

SPIRIT LAKE FISH HATCHERY
INTAKE IMPROVEMENTS REBID
DICKINSON COUNTY, IOWA
PROJECT NUMBER: 19-01-30-08

Date 11, 2021


This Addendum is issued to modify, explain or correct the original Drawings and Specifications, and is hereby made a part of the Contract Documents. Please attach this Addendum to the Project Manual in your possession. Insert the number and issue date of this Addendum in the blank space provided on the Proposal Form.

Specifications:

- A. The following specification chapters were inadvertently left out of the Project Manual:
 - 01 3000 Administrative Requirements
 - 01 4000 Quality Requirements
 - 01 7800 Closeout Submittals
 - 22 1116 Ductile Iron Pipe
 - 44 4010 Intake Screen System

HR Green, Inc.
Project No. 170075.01

Spirit Lake Fish Hatchery Intake Improvements - Rebid
State of Iowa

 <p>MARK A. HARDIE 14057</p> <p>LICENSED PROFESSIONAL ENGINEER IOWA</p>	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p> <p><i>Mark A. Hardie</i> _____ MARK A. HARDIE, P.E.</p> <p>License No. 14057</p> <p>My renewal date is December 31, 2022</p> <p>Pages or sheets covered by this seal: Divisions 1, 22, and 44</p> <p>_____ _____</p>
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**SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals for Review, Information, and Project Closeout.
- B. Number of Copies of Submittals.
- C. Submittal Procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit for review according to the procedures and purposes described herein.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. Required Submittal Quality
 - 1. Organization
 - a. Cover Labeling
 - 1) Supplier name, address, and telephone number.
 - 2) Supplier's designated Project Number.
 - 3) Engineer's designated Project Name, Job Number, and Location.
 - 4) Engineer's firm name and location
 - 5) General contractors name and location
 - 6) Specification Section(s) applicable to submittal contents.
 - b. Contents
 - 1) Cover sheet (same as Exterior Cover requirements) with at least a 4" x 4" blank space for Engineers Review Stamp.
 - 2) Table of Contents for all major equipment/devices/components/descriptions specified.
 - 3) Notification of all exceptions taken to the specifications.
 - 4) Order of Contents -- must be the same as order described in the applicable specification sections.
 - 5) Tabs separating each major equipment division.
 - 2. Identification of Pertinent Information
 - a. Provide Bill of Materials to indicate (at minimum) series, model number, and manufacturer.
 - b. On catalog cut sheets:
 - 1) Identify series and complete model number proposed.
 - 2) Identify information pertinent to proposed model and conformance to specifications by arrow, underline, circular enclosure.
 - 3) Minimize non-specific information that does not indicate conformance or cross out non-pertinent information.
 - c. On performance data/curves etc. clearly identify pertinent information (or cross out non-pertinent) data.
 - d. On all documentation provided, illustrate exceptions to the contract documents.
 - 3. Legible Quality
 - a. Font size no less than 10; minimum character height no less than 1/16".

- b. No faxes accepted.
- c. No copies of catalog cuts accepted where information is skewed off page or non-linear.
- d. Basic information to be all type-written; only identification of pertinent information may be hand written.

3.02 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Engineer's knowledge as contract administrator or for Owner.

3.03 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in conformance to requirements of Section 01 7800 - Closeout Submittals:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.04 NUMBER OF COPIES OF SUBMITTALS

- A. Submit two (2) copies for Owner's use plus the number required for return to the Contractor, of manufacturer's literature containing detailed specifications and performance data, or shop drawings fully describing the items showing fabrication, layout, setting or erection details, including erection plan and details as required.
- B. Documents for Information: Submit [] copies.
- C. Documents for Information: Submit one copy.
- D. Documents for Project Closeout: Make one reproduction of submittal originally reviewed.

3.05 SUBMITTAL PROCEDURES

- A. General Requirements:
- B. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
 - 2. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- C. Transmit each submittal electronically with a copy of approved submittal form.
- D. Transmit each submittal with Contractor's standard submittal form.
- E. Submittal number shall be in reference to Engineer's specification section. If there are multiple submittals to a singular specification section add a hyphen followed by a number. Re-submittals to have original number with an alphabetic suffix.
 - 1. Examples:

- a. Two submittals (from same specification section) for Project Review: 16425-1 & 16425-2; second submittal (after initial review was rejected): 16425-2-A.
- F. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
- G. Apply Contractor's standard certification stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without this certification will be returned without review.
- H. Schedule submittals to expedite the Project, and deliver. Coordinate submission of related items.
- I. Coordinate submittals with other submittals, related activities, sequential activities and overall performance of the Work.
- J. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- K. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- L. Provide space for Contractor and Engineer review stamps.
- M. Revise and submit submittals as required, identify all changes made since previous submittal.
- N. When revised for resubmission, identify all changes made since previous submission.
- O. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.
- P. Clearly identify on the transmittal sheet if the submittal represents "Or Equal" items or substitute items. If the submittal is a substitute, the substitution must result in a decrease in overall cost or result in saving construction time.
- Q. Contractor to investigate and evaluate for items with long lead times or critical path to execution of the contract, and to coordinate at least these items' submittal groupings with the Engineer. The Engineer accepts no burden for project delays where additional submittal cycles are required to ascertain conformance and intent to the contract documents.
- R. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, give written notice thereof at least 7 calendar days prior to release for manufacture.
- S. When the shop drawings have been completed to the satisfaction of the Engineer, carry out the construction in accordance therewith and make no further changes therein except upon written instructions from the Engineer.

3.06 ENGINEER'S REVIEW RESPONSIBILITIES, PROCEDURES AND DEFINITIONS

- A. General
 - 1. Review of shop drawings, data, and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
 - a. As permitting any departure from the Contract requirements;
 - b. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;
 - c. As approving departures from details furnished by the Engineer, except as otherwise provided herein;
 - d. As approving substitutions to specified products or manufacturers.
 - 2. The Engineer does not review for verification of quantities, weights, dimensions, or means and methods.

3. Partial review status will not be given to a submittal. Entire submittal shall be either acceptable or the entire submittal must be resubmitted with corrections as clarified by status definitions below.
 4. Submittals will be reviewed in order received unless Contractor requests a revised order of review, in writing. All submittals shall be submitted sufficiently in advance of construction requirements to provide no less than 21 calendar days for review from the time the Engineer receives them. No less than 30 calendar days will be required for major equipment that requires review by more than one engineering discipline.
- B. All submittals that have been reviewed by Engineer will have Engineer's Review Stamp affixed, initialed and dated, indicating Engineer's review action. No submittals shall be used for construction unless they bear the initialed Engineer's Review Stamp. Possible review actions by Engineer are:
1. REVIEWED. Engineer's review did not detect deviations from conformance and intent of the Contract Documents.
 2. REVIEWED AS NOTED. Engineer's review did not detect major deviations from conformance and intent of the contract documents; minor discrepancies and/or deficiencies are noted. Corrected copies are not required; however, the item(s) to be furnished are to be furnished in accordance with the Engineer's comments. If the Contractor elects to take exception to any comments, then corrected copies (with supplemental explanatory data) are to be re-submitted to the Engineer similar to a Revise and Resubmit status process.
 3. REVISE AND RESUBMIT. Engineer's review found major discrepancies and/or deficiencies, and corrected submittals (in their entirety) are required to determine conformance and intent to the contract documents.
 4. REJECTED. Engineer's review concluded that the item(s) submitted do not meet the requirements of the "Or Equal" allowance, or a "Substitution" has been provided without proper approval process. An additional submittal cycle is required containing suitable items to determine conformance and intent of the contract documents.
 5. HOLD. Submittal may be put on "hold" allowing the Contractor an opportunity to provide supplemental data (same number of copies required) to demonstrate conformance and thus avoid a re-submittal. The Engineer will allow 14 calendar days for receipt of corrected/additional data response, after notification to Contractor. This delay does not impact the Engineer's allowance of days to review submitted documents. If no acceptable receipt of response is received within the allowed time, the submittals will be returned as a "Revise and Resubmit" or "Rejected" status, as determined by the Engineer.
 - a. Notification of "hold" status shall be initiated (and recorded) by a transmittal letter (to the general contractor) which includes the "hold" status denoted and a copy of the contractor's original transmittal attached.
 6. REVIEW NOT REQUIRED BY CONTRACT -- The Engineer's review found that the information submitted is not necessary to evaluate conformance and intent with contract documents.

3.07 RE-SUBMITTALS

- A. Re-submittals will be handled in the same manner as first submittals. On re-submittals, direct specific attention, in writing on the transmittal letter and on re-submitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. Make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.
- B. Engineer will review all initial information for each submittal. Contractor shall reimburse Owner for the Engineer's charges for review of additional re-submittals. Contractor will be charged for review of all re-submittals over 20% of the initial submittals.

1. EXAMPLE: If the Contractor has a total of 50 initial submittals, there will be no charge for reviewing a combined total of 60 submittals and re-submittals. There will be a charge to review all submittals and re-submittals in excess of 60.
- C. The need for more than one re-submittal or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension of the contract time unless delay of the Work is the direct result of a change in the Work authorized by a Change Order or failure of Engineer to review and return any submittal to Contractor within the specified review period.
- D. An assigned review status of REVISE AND RESUBMIT or REJECTED requires the original full number of submittals to be resubmitted free of the Engineers previous correction marks and review status stamp. The Engineer reserves the right to retain the same number of copies for each review cycle.

END OF SECTION

**SECTION 01 4000
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Field Samples.
- B. References and standards.
- C. Control of Installation.
- D. Tolerances.
- E. Testing Services.
- F. Control of installation.
- G. Tolerances.
- H. Manufacturers' Field Services.

1.02 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids or date of Owner-Contractor Agreement when there are no bids.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.03 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Engineer.

1.04 TESTING SERVICES

- A. Contractor shall employ and pay for services of an independent testing agency to perform tests and other testing and inspection specified in individual specification sections and as required by the Engineer.
- B. Owner may choose to have Engineer perform certain inspection and testing activities in addition to those specified as required by the Contractor. Payment for initial Owner/Engineer inspection and testing will be by Owner. Payment for Owner/Engineer retesting required because of non-conformance to specified requirements will be charged to the Contractor by deducting inspection and testing charges from the Contract Sum.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- F. Have Work performed by persons qualified to produce required and specified quality.
- G. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 - 2. Perform inspections, sampling, testing, and other services specified in individual specification sections and as required by the Engineer.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Engineer.
 - 6. Submit reports of all tests/inspections specified to Engineer, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs, equipment, tools, storage, and assistance as requested.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Make arrangements with testing agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 7. Perform interior TV inspection on entire intake line including new intake screen. Assume intake will be totally submerged in water. Provide proper lighting intensity to provide a clear, in-focus picture of the entire inside periphery of the intake main. Use a footage counter device to measure distance travelled by camera that is accurate to plus or minus 2 feet in 100 feet. Inspect the interior using a color closed circuit television camera (CCTV) and document the inspection on a flash drive or thru a secure website such as an FTP site. Provide the following items at the end of the video inspection:
 - a. Inspection logs.
 - b. Video recordings.
 - c. Still photos of entire periphery of new screen and all adjacent connections.
 - d. Still photos of entire periphery of connection of new fittings to existing intake pipe.
 8. Perform exterior inspection of intake screen. Provide video or still photos of installed screen placed on lake bottom. Provide proper lighting intensity to provide a clear, in-focus picture of the entire intake screen, concrete dead weight, adjacent fittings, and connection to existing main. Pictures shall be taken on a calm day with high lake clarity to allow high quality pictures.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Engineer.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.
- G. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Engineer. Payment for re-testing will be made by the Contractor.

3.04 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given by Manufacturer's Service Representatives to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit report in duplicate within 30 days of observation to Engineer for review.

- D. Contractor shall provide qualified Service Representative(s), as necessary to:
 - 1. Instruct the Contractor's personnel in the installation, startup, and testing of equipment.
 - 2. Inspect equipment after it is installed to assure that all details of installation are correct and that equipment is prepared for operation in accordance with manufacturer's instructions and recommendations.
 - 3. Check connections to equipment and adjust, or supervise adjustment of, control and indicating devices after equipment has been installed and connected.
 - 4. Fully instruct Owner's operating personnel in operation and maintenance of equipment.
 - 5. Provide Engineer with duplicate copies of final alignment and clearance measurements on all rotating or reciprocating equipment. Measurements shall clearly identify each piece of equipment.
 - 6. Supervise preliminary operation of equipment and necessary adjustments.
- E. Presence of Service Representative will in no way relieve Contractor of any responsibility assumed under Agreement.
- F. Work and abilities of Service Representative shall be subject to review of Engineer. If Engineer determines that any Service Representative is not properly qualified, Contractor shall replace Service Representative upon written notification by Engineer.
- G. Contractor shall provide continuity in assignment of Service Representative to Work. In event substitution of Service Representative is made which is not at request of Engineer, substitute's time for "familiarization" shall be at Contractor's expense.
- H. Execute manufacturer's certificate of proper installation, found at the end of this section.

I. MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

I. OWNER: _____ **EQPT. SERIAL NO.:** _____

I. EQPT. TAG NO.: _____ **EQPT./SYSTEM:** _____

I. PROJECT NO.: _____ **SPEC. SECTION:** _____

I. I HEREBY CERTIFY THAT THE ABOVE-REFERENCED EQUIPMENT/SYSTEM HAS BEEN:

I. (CHECK APPLICABLE)

- 1. ____ Installed in accordance with Manufacturer's recommendations.
- 1. ____ Inspected, checked, and adjusted.
- 1. ____ Serviced with proper initial lubricants.
- 1. ____ Electrical and mechanical connections meet quality and safety standards.
- 1. ____ All applicable safety equipment has been properly installed.
- 1. ____ System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer.)

I. COMMENTS: _____

I. I, THE UNDERSIGNED MANUFACTURER'S REPRESENTATIVE, HEREBY CERTIFY THAT I AM (I) A DULY AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER, (II) EMPOWERED BY THE MANUFACTURER TO INSPECT, APPROVE, AND OPERATE HIS EQUIPMENT AND (III) AUTHORIZED TO MAKE RECOMMENDATIONS REQUIRED TO ASSURE THAT THE EQUIPMENT FURNISHED BY THE MANUFACTURER IS COMPLETE AND OPERATIONAL, EXCEPT AS MAY BE OTHERWISE INDICATED HEREIN. I FURTHER CERTIFY THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND ACCURATE.

I. DATE: _____

I. MANUFACTURER: _____

I. BY MANUFACTURER'S AUTHORIZED REPRESENTATIVE: _____

1. _____ (Authorized Signature)

END OF SECTION

**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Instruction of Owner's Personnel.
- D. Warranties and Bonds.

1.02 SUBMITTALS

- A. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
 - 2. Submit two (2) copies of preliminary draft hard copies (paper) or proposed formats and outlines of contents before start of Work. Submit one (1) copy of preliminary electronic format before start of work. Engineer will review draft and return one copy with comments.
 - 3. Submit three copies of approved data in final form prior to final inspection or acceptance.
 - 4. Submit five (5) electronic and paper copies of approved data in final form prior to final inspection or acceptance.
- B. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store record documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of foundations in relation to finish main floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.

5. Details not on original Contract drawings.

E. Submit documents to Engineer prior to claim for final Application for Payment.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data for particular installation. Organize in consistent format under separate headings for different procedures. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- E. Copy of each warranty, Bond, and service contract issued. Provide information sheet for Owner's personnel, giving proper procedures in event of failure and instances which might affect validity of warranties or Bonds.

3.03 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.
- B. Manual for equipment and systems shall constitute basis of instruction. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.
- C. Any presentation or training materials shall be provided to the OWNER in format presented (i.e. Microsoft format, version 2007 or less).

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- E. Provide servicing and lubrication schedule, and list of lubricants required.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include sequence of operation by controls manufacturer.
- H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance. Include predicted life of parts subject to wear and list of items recommended to be stocked as spare parts.

- I. Provide control diagrams by controls manufacturer as installed.
- J. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- K. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- M. Content for each electrical and electronic system, as appropriate.
 - 1. Description of system and component parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and commercial number of replacement parts
 - 2. Circuit directories of panel boards:
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
 - 3. As-installed color coded wiring diagrams.
 - 4. Operating procedures:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 - 5. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "trouble-shooting".
 - c. Disassembly, repair, and assembly.
 - d. Adjustment and checking.
 - 6. Manufacturer's printed operating and maintenance instructions.
 - 7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- N. Prepare and include additional data when need for such data becomes apparent during instruction of Owner's personnel.
- O. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS (HARD COPIES - PAPER)

- A. Prepare instructions and data by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this section.
 - 3. Skilled as technical writers to extent required to communicate essential data.
 - 4. Skilled as draftsmen competent to prepare required drawings.
- B. Prepare data in the form of an instructional manual for use by Owner's personnel.
- C. Format: 8-1/2 x 11 inch paper with 20 lb. minimum, white, for typed pages.
- D. Binders: Commercial quality, 8-1/2 by 11 inch binders with durable and cleanable plastic covers; 3 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
 - 1. Label spine of binder with identity of general subject matter covered in manual.
- E. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify: title of Project, identity of separate structure as applicable, and identity of general subject matter covered in manual.
- F. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

- G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- H. Contents: Neatly typewritten table of contents for each volume, arranged in systematic order with consecutive page numbers.
 - 1. Contractor, name of responsible principal, address, and telephone number.
 - 2. List of each product required to be included, indexed to content of volume.
 - 3. List, with each product, name, address, and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify area of responsibility of each.
 - d. Local source of supply for parts and replacement and list of recommended spare parts.
 - 4. Identify each product by product name and other identifying symbols as set forth in Contract documents, including nameplate information and shop order numbers for each item of equipment furnished.
 - 5. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
 - 6. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.
- I. Provide 30 days prior to actual start-up.

3.06 OPERATION AND MAINTENANCE MANUALS (ELECTRONIC)

- A. Prepare instructions and data by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this section.
 - 3. Skilled as technical writers to extent required to communicate essential data.
 - 4. Skilled as draftsmen competent to prepare required drawings.
- B. Prepare data in the form of an instructional manual for use by Owner's personnel.
- C. Format: Electronic copy shall be delivered on a unique CD-ROM in Adobe Acrobat's Portable Document Format (PDF) and Microsoft Word versions. The PDF file(s) shall be fully indexed using the table of contents, searchable with thumbnails generated. The Microsoft Word files shall be easily found using unique file naming conventions with reference list.
- D. Cover: Identify each CD-ROM with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify: title of Project, identity of separate structure as applicable, and identity of general subject matter covered in manual.
 - 1. Contents: Neatly typewritten table of contents for each volume, arranged in systematic order.
 - 2. List of each product required to be included, indexed to content of volume.
 - 3. List, with each product, name, address, and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify area of responsibility of each.
 - d. Local source of supply for parts and replacement and list of recommended spare parts.
 - 4. Identify each product by product name and other identifying symbols as set forth in Contract Documents, including nameplate information and shop order numbers for each item of equipment furnished.

3.07 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of

work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Completion is determined.

- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

**SECTION 22 1116
DUCTILE IRON PIPE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Detailed requirements for various ductile iron piping products. Some products specified in this section may not be required for this Contract. Piping system Specification section(s) and Drawings identify particular ductile iron piping products to be provided under this Contract.

1.02 REFERENCES

- A. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- B. ASTM B1000 - Standard Practices for Casting Preparation and Test Procedure of Porcelain Enamel-Lined Pipe, Fittings, and Valves for Use in the Municipal Wastewater, Sewage, and Water Treatment Industry.
- C. ASTM C283 - Standard Test Methods for Resistance of Porcelain Enameled Utensils to Boiling Acid.
- D. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- E. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- F. AWWA C105 - Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.
- G. AWWA C110 - Ductile-Iron and Gray-Iron Fittings, 3 in. Through 48 in., for Water and Other Liquids.
- H. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Pressure Pipe and Fittings.
- I. AWWA C115 - Flanged Ductile-Iron Pipe with Threaded Flanges.
- J. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
- K. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
- L. AWWA C153 - Ductile-Iron Compact Fittings, 3 inch Through 16 inch, for Water or Other Liquids.
- M. AWWA C606 - Grooved and Shouldered Joints.
- N. ANSI A21.14 - Ductile-Iron Fittings 3-in. Through 24-in., for Gas.
- O. ANSI A21.52 - Ductile-Iron Pipe, Centrifugally Cast, In Metal Molds or Sand Lined Molds for Gas.
- P. ANSI B18.2.1 - Square and Hex Bolts and Screws Inch Series.
- Q. ANSI B18.2.2 - Square and Hex Nuts.
- R. AWS A5.6 - Specification for Covered Copper and Copper Alloy Arc Welding Electrodes.
- S. AWS A5.15 - Specification for Welding Electrodes and Rods for Cast Iron.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 3000.
- B. Product Data: Include Manufacturer's specifications, catalog cuts, and literature:
 - 1. Pipe.
 - 2. Outside coatings.
 - 3. Inside linings.
 - 4. Flanged joints.
 - 5. Victaulic joints.

6. Standard fittings.
7. Special fittings.
- C. Submit product data and coating system information specified above in one complete submittal.
- D. A letter from the pipe and fitting manufacturers stating the product(s) are supplied new from the manufacturer and all linings required by the specifications for the pipe and fittings are supplied by the manufacturer and are covered by the manufacturer's warranty.

1.04 WARRANTY

- A. Full warranty against defects in materials and workmanship for two years after final acceptance by Owner, including all parts, labor, and expenses.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Minimum Thickness Class:
 1. Flanged Joint Pipe: Thickness Class 53.
 2. Grooved Joint Pipe:
 - a. Pipe Size 20 inch: Thickness Class 53.

2.02 INSIDE LINING

- A. Cement Mortar: Cement lining and seal coat shall be in accordance with AWWA C104.

2.03 JOINTS

- A. Joint Type:
 1. Grooved.
 2. Flanged.
- B. Flanged Joints:
 1. Flanged pipe for liquid and air service shall be in accordance with AWWA C115.
 2. Fabrication of flanged pipe, including assembly of flange on pipe shall be performed by pipe manufacturer in accordance with AWWA C115. Assembly of flange on pipe outside of manufacturer's shop is unacceptable.
 3. Flange material for flanged pipe shall be ductile iron. Flanged pipe with gray iron flanges is not acceptable.
 4. Gasket material shall be suitable for service and maximum operating temperature of piping system as specified in Piping System Specification Section 40 0620. Torque requirement of gaskets shall be less than torque rating of flange, bolts, and nuts.
 5. Gaskets shall be full face, 1/8 inch thick, and conform to dimensions shown in Appendices to AWWA C110 and C115.
 6. Bolts:
 - a. Size, length, and number as shown in AWWA C110 and C115.
 - b. Material: 316 Stainless Steel.
 - c. Dimensions: ANSI B18.2.1, heavy hex.
 7. Nuts:
 - a. Size, length, and number as shown in AWWA C110 and C115.
 - b. Material: 316 Stainless Steel.
 - c. Dimensions: ANSI B18.2.2, heavy hex.
- C. Grooved Joints:
 1. AWWA C606.
 2. Rigid joint. Pipe ends radius cut grooved to rigid groove specifications.
 3. Grooved couplings shall be Victaulic Style 31, Style 307, or equal.
 4. Grooved joint adapter flanges shall be Victaulic Styles 341 or equal.
 5. Gasket Material:

- a. Suitable for service and maximum operating temperature of piping system as specified in Piping System Specification Section 40 0620.
- b. Selected by grooved coupling manufacturer.
- 6. Coatings for grooved couplings and adapter flanges shall be same product as coatings for pipe.
- 7. All grooved couplings, adapter flanges, fittings and valves shall be manufactured by the same manufacturer.

2.04 FITTINGS

- A. Pressure rating shall be 250 psi, minimum.
- B. Standard fittings for liquid and air service shall be as follows:
 - 1. Flanged Joint Fittings:
 - a. Ductile iron.
 - b. AWWA C110.
 - c. Flange dimensions in accordance with AWWA C115.
 - 2. Grooved Joint Fittings:
 - a. Ductile iron.
 - b. AWWA C110 except end preparation and wall thickness.
 - c. End preparation in accordance with AWWA C606, rigid radius groove.
 - d. Minimum wall thickness in accordance with AWWA C153.
- C. Special fittings for liquid and air service, not included in AWWA standards, shall be manufacturer's standard, based on AWWA design principles, and in compliance with applicable requirements of AWWA standards.

2.05 OUTSIDE COATING

- A. Buried piping shall be provided with asphaltic coating approximately 1 mil thick in accordance with applicable AWWA and ANSI standards.

PART 3 EXECUTION

3.01 INSTALLATION & ASSEMBLY

- A. Grooved joint in accordance with manufacturer's written instructions.
- B. Flanged joint in accordance with Piping System Specification Section 40 0620, flanged pipe manufacturer's written instructions, and gasket manufacturer's written instructions.

END OF SECTION

**SECTION 44 4010
INTAKE SCREEN SYSTEM**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Intake screen system and appurtenances for the supply of water from Spirit Lake.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Water Works Association (AWWA) C115 - Flanged Ductile-Iron Pipe with Threaded Flanges.
- D. American Water Works Association (AWWA) C606 - Grooved and Shouldered Joints.

1.03 SUBMITTALS

- A. See Section 01 3000 – Administrative Requirements for submittal procedures.
- B. Shop Drawings Showing:
 - 1. Strength calculations for screen design.
 - 2. Arrangement, dimensions, and materials.
 - 3. Equipment performance data and operating instructions.
 - 4. Manufacturer's catalog data, marked to indicate materials being furnished.
- C. Operation and maintenance manuals as described in Section 01 7800.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 WARRANTY

- A. Full warranty against defects in materials and workmanship for two years after the date of delivery, including all parts, labor, and expenses; see Section 01 6000.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to site under provisions of Section 01 6000.
- B. Clearly mark to identify partial deliveries of component parts to facilitate assembly.
- C. Store products immediately on delivery and protect until installed. Store according to manufacturer's instructions with seals and labels intact and legible.
- D. Provide platforms, blocking, skids, or coverings required to protect products from deterioration or damage.
- E. Arrange storage in a manner to provide easy access for inspection.
- F. Provide equipment and personnel necessary to handle products by methods to prevent damage to products or packaging.
- G. Handle products by methods to prevent bending or over-stressing.

1.06 SERVICE REPRESENTATIVE

- A. Provide qualified service representative to perform functions described in Section 01 4000 and to sign the Certification of Proper Installation attached to Section 01 4000.
- B. Include necessary trips by the manufacturer's representative to provide one 8-hour work day on-site (travel time not included) for startup and training of operations personnel. Training may be video taped by Owner.
- C. Additional trips required by the Contractor before or after final startup and training shall not be charged to the Owner.

PART 2 PRODUCTS

2.01 GENERAL

- A. The intake screen shall be of all-welded continuous slot Vee-Wire construction to provide maximum open area commensurate with the strength requirements identified.
- B. The inlet slots shall widen inwardly from the screen surface so as to minimize the chance of debris entrapment in the screen openings. This includes low headloss flow field control.
- C. Screen inflow velocity shall be determined using inviscid flow field modeling.
- D. All welding of the screen assembly shall be performed by welders certified to ASME Section IX.
- E. See schedule below for number of screens, design flow, screen material, operational hydrostatic pressure, and air/chemical feed line connections.
- F. Screen shall be compatible with compressed air backwash system.
- G. Acceptable Manufacturers:
 - 1. Johnson Screens, Bilfinger Water Technologies.
 - 2. Engineer approved equal.

2.02 INTAKE SCREEN

- A. At maximum flow, the maximum slot velocity shall be limited to 0.5 feet per second and the maximum headloss shall not exceed 0.1 pounds per square inch.
- B. The screen shall be designed with minimum collapse pressure of 5 psi.
- C. Design stress when determining the strength shall be no more than 90% of the published yield strength of the material used.
- D. End plates shall be minimum 0.105 inches thick.
- E. The surface wire, support beams, and stiffener structure shall be an all-welded matrix designed to provide the specified strength with minimal interference with the screen's flow-through pattern.
- F. All structural butt welds shall be full penetration; structural fillet weld size shall be the thickness of the thinner component (at minimum).
- G. Intake slot size shall be controlled and continuously monitored during the manufacturing process.
- H. No slot opening in the assembly shall exceed the designated slot opening by more than 0.003 inches.
- I. Outlet pipe shall be minimum 3/16-inch thick and consist of flanged connection as summarized in the schedule below.
 - 1. Flanged Joints:
 - a. Pipe and flange dimensions shall be in accordance with AWWA C115.
 - b. Flange material shall be same material as screen.
 - c. Bolts and Nuts:
 - 1) Size, length, and number as shown in AWWA C110 and C115.
 - 2) Material: Stainless Steel.
 - 3) Heavy Hex bolts and nuts with dimensions in accordance with ANSI B18.2.1 and B18.2.2.
- J. Intake screen shall be provided with factory-furnished pipe and connection flange for air supply and chemical injections as shown the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's written instructions and as shown on the plans and in accordance with Section 46 0500 - Equipment Installation.

3.02 SCHEDULE

- A. Intake Screen No. 1
 - 1. Design Flow: 2,400 gpm.
 - 2. Screen Style: Tee
 - 3. Screen Material: Copper Alloy
 - 4. Screen Slot Size: 0.125 inches.
 - 5. Installation Depth: 5-15 feet.
 - 6. Screen outlet connection: 20" Flanged, with stainless steel bolts
 - 7. Air Line Connections:
 - a. Air Backwash: 1 connection, 2" size. Provide blind flange at 2" air connection port.

END OF SECTION