

**CONTRACT DOCUMENTS
&
TECHNICAL SPECIFICATIONS**

HU 2026-77

**LAKEVIEW 11TH SUBDIVISION
WATER & SANITARY SEWER EXTENSION DIST 2026-01**

CITY OF HASTINGS

**Proposals Will Be Opened Promptly At
4:00 PM, Wednesday, August 12, 2026**

Bid Submitted By: _____



**LAKEVIEW 11TH SUBDIVISION WATER & SANITARY SEWER
EXTENSION DIST 2026-01
HU 2026-77**

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PROFESSIONAL SEALS

Lakeview 11th Subdivision Water & Sanitary Sewer
Extension Dist 2026-01

Contract No. HU 2026-77

Professional Engineer Seal (front)	
Professional Engineer – Div. Civil Specification Sect. 1-5 & 33 05 27	

ADVERTISEMENT FOR BIDS

The City of Hastings, Nebraska, will receive bids for the **Lakeview 11th Subdivision Water & Sanitary Sewer Extension District 2026-01 HU 2026-77** until 4:00 p.m. at the City of Hastings, 1228 N Denver Ave., Hastings, Nebraska, on Wednesday, August 12, 2026, at which time and place all bids will be publicly opened and read aloud. **Brief description of project: Installation of 744 feet of 8” PVC sewer main and 823 feet of 8” ductile iron pipe water main for Lakeview 11th Subdivision in Hastings, Nebraska.** 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No bid shall be withdrawn after opening of bids without the consent of the City of Hastings, Nebraska, for a period of sixty (60) days after scheduled time of closing bids.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 3-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 21st day of July 2026.

CITY OF HASTINGS, NEBRASKA

Tyler Ficken, City Clerk

Publish:

July 24, 2026

July 31, 2026

Furnish 2 proofs of publication

IMPORTANT MAILING (OR HAND DELIVERY) INSTRUCTIONS

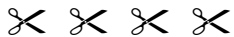
Please address your return envelope as shown in the example below. All bids must be sealed in a properly marked envelope.

To hand deliver, please drop off between the hours of 8am – noon and 1-5pm Monday through Friday.

Your Return Address

City of Hastings
Attn: Renae Griess
1228 N Denver Avenue
Hastings, NE 68901

**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**



BID DOCUMENTS ENCLOSED

ATTN: Renae Griess

Contract No: Lakeview 11th Subdivision Water & SS Extension Dist 2026-01

HU 2026-77

Bid Opens: Wednesday, August 12, 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 4:00 pm deadline.

IF YOU HAVE QUESTIONS OR NEED HELP ON THESE SPECIFICATIONS

PLEASE CONTACT ANY OF THE FOLLOWING:

TECHNICAL QUESTIONS

Keith Miller, Lead Engineer
1228 N Denver Ave
Hastings, NE 68901
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

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 himself, 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 City will not assume obligations resulting from losses or damages until acceptance of the equipment.

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.

**PROPOSAL FOR
Lakeview 11th Addition
Water & Sanitary Sewer Extension Districts 2026-01
Contract No. HU 2026-77**

TO: City of Hastings
1228 N. Denver Ave
Hastings, NE 68901

Bid Opening: August 12, 2026 (Wednesday)
SEALED BIDS MUST BE RECEIVED BY 4:00 P.M.
AND WILL BE OPENED PROMPTLY AT THAT
TIME

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.

Activity	Schedule
Bid Opening date	August 12, 2026
Contract award date	August 24, 2026
Completion date	November 1, 2026
Earliest start date after crop harvested	September 1, 2026
Liquidated Damages	\$100 per day
Sales Tax Exempt Items: Sanitary Sewer and Fire Hydrant	

SECTION A – Lakeview 11th - Sanitary Sewer Project					
Item	Description	Qty	Unit	Unit Price	Total
1	MOBILIZATION	1	LS		
2	8" PVC SAN. SEWER PIPE	744	LF		
3	48" D. x 5' MANHOLE (INC. RING, COVER, BASE, AND ADJ.)	4	EA		
4	ADDITIONAL 48"D. MANHOLE BARREL	28.11	VF		
5	8" x 4" SERVICE TEE ASY	16	EA		
6	4" PVC S.S. SERVICE CLEANOUT ASY	16	EA		
7	4" PVC S.S. SERVICE PIPE	491	LF		
8	8" S.S. CLEANOUT	1	EA		
TOTAL				\$	
In Words					

HU Specs/HU 2026-77
Date: 7/2026 City of Hastings, Hastings, NE

THIS BID DOCUMENT MUST BE SUBMITTED WITH BID

**PROPOSAL FOR
Lakeview 11th Addition
Water & Sanitary Sewer Extension Districts 2026-01
Contract No. HU 2026-77**

SECTION B – Lakeview 11th – Water Main Project					
Item	Description	Qty	Unit	Unit Price	Total
1	Mobilization	1	LS		
2	8” DIP PC-350	823	LF		
3	8” M.J. GATE VALVE w/ BOX	2	EA		
4	6” M.J. GATE VALVE w/ BOX	1	EA		
5	8” FOSTER ADAPTOR	1	EA		
6	COMPACT FITTINGS	352	LBS		
7	FIRE HYDRANT FITTINGS	209	LBS		
8	FIRE HYDRANT (6’-0” BURY)	1	EA		
9	8”x1” SERVICE SADDLE & CORP STOP	16	EA		
10	1” CURB STOP & BOX ASSEMBLY	16	EA		
11	1” PE SERVICE LINE	480	LF		
12	REMOVE AND RELOCATE HYDRANT ETC.	1	LS		
13	TRACER WIRE	1400	LF		
14	TRACER WIRE ANODE	3	EA		
TOTAL				\$	
In Words					

GRAND TOTAL BID SECTIONS A+B	
	\$
In Words	

**PROPOSAL FOR
Lakeview 11th Addition
Water & Sanitary Sewer Extension Districts 2026-01
Contract No. HU 2026-77**

Note: unit prices shall prevail in the case of potential mathematical discrepancies.

THE WATER PROJECT-SECTION B IS SUBJECT TO SALES TAX. The labor portion is not subject to sales tax; however, the material portion is taxed accordingly. See following tax rules and regulation language.

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.
- For this project, Contractor will supply all materials.

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 prices.

Yes _____ No _____

(ALL COSTS TO INCLUDE CITY AND STATE SALES TAX)

The undersigned bidder agrees to furnish the required performance bond and to enter into a contract within ten (10) days after acceptance of the Proposal and further agrees to complete all work covered by the foregoing Proposal in accordance with specified requirements.

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

**PROPOSAL FOR
Lakeview 11th Addition
Water & Sanitary Sewer Extension Districts 2026-01
Contract No. HU 2026-77**

Contractor's Earliest Start Date: _____

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.

City of Hastings may at its own discretion delete any project area and / or component prior to award of contract. City of Hastings will award all bid sections to one contractor.

In submitting this proposal, it is further understood that the City of Hastings reserves the right to reject any or all proposals 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 bids are opened.

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

OFFICIAL NAME & ADDRESS

_____ Firm Name	_____ Signature
_____ Address	_____ Typed or Printed Name
_____ City, State, Zip	_____ Title
_____ Phone No.	_____ Date
_____ Fax No.	_____ Email Address

**ALL BIDS MUST BE CHECKED IN TO THE CITY OF HASTINGS
PRIOR TO 4:00 PM DEADLINE**

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 _____ 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 **Lakeview 11th Subdivision Water & Sanitary Sewer Extension District 2026-01 HU 2026-77**

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.

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

CONTRACTOR
Party of the Second Part

SEAL

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.

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

Lakeview 11th Subdivision Water & Sanitary Sewer Extension District 2026-01

HU 2026-77

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 THREE (3) years 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)

Nebraska Resale or Exempt Sale Certificate for Sales Tax Exemption

FORM
13

Name and Mailing Address of Purchaser			Name and Mailing Address of Seller		
Name			Name		
Legal Name					
Street or Other Mailing Address			Street or Other Mailing Address		
City	State	Zip Code	City	State	Zip Code

Check Type of Certificate

- ☐ Single Purchase If single purchase is checked, enter the related invoice or purchase order number _____.
- ☐ Blanket If blanket is checked, this certificate is valid until revoked in writing by the purchaser.

I hereby certify that the purchase, lease, or rental by the above purchaser is exempt from the Nebraska sales tax for the following reason:

Check One ☐ Purchase for Resale (Complete Section A.) ☐ Exempt Purchase (Complete Section B.) ☐ Contractor (Complete Section C.)

Section A—Nebraska Resale Certificate

Description of Property or Service Purchased

I hereby certify that the purchase, lease, or rental of _____ from the seller listed above is exempt from the Nebraska sales tax as a purchase for resale, rental, or lease in the normal course of our business. The property or service will be resold either in the form or condition in which it was purchased, or as an ingredient or component part of other property or service to be resold.

I further certify that we are engaged in business as a: ☐ Wholesaler ☐ Retailer ☐ Manufacturer ☐ Lessor

Description of Product Sold, Leased, or Rented

of _____

My Nebraska Sales Tax ID Number is 01-_____.

If none, state the reason _____,

or Foreign State Sales Tax Number _____ State _____.

Section B—Nebraska Exempt Sale Certificate

The basis for this exemption is exemption category _____ (See the list of Exemption Categories and corresponding numbers on reverse side).

If exemption category 2 or 5 is claimed, enter the following information:

Description of Property or Service Purchased

Intended Use of Property or Service Purchased

If exemption category 3 or 4 is claimed, enter your Nebraska Certificate of Exemption State ID number. 05-_____.
Do **not** enter your Federal Employer ID Number.

If exemption category 6 is claimed, the seller must enter the following information and sign this form below:

Description of Items Sold	Date of Seller's Original Purchase	Was tax paid when purchased by seller? ☐ Yes ☐ No	Was item depreciable? ☐ Yes ☐ No
---------------------------	------------------------------------	--	---

Section C—For Contractors Only

1. Purchase of building materials or fixtures.

- ☐ As an Option 1 or Option 3 contractor, I hereby certify that the purchase of building materials and fixtures from the seller listed above are exempt from Nebraska sales tax. My Nebraska Sales or Use Tax ID Number is: _____.

2. Purchases made by an Option 2 contractor under a Purchasing Agent Appointment on behalf of _____ (exempt entity)

- ☐ As an Option 2 contractor, I hereby certify that the purchase of building materials and fixtures from the seller listed above is exempt from Nebraska sales tax pursuant to the **attached** Purchasing Agent Appointment and Delegation of Authority for Sales and Use Tax, Form 17.

Any purchaser, agent, or other person who completes this certificate for any purchase which is not for resale, lease, or rental in the regular course of the purchaser's business, or is not otherwise exempted from sales and use taxes is subject to a penalty of \$100 or ten times the tax, whichever amount is larger, for each instance of presentation and misuse. With regard to a blanket certificate, this penalty applies to each purchase made during the period the blanket certificate is in effect. Under penalties of law, I declare that I am authorized to sign this certificate, and to the best of my knowledge and belief, it is correct and complete.

**sign
here** ➤

Authorized Signature

Title

Date

Authorized Signature Name (please print)

**Do not send this certificate to the Nebraska Department of Revenue. Keep it as part of your records.
Sellers cannot accept incomplete certificates.**

The Department is committed to the fair administration of the Nebraska tax laws. It is unlawful to claim an exemption for purchases of property or services that are subject to tax. Sellers are encouraged to notify the Department of any unlawful use of this form.
revenue.nebraska.gov, 800-742-7474 (NE and IA), 402-471-5729

Instructions

Who May Issue a Resale Certificate. Purchasers are to give the seller a properly completed Form 13, Section A, when making purchases of property or taxable services that will subsequently be resold in the purchaser's normal course of business. The property or services must be resold in the same form or condition as when purchased, or as an ingredient or component part of other property that will be resold.

Who May Issue an Exempt Sale Certificate. Form 13, Section B, may be completed and issued by governmental units or organizations that are exempt from paying Nebraska sales and use taxes. See this list in the [Nebraska Sales Tax Exemptions Chart](#). Most nonprofit organizations are **not** exempt from paying sales and use tax. Enter the appropriate number from "Exemption Categories" (listed below) that properly reflects the basis for your exemption.

For additional information about proper issuance and use of this certificate, please review [Reg-1-013, Sale for Resale – Resale Certificate](#), and [Reg-1-014, Exempt Sale Certificate](#).

Contractors. Contractors complete Form 13, Section C, part 1 or part 2 based on the option elected on the [Contractor Registration Database](#).

To make tax-exempt purchases of building materials and fixtures, Option 1 or Option 3 contractors must complete Form 13, Section C, Part 1. To make tax-exempt purchases of building materials and fixtures pursuant to a construction project for an exempt governmental unit or an exempt nonprofit organization, Option 2 contractors must complete Form 13, Section C, Part 2. The contractor must also attach a copy of a properly completed [Purchasing Agent Appointment and Delegation of Authority for Sales and Use Tax, Form 17](#), to the Form 13, and both documents must be given to the supplier when purchasing building materials. See the [contractor information guides](#) and [Reg-1-017, Contractors](#), for additional information. Also, see the Important Note under "Exemption Categories" number 3.

When and Where to Issue. The Form 13 must be given to the seller at the time of the purchase to document why sales tax does not apply to the purchase. The Form 13 must be kept with the seller's records for audit purposes.

Sales Tax Number. A purchaser who is engaged in business as a wholesaler or manufacturer is not required to provide an ID number when completing Section A. Out-of-state purchasers may provide their home state sales tax number. Section B does not require a Nebraska ID number when exemption category 1, 2, or 5 is indicated.

Fully Completed Resale or Exempt Sale Certificate. A fully completed resale or exempt sale certificate is proof for the retailer that the sale was for resale or is exempt. For a resale certificate to be fully completed, it must include: (1) identification of the purchaser and seller, type of business engaged in by the purchaser; (2) sales tax permit number; (3) signature of an authorized person; and (4) the date of issuance.

For an exempt sale certificate to be fully completed, it must include: (1) identification of purchaser and seller; (2) a statement that the certificate is for a single purchase or is a blanket certificate covering future sales; (3) a statement of the basis for exemption, including the type of activity engaged in by the purchaser; (4) signature of an authorized person; and (5) the date of issuance.

Penalties. Any purchaser who gives a Form 13 to a seller for any purchase which is other than for resale, lease, or rental in the **normal** course of the purchaser's business, or is not otherwise exempted from sales and use tax under the Nebraska Revenue Act, is subject to a penalty of \$100 or ten times the tax, whichever is greater, for each instance of presentation and misuse. In addition, any purchaser, or their agent, who fraudulently signs a Form 13 may be found guilty of a Class IV misdemeanor.

Exemption Categories

(Insert appropriate number from the list below in Section B)

1. Governmental units, identified in [Reg-1-072, United States Government and Federal Corporations](#); and [Reg-1-093, Governmental Units](#). Governmental units are not assigned exemption numbers.

Sales to the U.S. government, its agencies, instrumentalities, and corporations wholly owned by the U.S. government are exempt from sales tax. However, sales to institutions chartered or created under federal authority, but which are not directly operated and controlled by the U.S. government for the benefit of the public, generally are taxable.

Purchases by governmental units that are **not** exempt from Nebraska sales and use taxes include, but are not limited to: governmental units of other states; sanitary and improvement districts; rural water districts; railroad transportation safety districts; and county historical societies.

2. Purchases when the intended use renders it exempt. See [Nebraska Sales Tax Exemption Chart](#).
3. Purchases made by organizations that have been issued a [Nebraska Exempt Organization Certificate of Exemption](#) (Certificate of Exemption). [Reg-1-090, Nonprofit Organizations](#); [Reg-1-091, Religious Organizations](#); and [Reg-1-092, Educational Institutions](#), identify these organizations. These organizations are issued a Certificate of Exemption with a state ID number which must be entered in Section B of Form 13.

Important Note: Nonprofit educational institutions must be accredited regionally or nationally and have their primary campus in Nebraska to be exempt from sales and use tax. Also nonprofit organizations providing any of the types of health care or services that qualify to be exempt must be licensed or certified by the Nebraska Department of Health and Human Services (DHHS) to be exempt from sales and use taxes. There is no sales and use tax exemption prior to these entities being accredited, licensed, or certified. They CANNOT issue either a [Resale or Exempt Sale Certificate, Form 13](#), or a [Purchasing Agent Appointment, Form 17](#), to any retailer or contractor relating to purchases of building materials for construction or repair projects performed prior to being accredited, licensed, or certified. After an entity becomes accredited, licensed, or certified upon completion of the construction project, it may submit a [Form 4](#).

Nonprofit **health care organizations** that hold a Certificate of Exemption are exempt for purchases for use at their facility, or portion of the facility, covered by the license issued under the Nebraska Health Care Facility Licensure Act. Only specific types of health care facilities and activities are exempt. Purchases of items for use at facilities that are not covered under the license, or for any other activities that are not specifically exempt, are taxable. The exemption is not for the entire organization that offers different levels of health care or other activities, but is limited to the specific type of health care that is exempt. Purchases for non-exempt types of health care are taxable.

4. Purchases of motor vehicles, trailers, semitrailers watercraft, and aircraft used predominately as common or contract carrier vehicles; accessories that physically become part of the common or contract carrier vehicle; and repair and replacement parts for these vehicles. The exemption ID number must be entered in Section B of the Form 13. An individual or business that has been issued a common or contract carrier certificate of exemption may only use it to purchase those items described above prior to the expiration date on the certificate. The certificate of exemption expires every 5 years. (See [Nebraska Common or Contract Carrier Information Guide](#)).
5. Purchases of manufacturing machinery and equipment made by a person engaged in the business of manufacturing, including repair and replacement parts or accessories, for use in manufacturing. (See [Reg-1-107, Manufacturing Machinery and Equipment Exemption](#)).
6. Occasional sales of used business or farm machinery or equipment productively used by the seller as a depreciable capital asset for more than one year in his or her business. The seller must have previously paid tax on the item being sold. The seller must complete, sign, and give the Exempt Sale Certificate to the purchaser. (See [Reg-1-022, Occasional Sales](#)). The Form 13 must be kept with the purchaser's records for audit purposes.

Purchasing Agent Appointment and Delegation of Authority for Sales and Use Tax

FORM
17

Section A – Purchasing Agent Appointment

Name and Address of Contractor			Name and Address of Exempt Governmental Unit or Exempt Organization		
Name			Name		
Street or Other Mailing Address			Street or Other Mailing Address		
City	State	Zip Code	City	State	Zip Code
Name and Location of Project			Appointment Information		
Name			Effective Date (See instructions)		
Street Address			Expiration Date		
City	State	Zip Code	Nebraska Exemption Number (Exempt Organizations Only)		

Provide the contract name, number, and a description of the project.

The undersigned governmental unit or exempt organization appoints the above-named contractor and the contractor's delegated subcontractors as its agent to purchase and pay for building materials that will be annexed to real estate by them into the tax exempt construction project identified above.

**sign
here** ▶

Authorized Signature of Exempt Governmental Unit or Exempt Organization

Title

Date

Section B — Delegation of Contractor's Authority A contractor can delegate its authority to its subcontractor.

Name and Address of Subcontractor			Delegation Information for the Project Identified in Section A		
Name			Effective Date		
Street or Other Mailing Address			Expiration Date		
City	State	Zip Code	Portion of Project		

The undersigned contractor hereby delegates authority to the above-named subcontractor to act as the purchasing agent of the named governmental unit or exempt nonprofit organization.

**sign
here** ▶

Signature of Contractor or Authorized Representative

Title

Date

Name and Address of Subcontractor			Delegation Information for the Project Identified in Section A		
Name			Effective Date		
Street or Other Mailing Address			Expiration Date		
City	State	Zip Code	Portion of Project		

The undersigned contractor hereby delegates authority to the above-named subcontractor to act as the purchasing agent of the named governmental unit or exempt nonprofit organization.

**sign
here** ▶

Signature of Subcontractor or Authorized Representative

Title

Date

Name and Address of Subcontractor			Delegation Information for the Project Identified in Section A		
Name			Effective Date		
Street or Other Mailing Address			Expiration Date		
City	State	Zip Code	Portion of Project		

The undersigned contractor hereby delegates authority to the above-named subcontractor to act as the purchasing agent of the named governmental unit or exempt nonprofit organization.

**sign
here** ▶

Signature of Subcontractor or Authorized Representative

Title

Date

revenue.nebraska.gov, 800-742-7474 (NE and IA) 402-471-5729

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.

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.

SECTION 1- GENERAL CONDITIONS

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
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

SECTION 1- GENERAL CONDITIONS

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.

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

SECTION 1- GENERAL CONDITIONS

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

SECTION 1- GENERAL CONDITIONS

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, 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

SECTION 1- GENERAL CONDITIONS

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 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.

SECTION 1- GENERAL CONDITIONS

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 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.

SECTION 1- GENERAL CONDITIONS

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 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.

SECTION 1- GENERAL CONDITIONS

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 2.015 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 of 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, not 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 including change orders.

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 Dust Control. The Contractor shall be required to keep dusty conditions, caused by construction, from being a source of complaint by adjacent property owners by watering down haul routes or by other methods approved by the Engineer.

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.

SECTION 2 – SPECIAL PROVISIONS

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 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) 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.
- (b) 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.
- (c) An approved water-reducing admixture shall be used in all fly ash modified concrete mixes at the dosage rate recommended by the manufacturer. The water-cement ratio of all fly ash modified concrete shall not exceed the limit for the various classes of concrete as shown in Table 1002.02.
- (d) 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.

Concrete Thickness and Strength Schedule

<u>Concrete Use:</u>	<u>Concrete Mix</u>	<u>Thickness</u>	<u>Minimum Strength</u>	
			<u>7 Days</u>	<u>28 Days</u>
State Highway	47-B, 47B-PHE	7" to 9"	2000	3500
City Street	47-B, 47B-PHE	6" minimum	2000	3500
Alleys	47-B, 47B-PHE	8" minimum	2000	3500

SECTION 2 – SPECIAL PROVISIONS

Sidewalk	47-B	4" minimum	2000	3500
Driveway Approach (curb to property line)	47-B, 47B-PHE	6" minimum	2000	3500
Driveway (inside property)	47-B	6" minimum	2000	3500

*Standard Schedule unless noted otherwise on project plans.

- (e) Testing: Concrete shall be tested for strength by a certified testing laboratory by City of Hastings at no expense to Contractor. Standard cylinders will be taken at random locations determined by City of Hastings and submitted for seven (7) day and twenty-eight (28) day strength. If failure of test occurs, Contractor will be required to remove the determined section and replace and have new tests at the expense of the Contractor.
- (f) Concrete Finish: Surface shall be floated for a semi-smooth surface, free from irregularities, except where slope is involved, surface shall be a light broom finish. All edges and joints shall be rounded out and given a smooth finish. Determination of finish will be addressed on work site by inspector and crew foreman.
If there is a dispute as to the quality of the concrete finish, the Engineer shall be consulted as to the final acceptance. A guide of acceptable surface finish to be utilized shall be no more than 3/16" of deflection using a 10 ft. straight edge.
- (g) Weather Protection: Contractor shall provide an adequate means for protection of concrete poured when temperature will be less than 35 degrees Fahrenheit and also for concrete poured when extreme warm and windy conditions occur that will cause fast surface drying.
- (h) Concrete Cutting: Saw cut control joints in all exposed concrete slabs at minimum intervals of 15 feet or as noted on the drawings. The joints shall be 1/3 the slab thickness. Additional control joints shall be cut as shown on the plans, or as directed by the Engineer around irregular sections.
Where required, cut control joints for concrete removal resulting in clean break.
- (i) Concrete Paving Joint: Install 18" No. 5 rebar (grade 60) on 18" center spacing. Install bars 9" into existing paving utilizing an 11/16" drill bit.

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.

SECTION 2 – SPECIAL PROVISIONS

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.

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

SECTION 2 – SPECIAL PROVISIONS

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.
- h. Site security. The contractor shall erect a construction barrier around the project site. The barrier shall consist 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

SECTION 2 – SPECIAL PROVISIONS

- 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.

Any seeding and sodding required to restore areas where the Contractor has operated on public or private property will be the responsibility of the Contractor.

END OF SECTION

SECTION 3

GENERAL DESCRIPTION AND SCOPE OF WORK

3.001 General. The City of Hastings is accepting bids for the installation of new water main and sewer main as shown on the accompanying plans and specifications.

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.

3.002 Location. The location of the project is on the north side of Hastings, Nebraska and begins just west of the intersections of 28th Street and Lakeview Avenue and Morrell Lane and Lakeview Avenue in the Lakeview 11th subdivision.

3.003 Survey and Control. The topographical survey for the project was provided by W Design Associates, 402-463-2377. The plat and related survey were provided by Josh Grummert, LS, Grummert Professional Services, LLC, (402) 879-5701. Control was tied to the City of Hastings and is based on NAVD 88 datum. There are control points (benchmarks) shown in tables on the construction plans. The Owner, City and/or Engineer will conduct a plan review with the contractor and show the project control. The engineer can provide a digital surface and control points upon request with 5 days' notice. The contractor will be required to control line and grade and will be checked by the Engineer or the City Engineering staff. Surveying and staking shall be provided by the contractor.

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.

The City of Hastings will conduct project staking and inspection.

Contractor shall coordinate work with the paving/grading contractor for this subdivision. The paving/grading work is bidding at the same time as this work. Paving will take place after the water and sewer construction is complete. Grading work can be either before or after the water and sewer installation depending on coordination between contractor's.

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

3.103 Storm Water Pollution Prevention. SWPP is included on the paving and sitework contract. Planned SWPP control measures should be installed before any work is started at this site. The SWPP will be managed by the on-site contractor.

- a) Contractor is responsible for keeping all sediment off existing roadways. May be required, a construction entrance track out and routine street sweeping is responsibility of the contractor.

SECTION 3

GENERAL DESCRIPTION AND SCOPE OF WORK

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.

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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.

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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.

SECTION 4 - WATER MAIN SPECIFICATIONS

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.

SECTION 4 - WATER MAIN SPECIFICATIONS

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

SECTION 4 - WATER MAIN SPECIFICATIONS

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

SECTION 4 - WATER MAIN SPECIFICATIONS

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.

SECTION 4 - WATER MAIN SPECIFICATIONS

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 consist 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, additional 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 4B

Water Services

Part 1: General

1.1 SCOPE

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

1.2 SUBMITTALS

- A. Submit shop drawings and manufacturer's literature to the Engineer for approval.

Part 2: Products

2.1 WATER SERVICE 2" AND SMALLER

2.1.1 Water Services Pipe and Fittings:

- A. Piping: Plastic tubing used for water service lines shall meet AWWA C901 Polyethylene pipe, SDR-9 PE3408 ASTM D2737, Pressure Class 200 PSI (1400 kPa) or AWWA C904-06 PEX pipe, SDR-9 ASTM F876 (PEX 1006) Pressure Class 200 PSI (1400 kPa). It shall be O.D. based on sizes 3/4 inch (20 mm) thru 2" (50 mm) conforming to the outside diameter of copper tubing (CTS).
- B. Fittings for plastic water service lines used for plastic water piping shall be brass pack joints and conform to AWWA Standard ASTM B62-Index 115-85-5-5. No plastic fittings or brass flared will be allowed.

2.1.2 Water Service Saddles:

- A. DIP Main: The service saddle must be constructed of high strength ductile iron per ASTM A536 with fusion-bonded epoxy coating having a double wide band and 1/2" UNC threaded studs constructed of type 304 stainless steel. Provide saddles with EPDM rubber gaskets per ASTM D2000. Saddles must be ANSI/NSF Standard 61 for use in drinking water applications and must conform to AWWA C800.
- B. PVC C900 Main : The service saddle must be constructed of brass conforming to AWWA C800 and NSF 61 certified for use in drinking water applications. All required fasteners shall be silicon bronze and threads conforming to AWWA/CC taper. Saddles shall have a minimum working pressure of 150 psi. Acceptable products are Ford S90 or approved equal.

SECTION 4B Water Services

- C. HDPE Main: Require an Electrofusion fitting, Transition Saddle (Corp Saddle). The Contractor shall provide the transition saddle and shall properly fasten the saddle to the main. Electrofusion Transition Saddle shall have a manufacturing standard of ASTM F1055. The Contractor shall provide Electrofusion Transition Saddle equal to Georg Fischer Central Plastics Company with brass 360 alloy outlet materials, and stainless 304 compression ring, and CC Threads or approved equal.

2.1.3 Corporation Stops:

- A. The corporation stop shall meet AWWA C800 standard and NSF61 certification. All corporation stops to be key style with AWWA/CC taper thread by flare fitting with the 1" and smaller to include a copper swivel type elbow with AWWA/CC female thread by CTS pack joint. All 1.5" and larger to include a straight copper coupling with AWWA/CC female thread by CTS pack joint (Saddle and valve/corporation stop supplied and installed by the City and assed tap fee). Acceptable manufacturer is FORD METER BOX or approved equal.

2.1.4 Curb Stop and Box:

- A. Curb stops shall be Mueller No. H-15155 or Ford B44 Series, unless otherwise specified, and shall be of the same nominal size as the service line to which they are connected. Curb stops shall be of heavy cast bronze construction and shall be Minneapolis pattern type. Curb boxes shall be extension type, cast iron, adjustable for length, and have Minneapolis pattern base. Lids shall have the word "WATER" cast in them and shall have a provision for being securely held in place.

2.1.5 Curb Stop Lid:

- A. When required, provide a 4-inch cast iron top and lid. Material conforming to ASTM A48 and Class 30B. Acceptable products are SIP Item 5216 or approved equal.

2.2 WATER SERVICE 3" AND LARGER

- A. Materials shall conform to the City of Hastings Water Main Technical Specification.

Part 3: Execution

3.1 WATER SERVICE 2" AND SMALLER

3.1.1 General Requirements

- A. Construct and installed with a minimum depth of 5'-0" of cover.

SECTION 4B Water Services

- B. Installation of plastic water service lines shall be free from debris and have a tracer wire installed by Contractor per the standard detail subsidiary to bid. The wire shall be taped to the service prior to backfilling.
- C. Grounding of electric services when plastic water services are installed: In the event existing metal water line was the source of grounding is abandoned, supplemental electrodes shall be provided. One shall be a rod or pipe electrode as specified in NEC 250.53, and the others shall be as mandated in NEC 250.52.
- D. For replacement services the interior metal piping system shall remain bonded to the service equipment. If there is not a ground rod already in use, an 8 foot rod (2.4 m) shall be driven and connected to the service equipment. The grounding electrode system shall comply with NEC 250.50.
- E. The city electrical inspector shall approve the installation after being satisfied that there is appropriate grounding.
- F. The owner shall pay an additional fee in accordance with the prevailing council fee resolution, for having the plumbing and electrical inspectors make the foregoing inspections.
- G. Service Taps shall be completed by the City of Hastings through tapping fees, with exception being contracts with the City. Contracts with the City for watermain work require all material to be supplied by the contractor.

All taps require a service saddle to be installed unless otherwise noted on the plans. All 1" taps require a contractor provided service saddle properly fastened to the main. For taps >1", the city will supply and install the saddle as part of the tap fee with all excavation and trench safety to be completed by the contractor.

Taps for 1" services will be at 90 degrees on top of the main. Taps for 1-1/2" and 2" will be horizontal off the pipe. All excavation shall be properly shored or sloped for Type C soil.

- D. Corporation Stops are included in the tap fee assessed with the City. For contracts held with the City of Hastings where tap fees are not assessed, the contractor is responsible for supplying and installing the corporation stops. When installed in concrete, provide a curb stop lid as specified in this section.

3.2 WATER SERVICE 3" AND LARGER

3.2.1 General Requirements

- A. Installation shall be in accordance with the City of Hastings Water Main Specification.
- B. All service lines require an inline tee orientated up installed immediately downstream of the service valve.

SECTION 4B Water Services

- C. Tracer wire shall be installed with services and terminated at the service valve.
- D. Grounding of electric services shall be in accordance with section 3.1.1 of this specification.
- E. Flushing and Testing shall be in accordance with the City of Hastings Water Main Specification.
 - a. 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.
- F. The City of Hastings Water Utility will permit, inspect, operate service valve for filling, flushing, and pigging the water pipe, observe the required pressure test and conduct chlorinating and bacteriological sampling.
 - a. Any private service that serves a private fire hydrant and/or fire system is required to be permitted through the fire marshal. Pressure test requirements and test observation completed by the fire marshal.

Part 4: Method of Measurement and Payment

4.1 WATER SERVICE 2" AND SMALLER

- A. Complete service installation paid for by completed quantity.
- B. Water Service Line: The payment for the installation of water service lines for 3/4" to 2" in diameter shall include all excavation, backfilling, re-sodding, re-seeding, service saddles, installation of tracer wire, water service lines, corporation valves, purchase of materials, fabrications, and all other incidentals for a complete installation. Payment will be made for each class of work and for each size of service required.
- C. Water Service Connection: The payment for the installation of a service connection for 3/4" to 2" in diameter shall include all excavations, backfilling, re-sodding, re-seeding, service saddles, connections to tracer wire, corporation valves, purchase of materials, fabrications, and all other incidentals for a complete installation. Payment will be made for each class of work and for each size of service required.
- D. Curb Stop: The payment for the installation of a curb stop shall include all excavation, backfilling, re-sodding, re-seeding, curb stops, connection to tracer wire, purchase of materials, fabrication, and all other incidentals for a complete installation. Payment will be made for each class of work for each size of curb stop required.

4.2 WATER SERVICE 3" AND LARGER

- A. Paid for in accordance with the City of Hastings Water Main Specification.

END OF SECTION

SECTION 5
SANITARY SEWERS TECHNICAL SPECIFICATION
CITY OF HASTINGS

SECTION 5-0 - SCOPE OF WORK

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

Section 5-1 - Materials

5.101 Polyvinyl Chloride Gravity Sewer Pipe and Fittings. All polyvinyl chloride gravity sewer pipe and fittings shall comply with the requirements and specifications of the latest revision of the following standards:

1. ASTM D-3034 SDR-35 sewer pipe for 8" (200 mm) through 15" (380 mm). When called out on plans, provide SDR-26.
2. ASTM D-2241 SDR-21 restrained joint sewer pipe for 8" and SDR-26 for 10" through 12".
3. ASTM F-679 for nominal pipe size 18" (460 mm) through 36" (910 mm).
4. ASTM F-794 pipe stiffness – 46 PSI 4" (100 mm) through 36" (910 mm).
5. ASTM F – 1803 pipe stiffness – 46 PSI 18" (450mm) through 36" (910 mm).

The PVC pipe and fittings shall be joined with integral bell and spigot type rubber gasketed joint, or restrained joint with integral bell for bore applications. All PVC joints shall comply with the requirements and specifications of the latest revision of ASTM F-477, "elastomeric gaskets for joining plastic pipe". All pipe shall be made of PVC plastic having a cell classification of 12454-C, or 12364-C as defined by ASTM D-1784. The fittings shall be made of P.V.C. plastic having a cell classification of 12454-C, or 12364-C as defined by ASTM D-1784.

All PVC sanitary sewer pipe shall be green in color.

5.102 Flexible Pipe Coupling. Flexible couplings shall comply to ASTM D 5926. Properly select the appropriate coupler based on manufacturer's intended use. Encase flexible couplers in concrete or utilize strong back couplers (stainless steel stiffening band) with proper backfill.

5.103 Precast Manholes.

- a. Precast Manhole Sections conforming to ASTM C478. Concrete used in the construction of manholes shall utilize an "Az" life factor design. The minimum cover over the inner reinforcing steel (z), measured from the steel surface to the inside of the pipe wall, shall be such that the product of the Alkalinity (A) of the cover concrete, expressed as calcium carbonate equivalent, multiplied by the minimum cover in inches (z) shall be no less than 0.50. In achieving the design Az factor, the alkalinity content of the components and the thickness of steel cover may both be varied, provided that

SECTION 5 SANITARY SEWERS

- the minimum provisions of ASTM C76 are met: and provided that the actual inside diameter of the section is not less than the nominal inside diameter (size) of section.
- b. Top Sections consist of eccentric cone or flat tops with adjusting rings. Flat tops have a minimum thickness requirement of 8 inches.
 - c. Joint Gaskets constructed of rubber conforming to ASTM C443 and suitable up to 13 psig.
 - d. Joint Sealant consisting of butyl rubber conforming to ASTM C990 is required where gaskets are not utilized.
 - e. Concrete Adjusting Ring class H-20 with interior diameter of 24" minimum height of 4 inch required and maximum of 12 inches. Required when manholes are installed under roadway.
 - f. Precast Base Sections require pipe to manhole connectors conforming to ASTM C923.

5.104 Manhole Base. Manhole bases are installed in place and constructed integral with the bottom manhole section. The base shall be a minimum of 5" thick reinforced concrete with #4 (1/2") grade 60 bars on 12" centers each way. The base shall be set upon 12" thick, 1-1/2" crushed limestone compacted subgrade base. The pipe penetration shall include a water-stop and properly encased in concrete both inside and outside of the manhole. The invert shall be properly grouted for the required flow path.

5.105 Manhole Drop. Constructed wherever shown on the plans or whenever the invert of the entering sewer is 24 inches or more above the invert of the manhole. The drop will consist of size-on-size pipe, (1) tee fitting and (1) 90-degree elbow. Drop to be constructed outside of the manhole encased in formed concrete. Refer to standard details for more information.

5.106 Manhole Steps. Manhole steps shall not be installed.

5.107 Sanitary Sewer Main Cleanout. Construct of same size and material specification as the main it is installed on. Cleanout consists of a wye fitting with riser with threaded adaptor and plug. Protect cleanout with a cast iron ring and cover with concrete collar. Ring and cover conforming to ASTM A-48 constructed of gray cast iron Class 35B. Minimum clear opening of 10-5/8 inches and a minimum height of 6-inches weighing no less than 60 pounds.

5.108 Manhole Rings and Covers. Constructed to ASTM A48 standard and shall be H-20 rated Class 35B gray cast iron machined ring and cover with gasket. The ring and cover shall have a clear opening of 24-inches and weigh no less than 380 pounds. It shall contain a pick hole and have a "SEWER" marking casted into the iron.

5.109 Water-Stop. Required when sealing around pipe into manhole. Polyisoprene/SBR blend compound conforming to ASTM C-923 containing stainless steel hardware. Acceptable manufacturers are A-LOK products, Press-Seal Corporation, or approved equal.

5.110 Concrete Anchors. Heavy-duty anchors designed for fastening into concrete that are 1/2" diameter by 4-1/4" long hex nut expansion wedge anchors. Anchor manhole ring with (4) equally spaced anchors.

5.111 Grout. Grout where required shall consist of equal parts of sand and cement with sufficient water to produce the proper consistency.

SECTION 5 SANITARY SEWERS

5.112 Concrete. 47B Mix with required unless specified on plans. Concrete mix shall comply with the Nebraska Department of Roads 47-B Mix design utilizing six and one half sack of cement (4000psi compressive strength at 28 days) with anti-bacterial additive such as conshield or equal.

5.113 Concrete Reinforcement. Grade 60 steel rebar in various diameters.

5.114 Flowable Fill. Ready-mix product comprised of sand, cement, fly ash, water, and air entrainment per the following table:

Table 3.113

Flowable Fill Mix Design	
Sand	3028 Lbs.
Cement	65 Lbs.
Fly Ash	200 Lbs.
Water	40 Gal.
Air Entrainment	3-1/2 Oz.

5.115 Sanitary Sewer Services.

A. Gravity Service

1. 4" (100 mm) service pipe shall be utilized on all service connections unless otherwise specified.
2. Main Size x 4" (100 mm) service tees shall be utilized unless otherwise specified.
3. Sanitary sewer services shall be PVC. PVC sewer pipe and fittings shall be SDR26 ASTM D3034 or Sch 40 PVC for 4" (100 mm) and 6" (150 mm) sizes. Provide SDR35 ASTM D3034 or heavier for 8" (200 mm) pipe. All PVC fittings shall comply with this specification. All joints shall be gasproof, watertight, and rootproof. All PVC sewer service pipe and fittings shall be surrounded with a six inch (6") (150 mm) gravel bedding as specified. When required provide ductile iron pipe and fittings.
4. All sewer services shall be constructed and installed by the Contractor as indicated on the drawings. Any work to be done on the customer side of the property line, except for connecting to existing services, shall be done by a licensed plumber. All service line work to be completed between the main and the property line may be done without the services of a licensed plumber. This work shall be deemed to be done by a sewer main Contractor. All service line work to be done by a sewer main Contractor shall be limited to the work as indicated on the drawings and within these contract documents, or as directed by the Engineer.

B. Pressurized Service

1. Pipe and Fittings:
 - a. Pressure rating minimum of 200 PSI.

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- b. Material: PVC SDR 21 or Sch. 40 conforming to ASTM D1784
- 2. Testing: Hydrostatic Pressure Test in accordance with AWWA C605-13 or latest revision.
 - a. Test duration of 2 hour at a test pressure of 1.5 times the sustained working pressure with maximum pressure drop of 2psi.

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

- 1) Provide catalog cuts showing weights, dimension and sizes of all pipe materials, fittings, glands, bolts, adaptors, etc. to be utilized on this project.
- 2) Provide catalog cuts showing weights, dimensions and sizes of all manholes, manhole steps, ring and cover to be utilized on this project.
- 4) Provide sieve analysis of all bedding materials.
- 5) Provide catalog cuts of sealants used to seal profile pipe with approved manufacturer procedures.

SECTION 5-2 - CONSTRUCTION METHODS

5.201 Excavation. The ditch shall be excavated along the lines designated by the Engineer and to the depth given by him. The Contractor shall furnish, at his own expense, all planks, stakes, spikes, grade boards, and twine that may be required. The Engineer shall have the right to limit the amount of trench that may be opened in advance of the line of work. Should the trench be excavated to a greater depth than that given by the Engineer, the Contractor shall refill to grade, at his own expense, with good, well-tamped material. The width of the trench shall be approximately one (1) foot (300 mm) greater in the clear than the external diameter of the pipe to be laid therein. Trenches, where required, shall be properly sheeted and braced. The bottom of the trench under each pipe shall be shaped to receive the bottom quadrant of the pipe barrel. Bell holes shall be excavated so that, after placement, only the barrel of the pipe receives bearing pressure from the trench bottom. 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.

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 suitable in-situ soil.

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 prevent slides or cave-ins. Materials unsuitable for backfilling shall be wasted by the Contractor as directed by the Engineer.

A minimum of one (1) foot (300 mm) of topsoil (unless otherwise noted on the plans) shall be removed in any and all area 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 (1) foot (300 mm) (unless otherwise noted on the plans) below grade, the topsoil shall be replaced and compacted as previously described.

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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 three (3) inches (76 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. Before any excavation is begun, the Contractor shall contact Diggers Hotline at 1-800-331-5666.

5.202 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. No 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.

The Contractor shall not begin any excavation until the utility locate is completed. Diggers Hotline can be found online or by phone at 811 or 800-331-5666.

5.203 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.

5.204 Pipe Laying and Jointing. The placement and embedment of the sewer pipe shall comply with the appropriate specifications as noted below:

- 1) All polyvinyl chloride sewer pipe shall comply with the latest revision of ASTM D-2321.

The installation of all sewer pipes shall also comply with the following:

Pipe shall be protected at all times against impact shocks and free fall. Laying of pipe in finished trenches shall be commenced at the lowest point, with the spigot ends on bell-and-spigot pipe and tongue ends on tongue-and-groove pipe pointing in the direction of the flow. Pipe shall be set firmly to line and grade, and preparatory to making pipe joints, all surfaces of the pipe to be jointed shall be cleaned and dried. Joints shall be made tight to meet requirements of this specification.

Sewer trenches shall be kept free from water by a method approved by the Engineer. The Contractor shall not pump sewage into a street or pump to a storm sewer unless authorized by the Engineer. Sanitary sewage must be returned to the sanitary sewer by means of pipe and hoses unless it is impossible to do so. Then disposal must be approved by the Engineer

When spiral or longitudinal closed profile pipe is provided, the Contractor shall seal the ends of all cuts of the closed profile pipe with a manufactured approved sealant and adhere to manufacturer's written procedures for sealing the open space. The closed profile pipe shall be installed in all manholes in such a manner the cut ends of the pipe are permanently sealed. In addition, the Contractor shall permanently seal all closed profile openings at a location 2' - 3' outside of the manhole. Any time a cut pipe is utilized, the ends shall be sealed and a second seal placed 2' - 4' away from the cut end.

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5.205 Manhole Construction

All manholes shall be constructed as indicated on the drawings. When installing manholes on sewers that are in service, provide the necessary means to avoid service interruption. The contractor shall insure that all elevations, as noted on the plans, are strictly adhered to. Any deviation of elevations shall be brought to the immediate attention of the Engineer or his representative. All manholes shall be installed straight and plum. All pick openings and pipe entrances shall be fully grouted and finished in a workman like manner. Any through piping shall have the top cut out of the pipe and the floor of the manhole sloping outward from the opening in pipe to the walls.

5.206 Pipe Bedding. All sewer main shall be installed using bedding detail III or IV as noted on special plan detail sheets. The space between the pipe and sides of the excavation shall be filled and compacted with granular bedding as specified. The bedding material shall extend as a minimum 12 inches (300 mm) above the top of all PVC and VCP sewer mains before the trench box is moved. A bench shall be constructed to allow the trench box to set above the top of the sewer main.

If other construction practice is desired, it shall be submitted in writing to the Engineer for review and approval. In the event a different construction practice is desired, the procedure shall be reviewed with respect to trench width, soil loads, and live loads such as H-20 traffic loading.

VCP sewer pipe shall adhere to bedding detail III as per ASTM C-12 with appropriate maximum depth of installation.

PVC sewer pipe shall adhere to bedding detail III and have a minimum modulus of soil reaction (E') of 100 PSI or greater, and have a maximum depth for deflections of 5% or less, and comply with applicable requirements set forth in Unibell Recommended Standard UNI-B-5 latest revision.

DIP shall adhere to bedding detail IV with appropriate pressure class and associated maximum depth of installation, and comply with latest revision of AWWA C150/A21.50 and applicable sections of AWWA C600-87.

The granular bedding shall have the following gradation:

<u>Sieve Size</u>	<u>Minimum % Retained on Sieve</u>	<u>Range</u>
1.0 inch	-0-	
No. 4	34%	± 5%
No. 10	63%	± 10%
No. 30	88%	± 5%
No. 200	98.5%	± 1.5%

Note: Granular bedding is similar to NDOR Type ABX sand and gravel aggregate

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The granular bedding shall be placed around all VCP and compacted to a minimum of 90% optimum proctor density for depths of 4 feet to 30 feet. Trench width shall adhere to 118 MCP technical bulletin (118 Sheet 2 of 2).

The granular bedding for PVC pipe shall be compacted to a maximum of 80% optimum proctor density for depth 4 feet to 16 feet and 90% optimum proctor density for depths 17 feet to 30 feet.

The granular bedding for DIP shall be compacted to 80% of optimum proctor density for depths up to 30 feet.

Trench width shall be kept to a minimum and as noted within these specifications or as noted in the drawings.

If in the event the bedding material cannot be properly compacted, then the Contractor shall provide a coarse aggregate bedding complying with the following gradation.

<u>Sieve Size</u>	<u>Minimum % Retained on Sieve</u>	<u>Range</u>
1 1/2 inch	-0-	
3/4 inch	20%	± 5%
3/8 inch	47%	± 10%
No. 10	80%	± 10%
No. 200	95%	± 5%

Note: Coarse aggregate bedding is similar to a NDOR crushed rock base course material.

5.207 Trench Backfilling. Trench backfill shall conform to following:

- 1) All sewer pipe shall be bedded as noted above. Bedding process shall be accomplished by introducing backfill material in layers not to exceed 6 inches in depth and compacted.
- 2) Upon bedding of pipe, fill may be introduced suitable to the type of method that will be used for compaction, i.e., compactor, hydraulic vibrator, etc. Lift thickness will be determined in field by inspector and job foreman with a maximum loose lift thickness of 12 inches. Once backfill has reached a depth of 5' below final grade all backfill will be tamped with a motorized vibratory sheepsfoot, to provide a consistent compacted trench.
- 3) Compaction tests to be taken 7' to 8' below top of trench or beginning 2-3' to 4' above top of pipe, whichever is deeper, then taken in 2' to 3' increments, with final test taken 1' below surface at final grade. Tests to be taken at 50 to 100 lineal foot (15 M to 30 M) of trench, to be determined on job site. Tests to be taken around manholes on all four sides 4' to 5' out from manholes at same depths as tests taken in trench. Contractor will be required to make excavation for tests.
- 4) Test results for compaction shall meet or exceed following:
 - a. 95% standard proctor density for terraces.

SECTION 5 SANITARY SEWERS

- b. 98% standard proctor density for driveways, sidewalks, and streets.
 - c. Assumption that moisture content ($\pm$) 3% of optimum failure of test to reach these minimum results will require recompaction by Contractor.
- 5) No unsuitable material will be allowed in backfilling, i.e., rock, saturated soils, excessively dry soils, concrete, grasses, etc. Contractor will be required to remove such material from the job site and replace with adequate amounts 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 backfill found unstable because of plastic soils will have to be replaced by the Contractor with suitable material. No additional compensation will be granted.
- 6) Water settling will not be permitted.
- 7) The select bedding material shall be granular fill as noted in specification 3.206.
- 8) 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.
- 9) The Contractor shall hand tamp around all manholes with hand tampers or pad tampers "Jumping Jacks" to insure proper compaction.
- 10) 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.

5.208 Trench Wall Support. All trenches shall be braced or sheeted as to local soil conditions dictate and in full observation of 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.

A full depth trench box shall be used for all sewer main installations. At the Contractor's discretion, wood or steel shoring can be used. All wood or steel shoring shall be cut off at the top of the sewer main and the lower section left in place.

5.209 Acceptance Testing. Upon completion of sewers, each pipe line and manhole will be lamped, checked for flow and freedom from accumulated earth or debris, and checked for the general requirements of the specifications. The Contractor shall furnish such tools, hose and other equipment necessary for making such tests, and shall be present during the inspection to note any deficiencies that may exist. Before final acceptance, all sewers shall be clean, shall comply with the specifications and all contract documents and shall be acceptable to the Engineer and municipal authorities. City of Hastings Engineering Inspector or representative is to be present to witness all testing.

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5.210 Exfiltration Test. Exfiltration test of the sewer lines shall be conducted upon completion of a section of wastewater line in accordance with ASTM F1417 and by the following method as directed by the Engineer:

After a manhole to manhole section of wastewater line has been backfilled and cleaned, pneumatic plugs shall be placed in the line at each manhole and inflated to 25 psig. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any ground water that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.

After the stabilization period (3.5 psig minimum pressure in the pipe), the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable" if the time required in minutes for the pressure to decrease from 3.5 psig to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in Table 1 below:

Table 1: Sewer Main Low Pressure Test per ASTM F1417

PVC Pipe Diameter in Inches

<u>Pipe Diameter</u> <u>Inches</u>	<u>Minimum Time,</u> <u>Minutes:Seconds</u>	<u>Length for Minimum</u> <u>Time, Ft.</u>	<u>Time for Longer</u> <u>Length:Seconds</u>
8	7:34	298	1.520 L
10	9:26	239	2.374 L
12	11:20	199	3.418 L
15	14:10	159	5.342 L
18	17:00	133	7.692 L
21	19:50	114	10.470 L
24	22:40	99	13.674 L
27	25:30	88	17.306 L
30	28:20	80	21.366 L
33	31:10	72	25.852 L
36	34:00	66	30.768 L

The following alternative method of exfiltration may be used with prior approval of the Engineer:

Plug the lower end of a section of wastewater line and fill with water. Let the water stand for approximately four hours and then fill the line again. After the line has reached its maximum absorption, refill to the original depth; after one hour, record the new level of water in the manhole and convert to gallons; and then subtract the actual manhole loss previously determined for one hour to set actual line loss. Pipe leakage allowance shall be 100 gallons per inch diameter per mile per day (1 liter per mm diameter per Meter per day).

5.211 Television Inspection – Sanitary Sewer Lines. Television (TV) inspection recorded digitally on DVD media shall be required on completion of all sewer main lines. The TV inspection shall include on screen measurement along the pipe being inspected – starting with zero at the first manhole of any run of pipe being inspected. In addition to the DVD, a written

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report shall be provided noting defects, service connection(s), sags, and other anomalies. The written report shall also denote the time, date, starting manhole number and station, direction of camera travel, and ending manhole number and station.

The Contractor shall provide a DVD and written report of the inspection. Video (VHS) will not be permitted.

Contractor shall furnish the name of firm proposed to do the television (TV) inspection on the subcontractor designation sheet. One copy of the DVD shall be given to City of Hastings for their files. Cost of TV inspection and DVD will be subsidiary to bid. Contractor will not be paid retention until television inspection is received.

5.212 Separation from Water Mains.

Horizontal Separation. Whenever possible, sewers should be laid at least ten (10) feet (3 M), horizontally), from any existing or proposed water main. Following should be true if conditions prevent a lateral separation of ten (10) feet (3 M) to a water main if:

- 1) It is laid in a separate trench.
- 2) It is laid in the same trench with the water mains located at one side on a bench of undisturbed earth.
- 3) In either case the elevation of the crown of the sewer is at least eighteen (18) inches (450 mm) below the invert of the water main.

Vertical Separation. Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least eighteen (18) inches (450 mm) below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the water main shall be relocated to provide this separation or reconstructed with slip-on or mechanical-joint cast iron pipe, for a distance of ten (10) feet (3 M) on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

Special Conditions. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the water main should be constructed of slip-on or mechanical-joint cast iron pipe, and the sewer constructed of mechanical-joint cast-iron and both services should be pressure tested to assure water-tightness.

5.213 Deflection Testing. Deflection tests shall be performed on all flexible pipe (i.e., P.V.C.). The test shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system. No pipe shall exceed a deflection of five percent (5%). If deflection exceeds five percent (5%), replacement or correction shall be accomplished as approved by the Engineer. A rigid ball or mandrel shall be used for the deflection test. It shall have a diameter not less than ninety-five percent (95%) of the nominal inside diameter of the pipe. The pipe shall be measured in compliance with ASTM D 2122, "Standard Test Method of Determining Dimension of Thermoplastic Pipe and Fittings". The test shall be performed without mechanical pulling devices.

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5.214 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.

5.215 Abandonment.

- a. Sewer Main: Properly seal off ends of pipe and fill pipe with flowable fill unless otherwise noted on plans.
- b. Manhole: Remove manhole and properly dispose of material. If the sewer line remains in service, provide necessary means to avoid service interruption.
- c. Sewer Service: Cap off sanitary sewer service at the sewer main.

SECTION 5-3 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

5.301 Sewer Pipe in Place. Sewer pipe shall be measured and paid for at the contract unit price for lineal foot for various sizes, including excavation and backfill complete in place. Sewer pipe shall be measured for payment after installation of the sewer, through all line manholes, through the walls of structures and existing manholes, and shall include the portion of all wyes considered as main line sewer. Such payment shall be full compensation for all labor, plant, equipment and materials necessary for a complete and accepted project, including removal of all debris, and final cleanup of the job.

5.302 Fittings and Tees. Fittings and tees shall be paid for at the contract unit price for various size fittings and tees.

5.303 Manhole Section. To be paid for at the contract unit price measured from flow line to top of barrel sections plus concrete adjusting rings (where required).

5.304 Sales Tax Exemption. City will furnish sales tax exemption to successful bidder.

END OF SECTION

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TRACER WIRE

Part 1: General

1.1 SCOPE

- A. Install electrically continuous tracer wire with access points as described herein to be used for locating pipe with an electronic pipe locator after installation. Tracer wire shall be installed on all water mains and services, all wastewater lines and sewer mains and services and all wastewater force mains.

1.2 SUBMITTALS

- A. Submit shop drawings and manufacturer's literature to the Engineer for approval.

Part 2: Products

2.1 TRACER WIRE MATERIAL

2.1.1 Open Excavation

- A. 12- gauge AWG solid copper wire with 30 mil, high density, HMWPE coating conforming to ASTM B-3, B170, and D1248. Acceptable products are PRO-TRACE COPPER PE30 or approved equal.
- B. Tracer wire color shall be blue for all water construction or as directed on plans.

2.1.2 Horizontal Directional Drilling

- A. 12- gauge extra high strength copper clad steel wire conforming to ASTM B1010 and ASTM B227 with 45 mil thick high-density, high molecular weight polyethylene. Acceptable products are Copperhead Industries Soloshot Extra-High Strength CCS Tracer wire, Pro-Trace HDD-CCS PE45, or approved equal. All tracer wire to be color coded to meet APWA standards for utility identification.

2.2 TRACER WIRE ACCESSORIES

2.2.1 Connectors

- A. Locking connectors for direct bury applications filled with dielectric silicone sealant and designed for splicing or connecting multiple wires for continued conductivity. Acceptable products are copperhead snakebite locking connector or approved equal.

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2.3 TRACER WIRE ACCESS BOXES

- A. For locations where valve boxes are not present, the tracer wire access point shall be composed of one SnakePit Tracer Wire Access Box, or approved equal, installed at each proposed access point.
- B. Shall be easy to located, color coded per APWA, contain a direct connection point, be intended for installed in concrete and encased in concrete.

2.4 TESTING REQUIREMENTS

- A. Contractor shall perform a continuity test on all tracer wire in the presence of owner or owner's representative. If the tracer wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire at their own expense.

2.5 GROUNDING

- A. Installed at all extents and 1000-yd intervals. A 1.5-lb drive-in magnesium ground rod or 3-lb high potential magnesium anode properly attached to the tracer wire. Anode chemistry per ASTM B843.

Part 3:Execution

3.1 INSTALLATION – GENERAL REQUIREMENTS

- A. Tracer wire shall be installed on all water mains and services or as directed on plans. The wire shall be installed in such a manner as to be able to properly tracer all mains without loss or deterioration of signal or without the transmitted signal migrating off the tracer wire.
- B. Tracer wire shall be installed in the same trench and inside bored holes and casing with pipe during pipe installation. It shall be laid in the trench below the pipe and pipe bedding being installed to ensure that the wire is not damaged during future repair operations. The tracer wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity, and it shall be accessible at all tracer wire access points.
- C. Tracer wire access points shall in general be no more than one thousand feet and at every proposed concrete valve box collar. Concentrations of multiple proposed valves near pipe intersections, i.e. tees or crosses, may require more than one access point assembly in each concrete valve box collar. Tracer wire access points shall be within public right-of-way or public utility easements.

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- D. At each valve location, (including fire hydrant isolation valves), a loop of wire is to be brought up the outside of the valve box and looped inside the box through a hole drilled 2-inch below the bottom of the lid.
- E. Except for approved spliced-in connections, tracer wire shall be continuous and without splices from each tracer wire access point. Where any approved spliced-in connections occur, only approved connectors shall be used.
- F. At all main end caps, a minimum of 6 feet of tracer wire shall be extended beyond the end of the pipe, coiled and secured for future connections. The end of the tracer wire shall be spliced to the wire of a zinc anode and is to be buried at the same elevation as the water main.
- G. Spliced connections between the main line tracer wire and branch connection tracer wire shall only be allowed at water main tees, crosses or at iron or copper water services where a portion of the branch connection water main or water service is replaced with non-iron or non-copper material. The branch connection tracer wire shall be a single tracer wire properly spliced to the main line tracer wire. Where the existing branch connection is neither iron nor copper, then the new branch connection tracer wire shall be properly spliced to the existing tracer wire on the branch connection.
- H. At all repair locations where there is existing tracer wire, the tracer wire shall be properly reconnected and spliced as outlined above.

Part 4:PAYMENT

- A. All items are paid for by installed quantity.
- B. Improper functionality of tracer wire will result in a penalty assessed at 5% total project costs.

END OF SECTION

PROFESSIONAL SEALS

Lakeview 11th Subdivision Water & Sanitary Sewer Extension District 2026-01

Contract No. HU 2026-77

Professional Engineer Seal (end)	
Professional Engineer – Div. Civil Specification Sect. 1-5 & 33 05 27	