E. 1ST AND MARKET STREET STORM WATER PUMP STATION REPAIRS

CITY COUNCIL APPROVAL

APPROVAL DATE
April 20, 2020

CONTRACT NO.

CONTRACTOR

PLAN FILE NO.
609-010/014

ROLL CALL NO.

CONTRACT AMOUNT
$0.00

ENGINEERING DEPARTMENT
Steven L. Naber, P.E.
Des Moines City Engineer

Funding Information
Object Code 543010
Organization No. E304PW99
Project No. SM087
E. 1st and Market Street Storm Water Pump Station Repairs

Activity ID 08-2020-009

The following documents are part of this contract:

- Document
- Instructions to Bidders
- Official Publications
- Proposal
- Bid Bond
- Contract
- Performance, Payment and Maintenance Bond

Addenda:

Special Provisions:
- Bidding Requirements
- Contractual Requirements
- Technical Specifications

Supplemental Specifications:
- General Supplemental Specifications to SUDAS, 2019 Edition

April 22, 2019

PROJECT ENGINEER: Matt Radermacher, P.E.
Phone Number: (515) 283-4076
INSTRUCTIONS TO BIDDERS

Activity ID  08-2020-009
Project Name  E. 1st and Market Street Storm Water Pump Station Repairs

The work comprising the above referenced project shall be constructed in accordance with the SUDAS Standard Specifications, 2019 Edition; and as further modified by the supplemental specifications and special provisions included in the contract documents. The Des Moines City Engineer is the Engineer. The terms used in the contract documents are defined in said SUDAS Standard Specifications. The City of Des Moines is the Contracting Authority on this project and shall hereinafter be referred to as the "Jurisdiction". Before submitting your bid, please review the SUDAS Standard Specifications, in particular, Division 1 - General Provisions and Covenants, including the sections regarding proposal requirements, bonding, contract execution and insurance requirements. Please be certain that all documents have been properly completed and submit them to the City Clerk, 1st Floor, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa, 50309.

I. BID SECURITY

The bid security must be in the minimum amount of 10% of the total bid amount including all add alternates (do not deduct the amount of deduct-alternates). Bid security shall be as defined in Section 26.8 of the Iowa Code and 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 bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the Jurisdiction. The bid bond must be submitted on the enclosed Bid Bond form (DSM Urban 04/20/98) as no other bid bond forms are acceptable. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature on the bid bond is not acceptable. Bid security other than said bid bond shall be made payable to the City of Des Moines. "Miscellaneous Bank Checks", and personal checks, as well as "Money Orders" and "Traveler's Checks" issued by persons, firms or corporations licensed under Chapter 533B of the Iowa Code, are not acceptable bid security. NOTE: If the Bidder submits Bid Security in the form of a Bid Bond, and the Bidder wishes to have their Bid Bond returned to them after an approved contract and bond has been executed or after there is a rejection of all bids (in accordance with Iowa Code 26.10), the Bidder shall include a self-addressed envelope with the Bid Bond.

II. SUBMISSION OF THE PROPOSAL AND IDENTIFY OF BIDDER

A. 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, and 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 sealed in the separate envelope identified as Bid Security and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered. Bidders must either utilize the two envelopes provided with the Bidding documents, or Bidders provide their own two envelopes, for their proposals and bid security for submission of their bids.

Sales Tax: The bidder should not include sales tax in the bid pursuant to Iowa Code. A sales tax exemption certificate will be available for all material purchased for incorporation in the project.

Accessibility for individuals with disabilities. The City of Des Moines is pleased to provide accommodations to individuals with disabilities or groups and encourages participation in City government. To better serve you, please notify us at least three business days in advance when possible at 515-283-4209, should special accommodations be required.
B. **All pages of the Proposal must be returned.** The following documents shall be completed, signed and returned in the Proposal envelope.

- **PROPOSAL - Complete each of the following parts:**
  - Part B - Acknowledgement of Addenda, if any have been issued;
  - Part C - Bid Items, Quantities and Prices;
  - Part F - Additional Requirements; The following proposal attachment documents must be completed and attached:

<table>
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<td>1.</td>
<td>Reciprocal Resident Bidder and Labor Force</td>
</tr>
<tr>
<td>2.</td>
<td>General</td>
</tr>
</tbody>
</table>

- **Part G - Identity of Bidder.**

The Bidder shall 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. The **Bidder Status Form** (PROPOSAL Part F Item 2B), is required by the Iowa Labor Commissioner, pursuant to Iowa Admin. Code rule 875-156.2(1). The Bidder must complete and submit the **Bidder Status Form**, signed by an authorized representative of the Bidder, with their bid proposal. Under Iowa Admin. Code rule 875-156.2(1), failure to provide the **Bidder Status Form** with the bid may result in the bid being deemed non-responsive and may result in the bid being rejected. The **Worksheet: Authorization to Transact Business** from the Labor Commissioner is included on page 3 of 3 of the Instructions to Bidders, to assist Bidders in completing the **Bidder Status Form**.

C. **Out-of-State Contractors:**

1. 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 Iowa Department of Workforce Development. The contractor should contact 515-242-5871 for further information. Prior to contract execution, the City 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.

2. Prior to entering into contract, the designated low bidder, if it be a corporation organized under the laws of a state other than Iowa, shall file with the 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, or as amended, governing foreign corporations. For further information contact the Iowa Secretary of State Office at 515-281-5204.

III. **GENERAL**

A. **All bid documents must be submitted as printed. No alterations, additions, or deletions are permitted.** If the Bidder notes a requirement in the contract documents that 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.

B. Additional information regarding addenda, plan holders, bid tabulations, etc. can be found on the Engineering Department web site at [http://www.dm.gov/Departments/Engineering/Pages/BidsContracts.aspx](http://www.dm.gov/Departments/Engineering/Pages/BidsContracts.aspx).
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.
NOTICE TO BIDDERS

CITY OF DES MOINES PUBLIC IMPROVEMENT PROJECT

Time and Place for Filing Sealed Proposals. Sealed bids for the work comprising each improvement as stated below must be filed at or before 11:00 a.m. on March 24, 2020, in the office of the City Clerk, 1st Floor, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa, 50309.

Accessibility for individuals with disabilities. The City of Des Moines is pleased to provide accommodations to individuals with disabilities or groups and encourages participation in City government. To better serve you, please notify us at least three business days in advance when possible at 515-283-4209, should special accommodations be required.

Time and Place Sealed Proposals Will be Opened and Considered. Sealed proposals will be opened and bids tabulated at 11:00 a.m., on March 24, 2020, in the City Council Chambers, 2nd Floor, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa, for consideration by the City Council (Council) at its meeting on April 20, 2020. The City of Des Moines (Jurisdiction) reserves the right to reject any and all bids.

Time for Commencement and Completion of Work. Work on each improvement shall be commenced upon approval of the contract by the Council, and completed as stated below.

Bid Security. Each bidder shall accompany its bid with bid security as defined in Section 26.8 of the Iowa Code and as specified by the Jurisdiction.

Contract Documents. Copies of the contract documents will be available after February 24, 2020, from the City Engineer's Office, 2nd Floor, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa 50309, at no cost, phone (515) 283-4573.

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

Sales Tax. The bidder should not include sales tax in the bid. A sales tax exemption certificate will be available for all material purchased for incorporation in the project.

General Nature of Public Improvement.
E. 1st and Market Street Storm Water Pump Station Repairs, 08-2020-009
This improvement includes the repairs of the existing stormwater pump station, including the removal of two existing stormwater pumps, rehabilitation of two existing pumps, installation of two stormwater pumps, providing and installing a new electrical control system located in a premanufactured building, building foundation, electrical and controls, erosion control, site work and miscellaneous associated work, including cleanup all in accordance with the contract documents, including Plan File No. 609-010/014 located near E.1st Street and Market Street, Des Moines, Iowa.

This project shall be fully completed not later than February 15, 2021, and in accordance with the Completion Provisions.

Engineer's Construction Estimate. $1,000,000.00

Preletting Conference.
NOTICE OF PUBLIC HEARING
CITY OF DES MOINES PUBLIC IMPROVEMENT PROJECT

Public Hearing on Proposed Contract Documents and Estimated Costs for Improvement. A public hearing will be held by the City Council on the proposed contract documents (plans, specifications and form of contract) on file in the City Engineer’s Office, and estimated cost for each improvement at its meeting on April 20, 2020, at 5:00 p.m., in the City Council Chambers, 2nd Floor, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa. The City Council Meetings are open to all individuals regardless of disability. To better serve you, please notify the City Clerk at least three business days in advance, when possible, should special accommodations be required.

General Nature of Public Improvement

E. 1st and Market Street Storm Water Pump Station Repairs 08-2020-009
This improvement includes the repairs of the existing stormwater pump station, including the removal of two existing stormwater pumps, rehabilitation of two existing pumps, installation of two stormwater pumps, providing and installing a new electrical control system located in a premanufactured building, building foundation, electrical and controls, erosion control, site work and miscellaneous associated work, including cleanup all in accordance with the contract documents, including Plan File No. 609-010/014 located near E. 1st Street and Market Street, Des Moines, Iowa

Published in the Des Moines Register
April 1, 2020
PROPOSAL

To the Honorable Mayor and Members of the
City Council, City of Des Moines, Iowa

PROPOSAL: PART A - SCOPE

The City of Des Moines, hereinafter called the "Jurisdiction", has need of a qualified contractor to complete the work comprising the below referenced improvement. The undersigned Bidder hereby proposes to complete the work comprising the below referenced improvements or project as specified in the contract documents, which are officially on file with the Jurisdiction, in the Des Moines City Engineer's Office, at the prices hereinafter provided in Part C of this Proposal, for the following described improvements:

E. 1st and Market Street Storm Water Pump Station Repairs, 08-2020-009

This improvement includes the repairs of the existing stormwater pump station, including the removal of two existing stormwater pumps, rehabilitation of two existing pumps, installation of two stormwater pumps, providing and installing a new electrical control system located in a premanufactured building, building foundation, electrical and controls, erosion control, site work and miscellaneous associated work, including cleanup all in accordance with the contract documents, including Plan File No. 609-010/014 located near E. 1st Street and Market Street, Des Moines, Iowa

PROPOSAL: PART B - ACKNOWLEDGEMENT 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, QUANTITIES AND PRICES

UNIT BID PRICE CONTRACTS: The bidder must provide all unit prices, the amount, the total construction cost, any alternate price(s), and the total construction cost plus any add-alternates if there are alternates on the proposal on Proposal Attachment: Part C - Bid Items, Quantities, and Prices. The total construction cost plus any alternates selected by the Jurisdiction shall be used for comparison of bids. The total construction cost plus any add-alternates shall be used for determining the sufficiency of the bid security.
BASE BID CONTRACTS: The bidder must provide any bid price(s), the total base bid price, any alternate price(s), and the total base bid plus any add-alternates if there are alternates on the proposal on Proposal Attachment: Part C - Bid Items, Quantities, and Prices. The total base bid plus any alternates selected by the Jurisdiction shall be used for comparison of bids. The total base bid plus any add-alternates shall be used for determining the sufficiency of the bid security.

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 in 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 plus any selected 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 and provide the following documents:
   - Proof of registration with the Iowa Division of Labor in accordance with Chapter 91C of the Iowa Code by providing a valid Registration Number,
   - Proof of insurance by a Certificate(s) of Insurance,
   - 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 documents and information as requested in Item 1 above acceptable to the Des Moines City Engineer; and

3. Commence the work on this project on or before a date to be specified in a written notice to proceed by the Jurisdiction, and to fully complete the project not later than February 15, 2021, and in accordance with the Completion Provisions; and to pay liquidated damages for noncompliance with said completion provisions at the rate of one thousand and 00/100 dollars ($1,000.00) 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 paid 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 put in a sham bid or to refrain from bidding, and 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 that all statements in this proposal are true; and

5. 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:

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<td>2.</td>
<td>General</td>
</tr>
</tbody>
</table>
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

A contract will not be executed until the apparent low Bidder is registered with the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code. The Bidder should contact 515-242-5871 for registration information.

NOTE: The signature on this proposal must be an original signature in ink; copies or facsimile of any signature will not be accepted.

By

Bidder

Signature

Title

Street Address

City, State, Zip Code

Telephone Number / Email Address

Engineering Department Staff will contact the apparent low Bidder and obtain the name and title of the company's owner, president, CEO, etc. if a different person than entered above.
PROPOSAL ATTACHMENT: PART C - BID ITEMS, QUANTITIES AND PRICES: 1 of 1
This is a unit bid price contract. The bidder must provide all unit prices, the amount, the total construction cost, any alternate price(s), and the total construction cost plus any add-altornates if there are alternates on the proposal. The total construction cost plus any alternates selected by the Jurisdiction shall be used for comparison of bids. The total construction cost plus any add-altornates shall be used for determining the sufficiency of the bid security.

<table>
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<tr>
<th>ITEM</th>
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<th>ESTIMATED UNITS</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E. 1st and Market Street Storm Water Pump Station Repairs, Complete as Specified and Described in Contract Documents</td>
<td>LS</td>
<td>1.00</td>
<td>$__________</td>
<td>$__________</td>
</tr>
</tbody>
</table>

TOTAL CONSTRUCTION COST $__________
PROPOSAL ATTACHMENT: PART F - ADDITIONAL REQUIREMENTS
ITEM 1 - RECIPROCAL RESIDENT BIDDER AND LABOR FORCE

Iowa Code section 73A.21 provides for a Reciprocal Resident Bidder and Labor Force preference.

Because of the nature of this project (i.e. Federal-aid participation), the Reciprocal Resident Bidder and Labor Force preference,

☐ shall not apply to this project, and the bidder need not complete the Resident Bidder Information below.

☒ shall apply to this project, and the bidder shall complete the Resident Bidder Information below.

To implement section 73A.21, the Iowa Labor Commissioner adopted chapter 156 of the Iowa Administrative Code, “Bidder Preferences in Government Contracting”. Iowa Admin. Code rule 875-156.2(1) requires each bidder to complete the attached Bidder Status Form. The Bidder must complete and submit the Bidder Status Form, signed by an authorized representative of the bidder, with their bid Proposal. Under Iowa Admin. Code rule 875-156.2(1), failure to provide the statement with the bid may result in the bid being deemed nonresponsive and may result in the bid being rejected.
Bidder Status Form

Part A

To be completed by all bidders

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: Authorization to Transact Business", on page 3 of the "Instructions to Bidders").

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 nonresident bidder. Please complete Parts C and D of this form.

Part B

To be completed by resident bidders

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

Dates: _____ / _____ / _____ to _____ / _____ / _____ Address: ______________________

City, State, Zip: ______________________

Dates: _____ / _____ / _____ to _____ / _____ / _____ Address: ______________________

City, State, Zip: ______________________

Dates: _____ / _____ / _____ to _____ / _____ / _____ Address: ______________________

City, State, Zip: ______________________

You may attach additional sheet(s) if needed.

Part C

To be completed by non-resident bidders

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.

Part D

To be completed by all bidders

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 a reason to reject my bid.

Firm Name: ______________________

Signature: ______________________

Date: ______________________

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

This form has been approved by the Iowa Labor Commissioner.

309-6001 02-14
1. The work under this proposal shall be constructed in accordance with the SUDAS Standard Specifications, 2019 Edition, and as further modified by the supplemental specifications and special provisions included in the contract documents.

**Alternate Sales Tax:**
Section 1020, 1.08, B, of the Supplemental Specifications shall apply. The bidder should not include sales tax in the bid. A sales tax exemption certificate will be available for all material purchased for incorporation in the project.

2. The Bidder hereby acknowledges that the City of Des Moines in advertising for public bids for this work reserves the right to give a limited notice to proceed of a duration not longer than three months. This limited notice to proceed shall be given where all necessary right-of-way has not yet been acquired. The limited notice to proceed will allow construction to proceed as far as possible and practical on the right-of-way, which has been acquired.

3. The Bidder hereby acknowledged and agrees:
   - To comply with the Equal Employment Opportunity Program included in the City of Des Moines Contract Compliance Program, which is available at the following website <http://www.dmgov.org/Departments/Engineering/PDF/Contract%20Compliance%20Program%20(June%202017).pdf> or from the City Engineer’s Office.
   - To comply with any and all applicable provisions of the Des Moines Human Rights Ordinance, Chapter 62, of the Des Moines Municipal Code.
   - Not to discriminate against any employees, or applicants for employment, on the basis of age, race, religion, creed, color, sex, sexual orientation, national origin, ancestry, disability, familial status or gender identity.

4. The City’s Overall Annual DBE/TSB Goal for calendar year 2020 is 5.94%, which represents a target that the City would like to achieve in including DBE/TSB participation on City contracts; and is not a mandatory goal for this project. The Certified Directory of DBEs is available at the following website <https://secure.iowadot.gov/DBE/Directory/Index/>. The Certified Directory of TSBs is available at the following website <https://iowaeda.dynamics365portals.us/tsb-search/>.

**PROPOSAL ATTACHMENT: PART F - ADDITIONAL REQUIREMENTS**
**ITEM 3 - COMPLETION PROVISIONS**

The bidder hereby agrees to commence and complete the work in accordance with the attached Completion Provisions.

PROPOSAL ATTACHMENT: PART F: Page 3 of 3 Pages
The Bidder hereby agrees to:

1. Commence the work and to fully complete all work no later than February 15, 2021; and to pay liquidated damages for noncompliance with said completion provision in the amount of one thousand and no/100 dollars ($1,000.00) for each calendar day thereafter.

2. Undertake and schedule work in compliance with the calendar day completion provisions as described below. The work to be completed by the calendar day completion requirements shall be such work as required to satisfy the calendar day completion descriptions.

   **Calendar Day Completion Provision:**
   Contractor shall limit the duration that the pump station is offline for no more than a total of thirty (30) consecutive calendar days. Contractor shall schedule the time when the pump station is offline during low river levels, refer to the specifications for details. Noncompliance with said thirty (30) calendar day requirement shall result in payment of liquidated damages with said calendar day completion provision in the amount of five thousand and no/100 dollars ($5,000) for each calendar day thereafter.

3. Pay separate sums of liquidated damages that will be assessed for each of the conditions described hereinbefore, and they shall be cumulative if multiple conditions have not been satisfied.
BID BOND

KNOW ALL BY THESE PRESENTS:

That we, ________________________________, as Principal, and ________________________________, as Surety, are held and firmly bound unto the City of Des Moines, as Obligee (hereinafter the "Jurisdiction"), in the penal sum of ________________________________ dollars ($__________________) lawful money of the United States, for which payment the Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The Principal has submitted to the Jurisdiction a proposal to enter into a contract in writing, for the following described improvements:

E. 1st and Market Street Storm Water Pump Station Repairs, 08-2020-009
This improvement includes the repairs of the existing stormwater pump station, including the removal of two existing stormwater pumps, rehabilitation of two existing pumps, installation of two stormwater pumps, providing and installing a new electrical control system located in a premanufactured building, building foundation, electrical and controls, erosion control, site work and miscellaneous associated work, including cleanup all in accordance with the contract documents, including Plan File No. 609-010/014 located near E. 1st Street and Market Street, Des Moines, Iowa

The Surety hereby stipulates and agrees that the obligations of the Surety and its Bond will be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept the Bid or execute a Contract; and the 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 will be Polk County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of this bond or to collect the monetary obligation accruing to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all outlay and expense incurred by the Jurisdiction in enforcing any of the provisions of this Bond. All rights, powers, and remedies of the Jurisdiction are cumulative and not alternative and are in addition to all rights, powers and remedies given to the Jurisdiction by law. The Jurisdiction may proceed against the Surety for any amount guaranteed hereunder whether action is brought against Principal or whether or not the Principal is joined in the action. As used herein, the phrase "all outlay and expense" is not to be limited in any way, but includes 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, outside experts, attorneys fees (including overhead expenses of the Jurisdiction's staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction.
If the proposal by the Principal is accepted and the Principal enters into a contract with the Jurisdiction in accordance with the terms of the proposal, including the provision of insurance and bond as specified in the contract documents with good and sufficient surety for the faithful performance of the contract, for the prompt payment of labor and material furnished in the prosecution of the work, and for the maintenance of the improvements as may be required in the contract documents or, in the event the Principal does not enter into a contract and provide the required insurance and bonds, the Principal pays the penal sum to the Jurisdiction, then this obligation will become null and void; otherwise, the Surety 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:

________________________
Surety Company

________________________
Signature Attorney-in-Fact/Officer

________________________
Name of Attorney-in-Fact/Officer

________________________
Company Name

________________________
Company Address

________________________
City, State Zip Code

________________________
Company Telephone Number

PRINCIPAL:

________________________
Bidder

________________________
Signature

________________________
Name

________________________
Title

________________________
Address

________________________
City, State Zip Code

________________________
Telephone Number

NOTE:
1. All signatures on this bid bond must be original signatures in ink; copies or facsimile of any signature will not be accepted.

2. This bond must be sealed with the Surety's raised, embossed 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 security watermark.

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.
CONTRACT

THIS CONTRACT, made and entered into at Des Moines, Iowa, on ________________, by and between the City of Des Moines, by its Mayor, upon order of its City Council, hereinafter the "Jurisdiction", and

______________________________________, hereinafter the "Contractor".

WITNESSETH:

The Contractor hereby agrees to complete the work comprising the below referenced improvement as specified in the contract documents, which are officially on file with the Jurisdiction, in the Des Moines City Engineer's Office. This contract includes all contract documents. The work under this contract shall be constructed in accordance with the SUDAS Standard Specifications, 2019 Edition; and as further modified by the supplemental specifications and special provisions included in said contract documents, and the Contract Attachments attached hereto. The Des Moines City Engineer is the Engineer. 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: Item 2: Bid Items, Quantities and Prices which were proposed by the Contractor in its proposal submitted in accordance with the Notice to Bidders for the following described improvements:

E. 1st and Market Street Storm Water Pump Station Repairs, 08-2020-009
This improvement includes the repairs of the existing stormwater pump station, including the removal of two existing stormwater pumps, rehabilitation of two existing pumps, installation of two stormwater pumps, providing and installing a new electrical control system located in a premanufactured building, building foundation, electrical and controls, erosion control, site work and miscellaneous associated work, including cleanup all in accordance with the contract documents, including Plan File No. 609-010/014 located near E.1st Street and Market Street, Des Moines, Iowa

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 under this contract on or before a date to be specified in a written notice to proceed by the Jurisdiction and to fully complete the project not later than February 15, 2021, and in accordance with the Completion Provisions; and to pay liquidated damages for noncompliance with said completion provisions in the amount of one thousand and 00/100 dollars ($1,000.00), for each calendar day thereafter that the work remains incomplete.
IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

JURISDICTION:

By
T. M. Franklin Cowrie, Mayor

(Seal)

ATTEST:

P. Kay Cmelik, City Clerk

FORM APPROVED BY:

Kathleen Vanderpool, Deputy City Attorney

CONTRACTOR:

By

Signature

Title

Street Address

City, State - Zip Code

/ Telephone Number / Email Address

CONTRACTOR PUBLIC REGISTRATION INFORMATION To Be Provided By:

1. **All Contractors:** The Contractor's Public Registration Number, issued by the Iowa Commissioner of Labor pursuant to Section 91C.5 of the Iowa Code, is as follows:

   Number

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 City 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 be a corporation organized under the laws of a state other than Iowa, shall file with the 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, or as amended, governing foreign corporations. For further information contact the Iowa Secretary of State Office at 515-281-5204.

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

State of __________________________ )
______________________________ 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 this 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 __________________________
1. The Contractor acknowledges and agrees:
   • To comply with the Equal Employment Opportunity Program included in the City of Des
     Moines Contract Compliance Program, which is available at the following website
     or from the City Engineer's Office.
   • To comply with any and all applicable provisions of the Des Moines Human Rights
     Ordinance, Chapter 62, of the Des Moines Municipal Code.
   • Not to discriminate against any employees, or applicants for employment, on the basis of
     age, race, religion, creed, color, sex, sexual orientation, national origin, ancestry, disability,
     familial status or gender identity.
   • To include this provision in all subcontracts for this project.

2. The Contractor agrees to comply with the requirements of the City of Des Moines Contract
   Compliance Program as referenced in the proposal. Final acceptance of the project will not be
   made until the Contractor has submitted to the City Engineer a notarized summary of payments
   to and scope of work by all DBE/TSB subcontractors.

3. The City of Des Moines Master Construction Safety Packet (Safety Plan) is available at
   and is also available upon request from the Engineering Department. The Engineering
   Department will make available a copy of the City of Des Moines Safety Plan to the Contractor
   when the contract is awarded. The Contractor understands and agrees that said Safety Plan is for
   the Contractor’s information only and that it is the Contractor’s sole responsibility to provide, or
   make available, this safety information to all its Subcontractors.

4. The Contractor understands and agrees that the construction of the work included in this contract
   is by its nature dangerous work. The Contractor agrees:
   • That the Contractor should have a safety program; however, the Contractor need not submit a
     safety program to the City of Des Moines, and City of Des Moines staff will not review or
     approve the Contractor's safety program. The City of Des Moines assumes that the
     Contractor will maintain a safe worksite; however, City of Des Moines staff will not intrude
     in the Contractor’s responsibility for safety issues.
   • That until the work is accepted by the Jurisdiction; the work shall be in the custody of and
     under the charge, care, and control of the Contractor.
   • That the Contractor is responsible for the project area or work site.
   • That the Contractor is solely responsible for the safety of everyone on its work site.
   • That it is the Contractor’s sole responsibility to provide as safe a working site as possible
     given the nature of the work.
   • That it is the Contractor’s responsibility to notify and advise its employees, subcontractors,
     suppliers, and everyone on the worksite of the dangers associated with the work, and provide
     them with appropriate safety information to protect them from those dangers.
5. The Contractor acknowledges and agrees that no contract shall be binding upon the City of Des Moines until said contract has been executed by the Bidder, and shall have been approved by the City Council and executed by the Mayor and attested to by the City Clerk.

6. The Contractor agrees that sixty (60) days shall constitute a reasonable time within which it shall be required to make progress payments or final payment to subcontractors after each subcontractor's satisfactory performance of its work, all as required by Section 573.12 2.b.(2) of the Code of Iowa.
This contract is awarded and executed for completion of the work specified in the contract documents for the bid price 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. Quantity changes which amount to twenty (20) percent or less of the amount bid shall not affect the unit bid price of that item.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>UNITS</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E. 1st and Market Street Storm Water Pump Station Repairs, Complete as Specified and Described in Contract Documents</td>
<td>LS</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL CONSTRUCTION COST
CONTRACT ATTACHMENT: ITEM 3 – COMPLETION PROVISIONS

The Contractor hereby agrees to:

1. Commence the work and to fully complete all work no later than February 15, 2021; and to pay liquidated damages for noncompliance with said completion provision in the amount of one thousand and no/100 dollars ($1,000.00) for each calendar day thereafter.

2. Undertake and schedule work in compliance with the calendar day completion provisions as described below. The work to be completed by the calendar day completion requirements shall be such work as required to satisfy the calendar day completion descriptions.

   **Calendar Day Completion Provision:**
   Contractor shall limit the duration that the pump station is offline for no more than a total of thirty (30) consecutive calendar days. Contractor shall schedule the time when the pump station is offline during low river levels, refer to the specifications for details. Noncompliance with said thirty (30) calendar day requirement shall result in payment of liquidated damages with said calendar day completion provision in the amount of five thousand and no/100 dollars ($5,000) for each calendar day thereafter.

3. Pay separate sums of liquidated damages that will be assessed for each of the conditions described hereinbefore, and they shall be cumulative if multiple conditions have not been satisfied.
PERFORMANCE, PAYMENT & MAINTENANCE BOND

KNOW ALL BY THESE PRESENTS:

That we, _________________, as Principal (the "Contractor" or "Principal"), and _________________, as Surety, are held and firmly bound unto the City of Des Moines, as Obligee (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 and severally, firmly by these presents.

The conditions of the above obligations are such that whereas the Contractor entered into a contract with the Jurisdiction, bearing the date of _________________ (the "Contract") wherein the Contractor undertakes and agrees to construct the following described improvements:

E. 1st and Market Street Storm Water Pump Station Repairs, 08-2020-009

This improvement includes the repairs of the existing stormwater pump station, including the removal of two existing stormwater pumps, rehabilitation of two existing pumps, installation of two stormwater pumps, providing and installing a new electrical control system located in a premanufactured building, building foundation, electrical and controls, erosion control, site work and miscellaneous associated work, including cleanup all in accordance with the contract documents, including Plan File No. 609-010/014 located near E. 1st Street and Market Street, Des Moines, Iowa

and to faithfully perform all the terms and requirements of the Contract within the time specified, in a good and workmanlike manner, and in accordance with the Contract Documents. Provided however, that one year after the date of acceptance by the Jurisdiction as complete, of the work under the above referenced Contract, the maintenance portion of this Bond shall continue in force but the penal sum for maintenance shall be reduced to _________________ dollars ($_______________), which is the cost associated with those items shown on the Proposal and in the Contract which require a maintenance bond period in excess of one year.

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

1. PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill and abide by each and every covenant, condition and part of the Contract and Contract Documents, by reference made a part hereof, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default or 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.
2. **PAYMENT**: The Contractor and Surety on this bond hereby agree to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract, 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 unless the claims have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Iowa Code Chapter 573.

3. **MAINTENANCE**: The Contractor and the Surety shall, at their own expense:
   
   A. Remedy any and all defects that may develop in or result from work to be performed under the Contract within the period of four (4) year(s) from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of the work;
   
   B. Keep all work in continuous good repair; and
   
   C. Pay the Jurisdiction's reasonable costs of monitoring and inspecting 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.

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

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

   A. To consent without notice to any extension of time to the Contractor in which to perform the Contract;
   
   B. To consent without notice to any change in the Contract or Contract Documents, that 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
   
   C. 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 liquidated damages are being charged against the Contractor.

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

   A. 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.
B. 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 as 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, attorneys 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.

C. 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.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall faithfully perform all of 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 word, 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.

Witness our hands, in triplicate, this __________ day of __________________________, 20________

PRINCIPAL:

______________________________
Contractor

By ____________________________
Signature

______________________________
Title

FORM APPROVED BY:

Kathleen Vanderpool
Deputy City Attorney

SURETY:

______________________________
Surety Company

By ____________________________
Signature Attorney-in-Fact/Officer

______________________________
Name of Attorney-in-Fact/Officer

______________________________
Company Name

______________________________
Company Address

______________________________
City, State Zip Code

______________________________
Company Telephone Number

NOTE:

1. All signatures on this performance, payment & maintenance bond must be original signatures in ink; copies or facsimile of any signature will not be accepted.

2. This bond must be sealed with the Surety's raised, embossed 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.

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.

5. This bond form must be utilized as printed; no additions/deletions/alterations are permitted, other than providing the required information.
1) AWARD OF CONTRACT

The apparent low Bidder on this project will be required to furnish executed contract; Performance, Payment, and Maintenance Bond; Certificate of Insurance; and NPDES Certification Statements, if required, in substantial compliance with the contract documents to the Engineering Department before 12:00 noon on Friday, April 17, 2020. Completed documents in accordance with the contract documents and acceptable to the City of Des Moines Engineering and Legal Departments will be presented to the City Council for award of this contract on Monday, April 20, 2020. This would allow construction to begin upon issuance of the Notice to Proceed by the City Engineer.

By submission of a bid, the Bidder agrees that if the Bidder fails to furnish said executed contract; Performance, Payment, and Maintenance Bond; Certificate of Insurance; and NPDES Certification Statements, if required, in substantial compliance with the contract documents to the Engineering Department before 12:00 noon on Friday, April 17, 2020; the amount of the Bidder’s bid security may become the property of the City and may be retained—not as a penalty but as liquidated damages. The award of the contract may then, at the discretion of the City, be made to the next-lowest responsible Bidder, or the work may be re-advertised or may be constructed by the City in any legal manner. Notice to Proceed will not be issued until the Contractor’s insurance is in compliance with the specifications.

The Bidder is reminded that all subcontractors must be approved by the City Council. The Council policy is that subcontractors be approved at the time the contract is awarded, if possible. The Bidder should submit a letter requesting approval of any subcontractors along with the subcontractor’s NPDES Certification Statement, if required, at the time its executed contracts are submitted for approval.

2) CONTRACT COMPLIANCE PROGRAM


a. EEO Program – Complaints of discrimination in violation of the Des Moines Human Rights Ordinance, or corresponding state or federal law, should still be filed with the appropriate city, state, or federal agency. If a Contractor is found by one of these agencies to be engaging in illegal discrimination, the Contractor will be in breach of its contract with the City of Des Moines and appropriate action will be taken.

b. DBE/TSB Program: Certification – The City of Des Moines’ program is a DBE/TSB Program whereby both certified DBEs and certified TSBs are equally eligible under the program. All DBEs shall be certified by the Iowa Department of Transportation (IDOT), and the Certified Directory of DBEs is available at the following website https://secure.iowadot.gov/DBE/Directory/Index/.
All TSBs shall be certified by the Iowa Department of Inspections and Appeals, and the Certified Directory of TSBs is available at the following website https://www.iowa.gov/hsb/index.php/search. The TSB website allows the user to search by name or other keyword. If the user enters the keyword "CONST" in the space next to Service Description and clicks SEARCH, the database will provide a listing of all TSBs that have identified various forms of construction as their type of work. The Directories will not be printed in the contract documents. Copies of the DBE and TSB Directories are available from the Engineering Department upon request.

c. DBE/TSB Program: Annual and Contract Goals — The City’s overall annual DBE/TSB goal will be based on the IDOT DBE overall annual goal established for the corresponding federal fiscal year as further adjusted and established by the Engineering Department to consider such factors as the current capacity of DBEs/TSBs to perform work, differences in the DBE versus TSB market, etc. By utilizing the IDOT overall annual DBE goal as the City’s overall annual DBE/TSB goal, the goal will be independently reviewed annually and updated regarding the availability of the DBEs that are ready, willing, and able to perform work. Many DBEs are also certified as TSBs and the availability is similar. The City’s overall annual DBE/TSB goal represents a target that the City would like to achieve by including DBE/TSB participation on City contracts; and is not a mandatory goal for this project. The Bidder is encouraged to use its best efforts to meet, and if possible exceed, the City’s overall annual DBE/TSB goal.

3) ALTERNATE SALES AND USE TAX

Section 1020, 1.08, B, of the General Supplemental Specifications shall apply to this contract. The Bidder should not include sales tax in the bid pursuant to Iowa Code. A sales tax exemption certificate will be available for all material purchased for incorporation in the project. Complete information on qualifying materials and supplies can be found at www.state.ia.us/tax, the Iowa Department of Revenue and Finance’s (IDRF) web site. Links are found in the Business Taxes and Local Government categories. Contact the IDRF at idrf@idrf.state.ia.us if you have questions on this requirement.
DEPARTMENT OF ENGINEERING  
CITY OF DES MOINES, IOWA  

SPECIAL PROVISION  
CONTRACTUAL REQUIREMENTS  

ON  

E. 1ST AND MARKET STREET STORM WATER PUMP STATION REPAIRS  

Activity ID 08-2020-009
Replace SECTION 1080, 1.01 SUBLET OR ASSIGNMENT OF CONTRACT with the following:

Delete all references in the section to “thirty percent” in reference to work to be performed by the contractor’s own organization and forces, and replace “thirty percent” with “ten percent” on all references.
The City of Des Moines will not purchase and maintain Builder’s Risk Insurance on this project as referenced in the General Supplemental Specifications in Section 1070, 3.05A.2 (Builder’s Risk Insurance by the Jurisdiction). The Contractor shall purchase and maintain an Installation Floater as referenced in the General Supplemental Specifications in Section 1070, 3.05A.3 (Installation Floater).
DEPARTMENT OF ENGINEERING
CITY OF DES MOINES, IOWA

SPECIAL PROVISION
TECHNICAL SPECIFICATIONS

ON

E. 1ST AND MARKET STREET STORM WATER PUMP STATION REPAIRS

Activity ID 08-2020-009
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.

Signed: H. Robert Veenstra Jr., P.E.
Iowa License No. 9037
My license renewal date is December 31, 2020

Date: February 10, 2020

Detailed parts covered by this seal:

All
ENGINEERING DEPARTMENT
CITY OF DES MOINES, IOWA

SPECIAL PROVISION
ON
E. 1ST AND MARKET STREET STORM WATER PUMP STATION REPAIRS
ACTIVITY ID NO. 08-2020-009

INDEX

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General</td>
<td>1-1</td>
</tr>
<tr>
<td>2</td>
<td>Pumps and Pump Tubes</td>
<td>2-1</td>
</tr>
<tr>
<td>3</td>
<td>Control Building and Appurtenances</td>
<td>3-1</td>
</tr>
<tr>
<td>4</td>
<td>Electrical Work, General</td>
<td>4-1</td>
</tr>
<tr>
<td>5</td>
<td>Electrical Raceway Systems</td>
<td>5-1</td>
</tr>
<tr>
<td>6</td>
<td>Wires and Cables</td>
<td>6-1</td>
</tr>
<tr>
<td>7</td>
<td>Grounding</td>
<td>7-1</td>
</tr>
<tr>
<td>8</td>
<td>Process Control and Instrumentation System</td>
<td>8-1</td>
</tr>
<tr>
<td>9</td>
<td>Instrumentation Equipment</td>
<td>9-1</td>
</tr>
<tr>
<td>10</td>
<td>Control Panel</td>
<td>10-1</td>
</tr>
<tr>
<td>11</td>
<td>Control Descriptions</td>
<td>11-1</td>
</tr>
</tbody>
</table>

APPENDIX A – ELECTRIC PUMP PROPOSAL
1 – GENERAL

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

A. This section of the Special Provisions sets forth specific requirements for the E. 1st and Market Street Storm Water Pump Station Repairs.

B. In addition to the requirements of this Special Provision, the requirements of the Standard Specifications and other Special Provisions not in conflict with this Special Provision are applicable to construction of the E. 1st and Market Street Storm Water Pump Station Repairs.

C. This Special Provision is structured as discrete section that encompass the entire Special Provision.

D. Payment for E. 1st and Market Street Storm Water Pump Station Repairs will be lump sum. Lump sum price includes all labor, material and equipment necessary to construct complete pump station as shown on plans and specified.

E. Prior to start of construction Contractor to provide a schedule of values for components of pump station. Schedule of values will be used for purpose of the monthly partial payment estimate. Schedule of values to include not less than 5 or more than 15 individual items of work constituting the complete project.

F. Project disturbs less than 1 acre. Contractor not required to develop a Stormwater Pollution Prevention Plan or obtain a General Permit No. 2.

G. Although Contractor is not required to develop Stormwater Pollution Prevention Plan, Contractor is responsible to provide erosion control to prevent the loss of silt from the project site.

H. Contractor responsible to provide and maintain erosion control during construction and to remove erosion control at completion of project.

I. Contractor responsible to provide on-site sanitary facilities for use during construction.

J. Contractor responsible to provide facilities for concrete washout.
K. Contractor responsible to provide construction staking. Include cost of construction staking in lump sum price.

L. City will provide soil compaction testing and testing of portland cement concrete.

M. Contractor responsible to protect existing pavement. Any pavement damaged during construction must be removed and replaced at no cost to City.

N. Contractor responsible to grade, seed and establish full stand of grass on project site prior to completion of project.

1.02 SCOPE OF PROJECT

A. The general scope of the project involves relocating two existing stormwater pumps from the SE 4th and Van Buren Pump Station to the E. 1st and Market Street Storm Water Pump Station. The pumps will be rehabilitated and upgraded before installation. The project includes providing a new control system located in a Starnet control building and completing the electrical improvements necessary to connect the new pumps to the new electrical and control system and to install the new level control equipment.

B. The scope of the project more particularly includes the following:

1. Contract with Electric Pump for the rehabilitation and upgrading of the two stormwater pumps and to provide new pump tubes and associated equipment. The proposal from Electric Pump for this work is attached to and made a part of these specifications.

2. Contract with Electric Pump for the new electrical and control equipment to be located in a Starnet building. A copy of the proposal from Electric Pump for the electrical and control equipment and Starnet building is attached to and made a part of these specifications.

3. Remove the two existing pumps from the SE 4th and Van Buren Pump Station and load the pumps on a truck provided by Electric Pump.

4. Rehabilitate and upgrade the existing pumps prior to installation at the E. 1st and Market Street Storm Water Pump Station. This work is included in the proposal from Electric Pump.

5. Remove and dispose of the two stormwater pumps at the existing E. 1st and Market Street Storm Water Pump Station.

6. Remove the existing pump tubes and top plate for the two pumps at the existing E. 1st and Market Street Storm Water Pump Station and remove and dispose of the existing cover plate for the unused pump bay that will be used as part of the new pump installation.
7. Provide new pump tubes and top plate for the two active pumps that will be installed. This work is part of the proposal by Electric Pump.
8. Install the new pump tubes.
9. Provide and install a new top plate for the pump bay that will be used for the control equipment as part of the pump station repairs.
10. Unload the rehabilitated and upgraded pumps. Delivery to the site is part of the work by Electric Pump. Unloading and handling the pumps is part of the general construction contract.
11. Install the rehabilitated and upgraded pumps in the E. 1st and Market Street Storm Water Pump Station.
12. Remove a portion of the existing façade wall around the E. 1st and Market Street Storm Water Pump Station and install a chain link fence as shown on plans.
13. Construct the foundation and pad for the new electrical and control building.
14. Provide a new electric and control building as shown plans and as specified. This work is part of the Electric Pump proposal.
15. Install the new electrical and control building on the building pad, including unloading the building from the delivery truck.
16. Complete the electrical work to connect the existing power supply to the new electrical system and to connect the pumps and associated equipment to the new electrical system.
17. Install the level control equipment. The level control equipment is provided by Electric Pump as part of its proposal.
18. Remove and dispose of unused electrical and control equipment.
19. Remove and properly dispose of all construction debris and excess material.
20. Provide appropriate erosion control during construction to prevent loss of silt.
21. At the completion of construction seed all areas disturbed by construction.
22. Following stabilization if disturbed areas remove all erosion control.
23. Provide final cleanup.
24. Provide all ancillary work required for complete project. Listing in this section of specifications is intended to provide a listing of major items of work. However, the lump sum bid includes all work necessary for the project to be completed.

1.03 SCHEDULE

A. Existing stormwater pump station must remain in service until a date no earlier than 10 days prior to the scheduled delivery date of the electrical and control building.
B. Work that does not affect the operability of the existing E. 1st and Market Street Storm Water Pump Station should be completed prior to the date when the stormwater pump station can be taken out of service. This work would include removal and upgrading of existing stormwater pumps located in the SE 4th and Van Buren Storm Water Pump Station and installation of foundation and pad for new electrical and control equipment.

C. Starting no earlier than 10 days prior to the scheduled delivery date of the electrical and control building the existing stormwater pump station can be taken out of service.

D. Once stormwater pump station is taken out of service existing pumps and pump tubes can be removed and new equipment installed. Existing electrical equipment that will not be reutilized can be removed.

E. Stormwater pump station is to be fully operational within 30 calendar days after the station is taken out of service for repairs and modifications.

F. Electric Pump anticipates the delivery date for the control building will be about September 30, 2020.

G. Completion date for project is February 15, 2021. This completion date is based on the City allowing work to be started by December 31, 2021. If the start date for taking the station offline is delayed the completion date will be adjusted.

H. All cleanup and site restoration, including seeding to be completed no later than scheduled completion date.

I. The Contractor must notify the City 14 days in advance of the date requested to take the existing pump station out of service.

J. Past or recent experience the pump station is often in operation in the fall months until well after October 1. The City cannot allow the station to be taken offline if operation is or is anticipated due to high river conditions.

K. The City reserves the right to delay the date the existing pump station may be taken out of service due to the current or anticipated river stage. The City will notify the Contractor within 5 days of receiving notice of the requested date for taking the pump station out of service if the City is delaying the date the existing pump station may be taken out of service.

L. Contractor should anticipate the likelihood the start of work will be delayed due to high river conditions. There will be no adjustment of contract price as a result of the delay.
M. During a delay the Contractor can work on all elements of the project that do not require the existing pump station to be out of service.

PART 2 – PRODUCTS

2.01 CHAIN LINK FENCE

A. Comply with SUDAS Section 9060, 96-inch high black vinyl clad fence material.

B. Gate, 4’0” wide, height and material to match fence.

PART 3 – PAYMENT

A. E. 1st and Market Street Storm Water Pump Station Repairs, LS; Lump sum bid item for project includes all work necessary to complete the project, including work associated with removal, rehabilitation and installation of two pumps currently located at E. 4th and Van Buren Stormwater Pump Station, removal of existing pump tubes and pumps, installation of new pump tubes and rehabilitated pumps, all electrical and control work, site improvements, site restoration and all miscellaneous work required for complete project as specified and as shown on plan drawings.
2 - PUMPS AND PUMP TUBES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. This section describes the general requirements for the relocation of two existing pumps from the SE 4th and Van Buren Storm Water Pump Station to the E. 1st and Market Street Storm Water Pump Station, including the rehabilitation and upgrading of the pumps.

B. The section sets forth the general requirements for the removal of the existing pump tubes at the E. 1st and Market Street Storm Water Pump Station and the installation of new pump tubes.

PART 2 – PRODUCTS

2.01 PUMPS

A. Existing stormwater pumps are Flygt Model PL7101-865-710B4, Serial Numbers 951134 and 951135.

B. Two MAS801 pump upgrades as described in Electric Pump proposal including new submersible power cable, MAS811 pump electronic module, current transformer for pump electronic module, terminal plate, MAS801 central unit, MAS811 base unit and FOP 402 7-inch Touch Panel HMI and O-rings as necessary.

C. Two pump tubes, 48-inch OD, 0.5-inch wall thickness to length and configuration as required. Finish coat in accordance with paint system 21B.

D. Two Flygt ROX cable support system and stainless steel lifting cable including cable suspension system.

E. Two Flygt formed suction intakes (FSI) for pumps including 0.5-inch thick A-36 steel wall, exterior stiffeners as required. Finish coat in accordance with paint system 21B.

F. Incidental parts and equipment as required.

PART 3 – INSTALLATION

A. Remove existing pumps from SE 4th and Van Buren Storm Water Pump Station.
B. Rehabilitate and upgrade to existing pumps as set forth in Electric Pump proposal.
   1. Contractor responsible to load pump on truck provided by Electric Pump.
   2. Electric Pump proposal includes trucking to Electric Pump local shop and all work associated with rehabilitation and upgrading as specified.
   3. Electric Pump proposal includes trucking of pumps to E. 1st and Market Street Storm Water Pump Station when ready for installation.

C. Repair all aspects of SE 4th and Van Buren Storm Water Pump Station that were altered or removed as part of pump removal.

D. Following deactivation of E. 1st and Market Street Storm Water Pump Station remove existing pumps and properly dispose of existing pumps.

E. Following deactivation of E. 1st and Market Street Storm Water Pump Station remove existing pump tubes and dispose of existing tubes.
   1. Best available information indicates the vertical pump tube and horizontal discharge tube are bolted together with a flanged fitting.
   2. For small center pump the horizontal discharge tube can be cut off at inside wall of pump chamber.
   3. For the small center pump cover the opening in the wall between pump chamber and discharge chamber after the pump table is removed.

F. Following deactivation of E. 1st and Market Street Storm Water Pump Station remove top plate and existing control equipment in the unused pump bay.

G. Install new pump tubes as shown on plans.
   1. Pump tubes provided as part of Electric Pump proposal.
   2. Each pump tube will include four parts, including two pieces of the formed intake structure, one piece for the vertical pump tube and one piece for the horizontal discharge tube.
   3. Formed intake structure must be placed and anchored to the floor of the lift station. The two halves of the formed intake will include a flanged connection. Bolt the two pieces together.
   4. The formed intake and vertical pump tube include flanged connections. Bolt the vertical pump tube to the fully assembled formed intake structure.
   5. The horizontal discharge tube and vertical pump tube include a flanged fitting for connecting the vertical tube to the horizontal discharge tube. Place and bolt the horizontal discharge tube to the flanged fitting on the vertical pipe tube.
   6. All of the bolted connections must be made inside the lift station as the access opening in the top of the station is too small to accommodate preassembled parts.
7. Grout opening around new horizontal discharge tube through the chamber wall.

H. Unload upgraded and rehabilitated pumps and install pumps in the two new pump tubes.

I. Provide and install steel cover for center pump bay at E. 1st and Market Street Storm Water Pump Station that will be used for control equipment. Coordinate the configuration and dimensions of the new top plate with Electric Pump to accommodate the new radar control and float control system.

J. Contractor to provide ventilation at all times where personnel are working inside existing stormwater pump station.
3 – CONTROL BUILDING AND APPURTENANCES

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section describes one (1) control building and appurtenances for the Pump Station as specified hereinafter and shown on plans.

B. Manufacturer: Arrow Starnet.

1.02 BASIC REQUIREMENTS

A. Furnish materials, labor and equipment necessary to complete work specified in this section.

B. Submittals:
   1. Shop drawings, complete fabrication and installation drawings, including layout dimensions, details, and installation information necessary to show compliance with specifications and recommended installation procedures.
   2. MCC details.
   3. Control Panel (CP-1) details, including all equipment and accessories.

1.03 PUMP STATION CONTROL BUILDING

A. In accordance with the plans and specifications, provide a complete pre-fabricated, pre-tested pump station control building including all required equipment, accessories, wiring and adjusting as indicated in the project specifications, on the project plan, and installed in accordance with applicable National, State and Local Codes, minimum live load on roof - 50 psf.
   1. Including City of Des Moines Building Code and Corps of Engineers EM 1110-2-3104.

B. These specifications are based upon Arrow Model MCX812 (including all internal components) as manufactured and/or assembled by Starnet Technologies, or approved equal.

C. Dimensions: 8’ wide x 14’ long x 11’ high.
1.04 GENERAL

A. All materials used and work performed under this section shall comply with rules and regulations of the latest edition of the State Electrical Code and local ordinances.

B. As specified elsewhere within this Special Provision and in accordance with the Contract Documents, shop drawings and materials lists shall be submittal for equipment listed under this section.

C. It will be the responsibility of the contractor to protect and maintain all materials and work furnished and installed under this section until acceptance.

D. The Control Building shall consist of two separate components:
   1. Site poured concrete foundation with box outs for conduits entry.
   2. Control Building complete with space for field installed piping, valves, electrical switchgear, pump controls, HVAC, lighting, generator and other electrical work all pre-installed at the factory.

E. The control building and accessories shall be designed for compliance with NFPA820 as this standard pertains to classifications of above-grade equipment housings physically separated from wet well.

1.05 FOUNDATION

A. Foundation shall consist of concrete slab with footings properly dimensioned for the control building. Placement of piping stubbed up through this slab is critical as the control building arrives with a floor opening for drop-over installation. Refer to manufacturer’s drawing for precise dimensions. Confirm all concrete slab dimensions with module manufacturer prior to construction. Refer to drawings for details on foundation and concrete slab.

1.06 CONTROL BUILDING

A. Control building shall be a completely prewired, walk-in style with factory assembled electrical and control system for pump control and alarming. The electrical and control system shall be designed to assure operation for wet areas.
B. The control building shall include the following:

1. Structure walls and roof: consisting of Type 1 expanded polystyrene foam plastic of 3-1/2" thick, 7/16" thick Exposure 1, Oriented Stranded Board (OSB); standing seam metal roofing and stone aggregate exterior as shown on plans; minimum R value for walls shall be 15.5 and 23.4 for roof.

2. FRP interior wall and ceiling surfaces on all areas except the piping and valve housing section.

3. Slip resistant fiberglass floor.

4. Two (2) LED light fixtures hung from the ceiling; switched from light switch.

5. Two (2) 4-Panel Fiberglass Entry Doors: furnish with door lockset and hydraulic door closure; door lockset shall meet City of Des Moines requirements.

6. Two Exterior LED Lights w/ Photo-Cell.

7. Receptacles: minimum of two.

8. Thru-wall air conditioning unit and ventilation fan with automatic controls.

9. 480 volt/3 phase motor control center (MCC) consisting of main fused disconnect, branch circuit breakers, step down transformer, lighting panel, across-the-line motor starters for wastewater pumps and other accessories as detailed. MCC shall be Arc safe as manufactured by Starmet.

10. Control panel (CP-1) consisting of:
    a. Ethernet based PLC for control of pumps; Allen Bradley Micro Logix 1400 with required input/output boards, power supplies and display.
    b. Radar level measuring system; Vega PULS WL61.
    c. Wet well floats: two (2) for high/low levels.
    d. Intrinsic safe relays.
    e. Uninterruptible power source with battery backup.
    f. Flygt Mini-Cas protection modules.
    g. Alarm dialer and router; coordinate requirements with City of Des Moines.
    h. Exterior keypad and external beacon.
11. The walk-in module specified herein shall be designed to be set on and anchored to the foundation assembly described above. The module shall be equipped with lifting eyes, standing seam metal roof, aggregate stone exterior panels, and four-panel insulated metal door. Interior wall and ceiling surfaces shall be white FRP panels. Floor shall be constructed of grey slip-resistant fiberglass. The interior control enclosure shall be steel construction with baked enamel beige finish. System module shall be adequately sized to incorporate all controls specified herein and to include utility and standby power connections, indicating lights, selector switches, pump control logic, motor starters, alarm, etc., where specified to be associated with the pump station. Enclosure sizing shall be as shown on the drawings.

12. The level control/alarm module shall be connected to the level sensors through an intrinsically safe module or relays.

13. Control panel terminal blocks shall be provided and labeled to interface with audible alarm, external visual alarm, flasher for visual alarm, power monitor, pump monitors, and pump motor starters.

14. All legend plates/name plates and equipment designations shall be engraved type.

15. All terminal blocks shall be identified by both number and graphic symbols, which clearly indicate the purpose of each terminal block.

16. The enclosure shall have a separate hinged door with interlocked padlockable disconnect handle for each individual motor starter compartment. Disconnects shall include “flex-shaft” mechanisms to operate circuit breakers in separate breaker compartment. Units shall be designed such that ALL power (including line-side breaker lugs) is removed from each starter unit when disconnect is open.

17. The enclosure shall include separate line voltage compartments marked for access by qualified personnel only. The line voltage compartments shall house the transfer switch, transformer, TVSS, electric heating unit, pump breakers, TVSS and transformer breakers, and associated wiring.

18. Control panel enclosure shall match with MCC construction.

19. The control system shall provide total automatic control for the two pumps, and other equipment as indicated.

20. The control system shall provide FAIL indication and additional dry alarm contacts for all alarm points listed.

21. The control system shall provide for all other process signals, alarm conditions, and control functions indicated on the plans and in the specifications.

22. The control building electrical and control system shall provide required power to exiting generator and automatic transfer switch, receive status and alarm signals from generator and automatic transfer switch and transmit all alarms to City of Des Moines through an alarm dialer.
A. The Arc Safe motor control centers shall be 600 volt class suitable for operation on a 3 phase, 60 Hz system. The system operating voltage and number of wires shall be as indicated.

B. The motor control center shall receive power from an existing 1200 Amp automatic transfer switch as shown on drawings. Power distribution from the MCC shall be 480 volt, 3 phase, 3 wire, however the MCC shall include provision for termination of an incoming neutral conductor in conformance to NEC requirements for service entrance.

C. Enclosure shall be NEMA Type 1 enclosure. Compartment doors shall be interlocked with compartment circuit breakers. The interlock shall be fitted with a maintenance override.

D. Size and Arrangement
1. Motor control centers shall be of mechanical groupings of control center units, pre-assembled into a complete compartmentalized control structure. Each control section shall be nominally 80" tall by minimum 16" deep.
2. MCC's shall be designed to not exceed the space requirements as indicated on the Contract Drawings, including spaces, spares, and future compartments. MCC's shall be subject to rejection for exceeding the lengths indicated where allotted space is critical.
3. Equipment within the MCC may be rearranged at the discretion of the manufacturer, providing the MCC provides the spares, space, and future provisions indicated.
4. Switches and circuit breakers used as switches shall be located so that the center of the grip of the operating handle of the switch or circuit breaker, when in its highest position, will not be more than 6'-7" above the floor, including the height of the concrete pad.

E. Cabinet
1. Structural members shall be fabricated of not less than 12 gauge steel and side and top panels and doors shall be not less than 14 gauge steel.
2. Spaces designated as "SPACE" or "BLANK" shall include blank hinged doors and vertical bus bars.
3. Control units inside compartments shall be clearly identified with tags or stencil markings.
4. Each control unit including spares, spaces and blanks, lights, and devices shall be identified by an engraved nameplate. Identification shall include circuit number as indicated.
5. Each motor control center shall be fitted with the manufacturer's nameplate which shall include the NEMA Standard electric rating and other pertinent data, including manufacturer, sales order number, date of manufacture, and place of manufacture.

6. Where "L" or "U" shaped MCC layouts are indicated, corner compartments shall have similar current and short circuit ratings as functional compartments.

7. Fans, heat exchangers, transformers, capacitors, junction boxes, or other devices may not be mounted on the outside of the motor control center enclosure.

8. Finish for motor control center shall be powder coated, painted manufacturer Standard White. The panels shall be given 2 coats of primer inside and out and 2 coats of enamel finish.

F. Components
   1. Power Distribution
      a. All current carrying conductors shall be fully insulated.
      b. Conductors shall be sized sufficiently according to the standards of UL 508A.
      c. All lugs and terminals for line voltage field wiring shall be UL Listed Fingersafe Power Distribution Blocks.
      d. The use of bus bars and/or exposed metal lugs is not acceptable.

   2. Wireways: A separate vertical wireway shall be provided adjacent to each vertical unit. Thru-wall terminals shall be provided for interconnection between isolated compartments. The wireway shall be completely isolated from the equipment enclosures to permit pulling wire in the wireway without disturbing adjacent unit compartments.

   3. Soft motor Starters, Transformer and Panelboard
      a. Furnish as required complying with NEC requirements.

1.08 CONTROL PANEL

A. Refer to Item No. 10 - Control Panel for details.

1.09 STATION INSTALLATION

A. Obtain installation instructions from the station manufacturer at least 1 week prior to the scheduled shipment of the station to the job site. The contractor shall study the instructions and direct any questions he has to the station manufacturer representative for answers before proceeding with the station installation. The contractor shall then install the station in complete conformance with manufacturer's recommendations.
1.10 GUARANTEE

A. The manufacturer of the control components shall furnish a limited warranty
12 months from start-up that all equipment shall be free from defects in
design, materials and workmanship. The manufacturer shall furnish
replacement parts for any component proven defective, whether of his or
other manufacturer during the warranty period, excepting only those items
which are normally consumed in service, such as (but not limited to), light
bulbs, oil, grease, packing, etc.

1.11 UL LISTING

A. The control panel unit shall be the product of a manufacturer that is
authorized by Underwriters Laboratories, Inc. to build products in compliance
with UL Standard 698A (Enclosed Industrial Control Panel – Enclosure in
Non-Hazardous area with extensions into hazardous area). A UL label shall
be affixed to the completed control panel.
 PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Contractor shall provide electrical work, complete and operable, in accordance with the Contract Documents.

B. The provisions of this section apply to all electrical sections.

C. The work of this section is required for operation of electrically-driven equipment provided under specifications in other divisions. The Contractor's attention is directed to the requirement for proper coordination of the work of this section with the work of equipment specifications and the work of instrumentation sections.

D. Concrete, excavation, backfill, and steel reinforcement required for encasement, installation, or construction of the work of the various electrical sections is included as a part of the work under the respective sections.

1.02 REFERENCE STANDARDS

A. The work of this section shall comply with the following as applicable:

- NEC (NFPA 70) National Electrical Code
- NETA International Electrical Testing Association
- NEMA 250 Enclosure for Electrical Equipment (1000 Volts Maximum)

B. Electrical equipment shall be listed by and shall bear the label of Underwriters' Laboratories, Inc. (UL) or an independent testing laboratory acceptable to the local code enforcement agency having jurisdiction.

C. Installation of electrical equipment and materials shall comply with OSHA Safety and Health Standards (29 CFR 1910 and 29 CFR 1926, as applicable), state building standards, and applicable local codes and regulations.

D. Where the requirements of the specifications conflict with UL, NEMA, NFPA, or other applicable standards, the more stringent requirements shall govern.
1.03 SIGNAGE AND MARKINGS

A. Identification: Provide danger, caution, and warning signs and equipment identification markings in accordance with applicable federal and state OSHA and NEC requirements.

B. Local Disconnect Switches
   1. Each local disconnect switch for motors and equipment shall be legibly marked to indicate its purpose unless the purpose is indicated by the location and arrangement.

C. Warning Signs
   1. 600 volts nominal, or less: Entrances to rooms and other guarded locations that contain live parts shall be marked with conspicuous signs prohibiting unqualified persons to enter.
   2. Over 600 volts: Buildings, rooms, or enclosures containing exposed live parts or exposed conductors operating at greater than 600 volts nominal shall be lockable. Permanent and conspicuous warning signs shall be provided reading as follows: DANGER – HIGH VOLTAGE – KEEP OUT.
   3. Indoor electrical installations that are open to unqualified persons and containing metal - enclosed switchgear, unit substations, transformers, and other similar associated equipment over 600 volts nominal shall be marked with appropriate caution signs.
   4. Outside branch circuits and feeders over 600 volts - Warning signs shall be posted in plain view where unauthorized persons might come in contact with live parts – "WARNING – HIGH VOLTAGE – KEEP OUT".

D. Isolating Switches: Isolating switches not interlocked with an approved circuit interrupting device shall be provided with a sign warning against opening them under load.

1.04 PUBLIC UTILITIES REQUIREMENTS

A. Existing electrical service is 277/480V system. The Contractor shall contact (MidAmerican Electric Company) the serving utility and coordinate if any scheduled shut-downs are required during the construction.

1.05 PERMITS AND INSPECTION

A. Permits, if any, shall be obtained and inspection fees shall be paid according to the General Conditions.
1.06 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Item No. 2 - Electrical Work, General.

B. Shop Drawings: Include the following:
   1. Complete material lists stating manufacturer and brand name of each item or class of material.
   2. Shop drawings for all grounding work not specifically indicated.
   4. Voltage requirement, phase, and current, as applicable.
   5. Front and rear access requirements.
   6. Test reports.
   7. Grounding requirements.

C. Shop drawings shall be custom prepared.

D. Owner's Manuals: Complete information in accordance with Item No. 2 - Electrical Work, General.

E. Record Drawings: The Contractor shall show invert and top elevations and routing of all duct banks and concealed below-grade electrical installations. Record drawings shall be prepared, be available to the Engineer, and be submitted.

1.07 AREA DESIGNATIONS

A. General
   1. Raceway system enclosures shall comply with Item No. 4 - Electrical Raceway Systems.

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<td>Indoors (inside Starnet Building)</td>
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B. Material Requirements
   1. NEMA 4X enclosures shall be 304 stainless steel.
   2. NEMA 7 enclosures shall be cast aluminum where used with aluminum conduit; and cast iron when used with galvanized steel conduit.
3. NEMA 1, 3R, and 12 enclosures shall be steel coated with ANSI 61 grey paint. NEMA 4X, 7, and 9 shall not be coated.

1.08 TESTS

A. The Contractor shall be responsible for factory and field tests specified in Electrical sections and by the Engineer or other authorities having jurisdiction. The Contractor shall furnish necessary testing equipment and pay costs of tests, including replacement parts and labor, due to damage resulting from damaged equipment or from testing and correction of faulty installation.

B. Where test reports are indicated, proof of design test reports for mass-produced equipment shall be submitted with the shop drawings, and factory performance test reports for custom-manufactured equipment shall be submitted and be approved prior to shipment. Field test reports shall be submitted for review prior to Substantial Completion.

C. Equipment or material that fails a test shall be removed and replaced.

1.09 SUBMITTALS

A. Furnish submittals in accordance with this section.

B. Shop Drawings: Include the following:
   1. Complete material lists stating manufacturer and brand name of each item or class of material.
   2. Shop drawings for all grounding work not specifically indicated.
   3. Front, side, rear elevations, and top views with dimensional data.
   4. Location of conduit entrances and access plates.
   5. Component data.
   6. Connection diagrams, terminal numbers, internal wiring diagrams, conductor size, and cable numbers.
   8. Types of materials and finish.
   10. Temperature limitations, as applicable.
   11. Voltage requirement, phase, and current, as applicable.
   12. Front and rear access requirements.
   13. Test reports.
   14. Grounding requirements.
15. Catalog cuts or photocopies of applicable pages of bulletins or brochures for mass produced, non-custom manufactured material. Catalog data sheets shall be stamped to indicate the project name, applicable Section and paragraph, model number, and options. This information shall be marked in spaces designated for such data in the Engineer's stamp.

C. Shop drawings shall be custom prepared. Drawings or data indicating "optional" or "as required" equipment are not acceptable. Options not proposed shall be crossed out or deleted from shop drawings.

D. Owner's Manuals: Complete information in accordance with Item No. 2 - Electrical Work, General.

E. Record Drawings: The Contractor shall show invert and top elevations and routing of all duct banks and concealed below-grade electrical installations. Record drawings shall be prepared, be available to the Engineer, and be submitted according to Item No. 2 - Electrical Work, General.

PART 2 - PRODUCTS

2.01 GENERAL

A. Equipment and materials shall be new, shall be listed by UL, and shall bear the UL label where UL requirements apply. Equipment and materials shall be the products of experienced and reputable manufacturers in the industry. Similar items in the work shall be products of the same manufacturer. Equipment and materials shall be of industrial grade standard of construction.

B. Where a NEMA enclosure type is indicated in a non-hazardous location, the Contractor shall utilize that type of enclosure, despite the fact that certain modifications such as cutouts for control devices may negate the NEMA rating.

C. On devices indicated to display dates, the year shall be displayed as 4 digits.

2.02 MOUNTING HARDWARE

A. Miscellaneous Hardware
1. Nuts, bolts, and washers shall be stainless steel.
2. Threaded rods for trapeze supports shall be continuous threaded, galvanized steel, 3/8" dia. minimum.
3. Strut for mounting of conduits and equipment shall be galvanized steel. Where contact with concrete or dissimilar metals may cause
galvanic corrosion, suitable non-metallic insulators shall be utilized to prevent such corrosion. Aluminum strut shall not be utilized for free standing support frames. Strut shall be as manufactured by Unistrut, B-Line, or equal.

4. Anchors for attaching equipment to concrete walls, floors and ceilings shall be stainless steel expansion anchors, such as "Rawl-Bolt," "Rawl-Stud" or "Lok-Bolt" as manufactured by Rawl; similar by Star, or equal. Wood plugs shall not be permitted.

2.03 ELECTRICAL IDENTIFICATION

A. Nameplates: Nameplates shall be fabricated from white-letter, black-face laminated plastic engraving stock, Formica type ES-1, or equal. Each shall be fastened securely, using fasteners of brass, cadmium plated steel, or stainless steel, screwed into inserts or tapped holes as required. Engraved characters shall be block style with no characters smaller than 1/8" top to bottom.

B. Conductor and Equipment Identification: Conductor and equipment identification devices shall be either imprinted plastic-coated cloth marking devices such as manufactured by Brady, Thomas & Betts, or equal, or shall be heat-shrink plastic tubing, imprinted split-sleeve markers cemented in place, or equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Incidentals: The Contractor shall provide all materials and incidentals required for a complete and operable system, even if not required explicitly by the specifications or the drawings.

B. Wiring shall be #12 AWG minimum, and conduits shall be 3/4" minimum (exposed) and 1" minimum (encased). Where circuits are combined in the same raceway, the Contractor shall derate conductor ampcapities in accordance with NEC requirements.

C. Workmanship: Materials and equipment shall be installed in strict accordance with printed recommendations of the manufacturer. Installation shall be accomplished by workers skilled in the work. Installation shall be coordinated in the field with other trades to avoid interferences.
D. Protection of Equipment and Materials: The Contractor shall fully protect materials and equipment against damage from any cause. Materials and equipment, both in storage and during construction, shall be covered in such a manner that no finished surfaces will be damaged, marred, or splattered with water, foam, plaster, or paint. Moving parts shall be kept clean and dry. The Contractor shall replace or refinish damaged materials or equipment, including faceplates of panels and switchboard sections as part of the work.

E. Incoming utility power equipment shall be provided in conformance with the utility's requirements.

3.02 CLEANING

A. Before final acceptance, the electrical work shall be thoroughly cleaned. Exposed parts shall be thoroughly cleaned of cement, plaster, and other materials. Oil and grease spots shall be removed with a non-flammable cleaning solvent. Such surfaces shall be carefully wiped and cracks and corners scraped out. Touch-up paint shall be applied to scratches on panels and cabinets. Electrical cabinets or enclosures shall be vacuum-cleaned.
5 – ELECTRICAL RACEWAY SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Contractor shall provide electrical raceway systems, complete and in place, in accordance with the Contract Documents.

1.02 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Item No. 2 - Electrical Work, General.

B. Shop Drawings
   1. Complete catalog cuts of raceways, fittings, boxes, supports, and mounting hardware, marked where applicable to show proposed materials and finishes.
   2. Dimensioned layout drawings of cable tray routings, including elevations.

PART 2 - PRODUCTS

2.01 GENERAL

A. Pull and junction boxes, fittings, and other indicated enclosures that are dedicated to the raceway system shall comply with this section.

2.02 CONDUIT

A. Rigid Aluminum (RAL) Conduits
   1. Rigid aluminum conduit shall be manufactured of 6063 alloy, temper T-1.
   2. Rigid aluminum conduit shall be manufactured in accordance with ANSI C80.5 - Rigid Aluminum Conduit, and UL-6 - Rigid Metal Electrical Conduit.
   3. Manufacturers, or equal.
      a. V.A.W. of America
      b. Alcoa

B. Rigid Galvanized Steel (RGS) Conduit
   1. Rigid steel conduit shall be mild steel, hot-dip galvanized inside and out.
   2. Rigid steel conduit shall be manufactured in accordance with ANSI C80.1 - Rigid Steel Conduit, Zinc Coated, and UL-6.
3. Manufacturers, or equal.
   a. LTV Steel
   b. Triangle
   c. Wheatland Tube

C. Rigid Non-Metallic Conduit
1. Rigid non-metallic conduit shall be Schedule 40 pvc, sunlight resistant.
2. Rigid non-metallic conduit shall be manufactured in accordance with NEMA TC-2 - Electrical Plastic Tubing and Conduit, and UL-651 - Standard for Rigid Non-metallic Conduit.
3. Manufacturers, or equal.
   a. Carlon
   b. Condux

D. Rigid pvc Coated Galvanized Steel (RPGS) Conduit
1. The conduit, prior to pvc coating, shall meet the requirements for RGS conduit above.
2. A pvc coating shall be bonded to the outer surface of the galvanized conduit. The bond between the coating and the conduit surface shall be greater than the tensile strength of the coating. The inside surfaces and threads of the conduit shall have a 2-mil urethane coating.
3. pvc coating thickness shall be not less than 40 mils.
4. pvc coated RGS shall be manufactured in accordance with the following standards:
   a. UL-6
   b. ANSI C80.1
   c. Federal Specification WW-C-581E.
   d. NEMA RN1 - pvc externally coated galvanized rigid steel conduit and intermediate metal conduit.
5. Manufacturers, or Equal
   a. Robroy
   b. Thomas & Betts

E. Liquidtight Flexible Conduit
1. Liquidtight flexible conduit shall be constructed of a flexible galvanized metal core with a sunlight resistant thermoplastic outer jacket.
2. Liquidtight flexible conduit shall be manufactured in accordance with UL-360 - Steel Conduits, Liquid-Tight Flexible.
3. Manufacturers, or equal.
   a. Anaconda, Sealtite
   b. Electriflex, Liquatite
F. Electrical Metallic Tubing (EMT) or Intermediate conduit (IMC) will not be accepted.

2.03 FITTINGS AND BOXES

A. General
   1. Cast and malleable iron fittings for use with metallic conduit shall be the threaded type with 5 full threads.
   2. Fittings and boxes shall have neoprene gaskets and non-magnetic stainless steel screws. Covers shall be attached by means of holes tapped into the body of the fitting. Covers for fittings attached by means of clips or clamps will not be acceptable.
   3. Boxes larger than standard cast or malleable types shall be 304 stainless steel, NEMA 4X.
   4. In outdoor areas, conduit shall be terminated in raintight hubs as manufactured by Myers, O.Z. Gedney, Appleton, or equal. In other than outdoor areas, sealed locknuts and bushings shall be used.
   5. Conduit, fittings, and boxes in hazardous locations shall be suitable for the Class and Division indicated.

B. Cast Aluminum Fittings and Boxes
   1. Cast aluminum boxes and fittings shall have less than 0.40% copper content and shall be utilized with aluminum conduit.
   2. Manufacturers, or equal.
      a. O.Z. Gedney
      b. Appleton
      c. Crouse-Hinds

C. Malleable Iron Fittings and Boxes
   1. Fittings and boxes for use with galvanized steel conduit shall be of malleable iron or gray-iron alloy with zinc plating.
   2. Manufacturers, or equal.
      a. O.Z. Gedney
      b. Crouse-Hinds
      c. Appleton

D. pvc Fittings and Boxes
   1. Fittings for use with rigid non-metallic conduit shall be pvc, solvent welded type.
   2. Boxes shall be pvc or fiberglass reinforced polyester (FRP).
   3. Manufacturers, or equal.
      a. Carlon
      b. Crouse-Hinds
      c. Hoffman
4. Provide welding solvent as required for installation of non-metallic conduit and fittings.

E. pvc Coated Fittings
1. Fittings for use with pvc coated RGS shall be pvc coated and shall be products of the same manufacturer as the conduit.
2. Male and female threads and internal surfaces shall have a 2-mil urethane coating.

F. Stainless Steel Boxes
1. Stainless steel boxes shall be used with pvc coated RGS conduit and where indicated.
2. Stainless steel boxes shall be NEMA 4X, Type 304.
3. Stainless steel shall be minimum 14-gauge thickness, with a brushed finish.
4. Doors shall have full length stainless steel piano hinges. Non-hinged boxes are not acceptable.
5. Manufacturers, or equal.
   a. Hoffman
   b. Rohn
   c. Hammond

G. Sheet Steel Boxes
1. Sheet steel boxes shall be galvanized steel outlet and switch boxes.
2. Manufacturers, or equal.
   a. Raco
   b. Steel City
   c. Appleton Electric

2.04 ACCESSORIES

A. Identification Devices
1. Raceway tags: round, permanent, non-ferrous metal; pressure stamped, embossed or engraved.
2. Warning tape: red 4 mil polyethylene; minimum width of 6"; minimum 1" high permanent black lettering imprinted continuously over entire length; Panduit type HTDU, or equal.
PART 3 - EXECUTION

3.01 GENERAL

A. Wiring shall be run in raceway unless indicated otherwise.

B. Raceways shall be installed between equipment as indicated. Raceway systems shall be electrically and mechanically complete before conductors are installed. Bends and offsets shall be smooth and symmetrical, and shall be accomplished with tools designed for this purpose. Factory elbows shall be utilized wherever possible.

C. Where raceway routings are indicated on plan views, follow those routings to the extent possible.

D. Where raceways are indicated but routing is not indicated, such as home runs or on conduit developments and schedules, raceway routings shall be the Contractor's choice and in strict accordance with the NEC and customary installation practice. Raceway shall be encased, exposed, concealed, or under floor as indicated, except that conduit in finished areas shall be concealed unless specifically indicated otherwise.

E. Routings shall be adjusted to avoid obstructions. Coordinate between trades prior to installation of raceways. Lack of such coordination shall not be justification for extra compensation, and removal and re-installation to resolve conflicts shall be by the Contractor as part of the work.

F. Exposed raceways shall be installed parallel or perpendicular to structural beams.

G. Install expansion fittings with bonding jumpers wherever raceways cross building expansion joints.

3.02 CONDUIT

A. Exposed conduit shall be rigid aluminum.

B. Conduit concealed, buried, or encased in concrete shall be Schedule 40 pvc; underground analog control conduits shall be pvc coated RGS.

C. Exposed conduit shall be 3/4" minimum trade size. Encased conduit shall be 1" minimum trade size. Supports shall be installed at distances required by the NEC.
D. Wherever possible, conduit runs shall slope to drain at one or both ends of run. Wherever conduit enters substructures below grade, the conduit shall be sloped to drain water away from the structure. Extreme care shall be taken to avoid pockets or depressions in conduit.
PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Contractor shall provide wires and cable, complete and operable, in accordance with the Contract Documents.

1.02 CONTRACTOR SUBMITTALS

A. The Contractor shall submit shop drawings in accordance with Item No. 2 - Electrical Work, General.

PART 2 - PRODUCTS

2.01 GENERAL

A. Conductors, include grounding conductors, shall be copper. Aluminum conductor wire and cable will not be permitted. Insulation shall bear UL label, the manufacturer's trademark, and identify the type, voltage, and conductor size. All conductors except flexible cords and cables, fixture wires, and conductors that form an integral part of equipment such as motors and controllers shall conform to the requirements of Article 310 of the National Electric Code, latest edition, for current carrying capacity. Flexible cords and cables shall conform to Article 400, and fixture wires shall conform to Article 402. Wiring shall have wire markers at each end.

2.02 LOW VOLTAGE WIRE AND CABLE

A. Power and Lighting Wire

1. Wire rated for 600 volts in duct or conduit for all power and lighting circuits shall be Class B Type XHHW cross-linked polyethylene conforming to UL-44 - UL Standard for Thermoset-Insulated Wires and Cables, or THHN/THWN.

2. Conductors for feeders as defined in Article 100 of the NEC shall be sized to prevent a voltage drop exceeding 3% at the farthest outlet of power, heating, and lighting loads, or combinations of such loads, and where the maximum total voltage drop on both feeders and branch circuits to the farthest connected load does not exceed 5%.
3. Conductors for branch circuits as defined in Article 100 of the NEC, shall be sized to prevent voltage drop exceeding 3% at the farthest connected load or combinations of such loads and where the maximum total voltage drop on both feeders and branch circuits to the farthest connected load does not exceed 5%.

4. Wiring for 600 volt class power and lighting shall be as manufactured by General Cable, Okonite, or Rome Cable.

B. Control Wire
1. Control wire in duct or conduit shall be the same type as power an lighting wire indicated above.
2. Control wiring shall be No.14 AWG.
3. Control wires at panels and cabinets shall be machine tool grade type MTW, UL approved, rated for 90°C. at dry locations, and be as manufactured by American, Carol Cable, or equal.

C. Instrumentation Cable
1. Instrumentation cable shall be rated at 600 volts.
2. Individual conductors shall be No. 16 AWG stranded, tinned copper. Insulation shall be color coded polyethylene: black-red for two-conductor cable and black-red-white for three-conductor cable.
3. Instrumentation cables shall be composed of the individual conductors, an aluminum polyester foil shield, a No. 18 AWG stranded tinned copper drain wire, and a pvc outer jacket with a thickness of 0.048”.
4. Single pair, No. 16 AWG, twisted, shielded cable shall be Belden Part No. 9342, or equal.
5. Single triad, No. 16 AWG, twisted, shielded cable shall be Belden Part No. 1119A, or equal.

D. Communication Cable
2. Shielded with stranded conductors.
3. 4 pair, 24 AWG.
4. Heavy duty oil and sunlight resistant PVC jacket with sequential markings at 2’ interval; NEC rated and UL listed.
5. Belden or equal.

2.03 CABLE TERMINATIONS

A. Compression connectors shall be Burndy "Hi Lug", Thomas & Betts "Sta-Kon," or equal. Threaded connectors shall be split bolt type of high strength copper alloy. Pressure type, twist-on connectors will not be acceptable.
B. Pre-insulated fork tongue lugs shall be Thomas & Betts, Burnsdy, or equal.

C. General purpose insulating tape shall be Scotch No. 33, Plymouth "Slip-knot", or equal. High temperature tape shall be polyvinyl as manufactured by Plymouth, 3M, or equal.

D. Labels for coding 600 volt wiring shall be computer printable or pre-printed, self-laminating, self-sticking, as manufactured by W.H. Brady, 3M, or equal.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall provide and terminate all power, control, and instrumentation conductors except where indicated.

3.02 INSTALLATION

A. Conductors shall not be pulled into raceway until raceway has been cleared of moisture and debris.

B. Pulling tensions on raceway cables shall be within the limits recommended by the cable manufacturer. Wire pulling lubricant, where needed, shall be UL approved.

C. Instrumentation wire shall not be run in the same raceway with power and control wiring except where specifically indicated.

D. Wire in panels, cabinets, and wireways shall be neatly grouped using nylon tie straps, and shall be fanned out to terminals.

3.03 SPLICES AND TERMINATIONS

A. General
   1. Wire taps and splices shall be properly taped and insulated according to their respective classes.
   2. In general, there shall be no cable splices in underground manholes or pullboxes. If splices are necessary, the cables shall be brought aboveground and terminated in a NEMA 4X, stainless steel terminal or splice cabinet on a concrete pad.
   3. Stranded conductors shall be terminated directly on equipment box lugs making sure that all conductor strands are confined within lug. Use forked-tongue lugs where equipment box lugs have not been provided.
B. Control Wire and Cable
1. Control conductors shall be spliced or terminated only at the locations indicated and only on terminal strips or terminal lugs of vendor furnished equipment.

C. Instrumentation Wire and Cable
1. Shielded instrumentation cables shall be grounded at one end only, preferably the receiving end on a 4-20 mA system.
2. Two- and three-conductor shielded cables installed in conduit runs which exceed available standard cable lengths may be spliced in pullboxes. Such cable runs shall have only 1 splice per conductor.

D. Power Wire and Cable
1. All 120/208-volt, 120/240-volt, and 480/277-volt branch circuit conductors may be spliced in suitable fittings at locations determined by the Contractor.
2. Splices to motor leads in motor terminal boxes shall be wrapped with mastic material to form a mold and then shall be taped with a minimum of 2 layers of varnished cambric tape overtaped with a minimum of 2 layers of high temperature tape.
3. Shielded power cable shall be terminated with pre-assembled stress cones in a manner approved by the cable and terminal manufacturer. The Contractor shall submit the proposed termination procedure as a shop drawing.

3.04 CABLE IDENTIFICATION

A. General: Wires and cables shall be identified for proper control of circuits and equipment and to reduce maintenance effort.

3.05 TESTING

A. Continuity Test: Control and instrumentation cables shall be tested for continuity, polarity, undesirable ground, and origination. Such tests shall be performed after installation and prior to placing cables in service.
7 - GROUNDING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Contractor shall provide the electrical grounding system, complete and operable, in accordance with the Contract Documents.

B. The requirements of Item No. 2 - Electrical Work, General apply to this section.

C. Single Manufacturer: Like products shall be the end product of one manufacturer in order to achieve standardization of appearance, operation, maintenance, spare parts and manufacturer's services.

1.02 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Item No. 2 - Electrical Work, General.

B. Shop Drawings: Manufacturer's product information for connections, clamps, and grounding system components, showing compliance with the requirements of this section.

PART 2 - PRODUCTS

2.01 GENERAL

A. Components of the grounding electrode system shall be manufactured in accordance with ANSI/UL 467 - Standard for Safety Grounding and Bonding Equipment, and shall conform to the applicable requirements of National Electrical Code Article 250 and local codes.

2.02 GROUNDING SYSTEM

A. Grounding loop conductors shall be bare annealed copper conductors suitable for direct burial. Conductors shall be No. 4/0 unless indicated otherwise.

B. Ground Rods
1. Unless indicated otherwise, the ground rod shall be a minimum of 3/4" in diameter, 10' long, and have a uniform covering of electrolytic copper metallically bonded to a rigid steel core. The copper to steel bond shall be corrosion resistant.
2. Conform to ANSI/UL 467.
3. Sectional type joined by threaded copper alloy couplings.

C. Buried cable-to-cable and cable-to-ground rod connections shall be made using exothermic welds by Cadweld, Enrico Products, or equal.

D. Exposed grounding connectors shall be of the compression type (connector to cable), made of high copper alloy, and be manufactured specifically for the particular grounding application. The connectors shall be Burndy, O.Z. Gedney, or equal.

E. Grounding clamps shall be used to bond each separately derived system to the grounding electrode conductors.

F. Equipment Grounding Circuit Conductors
   1. These conductors shall be the same type and insulation as the load circuit conductors. The minimum size shall be as outlined in Table 250.122 of the National Electrical Code, unless indicated otherwise.
   2. Metallic conduit systems shall have equipment grounding wires as well as being equipment grounding conductors themselves.

G. Manufacturers of grounding materials shall be Copperweld, Blackburn, Burndy, or equal.

PART 3 - EXECUTION

3.01 GROUNDING

A. Provide a separate grounding conductor, securely grounded in each raceway independent of raceway material.

B. Provide a separate grounding conductor for each motor and connect at motor box. Do not use bolts securing motor box to frame or cover for grounding connectors.

C. Size as given on the conduit schedule and in accordance with the NEC-Article 250.

D. Route conductors inside raceway.

E. Provide a grounding type bushing for secondary feeder conduits which originate from the secondary section of each MCC section, switchboard, or panelboard.

F. Individually bond these raceways to the ground bus in the secondary section.
G. Provide a green insulated wire as grounding jumper from the ground screw to a box grounding screw and, for grounding type devices, to equipment grounding conductor.

H. Provide a separate grounding conductor in each individual raceway for parallel feeders.

I. Interconnect the secondary switchgear neutral bus to the ground bus in the secondary switchgear compartment only at service entrance point or after a transformer.

J. Bond cold water pipe system and building structure to separate grounding electrode per NEC.

K. Measure ground impedance in accordance with IEEE STD 81 after installation but before connecting the electrode to the remaining grounding system.

L. Ground Rods
   1. Locations shall be as indicated.
   2. Rods forming an individual ground array shall be equal in length.

M. Shield Grounding
   1. Shielded instrumentation cable shall have its shield grounded at one end only unless shop drawings indicate the shield will be grounded at both ends.
   2. The grounding point shall be at the control panel or otherwise at the receiving end of the signal carried by the cable.
   3. Termination of shield drain wire shall be on its own terminal screw.
   4. Terminal screws shall be jumpered together using manufactured terminal block jumpers.
   5. Connection to the ground bus shall be via a green No. 12 conductor to the main ground bus for the panel.
PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Process Control and Instrumentation Systems (PCIS) shall be furnished as an integral part of the Control Building and appurtenances as described in Item No. 13.

B. The requirements of this section apply to all components of the PCIS unless indicated otherwise.

C. Related work specified elsewhere:
1. Item No. 10 - Instrumentation Equipment.
2. Item No. 14 - Control Panel.

1.02 REFERENCES

A. National Fire Protection Association (NFPA):

B. National Electrical Manufacturers Association (NEMA):
1. NEMA ICS-2 - Industrial Control Devices, Controllers, and Assemblies.
2. NEMA 250 - Enclosures for Electrical Equipment.

C. Underwriters Laboratories (UL):
1. UL 508 - Industrial Control Equipment.

1.03 GENERAL

A. The Contractor shall use Controls Integrator (CI) from Electric Pump/Starnet to furnish, install and place into service the PCIS.

B. Contractor shall assign to the CI full responsibility for the functional operation of instrumentation and integrated controls systems. The Controls Integrator shall:
1. Perform engineering required to select, to furnish, to supervise installation and connection, to calibrate, and to place into operation additional sensors, instruments, controls, accessories, and other equipment as specified.
2. Be responsible for the integration of related systems and shall ensure compatibility of components through the coordination of all hardware, signal converters, communications software and accessories.
3. Be under direct, written agreement with the Contractor and comply with specified requirements of these Documents.

C. Work specified in Items No. 12 - Process Control and Instrumentation System, No. 13 - Instrumentation Equipment, No. 14 - Control Panel and No. 15 - Control Descriptions includes furnishing, installing, start-up, testing and adjusting of all required equipment, including instruments, equipment, hardware, software, wiring, accessory equipment, and training to provide a completely operational process control and instrumentation system.

D. It shall be the responsibility of the Contractor through the use of the CI to furnish a complete and fully operating system; The Contractor shall be responsible for all details which may be necessary to properly install, adjust and place in operation the complete installation; The Contractor shall assume full responsibility for additional costs which may result from unauthorized deviations from the Contract Documents.

1.04 CONTROLS INTEGRATOR EXPERIENCE AND CAPABILITIES

A. The CI shall be normally engaged in assembly, installation, repair, and maintenance of process control and instrumentation systems.

B. The CI shall have qualified, trained service personnel on staff who are capable of programming, maintaining and adjusting the system; The CI shall be capable of offering an extended service contract after completion of the warranty period, including 24 hour, 7 day a week emergency services.

C. The CI shall have service and parts office within 100 miles of project site, shall be able to provide service within time period acceptable to the Owner; the local office shall have full-time service personnel.

D. Control Integrator: Electric Pump/Starnet.

1.05 SUBMITTALS

A. Submit informational literature/data for following materials and equipment in accordance with general procedures set forth in specifications:
   1. All equipment and components indicated on drawings and specified in this section.

B. Submit shop drawings for following materials and equipment in accordance with general procedures set forth in specifications:
   1. Panel drawings including system schematic drawings, terminal numbering, component schematic drawings, dimension drawings, layout drawing and nameplate schedule.
   2. Overall system diagram showing all components, converters, cables, and connectors.
C. Submit operation and maintenance instructions for following materials and equipment in accordance with general procedures set forth in specifications:
   1. Panel equipment, field devices and instruments, including "as-built" system schematics.

D. All submittals bound in 3-ring binders with labeled tabs separating sections.

1.06 GUARANTEE

A. Contractor shall guarantee operation of system and that materials and workmanship of equipment be free from defects for period as defined in General Conditions of project manual providing equipment has been operated and maintained in accordance with manufacturer's recommendations.

1.07 TESTING AGENCY CERTIFICATION

A. Panel furnished under this section constructed in accordance with UL 508.

B. Panel shop-inspected by UL or constructed in UL-recognized facility; completed panel shall bear serialized UL label indicating acceptance under Standard 508.

PART 2 - PRODUCTS

2.01 GENERAL

A. Code and Regulatory Compliance: PCIS work shall conform to or exceed the applicable requirements of the National Electrical Code.

B. Current Technology: Meters, instruments, and other components shall be the most recent field-proven models marketed by their manufacturers at the time of submittal of the Shop Drawings unless otherwise required to match existing equipment.

C. Hardware Commonality: Instruments which utilize a common measurement principle (for example, d/p cells, pressure transmitters, level transmitters that monitor hydrostatic head) shall be furnished by a single manufacturer. Panel mounted instruments shall have matching style and general appearance. Instruments performing similar functions shall be of the same type, model, or class, and shall be from a single manufacturer.
D. Loop Isolators and Converters: Signal isolators shall be provided as required to ensure adjacent component impedance match where feedback paths may be generated, or to maintain loop integrity during the removal of a loop component. Dropping precision wirewound resistors shall be installed at all field side terminations in the control panels to ensure loop integrity. Signal conditioners and converters shall be provided where required to resolve any signal level incompatibilities or provide required functions.

E. Environmental Suitability: Indoor and outdoor control panels and instrument enclosures shall be suitable for operation in the ambient conditions associated with the locations designated in the Contract Documents. Heating, cooling, and dehumidifying devices shall be provided in order to maintain all instrumentation devices 20% within the minimums and maximums of their rated environmental operating ranges. The Contractor shall provide power wiring for these devices. Enclosures suitable for the environment shall be furnished. All instrumentation in hazardous areas shall be suitable for use in the particular hazardous or classified location in which it is to be installed.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General
1. Instrumentation, including instrumentation furnished under other divisions, shall be installed under Items No. 12 - Process Control and Instrumentation System, No. 13 - Instrumentation Equipment, No. 14 - Control Panel and No. 15 - Control Descriptions and the manufacturers' instructions.

B. Conduit, Cables, and Field Wiring
1. Conduit shall be provided under various electrical sections without delay to the work of Items No. 12 - Process Control and Instrumentation System, No. 13 - Instrumentation Equipment, No. 14 - Control Panel and No. 15 - Control Descriptions.
2. Process equipment control wiring, 4-20 mA signal circuits, signal wiring to field instruments, PLC input and output wiring and other field wiring and cables shall be provided under various electrical sections.
3. Terminations and wire identification at PCIS equipment furnished under this or any other division shall be provided under Items No. 12 - Process Control and Instrumentation System, No. 13 - Instrumentation Equipment, No. 14 - Control Panel and No. 15 - Control Descriptions.
C. Ancillary Devices: The Contract Documents show all necessary conduit and instruments required to make a complete instrumentation system. The Contractor shall be responsible for providing any additional or different type connections as required by the instruments and specific installation requirements. Such changes shall not be a basis of claims for extra work or delay.

3.02 CALIBRATION

A. General: Devices provided under Items No. 12 - Process Control and Instrumentation System, No. 13 - Instrumentation Equipment, No. 14 - Control Panel and No. 15 - Control Descriptions shall be calibrated according to the manufacturer's recommended procedures to verify operational readiness and ability to meet the indicated functional and tolerance requirements.

3.03 START-UP

A. The Controls Integrator shall provide skilled programmer/instrumentation engineer or technician who shall complete troubleshooting and start-up to place entire system into satisfactory operation; engineer or technician shall make necessary inspection of completed installation, make necessary final field adjustments and make program revisions as required for start-up.

B. Demonstrate proper operation of all system features and functions to Owner and Engineer.

C. Coordinate start-up scheduling with Owner and Engineer.
9 – INSTRUMENTATION EQUIPMENT

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. General: The Contractor shall provide instrument systems and switches, complete and operable in accordance with the Contract Documents.

B. The requirements of Item No. 9 - Process Control and Instrumentation System apply to this section.

1.02 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Item No. 8 - Process Control and Instrumentation System.

PART 2 - PRODUCTS

2.01 LEVEL DETECTION SWITCHES

A. Tipping Float Level Switches
   1. Tipping float level switches shall consist of a switch, a moving float, and a connecting cable that is anchored at the midpoint of a differential band. As the level rises and falls the float rights itself or inverts causing switching actions. The cable anchoring point shall be protected by strain relief. The hermetically sealed switches shall be SPDT with a minimum rating of 10 Amps at 120 VAC. Mercury type switches will not be accepted.
   2. Manufacturer shall be MAGNETROL T10, FLYGT ENM-10, KARI, or equal.
   3. Refer to plans for trip set points.

2.02 LEVEL MEASURING SYSTEMS

A. Radar level measuring system shall consist of a non-contact microwave impulse generator, an electronic controller-transmitter, and interconnecting cables. The controller-transmitter shall generate the microwave signal to drive the transducer, detect the return echo, and convert the elapsed time first to a level signal and send to a linearized level signal. The controller-transmitter shall be in a standalone enclosure and shall produce a 4 - 20 mA signal linearly proportional to level. Housing shall be watertight and shall be constructed of Valox PBT. Ultrasonic level measuring system shall be manufactured by Vega Model VEGAPULS WL61.
PART 3 - EXECUTION

3.01 GENERAL

A. Install Level Sensors, level detection float switches at locations shown on drawings.

3.02 CALIBRATION, ADJUSTMENT AND TESTING

A. Devices requiring field calibration shall be calibrated in presence of Owner's representative and documented.
10 – CONTROL PANEL

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. General: The Contractor shall provide a control panel(s) consisting of soft starters, pump mas panel, transformer, single phase breaker panel, surge protection device (spd), Allen-Bradley MicroLogix 1400 PLC with operator interface and all other required accessories complete and operable, in accordance with the Contract Documents.

B. The requirements of Item No. 8 - Process Control and Instrumentation System apply to this section.

1.02 CONTRACTOR SUBMITTALS

A. General: Submittals shall be furnished in accordance with Item No. 2 - Electrical Work, General.

B. Control Panel Engineering Submittal: The Contractor shall submit a control panel engineering submittal (CPES) for the control panel. The CPES shall completely define and document the construction, finish, layout, power circuits, signal and safety grounding circuits, fuses, circuit breakers, signal circuits, internally mounted instrumentation, face plate mounted instrumentation components, internal panel arrangements, and external panel arrangements. All panel drawings shall, as a minimum, be "B" size with all data sheets and manufacturer specification sheets being "A" size. The submittal shall be in conformance with ISA-S20 - Standard Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves, shall be submitted as a singular complete bound volume or multi-volume package within 120 calendar days after Notice to Proceed, and shall have the following contents:

1. A complete index shall appear in the front of the bound volume. Panel tagging and nameplate nomenclature shall be consistent with the requirements of the Contract Documents.

2. Scaled physical arrangement drawings drawn to scale which define and quantify the physical groupings comprising control panel sections, auxiliary panels, subpanels, and racks. Cutout locations with nameplate identifications shall be shown.

3. Front of panel layout for the control panel.

4. Schematic/elementary diagrams shall depict all control devices and circuits and their functions.
5. Wiring/connection diagrams shall locate and identify electrical devices, terminals, and interconnecting wiring. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all electrical and control devices.

6. Interconnection diagrams shall locate and identify all external connections between the control panel/control panel devices and associated equipment. These diagrams shall show interconnecting wiring by lines, designate terminal assignments, and show the physical location of all panel ingress and egress points.

7. A bill of material which enumerates all devices associated with the control panel.

8. Submit informational literature/data for all components including but not limited to Control Panel, PLC hardware and software, etc.

9. Programmable Logic Controller (PLC) programs in ladder format including verbal description of each rung’s function; assign point numbers to all inputs and outputs, and show point numbering in PLC program.

10. Proposed graphic displays; submit actual hardcopy of programmed graphic screens.

C. Operations Manual: Provide operations and maintenance information for the following:

1. Panel equipment, field devices and instruments, including "as-built" system schematics.

2. Final copy of PLC program on 8-1/2" x 11" sheets in ladder format including verbal description of each rung's function.

3. Floppy disks containing final PLC program and final distributed control software program.

4. Complete software documentation including programming information and operator’s guides.

5. Point lists for all PLC inputs/outputs; identify point number (tag), point description, point type, range in engineering units (if analog point), PLC number, rack and slot number, and point address.

D. All submittals shall be bound in 3-ring binders with labeled tabs separating each section.

1.03 EXTENDED PERIOD FOR CORRECTION OF DEFECTS

A. The Contractor shall correct all defects in accordance with Item No. 8 - Process Control and Instrumentation System.
PART 2 - PRODUCTS

2.01 GENERAL

A. Environmental Suitability: The control panel shall be suitable for operation in the ambient conditions associated with the location designated in the Contract Documents. Heating, cooling, and dehumidifying devices shall be provided as necessary in order to maintain all instrumentation devices 20% within the minimums and maximums of their rated environmental operating ranges. The Contractor shall provide all power wiring for these devices. Enclosures suitable for the environment shall be provided.

B. The pump control panel controls shall be 50 V or less, to minimize Hazard Category and risk of Arc-Flash. Control conductors shall be provided in accordance with the indicated requirements.

C. The starter cabinet controls shall have all control voltage sourced from their respective enclosure such that when the circuit breaker feeding the starter is disconnected all components internal to the starter cabinet are de-energized (including circuit breaker line-side terminals). Circuit breakers feeding their respective starters shall be physically isolated from the starter they feed.

D. Each source of foreign voltage shall be isolated by providing disconnecting or pull-apart terminal blocks or a disconnect operable from the control panel front. Each control panel shall be provided with identified terminal strips for the connection of all external conductors. The Contractor shall provide sufficient terminal blocks to connect 25% additional conductors for future use.

2.02 CONTROL PANEL

A. General

1. A complete triplex pump control panel shall be furnished. The control panel shall be designed to provide proper pump down operation based on level controls, pump controller communication and pump protections for the specific pumps being utilized. All electrical controls shall be contained in a common enclosure. Controls shall be as described in these specifications and accompanying drawings.

2. Control panel shall be Arc Flash compliant.

B. Enclosure
1. Enclosure shall be a NEMA 1 painted steel and be of suitable size to house all components. The control panel shall be a compartmentalized assembly of the individual enclosures. A unique enclosure with individual door shall be provided for starters, PCP, ATS, and circuit breakers. Inner panel shall be made of 12 gauge steel and shall be painted white. Louvered vents and filters shall be provided on cabinets containing reduced voltage starters, variable frequency drives or other components that require operating temperatures to be maintained below those that can be maintained without ventilation. Venting shall be equipped with covers that can be manually installed at times when high ambient temperatures do not exist. The height shall be no higher than 80”.

2. Field Terminations
The control panel shall be provided with separate compartment(s) for all field connections. It shall not be necessary for the electrician to enter the individual control component enclosures for landing of field-installed conductors.

C. Components
1. Cabinet Heater: A fan forced heater shall be provided within the control enclosure. The heater shall be rated at 100 watts (minimum) and shall operate on 120 VAC. An adjustable thermostat shall be provided to turn heater on and off. The circuit shall be protected by a separate 15 amp. circuit breaker.

2. Line Terminal Block: A 3 pole line terminal block rated for 600 volt use shall be provided. Block shall be constructed of nylon and have insulating walls on all sides of the lug. Blocks must be UL recognized.

3. Lightning Protection: A lightning protection unit shall be installed at the point of connection for incoming power to the control panel. All units shall be rated at a minimum of 65 kA per mode and 65 kA per phase surge rating. The unit shall be capable of withstanding an unlimited number of surges. There shall be no leak current at double the rated voltage. Housing shall be made of PVC, shall be rated UL 94-5V, and tested as Type 12, 4 and 4X. Three phase units shall be rated at 600VAC, three phase, 4 wire. Single phase 200-240 VAC units shall be rated at 250VAC, single phase, 3 wire. ASCO 450, or equal.

6. Transformer and Panelboard: Square D, or equal.
7. Redundant 24 VDC power supplies for Pump Control Panel.
8. Control power fusing, sized as required by applicable codes.
9. Service receptacle: duplex; 15 amp., 125 volts; GFCI with indicator light/Leviton Catalog No. 6598-I, or equal; install in Raco No. 670, or equal utility box.

10. DC power supplies: 12 volts (1.7A), 15 volts (4.5A) and 24 volts (1.2A); Meanwell with "DC OK" indicator or equal; provide properly sized fuse on line side.

11. Digital indicator: solid state, 4-1/2 digit, ac powered, universal dc input, seven-segment, minimum ½” high LED readout; Red Lion Controls DP5D0000, or equal.

12. Reset push button: heavy duty, watertight/oil tight flush head, red button; Allen Bradley 800T-A2D2 (normally closed) or equal.

13. Provide properly sized time-delay fuses for wiring leaving enclosure to receive contact closure/open signals; Littlefuse FLM series, or equal.

14. Terminals: barrier type, 9/16-inch spacing, nominal 2.5KV RMS rating.

15. AC Power Isolator: provide power line noise suppressors to protect the electronic equipment. The units shall provide for common mode noise attenuation of up to 20 million to 1 and normal-mode noise attenuation typically 1,000 to 1 (60db).

16. Indicating lights: nominal 1" diameter LED type with opaque colored lens; press-to-test feature; heavy duty oil tight as required.

17. Control switches:
   a. Electronic circuits: Gold flashed contacts; initial resistance, 0.01 ohms; 0.5 amp. at 120 VAC, resistive; heavy duty, oil tight as required.
   b. Control circuits: Contact rating conforming to NEMA A-600 designation; heavy duty, oil tight as required.
   c. Control/timer relays:
      1) All general-purpose control relays and time delays shall have dust covers and plug-in configuration, with screw terminal socket allowing exchange without disturbing the wiring.
   d.  Contacts; 3 pole, double throw, minimum; 10 amp. (unless shown otherwise), 120VAC, resistive.

18. Alarm light: Ingram Products LRX40, or equal.

19. Intrinsic modules for all level sensors and floats.

20. DC, Battery Backed, UPS for monitoring, control and alarming.


D. Mounting of Instruments
1. The panel vendor shall provide cutouts, and shall mount all instrument items indicated to be panel mounted.

2. The panel vendor shall also mount behind the panels other instrument accessory items as required for functionality as indicated.
3. Equipment mounted at the rear of panel shall be installed to allow for commissioning adjustments, servicing requirements, and cover removal.

4. Spare space shall be kept clear of wiring, etc., to give maximum space for future additions.

E. Panel Wiring

1. Wire type and sizes: Conductor shall be flexible stranded copper machine tool wire, UL listed Type MTW, and shall be rated 600 volts. Wires for instrument signal circuits and alarm input circuits shall be No. 14 AWG. All other wires, including shielded cables, shall be No. 16 AWG minimum.

2. Wire Marking: Wire numbers shall be marked using white numbered wire markers made from plastic-coated cloth, Brady Type B 500 or equal, or shall be heat shrink plastic. Wires shall be alphanumerically labeled in reference to rung numbers on provided control diagrams. Color code for control wiring shall be as follows:
   a. Ungrounded AC conductors - Red
   b. Grounded AC conductors - White
   c. Ungrounded DC conductors - Blue
   d. Grounded DC conductors - White with Blue Stripe
   e. Ungrounded interconnect wires, externally sourced - Yellow
   f. Grounded interconnect wires, externally sourced - Yellow with White Stripe

3. For case grounding, panels shall be provided with a 1/4" by 1" copper ground bus complete with solderless connector for one No. 4 AWG bare stranded copper cable. The copper cable shall be provided by the Contractor and be connected to a system ground loop.

4. Power Supply Wiring:
   a. Unless otherwise indicated, instruments, and alarm systems shall operate on 120 volt, 60 Hz circuits.
   b. Each potentiometer type instrument, electronic transducer, controller, or analyzer shall have an individual disconnect switch. Disconnect switches shall have metal or plastic tags indicating instrument tag numbers. Individual plug and cord set power supply connections may be used without switches when indicated in the material specification.
5. Alarm Wiring: The panel vendor shall install and wire alarms including light cabinets, audible signal units, test and acknowledge switches, and remote logic units as indicated. Interconnecting wiring to panel mounted initiating devices shall also be wired by the panel vendor. The wiring from external initiating devices shall be provided by the Contractor. Where plug and cord sets are provided for component interconnection, the panel vendor shall harness and support the cables in neat and orderly fashion. Where separate wire is required, panel vendor shall install No. 16 AWG with THWN or THHN insulation between all components.

6. Signal Wiring:
   a. Signal wire shall be twisted pair or triads. Cable shall be constructed of No. 16 AWG copper signal wires with THWN or THHN insulation.
   b. Color code for instrument signal wiring shall be as follows:
      1) Positive (+) – Black
      2) Negative (-) - White

F. Labor and Workmanship: Panels shall be fabricated and wired by fully qualified workmen who are properly trained, experienced, and supervised.

G. Intrinsically Safe Barrier and Relays
   1. The intrinsically safe barrier and relays shall be panel mounted device. UL 913 listed.
   2. The intrinsically safe barrier and relays shall be protected and current limited according to the requirements of UL Class I (Groups A, B, C & D), Class II (Groups E, F, & G) and Class III certification.
   3. The intrinsically safe barrier shall allow for a maximum short circuit current of 10 ma.

2.03 PROGRAMMABLE LOGIC CONTROLLER

A. General:
   1. Furnish and install a programmable logic controller (PLC) including but not limited to power supply, microprocessor, input modules, output modules and other associated equipment as specified herein and as shown on drawings.
   2. PLC and all components shall be designed, manufactured and tested in accordance with latest applicable UL standards.
3. The PLC, I/O modules, power supply modules, communication interface devices, and peripheral equipment shall be mounted inside the control panel. Incoming I/O wiring from the field to the control panel shall be terminated on terminal blocks in the lower portion of the enclosure. A nameplate shall be mounted on the outside of the door of the enclosure and be engraved with "CONTROL PANEL"

4. PLC to have following features:
   a. Modular construction, allowing I/O modules to be individually added or removed.
   b. Mounting equipment, racks, connecting cables, and other equipment included to provide functioning control system.

5. Input/output modules to have following features:
   a. Inputs and outputs modular, with 4, 8 or 16 circuits per module; status LEDs for each point, powered from field voltage, installed in each module.
   b. Field wiring to screw connectors attached to I/O mounting rack; removal and replacement of any I/O module without disturbing field wiring or any other I/O modules.

B. Qualifications:
1. Manufacturer: ISO 9000, 9001 or 9002 certified for equipment herein specified; produced similar electrical equipment for minimum period of 5 years.

2. When requested by Engineer, provide acceptable list of installations of similar equipment to demonstrate compliance with qualifications.

C. PLC
1. 128 MB (minimum) user memory.
4. Program functions include contacts, coils, timers, counters, math functions, proportional-integral-derivative (PID) control, shift registers, bit and word operations.
5. Entire programmable controller system capable of operating in ambient temperatures of +32°F. to +140°F.; relative humidities of 5% to 95% non-condensing.

6. CPU capable of being networked to other programmable controllers or host computer.
7. Manufacturer, or equal: Allen-Bradley model MicroLogix 1400 with RSLogic 5000 Programming Software with analog and digital I/O modules.
D. Input/output Units
1. Analog Input/Output Characteristics: 4-20 milliamperes DC.
2. Digital Input/Output Characteristics: 120 volts AC, LED isolated from main processor. Individual I/O shall be electrically isolated, 2-wire discrete, dry contact relay equivalent.
3. Required Hardware:
   a. Input/Output Rack, Processor, Communications Interface Module (programmer port), rack and module power supplies.
   b. Each type of module shall have 25% spare capacity.
4. Manufacturer, or equal: Allen-Bradley.

E. Power Supply
1. Input Voltage: 24 VDC.

2.04 OPERATOR INTERFACE

A. Provide operator interfaces as indicated to allow on line data monitoring and modification.

B. Panel Mounted:
1. Mount operator interface terminal on inner door of control panel.
2. Operator interface terminal
   a. Display: Panel mounted, color, flat panel, 640x480 dpi.
   b. Memory: 2.25Mb On-Board Flash with 4Mb PCMCIA flash memory card.
   c. Enclosure: NEMA 12.
   d. Input Power: 24 VDC.
   e. Interface: Provide interface between PLC and operator terminal per manufacturers recommendations.
   f. Manufacturer, or equal: Allen-Bradley PanelView plus1000 color with PanelBuilder 1400e software, or equal.
   g. The manufacturer of the operator interface terminal shall be the same as the manufacturer of the PLC.

2.05 TELEMETRY SYSTEM

A. Furnish and install a complete telemetry system including but not limited to telogger, signal splitter, interconnecting cables, connectors and conduit for communication from control panels to WRA Enterprise Control System.

B. Signal Splitter
1. 4-20 mADC Loop Splitter / Isolator
2. High Accuracy / 0.05%
3. Small Size (12.5 mm) / High Packing Density
4. DIN Rail Mount
5. Loop Splitter ONE 4 to 20 mADC INPUT SPLIT INTO TWO FULLY ISOLATED 4 to 20 ma OUTPUTS.

6. The isolator that provides TWO isolated 4 to 20 ma outputs from a single 4 to 20 ma input. The input and the output loops must each have power supplies. The three power supplies must of course be isolated from each other to maintain isolation. The isolator is housed inside a plastic enclosure, suitable for DIN Rail mounting. Screw terminals provided for wire connections.

C. Telogger

1. RTU Inputs - The station shall include RTU (Recording Telemetry Unit) or Telogger; provide models with cellular modem and other options to support communication with existing Enterprise software owned by the Des Moines WRA.

2. Manufacturer and Model Number: Telog Instruments R-3314, or equal.

3. RTU shall interface to digital and analog signals including digital serial interface (e.g. RS-232, RS-485). RTU shall be configurable to automatically collect all device-measured parameters (e.g. level, velocity, flow, battery voltage).

4. Memory - Data collected by the RTU shall be stored within the RTU with time stamps, and then forwarded to the DSM WRA host computer at a user defined schedule (e.g. every 15 minutes, daily, etc.). The RTU shall have sufficient memory to store > 4 months of data when collecting 4 parameters required.

5. Communication Options – The RTU shall support the following communication methods:
   a. Packet Switched Cellular (1xRTT and GPRS using TCP/IP protocol)
   b. Circuit Switched Cellular (CDMA and GSM digital)
   c. Narrow Band and Spread Spectrum Radio (licensed and unlicensed)
   d. Land-line Telephone
   e. Satellite
   f. Ethernet Communication module
   g. Local RS-232

6. Communication Methodology – Communications between the Station RTU and Host Computer Application shall be automatic and error free. Error free operation shall be achieved by transferring data in short packets (500 byte maximum) with embedded CRC codes (16 bit minimum) with automatic retransmission of packets with detected errors. Transmission errors shall be recorded in error logs in both the RTU and the Host Computer.

7. The DSM WRA will support call initiation by either the RTU and/or the Host Computer. To minimize energy consumption in the RTU when battery powered, the RTU shall be configurable to remove power from...
the communications modem between calls. When this mode is selected, all communications will be initiated by the RTU.

8. The RTU shall support three call initiation modes:
   a. Normal calls – Scheduled calls to transmit all collected data not previously is transferred to the host computer. During these calls, the RTU clock shall be synchronized to the host computer, the RTU log files shall be uploaded to the host computer and any new RTU configuration or program changes shall be downloaded to the RTU.
   b. Instant Message calls- The RTU shall support a means to forward a single interval of data within a single data packet to the host computer at a user defined schedule. Total data transmitted during each IM call including overhead shall not exceed 700 bytes to limit monthly billing data rates to 2 Megabyte plans when calling at 15-minute intervals.
   c. Alarm Calls – The RTU shall generate alarm calls to the Host Computer when any user-configured alarm is detected by the RTU.

9. Alarms – The RTU shall provide user configurable alarms for:
   a. Recorded channels (hi and low threshold values)
   b. Computed channels (hi and low threshold values)
   c. Battery status (local RTU battery & external battery if applicable)
   d. Event Input (sampler, pump run time exceedance etc.)
   e. Memory nearly full (applicable only when using alarm recording mode)
   f. Tamper detect (e.g. external door switch detector)
   g. RTU operation error detect (e.g. power up reset; memory error, etc.)
   h. AC Power Fail detect

10. Alarms shall be forwarded to the Host Computer immediately upon detection and after a user configurable dwell time period. Alarms will be identified by Site and Recorder ID, measurement, value and time stamp. The RTU shall be configured to repeat the alarm call at a user specified interval if the alarm persists. The RTU shall call to announce an alarm clear condition when the condition returns to normal.

D. Equipment supplied must meet requirements of Des Moines WRA and must be suitable to communicate with Des Moines WRA Enterprise software.

E. Coordinate hardware, software and programming requirements with Des Moines WRA; include all costs associated with procurement, installation, debugging, startup and training of Telemetry system.
2.06 SPARE PARTS

A. Provide one (1) spare power supply for each Control Panel.

B. Provide one (1) spare memory cartridge containing control program.

C. Provide three (3) spare fuses of every size used in the Control Panels.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Preparation for Shipment and Shipping
   1. Panels shall be crated for shipment using a heavy framework and skids.
      Panel sections shall be cushioned to protect the finish of the
      instruments and panel during shipment.
   2. Control panel testing and inspection shall be performed prior to
      shipping.
   3. Control panels shall be installed in accordance with Item No. 12 -
      Process Control and Instrumentation System.

B. Install Control Panel CP where shown on plans.

3.02 SIGNAL AND CONTROL WIRING

A. Wiring Installation: Wires shall be run in plastic wireways except (1) field
   wiring, (2) wiring between mating blocks in adjacent sections, (3) wiring from
   components on a swing out panel to components on a part of the fixed
   structure, and (4) wiring to panel mounted components. Wiring run from
   components on a swing out panel to other components on a fixed panel shall
   be made up in tied bundles. These bundles shall be tied with nylon wire ties
   and shall be secured to panels at both sides of the "hinge loop" so that
   conductors are not strained at the terminals.

B. Wiring run to control devices on the panel front shall be tied together at short
   intervals with nylon wire ties and be secured to the inside face of the panel
   using adhesive mounts.

C. Wiring to rear terminals on panel-mount instruments shall be in plastic
   wireways secured to horizontal brackets above or below the instruments in
   about the same plane as the rear of the instruments.

D. Shop Drawings shall show conformance to the above wiring installation
   requirements.
E. Wire Marking: Each signal, control, alarm, and indicating circuit conductor connected to a given electrical point shall be designated by a single unique number which shall be shown on Shop Drawings. These numbers shall be marked on conductors at every terminal.

3.03 PROGRAMMING SERVICES

A. Program programmable logic controllers (PLCs) and operator interface terminal as required by functional descriptions.

B. Provide additional programming during start-up, training, and call-back periods as specified.

3.04 INSPECTION AND APPROVAL

A. Panel fabricator shall conduct the following tests prior to shipment.
   1. Alarm circuits rung out to determine their operability.
   2. Electrical circuits checked for continuity and where applicable, operability.
   3. Any other test required to place the panel in an operating condition.

B. It shall be the responsibility of the Contractor to furnish all necessary testing devices and sufficient manpower to perform the tests required by the engineer.

C. Field Testing: The control panel shall be tested again for functional operation in the field after the connection of external conductors and prior to equipment startup.
### 3.05 I/O POINT LIST

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### Tellog Panel

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11 – CONTROL DESCRIPTIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section describes how each portion of control system operates.

B. The functional descriptions, in conjunction with the drawings and technical requirements for products as described in Item No. 9 - Instrumentation Equipment and Item No. 10 - Control Panel, define the minimum requirements for installation.

C. All products used to meet the functional descriptions shall be those specified in Item No. 9 - Instrumentation Equipment and Item No. 10 - Control Panel.

PART 2 - FUNCTIONAL DESCRIPTIONS

2.01 PUMP STATION

A. Monitor water level in wet well with radar level sensor/controller and two float switches.
   1. Use radar level sensor/controller to start and stop pumps.
   2. Use one float switch to detect high water level in wet well.
   3. Use one float switch to detect low water level in wet well.

B. Storm Water Pumps 1 and 2
   1. General - There are two identical pumps.
   2. Process Set Points as shown on plans.
   3. Provide for manual or automatic control of the pumps from CP-1.
   4. Provide a three position (Hand-Off-Auto) selector switch for each pump on the CP-1.
   5. When in "Auto" mode, the pumps are controlled by the PLC. The PLC will start, stop based on wastewater level in the wet well as defined below:
      a. Wet well elevation to be maintained at preset level.
      b. Start lead pump when water in wet well reaches preset level.
      c. Start lag pump when water in wet well continues to rise to preset level.
      d. Stop all pumps when water in wet well reaches pump off level.
      e. Provide pump alternation after each start/stop.
   6. When in "Hand" mode, the pumps are run continuously.
   7. Provide indicating lights on the CP-1 to indicate off and running conditions of each pump.
8. Upon detection of motor over temp, as detected by thermal sensors in the stator winding of each pump:
   a. Automatically shut down the pump.
   b. Indicate by an indicating light on the CP-1.
   c. Provide for manual reset.
   d. Provide alarm output to the PLC.
   e. PLC to provide alarm output to dialer.
   f. Display on alarm screen of operator interface terminal on Control Panel.

9. Upon detection of seal failure or moisture in stator housing or cable entry chamber:
   a. Indicate by an indicating light on the CP-1.
   b. Provide alarm output to the PLC.
   c. Display on alarm screen of operator interface terminal on Control Panel.

PART 3 - EXECUTION

Not Applicable.
APPENDIX A

Electric Pump Proposal
TO: Veenstra & Kimm, Inc.

REF: E. 1st & Market Storm water Pump Station
     Des Moines, IA

DATE: February 4, 2020

Electric Pump is pleased to submit this budgetary proposal for the following equipment:

**New Pre-Fabricated Arrow Starnet Engineered Control Building Structure**

**Control Building – Pre-fabricated Engineered Structure**
- Supply and Install of Motor Control Center
- Thermostatically Controlled Ventilation Equipment
- Exterior Stone Aggregate and Standing Seam Metal Roof
- Door and Door Hardware
- Interior Fluorescent Lighting
- LED Exterior Lighting with Motion Control
- Magnetic Door Switch

**MCC – Motor Control Center**
- Factory Standard Gray 65kA 480Vac 3PH 1200Amp MCC
- 1200Amp Main Lugs for Incoming Power
- 200kA Surge Protective Device w/ Fused Disconnect
- Power Monitor
- 15kVA Lighting Transformer & 100Amp 18Ckt Lighting Panel
- (2) 400HP Soft Starters with Circuit Breakers, Fusing, and Control Devices

**PCP – Pump Control Panel**
- Integral to MCC Lineup
- UL508A & UL698A Label and Serialization
- Rockwell CompactLogix Programmable Logic Controller
- Rockwell Color Touchscreen Operator Interface
- Install of Telog Cellular RTU
- Power Supplies and Uninterruptible Power Supplies
- Relays & Timers
- 30mm HD Pilot Devices
- Ethernet Network Switch
- Terminal Blocks
- Telog RTU Back chassis with router and configuration
- Vega Radar Level Sensor with mounting bracket
- Three (3) Float Switch Backup
- One (1) Float Anchor Kit
Panel shall include the MAS 801 components as noted in the pump section
**Services – Process Control Devices**

Custom CAD Drawings & PDF Submittals  
Programming & Configuration of provided equipment  
Pre-shipment Testing of provided equipment  
PDF Operation & Maintenance Manuals

One (1) Lot of freight and startup services included for the Arrow Starnet Building

**Total Budgetary Price (Control Structure – Process Controls)**

$297,256.00 plus tax

**Note the following:**

- Concrete, Pumps Access Hatches, Anchor bolts, Junction Box,Reducers, Valves, Piping, Conduit, Utility Metering Equipment, Service Entrance Equipment, Automatic Transfer Switch, Offloading, Setting, Field Wiring, Installation of equipment and anything that’s not specifically mentioned in this proposal is the responsibility of others

Thank you for your consideration,

Tom Miller (515) 707-6020  
Dave Bloch (515) 707-6032  
cc: Taylor Musselman
TO: Veenstra & Kimm, Inc.

REF: E. 1st & Market Stormwater Pump Station
    Des Moines, IA

DATE: January 31, 2020

Electric Pump is pleased to submit this budgetary proposal for the following equipment:

**Reutilizing Pumps from SE 4th & Van Buren**

*Existing Pumps: PL7101-865-710B4 (SN: 951134 & 951135)*

**New Pump Tubes, FSI’s, and Appurtenances for PL7101 Axial Flow Pumps**

Two (2)
- Pump tube, 48” O.D. ½” wall thickness. Finish coat will be in accordance with paint system 21B

Two (2)
- Flygt ROX cable support system for electrical cables, guide wire, and SS lifting cable. Cable suspension system to include spring loaded lifting eyes Kellem grips, vulcanized tape for cables, and a beam mount for the system.

Two (2)
- Flygt formed suction intakes (FSI). ½” wall A-36 or equal. Exterior stiffeners included, with flanged connection to pump tube. Finish coat will be in accordance with paint system 21B

One (1)
- Lot of freight to jobsite included for new pumps, tubes, and cable handling systems

**Disassemble, Inspect & Reassemble Existing Pumps from SE 4th & Van Buren**

Two (2)
- Certified Pump Inspection Service. Inspection will take place at the Electric Pump Des Moines service center. Upon completion, recommended repair work and replacement parts will be quoted separately if deemed necessary

**Pump Monitoring System Upgrades**

- Remove existing power cables (2 per pump) that are now obsolete
  - Replace with 2x 80/pump of **standard** submersible power cable that are MAS 801 ready complete with new grommet and washer assemblies
- Remove Pilot Cables & Cap off existing Pilot Cable Entries as they are no longer necessary with MAS 801
- **MAS 801 Upgrades**
  - (2) MAS 811 Pump Electronic Module (**installed in pump head**)
  - (4) Current Transformer for Pump Electronic Module (**installed in pump head**)
  - (2) Terminal Plate (**installed in pump head**)
  - (1) MAS 801 Central Unit (**installed in control panel**)
  - (2) MAS 811 Base Unit (**installed in control panel**)
  - (1) FOP 402 7” Touch Panel HMI (**installed in control panel**)

Two (2)
- New O-ring Kits will be necessary to reassembly pumps after inspection and upgrades. These kits are included in the pricing
One (1)  Lot of freight allowed to and from jobsites for the pumps being inspected and upgraded

Two (2)  Startup Services are included for when pumps are installed (by others) and ready to start up at their new location (E. 1st and Market)

Total Budgetary Price: $288,705.00 plus tax

Note the following:
- Controls, Concrete, Pump Repairs other than what are specifically called out in the above proposal, Access Hatches, Anchor bolts, Junction Boxes, Reducers, Valves, Piping, Conduit, Offloading, Setting, Field Wiring, Installation of equipment and anything that's not specifically mentioned in this proposal are the responsibility of others

Thank you for your consideration,

Tom Miller (515) 707-6020
Dave Bloch (515) 707-6032
cc: Taylor Musselman
This project will be constructed in accordance with the SUDAS Standard Specifications, 2019 Edition, which were adopted by the City of Des Moines on April 22, 2019, under Roll Call No. 19-0621, as amended by these City of Des Moines General Supplemental Specifications.

The SUDAS Standard Specifications, 2019 Edition, may be viewed at the Iowa SUDAS website https://iowasudas.org/manuals/specifications-manual/, or can be purchased online from the Iowa SUDAS website at: https://iowasudas.org/order-the-manuals/.

Said SUDAS Standard Specifications are hereby amended as follows:

SECTION 1010 – DEFINITIONS

1010, 1.03 DEFINITIONS AND TERMS. Add the following new definition:

PRIVATE CONSTRUCTION CONTRACT. A contract awarded by a private agency or individual for construction of a publicly owned or privately-owned improvement, which by agreement of the parties is subject to these specifications.

SECTION 1020 – PROPOSAL REQUIREMENTS AND CONDITIONS

1020, 1.01 QUALIFICATION OF THE BIDDERS: Add the following new E.

E. The City of Des Moines may disqualify a Contractor from bidding on future work or from participating as a subcontractor for a period of up to 3 years in accordance with Section 94-198 of the Municipal Code of the City of Des Moines.

1020, 1.03 QUANTITIES AND UNIT PRICES: Delete B. and replace with the following new B.

B. When unit prices are requested in the proposal form, the quantities indicated on the proposal form are approximate only, and do not constitute a warranty or guarantee by the Jurisdiction as to the actual quantities involved in the work. Such quantities are to be used for the purpose of comparison of bids and determining the amount of bid security, contract, and performance, payment, and maintenance bond. In the event of discrepancies between unit prices and unit price extensions listed in a bidder’s proposal, unit prices shall govern and unit price extensions shall be corrected, as necessary, for agreement with unit prices; except in the case of an obvious, serious, clerical error where the Engineer is able to determine the bidder’s intent from the proposal; in which case, the Jurisdiction may waive irregularities that are in best interest of the Jurisdiction, as long as the integrity of the bid process can be maintained. The Jurisdiction expressly reserves the right to increase or decrease the quantities during construction as outlined in Section 1040, 1.06 - Increase or Decrease of Work, and to make reasonable changes in design, provided such changes do not materially change the intent of the contract. The amount of work to be paid for shall be based upon the actual quantities performed.

*This highlighted language and Section 94-198 of the Municipal Code of the City of Des Moines are not the current law of the State of Iowa and not applicable to the City’s current bidding process.
1020, 1.09 PREPARATION OF THE PROPOSAL: Delete D. and replace with the following D:

D. When unit prices are requested, they shall be submitted on each and every item of work included for which bids are requested. The format for unit prices will be in dollars and whole cents only. In the case of discrepancy, the unit price shall govern; except in the case of an obvious, serious, clerical error where the Engineer is able to determine the bidder’s intent from the proposal; in which case, the Jurisdiction may waive irregularities that are in best interest of the Jurisdiction, as long as the integrity of the bid process can be maintained.

1020, 1.15 LIMITATION ON WITHDRAWAL OF PROPOSALS AFTER OPENING OF PROPOSALS:
Add the following new C:

C. After bids are opened, if the low bidder claims that it has made a serious error in the preparation of its bid, and can support such a claim with evidence satisfactory to the Jurisdiction, said bidder shall be allowed to withdraw its bid and its bid security shall be returned; *provided however, as a condition for return of its bid security, said bidder shall be required to agree that it will not be allowed to again bid on the project, either as a prime bidder or as a subcontractor, if the project, or a substantial portion of the project, is rebid within six months of the first bid opening. Under no circumstances should said bidder be permitted to alter or adjust its bid, as this would undermine the entire system of competitive bidding and be an open invitation to abuse.

SECTION 1040 – SCOPE OF WORK

1040, 1.05 PLANS: Delete the 2nd paragraph and replace with the following:

Electronic support files, will not be provided prior to letting and may be provided to the low bidder and are for information only. Should there be a discrepancy between an electronic support file and a contract document, the contract documents shall govern. No guarantee is made that the data systems used by the Engineer will be directly compatible with the systems the Contractor uses.

1040, 1.07 CHANGE ORDERS, B. Written Orders: Add the following to the end of the section:

Formal approval by the Jurisdiction shall be defined as follows:
The authority of the Des Moines City Manager and the Engineer to approve change orders shall be limited to those change orders which will cost $50,000 or less. Change orders for work to cost more than $50,000 shall be approved by the City Council prior to the payment of the work provided for under the change order.

*This highlighted language is not the current law of the State of Iowa and not applicable to the City’s current bidding process.

1040, 1.09 CHANGED SITE CONDITIONS, A. Latent or Subsurface Conditions: Delete 1.and 2. in their entirety and replace with the following 1. and add the following new 3.

1. If the Contractor encounters latent or subsurface conditions differing materially from those indicated in the contract documents which the Contractor could not have discovered by a reasonable site investigation and examination of the type customarily undertaken by prudent and competent contractors, and if these changed conditions are considered by the Contractor as a basis for compensation in addition to the contract price, the Contractor shall within three working days after discovery thereof notify the Engineer of its claim by written notice as sent set forth herein. Before disturbing the site at which the latent or subsurface condition is alleged to exist, the Contractor shall give the Engineer the opportunity to inspect the same.
For claims greater than $50,000 the Contractor shall notify the Engineer by written notice either (i) personally delivered, (ii) sent by certified mail, return receipt requested, or (iii) delivered by a nationally recognized prepaid overnight courier service (receipt requested), to the address below:

City of Des Moines  
Engineering Department  
400 Robert D. Ray Drive  
Des Moines, IA  50309-1891  
Attention:  Steve Naber, P.E., City Engineer

Under no circumstance will an email, text message, verbal communication or any other informal communication, be considered acceptable or satisfactory written notice required by this section. The written notice shall:

1) Expressly state that it is a request for a contract change under Section 1040, 1.09;
2) Expressly identify the latent or subsurface conditions that the Contractor alleges differ materially from those indicated in the contract documents which the Contractor could not have discovered by a reasonable site investigation and examination of the type customarily undertaken by prudent and competent contractors;
3) Expressly state the reason the Contractor believes extra compensation is due;
4) Identify work that Contractor alleges will be impacted.

b. For claims less than $50,000 the Contractor shall notify the Project Engineer by written notice sent as set forth above or sent by email providing the same detail as identified in a.1) through 4) above. Under no circumstances will a text message, verbal communication or any other informal communication be considered acceptable or satisfactory written notice required by this section.

After inspection by the Engineer, the Jurisdiction may, in its discretion, authorize the Contractor to proceed with or abandon the work. The Contractor shall resume construction operations pending a decision regarding its claim by the Jurisdiction. Failure of the Contractor to give written notice within three working days of discovering the conditions and to give the Engineer full opportunity to inspect the condition before disturbing the site shall be deemed a waiver by the Contractor of all claims for extra compensation arising out of the alleged condition.

Latent or subsurface conditions that do not materially differ from those shown on the plans shall not form the basis for additional compensation. No additional compensation or extension of time shall be provided for conditions that do not materially differ, regardless of the nature of the condition encountered.

1040, 1.10 DISPUTED CLAIMS FOR EXTRA COMPENSATION: Delete 1.10 in its entirety and replace with the following:

A. Basis of Claim for Extra Compensation:

1. In any case where the Contractor believes extra compensation is due for work or material beyond the scope of the Work under the contract and not ordered by the Engineer as Extra Work as defined in Section 1010, 1.03, the Contractor shall provide written notice to the Engineer, as set forth herein, of its intention to make claim for such extra compensation within thirty (30) days of discovering the circumstances regarding the claim and before beginning the work on which the claim is based (hereinafter referred to as a “Claim”).

a. For claims greater than $50,000 the Contractor shall notify the Engineer by written notice either (i) personally delivered, (ii) sent by certified mail, return receipt requested, or (iii)
delivered by a nationally recognized prepaid overnight courier service (receipt requested) to the address below:

City of Des Moines  
Engineering Department  
400 Robert D. Ray Drive  
Des Moines, IA 50309-1891  
Attention: Steve Naber, P.E., City Engineer

Under no circumstance will an email, text message, verbal communication or any other informal communication, be considered acceptable or satisfactory written notice required by this section. The written notice shall:

1) Expressly state that it is a request for a contract change under Section 1040, 1.10;
2) Expressly state the reason the Contractor believes extra compensation is due;
3) Identify the underlying work or material that Contractor claims is beyond the scope of the Work under the contract and not ordered by the Engineer as Extra Work as defined in Section 1010, 1.03;
4) Identify any work that will be impacted.

b. For claims less than $50,000 the Contractor shall notify the Project Engineer by written notice sent as set forth above or sent by email providing the same detail as identified in a.1) through 4) above. Under no circumstances will a text message, verbal communication or any other informal communication be considered acceptable or satisfactory written notice required by this section.

The Contractor shall not proceed with that work until the Contractor and the Jurisdiction have executed a change order with respect to the Claim. The Contractor shall have no right to submit a Claim for any matter which is exclusively reserved to authority of the Engineer under the Contract Documents.

2. The Jurisdiction shall not be responsible for damages attributable to the performance, nonperformance, or delay, of any other contractor, governmental agency, utility agency, firm, corporation, or individual authorized to do work on the project, except if such damages result from negligence on the part of the Jurisdiction, its Engineer, or any of its officers or employees.

3. For any Claim, if such written notification is not given, or if after such written notification is given the Engineer is not allowed facilities for keeping strict account of actual costs as defined for force-account construction, the Contractor thereby agrees to waive the Claim for extra compensation for such work. Such written notice by the Contractor, and the fact the Engineer has kept account of the cost as aforesaid, shall not be construed as establishing the validity of the Claim.

4. The Claim, when filed, shall be in writing and in sufficient detail to permit auditing and an evaluation by the Jurisdiction. The Claim shall be supported by such documentary evidence as the Contractor has available and shall be verified by affidavit of the Contractor or other person having knowledge of the facts.

B. Presentation and Consideration of Claim: If the Contractor wishes an opportunity to present its Claim in person, the Claim shall be accompanied by a written request to do so. Where the Contractor asks an opportunity to present its Claim in person, the Jurisdiction, within thirty (30) calendar days of the filing of the Claim, shall fix a time and place for a meeting between the Contractor and the Jurisdiction or its designated representatives or representative. The Jurisdiction shall, within a reasonable time after the filing of the Claim or the meeting above referred to, whichever is later, rule upon the validity of the Claim and notify the Contractor, in writing, of its ruling together with the reasons therefore. In case the Claim is found to be just, in whole or in part, it shall be allowed and paid to the extent so found.
**Request for Claim Review:** In the event a Contractor’s Claim as outlined in the above procedure in Sections 1040, 1.10(A) and (B) has been disallowed, in whole or in part, the Contractor may, within thirty (30) calendar days from the date the ruling of the Jurisdiction is mailed, make a written request to the Jurisdiction that its Claim or Claims be submitted to a board of review. The written request shall be either (i) personally delivered, (ii) sent by certified mail, return receipt requested, or (iii) delivered by a nationally recognized prepaid overnight courier service (receipt requested) addressed as follows:

City of Des Moines  
Engineering Department  
400 Robert D. Ray Drive  
Des Moines, IA  50309-1891  
Attention: City Engineer

The Jurisdiction shall decide if the matter is subject to further review and shall, within thirty (30) calendar days of the receipt of the request for review, grant or deny the request for review. The Jurisdiction’s decision shall be final. In the event the Contractor fails to make a timely written demand for review of its Claim as provided by this Section 1040, 1.10(C), the decision of the Jurisdiction shall be deemed to be final and the Contractor shall have no right to pursue arbitration of its Claim.

**C. Board of Review:**

1. The Board shall have jurisdiction to pass upon questions involving compensation to the Contractor for work actually performed or materials furnished and upon claims for extra compensation that have not been allowed by the Jurisdiction. The Board’s jurisdiction shall not extend to matters exclusively reserved to the Engineer, to a determination of quality of workmanship or materials furnished, or to an interpretation of the intent of the Plans and Specifications except as to matters of compensation. Jurisdiction of the Board shall not extend to setting aside or modifying the terms or requirements of the contract.

2. Following the timely written demand for review of the Claim and the decision of the Jurisdiction to grant the request, a board of review shall be appointed to review the Claim. The board of review shall consist of three (3) members as follows: the Engineer, or designated representative; and two persons to be appointed by the Engineer (hereinafter the “Board”).

3. The Board shall set a date for the Contractor to present its Claim for review within sixty (60) days of the date the Jurisdiction issued its decision granting the Contractor’s request for review. The presentation before the Board shall not be in accordance with the Iowa rules of civil procedure and the Contractor shall not have the right to conduct discovery or compel the testimony of witnesses as part of the presentation. The Contractor shall submit three (3) copies of a written Claim summary and all documents it considers to be relevant to its Claim at least fourteen (14) days prior to the date set for the presentation before the Board. The presentation before the Board is intended to be an informal process to allow the Contractor to further explain its Claim and why it believes it is entitled to additional compensation. The Board reserves the right to impose such rules as it deems reasonably necessary to allow for a fair and efficient presentation.

4. Following the presentation before the Board, the Board shall render a written decision regarding the Claim within ten (10) days of the presentation. In the event the Board renders a decision in favor of the Contractor for some or all of the Claim, the Contractor and the Jurisdiction shall promptly proceed in good faith to prepare a change order consistent with the decision of the Board. If the Board denies the Claim, in part or in full, the Contractor’s sole and exclusive remedy is to demand final resolution of the Claim that has been denied subject to the procedure provided below.
E. **Final Resolution by Binding Arbitration or Litigation:** For any Claim denied by the Board, the Jurisdiction shall have the sole and exclusive right to determine whether final resolution of the Claim shall be through Binding Arbitration or litigation. The Contractor shall not have the right to pursue final resolution of any Claim that the Contractor did not submit to the Board. The Contractor must make a written demand for final resolution of the Claim upon the Jurisdiction within thirty (30) days of the date when the Board rendered its decision or it will be deemed to have waived this right and the decision of the Board will be final. The written demand shall be either (i) personally delivered, (ii) sent by certified mail, return receipt requested, or (iii) delivered by a nationally recognized prepaid overnight courier service (receipt requested) addressed as follows:

City of Des Moines  
Engineering Department  
400 Robert D. Ray Drive  
Des Moines, IA  50309-1891  
Attention:   Steve Naber, P.E., City Engineer

The Jurisdiction shall notify the Contractor within thirty (30) days of the date of receiving the Contractor’s written demand for final resolution of the Claim, whether the Jurisdiction will elect to use binding arbitration or litigation to reach a final resolution of the Claim. The decision to pursue binding arbitration or litigation, shall be the sole and exclusive decision of the Jurisdiction. The decision of the Jurisdiction on whether to pursue binding arbitration or litigation is final.

1. **Arbitration.**

(a) If the Jurisdiction elects to use binding arbitration for final resolution of the Claim, the sole and exclusive remedy for final resolution of the Claim shall be binding arbitration (the “Arbitration”). The Arbitration shall be submitted to a single arbitrator as is mutually agreed upon by the Contractor and Jurisdiction. If the Contractor and Jurisdiction cannot agree upon a single arbitrator within twenty-one (21) days of the date of the Jurisdiction’s notification to the Contractor of the Jurisdiction’s decision to pursue binding arbitration, the Arbitration shall be submitted to a three (3) member panel appointed as follows: the Contractor shall appoint one arbitrator; the Jurisdiction shall appoint one arbitrator; and the third arbitrator shall be chosen by the first two appointed arbitrators (for the sake of convenience, the arbitrator, or arbitrators as the case may be, shall be referred to hereinafter as the “Arbitrator”). The parties agree to work toward appointment of a three (3) member Arbitration panel within twenty-one (21) days after not being able to agree on a single arbitrator. The Arbitration shall be conducted in general accord with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect. The parties reserve the right to alter and amend the rules for the Arbitration as they may mutually agree in writing.

(b) The Arbitrator shall have jurisdiction to pass upon questions involving compensation to the Contractor for work actually performed or materials furnished and upon claims for extra compensation that have not been allowed by the Jurisdiction. The Arbitrator’s jurisdiction shall not extend to matters exclusively reserved to the Engineer, to a determination of quality of workmanship or materials furnished, or to an interpretation of the intent of the Plans and Specifications, except as to matters of compensation. Jurisdiction of the Arbitrator shall not extend to setting aside or modifying the terms or requirements of the contract.

(c) Subject to agreement of the parties and the Arbitrator, the parties shall work in good faith to schedule the Arbitration and allow for the decision of the Arbitrator within two hundred forty (240) days after appointment of the Arbitrator.
(d) The Arbitrator shall render a written decision within twenty (20) days after the Claim has been fully submitted. For Arbitrations before more than one arbitrator, the decision of a majority of the panel shall govern. The Arbitrator’s decision shall provide a basis for the findings and legal conclusions and shall determine how the cost of the proceedings shall be borne by the parties.

(e) The decision of the Arbitrator shall be binding and final. There shall be no further appeal or judicial review, except under the limited circumstances as allowed by Iowa law.

2. Litigation. If the Jurisdiction elects not to use arbitration as the means to reach final resolution of the claim, then the sole and exclusive remedy for final resolution of the Claim shall be litigation which must be brought in Iowa District Court in and for the County where the Jurisdiction is located or in the United Stated District Court in and for the District where the Jurisdiction is located.

SECTION 1050 – CONTROL OF WORK

1050, 1.10 PROTECTION OF LINE AND GRADE STAKES: Add the following new D.

D. The Jurisdiction shall provide all construction survey staking on projects funded by the Jurisdiction unless otherwise indicated on the plans or in the Contract Documents. On Private Construction Contracts, the Owner, in accordance with the Private Constructio Contract, shall hire a Licensed Surveyor for all survey work.

SECTION 1060 – CONTROL OF MATERIALS

1060, 1.03 SAMPLES AND TESTING: Add the following new D.

D. All on-site inspection and testing, as well as testing of materials, will be provided by the Jurisdiction unless otherwise indicated on the plans or by special provisions.

SECTION 1070 – LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1070, 1.03 PERMITS AND LICENSES: Delete and replace with the following:

The Contractor shall procure and pay for all necessary permits and licenses for the construction of the work and for temporary excavations, obstructions, enclosures, and street openings arising from the construction and completion of the work described in the Contract Documents. The Contractor shall be responsible for all violations of the law for any cause in connection with the construction of the work or caused by the obstruction of roads, streets, highways or sidewalks, and shall give all requisite notices to the Jurisdiction or other public authorities in connection therewith.

1070, 2.02 CONVENIENCE AND SAFETY: E. Project Area or Work Site Safety: Add the following new 6.

6. The City of Des Moines, Engineering Department, Master Construction Safety Packet is available at http://www.dmgov.org/Departments/Engineering/PDF/MasterConstructionSafetyPacket.pdf and is also available upon request from the Engineering Department. The Engineering Department will make available a copy of the City of Des Moines Master Construction Safety Plan to the Contractor when the contract is awarded. Said Safety Plan is for the Contractor’s information only and it is the Contractor’s sole responsibility to provide, or make available, this safety information to all its Subcontractors.
1070, 1.12, CONSENT TO JURISDICTION OF IOWA DISTRICT COURT OR FEDERAL DISTRICT COURT: Delete 1.12 in its entirety and replace with the following new 1.12:

1070, 1.12 DISPUTE RESOLUTION AND CONSENT TO JURISDICTION OF IOWA DISTRICT COURT OR FEDERAL DISTRICT COURT IN IOWA

A. The Contractor agrees any claims, disputes, causes of action that accrue to it, or which by subrogation or assignment accrue to its sureties or insurers, arising out of or connected with this contract, and that the Jurisdiction has determined in writing is not subject to Section 1040, 1.10, shall be resolved by arbitration or litigation as elected by the Jurisdiction. As to any such causes of action, Contractor shall provide written notice to Jurisdiction requesting that Jurisdiction make its election as to whether the dispute shall be settled by arbitration or litigation. The written notice shall be either (i) personally delivered, (ii) sent by certified mail, return receipt requested, or (iii) delivered by a nationally recognized prepaid overnight courier service (receipt requested) addressed as follows:

City of Des Moines
Engineering Department
400 Robert D. Ray Drive
Des Moines, IA  50309-1891
Attention:   Steve Naber, P.E., City Engineer

Jurisdiction shall notify Contractor in writing as to its election within thirty (30) days of receipt of Contractor’s written notice requesting a determination by Jurisdiction.

1. Arbitration

(a) If the Jurisdiction elects to use binding arbitration for final resolution, the sole and exclusive remedy for final resolution of the dispute shall be binding arbitration (the “Arbitration”). The Arbitration shall be submitted to a single arbitrator as is mutually agreed upon by the Contractor and Jurisdiction. If the Contractor and Jurisdiction cannot agree upon a single arbitrator within twenty-one (21) days of the date of the Jurisdiction’s notification to the Contractor of the Jurisdiction’s decision to pursue binding arbitration, the Arbitration shall be submitted to a three (3) member panel appointed as follows: the Contractor shall appoint one arbitrator; the Jurisdiction shall appoint one arbitrator; and the third arbitrator shall be chosen by the first two appointed arbitrators (for the sake of convenience, the arbitrator, or arbitrators as the case may be, shall be referred to hereinafter as the “Arbitrator”). The parties agree to work toward appointment of a three (3) member Arbitration panel within twenty-one (21) days after not being able to agree on a single arbitrator. The Arbitration shall be conducted in general accord with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect. The parties reserve the right to alter and amend the rules for the Arbitration as they may mutually agree in writing.

(b) Jurisdiction of the Arbitrator shall not extend to setting aside or modifying the terms or requirements of the contract.

(c) Subject to agreement of the parties and the Arbitrator, the parties shall work in good faith to schedule the Arbitration and allow for the decision of the Arbitrator within two hundred forty (240) days after appointment of the Arbitrator.

(d) The Arbitrator shall render a written decision within twenty (20) days after the matter has been fully submitted. For Arbitrations before more than one
arbitrator, the decision of a majority of the panel shall govern. The Arbitrator’s decision shall provide a basis for the findings and legal conclusions and shall determine how the cost of the proceedings shall be borne by the parties.

(e) The decision of the Arbitrator shall be binding and final. There shall be no further appeal or judicial review, except under the limited circumstances as allowed by Iowa law.

2. Litigation. If the Jurisdiction elects not to use arbitration as the means to reach final resolution of the claim or fails to notify Contractor in writing within thirty (30) days of its election, then the sole and exclusive remedy for final resolution of the Claim shall be litigation which must be brought in Iowa District Court in and for the County where the Jurisdiction is located or in the United Stated District Court in and for the District where the Jurisdiction is located.

B. Contractor further consents that it will require its subrogees and assigns to enter into an agreement to comply with the terms of Section, 1.12, and consent to the jurisdiction of either the Iowa District Court in and for the County where the Jurisdiction is located or the United States District Court in and for the District where the Jurisdiction is located, as to any causes of action brought against it arising out of this contract or any work performed under it by Contractor or its subcontractors, and further agrees, on behalf of itself, its subrogees and assigns, to waive any and all objections to the jurisdiction of said court as to any such cause of action. Contractor shall make such consent a condition of the retention of subrogees and assigns.

1070, 2.10 DUST CONTROL: Add the following paragraph:

The Contractor shall be responsible to remove any project-related construction materials deposited on a public street as well as related dust control measures. The Contractor shall employ all means necessary to prevent tracking soil, or loss of material, onto public streets; including but not limited to, rocking private access roads and removing excess material from equipment before leaving the construction site. The Contractor shall promptly remove any material deposited on a public street utilizing mechanical scraping and street sweeping, or other means as required by the Jurisdictional Engineer.

1070, 2.16 READY MIX CONCRETE WASTE: New Section - Add the following 2.16:

2.16 READY MIX CONCRETE WASTE

Concrete trucks will be allowed to washout or discharge excess concrete only in specifically designated areas which have been prepared to minimize contact between the concrete and storm water discharge from the site. The hardened product from the concrete washout areas will be disposed of by the Contractor as other non-hazardous waste materials or may be broken up and used on the site for other appropriate uses.

1070, 3.02 INSURANCE REQUIREMENTS, A: Delete A and replace them with the following A.

A. The contractor shall not purchase liability insurance in the name of the jurisdiction unless such purchase is allowed by special provision.
1070, 3.02 INSURANCE REQUIREMENTS, 2. Commercial General Liability Insurance: Revise the following limits on the Commercial General Liability Insurance:

- The Each Occurrence Limit shall be changed from $1,000,000 to $2,000,000.
- The Personal and Advertising Injury Limit, under Commercial General Liability, changed from $1,000,000 to $2,000,000.
- All other limits shall remain unchanged.

1070, 3.02 INSURANCE REQUIREMENTS, 3. Automobile Liability Insurance: Revise the following limits on the Automobile Liability Insurance:

- Minimum combined single limit per accident shall be changed from $1,000,000 to $2,000,000.

1070, 3.02 INSURANCE REQUIREMENTS, C: Add the following sentence at the end of 1, 2, 3, and 5: “Waiver of Subrogation in favor of Jurisdiction is required.”

1070, 3.02 INSURANCE REQUIREMENTS, C, 6. Additional Insured Endorsements: Replace “Except for Workers Compensation, the insurance specified shall:” with “Except for Workers Compensation and Railroad Protective Liability Insurance, the insurance specified shall:”.

1070, 3.02 INSURANCE REQUIREMENTS, C: Add the following new 8.

8. WAIVER OF SUBROGATION: To the fullest extent permitted by law, Contractor hereby releases the Jurisdiction, including their respective elected and appointed officials, agents, employees and volunteers and others working on their behalf from and against any and all liability or responsibility to the Contractor or anyone claiming through or under the Contractor by way of subrogation or otherwise, for any loss arising out of liability or occupational injury without regard to the fault of the Jurisdiction or the type of loss involved. This provision shall be applicable and in full force and effect only with respect to loss or damage occurring during the time of this Agreement. The Contractor’s policies of insurance shall contain a clause or endorsement to the effect that such releases shall not adversely affect or impair such policies or prejudice the right of the Contractor to recover thereunder.

1070, 3.03 CONTRACTOR’S INDEMNITY – CONTRACTUAL LIABILITY INSURANCE: Delete B; and replace with the following B.

B. Except to the extent caused by or resulting from the negligent act or omission of the Jurisdiction or the Jurisdiction’s employees, consultants, agents or other for whom the Jurisdiction is responsible, to the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Jurisdiction and its officers, agents, employees, and consultants from and against all claims, damages, losses, and expenses, including but not limited to, attorney's fees, arising out of or resulting from the performance or prosecution of the work by the Contractor, its subcontractors, agents, or employees; or arising from any neglect, default, or mismanagement or omissions by the Contractor, its subcontractors or consultants, suppliers, third parties, or the agents, officers, or employees of any of them in the performance of any duties imposed by the contract or by law; provided any such claim, damage, loss, or expense:

1. is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including economic damages and the loss of use resulting therefrom, and

2. is caused in whole or in part by any act or omission of the Contractor, its subcontractors or consultants, suppliers, third parties, or the agents, officers, or employees of any of them, or anyone for whose acts any of them may be liable.
Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity that would otherwise exist as to any party or person described in this subsection.

1070, 3.04 CONTRACTORS INSURANCE FOR OTHER LOSSES; WAIVER OF SUBROGATION, B:
Delete B and replace with the following B.

B. Contractor shall cause each of its subcontractors, consultants, suppliers, third parties, or the agents of any of them, to carry insurance sufficient to cover all loss to such materials, tools, motor vehicles, and equipment. All insurance carried by the Contractor, or its subcontractors, consultants, suppliers, third parties or the agents of any of them, covering risk of loss or damage to materials, tools, motor vehicles, and equipment used in the performance of the Work, shall provide a waiver of subrogation against the Jurisdiction, as specified in Section 1070, 3.02 Insurance Requirements, C.8. To the extent that any subcontractors, consultants, suppliers, third parties or the agents of any of them, do not provide such coverage, any uninsured loss shall be the sole responsibility of the Contractor.

1070, 3.05 PROPERTY INSURANCE: Delete A, D, and M; and replace them with the following A, D, and M.

A. Property Insurance Required: The Contractor shall purchase and maintain property insurance, being either Builder’s Risk Insurance or an Installation Floater, for the period of the contract until final acceptance of the work by the Jurisdiction, on all construction contracts where a building, electrical, mechanical, or plumbing permit is required by the permitting entity.

1. Builder’s Risk Insurance by Contractor: On contracts for construction of new buildings or on contracts when Builder’s Risk Insurance is applicable to the contract by definition, the Contractor shall purchase and maintain Builder’s Risk Insurance for the duration of the contract; unless the Jurisdiction states by special provision that the Jurisdiction shall purchase and maintain the Builder’s Risk Insurance. This property insurance, Builder's Risk Insurance, provided by the Contractor shall be in the amount of the initial bid amount, or in an amount equal to the estimated value of actual building construction, whichever is less, as well as applicable modifications thereto for the entire work on a replacement cost basis. Such property insurance shall be maintained, unless otherwise provided in the contract documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final acceptance of the work by the Jurisdiction. The insurance shall include interests of the Jurisdiction, the Contractor, subcontractors, and sub-subcontractors in the work. If the Contractor’s property insurance covering the work has any deductible, the Contractor shall be responsible to pay the cost associated with the deductible. Flood and Earthquake Insurance shall be required as part of the Builder’s Risk Policy, and the minimum required policy limits shall be not less than 10% of the full amount of the contract. If Boiler and Machinery Insurance is required by the contract documents or by law, the Contractor shall purchase the Boiler and Machinery Insurance if the Contractor is required to purchase the Builder’s Risk Insurance. If Boiler and Machinery Insurance coverage is included in the Contractor’s Builders Risk Insurance policy, it may be used to satisfy the Boiler and Machinery Insurance requirement to the extent such coverage specifically covers such objects during installation, testing, and until final acceptance by the Jurisdiction.

2. Builder’s Risk Insurance by the Jurisdiction: When stated in the special provisions, the Jurisdiction shall purchase and maintain property insurance, a.k.a. Builder's Risk Insurance in the amount of the initial bid amount, or in an amount equal to the estimated value of actual building construction, whichever is less, as well as applicable modifications thereto for the entire work at the site on a replacement cost basis. Such property insurance shall be maintained, unless otherwise provided in the contract documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final acceptance of the work by the Jurisdiction. The insurance shall include interests of the Jurisdiction, the Contractor, subcontractors, and sub-subcontractors in the work. This property insurance covering the work will have a deductible of $5,000 for each occurrence, or as stated in the special provisions, which will be the responsibility of the Contractor. Flood
and Earthquake Insurance shall be required as part of the Builder’s Risk Policy, and the minimum required policy limits shall be not less than 10% of the full amount of the contract. If Boiler and Machinery Insurance is required by the contract documents or by law, the Jurisdiction shall purchase the Boiler and Machinery Insurance if the Jurisdiction is required to purchase the Builder’s Risk Insurance. If Boiler and Machinery Insurance coverage is included in the Jurisdiction’s Builders Risk Insurance policy, it may be used to satisfy the Boiler and Machinery Insurance requirement to the extent such coverage specifically covers such objects during installation, testing, and until final acceptance by the Jurisdiction.

3. **Installation Floater:** On the remainder of these contracts where Builder’s Risk Insurance is not applicable to a contract by definition and an Installation Floater is applicable by definition, the Contractor shall purchase and maintain an Installation Floater for the duration of the contract. This Installation Floater shall cover all materials, fixtures, equipment, and supplies provided for the job. Such insurance shall be on an “all risk” form in an amount equal to the maximum value of such materials, equipment, or supplies covered on the job site, off-premises at any temporary storage location, or in transit, and shall include coverage for hoisting and rigging. The Installation Floater shall be maintained until final acceptance of the work by the Jurisdiction. If the Contractor’s Installation Floater covering the equipment and work has any deductible, the Contractor shall be responsible to pay the cost associated with the deductible. If Boiler and Machinery Insurance is required by the contract or by law, the Contractor shall purchase the Boiler and Machinery Insurance; the Installation Floater may be used to satisfy this requirement to the extent the Boiler and Machinery Insurance coverage specifically covers such objects during installation, testing, and until final acceptance by the Jurisdiction.

D. **Boiler and Machinery Insurance:** When required by the contract documents or by law, Boiler and Machinery Insurance shall specifically cover such insured objects during installation, testing, and until final acceptance by the Jurisdiction; this insurance shall include interest of the Jurisdiction, Contractor, subcontractors, and sub-subcontractors in the work, and the Jurisdiction and Contractor shall be named insureds. A Builders Risk Insurance policy or an Installation Floater, when also required by the contract documents or by law, may satisfy this requirement as indicated in 1070, 3.05 A.1, 2. and 3. above. If Boiler and Machinery Insurance is required by the contract documents or by law, the Contractor shall purchase the Boiler and Machinery Insurance. However, if the contract, requires the Jurisdiction to purchase the Builder’s Risk Insurance, the Jurisdiction shall also purchase the Boiler and Machinery Insurance.

M. **Installation Floater:** See Section 1070, 3.05, A.3 above.

**1070, 3.06 ENDORSEMENT NAMING JURISDICTION AS AN ADDITIONAL INSURED / CANCELLATION AND MATERIAL CHANGE / GOVERNMENTAL IMMUNITIES ENDORSEMENT:** Under C. delete the first full paragraph regarding the Cancellation and Material Change Endorsement language and replace it with the following:

Thirty (30) days Advance Written Notice of Cancellation, ten (10) days Written Notification of Cancellation due to non-payment of premium and forty-five (45) days Advance Written Notification of Non-Renewal shall be sent to the Jurisdiction at the office and attention of the Certificate Holder. This endorsement supersedes the standard cancellation statement on the Certificate of Insurance to which this endorsement is attached.

**1070, 3.06 ENDORSEMENT NAMING JURISDICTION AS AN ADDITIONAL INSURED / CANCELLATION AND MATERIAL CHANGE / GOVERNMENTAL IMMUNITIES ENDORSEMENT:** Replace first sentence under E. with the following: If allowed, as specified in Section 1070, 3.02 Insurance Requirements A., all liability policies purchased in the Jurisdiction’s name shall include a Governmental Immunities Endorsement, pursuant to Iowa Code Section 670.4, which endorsement shall include the following provisions:
1070, 3.07 PROOF OF INSURANCE: Add the following sentence at the end of A: “Mail Certificate of Insurance to: Engineering Department, City of Des Moines, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa 50309.”

SECTION 1080 – PROSECUTION AND PROGRESS

1080, 1.03 WORK PROGRESS AND SCHEDULE: Add the following new D:

D. No person shall operate or permit the operation of any tools or equipment in construction, drilling or demolition work or in preventive maintenance work for public service utilities between the hours of 10:00 p.m. and 7:00 a.m. without the written permission of the Engineer.

1080, 1.09 EXTENSION OF TIME, B. – Request for Extension of Time: Add the following sentence before the last sentence in the first paragraph: “The request for an extension of time is the sole and exclusive remedy of the Contractor for the events listed below.

SECTION 1090 – MEASUREMENT AND PAYMENT

1090, 1.04 PAYMENT FOR CHANGE ORDERS, B: Add the following new 4:

4. Extra Work Performed by the Subcontractor: The percentage markup to be allowed to the Contractor for extra performed by a Subcontractor shall be a maximum of 10%.

1090, 1.05 PROGRESS PAYMENTS, B. Retainage: Delete B. in its entirety and replace with the following B.

B. Retainage: The Jurisdiction shall retain from each monthly progress payment 3% of the amount determined to be due according to the estimate of the Engineer. Early release of retained funds may be requested by the Contractor according to Iowa Code Section 573.28.

SECTION 2010 – EARTHWORK, SUBGRADE, AND SUBBASE

2010, 3.06 SUBGRADE PREPARATION, A. Uniform Composition: 1. Subgrade Compaction in Fill Sections: Add the following new c.

   c. Proof roll subgrade as specified in Section 3.06, B to locate soft or yielding areas prior to placement of top six-inch lift.

2010, 3.06 SUBGRADE PREPARATION, A. Uniform Composition: 2. Subgrade Compaction in Cut Sections: Add the following new d.

   d. Prior to scarify, mix, and re-compact the bottom six inches of subgrade (paragraph 2.b above), proof roll subgrade as specified in Section 3.06, B to locate soft or yielding areas.

2010, 3.06 SUBGRADE PREPARATION, B. Subgrade Stability: Delete 1. in its entirety and replace with the following 1.

   1. Perform proof rolling with a fully loaded single axle or tandem axle truck. Operate trucks at less than 10 mph. Make multiple passes for every lane. The subgrade will be considered to be unstable if, under the operation of the loaded truck, the surface shows yielding (soil wave in front of the loaded tires) or rutting of more than 2 inches, measured from the top to the bottom of the rut at the outside edges.
**SECTION 3010 – TRENCH EXCAVATION AND BACKFILL**

3010, 3.02 ROCK OR UNSTABLE SOILS IN TRENCH BOTTOM: Delete B. and replace with the following new B.

B. The Engineer will review the contractor’s request for the need for over-excavation and trench foundation stabilization and authorize the work prior to installation of pipes and structures.

3010, 3.05 PIPE BEDDING AND BACKFILL, E. Final Trench Backfill: 3. Class I and Class II Backfill Material: Delete a. and replace with the following new a.

a. Compact to at least 65% relative density within right-of-way or under any paved surface or within two feet thereof.

3010, 3.05 PIPE BEDDING AND BACKFILL, E. Final Trench Backfill: 4. Class III and Class IVA Backfill Material: Delete a. and replace with the following new a.

a. Compact to at least 95% of Standard Proctor Density within right-of-way or under any paved surface or within two feet thereof.

**SECTION 4010 – SANITARY SEWERS**

4010, 3.06 SANITARY SEWER SERVICE STUBS, C: Add the following new 7:

7. Mark the location of all sanitary sewer service stubs at the time of installation by a two-inch wide detectable marking tape installed at a depth of 18 inches to 24 inches below finished grade, directly over the service stub, for its entire length and brought up to the surface at the end of the service stub adjacent to the post marking the stub location. The tape shall be green in color and marked “Sanitary Sewer Service Stub Buried Below”.

4010, 3.10 SANITARY SEWER CLEANOUT: Delete in its entirety and replace with the following:

Cleanouts are not allowed on sanitary sewer mains in the City of Des Moines. Figure 4010.203 shall apply to services only.

**SECTION 4020 – STORM SEWERS**

4020, 2.01 STORM SEWERS, Parts A-L: Reinforced Concrete Pipe shall be required for storm sewer construction in the Right-Of-Way or Public Easement areas. Minimum size of storm sewer pipe in the Right-Of-Way and Public Easement areas shall be 15-inch minimum diameter.

**SECTION 4030 – PIPE CULVERTS**

4030, 2.01 Pipe Culverts, Parts A-D: Reinforced Concrete Pipe shall be required for pipe culvert construction in the Right-Of-Way or Public Easement areas. Minimum size of pipe culverts in the Right-Of-Way and Public Easement areas shall be 15-inch minimum diameter.

**SECTION 4040 – SUBDRAINS AND FOOTING DRAIN COLLECTORS**

4040, 2.01 FOOTING DRAIN COLLECTORS: Use material for pipe and fittings complying with the current Adopted Edition of the Uniform Plumbing Code (UPC). In addition to the materials identified in the UPC, the pipe shall comply with ASTM D 3034, SDR 23.5 pipe will be allowed.
4040, 2.02 TYPE 1 SUBDRAINS (LONITUDINAL SUBDRAIN), C. Corrugated Polyethylene Tubing and Fittings (Corrugated PE): Delete Type C and Type CP. Only Type S or Type SP are allowed in the City of Des Moines.

4040, 2.03 TYPE 2 SUBDRAINS (COMBINATION SUBDRAIN/FOOTING DRAIN COLLECTOR), B.3. HDPE Pipe: Delete Type CP. Only Type SP is allowed in the City of Des Moines.

4040, 2.09 FOOTING DRAIN SERVICE STUBS - Add this new 2.09 and the following note: Use material for pipe and fittings complying with the current Adopted Edition of the Uniform Plumbing Code (UPC). In addition to the materials identified in the UPC, the use of SDR 23.5 pipe will be allowed.

4040, 3.02 FOOTING DRAIN COLLECTORS, C: Add the following new 3:

3. Type B cleanouts should be used for footing drain collectors less than 5 feet in depth in the City of Des Moines. Footing drain collectors greater than 5 feet deep, a Type A cleanout shall be used.

4040, 3.03 FOOTING DRAIN SERVICE STUBS: Add the following new D and E.

D. Mark the location of all footing drain service stubs at the time of installation by a two-inch wide detectable marking tape installed at a depth of 18 inches to 24 inches below finished grade, directly over the service stub, for its entire length and brought up to the surface at the end of the service stub adjacent to the post marking the stub location. The tape shall be green in color and marked “Footing Drain Service Stub Buried Below”.

E. ABS, PVC and SDR 23.5 pipe shall be installed with a minimum bedding of 4” below and up all side with 3/8” clean smooth gravel or a bedding product approved by the Engineer.

4040, FIGURE 4040.232, SUBDRAIN CLEANOUTS: Add the following new Note 7 to Figure 4040.232.

7. Type B cleanouts should be used for footing drain collectors or combination subdrain/footing drain collectors less than 5 feet in depth in the City of Des Moines. Footing drain collectors greater than 5 feet deep, a Type A cleanout shall be used.

SECTION 4060 – CLEANING, INSPECTION, AND TESTING OF SEWERS

4060, 3.03 VIDEO INSPECTION, A. General: Delete 1. and replace with the following new 1.

1. Conduct video inspection of all new and rehabilitated sanitary sewers, storm sewers, pipe culverts, and footing drain collectors after all backfill and compaction operations are completed, but prior to paving, unless otherwise specified in the contract documents.

SECTION 6010 – STRUCTURES FOR SANITARY AND STORM SEWERS

6010, PARTS 1, 2, 3, and Figures: Delete all references in this entire section to “precast rectangular intakes”. Only circular precast intakes and manholes are allowed in the City of Des Moines. All square or rectangular shaped intakes and manholes shall be cast-in-place.

6010, 2.03, B. REINFORCEMENT: Add the following second sentence: All reinforcement for cast-in-place structures shall be epoxy coated.

6010, 2.09 MANHOLE OR INTAKE ADJUSTMENT RINGS (Grade Rings): Add the following new C.

C. Manhole adjustment rings are not required to have pre-formed or pre-drilled holes for the anchor bolts.
6010, 2.10 CASTINGS (Ring, Cover, Grate, and Extensions), D. Casting Types: 2. - Intakes: Delete b. and replace it with the following b.

b. Castings shall include design shown in this General Supplemental for lids on Type E, F, and G storm sewer castings shown for Figure 6101.602.

6010, 2.13 STEPS: Delete entire Section as manhole steps are not allowed in the City of Des Moines.

6010, 2.15 ANCHOR BOLTS AND WASHERS, B. Diameter: Delete B. and replace it with the following B.:

Provide bolts and washers 1/8 inch smaller than hole or slot in the casting frame but not less than 7/8 inch diameter.

6010, 3.01 GENERAL REQUIREMENTS FOR INSTALLATION OF MANHOLES AND INTAKES, J. Castings: Delete J. and replace with the following J.: Install the type of casting specified in the contract documents and adjust to proper grade. Where a manhole or intake is to be in a paved area, adjust the casting to match the slope of the finished surface. When castings with a bolt down cover (Type C or D) are specified, attach casting frame to the structure with four anchor bolts.

SECTION 7010 – PORTLAND CEMENT CONCRETE PAVEMENT

7010, 3.02 PAVEMENT CONSTRUCTION, E. Bar and Reinforcement Placement, 1. Tie Bars: Delete a. and replace it with the following a.

a. Place bars prior to vibration. Bars shall be supported by approved chairs. Placement in position by a machine is not allowed.

7010, 3.02 PAVEMENT CONSTRUCTION, E. Bar and Reinforcement Placement: Add the following new 5:

5. PCC pavement slabs with manhole castings, with or without boxouts, shall have reinforcement similar to PV-103 around the castings.

7010, 3.02 PAVEMENT CONSTRUCTION, F. Concrete Pavement Placement: Delete 1. and replace it with the following 1.

1. Use paving machine for all full-width paving, pavement widening, and pavement reconstruction 100 feet or more in length.

7010, 3.07 CURB AND GUTTER CONSTRUCTION: Delete B. and replace it with the following B.

B. Use curb and gutter machine for all curb and gutter construction 100 feet or more in length.

7010, 3.07 QUALITY CONTROL, D. Pavement Thickness: Add the following as the first sentences under 1: Coring of pavement will not be required by the City of Des Moines if depth checks of the plastic thickness of the pavement are within one-half inch of the design thickness. If the variance exceeds one-half inch this section shall apply.

7010, FIGURE 7010.101, JOINTS: On Sheet 2 of 8 under ‘C’ Joint in Curb add the following: The entire curb shall be sealed with Joint Sealant Material.

7010, FIGURE 7010.101, JOINTS: On Sheet 3 of 8 delete Note 11 and replace with the following Note 11.

11. Sawing and sealing of the joint is required. See Detail D-2.

On Sheet 3 of 8 Joint Types KT-1, KT-2, and KT-3 shall not be used.
7010, FIGURE 7010.901, PCC PAVEMENT JOINTING: Add Note 6 with the following:

6. All new roadway pavements shall be a minimum width of 27 feet back to back with parking on one side and 33 feet with parking on two sides.

SECTION 7020 – HOT MIX ASPHALT PAVEMENT

7020, 3.01 HMA PAVEMENT, Add the following new H.:

H. The paver shall be capable of paving a minimum continuous width of twenty (20) foot wide strip without seam. Pavers in tandem will be acceptable; however, an adequate number of personnel shall be available to operate both pavers simultaneously.

7020, FIGURE 7020.901, HMA PAVEMENT: Add Note 3 with the following:

3. All new roadway pavements shall be a minimum width of 27 feet back to back with parking on one side and 33 feet with parking on two sides.

SECTION 7030 – SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS

7030, 2.07 DETECTABLE WARNINGS: Add the following sentence at the end: Only cast iron detectable warnings are allowed in the City of Des Moines.

7030, 3.04 PCC SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS, A. Form Setting: Add the following new 6:

6. The turning space for a sidewalk or shared use path shall be formed separately from the adjoining ramps and sidewalk or shared use path.

7030, 3.04 PCC SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS, B. Concrete Pavement Placement, 1. Shared Use Path: Add the following sentence at the end: “When the Portland Cement Concrete is delivered to the project on the prepared subgrade or subbase, the loads shall be limited to 5 tons for single axle vehicles or 10 tons for tandem axle or larger vehicles.”

7030, 3.04 PCC, SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS, 2. Sidewalk: Add the following new g:

6. The turning space for a sidewalk or shared use path shall be placed separately from the adjoining ramps and sidewalk or shared use path.

7030, 3.04 PCC SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS, B. Concrete Pavement Placement, 2. Sidewalk: Add the following new g:

b. For a sidewalk constructed with a driveway, install a ½” expansion joint on the property side of the sidewalk and a ½” expansion joint on the street side of the sidewalk.

7030, 3.05 HMA SHARED USE PATHS AND DRIVEWAYS: Add the following second sentence: When Hot Mix Asphalt is delivered to the project on the prepared subgrade or subbase, the loads shall be limited to 5 tons for single axle vehicles or 10 tons for tandem axle or larger vehicles.

7030, FIGURE 7030.101, CONCRETE DRIVEWAY, TYPE A: Delete the references to “E Joint” on the property side of the sidewalk and “C or E Joint” on the street side of the sidewalk, and replace with “install a ½” expansion joint on the property side of the sidewalk and a ½” expansion joint on the street side of the sidewalk”. In addition, install a ½” expansion joint in the sidewalk at the extension of both edges of the driveway. Delete 7 and replace with the following 7; “Install a ½” expansion joint at the back of curb.”
7030, FIGURE 7030.102, CONCRETE DRIVEWAY, TYPE B: Delete the references to “E Joint” on the property side of the sidewalk and “C or E Joint” on the street side of the sidewalk, and replace with “install a ½” expansion joint on the property side of the sidewalk and a 1/2” expansion joint on the street side of the sidewalk”. In addition, install a ½” expansion joint in the sidewalk at the extension of both edges of the driveway.

7030, FIGURE 7030.201, CLASSES OF SIDEWALKS: The detail for CLASS A SIDEWALK shall be revised to delete the “4” min.” thickness dimension of the sidewalk and replace with “5” min.”.

7030, FIGURE 7030.202, CURB DETAILS FOR CLASS A SIDEWALK: On Detail 3 delete the note “Sealed ‘E’ joint” and replace it with the following note “Sealed ‘B’ joint”. On Detail 1, 2, and 3 delete the “4 min.” thickness dimension of the sidewalk and replace with “5” min.”.

SECTION 9020 – SODDING

9020, 3.03 – SOD INSTALLATION: Delete A. and replace it with the following new A.
A. Do not install sod between the dates of June 1 and August 31, unless authorized by the Engineer.

SECTION 9040 – EROSION AND SEDIMENT CONTROL

9040, 1.03 – SUBMITTALS: Add the following sentences: The Jurisdiction will not approve the contractor’s Stormwater Pollution Prevention Plan (SWPPP) or revisions to the SWPPP; instead, the Jurisdiction will only review and comment on the SWPPP and any revisions. The contractor shall submit to the Engineer a copy of the Iowa Department of Natural Resources authorization prior to the Jurisdiction’s issuance of the Notice to Proceed for the work.

9040, 1.08 – MEASUREMENT FOR PAYMENT, A. Stormwater Pollution Prevention Plan (SWPPP): Delete A. in its entirety and replace with the following A.

A. **Stormwater Pollution Prevention**: Item will be paid for as a lump sum for the project based on the following formula: 30% of the bid amount after review of the SWPPP by the Engineer and filing a Notice of Intent by the contractor, an additional 20% of the bid amount when 25% of the total original contract amount is earned, an additional 20% of the bid amount when 50% of the total original contract amount is earned, an additional 20% of the bid amount when 75% of the total original contract amount is earned, and the remaining 10% of the bid amount upon filing the Notice of Discontinuation by the contractor. Item shall include the following activities and work:

1. **Stormwater Pollution Prevention Plan (SWPPP) Preparation**: Item includes reviewing and preparation of any modifications necessary to the general SWPPP provided by the Jurisdiction based on the Contractor’s proposed scheduling and construction methods, filing a Notice of Intent for coverage of the project under the Iowa DNR NPDES General Permit No. 2, and payment of associated NPDES permit fees. The Jurisdiction will publish the Public Notice of Storm Water Discharge and provide an affidavit of publication to the contractor.

2. **Management**: Item includes all work required to comply with the administrative provisions of the Iowa DNR NPDES General Permit No. 2; including record keeping, documentation, updating the SWPPP, filing the Notice of Discontinuation, etc. Item also includes weekly inspections required to satisfy the provisions of General Permit No. 2, unless otherwise stated in the contract documents.

3. **Inspection**: Item includes inspection of the disturbed areas, and erosion and sediment control measures performed by the contractor, at least once every seven (7) calendar days until the disturbed areas have been stabilized with a perennial vegetative cover of sufficient density to preclude erosion.
4. **Additional Erosion and Sediment Control Measures:** Item includes the cost of erosion and sediment control measures included in the contractor’s modifications to the general SWPPP provided by the Jurisdiction that are either not included as bid items on the proposal or exceed 20% of the proposal unit quantity for the measure, as well as replacement of these measures if needed. The contractor will be paid at the unit bid price for additional erosion and sediment control measures constructed that are included in the contractor’s modifications to the general SWPPP provided by the Jurisdiction when the quantity of these additional measures is less than or equal to 20% of the contract quantity for the measure.

**9040, 3.01 – SWPPP PREPARATION:** Delete in its entirety and replace with the following.

A. Review and prepare any modifications necessary to the general SWPPP provided by the Jurisdiction based on the Contractor’s proposed scheduling and construction methods. Prepare a Stormwater Pollution Prevention Plan (SWPPP) according to the requirements of the Iowa DNR NPDES General Permit No. 2.

B. Have the SWPPP prepared by an individual experienced in erosion and sediment control.

C. Ensure that controls utilized in the SWPPP conform to the type and quantity of erosion and sediment controls shown in the contract documents. See 9040,1.08, 4 above for measurement for payment of any erosion and sediment control measure used that is not shown in the contract documents or exceeds 20% of the contract quantity for the measure.

D. Submit the completed SWPPP to the Engineer for review and comment prior to filing the Notice of Intent.

E. The Jurisdiction will publish the Public Notice of Storm Water Discharge, as required by the NPDES General Permit No. 2 and provide an affidavit of publication to the contractor.

F. File the Notice of Intent and fee, as required by the NPDES General Permit No. 2.

G. Prior to beginning grading, excavation, or clearing and grubbing operations, all erosion and sediment control measures identified in the SWPPP shall be installed or constructed.

**9040, 3.02 – SWPPP MANAGEMENT:** Delete C. in its entirety and replace with the following C.

C. Submit all SWPPP revisions to the Engineer for review and comment.

**SECTION 9080 – CONCRETE STEPS AND HANDRAIL**

**9080, 2.01 – MATERIALS, B. Reinforcing Steel:** Add the following sentence at the end: “All reinforcement shall be epoxy coated.”
LID SHALL BE USED FOR TYPE E, TYPE F, AND TYPE G APPLICATIONS AS REFERENCED BY SUDAS FIGURE 6010.602.

STORM SEWER LID
FOR THE CITY OF DES MOINES, IOWA

MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 350
FINISH: NO PAINT

RAISED LETTERS FLUSH WITH TOP SURFACE
LETTERED "USA" OR "MADE IN USA"
PICKHOLES