

BRUNSWICK COUNTY

INVITATION TO BID

Addendum No. 1

Southport Sewer Lift Station

Replacement – REBID

DWI Project No. SRP-W-ARP-0105

ISSUE DATE: **August 12, 2025**

DUE DATE: **September 4, 2025**



BRUNSWICKCOUNTYNC.GOV/BID

**ADDENDUM NO. 1
FOR BRUNSWICK COUNTY PUBLIC UTILITIES
Southport Sewer Lift Station Replacement ITB - REBID**

DATE: August 12, 2025

TO: Prospective Respondents and Others Concerned

This Addendum forms a part of the Contract Documents and modifies the Invitation to Bid Documents dated August 12, 2025, with amendments and additions noted herein below.

This Addendum consists of 26 pages.

Specifications

1. Section 02 41 16 – Structure Demolition
 - a. Paragraph 1.6: REMOVE Paragraphs A and C.
 - b. Paragraph 3.1: REMOVE Paragraph 3.1 Existing Building Documentation.
 - c. Paragraph 3.5-F-1: REPLACE paragraph with the following:

“Prior to demolition of any equipment, Contractor shall allow Owner to inspect equipment for salvage. Any equipment that the Owner does not want to salvage, shall be disposed of by Contractor.”

2. Section 33 32 10 – Sewage Submersible Pumping Station:
 - a. Paragraph 2.1-B-1: REVISED to include solids-handling pumps.
 - b. Paragraph 2.1-B-2: REVISED to state that the impellers will be capable of passing up to 3” diameter spherical solids.

Drawings

No revisions with this Addendum.

Clarifications

1. **General Note:**

The Contractor shall afford Owner safe and proper access to the site in the event the Owner needs to complete any work, or operate any existing facilities, in an emergency situation or at any other time in accordance with Article 49 of the General Conditions.

2. Submersible pumps shall satisfy the requirements of Specification Section 33 32 10 – Sewage Submersible Pumping Station and may be chopper, cutter, grinder, or solids-handling type.

3. The motor horsepower for the Moore Street Pump Station pumps shall be 20 hp and the pumps shall be capable of achieving the primary and secondary flow and head conditions as specified in Section 33 32 10 – Sewage Submersible Pumping Station.
4. **Pre-Bid Meeting**
 - A pre-bid meeting was held on July 1, 2025. The agenda for the meeting is attached.

Contractor Questions

1. Are the propane tanks to become the property of the Contractor to dispose of off-site?

Designer Response: See revised Specification Section 02 41 16 – Structure Demolition attached to this Addendum.

2. Regarding Drawings C1 & C2, Moore Street and Park Avenue respectively, do you know the thickness of the concrete slabs to be demolished?

Designer Response: Slab thickness is unknown.

3. Is a part change possible for the control panel BOM? Brunswick County currently uses a large amount of Schneider Square D in their control cabinets, and Service Techs are more familiar. There are 7 line items that are Modicon and Momentum PLC on this BOM. Wondering if an M340 solution would be acceptable, as the Momentum PLCs are legacy products and some of the BOM components are no longer supported by Schneider. We have a solid solution using the M340 RTU Kit, and we can also propose upgrading all existing RTUs in the future.

Designer Response: Refer to Article 9 of the General Conditions regarding substitutes and “or equal” items.

Attachments:

1. Specification Section 02 41 16 – Structure Demolition
2. Specification Section 33 32 10 – Sewage Submersible Pumping Station
3. Pre-Bid Meeting Agenda

--END OF ADDENDUM NO. 1--

SECTION 02 41 16
STRUCTURE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Demolishing designated structures.
 - 2. Demolishing designated slabs-on-grade.
 - 3. Demolishing, disconnecting, and capping designated utilities.
 - 4. Removing designated items for reuse and Owner's retention.
 - 5. Protecting items designated to remain.
 - 6. Removing and disposing of demolished materials.

- B. Related Sections:
 - 1. Section TS 013 - Excavating, Grading, Trenching and Backfilling.

1.2 REFERENCES

- A. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest version, published by the North Carolina Department of Transportation.

1.3 SUBMITTALS

- A. Section TS 007 – Project Submittals: Requirements for submittals.

- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of barricades, fences, and temporary work.

- C. Existing Structure Documentation: Submit the following for existing buildings indicated to remain.
 - 1. Photographic survey indicating conditions before, during, and after demolition work.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

- B. Project Record Documents: Accurately record actual locations of capped utilities and subsurface obstructions.

1.5 QUALITY ASSURANCE

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, runoff control, and disposal.

- B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.
- C. Obtain required permits from authorities having jurisdiction.
- D. Perform Work in accordance with Section 210 and 215 of the NCDOT Standard Specifications.

1.6 QUALIFICATIONS

- A. Electrical Removals: Entity and personnel performing electrical removals shall be electrician legally qualified to perform electrical construction and electrical work in the jurisdiction where the Site is located.
- B. Design shoring, bracing, underpinning and under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

1.7 STAGING

- A. Demolition of wet wells and other active sanitary sewer facilities and structures shall be performed after the proposed sanitary sewer facilities have been constructed, tested, and brought into service.

1.8 SCHEDULING

- A. Schedule Work to precede site excavation work.
- B. Describe demolition removal procedures and schedule.

1.9 PROJECT CONDITIONS

- A. Notify Engineer upon discovery of hazardous materials.
- B. Do not sell demolished materials on-site.
- C. Maintain existing sidewalks to greatest extent possible.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine existing structures indicated to be demolished before demolition.
- B. Determine where removals may result in structural deficiency or unplanned collapse during demolition. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.

- C. Determine where demolition may affect structural integrity or weather resistance of adjacent structures indicated to remain.
 - 1. Identify measures required to protect structures from damage.
 - 2. Identify remedial work including patching, repairing, bracing, and other work required to leave structures indicated to remain in structurally sound and if applicable, weather tight and watertight condition.
- D. Verify hazardous material abatement is complete before beginning demolition.

3.2 PREPARATION

- A. Call Local Utility Line Information service designated on Drawings not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Notify affected utility companies before starting work and comply with utility's requirements.
- C. Protect installed structures and utilities prior to and during demolition.
- D. Do not close or obstruct roadways, sidewalks, and hydrants without permits.
- E. Erect, and maintain temporary barriers and security devices, including warning signs and lights, and similar measures, for protection of the public, Owner, and existing improvements indicated to remain.
- F. Protect existing landscaping materials, trees, appurtenances, and structures indicated to remain.
- G. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.

3.3 DEMOLITION REQUIREMENTS

- A. Use of explosives is not permitted unless authorized by authority having jurisdiction.
- B. Conduct demolition to minimize interference with adjacent structures.
- C. Cease operations immediately when adjacent structures appear to be in danger. Notify Owner and Engineer. Do not resume operations until directed.
- D. Conduct operations with minimum interference to public or private accesses to occupied adjacent structures. Maintain protected egress and access from adjacent structures at all times.
- E. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.
- F. Sprinkle Work with water to minimize dust. Provide hoses and water connections required for this purpose.

3.4 DEMOLITION

- A. Water and Sewer Utility Demolition:
1. Disconnect and cap designated utilities as indicated on the Drawings. Record termination or capped location on Record Documents.
 2. Gravity sewer and force main to be abandoned in place shall be capped on both ends and grout-filled.
 3. Manholes, vaults, wet wells and other underground utility structures to be abandoned shall be demolished to 5 feet below grade. All pipes entering or exiting the structure shall be capped as noted on Drawings. The structure shall be filled with granular material, topped with suitable backfill material compacted to 90% standard proctor, or better, and prepared for seeding. Access must be along established utility easements and only allowed during dry conditions. Any disturbed areas at the structure or enroute to the structure will be seeded and mulched.
- B. Electrical Demolition:
1. Perform electrical demolition work in accordance with Division 26 – Electrical Sections.
 2. Disconnect or shut off service to areas where electrical work is to be removed. Remove electrical fixtures, equipment, and related switches, outlets, conduit, and wiring which are not part of final project.
 3. Install temporary wiring and connections to maintain existing systems in service during construction.
 4. Perform work on energized equipment or circuits with experienced and trained personnel only after assessing arc flash hazard and implementing arc energy reduction measures or utilizing PPE rated for maximum possible level of hazard exposure.
 5. Protect and retain power to existing active equipment remaining.
 6. All exposed conduits in buildings or structures to be removed, shall be cut, and plugged flush with structure or floor.
 7. Cap abandoned empty conduits at both ends (except conduits that terminate in outlet boxes, junction boxes, pull boxes, handholes, manholes, or equipment enclosures).
 8. All wiring to be removed shall be disconnected at lugs within existing electrical distribution equipment, motor control centers, VFDs, or control panels. All wiring which serves equipment to be removed shall be removed.
- C. Remove concrete slabs-on-grade as indicated on the Drawings.
- D. Backfill open pits and holes resulting from demolition, in accordance with Section TS 013 - Excavating, Grading, Trenching and Backfilling.
- E. Rough grade and compact areas affected by demolition to maintain site grades and contours and to accommodate subsequent construction operations.
- F. Salvage and Ownership:
1. Prior to demolition of any equipment, Contractor shall allow Owner to inspect equipment for salvage. Any equipment that the Owner does not want to salvage, shall be disposed of by Contractor.
 2. Materials and equipment to remain Owner's property shall be carefully removed and appropriately handled by Contractor to avoid damage and invalidation of warranties in

effect and shall be cleaned and stored at the Site (or other site specified in the Contract Documents) at place designated by Engineer or Owner.

- G. Continuously clean up and remove demolished materials from site. Do not allow materials to accumulate on site.
- H. Transportation and Disposal:
 - 1. Non-hazardous Material: Properly transport and dispose of non-hazardous demolition debris to a permitted landfill or other suitable location permitted by the Division of Solid Waste Management, in accordance with Laws and Regulations. Non-hazardous material does not contain Asbestos, PCBs, Petroleum, Hazardous Waste, Radioactive Material, or other material designated as hazardous in Laws and Regulations.
 - 2. Hazardous Material: When handling and disposal of hazardous materials is included in the Work, properly transport and dispose of hazardous materials in accordance with the Contract Documents and Laws and Regulations.
- I. Do not burn or bury materials on site unless authorized by authority having jurisdiction. Leave site in clean condition.

END OF SECTION

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SECTION 33 32 10
SEWAGE SUBMERSIBLE PUMPING STATION

PART 1 GENERAL

1.1 SUMMARY

- A. The Contractor shall furnish all labor, materials, equipment and supplies and shall perform all work necessary for the complete construction of submersible pumping station as shown on the Drawings and specified herein.
- B. Related Sections:
 - 1. Section TS 007 – Project Submittals
 - 2. Section TS 013 – Excavating, Grading, Trenching and Backfilling
 - 3. Section TS 022 – Wastewater Force Mains
 - 4. Section TS 027 – Cast In Place Concrete
 - 5. Division 26 - Electrical Sections
 - 6. Section 33 05 62 – Polymer Concrete Wet Wells and Structures.

1.2 REFERENCES

- A. American National Standards Institute (ANSI)/American Water Works Association (AWWA)
 - 1. ANSI B16.1 - Cast iron pipe flanges and flanged fittings.
 - 2. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.
 - 3. ANSI/AWWA C115/A21.51 - Cast/ductile iron pipe with threaded flanges.
 - 4. ANSI 253.1 - Safety Color Code for Marking Physical Hazards.
- B. American Water Works Association:
 - 1. AWWA C219 - Bolted, Sleeve-Type Couplings for Plain-End Pipe
 - 2. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-In. Through 24-In. (50-mm Through 600-mm) NPS.
- C. ASTM International:
 - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
 - 2. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 - 3. ASTM A470 Standard Specification for Vacuum-Treated Carbon and Alloy Steel Forgings for Turbine Rotors and Shafts.
 - 4. ASTM A536 - Standard Specification for Ductile Iron Castings.
- D. Institute of Electrical and Electronics Engineers (IEEE)
 - 1. ANSI/IEEE Std 100 - Standard Dictionary of Electrical Terms.
 - 2. ANSI/IEEE Std 112 - Test Procedure for Polyphase Induction Motors.
 - 3. IEEE Std 242 - Protection of Industrial and Control Power Systems.
- E. National Electric Code (NEC)/National Electrical Manufacturers Assoc. (NEMA)
 - 1. NEC - National Electric Code.
 - 2. NEC 701 - National Electric Code article 701.

3. NEMA Std MG1 - Motors and Generators.

F. Miscellaneous References

1. Ten-State Standards Recommended Standards for Sewage Works.
2. Hydraulic Institute Std for Centrifugal, Rotary and Reciprocating Pumps.
3. ISO 9001 International Organization for Standardization.

1.3 SYSTEM DESCRIPTION

- A. Contractor shall furnish and install three (3) complete wastewater pumping stations to replace existing pump stations at Park Avenue, Moore Street, and Ninth Street.
- B. Principal items of equipment shall include submersible solids handling wastewater pumps, pump control panels, float-type liquid level switches, break-away fitting system, stainless steel guide rails and stainless steel lifting chain for pump removal, stainless steel discharge pipe and fittings.
 1. Polymer concrete wet wells and valve vaults are specified in Section 33 05 62 – Polymer Concrete Wet Wells and Structures.

1.4 SUBMITTALS

- A. Section TS 007 – Project Submittals: Requirements for submittals.
- B. Shop Drawings: Shop Drawings shall be submitted to the Engineer for approval.
 1. Pump Catalog Data, including a certified performance curve, motor data, and pump dimensional drawing
 2. Materials of construction list
 3. Mounting Accessory details
 4. Access Cover data
 5. Typical installation drawing
 6. Electrical schematics and diagrams
 7. Certified copies of test data from factory testing when specified, only after pumps have been ordered and manufactured.
- C. Informational Submittals:
 1. Descriptive information on material and equipment furnished
 2. Anchorage requirements
 3. Installation instructions
 4. Manufacturer's certificate of acceptance of installation and testing
 5. List of manufacturer's recommended spare parts
 6. Installation & Operation Manual with parts list
 7. Warranty documents
 8. Name and address of factory authorized service facility
- D. Design Data: Service Manual shall be furnished for all mechanical equipment specified in this section. The manual shall contain a description of the equipment, a complete accessory and parts list, and complete installation, operation and maintenance instructions. Two copies of the manual shall be submitted for approval within 30 days after approval of the shop drawings. After approval of the manual, six (6) additional copies shall be furnished.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of pumps and appurtenances on the contract drawing, reflecting all post-bid changes.
- C. Operation and Maintenance Data: Submit maintenance instructions for equipment and accessories.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with Brunswick County standards.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. All equipment shall be carefully handled and protected from damage while in storage and during installation. Equipment shall be protected from the weather at all times.
- B. Store materials to permit easy access for inspection and identification. Keep all material off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.
- C. Equipment damaged by the weather, handling, or construction shall be immediately repaired or replaced to the Engineer's satisfaction.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.

1.11 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Submersible wastewater pumps shall come with a 5-year, pro-rated warranty that begins at the date of shipment from the manufacturer's facility.

1.12 MAINTENANCE MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance materials.
- B. Furnish the following:
 - 1. One spare impeller, trimmed to match installed impeller.
 - 2. Two sets of special tools required for normal operation and maintenance of products furnished.

PART 2 PRODUCTS

2.1 PUMPS AND MOTORS

- A. Manufacturers:
 - 1. Barnes.
 - 2. Flygt N-Series.
 - 3. Myers.
 - 4. Fairbanks Morse.
 - 5. Sulzer ABS.
 - 6. Substitutions: Instructions to Bidders.
- B. Service Conditions:
 - 1. The pumps shall be submersible end suction centrifugal chopper, cutter, grinder, or solids-handling type suitable for wet pit submersible installation, with a permanently installed guide rail system, with a slide that automatically connects to the discharge piping when lowered into place. The pump will be suitable for submergence up to a depth of 66 ft
 - 2. Each pump shall be capable of handling raw, unscreened domestic sewage consisting of water and fibrous materials. The impellers will be capable of passing up to 3" diameter spherical solids. The pump (s) shall be driven by a Premium Efficient/ IE3 motor capable of operating in a 40°C/104° F environment and handling liquids with temperatures to 40°C/104° F continuously. The motor will be capable of operating continuously when fully submerged, partially submerged, or unsubmerged.
 - 3. Each pump will be capable of the following performance:

Moore Street Pump Station		
Primary Flow	400	US GPM
Primary Head	108	TDH - Feet
Minimum Hydraulic Efficiency	60	%
Secondary Flow	420	US GPM
Secondary Head	107	TDH - Feet
Discharge Size	4	In
Suction Size	4	In
Motor Speed	1750	RPM
Motor HP	20	HP
Frequency	60	Hz
Voltage	480	V

Phase	3	ph
Motor Service Factor	1.15	SF

Ninth Street Pump Station		
Primary Flow	300	US GPM
Primary Head	150	TDH - Feet
Minimum Hydraulic Efficiency	55	%
Secondary Flow	745	US GPM
Secondary Head	123	TDH - Feet
Discharge Size	4	In
Suction Size	4	In
Motor Speed	1750	RPM
Motor HP	50	HP
Frequency	60	Hz
Voltage	480	V
Phase	3	ph
Motor Service Factor	1.15	SF

Park Avenue Pump Station		
Primary Flow	315	US GPM
Primary Head	62	TDH - Feet
Minimum Hydraulic Efficiency	55	%
Secondary Flow	380	US GPM
Secondary Head	59	TDH - Feet
Discharge Size	4	In
Suction Size	4	In
Motor Speed	1750	RPM
Motor HP	15	HP
Frequency	60	Hz
Voltage	480	V
Phase	3	ph
Motor Service Factor	1.15	SF

4. Component Materials:

Volute	ASTM A48 Class 30 Cast Iron
Impeller	ASTM A536, 65-45-12 Ductile Iron
Slicing Blade	ASTM A276 440C Stainless Steel, Heat Treated to 53-60 HRC
Striker Plate	ASTM A276 440C Stainless Steel, Heat Treated to 53-60 HRC
Motor Housing	ASTM A48 Class 35B Cast Iron
Wear Ring	ASTM B505 C95400 Lead Free Bronze
External Hardware	304 Stainless Steel
Lifting Bail	304 Stainless Steel
Shaft	416 Stainless Steel

Cooling Jacket	304 Stainless Steel
Seals	Carbon/Silicon Carbide/Buna Upper, Silicon Carbide/Silicon Carbide/Buna Lower
Coating	Liquid End: Factory applied epoxy coating
Gaskets	Buna-N
O-Rings	Buna-N
Motor Rotor Bars	Die Cast Aluminum
Motor Cooling Liquid	Monopropylene Glycol and Distilled or Deionized Water
Elastomeric plug holding plate	ASTM A48 Class 30 Cast Iron
Cable Entry Housing	ASTM A48 Class 30 Cast Iron
Nameplate	304 Stainless Steel

5. Pump Components.

- a. The pump end components will be ASTM A48 Class 30 Cast Iron, aside from the impeller. The volute shall be a single piece non-concentric design, with smooth passages of sufficient size to pass solids that may enter through the impeller. The volute shall include a drain port connection. The volute discharge connection shall be a standard 125 lb. flange, slotted to accommodate ANSI or MM ISO Flanges used in sewage applications, and shall be a centerline connection. The suction connection shall be a standard ANSI 125 lb. flange. The volute shall be designed to withstand 1.5x the maximum shutoff head.
- b. The slicing blade-impeller assembly will be dynamically balanced to ISO G6.3 specifications, and will be capable of handling solids, fibrous materials, and other matter typically found in raw wastewater. The impeller shall be keyed to the shaft and shall have a taper lock connection. The impeller will be a:
 - 1) Mono-vane design with pump out vanes on both sides. The matching volute will include a replaceable volute wear ring at the inlet.
 - 2) Dual-vane design with pump out vanes on both sides. The matching volute will include a replaceable volute wear ring at the inlet. Larger models shall utilize an impeller wear ring as well.
 - 3) Tri-vane design with pump out vanes on both sides. The matching volute will include a replaceable volute wear ring at the inlet.
- c. The pump and motor shaft will be a solid, continuous piece of 416 stainless steel, keyed and tapered for the matching impeller fit to reduce rotor imbalance and minimize stress risers associated with stepped shafts. Shafts utilizing a coupling or other attachment method will not be acceptable. The shaft will have a maximum allowable deflection of 0.002 inches at the lower mechanical seal during operation.
- d. The mechanical seals will be a tandem system, consisting of two totally independent mechanical seals, each with its own single spring system acting in a common direction. The upper seal will have a carbon rotating face and a silicon carbide stationary face and will be located between the coolant chamber and the motor housing. The lower seal will have a silicon carbide rotating face and a silicon carbide stationary face and will be located between the pump and the lubricant chamber. Both seals will have 300 series stainless steel hardware and Buna-N elastomers.
 - 1) Alternate seal materials include a silicon carbide/silicon carbide upper seal, tungsten carbide/tungsten carbide upper seal, and tungsten carbide/tungsten

- carbide lower seal. Combination of these seal configurations will be acceptable.
Seal faces with materials other than those specified above will not be acceptable.
- e. Both seals shall be pinned in place to prevent rotation of the stationary seat and shall seal to the pump housing and must operate in a coolant chamber which shall provide superior heat transfer & seal cooling. The coolant must be environmentally safe non-toxic material. The seals must not require routine maintenance or adjustment but should be easily replaced. The seal shall be commercially available and not a pump manufacturer's proprietary design. Double mechanical seals with a single or double spring and/or cartridge seals will not be accepted.
 - f. The common pump and motor shaft shall rotate on two bearings. These bearings shall be high quality and commercially available. The bearings will be sealed, permanently grease lubricated for superior lubrication, cooling, and life. The lower bearing shall be of the double row ball type, locked in position to accept radial and axial thrust loads and the upper bearing shall be of the pre-loaded single ball type for radial loads as needed to provide a minimum L10 Life of 50,000 hours at -50% to +50% of BEP.
 - g. Gaskets except for seal gland and bearing retainer shall be of the angular gland compression O-ring type eliminating critical slip fits and the possibility of damage during service associated with sliding O-ring sealing arrangements. Mating surfaces where watertight sealing is required shall be machined and fitted with O-rings.
 - h. The exterior of the pump liquid end will be coated per Article 2.04 FINISHES below.
 - i. The pump shall be equipped with a stainless steel nameplate, located in an easily accessible location. The following data will be included on the nameplate:
 - 1) Manufacturer's Name
 - 2) Pump Part Number, Model Number and Serial Number
 - 3) Motor Horsepower Rating
 - 4) Voltage, Phase and Frequency
 - 5) Motor Speed
 - 6) Motor Service Factor
 - 7) Motor Full Load Amps
 - 8) Ambient Temperature Rating
 - 9) Code Letter
 - 10) Pump Weight
 - 11) Impeller Diameter
 - 12) Motor Insulation Class
 - j. Spare Parts
 - 1) One spare full diameter impeller-slicing blade assembly for each pump model.
 - 2) One spare set of mechanical seals.
 - 3) One complete set of pump bearings.
 - 4) One complete set of gaskets.
 - 5) One complete set of O-Rings.
 - 6) One complete set of wear rings for each pump model.
 - 7) One seal failure relay (if applicable).
 - 8) One set of each type of fuse used in the pump control panel and SCADA/RTU panel.
6. Motor Components
- a. The major driver components will be ASTM A48 Class 35B Cast Iron.
 - b. The motor shall be a squirrel cage induction motor housed in an air filled, watertight enclosure. The motor shall be NEMA Type B. The stator windings shall be insulated

with moisture resistant Class H insulation, rated for 180°C (356°F). The motor shall be 480 volts, 60 Hz, 3 phase, and shall have a voltage tolerance of +/- 10% from nominal voltage. The motor shall be designed to run continuously in a 40° (104°F) ambient environment.

- c. The stator shall be press fit into the motor housing, for mechanical stability and optimal heat transfer. The use of bolts or pins to secure the stator into the housing will not be acceptable.
 - d. The motor shall be inverter duty rated, in accordance with NEMA MG-1, Part 31, and shall have a minimum 1.15 service factor. The motor shall be designed for usage in submersible or dry applications, where the motor shall operate fully submerged, partially submerged, or completely unsubmerged. The motor shall continue to operate satisfactorily should the dry pit flood. The motor horsepower shall be non-overloading throughout the entire pump performance curve.
 - e. The rotor bars shall be die cast aluminum with integral cooling fins.
 - f. The motor will be capable of operating at a maximum submergence depth of 66 ft (20m), and shall be IP68 protection rated.
 - g. The motor will be IE3 rated in accordance with IEC 60034-30 at nominal voltage and frequency, with testing per CSA C390/IEEE114. The motor will be capable of 15 evenly spaced starts per hour without overheating.
 - h. The motor shall include a factory installed closed loop cooling system. The cooling system shall be completely self-contained. The cooling liquid shall be a mixture of 30% monopropylene glycol and 70% distilled or deionized water, and shall be circulated between a stainless steel jacket and the cast iron motor housing by a secondary, independent impeller. This secondary impeller shall be mounted directly to the motor shaft between the mechanical seals. The bearing bracket shall act as a heat exchanger to move the heat from the motor to the coolant liquid. The seal plate shall be finned and act as a heat exchanger to move the heat from the coolant to the pumped media. The system shall have at minimum one fill port and one drain port. An external coolant source, a cooling system circulating the pumped media or a design without a cooling system will not be acceptable.
7. Sensors
- a. A moisture sensor detection system shall be integrated within the bearing bracket and liquid ingress must trigger an alarm before reaching the bearings. A normally open float sensor with a circuit verification resistor must be installed in the seal leakage chamber to detect presence of liquid. Units sensing moisture within the motor chamber are not considered acceptable. It is recommended to use the pump monitor relay (PMR) installed inside the control panel which will trigger a warning light and shuts the pump down due to ingress of liquid.
 - b. The motor shall be equipped with thermal sensors:
 - 1) Three Phase: Three thermal sensors, one per phase, shall be embedded in the end coil of the stator windings, and wired in series. These sensors shall be used to monitor stator temperatures, in conjunction with an external motor overload protection device and wired to the control panel through the power cable.
 - 2) Single Phase: A thermal sensor shall be embedded in the end coil of the stator winding. It shall be used to monitor stator temperature, in conjunction with an external motor overload protection device and wired to the control panel through the power cable. The thermal switches shall open at 120°C (248°F). Start and run

capacitors with the starting relay shall be provided on a factory supplied backplate for mounting in the control panel.

8. Cable
 - a. The pump shall be equipped with 50 ft of a CSA qualified submersible power cable constructed in accordance with Type W guidelines. The power cable will also include the moisture and temperature sensor leads in one common jacket for most models.
 - 1) For E21 and E28 frame pumps, the cable entry system will be “Plug & Play” design, consisting of a voltage selectable expanding elastomeric plug, held in place by a cast stainless steel plate indicating the voltage and max amperage. By using this plug, pumps 20HP and below will be capable of switching between voltages with only a cord change. Pumps requiring internal wiring modifications to change voltage will not be acceptable.
 - 2) For E32 and E36 frame pumps, the cable entry system will be “Plug & Play” design, consisting of a potted cast iron housing, held in place by stainless steel hardware. The power cord shall be easily removed and replaced. Pumps with power cords that cannot be easily removed or replaced will not be acceptable.
 - b. The pumps shall be capable of being easily removed and replaced without the removal of the pump power cord from the electrical conduit.

2.2 WET WELL AND VALVE VAULT

- A. Wet well and valve vault shall be precast polymer concrete in accordance with Section 33 05 62 – Polymer Concrete Manholes and Structures.
- B. Flood-Proof Access Hatch with Fall Protection:
 1. Shall be constructed of aluminum with 1/4-inch thick, one-piece aluminum extruded frame having a continuous concrete anchor as part of the frame. Door panels shall be 1/4-inch thick aluminum diamond plate reinforced to withstand a 25-foot column of stationary water and H2O load rating. All hardware and hinges shall be stainless steel with tamper-proof fasteners. Doors shall open 90 degrees and be locked in this position with a stainless steel positive locking arm and aluminum release handle. Doors shall close flush with the top of the frame and be fully supported around the perimeter on a 1/2-inch wide lip.
 2. A grate based wet well fall protection system shall be furnished and installed by the Contractor. A system shall be installed when the door(s) is fabricated or field installed on the hatch door(s). The system shall be installed in accordance with the manufacturer’s recommendations.
 3. The System shall be designed to support a 300 PSF live load; highly visible in color; capable of locking in the fully open position; provided with lift assistance for ease of operation; UV and corrosion resistant; lockable to prevent unauthorized opening; supported with a load bearing bar(s) that provides continuous support; made of aluminum or one-piece fiberglass.

2.3 PIPING

- A. Pump discharge piping from inside wet well to valve vault shall be as follows:
 1. Stainless steel, grade 316L Schedule 40.
 2. Annealed, pickled and passivated conforming to ASTM A312.
 3. Joints: butt-welded or flanged ends with 304 stainless steel bolts.

2.4 VALVES AND FITTINGS

- A. Valves, fittings, and appurtenances in valve vault shall be the type, size, and class shown on the plans. Valves shall have a heavy cast iron body with standard flanged ends, Class 125 with operating devices as specified or shown. Valves shall be at least the same class as the pipe on which they are used. All exposed valves shall be shop primed. Insofar as possible, all valves shall be by the same manufacturer.
- B. Fittings:
1. Use fittings of same size as pipe they serve.
 2. Dissimilar Metals: Provide dielectric fittings or suitable nonconductive material between dissimilar metals.
 3. Welding Fittings: Welding fittings for use with welded steel pipe shall be forged steel fittings in accordance with ANSI B16.9, standard weight.
 4. Flanged Fittings: Fittings for use with flanged joints on ductile or cast iron pipe or on steel pipe shall be cast iron or ductile iron fittings conforming to ANSI B16.1 or AWWA C110. Flanges shall be faced and drilled in accordance with ANSI B16.1, Class 125. All fittings shall be pressure rated at 250 psig.
- C. Restrained Flange Coupling Adapters
1. Provide a restrained flanged to plain-end pipe connection. Comply with AWWA C219.
 2. Shall have a minimum working pressure of 250 psi.
 3. Gland and flange body shall be ductile iron meeting or exceeding ASTM A536, Grade 65-45-12.
 4. Gasket shall be made from virgin styrene butadiene rubber (SBR) compounded for water and sewer service in accordance with ASTM D2000 MBA 710. Flange gasket shall be O ring style and made of nitrile butadiene rubber (NBR) in accordance with ASTM D2000.
 5. Shop coat applied to cast parts for corrosion protection in transit.
 6. Restraining bolt shall be ductile iron, meeting or exceeding ASTM A 536.
 7. Restraining lugs shall be ductile iron, meeting or exceeding ASTM A 536.
 8. Shall be suitable for PVC, stainless steel, or ductile iron as shown on the Drawings.
- D. Plug Valves: Shall be eccentric of the non-lubricated type with resilient faced plugs. Valve bodies shall be ASTM A126 Class B cast iron according to AWWA C517. Valves shall include the following features:
1. Plugs shall be resilient faced cast iron, ASTM A126 Class B. The resilient covering shall be neoprene or hycar and suitable for use with sewage.
 2. Sleeve metal bearings which are sintered, oil impregnated, and permanently lubricated stainless steel conforming to Type 316, ASTM A743, Grade CF-8M or AISI Type 317 L shall be used. Non-metallic bearings are not acceptable.
 3. Valve shaft seals shall conform to AWWA C507 and AWWA C517 and shall utilize a multiple v-ring that is externally adjustable and repackable under pressure.
 4. Valve actuators shall be of the lever type for all valves 6 inches and smaller.
- E. Swing Check Valves: Shall meet or exceed AWWA C508 with the following features:
1. Body shall be constructed of ductile iron conforming to ASTM A536. End connections shall be flat faced flanged per ASME/ANSI 125/150 lb standard. The valve shall be rated for 250 psi cold working pressure.

2. Body seat: 316 stainless steel per ASTM A743. All external fasteners shall be stainless steel.
3. Disc and Disc Arm: Ductile iron conforming to ASTM A536. The disc shall be attached to the disk arm with 304 stainless steel fasteners.
4. Disc Seat: Acrylonitrile butadiene (NBR) securely held in place by stainless steel fasteners.
5. Pivot Shaft: One-piece 303 stainless steel per ASTM A582. Pivot shaft shall protrude through both sides of the valve body.
6. Lever and Weight: Lever arm and adjustable counterweight shall be ductile iron conforming to ASTM A536 grade 65-45-12.

F. Pressure Gauges

1. Range: 0-100 psig
2. Provide rounded type, stainless steel case, stainless steel bourdon tubes, glycerin filled, 1/4-inch NPT male bottom connection, stainless steel rack and pinion movement, white dials and black figures, and threaded ring case.
3. Gauge accuracy: within two (2) percent of the total scale range.
4. Provide diaphragm isolaters on all gauges.
 - a. Diaphragm material must be resistant to chemicals in the line being measured.

2.5 LEVEL CONTROL SYSTEM

A. Float-Tilt type level switches (qty. 4) shall be used to start and stop the pump motors in response to changes in wet well level as set forth herein and in Brunswick County SCADA/RTU Standard Details.

1. Materials:
 - a. Float material: Polypropylene with internal polyurethane foam or Teflon coated 316 stainless steel, not less than 5" in diameter.
 - b. Cable jacket: CPE, PVC, Synthetic rubber jacket; provide 1/8" thick neoprene sleeve over the cable jacket from 5" above mounting assembly to 5" below cable hinge point; provide 1/8" thick neoprene sleeve over the cable jacket from 5" above float to the top of the float switch body.
 - c. Cable clamp mounting assembly: 316 stainless steel, flanged & flared on both sides providing hinge point stress relief to both sides of the cable.
2. Design and Fabrication:
 - a. Provide switch complete with flexible electrical cable.
 - b. Micro-switch type.
 - c. Cable: 2-conductor plus ground, #16-gauge minimum stranded copper conductors, of sufficient length to reach the control panel without splices along the route as detailed in the project drawings, not less than 50 feet.
 - d. SPST contact rated 100 VA minimum up to 250 VAC.
 - e. Direct acting float switch:
 - 1) Switch actuates on rising level.
 - 2) Switch de-actuates when liquid falls 1" below actuation level.
3. A corrosion resistant weight shall be attached to a stainless-steel support cable below the lowest float to hold the switches in place.
4. Float cable holder:
 - a. Six (6) hooks, 316 stainless steel mounted with 316 stainless steel anchors.

2.6 FENCING

- A. See Section 32 31 19 - Decorative Fences and Gates.

2.7 ELECTRICAL

- A. See Division 26 sections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Instructions to Bidders: Verification of existing conditions before starting work.
- B. Contractor shall off-load equipment at installation site using equipment of sufficient size and design to prevent injury or damage. Follow manufacturer's instructions for proper handling.
- C. Immediately after off-loading, Contractor shall inspect items for shipping damage or missing parts. Any damage or discrepancy shall be noted in written claim with shipper prior to accepting delivery.
- D. Notify the manufacturer's representative of any unacceptable conditions noted with shipper.

3.2 EXISTING WORK

- A. After proposed pump station and gravity sewer work is completed and brought into service, begin demolition work in accordance with Section 02 41 16 – Structure Demolition.
- B. Contractor shall protect new work and existing improvements to remain.

3.3 INSTALLATION

- A. Equipment shall be installed in strict accordance with the manufacturer's instructions and approved shop drawings. All anchor bolts, piping, valves, and appurtenances required for a complete installation shall be provided.
- B. Excavation, Backfilling, and Compacting of Pumping Station: All excavation, backfilling, and compaction for the pumping station shall be done in accordance with Section TS 013 – Excavating, Grading, Trenching and Backfilling of these specifications.
- C. Fencing: All fencing installation shall be installed in accordance with Section 32 31 19 – Decorative Fences and Gates of these specifications and the manufacturer's instructions.
- D. Electrical Work: All electrical installation work shall be done in accordance with the requirements of Division 26 of these specifications.
- E. Service:

1. Equipment manufacturer shall furnish all instructional and assistance necessary for proper installation and operation of all equipment specified herein and in related sections. After installation, a qualified service representative of the equipment manufacturer shall inspect the complete installation, make adjustments as needed, and place the equipment in permanent operation. Field tests shall be performed with the Engineers present to ensure proper operation.
2. After assured of proper performance, the service representative shall review with the Owner and Engineer the equipment installed demonstrating the operating methods and standard maintenance practices for the equipment installed.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Factory Tests:
 1. The pump manufacturer shall perform a pump performance test to verify hydraulic performance as standard.
 2. If certified testing is required, the manufacturer shall offer testing in accordance with Hydraulic Institute Standards 11.6 and 14.6. Additionally, the following tests are also available:
 - a. A check of the motor voltage and frequency
 - b. A motor and cable insulation test for moisture content or insulation defects, in accordance with CSA criteria
 3. Each motor shall be dielectric tested to verify the motor insulation integrity.
- C. Manufacturer's Representative
 1. After equipment installation, manufacturer's representative shall inspect the equipment, carry out the equipment start-up procedures, and provide training to the operators in how to effectively operate and maintain the equipment. The manufacturer's representative may be an employee of the manufacturer's distributor.
 2. Prior to Operational Testing, the Contractor shall have the manufacturer's representative perform the following:
 - a. Megger test the stator and power cables.
 - b. Check proper rotation.
 - c. Check power supply voltage.
 - d. Measure motor operating load and no-load current.
 - e. Check level control operation and sequence.
 3. During Final Acceptance Testing, the manufacturer's service representative shall review recommended operation and maintenance procedures with the Owner's personnel.
 4. The manufacturer's representative shall be present for a period of not less than one (1) day to complete the following:
 - a. Inspect completed installation
 - b. Observe equipment testing
 - c. Observe equipment start-up
 - d. Instruct operational personnel on equipment operation and maintenance.
- D. Field Tests:
 1. After installation, the pumping system shall be field tested using potable water for a minimum of 30 minutes and check for correct direction of rotation in the presence of the

manufacturer's representative and the Engineer. The Contractor shall be responsible for providing water and for conveying the water to the site and providing required meter and back-flow prevention check valve assembly. Each pump shall be cycled through the sequence of operation "pump on" as the level rises in the wet well and then "pump off" during draw down. Once each pump has been tested separately, the pumps will be operated in parallel.

2. Each pump shall operate over its intended operating range without undue noise, vibration, or cavitation. The Contractor shall monitor and record vibration at three symmetrically located points on each pump at maximum and minimum speed and supply data to the Owner.

E. Inspections

1. Upon completion of the installation and on-site testing, and before acceptance by the Owner, the Pump Manufacturer or the authorized Pump Manufacturer's Representative shall submit a written statement that the pump installation has been inspected and is completed in accordance with the manufacturer's recommendations.

ADJUSTING

- F. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.

- G. Adjust parts for smooth, uniform operation in accordance with manufacturer's instructions.

3.5 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.

- B. Clean equipment as recommended by manufacturer. Do not use materials or methods which may damage surface finish or surrounding construction.

END OF SECTION



AGENDA

Southport Sewer Lift Station Replacement

07/01/2025

10:00 am – 11:00 am

Attendees:

Please read: N/A

Please bring: N/A

Agenda

Bid Procedures

- All bidder questions and/or clarifications must be submitted in writing no later than July 3, 2025, at 5:00 p.m. ET.
- Questions or requests for clarification shall be directed to:
 - Monroe Huckaby, PE
 - W.K. Dickson & Co., LLC
 - Email: mhuckaby@ardurra.com
 - Telephone: (919) 256-5659
- Bids due July 24th 3 pm
- MWBE business shall be considered per the contract documents
- Funding through State Reserve Program and ARPA - Davis-Bacon and American Iron and Steel requirements
- Base Bid All work covered in the Contract documents including lump sum and allowance items
- Forms to be included with Bid:
 - Form of Proposal
 - Socioeconomic Contracting Affidavit
 - Good Faith Efforts Form
 - Table A: Prime Contractor and List of Selected Subcontractors
 - Table B: Subcontract solicitation List (if applicable)
 - Form of Bid Bond – 5% Bid bond
- Addendum No. 1 – bid document price. Paper copy \$180, digital - \$135



Project Scope

Work of the Project includes improvement of facilities and equipment replacement at Moore Street, Ninth Street, and Park Avenue pump stations in the City of Southport.

Work of this project includes:

- Installation of new polymer concrete wet wells with flood-proof access hatch, new submersible pumps, pump control panels, generator replacement or reconfiguration, and associated electrical improvements, stainless steel pump discharge piping, polymer concrete valve vaults, ductile iron valves and fittings, restrained PVC C900 force mains and connection to existing force mains, PVC C900 gravity sewer extension including polymer and precast concrete manholes, new decorative site fencing, installation/extension of gravel access driveways, and relocation of existing water meters and backflow preventers. Converting to natural gas generators and natural gas connections and relocation of existing water meters and backflow preventers.
- Demolition of existing wet wells and concrete slab on grade, removal of suction lift pumps and related piping, fiberglass pump enclosure, existing pump control panels and existing wiring, abandonment of gravity sewer and force main, and removal of existing site fencing.

Work Sequence

- Construct Work in stages during construction period, coordinate construction schedule and operations with Owner:
- Stage 1: Install new wet wells, valve vaults, submersible pumps and associated electrical components, and construct new force main and gravity sewer up to the point of connection with existing utilities. Existing pump station shall remain operable while work in this stage is being completed.
- Stage 2: Upon successful testing and startup of new pump station components, make connections to existing force mains and gravity sewer and bring new pump station components into service.
- Stage 3: Begin demolition and abandonment of pump station components, gravity sewer, and force main no longer in use.

Trees

Only designated trees to be removed or trimmed. Contractor shall review and notify Engineer if additional tree trimming is requested.



Maintain Operation

Operation of the existing pump stations shall be maintained through out the project with no interruption. County maintenance personnel shall have access to the existing pump stations.

Contract Period

- A. Substantial Completion: 330 consecutive calendar days
- B. Final Completion: 360 consecutive calendar days
- C. Liquidated Damages: \$1,800.00 per day after Substantial Completion

Questions