

SOLICITATION FOR:
**PROCESS MONITORING FOR OPTIMAL
NITROGEN TREATMENT AND
OUTFALL REDUCTION**

#15-IFB-001



WAREHAM, MASSACHUSETTS

RELEASED:
FEBRUARY 23, 2015

DUE BY:
MARCH 23, 2015 @ 11:00 EST

DELIVER TO:
Town of Wareham
Wareham Water Pollution Control Facility
6 Tony's Lane
Wareham, MA 02571

SECTION 1.0 INSTRUCTIONS TO BIDDER

1.1 General

- When submitting bid, please identify the solicitation title and number clearly on the submitted envelope. All responses must be sealed and delivered to: Town of Wareham Water Pollution Control Facility, 6 Tony's Lane, Wareham, MA 02571
- Bids submitted must be originals.
- The completion of the following forms is necessary for consideration of a potential contract award. When submitting bid documents, please retain the order of documents as originally provided:
 - a. Signed Terms, Conditions and Certifications
 - b. Completed Bid Pricing Page
 - c. Completed Statement of Compliance Form
 - d. Completed Certificate of Authority
 - e. Completed Appendix A - Past Performance / References

NOTE: If Vendor is incorporated, an updated "CERTIFICATE OF GOOD STANDING" from the Commonwealth of Massachusetts may be required for the awarded vendor only.

- Please review and return with your sealed bids as sent. Also, insure that all forms are completed and your bid response is submitted as requested.

1.2 General Information & Submissions Instructions

1.2.1 Bid Delivery

Responses must be delivered by **March 23, 2015 @ 11:00 a.m.** to Town of Wareham Water Pollution Control Facility. Two (2) copies of the response should be submitted. Responses must be sealed and marked with the solicitation title and number. All bids must include a forms listed in Section 1.1.

1.2.2 Bid Signature

A response must be signed as follows: 1) if the Bidder is an individual, by her/him personally; 2) if the Bidder is a partnership, by the name of the partnership, followed by the signature of each general partner; and 3) if the Bidder is a corporation, by the authorized officer, whose signature must be attested to by the clerk/secretary of the corporation, and with the corporate seal affixed.

1.2.3 Time for Bid Acceptance

The contract will be awarded within 30 days after the bid opening. The time for award may be extended for up to 30 additional days by mutual agreement between the Town of Wareham and the apparent lowest responsive and responsible bidder (or, for a contract requiring payment, the apparent highest responsive and responsible bidder.)

1.2.4 Changes & Addenda

If any changes are made to this solicitation, an addendum will be issued. Addenda will be emailed or faxed to all bidders on record as having picked up the solicitation. No changes may be made to the solicitation documents by the Bidders without written authorization and/or an addendum from the Purchasing Department. **It is also the responsibility of the vendor to monitor the Town's website for addenda. The web address is:**

www.wareham.ma.us

1.2.5 Modification or Withdrawal of Bids, Mistakes, and Minor Informalities

Any Bidder may correct, modify, or withdraw a bid by written notice received by the Town of Wareham prior to the time and date set for the bid opening. Bid modifications must be submitted in a sealed envelope clearly labeled "Modification No. ____" to the address listed in part one of this section. Each modification must be numbered in sequence, and must reference the original solicitation.

After the bid opening, a Bidder may not change any provision of the bid in a manner prejudicial to the interests of the Town or fair competition. Minor informalities will be waived or the bidder will be allowed to correct them. If a mistake and the intended bid are clearly evident on the face of the bid document, the mistake will be corrected to reflect the intended correct bid, and the bidder will be notified in writing; the bidder may not withdraw the bid. A bidder may withdraw a bid if a mistake is clearly evident on the face of the bid document, but the intended correct bid is not similarly evident.

1.2.7 Right to Cancel/Reject Bids

The Town of Wareham may cancel this solicitation, or reject in whole or in part any and all bids, if the Town determines that cancellation or rejection serves the best interests of the Town.

1.2.8 Bid Prices to Remain Firm

All bid prices submitted in response to this solicitation must remain firm for 60 days following the bid opening.

1.2.9 Unbalanced Bids

The Town reserves the right to reject unbalanced, front-loaded and conditional bids.

1.2.10 Unforeseen Office Closure

If, at the time of the scheduled bid opening, the Water Pollution Control Facility is closed due to uncontrolled events such as fire, snow, ice, wind, or building evacuation, the bid opening will be postponed until **11:00 a.m.** on the next normal business day. Bids will be accepted until that date and time.

1.2.11 Price Submission

All prices must contain the unit rate as requested on the bid price form in this solicitation. All prices are to include delivery, the cost of fuel, the cost of labor and all other charges

related to the products or services listed. Prices are to remain fixed for the contract period of performance.

1.2.12 Estimated Quantities

The Town of Wareham has provided estimated quantities for services over the course of the contract period. These estimates are estimates only and not guaranteed.

1.2.13 Brand Name "or Equal"

Any references to any brand name or proprietary product in the specifications shall require the acceptance of an equal or better brand. The Town has the right to make the final determination as to whether an alternate brand is equal to the brand specified.

1.2.14 Warranty

The Bidder warrants that (1) the Supplies sold are merchantable, (2) that they are fit for the purpose for which they are being purchased, (3) that they are absent any latent defects and (4) that they are in conformity with any sample which may have been presented to the Town. The bidder guarantees that upon inspection, any defective or inferior equipment or supplies shall be replaced without additional cost to the Town. The vendor will assume any additional cost accrued by the Town due to the defective or inferior equipment or supplies. The bidder guarantees all equipment or supplies for a period of one (1) year, or as otherwise specified herein.

1.2.15 Cancellation

The Town reserves the right to cancel this contract at any time on any grounds, including the vendor's failure to comply with the Scope of Work (SOW) provided herein.

1.3 Questions About the Solicitation

Questions concerning this solicitation must be submitted in writing to: Guy Campinha, Director, Town of Wareham Water Pollution Control Facility, 6 Tony's Lane, Wareham, MA 02571 **before 11:00 AM on March 12, 2015**. Questions may be delivered, mailed, faxed to 508-291-0155, or e-mailed to gcampinha@wareham.ma.us. Written responses will be mailed or faxed to all bidders on record as having picked up the IFB. If any bidders or proposers contact anyone outside of the Wareham Water Pollution Control Facility regarding this bid/proposal, that bidder/proposer will be disqualified immediately.

1.4 Pre-bid Site Visit -

There will be a **mandatory/voluntary** site visit for this project held at the site (6 Tony's Lane, Wareham, MA). The pre-bid site visit will be on **March 10, 2015 @ 11:00 a.m.**

1.5 Rule for Award

A contract will be awarded to the responsive and responsible bidder offering the lowest total cost to complete project.

SECTION 2.0

GENERAL TERMS, CONDITIONS, CERTIFICATIONS

2.1 Bid Offers

The right is reserved to reject any and all bids or parts of bids and to make an award as may be determined to be in the best interests of the Town of Wareham. Bids with erasures or alterations will be rejected.

2.2 Prices

Must be F.O.B. Delivered Destination-Wareham, MA. No charges will be allowed for packing, crating, freight, handling, or cartage unless specifically stated and included with bid.

2.3 Awards

To a bidder may be cancelled if the bidder shall fail to prosecute the work with promptness and diligence.

2.4. Payment

The Town of Wareham shall make no payment for a supply or service rendered prior to execution of a written Contract. Bills for services, materials, or supplies furnished by bidders under Contract should be submitted before the first day of the in which payment is to be made to insure payment by twentieth day of that month, except where the allowance for a discount differs from the above. Bidder agrees to submit bills and delivery slips to the Town Department in sufficient time for such discounts to be taken advantage of by the Town and, in any event, shall not be less than ten (10) days from the submission to the Department of such bills and delivery slips. Time in connection with a discount offered will be computed from the date of delivery to the Town, as specified on the order or from the date a correct invoice is received by the using agency of the Town, if the latter date is later than the date of delivery.

2.5. Guarantees

The successful bidder shall repair, replace, or make good, without cost to the Town, any defects or faults arising within one (1) year after the date of acceptance of articles furnished hereunder resulting from imperfect or defective work done or materials furnished by the Seller.

2.6 Patents

The Seller shall indemnify and save harmless the Town and all persons acting for or on behalf of it from all suits and claims against them, or any of them, arising from or occasioned by the use of any material, equipment, or apparatus, or any part thereof, which infringes or is alleged to infringe on any patent rights. In case such material, equipment, or apparatus, or any part thereof, in any such suit is held to constitute an infringement, the Seller within a reasonable time, will, at its expense and as the Town may elect, replace such material, equipment, or apparatus, or remove the material, equipment, or apparatus and refund the sums paid.

2.7 Legality

The successful bidder shall comply with all applicable United States, Massachusetts, and/or Town of Wareham codes, statutes, ordinances, rules, and regulations.

2.8 Taxes

Purchases made by the Town are exempt from Massachusetts Sales Tax and Federal Excise Taxes. Bid prices must exclude any such taxes. Exemption certificates will be furnished upon request.

2.9 Orders

Verbal Orders are not binding on the Town of Wareham, and any delivery made or work performed without written order or written Contract are at the risk of the Seller or Bidder and may result in an unenforceable claim. The actual needs of the Town Department shall govern the actual amount delivered under Contract to be drawn and entered into between the successful bidder and the Town. Purchase Orders issued by the Town to pay for goods or services shall be made part of Contract.

2.10 Indemnity

Bidder shall agree to Indemnify, Defend, and Hold the Town Harmless from any and all claims arising out of the performance of this contract from the negligence, willful acts or omissions of the Bidder, its employees, agents, or any sub-Bidders.

2.11 Equality

Where trade names or specific manufacturers are mentioned in the specifications, the Town does not intend to limit competition, but merely to indicate the general type of commodity to be supplied. The Town invites offers on comparable commodities to those named or described in the specification. Naming of any commercial name, trademark or other identifier shall not be construed to exclude any item or manufacturer not mentioned by name or as limiting competition, but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if: (a) it is at least equal in quality, durability, appearance, strength, and design; (b) it will perform at least equally the function imposed by the general design for the purpose being contracted for or the material being purchased; and (c) it conforms in a substantial way, even with deviations, to the detailed requirements for the item in the specifications. The name and identification of all materials, other than the one named, shall be submitted to the Town in writing for approval, prior to the purchase, use, or fabrication of such items. Subject to the provisions of M.G.L. Ch.30, §.39J, or other applicable statute, approval shall be at the sole discretion of the Town, it shall be in writing to be effective, and the decision of the Town shall be final. The Town may require tests of all materials so submitted to establish quality standards at the vendor's expense. All directions, specifications, and advice by the manufacturer for the proper installation, handling, storage, adjustment, or operation of their equipment shall be complied with and the responsibility for the proper performance shall continue to rest with the vendor. Include a written brochure outlining all features of the product offered whenever possible.

2.14 Right to Know Legislation

M.G.L., Ch. 111F and 454 CMR 21.06. All vendors furnishing substances or mixtures which may be classified as toxic or hazardous, pursuant to MGL,Ch.111F , are cautioned to obtain and read the Law and the Regulations referred to above. Copies may be obtained from the State House Bookstore, State House, Room 117, Boston, MA 02133 for a fee.

2.15 Non-Collusion Affidavit

M.G.L., Ch.30, s.39M and/or Ch.30B, s. 10. Any person submitting a bid or proposal for the procurement or disposal of supplies or services to any governmental body shall certify in writing on the bid or proposal, as follows: the undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals,

2.16 State Taxes Paid

Pursuant to M.G. L. Ch.62C, s.49A, the undersigned certifies that, to the best of their knowledge and belief, they have complied with all the laws of the Commonwealth relating to taxes, reporting of employees and Bidders, and withholding and remitting of child support.

2.17 Bid Offers

Bid offers will be reviewed and awards made as soon as is possible. Awards will be made within 30 business days from Bid Opening. Offers must be signed to be valid.

2.18 Unit Price

The case of arithmetical error in any offer involving extension of prices quoted herein, the unit price will govern the final price of quantities offered.

2.19 None

2.21 Independent Bidder

The Bidder is neither an agent nor an employee of the Town of Wareham and is not authorized to act in behalf of the Town of Wareham.

2.22 Complete Agreement

The written contract supersedes all prior agreements or understandings between the parties and shall not be changed unless mutually agreed by both parties in writing.

2.23 Assignment / Sub-Contracting

The Bidder shall not assign any interest in a contract nor engage any other entity, company, subBidder or individual to perform any obligation to the Town without prior written consent of the Town of Wareham.

2.24 Conflict of Interest

The bidder certifies that no official or employee of the Town of Wareham has a financial interest in this offer or in the contract which the bidder offers to execute or in the expected profit to arise there from, unless there has been compliance with the provisions

of M.G.L.,Ch.43, s.27 (Interest in Public Contracts by Public Employees) and of provisions of M.G.L.,Ch.268A, s.20 (Conflict of Interest Law) and that this offer is made in good faith without fraud or collusion or connection with any other person submitting an offer to the Town of Wareham .

2.25 Termination

The Town of Wareham shall have the Right to terminate this Agreement, if: (A) the Bidder neglects or fails to perform or observe any of its obligations hereunder and cure is not affected by the Bidder within Fifteen (15) Days next following its receipt of a termination notice issued by the Town of Wareham , or, (B) a judgment or decree is entered against the Bidder approving a petition for arrangement, liquidation, dissolution or similar relief relating to any bankruptcy or insolvency and such judgment or decree remains unvacated for Thirty (30) Days; or Immediately, if Bidder shall file a voluntary petition in bankruptcy or any petition in bankruptcy or any petition or answer seeking any arrangement, liquidation or dissolution relating to bankruptcy, insolvency or other relief of debtors, or shall seek or consent or acquiesce in appointment of any trustee, receiver or liquidation of Bidder's property; or (C) funds are not appropriated or otherwise made available to support continuation of performance in any Fiscal Year succeeding the first year of this Agreement. Town of Wareham shall pay all reasonable and supportable costs incurred prior to termination which payment shall not exceed the value of any services provided. NOTICE: The Town of Wareham may terminate this Contract or any Purchase Order issued hereunder without cause at anytime, effective upon the termination date stated in the notice of termination. The Bidder shall cease performance upon the stated termination date. If the Contract or any Purchase Order is terminated under this subsection, the Bidder shall be entitled to be paid for supplies and/or services delivered and accepted prior to the notice of termination. In no event shall the Bidder be entitled to be paid for any supplies or services delivered after the effective date of termination.

2.26 Return of property

Upon termination, the Bidder shall immediately return to the Town of Wareham, without limitation, all documents, plans, drawings, tools, equipment, and items of any nature whatsoever supplied to the Bidder by the Town, or items developed by the Bidder in accordance with the terms of a Contract with the Town of Wareham .

2.27 Interpretations of Specifications

Any prospective bidder that requests an interpretation of existing specifications' terms or conditions must do so within five (5) working days before the scheduled bid opening or defined question due date located with the instructions to bidder. All requests shall be in writing to the Water Pollution Control Facility Director.

2.28 Information

The submission of a bid offer authorizes the Town to contact any and all parties referenced by the bidder in regard to financial and operational information. The Town shall have the right to request verification of any information or qualifications submitted as part of any offer to the Town.

2.29 Price Reduction

It is understood and agreed that should any price reductions occur between the opening of the bid offers and the completion of the delivery of goods or services that the benefit of all such reductions will be extended to Town.

2.30 Governing Law

The offer and any Contract which may ensue shall be governed by the Laws of the Commonwealth of Massachusetts.

2.31 Enforceability

In the event that any provision of this offer or Contract is found to be legally unenforceable, such legal unenforceability shall not prevent enforcement of any other provisions of a Contract.

2.32 Samples

Any qualified bidder may be required to submit samples of the goods offered at the request of the Purchasing Agent. Evaluation for acceptability will be a determining factor in the selection process.

2.33 Discrimination

It is understood and agreed that it shall be a material breach of Contract resulting from this bid offer for the Bidder to engage in any practice which shall violate any provision of M.G.L., Ch.151B, relative to discrimination in hiring, discharge, or, terms or conditions of employment.

(THIS AREA IS LEFT BLANK INTENTIONALLY)

CERTIFICATIONS

Statements below shall be submitted with each Bid or Proposal and shall be duly dated and signed with an **original signature** and all other information, or, the Bid or Proposal will be rejected.

In witness whereof, the undersigned certifies, under the pains and penalties of perjury that:

- 1. STATE TAXES PAID:** Pursuant to M.G.L. Chapter 62C, s. 49A, the undersigned certifies that, to the best of my knowledge and belief, have complied with all the laws of the Commonwealth relating to taxes, reporting of employees and Bidders, and withholding and remitting of child support.
- 2. CERTIFICATE OF NON-COLLUSION:** M.G.L. C. 30, s. 39M and/or C. 30B, s.10: Any person submitting a bid or proposal for the procurement or disposal of supplies or services to any governmental body shall certify in writing, on the bid or proposal, as follows: The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals.
- 3. PUBLIC CONTRACTS - DEBARMENT:** M.G.L. C. 550, Acts of 1991: The undersigned certifies that the said "person" is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of C. 29, s. 29F, or any other applicable debarment provision of any other Chapter of the General Laws, or any Rule or Regulation promulgated thereunder. Additionally, the undersigned is not presently debarred by any Agency of the Federal Government.
- 4. HEALTH & SAFETY ON PUBLIC CONSTRUCTION PROJECTS OVER \$10,000.00:** Chapter 306 of the Acts of 2004: The undersigned certifies that the firm is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the U.S. OSHA that is at least 10 hours in duration at the time that the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the U.S. OSHA that is at least 10 hours in duration.

5. COMPLIANCE:

The undersigned is in compliance with all of the provisions, and shall remain in full compliance with the provisions for the life of any Contract resulting from this solicitation. That the bidder is qualified to perform any such Contract and possesses, or shall obtain, all requisite licenses and/or permits to complete performance; shall maintain all unemployment, workers' compensation, professional and personal liability insurance policies sufficient to cover its performance under any such Contract; and shall comply with relevant prevailing wage rates and employment laws. To the best of its knowledge and belief has paid all local taxes, tax titles, utilities, motor vehicle excise taxes, water and wastewater bills in MA as required by Law.

Print Name _____

Circle: Corporation Partnership Individual

Authorized Signature _____

Print Name _____

Title of Person Signing Bid or Proposal _____

Date _____

Company Federal ID # or Social Security # _____

State of Incorporation _____

Approval of a Contract, or other Agreement, will not be granted unless this form is signed and fully complete.

SECTION 3.0 INVOICING REQUIREMENTS

3.1 General

Each invoice shall be mailed to the designated billing office at the following address after completion of order:

**Town of Wareham
Water Pollution Control Facility
6 Tony's Lane
Wareham, MA 02571**

To ensure a proper invoice, the invoice must include the following information and/or attached documentation:

Name of the business concern, invoice number and invoice date;

- 1) Contract number, or authorization for delivery of property of performance of services;
- 2) Description, price, and quantity and services actually delivered or rendered;
- 3) Shipping and payment terms;
- 4) Name (where practicable), title, phone number, and complete mailing address of responsible official to whom payment is to be sent; and
- 5) Other substantiating documentation or information as required by the contract.

SECTION 4.0 SCOPE OF WORK (SOW)

PART 4.1 GENERAL

The work to be performed under the contract consists of furnishing materials and equipment for the installation of state-of-art nitrogen monitoring equipment and process controls. A computerized network of monitoring probes will be installed to collect data in real time. This data will allow immediate corrections to be made to the various treatment processes before problems arise and will help ensure that the treatment process is maintained in an optimal state of nitrogen removal. DCAMM certification is not required as we estimate this project under 100k. This project will not commence until a "Letter to Proceed" has been received by the Bidder from the Town of Wareham.

4.1.2 Related Documents

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. The final award

of this bid will be contingent upon availability of sufficient funds. The Town reserves the right to award part or all of this contract pending availability of funds.

4.2 Site Description

The property location is Wareham Water Pollution Control Facility, 6 Tony's Lane, Wareham, MA.

4.3 Project Specifications

The following specifications must be met for the successful completion of the contract. The Bidder must consider these specifications when bidding. The bid price should include costs for all the specifications listed below. No additional costs will be considered.

4.3.1 Permits

All applicable permits and compliance with regulations are the responsibility of the Bidder. The Bidder is responsible for securing all permits and providing copies to the Town's Project Manager before commencement of work.

4.3.2 Site Condition During Work

The construction site will be kept neat and secured each day. Equipment security is the responsibility of the Bidder. Equipment may be stored at the site, but may not obstruct any roads or paths. The site will be free of trash and be kept in an orderly fashion.

4.3.3 Best Management Practices

The Bidder shall employ best management practices for construction sites to reduce erosion and maintain a clean and safe site.

4.3.4 Health and Safety

The Bidder will be responsible for ensuring the health and safety of employees and subBidders. Work will be conducted in a safe and responsible manner and in compliance with all applicable health and safety laws and regulations.

4.3.5 Hazardous Materials

The Bidder will be responsible for disposal of any and all hazardous materials in accordance with federal, state and local regulations and ordinances.

4.3.6 Contract Completion

The contract will be considered complete when:

- The site is clean of all debris
- All paperwork indicating disposal of materials has been turned in to the Project Manager.
- All permits have been signed off as complete by the managing authorities
- All items on punchlist have been completed
- All invoices have been submitted

4.4 Period of Performance

The contract period shall be for a period **thirty (30)** days, however substantial completion is anticipated to take no more than **fourteen (14)** days from notice to proceed.

SPECIFICATIONS

A. SECTION 40 91 13.XX

SPECTROMETRIC PROCESS MEASUREMENT DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Instruments and associated equipment for spectrometric measurement of organics / nitrates / solids in water and wastewater treatment systems.

B. Scope

1. Furnish, install, calibrate, test, adjust, and place into satisfactory operation spectrometric sensors as shown on the Drawings and specified herein in accordance with the contract documents.
2. The Drawings and Specifications illustrate and specify functional and general construction requirements of spectrometric sensors and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete workable and integrated system.

- ###### **C. Coordination:** Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.2 PERFORMANCE REQUIREMENTS

A. Operating range

1. Temperature: 32°F to 113°F (0°C to 45°C)
2. Pressure: less than or equal to 1 bar
3. pH: 4 S.U. to 12 S.U.
4. Flow velocity: < 3 m/s

B. Measuring range CarboVis 701 IQ

1. COD
 - a. Influent wastewater: 0 mg COD / l to 20,000 mg COD / l

C. Resolution CarboVis 701 IQ

1. COD: 1 mg O₂ / l.

- ###### **D. Signal averaging:** user selectable to provide a t₉₀ from 10 min. to 60 min.

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish spectrometric sensors by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- ###### **A. Delivery and Acceptance Requirements:** Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

- ###### **B. Storage and Handling Requirements:**

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.
5. Temperature range for storage: 15°F to 120°F (-10°C to 50°C)

1.5 SUBMITTALS

- A. Product data
 1. Sensor operating manual.
 2. Mounting bracket / sensor holder installation instructions.
- B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 GENERAL

- A. Design spectrometric measurement system for continuous monitoring *in situ* of COD, Nitrate, and TSS using optical detectors that measure the transmission of light through wastewater from light sources that generate 256 separate wavelengths spanning the ultraviolet and visible light spectrum.
- B. Connect spectrometric sensors to field-mounted junction box or Input/Output modules specified in Section 40 95 00 with appropriate sensor connecting cable.
- C. Spectrometric measuring system components shall be designed to be part of a process control system that is protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.

2.2 MANUFACTURER

- A. Provide products from the following manufacturer:
 1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.3 MANUFACTURED UNIT

- A. The spectrometric measurement system consists of the following:
 1. Model CarboVis® 701 IQ spectrometric sensor.
 - a. The sensor shall use an optical method that measures the absorption spectrum of a sample over a range from ultraviolet to long wave visible light.
 - b. The sensor shall be factory-calibrated and ready for measurement.
 - c. The sensor shall have a non-mechanical integrated ultrasonic cleaning system.
 - d. The sensor shall have a digital output signal.
 - e. The sensor shall detach from sensor cable allowing for easy replacement or repair.
 2. SACIQ-15 sensor connection cable.
 - a. 3-conductor shielded cable: communications, power, shield
 - b. Conductors: Minimum 18 AWG
 - c. Power supply: low voltage (24 V)

d. Quick fasteners

2.4 MATERIALS

A. Sensor

1. Shaft: Titanium Grade 2
2. Measurement window: sapphire
3. Center piece, end cap: PEEK
4. Plug head connector housing: POM
5. Plug: ETFE
6. Protective ring: POM
7. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A
8. Safety
 - a. Certification: CE, cETLus
9. Protection rating: IP68
10. Warranty: 2 yrs.

B. Sensor connection cable

1. Conductors: Tinned copper
2. Coupling ring: Stainless Steel 1.4571 (equivalent to 316Ti)
3. Ring: POM
Screw: Stainless Steel V4A
4. O-ring: NBR
5. Enclosure: POM
Nut: Stainless Steel 1.4571 (equivalent to 316Ti)
6. Protection ring: POM
7. Cable sheath: PUR
8. Protective cap: PVC
9. Protection rating: IP68 (waterproof)
10. Warranty: 12 months

2.5 ACCESSORIES

A. Handrail swing mounting assembly

1. YSI model 109 272Y Swing Mounting Assembly
2. YSI model 481 073Y Horizontal Chain Mount [horizontal mount option]

PART 3 EXECUTION

3.1 INSTALLATION

A. Immersion sensors:

1. Immerse sensor to a depth sufficient to fill the measuring gap.
2. Protect the probe against the oncoming flow of large objects.
3. Install instrument to prevent air bubbles from gathering on the optical sensing element.
 - a. Horizontal installation: Align sensor parallel to flow with measuring gap opening on the side
 - b. Vertical installation: Align measuring gap perpendicular to the flow direction.

4. Impact protection
 - a. Mount shock protectors to absorb inadvertent impacts.
 - b. Mount sensor so that it cannot knock against a wall or other obstacle.
 - B. Sensor connection cable
 1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).
- 3.2 START-UP
- C. Bidder will install spectrometric sensors in strict accordance with the manufacturer's instructions and recommendations.
 - D. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.
 1. Bidder will schedule a date and time for start-up.
 2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder
 - b. Electrical Bidder
 - c. YSI factory-trained representative
 - d. Owner's personnel
 - e. Engineer

B. SECTION 40 91 13.XX
DISSOLVED OXYGEN PROCESS MEASUREMENT DEVICES

PART 1 GENERAL

1.1 DESCRIPTION

- A. Section Includes
 1. Instruments and associated equipment for measuring dissolved oxygen in water and wastewater treatment systems.
- B. Scope
 1. Furnish, install, calibrate, test, adjust, and place into satisfactory operation dissolved oxygen sensors as shown on the Drawings and specified herein.
 2. The Drawings and Specifications illustrate and specify functional and general construction requirements of dissolved oxygen sensors and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated system.
- C. Coordination: Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.2 SYSTEM DESCRIPTION

- A. Design Requirements
 1. Design dissolved oxygen measurement system for continuous monitoring *in situ* using optical sensors that measure lifetime of luminescence caused by the presence of oxygen.
 2. Connect dissolved oxygen sensor to field-mounted junction box or Input/Output modules specified in Section 40 95 00 with sensor connecting cable specified in Section 2.3.A.2.

3. Dissolved oxygen measuring system components shall be designed to be part of a process control system that is protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.

B. Performance Requirements

1. Operating range
 - a. Temperature: 32°F to 140°F (0°C to 60°C)
 - b. Pressure: less than or equal to 10 bar
 - c. pH: 4 S.U. to 12 S.U.
2. Measuring range: 0.00 to 20.00 mg O₂/l; 0 to 200% of DO saturation
3. Accuracy
 - a. ± 0.05 mg O₂/L in the range less than 1 mg O₂/L
 - b. ± 0.10 mg O₂/L in the range greater than 1 mg O₂/L
4. Repeatability: ± 0.05 mg O₂/L
5. Resolution: 0.01 mg O₂ / L (0.1%)
6. Response time: 90 percent of the final (true) reading (t₉₀) in less than 150 seconds [60 seconds for FDO[®] 701] and 95 percent of the final (true) reading in less than 200 seconds.
7. Signal averaging: User selectable, to provide a t₉₀ from 150 seconds to 300 seconds [from 60 seconds to 300 seconds for FDO[®] 701].
8. Temperature measurement (compensation) range: 23°F to 140°F (-5°C to 60°C)

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish dissolved oxygen sensors by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Dissolved oxygen sensors shall not be delivered to the site until all product information and system shop drawings for the sensors have been approved.

B. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

C. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.
5. Temperature range for storage: 32°F to 149°F (0°C to 65°C)

1.5 SUBMITTALS

A. Product data

1. Sensor operating manual.
2. Mounting bracket / sensor holder installation instructions.

B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Provide products from the following manufacturer:

1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.2 MANUFACTURED UNIT

A. The Dissolved Oxygen measurement system consists of the following:

1. Model FDO[®] 700 IQ Optical Dissolved Oxygen Sensor consisting of a probe and a replaceable sensor cap.
 - a. The sensor shall have integrated NTC thermistor.
 - b. The sensor shall use green LED light with fluorescing optics and equal path reference system.
 - c. The sensor shall not require calibration. Replacement sensor caps shall contain a built in microchip, not requiring field calibration upon installation.
 - d. The sensor shall include self-diagnostics for monitoring of membrane sensing element function.
 - e. The sensor output signal shall be digital.
 - f. The sensor shall detach from sensor cable allowing for easy replacement or repair.
2. SACIQ-7 sensor connection cable.
 - a. 3-conductor shielded cable: communications, power, shield
 - b. Conductors: Minimum 18 AWG
 - c. Power supply: low voltage (24 V)
 - d. Connections
 - 1) Controller-side: Quick fastener (threaded)
 - 2) Sensor-side: tinned conductors

2.3 MATERIALS

A. Sensor

1. Shaft: V4A Stainless Steel 1.4571 (equivalent to 316Ti)
2. Plug head connector housing: POM
3. Sensor head: POM and PVC
4. Plug: ETFE
5. Fixing Ring: POM
6. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A
7. Safety
 - a. Certification: CE, cETLus
8. Protection rating: IP68
9. Warranty: 2 yrs.

B. Sensor Cap

1. Sensor cap: PMMA, PVC , silicone
 2. Warranty: 2 yrs. [6 months for FDO[®] 701 fast response cap]
- C. Sensor connection cable
1. Conductors: Tinned copper
 2. Coupling ring: Stainless Steel 1.4571 (equivalent to 316Ti)
 3. Ring: POM
Screw: Stainless Steel V4A
 4. O-ring: NBR
 5. Enclosure: POM
Nut: Stainless Steel 1.4571 (equivalent to 316Ti)
 6. Protection ring: POM
 7. Cable sheath: PUR
 8. Protective cap: PVC
 9. Protection rating: IP68 (waterproof)
 10. Warranty: 12 months

2.4 ACCESSORIES

A. Handrail Sensor mounting assemblies:

1. YSI model 2458000Y SMK Quick Release Stainless Steel Handrail Mounting Bracket with 1.5-inch Mounting Adapter

PART 3 EXECUTION

3.1 INSTALLATION

A. Install dissolved oxygen sensors in strict accordance with the manufacturer's instructions and recommendations.

B. Immersion sensors:

1. Immerse sensor a minimum of 18in. (46 cm) below the surface.
2. Protect the probe against the oncoming flow of large objects.
3. Install where the optical window does not face into direct light.
4. Install instrument to prevent air bubbles from gathering on the membrane sensing element.

C. Sensor connection cable

1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).

3.2 ADJUSTING

A. Adjust settings of the dissolved oxygen measuring system for the application requirements in accordance with the manufacturer's instructions

3.3 DEMONSTRATION AND TRAINING

- A. Demonstrate performance of all instruments to the engineer before commissioning.
- B. Manufacturer's representative will include a four hours of training, if requested.
 1. Bidder will schedule a date and time for training.
 2. Bidder will require representatives of the following be present during the training:
 - a. General Bidder
 - b. Electrical Bidder

- c. YSI factory-trained representative
- d. Owner's personnel
- e. Engineer

C. SECTION 40 91 23.xx

SLUDGE INTERFACE LEVEL MEASUREMENT DEVICES

PART 1 GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Instruments and associated equipment for measuring the sludge blanket profile in wastewater treatment settling tanks.

B. Scope

1. Furnish, install, calibrate, test, adjust, and place into satisfactory operation sludge interface level sensors as shown on the Drawings and specified herein.
2. The Drawings and Specifications illustrate and specify functional and general construction requirements of sludge interface level sensors and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated system.

C. Coordination: Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.2 PERFORMANCE REQUIREMENTS

A. Operating range

1. Temperature: 31°F to 122°F (0°C to 50°C)
2. Pressure range: < 0.3 bar
3. pH: 4 S.U. to 12 S.U.
4. Flow velocity: 13 ft./sec.
5. Immersion depth: 2 in. to 10 ft.

B. Measuring range: 1.32 ft. to 49.2

C. Measuring Accuracy: 4 in.

D. Resolution: 0.01 m

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish sludge interface level sensors by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.
5. Temperature range for storage: 23°F to 122°F (-5°C to 50°C)

1.5 SUBMITTALS

A. Product data

1. Sensor operating manual.
2. Mounting bracket / sensor holder installation instructions.

B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 GENERAL

A. Design sludge interface level measurement system for continuous monitoring *in situ* using ultrasonic echo measurement.

B. Connect sludge interface level sensor to field-mounted junction box or Input/Output modules specified in Section 40 95 00 with sensor connecting cable as specified in Section 2.3.A.2.

C. Sludge interface level measuring system components shall be designed to be part of a process control system that is protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.

2.2 MANUFACTURER

A. Provide products from the following manufacturer:

1. YSI, Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.3 MANUFACTURED UNIT

A. The Sludge interface level measurement system consists of the following:

1. Model IFL 700 IQ Sludge Interface Level Sensor.
 - a. The sensor shall use an ultrasonic method that measures echo time of travel.
 - b. The sensor shall be factory-calibrated and ready for measurement out of the box with input of sensor immersion depth and settling tank depth.
 - c. The sensor shall include intelligent signal processing to filter out undesirable signals.
 - d. In combination with the 2020XT controller, the sensor shall generate a graphical representation of the echo profile.
 - e. The sensor shall include self-diagnostics to detect moisture contamination in the sensing element.
 - f. The sensor shall have a digital output signal.
 - g. The sensor shall detach from sensor cable allowing for easy replacement or repair.
2. SACIQ-15 sensor connection cable.
 - a. 3-conductor shielded cable: communications, power, shield
 - b. Conductors: Minimum 18 AWG

- c. Power supply: low voltage (24 V)
- d. Quick fasteners

2.4 MATERIALS

A. Sensor

- 1. Body: V4A Stainless Steel 1.4571 (equivalent to 316Ti)
- 2. Plug head and transition unit: POM
- 3. Ultrasound unit: PVC-C
- 4. Safety
 - a. Certification: CE, cETL, ETL

B. Sensor connection cable

- 1. Conductors: Tinned copper.
- 2. Coupling ring: Stainless Steel 1.4571 (equivalent to 316Ti)
- 3. Ring: POM
- 4. Screw: Stainless Steel V4A
- 5. O-ring: NBR
- 6. Enclosure: POM
- 7. Nut: Stainless Steel 1.4571 (equivalent to 316Ti)
- 8. Protection ring: POM
- 9. Cable sheath: PUR
- 10. Protective cap: PVC
- 11. Protection rating: IP68 (waterproof)
- 12. Warranty: 12 months

2.5 ACCESSORIES

A. Handrail Sensor mounting assemblies:

- 1. Model IFL-E Deflector Plate for Skimmer Arm Applications
- 2. Model IFL-PM Vertical Rail Mount for IFL Sensor

PART 3 EXECUTION

3.1 INSTALLATION

A. Immersion sensors:

- 1. Immerse sensor a minimum of 2 in. (5 cm) below the surface.
- 2. Install the sensor in a vertical orientation.
- 3. Install sensor a minimum distance of from tank walls.

B. Sensor connection cable

- 1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).

3.2 START-UP

A. Install sludge interface level sensors in strict accordance with the manufacturer's instructions and recommendations.

B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.

- 1. Bidder will schedule a date and time for start-up.
- 2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder
 - b. Electrical Bidder

- c. YSI factory-trained representative
- d. Owner's personnel
- e. Engineer

D. SECTION 40 91 13.xx
NITRATE PROCESS MEASUREMENT DEVICES

PART 1 GENERAL

1.1 DESCRIPTION

A. Section Includes

- 1. Instruments and associated equipment for measuring nitrate in water and wastewater treatment systems.

B. Scope

- 1. Furnish, install, calibrate, test, adjust, and place into satisfactory operation nitrate sensors as shown on the Drawings and specified herein.
- 2. The Drawings and Specifications illustrate and specify functional and general construction requirements of nitrate sensors and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated system.

C. Coordination: Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.2 PERFORMANCE REQUIREMENTS

A. Operating range

- 13. Temperature: 32°F to 104°F (0°C to 40°C).
- 14. Maximum overpressure: 0.2 bar
- 15. pH: 4 S.U. to 11 S.U.

B. Measuring range:

- 16. Nitrate as N: 0.1 mg NO₃-N / l to 1,000 mg NO₃-N / l
- 17. Chloride as Cl: 0.1 mg Cl / l to 1,000 mg Cl / l.
- 18. Temperature: 32°F to 104°F (0°C to 40°C).
- 19. Voltage: -2,000 mV to 2,000 mV.

C. Measuring accuracy

- 1. Nitrate, in standard solutions: ± 5% of measured value or 0.2 mg/l.
- 2. Temperature: ± 0.5K

D. Resolution:

- 1. Nitrate as N:
 - a. 0.1 mg NO₃-N / l to 100.0 mg NO₃-N / l: 0.1 mg NO₃-N / l.
 - b. 1 mg NO₃-N / l to 1,000 mg NO₃-N / l: 1 mg NO₃-N / l.
- 2. Chloride as Cl: 1 mg Cl⁺ / l.
- 3. Temperature: 0.1 °C.
- 4. Voltage: 1 mV.

E. Response Time:

- 1. Nitrate: 90 percent of the final (true) reading in less than 180 seconds at a temperature of 20°C for a concentration change of 5 mg NO₃-N / l to 50 mg NO₃-N / l.

2. Chloride: 90 percent of the final (true) reading in less than 180 seconds at a temperature of 20°C for a concentration change of 10 mg Cl / l to 100 mg Cl / l.
 3. Temperature: 95 percent of the final (true) reading in less than 20 seconds.
- F. Compensation: Compensation for up to 1,000 mg Cl / l shall be automatic and dynamic with optional Cl electrode.

1.3 QUALITY ASSURANCE

- A. Acceptable Manufacturers:
1. Furnish nitrate sensors by the named manufacturers.
 2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
 3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
1. Store and handle materials in accordance with manufacturer's instructions.
 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
 3. Store materials in clean, dry area indoors.
 4. Protect materials during storage, handling, and installation to prevent damage.
 5. Temperature range for storage: 32°F to 104°F (0°C to 40°C)

1.5 SUBMITTALS

- A. Product data
1. Sensor operating manual.
 2. Mounting bracket / sensor holder installation instructions.
- B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 GENERAL

- A. Design nitrate measurement system for continuous monitoring *in situ* using a potentiometric measurement by means of ion selective electrodes.
- B. Connect nitrate sensor to field-mounted junction box or Input/Output modules specified in Section 40 95 00 with sensor connecting cable specified in Section 2.3.A.3.
- C. VNitrate measuring system components shall be designed to be part of a process control system that is protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.

2.2 MANUFACTURER

- A. Provide products from the following manufacturer:

1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.3 MANUFACTURED UNIT

A. The nitrate measurement system consists of the following:

1. Electrodes
 - a. Model VARiON[®]Plus NO₃ electrode.
 - b. Model VARiON[®] Ref reference electrode.
 - c. Model VARiON[®]Plus Cl electrode. [optional for most accurate measurement]
 2. Model NitraLyt[®]Plus 700IQ sensor assembly:
 - a. Integrated NTC thermistor.
 - b. Pre-amplification of electrode signal.
 - c. Digital signal processing with calibration value storage.
 - d. The sensor shall detach from sensor cable allowing for easy replacement or repair.
- SACIQ-15 sensor connection cable.
- e. 3-conductor shielded cable: communications, power, shield
 - f. Conductors: Minimum 18 AWG
 - g. Power supply: low voltage (24 V)
 - h. Quick fasteners

2.4 MATERIALS

A. Electrodes

1. Nitrate and chloride electrodes
 - a. Enclosure: POM.
 - b. Clamping ring: POM.
 - c. Membrane: soft PVC with stainless steel protective grating.
 - d. Sealing ring: Viton[®].
 - e. Connection contacts: gold plated.
 - f. Warranty: 1 year
2. Reference electrode
 - a. Enclosure: PVC.
 - b. Junction: Porous PVDF.
 - c. Sealing ring: Viton[®].
 - d. Connection contacts: gold plated.

B. Sensor assembly

1. Shaft: V4A stainless steel.
2. Protective hood: POM
3. Fixing Ring: POM
4. Protection cap: PVC
5. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A
6. Safety
 - a. Certification: CE, cETLus
7. Protection rating: IP68
8. Warranty: 2 yrs.

C. Sensor connection cable

1. Coupling ring: Stainless Steel 1.4571 (equivalent to 316Ti)

2. Ring: POM
3. Screw: Stainless Steel V4A
4. O-ring: NBR
5. Enclosure: POM
6. Nut: Stainless Steel 1.4571 (equivalent to 316Ti)
7. Protection ring: POM
8. Cable sheath: PUR
9. Protective cap: PVC
10. Protection rating: IP68 (waterproof)
11. Warranty: 12 months

2.5 ACCESSORIES

Handrail sensor mounting assemblies:

1. YSI model 2458000Y SMK Quick Release Stainless Steel Handrail Mounting Bracket with 1.5-inch Mounting Adapter

PART 3 EXECUTION

3.1 INSTALLATION

A. Immersion sensors:

1. Immerse sensor a minimum of 2 in. (50 mm) below the surface.
2. Protect the probe against the oncoming flow of large objects.

B. Sensor connection cable

1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).

3.2 START-UP

A. Bidder will install nitrate sensors in strict accordance with the manufacturer's instructions and recommendations.

B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.

1. Bidder will schedule a date and time for start-up.
2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder
 - b. Electrical Bidder
 - c. YSI factory-trained representative
 - d. Owner's personnel
 - e. Engineer

E. SECTION 40 91 13. 29 pH LEVEL PROCESS MEASUREMENT DEVICES

PART 1 GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Instruments and associated equipment for measuring pH in water and wastewater treatment systems.

B. Scope

1. Furnish, install, calibrate, test, adjust, and place into satisfactory operation pH sensors as shown on the Drawings and specified herein.
2. The Drawings and Specifications illustrate and specify functional and general construction requirements of pH sensors and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated system.

C. Coordination: Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.2 PERFORMANCE REQUIREMENTS

A. Operating range

1. Temperature: 32°F to 140°F (0°C to 60°C).
2. Maximum overpressure:
 - a. at 0°C to 20°C: 10 bar.
 - b. at 30°C: 5 bar.
 - c. at 40°C: 3 bar.
 - d. at 60°C: 1 bar.

B. Measuring range: 2 S.U. to 12 S.U.

C. Resolution: 0.01 S.U.

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish pH sensors by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
12. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
13. Protect materials during storage, handling, and installation to prevent damage.
14. Temperature range for storage: 23°F to 149°F (-5°C to 65°C)

1.5 SUBMITTALS

A. Product data

1. Sensor operating manual.
2. Mounting bracket / sensor holder installation instructions.

- B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 GENERAL

- A. Design pH measurement system for continuous monitoring *in situ* using a combination electrode.
- B. Connect pH sensor to field-mounted junction box or Input/Output modules specified in Section 40 95 00 with sensor connecting cable specified in Section 2.3.A.3.
- C. pH measuring system components shall be designed to be part of a process control system that is protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.

2.2 MANUFACTURER

- A. Provide products from the following manufacturer:
 - 1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.3 MANUFACTURED UNIT

- A. The pH measurement system consists of the following:
 - 1. Model SensoLyt[®] SEA combination double junction electrode.
 - 2. Model SensoLyt[®] 700IQ sensor assembly:
 - a. Integrated NTC thermistor.
 - b. Pre-amplification of electrode signal.
 - c. Digital signal processing with calibration value storage.
 - d. The sensor shall include self-diagnostics for monitoring of glass electrode breakage.
 - e. The sensor shall detach from sensor cable allowing for easy replacement or repair.
 - 3. SACIQ-15 sensor connection cable.
 - a. 3-conductor shielded cable: communications, power, shield
 - b. Conductors: Minimum 18 AWG
 - c. Power supply: low voltage (24 V)
 - d. Quick fasteners

2.4 MATERIALS

- A. Combination electrode
 - 1. Membrane: glass.
 - 2. Reference electrode: gel polymer solid.
 - 3. Armouring: PVC.
 - 4. O-ring seals: Viton.
 - 5. Watertight S7 plug head connector (IP67).
 - 15. Warranty: 6 months.
- B. Sensor assembly
 - 1. Shaft: 316Ti Stainless Steel
 - 2. Sensor holder: POM
 - 3. Fixing Ring: POM

4. Protection cap: PVC
5. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A
6. Safety
 - c. Certification: CE, cETLus
16. Protection rating: IP68
17. Warranty: 2 yrs.

C. Sensor connection cable

1. Coupling ring: Stainless Steel 1.4571 (equivalent to 316Ti)
2. Ring: POM
3. Screw: Stainless Steel V4A
4. O-ring: NBR
5. Enclosure: POM
6. Nut: Stainless Steel 1.4571 (equivalent to 316Ti)
8. Protection ring: POM
18. Cable sheath: PUR
19. Protective cap: PVC
20. Protection rating: IP68 (waterproof)
21. Warranty: 12 months

2.5 ACCESSORIES

A. Handrail Sensor mounting assemblies:

1. YSI model 2458000Y SMK Quick Release Stainless Steel Handrail Mounting Bracket with 1.5-inch Mounting Adapter

PART 3 EXECUTION

3.1 INSTALLATION

A. Immersion sensors:

1. Immerse sensor a minimum of 1.5in. (40 mm) below the surface.
2. Protect the probe against the oncoming flow of large objects.

B. Sensor connection cable

1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).

3.2 START-UP

A. Install pH sensors in strict accordance with the manufacturer's instructions and recommendations.

B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.

1. Bidder will schedule a date and time for start-up.
2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder
 - b. Electrical Bidder
 - c. YSI factory-trained representative

- d. Owner's personnel
- e. Engineer

F. SECTION 40 91 13.xx

DUAL AMMONIUM AND NITRATE PROCESS MEASUREMENT DEVICES

PART 1 GENERAL

1.1 DESCRIPTION

A. Section Includes

1. Instruments and associated equipment for measuring ammonium and nitrate in water and wastewater treatment systems.

B. Scope

1. Furnish, install, calibrate, test, adjust, and place into satisfactory operation sensors as shown on the Drawings and specified herein.
2. The Drawings and Specifications illustrate and specify functional and general construction requirements of sensors and do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated system.

- C. Coordination:** Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all the components and systems.

1.2 PERFORMANCE REQUIREMENTS

A. Operating range:

1. Temperature: 32°F to 104°F (0°C to 40°C).
2. Maximum overpressure: 0.2 bar
3. pH
 - a. Ammonium: 4 S.U. to 8.5 S.U.
 - b. Nitrate: 4 S.U. to 11 S.U.

B. Measuring range:

1. Ammonium as N: 0.1 mg NH₄-N / l to 1,000 mg NH₄-N / l
2. Nitrate as N: 0.1 mg NO₃-N / l to 1,000 mg NO₃-N / l.
3. Potassium as K: 0.1 mg K / l to 1,000 mg K / l.
4. Chloride as Cl: 0.1 mg Cl / l to 1,000 mg Cl / l.
5. Temperature: 32°F to 104°F (0°C to 40°C).
6. Voltage: -2,000 mV to 2,000 mV.

C. Measuring accuracy:

1. Ammonium and nitrate, in standard solutions: ± 5% of measured value or ±0.2 mg/l.
2. Temperature: ± 0.5K

D. Resolution:

1. Ammonium as N:
 - a. 0.1 mg NH₄-N / l to 100.0 mg NH₄-N / l: 0.1 mg NH₄-N / l.
 - b. 1 mg NH₄-N / l to 1,000 mg NH₄-N / l: 1 mg NH₄-N / l.
2. Nitrate as N:
 - a. 0.1 mg NO₃-N / l to 100.0 mg NO₃-N / l: 0.1 mg NO₃-N / l.
 - b. 1 mg NO₃-N / l to 1,000 mg NO₃-N / l: 1 mg NO₃-N / l.

3. Potassium as K: 1 mg K / l.
4. Chloride as Cl: 1 mg Cl / l.
5. Temperature: 0.1 °C.
6. Voltage: 1 mV.

G. Response Time:

1. Ammonium: 90 percent of the final (true) reading in less than 180 seconds at a temperature of 20°C for a concentration change of 10 mg NH₄-N / l to 100 mg NH₄-N / l.
2. Nitrate: 90 percent of the final (true) reading in less than 180 seconds at a temperature of 20°C for a concentration change of 5 mg NO₃-N / l to 50 mg NO₃-N / l.
3. Potassium: 90 percent of the final (true) reading in less than 180 seconds at a temperature of 20°C for a concentration change of 5 mg K / l to 50 mg K / l.
4. Chloride: 90 percent of the final (true) reading in less than 180 seconds at a temperature of 20°C for a concentration change of 10 mg Cl / l to 100 mg Cl / l.
5. Temperature: 95 percent of the final (true) reading in less than 20 seconds.

H. Compensation: Compensation for to 1,000 mg K / l and 1,000 mg Cl / l shall be automatic and dynamic with optional compensation electrodes.

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish dual ammonium and nitrate sensors by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.
5. Temperature range for storage: 32°F to 104°F (0°C to 40°C)

1.5 SUBMITTALS

A. Product data

1. Sensor operating manual.
2. Mounting bracket / sensor holder installation instructions.

B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 GENERAL

- A. Design dual ammonium and nitrate measurement system for continuous monitoring *in situ* using a potentiometric measurement by means of ion selective electrodes.
- B. Connect dual ammonium and nitrate sensors to field-mounted junction box or Input/Output modules specified in Section 40 95 00 with sensor connecting cable specified in Section 2.3.A.3.
- C. Dual ammonium and nitrate measuring system components shall be designed to be part of a process control system that is protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.

2.2 MANUFACTURER

- A. Provide products from the following manufacturer:
 - 1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.3 MANUFACTURED UNIT

- A. The nitrate measurement system consists of the following:
 - 1. Electrodes
 - a. Model VARiON[®]Plus NH₄ electrode.
 - b. Model VARiON[®]Plus NO₃ electrode.
 - c. Model VARiON[®] Ref reference electrode.
 - d. Model VARiON[®]Plus K electrode. [optional for most accurate measurement of NH₄]
 - 2. Model VARiON[®]Plus 700IQ sensor assembly:
 - a. Integrated NTC thermistor.
 - b. Pre-amplification of electrode signal.
 - c. Digital signal processing with calibration value storage.
 - d. The sensor shall detach from sensor cable allowing for easy replacement or repair.
 - 3. SACIQ-15 sensor connection cable.
 - a. 3-conductor shielded cable: communications, power, shield
 - b. Conductors: Minimum 18 AWG
 - c. Power supply: low voltage (24 V)
 - d. Quick fasteners

2.4 MATERIALS

- A. Electrodes
 - 1. Ammonium, nitrate, potassium, and chloride electrodes
 - a. Enclosure: POM.
 - b. Clamping ring: POM.
 - c. Membrane: soft PVC with stainless steel protective grating.
 - d. Sealing ring: Viton[®].
 - e. Connection contacts: gold plated.
 - f. Warranty: 1 year
 - 2. Reference electrode
 - a. Enclosure: PVC.
 - b. Junction: Porous PVDF.
 - c. Sealing ring: Viton[®].
 - d. Connection contacts: gold plated.
- B. Sensor assembly

1. Shaft: V4A stainless steel.
2. Protective hood: POM
3. Fixing Ring: POM
4. Protection cap: PVC
5. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A
6. Safety
 - a. Certification: CE, cETLus
7. Protection rating: IP68
8. Warranty: 2 yrs.

C. Sensor connection cable

1. Coupling ring: Stainless Steel 1.4571 (equivalent to 316Ti)
2. Ring: POM
3. Screw: Stainless Steel V4A
4. O-ring: NBR
5. Enclosure: POM
6. Nut: Stainless Steel 1.4571 (equivalent to 316Ti)
7. Protection ring: POM
8. Cable sheath: PUR
9. Protective cap: PVC
10. Protection rating: IP68 (waterproof)
11. Warranty: 12 months

2.5 ACCESSORIES

A. Handrail sensor mounting assemblies:

1. YSI model 2458000Y SMK Quick Release Stainless Steel Handrail Mounting Bracket with 1.5-inch Mounting Adapter

PART 3 EXECUTION

3.1 INSTALLATION

A. Immersion sensors:

1. Immerse sensor a minimum of 2 in. (50 mm) below the surface.
2. Protect the probe against the oncoming flow of large objects.

B. Sensor connection cable

1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).

3.2 START-UP

A. Bidder will install sensors in strict accordance with the manufacturer's instructions and recommendations.

B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.

1. Bidder will schedule a date and time for start-up.
2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder

- b. Electrical Bidder
- c. YSI factory-trained representative
- d. Owner's personnel
- e. Engineer

G. SECTION 40 94 13
DIGITAL PROCESS CONTROL COMPUTERS

PART 1 GENERAL

1.1 DESCRIPTION

A. Section Includes

- 1. Multi-parameter terminal/controllers and associated modules that control, indicate, record, and transmit signals from multiple online sensors in wastewater treatment processes.

B. Scope

- 1. Furnish, install, configure, and place into satisfactory operation multi-parameter terminal/controllers as shown on the Drawings and specified herein.
- 2. The Drawings and Specifications illustrate and specify functional and general construction requirements of terminal/controllers and associated networks but do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated process monitoring and control network.

C. Coordination: Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all process monitoring and control network components and systems.

1.2 SYSTEM DESCRIPTION

A. Design Requirements

- 1. Design terminal/controller system for continuous operation outdoors.
- 2. Terminal/controllers shall stack-mount to any input/output module in the network specified in this section and in Section 40 95 23 Process Control Input/Output Modules by means of a simultaneous mechanical/electrical connection.
- 3. Terminal/controller system components shall be designed to be part of a network that has the following capabilities and features:
 - a. Protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.
 - b. Powered from a centralized power supply.
 - c. 24VDC loop powered communication.
 - d. Modular: Additional sensors, up to a total of 20 sensors per controller, and process control input/output modules shall have full functionality from any location in the network.
 - e. Line, tree, star, and multiple star topology.

B. Performance Requirements

- 1. Operating range
 - a. Temperature: -4°F to 131°F (-20°C to 55°C)
 - b. Relative humidity: less than or equal to 90% (yearly average)

c. Altitude: less than or equal to 6,562 ft. (2,000 m) above mean sea level

2. Automatic air pressure compensation.

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish terminal/controllers by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Terminal/controllers shall not be delivered to the site until all product information and system shop drawings have been approved.

B. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

D. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.
5. Temperature range for storage: -13°F to 149°F (-25°C to 65°C)

1.5 SUBMITTALS

A. Product data

1. Operating manual for terminal/controller and associated modules.
2. Mounting bracket installation instructions.

B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Provide products from the following manufacturer:

1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.2 MANUFACTURED UNIT

A. The multi-parameter controller consists of the following:

1. Model MIQ/TC 2020 XT-H3 20-channel terminal/controller.
 - a. Display
 - 1) Black/white, backlit
 - 2) Resolution: 320 x 420 pixels
 - 3) Viewable area: 4.49 in. x 3.39 in.
 - 4) Display of measured values: lists or daily, weekly or monthly xy chart
 - b. Function/operation

- 1) 3 function keys
 - 2) 2 confirmation/switching keys
 - 3) 4-directional navigation key
 - c. Datalogger
 - 1) Total storage: Up to 525,600 measurements in csv format.
 - 2) User programmable logging interval: 1 minute to 60 minutes.
 - d. Multi-function USB-A port
 - 1) Electronic key
 - 2) Firmware upgrade
 - 3) Data transfer
 - e. Status light: blue LED
 - f. Terminal controller shall use a menu-driven operating system.
 - g. Each terminal/controller shall control 1 to 20 sensors.
 - h. Terminal/controllers shall be portable within the network by connecting to any input/output module in the network by means of a simultaneous mechanical/electrical connection.
- 2. Model MIQ/PS power supply module
 - a. Inputs
 - 1) 3 x sensor connections
 - 2) 1 x 100 to 240 VAC power
 - b. Cable glands: M 16 x 1.5, 4 total, with screw plug
 - c. Status lights: yellow LED, red LED
 - 3. SNCIQ [SNCIQ/UG] network cable.
 - a. 3-conductor shielded cable: communications, power, shield
 - b. Conductors: Minimum 18 AWG
 - c. Power supply: low voltage (24 V)

2.3 MATERIALS

- A. Terminal/controller.
 - 1. Housing material: ASA
 - 2. Function keys: silicon
 - 3. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A
 - 4. Safety
 - i. Certification: CE, cETLus
 - 5. Protection rating: IP66
 - 6. Interface
 - a. Silicon operating keys
 - b. LED status light
 - 7. 3-year warranty
- B. Input/output modules
 - 1. Housing material: polycarbonate, 20% glass filled
 - 2. EMI/RFI conformance
 - a. EN 61326 Class B
 - b. FCC Class A

3. Safety
 - a. Certification: CE, cETLus
4. Protection rating: IP66
5. 3-year warranty

- C. SNCIQ [SNCIQ/UG] network cable.
 1. Conductors: copper
 2. Cable sheath: PUR [with PVC coating for /UG]
 3. Protection rating: IP68 (waterproof)
 4. Warranty: 12 months

2.4 ACCESSORIES

- A. Sun shield:
 1. YSI model 109 295Y sun shield

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install terminal/controllers and input/output modules in strict accordance with the manufacturer's instructions and recommendations.
- B. Network cable
 1. Bend radius
 - a. Permanent bend: not less than 3.2 in. (80 mm).
 - b. One-time bend: not less than 2 in. (50 mm).

3.2 DEMONSTRATION AND TRAINING

- A. Manufacturer's representative will include a full-day of training, if requested, for the process monitoring system inclusive of the equipment supplied in this section and Section 40 95 23 Process Control Input/Output Modules and sections specifying primary process measurement devices.
 1. Bidder will schedule a date and time for start-up.
 2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder
 - b. Electrical Bidder
 - c. YSI factory-trained representative
 - d. Owner's personnel
 - e. Engineer

H. SECTION 40 95 23 PROCESS CONTROL INPUT/OUTPUT MODULES

PART 1 GENERAL

1.1 DESCRIPTION

- A. Section Includes
 1. Input/output modules for process monitoring and control networks installed in wastewater treatment facilities.
- B. Scope

1. Furnish, install, configure, and place into satisfactory operation process control input/output modules as shown on the Drawings and specified herein.
 2. The Drawings and Specifications illustrate and specify functional and general construction requirements of input/output modules and associated networks but do not necessarily show or specify all components, wiring, piping, and accessories required to make a completely integrated system. Provide all components, piping, wiring, accessories, and labor required for a complete and integrated process monitoring and control system.
- C. Coordination: Coordinate with other suppliers for installation of all items specified herein and required to ensure the complete and proper interfacing of all process monitoring and control network components and systems.

1.2 SYSTEM DESCRIPTION

A. Design Requirements

1. Design process control input/output modules for continuous operation outdoors.
2. Design process control input/output modules to stack-mount directly to process control input/output modules specified in this section and terminal/controllers and process control input/output modules specified in Section 40 94 13 Digital Process Control Computers.
3. Process control input/output modules shall be designed to be part of a network that has the following capabilities and features:
 - a. Protected from overvoltage due to lightning and power supply fluctuations and covered by manufacturer's warranty when installed using manufacturer's recommended components per manufacturer's instructions.
 - b. Powered from a centralized power supply.
 - c. Modular: Process control input/output modules shall have full functionality from any location in the network.
 - d. Line, tree, star, and multiple star topology.
 - e. 24VDC loop powered communication.

B. Performance Requirements

1. Operating range
 - a. Temperature: -4°F to 131°F (-20°C to 55°C)
 - b. Relative humidity: less than or equal to 90% (yearly average)
 - c. Altitude: less than or equal to 6,562 ft. (2,000 m) above mean sea level

1.3 QUALITY ASSURANCE

A. Acceptable Manufacturers:

1. Furnish process control input/output modules by the named manufacturers.
2. The named manufacturers have been specified to establish the standard of quality and performance of the equipment to be supplied.
3. Manufacturer shall be ISO 9001 certified.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Process control input/output modules shall not be delivered to the site until all product information and system shop drawings have been approved.
- B. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- C. Storage and Handling Requirements:
1. Store and handle materials in accordance with manufacturer's instructions.

2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.
5. Temperature range for storage: -13°F to 149°F (-25°C to 65°C)

1.5 SUBMITTALS

- A. Product data
 1. Operating manual for process control input/output module and associated modules.
 2. Mounting bracket installation instructions.
- B. Manufacturer's Certifications: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- C. Warranty documentation: Submit manufacturer's standard warranties.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Provide products from the following manufacturer:
 1. YSI Incorporated, 1700/1725 Brannum Lane, Yellow Springs, OH 45387. 1-800-765-4974.

2.2 MANUFACTURED UNIT

- A. Process control input/output modules consist of the following:
 1. Inputs
 - a. SensorNet connections
 - 1) Model MIQ/JB, 4 SensorNet connections.
 - 2) Model MIQ/PS, Model MIQ/24V, Model MIQ/IF232, Model MIQ/Blue PS Set: 3 SensorNet connections.
 - 3) All other models MIQ: 2 SensorNet connections.
 - b. Power Supply
 - 1) Model MIQ/PS,
 2. Outputs
 - a. Relay outputs – N/R
 - b. Current outputs
 - 2) Model MIQ/C6: 6 current outputs
 - c. Network communications
 - 1) Model MIQ/MC2: Ethernet RJ45 interface.
 3. S/N terminator switch.
 3. Status lights: yellow LED, red LED.
 4. Cable glands: M 16 x 1.5, 4 total, with screw plug.

2.3 MATERIALS

- A. Housing material: polycarbonate, 20% glass filled
- B. EMI/RFI conformance
 1. EN 61326 Class B.
 2. FCC Class A.
- C. Safety
 1. Certification: CE, cETLus

- D. Protection rating
 - 1. Modules: IP66.
 - 2. USB, Ethernet interfaces: IP67
- E. 3-year warranty

1.6 ACCESSORIES

- A. Rail mounting kit
 - 1. YSI Model 109 286Y.
- B. Sun shield
 - 1. YSI Model 109 284Y sun shield for modules.

PART 3 EXECUTION

3.1 INSTALLATION

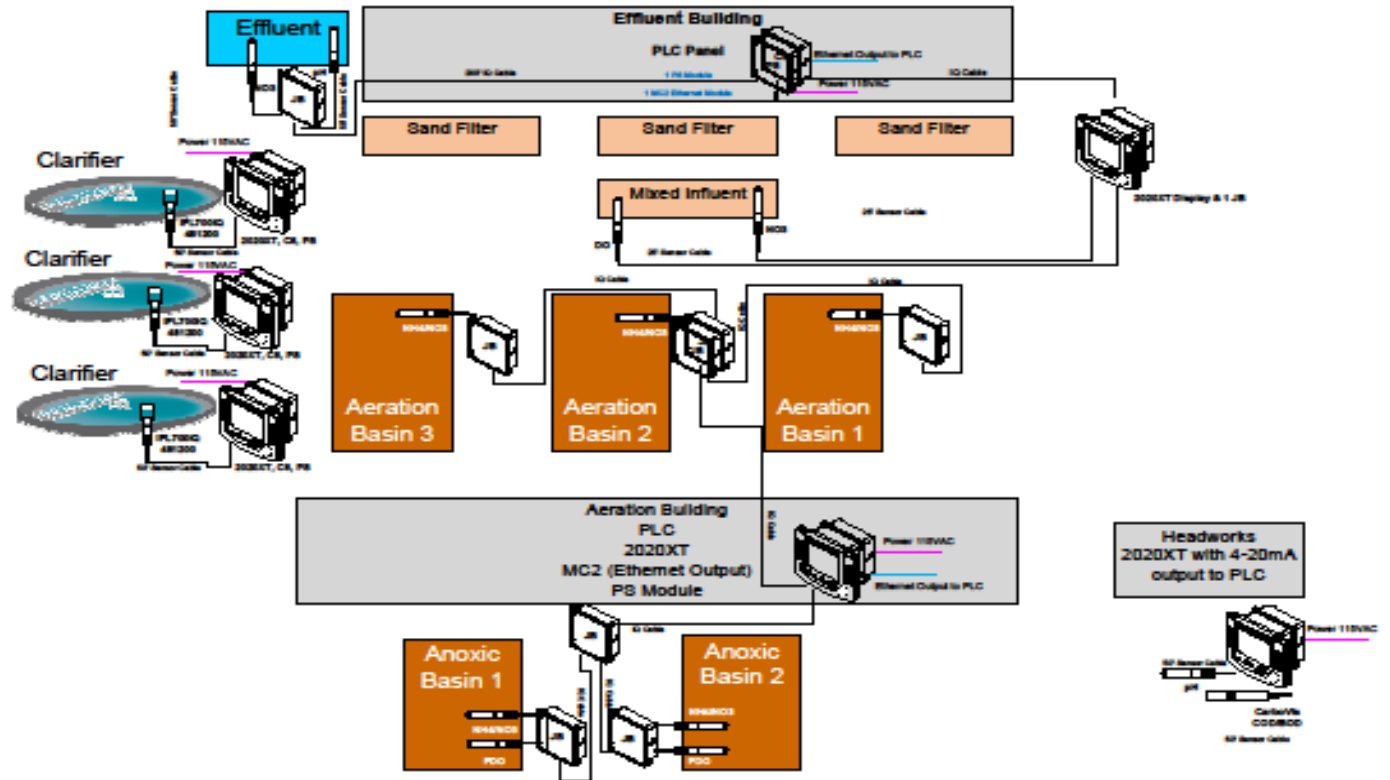
- A. Install process control input/output modules in strict accordance with the manufacturer's instructions and recommendations.

3.2 DEMONSTRATION AND TRAINING

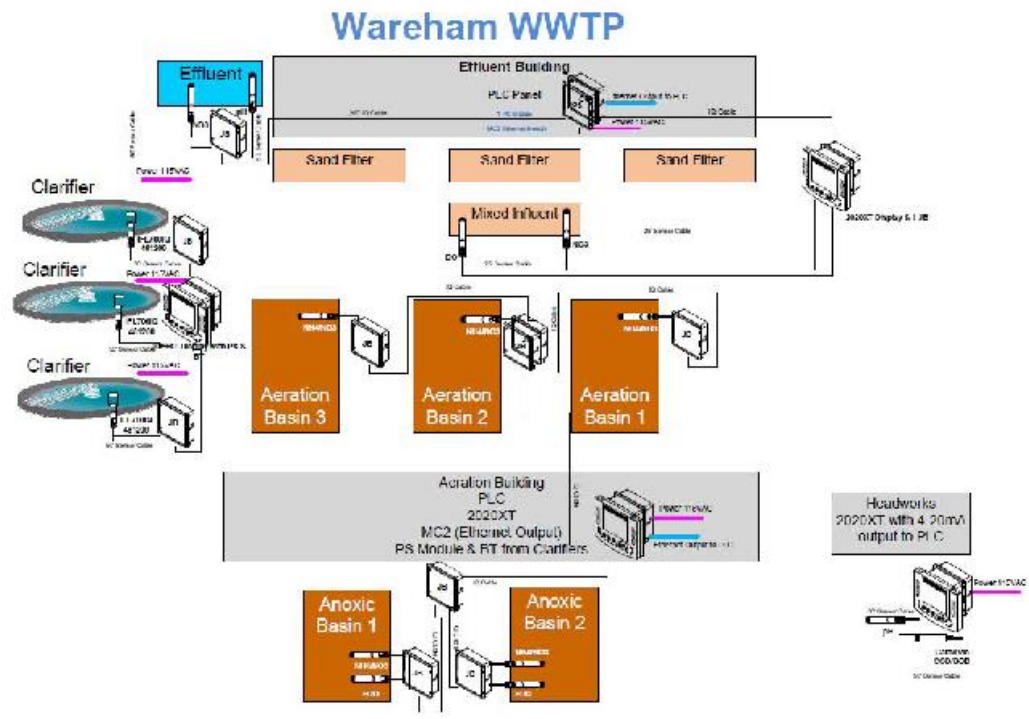
- A. Manufacturer's representative will include a full day of training, if requested, for the process monitoring system inclusive of the equipment supplied in this section and Section 40 94 13 Digital Process Control Computers and sections specifying primary process measurement devices.
 - 1. Bidder will schedule a date and time for start-up.
 - 2. Bidder will require representatives of the following be present during the start-up:
 - a. General Bidder
 - b. Electrical Bidder
 - c. YSI factory-trained representative
 - d. Owner's personnel
 - e. Engineer

END OF SECTION

Wareham WWTP



Deduct Alternate No. 1



4.4.1 Permits

All applicable permits and compliance with regulations are the responsibility of the Bidder. The Bidder is responsible for securing all permits and providing copies to the Water Pollution Control Facility Director before commencement of work.

4.4.2 Site Condition During Work

The construction site will be kept neat and secured each day. Equipment security is the responsibility of the Bidder. Equipment may be stored at the site, but may not obstruct any roads or paths. The site will be free of trash and be kept in an orderly fashion.

4.4.3 Best Management Practices

The Bidder shall employ best management practices for construction sites to reduce erosion and maintain a clean and safe site.

4.4.4 Health and Safety

The Bidder will be responsible for ensuring the health and safety of employees and subBidders. Work will be conducted in a safe and responsible manner and in compliance with all applicable health and safety laws and regulations.

4.4.5 Hazardous Materials

The Bidder will be responsible for disposal of any and all hazardous materials in accordance with federal, state and local regulations and ordinances.

4.4.6 Contract Completion

The contract will be considered complete when:

- The site is clean of all debris
- All paperwork indicating disposal of materials has been turned in to the Project Manager.
- All permits have been signed off as complete by the managing authorities
- All items on punchlist have been completed
- All invoices have been submitted

SECTION 5.0 PRICING

The undersigned proposes to supply and deliver the materials and services specified below in full accordance with the Contract Documents supplied by the Town of Wareham entitled:

NAME OF PROJECT

The Bidder proposes to furnish and deliver the services specified at the following prices. Pricing is firm fixed price (FFP)

CLIN	Description	Qty	Unit	Unit Price	Total Amount
001					
	Firm Fixed Price (FFP)				
002	FOB: Destination				
	Deduct Alternate No. 1 – Provide all the same equipment except provide Bluetooth Technology for clarifiers as detailed in the Figure				
003					

SEE FOLLOWING PAGE FOR REQUIRED SIGNATURE OR PRICING

NAME OF COMPANY/ INDIVIDUAL: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

TELEPHONE/FAX/EMAIL:

SIGNATURE OF AUTHORIZED INDIVIDUAL:

ACKNOWLEDGEMENT OF ADDENDUMS:

Addendum #1 _____ #2 _____ #3 _____ #4 _____

SECTION 6.0

FORMS

6.1 Required Submissions

6.1.1 Certificate of Authority

6.1.2 Statement of Compliance

APPENDIX A
PAST PERFORMANCE / REFERENCE SHEET

The Town requires that the Bidder demonstrate experience providing similar services in **size, scope and completely** for a minimum of three (3) projects. Three (3) references shall be provided for past performance.

Please use the below format for all references submitted and provide as much detail as possible in the Summary section.

Past Performance/Reference Title:

Period of Performance	
Contract \$ Value	
Technical & Contractual POC Names & Titles	
Telephone numbers	
Email address	
Detailed summary of services provided	

AGREEMENT

THIS AGREEMENT, made this _____ day of _____ 2014, by and between the party of the first part, the Town of Wareham, hereinafter called "OWNER," acting herein through its Town Authority and the party of the second part, _____ doing business as *(an individual) (a partnership) (a joint venture) (a corporation) located in the _____ (City/ Town) of _____, County, and State of _____ hereinafter called "BIDDER."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the BIDDER hereby agrees with the OWNER to commence and complete the project described as follows:

_____, hereinafter called the Project, for the sum of _____ Dollars (\$_____) and all extra work in connection therewith, under the terms as stated in the Bid Documents; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in GENERAL BID, including all maps, plates, blue prints, and the specifications and plans, as prepared by the Owner.

BIDDER hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" of the OWNER.

The BIDDER further agrees to fully complete the project within _____ consecutive calendar days of the date of the notice to proceed, but in no event later than _____

The BIDDER agrees not to discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

The OWNER agrees to pay the BIDDER in current funds for the performance of the contract, subject to additions and deductions, as provided in GENERAL CONDITIONS, and to make payments on account thereof as provided in the GENERAL CONDITIONS.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in two (2) counterparts, each of which shall be deemed an original, in the year and day first above.

AGREED:

Town of Wareham, Massachusetts

Derek D. Sullivan,
Town Administrator

Approved As to Form:

Town Counsel

Certified as to the Availability of Funds:

Town Accountant

Purchasing Agent

CERTIFICATE OF VOTE

(to be filed if Bidder is a Corporation)

I, _____, hereby certify that I am the duly qualified and
(Secretary of the Corporation)

acting Secretary of _____ and I further certify that a meeting of the Directors
(Name of Corporation)

of said Company, duly called and held on _____ at which all Directors were present
(Date of Meeting)

and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

Anyone acting singly, to execute Forms of General Bid, Contracts or Bonds on behalf of the Corporation.

I further certify that the above vote is still in effect and has not been changed or modified in any respect.

By: _____
(Secretary of Corporation)

A True Copy:

Attest: _____
(Notary Public)

My Commission Expires: _____
(Date)