

DCS

INSTRUCTIONS TO BIDDERS

- All public bids must be submitted to Purchasing in sealed envelopes which clearly identify the bid project number and the title of the service/product being bid. Any other writing on the envelope, with the exception of company logos, etc. may result in bids being misplaced and otherwise rejected.
- Unsigned bids may be rejected as informal.
- Questions regarding ambiguities or the propriety of these specifications should be addressed, in writing, to the Buyer, prior to the formal bid opening. Such questions will not be entertained after said bid opening.
- Where a Bid Security is indicated on the face of the proposal, the security must be attached to the Proposal as an earnest of good faith. In this case, any bid without a bid security may be rejected as informal.

The Purchasing Manager reserves the right to reject any and all bids, to waive any informality in the bids and to make awards in the best interest of Monroe County.

NON-COLLUSION BIDDING CERTIFICATION

By submission of this bid, each bidder and each person signing on behalf of any bidder, certifies and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

1. The prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.
2. Unless otherwise required by law, the prices, which have been quoted in its bid, have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.
3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit a bid for the purpose of restricting competition.

**CERTIFICATION REGARDING
DEBARMENT, SUSPENSION AND RESPONSIBILITY**

The undersigned certified, to the best of his/her knowledge and belief, that the Contractor and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded by any Federal department or agency;
2. Have not within a three-year period preceding this transaction/application/proposal/contract/agreement been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 2 of this certification and;
4. Have not within a three-year period preceding this transaction/application/proposal/contract/agreement had one or more public transactions (Federal, State or local) terminated for cause or default.

Date: _____

[Print Name of Contractor]

By: _____

[Signature]

[Print Name]

[Print Title/Office]

VENDOR MUST COMPLETE THIS FORM AND SUBMIT WITH BID.

TERMS AND CONDITIONS

BID ITEM: CHURCHVILLE PUMP STATION BYPASS CONNECTION IMPROVEMENTS

FOR: Department of Environmental Services

DEPARTMENT CONTACT: Kevin Quinn, (585) 753-7652

DUPLICATE COPIES: **PLEASE SUBMIT YOUR BID IN DUPLICATE; THE ORIGINAL AND ONE (1) COPY.**

BID INFORMATION: At the time of bid, the bidder shall supply detailed specifications covering the item(s) contained herein and shall clearly indicate any areas in which item or items offered do not fully comply with the specifications contained herein.

SUBMITTAL OF FORMAL PROPOSAL: Bid proposal must be legible and submitted in the original form, bearing an original signature. **EMAILS AND FACSIMILES ARE NOT ACCEPTABLE.**

Bidders must submit proof that they have obtained the required **Workers' Compensation** and **disability benefits** coverage or proof that they are exempt if awarded the contract.

SPECIFICATION ALTERATIONS: Specifications will be construed to be complete and be considered the entire description of the goods or services upon which Monroe County is now seeking bids. **Only formal written addenda can materially alter this set of specifications.** No verbal statement made by a Monroe County employee or anyone else is binding nor shall such statement be considered an official part of this public bid proposal.

NYS WAGE RATES: Pursuant to the provision of Section 220-A of the New York State Labor Law, as amended, the Contractor (and related Subcontractors) will be obligated to pay all workers in the covered classes only the applicable prevailing wage rates and supplements. The minimum hourly wage rate to be paid the various classes of labor performing work under this contract shall be in accordance with schedules which have been established or may hereafter be established or increased, by the New York State Department of Labor during the contract term. **Refer to NYS Wage Schedule PRC# 2012005492 developed for this project.**

BRAND REFERENCE: References to a manufacturer's product by brand name or number are done solely to establish the minimum quality and performance characteristics required. Bidders may submit bids on alternates, but must attach two (2) copies of manufacturer specifications for any alternate at the time of the bid. Further, the bidder must demonstrate that the alternate proposed has a sufficient operating track record to show the equipment will perform per the specified brand. The acceptance of a bidder's alternate rests solely with Monroe County.

QUALIFIED BIDDER:

Each bidder must be prepared to present satisfactory proof of his capacity and ability to perform this contract. Such proof may include, but is not limited to, an inspection of the bidder's facilities and equipment, financial statements, references and performance of similar contracts. **The Purchasing Manager reserves the right to reject any bid where the bidder cannot satisfy the County as to their ability to perform. Monroe County reserves the right to reject any and all bids** if the Monroe County Purchasing Manager deems said action to be in the best interest of Monroe County.

METHOD OF AWARD:

Monroe County intends to award one or more contract(s) to the lowest responsive and responsible bidder(s) based on the **LUMP SUM TOTAL**. **The County reserves the right to reject any and all bids** if the Purchasing Manager deems said action to be in the best interest of the County.

**PURCHASE ORDER
ISSUANCE:**

Delivery of services may be directed by the receipt of a Purchase Order only. **Items that are not part of this bid will not be paid for by Monroe County.** Contractor must be prepared to submit shop drawings for project within ten (10) days ARO.

As to all purchase orders issued by Monroe County, exceptions may only be authorized, in writing, by the Purchasing Manager or her authorized agent prior to delivery.

**WARRANTY/
GUARANTEE:**

All warranties by manufacturer shall apply. Bidder shall, as part of its proposal, furnish its warranty/guarantee for all goods/services to be furnished hereunder. As a minimum, Bidder shall warrant all goods/services for a period as stated herein. Bidder shall be obligated to repair or replace all defects in material or workmanship which are discovered or exist during said period. All labor, parts and transportation shall be at Bidder's expense.

**PERFORMANCE AND
LABOR & MATERIAL
BONDS:**

The successful bidder shall procure, execute and deliver to the Owner and maintain at his own cost and expense a Performance and Labor and Material Bonds in the amount of the contract, of surety company approved by the Owner and authorized to do business in the State of New York as a surety. The security can be in the form of a Certified Check, Bank Draft, Standard Form of Irrevocable Letter of Credit or Performance Bond.

**SECURITIES AND
INSURANCE:**

Any Certificate of Insurance, Bonds or other forms of security required by this bid are to be submitted to the Purchasing Manager no later than ten (10) normal business days following the date of notification of award. Documents must be received by the close of business, 5:00 PM on that day.

**COMPLIANCE WITH
THE LAW:**

The Contractor agrees to procure all necessary licenses and permits. The Contractor shall comply with all laws, rules and regulations pertaining to the payment of wages and all other matters applicable to the work performed under this contract.

SUBCONTRACT:

The Contractor **shall not subcontract** any work **without** first obtaining the **written consent of the Monroe County Purchasing Manager**.

INDEMNIFICATION:

The Contractor agrees to defend, indemnify and save harmless the County, its officers, agents, servants and employees from and against any and all liability, damages, costs or expenses, causes of action, suits, judgments, losses and claims of every name not described, including attorneys' fees and disbursements, brought against the County which may arise, be sustained, or occasioned directly or indirectly by any person, firm or corporation arising out of or resulting from the performance of the services by the Contractor, arising from any act, omission or negligence of the Contractor, its agents and employees, or arising from any breach or default by the Contractor under this Agreement. Nothing herein is intended to relieve the County from its own negligence or misfeasance or to assume any such liability for the County by the Contractor.

SUPPLEMENTAL CONDITIONS

A. SUPPLEMENTAL REQUIREMENTS

1. Definitions

- a. The term "Owner" means: Monroe County and the Gates-Chili-Ogden Sewer District.
- b. The term "Consultant" means the professional engineer, architect, landscape architect, or land surveyor firm so designated by the Owner whose name and address is given on the cover, or any duly authorized representative of that firm. If the Owner has not designated a Consultant, the Owner shall be deemed to be the Consultant.
- c. The term "Bidder" shall mean any party or parties submitting in proper form a Proposal to perform the work hereinafter specified to be performed. The successful Bidder selected by the Owner to perform the work hereinafter specified will thereafter be known as the "Contractor".
- d. The term "Contractor" shall mean the party or parties contracting to perform the work or his or their heirs, executors, administrators, successors, or assigns. Contract No. 1 – Plumbing shall mean specifically the Contractor that is contracted to perform the work for Contract No. 1 – Plumbing Construction.
- e. The term "Work" shall be understood to mean the furnishing of all labor, materials, equipment, and other incidentals necessary or convenient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract.
- f. The Contract Documents consist of the Bid Proposal, Instructions to Bidders, Agreement, Performance and Labor and Material Bonds, the General Terms and Conditions, the Drawings and the Supplemental and Technical Specifications, including all modifications thereof incorporated in the Documents before their execution; these form the Contract.
- g. The Owner, the Contractor and the Consultant are those mentioned as such in the Agreement. They are treated throughout the Contract Documents as if each were of singular number and masculine gender.
- h. A "subcontractor" is any company or individual who contracts with a prime contractor, or higher level subcontractor, to perform a portion of the "work", whether such "work" is performed on the Owner's construction site, or at an off-site facility. Such "work" includes repair of equipment as called for in the contract documents.
- i. A "supplier" is any company or individual who provides materials or equipment, including that fabricated to a special design, to a contractor or subcontractor, but who does not perform labor at the site.
- j. The project shall be considered "Complete" when the Owner determines that all work is complete (including all punch list items), and the Contractor has submitted the record drawings, O & M manuals, release of liens and any other documents/materials required to be submitted in other provisions of the Contract Documents.

- k. The "Consultant's certification" is the Consultant's written certification to the Owner, including the date for the start of the guarantee period.
- l. Final Payment - The final payment shall be made upon the expiration of the guarantee period, or upon the completion of any work to be performed during the guarantee period, whichever time is later.

2. Intent of Documents and Instructions

- a. The General and Technical Specifications, Drawings and any instructions as set forth herein are complementary, are intended to provide for, and include everything necessary for, the proper and orderly execution and completion of the work. Any work shown on the Drawings for which there are no particular specifications, or the omission from both Drawings and Specifications of express reference to any work which obviously was intended under the Contract, shall not excuse or relieve the Contractor or subcontractor from furnishing the same. Work or materials described in words which have a generally accepted technical or trade meaning, shall be interpreted by such customary and recognized standard meaning.
- b. Wherever the words "directed", "required", "permitted", "ordered", "designated", "prescribed", or words of like import are used in the Specifications or on the Drawings, it shall be understood that the direction, requirement, permission, order, designation, and prescription of the Consultant is intended. Similarly, the words "approved", "acceptable", "satisfactory", and words of like import shall mean approved by, acceptable to, and satisfactory to the Consultant, unless otherwise expressly stated.
- c. Written notice shall be deemed to have been given if delivered in person to the individual or to a member of the firm, or to an officer of the corporation for whom it is intended, or if delivered at or sent by first-class mail, overnight delivery, or facsimile to the last known business address.
- d. All time limits stated in the Contract Documents are of the essence.
- e. The laws of the State of New York, without regard to its conflicts of laws provisions, shall govern this Contract.

3. Modifications

- a. No oral statement of any person whatsoever shall in any manner or degree modify or otherwise affect the terms of this Contract.
- b. The results of any previous negotiation, agreement or understanding, whether oral or in writing, have been incorporated in the Contract Documents and such Documents contain the full intent of the parties.
- c. All directives to the Contractor shall be issued by the Consultant unless otherwise specified in these Contract Documents. All directives from other interested parties shall be issued through the Consultant except in the event of an emergency when the Consultant is not available. All inquiries by the Contractor shall be directed to the Consultant.

4. Conflicts and Discrepancies (Order of Precedence)

The contract documents are complementary; what is called for in one is as binding as if called for in all. If the CONTRACTOR finds a conflict or discrepancy in the contract documents, it should be called to the attention of the CONSULTANT in writing before proceeding with the work affected thereby. In resolving such conflicts and discrepancies, the documents should be given preference in the following order:

- a. Agreement
- b. Change Orders
- c. Specifications
- d. Drawings
- e. Other materials included in the bid documents (e.g. geotechnical reports)

Within the specifications, the order of precedence is as follows (note that not all elements listed are included in all contract documents):

- f. Addenda
- g. Special Conditions
- h. Special Notes
- i. Instructions to Bidders
- j. Performance and Labor and Material Bonds
- k. Supplemental Conditions
- l. Technical Specifications
- m. Standard Specifications (e.g. NYSDOT Standard Specifications)
- n. Requirements of other agencies (e.g. FAA Advisories)

With reference to the drawings, the order of precedence is as follows:

- o. Figures govern over scaled dimensions
- p. Detail drawings govern over general drawings
- q. Change order drawings govern over contract drawings
- r. Contract drawings govern over standard drawings
- s. Contract drawings govern over shop drawings

In no case shall the Contractor proceed with the work in uncertainty. Any work done by the Contractor after the discovery of any conflict or discrepancy, until authorized, shall be at the Contractor's risk and responsibility. The work is to be made complete and to the satisfaction of the Consultant notwithstanding any conflict or discrepancy in the specifications or on the drawings.

5. Record Drawings

- a. The Contractor shall perform all survey work required for the location and construction of the work and to record information necessary for completion of the record drawings. Record drawings shall show the actual location of the constructed facilities in the same manner as was shown on the bid drawings. All elevations and dimensions shown on the drawings shall be verified or corrected so as to provide a complete and accurate record of the facilities as constructed.

- b. It shall be the responsibility of the Contractor to mark each sheet of a set of Contract Drawings in red ink/pencil and record thereon in a legible manner, heretofore known as “red line” drawings, any and all approved field changes and conditions as they occur for the purpose of recording “as-built” conditions. A complete file of approved field sketches, diagrams, and other approved changes shall also be maintained and attached to the red line set of contract drawings. The red line drawings shall be reviewed by the Consultant for accuracy as often as deemed necessary by the Consultant. Errors or omissions that are identified shall be promptly corrected. The Consultant may withhold the Contractor’s progress payment request until the red line drawings have been updated by the Contractor. At the completion of the work, each sheet of the red line drawings, plus all approved field sketches and diagrams shall be certified by the Contractor as reflecting the as built conditions of the work. The Contractor shall thereafter submit to the Consultant the original red line drawings, referenced in paragraph a. above, for approval prior to release of any retainage and establishing the value of the work.

6. Preconstruction Conference

At the direction of the Consultant or the Owner, and prior to commencement of the work, the Contractor and his major subcontractors shall attend a preconstruction conference with the Consultant. The conference will include discussions on matters relative to the proper coordination of the work and maintenance of schedules and other pertinent aspects of the project.

7. On-Site Job Meetings

On-site job meetings will be held during the performance of the work of this Contract. Supervisory personnel representing the Contractor and major subcontractors that are deemed necessary at the time must attend. Meetings shall be held bi-weekly at a minimum; and may be held weekly during times of actual construction.

8. Construction Schedule

- a. Within ten (10) days of the date of the Notice of Award, and before commencing work, the Contractor shall submit to the Consultant for approval, a construction schedule showing in detail the proposed sequence of the work, and the estimated date of starting and completing each stage of the work in order to complete the project within the Contract time. The schedule shall reflect the proposed percent of the value of the Contract to be accomplished each week. If so required, the schedule shall be revised until it is approved by the Consultant. Contract No. 1 – Plumbing shall submit the construction schedule and shall coordinate it with the proposed schedules of other contractors, if any, engaged in work at the site. No payment shall be made to the Contractor until a construction schedule has been approved.
- b. The Contractor shall be responsible for the proper coordination of its work so as to maintain its schedule as approved. Should the Contractor fail to adhere to any phase of the approved schedule, they shall promptly adopt such additional means or methods of construction, including overtime, as may be necessary to make up lost time and complete each phase of his work in accordance with the schedule, all at no additional cost to the Owner.
- c. The schedule shall be marked by the Contractor to indicate progress and shall be resubmitted to

the Consultant weekly, and shall reflect revised estimates and actual durations and percent complete. Resubmitted schedules shall be accompanied by a detailed description of work to be accomplished during the succeeding week.

9. Time of Completion

- a. The work to be completed under this Contract shall be commenced within ten (10) days After Receipt of Order (ARO) date, issued by the Owner.
- b. The entire work shall be progressed and completed in accordance with the project milestone requirements identified in the Special Conditions.
- c. Failure to complete the work within the time stipulated in the Special Conditions for both Project Completion and any intermediate milestones, including extensions granted thereto as determined by the Consultant, or abandonment of the work before final completion, shall entitle the Owner to amounts stipulated in the Special Conditions for each calendar day of delay in the completion of the work for both Project Completion and any intermediate milestones, said sums being fixed and agreed as liquidated damages which the Owner will suffer by reason of such delay and not as a penalty. The Owner may deduct such liquidated damages from the monies due, or about to become due to the Contractor, or may recover such liquidated damages directly from the Contractor. Enforcement of this clause does not preclude the Owner from seeking any other legal remedies for Contractor's failure to complete the work within the time stipulated in the Special Conditions for both Project Completion and any intermediate milestones.

10. Progress Payments

The Owner shall make progress payments under this Contract as follows:

- a. On not later than the fifth day of every month, the Contractor shall submit an approvable invoice covering the percentage of the total amount of the Contract which has been completed from the start of the project up to and including the last day of the preceding month, less any amount previously paid to the Contractor. Attached to said invoice shall be supporting documentation which may reasonably be required by the Owner or the Consultant.
- b. Not later than the fifth day of the month following the submittal of an approvable invoice, the Owner will make partial payment to the Contractor on the basis of a duly certified approved estimate of the work performed during the preceding period by the Contractor in accordance with the following terms:
 - (1) The Owner shall retain five percent (5%) of the amount due on each invoice. The Owner reserves the right to retain a greater percentage in the event the Contractor fails to make satisfactory progress or in the event there is other specific cause for greater withholding.
 - (2) Notwithstanding any of the amounts to be withheld in accordance with the paragraph set forth above, the Owner has the further right to withhold any amount necessary to satisfy any claims, liens or judgments against the Contractor and the subject project which have not been satisfactorily discharged.
 - (3) The Owner hereby reserves the right to deduct from any monies due or to become due the Contractor any costs incurred by the Owner arising out of this contract for the handling and/or

processing of any liens, release of liens, restraining notices, garnishments, levies, summons, subpoenas or other documents, legal papers, suits or actions served upon or filed with the Owner.

- (4) At such time that the Owner deems the project to be Complete, the amount retained shall be reduced below five percent (5%) to two percent (2%) of the total contract amount. In the event that the Owner gives approval to allow any work (including punch list items) to be completed after the project completion date, the amount retained shall be increased to include two times the value of any remaining items of work to be completed, with the value determined by the Owner.
- c. No payment will be made for any materials or equipment until they are incorporated in the work; except, that partial payment may be made for the estimated value of the materials in short and/or critical supply (as verified by the Owner) and materials specifically fabricated for the project, each as defined in the Contract, when delivered to the site or off site by the Contractor and suitably stored and secured as required by the Owner, provided, however, that the Contractor, if so requested by the Owner, shall furnish written evidence that he is the unconditional Owner of the materials.
 - d. All work covered by partial payments shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from his sole responsibility for the care and protection of work upon which payments have been made, of the restoration of any damaged work, or as waiver of the right of the Owner to require the fulfillment of all the terms of the Contract.
 - e. Before any payments will be made under this Contract, the Owner reserves the right to require the Contractor and all subcontractors to submit written verified statements, in satisfactory form, certifying in detail to the amounts then due and unpaid by such Contractor and its subcontractors to all laborers for daily or weekly wages on account of labor performed upon the work under this Contract, or to other persons for materials, equipment and supplies delivered at the site of the work. The term "laborers," as used herein, shall include workers and mechanics.
 - f. The Contractor must pay subcontractors for satisfactory performance of their contracts within seven (7) days from receipt of each payment that the Owner makes to the Contractor. Contractors shall not withhold retainage from subcontractors. Documentation of all subcontractor payment amounts shall be submitted with payment requests.

11. Acceptance and Final Payment

- a. Upon completion of the project, including submission of record drawings, release of liens, and any other documents or materials required to be submitted in accordance with other portions of the Contract Documents, the Consultant shall make a final inspection for approval of all the work done under this contract and shall, within fifteen (15) days, prepare a certification to the Owner regarding completion of the work done, the value thereof, and recommending acceptance of the contract. The Owner shall, upon approval of this certificate, promptly pay the Contractor the entire sum so found due thereunder after deducting all previous payments and all percentages and amounts to be kept and retained under provisions of this Contract, and shall notify the Contractor of acceptance and start of the guarantee.

- b. Before issuance of the Consultant's certification, the Contractor shall submit evidence satisfactory to the Owner and Consultant that all payrolls, material bills, and other indebtedness connected with the work have been paid.
- c. The Contractor shall guarantee the work accomplished under this Contract for the Guarantee Period from the date the project is considered Complete by the Owner. Upon expiration of the guarantee period, the Contractor shall submit an invoice to the Owner for final payment. Final payment for the work shall be retainage withheld by the Owner during the guarantee period or, alternatively, the release of the letter of credit furnished by the Contractor in lieu of such retainage less any charges for corrective work or damages for defective equipment, materials and workmanship or those charges occasioned in correcting the same.

12. Schedule of Values

- a. At least fifteen (15) days before submission of the first application by the Contractor for a progress payment, the Contractor shall furnish to the Owner a complete breakdown of all lump sum items bid for in the Contract. This breakdown, modified where directed by the Consultant, will be used as a basis for preparing progress payments throughout the duration of the Contract.
- b. Except as otherwise provided in the Contract Documents, no payment will be made for materials or equipment not incorporated in the work.
- c. No payment will be made for modifications until the formal change order for the modification is fully executed.
- d. Neither the final payment nor any partial payment shall constitute acceptance of any defective workmanship or material, or noncompliance with the Drawings and Specifications.

13. Changes in the Work

- a. The Owner may order extra work or make changes altering, adding to or deducting from the work without invalidating the Contract. All such additional or changed work shall be executed under the conditions of the original Contract. Upon receipt of direction from the Owner to alter the work, the Contractor shall notify the Owner in the event the Contractor intends to make a claim for extension of time or additional costs to perform such revised or additional work. The Contractor shall proceed with the altered or additional work upon receipt of the Owner's direction.
- b. The Contractor shall promptly submit to the Consultant a proposal for performing the changed work including a detailed price breakdown itemizing all major items of cost, quantity or number of units, material and labor unit prices. The Contractor shall promptly comply with all requests from the Consultant for additional supporting documentation for the Contractor's proposal. The value of the changed work to be included in the written contract change order shall be determined in accordance with the Contract Documents.
- c. The Consultant shall have the authority to make minor changes in the work not involving extra costs and not inconsistent with the purposes of the Project. The Contractor shall proceed with such changed work upon receipt of the Consultant's direction. In the event the Contractor claims that any such work is extra work or is contrary to the terms and conditions of the Contract

Documents, the Contractor shall make a claim for extra costs in accordance with the Contract Documents.

- d. With respect to all additional work or modifications to be performed by the Contractor, the Contractor shall be obligated to diligently perform such work and to mitigate any and all costs associated with such work.

14. Claims for Extra Cost

- a. If the Contractor claims that any work it has been ordered to do shall be considered extra work, or that any action or omission of the Owner or the Consultant is contrary to the terms and provisions of the Contract Documents, they shall, within five (5) calendar days after receipt of such orders or action or omission on the part of the Owner or the Consultant, file a written statement with the Consultant stating the basis of their claim.
- b. All written claims for extra costs shall be forwarded to the Owner by the Consultant. Upon receipt by the Contractor of an acknowledgement from the Consultant of a pending claim for extra costs, the Contractor shall diligently proceed with the performance of the Contract and in accordance with all instructions of the Consultant.
- c. Except in an emergency endangering life or property, the Contractor shall not proceed with any alleged extra work until the above noted acknowledgement of their claim is received.
- d. The Contractor shall set up a separate cost record system, satisfactory to the Owner and the Consultant, for substantiation and verification of all costs incurred in performing each claim of alleged extra work.
- e. In an effort to resolve any conflicts that arise during the construction of the project or following the completion of the project, the Owner and the Contractor agree that all unresolved disputes between them arising out of or relating to this contract shall first be submitted to non-binding mediation unless the parties mutually agree otherwise.

The Contractor further agrees to include a similar mediation provision in all agreements with subcontractors retained for the project and to require all subcontractors also to include a similar mediation provision in all agreements with their subcontractors, suppliers or fabricators thereby providing for mediation as the primary method for dispute resolution between the parties to those agreements.

The Owner and the Contractor agree to select a mediator from lists suggested by each party. The mediator shall be a person knowledgeable in the type of matter under dispute and may be an accredited mediator, contractor, consultant, or otherwise knowledgeable person. Whenever possible the mediator shall be from the local area. All mediation sessions shall be held in Monroe County.

The cost of the mediator shall be shared equally by the parties to the dispute.

15. Guarantee Period

- a. The guarantee period shall commence upon the date the project is considered Complete by the

Owner (said date will be specified in the Consultant's certification) and continue for a period of two (2) years unless stipulated otherwise in the Special Conditions. In the event that the Owner gives approval to allow any work to be completed after the project completion date, the guarantee period for said work shall not begin until after it has been completed and accepted by the Owner. The guarantee shall have the value of two (2) percent of the final Agreement amount during the guarantee period.

- b. Upon completion and acceptance of the work by the Owner and Consultant, the Contractor shall submit to the Owner a general guarantee for the entire work. The guarantee shall be unconditional and cover all labor, material and equipment furnished. All guarantees shall be written in a form satisfactory to the Owner.
- c. The Contractor shall remedy any defective work appearing within the guarantee period and shall pay for damages caused by such defective equipment, work or materials or occasioned in correcting the same.
- d. If any defects occur within the guarantee period, the Contractor shall, within three (3) days after receipt of notification of such defects, take the necessary action to correct such defects. The correction of any defects in equipment, materials and workmanship which may develop during the guarantee period shall be at the expense of the Contractor. If the Contractor fails to comply with the requirements of this paragraph within the time stated, the Owner may have the corrective work done and charge the Contractor therefore.
- e. Request for final payment for the work may be submitted upon expiration of the guarantee period unless any defects in equipment, materials and workmanship remain at such date.
- f. The guarantee shall have the value of two percent (2%) of the final Contract amount during the guarantee period. The Owner will retain the sum of two percent (2%) of the final Contract amount during the guarantee period as security for performance of the guarantee work; provided, however, that the Contractor may substitute for such retainage an irrevocable standard form letter of credit for the benefit of the Owner in the foregoing amount, in a form acceptable to the County Attorney. Alternatively, the Contractor may submit negotiable United States, New York State or municipal bonds in accordance with Section 106 of the General Municipal Law of New York State.

16. Shop Drawings

- a. Within five (5) days after the ARO, the Contractor shall submit to the Consultant for approval a schedule of shop drawing submissions. The Consultant shall be notified immediately of changes in the schedule. Any changes in the shop drawing submission schedule shall be presented to the Consultant for approval. Shop drawings shall be submitted in accordance with the approved schedule of shop drawing submissions and any approved changes thereto.
- b. The Contractor shall submit for the approval of the Consultant shop drawings for all fabricated work and for all manufactured items required to be furnished in the Contract. Shop drawings shall be submitted in sufficient time to allow at least ten work days for the review. All shop drawings shall be time and date stamped as they are received and recorded in a log at the office of the Consultant.

- c. Consultant's approval of the Contractor's drawings shall be considered as a gratuitous service, given as assistance to the Contractor in interpreting the requirements of the Contract, and in no way shall it relieve the Contractor of any responsibilities under the Contract. Any fabrication, erection, setting or other work done in advance of the receipt of shop drawings or other work done in advance of the receipt of shop drawings returned by the Consultant and noted as "Reviewed" or "Reviewed as Noted", shall be entirely at the Contractor's risk. The Consultant's review will be confined to general arrangement and compliance with the Contract Drawings and Specifications only, and will not be for the purpose of checking dimensions, weights, clearances, fitting, tolerances, interferences, coordination of trades, etc.
- d. Shop drawings shall be furnished to the Consultant for use in accordance with the following sequence of operation:
 - (1) The Contractor shall submit four copies of shop drawings to the Consultant for review. If "Reviewed" or "Reviewed as Noted," one copy will be returned to the Contractor.
 - (2) When shop drawings are returned for correction, the Consultant will retain one copy and will return all other copies noted as "Resubmit" or "Rejected." The Contractor shall correct and resubmit for approval as described above, and such procedure shall not be considered by the Contractor as grounds for delay in completing the work.
 - (3) Failure of the Contractor to supply the required number of shop drawings for field use shall constitute reason to reject work or material at the job site.
- e. Shop drawings submitted by subcontractors shall be sent directly to the Contractor for preliminary checking. The Contractor shall be responsible for their submission to the Consultant at the proper time so as to prevent delays in delivery of materials.
- f. The Contractor shall thoroughly check all subcontractors' shop drawings as regards measurements, sizes of members, materials, and details to satisfy himself that they conform to the intent of the Contract Drawings and Specifications. Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors by the Contractor for correction before submitting them to the Consultant. Before submission, the Contractor shall mark the drawing as being checked and approved, dated and signed.
- g. All details on shop drawings submitted for approval shall clearly show the relation of the various parts, and where the work depends upon field measurements, such measurements shall be obtained by the Contractor and noted on the shop drawings before being submitted for approval.
- h. All submissions shall be properly referenced to indicate clearly the specification section, location, service and function of each particular item. All submissions for one item or group of related items shall be complete. Where manufacturer's publications in the form of catalogues, pamphlets, or other data sheets are submitted in lieu of prepared shop drawings, such submission shall specifically indicate the item for which approval is requested. Identification of items shall be made in ink, and submissions showing only general information are not acceptable.
- i. The Contractor shall submit one copy of all approved shop drawings in hard copy format and on CD-ROM in Adobe Acrobat® .PDF format upon completion of the project.
- j. Before release of any retainage, the Contractor shall deliver to the Consultant two (2) complete

bound sets of the final approved shop drawings applicable to the Contract for Owner's permanent files.

17. Owner's Right to Terminate and/or Complete Contract

Should the Contractor become insolvent, or should it refuse or neglect to prosecute the work in a proper manner and as directed by the Owner, or otherwise fail in the performance of any of its obligations under this Contract, and Surety after proper request fails to complete the Contract, then the Owner, upon the certificate of the Consultant that sufficient cause exists to justify such action, and after giving the Contractor seven (7) calendar days written notice, may, without prejudice to any other right or remedy, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, and appliances thereon and finish the work by whatever method he may deem expedient. In such cases, no further payment shall be made to the Contractor until the work is completed, at which time, if the unpaid balance of the Contract price shall exceed the expense of finishing the work, such excess shall be paid to the Contractor. Should such expense exceed the unpaid balance, the Contractor and his surety shall pay the difference to the Owner. The Owner shall audit and certify the expense incurred in finishing the work and the damage incurred through the Contractor's fault.

18. Certificate of Inspection for Electrical Work

The Contractor shall provide a certificate of inspection for all electrical work prior to acceptance by the Owner; said certificate of inspection shall be issued by either the New York Board of Underwriters or the Middle Department Inspection Agency.

19. Equivalents and Substitutions

- a. Whenever a particular brand or make of material, equipment or other item is specified or is indicated in the Contract Documents, any other brand or make which, in the opinion of the Consultant, is equivalent in quality, value, performance and suitability to that specified or indicated may be offered except where specifically stated otherwise.
- b. A particular brand or make of material, equipment or other item which is not equivalent in quality, value, performance and suitability may be considered as a substitute if it is determined by the Consultant to be in the best interest of the Owner.
- c. The Contractor shall submit complete descriptive literature and performance data together with samples of the materials where feasible for each proposed equivalent or substitution. No equivalent in quality, value, performance and suitability or substitution items shall be used in the work without prior written approval of the Consultant.
- d. In all cases the Consultant shall be the sole judge as to whether a proposed equivalent or substitution is to be approved and the Contractor shall have the burden of proving the same, at his own cost and expense, to the satisfaction of the Consultant. The Contractor shall abide by the Consultant's decision when proposed equivalent or substitution items are judged to be unacceptable and shall in such instances furnish the item specified or indicated. The Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Consultant in considering an equivalent or substitution proposed by the Contractor or

by reason of the failure of the Consultant to approve an equivalent or substitution proposed by the Contractor.

- e. Where the approval of an equivalent or substitution requires revision or redesign of any part of the work covered by this Contract, all such revision and redesign, and all new Drawings and details required therefore, shall be subject to the approval of the Consultant and shall be provided by the Contractor at his own cost and expense. Any changes in construction work arising out of such revisions and redesign shall be performed and paid for by the Contractor. Any savings realized by the Contractor as a result of the approved substitution, including any savings in installation costs or related construction costs, shall be shared equally between the Owner and the Contractor.

20. Operations and Maintenance Manual/Spare Parts Data

A minimum of fourteen days prior to completion of Construction, and prior to the reduction of retainage from 5% to 2%, the Contractor shall furnish five copies of operation and maintenance manuals, warranties, and spare parts data for equipment and materials provided within the contract to the Consultant for review. Spare parts data shall include a complete list of parts and supplies, with current unit prices and source of supply; a list of parts and supplies that are normally furnished at no extra cost with the purchase of the equipment and a list of additional items recommended by the manufacturer to assure efficient operation for a period of one hundred and twenty days at the particular installation. Operations and Maintenance Manuals which include warranty and spare parts information shall be submitted in accordance with the technical specifications. The foregoing shall not relieve the Contractor of any responsibilities under any guaranty specified herein. The Contractor shall also submit one copy of all approved Operation and Maintenance manuals on CD-ROM in Adobe Acrobat® .PDF format upon completion of the project.

21. Construction and Demolition Debris

The New York State Department of Environmental Conservation regulates solid waste management facilities under Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR Part 360). Sub-part 360-7 regulates the disposal of construction and demolition debris, and the construction and operation of construction and demolition debris landfills. Disposal of all construction and demolition debris shall be in accordance with these regulations.

Nothing herein is intended to prevent the Contractor from removing materials to off-site locations for speculative accumulation, beneficial use, recovery or recycling purposes if such activities are consistent with all applicable Federal, State and local laws and regulations.

3. Barricades, Warning Signs, Lights

The Contractor shall be responsible for providing the following:

- a. The Contractor shall provide, erect and maintain as necessary strong and suitable barricades, danger signs and warning lights along all roads and pathways accessible to the public and Owner's personnel, as required to ensure safety. All barricades and obstructions along roads and pathways shall be illuminated at night and all lights for this purpose shall be kept illuminated from sunset to sunrise.
- b. The Contractor shall also provide and maintain such other warning signs and barricades in other areas as may be necessary or required for the safety of those employed in the work or visiting the site.
- c. The Contractor shall provide and pay for necessary watchman and others as required to protect work and materials, and as required to permit the safe operation of pedestrian and vehicular traffic at all times.
- d. The Contractor shall not restrict access to any private road or driveway by open trenches or the storage of materials or excavated material. The Contractor shall provide and maintain suitable temporary crossings at all private roads and driveways.
- e. Barricades, danger signs and warning lights shall be provided in accordance with local jurisdictional authorities.

4. Scheduling and Order of Work

It shall be the Contractor's responsibility to develop and present a detailed construction schedule.

The information and order of work presented in this section is intended to advise the Contractor of the general constraints associated with scheduling and completion of the work. It is not intended to dictate the Contractor's means or methods for completion of the work. The order of work presented in this section is also intended to provide the Contractor with information on the required sequence for completion of the work activities. The descriptions of the work activities to be completed, as presented in the order of work, are general and do not list all of the specific activities that are required by the Contractor to complete the general work activity listed in the order of work. The Contractor may submit an alternate sequence for completion of the work activities to the Consultant for review; however, the Contractor may not proceed with completion of the work activities in an alternate sequence without receiving written approval from the Consultant. The order of work is presented below:

- a. Complete demolition work and new work inside the pump room and wet well, including new pipe connections and installation of instrumentation facilities.
- b. Complete any remaining work including final restoration. Demobilize from the site.

5. Cooperation with Utilities

It shall be the Contractor's duty to notify all utility companies, all pipe line owners or other parties affected, and to endeavor to have all necessary adjustment of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practical.

It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions and that no additional compensation will be allowed for any delays, inconveniences, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

6. Permit Required Confined Spaces

- a. In accordance with Federal Regulations (29 CFR 1910.146) the Owner has designated all manholes, valve and metering vaults, wet wells, tanks, and flow channels as "permit required confined spaces", which meets OSHA's definition. The potential hazards therein may include, but are not limited to, toxic and/or explosive gases, oxygen deficiency, engulfment, entrapment, slips, falls and exposure to a mixture of stormwater runoff, household sanitary and other domestic wastewater, and commercial and industrial wastewater, which may be in, or flowing through the spaces. Control of these hazards may include, but are not limited to: isolation means such as lockout and tag out; gas monitoring equipment; and personal protective equipment.
- b. The workplace contains permit required confined spaces and permit required confined space entry is allowed only through compliance with a permit required confined space program meeting the requirements of 29 CFR 1910.146. The Contractor shall have and follow its own permit required confined space program meeting the requirements of 29 CFR 1926.21 (b) (6) for all entries into the sewer system and other confined spaces.
- c. If Owner, Consultant, or Contractor employees and/or representatives enter the sewer system and other confined spaces at the same time, all parties will follow a coordinated program approved by all parties. Coordinated entries do not alleviate the Contractor from having its own permit required confined space program.

7. Emergency Call-Out Procedures

- a. The Contractor shall have an employee available at all times to address issues and problems, which may arise during the project. This employee shall:
 - (1) Have the authority to summon additional manpower and equipment to resolve any problems;
 - (2) Be available after hours, weekends, and holidays; and
 - (3) Carry a pager and/or cellular phone.
- b. The Contractor shall provide the Owner and Consultant with this employee's name, home phone number, place of residence, cellular phone and/or pager number.
- c. The Contractor's employee shall respond within one hour to a call received from the Owner,

Consultant, Consultant's Field Representative, or the Owner's Dispatch Office.

- d. If there is no response within one hour of the call, the Owner will resolve or repair the problem.
- e. All costs incurred by Owner in response to Item 7c shall be billed to the Contractor for actual costs incurred or with a minimum charge of \$1,000 for each instance.

8. Regular Working Hours

Except where otherwise prohibited by law or regulations, regular working hours are defined as up to 8 hours per day, beginning no earlier than 7:00 a.m. and ending no later than 4:00 p.m., unless otherwise required by the Contract Documents.

9. Access to the Work of this Project

- a. Access to the work of this project shall be from public roads and their existing boundaries. At the Contractor's own expense, the Contractor shall obtain all additional easements, access and storage areas that he deems necessary for the work of this Contract.
- b. The Contractor shall assume all responsibilities and indemnify against all liabilities assigned by said temporary use to the Owner, the Gates-Chili-Ogden Sewer District and Monroe County. In general, the Contractor is required to restore all private property to a condition as good as or better than its condition before work began. The Contractor shall indemnify the temporary use grantor for any property or personal damage and for any injury to third parties due to the Contractor's operations.
- c. In addition to the other requirements and conditions of the Contract Documents, the Contractor shall (1) conduct and schedule all activities, (2) provide all items, work and features, and (3) hold harmless the Owner, Gates-Chili-Ogden Sewer District and Monroe County for any claims hereunder due to the Contractor's performance of the Contract as necessary to comply with any special site restrictions and conditions imposed by the temporary use grantor on file with the Owner.

10. Work Limits and Site Security

The designated work limits for the project consist of the property line boundary for the Churchville Pump Station and/or as defined as shown on the Contract Drawings. Contract No. 1 – Plumbing is responsible for site security.

11. Photographs

The Contractor shall take both preconstruction and post construction digital photographs, as directed by the Consultant, at mutually agreed upon locations so as to avoid disputes concerning restoration work. The Contractor must provide a copy of the photos on disc to the Consultant immediately after taking photographs. Final Photographs are to be taken at the same location and in the same direction as preconstruction photos.

END OF CONDITIONS

INSURANCE REQUIREMENTS
INDEMNIFICATION

The Contractor shall procure and maintain at his own expense until final completion of the work covered by the Contract, insurance for liability for damages imposed by law of the kinds and in the amounts hereinafter provided, issued by insurance companies authorized to do business in the State of New York, covering all operations under the Contract whether performed by the Contractor or by his subcontractors. Monroe County must be named as Additional Insured on all policies.

Within ten (10) days after notice of award, the Contractor shall furnish to the County a certificate or certificates of insurance in a form satisfactory to the Monroe County Attorney (a sample form is attached to these specifications) showing that he has complied with all insurance requirements set forth herein, which certificate or certificates shall provide that the policies shall not be changed or canceled until thirty (30) days written notice has been given to the County. Except for Workers' Compensation Insurance, no insurance required herein shall contain any exclusion of municipal operations performed in connection with the Contract resulting from this bid solicitation. The kinds and amounts of insurance are as follows:

A. **WORKERS' COMPENSATION AND DISABILITY INSURANCE:** A policy covering the operations of the Contractor in accordance with the provisions of Chapter 41 of the Laws of 1914, as amended, known as the Workers' Compensation Law, covering all operations under Contract, whether performed by him or by his subcontractors. The Contract shall be void and of no effect unless the person or corporation making or executing same shall secure compensation coverage for the benefits of and keep insured during the life of said Contract, such employees in compliance with the provisions of the Workers' Compensation Law know as the Disability Benefits Law (Chapter 600 of the Laws of 1949) and amendments hereto.

B. **LIABILITY AND PROPERTY DAMAGE INSURANCE:**

(1) CONTRACTOR'S GENERAL LIABILITY INSURANCE issued to the Contractor and covering the liability for damages imposed by law upon the Contractor with respect to all work performed by him under the within Contract. All of the following coverages shall be included:

- Comprehensive Form
- Premises-Operations
- Products/Completed Operations
- Contractual Insurance covering the Hold Harmless Provision
- Broad Form Property Damage
- Independent Contractors
- Personal injury

(2) Unless otherwise specifically required by special specifications, each policy shall have limits of not less than the following:

BODILY INJURY LIABILITY PROPERTY DAMAGE LIABILITY AGGREGATE

Each Occurrence	Each Occurrence	
\$1,000,000	\$1,000,000	\$3,000,000

C. **MOTOR VEHICLE INSURANCE** issued to the Contractor and covering public liability and property damage on the Contractor's vehicles in the amount of:

BODILY INJURY LIABILITY PROPERTY DAMAGE LIABILITY

Each Occurrence	Each Accident
\$1,000,000	\$1,000,000

A sample insurance certificate is included with these specifications. All categories and amounts of insurance required for this bid project have been checked off on the sample. These are the minimum requirements that the Contractor must supply. Failure to supply a satisfactory certificate within ten (10) days after receipt of Notice of Award may result in the cancellation of the award.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – SCHEDULED PERSON OR
ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

<p>Name of Person or Organization:</p>

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.

B. With respect to the insurance afforded to these additional insureds, the following exclusion is added:

2. Exclusions

This insurance does not apply to "bodily injury" or "property damage" occurring after:

- (1) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed; or
- (2) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

NOTICE OF JOB VACANCIES

- a) The contractor recognizes the continuing commitment on the part of Monroe County to assist those receiving temporary assistance to become employed in jobs for which they are qualified and the County's need to know when jobs become available in the community.
- b) The contractor agrees to notify the County when the contractor has or is about to have a job opening for a full time position within Monroe County or any contiguous county. Such notice shall be given as soon as practicable after the contractor has knowledge that a job opening will occur. The notice shall contain information that will facilitate the identification and referral of appropriate candidates in a form and as required by the Employment Coordinator. This would include at least a description of conditions for employment, including the job title and information concerning wages, hours per work week, location and qualifications (education and experience).
- c) Notice shall be given in writing to:
Employment Coordinator
Monroe County Department of Human and Health Services
Rm 535
691 St. Paul St.
Rochester, NY 14605
Telephone: (585) 753-6322
Fax: (585) 753-6308
- d) The contractor recognizes that this is an opportunity to make a good faith effort to work with Monroe County for the benefit of the community. Nothing contained in this provision, however, shall be interpreted as an obligation on the part of the contractor to employ any individual who may be referred by or through the County for job openings as a result of the above notice. Any decisions made by the contractor to hire any individual referred by or through the County shall be voluntary and based solely upon the contractor's job requirements and the individual's qualifications for the job, as determined by the contractor.
- e) If the contractor is a local municipality within Monroe County, said municipality shall be subject to the above subparagraphs, except that said municipalities shall not be required to give notice where the position is subject to a published civil service list.

COMPLIANCE WITH FEDERAL SINGLE AUDIT ACT

In the event the Contractor is a recipient through this contract, directly or indirectly of any funds of or from the United States Government, Contractor agrees to comply fully with the terms and requirements of Federal Single Audit Act [Title 31 United States Code, Chapter 75], as amended from time to time. The Contractor shall comply with all requirements stated in Federal Office of Management and Budget Circulars A-102, A-110 and A-133 and such other circulars, interpretations, opinions, rules or regulations that may be issued in connection with the Federal Single Audit Act.

If on a cumulative basis the Contractor expends Five Hundred Thousand and no/100 Dollars (\$500,000.00) or more in federal funds in any fiscal year, it shall cause to have a single audit conducted, the Data Collection Form (defined in Federal Office of Management and Budget Circular A-133) shall be submitted to the County; however, if there are findings or questioned costs related to the program that is federally funded by the County, the Contractor shall submit the complete reporting package (defined in Federal Office of Management and Budget Circular A-133) to the County.

If on a cumulative basis the Contractor expends less than Five Hundred Thousand and no/100 Dollars (\$500,000.00) in federal funds in any fiscal year, it shall retain all documents relating to the federal programs for three (3) years after the close of the Contractor's fiscal year in which any payment was received from such federal programs.

All required documents must be submitted within nine (9) months of the close of the Contractor's fiscal year end to:

Monroe County Internal Audit Unit
304 County Office Building
39 West Main Street
Rochester, New York 14614

The Contractor shall, upon request of the County, provide the County such documentation, records, information and data and response to such inquiries as the County may deem necessary or appropriate and shall fully cooperate with internal and/or independent auditors designated by the County and permit such auditors to have access to, examine and copy all records, documents, reports and financial statements as the County deems necessary to assure or monitor payments to the Contractor under this contract.

The County's right of inspection and audit pursuant to this contract shall survive the payment of monies due to Contractor and shall remain in full force and effect for a period of three (3) years after the close of the Contractor's fiscal year in which any funds or payment was received from the County under this contract.

BID PROJECT NO. 0611-12

MONROE COUNTY, NEW YORK

SPECIFICATIONS AND RELATED DOCUMENTS

FOR

**CHURCHVILLE PUMP STATION BYPASS CONNECTION
IMPROVEMENTS**

June, 2012



Contract No. 1: Plumbing Construction

Prepared By:
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Fairport, New York 14450

Prepared For:
Monroe County Department of Environmental Services
50 West Main Street, 7100 City Place
Rochester, New York 14614

CHURCHVILLE PUMP STATION BYPASS CONNECTION IMPROVEMENTS

MONROE COUNTY, NEW YORK

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SECTION 01 12 13
SUMMARY OF WORK

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. This Section includes a general summary of the work to be performed and other associated general information.

1.2 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located at the site of the Churchville Pump Station in Monroe County on a property at 15 Carroll Street in the Village of Churchville.
- B. The Work to be performed under this Contract includes, but is not limited to, constructing the Work as presented in the Contract Documents. Refer to Article 1.3 of this Section for additional information
- C. Contracting Method: The Work will be constructed under the following prime construction contracts:
 - 1. Contract No. 1 – Plumbing Construction:

1.3 CONSTRUCTION CONTRACTS

- A. The work required to be performed by Contract No. 1 – Plumbing Construction is presented on the Contract Drawings, and includes:
 - 1. Obtain necessary permits, prepare the site staging area, verify existing conditions, and install temporary facilities as applicable.
 - 2. Remove existing piping, duct, and appurtenances as indicated on the Contract Drawings.
 - 3. Provide new equipment, materials, piping, valves, ventilation duct and supports as indicated on the Contract Drawings.

1.4 WORK BY OWNER

- A. Owner will perform the following in connection with the Work:
 - 1. Temporary pump shutdown and bypassing of flows from the wet well to the discharge force main.
 - 2. Drain wastewater from the section of force main piping to be removed. Contractor shall provide assistance as required.

1.5 SEQUENCE AND PROGRESS OF WORK

- A. Sequencing:
 - 1. Incorporate sequencing of the Work into the Progress Schedule.
 - 2. For Sequencing Requirements refer to Supplemental Conditions.
 - 3. Coordinate sequencing of the work with the temporary pump shutdown.

1.6 CONTRACTOR'S USE OF SITE

- A. The Site is defined by the Owners property/easement boundary limits indicated on the Contract Drawings.
- B. Contractor will have full use of the Site for storage and operations of workers.
- C. Contractor shall move stored products that interfere with operations of Owner, or others performing work for Owner.

1.7 EASEMENTS AND RIGHTS-OF-WAY

- A. Confine construction operations to within the Site, public rights-of-way, easements obtained by Owner, and the limits shown. Use care in placing construction tools, equipment, and products to be incorporated into the Work to avoid damaging property and interfering with traffic. Do not enter private property outside the Site without permission from the owner of the property.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

SECTION 02 41 00

DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Specified
 - 1. All labor, materials, services, equipment, tools, including all excavation and incidentals necessary to perform the demolition as specified herein and as shown on the Contract Drawings.
 - 2. Demolition and removal of existing site related construction.
 - 3. Demolition and removal of existing architectural and structural construction.
 - 4. Demolition and removal of existing process equipment and piping.
 - 5. Demolition and removal of existing heating and ventilating equipment and construction.
 - 6. Furnishing and installing all safety barriers and warning signs.
 - 7. Protecting existing facilities.
 - 8. Restoration of surfaces and facilities damaged or destroyed during the performance of the work.
 - 9. Removal of all supports and anchors, and patching openings of all surfaces resulting from demolition activities.
 - 10. Removal and disposal of all demolition and related surplus materials in an off-site location chosen by the Contractor and approved by the Owner.
- B. Related Sections
 - 1. Section 09 91 00 Painting

1.2 SUBMITTALS

- A. Demolition Plan
 - 1. A minimum of fourteen days prior to commencement of the demolition work, Contractor shall submit a detailed demolition plan to the Consultant for review. No demolition work will be allowed until the plan has been reviewed by the Consultant. The proposed plan shall consider the Owner's continuing occupancy and the sequence of construction.
 - 2. Demolition plan shall include the following:
 - a. Demolition, removal, and disposition of items identified in this Section.
 - b. Disposal locations of removed items and related surplus materials.
 - c. Temporary storage of items to be reused.
 - d. Time lines and sequences of operations.
 - e. Location of temporary barricades, fences, and signs.
 - f. Schedule and methods to be utilized to provide new penetrations and openings.

1.3 QUALITY ASSURANCE

- A. All work shall be performed in accordance with all Federal, state, and local codes and requirements.
- B. Blasting or the use of explosives is not allowed.
- C. Burning of debris is not allowed.
- D. Regulatory Requirements
 - 1. Conform to applicable code for demolition of structures, protection of adjacent structures, and disposal of materials.

2. Obtain required permits from authorities.
 3. Notify affected utility companies before starting demolition operations and comply with their requirements.
 4. Roadways, sidewalks, hydrants, and parking areas shall not be blocked or obstructed without required permits.
 5. Conform to applicable regulatory procedures if a hazardous environmental condition is encountered at site.
- E. Hazardous Environmental Conditions
1. If an unknown unforeseeable hazardous environmental condition is encountered at the site, or if Contractor or anyone for whom Contractor is responsible creates a hazardous environmental condition, immediately;
 - a. Secure or otherwise isolate such condition;
 - b. Stop all Work in connection with such condition and in any area affected thereby; and
 - c. Notify Owner and Consultant (and promptly thereafter confirm such notice in writing).
 2. Resume Work in connection with such condition or in any affected area only after Owner has obtained any required permits related thereto and delivered to Contractor a written notice specifying under what special conditions Work may be resumed safely.

1.4 SEQUENCING

- A. Sequence demolition work to conform with provisions of the Supplemental Conditions and sequence of construction.
- B. Coordinate all work with the Owner.

1.5 PROJECT RECORD DRAWINGS

- A. Submit under provisions of the Supplemental Conditions.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Fourteen days prior to performing any demolition, there shall be a coordination meeting between Owner, and Consultant to discuss the Contractor's Demolition Plans and related procedures. Items to be discussed shall be, but not limited to, sequence of work, removal of materials, protection of existing equipment, access and egress of material, etc. Demolition procedures must be coordinated with the Owner's operating personnel and operations, and adjusted accordingly, if necessary.
- B. Following the coordination meeting, begin demolition operations after obtaining written authorization to proceed from the Owner.
- C. Notify Owner and Consultant a minimum of 48 hours in advance of intended start of demolition operations in each affected area.
- D. Provide, erect, and maintain temporary barriers, signs, and security devices as required or directed by the Owner or Consultant.

- E. Erect and maintain temporary partitions and weatherproof closures as required or as directed by the Owner or Consultant to prevent spread of dust, odors, and noise in areas of continued Owner occupancy.

3.2 PROTECTION OF EXISTING FACILITIES

- A. Provide all measures as necessary to protect adjacent facilities which are not being demolished. The Contractor shall relocate any facilities which may be damaged during the work. All relocated facilities shall be returned to their original location upon completion of the work.
- B. The Contractor shall promptly repair all damaged facilities at no additional cost to the Owner.
- C. Interruptions of existing utilities and services shall be coordinated with the Owner.
- D. Furnish all signs, lights, railings, barricades and other items as necessary to meet safety regulations. Adequate protection of persons and property shall be provided at all times.
- E. Protect existing site-related items such as pavements, walkways, parking areas, curbs, aprons, and landscaping features which are not to be demolished.
- F. Protect existing electrical; heating, ventilating, and air conditioning; and plumbing systems, including related components, which are not to be demolished.
- G. Mark location of underground utilities.

3.3 DEMOLITION

- A. Disconnect and remove designated process piping systems, including valves and fittings; provide temporary connections of those segments of the system to remain in service.
- B. Detach, dismantle, and remove metal components of process equipment, including miscellaneous metal work items associated with access to and operation of such equipment.
- C. All removed materials and equipment designated for reuse on the Project, or salvaged for Owner's future use, shall be stored at locations indicated by the Owner and protected from damage and from deterioration by weather.
- D. Remove and dispose of demolished materials as work progresses. Do not burn materials; do not bury materials.
- E. Patch and refinish existing visible surfaces which are to remain and otherwise restore adjacent surfaces as specified in Contract Documents.
- F. Paint designated metal surfaces and reinforcing steel exposed by demolition operations, in accordance with Section 09 91 00.
- G. Remove and dispose of debris, trash, and other scrap.
- H. Upon completion of demolition operations, leave areas in a clean condition.
- I. No overcutting shall be allowed when saw cutting new opening in existing concrete or masonry floor, wall, or ceilings. Corners of proposed openings shall be core drilled and chiseled as required.

3.4 SCHEDULES

- A. Contractor shall demolish and remove all structures, portions of structures, process piping, and other items as required in this Section, as shown on the Contract Drawings, and as necessary to accomplish the work. Major items scheduled for demolition include, but are not limited to, the following:
 - 1. Remove existing sections of wastewater force main piping and supports.
 - 2. Remove existing insulated ventilation duct and supports.

3.5 HAZARDOUS AREAS

- A. The Contractor shall comply with all codes and regulations when working in hazardous areas or situations.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. The Owner shall be given the first right of refusal for all demolished materials.
- B. All materials shall be immediately removed from the site. Storage of materials on the site is not allowed.
- C. Sale of removed materials is not permitted at the site.

- END OF SECTION -

SECTION 03 60 00

GROUTING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install grout and perform grouting Work.
- B. Coordination:
 - 1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before grouting Work.

1.2 REFERENCES

- A. Standards referenced in this Section are:
 - 1. ACI 211.1, Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
 - 2. ACI 301, Structural Concrete for Buildings.
 - 3. ASTM C33/C33M, Specification for Concrete Aggregates.
 - 4. ASTM C109/C109M, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
 - 5. ASTM C230/C230M, Specification for Flow Table for Use in Tests of Hydraulic Cement.
 - 6. ASTM C531, Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 7. ASTM C579, Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 8. ASTM C827, Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
 - 9. ASTM C882/C882M, Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
 - 10. ASTM C939, Text Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).
 - 11. ASTM C1107/C1107M, Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
 - 12. ASTM C1181, Test Methods for Compressive Creep of Chemical-Resistant Polymer Machinery Grouts.
 - 13. NSF/ANSI 61, Drinking Water System Components - Health Effects.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Grout Testing Laboratory:
 - a. Independent testing laboratory employed for design and testing of grout materials and mixes shall comply with testing laboratory requirements in applicable requirements in the Contract Documents.
 - 2. Manufacturer: Shall have sufficient experience producing products substantially similar to that required and shall be able to submit documentation of at least five

satisfactory installations that have been in successful operation for at least five years each.

3. Manufacturer's Field Service Technician: When required, provide services of manufacturer's full-time employee, factory-trained in handling, use, and installing the products required, with experience in field applications of the products required.

B. Trial Batch:

1. Each grout fill and construction joint grout mix proportion and design shall be verified by laboratory trial batch or field experience methods. Comply with ACI 211.1 and submit to Consultant a report with the following data:
 - a. Complete identification of aggregate source of supply.
 - b. Tests of aggregates for compliance with specified requirements.
 - c. Scale weight of each aggregate.
 - d. Absorbed water in each aggregate.
 - e. Brand, type, and composition of cement.
 - f. Brand, type, and amount of each admixture.
 - g. Amounts of water used in trial mixes.
 - h. Proportions of each material per cubic yard.
 - i. Unit weight and yield per cubic yard of trial mixtures.
 - j. Measured slump.
 - k. Measured air content.
 - l. Compressive strength developed at seven days and 28 days, from not less than three test specimens cast for each seven-day and 28-day test, and for each design mix.
2. Laboratory Trial Batches: When laboratory trial batches are used to select grout proportions, prepare test specimens and conduct strength tests as specified in ACI 301.
3. Field Experience Method: When field experience methods are used to select grout proportions, establish proportions as specified in ACI 301.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
 - a. Schedule of Project-specific grout applications, installation locations, and the grout type proposed for each.
 - b. List of grout materials and proportions for the proposed mix designs. Include data sheets, test results, certifications, and mill reports to qualify the materials proposed for use in the mix designs. Do not start laboratory trial batch testing until submittal is approved by Consultant.
 - c. Trial Batch Reports: Submit laboratory test reports for grout materials and mix design tests.
2. Product Data:
 - a. Data sheets, certifications, and manufacturer's specifications for all materials proposed for use.

B. Informational Submittals: Submit the following:

1. Manufacturer's Instructions:
 - a. Special instructions for shipping, storing, protecting, and handling.
 - b. Installation instructions for the materials.
2. Qualifications Statements:
 - a. Testing laboratory, when not submitted under other Sections.
 - b. Manufacturer, when submittal of qualifications is required by Consultant.
 - c. Manufacturer's field service technician, when submittal of qualifications

is required by Consultant.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Storage of Materials: Store grout materials in a dry location, protected from weather and protected from moisture.

PART 2 – PRODUCTS

2.1 GENERAL

- A. All grout materials, admixtures, cementitious materials, and other materials used in grout that contact potable water or water that will be treated to become potable shall be listed in NSF/ANSI 61.

2.2 NON-SHRINK GROUT MATERIALS

- A. General: Non-shrink grout shall be a prepackaged, inorganic, flowable, non-gas-liberating, non-metallic, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or container in which the materials are packaged. Specific formulation for each type or class of non-shrink grout specified in this Section shall be that recommended by the grout manufacturer for the particular application.
- B. Class I Non-Shrink Grout:
 - 1. Class I non-shrink grouts shall have a minimum 28-day compressive strength of 7,000 psi. Use grout for precision grouting and where water-tightness and non-shrink reliability in both plastic and hardened states is critical, in accordance with Table 03 60 00-A in this Section.
 - 2. Products and Manufacturer: Provide one of the following:
 - a. Masterflow 928, by Master Builders, Inc.
 - b. Five Star Grout, by Five Star Products, Inc.
 - c. Hi-Flow Grout, by Euclid Chemical Company.
 - d. Or equal.
 - 3. Comply with ASTM C1107/C1107M, Grade C and B (as modified below) when tested using amount of water required to achieve the following properties:
 - a. Fluid consistency (20 to 30 seconds) shall be in accordance with ASTM C939.
 - b. At temperatures of 45, 73.4, and 95 degrees F.
 - 4. Length change from placing to time of final set shall not have shrinkage greater than the expansion measured at three or fourteen days. Expansion at three or fourteen days shall not exceed the 28-day expansion.
 - 5. Non-shrink property shall not be based on chemically-generated gas or gypsum expansion.
 - 6. Fluid grout shall pass through the flow cone, with continuous flow, one hour after mixing.

2.3 CURING MATERIALS

- A. Curing materials shall be as recommended by the manufacturer of prepackaged grouts.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine substrate and conditions under which grouting will be performed and notify Consultant in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. General:
 - 1. Place grout as shown and indicated, and in accordance with Laws and Regulations and grout manufacturer's instructions. If manufacturer's instructions conflict with the Contract Documents, obtain clarification or interpretation from Consultant before proceeding.
 - 2. Consistency of non-shrink grouts shall be as required to completely fill the space to be grouted for the particular application. Do not install grout for dry-packing without approval of Consultant. When dry-packing is approved by Consultant, dry-pack consistency shall be such that grout has sufficient water to ensure hydration and grout strength development, and remains plastic, moldable, and that does not flow.
 - 3. Grouting shall comply with temperature and weather limitations in accordance with grout manufacturer's instructions.
 - 4. Cure grout in accordance with grout manufacturer's instructions for prepackaged grout.

- END OF SECTION -

SECTION 05 05 33

ANCHOR BOLTS AND ANCHORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Anchors, including expansion, sleeve, and adhesive type.

PART 2 PRODUCTS

2.1 ANCHOR RODS CAST IN CONCRETE

- A. ASTM F593 Type 316, stainless steel anchor rods.
- B. ASTM F594 Type 316 stainless steel nuts.

2.2 ANCHORS

- A. General Requirements:
 - 1. Anchors Exposed to Weather, in Contact with Aluminum or FRP Components, or in Submerged Conditions, or as indicated on drawings: Type 316 stainless steel.
 - 2. Anchors for All Other Conditions: Zinc-plated; ASTM B633.
- B. Expansion Anchors:
 - 1. Manufacturers:
 - a. Hilti Corporation, Kwik Bolt III.
 - b. ITW Ramset/Red Head, Trubolt Wedge Anchor.
 - c. The Powers Company, Inc., Power-Stud.
 - d. Or equal.
 - 2. Minimum Embedment: 4 inches, unless otherwise indicated.
- C. Sleeve Anchors:
 - 1. Manufacturers:
 - a. Hilti Corporation, HLC Sleeve Anchor.
 - b. ITW Ramset/Red Head, Dynabolt Sleeve Anchor.
 - c. The Powers Company, Inc., Lok/Bolt.
 - d. Or equal.
- D. Adhesive Anchors:
 - 1. Manufacturers:
 - a. Hilti Corporation, HIT-HY 150 MAX
 - b. Or equal.
 - 2. Injection Gel: hybrid adhesive consisting of acrylic resin, hardener, cement and water.
 - 3. Threaded Rod: Use manufacturer's standard stainless steel threaded rods.
 - 4. Minimum Embedment: 5 inches unless otherwise indicated on the Contract Drawings.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install per manufacturer's instructions.

3.2 ANCHOR RODS CAST IN CONCRETE

- A. Use carbon steel, except where stainless steel is indicated.

3.3 ANCHORS

- A. Use adhesive and expansion anchors as indicated on the Contract Drawings.
- B. Use Sleeve anchors for hollow masonry work.

- END OF SECTION -

SECTION 09 91 00

PAINTING

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work Specified
 - 1. Furnish all painting materials and equipment and perform all labor necessary to provide a finished and completely acceptable painting/finishing job for the entire project.
 - 2. All painting work shall be as indicated on the Contract Drawings and as specified herein.
 - 3. All painting work shall be done in strict accordance with the paint manufacturer's published instructions in concert with this section of the specifications. Where paint manufacturer's recommended surface preparation, number of coats or mil thicknesses exceed those shown in the specifications, the recommendations of the manufacturer shall govern.

- B. Related Work Specified Elsewhere
 - 1. Section 40 05 19 Ductile Iron Pipe
 - 2. Section 40 05 53 Process Valves

- C. Reference Standards
 - 1. American Society for Testing and Materials
 - a. ASTM D 2246, Freeze-Thaw Test
 - b. ASTM E 308, Light Reflectance
 - c. ASTM B 117, Salt Spray Test
 - d. ASTM E 84, Surface Burning Characteristics Test
 - e. ASTM D 2805, Contrast Ratio
 - f. ASTM D 1308, Stain Resistance
 - g. ASTM D 2522, Conical Mandrel Elongation
 - h. ASTM D 3363, Hardness
 - i. ASTM D 4585, Condensing Humidity
 - j. ASTM D 3359B, Adhesion
 - k. ASTM D 4060, Abrasion
 - l. ASTM D 4541, Adhesion
 - m. ASTM D 4123, Scrubbability
 - 2. Federal Test Methods
 - a. Standard No. 141, Method 6271, Fungal Resistance
 - b. Standard No. 141, Method 642, Scrubbability
 - c. Standard No. TT-C-550C, Paragraphs 4.4.5.2 and 4.4.5.2, Stain Removal
 - d. Standard No. TT-C-550C, Paragraph 4.4.6, Chemical Resistance
 - e. Standard No. TT-C-555B, Paragraph 4.4.7.3, Wind Driven Rain
 - 3. American Institute of Steel Construction (AISC)
 - a. AISC Research Council on Structural Connection Specifications, Appendix A, Section 4.1
 - 4. Consumer Product Safety Act Regulations
 - a. Part 1303 - non-lead
 - 5. National Sanitation Foundation International (NSF)
 - a. ANSI/NSF Standard 61

- D. Performance Data
 - 1. Performance data and manufacturer's certified test reports confirming performance with applicable coating test requirements under Paragraph C., Reference Standards 1, 2, 3, 4, and 5.

1.2 SUBMITTALS

- A. Submit the following:
1. Paint Schedule
 - a. A comprehensive and complete schedule of surface preparations and paint systems shall be submitted. This schedule shall list all interior and exterior surfaces and all major equipment to be painted.
 - b. The schedule shall reflect the paint manufacturer's recommendations for the coating systems and shall contain certification that the manufacturer's representative has reviewed and approved the schedule.
 - c. The schedule shall itemize each painted surface or item and shall contain the following information in neat and tabular form:
 1. Paint system (generic name).
 2. Manufacturer and manufacturer's representative.
 3. Product name and product number line for each material.
 4. Type of surface preparation (note whether shop or field preparation is required).
 5. Prime coat (product, number of coats, dry mil thickness per coat, square feet coverage per gallon, manufacturer's recommended dry mil thickness).
 6. Intermediate coat, if required (product, number of coats, dry mil thickness per coat, square feet coverage per gallon, manufacturer's recommended dry mil thickness).
 7. Finish coat (product, number of coats, color, dry mil thickness per coat, square feet coverage per gallon, manufacturer's recommended dry mil thickness).
 8. Notes, remarks, comments on any special conditions, treatment or application requirements.
 9. Painting status at time of installation.
 - d. Colors shall be as specified in Article 3.9 Color Schedule or other sections in this specification.
 - e. The Contractor shall submit chips with the paint schedule to aid in color selection if requested by the Consultant.
 - f. Color names and/or numbers shall be identified according to the appropriate color chart issued by the manufacturer of the respective product.
 2. Pipe Marking/Label Schedule
 - a. A comprehensive listing of pipe markers shall be submitted. This listing shall include, at minimum, the following information and shall be presented in a neat, tabular form:
 1. Pipe which is to be labeled and nominal diameter of pipe (e.g. cold water line, 2-inch).
 2. Label type.
 3. Label wording.
 4. Label color.
 5. Letter color.
 3. Manufacturer's Technical Data
 - a. Manufacturer's technical data sheets for each paint/coating giving descriptive data, curing time, mixing, thinning and application instructions.
 - b. Manufacturer's technical data sheets for all pipe markers and labels.

1.3 QUALITY ASSURANCE

- A. All painting materials shall remain in their original containers with manufacturers' label intact. The following information shall appear on all painting material labels:
1. Manufacturer's name
 2. Product name and number

3. Color name and number
 4. Batch number
 5. Federal specification number if applicable
 6. Manufacturers stock number and date of manufacturer
- B. Field Quality Control
1. Field painting shall be by an approved painting subcontractor unless the Contractor has a successful experience record of painting on similar sized projects. The Contractor shall submit his experience record (or that of proposed subcontractor) for approval.
 2. The Contractor shall coordinate the paint products to be used such that shop and field coats are compatible. The Contractor shall coordinate the use of coatings such that shop coatings and field coatings are supplied by the same manufacturer, and that shop and field coats are compatible.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in sealed containers with manufacturer's label intact.
- B. Storage of Material
1. Store materials in a protective area at a temperature between 40-degrees F and 110-degrees F.
 2. Open and mix materials in storage area.

1.5 JOB CONDITIONS

- A. Apply coatings only under the following prevailing environmental conditions.
1. Air and surface temperature are not below 50-degrees F or above 110-degrees F.
 2. Relative humidity is not greater than 85 percent and the surface temperature is at least 50-degrees F above the dew point.
 3. The atmosphere is relatively free of airborne dust.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Unless otherwise specified materials shall be products of the following manufacturer:
1. Tnemec Company, Inc.
 2. Or equal.

PART 3 EXECUTION

3.1 GENERAL PAINTING NOTES

- A. All field surfaces prepared for field painting shall have the Consultant's approval before coating application begins.
- B. All coatings specified herein are in addition to shop coating specified elsewhere.
- C. Apply coatings with brush or roller. Spray paint only with Consultant's approval.
- D. Coatings shall be free from imperfections, unacceptable work will be given additional coats at no additional costs to the Owner.

- E. Damaged shop coatings shall be cleaned and retouched before any successive field painting is done.
- F. Shop primers shall be compatible with finish coats specified.
- G. New caulking shall not be painted.

3.2 SANDBLASTING

- A. Sandblasting shall conform to the Steel Structures Painting Council's System and Specifications.
- B. Proportions of sand, grit or shot shall be adjusted as necessary to produce a prepared surface equivalent of the approved sample.
- C. Application of protective coatings shall be within 24 hours after blast cleaning.
- D. Surfaces showing any traces of rust shall be blasted again before application of protective coatings.
- E. In areas where assemblies are scheduled to receive a sandblasted surface preparation and portions of the assembly have been previously coated, all prior coatings shall be removed by blast cleaning to the extent necessary for proper adhesion of the specified coating.

3.3 APPLICATION

- A. Mix and thin materials in accordance with the manufacturer's printed instructions.
- B. Apply materials at specified thickness by method recommended by the manufacturer.
- C. Allow each coat to dry thoroughly before recoating.
- D. Vary color slightly to indicate each successive coating.
- E. Cut in edges clean and sharp where work joins other materials or colors.
- F. Make finish coats smooth, uniform in color and free of brush marks, laps, runs and missed areas.

3.4 INSPECTION

- A. Surface Cleanliness: Surface of abrasive blast-cleaned steel shall comply with the SSPC pictorial standards.
- B. Surface Profile: The surface profile for ferrous metal scheduled to receive protective coatings shall be between 20 and 30 percent of the total dry film thickness for the completed system.

3.5 CLEANING

- A. Remove paint spatters from finished areas.
- B. Repair any damage to coatings or surfaces caused by cleaning operation.
- C. Remove debris from job site and leave storage area clean.

3.6 COLOR CODED AND MARKED PIPING

- A. All exposed interior and exterior piping shall be painted, color coded and marked in accordance with the Contract Drawings and this Section.
 - 1. Piping, miscellaneous metal, and structural steel located in vaults, manholes, and other underground structures shall be considered exposed.
 - 2. Markers shall be of all temperature adhesive tape, suitable for any pipe finish or covering as manufactured by W. B. Brady Company, Seton Nameplate Company or equal.
 - 3. Printing Style and Size
 - a. Outside diameter 2 inches and under: Letter size 3/4-inch, mount marker on piping.
 - b. Outside diameter 2 inches through 6 inches: Letter size 1/3 inches mount marker on piping.
 - c. Outside diameter 6 inches to 10 inches: Letter size 2 inches, mount marker on piping.
 - d. Outside diameter over 10 inches: Letter size 3 inches, mount marker on piping.
 - e. Marker and lettering shall meet ANSI Standard.
- B. Additional and/or supplemental information regarding label/marker colors is contained in the "Piping Label Schedule" included in this specification. Final selection of label/marker colors shall be conducted by the Consultant following submission of the pipe marking/label schedule.
- C. Markers (except for chemical feed piping) shall be placed not more than 10 feet apart with not less than one marker in any one straight run for pipe exceeding 5 feet in length. Chemical feed piping markers shall be placed at each branch and riser take off, both sides of pipe pressure through wall, floor, and ceiling at each passage to underground, and on all continuous pipe runs marked every three (3) feet.
 - 1. A flow arrow corresponding in background color and print style shall be installed with each pipe marker. Arrow markers must point away from the pipe labels and in the direction of flow. If flow can be in both directions, use double-headed arrow markers.
- D. On fiberglass, plastic, stainless steel, copper pipe, etc., a combination of wide banding tape and narrow banding tape shall be used for the pipe color and band.
- E. On vertical pipelines, labels shall be applied to read from the bottom up.
- F. Provide UV resistant labels where exterior use.

3.7 PIPING LABEL SCHEDULE

Pipe	Label	Label Colors		
		Field	Lettering	Pipe Color
Bypass Connection	Raw Sewage	Yellow	Black	Gray

3.8 SCHEDULE FOR PAINTING

- A. Products listed in the following schedule are manufactured by Tnemec Company.
- B. Schedule
 - 1. Concrete Walls and Ceiling (Interior Surface)
 - Surface Preparation: Brush down with wet, stiff bristle broom to remove loose dust, dirt, and contaminants. Clean and dry.
 - Prime Coat: Tnemec Series N69-Color Hi-Build Epoxoline at 3.0-5.0 mils DFT.
 - Finish Coat: Tnemec Series N69-Color Hi-Build Epoxoline at 3.0-5.0 mils DFT.

2. Concrete Block Walls (Interior)
Surface Preparation: Allow for 28-day curing. Level all fins and protrusions. Scrape joints, brush down with wet, stiff bristle broom to remove loose dust, dirt, and contaminants. Clean and dry.
Prime Coat: Tnemec Series, 156 Enviro-crete at 6.0 mils DFT.
Finish Coat: Tnemec Series 156 Enviro-crete at 6.0 mils DFT.
3. Interior Miscellaneous Metal and Structural Steel, Non-Submerged Ductile Iron Pipe, Interior Ductile Iron and Valves.
Surface Preparation: SSPC-SP6 commercial blast cleaning.
Prime Coat: Tnemec Series N69 Hi-Build Epoxoline at 4.0-5.0 mils DFT.
Intermediate Coat: Tnemec Series N69-Color Hi-Build Epoxoline at 3.0-5.0 mils DFT.
Finish Coat: Tnemec Series N69-Color Hi-Build Epoxoline at 3.0-5.0 mils DFT.
4. Exterior Exposed Miscellaneous Metal and Structural Steel, Exterior Exposed Ductile Iron Pipe.
Surface Preparation: SSPC-SP6 commercial blast cleaning.
Prime Coat: Tnemec Series 90-97 Tneme-Zinc at 2.5-3.5 mils DFT.
Intermediate Coat: Tnemec Series N69-Color Hi-Build Epoxoline at 3.0-5.0 mils DFT.
Finish Coat: Tnemec Series 1074/1075-Color Endura Shield II at 2.5-3.0 mils DFT.
5. Submerged Steel, Ductile Iron Pipe, Valves, and Appurtenances.
Surface Preparation: SSPC-SP6 commercial blast cleaning.
Prime Coat: Tnemec Series N69 Hi-Build Epoxoline at 3.0-5.0 mils DFT.
Intermediate Coat: Tnemec Series N69-Color Hi-Build Epoxoline at 3.0-5.0 mils DFT.
Finish Coat: Tnemec Series 1074/1075-Endura Shield II at 3.0-5.0 mils DFT.

3.9 COLOR SCHEDULE

Item	Color Description
Wastewater Piping	Medium Gray
Structural Steel Supports	Cream Tan
Sewage Piping, Valves and Appurtenances	Medium Gray
Pipe Hangers and Supports	Medium Gray
Concrete Ceiling, Walls	Cream Tan
All Other Items to Be Painted	As Determined by the Owner

- END OF SECTION -

SECTION 40 05 05

INTERIOR PROCESS PIPING INSTALLATION

PART 1 GENERAL

1.1 DESCRIPTION

- A. Scope:
1. Contractor shall provide all labor, materials, equipment and incidentals as shown, specified, and required to install and test all interior piping, fittings, and specials. The work includes the following:
 - a. All types and sizes of exposed piping, except where interior piping installations are specified under other Sections or other contracts.
 - b. Unless otherwise shown or specified, this Section includes all piping beginning at the outside face of structures or structure foundations and extending into the structure. Piping embedded in concrete within a structure or foundation shall be considered as interior and is included herein. Piping that is permanently or intermittently submerged, or installed in sub-aqueous environments, is considered as interior and is included in this Section.
 - c. Work on or affecting existing interior piping.
 - d. Installation of all jointing and gasket materials, specials, flexible couplings, mechanical couplings, harnessed and flanged adapters, sleeves, tie rods, and all work required for a complete interior piping installation.
 - e. Supports, restraints, and other anchors.
 - f. Field quality control, including testing.
 - g. Cleaning and disinfecting.
 - h. Incorporation of valves and special items shown or specified into the piping systems per the Contract Documents.
- B. Coordination:
1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before interior piping work.
- C. Related Sections:
1. Section 09 91 00, Painting.
 2. Section 40 05 19, Ductile Iron Pipe.
 3. Section 40 05 23, Stainless Steel Fittings.
 4. Section 40 05 53, Process Valves.
 5. Section 40 05 86, Air Valves for Wastewater Service.
 6. Section 40 05 87, Piping Specialties and Accessories.

1.2 REFERENCES

- A. Standards referenced in this Section are:
1. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings
 2. ANSI/AWWA C111, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 3. ANSI/AWWA C600, Installation of Ductile Iron Water Mains and Their Appurtenances.
 4. ANSI/AWWA C606, Grooved and Shouldered Joints.
 5. ANSI/AWWA C651, Disinfecting Water Mains.
 6. AWWA M23, PVC Piping - Design and Installation.
 7. AWWA M41, Ductile-Iron Pipe and Fittings.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with requirements and recommendations of authorities having jurisdiction over the work.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following Shop Drawings:
 - 1. Detailed drawings in plan and, as applicable, section.
 - 2. Details of piping, valves, supports, accessories, specials, joints, harnessing, and main anchor supports, and connections to existing piping, structures, equipment, and appurtenances.
 - 3. Submit description of proposed testing methods, procedures, and apparatus, and obtain Consultant's approval prior to testing.
- B. Test Reports:
 - 1. Submit copies of testing report for each test.
- C. Certificates:
 - 1. Submit a certificate signed by manufacturer of each product certifying:
 - a. That product conforms to applicable referenced standards.
- D. Record Documents:
 - 1. Maintain accurate and up-to-date record documents showing field and Shop Drawing modifications. Record documents for interior piping Work shall show actual location of all piping and appurtenances on a copy of the Drawings, unless otherwise approved by Consultant.
 - 2. Record documents shall show piping with elevations referenced to the project datum and dimensions from permanent structures. For straight runs of pipe provide offset dimensions as required to document pipe location.
 - 3. Include section drawings with interior piping record documents when the Contract Documents include section Drawings.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Deliver products to site to ensure uninterrupted progress of the work.
 - 2. Upon delivery, inspect pipe and appurtenances for cracked, gouged, chipped, dented, and other damage and immediately remove damaged products from site.
- B. Storage:
 - 1. Store products for convenient access for inspection and identification. Store products off the ground using pallets, platforms, or other supports. Protect packaged products from corrosion and deterioration.
 - 2. Pipe and fittings other than thermoplastic materials may be stored outdoors without cover. Thermoplastic pipe and fittings stored outdoors shall be covered.
- C. Handling:
 - 1. Handle pipe, fittings, specials, and accessories carefully with approved handling devices. Do not drop or roll material of delivery vehicles. Do not otherwise drop, roll, or skid piping.
 - 2. Avoid unnecessary handling of pipe.
 - 3. Keep pipe interiors free of dirt and foreign matter.

4. Protect interior linings and exterior coatings of pipe and fittings from damage. Replace pipe and fittings with damaged lining regardless of cause of damage. Repair damaged coatings.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Piping materials are specified in the Interior Process Piping Schedule at the end of this Section. Piping materials shall conform to Specification for each type of pipe and piping appurtenances.
- B. Markings and Identification:
 1. Pipe Markings:
 - a. Clearly mark each piece of pipe or fitting with a designation conforming to that shown on the approved Shop Drawings.
 - b. Manufacturer shall cast or paint on each length of pipe and each fitting the pipe material, diameter, and pressure or thickness class.
- C. Appurtenances: Provide products that conform to Section 40 05 87, Piping Specialties and Accessories.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the work is to be installed and notify Consultant in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 1. Install piping as shown, specified and as recommended by the pipe and fittings manufacturer.
 2. If there is a conflict between manufacturer's recommendations and the Contract Documents, request in writing instructions from Consultant before proceeding.
 3. Provide pipe manufacturer's installation specialist at site as specified on this Section.
- B. Temporary Blind Flanges, Plugs, Caps, and Bulkheads:
 1. Temporarily plug installed pipe at the end of each day of work or other interruption of pipe installation to prevent entry of animals, liquids, and persons into pipe, and entrance or insertion of deleterious materials into pipe.
 2. Install standard plugs in all bells at dead ends, tees, and crosses. Cap all spigot and plain ends.
 3. Fully secure and block blind flanges, plugs, caps, and bulkheads installed for testing, designed to withstand specified test pressure.
 4. Where plugging is required for phasing of work or subsequent connection of piping, install watertight, permanent type blind flanges, plugs, caps, or bulkhead acceptable to Consultant.

- C. Piping Installation:
1. Conform to manufacturer's instructions and requirements of standards and manuals listed in this Section, as applicable:
 - a. Ductile Iron Pipe: ANSI/AWWA C600, AWWA M41.
 2. Install straight runs true to line and elevation.
 3. Install vertical pipe truly plumb in all directions.
 4. Install piping parallel or perpendicular to walls of structures. Piping at angles and 45 degree runs across corners of structures will not be accepted unless specifically shown on the Contract Documents or approved by the Consultant.
 5. Install small diameter piping generally as shown when specific locations and elevations are not indicated. Locate such piping as required to avoid ducts, equipment, beams, and other obstructions.
 6. Install piping to leave all corridors, walkways, work areas, and similar spaces unobstructed. Unless otherwise approved by Consultant provide a minimum headroom clearance under piping and pipe supports of 7.5 feet. Clearances beneath piping shall be measured from the outermost edge of piping, flanges or other type of joint that extends beyond the nominal outside diameter of piping.
 7. Protect and keep clean interiors, fittings, and valves of pipe that will convey potable water, chemicals, and other pipe designated by Consultant.
 8. Cutting: Cut pipe from measurements verified at site. Field cut pipe, where required, with a machine specially designed for cutting type of pipe being installed. Make cuts carefully without damage to pipe, coating, or lining, and with a smooth end at right angles to axis of pipe. Cut ends of push-on joint type pipe shall be tapered and sharp edges filed off smooth. Do not flame-cut pipe.
 9. Place bell and spigot-type pipe so that bells face the direction of laying, unless otherwise approved by Consultant.
 10. Deflections at joints shall not exceed 75 percent of amount allowed by pipe manufacturer, unless otherwise approved by the Consultant.
- D. Jointing Pipe:
1. General:
 - a. Make joints in accordance with pipe manufacturer's recommendations and Contract Documents.
 - b. Cut piping accurately and squarely and install without forcing or springing.
 - c. Ream out pipes and tubing to full inside diameter after cutting. Remove all sharp edges on end cuts.
 - d. Remove all cuttings and foreign matter from inside of pipe and tubing before installation. Thoroughly clean all pipe, fittings, valves, specials, and accessories before installing.
 2. Ductile Iron Proprietary Joints:
 - a. Pipe that utilizes proprietary joints for restraint specified in Section 40 05 19, Ductile Iron Pipe, or other such joints, shall be installed in accordance with manufacturer's instructions.
 3. Ductile Iron and Steel Flanged Joints:
 - a. Assemble flanged joints using ring-type gaskets, with thickness as recommended by pipe manufacturer but not less than 1/8-inch thick, for raised-face flanges. Use full-face gaskets for flat-face flanges, unless otherwise approved by Consultant or recommended by pipe manufacturer. Gaskets shall be suitable for the service intended in accordance with the manufacturer's ratings and instructions. Gaskets shall be properly centered.
 - b. Tighten bolts in a sequence that provides equal distribution of bolt loads.
 - c. Length of bolts shall be uniform. Bolts shall not project beyond the nut more than 1/4-inch or fall short of the nut when fully taken up. Machine-cut ends of bolts to be neatly rounded. Do not use washers.

- d. Prior to assembly of flanged joints, lubricate bolt threads and gasket faces.
 - e. Alternately tighten bolts 180 degrees apart to compress the gasket evenly.
 - f. Bolts and nuts shall be type 316 stainless steel.
- E. Installing Valves and Accessories:
- 1. Provide supports for large valves, flow meters, and other heavy items as shown or required to prevent strain on adjoining piping.
- F. Closures:
- 1. Provide closure pieces, such as blind flanges and caps, shown or required to complete the work.

3.2 THRUST RESTRAINT

- A. Provide thrust restraint on all pressure piping systems and where otherwise shown or specified.
- B. Thrust restraints shall be designed for axial thrust exerted by test pressure specified in the Interior Process Piping Schedule at end of this Section.

3.3 WORK AFFECTING EXISTING PIPING

- A. Location of Existing Piping:
 - 1. Locations of existing piping shown on Drawings is approximate.
 - 2. Determine the true location of existing piping to which connections are to be made, crossed, and that could be disturbed, and determine location of other facilities that could be affected by the work.
- B. Work on Existing Pipelines:
 - 1. Cut or tap pipes as shown or required with machines and tools specifically designed for cutting or tapping pipelines.
 - 2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
 - 3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the work.

3.4 PAINTING

- A. Field painting shall conform to Section 09 91 00, Painting.

3.5 FIELD QUALITY CONTROL

- A. Testing, General:
 - 1. Test all piping, except as exempted in the Interior Process Piping Schedule.
 - 2. Notification:
 - a. Notify Consultant at least 48 hours prior to testing.
 - b. When authorities having jurisdiction are to witness tests, notify Consultant and authorities having jurisdiction in writing at least 48 hours in advance of testing.
 - 3. Conduct all tests in presence of Consultant.
 - 4. Remove or protect pipeline-mounted devices that could be damaged by testing.
 - 5. Provide all apparatus and services required for testing, including:
 - a. Test pumps, compressors, hoses, calibrated gages, meters, test containers, valves, fittings, and temporary pumping systems required to maintain Owner's operations.
 - b. Temporary bulkheads, bracing, blocking, and thrust restraints.

6. Provide air if an air test is required, power if pumping is required, and gases if gases are required.
 7. Unless otherwise specified, Owner will provide fluid required for hydrostatic testing. Contractor shall provide means to convey fluid for hydrostatic testing into the pipe being tested. Contractor shall provide fluid for other types of testing required.
 8. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.
 9. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest valve. Piping not installed by Contractor and that fails the test shall be repaired upon authorization of Consultant or Owner. Repair of existing piping will be paid as extra work unless otherwise specified.
- B. Test Schedule:
1. Refer to the Interior Process Piping Schedule for type of test required and required test pressure.
 2. Unless otherwise specified, the required test pressures are at lowest elevation of pipeline segment being tested.
 3. For piping not listed in Interior Process Piping Schedule:
 - a. Hydrostatically test pipe that will convey liquid at a pressure greater than five psig. Provide process air pipe test for pipe that will convey air or gas under pressure or vacuum, except chlorine gas, which requires a separate test.
 4. Test Pressure:
 - a. Use test pressures listed in Interior Process Piping Schedule.
 - b. If test pressure is not listed in Interior Process Piping Schedule, or if a test is required for piping not listed in the Interior Process Piping Schedule, test pressure will be determined by the Consultant based on the maximum anticipated sustained operating pressure and the methods described in the applicable ANSI/AWWA manual or standard that applies to the piping system.

3.6 INTERIOR PROCESS PIPING SCHEDULE

- A. The schedules listed below, following the "End of Section" designation, are a part of this Specification section.
1. Table 40 05 05-A, Interior Process Piping Schedule.

- END OF SECTION -

TABLE 40 05 05-A, INTERIOR PROCESS PIPING SCHEDULE

Service	Diameter (inch)	Material	Interior Lining	Exterior Coating	Pressure Class/ Thickness	Joint	Test	Remarks
Bypass Discharge	6", 8", 10"	DI	CL	P	CL-53	Flg/RFA	HYD (150 psi)	
Bypass Discharge	8"	SS	N/A	N/A	150 PSI	Flg	HYD (150 psi)	

The following abbreviations are used in the Interior Process Piping Schedule.

A. Service Abbreviations

Service	Abbrev.	Service	Abbrev.
Sanitary Force Main	SFM	Overflow	OF
Raw Water	RW	Centrate	CEN
Potable Water	PW	Filtrate	FILT
City Water	CW	Scum	SCUM
Non-Potable Water	NPW	Primary Sludge	PS
Plant Effluent Water	PEW	Return Activated Sludge	RAS
Spray Water	SPW	Waste Activate Sludge	WAS
Backwash Water	BW	Thickened Sludge	TS
Hot Water Supply	HWS	Mixed Sludge	MS
Hot Water Return	HWR	Digested Sludge	DS
Influent	INF	Chlorine Solution	CLS
Effluent	EFF	Sodium Hydroxide (Caustic)	NAOH
Drain	DR	Sodium Hypochlorite	NAOCL
Process Air	PA	Polymer Solution	POLYS
Instrument Air	IA	Alum	AL
Digester Gas	DIG	Hydraulic Fluid	HF
Chlorine Gas	CLG	Fuel Oil	FO
Wastewater	WW	Lube Oil	LO

B. Material Abbreviations

Material	Abbrev	Material	Abbrev.
Ductile Iron	DI	Polyvinyl Chloride	PVC
Cast Iron	CI	Chlorinated Polyvinyl Chloride	CPVC
Carbon Steel	CS	Polyethylene	PE
Stainless Steel	SS	High Density Polyethylene	HDPE
Copper	C	Fiberglass Reinforced Plastic	FRP
Prestressed Concrete Cylinder Pipe	PCCP		
Non-Prestressed Concrete Cylinder Pipe	CCP		
Steel Cylinder Pipe	SCP		

C. Lining/Coating Abbreviations

Lining	Abbrev	Coating	Abbrev.
Cement Mortar Lined	CL	Painted	P
Glass Lined	GL	Insulated	I
Ceramic Epoxy	CE	Galvanized	Galv
Fusion Bonded Epoxy Lined	FBEL		
Plastic Lined	PL		

D. Joint Abbreviations

Joint Type	Abbrev		Joint Type	Abbrev.
Bell and Spigot	BS		Flanged	Flg
Restrained Bell and Spigot	RBS		Butt Weld	BW
Push-on Joint	POJ		Lap Weld	LW
Restrained Push-on Joint	RPOJ		Butt Fusion Weld	BFW
Mechanical Joint	MJ		Solvent Weld	SW
Restrained Mech. Joint	RMJ		Sleeve-type Flexible Coupling	SLFC
Soldered	Sd		Split Flexible Coupling	SPFC
Brazed	Bz		Plasticized PVC Coupling	PPVC
Threaded	Thd		Grooved or Shouldered End Coupling	GSEC
Restrained Flanged Adapter	RFA		Flanged Adapter	FA

E. Test Abbreviations

Test	Abbrev		Test	Abbrev.
Hydrostatic Test (test pressure in psig)	HYD ()		Disinfection and Bacteriological Testing	DBT
Process Air Pipe Test (test pressure in psig)	PA ()		Examination of Welds	EW
Chlorine Pipe Test	CL		Exfiltration Test	EX
			No Test Required	NR

SECTION 40 05 07

PIPE HANGERS AND SUPPORTS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work Included
 - 1. Pipe and ductwork hangers and supports including all metallic hanging and supporting devices and all concrete piers for above-ground or interior pipelines, ductwork, and fittings, except electrical conduits.
- B. Related Work Specified Elsewhere
 - 1. Section 09 91 00 Painting

1.2 SUBMITTALS

- A. Shop Drawings/Manufacturer's Data
 - 1. Shop drawings and/or manufacturer's data demonstrating detailed compliance with the provisions of this section shall be submitted to the Consultant in accordance with the General Conditions.
 - 2. Submit layout drawings depicting type, location, and details of supports and anchors.
 - 3. Provide manufacturers technical information and drawings of custom fabricated supports.
 - 4. Provide design data for supports including rated capacity.

1.3 QUALITY ASSURANCE

- A. Acceptable Manufacturers
 - 1. Crane Company
 - 2. Grinnell Company
 - 3. B-Line Systems
 - 4. Or equal.

1.4 DESIGN CONSIDERATIONS

- A. Factor of Safety
 - 1. Supporting devices shall be designed in accordance with the best practice to provide a working safety factor of not less than 5 for each hanger, assuming the hanger is supporting the maximum specified hanger spacing.
- B. The Contractor shall be responsible for the layout and design of all pipe and ductwork supports.
- C. All supports shall be designed to adequately secure the piping and ductwork against movement due to thermal expansion and contraction, internal flow pressure and forces, and external forces such as equipment, pipe, and personnel contact.
- D. Supports shall be designed and located so that they do not interfere with normal operations.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Pipe hangers, supports, and associated hardware shall be type 316 stainless steel. Refer to relevant Sections of the Contract Documents for additional material requirements.

2.2 CONSTRUCTION

- A. Hangers - Overhead hangers for pipes ten inches in diameter and smaller shall be supported by threaded rods and pipe clamp-type hangers.
- B. Supports
1. Brackets for supporting piping from walls or columns shall be furnished with back plates where required to prevent the safe bearing capacity of the wall from being exceeded. Type 316 stainless steel adhesive wall anchors shall be provided.
 2. Insulated pipes shall be provided with protection saddles. Hangers shall be of size to allow for full thickness, continuous insulation. No hangers shall pierce covering on insulated piping.
 3. Saddle stands shall be of the adjustable type, with floor flanges for bolting to floors of foundations. Stanchions shall be similar to saddle stands except that they shall have a top yoke.
- C. Hanger Rods
1. The minimum acceptable size hanger rods for each installation shall be determined from the following table:

<u>Size of Pipe - Inches</u>	<u>Diameter of Rod - Inches</u>
6 and 8	3/4
10	7/8
 2. All hanger rods shall have turnbuckles to permit vertical adjustment after erection.

2.3 SPECIAL SUPPORTS

- A. Any required pipe supports for which the supports specified in this section are not applicable shall be fabricated or constructed from standard structural steel (type 316 stainless) shapes and anchor hardware similar to items previously specified herein and shall be subject to the approval of the Consultant.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Installation shall be performed as recommended by the manufacturer and shall be such that the centerline elevations of supported piping are maintained in an orderly manner.
- B. All pipes, horizontal and vertical, shall be rigidly supported from the building structure by approved supports. Supports shall be provided at changes in direction and elsewhere as shown on the Contract Drawings or specified herein.
- C. All pipe supports shall be designed with liberal strength and stiffness to support the respective pipes under the maximum combination of peak loading conditions to include pipe weight, liquid weight, liquid movement, and pressure forces, thermal expansion and contraction, vibrations, and all probable externally applied forces. Prior to installation, all pipe supports shall be approved by the Consultant.

- D. Pipe supports shall be provided to minimize lateral forces through valves, both sides of split-type couplings, and sleeve-type couplings and to minimize all pipe forces on pump housings. Pump housings shall not be utilized to support connecting pipes.
- E. Hangers and supports for all pipe other than PVC, shall be spaced not more than 10 feet apart and at or near changes in direction of pipelines.
- F. All vertical pipes shall be supported at each floor penetration or at intervals of at least 15 feet by approved pipe collars, clamps, brackets, or wall rests, and at all points necessary to insure rigid construction.
- G. Unless otherwise shown, specified or directed, no piping shall be supported from other piping or from metal stairs, ladders or walkways.
- H. Pipe supports shall not result in point loadings but shall distribute pipe loads evenly along the pipe circumference.
- I. Effects of thermal expansion and contraction of the pipe shall be accounted for in pipe support selection and installation.
- J. Responsibility for the proper location of pipe supports shall be borne by the Contractor.
- K. Pipes hung from existing floors or ceilings shall utilize a threaded rod and through-bolt with square steel plate and nuts located above the slab. A second plate shall be provided on the underside of the slab.

- END OF SECTION -

SECTION 40 05 19
DUCTILE IRON PIPE

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish ductile iron pipe and fittings.
 2. Extent of piping is shown on the Drawings. Section 40 05 05, Interior Process Piping Installation, specifies pipe service, diameter, material, lining, coating, pressure rating, joint type, and testing required.
- B. Coordination:
1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before ductile iron pipe Work.
- C. Related Sections:
1. Section 09 91 00 Painting.
 2. Section 40 05 05 Interior Process Piping Installation.
 3. Section 40 05 87 Piping Specialties and Accessories.

1.2 REFERENCES

- A. Standards referenced in this Section are:
1. ANSI B18.2.1, Square and Hex Bolts and Screws Inch Series.
 2. ANSI B18.2.2, Square and Hex Nuts. (Inch Series).
 3. ASTM A193, Alloy Steel and Stainless Steel Bolting Materials for High-Temperature Service.
 4. ASTM A194, Specification for Carbon Steel and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both.
 5. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 6. ASTM A354, Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners.
 7. ASTM A563, Specification for Carbon and Alloy Steel Nuts.
 8. ASTM B117, Practice for Operating Salt Spray (Fog) Apparatus.
 9. ASTM C283, Test Methods for Resistance of Porcelain Enameled Utensils to Boiling Acid.
 10. ASTM D714, Test Method for Evaluating Degree of Blistering of Paints.
 11. ASTM D792, Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
 12. ASTM D5162, Discontinuity (Holiday) Testing of Non-Conductive Protective Coating on Metallic Substrates.
 13. ASTM E96, Test Methods for Water Vapor Transmission of Materials.
 14. ASTM G14, Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test).
 15. ASTM G62, Test Methods for Holiday Detection in Pipeline Coatings.
 16. ASTM G95, Test Methods for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method).
 17. ANSI/AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.
 18. ANSI/AWWA C110, Ductile Iron and Gray Iron Fittings for Water.

19. ANSI/AWWA C111, Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
20. ANSI/AWWA C115, Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges.
21. ANSI/AWWA C116, Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron Fittings for Water Service.
22. ANSI/AWWA C151, Ductile Iron Pipe, Centrifugally Cast, for Water.
23. ANSI/AWWA C153, Ductile Iron Compact Fittings, 3 inch through 24 inch and 54 inch through 64 inch for Water Service.
24. ANSI/AWWA C606, Grooved and Shouldered Type Joints.
25. European Standard (EN), EN 598: Ductile Iron Pipe, Fittings, Accessories and Their Joints for Sewerage Applications.
26. MSS-SP 60, Connecting Flange Joint Between Tapping Sleeves and Tapping Valves.
27. NACE RP0188, Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.
28. NAPF 500-03, Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special External Coatings and/or Special Internal Linings.
29. NSF/ANSI 61, Drinking Water System Components - Health Effects.
30. SSPC PA 2, Measurement of Dry Coating Thickness with Magnetic Gages.
31. SSPC Painting Manual, Volume 1, Para. XIV.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 1. Manufacturer:
 - a. Manufacturer shall have a minimum of five years successful experience producing ductile iron pipe and fittings and shall be able to show evidence of at least five installations in satisfactory operation in the United States that are similar applications to the specified service.
 - b. Lining and coating products shall be manufactured by a firm with a minimum of five years successful experience in protecting pipelines exposed to the specified service conditions , and shall be able to show evidence of at least five installations in satisfactory operation in the United States that are similar applications to the specified service.
 - c. When not applied by the manufacturer, lining and coating subcontractor shall have a minimum of five years successful experience in the application of the specified linings and coatings for similar applications for the specified service, and shall be able to show evidence of at least five installations in satisfactory operation in the United States.
 - d. All ductile iron pipe and fittings shall be manufactured in the United States.
- B. Supply and Compatibility:
 1. Unless otherwise approved, obtain all pipe, fittings, and appurtenances included in this Section from a single ductile iron pipe manufacturer.
 2. Ductile iron pipe manufacturer shall review and approve or prepare all Shop Drawings and other submittals for pipe, fittings, and appurtenances furnished under this Section.
 3. Pipe, fittings, and appurtenances shall be suitable for the specified service and shall be integrated into overall piping system by ductile iron pipe manufacturer.
 4. Ductile iron pipe manufacturer shall be responsible for all products and all factory-applied linings and coatings, whether installed at pipe manufacturer's facility or at manufacturer's Supplier's facility.
- C. Regulatory Requirements:
 1. Pipe and fittings, including linings and coatings, that will convey potable water or

water that will be treated to become potable, shall be certified by an accredited organization in accordance with NSF/ANSI 61 as being suitable for contact with potable water, and shall comply with requirements of authorities having jurisdiction at Site.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following with Shop Drawings required under Section 40 05 05, Interior Process Piping Installation:
 - 1. Shop Drawings:
 - a. Detailed drawings and data for pipe, fittings, gaskets, hardware appurtenances, linings, and coatings.
 - 2. Test Procedures: For linings and coatings in pipe and fittings.
- B. Informational Submittals: Submit the following:
 - 1. Certificates:
 - a. Submit certificate signed by manufacturer of each product that product conforms to applicable referenced standards and the Contract Documents.
 - 2. Source Quality Control Submittals:
 - a. Submit results of specified shop tests for pipe, fittings, linings, and coatings.
 - b. Lining and coating test coupons.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 40 05 05, Interior Process Piping Installation.
- B. Handling of Pipe and Fittings Lined with Ceramic Epoxy, Fusion Bonded Epoxy, or Glass: Lifting devices shall not come into contact with lined surfaces. Use hooks, forks, chains, straps, and other lifting devices only on exterior of pipe and fittings. Pipe and fittings with damaged lining shall be replaced regardless of cause of damage.
- C. Handling of Fittings Coated with Fusion Bonded Epoxy: Hooks, forks, chains, straps, and other lifting devices shall be rubber-coated and be used only on exterior of fittings in manner to avoid damaging coating. If coating becomes damaged, notify pipe and coating manufacturer to determine if repair of damaged area or re-coating is required. Perform repairs using recommended procedures and materials provided by manufacturer, as accepted by Consultant. Pipe and fittings requiring re-coating shall be removed from Site and returned to manufacturer's facility. Repaired or re-coated pipe and fittings shall comply with requirements of this Section.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. Piping systems shall be suitable for their intended use.
 - 2. Joints shall be as specified in Section 40 05 05, Interior Process Piping Installation as shown on the Contract Drawings. If not specified, provide flanged joints for interior piping and push-on or mechanical joints for buried piping. Provide couplings on pipe with plain or grooved ends where shown or where approved by Consultant.

- B. Ductile Iron Pipe, Joints, and Fittings:
1. Flanged Pipe: Fabricate in accordance with ANSI/AWWA C115.
 - a. Pressure Rating: As specified in piping schedule in Section 40 05 05, Interior Process Piping Installation. If not otherwise specified, use Special Thickness Class 53.
 2. Non-Flanged Pipe: Conform to ANSI/AWWA C151 for material, pressure, dimensions, tolerances, tests, markings, and other requirements.
 - a. Pressure Class: As specified in piping schedules in Section 40 05 05, Interior Process Piping Installation. If not otherwise specified, use Pressure Class 250.
 - b. Special Thickness Class: As specified in piping schedules in Section 40 05 05, Interior Process Piping Installation. If not otherwise specified, use Special Thickness Class 53.
 3. Pipe Joints:
 - a. Flanged Joints: Conform to ANSI/AWWA C110, ANSI/AWWA C111, and AWWA C115 capable of meeting the pressure rating or special thickness class, and test pressure specified in piping schedule in Section 40 05 05, Interior Process Piping Installation.
 - 1) Gaskets: Unless otherwise specified, gaskets shall be at least 1/8-inch thick, ring or full-face as required for the pipe, of synthetic rubber compound containing not less than 50 percent by volume nitrile or neoprene, and shall be free from factice, reclaimed rubber, and other deleterious substances. Gaskets shall be suitable for the service conditions specified, specifically designed for use with ductile iron pipe and fittings.
 - 2) Bolts: Comply with ANSI B18.2.1.
 - a) Exposed: Type 304 Stainless Steel.
 - b) Buried or Submerged: ASTM A194, Grade B8M, Class 2, Heavy hex, Type 304 stainless steel.
 - 3) Nuts: Comply with Type 304 Stainless Steel.
 - a) Exposed: ASTM A563, Grade A, Heavy hex.
 - b) Buried or Submerged: ASTM A194, Grade B8M, Heavy hex, Type 304 stainless steel.

- C. Lining, General:
1. Typical Service Conditions:

Property	Suction and Discharge
Fluid(s) Conveyed Through Pipe	Wastewater
pH range	6-8
Temperature Range (degrees F)	35-85
Maximum Fluid Velocity (fps)	7
Lining Type	Bituminous Seal-Coated, Cement-Mortar

2. Surface Preparation:
 - a. Initial Surface Inspection: Surface to be lined shall be inspected by pipe and fitting manufacturer and applicator, if applicator is other than pipe and fitting manufacturer. The inspecting parties shall inspect the surface to be coated and mutually determine the recommended surface preparation method.
 - b. Surface Preparation: Prepare surface in accordance with the recommended method.
 - c. Finished Surface Inspection: Lining applicator shall inspect finished surface prior to application to determine acceptability. If surface is unacceptable, surface preparation shall be repeated as necessary.

- D. Cement-mortar Lining:
 - 1. Where specified in piping schedules included with Section 40 05 05, Interior Process Piping Installation, pipe and fittings shall be lined with bituminous seal coated cement-mortar lining, double thickness, in accordance with ANSI/AWWA C104.
- E. Couplings:
 - 1. Refer to Section 40 05 87, Piping Specialties and Accessories.
- F. Specials:
 - 1. Transition Pieces:
 - a. Provide suitable transition pieces (adapters) for connecting to existing piping.
 - b. Unless otherwise shown or indicated, expose existing piping to determine material, dimensions, and other data required for transition pieces.

2.2 MARKING FOR IDENTIFICATION

- A. In addition to identification markings specified in Section 40 05 05, Interior Process Piping Installation, also stamp, mark, and identify push-on joint and mechanical joint pipe with:
 - 1. Name or trademark of manufacturer.
 - 2. Weight, class or nominal thickness, and casting period.
 - 3. Country where cast.
 - 4. Year the pipe was produced.
 - 5. Letters "DI" or "Ductile" shall be cast or metal stamped
- B. In addition to identification markings specified in Section 40 05 05, Interior Process Piping Installation, also stamp, mark, and identify flanged pipe with:
 - 1. Flange manufacturer's mark, size, and letters "DI" cast or stamped on the flanges.
 - 2. Fabricator's mark if other than flange manufacturer.
 - 3. Length and weight.
- C. In addition to identification markings specified in Section 40 05 05, Interior Process Piping Installation, also stamp, mark, and identify fittings with:
 - 1. Manufacturer's identification.
 - 2. Pressure rating.
 - 3. Nominal diameters of openings.
 - 4. Country where cast.
 - 5. Number of degrees or fraction of the circle on bends.
 - 6. Letters "DI" or "Ductile" cast on them.

2.3 EXTERIOR SURFACE PREPARATION AND COATINGS

- A. General Coating Requirements:
 - 1. Coating types are specified in piping schedules in Section 40 05 05, Interior Process Piping Installation.
- B. Exposed Pipe and Fittings:
 - 1. Surface Preparation:
 - a. Initial Surface Inspection: Pipe and fitting manufacturer and coating applicator shall inspect surface to be coated and mutually determine recommended NAPF 500-03 surface preparation method.
 - b. Surface Preparation: Prepare surface in accordance with recommended NAPF 500-03 method.

- c. Finished Surface Inspection: Prepared surfaces shall be inspected by coating applicator prior to application to determine acceptability of finished surface. If surface is unacceptable, repeat surface preparation and re-application as necessary.
 2. After recommended surface preparation, prime coat exterior ferrous metal surfaces of pipe and fittings in the shop in accordance with Section 09 91 00, Painting.
 3. Field painting shall comply with Section 09 91 00, Painting.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Inspect piping to assure that piping is free from defects in material and workmanship. Verify compatibility of pipe, fittings, gaskets, linings, and coatings.

3.2 INSTALLATION AND FIELD QUALITY CONTROL

- A. For exposed piping installation and testing, refer to Section 40 05 05, Interior Process Piping Installation.

- END OF SECTION -

SECTION 40 05 23

STAINLESS STEEL FITTINGS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, tools, equipment, and incidentals as shown, specified, and required to furnish and install stainless steel pipe, fittings, and accessories.
 - 2. Extent of pipe, fittings and accessories is shown on the Contract Drawings.
- B. Coordination:
 - 1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before stainless steel pipe, fittings, and accessories.
- C. Related Sections:
 - 1. Section 40 05 05, Interior Process Piping Installation.

1.2 REFERENCES

- A. Standards referenced in this Section are:
 - 1. ASME B31.3, Process Piping.
 - 2. ASME B36.19M, Stainless Steel Pipe.
 - 3. American Society for Non-Destructive Testing (ASNT), ASNT-TC-1A, Recommended Practice, Personnel Qualification and Certification in Non-destructive Testing.
 - 4. ASTM A194/A194M, Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or both.
 - 5. ASTM A312/A312M, Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 - 6. ASTM A351, Specification for Castings, Austenitic, for Pressure-Containing Parts.
 - 7. ASTM A380, Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
 - 8. ASTM A403/A403M, Specification for Wrought Austenitic Stainless Steel Piping Fittings.
 - 9. ASTM A479/A479M, Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
 - 10. ASTM A530/A530M, Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe.
 - 11. ASTM A778, Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products.
 - 12. AWWA C208, Dimensions for Fabricated Steel Water Pipe Fittings.
 - 13. AWWA C219, Bolted, Sleeve Type Couplings for Plain-End Pipe.
 - 14. AWWA C606, Grooved and Shouldered Joints.
 - 15. AWWA M11, Steel Pipe - A Guide for Design and Installation.
 - 16. Expansion Joint Manufacturers Association, Inc. (EJMA), Standards of the Expansion Joint Manufacturers.
 - 17. ISO 9001, Quality Management Systems – Requirements.
 - 18. Pipe Fabrication Institute (PFI), PFI ES-3, Fabricating Tolerances.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer:
 - a. Manufacturers shall have sufficient experience producing stainless steel pipe, fittings, expansion joints, couplings, and accessories for air and gas service, and shall submit upon request documentation of at least five installations in satisfactory service for at least five years.
 - 2. Welding:
 - a. Personnel performing examination of welds shall be qualified to at least Level II, in accordance with ASNT-TC-1A
- B. Component Supply and Compatibility:
 - 1. Obtain all materials and equipment included in this Section, regardless of component manufacturer, from single stainless steel pipe, fittings and accessories Supplier.
 - 2. Supplier of stainless steel pipe, fittings, and accessories for air and gas service shall review and approve, or prepare, all Shop Drawings and other submittals for all components furnished under this Section.
 - 3. All components shall be specifically constructed for specified service conditions and shall be integrated into overall assembly by stainless steel pipe, fittings, and accessories Supplier.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Shop Drawings: Submit the following with submittals required under Section 40 05 05, Interior Process Piping Installation:
 - a. Detailed drawings and data for fittings, joint types, gaskets, and appurtenances.
 - b. Written welding procedures for each type of weld and weld position.
 - 2. Product Data:
 - a. Manufacturer's literature, including materials of construction, dimensions, weights, specifications and other engineering data.
 - 3. Testing Procedures: Quality control, inspection and testing procedures. Obtain Consultant's approval prior to performing tests.
- B. Informational Submittals: Submit the following:
 - 1. Certificates.
 - a. Certificates of compliance with applicable portions of standards referred to in this Section.
 - b. Certification of compliance with service conditions for elastomers used for gaskets.
 - 2. Supplier Instructions:
 - a. Installation data and instructions.
 - 3. Source Quality Control Submittals:
 - a. Pipe and fittings shop tests, including weld examination, product inspection, and test reports, in accordance with Article 2.2 of this Section.
 - b. Results of source quality control examinations, tests, and inspections for expansion joints, couplings, and appurtenances.
 - c. ASTM Conformance Test Reports: For pipe and fittings manufactured outside of the United States, submit test and inspection reports verifying certification with ASTM standards referenced in this Section.
 - 4. Qualifications Statements:
 - a. Manufacturer: List of existing installations with contact names and telephone numbers.
 - b. Welder qualifications.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 40 05 05, Interior Process Piping Installation.
- B. Handling:
 - 1. Handling of Pipe: To maintain circular shape and prevent distortion, temporarily brace each end of each length of pipe with pipe manufacturer-approved internal spider device, where recommended by pipe manufacturer.
 - 2. Handling of Stainless Steel Fabrications during Manufacturing, at the Site, and Elsewhere:
 - a. Avoid contact between ferrous materials and stainless steel. Do not use carbon steel wire rope or uncoated chain slings and rigging to handle stainless steel piping.
 - b. Use tools dedicated for stainless steel.
 - c. Use nylon slings and alloy chains, cable, or straps for handling stainless steel.
 - d. Use storage racks of non-ferrous metal or lined with rubber for storing stainless steel pipe, fittings, and accessories.

PART 2 – PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. General:
 - 1. Piping systems and components shall conform to the Contract Documents and be suitable for their intended use.
 - 2. Joint types, linings, and coatings shall be as specified in Section 40 05 05, Interior Process Piping Installation. If not specified, provide flanged joints for exposed interior piping and welded joints for buried piping.
- B. ASTM Conformance:
 - 1. Pipe and fittings manufactured outside of the United States shall conform to ASTM standards referenced in this Section. Physical tests and chemical analyses shall be performed as required on pipe and fittings being furnished to verify ASTM conformance. Tests and analyses shall be performed by an independent testing agency approved by Consultant and paid by Contractor. Select test samples in conformance with ASTM requirements.

2.2 STAINLESS STEEL PIPE AND FITTINGS

- A. Manufacturers: Provide products of one of the following:
 - 1. Blue Fabricators, Littleton CO.
 - 2. Douglas Brothers, Portland ME.
 - 3. Felker Bros. Corp., Marshfield WI.
 - 4. Or equal.
- B. General:
 - 1. Clean and descale welded stainless steel items in accordance with ASTM A380.
 - 2. There shall be no staining or streaking from iron and other surface contaminants on ready-to-be-shipped stainless steel items.
 - 3. Coordinate jointing requirements with stainless steel piping accessories and with equipment specified in other Sections.
 - 4. Coordinate dimensional tolerances of pipe and fittings as required for expansion joints, couplings, and for field welding of pipe joints (when field welding is allowed).
 - 5. Paints and markers used for marking stainless steel shall be free of harmful metal or metal salts, such as zinc, lead, copper, or sulfur.

- C. Fabrication of Fittings:
 - 1. Tees: Fabricate true and square from existing pipe and comply with field verified dimensions.
- D. Stainless steel pipe and fittings shall be minimum Schedule 10S type 304L stainless steel with manufactured in conformance with ANSI/AWWA C220, ANSI/AWWA C226, ASTM A774, and ASTM A778, minimum pressure rating 150 psi.
- E. Fittings shall be butt weld type manufactured in accordance with ANSI/AWWA C226 and ASTM A774 of the same raw materials and in the same thicknesses as the pipe, minimum pressure rating 150 psi.
- F. All shipments of pipe shall be tested at the Contractor's expense, in accordance with the provisions for testing in the applicable standard.
- G. The inside diameter of the pipe and fittings shall be equal to the nominal diameter shown on the Contract Drawings.

2.3 JOINTS

- A. Joints shall be flanged, welded or threaded as specified or as shown on the Contract Drawings.
- B. Welded connections shall be in accordance with AWS CR06 and ANSI/AWWA C200 and C206. The Contractor shall submit copies of welder's current certification. All testing of welders shall be at the Contractor's expense.
- C. Flanged joints shall be assembled with through bolts of the size required for the pipe being installed unless otherwise shown or required. Connecting flanges shall be in proper alignment and no external force shall be required or used to bring them together.
- D. Pipe flanges shall be AWWA C228, Class SD, 150 psi minimum pressure rating, manufactured from ASTM A240 type 304L stainless steel plate drilled to ANSI B16.1 class 125 standard.
- E. All hardware for flanges shall be type 316 stainless steel.
- F. Gaskets shall be 1/16-inch thick ring type of cloth inserted rubber, conforming to AWWA C115.
- G. Dielectric/Insulating Joints:
 - 1. Provide at all flanged connections to dissimilar metals to effectively prevent metal-to-metal contact at the joint.
 - 2. Provide insulating gasket of the dielectric type, full-face, in conformance to AWWA C115.
 - 3. Provide mylar insulating bolt sleeves and washers of the dielectric type.
 - 4. All hardware for flanges shall be type 316 stainless steel.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Conform to installation requirements specified in Section 40 05 05, Interior Process Piping Installation.
- B. Supports for air piping shall provide for expansion and contraction of piping system as shown or indicated.

- C. Use anti-seize compound for stainless steel nuts and bolts to prevent galling.
- D. Conform to manufacturer's recommendations for installing expansion joints and couplings.
- E. Provide harnessing rods on expansion joints and couplings where shown or indicated.
- F. After installation of stainless steel piping, wash foreign matter from piping surfaces with detergent and hot water followed by rinse cleaning.
- G. If rusting of embedded iron occurs, pickle affected surface with Oakite Deoxidizer or equal, scrub with stainless steel brushes, and rinse clean.

3.2 FIELD QUALITY CONTROL

- A. Comply with Section 40 05 05, Interior Process Piping Installation.

- END OF SECTION -

SECTION 40 05 53

PROCESS VALVES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install process valves, and appurtenances, complete and operational.
- B. Coordination:
 - 1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before process valves Work.
 - 2. Notify other contractors in advance of the installation of process valves and appurtenances to provide them with sufficient time for installing items included in their contracts that must be installed with or before process valves Work.
- C. Related Sections:
 - 1. Section 09 91 00, Painting.
 - 2. Section 40 05 05, Interior Process Piping Installation.

1.2 REFERENCES

- A. Standards referenced in this Section are listed below:
 - 1. American Bearing Manufacturers Association (ABMA).
 - 2. ANSI B16.1, Cast-Iron Pipe Flanges and Flanged Fittings.
 - 3. ANSI B16.34, Valves-Flanged, Threaded and Welding end. (ASME B16.34).
 - 4. ANSI/NSF 61 Drinking Water Components – Health Effects.
 - 5. API STD 598, Valve Inspection and Testing.
 - 6. ASTM A126, Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
 - 7. ASTM A194/A194M, Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service, or Both.
 - 8. ASTM A276, Specification for Stainless Steel Bars and Shapes.
 - 9. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - 10. ASTM A380, Practice for Cleaning, Descaling and Passivation of Stainless Steel Parts, Equipment and Systems.
 - 11. ASTM A536, Specification for Ductile Iron Castings.
 - 12. ASTM A564/A564M, Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes.
 - 13. ASTM A743/A743 M, Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
 - 14. ASTM B62, Specification for Composition Bronze or Ounce Metal Castings.
 - 15. ASTM B98/B98M, Specification for Copper-Silicon Alloy Rod, Bar, and Shapes.
 - 16. ASTM B138/B138M, Specification for Manganese Bronze Rod, Bar and Shapes.
 - 17. ASTM B265, Specification for Titanium and Titanium Alloy Strip, Sheet and Plate.
 - 18. ASTM B584, Specification for Copper Alloy Sand Castings for General Applications.
 - 19. ASTM D429, Test Methods for Rubber Property - Adhesion to Rigid Substrates.
 - 20. AWWA C509, Resilient-Seated Gate Valves for Water Supply Service.

21. AWWA C550, Protective Interior Coatings for Valves and Hydrants.
22. FS TT-C-494, Coating Compound, Bituminous, Solvent Type, Acid-Resistant.

1.3 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 1. Manufacturer shall have minimum of five years of experience producing substantially similar materials and equipment to that required and be able to provide evidence of at least five installations in satisfactory operation for at least five years.
- B. Component Supply and Compatibility:
 1. Obtain each type of equipment and appurtenances included in this Section, regardless of the component manufacturer, from a single manufacturer of the type of process valve. For each type of valve, do not furnish valves of more than one manufacturer.
 2. Supplier of each type of equipment specified shall review and approve or prepare all Shop Drawings and other submittals for all components associated with the type of process valve Supplier is furnishing.
 3. Components shall be suitable for use in the specified service conditions. Components shall be integrated into the overall assembly by the process valve manufacturer.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 1. Shop Drawings:
 - a. Installation drawings showing orientation of valve in both plan and elevation view. Drawings shall clearly identify valve and its appurtenances, including valve stems, and other components. Show dimensions of valves and appurtenances in relation to piping and structural components, where applicable.
 - b. Calculations for sizing of operating mechanism with extension stems.
 - c. Calculations for sizing of gear actuators.
 2. Product Data:
 - a. Product data sheets.
 - b. Complete catalog information, including dimensions, weight, specifications, and identification of materials of construction of all parts.
 - c. Corrosion resistance information to confirm suitability of valve materials for the application. Furnish information on chemical resistance of elastomers from elastomer manufacturer.
 - d. C values and hydraulic headloss curves.
 3. Testing Plans:
 - a. Submit plan for shop testing of each valve for which shop testing is specified, including testing plan's and test facility's limitations proposed.
- B. Informational Submittals: Submit the following:
 1. Certificates:
 - a. Certificates of compliance with referenced standards, where applicable, including those of AWWA, NSF, and others required by Consultant.
 2. Manufacturer Instructions:
 - a. Submit manufacturer's instructions for handling, storing, and installing valves and appurtenances. Provide templates and setting drawings for valves and appurtenances that require anchor bolts or similar anchorages.
 3. Source Quality Control Submittals:
 - a. Submit copies of shop test results and inspection data, certified by

- manufacturer.
- 4. Field Quality Control Submittals:
 - a. Submit results of field tests required.
- 5. Supplier's Reports:
 - a. When requested by Consultant, submit written report of results of each visit to Site by Supplier's serviceman, including purpose and time of visit, tasks performed and results obtained.
- 6. Qualifications Statements:
 - a. When requested by Consultant, submit manufacturer's qualifications demonstrating compliance with the Specifications, including list of existing installations with contact names and telephone number(s) for each.
- C. Closeout Submittals: Submit the following:
 - 1. Operations and Maintenance Data:
 - a. Furnish operation and maintenance manuals.
 - b. Furnish in operations and maintenance manuals complete nameplate data for each valve and electric actuator.
- D. Maintenance Material Submittals: Submit the following:
 - 1. Spare Parts, Extra Stock Materials, and Tools:
 - a. Spare Parts and Extra Stock Materials: Furnish as specified for each valve type.
 - b. Tools: Furnish two sets of special tools (excluding metric tools, if applicable) for each size and type of valve furnished.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling, and Unloading:
 - 1. Deliver materials and equipment to Site to ensure uninterrupted progress of the Work. Deliver anchorage products that are to be embedded in concrete in ample time to prevent delaying the Work.
 - 2. Inspect boxes, crates, and packages upon delivery to Site and notify Consultant in writing of loss or damage to materials and equipment. Promptly remedy loss and damage to new condition in accordance with manufacturer's instructions.
- B. Storage and Protection:
 - 1. Keep products off ground using pallets, platforms, or other supports. Store equipment in covered storage and prevent condensation and damage by extreme temperatures. Store in accordance with manufacturer's recommendations. Protect steel, packaged materials, and electronics from corrosion and deterioration.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Valves, General:
 - 1. Provide each valve with manufacturer's name and rated pressure cast in raised letters on valve body.

2. Provide valves with brass or Type 316 stainless steel nameplate attached with Type 316 stainless steel screws. Nameplates shall have engraved letters displaying the following minimum information:
 - a. Valve size.
 - b. Pressure and temperature ratings.
 - c. Application (other than water and wastewater).
 - d. Date of manufacture.
 - e. Manufacturer's name.
 3. Provide valves to turn clockwise to close, unless otherwise specified.
 4. Provide valves with permanent markings for direction to open.
 5. Manually operated valves, with or without extension stems, shall require not more than 40-pound pull on manual operator to open or close valve against specified criteria. Gear actuator and valve components shall be able to withstand minimum pull of 200 pounds on manual operator and input torque of 300-foot pounds to actuator nut. Manual operators include handwheel, chainwheel, crank, lever, and T-handle wrench.
- B. Valve Materials:
1. Valve materials shall be suitable for the associated valve's service or application, as shown.
 2. Protect wetted parts from galvanic corrosion caused by contact of different metals.
 3. Wetted components and wetted surfaces of valves used with potable water or water that will be treated to become potable shall conform to ANSI/NSF 61.
 4. Clean and descale fabricated stainless steel items in accordance with ASTM A380 and the following:
 - a. Passivate all stainless steel welded fabricated items after manufacture by immersing in pickling solution of six percent nitric acid and three percent hydrofluoric acid. Temperature and detention time shall be sufficient for removing oxidation and ferrous contamination without etching surface. Perform complete neutralizing operation by immersing in trisodium phosphate rinse followed by clean water wash.
 - b. Scrub welds with same pickling solution or pickling paste and clean with stainless steel wire brushes or by grinding with non-metallic abrasive tools to remove weld discoloration, and then neutralize and wash clean.
- C. Valve Joints:
1. Exposed Valves: Unless otherwise specified, provide with flanged ends conforming to ANSI B16.1. Pressure class of flanges shall be equal to or greater than specified pressure rating of the associated valve.
 2. For stainless steel bolting, except where nitrided nuts are required, use graphite-free anti-seize compound to prevent galling. Strength of joint shall not be affected by using anti-seize compound.

2.2 RESILIENT-SEATED GATE VALVES

- A. Manufacturers: Provide products of one of the following:
1. M&H Valve Company
 2. US Pipe and Foundry.
 3. Clow Valve Company.
 4. Kennedy Valve
 5. Or equal.

- B. General:
 - 1. Provide valves conforming to AWWA C509 and as specified in this Section.
 - 2. Sizes: 4-inch through 24-inch diameter.
 - 3. Type:
 - a. Provide non-rising stem (NRS) valves.
 - b. Provide position indicators for NRS valves.
 - 4. Minimum Rated Working Pressure:
 - a. 200 psig.
 - 5. Maximum Fluid Temperature: 150 degrees F.
 - 6. Provide valves with fully encapsulated resilient wedges, unless otherwise specified.
- C. Materials of Construction: Shall conform to AWWA C509 and shall be as follows:
 - 1. Valve Body, Bonnet, and Stuffing Box: Cast-iron.
 - 2. Wedge: Cast-iron, symmetrically and fully encapsulated with molded rubber having minimum 1/8-inch thickness.
 - 3. Stem: Manganese bronze.
 - 4. Rubber Items: Buna-N or other synthetic rubber suitable for the application.
 - 5. Internal and external bolting and other hardware including pins, set screws, plug studs, bolts, nuts, and washers shall be Type 316 stainless steel.
- D. Interior Coating:
 - 1. Steel, cast-iron and ductile iron surfaces, except machined surfaces, shall be fusion bonded epoxy coated in accordance with AWWA C550.
- E. Testing:
 - 1. Test valves in valve manufacturer's shop in accordance with AWWA C509.
- F. Gear Actuators for Manually-operated Valves:
 - 1. Provide valves with gear actuators conforming to AWWA C500.

2.3 ECCENTRIC PLUG VALVES

- A. General
 - 1. Valves shall be of non-lubricated eccentric type with resilient faced plugs and shall be furnished with end connections as shown on the Contract Drawings. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 125/150 lb. standard including flange thickness as required by AWWA C-504, and shall comply with MSS-SP-108-Resilient Seated Cast Iron Eccentric Plug Valves.
 - 2. Port areas shall be round with a minimum of 81% of the full pipe area to provide clog-free operation, and shall allow pigging.
 - 3. Valves shall be designed and manufactured to shut off bubble tight at 175 psi for valves size 2-1/2-inch through 12-inch, and at 150 psi for valves size 14-inch through 36-inch. Valves size 42-inch and larger shall be certified bubble tight at 125 psi.
 - 4. Valves shall be provided with adjustable open and closed travel stops.
- B. Bodies and Seats
 - 1. Valve bodies shall be manufactured from ASTM A126 Class B cast iron.
 - 2. Valve bodies shall be furnished with a minimum 1/8-inch thick welded-in overlay seat of not less than 90% pure nickel. Seat area shall be raised, with raised surface completely covered with weld to insure that the plug face contacts only nickel. Screwed-in seats are not acceptable.

- C. Plug
1. Plugs shall be ASTM A536 Grade 65-45-12 high strength ductile iron or solid one piece cast iron. Two piece plugs or plugs with internal cavities are not acceptable.
 2. The plug shall be of one piece solid construction supported on integral trunnions with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt, grit, and debris from entering the bearing and seal area. Valves that are not manufactured to isolate the bearing area from debris are not acceptable.
 3. Plug shall have cylindrical seating surface eccentrically offset from the center of the plug shaft.
 4. Plug face shall be covered with a molded Viton elastomer up to the trunnions.
- D. Bearings and Seals
1. Bearings shall be replaceable sleeve-type of sintered, oil-impregnated permanently lubricated type 316 stainless steel in accordance with ASTM A743 Grade CF8M.
 2. Shafts seals shall be of the dual U-cup type in accordance with AWWA C504. Seals shall be self adjusting and repackable without removing the bonnet from the valve under pressure. Packing adjustment shall not result in an increase in plug friction or resulting torque. Packing replacement shall be achieved without the need to cut packing during reinstallation and not require cap removal. Packing shall be adjustable U-rings. Single piece packing arrangements are not acceptable.
 3. Valves utilizing O-ring seals or non-adjustable packing are not acceptable.
- E. Coating
1. Valves shall be coated inside. Steel, cast-iron, and ductile iron surfaces, except machined surfaces, shall be fusion epoxy-coated in accordance with AWWA C550.
- F. Shop Testing:
1. Operational Tests:
 - a. To demonstrate that complete assembly is workable, successfully operate each valve (with actuator mounted directly on valve) three times from fully closed to fully open position and reverse under no-flow condition.
 2. Leakage Tests:
 - a. Test each valve for leaks while valve is in closed position.
 - b. Test valves at rated pressures. During test, valves shall be drip-tight. Test duration shall be at least five minutes for valves up to 20-inch diameter and ten minutes for valves larger than 20-inch diameter. Tests shall be repeated successfully with pressure in the unseating direction.
 3. Hydrostatic Test: Test valves to an internal hydrostatic pressure equivalent to twice rated pressure of valve. During hydrostatic test, there shall be no leakage through metal, end joints, and shaft seal, nor shall any part be permanently deformed. Duration of hydrostatic test shall be sufficient to allow visual examination for leakage. Test duration shall be at least one minute for valves eight-inch diameter and smaller, three minutes for valves 10-inch through 20-inch diameter, and ten minutes for valves 24-inch diameter and larger.

2.4 CHECK VALVES

- A. The valve body and cover shall be constructed of ASTM A536 Grade 65-45-12 ductile iron.
- B. The disc shall be precision molded Buna-N, ASTM D2000-BG.
- C. The valve body shall be full flow equal to nominal pipe diameter at all points through the valve. The seating surface shall be on a 45 degree angle to minimize disc travel. A threaded port with pipe plug shall be provided on the bottom of the valve to allow for field installation of backflow actuator.
- D. The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc. A threaded port with pipe plug shall be provided in the access cover to allow for field installation of a mechanical, disc position indicator.
- E. A screw-type backflow actuator shall be provided to allow opening of the valve during no-flow conditions. Buna-N seals shall be used to seal the stainless steel stem from the bronze bushing. The backflow device shall be of the rising-stem type to indicate position. A stainless steel T-handle shall be provided for ease of operation.
- F. A mechanical indicator shall be provided to provide disc position indication. The indicator shall have continuous contact with the disc under all operating conditions to assure accurate disc position indication.
- G. Check valves shall be type 7208.BFM1 - Surgebuster® swing check valve by Val-Matic, or equal.

2.5 APPURTENANCES FOR EXPOSED METALLIC VALVES

- A. Extension Stems For Gate Valves:
 - 1. Conform to the applicable requirements of AWWA C501 for sizing of complete lifting mechanism.
 - a. Type: Heavy-duty with tapered roller bearings enclosed in a weatherproof housing, provided with positive mechanical seals around lift nut and pinion shaft to prevent loss of lubrication and to prevent moisture from entering housing. Provide lubrication fitting for grease.
 - b. Materials of Construction:
 - 1) Housing: Cast-iron, ASTM A126, Class B.
 - 2) Lift Nut: Cast bronze, ASTM B98/B98M.
 - 3) Grease Fitting: Stainless steel.
 - 4) Bolting: Type 316 stainless steel.
 - 2. Extension Stems:
 - a. Materials of Stems and Stem Couplings: Type 316 stainless steel.
 - b. Maximum Slenderness Ratio (L/R): 100.
 - c. Minimum Diameter: 1.5-inch.
 - d. Threads: Acme.
 - e. Provide stem couplings where stems are furnished in more than one piece. Couplings shall be threaded and keyed or threaded and bolted and shall be of greater strength than the stem.
 - f. Weld to bottom of extension stem a Type 316 stainless steel cap suitable for square end of valve stem.
 - 3. Bottom Couplings: Ductile iron with Type 316 stainless steel pin and set screw.

4. Stem Guides:
 - a. Material: Type 316 cast stainless steel with bronze bushing for stem.
Type 316 cast stainless steel with stainless steel bushing for stem.
 - b. Maximum Stem Length Between Guides: Seven feet.
 - c. Stem guides shall be adjustable in two directions.

- B. Floor Boxes: Provide cast-iron floor boxes for valves that are to be operated from floor above valve. Boxes shall be equal in depth to floor slab. Boxes shall have cast-iron covers and be fitted with bronze bushing.

- C. Chain Operators:
 1. Chains shall extend to three feet above operating floor.
 2. Provide 1/2-inch stainless steel hook bolt to keep chain out of walking area.
 3. Materials of Construction:
 - a. Chain: Type 316L stainless steel.
 - b. Chainwheel: Recessed groove type made out of Type 316 stainless steel.
 - c. Guards and Guides: Type 316L stainless steel.
 4. Chain Construction:
 - a. Chain shall be of welded link type with smooth finish. Chain that is crimped or has links with exposed ends is unacceptable.
 5. Provide geared operators where required to position chainwheels in vertical position.

2.6 ANCHORAGES AND MOUNTING HARDWARE

- A. General:
 1. Obtain bolts, nuts, and washers for connection of valve and appurtenances to concrete structure or other structural members from valve Supplier.
 2. Bolts, nuts, and washers shall be of ample size and strength for purpose intended. Anchorages in concrete shall be at least 5/8-inch diameter.
 3. Provide stem guide anchorages of required strength to prevent twisting and sagging of guides under load.
 4. Materials: Provide bolts and washers of Type 316 stainless steel and nitrided nuts. Bolts shall have rolled threads. Bolts and nuts shall be electropolished to remove burrs.

2.7 TOOLS, LUBRICANTS, AND SPARE PARTS

- A. Provide the following T-handle operating wrenches:
 1. Length of T-Handle Operating Wrench: 3 feet.
 2. Quantity: 1.

- B. Lubricants: For valves, actuators, and appurtenances requiring lubricants, provide suitable lubricants for initial operation and for first year of use following Substantial Completion. Lubricants for equipment associated with conveying potable water or water that will be treated to become potable shall be food-grade and ANSI/NSF 61-listed.

- C. Tools, spare parts, and maintenance materials shall conform with this Section.

2.8 PAINTING OF EXPOSED VALVES, AND APPURTENANCES

- A. Exterior steel, cast-iron, and ductile iron surfaces, except machined surfaces of exposed valves and appurtenances, shall be finish painted in manufacturer's shop. Surface preparation, priming, finish painting, and field touch-up painting shall conform to Section 09 91 00, Painting.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which materials and equipment are to be installed and notify Consultant in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:
 - 1. Install valves and appurtenances in accordance with:
 - a. Supplier's instructions and the Contract Documents.
 - b. Requirements of applicable AWWA standards.
 - c. Applicable requirements of Section 40 05 05, Interior Process Piping Installation.
 - 2. Install valves plumb and level. Install all valves to be free from distortion and strain caused by misaligned piping, equipment, and other causes.
- B. Exposed Valves:
 - 1. Provide supports for large or heavy valves and appurtenances as shown or required to prevent strain on adjoining piping.
 - 2. Operators:
 - a. Install valves so that operating handwheels or levers can be conveniently turned from operating floor without interfering with access to other valves, piping, structure, and equipment, and as approved by Consultant.
 - b. Avoid placing operators at angles to floors or walls.
 - c. Orient chain operators out of way of walking areas.
 - d. Install valves so that indicator arrows are visible from floor level.
 - 3. Floor Stands and Stems:
 - a. Install floor stands as shown and as recommended by manufacturer.
 - b. Provide lateral restraints for extension bonnets and extension stems as shown and as recommended by manufacturer.
 - c. Provide sleeves where operating stems pass through floor. Extend sleeves two inches above floor.
- C. Plug Valves:
 - 1. Install plug valves that are in horizontal liquid piping with stem horizontal and plugs on top when valve is open. Plug shall be on upstream end when valve is closed.
 - 2. Install plug valves that are in vertical liquid piping with plug at top when closed or as recommended by valve Supplier.
 - 3. Supplier shall tag or mark plug valves to indicate proper mounting position.

3.3 FIELD QUALITY CONTROL

- A. Field Tests:
1. Adjust all parts and components as required to provide correct operation of valves.
 2. Conduct functional field test on each valve in presence of Consultant to demonstrate that each valve operates correctly.
 3. Verify satisfactory operation and controls of motor operated valves.
 4. Demonstrate satisfactory opening and closing of valves at specified criteria requiring not more than 40 pounds effort on manual actuators.
 5. Test ten percent of valves of each type by applying 200 pounds effort on manual operators. There shall be no damage to gear actuator or valve.

- END OF SECTION -

SECTION 40 05 86

AIR VALVES FOR WASTEWATER SERVICE

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish, install, and test Air Valves for wastewater service complete with appurtenances.
- B. Coordination:
 - 1. Review installation procedures for this and other Specification sections and coordinate work that must be installed with or before work under this Section.
- C. Related Sections:
 - 1. Section 09 91 00, Painting
 - 2. Section 40 05 53, Process Valves

1.2 REFERENCES

- A. Standards referenced in this Section are:
 - 1. ANSI/AWWA C512, Air Release, Air Vacuum and Combination Air Valves for Waterworks Service
 - 2. ANSI/AWWA C550, Protective Interior Coatings for Valves and Hydrants.

1.3 DEFINITIONS

- A. The following definitions apply to this Section.
 - 1. Air Release Valve: A hydromechanical device designed to automatically release to atmosphere small pockets of air as they accumulate in a pipeline when pipeline system is full and operating under pressure.
 - 2. Air/Vacuum Valve: Direct-acting, float-operated, hydromechanical device designed to automatically release or admit large volumes of air during filling or draining of a pipeline or piping system. Valve will open to relieve negative pressures and will not reopen to vent air when system is full and under pressure.
 - 3. Air Valve: Valve of one of the following types: Air Release Valve, Air/Vacuum Valve, or Combination Air Valve.
 - 4. Combination Air Valve: Device having features of an Air Release Valve and Air/Vacuum Valve.
 - 5. Maximum and Minimum Working Pressure: Pressure range at which valve is designed to function.
 - 6. Orifice: Opening in valve mechanism through which air is expelled from or admitted into pipeline or piping system.
 - 7. Valve Design Pressure: Maximum pressure to which a valve may be subjected without exceeding allowable stress of its components.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Manufacturer shall be able to provide documentation of at least five installations of substantially similar equipment to that specified, in satisfactory operation for at least five years.

1.5 SUBMITTALS

- A. Action Submittals.
 - 1. Product Data: Submit the following for each type and size of valve specified:
 - a. Product data sheet.
 - b. Complete catalog information, including dimensions, weight, performance data, Orifice size, specifications, and identification of materials of each part.
- B. Informational Submittals:
 - 1. Certifications:
 - a. Submit a certificate signed by manufacturer of each product stating that product conforms to applicable referenced standards and specified requirements.
 - 2. Test Reports:
 - a. Provide results of successful factory tests prior to shipping products to the Site.
 - 3. Manufacturer's Reports:
 - a. Submit written report of results of each visit to Site by a manufacturer's serviceman, including purpose and time of visit, tasks performed, and results obtained.
- C. Closeout Submittals.
 - 1. Operation and Maintenance Data:
 - a. Submit complete operation and maintenance manual for all Air Valves in the Contract, including maintenance data and schedules in sufficient detail for disassembly and assembly of valve, and identifying parts that can be replaced.
 - b. Furnish operation and maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDING

- A. Packing, Shipping, Handling, and Unloading:
 - 1. Prepare valves for shipping per Section 6.2 of ANSI/AWWA C512.
- B. Acceptance at Site:
 - 1. Inspect all boxes, crates, and packages upon delivery to Site and notify Consultant in writing of loss or damage to products. Promptly remedy loss and damage to new condition per manufacturer's instructions.
- C. Storage and Protection:
 - 1. Keep all products off ground using pallets, platforms, or other supports. Protect products from corrosion and deterioration.

PART 2 – PRODUCTS

2.1 SEWAGE AIR VALVES

- A. Sewage air valves shall consist of a compact tubular body, hollow direct acting float and solid large orifice float. Floats shall be low pressure design.
- B. Valve shall allow large volumes of air to escape or enter through the large diameter air orifice when filling or draining a pipeline. When the pipeline is filled and pressurized, the large air orifice shall stay closed, and the smaller diameter air release orifice shall remain operative and open to allow small pockets of air accumulation to escape automatically and independently of the large orifice.

- C. The valve shall have an integral anti-surge orifice mechanism that shall operate automatically to limit transient pressure rise or shock in the pipe induced by closure to less than 1.5 times the valve rated working pressure.
- D. Discharge of pressurized air shall be controlled by the seating and unseating of a small orifice nozzle on a natural rubber seal affixed into the control float. The nozzle shall have a flat seating land surrounding the orifice so that damage to the rubber seal is prevented.
- E. Ends shall be provided with 2-inch-diameter type 316 stainless steel threaded connections.
- F. Materials of construction shall be as follows:

<u>Item</u>	<u>Material</u>
Body and Cover	Type 316 Stainless Steel
Lower Float	High Density Polyethylene
Top Floats	High Density Polyethylene
O-Ring	EPDM Rubber
- G. Valves shall be supplied with threaded and capped pressure and gauge ports at the top and bottom of the air valve.
- H. Valve size shall have a 2-inch-diameter inlet, and rated for a pressure range of 3 to 125 psi.
- I. Sewage air valves shall be Model 080RGX1031LP as manufactured by Vent-O-Mat, or equal.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which Work is to be installed and notify Consultant in writing of conditions detrimental to proper and timely completion of Work. Do not proceed with Work until unsatisfactory conditions have been corrected.
- B. Examine valves and remove packing and foreign materials from interior of valve. Report defects to Consultant.

3.2 INSTALLATION

- A. Install valves and appurtenances as shown on the Drawings and per Air Valve manufacturer's recommendations, approved Shop Drawings, and applicable codes and standards.
- B. Install valves plumb and vertical.
- C. Install with an isolating valve. Furnish Air Valve assembly and deliver to Owner.
- D. Adjust throttling devices, if provided, for smooth, non-slam and waterhammer-free operation.

- END OF SECTION -

SECTION 40 05 87

PIPING SPECIALTIES AND ACCESSORIES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install all piping specialties and accessories.
- B. Coordination:
 - 1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before piping specialties and accessories Work.
- C. Related Sections:
 - 1. Section 09 91 00, Painting.
 - 3. Section 40 05 05, Interior Process Piping Installation.

1.2 REFERENCES

- A. Standards referenced in this Section are:
 - 1. ASME B31, Standards of Pressure Piping.
 - 2. ASTM F593, Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
 - 3. AWWA C110, Ductile Iron and Gray Iron Fittings for Water
 - 4. AWWA C111, Rubber-Gasket Joints for Ductile Iron Pressure Pipe
 - 5. AWWA C115, Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges
 - 6. AWWA C151, Ductile Iron Pipe, Centrifugally Cast for Water

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer shall have sufficient experience producing substantial similar products to those specified and shall be able to provide documentation of at least five installations in satisfactory operation for at least five years each.
- B. Component Supply and Compatibility:
 - 1. Obtain each type of piping specialty and accessory product included in this Section, regardless of component manufacturer, from a single piping specialty and accessories manufacturer.
 - 2. Supplier shall prepare, or review, and approve all submittals for components furnished under this Section.
 - 3. Components shall be suitable for specified service conditions and be integrated into overall assembly by the Supplier.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 - 1. Shop Drawings: Submit piping layout Shop Drawings in accordance with Section 40 05 05, Interior Process Piping Installation.

2. Product Data: Submit product data on each type of coupling, expansion joint, and other piping specialties and accessories, including gaskets, hardware, and appurtenances sufficient to demonstrate compliance with the Contract Documents.
- B. Informational Submittals: Submit the following:
1. Certificates: When requested by Consultant submit certificate attesting to compliance with standards referenced in this Section, signed by manufacturer.
 2. Manufacturer's Instructions: Provide instructions for handling, storing, installing, and adjusting of products.
 3. Source Quality Control: When requested by Consultant, submit results of source quality control tests.
 4. Qualifications Statements: Submit qualifications of manufacturer when requested by Consultant.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 40 05 05, Interior Process Piping Installation.

PART 2 – PRODUCTS

2.1 COUPLINGS

- A. Restrained Flanged Coupling Adapters:
1. Description: For connecting plain end DIP to flanged fitting or valve. Restraint shall consist of a plurality of individual actuated gripping wedges to maximize restraint capability.
 2. Products and Manufacturers: Provide one of the following:
 - a. Series 2100 Megaflange® Restrained Flange Adapter, as manufactured by EBAA Iron Inc.
 - b. Or equal.
 3. Pressure and Service: Same as connected piping.
 4. Material: Ductile Iron.
 5. Gasket: EPDM as recommended by the manufacturer.
 6. Bolts and nuts: Type 316 Stainless Steel.

2.2 MECHANICAL SEALS

- A. Mechanical Seals: Provide link type mechanical seals suitable for 20 psi working pressure, corrosive service and accessible from one side, with glass-reinforced nylon pressure plate and stainless steel bolts and nuts.
1. Products and Manufacturers: Provide one of the following:
 - a. Link-Seal, as manufactured by Thunderline Corporation.
 - b. Or equal.

2.3 PAINTING

- A. Shop Painting:
1. Clean and prime-coat ferrous metal surfaces of products in the manufacturer's shop in accordance with Section 09 91 00, Painting, unless otherwise specified in this Section
 2. Coat machined, polished and non-ferrous surfaces bearing surfaces and similar unpainted surfaces with corrosion prevention compound that shall be maintained during storage and until products are placed into operation.

- B. Field painting shall conform to Section 09 91 00, Painting.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Inspect materials for defects in material and workmanship. Verify compatibility of products with pipe, fittings, valves, and appurtenances.

3.2 INSTALLATION

- A. Installation:
 - 1. Install piping specialties in accordance with the Contract Documents and manufacturer's instructions.
- B. Adjust expansion joints as required to ensure that expansion joints will be fully extended when ambient temperature is at minimum operating temperature, and fully compressed at maximum operating temperature for the system in which expansion joints are installed.

- END OF SECTION -

Retain For Your Records
DO NOT RETURN WITH YOUR BID

**General
Specifications
County
Of
Monroe**

DEPARTMENT OF FINANCE
Division of Purchasing and Central Services

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Purchasing Manager

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FOREWORD

This booklet contains the General Specifications of the County of Monroe Division of Purchasing and Central Services and supersedes any previous issue. The terms and conditions set forth apply to all contracts awarded by the County of Monroe Division of Purchasing and Central Services.

DEFINITIONS

POLITICAL SUBDIVISIONS: All County departments, institutions, agencies, political subdivisions (town, city, village public school districts) and others authorized by law to make purchases through the County Purchasing Division.

BID: An offer to furnish a described commodity at a stated price in accordance with the proposal and specification.

BIDDER: Any person, firm or corporation submitting a proposal to the County.

COMMODITIES: Materials, supplies, equipment and non-professional services.

CONTRACTOR: Any bidder to whom a contract award is made by the Purchasing Manager or Legislature.

CONTROLLER: Controller of the County of Monroe.

COUNTY: County of Monroe.

GROUP: A classification of commodities.

LATE BID: A bid received in the office of the Purchasing Division, whether in person or by mail, after the time and date established in the bid specifications for the bid opening.

PURCHASING MANAGER: Manager of the Purchasing Division for the County of Monroe.

NOTICE OF CONTRACT AWARD: The notification to all participants that a contract has been made between the County and the successful bidder.

PROPOSAL: The form which, when issued by the Purchasing Division, constitutes an invitation to bid on the commodity described therein and which, when completed by the bidder, constitutes his/her bid to the County to furnish such commodity.

PURCHASE ORDER: The official form to be used by Monroe County when placing an order for material, equipment or supplies with a contractor or vendor.

SPECIFICATION: Description of a commodity and the conditions for its purchase.

PROPOSALS AND BIDS

1. The date and time of bid opening will be given on the proposal.
2. All bids are to be submitted on forms provided by the Purchasing Division.
3. All bids must be submitted in a sealed envelope clearly marked with bid number, title, opening date and time. Bids must not be attached to or enclosed in packages containing bid samples.
4. All information required by the proposal and specifications must be supplied by the bidder.
5. Each bid offered shall be construed in accordance with the specifications and proposal. The bidder must explain all deviations, exceptions and qualifications in detail in the bid.
6. Prices and information required by the proposal, except the signature of bidder, shall be typewritten or printed in ink for legibility. Bids written in pencil may be rejected. The Purchasing Manager may interpret or reject illegible or vague bids and the decision shall be final. All signatures must be in ink. Facsimile, printed or typewritten signatures are not acceptable and the bid may be rejected.
7. No alteration, erasure or addition of the specifications or the proposal shall be made.
8. In all specifications or proposals, the words "or equal" are understood to appear after each commodity giving manufacturer's name or catalog reference or on any patented commodity. If bidding on commodities other than those specified, bidder must in every instance give the trade designation of the commodity, manufacturer's name and detailed specification of commodity he/she proposes to furnish. Otherwise, bid will be construed as submitted on the identical commodity described in the specifications.
9. Used, damaged or obsolete items are not acceptable unless specifically requested and if offered or delivered, shall be rejected and the contract may be cancelled.
10. When bids are requested on a number of commodities as a group, a bidder desiring to bid "no charge" on a commodity in the grouping must so indicate. Otherwise, such bid will be considered as incomplete and may be rejected. Any bidder failing to bid on minimum number of items specified in the bid package may have his/her bid declared incomplete or unresponsive and the Purchasing Manager has the discretion to reject the bid.
11. The bidder must insert the price per unit specified and the price extension for each item in the bid if required. In the event of a discrepancy between the unit price and the extension, the unit price will govern. Prices must be extended in decimals, not fractions.
12. Prices must be net, including transportation and delivery charges fully prepaid by contractor to the destination(s) indicated in the proposal, subject only to the cash discount. If the award is to be on any other basis, transportation charges must be prepaid by the contractor and added to the invoice as a separate item.
13. Bidders are cautioned to verify their bids before submission, as bids and amendments to bids or requests for withdrawal of bids received by the Purchasing Manager after the time specified for the bid opening may not be considered.
14. All bids will be opened and tabulated publicly at the time and place set forth in the proposal.
15. A late bid will be rejected and cannot be considered in awarding a contract.

SAMPLES

16. The Purchasing Manager reserves the right to request a representative sample of the commodity at any time. The sample shall be furnished within the timeframe specified in the bid package.
17. If in the judgment of the Purchasing Manager, the sample is not in accordance with the requirements stated in the specifications and the proposal, the County may reject the bid; or if an award has been made, cancel the contract at the expense of the contractor.
18. When samples are required, failure to submit them in accordance with instructions may be sufficient cause for rejecting a bid or canceling an award.

19. When an accepted sample exceeds the minimum specifications, all commodities delivered will be of same quality and identity as the sample.
20. Samples must be submitted free of charge and be accompanied by the bidder's name and address, a statement indicating how and where the sample is to be returned to the bidder and descriptive literature regarding the commodity. Samples will be returned at the bidder's expense and risk.
21. All samples are subject to tests in the manner and place designated by the Purchasing Manager. Samples consumed or made useless by testing cannot be returned to the bidder and the County will not be responsible for any costs as a result of such testing.
22. Where the sample has not been impaired by testing and the bidder has failed to indicate the place and mode of return of the sample, it becomes the property of the County at the conclusion of the contract period.
23. Samples may be held by the County during the entire term of the contract for comparison with deliveries.
24. A Proposal may indicate that the commodity to be purchased must be equal to a sample on display in a designated place. Failure on the part of the bidder to examine such sample shall NOT entitle him to any relief from the conditions imposed in the proposal, specification and related documents. If feasible, standard samples will be submitted to the bidder for his/her examination prior to the bid opening date.
25. Cash discounts will no be considered as a basis for award in any contract.

AWARDS

26. The Purchasing Manager reserves the right before making an award, to investigate whether or not the items, qualifications or facilities offered by the bidder meet the requirements set forth in the proposal and specifications and is ample and sufficient to insure the proper performance of the contract, in the event of award. The bidder must be prepared, if requested by the Purchasing Manager, to present evidence of experience, ability and financial standing, as well as a statement as to plant, machinery and capacity of the manufacturer for the production and distribution of the commodity on which he/she is bidding. If in the opinion of the Purchasing Manager, it is found that the conditions of the proposal and specifications are not complied with or that items proposed to be furnished do not meet the requirements or specifications called for or that the qualifications, financial standing, facilities or capacities are not satisfactory, the Purchasing Manager may reject such a bid. The Purchasing Manager, in no way, is required or obligated to conduct such investigation prior to awarding the contract. It is further understood that if such investigations are made, it in no way relieves the contractor from fulfilling all requirements and conditions of the contract.
27. Contracts shall be awarded to the lowest responsive and responsible bidder. Responsibility is determined by taking into consideration the reliability of the bidder, the qualities of the articles proposed to be supplied and their conformity with the specifications, the purposes for which required and the terms of delivery and any historical performance record of the bidder that may be maintained by the County.
28. A bidder may be disqualified from receiving awards if such bidder or anyone in his/her employ, has previously failed to perform satisfactorily in connection with public bidding or contracts.
29. The Purchasing Manager reserves the right to evaluate and/or reject all bids in whole or in part and to waive technicalities, irregularities and omissions, if in her judgment; the best interests of the County will be served.
30. The Purchasing Manager reserves the right to make awards within forty-five (45) days after the date of the bid opening, during which period bids shall not be withdrawn.
31. If two or more bidders submit identical bids as to price, the decision of the Purchasing Manager to award a contract to one or more of such identical bidders shall be final.

CONTRACTS

32. All contracts awarded by the Purchasing Manager shall be executory only to the extent that funds are available to each Agency or Department for the purchase of the commodity.
33. All bids shall be received with the understanding that the acceptance thereof, in writing, by the Purchasing Manager or governing body, shall constitute a contract between the bidder and the County. The mailing of either a notice of contract award identified by number or of a purchase order to the address on the bid shall be sufficient notice of such acceptance.

34. Unless otherwise specified, the quantities listed in the proposal are subject to change to conform to Agency or Department requirements.
35. The County reserves the right to order up to 10% more or 10% less than the quantities called for in the contract. This paragraph shall not apply to estimated quantity contracts. Over runs and under runs shall not exceed 10%.
36. Unless terminated or cancelled by the Purchasing Manager pursuant to the authority vested in her, contracts will remain in force for the period specified.
37. All purchase orders must be in writing and must bear the appropriate contract number and the approval of the Purchasing Manager.
38. No commodities are to be shipped or delivered until after receipt of an official purchase order from the County, unless otherwise authorized in writing by the Purchasing Manager.
39. The contractor shall not assign, transfer, convey, sublet or otherwise dispose of the contract or his/her right, title or interest therein or his/her power to execute such contract to any other person, company or corporation without the prior consent, in writing, of the Purchasing Manager. (Approval by the Purchasing Manager is not required for the assignment of monies due for contract deliveries. Such assignments should be filed directly with the Purchasing Manager.)
40. No alteration or variation of the terms of the contract shall be valid or binding upon the County unless requested in writing and approved in writing by the Purchasing Manager.
41. Contractor shall employ no one in relation to the work contemplated by the contract who shall be permitted or required to work more than eight (8) hours in any one calendar day or more than five (5) days in any one week except in cases of extraordinary emergency caused by war, acts of public enemies, strikes, fire, flood or danger to life or property and the wages to be paid to employees for a legal day's work shall not be less than the prevailing New York State wage rates for a day's work in the same trade or occupation in the locality where the contract work is executed.
42. Pursuant to the provision of Section 220-A of the New York State Labor Law, as amended, the Contractor (and his/her Sub-Contractors) will be obligated to pay all workers in the covered classes the applicable prevailing wage rates and supplements. The minimum hourly wage rate to be paid the various classes of labor performing work under this contract shall be in accordance with schedules which have been established or may hereafter be established or increased, by the New York State Department of Labor during the contract term.

DELIVERY

43. Delivery must be made as ordered and in accordance with the terms of the contract. Unless otherwise specified, delivery shall be made within thirty (30) days of receipt of purchase orders by the contractor. The decision of the Purchasing Manager as to reasonable compliance with delivery terms shall be final. Burden of proof of delay in receipt of purchase order shall rest with contractor.
44. Any extension of time of delivery must be requested in writing by the contractor and approved in writing by the Purchasing Manager.
45. The Departments will not schedule any deliveries for Saturdays, Sundays or legal holidays, except commodities required for daily consumption or where the delivery is an emergency, a replacement or is overdue, in which events the convenience of the County will govern.
46. Commodities shall be securely and properly packed for shipment, storage and stocking in new shipping containers and according to accepted commercial practice, without extra charge for packing cases, baling or sacks. The container shall remain the property of the County unless otherwise specifically agreed to in the contract.
47. Point of Destination: All deliveries shall be unloaded at the storeroom door of the ordering Agency or department unless otherwise stated in the proposal or specification.
48. Commodities purchased at a price, f.o.b. shipping point plus transportation charge, are understood to be purchased on an f.o.b. point of destination basis. Title shall not pass until commodities have been received and accepted by the Agency or Department.

49. When commodities are rejected with notice of such rejection having been provided to the bidder, they must be removed by the contractor from the premises of the Department or Agency within five (5) days from notification. Rejected items left longer than five (5) days will be regarded as abandoned and the County shall have the right to dispose of them as its own property.

DEPOSITS

50. Unless otherwise expressly indicated, specification deposits are returned only to those prospective contractors who actually submit proposals to the County of Monroe and have returned their specifications unmarked and in good condition within 30 days of the bid award.
51. Unless otherwise expressly indicated, bid deposits are considered an earnest of good faith and are retained by the County only until a contract has been awarded; at which time they are returned to all bidders who submitted proposals. Failure, on the part of a contractor, to execute a contract, may result in forfeiture of his/her bid deposit.

PAYMENTS

52. Payments will be made by the Controller after presentation of a completed voucher to the ordering Department or Agency.
53. In any case where a question of non-performance of a contract arises, payment may be withheld in whole or in part at the discretion of the Purchasing Manager. Should the amount withheld be finally paid, a cash discount originally offered may be taken by the County as if no delay in payment had occurred.
54. Any claim against a contractor may be deducted by the County from any money due him in the same or other transactions. If no deduction is made in such fashion the contractor shall pay the County the amount of such claim on demand. Submission of a voucher and payment thereof by the County shall not preclude the Purchasing Manager from demanding a price adjustment in any case where the commodity delivered is later found to deviate from the specification and proposal. Any delivery made which does not meet the requirements of the specifications and proposal may be rejected or accepted on an adjusted price basis as determined by the Purchasing Manager.
55. Tax Provisions: Purchases made by the County of Monroe are not subject to State or Local sales taxes or Federal Excise taxes. To satisfy the requirements of the New York State Sales Tax, either the purchase order issued by an agency or institution of New York State for supplies or equipment or the voucher forwarded to authorize payment for such supplies and equipment will be sufficient evidence that the sale by a contractor or vendor was made to the County of Monroe, an exempt organization under section 1116 (a) (I) of the Tax Law. Exemption certificates for Federal Excise taxes will be furnished upon request by the Purchasing Division. No person, firm or corporation is, however, exempt from paying the New York State Truck Mileage and Unemployment Insurance or the Federal Social Security Taxes. This exemption does not apply to materials not incorporated into the work of a Public Works Contract.

GUARANTEES BY CONTRACTOR

56. Contractor hereby guarantees:
- (a) To save the County, its agents and employees, harmless from any liability imposed upon the County arising from the negligence, either active or passive, of the contractor, as well as for the use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of the contract of which the contractor is not the patentee, assignee or licensee.
 - (b) To pay for all permits, New York licenses and fees and gives all notices and complies with all laws, ordinances, rules and regulations.
 - (c) That the equipment offered is standard new equipment, latest model of regular stock product with all parts regularly used with the type of equipment offered; also, that no attachment or part has been substituted or applied contrary to manufacturer's recommendations and standard practice. Every unit delivered must be guaranteed against faulty material and workmanship for a period of one year unless otherwise specified.
57. Waiver of Immunity Clause:

103-a. Ground for cancellation of contract by municipal corporations and fire districts.

A clause shall be inserted in all specifications or contracts made or awarded by a municipal corporation or any public department, agency or official thereof on or after the first day of July, nineteen hundred fifty-nine or by a fire district or any agency or official thereof on or after the first day of September, nineteen hundred sixty, for work or services performed or to be performed or goods sold or to be sold, to provide that upon the refusal of a person, when called before a grand jury, head of a state department, temporary state commission or other state agency, the organized crime task force in the department of law, head of a city department or other city agency, which is empowered to compel the attendance of witnesses and examine them under oath, to testify in an investigation concerning any transaction or contract had with the state, any political subdivision thereof, a public authority or with any public department, agency or official of the state or of any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract.

- (a) such person and any firm, partnership or corporation of which he is a member, partner, Purchasing Manager or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with municipal corporation or fire district or any public department, agency or official thereof, for goods, work or services, for a period of five years after such refusal and to provide also that
- (b) any and all contracts made with any municipal corporation or any public department, agency or official thereof on or after the first day of July, nineteen hundred fifty-nine or with any fire district or any agency or official thereof on or after the first day of September, nineteen hundred sixty, by such person and by any firm, partnership or corporation of which he is a member, partner, Purchasing Manager or officer may be cancelled or terminated by the municipal corporation or fire district without incurring any penalty or damages on account of such cancellation or termination but any monies owing by the municipal corporation or fire district for goods delivered or work done prior to the cancellation or termination shall be paid.

The provisions of this section as in force and effect prior to the first day of September, nineteen hundred sixty, shall apply to specifications or contracts made or awarded by a municipal corporation on or after the first day of July, nineteen hundred fifty-nine but prior to the first day of September, nineteen hundred sixty.

103-b. Disqualification to contract with municipal corporations and fire districts.

Any person who, when called before a grand jury, head of a state department, temporary state commission or other state agency, the organized crime task force in the department of law, head of a city department or other city agency, which is empowered to compel the attendance of witnesses and examine them under oath, to testify in an investigation concerning any transaction or contract had with the state, any political subdivision thereof, a public authority or with a public department, agency or official of the state or of any political subdivision thereof or of a public authority, refuses to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract and any firm, partnership or corporation of which he is a member, partner, Purchasing Manager or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any municipal corporation or fire district or with any public department, agency or official thereof, for goods, work or services, for a period of five years after such refusal or until a disqualification shall be removed pursuant to the provisions of section one hundred three-c of this article.

It shall be the duty of the officer conducting the investigation before the grand jury, the head of a state department, the chairman of the temporary state commission or other state agency, the organized crime task force in the department of law, the head of a city department or other city agency before which the person so refusing is known to be a member, partner, officer or Purchasing Manager, to the commissioner of transportation of the state of New York and the appropriate departments, agencies and officials of the state, political subdivisions thereof or public authorities with whom the person so refusing and any firm, partnership or corporation of which he is a member, partner, Purchasing Manager or officer, is known to have a contract. However, when such refusal occurs before a body other than a grand jury, notice of refusal shall not be sent for a period of ten days after such refusal occurs. Prior to the expiration of this ten day period, any person, firm, partnership or corporation which has become liable to the cancellation or termination of a contract or disqualification to contract on account of such refusal may commence a special proceeding at a special term of the supreme court, held within the judicial district in which the refusal occurred, for an order determining whether the

questions in response to which the refusal occurred were relevant and material to the inquiry. Upon the commencement of such proceeding, the sending of such notice of refusal to answer shall be subject to order of the court in which the proceeding was brought in a manner and on such terms as the court may deem just. If a proceeding is not brought within ten days, notice of refusal shall thereupon be sent as provided herein.

103-d. Statement of non-collusion in bids and proposals to political subdivision of the state.

(FN1) Every bid or proposal hereafter made to a political subdivision of the state or any public department, agency or official thereof where competitive bidding is required by statute, rule, regulation or local law, for work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury: Non-collusive bidding certification.

(a) "By submission of this bid, each bidder and each person signing on behalf of any bidder certifies and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in his/her bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly to any other bidder or to any competitor and;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(b) A bid shall not be considered for award nor shall any award be made where (a) (1) (2) and (3) above have not been complied with; provided however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (a) (1) (2) and (3) above have not been complied with, the bid shall not be considered for award nor shall any award be made unless the head of the purchasing unit of the political subdivision, public department, agency or official thereof to which the bid is made or his/her designee, determines that such disclosure was not made for the purpose of restricting competition.

The fact that a bidder (a) has published price lists, rates or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items or;

(c) Has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of subparagraph one (a).

Any bid hereafter made to any political subdivision of the state or any public department, agency or official thereof by a corporate bidder for work or services performed or to be performed or goods sold or to be sold, where competitive bidding is required by statute, rule, regulation or local law and where such bid contains the certification referred to in subdivision one of this section, shall be deemed to have been authorized by the board of Purchasing Managers of the bidder and such authorization shall be deemed to include the signing and submission of the bid and the inclusion therein of the certificate as to non-collusion as the act and deed of the corporation.

58. Anti-discrimination Clause: During the performance of this contract, the contractor agrees as follows:

(a) The contractor will not discriminate against any employee because of race, creed, color, sex or national origin and will take affirmative action to insure that they are afforded equal employment opportunities without discrimination because of race, creed, color, sex or national origin. Such action shall be taken with reference but not be limited to: recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of pay or other forms of compensation and selection for training or retraining, including apprenticeship and on-the job training.

(b) The contractor will send to each labor union or representative of workers with which he has or is bound by a collective bargaining or other agreement or understanding, a notice, to be provided by the New

York State Division for Human Rights, advising such labor union or representative of the contractor's agreement under clauses (a) through (g) hereinafter called "non-discrimination clauses"). If the contractor was directed to do so by the contracting agency as part of the bid or negotiation of this contract, the contractor shall request such labor union or representative to furnish him with a written statement that such labor union or representative will not discriminate because of race, creed, color, sex or national origin and that such labor union or representative either will affirmatively cooperate, within the limits of its legal and contractual authority, in the implementation of the policy and provisions of these non-discrimination clauses or that it consents and agrees that recruitment, employment and the terms and conditions of employment under this contract shall be in accordance with the purposes and provisions of these non-discrimination clauses. If such labor union or representative fails or refuses to comply with such a request that it furnish such a statement, the contractor shall promptly notify the New York State Division of Human Rights of such failure or refusal.

- (c) The contractor will post and keep posted in conspicuous places, available to employees and applicants for employment, notices to be provided by the New York State Division of Human Rights setting forth the substance of the provisions of clauses (a) and (b) and such provisions of the State's laws against discrimination as the New York State Division of Human Rights shall determine.
- (d) The contractor will state, in all solicitations or advertisements for employees placed by or on behalf of the contractor, that all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, sex or national origin.
- (e) The contractor will comply with the provisions of the Human Rights Law of the State of New York as set forth in section 290-301 of the Executive Law of New York, will furnish all information and reports deemed necessary by the State Division for Human Rights under these non-discrimination clauses and such sections of the Executive Law and will permit access to his/her books, records and accounts by the State Division for Human Rights, the Attorney General and the Industrial Commissioner for purposes of investigation to ascertain compliance with these non-discrimination clauses and such sections of the Executive Law and applicable Federal Civil Rights Laws.
- (f) This contract may be forthwith cancelled, terminated or suspended, in whole or in part by the contracting agency upon the basis of a finding made by the New York State Division for Human Rights that the contractor has not complied with these non-discrimination clauses and the contractor may be declared ineligible for future contracts made by or on behalf of the State or a public authority or agency of the State, until he/she satisfies the New York State Division for Human Rights that he/she has established and is carrying out a program in conformity with the provisions of these non-discrimination clauses. Such finding shall be made by the New York State Division for Human Rights after conciliation efforts by the Commission have failed to achieve compliance with these non-discrimination clauses and after a verified complaint has been filed with the Division, notice thereof has been given to the contractor and an opportunity has been afforded him/her to be heard publicly before three members of the Division. Such sanctions may be imposed and remedies invoked independently of or in addition to sanctions and remedies otherwise provided by law.
- (g) The contractor will include the provisions of clauses (a) through (f) in every subcontract or purchase order in such a manner that such provisions will be binding upon each subcontractor or vendor as to operations to be performed within the State of New York. The contractor will take such action in enforcing such provisions of such subcontract or purchase order as the contracting agency may direct; including sanctions or remedies for non-compliance. If the contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor shall promptly so notify the Attorney General, requesting him to intervene and protect the interests of the State of New York.

59. Workmen's Compensation: Contractor will secure workman's compensation and keep insured during the life of the contract for the benefit of such employees as are required to be insured by the provisions of Chapter 41 of the laws of 1914, as amended, known as the Workmen's Compensation Law and also provisions of Article 9 of the Workmen's Compensation Law known as the Disability Benefits Law. The contract shall be void and of no effect unless the contractor complies with these provisions.

CANCELLATION OF CONTRACT

60. Upon failure of the contractor to deliver within the time specified or failure to make prompt replacement of rejected commodities when so requested, the Purchasing Manager may purchase from other sources to replace the commodity rejected or not delivered. On all such purchases, the contractor agrees to reimburse the County promptly for costs associated with purchasing from other sources. Should the cost be less than the contract price, the contractor shall have no claim to the difference. Such purchases may be deducted from contract quantity by the Purchasing Manager.
61. A contract may be cancelled at the contractor's expense upon nonperformance of contract.

DRAWINGS

62. Rough and/or shop drawings shall be furnished as deemed necessary and required by the specification. Such drawings shall be consistent with the contract documents and shall be considered as forming part of the specification and the contract to which they relate.
63. All lettering on the drawings shall be considered a part of the drawings.
64. Approval by the Purchasing Manager of shop drawings of details for any commodity will not relieve the contractor from responsibility for furnishing same of proper dimension, size, quantity and quality to efficiently perform the work and carry out the requirements and intent of the layout or descriptive drawings forming part of the proposal and specifications. Such approval shall not relieve the contractor from responsibility for errors of any sort in the shop drawings. If the shop drawings deviate or are intended to deviate from the layout or descriptive drawings on specifications, the contractor shall so advise the Purchasing Manager in writing at the time the shop drawings are submitted, stating the difference in value between the contract requirements and that denoted by said shop drawings.
65. Rough and/or shop drawings will be examined by the Purchasing Manager and if necessary, will be returned to the contractor for correction. After the corrections have been made, the contractor shall resubmit to the Purchasing Manager as many copies as required for final approval.
66. All drawings and copies thereof shall become the property of the County.

CONTRACTS INVOLVING INSTALLATION

67. Contractor shall clean up and remove all debris and rubbish resulting from his/her work from time to time as required or directed. Upon completion of the work the premises shall be left in a neat unobstructed condition, the buildings broom clean and everything in satisfactory repair and order.
68. Equipment, supplies and materials shall be stored at the site only upon the approval of the using Agency and at the contractor's risk. In general, such on-site storage should be avoided to prevent possible damage or loss of the material.
69. Work shall be performed so as to cause the least inconvenience to the County and with proper consideration for the rights of other contractors or workmen. The contractor shall keep in touch with the entire operation and install his/her equipment promptly.
70. Installation shall also include the furnishings of any rigging necessary to move equipment into the buildings; also the removal and resetting of any removable windows used for moving equipment into building.
71. Bidders shall acquaint themselves with conditions to be found at the site and shall assume all responsibility for placing and installing the equipment in the locations required.
72. All materials used in installation shall be of the highest quality and shall be free from all defects which would mar the appearance of the equipment or render it structurally unsound.
73. Contractor shall furnish adequate protection from damage for all work and shall repair damages of any kind for which he/she or his/her workmen are responsible.

SAVINGS CLAUSE

74. The contractor shall not be responsible for any losses resulting from his/her failure to perform properly, if such failure was due to causes beyond his/her control and without his/her fault or negligence, including but not restricted to acts of God, wars, acts of public enemies, strikes, fires and floods, provided that the contractor shall within ten (10) days from the beginning of any such delay, notify the Purchasing Manager, in writing, of the cause of such delay.

75. The terms, conditions and requirements set forth in these General Specifications shall be binding upon bidders and contractors submitting bids or furnishing materials in connection with proposals received or contracts awarded by the County pursuant to rules and regulations promulgated by the Purchasing Manager of the Monroe County Division of Purchasing and Central Services.