A pre-letting conference will be held at 1:00 p.m., March 29, 2021, at the Wastewater Reclamation Facility, 3000 Vandalia Road, Des Moines, Iowa.

DES MOINES METROPOLITAN WASTEWATER RECLAMATION AUTHORITY
OPERATING CONTRACTOR - CITY OF DES MOINES
WASTEWATER RECLAMATION FACILITY
3000 VANDALIA ROAD
DES MOINES, IOWA 50317-1346

PUBLIC IMPROVEMENTS CONTRACT DOCUMENTS

WRF DIGESTER HEAT EXCHANGER UPGRADES

ACTIVITY ID
042021014

PLAN FILE NO.
626-054/067

WRA APPROVAL

APPROVAL DATE
April 20, 2021

WRA BOARD RESOLUTION NO.

CONTRACT NO.

CONTRACTOR

FUNDING INFORMATION
Object Code 543060
Organization No WR809855
Project No WR070

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


ENGINEERING DEPARTMENT
CITY OF DES MOINES, IOWA

WRF Digester Heat Exchanger Improvements

Activity ID 042021014

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, 2020 Edition May 4, 2020
WRA General Supplemental Specifications to SUDAS, 2020 Edition May 19, 2020

PROJECT ENGINEER: Patrick A. Brown, P.E.

Phone Number: (515) 323-8027
The work comprising the above referenced project shall be constructed in accordance with the SUDAS Standard Specifications, 2020 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 Des Moines Metropolitan Wastewater Reclamation Authority is the Contracting Authority on this project and shall hereinafter be referred to as the "Jurisdiction". Before submitting your bid, please review the SUDAS Stancard 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 Des Moines Metropolitan Wastewater Reclamation Authority, "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 IDENTITY 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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<tbody>
<tr>
<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.dmgov.org/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.

309-6001 02-14
NOTICE TO BIDDERS

DES MOINES METROPOLITAN WASTEWATER RECLAMATION AUTHORITY PUBLIC IMPROVEMENT

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 April 6, 2021, 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 April 6, 2021, in the City Council Chambers, 2nd Floor, City Hall, 400 Robert D. Ray Drive, Des Moines, Iowa, for consideration by the Des Moines Metropolitan Wastewater Reclamation Authority Board (WRA Board) at its meeting on April 20, 2021. The Des Moines Metropolitan Wastewater Reclamation Authority (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 WRA Board, 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 March 16, 2021, 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.
WRF Digester Heat Exchanger Improvements, 042021014

The improvement includes removal and replacement of four digester sludge heat exchangers, sludge piping, hot water piping, valves, instruments, and other incidental items in Buildings 80-1, 80-2, and 80-3; all in accordance with the contract documents, including Plan File Nos. 626-054/067, located at the Wastewater Reclamation Facility, 3000 Vandalia Road, Des Moines, Iowa.

This project shall be fully completed not later than January 31, 2022.

Engineer’s Construction Estimate. $926,000.00

Preletting Conference. A pre-letting conference will be held at 1:00p.m., March 29, 2021, at the Wastewater Reclamation Facility, 3000 Vandalia Road, Des Moines, Iowa.
NOTICE OF PUBLIC HEARING
DES MOINES METROPOLITAN WASTEWATER RECLAMATION AUTHORITY PUBLIC IMPROVEMENT

Public Hearing on Proposed Contract Documents and Estimated Costs for Improvement. A public hearing will be held by the Des Moines Metropolitan Wastewater Reclamation Authority Board 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, 2021, at 1:30 p.m., in the Des Moines Metropolitan Wastewater Reclamation Facility, 3000 Vandalia Road, Des Moines, Iowa. The Des Moines Metropolitan Wastewater Reclamation Authority Board Meetings are open to all individuals regardless of disability. To better serve you, please notify the Board Secretary at least three business days in advance, when possible, should special accommodations be required.

General Nature of Public Improvement

WRF Digester Heat Exchanger Improvements, 042021014

The improvement includes removal and replacement of four digester sludge heat exchangers, sludge piping, hot water piping, valves, instruments, and other incidental items in Buildings 80-1, 80-2, and 80-3; all in accordance with the contract documents, including Plan File Nos. 626-054/067, located at the Wastewater Reclamation Facility, 3000 Vandalia Road, Des Moines, Iowa

Published in the Des Moines Register
March 31, 2021
PROPOSAL

To the Chairperson and Members of the Board of
the Des Moines Metropolitan Wastewater
Reclamation Authority

PROPOSAL: PART A - SCOPE

The Des Moines Metropolitan Wastewater Reclamation Authority, 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:

WRF Digester Heat Exchanger Improvements, 042021014

The improvement includes removal and replacement of four digester sludge heat exchangers, sludge piping, hot water piping, valves, instruments, and other incidental items in Buildings 80-1, 80-2, and 80-3; all in accordance with the contract documents, including Plan File Nos. 626-054/067, located at the Wastewater Reclamation Facility, 3000 Vandalia Road, 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-altamtes if there are alternate bids 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-altamtes 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 to the lowest responsible, responsive bidder; and
2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsible, responsive bidder to be based on comparison of the total bid 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 January 31, 2022; and to pay liquidated damages for noncompliance with said completion provisions at the rate of One Thousand and 00/100 ($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

PROPOSAL Page 2 of 4
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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</tr>
<tr>
<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

By

Bidder

Signature

Name (Print/Type)

Title

Street Address

City, State, Zip Code

Telephone Number / Email Address

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.

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.

NOTE: The signature on this proposal must be an original signature in ink;
copies or facsimile of any signature will not be accepted.
This is a base bid price contract. 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. 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.

<table>
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<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>WRF Digester Heat Exchanger Improvements, Complete as Specified and Described in Contract Documents</td>
<td>LS</td>
<td>1</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

To be completed by all bidders

Part A

Please answer “Yes” or “No” for each of the following:

Yes____ No____ My company is authorized to transact business in Iowa.

(To help you determine if your company is authorized, please review the "Worksheet: 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.

To be completed by resident bidders

Part B

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

Dates: _____ / _____ / _____ tc _____ / _____ / _____ Address:

City, State, Zip: __________________________

Dates: _____ / _____ / _____ tc _____ / _____ / _____ Address:

City, State, Zip: __________________________

Dates: _____ / _____ / _____ tc _____ / _____ / _____ Address:

City, State, Zip: __________________________

You may attach additional sheet(s) if needed.

To be completed by non-resident bidders

Part C

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

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

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

You may attach additional sheet(s) if needed.

To be completed by all bidders

Part D

I certify that the statements made on this document are true and complete to the best of my knowledge and I know that any 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
PROPOSAL ATTACHMENT: PART F - ADDITIONAL REQUIREMENTS
ITEM 2 - GENERAL

1. The work under this proposal shall be constructed in accordance with the SUDAS Standard Specifications, 2020 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 Des Moines Metropolitan Wastewater Reclamation Authority 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 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 <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.
   • To include this provision in all subcontracts for this project.

4. The City’s Overall Annual DBE/TSB Goal for calendar year 2021 is 6.03%, 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/>
BID BOND

KNOW ALL BY THESE PRESENTS:

That we, _____________________________________________, as Principal, and
_____________________________________________________, as Surety, are held and firmly
bound unto the Des Moines Metropolitan Wastewater Reclamation Authority, 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:

WRF Digester Heat Exchanger Improvements, 042021014

The improvement includes removal and replacement of four digester sludge heat exchangers, sludge
piping, hot water piping, valves, instruments, and other incidental items in Buildings 80-1, 80-2, and 80-3,
all in accordance with the contract documents, including Plan File Nos. 626-054/067, located at the
Wastewater Reclamation Facility, 3000 Vandalia Road, 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

By __________________________
Signature Attorney-in-Fact/Officer

__________________________
Name of Attorney-in-Fact/Officer

__________________________
Company Name

__________________________
Company Address

__________________________
City, State Zip Code

__________________________
Company Telephone Number

PRINCIPAL:

__________________________
Bidder

By __________________________
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.
ENGINEERING DEPARTMENT  
CITY OF DES MOINES, IOWA  

CONTRACT NO.  
DATE  
4/20/2021  

WRA BOARD RESOLUTION NO.  

CONTRACT  

THIS CONTRACT, made and entered into at Des Moines, Iowa, on ______________, by and between the Des Moines Metropolitan Wastewater Reclamation Authority, by its WRA Board Chair, upon order of its Des Moines Metropolitan Wastewater Reclamation Authority Board, 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, 2020 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:

WRF Digester Heat Exchanger Improvements, 042021014
The improvement includes removal and replacement of four digester sludge heat exchangers, sludge piping, hot water piping, valves, instruments, and other incidental items in Buildings 80-1, 80-2, and 80-3; all in accordance with the contract documents, including Plan File Nos. 626-054/067, located at the Wastewater Reclamation Facility, 3000 Vandalia Road, 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 January 31, 2022; and to pay liquidated damages for noncompliance with 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.

<table>
<thead>
<tr>
<th>JURISDICTION:</th>
<th>CONTRACTOR:</th>
</tr>
</thead>
<tbody>
<tr>
<td>By</td>
<td></td>
</tr>
<tr>
<td>Paul Moritz, WRA Board Chair</td>
<td>Contractor</td>
</tr>
<tr>
<td>(Seal)</td>
<td>By</td>
</tr>
<tr>
<td>ATTEST:</td>
<td>Signature</td>
</tr>
<tr>
<td>Michael McCoy, Board Secretary</td>
<td>Title</td>
</tr>
<tr>
<td>FORM APPROVED BY:</td>
<td>Street Address</td>
</tr>
<tr>
<td>Kathleen Vanderpool, Deputy City Attorney</td>
<td>City, State - Zip Code</td>
</tr>
<tr>
<td></td>
<td>Telephone Number / Email Address</td>
</tr>
</tbody>
</table>

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 ____________________________

) SS

__________________________ County

On this ________ day of ___________, 20______, before me, the undersigned, a Notary Public in and for
the State of ________________, personally appeared _______ and ________________, to me
known, who, being by me duly sworn, did say that they are the ________________, and
__________________________, respectively, of the corporation executing the foregoing instrument;
that (no seal has been procured by) (the seal affixed thereto is the seal of) the corporation; that said instrument was signed
(and sealed) on behalf of the corporation by authority of this Board of Directors;
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

My commission

__________________________________________

SUDAS 04/25/2016

CONTRACT Page 3 of 3
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,
   • 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 Des Moines Metropolitan Wastewater
   Reclamation Authority 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
   <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 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 Des Moines Metropolitan Wastewater Reclamation Authority, and Des
     Moines Metropolitan Wastewater Reclamation Authority staff will not review or approve the
     Contractor’s safety program. The Des Moines Metropolitan Wastewater Reclamation Authority
     assumes that the Contractor will maintain a safe worksite; however, Des Moines Metropolitan
     Wastewater Reclamation Authority 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 Des Moines
   Metropolitan Wastewater Reclamation Authority until said contract has been executed by the Bidder,
   and shall have been approved by the Des Moines Metropolitan Wastewater Reclamation Authority
   Board and executed by the WRA Board Chair and attested to by the Board Secretary.
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 is a base bid price contract. 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-altornates if there are alternates on the proposal. 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-altornates shall be used for determining the sufficiency of the bid security.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>ESTIMATED UNITS</th>
<th>UNIT QUANTITY</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>WRF Digester Heat Exchanger Improvements, Complete as Specified and Described in Contract Documents</td>
<td>LS</td>
<td>1</td>
<td>$</td>
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TOTAL CONSTRUCTION COST $
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 Des Moines Metropolitan Wastewater Reclamation Authority, 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:

WRF Digester Heat Exchanger Improvements, 042021014

The improvement includes removal and replacement of four digester sludge heat exchangers, sludge piping, hot water piping, valves, instruments, and other incidental items in Buildings 80-1, 80-2, and 80-3; all in accordance with the contract documents, including Plan File Nos. 626-054/067, located at the Wastewater Reclamation Facility, 3000 Vandalia Road, 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 one (1) 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.

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

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; and Certificate of Insurance; and NPDES Certification Statements, if required, in substantial compliance with the contract documents to the City of Des Moines Engineering Department before 12:00 noon on Friday, April 16, 2021. 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 Des Moines Metropolitan Wastewater Reclamation Authority Board for award of this contract on Tuesday, April 20, 2021. This would allow construction to begin upon issuance of the Notice to Proceed in accordance with the Special Provisions.

By submission of a bid, the Bidder agrees that if the Bidder fails to furnish said executed contract; Performance, Payment, and Maintenance Bond; and Certificate of Insurance; and NPDES Certification Statements, if required, in substantial compliance with the contract documents to the Des Moines Engineering Department before 12:00 noon on Friday, April 16, 2021; the amount of the Bidder’s bid security may become the property of the Des Moines Metropolitan Wastewater Reclamation Authority and may be retained—not as a penalty but as liquidated damages. The award of the contract may then, at the discretion of the Des Moines Metropolitan Wastewater Reclamation Authority Board, be made to the next-lowest responsible Bidder, or the work may be readvertised or may be constructed by the Des Moines Metropolitan Wastewater Reclamation Authority Board 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 Des Moines Metropolitan Wastewater Reclamation Authority Board 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) BIDDING AND CONTRACT PROCESS INCLUDING CONTRACT COMPLIANCE PROGRAM

On February 12, 2007, under Roll Call Number 07-291, the Des Moines City Council approved bidding and contracting process changes for construction of public improvements. In accordance with the Initial Operating Contract with the City of Des Moines approved by the WRA Board under WRA Board Resolution Number 04-017, the City of Des Moines Engineering Department shall utilize its standard Bidding/Contracting Process for construction of WRA Improvements. The standard Bidding/Contracting Process included with said Roll Call 07-291shall apply on this WRA project except of the following:

- The Change Order Process revisions shall not apply as the WRA Board has previously approved its own change order policy.
• The Equal Employment Opportunity (EEO) Program included in the Des Moines Contract Compliance Program shall apply to all WRA projects as state and federal law mandate these requirements; however, the Disadvantaged Business Enterprise/Targeted Small Business (DBE/TSB) Program shall not apply to projects funded solely with WRA funds. If federal or state funds include DBE or TSB requirements, these requirements will be included in those projects by special provision.

Said Roll Call 07-291 is available on the Engineering Department website at http://www.dmgov.org/departments/ENG/Bid Information/index.htm and includes an updated, revised Contract Compliance Program for the City of Des Moines, which is available at the same website.

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 (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.
PROPERTY INSURANCE – INSTALLATION FLOATER

The Jurisdiction 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).
ENGINEERING DEPARTMENT
CITY OF DES MOINES, IOWA

SPECIAL PROVISION
TECHNICAL SPECIFICATIONS

ON

WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS

ACTIVITY ID 04-2021-014
WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS
TECHNICAL SPECIFICATIONS TABLE OF CONTENTS

DIVISION 00 – BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF THE CONTRACT
00001  SEALS AND SIGNATURES
01060  SPECIAL AND JOB CONDITIONS
01340  SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS

DIVISION 09 – FINISHES
09961  HIGH PERFORMANCE INDUSTRIAL COATINGS

DIVISION 10 – SPECIALTIES
10400  IDENTIFICATION DEVICES

DIVISION 13 – SPECIAL CONSTRUCTION
13230  SLUDGE HEAT EXCHANGERS
13442  PRIMARY ELEMENTS AND TRANSMITTERS
13504  CONFIGURATION REQUIREMENTS: HUMAN MACHINE INTERFACE (HMI) AND REPORTS

DIVISION 16 – MECHANICAL
15060  GENERAL PIPE REQUIREMENTS
15061  STEEL PIPE
15062  DUCTILE IRON PIPE
15090  PIPE SUPPORTS
15100  BASIC VALVE REQUIREMENTS
15101  GATE VALVES
15102  PLUG VALVES
15104  BALL VALVES
15183  PIPE INSULATION
| I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Iowa. |
|---|---|
| Patrick A. Brown | Date |
| 2-15-2021 |
| My license renewal date is December 31, 2022. |
| Pages or sheets covered by this seal: |
| All Technical Specifications |
SECTION 01060
SPECIAL AND JOB CONDITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Coordination with WRA and sequencing requirements.

1.2 COORDINATION WITH WRA:

A. Construction sequencing:
   1. Contractor shall keep one (1) heat exchanger and associated hot water service in each Digester Control Building (80-1, 80-2, and 80-3) in service at all times.
      a. Contractor shall provide blind flanges or other means as needed to isolate all affected piping systems and equipment to allow removal of one heat exchanger while keeping the other in service.
      2. Contractor shall coordinate with WRA for equipment lockout/tagout and provide seven (7) day notice prior to start of any shutdowns.
      3. Contractor shall not begin demolition until new equipment and materials are on site.

B. Contractor working hours are 7:00 AM - 3:30 PM Monday through Friday unless approved in advance by WRA.

C. Prior to starting work on site, all Contractor and any Sub-contractor employees working on site at WRF must complete WRF site safety training (approximately 30-minute session). The contractor shall coordinate with WRA staff to schedule the training.

1.3 JOB SITE ENVIRONMENT

A. Heat exchanger rooms are National Fire Protection Association (NFPA) Code Class 1, Division 1 Area Classification. Electrical rooms are unclassified. All work, materials, and equipment provided shall be suitable for the environment. Contractor responsible for planning and carrying out all proper safety requirements.

1.4 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference shall be held at WRA and/or by phone after award of Contract.
   1. Contractor’s Project Manager and Project Superintendent and Contractor’s Subcontractor Representatives shall attend.
   2. Contractor shall submit schedule of values and construction schedule to the preconstruction meeting.

1.5 SCHEDULE OF VALUES

A. Where a Contract is awarded on a lump sum basis, the Contractor shall file with the Engineer a balanced price segregation of the lump sum bid into items similar to the various subdivisions of the general and detailed specifications, the sum of which shall equal the lump sum bid.
   1. The cost of various materials shall be furnished upon request of the Engineer, and such data will then be used as a basis for making progress estimates.
   2. Breakdown costs, itemized by Specification Section and trade, and distribute cost to individual applicable units and structures.
   3. Where structures, units, equipment or other components are identified by a specific series or, identification number, utilize said designation throughout cost breakdown.
4. Provide detailed breakdown for individual yard piping or conduit runs and identify approximate quantities involved to satisfaction of the Engineer.
5. Provide separate breakdown for change order items requested.
6. Provide an additional breakdown sheet, equivalent to EJCDC document C620, Page 3 of 3, showing the tabulation format for stored materials.
7. Submit this sheet each month with Contractor's pay request breakdown.
8. The detail and format of cost breakdown and stored materials tabulation sheet shall be fully approved by Engineer.

B. A reasonable allocation of the Contract Price to the component parts of the Work will be approved if component parts of the Work have values assigned to them that are well-balanced with respect to relative values for similar work established by published estimating guides.

1. Unless otherwise agreed to at the Preconstruction Conference, Means Estimator Guide or other similar nationally recognized estimating guide shall be used for resolving differences between Engineer's and Contractor's opinions of allocation of values.

2. Consent of Surety: If Contractor and Engineer cannot mutually agree on a Schedule of Values, Engineer will approve a Schedule of Values approved by the Surety providing the Performance Bond.

C. Contractor's costs shall not govern the allocation of values when application of Contractor's costs to a component part of the Work results in any other component part or combination of component parts being under-valued in relation to conventional estimating guides.

D. Schedule of Values shall be agreed upon prior to first Application for Payment.

1.6 PROJECT MEETINGS

A. Construction Meetings:

1. The Engineer will conduct periodic construction meetings involving:
   a. Contractor's project manager.
   b. Contractor's project superintendent.
   c. Owner's designated representative(s).
   d. Engineer's designated representative(s).
   e. Contractor's subcontractors as appropriate to the Work in progress.
   f. Owner's Construction Quality Control Consultant.

2. Meetings will be conducted weekly or at engineer's discretion may be less frequent during periods of low work activity.

3. The Engineer will take meeting minutes and submit copies of meeting minutes to participants and designated recipients identified at the Preconstruction Conference.
   a. Corrections, additions or deletions to the minutes shall be noted and addressed at the following meeting.

4. The Engineer will schedule meetings for most convenient time frame.

5. The Contractor shall have available at each meeting up-to-date record drawings.

6. Meetings may be scheduled on site and/or by phone.

1.7 QUALITY ASSURANCE

A. Supervisor and Superintendent:

1. The competent General Contractor Superintendent must be on the project site when construction activities are taking place. The superintendent shall supervise, direct and controls the Contractor's operations, personnel, work and subcontractor's operations. The contractor shall give the WRA written notification of the name of the superintendent. The superintendent shall be employed by the general contractor and superintendent mobilization shall be incidental to the project.
2. Contractor shall maintain a qualified and responsible person available 24 hours a day, seven days a week to respond to emergencies which may occur after work hours. Contractor shall provide phone number for contact to WRA.

3. Incompetent or incorrigible employees shall be dismissed from work by contractor or its representative when requested by WRA and such persons shall not be permitted to work on site again without written consent of WRA.

B. A copy of drawings, specifications and as-built drawings shall be available on site at all times any work is occurring on site.

1.8 OWNER OCCUPANCY

A. The WRA shall have right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions as may not have expired, but such taking, possession and use shall not be deemed an acceptance of any work not completed in accordance with the contract documents.

B. WRA intends to continue to occupy all portions of the existing buildings during the entire construction period.
   1. Treatment plan must be maintained in operation throughout the entire construction period, with planned and scheduled shutdowns for connections, cut-ins, changeovers, etc.
   2. Access to doors shall be provided immediately when requested by WRA to allow for operation of the treatment plant.

C. Cooperate with WRA to minimize conflict to facility WRA’s operations.

D. Schedule the work to accommodate WRA occupancy and operations.

E. Continuity of treatment system operation.
   1. Conduct work in manner that avoids interruption of effective treatment system operation.
   2. Prevent the bypass of untreated wastewater to surface water or drainage ways or equipment failure that upsets the treatment process. Accidental bypasses or treatment failures caused by contractor’s work will entitle WRA to:
      a. Employ others to correct the issues without giving notice to contractor.
      b. Recover from the contractor all costs incurred by the WRA as a result of the bypass or failures including labor, materials, services, legal fees, regulatory penalties, and related expenses.

END OF SECTION
SECTION 01340
SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 SUMMARY

A. Procedures and requirements for submittals and operation and maintenance manuals.

1.2 PREPARATION OF SUBMITTALS

A. Shop Drawings and Samples:
   1. Scope of any submittal and letter of transmittal:
      a. Limited to one (1) Specification Section.
   2. Numbering letter of transmittal:
      a. Use the Specification Section number followed by a series number ("-xx" and
         beginning with "01"); increase the series number sequentially with each
         additional transmittal for that Specification Section.
   3. Describing transmittal contents:
      a. Provide listing of each component or item in submittal capable of receiving an
         independent review action.
      b. Identify for each item:
         1. Manufacturer and Manufacturer’s Drawing or data number.
         2. Contract Document tag number(s).
         3. Unique page numbers for each page of each separate item.
      c. When submitting “or-equal” items that are not the products of named
         manufacturers, include the words “or-equal” in the item description.
   4. Contractor certification of review and approval:
      a. Contractor’s review and approval certification stamp shall be applied either to
         the letter of transmittal or a separate sheet preceding each independent item in
         the submittal.
         1. Stamp may be either a wet ink stamp or electronically embedded.
         2. Clearly identify the person who reviewed the submittal and the date it was
            reviewed.
         3. Shop Drawing submittal stamp shall read "(Contractor’s Name) has
            satisfied Contractor’s obligations under the Contract Documents with
            respect to Contractor’s review and approval as stipulated in the General
            Conditions."
   5. Resubmittals:
      a. Number with original Specification Section and series number with a suffix letter
         starting with "A" on a (new) duplicate transmittal form.
      b. Do not increase the scope of any prior transmittal.
      c. Account for all components of prior transmittal.
         1. If items in prior transmittal received "A" or "B" Action code, list them and
            indicate "A" or "B" as appropriate.
            a) Do not include submittal information for items listed with prior "A" or "B"
               Action in resubmittal.
         2. Indicate "Outstanding-To Be Resubmitted At a Later Date" for any prior "C"
            or "D" Action item not included in resubmittal.
            a) Obtain Engineer’s approval to exclude items.
   6. Transmittal contents:
      a. Coordinate and identify Shop Drawing contents so that all items can be easily
         verified by the Engineer.
b. Provide submittal information or marks defining specific equipment or materials utilized on the Project.
   1) Generalized product information, not clearly defining specific equipment or materials to be provided, will be rejected.

c. Identify equipment or material project application, tag number, Drawing detail reference, weight, and other Project specific information.

d. Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.

e. Do not modify the manufacturer's documentation or data except as specified herein.

f. Submit items such as equipment brochures, cuts of fixtures, product data sheets or catalog sheets on 8-1/2 x 11 IN pages.
   1) Indicate exact item or model and all options proposed.


g. When a Shop Drawing submittal is called for in any Specification Section, include as appropriate, scaled details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout Drawings, rough-in diagrams, wiring diagrams, controls, weights and other pertinent data in addition to information specifically stipulated in the Specification Section.
   1) Arrange data and performance information in format similar to that provided in Contract Documents.
   2) Provide, at minimum, the detail specified in the Contract Documents.

h. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.

B. Operation and Maintenance Manuals:
   1. Content:
      a. Provide a cover page as the first page of each manual with the following information:
         1) Manufacturer(s) Name and Contact Information.
         2) Vendor's Name and Contact Information.
         3) Date (month, year).
         4) Project Owner and Project Name.
         5) Specification Section.
         6) Project Equipment Tag Numbers.
         7) Model Numbers.
         8) Engineer's Name.
         9) Contractor's Name.

      b. Provide a Table of Contents for each manual.

      c. Provide the following detailed information, as applicable:
         1) Use equipment tag numbers from the Contract Documents to identify equipment and system components.
         2) Equipment function, normal and limiting operating characteristics.
         3) Instructions for assembly, disassembly, installation, alignment, adjustment, and inspection.
         4) Operating instructions for start-up, normal operation, control, shutdown, and emergency conditions.
         5) Lubrication and maintenance instructions.
         6) Troubleshooting guide.
         7) Mark each sheet to clearly identify specific products and component parts and data applicable to the installation for the Project; delete or cross out information that does not specifically apply to the Project.
         8) Parts lists:
a) A parts list and identification number of each component part of the equipment.
b) Exploded view or plan and section views of the equipment with a detailed parts callout matching the parts list.
c) A list of recommended spare parts.
d) List of spare parts provided as specified in the associated Specification Section.
e) A list of any special storage precautions which may be required for all spare parts.

9) General arrangement, cross-section, and assembly drawings.
10) Electrical diagrams, including elementary diagrams, wiring diagrams, connection diagrams, and interconnection diagrams.
11) Test data and performance curves.
12) As-constructed fabrication or layout drawings and wiring diagrams.
13) Copy of the equipment manufacturer’s warranty meeting the requirements of the Contract.
14) Copy of any service contracts provided for the specific piece of equipment as part of the Contract.

d. Additional information as required in the associated equipment or system Specification Section.

2. Final paper copy O&M:
a. 3-Ring Binder:
   1) Provide D-ring binder with clear vinyl sleeves (i.e. view binder) on front and spine.
   2) Insert binder title sheet with the following information under the front and spine sleeves:
      a) Project name.
      b) Specification Section.
      c) Equipment names and summary of tag(s) covered.
      d) Manufacturer name.
      e) Date (month, year).
   3) Provide plastic sheet lifters prior to first page and following last page.

b. Drawings:
   1) Provide all drawings at 11 x 17 IN size, triple folded and three-hole punched for insertion into manual.
   2) Where reduction is not practical to ensure readability, fold larger drawings separately and place in three-hole punched vinyl envelopes inserted into the binder.
   3) Identify vinyl envelopes with drawing numbers.

c. Use plastic coated dividers to tab each section of each manual in accordance with the Table of Contents.

1.3 TRANSMITTAL OF SUBMITTALS

A. Shop Drawings:
   1. Provide electronic (PDF) copy to WRA for review.

B. Operation and Maintenance Manuals:
   1. Preliminary: Provide electronic (Searchable PDF) copy to WRA for review.
   2. Final:
      a. Provide electronic (Searchable PDF) copy to WRA
      b. Provide two (2) bound hard copies to WRA.

1.4 ENGINEER’S REVIEW ACTION

A. Shop Drawings and Samples:
   1. Items within transmittals will be reviewed for overall design intent and will receive one (1) of the following actions:

   WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS
   01340 – SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS

3 of 5
a. A - FURNISH AS SUBMITTED.
b. B - FURNISH AS NOTED (BY ENGINEER).
c. C - REVISE AND RESUBMIT.
d. D - REJECTED.
e. E - ENGINEER'S REVIEW NOT REQUIRED.

2. Submittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp.
a. Submittals not stamped by the Contractor or stamped with a stamp containing language other than that specified herein will not be reviewed for technical content and will be returned without any action.

3. In relying on the representation on the Contractor's review and approval stamp, Owner and Engineer reserve the right to review and process poorly organized and poorly described submittals as follows:
a. Submittals transmitted with a description identifying a single item and found to contain multiple independent items:
   1) Review and approval will be limited to the single item described on the transmittal letter.
   2) Other items identified in the submittal will:
      a) Not be logged as received by the Engineer.
      b) Be removed from the submittal package and returned without review and comment to the Contractor for coordination, description and stamping.
      c) Be submitted by the Contractor as a new series number, not as a re-submittal number.

b. Engineer, at Engineer's discretion, may revise the transmittal letter item list and descriptions, and conduct review.
   1) Unless Contractor notifies Engineer in writing that the Engineer's revision of the transmittal letter item list and descriptions was in error, Contractor's review and approval stamp will be deemed to have applied to the entire contents of the submittal package.

4. Submittals returned with Action "A" or "B" are considered ready for fabrication and installation.
a. If for any reason a submittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal.

b. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.

5. Submittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
a. The portion of the submittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Conference).
   1) One (1) copy or the one (1) transparency of the "C" or "D" Drawings will be marked up and returned to the Contractor.
      a) Correct and resubmit items so marked.

b. Items marked "A" or "B" will be fully distributed.

c. If a portion of the items or system proposed are acceptable, however, the major part of the individual Drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action.
   1) This is at the sole discretion of the Engineer.
   2) In this case, some Drawings may contain relatively few or no comments or the statement, "Resubmit to maintain a complete package."
   3) Distribution to the Owner and field will not be made (unless previously agreed to otherwise).

6. Failure to include any specific information specified under the submittal paragraphs of the Specifications will result in the submittal being returned to the Contractor with "C" or "D" Action.

WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS
01340 – SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS
7. Calculations required in individual Specification Sections will be received for information purposes only, as evidence calculations have been performed by individuals meeting specified qualifications, and will be returned stamped "E. Engineer's Review Not Required" to acknowledge receipt.

8. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

9. Transmittals of submittals which the Engineer considers as "Not Required" submittal information, which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" action in a prior submittal, will be returned with action "E. Engineer's Review Not Required."

10. Samples may be retained for comparison purposes.
   a. Remove samples when directed.
   b. Include in bid all costs of furnishing and removing samples.

11. Approved samples submitted or constructed, constitute criteria for judging competed work.
   a. Finished work or items not equal to samples will be rejected.

12. Operation and Maintenance Manuals will only receive "A" or "C" actions.

END OF SECTION
SECTION 09961
HIGH PERFORMANCE INDUSTRIAL COATINGS

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes:
   1. Minimum surface preparation requirements.
   2. High performance industrial coatings (HPIC).

PART 2 - ANY OTHER COATING, THINNER, ACCELERATOR, INHIBITOR, ETC., SPECIFIED OR REQUIRED AS PART OF A COMPLETE SYSTEM SPECIFIED IN THIS SPECIFICATION SECTION.

2.1 QUALITY ASSURANCE
A. Referenced Standards:
   1. ASTM International (ASTM):
      b. D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
   2. National Association of Pipe Fabricators (NAPF):
      a. 500-03, Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings:
         1) 500-03-04, Abrasive Blast Cleaning for Ductile Iron Pipe.
         2) 500-03-05, Abrasive Blast Cleaning for Cast Ductile Iron Fittings.
      a. Certified Coating Thickness Calibration Standards.
   4. NSF International (NSF).
   5. The Society for Protective Coatings (SSPC):
      a. PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
      b. SP 1, Solvent Cleaning.
      c. SP 16, Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.
   6. The Society for Protective Coatings/NACE International (SSPC/NACE):
      a. SP 7/NACE No. 4, Brush-off Blast Cleaning.

B. Qualifications:
   1. Coating manufacturer's authorized representative shall provide written statement attesting that applicator has been instructed on proper preparation, mixing and application procedures for coatings specified.

C. Miscellaneous:
   1. Furnish coating through one (1) manufacturer.

D. Deviation from specified mil thickness or product type is not allowed without written authorization of Engineer.
   1. Deviation shall require re-work by contractor.

E. Material shall not be thinned unless approved, in writing, by coating manufacturer's authorized representative.
2.2 SUBMITTALS

A. Shop Drawings:
   1. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's application instructions.
      c. Manufacturer's surface preparation instructions.
      d. If products being used are manufactured by Company other than listed in the MATERIALS Article of this Specification Section, provide complete individual data sheet comparison of proposed products with specified products including application procedure, coverage rates and verification that product is designed for intended use.
      e. Contractor's written plan of action for containing airborne particles created by blasting operation and location of disposal of spent contaminated blasting media.
      f. Coating manufacturer's recommendation on abrasive blasting.
      g. Manufacturer's recommendation for universal barrier coat.
      h. Manufacturer's recommendation for providing temporary or supplemental heat or dehumidification or other environmental control measures.
   2. Manufacturer's statement regarding applicator instruction on product use.

2.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver in original containers, labeled as follows:
   1. Name or type number of material.
   2. Manufacturer's name and item stock number.
   3. Contents, by volume, of major constituents.
   4. Warning labels.
   5. VOC content.

B. Store materials in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 DegF.

2.4 PROJECT CONDITIONS

A. Verify that atmosphere in area where coating is to take place is within coating manufacturer's acceptable temperature, humidity and sun exposure limits.
   1. Provide temporary heating, shade and/or dehumidification as required to bring area within acceptable limits.

PART 3 - PRODUCTS

3.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. High Performance Industrial Coatings:
      a. Tiemec.
      b. Or approved equal.

3.2 MATERIALS

A. General:
   1. High Performance Industrial Coatings: Products listed are manufactured by Tiemec.
   2. Products of other manufacturers will be considered for use provided that the product:
      a. Is of the same generic resin.
      b. Requires comparable surface preparation.
c. Has comparable application requirements.
d. Meets the same VOC levels or better.
e. Provides the same finish and color options.
f. Will withstand the atmospheric or immersion conditions of the location where it is to be applied.

3. Where manufacturer's product data sheet indicates a minimum mil thickness per coat that is greater than specified herein, mil thickness for entire coating system shall be increased proportionately.

B. For unspecified materials such as thinner, provide coating manufacturer's recommended products.

C. High Performance Industrial Coatings:

<table>
<thead>
<tr>
<th>GENERIC DESCRIPTION</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyamidoamine Epoxy</td>
<td>Series L69 Hi-Build Epoxoline II</td>
</tr>
<tr>
<td>Zinc-Rich Urethane</td>
<td>Series 94-H2O Hydro-Zinc</td>
</tr>
<tr>
<td>Waterborne Acrylic Polyurethane</td>
<td>Series 1080 Endura-shield WB</td>
</tr>
<tr>
<td>Modified Polyamidoamine Epoxy</td>
<td>Series 135 Chembuild</td>
</tr>
</tbody>
</table>

### 3.3 COATING SYSTEMS:

<table>
<thead>
<tr>
<th>Environment</th>
<th>Surface Preparation</th>
<th>Prime Coat</th>
<th>Intermediate Coat</th>
<th>Finish Coat</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Ferrous Metals (Structural &amp; Miscellaneous Metals)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior atmospheric</td>
<td>SSPC SP-10/</td>
<td>2.5 to 3.5 mil</td>
<td>3.0 to 4.0 mil</td>
<td>3.0 to 4.0 mil</td>
</tr>
<tr>
<td></td>
<td>NACE No. 2 min.</td>
<td>Series 94-H2O</td>
<td>Series L69</td>
<td>Series L69</td>
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<tr>
<td></td>
<td>2 mil anchor profile</td>
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</table>

**Heat Exchangers**

See Section 13230

**Field Painting of Factory Finished Ferrous Metal (Valves, etc.)**

<table>
<thead>
<tr>
<th>Interior atmospheric</th>
<th>Factory top coat finish to remain</th>
<th>2.0 mils, Series 135 Chembuild</th>
<th>2.0-3.0 mils, Series L69</th>
<th>2.0 mils, Series 1080 Endura-shield</th>
</tr>
</thead>
</table>

**Ferrous Piping**

<table>
<thead>
<tr>
<th>Interior atmospheric</th>
<th>Pipe: NAPF 500-03-04</th>
<th>3.0 to 4.0 mil Series L69</th>
<th>3.0 to 4.0 mil Series L69</th>
<th>3.0 to 4.0 mil Series L69</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fittings: NAPF 500-03-05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PART 4 - EXECUTION

#### 4.1 ITEMS TO BE COATED

A. Interior Areas:

WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS
09951 – HIGH PERFORMANCE INDUSTRIAL COATINGS
3 of 7
1. Piping, valves, fittings.
2. Sludge heat exchangers.
3. Prep and repaint items as noted on drawings or specifications.
   a. Do not paint piping scheduled to be insulated.

4.2 ITEMS NOT TO BE COATED
A. Hot dipped galvanized steel.
B. Electrical conduits.
C. Stainless steel.
D. Pipe insulation.

4.3 PREPARATION

A. General:
   1. Prepare surfaces to be painted in accordance with coating manufacturer's
      instructions and this Specification Section unless noted otherwise in this
      Specification Section.
      a. Where discrepancy between coating manufacturer's instructions and this
         Specification Section exists, the more stringent preparation shall be provided
         unless approved otherwise, in writing, by the Engineer.
   2. Remove all dust, grease, oil, compounds, dirt and other foreign matter which would
      prevent bonding of coating to surface.
   3. Adhere to manufacturer's recoat time surface preparation requirements.
      a. Surfaces that have exceeded coating manufacturer's published recoat time
         and/or have exhibited surface chalking shall be prepared prior to additional
         coating in accordance with manufacturer's published recommendations.
         1. Minimum SSPC SP 7/NACE No. 4 unless otherwise approved by Engineer.

B. Protection:
   1. Protect surrounding surfaces not to be coated.
   2. Remove and protect hardware, accessories, plates, fixtures, finished work, and
      similar items; or provide ample in-place protection.
   3. Protect code labels, equipment identification or rating plates and similar labels,
      tagging and identification.

C. Prepare and paint before assembly all surfaces which are inaccessible after assembly.

D. Ferrous Metal:
   1. Prepare ductile iron pipe in accordance with pipe manufacturer's recommendations
      and NAPF.
      a. All piping, pumps, valves, fittings and any other component used in the water
         piping system that requires preparation for painting shall be prepared in
         accordance with requirements for immersion service.
      b. Prepare all areas requiring patch painting in accordance with recommendations
         of manufacturer and NAPF.
      c. Remove bituminous coating per piping manufacturer, paint manufacturer and
         NAPF recommendations.
      1. The most stringent recommendations shall apply.
   2. Complete fabrication, welding or burning before beginning surface preparation.
      a. Chip or grind off flux, spatter, slag or other laminations left from welding.
      b. Remove mill scale.
      c. Grind smooth rough welds and other sharp projections.
   3. Solvent clean in accordance with SSPC SP 1.
   4. Restore surface of field welds and adjacent areas to original surface preparation.

E. Galvanized Steel and Non-ferrous Metals:
1. Solvent clean in accordance with SSPC SP 1 followed by brush-off blast clean in accordance with SSPC SP 16 to remove zinc oxide and other foreign contaminants.
   a. Provide uniform 1 mil profile surface.

F. Preparation by Abrasive Blasting:
1. Schedule the abrasive blasting operation so blasted surfaces will not be wet after blasting and before painting.
2. Provide compressed air for blasting that is free of water and oil.
   a. Provide accessible separators and traps.
3. Protect nameplates, valve stems, rotating equipment, motors and other items that may be damaged from blasting.
4. All abrasive-blasted ferrous metal surfaces shall be inspected immediately prior to application of paint coatings.
   a. Inspection shall be performed to determine cleanliness and profile depth of blasted surfaces and to certify that surface has been prepared in accordance with these Specifications.
5. Perform additional blasting and cleaning as required to achieve surface preparation required.
   a. Re-blast surfaces not meeting requirements of these Specifications.
   b. Prior to painting, re-blast surfaces allowed to set overnight and surfaces that show rust bloom.
   c. Surfaces allowed to set overnight or surfaces which show rust bloom prior to painting shall be re-inspected prior to paint application.
6. Profile depth of blasted surface: Not less than 1 mil or greater than 2 mils unless required otherwise by coating manufacturer.
7. Ensure abrasive blasting operation does not result in embedment of abrasive particles in paint film.
8. Confine blast abrasives to area being blasted.
   a. Provide shields of polyethylene sheeting or other such barriers to confine blast material.
   b. Plug pipes, holes, or openings before blasting and keep plugged until blast operation is complete and residue is removed.
9. Abrasive blasting media may be recovered, cleaned and reused providing Contractor submits, for Engineer’s review, a comprehensive recovery plan outlining all procedures and equipment proposed in reclamation process.
10. Properly dispose of blasting material contaminated with debris from blasting operation.

4.4 APPLICATION

A. General:
1. Thin, mix and apply coatings by brush, roller, or spray in accordance with manufacturer’s installation instructions.
   a. Application equipment must be inspected and approved in writing by coating manufacturer.
   b. Hollow metal shall be spray applied only.
2. Temperature and weather conditions:
   a. Do not paint surfaces when surface temperature is below 50 DegF unless product has been formulated specifically for low temperature application and application is approved in writing by Engineer and paint manufacturer’s authorized representative.
   b. Avoid painting surfaces exposed to hot sun.
   c. Do not paint on damp surfaces.
3. Apply materials under adequate illumination.
4. Provide complete coverage to mil thickness specified.
   a. Thickness specified is dry mil thickness.
5. Evenly spread to provide full, smooth coverage.
a. Air paint systems are "to cover."
   1. In situations of discrepancy between manufacturer's square footage
      coverage rates and mil thickness, mil thickness requirements govern.

b. When color or undercoats show through, apply additional coats until paint film
   is of uniform finish and color.

c. Finished paint system shall be uniform and without voids, bugholes, holidays,
   laps, brush marks, roller marks, runs, sags or other imperfections.

6. If so directed by Engineer, do not apply consecutive coats until Engineer has had
   an opportunity to observe and approve previous coats.

7. Work each application of material into corners, crevices, joints, and other difficult to
   work areas.

8. Avoid degradation and contamination of blasted surfaces and avoid inter-coat
   contamination.
   a. Clean contaminated surfaces before applying next coat.

9. Smooth out runs or sags immediately, or remove and recoat entire surface.

10. Allow preceding coats to dry before recoating.
    a. Recoat within time limits specified by coating manufacturer.
    b. If recoat time limits have expired, re-prepare surface in accordance with coating
       manufacturer's printed recommendations.

11. Allow coated surfaces to cure prior to allowing traffic or other work to proceed.

12. Coat all aluminum in contact with dissimilar materials.

13. Where coating rough surfaces which cannot be backrolled sufficiently, hand brush
    coating to work into all recesses.

14. Backroll surfaces if paint coatings are spray applied.

B. Prime Coat Application:
   1. Apply structural steel and miscellaneous steel prime coat in the factory.
      a. Finish coats shall be applied in the field or factory.
      b. Prime coat referred to here is prime coat as indicated in this Specification.
         1. Prime coating applied in factory (shop) as part of Fabricator's standard rust
            inhibiting and protection coating is not acceptable as replacement for
            specified prime coating.

2. Prime all surfaces indicated to be painted.
   a. Apply prime coat in accordance with coating manufacturer's written instructions
      and as written in this Specification Section.

3. Prime ferrous metals embedded in concrete to minimum of 1 IN below exposed
   surfaces.

4. Apply zinc-rich primers while under continuous agitation.

5. Brush or spray bolts, welds, edges and difficult access areas with primer prior to
   primer application over entire surface.

6. Touch up damaged primer coats prior to applying finish coats.
   a. Restore primed surface equal to surface before damage.

C. Finish Coat Application:
   1. Apply finish coats in accordance with coating manufacturer's written instructions
      and in accordance with this Specification Section; manufacturer instructions take
      precedent over these Specifications.

2. Touch up damaged finish coats using same application method and same material
   specified for finish coat.
   a. Prepare damaged area in accordance with the PREPARATION Article of this
      Specification Section.

4.5 COLOR:
   A. Coordinate with WRA.

4.6 FIELD QUALITY CONTROL
   A. Application Deficiencies:
1. Surfaces showing runs, laps, brush marks, telegraphing of surface imperfections or other defects will not be accepted.
2. Surfaces showing evidence of fading, chalking, blistering, delamination or other defects due to improper surface preparation, environmental controls or application will not be accepted.
   a. Epoxy surfaces showing evidence of chalking or amine blush shall be prepared and recoated as follows:
      1) Solvent clean surfaces in accordance with SSPC SP1 and abrasive blast in accordance with SSPC SP7/NACE No. 4.
      2) Recoat with intermediate and finish coats in accordance with coating system specified herein.

B. Provide protection for painted surfaces.
   1. Surfaces showing soiling, staining, streaking, chipping, scratches, or other defects will not be accepted.

C. Provide instrumentation as necessary to measure and record atmospheric and substrate conditions per manufacturer's recommendations. Maintain daily records conditions.

D. Measure wet coating with wet film thickness gages in accordance with ASTM D4414.

E. Measure coating dry film thickness in accordance with SSPC PA 2 using Mikrotest gage calibrated against NBS “Certified Coating Thickness Calibration Standards.”
   1. Engineer may measure coating thickness at any time during project to assure conformance with these Specifications.

F. Provide wet paint signs.

4.7 CLEANING

A. Clean paint spattered surfaces.
   1. Use care not to damage finished surfaces.

B. Upon completion of painting, replace hardware, accessories, plates, fixtures, and similar items.

C. Remove surplus materials, scaffolding, and debris.

END OF SECTION
SECTION 10400
IDENTIFICATION DEVICES

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes:
   1. Tag, tape and stenciling systems for equipment, piping, valves, pumps, ductwork
      and similar items, and hazard and safety signs.

1.2 QUALITY ASSURANCE
A. Referenced Standards:
   1. American Society of Mechanical Engineers (ASME):
   2. Instrumentation, Systems, and Automation Society (ISA).

1.3 SUBMITTALS
A. Shop Drawings:
   1. Product technical data including:
      a. Catalog information for all identification systems.
      b. Acknowledgement that products submitted meet requirements of standards
         referenced.
      c. Listing all items in PART 3 of this Specification Section to be identified, type of
         identification system to be used, lettering, location and color.
      1. Confirm valve tag numbers with WRA.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS
A. Subject to compliance with the Contract Documents, the following manufacturers are
   acceptable:
   1. W.H. Brady Co.
   2. Panduit.
   5. Carlton Industries, Inc.

B. Submit request for substitution in accordance with Specification Section 01640.

2.2 MANUFACTURED UNITS
A. Type A1 – Round metal tags.
   2. Size:
      a. Diameter: 3 inch minimum.
      b. Thickness: 0.035 IN (20 GA) minimum.
   3. Fabrication:
      a. 3*16 IN minimum mounting hole.
      b. Legend: stamped and filled with durable black coloring.

B. Type C – Laminated name plates:
1. Materials: Phenolic or high impact acrylic.
2. Size:
   a. Surface: As required by text.
   b. Thickness: 1/16 inch minimum.
3. Fabrication:
   a. Outdoor and UV resistance rated.
   b. Two (2) layers laminated.
   c. Legend: engraved through top lamination into bottom lamination.
   d. Two (2) holes for screw mounting.
4. Color: black top surface, white core.

C. Type D - Self-Adhesive Tape Tags and Signs:
1. Materials: Vinyl tape or vinyl cloth.
2. Size:
   a. Surface: As required by text.
   b. Thickness: 5 mils minimum.
3. Fabrication:
   a. Indoor/Outdoor grade.
   b. Weather and UV resistant inks.
   c. Permanent adhesive.
   d. Legend: Preprinted.
   e. Wire markers to be self-laminating.
4. Provide arrow marker labels that wraps around entire pipe on each end of abbreviation on both sides of pipe with arrow markers pointing in flow direction.
   a. If flow is in both directions use double headed arrow markers.
5. Color: coordinate with WRA.

2.3 ACCESSORIES

A. Fasteners:
   1. Bead chain: aluminum or stainless steel.
   2. Plastic strap: Nylon, urethane or polypropylene.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

A. Install identification devices at specified locations.

B. All identification devices to be printed by mechanical process, hand printing is not acceptable.

C. Attach tags to equipment with sufficient surface or body area with solvent activated adhesive applied to back of each tag.

D. Attach tags with 1/8 IN round or flat head screws to equipment without sufficient surface or body area, or porous surfaces.
   1. Where attachment with screws should not or cannot penetrate substrate, attach with plastic strap.

3.2 SCHEDULES

A. Process Systems:
   1. General:
      a. Provide arrows and markers on piping.
1. At 20 FT maximum centers along continuous lines.
2. At changes in direction (route) or obstructions.
3. At valves, risers, "T" joints, machinery or equipment.
4. Where pipes pass through floors, walls, ceilings, cladding assemblies and like obstructions provide markers on both sides.
   b. Apply tapes and stenciling in uniform manner parallel to piping.
2. Valves:
   a. Label all valves 4" and larger or as shown on drawings or specifications.
   c. Fastener: Stainless steel chain.
   d. Legend:
      1. Letter height: 3/8 IN minimum.
      2. Valve designation as indicated on the Drawings (e.g., "80-HWR-VAL-100") or as coordinated with WRA.
3. Piping systems:
   a. All pipe systems shall be labeled.
   b. Tag type:
      1. Indoor locations:
         a) Type D - Self-Adhesive Tape Tags and Signs.
   c. Fastener: Self.
   d. Color: Coordinate with WRA.
   e. Legend:
      1. Letter height: Manufacturers standard for the pipe diameter.
      2. Use piping system designation as indicated on the Drawing and coordinate with WRA prior to installing labels.
4. Instrumentation Equipment (primary elements, transmitters, indicators, etc.)
   b. Fastener: Stainless steel chain.
   c. Legend:
      1. Letter height: 1/4 IN minimum.
      2. Instrument designation as indicated on the Drawings and as coordinated with WRA.
   d. Enclosures for instruments, indicators, etc.
      1. Tag type: Type C – phenolic name plates.
      2. Fastener: Stainless steel chain.
      3. Legend:
         a) Letter height: 1/4 IN minimum.
         b) Top line: Name/Description of item, coordinate with WRA.
         Second line: equipment tag designation as indicated on the Drawings and as coordinated with WRA.

END OF SECTION
SECTION 13230
SLUDGE HEAT EXCHANGER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Furnish all labor, equipment, materials and incidentals required to remove and replace four (4) existing digester sludge heat exchangers (80-DIG-HXS-03, 80-DIG-HXS-04, 80-DIG-HXS-05, 80-DIG-HXS-06) as specified herein.

B. The contractor shall ensure coordination and compatibility of new heat exchanger equipment with the existing hot water circulation pumps, sludge recirculation pumps and hot water boiler system currently operating at the plant.

1.2 QUALITY ASSURANCE

A. All equipment furnished in this section shall be by a manufacturer regularly engaged in the application, design and supply of the specified equipment for use in wastewater sludge systems.

B. All heat exchangers shall be a standard catalogued product of the manufacturer.

C. The use of a manufacturer’s name and model number or catalog number is for the purpose of establishing the standard of quality and general configuration of the required item.

D. Referenced Standards:
   1. ASTM International (ASTM):
      a. ASTM A 36 – Specifications for Structural Steel.
      b. ASTM A53 – Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Stainless.
      c. ASTM A276 – Specification for Steel Shapes.
      e. ASTM D4895 – Standard Specification for Polytetrafluoroethylene (PTFE) Resin Produced by Dispersion.
   2. American Society of Mechanical Engineers (ASME):
      a. Boiler and Pressure Vessel Code, Section VIII, Pressure Vessels.
   3. American Welding Society (AWS):
      b. Structural Welding Code, AWS D1.1

1.3 SUBMITTALS

A. Shop Drawings:
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
         1) Contractor shall note any items that do not conform to portions of this specification and describe in detail.
      b. Certified shop and erection drawings showing all important details of construction, dimensions, weights and anchor bolt locations.
c. Descriptive literature, bulletins, and/or catalogs of the equipment. How water and sludge flow rates and pressure loss data for heat exchangers.
d. A complete total bill of materials for all equipment. Include list of all parts with manufacturer’s part numbers, materials of construction and O&M part numbers for all parts.
e. A list of the manufacturer’s recommended spare parts, special tools, and supplies.
f. Complete description of surface preparation and shop painting.

3. Certified shop test reports:
a. Hydrotest test report.
b. A Manufacturer’s Data Report for Unfired Pressure Vessels, Form U-1, as required by the provisions of the ASME Code Rules, shall be furnished to the contractor for transmittal to the owner. This form must be signed by a qualified inspector, holding a National Board commission, certifying that construction conforms to the latest revision of the ASME Code. The ASME “U” symbol shall also be stamped on the heat exchanger nameplate.

4. Submit manufacturer’s certificate of proper installation and startup.
5. Copy of manufacturer’s warranty.
a. All equipment under this specification shall be warranted for a period of two (2) years after final project acceptance against all defects in workmanship and materials.
b. If the equipment should fail during the warranty period due to such a defect, the affected part(s) shall be replaced and the equipment restored to service, at no expense to the WRA.

6. O&M manuals shall be prepared specifically for this equipment installation and shall include all cuts, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with the project.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the contract documents, the following manufacturers are acceptable:

1. Walker Process, Model E3200

2.2 MATERIALS

A. Sludge Heat Exchangers:

1. Sludge and water tubes:
   a. Steel, ASTM SA53 grade B.
   b. Minimum thickness: Greater of 0.25 inches or per schedule 40 steel.
2. End castings: Cast iron, ASTM SA48.
5. Insulation: Glass wool type with minimum density of 0.75 pound per cubic foot, minimum 1-1/2 IN thick.
7. Anchor bolts: Stainless steel, type 316.
8. Fasteners:
   a. End casting fasteners: Zinc plated carbon steel.
   b. All other fasteners: Stainless steel, type 316.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

A. Description:
1. Heat exchangers shall be designed for heating of municipal and industrial wastewater sludge from a mesophilic anaerobic digestion process. The sludge may contain oil, grease, petroleum products, solvents, rags and stringy material.

2. Heat transfer required for heating shall be provided by the heat exchanger in conjunction with a hot water heating loop.

3. The heat exchanger shall be designed, fabricated, and tested in compliance with the ASME Code, Section VIII, Division 1.

4. Hydrostatic pressure test results shall be provided.

5. All work, equipment and materials provided in the heat exchanger room shall be in accordance and compatible with Class 1, Division 1, Group D environment.

B. Sludge Heat Exchangers (EACH) (80-DIG-HXS-03, 80-DIG-HXS-04, 80-DIG-HXS-05, 80-DIG-HXS-06):
   1. Sludge heating capacity: 3,200,000 BTU/HR.
   2. Minimum heated surface area (based on tube ID): 444 FT².
   3. Minimum number of sludge tubes: 18
   5. Water tube diameter: 8 inches
   6. Inlet and Outlet Connections:
      a. Provide cast iron casting with the following connections:
         2. Water tube connection: 4-inch ANSI flange.
         3. Three (3), 1/2-inch (minimum) NPT connections for attachment of sludge and water inlet and outlet thermometers and pressure gauge.
            a) Contractor shall provide threaded plug for connections not used.
   8. Pressure loss:
      a. Note: water and sludge losses shall be calculated using Hazen-Williams Equation with C=100 or Darcy-Weisbach Equation with equivalent friction factor.
      b. Sludge side pressure loss: Maximum 14.0 feet at design sludge flow.
      c. Water side pressure loss: Maximum 58.0 feet at design water flow.
   9. Sludge Recirculation:
      a. Flow rate: 450 gpm
      b. Maximum pressure: 75 psi.
      c. Inlet sludge temperature: 90 deg F.
      d. Discharge sludge temperature: 103 deg F.
      e. All sludge passageways shall pass a sphere with minimum 4.5-inch diameter.
   10. Heating Water:
      a. Water flow rate: 200 gpm
      b. Inlet water temperature 160 to 180 deg F typical.
   11. Dimensions:
      a. Maximum footprint: 17.5 ft x 3.5 ft x 7 ft (LxWxH)
      b. Maximum weight full: Approximately 31,000 pounds (operating weight).
      c. Maximum allowable workspace for tube removal:
         1. Inlet side: 16.5 ft.
   12. Heat transfer coefficients:
      a. Total maximum service heat transfer coefficient (U-value): 235 BTU/hour-ft²-deg F.
      b. Minimum sludge viscosity: 6 centipoise.
      c. Fouling Factor:
         1. Note: minimum fouling factor shall be applied to clean heat transfer coefficient to obtain the service heat transfer coefficient.
         2. Minimum sludge fouling factor: 0.001 hr-ft²-deg F / BTU
         3. Minimum water fouling factor: 0.001 hr-ft²-deg F / BTU

2.4 FABRICATION

WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS
13230 – SLUDGE HEAT EXCHANGER
3 of 6
A. General
1. The equipment specified herein is intended to be heat exchanging equipment of proven ability as manufactured by a reputable manufacturer having experience in the production of such equipment.
2. Lifting rings or lugs shall be provided on each unit. The lifting lugs shall be positioned and of adequate strength to allow lifting of the entire unit safely and without damage to the equipment in the vertical (normal upright) position.
3. All necessary foundation bolts, plates, nuts and washers shall be furnished by the equipment manufacturer and shall be of Type 316 stainless steel. Minimum foundation bolt diameter shall be 3/8-inch. It shall be the responsibility of the equipment manufacturer to determine the number, size and location of all anchor bolts.
4. Stainless steel nameplates giving the name of the manufacturer, model number, serial number, capacity, pressure and any other pertinent data shall be attached to each item of equipment furnished.
5. Shop fabrication and welding of structural members shall be in accordance with the Structural Welding Code, AWS D1.1 of the American Welding Society. All welded connections shall develop the full strength of the connected elements and all joined or lapped surfaces shall be completely seal welded with a minimum 1/8-inch fillet weld. Intermittent welding shall not be allowed.
6. Sharp projections of cut or sheared edges of ferrous metals shall be ground to a radius by multiple passes of a power grinder as required to ensure satisfactory coating adherence.

B. Heat Exchanger
1. The heat exchanger shall be designed to have sludge pass through an inner tube, with water flowing exterior to the sludge tube. No obstructions, including but not limited to structural studs and pins present in the sludge passage tube. The sludge and the water flows shall be in a counter current flow pattern.
   a. The tubes shall be joined by gasketed end castings so that any leakage occurring will be to the exterior of the heat exchanger.
   b. Sludge and water tubes shall be independently removable and arranged to prevent contamination of the heating water by material circulated through the tubes.
2. End Castings:
   a. Provide 180-degree full pipe diameter bend tube ends joined by independently removable and gasketed sludge end castings arranged to permit inspection and cleaning of the tubes to prevent contamination of the heating water by any material circulated through the sludge tubes. Provide cast iron end castings for sludge tubes that can be removed for inspection and cleaning of the tubes without draining the water tubes.
      1. All sludge passageways shall pass a sphere with minimum 4.5-inch diameter.
   b. Location of piping connections:
      1. Piping connections and flow directions for heat exchangers in each building are "mirrored".
      2. Contractor shall confirm the location of all pipe connections with manufacturer.
3. The heat exchanger shall have 125-pound ANSI flanged connections for both sludge and water as listed in the design criteria table above.
4. Provide a 3/4-inch capped drain at the low point of each water and sludge chamber or connecting piping.
5. Provide a 3/4-inch capped vent at the high point of each water and sludge chamber or connecting piping.

2.5 PAINTING
A. See specification 09961.

B. Provide factory prep, prime and finish coat with field touch-up.

C. All interior and exterior ferrous surfaces of heat exchangers:
   1. Preparation: Shop clean all interior and exterior ferrous metal surfaces, except stainless steel, by sandblasting in accordance with SSPC SP-7 prior to factory prime coat.
   2. Prime Coat: One coat Sherwin-Williams Macropoxy 646 PW (or approved equal), 3.0 to 5.0 mils dry film thickness.
   3. Finish Coat: One coat Sherwin-Williams Acrolon 218 HS (or approved equal), 3.0 to 6.0 mils dry film thickness.
      a. Color: ANSI #70 Gray

D. Contractor shall field touch-up per manufacturer's recommendation prior to final acceptance.

2.6 ACCESSORIES

A. Pipe expansion joints:
   1. Subject to compliance with the contract documents, the following manufacturers are acceptable:
      a. Resitoflex
      b. Cr approved equal
   2. General:
      a. Provide expansion joints at inlet and outlet sludge and hot water pipe connections to heat exchangers.
      1i. Provide external pipe support at expansion joint on piping side of joint.
   3. Materials:
      a. Bellows: PTFE fluoropolymer conforming to ASTM D4895, Type 1, Grade 4, Class B.
      b. Reinforcing rings: Nitronic 50, conforming to ASTM A276.
      d. Limit bolts, washer and nuts: Stainless steel, 316.

B. Design Requirements:
   1. All components shall be rated for 200 Deg. F.
   2. Flanges shall be one-piece construction.
   3. Flange bolt pattern:
      a. Meet ASME B16.5, class 150 at minimum.
      b. Contractor shall coordinate to ensure connection is compatible with adjacent piping and equipment.
   4. Pressure: meet requirements of adjacent piping.
   5. Gasket face shall be concentric with the bore and conform to ASME B16.5, class 150.
   6. Bellow convolutions shall be contour molded to uniform radii and free from sharp corners.

C. Coating: Coat flanges with chemical resistant aliphatic acrylic-polyester polyurethane.

2.7 MAINTENANCE MATERIALS

1. Spare Parts:
   a. One (1) of each type of seal and gasket used.

PART 3 - EXECUTION

3.1 INSTALLATION
A. Install equipment in accordance with manufacturer’s recommendations and as shown on project documents.

3.2 DELIVERY, STORAGE AND HANDLING

A. All equipment shall be crated and delivered to protect against damage during shipment.

B. Painted surfaces shall be protected and any damage during shipping or installation shall be repaired to WRA’s satisfaction. Iron and steel surfaces not painted shall be properly protected to prevent rust and corrosion.

C. Drain water from equipment after factory test.

3.3 SHOP TESTS

A. Hydrostatically test heat exchanger at 200 percent of the working pressure on each side independently and separately with zero-gauge pressure on the opposite side.
   1. Designing for differential pressure is not allowed.

3.4 FIELD QUALITY CONTROL

A. Employ and pay for services of equipment manufacturer’s field service representative(s) to:
   1. Inspect equipment covered by these Specifications.
   2. Supervise adjustments and installation checks.
   3. Provide test equipment, tools, and instruments necessary to accomplish equipment testing.
   4. Conduct start-up of equipment and perform operational checks.
   5. Provide Owner with a written statement that manufacturer’s equipment has been installed properly, has been started up, and is ready for operation by Owner’s personnel.

3.5 DEMONSTRATION

A. Contractor shall arrange for manufacturer to supervise the field testing (functional and performance) and startup of each heat exchanger in the presence of the owner.

B. Field tests will include operation of the sludge and hot water recirculation pumps through range of flows and operation of all accessories including but not limited to temperature and flow sensors for each heat exchanger installed.
   1. During test period, heat exchanger operating data readings, flow and temperature shall be recorded hourly on a log test sheet. Testing duration shall be minimum 48 hours for each heat exchanger.
   2. If equipment does not satisfy the requirements of this section, contractor shall make adjustments and modifications at their cost.

END OF SECTION
SECTION 13442
PRIMARY METERS AND TRANSMITTERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Furnishing, installation and services for flow, pressure and temperature related instruments.

B. All work, equipment and materials provided in the heat exchanger room shall be in accordance and compatible with explosion proof Class 1, Division 1, Group D environment.

C. See instrumentation schedule on drawings.

D. The contractor shall ensure coordination and compatibility of new and existing equipment.

E. All electronic gauges, sensors and transmitters shall be provided with a tag per specification 10400.

1.2 QUALITY ASSURANCE

A. All equipment furnished in this section shall be by a manufacturer regularly engaged in the application, design and supply of the specified equipment for use in wastewater sludge systems.

B. Qualifications:
   1. Acceptable instrumentation integration subcontractor:
      a. Jetco

C. The use of a manufacturer’s name and model number or catalog number is for the purpose of establishing the standard of quality and general configuration of the required item and use of name/model alone is not sufficient to satisfy specification requirements.

D. Referenced Standards:
   1. American Iron and Steel Institute (AISI).
   3. American Society of Mechanical Engineers (ASME):
      b. B31.1, Power Piping.
      c. PTC 19.3, Instruments and Apparatus, Part 3 Temperature Measurement.
      e. Section II, Part A SA-182, Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
      f. Section II, Part A SA-479, Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
   4. ASTM International (ASTM):

5. Instrumentation, Systems, and Automation Society (ISA):
a. MC96.1, Temperature Measurement Thermocouples.

6. National Electrical Manufacturers Association (NEMA):
a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).

1.3 SUBMITTALS

A. Shop Drawings and operation and maintenance manuals:
   1. See Specification Section 01340 and 13440.

B. Product technical data including:
   1. Equipment catalog cut sheets.
   2. Dimensioned drawings.
   4. Minimum and maximum measurement ranges.
   5. Pressure loss curves.
   6. NEMA enclosure and area classification ratings.
   7. Parts list.
   8. Submittals shall be marked with arrows to show exact features to be provided.
   9. Confirmation product meets specification requirements.
   10. Wiring diagrams.

2. PART 2 - PRODUCTS

2.1 FLOW COMPONENTS

A. Flow Orifice Plate:
   1. General:
      a. All components shall be explosion proof approved for explosion proof Class 1,
         Division 1, Group D environment.
   2. Acceptable manufacturers:
      a. Shall be compatible with transmitter and other accessories provided.
      c. Superior Products.
   3. Documentation Required:
      a. Manufacturer’s certified copy of lab test data for a similar orifice plate
         substantiating the flow vs. difference curve.
      b. Certified dimensional inspection report.
      c. Bore sizing calculations to be submitted prior to fabrication.
   4. Acceptable manufacturers:
      a. Foxboro.
      b. Emerson Process Management
      c. Daniel Industries, Inc.
   5. Materials:
      a. Orifice plate: ASTM A240, Type 316, stainless steel.
   6. Design and fabrication:
      a. Flange material, type and rating per piping specifications.
      b. Flow range: See schedule on drawings.
      c. Bore: Concentric with sharp and square inlet edge.
      d. Minimum nominal plate thickness:
<table>
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<tr>
<th>THICKNESS (IN)</th>
<th>PIPE SIZE (IN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.125</td>
<td>1 to 8</td>
</tr>
<tr>
<td>0.250</td>
<td>10 to 14</td>
</tr>
<tr>
<td>0.375</td>
<td>16 to 20</td>
</tr>
</tbody>
</table>

1. Plate thickness shall be adequate to prevent warping under specified process pressure and temperature conditions.

2. Upstream side of tab handle marked "inlet" and with bore size and flange type/rating.

3. Conformity: Finish 45 microinch or better.

4. Bore tolerance in accordance with ASME PTC 19.5 and AGA Gas Measurement Committee Report #3.

B. Differential Pressure Transmitters:

1. General:
   a. AI components shall be explosion proof approved for Class 1, Division 1, Group D environment.

2. Acceptable manufacturers:
   a. Rosemount, Model 3051CD.
   b. Foxboro, IDP10.

3. Design and fabrication:
   a. Smart transmitter utilizing microprocessor-based electronics.
   b. Process wetted parts:
      1) Isolating diaphragm and other wetted metal parts shall be stainless steel, type 316L.
      2) Gaskets and O-rings: Teflon.
   c. Output: 4-20 mA DC proportional to:
      1) Non-flow applications: Differential pressure.
      2) Flow applications: Square root of the differential pressure.
   d. Nonvolatile EEPROM memory.
   e. Power supply: 24 Vdc.
   f. Adjustable zero and span.
   g. Temperature limits: -20 to 180 DegF.
      1) -4 to 175 DegF for LCD indicators.
   h. Diagnostics:
      1) Self-diagnostics with transmitter failure driving output to above or below out of range limits.
      2) Simulation capability for inputs and loop outputs.
      3) Test terminals available to ease connection for test equipment without opening the loop.
      4) Registers to record minimum and maximum pressure and temperatures transmitter has been exposed to shall be available.
   i. Overpressure limits:
      1) Withstand body rated pressure on either side without damage or loss of calibration.
      2) Withstand 150 percent of stated maximum service pressure without damage.
   j. Humidity limits: 0 to 100 percent relative humidity.
   k. Camping: Adjustable between 0 and 32 seconds.
   l. Inaccuracy (includes effects of linearity, repeatability and hysteresis): +/-0.10 percent of calibrated span for 15:1 rangeability.
   m. Stability: +/-0.2 percent of upper range limit for 12 months.
   n. Temperature effect:
      1) Total effect including span and zero errors: +/-0.2 percent of upper range limit per 100 DegF for minimum 15:1 rangeability.
o. Minimum 1/2 IN pressure connection.
p. Each transmitter shall be provided with integral remote armored capillary seals.
The seal connection shall match the connection provided at the meter. The fluid in the seal shall meet the temperature requirements in which the meter is located.
q. Provide bleed-off/drain valve.
r. Equip with a three-valve manifold as follows:
   1: Two (2) transmitter isolating valves.
   2: One (1) transmitter equalizing valve.

2.2 TEMPERATURE COMPONENTS

A. Temperature Sensor:
   1. Type: Resistance temperature detector (RDT)
   2. Acceptable manufacturers:
      a. Shall match transmitter manufacturer and be compatible with all accessories and related components.
   3. Materials:
      b. Sheath: Stainless steel, type 316.
      c. Insulation: Ceramic or metallic oxide.
   4. Design and fabrication:
      a. Range: Per schedule on drawings.
      b. 100 ohms at 0 DegC with temperature coefficient of 0.00385 ohms/ohm/deg. C.
      c. Spring loaded sensor assembly.
      d. Lead wire compensation: Three- or four-wire.
      e. Accuracy:
         1. +0.5 DegF or +0.5 percent of measured temperature, whichever is greater.
      f. Self Heating: Maximum self heating factor of 0.15 degrees K/mW when measured as defined in DIN EN 60751.
      g. Sensor shall penetrate pipe where it is installed by 1/3 to 1/2 of pipe diameter.
      h. Sensors shall be installed in 316L stainless steel thermowells. Thermowells shall be threaded. See separate paragraph for Thermowell specification.
      i. Extensions shall be provided for sensors installed in insulated pipe. Extensions shall clear the pipe insulation. Extensions shall also be provided where process temperatures are above 100 degrees C.
      j. Sensor shall be provided with covered connection head. Sensor and connection head shall be NEMA 7 and explosion proof approved for Class I, Division 1, Group D.

B. Thermowells:
   1. Purpose:
      a. To separate the temperature measuring sensitive portion of resistance temperature detector from potentially corrosive or damaging process media, and/or provide isolation for removal.
   2. Acceptable manufacturers:
      a. Shall match transmitter manufacturer and be compatible with all accessories and related components.
   3. All components shall be rated for explosion proof Class 1, Division 1, Group D environment.
   4. Materials:
      b. Head: Cast iron.
   5. Design and fabrication:
      a. Lagged, threaded and tapered.
      b. Insertion length to suit application.
c. Constructed in accordance with ASME PTC 19.3, Part 3, Chapter 1, Paragraphs 8-19.
d. Lagging extension minimum 3-inch or longer as needed to provide wrench clearance above lagging.
e. Test thermowells shall be supplied with watertight cap and chain.

C. Temperature Transmitters:
1. Acceptable manufacturers:
   a. Rosemount 3144P.
   b. Foxboro RTT20.
2. Type: Remotely mounted, intelligent transmitter compatible with sensor provided.
3. All enclosures and components shall be NEMA 7 and rated for explosion proof Class 1, Division 1, Group D environment.
4. Digital Accuracy: plus or minus 0.2 degrees C.
5. Stability: plus or minus 0.1 percent or 0.1 degrees C, whichever is greater, for 24 months.
6. Operating Temperature: -40 to 85 degrees C.
7. Input: RTD.
8. Output:
   a. 4-20 mA DC linear with temperature.
   b. Output may be set as difference or average of two measured temperatures.
   c. Output may be configured for custom curves.
9. Display: Digital indicator displaying temperature in Deg. F.
10. Diagnostics:
    a. Self diagnostics with transmitter failure driving output to above or below out of range limits.
    b. LED indication of transmitter faults.
    c. Simulation capability for inputs and loop outputs.
    d. Test terminals available to ease connection for test equipment without opening the loop.
    e. Power supply: 24V loop power.
    f. Adjustable span.
    g. Adjustable zero.

2.3 PRESSURE COMPONENTS

A. All components shall be rated for explosion proof Class 1, Division 1, Group D environment.

B. Pressure Gage:
1. Acceptable manufacturers:
   a. Ashcroft.
   b. Ametek.
2. Materials:
   a. Bourdon tube, socket, connecting tube: 316 stainless steel.
   b. Case: Stainless steel.
   c. Window: clear acrylic or shatterproof glass.
3. Accessories:
   a. Provide stainless steel ball valve at point of connection to equipment and/or piping, and specification 15104.
   b. Utilize diaphragm seal, see paragraph this specification and see drawings.
4. Design and fabrication:
   a. Glycerin filled gauge at factory.
   b. All components suitable for service at:
      1) 200 DegF.
   c. Calibrate gages at job site for pressure and temperature in accordance with manufacturer's instructions.
   d. Connection: 1/2-inch diameter.
e. Gauge diameter: minimum 4 inch.
f. Equip with white faces, black numerals and black pointers.
g. Gage tapping position to be clear of equipment functions and movements and protected from maintenance and operation of equipment.
   1) Gage to be readable from an accessible standing position.
h. Gage accuracy: 1 percent of full range.
i. Range: 0 - 60 PSI.

C. Diaphragm Seal:
1. Acceptable manufacturers:
   a. Ashcroft.
   b. Ametek.
2. Materials:
   a. Lower housing: 316 stainless steel.
   b. Diaphragm material: 316 stainless steel.
3. Design and fabrication:
   a. Isolates instrument from process fluids which are corrosive or contain solids.
   b. Upper housing with bleed screw.
   c. Lower housing with flushing connection.
   d. Fill fluid:
      1) Utilize halocarbon fill for process applications involving strong oxidizing agents.
      a) Agents include but are not limited to: Cl₂, KMNO₄, FeCl₃, NaOH, and NaOCl.
      2) Utilize manufacturer’s standard fill for other applications.
      a) Ensure fill is suitable for application temperatures.
   e. Process connections:
      1) Instrument and Process Pipes: Minimum 1/2 IN NPT.
4. Installed where specified or shown on Drawings.

2.4 PIPE, TUBING AND FITTINGS FOR INSTRUMENTS

A. Size tubing per manufacturer

B. Acceptable Manufacturers:
1. Tube fittings:
   a. Parker CPI.
   b. Swagelok.

C. Instrument Tubing and Fittings:
1. Material:
   a. Tubing: ASTM A269, Grade TP 316 stainless steel.
   b. Straight fittings: 316 stainless steel per ASME SA-479 or ASTM A276.
2. Design and fabrication:
   a. Tubing:
      1) Seamless.
      2) Fully annealed.
      3) Maximum hardness: 80 Rb.
      4) Free from surface scratches and imperfections.
      5) Diameter: 1/2 IN OD unless specified otherwise.
      6) Wall thickness:
         a) Meet requirements of ASME B31.1.
         b) Minimum 0.049 IN for 1/2 IN OD tubing.
   b. Fittings:
      1) Flareless.
      2) Compression type.
D. Instrument Piping:
   1. For applications where the instrument is supported solely by the sensing line, (e.g., pressure gauge directly mounted to process line) utilize piping as specified below.
      a. Diameter: 1/2 IN minimum unless noted otherwise.
      b. Schedule 40, stainless steel type 304 unless noted otherwise.

E. Supports:
   1. Provide supports to securely anchor instrument pipe, tubing and instruments.
   2. Support material shall match material of pipe/tubing.

2.5 INSTRUMENT VALVES

A. Provide where indicated on drawings and/or specifications.
   1. See specification 15104 for valve specification.

2.6 PAINTING

1. See specification 09961.

2.7 ACCESSORIES

A. Furnish all mounting brackets, hardware and appurtenances required for mounting primary elements and transmitters.
   1. Provide corrosion resistant spacer between surface and mounting hardware.
   2. Materials, unless otherwise specified, shall be as follows:
      a. No carbon, mild or galvanized steel.
      c. Mounting brackets: 304 stainless steel.
      d. Mounting plates, angles: 304 stainless steel.
         1: Corrosive areas: 304 stainless steel.
      e. Instrument pipe stands: 304 stainless steel.
      f. Tubing support angles and brackets: 304 stainless steel.

B. Tubing Tray or Channel:
   1. Stainless steel type 304.

C. Provide handheld communicator compatible with all intelligent transmitters furnished.
   1. Hand held communicator shall provide capability to check calibration, change transmitter range, and provide diagnostics.
   2. If these features are provided with the intelligent transmitter, the hand-held communicator is not required.

D. Cable lengths between sensors and transmitters shall be continuous (without splices) and as required to accommodate locations as shown on Drawings.

E. Wire size shall be per sensor/transmitter manufacturer recommendations.

F. Conduit:
   1. Provide materials and components in accordance with area classification.
   2. Sized per manufacturer's recommendation for sensor and communication wires.
   3. Provide seal offs between classified and un-classified environments.
   4. Materials:
      a. Rigid aluminum conduit.
      b. Final connections between rigid conduit and sensors/indicators/transmitters shall be flexible conduits rated for hazardous class 1, division 1, group D environment per NFPA 70.

PART 3 - EXECUTION

3.1 INSTALLATION
A. Install products in accordance with manufacturer's instructions.

B. Install instrument mounting pipe stands level and plumb.

C. Instrument Valves:
   1. Orient stems for proper operation.
   2. Install arrays orderly and neat in appearance with true horizontal and vertical lines.
   3. Provide a minimum of 2 IN clearance between valve handle turning radii where there are multiple valve handles appearing in a straight line.
   4. Valves shall have bonnets and any soft seals removed during welding or soldering into the line.
      a. When cool, reassemble the valves.
   5. Support each valve individually.
      a. The tubing system does not qualify as support for the valve.

D. Locate instrument piping and tubing so as to be free of vibration and interference with other piping, conduit, or equipment.

E. Keep foreign matter out of the system.

F. Remove all oil on piping and tubing with solvent before piping and tubing installation.

G. Plug all open ends and connections to keep out contaminants.

H. Tubing Installation:
   1. General:
      a. Install such that tube shows no sign of crumpling, bends of too short a radius, or flattening, etc.
      b. Make tube runs straight and parallel or perpendicular to the floor, equipment and piping runs.
      c. For liquid and steam applications, slope continuously from the process to the instrument with a minimum slope of 0.50 IN per foot.
      d. For gas and air applications, slope continuously from the process to the instrument to the process with a minimum slope of 0.50 IN per foot.
      e. If the sensing line cannot be continuously sloped, install high point vents and low point drains.
      f. Keep instrument tubing clean during all phases of work.
      g. Blow out with clean, dry, oil-free air immediately before final assembly.
      h. Cut by sawing only and debur.
   2. Bending:
      a. Make each bend with tube bender of the correct size for the tube.
      b. Make all bends smooth and continuous.
      c. Rebending is not permitted.
      d. Make bends true to angle and radius.
      e. Maintain a true circular cross section of tubing without buckling or undue stretch of tube wall.
      f. Allowable tolerance for flattening out of tubing bends: Maximum of 8 percent of the OD for stainless steel tubing.
      g. Minimum bending radius for stainless steel tubing:

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<th>TUBE OD, INCHES</th>
<th>MINIMUM BENDING RADIUS, INCHES</th>
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<tr>
<td>1/4</td>
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h. Minimum bending radius for type L, hard (drawn) copper:

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<th>TUBE OD, INCHES</th>
<th>MINIMUM BENDING</th>
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WRF DIGESTER HEAT EXCHANGER IMPROVEMENTS
13442 – PRIMARY METERS AND TRANSMITTERS
8 of 10
3. Tubing support:
   a. Intermittently support by clamping to support angle.
   b. Install supports to be self-draining, supported by hangers, or cantilevered from walls or structural beams.
   c. Support at 5 FT-0 IN maximum spans for horizontal or vertical runs.
   d. Use tubing trays in areas where spans between supports are greater than 5 FT and for all signal tubing support.
   e. Support each tubing tray at 10 FT maximum spans.
   f. Align tubing in orderly rows and retain in the tray by bolted clips.
      1: The use of spring or speed clips is not acceptable.
   g. Maintain order of the tubing throughout the length of the tray.
   h. Locate angle, channel and tray installation to protect tubing from spills and mechanical damage.
   i. Locate support members to clear all piping, conduit, equipment, hatchways, monorails, and personnel access ways and allow access for equipment operation and maintenance.
   j. Support trays to prevent torsion, sway or sag.
   k. Permanently attach supports to building steel or other permanent structural members.
   l. Arrange supports and trays so that they do not become a trough or trap.

4. Routing and orientation:
   a. Route to maintain a minimum headroom clearance of 8 FT.
   b. Locate and orient valves and specialties so that they are accessible for operation and maintenance from the operating floor.
      1: Do not route through or over equipment removal areas, in or across walkways, below monorails or cranes nor above or below hatches.

5. Expansion and vibration provisions:
   a. Provide horizontal expansion loops at the process connections.
   b. Route tubing parallel to relative motion through sleeved supports that allow linear tube movement.
   c. Cold springing of tubing to compensate for thermal expansion is prohibited.
   d. Utilize flexible hoses to connect pneumatic tubing to air users which may move or vibrate.

I. Threaded Connection Seals:
   1. Use Tite-Seal or acceptable alternate.
   2. Use of lead base pipe dope or Teflon tape is not acceptable.
   3. Do not apply Tite-Seal to tubing threads of compression fittings.

J. Capillary Tubing:
   1. Route capillary tubing in tubing tray.
   2. Install capillary tubing with a 2 IN minimum bend radius which does not kink or pinch the capillaries.
   3. Do not cut or disconnect at any point.
   4. Coil excess capillary tubing and secure at the instrument.

K. Temperature Elements:
   1. Assemble in the following sequence:
      a. Remove temperature sensor sheaths and terminal blocks from the head and nipple assembly.
      b. Connect nipple and head to thermowell installed in the pipe.
      c. Insert sheath and terminal block until it seats in the thermowell.
      d. Connect to the head.
L. Instrument Mounting:
   1. Mount all instruments where they will be accessible from fixed ladders, platforms, or grade.
   2. Mount all local indicating instruments with face forward toward the normal operating area, within reading distance, and in the line of sight.
   3. Mount instruments level, plumb, and support rigidly.
   4. Mount to provide:
      a. Protection from heat, shock, and vibrations.
      b. Accessibility for maintenance.
      c. Freedom from interference with piping, conduit and equipment.

3.2 DELIVERY, STORAGE AND HANDLING

A. All equipment shall be crated and delivered to protect against damage during shipment.

B. Painted surfaces shall be protected and any damage during shipping or installation shall be repaired to WRA's satisfaction. Iron and steel surfaces not painted shall be properly protected to prevent rust and corrosion.

C. Drain water from equipment after factory test.

3.3 SHOP TESTS

A. Hydrostatically test heat exchanger at 150 percent of the working pressure on each side independently and separately with zero gauge pressure on the opposite side.
   1. Designing for differential pressure is not allowed.

3.4 DEMONSTRATION

A. Demonstrate all instruments as part of the heat exchanger demonstration per specification 13230.

3.5 FIELD QUALITY CONTROL

A. Employ and pay for services of equipment manufacturer's field service representative(s) to:
   1. Inspect equipment covered by these Specifications.
   2. Supervise adjustments and installation checks.
   3. Provide test equipment, tools, and instruments necessary to accomplish equipment testing.
   4. Conduct start-up of equipment and perform operational checks.
   5. Provide Owner with a written statement that manufacturer's equipment has been installed properly, has been started up, and is ready for operation by Owner's personnel.
   6. Instruct owner's personnel in multiple sessions over one (1) full day at the jobsite on operation and maintenance of equipment specified herein.
      a. Contractor shall submit to owner an agenda listing topics to be covered with estimated durations prior to scheduling training.
      b. Final O&M manuals shall be delivered to owner prior to scheduling training.
      c. Training shall be scheduled with owner a minimum 7 days in advance.

END OF SECTION
SECTION 13504
CONFIGURATION REQUIREMENTS: HUMAN MACHINE INTERFACE (HMI) AND REPORTS

PART 1 - GENERAL

1.1 SUMMARY
   A. Section Includes:
      1. Provide all programming and configuration required as part of this project.
      2. Develop new SCADA graphics as outlined herein.

1.2 QUALITY ASSURANCE
   A. Qualifications:
      1. Acceptable instrumentation integration subcontractor:
         a. Jetco

1.3 DEFINITIONS
   A. HMI: Human Machine Interface.
   B. I/O: Input/Output.
   C. PC: Personal Computer.
   D. PLC: Programmable Logic Controller.

1.4 SUBMITTALS
   A. Shop Drawings:
      2. Software Configuration Standards and Conventions document.
      3. Graphic screen displays; provide in actual colors utilized.
      4. Sample reports.
      5. Certifications:
         a. Qualifications of programmer(s).

PART 2 - PRODUCTS

2.1 FUNCTIONAL REQUIREMENTS AND SCOPE OF NEW SCREENS
   A. General scope:
      1. Existing digester heat exchanger SCADA screens are out of date and do not match current plant appearance standards.
      2. Contractor's integrator shall create the following new SCADA screen graphics to replace existing screens. New screens shall be based on existing functionality, controls and instrumentation (this includes instrumentation replaced as part of this project):
         a. Digester heat exchanger overview screens.
            1. One overview screen for each digester (6 total).
      3. Contractor's integrator shall maintain all existing control functionality, links, alarms, indications, reports, trending, "pop-up" screens, etc., coordinate with WRA.
         a. Integrator shall add new indication displays on each overview screen for new instrumentation added as part of this project.
PART 3 - EXECUTION

3.1 CONFIGURATION STANDARDS AND CONVENTIONS

A. Coordinate with WRA.

3.2 SCREEN CONFIGURATION REVIEW MEETINGS

A. Conduct a minimum of two configuration conferences with the Owner to review and discuss system configuration programming and related topics.
   1. The purpose of the conference(s) will be to discuss, in detail, how each I/O point will be handled and the types, quantities, hierarchies, and functioning of display screens.
   2. Review of the Owner's existing systems, standards, conventions, file and tag naming requirements, font type and size requirements, and reporting requirements must be part of each conference.
   3. Review the navigation bar to be utilized.
   4. Each screen will be reviewed at each conference.
   5. Submit color copies of screens (PDF) via shop drawing submittal process 5 calendar days before each conference.

B. Proposed graphic screens and report formats must be reviewed with the Owner throughout the configuration process.

3.3 DEMONSTRATION

A. Demonstrate all functionality (controls, indications, etc.) of system on-site in accordance and coordination with Heat Exchanger Start-up, Section 13230.
   1. All start-up and functionality shall be witnessed by WRA.

END OF SECTION
SECTION 15060
GENERAL PIPE REQUIREMENTS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. Referenced Standards (Latest edition unless noted):
   1. American Iron and Steel Institute (AISI).
   2. American Society of Mechanical Engineers (ASME):
      d. B36.19, Stainless Steel Pipe.
      e. B40.100, Pressure Gauges and Gauge Attachments.
   3. ASTM International (ASTM):
      k. D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
   4. American Water Works Association (AWWA):
      a. C200, Standard for Steel Water Pipe - 6 IN and Larger.
      b. C207, Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 IN through 144 IN.
      d. C606, Standard for Grooved and Shouldered Joints.

7. Underwriters Laboratories, Inc. (UL).

1.2 SUBMITTALS

A. See Section 01340.

B. Shop Drawings:
   1. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Copies of manufacturer’s written directions regarding material handling, delivery, storage and installation.
      c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
         1) Attach technical product data on gaskets, pipe, fittings, and other components.

C. Informational Submittals:
   1. Test reports:
      a. Copies of pressure test results on all piping systems.
      b. Notification of time and date of piping pressure tests.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Protect pipe coating during handling using methods recommended by manufacturer.
   1. Use of bare cables, chains, hooks, metal bars or narrow skids in contact with coated pipe is not permitted.

B. Prevent damage to pipe during transit.
   1. Repair abrasions, scars, and blemishes.
   2. If repair of satisfactory quality cannot be achieved, replace damaged material immediately.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Insulating unions:
      a. ”Dielectric” by Epco.
   2. Dielectric flange kit:
      a. PSI.
      b. Maloney.
      c. Central Plastics.
   3. Pipe saddles (for gage installation):
      a. Cresser Style 91 (steel and ductile iron systems).

2.2 PIPING SPECIFICATION SCHEDULES

A. Piping system materials, fittings and appurtenances are subject to requirements of specific piping specification schedules located at the end of PART 3 of this Specification Section.
PART 3 - EXECUTION

3.1 INTERIOR AND EXPOSED EXTERIOR PIPING INSTALLATION

A. Install piping in vertical and horizontal alignment as shown on Drawings.

B. Alignment of piping smaller than 4 IN may not be shown; however, install according to Drawing intent and with clearance and allowance for:
   1. Expansion and contraction.
   2. Operation and access to equipment, doors, windows, hoists, moving equipment.
   3. Headroom and walking space for working areas and aisles.
   4. System drainage and air removal.

C. Provide airtight seals for penetrations between classified and unclassified areas.

D. Install vertical piping runs plumb and horizontal piping runs parallel with structure walls.

E. Pipe Support:
   1. Use methods of piping support as shown on Drawings and as required in Specification Section 15090.
   2. Where pipes run parallel and at same elevation or grade, they may be grouped and supported from common trapeze-type hanger, provided hanger rods are increased in size as specified for total supported weight.
      a. The pipe in the group requiring the least maximum distance between supports shall set the distance between trapeze hangers.
   3. Size pipe supports with consideration to specific gravity of liquid being piped.

F. Locate and size sleeves and castings required for piping system.
   1. Arrange for chases, recesses, inserts or anchors at proper elevation and location.

G. Use reducing fittings throughout piping systems.
   1. Bushings will not be allowed unless specifically approved.

H. Unions:
   1. Install in position which will permit valve or equipment to be removed without dismantling adjacent piping.
   2. Mechanical type couplings may serve as unions.
   3. Additional flange unions are not required at flanged connections.

I. Install expansion devices as necessary to allow expansion/contraction movement.

J. Provide full face gaskets on all systems.

K. Anchorage and Blocking:
   1. Block, anchor, or harness exposed piping subjected to forces in which joints are installed to prevent separation of joints and transmission of stress into equipment or structural components not designed to resist those stresses.

L. Equipment Pipe Connections:
   1. Equipment - General:
      a. Exercise care in bolting flanged joints so that there is no restraint on the opposite end of pipe or fitting which would prevent uniform gasket pressure at connection or would cause unnecessary stresses to be transmitted to equipment flanges.
      b. Where push-on joints are used in conjunction with flanged joints, final positioning of push-on joints shall not be made until flange joints have been tightened without strain.
      c. Tighten flange bolts at uniform rate which will result in uniform gasket compression over entire area of joint.
         1. Provide tightening torque in accordance with manufacturer's recommendations.
d. Support and match flange faces to uniform contact over their entire face area prior to installation of any bolt between the piping flange and equipment connecting flange.

e. Permit piping connected to equipment to freely move in directions parallel to longitudinal centerline when and while bolts in connection flange are tightened.

f. Align, level, and wedge equipment into place during fitting and alignment of connecting piping.

g. Grout equipment into place prior to final bolting of piping but not before initial fitting and alignment.

h. To provide maximum flexibility and ease of alignment, assemble connecting piping with gaskets in place and minimum of four (4) bolts per joint installed and tightened.

1. Test alignment by loosening flange bolts to see if there is any change in relationship of piping flange with equipment connecting flange.

2. Realign as necessary, install flange bolts and make equipment connection.

i. Provide utility connections to equipment shown on Drawings, scheduled or specified.

M. Provide insulating components where dissimilar metals are joined together.

3.2 CONNECTIONS WITH EXISTING PIPING

A. Where connection between new work and existing work is made, use suitable and proper fittings to suit conditions encountered.

B. Undertake connections in fashion which will disturb system as little as possible.

C. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to adjacent property.

D. Where connections to existing systems necessitate employment of past installation methods not currently part of trade practice, utilize necessary special piping components.

E. Once tie-in to each existing system is initiated, continue work continuously until tie-in is made and tested.

3.3 CATHODIC PROTECTION

A. Isolate, dielectrically, all piping from all other metals including reinforcing bars in concrete slabs, other pipe lines, and miscellaneous metal.

3.4 FIELD QUALITY CONTROL

A. Pipe Testng - General:

1. Test piping systems as follows:
   a. Test exposed, non-insulated piping systems upon completion of system.
   b. Test exposed, insulated piping systems upon completion of system but prior to application of insulation.
   c. Test concealed interior piping systems prior to concealment and, if system is insulated, prior to application of insulation.
   d. Test buried piping (insulated and non-insulated) prior to backfilling and, if insulated, prior to application of insulation.

2. Utilize pressures, media and pressure test durations as specified in the PIPING SPECIFICATION SCHEDULES.

3. Isolate equipment which may be damaged by the specified pressure test conditions.

4. Perform pressure test using calibrated pressure gages and calibrated volumetric measuring equipment to determine leakage rates.

   a. Select each gage so that the specified test pressure falls within the upper half of the gage's range.
b. Notify the Engineer 24 HRS prior to each test.
5. Completely assemble and test new piping systems prior to connection to existing pipe systems.
6. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.
7. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.

B. Hydrostatic pressure testing methodology:
   1. General:
      a. All joints, including welds, are to be left exposed for examination during the test.
      b. Provide additional temporary supports for piping systems designed for vapor or gas to support the weight of the test water.
      c. Provide temporary restraints for expansion joints for additional pressure load under test.
      d. Isolate equipment in piping system with rated pressure lower than pipe test pressure.
      e. Isolate new piping from old with test "pancakes" or other means.

E. Dielectric Testing Methods and Criteria:
   1. Provide electrical check between metallic non-ferrous pipe or appurtenances and ferrous elements of construction to assure discontinuity has been maintained.
   2. Wherever electrical contact is demonstrated by such test, locate the point or points of continuity and correct the condition.

3.5 PIPE INSULATION

A. Insulate pipe and pipe fittings in accordance with Specification Section 15183.

3.6 SCHEDULES

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<th>ABBREVIATION</th>
<th>SERVICE</th>
<th>SPECIFICATION SCHEDULE</th>
<th>SPECIFICATION REFERENCE</th>
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<td>RECIRCULATED SLUDGE</td>
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<td>HWR</td>
<td>HOT WATER RETURN</td>
<td>6</td>
<td>15061</td>
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<tr>
<td>HWS</td>
<td>HOT WATER SUPPLY</td>
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NOTE: FOR INSTRUMENTATION RELATED PIPING AND TUBING SEE SPECIFICATION 13442 AND DRAWINGS.
A. SPECIFICATION SCHEDULE - SYSTEM 2

1. General:
   a. Piping symbol and service:
      1. RCSL – Recirculated Sludge
   b. Test requirements:
      1. Test medium: Water.
      2. Pressure: 100 psig.
      3. Duration: 3 HRS.
   c. Gaskets:
      1. Rated for 150 Deg. F.
      2. For Flanged Pipe: full face, minimum 1/8-inch thick.
      3. Flanged, push-on, and mechanical joints (ductile iron): Rubber, AWWA/ANSI C111/A21.11.

2. System components:
   a. Pipe size 3 IN through 48 IN:
      1. Exposed service:
         a) Material:
            (1) Flanged: Ductile iron, Class 53.
         c) Lining: Glass Lined.
         d) Coating: Paint.
         e) Insulation: None.
         f) Fittings: Either AWWA/ANSI C110/A21.10 ductile or gray iron.
         g) Joints: AWWA/ANSI C115/A21.15 flanged joints with flanges at valves and structure penetrations.
            (1) Flanges: Minimum 150 pound, drilled and faced per ASME B16.1.
         h) Nuts and Bolts:
            (1) Stainless steel type 304.
            (2) Project ends 1/2 IN beyond nuts.
            (3) Provide anti-seize on bolts per manufacturer recommendation.
B. SPECIFICATION SCHEDULE - SYSTEM 6

1. General:
   a. Piping symbol and service:
      1' HWS – Hot Water Supply
      2' HWR – Hot Water Return
   b. Test requirements:
      1' Test medium: Water.
      2' Pressure: 125 psig.
      3' Duration: 3 HRS.
   c. Gaskets and O-rings: EPDM.

2. System components:
   a. Pipe size through 12 IN:
      1' All pipe components and accessories shall be rated for water temperature of 200 Deg. F.
      2' Exposed service:
         a) Material:
            (1) Threaded: Steel, Grade B, black, Schedule 40.
            (2) Grooved type joint system: Use pipe thickness per AWWA C606.
         b) Reference: ASTM A53.
         c) Lining: None.
         d) Coating: Paint.
         e) Insulation: Yes.
         f) Fittings: Malleable iron or steel meeting ASME B16.3 and ASTM A234.
         g) Joints:
            (1) Threaded or grooved type mechanical coupling (AWWA C606) joints.
            (2) With both systems, provide rigid flanges at equipment, valves and structure penetrations above 2 IN and unions at those locations 2 IN and below.
   h) Nuts and Bolts:
      (1) Stainless steel type 304.
      (2) Provide anti-seize on stainless bolts per manufacturer recommendation.

END OF SECTION
SECTION 15061
STEEL PIPE

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes: steel pipe and accessories.

1.2 QUALITY ASSURANCE
A. Referenced Standards (Latest edition unless noted):
   1. ASTM International (ASTM):
      a. A913 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for
         High Temperature or High Pressure Service and Other Special Purpose
         Applications.
   2. NACE International (NACE):
      a. MR 0175 – Materials for Use in Hydrogen Sulfide Containing Environments
   3. NSF International (NSF):
   4. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS):
      a. SP-72, Ball Valves with Flanged or Butt-Welding Ends for General Service.
      b. SP-110, Ball Valves: Threaded, Socket-Welded, Solder Joint, Grooved and
         Flared Ends.

1.3 SUBMITTALS
A. See Section 01340.
B. Shop Drawings:
   1. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards
         referenced.
      b. Copies of manufacturer's written directions regarding material handling,
         delivery, storage and installation.
      c. Separate schedule sheet for each piping system scheduled in this Specification
         Section showing compliance of all system components.
         1) Attach technical product data on gaskets, pipe, fittings, and other
            components.
C. Informational Submittals:
   1. Test reports:
      a. Copies of pressure test results on all piping systems.
      b. Notification of time and date of piping pressure tests.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS
A. Subject to compliance with the Contract Documents, the following manufacturers are
   acceptable:
   1. Flanged adaptors:
      a. Rockwell (Style 913 (steel)).
      b. Dresser (Style 128 (steel)).
2. Insulating couplings:
   a. Rockwell (Style 416).
   b. Dresser (Style 39).
3. Transition coupling:
   a. Rockwell (Style 413).
   b. Dresser (Style 62).
4. Mechanical couplings and fittings:
   a. Victaulic
   b. S.P. Fittings.

2.2 MATERIALS

A. All materials used in steel piping systems defined in Section 15060 shall meet or exceed pressure test requirements specified for each respective system.

B. Steel Pipe (Mill Type): ASTM A53, Type E or S.

C. Fittings (For Mill Type Pipe):
   1. ASTM A234.

D. Flanges (Mill Type Pipe):
   1. ASME B16.5.
   2. Flat faced.

E. Nuts and Bolts:
   1. Stainless steel type 304.
   3. Threaded per ASME B1.1.
   4. Project ends 1/4 to 1/2 IN beyond nuts.

F. Gaskets: See individual piping systems in Section 15060.

2.3 MANUFACTURED UNITS

A. Couplings:
   1. Flanged adaptors:
      a. Steel or carbon steel body sleeve, flange, followers and Grade 30 rubber gaskets.
      b. Provide units specified in Article 2.1.
      c. Flanges meeting standards of adjoining flanges.
      d. Entire assembly to be rated for test pressure specified on Piping Schedule for each respective application.
   2. Compression sleeve coupling:
      a. Steel sleeve, followers Grade 30 and rubber gaskets.
      b. Provide units specified in Article 2.1.
      c. Flanges meeting standards of adjoining flanges.
      d. Entire assembly to be rated for test pressure specified on Piping Schedule for each respective application.
      e. Provide field coating for buried couplings per AWWA C203.
   3. Mechanical coupling joint:
      a. Use of mechanical grooved (AWWA C606) type couplings and fittings in lieu of flanged joints is acceptable where specifically specified in Section 15060.
      b. Utilize units defined in Article 2.1.

2.4 ACCESSORIES

A. Heating Water Application:
1. For steel heating lines, provide braided, flanged stainless steel connectors for connection to equipment.
2. Provide pump connectors with stainless steel construction, rubber filled bellows and flanged end connections.

2.5 FABRICATION

A. Provide wall thicknesses per pipe system schedule Section 15060.
B. Furnish cast parts with lacquer finish compatible with finish coating.
C. Furnish without outside coating of bituminous material any exposed pipe scheduled to be painted.
D. Taper cement mortar linings as required for valve interfacing.
E. Protective Coatings and Linings:
   1. See Section 15060 and 09961.

2.6 SOURCE QUALITY CONTROL

A. Testing:
   1. Field hydrostatic test all pipe as specified in Section 15060.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer’s instructions.
B. Joining Methods - Flanges:
   1. Facing method:
      a. Insert slip-on flange on pipe.
      b. Assure maximum tolerances for flange faces from normal with respect to axis of pipe is 0.005 IN per foot of flange diameter.
      c. Test flanges after welding to pipe for true to face condition and reface, if necessary, to bring to specified tolerance.
   2. Joining method:
      a. Leave 1/8 to 3/8 IN of flange bolts projecting beyond face of nut after tightening.
      b. Coordinate dimensions and drillings of flanges with flanges for valves, pumps, equipment, tank, and other interconnecting piping systems.
      c. When bolting flange joints, exercise extreme care to assure that there is no restraint on opposite end of pipe or fitting which would prevent uniform gasket compression or cause unnecessary stress, bending or torsional strains being applied to cast flanges or flanged fittings.
      1) Allow one (1) flange free movement in any direction while bolts are being tightened.
      d. Do not assemble adjoining flexible coupled, mechanical coupled or welded joints until flanged joints in piping system have been tightened.
      e. Gradually tighten flange bolts uniformly to permit even gasket compression.
      f. Do not over stress bolts to compensate for poor installation.
C. Joining Method - Welded Joints:
   1. Perform welding in accordance with AWWA C206 and this Section.
   2. For flange attachment perform in accordance with AWWA C207.
   3. Have each welding operator affix an assigned symbol to all his welds.
      a. Mark each longitudinal joint at the extent of each operator’s welding.
      b. Mark each circumferential joint, nozzle, or other weld into places 180 degrees apart.
   4. Welding for all process piping shall conform with ASME B31.3.

WRF DIGESTER HEAT EXCHANGER REPLACEMENT
15061 - STEEL PIPE
3 of 4
a. Welding of utility piping 125 psi and less shall be welded per ASME B31.9.
b. Utility piping above 125 psi shall conform to ASME B31.1.
5. Provide caps, tees, elbows, reducers, etc., manufactured for welded applications.
6. Weldedlets may be used for 5 IN and larger pipe provided all slag is removed from inside the pipe.
7. Weld-n nozzles may be used for branch connections to mains and where approved by Engineer.
8. Use all long radius welding elbows for expansion loops and bends.
9. Use long radius reducing welding elbows 90 degree bends and size changes are required.

D. Joining Method - Couplings:
   1. Compression sleeve:
      a. Install coupling to allow space of not less than 1/4 IN but not more than 1 IN.
      b. Provide harnessed joint.
         1) Use joint harness arrangements detailed in AWWA M11.
      c. Design harness assembly with adequate number of tie rods for test pressures indicated in Section 15060 and allow for expansion of pipe.
      d. Provide ends to be joined or fitted with compression sleeve couplings of the plain end type.
      e. Grind smooth welds the length of one (1) coupling on either side of joint to be fitted with any coupling.
      f. Assure that outside diameter and out-of-round tolerances are within limits required by coupling manufacturer.
   2. Mechanical coupling:
      a. Arrange piping so that pipe ends are in full contact.
      b. Groove and shoulder ends of piping in accordance with manufacturer’s recommendations.
      c. Provide coupling and grooving technique assuring a connection which passes pressure testing requirements.

E. Joining Method - Threaded and Coupled (T/C):
   1. Provide T/C end conditions that meet ASME B1.2 requirements.
   2. Furnish pipe with factory-made T/C ends.
   3. Field cut additional threads full and clean with sharp dies.
   4. Leave not more than three (3) pipe threads exposed at each branch connection.
   5. Ream ends of pipe after threading and before assembly to remove burrs.
   6. Use Teflon thread tape on male thread in mating joints.

F. Support exposed piping in accordance with Section 15060 and 15090.

G. Install burred piping per Section 15060.

3.2 FIELD QUALITY CONTROL

A. Test piping systems in accordance with Section 15060.

END OF SECTION
SECTION 15062
DUCTILE IRON PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Ductile iron pipe and accessories.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Society of Mechanical Engineers (ASME):
      a. B1.1, Unified Inch Screw Threads (UN and UNR Thread Form).

1.3 SUBMITTALS

A. Shop Drawings:
   1. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
      c. Separate schedule sheet for each piping system scheduled in this Specification Section showing compliance of all system components.
         1) Attach technical product data on gaskets, pipe, fittings, and other components.

B. Informational Submittals:
   1. Test reports:
      a. Copies of pressure test results on all piping systems.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Flanged adaptors and flanged reducing adapters:
      a. Rockwell (Style 913 or 914 (steel)).
      b. Dresser (Style 128 (steel)).
   2. Mechanical coupling:
      a. Victaulic (Style 31).
      b. Tyler.
2.2 MATERIALS

A. Ductile Iron Pipe:
   1. AWWA/ANSI C115/A21.15.
   2. AWWA/ANSI C150/A21.50.
   3. AWWA/ANSI C151/A21.51.

B. Fittings and Flanges:
   1. AWWA/ANSI C110/A21.10.
   2. AWWA/ANSI C115/A21.15.
   3. Flanges drilled and faced per ASME B16.1 for both 125 and 250 psi applications.

C. Nuts and Bolts:
   1. Stainless steel, type 304.
   2. Threaded per ASME B1.1.
   3. Project ends 1/4 to 1/2 IN beyond nuts.

D. Gaskets: See individual piping system requirements in Section 15060.

E. If mechanical coupling system is used, utilize pipe thickness and grade in accordance with AWWA C606.

F. See Piping Schedules in Section 15060.

2.3 MANUFACTURED UNITS

A. Couplings:
   1. Flanged adaptors:
      a. Unit consisting of steel or carbon steel body sleeve, flange, followers, Grade 30 rubber gaskets.
      b. Provide units specified in Article 2.1.
      c. Supply flanges meeting standards of adjoining flanges.
      d. Rate entire assembly for test pressure specified on piping schedule for each respective application.
   2. Mechanical couplings:
      a. Use of mechanical couplings and fittings in lieu of flanged joints is acceptable where specifically specified in Section 15060.
      b. Utilize units defined in Article 2.1.

2.4 FABRICATION

A. Furnish and install without outside coatings of bituminous material any exposed pipe schedule to be painted.

B. Furnish cast parts with lacquer finish compatible with finish coat.

C. Glass Lining:
   1. Minimum two-coat process.
      a. Base coat heated to solidly fuse glass to pipe surface.
      b. Subsequent coat(s) heated to form integral bond with preceding coat.
   2. Final finish parameters:
      a. Thickness: 8-12 mils.
      b. Hardness: Above 5 on MOHS scale.
      c. Density: 2.5-3.0 grams per cubic centimeter.
      d. Metal to lining bonding: Capable of withstanding strain of 0.001 IN/IN without damage to lining.
   3. Complete compatibility between fittings and piping.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Joining Method - Push-On Mechanical (Gland-Type) Joints:
   1. Install in accordance with AWWA/ANSI C111/A21.11.
   2. Assemble mechanical joints carefully according to manufacturer's
      recommendations.
   3. If effective sealing is not obtained, disassemble, thoroughly clean, and reassemble
      the joint.
   4. Do not overstretch bolts.
   5. Where piping utilizes mechanical joints with tie rods, align joint holes to permit
      installation of harness bolts.

B. Joining Method - Push-On Joints:
   1. Install in accordance with AWWA/ANSI C151/A21.51.
   2. Assemble push-on joints in accordance with manufacturer's directions.
   3. Bevel and lubricate spigot end of pipe to facilitate assembly without damage to
      gasket.
      a. Use lubricant that is non-toxic, does not support the growth of bacteria, has no
         deteriorating effects on the gasket material, and imparts no taste or odor to
         water in pipe.
   4. Assure the gasket groove is thoroughly clean.
   5. For cold weather installation, warm gasket prior to placement in bell.
   6. Taper of bevel shall be approximately 30 degrees with centerline of pipe and
      approximately 1/4 IN back.

C. Joining Method - Flanged Joints:
   1. Install in accordance with AWWA/ANSI C115/A21.15.
   2. Extend pipe completely through screwed-on flanged and machine flange face and
      pipe in single operation.
   3. Make flange faces flat and perpendicular to pipe centerline.
   4. When bolting flange joints, exercise extreme care to ensure that there is no restraint
      on opposite end of pipe or fitting which would prevent uniform gasket compression
      or would cause unnecessary stress, bending or torsional strains to be applied to
      cast flanges or flanged fittings.
   5. Allow one (1) flange free movement in any direction while bolts are being tightened.
   6. Do not assemble adjoining flexible joints until flanged joints in piping system have
      been tightened.
   7. Gradually tighten flange bolts uniformly to permit even gasket compression.

D. Joining Method - Mechanical Coupling Joint:
   1. Arrange piping so that pipe ends are in full contact.
   2. Groove and shoulder ends of piping in accordance with manufacturer's
      recommendations.
   3. Provide coupling and grooving technique assuring a connection which passes
      pressure testing requirements.

E. Flange Adaptors 12 IN and Less:
   1. Locate and drill holes for anchor studs after pipe is in place and bolted tight.
   2. Drill holes not more than 1/8 IN larger than diameter of stud projection.

F. Cutting:
   1. Do not damage interior lining material during cutting.
   2. Use abrasive wheel cutters or saws.
   3. Make square cuts.
   4. Bevel and free cut ends of sharp edges after cutting.
   5. Repair glass lining material per manufacturer's recommendation.
G. Support exposed pipe in accordance with Section 15060.
H. Install buried piping in accordance with Section 15060.
I. Install restrained joint systems where specified in Section 15060 under specific piping system.

3.2 FIELD QUALITY CONTROL

A. Test piping systems in accordance with Section 15060.

END OF SECTION
SECTION 15090
PIPE SUPPORTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe support and anchor systems.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Society of Mechanical Engineers (ASME):
   2. ASTM International (ASTM):
      b. A575, Standard Specification for Steel Bars, Carbon, Merchant Quality, M-
         Grades.
      c. A576, Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special
         Quality.
   3. American Welding Society (AWS):
      a. D1.1, Structural Welding Code - Steel.
   4. Manufacturers Standardization Society of the Valve and Fittings Industry Inc.
      (MSS):
      a. SP-58, Pipe Hangers and Supports - Materials, Design and Manufacture.
      b. SP-69, Pipe Hangers and Supports - Selection and Application.

1.3 SUBMITTALS

A. Shop Drawings:
   2. At owner’s request, contractor shall provide certification sealed by a professional
      engineer that pipe supports provided are satisfactory to support pipe for all loads
      and forces.
   3. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards
         referenced.
      b. Manufacturer’s installation instructions.
      c. Itemized list of wall sleeves, anchors, support devices and all other items
         related to pipe support system.
      d. Scale drawings showing guides, hangers, supports, anchors, structural
         members and appurtenances to describe the pipe support system.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS
A. Model numbers listed in the specifications and on the drawings for pipe support components are intended to establish the general type, function and quality required. Actual manufacturer and/or model numbers will vary with materials of construction. Model numbers may be changed by manufacturers without notice. Materials and other requirements shall comply with those listed in the specifications and as noted on the drawings Drawings.

B. Material:
   1. Hot dipped galvanized unless otherwise noted.
   2. All weld areas: passivate/pickle.
   3. Hardware/fasteners: Stainless steel, type 304
   4. Provide dielectric material between dissimilar metals (pipes and/or supports).

C. Hanger Rods:
   a. Minimum allowable tensile stress of 12,000 psi at 650 DegF per MSS SP-58.
   b. Continuously threaded.
   c. Load limit:

<table>
<thead>
<tr>
<th>NOMINAL ROD DIAMETER</th>
<th>MAXIMUM SAFE LOAD, (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8 IN DIA (min)</td>
<td>610</td>
</tr>
<tr>
<td>1/2 IN DIA</td>
<td>1,130</td>
</tr>
<tr>
<td>5/8 IN DIA</td>
<td>1,810</td>
</tr>
<tr>
<td>3/4 IN DIA</td>
<td>2,710</td>
</tr>
<tr>
<td>7/8 IN DIA</td>
<td>3,770</td>
</tr>
<tr>
<td>1 IN DIA</td>
<td>4,980</td>
</tr>
</tbody>
</table>

D. Hangers:
   1. Hanger type schedule:

<table>
<thead>
<tr>
<th>APPLICATION / PIPE SIZE</th>
<th>HANGER TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>All except noted 4 IN and less</td>
<td>ANVIL Figure 108 with Figure 114</td>
</tr>
<tr>
<td>Over 4 IN</td>
<td>ANVIL Figure 590</td>
</tr>
<tr>
<td>All</td>
<td>ANVIL Figure 181, Figure 82</td>
</tr>
</tbody>
</table>

E. Concrete inserts for Hanger Rods:
   1. Continuous slots: Unistrut #P1000.
   2. Individual inserts: ANVIL Figure 281.
   3. Self-drilling expansion anchors: Phillips flush-end or snap-off end type.

F. Beam Clamps for Hanger Rods:
   1. Heavy duty.
   2. ANVIL Figure 134.

G. Trapeze Hangers for Suspended Piping:
   1. Angles, channels, or other structural shapes.
   2. Curved roller surfaces at support point corresponding with type of hanger required.

H. Vertical Pipe Supports:
   1. At base of riser.
   2. Lateral movement:
      a. ANVIL Figure 40S.D.

I. Pipe Floor Support:
   1. For pipe located 3 FT or less from floor elevation, except as otherwise indicated on Drawings.
   2. ANVIL Figure 258/264, heavy duty.
3. Pipe Support Stanchion:
   a. As recommended by saddle manufacturer, Schedule 40 steel minimum.
   b. Anvil Figure 62.

J. Pipe Support Base Plate:
   1. 4 IN larger than support.
   2. Collar 3/16 IN thickness, circular in shape, and sleeve type connection to pipe.
   3. Collar fitted over outside of support pipe and extended 2 IN from floor plate.
   4. Collar welded to floor plate.
   5. Edges ground smooth.
   6. Provide grout equipment pad between floor and baseplate.

K. Pipe Covering Protection Saddle:
   1. For insulated pipe at point of support.
   2. Anvil Figure 167, Type B.

L. Wall Brackets:
   1. For pipe located near walls and 8 FT or more above floor elevation or as otherwise
      indicated on the Drawings.
   2. Anvil Figure 199.

M. Pipe Anchors:
   1. For locations shown on the Drawings.
   2. 1/4 IN steel plate construction.
   3. Designed to prevent movement of pipe at point of attachment.

N. Pipe Guides:
   1. For locations on both sides on each expansion joint or loop.
   2. To ensure proper alignment of expanding or contracting pipe.
   3. Anvil Figure 256.

2.2 DESIGN REQUIREMENTS

A. At owner’s request, contractor shall provide certification sealed by a professional
   engineer that pipe supports provided are satisfactory to support pipe for all horizontal
   and vertical loads and forces.

B. Supports capable of supporting the pipe for all service and testing conditions.
   1. Provide 5 to 1 safety factor.

C. Allow free expansion and contraction of the piping to prevent excessive stress resulting
   from service and testing conditions or from weight transferred from the piping or
   attached equipment.

D. Design supports and hangers to allow for proper pitch of pipes.

E. For chemical and waste piping, design, materials of construction and installation of pipe
   hangers, supports, guides, restraints, and anchors:
   1. ASME B31.3.
   2. MSS SP-58 and MSS SP-69.
   3. Except where modified by this Specification.

F. For steam and hot and cold water piping, design, materials of construction and
   installation of pipe hangers, supports, guides, restraints, and anchors:
   1. ASME B31.1.
   2. MSS SP-58 and MSS SP-69.

G. Check all physical clearances between piping, support system and structure.
   1. Provide for vertical adjustment after erection.

H. Support vertical pipe runs in pipe chases at base of riser.
   1. Support pipes for lateral movement with clamps or brackets.
I. Place hangers on outside of pipe insulation.
   1. Use a pipe covering protection saddle for insulated pipe at support point.
   2. Insulated piping 1-1/2 IN and less: Provide a 9 IN length of 9 LB density fiberglass insulation at saddle.
   3. Insulated piping over 1-1/2 IN: Provide a 12 IN length of 9 LB density fiberglass insulation on saddle.

J. Provide 20 GA galvanized steel pipe saddle for fiberglass and plastic support points to ensure minimum contact width of 4 IN.

K. Pipe Support Spacing:
   1. General:
      a. Factor loads by specific weight of liquid conveyed if specific weight is greater than water.
      b. Locate pipe supports at maximum spacing scheduled unless indicated otherwise on the Drawings.
      c. Provide at least one (1) support for each length of pipe at each change of direction.
      d. Provide supports on each side of valves.
      e. Provide sufficient supports so that pipe remains adequately supported if a valve, equipment, flow meter, etc. is removed.
   2. Steel, stainless steel, iron pipe support schedule:

<table>
<thead>
<tr>
<th>PIPE SIZES - IN</th>
<th>MAXIMUM SPAN - FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2 and less</td>
<td>5</td>
</tr>
<tr>
<td>2 thru 4</td>
<td>10</td>
</tr>
<tr>
<td>5 thru 8</td>
<td>15</td>
</tr>
<tr>
<td>10 and greater</td>
<td>20</td>
</tr>
</tbody>
</table>

   3. Copper pipe support schedule:

<table>
<thead>
<tr>
<th>PIPE SIZES - IN</th>
<th>MAXIMUM SPAN - FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1/2 and less</td>
<td>5</td>
</tr>
<tr>
<td>3 thru 6</td>
<td>10</td>
</tr>
<tr>
<td>8 and greater</td>
<td>15</td>
</tr>
</tbody>
</table>

   4. PVC pipe support schedule:

<table>
<thead>
<tr>
<th>PIPE SIZES - IN</th>
<th>MAXIMUM SPAN - FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/4 and less</td>
<td>3</td>
</tr>
<tr>
<td>1-1/2 thru 3</td>
<td>4</td>
</tr>
<tr>
<td>4 and greater</td>
<td>5</td>
</tr>
</tbody>
</table>

   * Maximum fluid temperature of 120 DegF.

5. Support each length and every fitting:
   a. Bell and spigot piping:
      1) At least one (1) hanger.
      2) Applied at bell.
   b. Mechanical coupling joints:
      1) Place hanger within 2 FT of each side of fittings to keep pipes in alignment.

6. Space supports for soil and waste pipe and other piping systems not included above every 5 FT.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide piping systems exhibiting pulsation, vibration, swaying, or impact with suitable constraints to correct the condition.
   1. Included in this requirement are movements from:
      a. Trap discharge.
      b. Water hammer.
      c. Similar internal forces.

B. Weld Supports:
   1. AWS D1.1.
   2. Weld anchors to pipe in accordance with ASME B31.3.

C. Locate piping and pipe supports as to not interfere with open accesses, walkways, platforms, and with maintenance or disassembly of equipment.

D. Inspect hangers for:
   1. Design offset.
   2. Adequacy of clearance for piping and supports in the hot and cold positions.
   3. Guides to permit movement without binding.
   4. Adequacy of anchors.

E. Inspect hangers after erection of piping systems and prior to pipe testing and flushing.

F. Install individual or continuous slot concrete inserts for use with hangers for piping and equipment:
   1. Install concrete inserts as concrete forms are installed.

G. Welding:
   2. Integral attachments:
      a. Include welded-on ears, shoes, plates and angle clips.
      b. Ensure material for integral attachments is of good weldable quality.
   3. Preheating, welding and postheat treating: ASME B31.3, Chapter V.

END OF SECTION
SECTION 15100
BASIC VALVE REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: general requirements for valves, actuators and accessories.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Society of Mechanical Engineers (ASME):
      a. B1.20.1, Pipe Threads, General Purpose.
   2. ASTM International (ASTM):
   3. American Water Works Association (AWWA):
      a. C207, Standard for Steel Pipe Flanges for Waterworks Service - Sizes 4 IN through 144 IN.
      c. C507, Standard for Ball Valves, 6 IN through 48 IN (150 MM through 1200 MM).
      e. C550, Standard for Protective Coatings for Valves and Hydrants.

1.3 SUBMITTALS

A. Shop Drawings:
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer’s installation instructions.
      c. Valve pressure and temperature rating.
      d. Valve material of construction.
      e. Special linings.
      f. Valve dimensions and weight.
      g. Valve flow coefficient.
      h. Wiring and control diagrams for electric or cylinder actuators.
   3. Test reports.
PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS
A. Refer to individual valve Specification Sections.

2.2 MATERIALS
A. Refer to individual valve Specification Sections.

2.3 VALVE ACTUATORS
A. Valve Actuators - General:
   1. Provide actuators as shown on Drawings or specified.
   2. Counter clockwise opening as viewed from the top.
   3. Direction of opening and the word OPEN to be cast in handwheel or valve bonnet.
   4. Size actuator to produce required torque with a maximum pull of 40 LB at the maximum pressure rating of the valve provided and withstand without damage a pull of 200 LB on handwheel or chainwheel or 300 foot-pounds torque on the operating nut.
   5. Unless otherwise specified, actuators for valves to be buried, submerged or installed in vaults or manholes shall be sealed to withstand at least 20 FT of submergence.
   6. Extension stem:
      a. Install where shown or specified.
      b. Solid steel with actuator key and nut, diameter not less than stem of valve actuator shaft.
      c. Pin all stem connections.
      d. Center in valve box or grating opening band with guide bushing.

B. Exposed Valve Manual Actuators:
   1. Provide for all exposed valves not having electric or cylinder actuators.
   2. Provide handwheels for gate and globe valves.
      a. Size handwheels for valves in accordance with AWWA C500.
   3. Provide lever actuators for plug valves, butterfly valves and ball valves 3 IN DIA and smaller.
      a. Lever actuators for butterfly valves shall have a minimum of 5 intermediate lock positions between full open and full close.
      b. Provide at least two (2) levers for each type and size of valve furnished.
   4. Gear actuators required for plug valves, butterfly valves, and ball valves 4 IN DIA and larger.
      a. Plug valves 4 IN DIA and larger shall have geared actuator with handwheel and 2 IN square operating nut factory welded to center of handwheel.
   5. Provide gearing for gate valves 20 IN and larger in accordance with AWWA C500.
   6. Gear actuators to be totally enclosed, permanently lubricated and with sealed bearings.
   7. Unless noted otherwise, provide chain actuators for valves 5.5 FT or higher from finish floor to centerline of handwheel.
      a. Cadmium-plated chain looped to within 3 FT of finish floor.
      b. Equip chain wheels with chain guides to permit rapid operation with reasonable side pull without "gagging" the wheel.
   8. Provide cast iron floor stands where shown on Drawings.
      a. Stands to be furnished by valve manufacturer with actuator.
      b. Stands or actuator to include thrust bearings for valve operation and weight of accessories.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer’s instructions.

B. Painting Requirements:
   1. Field paint over factory finish coating per Specification Section 09961

C. Support exposed valves and piping adjacent to valves independently to eliminate pipe loads being transferred to valve and valve loads being transferred to the piping.

D. For grooved coupling valves, install rigid type couplings or provide separate support to prevent rotation of valve from installed position.

E. Install electric or cylinder actuators above or horizontally adjacent to valve and gear box to optimize access to controls and external handwheel.

F. For threaded valves, provide union on one (1) side within 2 FT of valve to allow valve removal.

G. Install valves accessible for operation, inspection, and maintenance.

END OF SECTION
SECTION 15101
GATE VALVES

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes: Gate Valves and accessories.

1.2 QUALITY ASSURANCE
A. Referenced Standards:
   1. ASTM International (ASTM):
   2. American Water Works Association (AWWA):
   3. Manufacturers Standardization Society of the Valve and Fittings Industry Inc. (MSS):
      a. SP-9, Spot Facing for Bronze, Iron and Steel Flanges.
      b. SP-70, Cast Iron Gate Valves, Flanged and Threaded Ends.
      c. SP-80, Bronze Gate, Globe, Angle and Check Valves.

1.3 DEFINITIONS
A. OS&Y: Outside screw and yoke.
B. RS: Rising stem.
C. NRS: Non-rising stem.

1.4 SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS
A. See specification section 01340.
B. Product technical data including:
   1. Dimensioned drawings.
   3. Parts list.
   4. Confirmation product meets specification requirements.

PART 2 - PRODUCTS

2.1 RESILIENT WEDGE GATE VALVES FOR POTABLE AND NON-POTABLE WATER SERVICE, 4" TO 16"
A. General:
   1. Comply with requirements of AWWA C515.
   2. Potable water application shall meet NSF 61 Requirements.
B. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Clow.

C. Materials:
1. Body: Ductile iron.
2. Bonnet: Ductile iron.
3. O-ring plate: Ductile iron.
4. Stem and stem nut: Bronze.
   a. Wetted bronze parts in low zinc bronze.
   b. Aluminum bronze components: Heat treated per AWWA C504.
5. Resilient Wdgc: Fully encapsulated rubber wdgc, SBR.

D. Design:
1. Design requirements:
   a. Minimum 200 psi working pressure.
   b. Buried: NRS, O-ring stem seal, 2 IN square operating nut.
   c. Exposed: OS&Y, stuffing box stem seal, handwheel
      1) Valve shall be installed in vertical/upright position unless approved by WRA.
   d. Counter clockwise open rotation.
   e. Handwheel shall be marked with word “OPEN” and an arrow to indicate open direction.
   f. Provide O-ring seals at all pressure retaining joints.
      1) No flat gaskets allowed.
   g. Fusion bonded epoxy coating interior and exterior except stainless steel and bearing surfaces.
      1) Comply with AWWA C550.
      2) Wetted bronze parts in low zinc bronze.
      3) Aluminum bronze components: Heat treated per AWWA C504.
   h. Cast pressure rating and year of manufacture into the body.
   i. Provide valves with clear waterways the full diameter of the valve.
   j. Pipe connection:
      1) All exposed valves shall have flanged connections to adjacent piping.

2.2 ACCESSORIES

A. Refer to Drawings and valve schedule for type of actuators.
1. Furnish actuator integral with valve.
2. Gate valves with chainwheel operators shall be installed with actuator gearing so that the valve is installed in the vertical/upright position.

B. Refer to Specification Section 15100 for actuator requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

A. See Specification Section 15100.

B. Where larger buried valves utilize smaller bypass valves, provide a second valve box installed over the bypass valve operating nut.

C. Do not install gate valves inverted or with the stems sloped more than 45 degrees from the upright unless the valve was ordered and manufactured specifically for this orientation and with approval of WRA.

END OF SECTION
SECTION 15102
PLUG VALVES

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes: Plug Valves

1.2 QUALITY ASSURANCE
A. Referenced Standards:
   1. American Society of Mechanical Engineers (ASME):
   2. ASTM International (ASTM):
      a. A126, Standard Specification for Gray Iron Castings for Valves, Flanges and
         Pipe Fittings.

1.3 SUBMITTALS AND OPERATION AND MAINTENANCE MANUALS
A. See specification section 01340.
B. Product technical data including:
   1. Dimensioned drawings.
   3. Parts list.
   4. Confirmation product meets specification requirements.

PART 2 - PRODUCTS

2.1 NON-LUBRICATED ECCENTRIC PLUG VALVES (WASTEWATER, SLUDGE,
DIGESTER GAS APPLICATIONS)
A. Acceptable Manufacturers:
   1. DeZurik.
   2. Approved equal.
B. Materials:
   3. Plug facing: Grease and/or petroleum-resistant resilient Neoprene or Buna-N
      compound, 70 Type A durometer hardness per ASTM D2240.
   4. Shaft bearings: Permanently lubricated, rigidly backed TFE, stainless steel at both
      upper and lower stem journals.
      a. Fanged valves and valves without neck extensions shall be provided with
         grease fittings in the body and bonnet bearing journal areas.
   5. Valve Packing: externally adjustable, multiple V-rings constructed of Acrylonitrile
      Butadiene.
      a. Packing glands shall be ductile iron and designed such that inspection, external
         adjustments and packing replacement can be completed without removing the
         valve operator.
   6. Valve seats: Welded-in overlay of 95 percent nickel, minimum Brinell hardness of
      200, (minimum 1/2 IN thick).
7. All exposed bolts, nuts and washers shall be stainless steel, type 316.

C. Design Requirements:
   1. Plug:
      a. Removable without removing valve from the pipe.
      b. Have integral upper and lower shaft with seals on upper and lower journals to prevent solids entering journals.
   2. Port:
      a. Rectangular port.
      b. 100 percent of pipe area, full port.
   4. End connections:
      a. Interior/exposed service:
         1) Cast with integral flanges,
         2) Conform to ANSI B16.1, class 125 minimum or higher as needed to be compatible with specified piping.
      b. Buried service: mechanical joint, compatible with specified piping.
   5. Valve seat:
      a. Provide full 360-degree seating by contact of a resilient seating material on the plug, mated to seating surface on the body.
   6. Stem seal: Adjustable and replaceable without disassembling valve or bonnet.
   7. Designed for seating drip tight in any flow direction.
   8. Rating:
      a. 1/2 through 12 IN, 175 psi working pressure.
      b. 14 through 36 IN, 150 psi working pressure.
   9. Actuators:
      a. See specification 16100.
      b. All actuators shall include a worm-gear gearbox actuator.
         1) See drawings and/or valve schedule for valves to be provided with motor actuators.
      c. Actuator gearing in enclosure suitable for running in oil with seals on shaft to prevent entry of dirt or water.
      d. Adjustable stop to set closing torque.
      e. Quarter (1/4) turn to open or close.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Plug valves shall be installed so that the direction of flow through the valve and the shaft orientation is in accordance with the manufacturer’s recommendations.

END OF SECTION
SECTION 15104
BALL VALVES

PART 1 - GENERAL

1.1 SUMMARY
   A. Section Includes: Ball Valves

1.2 QUALITY ASSURANCE
   A. Referenced Standards (Latest edition unless noted):
      1. ASTM International (ASTM):
         a. A913 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
      2. American Society of Mechanical Engineers (ASME):
         a. B31.1 – Power Piping
      3. NACE International (NACE):
         a. MR 0175 – Materials for Use in Hydrogen Sulfide Containing Environments
      4. NSF International (NSF):
      5. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS):
         a. SP-72, Ball Valves with Flanged or Butt-Welding Ends for General Service.
         b. SP-110, Ball Valves: Threaded, Socket-Welded, Solder Joint, Grooved and Flared Ends.

1.3 SUBMITTALS
   A. See specification section 01340.

   B. Product technical data including:
      1. Dimensioned drawings.
      3. Parts list.
      4. Confirmation product meets specification requirements.

PART 2 - PRODUCTS

2.1 ACTUATORS
   A. See specification 15100 for actuator requirements.

2.2 STAINLESS STEEL BALL VALVES FOR STAINLESS STEEL TUBING
   A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
      1. Swagelok
      2. Or approved equal.

   B. Materials:
      2. Stem: 316 stainless steel.
5. Handle: 316 stainless steel.
6. Fasteners and hardware: Stainless steel type 316 unless noted otherwise.
7. O-rings: Fluorocarbon FKM
9. Seats: Poly ether ether ketone (PEEK)

C. Design and fabrication:
1. Valve connection: match adjacent tubing connection.
2. Ball valve with 1/4 turn activation.
3. Provide body well thickness sufficient for process design conditions per ASME B31.1.
4. Temperature: Manufacturer's temperature rating for all components shall exceed process design conditions.

2.3 STAINLESS STEEL BALL VALVES, 1/4 TO 4 IN DIA, MANUALLY ACTUATED

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
1. Valvoc Series 110
2. Or approved equal.

B. Materials
1. All metallic components shall be stainless steel.
2. Body, Cap, Ball: Cast stainless steel, type 316.
5. Seats, gaskets, packing: PTFE.

C. Design Requirements:
1. Full port opening.
2. Rated for 150 PSI (working steam pressure).
5. Adjustable stem packing.
6. Stem shall not contact media.
7. Reinforced seats.
8. Lockable handle.
9. Handle shows direction of open.
10. Meet requirements of MSS SP-72 or MSS SP-110 as applicable for pipe connection type.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install per manufacturer's recommendation.

END OF SECTION
SECTION 15183
PIPE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Pipe insulation and accessories.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. ASTM International (ASTM):
      a. C177, Standard Test Method for Steady-State Heat Flux Measurements and
         Thermal Transmission Properties by Means of Guarded-Hot-Plate Apparatus.
      b. C411, Standard Test Method for Hot-Surface Performance of High-
         Temperature Thermal Insulation.
      c. C423, Standard Test Method for Sound Absorption and Sound Absorption
         Coefficients by the Reverberation Room Method.
      e. C553, Standard Specification for Mineral Fiber Blanket Thermal Insulation for
         Commercial and Industrial Applications.
         Light Frame Construction and Manufactured Housing.
      g. C1071, Standard Specification for Fibrous Glass Duct Lining Insulation
         (Thermal and Sound Absorbing Material).
      h. D1056, Standard Specification for Flexible Cellular Materials-Sponge or
         Expanded Rubber.
      i. E84, Standard Test Method for Surface Burning Characteristics of Building
         Materials.
      k. F25, Standard Test Method for Sizing and Counting Airborne Particulate
         Contamination in Cleanrooms and Other Dust-Controlled Areas.
   2. National Fire Protection Association (NFPA):
      a. 255, Standard Method of Test of Surface Burning Characteristics of Building
         Materials.
   3. Underwriters Laboratories, Inc. (UL):
      a. 723, Standard for Test for Surface Burning Characteristics of Building
         Materials.

1.3 SUBMITTALS

A. Shop Drawings:
   2. Product technical data including:
      a. Acknowledgment that products submitted meet requirements of standards
         referenced.
      b. Manufacturer's installation instructions.
      c. Submit complete specification of insulation materials, adhesives, cement,
         together with manufacturer's recommended methods of application and
         coverage for coatings and adhesives.
   3. Submit itemized schedule by building of proposed insulation systems showing
      density, thermal conductivity, thickness, adhesive, jackets and vapor barriers.
   4. Certifications: Products will meet the requirements of the Contract Documents.
PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
   1. Elastomeric insulation:
      a. Rubatex.
      b. Armstrong.
   2. Fiberglass insulation:
      a. CertainTeed Corporation.
      b. Schuller (Manville).
      c. Owens Corning.
      d. Knauf.
   3. PVC jacket:
      a. Ceil-Co.
      b. PIC Plastics.
   4. Or approved equal.

2.2 PIPING INSULATION - FIBERGLASS

A. Pipe and Fitting Insulation:
   1. Prefomed fiberglass pipe insulation:
      a. Density: 4 LBS/CF.
      b. Temperature rated: 650 DegF.
      c. Average thermal conductivity not to exceed 0.22 (Btu-IN)/(HR-FT²-DegF) at mean temperature of 75 DegF.
      d. Fire hazard rating:
         1) UL 723, ASTM E84, NFPA 255.
         2) Flame spread not exceeding 50 and smoke developed not exceeding 50.
   2. Moisture adsorption:
      a. ASTM C553.
      b. Not greater than 0.5 percent moisture by volume when exposed to moisture laden air at 120 DegF and 96 percent RH.
   3. Fungi and bacteria resistance:
      a. ASTM C665.
      b. Does not breed or promote growth.
      c. Flame attenuated glass fibers bonded with thermosetting resin.
   4. Piping jackets (general applications):
      a. PVC: Prefomed 0.028 IN thick PVC jackets fabricated from B.F. Goodrich PVC sheeting V-66 with proven resistance to ultraviolet degradation when temperatures do not exceed the limits of PVC.
   5. Provide minimum insulation thickness conforming to schedules or as shown on the Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. General:
   1. Consider ductwork, piping and equipment as exposed, except as otherwise indicated.
   2. Consider ductwork, piping and equipment in walls, partitions, floors, pipe chases, pipe shafts and duct shafts as concealed.
   3. Provide release for insulation application after installation and testing is complete.
a. Apply insulation on clean, dry surfaces after inspection.
4. Provide insulation continuous through wall, roof and ceiling openings, pipe hangers, supports and sleeves.
5. Provide insulation with vapor barrier for piping, ductwork and equipment where surfaces may be cooler than surrounding air temperatures.
   a. Provide vapor barrier (0.17 perm-\text{IN}; ASTM C553) continuous and unbroken.
   b. Hangers, supports, anchors, and related items that are secured directly to cold surfaces must be adequately insulated and vapor-sealed to prevent condensation.
6. Apply specified adhesives, mastics and coatings at the manufacturer's recommended coverage per unit volume.

C. Piping Insulation - Fiberglass:
   1. Apply over clean dry pipe.
      a. Butt all joints together firmly.
   2. Seal joints, slits, miter-cuts and other exposed edges of insulation as recommended by the insulation manufacturer.
   3. Insulate fittings, valves, and flanges with insulation thickness equal to adjacent pipe.
   4. PVC pipe jacket:
      a. Apply jacketing with a minimum of 1 IN overlap.
         1) Weld longitudinal and circumferential seams with adhesives as recommended by manufacturer.
      b. Provide slip-joints every 30 FT and between fittings if distance exceeds 8 FT.
         1) Construct slip-joints by overlapping jacket sections 6 to 10 IN.
      c. Provide premolded PVC covers of same material and manufacturer as jacket for fittings, valves, flanges, and related items in insulated piping systems.

3.2 REPAIR

A. Whenever any factory applied insulation or job-applied insulation is removed or damaged, replace with the same quality of material and workmanship.

3.3 SCHEDULES

A. Pipe, Fittings and Valves:
   1. Fiberglass.

<table>
<thead>
<tr>
<th>APPLICATION</th>
<th>PIPE SIZE</th>
<th>MIN THICKNESS</th>
<th>JACKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (W1, W2 and W3)</td>
<td>3 IN and less</td>
<td>3/4 IN</td>
<td>PVC</td>
</tr>
<tr>
<td></td>
<td>Over 3 IN</td>
<td>1 IN</td>
<td>PVC</td>
</tr>
<tr>
<td>Heating Water (HWS, HWR); (160-200 DegF)</td>
<td>Less than 4 IN</td>
<td>2.5 IN</td>
<td>PVC</td>
</tr>
<tr>
<td></td>
<td>4 IN and greater</td>
<td>3 IN</td>
<td>PVC</td>
</tr>
</tbody>
</table>

END OF SECTION
This project will be constructed in accordance with the SUDAS Standard Specifications, 2020 Edition, which were adopted by the City of Des Moines on May 4, 2020, under Roll Call No. 20-0737, as amended by these City of Des Moines General Supplemental Specifications.

The SUDAS Standard Specifications, 2020 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 2.; 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.
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, 1.09;
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.

2. 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.

3. 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.
C. 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 or litigation of its Claim.

D. 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 States 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 Construction 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 in the Forms and Documents section at the Engineering page on the City of Des Moines website at:
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, raking 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 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. 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 11:00 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 maximum percentage of combined overhead, profit, and bond for changes in the work performed by the Contractor shall be 10%. If the changed work is performed by a Subcontractor, a maximum of 5% may be added by that Subcontractor on his work for combined overhead and profit and additional maximum of 5% may be added by the Prime Contractor for administration, coordination, and general conditions of said Subcontractor work.

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 e.

e. 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 (LONGITUDINAL 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, 2.15 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, 1.08 MEASUREMENT AND PAYMENT, Add new N following:

N. Cold Weather Protection: When any type of additional protection described in 7010.3.04.A is necessary, additional payment will be made as extra work at the rate of $1.00 per square yard of surface protected. Payment will be limited to protection within the contract period. Protection necessary after November 15 will be paid only when the Engineer authorizes the work.

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

7010, 1.08 MEASUREMENT AND PAYMENT, Add new J following:

J. Cold Weather Protection: When any type of additional protection described in 7010.3.04.A is necessary, additional payment will be made as extra work at the rate of $1.00 per square yard of surface protected. Payment will be limited to protection within the contract period. Protection necessary after November 15 will be paid only when the Engineer authorizes the work.

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, B. Concrete Pavement Placement, 2. Sidewalk: Add the following new g:

  g. 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, D. Curing Replace with the following:

Curing is required and shall comply with Section 7010.

7030, 3.04 PCC SIDEWALKS, SHARED USE PATHS, AND DRIVEWAYS, F. Jointing: 4. Isolation Joints: Delete b. and replace it with the following new b.

  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 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.

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 9010 – SEEDING

9010, 3.02 – AREA OF SEEDING: Add A. and B.

A. Mobilize within 72 hours of a written order with sufficient labor, equipment, and materials to seeding work as ordered or approved by Engineer. Complete work within 7 calendar days of a written order.

B. Failure to mobilize and complete work within such time period, will result in a deduction of $750.00 per calendar day from payment due under the contract, except when Engineer extends such time period.
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.

B. Mobilize within 72 hours of a written order with sufficient labor, equipment, and materials to sod installation as ordered or approved by Engineer. Complete work within 7 calendar days of a written order.

C. Failure to mobilize and complete work within such time period, will result in a deduction of $750.00 per calendar day from payment due under the contract, except when Engineer extends such time period.

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 6010.802.

RAISED LETTERS FLUSH WITH TOP SURFACE

IT IS IN OUR HANDS
PROTECT OUR WATER

PICKHOLES

RAISED LETTERS FLUSH WITH TOP SURFACE

LETTERED "USA" OR "MADE IN USA"

MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 358
FINISH: NO PAINT

TLD
STORM SEWER LID
FOR THE CITY OF DES MOINES, IOWA
This project will be constructed in accordance with the SUDAS Standard Specifications, 2020 Edition, which were adopted by the Des Moines Metropolitan Wastewater Reclamation Authority on May 19, 2020 by Resolution No. 20-59, as amended by the City of Des Moines General Supplemental Specifications to the SUDAS Standard Specifications, 2020 Edition, effective May 4, 2020, by the City of Des Moines, Iowa, and as further amended by these WRA General Supplemental Specifications.


1020, 1.04 EXAMINATION OF THE CONTRACT DOCUMENTS AND SITE OF WORK: Delete A. and E. in their entirety and replace with the following A. and E:

A. By submission of a proposal on the work, the bidder represents that it has carefully examined the site of the proposed work; the plans, specifications, and all other Contract Documents; and that the bidder is fully informed concerning the requirements of the contract, the physical conditions to be encountered in the work, and the character, quality, and the quantity of work to be performed, as well as materials to be furnished. The Contractor will not be entitled to additional compensation if it subsequently finds that conditions require methods or equipment other than that anticipated by the Contractor in making its proposal.

(Note: Subsections B., C., and D. of 1020, 1.04 shall remain as-is without any revision)

E. The Jurisdiction does not warrant, impliedly or explicitly, the nature of the work, the conditions that will be encountered by the bidder, the adequacy of the Contract Documents for the Contractor to perform the work, or the conditions or structures to be encountered under any surface. Any such data supplied on the plans or other Contract Documents, or interpretation thereof by the Engineer, are merely for the convenience of the prospective bidders, who are to rely upon their own explorations of latent or subsurface site conditions, before completing and filing their proposal.

SECTION 1040 – SCOPE OF WORK

1040, 1.06 INCREASE OR DECREASE OF WORK: Delete A. and B. in their entirety and replace with the following new A:
A. The Jurisdiction reserves the right to make such alterations in the plans or in the quantities of Work as may be considered necessary. Such alterations shall be in writing by the Engineer and shall not be considered as a waiver of any conditions of the Contract Documents or to invalidate any of the provisions thereof.

1040, 1.07 CHANGE ORDERS, B. Written Orders: Delete the formal approval definition as added by the City of Des Moines General Supplemental Specifications and add the following new WRA formal approval definition:

Formal approval by the Jurisdiction shall be defined as follows:

The WRA Director and the Engineer have authority to approve change orders to contract documents in an amount up to $10,000 or 10% of the original contract price, or such other contingency amount or percentage established by the WRA Board, whichever is greater; provided that any change order in excess of $100,000 shall require approval by the WRA Board. Change orders shall be approved prior to the payment of the work provided for under the change order.

1040, 1.08 SITE CONDITIONS: Delete 1.08 in its entirety and replace with the following new A:

A. The Contractor is required by Section 1020 1.04 Examination of the Contract Documents and Site of Work to make reasonable investigation and examination to determine latent and subsurface conditions at the site of the work prior to preparing its proposal. The Jurisdiction makes no guarantee of any conditions, latent or subsurface, at the site of the work. The Jurisdiction shall not be obligated to make any payments to Contractor by reason of any latent or subsurface conditions.

1040, 1.09 CHANGED SITE CONDITIONS: Delete 1.09 in its entirety, and also delete in its entirety the revision made to 1.09 under the City of Des Moines General Supplemental Specifications.

1040, 1.10 DISPUTED CLAIMS FOR EXTRA COMPENSATION: Delete 1.10 in its entirety, and also delete in its entirety the revision made to 1040, 1.10 under the City of Des Moines General Supplemental Specifications, and replace with the following:

A. Basis of Claim for Extra Compensation:

1. If, 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 herein, 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 and WRA Director 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 addresses below:

**Engineer:**

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

**WRA Director:**

Des Moines Metropolitan Wastewater Reclamation Authority  
3000 Vandalia Road  
Des Moines, Iowa 50317  
Attention: WRA Director

Under no circumstances will an email, text message, verbal communication or any other informal communication, be considered acceptable or satisfactory 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.

C. 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:

To the Engineer:

City of Des Moines
Engineering Department
400 Robert D. Ray Drive
Des Moines, Iowa 50309-1891
Attention: City Engineer
To the WRA Director:

Des Moines Metropolitan Wastewater Reclamation Authority
3000 Vandalia Road
Des Moines, Iowa 50317
Attention: WRA Director

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.

D. 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 WRA Director; the Engineer, or his designated representative; and a third person to be appointed by the WRA Director (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 binding arbitration of the Claim that has been denied subject to the procedure provided below.

E. Binding Arbitration:

1. For any Claim denied by the Board, the Jurisdiction shall have the sole and exclusive right to determine whether final resolution shall be through Binding Arbitration (the “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:

   To the Engineer:

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

   To the WRA Director:

   Des Moines Metropolitan Wastewater Reclamation Authority
   3000 Vandalia Road
   Des Moines, Iowa 50317
   Attention: WRA Director

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 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 resolution of the Claim shall be binding 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 Contractor’s demand for 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 States District Court in and for the District where the Jurisdiction is located.
SECTION 1050 – CONTROL OF WORK

1050, 1.01 AUTHORITY OF THE ENGINEER: Delete A., B., and C. in their entirety and replace with the following A., B., and C., and add the following new E regarding survey, inspection, and testing:

A. The work included in the contract is to be done under the direct supervision and to the complete satisfaction of the Engineer, and the decision of the Engineer as to the true construction and meaning of the Contract Documents, plans, specifications, estimates, and as to all questions arising as to proper performance of the work, shall be final.

B. The Engineer shall determine the unit quantities and the classification of all work done and materials furnished under the provisions of the Contract Documents, and the Engineer's determination thereof shall be final.

C. The Engineer shall decide any and all questions which may arise as to the quality or acceptability of materials furnished and work performed, as to the rate of progress of the work, including cleanup and restoration, as to acceptable fulfillment and performance of the contract on the part of the Contractor, and as to compensation. The decision of the Engineer in such matters shall be final.

(Note: Subsection D. of 1050, 1.01 shall remain as-is without any revision)

E. The Jurisdiction will provide construction staking, on-site inspection, and materials, compaction, and other field testing unless otherwise indicated on the plans or stated in the special provision.

SECTION 1070 – LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1070, 1.12, DISPUTE RESOLUTION AND CONSENT TO JURISDICTION OF IOWA DISTRICT COURT OR FEDERAL DISTRICT COURT IN IOWA: Delete 1.12 in its entirety and also delete in its entirety the revision made to 1070, 1.12 under the City of Des Moines General Supplemental Specifications 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: City Engineer  

Des Moines Metropolitan Wastewater Reclamation Authority  
2000 Vandalia Road  
Des Moines, Iowa 50317  
Attention: WRA Director  

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, 2.03 WORK AREA: Add the following new C. regarding encroachment beyond the construction limits:

C. Encroachment Beyond the Construction Limits:
   1. The Contractor may negotiate with individual property owners for approval to use areas beyond the designated construction limits as sown in the Contract Documents. Any such negotiated agreement with individual property owners shall be in writing and designate the rate of payment and the basis of calculating the area on which payment shall be made. A copy of any written agreement shall be submitted to the Jurisdiction.

   2. Prior to final acceptance the Jurisdiction will contact each property owner for which there is a written agreement. The Jurisdiction may, at its discretion, delay final acceptance of the project until all property owners with a written agreement indicate to the Jurisdiction that the Contractor has satisfied the terms and conditions of the agreement.

   3. If the Contractor’s activities extend beyond the designated construction limits and there is no written agreement, such activities shall be considered an encroachment. In the event of an encroachment, the Jurisdiction will notify the Contractor to reach agreement with the affected property owner regarding damages or compensation as the result of the encroachment. The Contractor will be provided a reasonable time to reach agreement.

   4. In the event the Contractor is unable, or unwilling, to reach agreement with a property owner on which an encroachment by the Contractor occurred, the Jurisdiction will negotiate a settlement of compensation relating to the
encroachment including compensation for additional temporary easement, crop damages and other appropriate compensation. The Jurisdiction will make its best efforts to limit the payment for encroachment to a rate no greater than the original easement compensation rate.

5. In the event the Jurisdiction is required to compensate a property owner for an encroachment by the Contractor, the amount paid by the Jurisdiction to a property owner for resolution of an encroachment shall be deducted from the compensation due the Contractor.

6. The Jurisdiction will make available information on the rate of easement compensation for each property owner. Such information will be made available upon request during the bidding phase and during the construction phase of the project.

1070, 3.02 INSURANCE REQUIREMENTS: Add the following at the end of A:

For purposes under 1070, 3.02 - 3.09 inclusive only, “Jurisdiction” shall be defined as “Des Moines Metropolitan Wastewater Reclamation Authority and the City of Des Moines”, and all references to “Jurisdiction” shall be replaced with “Des Moines Metropolitan Wastewater Reclamation Authority and the City of Des Moines”.

SECTION 3010 – TRENCH AND BACKFILL

3010, 1.08 MEASUREMENT FOR PAYMENT, B. ROCK EXCAVATION: Delete in its entirety.

3010, 1.08 MEASUREMENT FOR PAYMENT, C. TRENCH FOUNDATION: Add new subsections 3010, 1.08 (C)(4)(a) and (b) as follows:

4. Stabilizing material over-excavation and trench bottom stabilization:

   a. Stabilizing material will be authorized only if the Contractor provides a dewatering operation in accordance with the requirements of Section 3010 3.05. Stabilizing material will not be authorized when only localized dewatering is used at the location of the pipe laying unless prior to such dewatering it is approved in writing by the Engineer.

   b. No adjustment of unit price for stabilizing material will be negotiated regardless of quantity of stabilizing material used on the project.

3010, 2.01 MATERIALS EXCAVATED FROM A TRENCH, A. Standard Trench Excavation: Delete in its entirety and replace with the following:

   A. Standard Trench Excavation: All materials excavated during trench excavation, except over-excavation.

3010, 2.01 MATERIALS EXCAVATED FROM A TRENCH, B. Rock Excavation: Delete B. Rock Excavation in its entirety.