

**TOWN OF ARLINGTON MASSACHUSETTS
INVITATION TO BID
#15-31
COLUMBARIUM PROJECT/MT. PLEASANT CEMETERY**

Sealed bids are invited and will be received by the Town Manager, Town of Arlington, Massachusetts, until **2:00 P.M., Thursday, August 13, 2015** at the Office of the Purchasing Agent, Town Hall, Arlington, Massachusetts 02476, at which time and place they will be publicly opened and read.

A BID DEPOSIT IN THE FORM OF CASH, CERTIFIED CHECK, OR TREASURER'S CHECK, shall accompany every bid. The amount of such bid deposit shall be FIVE PERCENT (5%) of the value of the bid.

Specifications and proposal forms will be available at the Office of the Purchasing Agent, Town Hall, Arlington, Massachusetts. All bids must be in sealed envelopes plainly marked: **BID ON:
COLUMBARIUM PROJECT/MT. PLEASANT CEMETERY , BID #15-31,
Thursday, August 13, 2015 AT 2:00 P.M.**

**Pre-bid Site Visit will be held on Tuesday August 4, 2015 at 11:00 AM, Mt. Pleasant
Cemetery, Medford St., Arlington, MA.**

The conditions of employment as set forth in Sections 26 to 27D and 27F of Chapter 149 of the General Laws, as amended, shall prevail in the execution of the work under this contract.

Attention is called to the fact that minimum wage rates and health and welfare and pension fund contributions are established for this contract and are a part of the specifications.

Work under this contract shall be governed by M.G.L.Ch.30, Sec.39M.

Attestation Forms pursuant to M.G.L. Ch. 62C, Sec. 49A and M.G.L. Ch. 701 of the Acts of 1983 are enclosed and shall be submitted with bids.

Proposals are for the construction of a Columbarium, including foundation and concrete pavement along with other miscellaneous improvements in the Mount Pleasant Cemetery in the Town of Arlington, Massachusetts.

It is the intention of the Owner to award the Contract to the lowest qualified responsive bidder. The bidder must submit a bid on all bid items in the Contract.

All proposals to include prices in both writing and in figures, and must be signed by the bidder with his business address.

An increase or decrease in the quantity of work shall not be regarded as a sufficient ground for an increase in the unit prices.

Attached By-Law of the Town of Arlington, Title I, Article 16, concerning Construction Projects which exceed \$200,000.00 is part and parcel of the bid.

To receive consideration, bids must be in the hands of the Purchasing Agent or his authorized representative not later than the day and hour above mentioned. For further information relative

to this bid, please confer with Domenic R. Lanzillotti, Director, Purchasing Department, Town Hall, Arlington, Massachusetts, 02476.

OSHA Construction Training Required: As of July 1, 2006, under M.G.L. – Chapter 30, Section 39s, any person, submitting a bid for, or signing a contract to work on, the construction, reconstruction, alteration, remodeling or repair of any public work by the Commonwealth of Massachusetts/Town of Arlington, and estimated by the awarding Authority to cost more than \$10,000, shall certify on the Bid or Contract, under penalty of perjury, that all employees to be employed at the work will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration

The Town Manager reserves the right to cancel any invitation for bids, to reject in whole or in part any and all bids, when it is deemed in the best interest of the Town of Arlington to do so.

TOWN OF ARLINGTON

Adam Chapdelaine
Town Manager

Date: July 29, 2015

I INSTRUCTION TO BIDDERS

1. Receipt of Bids

The Town may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informality in or reject any bids. Any bid may be withdrawn before the time for the opening of bids. Any bid received after the time and date specified shall not be considered. No bidder may withdraw his/her bid for a period of 30 days, excluding Saturdays, Sundays, and legal holidays after actual date of the opening thereof.

2. Preparation of Bid

Each bid shall be submitted on the forms attached to these documents. The bid forms may be removed and submitted separately from the other documents. All blank spaces for bid prices must be filled in with the unit price for the item or the lump sum for which the proposal is made. Bidders must bid on each item. All entries in the entire proposal must be made clearly, and prices written in both words and figures in the spaces provided.

Each bid must be in a sealed envelope addressed to the Office of the Purchasing Agent, 730 Massachusetts Avenue, Arlington, Massachusetts, 02476; and bearing on the outside the name of the bidder, his/her address, the name of the project for which the bid is submitted, and the notation ' **BID ON: BID # 15-31 COLUMBARIUM PROJECT/MT. PLEASANT CEMETERY.**

3. Bid Security

Every bid submitted by contractors shall be accompanied by a bid deposit in the form of cash, certified check, treasurer's or cashier's check, or a bid bond issued by a responsible bank or trust company and made payable to the Town of Arlington. The amount of the bid deposit shall be 5% of the amount of the bid. All security except those of the three lowest responsible and eligible bidders will be returned within ten days, Saturdays, Sundays, and legal holidays excluded, after opening of the bid. All bid securities will be returned on the execution of the contract or if no award is made within 30 days, excluding Saturdays, Sundays, and legal holidays, after the actual date of the opening thereof, unless forfeited under the conditions herein stipulated.

In case a party to whom a contract is awarded shall fail or neglect to execute the contract and furnish the satisfactory bond in the time specified, the Town may determine the bidder has abandoned the contract and thereupon the proposal and acceptance shall be null and void, and the bid security accompanying the proposal shall be forfeited to the Town as liquidation damages for such failure or neglect and indemnify the Town for any loss which may be sustained by failure of the bidder to execute the contract and furnish the bonds as aforesaid, provided that, in case of death, disability, or other unforeseen circumstances affecting the bidder, such bid security may be returned to him/her.

After execution of the contract and acceptance of the bonds by the Town, the bid security accompanying the proposal of the successful bidder will be returned.

4. Time of Completion

The bidder must agree to commence work within ten (10) business days from the date of signing the contract and to fully complete the project within the time specified within the Special Provisions section of this document.

5. Performance and Labor Material Bonds

A performance bond in the sum of 50% of the total amount of the Contract by the successful bidder and an additional bond in equal amount covering the payment for all labor and materials used in the work will be required. A surety company authorized to do business in Massachusetts and satisfactory to the Town of Arlington must provide these bonds. These bonds will be required at the execution of the contract. Attorneys-in-fact who sign contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

6. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws, Town of Arlington Bylaws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they shall be deemed to be included in the contract the same as though herein written out in full.

7. Withdrawal of Bids

Upon proper written request and identification, Bids may be withdrawn only as follows:

- a. At any time before the designated time for the opening of Bids.
- b. Death or serious injury of a principal.
- c. With the written approval of the Town of Arlington Office of the Purchasing Director.
- d. At any time after the expiration of the period during which withdrawal is prohibited provided the bid has not been accepted by the Town.

8. Execution of Contract

The party to whom the contract is awarded shall be required to execute the contract and furnish the bonds duly executed with a satisfactory surety company within five days, excluding Saturdays, Sundays, and legal holidays, of the date of the mailing of the notice to the bidder according to the address given by him/her, that the contract is ready for execution.

9. Obligation of Bidder

At the time of the opening of bids, each bidder shall be presumed to have read and to be thoroughly familiar with the contract documents. The failure or omission of any bidder to receive or examine any form, instrument, or documents shall in no way relieve any bidder from the obligation in respect to his bid.

10. Omissions, Discrepancies, Interpretations and Addenda

Should a bidder find discrepancies in, or omissions from, the drawings or contract documents, or should he/she have questions as to the interpretation of the plans or contract documents he/she shall submit such in writing to the Director of Purchasing at least five (5) days before the date herein set for the opening of bids. An interpretation will be mailed by certified mail to prospective bidders at the addresses given by them on or about two (2) days before the opening of bids. Signed copies of all addenda shall be included with the bid; omission of the signed addendum shall be cause for rejection of the bid.

11. Record of Address

Prospective bidders shall at the time plans and specifications are secured place on file with the Director of Purchasing their address, and are required to make any changes necessary to insure that the record is accurate, complete, and up to date.

12. Massachusetts Sales and Use Tax

Materials purchased for permanent installation in the work will be exempt from the Massachusetts Sales and Use tax. Each bidder shall consider this exemption in calculating his/her bid for the work.

13. State Tax Affidavit

Prospective bidders are required to certify that all state tax returns have been filed and all state taxes have been paid in order to be eligible to enter into a contract with the Town on this project. The included form is to be used for this purpose and is to be completed and returned as part of the bid and proposal.

14. Minimum Wage Rates

Prevailing rates for wages for work performed under this Contract will be as predetermined by the Commissioner of Labor and Industries of the Commonwealth of Massachusetts in accordance with the provisions of Sections 26 to 27D, inclusive, of c.149 of M.G.L. A schedule of the prevailing wages is included in the Minimum Wage Rates Section.

15. Sub-bids

No sub bids shall be sought in connection with this Contract.

16. All bidders shall submit the following supplemental information with a fee proposal:

- a. Name, address and phone number of a minimum of three (3) references that can vouch for the performance of the bidder
- b. Proof of Liability and Worker's Compensation Insurance Coverage
- c. Completed tax attestation form
- d. Bid deposit

SECTION 00300
BID FORM

TO:
Mr. Domenic R. Lanzillotti, Director
Purchasing Department
Town Hall
Arlington, Massachusetts, 02476.

Bidders' Name: _____

The undersigned hereby offers to furnish all labor, materials, equipment and other facilities required, necessary or incidental to the work required in conformity with the Contract Documents for the project entitled:

Columbarium Construction at Mount Pleasant Cemetery, Arlington, Massachusetts

I. BASE BID

For the Sum of: _____

(\$ _____) dollars.

II. SCHEDULE OF VALUES

Provide pricing for the line items listed below. The total line items must be equal to the total sum listed in the base bid.

General Conditions- Division I \$ _____

Site Preparation and Erosion Control \$ _____

One (1) Foundation, including excavation and backfill of all material \$ _____

Concrete pavement (4" thick), including excavation and backfill of all material \$ _____

One Columbarium, including stone covers, base and coping stones \$ _____

LANDSCAPING

Seeded lawn, including preparation and maintenance until acceptance \$ _____

Trees, including planting mix and mulch \$ _____

Shrubs, including planting mix and mulch \$ _____

TOTAL \$ _____

At the Owners discretion, the Contract Cost may be modified to include the following:

ADD COST 1

Provide one additional foundation, including excavation and backfill of all material \$ _____

ADD COST 2

Provide one additional Columbarium, including stone covers, base and coping stones \$ _____

The undersigned agrees to execute a contract within Seven (7) days of delivery thereof by the Town of Arlington, and to commence work within Ten (10) days of Notice to Proceed.

The undersigned further agrees, if awarded the contract, to execute and complete the work specified, necessary and implied in the contract documents within 120 days.

The undersigned acknowledges receipt of the following addenda and the cost, if any, of such revisions has been acknowledged in the bid sum.

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

In submitting this Bid, the undersigned certifies he has examined the premises and satisfied himself as to the existing conditions under which he shall be obligated to operate or that will in any manner affect the work under the Contract.

BIDDERS NAME: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

BY: _____

DATE: _____

SIGNATURE: _____

***NOTE: ONLY SIGNED BIDS SHALL BE ACCEPTED.**

**RESOLUTION OF CORPORATE BOARD
AUTHORIZING SUBMISSION OF BID**

RESOLVED,

_____ that
_____(Name of individual) is
authorized to sign and submit the bid or proposal of this corporation for the following project:
Columbarium Construction, including paving in Mount Pleasant Cemetery, Arlington.

The foregoing is a true and correct copy of the resolution adopted by
_____ Corporation at a meeting of its Board of
Directors held on this _____ day of _____, 2013.

Secretary

(Seal of the Corporation)

Sworn to before me this _____ day
of _____, 2011

Notary Public

NON-COLLUSION BIDDING CERTIFICATION

By submission of this bid, each bidder and each person signing on behalf of any bidder certified, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his knowledge and belief:

1. ***The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any manner relating to such prices with any other bidder or with any competitor;***

2. ***Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and***

3. ***No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.***

4. ***The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalty of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in his behalf.***

5. ***That attached hereto (if a corporate bidder) is a certified copy of a resolution authorizing the execution of this certificate by the signatory of this bid or proposal on behalf of the corporate bidder.***

(Print Name of Entity)

By: _____
(Name and Title)

Sworn to before me this ____
Day of _____, 2011

Notary Public

OSHA TRAINING

The undersigned hereby certifies that it is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that it will comply fully with all laws and regulations applicable to awards made subject to section forty-four A of Chapter 149 of the General Laws.

Signature: _____

Title: _____

Date: _____

BY-LAWS OF THE TOWN OF ARLINGTON
TITLE I
ARTICLE 16

CONSTRUCTION PROJECTS

Section 1. Women Work Force Participation

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

- A. Contractor shall maintain as a goal on this project a not less than five percent ratio of women work force to total project hours in both the general contract and each individual filed sub-bid contract, if applicable. The preceding sentence shall be included in all construction contracts whether entered into by the Town pursuant to the provisions of M.G.L. c. 149 or M.G. L. c 30, §39M et. seq. provided however, that if entered into under Chapter 30 same shall not be deemed to apply where the projected bid price as determined by the Director of Public Works is not likely to exceed \$200,000.
- B. A Labor Scheduling Table which will be used as a tool for achieving a range of women work force participation for the entire project in both the general contract and each individual filed sub-bid contract.

Section 2. Equal Opportunity Goal Compliance

Any Town board or official in charge of a construction or reconstruction project is required to include in the contract documents the following:

- A. Before starting work, the contractors (includes the general contractor, for itself and its subcontractors, as well as all filed sub-bid contractors, if applicable) will submit plans for achievement of the equal opportunity goals of the contract. All contractors will be required to make a good faith effort to achieve these goals. The plan will indicate if the contractors expect to achieve the requirements during the first quarter. If there are reasons why the contractors do not expect to achieve the requirements during the first quarter year of the contract construction phase, then the contractors shall provide a plan calculated to address, to the extent reasonably possibly, these obstacles to a good faith effort to achieve such goals.
- B. Not more than ten days following the end of each work quarter, the contractors will report on the achievement of the goals, detailing the good faith efforts that have been made and will continue to be made and any other appropriate efforts not yet undertaken.
- C. All reports will be signed by an officer or principal of the company who has the authority to contractually obligate the company.

Section 3. Recruitment and Training

Any board, officer, committee, or other agency of the Town, which acts on behalf of the Town in making or supervising any contract, in an amount exceeding the sum of \$100,000 for the purchase of goods or services or for the construction, renovation, or repair of buildings or other improvement of real estate, may make arrangements with contractors and other interested agencies for special programs of recruitment and training in connection with the work to be performed on such contract, with the objective of promoting equal employment opportunity for members of minority groups protected by the fair employment laws of the Commonwealth and the United States. Any board, officer, committee or other Town agency may expend Town funds in carrying them out provided that appropriations specifically designed for such purposes have been voted by the Town Meeting.

F/shared/pur/winword/forms/womenworkforce.doc

From: "MA Prevailing Wage" <prevailingwages@state.ma.us>
To: dlanzillotti@town.arlington.ma.us
Date: 07/29/2015 10:36 AM
Subject: Prevailing wage schedule for Wage Request number :20150729-002

To view and print Weekly Payroll & Statement of Compliance Forms, click on www.mass.gov/dols/pw.

PLEASE NOTE: The attached Prevailing Wage Schedule is valid for 90 days. An Awarding Authority should re-request an up to date Prevailing Wage Schedule if it has NOT opened bids or selected a contractor within 90 days of the issuance date of the attached prevailing wage schedule.

*For MULTI-YEAR projects bid on or after 8/8/08, Awarding Authorities must request an Annual Update to this Prevailing Wage Schedule each year for the duration of the project, no later than two weeks before the anniversary date of the execution of the general contract. Annual updates are not required for projects that last LESS THAN ONE YEAR.

*For CM AT RISK projects (bid pursuant to GL c.149A), Awarding Authorities must request a Prevailing Wage Schedule NOT sooner than 90-days before the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work.

*For MULTI-YEAR CM AT RISK projects, Awarding Authorities must request an Annual Update to this Prevailing Wage Schedule each year for the duration of the project, no later than two weeks before the anniversary date, which is the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to procure construction scopes of work.

Apprentice wages (expressed as dollar figures) and the required benefits are listed on the Prevailing Wage Schedule. For further details, please see opinion letter PW-2010-03-03.16.10 (dated March 18, 2010) at www.mass.gov/dols/pw.

Request Prevailing Wage Rates online at: www.mass.gov/dols/pw.

THIS IS A SYSTEM-GENERATED EMAIL. PLEASE DO NOT REPLY TO THIS EMAIL.
TO CONTACT DLS REGARDING PREVAILING WAGE MATTERS, CALL 617-626-6953.

APPROVAL/DENIAL COMMENTS

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e-mail and destroy all copies of the original message. Thank you.

Attachments:

File: 20150729-002.pdf Size: 168k Content Type: application/pdf



CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

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

RONALD L. WALKER, II
Secretary

WILLIAM D MCKINNEY
Director

Awarding Authority: Town of Arlington
Contract Number: 15-31 **City/Town:** ARLINGTON
Description of Work: Provide all labor, materials, equipment and supervision necessary for construction of columbarium at the Mt. Pleasant Cemetery as per specifications and requirements
Job Location: Medford Street

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 Division of Apprentice Standards (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. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAS, the apprentice 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 criminal penalties.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$32.75	\$9.91	\$9.33	\$0.00	\$51.99
	08/01/2015	\$32.75	\$10.41	\$9.33	\$0.00	\$52.49
	12/01/2015	\$32.75	\$10.41	\$10.08	\$0.00	\$53.24
	06/01/2016	\$33.25	\$10.41	\$10.08	\$0.00	\$53.74
	08/01/2016	\$33.25	\$10.91	\$10.08	\$0.00	\$54.24
	12/01/2016	\$33.25	\$10.91	\$10.89	\$0.00	\$55.05
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$32.82	\$9.91	\$9.33	\$0.00	\$52.06
	08/01/2015	\$32.82	\$10.41	\$9.33	\$0.00	\$52.56
	12/01/2015	\$32.82	\$10.41	\$10.08	\$0.00	\$53.31
	06/01/2016	\$33.32	\$10.41	\$10.08	\$0.00	\$53.81
	08/01/2016	\$33.32	\$10.91	\$10.08	\$0.00	\$54.31
	12/01/2016	\$33.32	\$10.91	\$10.89	\$0.00	\$55.12
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$32.94	\$9.91	\$9.33	\$0.00	\$52.18
	08/01/2015	\$32.94	\$10.41	\$9.33	\$0.00	\$52.68
	12/01/2015	\$32.94	\$10.41	\$10.08	\$0.00	\$53.43
	06/01/2016	\$33.44	\$10.41	\$10.08	\$0.00	\$53.93
	08/01/2016	\$33.44	\$10.91	\$10.08	\$0.00	\$54.43
	12/01/2016	\$33.44	\$10.91	\$10.89	\$0.00	\$55.24
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$88.29	\$9.80	\$19.23	\$0.00	\$117.32
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	12/01/2015	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	06/01/2016	\$37.35	\$7.30	\$13.20	\$0.00	\$57.85
	12/01/2016	\$38.35	\$7.30	\$13.20	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2015	\$33.43	\$10.40	\$5.95	\$0.00	\$49.78
	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	12/01/2015	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	06/01/2016	\$37.35	\$7.30	\$13.20	\$0.00	\$57.85
	12/01/2016	\$38.35	\$7.30	\$13.20	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2010	\$37.70	\$6.97	\$11.18	\$0.00	\$55.85

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2010

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
2	65	\$24.51	\$6.97	\$11.18	\$0.00	\$42.66
3	70	\$26.39	\$6.97	\$11.18	\$0.00	\$44.54
4	75	\$28.28	\$6.97	\$11.18	\$0.00	\$46.43
5	80	\$30.16	\$6.97	\$11.18	\$0.00	\$48.31
6	85	\$32.05	\$6.97	\$11.18	\$0.00	\$50.20
7	90	\$33.93	\$6.97	\$11.18	\$0.00	\$52.08
8	95	\$35.82	\$6.97	\$11.18	\$0.00	\$53.97

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	02/01/2015	\$48.96	\$10.18	\$18.50	\$0.00	\$77.64
	08/01/2015	\$49.86	\$10.18	\$18.57	\$0.00	\$78.61
	02/01/2016	\$50.43	\$10.18	\$18.57	\$0.00	\$79.18
	08/01/2016	\$51.33	\$10.18	\$18.65	\$0.00	\$80.16
	02/01/2017	\$51.90	\$10.18	\$18.65	\$0.00	\$80.73

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Boston

Effective Date - 02/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.48	\$10.18	\$18.50	\$0.00	\$53.16
2	60	\$29.38	\$10.18	\$18.50	\$0.00	\$58.06
3	70	\$34.27	\$10.18	\$18.50	\$0.00	\$62.95
4	80	\$39.17	\$10.18	\$18.50	\$0.00	\$67.85
5	90	\$44.06	\$10.18	\$18.50	\$0.00	\$72.74

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.93	\$10.18	\$18.57	\$0.00	\$53.68
2	60	\$29.92	\$10.18	\$18.57	\$0.00	\$58.67
3	70	\$34.90	\$10.18	\$18.57	\$0.00	\$63.65
4	80	\$39.89	\$10.18	\$18.57	\$0.00	\$68.64
5	90	\$44.87	\$10.18	\$18.57	\$0.00	\$73.62

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$36.20	\$7.30	\$13.40	\$0.00	\$56.90
	12/01/2015	\$36.95	\$7.30	\$13.40	\$0.00	\$57.65
	06/01/2016	\$37.70	\$7.30	\$13.40	\$0.00	\$58.40
	12/01/2016	\$38.70	\$7.30	\$13.40	\$0.00	\$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$35.05	\$7.30	\$13.40	\$0.00	\$55.75
	12/01/2015	\$35.80	\$7.30	\$13.40	\$0.00	\$56.50
	06/01/2016	\$36.55	\$7.30	\$13.40	\$0.00	\$57.25
	12/01/2016	\$37.55	\$7.30	\$13.40	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$35.05	\$7.30	\$13.40	\$0.00	\$55.75
	12/01/2015	\$35.80	\$7.30	\$13.40	\$0.00	\$56.50
	06/01/2016	\$36.55	\$7.30	\$13.40	\$0.00	\$57.25
	12/01/2016	\$37.55	\$7.30	\$13.40	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2015	\$35.75	\$9.80	\$16.48	\$0.00	\$62.03

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.88	\$9.80	\$1.63	\$0.00	\$29.31
2	60	\$21.45	\$9.80	\$1.63	\$0.00	\$32.88
3	70	\$25.03	\$9.80	\$11.59	\$0.00	\$46.42
4	75	\$26.81	\$9.80	\$11.59	\$0.00	\$48.20
5	80	\$28.60	\$9.80	\$13.22	\$0.00	\$51.62
6	80	\$28.60	\$9.80	\$13.22	\$0.00	\$51.62
7	90	\$32.18	\$9.80	\$14.85	\$0.00	\$56.83
8	90	\$32.18	\$9.80	\$14.85	\$0.00	\$56.83

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	07/01/2015	\$45.82	\$10.90	\$18.71	\$1.30	\$76.73
	01/01/2016	\$46.44	\$10.90	\$18.71	\$1.30	\$77.35

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Boston)

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.91	\$10.90	\$12.21	\$0.00	\$46.02
2	60	\$27.49	\$10.90	\$13.71	\$1.30	\$53.40
3	65	\$29.78	\$10.90	\$14.71	\$1.30	\$56.69
4	70	\$32.07	\$10.90	\$15.71	\$1.30	\$59.98
5	75	\$34.37	\$10.90	\$16.71	\$1.30	\$63.28
6	80	\$36.66	\$10.90	\$17.71	\$1.30	\$66.57
7	90	\$41.24	\$10.90	\$18.71	\$1.30	\$72.15

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.22	\$10.90	\$12.21	\$0.00	\$46.33
2	60	\$27.86	\$10.90	\$13.71	\$1.30	\$53.77
3	65	\$30.19	\$10.90	\$14.71	\$1.30	\$57.10
4	70	\$32.51	\$10.90	\$15.71	\$1.30	\$60.42
5	75	\$34.83	\$10.90	\$16.71	\$1.30	\$63.74
6	80	\$37.15	\$10.90	\$17.71	\$1.30	\$67.06
7	90	\$41.80	\$10.90	\$18.71	\$1.30	\$72.71

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
LABORERS - ZONE 1	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	06/01/2015	\$43.83	\$10.00	\$14.55	\$0.00	\$68.38
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$45.08	\$10.00	\$14.55	\$0.00	\$69.63
	06/01/2016	\$45.83	\$10.00	\$14.55	\$0.00	\$70.38
	12/01/2016	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	06/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
	12/01/2017	\$49.08	\$10.00	\$14.55	\$0.00	\$73.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR	06/01/2015	\$29.61	\$10.00	\$14.55	\$0.00	\$54.16
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$30.48	\$10.00	\$14.55	\$0.00	\$55.03
	06/01/2016	\$31.00	\$10.00	\$14.55	\$0.00	\$55.55
	12/01/2016	\$31.87	\$10.00	\$14.55	\$0.00	\$56.42
	06/01/2017	\$32.56	\$10.00	\$14.55	\$0.00	\$57.11
	12/01/2017	\$33.25	\$10.00	\$14.55	\$0.00	\$57.80

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.28	\$7.85	\$0.00	\$0.00	\$32.13
2	55	\$26.71	\$7.85	\$3.66	\$0.00	\$38.22
3	60	\$29.14	\$7.85	\$3.99	\$0.00	\$40.98
4	65	\$31.56	\$7.85	\$4.32	\$0.00	\$43.73
5	70	\$33.99	\$7.85	\$14.11	\$0.00	\$55.95
6	75	\$36.42	\$7.85	\$14.44	\$0.00	\$58.71
7	80	\$38.85	\$7.85	\$14.77	\$0.00	\$61.47
8	90	\$43.70	\$7.85	\$15.44	\$0.00	\$66.99

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.76	\$7.85	\$0.00	\$0.00	\$32.61
2	55	\$27.23	\$7.85	\$3.66	\$0.00	\$38.74
3	60	\$29.71	\$7.85	\$3.99	\$0.00	\$41.55
4	65	\$32.18	\$7.85	\$4.32	\$0.00	\$44.35
5	70	\$34.66	\$7.85	\$14.11	\$0.00	\$56.62
6	75	\$37.13	\$7.85	\$14.44	\$0.00	\$59.42
7	80	\$39.61	\$7.85	\$14.77	\$0.00	\$62.23
8	90	\$44.56	\$7.85	\$15.44	\$0.00	\$67.85

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 1	06/01/2015	\$35.25	\$7.30	\$13.20	\$0.00	\$55.75
	12/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 1	06/01/2015	\$36.25	\$7.30	\$13.20	\$0.00	\$56.75
	12/01/2015	\$37.00	\$7.30	\$13.20	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 1	06/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
	12/01/2015	\$36.75	\$7.30	\$13.20	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 1	06/01/2015	\$36.25	\$7.30	\$13.20	\$0.00	\$56.75
	12/01/2015	\$37.00	\$7.30	\$13.20	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 1	06/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
	12/01/2015	\$36.75	\$7.30	\$13.20	\$0.00	\$57.25

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.25	\$7.30	\$13.20	\$0.00	\$55.75
	12/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$58.24	\$9.80	\$18.17	\$0.00	\$86.21
	08/01/2015	\$58.86	\$9.80	\$19.23	\$0.00	\$87.89
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$62.40	\$9.80	\$18.17	\$0.00	\$90.37
	08/01/2015	\$63.06	\$9.80	\$19.23	\$0.00	\$92.09
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$87.36	\$9.80	\$18.17	\$0.00	\$115.33
	08/01/2015	\$88.23	\$9.80	\$19.23	\$0.00	\$117.26
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54

Apprentice - ELECTRICIAN - Local 103

Effective Date - 03/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.07	\$13.00	\$0.54	\$0.00	\$31.61
2	40	\$18.07	\$13.00	\$0.54	\$0.00	\$31.61
3	45	\$20.33	\$13.00	\$11.64	\$0.00	\$44.97
4	45	\$20.33	\$13.00	\$11.64	\$0.00	\$44.97
5	50	\$22.59	\$13.00	\$11.98	\$0.00	\$47.57
6	55	\$24.84	\$13.00	\$12.33	\$0.00	\$50.17
7	60	\$27.10	\$13.00	\$12.66	\$0.00	\$52.76
8	65	\$29.36	\$13.00	\$13.01	\$0.00	\$55.37
9	70	\$31.62	\$13.00	\$13.35	\$0.00	\$57.97
10	75	\$33.88	\$13.00	\$13.70	\$0.00	\$60.58

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.45	\$13.00	\$0.55	\$0.00	\$32.00
2	40	\$18.45	\$13.00	\$0.55	\$0.00	\$32.00
3	45	\$20.76	\$13.00	\$11.65	\$0.00	\$45.41
4	45	\$20.76	\$13.00	\$11.65	\$0.00	\$45.41
5	50	\$23.07	\$13.00	\$11.99	\$0.00	\$48.06
6	55	\$25.37	\$13.00	\$12.34	\$0.00	\$50.71
7	60	\$27.68	\$13.00	\$12.68	\$0.00	\$53.36
8	65	\$29.98	\$13.00	\$13.03	\$0.00	\$56.01
9	70	\$32.29	\$13.00	\$13.37	\$0.00	\$58.66
10	75	\$34.60	\$13.00	\$13.72	\$0.00	\$61.32

Notes :
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2015	\$53.30	\$13.58	\$14.21	\$0.00	\$81.09
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2016	\$54.53	\$14.43	\$14.96	\$0.00	\$83.92
	01/01/2017	\$55.86	\$15.28	\$15.71	\$0.00	\$86.85

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.65	\$13.58	\$0.00	\$0.00	\$40.23
2	55	\$29.32	\$13.58	\$14.21	\$0.00	\$57.11
3	65	\$34.65	\$13.58	\$14.21	\$0.00	\$62.44
4	70	\$37.31	\$13.58	\$14.21	\$0.00	\$65.10
5	80	\$42.64	\$13.58	\$14.21	\$0.00	\$70.43

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.27	\$14.43	\$0.00	\$0.00	\$41.70
2	55	\$29.99	\$14.43	\$14.96	\$0.00	\$59.38
3	65	\$35.44	\$14.43	\$14.96	\$0.00	\$64.83
4	70	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
5	80	\$43.62	\$14.43	\$14.96	\$0.00	\$73.01

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 4</i>	01/01/2015	\$37.31	\$13.58	\$14.21	\$0.00	\$65.10
	01/01/2016	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
	01/01/2017	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2015	\$40.22	\$10.00	\$14.30	\$0.00	\$64.52
	11/01/2015	\$40.80	\$10.00	\$14.30	\$0.00	\$65.10
	05/01/2016	\$41.69	\$10.00	\$14.30	\$0.00	\$65.99
	11/01/2016	\$42.28	\$10.00	\$14.30	\$0.00	\$66.58
	05/01/2017	\$43.16	\$10.00	\$14.30	\$0.00	\$67.46
	11/01/2017	\$43.89	\$10.00	\$14.30	\$0.00	\$68.19
	05/01/2018	\$44.60	\$10.00	\$14.30	\$0.00	\$68.90
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2015	\$41.65	\$10.00	\$14.30	\$0.00	\$65.95
	11/01/2015	\$42.24	\$10.00	\$14.30	\$0.00	\$66.54
	05/01/2016	\$43.13	\$10.00	\$14.30	\$0.00	\$67.43
	11/01/2016	\$43.73	\$10.00	\$14.30	\$0.00	\$68.03
	05/01/2017	\$44.62	\$10.00	\$14.30	\$0.00	\$68.92
	11/01/2017	\$45.35	\$10.00	\$14.30	\$0.00	\$69.65
	05/01/2018	\$46.07	\$10.00	\$14.30	\$0.00	\$70.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2015	\$21.68	\$10.00	\$14.30	\$0.00	\$45.98
	11/01/2015	\$22.02	\$10.00	\$14.30	\$0.00	\$46.32
	05/01/2016	\$22.54	\$10.00	\$14.30	\$0.00	\$46.84
	11/01/2016	\$22.89	\$10.00	\$14.30	\$0.00	\$47.19
	05/01/2017	\$23.42	\$10.00	\$14.30	\$0.00	\$47.72
	11/01/2017	\$23.84	\$10.00	\$14.30	\$0.00	\$48.14
	05/01/2018	\$24.27	\$10.00	\$14.30	\$0.00	\$48.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$33.88	\$13.00	\$13.70	\$0.00	\$60.58
	09/01/2015	\$34.60	\$13.00	\$13.72	\$0.00	\$61.32
	03/01/2016	\$35.31	\$13.00	\$13.74	\$0.00	\$62.05
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$35.64	\$10.00	\$14.55	\$0.00	\$60.19
	12/01/2015	\$36.69	\$10.00	\$14.55	\$0.00	\$61.24
	06/01/2016	\$37.31	\$10.00	\$14.55	\$0.00	\$61.86
	12/01/2016	\$38.35	\$10.00	\$14.55	\$0.00	\$62.90
	06/01/2017	\$39.19	\$10.00	\$14.55	\$0.00	\$63.74
	12/01/2017	\$40.02	\$10.00	\$14.55	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	06/01/2015	\$20.50	\$7.30	\$13.20	\$0.00	\$41.00
	12/01/2015	\$20.50	\$7.30	\$13.20	\$0.00	\$41.00
	06/01/2016	\$20.50	\$7.30	\$13.20	\$0.00	\$41.00
	12/01/2016	\$20.50	\$7.30	\$13.20	\$0.00	\$41.00
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	09/01/2014	\$40.40	\$9.80	\$17.21	\$0.00	\$67.41

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone 1

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.20	\$9.80	\$1.79	\$0.00	\$31.79
2	55	\$22.22	\$9.80	\$1.79	\$0.00	\$33.81
3	60	\$24.24	\$9.80	\$11.84	\$0.00	\$45.88
4	65	\$26.26	\$9.80	\$11.84	\$0.00	\$47.90
5	70	\$28.28	\$9.80	\$13.63	\$0.00	\$51.71
6	75	\$30.30	\$9.80	\$13.63	\$0.00	\$53.73
7	80	\$32.32	\$9.80	\$15.42	\$0.00	\$57.54
8	85	\$34.34	\$9.80	\$15.42	\$0.00	\$59.56

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS	06/01/2015	\$29.61	\$10.00	\$14.55	\$0.00	\$54.16
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2015	\$30.48	\$10.00	\$14.55	\$0.00	\$55.03
	06/01/2016	\$31.00	\$10.00	\$14.55	\$0.00	\$55.55
	12/01/2016	\$31.87	\$10.00	\$14.55	\$0.00	\$56.42
	06/01/2017	\$32.56	\$10.00	\$14.55	\$0.00	\$57.11
	12/01/2017	\$33.25	\$10.00	\$14.55	\$0.00	\$57.80

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	07/01/2015	\$38.06	\$7.85	\$16.10	\$0.00	\$62.01
<i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2016	\$39.01	\$7.85	\$16.10	\$0.00	\$62.96
	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.03	\$7.85	\$0.00	\$0.00	\$26.88
2	55	\$20.93	\$7.85	\$3.66	\$0.00	\$32.44
3	60	\$22.84	\$7.85	\$3.99	\$0.00	\$34.68
4	65	\$24.74	\$7.85	\$4.32	\$0.00	\$36.91
5	70	\$26.64	\$7.85	\$14.11	\$0.00	\$48.60
6	75	\$28.55	\$7.85	\$14.44	\$0.00	\$50.84
7	80	\$30.45	\$7.85	\$14.77	\$0.00	\$53.07
8	90	\$34.25	\$7.85	\$15.44	\$0.00	\$57.54

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.51	\$7.85	\$0.00	\$0.00	\$27.36
2	55	\$21.46	\$7.85	\$3.66	\$0.00	\$32.97
3	60	\$23.41	\$7.85	\$3.99	\$0.00	\$35.25
4	65	\$25.36	\$7.85	\$4.32	\$0.00	\$37.53
5	70	\$27.31	\$7.85	\$14.11	\$0.00	\$49.27
6	75	\$29.26	\$7.85	\$14.44	\$0.00	\$51.55
7	80	\$31.21	\$7.85	\$14.77	\$0.00	\$53.83
8	90	\$35.11	\$7.85	\$15.44	\$0.00	\$58.40

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
OPERATING ENGINEERS LOCAL 4	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.56	\$10.00	\$0.00	\$0.00	\$33.56
2	60	\$25.70	\$10.00	\$14.55	\$0.00	\$50.25
3	65	\$27.84	\$10.00	\$14.55	\$0.00	\$52.39
4	70	\$29.98	\$10.00	\$14.55	\$0.00	\$54.53
5	75	\$32.12	\$10.00	\$14.55	\$0.00	\$56.67
6	80	\$34.26	\$10.00	\$14.55	\$0.00	\$58.81
7	85	\$36.41	\$10.00	\$14.55	\$0.00	\$60.96
8	90	\$38.55	\$10.00	\$14.55	\$0.00	\$63.10

Effective Date - 12/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.24	\$10.00	\$0.00	\$0.00	\$34.24
2	60	\$26.45	\$10.00	\$14.55	\$0.00	\$51.00
3	65	\$28.65	\$10.00	\$14.55	\$0.00	\$53.20
4	70	\$30.86	\$10.00	\$14.55	\$0.00	\$55.41
5	75	\$33.06	\$10.00	\$14.55	\$0.00	\$57.61
6	80	\$35.26	\$10.00	\$14.55	\$0.00	\$59.81
7	85	\$37.47	\$10.00	\$14.55	\$0.00	\$62.02
8	90	\$39.67	\$10.00	\$14.55	\$0.00	\$64.22

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2015	\$43.28	\$10.20	\$20.54	\$2.22	\$76.24
	08/01/2015	\$43.31	\$10.20	\$21.48	\$2.25	\$77.24
	02/01/2016	\$44.31	\$10.20	\$21.48	\$2.25	\$78.24
	08/01/2016	\$45.46	\$10.20	\$21.48	\$2.25	\$79.39
	02/01/2017	\$46.56	\$10.20	\$21.48	\$2.25	\$80.49
	08/01/2017	\$47.66	\$10.20	\$21.48	\$2.25	\$81.59
	02/01/2018	\$48.81	\$10.20	\$21.48	\$2.25	\$82.74

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2015	\$45.17	\$13.00	\$15.40	\$0.00	\$73.57
	09/01/2015	\$46.13	\$13.00	\$15.43	\$0.00	\$74.56
	03/01/2016	\$47.08	\$13.00	\$15.46	\$0.00	\$75.54

For apprentice rates see "Apprentice- ELECTRICIAN"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2015	\$43.28	\$10.20	\$20.54	\$2.22	\$76.24
	08/01/2015	\$43.31	\$10.20	\$21.48	\$2.25	\$77.24
	02/01/2016	\$44.31	\$10.20	\$21.48	\$2.25	\$78.24
	08/01/2016	\$45.46	\$10.20	\$21.48	\$2.25	\$79.39
	02/01/2017	\$46.56	\$10.20	\$21.48	\$2.25	\$80.49
	08/01/2017	\$47.66	\$10.20	\$21.48	\$2.25	\$81.59
	02/01/2018	\$48.81	\$10.20	\$21.48	\$2.25	\$82.74
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	12/01/2015	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	06/01/2016	\$37.35	\$7.30	\$13.20	\$0.00	\$57.85
	12/01/2016	\$38.35	\$7.30	\$13.20	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2014	\$43.31	\$11.25	\$12.60	\$0.00	\$67.16

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.66	\$11.25	\$9.35	\$0.00	\$42.26
2	60	\$25.99	\$11.25	\$10.00	\$0.00	\$47.24
3	70	\$30.32	\$11.25	\$10.65	\$0.00	\$52.22
4	80	\$34.65	\$11.25	\$11.30	\$0.00	\$57.20

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	03/16/2015	\$42.11	\$7.70	\$20.25	\$0.00	\$70.06
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.27	\$7.70	\$20.25	\$0.00	\$53.22
2	70	\$29.48	\$7.70	\$20.25	\$0.00	\$57.43
3	75	\$31.58	\$7.70	\$20.25	\$0.00	\$59.53
4	80	\$33.69	\$7.70	\$20.25	\$0.00	\$61.64
5	85	\$35.79	\$7.70	\$20.25	\$0.00	\$63.74
6	90	\$37.90	\$7.70	\$20.25	\$0.00	\$65.85

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 1	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 1	06/01/2015	\$35.10	\$7.30	\$13.20	\$0.00	\$55.60
	12/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	06/01/2016	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	12/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10

Apprentice - LABORER - Zone 1

Effective Date - 06/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.06	\$7.30	\$13.20	\$0.00	\$41.56
2	70	\$24.57	\$7.30	\$13.20	\$0.00	\$45.07
3	80	\$28.08	\$7.30	\$13.20	\$0.00	\$48.58
4	90	\$31.59	\$7.30	\$13.20	\$0.00	\$52.09

Effective Date - 12/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.51	\$7.30	\$13.20	\$0.00	\$42.01
2	70	\$25.10	\$7.30	\$13.20	\$0.00	\$45.60
3	80	\$28.68	\$7.30	\$13.20	\$0.00	\$49.18
4	90	\$32.27	\$7.30	\$13.20	\$0.00	\$52.77

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.10	\$7.30	\$13.20	\$0.00	\$55.60
	12/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	06/01/2016	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	12/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.10	\$7.30	\$13.20	\$0.00	\$55.60
	12/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	06/01/2016	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	12/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.25	\$7.30	\$13.20	\$0.00	\$55.75
	12/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.10	\$7.30	\$13.20	\$0.00	\$55.60
	12/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	06/01/2016	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	12/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.10	\$7.30	\$13.20	\$0.00	\$55.60
	12/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	06/01/2016	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	12/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2015	\$37.37	\$10.18	\$17.18	\$0.00	\$64.73
	08/01/2015	\$38.08	\$10.18	\$17.25	\$0.00	\$65.51
	02/01/2016	\$38.53	\$10.18	\$17.25	\$0.00	\$65.96
	08/01/2016	\$39.23	\$10.18	\$17.33	\$0.00	\$66.74
	02/01/2017	\$39.69	\$10.18	\$17.33	\$0.00	\$67.20

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.69	\$10.18	\$17.18	\$0.00	\$46.05
2	60	\$22.42	\$10.18	\$17.18	\$0.00	\$49.78
3	70	\$26.16	\$10.18	\$17.18	\$0.00	\$53.52
4	80	\$29.90	\$10.18	\$17.18	\$0.00	\$57.26
5	90	\$33.63	\$10.18	\$17.18	\$0.00	\$60.99

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.04	\$10.18	\$17.25	\$0.00	\$46.47
2	60	\$22.85	\$10.18	\$17.25	\$0.00	\$50.28
3	70	\$26.66	\$10.18	\$17.25	\$0.00	\$54.09
4	80	\$30.46	\$10.18	\$17.25	\$0.00	\$57.89
5	90	\$34.27	\$10.18	\$17.25	\$0.00	\$61.70

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	02/01/2015	\$49.00	\$10.18	\$18.50	\$0.00	\$77.68
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2015	\$49.90	\$10.18	\$18.57	\$0.00	\$78.65
	02/01/2016	\$50.47	\$10.18	\$18.57	\$0.00	\$79.22
	08/01/2016	\$51.37	\$10.18	\$18.65	\$0.00	\$80.20
	02/01/2017	\$51.94	\$10.18	\$18.65	\$0.00	\$80.77

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile

Effective Date - 02/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.50	\$10.18	\$18.50	\$0.00	\$53.18
2	60	\$29.40	\$10.18	\$18.50	\$0.00	\$58.08
3	70	\$34.30	\$10.18	\$18.50	\$0.00	\$62.98
4	80	\$39.20	\$10.18	\$18.50	\$0.00	\$67.88
5	90	\$44.10	\$10.18	\$18.50	\$0.00	\$72.78

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.95	\$10.18	\$18.57	\$0.00	\$53.70
2	60	\$29.94	\$10.18	\$18.57	\$0.00	\$58.69
3	70	\$34.93	\$10.18	\$18.57	\$0.00	\$63.68
4	80	\$39.92	\$10.18	\$18.57	\$0.00	\$68.67
5	90	\$44.91	\$10.18	\$18.57	\$0.00	\$73.66

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	04/01/2015	\$37.64	\$9.80	\$16.21	\$0.00	\$63.65
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Apprentice - MILLWRIGHT - Local 1121 Zone 1

Effective Date - 04/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$20.70	\$9.80	\$4.48	\$0.00	\$34.98
2	65	\$24.47	\$9.80	\$13.36	\$0.00	\$47.63
3	75	\$28.23	\$9.80	\$14.18	\$0.00	\$52.21
4	85	\$31.99	\$9.80	\$14.99	\$0.00	\$56.78

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$21.97	\$10.00	\$14.55	\$0.00	\$46.52
	12/01/2015	\$22.62	\$10.00	\$14.55	\$0.00	\$47.17
	06/01/2016	\$23.01	\$10.00	\$14.55	\$0.00	\$47.56
	12/01/2016	\$23.66	\$10.00	\$14.55	\$0.00	\$48.21
	06/01/2017	\$24.17	\$10.00	\$14.55	\$0.00	\$48.72
	12/01/2017	\$24.69	\$10.00	\$14.55	\$0.00	\$49.24

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$25.68	\$10.00	\$14.55	\$0.00	\$50.23
	12/01/2015	\$26.43	\$10.00	\$14.55	\$0.00	\$50.98
	06/01/2016	\$26.89	\$10.00	\$14.55	\$0.00	\$51.44
	12/01/2016	\$27.64	\$10.00	\$14.55	\$0.00	\$52.19
	06/01/2017	\$28.24	\$10.00	\$14.55	\$0.00	\$52.79
	12/01/2017	\$28.85	\$10.00	\$14.55	\$0.00	\$53.40

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.28	\$7.85	\$0.00	\$0.00	\$32.13
2	55	\$26.71	\$7.85	\$3.66	\$0.00	\$38.22
3	60	\$29.14	\$7.85	\$3.99	\$0.00	\$40.98
4	65	\$31.56	\$7.85	\$4.32	\$0.00	\$43.73
5	70	\$33.99	\$7.85	\$14.11	\$0.00	\$55.95
6	75	\$36.42	\$7.85	\$14.44	\$0.00	\$58.71
7	80	\$38.85	\$7.85	\$14.77	\$0.00	\$61.47
8	90	\$43.70	\$7.85	\$15.44	\$0.00	\$66.99

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.76	\$7.85	\$0.00	\$0.00	\$32.61
2	55	\$27.23	\$7.85	\$3.66	\$0.00	\$38.74
3	60	\$29.71	\$7.85	\$3.99	\$0.00	\$41.55
4	65	\$32.18	\$7.85	\$4.32	\$0.00	\$44.35
5	70	\$34.66	\$7.85	\$14.11	\$0.00	\$56.62
6	75	\$37.13	\$7.85	\$14.44	\$0.00	\$59.42
7	80	\$39.61	\$7.85	\$14.77	\$0.00	\$62.23
8	90	\$44.56	\$7.85	\$15.44	\$0.00	\$67.85

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2015	\$39.46	\$7.85	\$16.10	\$0.00	\$63.41
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2016	\$40.41	\$7.85	\$16.10	\$0.00	\$64.36
	07/01/2016	\$41.36	\$7.85	\$16.10	\$0.00	\$65.31
	01/01/2017	\$42.31	\$7.85	\$16.10	\$0.00	\$66.26

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.73	\$7.85	\$0.00	\$0.00	\$27.58
2	55	\$21.70	\$7.85	\$3.66	\$0.00	\$33.21
3	60	\$23.68	\$7.85	\$3.99	\$0.00	\$35.52
4	65	\$25.65	\$7.85	\$4.32	\$0.00	\$37.82
5	70	\$27.62	\$7.85	\$14.11	\$0.00	\$49.58
6	75	\$29.60	\$7.85	\$14.44	\$0.00	\$51.89
7	80	\$31.57	\$7.85	\$14.77	\$0.00	\$54.19
8	90	\$35.51	\$7.85	\$15.44	\$0.00	\$58.80

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.21	\$7.85	\$0.00	\$0.00	\$28.06
2	55	\$22.23	\$7.85	\$3.66	\$0.00	\$33.74
3	60	\$24.25	\$7.85	\$3.99	\$0.00	\$36.09
4	65	\$26.27	\$7.85	\$4.32	\$0.00	\$38.44
5	70	\$28.29	\$7.85	\$14.11	\$0.00	\$50.25
6	75	\$30.31	\$7.85	\$14.44	\$0.00	\$52.60
7	80	\$32.33	\$7.85	\$14.77	\$0.00	\$54.95
8	90	\$36.37	\$7.85	\$15.44	\$0.00	\$59.66

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2015	\$37.52	\$7.85	\$16.10	\$0.00	\$61.47
PAINTERS LOCAL 35 - ZONE 2	01/01/2016	\$38.47	\$7.85	\$16.10	\$0.00	\$62.42
	07/01/2016	\$39.42	\$7.85	\$16.10	\$0.00	\$63.37
	01/01/2017	\$40.37	\$7.85	\$16.10	\$0.00	\$64.32

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.76	\$7.85	\$0.00	\$0.00	\$26.61
2	55	\$20.64	\$7.85	\$3.66	\$0.00	\$32.15
3	60	\$22.51	\$7.85	\$3.99	\$0.00	\$34.35
4	65	\$24.39	\$7.85	\$4.32	\$0.00	\$36.56
5	70	\$26.26	\$7.85	\$14.11	\$0.00	\$48.22
6	75	\$28.14	\$7.85	\$14.44	\$0.00	\$50.43
7	80	\$30.02	\$7.85	\$14.77	\$0.00	\$52.64
8	90	\$33.77	\$7.85	\$15.44	\$0.00	\$57.06

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.24	\$7.85	\$0.00	\$0.00	\$27.09
2	55	\$21.16	\$7.85	\$3.66	\$0.00	\$32.67
3	60	\$23.08	\$7.85	\$3.99	\$0.00	\$34.92
4	65	\$25.01	\$7.85	\$4.32	\$0.00	\$37.18
5	70	\$26.93	\$7.85	\$14.11	\$0.00	\$48.89
6	75	\$28.85	\$7.85	\$14.44	\$0.00	\$51.14
7	80	\$30.78	\$7.85	\$14.77	\$0.00	\$53.40
8	90	\$34.62	\$7.85	\$15.44	\$0.00	\$57.91

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 1	06/01/2015	\$35.10	\$7.30	\$13.20	\$0.00	\$55.60
	12/01/2015	\$35.85	\$7.30	\$13.20	\$0.00	\$56.35
	06/01/2016	\$36.60	\$7.30	\$13.20	\$0.00	\$57.10
	12/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	07/01/2015	\$38.06	\$7.85	\$16.10	\$0.00	\$62.01
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2016	\$39.01	\$7.85	\$16.10	\$0.00	\$62.96
	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.03	\$7.85	\$0.00	\$0.00	\$26.88
2	55	\$20.93	\$7.85	\$3.66	\$0.00	\$32.44
3	60	\$22.84	\$7.85	\$3.99	\$0.00	\$34.68
4	65	\$24.74	\$7.85	\$4.32	\$0.00	\$36.91
5	70	\$26.64	\$7.85	\$14.11	\$0.00	\$48.60
6	75	\$28.55	\$7.85	\$14.44	\$0.00	\$50.84
7	80	\$30.45	\$7.85	\$14.77	\$0.00	\$53.07
8	90	\$34.25	\$7.85	\$15.44	\$0.00	\$57.54

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.51	\$7.85	\$0.00	\$0.00	\$27.36
2	55	\$21.46	\$7.85	\$3.66	\$0.00	\$32.97
3	60	\$23.41	\$7.85	\$3.99	\$0.00	\$35.25
4	65	\$25.36	\$7.85	\$4.32	\$0.00	\$37.53
5	70	\$27.31	\$7.85	\$14.11	\$0.00	\$49.27
6	75	\$29.26	\$7.85	\$14.44	\$0.00	\$51.55
7	80	\$31.21	\$7.85	\$14.77	\$0.00	\$53.83
8	90	\$35.11	\$7.85	\$15.44	\$0.00	\$58.40

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2015	\$36.12	\$7.85	\$16.10	\$0.00	\$60.07
PAINTERS LOCAL 35 - ZONE 2	01/01/2016	\$37.07	\$7.85	\$16.10	\$0.00	\$61.02
	07/01/2016	\$38.02	\$7.85	\$16.10	\$0.00	\$61.97
	01/01/2017	\$38.97	\$7.85	\$16.10	\$0.00	\$62.92

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.06	\$7.85	\$0.00	\$0.00	\$25.91
2	55	\$19.87	\$7.85	\$3.66	\$0.00	\$31.38
3	60	\$21.67	\$7.85	\$3.99	\$0.00	\$33.51
4	65	\$23.48	\$7.85	\$4.32	\$0.00	\$35.65
5	70	\$25.28	\$7.85	\$14.11	\$0.00	\$47.24
6	75	\$27.09	\$7.85	\$14.44	\$0.00	\$49.38
7	80	\$28.90	\$7.85	\$14.77	\$0.00	\$51.52
8	90	\$32.51	\$7.85	\$15.44	\$0.00	\$55.80

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.54	\$7.85	\$0.00	\$0.00	\$26.39
2	55	\$20.39	\$7.85	\$3.66	\$0.00	\$31.90
3	60	\$22.24	\$7.85	\$3.99	\$0.00	\$34.08
4	65	\$24.10	\$7.85	\$4.32	\$0.00	\$36.27
5	70	\$25.95	\$7.85	\$14.11	\$0.00	\$47.91
6	75	\$27.80	\$7.85	\$14.44	\$0.00	\$50.09
7	80	\$29.66	\$7.85	\$14.77	\$0.00	\$52.28
8	90	\$33.36	\$7.85	\$15.44	\$0.00	\$56.65

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$32.58	\$9.91	\$9.33	\$0.00	\$51.82
	08/01/2015	\$32.58	\$10.41	\$9.33	\$0.00	\$52.32
	12/01/2015	\$32.58	\$10.41	\$10.08	\$0.00	\$53.07
	06/01/2016	\$33.08	\$10.41	\$10.08	\$0.00	\$53.57
	08/01/2016	\$33.08	\$10.91	\$10.08	\$0.00	\$54.07
	12/01/2016	\$33.08	\$10.91	\$10.89	\$0.00	\$54.88
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2014	\$41.60	\$9.80	\$18.17	\$0.00	\$69.57
	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.80	\$9.80	\$18.17	\$0.00	\$48.77
2	60	\$24.96	\$9.80	\$18.17	\$0.00	\$52.93
3	70	\$29.12	\$9.80	\$18.17	\$0.00	\$57.09
4	75	\$31.20	\$9.80	\$18.17	\$0.00	\$59.17
5	80	\$33.28	\$9.80	\$18.17	\$0.00	\$61.25
6	80	\$33.28	\$9.80	\$18.17	\$0.00	\$61.25
7	90	\$37.44	\$9.80	\$18.17	\$0.00	\$65.41
8	90	\$37.44	\$9.80	\$18.17	\$0.00	\$65.41

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.02	\$9.80	\$19.59	\$0.00	\$50.41
2	60	\$25.22	\$9.80	\$19.59	\$0.00	\$54.61
3	70	\$29.43	\$9.80	\$19.59	\$0.00	\$58.82
4	75	\$31.53	\$9.80	\$19.59	\$0.00	\$60.92
5	80	\$33.63	\$9.80	\$19.59	\$0.00	\$63.02
6	80	\$33.63	\$9.80	\$19.59	\$0.00	\$63.02
7	90	\$37.84	\$9.80	\$19.59	\$0.00	\$67.23
8	90	\$37.84	\$9.80	\$19.59	\$0.00	\$67.23

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
PIPEFITTERS LOCAL 537	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PIPEFITTER - Local 537

Effective Date - 03/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.48	\$9.70	\$7.50	\$0.00	\$36.68
2	45	\$21.91	\$9.70	\$16.89	\$0.00	\$48.50
3	60	\$29.21	\$9.70	\$16.89	\$0.00	\$55.80
4	70	\$34.08	\$9.70	\$16.89	\$0.00	\$60.67
5	80	\$38.95	\$9.70	\$16.89	\$0.00	\$65.54

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$19.88	\$9.70	\$7.50	\$0.00	\$37.08
2	45	\$22.36	\$9.70	\$16.89	\$0.00	\$48.95
3	60	\$29.81	\$9.70	\$16.89	\$0.00	\$56.40
4	70	\$34.78	\$9.70	\$16.89	\$0.00	\$61.37
5	80	\$39.75	\$9.70	\$16.89	\$0.00	\$66.34

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
 Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
LABORERS - ZONE 1	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS	03/01/2015	\$50.21	\$10.32	\$14.89	\$0.00	\$75.42
PLUMBERS & GASFITTERS LOCAL 12	09/01/2015	\$51.21	\$10.32	\$14.89	\$0.00	\$76.42
	03/01/2016	\$52.36	\$10.32	\$14.89	\$0.00	\$77.57
	09/01/2016	\$53.41	\$10.32	\$14.89	\$0.00	\$78.62
	03/01/2017	\$54.41	\$10.32	\$14.89	\$0.00	\$79.62

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.57	\$10.32	\$5.54	\$0.00	\$33.43
2	40	\$20.08	\$10.32	\$6.27	\$0.00	\$36.67
3	55	\$27.62	\$10.32	\$8.42	\$0.00	\$46.36
4	65	\$32.64	\$10.32	\$9.87	\$0.00	\$52.83
5	75	\$37.66	\$10.32	\$11.30	\$0.00	\$59.28

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.92	\$10.32	\$5.54	\$0.00	\$33.78
2	40	\$20.48	\$10.32	\$6.27	\$0.00	\$37.07
3	55	\$28.17	\$10.32	\$8.42	\$0.00	\$46.91
4	65	\$33.29	\$10.32	\$9.87	\$0.00	\$53.48
5	75	\$38.41	\$10.32	\$11.30	\$0.00	\$60.03

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$56.05 Step5 with lic\$62.48

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	03/01/2015	\$48.69	\$9.70	\$16.89	\$0.00	\$75.28
	09/01/2015	\$49.69	\$9.70	\$16.89	\$0.00	\$76.28
	03/01/2016	\$50.69	\$9.70	\$16.89	\$0.00	\$77.28
	09/01/2016	\$51.69	\$9.70	\$16.89	\$0.00	\$78.28
	03/01/2017	\$52.69	\$9.70	\$16.89	\$0.00	\$79.28

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	06/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	12/01/2015	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	06/01/2016	\$37.60	\$7.30	\$13.20	\$0.00	\$58.10
	12/01/2016	\$38.60	\$7.30	\$13.20	\$0.00	\$59.10

For apprentice rates see "Apprentice- LABORER"

POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$29.61	\$10.00	\$14.55	\$0.00	\$54.16
	12/01/2015	\$30.48	\$10.00	\$14.55	\$0.00	\$55.03
	06/01/2016	\$31.00	\$10.00	\$14.55	\$0.00	\$55.55
	12/01/2016	\$31.87	\$10.00	\$14.55	\$0.00	\$56.42
	06/01/2017	\$32.56	\$10.00	\$14.55	\$0.00	\$57.11
	12/01/2017	\$33.25	\$10.00	\$14.55	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/10 (Drivers Hired After 4/30/2010) <i>TEAMSTERS LOCAL 25c</i>	07/01/2015	\$27.88	\$7.98	\$8.92	\$0.00	\$44.78
	05/01/2016	\$28.03	\$7.98	\$9.31	\$0.00	\$45.32
	07/01/2016	\$28.03	\$8.23	\$9.31	\$0.00	\$45.57
	05/01/2017	\$28.18	\$8.23	\$9.72	\$0.00	\$46.13
	07/01/2017	\$28.18	\$8.48	\$9.72	\$0.00	\$46.38
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25c</i>	07/01/2015	\$29.18	\$7.98	\$8.92	\$0.00	\$46.08
	05/01/2016	\$29.33	\$7.98	\$9.31	\$0.00	\$46.62
	07/01/2016	\$29.33	\$8.23	\$9.31	\$0.00	\$46.87
	05/01/2017	\$29.48	\$8.23	\$9.72	\$0.00	\$47.43
	07/01/2017	\$29.48	\$8.48	\$9.72	\$0.00	\$47.68
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2011	\$24.24	\$8.67	\$15.51	\$0.00	\$48.42
RESIDENTIAL WOOD FRAME CARPENTER **	05/01/2011	\$24.24	\$6.34	\$6.23	\$0.00	\$36.81
** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i>						
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.						

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Residential Wood Frame) - Zone 2

Effective Date - 05/01/2011

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.54	\$6.34	\$0.00	\$0.00	\$20.88
2	60	\$14.54	\$6.34	\$6.23	\$0.00	\$27.11
3	65	\$15.76	\$6.34	\$6.23	\$0.00	\$28.33
4	70	\$16.97	\$6.34	\$6.23	\$0.00	\$29.54
5	75	\$18.18	\$6.34	\$6.23	\$0.00	\$30.75
6	80	\$19.39	\$6.34	\$6.23	\$0.00	\$31.96
7	85	\$20.60	\$6.34	\$6.23	\$0.00	\$33.17
8	90	\$21.82	\$6.34	\$6.23	\$0.00	\$34.39

Notes:

Apprentice to Journeyworker Ratio:1:5

RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2015	\$40.11	\$10.50	\$11.60	\$0.00	\$62.21
	08/01/2015	\$40.11	\$11.00	\$12.00	\$0.00	\$63.11
	02/01/2016	\$41.01	\$11.00	\$12.00	\$0.00	\$64.01

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.06	\$10.50	\$3.38	\$0.00	\$33.94
2	60	\$24.07	\$10.50	\$11.60	\$0.00	\$46.17
3	65	\$26.07	\$10.50	\$11.60	\$0.00	\$48.17
4	75	\$30.08	\$10.50	\$11.60	\$0.00	\$52.18
5	85	\$34.09	\$10.50	\$11.60	\$0.00	\$56.19

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.06	\$11.00	\$3.38	\$0.00	\$34.44
2	60	\$24.07	\$11.00	\$12.00	\$0.00	\$47.07
3	65	\$26.07	\$11.00	\$12.00	\$0.00	\$49.07
4	75	\$30.08	\$11.00	\$12.00	\$0.00	\$53.08
5	85	\$34.09	\$11.00	\$12.00	\$0.00	\$57.09

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2015	\$40.36	\$10.50	\$11.60	\$0.00	\$62.46
	08/01/2015	\$40.36	\$11.00	\$12.00	\$0.00	\$63.36
	02/01/2016	\$41.26	\$11.00	\$12.00	\$0.00	\$64.26
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2015	\$43.28	\$10.20	\$20.54	\$2.22	\$76.24
	08/01/2015	\$43.31	\$10.20	\$21.48	\$2.25	\$77.24
	02/01/2016	\$44.31	\$10.20	\$21.48	\$2.25	\$78.24
	08/01/2016	\$45.46	\$10.20	\$21.48	\$2.25	\$79.39
	02/01/2017	\$46.56	\$10.20	\$21.48	\$2.25	\$80.49
	08/01/2017	\$47.66	\$10.20	\$21.48	\$2.25	\$81.59
	02/01/2018	\$48.81	\$10.20	\$21.48	\$2.25	\$82.74

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.31	\$10.20	\$4.58	\$0.00	\$32.09
2	40	\$17.31	\$10.20	\$4.58	\$0.00	\$32.09
3	45	\$19.48	\$10.20	\$9.09	\$1.16	\$39.93
4	45	\$19.48	\$10.20	\$9.09	\$1.16	\$39.93
5	50	\$21.64	\$10.20	\$9.91	\$1.25	\$43.00
6	50	\$21.64	\$10.20	\$10.16	\$1.26	\$43.26
7	60	\$25.97	\$10.20	\$11.55	\$1.43	\$49.15
8	65	\$28.13	\$10.20	\$12.38	\$1.52	\$52.23
9	75	\$32.46	\$10.20	\$14.02	\$1.70	\$58.38
10	85	\$36.79	\$10.20	\$15.16	\$1.86	\$64.01

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.32	\$10.20	\$4.90	\$0.00	\$32.42
2	40	\$17.32	\$10.20	\$4.90	\$0.00	\$32.42
3	45	\$19.49	\$10.20	\$9.59	\$1.18	\$40.46
4	45	\$19.49	\$10.20	\$9.59	\$1.18	\$40.46
5	50	\$21.66	\$10.20	\$10.45	\$1.27	\$43.58
6	50	\$21.66	\$10.20	\$10.70	\$1.28	\$43.84
7	60	\$25.99	\$10.20	\$12.17	\$1.45	\$49.81
8	65	\$28.15	\$10.20	\$13.04	\$1.54	\$52.93
9	75	\$32.48	\$10.20	\$14.76	\$1.72	\$59.16
10	85	\$36.81	\$10.20	\$15.98	\$1.89	\$64.88

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR PAINTERS LOCAL 35 - ZONE 2	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SIGN ERECTOR - Local 35 Zone 2

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.91	\$7.07	\$0.00	\$0.00	\$19.98
2	55	\$14.20	\$7.07	\$2.45	\$0.00	\$23.72
3	60	\$15.49	\$7.07	\$2.45	\$0.00	\$25.01
4	65	\$16.78	\$7.07	\$2.45	\$0.00	\$26.30
5	70	\$18.07	\$7.07	\$7.05	\$0.00	\$32.19
6	75	\$19.36	\$7.07	\$7.05	\$0.00	\$33.48
7	80	\$20.65	\$7.07	\$7.05	\$0.00	\$34.77
8	85	\$21.94	\$7.07	\$7.05	\$0.00	\$36.06
9	90	\$23.23	\$7.07	\$7.05	\$0.00	\$37.35

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.04	\$9.91	\$9.33	\$0.00	\$52.28
	08/01/2015	\$33.04	\$10.41	\$9.33	\$0.00	\$52.78
	12/01/2015	\$33.04	\$10.41	\$10.08	\$0.00	\$53.53
	06/01/2016	\$33.54	\$10.41	\$10.08	\$0.00	\$54.03
	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.33	\$9.91	\$9.33	\$0.00	\$52.57
	08/01/2015	\$33.33	\$10.41	\$9.33	\$0.00	\$53.07
	12/01/2015	\$33.33	\$10.41	\$10.08	\$0.00	\$53.82
	06/01/2016	\$33.83	\$10.41	\$10.08	\$0.00	\$54.32
	08/01/2016	\$33.83	\$10.91	\$10.08	\$0.00	\$54.82
	12/01/2016	\$33.83	\$10.91	\$10.89	\$0.00	\$55.63
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2015	\$54.43	\$8.42	\$14.90	\$0.00	\$77.75
	10/01/2015	\$55.58	\$8.42	\$14.90	\$0.00	\$78.90
	01/01/2016	\$55.58	\$8.67	\$15.05	\$0.00	\$79.30
	03/01/2016	\$56.58	\$8.67	\$15.05	\$0.00	\$80.30
	10/01/2016	\$57.73	\$8.67	\$15.05	\$0.00	\$81.45
	03/01/2017	\$58.73	\$8.67	\$15.05	\$0.00	\$82.45

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 03/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.05	\$8.42	\$8.40	\$0.00	\$35.87
2	40	\$21.77	\$8.42	\$8.40	\$0.00	\$38.59
3	45	\$24.49	\$8.42	\$8.40	\$0.00	\$41.31
4	50	\$27.22	\$8.42	\$8.40	\$0.00	\$44.04
5	55	\$29.94	\$8.42	\$8.40	\$0.00	\$46.76
6	60	\$32.66	\$8.42	\$8.40	\$0.00	\$49.48
7	65	\$35.38	\$8.42	\$8.40	\$0.00	\$52.20
8	70	\$38.10	\$8.42	\$8.40	\$0.00	\$54.92
9	75	\$40.82	\$8.42	\$8.40	\$0.00	\$57.64
10	80	\$43.54	\$8.42	\$8.40	\$0.00	\$60.36

Effective Date - 10/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.45	\$8.42	\$8.40	\$0.00	\$36.27
2	40	\$22.23	\$8.42	\$8.40	\$0.00	\$39.05
3	45	\$25.01	\$8.42	\$8.40	\$0.00	\$41.83
4	50	\$27.79	\$8.42	\$8.40	\$0.00	\$44.61
5	55	\$30.57	\$8.42	\$8.40	\$0.00	\$47.39
6	60	\$33.35	\$8.42	\$8.40	\$0.00	\$50.17
7	65	\$36.13	\$8.42	\$8.40	\$0.00	\$52.95
8	70	\$38.91	\$8.42	\$8.40	\$0.00	\$55.73
9	75	\$41.69	\$8.42	\$8.40	\$0.00	\$58.51
10	80	\$44.46	\$8.42	\$8.40	\$0.00	\$61.28

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2015	\$33.88	\$13.00	\$13.70	\$0.00	\$60.58
	09/01/2015	\$34.60	\$13.00	\$13.72	\$0.00	\$61.32
	03/01/2016	\$35.31	\$13.00	\$13.74	\$0.00	\$62.05

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.55	\$13.00	\$0.41	\$0.00	\$26.96
2	40	\$13.55	\$13.00	\$0.41	\$0.00	\$26.96
3	45	\$15.25	\$13.00	\$10.87	\$0.00	\$39.12
4	45	\$15.25	\$13.00	\$10.87	\$0.00	\$39.12
5	50	\$16.94	\$13.00	\$11.11	\$0.00	\$41.05
6	55	\$18.63	\$13.00	\$11.38	\$0.00	\$43.01
7	60	\$20.33	\$13.00	\$11.64	\$0.00	\$44.97
8	65	\$22.02	\$13.00	\$11.89	\$0.00	\$46.91
9	70	\$23.72	\$13.00	\$12.15	\$0.00	\$48.87
10	75	\$25.41	\$13.00	\$12.41	\$0.00	\$50.82

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.84	\$13.00	\$0.42	\$0.00	\$27.26
2	40	\$13.84	\$13.00	\$0.42	\$0.00	\$27.26
3	45	\$15.57	\$13.00	\$10.88	\$0.00	\$39.45
4	45	\$15.57	\$13.00	\$10.88	\$0.00	\$39.45
5	50	\$17.30	\$13.00	\$11.14	\$0.00	\$41.44
6	55	\$19.03	\$13.00	\$11.39	\$0.00	\$43.42
7	60	\$20.76	\$13.00	\$11.65	\$0.00	\$45.41
8	65	\$22.49	\$13.00	\$11.90	\$0.00	\$47.39
9	70	\$24.22	\$13.00	\$12.17	\$0.00	\$49.39
10	75	\$25.95	\$13.00	\$12.43	\$0.00	\$51.38

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2015	\$47.90	\$10.18	\$18.50	\$0.00	\$76.58
	08/01/2015	\$48.80	\$10.18	\$18.57	\$0.00	\$77.55
	02/01/2016	\$49.37	\$10.18	\$18.57	\$0.00	\$78.12
	08/01/2016	\$50.27	\$10.18	\$18.65	\$0.00	\$79.10
	02/01/2017	\$50.84	\$10.18	\$18.65	\$0.00	\$79.67

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.95	\$10.18	\$18.50	\$0.00	\$52.63
2	60	\$28.74	\$10.18	\$18.50	\$0.00	\$57.42
3	70	\$33.53	\$10.18	\$18.50	\$0.00	\$62.21
4	80	\$38.32	\$10.18	\$18.50	\$0.00	\$67.00
5	90	\$43.11	\$10.18	\$18.50	\$0.00	\$71.79

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.40	\$10.18	\$18.57	\$0.00	\$53.15
2	60	\$29.28	\$10.18	\$18.57	\$0.00	\$58.03
3	70	\$34.16	\$10.18	\$18.57	\$0.00	\$62.91
4	80	\$39.04	\$10.18	\$18.57	\$0.00	\$67.79
5	90	\$43.92	\$10.18	\$18.57	\$0.00	\$72.67

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$36.45	\$7.30	\$13.40	\$0.00	\$57.15
	12/01/2015	\$37.20	\$7.30	\$13.40	\$0.00	\$57.90
	06/01/2016	\$37.95	\$7.30	\$13.40	\$0.00	\$58.65
	12/01/2016	\$38.95	\$7.30	\$13.40	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$35.17	\$7.30	\$13.40	\$0.00	\$55.87
	12/01/2015	\$35.92	\$7.30	\$13.40	\$0.00	\$56.62
	06/01/2016	\$36.67	\$7.30	\$13.40	\$0.00	\$57.37
	12/01/2016	\$37.67	\$7.30	\$13.40	\$0.00	\$58.37

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2015	\$35.05	\$7.30	\$13.40	\$0.00	\$55.75
	12/01/2015	\$35.80	\$7.30	\$13.40	\$0.00	\$56.50
	06/01/2016	\$36.55	\$7.30	\$13.40	\$0.00	\$57.25
	12/01/2016	\$37.55	\$7.30	\$13.40	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.42	\$10.00	\$14.55	\$0.00	\$66.97
	12/01/2015	\$43.66	\$10.00	\$14.55	\$0.00	\$68.21
	06/01/2016	\$44.41	\$10.00	\$14.55	\$0.00	\$68.96
	12/01/2016	\$45.64	\$10.00	\$14.55	\$0.00	\$70.19
	06/01/2017	\$46.63	\$10.00	\$14.55	\$0.00	\$71.18
	12/01/2017	\$47.62	\$10.00	\$14.55	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.62	\$9.91	\$9.33	\$0.00	\$52.86
	08/01/2015	\$33.62	\$10.41	\$9.33	\$0.00	\$53.36
	12/01/2015	\$33.62	\$10.41	\$10.08	\$0.00	\$54.11
	06/01/2016	\$34.12	\$10.41	\$10.08	\$0.00	\$54.61
	08/01/2016	\$34.12	\$10.91	\$10.08	\$0.00	\$55.11
	12/01/2016	\$34.12	\$10.91	\$10.89	\$0.00	\$55.92
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2015	\$47.33	\$7.30	\$13.80	\$0.00	\$68.43
	12/01/2015	\$48.08	\$7.30	\$13.80	\$0.00	\$69.18
	06/01/2016	\$48.83	\$7.30	\$13.80	\$0.00	\$69.93
	12/01/2016	\$49.83	\$7.30	\$13.80	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2015	\$49.33	\$7.30	\$13.80	\$0.00	\$70.43
	12/01/2015	\$50.08	\$7.30	\$13.80	\$0.00	\$71.18
	06/01/2016	\$50.83	\$7.30	\$13.80	\$0.00	\$71.93
	12/01/2016	\$51.83	\$7.30	\$13.80	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2015	\$39.40	\$7.30	\$13.80	\$0.00	\$60.50
	12/01/2015	\$40.15	\$7.30	\$13.80	\$0.00	\$61.25
	06/01/2016	\$40.90	\$7.30	\$13.80	\$0.00	\$62.00
	12/01/2016	\$41.90	\$7.30	\$13.80	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2015	\$41.40	\$7.30	\$13.80	\$0.00	\$62.50
	12/01/2015	\$42.15	\$7.30	\$13.80	\$0.00	\$63.25
	06/01/2016	\$42.90	\$7.30	\$13.80	\$0.00	\$64.00
	12/01/2016	\$43.90	\$7.30	\$13.80	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	06/01/2015	\$33.04	\$9.91	\$9.33	\$0.00	\$52.28
	08/01/2015	\$33.04	\$10.41	\$9.33	\$0.00	\$52.78
	12/01/2015	\$33.04	\$10.41	\$10.08	\$0.00	\$53.53
	06/01/2016	\$33.54	\$10.41	\$10.08	\$0.00	\$54.03
	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2015	\$35.35	\$7.30	\$13.20	\$0.00	\$55.85
	12/01/2015	\$36.10	\$7.30	\$13.20	\$0.00	\$56.60
	06/01/2016	\$36.85	\$7.30	\$13.20	\$0.00	\$57.35
	12/01/2016	\$37.85	\$7.30	\$13.20	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2015	\$42.83	\$10.00	\$14.55	\$0.00	\$67.38
	12/01/2015	\$44.08	\$10.00	\$14.55	\$0.00	\$68.63
	06/01/2016	\$44.83	\$10.00	\$14.55	\$0.00	\$69.38
	12/01/2016	\$46.08	\$10.00	\$14.55	\$0.00	\$70.63
	06/01/2017	\$47.08	\$10.00	\$14.55	\$0.00	\$71.63
	12/01/2017	\$48.08	\$10.00	\$14.55	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/01/2015	\$50.21	\$10.32	\$14.89	\$0.00	\$75.42
	09/01/2015	\$51.21	\$10.32	\$14.89	\$0.00	\$76.42
	03/01/2016	\$52.36	\$10.32	\$14.89	\$0.00	\$77.57
	09/01/2016	\$53.41	\$10.32	\$14.89	\$0.00	\$78.62
	03/01/2017	\$54.41	\$10.32	\$14.89	\$0.00	\$79.62
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$25.66	\$8.70	\$4.48	\$0.00	\$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.55	\$8.70	\$6.58	\$0.00	\$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$29.94	\$8.70	\$6.05	\$0.00	\$44.69
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$5.24	\$0.00	\$37.46
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.35	\$8.70	\$9.43	\$0.00	\$54.48
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$3.72	\$0.00	\$35.94
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$19.25	\$8.70	\$2.85	\$0.00	\$30.80
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$25.66	\$8.70	\$4.24	\$0.00	\$38.60
2	65	\$27.80	\$8.70	\$4.71	\$0.00	\$41.21
3	70	\$29.94	\$8.70	\$5.43	\$0.00	\$44.07
4	75	\$32.08	\$8.70	\$6.16	\$0.00	\$46.94
5	80	\$34.22	\$8.70	\$6.88	\$0.00	\$49.80
6	85	\$36.35	\$8.70	\$7.62	\$0.00	\$52.67
7	90	\$38.49	\$8.70	\$8.83	\$0.00	\$56.02

Notes:

Apprentice to Journeyworker Ratio:1:2

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2015	\$28.12	\$4.25	\$3.09	\$0.00	\$35.46
	01/01/2016	\$28.98	\$4.25	\$3.12	\$0.00	\$36.35
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2015	\$26.49	\$4.25	\$3.04	\$0.00	\$33.78
	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2015	\$26.49	\$4.25	\$3.04	\$0.00	\$33.78
	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/01/2015	\$18.05	\$3.55	\$0.00	\$0.00	\$21.60
	01/31/2016	\$18.51	\$3.55	\$0.00	\$0.00	\$22.06
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/01/2015	\$15.92	\$3.55	\$0.00	\$0.00	\$19.47
	01/31/2016	\$16.32	\$3.55	\$0.00	\$0.00	\$19.87
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.						

Additional Apprentices Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentices ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

** Multiple ratios are listed in the comment field.

*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

SECTION 330000

CAST IN PLACE CONCRETE

PART I GENERAL

I.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections:
 - 1. Site Preparation – Section 311000
 - 2. Earthwork - Section 312000
 - 3. Paving and Curbing - Section 321400
 - 5. Site Improvements - Section 323000
 - 6. Planting - Section 329000
 - 6. Lawns - Section 329300

I.2 SCOPE OF WORK

- A. The work of this section consists of the following work in accordance with the plans and details:
 - 1. Installing 3500 psi 5% air entrained steel reinforced concrete foundations
 - 2. Installing 3500 psi 5% air entrained concrete pavement

I.3 SUBMITTALS

- A. Design Mixtures: For each concrete mixture.
- B. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

I.4 INFORMATIONAL SUBMITTALS

- A. Material certificates.

I.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

- I. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, acceptable to Landscape Architect, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301, "Specifications for Structural Concrete," **[Sections 1 through 5.]**
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
 - I. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- D. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from galvanized-steel wire into flat sheets.
- E. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type I, plain steel.

- F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - I. Portland Cement: ASTM C 150, Type I.
 - a. Fly Ash: ASTM C 618, Class F or C.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class C. Include manufacturer's recommended adhesive or pressure-sensitive tape.
- B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 6 mils thick.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type I, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type I, Class B, nondissipating.

2.7 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 2. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
- C. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
 - 3. Slump Limit: 4 inches (100 mm).
 - 4. Air Content: 5 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.
 - 5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
 - 6. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd.

2.9 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.
 - I. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
 - I. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - I. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Landscape Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated.
 - I. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - I. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - I. Apply to concrete surfaces not exposed to public view.

- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - I. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - I. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.
- E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

- a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.9 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Landscape Architect. Remove and replace concrete that cannot be repaired and patched to Landscape Architect's approval.

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION 033000

SECTION 04 40 00
COLUMBARIUM MASONRY

PART I - GENERAL

PART I - GENERAL

I.1 GENERAL REQUIREMENTS

- A. Include GENERAL CONDITIONS and applicable parts of Division I as part of this Section.
- B. Examine all other Sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

I.2 SCOPE

- A. Provide all labor, materials, equipment, services and transportation required to complete all site improvement work as shown on Drawings, as specified herein, or both.
- B. See Drawings for locations and details.
- C. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, and without limiting the generality thereof includes:
 - I. Columbarium cabinets with stone facing, coping and base

I.3 RELATED WORK UNDER OTHER SECTIONS

- 1. Site Preparation and Erosion Control – Section 311000
- 2. Earthwork – Section 312000
- 3. Paving and Curbing – Section 321400
- 5. Concrete – Section 330000
- 6. Planting – Section 329000

7. Lawns - Section 329300

I.4 PERMITS AND CODES

- A. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.

I.03 REFERENCE STANDARDS

- A. ASTM C615: Standard Specification for Granite Building Stone.
- B. Standard Specification: The Commonwealth of Massachusetts, Highway Department, Standard Specification, latest edition.
- C. NBGQA: "Specifications for Building Granite", National Building Granite Quarries Association, Inc., Barre VT.

I.04 SUBMITTALS

- A. Shop drawings: provide complete shop drawings for columbarium, including new stone work. Include layout of all cabinets including hanger locations and fasters to secure stone to columbarium structure. Shop drawings shall include stone sizes, shapes, and finishes and holes and slots for attachment of stone work to columbarium cabinet.
- B. Samples
 - 1. Granite: 12x12" minimum of each different color, grade and finish of stone required. Include full range of exposed color and texture to be expected in the completed work.
 - 2. Colored masonry mortar showing full range of colors available.

I.05 QUALITY ASSURANCE

- A. QUALITY CONTROL
 - 1. All finishes, dimensions and tolerances shall meet both industry standards and those indicated on approved shop drawings.
 - 2. All stone used shall be sound and free from cracks, seams or starts that might impair its structural integrity or function.
- B. STONE MANUFACTURING: Fabrication including cutting and finishing shall be carried out at a factory with the demonstrated ability to produce the work required.

- C. Single Source Responsibility for Stone Units: Obtain exposed stone units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.
- D. Construction Tolerances:
 - 1. Variations from plumb: 1/4 inch in 10 feet.
 - 2. Variations from level: 1/4 inch in 20 feet.
 - 4. Variations from flush in unit to unit offset: 1/16 inch.

I.06 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Loading of Stone: Carefully pack and load finished stone for shipment using all reasonable and customary precautions against damage in transit. Do not use any material which may cause staining or discoloration for blocking or packing.
- B. Store and handle stone units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.
- C. Protect stone during storage and construction against moisture, soiling, staining and physical damage.
- D. Deliver masonry materials in undamaged condition.

I.07 COLD WEATHER PROTECTION

- A. Do not erect, clean or repoint any stone when temperature of surrounding area is below 40 degrees F., or below 45 degrees F. and falling, or forecast by public news media to fall to or below 35 degrees F. within 24 hours without temporary heated enclosures or without heating materials or other precautions necessary to prevent freezing. Minimum temperature within heated enclosure shall be 40 degrees F. Do not use masonry materials which are likely to contain frost. Do not use accelerating ingredients with any mortar. Do not use anti-freeze compounds to lower the freezing point of mortar. Mortar shall harden without freezing and with no damage from frost. Protect all masonry against freezing for not less than 48 hours after installation.

- B. Do not lay stone units which are wet for frozen. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen setting beds. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch. Remove and replace masonry work damaged by frost or freezing.
- C. Comply with requirements of International Masonry All-Weather Council's "Guide Specification for Cold-Weather Masonry Construction". Heat materials and provide temporary protection of completed portions of masonry work.

1.09 HOT WEATHER PROTECTION

- A. Protect masonry work in hot weather to prevent excessive evaporation of setting beds and grout. Provide artificial shade, wind breaks and use cooled materials as required. Use fresh mortar. Discard mortar which has stiffened due to hydration.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. GRANITE: Comply with the physical requirements and properties of ASTM C615 and with "Specifications for Building Granite" National Building Quarries Association, Inc., for color and finish qualities. Granite shall be sound, durable stone, free from imperfections such as knot formations, starts, cracks or seams which may impair its structural integrity. Granite shall be free of minerals that may cause objectionable staining under normal environments of use. Sizes shall be as indicated on the Drawings.
 - 1. SCHEDULE OF GRANITE MATERIALS
 - a. Granite: Barre Medium Gray from Rock of Ages Quarry, Barre, VT, or approved equal
 - 2. GRANITE FINISHES [as defined by the National Building Quarries Association, Inc.]:
 - a. All beds, joints and other concealed surfaces shall be sawn.
 - b. Ease exposed corners.
 - c. Columbaria Niche Covers – shall be sawn and Steel finished

- d. Coping- vertical faces- rock pitch from arris line on top and steel finished radial margin;
Top surface - Steel
- e. Base- vertical faces- rock pitch with steel finished radial margin;
Top surface - Steel

B. MORTAR MATERIALS

- 1. Portland cement shall conform to ASTM C150, Type I.
- 2. Lime: ASTM C207 type S, special finishing hydrated lime.
- 3. Aggregate for Mortar: Non-staining sand, ASTM C144, or ASTM C404, Size No. 2 except for joints 1/4 inch and less (if any) use aggregate graded with 100 percent passing No. 16 sieve.
- 4. Colored Mortar Pigments; Natural and synthetic iron oxides and chromium oxides, compounded for used in mortar mixes. Use only pigments with record of satisfactory performance in masonry mortars. Landscape Architect will not be limited to "standard" colors. Provide custom colors when color selected is not available as one of the following products:
 - a. "Spectrum Custom Colors": S.B. Green & Co., Inc., Watertown, MA.
 - b. "SGS Mortar Colors": Solomon Grind-Chem Services, Inc.
 - c. Iron oxide pigments: Lander-Segal.
- 5. Calcium chloride, any other antifreeze materials and accelerators: **NOT PERMITTED.**
- 6. Water: Clean, potable, non-alkaline and free of deleterious materials which would impair strength or bond.

D. EPOXY GROUT: Equal to Sikadur 35, Hi-Mod LV as manufactured by Sika Corporation, Lyndhurst NJ.

E. EXPANSION JOINT FILLER: Preformed strips of resilient, nonextruding, nonstaining polyurethane or polyethylene of closed cell structure or other material recommended by sealant manufacturer. Joint filler shall be compatible with sealant and primer, and of widths indicated on the Drawings.

2.2 STONE FABRICATION

A. Cut all stone as required accurately to shape and dimensions and full to the square with jointing as shown or required. Cut to curvature where required. All exposed

faces shall be dressed true. Beds and joints shall be at right angles to the face and joints shall have a uniform thickness. Fabricate stone to pitch in multiple directions as required. All exposed arrises shall be in true alignment and slightly eased to prevent chipping.

- B. Provide all necessary holes, slots, recesses and sinkages for accessories in accordance with industry standard practices. Provide cramp holes or Lewis pin holes for stones that can not be handled manually. No holes for handling devices will be allowed in exposed surfaces. Provide all cutting and drilling of stone to accommodate other trades.
 - I. Incidental Cutting and Drilling: Where thickness permits, all pieces weighing over 100 pounds may have Lewis holes for lifting if desired. Lewis holes may extend no closer than 2" from the finished face, and will not be permitted on exposed surfaces except with written permission of the Landscape Architect. Pieces under 4" in thickness may have holes for C-clamps if required, on surfaces not exposed.

- C. Dimensional Tolerance for Veneer
 - I. Thickness: the variation from nominal thickness as specified shall not exceed the following +/- 1/8".

- D. Flatness Tolerances: Variation from true plane or flat surfaces shall be determined by a 4 foot dimension in any direction on the surface. Such variations on polished, honed and fine rubbed surfaces shall not exceed tolerances listed below or 1/3 of the specified joint width, whichever is greater. On surfaces having other finishes, the maximum variation from true plane shall not exceed the tolerance listed below or 1/2 of the specified joint width whichever is greater.
 - 1. Sawn, 4-cut, 6-cut and 8-cut finishes: 1/8"
 - 2. Thermal and coarse stippled finishes: 3/16"

- E. Beds and Joints: Pieces shall be bedded and jointed as shown on the approved shop drawings, and bed and joint surfaces shall be cut as follows:
 - 1. Provide 3/8" joints unless otherwise shown on the Drawings.
 - 2. Provide for beds as shown on the Drawings.

- F. **Backs of Pieces:** Backs of pieces shall be sawn or roughly dressed to approximate true planes. Sawn backs shall be cleaned of all rust stains and free from iron particles. Wherever shown on approved shop drawings, pieces shall be backed off to clear structural members or other obstructions.
- G. **Washes and Drips** shall be constant in profile throughout their length, in strict conformity with details shown on approved shop drawings.
- H. **Anchor Tolerances**
 - 1. The centers of all back anchors cut into stone shall be within $\pm 1/4$ " of the location specified on the shop drawings. The dimensions of all back anchor sinkages shall be as shown on the shop drawings within a tolerance of $\pm 1/16$ ". The thickness of slots or kerfs cut into the edge of stone for anchorage purposes shall be within $\pm 1/16$ " of the dimension shown on the shop drawings. The location across the stone thickness on the centers of slots or kerfs cut into the edge of stone shall be as stated on the shop drawings within a tolerance of $\pm 1/16$ ".
 - 2. Depth of kerfs, rebated kerfs or anchor holes shall be as shown on the shop drawings, but shall be allowed to vary in depth to a minimum required for anchorage clearance and a maximum not to impact the structural integrity of the anchoring system. In any case tolerances of $-1/8$ " $+3/8$ " will be allowed.
- I. Shop clean granite at time of final fabrication.

2.3 MORTAR MIXTURES

- A. **Mortar for Stone:** Type M mortar. Comply with ASTM C270, Proportions Specifications, except limit materials to those specified herein, and limit cement/lime ratio (by volume) as follows: Mortar proportions by volume shall be one part Portland Cement; one quarter $[1/4]$ part hydrated lime and not less than $2-1/4$ nor more than 3 times the sum of the separate volumes of cementitious materials of aggregate.
- B. **Measurement:** Use methods which will ensure that specified proportions are controlled and accurately maintained. Measure aggregate materials in a damp, loose condition. The method of measuring materials shall be by volume. Use of a tile box or similar device is required. Measurement by shovel will not be allowed.

- C. Add mortar color to mix in accordance with manufacturer's recommendations and as required to match color of approved sample. Ensure uniformity of mix and coloration. Accurately measure and record the exact amount of pigment added to approved mix.
- D. Do not add plasticizers, accelerators, retardants, water repellent agents, air entraining additives and other admixtures to the mortar mix. Do not use anti-freeze compounds to lower the freezing point of mortar.
- E. Mixing: Machine mix mortar meeting the requirements of ASTM C270. Hand mixing will not be allowed. Mix mortar until it is thoroughly homogeneous, stiff and plastic.
- F. Use mortar within two hours of mixing at temperatures over 74 degrees F., and two and one half hours at temperatures over 50 degrees F. but under 74 degrees F. Do not use mortar that has begun to set. The retempering of partially hardened mortar will not be permitted.

2.4 COLUMBARIUM CABINET

- A. Columbarium cabinet shall be manufactured to dimensions shown on drawings and in conformance with approved shop drawings. Cabinets shall be preassembled units, including stone as manufactured by Eickhof Columbaria, Inc, Crookston, Minnesota 800 253-0457 or approved equal.
 - 1. Structural vertical niche divisions shall be 3/8" fiber reinforced cement boards or equal with verified compression strength.
 - 2. Niche shelves shall be fabricated from anodized aluminum extrusions.
 - 3. Inner closure panels shall be fabricated from sheet aluminum.
 - 4. Locking hardware for fastening niche covers shall be totally concealed and fabricated from anodized aluminum extrusion, cast aluminum with stainless steel and brass fasteners. Niche hardware shall be fully adjustable to bring covers to true horizontal and vertical alignments.
 - 4. All internal fasteners and misc. hardware shall be stainless steel.
- B. Columbarium cabinets shall be manufactured with vertical ribs fabricated with fiber reinforced cement boards oriented perpendicular to radii. Vertical ribs shall be carefully joined by horizontal aluminum extrusions securely fastened to ribs to provide lateral support and structural integrity.
 - 1. Vertical niche divisions shall be plumb and carefully aligned

2. Horizontal shelves shall be level and secured to vertical divisions to provide lateral support sufficient to keep cabinets from wracking or bending under the weight of granite covers and coping stones. Provide additional diagonal bracing as required for structural stability.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Coordinate fabrication of columbarium cabinet, including stone cladding, bases and copings. Coordinate foundation installation with approved shop drawings. Installation of columbarium cabinet shall be performed by manufacturer with skilled craftsmen. Execute stone work by skilled and competent stone setters in accordance with the approved shop drawings. Do necessary field cutting as stone is set. Cut stone as required with high speed masonry saw to provide clean, sharp edges and as required to fit neatly around all projections.
- B. Install foundations in careful alignment and to dimensions shown on drawings. Top of foundation shall be set level at proper elevation and shall be finished to neat and smooth finish with deviations from a true horizontal plane not exceeding $\frac{1}{4}$ " (+-1/8").

3.02 INSTALLATION OF COLUMBARIUM

- A. Set cabinet level and accurately aligned in strict accordance with the Drawings and Shop Drawings . Cabinets shall be set plumb, level and true to line.
- B. Attach end stones to cabinets and set stones in full beds of mortar with all joints slushed full, and neatly pointed.
- C. Attach coping stones in proper alignment and concentric with columbarium cabinet. Carefully install flashing according to approved shop drawings.
- D. Set base stones on mortar bed and carefully aligned true to radii and neatly pointed.
- E. Set granite covers over niches such that all covers are aligned level and true to vertical and horizontal alignments. Surfaces of all covers shall be adjusted to create an even faceted surface, with nominal 1/8" joints between niche fronts.

3.03 CLEAN UP

- A. Carefully wash using clean water and soap; rinse with clean water. Do not use acid solution, steel wool or other harsh abrasives.

End of Section

3.04 CLEANING AND PROTECTION

- A. Protect stone work in progress and after completion.
 - 1. Protect all granite work in progress at all times during construction by use of a suitable strong, impervious film or fabric securely held in place.
 - 2. After the granite work is installed, properly and adequately protect it from damage. Provide boxing or other suitable protection wherever required. Do not use lumber which may stain or deface the granite. All nails used shall be galvanized or non-rusting.
- B. Promptly as work proceeds and upon completion, remove excess mortar, smears and droppings. Clean adjacent and adjoining surface of marks arising out of execution of work in this Section.
- C. Sweep up and remove daily sand, cleaning compounds and mixtures, dirt, debris and rubbish. Sweep or flush away nightly, all residual washed materials. Keep the premises neat and clean at all times.
- D. After installation and pointing or caulking are completed, carefully clean granite, removing all dirt, excess mortar, weld splatter, stains and/or other site incident defacements. Clean soiled surfaces using a nonacidic solution which will not harm stone or adjacent materials. Consult stone fabricator for acceptable cleaners. Do not use wire brushes, acid or other solutions which may cause discoloration. Use nonmetallic tools in cleaning operation. Apply in accordance with cleaner manufacturer recommendations.

END OF SECTION

**SECTION 311000
SITE PREPARATION AND EROSION CONTROL**

PART I - GENERAL

I.1 CONDITIONS AND REQUIREMENTS

- A. The GENERAL DOCUMENTS, as listed on the Table of Contents, and applicable parts of Division I, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

I.2 SCOPE OF WORK

- A. Work to be done includes furnishing all labor, materials, equipment and services required to complete all site preparation, and erosion control indicated on the drawings and as specified herein.
- B. Special attention is directed to requirements to follow the erosion and sedimentation controls as enumerated on the plans and as described in the "Order of Conditions" covering existing site conditions to be protected and preserved in the finished work and to the Initial Sequence of Construction Activities and Erosion Control specified herein.

I.3 RELATED WORK

- 1. Earthwork - Section 312000
- 2. Paving - Section 321400
- 3. Concrete - Section 330000
- 4. Site Improvements - Section 323000
- 5. Planting - Section 329000
- 6. Lawns - Section 329300

I.4 PERMITS AND CODES

- A. All work shall comply with all codes, rules, regulations, laws and ordinances of the Town of Arlington and Commonwealth of Massachusetts, and all other authorities having jurisdiction. All work necessary to make site preparation comply with such requirements shall be provided without additional cost to the Owner.
- B. The Contractor shall procure and pay for all permits and licenses required for work under this Section.

- C. Issue submittals in accordance with Division I. Submittals under this section shall include manufacturer's specifications and installation instructions.

I.5 EXAMINATION OF SITE AND DOCUMENTS

- A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.
- B. Plans, surveys, measurements and dimensions, under which the work is to be performed are believed to be correct to the best of the Landscape Architect's knowledge, but the Contractor shall have examined them for himself during the bidding period, as no allowance will be made for any errors or inaccuracies that may be found herein.

I.6 STAGING AREA

- A. Parking of cars shall be on site. No parking is permitted within the right of way of adjacent streets.
- B. The Contractor shall submit a plan for his construction staging, equipment and materials storage and parking of construction workers within the site prior to commencing construction. This plan shall include locations for topsoil and other soils and materials generated during site clearing and excavation. This plan shall be reviewed in detail with the Owner and Landscape Architect and revised as directed.
- C. No parking of cars or stockpiling of construction materials shall be permitted under any trees which are scheduled to remain or be protected.

I.7 SUBMITTALS

- A. Issue submittals in accordance with General Conditions and Division I general requirements. Submittals in this section shall include:
 - I. The Contractor shall submit manufactures information for 12" Stormwater Microbial "Filter Mitt", including installation directions to Landscape Architect for review.

I.7 DISPOSITION OF EXISTING UTILITIES

- A. No active utilities existing on the site.
- B. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped. The location of such utilities shall be noted on the drawings and reported in writing to the Landscape Architect.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Phase 2 - 12" Stormwater Microbial "Filter Mitt" for erosion and sedimentation control shall be a bio-degradable product that incorporates a dense matrix of organic materials manufactured to trap sediments and absorb volatile organic compounds. Manufactured by Groundscapes Express, Inc. Wrentham, MA – 508-384-7140.
- B. Wood stakes shall be 1 x 1 inch x 4'-0" oak stakes with tapered points.
- C. Construction fence shall be 4'-0" high, orange heavy duty polyethylene fence held in place by driven steel posts, 10'-0" o.c., driven a minimum of 24 inches into the ground.

PART 3 - EXECUTION

3.1 GENERAL

- A. All lines and grade work required for this contract at the site shall be laid out by a registered land surveyor or Professional Engineer employed by the Contractor, in accordance with the Drawings and Specifications.
- B. Before any site preparation is done, the Contractor shall arrange a conference on the site with the Landscape Architect and Owner to mark the edges of existing graves and location of erosion control measures.
- C. Temporary Construction Fence: Erect temporary construction fencing four feet high, supported by driven steel posts. Fencing shall be placed at limit of work line as painted in field with Owner. Fence shall be erected prior to any construction work on the site. Fencing shall be maintained in good condition during full time of construction work on site.
 - 1. Do not permit heavy equipment or stockpiles beyond fencing
 - 2. The General Contractor shall remove all of the fencing he has installed under this Contract at substantial completion of the job when authorized by the Landscape Architect. All materials shall be removed from the site unless otherwise directed by the Landscape Architect.

3.2 EROSION CONTROL MEASURES

- A. The contractor shall be responsible to take all necessary measures on-site to protect on-site and off-site areas from damage due to erosion and siltation generated during the construction of this project. The contractor shall install erosion and siltation controls in accordance with field conditions so as to ensure that the construction activities do not

negatively impact on the environmental and hydraulic characteristics of the site and adjacent properties.

- B. Erosion Control Mitt shall be securely staked in locations as shown on plan. Install according to manufacturer's directions. The contractor shall install Erosion Control Mitt prior to site preparation activities. The contractor shall maintain Erosion Control Mitt and other erosion control measures throughout the project. Maintenance shall include regular inspection and removal of silt throughout the period of construction
 - I. Install erosion control mitt around all soil stockpiles on site.
- C. The Contractor shall clean erosion control barriers after each rain event. Maintenance of erosion control structures shall include removal of accumulations of silt and other migrating soils; stabilizing, backfilling and mulching any erosion channels, or rills or gulying. Any areas or manmade structures that have been affected by siltation or erosion due to construction activities shall be restored to their pre-construction condition.

3.3 STRIPPING AND STOCKPILING TOPSOIL AND SUBSOIL

- A. Prior to the start of General Excavation, strip all topsoil and organic silt from within areas to be excavated as shown on the Drawings and stockpile where indicated on the approved Construction Sequencing Drawings or remove from the site and stockpile off-site-- if there is not adequate space in the location on site. Do no stripping without clear understanding of the existing site conditions to be preserved and limits of existing topsoil to be stripped and storage areas.
- B. All topsoil, subsoil or organic silt encountered during the stripping operations, regardless of depth, shall be removed and stockpiled on the site or where directed by the Landscape Architect. All other stripped soil, which can be classified as fill as defined in Section 312000 - EARTHWORK, shall be stockpiled for reuse in rough grading. This material shall be stripped separately from the topsoil. Topsoil, subsoil and organic materials shall be stripped below the following:
 - 1. Structures and Pavements- remove completely.
 - 2. Future Lawn Areas - not necessary to remove.
- C. The Contractor shall control his topsoil stripping operation so that it does not become contaminated with subsoil materials; the Contractor shall use machinery suitable for achieving this result. The material directly below the topsoil-- 'subsoil'-- shall not be considered usable as Ordinary Fill as specified under Section 312000 - EARTHWORK, or for topsoil. This material shall be stripped separately from the topsoil and from the granular material directly below this layer.
- D. Subsoil and organic silt material may be used as fill material in lawn areas only if deposited according to conditions specified in Section 312000 - EARTHWORK. Subsoil and organic

materials are not to be used in place of Ordinary Fill as specified in Section 312000 - EARTHWORK. All excess subsoil encountered in earthwork operations shall be removed from the site and legally disposed of.

- E. All stored soil materials shall be surrounded by silt barriers. If soil is to be stockpiled for longer than 30 days, it shall be seeded with annual rye or other approved seed.

3.5 DISPOSAL AND REMOVAL OF SURPLUS MATERIALS

- A. All surplus fill materials which are not required to fulfill the requirements of this contract including stumps, wood, refuse, fencing, and other debris from these operations shall be removed from the site and legally disposed of.
- B. Dumping on the site shall not be permitted. Material to be removed shall be removed typically at the end of each day's work, as it accumulates—but under no condition by the end of each week of operations.
- C. Burning on-site shall not be permitted.

END OF SECTION

SECTION 312000

EARTHWORK

PART I - GENERAL

I.1 GENERAL REQUIREMENTS

- A. General Provisions of the Contract, including General and Supplementary Conditions and Division I, General Requirements, apply to work specified in this Section.
 - 1. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
 - 2. Coordinate work with that of all other trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under Contract.

I.2 DESCRIPTION OF WORK

- A. The work covered by this Section, without limiting the generality thereof, consists of furnishing all materials, labor, equipment and performing all operations in connection with excavation, filling and grading, to the lines and grades shown on the drawings and as specified herein. As a minimum, the work shall include the following:
 - 1. Topsoil removal and stockpiling.
 - 2. Excavation and removal of existing fill and other unsuitable materials.
 - 3. Excavation to indicated subgrade levels as approved by the Landscape Architect for all paved surfaces and foundations.
 - 4. Disposal of unsuitable or surplus excavated materials off site.
 - 5. Furnishing, from an approved source, backfill materials for placement and compaction on site as required to complete the work of this section.
 - 6. Fill compaction and control.
 - 7. Rough grading.
 - 8. Dust control.

I.3 RELATED SECTIONS

- A. Carefully examine all of the Contract Documents for requirements which affect the work of this section.
- B. Other specifications sections which directly relate to the work of this section include, but are not limited to, the following:
 - 1. Site Preparation and Erosion Control - Section 311000
 - 2. Paving - Section 321400
 - 3. Concrete - Section 330000
 - 4. Site Improvements - Section 323000

- 5. Planting - Section 329000
- 6. Lawns - Section 329300

I.4 PERMITS AND CODES

- A. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.
- B. Comply with all rules, regulations, laws and ordinances of the Town of Arlington and Commonwealth of Massachusetts of all other authorities having jurisdiction. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- C. The Contractor shall arrange for and obtain all permits and licenses required for the complete work specified herein and shown on the Drawings. Any fees not waived shall be paid for by the Contractor. See General Conditions.
- D. Do not close or obstruct any street or public way. Do not obstruct or block access within the site without prior notification and permission of the Owner. Conduct operations so as to interfere as little as possible with public visitation and ordinary use of the site. Parking shall be in designated areas only as directed by the Owner.

I.5 REFERENCES

- A. Definitions and Reference Standards:
 - 1. ASTM: Specifications of the American Society for Testing and Materials.
 - 2. AASHTO: American Association of State Highway and Transportation Officials.
 - 3. ACI: American Concrete Institute.
 - 4. Code: Commonwealth of Massachusetts State Building Code.
 - 5. EPA: Environmental Protection Agency.
 - 6. DEP: Commonwealth of Massachusetts Department of Environmental Protection.
 - 7. Standard Specifications: Commonwealth of Massachusetts Highway Department, Standard Specifications for Highways and Bridges, latest revisions.

I.6 SUBMITTALS

- A. Issue submittals in accordance with General Conditions and Division I general requirements. Submittals in this section shall include:
 - 1. The Contractor shall submit the information specified herein to the Landscape Architect for review. Unless otherwise specified, submittals shall be made not less than three weeks before the start of the work.

- B. Backfill Samples:
 - 1. 1.5" crushed stone-- sample shall weigh approximately 50 lbs.
- C. Testing:
 - 1. Provide certification test from supplier that crushed stone meets requirements of Standard Specifications.

I.7 QUALITY ASSURANCE

- A. Refer to General Conditions and Division I General Requirements, for general provisions covering material delivery, storage, and installation, and product substitutions.
- B. Field Monitoring and Testing
 - 1. The Owner may retain the services of a Geotechnical Engineer to test, observe and document the Contractor's on-site earthwork activities to determine the work is completed in accordance with the Project Specifications and perform such other duties as are herein enumerated throughout these Specifications.
 - 2. All fill materials and their placement will be subject to quality control testing. The Contractor will bear the cost of any tests which are needed to correct previously unacceptable work. Test results and lab recommendations will be available to the Contractor.
 - 3. Approvals given by the Landscape Architect shall not relieve the Contractor of his responsibility for performing the work in accordance with the Contract Documents.

I.8 EXAMINATION OF SITE AND DOCUMENTS

- A. By submitting a bid the Contractor affirms that he has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.
- B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period, as no additional compensation will be made for errors or inaccuracies that may be found therein.

I.9 LINES AND GRADES

- A. Lay out all lines and grade work not presently established at the site in accordance with Drawings and Specifications. Survey control shall be established by a Registered Land Surveyor or professional Civil Engineer. Maintain all established bounds and bench marks and replace as directed any which are destroyed or disturbed.

- B. The words “finished grades” as used herein shall mean the required final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours.
- C. The word “subgrade” as used herein, means the required surface of subsoil, borrow fill or compacted fill. This surface is immediately beneath site improvements, specially dimensioned fill, paving, topsoil or other surfacing material.

I.10 UTILITY CLEARANCES AND PERMITS

- A. It shall be the responsibility of the Contractor to obtain required permits, licenses, and certificates from all authorities having jurisdiction over this work. Copies of these permits shall be submitted for review prior to the commencement of work.

I.11 PROTECTION OF UNDERGROUND FACILITIES

- A. The Contractor's attention is directed to the necessity of making his own investigation in order to assure that no damage to existing structures, drainage lines, etc. will occur.
- B. The Contractor shall notify "Dig Safe" and procure a DIG SAFE number for each location prior to disturbing existing ground in any way.
- C. Before the Contractor begins any work or operations, he shall locate all utilities in the vicinity of proposed construction. In consultation with Mt. Pleasant Cemetery personnel – the edges of all graves shall be painted out and a temporary plastic construction fence shall be placed along the limit of work line for approval by Mt. Pleasant Cemetery personnel.

I.12 MEASUREMENT AND PAYMENT

- A. All work included in this Section shall be paid for as a lump sum price as submitted in the bid, including, but is not limited to, the following:
 - 1. Topsoil removal and stockpiling.
 - 2. Excavation and removal of existing fill and other unsuitable materials.
 - 3. Excavation to indicated subgrade levels for all paved surfaces, curbing and other improvements, including foundations.
 - 4. Disposal of unsuitable or surplus excavated materials off site.
 - 5. Furnishing, from an approved sources, backfill materials for placement and compaction.
 - 6. Fill compaction and control.
 - 7. Rough grading.
 - 8. Dust control.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Earth materials used as fill shall be as designated below.
- B. All off-site soil materials to be used as fill or backfill will be evaluated, based on information submitted by the Contractor to the Landscape Architect, in accordance with current environmental practice in the Commonwealth of Massachusetts. The evaluation of all backfill materials, including materials excavated from the site, shall be based on the requirements of the Standard Specifications.

2.2 CRUSHED STONE

- A. Crushed stone shall consist of clean, hard, durable natural rock, free of organic matter, rock dust and other contaminant and conforming to Standard Specifications for 1.5" crushed stone.

2.3 COMMON FILL

- A. Common Fill shall consist of mineral soil substantially free of organic materials, loam, wood, trash and other objectionable material which may be compressible or which cannot be compacted properly. Common Fill shall be unfrozen and shall not contain snow, ice or frozen materials. Common Fill shall not contain stones larger than six (6) inches in largest dimension and shall have physical properties such that it can be readily spread and compacted. Common Fill shall conform to Standard Specifications. Existing soils excavated from site may be used for Common Fill if they meet these requirements.

PART 3- EXECUTION

3.1 CLEARING AND PREPARATION

- A. Strip and stockpile existing topsoil for reuse in location acceptable to Owner.
- B. Remove and separate from topsoil and properly dispose of all asphalt paving, concrete and other non-soil materials encountered during topsoil stripping.

3.2 EXCAVATION

- A. General:
 - I. Excavation consists of the removal and disposal or stockpiling of materials encountered when establishing the required limits and grade elevations, including but not limited to soil, utilities, and other buried structures.

2. See Section 311000 Site Preparation for detailed description of topsoil stripping and stockpiling.
3. Conform to the elevations and dimensions indicated on the drawings, extending a sufficient distance from foundation walls to achieve stability, to permit placing and removal of concrete formwork, installation of services, other construction, and for monitoring.
4. All surplus excavated soil not re-used as backfill on-site shall be stockpiled or removed as directed by the Landscape Architect. Soil shall not be removed from the project site until its deposition has been arranged in accordance with these specifications and applicable regulations.

B. Structure Excavation:

1. Excavate utilizing appropriate equipment in sufficient quantity and sizes to expeditiously perform the excavation required to facilitate construction of the foundations and pavements, and other site improvements to the lines and grades specified and/or indicated on the Drawings.
2. Prevent disturbance to soil subgrades and adjacent facilities.

C. Disposal and Stockpiling of Material:

1. The Contractor shall coordinate all disposal activities as required to complete the work described in this Section. The Contractor shall be responsible for the legal disposal off site of all excavated materials.
3. The Contractor will be responsible for on-site stockpiling of excavated material suitable for use as backfill. It is anticipated that a significant portion of the excavated on-site material will be suitable for re-use as Common Fill. All excess excavated materials shall be disposed by the Contractor.

3.3 TEMPORARY EXCAVATION SUPPORT

- A. It is the responsibility of the Contractor to provide safe and stable excavations in earth and rock at all times during construction until the permanent structures shown on the Drawings have been constructed/completed, achieve adequate strength, and are accepted by the Landscape Architect as being complete.

3.4 SUBGRADE PREPARATION AND PROTECTION

A. General:

1. Complete the excavations to the specified or indicated limits and required depths.

B. Compaction of Subgrades:

1. Where specified herein, indicated on the Drawings or directed by the Landscape Architect during construction, the Contractor shall proof roll or thoroughly compact subgrades with suitable equipment prior to proceeding with work. Proof rolling or compaction of in-place fill shall be conducted in all paving and below foundations.
2. Proof rolling shall consist of at least two (2) complete coverages over the designated area(s) with approved heavy compaction equipment or by means of other approved compaction equipment.
3. Soft spots brought to the attention of the Landscape Architect shall be removed and replaced with compacted granular fill as directed by the Landscape Architect.

C. Cold Weather Protection:

1. Protect frost susceptible subgrade soils against freezing when the atmospheric temperature is less than 35 degrees F. Should protection fail, remove frozen materials and replace with common fill or granular fill, as directed by the Landscape Architect, at no cost to the Owner.

3.5 PLACEMENT AND COMPACTION OF MATERIALS

A. General:

1. All fill and backfill materials brought to the site must be obtained from an Owner-approved borrow source(s).
2. All fill materials shall be placed "in-the-dry" on subgrades acceptable to the Landscape Architect. The Contractor shall dewater excavated areas as required to perform the work, and in such a manner as to preserve the undisturbed state of the subgrade material. The Contractor shall drain away ponded areas as required to perform the placement of fill "in-the-dry."
3. During compaction operations, incidental compaction due to traffic by construction equipment other than used specifically in compaction operations will not be credited toward the required minimum coverages specified.
4. Control surface water runoff by ditches, sumps, sloped surfaces, to permit collection and removal efficiently and with minimal disturbance to materials being placed.
5. Fill materials of the various types specified shall generally be placed and compacted within the limits and to the thickness indicated on the Drawings, unless otherwise specified.
 - a. Crushed Stone: shall be used as shown on drawings.

- b. Common Fill: Common Fill shall be used as backfill beneath areas that are designated to be landscaped. It is anticipated that on-site excavated soil will be selectively re-used as common fill.
 - c. Topsoil shall be used on all remaining non-paved areas.
 6. Do not place fill material on surfaces that are muddy, frozen, or contain frost or ice.
 7. Place fill materials evenly adjacent to structures to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.
 8. Fill shall not be placed when the atmospheric temperature is less than 30 degrees, unless prior approval is given by the Landscape Architect. In addition, during freezing weather, the following shall apply:
 - a. A layer of fill shall not be left in an uncompacted state at the close of a day's operations. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks and compaction equipment.
 - b. A layer of compacted fill shall not be placed on snow, ice, or soil that was permitted to freeze prior to compaction. Removal of these unsatisfactory materials will be required as directed by the Landscape Architect
 9. Placement of all specified fill materials shall be systematically conducted in the specified uniform layer thickness which is measured in all cases prior to compaction.
 10. Compaction of fill materials shall be conducted by a minimum of four (4) complete coverages with acceptable compaction equipment to a specified density which is expressed as a percentage of maximum dry density as determined by ASTM D1557.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
 1. Acceptance by the Landscape Architect of construction below finish grade including, where applicable, utilities.
 2. Completion of quality control testing, approval and recording locations of underground utilities.
 3. Removal of concrete formwork.
 4. Removal of trash and debris.
- C. Compaction Equipment:
 1. In all cases, the character, efficiency and acceptability of the Contractor's compaction equipment shall be subject to the approval of the Landscape Architect based on observed or documented field performance.
 2. Compaction in confined areas (against walls, footings, piers and in trenches) shall be conducted with acceptable equipment such as hand-guided vibratory compactors or mechanical tampers.

D. Moisture Control:

1. The amount of moisture in any one layer of fill material shall be as uniform as practicable throughout. The upper limit of water content in materials shall be that which will permit handling and placing and will permit proper compaction to exceed a value of three (3) percentage points on the wet side of optimum water content as determined by ASTM• D1557. The lower limit of water content shall not be less than two (2) percentage points below optimum water content. Material which is too wet, shall be spread and permitted to dry, assisted by mechanical agitation, if necessary, until the water content is reduced to a value within the specified limits.
2. Each layer of material which is too dry shall be sprinkled with water, and the water worked into the material by mechanical methods until a uniform distribution of moisture shall be accurately controlled in amount so that free water will not appear on the surface during or subsequent to compaction. Should excess water be applied to any part of the material, such that materials are too wet to obtain the specified compaction, the compaction operations and all work on that section of placed material shall be suspended until the water content of the material is reduced to a value within the specified limits.

E. Compacted Crushed Stone:

1. Place in layers not to exceed nine inches when utilizing heavy compaction equipment and in six inch layers when utilizing light, hand-operated compaction equipment.
2. Compact to at least 95 percent of maximum dry density.

F. Common Fill around Foundations:

1. Place in layers not to exceed twelve inches.
2. Compact to at least 95 percent of maximum dry density.
3. Under lawns and planting areas,:
 - a. All fills to within eighteen inches of finished subgrade: 90%.
 - b. Top eighteen inches to finished subgrade: 88%-90%.

3.6 DRAINAGE LAYER UNDER CONCRETE PAVEMENT

- A. Place drainage course on subgrades free of mud, frost, snow, or ice. Carefully backfill areas against foundation to 95% as required to subgrade elevation of pavement. Carefully grade out subgrade to neat and even lines and compact to 90% density. After compaction, loosen top 1" of subgrade prior to placing crushed stone layer.

3.7 GRADING

- A. General: Perform all rough and finish grading required to attain the elevations shown on the Drawings.

- B. Upon completion of required backfilling and compacting, uniformly grade areas within limits of grading under this Section, including adjacent transition areas. Smooth finish surfaces, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades. Grades shall be smooth and even, free of voids, compacted as specified, and to the required elevation.

3.8 DUST CONTROL

- A. The Contractor shall use water to prevent the spread of dust. Chemical materials may not be used. Water as required or as directed by the Landscape Architect.

END OF SECTION

SECTION 321400

PAVING

PART I GENERAL

I.1 REFERENCES

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division I, GENERAL REQUIREMENTS shall be included and made a part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

I.2 SCOPE

- A. The work of this Section consists of all paving, surfacing and curbing work and related items as indicated on the Drawings and/or as specified herein and includes, but is not limited to the following:
 - 1. Cement Concrete Pavement
 - 2. Area drain with piping and crushed stone infiltration bed.

I.3 RELATED WORK UNDER OTHER SECTIONS

- 1. Site Preparation and Erosion Control - Section 311000
- 2. Earthwork - Section 312000
- 3. Cast in Place Concrete - Section 330000
- 4. Site Improvements - Section 323000
- 5. Planting - Section 329000
- 6. Lawns - Section 329300

I.4 PERMITS AND CODES

- A. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.

- B. Comply with all rules, regulations, laws and ordinances of the Town of Arlington and Commonwealth of Massachusetts and of all other authorities having jurisdiction. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- C. The Contractor shall arrange for and obtain all permits and licenses required for the complete work specified herein and shown on the Drawings. Any fees not waived shall be paid for by the Contractor. See General Conditions.
- D. Do not close or obstruct any street or public way. Do not obstruct or block access within the site without prior notification and permission of the Owner. Conduct operations so as to interfere as little as possible with public visitation and ordinary use of the site. Parking shall be in designated areas only as directed by the Owner.

I.5 DEFINITIONS

- A. The following related items are included herein and shall mean:
 - 1. Standard Specification: The Commonwealth of Massachusetts Department of Transportation, Standard Specification, latest edition.
 - 2. ASTM: American Society of Testing Materials
 - 3. AASHTO: American Association of State Highway and Transportation Officials
 - 4. AAN: American Association of Nurserymen.
 - 5. AOAC: Association of Official Agricultural Chemists.

I.6 PROTECTION

- A. Protect exposed pavement surfaces from damage or defacement.

I.7 EXAMINATION OF SITE CONDITIONS AND DOCUMENTS

- A. The Contractor shall have a clear understanding of existing conditions of the site before submitting his bid, and shall be fully responsible for carrying out all site work required to properly execute the work of the Contract. Regardless of the conditions encountered in the actual work, no claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed.
- B. Plans, surveys, measurements, and dimensions under which the work to be performed are believed to be correct to the best of the Landscape Architect's knowledge, but the

Contractor shall have examined them for himself during the bidding period, as no allowance will be made for any errors or inaccuracies that may be found therein.

PART 2 — PRODUCTS

2.1 CEMENT CONCRETE PAVEMENT

- A. Cement concrete shall be furnished in accordance with the Standard Specifications and in accordance with Section 330000 Concrete.

2.2 AREA DRAIN AND DRAINPIPE

- A. The area drain shall be a 12"x12" NDS 1200 "catch basin" with 1210 cover and adapter to connect with a 4" pipe fabricated from UV resistant high density PVC. NDS (800) 726-1994
- B. Drain pipe shall be 4" dia corrugated slotted drain pipe as available from ADS or equal manufactured from high density PVC.

PART 3 — EXECUTION

3.1 PLACEMENT OF CRUSHED STONE BASE COURSE FOR PAVEMENTS

- A. Construct base course as detailed on the Drawings for all areas of new paved surfaces in this Section. Placement of crushed stone base course shall conform to the requirements of Earthwork 31 20 00.
- B. Spread crushed stone from self-spreading vehicles, approved type of power grader or by hand upon prepared subgrade. Compaction shall have a density of not less than 95% of maximum density determined in accordance with AASHTO-T-180 Method D. All rolling shall be done with a roller weighing 8 to 10 tons. Compact any portion which is not accessible to a roller by mechanical or hand tamper.
- C. Final rolled surface shall be true to the lines and grades indicated on the Drawings or as directed by the Landscape Architect.

3.2 AREA DRAIN AND DRAINPIPE

- A. Excavate and place crushed stone base below catch basin. Set catch basin at proper height 2" below adjacent pavement and lawn areas. Set catch basin so that top of structure is level.
- B. Attach drain pipe and extend under concrete pavement as shown on plans and details.

3.3 CEMENT CONCRETE PAVEMENT

- A. Cement concrete shall be placed in accordance with the Standard Specifications in accordance with Section 330000 Concrete.

3.5 FIELD QUALITY CONTROL

- A. The testing laboratory shall make the following inspections and tests:
 - I. Test paving materials for compliance with Standard Specifications, or furnish accepted certificate of compliance from source of supply.
- B. If any of the above tests indicate that the Specifications have not been met, the Contractor shall pay for such additional tests as may be required to assure that compliance has been attained.

END OF SECTION

SECTION 329000

PLANTING

PART I - GENERAL

I.1 REFERENCES

- A. Include GENERAL CONDITIONS and applicable parts of Division I as part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

I.2 SCOPE

- A. The work of this Section consists of all Planting work and related items as indicated on the Drawings and/or as specified herein and includes, but is not limited to, the following:
 - 1. Preparation of topsoil based planting medium
 - 2. Tree and Shrub Planting
 - 4. Maintenance

I.3 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Site Preparation and Erosion Control – Section 311000
 - 2. Earthwork - Section 312000
 - 3. Paving and Curbing - Section 321400
 - 5. Concrete - Section 330000
 - 6. Site Improvements - Section 323000
 - 7. Lawns - Section 329300

I.4 EXAMINATION OF SITE CONDITIONS AND DOCUMENTS

- A. The Contractor shall have a clear understanding of existing conditions of the site before submitting his bid, and shall be fully responsible for carrying out all site work required to properly execute the work of the contract. Regardless of the conditions encountered in the actual work, no claim for extra compensation or extension of time will be allowed on account of actual conditions inconsistent with those assumed.
- B. Plans, surveys, measurements and dimensions under which the work is to be performed are

believed to be correct to the best of the Landscape Architect's knowledge, but the Contractor shall have examined them for himself during the bidding period, as no allowance will be made for any error or inaccuracies that may be found therein.

I.5 PERMITS AND CODES

- A. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.
- B. Comply with all rules, regulations, laws and ordinances of the Town of Arlington and Commonwealth of Massachusetts and of all other authorities having jurisdiction. All labor, materials, equipment and services necessary to make the Work comply with such requirements shall be provided without additional cost to the Owner.
- C. The Contractor shall arrange for and obtain all permits and licenses required for the complete work specified herein and shown on the Drawings. The Contractor shall pay for any fees not waived. See General Conditions.
- D. Do not close or obstruct any street or public way. Do not obstruct or block access within the site without prior notification and permission of the Owner. Conduct operations so as to interfere as little as possible with public visitation and ordinary use of the site. Parking shall be in designated areas only as directed by the Owner.

I.6 SCHEDULING

- A. The Contractor shall submit to the Landscape Architect, for approval by the Owner, a progress schedule as specified herein.

I.7 DEFINITIONS

- A. The following related items are included herein and shall mean:
 - 1. Standard Specification: the Commonwealth of Massachusetts, Highway Department, Standard Specification, latest edition.
 - 2. ASTM: American Society of Testing Materials
 - 3. AASHTO: American Association of State Highway and Transportation Officials
 - 4. AAN: American Association of Nurserymen.
 - 5. AOAC: Association of Official Agricultural Chemists.

I.8 SAMPLES/SUBMITTALS

- A. All sample submissions and other submittals shall be in accordance with the requirements of

the GENERAL CONDITION, SUPPLEMENTARY GENERAL CONDITIONS and SECTION 01300, SUBMITTALS specified herein.

- B. Prior to ordering the below listed materials, submit representative samples to Landscape Architect for selection and approval as follows. Do not order material until Landscape Architect's approval has been obtained. Delivered materials shall closely match the approved samples.
1. Compost: The Contractor shall provide a one (1) cubic foot representative sample from each proposed source for testing and approval as directed herein. The Contractor shall deliver samples to testing laboratory prior to delivering of compost to site and pay all costs. Testing report shall be sent directly to the Landscape Architect and the Owner.
 2. Topsoil: The Contractor shall provide a one (1) cubic foot representative sample from the topsoil striped from the site for testing. The Contractor shall deliver samples to testing laboratory and pay all costs. Testing report shall be sent directly to the Landscape Architect and the Owner. Report shall be submitted at least two weeks before placement of Topsoil.
- C. Test Reports: Submit certified reports for tests for topsoil, compost and sand as described in this Section to Landscape Architect. Landscape Architect shall have certified reports reviewed for compliance by Pine and Swallow, Environmental, Inc. 867 Boston Road, Groton, MA 01450 #978-448-9511. Contractor shall pay for costs of testing and review of test results. For topsoil test for:
1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System. Percent clay (0.002 mm) shall be reported separately in addition to silt (ASTM D-422-63, hydrometer method).
 2. The silt and clay content shall be determined by a Hydrometer Test of soil passing the #270 sieve after destruction of organic matter by H₂O₂.
 3. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium, Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Lead, Chromium, Aluminum, Soluble Salts, acidity (pH), buffer pH and micronutrients.
 4. Tests shall be conducted in accordance with Recommended Soil Testing Procedures for the Northeastern United States, 2nd Edition, Northeastern Regional Publication No. 493; Agricultural Experiment Stations of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and West Virginia; Revised - December 15, 1995. Referenced Document may be obtained on the web at http://ag.udel.edu/extension/Information/Soil_Testing/title-95.htm. Tests include the following:
 - a. Test for soil Organic Matter by loss of weight on ignition, as described in Northeastern Regional Publication No. 493, p. 59.

- b. Test for soil CEC by exchangeable acidity method as described in Northeastern Regional Publication No. 493, p. 64.
 - c. Test for soil Soluble Salts shall be by the 1:2 (v:v) soil:water Extract Method as described in Northeastern Regional Publication No. 493, p.74 except 1:5 for Organic Amendment Material.
 - d. Test for Buffer pH by the SMP method as described in Northeastern Regional Publication No. 493.
5. Certified reports on analyses from producers of composted organic materials are required, particularly when sources are changed. Analyses will include all tests for criteria specified for Organic Amendment Material as specified under 2.1.
6. Density Tests: ASTM D1556 Density of soil and rock in place using Sand Cone Method" or with Nuclear Density (e.g. Troxler) equipment. ASTM D698 Test Method for laboratory compaction characteristics of soil using Standard Effort.
 - a. In-place density tests shall be carried out at a rate of one test per 2,000 square feet for each type of material placed.
 - b. Testing Agencies: The following firms are acceptable testing agencies for the various components.
 - i. Leaf Yard Waste Compost Stability Test and Pathogens/ Metals/Vector Attraction: Woods End Research Laboratory P.O. Box 297, Mt. Vernon, ME, 04352, tel: 201.293.2457 fax: 201.293.2488.
 - ii. Leaf Yard Waste Compost/ All other tests except those listed above: University of Massachusetts, West Experiment Station, Amherst, MA 01003, tel: 413.545.2311, fax: 413.545.1931.
 - iii. Mechanical Gradation and Chemical Analysis, All Components and Planting Soil Mixes: University of Massachusetts West Experiment Station, Amherst, MA 01003 tel: 413.545.2311, fax: 413.545.1931.
4. Antidesiccant: Submit manufacturer.
5. Fertilizer: Submit Certificate of Compliance listing analysis.
6. Unit prices for all plant materials, including installation and maintenance.

I.9 CERTIFICATION OF ACCEPTANCE AND GUARANTEE

- A. After the minimum thirty (30) day maintenance period, the Contractor shall request the Landscape Architect, in writing, for an inspection to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given

by the Landscape Architect to the Contractor stating that the one year maintenance and guarantee period begins from the date of the Certificate of Acceptance.

- B. If any plants are sickly and dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All plants unacceptable to the Landscape Architect shall be promptly removed from the project. Replacements shall conform in all respects to the specification for new plants and shall be planted in the same manner.
- C. Plants shall be guaranteed for a period of one year after inspection and issuance of Certificate of Acceptance, and shall be alive and in satisfactory growth at the end of the guarantee period. The sum of 10% of the total cost of the planting contract shall be retained and paid to the Contractor after replacements have been made, one year from acceptance of original planting.
- D. At the end of the guarantee period, inspection will be made again. Any plant required under this contract that is dead or unsatisfactory shall be removed from the site. Each plant shall show at least 75% healthy growth and shall have the natural character of a plant of its species in accordance with the American Nurseryman's Association Standards. These plants shall be replaced live during the normal planting season. A final inspection for acceptance will be made after the replacement plantings have lived through one year.
- E. All replacements shall be plants of the same kind, size and quality as specified in the PLANT LIST. The cost shall be borne by the Contractor, except for possible replacements due to vandalism or neglect on the part of others.

1.10 COORDINATION

- A. The Landscaping Contractor shall coordinate his work with the requirements of the General Contractor and with the installation of irrigation.

1.11 QUALIFICATIONS

- A. All planting work shall be done under the direct full time supervision of a certified arborist or nurseryman. The Contractor shall submit the qualifications of the supervisor to the Landscape Architect for approval.

PART 2 - PRODUCTS

2.1 COMPOST

- A. Compost for amending the organic content of topsoil shall be a stable, humus-like material produced from the aerobic decomposition of biosolids amended with yard trimmings,

agricultural residuals and/or source separated municipal waste. The compost shall be a dark brown to black color and be capable of supporting plant growth with appropriate management practices in conjunction with addition of fertilizer and other amendments as applicable with no visible free water or dust and with no unpleasant odor.

- B. The ratio of carbon to nitrogen shall be in the range of 10:1 to 25:1.
- C. Stability shall be assessed by either a CO₂ evolution test or a re-heating test. Protocols for each are specified by the coalition of Northeastern Governors Source Reduction Task Force (CONEG) in their 1966 report, "Model Procurement Specifications for Source Separated Compost." For the CO₂ test, the compost respiration shall be no more than 5mg CO₂-C/gBVS day. For re-heating using the Dewar self-heating test, the maximum heat rise shall be no greater than 20° C above room temperature (20° to 25° C).
- D. Pathogens/Metals/Vector Attraction reduction shall meet NY Standard Specifications (for applications to soils with human activity).
- E. Organic Content: Shall be at least 40 percent (dry weight). 100 percent of the material shall pass a 1/2-inch (or smaller) screen. Debris such as metal, glass, plastic, wood (other than residual chips), asphalt or masonry shall not be visible and shall not exceed one percent dry weight. Organic content shall be determined by weight loss on ignition American Society of Agronomy *Methods of Soil Analysis*, Part 2, 1986, for particles passing a number 4 sieve.
- F. pH: The pH shall be between 5.5 and 6.5 as determined from a 1:1 soil-distilled water suspension using a glass electrode pH meter American Society of Agronomy *Methods of Soil Analysis*, Part 2, 1986.
- G. Salinity: Soluble salts shall not exceed 2.0 mmhos/cm (dS/m).
- H. Nutrient content shall be determined by the Cornell Nutrient Analysis Laboratory of Cornell University, New York or equivalent laboratory and utilized to evaluate soil required amendments for the mixed soils.

2.2 TOPSOIL

- A. Reuse Topsoil stripped from site. Stripped topsoil shall be screened to remove stones and debris greater than 1" in size.
- B. Soil Analysis: The Contractor shall submit representative samples of topsoil to a Soil and Plant Testing Laboratory acceptable to the Landscape Architect. All reports shall be sent to the Landscape Architect for approval. Deficiencies in the topsoil shall be corrected by the Contractor, as directed by the Landscape Architect after review of the testing agency report.

Testing reports shall include the following tests and recommendations.

1. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System
 2. The silt and clay content shall be determined by a Hydrometer Test of soil passing the #200 sieve.
 3. Percent of organics shall be determined by an Ash Burn Test or Walkley/Black Test.
 4. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts, and acidity (pH).
 5. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish particular lawn and planting objectives noted.
 6. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.
- C. Amended topsoil shall not have a pH factor of less than 6.0 or greater than 7.0 and shall have an organic content between 4.0 and 8.0 percent.

2.3 SAND

- A. Sand shall be uniformly graded coarse sand consisting of clean, inert, rounded grains of quartz or other durable rock free from topsoil or clay, surface coatings and deleterious materials with the following gradation.

<u>U.S. Sieve No.</u>	<u>% Passing by Weight</u>	
	Minimum	Maximum
4	100	- - -
10	80	100
20	50	85
40	15	50
100	0	15
200	0	5

The ratio of the particle size for 70% passing (D_{70}) to the particle size for 20% passing (D_{20}) shall be 3.0 or less. (D_{70}/D_{20} less than 3.0)

2.4 SOIL ADDITIVES

- A. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Landscape Architect.

1. Commercial fertilizer shall be a product complying with the Commonwealth of Massachusetts and United States Fertilizer Laws. Deliver to the site in the original unopened containers, which shall bear the manufacturer's Certificate of Compliance covering analysis, which shall be furnished to the Landscape Architect. At least 50% by weight of the nitrogen content shall be derived from organic materials. A minimum of 35% of the nitrogen shall be water insoluble. Fertilizer shall contain not less than percentage of weight of ingredients as follows or as recommended by soil analysis:

	Nitrogen	Phosphorus	Potash
Dry	7%	7%	7%

2.5 PLANT MATERIALS

- A. The Contractor shall furnish and plant all plants shown on the Drawings, as specified, and in quantities listed on the PLANT LIST. No substitutions will be permitted. In case of conflict between the Planting Plan and the Plant List, the Plant List shall prevail. All plants shall be nursery grown:
1. The Contractor is responsible for paying all shipment and shipment related costs for this contract. If any plant is damaged by digging or during transit or off loading, it shall be the Contractor's responsibility to replace the unacceptable plant at the his/her expense.
2. It shall be the Contractor's responsibility at the end of the guarantee period to replace any plant at no additional cost to the Owner that the Landscape Architect determines unacceptable. The Contractor shall pay all replacement costs, maintain the replacement plants for a minimum of thirty (30) days or until acceptance and provide a one year guarantee.
- B. Plants shall be in accordance with the U.S.A. Standard for Nursery Stock of the American Association of Nurserymen, Latest edition.
- C. All shrubs shall exhibit distinctive character and form and shall be well branched and fully covered with foliage. Shrubs shall meet the requirements for spread or height stated in the plant list. The measurements for height are to be taken from the ground level to the average height of the shrub and not to the longest branch. The thickness of each shrub shall correspond to the trade classification "No. 1" AAN standard. Single stemmed or thin plants will not be accepted. The side branches must be generous, well twigged, and the plant as a whole well-branched to the ground. The plants must be in a moist condition, free from dead wood, bruises or other root or branch injuries. Plants shall not be pruned prior to delivery.

- D. All trees shall exhibit distinctive character and form and shall be well branched and fully covered with foliage. Trees shall meet the requirements for spread or height stated in the plant list. The measurements for height and size of trees shall be in accordance with AAN standards. The side branches must be generous, well twigged, and the plant as a whole well-branched. The plants must be in a moist condition, free from dead wood, bruises or other root or branch injuries. Plants shall not be pruned prior to delivery.
- E. Perennial plants grasses and groundcovers shall be grown a minimum of one year in the stated sized pots. Plants shall be healthy, free of insects and diseases. Perennial plants shall be potted. No bare rooted plants are allowed
- F. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its own soil together, firm and whole. No plants shall be loose in the container.
- G. Product Delivery, Storage and Handling
 - I. All plants shall be handled so that the roots are adequately protected at all times. Plants shall not be top pruned prior to planting. The balls of balled and burlapped plants shall be well protected before, during and upon delivery and until planted. If immediate planting is not feasible protect all plants from sun and drying wind. All B&B plants which cannot be planted within 3 days of delivery shall be set in a shady location such that the stems are in a vertical position and fully covered with mulch.
- H. All Plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. Only plant stock within the hardiness Zone 1 through 6, as established by the Arnold Arboretum, Jamaica Plain, Massachusetts, will be accepted. The Contractor's suppliers must certify in writing that the stock has actually been grown under Zone 6 or hardier conditions. Plants not so certified will not be accepted.
- I. The root system of each shall be well provided with fibrous roots. All parts shall be moist and show active green cambium when cut. They shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae.
- J. All plants must be moved with the root systems as solid units with balls of earth firmly wrapped with untreated eight ounce burlap, firmly held in place by a stout cord or wire baskets. No "burlap" made of synthetic fibers will be acceptable. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous and root feeding system necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the

process of planting or after the burlap, staves, ropes or platform required in connection with its transplanting have been removed. The plants and balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled in by setting in the ground and covering the balls with mulch and watering them.

- K. At least 75% of the plants furnished for each size range shown on the plant list shall be at or above the average between the maximum and minimum size specified. If a nursery supplies material at a specific height (not a range), then the larger size of the specified range shall be furnished.
- L. Plants delivered by truck and plants requiring storage on site shall be properly wrapped and covered to prevent wind-drying and desiccation of branches, leaves or buds; plant balls should be firmly bound, unbroken, reasonably moist to indicate watering prior to delivery and during storage and tree trunks should be free from fresh scars and damage in handling.
 - I. Any plant material which is transported in uncovered trucks will be rejected. No plant material from cold storage will be accepted.
- M. Plant material which is to be planted after the specified seasons for planting shall be dug during the normal season for digging of the particular plant material and be stored and maintained in good health until planting. The Contractor shall assume all costs for maintaining plant material while it is being stored.
- N. All plants shall be free from plant diseases and insect pests, and shall comply with all applicable State and Federal laws with respect to inspection for plant diseases and infestations.
- O. The Contractor shall provide a list of suppliers in sufficient time to allow the Landscape Architect to send a representative to select and approve plant materials at the nurseries. All trees shall be specifically selected by the Landscape Architect. Representative shrubs, perennials and grasses of each variety shown on the plant list shall be specifically tagged at the nurseries by the Landscape Architect. All perennials and grasses furnished by the nurseries shall closely approximate the selected shrub and perennials in respect to size and growth characteristics. Approval to move nursery materials shall not be considered as final acceptance. The Contractor shall notify the Landscape Architect not less than 48 hours in advance of delivery of plants. The Landscape Architect will specifically review the plant materials for conformance with the specifications. All trees delivered to the site shall be those specifically selected by the Landscape Architect. The Landscape Architect will specifically review the perennials, grasses and groundcovers for conformance with the tagged sample of the same.
 - I. The Contractor shall pay the expenses of the Landscape Architect to select the trees including mileage at \$.55/mi., airfare, and rental car costs and tolls. The Contractor shall

pay the hourly fees for the Landscape Architect to select the plant materials at a rate not to exceed \$90/hr., including travel time.

3. Plants shall be selected by the Landscape Architect at the place of growth for conformity to specification requirements as to quality, size, and variety. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work. Cost of replacement shall be borne by the Contractor.
- P. All planting stock shall conform to the laws of Commonwealth of Massachusetts and shall be inspected before removal from the nursery, by authorized Federal, State or other authorities as may be required in the area where the nursery is located. The invoice or order for each shipment of plants shall contain the project name and number and quantity and variety of plant material delivered.
- Q. Plants shall be dug with care and skill. Special precautions shall be taken to avoid any unnecessary injury to, or removal of fibrous roots. Each species or variety shall be handled and packed in the approved manner for that particular plant. All precautions shall be taken to insure that upon arrival at the project site the plants are in good condition for successful growth.
- R. Requests for plant substitutions shall be made at least 2 weeks before the plants are to be planted and such requests shall list at least 4 major nursery sources contacted for confirmation of unavailability.

2.6 WATER

- A. The Contractor shall be responsible to furnish his own supply of water to the site at no extra cost. If possible, the Owner will furnish the Contractor upon request with an adequate source and supply of water at no charge. However, if the Owner's water supply is not available or not functioning, the Contractor will be held responsible to furnish adequate supplies at his own cost. All work injured or damaged due to the lack of water, or the use of too much water, shall be the Contractor's responsibility to correct. Water shall be free from impurities injurious to vegetation.

2.7 ANTIDESICCANTS

- A. Antidesiccants shall be emulsions or other materials, which will provide a protective film over plant surfaces permeable enough to permit transpiration, and specifically manufactured for that purpose. Manufacturer of antidesiccant shall be subject to the Landscape Architect. Antidesiccant shall be delivered in containers of the manufacturer and shall be mixed according to the manufacturer's instructions.

2.8 MULCH

- A. Bark mulch shall be shredded bark averaging 1/2 to 2 inches in length and shall be no less than 6 months old nor more than 1 year old. It shall be free of sticks leaves twigs and other debris to the satisfaction of the Landscape Architect. It shall not contain ground up construction debris, shipping pallets, or any toxic materials. It shall not have been subject to anaerobic conditions.

PART 3 - EXECUTION

3.1 Planting Mix

- A. The Planting Mix shall consist of a blend of equal parts by volume of sand, compost and topsoil. Mixing of components shall take place in a two step operation and in the ratios described below. The sand shall be mixed with compost in a ration of two parts sand to one part compost. The two components shall be thoroughly mixed to create a uniform blend. The sand/compost shall then be mixed with topsoil in a ration of one part sand/compost to one part topsoil. These two components shall be mixed to create a thorough blend.

3.2 PLANTING

- A. Planting of any plant material includes: Coordination with the nursery, shipment from the nursery, the digging of the holes, provision of the soil additives and amendments, furnishing the plants of specified size with roots in the specified manner, the labor of planting and mulching, and the removal of all excess or debris material created as a result of the work.
- B. Coordination with Existing Conditions: Prior to excavating for any plants, the Contractor shall inform himself fully of existing conditions below grade. Underground obstructions may exist in the form of project-installed improvements and/or pre-existing conditions. The Contractor shall call Dig-Safe. The Contractor shall be liable for any damages resulting from his failure to ascertain subsurface conditions before proceeding with the work.
- C. Finished grades shall be understood to be the surface of the soil in the planting beds or adjacent lawn areas. At the completion of planting operations the soil surface shall be uniformly level or slope as directed. There shall be no irregular surfaces or areas which puddle.
- D. Planting:
 - 1. Tree and Shrub planting shall be in individual planting holes as shown on the details
 - 2. All trees shall be set on the ground by the Contractor for approval by the Landscape

Architect before any excavation. The Contractor shall move plants as necessary to obtain the Landscape Architect's approval. Each plant location shall be carefully marked and the planting hole excavated so that the final arrangement of plants conforms to the location of plants as approved prior to planting. Before beginning any backfilling, the Contractor shall turn and otherwise correct the plant location as required by the Landscape Architect for his approval. Once final approval has been given by the Landscape Architect, the Contractor can proceed with the backfilling.

3. The holes for individually planted trees shall be no deeper than the root balls.
4. Holes for shrubs shall be excavated in the planting bed to accommodate the root balls and allow for turning and setting the plants plumb. The holes shall be no deeper than the depth of the rootball.
5. After all trees have been planted, the Contractor shall place all the shrubs as directed by the Landscape Architect.
6. Trees shall be planted such that the root flare of the tree is 3" above the ground or planting bed surface. Shrubs shall be planted with their root flare 2" above the surface of the planting bed.
7. The Contractor assumes responsibility for any damage caused to walls, pavements, and other elements of construction caused by planting operations. Provide all necessary materials and labor to protect any construction elements which may be endangered by planting installation or maintenance.
8. All plant roots and earth balls must be damp and thoroughly protected from sun and wind from the beginning of the digging operation, during transportation and on the ground until the final planting. After plant locations have been approved, excavate holes as described and set trees and shrubs to their proper depths and firmly place planting mix around the bases of the rootballs such that plants are plumb and in their proper relationship to the soil surfaces. Remove burlap, rope, wires, etc. from the stems and the top 25% of the rootballs. Metal cages shall be cut to 12" below the elevation of the ground. Do not pull burlap out from under root balls.
9. The sides of rootballs of potted shrubs shall be scarified to cut free encircling roots. After the rootball is in the proper location, add new Planting mix around each plant and tamp in place.
10. When the rootballs of trees been backfilled, place a 3" high saucer of planting mix around the base of all trees to contain water over the rootball for watering operations

- E. All plants shall be flooded with water twice within the first 24 hours of the time of planting and all plants during the maintenance period shall be watered at least twice each week. At each watering the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as determined by the Landscape Architect, the required watering may be reduced.
- F. Shredded bark mulch shall be placed over entire planting areas to a depth of three inches after settlement, not later than one week after planting. No mulch shall be applied prior to the first watering of plant materials.
- G. Pruning:
 - I. All dead wood or suckers and all broken or badly bruised branches shall be removed back to a live bud, branch or stem. Never cut a leader and do not trim back the tips of branches.
- H. Antidesiccant shall be applied to all plants before digging at the nursery and/or as directed by the Landscape Architect once the plants have been delivered to the site.
- I. Absolutely no debris may be left on site. Excavated material shall be removed as directed by the Landscape Architect. Repair any damage to site or structures to restore them to their original condition as directed by the Landscape Architect, at no cost to the Owner.

3.4 FERTILIZATION

- A. Water-soluble fertilizer shall be dissolved in water at the rate recommended by the manufacturer. The thoroughly mixed solution shall be applied two weeks after time of initial planting and 6 weeks after initial planting. Contractor shall specifically alert Landscape Architect prior to liquid fertilizing.
- B. The Contractor's guarantee period extends Spring to Spring; all plants shall receive an additional application of fertilizer in the Spring prior to final acceptance.

3.5 MAINTENANCE

- A. Maintenance shall begin immediately after each plant is planted and shall continue until the issuance of the Certificate of Acceptance. The Contractor shall maintain all plants and plant beds until the final acceptance of the project and the issuance of the Certificate of Acceptance.
- B. Maintenance shall consist of keeping the plants in a healthy growing condition and shall include watering, weeding, cultivating, remulching, removal of dead material, and resetting plants to

proper grades or upright position.

1. All plants during the maintenance period shall be watered at least three times each week. At each watering, the soil around each tree or shrub shall be thoroughly saturated. If sufficient moisture is retained in the soil, as directed by the Landscape Architect, the required watering may be reduced. Trees will require a minimum of ten gallons of water each.
2. Planting beds pits to be kept free of weeds.
3. Plants that die during the maintenance period shall be replaced as directed by the Landscape Architect.
4. Spraying for both insect pests and diseases shall be included during the maintenance period as required and as directed by the Landscape Architect. Only an individual holding currently valid applicable licenses shall perform all pest control operations. Spraying is to be considered only after full consideration has been given to alternative pest control strategies. The least toxic approach to pest control will always be used.
5. The Landscape Architect may order or the Contractor may request the use of a suitable insecticide or fungicide when it is determined that infestations of insects or plant disease require the use of such material.
6. All herbicides, insecticides, and fungicides shall be applied as prescribed by their manufacturer and in accordance with the laws of the Commonwealth of Massachusetts. The Contractor shall possess from the State the proper registrations and permits for application of such materials or have the applications made by an approved, qualified firm holding such registrations and permits. Copies of all permits in connection with such materials shall be furnished to the Landscape Architect.

END OF SECTION

SECTION 329300

LAWNS

PART I - GENERAL

I.1 RELATED DOCUMENTS

- A. The General Documents, as listed on the Table of Contents, and applicable parts of Division I, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine Drawings and other Sections of the Specifications for requirements affecting work of this Section.

I.2 SCOPE

- A. Provide labor, materials, equipment, services and transportation required to complete lawn work as shown on Drawings and specified herein and includes, but is not limited to, the following:
 - 1. Preparation of subgrade in areas to receive topsoil.
 - 2. Place topsoil stripped from site and finish grade for lawn areas.
 - 3. Seeding.
 - 4. Protecting and maintaining lawn areas until Final Acceptance.
 - 5. Cleaning up.

I.3 RELATED WORK UNDER OTHER SECTIONS

- A. The following items of related work are specified and included in other Sections of the Specifications:
 - 1. Site Preparation and Erosion Control – Section 311000
 - 2. Earthwork – Section 312000
 - 3. Paving and Curbing – Section 321400
 - 5. Concrete – Section 330000
 - 6. Site Improvements – Section 323000
 - 7. Planting – Section 329000

I.4 EXAMINATION OF SITE AND DOCUMENTS

- A. Areas of lawn work shall be inspected before start of work and correct defects such as incorrect grading.

- B. Contractor shall be solely responsible for judging full extent of work requirements involved. By submitting bid, Contractor affirms he has carefully examined the site and conditions affecting work. No claim for additional costs will be allowed because of lack of knowledge of actual existing conditions.
- C. Drawings, surveys, measurements, and dimensions under which work is to be performed are believed to be correct, but Contractor examine them for himself during bidding period, as no additional compensation will be made for errors or inaccuracies found therein.

I.5 PERMITS AND CODES

- A. Work shall conform to Drawings and Specifications and shall comply with applicable codes and regulations.
- B. Comply with rules, regulations, laws and ordinances of the Town of Arlington and Commonwealth of Massachusetts and other authorities having jurisdiction. Labor, materials, equipment and services necessary to make Work comply with such requirements shall be provided without additional cost to Owner.
- C. Arrange for and obtain permits and licenses required to complete Work. Fees not waived shall be paid for by Contractor.
- D. Conduct operations to minimize interference with use of roads, driveways, or other facilities near enough to Work to be affected.

I.6 DEFINITIONS

- A. The following related items are included herein and shall mean:
 - 1. Standard Specification: The Commonwealth of Massachusetts Highway Department, Standard Specification, latest edition.
 - 2. ASTM: American Society of Testing Materials.
 - 3. AAN: American Association of Nurserymen.
 - 4. ANSI: American National Standards Institute.
 - 5. AOAC: Association of Official Agricultural Chemists.
 - 6. USDA: United States Department of Agriculture.

I.7 SAMPLES/SUBMITTALS

- A. Sample submissions and other submittals shall be in accordance with the requirements of the General Conditions, Supplementary Conditions and Section 01300 -Submittals.
- B. Prior to ordering materials listed below, submit representative samples to Landscape Architect for selections and approval as follows. Do not order material until Landscape Architect's approval has been obtained. Delivered materials shall closely match approved samples.
 - 1. Submit manufacturer's certificates of compliance listing analysis for the following:
 - a. Fertilizer
 - b. Seed
 - c. Lime
 - 2. Submit manufacturer's certificates of compliance with each shipment of each seed and sod type. Certificate from seed and sod supplier shall indicate seed is true to variety indicated on packaging. Certificates shall include guaranteed percentages of purity, weed content and germination of seed, net weight and date of shipment. No seed may be sown until certificates have been submitted.
- C. Submittal Schedule
 - 1. Before installation:
 - a. Manufacturer's Product data
 - b. Test Reports
 - c. Seed Certification

I.8 QUALITY ASSURANCE

- A. Work under this Section shall be performed by workmen experienced in lawn installation under full time supervision of qualified foreman.

I.9 DELIVERY AND STORAGE

- A. Deliver material to site in original unopened packages, showing weight, manufacturer's name and guaranteed analysis.
- B. Store materials in such a manner that their effectiveness and usability will not be diminished or destroyed and shall be uniform in composition, dry, unfrozen and free flowing. The Landscape Architect reserves the right to reject material which has become caked or otherwise damaged or does not meet specified requirements.

PART 2 - PRODUCTS

2.1 TOPSOIL BORROW

- A. Topsoil borrow shall be as described in Section 329000 Planting.
- B. Deficiencies in Topsoil shall be corrected by Contractor as directed by testing agency.
- C. No Topsoil shall be delivered or handled in a frozen or muddy condition.

2.2 TOPSOIL ADDITIVES

- A. Commercial Fertilizer: complete fertilizer and a standard product complying with State and United States fertilizer laws. Fertilizer shall be delivered to site in original unopened containers which shall bear manufacturer's name and guaranteed statement of analysis. Fertilizer for incorporation into lawn areas prior to seeding shall contain 5 percent nitrogen, 10 percent phosphorus, and 5 percent potash by weight of ingredients or as otherwise indicated by soil test results. Fertilizer shall have its nitrogen in a water soluble form derived from urea, ammonium nitrate, or ammonium phosphate.
- B. Superphosphate: finely ground phosphate rock as commonly used for agricultural purposes and shall contain not less than 18 percent available phosphoric acid.
- C. Ground Limestone: dolomite limestone and contain not less than 85 percent of total carbonates and magnesium and shall be ground to such fineness that 50 percent will pass a 100 mesh sieve and 90 percent will pass through a 20 mesh sieve. Coarser material will be accepted provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

2.3 MAINTENANCE FERTILIZER

- A. Maintenance fertilizer: shall contain 4 percent nitrogen, 1 percent phosphorus, and 2 percent potash by weight of ingredients. Fertilizer shall have its nitrogen in water soluble form derived from urea, ammonium nitrate, or ammonium phosphate.

2.4 SEED

- A. Seed mixture: fresh, clean, new crop seed. Seed can be mixed by an approved method on site

or can be mixed by dealer. If seed is mixed on site, each variety shall be delivered in original containers bearing dealer's guaranteed analysis. If seed is mixed by dealer, Seeding Contractor shall furnish to the Landscape Architect the dealer's guaranteed statement of composition of mixture and percentage of purity and germination of each variety.

- I. Chewings fescue, hard fescue, tall fescue and rygrass shall contain *Acromonium* endophytes. Seed containing endophyte must be kept cool and dry at all times; do not stockpile in the sun.

B. Seed Mixtures:

	Proportion of mix after purity	Minimum germination
Reliant Hard Fescue	40%	95%
Jamestown II Chewings Fescue	40%	95%
Palmer II perennial ryegrass	20%	95%

2. If cultivars as listed are not available, others can be substituted with Landscape Architect's approval.

PART 3 - EXECUTION

3.1 LAWN WORK SCHEDULE

- A. Lawn work shall proceed on schedule in conformance with project phasing as indicated on phasing drawings and specified under General Conditions. These requirements will be strictly adhered to.
- B. Contractor responsible for maintenance work on installed lawn until an acceptable lawn is established for a minimum of 60 days.

3.2 INSTALLATION OF NEW LAWNS

- A. Preparation of subgrade
 - I. Before beginning work of this Section, Lawns Subcontractor shall inspect subgrade work to ensure proper subgrade, true to elevation and with smooth slopes parallel to final finished grade, has been provided. Coordinate additional work to and adjustment of subgrade with General Contractor. Do not begin placing Topsoil on subgrade until receipt of Landscape Architect's approval.

2. Immediately before placing Topsoil, rototill the subgrade to a depth of 6". Landscape Architect shall inspect and approve subgrade before placing of Topsoil.
3. Rake surface of subsoil to remove rocks in excess of 1". Landscape Architect shall inspect and approve subgrade before placing of Topsoil.
4. Place a 2-3" layer of topsoil and cultivate this topsoil into the loosened and raked subsoil with a harrow, rototiller or other approved method.
5. Provide and set sufficient grade stakes, as determined by Landscape Architect, to ensure correct line and grade of finish grade.

B. Placing Topsoil

1. Place and spread Topsoil over approved areas to depth sufficiently greater than depth required so after natural settlement and light rolling, complete work conforms to lines, grades and elevations indicated, and ensures proper drainage in an uninterrupted pattern free of hollows and pockets. Topsoil depth after rolling shall be 6".
2. After placing Topsoil, roll entire surface with roller weighing approximately one hundred pounds per foot of width. During rolling fill depressions caused by settlement with additional Topsoil and regrade and roll until surface presents smooth, even and uniform finish and is up to required grade. Obtain approval from Owner's Representative of finish grading and rolling of Topsoil.
4. No subsoil or Topsoil borrow shall be handled if in a wet or frozen condition.

C. Application of fertilizers

1. Prior to seeding, apply uniform application of 5-10-5 fertilizer at rate of 440 pounds per acre. Work into soil with seed application described below.

3.3 SEEDING SEASON

A. Seeding dates are as follows:

1. April 15 to June 1, September 1 to October 15.

B. Seeding other than within the above season shall be allowed only when ordered by Landscape Architect or when Contractor submits written request for permission to

do so and permission is granted. Newly seeded areas, if seeded out of season, must be continuously watered according to good practice if seeding is done between June 1 and September 1. Seeding done outside dates established above shall be solely at Contractor's risk.

3.4 SOWING OF SEED

- A. Seeding: Seeding shall consist of soil preparation, seeding, raking, rolling, weeding, watering and otherwise providing labor and materials necessary to secure establishment of acceptable turf.
- B. Sowing of Seed: Immediately before seed is sown, ground shall be scarified, or raked lightly until surface is smooth, friable, and of uniformly fine texture. No seeding shall be done during windy weather. Sow seed in two directions right angles to each other, applying 3 lbs. of seed per 1,000 sq. feet in each direction. Sow seed evenly using a cultipacker or approved seeding device (if cultipacker is not used, cover seed with thin layer of Topsoil borrow by dragging, light raking or other approved method). Roll in both directions with hand roller weighing approximately one hundred pounds per foot of width, and water with fine spray. Provide protective fencing where required to keep area undisturbed until grass is established.
- C. Seeding may be done with Hydro-seeder with approval of Landscape Architect. Contractor shall submit specific quantities of seed, type and amount of mulch and tackifier.
 - 1. Sowing of Seed: Hydroseeding shall apply 6 lbs of seed per 1,000 s.f.
 - 2. Spread seed at specified rates in a slurry mixture of approved hydroseed mulch. After all areas have been hydroseeded, spread an approved tackifyer to surfaces greater than 1:5.
 - 3. On slopes of 3:1 or greater, Contractor can, at his option, use erosion control blanket pre-seeded with specified mixtures. Erosion control blanket shall be installed with two staples minimum per square yard.

3.6 WATERING

- A. Watering of Seeded Areas
 - I. First Week: Provide labor and arrange for watering necessary to establish acceptable lawn. In absence of adequate rainfall, watering shall be performed daily and as necessary during first week and in sufficient quantities to maintain moist soil to two inch minimum depth.

2. Second and Subsequent Weeks: Water lawn to maintain adequate moisture in upper 5 inches of soil, necessary for deep root growth promotion.
3. Watering in a manner providing uniform coverage while preventing erosion due to application of excessive quantities over small areas, and prevent damage to finished surface by watering equipment. Provide sufficient watering equipment to apply one complete coverage to seeded areas in eight hour period.

3.7 MAINTENANCE

- A. Maintenance begins immediately after lawn is installed and continues according to the following requirements:
 1. Lawns shall be maintained for a minimum of 60 days and as long as required to establish uniform, thick, well-developed stand of grass.
 2. Mowing: Mow lawns at seven day intervals. First mowing when grass has reached 2 1/4"-2 1/2" height, and cut grass to 2" height. Subsequent mowings shall cut grass to 2" height. Mow in the fall until growth of grass ceases, and resume in spring when grass reaches 2 1/2" height.
 3. Apply uniform application of 4-1-2 soluble nitrogen (urea or ammonium nitrate) fertilizer at rate of 44 pounds nitrogen per acre throughout maintenance period. Initial application 3 to 4 weeks after seeding. Additional applications shall occur at four week intervals or as directed Owner's Representative.
 4. Lawn areas shall continue to be watered as described above.
 5. After grass has started, areas which fail to show uniform, thick, well-developed stand of grass shall be immediately re-seeded repeatedly until areas are covered with satisfactory growth of grass as determined by Landscape Architect.
 6. Repair damage from erosion, gullies, washouts, or other causes immediately by filling with loam borrow, tamping, re-fertilizing and re-seeding.

3.8 INSPECTION FOR ACCEPTANCE

- A. Conditions of Acceptance

1. Lawn acceptance shall be given for entire lawn area. No partial acceptance shall be given.
2. Lawns shall exhibit uniform, thick, well- developed stand of grass. Lawn areas shall have no bare spots in excess of four inches in diameter and bare spots shall comprise no more than two percent of total area of lawn.
3. No lawn areas shall exhibit signs of damage from erosion, washouts, gullies, or other causes.
4. Pavement surfaces and site improvements adjacent to lawn areas shall be clean and free of spills or overspray from placing or handling of loam borrow and seeding operations.

B. Inspection and Acceptance

1. Upon written request of the Contractor, the Landscape Architect shall inspect lawn areas to determine completion of Contract work. This request must be submitted a minimum of five days prior to anticipated inspection date.
2. If lawn areas are not acceptable, the Landscape Architect shall indicate corrective measures to be taken, and extend maintenance period as necessary for completion of work. Contractor shall request a second inspection of lawns as described above. This process shall be repeated until total lawn area being inspected is acceptable.
3. If the lawn areas are acceptable to Landscape Architect, he shall arrange meeting of Contractor and Owner to accept lawn work. Final inspection shall be part of this meeting to insure acceptability. At this meeting, Contractor shall be furnished with written acceptance of lawn approval. Contractor shall hand over maintenance of lawn to Owner at this meeting.
4. Following the acceptance of lawns, Contractor shall provide Owner with access to lawn areas as required for the Owner's maintenance work.

C. Cleanup

1. Following lawn acceptance, Contractor shall immediately remove materials and equipment not required for other planting or maintenance work. Materials and equipment remaining on site shall be stored in locations which

do not interfere with Owner's maintenance of accepted lawns or other construction operations.

2. Contractor shall be responsible for keeping paving and building surfaces clean during placement of loam and seeding operations. Spills and oversprays shall be cleaned up immediately. Acceptance shall not be granted until this condition is met.

END OF SECTION