proposal Form. The approved form on which the City requires formal bids be prepared and submitted.

SECTION 1- GENERAL CONDITIONS

1.123 Proposal Guaranty. The security furnished by the bidder with his proposal for a project, as a guaranty that he will enter into a contract for the work if his proposal is accepted.

1.124 Right-of-Way. The land area which is reserved or secured by the City for constructing the work or for obtaining material therefore.

1.125 Special Provisions. Special directions, provisions or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications. See Section II Special Provisions.

1.126 Specifications. The general term comprising all the directions, provisions, and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

1.127 Subcontractor. Any individual, firm, or corporation to whom the Contractor, with the written consent of the City, sublets any part of the contract.

1.128 Superintendent. The representative of the Contractor, present on the work at all times during progress, authorized to receive and fulfill instructions from the Engineer and capable of superintending the work efficiently.

1.129 Surety. The corporate body bound with and for the Contractor for the acceptable performance of the contract and the completion of the work, and for payment of all just claims arising therefrom.

1.130 Work. Work shall be understood to mean the furnishing of all labor, materials, equipment, paying all applicable city, state, and federal taxes, and other incidentals necessary or convenient to the successful completion of the project by the Contractor and the carrying out of all the duties and obligations imposed by the contract if applicable.

1.131 Working Day. Any day, except Saturdays, Sundays, and City of Hastings holidays. Working days for a project area shall be counted consecutively from project starting date.

1.132 Completion of the Work and Formal Acceptance by the City. Whenever the term "completion of the work and formal acceptance by the City" is used, it refers to and means the formal acceptance of the work by the Engineer and the City at the time the Contractor has all work under the contract completed and in place. Release of the final pay estimate shall constitute formal acceptance by the City.

1.133 Final Acceptance of the Work. Whenever the term "final acceptance of the work" is used, it refers to and means the time when the Engineer and City finally accept the work after the expiration of the time for which the Contractor guarantees to keep the work in repair.

1.134 Abbreviations.

A.A.S.H.O. American Association of State Highway Officials

SECTION 1- GENERAL CONDITIONS

A.S.M.E.	American Society of Mechanical Engineers
A.S.T.M.	American Society for Testing Materials
A.R.E.A.	American Railway Engineering Association
A.W.S.	American Welding Society
D.O.T.	Department of Transportation, Office of Pipeline Safety
O.S.H.A.	Occupational Safety and Health Administration
A.W.W.A.	American Water Works Association

SECTION 1-2 - PROPOSAL REQUIREMENTS AND CONDITIONS

1.201 Contents of Proposal Forms. Bidders will be furnished with proposal forms which will state the location and description of the contemplated work and will show the estimate of the various quantities and kinds of work to be performed or materials to be furnished, with a schedule of items for which unit bid prices are asked, and the time in which the work must be completed, and the date, time, and place of opening bids. All special provisions and required provisions will be grouped together and bound with or included through reference in the proposal form.

1.202 Interpretation of Quantities in Proposal Forms. The quantities listed in the proposal forms are to be considered as approximate, unless otherwise provided by special provision. It is understood that the quantities of work to be done and materials to be furnished may each be increased, diminished or omitted, as hereinafter provided, without in any way invalidating the unit bid prices, except as provided in Article 1.403.

1.203 Examination of Plans, Specifications, Special Provisions, and Site of Work. The bidder is required to examine carefully the site, and the proposal, plans, specifications, special provisions, and contract form, for the work contemplated, and it will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of these specifications, the special provisions, and contract. It is mutually agreed that the submission of a proposal shall be considered prima facie evidence that the bidder has made such examination.

1.204 Preparation of Proposal. Bidders shall submit their proposals on blank forms furnished by the Engineer, with the full name and address and the place of business or residence of the bidder. If the bidder is co-partnership, then the signature shall be by a member of the firm, with the names and addresses of each member; and if a corporation, then by an officer of the corporation in the corporate name and with the corporate name and with the corporate seal attached thereto.

All blank spaces in the form shall be fully filled; numbers shall be stated in legible figures and writing when required; the signature shall be longhand; and the complete form shall be without interlineation, alteration or erasure.

No oral, telegraphic, telephonic, faxes, or electronically mailed proposals or modifications will be considered.

SECTION 1- GENERAL CONDITIONS

When certain alternative prices, for both increasing and decreasing the cost, are required, as called for in the proposal sheet, it must be understood that all materials and workmanship required shall be the best of their respective kinds; and in all cases, shall correspond with similar work herein specified and, if accepted, the work shall be done under the general terms of the specifications.

1.205 Statement of Bidder's Financial Conditions. Any bidder may be required by the City to submit data to satisfy the City that such bidder is prepared to fulfill the contract if it is awarded to him.

1.206 Certified Check, Cashier's Check or Bid Bond. Each bidder must submit with his proposal a certified check, cashier's check or bid bond in the amount of not less than five percent (5%) of the amount bid, drawn to the order to the City of Hastings, Nebraska, guaranteeing the execution of the contract and bond required, within ten (10) days of the notification of award. Any certified check must be issued by a U.S. Commercial Bank.

1.207 Filing of Proposal. The proposal and the supporting proposal guaranty for each project shall be filed in separate but attached envelopes, so marked as to indicate their contents. All proposals shall be filed with the City at the place designated in the notice to bidders, prior to the time advertised for the opening of bids.

1.208 Withdrawal of Proposal. A bidder will be permitted to withdraw his proposal unopened after it has been submitted, if his request for withdrawal is made in writing and delivered personally by the bidder or his authorized representative prior to the time specified for opening bids.

1.209 Public Opening of Proposals. Proposals will be publicly opened and read at the time and place stipulated in the notice to bidders.

1.210 Material Guaranty. The bidder may be required to furnish a complete statement of the origin, composition, and manufacture of any or all materials to be used in the construction of the work, together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

SECTION 1-3 - AWARD OF CONTRACT

1.301 Consideration of Proposals. After the proposals are opened and read, they will be compared on the basis of the summation of the products of the quantities shown in the bid schedule by the unit bid prices. The results of such comparisons will be immediately available to the public.

The right is reserved to reject any and all proposals and to waive technical errors as may be deemed best for the interest of the City.

1.302 Award of Contract. In the award of contract, consideration will be given not only to the prices bid but also the mechanical and other equipment available to the bidder, the financial

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responsibility of the bidder, and his ability and experience in the performance of like or similar contracts.

The award of alternatives proposed will be selected not only of the price but of the quality of the products provided, availability of replacement parts, repair, connection to future or existing systems, longevity, durability, function, and all other engineering and operational consideration.

Award of contracts will be made as promptly as practical after bids have been opened and read. The City reserves the right to delay the award for such time as is needed for the consideration of the bids, and for the receipt of concurrence in recommended contract awards from other governmental agencies whose concurrence may be required.

1.303 Cancellation of Award. The City reserves the right to cancel the award of any contract at any time before the execution of the said contract by all parties without any liability against the City.

1.304 Return of Proposal Guaranty. Proposal guaranties will be returned to the unsuccessful bidders by mail promptly after the signing of the contract has been made. Return to the successful bidder will be made after the signing of the contract and filing of the contract bond.

1.305 Maintenance Bond. The Contractor shall furnish a maintenance bond with a company having the approval of the City in an amount of one hundred percent (100%) of the completed construction project for a specified time period of three (3) years against defects and faults in materials, workmanship, and design.

In the event that Contractor chooses to submit a bond other than the bond from contained in this package, such submission is done at the risk of the bidder. All such substituted bond forms shall contain indemnification both for performance and warranty as set out more fully in these documents

1.306 Performance Bond. The Contractor shall furnish a performance bond with a company having the approval of the City in an amount of one hundred percent (100%) of the contract price guaranteeing complete and faithful performance of the contract, payment of all bills of whatever nature which could become a lien against the property.

In the event that Contractor chooses to submit a bond other than the bond from contained in this package, such submission is done at the risk of the bidder. All such substituted bond forms shall contain indemnification both for performance and warranty as set out more fully in these documents.

1.307 Failure to Execute Contract. Failure to execute a contract and file an acceptable performance bond, as provided herein, within ten (10) days from date of award shall be just cause for the annulment of the award and the forfeiture of the certified check, bid bond, or cashier's check to the City, not as a penalty but in liquidation of damages sustained.

SECTION 1-4 - SCOPE OF WORK

1.401 Intent of Plans and Specifications. The intent of the plans and specifications is to provide for the construction and completion of every detail of the work described therein. It shall be understood by the Contractor that he will furnish all labor, materials if applicable (see

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Section 5 paragraph 5.002 for gas main installation materials), tools, transportation, and supplies required for all or any part of the work to make each item complete in accordance with the spirit of the contract. It is understood that the apparent silence of the specifications as to any detail, or the apparent omission of a detailed description concerning any point, shall be regarded as meaning that only the best general practice is to prevail, and that only materials and workmanship of the best quality are to be used.

For the purpose of design and the preparation of the Engineer's estimate, the City may perform a reasonable amount of exploratory work to gain information relative to surface and subsurface conditions relating to types of soil, moisture content and types and extent of rock strata.

This information, when shown on the plan, represents to the best of the City's knowledge, conditions as of the date the survey was made. The appearance of this information on the plan will not constitute a guarantee that conditions other than those indicated will not be encountered at the time of construction.

The bidder may utilize this information as he sees fit. Any bidder interested in the work is authorized to make whatever additional investigation he considers advisable.

In making such additional investigation, the bidder is directed to the Engineer for information relating to available right-of-way. If there are, at that time, any parcels of land over which the City does not have jurisdiction, right of entry must be secured by the prospective bidder from those authorized to grant such permission.

1.402 Special Work. Any conditions not covered by these standard specifications are stated in the special provisions.

1.403 Increased or Decreased Quantities of Work. The Engineer reserves the right to alter the quantities of contract items for which there are bid prices. Such increases or decreases in quantities shall be made as he considers necessary or desirable without waiving or invalidating any of the provisions of the contract; provided, that all such alterations shall be ordered in writing and that a supplemental agreement shall be executed with the Contractor for the item or items involved, when such alterations involve an increase or decrease of more than twenty percent (20%) of the total cost of the work of any group of the contract calculated from the original proposal quantities and the contract unit prices. The Contractor shall not start on any alteration requiring a supplemental agreement until the agreement setting forth an equitable adjustment of compensation, satisfactory to both parties, shall have been executed by the Engineer and the Contractor.

1.404 Changes in Work - Change Order. The City reserves the right to order the performance of work of a class not contemplated in the proposal but which may be considered necessary to complete satisfactorily the work included in the contract. All change orders must be approved in writing prior to start of work.

- a. If applicable unit prices are not contained in the Agreement or if the total net change increases or decreases the total Contract Price more than twenty (20) percent, the City shall, before ordering the Contractor to proceed with desired changes, request an itemized

SECTION 1- GENERAL CONDITIONS

proposal from him covering the work involved in the change after which the procedures shall be as follows:

1. If the proposal is acceptable, the City will prepare the change order in accordance therewith for acceptance by the Contractor.
 2. If the proposal is not acceptable and prompt agreement between the two parties cannot be reached, the City may order the Contractor to proceed with the work on a cost-plus-limited basis. A cost-plus-limited basis is defined as the net cost of the Contractor's labor, materials, and insurance plus fifteen (15) percent of said net cost to cover overhead and profit, the total cost not to exceed a specified limit.
- b. Each change order shall include in its final form:
1. A detailed description of the change in the work.
 2. The Contractor's proposal (if any) or a conformed copy thereof.
 3. A definite statement as to the resulting change in the Contract Price and any impacts on project schedule.
 4. The statement that all work involved in the change shall be performed in accordance with Contract requirements except as modified by the change order.

1.405 Removal and Disposal of Structures and Obstructions. The Contractor for bridge and culvert work shall remove any existing structure or part of structure that in any way interferes with the new construction. If specific payment for such work has not been provided in the contract, it will be paid for as extra work.

The Contractor shall remove any materials or structures found on the right-of-way which are not to remain in place or which have not been designated for use in the new construction. The removal and disposal of pipe culverts will not be paid for directly, but shall be considered as incidental work, and the cost of such removal and disposal shall be considered to be included in the contract price for other items. Pipe culverts shall be removed by methods that will cause a minimum of damage to the pipe culverts. The removal and disposal of bridges or other masonry or monolithic concrete construction will be paid for. If the contract does not contain an item for such work, it will be paid for as extra work. Whenever City of Hastings requires abandonment of old utility mains or services, the Contractor shall plug or cap all open ends.

1.406 Rights In and Use of Materials Found on the Right-of-Way. Unless stated to the contrary in the contract documents, all materials, such as stone, gravel, sand, timber, and structures or parts of structures, found on the right-of-way of the street or on land acquired for the work, are the property of the City or the City of the fee title to the land, and shall not be used or destroyed by the Contractor without special permission from the Engineer. When the Contractor is permitted to use materials found on the right-of-way, any excavations that he makes below the grade elevation shall be backfilled with other suitable materials so that the

SECTION 1- GENERAL CONDITIONS

finished street will conform to the grade shown on the plans. No extra compensation will be allowed for such backfilling.

When rock excavation is encountered, any portion of rock excavation which would otherwise be deposited in waste areas and not be incorporated in the embankments may be processed and used, royalty free, by the Contractor in any other portion of the construction in which material of that quality would be acceptable. No deduction will be made from excavation quantities for rock so used.

1.407 Right-of-Way. Right-of-Way for the work will be provided without cost to the Contractor. Right-of-way will be made available to the Contractor on or before the date specified for the commencement of the work, unless a later date for the right-of-way to be made available to the Contractor is designated in the contract documents.

1.408 Railroad Crossings. Whenever the work involves construction with which railroad companies are concerned, the performance of the work is contingent upon arrangements with the railroad companies for the proposed construction. No claims will be allowed for loss or damage caused by failure to complete such arrangements. The Contractor is responsible to pay for any railroad required Contractor's fees.

SECTION 1-5 - CONTROL OF WORK

1.501 Authority of Engineer. The Engineer will decide any questions that arise with reference to the intent of the contract documents and compliance therewith. They will resolve all questions relating to materials, work, progress, disputes and mutual rights between contractors, fulfillment of contract and compensation, in accordance with the provisions of these specifications.

1.502 Plans and Working Drawings. The approved plans will be supplemented by such working drawings as are necessary to adequately control the work. It is mutually agreed that all authorized alterations affecting the requirements and information given in the approved plans shall be in writing.

Working drawings for any structure shall consist of such detailed plans as may be required of the Contractor for the execution of the work. These are not included in the plans furnished by the Engineer. They shall include shop details, erection plans, masonry, and form work. The Engineer's prior approval of the shop details must be obtained before any fabrication work involving these plans is performed. Erection plans, masonry layout diagrams, and plans for cribs, cofferdams, false work, centering and framework, as well as any other working drawings not previously mentioned, may be required of the Contractor and shall be subject to the Engineer's approval.

1.503 Alteration of Plans or of Character of Work. The Engineer shall have the right to make alterations in plans or character of work as may be considered necessary or desirable during the progress of the work to complete satisfactorily the proposed construction. Such alterations shall not be considered as a waiver of any conditions of the contract or invalidate any of the provisions thereof.

1.504 Coordination of Plans, Specifications, Special Provisions and Supplemental Specifications. These specifications, the supplemental specifications, the plans, special

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provisions, and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complimentary and to describe and provide for a complete work.

1.505 Cooperation of Contractor. The Contractor will be supply a minimum of two sets of approved plans and contract assemblies, including special provisions, one set of which the contractor shall keep available on the work at all times.

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Engineer and other contractors in every way possible.

The Contractor shall at all times have on the work, as his agent, a competent superintendent capable of reading and thoroughly understanding the plans and specifications, knowledgeable in the pertinent industry codes and standards, thoroughly experienced in the type of work being performed, who shall receive instructions from the Engineer or his authorized representatives.

The superintendent shall have full authority to execute the orders or directions of the Engineer without delay, and to promptly supply such materials, equipment, tools, labor and incidentals as may be required. Such superintendent shall be furnished irrespective of the amount of work sublet.

Before starting any work under this Contract, the Contractor shall file with the City a letter signed by an officer of the company (or City, or partner, as the case may be), giving the name, address, and telephone number of the superintendent who is to represent the Contractor in all matters with prosecution of the work and who is to officially receive on behalf of the Contractor, notices or directions issued by the City or its Engineer, and act upon them as required. If, during the life of the Contract, a change in superintendents is made by the Contractor, a new letter shall be filed simultaneously with the change.

1.506 Surveys. Lines and elevations shall be established by the Engineer before the work commences, and the Contractor shall obtain lines and elevation from the points so set by the Engineer. The Contractor shall furnish all stakes necessary for lines and elevations and necessary cooperation for the Engineer in setting same.

All property pins, section corners, right of way monuments, permanent bench marks (brass caps), and all other survey monuments disturbed or removed by the Contractor shall be replaced by a licensed Surveyor at the expense of the Contractor. The Contractor shall take all necessary precaution to maintain in good condition all survey monuments.

The Contractor will insure the Engineer or his representative is present to verify the elevation of each sanitary sewer manhole set or tied into. The Contractor will also insure the Engineer or his representative is present to verify the location of all utilities (highways, railroads, drainage, etc.) uncovered, crossed, or otherwise exposed during the completion of the project. The Contractor shall keep the Engineer or his representative abreast of activities so adequate response by the Engineer or his representative can be made without unduly delaying the construction process. A 24 hour notice may be enforced if sufficient time is not allowed by the Engineer or his representative to conduct all necessary field surveys.

See specification 2.013 for additional information.

1.507 Authority and Duties of Inspector. The City may appoint inspectors to represent the Engineer in the inspection of all materials used in and all work done under the contract. Such inspection may extend to any part of the work and to the preparation of manufacture of the materials to be used. The Inspector will not be permitted to modify in any way the provisions of the contract documents, nor to delay the work by failing to inspect materials and work with reasonable promptness. An inspector is placed on the work to keep the Engineer informed as to its progress and the manner in which it is being done; also, to call the Contractor's attention to any infringements of the contract documents. The Inspector will not act as foreman or perform other duties for the Contractor, not improperly interfere with the management of the work. He will not be authorized to approve or accept any portion of the work. In case of dispute between the Contractor and Inspector as to quality of materials or the manner of performing the work, the Inspector shall have authority to reject materials or suspend the work until the question at issue can be decided by the Engineer. Written notice of the suspension of work will be given to the Engineer and the Contractor.

Upon the failure of Contractor or its Subcontractors to comply with any of the requirements of this Contract (but not limited to quality or safety), the City shall have the authority to stop any portion of the work affected by such failure until such failure is remedied. If the City issues a Stop Work Order, the City shall not be liable for any costs or expenses claimed by Contractor arising out of such issuance. The construction schedule shall not be delayed or extended as a result of the City's issuance of a Stop Work Order.

1.508 Inspection of Work.

- a. The Contractor shall notify the City sufficiently in advance of backfilling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the City, the Contractor shall uncover for inspection and recover such facilities, all at his own expense.
- b. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work is being performed in conformance with the contract documents. At any time before acceptance of the work, upon request of the Engineer, the Contractor shall remove or uncover such portions of the finished work as the Engineer may direct. After examination has been made, the Contractor shall restore such portions of the work to the standard required by the contract documents.
- c. Should it be considered necessary or advisable by the City any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor and material. If such work is found to be defective in any important respect, due to fault of the Contractor or his Subcontractors, the Contractor shall defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus fifteen (15) percent of such costs to cover superintendent's, general expenses and profit, shall be allowed the Contractor and he shall in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

1.509 Removal of Defective Work. Any defective work shall be removed and replaced at the Contractor's expense. Should the Contractor fail or refuse to remove defective work when so ordered by the Engineer, the Engineer shall have authority to order the Contractor to suspend further operations, and may withhold payment on estimates until such defective work has been removed and replaced in accordance with the plans and specifications. Continued failure or refusal on the part of the Contractor to correct defective work promptly shall be sufficient cause for the City to declare the contract in default, and to proceed to have the work completed in accordance with Article 1.808.

1.510 Final Inspection. Upon written notification by the Contractor or his authorized representative that the work is completed, the Engineer shall make a final inspection within 10 days of the completion of all work included in the contract. If the work is found not to be in accordance with the contract documents, the Engineer shall provide the Contractor with a "Punch List" of the particular defects to be remedied.

Once the Engineer and Contractor determines the work is completed a written Notice by the Engineer shall be given to the Contractor within 10 days of the completion of all work items.

1.511 Review By City. The City, its authorized representatives and agents shall at all time have access to and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the City through its authorized representatives or agents.

1.512 Quality Control. The contractor shall make every effort to provide control of the workmanship of the project. This shall include but not be limited to the following construction practices.

1. Concrete surfaces of sidewalks, paving, slab on grade and other related concrete work shall be smooth and constructed to the elevations as shown on the plans or as directed by the Engineer. An acceptable construction tolerance shall be agreed upon before work is to begin. The Contractor shall notify the Engineer 72 hours before any work is to begin which will involve concrete finishing.
2. Lines and grades of all pipes, conduits, casing, grading, etc. shall be constructed according to the plans or as directed by the Engineer. An acceptable construction tolerance shall be agreed upon before any pipeline, conduit installation, casing installation, or grading begins.

SECTION 1-6 - CONTROL OF MATERIALS.

1.601 Source of Supply and Quality Requirements. The materials used on the work shall meet all quality requirements of the contract. In order to expedite the inspection and testing of materials, the Contractor shall notify the Engineer of his proposed sources of materials prior to delivery. At the option of the Engineer, approval of the source or approval of materials at the source prior to delivery may be required. If it is found after trial that sources of supply for previously approved materials do not produce specified products or when conditions are such that the use of unfit materials cannot be prevented except by extraordinary inspection methods, the Contractor shall furnish materials from other sources. Before delivery is started and at any time during the process of preparation and use, the materials shall be subject to the approval of the Engineer.

All materials supplied shall be new and undamaged.

1.602 Storage of Materials. The Contractor shall be responsible for the care and storage of materials delivered on the work or purchased for use thereon. Any material that has been delivered on the work and has become damaged before actual incorporation in the work may be rejected by the Engineer even though it may previously have been accepted. Stored materials shall be so located as to facilitate thorough inspection.

1.603 Unacceptable Materials. All materials not conforming to the requirements of the specifications at the time they are to be used shall be considered as unacceptable and all such materials will be rejected and shall be removed immediately from the site of the work unless otherwise instructed by the Engineer. No rejected material, the defects of which have been corrected, shall be used until approval has been given.

1.604 Guarantee. The Contractor shall guarantee the design, equipment, materials, and workmanship furnished under this Contract to be as specified and to be free from defects during the guarantee period. In addition, the equipment and materials furnished by the Contractor shall be guaranteed to be free from defects in design.

Except as otherwise prescribed by the terms of any special guarantees required by the contract documents, the guarantee period shall begin on the date of formal acceptance by the City and shall end 36 months later.

Upon notification, the Contractor shall promptly make all adjustments, repairs, or replacements which, in the opinion of the Engineer or City, arose out of defects and became necessary during the guarantee period.

The cost of all materials, parts, labor, transportation, supervision, special tools, and supplies required for replacement or repair of parts and for correction of defects shall be paid by the Contractor or by the surety.

This guarantee shall be extended to cover all repairs and replacements furnished under the guarantee, including repair for ditch settlement, and the period of the guarantee for each such repair or replacement shall be 36 months after installation or the end of the project guarantee period, whichever is later, except as otherwise prescribed by the terms of any special guarantees required by the contract documents.

If within 10 days after the City has notified the Contractor of a defect, failure, or abnormality in the work, the Contractor has not started to make the necessary repairs or adjustments, the City is hereby authorized to make the repairs or adjustments or to order the work to be done by a third party, the cost of the work to be paid by the Contractor.

In the event of an emergency where, in the judgment of the City, delay would cause serious loss or damage, repairs or adjustments may be made by the City, or a third party chosen by the City, without advance notice to the Contractor and the cost of the work shall be paid by the Contractor or by the surety.

The acceptance of the installation, or any part of it, shall not act to waive this liability on the part of the Contractor.

1.605 "Or Equal" Clause. Whenever, in any section of the contract documents, plans or specifications, any article, materials, or equipment is defined by describing a proprietary product or by using the name of a manufacturer or vendor, the term "or approval equal", if not inserted, shall be implied. The specified article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard or design, efficiency and quality desired, and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design and efficiency. The Engineer shall determine the acceptability of articles, materials or equipment proposed as equals.

1.606 Shop Drawings. The Contractor shall submit for review and approval all shop drawings as indicated in these specifications before the beginning of construction. Failure to submit shop drawings shall suspend payment of any materials delivered or installed. This includes delivery of materials in storage. These requirements will be strictly enforced.

SECTION 1-7 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1.701 Laws to be Observed. The Contractor shall keep himself fully informed of, and at all times, shall observe and comply with all federal and state laws, all local bylaws, ordinances, and regulations, and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall protect and indemnify the City and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees. It shall be the responsibility of the Contractor to provide all safeguards, safety devices and protective equipment and to take any other needed actions as are reasonably necessary to protect the life and health of employees on the project.

Work Eligibility Status. As required under Nebraska LB 403 for any contract entered into after October 1, 2009 the Contractor must register and use a federal immigration verification system, such as the E-Verify Program or an equivalent federal program designated by the United States Department of Homeland Security or other federal agency authorized to verify the work eligibility of a newly hired employee pursuant to the Immigration Reform and Control Act of 1986, to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

1.702 Fair Labor Standards. The Contractor agrees to comply with all current applicable State, Federal, and City fair labor standards in the execution of the contract.

1.703 Permits. The Contractor shall procure and pay for all permits, licenses and bonds necessary for the execution of his work and/or required for municipal, state and federal regulations and laws.

1.704 Restoration of Surfaces Opened by Permit. Upon the presentation of a duly authorized and satisfactory permit from the City, which provides that all necessary repair work will be paid for by the party to whom such permit is issued, the Engineer may authorize the Contractor to allow parties bearing such permits to make openings in the street. The Contractor shall make in an

acceptable manner all necessary repairs due to such openings, and such necessary work ordered by the Engineer shall be paid for as provided in these specifications.

1.705 Safety, Health and Sanitation. In the performance of his contract, the Contractor shall comply with all applicable federal, state and local laws governing safety, health and sanitation.

- a. The Contractor shall exercise proper precaution at all time for the protection of persons and property and shall be responsible for all damages to persons or property either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes and OSHA shall be observed, and the Contractor shall take or cause to be taken such additional safety and health measures as the City may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws. The Contractor shall comply with the latest edition of Part VI of the Manual on Uniform Traffic Control Devices. The Contractor shall install plastic fence on open holes when directed by the Inspector. The Contractor shall wear hard hats and safety glasses at all times on the construction site.
- b. The Contractor shall maintain an accurate record all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the City with reports concerning these matters.
- c. The Contractor shall indemnify and hold harmless the City 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 claim, damage, loss or expense 1) is attributed to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom, and 2) is caused in whole or in part by any negligent act or omission 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, regardless of whether or not it is caused in part by a party indemnified hereunder.

In any and all claims against the City 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 under this paragraph "c" 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 employee benefit acts.

The obligation of the Contractor under this paragraph "c" shall not extend to the liability of the Engineer, his agents or employees arising out of 1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or 2) the giving

of or failure to give directions or instructions by the Engineer, his agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

The Contractor shall immediately correct any unsafe conditions identified by the City. In the event the Contractor fails to immediately correct such unsafe conditions, the City may either have the unsafe conditions corrected by others at the Contractor's expense, or direct that the work be stopped in the area of the unsafe condition; however, this right to stop/suspend the work shall not give rise to any duty on the part of the City to exercise this right.

The Contractor waives the right to bring claim for damages against the City or Engineer for the correction of unsafe conditions or work stoppages in connection with the Contractor's Safety, Health, and Accident Prevention Program or such program of another contractor. If such a claim against the City or Engineer is brought by a third party, the Contractor shall indemnify and defend the City or Engineer against such claim. The Contractor shall submit to City of Hastings a current copy of the company safety manual before starting work.

1.706 Claims for Labor and Materials. The Contractor shall indemnify and save harmless the City from all claims for labor and materials furnished under this contract. When requested by the City, the Contractor shall submit satisfactory evidence that all persons, items, or corporation who have done work or furnished materials under this contract, for which the City may have become liable under the laws of the State, have been fully paid or satisfactorily secured. In case such evidence is not furnished or is not satisfactory, an amount will be retained from money due the Contractor which, in addition to any other sums that may be retained, will be sufficient, in the opinion of the City, to meet all claims of the persons, firms, and corporations as aforesaid. Such sum shall be retained until the liabilities as aforesaid are fully discharged or satisfactorily secured.

1.707 Contractor's Insurance Coverage. The Contractor shall not commence work under this Contract until Contractor has obtained all the insurance required under this article. Furthermore, the Contractor shall not allow any sub-contractor to commence work under this Contract until the sub-contractor has obtained the same insurance as is required of the Contractor. The sub-contractor alone shall be responsible for the sufficiency of its own insurance program.

Certificates of Insurance. Certificates of Insurance acceptable to the City shall be filed with the City prior to commencement of the work. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled, or materially altered, until at least 30 days prior written notice has been given to the City. All insurance carried shall conform to the relevant provisions of the respective Project Documents and be with insurance companies which are rated "A, X" or better by Best's Insurance Guide, or other insurance companies of recognized responsibility satisfactory to the City.

Additional Insureds. Insurance coverages furnished under this Contract, with the exception of Workers' Compensation and Employer's Liability, shall include the City of Hastings and their partners, directors, officers, agents, and employees as Additional Insureds on a primary and noncontributory basis, and shall include Products and completed operations with respect to the activities of the Contractor and shall be maintained for the full duration of the project including for a period after completion to include the statute of repose.

Notwithstanding any other provision of these policies, the insurance afforded shall apply separately to each insured, with respect to any claim, suit, or judgment made or brought by or for any other insured, as though a separate policy had been issued to each, except the insurer's liability shall not be increased beyond the amount or amounts for which the insurer would have been liable had only one insured been named.

The City shall not by reason of their inclusion under these policies incur liability to the insurance carrier for payment of premium for these policies.

Waiver Of Subrogation. The Contractor and their sub-contractor shall require their insurance carriers, with respect to all insurance policies, to waive all rights of subrogation against the City their partners, directors, officers, agents, and employees.

Workers' Compensation And Employer's Liability Insurance. The Contractor shall procure, and shall maintain during the life of this Contract, Workers' Compensation Insurance as required by workers' compensation laws of the State of Nebraska and also of the state in which the sub-contractor is domiciled.

The Contractor shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a workers' compensation law. The Employer's Liability Insurance shall contain the following limits of liability:

Bodily Injury by Accident	\$500,000 each accident
Bodily Injury by Disease	\$500,000 each employee
Bodily Injury by Disease	\$500,000 policy limit

General Liability Insurance. This insurance shall be written per project on an “occurrence” policy form, including coverage for premises/operations, products/completed operations, broad form property damage, blanket contractual liability, independent contractor’s and personal injury, with no exclusions for explosion, sudden and accidental pollution or an absolute or total pollution exclusion, collapse and underground perils. The commercial general liability policy shall also include a severability of interest clause and a cross liability clause in the event more than one entity is “named insured” under the liability policy. If applicable, this policy shall also be endorsed to include railroad protective with limits no less than replacement cost of the value of any real property covered under any rail agreement entered into by the City. If work is being done near a railroad track, the 50’ railroad right of way exclusion must be deleted.

Limits of Insurance shall be as follows:

Each Occurrence Limit	\$1,000,000
Products/Completed Operations	\$2,000,000
General Aggregate Limit	\$2,000,000
Personal and Advertising Injury	\$1,000,000

Pollution Liability – (If Applicable).

Limits of at least: \$1,000,000 per occurrence; \$1,000,000 aggregate

If Contractor or its Sub-subcontractor's work includes but not limited to remediating, handling, processing or disposing of hazardous material including but not limited to asbestos containing materials, silica, lead, PCBs, contaminated soil, etc, coverage shall be provided for bodily injury, property damage and clean-up costs resulting for pollution conditions.

Riggers Liability – (If applicable). Should work involve the moving, lifting, lowering, rigging or hoisting of property or equipment Contractor shall carry Rigger's Liability Insurance to insure against physical loss or damage to the property or equipment on a Replacement Cost Basis

Automobile Liability Insurance. This insurance shall be written under a Business Auto Policy and shall protect the Contractor and Additional Insureds against claims arising from injuries to members of the public or damage to property of others arising from the use of automobiles whether such automobiles are owned, non-owned, or hired. Automobile insurance shall include Motor Carrier Endorsement Act MCS 90 and transportation pollution coverage if applicable. If work is being done near a railroad track, the 50' railroad right of way exclusion must be deleted.

Limit of Liability \$1,000,000 each accident

Umbrella Liability Policy. This insurance shall protect the Contractor and the Additional Insureds against all claims in excess of the limits provided under the employer's liability, automobile liability, and general liability policies. The liability limits of the umbrella liability policy shall be not less than \$5,000,000 per occurrence. This policy shall be an "occurrence" type policy. However, City reserves the right to require higher limits with respect to each project.

Professional Liability (Applicable for contractors providing or is responsible for providing design/engineering/surveying services/or consulting services):

Limits of at least: \$1,000,000 per occurrence; \$1,000,000 aggregate

Policy shall provide for a retroactive date prior to the starting date of services for which this agreement applies. Policy shall not exclude bodily injury, property damage, or pollution liability. Coverage shall remain in force for a minimum of 3 years following substantial completion of construction through either policy renewal or the purchase of an Extended Reporting Provision. Contractor agrees to waive its rights of recovery. Subcontractor's insurer shall endorse the policy to waive subrogation against Owner and their respective agents, officers, directors and employees.

Transportation Insurance. Contractor shall purchase inland marine coverage at the expense of Contractor on all equipment and materials, where City has an insurable interest. Insurance shall protect for Contractor and City from physical loss of equipment while loading, unloading, in transit to jobsite, and until equipment or materials have been installed or received by City.

Proof of Carriage of Insurance. Satisfactory certificates of insurance shall be filed with the City prior to starting any construction work on this contract. The certificates shall state that

thirty (30) days written notice shall be given to the City before any policy covered thereby is changed or canceled.

Indemnification. To the fullest extent permitted by laws and regulations, the Contractor shall defend, indemnify, and hold harmless the City, their officers, directors, partners, consultants, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising out of or resulting from the performance of the work by the Contractor, any sub-contractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by law and regulations regardless of the negligence of any such party.

In any and all claims against the City, or of any of their officers, directors, partners, consultants, agents, or employees by any employee of the Contractor, any sub-contractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, this 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 such sub-contractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts, nor shall this indemnification obligation be limited in any way by any limitation on the amount or type of insurance coverage provided by the City, the Contractor, or any of their sub-contractors.

Property Insurance A.K.A. Builder's Risk. Unless otherwise provided, the CONTRACTOR shall purchase and maintain property insurance, a.k.a. builder's risk insurance, on the building construction project in amount thereto for entire work at site on a replacement cost basis. Such property insurance shall be maintained, unless otherwise provided in contract documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final acceptance of work by OWNERS. Insurance shall include interests of OWNERS, CONTRACTOR, SUBCONTRACTOR, and sub-subcontractors in work. This property insurance covering work will have deductible for each occurrence, which will be responsibility of CONTRACTOR.

Before an exposure to loss may occur, the CONTRACTOR will provide a copy of the property insurance policy or evidence of property insurance, upon request that includes all property insurance coverages. The CONTRACTOR will not cancel or allow such policy to expire without written notice to the other.

Waivers of Subrogation: OWNER and CONTRACTOR and all SUBCONTRACTORS waive all rights against

(1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) OWNER'S or CONTRACTOR'S consultants, separate contractors, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to extent covered by property insurance obtained, or other property insurance

applicable to work, except such rights as they have to proceeds of such insurance held by OWNER and/or CONTRACTOR as fiduciary. OWNER and/or CONTRACTOR, as appropriate, shall require of OWNER'S and/or CONTRACTOR'S consultants, separate contractors, if any, and subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. Policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay insurance premium directly or indirectly and whether or not person or entity had an insurable interest in property damaged.

1.708 Contractor's Responsibility for Utility Property and Services. At points where the Contractor's operations are adjacent to properties of railway, telephone and power companies, or are adjacent to other property, to which damage might result, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The Contractor shall cooperate with any of the City's underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority. He shall cooperate with the said authority in the restoration of service as promptly as possible.

In no case shall interruption to water service be allowed to exist outside of working hours. Fire hydrants shall be kept accessible to the Fire Department at all times and no materials shall be kept or stockpiled within fifteen (15) feet of any fire hydrant.

The Contractor must cooperate with the utility companies and schedule his work in such a manner as to protect the existing utility facilities until the facilities are abandoned or replacement facilities are completed. In instances where partial grading is necessary before a utility can install its facilities, the Contractor shall consult with the utility and plan the work so that reasonable time can be allowed the utility for completing its work.

Contractor shall exercise particular care at all times to avoid damage to any of City of Hastings system or other facilities and equipment located at or near the scene of any part of the work, especially such facilities as may be in operation. Any costs for potholing prior to boring are considered subsidiary to the bid.

Contractor specifically acknowledges that it shall be responsible and liable to City of Hastings for all injury or damage to any such existing and operating facilities, including loss of gas or product and all repairs necessitated by any act or omission, resulting in such damages, on the part of the Contractor, his agents or employees, or any subcontractor or subcontractor's agents or employees.

Contractor shall also exercise particular care at all times to avoid damage to underground structures and lines, and specifically recognizes that it shall be held responsible for any injury or damage to unmarked or unidentified underground structures or pipelines, done by Contractor's personnel, or any subcontractor's personnel in connection with performance of the work hereunder.

Please note before beginning any excavation, the Contractor shall be responsible for contacting Diggers Hotline at 1-800-331-5666 or call 811.

1.709 No Waiver of Legal Rights. The City shall not be precluded or estopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment therefore, from showing the true amount and character of the work performed and materials furnished by the Contractor, nor from showing that any such measurement, estimate, or certificate is untrue or is incorrectly made, nor that the work or materials do not, in fact, conform to the contract. The City shall not be precluded or estopped, notwithstanding any such measurement, estimate or certificate and payment in accordance therewith, from recovering from the Contractor or his sureties, or both, such damage as it may sustain by reason of his failure to comply with the terms of the contract. Neither the acceptance by the City, nor any representative of the City, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the City, shall operate as a waiver of any portion of the contract or of any power herein reserved, or of any right to damages. A waiver of any breach of the contract shall not be held to be a waiver of any other or subsequent breach.

1.710 Warranty of Title. No material, supplies or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease-purchase or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed, or placed thereon, by him to the City free from any claims, liens or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon.

Nothing contained in this paragraph, however, shall defect or impair the right of persons furnishing materials or labor under any law permitting such persons to look to funds due the Contractor in the hands of the City. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

1.711 Jurisdiction. Any action in court against the Contractor or sureties on his bond, because of damages to property or individual by said Contractor, or his workmen, or because of the violation of any provision of the specifications, or on account of the failure of the Contractor to fully comply with this provision, shall be brought in the District Court of the State of Nebraska in and for Adams County.

1.712 Care of Work.

- a. The Contractor shall be responsible for all damages to person or property that occur as a result of his fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the City.
- b. The Contractor shall provide sufficient competent watchmen, both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.
- c. In an emergency affecting the safety of life, limb or property, including adjoining property, the Contractor, without special instructions or authorization from the City, is authorized to act at his discretion to prevent such threatened loss or injury and he shall so act. He shall likewise act if instructed to do so by the City. Any compensation claimed by the Contractor on account of such emergency work will be determined by the City as provided in Section 1.404 hereof.
- d. The Contractor shall avoid damage as a result of his operations to existing sidewalks, streets, curbs, pavements, utilities (except those which are to be replaced or removed), adjoining property, etc., and he shall at his own expense completely repair any damage thereto caused by his operations.
- e. The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or connected with the demolition and/or site clearance of the work embraced in this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property City, public & private utility companies, or other party before the commencement of any work. The Contractor shall indemnify and save harmless the City from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and from all damages for which the City may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

SECTION 1-8 - EXECUTION AND PROGRESS

1.801 Subletting or Assigning or Contract. The Contractor will not be permitted to sublet, assign, sell, transfer or otherwise dispose of the contract or any portion thereof, or his right, title, or interest therein; or to either legally or equitably assign any of the money payable under his contract, or his claim thereto, without the written consent of his surety and the Engineer. The Contractor will not be relieved of any responsibility through any of the above actions.

- a. The Contractor shall be as fully responsible to the City 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.
- b. Nothing contained in the Contract shall create any contractual relation between any subcontractors and the City.

1.802 Execution of Work. The proposal for each project will show the project period. The progress of the work shall be at a rate sufficient to complete the project within the project period. If it appears that the rate of progress is such that the project will not be completed within the project period, or if the work is not being executed in a satisfactory and workmanlike manner, the City may order the Contractor to take such steps as it considers necessary to complete the project within the period of time specified, or execute the work in a satisfactory manner.

1.803 Limitation of Operations. The Contractor shall conduct the work at all times in such a manner and in such sequence as will insure the least interference with traffic. He shall have due regard to the location of detours and to the provisions for handling traffic. He shall not open up work to the prejudice of work already started, and the Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional section. The Contractor shall so conduct his operations and maintain the work in such condition that adequate drainage shall be in effect at all times.

1.804 Methods and Equipment. The methods, equipment and appliances used shall produce a satisfactory quality of work, and shall be adequate to maintain the schedule of progress specified. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent property, or other streets will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the contract, the Contractor is free to use any methods or equipment that he demonstrates, to the satisfaction of the Engineer, will accomplish the contract work in conformity with the requirements of the contract.

1.805 Temporary Suspension of Work. Work shall be suspended wholly or in part when, in the opinion of the Engineer, weather or other conditions are unfavorable to its satisfactory prosecution. Work shall also be suspended at the direction of the Engineer pending settlement or disputes arising out of failure of the Contractor to comply with the provisions of the contract. Written notice of suspension of work shall be given by the Engineer. When the conditions causing suspension no longer exist, such written notice shall be given to the Contractor by the Engineer. Promptly after such written notice, the Contractor shall resume prosecution of the work as provided in Article 1.802.

1.806 Liquidated Damages. Time is an essential element of the contract, and it is important that the work be pressed vigorously to completion.

For each working day that any work shall remain uncompleted either after the end of each project period or at the end of the contract completion date, the amount per working day specified in the proposal form will be assessed, not as a penalty but as predetermined and agreed liquidated damages. The City and Contractor specifically agree that the per working day amount to be assessed as liquidated damages is fair and reasonable and not excessive. The parties further agree that said per working day amount accurately reflect the anticipated loss and inconvenience to the public and lost revenue to or use by the City due to the project not being completed by the end of the project period or the end of the contract completion date. The City will prepare and forward to the Contractor an invoice for such liquidated damages. The final payment will be withheld by the City until the invoice is paid by the Contractor.

Due account shall be taken of any adjustment of the project period or the contract completion date granted under Article 1.807.

The assessment of liquidated damages for failure to complete the work either within each project period or the contract completion date shall not constitute a waiver of the City's right to collect for any additional damages which the City may sustain by failure of the Contractor to carry out the terms of its contract.

1.807 Extension of Project Period or Contract Completion Date. An extension of the project period or contract completion date may be granted only in writing by the City for any of the following reasons:

1. Additional work resulting from a modification of the plans for the project.
2. Delays caused by the City.
3. Other reasons beyond the control of the Contractor, which in the City's judgment would justify such extension.

No extension of project period or contract completion date will be allowed for variations between contract quantities and actual quantities which cannot be predetermined and which amount to less than twenty percent (20%) of the contract quantities unless approved by the Engineer.

1.808 Abrogation. If the Contractor abandons the work under this contract, sublets it or assigns it without the consent of the city, or if he fails to give his personal attention to it, or if it is the Engineer's opinion that he has unnecessarily or unreasonably delays or neglected the work or any part of it, written notice to that effect is to be given to the Contractor by the Engineer. After such notice, no materials or equipment shall be removed from the work. If, within five (5) days thereafter, the Contractor does not take steps which, in the judgment of the Engineer, will insure the satisfactory completion of the work, then the City may declare this contract null and void and the security forfeited and may notify the Contractor in written to discontinue the work or any part of it; thereupon ceases the Contractor's right or possession of the ground and of all materials and equipment thereon. The City then, at its option, may enter upon and take possession of the work with all material, supplies, and equipment remaining thereon and by contract or otherwise, as the City may determine, may complete the work or the part of it designated, and charge the expense thereof to the Contractor using any materials or equipment found on the site. The expense so charged, together with all damages incurred, will be deducted from any funds due to become due under this contract, and should the unexpended balance of these funds be insufficient, the excess shall be at the cost of the Contractor and the sureties on the Contractor's bond. Neither completion of a part of the work nor the extension for any reason of the time of the completion of the work is to be considered a waiver of this right to abrogate the contract for abandonment, delay or unsatisfactory work.

1.809 Termination of Contractor's Responsibility. The contract shall be considered completed when the work has been accepted in writing by the City. Such acceptance shall release the Contractor from all further obligation with respect thereto, except as to conditions and requirements set forth in his bond.

1.810 Assignment or Novation. The Contractor shall not assign or transfer, any of its rights, duties, benefits, obligations, liabilities, or responsibilities under this Contract without the written

consent of the City, provided, however, that assignments to banks, trust companies, or other financial institutions may be made without the consent of the City. No assignment or novation of this Contract shall be valid unless the assignment or novation expressly provides that the assignment of any of the Contractor's rights or benefits under the Contract is subject to a prior lien for labor performed, services rendered, and materials, tools, and equipment supplied for the performance of the work under this Contract in favor of all persons, firms or corporations rendering such labor or services or supplying such materials, tools, or equipment.

1.811 Disputes.

- a. All disputes arising under this Contract or its interpretation, whether involving law or fact or both, or extra work, and all claims for alleged breach of Contract shall within ten (10) days of commencement of the dispute be presented by the Contractor to the City for decision. All papers pertaining to claims shall be filed in quadruplicate. Such notice need not detail the amount of the claim but shall state the facts surrounding the claim in sufficient detail to identify the claim, together with its character and scope. In the meantime, the Contractor shall proceed with the work as directed. Any claim not presented within the time limit specified in this paragraph shall be deemed to have been waived, except if the claim is of a continuing character and notice of the claim is not given within ten (10) days of its commencement, the claim will be considered only for a period commencing ten (10) days prior to the receipt by the City of notice thereof.
- b. The Contractor shall submit in detail his claim and his proof thereof. Each decision by the governing body of the City will be in writing and will be mailed to the Contractor by registered or certified mail, return receipt requested, directed to his last known address.
- c. If the Contractor does not agree with any decision of the City, he shall in no case allow the dispute to delay the work but shall notify the City promptly that he is proceeding with the work under protest and he may then accept the matter in question from the final release.

SECTION 1-9 - MEASUREMENT AND PAYMENT

1.901 Payments. The City, at its discretion, may include in such monthly estimates payments for materials that will eventually be incorporated in the project, provided that such materials are suitably stored on the site of the project at the time of preparing estimates for payment. Such payment is to be based upon the estimated value thereof as ascertained by the Engineer. Such material when so paid for by the City shall not be removed from the project without consent of the City and, in case of default on the part of the Contractor, the City may use or cause to be used by others these materials in construction of the project.

The City will retain five percent (5%) of the total contract amount for all work completed.

Payment of the retainage will be made within forty-five (45) days after project is substantially complete, provided the Contractor submits a Letter of Credit for 125% of the uncompleted work. Substantial completion will include water mains passing biological testing and placed into service. Sewer mains shall pass pressure testing and be televised with receipt of the inspection report.

The bid proposal price sheets include any and all work for each project. Any requirement shown in the drawings, but not listed separately in the proposal price sheets, are considered subsidiary to the work. This includes but is not limited to abandonments of existing utilities and any potholing required for utility locates prior to boring.

1.902 Payments Withheld. The City may withhold or, on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect itself from loss on account of:

1. Defective work not remedied.
2. Claims filed or reasonable evidence indicating probable filing of claims.
3. Failure of the Contractor to make payments properly to subcontractors for material or labor.
4. A reasonable doubt that the contract can be completed for the balance then unpaid.
5. Damage to another Contractor.
6. Damage to public or private property.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

1.903 Acceptance, Final Payment, and Release of Liability. If final inspection reveals that all details of the work have been completed to his satisfaction, the Engineer shall tentatively accept the work, in writing, relieving the Contractor of further responsibility for the care and maintenance of the completed work and, provided that all equipment and materials have been removed from the right-of- way, shall also relieve the Contractor of further public liability. As soon as possible after tentative acceptance of the work, the Engineer shall measure the completed work and compute the quantities of work for which payment is to be made. Before final settlement is made, the City shall be satisfied with the completed work. When the Engineer is satisfied that all items of the work have been found to be consistent with the terms of the contract and specifications, a final estimate, including the retained percentage due the Contractor, shall be released for payment. Release of the final estimate shall constitute formal acceptance of the work. Acceptance by the Contractor of the final payment shall constitute release of the City and each of its officers and agents from any additional claim or liability hereunder for any act or negligence of the City or of any other person.

All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

1.904 Payment for Extra Work. The Contractor will receive and accept payment for work performed under this contract as follows:

- a. Work Performed as Stipulated in the Contract. For all items of work performed which are covered by definite unit prices or lump sum amounts specified in the contract, the Contractor shall receive and accept compensation at the rate specified in the contract.
- b. Extra Work. Extra work ordered by the Engineer, of a quality or class not covered by the contract, will be paid for at an agreed price. For extra work ordered by the Engineer and performed on an agreed price basis, the Engineer and the Contractor shall enter into a written agreement before such work is undertaken. This agreement shall describe the extra work that is to be done and shall specify the agreed price or prices therefore.

END OF SECTION

SECTION 2 SPECIAL PROVISIONS

SECTION 2-0 - GENERAL

2.001 General Provisions. The general conditions are general in scope and may refer to conditions not encountered on the work covered by this contract. Any provisions of the General Provisions which pertains to a nonexistent condition and is not applicable to the work to be performed hereunder, or which conflicts with any provision of the Special Provisions shall have no meaning to the contract and shall be disregarded.

2.002 Purchasing Agent Appointment and Exempt Sales Certificate. The Contractor performing the work under this contract will be issued a "Purchasing Agent Appointment" and "Exempt Sales Certificate" signed by the authorized representative of the Owner. It is to be used by the Contractor when purchasing tangible personal property to be actually incorporated into the contract work.

2.003 Maintenance of Traffic. The Contractor shall conduct their work so as to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct or close roads, driveways and walks, whether public or private, the Contractor shall, at their own expense, provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them. Such maintenance of travel will not be required when the Contractor has obtained permission from the owner or tenant or private property, or from the authority having jurisdiction over public property involved, to obstruct traffic at the designed area.

2.004 Provisions for Traffic Control and/or Barricading. The Contractor shall provide barricades and maintain a means of traffic control applicable to work site conditions. The means of traffic control and barricade(s) type(s) shall be approved by City of Hastings inspector and by appropriate agency on which work is occurring, being either or combination of city, county, or state right-of-way.

The Contractor shall provide all approved barricades with lights and furnish flagmen as required. Contractor shall provide daily maintenance on all barricades, flashers, etc., during course of construction. A person will be designated by Contractor that is in their employment to be responsible for daily maintenance and shall be available 24 hours a day, seven days a week and will have a telephone number given to City of Hastings and appropriate governing agency on whose right-of-way project is taking place.

Traffic Control shall be considered subsidiary to the project and no direct payment shall be paid for this work.

2.005 Street Closing. In the event it is deemed necessary for the Contractor to close any streets during the execution of work, the Contractor shall notify the owner of such street closing 48 hours in advance, prior to any street closing due to open cut street crossing, and shall notify all vital departments to include police, fire, ambulance, sheriff, street, and engineering Departments.

SECTION 2 – SPECIAL PROVISIONS

2.006 Grass Seeding. All grass areas disturbed shall be fine graded and seeded with contractor blend fescue upon completion.

2.007 Removal of Trees, Hedges, Shrubs, and/or Fences. The Contractor shall sufficiently plan ahead to notify property owner(s) of any obstacles in the way of proposed construction that will have to be removed prior to construction by property owners if they desire to save such.

Clearing and removal of items will be shown on plans and completed by Contractor. The payment for removal of said items will be on proposal sheet, however, any tree with a diameter of 6" or less, all shrubs and bushes will be considered subsidiary to work and no additional compensation will be paid. The Contractor shall not remove any trees in the project area without prior approval of City of Hastings.

The Contractor will be required to reimburse the public for any damage to trees which is not authorized by City of Hastings.

2.008 Shutdown, Valve Operation. Shutdowns will be made only by City of Hastings Utilities Department personnel. In the event that an emergency condition warrants, the Contractor shall take direct action to make shutdown but must notify City of Hastings Utilities Department immediately and remain on worksite to demonstrate what has taken place to City of Hastings Utilities Department personnel.

All shutdowns, unless emergency, will be scheduled in advance and shall be the responsibility of the Contractor to notify residences and/or businesses effected and give estimated time of return of service.

2.009 Water. The Owner will provide access to the Contractor of any and all water necessary to construct the proposed project. The water will be furnished from the fire hydrant nearest the project. It will be the responsibility of the Contractor to contact Hastings Utilities before use of any fire hydrant. Hastings Utilities will, upon deposit from the Contractor, furnish and install a meter, check valve and shut-off for the Contractor's use. The Contractor shall furnish all other necessary hose adaptors, hose and other equipment for the distribution and transportation of the water and shall be responsible for water usage fees.

2.010 Maintenance of Surface Drainage and Storm Sewers. During the course of construction, the Contractor shall conduct operations in a manner that will not pond or divert surface drainage onto private property and shall maintain the existing surface drainage patterns until such time that the storm sewer system is operable. In addition, the Contractor shall provide temporary works construction which must be approved by the Engineer and shall remain in place until such time that the storm sewer system is operable. The work required for maintenance of surface drainage and storm sewers will not be paid for directly but shall be considered subsidiary to the bid items of the contract.

2.011 Testing. All materials will be inspected, tested and accepted by the Engineer before incorporated in the work. Any work in which untested and unaccepted materials are used without

SECTION 2 – SPECIAL PROVISIONS

approval or written permission of the Engineer shall be performed at the Contractor's risk and may be considered as unacceptable and unauthorized and will not be paid for. Unless otherwise designated, tests in accordance with the most recent cited standard method of AASHTO or ASTM, whichever are current on the date of advertisement, will be at the expense of the Contractor. All testing (concrete and subgrade) will be taken by the Engineer or a qualified representative of the Owner. The cost of concrete tests (compressive cylinder breaks) will be the responsibility of the Owner. All materials being used are subject to inspection, test or rejection at any time prior to incorporation into the work. Copies of such tests will be furnished to the Contractor at their request.

2.012 Concrete. Cement and aggregates not on the latest edition of the Nebraska Department of Transportation's "Approved Product List" shall not be used without permission from the City Engineer. All Portland Cement Concrete (PCC) shall be NDOT approved Type 1P, 1S or 1T. The constituents of PCC and their mixing, handling, and proportioning shall conform to ASTM C94. Concrete not meeting the 28 day required strength shall be removed and replaced at no extra cost to the City. The Engineer may evaluate the concrete's expected use and may allow it to remain in place at 50% pay.

- (a) Concrete mix for PCC pavement, driveways and structural concrete shall be State of Nebraska 47B as specified in Section 1002 of the 2017 State of Nebraska specifications.
- (b) Concrete mix for sidewalks shall be State of Nebraska Type 47-B as specified in Section 1002 of the 2017 State of Nebraska Specifications.
- (c) Concrete for hard troweled smooth finish floor: L40 4000 WR NA mix, which includes 5-1/2 sack cement, 3,400 lbs of 47B aggregate, 16 oz. of water reducer, and 33 gallons of water to created a 4,000psi 28-day strength.
 - a. Apply a concrete densifier, hardener, sealer.
 - b. Seal joints with a self-leveling concrete sealant.
- (d) Contractor shall submit a Concrete Mix Design identifying the location of the ready mix or central mix plant, cement manufacturer, type of inter-ground and blended cement, type of admixtures, aggregate gradation, aggregate pit and quarry location.
- (e) Contractor shall submit concrete batch tickets showing batch weights, aggregate moisture (shall be tested daily and moisture probes are allowed), admixtures used, water, and mix design calculations. A copy of the batch ticket shall be provided upon delivery of concrete.
- (f) All concrete shall have a minimum compressive strength of 3,500 psi at 28 days unless otherwise noted in the plans and specifications. The 7-day compressive strength should be 70% of the 28-day compressive strength.

SECTION 2 – SPECIAL PROVISIONS

2.013 Landfill Fees. The Contractor will be responsible for securing their own disposal site or paying any associated fees for disposal at the Landfill.

2.014 Working Hours. Normal working hours will be considered to be from 8:00 a.m. to 5:00 p.m., Monday through Friday (holidays excepted: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving, Friday after Thanksgiving, ½ day Christmas Eve, and Christmas Day). Any Contractor desiring other working hours must take exception to specifications for consideration by City of Hastings. Any exception must be approved or negotiated to mutual acceptance by Contractor and City of Hastings, final acceptance will be granted in writing.

2.015 Removal and Replacement of Property Stakes. If it is necessary to remove any property corners or markers during construction operations, the Contractor shall notify the Engineer so that the Engineer can establish reference ties. Any markers removed without notice to the Engineer shall be replaced at the Contractor's expense in accordance with the proper land surveying techniques.

2.016 Removal of Existing Materials. Contractor shall remove all called for materials with care as not to ruin or damage material for further use. Any material required to be removed for reuse and has been damaged by careless and negligent action on part of Contractor, shall constitute cause for replacement or payment by Contractor. Inspection of said material for reuse shall be made at sole discretion of City of Hastings inspector. Any gas services which are removed by Contractor shall be foamed shut by Contractor.

2.017 Existing Sprinkler Systems. Contractor shall be responsible for the repair of existing lawn sprinkler components disturbed by the construction activities. The property owner shall be responsible to show, if possible, the location of the underground line and size as well as sprinkler head location. Temporary plugging of line may be incurred by Contractor to keep certain areas operational of sprinkler system. Where sprinklers systems are listed as bid items, they shall be replaced in like kind, including all connectors. All sprinkler lines that will be disturbed during construction, shall be cut and protected as needed.

2.018 Appearance of Construction Area and Storage Site. Contractor will be required to keep the construction area in a neat and orderly fashion that would be considered reasonable in regard to work being completed.

Where sidewalks, driveways, etc., exist, Contractor shall keep them free from debris and will be swept off at the end of the construction day. Storage site will be kept in a neat and orderly manner.

No dirt will be allowed to be piled in the street overnight. Dirt piles on the terrace (or alternate locations) must meet all storm water management requirements.

Where Contractor will have a storage site for materials, equipment, etc., on property owned by City, it shall be kept in a neat and orderly manner, free from debris, accumulation of unused materials, etc. Any area used for storage, etc., shall be properly served from the public by temporary fencing if not within a fenced area.

SECTION 2 – SPECIAL PROVISIONS

Debris from job site must be removed same day as taken from street, yard, etc. Piling up of these materials, (i.e., concrete, brush, trees, tree limbs) will not be allowed on site.

2.019 Construction Progress Meetings. Construction progress meetings will be held at a predetermined time each week, time to be chosen at the preconstruction conference. City of Hastings will have in attendance Director of Engineering and Project Engineer and Inspector. Contractor shall have Project Superintendent and job foreman present.

2.020 Final Cleaning Up. Upon completion of the work and before acceptance and final payment, the Contractor shall clean the street, borrow pits and all ground occupied by him in connection with the work of all rubbish, excess materials, false work, temporary structures, and equipment; all parts of the work shall be left in a neat and presentable condition.

2.021 Preconstruction Conference. A preconstruction conference will be held at City of Hastings offices with the contractor owner, superintendent, and job foreman prior to construction and all other city, county, state, and other necessary agencies will be notified of this meeting also.

Contractor shall submit to City a detailed construction progress schedule with major milestones prior to preconstruction meeting.

A preconstruction conference shall be arranged between the Director of Engineering and the Contractor prior to beginning construction. At this meeting the following items shall be addressed.

- a. Work by others. Coordination of work to be performed by subcontractors and other contractors performing work related to this project.
- b. Availability of land. The site and use of adjacent land shall be reviewed.
- c. Project Engineer. The project engineer will be assigned by the Director of Engineering. The Contractor shall designate a construction foreman that will be responsible for communication with the project engineer.
- d. Change orders. Procedures for implementing change orders shall be reviewed.
- e. Tests and inspection. As described within these documents the Contractor shall perform all necessary tests and inspections. Any documented results shall be submitted to the project engineer. At all times the project engineer shall be allowed to inspect the work being performed.
- f. Safety and protection. The Contractor shall be responsible for all safety and necessary protection of all persons in attendance of the project site. The project engineer and other observers shall adhere to all safety precautions deemed necessary by the Contractor.
- g. Final inspection and payment. Final inspection shall be performed by the Director of Engineering and their representatives. When all aspects of this project, as described within these documents have been met, the Contractor may submit for final payment.

SECTION 2 – SPECIAL PROVISIONS

- h. Site security. The contractor shall erect a construction barrier around the project site. The barrier shall consists of a temporary fence with appropriate warning signs.
- i. Shop drawings, submittals. The required list of submittals shall be reviewed.
- Concrete mix design
 - Traffic Control Plan
 - Water and Sewer material
- j. Pipe Cleaning Video: When the project involves water main installation, at the end of the pre-construction conference, an AWWA instructional video on the proper cleaning and installation of water mains shall be watched by the Contractor (Owner); the Contractor's Project Foreman; Project Inspector (HU); Water Department Superintendent (HU); and one representative of HU Engineering. At the end of the video, the participants shall review the requirements for pipe installation and cleaning as noted in the specifications and on the drawings.

2.022 Customer Relations. Contractor shall exert all reasonable efforts to maintain good will for the benefit of City of Hastings with the landowners tenants, and lessees along the right-of-way and with the general public. The Contractor will not be allowed to start construction until he has adequate manpower and material to allow the job to progress smoothly and be complete in a reasonable amount of time. City of Hastings will have the authority to remove workers from the job site who exhibit horseplay and foul language to the public.

2.023 Operations of the Contractor. The Contractor shall confine operations exclusively to easements and public right-of-way. If the Contractor desires to operate equipment or store materials on private property that does not have a utility easement, he must obtain permission from the property owner. Prior to release of the payment retention by City of Hastings, the Contractor must restore the private property to original condition. If the landowner is not satisfied with the restoration, City of Hastings will continue to hold the appropriate retention.

END OF SECTION

SECTION 3

GENERAL DESCRIPTION AND WELL MAINTENANCE WORK

SECTION 3.0 GENERAL

3.001 Description. This is a well rehab project where the contractor is required to convert the existing municipal well which contains an installed single vertical turbine pump and discharge piping into a duplex pump application with duplex discharge pipes extending outside of the building.

The Bidder shall inform himself of all conditions and factors which would affect the execution of the work. No claims for financial compensation, based on the lack of such prior information (or its effect on the cost of the work), will be permitted by the Owner.

SECTION 3.1 CONTRACT ITEMS

3.101 Scope of Work. The Contractor shall provide all labor, equipment, materials, and appurtenances necessary to complete the work as described on the drawings.

The intent of these contract documents, specifications, drawings, and appendix are to provide the Contractor a description of the proposed work.

3.102 Special Testing: Compaction Testing: Owner to perform compaction testing.

3.103 Electrical and Miscellaneous: Contractor to coordinate with City of Hastings staff for electrical and pipe tapping for pressure transmitters and sample collection ports.

3.104 Well Work on Existing:

- a) Down Well Video Log: Provide a video log inspection of existing well utilizing a down well camera properly decontaminated.
- b) Surge Block and Bail: Conduct a 1-hour (minimum) surge block and bail out any fine material that settles in the well. Continue to surge block if deemed necessary.

END OF SECTION

SECTION 4 WATERMAIN AND ACCESSORIES

SECTION 4-0- SCOPE OF WORK

The work covered by this section of the specifications consists of furnishing all labor, equipment, appliances and materials, and performing all operations necessary to construct and complete water mains and appurtenances in strict accordance with these specifications, the applicable drawings, and subject to the terms and conditions of the contract.

Section 4-1 - Materials

4.101 Water Mains. All water mains shall be constructed of ductile iron meeting the requirements as specified in these contract documents unless otherwise noted on the drawings.

4.101(a) Ductile Iron Pressure Class Pipe. DIP pipe shall comply with the latest revision of ANSI/AWWA C151/A21.51-96 with the exception that the wall thickness shall comply with 350 PSI (2400 kPa) pressure class pipe for sizes 3 thru 24 inch (76 mm thru 600 mm) unless stated otherwise on the plan drawing. Whenever the plans or specifications call for the installation of polyethylene encasement, provide low density polyethylene film in accordance with the latest revision of ANSI/AWWA C105.

4.101(b) Ductile Iron Pipe Shall Be:

- 1) Interior Lining: Cement-mortar lining per ANSI A21.4-16 (AWWA C104), no asphaltic sealer.
- 2) Outside coating: AWWA C151/A21.51 Minimum of 1 mil thickness (0.025 mm) of bituminous coating (paragraph 51.8.1).
- 3) Pipe Joints:
 - a. Push on joint, ANSI A21.11 (AWWA C111).
 - b. Mechanical joint ANSI A21.11 (AWWA C111).
 - c. Restrained joint pipe for special use (Horizontal Direction Drilling), pipe shall be ANSI A21.51 (AWWA C151) ANSI A21.4 (AWWA C104). See Section 4.103 for pipe restraining.
- 4) In accordance with AWWA C151/A21.51-96 Section 5.1.1.2 provide Affidavit of Compliance.
- 5) Whenever the plans or specifications call for the installation of polyethylene encasement, provide low density polyethylene film in accordance with the latest revision of ANSI/AWWA C105.

4.101(c) Polyvinyl Chloride Water Main (PVC). Polyvinyl chloride water main shall conform to the latest revision of polyvinyl chloride (PVC) pressure pipe 4 inch thru 12 inch cast iron O.D. (100 mm thru 300 mm) for water distribution ANSI/AWWA C900 latest revision. Molecularly oriented PVC (PVCO) pipe must conform to the standards of ANSI/AWWA C909, latest revision for 6 inch through 12 inch pipe cast iron O.D. (100

SECTION 4 - WATER MAIN SPECIFICATIONS

mm thru 300 mm). All PVC and PVCO pipe shall be pressure Class 305 unless otherwise stated on the plans. PVC water mains 16 inch through 48 inch cast iron O.D. (400 mm through 1220 mm) shall conform to the latest revision of AWWA C900. All AWWA C900 water mains shall have a minimum DR as noted on the proposal or the drawings.

Polyvinyl Chloride Pipe Shall Be:

- 1) For all PVC and PVCO pipe provided for potable water service, comply with standard AWWA C900-16. Provide NSF61 certification for each class, type, and size of PVC or PVCO to be provided.
 - a. Restrained Joint for Horizontal Directional Drilling (HDD): C900 Certa-Lok RJ PVC Pipe. See 4.103 (a).
- 2) Provide all PVC and PVCO pipe provided shall comply with AWWA C-900 DR-14; **or** 305 PSI pressure class of AWWA C-909 Molecularly Orientated Polyvinyl Chloride Pressure Pipe.
- 3) Provide required quality control certification documentation as noted above in accordance with AWWA C-900 Section 5.2, or AWWA C-909 Section 5, or AWWA C-905 Section 5.2.
- 4) All PVC and PVCO pipe provided for potable water service shall be blue in color. All PVC and PVCO pressure pipe used for reclaim water shall be purple in color.
- 5) In accordance with AWWA C-900 Section 6.3 or AWWA C-909 Section 6.3, or AWWA C-905 Section 6.3, provide Affidavit of Compliance.

4.101(d) High Density Polyethylene Water Mains. All Polyethylene (PE) (HDPE – High Density Polyethylene Pipe) water mains shall have a Ductile Iron pipe size (DIPS). Unless otherwise stated in the specifications or plans the HDPE water main shall have a minimum DR-9. Provide minimum pressure class rating of 250 psi for DR-9 HDPE pipe as per ANSI/AWWA C906 Table 5. The cell classification shall be PE 4710 HDPE according to ASTM D3350. The construction and fabrication of the HDPE water main shall comply with the appropriate standards as set forth in the latest edition of ANSI/AWWA C906.

- 1) Provide Affidavit of Compliance of all HDPE as per ANSI/AWWA C906 Section 6.3.
- 2) Pipe and fittings to be marked in accordance to C906-15 Section 6.1. All HDPE pipe shall be color coded with a blue strip to indicate it is used for potable water.
- 3) Provide FM Fitting MJ adapter kit for all connections to Cast Iron or Ductile Fittings and valves.
- 4) All fusion welds shall be in accordance with manufactures recommendations. All fusion welds shall be completed by properly trained personnel approved by the manufacturer.

SECTION 4 - WATER MAIN SPECIFICATIONS

- 5) Flanged and Mechanical Joint adapters to confirm to ASTM D3261. Markings for molded or machined flanged adapters of MJ adapters shall be per ASTM D3261. Fabricated (including machined) flange adapters shall be per ASTM F2206.
- 6) When new HDPE pipe is to be fused with existing HDPE piping, the purchaser of the new HDPE pipe shall inform the manufacturer of the cell classification of the existing HDPE pipe as per ASTM D3350, and obtain from the manufacturer a list of the validated fusion parameters that may be used to join the purchased piping to the existing piping. The manufacturers shall be consulted to determine the appropriate fusion procedures.
- 7) Polyethylene fusion fittings may be molded, thermoformed from pipe sections, or fabricated by heat fusion joining polyethylene components prepared from pipe, molded fittings, thermoformed pipe, or polyethylene sheet or block.
- 8) Butt Fusion Fittings shall be made of HDPE material with a minimum material designation code of PE4710 and with minimum cell classification of PE345464C. Butt Fusion Fittings shall meet the requirements of ASTM D3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. All fittings shall meet the requirements of ANSI/AWWA C906. Marking for molded fittings shall comply with the requirements of ASTM D3261. Fabricated fittings shall be marked in accordance with ASTM F2206.
- 9) Electrofusion Fittings shall be made of HDPE material with a minimum material designation code of PE4710 and with a minimum cell classification of PE345464C. Electrofusion Fittings shall have a manufacturing standard of ASTM F1055. Markings shall be according to ASTM F1055.

4.102 Compact Ductile Fittings. All fittings for pipe sizes 4" thru 24" (100 mm thru 600 mm) shall be Ductile Iron Pressure Class 350 psi (2400 kPa) and shall conform to ANSI A21.53.94 (AWWA C153) current revised edition of said standards as minimum specifications. All fittings for pipe sizes 30" thru 48" (260 mm thru 1200 mm) shall be Ductile Iron Pressure Class 250 and shall conform to ANSI A21.10.93 (AWWA C110) current revised editions of said standards as minimum specifications.

Ductile Iron Fittings Shall Be:

- 1) Interior Lining: Cement-mortar lined, ANSI A21.4.90 (AWWA C104) without coal tar sealer.
- 2) Mechanical joint, ANSI A21.11.90 (AWWA C111).
- 3) Testing, ANSI A21.10.93 (AWWA C110) or ANSI A21.53.94 (AWWA C153).
- 4) Fitting to be cast marked DI or Ductile with pressure rating and size and type fitting.

4.103 (a) Restrained Joint Pipe. Restrained joint pipe is required in all horizontal directional drilled installations. Restraining method shall be achieved with locking joint such as "TR Flex" by U.S. Pipe or equal for DIP and "Certa-Lok" by Westlake Pipe & Fittings for C900 PVC.

Restraining gaskets such as "fast-grip" gaskets by American pipe or approved equal to restrain push on joint pipe can be used when called out on plans.

SECTION 4 - WATER MAIN SPECIFICATIONS

When the proposal or drawings require retaining glands, the Contractor shall provide Megalug Series 1100 Mechanical Joint Restraint or equal.

4.103 (b) Restrained Joint Couplings. When noted on the drawings, the Contractor shall erect and install restrained joint coupling(s). The restrained joint coupling shall be a Griffin Bolt-Lok restrained joint, or American MJ coupled restrained joint.

The restrained joint coupling shall provide a positive longitudinal connection between fittings or fittings and restrained joint pipe as applicable. The Contractor shall install applicable thrust blocks as noted on the drawings in addition to the restrained joint coupling.

4.104 Resilient Seated Gate Valves, Cut in Sleeves. All gate valves 4" and larger up to and including thirty inch (30") (260 mm) shall be ductile iron body resilient seated gate valves conforming to AWWA C509, C515, AWWA C111 and ANSI A21.11 specifications and current revisions. All gate valves shall be suitable for mechanical joint connection to ductile iron pipe complete with bolts, glands, and required gaskets. All gate valves shall have a 2" square (50 mm) operating nut and non-rising stem and O-ring type seals. All resilient seated gate valves shall be Mueller Model A-2360-20, M and H Style 3067, Flow Control Series 2500, Clow Model 2638 or 2639 valve or approved equal. When beveled gearing is required, provide valves with a bevel gear assembly to allow the gate to move in a horizontal direction. Cut in sleeves for use with gate valves where required shall be mechanical joint and have stop screw incorporated in body, and shall be Mueller No. H840, H841, or approved equal. For installation requiring a 4", 6", or 8" (100 mm, 150 mm, or 200 mm) cut-in valve, the Contractor shall utilize Mueller C-2360-44 cut-in valves or approved equal. The Contractor shall utilize duck tipped gaskets or plain tipped gaskets as required to complete the field installation. All exposed bonnet and packing bolts shall be ASTM F593 Type 304 Stainless Steel. Gate Valves shall be no more than one year older than the date delivered to the project, or the supplier must show that the valves were stored inside and shall show no signs of wear or damage from storage. All manufacturer tags, bar codes, and SQR tags must remain on the product and must not be removed by the contractor or supplier. City of Hastings Inspector will take pictures and /or remove tags during installation.

4.105 Valve Boxes. All buried valves shall be provided with Buffalo type cast iron valve boxes or alternate as specified.. Valve boxes shall have a screw type extension sleeve and be designed for the size of valve on which it is to be used and for the depth of cover as required. Covers shall have the word "WATER" cast thereon. Valve boxes shall be Mueller No. H10360, Tyler Series 6850 Type 664-S, 666, 668 as required, or approved equal.

4.105(a) High Density Polyethylene (HDPE) Valve Boxes. Whenever the drawings or proposal request installation high density polyethylene (HDPE) valve boxes, the Contractor shall provide and install American Flow Control Trench Adapter Valve Box or equal. The valve body shall be constructed of high density polyethylene material complete with a steel stem extension tube. The unit shall be fitted with an extension stem tested to 1000 pounds of torque. The lid shall be made of gray cast iron with the word "WATER" imprinted end to top of the lid. Provide HDPE boxes of appropriate depth and size as per manufacturer's recommendations.

Adjustment in valve box height shall be considered subsidiary to the valve installation.

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4.106 Solid Ductile Iron Sleeves. Contractor shall furnish couplings for connecting ductile iron to ductile iron pipe or ductile iron to cast iron pipe, or ductile iron to PVC pipe. The inside diameter of the coupling shall be suitable for connecting the ends of either PVC, ductile, or cast iron pipe as required. All solid ductile iron sleeves shall comply with the requirements of 4.102. Provide only long solid sleeves unless otherwise directed by the Engineer. Solid ductile iron sleeves will not be called out on the drawings; however, Contractor shall provide solid sleeves as field conditions warrant and as approved by the Engineer.

4.107 Mechanical Joint Connections. When called for on the drawings or proposal, the Contractor shall provide Foster adaptors or equal for water main size 4" through 24". Provide a ductile iron fitting meeting material and pressure requirement of the current revision of AWWA C110 and as defined by Section 4.102 of these specifications.

Provide tee bolt kits for all applications.

4.108 Fire Hydrants.

Fire hydrants shall be Mueller No. A-423 and comply with Dry-Barrell Fire Hydrants ANSI/AWWA standard C-502 and latest revisions.

- a. Size of Hydrant: 5-1/4"
- b. Inlet Connection: 6" Mechanical Joint
- c. Operating nut and nozzle cap nut: 1-1/2" pentagonal operating nut and open counterclockwise.
- d. Nozzle Connections: 3-way with 2 hose nozzles 180 degrees apart, 1 pumper in between and on the same horizontal plane. All threads "national standard" conforming to NFPA for fire hose connections.
- e. Unit shall be traffic type hydrants with ground break away flange system. Seals shall be O-ring.
- f. Paint: Interior and exterior above and below ground line coated with high performance 2-part epoxy. Exterior above ground – one coat of UV resistant high gloss 2-part polyurethane enamel. Color to be silver with color coded cap and bonnet per NFPA. Private hydrants to be yellow with color coded cap and bonnet per NFPA.
- g. In accordance with ANSI/AWWA C-502 Section 5.1.3 the hydrostatic test shall be conducted at 300 PSI (2100 kPa) for a minimum of 60 seconds with no leakage.
- h. In accordance with ANSI/AWWA C-502 Section 5.3 the supplier shall deliver all hydrants to the City of Hastings for pressure testing at its North Denver Station facilities at an agreed time and during normal business hours. The supplier shall provide 72 hour notice before testing is required.
- i. In Accordance with ANSI/AWWA C-502 Section 6.3 provide Affidavit of Compliance.
- j. All fire hydrants shall be furnished with all connecting bolts, nuts, glands, gaskets, etc., required for immediate installation. Units shall be Mueller No. A-423, American Darling B-84-B-5, Kennedy K81-D or approved equal. All fire hydrants will be 6'-0" (1.8m) bury unless noted differently on plans. To achieve proper hydrant installation, utilize hydrant extensions or Gradelok swing arm fittings when necessary.
- k. All exposed bolts and nuts that are typically buried shall be stainless steel 304 or equal.

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1. Fire hydrants shall be no more than one year older than the date delivered to the project, or the supplier must show that the fire hydrants were stored inside and shall show no signs or wear or damage from storage. All manufacturer tags, bar codes and SQR tags must remain on the product and must not be removed by the contractor or the supplier. City of Hastings Inspector will take pictures and/or remove tags during installation.

4.109 Water Services and Service Line Connections. This section has been moved to "SECTION 4B Water Services".

4.110 Thrust Block. All thrust blocks shall be installed in accordance with the drawings. The class of concrete to be used for thrust blocks around fittings shall be Nebraska Department of Roads Class "47B" or Type "ABX". All concrete shall have minimum 28 day strength of 3000 PSI.

THRUST BLOCK DIMENSION				
Pipe Size Inch	A Feet	B Feet	C Feet	D Inch
4 (100 mm)	1 (0.3 M)	1 (0.3 M)	1 (0.3 M)	3 (75 mm)
6 (150 mm)	1.5 (0.45 M)	1.5 (0.45 M)	1 (0.3 M)	6 (150 mm)
8 (200 mm)	2 (0.6 M)	2 (0.6 M)	1 (0.3 M)	6 (150 mm)
10 (250 mm)	2.5 (0.75 M)	2.5 (0.75 M)	2 (0.6 M)	9 (225 mm)
12 (300 mm)	3 (0.9 M)	3 (0.9 M)	2 (0.6 M)	9 (225 mm)
14 (350 mm)	3 (0.9 M)	3 (0.9 M)	2.5 (0.75 M)	12 (300 mm)
16 (400 mm)	4. (1.2 M)	3 (0.9 M)	2.5 (0.75 M)	12 (300 mm)
18 (450 mm)	4 (1.2 M)	4 (1.2 M)	2.5 (0.75 M)	12 (300 mm)
20 (500 mm)	4 (1.2 M)	4 (1.2 M)	3 (0.9 M)	16 (400 mm)
24 (600 mm)	4.5 (1.4 M)	4.5 (1.4 M)	3 (0.9 M)	16 (400 mm)
30 (750 mm)	4.5 (1.4 M)	5. (1.5 M)	3.5 (1.0 M)	18 (450 mm)
36 (900 mm)	5 (1.5 M)	5 (1.5 M)	3.5 (1.0 M)	18 (450 mm)
42 (1050 mm)	5.5 (1.7 M)	5.5 (1.7 M)	4 (1.2 M)	24 (600 mm)
48 (1200 mm)	6 (1.8 M)	6 (1.8 M)	4 (1.2 M)	24 (600 mm)

4.111 Machine Tap. City of Hastings will furnish and install all machine taps. Contractor shall provide all excavation and backfill. Minimum excavation at each tapping point will be 4 ft. wide (1.2 M) and 6 ft. (1.8 M) long and shall be sufficiently below the main at point of tap in the installation of bolted sleeve. City of Hastings Water Department Personnel shall make determination in field as to tap location and give specific requirements. In the event that the

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uncovered water main is at a joint, etc., excavation will be relocated as directed by Water Department Personnel.

4.112 Steel Encasement. Smooth wall casing pipe shall be of welded steel construction and shall be new material with a minimum yield point of 35,000 psi (241,000 Kpa). The pipe shall have a minimum wall thickness of "0.250" (6 mm) or as indicated on the drawings. The casing pipe shall be bare steel.

4.113 Casing Spacer. The Contractor shall use casing spacers. Casing spacers shall be of the type that bolt onto the carrier pipe and constructed of high density polyethylene. The spacer shall be 8" (200 mm) minimum in length. The chocks shall be as manufactured by Pipeline Seal and Insulation Inc., Model C8G-2, Advance Products and System Model SI-8" (200 mm) long with 1" (25 mm) or 2" (150 mm) wide runners, or approved equal.

4.114 Casing End Seal. All steel encasement pipes shall be closed at each end with a standard pull on S-shaped seal as manufactured by Pipeline Seal and Insulator, Inc. (PSI), Model S, Advance Model AC End Seals, or approved equal.

4.115 Manholes. Manholes shall be constructed as indicated on the plans. Manhole ring and cover shall be constructed of Class 35 gray cast iron weighing not less than 450 pounds conforming to ASTM A48-87 and satisfactory to the Engineer. The manhole ring and cover shall be Deeter No. 1030 or Neenah R-1703. Manhole steps are not required unless otherwise noted on plans.

Manholes of precast sections conforming to ASTM C478 specifications shall be used. Precast concrete sections for manholes shall be installed with bituminous joint filler.

4.116 Submittals. The Contractor shall provide to the Engineer the following submittals, shop drawings, certifications and other related documents for review and approval:

- a. Provide catalog cuts showing weights, dimensions, and sizes of all pipe materials, fittings, glands, bolts, adapters, etc. to be utilized on this project.
- b. Provide catalog cuts of all fire hydrants, gate valves, butterfly valves, fittings, manholes, valve boxes, grounding mechanisms, tracer wire, corporation valves, curb stop, curb stop boxes to be utilized on this project.
- c. Provide catalog cuts showing weight, dimensions and sizes of all casings, casing chocks, and casing ends seals to be utilized on this project.

4.117 Utility Marking Bury Tape. Polyethylene material, 6 inches wide with 4.0-mil thickness, color coded per APWA and overcoated graphics. Must be rated for outdoor bury.

SECTION 4 - WATER MAIN SPECIFICATIONS

SECTION 4-2 - CONSTRUCTION METHODS

4.201 Excavation. The Contractor shall perform all excavation of whatever substances are encountered to the depth shown on the drawings, or to provide a minimum cover of five (5) feet (1.5 M) over the top of the pipe. The Engineer shall have the right to limit the amount of trench that may be opened in advance of the line of work, along with the duration in which the excavation is open. All excavated materials not required for backfill shall be removed from the project by the Contractor. Banks of trenches shall be kept as nearly vertical as practicable and, where required, shall be properly sheeted and braced. Trenches shall be of sufficient width to provide working space for proper laying and embedment. Excavation around existing utilities and structures shall be limited to minimum invasive practices such as utilization of properly sized trench safety equipment in-leu of benching.

The bottom of the trenches shall be accurately graded to provide uniform bearing and support for each section of pipe on undisturbed soil at every point along its entire length, except for portions of the pipe sections where it is necessary to excavate for bell holes.

Whenever wet or unstable soil that is incapable of properly supporting the pipe, as determined by the Engineer, is encountered in the trench bottom, such soil shall be removed to the depth and length determined by the Engineer, and the trench backfilled to grade with in-situ soils or other suitable material as deemed appropriate by the engineer.

All grading in the vicinity of trench excavation shall be controlled to prevent surface water from flowing into the trench. Any water accumulating in the trench shall be removed by pumping or other approved method. Material excavated from the trenches shall be stacked in an orderly manner a sufficient distance back from edge of trenches to avoid overloading and preventing slides or cave-ins. Material unsuitable for backfilling shall be wasted by the Contractor as directed by the Engineer. Any unauthorized excavation below grade shall be backfilled at the Contractor's expense with good, well-tamped material.

A minimum of one foot (1') (300 mm) of topsoil (unless otherwise noted on the plans) shall be removed in any and all areas covered by vegetation. This topsoil shall be stockpiled separately from the material removed from the remainder of the trench. After the pipe is installed and the trench backfilled to an elevation one foot (1') (300 mm), (unless otherwise noted on the plans) below grade, the topsoil shall be replaced and compacted as previously described.

Excavation will not be classified. Whatever material is encountered shall be excavated to the proper grades and if, in any locations, such material is not sufficient to provide a uniform, even bed for the pipe, the trench shall be excavated at least six inches (6") (150 mm) deeper than the grade at the bottom of the pipe and the space thus excavated shall be refilled with earth or sand and thoroughly compacted.

4.202 Horizontal Directional Drill (HDD).

Directional drilling to be completed by an experienced Contractor. The contractor shall submit a work plan prior to beginning work which outlines the procedure and schedule to be used while construction is in progress. The work plan must include specific equipment to be used, list of supervisory, technical, and general personnel to be utilized during the project. Any permits

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required but not limited to erosion & sediment control plan, traffic control plan and trench shoring plan to be submitted.

HDD shall utilize a guidance system along with drilling fluid (mud) system. The drilling fluid system shall include a self-contained drilling fluid mixing system adequately sized. The drilling fluids to be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Used drilling fluid and spilled fluid to be contained and disposed of properly.

The drill path is to be accurately surveyed with entry and exit stakes placed in appropriate locations. The minimum cover required over water main piping is five (5) feet. Additional bury depth may be required as indicated on the plans. In the event the pipe is to be field installed after locating of existing utilities, the contractor must submit a bore plan profile which includes all existing utilities. Excavation around existing utilities and structures shall be limited to minimum invasive practices such as utilization of properly sized trench safety equipment in-leu than benching.

Pilot hole shall be drilled to not exceed the maximum allowed pipe deflection. Upon successful completion of the pilot, the bore will be reamed to a minimum of 25% greater than the outside diameter of the pipe to be installed. The contractor will pull the pipe to be installed back through the bore hole utilizing a swivel to prevent torsional stresses occurring in the pipe. A final bore log must be submitted to the engineer.

4.203 Trench Backfilling. Trench backfill shall conform to following:

- 1) All water mains and services shall be properly bedded with insitu soils unless otherwise directed due to poor soils or soil conditions. The Engineer shall instruct the Contractor in proper operation and fill material if conditions are deemed less than favorable. Insitu soils typically deemed satisfactory are local clay, silt loam, and sandy soils found in the Hastings area.

Ductile Iron Pipe. All ductile iron pipe shall be bedded as shown on bedding detail II of the plans with insitu soils to top of pipe or twelve inches (12") (300 mm) above top of pipe as noted. The bedding process shall be accomplished by mechanical means and by introducing backfill material layers not to exceed six inches (6") (150 mm) depth. Each lift shall be thoroughly compacted before introducing additional backfill material. Hand tamping will be required whenever streets, driveways, or terraces requiring sodding will be placed above the water main installed. The bedding shall be accomplished using a hand tamper for each six inch (6") (150 mm) lift of soil to the top of the pipe. Other mechanical means such as a rolling vibratory sheeps foot can be utilized for the next twelve inches (12") (300 mm) above the top of pipe. **All hand tamping shall be strictly enforced.**

Polyvinyl Chloride Pipe. All polyvinyl chloride pipe regardless of location shall be bedded as shown on bedding detail I of the plans with six inches (6") (150 mm) lifts of soil to a point twelve inches (12") (300 mm) above the top of pipe. **All hand tamping shall be strictly enforced.**

Upon bedding of pipe, fill may be introduced suitable to the type of method that will be used for compaction, i.e., roll compactor, hydraulic vibrator, etc. Lift thickness will be determined in field by inspector and job foreman, with a maximum loose lift thickness of 12" under streets.

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- 3) Compaction test may be taken at random locations and different depths as determined by inspector. Average of two compaction tests will be taken at each 50 lineal foot) (15 M) of trench and test at an elevation to be determined on job site and dependent on depth of trench. Contractor will be required to make excavation for test.
- 4) Test results for compaction shall meet or exceed following:
 - a. 95% standard proctor density for terraces.
 - b. 98% standard proctor density for driveways, sidewalks, streets.
 - c. Assumption that moisture content ($\pm$) 3% of optimum failure of test to reach these minimum results will require re-compaction by Contractor.
- 5) No unsuitable material will be allowed in backfilling, i.e., rock, saturated soils, concrete, brick, motor, vegetation, debris, grasses, etc. Contractor will be required to remove such from job site and replace with adequate amount of approved material. The Contractor shall supply suitable backfill material from an approved borrow site acceptable to the Engineer at the unit price in the proposal.

Any area found unstable because of plastic soils will have to be replaced by the Contractor with suitable material
- 6) Water settling will not be permitted.
- 7) If proper compaction requires additional soil to be brought to the site by the Contractor, all expenses for this additional soil shall be considered subsidiary to the pipe installation.
- 8) Contractor shall return ditch elevations to preexisting elevations as shown on the plans. If it is determined after the construction is complete the Contractor has not done so, he will be required to return the ditch to original elevation at his cost.
- 9) The Contractor shall hand tamp around all fire hydrants, curb stops, and valve boxes with hand tampers or pad tampers ("Jumper Jacks") to insure proper compaction.

In the event settlement of any backfill associated with the project is encountered, the Engineer shall notify the Contractor in writing to repair all defects, including settlement and associated street repair, if it is discovered within the three (3) year maintenance period. No extra monies will be paid for repairs caused by settlement of the backfill.

4.204 Trench Wall Support. All trenches shall be braced or sheeted as to local soil conditions dictate and in full compliance with OSHA, as well as local, State of Nebraska, and other Federal requirements. There shall be sufficient tamped cover over pipe to protect in removal of shoring material.

4.205 Protection of Existing Utilities. The accuracy of location of existing underground utilities as shown on the plans is not guaranteed. It shall be the duty of the Contractor to locate these utilities in advance of excavation, and to protect same from damage after uncovering. House service lines are shown on the plans. The Contractor shall contact the owners of the utilities for assistance in locating these service lines. Any expense incurred by reason of damaged or broken lines shall be the responsibility of the Contractor.

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The Contractor shall not begin any excavation until he has contacted Diggers Hotline at 811.

4.206 Tunneling. Tunneling, when necessary, shall be done under the supervision of the Engineer. Jacking or boring may be permitted where indicated in the plans. Before proceeding with boring or jacking, the Contractor shall submit to the Engineer for his approval a plan sketch showing the frame, bracing, pit details, etc. Whenever a steel casing is required, joints shall be welded with full strength welds. The Contractor shall maintain proper joint alignment and use full penetration welds.

4.207 Pipe Cutting. Cutting of the pipe shall be kept to a minimum and shall be done in a neat and workmanlike manner without damage to the pipe. Unless otherwise authorized by the Engineer, cutting shall be done by means of an approved type of mechanical cutter. Hydraulic cutters shall be used when practicable.

4.208 Installation of Water Mains.

4.208(a) Installation of DIP Water Mains. The installation of ductile iron water main shall be in accordance with the latest revision of AWWA C600. All DIP (Class 52 and Pressure Class) water main installation shall also be in accordance with the following:

- 1) Pipe and accessories shall be handled in such manner as to insure delivery to the work in a sound, undamaged condition.
- 2) While suspended in a sling and before lowering into the trench, all pipe shall be inspected for defects. Defective, damaged or unsound pipe will be rejected. Deflections from a straight line or grade, as required by vertical or horizontal curves, shall not exceed manufacturer's recommendations and approval by the Engineer.
- 3) Mechanical joints shall be installed under the provisions of the recommendations of the joint manufacturer.
- 4) Fittings at bends or dead ends shall be firmly blocked against the vertical face of the trench to prevent fittings from being blown off the lines when under pressure. Blocking shall conform to the plan for concrete blocking for fittings. Where pipe ends are left for future connections, they shall be valved, plugged or capped as shown on the plans. Where connections are made between new work and existing mains, the connections shall be made by using fittings as required.
- 5) All DIP where noted on the drawings shall have a tracer wire buried beside the invert of the pipe as shown on the drawings. A tracer wire locating station will be supplied to the Contractor by HU. The tracer wire furnished by HU will be a 12 or 14 AWG solid, Protrace HF-CCS PE30 or equal 30 Mil (0.8 mm) HMW-HDPE coated copper wire. The color will be blue. The wire shall be continuous and unspliced from tracer wire locating station to tracer wire locating station. The tracer wire shall be electrically intrinsic with reference to the water distribution system.

All DIP water main or water service lines of 4" (100 mm) diameter or greater shall have warning tape buried 12" (300 mm) to 24" (600 mm) above the top of the pipe. The warning tape will be inscribed with the message "CAUTION BURIED WATER LINE". The warning tape will be a minimum of 3" (75 mm) in width. The warning tape will be a minimum 4 mils (0.1 mm) in thickness. The warning tape will be blue in color and

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furnished to Contractor by HU. Installation of tracer wire and warning tape will be subsidiary to bid.

- 6) The use of pipe gasket lube shall be limited to Blue Lube manufactured by Whitlam Plumb-Pro or equal. The use of yellow gasket grease is not permitted or allowed to be stored on site. Pipe gasket lube shall be NSF Standard 14 and 61 certified for potable use. Care shall be taken to limit the amount of pipe gasket lube applied as this will aid in cleanup of the water main and assemblies.

4.208(b) Installation of PVC Water Main. The installation of polyvinyl chloride (PVC) water main shall be in accordance with the latest revision of AWWA C605.

All PVC water main installation shall also be in accordance with the following:

- 1) Pipe and accessories shall be handled in such a manner as to insure delivery to the work in a sound undamaged condition. All PVC pipe stored on site and expected to be stored for more than 3 months, shall be covered with tarpaulins to protect the pipe from ultra violet light damage as required by AWWA C-605 Section 2.3.1.
- 2) Prior to the pipe being placed in the trench and while suspended in a sling, all pipe shall be inspected for defects. Defective, damaged, scratched, bleached, cut, scarred, or unsound will be rejected. Deflections from a straight line or grade, as required by vertical or horizontal curves, shall not exceed manufacturer's recommendations and approval by the Engineer.
- 3) Mechanical joints shall be installed under provisions of the recommendations of the joint manufacturer.
- 4) Fittings at bends or dead ends shall be firmly blocked against the vertical face of the trench to prevent fittings from being blown off the lines when under pressure. Blocking shall conform to the plan for concrete blocking for fittings. Where pipe ends are left for future connections, they shall be valve, plugged or capped as shown on the plans. Where connections are made between new work and existing mains, the connections shall be made by using fittings as required.
- 5) All PVC where noted on the drawings shall have a tracer wire buried beside the invert of the pipe as shown on the drawings. A tracer wire locating station will be supplied to the Contractor by HU. The tracer wire furnished by HU will be a 12 or 14 AWG solid, Protrace HF-CCS PE30 or equal 30 Mil (0.8 mm) HMW-HDPE coated copper wire. The color will be blue. The wire shall be continuous and unspliced from tracer wire locating station to tracer wire locating station. The tracer wire shall be electrically intrinsic with reference to the water distribution system.

All PVC water main or water service lines of 4" (100 mm) diameter or greater shall have warning tape buried 12" (300 mm) to 24" (600 mm) above the top of the pipe. The warning tape will be inscribed with the message "CAUTION BURIED WATER LINE". The warning tape will be a minimum of 3" (75 mm) in width. The warning tape will be a minimum 4 mils (0.1 mm) in thickness. The warning tape will be blue in color and

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furnished to Contractor by HU. Installation of tracer wire and warning tape will be subsidiary to bid.

- 7) The use of pipe gasket lube shall be limited to Blue Lube manufactured by Whitlam Plumb-Pro or equal. The use of yellow gasket grease is not permitted or allowed to be stored on site. Pipe gasket lube shall be NSF Standard 14 and 61 certified for potable use. Care shall be taken to limit the amount of pipe gasket lube applied as this will aid in cleanup of the water main and assemblies.

4.208(c) Installation of HDPE Water Mains. The installation of HDPE water mains shall be in accordance to the following:

- 1) The pipe and accessories shall be handled in a manner to insure the work is sound undamaged condition.
- 2) All HDPE pipe shall be stored shall be covered with tarpaulins to protect the pipe.
- 3) All HDPE where noted on the drawings shall have a tracer wire buried beside the invert of the pipe as shown on the drawings. A tracer wire locating station will be supplied to the contractor by HU. The tracer wire furnished by HU will be a 12 or 14 AWG solid, Protrace HF-CCS PE30 or equal Gauge, 30 mil (0.8 mm) HMW-HDPE coated copper wire. The color will be blue. The wire shall be continuous and unspliced from tracer wire locating station to tracer wire locating station. The tracer wire shall be electrically intrinsic with reference to the water distribution system. Installation of the tracer wire will be subsidiary to the bid.
- 4) All HDPE water main or 4" (100 mm) or greater shall have a warning tape buried 12" (300 mm) to 24" (600 mm) above the top of pipe. The warning tape will be inscribed with the message "CAUTION BURIED WATER LINE". The warning tape will be a minimum of 3" (75 mm) in width. The warning tape will be a minimum of 4 mils (0.1 mm) in thickness. The warning tape will be blue in color and furnished to Contractor by HU. Installation of the warning tape will be subsidiary to the bid.
- 5) Prior to the pipe being placed in the trench and while suspended in a sling, all pipe shall be inspected for defects. Defective, damaged, scratched, bleached, cut, scarred, or unsound will be rejected. Deflections from a straight line or grade, as required by vertical or horizontal curves, shall not exceed manufacturer's recommendations and approval by the Engineer.
- 6) Joining methods:
 - a) Butt Fusion: HDPE pipe joined by the butt fusion shall be done in accordance with ASTM F2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians per PPI TN-42. Qualification of the fusion technician shall be demonstrated by evidence of fusion training within the past year on the equipment to be utilized on the project. Provide copy of Butt Fusion procedure to Engineer 10 days prior to construction for review and approval.
 - b) Saddle fusion: HDPE pipe joined by Saddle fusion shall be in accordance with ASTM F2620, TR-41 or the fitting manufacturer's recommendations and PPI TR-

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41. Saddle fusion shall be used to fused branch saddles, taping tees, and other HDPE constructs onto the wall of the main pipe. Saddle fusion joints shall be made by qualified fusion technician. Qualification of the fusion technician shall be demonstrated by evidence of fusion training within the past year on the equipment to be utilized on the project. Provide copy of Saddle Fusion procedure to Engineer 10 days prior to construction for review and approval.c)

Electrofusion: HDPE pipe joined by Electrofusion shall be done in accordance with the manufacturers recommended procedure. Other sources of electrofusion joining information are ASTM F1290 and PPI TN-34. The process of electrofusion requires an electric source, a transformer, commonly called and electrofusion box. The electrofusion box must be capable of reading and storing the input parameters and the fusion results for later download to an electronic record file. Qualification of the fusion technician shall be demonstrated by evidence of electrofusion training within the past year on the equipment to be utilized for this project. Provide copy of Electrofusion procedure to Engineer 10 days prior to construction for review and approval.

- d) Mechanical coupling that wrap around the pipe and act as saddles shall be recommended by the manufacturer as being designed for use with HDPE pipe. Mechanical connection of HDPE to auxiliary equipment such as valves, pumps, and fittings shall use mechanical joint adapters and other devices in conformance with the PPI Handbook of Polyethylene Pipe, Chapter 9 and AWWA Manual of Practice M55, Chapter 6.
- e) Joint construction records are the critical parameters of each fusion joint. As required by the manufacturer this data shall be recorded either manually or by an electronic data logging device. All fusion joint data shall be included in the Fusion Technician's joint report and provided to the Engineer for review.

- 7) Buried HDPE pipe and fittings shall be installed in accordance with ASTM D2321 or ASTM D22774 for pressure systems, AWWA Manual practice M55 Chapter 7 and as specified within these specifications for the placement of Water Main.

4.209 Pipe Plug. The Contractor shall utilize a water tight mechanical plug or cap of appropriate size to secure the open end of the pipe from debris entering into the pipe. This shall be strictly enforced at the end of each day, during any breaks lasting more than 30 minutes or unscheduled stoppage which the pipe may be left unattended for more than 30 minutes. Buckets, duct tape and other methods will not be allowed.

4.210 Service Interruptions. When it becomes necessary, for the purpose of making connections or for any other reason, to shut off or turn on water in any existing mains, it is the sole responsibility of the Contractor to notify the City Water Department, through the Resident Engineer, as to when and for how long service will be interrupted, and also to notify all water users well in advance to that they might prepare themselves for the period during which service might be interrupted. Water system valves shall not be opened or closed by anyone other than City Water Department personnel.

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4.211 Fire Hydrants and Valve Boxes. All fire hydrants, valves, and valves boxes shall be installed in the lines as shown on the drawing and as directed by the Engineer. All apparatuses shall be set plum. Valve boxes shall be centered directly over the valves. Earth fill shall be carefully hand tamped around all valve boxes and fire hydrants. Valves boxes shall have the interiors cleaned of all foreign matter before installation.

All valve boxes shall be installed to permit without restriction valve wrenches. All fire hydrants shall be installed in accordance with the latest revision of AWWA Manual M17, "Installation, Field Testing and Maintenance of Fire Hydrants", and no more than 1/4" per two (2) vertical feet out of plumb in any direction. The engineer shall measure the plumbness of all fire hydrants installed. Any fire hydrant not installed correctly and plumbed shall be straightened and any additional extensions of the barrel to raise it to grade shall be provided without additional reimbursement. Review of the plumbness test by the Engineer shall be requested by the Contractor prior to beginning of the project. If a review is not requested, the Engineer may assume the Contractor fully understands the requirements for proper hydrant installation.

4.212 Cleaning, Disinfection, Flushing and Pressure Testing of Water Mains

A. Cleaning

Procedures for the disinfection of the water mains and service lines 4" and larger shall be in accordance with the latest revision of AWWA C651. Specifically each segment of completed water main to be disinfected shall not exceed a length greater than 1,000 LF unless otherwise approved by the Engineer.

All costs associated with disinfection, flushing and pressure testing of the water mains and appurtenances shall be considered subsidiary to the main installation.

Contractor is required to provide and install all necessary fittings and accessories to effectively perform the required cleaning, flushing and testing. All associated costs are subsidiary to the bid.

To aid in the cleaning and disinfection of the water main the contractor shall comply with the following:

1. All water main materials shall be shipped in plastic wrap or provided removal plugs to limit contamination during shipping. Water main pipe shall be shipped with a tarp or cover to protect the pipe end (windward end) during transport.
2. Onsite storage of water main materials shall be placed on skids or blocks to limit contamination while in storage. Provide minimum of 4 inches elevation above the ground line and not located in areas that may become flooded.
3. Tarps or plastic wrap shall be provided to secure the open end of the pipe and water materials from contamination during site storage. Contractor shall limit site storage to amounts that can be installed in a timely manner to limit contamination.
4. Each section of pipe, all fittings and other water main assemblies shall be thoroughly inspected for presence of dirt, oil film(s), and debris prior to installation. Contractor shall remove and clean all visible contamination.

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5. During installation the open end of the water main or assembly shall be fitted with a plug to limit contamination. This shall be used at all times. For periods where construction will be delayed for more than 1 hour a tight fitting plug shall be installed that will prevent water intrusion at a pressure of at least 10 feet of hydraulic head.
6. A suggested process for cleaning the water main pipe prior to installation is to power wash the inside of the pipe from each end of the pipe then swab each pipe with a soft foam or soft sponge pig soaked with chlorinated water, swab once from each end using a bull float pole to push the pig through. Then power wash the inside of each pipe one more time. Bag each end of the pipe with a heavy plastic garbage bag and seal with duct tape. After the pressure testing is completed, the pigging process shall consist of running the vinyl covered pig with bristles through the water main at least 4 times, then running the vinyl covered pig without bristles through at least 2 times, then running the non-vinyl covered hard foam pig through at least two times or at such time as the water is clear. New pigs shall be used with each water section thereof. Once the pigging process is completed the water main shall then be chlorinated. City of Hastings will supply two sets of pigs for the first two times of pigging on each section of main being cleaned. Length of each section of main to be determined by the engineer.
7. Use of granular chlorine or chlorine tabs will not be permitted.
8. A pipe cleaning pig launching and receiving assembly shall be supplied and installed. For City contracts, pipe cleaning pigs will be provided for two rounds of cleaning, additional pigs will be the contractors expense along with City of Hastings labor and equipment costs. For private contracted projects, the costs of pigs is responsibility of the owner, along with City of Hastings labor and equipment costs.
9. A written plan for providing cleaning, disinfection and sampling shall be provided to the engineer for approval before main installation begins. A walk thru of the project prior to main installation shall be conducted with the contractor foreman to review disinfection procedures.

Flush Water Disposal

The contractor shall provide all piping, hoses, ditches and other conveyance devices to properly dispose of the water from the water mains. The following procedures shall be used:

1. Flush water containing chlorine in excess of 1 mg/l shall be directed to the sanitary sewer at rates that do not exceed the capacity of the receiving sanitary sewer. In the event a sanitary sewer is not available to the contractor, City of Hastings Sewer Department shall provide assistance in removing the chlorine., Plan and procedures for de-chlorination shall be approved by the engineer prior to commencing work.
2. Waters containing 1 mg/l or less of free residual chlorine to be flushed from the main shall be directed to appropriate storm sewers, ditches or other drainage ways. Disposal of flushed water shall be the responsibility of the contractor. Erosion caused by flushing

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activities shall be repaired by the contractor. Repair of right of ways and private property shall be completed to the satisfaction of the property owner or controlling authority.

B. Hydrostatic Pressure Testing:

Utility Owned Mains: Hydrostatic testing shall be in accordance with the latest revision of AWWA C600 Section 4 or AWWA C605 Section 7 as deemed appropriate. Hydrostatic testing shall be performed at a pressure of 140 psi (965 kPa) minimum to 150 psi (1035 kPa) maximum, with an maximum drop in pressure of 2 psi (14 kPa) over a two hour period. All defective materials or improperly installed materials shall be repaired or replaced as deemed appropriate by the engineer. The hydrostatic pressure test shall be repeated after all repairs are completed and until satisfactory results are obtained.

Privately Owned Services: Service lines greater than 2" shall conform to NFPA 24 hydrostatic pressure test requirements. All piping and attached appurtenances subject to system working pressure shall be hydrostatically tested at gauge pressure of 200 psi or 50 psi in excess of the system working pressure, whichever is greater, and shall maintain that pressure at gauge pressure of ± 5 psi for 2 hours.

C. Water Main Disinfection and Flushing

Water main disinfection and flushing shall be completed in a timely manner. As noted above a written plan shall be prepared and provided to the engineer for approval. The plan shall limit the amount of time water is allowed to be placed in the main prior to disinfection procedures are applied. The following terms and conditions shall be used with respect to disinfection and flushing of water mains:

Step 1. Pre-flushing (By HU Forces): Once the water main has been installed and all appropriate control valves placed into service, the water main shall then be flushed with potable water. This shall be done at a minimum velocity of 5 fps or maximum achievable with normal system water pressure. Pre-flushing of the water main shall be conducted for a sufficient period of time until the water is clear and then an additional five (5) pipe volumes of water shall be discharged. See above for flush water disposal requirements. City of Hastings forces shall be responsible for the operation of all Hastings water valves.

Step 2. Hydrostatic Pressure Testing (By Contractor): Immediately after pre-flushing of the main (within 1 hour) the water mains shall be hydrostatically tested.

Step 3. Aggressive Main Cleaning (Pigging) (By Contractor): Following successful hydrostatic testing (within 1 hour), water mains shall be aggressively pigged. Every effort shall be made to aggressively clean all sections of the water main. Appropriate sized pigs will be pushed through the pipe being cleaned using water system pressure. A set of pigs consist of the following:

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Pipe Cleaning Pig Set	
Pig Description	Qty. of Pigs per 1000 ft.
Medium Density Foam Vinyl Coated w/ Plastic Bristle	2
Medium Density Bare Foam with Cone End	2

Starting with new pigs, run pigs one at a time, starting with the vinyl coated scrubbing pig and repeat until the flush water is clean before repeating the process with the bare foam pig. Upon completion, the City will discard used pigs. See above for flush water disposal requirements. City of Hastings forces shall be responsible for the operation of all Hastings water valves.

Rev 2- 2020 **Step 4. Initial Disinfection (By Contractor):** Immediately after the water main has been aggressively cleaned (within 1 hour), the water main shall be disinfected with chlorine. Sufficient amounts of chlorine shall be used to provide a minimum of 25 mg/l to a maximum of 100 mg/l of free chlorine residual for a minimum contact time of 24 hours. Chlorine shall be added to each section of main using a continuous-feed method. The contractor shall provide, install, and operate all chlorination equipment. Chlorine chemical will be supplied by the owner and placement is the responsibility of the contractor. No additional compensation is provided. City of Hastings forces shall be responsible for the operation of all Hastings water valves.

Step 5. Flushing (By HU Forces): Once the water main has been disinfected the water main shall be flushed. Flushing of the water main shall be conducted for a sufficient period of time to remove all traces of chlorine. A field chlorine test shall be conducted to confirm all chlorine has been removed. See above for flush water disposal requirements and specifically for waters containing chlorine. Once the chlorine is removed flush an additional five (5) pipe volumes. City of Hastings forces shall be responsible for the operation of all Hastings water valves.

Step 6. Bacteriological Sampling (By HU Forces): Once the water main has been flushed of disinfectant samples for coliforms and heterotrophic bacteria (a.k.a. HPC or plate count) shall be collected. The water shall be tested for chlorine residual to insure that all chlorine has been removed. The water samples shall be collected from a sanitary access tap properly sized and approved of by the City. The water main shall not be aggressively flushed during the sample collection. The water main is deemed to be clean once two sets of samples are collected 24 hours apart and show no evidence of coliforms (zero coliforms) or heterotrophic bacteria (a.k.a. HPC or plate count) greater than 500 colony forming units per ml (500 cfu/ml).

All samples will be collected by HU forces and delivered to a third-party testing lab.

During each sampling event coliform and heterotrophic bacteria samples shall be collected at a point where system water enters the project. These samples are collected to insure the water used for cleaning of the mains is potable.

Step 7. Re-cleaning of the water main (By Contractor): If the water main after testing and flushing as noted above has not been successfully cleaned, then it shall be re-cleaned beginning with Step 3 as noted above. Selection of the pig type and construction shall be reviewed with the engineer for

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approval. All water used after initial Step 6 as noted above shall be metered using estimated flow rates as determined by City of Hastings. This water shall be purchased by the contractor at current residential (Urban) water rates. Expense of all retesting of the water main for coliforms and heterotrophic bacteria (a.k.a. HPC or plate count) shall be the responsibility of the contractor.

Step 8. Surfactant Cleaning (by Contractor): If deemed necessary by the contractor the water main may be cleaned using a National Sanitation Foundation (NSF) approved surfactant equal to a Johnson Screens NW-400. Application rate of the surfactant shall be as per manufactures recommendation. NW-400 shall be injected at a rate of 1 gallon per 1500 to 2000 gallons of water. Additionally the main shall be provided chlorine at a minimum rate of 25 mg/l and a maximum of 100 mg/l of free available chlorine. The surfactant and chlorine shall be allowed to be in contact with the pipe interior for a minimum of 24 hours and a maximum of 96 hours. Flushing of the surfactant and chlorine shall be deemed complete when there is not chlorine residual present.

4.213 Separation from Sanitary Sewer Mains. There shall be a minimum of eighteen (18) inches (450 mm) clearance between water mains and sanitary sewer mains crossing at approximately ninety degrees (90°). There shall be a minimum of 10' horizontal clearance between water mains and sanitary sewer, manholes and storm sewers measured from outside of pipe to outside of pipe.

Fire hydrants must not be located within 10' of a sanitary sewer.

4.214 Encasement Pipe. The encasement pipe for railroad and street crossings shall be installed by tunneling. Steel casing sections shall be connected by seam welding. The seam shall be a butt joint. Field welding shall conform to AWWA standard C206.

Casing chocks shall be provided as indicated on the drawings and installed per manufacturer recommendations. The casing chocks shall be securely fastened to the carrier pipe. The casing chocks shall be placed approximately 7'-0" (2.1 M) on center with a casing chock placed 3'-0" (0.9 M) from each end of each section of pipe. On a standard 20'- 0" (6.0 M) length of pipe, three casing chocks shall be installed.

Both ends of the encasement pipe shall be closed with a standard pull-on S-shaped seal as manufactured by Pipeline Seal and Insulator Inc., Model S, Advance Model AC End Seal, or approved equal.

After installation of the smooth steel pipe, City of Hastings shall install two 48 pound (21.8 Kg) sacrificial anodes or as determined by the Engineer shall be attached and buried at each end of the encasement. The anodes shall be attached to the outside of the encasement, one on each side.

SECTION 4-3 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

4.301 Water Main. Water main shall be measured for payment by measuring the length down the center line of construction of all pipelines installed, with no deduction for fittings or valves. Payment shall be made at the contract unit price per lineal foot for various sizes, including fittings, excavation and backfill, complete in place. The cost of providing and installing location tape shall be considered subsidiary to the water main.

4.302 Valves and Boxes. Valves and valve boxes shall be paid for at the contract unit price, complete in place.

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4.303 Hydrants. Fire hydrants shall be paid for at the contract unit price, complete in place.

4.304 Manholes. Manholes shall be paid for at the contract unit price bid per manhole, for a depth of five feet (5') (1.5 M), which payment shall include footings, ring and cover. Additional payment shall be made for manholes more than five feet (5') (1.5 M) in depth, measure from top of footings to top of cover, at the contract price for each vertical foot or fraction thereof in excess of five feet (5') (1.5 M).

4.305 Fittings. Fittings such as tees, bends, solid sleeves, MJ to MJ adapters, and reducers including all glands and bolts shall be paid for at the contract unit price, complete in place. If in the event additional fittings are required to be installed, then additional fittings shall be paid for at the unit price per pound of the base weight of the fitting.

All ductile iron fitting weights shall be computed using AWWA C153.D.I. Compact Fittings whenever appropriate. In the event a compact fitting weight is not provided by AWWA C153, then the appropriate ductile iron fitting weight as specified in AWWA C110 shall be used. If in the event special items that are called for on the drawings are not referenced in AWWA C110 or C153, then appropriate manufacturer weights shall be utilized. The fitting weights shall consists of the base weight only; all bolts, gaskets and glands shall be considered subsidiary to the pay item.

The Contractor will be reimbursed for actual installed fitting weights using the manufacturers standard weight schedule.

4.306 Boring and Encasement. The construction of encasement pipe shall include boring, excavation, backfill, casing pipe, and cathodic protection. All other items necessary to complete the installation encasement pipe shall be considered subsidiary to the bid item. The amount of encasement installed shall be measured along the center-line of the encasement and shall be paid for at the contract unit price.

4.307 Hydrant Extension. Hydrant extensions as required or as directed by Engineer shall be paid for on a per extension basis; such as 3" (75 mm), 6" (150 mm), 9" (225 mm), etc. Payment shall compensate the Contractor for all labor, fabrication, installation, backfilling, excavating, and all other incidental work as specified or directed by Engineer.

4.308 Valve Box Extension. Valve box extension shall be considered subsidiary to the installation of the valve and valve box.

4.309 Extra Depth Excavation and HDD. When deemed necessary by the Engineer for extra depth greater than 2.0 feet (600 mm) from plan grades, addition compensation shall be provided a per foot depth per linear foot basis. Payment shall include all excavating, backfilling, labor, and other incidental work as specified.

When bury depth is not indicated and rather to be field determined by the contractor, no additional compensations will be made.

No additional compensation will be made when the Contractor varies depth do his operation or failure to control his operation.

SECTION 4 - WATER MAIN SPECIFICATIONS

4.310 Locating Materials. Material and installation is responsibility of the contractor. Bury tape and tracer wire will be paid for by total feet of main plus total feet of service line. Connectors are subsidiary, tracer stations and anodes will be paid by total quantity.

4.311 Thrust Block. The payment for thrust blocks will be per quantity installed. This will include forming and pouring in place per detail dimensions.

END OF SECTION

SECTION 5

Submersible Pump Assembly

Part 1: General

1.1 SCOPE

- A. This section covers submersible pump units to be installed and used for municipal wells. The pumping unit shall be complete with an electric motor, pump column, wiring, discharge base, pump base, anchor bolts, and all other appurtenances which are specified for proper operation as recommended by the manufacturer.

1.2 GENERAL

- A. Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer, unless exceptions are noted by Hastings Utilities.

1.2.1 Submittals

- A. Submit shop drawings and product data. Submittals shall include the following:
 - 1. ANSI/NSF61 Certification clearly stated on product submittal.
 - 2. Certified dimensional drawings of each item of equipment and auxiliary apparatus to be furnished, including equipment weights, lengths, submergence, thread sizes, shaft stickups, widths, lifts, coating and lining types, and location and size of bolting.
 - 3. Literature and drawings describing the equipment, including parts list and materials of construction, in sufficient detail to indicate full conformance with the detail specifications.
 - 4. Cut sheets on accessory items.
 - 5. Manufacturer's certified rating curves, to satisfy the specified design conditions, showing pump characteristics of discharge, head, brake horsepower, efficiency and net positive suction head required (NPSHR). When applicable, variable speed curves shall be provided showing at least three speeds plotted equally from maximum rpm to minimum rpm. Minimum rpm shall be no less than that required to obtain minimum flow. Curves shall show the fully recommended range of performance and include shut-off head. This information shall be prepared specifically for the pump proposed. Catalog sheets showing a family of curves will not be acceptable

SECTION 5 - Submersible Pump Assembly

Part 2: Products

2.1 POWER SUPPLY

Power supply to the pump is to be operated off of existing variable frequency drive with service of 480 volt, 60 Hz, 3-phase, provided by Hastings Utilities. All electrical work shall be completed by a licensed electrician and shall be in conformance to all local electrical codes.

2.2 SERVICE AND INSTALLATION CONDITIONS

The Contractor shall, at his own expense furnish the services of an installation supervisor who is authorized by the pump manufacturer to supervise the installation of the pump and motor. The location of the bowl assembly is as shown on the attached drawings. The Contractor must be aware that the depth of the wells, pump settings and other conditions may vary and that the final data will depend upon field conditions and pumping tests of the wells as described in other sections of these specifications.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

Pumping units shall be designed for the following operating conditions when operating at full speed unless otherwise noted.

Pump 1 (Top Pump)	
Rated total head (feet)	300
Capacity at rated head (gpm)	450
Maximum shutoff (feet)	500
Maximum nominal pump operating speed (rpm)	3,600
Minimum nominal size of pump column (inches)	5
Nominal size of pump discharge (inches)	6
Performance Requirements	HI-1U non-overloading
Pump setting	133 feet
Pump suction	140-141 feet
Minimum pump overall efficiency (%)	75
Max Horse Power	50

Pump 2 (Bottom Pump)	
Rated total head (feet)	300
Capacity at rated head (gpm)	450
Maximum shutoff (feet)	500
Maximum nominal pump operating speed (rpm)	3,600
Minimum nominal size of pump column (inches)	5
Nominal size of pump discharge (inches)	6
Performance Requirements	HI-1U non-overloading

SECTION 5 - Submersible Pump Assembly

Pump setting	147 feet
Pump suction	155 feet
Minimum pump overall efficiency (%)	75
Max Horse Power	50

Performance of each pump shall be stable and free from damaging cavitation, vibration and noise in the operating head range. NPSHr shall not exceed 24 feet at design flow.

For design and rating purposes, the water to be pumped shall be assumed to have a temperature of 54 degrees Fahrenheit.

2.4 PUMP SYSTEM CONSTRUCTION

2.4.1 Materials:

The equipment furnished shall be supplied with material that complies with all applicable standards of ANSI/AWWA E102 for Submersible Vertical Turbine Pumps unless otherwise stated with these documents. Pump systems must be compliant with NSF 61.

2.4.2 Discharge Base:

The pump discharge base shall be designed to support the entire pump assembly. Provide six (2 for electrical, 1 for transducer, 1 vent, & 2 spare) tapped openings with a 1-1/2" diameter male pipe thread nipple. Provide a 1-1/2" screened air vent w/24 gauge mesh screen. The pump discharge outlet shall be integral with the discharge base and shall terminate in AWWA C110 flange (150lb).

2.4.3 Bowls and Impellers:

The pump bowls shall be constructed of cast iron ASTM A48, Class 30 or 304 Stainless Steel. Impellers shall be accurately machined and balanced and securely locked on the pump shafting. Impellers shall be made of Stainless Steel grade 316 and shall be securely fastened to the pump shaft. The impellers shall be of semi-opened type of construction. Pump bowl diameter shall be no greater than 7-1/2 inches.

2.4.4 Pump Column

Boreline FlexiRiser manufactured by Hose Solutions Inc. with appropriate termination fittings.

Nominal Diameter (inches)	6
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SECTION 5 - Submersible Pump Assembly

2.4.5 Suction Bowl Inlet:

The pump shall be equipped with vanes to guide the water to the first stage impeller. Provide and install a PVC suction shroud properly sized to prevent intake restriction and collapse.

2.4.6 Foot Valve:

A Ductile Iron or stainless steel body foot (check) valve shall be installed above the pump. The valve guide shall be 316 Stainless Steel. The follower shall be Ductile Iron or stainless steel. The Elastomeric Disk shall be constructed Buna-N rubber. Provide stainless steel spring. The foot valve shall be rated for 250 psi operating pressure and VFD duty. The foot valve shall be NSF approved for municipal water use. Provide a Flomatic Submersible Pump In-Line Check Valve Model 80DI VFD or equal.

2.4.7 Depth Transducer Drop Pipe:

PVC threaded connection drop pipe (1" nominal diameter) shall be installed to top of pump depth and terminated to pump base. Install a bolt stop at the bottom of pipe and perforate effectively the bottom 10' to allow for water to flow without restriction into and out of the pipe.

2.4.8 Submersible Pump Motor:

Each motor shall be designed and applied in conformity with NEMA, NEC, ANSI, IEEE, and AFBMA Standards for the particular application and service. Bearing life shall be based upon actual operating conditions in accordance with AFBMA life and thrust values. The motor shall be a maximum of 50 Hp, 460 volt, 60 Hz, 3-phase, squirrel-cage inductions type motor constructed for submersible pump installations. The motor shall have a 1.15 service factor. Insulation shall be Class B minimum, with a standard temperature rise of 60 degrees C by thermometer in an ambient of 40 degrees C. The motor shall be of the normal starting torque, low starting current, constant speed squirrel cage induction type and shall be operated with a line voltage at any value between 10 percent below and 10 percent above the rated voltage.

When the motor is used in conjunction with a variable frequency drive the motor shall be compatible with characteristics of the intended variable frequency generator. Motors shall be provided with Class F insulation.

2.4.9 Submersible Power Cable:

The electrical power conductors shall be rated for 1.2 times the maximum locked motor amperage. Provide 4 wire conductor assemblies. The cable jacket shall be

SECTION 5 - Submersible Pump Assembly

water tight and compatible with potable water use. Support the cable at each joint of column pipe using nylon cable ties.

2.4.10 Balance:

All rotating parts shall be accurately machined and shall be in as nearly perfect rotational balance as practicable. Excessive vibration shall be sufficient cause for rejection of the equipment. The mass of the unit and its distribution shall be such that resonance at normal operating speeds is avoided. In any case, the vibration displacement (peak to peak) as measured at any point on the machine shall not exceed 4.5 mils and that of the shaft measured at the face of the stuffing box shall not exceed 2.0 mils.

At any operating speed, the ratio of the rotative speed to the critical speed of a unit or components thereof shall be no less than 0.8 or more than 1.3.

2.5 INSTALLATION, STARTUP, and DISINFECTION

2.5.1 Installation:

Install pump and column in cleanly fashion, avoid contaminating bore line with any debris by keeping on a clean surface. Allow the bore line to stretch per manufacturer's recommendation. Affix the motor cables to the bore line. After the pump is set, the pump base shall be grouted in place with non-shrinking grout. Shimming between machined surfaces will not be permitted.

2.5.2 Startup:

Confirm proper pump rotation upon startup. Test pump the well to waste at shut off pressure and requested TDH to confirm pump performance.

2.5.3 Disinfection:

Once installation and startup is completed, disinfect the well per AWWA standard C654-13. Sample bacteriological and coliform sampling also in accordance of C654-13, two samples collected 30 minutes apart with the first being collected 15 minutes after the last detection of chlorine. In addition, collect heterotrophic plate count samples, results to not exceed 500 CFU/mL.

2.5.4 Drawings and Data:

Complete assembly and installation drawings, together with detailed specifications and data covering materials used, parts, devices, and other accessories forming a part of the equipment furnished, shall be submitted prior to installation for approval by Hastings Utilities. The data and specifications for each unit shall include but shall not be limited to the following:

SECTION 5 - Submersible Pump Assembly

Pumps

- a) Name of manufacturer
 - b) Type of model
 - c) Design rotative speed
 - d) Number of stages
 - e) Pump bowl efficiency at rated capacity and head
 - f) Type of line shaft bearings
 - g) Size of pump column
 - h) Size of discharge outlet
 - i) OD of pump bowls
 - j) Weight
-

Complete performance curves showing capacity, head, NPSH requirements, pump efficiency, wire to water efficiency, and bhp requirements.

Motors

- a) Name of manufacturer
 - b) Type of model
 - c) Rated size of motor hp
 - d) Temperature rating
 - e) Full load rotative speed
 - f) Net weight
 - g) Efficiency at full load and rated pump condition
 - h) Full load current
 - i) Locked rotor current
-

Complete Pumping Unit

- a) Maximum overall dimensions
 - b) Total weight
-

Electrical Controls

- a) Name of manufacturer
 - b) Type and make
 - c) Electrical diagrams
 - d) Overall dimensions
 - e) Mounting requirements
-

SECTION 5 - Submersible Pump Assembly

2.6 ELECTRICAL CONTROLS

The intent of these specifications is for the owner to provide all fabrication and installation of the electrical controls. The pump installer shall confirm proper motor rotation.

2.7 CORROSION PROTECTION

The Pump Installation Contractor shall obtain the services of a qualified Coating Contractor to have all column pipe, bowl assembly and suction pipe epoxy coated for those items installed below the static water level, excluding stainless steel and boreline. The Contractor shall provide Hastings Utilities prior to the coating process a written description of the coating process along with the name, address, and telephone number of the coating Contractor.

Liquid-epoxy coating shall not be less than sixteen (16) mils dry film thickness. The epoxy coating shall be compatible with use in municipal water supply wells and NSF 61 approved. The coating and the coating process shall be in accordance to AWWA C210-15 or approved by the National Sanitation Foundation. If an alternative coating process is proposed, the Contractor shall obtain approval from Hastings Utilities. The coating shall be firmly attached to the base material and be resistive to normal abrasion associated with the municipal well use. The coating shall be applied to all exterior surfaces below static water level. If provided the tail pipe shall be also coated on the interior. Provide and Affidavit of Compliance as per AWWA C211-15, Sec. 6.3.

Fusion-bonded epoxy coatings shall not be less than twelve (12) mils dry film thickness. The epoxy coating must be certified to NSF/ANSI Standard 61. The coating and coating process shall be in accordance with AWWA C213-15. The coating shall be applied to all exterior surfaces below static water level. If provided the tail pipe shall be also coated on the interior. Provide and Affidavit of Compliance as per AWWA C213-15, Sec. 6.3.

2.8 SHOP TESTS

- A. Perform non-witness factory tests and inspect any equipment to be furnished under this Section prior to their shipment from place of manufacture.
 - 1. A complete test report for each pump, including certified characteristic curves of the pump, consisting of at least all information required in Paragraph 2.2.1 above, except for NPSHR shall be submitted to and approved by the Engineer before the pumps are shipped.
- B. Each pump specified herein shall be factory tested in accordance with the latest edition

SECTION 5 - Submersible Pump Assembly

of the Hydraulic Institute Standards. Notification of such test and a list of test equipment and procedures shall be furnished to the Engineer at least 10 working days before the schedule test date.

1. Each pump shall be tested and data recorded at its operating conditions of service as listed in Paragraph 2.5 above. Sufficient test point readings shall be made to establish complete head flow capacity, efficiency and brake horsepower curves for each pump. Performance criteria must meet or exceed that of HI-1U non-overloading.
2. Tests may be conducted with shop column, discharge head and motor to facilitate the manufacturing process.
3. If the application is variable speed a minimum speed curve shall be plotted on the performance curve basis the affinity laws and the test data.
4. All gauges and other test instruments shall be calibrated within 30 days of the scheduled test and certified calibration data shall be provided.

END OF SECTION

SECTION 6

WELL DISCHARGE PIPING AND METERS

- 6.1** **SCOPE.** This section covers the construction and installation of the discharge piping. The discharge piping shall include, but not necessarily limited to, the air relief, check valve, butterfly valve, and meter.

See drawings for requirements.

- 6.2** **GENERAL.** The layout and support of the pipe shall be as shown on the attached drawings. The Contractor shall install each fitting and device in a workman like manner and in accordance with manufacture's recommendations and instructions.

- 6.3** **AIR / VACUUM RELIEF.** When required install an air / vacuum relief valve. The air/vacuum valve shall be designed for deep well service. The unit shall be able to withstand pressures of 150 psi. The body shall be a cast iron ASTM A48 and shall utilize stainless steel or bronze internal parts. The unit, shall be designed for venting exhaust air during pump start-up and allow air to re-enter during pump shutdown. The air relief valve shall be a Crispin Model DL30 Deep Well Air Valve. All necessary piping shall be 3" galvanized Sch. 40 iron pipe with National pipe threads.

- 6.4** **CHECK VALVE.** When required provide a swing check valve to be manufactured using ASTM A126 Class B Cast Iron with lead free bronze disc and seat and comply with MSS SP-71. Valve to be pressure rated to 200psi (12.1 bar) CWP with flanged ends that comply with ASME B16.10 and ASME B16.1 Class 125 standards. Series 411 shall comply with AWWA C508 and use a NSF 61 certified coating and shall comply with state codes and standards, where applicable, requiring reduced lead content. Valve shall have a full port design, and be in-line repairable. Valve to be Watts Series 411 Swing Check Valve or approved equal.

- 6.5** **BUTTERFLY VALVE.** The butterfly valve shall be tight closing, rubber seat type with rubber seats which are securely fastened to the valve body. The valve shall be bubble-tight at rated pressures, and shall be satisfactory for applications involving throttling service, frequent operations, and for applications involving valve operation after long periods of inactivity. The connection flanges shall be ANSI B16.1 Class 125. The valve shall meet the full requirements of AWWA standard C504-74 for Class 150B. Provide a hand-wheel crank.

The butterfly valve shall be one of the following or an approved equal:

- 1) M and H No. 450 12" AWWA C504 Butterfly Valve with ANSI B16.1 Class 125 Flanges.
- 2) Pratt Model 2FII 12" Butterfly Valve with MDT Operator with ANSI B16.1 Class 125 Flanges.
- 3) DeZurk 12" AWWA Butterfly valve with fluid crank operator and ANSI B16.1 Class 125 flanges.

SECTION 6: WELL DISCHARGE PIPING AND METERS

- 6.6 MAINLINE PROPELLER WATER METER.** Meter body rated for a maximum working pressure rating of 150 psi. and comply with AWWA C704 and be NSF certified. The flanged fittings shall be 150lb AWWA Class “D” flat face steel flanges. Gearbox shall be stainless steel with the electronic sensor housed in the gearbox which is magnetically driven and sealed from water flow eliminating water entering the meter and all moving parts except the propeller. Totalizer shall be remote mounted transmitter displaying local flow totalizer and GPM. Outputs in 4-20mA analog and open collector pulse, each pulse shall represent 1000 gallons. Include output cable with 25 feet length. The input voltage shall be 10-35 volt D.C. The accuracy shall be 0.5% over the entire flow range. Acceptable products are Water Specialties ML04D with FlowCom Transmitter Assembly or approved equal. See plans for meter size.
- 6.7 ELECTROMAGNETIC (MAG) WATER METER.** The Electromagnetic water meter shall be a velocity sensing electromagnetic type, flanged tube meter with sealed housing for 150 PSI working pressure. The meter shall be an Ultra Mag™ 3000 with a remote mounted McCrometer ProComm Go or approved equal. The meter shall be equipped with a 9 digit digital totalizer reading in units of 1000 gallons. The meter shall be accurate within 0.5% of actual flow (over the entire flow range). The meter assembly shall operate within a range of 0.2 FPS to 32 FPS:
- 6.7.1 METER BODY** shall be fabricated of stainless steel pipe and use 150 lb. AWWA Class “D” flat face steel flanges. The internal and external of the meter tube shall be blasted and lined with a NSF approved fusion bonded epoxy UltraLiner™, applied by the fluidized bed method or approved equal. Meter tubes shall have a constant nominal inside diameter offering no obstruction to the flow. Electrodes shall be 316 stainless steel.
- 6.7.2 MAG SHIELD** shall be welded to the tube providing a completely sealed environment for all coils, electrode connections and wiring harness capable of NEMA 6P/IP68 operation.
- 6.7.3 SIGNAL CONVERTER** shall be pulsed DC coil excitation type with auto zeroing. The converter shall indicate direction of flow and provide a flow rate indication and a totalization of flow volume for both forward and reverse directions. Both forward and reverse totalizers shall be electronically resettable. The flow meter converter shall be microprocessor based with a keypad for instrument set up and LCD displays for totalized flow, flow rate engineering units and velocity. The converter shall power the flow sensing element and provide galvanic isolated dual 4-20mA outputs. It shall be possible, in the test mode, to easily set the converter outputs to any desired value within the range. The 4-20mA scaling, time constants, pipe size, flow proportional output, engineering units and test mode values shall be easily set via the keypad and display. Four separate fully programmable alarm outputs shall be provided to indicate empty pipe, forward/reverse polarity (normally open/close), analog over-range, fault conditions, high/low flow rates, percent of range and pulse cutoff. The converter shall

SECTION 6: WELL DISCHARGE PIPING AND METERS

periodically perform self-diagnostics and display and resulting error messages. All set up and data and totalizer values may be protected by a password. The converter shall be integrally mounted or remotely mounted up to 500 feet from the sensor, and shall be supplied in a sealed IP67 rated enclosure. Calibration will be completed at the manufacturer's location in accordance with customer supplied application-based requirements.

- 6.7.4 GROUNDING RINGS** shall be 316 stainless steel and shall be supplied with the meter tube.
- 6.7.5 POWER AND SIGNAL ISOLATION:** The power supplied between the converter and the meter tube (sensor) and signal between the meter tube and the converter shall be isolated and placed in separate submersible cables.
- 6.7.6 SERVICE & SUPPORT:** Supplier must have flow calibration laboratories and personnel to perform testing and certify calibration. Personnel must also provide instruction or training as required assuring meters are supported and maintained throughout the guarantee period.
- 6.7.7 VOLUMETRIC TESTING** of all meters must be performed and approved prior to shipment. The complete meter assembly and signal converter must be wet accuracy tested and calibrated. The test facility must be rigorously traceable to an accuracy of $\pm 0.15\%$ with the National Institute of Standards and Technology. If desired, the test shall be witnessed by the customer or their selected agent. A copy of the certified accuracy test record must be furnished at no charge to the customer.
- 6.8 BRONZE STRAINER.** When required provide 3" threaded "Y" type bronze body strainer with bronze screen having a maximum 1/4" – 1/4" opening. Design to withstand minimum 150 psi pressure.
- 6.9 SURGE RELIEF VALVE.** When required provide a surge relief to protect the water main from water hammer and transient surges. The unit shall be a Watts F100 full port ductile iron single chamber valve or approved equal. The valve body shall constructed of ductile iron and epoxy coated. The internal materials shall be 304 stainless steel or. All gaskets shall be Buna-N (Nitrile). The valve shall have a pressure rating of at least 150 psi. The direction of full shall be imprinted on the body of the valve.

Provide flange gaskets to install the surge valve.

The surge valve shall be fitted with a Watts Model LFPV20C or approved equal to control the required relief pressure of the surge valve. The body shall be constructed of lead free brass. The seat shall be stainless steel and the elastomeric gaskets shall be Buna-N (Nitrile). The adjustment rating shall be 20 to 200 psi. All interconnecting tubing shall be stainless steel or copper rated for a minimum of 250 psi. The controller

SECTION 6: WELL DISCHARGE PIPING AND METERS

shall be securely mounted on the surge valve. The controller shall be imprinted with the direction of installation.

- 6.10 DUCKBILL CHECK VALVE.** When required provide a duckbill style check valve as indicated on the drawings. Provide a Hed-Flex Duckbill Check Valve Series 9900 Slip-on or approved equal. The duckbill check valve shall be constructed of rubber with a slip-on connection. The check valve shall be designed to slip onto Class 52 Ductile Pipe. The check valve shall be secured to the pipe with a 316 stainless steel band. The port area shall contour down to the duck bill. The check valve shall be one-piece rubber connection with nylon reinforcement.

The company name, model, and size shall be bonded to the check valve.

6.11 BALL VALVES.

6.11.1 Brass Ball Valve ¼ inch thru 3 inch (Threaded)

Provide fully ported brass ball valves as noted on the drawings. Ball valves shall be Watts Series FBV-4, FBV-4S, or approved equal for sizes ¼ inch thru 3 inch. Ball valves shall be designed with National Pipe Threaded connections. The ball valves shall be approved by NSF/ANSI Standard 61/8.

6.11.2 Cast Iron Ball Valve 4 inch thru 6 inch

Provide fully ported Ductile Iron Ball Valves as noted on the drawings. The ductile iron ball valve shall be an American Valve Model 4000D or approved equal. The ball valve shall be NSF/ANSI 61 and AWWA C507 approved.

Ball valves shall be of the floating-ball design providing bi-directional, tight shutoff in accordance with MSS SP-72. The valves shall be rated at 125# WSP/200# WOG. Bodies shall be of cast iron per ASTM A126 Class B, With ANSI Class 125 flat-face flanges. The interior and exterior of the body shall be UL certified polyester powder coated to meet NSF/ANSI 61 and NSF/ANSI 372. The ball shall be PFA infused cast iron, with a stainless steel blowout-proof stem. The seats and body seals shall be PTFE. The stem seal shall be PTFE, externally adjustable chevron type. Valves shall be equipped with locking handles as standard.

- 6.11 DUCTILE IRON PIPE.** Pipe shall comply with the latest revision of ANSI/AWWA C151/A21.51-96 with the exception that the wall thickness shall comply with 350 PSI (2400 kPa) pressure class pipe for sizes 3 thru 24 inch (76 mm thru 600 mm) unless stated otherwise on the plan drawing. Pipe shall contain cement-mortar lining per ANSI A21.4-16 (AWWA C104) and outside coating per AWWA C151/A21.51 Minimum of 1 mil thickness (0.025 mm) of bituminous coating (paragraph 51.8.1).

- 6.12 DUCTILE IRON PIPE FLANGED ADAPTER.** Provide ductile iron pipe flanged adapters as noted on the drawings conforming to AWWA C110. The adapters shall be

SECTION 6: WELL DISCHARGE PIPING AND METERS

EBA Iron Series 1000 E-Z Flange or approved equal. Provide adapters to withstand a 250lb test pressure rating in accordance with AWWA C600. Provide appropriate gasket for each adapter supplied.

- 6.13** **STEEL PIPING AND COUPLINGS.** Provide schedule 40 steel piping and couplings as noted on the drawings. Provide all steel piping with national pipe threads. All steel piping and couplings shall be installed rust free.
- 6.14** **PIPE SUPPORT.** Provide adjustable pipe support as indicated on the drawings. Provide adjustable pipe support with integral saddle as manufactured by Trumbull Industries or approved equal. The contractor shall install the supports securely to the concrete floor using appropriately sized stainless steel expansion anchor bolts. All supports shall be electro-galvanized finished.

END OF SECTION

PROFESSIONAL SEALS

ASR Phase IV: Well 17 Dual Pump and Piping

Contract No. HU 2026-73

Professional Engineer Seal (back)	
Professional Engineer – Div. Civil Specification Sect. 1-6	