NORTH STONINGTON BOARD OF EDUCATION

REQUEST FOR PROPOSAL

FOR DESIGN AND INSTALLATION OF AN AUTOMATIC IRRIGATION AND PUMP SYSTEM

FOR ATHLETIC FIELDS
AT WHEELER HIGH SCHOOL
NORTH STONINGTON, CT

Due June 5, 2025, by 2:00pm

Bid #2024-12-BOE

BACKGROUND

The North Stonington Board of Education (BOE) is soliciting Proposals from qualified irrigation installation contractors (Vendors) to design and install an irrigation system for 3 Athletic Fields at Wheeler High School, as follows:

1 x Soccer Field	90,000sqft (Approximate)
1 x Baseball Field	90,000sqft (Approximate)
1 x Softball Field	60,000sqft (Approximate)

The selected Vendor will be required to coordinate the installation with the BOE Superintendent and/or Business Manager to limit the disruption to the school and community sports leagues.

REQUIREMENTS

The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract be set aside for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the total state-funded value with DAS-certified Small Businesses and 6.25% of the total state-funded value with DAS-certified Minority-, Women-, and/or Disabled-owned Businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

SCOPE OF WORK

The selected Vendor will be responsible for the design, provision, and installation of the irrigation system for 3 athletic fields.

LOCATION Wheeler High School
297 Norwich-Westerly Road
North Stonington CT 06359

PROJECT SUMMARY

a) A general description of the Work, which is further clarified in the Specifications, under this Contract includes, but is not limited to:
   i) Furnish and install all new PVC mainline and lateral piping, isolation valves, fittings, and any other necessary pipeline appurtenances for the irrigation system, including connection to the water source to all 3 athletic fields.
   ii) Furnish and install new control valves, Irrigation Heads and quick coupler valves with swing joint assemblies and all necessary fittings, valve boxes, etc. to all 8 athletic fields where applicable.
   iii) Furnish and install a new 2" backflow device at the water connection that meets the requirements of local and national codes.
   iv) Furnish and install a new smart, wireless irrigation controller with wireless weather

sensing equipment, wireless soil moisture monitor, and internet control module, including all necessary electrical supplies and internet capabilities. Provide one winterization and spring start-up of the irrigation system after the entire installation has been completed and approved by the BOE

BIDS

Bid Documents shall be enclosed in a sealed envelope addressed to the Superintendent and clearly marked "**SEALED BID – Irrigation Design and Installation at Wheeler High School"** along with the name of Bidder, date, and time of bid opening to guard against premature opening of the bid.

MANDATORY PRE-BID SITE VISIT

Site visits will be held for any interested Vendor. Vendors are encouraged to review site conditions to familiarize themselves with the fields. Vendors may visit the site independently but MUST attend the MANDATORY pre-bid site visit on May 29, 2025, at 2:00 p.m., at Wheeler High School.

PROPOSAL PROCESS

The proposal process will consist of a written proposal, which shall include the following items:

1. An introduction containing the following information:
   a. A complete description of the capability and history of the contractor.
   b. History of similar projects completed within the last three years, including cost and client contact information.
   c. A brief description of the proposed schedule including how the project would be organized.
   d. A list of sub-contractors to be used on the project.

2. A list of not less than three (3) references including product or service provided, name of agency, contact person, phone number and/or e-mail.

3. Identify any state approvals or certifications that allow service or materials provided for the project. Such pricing is to be incorporated in the cost proposal(s).

4. Proposal Summary Form (attached)

5. Irrigation design proposal. For each design proposal, provide the following:
   a. A scaled site plan showing the proposed installation design.
   b. Drawings and manufacturer's printed literature and specifications for each item or component being proposed.
   c. A detailed breakdown of cost including, but not limited to:
      i. Design
      ii. Equipment (inclusive of all structures, components, signage, hardware, equipment manuals and operations manuals)
      iii. Installation
      iv. Any other equipment-related improvements necessary to complete the project.
   d. Manufacturer warranties.
   e. Proof of Manufacturer's Product Liability Insurance
   f. Proof of installer certification and insurance

6. Anticipated lead time for equipment construction and delivery to include duration (# of days) for completion of project.
7. The Board of Education will contract an outside consultant or form a committee to best evaluate design proposals.

BID SECURITY

Each Bid must be accompanied by a surety bond in the amount of 5% of the total of the Bid with the forms supplied by the Vender. A certified check will not be acceptable. Bid security of the successful Bidder will be retained until such Bidder has executed the Agreement, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. The Bid security of other Bidders whom Vender believes to have a reasonable chance of receiving the award may be retained by Vender until the earlier of the seventh day after the Effective Date of the Agreement or the sixty-first day after Bid opening, whereupon the Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven (7) days of Bid opening.

SECURITY FOR FAITHFUL PERFORMANCE

In addition to the Agreement, a successful Bidder shall also provide, within the time stipulated, a Construction Performance Bond by a company satisfactory to the Vender in an amount equal to One Hundred Percent (100%) of Estimated Total Contract Price recorded in the Proposal section of the Contract as executed, and a Construction Payment Bond in like amount will be required from the successful Bidder for faithful performance of the Contract.

LABOR AND MATERIALS PAYMENT BOND

The Town of North Stonington and the Board of Education require a Labor & Material Payment Bond for contracts exceeding $100,000. If a construction manager is employed, each subcontract exceeding $100,000 shall be bonded or a certified check is required.

PROPOSAL SUBMITTAL

By submitting a Proposal pursuant to this RFP, Vendor is indicating willingness to enter into the Agreement and is agreeing to furnish the insurance certificates and endorsements as required by the Agreement and this RFP. Furthermore, Vendor is deemed to have provided its assurance that it is able to meet the insurance requirements described in the Agreement. Bidder understands that failure to sign the Agreement and/or provide the insurance certificates and endorsements will cause BOE to terminate the bid award.

EVALUATION OF PROPOSALS

The bid will be offered to the Lowest, Responsible and Qualified Bidder. The bidder whose bid is the lowest of bidders possessing the skill, ability and integrity necessary to faithfully perform the work. The BOE may reject the lowest bidder if deemed not responsible and/or not qualified. The BOE will determine whether bidding firms are "responsible and qualified" after reviewing the required documentation which includes a history of similar projects, references, irrigation design/written proposal, proposed schedule, manufacturer warranties, proof of liability insurance, and all required certifications.

CHRO REQUIREMENTS

All bidders must complete, sign, and return the "CHRO Contract Compliance Regulations Notification to Bidders" form (see attached) to the Board of Education at the time of the bid opening. Bids not including this form should be considered incomplete and will be rejected.

PREVAILING WAGES

As per C.G.S. Sec. 31-53, municipal grantees shall pay prevailing wages rates on a Public Works Contract. Under current law, the state or political subdivision must award the construction contract and be a party to the construction contract and not a mere grantor of funds for the project to require prevailing wage rates.

The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to any employee welfare fund, as defined in subsection (i) of section 31-53, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair project is being undertaken. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day. (See attachment for current prevailing wages)

OTHER CONSIDERATIONS

This RFP does not commit the BOE to award a contract, to defray any costs incurred in the preparation of a proposal pursuant to this RFP, or to procure or contract for work. No payment of any kind will be provided to a Vendor for responding to this RFP. The BOE is not bound to select any of the Vendors submitting proposals, and may, at its discretion, waive any irregularities in Proposals and their submittal. The BOE reserves the right to reject any or all proposals, and to reissue the RFP in part or in its entirety.

The BOE reserves the right to cancel or modify, for any or no reason, in part or in its entirety, this RFP including, but not limited to, selection schedule, submittal date, and submittal requirements, without prior notice. Notification of revisions to the RFP will be made by addendum posted on the bid webpage.

The BOE reserves the right to verify the information received in the Proposal. If a Vendor knowingly and willfully submits false information or data, the BOE reserves the right to reject that Proposal. If it is determined that a contract was awarded as a result of false statements or other data submitted in response to this RFP, the BOE reserves the right to terminate the contract. The BOE reserves the right to request additional information at any time from any and all Vendors which the BOE deems necessary to evaluate Proposals.

All documentation and materials submitted in response to this RFP, will remain the property of the BOE and will become a public record subject to the requirements of the State of Connecticut.

PROPOSAL DEADLINE

The deadline for receiving proposals is June 5, 2025, at 2:00 p.m. and shall be submitted in a sealed envelope as outlined below, prior to the proposal deadline. Proposals should be signed by an authorized individual to bind the firm and must be valid for at least 90 days. Please submit proposals to:

Board of Education
298 Norwich-Westerly Road
North Stonington CT 06359

SCHEDULE

- Request for Proposals released — May 6, 2025
- Proposals Due — June 5, 2025, at 2:00 p.m.
- Tentative Contract award — June 30, 2025

*Vendor agrees to hold equipment and upon notification from BOE Representative, coordinate delivery and installation of equipment at specified location undergoing site improvements. The date(s) for the installation of the irrigation equipment will be determined by the BOE in consultation with the successful Vendor. **Vendor is to coordinate activities to ensure that athletic field closures have the least possible impact on the school students and other user groups.** Once installation is ordered by the BOE, Vendor shall have two (2) weeks to deliver and begin installation.

ADDITIONAL INFORMATION

All requests for clarification or additional information must be submitted in writing via e- mail to the Superintendent of Schools. Telephone communication with BOE members or employees is not encouraged, and the BOE is not bound by any clarifications, interpretations, corrections, or changes to the RFP that are made verbally or in any manner other than by written addendum. Interpretation or correction of the RFP will be made by addendum posted on the BOE website and any addendum will be considered a part of the RFP and will be incorporated therein.

An Affirmative Action/Equal Opportunity Employer.
Minority/Women's Business Enterprises are encouraged to apply.
This contract is subject to state set-aside and contract compliance requirements.

GENERAL SPECIFICATIONS

Article 1: DEFINITIONS

1.1 CONTRACT DOCUMENTS

The contract documents consist of the general specifications, material specifications, installation specifications, system typical drawings, and system design drawings. The Owner, Contractor, and Distributor are those parties that shall be mentioned throughout these documents.

BIDS SHALL BE ACCEPTED, WHEN REQUESTED, FOR COMPARABLE MATERIALS, COMPONENTS AND/OR TYPES - IF THE VENDOR SUPPLIES ADEQUATE DOCUMENTATION AS TO ITS COMPARABILITY. ALL ITEMS LISTED IN THESE SPECIFICATIONS MAY BE SUBSTITUTED WITH COMPARABLE ITEMS.

1.2 WORK

The term "work" as used herein comprises the completed construction required by the contract documents and includes all labor, supervision, materials, and supplies necessary to produce the irrigation system. Work also includes the delivery and suitable storage of the materials on the site. The Contractor shall be responsible for protection and insuring of materials on site.

1.3 EXTRA WORK

The term "extra work" as used herein refers to and includes work required by the Owner, which involves changes in, or additions to, that which is required by the plans, specifications, and addenda, if any, in their present form.

1.4 OWNER

The term "Owner" as used herein refers to: North Stonington BOE. The term also applies to the Owner's designated authorized representative, who shall be designated by name, but shall be referred to as the Owner in these specifications.

1.5 CONTRACTOR

The Contractor shall be the firm or individual assigned to the overall responsibility of providing the finished working irrigation system by virtue of his success in bidding or negotiating this project.

1.7 SUB-CONTRACTOR

The Sub-Contractor is a person, firm, or corporation supplying materials and labor, or labor only, for work required by the Contractor to whom the contract has been awarded.

1.8 MAIN LINE

The main line refers to any pipe that is under continuous pressure and which transmits water from the source to a given area.

1.9 LATERAL PIPE

The lateral pipe refers to any pipe that is not under continuous pressure and is controlled by an automatic valve or manual control valve.

1.10 DELETERIOUS MATERIAL

Deleterious material refers to any material that is not suitable for backfill, such as rock, shale, organic matter, or stones.

Article 2: SCOPE OF WORK

2.1 The work is to consist of the design construction/installation of an automatic irrigation system and installation of pump station as further defined in the specifications.

2.2 The Contractor is to furnish all the labor, supervision, tools, irrigation materials, and equipment to construct/Install the system.

2.3 Unless otherwise specified, the specifications are intended to include everything obviously requisite and necessary for the proper installation and completion of the work, whether each necessary item is mentioned herein or not.

2.4 These specifications are intended to cooperate so that any condition or thing shown by one but not the other shall be of the same effect as if contained in both and shall be performed by the Contractor without additional charge. If a discrepancy exists between an item called for in the plans and the specifications, the specifications shall take precedence.

2.5 All work herein specified shall be executed in accordance with all governing ordinances, laws, and regulations that meet all local conditions. Additionally, any changes and/or additions in the work necessary to meet these ordinances, laws, regulations, and/or conditions shall be made without additional cost to the Owner. The Contractor and Sub-Contractor shall abide by all OSHA standards and regulations including, but not limited to, confined space, hazardous materials, trenching, lock-out/tag-out, etc. The Contractor shall be responsible for Sub- contractors abiding to such regulations.

Article 3: DESCRIPTION OF SYSTEM

3.1 The design of the system shall be shown on the plan for North Stonington BOE.

3.2 The Contractor shall lift and replace sod at all Irrigation heads and valve boxes.

3.3 All pipes two (2) inches or smaller shall be pulled by the method of vibratory plow. Trenches shall be power rolled to original compaction. All disturbed areas are to be reseeded.

Article 4: EXAMINATION OF SITE

4.1 Each bidder shall visit the site of the proposed work and fully acquaint themselves with the conditions there relating to construction and labor and should fully inform themselves as to the facilities involved, and the difficulties and restrictions attending the performance of the contract. The bidder should thoroughly examine and familiarize themselves with technical specifications, and all other bid and contract documents. The Contractor, by the execution of the contract, shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal document or to visit the site and acquaint themselves with the conditions there existing and the Owner shall be justified in rejecting any claim thereof.

4.2 The Owner shall make available to all prospective bidders at the site, prior to the receipt of the final bid, all known information pertaining to subsoil information in the vicinity of the work to be performed. This includes the location of underground utilities, drainage and irrigation lines, and any other information that might assist the bidder in properly evaluating the amount of work that the project shall entail.

Article 5: CONDUCT OF THE WORK

5.1 The Contractor shall be employed by, or a Certified Irrigation Contractor (CIC) and a Certified Irrigation Designer (CID) as described by the Irrigation Association (IA). The Contractor shall have had five (5) years commercial experience in athletic fields and golf courses and demonstrated ability in the installation of Irrigation Heads irrigation systems of this type and magnitude. All work shall be installed by J-3 and/or J-4 licensed and proficient in the trades required, in a neat, orderly, and responsible manner and with recognized standards of workmanship.

5.2 The Contractor shall provide the name, address, contact name, and phone number of two (2) jobs of equal/similar size and nature that he has successfully completed.

5.3 The Contractor shall maintain a competent superintendent satisfactory to the Owner, on work in progress, with authority to act for him in all matters pertaining to the work. The Owner shall designate, prior to the commencement of work, a representative with authority to act for him in all matters pertaining to the work daily. As soon as the Contractor starts work on the job, the Contractor establishes a daily log of activities in triplicate. This log is to be signed every second day by the Contractor's superintendent and the Owner's representative on the job. As this log shall be the basis for payment of work completed and extras authorized and completed, it is imperative that it be accurate. Any difference of opinion between the Contractor's superintendent and the Owner's representative should be recorded when signed and in no event shall such differences interfere with or delay the progress of the work. The Owner, the Contractor, and the Designer shall receive copies when signed.

At least once a month, the Contractor shall make a written estimate report to the Owner of the total amount and the value of the work done to date on the project over the preceding month. The Owner shall review the estimate and if it is approved, the Owner shall pay the Contractor within ten (10) days. Invoices are paid the 15th and the 30th of each month. The Owner shall withhold five percent (5%) of each requisition. Upon final inspection and completion of the punch list, balances shall be paid in full.

The Contractor agrees to indemnify and save the Owner harmless from all claims growing out of the lawful demands of Sub-contractors, laborers, workers, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract.

The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature herein above designated have been paid, discharged, or waived. If the Contractor fails to do so, then the Owner may, after having served written notice to the Contractor, either pay unpaid bills, of which the Owner has written notice, direct or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payments to the Contractor may resume in accordance with the terms of this contract; but in no event shall the provisions of this sub-paragraph be construed to impose any obligations upon the Owner to either the Contractor or his surety.

5.4 The Contractor shall coordinate his work with the other trades, and particularly the North Stonington BOE's maintenance operation.

5.5 The Contractor shall confine his operations to the area to be improved and to the areas allotted him by the Owner for materials and equipment storage.

5.6 During the work, the Contractor shall erect proper protective devices to warn and/or prevent players, the public, and maintenance personnel of and from the danger of construction activities. The site shall be secured at the close of work each day.

5.7 The Owner assumes no responsibility in the supervision and inspection of the work involved in the execution of this contract beyond insuring, to the Owner's satisfaction, that the plans and specifications are being properly interpreted. This supervision and checking shall not relieve the Contractor of any responsibility for the performance of his work in accordance with the plans and these specifications.

5.9 If the Contractor neglects, fails or refuses to achieve substantial completion of work by the substantial completion date in the executed construction contract, and such delay is not otherwise under this contract, then the Contractor shall agree to pay the Board of Education a liquidated damage for breach of contract for each and every calendar day that the Contractor shall be in default of the project work. Liquidated damages per day will be $100.00.

Article 6: INSURANCE

6.1 The Contractor shall not commence work under their contract until they have obtained all insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any Sub-Contractor to commence work on his Sub-contract until all similar insurance required of the Sub-Contractor has been obtained and approved. Insurance approval by the Owner shall not relieve or decrease the liability of the Contractor.

Insurance required as follows:

The Contractor shall be responsible for maintaining insurance coverage in force for the life of this contract and in addition, until the expiration of the guarantee period, of the kinds and in the adequate amounts to secure all of his obligations under the contract and with insurance companies licensed to write such insurance in the State of Connecticut. The kinds and amounts of such insurance carried shall not be less than that stipulated herein, and the Contractor agrees that the stipulation of the kinds and minimum amounts of insurance coverage, or the acceptance by the Owner of certificates indicating the kinds and limits of coverage, shall in no way limit the liability of the Contractor to any such kinds and amounts of insurance coverage. It shall be stated that all policies issued shall indemnify and save harmless the Owner, their agents, and employees from any claims for damages arising out of this contract to either persons or property.

The North Stonington BOE and the State of Connecticut shall be named as "Additional Insured" on all certificates. The Contractor shall require its Sub-contractors to obtain policies of similar insurance before each commences work. The Contractor shall have all Sub-contractors submit Certificates of Insurance for all policies of similar insurance in conjunction with this project. Sub-contractors shall also list the North Stonington BOE and State of Connecticut as "Additional Insured".

The minimum limits of liability for the policies specified below in these General Conditions shall be as follows:

A) 1) Worker's Compensation - Statutory
   2) Employer's liability - $100,000 / 500,000 / 100,000

B) 1) Commercial general liability

Bodily and personal liability and property damage
$1,000,000 per occurrence
$2,000,000 annual aggregate
Products and completed operation hazard to be included.

C) Comprehensive auto liability
Including coverage of owned, non-owned, and rented vehicles
$1,000,000 per occurrence

Indemnity of the BOE by the Contractor:
The Contractor shall, at all times, indemnify and save harmless the Owner and their employees, officers, and agents against any and all damages to property or injuries to or death of any person or persons including property and employees or agents of the Owner and shall defend, indemnify, and save harmless the Owner from any and all claims, demands, suits, actions, or proceedings of any kind or whomsoever in any way resulting from or arising out of operations or connections herewith, including operations of Sub-contractors and acts of omissions of employees or agents of the Contractor or his Sub- contractors.

6.2 The Contractor and Sub-contractors shall furnish Certificates of Insurance to the Owner, naming the North Stonington BOE and State of Connecticut as "Additional Insured".

6.3 The Contractor shall be liable for any loss or damage to material stored on the job site. Any loss or damage to installed or completed work shall be the responsibility of the Owner.

Article 7: CODES AND PERMITS

7.1 The entire installation shall fully comply with all local and state laws and ordinances with all established codes applicable thereto.

7.2 The Contractor shall take out all required permits and arrange for all necessary inspections. Fees shall be waived by the North Stonington BOE.

7.3 The Contractor shall comply with all federal, state, and local laws regarding condition of employment.

7.4 In the event of discrepancies between the specifications and federal, state, and/or local laws or codes, such laws or codes shall govern the installation of this system.

Article 8: SUBLETTING AND ASSIGNMENT

8.1 The Contractor shall not assign or sublet any portion of this work without written approval of the Owner of the specific Sub-Contractor prior to commencement of the work to be Sub-contracted. Acceptance by the Owner of the Sub-Contractor does not decrease or relieve the responsibility of the Contractor.

Article 9: ERRORS OR CONFLICTS IN DRAWINGS AND SPECIFICATIONS

9.1 The Contractor shall immediately notify the Owner's representative should he find any errors or conflicts in the drawings and/or specifications. The Owner shall render his interpretation or instructions on the items as soon as possible.

9.2 Any work undertaken by the Contractor regarding errors or conflicts shall be done so at their own risk unless they have received written prior approval from the Owner.

10 The quantities and measurements shown on the plans and specifications have been indicated as closely as possible but are approximate only. The Contractor shall be responsible for estimating and supplying all quantities; where clarification or additional information is required, a request in writing to the Owner shall be made. No extra charge or compensation shall be allowed the Contractor unless there is a change in scope or dimension of the project resulting in the need for extra material, equipment, and/or labor. Said differences shall be handled under Article 11. (It is the responsibility of the Contractor to properly estimate quantities for bidding purposes.)

Article 10: CLAIMS FOR EXTRA WORK

10.1 No claim by the Contractor for increased compensation for alterations or additions, except when done in pursuance of a written authorization from the Owner, shall be considered unless written notice of the claim is made to the Owner before the commencement of such work.

10.2 Claims for alterations or additions shall be figured at a maximum rate of the Contractor's cost for labor and materials, plus twenty-five percent (25%). No allowance for the Contractor's overhead shall be considered.

10.3 The Contractor agrees to cooperate with the Owner in connection with the execution of any changes and/or additional work beyond the scope of the plans and the specifications referred to herein. The Contractor agrees to exercise its best efforts to coordinate any such changes and/or additional work with the installation of the irrigation system as designed and such work shall be paid for by the Owner as billed.

10.4 The daily log shall serve as a record for all claims.

Article 11: PAYMENTS

11.1 The payment for installation work shall be broken down into segments. The Contractor and the Owner shall prepare jointly a schedule of the estimated values of the main segments of the work totaling the amount of the installation portion of the contract. The values in the schedule shall be used only for determining these unit payments. As these segments, or portions of the project, are completed, the Contractor may apply for up to ninety percent (90%) of the assigned payment.

11.2 The remaining ten percent (10%) of the contract price shall be retained by the Owner to guarantee satisfactory completion of the irrigation system.

11.3 Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete release of all claims against the Owner rising under and by virtue of his contract, including claims of all Sub- contractors and suppliers of either materials or labor. If, at the Owner's request, a segment or portion of the system that has been completed is requested for operational use, the retainage on that portion shall become due and payable prior to release to the Owner.

Article 12: WARRANTY

12.1 The Contractor agrees to replace any defective equipment and components furnished by the Contractor within one (1) year from the date of acceptance of the system, provided that the system is maintained and serviced in accordance with the Contractor's specifications that shall be furnished at the time of acceptance and further provided that no alterations are made without the prior written approval of the Contractor.

12.2 The Contractor shall warrantee that the materials have been installed in accordance with the manufacturer's recommendations and by accepted methods of the irrigation industry. Such installation shall be warrantied for a period of one (1) year from the date of acceptance. The warranty shall include two (2) system start-ups and one (1) winterization.

12.3 The warranty period shall commence when the complete system and/or any portion thereof has been put into operation and accepted by the Owner.

Article 13: OWNER'S ACCEPTANCE

13.1 Within ten (10) days of the Contractor's notice that the installation is complete and satisfactory pressure testing as per the manufacturer's specifications has been completed, the Owner shall inspect the installation and either give final acceptance or prepare a "punch list" of unacceptable items which must be corrected by the Contractor. Upon correction of the "punch list" items by the Contractor, the Owner shall give final acceptance and make final payment to the Contractor.

13.2 If, after completion of the installation, final pressure testing is delayed by reason of the Owner's failure to provide proper electrical or water supply, fifty percent (50%) of the retainage shall be due and payable within seven (7) days of the ten (10) day period mentioned in paragraph 13.1, or correction of all "punch list" items, whichever occurs first; and the remaining fifty percent (50%) of the retainage shall be due when the system has been satisfactorily tested and is in compliance with the contract, drawings, and specific

TECHNICAL SPECIFICATIONS

Section	Description
1	Summary of Work
2	Coordination and Meetings
3	Submittals
4	Quality Control
5	Construction Facilities and Temporary Controls
6	Materials and Equipment
7	Contract Close-Out
8	Trenching, Excavating, Backfilling, and Compacting for Utilities and Structures
9	Irrigation System

SECTION 1 SUMMARY OF WORK

The intention of this technical specification is to provide the following design and installation for:

1 x Soccer Field	90,000sqft (Approximate)
1 x Baseball Field	90,000sqft (Approximate)
1 x Softball Field	60,000sqft (Approximate)

1) GENERAL
   a) Project/Work Identification
   b) Work Covered by Contract Documents
   c) Work by BOE
   d) CONTRACTOR Use of Premises, Work Sequence, and BOE Occupancy

2) PROJECT/WORK IDENTIFICATION
   a) The name of the Project is "IRRIGATION DESIGN AND INSTALLATION" and is located at North Stonington High School, Connecticut.

3) WORK COVERED BY CONTRACT DOCUMENTS
   a) Briefly and without force and effect upon Contract Documents, the Work of the Contract can be summarized as follows:
   b) Installation of an irrigation system with associated controls and equipment

4) WORK BY BOE (GROUNDS MAINTENANCE TEAM)
   a) Work of the Project which will be executed during Work of this Contract, and which is specifically excluded from this Contract are as follows:
      i) Re-grading of existing athletic field
      ii) Re-establishment of natural turf
      iii) Line striping of new athletic field
      iv) Incidental curb restoration

5) CONTRACTOR USE OF PREMISES, WORK SEQUENCE, AND BOE OCCUPANCY
   a) CONTRACTOR shall have use of the site for Work, storage, and access. Under no conditions, shall roads be blocked.
   b) Assume full responsibility for protection and safekeeping of products under this Contract.
   c) Obtain and pay for use of additional storage or Work areas needed for operations under this Contract.
   d) Coordinate the Progress Schedule and operations with the BOE.
   e) Cooperate with the BOE in scheduling operations to minimize conflict and to facilitate field usage. Provide all temporary measures to ensure the safety of the BOE and the BOE's representatives.
   f) In particular, the CONTRACTOR is not to disrupt existing utility service, interfere with normal auto and pedestrian traffic, or obstruct existing exits and life safety systems and emergency access.

SECTION 2 COORDINATION AND MEETINGS

1) GENERAL
   a) Coordination
   b) Preconstruction Meeting
   c) Progress Meetings

2) COORDINATION
   a) Coordinate scheduling, submittals, and Work of the various Sections of specifications to

assure efficient and orderly sequence of installation of interdependent construction elements.

b) Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
c) Coordinate completion and clean-up of Work of separate sections in preparation for substantial completion and for portions of Work designated for BOEs partial occupancy.
d) During BOE use of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of BOE's use of premises.

3) PRE-ISTALLATION MEETING
   a) The BOE will administer preinstallation conference for execution of CONTRACTOR Agreement and exchange of preliminary submittals.

4) PROGRESS MEETINGS
   a) General CONTRACTOR shall schedule and administer Project meetings throughout progress of the Work at intervals as required by the BOE.
   b) Make physical arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two days to the BOE, participants, and those affected by decisions made at meetings.
   c) Attendance: Job superintendent, CONTRACTORs, major subcontractors, suppliers, BOE as appropriate to agenda topics for each meeting.

SECTION 3 SUBMITTALS

1) GENERAL
   a) Submittal Procedures
   b) Installation Progress Schedules
   c) Proposed Products List
   d) Shop Drawings
   e) Product Data
   f) Samples
   g) Manufacturer's Instructions
   h) Manufacturer's Certificates

2) SUBMITTAL PROCEDURES
   a) Review submittals prior to submission. Verify field measurements, catalog numbers and other information critical to construction or installation.
   b) Coordinate each submittal with requirements of Work and of Contract Documents.
   c) Notify BOE in writing at time of submission of deviations in submittals from requirements of Contract Documents. Responsibility for deviations from requirements of Contract Documents is not relieved by Engineer's review of submittals, except when given written acceptance of specific deviation.
   d) Transmit each submittal with Engineer accepted form.
   e) Identify Project, CONTRACTOR, Sub-CONTRACTOR, or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
   f) Apply CONTRACTOR's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
   g) Schedule submittals in accordance with approved project schedule to cause no delay to the Work.
   h) Deliver to Engineer at his business address. Coordinate submission of related items.
   i) Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
   j) Provide space for CONTRACTOR review stamp and a 3"x 5" Engineer review stamp.
   k) Obtain new samples, revise drawings and/or data as required by Engineer review and resubmit,

identify changes made since previous submittal.

l) Distribute copies of reviewed submittals to concerned persons including Test Lab, Special Inspector, Building Official, and Clerk of the Works (Construction Inspector).
m) Instruct recipients to promptly report any inability to comply with provisions.
n) Begin no Work which requires submittals until return of submittals with Engineer's review stamp and initials or signature indicating review and distribution to concerned persons.

3) INSTALLATION PROGRESS SCHEDULES
   a) Submit initial progress schedule and schedule of values (if lump sum project) in duplicate within 15 days after date established for commencement of Work.
   b) After review by Engineer, revise and resubmit as required.
   c) Submit revised schedules with every Application for Payment, reflecting changes since previous submittal.
   d) Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
   e) Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.
   f) Show projected percentage of completion for each item of Work as of time of each Application for Progress Payment.
   g) Show submittal dates required for Shop Drawings, product data, and samples, and product delivery dates, including those furnished by BOE and those under Allowances.

4) PROPOSED PRODUCT LIST
   a) Within 15 days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   b) For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

5) SHOP DRAWINGS
   a) Shop Drawings include specially prepared technical data for this project, including Drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements, and similar information not in standard printed form for general application to several projects.
   b) Provide newly prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated), with name of preparer indicated (firm name).
   c) Maximum sheet size shall be 24 in. x 36 in. Show dimensions and note which are based on field measurement. Identify materials and products in the Work shown.
   d) Indicate compliance with standards and special coordination requirements.
   e) Identify details by reference to sheet numbers shown on Contract Drawings and Specification Sections, page numbers and paragraph line numbers. Contract Design Drawings shall not be traced or otherwise reproduced for use as Shop Drawings.
   f) Submit (1) reproducible electronic copy of newly prepared Shop Drawings to Engineer. Where design calculations are required, submit (1) reproducible electronic copy of calculations as well.
   g) Do not allow Shop Drawing copies without appropriate approval markings by Engineer to be used in connection with the Work.
   h) Indicate on shop drawing whether it is a full or partial submittal.
   i) Fabrication and installation of components requiring Shop Drawings shall not begin until Shop Drawings have approval of Engineer unless directed otherwise in writing by same.

6) PRODUCT DATA
   a) Product data includes standard printed information on materials, products, and systems; not specially prepared for this project, other than the designation of selections from among available choices printed therein.
   b) Collect required data into one submittal for each unit of Work or system; and clearly mark each copy to show which choices and options are applicable to project.
   c) Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, special coordination requirements, instructions for delivery, storage, assembly, installation, adjusting and finishing.
   d) Submit electronic copies of product data to the Engineer.

7) SAMPLES
   a) Samples include both fabricated and unfabricated physical examples of materials, products, and units of Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.
   b) Provide units identical with final condition of proposed materials or products for the Work. Include "range" samples (not less than 3 units) where unavoidable variations must be expected and describe or identify variations between units of each set.
   c) Provide full set of optional samples where Engineer's selection is required. Prepare samples to match Engineer's sample where so indicated.
   d) Include information with each sample to show generic description, source or product name and manufacturers, limitations, and compliance with standards.
   e) Samples are submitted for review and confirmation of color, pattern, texture, and "kind" by Engineer. Engineer will not "test" samples (except as otherwise indicated) for compliance with other requirements, which are therefore the exclusive responsibility of the CONTRACTOR.
   f) Submit the number of samples stated in each Specification Section.
   g) Mock-ups are a special form of samples, which are too large or otherwise inconvenient for handling in specified manner for transmittal of sample submittals.
   h) Where mock-ups and similar samples are indicated in individual Work sections recognized as a special type of sample, comply with requirements for "samples" to greatest extent possible, and process transmittal forms to provide a record of activity.

8) MANUFACTURER'S INSTRUCTIONS
   a) When specified in individual specification Sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
   b) Identify conflicts between manufacturer's instructions and Contract Documents.

9) MANUFACTURERS' CERTIFICATES
   a) When specified in individual specification Sections, submit manufacturer's certificate to Engineer for review, in quantities specified for Product Data.
   b) Indicate whether material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.
   c) Certificates may be recent or previous test results on material or Product but must be acceptable to Engineer.

SECTION 4 QUALITY CONTROL

1) GENERAL
   a) Quality assurance and control of installation.
   b) Manufacturers' field services and reports.
   c) Functional Testing

2) RELATED SECTIONS
   a) Section 3 - Submittals

3) QUALITY ASSURANCE/CONTROL OF INSTALLATION
   a) All Work shall be performed in a first-class, neat, substantial, and Workmanlike manner, by Workers with adequate experience and training to perform the Work.
   b) Monitor quality control over suppliers, manufacturers, products, services, site conditions, and Workmanship, to produce Work of specified quality.
   c) Comply fully with manufacturer's instructions, including each step, in sequence.
   d) Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
   e) Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise Workmanship.
   f) Perform Work by persons qualified to produce Workmanship of specified quality.
   g) Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

4) EQUIPMENT CLEARANCES
   a) Whether or not shown in detail or dimensioned on the Drawings, no equipment shall be installed in such a manner that it cannot be serviced.
   b) CONTRACTOR shall make field measurements to ensure that furnished equipment shall fit in available space.
   c) If field measurements indicate that specified equipment does not fit the CONTRACTOR shall notify the Engineer in writing, so that appropriate changes can be made.

5) MANUFACTURERS' FIELD SERVICES AND REPORTS
   a) When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of Workmanship, start- up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.
   b) Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
   c) Submit report in duplicate within 30 days of observation to Engineer for review.

6) FUNCTIONAL TESTING
   a) Functional testing of all systems and equipment shall be required. Test shall be attended by representatives of the CONTRACTOR, equipped with instruments required to demonstrate proper functioning of each system.
   b) The CONTRACTOR shall demonstrate that all Equipment is installed and operating in accordance with manufacturer's specifications and instructions, local and state codes.

SECTION 5 CONSTRUCTION FACILITIES AND TEMPORARY CONTROL'S

1) GENERAL
   a) Unless noted otherwise, the General CONTRACTOR shall provide the following:
      i) Temporary Utilities
         (1) Electricity, Lighting
         (2) Temporary Water
         (3) Sanitary Facilities
      ii) Temporary Controls

(1) Barriers
(2) Enclosures
(3) Protection of Installed Work
(4) Hoists
(5) Construction Aids
(6) Water Control

iii) Installation Facilities
(1) Cleaning During Installation
(2) Field Offices and Sheds
(3) Access on Roads
(4) Parking
(5) Removal of Utilities, Facilities and Controls

2) TEMPORARY ELECTRICITY, LIGHTING
   a) Arrange with utility company and pay all costs to provide service required for Installation operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords.
   b) Provide artificial lighting, at a rate of 1 watt per square foot minimum, for Installation operations when natural light is not adequate for Work.
   c) Existing and permanent lighting may be used during Installation.
   d) Maintain lighting and make routine repairs.
   e) When working on BOE sites or buildings and electricity is readily available, the CONTRACTOR may use the BOE's electric service at no expense. (This does not include any field offices.)

3) TEMPORARY WATER
   a) Arrange with utility company and pay all costs to provide service required for Installation operations.
   b) Water may be trucked in at the CONTRACTOR's option.
   c) When Working on BOE sites or buildings and water is readily available, the CONTRACTOR may use the BOE's water service at no expense.

4) BARRIERS
   a) Provide as required to prevent unauthorized entry to Installation areas, to allow for BOE's and BOE's use of site, and to protect existing facilities and adjacent properties from damage from Installation operations.
   b) Provide barricades and covered walkways as required by governing authorities for public rights-of-way and for public access to existing buildings.
   c) Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

5) ENCLOSURES
   a) Provide temporary insulated weather-tight closures where indicated and where reasonably required to ensure adequate workmanship and protection from weather and unsatisfactory ambient conditions for Work to allow for temporary heating.

6) PROTECTION OF INSTALLED WORK
   a) Protect installed Work and provide special protection where specified in individual Specification Sections.
   b) Provide temporary protection for installed products. Control activity in immediate area to minimize damage.
   c) Prohibit traffic from lawns and landscaped areas.

7) HOISTS
   a) Provide adequate hoist facilities for loading and unloading materials.

8) INSTALLATION AIDS
   a) Provide Installation aids and equipment required by personnel and to facilitate execution of the Work: scaffolds, staging, ladders, ramps, runways, platforms, railings, cranes, chutes and other such facilities and equipment. Refer to respective sections for particular requirements for each trade.
   b) Maintain facilities and equipment in first-class condition.

9) WATER CONTROL
   a) Grade site to drain.
   b) Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
   c) Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

10) CLEANING DURING INSTALLATION
   a) Control accumulation of waste materials and rubbish; periodically dispose of off- site.
   b) Streets and drives in the area of Installation shall be kept free of accumulation of mud, clay, gravel, and any other materials which vehicles or equipment may track or scatter onto these surfaces.
   c) No burning or disposal of rubbish at the job site will be permitted.

11) FIELD OFFICES AND SHEDS
   a) CONTRACTOR may erect and maintain a temporary field office on the project site. Place field office in coordination with BOE's direction.
   b) Field Office:
      i) Weather-tight, with lighting, electrical outlets, heating, ventilating and air conditioning equipment, and equipped with furniture.
      ii) Provide space for project meetings, with table and chairs to accommodate 6 persons.
   c) Storage Sheds for Tools, Materials, and Equipment: Weathertight, with heat and ventilation for Products requiring controlled conditions, with adequate space for organized storage and access, and lighting for inspection of stored materials.

12) ACCESS ON ROADS
   a) Maintain passage of roads and driveways during construction unless otherwise authorized. Spray roads periodically with calcium chloride to keep dust to a minimum.
   b) Provide means of removing mud from vehicle wheels before entering public streets.

13) REMOVAL OF UTILITIES, FACILITIES AND CONTROLS
   a) Remove temporary above grade or buried materials, equipment, utilities, and Installation prior to Substantial Completion inspection.
   b) Remove underground installations to a depth of 2 feet; grade site as indicated.
   c) Clean and repair damage caused by installation or use of temporary Work or facilities. Restore existing facilities used during Installation to original condition.
   d) Restore permanent facilities used during Installation to the specified condition.

SECTION 6 MATERIALS AND EQUIPMENT

1) GENERAL
   a) Products
   b) Transportation and Handling
   c) Storage and Protection
   d) Product Options
   e) Substitutions

2) RELATED SECTIONS
   a) Section 4 - Quality Control

3) PRODUCTS
   a) Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.
   b) Products may also include existing materials or components required for reuse.
   c) Components required to be supplied in quantity within a Specification section shall be the same and shall be interchangeable.
   d) Do not use materials and equipment removed from existing structure, except as specifically required, or allowed by Contract Documents.

4) TRANSPORTATION AND HANDLING
   a) Transport products by methods which will avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
   b) Provide equipment and personnel to handle products by methods which will prevent soiling or damage.
   c) Promptly inspect shipments to assure that products comply with requirements; quantities are correct; and products are undamaged.

5) STORAGE AND PROTECTION
   a) Store products in accordance with manufacturer's instructions, with seals, and labels intact and legible. Store sensitive products in weather-tight enclosures.
   b) Maintain within temperature and humidity ranges required by manufacturer's instructions.
   c) For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
   d) Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
   e) Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged and are maintained under required conditions.
   f) Take proper fire precautions at all times during storage and of flammable and explosive materials. Do not store Styrofoam or cellular polystyrene insulation in or adjacent to any building.
   g) Any products damaged by failure to provide above protection shall be removed and replaced with new material at the CONTRACTOR's expense, unless covered by Insurance.

6) PRODUCT OPTIONS
   a) Products specified by Reference Standards or by description only: Any product meeting those standards or description.
   b) Products specified by naming one or more manufacturers with a provision for substitutions or approved equal: Submit a request for substitution for any manufacturer not named.
   c) Products specified by naming several manufacturers: Products of named manufacturers and meeting specifications; no options and no substitutions allowed.
   d) Products specified by naming only one manufacturer: No options and no substitutions

allowed.

e) Product Options: Whenever any product is specified in the Contract Documents by reference to the name, trade name, make or catalog number of any manufacturer or supplier, "or approved equal", the BOE, in conjunction with the Engineer shall be the sole judge as to whether a proposed equal is to be approved and the CONTRACTOR shall have the burden of proving, at his own cost and expense to the satisfaction of the BOE, and in conjunction with the Engineer, that the proposed product is equal to the named product.

f) In making such determination, the Engineer may establish such objective and appearance criteria as he may deem proper that the proposed product must meet in order for it to be approved.

7) SUBSTITUTIONS

a) Only within 30 days after date of contract signing will Engineer consider requests from CONTRACTOR for substitutions. Subsequently, substitutions will be considered only when a product becomes unavailable due to no fault of CONTRACTOR.

b) Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

c) When requested by Engineer, document each substitutions submittal with complete data substantiating compliance of proposed substitution with Contract Documents including:

i) Comparison of the qualities of the proposed substitution with the product specified.
ii) Changes required in other elements of the Work because of the substitution.
iii) Effect on construction schedule.
iv) Cost data comparing proposed substitution with product specified.
v) Any required license fees or royalties.
vi) Availability of maintenance service and source of replacement materials.
vii) Evidence that proposed substitution has been in successful service for a minimum of five years.

d) Request constitutes a representation that the CONTRACTOR:

i) Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product.
ii) Will provide the same warranty for substitution as for specified product.
iii) Will coordinate installation and make other changes to other Work which may be required for Work to be complete in all respects with no additional costs to BOE.
iv) Waives claims for additional costs or time extensions which may subsequently become apparent.
v) Will reimburse the BOE for review or redesign services associated with re-approval by authorities.

e) Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, or when acceptance will require substantial revision of Contract Documents.

f) Substitution Submittal Procedure:

i) Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
ii) Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
iii) Engineer will determine acceptability of proposed substitution and will notify CONTRACTOR of acceptance or rejection in writing within a reasonable time.
iv) Only one request for substitution will be considered for each product. When substitution is not accepted, provide specified product.

SECTION 7 CONTRACT CLOSE-OUT

1) GENERAL
    a. Close-out Procedures
    b. Final Cleaning
    c. Project Record Documents
    d. Warranties and Bonds
    e. Spare Parts and Maintenance Materials

2) RELATED SECTIONS
    a. Section 1 - Summary of Work

3) DEFINITIONS
    a) Close-out is defined to include general requirements near the end of Contract Time, in preparation for final acceptance, final payment, normal termination of contract, occupancy by BOE and similar actions evidencing completion of the Work.

4) CLOSE-OUT PROCEDURES
    a) Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
    b) Provide submittals to Engineer and BOE that are required by governing or other authorities.
    c) Prior to requesting Engineer's inspection for certification of substantial completion, as required by general conditions (for either the entire Work or portions thereof), complete the following and list known exceptions in request:
        i) In progress payment request coincidental with or following first date claimed, show either 100 percent complete for portion of Work claimed as "substantially complete", or list incomplete items, value of incompletion, and reasons for being incomplete.
        ii) Advise Engineer of pending insurance change-over requirements, if any.
        iii) Submit updated final statement, accounting for additional (final) changes to the Contract Sum and as follows:
            (a) Statement shall reflect all adjustments.
            (b) Original Contract Sum.
            (c) Additions and deductions resulting from: Previous change orders, cash allowances, unit prices, other adjustments, deductions for uncorrected Work, deductions for liquidated damages, bonuses, deductions for re-inspection payments, total contract sum, as adjusted previous payments.
            (d) Sum remaining due.

5) SUBSTANTIAL COMPLETION
    a) Within ten (10) days following receipt of CONTRACTOR's request for substantial completion inspection, Engineer will either proceed with inspection or advise CONTRACTOR of prerequisites not fulfilled.
    b) Following initial inspection, Engineer will either prepare certificate of substantial completion or advise CONTRACTOR of Work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that Work has been substantially completed. Results of completed inspection will form initial "punch-list" for

final acceptance.

c) Should Engineer consider that Work is substantially complete, the CONTRACTOR shall prepare, and submit to Engineer, a list of items to be completed or corrected, as determined by the inspection.
d) Engineer will prepare and issue a Certificate of Substantial Completion, complete with signatures of BOE and CONTRACTOR, accompanied by CONTRACTOR's list of items to be completed or corrected as verified and amended by Engineer.
e) Complete Work listed for completion or correction within designated time. Should Engineer consider that Work list is not substantially complete, he shall notify CONTRACTOR in writing stating reasons.
f) Complete Work, and send second written notice to Engineer, certifying that Project, or designated portions of Project, is substantially complete.
g) Engineer will re-inspect Work.

6) PREREQUISITES TO FINAL ACCEPTANCE

a) Prior to requesting Engineer's final inspection for certification of final acceptance and final payment, as required by General Conditions, complete the following and list known exceptions (if any) in request:
b) Submit certified copy of Engineer's final punch list of itemized Work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance.
c) Submit record drawings, maintenance manuals, final project photographs, specific warranties, Workmanship/maintenance bonds, maintenance agreements, final certifications, and similar record documents as specified herein.
d) Complete final clean-up requirements as specified herein, including touch-up of marred surfaces.
e) Deliver tools, spare parts, extra stocks of materials, and similar physical items to BOE.

7) FINAL ACCEPTANCE

a) Within five (5) days following receipt of CONTRACTOR's notice that the Work has been completed, including "punch list" items from earlier inspections, Engineer will re-inspect the Work. Upon completion of re-inspection, Engineer will either notify CONTRACTOR in writing of Work not completed or obligations not fulfilled as required for final acceptance of request.
b) CONTRACTOR to submit evidence of payments, release of liens and final application for payment as an indication of final acceptance.
c) CONTRACTOR shall take immediate steps to remedy the stated deficiencies and send second written notice to Engineer certifying that Work is complete and Engineer will re-inspect Work.
d) Should Engineer be required to perform second inspections because of failure of Work to comply with original certifications of CONTRACTOR. BOE will compensate Engineer for additional services, and deduct amount paid from final payment to CONTRACTOR.

8) EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

a) The CONTRACTOR shall submit the following documents as evidence of payments and release of liens with the final application for payment:
b) CONTRACTOR's Affidavit of Payment of Debts and Claims: AIA G706.
c) CONTRACTOR's Affidavit of Release of Liens: AIA G706A.
d) CONTRACTOR's release or waiver of liens.
e) Separate releases of waivers of liens for Subcontractors, suppliers, and others with lien rights against property of BOE, together with list of those parties.

f) Consent of Surety to Final Payment: AIA G707.
g) All submittals shall be duly executed before delivery to Engineer.

9) FINAL APPLICATION FOR PAYMENT
   a) Engineer will prepare final Change Order, reflecting approved adjustment to contract sum not previously made by Change Orders.
   b) CONTRACTOR shall submit final application in accordance with requirements of General and Supplementary Conditions and as herein specified.
   c) Final Certificate for Payment
   d) Engineer will issue final certificate in accordance with provisions of General Conditions.
   e) Should final completion be materially delayed through no fault of CONTRACTOR, Engineer may issue a Semi-Final Certificate of Payment, in accordance with provisions of General Conditions.

10) FINAL CLEANING
   a) Special cleaning requirements for specific portions of the Work are specified in their individual sections.
   b) Complete final cleaning prior to final inspection.
   c) Clean project site (yard and grounds), including landscape, development areas, of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petrol chemical spills and other foreign deposits. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.
   d) Conduct cleaning and waste disposal operations in compliance with all laws and ordinances. Comply with federal and local environmental and anti-pollution regulations.
   e) No burning or disposal of rubbish at the job site will be permitted.

11) PROJECT RECORD DOCUMENTS
   a) Maintain documents in clean, dry, legible condition and do not use record documents for construction purposes.
   b) Store documents in files and on racks in temporary field office. Keep separate from those used for construction.
   c) Record documents shall be always available for reference by Engineer and BOE.
   d) Keep documents current. Do not permanently conceal any Work until required information has been recorded on the documents.
   e) At Contract close-out, submit documents with transmittal letter containing date, Project title, CONTRACTOR's name and address, list of documents, and signature of CONTRACTOR. Label each record document "PROJECT RECORD" in large printed or stamped letters.
   f) Record Drawings: During progress of Work, maintain two (2) sets of Contract drawings, shop drawings, and any special drawings with mark-up of actual installation which vary substantially from the Work as originally shown. Engineer will provide one set of mylar sepias and one set of prints for CONTRACTOR's use.
      i) Mark whatever drawing is most capable of showing actual physical condition, fully and accurately.
      ii) When shop drawings are marked-up, mark cross-reference on Contract drawings at corresponding location.
      iii) Mark with erasable color pencil, using separate colors where feasible to distinguish between changes for different categories of Work at same general location.
      iv) Mark-up important additional information which was either shown schematically or omitted from original drawings. Give particular attention to information on Work concealed, which would be difficult to identify or measure and record at a later date.
      v) Note alternative numbers, change order numbers and similar identification.
      vi) Require each person preparing mark-up to initial and date mark-up.
   g) Record Specifications: During progress of the Work, maintain two (2) copies of project manual, including addenda, and two (2) copies of change orders and similar modifications issued in

printed form during construction.

i) Mark up variations (of substance) in actual Work in comparison with text of specifications and modifications as issued.
ii) Give particular attention to substitutions, selection of options, and similar information on Work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation.
iii) Note related record drawing information and product data, where applicable.

h) Record Product Data: During progress of the Work, maintain one copy of each product data submittal, and mark up significant variations in the actual Work comparison with submitted information.

i) Include both variations in product as delivered to site, and variations from manufacturer's instructions and recommendations for installation.
ii) Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned at a later date by direct observations.
iii) Note related change orders and mark up of record drawings and specifications.

i) Record Samples: Immediately prior to date(s) of substantial completion, Engineer and BOE's personnel will meet with CONTRACTOR at site and will determine which (if any) of submitted samples, maintained by CONTRACTOR during progress of the Work, are to be transmitted to BOE for record purposes.

i. Comply with Engineer's instructions for packaging, identification marking, and delivery to BOE's sample storage space.
ii. Dispose of the samples in manner specified for disposal of surplus and waste materials, unless otherwise indicated or directed by Engineer.

SECTION 8
TRENCH EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES AND STRUCTURES
PART 1 GENERAL

1) WORK INCLUDED
   a) The Work under this section includes all the labor, materials, tools, and equipment necessary to perform, to the lines and grades shown on the plans, all earth excavation, backfill, and compaction required to install all utilities and structures in the project as shown on the drawings or referenced in the specifications. It shall also include the disposal of excess or unsuitable material.

1) RELATED WORK
   a) Section 3 - Submittals
   b) Section 4 - Quality Control

2) REFERENCE STANDARDS
   a) Form 818, State of Connecticut Department of Transportation, Standard Specification for Roads, Bridges, and Incidental Construction, 2020.
   b) ASTM – American Society for Testing and Materials
      a) D422, Particle-size Analysis of Soils
      b) D2922, Density of Soil and Soil Aggregate in Place by Nuclear Methods
      c) D1557, Moisture Density Relations of Soils and Soil Aggregate Mixtures using 10 lb. Rammer and 18-inch drop.

3) QUALITY ASSURANCE
   1) Protect and maintain site boundaries and project limits during Installation. If disturbed, destroyed, or exceeded, repair as directed by Engineer.

4) SUBMITTALS
   1) Submit under provisions of Section 3 for all materials to be used in this section.

5) SITE CONDITIONS
   a) Verify and confirm all existing conditions in the field.
   b) Restore all areas outside the contract limit lines that are disturbed during the progress of Work as directed by the Engineer at the CONTRACTOR's expense.
   c) If subsurface investigations have been made, the results are included elsewhere. The data shown, if any, is for general information only.
   d) Bidders are expected to examine the site and the compiled record of investigations, and then decide for themselves the character of materials to be encountered.
   e) No warranty, either expressed or implied, is made as to the accuracy of the subsurface information presented.
   f) The Bidders will be allowed, with concurrence of the BOE, the right to make any subsurface explorations they deem necessary to satisfy themselves of the existing ground conditions.

6) COORDINATION
   a)Coordinate Work with BOE surveyors for layout and grading.
   b) Coordinate with affected utility companies.

7) PROTECTION
   a) Protect benchmarks, monuments, other reference points, existing structures, roads, sidewalks, paving, curbs, overhead and underground utilities against damage from equipment and vehicular or foot traffic.
   b) Protect excavations by shoring, bracing, sheet piling, underpinning, or other methods as required to sustain excavated areas.
   c) Protect bottom of excavations and soil around and beneath utilities from frost.
   d) Grade around excavation to prevent surface water run-off into excavated area.

8) MEASUREMENT AND PAYMENT
   a) Work under this section shall be included in the CONTRACTOR’s lump sum bid for the entire project.

PART 2 PRODUCTS

MATERIALS

   b) Fill: Usable material excavated within the limits of Work or imported material conforming to Article M.02.06 Grading "C" of Form 818. Only free draining material shall be used.
   c) Topsoil: Usable material excavated within the limits of Work or imported material conforming to M.13.01-4 of Form 818. Texture Class: Loam.
   d) Processed Gravel: Usable material excavated within the limits of Work or imported material conforming to Article M.02.06 Grading "C" of Form 818. Only free draining material shall be used.
   e) Pipe Bedding: Conform to Article M.08.03-1 of Form 818.
   f) Sand: Fine aggregate of clean, hard, durable, uncoated particles of quartz or other rock, conforming to M.03.01-2 of Form 818.

PART 3 EXECUTION

1) STRIPPING AND STOCKPILING TOPSOIL
   a) Topsoil from resulting trenching shall be stripped and stockpiled for use in backfilling.
   b) Stockpile topsoil so that natural drainage is not obstructed, and no off-site sediment damage shall result.
   c) Side slopes of the stockpile shall not exceed a 2 to 1 slope.

d) No topsoil shall be excavated, graded, or worked in saturated or frozen condition.
e) Dispose of unsuitable material off site in a legal manner.

2) REMOVING EXISTING PAVEMENT SURFACES
   a) No excavation shall be made until existing paved surfaces have been neatly saw- cut.
   b) Pavement which is weakened or destroyed beyond the limits indicated shall be recut and trimmed as directed by the Engineer.
   c) The additional pavement shall be removed and replaced by the CONTRACTOR at no additional expense to the BOE.
   d) All pavement removal within state-controlled highway lines shall be in strict accordance with all requirements of the State Highway Department.
   e) Conditions of permits for excavation within established rights-of-way shall be strictly observed and the CONTRACTOR shall assume full responsibility for violations thereof.

3) EARTH EXCAVATION
   a) Excavation shall be in open cut with sheeting provided in areas shown on the plans or as required. Excavate in such a manner and to such widths as will give suitable room for Irrigation piping and valve boxes/junctions and wiring.
   b) All excavations carried outside of the lines and grades given or specified, together with the disposal of such material, and all excavations and other Work resulting from slides, cave-ins, swellings, or upheavals, will be at the CONTRACTOR's own cost and expense.
   c) All spaces resulting from unauthorized excavations or from slides or cave-ins shall be refilled at the CONTRACTOR's expense with suitable material, as directed and approved by the Engineer.
   d) When materials encountered are not suitable for the utility or when it is found desirable or necessary to go to additional depth, the excavation shall be carried to an additional depth as ordered and refilled and compacted as directed by the Engineer.

4) SITE CONTAMINATION
   a) The suspicion of, or unanticipated discovery of, contaminated ground during the excavation, or other Work task under this contract, shall be reported immediately to the Engineer and/or BOE. The CONTRACTOR, at all times, shall exercise caution to protect Workmen, observers, and residents from harm. The CONTRACTOR shall provide all reasonable and necessary assistance to the BOE and/or Engineer to ascertain the nature and source of ground contamination.
   b) Any unreasonable delays to an established Work schedule or any significant changes to the CONTRACTOR's normal operation resulting from the BOE's directed corrective action for the ground contamination will be considered during review of time extension and extra Work order requests by CONTRACTOR.

5) PROTECTION OF WORK
   a) Provide safe working conditions for the protection of workers, materials and equipment involved in the Work, and to protect the public, adjacent structures, utilities, poles, pipelines, duct, conduit, streets and other public or private property from cave-ins, slides, settlement, or other damage.
   b) CONTRACTOR shall assume full responsibility for compliance with all local codes or State and Federal laws which pertain to safe Working conditions for the protection of men, materials, and equipment during excavation.
   c) Existing pipes, poles, wires, fences, curbing, property-line markers, and other structures, which must be preserved in place without being temporarily or permanently relocated, shall be carefully supported, and protected from injury.
   d) Should such items be damaged, they shall be restored by the CONTRACTOR, without compensation, to at least as good a condition as that in which they were found immediately before the Work was begun.
   e) Cooperate closely with all utility companies involved and to ascertain the exact locations of all

utilities prior to excavation.

f) Existing utilities will be protected from damage during construction, and if damaged, will be repaired by the CONTRACTOR at his own expense.
g) Note that it is the policy of the local utilities not to mark locations of services on private property. Therefore, it is the responsibility of the CONTRACTOR to locate utilities on the site.
h) Power-driven excavating machinery shall be handled with care to prevent damage to shade trees, particularly to overhanging branches.
i) Branches shall not be cut off except by special permission from the Engineer.
j) Dig up, handle, protect and properly reset signs, posts, guard rails and the like along the line of or adjacent to the Work.
k) Utility poles or other structures in close proximity to trench excavations must be tied back, braced, or otherwise temporarily supported to the satisfaction of the utility company.
l) Costs for providing such support, or damages resulting from inadequate or insufficient support, shall be the CONTRACTOR's sole responsibility and no separate compensation will be made.
m) Damage to electric poles, or their attachments, under- ground duct lines, manholes, conduits, or their components caused by the CONTRACTOR shall be repaired by the controlling utility agency, but the financial responsibility shall rest with the CONTRACTOR.

6) CARE AND RESTORATION OF PROPERTY
   a) Do not use or operate tractors, bulldozers, or other power-operated crawler equipment on paved surfaces; the treads or wheels of which are so shaped as to cut or otherwise injure such surfaces without providing proper protection for the pavement.
   b) Replace in kind, all granite, concrete, or bituminous curbing removed.
   c) Granite or precast concrete curbing shall be set plumb and true to the lines and grades established and shall be backed up with materials equal to those removed.
   d) Existing cast-in-place or bituminous curbing which is damaged or destroyed by the CONTRACTOR, or precast concrete or granite curbing, which is damaged, and is not scheduled for removal, shall be replaced with new curbing equal to that removed at the CONTRACTOR's sole expense.
   e) All surfaces which have been injured by the CONTRACTOR's operations shall be restored to a condition at least equal to that in which they were found immediately before Work was begun. Suitable materials and methods shall be used for such restoration.
   f) The restoration of existing property or structures shall be done as promptly as practicable and shall not be left until the end of the construction period.
   g) In case of failure on the part of the CONTRACTOR to restore damaged property, the Engineer may, upon forty-eight (48) hours written notice to the CONTRACTOR, proceed to have the necessary repairs, rebuilding, or restoration Work performed and the cost thereof may be deducted from any monies due, or to become due, the CONTRACTOR under this Contract, or the BOE may deduct from any monies due, or to become due, a sum sufficient in the judgement of the Engineer to reimburse the BOE of the property so damaged or injured.

7) DISPOSAL OF SURPLUS AND UNSUITABLE EXCAVATED MATERIALS
   a) Dispose of material off-site in a legal manner and provide the BOE with proof.

8) DUST CONTROL
   a) Conduct operations and maintain the area of activities, including sweeping and sprinkling of area as necessary, to minimize the creation and dispersion of dust.
   b) If it is necessary to use calcium chloride for more effective dust control, the CONTRACTOR shall furnish and spread the material as directed at no additional cost to the BOE.

9) DEWATERING
   a) CONTRACTOR shall at all times keep the excavation free from water. The water shall be disposed of by the CONTRACTOR to the satisfaction of the BOE and /or the North Stonington Water Department and in accordance with the General Conditions and applicable laws and regulations.
   b) CONTRACTOR shall provide all necessary pumps, dams, drains, ditches, flumes, well points, and other means for excluding and removing water from trench excavations, and for preventing the slopes from sliding or caving in.
   c) CONTRACTOR shall satisfactorily remove all water which interferes with the Work.
   d) The CONTRACTOR shall sufficiently dewater excavations trenches to completely dry out and solidify the foundation below the bottom of the pipe to whatever depth is necessary to provide a firm, solid, completely dry foundation on which to lay the pipe.
   e) No additional payment shall be made for dewatering, temporary stream or underground diversion, pumping, bailing or for equipment necessary for the satisfactory dewatering of the trench excavation but the cost is to be included in the unit price for trench excavation.

10) BACKFILLING
   a) As the various pipes or utilities are installed, refill the space outside and around the pipe walls with approved materials to the depths, and widths, and as shown on the plans and standard details. All forms, bracing, and lumber shall be removed before backfilling.
   b) Frozen material shall not be placed in the backfill nor shall backfill be placed upon frozen material.
   c) Previously frozen material shall be removed or shall be otherwise treated as required before new backfill is placed.
   d) Backfill shall be placed in lifts no greater than nine (9) inches.
   e) The dry density after compaction for athletic fields shall not be less than 85 percent or more than 90 percent of the dry density for that soil when tested in accordance with AASHTO T 180, Method D. Correction for particles retained in the 3/4 inch sieve shall be as specified in AASHTO Method T-224.
   f) The dry density after compaction for pavement and structures shall not be less than 95 percent of the dry density for that soil when tested in accordance with AASHTO T 180, Method D. Correction for particles retained in the 3/4 inch sieve shall be as specified in AASHTO Method T-224.
   g) Backfill shall be placed and compacted in a manner so as not to damage any waterproofing materials applied to the outside of the structure.
   h) Any damage caused to waterproofing shall be repaired at the CONTRACTOR's expense.
   i) If necessary to ensure proper compaction by tamping or rolling, the material shall first be wet by sprinkling.
   j) However, no compaction by tamping or rolling shall be done when the material is too wet either from rain or too great an application of water to be compacted properly.
   k) At such times, the Work will be suspended until the previously placed and new materials have dried out sufficiently to permit proper compacting, or such other precautions shall be taken as may be necessary to obtain proper compaction.
   l) Care shall be taken that stones and lumps do not become nested and that all voids between stones shall be completely filled with fine material.
   m) All voids left with removal of sheeting shall be completely backfilled with suitable materials and thoroughly compacted.

SECTION 8 IRRIGATION SYSTEM

PART 1 GENERAL

1) QUALIFICATION OF BIDDERS
   a) The Bidder shall have at least five (5) years of experience in athletic field irrigation system installation with at least three (3) projects in the last three (3) years.
   b) The Bidder shall submit, with his Bid, a list of the *three (3) latest completed projects of a similar nature to this project*.
   c) The BOE reserves the right to request additional data information necessary to qualify the Bidder.
   d) The BOE also retains the right to reject any bid if in his opinion the CONTRACTOR is not qualified to properly perform the Work described by the plan and specifications.
   e) As required, the CONTRACTOR must be licensed to install irrigation systems in the State of Connecticut.
   f) The CONTRACTOR shall comply with all regulations pertaining to the license as determined by the governing department.
   g) A copy of the CONTRACTOR's license must be furnished before the Contract is awarded.

2) INTENT
   a) The objective of these specifications is to provide an assembled, installed and fully functioning automatic irrigation system which will efficiently irrigate all areas to be covered and shall be acceptable in all aspects to the BOE.
   b) These specifications, design details, and irrigation plans are to be considered part of the Contract, and the CONTRACTOR shall follow the specifications with due perseverance.

2) WORK INCLUDED
   a) The Contract contemplated by these specifications consists of the CONTRACTOR furnishing all supervision, labor, equipment, and materials required for all Work described herein to install a fully automatic irrigation system as further defined in the plan and specifications.
   b) Unless otherwise specified, the plan and specifications are intended to include everything obviously requisite and necessary for the proper installation and completion of the Work whether each necessary item is mentioned herein or not.
   c) The plan and specifications are intended to be cooperative, and any item called for in one and not the other shall be as binding as if called for in both.
   d) The CONTRACTOR shall provide the BOE with as-built drawings indicating sizes and locations of all the irrigation components as installed.

3) PROJECT SUMMARY
   a) A general description of the Work, which is further clarified in the Specifications, to be done under this Contract includes, but is not limited to:
      i) Furnish and install all new PVC mainline and lateral piping, isolation valves, fittings, and any other necessary pipeline appurtenances for the irrigation system, including connection to the water source.
      ii) Furnish and install new control valves, Irrigation Heads and quick coupler valves with swing joint assemblies and all necessary fittings, valve boxes, etc.
      iii) Furnish and install a new 2" backflow device at the water connection that meets the requirements of local and national codes.
      iv) Furnish and install a new smart, wireless irrigation controller with wireless weather sensing equipment, wireless soil moisture monitor, and internet control module, including all necessary electrical supplies and internet capabilities.
      v) Provide one winterization and spring start-up of the irrigation system after the entire installation has been completed and approved by the BOE.

SECTION 2 IRRIGATION MATERIALS

A Summary of approximate materials, types and quantities is listed below, this is a guide and is approximate. It is the responsibility of the contractor to clarify and calculate all materials, types, and quantities at the time of design and bid. The North Stonington BOE cannot be held responsible for approximate material types, quantities identified in this technical specification. Substitutions to the list below will be considered.

1) MATERIALS
   a) The Hunter Irrigation Heads, valves and controllers chosen for the design of the irrigation system have been specifically referred to enable the BOE to establish consistency with other BOE irrigation systems.
   b) Irrigation Heads, electric control valves, quick coupler valves and control system equipment shall be as specified, and substitutions shall not be allowed.
   c) The materials required for the project shall be purchased from *a single authorized local distributor* to ensure prompt local support for any warranty issues that may arise during construction or after completion.
   d) The CONTRACTOR shall supply the materials necessary for a complete, smart wireless irrigation system.
   e) The CONTRACTOR shall arrange for the materials to be on site prior the CONTRACTOR's arrival to start the Work.
   f) All materials shall be new and unused as specified.

2) PRODUCT SUBMITTALS
   a) The CONTRACTOR shall submit product specification sheets of the following items prior to bringing materials to the project site.
   b) Submittals shall include the manufacturer of the product with specific model numbers, sizes, etc. highlighted.
   c) One (1) electronic copy of the submittal package shall be forwarded to the Engineer for approval.

      i) Each type of Irrigation Head
      ii) Electric control valves
      iii) Quick coupler valves
      iv) Backflow Preventer
      v) Irrigation controllers
      vi) Weather and soil sensing equipment
      vii) Mainline and lateral piping
      viii) Mainline and lateral fittings
      ix) Swing joint assemblies.
      x) Mainline and lateral isolation valves
      xi) Valve boxes

3) BACKFLOW PREVENTER AND PRESSURE-REDUCING VALVE (If Required)

   a) The backflow preventer shall be a reduced-pressure device consisting of two (2) independently operating, spring loaded check valves and one (1) hydraulically dependent differential relief valve. The device shall automatically reduce the pressure in the “zone” between the check valves to at least five (5) psi lower than the inlet pressure. Should the differential between the upstream and the zone of the unit drop to two (2) psi, the differential relief valve shall open and maintain the proper differential.

   b) Mainline valve body and caps, including relief valve body and cover, shall be ductile iron. Check valve moving member shall be center stem guided. All hydraulic sensing passages shall be internally located within the mainline and relief valve bodies and relief valve cover. Check valve and relief valve components shall be constructed so that they may be serviced without removing the

valve body from the line. Shut-off valves shall be fully protected.

c) The device shall be rated to 175 psi water working pressure and water temperature range from thirty-two (32) degrees to one hundred forty (140) degrees Fahrenheit.

d) The backflow preventer shall be manufactured by Febco Sales, Fresno, California or similar.

e) A vandal-resistant backflow enclosure shall be a Hot Box model, installed on a six (6") inch reinforced concrete pad if backflow is located outside.

4) IRRIGATION HEADS

a) The rotary Irrigation Heads shall be capable of full- and part-circle operation and be a gear-driven rotary type and have a 1" ACME female-threaded inlet.
b) The Irrigation Heads required shall be the high-flow model that includes a seven (7) nozzle tree capable of a 46' to 75' radius, depending on nozzle / PSI configuration.
c) Water distribution shall be via a single pressed-in nozzle, retained by the radius reduction screw and have a stainless-steel riser that elevates 5.75" above the body when in operation.
d) All the Irrigation Head nozzles shall be color-coded for easy identification of radius and flow performance capabilities.
e) A stainless-steel radius reduction screw shall be provided for fine-tuning the radius up to a 25% reduction.
f) The arc of the Irrigation Heads shall be top-adjustable wet or dry, and graphically illustrated to identify the arc setting.
g) The Irrigation Heads shall be adjustable from a minimum of 45 degrees to maximum of 335 degrees as a part circle, and a true uni-directional full circle at 360 degrees.
h) The Irrigation Heads shall incorporate SMART ARCTM, a memory arc feature that allows the nozzle base to be turned beyond the arc borders without damage to the Irrigation Heads and returns to the original arc setting once released.
i) The Irrigation Heads shall include a nozzle base clutch feature that enables the user to rotate the nozzle base in either direction (wet or dry) and hold in one position (during operation) for spot watering.
j) Rotation shall be accomplished by a water-lubricated planetary gear drive designed to provide a 3-minute, full circle rotation speed throughout the pressure and flow range.
k) The nozzle base cover shall incorporate a pull-up feature that provides serviceability of the nozzles and riser assembly.
l) The Irrigation Heads shall have a plastic filter screen in the riser to prevent entry of foreign material from clogging the nozzle.
m) All internal components shall be serviceable from the top of the Irrigation Heads without disturbing the body installation.
n) Irrigation Heads flush rate shall not exceed 5 GPM. The rubber cover shall be injection-molded from Santoprene thermoplastic elastomer.
o) The Irrigation Heads shall provide a check valve feature that prevents low head drainage, soil erosion and water waste while maintaining water in the piping system up to 5' (1,5m) of elevation difference.
p) The check valve shall be reversible allowing full pipe drainage if desired.
q) All Irrigation Heads shall be developed and manufactured by a Hunter, ISO 9001-certified facility.

5) QUICK COUPLER VALVES

a) The valve shall have a corrosion resistant stainless-steel spring and self-flushing brass plunger. There shall be a chevron-shaped wiper seal to reduce leakage around the key when inserted.
b) It shall also incorporate a drain hole in the body to minimize debris collection.
c) The quick coupler valve shall be located near home plate, on the infield on the baseball/softball

fields.

6) ELECTRIC CONTROL VALVES
   a) The electric control valve shall be a pressure-regulating model constructed of rust- and electrolysis-resistant glass- filled nylon (GFN).
   b) The valve shall have a minimum operating pressure of 20 PSI and a maximum operating pressure of 220 PSI, and a flow range of 5 to 300 gallons per minute (GPM), dependent on size.
   c) The valve's diaphragm and valve seat seal shall be made of nylon-reinforced EPDM.
   d) All valve parts shall be fully- serviceable from the top of the valve without the need of having to remove the valve from the line.
   e) The valve may be installed at any angle without affecting its operation.
   f) All fasteners and other internal components of the valve shall be made of stainless steel, brass, or plastic to ensure corrosion resistance.
   g) The valve shall have an internal manual downstream bleed to prevent flooding of the valve box, as well as an external bleed for system flushing.
   h) The valve shall have a removable self-cleaning, stainless-steel metering system.
   i) The valve shall have a manual flow control that is adjustable down to zero flow via a hand-operated, rising-type flow-control stem made from brass.
   j) The valve shall have a slow-closing design to prevent the occurrence of water hammer.
   k) For the 1" model, friction loss with an inlet flow of 40 GPM shall not exceed 10.75 PSI in a globe orientation or 9.46 PSI in an angle orientation.
   l) For the 1.5" model, friction loss at 100 GPM shall not exceed 17.20 PSI in a globe orientation or 14.6 PSI in an angle orientation.
   m) For the 2" model, friction loss at 150 GPM shall not exceed 11.61 PSI in a globe orientation or 9.37 PSI in an angle orientation.
   n) For 3" model, friction loss at 300 GPM shall not exceed 10.23 PSI in a globe orientation or 9.31 PSI in an angle orientation.
   o) The burst pressure safety rating shall be no less than 450 PSI.
   p) When operating at 220 PSI, the valve must open or close in less than one minute without water hammer.
   q) The valve shall have a fully encapsulated plastic solenoid that features a captured hex plunger and spring.
   r) The solenoid shall have a removable retainer for servicing of the spring and plunger.
   s) The solenoid operator shall be suitable for 24 VAC, 50/60 Hz service with inrush of .12 A @ 50/60 Hz and holding of .10 A @ 50/60 Hz.
   t) The Spike Guard solenoid shall be capable of withstanding lightning surges in excess of 20,000 volts in the common and normal modes without failure.
   u) The valve shall have a built-in, Schrader-type valve for attaching a pressure gauge to verify downstream pressure.
   v) The EZReg pressure regulator shall be a dial design to permit visual setting of pressure with or without the use of a pressure gauge.
   w) The regulator shall be of a screw-in design and shall regulate precisely over a 5-100 PSI range with a maximum inlet pressure of 220 PSI.
   x) The regulator shall maintain the set pressure within ± 3 PSI (when inlet pressure is no less than 10 PSI greater than desired outlet pressure).
   y) The pressure-regulating electric control valve shall be developed and manufactured by an ISO 9001-certified facility.
   z) The Irrigation Heads shall be developed and manufactured by Hunter.

7) <u>IRRIGATION CONTROLLER</u>
   a) The Smart controller shall be manufactured under the brand name of Hunter to be installed or wired in accordance with manufacturer's published instructions and applicable codes.
   b) The controller shall be electronically controlled and have independent watering programs for each field that can run concurrently with each station's watering time independently variable

from 1 minute to 10 hours in 1-minute increments.

c) Controller shall also have programmable watering calendar options of 7-day specific, odd/even date or day interval options of 1 to 30 days. Clock shall have 365-day calendar for true unattended odd/even date programming.
d) Controller shall have 16 total start times assignable to any program(s). Controller shall have a water budgeting feature that changes all stations within a program by a percentage from 10 to 200% in 10% increments without permanently altering the program.
e) Controller shall have a "Valve Test" terminal. Controller shall have a programmable "Rain Off" up to 7 days.
f) Programs shall be held in non-volatile memory throughout power failures of any duration. Controller shall have real-time battery (alkaline) backup capable of keeping accurate time during power failures up to 90 continuous days.
g) Controller shall have a self-diagnostic electronic circuit breaker with valve-short detection that identifies and overrides an electrical malfunction.
h) Programming shall be available in automatic, semi-automatic, single station timed manual and true manual operation.
i) All programming shall be accomplished by use of a simple programming dial and selection buttons with a large LCD for ease of programming.
j) Controller shall have start time stacking within each program, a pump start, programmable master valve and sensor hook up.
k) Controller shall have modular design/enclosed electronics and remote-control compatibility.
l) The controllers shall be enclosed in a weather-resistant plastic case with lock and key.
m) Transformer input shall be 120 V ac, 60Hz (220/240 V ac, 50Hz). Transformer output shall be 24 V ac, 1.67 amps. Electronic circuit breaker shall be 1.25 amps minimum holding. Maximum output per station shall be 24 V ac, .5 amp. Maximum operating output to all valves shall be 24 V ac, 1.25 amp (including master valve).
n) Controller shall have two-stage primary and secondary surge protection to resist damage from power surges and electrical storms.
o) The controller shall include the wireless Smart irrigation control system and installed in accordance with local/national electrical codes and manufacturer's published instructions.
p) The Smart Wireless Irrigation system shall provide cloud-based irrigation control via website and/or mobile application.
q) The irrigation system shall be connected via cord to the end user's internet router, and will wirelessly, via a 900 MHz bandwidth, communicate with a weather sensing monitor.
r) The website and mobile application shall include, but not be limited to, the remote abilities to manually turn irrigation stations on or off, to advance between stations, to turn off all watering, to manually start a station test sequence and to start an irrigation program.
s) The desired amount of manual station run time will be dependent upon which automatic controller listed above is used in the irrigation system.
t) In addition, the website and mobile app shall provide the ability to upload and save a unique name and or picture in place of the default image and name to each individual zone in the irrigation system.

8) <u>WEATHER SENSING</u>

a) The controller shall include a weather monitoring system that shall be manufactured under the Hunter brand name and installed with the irrigation controllers in accordance with manufacturer's instructions.
b) The system shall consist of a remote weather sensor/transmitter that wirelessly communicates weather information to a receiver module which is plugged into the irrigation controller.
c) The weather sensor shall have the capability of detecting the amount of rainfall, set by the user, which will initiate shutdown of irrigation.
d) The weather sensor shall also have a device for monitoring solar exposure and another for air temperature.
e) The weather sensor shall be able to transmit the data from each of the above devices to the receiver

module for processing.

f) The module shall input the processed information as commands to the irrigation controller.
g) System capabilities shall include, but not be limited to, irrigation system shut down because of rain (precipitation level set by user), irrigation system shut down because of cold weather (temperature level set by user) and adjusting the irrigation controller's water budget percentage to the weather data for appropriate running time lengths for each zone or station.
h) The receiver module shall allow the user to do, but not be limited to, the following: enter the postal zip code or latitude or longitude for the irrigation site, to select English or Spanish language support, to select the "dry out" time following system shut down because of rain, to select the cold weather shutoff temperature, to set the PIN number for reception from an optional remote device, to set a water restriction time, to establish communication with the weather sensor, to observe the outside air temperature, to observe the percentage of the hottest month's water budget currently in use, to observe the signal indicator and to bypass the weather sensor.
i) Setup for the system shall require the controller to be programmed for the hottest time of year for the location.
j) After establishment of communication between the module and the weather sensor, the weather sensor must be installed outside where it can receive full sun and unsheltered rain fall.
k) Wireless signal range shall be a maximum of 1,000 feet uninterrupted line of sight. Objects or interference may decrease range.
l) One weather sensor shall be capable of communicating with multiple receiver modules.
m) The receiver module shall be powered by the controller.
n) The weather sensor shall be battery powered. Battery shall be easily accessible for replacement.
o) The weather sensor shall be constructed of a polymer suitable for outdoor mount in full sun.
p) The irrigation weather monitor shall be developed, manufactured, qualified, and released in the USA by an ISO 9001-certified facility.
q) The sensor shall be manufactured by Hunter.

9) SOIL SENSOR
   a) The system shall include a wireless soil sensor that reduces water waste by continuously measuring moisture levels in the soil to help determine when to allow the controller to water, maximizing the system efficiency.
   b) The soil sensor requires no digging and communicates between the sensor probe and receiver wirelessly, with up to a 500' range (line of sight).
   c) The sensor will automatically detect soil type and adjust all calculations accordingly.
   d) The sensor shall provide freeze detection.
   e) Sensor receiver shall hook up to irrigation controller's sensor port (if available) or wired into the common wire.
   f) It shall have adjustable moisture threshold in 1% increments that allows the user to set the desired moisture level. Smart bypass overrides the sensor for a user-defined length of time (especially useful during system winterization)
   g) If the sensor is tripped while the irrigation controller is in the middle of a watering program, the optional "Cycle Delay" feature shall ensure all subsequent zones in the irrigation program have a chance to get watered before the sensor halts watering. Multi-color LED on the sensor probe shall indicate radio signal strength.
   h) The sensor probes shall have an ultra-slim 3/4" profile that allows it to avoid being damaged by mowing equipment. The extra-long stainless-steel electrodes shall measure over 4" down into the soil profile.
   i) Sensor probe's support stakes hold sensor firmly in place when installed.
   j) The sensor shall have easily replaceable batteries that last up to two years with alkaline batteries.

10) PIPE
   a) All mainline and lateral piping shall be poly vinyl chloride (PVC) pipe, having a minimum Working pressure rating of Class 200 (SDR 21).

b) PVC pipe shall be virgin, high impact, conforming to ASTM dimensions and tolerances.
c) Piping shall have integrated deep bell ends for solvent welding. PVC pipe shall be continuously and permanently marked with the manufacturer's name, material, size, and schedule or type.
d) The pipe shall be capable of withstanding a long-term pressure test (1000 hours) of 420 P.S.I. and a quick term burst test of 630 P.S.I. PVC pipe shall be manufactured by Certainteed, J-M, IPEX, or approved equal.

11) FITTINGS
a) Fittings shall be solvent weld for use with PVC pipe laterals and shall be Schedule 40 fittings produced from PVC Type 1, cell classification 12454 B.
b) Threaded elbows, tees, reducers, and pipe nipples for lateral valve assemblies shall be PVC Schedule 80 fittings, Type 1, Grade 1.
c) The fittings shall be listed by the National Safety Foundation for potable water services.
d) The fittings shall be listed by IAPMO for water service and gas yard piping in appropriate types and sizes. PVC fittings shall meet the following codes and specifications: ASTM D2464 Threaded Schedule 80 fittings, ASTM D2466 Schedule 40 socket type fittings, ASTM-D2647 Schedule 80 socket type fittings.

12) SWING JOINT ASSEMBLIES
a) All 1" swing joint assemblies for Irrigation Heads shall be pre-assembled units manufactured of PVC material.
b) The swing joint assembly shall be a “Standard” model and consist of a 12" long lay length nipple.
c) 1" swing joint assemblies for quick coupler valves in the field shall be pre-assembled units manufactured of PVC and brass materials.
d) The swing joint assembly shall consist of two 90-degree elbows, one 12" long riser with a 90-degree bend at one end, and a brass MPT nipple for connection to the valve.
e) Quick coupler swing joints shall incorporate a quick coupler “lock” and stabilizer attachment.
f) All connections shall consist of Buttress Threads and double "O" Rings providing leak free 360-degree adjustment.
g) Wall construction shall be Schedule 80+ with special emphasis at inside corners on change of direction fittings.
h) Swing joint assemblies shall be made from virgin PVC Type 1, Cell Classification 12454 B material listed for potable water conveyance by NFS. Working pressure shall be 200 psi combined static and surge.
i) All PVC swing joints shall be factory assembled as manufactured by Hunter.

13) ISOLATION VALVES
a) Mainline isolation gate valve shall be constructed with non-rising stem, solid wedge disc and screwed ends.
b) The Class 125 valve shall have screw-in bonnet with integral seat and renewable seat and disc. The valve shall be rated for 200 PSI non-shock cold water, oil, or gas.
c) The valve shall have a bronze wheeled handle and be model T-113 as manufactured by NIBCO, Inc.
d) Isolation valves for electric control valves shall be 2” True Union Slo-Close valves assembled with union nuts molded from CPVC material.
e) Valves shall have threaded ends connections with EPDM O-rings. The ball valve shall be manufactured by LASCO.

14) VALVE BOXES
a) Valve boxes shall be constructed of HDPE (high-Density Polyethylene) with heavy-duty wall sections and have a tensile strength of 2700-4400 PSI.

b) Boxes shall have T-lip lid design with secure snap fit and have the ability to be locked with a 3/8" hex head standard bolt with washer.
c) The rectangular valve box shall be "standard" having a 12" x 17" opening x 12" deep. The boxes shall allow for reverse stack for deeper installations or utilize extension boxes in 6" increments.
d) The round valve box for the quick coupling valves shall have a 7" opening x 9" deep. The valve boxes shall be manufactured by The Hunter Company.

15) WIRE
a) Solenoid control and common wiring shall be a single, solid copper conductor; UL listed type utilizing low density high molecular weight polyethylene insulation, suitable for direct burial applications for operation up to 600 volts and conductor temperatures up to 60ºC. Control and common wires shall be #14 AWG manufactured by Paige Electric spec P7079D.

16) WIRE SPLICES
a) Wire splicing kits for single wire connections shall be Direct Burial kits consisting of sealant which shall not set up hard allowing splices to be reworked without cutting wires.
b) Direct Burial kits shall have an application temperature range of 32 to 120 degrees Fahrenheit and service 600 VAC maximum.
c) DBR/Y kits shall allow connections of two to five #18 AWG, two #12 AWG or three #10 AWG solid or stranded copper wires.
d) Splicing kits shall be manufactured by 3M Electrical Products Division or King Connections.

17) BACKFLOW PREVENTER
a) Backflow preventer shall be subject to approval by the North Stonington BOE

SECTION 3 IRRIGATION INSTALLATION

1) INSTALLATION REQUIREMENTS
a) The word "piping" in these specifications means pipe, fittings, nipples, and valves, and shall be considered as such in this installation.
b) The arrangements, positions, and connection of piping, drains, valves, and the like indicated on the plan, shall be followed as closely as possible, but the right is reserved by the BOE to change locations and elevations to accommodate conditions which may arise during the progress of the Work prior to installation without additional compensation for such changes.
c) The responsibility for accurately laying out the Work and coordinating the installation with other trades rests with the CONTRACTOR.
d) Should it be found that any Work is laid out so that interference will occur, the CONTRACTOR shall report that to the BOE before commencing Work.

2) STAKING
a) The CONTRACTOR, Designer and BOE are to stake out all proposed pipe and wire routes, Irrigation Heads, valves, and controller locations in accordance with locations shown on the plan. All staking will be done prior to commencement of Work in any area of the installation.
b) The CONTRACTOR shall furnish all supplies, equipment, and personnel necessary for the staking of the Work.
c) The CONTRACTOR shall give a minimum of three (3) days' notice to the BOE of the day he wishes to stake a particular section of the Work and shall be responsible for arranging the staking with the Designer.

3) EXCAVATION & PIPE INSTALLATION
a) The CONTRACTOR shall do all excavating, vibratory plowing, backfilling, and compaction required for the proper installation of the Work according to standard acceptable industry practices.
b) Pipe routing shall be in accordance with the plan, however, the BOE shall have the right to change the route and/or depth of the pipe where rock or other obstacles may interfere with the

intended path.

c) The CONTRACTOR, with approval of the BOE, also may adjust the location of any pipeline and/or depth to avoid large rock or other obstacles, provided that the adjustment does not affect the performance of the system.
d) In no event shall such changes affect the cost of the Work except where those changes greatly alter the quantity of materials and/or labor.
e) The minimum trench width shall provide for a minimum space of 4" on each side of the piping. Trench widths shall be held close to these minimums to avoid excess earth loads on piping.
f) Mainline piping shall have a minimum cover of 20". Trenches shall be backfilled with rock-free soil completely surrounding the pipe.
g) Any trenches that are in extremely rock-filled soil, or if ledge is present, shall require the trench to be back-filled with a minimum of 4" of sand surrounding the pipe.
h) The BOE shall supply all sand required for backfilling.
i) Lateral piping shall have a cover of 16".
j) The use of a vibratory plow for pipe installation shall only be allowed as long as minimum cover is maintained and there is no evidence of damage to the pipe.
k) The CONTRACTOR must provide effective protection at all times to prevent sand, rubbish, or any other debris from entering the piping.
l) When Work is stopped at night, or at any other time, the ends of the piping must be closed and properly secured.
m) Sidewalks, cart paths and driveways shall be clear of project debris and equipment at all times and barricades and/or tape shall be installed around any trenches left open.
n) When backfilling, all backfill material shall be free from rock, large stone, or other unsuitable substances to prevent damage to piping and wiring.
o) Backfilling of trenches containing plastic pipe shall be done when the pipe is cool to avoid excessive contraction in cold weather. All backfill material will be compacted in 6" layers as it is brought up to finish grade so as to ensure that no settling results.
p) The CONTRACTOR shall be responsible for repairing all depressions or damage cause by their equipment as determined by the BOE.
q) Pipe shall be installed strictly in accordance with recommendations of the manufacturer, including leveling of trench bottoms, bedding of pipe, and securely thrusting any fittings to change direction of gasketed piping.

4) ROAD AND WALK CROSSINGS
   a) Any cutting or breaking of sidewalks, paths, and/or roads shall be performed by the CONTRACTOR with necessary re- paving as part of the Contract cost.
   b) Permission to cut or break sidewalks, cart paths, and/or roads shall be obtained from the BOE. Hydraulic driving or drilling under asphalt or concrete paving must be approved by the BOE.
   c) All piping under roads shall be installed in piping sleeves double the nominal pipe size. Joint restraints shall be used at any pipe bell connections that are within the sleeve.
   d) All wires under roads shall be installed in electrical conduit sized for the number of wires that are required to pass through.

5) THRUST BLOCKING
   a) Thrust block all PVC fittings and/or piping in accordance with the pipe manufacturer's recommendations.
   b) All thrust blocks shall be constructed of concrete as per PVC pipe manufacturer's recommendations.
   c) The area of the bearing surface of the thrust block shall meet the pipe manufacturer's specifications based on the fitting and soil involved.
   d) All thrust blocks must bear against undisturbed soil.
   e) Precast solid concrete blocks are acceptable for 2" and smaller PVC pipe provided bearing surface meets above requirements.
   f) Approved joint restraints may be accepted in lieu of blocks.

g) All materials required for thrust blocking shall be provided by the CONTRACTOR.

6) TRENCH SETTLEMENT
   a) During the Work period, it shall be the CONTRACTOR's responsibility to refill any trenches that may have settled due to incomplete compaction.
   b) If within one year from completion date, major settlement due to improper compaction occurs, and an adjustment in pipe, Irrigation Heads, topsoil and seed, or paving is necessary to bring the system to the proper level of the permanent grade, the CONTRACTOR, as part of the Work under this Contract, shall make said adjustments without extra cost to the BOE.
   c) It will not be the CONTRACTOR's responsibility to re-compact trenches that have been eroded by natural heavy rainfall.

7) ELECTRICAL & WIRE INSTALLATION
   a) The CONTRACTOR will be responsible to have connections made to the building electrical system as is required for the proper operation of the automatic control system. Sub-contracting for an electrician to perform any wiring required by local code, shall be the CONTRACTOR's responsibility.
   b) Wire shall be installed in the same trenches as piping wherever possible and laid on the side of the pipe.
   c) All wires shall be bundled or tied together every 8 to 10 feet with electrical tape or tie straps.
   d) Wire shall be installed with a minimum slack of 18 inches at all 90-degree bends and at all solenoid connections.
   e) All control circuitry passing through the wall of a building or beneath a road or cart path shall be installed in a suitable electrical conduit.
   f) The jointing of all underground wires shall be by the use of wire nuts covered with Scotchlok or DBR/Y waterproof connections per installation instructions provided by the manufacturer.
   g) Under no circumstances shall wire connections, outside of the controller, be made without the use of a waterproof connector.

8) VALVE BOX INSTALLATION
   a) Valve boxes shall be installed with adequate space for operation and service of equipment in the box. A minimum of 4" of pea stone or gravel shall be placed under each box for both drainage and leveling of the box. Gravel shall be furnished by the CONTRACTOR.
   b) All valve boxes shall be mounted flush to grade. Extensions shall be used as required for proper installation and setting.
   c) Valve boxes shall be installed so that position of box will allow full open and full close of shut-off valves.

9) IRRIGATION HEADS AND VALVE INSTALLATION
   a) Irrigation Heads shall be connected to piping by installation of pre-assembled PVC swing joint assemblies.
   b) The swing joint assemblies shall be factory pre-assembled and installed so that the assembly and Irrigation Heads are not directly over the piping or service tee.
   c) If backfill material contains rocks or stones, or is comprised of heavy clay, all swing joint assemblies and Irrigation Heads attached shall be completely backfilled with sand to within 3" of final grade.
   d) Manual shut-off valves for Irrigation Heads and electric valves shall be installed in the closed position and shall not be opened until main line piping has been pressurized and properly flushed through quick coupler valves or drains.
   e) Quick coupling valves shall be installed on pre-assembled PVC swing joint assemblies.

10) CLEANING THE PREMISES
   a) Clean up shall be performed as each portion of the Work progresses. Refuse, rubbish, and excess

soil shall be removed from the site.

b) Upon completion of the job, the CONTRACTOR shall clean up all debris caused by his Work and leave the job site in a neat and clean condition.
c) All sidewalks and paving shall be broomed or washed down.
d) All debris removed from the job will be taken away from the premises.

SECTION 4 PROJECT COMPLETION

1) TESTING THE SYSTEM
   a) Work included under this Contract includes all tests required under laws, rules, and regulations, and shall be made in accordance therewith.
   b) The entire system shall be tested at the normal system Working pressure and upon visual inspection of the ground, should any leaks be found, they shall be promptly repaired. The line shall then be retested until satisfactory.
   c) The BOE and other required authorities shall be notified at least 48 hours in advance of all tests and all tests shall be conducted to their satisfaction.
   d) All irrigation lines shall be tested at a maximum system pressure for a period of at least 24 hours, with no loss of pressure or detected water flow before final approval by the BOE has been given.

2) ADJUSTING AND BALANCING THE SYSTEM
   a) All areas of the irrigation system shall be inspected to ensure proper coverage and to ensure that proper Irrigation Heads location has been accomplished.
   b) If necessary, the CONTRACTOR shall adjust or change Irrigation Heads nozzles to correct any mislocated products.

3) AS-BUILT DRAWING
   a) During the installation, the CONTRACTOR shall maintain an updated as-built drawing of the system.
   b) The as-built is intended to provide an accurate record of the actual location of the installed system components.

   c) After completion of the entire installation, the CONTRACTOR shall furnish the as-built drawing showing all piping, wiring, Irrigation heads, valves, controllers, drains, etc., to scale with dimensions where required.
   d) All splices on 120/240-volt power, communication, and 24 volt common and control wiring shall be located on as-built plan with precise and detailed measurements indicated.

4) INSTRUCTIONS
   a) After completion and testing of the system, the CONTRACTOR and/or the equipment distributor will instruct the BOE in proper operation and maintenance of the system.
   b) The CONTRACTOR and/or the equipment distributor shall supply all manufacturer's BOE's Manuals and Service Manuals to the BOE.

5) SERVICE AND GUARANTEE
   a) The CONTRACTOR shall submit a single guarantee that all portions of the Work are in accordance with the Contract requirements and providing for maintenance of the system.
   b) The CONTRACTOR shall guarantee all Work against faulty and improper Workmanship for a period of one (1) year from date of final acceptance by the BOE, except where guarantees or warranties for longer terms are specified herein.
   c) The CONTRACTOR shall correct any deficiencies that occur during the guarantee period at no additional cost to the BOE, all to the satisfaction of the BOE. The CONTRACTOR shall obtain similar guarantees from Subcontractors.

6) WINTER BLOWOUT
   a) The CONTRACTOR shall provide service necessary to maintain the system for a period of one year from the date of final acceptance by the BOE.

b) This service shall include winterizing the system with compressed air and providing all Work and equipment necessary to properly start the system the following spring.

CONCLUSION

a) It has been our purpose in preparing these specifications to supplement the plans and to provide an Irrigation system that is complete in every detail.
b) It has not been our purpose in preparing these plans and specifications to make omissions and/or errors.
c) Such omissions and/or errors, in either the plans or specifications, shall be corrected when called to our attention.
d) Discrepancies of any sort shall not be taken advantage of, as harmony shall be preserved at all times so that construction can be pursued efficiently and rapidly in the letter and spirit of these specifications.
e) The true intent and meaning of the same is that all Work of every kind that may be necessary for the complete job be done. This is implied, although the same may not be specifically express.

TOWN OF NORTH STONINGTON, CONNECTICUT

Athletic Fields Irrigation and Pump System - Design and Installation at Wheeler High school
BID PROPOSAL FORM

Name: _____

Company: _____

Address: _____

Telephone Number: _____ Fax: _____

Email Address: _____

Bid $_____

List any and all non-compliance, exceptions or substitutions from the published specifications (use additional pages as required). Failure to list may result in bid disqualification.

Specifications as to proposed products are to be attached (use additional pages as required).

IN WITNESS WHEREOF, the undersigned has caused this Bid to be signed and delivered as of the date bids are opened by Owner.

Signature: _____ Title: _____ Date: _____

COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS
(Revised 09/17/07)

The contract to be awarded is subject to contract compliance requirements mandated by Sections 4a-60 and 4a-60a of the Connecticut General Statutes; and, when the awarding agency is the State, Sections 46a-71(d) and 46a-81i(d) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at Section 46a-68j-21 through 43 of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by Sections 4a-60 and 46a-71(d) of the Connecticut General Statutes.

According to Section 46a-68j-30(9) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to "aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials." "Minority business enterprise" is defined in Section 4a-60 of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: "(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of Section 32-9n." "Minority" groups are defined in Section 32-9n of the Connecticut General Statutes as "(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4)Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . ." An individual with a disability is also a minority business enterprise as provided by Section 4a-60g of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of Section 46a-68j-21(11) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder's qualifications under the contract compliance requirements:

(a) the bidder's success in implementing an affirmative action plan;
(b) the bidder's success in developing an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17 of the Administrative Regulations of Connecticut State Agencies, inclusive;
(c) the bidder's promise to develop and implement a successful affirmative action plan;
(d) the bidder's submission of employment statistics contained in the "Employment Information Form", indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
(e) the bidder's promise to set aside a portion of the contract for legitimate minority business enterprises. See Section 46a-68j-30(10)(E) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following BIDDER CONTRACT COMPLIANCE MONITORING REPORT must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to Sections 4a-60 and 4a-60a CONN. GEN. STAT., and Sections 46a-68j-23 of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder's good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) Definition of Small Contractor

Section 4a-60g CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding ten million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision 4a-60g CONN. GEN. STAT.

2) Description of Job Categories (as used in Part IV Bidder Employment Information) (Page 2)

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category..

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

White (not of Hispanic Origin)- All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East. Black(not of Hispanic Origin)- All persons having origins in any of the Black racial groups of Africa. Hispanic- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.	Asian or Pacific Islander- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa. American Indian or Alaskan Native- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.

BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART I - Bidder Information

Company Name Street Address City & State Chief Executive	Bidder Federal Employer Identification Number_____ Or Social Security Number_____
Major Business Activity (brief description)	Bidder Identification (response optional/definitions on page 1) -Bidder is a small contractor. Yes__ No__ -Bidder is a minority business enterprise Yes__ No__ (If yes, check ownership category) Black___ Hispanic___ Asian American___ American Indian/Alaskan Native___ Iberian Peninsula___ Individual(s) with a Physical Disability___ Female___ - Bidder is certified as above by State of CT Yes__ No__
Bidder Parent Company (If any)	
Other Locations in Ct. (If any)	

PART II - Bidder Nondiscrimination Policies and Procedures

1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes__ No__	7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes__ No__
2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes__ No__	8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes__ No__
3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes__ No__	9. Does your company have a mandatory retirement age for all employees? Yes__ No__
4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes__ No__	10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes__ No__ NA__
5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes__ No__	11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes__ No__ NA__
6. Does your company have a collective bargaining agreement with workers? Yes__ No__ 6a. If yes, do the collective bargaining agreements contain non-discrim ination clauses covering all workers? Yes__ No__ 6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of Ct? Yes__ No__	12. Does your company have a written affirmative action Plan? Yes__ No__ If no, please explain. 13. Is there a person in your company who is responsible for equal employment opportunity? Yes__ No__ If yes, give name and phone number. _____ _____

Part III - Bidder Subcontracting Practices (Page 4)

1. Will the work of this contract include subcontractors or suppliers? Yes__ No__

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? Yes__ No__

PART IV - Bidder Employment Information Date:

JOB CATEGORY *	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	male	female
Management											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

PART V - Bidder Hiring and Recruitment Practices (Page 5)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service					Work Experience	
Private Employment Agencies					Ability to Speak or Write English	
Schools and Colleges					Written Tests	
Newspaper Advertisement					High School Diploma	
Walk Ins					College Degree	
Present Employees					Union Membership	
Labor Organizations					Personal Recommendation	
Minority/Community Organizations					Height or Weight	
Others (please identify)					Car Ownership	
					Arrest Record	
					Wage Garnishments	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
08	Hunter I-40-06-SS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, Standard Nozzle.	140	40	7.6	44'	
08	Hunter I-40-06-SS-HS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, High Speed Nozzle.	18	40	7.6	41'	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Hunter ICV-G-DC 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves. Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. With DC Latching Solenoid Factory Installed Option.	41	
	Hunter HQ-5RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1in. NPT inlet, 1-piece body.	5	
PC1	Water Meter 2"	1	
	Irrigation Lateral Line: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger. Only lateral transition pipe sizes 1" and above are indicated on the plan, with all others being 3/4" in size.	7,417 l.f.	
	Irrigation Mainline: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger.	2,726 l.f.	

Valve Callout

CRITICAL ANALYSIS

Generated:	2024-07-15 12:52
P.O.C. NUMBER: 01	
Water Source Information:	
FLOW AVAILABLE	
Water Meter Size:	2"
Flow Available	38.07 GPM
PRESSURE AVAILABLE	
Static Pressure at POC:	72 PSI
Elevation Change:	0.00 ft
Service Line Size:	2"
Length of Service Line:	5 ft
Pressure Available:	72 PSI
DESIGN ANALYSIS	
Maximum Station Flow:	38 GPM
Flow Available at POC:	38.07 GPM
Residual Flow Available:	0.07 GPM
Design Pressure:	40 PSI
Friction Loss:	4.17 PSI
Fittings Loss:	0.42 PSI
Elevation Loss:	0 PSI
Loss through Valve:	17.8 PSI
Pressure Req. at Critical Station:	62.4 PSI
Loss for Fittings:	0.64 PSI
Loss for Main Line:	6.44 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	0 PSI
Loss for Water Meter:	1.18 PSI
Critical Station Pressure at POC:	70.7 PSI
Pressure Available:	72 PSI
Residual Pressure Available:	1.35 PSI

0 50 100 150 feet

1" = 50'

WHEELER SCHOOL IRRIGATION LAYOUT

STAMP

CONSULTANT

SHEET TITLE

OVERALL LANDSCAPE IRRIGATION PLAN

PROJECT NAME

WHEELER SCHOOL
NORTH STONINGTON CT

IRRIGATION LAYOUT

PROJECT ADDRESS

297 NORWHICH-WESTERLY ROAD
NORTH STONINGTON CT 06359

SUBMITTAL	DATE
SCHEMATIC IRRIGATION	2024.07.15

NO.	REVISIONS	DATE

DRAWN BY:	CHECKED BY:
JR	
DATE ISSUED:	SCALE:
07/15/2024	1"=50'

PROJ. NO. A1063

SHEET NO. LI1.0

IRRIGATION LAYOUT 2024.07.15

OVERALL LANDSCAPE IRRIGATION PLAN

IRRIGATION SCHEDULE BASEBALL

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
08	Hunter I-40-06-SS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, Standard Nozzle.	48	40	7.6	44'	
08	Hunter I-40-06-SS-HS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, High Speed Nozzle.	10	40	7.6	41'	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Hunter ICV-G-DC 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. With DC Latching Solenoid Factory Installed Option.	15	
	Hunter HQ-5RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1in. NPT inlet, 1-piece body.	2	
	Irrigation Lateral Line: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger. Only lateral transition pipe sizes 1" and above are indicated on the plan, with all others being 3/4" in size.	2,675 l.f.	
	Irrigation Mainline: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger.	1,214 l.f.	

Valve Callout
Valve Number
Valve Flow
#" Valve Size

NORTH

0 20 40 60 feet
1" = 20'

WHEELER SCHOOL IRRIGATION LAYOUT

STAMP

CONSULTANT

SHEET TITLE

BASEBALL ATHLETIC IRRIGATION PLAN

PROJECT NAME

WHEELER SCHOOL
NORTH STONINGTON CT

IRRIGATION LAYOUT

PROJECT ADDRESS

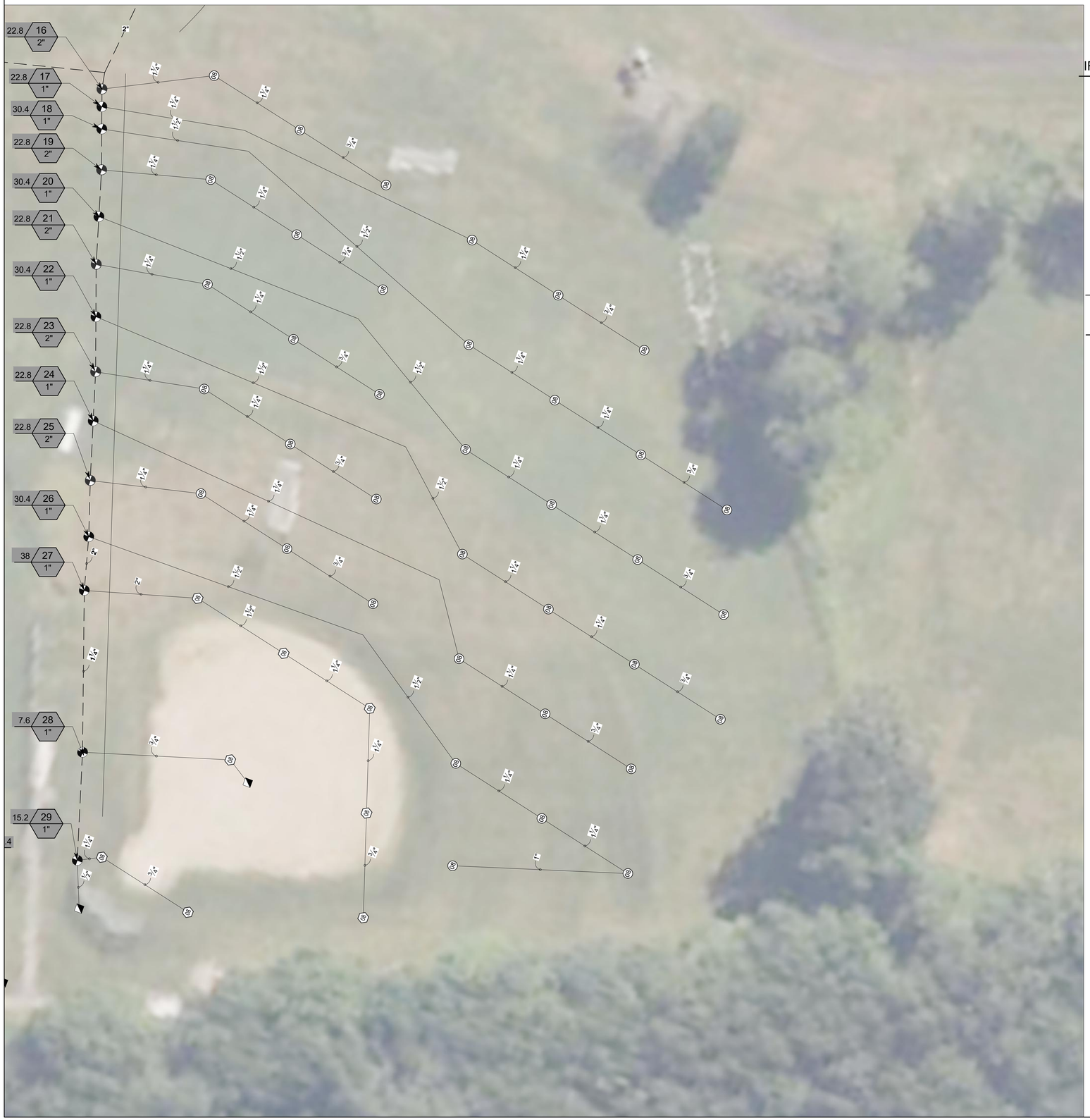
297 NORWHICH-WESTERLY ROAD
NORTH STONINGTON CT 06359

SUBMITTAL	DATE
SCHEMATIC IRRIGATION	2024.07.15

NO.	REVISIONS	DATE

DRAWN BY:	CHECKED BY:
JR	
DATE ISSUED:	SCALE: 1"=20'
PROJ. NO.	A1063
SHEET NO.	LI1.1

IRRIGATION LAYOUT 2024.07.15



IRRIGATION SCHEDULE SOFTBALL

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
08	Hunter I-40-06-SS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, Standard Nozzle.	37	40	7.6	44'	
08	Hunter I-40-06-SS-HS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, High Speed Nozzle.	8	40	7.6	41'	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Hunter ICV-G-DC 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. With DC Latching Solenoid Factory Installed Option.	14	
	Hunter HQ-5RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1in. NPT inlet, 1-piece body.	2	
	Irrigation Lateral Line: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger. Only lateral transition pipe sizes 1" and above are indicated on the plan, with all others being 3/4" in size.	2,706 l.f.	
	Irrigation Mainline: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger.	312.8 l.f.	

Valve Callout
Valve Number
Valve Flow
#" Valve Size

NORTH

0 20 40 60 feet
1" = 20'

WHEELER SCHOOL IRRIGATION LAYOUT

STAMP

CONSULTANT

SHEET TITLE
SOFTBALL ATHLETIC IRRIGATION PLAN

PROJECT NAME
WHEELER SCHOOL
NORTH STONINGTON CT

IRRIGATION LAYOUT

PROJECT ADDRESS
297 NORWHICH-WESTERLY ROAD
NORTH STONINGTON CT 06359

SUBMITTAL	DATE
SCHEMATIC IRRIGATION	2024.07.15

NO.	REVISIONS	DATE

DRAWN BY:	CHECKED BY:
JR	
DATE ISSUED:	SCALE:
	1"=20'
PROJ. NO.	
A1063	
SHEET NO.	
LI1.2	

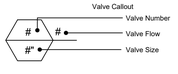
IRRIGATION LAYOUT 2024.07.15

IRRIGATION SCHEDULE TRACK

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
08	Hunter I-40-06-SS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, Standard Nozzle.	55	40	7.6	44'	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Hunter ICV-G-DC 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. With DC Latching Solenoid Factory Installed Option.	12	
	Hunter HQ-5RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1in. NPT inlet, 1-piece body.	1	
	Irrigation Lateral Line: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger. Only lateral transition pipe sizes 1" and above are indicated on the plan, with all others being 3/4" in size.	2,036 l.f.	
	Irrigation Mainline: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger.	572.9 l.f.	

Valve Callout



NORTH

0 20 40 60 feet

1" = 20'

WHEELER SCHOOL IRRIGATION LAYOUT

STAMP

CONSULTANT

SHEET TITLE

TRACK ATHLETIC
IRRIGATION PLAN

PROJECT NAME

WHEELER SCHOOL
NORTH STONINGTON CT

IRRIGATION LAYOUT

PROJECT ADDRESS

297 NORWHICH-WESTERLY ROAD
NORTH STONINGTON CT 06359

SUBMITTAL	DATE
SCHEMATIC IRRIGATION	2024.07.15

NO.	REVISIONS	DATE

DRAWN BY:	CHECKED BY:
JR	
DATE ISSUED:	SCALE:
	1"=20'

PROJ. NO.
A1063

SHEET NO.
LI1.3

IRRIGATION LAYOUT 2024.07.15

TRACK ATHLETIC IRRIGATION PLAN

IRRIGATION SCHEDULE BASEBALL

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
08	Hunter I-40-06-SS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, Standard Nozzle.	48	40	7.6	44'	
08	Hunter I-40-06-SS-HS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, High Speed Nozzle.	10	40	7.6	41'	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Hunter ICV-G-DC 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. With DC Latching Solenoid Factory Installed Option.	15	
	Hunter HQ-5RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1in. NPT inlet, 1-piece body.	2	
	Irrigation Lateral Line: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger. Only lateral transition pipe sizes 1" and above are indicated on the plan, with all others being 3/4" in size.	2,675 l.f.	
	Irrigation Mainline: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger.	1,214 l.f.	

Valve Callout
Valve Number
Valve Flow
#" Valve Size

NORTH

0 20 40 60 feet
1" = 20'

WHEELER SCHOOL IRRIGATION LAYOUT

STAMP

CONSULTANT

SHEET TITLE

BASEBALL ATHLETIC IRRIGATION PLAN

PROJECT NAME

WHEELER SCHOOL
NORTH STONINGTON CT

IRRIGATION LAYOUT

PROJECT ADDRESS

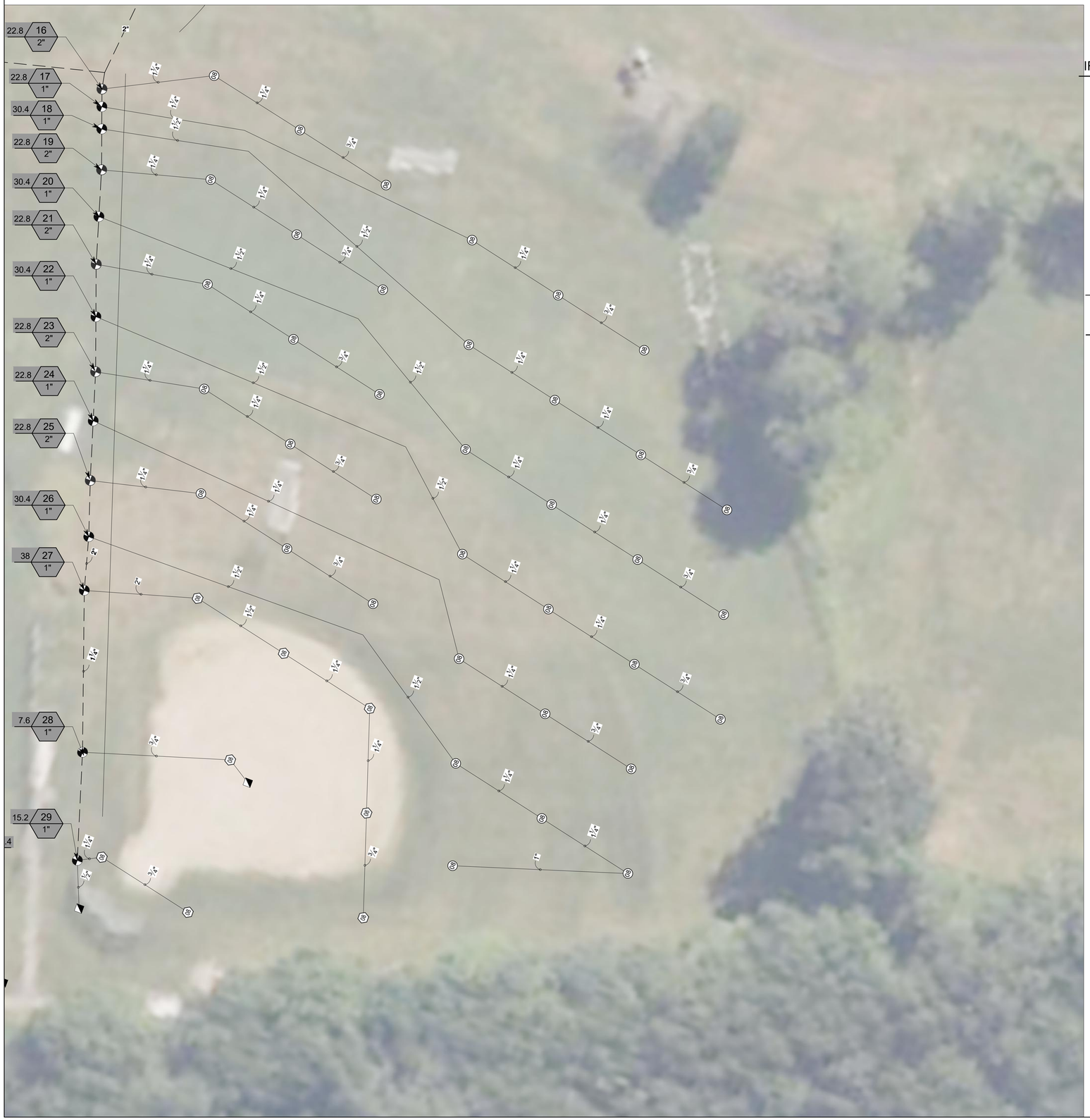
297 NORWHICH-WESTERLY ROAD
NORTH STONINGTON CT 06359

SUBMITTAL	DATE
SCHEMATIC IRRIGATION	2024.07.15

NO.	REVISIONS	DATE

DRAWN BY:	CHECKED BY:
JR	
DATE ISSUED:	SCALE: 1"=20'
PROJ. NO.	A1063
SHEET NO.	LI1.1

IRRIGATION LAYOUT 2024.07.15



IRRIGATION SCHEDULE SOFTBALL

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI	GPM	RADIUS	DETAIL
08	Hunter I-40-06-SS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, Standard Nozzle.	37	40	7.6	44'	
08	Hunter I-40-06-SS-HS 08 Turf Rotor, 6in. Pop-Up. Adjustable to Full Circle. Drain Check Valve, Stainless Steel Riser, 1in. Female NPT Inlet Threads, High Speed Nozzle.	8	40	7.6	41'	

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	DETAIL
	Hunter ICV-G-DC 1in., 1-1/2in., 2in., and 3in. Plastic Electric Remote Control Valves, Globe Configuration, with NPT Threaded Inlet/Outlet, for Commercial/Municipal Use. With DC Latching Solenoid Factory Installed Option.	14	
	Hunter HQ-5RC Quick coupler valve, yellow rubber cover, red brass and stainless steel, with 1in. NPT inlet, 1-piece body.	2	
	Irrigation Lateral Line: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger. Only lateral transition pipe sizes 1" and above are indicated on the plan, with all others being 3/4" in size.	2,706 l.f.	
	Irrigation Mainline: Blu-Lock and PVC Class 200 Blu-Lock pipe, as manufactured by Hydro Rain, 1/2" to 1", then PVC Class 200 for 1-1/4" and larger.	312.8 l.f.	

Valve Callout
Valve Number
Valve Flow
#" Valve Size

NORTH

0 20 40 60 feet
1" = 20'

WHEELER SCHOOL IRRIGATION LAYOUT

STAMP

CONSULTANT

SHEET TITLE
SOFTBALL ATHLETIC IRRIGATION PLAN

PROJECT NAME
WHEELER SCHOOL
NORTH STONINGTON CT

IRRIGATION LAYOUT

PROJECT ADDRESS
297 NORWHICH-WESTERLY ROAD
NORTH STONINGTON CT 06359

SUBMITTAL	DATE
SCHEMATIC IRRIGATION	2024.07.15

NO.	REVISIONS	DATE

DRAWN BY:	CHECKED BY:
JR	
DATE ISSUED:	SCALE:
	1"=20'
PROJ. NO.	
A1063	
SHEET NO.	
LI1.2	

IRRIGATION LAYOUT 2024.07.15

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 25-2715

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: Project Town: North Stonington
State#: FAP#:
Project: Wheeler High/Middle School: Town Building and Athletic Field Improvements

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	48.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	43.14	34.74
2) Carpenters, Piledrivermen	39.54	28.68
2a) Diver Tenders	39.54	28.68
3) Divers	48.0	28.68
03a) Millwrights	43.25	29.13
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	57.85	25.95
4a) Painters: Brush and Roller	38.07	25.80
4b) Painters: Spray Only	41.07	25.80

As of: April 28, 2025

4c) Painters: Steel Only	40.07	25.80
4d) Painters: Blast and Spray	41.07	25.80
4e) Painters: Tanks, Tower and Swing	40.07	25.80
4f) Elevated Tanks (60 feet and above)	47.07	25.80
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	45.75	33.97+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	41.27 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	49.58	35.25
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	35.7	28.85
8) Group 1a: Acetylene Burners (Hours worked with a torch)	36.7	28.85
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	35.95	28.85
10) Group 3: Pipelayers	36.2	28.85
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	36.2	28.85

As of: April 28, 2025

12) Group 5: Toxic waste removal (non-mechanical systems)	37.7	28.85
13) Group 6: Blasters	37.45	28.85
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	38.7	28.85
Group 8: Traffic control signalmen	21.42	28.85
Group 9: Hydraulic Drills	36.45	28.85
Group 10: Toxic Waste Removers A or B With PPE	38.7	28.85
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	37.93	28.85 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	36.96	28.85 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	36.96	28.85 + a
15) Form Erectors	37.29	28.85 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	36.96	28.85 + a

17) Laborers Topside, Cage Tenders, Bellman	36.85	28.85 + a
18) Miners	37.93	28.85 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: -----		
18a) Blaster	44.42	28.85 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	44.22	28.85 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	42.24	28.85 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	45.01	28.85 + a
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	33.16	32.36 + a
Three Axle Trucks; Two Axle Ready Mix	33.27	32.36 + a
Three Axle Ready Mix	33.33	32.36 + a
Four Axle Trucks	33.39	32.36 + a
Four Axle Ready-Mix	33.44	32.36 + a
Heavy Duty Trailer (40 tons and over)	35.66	32.36 + a

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	33.44	32.36 + a
Heavy Duty Trailer (up to 40 tons)	34.39	32.36 + a
Snorkle Truck	33.54	32.36 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)	58.19	29.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	53.33	29.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	57.78	29.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	56.79	29.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer).	52.92	29.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	51.92	29.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).	51.42	29.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)	50.63	29.80 + a

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	50.63	29.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	50.22	29.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	49.77	29.80 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	49.25	29.80 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	48.67	29.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	45.96	29.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	45.96	29.80 + a
Group 12: Wellpoint Operator.	45.87	29.80 + a
Group 13: Compressor Battery Operator.	45.12	29.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	43.6	29.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	43.06	29.80 + a
Group 16: Maintenance Engineer.	42.2	29.80 + a

As of: April 28, 2025

Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	47.91	29.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	44.7	29.80 + a
Surveyor: Chief of Party	48.16	29.80 + a
Surveyor: Assistant Chief of Party	44.41	29.80 + a
Surveyor: Instrument Man	42.73	29.80 + a
Surveyor: Rodman or Chairman	36.78	29.80 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	48.84	18.07
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

As of: April 28, 2025

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.1	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

Welders: Rate for craft to which welding is incidental.

Surveyors: Hazardous material removal: $3.00 per hour premium.

*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.

**Note: Hazardous waste premium $3.00 per hour over classified rate

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

As of: April 28, 2025

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: April 28, 2025