

**Plymouth Public Schools  
27 North Harwinton Avenue  
Terryville, CT 06786**

**Request for Proposal (RFP)**

**for**

**INSTALLATION OF IRRIGATION SYSTEMS FOR ATHLETIC FIELDS LOCATED  
AT TERRYVILLE HIGH SCHOOL**

**Bid# 2324-001**

**Terryville High School**

**Mandatory Bidder's Meeting and Walk-through  
Terryville High School Auditorium  
Thursday, March 14, 2024  
10:00 AM**

**Bid Opening  
Thursday, March 28, 2024  
1:00 PM  
Business Office**

**Plymouth Public Schools Contact:**

**Jim Mazon, Facilities Director  
203-695-8469 – [mazonj@plymouth.k12.ct.us](mailto:mazonj@plymouth.k12.ct.us)**

**Matthew Tencza, Business Manager  
860-314-2768 – [tenczam@plymouth.k12.ct.us](mailto:tenczam@plymouth.k12.ct.us)**

# GENERAL SPECIFICATIONS For ATHLETIC FIELDS

## 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 MODELS 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.

Proposals shall be based on the following: Site one Plans and General Specifications.

### 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: Plymouth Public Schools

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 construction of an automatic irrigation system as further defined in the plans and specifications.

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

2.3 Unless otherwise specified, the plans 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.

2.4 These specifications and the accompanying plans 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 or called for on the drawings 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 the Plymouth Public Schools

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

3.3 All pipe 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 himself with the conditions there relating to construction and labor and should fully inform himself as to the facilities involved, and the difficulties and restrictions attending the performance of the contract. The bidder should thoroughly examine and familiarize himself with drawings, 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 himself 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 have had five (5) years commercial experience in athletic fields and golf courses and demonstrated ability in the installation of sprinkler 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 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 on a daily basis.

5.4 As soon as the Contractor starts work on the job, the Contractor is to establish a daily log of activities. 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 nature hereinabove 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 subparagraph be construed to impose any obligations upon the Owner to either the Contractor or his surety.

5.5 The Contractor shall coordinate his work with the other trades and in particular, the Plymouth Public School's maintenance operation.

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

5.7 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.

5.8 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.

## **Article 6: INSURANCE**

6.1 The Contractor shall not commence work under his contract until he has 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 so 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 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.

Plymouth Public Schools 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 Plymouth Public Schools 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 Town 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 Plymouth Public Schools 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 Town of Terryville.

7.3 The Contractor shall comply with all federal, state, and local laws regarding conditions 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 with regard to errors or conflicts shall be done so at his own risk unless he has received written prior approval from the Owner.

9.3 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.

11.4 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 specifications.

# MATERIAL SPECIFICATIONS For ATHLETIC FIELDS

## **Article 1: SUBSTITUTION OF MATERIALS**

1.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

1.2 The purpose of this specification is to secure for the Plymouth Public Schools that item best suited for this project. Bids shall be carefully evaluated to conformance with stated specifications. Bids shall be accepted, when requested, for comparable models and/or types, if the vendor supplies adequate documentation as to its comparability. The Plymouth Public Schools encourages "or equal" proposals. Substitutions shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment, or other portions of the work shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Owner's decision of approval or disapproval of a proposed substitution shall be final.

1.3 If the Owner approves a proposed substitution prior to receipt of bids, such approval shall be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

1.4 No substitutions shall be considered after the contract award unless specifically provided in the contract documents.

1.5 All material installed in the job site shall be new and of the best quality.

1.6 The manufacturer's recommendations shall be followed for the installation of all equipment.

## **Article 2: PIPING**

2.1 All main line piping (pipe under continuous pressure) shall be DR-11 IPS HDPE polyethylene pipe. All plastic pipes shall be new and be continuously and permanently marked with the manufacturer's name, materials size, and type.

2.2 All lateral pipe (on the discharge side of the automatic valves) shall be DR-11 polyethylene pipe. Sizes shall be as shown in the drawings.

### **Article 3: PIPE FITTINGS**

- 3.1 Fittings shall be HDPE Electrofusion and/or Butt fused fittings.
- 3.2 Main line fittings and service tees over two and a half (2 ½) inches shall be Electrofusion as manufactured by Harco.
- 3.3 HDPE lateral pipe fittings shall be Tap. Fittings shall be manufactured by Lasco or equal.
- 3.4 Pipe joint compounds:
- |                    |   |  |
|--------------------|---|--|
| Steel to steel     | - | Teflon tape, Rectorseal #5 or approved equal |
| Steel to malleable | - | Teflon tape, Rectorseal #5 or approved equal |
| Steel to brass     | - | Teflon tape, Rectorseal #5 or approved equal |
| Steel to PVC       | - | Rectorseal #5 or approved equal              |
| PVC to PVC         | - | Rectorseal #5 or approved equal              |

Note: Teflon tape or Teflon type products shall not be used with PVC-to-PVC threaded joints. Excess compound shall be removed and in no case shall tape or compound be allowed to enter the pipe or fittings.

### **Article 4: MANUAL VALVES AND QUICK- COUPLING VALVES**

- 4.1 The manual ball valve shall be of cast bronze, machined brass, and stainless-steel construction for strength and corrosion resistance. The valve shall incorporate a chromium plated ball and reinforced TFE seats and stuffing box ring.
- Valve inlet and outlet shall be one (1) inch NPT. The valve shall operate in a low range of fifty (50) to seventy-five (75) GPM. The manual ball valve shall be an Apollo model 70-107.
- 4.2 The quick coupling valve shall be a one (1) piece type utilizing an HK-44. The valve body/housing, lid, and coupler key shall be made of cast bronze. The seat disc plunger shall be spring-loaded to maintain the valve in a closed position at zero (0) inlet pressure. The coupler seal shall be removable from the top while the valve is under pressure. The valve shall have a three-quarter inch (.75") inlet and be capable of 20 gpm flow a 7.2 psi maximum pressure loss. The valve shall be opened and closed by a single lug coupler key having a three-quarter inch (.75") NPT outlet thread, and a half-inch (.5") FNPT outlet thread. The valve shall be equipped with a bronze lid. The valve shall be a Hunter model HK-44 or approved equal.
- 4.3 The system shall be drained by purging with compressed air; therefore, no drain valves need be installed.



## **Article 5: VALVE BOXES**

5.1 Valve boxes shall be placed over all main line isolation valves and shall be the adjustable telescoping type, where depth of the trench dictates; otherwise, top section only shall be used. The box shall be Carson or as equal.

5.2 Remote control irrigation valves shall be housed in individual twelve (12) inch valve boxes, Rain Bird standard twelve (12) inch box with snap-in cover.

5.3 Boxes located "out of play" shall be installed flush to grade; extensions shall be used as required. Boxes mounted in "play" areas shall be covered with a minimum of six (6) inches of topsoil with a four (4) inch sleeve and plug over the ball valve.

5.4 The Contractor shall drill necessary holes in the valve box lids to accommodate four (4) inch sleeves.

## **Article 6: WIRE**

6.1 Valve control wire shall be double conductor solid copper conductor, U.L. listed, direct burial irrigation wire. Control wire shall be no smaller than #14.

6.2 All splices for valve wiring shall be made in controller enclosures, valve boxes, or a separate splice box. Field splices shall not be allowed without specific approval of the Designer (such splices shall be accurately measured on the "as built" drawing). All splices shall be soldered and sealed with Scotchloc Sealing Packs, #3570, with wire nuts or other approved epoxy-style connectors.

## **Article 7: IRRIGATION CONTROLLER**

7.1 The irrigation controller shall be Hunter ACC2-D or equal with Hunter ICR remote. Program features shall include the following.

### Features

- Number of stations: Up to 75 (metal enclosure) or 38 (plastic enclosure)
- Type: Modular
- Enclosures: Outdoor plastic, metal, stainless steel, and plastic pedestal (120/230 VAC)
- Independent programs: 4
- Start times: 8 per program
- Max station run time: 12 hours
- Simultaneous program operation: 2
- Warranty period: 5 years

#### Electrical Specifications

- Transformer input: 120/230 VAC
- Transformer output: 1.4 A
- Current draw: 120 VAC, Standby 0.13 A (3.9W), Max 0.35 A, (19.85 W)
- Current draw: 230 VAC, Standby 0.12 A (5.56W), Max 0.22 A (23.5 W)
- Station output: Up to 0.56 A
- P/MV output: Up to 0.56 A
- Sensor inputs: 1 (Clik or Solar Sync)

#### Approvals

- UL, cUL, FCC, RCM
- Enclosure rating: NEMA 3R, IP44 - Plastic Pedestal, IP-24

### **Article 8: ELECTRIC VALVES**

8.1 The remote-control electric valves shall be globe type, normally closed, electric solenoid-actuated and diaphragm-operated. The valves shall use the reverse flow principle, equally pressurizing on the top and the bottom of the diaphragm when not activated. All functional internal parts shall be of stainless-steel construction. The valve shall incorporate an internal bleed for manual actuation and a cross handle shall allow for flow control. The diaphragm assembly shall have multiple self-flushing ports. The solenoid shall be epoxy impregnated sixty (60) Hz, eighteen (18) to thirty (30) VAC and shall be serviceable for routine maintenance without removal from the line. The valve shall be a Hunter ICV-FS or equal as indicated on the system design drawing.

### **Article 9: SPRINKLER EQUIPMENT**

9.1 All sprinklers shall be located as shown on the plan or as directed by the Owner's representative.

9.2 The large rotary sprinkler shall be Hunter I-25 S.S. or equal with a radius of forty-three (43') feet to seventy-one (71') feet at seventy (70) psi.

9.3 The small rotary sprinkler shall be Hunter I-20 S.S. or equal with a radius of thirty-two (32') feet to forty-five (45') feet at 60 PSI.

9.4 The sprinkler shall be equipped with a drain check valve to prevent low head drainage and be capable of checking up to fifteen (15) feet in elevation change. The sprinkler shall have the capability, should conditions dictate, to operate when installed one-half (.5") inches below grade.

9.5 The sprinkler shall be serviceable after installation in the field by unscrewing the body cap and removing the riser assembly, check valve and inlet filter screen.

9.6 The body of the sprinkler shall be constructed of non-corrosive, heavy duty A.B.S. with a stainless steel. The sprinkler shall carry a five (5) year, over-the-counter exchange warranty, not prorated.

#### **Article 10: SPRINKLER CONNECTION TO MAIN**

10.1 The sprinkler head or quick-coupling valve shall be connected to the lateral pipe by installing a three-elbow swing joint, manufactured by Spears Manufacturing or equal.

#### **Article 11: DBY WIRE SPLICING KITS**

11.1 Wire splicing kits shall be direct burial splice kits.

11.2 DBY shall be manufactured by 3M.

#### **Article 12: WIRE NUTS**

12.1 Wire nuts shall have "live" spring action and shall be able to splice all common combinations of solid and stranded wire from eighteen (18) through eight (8) AWG. The spring shall be encased in a steel shell with an outer jacket of color-coded vinyl plastic insulation. Wire nuts shall be U.L. listed and C.S.A. certified.

12.2 Wire nuts shall be manufactured by 3M, Electrical Products Division, St. Paul, Minnesota or equal.

#### **Article 13: ELECTRICAL TAPE**

13.1 Electrical tape shall be non-corrosive, water, and oil resistant, and eight (8) ml. thick. The tape shall be suitable for use between thirty-two (32) and 176 degrees Fahrenheit. The tape shall be U.L. listed and approved.

# **INSTALLATION SPECIFICATIONS**

## **For**

### **ATHLETIC FIELDS**

#### **Article 1: STAKING OUT**

1.1 The Contractor shall stake out all proposed piping and wiring routes, and sprinkler, valve, and controller in accordance with the locations shown on the drawing. The Owner's representative and/or Designer shall approve such staking prior to the installation operation. Minor changes in location shall be made at this time. Stakes shall be furnished by the Contractor.

#### **Article 2: EXCAVATING, PIPE AND WIRE LAYING, AND BACKFILLING**

2.1 The Contractor shall do all excavating, vibratory plowing, and backfilling required for the proper installation of the work.

2.2 Pipe shall be installed strictly in accordance with the recommendations of the manufacturer, including bedding of pipe in the bottom trench and securely thrusting any fittings to change the direction of the pipe. Thrust blocks shall be poured so as not to interfere with any pipe joint or connection. Concrete for the thrust blocks shall be furnished by the Contractor.

2.3 The minimum depth of cover of the pipe and wire shall be as follows:

- a. Main line piping: minimum twenty (20) inches.
- b. Zone piping (downstream of automatic control valves): twelve (12) inches.
- c. Wire in main line pipe trench shall be at the depth of the pipe.
- d. Wire in separate trench from pipe: twenty-four (24) volt wire, twelve (12) inches.
- e. Wire under roads and through culverts shall be installed in 1 1/2-inch conduit. Conduit shall extend five (5) feet beyond road or culvert and shall be plugged with duct seal or approved equal.

2.4 Wire shall be installed in the same trench as the pipe wherever possible. All wire shall be installed with at least one percent (1%) slack, thirty-six (36) inch expansion loop at each forty-five (45) degree or ninety (90) degree turn in the trench and have an eighteen (18) inch expansion loop at each automatic valve. Wire may be laid with a vibratory plow but never pulled.

2.5 When wire runs do not follow pipe trenches, they are to be laid in a straight line which shall be carefully located on the as-built plan. If a change of direction is required on these runs, they are to be made at an angle between two (2) straight runs, and not as a sweeping curve. A splice box is to be installed at the angle point with sufficient wire slack to allow wires to be raised at least twenty-four (24) inches above grade.

2.6 Backfill material shall be free from rock, large stones, or other unsuitable substances to prevent damage to pipe and wire during backfilling operations. Backfill is to be approved by the Owner.

2.7 Excess material shall be removed to a readily accessible location on site, as designated by the Owner's representative, at the Contractor's expense. The Owner shall supply replacement backfill material at his expense, as and in quantities requested by the Contractor.

2.8 Deleterious material shall be dug and hauled to an accessible dumping site at a pre-determined contract price per cubic yard. Determination of deleterious material shall be made jointly by the Owner's representative and the Contractor's superintendent.

2.9 Backfilling shall be done by hand, so as to place it under, around, and above the pipe in stages so that it is hand tampered in layers to a point six (6) inches above the pipe. Special care shall be taken to ensure that this layer is completely free of stones and other deleterious matter. The remainder of the trench may be machine backfilled with available soil. Machine placed backfill shall be compacted to the original density by machine tamping, rolling, or puddling to prevent settlement in the trench.

2.10 Throughout the entire work period, it shall be the responsibility of the Contractor to refill any trenches that may have settled due to incomplete compaction. However, it shall not be the responsibility of the Contractor to refill any trenches that may have been washed out by natural rainfall or run-off.

2.11 Trenches shall be compacted and left flush with the present grade and hand raked clean of stone with a fine rake. Loam and reseeding shall be done as required.

2.12 Wherever conditions permit, pipe shall be installed with a vibratory plow to minimize damage to the existing turf.

### **Article 3: BLASTING**

3.1 When considered necessary by the Contractor and the Owner as a final alternative, blasting shall be done by personnel licensed by the State of Connecticut and shall be considered extra work in terms of payment. In this instance only, the payment shall be figured as cost-plus fifteen percent (15%). The material left after blasting shall be considered deleterious and paid for by the Contractor.

### **Article 4: UTILITIES**

4.1 The Owner shall make available to the Contractor all of the available information regarding the locations of existing utilities and shall mark the locations of such utilities and/or any underground obstruction, both at the site and on all copies of the installation plans. HOWEVER, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" IN ADDITION TO WHATEVER INFORMATION IS SUPPLIED BY THE TOWN. The Contractor shall be liable for the damages to and the cost of repairing or replacing any buried conduit, cables, or piping encountered during the installation of the work.

### **Article 5: TESTING**

5.1 All main lines having continuously applied pressure shall be tested at maximum system pressure for a period of twenty-four (24) hours. During this time, visual inspection shall be made for leaks. Any leaks shall be fixed, and the lines retested until satisfactory. All zone lines downstream of control valves, shall be tested under working conditions and visual inspection made for leaks. All testing is to be performed by the Contractor in the presence of Town of Terryville personnel.

### **Article 6: SPRINKLER INSTALLATION**

6.1 Sprinklers shall be set to grade as shown in the detailed drawings or as otherwise directed by the Owner's representative. Those sprinklers or quick coupling valves set to grade shall be plumb and to grade for a distance of four (4) feet from the sprinkler in all directions; sprinklers shall not be in pockets or on a mound.

6.2 The sprinkler head shall be connected to the main by installing a three (3) elbow swing joint.

6.3 Adjustment of the sprinkler heads and automatic equipment shall be done by the Contractor upon completion of the installation, to provide optimum performance. Minor adjustments during the guarantee period shall be made by the Owner.

## **Article 7: CONTROLLER INSTALLATION**

7.1 Ground rods shall be 5/8 inch by ten (10) feet U.L. listed, copper clad steel. The connector of ground wire to rod shall be with Cadwell connectors. The "TYPICAL DRAWINGS" section illustrates the proper connection techniques.

7.2 The ground rod box shall be an Carson Econo Box with a cover.

7.3 All controllers shall be connected to an individual grounding network. Grounding shall achieve a ground reading of fifteen (15) ohms or less.

## **Article 8: DRAWINGS**

8.1 The Contractor shall maintain an "as built" drawing of the system during the duration of the installation, keeping the same current on a daily basis.

8.2 After completion of the installation, the Contractor shall furnish an "as built" drawing of the system to the Owner.

8.3 The drawing shall show any changes from the original plans, and accurate measurements from two fixed permanent features to gate valves, valves boxes, splice boxes, pipe at road crossings, etc.

## **Article 9: OWNER'S RESPONSIBILITY FOR MAINTENANCE**

9.1 It shall be the Owner's responsibility to maintain the system in working order during the warranty period, performing necessary minor maintenance, keeping grass from obstructing the sprinkler heads, and preventing vandalism and damage during the athletic field's regular maintenance schedule.

## **Article 10: SERVICE BY CONTRACTOR**

10.1 The Contractor shall service the system at the Owner's request during the warranty period and shall be paid for work performed which is not covered by the warranty. If requested by the Owner, the Contractor shall furnish the Owner with a schedule of service fees.

Installation is to begin within thirty (30) days after the award of the bid and is to be completed within sixty (60) days thereafter, weather permitting.

The Plymouth Public Schools reserves the right to accept or reject any or all proposals and to waive all formalities.

Additional Project Requirements: In addition to the above specifications regarding the installation of the irrigation system for the athletic fields located at Terryville High School, the winning bidder will also be responsible for and should be providing bid specifications for the following additional services.

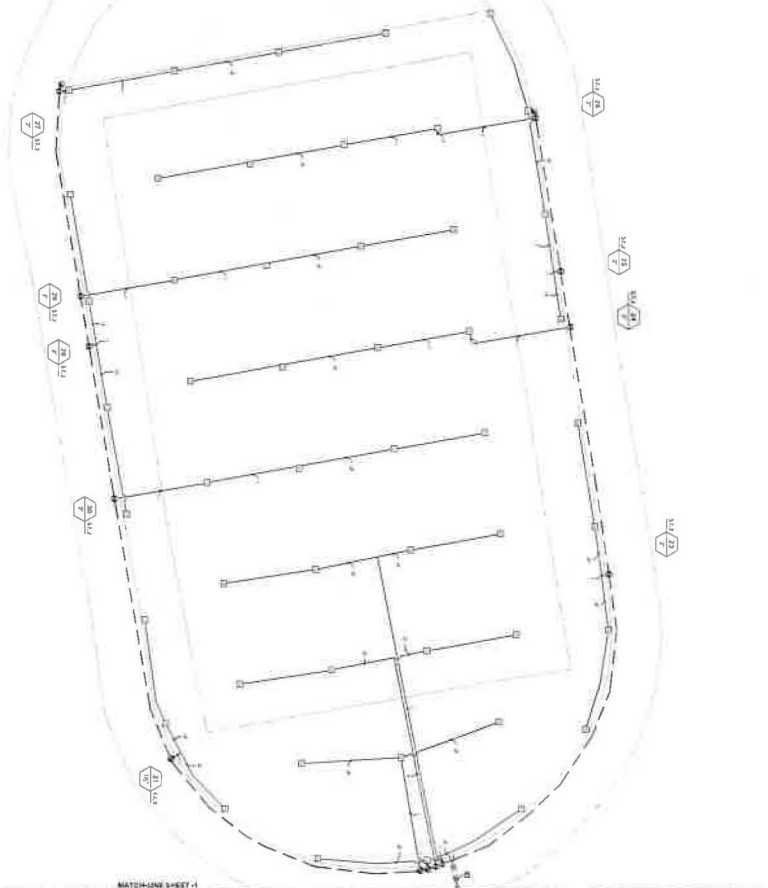
- I.     OPTION 1: Installation of appropriate water pumping equipment to move water from the “reservoir” on grounds to the irrigation system. The minimum requirement for equipment is as follows:

- a.   15 Horsepower
- b.   230/460V AC
- c.   150 ft Max Head
- d.   3 in
- e.   2.5 in intake
- f.   Disch
- g.   A sled for the pump to sit on in the pond.

OPTION 2: Installation of water supply tying into the Terryville High School existing city water supply. Successful bidder shall provide an option to ensure the proper water pressure will be supplied to the irrigation system installed in the fields. This option must include all wiring,

- II.    If OPTION 1 is selected by Plymouth Public Schools, Installation must include the following:
- a.   Installation of the pumping equipment in a Plymouth Public Schools supplied pump house/
  - b.   All trenching to the “reservoir” and installation of piping underground.
  - c.   Installation of a filtration system that will appropriately filter water BEFORE water supply enters the irrigation system.
  - d.   The winning bidder must provide service to run the electrical requirements for the pumping station and irrigation system from Terryville High School to the provided Pump house.







Ground Class		100.0	Area		Volume
Proposed Surface		914.0	100.00 sq. ft.		0.00 cu. yd.
Grass Surface		10.0	914.00 sq. ft.		4.00 cu. yd.
			10.00 sq. ft.		0.00 cu. yd.
			100.00 sq. ft.		0.00 cu. yd.

Terryville High School  
333 North 17th Avenue

1-800-341-4272

**SiteOne**  
Project Services