



HOFFMAN ESTATES

GROWING TO GREATNESS

May 29, 2026

**SUBJECT: VILLAGE OF HOFFMAN ESTATES
HAMPTON LIFT STATION IMPROVEMENTS
ADDENDUM NO. 2**

To Whom It May Concern:

Please make reference of the following clarifications and changes to the above contract:

Response to Bidder's Questions:

1. Would the Village consider extending the substantial and final completion date for the project, allowing the project to be constructed over the winter months into 2027 and having the final completion in late April / early May 2027 when the asphalt plants open up.
The Village will extend dates accordingly.

Revisions to Bid Documents:

1. Section 01 32 16 – Construction Progress Schedules and Liquidated Damages.
 - a. The following were updated under Required Completion Date (Part 1.02).
 - i. Contractor shall begin construction in 2026.
 - ii. Substantial Completion was revised to 2/26/2027.
 - iii. Final Completion was revised to 5/18/2027.
2. Section 26 60 20 – Electric Service
 - a. Payments (Part 4.02D) was revised to clarify that conduit and cables installed on the line side of the meter, specifically between the service pole and the meter, will be included in the Electric Service pay item.
3. Section 33 11 00 – Utility Piping
 - a. Related Sections (Part 1.00) was revised to include a reference to Section 26 27 16 – Cabinet and Enclosures.
 - b. Payments (Part 4.02) was revised as follows:
 - i. Trench backfill was included under the sanitary sewer pipe pay items, as discussed during the Pre-Bid Meeting.
 - ii. Tracer cable and access boxes were added to be included under the Forcemain pay item.

Attachments:

Attachment A – Revised Technical Special Provisions Sections

THESE CHANGES TO THE ABOVE DOCUMENTS MUST BE REFLECTED IN THE BIDS SUBMITTED TO THE VILLAGE.

PLEASE SIGN BELOW TO VERIFY RECEIPT OF THE ADDENDUM AND RETURN WITH YOUR BID.

Company/Bidder: _____ Date: _____

Name & Title: _____ Signature: _____

Please direct any questions to Katrina Lopez at Ciorba Group by email at klopez@ciorba.com or phone at (773) 355-2958.

Sincerely,

A handwritten signature in black ink that reads "Katrina Lopez". The signature is written in a cursive, flowing style.

Katrina Lopez, P.E., LEED AP
Senior Project Manager

A. REVISIONS TO BID DOCUMENT

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULES AND LIQUIDATED DAMAGES

PART 1 – GENERAL

1.01 DESCRIPTION:

- A. The Contractor shall be responsible for preparing, maintaining and submitting a construction schedule which identifies construction sequences of work and critical path.

1.02 REQUIRED COMPLETION DATES:

- A. Contract Completion Time: All work of this Contract shall be completed **313** consecutive calendar days from the date of the Notice to Proceed and **shall begin in 2026.** [ADD#2]
- B. Substantial Completion: The work of this Contract shall reach substantial completion by **2/26/2027.** [ADD#2] Substantial completion of the Work is when the facility is ready for use, but not necessarily including, final check-out, start-up testing, and placing into operation of all equipment is complete.
- C. Final Completion: Final completion shall be defined as the date when equipment start-up has successfully been completed and the equipment has been placed into satisfactory operation. Final completion shall be no later than **05/18/2027.** [ADD#2]

1.03 LIQUIDATED DAMAGES

- A. Refer to Section 108.09 of the Standard Specifications for cost associated with failing to complete the work on time.

1.04 FORM OF SCHEDULES:

- A. The schedule shall consist of a horizontal bar chart, utilizing the critical path method of scheduling.
 - 1. Provide separate horizontal bars for each trade or operation.
 - 2. Horizontal Time Scale: Identify the first workday of each week.
 - 3. Scale and spacing to allow space for notations and future revisions.
- B. Format of Listings: Chronological order of start of each item of work.

C. Identification of Listings: By major specification section numbers.

1.05 SUBMITTAL REQUIREMENTS:

A. For initial submittal of construction schedule and subsequent revisions thereof, furnish six paper copies of schedule to Engineer, or an electronic version in Adobe Acrobat.

1.06 CONSTRUCTION SCHEDULE:

A. Contractor shall prepare and submit to Engineer for review within 14 days after Notice to Proceed, a construction progress schedule.

B. The construction schedule shall be prepared based on working hours between **7:00 AM to 5:00 PM** weekdays. No work will be allowed on Saturdays unless prior approval is granted in writing by the Owner. If work is allowed, it shall be confined to the period beginning at 8:00 AM to 5:00 PM. Any work outside the allowed time periods specified including but not limited to material deliveries, mobilization of equipment, warming up machinery, general deliveries and mobilization of equipment, may incur a penalty of \$1,000 for each occurrence.

C. Construction Progress Schedule:

1. Show complete sequence of construction by activity.
2. Show dates for beginning and completion of each major element of construction and installation dates for major items of equipment. Elements shall include, but not be limited to the following:
 - a. Shop drawing receipt from supplier/manufacturer submitted to Engineer, review and return to supplier/manufacturer.
 - b. Material and equipment order, manufacturer, delivery, installation, and checkout.
 - c. Performance tests and supervisory services activity.
 - d. By-pass pumping.
 - e. Piping, conduit work, and wiring installation.
 - f. Construction of various facilities.
 - g. Concrete pour sequence.
 - h. Backfilling, grading, seeding, sodding, landscaping, fence construction, and paving.
 - i. Electrical work activity.
 - j. Electric service connection.
 - k. Mechanical work activity.
 - l. Sanitary and Storm Sewer installation.

- m. Connection to existing sewers.
- n. Forcemain installation.
- o. Subcontractor's items of work.
- p. Final cleanup.
- q. Allowance for inclement weather.
- r. Demolition.
- s. Miscellaneous concrete placement.
- t. Start-up testing and procedures.
- u. Final check-out.
- v. Maintenance transfer.

3. Show projected percentage of completion for each items as of first day of each month.

1.07 SCHEDULE REVISIONS:

- A. The Contractor shall revise the construction schedule to reflect changes in progress of work.
- B. Indicate progress of each activity at date of submittal.
- C. Revise scheduled meeting dates.
- D. Show changes occurring since previous submittal of schedule including:
 - a. Major changes in scope
 - b. Activities modified since previous submittal
 - c. Revised projections of progress and completion
 - d. Other identifiable changes.
- E. Provide a narrative report to identify:
 - a. Reason for revised schedule, problem areas, and resulting delays
 - b. Overall impacts to completion date and milestones
 - c. Corrective action recommended
 - d. Effect to Subcontractors, if applicable.

PART 2 – PRODUCTS

As specified in applicable sections of the Contract Documents.

PART 3 – EXECUTION

As specified in applicable sections of the Contract Documents.

PART 4 – MEASUREMENT AND PAYMENT

Work specified in this Section will not be measured or paid for as a separate item, but shall be considered as included in the prices bid for the various pay items of work involved.

--- END OF SECTION ---

SECTION 26 60 20
ELECTRIC SERVICE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Project Requirements.
2. Electric Utility Service.
3. Electric Utility Equipment.

1.02 RELATED SECTIONS

A. Applicable sections of the following:

1. Division 1 – General Requirements
2. Section 03 00 00 – Cast-in-Place Concrete
3. Section 03 40 00 – Precast Concrete Structures
4. Section 26 05 00 – General Electrical Requirements
5. Section 26 05 19 – Low-Voltage Electrical Power Conductors and Cables
6. Section 26 05 26 – Grounding and Bonding for Electrical Systems
7. Section 26 05 29 – Hangers and Supports for Electrical Systems
8. Section 26 28 16 – Enclosed Switches and Circuit Breakers

1.03 REFERENCES

A. Utility Company Requirements.

1. For Com Ed Service Areas (CECHA listing).

B. National Fire Protection Association (NFPA).

C. National Electrical Code (NEC).

D. Underwriters Laboratories, Inc. (UL).

E. Local codes and ordinances.

1.04 SUBMITTALS

A. Submit in accordance with Section 01 33 00 – Submittal Procedures.

- B. Submit shop drawings and manufacturer's product data in accordance with the requirements of Section 26 05 00 – General Electrical Work.

1.05 PROJECT REQUIREMENTS

- A. Proposed electric service for the new lift station.
- B. The existing service shall remain in place for the station to operate during construction.
- C. Contractor shall coordinate the following work with Com Ed:
 - 1. Connecting the proposed electric service.
 - 2. Disconnecting the existing electric service, only once the new station is operational.
 - 3. Elimination of existing wood poles as shown on the Drawings.
 - 4. Raise overhead electric lines over existing residential property.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Meter:
 - 1. Milbank.
 - 2. Substitutions will be allowed in accordance with Section 01 25 00 – Substitution Procedures.
- B. CT Cabinet (if Required):
 - 1. Erickson.
 - 2. Substitutions will be allowed in accordance with Section 01 25 00 – Substitution Procedures.

2.02 ELECTRICAL SERVICE

- A. Voltage: 277/480V, 3-Phase, 4-Wire, 60 Hertz.
- B. Amperage: As shown on the Drawings.
- C. Location: As shown on the Drawings.
- D. Contractor Responsibility:
 - 1. Conduit: Conduit between meter or CT cabinet and electric service location, as shown on the Drawings. Long sweep 90 degree elbows are included.

2. Secondary Cables: Service cables between meter and electric service location. Contractor shall provide enough slack cable to connect to overhead service wires and/or ground mounted transformer stabs.
3. Service Grounding.
4. Concrete transformer pad (where required).
5. Meter fitting.
6. CT cabinet (where required).
7. Splice pits.
8. Service Disconnect.
9. Step down transformers (where required).

E. Utility Provider Responsibility:

1. Connections to overhead wires or pad mounted transformers.
2. Utility meter.
3. Transformers.
4. Switchgears.
5. Primary cables.

PART 3 - EXECUTION

3.01 GENERAL

- A. Contractor shall be responsible for coordinating all work with utility company.
- B. Project Contact is:
Mr. James Bartholomew
(224) 257-1456
- C. Project Service Request Number: 06691365
- D. Contractor shall be responsible for obtaining Utility Company's Service Agreement for electrical service.

3.01 INSTALLATION

- A. Contractor shall furnish and install equipment and materials as described in related Sections of the specifications, and as shown on the Drawings.
- B. Equipment shall be installed in accordance with Com Ed standard procedures and the manufacturer's recommendations.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

A. Measurement will not be made for the Work specified in this Section.

4.02 PAYMENT

- A. Payment for the Work specified in this Section will be made at the lump sum prices for ELECTRIC SERVICE INSTALLATION.
- B. Payment for coordination of the Work and any associated utility fees as required for the proposed electrical service will be made under an Allowance for ELECTRIC SERVICE UTILITY FEE.
- C. These prices shall be full compensation for furnishing all materials; for all preparation and placing of the materials; for all labor, equipment, tools, and incidentals necessary to complete the items; and, for all coordination with the utility company and the Owner.
- D. **Conduit and cables installed on the load side of the service meter/disconnect shall be paid for separately^[ADD#2]** and will not be included in the payment for the work specified in this section.
- E. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items they pertain to.

--- END OF SECTION ---

SECTION 33 11 00

UTILITY PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Ductile iron pipe.
2. Mechanical joint fittings.
3. Flange piping and joints.
4. Bolts, studs, tie rods, nuts, and washers.
5. Gaskets.
6. Restrained joints.
7. Coatings and liners.
8. Couplings.
9. Plastic Pipe.
10. Steel Pipe.
11. Pipe sleeves.
12. Pipe supports.
13. Flexible connector.
14. Casing pipe.

1.02 RELATED SECTIONS

A. Applicable sections of the following:

1. Section 09 90 00 – Painting and Coatings
2. **Section 26 27 16 – Cabinet and Enclosures^[ADD#2]**
3. Section 33 12 16 – Utility Piping Valves
4. Section 33 42 00 – Sewage Pumps and Accessories

1.03 REFERENCES

A. American Welding Society:

1. AWS B3.0 – Welding Procedure and Performance Qualification

B. Manufacturer's Standardization Society:

1. MSS SP-69 – Pipe Hangers and Supports

C. American Society for Testing and Materials:

1. ASTM A216: Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High Temperature Service.
2. ASTM A307: Standard Specification for Carbon Steel Externally Threaded Standard Fasteners.
3. ASTM D1330: Standard Specification for Rubber-Sheet Gaskets.

D. American National Standards Institute:

1. ANSI B16.1: AN Standard for Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.

E. Fluid Sealing Association - Technical Handbook.

F. Standard Specifications for Water and Sewer Main Construction in Illinois

G. American Water Work Association (AWWA)

H. ASTM International (ASTM)

1.04 SUBMITTALS

A. Submit in accordance with Section 01 33 00 – Submittal Procedures.

B. Shop drawings shall include:

1. Manufacturer's certificates of conformance.
2. Certified copies of test reports.
3. Piping layouts in full detail.
4. Location of pipe hangers and supports.
5. Location and type of backup block or device to prevent joint separation.
6. Large scale details of wall penetrations and fabricated fittings.
7. Schedules of all pipe, fittings, special castings, flexible connectors, adapters, couplings, expansion joints, and other appurtenances.
8. Reports as required for welding certifications per ANSI B31.1 Paragraph 127.6.
9. Catalog cuts of joints, couplings, harnesses, expansion joints, gaskets, fasteners and other accessories.
10. Brochures and technical data on coatings and linings and proposed method for application and repair.
11. Manufacturer's descriptive literature and technical data on insulation and proposed method of installation.
12. Accessory items.
13. Manufacturer's literature as needed to supplement certified data.
14. Special tools.
15. Shop and field testing procedures and equipment to be used.
16. The most recent ISO 9000 series certification or quality system plan.
17. Material Certification:

- a. Provide certification from the equipment manufacturer that the materials of construction specified are recommended and suitable for the service conditions specified and as indicated. If materials other than those specified are proposed based on incompatibility with the service conditions, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified. And indicated including an installation list of a minimum of five (5) installations in operation for a minimum of five (5) years. Provide proposed materials at no additional cost to the Authority.
- b. Where materials are not specified, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated.

1.05 SYSTEM DESCRIPTION

- A. Provide all discharge piping, fittings, and appurtenances as shown on the Drawings, between the pumps and the forcemain.
- B. Provide piping, fitting, and appurtenances along the forcemain, as shown on the Drawings.
- C. The forcemain shall be defined as buried main commencing after the valve vault structure.

1.06 QUALITY ASSURANCE:

- A. In accordance with Section 01 43 00 – Quality Assurance.
- B. Replace all materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvent, paint thinner, and acid solder at no additional cost to the Owner.
- C. Coordinate dimensions and drilling of flanges with flanges for valves, pumps and other equipment to be installed in piping systems. Bolt holes in flanges to straddle vertical centerline.
- D. Qualification for Pipe Support Structural Attachment Welders: Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests. If recertification of welders is required, retesting is the Contractor's responsibility at no additional cost to the Owner.
- E. Protect piping from dirt, dust, oil, grease, and other foreign matter during installation to prevent debris from being left in piping.

1.07 DELIVERY, STORAGE AND HANDLING:

- A. In accordance with Section 01 60 00 – Materials and Equipment.
- B. Shipping:
 - 1. Ship equipment, material and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.
 - 2. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended.
 - 3. The Contractor shall obtain spare parts from the manufacturer at the same time as pertaining equipment. The Contractor shall maintain possession of spare parts until Substantial Completion at which time, all spare parts shall be turned over to the Owner.
- C. Receiving:
 - 1. Inspect and inventory items upon delivery to site.
 - 2. Store and safeguard equipment, material and spare parts in accordance with manufacturer's written recommendations and instructions.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS

- A. Minimum wall thickness for ductile iron pipe shall not be less than Class 52, unless otherwise shown on the Drawings.
- B. Ductile Iron Pipe (DIP) - shall be centrifugally cast in metal or sandlined molds and shall conform to ANSI A21.51/AWWA C 151. Pipe joints shall be push-on type and conform to ANSI A21.11/AWWA C 111 unless otherwise shown or noted on the Drawings. Each length of pipe shall be marked to show manufacturer's name or trademark, pipe class, year of manufacture conforming to ANSI A 21.51/AWWA C 151.
- C. Mechanical Joint Fittings - shall be mechanical joint and iron or ductile iron conforming to ANSI A 21.53/AWWA C153 and ANSI A21.4/AWWA C104. Restrained joints may be used instead of mechanical joints. Thrust blocking shall be provided for all fittings. Fittings not covered under AWWA C153 shall comply with AWWA C110. Fittings shall have the same linings and coatings as the pipe.

- D. Flanged Piping and Joints - Flanged piping and joints where required on the Drawings shall comply with AWWA C115 and AWWA C110, respectively. Flanges shall conform to ANSI B16.1. Flange gaskets shall be full face type, rubber composition. Gasket thickness shall be 1/16-inch for pipe 10 inches and less and 1/8-inch for larger pipe. Flange assembly bolts shall be standard hexagonal head carbon steel machine bolts with heavy, hot pressed, hexagon nuts, ANSI B18.2. Threads shall conform to ANSI B1.1, coarse thread series, Class 2 fit. Bolt length shall be such that after joints are made up the bolts shall protrude through the nut, but not more than 2-inch. Bolts for use in submerged/wetted service shall be stainless steel.
- E. Bolts, Studs, Tie Rods, Nuts and Washers - All bolts, studs, tie rods and nuts for all pipe, valves and accessories shall be low carbon steel and have American National form right-hand machine cut threads which shall conform with ANSI B1.1, "Screw Threads", Coarse Thread Series, Class 2 Fit, unless otherwise specified.
1. Bolt heads and nuts shall be semifinished and shall conform with ANSI B18.2, "Wrench-Head Bolts and Nuts and Wrench Openings", Heavy Series, unless otherwise specified. All nuts shall be hexagonal in shape.
 2. All low carbon steel bolts for flange joints and bolts for restrained joints shall conform with ASTM A307, Grade B or approved equal.
 3. The Contractor shall provide bolts conforming to AWWA C111 for all flanged and mechanical joints for compact fittings. The bolt threads shall be lengthened according to AWWA C153 to allow for proper nut installation.
- F. Gaskets - for mechanical joints and push-on joints shall conform to ANSI A 21.11/AWWA C 111.
- G. Coatings & Linings:
1. Interior coating: Cement mortar lining, standard thickness, in conformance with ANSI A 21.4/AWWA C 104.
 2. Exterior coating: Factory applied asphaltic coating, minimum of one (1) mil thick, in accordance with ANSI A 21.51/AWWA C 151, unless otherwise indicated on the Drawings.
 - a. All ductile iron pipe shall be encased in polyethylene film polyethylene encasement in accordance with ANSI/AWWA C105/A21.5-05.
 5. Field Applied Coatings: Shall be in accordance with Section 09 90 00 – Painting and Coatings.

2.02 PLASTIC PIPE

A. Polypropylene Pipe:

1. Pipe: ASTM F2764.
2. Joints: Flexible elastomeric seals in accordance with ASTM D3212 and F477.

B. PVC Pipe:

1. PVC Pipe:
 - a. Minimum SDR/DR shall be 35.
 - b. Pressure rated: ASTM D 2241, SDR 26.
 - c. Gravity rated: ASTM F679.
2. Fittings:
 - a. Screw Joint Fittings: ASTM D2464, Schedule 80.
 - b. Push-On Joint Fittings: ASTM D3139, with ASTM F477 gaskets.
 - c. Solvent Cement: ASTM D2564.
 - d. Solvent Cemented Joint Fittings: ASTM D2672.
 - e. Couplings for use with plain end pipe shall have centering rings or stops to ensure coupling is centered on joint.

C. High Density Polyethylene (HDPE)

1. Pipe:
 - a. Premium, highly engineered PE4710 resin, conforming ASTM D3350, with cell classification of 445574C/E
 - b. Listed with Plastic Pipe Institute's (PPI) TR4
 - c. Formulated with ultraviolet stabilizer for protection against UV rays.
2. Fittings: ASTM D3261.
3. Joints:
 - a. Heat fusion joints in accordance with ASTM F2620/F3190.
 - b. Electrofused in accordance with ASTM F1055
 - c. Flexible elastomeric seals in accordance with ASTM D3212 and F477.

D. All pipe shall be manufactured from 100 percent virgin resin.

2.03 STEEL PIPE

A. Pipe:

1. Steel Pipe 6-Inches in Diameter and Larger: AWWA C200.
2. Steel Pipe Less Than 6-Inches in Diameter: ASTM A53, standard weight, threaded end, galvanized.
3. Fittings 6-Inches in Diameter and Larger: AWWA C200, fabricated in compliance with AWWA C208.
4. Fittings Less Than 6 inches in Diameter: ASME B16.3, galvanized.

- B. Joints:
 - 1. Push-On Joints: AWWA C200.
 - 2. Mechanical Joints: AWWA C200.
 - 3. Flanged Joints: AWWA C207.

2.04 RESTRAINED JOINTS

- A. Manufacturers:
 - 1. Megalug.
 - 2. Substitutions will be allowed in accordance with Section 01 25 00 - Substitutions.
- B. Restraint device for nominal pipe sizes 3 inch through 54 inch shall consist of multiple gripping wedges incorporated into a follower gland.
- C. In accordance with applicable requirements of ANSI/AWWA C110/A21.10.
- D. The devices shall have a working pressure rating of 350 psi for 3-16 inch, 250 psi for 18-48 inch, and 200 psi for the 54 inch size. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes.
- E. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.
- F. Ductile iron gripping wedges shall be heat treated within a range of 370 to 470 BHN.

2.05 PIPE SUPPORTS

- A. Saddle Stands: Used adjustable saddle stands.
 - 1. Provide each stand with a length of steel pipe fitted at the base with standard threaded cast-iron flange or steel base plat and at the top with an adjustable saddle or roll. Bolt the base flange or plate to the floor, foundation or concrete base.
 - 2. Use stanchions of construction similar to the saddle stand, except fit them at the top with cast-iron pipe saddle supports or with pipe stanchion saddles with yokes and nuts.

2.06 PIPE SLEEVES

- A. Steel fabricated type with integral water stop.
- B. Plastic when used within concrete form work.

2.07 WALL SLEEVES

- A. Wall sleeves installed on round structures
 - 1. Flexible boots
 - a) In accordance with ASTM C923 Clamp-On Type or "A-Lock" Type
 - b) Clamp to pipe using minimum of 2 stainless steel clamps.
- B. Wall sleeves installed on square structures
 - 1. Modular, elastomer sealing system
 - a) sized for the pipe diameter and material type.
 - b) Pressure resistant to 20 psi
 - c) EDPM rubber
- C. Hardware: Type 316 stainless steel.

2.08 STEEL CASING PIPE

- A. Yield strength: 35,000 psi minimum.
- B. Steel Casing Pipe:
 - a. Installation: By boring/augering or jacking into place at the locations shown on the Drawings.
 - b. Wall thickness: Minimum wall thickness as required by permit requirements of the Agency Having Jurisdiction, and as shown on the Drawings.
 - c. Material: Billet steel, cylindrical, with smooth bituminous coated walls inside and outside.
 - d. Design Requirements: Conform to ASTM A53 Grade B, ASTM A139 Grade B, or pipe fabricated in accordance with AWWA C200 using ASTM A36 steel.
- C. Casing Spacers:
 - a. Material:
 - i. The shell shall be made of two sections of heavy T304 stainless steel.
 - ii. The shell shall be lined with a PVC liner 0.090-inch thick with 85-90 durometer.
 - iii. Connecting flanges of shell shall be ribbed.
 - b. Type: Bolt-on, spider style and shall be provided with the casing pipe to

facilitate position of the carrier pipe within the casing pipe.

c. Accessories:

- i. Nuts and bolts shall be 18-8 stainless steel.
- ii. Runners shall be made of ultra-high molecular weight polymer with inherent high abrasion resistance and a low coefficient of friction.
- iii. Runners shall be supported by shell risers made of heavy T304 stainless steel.
- iv. The height of the supports and runners combined shall be sufficient to approximately center the carrier pipe inside the casing pipe.

d. Manufacturers:

- i. Cascade Waterworks Mfg. Co.
- ii. Substitutions will be allowed in accordance with Section 01 25 00 – Substitution Procedures.

2.09 COUPLINGS-SLEEVE TYPE

A. Manufacturers:

1. Romac
2. Smith Blair
3. Viking Johnson
4. Dresser
5. Substitutions will be allowed in accordance with Section 01 25 00 – Substitution Procedures.

B. In accordance with AWWA C219.

C. Couplings 12-in and smaller:

1. End rings and center rings: ASTM A536 ductile iron, fusion bonded epoxy coated.
2. Gaskets: Buna-N, NSF 61 approved.
3. Hardware: Type 316 stainless steel.

D. Bridles and tierods: Minimum $\frac{3}{4}$ -in diameter, except where tierods replace flange bolts of smaller size, in which case fit with nut on each side of pair of flanges.

1. Provide as indicated.

2.10 EXPANSION JOINTS-STAINLESS STEEL

A. Manufacturers:

1. Pathway
2. Flexonic
3. Adscio
4. Substitutions will be allowed in accordance with Section 01 25 00 – Substitution Procedures.

B. Design Criteria:

1. Minimum Pressure Rating: 150 psi minimum or as indicated in the Process Piping Schedule.
2. Minimum Lateral Movement: 0.125-inch.
3. Minimum Axial Movement: 0.4-inch
4. For expansion joints used on pump discharge nozzles the Contractor shall coordinate the rod size and movement allowable with the pump manufacturer and provide a statement from the pump manufacturer that the expansion joint and rod size is acceptable for the pump provided.

C. Products:

1. Provide bellows of two-ply construction formed from concentric tubes having only longitudinal seams.
2. For two-ply construction, each ply shall be capable of retaining the rated pressure at the specified temperature independently.
3. For two-ply construction, seal weld both plies so that no gas or liquid leaks out at the ends.
4. For two-ply construction, provide a pressure monitoring connection with pressure gauge and pressure switch as specified herein for the annular space.
5. Provide control rods for test pressure.
6. Provide minimum two lifting lugs on each joint. Each lug shall be designed to carry the entire weight of the assembly.
7. Provide each joint with a liner and mark a flow arrow on the outside to indicate direction of flow.
8. Provide each expansion joint with a Type 316 stainless steel nameplate indicating size, bellows material, pressure and temperature rating, lateral

and axial limits on movement, date of manufacturer, and the manufacturer.

D. Materials:

1. Bellows:
 - a) Inner Ply: Inconel alloy 625, minimum 0.048-inch thick.
 - b) Outer Ply: Inconel alloy 625, minimum 0.048-inch thick.
2. Liner: Type 316L stainless steel, minimum 0.1875-inch thick.
3. Flanges: Type 316L stainless steel, Class 150.
4. Limit Rods/Nuts and Hardware: Type 316 stainless steel.

E. Install joints in their neutral position.

2.11 BYPASS COUPLING SYSTEM

A. Acceptable Manufacturers

1. Precision Systems.
2. Substitutions will be allowed in accordance with Section 01 25 00 – Substitution Procedures.

B. Description

1. Bypass coupling connection and hatch shall include a 6” Camlock fitting manufactured for an NPT connection to valve vault riser pipe. Camlock fitting shall be integral to a rectangular stainless steel and aluminum assembly for casting in valve vault lid. Hatch shall be aluminum check plate, with lockable lid and waterproof lock.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install items in accordance with manufacturer's recommendations and as shown on the Drawings.
- B. Where changes in the pipe routing are required, the Contractor shall submit a drawing showing the proposed change to the Engineer for review.

- C. The Contractor shall provide all tools, labor and equipment necessary for the safe and expeditious installation of all piping and appurtenances as shown on the Drawings and specified herein, including fusion welding machines.
- D. Ensure interior lines parallel to building walls wherever possible. Install piping to accurate lines and grades, and support. Provide pipe supports as specified under Part 2.03 of this section. Where temporary supports are used, ensure rigidity, to prevent shifting or distortion of pipe. Provide for expansion.
- E. Before assembly, remove all dirt and chips from inside pipe and fittings.
- F. Use dielectric bushings or unions when ferrous pipes join nonferrous pipes carrying liquid either underground or elsewhere.
- G. Welding in accordance with ANSI Standard B31 and AWS B3.0.

3.02 WALL SLEEVE SEALS

- A. Pack annular spaces with extrudable preformed plastic gasket material to prevent debris from entering space between pipe and flexible boot.
- B. Install modular units in accordance with manufacturer's recommendations.

3.03 TEMPORARY PLUGS

- A. Close open ends of pipe with temporary plugs or caps when pipe installation is not in progress. Use watertight plugs for exterior, buried piping and if water or debris is in trench when work is resumed, do not remove until adequate provision has been made to prevent any water or debris entering pipe even if it necessitates dewatering trench.

3.04 TESTING

A. Pressure Test:

1. After pipe has been installed, joints completed, thrust blocks have been in place for at least five days, and trench has been partially backfilled, leaving joints exposed for examination, fill pipe with water to expel all air.
2. All hydrotesting of pipes shall be done with water provided by the Contractor. All equipment necessary for complete hydrotesting, such as hoses, auxiliary piping, pumps, compressors, meters, plugs, blinds, etc. shall be supplied by the Contractor. The Contractor shall also furnish all labor and supervision as necessary for testing and inspection. Contractor shall submit a schedule for hydrotesting to the Engineer for review.

3. Subject pipeline to a test pressure of 100 psi or 150 percent of working pressure, whichever is greater, for a period of at least two hours. Tests shall be witnessed by the Engineer.
4. After pressure is applied, pressurizing device must be disconnected or isolated from the system during inspection period. There shall be no allowable leakage and defects shall be corrected immediately. Testing shall be repeated after defects have been corrected until a successful test has been accomplished.
5. During hydrostatic pressure testing locally mounted indicating pressure gauges, where test pressure would exceed their scale range, shall be isolated or removed prior to testing. If removed, branch lines shall be plugged. All lines that are to be insulated shall be tested, cleaned and flushed prior to installation of insulation. All equipment shall be isolated from the system during testing of piping system. All air shall be vented from the system prior to application of test pressures for hydrostatic tests.
6. Open and close each valve several times during test.
7. Examine exposed pipe, joints, fitting, and valves for leaks. Stop visible leaks or replace defective pipe, fitting, joints, or valve.

B. Leakage Test:

1. Leakage test may be conducted subsequent to or concurrently with pressure test.
2. Place amount of water permitted as leakage for lines in a sealed container attached to supply side of test pump.
3. No other source of supply will be permitted to be applied to pump or line under test.
4. Pump water into line by test pump as required to maintain specified test pressure as described for pressure test for a two (2) hour period.
5. Exhaustion of supply or inability to maintain required pressure will be considered test failure.
6. PE pipe can experience diametric expansion and pressure elongation during initial testing.
7. Consult manufacturer prior to testing for special testing considerations.
8. Determine allowable leakage by the following I-P formula:
 - a. $L = NDP/K$ Where:
 - b. L = Allowable leakage in gallons per hour.
 - c. N = Number of joints in length of pipeline tested.
 - d. D = Nominal diameter of the pipe in inches.
 - e. P = Square root of the test pressure in psig.
 - f. K = 7400 for pipe materials.
9. At conclusion of test, measure amount of water remaining in container and record results in test report.

C. Retesting: If any deficiencies are revealed during any test, correct such deficiencies and reconduct tests until results of tests are within specified allowances, without additional cost to Owner.

3.05 CLEANING AND ADJUSTMENT

- A. At the completion of the Work, all parts of the installations shall be thoroughly cleaned. All equipment, pipe, valves, and fittings shall be cleaned of grease, welding metal, slag, metal cuttings, and sludge which may have accumulated by operation of the systems for testing. Any discoloration or other damage to parts of the buildings, their finish, or furnishings due to the Contractor's failure to properly clean the piping systems shall be repaired by the Contractor without cost to the Owner. Special care shall be exercised to remove all metal particles from the piping system to assure no damage to valves and other operating mechanisms.

3.06 TOUCH-UP FIELD PAINTING:

- A. Repair or replace damaged or defective coating areas.
- A. Remove damaged or defective coatings by sand-blast cleaning in accordance with SSPC-SP-6, Commercial Grade, immediately prior to priming.
- B. Before priming, provide surfaces dry and free of dust, oil, grease and other foreign material.
- C. Apply approved coating in accordance with valve manufacturer's printed recommendations.
- D. When small areas of coating need touch up, surface preparation may be done with suitable power needle gun to match specified blast cleaning.

3.07 CONTRACT CLOSEOUT:

- A. In accordance with Section 01 77 00 – Closeout Procedure.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

- A. Measurement for the items specified in this section shall be made as follows:
 - 1. Lump sum for discharge piping and fittings.
 - 2. Lump sum for forcemain.
 - 3. Per foot for sanitary sewer.
 - 4. Per foot for storm sewer.

4.02 PAYMENT

- A. Payment for the Work specified in this Section will be made at the lump sum

prices for:

1. DIP PUMP DISCHARGE PIPING AND FITTINGS.
 2. FORCEMAIN.
 3. SANITARY SEWER 6".
 4. SANITARY SEWER 8".
 5. SANITARY SEWER 10".
- B. Trench backfill for the sanitary pipes shall be ~~paid for~~ **included under this pay item** ~~the contract unit price for "Trench Backfill"~~. **Separate payment shall not be allowed.** [ADD#2]
- C. Trench backfill for DIP Pump Discharge Piping and Forcemain shall be included under the individual pay items. Separate payment shall not be allowed.
- D. **Tracer cable and access boxes shall be included under the FORCEMAIN pay item. Separate payment shall not be allowed.** [ADD#2]
- E. These prices shall be full compensation for furnishing all materials; for all preparation and placing of the materials; and, for all labor, equipment, tools, and incidentals necessary to complete the items.
- F. Payment will not be made for any other items except as listed above. All other costs associated with such Work shall be considered incidental and shall be included in the prices bid for the various items they pertain to.

--- END OF SECTION ---