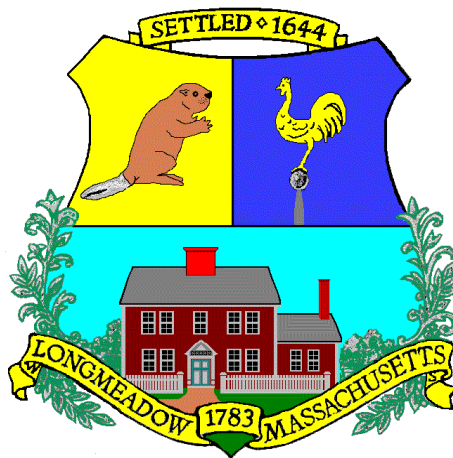


INVITATION FOR BID (IFB)

**BLUEBERRY HILL
ELEMENTARY SCHOOL
LAWN IRRIGATION**



TOWN OF LONGMEADOW
MASSACHUSETTS

June 21, 2018

INVITATION FOR BID (IFB)
BLUEBERRY HILL ELEMENTARY SCHOOL
LAWN IRRIGATION
Town of Longmeadow, Massachusetts

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Blueberry Hill Elementary School
Soccer Field Plan
275 Blueberry Hill Road
MGLU 87/20/65
Longmeadow, Massachusetts

Consisting of 5 Sheets:

C-T1 Cover Sheet
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LEGAL NOTICE:

INVITATION FOR BID (IFB)

BLUEBERRY HILL ELEMENTARY SCHOOL LAWN IRRIGATION

The Town of Longmeadow, MA, is soliciting sealed bids for the Blueberry Hill School Lawn Irrigation project. Bid documents are available from the Town of Longmeadow, Purchasing Department, Attn: Chad Thompson- Procurement Manager, 735 Longmeadow Street, Suite 101, Longmeadow, MA 01106, P: 413-565-4185, cthompson@longmeadow.org . Purchasing Department office hours are between 8:00 a.m. and 4:30 p.m., Monday through Thursday, and 8:00 a.m. to 12:00 p.m. on Fridays. Bid documents can also be accessed online through the Purchasing Department page of the town website www.longmeadow.org by selecting 'Government' from the header, then the 'Bids & RFPs' link, then 'Bid & RFP Finder' to access documents. Bidders are encouraged to register with the Purchasing Department, those that do not register will be responsible for monitoring the bid listing service for updates and posted addenda. Failure to acknowledge the receipt of addenda may result in a bid rejection.

A **MANDATORY PRE-BID CONFERENCE** will be held on **Thursday, June 28, 2018 beginning at 2:00PM**. Gather outside of the main entry at Blueberry Hill Elementary School, 275 Blueberry Hill Road, Longmeadow, MA. Those interested in bidding are required to register during the mandatory pre-bid conference before the conference is declared complete. Additional registration opportunities will not be accommodated.

Sealed bids should be delivered to the Longmeadow Purchasing Department and will be accepted until the **bid deadline of Friday, July 13, 2018 at 11:00am**. Sealed bids should be labeled 'IFB: Blueberry Hill School Lawn Irrigation' on the outer envelope along with the bidder's company name, address and contact information. Late bids will be rejected. Immediately following the bid deadline, bids will be publicly opened in the auditorium. No bid deposit is required with the submission of bids. Wages are subject to Massachusetts minimum wage rates as per M.G.L. C.149, Section 26 to 27H, inclusive. A 50% Payment Bond will be required of the successful bidder upon contract award. No bid may be withdrawn within thirty (30) days after the date of the opening of bids.

All bids received will be evaluated and awarded in accordance with the provisions established under Massachusetts General Law Chapter 30,39M, inclusive or as amended. The Town of Longmeadow, acting through the Town Manager, the Awarding Authority reserves the right to reject any or all bids, waive informalities, and to award the contract in the best interest of the Town.

**INVITATION FOR BID (IFB)
BLUEBERRY HILL ELEMENTARY SCHOOL LAWN IRRIGATION**

INSTRUCTIONS TO BIDDERS:

ARTICLE 1- Objective

1.1 The Town of Longmeadow, MA, is accepting sealed bids for the installation of a lawn irrigation system and related field work at Blueberry Hill Elementary School. The successful bidder will be responsible for supplying and installing all of the requested materials as required on the plans and specifications. All materials shall comply with the specifications and drawings supplied with the bid. The bid pricing shall include all supply, installation, and any other work needed to complete the work and restore the site to pre-construction condition.

1.3 The contract will be awarded to one vendor with fixed pricing with a project Substantial Completion date of August 20, 2018. The contract may be extended at the sole discretion of the Town for up to one year from the effective date of the contract. The Contractor will be responsible for the payment of liquidated damages after the Substantial Completion date for each day the Substantial Completion date that work is not completed.

ARTICLE 2- Bid Documents

2.1 Each Bidder by making a bid represents that they have read and understand the bidding documents, contract forms and general conditions of the contract and the bid specifications .

2.2 Addenda will only be emailed to every individual on record as having taken a set of bid documents. Addenda will be available from the Town of Longmeadow Purchasing Department and can also be accessed through the Purchasing Department of the Town website www.longmeadow.org , select links for 'Bids & RFPs', then 'Bid & RFP Finder'.

2.3 Those that are NOT on the active bid list specific for this bid and will not receive update and addenda notifications include the following:

Those that are on a Town of Longmeadow general category bid list,

Those that receive a solicitation or email from the Longmeadow Purchasing Department labeled as a 'Notification' of a specific bid opportunity and then do not reply requesting to be added to a specified active bid list for an active bid.

Those who access bid documents through other sources, such as a bid listing service, etc.

Those that do not register to be added to the active bid list will be responsible for monitoring the town website bid listing service for updates and addenda. These individuals should check at least one day prior to the bid deadline Failure to acknowledge the receipt of addenda may result in a bid rejection.

2.4 Those that are on the active bid, bid list for this bid solicitation includes only those that notify the Longmeadow Purchasing Department that they would like to be added to the bid list

for this active bid. The bidder should identify the title name of the active bid list that they would like to be added to and should also supply their complete contract information. A bidder on an active bid list will receive confirmation from the Purchasing Department that they have been added to the bid list.

ARTICLE 3- Questions & Request for Interpretation:

3.1 All questions should be submitted in writing to Chad Thompson-Procurement Manager in the Purchasing Department by fax: 413-565-4185 or by email: cthompson@longmeadow.org . All clarification or responses to questions that result in a change to the specifications will be issued through written addendum. Verbal interpretations will not be considered as binding.

3.2 All questions, if any must be received by the Procurement Manager no later than 120 hours (5 days) prior to the bid deadline. Questions received after the deadline for questions will not be answered. Bidders should not contact other Town employees regarding this bid.

ARTICLE 4- Submission of Bids:

4.1 Sealed bids should be delivered to the Town of Longmeadow Purchasing Department no later than the bid deadline date and time identified in the Legal Notice.

4.2 Bids should be delivered in a sealed envelope labeled '**IFB: BLUEBERRY HILL SCHOOL LAWN IRRIGATION**' on the exterior of the envelope along with the complete contact information of the bidder (Organization name, contact name, complete address, and phone number).

4.3 Late bids will be rejected. Timely delivery of bids to the Longmeadow Purchasing Department shall be the responsibility of the Bidder. In the event that the Town of Longmeadow is closed on the date or at the time that bids are due, the date and time of receipt of bids shall be extended to the next regular business day that the Purchasing Department of the Town of Longmeadow is open (Monday through Friday, excluding holidays), with the bid deadline time being the same time as specified in the legal notice.

4.4 Bids should be submitted utilizing the Bid Submission Forms supplied with the bid document or revised Bid Submission Forms if they are issued through addenda. The Non-Collusion form supplied with the Bid Submission Forms must be completed, a Non-Collusion form not completed as required by law will result in a bid rejection.

4.5 Where indicated on the Bid Submission Form, the unit price bid pricing should be supplied in both numbers and written words. Where there is a discrepancy between the numeric and written words of a bidder, the written words shall be utilized in correcting the unit pricing and further calculation of totals.

4.6 Withdrawal of Bid: Any bid may be withdrawn prior to the time designated for receipt of bids. Provide written notification to the Longmeadow Purchasing Department. No bid may be

withdrawn within sixty (60) days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

4.7 Before submitting a bid, each bidder must make a careful study of all specifications and bidding/contract requirements and fully assure themselves as to the quality/quantity of the materials and work required. It is strongly advised that the bidder perform a site walk at all project locations.

4.8 The bid for this work must cover all contingencies, including all labor and materials, transportation, etc, necessary for the purchase, delivery and installation of the materials and related work required by the Town of Longmeadow. No fuel adjustment, mileage expenses or other additional unauthorized charges or fees will be allowed.

4.9 A **five percent (5%) bid deposit is not required** with the submission of a bid for this project based on the Town's estimate.

ARTICLE 5- Contract Award

5.1 The Town is soliciting pricing for the items set forth in the Bid Submission Forms. One contract will be awarded to the "lowest responsive and eligible bidder" based on the total price of the Base Bid and Bid Alternate(s) selected for award by the Town. The term "lowest responsive and eligible bidder" shall mean the Bidder (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance/supply required; (2) who has met all of the Minimum Requirements of the Invitation for Bid; (3) who shall certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.

5.2 The Town reserves the right to request and check references of the low bidders to determine if they are responsive and responsible. All bidders must submit a list of references of clients who they have performed work of similar Scope of Work. The **Minimum Requirements** of the bidder is that they have: 1) been in the business of installing lawn irrigation systems for a minimum of two (2) full years; and 2) have experience with installed new lawn irrigation systems of similar size or large, and 3) have experience with field site improvements similar to those required in this Invitation for Bid. Bids received that do not meet the Minimum Requirements will result in a bid rejection and will not be considered for contract award. By submitting a bid, the bidder gives the Town express permission to contact any client of the bidder to determine a bidder's past experience, quality of supplies and services provided, and satisfaction with a bidder's past performance for comparable work. Any negative references received will be grounds for rejection of the bid by the Town. The Town may also conduct an investigation and check references on similar projects completed by a bidder for which the bidder has omitted reference from with their bid submission.

5.3 All quantities shown for the estimated quantities on the Bid Submission Forms are estimates only. The Town will direct the Contractor to provide only those supplies which are

actually required. The Contractor will be compensated only for the supplies accepted. Whether the supplies are more or less than the estimate, the unit pricing provided on the bid shall apply.

5.4 Subsequent to the award and within five (5) days, Saturday, Sundays and legal holidays excluded, after the prescribed forms are presented for signature the successful bidder shall execute and deliver to the Town a completed original contract with original signatures in the form included in the contract documents. In the event that the Contractor delays the return a completed contract, the Town will supply the contract with a notification to return the contract within two days. Then if the Contractor fails to return the completed Contract to the Town, the Town reserves the right at its own discretion to withdraw the contract award offer and instead award the contract to the next “lowest responsive and eligible bidder”.

5.5 In the event that the Town receives low bids that result in an identical tied award total price from two or more responsive and responsible bidders, the Town shall select the successful bidder by a blind selection process chosen by the Town, such as the drawing of names. The low bidders who are under consideration will be invited to attend and observe the selection process.

5.6 Proprietary specifications: The town may have proprietary specifications for some materials utilized. Such proprietary specifications are permitted under M.G.L. c. 30, 39M(b), provided that the Town state in writing that use of the proprietary specifications is in its best interest and that it will accept an “equal” of the item specified. An item is considered equal if (i) it is at least equal in quality, durability, appearance, strength and design; (ii) will perform the intended function at least; and (iii) conforms substantially, even with deviations, to the detailed requirements contained in the specifications.

5.7 The bidder to whom a contract is awarded will be required to guarantee the installed materials and workmanship in writing to the Town of Longmeadow for a period of three hundred sixty-five (365) days after final acceptance and shall replace any defective materials or workmanship required without additional cost to the Town.

5.8 The Town of Longmeadow acting through the Town Manager, the Awarding Authority reserves the right to reject any and all bids, waive minor informalities and to award a contract in the best interest of the Town.

ARTICLE 6: Terms and Conditions

6.1 A Town sample standard contract is provided within this IFB document which contains contract terms and conditions. The IFB document and addendum issued will also become part of the contract specifications, terms and conditions. Upon contract award the successful contractor will be required to complete the contract and comply with all of terms and conditions of the contract.

6.2 Equality of Materials: All proprietary specifications, or proprietary names used for items listed in the specifications, are shown for purposes of description only and are not intended, nor should they be interpreted, to be an endorsement of any particular proprietary item. The words “or equal” are understood to follow all names of proprietary products, trade names, catalog numbers and detailed descriptions and shall be interpreted to mean any material, article, assembly, or system, which in the opinion of the Town is at least equal in quality, durability, appearance, strength and design to the equipment specified and will perform at least equally the functions imposed by the general design. The words “or equal” shall not be construed to permit substantial departure from the requirements of the specifications. The provisions of Massachusetts’s General laws shall govern.

6.3 Performance of Services: Under the contract awarded, the successful bidder shall agree to the following:

6.3.1 All services of the successful bidder shall be performed by qualified licensed contractor and their employees. The successful bidder shall perform its services in accordance with the highest professional standards of skill, care and diligence.

6.3.2 Unless clearly stated in the successful bidder’s bid and incorporated into the contract, none of the services to be provided by the successful bidder pursuant to the contract shall be sub-contracted or delegated to any other organization, association, individual, corporation, partnership or other such entity without the prior written consent of the Town.

6.3.3 The successful bidder and its personnel shall perform one hundred percent (100%) of all the work under the contract, except as may be required under emergency circumstances or as otherwise approved by the Town, measured either in value of services rendered or in bidder’s time spent on such services.

6.3.4 The Town may require the successful bidder to relieve any of the successful bidder’s personnel and sub-contractors from any further work under the contract if in the Town’s sole option the individual or sub-contractor does not perform at the applicable skill level; the individual does not deliver work which conforms to the performance standards stated in the contract and the successful bidder’s bid; or personality conflicts with Town personnel hinder effective progress on the work of the project or assignment for which the individual is responsible.

6.3.5 No subcontracts or delegation shall relieve or discharge the successful bidder from any obligation or liability under the contract except as specifically set forth in the instrument of consent. The successful bidder shall be as fully responsible to the Town for acts and omissions of its sub-contractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly or indirectly employed by it.

6.3.6 Without limiting the foregoing, the Town shall have the right to require the successful bidder to cease providing services immediately upon written notice.

6.4 Compliance with applicable laws and regulations: This procurement is subject to the requirements under MGL, Chapter 30, Section 39M. Under the contract award, it is the successful bidder's responsibility that the contract be conducted, and that all services and other work performed by the successful bidder under the contract be performed so as to comply with all applicable federal, state and municipal laws, regulations, codes, and ordinances including prevailing wage laws as applicable. The Town intends to award the contract to one prime Bidder only, generally referred to herein as 'the successful bidder'. The successful bidder shall be solely responsible for any separate contractual agreements with its sub-contractor(s), if any are proposed and agreed to in the contract between the Town and the successful bidder.

6.5 Bid and Contract Pricing:

6.5.1 All price quotes must include all charges, fees, expenses, etc., related to supplying the required equipment and installation work (including all labor and materials and any cleanup). No separate or additional costs will be paid by the Town. All costs must be included in the proposed unit pricing. Prices must be based on the total installed based on the unit pricing provided. There will be no price adjustments of unit pricing, fuel adjustment, mileage reimbursement or other expenses.

6.5.2 The Town will provide at no additional cost to the Contractor any police detail required if needed. The Town will independently contract any police order required.

6.5.3 Prevailing wages will apply to this contract. The successful bidder must comply with the prevailing wage laws of Massachusetts when performing work for the Town. Prevailing wage rates are provided. The successful Contractor shall submit prevailing wage reports to the Longmeadow Purchasing Department.

6.6 Compensation: Under the contract awarded, the successful bidder's compensation shall be made according to the following provisions:

6.6.1 The maximum fee for all successful bidder and sub-contractor services and expenses shall not exceed the bid amount. The maximum successful bidder fee shall be all-inclusive. Compensation shall be based on the unit pricing supplied by the successful bidder multiplied by the actual quantities provided. In no event shall the Town be liable for additional charges such as interest, penalties, attorney's fees or any other expenses incurred by the successful bidder such as travel, telephone, or duplication expenses except as may be negotiated for and agreed to by the Town and set forth in writing.

6.6.2 The successful bidder shall submit invoices for services rendered on the schedule agreed to between the Town and the successful bidder. The successful bidder's invoice shall include a description of services performed under the task or tasks in such, form, detail, and with such supporting data as the Town may reasonably require showing the computational basis for all charges. The successful bidder shall keep records pertaining to services performed employing sound bookkeeping practices and in accordance with generally accepted accounting principles.

6.6.3 Payments under the contract will be made only to the successful bidder. The successful bidder shall be responsible for the compensation of any of its sub-contractors.

6.6.4 The Town shall withhold a retainage of five percent (5%) of Town authorized payments due to the contract for completed work. The total retainage will be released upon final inspection and authorization by the Town Engineer that the Scope of Work is fully complete to the Town's expectations and specifications.

6.6.5 Compensation for the job will be based on actual quantities of bid unit items selected for the project by applying the successful bidder's unit price.

ARTICLE 7: Specifications and Scope of Work

The Town of Longmeadow, MA, is soliciting sealed bids for the Blueberry Hill Elementary School Lawn Irrigation project. The project includes improvements to the soccer field and installation of a lawn irrigation system per specifications and plans prepared by the consulting engineers and land surveyors: Design Professionals, of South Windsor, CT.

**BLUEBERRY HILL ELEMENTARY SCHOOL
SOCCER FIELDS
LONGMEADOW, MA**

SECTION 311000 – SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Protecting existing vegetation to remain.
 - 2. Site enclosure fence.
 - 3. Removing existing vegetation.
 - 4. Clearing and grubbing.
 - 5. Stripping and stockpiling topsoil.
 - 6. Removing above- and below-grade site improvements.
 - 7. Disconnecting, capping or sealing site utilities.

1.3 MATERIAL OWNERSHIP

- A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain on Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 PROJECT CONDITIONS

- A. Contractor shall arrange for and attend a pre-construction conference with the Owner prior to commencing construction.
- B. Traffic: Minimize interference with adjoining roads, streets, walks, parking lots, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, parking lots, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises.
- D. Utility Locator Service: Notify appropriate utility locator service at least 72 hours prior to the construction effort.
- E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

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- F. The following practices are prohibited within proximity to trees to be preserved:
1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Excavation or other digging unless otherwise indicated.
 4. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
1. Obtain approved Satisfactory soil material from off-site sources when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- B. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
1. Extent of Fence: As required to enclose portion of site determined sufficient to accommodate construction operations.
 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner with one set of keys.
- C. Protect and maintain benchmarks and survey control points from disturbance during construction.
- D. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TREE AND PLANT PROTECTION

- A. General: Protect trees and plants remaining on-site.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

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3.3 EXISTING UTILITIES

- A. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify Owner not less than two days in advance of proposed utility interruptions.
 2. Do not proceed with utility interruptions without Owner's written permission.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
1. Remove stumps and roots completely within construction areas.
 2. Use care to protect trees to be saved.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm) and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil and legally dispose of off site.
- B. Strip topsoil from all areas to be regraded and stockpile as indicated.
- C. Strip topsoil in a manner to prevent intermingling with underlying subsoil or other waste materials.
- D. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water. Circle entire base of stockpile with temporary erosion control measures.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work. Recycle materials including concrete, brick, paving blocks, wood bollards, metal light poles, metal signs, wire, and all other similar materials.

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3.9 STORM DRAINAGE

- A. Protect existing storm drainage structures to remain from damage during construction.
- B. Protect existing storm drainage pipe to remain from damage during construction.

END OF SECTION 311000

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SECTION 312000 – EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."
- B. See Section 329200 "Turf & Grasses" for additional finish grading requirements.

1.2 SUMMARY

- A. Section Includes:
 - 1. Preparing subgrades for turf and grasses.
 - 2. Excavating and backfilling for utility trenches.

1.3 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.
- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Owner.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner. Unauthorized excavation, as well as remedial work directed by Owner, shall be without additional compensation.
- F. Fill: Soil materials used to raise existing grades.
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

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- H. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 QUALITY ASSURANCE

- A. Pre-excavation Conference: A pre-construction meeting shall be held at the site as directed by the Owner.

1.5 PROJECT CONDITIONS

- A. Utility Locator Service: Notify 'Dig Safe' at least 72 hours prior to the construction effort.
- B. Do not commence earth moving operations until all appropriate erosion control measures, construction fencing and pedestrian protection measures are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
 - 2. Frozen materials are considered Unsatisfactory
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

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- F. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- H. Granular Base shall meet CT DOT Form 817 M.02.03 Granular Base, Rolled Bank Gravel Surface and Traffic Bound Gravel.
- I. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

2.2 ACCESSORIES

- A. Geotextile fabric should be a non-woven fabric, consisting of Mirafi 140N or an approved equal product.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials. Remove and legally dispose of unsatisfactory material off-site.

3.3 EXCAVATION FOR EDGES OF TREE AND PLANT PROTECTION ZONES

- A. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

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3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit unless otherwise indicated.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
- D. Trenches in Tree- and Plant-Protection Zones:
 - 1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - 2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

3.6 SUBGRADE INSPECTION

- A. Proof-roll subgrade with a pneumatic-tired dump truck or other equipment approved by the Owner to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades. Sub-grades that become unstable (i.e. soft, yielding, rutting, pumping, etc.) under the action of proof-rolling may require selective undercutting or further stabilization prior to placement of the fill materials.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Owner, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavations under all construction, pipe, or conduit as directed by Owner.

3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
 - 2. All topsoil to remain on site. Use within berms and lawn areas. Grade as shown.

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3. Legally dispose of all other surplus soil materials off-site.

3.9 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact final backfill of satisfactory soil to final subgrade elevation.

3.10 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in lifts to required elevations as follows:
 1. Under grass and planted areas, use satisfactory soil material.
 2. Under walks and pavements, use satisfactory soil material.

3.11 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in lifts not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly to required elevations.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557 (Modified AASHTO Compaction).
 1. Under pavements and concrete walks, scarify and recompact top 12 inches of existing subgrade and each lift of backfill or fill soil material at 95 percent of the maximum dry density.
 2. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each lift of backfill or fill soil material at 85 percent of the maximum dry density.
 3. For utility trenches, compact each lift of initial and final backfill soil material at 95 percent of the maximum dry density.

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3.13 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. During construction, positive grading will be maintained to direct storm runoff away from buildings and foundations.
 - 2. Final grading shall be done to insure positive grading to direct storm runoff away from buildings and foundations.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1/2 inch.
 - 3. Pavements: Plus or minus 1/2 inch.

3.14 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 - 1. Shape subbase course and base course to required crown elevations and cross-slope grades.
 - 2. Place subbase course and base course that exceeds 6 inches in compacted thickness in lifts of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 3. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.15 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.
- D. Do not allow debris to collect near doors or building openings during construction. Maintain the site in a clean and neat appearance throughout the construction process.

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3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

3.18 DEWATERING

- A. Work shall include all material, labor, and equipment required for the removal of water from the excavated areas to maintain in a dry condition all excavations and work areas. The Contractor shall be responsible for performing all required dewatering in such a manner as to prevent injury to persons, public health, the environment, or damage to existing facilities.
- B. The Contractor shall be responsible for providing, maintaining, operating, and removing all dewatering equipment and other facilities, including all pumping and appurtenant equipment, required to maintain the area in a dry condition during construction.
- C. Any damage to existing including settlement caused by dewatering operations, or damage to new work due to failure of the Contractor to maintain a dry work area shall be repaired by the Contractor as directed by the Engineer at no additional cost.
- D. The Contractor's dewatering process shall be performed in such a manner as to limit the quantities of sediment removed.
- E. All pipelines or structures not stable against uplift shall be thoroughly braced or otherwise protected against movement or damage.
- F. Water being disposed of by the dewatering operation shall be discharged into properly sized sedimentation control basins, or other appropriate structures. In no case shall the water from the dewatering process be allowed to flow directly into a wetland or watercourse.
- G. The dewatering process shall be initiated in any excavated area where excess water accumulates preventing the work to be performed in dry conditions.

END OF SECTION 312000

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SECTION 312500 – EROSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:
 - 1. Temporary erosion and sedimentation control materials and practices.
 - 2. Slope stabilization.

1.3 QUALITY ASSURANCE

- A. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers.
- B. Comply with all governing codes and regulations.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store materials in accordance with manufacturer's written instructions.
- B. Erosion control blanket shall be furnished in rolls and wrapped with suitable material to protect against moisture intrusion and extended ultraviolet exposure prior to placement.
- C. Erosion control blanket shall be stored in a manner that protects them from damage by construction activities.

1.5 MAINTENANCE SERVICE

- A. Maintain temporary erosion control measures until site is stabilized and accepted by local authority having jurisdiction.

PART 2 - PRODUCTS

2.1 EROSION CONTROL MATERIALS

- A. Silt Fencing

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1. Filter Fabric: Extra strength filter fabric (50 lbs/lin.in. min.), or a combination of standard strength (30 lbs/lin.in. min.) and 14-gauge woven wire fence.
 2. Fence posts: 2"x2" pressure treated wood, minimum of 48" high.
- B. Haybales: Haybales shall be composed of non-degraded straw in reasonable condition.
- C. Construction Access: Rip Rap consisting of sound, tough, durable, and angular rock, maximum size to be 4 inches and not more than 10% less than 2 inches..
- D. Filter Fabric: Geotextile fabric should be a non-woven fabric, consisting of Mirafi 140N or an approved equal product.
- E. Slope Stabilization: Provide and install erosion control blankets as follows:
1. AEC Premier Straw/Coconut as manufactured by American Excelsior Company, Arlington, TX, 866-9FIBERS, or approved equivalent.
 2. Free of defects and voids that would interfere with proper installation or impair performance.
 3. Shall be of consistent thickness with fibers distributed evenly over the entire area of the blanket.
- F. Erosion Control Blanket Staples: Shall be a minimum 6 inch biodegradable staple as provided by American Excelsior Company, or approved equivalent.

PART 3 - EXECUTION

3.1 GENERAL LAND CONSERVATION

- A. All structural erosion and sediment control practices shall be placed prior to or as the first step in grading for all areas.
- B. Permanent or temporary soil stabilization shall be applied to disturbed areas within 14 days after final grade is reached on any portion of the site.
- C. Any disturbed area not stabilized with seeding, sodding, paving, or built upon by November 1st, or areas disturbed after that date, shall be mulched immediately with hay or straw at the rate of 2 tons per acre and over-seeded by April 15th.
- D. At the completion of construction, and establishment of vegetation, all temporary sediment controls shall be removed and legally disposed off-site.

3.2 EROSION CONTROL

- A. Provide straw bales and silt fencing in areas shown on the plans, or in other areas deemed as potential erosion locations.
- B. Silt fencing shall be placed down-gradient of construction areas, as necessary, to control sediment and minimize erosion until turf is established.

3.3 EROSION CONTROL BLANKET

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- A. Install erosion control blanket per manufacturer's written instructions in the areas as depicted on the Drawings following finish grading and seeding.
- B. Maintain erosion control blankets until establishment of satisfactory turf as defined in Section 329200 "Turf and Grasses."

3.4 SILT FENCING

- A. Set posts maximum ten feet (10') apart. Angle posts approximately 5 degrees upslope.
- B. Excavate a 6"x6" trench upslope and along the line of posts.
- C. Staple wire fencing to upslope side of posts, if applicable.
- D. Attach filter fabric to wire fence or upslope side of posts and extend fabric into trench. Top of fabric is to be a minimum of 30" above ground level.
- E. Backfill and compact excavated soil.

3.5 MAINTENANCE

- A. All erosion and sediment control measures shall be checked weekly and within 24 hours after each rainfall to assure that the measures are functioning adequately. Make any repairs as necessary. Sediment that is collected will be distributed on the protected portion of the site and stabilized.
- B. All stockpiles of earth and topsoil shall be protected with temporary seeding, erosion control fence around the entire perimeter, or other means to prevent erosion.

3.6 CONSTRUCTION ACCESS

- A. Provide a stone construction entrance as shown on the plans and in the detail drawings to help prevent tracking of mud and dirt by vehicles leaving the construction site.
- B. Roadside ditches and other drainage structures should be checked regularly to ensure that they do not become clogged with silt or other debris.

3.7 SILT FENCE

- A. Silt fences and filter barriers shall be inspected immediately after each rainfall, at least daily during prolonged rainfall, and weekly during other periods. Any required repairs shall be made immediately.
- B. Should the fabric on a silt fence or fabric barrier decompose or become ineffective and the barrier is still necessary, it shall be replaced immediately.
- C. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.

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- D. For any sediment deposits remaining after the silt fence or filter barrier is no longer required, the sediment shall be spread, dressed, and seeded to conform to the surrounding area.

END OF SECTION 312500

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SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes chain-link fences and swing gates.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Product Certificates: For each type of chain-link fence and gate, from manufacturer.
- D. Product Test Reports: For framing strength according to ASTM F 1043.
- E. Operation and maintenance data.
- F. Sample of special warranty.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: Five years from date of Substantial Completion.

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PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:
1. Fabric Height: As indicated on Drawings.
 2. Steel Wire Fabric: 9 gauge.
 - a. Mesh Size: 2 inches (50 mm).
 - b. Polymer-Coated Fabric: ASTM F 668, Class 2b over zinc-coated steel wire.
 - 1) Color: Black, complying with ASTM F 934.
 3. Selvage: Knuckled at both selvages.

2.2 FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
1. Fence Height: As indicated on Drawings.
 2. Light Industrial Strength: Material Group IC-L, round steel pipe, electric-resistance-welded pipe.
 - a. Line Post: 1.9 inches (48 mm) in diameter.
 - b. End, Corner and Pull Post: 2.375 inches (60 mm).
 3. Horizontal Framework Members: top and bottom rails complying with ASTM F 1043.
 4. Metallic Coating for Steel Framing:
 - a. Type A zinc coating.
 - b. Type B zinc with organic overcoat.
 - c. External, Type B zinc with organic overcoat and internal, Type D zinc-pigmented coating.
 - d. Type C, Zn-5-Al-MM alloy coating.
 - e. Coatings: Any coating above.
 5. Polymer coating over metallic coating.
 - a. Color: Match chain-link fabric, complying with ASTM F 934.

2.3 SWING GATES

- A. General: Comply with ASTM F 900 for gate posts and single swing gate types.
1. Gate Leaf Width: 36 inches (914 mm).
 2. Gate Fabric Height: 72 inches (1830 mm) or less.

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B. Pipe and Tubing:

1. Zinc-Coated Steel: Comply with ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framing.
2. Gate Posts: Round tubular steel.
3. Gate Frames and Bracing: Rectangular tubular steel.

C. Frame Corner Construction: Welded.

D. Hardware:

1. Hinges: 180-degree outward swing.
2. Latches permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
3. Closer: Manufacturer's standard.

2.4 FITTINGS

A. General: Comply with ASTM F 626.

B. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. (366 g /sq. m) zinc.
 - a. Polymer coating over metallic coating.

2.5 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 1. Do not begin installation before irrigation system is completed unless otherwise permitted by Owner.

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2. Coordinate final location and dimensions with Owner to avoid placing posts in front of windows.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.
- D. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- E. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 2 inches (50 mm) above grade; shape and smooth to shed water.
- F. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.
- G. Line Posts: Space line posts uniformly at maximum 96 inches (2440 mm) o.c.
- H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches (50 mm) between finish grade or surface and bottom selvage unless otherwise indicated.
- I. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
- J. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

END OF SECTION 323113

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SECTION 328400 - IRRIGATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Piping.
 - 2. Manual valves.
 - 3. Automatic control valves.
 - 4. Automatic drain valves.
 - 5. Sprinklers.
 - 6. Quick couplers.
 - 7. Controllers.
 - 8. Boxes for automatic control valves.

1.2 PERFORMANCE REQUIREMENTS

- A. Irrigation zone control shall be automatic operation with controller and automatic control valves.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.
- C. Minimum Working Pressures: The minimum pressure requirements for the irrigation system is noted on the plans. Contractor shall verify if existing supply is sufficient prior to commencing construction. Contractor shall include an add alternate bid for a booster pump in the event one is required to meet minimum pressure requirements.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's warranty, rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Wiring Diagrams: For power, signal, and control wiring.
- C. Zoning Chart: Show each irrigation zone and its control valve.
- D. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.
- E. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

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- B. In addition to manufacturer's warranty, Contractor shall provide a minimum one year warranty from date of completion that includes replacement of parts and/or pipes with defects in materials or workmanship. Warranty shall include all labor and material.
- C. Installation shall be completed by a company having minimum experience including the installation of at least five sports fields irrigation systems over the last five years.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components with factory-applied identification. Provide shipping, storage, and handling to prevent damage and to prevent entrance of dirt, debris, and moisture.
- B. Store components protected from direct sunlight and per manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

- A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
- B. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedules 40 and 80.
 - 1. PVC Socket Fittings: ASTM D 2466, Schedules 40 and 80.
 - 2. PVC Threaded Fittings: ASTM D 2464, Schedule 80.
 - 3. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket ends.
- C. PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, Class 200.
 - 1. PVC Socket Fittings: ASTM D 2467, Schedule 80.
 - 2. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.

2.2 PIPING JOINING MATERIALS

- A. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
- B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.3 BACKFLOW PREVENTER

- A. Shall meet or exceed specifications and standards set by the State and USC Foundation for Cross-Connection Control and Hydraulic Research.
 - 1. Mount inside a weatherproof cover on a concrete pad.

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2.4 MANUAL VALVES

A. Brass Ball Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or an approved equivalent.:
 - a. Crane Co.; Crane Valve Group; Crane Valves.
 - b. Crane Co.; Crane Valve Group; Jenkins Valves.
 - c. DynaQuip Controls.
 - d. Flow-Tek, Inc.; a subsidiary of Bray International, Inc.
 - e. Hammond Valve.
 - f. Jamesbury; a subsidiary of Metso Automation.
 - g. Jomar International, LTD.
 - h. KITZ Corporation.
 - i. Legend Valve.
 - j. Marwin Valve; a division of Richards Industries.
 - k. Milwaukee Valve Company.
 - l. NIBCO INC.
 - m. Red-White Valve Corporation.
 - n. RuB Inc.
2. Description:
 - a. Standard: MSS SP-110.
 - b. SWP Rating: 150 psig (1035 kPa).
 - c. CWP Rating: 600 psig (4140 kPa).
 - d. Body Design: Two piece.
 - e. Body Material: Forged brass.
 - f. Ends: Threaded or solder joint if indicated.
 - g. Seats: PTFE or TFE.
 - h. Stem: Brass.
 - i. Ball: Chrome-plated brass.
 - j. Port: Full.

2.5 AUTOMATIC CONTROL VALVES

A. Plastic, Automatic Control Valves:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or approved equivalent.
 - a. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.

2.6 AUTOMATIC DRAIN VALVES

- A. Description: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig (17 to 20 kPa).

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2.7 SPRINKLERS

- A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.

- B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or approved equivalent.

 - 2. Description:
 - a. Body Material: ABS.
 - b. Nozzle: ABS.
 - c. Retraction Spring: Stainless steel.
 - d. Internal Parts: Corrosion resistant.

 - 3. Capacities and Characteristics:
 - a. Flow: 7.0 GPM.
 - b. Pop-up Height: 3.5 inches aboveground to nozzle.
 - c. Arc: adjustable circle between 50 degrees and 360 degrees.
 - d. Radius: 46 feet.
 - e. Inlet: 1 inch FNPT.

2.8 QUICK COUPLERS

- A. Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.
 - 1. Locking-Top Option: Vandal-resistant locking feature. Include two matching key(s).

2.9 CONTROLLERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or approved equivalent.

- B. Description:
 - 1. Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 minutes to 12 hours. Include switch for manual or automatic operation of each station.
 - 2. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
 - a. Body Material: Molded plastic.
 - b. Mounting: Freestanding type for concrete base.

 - 3. Control Transformer: 24-V secondary, with primary fuse.
 - 4. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate two or more times daily.

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- a. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
 - b. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.
 - c. Surge Protection: Metal-oxide-varistor type on each station and primary power.
5. Moisture Sensor: Adjustable from one to seven days, to shut off water flow during rain.
6. Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.
- a. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
 - b. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
 - c. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.
7. Concrete Base: Reinforced precast concrete not less than 36 by 24 by 4 inches thick, and 6 inches greater in each direction than overall dimensions of controller. Include opening for wiring.

2.10 BOXES FOR AUTOMATIC CONTROL VALVES

A. Plastic Boxes:

1. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
- a. Size: As required for valves and service.
 - b. Shape: Rectangular.
 - c. Sidewall Material: PE, ABS, or FRP.
 - d. Cover Material: PE, ABS, or FRP.

1) Lettering: "IRRIGATION."

- B. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Division 31 Section "Earth Moving."
- B. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from 3/4 to 3 inches, to 12 inches below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.
- C. Provide minimum cover over top of underground piping according to the following:

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1. Irrigation Main Piping: Minimum depth of 24 inches below finished grade.
2. Circuit Piping: 12 inches below finished grade.
3. Drain Piping: 12 inches below finished grade.
4. Sleeves: 24 inches below finished grade.

3.2 WATER SUPPLY

- A. Connect to water supply location as directed by Owner in the field in accordance with local code and water supplier requirements.

3.3 PIPING INSTALLATION

- A. All line installation shall occur prior to spreading of topsoil. Swing joints shall be installed and capped.
- B. Location and Arrangement: Drawings indicate location and arrangement of piping systems in a diagrammatic fashion. Adjust locations in the field as required to avoid obstructions and/or other parts of the system without compromising the integrity of the system.
 1. Allow a minimum of six inches (6") between parallel pipe lines.
- C. Install piping at minimum uniform slope of 0.5 percent down toward drain valves.
- D. Install piping free of sags and bends.
- E. Install groups of pipes parallel to each other, spaced to permit valve servicing.
- F. Install fittings for changes in direction and branch connections.
- G. Install unions adjacent to valves and to final connections to other components with NPS 2 (DN 50) or smaller pipe connection.
- H. Install flanges adjacent to valves and to final connections to other components with NPS 2-1/2 (DN 65) or larger pipe connection.
- I. Install expansion loops in control-valve boxes for plastic piping.
- J. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- K. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.

3.4 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

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- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Flanged Joints: Select rubber gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- E. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 3. PVC Nonpressure Piping: Join according to ASTM D 2855.

3.5 VALVE INSTALLATION

- A. Install per manufacturer's written recommendations.
- B. Underground Curb Valves: Install in curb-valve casings with tops flush with grade.
- C. Underground Iron Gate Valves, Resilient Seat: Comply with AWWA C600 and AWWA M44. Install in valve casing with top flush with grade.
 - 1. Install valves and PVC pipe with restrained, gasketed joints.
- D. Aboveground Valves: Install as components of connected piping system.
- E. Throttling Valves: Install in underground piping in boxes for automatic control valves.
- F. Drain Valves: Install in underground piping in boxes for automatic control valves.

3.6 SPRINKLER INSTALLATION

- A. Uncover swing joints and install heads after topsoil is spread and finish grade has been achieved to specified tolerances.
- B. Install per manufacturer's written recommendations.
- C. Install sprinklers after hydrostatic test is completed.
- D. Install sprinklers at manufacturer's recommended heights.
- E. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries unless otherwise indicated.

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3.7 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

- A. Install per manufacturer's written recommendations.
- B. Equipment Mounting: Install exterior freestanding controllers on precast concrete bases.
 - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
- C. Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

3.8 IDENTIFICATION

- A. Identify system components. Comply with requirements for identification.
- B. Equipment Nameplates and Signs: Permanently label each automatic controller.
 - 1. Text: In addition to identifying unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

3.9 FIELD QUALITY CONTROL

- A. Perform tests and inspections according to manufacturer's written instructions.
- B. Tests and Inspections:
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Any irrigation product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.10 ADJUSTING

- A. Adjust settings of controllers, including initial programming.
- B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- C. Adjust sprinklers and devices so they will be flush with finish grade.

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- D. Adjust sprinklers located at corners and edges of the fields so spray is directed toward the interior of the fields as depicted on the plans.

3.11 PIPING SCHEDULE

- A. Install components having pressure rating equal to or greater than system operating pressure.
- B. Piping in control-valve boxes and aboveground may be joined with flanges or unions instead of joints indicated.
- C. Underground irrigation main and circuit piping shall be as indicated on Drawings.
- D. Underground Branches and Offsets at Sprinklers and Devices: Schedule 80, PVC pipe; threaded PVC fittings; and threaded joints.
 - 1. Plastic swing-joint assemblies, with offsets for flexible joints, manufactured for this application.
- E. Drain piping shall be one of the following:
 - 1. Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.
 - 2. SDR 21, 26, or 32.5, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

END OF SECTION 328400

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SECTION 329200 – TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.2 SUMMARY

- A. Section Includes:
 - 1. Finish grading.
 - 2. Seeding for lawn areas.

1.3 DEFINITIONS

- A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- I. Surface Soil: Whatever soil is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

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1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Certification of grass seed.
- C. Product certificates.

1.5 QUALITY ASSURANCE

- A. Finish grading shall be completed by a company having minimum experience including the construction of at least five sports fields over the last five years and shall have in-house capabilities to perform automated precision laser-grading of the playing surface that will conform with the specifications and plans.
- B. Laser grading operators shall have a minimum of three (3) years of experience with similar equipment.
- C. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 1. Pesticide Applicator: State licensed, commercial.
- D. Soil Analysis: Furnish topsoil analysis and a written report by the following qualified soil-testing laboratory:
 - 1. Turf & Soil Diagnostics
35 King Street
Trumansburg, NY 14886
855-769-4231
 - 2. Sample soil per soil-testing laboratory recommendations.
 - 3. Report suitability of tested soil for turf growth.
 - a. State recommendations for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 - b. Report presence of problem salts, minerals, or heavy metals; if present, provide additional recommendations for corrective action.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.

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1.7 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
 - 1. Seeded Turf: Until Substantial Completion.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species as follows:
 - a. 'Athletic Field Mix – ERNMX-106' by Ernst Conservation Seeds, 800-873-3321, or Landscape Landscape Architect approved equivalent.

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve, containing a maximum 60% oxide.
- B. Aluminum Sulfate: Commercial grade, unadulterated.
- C. Perlite: Horticultural perlite, soil amendment grade.
- D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 (0.30-mm) sieve.
- E. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- F. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

2.3 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch (19-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.

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- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, with a pH range of 3.4 to 4.8.
- C. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
- D. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.4 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: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.5 PLANTING SOILS

- A. Planting Soil Existing, native surface topsoil formed under natural conditions with the duff layer retained during excavation process or ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 2 percent organic material content. Verify suitability of soil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:
 - 1. Ratio of Loose Compost to Topsoil by Volume: as recommend by soils analysis.
 - 2. Ratio of Loose Sphagnum Peat to Topsoil by Volume: as recommend by soils analysis.
 - 3. Ratio of Loose Wood Derivatives to Topsoil by Volume: 10%-12%.
 - 4. Weight of Lime per 1000 Sq. Ft. (92.9 Sq. m): as recommend by soils analysis.
 - 5. Weight of Aluminum Sulfate per 1000 Sq. Ft. (92.9 Sq. m): as recommend by soils analysis.
 - 6. Weight of Agricultural Gypsum per 1000 Sq. Ft. (92.9 Sq. m): as recommend by soils analysis.
 - 7. Volume of Sand Plus 10 Percent Diatomaceous Earth per 1000 Sq. Ft. (92.9 Sq. m): as recommend by soils analysis.
 - 8. Weight of Commercial Fertilizer per 1000 Sq. Ft. (92.9 Sq. m): as recommend by soils analysis.
 - 9. Weight of Slow-Release Fertilizer per 1000 Sq. Ft. (92.9 Sq. m): as recommend by soils analysis.

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2.6 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.7 PESTICIDES

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.8 HYDROSEED

- A. Mulch: Mulch shall be composed of cellulose or wood fiber products with no growth or germination inhibiting substances, and shall be manufactured in such a manner that when thoroughly mixed with seed, fertilizer, organic stabilizer, and water, in the proportions specified, will form homogeneous slurry which is capable of being sprayed to form a porous mat. The fibrous mulch in its air-dry state shall contain no more than 15% by weight of water. The fiber shall have a temporary green dye and shall be accompanied by a certificate of compliance stating that the fiber conforms to these specifications.
- B. Organic Stabilizer/Tackifier: Shall be an organic substance supplied in powder form and shall be psilium-based and packed in clearly marked bags stating the contents of each package.
- C. Equipment: Equipment used for application of slurry shall be a commercial-type Hydro-Seeder and have a built-in agitation system with an operation capacity sufficient to agitate, suspend and homogeneously mix slurry. Tank capacity shall be a minimum of 1,500 gallons and shall be mounted on a truck to allow access to the site. Distribution Lines: Large enough to prevent stoppage and allow for even distribution of slurry over the site. Pump: Shall be able to generate 150 psi at the nozzle.

PART 3 - EXECUTION

3.1 TURF AREA PREPARATION

- A. Utilize low ground pressure equipment for the placing and grading of the topsoil.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches (100 mm). Remove stones larger than 2 inches (50 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Move the topsoil from the stockpile in such a manner that other materials are not tracked onto the field from tracks or tires.
 - 2. Trucks loaded with soil shall avoid topsoil already placed on the field.
 - 3. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
 - 4. Spread planting soil uniformly to a minimum depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

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- C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least 6 inches (150 mm). Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches (100 mm) of soil. Till soil to a homogeneous mixture of fine texture.
 - 3. Remove stones larger than 2 inches (50 mm) in any dimension and sticks, roots, trash, and other extraneous matter.
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Eliminate potential water-holding pockets. Grade to provide positive drainage away from buildings and structures. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Before planting, verify elevations and grades of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 SEEDING

- A. Seeding shall be completed using one of the following methods:
 - 1. Broadcast / Drop Seed
 - a. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
 - b. Sow seed at a total rate of 5.0 lb/1,000 sq ft.
 - c. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.
 - d. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2 inches (38 mm) in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment. Prevent straw from blowing on or being applied to adjacent properties or streets.
 - 2. Hydroseeding
 - a. Preparation:
 - 1) Water, mulch, fertilizer, binder and other ingredients shall be added to the tank simultaneously so that the finished load is a homogenous mix of the specified ingredients.
 - 2) Seed shall be added last and shall be discharged within 2 hours. Loads held over 2 hours will be recharged with 1/2 the seed rate before application.
 - 3) Once fully loaded, the complete slurry shall be agitated for 3-5 minutes to allow for uniform mixing.
 - b. Apply fertilizer and seed per rates specified herein.
 - c. Apply mulch at a rate of 35-40 pounds per 1000 square feet.

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- d. All hydroseed applications are to be applied in a sweeping motion to form a uniform application and form a mat at the specified rates.
- e. Unused Loads: If mixture remains in tank for more than 8 hours it shall be removed from the job site at contractor's expense.

3.3 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain height appropriate for species without cutting more than 1/3 of grass height.

3.4 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Landscape Architect:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.5 PROJECT CLEAN-UP

- A. General: All turf areas and staging areas shall be maintained in a neat and orderly condition. Keep paved areas free of soil.
- B. Hydro-Seeding Overspray: Installing contractor is responsible for washing or otherwise cleaning excess material off all areas not intended to receive treatment.
- C. Debris: Clean up and remove associated materials and debris from project site before Final Acceptance.

END OF SECTION 329200

ARTICLE 8
PREVAILING WAGE RATES



**THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS**

Prevailing Wage Rates

**As determined by the Director under the provisions of the
Massachusetts General Laws, Chapter 149, Sections 26 to 27H**

CHARLES D. BAKER
Governor

ROSALIN ACOSTA
Secretary

KARYN E. POLITO
Lt. Governor

WILLIAM D MCKINNEY
Director

Awarding Authority: Town of Longmeadow
Contract Number: **City/Town:** LONGMEADOW
Description of Work: Blueberry Hill School - Installation of lawn irrigation, piping, electrical connection, landscaping.
Job Location: Blueberry Hill School, 275 Blueberry Hill Rd

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule from the Department of Labor Standards (“DLS”) if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F “rental of equipment” contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.15	\$10.91	\$10.89	\$0.00	\$53.95
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.22	\$10.91	\$10.89	\$0.00	\$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.34	\$10.91	\$10.89	\$0.00	\$54.14
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2017	\$92.97	\$9.90	\$21.15	\$0.00	\$124.02
	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/04/2018	\$31.75	\$7.70	\$13.29	\$0.00	\$52.74
	12/03/2018	\$32.52	\$7.70	\$13.29	\$0.00	\$53.51
	06/03/2019	\$33.33	\$7.70	\$13.29	\$0.00	\$54.32
	12/02/2019	\$34.14	\$7.70	\$13.29	\$0.00	\$55.13
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2018	\$31.75	\$7.70	\$11.28	\$0.00	\$50.73
	12/01/2018	\$32.51	\$7.70	\$11.28	\$0.00	\$51.49
	06/01/2019	\$33.30	\$7.70	\$11.28	\$0.00	\$52.28
	12/01/2019	\$34.09	\$7.70	\$11.28	\$0.00	\$53.07
	06/01/2020	\$34.90	\$7.70	\$11.28	\$0.00	\$53.88
	12/01/2020	\$35.71	\$7.70	\$11.28	\$0.00	\$54.69
	06/01/2021	\$36.55	\$7.70	\$11.28	\$0.00	\$55.53
	12/01/2021	\$37.38	\$7.70	\$11.28	\$0.00	\$56.36
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	06/01/2018	\$33.21	\$11.50	\$6.60	\$0.00	\$51.31
	12/01/2018	\$34.11	\$11.50	\$6.60	\$0.00	\$52.21
	06/01/2019	\$35.01	\$11.50	\$6.60	\$0.00	\$53.11
	12/01/2019	\$35.91	\$11.50	\$6.60	\$0.00	\$54.01
	06/01/2020	\$36.81	\$11.50	\$6.60	\$0.00	\$54.91
	12/01/2020	\$37.71	\$11.50	\$6.60	\$0.00	\$55.81
ASPHALT RAKER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/04/2018	\$31.25	\$7.70	\$13.29	\$0.00	\$52.24
	12/03/2018	\$32.02	\$7.70	\$13.29	\$0.00	\$53.01
	06/03/2019	\$32.83	\$7.70	\$13.29	\$0.00	\$53.82
	12/02/2019	\$33.64	\$7.70	\$13.29	\$0.00	\$54.63
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2018	\$31.25	\$7.70	\$11.28	\$0.00	\$50.23
	12/01/2018	\$32.01	\$7.70	\$11.28	\$0.00	\$50.99
	06/01/2019	\$32.80	\$7.70	\$11.28	\$0.00	\$51.78
	12/01/2019	\$33.59	\$7.70	\$11.28	\$0.00	\$52.57
	06/01/2020	\$34.40	\$7.70	\$11.28	\$0.00	\$53.38
	12/01/2020	\$35.21	\$7.70	\$11.28	\$0.00	\$54.19
	06/01/2021	\$36.05	\$7.70	\$11.28	\$0.00	\$55.03
	12/01/2021	\$36.88	\$7.70	\$11.28	\$0.00	\$55.86
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2018	\$34.54	\$11.19	\$13.44	\$0.00	\$59.17
	12/01/2018	\$35.14	\$11.19	\$13.71	\$0.00	\$60.04
	06/01/2019	\$35.65	\$11.19	\$13.98	\$0.00	\$60.82
	12/01/2019	\$36.25	\$11.19	\$14.25	\$0.00	\$61.69
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2018	\$34.54	\$11.19	\$13.44	\$0.00	\$59.17
	12/01/2018	\$35.14	\$11.19	\$13.71	\$0.00	\$60.04
	06/01/2019	\$35.65	\$11.19	\$13.98	\$0.00	\$60.82
	12/01/2019	\$36.25	\$11.19	\$14.25	\$0.00	\$61.69
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/04/2018	\$31.25	\$7.70	\$13.29	\$0.00	\$52.24
	12/03/2018	\$32.02	\$7.70	\$13.29	\$0.00	\$53.01
	06/03/2019	\$32.83	\$7.70	\$13.29	\$0.00	\$53.82
	12/02/2019	\$33.64	\$7.70	\$13.29	\$0.00	\$54.63
For apprentice rates see "Apprentice- LABORER"						
BATCH/CEMENT PLANT - ON SITE <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2018	\$34.01	\$11.19	\$13.44	\$0.00	\$58.64
	12/01/2018	\$34.61	\$11.19	\$13.71	\$0.00	\$59.51
	06/01/2019	\$35.12	\$11.19	\$13.98	\$0.00	\$60.29
	12/01/2019	\$35.72	\$11.19	\$14.25	\$0.00	\$61.16
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/04/2018	\$31.75	\$7.70	\$13.29	\$0.00	\$52.74
	12/03/2018	\$32.52	\$7.70	\$13.29	\$0.00	\$53.51
	06/03/2019	\$33.33	\$7.70	\$13.29	\$0.00	\$54.32
	12/02/2019	\$34.14	\$7.70	\$13.29	\$0.00	\$55.13
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2018	\$31.75	\$7.70	\$11.28	\$0.00	\$50.73
	12/01/2018	\$32.51	\$7.70	\$11.28	\$0.00	\$51.49
	06/01/2019	\$33.30	\$7.70	\$11.28	\$0.00	\$52.28
	12/01/2019	\$34.09	\$7.70	\$11.28	\$0.00	\$53.07
	06/01/2020	\$34.90	\$7.70	\$11.28	\$0.00	\$53.88
	12/01/2020	\$35.71	\$7.70	\$11.28	\$0.00	\$54.69
	06/01/2021	\$36.55	\$7.70	\$11.28	\$0.00	\$55.53
12/01/2021	\$37.38	\$7.70	\$11.28	\$0.00	\$56.36	
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
2	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
3	70	\$30.04	\$6.97	\$11.35	\$0.00	\$48.36
4	75	\$32.19	\$6.97	\$12.16	\$0.00	\$51.32
5	80	\$34.34	\$6.97	\$12.97	\$0.00	\$54.28
6	85	\$36.48	\$6.97	\$13.78	\$0.00	\$57.23
7	90	\$38.63	\$6.97	\$14.59	\$0.00	\$60.19
8	95	\$40.77	\$6.97	\$15.40	\$0.00	\$63.14

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	03/01/2018	\$40.56	\$10.75	\$18.14	\$0.00	\$69.45
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	08/01/2018	\$41.91	\$10.75	\$18.27	\$0.00	\$70.93
	02/01/2019	\$42.46	\$10.75	\$18.27	\$0.00	\$71.48
	08/01/2019	\$43.81	\$10.75	\$18.41	\$0.00	\$72.97
	02/01/2020	\$44.36	\$10.75	\$18.41	\$0.00	\$73.52
	08/01/2020	\$45.71	\$10.75	\$18.56	\$0.00	\$75.02
	02/01/2021	\$46.26	\$10.75	\$18.56	\$0.00	\$75.57
	08/01/2021	\$47.66	\$10.75	\$18.72	\$0.00	\$77.13
	02/01/2022	\$48.19	\$10.75	\$18.72	\$0.00	\$77.66

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Springfield/Pittsfield

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.28	\$10.75	\$18.14	\$0.00	\$49.17
2	60	\$24.34	\$10.75	\$18.14	\$0.00	\$53.23
3	70	\$28.39	\$10.75	\$18.14	\$0.00	\$57.28
4	80	\$32.45	\$10.75	\$18.14	\$0.00	\$61.34
5	90	\$36.50	\$10.75	\$18.14	\$0.00	\$65.39

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.96	\$10.75	\$18.27	\$0.00	\$49.98
2	60	\$25.15	\$10.75	\$18.27	\$0.00	\$54.17
3	70	\$29.34	\$10.75	\$18.27	\$0.00	\$58.36
4	80	\$33.53	\$10.75	\$18.27	\$0.00	\$62.55
5	90	\$37.72	\$10.75	\$18.27	\$0.00	\$66.74

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/POWER SHOVEL/TREE SHREDDER	06/01/2018	\$34.54	\$11.19	\$13.44	\$0.00	\$59.17
/CLAM SHELL OPERATING	12/01/2018	\$35.14	\$11.19	\$13.71	\$0.00	\$60.04
ENGINEERS LOCAL 98	06/01/2019	\$35.65	\$11.19	\$13.98	\$0.00	\$60.82
	12/01/2019	\$36.25	\$11.19	\$14.25	\$0.00	\$61.69

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN	06/01/2018	\$39.10	\$7.70	\$15.40	\$0.00	\$62.20
LABORERS - FOUNDATION AND MARINE	12/01/2018	\$40.05	\$7.70	\$15.40	\$0.00	\$63.15
	06/01/2019	\$41.05	\$7.70	\$15.40	\$0.00	\$64.15
	12/01/2019	\$42.05	\$7.70	\$15.40	\$0.00	\$65.15
	06/01/2020	\$43.04	\$7.70	\$15.40	\$0.00	\$66.14
	12/01/2020	\$44.02	\$7.70	\$15.40	\$0.00	\$67.12
	06/01/2021	\$45.04	\$7.70	\$15.40	\$0.00	\$68.14
	12/01/2021	\$46.05	\$7.70	\$15.40	\$0.00	\$69.15

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER	06/01/2018	\$37.95	\$7.70	\$15.40	\$0.00	\$61.05
LABORERS - FOUNDATION AND MARINE	12/01/2018	\$38.90	\$7.70	\$15.40	\$0.00	\$62.00
	06/01/2019	\$39.90	\$7.70	\$15.40	\$0.00	\$63.00
	12/01/2019	\$40.90	\$7.70	\$15.40	\$0.00	\$64.00
	06/01/2020	\$41.89	\$7.70	\$15.40	\$0.00	\$64.99
	12/01/2020	\$42.87	\$7.70	\$15.40	\$0.00	\$65.97
	06/01/2021	\$43.89	\$7.70	\$15.40	\$0.00	\$66.99
	12/01/2021	\$44.90	\$7.70	\$15.40	\$0.00	\$68.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2018	\$37.95	\$7.70	\$15.40	\$0.00	\$61.05
	12/01/2018	\$38.90	\$7.70	\$15.40	\$0.00	\$62.00
	06/01/2019	\$39.90	\$7.70	\$15.40	\$0.00	\$63.00
	12/01/2019	\$40.90	\$7.70	\$15.40	\$0.00	\$64.00
	06/01/2020	\$41.89	\$7.70	\$15.40	\$0.00	\$64.99
	12/01/2020	\$42.87	\$7.70	\$15.40	\$0.00	\$65.97
	06/01/2021	\$43.89	\$7.70	\$15.40	\$0.00	\$66.99
	12/01/2021	\$44.90	\$7.70	\$15.40	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/04/2018	\$31.25	\$7.70	\$13.29	\$0.00	\$52.24
	12/03/2018	\$32.02	\$7.70	\$13.29	\$0.00	\$53.01
	06/03/2019	\$32.83	\$7.70	\$13.29	\$0.00	\$53.82
	12/02/2019	\$33.64	\$7.70	\$13.29	\$0.00	\$54.63
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS LOCAL 108 - HAMPDEN HAMPSHIRE FRANKLIN</i>	03/05/2018	\$36.56	\$8.26	\$15.00	\$0.00	\$59.82
	09/05/2018	\$37.60	\$8.26	\$15.00	\$0.00	\$60.86
	03/04/2019	\$38.64	\$8.26	\$15.00	\$0.00	\$61.90

Apprentice - CARPENTER - Local 108 Hampden Hampshire Franklin

Effective Date - 03/05/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.28	\$8.26	\$1.22	\$0.00	\$27.76
2	60	\$21.94	\$8.26	\$1.22	\$0.00	\$31.42
3	70	\$25.59	\$8.26	\$11.34	\$0.00	\$45.19
4	75	\$27.42	\$8.26	\$11.34	\$0.00	\$47.02
5	80	\$29.25	\$8.26	\$12.56	\$0.00	\$50.07
6	80	\$29.25	\$8.26	\$12.56	\$0.00	\$50.07
7	90	\$32.90	\$8.26	\$13.78	\$0.00	\$54.94
8	90	\$32.90	\$8.26	\$13.78	\$0.00	\$54.94

Effective Date - 09/05/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.80	\$8.26	\$1.22	\$0.00	\$28.28
2	60	\$22.56	\$8.26	\$1.22	\$0.00	\$32.04
3	70	\$26.32	\$8.26	\$11.34	\$0.00	\$45.92
4	75	\$28.20	\$8.26	\$11.34	\$0.00	\$47.80
5	80	\$30.08	\$8.26	\$12.56	\$0.00	\$50.90
6	80	\$30.08	\$8.26	\$12.56	\$0.00	\$50.90
7	90	\$33.84	\$8.26	\$13.78	\$0.00	\$55.88
8	90	\$33.84	\$8.26	\$13.78	\$0.00	\$55.88

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$25.93/ 3&4 \$30.77/ 5&6 \$46.41/ 7&8 \$51.29

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME <i>CARPENTERS LOCAL 108 - HAMPDEN HAMPSHIRE FRANKLIN</i>	04/01/2018	\$22.33	\$7.07	\$7.86	\$0.00	\$37.26
	10/01/2018	\$22.71	\$7.07	\$7.86	\$0.00	\$37.64
	04/01/2019	\$23.10	\$7.07	\$7.86	\$0.00	\$38.03
	10/01/2019	\$23.49	\$7.07	\$7.86	\$0.00	\$38.42

As of 9/1/09 Carpentry work on wood-frame WEATHERIZATION projects shall be paid the WOOD FRAME CARPENTER rate.

Apprentice - CARPENTER (Wood Frame) - 108 Hampden Hampshire

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.40	\$7.07	\$0.00	\$0.00	\$20.47
2	60	\$13.40	\$7.07	\$0.00	\$0.00	\$20.47
3	65	\$14.51	\$7.07	\$7.86	\$0.00	\$29.44
4	70	\$15.63	\$7.07	\$7.86	\$0.00	\$30.56
5	75	\$16.75	\$7.07	\$7.86	\$0.00	\$31.68
6	80	\$17.86	\$7.07	\$7.86	\$0.00	\$32.79
7	85	\$18.98	\$7.07	\$7.86	\$0.00	\$33.91
8	90	\$20.10	\$7.07	\$7.86	\$0.00	\$35.03

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.63	\$7.07	\$0.00	\$0.00	\$20.70
2	60	\$13.63	\$7.07	\$0.00	\$0.00	\$20.70
3	65	\$14.76	\$7.07	\$7.86	\$0.00	\$29.69
4	70	\$15.90	\$7.07	\$7.86	\$0.00	\$30.83
5	75	\$17.03	\$7.07	\$7.86	\$0.00	\$31.96
6	80	\$18.17	\$7.07	\$7.86	\$0.00	\$33.10
7	85	\$19.30	\$7.07	\$7.86	\$0.00	\$34.23
8	90	\$20.44	\$7.07	\$7.86	\$0.00	\$35.37

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$17.12/ 3&4 \$24.10/ 5&6 \$30.56/ 7&8 \$32.79

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING <i>BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)</i>	01/01/2018	\$39.11	\$12.30	\$17.64	\$0.30	\$69.35
	07/01/2018	\$39.07	\$12.37	\$17.64	\$0.30	\$69.38
	01/01/2019	\$40.54	\$12.37	\$17.64	\$0.30	\$70.85
	07/01/2019	\$41.11	\$12.37	\$17.64	\$0.30	\$71.42
	01/01/2020	\$42.59	\$12.37	\$17.64	\$0.30	\$72.90

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CEMENT MASONRY/PLASTERING - Springfield/Pittsfield

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.56	\$12.30	\$15.41	\$0.00	\$47.27
2	60	\$23.47	\$12.30	\$17.64	\$0.30	\$53.71
3	65	\$25.42	\$12.30	\$17.64	\$0.30	\$55.66
4	70	\$27.38	\$12.30	\$17.64	\$0.30	\$57.62
5	75	\$29.33	\$12.30	\$17.64	\$0.30	\$59.57
6	80	\$31.29	\$12.30	\$17.64	\$0.30	\$61.53
7	90	\$35.20	\$12.30	\$17.64	\$0.30	\$65.44

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.54	\$12.37	\$15.41	\$0.00	\$47.32
2	60	\$23.44	\$12.37	\$17.64	\$0.30	\$53.75
3	65	\$25.40	\$12.37	\$17.64	\$0.30	\$55.71
4	70	\$27.35	\$12.37	\$17.64	\$0.30	\$57.66
5	75	\$29.30	\$12.37	\$17.64	\$0.30	\$59.61
6	80	\$31.26	\$12.37	\$17.64	\$0.30	\$61.57
7	90	\$35.16	\$12.37	\$17.64	\$0.30	\$65.47

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	06/04/2018	\$31.25	\$7.70	\$13.29	\$0.00	\$52.24
<i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/03/2018	\$32.02	\$7.70	\$13.29	\$0.00	\$53.01
	06/03/2019	\$32.83	\$7.70	\$13.29	\$0.00	\$53.82
	12/02/2019	\$33.64	\$7.70	\$13.29	\$0.00	\$54.63

For apprentice rates see "Apprentice- LABORER"

COMPRESSOR OPERATOR	06/01/2018	\$34.01	\$11.19	\$13.44	\$0.00	\$58.64
<i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2018	\$34.61	\$11.19	\$13.71	\$0.00	\$59.51
	06/01/2019	\$35.12	\$11.19	\$13.98	\$0.00	\$60.29
	12/01/2019	\$35.72	\$11.19	\$14.25	\$0.00	\$61.16

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CRANE OPERATOR	06/01/2018	\$38.04	\$11.19	\$13.44	\$0.00	\$62.67
<i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2018	\$38.64	\$11.19	\$13.71	\$0.00	\$63.54
	06/01/2019	\$39.15	\$11.19	\$13.98	\$0.00	\$64.32
	12/01/2019	\$39.75	\$11.19	\$14.25	\$0.00	\$65.19

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 3	01/01/2018	\$49.66	\$8.10	\$19.55	\$0.00	\$77.31
	07/01/2018	\$50.01	\$8.15	\$20.15	\$0.00	\$78.31
	01/01/2019	\$50.36	\$8.15	\$20.85	\$0.00	\$79.36
	07/01/2019	\$51.46	\$8.15	\$20.85	\$0.00	\$80.46
	01/01/2020	\$42.56	\$8.15	\$20.85	\$0.00	\$71.56
	07/01/2020	\$53.66	\$8.15	\$20.85	\$0.00	\$82.66
	01/01/2021	\$54.76	\$8.15	\$20.85	\$0.00	\$83.76

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.83	\$8.10	\$0.00	\$0.00	\$32.93
2	55	\$27.31	\$8.10	\$5.06	\$0.00	\$40.47
3	60	\$29.80	\$8.10	\$5.52	\$0.00	\$43.42
4	65	\$32.28	\$8.10	\$5.98	\$0.00	\$46.36
5	70	\$34.76	\$8.10	\$16.79	\$0.00	\$59.65
6	75	\$37.25	\$8.10	\$17.25	\$0.00	\$62.60
7	80	\$39.73	\$8.10	\$17.71	\$0.00	\$65.54
8	90	\$44.69	\$8.10	\$18.63	\$0.00	\$71.42

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.01	\$8.15	\$0.00	\$0.00	\$33.16
2	55	\$27.51	\$8.15	\$5.34	\$0.00	\$41.00
3	60	\$30.01	\$8.15	\$5.82	\$0.00	\$43.98
4	65	\$32.51	\$8.15	\$6.31	\$0.00	\$46.97
5	70	\$35.01	\$8.15	\$17.24	\$0.00	\$60.40
6	75	\$37.51	\$8.15	\$17.73	\$0.00	\$63.39
7	80	\$40.01	\$8.15	\$18.21	\$0.00	\$66.37
8	90	\$45.01	\$8.15	\$19.18	\$0.00	\$72.34

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2018	\$38.15	\$7.70	\$15.20	\$0.00	\$61.05
	12/01/2018	\$39.10	\$7.70	\$15.20	\$0.00	\$62.00
	06/01/2019	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	12/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2018	\$39.15	\$7.70	\$15.20	\$0.00	\$62.05
	12/01/2018	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	06/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
	12/01/2019	\$42.10	\$7.70	\$15.20	\$0.00	\$65.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BURNERS <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2018	\$38.90	\$7.70	\$15.20	\$0.00	\$61.80
	12/01/2018	\$39.85	\$7.70	\$15.20	\$0.00	\$62.75
	06/01/2019	\$40.85	\$7.70	\$15.20	\$0.00	\$63.75
	12/01/2019	\$41.85	\$7.70	\$15.20	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2018	\$39.15	\$7.70	\$15.20	\$0.00	\$62.05
	12/01/2018	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	06/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
	12/01/2019	\$42.10	\$7.70	\$15.20	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2018	\$38.90	\$7.70	\$15.20	\$0.00	\$61.80
	12/01/2018	\$39.85	\$7.70	\$15.20	\$0.00	\$62.75
	06/01/2019	\$40.85	\$7.70	\$15.20	\$0.00	\$63.75
	12/01/2019	\$41.85	\$7.70	\$15.20	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2018	\$38.15	\$7.70	\$15.20	\$0.00	\$61.05
	12/01/2018	\$39.10	\$7.70	\$15.20	\$0.00	\$62.00
	06/01/2019	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	12/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2017	\$61.98	\$9.90	\$21.15	\$0.00	\$93.03
	08/01/2018	\$65.20	\$9.90	\$21.15	\$0.00	\$96.25
	08/01/2019	\$68.52	\$9.90	\$21.15	\$0.00	\$99.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2017	\$66.41	\$9.90	\$21.15	\$0.00	\$97.46
	08/01/2018	\$69.86	\$9.90	\$21.15	\$0.00	\$100.91
	08/01/2019	\$73.41	\$9.90	\$21.15	\$0.00	\$104.46
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2017	\$92.97	\$9.90	\$21.15	\$0.00	\$124.02
	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
ELECTRICIAN (Including Core Drilling) <i>ELECTRICIANS LOCAL 7</i>	12/31/2017	\$40.51	\$10.00	\$11.42	\$0.00	\$61.93
	07/01/2018	\$41.21	\$10.25	\$11.74	\$0.00	\$63.20
	12/30/2018	\$41.91	\$10.50	\$12.06	\$0.00	\$64.47
	06/30/2019	\$42.66	\$10.75	\$12.33	\$0.00	\$65.74
	12/29/2019	\$43.41	\$11.00	\$12.60	\$0.00	\$67.01

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 7

Effective Date - 12/31/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.20	\$5.40	\$0.49	\$0.00	\$22.09
2	45	\$18.23	\$5.40	\$0.55	\$0.00	\$24.18
3	50	\$20.26	\$10.00	\$6.91	\$0.00	\$37.17
4	55	\$22.28	\$10.00	\$6.97	\$0.00	\$39.25
5	65	\$26.33	\$10.00	\$8.09	\$0.00	\$44.42
6	70	\$28.36	\$10.00	\$9.15	\$0.00	\$47.51

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.48	\$5.55	\$0.49	\$0.00	\$22.52
2	45	\$18.54	\$5.55	\$0.56	\$0.00	\$24.65
3	50	\$20.61	\$10.25	\$6.92	\$0.00	\$37.78
4	55	\$22.67	\$10.25	\$6.98	\$0.00	\$39.90
5	65	\$26.79	\$10.25	\$8.10	\$0.00	\$45.14
6	70	\$28.85	\$10.25	\$9.17	\$0.00	\$48.27

Notes:

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

Apprentice to Journeyworker Ratio:2:3****

ELEVATOR CONSTRUCTOR	01/01/2018	\$51.46	\$15.43	\$16.61	\$0.00	\$83.50
ELEVATOR CONSTRUCTORS LOCAL 41	01/01/2019	\$53.11	\$15.58	\$17.51	\$0.00	\$86.20
	01/01/2020	\$54.85	\$15.73	\$18.41	\$0.00	\$88.99
	01/01/2021	\$56.69	\$15.88	\$19.31	\$0.00	\$91.88
	01/01/2022	\$58.62	\$16.03	\$20.21	\$0.00	\$94.86

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 41

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.73	\$15.43	\$0.00	\$0.00	\$41.16
2	55	\$28.30	\$15.43	\$16.61	\$0.00	\$60.34
3	65	\$33.45	\$15.43	\$16.61	\$0.00	\$65.49
4	70	\$36.02	\$15.43	\$16.61	\$0.00	\$68.06
5	80	\$41.17	\$15.43	\$16.61	\$0.00	\$73.21

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.56	\$15.58	\$0.00	\$0.00	\$42.14
2	55	\$29.21	\$15.58	\$17.51	\$0.00	\$62.30
3	65	\$34.52	\$15.58	\$17.51	\$0.00	\$67.61
4	70	\$37.18	\$15.58	\$17.51	\$0.00	\$70.27
5	80	\$42.49	\$15.58	\$17.51	\$0.00	\$75.58

Notes:

Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2018	\$36.02	\$15.43	\$16.61	\$0.00	\$68.06
	01/01/2019	\$37.18	\$15.58	\$17.51	\$0.00	\$70.27
	01/01/2020	\$38.40	\$15.73	\$18.41	\$0.00	\$72.54
	01/01/2021	\$39.68	\$15.88	\$19.31	\$0.00	\$74.87
	01/01/2022	\$41.03	\$16.03	\$20.21	\$0.00	\$77.27

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2018	\$31.25	\$7.70	\$11.28	\$0.00	\$50.23
	12/01/2018	\$32.01	\$7.70	\$11.28	\$0.00	\$50.99
	06/01/2019	\$32.80	\$7.70	\$11.28	\$0.00	\$51.78
	12/01/2019	\$33.59	\$7.70	\$11.28	\$0.00	\$52.57
	06/01/2020	\$34.40	\$7.70	\$11.28	\$0.00	\$53.38
	12/01/2020	\$35.21	\$7.70	\$11.28	\$0.00	\$54.19
	06/01/2021	\$36.05	\$7.70	\$11.28	\$0.00	\$55.03
	12/01/2021	\$36.88	\$7.70	\$11.28	\$0.00	\$55.86

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"

FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$18.84	\$4.80	\$4.10	\$0.00	\$27.74
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$21.33	\$4.80	\$4.10	\$0.00	\$30.23
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$22.33	\$4.80	\$4.10	\$0.00	\$31.23

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 7</i>	12/31/2017	\$40.51	\$10.00	\$11.42	\$0.00	\$61.93
	07/01/2018	\$41.21	\$10.25	\$11.74	\$0.00	\$63.20
	12/30/2018	\$41.91	\$10.50	\$12.06	\$0.00	\$64.47
	06/30/2019	\$42.66	\$10.75	\$12.33	\$0.00	\$65.74
	12/29/2019	\$43.41	\$11.00	\$12.60	\$0.00	\$67.01

For apprentice rates see "Apprentice- ELECTRICIAN"

FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 7</i> / COMMISSIONING <i>ELECTRICIANS</i>	12/31/2017	\$40.51	\$10.00	\$11.42	\$0.00	\$61.93
	07/01/2018	\$41.21	\$10.25	\$11.74	\$0.00	\$63.20
	12/30/2018	\$41.91	\$10.50	\$12.06	\$0.00	\$64.47
	06/30/2019	\$42.66	\$10.75	\$12.33	\$0.00	\$65.74
	12/29/2019	\$43.41	\$11.00	\$12.60	\$0.00	\$67.01

For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"

FIREMAN <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2018	\$34.01	\$11.19	\$13.44	\$0.00	\$58.64
	12/01/2018	\$34.61	\$11.19	\$13.71	\$0.00	\$59.51
	06/01/2019	\$35.12	\$11.19	\$13.98	\$0.00	\$60.29
	12/01/2019	\$35.72	\$11.19	\$14.25	\$0.00	\$61.16

Apprentice - OPERATING ENGINEERS - Local 98 Class 3

Effective Date - 06/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.41	\$11.19	\$13.44	\$0.00	\$45.04
2	70	\$23.81	\$11.19	\$13.44	\$0.00	\$48.44
3	80	\$27.21	\$11.19	\$13.44	\$0.00	\$51.84
4	90	\$30.61	\$11.19	\$13.44	\$0.00	\$55.24

Effective Date - 12/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.77	\$11.19	\$13.71	\$0.00	\$45.67
2	70	\$24.23	\$11.19	\$13.71	\$0.00	\$49.13
3	80	\$27.69	\$11.19	\$13.71	\$0.00	\$52.59
4	90	\$31.15	\$11.19	\$13.71	\$0.00	\$56.05

Notes:

Steps 1-2 are 1000 hrs.; Steps 3-4 are 2000 hrs.

Apprentice to Journeyworker Ratio:1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2018	\$21.50	\$7.70	\$11.28	\$0.00	\$40.48
	12/01/2018	\$22.50	\$7.70	\$11.28	\$0.00	\$41.48
	06/01/2019	\$22.50	\$7.70	\$11.28	\$0.00	\$41.48
	12/01/2019	\$23.50	\$7.70	\$11.28	\$0.00	\$42.48
	06/01/2020	\$23.50	\$7.70	\$11.28	\$0.00	\$42.48
	12/01/2020	\$24.50	\$7.70	\$11.28	\$0.00	\$43.48
	06/01/2021	\$24.50	\$7.70	\$11.28	\$0.00	\$43.48
	12/01/2021	\$24.50	\$7.70	\$11.28	\$0.00	\$43.48

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"