TOWN OF GUILFORD
INVITATION TO BID
BID #2-1920
ELIZABETH C. ADAMS MIDDLE SCHOOL
ATHLETIC FIELDS IRRIGATION SYSTEM

I.	Invitation to Bid (Legal Notice)
II.	General Conditions & Instructions to Bidder
III.	General Specifications
IV.	Form Contract
V.	Non-Collusion/Non-Conflict Affidavit (submit with bid)
VI.	Affirmative Action Affidavit (submit with bid)
VII.	Bid Proposal Form (submit with bid)
VIII.	Prevailing Wage Not Applicable

REQUIREMENTS

1)	Certificate of Insurance	X Yes, upon bid award
2)	Bid Bond/Cashier's Check (10% of base bid)	X Yes (submit w/ bid)
3)	100% Performance Bond	X Yes, upon bid award
4)	Labor & Materials Bond (a/k/a Payment Bond)	X Yes, upon bid award
5)	Vendor References	X Yes (submit w/ bid)
6)	Prequalification Statement/ Update (Bid) Statement	N/A
7)	Required Submissions Above	X Yes (submit w/ bid)

I.

LEGAL NOTICE
TOWN OF GUILFORD
INVITATION TO BID #2-1920
ELIZABETH C. ADAMS MIDDLE SCHOOL
ATHLETIC FIELDS IRRIGATION SYSTEM

The Town of Guilford is seeking competitive bids for the Elizabeth C. Adams Middle School Athletic Fields Irrigation System. Sealed Bids are due on Monday, August 26, 2019 at 2:00 p.m. at the office of the First Selectman, on the second floor of Town Hall, 31 Park Street, Guilford, CT 06437 at which time they will be opened publicly. Bids received after this date and time will be rejected. Sealed Bid proposals should be labeled with bid number and bid title. Bidding documents may be obtained by accessing the Town of Guilford's website at http://www.ci.guilford.ct.us and the State of Connecticut Department of Administrative Services procurement website at https://portal.ct.gov/das.

A pre-bid conference will be held at the front lobby of the Elizabeth C. Adams Middle School, 200 Church Street, Guilford, CT on Thursday, August 15, 2019 at 10:00 a.m.

Any questions regarding the specifications may be directed, in writing only, to Mr. Rick Maynard, Director of Parks and Recreation at maynardr@ci.guilford.ct.us, with a copy to the Purchasing Department at millmanp@ci.guilford.ct.us.

Each bidder will be required to submit to the Office of the First Selectman, their original proposal with one (1) copy, one (1) electronic copy, and a bid bond or cashier's check in the amount of ten percent (10%) of the base bid. Each bidder shall honor the bid price for ninety (90) business days from the date of the bid opening, without modification. Upon award of the bid, the winning bidder shall be bound by the bid proposal price throughout the contract period.

The Town of Guilford reserves the right to reject any or all bids; or to waive defects in same, if it deems such to be in the best interest of the Town. The Town of Guilford is an affirmative action, equal opportunity employer.

Matthew T. Hoey III
First Selectman

Publish one time only in the New Haven Register under LEGAL NOTICES on August 12, 2019.

II.

GENERAL CONDITIONS AND INSTRUCTIONS TO BIDDERS

The general rules and conditions outlined below apply to all purchases authorized by the Town of Guilford. The conditions outlined become a formal part of each Invitation to Bid unless otherwise specified. All Bidders are expected to fully inform themselves as to the conditions, requirements and specifications before submitting bids. Failure to do so will be at the Bidder's own risk.

The terms and conditions outlined in the Invitation to Bid become part of the formal contract following award, unless specified otherwise.

1. BIDDING PROCEDURE

1.1 Bidder shall submit two (2) complete sets of the bid documents and all supporting material, unless otherwise stated in the Invitation to Bid. All appropriate blanks shall be completed. The signer of the bid shall initial any interlineations, alteration or erasure on the specification document. Bidders shall not change the Proposal Form nor make additional stipulations on the specifications document.

1.2 Bid prices shall be submitted on the Proposal Form included in the bid document.

1.3. The Base Bid is the sum stated in the bid for which the Bidder offers to perform the work or provide merchandise or equipment described in the bid package as the base, to which work or materials may be added or from which work or materials may be deleted from sums stated in alternate bids.

1.4 Conditional bids are subject to rejection in whole or in part. A conditional bid is defined as one which limits or modifies any of the terms and conditions and/or specifications of the Invitation to Bid.

1.5 Alternate bids will not be considered unless specifically requested in the original bid package. An alternate bid is defined as one which is submitted in addition to the Bidder's Base Bid set forth in the Invitation to Bid. Town shall have the right to accept alternates in any order or combination, unless otherwise specifically provided in the bid documents, and to determine the low Bidder on the basis of the sum of the Base Bid and alternates accepted.

1.6 Unit prices will not be considered unless specifically requested in the original bid package. Unit price is defined as an amount proposed by Bidders, stated on the Proposal Form, as a price per unit of measurement for material or services added to or deducted from the base bid by appropriate modification, if estimated quantities of work required by the contract documents are increased or decreased.

1.7 Each bid must be legible (no pencil), include the full name, business and e-mail address, and telephone number of the Bidder and be signed in ink by the Bidder.

1.8 A bid by a firm or organization other than a corporation must include the name and address of each member.

1.9 A duly authorized representative of a Bidder entity must sign the bid and any applicable bond(s) in the name of such entity. Such representative must attest that he/she is duly authorized to bind such entity or submit a corporate resolution or limited liability/partnership consent evidencing such authority.

1.10 Bids received after the time and date established for receiving bids will be rejected.

1.11 At bid opening all bids are publicly opened and received. The bids will be considered unverified and subject to further review for acceptance/disqualification. The Town shall prepare a bid summary by the Town of Guilford, which summary shall be available to all Bidders upon the request.

1.12 Estimated quantities may be listed as part of a bid package in order to assist Bidders, but Bidders are reminded that actual quantities ordered may vary from figures listed and the Town will not be held liable for any difference. On "as required" bids, acceptance of this bid will bind the Town to pay for, at unit price only, quantities ordered and delivered. The Town will not be required to accept delivery of any balances unordered as of the contract expiration date.

1.13 Bidders shall submit catalogues, descriptive literature and detailed drawings, fully detailing features, designs and construction necessary to fully describe the material or work proposed in the bid.

2. BIDDER'S SECURITY

2.1 Bid Security, as a guarantee of good faith, in the amount of ten percent (10%) of the base bid and in the form of a certified check, cashier's check, or Bidder's bond, shall be required to be submitted with the bid package for all bids.

2.2 Such bid security will be returned to the unsuccessful Bidders when the award of bid is made.

2.3 Bid security will be returned to the successful Bidder as follows:

2.3.1 For bids with specified quantities for which the awarded bid package and delivery of award notice constitute the contract; upon the delivery of all equipment or merchandise (and/or performance of services, if applicable), and upon final acceptance by the Town.

2.3.2 For all other contracts; upon receipt by the Town of the executed contract and applicable bonds, if any.

2.4 Town shall have the right to retain the bid security of Bidders to whom an award is being considered until either:

2.4.1 A contract has been executed and bonds have been furnished.

2.4.2 The specified time has elapsed so that the bids may be withdrawn.

2.4.3 All bids have been rejected.

2.5 Bid security will be forfeited to the Town as full liquidated damages, but not as a penalty, for any of the following reasons:

2.5.1 If the Bidder fails to deliver the equipment or merchandise in full compliance with the accepted proposal and specifications.

2.5.2 If the Bidder fails or refuses to enter into a contract on forms provided by the Town, and/or if the Bidder fails to provide sufficient bonds or insurance within applicable time periods set forth in the bid package.

2.6 The surety company executing the bond must be licensed to do business in the state, or the bond must be countersigned by a company so licensed. The bond must be signed by an official of the surety company and corporate seal must be affixed over his/her signature. Signatures of two witnesses for both the principal and surety must appear on the bond, as required by law. A power of attorney for the official signing the bond for the surety company must be submitted with the bond.

3. CLARIFICATION OF SPECIFICATIONS/ADDENDA

3.1 Bidders shall promptly notify the Purchasing Manager of any ambiguity, inconsistency or error, which they may discover upon examination of the specification documents.

3.2 Bidders desiring clarification or interpretation of the specification documents shall make a written request which must reach the Purchasing Department by Tuesday, August 20, 2019 at noon. Failure to request a clarification or interpretation within said time frame shall be deemed a waiver of the right to assert these issues and claims in the future.

3.3 Interpretations, corrections and changes made to the specification documents will be made by written addenda.

3.4 Oral interpretations or changes to the specification documents made in any other manner, will not be binding on the Town and Bidders will not rely upon such interpretations or changes.

3.5 Addenda are written instruments issued by the Town prior to the bid opening date, which modify or interpret the specification document by addition, deletion, clarification or correction.

3.6 It is the Bidder's responsibility to check for addenda prior to submitting proposals.

3.7 Copies of addenda will be made available for inspection at the office of the Purchasing Department, which is located in the First Selectman's office.

3.8 No addenda will be issued later than forty-eight (48) hours prior to the bid opening date, except addenda withdrawing the Invitation to bid or addenda which includes postponement of the bid.

3.9 Bidders shall ascertain prior to submitting their bid that they have received all addenda issued, and they shall acknowledge receipt of addenda on the Proposal Form. It is the sole responsibility of the Bidders to monitor the Town website and DAS, if applicable to determine if addendums have issued.

4. BIDDER REPRESENTATION

4.1 Each Bidder by signing and submitting a bid, represents that the Bidder has read and understands the specifications documents and all addendums, and the bid has been made in accordance therewith.

4.2 Each Bidder for services further represents that the Bidder has visited the site and has become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance, furnishing and completion of the services. Bidder acknowledges that it is solely responsible for investigating and satisfying itself as to all actual and existing site conditions.

4.3 Bidder recognizes and agrees that the Town is subject to the Freedom of Information Act of the Connecticut General Statutes and, as such, any information contained in or submitted with or in connection with Bidder's bid is subject to disclosure if required by law or otherwise. Bidder expressly waives any claims that Bidder or any of its successors and/or assigns has or may have against the Town or any of its directors, officers, employees or authorized agents as a result of any such disclosure.

4.4 Bidder recognizes and agrees that the Town shall have the right to inspect and audit the records of the Contractor as they pertain to this bid.

5. SUBSTITUTIONS

5.1 Wherever in the specifications or Bid Proposal form brand names, manufacturer, trade name, or catalog numbers are specified, it is for the purpose of establishing standard of required function, dimension, appearance and quality to be met by any proposed substitution.

5.2 No substitution will be considered prior to receipt of bids unless written request for approval has been received by Town at least by the date and time set forth in Section 3.2. It is the Bidder's responsibility to identify any alternate items offered in the bid, and prove to the satisfaction of the Town that said item is equal to, or better than, the product specified. Bidder shall identify the manufacturer and brand name of each proposed alternate, plus a complete description of the alternate items including illustrations, performance test data and any other information necessary for an evaluation. The Bidder must indicate any variances by item number from the specification document. Bidder must fully explain the variances from the specification document, since brochure information may not be sufficient. Town reserves the right to approve as an equal or to reject as not being equal any article the Bidder proposes to furnish which contains major or minor variations from the specifications requirements. Any deviation from the Town's specifications not previously submitted as required by the above will be grounds for rejection of the material and/or equipment.

6. SAMPLES

6.1 When samples are required from Bidders, the samples may be retained by the Town of Guilford until the delivery of contracted items by the awarded Bidder and with respect to the rejected Bidders, upon notification of such rejection. Bidders shall be responsible for delivery and removal of samples, at Bidders' sole cost. All samples are to be marked samples and delivered to Guilford. The package must indicate the name of the Bidder, item enclosed and bid number. Failure to adequately identify samples as indicated may be considered sufficient grounds for rejection of the bid.

7. BID AWARD

7.1 The signed bid proposal shall be considered an offer on the part of the Bidder. Such offer shall be deemed accepted upon receipt of proper Town authorization from the Board of Selectmen, and delivery by the Town of a notice of award letter to the winning bidder, or if applicable, execution by the Town and Bidder of a separate contract, in the form included in the bid package, or if not included in the bid package, in a form mutually acceptable to both parties. In either case, the terms and provisions of the Town's Invitation to Bid shall be deemed incorporated into the contract. *Notwithstanding anything to the contrary stated herein, the contract shall be deemed executory only to the extent of appropriation available to each agency for the purchase of such articles/services. The Town's extended obligation on those contracts which envision extended funding, through successive fiscal periods shall be contingent upon actual appropriations for the following year. In the event that funding is not available at the time of award and/or execution of the contract and/or if the Town budget is approved for the*

fiscal year in which the contract is to be performed after contract execution or time of award but prior to the performance of the contract, the Town reserves the right to cancel the contract.

7.2 Contracts shall be executed by the Bidder and delivered to the Town for counter-execution within five (5) business days of Town's delivery of final contracts for execution. By submitting a bid, bidder expressly agrees that it will execute the final contract provided by the Town within five (5) business days of notice of award. If Bidder fails to execute the contract provided by the Town within the aforementioned time period, the Town may reject the bid and award to the next most responsible responsive bidder.

7.3 No bid shall be modified or withdrawn for a period of ninety (90) calendar days after the time and date established for receiving bids, and each Bidder so agrees in submitting the bid. Upon award of the bid, the winning bidder shall be bound by the bid proposal price throughout the contract period.

7.4 If two or more Bidders submit identical bids and are equally qualified, the decision of the Town to make award to one or more of such Bidders shall be final. Selection shall be made by drawing lots in public, unless one of the bidders is a resident bidder, in which case preference shall be given to the resident bidder.

7.5 The contract will be awarded to the lowest responsive, qualified and responsible Bidder complying with all the provisions of the invitation, provided the bid price is reasonable and in the best interest of the Town of Guilford to accept it. The Town reserves the right to reject any or all bids. The Town specifically reserves the right to reject the low Bidder.

In determining responsibility, the following qualifications in addition to price will be considered.

a. Compliance to the specifications, and the terms, conditions and instructions of the bid documents/quote request.

b. The ability and capacity of the Bidder to perform the work or provide the services required.

c. The character, integrity, reputation and experience of the Bidder

d. The quality and satisfaction of any previous work or services performed for the Town.

e. The financial resources available to provide the insurance and bond requirements of the bid.

f. The number and scope of any conditions or exceptions included in the bid or quote.

g. The quality, availability and adaptability of the supplies or contractual services to the particular use required.

h. The ability of the Bidder to provide future maintenance and service for the use of the subject of the contract, if applicable.

7.6 The Town reserves the right to reject all bids or any part of a bid or to waive defects in bids if to do so is deemed to be in the best interest of the Town. The Town reserves the right to waive irregularities and technicalities in bids, such as shall best service the requirement and interest of the Town.

8. TERMS OF PAYMENT

8.1 Prepayment discounts for early payment are preferred. All others to be Net 30 days unless otherwise specified.

8.2 The Town is exempt from state and local taxes.

8.3 A contract shall be deemed executory only to the extent of appropriation available to each agency for the purchase of such articles. The Town's extended obligation on these contracts which envision extended funding, through successive fiscal periods shall be contingent upon actual appropriations for the following year

9. PERFORMANCE/LABOR AND MATERIALS PAYMENT BOND

9.1 The successful Bidder shall supply an original performance bond and labor and materials payment bond in the amount of 100% of the total awarded bid amount within five (5) business days of the award notification. The provisions of Section 2.6 above shall apply to the bonds required by this Section 9.1. The bonds shall remain in effect for one year from the date of delivery of the bonds to the Town. Should the Town elect to renew the terms of the accepted proposal, if applicable, then the bonds shall be extended for the period of such renewal period and the performance bond shall be increased to the full amount of the revised contract price, if applicable.

10. INSURANCE REQUIREMENTS

10.1 The successful Bidder shall, at its own expense and cost, obtain and keep in force during the duration of the work/project the insurance set forth below covering the Bidder and its agents, employees and subcontractors and other providers of services and shall name the Town of Guilford and Guilford Board of Education and its employees and agents as "Additional Insureds" on a primary and non-contributory basis to the Bidder's Commercial General Liability and Automobile Liability Certificate of Insurance.

10.2 Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum Best's Rating of A-. In addition, all Carriers are subject to approval by the Town of Guilford.

10.3 The Town reserves the right to require additional coverages than those listed below, including, without limitation, Builder's Risk insurance for construction projects and Owner's Protective Liability, if desirable.

10.4 The required coverages are as follows:

a. **Worker's Compensation Insurance:** (i) statutory coverage, (ii) employer's liability; (iii) $500,000 each accident/ $500,000 disease-policy limit/$500,000 disease each employee (Coverage is to be extended for USL&H benefits and include coverage for Jones Act where work is adjacent to or on the water); and (iv) waiver of subrogation shall be provided.

b. **Commercial General Liability:** (on an occurrence basis): (i) including premises & operations, products and completed operations, personal and advertising injury, contractual liability and independent contractors, (ii) limits of liability for bodily injury and property damage each occurrence $2,000,000, aggregate $3,000,000 (to be applied separately to each job), and (iii) waver of subrogation shall be provided.

c. **Automobile Insurance:** (i) including all owned, hired, borrowed and non-owned vehicles; (ii) limit of liability for bodily injury and property damage per accident $1,000,000; and (iii) wavier of subrogation shall be provided.

d. **Excess Liability Coverage (Umbrella):** With respect to the coverage provided by firm for this Project, excess liability insurance will be provided in an amount not less than Two Million Dollars ($2,000,000.00) per occurrence and annual aggregate basis.

The Bidder shall provide a Certificate of Insurance to the Town within five (5) business days after receipt of notice of award. The Certificate shall specify that the Town of Guilford and Board of Education shall receive thirty (30) days advance written notice of cancellation or non-renewal. The Certificate shall evidence all required coverage including the *Additional Insured and Waiver of Subrogation.* Notwithstanding the forgoing, in the event that any State laws or regulations require additional coverage and/or higher coverage amounts, State laws and regulations shall control.

11. WARRANTIES AND MAINTENANCE

11.1 Copies of manufacturer's warranties and maintenance policies and associated costs shall accompany the bid proposal for items being bid.

11.2 At a minimum the Bidder shall warrant that any defective components discovered within a one year period after the date of installation/delivery shall be replaced at no expense to the Town, unless otherwise specified. Bidder shall pay the cost of all shipping with regard to such defective parts (both return and purchase of replacement parts.)

12. INDEMNIFICATION

12.1 The Bidder shall indemnify, defend and hold harmless the Town, its agents and employees from and against all claims, damages, losses and expenses, including attorney's fees arising out of, in whole or in part, the performance of the contract, or any negligent or willful act or omission of the Bidder, its subcontractors, employees or agents, including, without limitation, claims, damages, loss and expense attributable to

bodily injury, sickness, disease or death or injury to or destruction of tangible property, including the loss of use resulting there from or attributable to any type of pollution and/or environmental impairment or release into or upon land, the atmosphere, or any course or body of water that is above or below ground. The indemnification obligation under 12.1 shall not be limited in anyway by any limitation of the amount or type of damages, compensation or benefits payable by or for the Bidder, its subcontractors, agents or employees under worker's compensation, disability benefit acts or other employee benefit acts. This indemnity shall survive the expiration or early termination of the contract.

13. MISCELLANEOUS CONTRACT TERMS

13.1 **Delivery.** TIME IS OF THE ESSENCE with regard to the performance of the Work and the Contract. Strict compliance with and adherence to the schedule for the Work and the Contract. All bids shall be based upon inside delivery of the equipment or merchandise F.O.B. at the location specified by the Town. The Town reserves the right to cancel orders or any part thereof, without obligation, if delivery is not made within the time(s) specified on the proposal form. Such failure to deliver shall authorize the Town to purchase replacement articles of comparable grade from third party supplier(s). On all such purchases, Bidder shall reimburse the Town, within a reasonable time as specified by the Town, for any expenses incurred in excess of contract prices or the Town may deduct such amount from amounts owed the defaulting contractor. Such substitute purchases shall be deducted from contract quantities. If in the best interest of the Town, the Town reserves the right to use or consume articles delivered which are substandard in quality, subject to an adjustment in price to be determined by the Town.

13.2 **Termination of Contract**. Contracts shall remain in force for the period within which the Bidder must perform as set forth in the proposal, unless (i) there have been satisfactory deliveries prior to expiration; or (ii) an extension has been agreed upon as evidenced by a contract extension executed by Bidder and the Town.

13.3 **Assignment.** Bidder shall not assign, transfer or subcontract this contract or its obligations hereunder without the prior written consent of the Town, which consent may be withheld in the Town's sole discretion.

13.4 **Default.** The contract may be terminated by the Town by written notice of default to the contractor upon non-performance or breach of the contract terms. The awarded Bidder shall be obligated to pay the Town for all losses, damages, costs and expenses, including the cost of re-procurement, and attorney's fees incurred defending claims arising from such default and in seeking recovery of all such costs and expenses from Bidder and/or its surety. Upon a termination for cause, the Town shall have no further obligation to issue payments to the Contractor until resolution of the dispute.

13.5 **Conflict.** To the extent any of the contract terms set forth in sections 13.1 through 13.4 conflict with the terms of the form Contract entered into by the parties, the Contract terms shall control.

14. COMPLIANCE WITH LAWS

14.1 The Bidder shall comply with all federal, state and local laws and regulation and shall procure all necessary license and permits, pay all charges and fees and give all notice necessary and incident to the due and lawful performance of the contract and bid process. Such laws shall include, without limitation, the following:

a. **Non-Discrimination and Affirmative Action.** Contractor, in performing under this contract, shall not discriminate against any worker, employee or applicant, or any member of the public, because of race, creed, color, age, marital status, sexual orientation, national origin, ancestry, sex, mental retardation or physical disability, including but not limited to blindness, unless it is shown by the contractor that such disability prevents performance of the work involved in any manner prohibited by the laws of the United States or the State of Connecticut, nor otherwise commit an unfair employment practice. Contractor further agrees that this article, (and any additional provisions required by law), will be incorporated by contractor in all contracts entered into with suppliers of materials or services contractors and sub-contractors and all labor organizations, furnishing skilled, unskilled and craft union skilled labor or who may perform any such labor or services in connection with this contract. The following principles and requirements of Equal Opportunity and Affirmative Action, as incorporated herein, will be incorporated into "Equal Opportunity - Non-Discrimination Clause" are hereby deemed to be included in all Town bid documents, purchase orders, lease and contracts entered into with the Town. The principles of Affirmative Action are addressed in the 13th, 14th and 15th Amendments of the United States Constitution, Civil Rights Act of 1964, Equal Pay Act of 1963, Title VI and VII of the 1964 United States Civil Rights Act, Presidential Executive Orders 11246, 11375, 11478 (nondiscrimination under federal contracts), Act 1, Section 1 and 20 of the Connecticut Constitution, Governor Grasso's Executive Order Number 11, Governor O'Neill's Executive Order Number 9, the Connecticut Fair Employment Practices Law (Sec. 46a-60-69) of the Connecticut General Statutes (CGS), Connecticut Code of Fair Practices (46a-70-81), Deprivation of Civil Rights (46a-58 (a)(d)), Public Accommodations Law (46a-63-64), Discrimination against Criminal Offenders (46a-80), definition of blind (46a-51(1)), definition of Physically Disabled (46a-51 (15)), definition of Mentally Retarded (46a-51-13), cooperation with the Commission on Human Rights and Opportunities (46a-77), Sexual Harassment (46a-60 (a)-8), Connecticut Credit Discrimination Law (360436 through 439), Title 1 of the State and the Local Fiscal Assistance Act 1 1972.

If a project is funded in whole or in part by State funds, CGS Sections 46a-68c through 46a-68k apply to contractors. These Sections trigger affirmative action plan requirements for contractors and the filing of compliance reports with the State by contractors.

b. **Executive Orders.** The contract may be subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgate June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of

Governor Thomas J. Meskill, promulgate February 15, 1973, concerning the listing of employment opening and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of the contract as if they had been fully set forth in it. The contract may also be subject to Executive Order No. 7C of Governor M. Jodi Rell, promulgated July 13, 2006, concerning contracting reforms and Executive Order No. 14 of Governor M. Jodi Rell, promulgate April 17, 2006, concerning procurement of cleaning products and services, in accordance with their respective terms and conditions.

c. **Connecticut's Prevailing Wage Law Provision.** If applicable, the contractor must be in full compliance with CGS Section 31-53 and 31-53(a) which applies to each contract for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration, or repair of any public works project by the state or its agents, or by any political subdivision of the State, CGS Section 31-53 (g) provides monetary thresholds which must be met before the law is applicable. In accordance with CGS Section 31-53, projects are subject to the payment of minimum prevailing wages where the total cost of all work to be performed by all contractors and subcontractors in connection with new construction of any public works project is **$1,000,000** or more and where the total cost of all work to be performed by all contractors and subcontractors in connection with any remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project is **$100,000** or more. For qualifying projects, all contractors and subcontractors shall submit to the Finance Department certified weekly payrolls for all contracts meeting the stated monetary limits. The certified payrolls shall be submitted to the Finance Department with the contractor's monthly certificate for payment. The contractor should familiarize themselves with all aspects of the provisions under state law in order to ensure full compliance.

d. **Occupational Safety and Health Administration Requirements.** According to CGS, Section 31-53b (a) each contract entered into on or after July 1, 2007, for the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public building project by the state or any of its agents, or by a political subdivision of the state or any of its agents, where the total cost of all work to be performed by all contractors and subcontractors in connection with the contract is at least **$100,000** shall contain a provision requiring that, not later than thirty days after the date such contract is awarded, each contractor furnish proof to the Labor Commissioner that all employees performing manual labor on or in such public building , pursuant to such contract, have completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, in the case of telecommunications employees, have completed at least ten hours of training in accordance with 29 CFR 1910.268. The aforesaid provisions shall be deemed to be incorporated into the Contract with the Town. The contractors should familiarize themselves with all aspects of state law and any applicable regulations pertaining to these requirements in order to ensure full compliance.

e. **Payment Bond/Performance Bond State Law Requirements.** CGS Section 49-41, known as the Little Miller Act, requires that the Town ensure that payment bonds a/k/a labor and materials bond in the amount of the contract are provided for public works projects over **$100,000**. When a contract for construction, alteration, remodeling, repair or demolition of any public building is estimated to cost more than **$500,000** additional laws/requirements apply. The contractors should familiarize themselves with all aspects of state law and any applicable regulations pertaining to these requirements in order to ensure full compliance.

f. **State of Connecticut Contractor Prequalification Program.** CGS Section 4b-91 requires all bidders for the construction, alteration, remodeling, repair or demolition of any public building or any other public work by a public agency (includes a municipality) that is paid for, in whole or in part, with state funds and that is estimated to cost more than **$500,000,** except a public highway or bridge project or any other construction project administered by DOT, shall be prequalified with the State pursuant to CGS Section 4a-100. Once a contractor is prequalified, it is issued a prequalification certificate by DAS, which certificate is in effect for one year. Subcontractors' work, the cost of which may exceed **$500,000**, are also required to be prequalified. Any bid for a project that requires prequalification must include a copy of the bidder's Prequalification Certificate showing the aggregate work capacity rating required under the contract and the Update (Bid) Statement showing renewal of certificate and/or change in aggregate work capacity. Bids which do not include a copy of the Prequalification Certificate and the Update (Bid) Statement are invalid. Contractors should contact the State Department of Administrative Services to familiarize themselves with these requirements.

g. **Non-Resident Contractor 5% Tax For Contracts.** CGS Section 12-430(7) requires non-resident contractors who perform services or furnish materials, or both, for the construction, alteration or improvement of any project in which the contract price is at least **$250,000**, to furnish the Department of Revenue Services (DRS) a Guarantee Bond for 5% of the total cost of the work, issued under a contract using Form AU-766, Guarantee Bond. This form is available on the State DRS website. Form AU-766 must be submitted for each additional change order or supplement issued against the contract. Non-resident contractors must have completed and submitted to the DRS Form REG-1, Business Tax Registration Application, to register with the DRS and have been issued a Connecticut Tax Registration Number. This form is available on the DRS website. Non-resident contractors have 120 days from the commencement of the contract to file the Guarantee Bond with the State. Commencement of the contract, as defined by law, "means the time when the non-resident contractor signs the contract, but, in any event, occurs no later than when the work under the contract actually starts." As soon as the guarantee bond is filed with the DRS, the non-resident contractor shall submit the copy of such Guarantee Bond together with the non-resident contractor's Connecticut Tax Registration Number to the Town department for whom the project is required. After the non-resident

contractor receives its Certificate of Compliance from the DRS confirming that the Guarantee Bond requirement has been met, the non-resident contractor shall submit a copy of the same to the department, for whom the work is being performed, with a copy to the Purchasing Department.

h. **Equal Employment Opportunity (EEO); Minority Business Enterprises (MBE)**

If a project is funded in whole or in part by state or federal funds, there may be a requirement that the contractor comply with CGS Section 4a-60 and applicable State regulations. On these projects it will depend upon which set-aside requirements are imposed by the funding agency. If no set-aside requirement is imposed, a statement that the contractor is required to undertake good faith efforts to include subcontractors and suppliers who are minority business enterprises will suffice and shall be deemed to be incorporated into the Contract with the Town. If there is a set-aside goal, the Town and contractor shall comply with the Small Contractors Set-Aside Program and the hiring goals identified by the State Commission on Human Rights and Opportunities (CHRO.)

III.

GENERAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Table of Contents

SECTION 01 00 00 – SPECIFICATION FORMAT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The purpose of this section is to describe the format in which the Specifications are presented.

1.02 GENERAL FORMAT

A. The Specifications are presented generally in accordance with the Construction Specifications Institute MasterFormat ® publication.

B. Most technical and construction related requirements are specified in the technical sections which are grouped by the Construction Specifications Institute into major divisions according to trade or type of Work. All major divisions may not be used in this Contract.

C. Technical sections are arranged in numerical order. Page numbering is subordinate to each Section.

D. Most sections are generally presented in three parts:

PART 1 – GENERAL
PART 2 – PRODUCTS
PART 3 – EXECUTION

All three parts may not be used in all sections and in some cases the title of some parts is other than the three standard titles given above.

E. Paragraph designations are subordinate to each part.

1.03 EXPLANATIONS

A. Descriptions: Many technical sections begin with a paragraph entitled "SCOPE OF WORK" or similar wording. In such paragraphs, a brief description of the Work generally specified in that section is presented.

B. Related Work Specified Elsewhere: Some technical sections include a paragraph which lists some of the related work specified elsewhere in the Contract Documents. Such listings are presented as an aid to the Contractor in locating some of the other Specification sections wherein Work is specified that has a close relationship to the Work specified in that section.

SECTION 01 00 00 – SPECIFICATION FORMAT

1.04 STANDARD SPECIFICATIONS

A. The Contractor's attention is directed to the use of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities and Incidental Construction Form 817, 2016, latest revision, and all supplements thereto in the Specifications for this Project.

B. Only the Division II Construction Details and Division III Materials Section shall apply to the Specifications for this Project.

Within the above referenced portions of the Standard Specifications, wherein the following terms are used, they shall mean respectively:

Owner:	The Town of Guilford, Connecticut
Engineer:	Summer Hill Civil Engineers & Land Surveyors, P.C.
Inspector:	Inspector designated by the Owner
Laboratory:	Laboratory designated by the Owner

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 11 00 – SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. The purpose of the section is to generally describe the Work included in the Contract.

1.02 PROJECT SCOPE

A. Project Description: The construction of the Elizabeth C. Adams Middle School Athletic Fields Irrigation System Project including:

1. The provision and installation of a new irrigation controller, a new mainline for the entire system beginning at the existing point of connection and a complete irrigation system for all of the athletic fields as shown on the Drawings and as specified in the Contract Documents.

B. In addition, the Work under the Contract includes:

1. Work outside the Site as described in the Contract Documents and as required for the performance of the Work.

2. The provision and removal of temporary facilities.

3. Restoration of existing conditions as required.

1.03 PERMITS AND FEES

A. The Contractor shall obtain, secure, and schedule all permits and inspections necessary for the proper execution of the Work. Permit fees of the Town of Guilford shall be waived.

B. The Contractor shall comply with the conditions, if any, of all permits issued by the Town of Guilford.

1.04 TIME OF COMPLETION

A. The Work shall be commenced at the time stated in the Notice to Proceed and shall be substantially complete and ready for final payment on or before the dates or within the number of calendar days indicated in the Agreement.

PART 2 - PRODUCTS

NONE

SECTION 01 11 00 – SUMMARY OF WORK

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 31 19 – PROJECT MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The purpose of the section is to describe the requirements for Project meetings.

1.02 PROJECT MEETINGS

A. Preconstruction Conferences: Conduct a preconstruction conference prior to beginning Work on the Site. Require all major Subcontractors and suppliers to attend. In general, the meeting shall cover the following subjects:

1. Creation of project team directory listing contact person for each organization.
2. Issuance of Contract Documents.
3. Review of project constraints and work hours.
4. Unloading policies, storage locations, temporary office locations, and temporary facilities.
5. First aid, safety, and security procedures.
6. Cleaning, housekeeping, and waste removal.
7. Change Order requirements.
8. Progress payment requirements.
9. Submittal requirements, schedules, and procedures.
10. Record document requirements and procedures.
11. Other subjects as determined by the Contractor, Owner, and Engineer.

B. Regular Progress Meetings: Conduct progress meetings to aid in coordination and planning of the Work and to create a forum to resolve coordination and scheduling problems and conflicts. Progress meetings shall be held as required at the Site. Special progress meetings may be called at any time by the Owner or Engineer and shall be attended by the Contractor and any required Subcontractors.

C. Chairperson and Minutes: The Engineer will chair the meetings and will prepare written meeting minutes.

D. The Contractor shall require representatives of all major Subcontractors and suppliers to attend each progress meeting as required.

E. Progress Meeting Agenda: Progress meetings shall have at least the following agenda:

1. Review and approval of minutes and record of previous meeting.
2. Review progress of the Work, schedule, and status of submittals.
3. Identify problems that impede planned progress.
4. Develop corrective measures and procedures to maintain planned schedule.
5. Review apparent conflicts and other problems and develop corrective measures.
6. Review of payment applications.
7. Pre-installation discussions regarding specific project items.
8. Other current business.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Consult the individual sections of the Specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

1.02 GENERAL PROCEDURES FOR SUBMITTALS

A. It is anticipated that the submittal process shall begin immediately following the award of the Contract.

B. Timeliness: The Contractor shall transmit each submittal to the Engineer at least five (5) days in advance of performing related Work or other applicable activities so that the installation will not be delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractors failure to transmit submittals to the Engineer in advance of Work.

C. Sequence: The Contactor shall transmit each submittal in a sequence which will not result in approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

D. Contractors Review and Approval: Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Engineer. Submittals shall be accompanied by a transmittal notice stating the name of the Project, date of submittal, To or From, Specification Section or Drawing number to which the submittal refers, purpose (first submittal, re-submittal), description, remarks, distribution record, and signature of transmitter.

E. Any reference to a specific type or manufacturer in these Specifications is for identification purposes only. Equivalent products will be considered. In the event that samples or Specifications on equivalent products are required, it will be at the Contractors expense.

F. Or-Equivalents: On the transmittal, or on a separate sheet attached to the transmittal, the Contractor shall direct attention to any deviations including minor limitations and variations from the Contract Documents.

G. The Contractor and Subcontractors shall submit to the Engineer for consideration of any or-equivalent substitution, a written point by point comparison containing the name and full particulars of the proposed product or product named or described in the Contract Documents.

H. Such submittal shall in no event be made later than five (5) calendar days prior to the incorporation of the item into the Work. In any case in which the time period specified in the Contract Documents from the Notice to Proceed to Substantial Completion is less than five (5) days, the Engineer can waive this requirement.

I. Upon receipt of a written request for approval of an or-equivalent substitution, the Engineer shall investigate whether the proposed item shall be considered equivalent to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Engineer shall promptly advise that the item is, or is not, acceptable as an or-equivalent substitution. Such written notice must have the concurrence of the Owner.

J. In no case may an item be furnished on the Work other than the item named or described, unless the Engineer, with the Owners concurrence, shall consider the item equivalent to the item so named or described.

K. The equivalency of items offered as equivalent to items named or described shall be proved to the satisfaction of the Engineer at the expense of the Contractor or Subcontractor submitting the substitution.

L. The Engineer and the Owner may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor and Subcontractor, as the case may be, shall bear the full cost for providing, delivering, and removal and disposal of all such samples.

M. The Contractor or Subcontractor, as the case may be, shall assume full responsibility for the performance of any item submitted as an or-equivalent and assume the costs of any changes in any Work that may be due to such substitution.

N. All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by the Contract shall be included in the lump sum base bid Contract Price.

1.03 ENGINEERS ACTION

A. The Engineer will review the Contractors submittals and return them with one of the following actions recorded thereon by appropriate markings:

1. Final Unrestricted Release: Where marked "Reviewed", the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.

2. Final but Restricted Release: Where marked "Reviewed as Modified", the Work may proceed provided it complies with the Engineers notations or corrections on the submittal and complies with the requirements of the Contract Documents.

3. Returned for Resubmittal: When marked "Revise and Resubmit", or "Not Reviewed", the Work covered by the submittal (purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in accordance with the Engineers notations stating the reasons for returning the submittal.

1.04 SUBMISSION OF SHOP DRAWINGS AND PRODUCT DATA

A. Shop Drawings shall be complete and give all information necessary or requested in the individual sections of the Specifications. They shall also show adjoining Work and details of connection thereto.

B. Shop Drawings shall be for whole systems. Partial submissions will not be accepted.

C. The Engineer reserves the right to review and approve Shop Drawings only after approval of related product data and samples.

D. Shop Drawings shall be properly identified and contain the name of the Project, name of the firm submitting the Shop Drawings, Shop Drawing number, date of Shop Drawing and revisions, Contractors stamp of approval, and sufficient spaces near the title block for the Engineers stamp.

E. The Contractor shall submit Shop Drawings as indicated below. The Shop Drawing must be legible in both formats. A transmittal notice shall accompany each submittal.

1. To the Owner: One (1) hard copy.

2. To the Engineer: One (1) copy via email or hard copy.

F. The Engineer will process the submittal as outlined below and send the submittal back via email. Hard copies will not be sent.

1. When the Shop Drawing is returned by the Engineer with the stamp "Revise and Resubmit" or "Not Reviewed", the Contractor shall correct the original drawing or prepare a new drawing and resubmit a transparency and two (2) prints thereof to the Engineer for approval. The procedure shall be repeated until the Engineers approval is obtained.

2. When the transparency is returned by the Engineer with the stamp "Reviewed" or "Reviewed as Modified", the Contractor shall provide and distribute the prints for all Contractors and Subcontractors use, and in addition submit, within ten (10) calendar days after approval, five (5) prints to the Engineer.

G. The Contractor shall maintain one (1) full set of approved Shop Drawings at the Site.

1.05 SUBMISSION OF SAMPLES

A. Unless otherwise specified in the individual sections of the Specifications, the Contractor shall submit two (2) specimens of each sample.

B. Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved.

C. Samples that can be conveniently mailed shall be sent directly to the Engineer, accompanied by a transmittal notice. All transmittals shall be stamped with the Contractors approval stamp of the material submitted.

D. All other samples shall be delivered at the field office of the Engineer with sample identification tag attached and properly filled in. Transmittal notice of samples so delivered with the Contractors stamp of approval shall be mailed to the Engineer.

E. If a sample is rejected by the Engineer, a new sample shall be submitted in a manner specified herein above. This procedure shall be repeated until the Engineer approves the sample.

F. Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the Specifications.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 43 00 – QUALITY ASSURANCE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Consult the individual sections of the Specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

1.02 TESTING AND SPECIAL TESTING

A. Unless otherwise provided in the Specifications, the Contractor or assigned Subcontractor shall provide all materials, samples, mock-ups, or assemblies for all tests specified in various sections of the Specifications, or as directed by the Engineer, and pay shipping costs for such samples to laboratory or other testing location and facility. Unless specified otherwise, all tests shall be made by an approved independent testing laboratory and reports provided to the Engineer.

B. Tests shall be provided and accomplished in accordance with the standard used as the reference for the particular material or product, unless other test methods or criteria are specified. In the absence of a referenced standard, tests shall be accomplished in accordance with applicable ASTM Standards or Test Methods, current at the date of the Contract Documents.

C. The Owner will employ and pay for any special inspector to provide the inspections during construction as may be required by applicable codes. The Contractor shall coordinate his operations with the inspector and cooperate with the inspector in the required inspections.

1.03 QUALIFICATIONS OF TESTING AGENCY

A. Approved Independent Testing Laboratory: Shall mean an independent testing agency acceptable to the Owner and the Engineer and possessing the professional qualifications and equipment to perform the specified tests and to evaluate the report results.

1.04 QUALITY ASSURANCE

A. Laboratories shall maintain a full-time licensed Engineer on staff to review services.

B. Laboratory authorized to operate in State in which Project is located.

C. Testing equipment shall be calibrated at reasonable intervals with devices of accuracy traceable to either NBS Standards or accepted values of natural physical constraints.

1.06 PAYMENT FOR TESTS

A. The Contractor or assigned Subcontractor shall be responsible for, and shall pay for, all off-site and on-site tests.

B. The Engineer shall have the right to witness all off-site and on-site tests performed by the Contractor or assigned Subcontractor and the Contractor shall furnish adequate notice of when tests will be made.

C. When in the opinion of the Engineer, additional tests or inspections are required because of the manner in which the Contractor executes its Work, such tests and inspections shall be paid for by the Owner but will be deducted from the Contract Price. Examples of such tests and inspections are tests of previously accepted materials, or substitutes for specified materials, retests made necessary by failure of materials to comply with the requirements of the Specifications, load test made necessary because of portions of the structure not fully meeting Specifications or plan requirements, etc.

1.07 TESTS TO DEMONSTRATE QUALIFICATION

A. In addition to tests specified, should the Contractor propose a product, material, or method of assembly that is of unknown or questionable quality to the Engineer, the Engineer may require and order suitable tests to establish a basis for acceptance or rejection. Such tests will be paid for by the Contractor, or by the Subcontractor requesting approval. Standard test reports or similar material will not be acceptable.

B. The Owner and Engineer reserve the right to require certification or other proof that the material, assembly, equipment, system, or other product furnished or proposed to be furnished for the Project is in compliance with any test or standard called for. The certificate shall be signed by a representative of the independent testing laboratory.

C. Any test required to qualify the Contractor or any of his workmen for any phase of the Work, and any test of a method, system, or equipment that may be required by Specification or law to qualify the item for use, shall be made or taken without additional reimbursement.

D. If exploratory Work is required to determine the cause of defects, the cost of such Work shall be borne by the Contractor or assigned Subcontractor responsible for such Work if Work is found, in the judgement of the Engineer to be defective. If the Contractor or assigned Subcontractor responsible for the Work is adjudged by the Engineer to be not at fault, exploratory testing will be paid for by the Owner.

1.08 INSPECTIONS

A. Should the Specifications, Engineers instructions, laws, ordinances, or any public authority require any Work to be inspected or approved, the Contractor shall give timely notice of its readiness for inspections and a reasonable date fixed for such inspection. If any Work requiring inspection should be covered up without approval or consent of the Engineer, it must be uncovered for examination at Contractors expense.

1.09 CERTIFICATES

A. Except for test reports provided and signed by approved independent testing laboratories, all certificates required by the Specifications shall be signed by an authorized official of the firm providing the certificate, with the signature notarized, when such certificates by the producer are acceptable to the Engineer.

1.10 RETEST RESPONSIBILITY

A. Where results of required inspections, tests, or similar prove unsatisfactory and do not indicate compliance of related Work with requirements of the Contract Documents, the retests are the responsibility of the Contractor or assigned Subcontractor, regardless of whether original test was the Contractors responsibility. Retesting of Work revised or replaced by Contractor is the Contractors responsibility, where required tests were performed on original Work.

B. Owners decision on unsatisfactory testing resulting in retesting of Work based on consultation with Testing Laboratory and Engineer is final.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such facilities prior to Substantial Completion must be with the concurrence of the Engineer.

B. Removal of all temporary facilities shall be a condition precedent to Substantial Completion unless directed otherwise by the Engineer or specifically noted in the Specifications.

1.03 TEMPORARY FENCING

A. The Contractor shall be responsible for providing and maintaining temporary fencing or barricades as may be necessary to assure the safety of all persons authorized or unauthorized. Such protective measures shall be located and installed as required by local, State, and Federal ordinances, laws, codes, or regulations at no additional costs to the Owner.

1.04 TEMPORARY STRUCTURES AND MATERIAL HANDLING

A. Materials shall be handled, stored, installed, cleaned, and protected in accordance with the best practice, and except where otherwise specified in the Contract Documents, in accordance with manufacturers specifications and directions.

1.05 TEMPORARY ELECTRICITY

A. The Contractor may make use of the available electricity at the Site for construction purposes, provided the Contractor shall supply proper adapters and extension cords. Where electrical equipment drawing current in excess of 15 amps is involved, the Contractor shall provide a temporary electrical service to supply the electricity.

B. Temporary electrical work shall be performed under the direct supervision of a licensed electrician who will be present on the Site at all times when such Work is being performed.

C. Temporary electrical work shall be in accordance with all applicable laws, regulations, and codes.

D. The Contractor shall remove from the Site all temporary electrical facilities.

1.06 TEMPORARY WATER

A. The Contractor may make use of the available water supply at the Site for construction purposes, provided the permission of the Owner is obtained beforehand and only as long as the water is not used wastefully.

B. The Contractor shall provide all necessary connections, piping, and hoses to utilize the water source.

C. In the event that the water source is unavailable, the Contractor shall be responsible for providing water from off-site sources.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 57 26 – DUST CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications shall consist of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with providing calcium chloride and/or water for dust control purposes over the areas of the Work and at the times and at the rates of application in accordance with the Drawings and these Specifications, or as directed by the Engineer.

1.02 RELATED WORK SPECIFIED ELSEWHERE

NONE

PART 2 - PRODUCTS

2.01 MATERIALS

A. Calcium chloride shall meet the requirements of the Standard Specifications, Section 9.42.

B. Water shall be fresh water obtained from a source approved by the Engineer.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall exercise every precaution and means to prevent and control dust created as a result of all construction operations from becoming a nuisance to abutting properties, surrounding neighborhoods, and/or the traveling public.

B. Pavement areas adjoining the work that are open to vehicular traffic shall be kept clean of excess earth materials as directed by the Engineer.

C. When in the opinion of the Engineer, conditions require additional dust control measures to supplement those required to be provided by the Contractor in Paragraphs A and B above, the Engineer may direct the Contractor to furnish and spread calcium chloride and/or water over certain areas of the site, at certain times, and at certain rates of application.

3.02 EQUIPMENT

A. Calcium chloride shall be spread in a manner and by devices approved by the Engineer that will insure uniform application over the area on which it is to be placed.

B. Watering equipment shall consist of pipelines, tanks, tank trucks, distributors, pumps, meters, hoses, or other devices, approved by the Engineer, which are capable of applying a uniform spread of water over the surface of the area on which it is to be placed. Suitable devices for positive shut-off and regulation of flow shall be provided to insure operator control.

END OF SECTION

SECTION 01 71 13 – MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications shall consist of all Work necessary for the movement of the Contractor's plant, equipment, material, and personnel to and from the Project Site within this Contract, and for the establishment, maintenance, and ultimate removal of any temporary field offices, buildings, storage areas, sanitary, and other facilities necessary to the performance of the Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

NONE

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 71 23 – FIELD ENGINEERING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications shall consist of providing sufficient additional horizontal and vertical reference points in the project area, and all detailed layout, staking, and grade control necessary for the control of the accuracy of all lines, grades, and measurements used in the execution of all Work to be performed under this Contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

NONE

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

3.01 GENERAL

A. The Owner will furnish and establish permanent horizontal and vertical reference points in the Project area to enable the Contractor to proceed with the Work required under this section.

B. The Contractor shall carefully protect and preserve all permanent reference points, monuments, stakes, benchmarks, and other survey markers furnished by the Owner. Where located in the line of Work, such points, monuments, markers and/or benchmarks shall be tied to fixed points and/or transferred and replaced upon completion of the Work unless otherwise specified by the Engineer.

C. The Contractor shall record the tie-in or transfer of all points and/or benchmarks and shall submit copies of all notes, sketches or other records of the tie-in and/or transfer to the Engineer.

D. The Contractor shall insure that adequate reference points, stakes, and/or benchmarks are in place at all times to allow the Engineer to check the Work in progress.

3.02 LINES AND GRADES

A. The Contractor shall layout all Work and set all necessary grades as required to ensure that all Work is installed in conformance with the lines and grades shown on the Drawings or as directed by the Engineer.

END OF SECTION

SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The purpose of this section is to describe the closeout procedures for the Project.

1.02 RELATED DOCUMENTS

A. Consult the individual sections of the Specifications for specific items required under those sections.

1.03 SUBSTANTIAL COMPLETION

A. Prior to requesting Substantial Completion as provided in the General Conditions, the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.

B. Upon completion of the list, the Contractor shall notify the Engineer in writing, that the Work is Substantially Complete. The Engineer shall then conduct a similar thorough inspection. If the Engineer agrees that the Work is Substantially Complete, the Engineer will promptly make a thorough inspection and prepare a punch list, setting forth in accurate detail any items on the Contractors list and additional items that are not acceptable or incomplete. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.

C. The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Engineers punch list.

D. If the Engineer determines that the Work is not Substantially Complete, the Engineer shall inform the Contractor of those items that must be completed before the Engineer will prepare a punch list. Upon completion of those items, the Contractor shall again request the Engineer to prepare a punch list.

E. When the punch list has been prepared, the Engineer will arrange a meeting with the Contractor and Subcontractors to identify and explain all punch list items and answer questions on Work which must be done before final acceptance.

F. The Engineer may revise the punch list, from time to time, to ensure that all items of Work are properly completed.

G. The Engineer shall prepare the Certificate of Substantial Completion in accordance with the General Conditions.

1.04 FINAL COMPLETION

A. Within fifteen (15) days after Substantial Completion, if any of the items on the Engineers punch list are not complete or if the Contractor has not provided the appropriate Record Drawings, Operating Manual, Warranties, Guaranties, or spare parts, the Engineer may assign a monetary value for each incomplete item.

B. The Contractor shall provide the Engineer with a notarized Contractors Certificate and Release and an appropriate Application for Payment. This application shall be for an amount equal to the remaining balance of the Contract.

C. The Contractor shall complete all remaining Work in accordance with the provisions of the General Conditions.

D. Upon completion of all remaining items, and after receipt of all appropriate Shop Drawings, Record Drawings, Operating Manuals, Warranties, Guaranties, and spare parts required by the Contract Documents, the Contractor shall provide a notarized Contractors Certificate and Release and a final Application for Payment to complete the closeout process.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 78 36 – WARRANTIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The purpose of this Section is to describe warranty requirements for all Work included in the Contract.

1.02 WARRANTY REQUIREMENTS

A. Warranties Required: All materials, equipment and Work of the Project shall be covered by comprehensive written warranties. Refer to individual Specification sections for additional specific warranty requirements. For Work not specified to have additional specific warranty requirements or warranties longer than one (1) year, provide a comprehensive one (1) year warranty signed by the Contractor and Subcontractor.

B. Warranty Limitations: Warranties required under the Contract are in addition to and not in lieu of any remedy or warranty to which the Owner is entitled under law. Warranties required under the Contract shall not be interpreted as a waiver of any of the Owners rights.

C. Warranty Procurement: Do not purchase or subcontract for materials, equipment, or Work until it has been verified that parties required to provide and sign warranties are willing to do so and that warranty language, content, and form are approved by the Owner. Special warranty terms, conditions, and requirements are often specified.

D. Warranties are Irrevocable: After a specific warranty language, content, and form has been approved by the Owner and after the Work covered by a specific warranty is subcontracted or purchase order given to a manufacturer, the warrantor shall not revoke or withhold the warranty for any reason including without limitation, non-payment or incomplete payment by any party other than the Owner, except that if Work has not been installed in compliance with the warrantor installation requirements, then the warranty may be temporarily withheld until corrections are made and the warrantors installation requirements have been met.

E. Warranty Forms: Submit written warranty forms to Owner through the Engineer for approval prior to award of Subcontract, submission of purchase order, and execution of warranty. The manufacturers standard warranty forms may not comply with the requirements of the Contract Documents. Special warranty terms, conditions, and requirements are often specified and required.

F. Standard Warranty Form: In the absence of specific written permission by the Owner, provide all warranties including the Contractors comprehensive one (1) year warranty on fully executed standard warranty. Furnish original or certified copies of each executed warranty to Owner for warranty and maintenance manuals.

G. Work Covered by Warranty: Contractor and warrantor shall remove and replace other Work damaged as a result of failure of warranted materials, equipment, or Work, and shall remove and replace other Work which must be removed and replaced to provide access to and replacement of materials, equipment, or Work covered under warranty. Warranties shall include full payment to the Owner for Work related to warranty repair or replacement including without limitation, painting.

H. Pro-Rated Warranties: Unless otherwise specified or approved in writing by Owner, each warranty shall cover the full cost of replacement or repair and shall not be pro-rated on basis of useful service life or warranty period.

I. Warranty Extensions: Work repaired or replaced under warranty shall be provided with a new warranty equal to the full length of the original warranty. The new warranty shall begin on the date of Owners acceptance and use of the replaced or repaired item.

J. Warranty Effective Starting Date: All warranties shall begin on Date of Final Acceptance of the entire Project or Owners acceptance of the Work or item covered by the warranty, whichever is later, and the warranty coverage shall continue for the period specified. If no specific warranty period is specified, the warranty shall extend for one (1) year.

K. Contractors Responsibilities for Warranties: The Contractor shall implement and invoke all guarantees and warranties provided by Subcontractors, manufacturers, material suppliers, and other parties, including warranties longer than one (1) year duration. The Contractor shall make every effort to facilitate, expedite, and aid the Owner in warranty claims the Owner may have throughout the warranty periods.

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 01 78 39 – PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The purpose of this Section is to describe Project Record Document requirements.

1.02 RECORD DOCUMENTS

A. From the set of Contract Drawings furnished by the Owner, the Contractor shall reserve one set for record purposes. From this set, the Contractor shall detach and furnish, the Drawings of their portion of the Work for the same purpose.

B. The Contractor and Subcontractors shall keep their record set on the Site at all times and note on it in colored ink or pencil, neatly and accurately, at the end of each work day, the exact location of their Work as actually installed. This shall include the location, elevations, and dimensions of underground and concealed Work, and any variations from the Contract Drawings. All changes, including those issued by Addendum, Change Order, or Field Order shall be recorded. Record Drawings shall be prepared for the entire Project and include all Work.

C. The Engineer may periodically inspect the Record Drawings at the Site. The proper and current maintenance of the information required on these drawings shall be a condition precedent to the monthly requisitions for periodic payment.

D. At Substantial Completion, the Contractor shall submit the complete set of Record Drawings to the Engineer. The Engineer will review these drawings and return them to the Contractor with necessary comments.

NONE

PART 2 - PRODUCTS

NONE

PART 3 - EXECUTION

NONE

END OF SECTION

SECTION 02100 – SITE PREPARATION

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications shall consist of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with all Work necessary to prepare the Site for the proper completion of the Work to be performed under this Contract, in accordance with the Drawings and these Specifications, or as directed by the Engineer.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Dust Control - Section 01 57 26.

B. Earthwork - Section 31 00 00.

C. Clearing and Grubbing – Section 31 11 00.

D. Trench Excavation and Backfill - Section 31 23 16.

E. Dewatering, Control and Diversion of Water - Section 31 23 19.

F. Soil Erosion and Sediment Control - Section 31 25 00.

1.03 SUBMITTALS

A. Submit the following:

1. Certificates of discontinuance of utility services, if required.

1.04 PROTECTION

A. Protect wetlands and watercourses.

B. Maintain and protect vehicular and pedestrian traffic.

C. Take precautions to prevent damage to existing conditions to remain. Promptly repair any damage identified by the Engineer.

D. Take precautions to properly support structures. Cease operations and notify the Engineer immediately if safety of adjacent structures appears to be endangered.

E. Take measures to prevent windblown dust, dirt, and debris.

PART 2 – PRODUCTS

2.01 TEMPORARY FENCING

A. Temporary fencing shall consist of four (4) foot height, high density polyethylene construction safety fencing, color-orange, with wood or metal stakes, spaced ten (10) feet on center.

2.02 STOCKPILE COVERS

A. Reinforced polypropylene tarps, resistant to ultraviolet radiation, secured with anchors as required and approved by the Engineer.

PART 3 – EXECUTION

3.01 POLLUTION CONTROL

A. Comply with the requirements of Section 01 57 26 – Dust Control to limit dust, dirt, and debris rising and scattering in air. Comply with governing regulations pertaining to environmental protection.

B. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

C. Comply with the requirements of Section 31 25 00 - Soil Erosion and Sediment Control.

D. Clean adjacent structures and improvements of dust, dirt, and debris caused by site preparation operations. Return adjacent areas to condition existing prior to start of Work.

3.03 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Existing structures and utilities shall be protected from damage, including but not limited to existing buildings, fencing, lighting, and utilities.

B. Provide protections necessary to prevent damage to pipes, conduits, wires, cable or structures above or below ground, indicated on drawings to remain.

C. No monuments, property markers, or benchmarks shall be damaged or removed until an authorized agent has witnessed or otherwise referenced their location and approved their removal.

D. Provide protections necessary to prevent damage to adjoining properties.

E. Repair any damaged utilities as acceptable to the Engineer, at no additional cost to the Owner.

F. Restore damaged items to their original condition, at no additional cost to the Owner, and as acceptable to the Engineer.

3.04 REMOVAL, SALVAGE, AND RELOCATION

A. Removal: Items and materials indicated on the Drawings or designated by the Engineer to be removed shall be either removed and stockpiled on the Site, or demolished, dismantled, removed, and disposed of properly off-site.

1. Items and materials resulting from the preparation of the Site, which are not required for reuse in the Project, or which are unsuitable for reuse in the Project, and as determined by the Engineer should be salvaged, shall remain the property of the Owner and shall be stockpiled on the Site at a location identified by the Engineer.

2. Items and materials resulting from the preparation of the Site, which are not required for reuse in the Project, or which are unsuitable for reuse in the Project and as determined by the Engineer should not be salvaged, shall be properly disposed of off-site. Such items or materials shall be removed from the Site and disposed of promptly and shall not be left until final cleanup of the Site.

B Salvage: Items and materials indicated on the Drawings or designated by the Engineer to be salvaged shall be dismantled, removed, protected, and delivered to the Owner at a location identified by the Engineer.

C. Relocation: Items and materials indicated on the Drawings or designated by the Engineer to be relocated shall be dismantled, removed, protected, and relocated as indicated on the Drawings or as directed by the Engineer.

END OF SECTION

SECTION 31 00 00 - EARTHWORK

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications consists of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with all Work necessary for all earthwork operations in accordance with the Drawings and these specifications, or as directed by the Engineer.

B. The Work under this section of the Specifications shall include, but not necessarily be limited to:

1. Stripping and stockpiling of topsoil.

2. Mass earth and rock excavation.

3. Earth and rock excavation for structures.

5. Site grading.

6. Processing on-site materials for use in the items of Work under this Contract.

7. Providing, placing and compacting all general site fill, all structural fill and all bedding materials.

8. Providing, placing and compacting all required borrow materials.

9. Removal from the Site and disposal of all materials as directed by the Engineer.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Dust Control - Section 01 57 26.

B. Trench Excavation and Backfill - Section 31 23 16.

C. Dewatering, Control and Diversion of Water - Section 31 23 19.

D. Soil Erosion and Sediment Control – Section 31 25 00.

SECTION 31 00 00 - EARTHWORK

1.03 DESCRIPTION

A. General Excavation: Shall be classified as Earth Excavation, Rock Excavation and Unclassified Excavation in accordance with the following definitions:

1. Earth excavation shall include the removal, relocation, spreading, and compaction of all suitable earth material so as to achieve the finished grades shown on the Drawings or as directed by the Engineer. Any unsuitable earth such as swamp muck, bog, pavement, peats, etc. shall be disposed of similar to the debris from Section 31 11 00 - Clearing and Grubbing. Earth excavation includes materials which are removable by normal earth excavation equipment and methods. All material which can be excavated by machinery of smaller size than the machine used to define Rock excavating equipment below shall be considered as earth excavation.

2. Rock excavation shall include the removal and disposal of all rock material encountered so as to achieve the finished grades as shown on the Contract Drawings or as directed by the Engineer. Rock shall be defined as boulders one (1) cubic yard or more in volume, solid rock, rock in ledges and outcrops, and rock hard cementious aggregate deposits. For the purposes of payment, rock shall be defined as material which cannot be dislodged and excavated with modern track mounted heavy duty excavating equipment without drilling, blasting or ripping. Rock excavation equipment is defined as Caterpillar Model No. D8N bulldozer or equivalent track mounted bulldozer, rated at not less than 285 HP flywheel power. Intermittent drilling, blasting, or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.

3. Unclassified Excavation shall include all materials for which no classification is given above.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Common Fill: Shall be utilized under areas to be grassed and areas of general landscaping, and shall be clean, friable, non-plastic in-organic soil material containing no stone greater than two thirds (2/3) of the required loose lift thickness. The material shall be free from debris, ice, snow, frozen lumps, vegetation, stumps, roots or other organic materials.

B. Sandy Fill: Shall be utilized as structure backfill and as trench backfill where indicated on the Contract Drawings, and shall be clean, friable, non-plastic in-organic soil material free from debris, ice, snow, frozen lumps, vegetation, stumps, roots or other organic materials and shall conform to the following gradation:

Sieve Size	Percent Passing By Weight
6"	100
No. 10	30-95
No. 40	10-75
No. 100	5-30
No. 200	0-12

C. Structural Fill: Shall be utilized under footings, foundations, slabs and structure bases where indicated on the Drawings or directed by the Engineer, and shall be clean, friable, non-plastic in-organic soil material free from debris, ice, snow, frozen lumps, vegetation, stumps, roots or other organic materials. The material shall consist of sound, tough, hard, durable particles of sand, gravel and crushed rock or a combination of these materials and shall conform to the following gradation:

Sieve Size	Percent Passing By Weight
6"	100
3/4"	50-100
1/4"	30-80
No. 40	10-50
No. 100	0-15
No. 200	0-10

D. Granular Fill: Shall consist of sound, tough, hard, durable particles of crushed or uncrushed gravel, free from soft, thin, elongated or laminated pieces and vegetable or other deleterious substances. It shall conform to Section M.02, Article M.02.01 and Article M.02.06, Grading "B", of the Standard Specifications.

E. Rolled Granular Base: Conform to Section M.02, Article M.02.03 of the Standard Specifications, for the stone sizes shown on the Drawings or required in the Specifications.

F. Crushed Stone: Conform to Section M.02, Article M.01.01 of the Standard Specifications, for the stone sizes shown on the Drawings or required in the Specifications.

H. Bedding Material:

1. Crushed Stone Bedding: See Item F. above.

2. Sand Bedding: Shall be clean, friable, non-plastic in-organic soil material free from debris, ice, snow, frozen lumps, vegetation, stumps, roots or other organic materials and shall conform to the following gradation:

Sieve Size	Percent Passing By Weight
1/2"	100
3/8"	80-106
No. 10	30-80
No. 40	10-50
No. 200	0-5

I. Stone Screenings: That product from the crushing operations to produce crushed stone meeting the material specifications in Paragraph 2.01.F. above that completely passes a No. 4 sieve and not less than 40% passes a No. 8 sieve.

PART 3 - EXECUTION

3.01 LOCATIONS, GRADES AND ELEVATIONS

A. The Drawings indicate the general location and alignment, and the invert and finished grade elevations of all proposed structures and utilities and other Work under this Contract. The Engineer reserves the right to make such adjustments in alignment and elevation as are found necessary in order to avoid interference with structures, facilities, or other obstacles and to adapt the proposed structures, utilities, and other work to other special conditions encountered.

3.02 UTILITIES

A. The Contractor shall obtain information from the applicable utility companies concerning locations of all utilities within the areas of the Work. All rules and regulations of the respective utility companies shall be observed. The Contractor shall adequately protect from damage all existing active utilities. Inactive or abandoned utilities encountered in earthwork operations shall be plugged, capped, or removed as directed. The Contractor shall restore any utility damaged as a result of his operations without additional compensation.

3.03 TEMPORARY PROCESSING FACILITIES

A. It is intended that the Contractor utilize, to the extent possible, on-site materials that have been generated in the earthwork operations under this Contract. The Work under this section of the Specifications shall include the processing of on-site materials, including obtaining any required permits and/or approvals for, and the set up and operation of any temporary processing facilities required. All processed materials shall meet the specifications for the various materials noted herein under Section 2.01, Paragraphs A through I.

B. The Contractor shall be responsible for obtaining all required permits and/or approvals from all regulatory authorities that may have jurisdiction in regulating the operation of any temporary materials processing facilities.

C. The Contractor shall insure that the operation of any temporary processing facility shall be in strict conformance with the conditions of all permits and/or approvals for such facilities throughout the length of the project.

D. The location of such facilities shall be in conformance with the conditions of all permits and/or approvals and shall be approved by the Engineer.

3.04 STRIPPING AND STOCKPILING TOPSOIL

A. Prior to the commencement of any excavation and/or grading operations all topsoil shall be stripped to a depth equal to the top of the subsoil and from the area(s) to be disturbed and stockpiled in locations approved by the Engineer.

B. Topsoil stockpiles shall be protected from erosion as specified in Section 31 25 00 – Soil Erosion and Sediment Control, of these Specifications.

3.05 STRUCTURE EXCAVATION

A. Excavation shall be performed to the elevations and dimensions indicated plus adequate space to permit erection of forms, sheeting, shoring, bracing, drains, masonry, and other Work and the inspection of the Work.

B. Immediately after excavations for the structure have been completed to the required grades, the exposed surface of the excavation shall be cleaned of all loose or disturbed materials. The surface of the excavation shall then be compacted with at least six (6) passes of an acceptable vibratory plate tamper.

C. If suitable bearing for foundations is not encountered at the depth indicated on the Drawings, or in the excavation required in these Specifications, the Contractor shall immediately notify the Engineer. The Contractor shall remove any remaining unsuitable material as directed. Unsuitable materials as herein defined are organic material, frozen material, peat, organic silt, or combinations thereof, all having unsuitable in-situ bearing properties and all materials of whatever description which are too loose or saturated to provide satisfactory bearing.

D. If rock is encountered at the required elevations, the rock shall be over-excavated and replaced with a minimum of twelve (12) inches of compacted gravel or crushed stone fill.

E. The bottom of excavations shall be protected from frost from whatever source. Footings or slabs shall not be placed on frozen ground or on saturated materials. No excavation shall be

made to the full depth indicated when freezing temperatures may be expected, unless the footings or slabs can be placed immediately. The bottoms so excavated shall be protected from frost and water if placing of concrete is delayed.

F. The Contractor shall sheet, shore, and brace all excavation if necessary to prevent cave-ins as required.

G. Over excavation below or beyond the indicated or authorized limits shall be refilled with fill material approved by the Engineer compacted to ninety-five (95%) percent of the maximum dry density of the material as determined by ASTM D 1557 at no additional expense to the Owner.

H. The Contractor shall control and pitch all grading to prevent water from running into the excavated areas of structures or to prevent damage to other Work already completed or in progress.

I. The Contractor shall furnish all pumping and other dewatering equipment necessary to keep excavated areas dry during construction, as required. Refer to Section 02230 - Dewatering, Control and Diversion of Water, of these Specifications.

J. Any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain the area of all structures and Work in a suitable dry condition shall be repaired as directed by the Engineer at no additional expense to the Owner.

3.06 SITE EXCAVATION, FILL AND BACKFILL

A. GENERAL

1. All fill materials shall be approved by the Engineer prior to being incorporated into any fill area.

2 The Contractor shall perform all site excavations, fills, re-fills, backfills, and compaction required for all site grading and for the various areas to be paved, and for utilities, structures, conduits and appurtenances.

B. BORROW

1. The amount of usable general fill material excavated within the limits of the Work contracted for may not be sufficient to accomplish the grading called for and other features of the Work. Borrow shall include the furnishing, removing, and satisfactory placing of additional material necessary to complete all features of the Work.

2. Borrow shall be of satisfactory quality as determined by the Engineer for the purpose intended.

3. Borrow will be permitted only to the extent necessary to complete the Work as shown and only after all acceptable on-site material from excavation has been placed. With the approval of the Engineer, the Contractor may be permitted to place borrow before the excavation is completed; but he will be held responsible for the proper placing of all suitable excavated material.

4. The Contractor shall notify the Engineer at least fifteen (15) calendar days prior to obtaining material from any borrow pits so that an examination may be made of the fitness of the material. The limits of the proposed borrow pit shall be shown to the Engineer. The Contractor shall be required to clear the area of all unsuitable material.

C. OVER-EXCAVATION

1. Unauthorized excavation of suitable materials beyond the indicated or authorized limits shall be refilled, at no additional expense to the Owner, with gravel fill compacted to ninety-five (95%) percent of the maximum dry density of the material as determined by ASTM D 1557.

D. SHEETING AND SHORING

1. Excavations shall be adequately sheeted, shored and braced, as necessary, to permit proper execution of the Work and to protect all slopes and banks.

2. The Contractor shall be solely responsible for the adequacy of all temporary support systems.

3. The Contractor shall retain a Professional Engineer licensed in the State of Connecticut to design all temporary support systems required for the execution of the Work. The installation of sheeting, shoring, and bracing shall comply with the safety precautions as outlined in the Associated General Contractors of America "Manual of Accident Prevention in Construction," and all Local and State regulations.

4. Sheeting shall be installed as required to prevent cave-ins or settlement and to protect workmen, adjacent structures, and utilities. Shoring and sheeting may be removed as the backfilling progresses, but only when banks are safe against caving. The Engineer may direct that sheeting, shoring, and bracing be left in place at any time during the progress of the Work, and direct that the timber and/or steel be used for sheeting and bracing, authorized to be left in place, be cut-off at a specified elevation.

5. Dewatering shall be performed as required, for all excavations below ground water level in conformance with Section 31 23 19 - Dewatering, Control and Diversion of Water, of these Specifications.

E. BACKFILLING

1. Backfilling shall comply with material, compaction and placing requirements specified elsewhere in this section. In addition, comply with the following requirements:

2. Backfilling at Buildings: Remove from spaces to be filled all excessively wet or otherwise unsuitable material, such as rubbish, organic materials, sheeting, bracing, forms and debris. Do not commence backfilling operations until conditions have been inspected and approved by the Engineer. Do not place fill material against foundation walls or structural members unless they are either shored and braced or of sufficient strength to withstand the pressures to be imposed by compaction. Similarly, do not place fill until subgrade dampproofing materials have been in place for at least 48-hours, have been inspected and approved by the Engineer, and are properly protected.

3. Backfilling at Utility Trenches: Do not commence backfilling operations until all piping, conduit, etc. has been installed, tested and approved by the Engineer and the locations of all pipe and appurtenances have been recorded. backfill carefully by hand around pipe to depth of 6" above top of pipe using bedding material and tamping firmly in layers not to exceed 6", compacting by hand rammers or mechanical tampers. When a manufacturer of a utility line material suggests specific backfill materials and methods other than those specified herein, such requirements shall govern, providing the finished work equals or exceeds the result obtained by the materials and methods specified herein as determined by the Engineer.

4. Backfilling at Retaining Structures: Compaction equipment weighing more than 2,000 pounds will not be used adjacent to retaining structures or building walls which function as retaining structures unless specifically authorized by the Engineer.

3.07 PLACING FILL

A. PREPARATION

1. Foundations for fills, refills and backfills shall be prepared in an approved manner by removing all excess and unsuitable materials. The base or other surfaces of fills, refills, or excavations which have been allowed to weather and which, in the opinion of the Engineer, are unsuitable, shall be removed and replaced with crushed stone or gravel fill or shall be dried, roughened or scarified, and then compacted with at least six (6) passes of a suitable vibratory compactor, as directed, before any additional fills or refills are placed on them.

B. PLACEMENT

1. Materials placed shall be specially compacted by depositing in approximately horizontal layers not exceeding twelve (12) inches in thickness before compaction, and unless sufficiently moist as spread, shall be wetted to near the optimum moisture content. Each layer shall be compacted by suitable vibratory compactors or tampers.

2. Materials used in refills and backfills shall be carefully placed to avoid damage to structures, conduits and/or pipes.

C. MOISTURE CONTROL

1. Fill material which does not contain sufficient moisture to be compacted to the specified densities shall be conditioned by adding water uniformly to the surface of each lift before compaction.

2. Fill material containing excess moisture shall be required to dry to optimum moisture content before it is placed and compacted. A tolerance of up to five (5%) percent above optimum may be permitted by the Engineer. However, if a lift of fill displays pronounced elasticity or deformation under the action of earthmoving and compaction equipment, the moisture content shall be reduced to secure stability.

3.08 COMPACTION

A. REQUIREMENTS

1. All fills, refills, and backfills shall be compacted in accordance with the following minimum percentage of the maximum dry density for the material as determined by ASTM D 1557:

   a. All fills under building areas - 95%.

   b. All bases under slabs on grade and footings - 97%.

   c. All fills under areas to be paved:

      (1) To within three (3) feet of finished pavement - 92%.

      (2) Within three (3) feet of finished pavement - 95%.

   d. All foundation and retaining wall backfill - 95%.

   e. All pipe bedding - 95%.

f. All trench backfill under areas to be paved:

(1) To within three (3') feet of finished pavement - 92%.

(2) Within three (3') feet of finished pavement - 95%.

g. All trench backfill under unpaved areas - 90%.

h. All fills under general landscaped areas - 90%.

B. TESTING

1. All percentages of compaction specified herein shall be related to the maximum dry density as established by Method D ASTM Designation D 1557, latest revision and verified in the field by ASTM Designation D 1556, latest revision, D 2167, latest revision or an approved Nuclear Density Testing Device. Prior to placing, at least one (1) laboratory test shall be made by the Engineer on a representative sample of each of the fill materials proposed to be furnished for the earthwork operations to determine gradation and moisture-density characteristics.

2. Field density tests to determine the actual in-place densities being attained shall be made at the Owner's expense and insufficient quantity to determine that the required compaction is being attained.

C. EQUIPMENT

1. Where vibratory compaction equipment is specified herein or is directed to be used by the Engineer, all such equipment, whether plate-type or roller-type, shall be furnished with a vibrating surface at least twenty-four (24") inches in width, and capable of operating at a minimum of two thousand (2,000) blows per minute. Equipment not specifically designed as vibrating compaction equipment shall not be permitted for compaction of either existing in-place materials or of fills, refills and backfills. Plate vibratory tampers specified for compaction of materials shall be commercially manufactured by Jackson Vibrators, Inc., Ludington, MI.; the Wacker Corp., Hartford, WI.; the Jay vibratory plate tamper as manufactured by the Jay Co., Columbus, OH.; or equal.

2. Vibrating rollers and vibrating tampers specified for compaction shall be similar and equal to the Vibrating Rollers as manufactured by Essick Manufacturing Company, Elizabeth, NJ; the Multiple Vibratory Compactor as manufactured by Jackson Vibrators, Inc., Luddington, MI; or equal. Jack hammers, rubber-tired vehicles, and similar equipment not specifically designed and manufactured for the compaction of granular materials will not be approved for use.

D. SURFACES TO BE COMPACTED

1. Surfaces to be compacted shall, unless otherwise specified, shall be compacted by a sufficient number of passes with approved vibratory compactors, in order to obtain the percentage of compaction specified in subsection 3.07 A. A complete pass shall consist of the entire coverage of the surface area to be compacted with one trip of the equipment. Each trip of the equipment shall overlap the previous trip by at least one (1) foot.

2. Dumping, spreading, preparing and compacting of several layers of fill materials across the area of work may be performed simultaneously, providing there is sufficient total area to permit these operations to proceed in a systematic manner.

3. No rolling equipment shall be used to compact fill, refill or backfill materials within four (4) feet of the vertical faces of any concrete walls or utility pipes. Plate vibratory tampers shall be used in these restricted areas and in other areas too confined to satisfactorily use rolling equipment.

4. It is the intent of these compaction requirements that the minimum in-place dry density of the compacted materials resulting from the specified minimum number of passes of the compaction equipment will be equal to or greater than the minimum percentages specified herein. Additional passes of the specified equipment shall be required if the minimum percentages of ASTM in-place dry densities as specified are not obtained with the minimum passes indicated.

3.09 RESTORATION OF EXISTING SURFACES

A. Whenever streets, lawns or sidewalks within or outside the Contract Limit Lines have been excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all material necessary to bring finish surfaces level with the existing adjacent surfaces. All work shall be installed to match the existing conditions in accordance with the governing authority. The Contractor shall notify the proper authorities prior to restoring surfaces outside the Contract Limit Lines.

3.10 OVERLOAD OF STRUCTURES

A. The Contractor shall be responsible for taking all necessary precautionary measures to assure that compaction equipment used will not overload structures during the compaction of fills and backfills.

END OF SECTION

SECTION 31 23 00 – TRENCH EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications consists of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with trench excavation and subsequent earth backfilling necessary for the construction of all drainage pipe, utilities, conduits, and related Work in accordance with the Drawings and these Specifications, or as directed by the Engineer.

B. The Work shall also include the temporary control and diversion of groundwater, the installation of trench support systems, and the removal and disposal of surplus excavated material, which in the opinion of the Engineer are considered unsuitable for reuse in any part of the Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Earthwork - Section 31 00 00.

B. Dewatering, Control and Diversion of Water - Section 31 23 19.

C. Soil Erosion and Sediment Control - Section 31 25 00.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bedding and backfill materials shall conform to the requirements of Section 31 00 00 – Earthwork.

PART 3 - EXECUTION

3.01 CLASSIFICATION OF TRENCH EXCAVATION

A. Trench Excavation: Shall be classified as either earth or rock as described below:

1. Trench Excavation shall include the excavation and removal of all materials of whatever nature encountered in trench excavation operations, or as directed by the Engineer.

2. Rock in trenches shall be excavated well in advance of the construction of pipelines, utilities, conduits and other Work to ensure that all necessary blasting is kept at a reasonable distance from the Work in progress.

3.02 BACKFILL

A. Bedding Material: Shall be placed to the dimensions and compacted thicknesses as shown on the Drawings and shall conform to the requirements of these Specifications. Bedding material shall be deposited in layers and shall be compacted to not less than ninety (90%) percent of the maximum dry density of the material as determined by ASTM D 1557 for all areas not under traveled ways and to not less than ninety-five (95%) percent of the maximum dry density of the material as determined by ASTM D 1557 for all areas under traveled ways.

B. Sandy Fill: Shall be suitable excavated material meeting the requirements of Section 31 00 00 - Earthwork of these Specifications and placed in accordance with the Drawings. If sufficient suitable materials are unavailable from excavations, additional acceptable backfill shall be obtained and compacted in the Work in sufficient quantities required for completion of the refilling to the limits directed.

C. All Sandy Fill shall be placed in uniform layers which shall not exceed twelve (12) inches in depth and shall be thoroughly compacted by means of mechanical rammers or vibrators, or by pneumatic tampers. Hand tampers shall be used only upon written permission of the Engineer. All trench backfill shall be compacted to not less than ninety (90%) percent of the maximum dry density of the material as determined by ASTM D 1557 for all areas not under traveled ways and to not less than ninety-five (95%) percent of the maximum dry density of the material as determined by ASTM D 1557 for all areas under traveled ways.

3.03 GENERAL

A. Unauthorized excavations made beyond neat lines or below subgrade lines shall be refilled with approved compacted gravel or other approved material as directed by the Engineer and at no additional expense to the Owner.

B. No backfilling shall be allowed around manholes or other masonry structures until concrete or masonry has set sufficiently, as determined by the Engineer. The best of the excavated materials shall be used in backfilling within two (2) feet of the structure. Unequal soil pressures shall be avoided by depositing the material evenly around the structure.

C. Frozen material shall not be placed in the backfill, nor shall backfill be placed upon frozen material. Previously frozen material shall be removed or shall otherwise be treated as required, before new backfill is placed.

D. If pipe is to be laid in embankments or other recently filled materials, the fill shall first be placed to the top of the embankment or to the height of at least one (1) foot above the top of the pipe, whichever is lesser. Particular care shall be taken to ensure maximum consolidation of fill under the pipe location. The pipe trench shall be excavated as though in undisturbed earth.

E. All surfaces shall be graded evenly. Unless otherwise specifically required, all paving and walks damaged by work shall be built anew of same kind of material as that existing, and all loam, sods, shrubs, trees, and other surface material shall be replaced in good condition.

END OF SECTION

SECTION 31 23 19 – DEWATERING, CONTROL AND DIVERSION OF WATER

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications consists of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with the dewatering, control, and diversion of water, and all other operations necessary to maintain "in the dry" conditions of all excavations and Work areas of this Contract, in accordance with the Drawings and these Specifications, or as directed by the Engineer.

B. The Contractor shall be responsible for providing, operating, maintaining, and removing all dewatering and other facilities, including all pumping and appurtenant equipment required to maintain "in the dry" conditions.

C. The Contractor shall exercise extreme caution in all dewatering operations and shall be responsible for performing all required dewatering in a manner to prevent injury to persons or public health and damage to existing structures, facilities, wells or the Work in progress.

1.02 RELATED WORK SPECIFIED ELSEWHERE

1. Earthwork - Section 31 00 00.

2. Trench Excavation and Backfill - Section 31 23 16.

3. Soil Erosion and Sediment Control - Section 31 25 00.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The Contractor shall provide all pumps, drains, well points, cofferdams or any facilities necessary for the control, collection, and disposal of all surface and subsurface water encountered in the performance of the Work.

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall provide dewatering during construction suitable for the conditions encountered or as required by the Engineer to ensure that all Work is performed in the dry condition.

B. Dewatering facilities shall be designed, installed, and operated in such a manner as to minimize the transport of fine soil particles from the excavation that could cause settlement of structures or of the Work in progress.

C. Any damage to existing structures or the Work in progress resulting from the failure of the Contractor to perform the Work in the dry condition shall be repaired by the Contractor, as directed by the Engineer, at no additional expense to the Owner.

3.02 WORKMANSHIP

A. All dewatering operations shall be carried out in such a manner that no loss of ground occurs. All pipes, structures and other facilities shall be thoroughly braced or otherwise protected against damage.

B. All water and other materials removed from excavations and other Work areas by dewatering operations shall be disposed of in such a manner to prevent direct discharge into a waterbody. Sedimentation basins shall be provided for any water from dewatering operations that is to be discharged to a waterbody or storm drainage system. No water from dewatering operations shall be discharged to any sanitary sewer system.

C. Upon completion of the Work in each area requiring dewatering, the Contractor shall remove all temporary dewatering equipment and shall perform all necessary Work including backfilling, compacting, and grading all areas disturbed for purposes of dewatering operations.

END OF SECTION

SECTION 31 25 00 – SOIL EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications consists of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with all Work necessary for controlling soil erosion and water pollution and providing and maintaining the various erosion and sediment control devices including but not limited to berms, dikes, dams, sediment basins, geosynthetics, haybales, gravel, mulches, grasses, slope drains, ditches, channels, riprap, grading to surface runoff, and other erosion and sediment control devices in accordance with the Drawings and these Specifications, or as directed by the Engineer.

B. The Contractor shall operate, maintain, and provide means and devices necessary to minimize to the greatest extent possible, erosion within the Work area of the Contract and to prevent entrance of any silt laden runoff from the work area into any drainage system, sewer or waterbody on or adjacent to the Work area. Waterbodies mentioned herein shall mean any Inland Wetland, swamp, stream, watercourse, lake, pond, or other area of water impoundment.

C. The Contract Drawings and these Specifications set forth the minimum requirements for the control of soil erosion and sediment. The Contractor shall employ such additional methods and measures as may be necessary to fully comply with the intent of this section and the guidelines and recommendations set forth in the "Connecticut Guidelines for Soil Erosion and Sediment Control", 2002, latest revision.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Earthwork - Section 31 00 00.

B. Trench Excavation and Backfill - Section 31 23 16.

C. Dewatering, Control and Diversion of Water - Section 31 23 19.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials to be used for the control of soil erosion and sediment shall be as indicated on the Drawings and shall be approved by the Engineer.

PART 3 - EXECUTION

3.01 GENERAL

A. All necessary soil erosion and sediment control devices shall be properly installed, as specified on the Drawings, and in a manner acceptable to the Engineer prior to the commencement of the Work.

B. Soil erosion and sediment control devices shall be maintained by the Contractor as specified on the Contract Drawings and in a manner acceptable to the Engineer. Soil erosion and sediment control devices shall be replaced as required or as ordered by the Engineer.

C. Soil erosion and sediment control devices shall be removed after all disturbed areas have been stabilized, as ordered by the Engineer.

D. The Engineer has the authority to control the surface area of earth material exposed by construction operations and to direct the Contractor to immediately provide permanent or temporary erosion and sedimentation control devices.

E. All slopes of temporarily stockpiled material shall be stabilized or otherwise protected by seeding, mulching, or any means necessary to comply with the intent of this section.

END OF SECTION

SECTION 32 00 80 – IRRIGATION

PART 1 - GENERAL

1.01 PROJECT INTRODUCTION AND REQUIREMENTS

A. The Elizabeth C. Adams Middle School athletic fields include two Little League baseball fields, a 90-foot diamond baseball field, and a multi-purpose field used for both soccer and field hockey.

B. An existing irrigation system provides irrigation for the infield turf of the two Little League baseball fields only.

C. A water service from the Connecticut Water Company water main within Church Street (State Route 77) provides water supply for the existing irrigation system. The point of connection is located within an enclosure at the main Little League baseball field. The existing irrigation system consists of backflow preventer valves, pump, variable frequency drive, and irrigation controller.

D. The Work consists of the provision and installation of a new irrigation controller, a new mainline for the entire system beginning at the existing point of connection and a complete irrigation system for all of the athletic fields identified under Paragraph 1.01 A. above as shown on the Drawings and as specified in this Section.

E. All existing Little League fields irrigation system electronic zone valves shall be replaced and all existing valve boxes shall be reset. The existing PVC lateral piping shall be connected to the new mainline and all existing rotary sprinklers shall remain in use.

F. All new irrigation system piping and fittings shall be high density polyethylene (HDPE) and all piping shall only be installed by pulling with a vibratory plow.

G. Only Contractors with extensive experience in the installation and fusing of HDPE irrigation piping will be considered for this project. See Paragraph 1.02 A. for required qualifications to be submitted with a Bid.

H. The Work includes a Base Bid scope of work and three (3) Additive Alternate scopes of work as described herein:

1. Base Bid: All Work required to provide and install the mainline and all required isolation valves, electronic zone valves and valve boxes as shown on the drawings for the complete irrigation system for Baseball Fields No.s 1, 2 and 3, the Soccer Field and the Field Hockey Field, and all Work required to provide and install the complete irrigation systems for Baseball Field No. 1 and Baseball Field No.2 as

shown on the drawings including all lateral lines, swing joint assemblies and rotary sprinklers.

2. Alternate No. 1 – Baseball Field No. 3: All Work required to provide and install the complete irrigation system for Baseball Field No. 3 as shown on the drawings including all lateral lines, swing joint assemblies, rotary sprinklers, and quick coupling valve and valve box.

3. Alternate No. 2 – Soccer Field: All Work required to provide and install the complete irrigation system for the Soccer Field as shown on the drawings including all lateral lines, swing joint assemblies and rotary sprinklers.

4. Alternate No. 3 – Field Hockey Field: All Work required to provide and install the complete irrigation system for the Field Hockey Field as shown on the drawings including all lateral lines, swing joint assemblies and rotary sprinklers.

I. Anticipated Project Schedule for Base Bid Scope of Work:

Bid Advertisement Date: Monday, August 12, 2019

Bid Due Date: Monday, August 26, 2019

Notice to Proceed Date: Week of September 16th, 2019

Begin Base Bid Construction: Week of September 30th, 2019

Completion of Base Bid Construction: Week of October 21st, 2019

1.02 QUALITY ASSURANCE

A. Qualifications Required to be Submitted with Bid:

1. Evidence of a minimum of five (5) years experience with the Work of the type and scope described in this Section.

2. A minimum of three (3) athletic field irrigation system project references for Work of the type and scope described in this Section including names and telephone numbers of the contact person for each project.

3. Current Irrigation Association Certified Irrigation Contractor (CIC) certification.

4. Certification of completion of HDPE pipe and fittings fusion training by an HDPE pipe and fittings manufacturer within the past calendar year.

B. Submittals:

The Contractor shall provide copies of product specification sheets for all proposed equipment to be installed to the Owner's Representative for approval prior to the start of Work. Work on the irrigation system may not commence until product sheets are submitted and approved. Submittals shall be marked up to show proper nozzles, sizes, flows, and specifics of each item as to its qualifications.

Equipment to be included:

1. Sprinkler Heads
2. Valves: Manual and Automatic
3. Valve Boxes
4. Pipe and Fittings
5. Swing Joints
6. Wire and Connectors
7. Quick Coupling Valves
8. Rain Sensors
10. Lightning Surge Devices
11. Decoders
12. Grounding Equipment
13. Miscellaneous Materials

1.03 APPLICABLE STANDARDS AND CODES

A. All Work shall comply with the applicable requirements established in the recognized standards and codes published by the following organizations:

1. American Society for Testing and Materials (ASTM)

2. National Electrical Code (NEC)

3. National Standard Plumbing Code (NSPC)

4. Occupational Health and Safety Administration (OSHA)

5. Underwriters Laboratories, Inc. (UL)

SECTION 32 00 80 – IRRIGATION

1.04 SCOPE OF WORK

A. Furnish all labor, materials, equipment and services required to complete all irrigation Work indicated on the Drawings and as specified herein.

B. The Drawings and Specifications must be interpreted and are intended to complement each other. The Contractor shall furnish and install all parts which may be required by the Drawings and may be omitted in the Specifications, or vice versa.

C. All necessary changes to the Drawings to avoid any obstacles shall be made by the Contractor with approval of the Owner or the Engineer.

D. All irrigation system pipe is to be installed via a vibratory plow on a low ground pressure track machine to minimize disturbance of the athletic fields. All pipe shall be installed a minimum of 18" below grade to allow for deep tine aeration of the athletic fields.

E. The Work shall be constructed and finished in every respect in a good, workmanlike and substantial manner, to the full intent and meaning of the Drawings and Specifications.

1.05 RELATED WORK

A. Carefully examine the Contract Documents for requirements that affect the Work of this Section.

1.06 ORDINANCES, PERMITS AND FEES

A. The Work under this Section shall comply with all ordinances and regulations of authorities having jurisdiction.

B. The Contractor shall obtain and pay for any and all permits, tests and certifications required for the execution of Work under this Section.

C. Furnish copies of permits, certifications and approval notices to the Owner or Owner's representative.

D. The Contractor shall include in their Bid any charges by the water utility company, or other authorities for the work done by them and charged to the Contractor.

1.07 EXAMINATION OF CONDITIONS

A. The Contractor shall fully inform him or herself of existing conditions on the site before submitting his bid, and shall be fully responsible for carrying out all Work required to fully and properly execute the work of the contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed except those conditions described in the general conditions.

1.08 DELIVERY, STORAGE AND HANDLING

A. Store and handle all products and materials in compliance with manufacturers instructions and recommendations.

B. Protect from all possible damage.

C. Minimize on-site storage where practicable.

D. Remove all unused materials from the site of the Work upon completion of installation

1.09 TESTS

A. Observation: The Owner or Owner's representative will be on site at various times to insure the system is being installed in accordance with the Contract Documents.

B. Coverage Test: After completion of the system, test the operation of the entire system and adjust sprinklers as directed by Owner or Owner's representative. Demonstrate to the Owner or Owner's representative that all irrigated areas are being adequately covered. Furnish and install materials required to correct inadequacies of coverage due to deviation from Drawings.

C. The Owner or Owner's representative shall be notified 7 days in advance for observations.

D. During final observation, the Contractor shall be responsible for having two-way communication and sufficient personnel to provide instantaneous communication between the observation area and the controller for the system.

1.10 GUARANTEES

A. The Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are

offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities that the Contractor may have by law.

B. In addition to the manufacturers guarantees the Contractor shall warrant the entire irrigation system, both parts and labor for a period of one (1) year from the date of acceptance by the Owner.

C. As part of the one-year warranty the Contractor shall perform the first year-end winterization and spring start-up for the irrigation system.

D. Should any problems develop within the warranty period because of inferior or faulty materials or workmanship, they shall be corrected to the satisfaction of the owner and owner's representative at no additional expense to the Owner.

E. A written warranty showing date of completion and period of warranty shall be supplied upon completion of each segment of the project.

1.11 PROJECT RECORD DOCUMENTS

A. The Contractor shall provide and keep up-to-date a complete redlined Record Set of Drawings of the system as the project proceeds. Drawings shall be corrected daily, showing every change from the original Drawings and Specifications. Record Drawings shall specify and exactly locate sprinkler type; pop up height and nozzle for each sprinkler installed. Each valve box location to be referenced by distance from a minimum of two permanent locations. Controllers, rain sensors, moisture sensors, lightning arrestors, decoder cable fused devices, quick coupling valves and all other equipment shall be indicated on the Drawings. All wire routing, wire size and splices shall be indicated. Main line pipe and wire route shall have two (2) distinctly different graphic symbols (line types). Prints for this purpose may be obtained from owner or owner's representative at cost. This redlined record set of drawings shall be kept at the job site and shall be used only as a record set.

B. This redlined set of documents shall also serve as Work progress sheets and shall be the basis for measurement and payment for work completed. This record set of Drawings shall be available at all times for observation and shall be kept in a location designated by Owner or Owner's representative. Should this record set of Drawings not be available for review or not be up-to-date at the time of the observation, it will be assumed no work has been completed. Provide copies of the redlined record set of Drawings for Owner or Owner's representative review on a monthly basis.

C. Make neat and legible notations on this record set of Drawings daily as the work proceeds, showing the work as actually installed. For example, should a piece of

equipment be installed in a location that does not match the plan, indicate that equipment in a graphic manner in the location of installation and so as to match the original symbols as indicated in the irrigation legend. Should the equipment be different from that specified, indicate with a new graphic symbol both on the Drawings and the irrigation legend. The relocated equipment dimensions and northing and easting coordinates should then be transferred to the appropriate Drawing in this record set of Drawings at the proper time.

D. On or before the date of final field observation, deliver corrected and completed AutoCAD computer plots of "record drawings" on vellum and AutoCAD electronic files on disk to owner or owner's representative as part of contract closeout. Delivery of plots will not relieve the Contractor of the responsibility of furnishing required information that may have been omitted from the prints.

E. Final project as-built should be collected utilizing a GNSS System capable of delivering 6" or better accuracy. All information should be collected and imported into AutoCAD.

1.12 MAINTENANCE AND OPERATING INSTRUCTIONS

A. Contractor shall include in their Bid an allowance for four (4) hours of instruction of Owner and/or Owner's personnel upon completion of check/test/start-up/adjust operations.

B. Upon completion of the Work and prior to application for acceptance and final payment, a minimum of three (3) three ring, hard cover binders titled "MAINTENANCE AND OPERATING INSTRUCTIONS FOR ELIZABETH C. ADAMS MIDDLE SCHOOL ATHLETIC FIELDS IRRIGATION SYSTEM" shall be submitted to the Owner's Representative. After review and approval, the copies will be forwarded to the Owner. Included in the Maintenance and Operating binders shall be:

1. Table of Contents

2. Written description of Irrigation System.

3. System drawings:

   a. One (1) copy of the original irrigation plan

   b. One (1) copy of the Record Drawing;

   c. One (1) reproducible of the Record Drawing

d. One (1) copy of the controller valve system wiring diagram

4. Listing of Manufacturers.

5. Manufacturers data where multiple model, type and size listings are included, clearly and conspicuously indicating those that are pertinent to this installation.

6.
   a. Approved submittals of all irrigation equipment

   b. Operation

   c. Maintenance: including complete troubleshooting charts.
   d.
   e. Parts list.

   f. Names, addresses and telephone numbers of recommended repair and service companies. A copy of the suggested "System Operating Schedule" which shall call out the controllers' programs required (zone run time in minutes per day and days per week) in order to provide the desired amount of water to each area under "no-rain" conditions.

7. Winterization and spring start-up procedures.

8. Guarantee information.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials to be incorporated in the irrigation system shall be new and without flaws or defects and of the quality and performance specified meeting the requirements of the system.

B. No material substitutions from the irrigation products described in these Specifications and shown on the Drawings shall be made without prior approval and acceptance from the Owner or Owner's representative.

C. Any manufacturer's names and/or model numbers identified herein are intended to assist in establishing a general level of quality, configuration, functionality, and appearance required. This is not a proprietary specification and it should be noted that the term "or equal" applies to all products denoted herein. It is understood that all manufactures will have minor variations in configuration, appearance, and product specifications and such minor variations shall not eliminate such manufacturers as an "equal". It is the intent of this Specification to encourage open and competitive involvement from multiple manufacturers that are able to supply similar products.

2.02 IRRIGATION PIPE

A. Main line and lateral pipe: High Density Polyethylene (HDPE) PE 4710 IPS, DR 11 (200 psi), ASTM D3350, ASTM F412.

B. Manufacturers: CP Aqua Fuse, ISCO or approved equal.

C. Pipe shall be joined by butt fusion method using personnel certified in the procedure.

D. The pipe manufacturer must provide a written 25 year or better limited warranty.

2.03 IRRIGATION PIPE FITTINGS

A. 1 ½ inch and 2 inch fittings shall be HDPE PE4710 IPS, cell classification of PE 445474C as determined by ASTM D3350-09. Butt fusion and molded fittings shall have a manufacturing standard of ASTM D3261 and shall be molded such that knit lines are not present in the vicinity of the crotches of tee and elbow fittings. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the Drawings. Fabricated fittings per AWWA C906 are to be manufactured using a data logger. Reference to the data logger quality control records should be referenced from an indented stamp in each fusion bead of each fitting. Temperature, fusion

pressure and a graphic representation of the fusion cycle shall be a part of the quality control records.

B. Flanged and mechanical joint adapters shall be HDPE PE 4710, Cell Classification of 445474C as determined by ASTM D3350-09. Flanged and mechanical joint adapters shall have a manufacturing standard of ASTM D3261. Fittings shall have the same pressure rating as the pipe unless otherwise specified on the Drawings.

C. All main line and lateral line taps are to be completed via sidewall fusion. No mechanical or electrofusion fittings will be allowed on the mainline or laterals with the exception of the connection to the pump station which will be a flanged connection.

2.04 BRASS PIPE FITTINGS

A. Brass fittings shall be cast bronze, screwed, 125lb. class.

2.05 ELECTRONIC ZONE VALVES

A. Electric zone valves shall be one inch (1"), one and one half inch (1 ½") and two (2") inch remote control, diaphragm type, fiberglass or reinforced nylon body plastic valves with manual flow control, pressure regulating device, manual bleed screw and 200 psi pressure rating.

B. Manufacturers and Models: Hunter Industries, Model PGV or approved equal

2.06 ISOLATION VALVES

A. All isolation valves shall be butt fusion connections. Isolation valves shall be 2" - 4" and shall be polyethylene ball valves with DR 9 bodies (rated 250 psi) and DR 13.5 ends (rated 200 psi) per the requirements of ASTM D 3261. The valves shall be approved for water contact and NSF 61 listed. The valves shall be manufactured using Dow DGDA 2490 Black PE 4710 resin. The valves shall be full port and shall have a 2" operating nut. All seals shall be EPDM, nitrile seals are not permitted. Stems shall be modified phenylene oxide, acetyl stems are not permitted. Ball lubricant shall be optimized for water applications; valves also used in gas applications are not permitted. Connection of nut to stem shall not require the use of steel pins. The valve shall be the Poly-Water Valve for potable water as manufactured by Aqua-Fuse, Polyvalve – Andronaco Industries (Harco) or Integrity Fusion. All 2" and 3" ball valves are to be slow close.

B. One of the appropriate configuration and size valve keys shall be supplied for each type of valve used on the project

2.07 QUICK COUPLING VALVES

A. The valve body shall be of cast brass construction with a working pressure of 125 psi. The valve seat disc plunger body shall be spring loaded so that the valve is normally closed under all conditions when the key is not inserted.

B. The top of the valve body receiving the key shall be equipped with ACME threads and smooth face to allow the key to open and close the valve slowly. The quick coupling valve shall be equipped with a vinyl cover.

C. The valve body construction shall be such that the coupler seal washer may be removed from the top for cleaning or replacement without disassembling any other parts of the valve.

D. All quick coupling valves shall require the installation of a stabilizer if not an integral part of the quick coupling valve body.

E. Keys shall be ACME with 1-inch male thread and 3/4-inch female thread at the top.

F. Provide a minimum of two (2) keys for quick coupling valves and two (2) 1-inch x 3/4-inch swivel hose ells.

G. Manufacturers and Models: Hunter Industries, Model HQ-44RC-AW, HK-44A and HS-1 or approved equal.

2.08 VALVE BOXES

A. Valve boxes shall be manufactured from unformed resin with a tensile strength of 3,100 - 5,500 psi conforming to ASTM D638. All boxes shall be green in color. Covers shall be green in color unless otherwise specified.

B. Valve boxes for single 1 inch and 1-1/2 inch electric valves, small isolation valves and quick coupling valves shall be 10-inch round valve boxes with metal detection and bolt down covers.

C. Valve boxes for main line isolation gate valves 3-inch and larger shall be 5-1/4 inch round valve boxes with poly-iron (detectable) sleeves. Top piece shall be 15-1/2 inches long and bottom piece 24 inches. Top shall turn on bottom section to allow for adjustment to grade. "T" handle wrench must fit well inside of box.

D. Valve boxes for single 2 inch and dual electric valves shall be 12-inch standard valve boxes with metal detection and bolt down covers. When multiple electric valves are

installed in the same area, they are to be installed two (2) valves per box in a 12-inch standard box.

E. All lightning/ surge arrestors and decoder cable fused devices shall be installed in 10-inch round valve boxes with gray lids and detectable disks.

F. Valve boxes for wire splices shall be 10 inch round valve boxes with detectable disks. All splices shall be in separate valve boxes and not included with isolation valves.

G. Valve box extensions shall be provided and installed for proper box depth. Valve box extensions shall be made by the same manufacturer.

H. Manufacturers and Models: Pentek, Carson Specification Grade, NDS Pro Series or approved equal.

2.09 ROTARY SPRINKLERS

1. Size: 6-Inch Stainless Steel Pop-Up Riser with 1-Inch NPT Bottom Inlet
2. Ratings: 37 – 71 feet Radius, 30 – 100 psi Pressure, 2.9 – 31.5 gpm Flow
3. Construction: Gear-Driven, Removable Nozzle, Internal Check Valve, Stainless Steel Retraction Spring, Rubber Cover, Stainless Steel Riser
4. Features: Adjustable, Part, and Full Circle
5. Manufacturer/Model: Hunter I-25-SS; Rain Bird 6504-SS-XX; or Approved Equal
6. Spacing: As shown on Drawings, generally 75% - 80% of manufacturer rating

2.10 VALVE-IN-HEAD ROTARY SPRINKLERS

1. Size: 6-Inch Stainless Steel Pop-Up Riser with 1-Inch NPT Bottom Inlet
2. Ratings: 45 – 90 feet Radius, 80 psi minimum Pressure, 2.9 – 31.5 gpm Flow
3. Construction: Gear-Driven, Removable Nozzle, Internal Check Valve, Stainless Steel Retraction Spring, Rubber Cover, Stainless Steel Riser
4. Features: Adjustable, Part, and Full Circle, Low angle nozzles for wind
5. Manufacturer/Model: Hunter I-25-SS; Rain Bird 6504-SS-XX; or Approved Equal
6. Spacing: As shown on Drawings, generally 75% - 80% of manufacturer rating

2.11 SWING JOINT ASSEMBLIES

A. Rotary sprinklers shall be installed on 1-inch prefabricated PVC unitized swing joint assemblies with double o-ring seals, minimum 315 psi rating and minimum length of

12 inches. Prefabricated PVC swing joints shall be as manufactured by Lasco or approved equal.

B. Quick coupling valves to be installed on 1-inch prefabricated PVC unitized swing joint assemblies with double o-ring seals, minimum 315 psi rating and minimum length of 12 inches with brass insert and stabilizer (unless stabilizer is an integral part of the quick coupling valve). Prefabricated PVC swing joints shall be as manufactured by Lasco or approved equal.

2.12 CONTROLLER

1. Size: 50-Station Standard Minimum (expandable up to 200 Stations)
2. Construction: Electronic with 120-Volt Input and 24-28 Volt Output; Outdoor Stainless-Steel Pedestal Enclosure.
   Standards: UL-Listed
3. Features: Manual and Automatic Control, Water Budgeting, Cycle-Soak, Sensor Input Terminals, Internal Transformer, Flow Monitoring Capability, Lightning Protection.
4. Remote Control Wifi or Cellphone control and 2 years of subscription to remote service.
5. Manufacturer/Model: Rain Bird ESP-LXD with Flow Smart and IQ Cloud Server; or Approved Equal.

2.13 DECODERS

A. Decoders shall be installed between the controller and the electric control valves to provide the 24-volt power supply for individual valves. Each decoder shall be available in 1, 2 or 4- station devices. Each decoder shall have a unique serial number and controller-assigned address to identify it in the network. All decoders shall be within 10 feet of the valves they control.

B. Sensor shall be manufactured by the controller manufacturer.

2.14 WIRE

A. All valve control wire from the controller to the decoder shall be through two-wire. Wiring shall be polyethylene double-jacketed or UF-B UL PVC double-jacketed two-conductor solid copper designed for direct burial systems. Wire connections shall be 3MDBR/Y-6 or equivalent on the wire side of the decoder and shall utilize 3M DBR/Y-6 or equivalent on the valve side. All connections shall be installed as per their manufacturers' instructions. Wire shall be manufactured by Paige Electric

(maxi wire) or approved equal. Wire gauge shall be AWG #14. Each controller shall have two two-wire paths with its decoders divided evenly between the two paths.

B. Wire type and method of installation shall be in accordance with local codes for NEC Class II circuits of 30-volt A.C. or less.

C. All wiring shall be in strict accordance with all national, state and local electrical codes.

2.15 SURGE ARRESTORS

A. Shall directly connect to the two wire path and require no power from the two wire path.

B. The surge arrestor shall be fully sealed and capable of direct burial. It shall have three wires. The red and black wire 12-inches in length connected to the two wire path, and the green ground wire connected to the grounding system.

C. Sensor shall be manufactured by the irrigation controller manufacturer.

2.16 GROUNDING EQUIPMENT

A. Two-wire communication path shall be grounded at 600 foot maximum intervals and at every termination of a part of the wire path to a surge arrestor decoder. Any branch exceeding 50 feet requires a lightning surge arrestor and grounding. Each surge decoder shall be connected to a 5/8-inch diameter x 8-foot long copper clad grounding rod with minimum #6 AWG, solid, bare copper wire as outlined below. Minimum 10-foot separation between rod and other equipment. All connections to rods shall be with fusion bonded weld connectors as specified. Each grounding rod is to be covered by a 4-inch round, grated top, plastic valve cover with metal detection and six inches of 4-inch perforated drainage pipe. Ground rods shall be UL listed.

B. Each surge arrestor shall have a separate ground.

C. Ground rods and plates shall be UL listed.

2.17 PVC PIPE SLEEVES

A. All pipe sleeves beneath non-soil areas shall be PVC, Class 160 water pipe as manufactured by Cresline, JM or equal. Minimum sleeve size to be 3-inch.

2.18 WIRE CONDUIT

A. Conduit for below grade wiring beneath non-soil surface areas shall be PVC Schedule 40 with solvent-weld joints.

B. Sweep ells shall be standard PVC Schedule 40 long sweep elbows. Cap sweep ells with tri-plug with ring for securing nylon pull rope.

C. Manufacturers: by Certainteed, Cresline, JM or equal.

2.19 CRUSHED STONE

A. Crushed stone shall be as specified in Section 31 00 00 Earthwork. Crushed stone shall be used under valve boxes.

2.20 SAND

A. Sand used for backfilling of trenches; under, around and over lines shall be as specified in Section 31 00 00 Earthwork.

2.21 SPARE PARTS

A. Provide the following tools and equipment to the Owner before final observation:

1. Two (2) wrenches or keys for disassembling and adjusting each type of rotary sprinkler head provided.

2. One (1) quick coupler key assembly for every five or fraction thereof of each type of quick coupling valve provided.

3. One (1) of each size electric control valve used in the project.

4. Five (5) of each type sprinkler head and pattern (PC & FC) used in the project.

5. Five (5) of each type sprinkler head nozzle used in the project.

PART 3- EXECUTION

3.01 GENERAL

A. Before Work is commenced, hold a conference with the Owner or Owner's Representative to discuss general details of the Work.

B. Examine all Contract Documents applying to this Section noting any discrepancies and bringing the same to the attention of the Owner or Owner's representative for timely resolution.

C. All Work indicated on Drawings shall be provided whether or not specifically mentioned in the Specifications.

D. If there are ambiguities between the Drawings and Specifications, and specific interpretation or clarification is not issued prior to bidding, the interpretation or clarification will be made only by the Owner or Owner's representative and Contractor shall comply with the decisions. In the event the installation contradicts the directions given, the installation shall be corrected by Contractor at no additional cost to Owner.

E. Verify dimensions and grades at job site before Work is commenced. Do not proceed with installation of the irrigation system when it is apparent that obstructions or grade differences exist or if conflicts in construction details, legend or specific notes are discovered. All such obstructions, conflicts, or discrepancies shall be brought to the attention of the Owner's Representative.

F. Make all field measurements necessary for the Work noting the relationship of the irrigation work to the other trades. Coordinate with other trades (landscaping and other site work trades). Project shall be laid out essentially as indicated on the Drawings, making minor adjustments. Major changes shall be reviewed with the Owner's Representative prior to proceeding.

G. Layout of sprinkler lines indicated on Drawings is diagrammatic only. Final location of sprinkler equipment is contingent upon and subject to integration with all other underground utilities. Contractor shall employ all data contained in the Contract Documents and shall verify this information at the construction site to confirm the manner by which it relates to the installation.

H. Coordinate installation of all sprinkler materials, including pipe, to avoid conflict with the trees, shrubs, or other plantings.

I. During progress of Work, a competent superintendent and all assistants necessary shall be on site. All shall be satisfactory to the Owner's Representative. The superintendent shall not be changed, except with the consent of the Owner's Representative, unless that person proves unsatisfactory and ceases to be employed. The superintendent shall represent the Contractor in his absence and all directions given to the superintendent shall be as binding as if given to the Contractor.

J. At all times, protect landscaping, hardscapes, structures, walls, footings, utilities and other site materials from damage. Any inadvertent damage to the work of another trade shall be reported at once.

K. Replace, or repair to the satisfaction of the Owner, all existing hardscapes disturbed during course of work. New hardscapes shall be the same type, strength, texture, finish, and be equal in every way to removed hardscapes.

L. Butt fusion equipment must be serviced prior to use on this project. The machines must be environmentally friendly and in satisfactory working order. The hydraulic system must be leak free. The pressure gauge and thermometer must be checked and certified for accuracy. If machines are rented, they must be rented from a company that has a fusion machine service center certified by the machine manufacturer. The machines must arrive on the site with certification that the pressure gauges and heater thermometers were accurate when shipped.

M. Prior to HDPE pipe being installed in the trench, at the beginning of the job, the Contractor shall cut out the first butt fusion of each pipe size. The contractor shall prepare the sample for the test. The samples shall be tested in the presence of the Owner's Representative. All samples shall be labeled and saved. Testing must be done at 73 degrees F plus or minus 5 degrees. The test temperature and sample size are critical to testing.

N. Prior to HDPE pipe being installed in the trench, after the contractor has begun butt fusion of the pipe, the Owners Representative reserves the right to select at random two butt fusion joints (with a minimum of 18" of pipe on each side of the joint). These samples shall be sent to the HDPE supplier for hydrostatic testing at the Contractor's expense

O. All main line pipe joints are to be butt fused using McElroy fusion equipment or equal. Each butt fusion unit shall be equipped with a data-logger. The contractor shall label each butt fused joint so as it will be recorded on the data-logger. The data-logger shall record temperature, fusion pressure, with a graphic representation of the fusion cycle and shall be part of the quality control records. The data-logger information shall be downloaded weekly and given to the irrigation consultant or owners representative for quality control records.

P. Electro fusion may be used where the butt fusion method cannot be used. Electro fusion couplings and fittings shall be PE 4710 HDPE, cell of PE 445474C as determined by ASTM D3350- 09. Electro fusion couplings or fittings shall have a manufacturing standard of ASTM D3261. Couplings and fittings shall have the same pressure rating as the pipe unless otherwise specified on the Drawings.

3.02 PIPE AND FITTINGS INSTALLATION

A. Use proper pulling blade with wire shoot.

B. Mainline pipe shall have minimum 24 inches of cover.

C. Lateral pipe shall have minimum 18 inches of cover.

D. Make fusion connections for mainline HDPE pipe and fittings per ASTM D2657, ASTM F1056, ASTM F905, PPI Technical Reports 33 and 41 and US DOT Pipeline Safety Regulations (CFR 49).

E. Check fusion machine heater plates on a regular basis to make sure they are at proper temperature and adjust to meet manufacturer's requirements.

F. Cut plastic pipe with handsaw or pipe-cutting tool, removing all burrs at cut ends. All pipe cuts are to be square and true. Bevel cut end to conform to manufacturer's Specifications.

G. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. At times, when installation of the piping is not in progress, the open end(s) of the pipe shall be closed by a watertight plug or other means. All piping, which cannot temporarily be joined, shall be sealed to make as watertight as possible. This provision shall apply during the lunch hour as well as overnight. Pipe not to be installed that day shall not be laid out. Should water enter the trench during or after installation of the piping, no additional piping may be installed or back filled until all water is removed from the trench. Pipe shall not be installed when water is in the trench, when precipitation is occurring, or when the ambient temperature is at 40° F or below. Pipe installed at temperatures below 40° F shall be removed and replaced at no cost to the Owner.

H. In installing irrigation pipe the Contractor shall route the pipe as necessary to prevent damage to tree roots. Where trenching must occur near trees, the Contractor shall provide proper root pruning and sealing methods to all roots 1-inch and larger.

I. Maintain 6-inch minimum clearance between sprinkler lines and lines of other trades. Do not install sprinkler lines directly above another line of any kind. Follow

all utility regulations for required vertical and horizontal separation requirements unless encroachment agreements have been approved.

J. Maintain 1-inch minimum between lines which cross at angles of 45 to 90 degrees

K. Throughout the guarantee period it will be the responsibility of the Contractor to refill any trenches that have settled due to incomplete compaction.

3.03 ELECTRICAL WIRE CONDUIT INSTALLATION

A. Electrical conduit shall be installed in all non-soil areas, as well as for all above ground wiring where wire passes under or through walls, walks and paving to controller and rain sensor.

B. Conduit shall extend 18 inches beyond edges of walls and pavement.

3.04 PIPE SLEEVING INSTALLATION

A. Sleeving shall be installed wherever piping is going under hardscape areas where indicated on the Drawings. Minimum cover over all sleeving pipe shall be 24 inches as shown on the detail.

B. Sleeving shall extend 18 inches beyond edges of walls and pavement. Prior to the installation of irrigation piping and wiring, the ends of all sleeving shall be field marked with a vertical wood stake extending above grade to allow field location at the time of irrigation installation.

C. Contractor shall ensure that all required sleeving is installed prior to starting any pavement operations or casting concrete structures which require sleeving to pass through the items. The Contractor shall review all sleeve locations in the field with the irrigation sub-contractor to confirm that sleeves are properly located for the required irrigation pipe runs. In no case will saw cutting into newly installed pavements or jacking under new pavements be permitted to install sleeving which was not installed in proper sequence or in the required orientations or locations.

3.05 ELECTRONIC VALVE INSTALLATION

A. Control valves shall be installed on a level crushed stone base. Grade of bases shall be consistent throughout the project so that finish grades fall within the limits of work. Valves shall be set plumb with adjusting handle and all bolts, screws and wiring accessible through the valve box opening. Valves shall be set in a plumb position with 24-inch minimum maintenance clearance from other equipment.

B. Install at sufficient depth to provide more than 6-inch, nor less than 4-inch cover from top of valve to finish grade.

C. Adjust zone valve operation after installation using flow control and pressure regulator devices on valve.

3.06 ISOLATION VALVE INSTALLATION

A. Install isolation valves per detail where indicated on the Drawings. Install all isolation valves on a level crushed stone base so that they can be easily opened or closed with the appropriate valve wrench. Install specified valve box over each isolation valve.

B. Check and tighten valve bonnet packing before valve box and backfill installation.

C. Provide and install thrust blocks for ringtite valves

3.07 VALVE BOX INSTALLATION

A. Furnish and install a valve access box for each electric valve, quick coupling valve, isolation valve, decoder, decoder switch device, lightning surge arrestor and wire splice.

B. All valve access boxes shall be installed on a minimum 4-inch crushed stone base. Finish elevation of all boxes shall be at grade. All crushed stone to be supplied by the Contractor and installed before valve box. Crushed stone shall not be poured into previously installed valve boxes.

3.08 WIRE INSTALLATION

A. Wiring shall be installed along with the main line. Multiple wire bundles shall be cinched together at maximum 12-foot centers using plastic cable cinches and shall be laid beside, and at the same invert as, the irrigation lines. Sufficient slack for expansion and contraction shall be maintained and wiring shall at no point be installed tightly. Provide and install an additional 8 inches to 12 inches slack at all changes of direction. Wiring in valve boxes shall be a sufficient length to allow the valve solenoid, decoder, splice, and all connections to be brought above grade for servicing. This additional slack shall be coiled for neatness in the valve box.

B. All wire shall be laid in trenches and shall be carefully back-filled to avoid any damage to the wire insulation or wire conductors themselves. In areas of unsuitable material, the trench shall have a 2 inches layer of sand or stone dust on the bottom before the wires are laid into the trench and back-filled. The wires shall have a

minimum of 24 inches of cover (See Detail). Wire not to be installed that day shall not be laid out.

C. An expansion curl shall be provided and installed within 6 inches of each wire connection to a solenoid and at least every 100 feet of wire length on runs more than 100 feet in length. Expansion curls can be formed by wrapping five (5) turns of wire around a 1-inch diameter or larger pipe and then withdrawing the pipe.

D. Service wiring in connection with drawings and local codes for low voltage service. All in ground wire connections shall be waterproofed with 3M DBR/Y-6 splice kits. All splices shall be made in valve boxes. Splice locations shall be shown on the Record Drawings.

E. Contractor shall provide a complete wiring diagram showing wire routing for the connections between the controller, decoders and valves. See section one for the inclusion of wiring diagram in operation and maintenance manuals.

3.09 SURGE ARRESTOR INSTALLATION

A. Lightning arrestor shall be installed per manufacture's recommendations and instructions.

B. Each surge decoder shall be grounded to one rod. The grounding electrode shall be installed at least 10 feet from wires connected to the surge arrestor. Each surge arrestor shall have a separate ground.

3.10 GROUNDING INSTALLATION – SURGE ARRESTOR

A. The grounding rod shall be driven into the ground its full length minimum 10-feet from the surge arrestor and connected via a fusion type connector or approved equal connection to #6 solid, bare copper wire. The copper wire is to be installed in as straight a line as possible, and if it is necessary to make a turn or bend, it shall be done in a sweeping curve with a minimum radius of 8 inches and a minimum included angle of 90 degrees. There shall be no splices in the bare copper wire. The top of the ground rod shall be driven below the ground surface. A 4-inch grated cover as specified, set a minimum of 1-inch below grade, shall be placed over the ground rod and fusion type connector or approved equal connection for periodic maintenance. Cover shall be installed on a minimum of 6 inches of 4-inch corrugated polyethylene, perforated drainage pipe.

B. When tested, grounding grid shall have an earth resistance no greater than 10 ohms from any electrical device or wire to earth ground. If earth resistance is greater than

10 ohms, additional grounding rods and/or plates and enhancement material shall be added to system until desired test results have been meet.

3.11 SPRINKLER INSTALLATION

A. Spray sprinklers and MP Rotator sprinklers shall be installed flush to grade.

B. Small and medium rotary sprinklers shall be installed flush to grade on 3/4-inch prefabricated PVC unitized swing joint assemblies with integral o-rings, minimum length 12 inches.

C. Sprinklers shall not exceed maximum spacing indicated.

D. Adjust sprinkler zone after installation using flow control and pressure regulating devices on valve.

3.12 QUICK COUPLING VALVE INSTALLATION

A. Provide and install quick coupling valves where indicated on the Drawings.

3.13 CHECK/TEST/START-UP/ADJUST

A. Flushing:

i. After all piping, valves, sprinkler bodies, and pipe lines are in place and connected, but prior to installation of sprinkler internals, open the control valves and flush out the system under a full head of water.

ii. Sprinkler internals, flush caps and riser nozzles shall be installed only after flushing of the system has been accomplished to the full satisfaction of the Owner's Representative.

iii. Contractor shall be responsible for flushing the entire system after installation is complete and will be responsible for any clogged nozzles for thirty (30) days after substantial completion of this portion of the landscape irrigation system.

B. Testing:

i. Leakage test: test all lines for leaks under operating pressure. Repair all leaks and retest.

ii. Coverage test: perform a coverage test in the presence of the owner or owner's representative. Owner or owner's representative will determine if the water

coverage is complete and adequate. Readjust heads and/or head locations as necessary or directed to achieve proper coverage.

iii. All testing shall be at the expense of the Contractor.

3.14 CLEANING AND ADJUSTING

A. At the completion of the Work, all parts of the installation shall be thoroughly cleaned. All equipment, pipe, valves and fittings shall be cleaned of grease, metal cuttings and sludge which may have accumulated by the operation of the system for testing.

B. Adjust sprinkler heads, valve boxes, and quick coupling valves to grade, so that they will not be damaged by mowing operations.

C. Continue sprinkler coverage adjustment from settlement or other issues caused from initial irrigation construction throughout the guarantee period.

D. Each control zone shall be operated for a minimum of 5 minutes and all heads checked for consistency of delivering water. Adjustments shall be made to sprinklers that are not consistent to the point that they match the manufacturer's standards. All sprinklers, valves, timing devices or other mechanical or electrical components, which fail to meet these standards, shall be rejected, replaced and tested until they meet the manufacturer's standards.

3.15 ACCEPTANCE AND OPERATION BY OWNER

A. Upon completion of the Work and acceptance by the Owner, the Contractor shall be responsible for the training of the Owner's Representative(s) in the operation of the system (provide minimum 7 day written notice in advance of test). The Contractor shall furnish, in addition to the Record Drawings and operational manuals, copies of all available specification sheets and catalog sheets to the Owner's personnel responsible for the operation of the irrigation system. The Contractor shall guarantee all parts and labor for a minimum period of one (1) year from date of acceptance.

3.16 CLEAN UP

A. Upon completion of all installation work, remove all leftover materials and equipment from the site in a safe and legal manner.

B. Remove all debris resulting from work of this Section.

C. Regrade, lightly compact, and replant around sprinkler heads where necessary to maintain proper vertical positioning in relation to established grade.

D. Fill all depressions and eroded channels with sufficient soil mix to adjust grade to ensure proper drainage. Compact lightly, and replant filled areas in accordance with Drawing requirements.

END OF SECTION

SECTION 32 92 19 – SEEDED LAWNS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work required by this section of the Specifications consists of furnishing all labor, plant, equipment, tools, materials, and incidentals, and performing all operations in connection with all Work necessary to provide the establishment of general lawn area grass, in accordance with the Drawings and these Specifications, or as directed by the Engineer.

1.02 WORK INCLUDED

A. The Work of this section consists of all seeding and related Work as shown on the Drawings or required herein and includes the following:

1. Providing all topsoil from on-site sources required for the Work under this section.
2. Providing all soil amendments, fertilizers, herbicide, and pesticide products as required.
3. Preparation of subsoil in preparation for loaming.
4. Spreading and fine grading topsoil for all lawn areas.
5. Seeding.
6. Establishment and maintenance of lawn area grass.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Site Preparation – Section 02 41 00.

B. Earthwork – Section 31 00 00.

C. Soil Erosion and Sediment Control – Section 31 25 00.

1.04 SUBMITTALS

A. Materials List: Submit a complete list of all materials proposed for use in this Work, demonstrating complete conformance with the requirements specified.

B. Grass Seed: For each grass seed mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

C. Fertilizers: Product certificate from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's instructions.

1.05 QUALITY ASSURANCE

A. Installer Qualifications:

B. Herbicides shall be applied by a licensed commercial applicator in conformance with all applicable laws and regulations, and in conformance with the manufacturer's directions.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver manufactured products in manufacturers original, unopened, and undamaged containers with labels intact and legible.

B. Store and handle manufactured products to prevent damage and deterioration. In the event of damage, make replacements necessary at no additional cost to Owner.

C. Use all means necessary to protect seed from moisture and other contaminants which may adversely affect proper germination.

D. Use all means necessary to protect amendments, fertilizers, and other materials from moisture and other contaminants that may adversely affect their efficacy.

PART 2 – PRODUCTS

2.01 TOPSOIL

A. Topsoil shall be from on-site sources and amended as specified.

2.02 LIME

A. Lime shall be an approved agricultural limestone containing no less than fifty (50) percent of total carbonates and twenty-five (25) percent total magnesium with a neutralizing value of at least one hundred (100) percent. The material shall be ground to such a fineness that forty (40) percent will pass through a Number 100 U.S. Standard sieve and ninety-eight (98) percent will pass through a Number 20 U.S. Standard sieve. Lime shall be of uniform composition, dry, and free flowing, and shall be delivered to the Site in original, unopened containers, each bearing the manufacturers guaranteed analysis.

2.03 FERTILIZERS

A. Commercial Fertilizer: Commercial grade complete fertilizer of neutral character, consisting of fast and slow release nitrogen, 50 percent derived from natural organic sources of urea

formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from qualified testing laboratory.

2.04 WATER

A. Water is available from the existing irrigation system. The Contractor shall not use water from other sources.

2.05 HERBICIDES, PESTICIDES, AND FUNGICIDES

A. Herbicides, pesticides, and fungicides may be used if required. All materials shall be approved by the Owner prior to use and shall be applied by State licensed applicators in strict conformance with the manufacturer's instructions.

2.06 GRASS SEED

A. Grass seed shall be fresh, clean, dry, new crop seed, complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species Mixture: Seed of grass species as follows, with not less than 80 percent germination, not less than 97 percent pure seed, and not more than 0.5 percent weed seed.

1. Proportioned by weight as follows:

a. 40 percent Kentucky bluegrass.

b. 40 percent improved creeping red fescue.

c. 20 percent perennial rye grass.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSOIL

A. Prior to spreading topsoil, subsoil should be rough graded to correspond with finish grades as indicated on the Drawings. The subgrade shall slope to allow for subsurface drainage. Depressions shall be filled, and areas which are highly compacted shall be loosened to a depth which is adequate for gravitational water through the subsoil.

B. After acceptance of subsoil grades, loosen and mix subgrade material two (2) to four (4) inches deep. Remove stones over two (2) inches, sticks, debris, and other deleterious

materials which may impede the healthy and vigorous growth of grass. Move no heavy objects or equipment, except as necessary for the spreading of topsoil, over seed beds after preparation of the subgrade.

3.02 TOPSOIL PLACEMENT

A. After approval of subgrade, spread stockpiled topsoil using tracked or low-pressure turf tired equipment as specified herein. Do not spread topsoil which is in a wet or frozen condition.

B. Fine grade the topsoil surface to achieve the surface elevations indicated on the Drawings within a surface tolerance of one-half (1/2) inch in ten (10) feet.

C. Roll topsoil surface with a tow behind turf roller to firm surface.

3.03 SEEDING

A. Sow grass seed between August 15 and September 15, except as otherwise approved by the Engineer.

B. If seeding out of season as described above, The Contractor is still obligated by all conditions and responsibilities described under Paragraph 3.06 Lawn Maintenance and Inspection, until final acceptance of all turfgrass areas.

C. Prior to sowing seed, scarify soil and rake until surface is smooth, friable, and of uniformly fine texture. Seed evenly at suppliers recommended rates, lightly rake and water with fine spray.

D. Mulch sloped area great than 3:1 with straw mulch at an application rate of 1 ½ - 2 tons per acre.

3.04 LAWN MAINTENANCE AND INSPECTION

A. Maintenance of lawn areas grass shall begin immediately after seeding operations, and shall generally consist of watering, weeding, mowing, edging, fertilization, reseeding, disease and insect control, repair of erosion or settlement areas, and any other procedure consistent with good horticultural practices, necessary to insure normal, vigorous and healthy grass growth.

B. Maintenance shall also include filling, regrading, and reseeding as necessary to correct depressions caused by settling or other damage.

C. Maintenance shall also include all temporary protection fencing, barriers, signs and all other work incidental to proper maintenance.

D. The Contractor shall be responsible for maintenance to establish a uniform stand of grass until acceptance.

E. At the time of first cutting, mow turf not less than two (2) inches high with reel type mowing equipment.

3.05 INSPECTION AND ACCEPTANCE

A. The Engineer shall inspect the lawn areas for acceptance upon written request by the Contractor. The request shall be received at least ten (10) days before the anticipated date of inspection.

B. Final acceptance will not be approved until all seeded areas are in satisfactory condition.

C. If the grass is in satisfactory condition, the Contractors care and maintenance responsibilities will terminate. If the grass condition is not satisfactory, the Contractors maintenance responsibilities shall continue until an acceptable stand of turf grass is achieved.

END OF SECTION

IV.

TOWN FORM CONTRACT

SUCCESSFUL BIDDER TO EXECUTE TOWN FORM CONTRACT, UPON AWARD (TO BE PREPARED)

V.

NON-COLLUSIVE/NON-CONFLICT AFFIDAVIT OF BIDDERS

BID #2-1920 – Athletic Fields Irrigation System – Elizabeth C. Adams Middle School

The undersigned bidder, having fully informed themselves regarding the accuracy of the statements made herein certifies that:

1. the bid has been arrived at by the bidder independently and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in the invitation to bid, designed to limit independent bidding or competition;

2. the contents of the bid have not been communicated by the bidder and its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid, and will not be communicated to any such person prior to the official opening of the bid;

3. no Selectman or other officer or employee or person whose salary is payable in whole or in part from the Town of Guilford, nor any immediate family member thereof, is directly or indirectly interested in the Bid/Proposal, or in the supplies, materials, equipment, work or labor to which it relates, or in any profits thereof; and

4. he/she has read the Guilford Code of Ethics, set forth in Chapter 31 of the Code of the Town of Guilford, which is available on the Town website and he/she agrees on his/her behalf and on the behalf of his/her firm/company that he/she nor his/her firm/company are in violation of the Code with respect to this bid.

The undersigned further certifies that this statement is executed for the purpose of inducing the Town of Guilford to consider the bid and make an award in accordance therewith.

Legal Name of Bidder: _____

Business Name: _____
Business Address: _____

_____
Signature and Title of Person

Subscribed and sworn to me _____
this _____ day of _____, 20_____.

_____ My Commission Expires_____
Notary Public Date

VI.

AFFIRMATIVE ACTION/EEO AFFIDAVIT

BID #2-1920 – Athletic Fields Irrigation System – Elizabeth C. Adams Middle School

Concerning Equal Employment Opportunities and/or Affirmative Action Policy

I/we, the respondent, certify to the TOWN OF GUILFORD that:

1. I/we are in compliance with the equal opportunity clause as set forth in Connecticut state law (Executive Order No. Three, http://www.cslib.org/exeorder3.htm).
2. I/we do not maintain segregated facilities.
3. I/we have filed all required employer's information reports.
4. I/we have developed and maintain written affirmative action programs.
5. I/we list job openings with federal and state employment services.
6. I/we attempt to employ and advance in employment qualified handicapped individuals.
7. I/we are in compliance with the Americans with Disabilities Act.
8. I/we (check one)

_____ have an Affirmative Action Program, or
_____ employ 10 people or fewer

Legal Name of Bidder: _____

Business Name: _____
Business Address: _____

_____
Signature and Title of Person

Subscribed and sworn to me _____
this _____ day of _____, 20_____.

_____ My Commission Expires_____
Notary Public Date

VII.

BID PROPOSAL FORM

Board of Selectmen
Town of Guilford
31 Park Street
Guilford, CT 06437

Attention: Purchasing Department
SECOND FLOOR

Re: BID #2-1920 – Athletic Fields Irrigation System – Elizabeth C. Adams Middle School
Bid Opening Date: Monday, August 26, 2019 at 2:00 p.m.

BIDDER
Company Name: _____
Address: _____
_____

Telephone: _____ Fax: _____
E-mail: _____
Contact Person: _____ Title: _____

To the Board of Selectmen:

We submit for your consideration our bid for the above referenced bid. We have read the bidding documents including the Town of Guilford's General Conditions and Instructions to Bidders and the bid specifications and are submitting our bid in full compliance with all terms and conditions except as noted below under "Exceptions." We have enclosed our original bid bond/cashier's check in the amount of 10% of our total base bid. *We acknowledge receipt of all addendums to the bid documents and assume full responsibility to access those addendums from the Town website and/or DAS website, as applicable.*

We will provide the following within five (5) business days after receipt of a notice of award from the Purchasing Department:

(i) The requested Certificate of Insurance from the following company:

_____;

And

(ii) Payment and Performance Bonds from the following company:

_____.

BID PROPOSAL FORM CONTINUED

Within five (5) business days after receipt of final contract from Town, we will forward to the Purchasing Department three original contracts, in the form provided by the Town, executed by an authorized officer.

A. TOTAL BASE BID

We agree to perform the work described in the bid specifications within the time period set forth in the specifications for a **TOTAL BASE BID** amount of:

$_____ ($_____)
Write amount in words — Write dollar amount

B. ALTERNATE BID PRICE ITEMS

Alternate No. 1 – Baseball Field No. 3 Irrigation

Alternate No. 1 Lump Sum Bid Price written in words:

_____

_____

Alternate No. 1 Lump Sum Bid Price written in figures:

$ _____

Alternate No. 2 – Soccer Field Irrigation

Alternate No. 2 Lump Sum Bid Price written in words:

_____

_____

Alternate No. 2 Lump Sum Bid Price written in figures:

$ _____

Alternate No. 3 – Field Hockey Field Irrigation

Alternate No. 3 Lump Sum Bid Price written in words:

_____

_____

Alternate No. 3 Lump Sum Bid Price written in figures:

$ _____

On site construction, installation, delivery and storage shall be coordinated with the following Town Department Head: Rick Maynard, Telephone: 203-453-8068, Email: maynardr@ci.guilford.ct.us.

Exceptions: _____
_____
_____
_____
_____
_____
_____

We agree that the allowable mark-up for overhead and profit on any charges shall not exceed a TOTAL (all tiers) of ten percent (10%).

The undersigned authorized representative hereby submits the above bid to the Town of Guilford.

Name of Contractor Entity: _____

By _____

Print Name and Title: _____

Duly authorized

VIII.

PREVAILING WAGE NOT APPLICABLE