PROJECT MANUAL

68th Street Improvement Project

City of Windsor Heights

Windsor Heights, Iowa

December 2024

BMI Project No. 0A1.133739

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SECTION 00005 - CERTIFICATION PAGE

PROJECT MANUAL

FOR

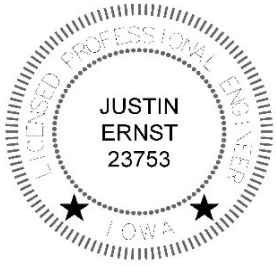
68TH STREET IMPROVEMENT PROJECT

CITY OF WINDSOR HEIGHTS

WINDSOR HEIGHTS, IOWA

DECEMBER 2024

BMI PROJECT NO. 0A1.133739



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

_____ Date: _____

Justin Ernst
License No. 23753
My renewal date is December 31, 2025
Pages or sheets covered by this seal: _____

SECTION 00010 - TABLE OF CONTENTS

68th Street Improvement Project
City of Windsor Heights

CONTRACT DOCUMENTS:

PROJECT MANUAL:

Introductory Information, Bidding Requirements, Contract Forms and Conditions of Contract

Technical Specifications

Joint Preventative Sealant

Supplemental Specifications
Des Moines Water Works

DRAWINGS (UNDER SEPARATE COVER):

_____ sheets numbered _____ through _____, inclusive, dated _____, 20____, and with each sheet bearing the following general title:

68th Street Improvement Project
City of Windsor Heights

APPENDICES
SOIL BORINGS

This project is based on
SUDAS STANDARD SPECIFICATIONS, 2024 EDITION
unless modified herein.

******END OF SECTION******

SECTION 00100 - NOTICE TO BIDDERS

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

Receipt and Opening of Sealed Proposals. Sealed proposals for the work comprising the repair or improvement as stated below must be filed before 10:00 A.M. on January 28, 2025 in the office of the City Clerk, 1145 66th Street, Suite 1, Windsor Heights, Iowa 50324. Sealed proposals will be opened and publicly read with bids being tabulated at that time. The results will be reported to the City of Windsor Heights at its meeting at 6:00 P.M. on February 3, 2025, at which time the City Council may take action on the proposals submitted or at such a time as may then be fixed. The City of Windsor Heights City Council reserves the right to reject any or all bids, to waive informalities or technicalities in any bid, and to enter into such contract, or contracts, as it shall deem to be in the best interest of the City of Windsor Heights.

Time for Commencement and Completion of Work. Work on the improvement shall commence upon approval of the contract by the City Council and as stated in the Notice to Proceed. All work under the contract must be complete on or before November 21, 2025. Liquidated damages are as set forth in Section 00500 – Contract.

Bid Security. Each Bidder shall accompany its bid with bid security, as defined in Iowa Code Section 26.8, as security that the successful Bidder will enter into a contract for the work bid upon. The Bidder's security shall be in an amount equal to 5 percent of the total amount of the bid. The bid shall contain no condition except as provided in the specifications. If the Bidder fails to execute the contract and to furnish an acceptable Performance, Payment, and Maintenance Bond or provide a Certificate of Insurance within ten (10) days after acceptance of the bid by the City, the bid security may be forfeited or cashed by the City as liquidated damages.

Contract Documents. Copies of the project documents are available for a price of $25.00 per set. This fee is refundable, provided the plans and specifications are returned complete and in reusable condition, and they are returned within fourteen (14) calendar days after the award of the project. Please make your check payable to Bolton & Menk, Inc. and send it to 430 E Grand Ave, Suite 101, Des Moines, IA 50309. Complete digital project bidding documents are available at www.bolton-menk.com or www.questcdn.com. You may view the digital plan documents for free by entering QuestCDN Project #9456509on the website's Project Search page. Documents may be downloaded for $0.00. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, viewing, downloading, and working with this digital project information.

Preference of Products and Labor. By virtue of statutory authority, a preference will be given to products and provisions grown and coal produced within the State of Iowa, to the extent lawfully required under Iowa statutes.

Sales Tax Exemption Certificates. The Bidder shall not include sales tax in the bid. The City of Windsor Heights will distribute tax exemption certificates and authorization letters to the contractor and all subcontractors who are identified. The contractor and subcontractor may make copies of the tax exemption certificates and provide a copy to each supplier providing construction materials. These tax exemption certificates and authorization letters are applicable only for this specific project under the contract.

PROJECT DESCRIPTION: The 68th Street Reconstruction project includes pavement reconstruction, storm sewer installation and water main replacement on 68th Street between University Avenue and School Street.

The Notice is given by order of the City Council of the City of Windsor Heights.

_____

Adam Strait
City Clerk

SECTION 00110 - NOTICE OF PUBLIC HEARING

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

Public Hearing on Proposed Contract Documents and Estimated Costs for Repair or Improvement. A public hearing will be held by the City of Windsor Heights on the proposed contract documents (plans, specifications and form of contract) and estimated cost for the improvement at its meeting at 6:00 P.M. on February 3, 2025 at 1133 66th Street, Windsor Heights, Iowa 50324.

PROJECT DESCRIPTION: The 68th Street Reconstruction project includes pavement reconstruction, storm sewer installation and water main replacement on 68th Street between University Avenue and School Street.

At said hearing, the City Council will consider the plans, specifications, proposed form of contract, and estimated total cost for the project, the same now being on file in the office of the City Clerk, 1145 66th Street, Suite 1, Windsor Heights, Iowa 50324**,** reference to which is made for a more detailed and complete description of the proposed improvements, and at said time and place the said City Council will also receive and consider any objections to said plans, specifications, estimate of cost, and form of contract made by any interested party.

SECTION 00200 - INSTRUCTIONS TO BIDDERS

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

The work comprising the above referenced project shall be constructed in accordance with the SUDAS Standard Specifications, 2024 Edition, and as further modified by the supplemental specifications and special provisions included in the contract documents. The terms used in the contract version of the documents are defined in said standard specifications. Before submitting a bid, please review the requirements of Division One, General Provisions and Covenants. Please be certain that all documents have been completed properly, as failure to complete and sign all documents and to comply with the requirements listed below can cause a submitted bid not to be read.

ARTICLE 1—BID SECURITY

1.01 The bid security must be in the minimum amount of 5% of the total bid amount including all add alternates (do not deduct the amount of deduct alternates).

1.02 Bid security other than said bid bond shall be in accordance with Chapter 26 of the Iowa Code.

1.03 Bid security shall be in the form of a cashier's check or certified check drawn on a state chartered or federally chartered bank; or a certified share draft drawn on a state chartered or federally chartered credit union; or a bidder's bond with corporate surety satisfactory to the City of Windsor Heights, hereinafter called the "Jurisdiction".

1.04 All signatures on the bid bond must be original signatures in ink; electronic, copies, or facsimile (fax) of any signature on the bid bond is not acceptable.

1.05 The bid bond must be submitted on the enclosed Bid Bond form as no other bid bond forms are acceptable.

ARTICLE 2—SUBMISSION OF THE PROPOSAL AND IDENTITY OF BIDDERS

2.01 The Proposal shall be sealed in an envelope, properly identified as the "Proposal", with the project title and the name and address of the Bidder. The bid security shall be sealed in a separate envelope identified as the "Bid Security" and attached to the outside of the bid proposal envelope. The Proposal and Bid Security shall be deposited with the Jurisdiction at or before the time and at the place provided in the Notice to Bidders. It is the sole responsibility of the Bidder to see that its proposal is delivered to the Jurisdiction prior to the time for opening bids along with the appropriate bid security. Any proposal received after the scheduled time for the receiving of proposals will be returned to the Bidder unopened and will not be considered.

2.02 The following documents shall be completed, signed, and returned in the proposal envelope. The bid cannot be read if any of these documents are omitted from the proposal envelope.

A. PROPOSAL – Complete each of the following parts:

- Part B – Acknowledgment of Addenda, if any have been issued;
- Part C – Bid Items, Quantities and Prices;
- Part F – Additional Requirements; and
- Part G – Identity of Bidder.

2.03 Sign the proposal. The signature on the proposal and all proposal attachments must be an original signature in ink signed by the same individual who is the company owner or an authorized officer of the company; copies or facsimile of any signature will not be accepted.

2.04 Documents must be submitted as printed. No alterations, additions, or deletions are permitted. If the Bidder notes a requirement in the contract documents which the Bidder believes will require a conditioned or unsolicited alternate bid, the Bidder must immediately notify the Engineer in writing. The Engineer will issue any necessary interpretation by an addendum.

2.05 Division 1 - General Provisions and Covenants of the 2024 SUDAS Standard Specifications is modified as follows:

A. Section 1020.1.09B, Unit Price Attachment.

A computer-generated unit price attachment may be submitted by the Bidder as specified by this section.

ARTICLE 3—PROSECUTION AND PROGRESS OF THE WORK

3.01 The work is located in the City of Windsor Heights.

Work on the improvement shall commence upon approval of the contract by the City Council and as stated in the Notice to Proceed. All work under the contract must be completed as stated in Section 00500 - Contract. Liquidated damages will be assessed as detailed in Section 00500 - Contract.

3.02 Community Events.

Successful Bidder will be required to coordinate with the Jurisdiction and accommodate the Jurisdiction's requirements for the following list of events:

May 2, June 6, August 1, October 3 – Movies in the Park at Colby Park

May 30 – Touch a Truck at Colby Park

August 5 – National Night Out

October 3 & 4 – Fall Fest at Colby Park with parade route on 69th Street

TBD – Spring Cleanup

3.03 Each successful Bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by City of Windsor Heights and shall guarantee the faithful performance of the contract, the terms and conditions therein contained, the prompt payment of all material and labor, protect and save harmless the City of Windsor Heights from claims and damages of any kind caused by the operations of the contract, and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of 4 years from and after acceptance of the work.

3.04 The City of Windsor Heights, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42U.S.C. 2000d to 2000d-4 and Title 49 Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-Assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all Bidders that it will affirmatively ensure that with any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

ARTICLE 4—PREFERENCE OF PRODUCTS AND LABOR

4.01 In accordance with Iowa statutes, a resident bidder shall be allowed preference against a nonresident bidder from a state or foreign country provided that state or foreign country gives or requires any preference to bidders from that state or foreign country. This includes, but is not limited to any preference to bidders, the imposition of any type of labor force preference, or any other form of preferential treatment to bidders or laborers from that state or foreign country. The preference allowed shall be equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident. In the instance of a resident labor force preference, a nonresident bidder shall apply the same resident labor force preference to a public improvement in this state as would be required in the construction of a public improvement by the state or foreign country in which the nonresident bidder is a resident. If it is determined that this may cause denial of federal funds which would otherwise be available or would otherwise be inconsistent with requirements of any federal law or regulation, this resident bidder preference shall be suspended, but only to the extent necessary to prevent denial of the funds or to eliminate the inconsistency with federal requirements.

ARTICLE 5—TAXES

5.01 The City will issue a sales tax exemption certificate and authorization letters to the contractor and all subcontractors for all materials purchased on the project. Tax exemption certificates are applicable only for the specific project for which the tax exemption certificate is issued.

5.02 The contractor shall provide a listing to the City identifying all appropriate subcontractors qualified for use of the tax exemption certificate. The contractor and subcontractors may make copies of the certificate and provide to each supplier providing construction material.

5.03 Income Tax:

A. Successful Bidder is subject to payment of Iowa income tax on income from this work in amounts prescribed by law.

B. If successful Bidder is a non-Iowa partnership, individual, or association, Bidder shall furnish evidence prior to execution of contract that bond or securities have been posted with the Iowa Department of Revenue in the amount required by law.

******END OF SECTION******

SECTION 00410 - PROPOSAL

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

PROPOSAL: PART A – SCOPE

The City of Windsor Heights, hereinafter called the "Jurisdiction", has need of a qualified contractor to complete the work comprising of the below referenced repair or improvement. The undersigned Bidder hereby proposes to complete the work comprising of the below referenced repair or improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the Mayor, at the prices hereinafter provided in Part C of the Proposal, for the improvements on the 68th Street Improvement Project.

PROPOSAL: PART B – ACKNOWLEDGMENT OF ADDENDA

The Bidder hereby acknowledges that all addenda become a part of the contract documents when issued and that each such addendum has been received and utilized in the preparation of this bid. The Bidder hereby acknowledges receipt of the following addenda by inserting the number of each addendum in the blanks below:

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

and certifies that said addenda were utilized in the preparation of this bid.

PROPOSAL: PART C – BID ITEMS AND QUANTITIES

UNIT PRICE CONTRACTS: The Bidder must provide the Unit Bid Price, the Total Bid Price, any Alternate Prices, and the Total Construction Costs on the Proposal Attachment: Part C – Bid Items and Quantities. In case of discrepancy, the Unit Bid Price governs. The quantities shown on the Proposal Attachment: Part C – Bid Items and Quantities are approximate only, but are considered sufficiently adequate for the purpose of comparing bids.

SEE INCLUDED PROPOSAL ATTACHMENT

PROPOSAL: PART D – GENERAL

The Bidder hereby acknowledges that the Jurisdiction, in advertising for public bids for this project reserves the right to:

1. Reject any or all bids. Award of the contract, if any, to be to the lowest responsible, responsive Bidder; and
2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsible, responsive Bidder to be based on comparison of the total bid only, not including any alternates; and
3. Make such alterations in the contract documents or in the proposal quantities as it determines necessary in accordance with the contract documents after execution of the contract. Such alterations shall not be considered a waiver of any conditions of the contract documents, and shall not invalidate any of the provisions thereof; and

The Bidder hereby agrees to:

1. Enter into a contract, if this proposal is selected, in the form approved by the Jurisdiction, provide proof of registration with the Iowa Division of Labor in accordance with Chapter 91C of the Iowa Code, and furnish a performance, maintenance, and payment bond; and
2. Forfeit bid security, not as a penalty but as liquidated damages, upon failure to enter into such contract and/or to furnish said bond; and
3. Commence the work upon written Notice to Proceed; and
4. Complete the work in accordance with the completion dates defined in Section 00500 – Contract; and
5. Pay liquidated damages for noncompliance with said completion provisions at the rate detailed in Section 00500 – Contract for each calendar day thereafter that the work remains incomplete.

PROPOSAL: PART E – NON-COLLUSION AFFIDAVIT

The Bidder hereby certifies:

1. That this proposal is not affected by, contingent on, or dependent on any other proposal submitted for any improvement with the Jurisdiction; and
2. That no individual employed by the Bidder has employed any person to solicit or procure the work on this project, nor will any employee of the Bidder make any payment or agreement for payment of any compensation in connection with the procurement of this project; and
3. That no part of the bid price received by the Bidder was or will be paid to any person, corporation, firm, association, or other organization for soliciting the bid, other than the payment of their normal compensation to persons regularly employed by the Bidder whose services in connection with the construction of the project were in the regular course of their duties for the Bidder; and
4. That this proposal is genuine and not collusive or sham; that the Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any Bidder or person, to submit a sham bid or to refrain from bidding; and
5. That the bid has not in any manner, directly or indirectly, sought, by agreement or collusion, or communication or conference, with any person, to fix the bid price of the Bidder or of any other Bidder; and
6. That all statements in this proposal are true; and
7. That the individual(s) executing this proposal have the authority to execute this proposal on behalf of the Bidder.

PROPOSAL: PART F – ADDITIONAL REQUIREMENTS

The Bidder hereby agrees to comply with the additional requirements listed below which are included in this proposal and identified as proposal attachments:

ITEM NO.	DESCRIPTION OF ATTACHMENT
1.	None

PROPOSAL: PART G - IDENTITY OF BIDDER

The Bidder shall indicate whether the bid is submitted by a/an:

□ Individual,
Sole Proprietorship

□ Partnership

□ Corporation

□ Limited Liability Company

□ Joint-Venture; all parties must join-in and execute all documents

□ Other

The Bidder shall enter its Public Registration Number

___ ___ ___ ___ ___ - ___ ___
issued by the Iowa Commissioner of Labor Pursuant Section 91C.5 of the Iowa Code.

Failure to provide said Registration Number shall result in the bid being read under advisement. A contract will not be executed until the contractor is registered.

_____
Bidder

_____
Signature

_____
Name (Print/Type)

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone Number

_____
E-Mail Address

Type or print the name and title of the company's owner, president, CEO, etc. if a different person than entered above.

_____
Name

_____
Title

NOTE: The signature on this proposal must be an original signature in ink; copies, facsimiles, or electronic signatures will not be accepted.

All bidders must submit the following completed form to the governmental body requesting bids per 875 Iowa Administrative Code Chapter 156.

BIDDER STATUS FORM

To be completed by all bidders. **Part A**

Please answer "Yes" or "No" for each of the following:

☐ Yes ☐ No My company is authorized to transact business in Iowa.
(To help you determine if your company is authorized, please review the worksheet on the next page).

☐ Yes ☐ No My company has an office to transact business in Iowa.

☐ Yes ☐ No My company's office in Iowa is suitable for more than receiving mail, telephone calls, and e-mail.

☐ Yes ☐ No My company has been conducting business in Iowa for at least 3 years prior to the first request for bids on this project.

☐ Yes ☐ No My company is not a subsidiary of another business entity, or my company is a subsidiary of another business entity that would qualify as a resident bidder in Iowa.

If you answered "Yes" for each question above, your company qualifies as a resident bidder. Please complete Parts B and D of this form.

If you answered "No" to one or more questions above, your company is a non-resident bidder. Please complete Parts C and D of this form.

To be completed by resident bidders. **Part B**

My company has maintained offices in Iowa during the past 3 years at the following addresses:

Dates: _____ to _____ Address: _____

(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____

(mm/dd/yyyy) City, State, Zip: _____

Dates: _____ to _____ Address: _____

(mm/dd/yyyy) City, State, Zip: _____

You may attach additional sheet(s) if needed.

To be completed by non-resident bidders. **Part C**

1. Name of home state or foreign country reported to the Iowa Secretary of State: _____

2. Does your company's home state or foreign country offer preferences to bidders who are residents? ☐ Yes ☐ No

3. If you answered "Yes" to question 2, identify each preference offered by your company's home state or foreign country and the appropriate legal citation.

_____

_____

You may attach additional sheet(s) if needed.

To be completed by all bidders. **Part D**

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that my failure to provide accurate and truthful information may be reason to reject my bid.

Firm Name: _____

Signature: _____ Date: _____

WORKSHEET: AUTHORIZATION TO TRANSACT BUSINESS

This worksheet may be used to help complete Part A of the Resident Bidder Status form. If at least one of the following describes your business, you are authorized to transact business in Iowa.

☐ Yes ☐ No My business is currently registered as a contractor with the Iowa Division of Labor.

☐ Yes ☐ No My business is a sole proprietorship, and I am an Iowa resident for Iowa income tax purposes.

☐ Yes ☐ No My business is a general partnership or joint venture. More than 50 percent of the general partners or joint venture parties are residents of Iowa for Iowa income tax purposes.

☐ Yes ☐ No My business is an active corporation with the Iowa Secretary of State and has paid all fees required by the Secretary of State, has filed its most recent biennial report, and has not filed articles of dissolution.

☐ Yes ☐ No My business is a corporation whose articles of incorporation are filed in a state other than Iowa, the corporation has received a certificate of authority from the Iowa Secretary of State, has filed its most recent biennial report with the Secretary of State, and has neither received a certificate of withdrawal from the Secretary of state nor had its authority revoked.

☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in this state and the statement has not been canceled.

☐ Yes ☐ No My business is a limited liability partnership which has filed a statement of qualification in a state other than Iowa, has filed a statement of foreign qualification in Iowa and a statement of cancellation has not been filed.

☐ Yes ☐ No My business is a limited partnership or limited liability limited partnership which has filed a certificate of limited partnership in this state and has not filed a statement of termination.

☐ Yes ☐ No My business is a limited partnership or a limited liability limited partnership whose certificate of limited partnership is filed in a state other than Iowa, the limited partnership or limited liability limited partnership has received notification from the Iowa Secretary of state that the application for certificate of authority has been approved and no notice of cancellation has been filed by the limited partnership or the limited liability limited partnership.

☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in Iowa and has not filed a statement of termination.

☐ Yes ☐ No My business is a limited liability company whose certificate of organization is filed in a state other than Iowa, has received a certificate of authority to transact business in Iowa and the certificate has not been revoked or canceled.

PROPOSAL ATTACHMENT: PART C – BID ITEMS AND QUANTITIES

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

This is a UNIT PRICE CONTRACT. The Bidder must provide the Unit Bid Price, the Total Bid Price, any Alternate Prices, and the Total Construction Costs on the Proposal Attachment: Part C – Bid Items and Quantities. In case of discrepancy, the Unit Bid Price governs. The quantities shown on the Proposal Attachment: Part C – Bid Items and Quantities are approximate only, but are considered sufficiently adequate for the purpose of comparing bids.

ESTIMATED PROJECT QUANTITIES							
Item No.	**Item Code**	**Item**	**Unit**	**City Quantity**	**DMWW Quantity**	**Unit Price**	**Total**
1	2010-C	CLEARING AND GRUBBING	LS	1	0	$	$
2	2010-D-1	TOPSOIL, ON-SITE	CY	620	0	$	$
3	2010-E	EXCAVATION, CLASS 10	CY	700	0	$	$
4	2010-F	BELOW GRADE EXCAVATION (CORE OUT)	CY	0	0	$	$
5	2010-G	SUBGRADE PREPARATION	SY	8150	0	$	$
6	2010-J	SUBBASE, MODIFIED, 6 INCHES	SY	8150	0	$	$
7	3010-D	REPLACEMENT OF UNSUITABLE BACKFILL MATERIAL	CY	0	0	$	$
8	4010-A-1	SANITARY SEWER GRAVITY MAIN, TRENCHED, PVC TRUSS, 8 INCH	LF	25	0	$	$
9	4010-E	SANITARY SEWER SERVICE, PVC, 4 INCH	LF	200	0	$	$
10	4010-H	REMOVAL OF SANITARY SEWER SERVICE, ORANGEBURG	LF	0	0	$	$
11	4020-A-1	STORM SEWER, TRENCHED, PP, 8 INCH	LF	44	0	$	$
12	4020-A-1	STORM SEWER, TRENCHED, 12 INCH	LF	97	0	$	$
13	4020-A-1	STORM SEWER, TRENCHED, 15 INCH	LF	1480	0	$	$
14	4020-A-1	STORM SEWER, TRENCHED, 18 INCH	LF	16	0	$	$
15	4020-A-1	STORM SEWER, TRENCHED, 36 INCH	LF	46	0	$	$
16	4020-A-1	STORM SEWER, TRENCHED, RCP, 37" X 23" ARCH	LF	50	0	$	$
17	4020-A-1	STORM SEWER, TRENCHED, RCP, 44" X 27" ARCH	LF	490	0	$	$
18	4020-D	REMOVAL OF STORM SEWER, LESS THAN 36"	LF	223	0	$	$
19	4040-A	SUBDRAIN, HDPE, 6"	LF	2350	0	$	$
20	4040-C-1	SUBDRAIN CLEANOUT, TYPE A-1, 6"	EA	9	0	$	$
21	4040-D-1	SUBDRAIN OUTLETS AND CONNECTIONS, CMP, 6"	EA	9	0	$	$

Item No.	Item Code	Item	Unit	City Quantity	DMWW Quantity	Unit Price	Total
22	SPEC. PROV.	WATER MAIN, TRENCHED, PVC C900 (DR 18), 6 INCH WITH TRACER WIRE	LF	0	10	$	$
23	SPEC. PROV.	WATER MAIN, TRENCHED, PVC C900 (DR 18), 8 INCH WITH TRACER WIRE	LF	0	2130	$	$
24	SPEC. PROV.	FITTING BY WEIGHT, DUCTILE IRON	LB	0	6700	$	$
25	SPEC. PROV.	WATER SERVICE TRANSFER, COPPER, 1 INCH, SAME SIDE	EA	0	23	$	$
26	SPEC. PROV.	WATER SERVICE TRANSFER, COPPER, 1 INCH, OPPOSITE SIDE	EA	0	26	$	$
27	SPEC. PROV.	WATER MAIN REMOVAL	LF	0	250	$	$
28	SPEC. PROV.	VALVE, GATE, 6 INCH	EA	0	1	$	$
29	SPEC. PROV.	VALVE, GATE, 8 INCH	EA	0	4	$	$
30	SPEC. PROV.	FIRE HYDRANT ASSEMBLY	EA	0	5	$	$
31	SPEC. PROV.	FLUSHING DEVICE (BLOW OFF), 2 INCH	EA	0	2	$	$
32	SPEC. PROV.	FIRE HYDRANT ASSEMBLY REMOVAL	EA	0	5	$	$
33	SPEC. PROV.	VALVE BOX REMOVAL	EA	0	3	$	$
34	SPEC. PROV.	TAP FEE, 1", REPLACE TAP FOR WATER SERVICE	EA	0	49	$	$
35	SPEC. PROV.	PREPARE EXCAVATION FOR TAPPING SLEEVE AND VALVE	EA	0	2	$	$
36	6010-A	STORM MANHOLE, SW-401, 72 INCH	EA	3	0	$	$
37	6010-B	INTAKE, SW-501	EA	3	0	$	$
38	6010-B	INTAKE, SW-503	EA	1	0	$	$
39	6010-B	INTAKE, SW-505	EA	9	0	$	$
40	6010-B	INTAKE, SW-506	EA	1	0	$	$
41	6010-B	INTAKE, SW-507	EA	2	0	$	$
42	6010-B	18" NYLOPAST DRAIN BASIN	EA	2	0	$	$
43	6010-B	INTAKE, SW-516	EA	2	0	$	$
44	6010-E	SANITARY MANHOLE ADJUSTMENT, MINOR	EA	6	0	$	$
45	6010-F	SANITARY MANHOLE ADJUSTMENT, MAJOR	EA	2	0	$	$
46	6010-G	CONNECTION TO EXISTING MANHOLE	EA	1	0	$	$
47	6010-H	REMOVE INTAKE	EA	10	0	$	$
48	7010-A	PAVEMENT, PCC, 7 INCH	SY	6520	0	$	$

Item No.	Item Code	Item	Unit	City Quantity	DMWW Quantity	Unit Price	Total
49	7030-A-1	REMOVAL OF SIDEWALK	SY	100	0	$	$
50	7030-A-3	REMOVAL OF DRIVEWAY	SY	1160	0	$	$
51	7030-E	SIDEWALK, PCC, 4 INCH	SY	960	0	$	$
52	7030-E	SIDEWALK, PCC, 6 INCH	SY	120	0	$	$
53	7030-G	DETECTABLE WARNING	SF	110	0	$	$
54	7030-H-1	DRIVEWAY, PAVED, PCC, 6 INCH	SY	1900	0	$	$
55	7040-H	PAVEMENT REMOVAL	SY	6210	0	$	$
56	8020-B	PAINTED PAVEMENT MARKINGS, SOLVENT/WATERBORNE	STA	1.5	0	$	$
57	8030-A	TEMPORARY TRAFFIC CONTROL	LS	1	0	$	$
58	8040-A	TRAFFIC SIGNS, TYPE A	EA	8	0	$	$
59	8040-D	PERFORATED SQUARE STEEL TUBE POSTS	EA	8	0	$	$
60	9010-D	WATERING	MGAL	30	0	$	$
61	9020-A	SOD	SQ	250	0	$	$
62	9030-B	PLANTS WITH WARRANTY, ORNAMENTAL TREE	EA	2	0	$	$
63	9030-B	PLANTS WITH WARRANTY, DECIDUOUS TREE	EA	2	0	$	$
64	9040-A-1	SWPPP PREPARATION	LS	1	0	$	$
65	9040-A-2	SWPPP MANAGEMENT	LS	1	0	$	$
66	9040-D-1	FILTER SOCK, 9 INCH	LF	4400	0	$	$
67	9040-O-1	STABILIZED CONSTRUCTION ENTRANCE	SY	300	0	$	$
68	9040-Q-2	EROSION CONTROL MULCHING, HYDRO MULCHING	AC	1	0	$	$
69	9040-T-1	INLET PROTECTION DEVICE, MAINTENCE, AND REMOVAL	EA	34	0	$	$
70	9070-A	MODULAR BLOCK RETAINING WALL	SF	900	0	$	$
71	11020-A	MOBILIZATION	LS	1	0	$	$
72	11030-A	MAINTENANCE OF POSTAL SERVICE	LS	1	0	$	$
73	11030-B	MAINTENANCE OF SOLID WASTE COLLECTION	LS	1	0	$	$
						BID TOTAL:	**$**

NOTE: IT IS UNDERSTOOD THAT THE ABOVE QUANTITIES ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE JURISDICTION AS NOTED IN SECTION 00500 - “CONTRACT” OF THIS PROJECT MANUAL.

_____

Bidder Name

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SECTION 00420 - BID BOND

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal, and

_____, as Surety, are held and firmly bound unto, City of Windsor Heights as Obligee, (hereinafter referred to as "the Jurisdiction"), in the penal sum of _____ _____dollars ($_____), lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The condition of the above obligation is such that whereas the Principal has submitted to the Jurisdiction a certain proposal, in a separate envelope, and hereby made a part hereof, to enter into a contract in writing, for the following project:

Project Title: 68th Street Improvement Project

Project Description: The 68th Street Reconstruction project includes pavement reconstruction, storm sewer installation and water main replacement on 68th Street between University Avenue and School Street.

The Surety hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept such bid or execute such Contract; and said Surety does hereby waive notice of any such extension.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Polk County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of the bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all damages, costs, and attorney fees incurred by enforcing any of the provisions of this Bond. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers, and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against Surety for any amount guaranteed hereunder whether action is brought against Principal or whether Principal is joined in any such action or actions or not.

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____ day of _____, 20_____.

SURETY:	PRINCIPAL:
_____	_____
Surety Company	Bidder
By: _____	By: _____
Signature Attorney-in-Fact/Officer	Signature
_____	_____
Name of Attorney-in-Fact/Officer	Name (Print/Type)
_____	_____
Company Name	Title
_____	_____
Company Address	Address
_____	_____
City, State, Zip Code	City, State, Zip Code
_____	_____
Company Telephone Number	Telephone Number
_____	_____
Company E-Mail	E-Mail

NOTE: All signatures on this bid bond must be original signatures in ink; electronic, copies or facsimile of any signature will not be accepted. This bond must be sealed with the Surety's raised, embossing seal or official adhesive seal. The Certificate or Power of Attorney accompanying this bond must be valid on its face and sealed with the Surety's raised, embossing seal or official adhesive seal.

SECTION 00500 - CONTRACT

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

THIS CONTRACT, made and entered into this _____ day of _____, 20_____, by and between the City of Windsor Heights hereinafter called the "Jurisdiction", and _____, hereinafter called the “Contractor”.

WITNESSETH:

The Contractor hereby agrees to complete the work comprising the 68th Street Improvement Project as specified in the contract documents, which are officially on file with the Jurisdiction, in the office of the City Clerk, City of Windsor Heights, 1145 66th Street, Suite 1, Windsor Heights, Iowa. This Contract includes all such contract documents. All work under this Contract shall be constructed in accordance with the SUDAS Standard Specifications, 2024 Edition and as further modified by the Special Provisions, Technical Specifications and Supplemental Specifications included in said contract documents and the Contract Attachment which is attached hereto. The Contractor further agrees to complete the work in strict accordance with said contract documents, and to guarantee the work as required by law for the time required in said contract documents after its acceptance by the Jurisdiction.

This Contract is awarded and executed for completion of the work specified in the contract documents for the bid prices shown on the Contract Attachment: Bid Items and Quantities which were proposed by the Contractor in its Proposal submitted in accordance with the Notice to Bidders and Notice of Public Hearing for the following project:

Project Title: 68th Street Improvement Project

Project Description: The 68th Street Reconstruction project includes pavement reconstruction, storm sewer installation and water main replacement on 68th Street between Universtiy Avenue and School Street.

The Contractor agrees to perform said work for and in consideration of the Jurisdiction’s payment of the bid amount of _____ dollars ($_____), which amount shall constitute the required amount of the Performance, Payment and Maintenance Bond. The Contractor hereby agrees to commence work as stated in the written Notice to Proceed; and substantially complete the work in accordance with the following contract provisions:

CONTRACT PROVISIONS

A. Completion Date: Date

   1. The work will be substantially completed on or before 11/21/2025, and completed and ready for final payment in accordance with General Conditions on or before 5/29/2026.

B. Liquidated Damages

   1. Pay liquidated damages for noncompliance with said completion provisions in the amount of Five Hundred Dollars ($500.00) for each calendar day the work remains incomplete.

C. Maintenance Bond & Warranty

   1. To remedy any and all defects that may develop in or result from work to be performed under the Contract within the City of Windsor Heights, from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work.

2. Shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of 4 years from and after acceptance of the work.

D. Bid Quantity Revisions

1. All quantities are estimates and subject to revision by the Jurisdiction.

2. Quantity changes that do not materially change the character of the work to be performed and amount to less than Twenty (20) percent of a given bid item or less than Five (5) percent of the total contract amount shall not affect the unit price bid.

IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

JURISDICTION: City of Windsor Heights

By: _____
Mike Jones, Mayor

(Seal)
ATTEST:

By: _____
Adam Strait, City Clerk

CONTRACTOR:

_____
Company Name

_____
Signature

_____
Name (Print/Type)

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone

_____
E-Mail

CONTRACTOR PUBLIC REGISTRATION INFORMATION to be Provided By:

1. All Contractors: The Contractor shall enter its Public Registration No. _____ issued by the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code.

2. Out-of-State Contractors:

   A. Pursuant to Section 91C.7 of the Iowa Code, an out-of-state contractor, before commencing a contract in excess of five thousand dollars in value in Iowa, shall file a bond with the division of labor services of the department of workforce development. The Contractor should contact 515-242-5871 for further information. Prior to contract execution, the Jurisdictional Engineer may forward a copy of this contract to the Iowa Department of Workforce Development as notification of pending construction work. It is the Contractor's responsibility to comply with said Section 91C.7 before commencing this work.

   B. Prior to entering into contract, the designated low bidder, if it is a corporation organized under the laws of a state other than Iowa, shall file with the Jurisdictional Engineer a certificate from the Secretary of the State of Iowa showing that it has complied with all the provisions of Chapter 490 of the Code of Iowa, as amended, governing foreign corporations. For further information contact the Iowa Secretary of State Office at 515-281-5204.

   Bond No. _____

   Name of Surety _____

NOTE: All signatures on this contract must be original signatures in ink; electronic, copies or facsimile of any signature will not be accepted.

CORPORATE ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, 20_____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known, who, being by me duly sworn, did say that they are the _____, and _____, respectively, of the corporation executing the foregoing instrument; that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed (and sealed) on behalf of the corporation by authority of the Board of Directors; that _____ and _____ acknowledged the execution of the instrument to be the voluntary act and deed of the corporation, by it and by them voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

PARTNERSHIP ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, 20_____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ to me personally known, who being by me duly sworn, did say that the person is one of the partners of _____, a partnership, and that the instrument was signed on behalf of the partnership by authority of the partners and the partner acknowledged the execution of the instrument to be the voluntary act and deed of the partnership by it and by the partner voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

INDIVIDUAL ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, 20_____, before me, the undersigned, a Notary Public in and for the State of _____, personally appeared _____ and _____, to me known to be the identical person(s) named in and who executed the foregoing instrument, and acknowledged that (he) (she) (they) executed the instrument as (his) (her) (their) voluntary act and deed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

LIMITED LIABILITY COMPANY ACKNOWLEDGMENT

State of _____)
) SS
_____ County)

On this _____ day of _____, 20_____, before me a Notary Public in and for said State, personally appeared _____, to me personally known, who being by me duly sworn did say that person is _____ of said _____, that (the seal affixed to said instrument is the seal of said OR no seal has been procured by the said) _____, and that said instrument was signed and sealed on behalf of the said _____, by authority of its managers and the said _____ acknowledged the execution of said instrument to be the voluntary act and deed of said _____, by it voluntarily executed.

_____
Notary Public in and for the State of _____
My commission expires _____, 20_____

CONTRACT ATTACHMENT: ITEM 1: GENERAL – NONE

CONTRACT ATTACHMENT: ITEM 2: BID ITEMS AND, QUANTITIES

THIS CONTRACT IS AWARDED AND EXECUTED FOR COMPLETION OF THE WORK SPECIFIED IN THE CONTRACT DOCUMENTS FOR THE BID PRICES TABULATED BELOW AS PROPOSED BY THE CONTRACTOR IN ITS PROPOSAL SUBMITTED IN ACCORDANCE WITH NOTICE TO BIDDERS AND NOTICE OF PUBLIC HEARING. ALL QUANTITIES ARE SUBJECT TO REVISION BY THE JURISDICTION. THE JURISDICTION RESERVES THE RIGHT TO ADJUST QUANTITIES AS NECESSARY TO MAXIMIZE FUNDS BUDGETED FOR THIS PROJECT AS NOTED IN SECTION 00500 – CONTRACT.

[Insert Schedule of Unit Prices Standard Table Format]

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SECTION 00610 - PERFORMANCE, PAYMENT AND MAINTENANCE BOND

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal (hereinafter the "Contractor" or "Principal") and _____, as Surety are held and firmly bound unto _____ , as Obligee (hereinafter referred to as "the Jurisdiction"), and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of _____ DOLLARS ($_____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these presents.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction, bearing date the _____ day of _____, _____, hereinafter the "Contract" wherein said Contractor undertakes and agrees to construct the 68th Street Improvement Project, Windsor Heights, Iowa.

Project Description: The 68th Street Reconstruction project includes pavement reconstruction, storm sewer installation and water main replacement on 68th Street between Universtiy Avenue and School Street.

And to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract documents. Provided, however, that one year after the date of acceptance as complete of the work under the above referenced Contract, the maintenance portion of this Bond shall continue in force for the stated maintenance period.

It is expressly understood and agreed by the Contractor and Surety in this Bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill, and abide by each and every covenant, condition, and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

PAYMENT: The Contractor and the Surety on this Bond are hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price which the Jurisdiction is required to retain until completion of the improvement, but the Contractor 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 as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573, Code of Iowa, which by this reference is made a part hereof as though fully set out herein.

MAINTENANCE: The Contractor and the Surety on this Bond hereby agree, at their own expense:

To remedy any and all defects that may develop in or result from work to be performed under the Contract as detailed in Section 00500 - Contract, from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work;

To keep all work in continuous good repair; and

To pay the Jurisdiction's reasonable costs of monitoring and inspection to assure that any defects are remedied and to repay the Jurisdiction all outlay and expense incurred as a result of Contractor's and Surety's failure to remedy any defect as required by this section.

Maintenance Bond requirements shall not apply to the following: work that is not permanently incorporated into the project; pavement markings, seeding, sodding, and plant material and planting.

Contractor's and Surety's agreement herein made extends to defects in workmanship or materials not discovered or known to the Jurisdiction at the time such work was accepted.

GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

To consent without notice to any extension of time to the Contractor in which to perform the Contract;

To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this Bond, provided that all such changes do not, in the aggregate, involve an increase of more than twenty percent of the total contract price, and that this Bond shall then be released as to such excess increase; and

To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

The Contractor and every Surety on the Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

That no provision of this Bond or of any other contract shall be valid which limits to less than five years after the acceptance of the work under the Contract the right to sue on this Bond.

That as used herein, the phrase "all outlay and expense" is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits and overhead where applicable. Accordingly, "all outlay and expense" would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorney's fees (including overhead expenses of the Jurisdiction's staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor's failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required.

In the event the Jurisdiction incurs any "outlay and expense" in defending itself with respect to any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety's obligation under this Bond shall not exceed 125% of the penal sum of this Bond.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Polk County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly and severally, to pay the Jurisdiction all outlay and expense incurred therefor by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers

and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action(s).

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

When a work, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

Project No. _____

(CON'T – PERFORMANCE, PAYMENT AND MAINTENANCE BOND)

Witness our hands, in triplicate, this _____ day of _____, 20_____.

SURETY:	PRINCIPAL:
_____	_____
Surety Company	Bidder
By: _____	By: _____
Signature of Attorney-in-Fact/Officer	Signature
_____	_____
Name of Attorney-in-Fact/Officer	Name (Print/Type)
_____	_____
Company Name	Title
_____	_____
Company Address	Address
_____	_____
City, State, Zip Code	City, State, Zip Code
_____	_____
Company Telephone Number	Telephone Number
_____	_____
Company E-Mail	E-Mail

NOTE:

1. All signatures on this Performance, Maintenance & Payment Bond must be original signatures in ink; electronic, copies, or facsimile of any signature will not be accepted.
2. This Bond must be sealed with the Surety's raised, embossing seal or official adhesive seal.
3. The Certificate or Power of Attorney accompanying this Bond must be valid on its face and sealed with the Surety's raised, embossing seal or official adhesive seal.
4. The name and signature of the Surety's Attorney-in-Fact/Officer entered on this Bond must be exactly as listed on the Certificate or Power of Attorney accompanying this Bond.

SECTION 00800 - SPECIAL PROVISIONS

FOR

68th Street Improvement Project
City of Windsor Heights
Windsor Heights, Iowa

TABLE OF CONTENTS

1) CONTRACT PROVISIONS

a) Completion Date

i) All work under the Contract must be completed as detailed in Section 00500 – Contract.

b) Liquidated Damage

i) Damages in the amount as detailed in Section 00500 – Contract will be assessed for each calendar or working day the work remains incomplete.

c) Maintenance Bond & Warranty

i) To remedy any and all defects as detailed in Section 00500 – Contract.

d) Bid Quantity Revisions

i) All quantities are estimates and subject to revision by the Jurisdiction.

ii) Quantity changes that do not materially change the character of the work to be performed and amount to less than Twenty (20) percent of a given bid item or less than Five (5) percent of the total contract amount shall not affect the unit price bid.

2) DEFINITION AND INTENT

a) The Specifications that apply to the materials and construction practices for this project are defined as follows:

i) The 2024 Edition of the SUDAS Standard Specifications, except as modified by these Special Provisions to the Technical Specifications.

ii) Omissions of words or phrases such as “the Contractor shall”, “in accordance with”, “shall be”, “as noted on the Plans”, “according to the Plans”, “a”, “an”, “the” and “all” are unintentional; supply omitted words or phrases by inference.

iii) “Final Acceptance” and “Final Completion” shall mean final approval of the project as defined in SUDAS 1090, 1.08, C.

iv) “Owner”, “Jurisdiction” and “City” shall mean the City of Windsor Heights, acting through the City Council.

v) “Person” shall mean any individual, partnership, limited partnership, joint venture, society, association, joint stock company, corporation, limited liability company, estate, receiver, trustee, assignee, or referee, whether appointed by a court or otherwise, and any combination of individuals.

vi) “Engineer” shall mean the Engineer of Record.

vii) The intent of the Technical Specifications is to describe the construction desired, performance requirements, and standards of materials and construction.

viii) “Standard Drawings” shall mean the Figures bound within the SUDAS Standard Specifications and/or the Typical Drawings bound within the Plans.

ix) “Substantial Completion” shall be as defined by the Iowa Administrative Code Chapter 573.28.

x) “Work” shall mean the work to be done and the equipment, supplies, and materials to be furnished under the Contract unless some other meaning is indicated by the context.

xi) “Or equal” shall follow manufacturers names used to establish standards and, if not stated, is implied.

b) Engineer: Bolton & Menk, Inc., 430 E Grand Ave, Suite 101, Des Moines, IA 50309.

3) GENERAL PROVISIONS AND COVENANTS

a) Division 1 of the General Provisions and Covenants of the 2024 Edition SUDAS Standard Specifications is modified as follows:

i) Section 1020.1.09B, Unit Price Attachment.

(a) A computer-generated unit price attachment may be submitted by the Bidder as specified by this Section.

ii) Section 1050, 1.05 - Shop Drawings, Certificates, and Equipment Lists

(a) Electronic submittal of shop drawings will be allowed.

(b) If hardcopy submittals are used, the Contractor shall submit a minimum of three (3) copies plus any additional required by the Contractor.

iii) Section 1050, 1.15 – Additional Contractor Responsibilities

(a) No Changes.

4) WORK REQUIRED

a) Work under this Contract includes all materials, equipment, transportation, traffic control, and associated work for the construction of the 68th Street Improvement Project as described in the Official Publication.

5) PLANS AND SPECIFICATIONS

a) The Jurisdiction will furnish five (5) sets of plans and specifications to the Contractor after award of the Contract. The Contractor shall compensate the Jurisdiction for printing costs for additional copies required.

b) Contractor shall provide one set of plans and specifications for each foreman and superintendent in charge of each crew on the job.

6) SUBMITTALS

a) Contractor shall provide a construction schedule showing dates of starting and completing various portions of work. Schedule shall be updated as needed or as requested by Engineer due to changes in progress of construction from original schedule. Updates shall be completed within one week of request.

b) Contractor shall submit the following information for Engineer's review. Three (3) copies plus any additional copies required by Contractor shall be submitted to the Engineer at the preconstruction conference or at least 14 days prior to utilization of the particular item on this project.

i) Testing reports.

ii) Manufacturer's data for materials that are to be permanently incorporated into the project.

iii) Details of proposed methods of any special construction required.

iv) Purchase orders and subcontracts without prices.

v) Traffic control and staging plan.

vi) Such other information as the Engineer may request to ensure compliance with contract documents.

vii) List of Subcontractors and Suppliers.

7) STANDARDS AND CODES

a) Construct improvements with best present day construction practices and equipment.

b) Conform with and test in accordance with applicable sections of the following standards and codes.

i) American Association of State Highway and Transportation Officials (AASHTO).

ii) American Society for Testing and Materials (ASTM).

iii) Iowa Department of Transportation Standard Specifications (Iowa DOT).

iv) American National Standards Institute (ANSI).

v) American Water Works Association (AWWA).

vi) American Welding Society (AWS).

vii) Federal Specifications (FS).

viii) Iowa Occupational Safety and Health Act of 1972 (IOSHA).

ix) Manual of Accident Prevention in Construction by Associated General Contractors of America, Inc. (AGC).

x) Standards and Codes of the State of Iowa and the ordinances of the Jurisdiction.

xi) Other standards and codes which may be applicable to acceptable standards of the industry for equipment, materials and installation under the Contract.

8) EMPLOYMENT PRACTICES

a) Neither the Contractor nor the Contractor's subcontractors shall employ any person whose physical or mental condition is such that their employment will endanger the health and safety of anyone employed on the Project.

b) The Contractor shall not commit any of the following employment practices and agrees to include the following clauses in any subcontracts:

i) To discharge from employment or refuse to hire any individual because of sex, race, color, religion, national origin, sexual orientation, marital status, age, or disability unless such disability is related to job performance of such person or employee.

ii) To discriminate against any individual in terms, conditions, or privileges or employment because of sex, race, color, religion, national origin, sexual orientation, marital status, age, or disability unless such disability is related to job performance of such person or employee.

9) RESPONSIBILITY OF CONTRACTOR

a) Contractor shall provide supervision of the work.

b) Contractor shall provide protection of all property from injury or loss resulting from construction operations.

c) Contractor shall replace or repair objects sustaining any such damage, injury, or loss, to the satisfaction of the Jurisdiction and Engineer.

d) Contractor shall cooperate with Jurisdiction, Engineer, and representatives of utilities in locating underground utility lines and structures. Incorrect, inaccurate, or inadequate information concerning location of utilities or structures shall not relieve the Contractor of responsibility for damage thereto caused by construction operations.

e) Contractor shall keep cleanup current with construction operations.

f) Contractor shall comply with all Federal, State of Iowa, and local laws and ordinances.

10) WORK HOURS/COMMUNITY EVENTS

a) The Contractor will be required to limit work hours on the Project from 7:00 a.m. to 7:00 p.m., Monday through Saturday, unless otherwise directed by the Engineer.

b) The following Community Events are scheduled. Contractor is required to coordinate with the Jurisdiction as needed to allow use of public property as necessary for the event(s). If Contract continues for multiple years, event is still in force even though dates and locations may change.

i) May 2, June 6, August 1, October 3 – Movies in the Park at Colby Park

ii) May 30 – Touch a Truck at Colby Park

iii) August 5 – National Night Out

iv) October 3 & 4 – Fall Fest at Colby Park with parade route on 69th Street

v) TBD – Spring Cleanup

11) CONSTRUCTION FACILITIES

a) Contractor shall provide telephone numbers where Contractor's representative can be reached during work days and on nights and weekends in event of emergency.

b) Contractor shall provide and maintain suitable sanitary facilities for construction personnel for duration of work; remove upon completion of work.

c) Contractor shall not store construction equipment, employee vehicles, or materials on streets open to traffic.

d) Contractor shall provide suitable storage facilities necessary for proper storage of materials and equipment. Location for storage of equipment by Contractor is subject to approval of the Engineer.

e) Contractor will be required to make arrangements for all services required during the construction period and pay for such services at no additional cost to the Jurisdiction.

12) PROJECT SUPERVISION

a) The Contractor shall be represented in person at the construction site at all times that construction operations are proceeding. Representation constitutes a qualified superintendent or other designated, qualified representative capable of providing adequate supervision. The representative must be duly authorized to receive and execute instructions, notices, and written orders from the Engineer.

b) Resolution of issues that arise during construction relating to traffic control, construction staging, etc. is the responsibility of the Contractor.

c) Weekly progress meetings, if specified at the preconstruction conference, may be held at the project site to review project schedules, coordinate activities, resolve conflicts, and coordinate the construction work. The day and time for this meeting will be set at the preconstruction conference. The Contractor shall provide qualified representation at each meeting.

d) Refer to Division 1 – General Provisions and Covenants, Section 1080 – Contractual Provisions, Part 1 – Prosecution and Progress of the Work, Section 1.10 Contractors Employees, Methods and Equipment for additional requirements.

e) Contractor shall provide supervision of all sub-contractors and their personnel while on the site.

13) COORDINATION WITH OTHERS

a) Contractor shall cooperate and coordinate construction with the Jurisdiction, utility companies, affected property owners, and other contractors working in the vicinity of this project.

b) It is the Contractor's responsibility to schedule and coordinate work to minimize construction delays and conflicts.

c) Contractor shall cooperate and coordinate with property owners prior to beginning work that will affect their parcel.

14) CONSTRUCTION GENERAL

a) Procedures outlined herein are not intended to fully cover all special construction procedures but are offered as an aid to the Contractor in planning work.

b) Contractor shall cooperate with the City of Windsor Heights, Iowa and the Engineer to minimize inconvenience to property owners, other jurisdictions and motorists and to prevent delays in construction and interruption to continuous operation of utility services and site access.

c) The Contractor is expected to provide adequate personnel and equipment to perform work within the specified time of construction.

d) Contractor shall install and maintain orange safety fence around all open trenches or open structures when left unattended.

e) Contractor shall complete surface restoration and cleanup activities as construction progresses.

15) CONSTRUCTION LIMITS

a) Contractor shall confine the construction operations within the construction limits shown on the plans.

b) Contractor shall not store equipment, vehicles, or materials within the right-of-way of any streets open to traffic or on temporary access roads at any time.

c) Areas disturbed outside of construction limits shall be restored at the contractor's expense to the satisfaction of the Jurisdiction.

d) Contractor shall protect trees, fences and landscaping within the construction limits not marked for removal.

e) All work on this project will be within City Right-of-Way, Easements or Public Property.

16) CONSTRUCTION SCHEDULE

a) The Contractor will prepare and submit to the Engineer a project schedule that will assure the completion of the project within the time specified within the Contract.

b) Adequate equipment and forces shall be made available by the Contractor to start work immediately upon receipt of the Notice to Proceed.

c) Contractor shall submit a construction schedule at the preconstruction conference.

d) Contractor shall periodically update the construction schedule as needed due to changes in progress of construction from the original schedule or as requested by the Engineer. Updates shall be completed within one week of request.

e) The Contractor shall be required to meet the final completion date as specified in Section 00500 – Contract.

f) Contractor shall notify the Jurisdiction and property owners at least 48 hours prior to any street closures.

i) Notification shall be provided by written notice placed on the front door. The following items shall be included within the notice:

(a) The street name, location and proposed date of street closure.

(b) The estimated schedule for completion of work.

(c) The estimated date for reopening of the street.

(d) Procedure for garbage collection recycling and postal service.

17) CONSTRUCTION PHASING

a) Contractor shall refer to construction staging and traffic control plans when included in construction plans.

b) Contractor shall include construction phasing on the required construction schedule submittal.

18) CONSTRUCTION STAKING

a) Unless otherwise specified in the specific sections, Jurisdiction shall provide engineering surveys to establish reference points for construction as follows:

i) Storm Sewer: Staking will be furnished and set by the Engineer at 50.0-foot spacing (usually offset for construction) for the control of the underground construction herein described. Cuts to the proposed pipeline grade will be furnished by the Engineer. Manholes and catch basins will be staked with an offset and a witness with a cut to the lowest structure invert.

ii) Watermain: The staking interval for watermain shall be 25.0-feet. Cuts to the proposed pipeline grade will be furnished by the Engineer. Location staking shall be provided for valves and fittings. Hydrants will be staked with an offset and a witness with a cut to the ground elevation at the hydrant. The Engineer will provide horizontal and vertical control points on the project's datum.

iii) Street Grading, Form Grade and Top of Curb: A control line (usually offset from the curb line) with cuts and fills to proposed grade at 50.0-foot spacing on tangents, and 25.0-foot spacing on horizontal or vertical curves, shall be furnished and set on both sides for control of the construction herein described.

iv) Concrete Paving: Control lines for paving forms or stringline control with cuts and fills to proposed finished grade at 25.0 or 50.0-foot stations shall be furnished and set by the Engineer for control of the concrete construction herein described. The offset and actual form or stringline locations shall be in accordance with the paver manufacturer's recommendations and the approved paving strategy as determined at the preconstruction conference.

b) The Engineer will provide stakes indicating the right of way and/or temporary easement construction limits.

c) Contractor is responsible to have all areas where stakes need to be set to be clear of debris. The Contractor needs to also provide a clear line of sight for staking.

d) The Contractor shall submit staking requests a minimum of two (2) working days, excluding Saturdays, Sundays and legal holidays, prior to the date requested stakes are needed on the project. Staking requests submitted after 2pm shall be recorded as being received the next business day.

e) The stakes are an integral part of the project and the Contractor shall protect and preserve all such stakes and marks and will be charged with the expense of resetting all such stakes and marks destroyed or disturbed due to the Contractor's carelessness or negligence. Stakes that are destroyed due to vandalism, erosion or other incidents shall be re-staked by the Engineer and will not be at the Contractor's expense.

f) In the event of apparent or questionable errors or inconsistencies in such stakes set for control of line and/or grade, the Contractor shall promptly notify the Engineer of such error or inconsistency and shall not proceed with the work until such stake, grade or mark shall have been verified or corrected by the Engineer.

g) The Engineer will mark the existing boundary monuments prior to construction. The Contractor is responsible for protecting the monuments during construction. If monuments are removed, the Engineer will reset them post construction at the Contractor's expense.

h) All other line and grade staking shall be the responsibility of the Contractor. The Contractor shall furnish sufficient equipment and personnel for determination of plan grades, cross sections, course thicknesses, etc. The survey cost of establishing stakes requested by the Contractor for the convenience of the Contractor, beyond those cited as basic project control, will be charged to the Contractor, or withheld from the amounts due to the Contractor.

19) CONSTRUCTION SURVEY DOCUMENTATION & RESPONSIBILITIES OF ENGINEER AND CONTRACTOR

a) The Contractor shall maintain at the construction site one complete set of drawings suitably marked to show all deviations from the original set of drawings and other information as specified. Supplementary sketches shall be included, if necessary, to clearly indicate all work as constructed.

b) All manholes and valves shall be located with tie-off dimensions to known items on the plans or in the field to enable the Contractor or City personnel to locate these structures for adjustment.

c) Survey work documentation shall be a combination of digital and hard copy format and is the property of the Engineer.

d) Tie-ins with existing pavements and utilities shall be verified for correctness of alignment and elevation prior to construction staking. Any discrepancies discovered during this verification process will be brought to the attention of the Engineer for review and assistance with resolution prior to staking.

e) When survey work is done under traffic conditions, the traffic control shall be in place prior to commencement of survey work.

f) The Engineer will have a representative at the preconstruction conference to discuss construction staking.

g) The Jurisdiction and Engineer will not be responsible for delays due to lack of grade or line stakes unless the Contractor has given the Engineer a 48 hour, working day, notice that such stakes will be needed and the Contractor's work is being conducted in a satisfactory manner and at the specified rate of progress.

20) MATERIALS TESTS

a) Testing shall follow the requirements of the SUDAS Standards Specifications. Contractor specified testing shall be completed by an independent testing laboratory retained by the Jurisdiction. Required testing not specified as Contractor or Supplier responsibility will be completed by an independent testing laboratory retained by the Jurisdiction or the Engineer.

b) The Contractor shall coordinate all material testing with the Engineer.

c) The Contractor shall not deliver materials to the project site until laboratory tests and/or certifications have been furnished which verify compliance of materials with specifications.

d) Contractor shall provide gradation and materials certifications for all granular materials. Certify that sources of Portland Cement and aggregate sources are Iowa DOT approved.

21) SOIL BORINGS

a) See attached.

22) EXISTING UTILITIES

a) Location of utility lines, mains, cables and appurtenances shown on plans are from information provided by utility companies and records of the Jurisdiction.

b) Prior to construction, Contractor shall contact all utility companies and have all utility lines and services located. The Contractor is responsible for excavating and exposing underground utilities in order to confirm their locations ahead of the work.

c) The Contractor is solely responsible for damage to utilities or private or public property due to utility disruption.

d) The Contractor shall notify utility company immediately if utility infrastructure is damaged during construction.

e) The Contractor shall support and protect all utilities that are not moved.

f) Utility services are not generally shown on plans; protect and maintain services during construction. Notify Jurisdiction and affected property Jurisdictions 48 hours prior to any planned utility service interruptions.

g) If private utility work occurs within/adjacent to the site during the construction period, Contractor shall coordinate work schedules with the Engineer.

h) Existing utilities shall remain in substantially continuous operation during construction. Contractor shall select the order and methods of construction that will not interfere with the operation of the utility systems. Interrupt utility services only with approval of Jurisdiction and Engineer.

i) No claims for additional compensation or time extensions will be allowed to the Contractor for interference or delay caused by utility companies.

23) SALVAGE OF MATERIALS / DISPOSAL

a) The Contractor shall remove from the project site and dispose of trees, shrubs, vegetation, excess soil excavation, rubbish, concrete, granular materials and other materials encountered as shown on plans and as specified. Excess soil excavation not designated for waste locations shall be disposed of as directed by the Engineer.

b) The City of Windsor Heights, Iowa retains first right of refusal for retaining any existing materials removed by the construction.

c) The Contractor shall dispose of materials in accordance with applicable laws and ordinances. Disposal sites are subject to the review and approval of the Engineer.

d) Burning of brush and other debris is not permitted. Contractor is responsible for selecting disposal location off site.

e) The Contractor shall dispose of broken concrete, asphalt, granular material, rubble and excess or unsuitable excavated material. Contractor is responsible for selecting disposal location off site.

f) The Contractor shall cooperate with all applicable City, State and Federal agencies concerning disposal of materials.

g) The Contractor shall carefully remove, in a manner to prevent damage, all materials and equipment specified or indicated as salvage. The Contractor shall protect and store items specified.

h) Any items damaged in removal, storage or handling through carelessness or improper procedures shall be replaced by the Contractor in kind with new items.

24) TRAFFIC CONTROL

a) The Contractor shall provide sufficient surveillance of the traffic control devices to ensure compliance during the entire construction period. The Contractor shall furnish names, addresses, and phone numbers of at least two (2) local individuals capable of immediate response who will be responsible for the site security and traffic control devices to:

i) The Engineer;

ii) The Jurisdiction; and

iii) Local Law Enforcement Agencies.

b) The Contractor shall schedule the work to cooperate fully with business property owners and occupants abutting the project to minimize the time of restricted access to their property during the construction period.

c) The Contractor shall notify the City and property owners at least 48 hours prior to any street closures.

i) Notification shall be provided by written notice delivered to the business. The following items shall be included within the notice:

(1) The street name, location and proposed date of street closure;

(2) The estimated schedule for completion of work;

(3) The estimated date for reopening of the street; and

(4) Procedure for garbage collection/recycling and postal service.

ii) Contractor shall accommodate and maintain safe access to homes for property owners. Access to homes shall be considered incidental to the project.

d) The cost of maintaining vehicular and pedestrian traffic on temporary surfaced drives and walkways, including the eventual removal of the temporary surfacing material, shall be considered incidental to traffic control.

e) In the event that any of the above right-of-way require traffic to be detoured around the construction zone, the Contractor shall prepare the detour route with the appropriate Agency representatives. The Contractor shall provide and maintain all signing and other traffic control required. The affected Agency shall be notified by the Contractor before re-routing traffic. Dust control and road maintenance of the by-pass route shall be the Contractor's responsibility.

f) Contractor shall furnish, erect and maintain traffic control devices as specified in the construction drawings and directed by the Engineer including signs, barrels, cones and barricades to direct traffic and separate traffic from work areas. Traffic control shall be in place prior to the closing of any streets.

g) Contractor shall provide traffic control devices in accordance with the Iowa DOT Standard Specification, Section 2528, Traffic Control, and the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).

h) Adjustments to the traffic control or the addition of flaggers will be required if, in the opinion of the Engineer, undue traffic congestion occurs.

i) Contractor shall provide continuous access for police, fire and other emergency vehicles.

j) Contractor shall notify the Engineer in writing at least 72 hours prior to the start of any construction operation that will necessitate land closure or internal traffic control signing.

25) TEMPORARY FENCES

a) Contractor shall install temporary fencing around open excavations or material storage areas and as directed by Engineer to prevent access of unauthorized persons to construction areas.

b) Contractor shall provide orange plastic mesh safety fence with a nominal height of 48". Support fence securely on driven posts in vertical position without sagging.

i) Refer to Iowa DOT Section 4188.03 for fence materials.

c) Temporary fencing installed around open excavations or material storage areas is incidental to construction and will not be measured for payment.

d) Contractor shall remove temporary fencing upon completion of construction.

26) EROSION CONTROL (NPDES Permit)

a) If Contractor fails to install and/or perform the appropriate erosion and sediment control practices, as determined by the Engineer, the Engineer may issue a written order to the Contractor. Failure to perform this work within 72 hours of notification of non-compliance may result in the Jurisdiction or Engineer arranging for completion of the work by others. A contract deduction may be made equal to the total of all costs to perform such work so arranged, including but not limited to, labor, materials, equipment and administrative costs.

b) It shall be the Contractor's responsibility to update the Erosion Control Plan during construction and have the plan available on site at all times.

c) Contractor is responsible for preparing the SWPPP to match staging, phasing and construction methods as work progresses. Contractor shall comply with the erosion control requirements of said plan, the Iowa Code and local ordinances. Protect against erosion and dust pollution on this project site and any off-site deposit or borrow area used for this project.

d) The Contractor will publish the necessary notification for the NPDES permit prior to the start of construction. The Contractor shall obtain an NPDES permit from the Iowa DNR for the area within the limits of this project based on the Pollution Prevention Plan. It shall be the Contractor's responsibility to update the plan during construction and have the plan available on site at all times.

e) The Contractor shall protect adjoining property (including public sanitary/storm sewer systems and streets) from any damage resulting from movement of earth or other debris from the project site. Any damage shall be repaired immediately.

f) Contractor shall prevent the accumulation of earth or debris on adjoining public or private property. Contractor shall remove any accumulation of earth or debris immediately and prevent the repetition of any instance where earth or debris moves from the project site to adjoining public or private property.

g) Contractor shall provide erosion control measures necessary to protect against siltation and erosion from the flow of storm water. Maintain continuous operation of the storm sewer system throughout the construction period.

h) Contractor shall use silt fence and similar Best Management Practices (BMP) at all drainage courses, swales and storm sewer system inlets/outlets to protect against siltation and erosion as shown in the construction drawings or as directed by the Engineer.

i) Erosion protection measures, other than those specified as unit price pay items, are incidental.

j) The Contractor will be fully liable for all damages to public and private property caused by their action or inaction in providing for handling of storm water flow during construction.

k) As construction progresses, stabilization is required in those segments of the corridor that become available to do so. The Contractor shall not wait until all grading and paving operations are completed before commencing final surface restoration.

l) The Contractor shall anticipate multiple mobilizations to complete finish grading operations in surface restoration areas.

27) DEWATERING

a) Contractor shall perform all construction work in dry conditions.

b) Unless specified in the Bid Items, all costs associated with dewatering activities shall be incidental to the project.

c) Contractor shall submit dewatering methods to the Engineer for review. Obtain the Engineer's approval on methods prior to construction.

d) Groundwater levels are subject to variation. No additional compensation will be permitted due to high groundwater conditions.

e) Should cohesive soils with no wet sand seams or layers be encountered, it may be possible to control water seepage by draining groundwater to temporary construction sumps and pumping it outside the perimeter of the excavation.

f) The Contractor shall not pump water from open excavation in sand and gravel below the natural ground water level.

g) Contractor shall maintain water levels 2 feet or more below the bottom of excavations in saturated cohesionless (sand and/or gravel) soils to prevent upward seepage, which could reduce subgrade support.

i) A dewatering system (well points or shallow wells) shall be installed when working in cohesionless soils.

ii) Costs of installing and operating dewatering system are incidental, unless specified otherwise.

h) Contractor shall provide means for conveying surface water encountered during construction.

i) Surface water shall be prevented from flowing into excavation and accumulated water shall be removed.

ii) Surface water and storm sewer flows shall be diverted around areas of construction.

iii) Sanitary sewers shall not be used for the disposal of dewatering or trench water.

i) Contractor shall backfill pipe and structures prior to stopping dewatering operations. Contractor shall not lay pipe or construct concrete structures on excessively wet soils.

j) Costs of conveying both surface water and groundwater are incidental.

28) READY MIX CONCRETE USED ON PAVING PROJECTS

a) Contractor will be required to provide plant/truck batch tickets as detailed in the Iowa DOT Construction Manual, Chapter 9, Section 9.03.

b) Contractor shall be required to provide a batch ticket for each delivered load to the Engineer or their field staff at the time of delivery on site.

29) INCIDENTAL CONTRACT ITEMS

a) The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid in the absence of a specific bid item for the work. These costs shall be included in the Unit Price Bid for the individual items associated with the stated specific item or work effort. Such items of work include, but are not limited to:

Concrete header removal
Connections to existing storm sewer structures and pipes unless specified for separate payment
Construction and removal of temporary access roads
Construction fencing
Construction staging and phasing
Coordination and cooperation with affected property owners
Coordination and cooperation with the City of Windsor Heights

Coordination and cooperation with other contractors
Coordination and cooperation with other projects in the area
Coordination and cooperation with utility companies
Dewatering and handling storm water flow during construction
Dust control measures
Engineering fabric
Excavation, verification and protection of existing utilities
Field and wood fence removal
Field testing
Finish grading
Full depth saw-cutting of existing pavement
Grading for storm sewer outlets
Granular backfill and bedding for storm and sanitary sewer installation
Granular surfacing removal
Maintenance and watering for seeding and sodding
Maintenance of erosion control measures, including silt removal
Material testing
Monitoring weather conditions
Mowing
Overhaul
Pipe and structure bedding material
Porous backfill for subdrain
Proof rolling
Protection of existing hydrant(s) and valve(s)
Protection of existing trees and plantings not shown as removals
Protection of existing utilities and light poles
Removing and reinstalling existing signs
Reseeding
Site cleanup/restoration
Temporary safety closures
Temporary sheeting and shoring
Water valve removal
Working backfill to reduce moisture content
Working subgrade to achieve acceptable moisture content
Wrapping of storm sewer pipe joints

******END OF SECTION******

SECTION 00900 - NOTICE OF AWARD

(To be executed after bid is awarded.)

TO: Contractor

Address 1

Address 2

City, State, Zip

PROJECT TITLE: 68th Street Improvement Project

PROJECT DESCRIPTION: The 68th Street Reconstruction project includes pavement reconstruction, storm sewer installation and water main replacement on 68th Street between University Avenue and School Street.

OWNER'S NAME: City of Windsor Heights

The OWNER has considered the BID submitted by you for the above-described WORK in response to its Notice to Bidders dated _____, 20_____, and Instructions to Bidders.

You are hereby notified that your BID has been accepted for items in the amount of $_____.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER within fifteen (15) days of this, the ____ day of _____, 20___.

You must deliver to the OWNER Three (3) fully executed counterparts of the Contract, including all the Contract Documents. Each of the Contract Documents must bear your signature. You must deliver with the executed Contract acceptable Contract Security (Bonds), Certificate(s) of Insurance, and other required information. Within ten days after you comply with the above conditions, the OWNER will return to you one fully executed counterparts of the Contract.

Dated this, the _____ day of _____, 20____.

City of Windsor Heights
Windsor Heights, Iowa

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____,

this, the _____ day of _____, 20_____.

BY: _____

TITLE: _____

SECTION 00910 - NOTICE TO PROCEED

(To be executed after Agreement, Bonds and Insurance Certificates are approved.)

TO:	Contractor	Date:	
	Address 1	Project Title:	68th Street Improvement Project
	Address 2	Project Owner:	City of Windsor Heights
	City, State, Zip	Project Location:	Windsor Heights, Iowa

You are hereby notified to commence WORK in accordance with the Contract awarded on _____, 20___. The Contract Time shall commence to run on Anticipated start date: _____, 20____. WORK shall proceed in accordance with the dates set forth in the Contract and all other provisions of the Contract Documents.

City of Windsor Heights

Windsor Heights, Iowa

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____,

this, the _____ day of _____, 20____.

BY: _____

TITLE: _____

TO BE PRINTED ON CONTRACTOR'S LETTERHEAD

LETTER OF TRANSMITTAL

Contractor Name

Contractor Address

Contractor City, State, Zip

Contractor Phone/E-Mail

DATE:	BMI # 0A1133739
ATTENTION: Justin Ernst	
RE: 68th Street Improvements	
SUBMITTAL NO.:	

WE ARE SENDING YOU ☐ Attached ☐ Under Separate Cover via _____ the Following Items:

☐ Shop Drawings ☐ Prints ☐ Specifications ☐ Copy of Letter

☐ _____

No. Copies Submitted	Specification Section	Subject of Shop Drawing or Other Submittal

Review Action: *(To be filled in by Engineer)*

☐ No Exceptions Taken ☐ Make Corrections Noted ☐ Amend - Resubmit ☐ Rejected - Resubmit ☐ Not Reviewed ☐ For Record

Comments: *(To be filled in by Engineer.)*

☐ The CONTRACTOR hereby notifies the OWNER that this Shop Drawing is in conformance with SUDAS Specifications Section 1050, 1.05 referenced in the Contract Documents.

☐ The CONTRACTOR hereby notifies the OWNER that this Shop Drawing is not in conformance with Section 1050, 1.05 of the SUDAS Specifications referenced in the Contract Documents and nevertheless asks approval thereof. The features not in conformance are as follows:

1. _____
2. _____
3. _____
4. _____
5. _____

CONTRACTOR SIGNED: _____

DATE: _____

(To be filled in by Engineer)

COPY TO: _____

_____

_____

_____

ENGINEER SIGNED: _____

DATE: _____

Distribution: ☐ Contractor ☐ Owner ☐ Project Engineer ☐ Field Office ☐ Other

TECHNICAL SPECIFICATIONS

JOINT PREVENTATIVE SEALANT

8.1 Perform Joint Preventative Sealant on transverse and longitudinal concrete pavement points when indicated on the plans or directed by the Engineeras shown on the Standard Drawing and the Plans.

8.2 Joint Preventative Sealant work consists of providing all labor, equipment, materials and related incidental work necessary for the application of spray- applied penetrating sealer to concrete pavement joints including the preparation and cleaning of the joints.

8.3 MATERIALS:

8.3.1 CHEM-CRETE PAVIX CCC100 or approved equal

8.4 EQUIPMENT:

8.4.1 Water cleaning equipment: Capable of delivering water at 2,000 psi from a nozzle in accordance with Iowa DOT Standard Specification Section 2542 for PCC surfaces and Section 2541 for HMA surfaces.

8.4.2 Sand blast equipment: Capable of removing old sealant, slurry, debris, and other foreign material from vertical face of crack or joints in accordance with Iowa DOT Standard Specifications Section 2542 for PCC surfaces and Section 2541 for HMA surfaces.

8.4.3 Sealant applicator: Follow manufacturer specifications, to be certified applicators.

8.5 INSPECTION:

8.5.1 The concrete surface is clean, dry and sound.

8.5.2 The concrete has cured for a minimum of 7 days.

8.5.3 Perform a water absorption test to determine absorption of concrete substrate. Mist area to be treated with water. Water should readily absorb into concrete substrate, if water beads at surface the presence of a sealer is possible.

8.6 JOINT CLEANING:

8.6.1 Clean all joints and cracks wider than 1/8 inch. Clean no more joints than can be sealed in the same day.

8.6.2 Compressed air, pressure washing or any method of abrading can be used as proper preparation method to ensure clean, sound concrete surface that is free of any debris. Ensure the concrete surface is free of any sealers which may impede the absorption of the sealant into the concrete substrate matrix. Thoroughly blow out all joints and cracks of loose material.

8.6.3 Surface contaminated with oil or grease shall be vigorously scrubbed with a biodegradable detergent. Thoroughly wash, clean and dry concrete substrate. Areas where oil or other contaminants penetrate deep into the concrete may require removal by mechanical methods.

8.6.4 Existing joint emulsion filler to remain in place.

8.5.5 Surface shall be clean, dry and sound.

8.7 APPLICATION:

8.7.1 Place joint sealant at manufacturer's recommended temperature to the dimensions specified in the plan details.

8.7.2 Application rates as specified by manufacturer.

8.7.3 Apply by low pressure spray equipment, rollers brooms or other methods as approved by the manufacturer. Flooding the joint is not an approved method of application.

8.7.4 Do not apply if precipitation is forecasted within 24 hours of coating completion. If precipitation occurs during application, discontinue immediately. Follow manufacturer's recommendations for necessary remediation action.

8.7.5 Allow to cure for a minimum of 2 hours before allowing vehicle traffic, or as approved by manufacturer's recommendations.

8.7.6 All defects caused by the operation of the contractor must be repaired in accordance with the direction of the Engineer.

8.7.7 Application to be a minimum of 24 inches in width or 6 inches outside of pavement shadowing as defined with the direction of the Engineer.

8.8 CLEAN UP:

8.8.1 Sweep dust and debris generated by the work from adjacent driveways.

8.8.2 After joint sealant is completed, sweep street to remove dust and debris.

8.8.3 Protect area behind curb from debris, remove any debris from the work from the area behind curb.

WINDSOR HEIGHTS 68TH STREET IMPROVEMENTS

SPECIAL PROVISION

WATER MAINS

CITY OF DES MOINES

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Carla J Schumacher 12/12/2024

Carla J. Schumacher, P.E.	Date
Des Moines Water Works	
License Number:	18191
My license renewal date is:	December 31, 2024
Pages or sheets covered by this seal:	Water Main Special Provision

SPECIAL PROVISION

WATER MAINS

I. GENERAL INFORMATION

A. Submittals

The Des Moines Water Works (DMWW) will review all shop drawings for materials related to water main construction. Shop drawings shall be provided to DMWW two (2) weeks prior to any water main construction. The Contractor shall submit these shop drawings with a summary of shop drawing submittals by email to:

Carla Schumacher
cschumacher@dmww.com

B. Preparation

Notify DMWW (515-323-6227) 48 hours prior to the start of any water main related construction.

Verify proposed grades prior to construction to ensure adequate finished cover will be provided over all water mains.

The Contractor shall arrange for all survey required to install water main on line and grade as shown on the plans.

The Contractor shall arrange with DMWW for all valves and hydrants to be operated only by DMWW's personnel.

Existing 10” DMWW mainline water valve on University Avenue along the south curbline and west of 68th Street was paved over during a past project. If not already exposed, this valve shall be uncovered by Contractor prior to start of water main work so it is operational for project.

C. Connections to the Existing Water System

Expose existing buried pipe at proposed connection location. Confirm location of bells and collect field measurements. Complete this work at least two weeks prior to ordering solid sleeves or tapping sleeve and valve to allow time for manufacturing and shipping.

A tee or tapping sleeve and valve shall not be closer than 3’ from another tee or tapping sleeve and valve per DMWW Rules and Regulations. Verify manufacturer’s minimum distance requirements for tapping sleeve and valve before obtaining field measurements. If an alignment adjustment is required, Contractor and DMWW personnel to discuss proposed realignment so that measurements are obtained in the correct location. DMWW Tech to get a GPS shot of tee or tapping sleeve and valve location and existing bell.

Required field measurements of existing main include the outside diameter at actual connection location, depth to top of existing main, orientation, pipe material, and type and location of joints.

Connections to the existing DMWW’s system shall be coordinated with the Engineer and scheduled a minimum of 48 hours in advance. Customers who will be without water shall be notified by the Contractor a minimum of 24 hours in advance. Water main shutdowns may need to be completed outside of normal working hours to minimize impact on affected

customers. No additional compensation will be paid for work outside normal working hours.

There are three connections to existing main:

1. School Street and 68th Street
    - Connect to 6" cast iron main
    - Installed 1960
    - Anticipate Top of Pipe at 6'
    - Install a tee with two solid sleeves to connect to existing main. Requires water outage.
    - Confirm location and get measurements.

2. Mott Avenue and 69th Street
    - Connect to 8" PVC main installed in 2020.
    - Remove existing 45-degree bend (installed in 2020), located east of existing valve on tee at 69th & Mott.
    - Install new main with solid sleeve to existing main after 45-degree bend removed.

3. University Avenue and 68th Street
    - Locate valve west of intersection at 68th & University that was paved over during past project. This must be operational for project.
    - Connect to existing 10" cast iron main located north of Clive 12" water main (1955 vintage).
    - Measure outside diameter of existing main.
    - Install a tee with two solid sleeves to connect to existing main. Requires water outage.

D. Abandonment of Existing Facilities

Existing water mains shall be abandoned as shown on the plans. Mains shall be capped and hydrant assemblies and valve boxes shall be removed incidental to water main construction.

Existing tees on active mains connected to abandoned water main shall be removed and replaced with a short section of new pipe and two sleeves and paid by bid items.

Abandonments must be completed prior to paving and right of way restoration.

E. Paving

1. Sidewalks
    - Follow City of Windsor Heights requirements for stop box installation in sidewalk paving.
    - Stop boxes must be operational and accessible.
    - City Inspector and DMWW Engineering Technician to verify all new stop boxes are visible and operational after paving.
2. Street
    - Paving contractor to coordinate valve box raising with prime contractor for all valves.
    - City Inspector and DMWW Engineering Technician to count and verify location of all new valve boxes. Valve boxes shall be visible and operational after paving. Missing valve boxes shall be reported to paving contractor so they can be uncovered and raised.

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. Excavating, backfilling, and compacting specifications, as applicable, for installation of water main and appurtenances.

1.02 RELATED SECTIONS

A. Section 02 22 70 – Augured Pipe Casing.

B. Section 02 61 00 – Ductile Iron and Polyvinyl Chloride Pipe for Water Mains.

C. Section 02 64 00 – Valves and Hydrants.

D. Section 02 66 00 – Water Service Transfers.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

B. American Society for Testing and Materials (ASTM) D3017 – Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. American Society for Testing and Materials (ASTM) D698 – Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3).

D. Federal Register – Occupational Safety and Health Administration (OSHA), Occupational Safety and Health Standards - Excavations.

E. Iowa Department of Transportation (IDOT) Standard Specifications for Highway and Bridge Construction – current version, including Supplemental Specification.

F. Iowa Statewide Urban Design and Specifications (SUDAS).

1.04 SUBMITTALS (NOT USED)

1.05 MEASUREMENT AND PAYMENT

A. Stabilization Materials: per ton, based on quantities shown on material delivery tickets provided to Engineer.
   1. Include cost for all material, equipment, labor, and associated work necessary to complete work associated with stabilization materials in the unit bid price for “Foundation Rock” on the Proposal.
   2. Estimated quantity shown on Proposal for “Foundation Rock” is not to be used as an indication of site conditions that will be encountered during the course of the Work.

B. Special Pipe Embedment and Encasement Material: per cubic yard, based on quantities shown on material delivery tickets provided to Engineer.
   1. Include cost for all material, equipment, labor, and associated work necessary to complete work associated with special pipe embedment and encasement material in the unit bid price for “Utility Embedment Material” on the Proposal.
   2. Estimated quantity shown on Proposal for “Utility Embedment Material” is not to be used as an indication of site conditions that will be encountered during the course of the Work.

PART 2 PRODUCTS

2.01 EXCAVATED MATERIALS

A. Strip, grub, and stockpile topsoil for finished grading.

B. Backfill material to be:
   1. Approved for use by Engineer.
   2. Selected material taken from the excavation or select borrow material, if sufficient quantities of compliant excavated material are not available.
   3. Inorganic clays, clayey sands, or inorganic and clayey silts, compatible with and having an obtainable density no less than adjacent soils.
   4. Free of lumps or clods over 3 inches in the largest dimension.
   5. Free of foreign debris including rocks, organic materials, and man-made debris.
   6. Material that is not frozen.

2.02 BEDDING MATERIAL

A. Steel Pipe: Bed pipe using sand free of frozen material, foreign debris, including rocks, organic materials, and man-made debris.

B. Ductile iron pipe, prestressed concrete cylinder pipe, polyvinyl chloride pipe, and corrugated steel pipe: Bed pipe using material taken from the excavation with the following characteristics:
   1. Inorganic clay, clayey sand, or inorganic and clayey silt.
   2. Free of lumps or clods over 2 inches in the largest dimension.
   3. Free of foreign debris including rocks, organic materials, and man-made debris.
   4. With a soil moisture range of optimum moisture to 4 percentage points above optimum moisture content.
   5. Material that is not frozen.

2.03 STABILIZATION MATERIAL

A. When required by field conditions, use stabilization material of crushed limestone, dolomite, or quartzite generally meeting the following characteristics:
   1. 2-inch nominal maximum size.
   2. 95 percent retained on a 3/4-inch screen.
   3. Generally free from deleterious substances as determined by Engineer.

2.04 BORROW MATERIALS

A. If sufficient quantity of suitable material is not available from excavations, obtain material from approved off-site sources. Off-site sources must hold a National Pollutant Discharge Elimination System (NPDES) permit from the IDNR for storm water discharge associated with construction activity.

B. Conform borrow materials, including topsoil and backfill material, to specifications for excavated materials in Part 2.01.

C. Topsoil borrow material to be:
   1. Natural loam and humus with characteristics consistent with the existing topsoil on site.
   2. Finely graded and free of clumps larger than 2 inches in the largest dimension.
   3. Free of man-made materials and debris.
   4. Free of rock or organic matter, including wood and roots, greater than 3/4-inch, in the largest dimension.
   5. Comprised of less than 0.5 percent clay.

2.05 SPECIAL PIPE EMBEDMENT AND ENCASEMENT MATERIAL

A. When directed by Engineer, install controlled low-strength material to provide support to existing utilities.
   1. Controlled Low-Strength Material (CLSM):
      a. Approximate quantities per cubic yard:
         (1) Cement: 50 pounds.
         (2) Fly ash: 250 pounds.
         (3) Fine aggregate: 2,910 pounds.
         (4) Water: 60 gallons.
      b. A compressive strength of at least 50 psi compressive strength at 28 calendar days.
      c. Comply with material requirements of Section 2506.02 of IDOT Standard Specifications, current version.

2.06 MANUFACTURED SAND MATERIAL

A. When directed by Engineer, install manufactured sand.
   1. Stone sand complying with the following gradation:

Sieve	Percent Passing
3/8-inch	100
No. 4	90-100
No. 8	60-75
No. 30	15-30
No. 200	0-4

PART 3 EXECUTION

3.01 GENERAL

A. General Description
   1. Complete trenching, backfilling, and compacting for water main in accordance with the SUDAS manual. These specifications are intended to highlight or modify basic requirements; see SUDAS manual for more detailed information.

B. Quality Assurance
   1. Give Engineer the opportunity to review excavated or borrowed soils prior to placement as backfill.
   2. Owner will commission and compensate a qualified soils engineer to develop Proctor curves indicating moisture-density relationships for all soil types used as backfill.
   3. Use Proctor curves and soil analysis information in determining proper compaction of soils placed.

C. General Safety
   1. Blasting not permitted.
   2. Safety and protection:
      a. Provide shoring, sheeting, and bracing, as required, to protect Work, adjacent property, private or public utilities, and workers.
      b. Strictly observe laws and ordinances regulating health and safety measures.
      c. Excavations that Owner's personnel are required to enter shall comply with OSHA standards.

D. Soil Testing
   1. Field tests for density and moisture content to be performed by the soils engineer, defined in Part 3.01.B above, to ensure that specified density is being obtained. Perform testing using ASTM D2922 nuclear methods or another method approved by Engineer.
   2. Take density tests at finished grade, at 3 feet below finished grade, and as directed by Engineer under special conditions. Test locations to be selected by Engineer immediately prior to performing tests. Excavate, as directed by Engineer, for tests at intermediate depths. As a

minimum, take density tests at approximately 200-foot intervals along the trench. The following locations require additional testing:
   a. Over jacking pits where casing was installed.
   b. Immediately adjacent to all structures.
3. When test results indicate compaction is not as specified:
   a. Additional tests will be required in both directions from the failed test until satisfactory results are obtained.
   b. Remove, replace, and recompact all material between the satisfactory tests in lifts to meet specifications. Compaction corrections are made at no expense to Owner.
   c. Provide density tests to recompacted areas at the same frequency as the original tests. Testing of recompacted areas performed at the Contractor's expense.
4. Notify Engineer if petroleum-based materials are detected in soils. Appropriate action will be taken by Owner.
5. Tests that are not conducted in the presence of the Engineer, or are conducted at locations not selected by the Engineer, will be rejected.

E. Protection of Utility Lines
1. Conduct trenching operations to avoid damaging underground utilities.
2. Protect all underground utilities. Damage resulting from trenching or backfilling to be repaired by Contractor or utility company at Contractor's expense.
3. Underground utilities discovered by Contractor are to be protected.

3.02 DISPOSAL OF EXCAVATED MATERIAL

A. Remove excess material excavated for water main trench from site and in compliance with environmental regulations.

B. Backfill consisting of suitable material, which comes from an off-site source, must conform to Part 2.01.

3.03 TRENCH EXCAVATION

A. Strip and stockpile topsoil for finished grading. A minimum of 12 inches of topsoil must be segregated from other materials in agricultural areas.

B. Excavate trenches so as to:
1. Follow lines and grades as indicated on plans.
2. Provide uniform bearing on undisturbed soil and continuous support along the entire length of pipe.
3. Prevent over-excavation in locations where suitable subgrade conditions exist.
4. Provide vertical trench walls to an elevation no less than 12 inches above the pipe.

C. Correct unstable trench bottoms, as determined by Engineer, as follows:
1. Over-excavate the trench to stable soil or to a maximum of 2 feet below the bottom of the pipe.
2. If stable soil is reached, bring trench back to grade using suitable backfill material or bedding material compacted to 90 percent Standard Proctor Density.
3. If stable soil is not reached after 2 feet of over-excavation, place one (1) foot of the specified trench stabilization material in the trench bottom and compact. Bring trench back to grade using suitable backfill material or bedding material compacted to 90 percent Standard Proctor Density.
4. Place pipe only after trench bottom has been fully stabilized.

D. Remove stones encountered during excavation. When large rocks are encountered, remove to an elevation 6 inches below the bottom of the proposed improvement. Fill voids created through removal of stones with approved backfill material and thoroughly compact to 90 percent Standard Proctor Density.

E. Excavate trench bottoms deeper at location of bell joints to permit body of pipe to rest uniformly supported upon trench bottom. Use bell holes no longer than is necessary for practical installation of pipe.

F. The length of trench to be opened at one time is as follows:
   1. In extended runs, open trench length is not to exceed 100 feet.
   2. In street crossings, trench shall not be open in more than one lane at a time, unless specified differently in traffic control plan.
   3. Backfill driveways and entrances immediately after placement of pipe.

G. Place excavated material:
   1. As approved by Engineer when these specifications do not apply.
   2. Compactly along sides of excavation.
   3. To provide continuous access to fire hydrants and utility valves.
   4. To provide as little inconvenience as possible to public travel.
   5. To minimize damage to adjacent lawns and planted areas.

3.04 PIPE BEDDING

A. Bed pipe with 4-inch-thick layer of specified bedding material for pipes 20-inch and larger.

B. Place bedding alongside of pipe to an elevation above springline (no lower than half the height of the pipe).

C. Compact bedding to a minimum of 90 percent Standard Proctor Density.

D. Obtain required compaction within a soil moisture range of optimum moisture to 4 percentage points above optimum moisture content.

E. Do not damage pipe coating or wrapping system during bedding placement and compaction.

3.05 BACKFILLING

A. Perform backfilling of trenches only after pipe installation, jointing, and bedding are complete, inspected, and approved.

B. Use backfill material complying with Part 2 above.

C. Mechanically tamp backfill with impact or vibrating compaction equipment.

D. Place backfill in layers and compact to required density.

E. Backfill to be:
   1. Compacted to 90 percent Standard Proctor Density to a level one (1) foot above the pipe.
   2. For the remainder of the trench:
      a. Compact public rights-of-way to 95 percent Standard Proctor Density.
      b. Compact easement areas to 90 percent Standard Proctor Density.
   3. Within a soil moisture range of optimum moisture to 4 percentage points above optimum moisture content.

F. Protect pipe coating or pipe wrapping system from damage during backfill operations.

G. Hydraulic compaction or water jetting of pipe trenches is not permitted.

H. Adjust moisture content of material that exceeds optimum moisture range, but is otherwise acceptable, by spreading and aerating or otherwise drying as necessary until moisture content is within required moisture range and required compaction can be obtained.

I. Adjust moisture content of material that is below optimum moisture, but is otherwise acceptable, by wetting as necessary until moisture content is within required moisture range and required compaction can be obtained.

3.06 GRADING

A. Finish-grade surfaces with a well-compacted, free-draining, uniform surface without obstructive protrusions or depressions.

B. Place topsoil at a uniform depth equal to surrounding topsoil, but not less than 4 inches.

C. Place topsoil to a minimum depth of 6 inches when ample native topsoil is available.

D. Place topsoil only under lawn and planted areas.

3.07 CONTROL OF WATER

A. Install pipe in the dry.

B. Dewater as necessary to prevent water from entering pipe or rising around pipe.

C. Do not allow water pumped or diverted from excavation site to be:
   1. Pooled anywhere on site.
   2. Removed in such a manner as to disperse silt.
   3. Placed on surfaces heavily traveled by pedestrian traffic.

D. Do not use installed pipe as a conduit for trench dewatering.

E. Control surface water as follows:
   1. Divert surface water to prevent entry into pipe trenches.
   2. Remove surface water accumulated in pipe trenches and other excavations prior to continuation of excavation work.
   3. Remove surface water saturated soil from excavation.

F. Control groundwater as follows:
   1. Where groundwater is encountered, dewater trenches and other excavations, as necessary, to permit proper execution of the Project.
   2. When large quantities of groundwater are encountered, stabilize trenches with the specified stabilization material, and bed pipe as specified.

3.08 DISPOSAL OF UNSUITABLE OR EXCESS MATERIAL

A. Dispose of surplus material and material not suitable for backfill off-site at a location provided by Contractor.
   1. Off-site disposal locations must hold a National Pollutant Discharge Elimination System (NPDES) permit from the IDNR for storm water discharge associated with construction activity.
   2. Contractor to provide transportation of such material.

3.09 CLEANUP AND RESTORATION

A. Clear the site in and around the excavation of mud and construction debris to a condition equal to, or better than, that existing prior to trenching work.

B. Remove construction remnant materials from site.

C. Repair damage to adjacent property suffered during installation work to a condition equal to, or better than, that condition existing prior to trenching Work.

**** END OF SECTION ****

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This Section describes Iowa Department of Natural Resources (IDNR) requirements for protection of water supply systems and reflects IDNR updates to 567 IAC 43.3(2)"a"(3) that became effective March 16, 2022, and the Standard Specifications on file with IDNR dated October 10, 2014, that include a variance for electronic leak detection.

1.02 RELATED SECTIONS

A. Section 02 61 00 – Ductile Iron and Polyvinyl Chloride Pipe for Water Mains.

B. Section 02 64 00 – Valves and Hydrants.

C. Section 02 67 40 – Pressure Testing Water Mains.

D. Section 02 67 50 – Disinfection of Water Distribution Systems.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

B. 567 IAC 43.3 (2)"a"(3) new subparagraphs (3) and (4), effective March 16, 2022.

C. Standard Specifications on file with IDNR dated October 10, 2014, with variance for electronic leak detection.

1.04 SUBMITTALS (NOT USED)

1.05 MEASUREMENT AND PAYMENT (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Lay water mains to avoid high points where air can accumulate. Grade piping so that proposed hydrants will be at the highest points.

B. Do not locate hydrants within 10 feet of sanitary sewers or storm drains.

C. Plug hydrant drain ports in areas where groundwater rises above water main and pump hydrant barrel dry following construction.

D. Pressure test and disinfect new water mains prior to placing them in service.

3.02 SEPARATION DISTANCE

A. **Horizontal separation of water mains from <u>gravity sanitary and combined sewers</u>**:
   1. When horizontal separation is at least 10 feet from edge to edge, there are no additional requirements.
   2. When horizontal separation is at least 3 feet from edge to edge and less than 10 feet, with water main located at least 18 inches or more above top of sewer, <u>sewer must be placed in a separate trench than the water main or on a bench of undisturbed earth in the same trench as the water main.</u>

3. When horizontal separation is at least 3 feet from edge to edge and less than 10 feet, with water main located less than 18 inches above top of sewer:
    a. Option 1: Construct water main within watertight casing pipe with evenly spaced annular gap provided by watertight end seals, or
    b. Option 2: Construct sewer of water main materials.
4. When it is impossible to obtain the required 3-foot horizontal clearance edge to edge, the sewer must be replaced with water main quality materials.
5. In no case shall horizontal separation be less than 2 feet.

B. **Horizontal separation of water mains from sanitary sewer force mains**:
1. When horizontal separation distance is at least 10 feet from edge to edge, there are no additional requirements.
2. When horizontal separation is at least 4 feet from edge to edge and less than 10 feet, sewer must be constructed of water main materials.
3. In no case shall horizontal separation be less than 4 feet.

C. **Vertical separation of water mains from gravity sanitary and combined sewer crossings**:
1. When vertical separation distance is at least 18 inches or greater from edge to edge and water main is located above sewer, there are no additional requirements.
2. When vertical separation distance is at least 6 inches from edge to edge and less than 18 inches, and water main is located above sewer:
    a. Option 1: Construct water main within watertight casing pipe with evenly spaced annular gap and watertight end seals, or
    b. Option 2: construct sewer of water main materials.
3. When vertical separation distance is 18 inches or greater from edge to edge, and water main is located below sewer:
    a. Option 1: Construct water main within watertight casing pipe with evenly spaced annular gap and watertight end seals, or
    b. Option 2: construct sewer of water main materials.
4. In no case shall vertical separation be less than 6 inches edge to edge when water main is above sewer.
5. In no case shall vertical separation be less than 18 inches edge to edge when water main is below sewer.

D. **Horizontal separation of water mains from gravity storm sewers**:
1. When horizontal separation is at least 10 feet from edge to edge, there are no additional requirements.
2. When horizontal separation is at least 3 feet from edge to edge and less than 10 feet:
    a. Option 1: Construct water main of ductile iron pipe with gaskets impermeable to hydrocarbons, or
    b. Option 2: Construct water main within watertight casing pipe with evenly spaced annular gap using chocks and watertight end seals, or
    c. Option 3: Construct sewer of water main materials, or
    d. Option 4: Construct reinforced concrete pipe storm sewers with gaskets manufactured in accordance with ASTM C443.
3. In no case shall horizontal separation be less than 3 feet.

E. **Vertical separation of water mains from gravity storm sewer crossings**:
1. When vertical separation distance is at least 18 inches from edge to edge, there are no additional requirements.
2. When vertical separation distance is at least 6 inches from edge to edge and less than 18 inches, and water main is located above sewer:
    a. Option 1: Construct water main of ductile iron pipe with gaskets impermeable to hydrocarbons, or
    b. Option 2: Construct water main within watertight casing pipe with evenly spaced annular gap using chocks and watertight end seals, or
    c. Option 3: Construct sewer of water main materials, or
    d. Option 4: Construct reinforced concrete pipe storm sewers shall be constructed with gaskets manufactured in accordance with ASTM C443.

3. In no case shall vertical separation be less than 6 inches when water main is above sewer.
4. In no case shall vertical separation be less than 18 inches when water main is below sewer.

F. **Separation of water mains from sewer manholes**:
1. No water pipe shall pass through, or come in contact with, any part of a sewer manhole.
2. Provide a horizontal separation distance of at least 10 feet between water mains and sewer manholes whenever possible.
3. In no case shall the horizontal separation of water main from sanitary and combined sewer manholes be less than 3 feet.

G. Advise Engineer should physical conditions exist such that exceptions to Part 3.02 of this Section are necessary.

3.03 WATER CROSSINGS

A. Above-water Crossings:
1. Adequately support and anchor pipe used for above-water crossings.
2. Protect pipe from damage and freezing.
3. Ensure pipe is accessible for repair or replacement.

B. Underwater Crossings:
1. Use restrained joint pipe for water mains entering or crossing streams that are 15 feet in width or larger.
   a. Place top of water main a minimum of 5 feet below natural bottom of streambed.
   b. Securely anchor water main to prevent movement of pipe and provide easily accessible shutoff valves located outside the floodway at each end of the water crossing.
   c. Backfill trench with crushed rock or gravel.
   d. Seed, sod, or otherwise protect streambank from erosion upon completion of the Project.
2. For smaller streams, the same requirements shall apply except that shutoff valves do not need to be located immediately adjacent to the water crossing.
3. DMWW will electronically pinpoint leaks in lieu of inserting a small meter to determine leakage and obtain water samples on each side of shutoff valve.

3.04 DEPTH OF COVER AND WIDTH OF TRENCH

A. Provide 5 feet minimum depth of cover from top of pipe to ground surface.

B. Where possible, provide an additional 6 inches of cover under pavement.

C. Insulate water mains where conditions prevent adequate earth cover.

D. Provide a trench width adequate to lay and joint pipe properly but not more than 12 inches on either side of the pipe.

**** END OF SECTION ****

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This Section includes water mains, fittings, as shown on the plans, complete with accessories.

1.02 RELATED SECTIONS

A. Section 02 22 00 – Excavating, Backfilling, and Compacting for Water Mains.

B. Section 02 60 00 – Protection of Water Supply.

C. Section 02 64 00 – Valves and Hydrants.

D. Section 02 67 40 – Pressure Testing Water Mains.

E. Section 02 67 50 – Disinfection of Water Distribution Systems.

1.03 REFERENCES

A. American National Standards Institute (ANSI) B16.1 – Cast Iron Pipe Flanges and Flanged Fittings.

B. American Society for Testing and Materials (ASTM) A320 – Alloy-Steel and Stainless-Steel Bolting for Low-Temperature Service.

C. American Society for Testing and Materials (ASTM) A536 – Standard Specification for Ductile Iron Castings.

D. American Water Works Association (AWWA) C104 – Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.

E. American Water Works Association (AWWA) C105 – Polyethylene Encasement for Ductile-Iron Pipe Systems.

F. American Water Works Association (AWWA) C110 – Ductile-Iron and Gray-Iron Fittings.

G. American Water Works Association (AWWA) C111 – Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

H. American Water Works Association (AWWA) C115 – Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.

I. American Water Works Association (AWWA) C150 – Thickness Design of Ductile Iron Pipe.

J. American Water Works Association (AWWA) C151 – Ductile Iron Pipe, Centrifugally Cast.

K. American Water Works Association (AWWA) C153 – Ductile-Iron Compact Fittings.

L. American Water Works Association (AWWA) C600 – Installation of Ductile-Iron Water Mains and Their Appurtenances.

M. American Water Works Association (AWWA) C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

N. American Water Works Association (AWWA) C900 – Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In.

1.04 SUBMITTALS

A. Submit the following items for materials provided by the Contractor:
   1. Manufacturer's certification that materials furnished are in compliance with applicable requirements of referenced standards and this Section.
   2. Drawings and manufacturer's data showing details of pipe and fittings to comply with this Section.
   3. Class of pipe and fittings.
   4. Restrained joint details for Engineer's approval.
   5. List of at least ten projects similar to this Project. Include project name, scope, duration of Project, and references with phone numbers.

B. Provide dimensional drawings, fabrication details, functional description, and properly identified catalog data on pipe and equipment to prove complete compliance with Drawings and Specifications.

1.05 MEASUREMENT AND PAYMENT

A. Measure water main in linear feet, along centerline of pipe.

B. Include costs for material, equipment, and labor for Work included in this Section.

PART 2 PRODUCTS

2.01 DUCTILE IRON PIPE (12-INCH AND SMALLER)

A. Special Thickness Class 52 per AWWA C150.

B. Manufacture pipe in accordance with AWWA C151.

C. Provide asphaltic outside coating per AWWA C151, 1 mil in thickness.

D. Cement Mortar Lining:
   1. Provide pipe with standard thickness cement mortar lining per AWWA C104.
   2. Seal-coat cement mortar lining in accordance with AWWA C104.

2.02 POLYVINYL CHLORIDE PIPE

A. Use Class 235 (DR 18) pipe with ductile iron pipe equivalent outside diameters.

B. Manufacture pipe in accordance with AWWA C900.

C. Use restrained-joint PVC pipe for pipe installed utilizing horizontal directional drilling.

D. Use blue pipe.

2.03 FITTINGS FOR DUCTILE IRON AND POLYVINYL CHLORIDE PIPE

A. Use compact fittings in accordance with AWWA C153, or full size in accordance with AWWA C110.

B. Use ductile iron material for construction in accordance with AWWA C110.

C. Joints
   1. Mechanical in accordance with AWWA C111 with restraint.
      a. T-bolts and hex-head nuts for mechanical joints in accordance with AWWA C111.
         (1) Material: low carbon alloy weathering Cor-Ten steel.
         (2) Coating: Cor-Blue fluorocarbon resin.
         (3) Color: Blue.
         (4) Approved Manufacturers:
            (a) Birmingham Fastener Manufacturing Fluorocarbon Coated T-Head Bolt.
            (b) Or approved equal.

2. Flanged in accordance with AWWA C115, as indicated on plans, with ANSI Class 125 full-faced flange.
    a. Gaskets: of thickness compatible with machining tolerance of flange faces. Minimum thickness: 1/8-inch.
    b. Nuts and bolts: stainless steel in accordance with ASTM A320, Type 304.

D. Pressure Rating:

Size (inches)	Pressure Rating (psi)
3 – 24	350
30 – 48	250
54 – 64	150

E. Provide asphaltic outside coating per AWWA C110, 1 mil in thickness.

F. Cement Mortar Lining:
1. Provide standard thickness cement mortar lining per AWWA C104.
2. Seal-coat cement mortar lining in accordance with AWWA C104.

2.04 JOINTS FOR DUCTILE IRON AND POLYVINYL CHLORIDE PIPE

A. Use push-on joints using an integral bell with an elastomeric or nitrile gasket in accordance with AWWA C111, mechanical in accordance with AWWA C111, or restrained as needed for thrust restraint.

B. Use ductile iron follower glands for mechanical joints.

C. Solvent cement joints are strictly prohibited.

D. T-bolts and hex-head nuts for mechanical joints in accordance with AWWA C111.
1. Material: low carbon alloy weathering Cor-Ten steel.
2. Coating: Cor-Blue fluorocarbon resin.
3. Color: Blue.
4. Approved Manufacturers:
    a. Birmingham Fastener Manufacturing Fluorocarbon Coated T-Head Bolt.
    b. Or approved equal.

E. Provide flanged joints for connections to flanged valves, hydrant valves, and other flanged fittings where shown on plans. Conform to AWWA C115 with ANSI Class 125 full-faced flange.
1. Gaskets: SBR Rubber of thickness compatible with machining tolerances of flange faces. Minimum thickness: 1/8 inch.
2. Nuts and bolts: Conform to ASTM A320, Type 304.

F. Joint bonds: No. 4 AWG-HMWPE stranded copper cable per Section 13 21 00.

2.05 RESTRAINED JOINTS

A. Mechanical Joint
1. Incorporate restraint for all mechanical joints into the design of the follower gland.
2. Use retainer gland designed to impart multiple wedging actions against the pipe, increasing its resistance as pressure increases.
3. Restrained joints to consist of a mechanical joint with retainer gland or manufacturer's proprietary-restrained joint.
4. Conform dimensions to the requirements of AWWA C111 and AWWA C153.
5. Pressure rating:
    a. Minimum of 235 psi for PVC pipe.
    b. Minimum of 350 psi for ductile iron pipe for sizes 16-inch and smaller.
    c. Minimum of 250 psi for ductile iron pipe for sizes 18-inch and larger.

6. Color:
    a. Red for PVC pipe.
    b. Black for ductile iron pipe.
7. Materials for construction:
    a. Body, wedge segments, and break-off bolt assemblies: Grade 65-45-12 ductile iron as specified by ASTM A536.
    b. Coating to be electrostatically applied and heat cured.
        (1) Approved manufacturers:
            (a) MEGA-BOND by EBAA Iron, Inc.
            (b) CORRSAFE by Sigma.
            (c) Starbond by Star Products.
            (d) Resicoat R2-ES by Tyler Union.
            (e) EZ Shield by SIP Industries.
            (f) Or approved equal.
8. Minimum safety factor of 2.
9. Use ductile iron retainer wedge segments heat treated to a minimum Brinell hardness number of 370.
10. Incorporate twist-off nuts, the same size as hex-head nuts for T-bolts, into the design to ensure proper actuating torque is applied during installation.
11. Approved manufacturers for PVC pipe:
    a. Megalug by EBAA Iron Inc. Series 2000PV.
    b. One-Lok by Sigma Series SLCE.
    c. Stargrip by Star Products Series 4000.
    d. TUFGrip by Tyler Union Series 2000.
    e. EZ Grip by SIP Industries Series EZP.
    f. Or approved equal.
12. Approved manufacturers for ductile iron pipe:
    a. Megalug by EBAA Iron Inc. Series 1000.
    b. One-Lok by Sigma Series SLDE.
    c. Stargrip by Star Products Series 3000.
    d. TUFGrip by Tyler Union Series 1000.
    e. EZ Grip by SIP Industries Series EZD.
    f. Or approved equal.

B. PVC Pipe Joint
1. Provide restraint for in-line PVC pipe through the use of groove and spline or grip ring located in the bell that provides full-circumferential restrained joint.
2. Restraint joints to have a minimum pressure rating of 150 psi.
3. Manufacturers:
    a. Certa-Lok by North American Specialty Products.
    b. Diamond Lok-21 by Diamond Plastics.
    c. Eagle Loc 900 by JM Eagle.
    d. Or approved equal.

C. Ductile Iron Pipe Joint
1. Restraint for in-line ductile iron pipe shall consist of the manufacturer's proprietary-restrained joint.
2. Restraint joints to have a minimum pressure rating of 250 psi.

2.06 POLYETHYLENE PIPE ENCASEMENT MATERIAL (DUCTILE IRON PIPE AND FITTINGS)

A. Polyethylene encasement manufactured in accordance with AWWA C105.

B. Linear low-density polyethylene film.

C. Minimum thickness of be 8 mils.

D. Color: Blue.

E. Physical Properties:
   1. Tensile strength 3600 psi, minimum.
   2. Elongation 800 percent, minimum.
   3. Dielectric strength 800 V/mil, minimum.
   4. Impact resistance 600 g, minimum.
   5. Propagation tear resistance 2550 gf, minimum.

F. Use flat-width tubing of the following sizes:

Pipe Size	Tubing Width
3 inches	14 inches
4 inches	14 inches
6 inches	16 inches
8 inches	20 inches
12 inches	27 inches
16 inches	34 inches
20 inches	41 inches
24 inches	54 inches
30 inches	67 inches
36 inches	81 inches

G. Provide markings containing the following information spaced every 2 feet apart:
   1. Name of manufacturer.
   2. Year of manufacture.
   3. ANSI/AWWA C105-A21.5.
   4. 8 mil linear low-density polyethylene (LLDPE).
   5. Applicable range of nominal pipe diameter.
   6. Warning – Corrosion Protection – Repair Any Damage.

H. Sheet material can be used to wrap irregular-shaped valves and fittings.

I. Use 2-inch-wide, 10-mil-thick pressure-sensitive polyethylene tape to close seams and hold overlaps.

2.07 TRACER SYSTEM

A. Tracer Wire:
   1. Open Cut:
      a. No. 12 AWG Solid Single Copper Conductor
         (1) Insulation: 45 mil, high-density, high molecular weight polyethylene (HDPE) and rated for direct burial at 30 volts.
         (2) Tensile Strength: 150 pounds, minimum.
         (3) Color: Blue.
   2. Directional Drilling/Boring:
      a. No. 12 AWG extra-high-strength copper clad steel conductor (EHS-CCS).
         (1) Insulation: 45 mil, high-density, high molecular weight polyethylene (HDPE) and rated for direct burial at 30 volts.
         (2) EHS-CCS Conductor: 21 percent conductivity for locating purposes with a minimum 1150 pounds break load.
         (3) Origin of copper clad steel manufacture is required and steel core must be manufactured in the United States.
         (4) Color: Blue.
      b. Install tracer wire on pipe installations with a combination of open cut and directional drilling to meet directional drilling requirements.

B. Ground Rod: 3/8-inch minimum diameter, 8-foot minimum length steel rod uniformly coated with metallically bonded electrolytic copper.

C. Ground Rod Clamp: High-strength, corrosion-resistant copper alloy.

D. Wire Splice Connector:
   1. Tracer wire splices shall only be used to connect the anode ground rod to the tracer wire, at tees/crosses and at places where tracer wire has been damaged during construction. All splices must be brought to the attention of inspector and a GPS shot recorded for DMWW records.
   2. Tracer wire splices will not be allowed for:
      a. Splices between the end of a roll of wire and the beginning of a new roll. If wire roll does not contain enough wire to reach next required splice point or a Triview connection terminal, contractor shall start a new wire roll.
      b. Between anode ground rods and Triview connection terminal.
      c. At hydrant tees.
   3. Splices used for tracer wire repair must be approved by Engineer.
      a. Splice Kit: 3M Scotchcase 3832 Buried Service Wire Splice Kit with Burndy KS15 8-14 AWG Splice Bolt.
      b. Splice Kit: DryConn Direct Bury Lug Aqua (SKU 90220)
      c. Or approved equal.

E. Tracer Wire Connection:
   1. Rhino TriView TracerPed, or approved equal.
      a. Three internal terminals with two shunts.
      b. 5-foot white plastic triangular post.
      c. Removable top cap with lock.
      d. Three 2-7/8-inch by 14-inch custom vinyl decals No. SD-5594K.
      e. Tri-grip anchor.

PART 3 EXECUTION

3.01 HANDLING, STORAGE, AND SHIPPING

A. Handle pipe carefully.

B. Use blocking and hold-downs during shipment to prevent movement or shifting.

C. Pipe with damage to cement mortar lining will be rejected with field-patching not permitted.

D. Do not telescope small pipe inside larger pipe for shipment and storage.

E. Handle pipe materials by use of nylon straps, wide canvas or padded slings, wide-padded forks and skids, or other approved means designed to prevent damage to the polyethylene encasement. Unpadded chains, sharp edges or buckets, wire ropes, narrow forks, hooks, and metal bars are unacceptable.

F. Dropping or rolling of pipe material is not permitted.

G. Do not store PVC pipe in direct sunlight for prolonged periods of time.

H. Protect pipe to prevent dirt entering the pipe.

3.02 GENERAL PIPE INSTALLATION

A. Protect pipe joints from injury while handling and storing.

B. Use no deformed, defective, gouged, or otherwise impaired pipe.

C. Excavate and prepare trench as specified in Section 02 22 00.

D. Install ductile iron pipe in accordance with AWWA C600.

E. Install PVC pipe in accordance with AWWA C605.

F. Prepare trench bottom with sufficient exactness before pipe is installed so that only minor movement of the pipe will be necessary after installation.

G. Clean pipe interior prior to placement in trench.

H. Install pipe to line and grade shown on plans with an allowable tolerance of 6 inches, plus or minus.

I. Maintain uniform bearing along full length of pipe barrel at all times. Blocking the pipe up will not be acceptable. Excavate trench bottoms deeper at location of bell joints to permit body of pipe to rest uniformly supported upon trench bottom. Use bell holes no longer than is necessary for practical installation of the pipe.

J. Clean joint surfaces of dirt and foreign matter using a wire brush before jointing pipe.

K. Lubricate gasket and pipe bell. Provide food grade lubricant meeting manufacturer's recommendations. Use lubricant approved for use with potable water.

L. Make joints in strict accordance with manufacturer's recommendations.

M. Deflect joints within manufacturer's specifications for maximum deflections.

N. Tighten bolts on mechanical joints evenly around pipe by alternating from one side of the pipe to the other.

O. Cut pipe in a neat manner, without damage to pipe or cement mortar lining, if any. Leave a smooth end at right angles to axis of pipe. Bevel cut pipe ends for push-on-type joints in accordance with manufacturer's recommendations.

P. Do no install pipe in water, nor allow water to rise in trench above bottom of pipe.

Q. Place watertight bulkheads on exposed ends of pipe at all times when pipe installation is not actually in progress.

R. Backfill and compact around pipe as outlined in Section 02 22 00.

3.03 INSTALLATION OF POLYETHYLENE PIPE ENCASEMENT MATERIAL

A. Use polyethylene encasement material on buried ductile iron pipe, fittings, rods, and appurtenances in accordance with AWWA C105, Method A.

B. Use polyethylene tubing to encase pipe.

C. Cut tubing 2 feet longer than pipe section. Overlap tubing one (1) foot at each end of pipe.

D. Gather and lap tubing to provide a snug fit.

E. Secure lap at quarter points with polyethylene tape. Secure each end of tube with a complete wrap of polyethylene tape.

F. Use polyethylene encasement to prevent contact between the pipe and bedding material. The polyethylene encasement is not intended to be a completely airtight and watertight enclosure.

G. Repair damaged polyethylene encasement material using polyethylene tape or replace damaged section(s).

H. Pick and move polyethylene-encased pipe with nylon slings; wire rope is not permitted.

3.04 THRUST BLOCKS

A. Provide concrete thrust blocks or collars at changes in alignment, tees, and dead ends.

B. Carry thrust blocks or collars to undisturbed soil that will provide adequate bearing.

C. The bearing area of thrust blocks or collars, in square feet, to be as shown on plans. Minimum thickness for thrust block to be 1.5 times outside pipe diameter or 18 inches, whichever is greater.

D. Hold thrust blocks or collars back 3 inches from all bolts, nuts, glands, or other jointing materials. Ensure joints could be remade without disturbing thrust block or collar.

E. Provide bond breaker between thrust block or collar and pipe. Polyethylene encasement material will be considered an acceptable bond breaker.

F. Provide thrust blocks at all connections to existing water mains.

3.05 TRACER SYSTEM INSTALLATION

A. Install tracer wire with buried piping.

B. Duct tape tracer wire to pipe every 5 feet in the 5 or 7 o'clock position to prevent damage to wire during backfill and future construction exposure.

C. Tracer wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, and proper locating of wire without loss, deterioration, or migration of the signal for distances in excess of 1,000 linear feet.

D. Install ground rods as follows:
   1. At the starting point and ending point of each direct run of pipe, regardless of the length of the pipe segment.
   2. At select hydrants, approximately every 1,000 feet.
   3. Adjacent to tee or cross fittings. Tracer wire would typically not be spliced together at these fittings.
   4. At connection fittings to existing water main installed without tracer wire. Where minor alterations to existing water main installed without tracer wire are being performed, no tracer system will be installed.

E. Terminate tracer wire in tracer wire connection next to each fire hydrant or other locations noted in paragraph D.

F. Wire splice connectors are not allowed unless approved by Engineer. Provide long enough roll of tracer wire to not need the use of wire splice connectors.

G. Allow Engineer to inspect underground splices prior to backfilling.

H. Tracer wire installation is considered incidental to water main installation.

3.06 TESTING AND CHLORINATION

A. Perform hydrostatic and leakage tests in accordance with Section 02 67 40.

B. Disinfect all water mains in accordance with Section 02 67 50.

C. A tracer wire test will be conducted by Owner prior to acceptance. The tracer wire system including terminations at all TriViews, anode ground rods, and splice kits are to be completely installed prior to tracer wire test. Any deficiency found in tracer wire system to be corrected by Contractor at Contractor's expense.

**** END OF SECTION ****

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This Section includes valves and hydrants as shown on the plans, complete with accessories.

1.02 RELATED SECTIONS

A. Section 02 22 00 – Excavating, Backfilling, and Compacting for Water Mains.

B. Section 02 60 00 – Protection of Water Supply.

C. Section 02 61 00 – Ductile Iron and Polyvinyl Chloride Pipe for Water Mains.

D. Section 02 67 40 – Pressure Testing

E. Section 02 67 50 – Disinfection

1.03 REFERENCES

A. American National Standards Institute (ANSI) B16.1 – Cast Iron Pipe Flanges and Flanged Fittings.

B. American Society for Testing and Materials (ASTM) A320 – Alloy-Steel and Stainless-Steel Bolting for Low-Temperature Service.

C. American Society for Testing and Materials (ASTM) A536 – Standard Specification for Ductile Iron Castings.

D. American Society for Testing and Materials (ASTM) B584 – Copper Alloy Sand Castings for General Applications.

E. American Water Works Association (AWWA) C105 – Polyethylene Encasement for Ductile-Iron Pipe Systems.

F. American Water Works Association (AWWA) C111 – Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

G. American Water Works Association (AWWA) C115 – Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.

H. American Water Works Association (AWWA) C153 – Ductile Iron Compact Fittings.

I. American Water Works Association (AWWA) C502 – Dry-Barrel Fire Hydrants.

J. American Water Works Association (AWWA) C509 – Resilient-Seated Gate Valves for Water Supply Service.

K. American Water Works Association (AWWA) C515 – Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.

L. American Water Works Association (AWWA) C550 – Protective Interior Coatings for Valves and Hydrants.

M. American Water Works Association (AWWA) C600 – Installation of Ductile-Iron Water Mains and Their Appurtenances.

1.04 SUBMITTALS

A. Submit manufacturer's certification that materials furnished are in compliance with applicable requirements of referenced standards and this Section.

B. Provide dimensional drawings, fabrication details, functional description, and properly identified catalog data on all items to prove complete compliance with Drawings and Specifications.

1.05 MEASUREMENT AND PAYMENT

A. All material, equipment, and labor necessary to comply with this Section incidental to unit price bids on the Proposal.

PART 2 PRODUCTS

2.01 GATE VALVES

A. Provide resilient-seated gate valves manufactured in accordance with AWWA C509 or AWWA C515.
   1. Type of service: buried service handling potable water with a pH range of 9.5 to 9.8.
   2. Minimum pressure rating: 250 psi.
   3. Provide valves with non-rising stem.
   4. Provide 2-inch by 2-inch wrench operating nut that opens valves when turned in clockwise direction (open to the right), unless noted otherwise on Drawings.
   5. Valve gearing for 20-inch to 48-inch valves:
      a. Provide valve with gear box.
      b. Provide vertical valve unless otherwise specified on Drawings.
      c. Use the following gear ratios for the corresponding sizes:

Valve Size (inches)	Gear Ratio
20	3 to 1
24	3 to 1
30	6 to 1
36	6 to 1
42	8 to 1
48	8 to 1

      d. Totally enclosed type, oil-filled, and designed for buried and submerged service.
      e. Materials of construction:
         (1) Gear housing: ductile iron.
         (2) Gears: carbon steel.
         (3) Pinion shaft: 304 stainless steel.
         (4) Design input shaft with a ball bearing and sealed with O-rings.
         (5) Exposed hex nuts and bolts: 304 stainless steel.

B. Materials of Construction:
   1. Body and bonnet: ductile iron.
   2. Gate: cast or ductile iron fully encapsulated with synthetic rubber.
   3. Stem and stem nut: bronze.
   4. O-rings: Buna-N.
   5. Exposed hex bolts and nuts: 304 stainless steel.
   6. Joints:
      a. Mechanical in accordance with AWWA C111.
         (1) Gaskets: Buna-N or nitrile.
         (2) Nuts and bolts:
            (a) All T-bolts and hex-head nuts for mechanical joints in accordance with AWWA C111.
            (b) Material: low carbon alloy weathering Cor-Ten steel.
            (c) Coating: Cor-Blue fluorocarbon resin.
            (d) Color: Blue.
            (e) Approved Manufacturers:
               1) Birmingham Fastener Manufacturing Fluorocarbon Coated T-Head Bolt.
               2) Or approved equal.

b. Flanged in accordance with AWWA C115, as indicated on the plans, with ANSI Class 125 full-faced flange.
(1) Gaskets: Buna-N or nitrile, of thickness compatible with machining tolerances of flange faces. Minimum thickness: 1/8-inch.
(2) Nuts and bolts: 304 stainless steel.

C. Design valve to:
1. Allow replacement of upper O-ring while valve is under pressure in the full-open position.
2. Not permit metal-to-metal contact between gate and body.
3. Accommodate full-size tapping machine shell cutter.

D. Horizontal valves are required to have a cleaning system on both sides of the gate consisting of materials that are non-corrosive.

E. Interior and exterior valve coating minimum of 10-mil-thick fusion-bonded epoxy per AWWA C550.

F. Operating valve through 500 cycles at rated pressure must not result in disbondment or degradation of the coating. Certification will be required for manufacturers not listed below.

G. Indicate manufacturer, casting year, size, working pressure, and body material (ductile iron) in valve casting.

H. Manufacturers' Models for 4-inch to 16-inch valves:
1. Clow Model 2638.
2. American Flow Control Series 2500.
3. Mueller 2300 Series.
4. M & H Style 4067.
5. EJ Flowmaster.
6. Approved equal.

I. Manufacturers' Models for 20-inch to 48-inch valves:
1. Clow Model 2638.
2. American Flow Control Series 2500.
3. Mueller 2300 Series.
4. EJ Flowmaster.
5. Approved equal.

2.02 SWING CHECK VALVE

A. Provide swing check valves manufactured in accordance with AWWA C508.
1. Type of service: buried service handling potable water with a pH range of 9.5 to 9.8.
2. Minimum pressure rating: 250 psi.

B. Materials of Construction:
1. Body and cover: ductile iron per ASTM A536.
2. Disc: molded Buna-N (NBR) per ASTM D2000-BG.
3. Disc accelerator: Type 302 stainless steel.
4. Exposed hex bolts and nuts: stainless steel.
5. Joints:
a. Flanged in accordance with AWWA C115, as indicated on the plans, with ANSI Class 125 full-faced flange.
(1) Gaskets: Buna-N or nitrile, of thickness compatible with machining tolerances of flange faces. Minimum thickness: 1/8-inch.
(2) Nuts and bolts: Conform to ASTM A320, Type 304.

C. Provide full-size top access port to allow removal of the disc without removing the valve from the line.

D. Provide one-piece disc with alloy steel and nylon reinforcement.

E. Provide one-piece disc accelerator, enclosed within the valve, field adjustable, and replaceable without removing the valve from the line.

F. Interior and exterior valve coating shall be ANSI/NSF approved fusion-bonded epoxy.

G. Manufacturers:
   1. Val-Matic Series #7200 Surgebuster Swing Check Valve.
   2. Approved equal.

2.03 HYDRANTS (DES MOINES/WINDSOR HEIGHTS)

A. Hydrants manufactured in accordance with AWWA C502.

B. Use dry-barrel, breakaway type hydrants designed to break near ground line on impact. The breaking ring consists of a full circumference one piece or split contact retaining ring.

C. Provide flanged connections for head and base to hydrant barrel.

D. Provide 6-inch mechanical joint shoe with harnessing lugs.

E. Provide 4-1/2-inch-minimum-diameter main valve with bronze seat ring. Thread seat ring directly to bronze bushing or drain ring that is securely locked to hydrant shoe.

F. Provide pentagon-shaped operating nut with weather cap. Dimension from point to flat at top of operating nut: 1-3/16-inch.

G. Provide two 2-1/2-inch hose nozzles and one 4-inch pumper nozzle with caps having nut with dimensions identical to operating nut:
   1. Hose nozzle threads
      a. Outside diameter of male thread: 3-1/16 inches
      b. Diameter at root of male thread: 2-7/8 inches
      c. Threads per inch: 7-1/2
      d. Length of nozzle threads: 1 inch
      e. Cut off at top of threads: 1/4 inch
   2. Pumper nozzle threads
      a. Outside diameter of male thread: 4-31/32 inches
      b. Diameter at root of male thread: 4-19/32 inches
      c. Threads per inch: 4
      d. Length of nozzle threads: 1-1/2 inches
      e. Cut off at top of threads: 1/4 inch

H. Provide markings cast-in-bonnet that indicate direction of opening. Hydrants to open clockwise (to the right).

I. Provide anti-thrust washers for ease of operation.

J. Provide grease chamber or oil reservoir, sealed by means of O-rings, for lubrication of operation threads. Provide lubricant suitable for contact with potable water.

K. Painting:
   1. Prepare surfaces to be coated according to SSPC-SP6, commercial blast cleaning.
   2. Coat hydrant in accordance with AWWA C502 and coating manufacturer's instructions.
   3. Tnemec epoxy paint system (Alternative 1)
      a. Coat interior surfaces, other than machined surfaces, with asphaltic coating.
      b. Coat exterior surfaces below grade with two coats of asphaltic coating.
      c. Prime exterior surfaces above grade using an aromatic urethane, zinc-rich system with 2.5 to 3.5 mils dry film thickness. Tnemec Series 90-97.
      d. Paint exterior surfaces above grade using an aliphatic acrylic polyurethane system at 2.5 to 3.5 mils dry film thickness. Tnemec Series 73.

e. Apply a 2 to 3 mils dry film thickness of high gloss clear coat to exterior surfaces above grade after paint has been allowed to dry thoroughly. Tnemec Series 1079.
f. Color:
(1) Asphaltic coating: Black.
(2) Primer: Reddish-gray.
(3) Body: Bright Yellow (03SF).
(4) Bonnet: Safety Green (09SF).
(5) Caps: Bright Yellow (03SF).

4. Tnemec epoxy paint system (Alternative 2)
a. Coat interior surfaces, other than machined surfaces, with asphaltic coating.
b. Coat exterior surfaces below grade with two coats of asphaltic coating.
c. Prime exterior surfaces above grade using a polyamide epoxy system, Tnemec Series 20, FC20 or 66, and paint using an aliphatic acrylic polyurethane system, Tnemec Series 75, or approved equal. Provide total dry mil thickness of 5 to 7 mils.
d. Apply a 2 to 4 mils dry thickness of clear coat to exterior surfaces above grade after paint has been allowed to dry thoroughly.
e. Color:
(1) Asphaltic coating: Black.
(2) Primer: White (AA83).
(3) Paint: Bright Yellow (SC02).
(4) Bonnet: Safety Green (SC07).
(5) Caps: Bright Yellow (SC02).

5. Approved equal.
a. System must be approved by DMWW prior to bid opening.

L. Materials of Construction:
1. Breakaway stem coupling: steel, cast iron, or stainless steel.
2. Bonnet barrel, shoe, gate, and nozzle caps: cast iron.
3. Threaded internal components exposed to water, valve seats, and nozzles: bronze.
4. Cotter pins, drive pins, bolts, and screws exposed to water: stainless steel or brass.
5. Exterior bolts, nuts, set screws, and other miscellaneous fasteners: stainless steel or bronze. Metal components in contact with water to comply with requirements of ASTM B584 copper alloy UNS No. C89520 or UNS No. C89833. Residual lead levels of the metal not to exceed 0.25 percent by weight as cast or extruded.

M. Manufacturers:
1. Clow Medallion.
2. Mueller Centurion.
3. Approved equal.

2.04 JOINTS FOR VALVES AND HYDRANTS

A. Use mechanical joints in accordance with AWWA C111, or restrained as indicated on plans.

B. Use ductile iron follower glands for mechanical joints.

C. Bolts:
1. All T-bolts and hex-head nuts for mechanical joints in accordance with AWWA C111.
a. Material: low carbon alloy weathering Cor-Ten steel.
b. Coating: Cor-Blue fluorocarbon resin.
c. Color: Blue.
d. Approved Manufacturers:
(1) Birmingham Fastener Manufacturing Fluorocarbon Coated T-Head Bolt.
(2) Or approved equal.

2. All bolts and hex nuts for flanged joints of 304 stainless steel.

D. Use flange joints having 1/8-inch rubber ring gaskets for nominal diameters of 24 inches or less and 1/8-inch rubber ring gaskets for nominal diameter greater than 24 inches.

E. Use elastomeric or nitrile gaskets in accordance with AWWA C111.

2.05 RETAINER GLANDS

A. Incorporate restraint for all mechanical joints into design of follower gland.

B. Use a retainer gland design imparting multiple wedging actions against the pipe, increasing its resistance as pressure increases.

C. Restrained joints to consist of a mechanical joint with retainer gland or manufacturer's proprietary-restrained joint.

D. Dimensions conforming to the requirements of AWWA C111 and AWWA C153.

E. Pressure rating:
   1. Minimum of 235 psi for PVC pipe.
   2. Minimum of 350 psi for ductile iron pipe for sizes 16-inch and smaller.
   3. Minimum of 250 psi for ductile iron pipe for sizes 18-inch and larger.

F. Color:
   1. Red for PVC pipe.
   2. Black for ductile iron pipe.

G. Materials for construction:
   1. Body, wedge segments, and break-off bolt assemblies: Grade 65-45-12 ductile iron as specified by ASTM A536.
   2. Coating to be electrostatically applied and heat cured.
      a. Approved manufacturers:
         (1) MEGA-BOND by EBAA Iron, Inc.
         (2) CORRSAFE by Sigma.
         (3) Starbond by Star Products.
         (4) Resicoat R2-ES by Tyler Union.
         (5) EZ Shield by SIP Industries.
         (6) Or approved equal.

H. Minimum factor of safety of 2.

I. Use ductile iron retainer wedge segments heat-treated to a minimum Brinell hardness number of 370.

J. Incorporate twist-off nuts, the same size as hex-head nuts for T-bolts, into the design to ensure proper actuating torque is applied during installation.

K. Approved manufacturers for PVC pipe:
   1. Megalug by EBAA Iron Inc. Series 2000PV.
   2. One-Lok by Sigma Series SLCE.
   3. Stargrip by Star Products Series 4000.
   4. TUFGrip by Tyler Union Series 2000.
   5. EZ Grip by SIP Industries Series EZP.
   6. Or approved equal.

L. Approved manufacturers for ductile iron pipe:
   1. Megalug by EBAA Iron Inc. Series 1000.
   2. One-Lok by Sigma Series SLDE.
   3. Stargrip by Star Products Series 3000.
   4. TUFGrip by Tyler Union Series 1000.
   5. EZ Grip by SIP Industries Series EZD.
   6. Or approved equal.

2.06 VALVE BOXES

A. Provide cast iron screw-type adjustable heavy-duty valve box with cast iron stay-put cover marked "WATER" for each buried valve.

B. Minimum inside diameter of valve boxes of 5-1/8 inches.

C. Weight of valve box assembled, top and bottom sections, without valve box lid as follows:

Extension Height (inches)	Weight (pounds)
27-37	71
33-43	78
39-50	85
36-52	93
39-60	100

D. Tyler No. 6850 29-U Domestic, or approved equal.

E. For an approved equal, provide proof that all parts of proposed valve box can be interchangeable with Tyler No. 6850 29-U Domestic.

F. Install valve boxes upon valve with use of a rubber Valve Box Adapter II as manufactured by Adaptor Inc., or approved equal.

2.07 POLYETHYLENE ENCASEMENT MATERIAL

A. Polyethylene encasement manufactured in accordance with AWWA C105.

B. Linear low-density polyethylene film.

C. Minimum thickness of 8 mils.

D. Color: Blue.

E. Physical Properties:
1. Tensile strength 3600 psi, minimum.
2. Elongation 800 percent, minimum.
3. Dielectric strength 800 V/mil, minimum.
4. Impact resistance 600 g, minimum.
5. Propagation tear resistance 2550 gf, minimum.

F. Sheet material can be used to wrap irregular-shaped valves and fittings.

G. Use 2-inch-wide, 10-mil-thick pressure-sensitive polyethylene tape to close seams and hold overlaps.

PART 3 EXECUTION

3.01 HANDLING, STORAGE, AND SHIPPING

A. Handle valves and hydrants carefully.

B. Use blocking and hold-downs during shipment to prevent movement or shifting.

3.02 GENERAL INSTALLATION REQUIREMENTS

A. Protect valves and hydrants from injury while handling and storing.

B. Use no defective, damaged, or otherwise impaired materials.

C. Prepare excavation as outlined in Section 02 22 00.

D. Install valves and hydrants in accordance with AWWA C600.

E. Clean interior of valve or hydrant prior to placement in trench.

F. Install valves and hydrants to line and grade as shown on plans.

G. Install valves and hydrants plumb.

H. Clean joint surfaces of dirt and foreign matter using a wire brush before jointing.

I. Lubricate gasket and bell. Provide food grade lubricant meeting manufacturer's recommendations. Use lubricant approved for use with potable water.

J. Make joints in strict accordance with manufacturer's recommendations.

K. Evenly tighten bolts on mechanical joints or flanged joints around pipe by alternating from one side of pipe to the other. Follow manufacturer's installation specifications for electrical isolation flanges to prevent damage during bolt torquing.

L. Backfill and compact around hydrants and valves as outlined in Section 02 22 00.

3.03 VALVE INSTALLATION

A. Do not support valves off of piping.

B. Ensure valve box is centered over operating nut.

C. Install rubber Valve Box Adapter II as manufactured by Adapter Inc., or approved equal, inside of valve box centered on valve.

D. If located within pavement, the top of valve boxes shall be installed 1/4 inch below the pavement surface.

3.04 HYDRANT INSTALLATION

A. Anchor auxiliary valve to hydrant tee.

B. Install hydrant with break flange more than 1 inch and less than 7 inches above finished grade.

C. The use of hydrant extensions will not be allowed to set hydrant to appropriate height, unless approved by Engineer. Hydrant extensions, if approved, must be from same manufacture as the fire hydrant.

D. Use restrained joints in hydrant branch.

E. Set hydrant on a solid concrete cinder block not smaller than 8-inch by 16-inch by 4-inch.

F. Provide poured concrete thrust blocks behind hydrant and hydrant tee.

G. Ensure hydrant drain is free-flowing and unobstructed in areas where normal groundwater level is below drain opening.

H. Provide not less than one (1) cubic yard of open-graded granular fill around base of hydrant for drainage.

I. Lubricate and exercise each of the three (3) hydrant caps to prevent seizing. Provide food grade grease lubricant meeting manufacturer's recommendations. Use lubricant approved for use with potable water.

3.05 INSTALLATION OF POLYETHYLENE PIPE ENCASEMENT MATERIAL

A. Use polyethylene encasement material on buried valves and buried portion of hydrants in accordance with AWWA C105.

B. Wrap valves using polyethylene sheet material to prevent contact with bedding. Secure sheet to adjacent pipe and just below valve operation nut using polyethylene tape.

C. Wrap buried portions of hydrants using 24-inch flat-width polyethylene tubing. Secure tubing to hydrant barrel just below grade using polyethylene tape.

D. The polyethylene encasement preventing contact with bedding material is not intended to be an airtight and watertight enclosure.

E. Repair damaged polyethylene encasement material using polyethylene tape, or replace the damaged section.

3.06 THRUST BLOCKS

A. Provide concrete thrust blocks at hydrants and hydrant tees.

B. Carry thrust blocks to undisturbed soil that will provide adequate bearing.

C. The bearing area of thrust blocks, in square feet, as shown on the plans. Minimum thickness for thrust block of 1.5 times outside pipe diameter or 18 inches, whichever is greater.

D. Hold thrust blocks back 3 inches from bolts, nuts, glands, or other jointing materials. Ensure joints could be remade without disturbing thrust block.

E. Provide bond breaker between thrust block and pipe or hydrant. Polyethylene encasement material will be considered an acceptable bond breaker.

3.07 REMOVAL OF ABANDONED FIRE HYDRANTS AND VALVE BOXES

A. Surface restoration items including pavement removal and replacement, seeding, or sodding, needed to remove abandoned fire hydrants or valve boxes to be paid in accordance with appropriate bid item in Contract.

B. All other items related to removal of abandoned fire hydrants and valve boxes including repairs to traffic loops and lawn irrigations systems incidental to Contract.

C. Remove abandoned fire hydrants by disconnecting pipe from fire hydrant at the shoe.

D. Return abandoned fire hydrants to Des Moines Water Works at 408 Fleur Drive, unless Engineer approves their disposal.

E. Backfill and restore all excavations for fire hydrant removals according to Sections 02 22 00 and 02 50 00 of these Specifications.

F. Remove abandoned valve box and entire top section, backfill the lower section and excavation, and restore according to Sections 02 22 00 and 02 50 00 of these Specifications.

**** END OF SECTION ****

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. Transferring existing water services from existing water mains to new water mains to the extent shown in the Plans.

1.02 RELATED SECTIONS

A. Section 02 22 00 – Excavating, Backfilling, and Compacting for Water Mains.

B. Section 02 60 00 – Protection of Water Supply.

C. Section 02 61 00 – Ductile Iron and Polyvinyl Chloride Pipe for Water Mains.

D. Section 02 64 00 – Valves and Hydrants.

E. Section 02 67 40 – Pressure Testing Water Mains.

F. Section 02 67 50 – Disinfection of Water Distribution Systems.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) B62 – Composition Bronze or Ounce Metal Castings.

B. American Society for Testing and Materials (ASTM) B88 – Seamless Copper Water Tube.

C. American Society for Testing and Materials (ASTM) B584 – Copper Alloy Sand Castings for General Applications.

D. American Water Works Association (AWWA) C800 – Underground Service Line Valves and Fittings.

E. Federal Register – Occupational Safety and Health Administration (OSHA), Occupational Safety and Health Standards – Excavations.

1.04 SUBMITTALS

A. Submit the following items for materials provided by the Contractor:
   1. Manufacturer's certification that materials furnished are in compliance with the applicable requirements of the referenced standards and this Section.
   2. Drawings and manufacturer's data showing details of pipe and fittings to comply with this Section.

B. Provide dimensional drawings, fabrication details, functional description, and properly identified catalog data on all equipment to prove complete compliance with Drawings and Specifications.

1.05 MEASUREMENT AND PAYMENT

A. Payment for installation of 1-inch to 2-inch water service transfer is made as a unit, including the connection to new water main with insulated corporation and corporation 90, installation of new curb stop and stop box, installation of pipe, connection to existing water service, excavation, backfill, and compaction.

B. Payment for installation of 4-inch and larger water service transfer is made as a unit, including the tee, valve, DI pipe, valve box, valve box adapter, needed fittings, poly wrap, bonded joints, and thrust restraint.

C. All work related to water service transfer is considered incidental to the installation of the water service transfer.

PART 2 PRODUCTS

2.01 CORPORATION VALVES

A. Type: one-quarter-turn ball valve in accordance with AWWA C800.

B. Inlet Threads: standard AWWA corporation valve inlet threads.

C. Outlet Threads: flared copper connection.

D. Provide corporations to be used on iron pipe with a dielectric insulator that prevents the passage of electric current.

E. Metal components in contact with water to comply with the requirements of ASTM B584 copper alloy UNS No. C89520 or UNS No. C89833. Residual lead levels of the metal not to exceed 0.25 percent by weight as cast or extruded.

F. Metal components not in contact with water to comply with the requirements of ASTM B62 copper alloy UNS No. C38600 or the material as described in Part 2.01.E.

G. Meet Des Moines Water Works Rules and Regulations for Water Services.

H. Approved Manufacturers for Corporation Valves on Non-iron Pipe:
   1. A.Y. McDonald Mfg. Co., Model No. 74701B.
   2. The Ford Meter Box Company, Inc., Catalog No. FB600-NL.
   3. Mueller Co., Model No. 300 Catalog No. B-25000N.

I. Approved Manufacturers for Corporation Valves on Iron Pipe:
   1. A.Y. McDonald Mfg. Co., Model No. 74701BDB.
   2. The Ford Meter Box Company, Inc., Catalog No. SI-FB600-NL.
   3. Mueller Co., Model No. 300 Catalog No. N-35000N.

2.02 COPPER PIPE

A. Copper Tubing: ASTM B88, Type K, annealed.

B. Joints: flared.

C. Meet Des Moines Water Works Rules and Regulations for Water Services.

2.03 FITTINGS (2-INCH AND SMALLER)

A. Joints: flared.

B. Metal components in contact with water to comply with the requirements of ASTM B584 copper alloy UNS No. C89520 or UNS No. C89833. Residual lead levels of the metal not to exceed 0.25 percent by weight as cast or extruded.

C. Metal components not in contact with water to comply with the requirements of ASTM B62 copper alloy UNS No. C38600 or the material as described in Part 2.03.B.

D. Meet Des Moines Water Works Rules and Regulations for Water Services.

2.04 CURB STOP

A. Type: "T" handle, quarter-turn, ball pattern valves conforming to AWWA C800, with flared copper inlet and outlet connections.

B. Provide pre-drilled valve head for attaching stationary shutoff rod.

C. Provide valve head checks that limit rotation to 90 degrees. Valve head to be parallel to valve body when open; valve head to be perpendicular to valve body when closed (Operate right to shutoff).

D. Metal components in contact with water to comply with the requirements of ASTM B584 copper alloy UNS No. C89520 or UNS No. C89833. Residual lead levels of the metal not to exceed 0.25 percent by weight as cast or extruded.

E. Metal components not in contact with water to comply with the requirements of ASTM B62 copper alloy UNS No. C38600 or the material as described in Part 2.04.D.

F. Meet Des Moines Water Works Rules and Regulations for Water Services.

G. Approved Manufacturers:
   1. A.Y. McDonald Mfg. Co., Model No. 76100.
   2. A.Y. McDonald Mfg. Co., Model No. 76104.
   3. The Ford Meter Box Company, Inc., Catalog No. B22-444M-NL or B22-777M-NL.
   4. The Ford Meter Box Company, Inc., Catalog No. B22-444-NL or B22-777-NL.
   5. Mueller Co., Model No. 300 Catalog No. B-25204N.
   6. Mueller Co., Model No. 300 Catalog No. B-25154N.

2.05 CURB BOX

A. Body:
   1. Upper section: 1-inch-inside-diameter steel pipe.
   2. Base section: arch base pattern, with telescoping 1-inch upper section, stainless steel rod and pin, and lid.
   3. Adjust to accommodate:
      a. 5-foot-minimum service depth.
      b. 7-foot-maximum service depth.
   4. Provide a positive means of preventing rotation of upper section during removal of lid.

B. Lid:
   1. Material: cast iron.
   2. Style: two-hole Erie pattern, to fit spanner wrench.
   3. Provide 1-inch NPT female-threaded brass bushing to screw onto curb box with 1-inch-diameter upper section. Bushing shall be secure and rotate integrally with lid.
   4. Acceptable lids:
      a. A.Y. McDonald Mfg. Co., Model No. 5601L.
      b. The Ford Meter Box Company, Inc., Type HS.
      c. Mueller Co., Model Part No. 89982.
      d. Or approved equal.

C. Stationary Shutoff Rod
   1. Material: 304 stainless steel, single-piece construction.
   2. Diameter: approximately 1/2-inch.
   3. Rod:
      a. Self-centered in curb box.
      b. Extending above curb box joint. Distance between top of rod and top of box to be:
         (1) No less than 12 inches.
         (2) No greater than 24 inches.
   4. Provide a blade at the upper end of rod in a plane parallel to the curb stop valve head with thickness appropriate for operation using a stationary rod key.
   5. Provide a fork at the lower end of rod to fit over and operate the valve head of a standard curb stop. Provide holes in fork to align with hole in curb stop valve head.
   6. Connect rod to curb stop using stainless steel cotter pin, or approved equal, inserted through holes in rod fork and curb stop valve head.

D. Meet Des Moines Water Works Rules and Regulations for Water Services.

E. Approved Manufacturers:
   1. A.Y. McDonald Mfg. Co., Model No. 5601.
   2. The Ford Meter Box Company, Inc., Catalog No. EA1-__#1__-40-__#2__R, with #1 being extended length of stop box housing and #2 being rod length.
   3. Or approved equal.

2.06 LARGE WATER SERVICE TRANSFERS (4-INCH AND LARGER)

A. Use products listed in Sections 02 61 00 and 02 64 00.

B. Use ductile iron for all pipe.

PART 3 EXECUTION

3.01 GENERAL

A. Qualifications:
   1. Plumbing work covered by this Section to be completed by a plumber who is bonded with Des Moines Water Works and licensed in accordance with local plumbing codes.
   2. Contractors will not be permitted to make their own 1-inch direct taps on mains installed under this Contract. Contact Des Moines Water Works 24 hours in advance to schedule taps.

B. Plumbing Permits and Inspections:
   1. Obtain permits necessary for service transfers.
   2. Arrange for and schedule required plumbing inspections in accordance with local plumbing codes.

C. Scheduling:
   1. Install services only after the new water main passes pressure test per Section 02 67 40 and disinfection per Section 02 67 50.
   2. The Contractor is to notify residential customers 24 hours in advance when their water service will be interrupted for service transfer.
   3. The Contractor is to notify commercial and industrial customers a minimum of 24 hours in advance when water service will be interrupted for service transfer and to coordinate the interruption completely with the customer. Commercial and industrial service transfers may need to be completed outside normal working hours to minimize impact on the affected customers. No additional compensation will be paid for work outside normal working hours.

3.02 EXAMINATION

A. Confirm location, elevation, and orientation of existing utilities and modify elevation of new water services to omit conflicts with utilities while maintaining 5-foot-minimum cover.

B. Verify location and size of existing service line prior to excavation and installation of new tap.

3.03 SIZE OF SERVICE LINES AND TAPS

A. Transfer water service lines according to Plans and Specifications as follows:
   1. Complete 1/2-inch, 3/4-inch, and 1-inch service transfers with 1-inch taps and 1-inch pipe needed to make connection.
   2. Complete 1-1/2-inch and 2-inch service transfers with 2-inch taps and pipe same size as existing.

B. Complete 4-inch and larger service transfers with valve, pipe, and fittings needed to make connection.

3.04 PREPARATION

A. Excavate in accordance with Section 02 22 00.

B. Cut pipe ends square, ream tube ends to full pipe diameter, and remove burrs.

C. Remove scale and dirt on inside and outside before assembly.

3.05 INSTALLATION

A. Schedule taps to be made by Owner a minimum of 24 hours in advance. Such taps will be made only between the hours of 8 a.m. and 3:30 p.m. and only on the Owner's normal work days.

B. Shore excavations for taps to be made by Owner according to OSHA Trench Shoring Standards.

C. Provide 12-inch clear area behind and below main and 48-inch clear area in front of main to be tapped.

D. Install service lines in accordance with local plumbing codes.

E. Use trenchless construction methods when installing water service lines underneath roads, driveways, shoulders, or other traffic-carrying surfaces.

F. Corporation:
   1. Install corporations no closer than 18 inches from a pipe joint, another corporation, or side of excavation.
   2. One-inch corporations will be installed at a 45-degree angle above horizontal; 2-inch corporations will be installed horizontal.
   3. Corporation to face the property to be served.
   4. Corporation taps will not be allowed on dry mains.

G. Pipe:
   1. Maintain minimum separation between water piping and sewer piping in accordance with IDNR requirements as described in Section 02 60 00.
   2. Maintain 5-foot-minimum cover below final grade. Do not exceed 7-foot cover without Owner's authorization.

H. Curb Stop:
   1. Set curb stop on solid bearing.
   2. Center and plumb curb box over curb stop.
   3. Install stationary shutoff rod. Attach shutoff rod to curb stop as specified above.
   4. Set box cover flush with finished grade and plumb.
   5. Location:
      a. In public right-of-way.
      b. 1 to 6 feet from property line in the City of Des Moines.
      c. 1 foot from property line in Polk County.
      d. Not within driveway or sidewalk.

I. Repair leaks that develop in new service lines or water mains due to water service installation operations.

J. Coordinate necessary inspections to satisfaction of jurisdictional authority for water service lines.

K. Install large service transfers in accordance with Section 02 61 00.

3.06 RETIREMENT OF EXISTING SERVICE LINES

A. Effectively cap existing service stub after service is transferred to new main.

B. Repair of leaks that develop in existing service lines or mains due to service transfer operations are the responsibility of the Contractor and costs are incidental to service line transfer.

3.07 BACKFILL, COMPACTION, AND RESTORATION

A. Backfill and compact excavations as specified in Section 02 22 00 for trenches.

B. Restore affected areas as specified elsewhere and as shown on Plans.

**** END OF SECTION ****

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. Pressure test water mains in accordance with this Section.

1.02 RELATED SECTIONS

A. Section 02 61 00 – Ductile Iron and Polyvinyl Chloride Pipe for Water Mains.

B. Section 02 64 00 – Valves and Hydrants

1.03 REFERENCES

A. American Water Works Association (AWWA) C600 – Installation of Ductile Iron Water Mains and Their Appurtenances.

B. American Water Works Association (AWWA) C605 – Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.

1.04 SUBMITTALS (NOT USED)

1.05 MEASUREMENT AND PAYMENT

A. Work under this Section incidental to Contract.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.01 PRESSURE TESTING

A. Perform Work in accordance with AWWA C600 and AWWA C605.

B. Test piping at 150 psi or as indicated on plans for 2 hours.

C. Fill and flush new piping with potable water, ensuring that all trapped air is removed.

D. Isolate new piping from the existing system.

E. Pressure test new piping in sections by isolating each section using in-line gate valves. Relieve pressure on non-test side of gate valve.

F. Pressurize new piping to test pressure at lowest point in the isolated system. Do not pressurize to more than 5 psi over test pressure at lowest point in the isolated system.

G. Monitor pressure in line being tested for a period of not less than 2 hours.

H. If at any point during that 2-hour period the pressure drops to 5 psi below test pressure, re-pressurize by pumping water into the line in sufficient quantity to bring pressure back to between test pressure and 5 psi above test pressure. Accurately measure the quantity of water required to re-pressurize the main.

I. At the end of the 2-hour period, if pressure in the line has dropped below test pressure, re-pressurize to test pressure. Accurately measure the quantity of water required to re-pressurize the main.

J. Allowable leakage, in gallons, per hour of testing shall equal (LD(P)½) / 148,000.
   L = length of pipe section being tested in feet
   D = nominal diameter of pipe in inches
   P = average test pressure in psig

K. Leakage equals total quantity of water required to keep line pressurized during the 2-hour test period and re-pressurize line at the end of the test period.

L. If average leakage per hour is less than allowable leakage, the pressure test is acceptable.

M. If average leakage per hour is more than allowable leakage, the pressure test is not acceptable. Locate and make approved repairs as necessary until leakage is within specific allowance.

N. If pressure in the isolated line never drops to test pressure, having started no more than 5 psi above test pressure, the pressure test is acceptable.

O. Repair visible leaks regardless of the quantity of leakage.

**** END OF SECTION ****

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. Disinfect water mains and 2-inch and larger water services in accordance with this Section.

1.02 RELATED SECTIONS

A. Section 02 22 00 – Excavating, Backfilling, and Compacting for Water Mains.

B. Section 02 22 80 – Horizontally Directional Drilled Water Main.

C. Section 02 61 00 – Ductile Iron and Polyvinyl Chloride Pipe for Water Mains.

D. Section 02 64 00 – Valves and Hydrants

E. Section 02 66 00 – Water Service Transfers.

1.03 REFERENCES

A. American Water Works Association (AWWA) B300 – Hypochlorites.

B. American Water Works Association (AWWA) B301 – Liquid Chlorine.

C. American Water Works Association (AWWA) C651 – Disinfecting Water Mains.

1.04 SUBMITTALS (NOT USED)

1.05 MEASUREMENT AND PAYMENT

A. Work under this Section incidental to Contract.

PART 2 PRODUCTS

2.01 CHLORINE

A. Calcium hypochlorite granules conforming to AWWA B300.

B. Liquid chlorine conforming to AWWA B301.

2.02 DE-CHLORINATION CHEMICALS

A. Vita-D-Chlor (Ascorbic Acid) by Integra Chemical Company.

B. Vita-D-Chlor, Neutral (Sodium Ascorbate) by Integra Chemical Company.

C. No-Chlor (Ascorbic Acid) by Measurement Technologies.

D. Approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Water for disinfection will be provided by Owner for two disinfection attempts. If additional attempts are necessary, the Contractor will be billed for water used at the normal rate set for industrial customers.

B. Perform disinfection of piping and appurtenances only after satisfactory pressure testing.

C. Ensure piping to be disinfected is isolated from portion of distribution system that is in service.

D. Review procedures and coordinate disinfection with Owner.

E. Perform Work in accordance with AWWA C651.

F. Bacteriological samples shall be taken and tested by Owner to ensure satisfactory disinfection.

3.02 CHLORINATION OF PIPING

A. Provide equipment and materials necessary to complete chlorination.

B. Use continuous feed method as outlined in AWWA C651.

C. Prior to feeding chlorine, fill and flush new piping to remove trapped air and particulates. Provide equipment and materials necessary to obtain a minimum flushing velocity of 3.0 fps in piping to be disinfected. When flushing velocities of 3.0 fps cannot be obtained, swab pipe until pipe is free of debris. Type of swab and procedures for use shall be approved by Owner prior to its use.

D. Induce flow of potable water through new piping at required flushing velocity. Make provisions for diverting and disposing of flushing water that does not damage surroundings. Repair damage caused by flushing activities.

E. At a point within five pipe diameters of connection to existing distribution system, introduce highly chlorinated water in sufficient quantity to provide at least 25 mg/L free chlorine in the new piping. Provide all metering and feed equipment and temporary chlorination taps. Remove temporary chlorination taps and cap the main once the main passes.

F. Introduce highly chlorinated water continuously until entire section of new piping contains a minimum of 25 mg/L free chlorine. Do not exceed 100 mg/L free chlorine.

G. Isolate newly chlorinated piping for a contact period of at least 24 hours, and not more than 48 hours, taking care not to backflow chlorinated water into existing potable water system.

H. After the contact period, water in new piping must have a residual-free chlorine content of not less than 10 mg/L. If residual is less than 10 mg/L, rechlorinate as outlined above.

3.03 FLUSHING CHLORINATED PIPING

A. After the contact period, flush recently chlorinated piping with potable water.

B. Continue flushing until chlorine residual in new piping is equal to chlorine residual in existing distribution system.

C. Isolate new piping from existing distribution system for a period of not less than 24 hours.

D. Chlorinated water, flushed from new piping, shall be dechlorinated and disposed of so not to cause damage to the environment. Conform to state and federal requirements.

E. De-chlorinate all water from flushing activities and testing before it is released into the ground, stream, or storm sewers. Method to be approved by Owner prior to any flushing activities.

3.04 BACTERIOLOGICAL TESTING

A. Immediately following flushing of pipelines and again at least 24 hours after flushing pipelines, samples will be taken and tested by Owner.

B. The Owner reserves the right to take and test additional samples 48 hours after flushing.

C. Approximately one sample will be taken for each 1,200 feet of new water main.

D. Additional samples may be taken at the discretion of Owner.

E. Samples must show the absence of coliform organisms and other contaminants and meet requirements of the Iowa Department of Natural Resources to be considered acceptable.

F. If any sample is not satisfactory with either sampling, the piping represented by that sample must be flushed and rechlorinated by the Contractor at the discretion of, and as directed by, the Owner.

**** END OF SECTION ****

GENERAL NOTES - BORING LOG DESCRIPTIONS

Soil descriptions stated on the Boring Logs are based on the Unified Soil Classification System as stated in ASTM Designations D-2487 and D-2488. The Unified Soil Classification group symbol listed in the table below correlate to the group symbols listed on the Boring Logs. The classification is mainly based on visual observations to define the soil characteristics. If a more detailed soil description is required, additional soil testing will be conducted to better define the soil characteristics.

Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name
SW	Well-graded Sand	GW	Well-graded Gravel	CL	Lean Clay	CH	Fat Clay
SP	Poorly-graded Sand	GP	Poorly-graded Gravel	ML	Silt	MH	Elastic Silt
SM	Silty Sand	GM	Silty Gravel	OL or OH	Organic Silt Organic Clay	Pt	Peat
SC	Clayey Sand	GC	Clayey Gravel				

RELATIVE DENSITY OF COARSE-GRANED SOILS		**CONSISTENCY OF FINE-GRAINED SOILS**		
SPT, bpf	*Relative Density*	*Unconfined Compressive Strength, Q_u, psf*	*Consistency*	*SPT, bpf*
0-3	Very Loose	< 500	Very Soft	0 – 2
4-9	Loose	500 - 1,000	Soft	2 – 4
10-29	Medium Dense	1,001 - 2,000	Medium Stiff	4 – 8
30-49	Dense	2,001 – 4,000	Stiff	8 – 15
50-80	Very Dense	4,001 – 8,000	Very Stiff	15 – 30
80+	Extremely Dense	8,001 – 16,000	Hard	30 – 100
		>16,000	Very Hard	>100

GRAIN SIZE TERMINOLOGY		**RELATIVE PROPORTIONS**		
Major Component of Sample	*Size Range*	*Descriptive Terms(s) (of components also present in sample)*	*Fines Percent of Dry Weight*	*Sand and Gravel Percent of Dry Weight*
Cobbles	12 in. to 3 in. (300 mm to 75 mm)	Trace	< 5	< 15
Gravel	3 in. to #4 sieve (75 mm to 4.75 mm)	With	5 – 12	15 – 29
Sand	#4 to #200 sieve (4.75 mm to 0.074 mm)	Modifier	> 12	> 30
Silt or Clay	Passing #200 sieve (> 0.074 mm)			

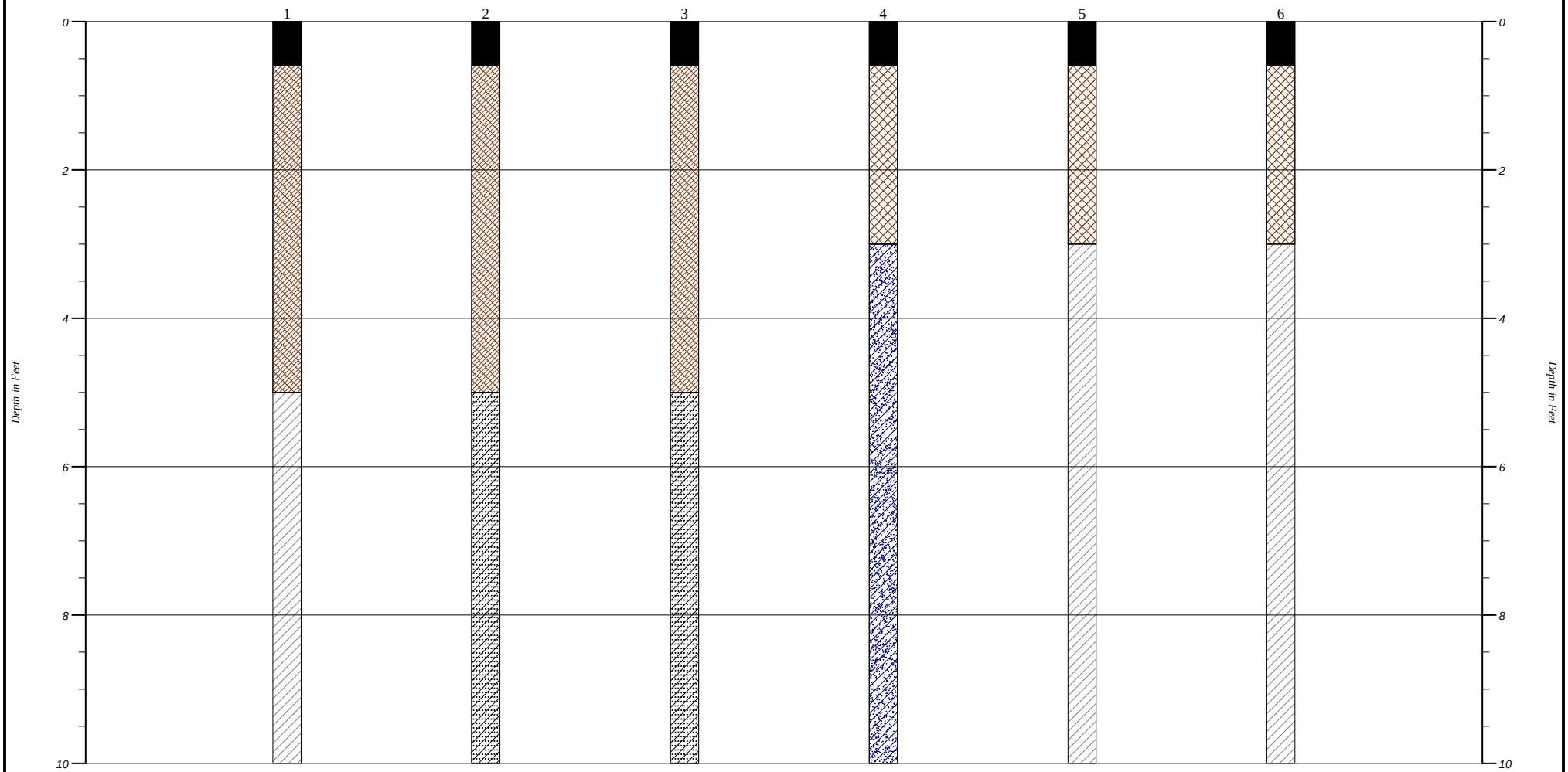
DRILLING AND SAMPLING ABBREVIATIONS

Drilling Methods

CFA – Continuous Flight Auger; typically, 4, 6, or 8 inches in diameter (ASTM D 1452)
HSA – Hollow Stem Auger; 6 or 8 inches in diameter, continuous flight auger remains in bore hole with undisturbed soil samples obtained from center of auger.
HA – Hand Auger; typically with a 4 inch or less diameter auger

Sample Types

SS - Split Spoon; samples obtained with a 140 lb manual hammer in accordance with ASTM D1586.
SSA – Split Spoon; samples obtained with a 140 lb automatic hammer in accordance with ASTM D 1586.
ST – Shelby Tube; thin walled tube samples, typically for cohesive soils, in accordance with ASTM D1587.
SPT- Standard Penetration Test: The number of blows required to drive a sampler, either split spoon or drive cone, into the soil with a 140 lb mass dropped a distance of 30 inches, in accordance with ASTM D 1586, and the number of blows are recorded in each 6 inch interval over a distance of 18 inches. Blow counts are reported for each 6 inch interval or the sum of the last two intervals is reported. The sum of the last two intervals is referred to as N, in blows per foot.
BS – Bulk Disturbed Sample
CPT – Cone Penetration Test; A device in which a 60° cone is pushed continuously into the soil and the cone end resistance is measured for skin friction and end bearing (ASTM D3441).



Plan View

Strata symbols

- Paving
- Fill
- Lean clay
- Clayey sand
- Sandy lean clay

CONSTRUCTION MATERIALS TESTING

GENERALIZED SOIL PROFILE

HORIZONTAL SCALE:	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: 1"=2'		3/26/2024

68th Street Reconstruction

PROJECT NO. 242018CWH

FIGURE NUMBER

Project 68th Street Reconstruction

Boring # 1

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±2.0 inches HMA, ±5.0 inches PCC		
								Dark brown very sandy lean clay, moist to very moist	CL	
2								EXISTING FILL		
4	1	CS		26.8		2,000**				
								Very dark brown silty lean clay, trace sand, moist	CL	
6								COHESIVE ALLUVIUM		
8										
	2	CS		23.7		3,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Project 68th Street Reconstruction

Boring # 2

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±6.0 inches PCC		
								Dark yellowish brown very sandy lean clay, moist	CL	
2								EXISTING FILL		
4	1	CS		20.9		2,500**				
								Yellowish brown clayey sand, moist	SC	
6								GRANULAR ALLUVIUM		
8										
	2	CS		15.8		3,500**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Project 68th Street Reconstruction

Boring # 3

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±5.0 inches PCC		
								Dark yellowish brown very sandy lean clay, moist	CL	
2								EXISTING FILL		
4	1	CS		18.3		3,000**				
								Rusty-brown clayey sand, moist	SC	
6								GRANULAR ALLUVIUM		
8										
	2	CS		11.0		4,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Project 68th Street Reconstruction

Boring # 4

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±5.0 inches PCC		
								Gray-rusty-brown sandy lean clay, moist	CL	
2								EXISTING FILL		
								Gray-rusty-brown sandy lean clay, trace gravel, moist	CL	
4	1	CS		21.6		2,000**				
6								COHESIVE ALLUVIUM		
8										
	2	CS		22.9		2,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Project 68th Street Reconstruction

Boring # 5

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.0 inches HMA, ±5.5 inches PCC		
								Dark yellowish brown sandy lean clay, moist	CL	
2								EXISTING FILL		
								Gray-rusty-brown silty lean clay, trace sand, moist	CL	
4	1	CS		20.7		3,000**				
6								COHESIVE ALLUVIUM		
8										
	2	CS		22.1		2,500**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Project 68th Street Reconstruction

Boring # 6

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±6.5 inches PCC		
								Dark brown sandy lean clay, moist to very moist	CL	
2								EXISTING FILL		
								Gray-rusty-brown silty lean clay, trace sand, moist	CL	
4	1	CS		26.2		2,000**				
6								COHESIVE ALLUVIUM		
8	2	CS		23.1		3,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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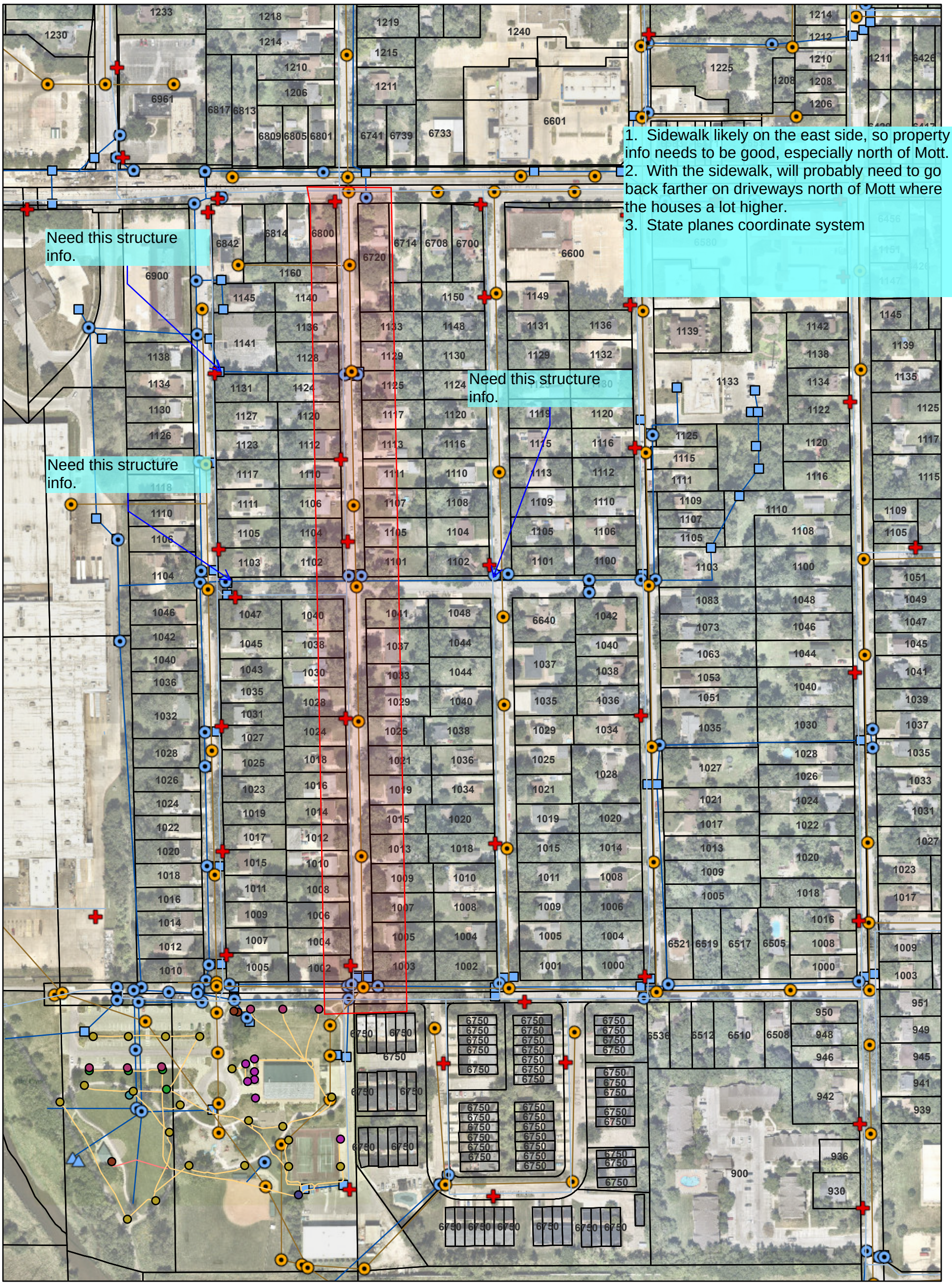
Windsor Heights Utility Viewer



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APPENDIX

FOR

68TH STREET IMPROVEMENT PROJECT

CITY OF WINDSOR HEIGHTS

WINDSOR HEIGHTS, IOWA

GENERAL NOTES - BORING LOG DESCRIPTIONS

Soil descriptions stated on the Boring Logs are based on the Unified Soil Classification System as stated in ASTM Designations D-2487 and D-2488. The Unified Soil Classification group symbol listed in the table below correlate to the group symbols listed on the Boring Logs. The classification is mainly based on visual observations to define the soil characteristics. If a more detailed soil description is required, additional soil testing will be conducted to better define the soil characteristics.

Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name	Group Symbol	Group Name
SW	Well-graded Sand	GW	Well-graded Gravel	CL	Lean Clay	CH	Fat Clay
SP	Poorly-graded Sand	GP	Poorly-graded Gravel	ML	Silt	MH	Elastic Silt
SM	Silty Sand	GM	Silty Gravel	OL or OH	Organic Silt Organic Clay	Pt	Peat
SC	Clayey Sand	GC	Clayey Gravel				

RELATIVE DENSITY OF COARSE-GRANED SOILS		**CONSISTENCY OF FINE-GRAINED SOILS**		
SPT, bpf	*Relative Density*	*Unconfined Compressive Strength, Q_u, psf*	*Consistency*	*SPT, bpf*
0-3	Very Loose	< 500	Very Soft	0 – 2
4-9	Loose	500 - 1,000	Soft	2 – 4
10-29	Medium Dense	1,001 - 2,000	Medium Stiff	4 – 8
30-49	Dense	2,001 – 4,000	Stiff	8 – 15
50-80	Very Dense	4,001 – 8,000	Very Stiff	15 – 30
80+	Extremely Dense	8,001 – 16,000	Hard	30 – 100
		>16,000	Very Hard	>100

GRAIN SIZE TERMINOLOGY		**RELATIVE PROPORTIONS**		
Major Component of Sample	*Size Range*	*Descriptive Terms(s) (of components also present in sample)*	*Fines Percent of Dry Weight*	*Sand and Gravel Percent of Dry Weight*
Cobbles	12 in. to 3 in. (300 mm to 75 mm)	Trace	< 5	< 15
Gravel	3 in. to #4 sieve (75 mm to 4.75 mm)	With	5 – 12	15 – 29
Sand	#4 to #200 sieve (4.75 mm to 0.074 mm)	Modifier	> 12	> 30
Silt or Clay	Passing #200 sieve (> 0.074 mm)			

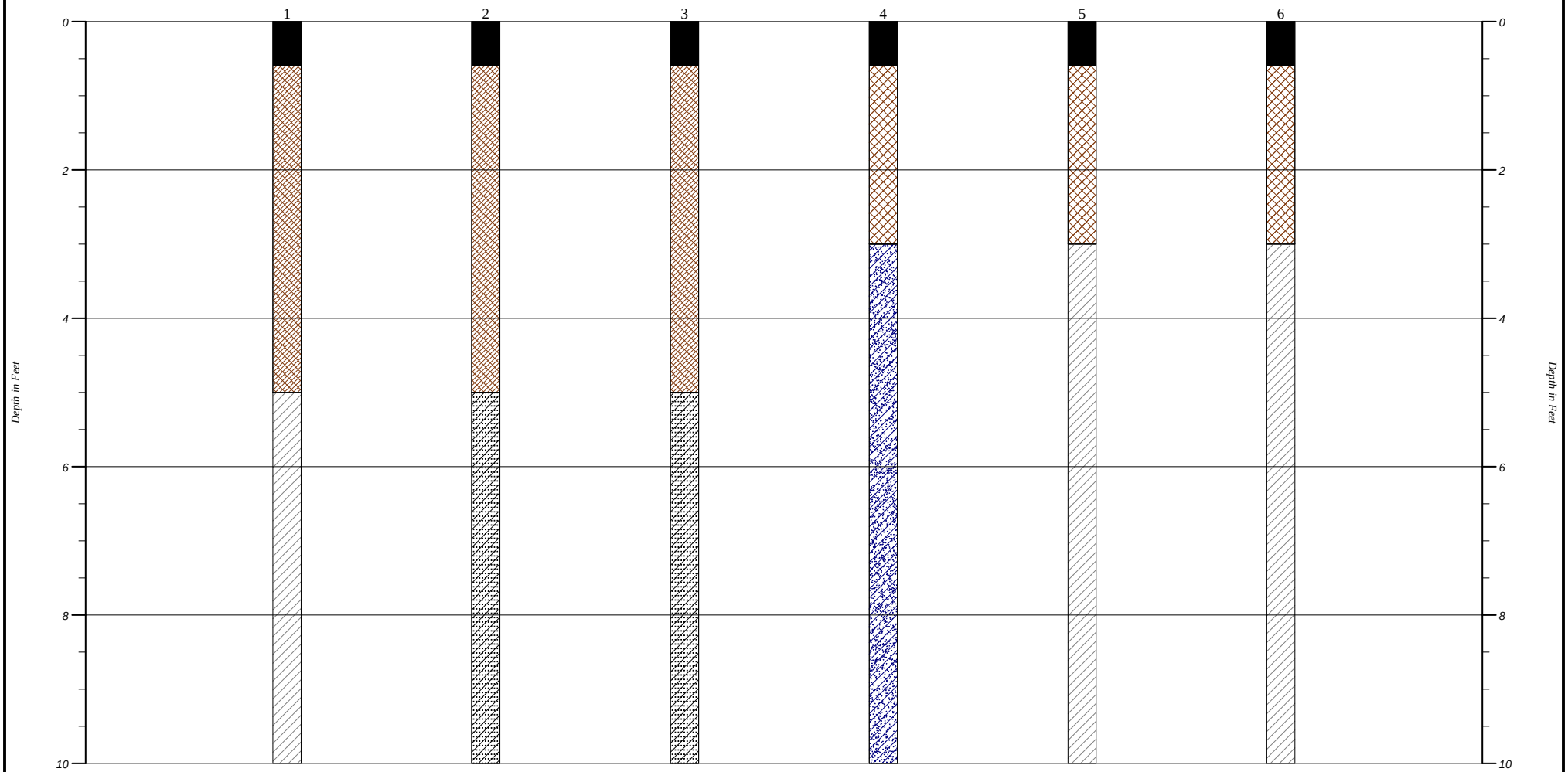
DRILLING AND SAMPLING ABBREVIATIONS

Drilling Methods

CFA – Continuous Flight Auger; typically, 4, 6, or 8 inches in diameter (ASTM D 1452)
HSA – Hollow Stem Auger; 6 or 8 inches in diameter, continuous flight auger remains in bore hole with undisturbed soil samples obtained from center of auger.
HA – Hand Auger; typically with a 4 inch or less diameter auger

Sample Types

SS - Split Spoon; samples obtained with a 140 lb manual hammer in accordance with ASTM D1586.
SSA – Split Spoon; samples obtained with a 140 lb automatic hammer in accordance with ASTM D 1586.
ST – Shelby Tube; thin walled tube samples, typically for cohesive soils, in accordance with ASTM D1587.
SPT- Standard Penetration Test: The number of blows required to drive a sampler, either split spoon or drive cone, into the soil with a 140 lb mass dropped a distance of 30 inches, in accordance with ASTM D 1586, and the number of blows are recorded in each 6 inch interval over a distance of 18 inches. Blow counts are reported for each 6 inch interval or the sum of the last two intervals is reported. The sum of the last two intervals is referred to as N, in blows per foot.
BS – Bulk Disturbed Sample
CPT – Cone Penetration Test; A device in which a 60° cone is pushed continuously into the soil and the cone end resistance is measured for skin friction and end bearing (ASTM D3441).



Plan View

Strata symbols

- Paving
- Fill
- Lean clay
- Clayey sand
- Sandy lean clay

CONSTRUCTION MATERIALS TESTING

GENERALIZED SOIL PROFILE

HORIZONTAL SCALE:	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: 1"=2'		3/26/2024

68th Street Reconstruction

PROJECT NO. 242018CWH

FIGURE NUMBER

Project 68th Street Reconstruction

Boring # 1

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±2.0 inches HMA, ±5.0 inches PCC		
								Dark brown very sandy lean clay, moist to very moist	CL	
2								EXISTING FILL		
4	1	CS		26.8		2,000**				
								Very dark brown silty lean clay, trace sand, moist	CL	
6								COHESIVE ALLUVIUM		
8										
	2	CS		23.7		3,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Boring # 2

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±6.0 inches PCC		
								Dark yellowish brown very sandy lean clay, moist	CL	
2								EXISTING FILL		
4	1	CS		20.9		2,500**				
								Yellowish brown clayey sand, moist	SC	
6								GRANULAR ALLUVIUM		
8										
	2	CS		15.8		3,500**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Boring # 3

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±5.0 inches PCC		
								Dark yellowish brown very sandy lean clay, moist	CL	
2								EXISTING FILL		
4	1	CS		18.3		3,000**				
								Rusty-brown clayey sand, moist	SC	
6								GRANULAR ALLUVIUM		
8										
	2	CS		11.0		4,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

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Project 68th Street Reconstruction

Boring # 4

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±5.0 inches PCC		
								Gray-rusty-brown sandy lean clay, moist	CL	
2								EXISTING FILL		
								Gray-rusty-brown sandy lean clay, trace gravel, moist	CL	
4	1	CS		21.6		2,000**				
6								COHESIVE ALLUVIUM		
8										
	2	CS		22.9		2,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Boring # 5

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.0 inches HMA, ±5.5 inches PCC		
								Dark yellowish brown sandy lean clay, moist	CL	
2								EXISTING FILL		
								Gray-rusty-brown silty lean clay, trace sand, moist	CL	
4	1	CS		20.7		3,000**				
6								COHESIVE ALLUVIUM		
8										
	2	CS		22.1		2,500**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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Boring # 6

Client City of Windsor Heights

Surface Elev. Existing Ground Surface

Depth Ft.	Sample #	Method	SPT bpf	Moisture %	Dry Density pcf	Unconfined Compressive Strength	Cross Section	Material Description *	USCS	Water Level
0								±1.5 inches HMA, ±6.5 inches PCC		
								Dark brown sandy lean clay, moist to very moist	CL	
2								EXISTING FILL		
								Gray-rusty-brown silty lean clay, trace sand, moist	CL	
4	1	CS		26.2		2,000**				
6								COHESIVE ALLUVIUM		
8	2	CS		23.1		3,000**				
10								End of Boring No groundwater noted during drilling operations. **Estimated using calibrated penetrometer.		
12										

* The stratification lines represent approximate boundary lines between material types -- the transition may be gradual.

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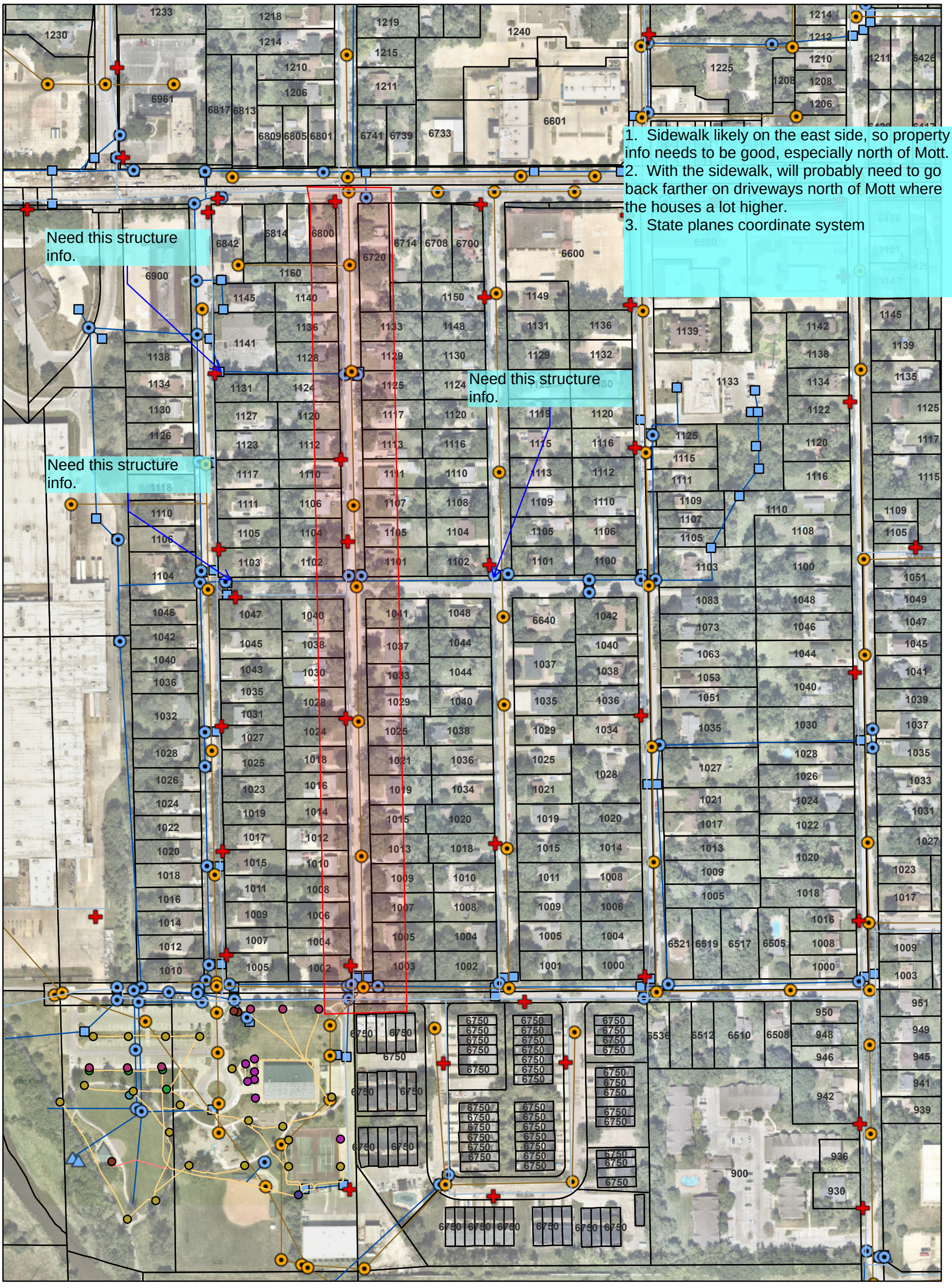
Windsor Heights Utility Viewer



2/8/2024

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0 0.03 0.05 0.1 mi

0 0.04 0.09 0.17 km