INVITATION TO BID

CITY OF QUINCY, MASSACHUSETTS
PURCHASING DEPARTMENT
1305 HANCOCK ST., QUINCY, MA 02169

The City of Quincy invites sealed bids/proposals for:

PUBLIC BUILDINGS **June 12, 2014 @ 11:30 a.m.**

Replace existing DDC building control system with new DDC system at North Quincy High

Detailed specifications are available on-line at the City of Quincy's website, www.quincyma.gov and also available at the office of the Purchasing Agent, Quincy City Hall, 1305 Hancock Street, Quincy, Massachusetts, 02169, between the hours of 8:30 AM and 4:30 PM for a non-refundable printing charge of $25.00

A non-mandatory pre-bid walk thru will be held on June 4, 2014 at 10:00 a.m. at North Quincy High School, 316 Hancock Street, Quincy, MA 02171. DCAMM required in Energy Management Systems.

All questions regarding this bid should be directed to Kathryn R. Hobin, Purchasing Agent through fax: 617-376-1074 and email: khobin@quincyma.gov and cc: to kimtrillcott@quincyma.gov Questions will be accepted until June 6, 2014 at 4:00 p.m.

Bids/Proposals must be in a sealed envelope. The outside of the sealed envelope is to be clearly marked **"BID ENCLOSED"** with time/date of bid call.

The successful bidder will be required to conform to the payment of Prevailing Wage Rates, as determined by the Commissioner of Labor & Industries under the provision of M.G.L. Chapter 149, Section 26 to 27D as amended.

Firm bid prices will be given first consideration. Bids/Proposals will be received at the office of the Purchasing Agent until the time and date stated above, at which time and date they will be publicly opened and read. Late Bids/Proposals, delivered by mail or in person, will be rejected.

If applicable, bids shall be in accordance with M.G.L. Chapter 30B, Chapter 149 as amended, and Chapter 30, Sections 39A, 39B and 39F-R.

The right is reserved to reject any or all bids or to accept any part of a bid or the one deemed best for the City and waive any informality in the bidding if it is in the best interest of the City to do so.

Thomas P. Koch, MAYOR

Kathryn R. Hobin, PURCHASING AGENT

LEGAL: MAY 28, 2014
LEGAL: MAY 29, 2014

CENTRAL REGISTER
P.O. # S061214

DEPT. CHARGED: BUILDING MAINTENANCE

CITY OF QUINCY, MASSACHUSETTS
PURCHASING DEPARTMENT
1305 HANCOCK STREET, QUINCY, MA 02169

DETAILED SPECIFICATIONS AND REQUIREMENTS

ISSUE DATE: MAY 29, 2014
BID CALL: JUNE 12, 2014 @ 11:30 A.M.
DEPARTMENT: BUILDING MAINTENANCE
ITEM: **Replace existing DDC building control system with new DDC system at North Quincy High**

1. Certified check or 5% bid bond **is required**.
2. 100% Payment Bond and 100% Performance Bond **is required**.
3. The following forms, if contained in the bid documents, must be completed and signed:
   - Certificate of Non-Collusion
   - Tax Compliance Certificate
   - Certification Relating to Debarment and Suspension
   - Signature Authorization Form
   - Certification of General/Sub-bidders on Public Construction Projects Regarding Health and Safety and Non-Collusion and Debarment
   - DCAM Form, including Certificate of Eligibility and Update Statement.
   - Form for General Bid
4. Do not separate any sheets from this bid call.
5. All prices are to include delivery F.O.B. destination unless noted otherwise.
6. Wherever a manufacturer's name or model number is specified, it is to be clearly understood that the words "or approved equal" follow.
7. All vendors must acknowledge in writing receipt of any addenda.
8. The Purchasing Department shall accept questions in writing via facsimile up until 48 hours prior to the opening.

* TO THE EXTENT APPLICABLE THE FOLLOWING SECTIONS OF MASSACHUSETTS GENERAL LAWS ARE INCORPORATED HEREIN BY REFERENCE:

M.G.L. CHAPTER 30B, CHAPER 30, SECTIONS 39A, 39B AND 39F-R AND M.G.L. CHAPTER 149, AS AMENDED.

In the event of any inconsistency between the bid, Information for Bidders, Bid Forms, Conditions or any other Contract Document or potential Contract Document and these statutes; or any other applicable statutes, by-laws or regulations existing on the date on which the bid is submitted, then the statute, by-laws or regulations shall govern. Such inconsistency shall not be grounds for invalidating this invitation to bid.

The successful bidder will be required to conform to the payment of Minimum Wage Rates, as determined by the Commissioner of Labor & Industries under the provision of M.G.L., Chap. 149, Sect. 26 to 27D as amended.

General bids will be considered only from bidders who present with their bid, CERTIFICATE OF ELIGIBILITY and QUALIFICATION UPDATE STATEMENT as prescribed by chapter 484 of the Acts of 1984.

Forms for the CONTRACTORS QUALIFICATIONS STATEMENT are included for the Division of Asset Management. (DCAM) (DCAM Certification in "ENERGY MANAGEMENT SYSTEM" is required.

LIABILITY, PROPERTY DAMAGE and WORKERS' COMPENSATION coverage is required of the successful bidder before any work can be started.

DATE:_____

SPECS: **Replace existing DDC building control system with new DDC system at North Quincy High**

BIDDER: _____

ADDRESS: _____

_____

TELEPHONE: _____

EMAIL: _____

City of Quincy
North Quincy High School
Additional System and Bidder Requirements
June 12, 2014

1. The system shall be provided with a no-cost, license-free, controller configuration and programming tool for use within and outside of a Niagara AX or Computrols environment. This tool shall be configured for use over the network, rather than require plugging in at each controller. For acceptance of the bid, include cut-sheets that illustrate how this non-proprietary tool is made available to the City for more advanced configuration and customization of the devices sequence of operation.

2. Bidder must transfer all programs and databases to the City.

3. Bidder shall provide 20 hours of training for City staff. The training will take place in a space inside the building spread over a maximum of (10) 2-hour sessions. The bidder must demonstrate the features of the system on a contractor-provided LCD projector-type display. Training should include topics such as log-on, navigation, scheduling, troubleshooting, adjusting, and servicing.

4. Bidder shall provide proof of certification to purchase, install, program, and service proposed equipment.

5. Bidder must submit **DCAMM Form** (in the category of "Energy Management Systems" and Certificate of Eligibility with bid documents.

6. Bidder shall provide a rate schedule to be utilized for any additional work required during the project; schedule to include straight time, overtime, and double time for each skill level individual that may be utilized on the job. **(Exhibit A)**

7. Bidder must comply with the City's current background check requirements **(see attachments)** including CORI checks and fingerprinting of workers to be eligible to work on the school property.

8. Bidder must be based within a 50 mile radius and provide emergency response times of less than 2 hours with a responding individual familiar with the installation and capable of making repairs to the system.

9. The majority of the work must take place during summer recess (June 26th – August 31st). Any work required in classrooms, common areas, or hallways must be completed during this time frame. Work in mechanical rooms and service areas may occur outside of this time frame. The project must be substantially complete prior to the start of the new school year (September 1st). Bidders shall bid the project on straight time hours and any required overtime or double time to substantially complete the project within this time frame. Substantially complete will be defined as: all systems operating properly and automatically, all included areas maintaining the proper environment, and work complete in classrooms/common areas/hallways. The fine tuning of programming, the neatening of control panels, training, and miscellaneous mechanical room activities may continue after school commences.

10. Bidder must have been in business performing similar work for at least 5 years. Contractor shall provide 3 references for which they have provided a similar service.

11. A 1 year warranty and additional copies of all manuals must be provided at the time of Job completion.

12. Permits must be obtained through the Inspectional services Department, however the City shall waive all applicable fees.

CITY OF QUINCY
Purchasing Department
1305 Hancock Street, Quincy, MA 02169

Phone: (617) 376-1060
Fax: (617) 376-1074

SIGNATURE AUTHORIZATION

At a duly authorized meeting of the Board of Directors of the

_____
(NAME OF CORPORATION)

held on _____, at which all the Directors were present or waived notice, it was
(DATE)

VOTED, that:

_____ _____
(NAME) (TITLE)

of this company, be and he/she hereby is authorized to execute Contracts and Bonds in the name and behalf of said Company, and affix its Corporate Seal thereto, and such execution of any Contract or obligation in this Company's name on its behalf by such _____ under seal of the Company, shall be valid
(TITLE)

and binding upon this Company. It was further voted that the City of Quincy may rely on such authorization of future Contracts until notified to the contrary.

A true copy,

ATTEST: _____
(CLERK'S SIGNATURE)

PLACE OF BUSINESS: _____

DATE OF THIS CONTRACT: _____

I hereby certify that I am the Clerk of the:

_____ that _____ is the
(COMPANY) (NAME)

duly elected _____ of said Company, and that the above VOTE has not been
(TITLE)

amended or rescinded and remains in full force and effect as of the date of this Contract.

_____ **CORPORATE SEAL**

CITY OF QUINCY
Purchasing Department
1305 Hancock Street, Quincy, MA 02169

Phone: 376-1060
Fax: 376-1074

TAX COMPLIANCE CERTIFICATE
MASS. GENERAL LAWS, CH. 62C, S: 49A(b)

I hereby certify that pursuant to MGL Chapter 62c, section 49a, I have complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding of child support. This is being signed under the pains and penalties of perjury.

(1) Individual Contractor _____
(Contractor's Name and Signature)

Social Security Number _____

(2) Corporation, Association or Partnership _____
(Contractor's Name)

Federal Tax ID Number, or Social Security Number _____

By: _____
(Authorized Signature)

CERTIFICATE OF NON – COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union committee, club, or other organization, entity, or group of individuals.

_____
(Name of person signing bid or proposal)
(Please print)

_____
(Signature required)

_____
(Name of business)

CERTIFICATION OF GENERAL BIDDERS ON PUBLIC CONSTRUCTION PROJECTS

I. CERTIFICATION REGARDING HEALTH AND SAFETY

The undersigned hereby certifies that he 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 ten 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 he will comply fully with all laws and regulations application to awards made subject to section 44A.

II. CERTIFICATION REGARDING NON-COLLUSION AND DEBARMENT

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date: _____

_____
Name of General Bidder

By _____
Signature

_____
Print name and title

_____
Business Address

_____
Street Address City and State

CERTIFICATION RELATING TO DEBARMENT AND SUSPENSION

The undersigned contractor certifies to the City of Quincy that neither it nor its principals, officers or any affiliated entities has been debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction in accordance with the requirements of OMB Circular A-87 and with Executive Order 12549, "Debarment and Suspension."

Furthermore, the contractor certifies that it shall not make any subcontract or permit any subcontract to be made with any party which is debarred or suspended or is otherwise excluded in accordance with said OMB Circular and with Executive Order 12549.

This certification shall be for the benefit of the City of Quincy and its successors and/or assigns and is binding upon the contractor, its successors and assigned.

Executed under seal this _____ day of _____, _____.

_____

Contractor Name
By its duly authorized agent,

Contract Number_____

_____
(Authorized Signature)

INDEMNITY AGREEMENT

In consideration of the award of Contract No._____.

by the City of Quincy, hereinafter referred to as INDEMNITEE, to the CONTRACTOR/BIDDER:

_____.

hereinafter referred to as INDEMNITOR, and for other good and valuable consideration, said INDEMNITOR agrees to hold INDEMNITEE, City of Quincy, and its various department and employees harmless from any and all liability, loss or damage that INDEMNITEE may suffer as the result of claims, demands, costs, including attorneys fees, or judgement or other actions against it by reason of any and all work done by or on behalf of the INDEMNITOR in connection with the above-referenced contract.

INDEMNITOR,

_____.

By Duly Authorized Agent

Date:_____.

SPECIAL NOTICE TO AWARDING AUTHORITY
BIDDERS' UPDATE STATEMENTS ARE NOT PUBLIC RECORDS AND ARE NOT OPEN TO PUBLIC INSPECTION (M.G.L. C.149, §44D)

Commonwealth of Massachusetts
Division of Capital Asset Management

PRIME/GENERAL CONTRACTOR UPDATE STATEMENT

TO ALL BIDDERS AND AWARDING AUTHORITIES

A COMPLETED AND SIGNED PRIME/GENERAL CONTRACTOR UPDATE STATEMENT MUST BE SUBMITTED WITH EVERY PRIME/GENERAL BID FOR A CONTRACT PURSUANT TO M.G.L. c.149, §44A AND M.G.L. c. 149A. ANY PRIME/GENERAL BID SUBMITTED WITHOUT AN APPROPRIATE UPDATE STATEMENT IS INVALID AND MUST BE REJECTED.

Caution: This form is to be used for submitting Prime/General Contract bids. It is not to be used for submitting Filed Sub-Bids or Trade Sub-Bids.

AWARDING AUTHORITIES

If the Awarding Authority determines that the bidder does not demonstrably possess the skill, ability, and integrity necessary to perform the work on the project, it must reject the bid.

BIDDER'S AFFIDAVIT

I swear under the pains and penalties of perjury that I am duly authorized by the bidder named below to sign and submit this Prime/General Contractor Update Statement on behalf of the bidder named below, that I have read this Prime/General Contractor Update Statement, and that all of the information provided by the bidder in this Prime/General Contractor Update Statement is true, accurate, and complete as of the bid date.

[Enter Bid Date Here]
Bid Date

[Enter Name of Prime/General Contractor Here]
Name of Prime/General Contractor

[Enter Project Number Here]
Project Number (or name if no number)

[Enter Business Address Here]
Business Address

[Enter Name of Awarding Authority Here]
Awarding Authority

[Enter Your Telephone Number Here]
Telephone Number

SIGNATURE⇨ _____
Bidder's Authorized Representative

INSTRUCTIONS

INSTRUCTIONS TO BIDDERS

- This form must be completed and submitted by all Prime/General contractors bidding on projects pursuant to M.G.L. c. 149, §44A and M.G.L. c. 149A.
- You must give complete and accurate answers to all questions and provide all of the information requested. MAKING A MATERIALLY FALSE STATEMENT IN THIS UPDATE STATEMENT IS GROUNDS FOR REJECTING YOUR BID AND FOR DEBARRING YOU FROM ALL PUBLIC CONTRACTING.
- Information is to cover the period from the date your most recent annual Certificate of Eligibility was issued (not extended) to the date of the bid.
- You must use this official form of Update Statement. Copies of this form may be obtained from the awarding authority and from the Asset Management Web Site: www.mass.gov/cam
- If additional space is needed, please copy the appropriate page of this Update Statement and attach it as an additional sheet.
- See the section entitled "Bidding Limits" in the *Instructions to Awarding Authorities* for important information concerning your bidding limits.

INSTRUCTIONS TO AWARDING AUTHORITIES

Determination of Bidder Qualifications

- It is the awarding authority's responsibility to determine who is the lowest eligible and responsible bidder. You must consider all of the information in the low bidder's Update Statement in making this determination. Remember: this information was not available to the Division of Capital Asset Management at the time of certification.
- The bidder's performance on the projected listed in Parts 1 and 2 must be part of your review. Contact the project references.
- AWARDING AUTHORITIES ARE STRONGLY ENCOURAGED TO REVIEW THE LOW BIDDER'S ENTIRE CERTIFICATION FILE AT THE DIVISION OF CAPITAL ASSET MANAGEMENT. Telephone (617) 727-9320 for an appointment.

Bidding Limits

Single Project Limit: The total amount of the bid, including all alternates, may not exceed the bidder's Single Project Limit.

Aggregate Work Limit: The annual value of the work to be performed on the contract for which the bid is submitted, when added to the annual cost to complete the bidder's other currently held contracts, may not exceed the bidder's Aggregate Work Limit. Use the following procedure to determine whether the low bidder is within its Aggregate Work Limit:

Step 1 — Review Update Statement Question #2 to make sure that all requested information is provided and that the bidder has accurately calculated and totaled the annualized value of all incomplete work on its currently held contracts (column 9).

Step 2 — Determine the annual dollar value of the work to be performed on your project. This is done as follows:

(i) If the project is to be completed in less than 12 months, the annual dollar value of the work is equal to the full amount of the bid.

(ii) If the project will take more than 12 months to complete, calculate the number of years given to complete the project by dividing the total number of months in the project schedule by 12 (calculate to 3 decimal places), then divide the amount of the bid by the calculated number of years to find the annual dollar value of the work.

Step 3 — Add the annualized value of all of the bidder's incomplete contract work (the total of column 9 on page 5) to the annual dollar value of the work to be performed on your project. **The total may not exceed the bidder's Aggregate Work Limit.**

Correction of Errors and Omissions in Update Statements

Matters of Form: An awarding authority shall not reject a contractor's bid because there are mistakes or omissions of form in the Update Statement submitted with the bid, provided the contractor promptly corrects those mistakes or omissions upon request of the awarding authority. [810 CMR 4.09(1)].

Correction of Other Defects: An awarding authority may, in its discretion, give a contractor notice of defects, other than mistakes or omissions of form, in the contractor's Update Statement, and an opportunity to correct such defects, provided the correction of such defects is not prejudicial to fair competition. An awarding authority may reject a corrected Update Statement if it contains unfavorable information about the contractor that was omitted from the Update Statement filed with the contractor's bid. [810 CMR 4.09(2)].

PART 1 - COMPLETED PROJECTS

LIST ALL PUBLIC AND PRIVATE *BUILDING* PROJECTS YOUR FIRM HAS COMPLETED SINCE THE DATE YOUR CURRENT CERTIFICATE OF ELIGIBILITY WAS ISSUED (NOT EXTENDED). *

PROJECT TITLE & LOCATION	WORK CATEGORY	CONTRACT PRICE	START DATE	DATE COMPLETED
[Enter Project Title & Location Here]	*[Enter Work Category]*	*[Enter Contract Price]*	*[Enter Start Date]*	*[Date Completed]*
[Enter Project Title & Location Here]	*[Enter Work Category]*	*[Enter Contract Price]*	*[Enter Start Date]*	*[Date Completed]*
[Enter Project Title & Location Here]	*[Enter Work Category]*	*[Enter Contract Price]*	*[Enter Start Date]*	*[Date Completed]*
[Enter Project Title & Location Here]	*[Enter Work Category]*	*[Enter Contract Price]*	*[Enter Start Date]*	*[Date Completed]*
[Enter Project Title & Location Here]	*[Enter Work Category]*	*[Enter Contract Price]*	*[Enter Start Date]*	*[Date Completed]*
[Enter Project Title & Location Here]	*[Enter Work Category]*	*[Enter Contract Price]*	*[Enter Start Date]*	*[Date Completed]*

Attach additional sheets if necessary

* If your firm has been terminated from a project prior to completion of the work or has failed or refused to complete its work under any contract, full details and an explanation must be provided. See Part 3 of this Update Statement.

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH COMPLETED PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above, either through a business or family relationship? ☐ YES ☐ NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship? ☐ YES ☐ NO

If you have answered YES to either question, explain:

PART 2 - CURRENTLY HELD CONTRACTS

LIST ALL PUBLIC AND PRIVATE BUILDING AND NON-BUILDING *CONSTRUCTION* PROJECTS YOUR FIRM HAS UNDER CONTRACT ON THIS DATE REGARDLESS OF WHEN OR WHETHER THE WORK COMMENCED.

1	2	3	4	5	6	7	8	9
PROJECT TITLE & LOCATION	WORK CATEGORY	START AND END DATES	ON SCHEDULE (yes / no)	CONTRACT PRICE	% NOT COMPLETE	$ VALUE OF WORK NOT COMPLETE (col. 5 x col. 6)	NO. OF YEARS REMAINING (see note below)	ANNUALIZED VALUE OF INCOMPLETE WORK (col. 7 ÷ col. 8)

ANNUALIZED VALUE OF ALL INCOMPLETE CONTRACT WORK (Total of Column 9) $

Column 8
- If less than one year is left in the project schedule, write 1.
- If more than 12 months are left in the project schedule, divide the number of months left in the project schedule by 12 (calculate to three decimal places).

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH INCOMPLETE PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above either through a business or family relationship? ☐ YES ☐ NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship? ☐ YES ☐ NO

If you have answered YES to either question, explain:

PART 3 - PROJECT PERFORMANCE

Please answer the following questions. Information is to cover the period from the date your current Certificate of Eligibility was issued to the bid date.

If you answer YES to any question, on a separate page provide a complete explanation. Include all details [project name(s) and location(s), names of all parties involved, relevant dates, etc.].

	YES	NO
A. Has your firm been terminated on any contract prior to completing its work?	☐	☐
B. Has your firm failed or refused either to perform or complete any of its work under any contract prior to substantial completion?	☐	☐
C. Has your firm failed or refused to complete any punchlist work under any contract?	☐	☐
D. Has your surety taken over or been asked to complete any of your work under any contract?	☐	☐
E. Has your surety made payment to a materials supplier or other party under your payment bond on any contract?	☐	☐
F. Has any subcontractor filed a demand for direct payment with an awarding authority on a public project for any of your contracts?	☐	☐
G. Have any of your subcontractors or suppliers filed litigation to enforce a mechanic's lien against property in connection with work performed or materials supplied under any of your contracts?	☐	☐
H. Have there been any deaths of employee or others occurring in connection with any of your projects?	☐	☐
I. Has any employee or other person suffered an injury resulting in complete disability in excess of thirty working days in connection with any of your projects?	☐	☐

PART 4 - LEGAL PROCEEDINGS

Please answer the following questions. Information is to cover the period from the date your current Certificate of Eligibility was issued to the bid date.

The term "Administrative Proceeding" as used in this Update Statement includes (i) any action or proceeding brought by a governmental agency, department or officer to enforce any law, regulation, code or other legal requirement, except for those brought in state or federal courts, and (ii) any action taken by a governmental agency, department or officer imposing penalties, fines or other sanctions for failure to comply with any such legal requirement.

If you answer YES to any question, on a separate page provide a complete explanation of each proceeding and any judgement or decision. Include all details (name of court or administrative agency, title of case or proceeding, case number, date action was commenced, date judgement or decision was entered, fines or penalties imposed, etc.).

	YES	NO
A. Have any judicial proceedings (other than criminal proceedings) been brought or concluded adversely against your firm or a principal or officer of your firm relating to the procurement or performance of **any** construction contract, including actions to obtain payment brought by subcontractors, suppliers or others?	☐	☐
B. Have any criminal proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to any of the following offenses: graft, embezzlement, forgery, bribery, falsification or destruction of records, receipt of stolen property or environmental offenses?	☐	☐
C. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a violation of state or federal antitrust laws arising out of the submission of bids or proposals?	☐	☐
D. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a violation of state or federal laws regulating campaign contributions?	☐	☐
E. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a violation of chapter 268A of the Massachusetts General Laws?	☐	☐
F. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a violation of any state or federal law regulating prevailing wages?	☐	☐
G. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a violation of any state or federal law regulating hours of labor, minimum wages, overtime pay, equal pay, child labor or worker's compensation?	☐	☐
H. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a violation of any state or federal law prohibiting discrimination in employment?	☐	☐
I. Have any judicial or administrative proceedings been brought or concluded adversely against your firm or a principal or officer of your firm relating to a claim of repeated or aggravated violation of any state or federal law regulating labor relations or occupational health or safety?	☐	☐
J. Have any proceedings been brought by any state or federal agency to debar or suspend your firm or any principal or officer of your firm from public contracting?	☐	☐
K. Has your firm been fined by OSHA or any other state or federal agency for violations of any laws or regulations related to occupational health or safety?	☐	☐

PART 5 - SUPERVISORY PERSONNEL

List all supervisory personnel, such as project managers and superintendents, who will be assigned to the project if your firm is awarded the contract. **Attach the resume of each person listed below.**

NAME	TITLE OR FUNCTION

PART 6 - CHANGES IN BUSINESS ORGANIZATION OR FINANCIAL CONDITION

Have there been any changes in your firm's business organization, financial condition or bonding capacity since the date your current Certificate of Eligibility was issued? ☐ Yes ☐ No
If YES, attach a separate page providing complete details.

City of Quincy
North Quincy High School
Building Control System (BCS) Survey Report
January 28, 2014

Appendix 1
Photograph Log

Photo 1- I/O#1 - Boiler Room - Main Control Enclosure
Photo 2 - I/O#1 - Section 1 Top (left) - Control Relays
Photo 3 - I/O#1 – Section 1 Bottom (left) - Control Transformers
Photo 4 - I/O#1 - Section 2 (from left) - Excel 500 Controller
Photo 5 - I/O#1 - Section 3 Top (from left) - Terminal Strip
Photo 6 - I/O#1 - Section 3 Bottom (from right) - Control Relays
Photo 7 - I/O#2 - Boiler Room
Photo 8 - I/O#2 - Excel 500 Controller
Photo 9 - Boiler Room - Hydronic Loop Pump VFDs
Photo 10 - Boiler Room - Chilled Water Loop Pump VFDs
Photo 11 - Boiler Room Piping Schematic
Photo 12 - Boiler Room - Main Heating Loop Bypass Valve
Photo 13 - Boiler Room - Zone 3 - Isolation Valve #1
Photo 14 - Boiler Room - Zone 3 Isolation Valve #2 and Main Loop Bypass Valve
Photo 15 - Boiler Room - Zone 5 Heat and Bypass Valves
Photo 16 - I/O#3 - Penthouse 5 - Main Control Enclosure
Photo 17 - I/O#3 - Section 1 (left) - Excel 100 Controller
Photo 18 - I/O#3 - Section 2 (from left) - Control Relays
Photo 19 - I/O#3 - Section 3 (from left) - Excel 500 Controller
Photo 20 - I/O#3 - Section 4 (from left) - Control Relays
Photo 21 - I/O#3 - Section 5 Top and Bottom (from left) - Terminal Strip & Unused
Photo 22 - I/O#4 - Penthouse 5 - AH 1, 5, & 7
Photo 23 - I/O#4 - Section 1 (left) - AH7 Controls
Photo 24 - I/O#4 - Section 2 (from left) - AH1 Controls
Photo 25 - I/O#4 - Section 3 (from left) - AH5 Controls
Photo 26 - I/O#5 - Penthouse 5 - AH2 & 6
Photo 27 - I/O#5 - Section 1 (left) - AH6 Controls
Photo 28 - I/O#5 - Section 2 (from left) - AH2 Controls
Photo 29 - I/O#6 - Section 1 (left) - AH4 Controls
Photo 30 - I/O#6 - Section 2 (from left) - AH3 Controls
Photo 31 - I/O#7 - Dog House - Main Control Enclosure
Photo 32 - I/O#7 - Section 1 Top (left) - Excel 100 Controllers
Photo 33 - I/O#7 - Section 1 Bottom (left) - AH 19 & 20 Controls
Photo 34 - I/O#7 - Section 2 Top (from left) - Fan Control Relays
Photo 35 - I/O#7 - Section 2 Bottom (from left) – Pneumatics
Photo 36 - I/O#7 - Section 3 (from left) - Control Relays
Photo 37 - I/O#8 - Rm 419 Closet - Main Control Enclosure

Photo 38 - I/O#8 - Section 1 (left) - AH18 Controls
Photo 39 - I/O#8 - Section 2 (from left) - Excel 50 Controller and Relays
Photo 40 - Rm 419 Closet - AH18 Control Valve
Photo 41 - I/O#9 - Guidance Area Closet
Photo 42 - I/O#9 - Section 1 Top – Pneumatics
Photo 43 - I/O#9 - Section 1 Bottom - AH8 Controls
Photo 44 - I/O#10 - Gymnasium Closet - Main Control Enclosure
Photo 45 - I/O#10 - Section 1 (left) - Control Relays
Photo 46 - I/O#10 - Section 2 (from left) - Control Relays
Photo 47 - I/O#10 - Section 3 Top & Bottom (from left) - AH13, 14, 15, & 16 Controls and Excel 100 Controllers
Photo 48 - I/O#11 - Penthouse 3 - AH11, 12, & 17
Photo 49 - I/O#11 - Section 1 (left) - AH12 Controls
Photo 50 - I/O#11 - Section 2 (from left) - AH17 Controls
Photo 51 - I/O#11 - Section 3 (from left) - AH11 Controls
Photo 52 - I/O#12 - Penthouse 3 - Main Control Enclosure
Photo 53 - I/O#12 - Section 1 (left) - AH9 Controls
Photo 54 - I/O#12 - Section 2 (from left) - AH10 Controls
Photo 55 - I/O#12 - Section 3 (from left) - Excel 500 Controller
Photo 56 - I/O#12 - Section 4 (from left) - Control Relays
Photo 57 - I/O#12 - Section 5 (from left) - Not used
Photo 58 - Penthouse 5 - AH1 Valve and Actuator
Photo 59 - Penthouse 5 - AH1 Bypass Damper Actuator
Photo 60 - Penthouse 5 - AH1 Face and Bypass Damper Actuator
Photo 61 - Penthouse 5 - AH1 OA Damper Actuator

PLEASE SEE FILE NAMED: "REPLACE EXISTING DDC CONTROL SYSTEM "PHOTOS" TO SEE ALL PHOTOS.

City of Quincy
North Quincy High School
Building Control System (BCS) Survey Report
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Appendix 2
Existing AH I/O Points

		Digital Outputs				Analog Outputs										Analog Inputs										Digital Inputs				
AH	Hydronic Zone	Supply Fan	Return Fan	OA Damper	Interlocked Minimum OA/EA Dampers	Hydronic Loop Valve	Hot Water Coil Valve	Chilled Water Coil Valve	Hot Deck/ Cold Deck Dampers	Coil Face and Bypass Dampers	Supply Fan Bypass Damper	Interlocked OA/RA Dampers	Interlocked OA/EA Dampers	RA Damper	Interlocked OA/EA/MA Dampers	Space Temp	Space Temp Location	Supply Air Temp	Hot Deck Temp	Cold Deck Temp	Return Air Temp	Mixed Air Temp	Supply Air Static Pressure	Space CO2	Return Air CO2	AH Enable Input	Supply Fan Status	Return Fan Status	Supply Air Smoke Detector	Return Air Smoke Detector	Freeze Stat	Clogged Filter
1	1	X		X		X				X	X					X	Kitchen	X					X			X	X		X		X	X
2	2	X	Note 1			X					X				X	X	Cafeteria	X			X	X	X		X		X	X	X	X	X	X
3	2	X	Note 1			X									X	X	Note 4	X			X	X			X		X	X	X	X	X	X
4	2	X	Note 1			X									X	X	Note 4	X			X	X			X		X	X	X	X	X	X
5	1	X	Note 1			X									X	X	Note 4	X			X	X			X		X	X	X	X	X	X
6	2	X	Note 1			X									X	X	Note 4	X			X	X			X		X	X	X	X	X	X
7	2	X	Note 1			X									X	X	Rm 433	X			X	X			X		X	X	X	X	X	X
8	1A	X	Note 1		X		X	X	X						X	X	Note 5		X	X	X	X			X		X	X	X	X	X	X
9	1	X	Note 1		X	X							X	X		X	Boy's Locker Room	X			X	X			X		X	X	X	X	X	X
10	1	X	Note 1		X	X							X	X		X	Girl's Locker Room	X			X	X			X		X	X	X	X	X	X
11	3	X	Note 1		X		X	X	X				X	X		X	Room 130		X	X	X	X			X		X	X	X	X	X	X
12	3	X	Note 1		X	X							X	X		X	Auditorium	X			X	X			X		X	X	X	X	X	X
13	1	X				X						X				Note 2	In Gym	X			X			Note 2			X		X	X	X	X
14	1	X				X						X				Note 2	near	X			X			Note 2			X		X	X	X	X
15	1	X				X						X				Note 2	Custodian's	X			X	X		Note 2			X		X	X	X	X
16	1	X				X						X				Note 2	closet	X			X	X		Note 2			X		X	X	X	X
17	3	X	Note 1		X	X							X	X		X	Little Theater	X			X	X			X		X	X	X	X	X	X
18	3	X	Note 1			X									X	X	Atrium	X			X	X			X		X	X	X	X	X	X
19	1A	X	Note 1			X									X	X	Note 4	X			X	X			X		X	X	X	X	X	X
20	4	X	Note 1			X									X	X	4th Flr Hall @ Stair 2	X			X	X			X		X	X	X	X	X	X

Note 1 - Return air fan is present but is controlled through aux contacts of supply air fan contactor.
Note 2 - Common sensor input for these four units.
Note 3 - All units with supply air smoke detectors and return air smoke detectors have a single DI for both.
Note 4 - Searched the area indicated on the plans, but could not locate the space temperature sensor
Note 5 - Could not get into most offices after hours.

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City of Quincy
North Quincy High School
Building Control System (BCS) Survey Report
January 28, 2014

Introduction

TESCO was retained by the City of Quincy to perform a survey of the existing Building Control System (BCS) at the North Quincy High School (NQHS). The purpose of the survey was to 1) determine the overall operational condition of the control system, 2) identify the input and output points connected to the system, 3) evaluate the operational condition of the input and output devices (to the extent possible), and 4) begin the process of developing a specification for the replacement of the system. The survey was completed over nine visits to the building during the month of January 2014.

System Overview and Controls Configuration

The BCS installed at NQHS is a Honeywell Excel system. It is a distributed, direct digital control (DDC) system employing a combination of Excel 500, Excel 100, and Excel 50 controllers. When installed, the system was intended to control the operation of the heating system boilers, the domestic hot water heaters, the central chiller plant, the hydronic system pumps and valves, the HVAC system air handlers, and a number of exhaust fans. A system front end, or man-machine interface (MMI), was originally provided with the BSC but that device no longer exists. The custodial staff have nearly no operational access to the BCS. The Public Buildings staff have limited operational access (set point changes and I/O overrides) using a hand held interface device. The device can be connected to the Excel 500 controllers but not the Excel 100 or Excel 50 devices. No functional (i.e. programming) changes can be made to the system by any of the City of Quincy staff.

At some point after the initial system installation, several variable frequency drives (VFDs), an additional Excel 500 controller, a new control enclosure, and some miscellaneous control hardware were installed in the boiler room. The installation of this additional equipment is assumed to have been intended to reduce energy consumption.

The control actuators located in the boiler room are electronic while most of those located outside the boiler room are pneumatic. The BCS operates the pneumatic controls through a combination of analog and digital pneumatic/electronic (P/E) interface devices. The distributed BCS controllers, control relays, P/E devices, and control power transformers are located in modular control enclosures located throughout the building. The control enclosures come in two sizes. The full size enclosure dimensions are 24"W X 37-1/2"H X 9"D while the half size enclosure is only 18-3/4" high. The table below summarizes those control enclosures. None of the enclosures are physically numbered. For ease of reference they are numbered below in the order that they were surveyed.

NQHS BCS Control Enclosures

I/O Encl Number	Location	Description	Size
1	Boiler Room	Excel 500	1 full & 4 half modules
2	Boiler Room	Excel 500	1 full module
3	Penthouse 5	Excel 500 and 100	4 full & 2 half modules
4	Penthouse 5	AH1, 5, & 7 controls	3 full modules
5	Penthouse 5	AH2 & 6 controls	2 full modules
6	Penthouse 5	AH3 & 4 controls	2 full modules
7	Dog House	Two Excel 100, AH19 & 20 controls	3 full & 2 half modules
8	Room 419 Closet	Excel 50, AH18 controls	2 full modules
9	Guidance Closet	AH8 controls	1 full & 1 half module
10	Gymnasium Closet	Two Excel 100, AH13, 14, 15, & 16 controls	2 full & 2 half modules
11	Penthouse 3	AH11, 12, & 17 controls	3 full modules
12	Penthouse 3	Excel 500, AH9 & 10 controls	4 full & 1 half modules

A CD is included with this report. It has all the photos listed in Appendix 1 and a soft copy of this report. For ease of reference and to avoid monotonous repetition, I have listed all the I/O point associated with each air handler in Appendix 2.

Few of the pneumatic actuators have any labeling and many are in locations that I could not reach.

Boiler Room

The Boiler Room houses the boilers, the domestic hot water heaters, the steam generator, the main heating loop pumps, the main chilled water loop pumps, the hydronic loop pumps for all zones, and I/O Enclosures #1 and 2. The I/O Enclosures are as described in the table above. The following additional I/O points are located in I/O Enclosure #1:

Relay Outputs	Digital Inputs
Combustion Air Damper	Combustion Air Damper Proof
Steam Boiler Enable	Steam Boiler Call
	Low Air Alarm
	Pump Fail Reset
	Summer/Winter Switch

The Combustion Air Damper was tested and would not operate. The associated proof DI is overridden on. The Summer/Winter DI operates properly. The purpose of the Low Air Alarm and Pump Fail Reset DIs is not apparent.

I/O Enclosures #1 and 2

I/O Enclosure #1 was apparently the originally installed control enclosure in the Boiler Room. As noted in the table above, it contains an Excel 500 controller that at one time controlled all the BCS-controlled equipment in the room as well as AH 8 in the Guidance Area. At some point in the more recent past, I/O Enclosure #2 was added to the BCS with an additional Excel 500 controller. At the same time VFDs were installed for one of the main heating loop pumps, all three of the main chilled water loop pumps, and one each of zone loop pumps for zones 1, 2, 4, and 5. Each of the noted loops was then also equipped with a differential pressure sensor and modulating bypass valve. Pumps 1 (main heating loop), 3 (zone 5 loop),

5 (zone 1 loop), 7 (zone 2 loop), and 15 (zone 4 loop) were each provided with a Differential Pressure AI, Pump Status DI, VFD Fault DI, Pump Speed AO, and Bypass Valve AO in I/O Enclosure #2. The main chilled water loop was provided with a Differential Pressure AI and a Bypass Valve AO in I/O Enclosure #2. Each of the three chilled water loop pumps were provided with a Pump Status DI, VFD Fault DI, and Pump Speed AO in I/O Enclosure #2. The previously existing pump start/stop RO and pump status DI for each of these eight pumps was removed from I/O Enclosure #1. On examination, it appears that all of the described I/O are terminated in I/O Enclosure #2, however there is no program in the Excel 500 controller in that enclosure. As a result none of the I/O from Enclosure #2 could be verified. It is not clear whether the program was installed and then lost or simply never completed. During the survey all the VFDs were manually adjusted to full speed and the bypass lines in each loop were closed.

Boilers

The building was originally equipped with three large boilers. A Boiler Enable RO, Boiler Status DI, and Boiler Alarm DI is provided for each. At some time in the past one of the boilers was replaced with three smaller units operating in parallel. The newer boilers are now the primary heating system for the building and are not controlled by the BCS. The two older boilers also appear to be running on manual controls. It appears that at one time the BCS enabled boilers to maintain supply temperature to the main heating loop while factory boiler controls maintained individual boiler temperature.

The boilers provide heat to the main heating loop through a large three way valve which bypasses the boilers when the loop temperature set point is reached. The set point is reset based on outside air temperature.

The new boilers reset boiler temperature based on outside air temperature. The three way valve has been left open to the boilers and disconnected from the controls.

Domestic Hot Water Heaters

Domestic hot water is provided by two large water heaters. One of them is a relatively new, high efficiency unit. The other is original and was shut off for repairs during the survey. The BCS has a DHW Enable RO and DHW Call DI for each of the systems. The new water heater is not connected to the BCS and operates off its own factory controls.

Chillers

Two large chillers are located on the roof outside Mechanical Penthouse 5 and controlled by the BCS through I/O Enclosure #1. Only one of the chillers is operational. The BCS provides a Chiller Enable RO, Chiller Valve RO, Chiller Status DI, Chiller Alarm DI, and Valve Proof DI for each of the chillers. Main chilled water loop supply and return temperatures are also provided.

Hydronic Loops

The main heating loop takes heat from the boilers and delivers it to the six (1, 1A, 2, 3, 4, and 5) zone loops. Pumps 1 and 2 are associated with the loop. Pump 1 controls have been relocated to I/O Enclosure #2 as noted earlier. Pump 2 has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1. The return temperature sensor is defective.

The main chilled water loop provides chilled water from the chillers to the six zone loops. Controls for all three pumps associated with the loop have been relocated to I/O Enclosure #2 as noted earlier. Pump 2 has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1.

Paired two-position isolation valves in loops 1, 1A, 2, 3, and 4 are logically connected with the Summer/Winter DI to alternately connect either the main heating loop or the main chilled water loop to the noted zone loops. All the isolation valves were either observed to operate properly or repaired during the survey.

The zone 1 loop is fed from one of the two main loops as determined by the position of its isolation valves. Pumps 5 and 6 are associated with the loop. Pump 5 controls have been relocated to I/O Enclosure #2 as noted earlier. Pump 6 has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1. The supply temperature sensor is defective.

The zone 1A loop is fed from one of the two main loops as determined by the position of its isolation valves. Pumps 13 and 14 are associated with the loop. There is no VFD installed on this loop and each has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1. Both pumps were switched on at the HOA switch at the electrical disconnect. Both DIs indicated pumps running.

The zone 2 loop is fed from one of the two main loops as determined by the position of its isolation valves. Pumps 7 and 8 are associated with the loop. Pump 7 controls have been relocated to I/O Enclosure #2 as noted earlier. Pump 8 has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1. The supply temperature sensor is defective.

The zone 3 loop is fed from one of the two main loops as determined by the position of its isolation valves. Pumps 9 and 10 are associated with the loop. There is no VFD installed on this loop and each has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1. The supply temperature sensor is defective.

The zone 4 loop is fed from one of the two main loops as determined by the position of its isolation valves. Pumps 15 and 16 are associated with the loop. Pump 15 controls have been relocated to I/O Enclosure #2 as noted earlier. Pump 16 has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1. The supply temperature sensor is defective.

The zone 5 loop is a reheat loop fed only from the main heating loop. It has a single digitally controlled three way bypass valve that regulates flow in the loop. The valve was found to be inoperative during the survey, but I believe has since been repaired. Pumps 3 and 4 are associated with the loop. Pump 3 controls have been relocated to I/O Enclosure #2 as noted earlier. Pump 4 has a pump start/stop RO and a pump status DI in I/O Enclosure #1. The loop has a supply and return temperature sensor also in I/O Enclosure #1.

Mechanical Penthouse 5

Mechanical Penthouse 5 houses air handlers AH1 through AH7 and exhaust fans EF1 through EF3. It is also the location of I/O Enclosures 3, 4, 5, & 6. The I/O Enclosures are as described in the table above and the I/O for the air handlers are as shown in Appendix 2. The following additional I/O points are located in I/O Enclosure #3:

Relay Outputs	Digital Inputs	Anaolog Inputs
EF 3	EF 3 Proof	OAT
EF 11 (overridden on)	EF 15 Proof	2nd flr N Rm 221 Temp (302°F)

EF 14 — 3rd flr NW Rm 311 Temp (-58°F)
EF 15
EF 16 (overridden on)
EF 17
AH2 D/N
AH3 D/N
AH4 D/N
AH5 D/N
AH6 D/N
AH7 D/N

The purpose of the D/N relay outputs is not clear.

AH 1

This air handler is a make-up air unit for the kitchen. It is connected to the Zone 1 hydronic loop. The design intent is that the unit will run only when the kitchen exhaust fans run. A DI driven by the manual fan controls in the kitchen enables the air handler and opens the outside air damper. The face-and-bypass dampers modulate to maintain space temperature. The bypass damper modulates to maintain supply duct static pressure. There are two exhaust fans and both are shown to be two-speed devices, so air flow can vary substantially.

I found the fan operating with the system calling for it to be off. I could not determine how it is being held on. The fan proof input reads on with the fan operating, but I could not shut the fan off to test it in the off condition. The pneumatic control line is not connected to the hydronic valve operator. The valve appears to be open all the time and supply air temperature was 102°F. It has been re-piped eliminating the bypass. The bypass damper operates. The face-and-bypass dampers are disconnected from the actuator, but the actuator works. The outside air damper is closed and would not open regardless of kitchen exhaust fan status. The Clogged Filter DI is on.

All AI and DI display appropriate values except as noted.

AH 2

This air handler serves the cafeteria. It is connected to the Zone 2 hydronic loop. The design intent is that AH2, EF 3, and EF 15 will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The bypass damper modulates to maintain supply duct static pressure. The hydronic valve modulates to maintain space temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

I found the fan operating with the system calling for it to be off. I could not determine how it is being held on. The fan proof input reads on with the fan operating, but I could not shut the fan off to test it in the off condition. I noted the smoke detector DI is on. This would hold the fan off, so it has likely been jumped out and operates all the time. The hydronic valve operates. It has been re-piped eliminating the bypass. The bypass damper operates but the switch on the P/E device controlling it is in the manual position. The EA/OA/RA dampers all operate but the switch on the P/E device controlling it is in the manual position.

The programming logic cannot be viewed so it is not clear that the schedule is properly logically linked with AH2 and the exhaust fans. Based on the operating conditions, it appears that it is not.

All AI and DI display appropriate values except as noted.

AH 3

This air handler serves the "4th Floor Interior Labs". It is connected to the Zone 2 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

The supply air fan, return air fan, and associated DIs work properly. The hydronic valve operates. It has been re-piped eliminating the bypass. The EA/OA/RA dampers all barely move when operated. The belt guard is off and should be re-installed.

All AI and DI display appropriate values except as noted.

AH 4

This air handler serves the "2nd and 3rd Floor Interior". It is connected to the Zone 2 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

The supply air fan, return air fan, and associated DIs work properly. The hydronic valve operates. It has been re-piped eliminating the bypass. The EA/OA/RA dampers all move when operated, but only over about 50% of the indicated stroke. The belts are loose and need adjustment.

All AI and DI display appropriate values except as noted.

AH 5

This air handler serves the "2nd, 3rd, and 4th Floor Perimeter". It is connected to the Zone 1 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

The supply air fan, return air fan, and associated DIs work properly. The hydronic valve operates, but does not seem to move as much as the others. It has been re-piped eliminating the bypass. The OA/RA dampers both barely move when operated. I could not locate an EA damper. The valve output is at 0% with a supply air temperature of 112°F and a space temperature of 82°F. I suspect a problem with the valve or the valve programming logic.

All AI and DI display appropriate values except as noted.

AH 6

This air handler serves the "1st through 4th Floor Interior". It is connected to the Zone 2 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

This air handler is controlled by an Excel 100 (apparently operating) device and could not be overridden for testing. The hydronic valve has been re-piped eliminating the bypass. The switch on the P/E device controlling the EA/OA/RA dampers is in the manual position.

AH 7

This air handler serves the "Interior Classrooms". It is connected to the Zone 2 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

This air handler is controlled by an Excel 100 device (apparently operating) and could not be overridden for testing. The hydronic valve has been re-piped eliminating the bypass.

EF 1

This fan was never observed to run regardless of the Kitchen fan switch position. The electrical disconnect is marked "not used".

EF 2

This fan appears to be controlled by the manual switches in the Kitchen.

EF 3

This fan was not operating during the survey but on a later visit was reset at the electrical disconnect and now appears to be operating on the schedule as intended.

Mechanical Dog House

Mechanical Dog House houses air handlers AH19 and AH20. It is also the location of I/O Enclosure #7. The I/O Enclosure is as described in the table above and the I/O for the air handlers are as shown in Appendix 2. One of the two Excel 100 controllers is inoperative. The other looks like it's running. I did not determine the I/O points connected to the dead controller. The following additional I/O points are located in I/O Enclosure #7:

Relay Outputs	Digital Inputs	Anaolog Inputs
EF 4 Low Speed	EF 4 Proof	Dog House Temperature
EF 4 High Speed		1st flr S Perimeter Temp
EF 8 Low Speed		2nd flr S Perimeter Temp

EF 8 High Speed
EF 5
EF 6
EF 9
EF 10
AH 20 Booster Pump

3rd flr S Perimeter Temp
4th flr S Perimeter Temp

AH 19

This air handler serves the "2nd Floor East Wing". It is connected to the Zone 1A hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain discharge air temperature reset by the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

This air handler is controlled by an Excel 100 device and could not be overridden for testing. The hydronic valve has been re-piped eliminating the bypass. The switch on the P/E device controlling the valve is in the manual position.

I noted no hot water being supplied to the air handler during the survey. The valve is apparently manually open. This was reported to the building staff.

AH 20

This air handler serves the "1st, 3rd, and 4th Floor Corridors E and W Wings". It is connected to the Zone 4 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain discharge air temperature reset by the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

This air handler is controlled by an Excel 100 device and could not be overridden for testing. The hydronic valve has been re-piped eliminating the bypass. The switch on the P/E device controlling the valve is in the manual position. An additional circulator pump has been installed in the hydronic piping to this unit. The pump is operating. It is labeled AH 19 Heating Pump on the plans.

I noted no hot water being supplied to the air handler during the survey. The valve is apparently manually open. This was reported to the building staff.

Mechanical Room Behind Room 419

The mechanical room located in the closet of Room 419 houses air handler AH18. It is also the location of I/O Enclosure #8. The I/O Enclosure is as described in the table above and the I/O for the air handler are as shown in Appendix 2. The following additional I/O points are located in I/O Enclosure #8:

Relay Outputs
Zone 3 NE D/N
Zone 4 NE D/N

The purpose of the D/N relay outputs is not clear.

AH 18

This air handler serves the "Lobby". It is connected to the Zone 3 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve and dampers modulate to maintain discharge air temperature reset by the average of space temperature and return air temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate.

This air handler is controlled by an Excel 50 device and could not be overridden for testing. The excel 50 does not appear to be powered. The hydronic valve has been re-piped eliminating the bypass. The switch on the P/E device controlling the EA/OA/RA dampers is in the manual position.

Oddly, a bypass has been piped around the hydronic valve (see photo 40). The hand valve in the bypass line is open providing hot or chilled water to the air handler coil 24/7. The belt has been removed from the unit and should be replaced.

Guidance Area Closet

The mechanical closet in the Guidance Area houses air handler AH8. It is also the location of I/O Enclosure 9. The I/O Enclosures are as described in the table above and the I/O for the air handlers are as shown in Appendix 2. AH8 is controlled by the Excel 500 controller located in I/O Enclosure 1 in the Boiler Room. I/O Enclosure 9 contains only the P/E devices for AH8 and no additional I/O points. None of the P/E devices are powered.

AH 8

This air handler serves the "Interior Admin Offices". The hydronic loop serving the unit is not identified. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. There are two hydronic valves at the unit. One feeds a heating coil, the other a cooling coil. A set of dampers with pneumatic actuators are intended to determine the coil in use, however there is no independent control for the dampers and it is difficult to see how these dampers could possibly work at all based on their position in the duct work. Once the operating coil is selected, the hydronic valve and dampers modulate to maintain the space temperature. The exhaust air (EA), outdoor air (OA), and return air (RA) dampers are linked pneumatically and operated by a single P/E device. The design intent for control of these dampers is not clear except that they will be used for free cooling when conditions are appropriate. There is an additional OA Minimum Damper relay output point assigned to the unit. I could not locate an additional damper or any controls for one.

None of the outputs, analog or digital, operate. As noted above, there is no power to the P/E devices for the unit. The fan is somehow operating while the BCS calls for it to be off. The heat valve is open. It and the cooling valve have been re-piped eliminating the bypass.

All AI and DI display appropriate values except as noted.

Custodians Closet in Gymnasium

The Custodians Closet just off the Gymnasium is the location of I/O Enclosure 10. The four Gymnasium air handlers AH 13, 14, 15, and 16 are located in the Gymnasium at ceiling level. The I/O Enclosure is as described in the table above and the I/O for the air handlers are as shown in Appendix 2. The following additional I/O points are located in I/O Enclosure #10:

Relay Outputs	Digital Inputs
EF 7	EF 7 Proof

AH 13, 14, 15, and 16

These four air handlers all serve the "Gymnasium". They are connected to the Zone 1 hydronic loop. The design intent is not clear as the Sequence of Operation on the plans is obviously copied from the units in Mechanical Penthouse 3 and not appropriate for the Gymnasium units. I would presume that the units would operate based on a TOD schedule. These units have no return fans but need to be logically connected with EF 7. The four units share a common space temperature sensor and CO2 sensor in the controlled space. Each unit has a pneumatically operated hydronic valve, an OA damper, and an RA damper. The dampers are mechanically linked and operated by a single pneumatic actuator.

These air handlers are controlled by two Excel 100 (apparently operating) devices and could not be overridden for testing. The hydronic valves have not been re-piped like the other air handler valves in the building. The switches on the P/E devices controlling the valves and dampers are all in the automatic positions.

The only difference noted between the units is that the points listing on the plans does not show MA temperature sensors for AH 13 and 14.

Mechanical Penthouse 3

Mechanical Penthouse 3 houses air handlers AH9, AH10, AH11, AH12, and AH17 and exhaust fans EF 7 and EF 12. It is also the location of I/O Enclosures 11 & 12. The I/O Enclosures are as described in the table above and the I/O for the air handlers are as shown in Appendix 2. There are no additional I/O points located in either enclosure.

AH 9

This air handler serves the "Boys Locker Room". It is connected to the Zone 1 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve modulates to maintain a discharge air temperature that is reset on space temperature. The pneumatically linked, two-position Minimum OA and Minimum EA dampers are open in heating mode and cooling mode, but not in free cooling mode. The plans show a heat pipe energy recovery system in the two minimum air ducts. The RA damper opens wide for warm up and then assumes a fixed position. The exhaust air (EA) and outdoor air (OA) dampers are linked pneumatically and operated by a single P/E device. They are normally held closed and open only for free cooling when conditions are appropriate.

I found both the supply fan and return fan off during my survey. Once it was determined that the freeze stat was tripped and that the device requires a manual reset, I reset it and the unit came right on.

The supply air fan, return air fan, and associated DIs work properly. The hydronic valve operates. It has been re-piped eliminating the bypass. The Minimum OA and Minimum EA dampers work properly. The RA damper works properly. When the OA/EA Dampers are operated the EA damper operates, but the OA damper does not.

The CO2 sensor reads an impossibly low 130 ppm. All AI and DI display appropriate values except as noted.

AH 10

This air handler serves the "Girls Locker Room". It is connected to the Zone 1 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve modulates to maintain a discharge air temperature that is reset on space temperature. The pneumatically linked, two-position Minimum OA and Minimum EA dampers are open in heating mode and cooling mode, but not in free cooling mode. The plans show a heat pipe energy recovery system in the two minimum air ducts. The RA damper opens wide for warm up and then assumes a fixed position. The exhaust air (EA) and outdoor air (OA) dampers are linked pneumatically and operated by a single P/E device. They are normally held closed and open only for free cooling when conditions are appropriate.

The supply air fan, return air fan, and associated DIs work properly. The hydronic valve operates. It has been re-piped eliminating the bypass. The Minimum OA and Minimum EA dampers work properly. The RA damper works properly. The OA/EA Dampers work properly.

All AI and DI display appropriate values except as noted.

AH 11

This air handler serves the "Music Area". It is connected to the Zone 3 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. There are two hydronic valves at the unit. One feeds a heating coil, the other a cooling coil. A set of dampers with pneumatic actuators are intended to determine the coil in use, however there is no independent control for the dampers and it is difficult to see how these dampers could possibly work at all based on their position in the duct work. Once the operating coil is selected, the hydronic valve modulates to maintain the discharge air temperature reset on space temperature. The pneumatically linked, two-position Minimum OA and Minimum EA dampers are open in heating mode and cooling mode, but not in free cooling mode. The plans show a heat pipe energy recovery system in the two minimum air ducts. The RA damper opens wide for warm up and then assumes a fixed position. The exhaust air (EA) and outdoor air (OA) dampers are linked pneumatically and operated by a single P/E device. They are normally held closed and open only for free cooling when conditions are appropriate.

The supply air fan and the associated DI work properly. The return air fan would not operate and the DI could not be verified. The two hydronic valves operate. They have been re-piped eliminating the bypass. The Minimum OA and Minimum EA dampers do not operate. The RA damper works properly. When the OA/EA Dampers are operated the EA damper operates, but the OA damper barely moves.

All AI and DI display appropriate values except as noted.

AH 12

This air handler serves the "Auditorium". It is connected to the Zone 3 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve modulates to maintain a discharge air temperature that is reset on space temperature. The pneumatically linked, two-position Minimum OA and Minimum EA dampers are open in heating mode and cooling mode, but not in free cooling mode. The plans show a heat pipe energy recovery system in the two minimum air ducts. The RA damper opens wide for warm up and then assumes a fixed position. The exhaust air (EA) and outdoor air (OA) dampers

are linked pneumatically and operated by a single P/E device. They are normally held closed and open only for free cooling when conditions are appropriate.

I found the supply fan off and the return fan running during my survey. I noted the smoke detector DI to be on. A defective smoke detector would hold the supply fan off, but the return fan should also be off. The control circuit should be checked electrically to determine how the return fan continues to operate. I could not verify the associated DIs.

The hydronic valve operates. It has been re-piped eliminating the bypass. The Minimum OA and Minimum EA dampers work properly. The RA damper operates but does not move through its full stroke. When the OA/EA Dampers are operated the EA damper operates, but the OA damper does not.

The CO2 sensor reads an impossibly low 132 ppm. The AH12 SA Status and AH17 SA Status DI point assignments are reversed from the plans. All AI and DI display appropriate values except as noted.

AH 17

This air handler serves the "Little Theater". It is connected to the Zone 3 hydronic loop. The design intent is that the unit will operate based on a TOD schedule. The return air fan is controlled through an auxiliary contact on the supply fan contactor. The hydronic valve modulates to maintain a discharge air temperature that is reset on space temperature. The pneumatically linked, two-position Minimum OA and Minimum EA dampers are open in heating mode and cooling mode, but not in free cooling mode. The plans show a heat pipe energy recovery system in the two minimum air ducts. The RA damper opens wide for warm up and then assumes a fixed position. The exhaust air (EA) and outdoor air (OA) dampers are linked pneumatically and operated by a single P/E device. They are normally held closed and open only for free cooling when conditions are appropriate.

The supply air fan and the associated DI work properly. The return fan did not shut down with the supply fan and must not be wired as indicated on the plans. The hydronic valve operates, but the switch on the P/E device is in the manual position with the valve being held open. It has been re-piped eliminating the bypass. The Minimum OA and Minimum EA dampers do not operate. The RA damper works properly. When the OA/EA Dampers are operated the EA damper operates, but the OA damper does not.

All AI and DI display appropriate values except as noted.

EF 7

While the fan is physically located in Mechanical Penthouse 3, it is controlled from the Excel 100 controller in I/O Enclosure #10. It was running during the survey, but could not be tested.

EF 12

This is a very small exhaust fan located in Mechanical Penthouse 3 but not controlled by the BCS. I only mention it here because I note the motor operating with the belt off.

New VFDs Being Installed

During the course of the survey new VFDs were observed throughout the building at various stages of installation. A meeting was held with the company performing the installation in order for both parties to better understand the needs and expectations of the other. The new VFDs will not be incorporated into the existing BCS, but are expected to tie into and work seamlessly with the new system when it is installed.

The Boiler Room has 14 new VFDs mounted on the wall, one for each of the two main heating loop pumps and the twelve zone loop pumps in the room. During our meeting, the contractor agreed to add 3 additional VFDs for the main chilled water loop pumps.

Mechanical Penthouse 5 has 15 new VFDs mounted on the wall, one for each of the seven supply fans, one for each of the six return fans, and one for each of two exhaust fans in the room.

Mechanical Penthouse 3 has 11 new VFDs mounted on the wall just outside the room, one for each of the five supply fans, one for each of the five return fans, and one for the exhaust fan in the room.

The 4th floor east wing electrical room has 2 new VFDs mounted on the wall for the AH 20 supply and return fans in the Mechanical Dog House above. The installing contractor indicated that the supply and return fan motors for AH 19 are too small to make a VFD cost effective.

The mechanical room in the closet of Room 419 has 2 new VFDs mounted on the wall for the AH 18 supply and return fans.

The Guidance Area closet has 2 new VFDs installed for the AH 8 supply and return fans.

Table 1 - I/O Requirements by Physical Location

Location	Device	Modbus Connection	Analog Input	Digital Input	Analog Output	Digital Output
Boiler Room						
	Boiler	1				
	Domestic Hot Water					2
	Chiller			3	1	1
	Main Chilled Water Loop	3	2	3		
	Main Hot Water Loop	2	2	2		
	Zone Loops	12	12	12	1	1
	Combustion Air Damper			1		1
	Steam Generator			1		1
	Low Air Pressure			1		
	Summer/Winter Switch			1		
	Kitchen Space Temp		1			
	Air Handler 8		4	5		
	Boiler Room Subtotal	18	21	29	2	6
Penthouse 5						
	Air Handler 1	1	1	4	2	1
	Air Handler 2	2	5	5	2	
	Air Handler 3	2	5	5	2	
	Air Handler 4	2	5	5	2	
	Air Handler 5	2	5	5	2	
	Air Handler 6	2	5	5	2	
	Air Handler 7	2	5	5	2	
	EF 1	1				
	EF 3	1		1		
	EF 11					1
	EF 14					1
	EF 15			1		1
	EF 16					1
	EF 17					1
	OAT & OARH		2			
	Miscellaneous		2			6
	Penthouse 5 Subtotal	15	35	36	14	12
Dog House						
	Air Handler 19		5	5	2	1
	Air Handler 20	2	5	5	2	1
	EF 4			1		2
	EF 5					1
	EF 6					1
	EF 8					2
	EF 9					1
	EF 10					1
	Dog House Space Temp		1			
	Miscellaneous		4			4
	Dog House Subtotal	2	15	11	4	14
Room 419 Closet						
	Air Handler 18	2	5	5	2	
	Miscellaneous					2
	Room 419 Closet Subtotal	2	5	5	2	2
Penthouse 3						
	Air Handler 9	2	5	5	3	1
	Air Handler 10	2	5	5	3	1
	Air Handler 11	2	7	5	4	3
	Air Handler 12	2	5	5	3	1
	Air Handler 17	2	5	5	3	1
	EF 7	1		1		
	Penthouse 3 Subtotal	11	27	26	16	7
Guidance Closet						
	Air Handler 8	2	3		3	3
	Guidance Closet Subtotal	2	3	0	3	3
Gymnasium Closet						
	Air Handler 13		3	4	2	1
	Air Handler 14		3	4	2	1
	Air Handler 15		3	4	2	1
	Air Handler 16		3	4	2	1
	Gymnasium Space Temp		1			
	Gymnasium CO2		1			
	Gymnasium Closet Subtotal	0	14	16	8	4
	System Total	50	120	123	49	48

Table 2 - Air Handler Specifications

Air Handler	Supply Fan			Minimum Outside Air (CFM)	Cooling Discharge Temp (°F)	Heating Discharge Temp (°F)	Return Fan		
	Flow Rate (CFM)	Total SP (in H2O)	External SP (In H2O)				ID Tag	Flow Rate (CFM)	External SP (In H2O)
1	16,200	1.10	0.55	6,200 min	-	72	-	-	
				16,200 max					
2	13,200	3.00	1.00	6,600	56	72	2	7,000	0.75
3	16,100	1.75	0.90	1,610 sum	56	72	3	14,870	0.75
				1,932 win					
4	18,500	4.25	3.30	1,850 sum	56	72	4	16,500	0.75
				3,145 win					
5	26,740	4.50	3.50	5,348	56	72	5	22,350	0.75
6	18,640	4.50	3.50	2,050 sum	56	72	6	17,950	0.75
				4,473 win					
7	15,550	4.25	3.25	1,555 sum	56	72	7	13,385	1.00
				3,110 win					
8	3,550	2.25	1.40	710	56	72	8	3,150	1.00
9	7,200	2.25	1.50	3,600	-	70	9	7,950	1.25
10	6,400	2.25	1.50	3,200	-	70	10	8,500	1.25
11	3,700	2.50	1.10	555 sum	56	72	11	3,400	0.62
				1,221 win					
12	9,500	2.35	1.25	3,705	56	83	12	9,030	0.50
13	7,000	1.00	0.40	3,500	-	86	-	-	
14	7,000	1.00	0.40	3,500	-	86	-	-	
15	7,000	1.00	0.40	3,500	-	86	-	-	
16	7,000	1.00	0.40	3,500	-	86	-	-	
17	3,500	2.25	1.25	490	56	76	13	3,500	0.50
18	9,000	4.50	3.20	1,350	56	90	14	7,950	0.50
19	1,800	2.00	0.70	594	56	72	19	1,200	0.50
20	4,700	2.00	0.70	2,350	56	75	20	2,300	0.50
EF 1	10,000		0.75						
EF 3	5,100		0.75						
EF 7	9,100		0.75						

City of Quincy
North Quincy High School
Functional Specification and Scope of Work for Building Control System Replacement
June 14, 2014

Introduction

The City of Quincy intends to replace the existing Building Control System (BCS) at the North Quincy High School. This document is intended to specify the system to be installed, identify the input and output points required for each piece of equipment controlled by the new system, identify auxiliary control devices to be replaced or added, and specify the programming that should be applied to each piece of controlled equipment.

The new BCS will replace an existing Honeywell Excel system. That system has been recently inspected with the details of the inspection and photographs of existing components included in a report to the City of Quincy dated 01/28/14. Extensive system detail will not be repeated in this document. Bidders should be familiar with the content of that document before providing bids for the new system.

Generally, the existing BCS is a distributed DDC system with a combination of electronic and pneumatic/electronic (P/E) end devices controlling the central boiler plant, central chiller plant, domestic hot water plant, hydronic loop pumps, hydronic loop valves, and 20 air handlers. Numerous terminal heating/reheat coils and perimeter unit ventilators are essentially stand-alone devices controlled by local pneumatic thermostats and will not be part of the BCS replacement project.

The BCS replacement project will include the removal and replacement of the Honeywell Excel system and most of the associated input devices as defined in this document. It will also include the removal of all of the associated pneumatic control devices and replacement of those devices with electronic controls. The compressed air system in the building will remain in service to provide operational power for the terminal heating/reheat coils and perimeter unit ventilators. All unused control equipment and devices shall be removed prior to final payment.

All work performed shall be incompliance with applicable codes and regulations.

Bid packages shall include cut sheets for all proposed control equipment and interface devices. Prior to beginning work, the successful bidder shall provide installation drawings and a detailed points list for approval by the City of Quincy. Prior to beginning programming, the successful bidder shall review all programming strategies and graphics for approval with the City of Quincy.

System Overview and Configuration

The BCS shall be a distributed digital control system (DDC) capable of controlling all the equipment listed in this document and performing the control strategies detailed below. Acceptable manufacturers for the BCS are Computrols, Honeywell, and Siemens. In the case of Honeywell and Siemens, the system shall

be Tridium based using the Niagara Framework. Regardless of manufacturer, the BCS shall be capable of Modbus communication with the new boiler system in place in the Boiler Room and the new Delta VFDs installed throughout the building. The Modbus connections shall provide full functionality of the controlled devices. All peer-to-peer BCS communications shall use the BACnet communications protocol.

The system supplier shall provide an appropriately configured workstation in the Maintenance Office and connected to the building IT network. The workstation will provide a graphical user interface to the BCS. The supplier shall program schematically accurate graphical representations of all the equipment controlled by the system displaying all relevant input, output, set point, and calculated data. All set point data shall be displayed in a manner distinguishing it from other (input, output, and calculated) data and be user-editable from the graphical screen. The user shall be allowed the capability of overriding all input and output points directly from the graphical representations. Overridden input and output points shall be displayed in a manner distinguishing them as such.

It is anticipated that the new BCS will be distributed in the same manner as the existing controls and that the installer will, to the greatest extent possible, reuse the existing I/O enclosures to house the new control components. Any new control enclosures as well as all power supplies, transformers, fusing, wiring, wire ways, and ancillary devices shall be included in the quoted price.

In the sections below, the I/O requirements for each piece of controlled equipment are detailed. Table 1 at the end of the document summarizes the I/O requirements by physical location in the building.

Boilers

The new modular boiler shall be connected by Modbus to the new BCS. The two existing older boilers shall be removed from the BCS with all inputs and outputs removed back to the individual boiler control sections. These boilers will be operated manually by the maintenance staff.

The new boiler will be controlled by the factory installed controls on the boiler. The new BCS shall provide a boiler enable signal to the factory controls when the Summer/Winter Switch is in the Winter position and based on a user-adjustable outside air temperature lockout. The boiler graphic shall display the status of each boiler module, relevant water temperatures, and relevant set points from the factory controls via the Modbus connection.

Domestic Hot Water Heaters

The two Domestic Hot Water Enable relay output points shall be relocated to appropriate I/O points on the new BCS. These two points shall each be programmed to operate on a Time-of-Day schedule. The building operator will adjust the schedules to activate the desired unit. Once enabled, each unit shall operate on the existing factory- or field-wired system controls.

Chillers

The inoperative chiller shall not be connected to the new BCS. Relevant control wiring shall be removed from the existing BCS, appropriately tagged, and abandoned in the control enclosure.

The existing Chiller Enable relay output point; Chiller Valve analog output point; and the Chiller Status, Chiller Alarm, and Chiller Valve Proof digital inputs for the operational chiller shall be relocated to appropriate I/O points on the new BCS. The chiller graphic shall display all of the noted I/O.

The Chiller Valve shall be programmed to open fully when the Summer/Winter switch is in the Summer position and close fully when the switch is in the Winter position. The Chiller Enable output shall be programmed to operate based on a Time-of-Day schedule and a user-adjustable outside air temperature lockout.

Hydronic Loops

The three main chilled water loop pumps, the two main hot water loop pumps, and the twelve zone loop pumps have each had a VFD installed recently. Each loop has also been equipped with a differential pressure transducer wired back to the VFD. Each of the VFDs will be connected to the new BCS via Modbus. The existing pump start/stop relay output points and pump status digital input points shall be removed.

The existing Zone 5 Valve analog output point shall be relocated to an appropriate I/O point on the new BCS. The existing Zone 1, 1A, 2, 3, and 4 S/W Valve relay output points shall be relocated to a single relay output point on the new BCS. If necessary, a multi-pole isolation relay shall be provided to keep the feeds to each pair of valves separated.

New temperature probes shall be installed and appropriately terminated on the new BCS to monitor Main Chilled Water Supply and Return Temperatures, Main Hot Water Supply and Return Temperatures, Zone 1 Supply and Return Temperatures, Zone 1A Supply and Return Temperatures, Zone 2 Supply and Return Temperatures, Zone 3 Supply and Return Temperatures, Zone 4 Supply and Return Temperatures, and Zone 5 Supply and Return Temperatures.

A single pole, single throw toggle switch shall be installed at each of the three chilled water pumps and wired to a digital input point on the new BCS. They shall be oriented vertically such that up is on and labeled to indicate the on/off positions and the pump to which they are logically connected. These switches will be used by the system operator as a manual input to the BCS to enable/disable the desired pumps.

A single pole, double throw toggle switch shall be installed at the pair of Main Heat Loop Pumps and at each pair of Zone Loop Pumps. For the two sets of overhead pumps, the switches shall be located at an easily accessible height in the area below the pumps. Each switch shall be wired to two digital inputs on the new BCS. They shall be oriented horizontally and labeled to indicate the two pumps and the zone to which they are logically connected. The left position shall correspond with the left-most pump in the pair, the right position shall correspond with the right-most pump in the pair, and the center position shall be used to indicate both pumps on. These switches will be used by the system operator as a manual input to the BCS to enable/disable the desired pumps.

Each pump shall be programmed with a user-adjustable minimum and maximum operating speed.

A graphic depicting a schematic plan of the loops shall display all loop temperatures; all valve positions; and the status, speed, and motor current for each pump.
Any time the Summer/Winter switch position is changed, all pumps in the system shall immediately ramp to minimum speed and then perform a soft stop. They shall remain off for a user adjustable time period, initially set to 5 minutes, allowing the valves to move to the correct position for the new switch setting. Once the time delay has elapsed, the desired pumps (as defined by the input switches) shall soft start, ramp to the programmed minimum operating speed, and then follow the appropriate control sequence as defined below.

Main Loops

When the Summer/Winter Switch is in the summer position the Zone 1, 1A, 2, 3, and 4 S/W Valves shall move to the summer position connecting the zone loops to the main chilled water loop. The Zone 5 Valve shall fully close. The Main Hot Water Loop Pumps shall both remain off regardless of the toggle switch position. The system operator will select which of the three main chilled water loop pumps are to operate using the manual toggle switches. The BCS shall operate the enabled pump VFD(s), through the Modbus connection, over the operating range established by the programmed minimum speed/maximum speed parameters. The control algorithm setting pump speed shall be a PID loop using the Chilled Water Loop Return Temperature as the control input. The return water temperature set point shall be user adjustable. The loop differential pressure shall be monitored.

When the Summer/Winter Switch is in the winter position the Zone 1, 1A, 2, 3, and 4 S/W Valves shall move to the winter position connecting the zone loops to the main hot water loop. The Zone 5 Valve shall fully open. The Main Chilled Water Loop Pumps shall all remain off regardless of the toggle switch positions. The system operator will select which (or both) of the two main hot water loop pumps are to operate using the manual toggle switch. The BCS shall operate the enabled pump VFD(s), through the Modbus connection, over the operating range established by the programmed minimum speed/maximum speed parameters. The control algorithm setting pump speed shall be a PID loop using the Hot Water Loop Return Temperature as the control input. The return water temperature set point shall be user adjustable. The loop differential pressure shall be monitored.

Zone Loops

When the Summer/Winter Switch is in the summer position both Zone 5 Pumps shall remain off regardless of the toggle switch position. The system operator will select which (or both) of the two pumps in each of the other zone loops that are to operate using the manual toggle switches. The BCS shall operate the enabled zone loop pump VFD(s), through the Modbus connection, over the operating range established by the programmed minimum speed/maximum speed parameters. The control algorithm setting pump speed shall be a PID loop using the Loop Differential Pressure as the control input. The differential pressure set point shall be user adjustable. The zone loop supply and return temperatures shall be monitored.

When the Summer/Winter Switch is in the winter position the system operator will select which (or both) of the two pumps in each of zone loops are to operate using the manual toggle switches. The BCS shall operate the enabled zone loop pump VFD(s), through the Modbus connection, over the operating range established by the programmed minimum speed/maximum speed parameters. The control algorithm

setting pump speed shall be a PID loop using the Loop Differential Pressure as the control input. The differential pressure set point shall be user adjustable. The zone loop supply and return temperatures shall be monitored.

Other Boiler Room Equipment

Combustion Air Damper

The Combustion Air Damper relay output point and the Combustion Air Damper Proof digital input points shall be relocated to appropriate I/O points on the new BCS. The damper shall be opened whenever the boiler, the domestic hot water heater, or the steam generator are operated. Once opened, the BCS shall generate an operator alarm if the proof input does not indicate the damper to be opened. The status of the relay output and the digital input shall be displayed on the graphics for all boiler room combustion equipment.

Steam Generator

The Steam Generator Enable relay output point and the Steam Generator Call digital input points shall be relocated to appropriate I/O points on the new BCS. The steam generator shall be enabled on call for steam and disabled at all other times. The status of the relay output and the digital input shall be displayed on a graphic.

Low Air Pressure

The Low Air Pressure digital input shall be relocated to an appropriate I/O point on the new BCS. An operator alarm shall be generated when compressed air pressure falls below a user adjustable set point.

Summer/Winter Switch

The Summer/Winter Switch digital input shall be relocated to an appropriate I/O point on the new BCS. This digital input shall be used as an input to the control algorithms for various pieces of equipment throughout the building. The summer position it shall establish "Cooling Mode" and the winter position shall establish "Heating Mode". Its status shall be displayed on all relevant graphics.

Air Handlers (Add Alternate Price)

The twenty air handlers in the building are grouped below by common features and/or functions. Fan specifications to be used in setting fan speeds, damper positions, and programming each unit are included in Table 2 as an attachment to this document. Bids for the BCS replacement shall include the replacement of all the input and output devices noted below for each unit. All damper and valve actuators shall be manufactured by Belimo. An add alternate price for the replacement of the hydronic valves at each air handle coil shall also be provided: the valves shall be manufactured by Belimo.

Fifteen of the units have recently been equipped with a VFD on the supply and, where applicable, return fans. Each of the fifteen supply fans have also been fitted with a new static pressure transducer providing a duct static pressure input directly to the VFD. All of these VFDs will be connected to the new

BCS by Modbus. The VFDs will be programmed to perform soft start and soft stop based on the schedules described below. The supply fan VFDs shall be programmed to maintain supply duct static pressure at a user-adjustable set point. Table 2 will provide initial static pressure set points. Return fan VFDs will be programmed to operate at a user-adjustable RA Speed Offset from the respective supply fan speed. The initial RA Speed Offset for each return fan shall be set to -5.0%.

The five air handlers that have not been fitted with VFDs will continue to use the existing start/stop controls for the supply fans and interlocked return fans.

Each air handler shall be programmed with a unique Enable/Disable schedule, a unique Occupied/Unoccupied schedule, and a common All Units Enable/Disable schedule. All three schedules shall be adjustable from the graphical user interface. The common All Units Enable/Disable schedule will set all units to enabled 24/7 and will provide a simple way for the system operator to shut all twenty air handlers down with a single schedule change. The individual Enable/Disable schedules will be used to program individual units on/off by time-of-day. Each unit will be programmed with at least one disable event per week. Any unit that is normally operated 24/7 shall have a 5 minute off-time period scheduled once each week at a time determined by the City of Quincy. The individual Occupied/Unoccupied schedules will be used to establish the heating or cooling set point for each unit as detailed below.

Whenever an air handler is disabled the hydronic valve shall close and the supply and return (where applicable) fans shall be stopped. Once the fan proof input points have indicated both fans to be off, all the dampers associated with the air handler shall be exercised over the full range of operation ending with the outside air intake and exhaust dampers in the full closed position.

When an air handler is enabled, the supply and, where individually controlled, return fans shall be started or brought to operating speed. Failure to activate the respective fan proof input(s) shall generate an operator alarm. Once the fan proof input(s) have verified proper fan operation the appropriate heating or cooling sequence will be initiated based on the position of the Summer/Winter Switch.

In the cooling mode the hydronic valve will open and modulate to achieve the user-adjustable cooling discharge temperature set point as indicated in Table 2. When the discharge air temperature set point has been reached the outside air/exhaust air/return air dampers shall modulate to the user-adjustable minimum outside air position indicated in Table 2. Once the dampers are opened the Occupied/Unoccupied schedule will determine the user-adjustable air handler set point temperature. The control input shall be determined by one of three user-selected, mutually exclusive, push buttons on the graphic for the unit (space temperature, return air temperature, or average of space and return air temperature.) The hydronic valve shall then modulate to maintain set point.

Free cooling shall be used in the cooling mode when the proper outdoor air conditions are met. Free cooling shall be initiated when outside air relative humidity is below the user-adjustable OARH Set Point and outside air temperature is below return air temperature minus a user-adjustable RA Offset. When free cooling is initiated the hydronic valve shall be modulated closed and the outside air/exhaust air/return air dampers shall modulate to maintain discharge air temperature set point. Once the dampers have opened fully, the hydronic valve shall reopen to provide additional cooling as required.

In the heating mode the hydronic valve will open and modulate to achieve the user-adjustable heating discharge temperature set point as indicated in Table 2. When the discharge air temperature set point has been reached the outside air/exhaust air/return air dampers shall modulate to the user-adjustable minimum outside air position indicated in Table 2. Once the dampers are opened the Occupied/Unoccupied schedule will determine the user-adjustable air handler set point temperature. The control input shall be determined by one of three user-selected, mutually exclusive, push buttons on the graphic for the unit (space temperature, return air temperature, or average of space and return air temperature.) The hydronic valve shall then modulate to maintain set point.

While in the heating mode the mixed air temperature shall be continuously monitored to avoid coil freeze-ups. When mixed air temperature falls below a user-adjustable set point and operator alarm shall be generated. If the digital freeze stat input is activated, the outside air/exhaust air/return air dampers shall modulate to close off the outside air, the hydronic valve shall open, the fan(s) shall stop, and an operator alarm shall be generated. The air handler shall remain in this state until the freeze stat is manually reset. A normal start-up sequence shall then be initiated.

In either heating or cooling modes the CO2 sensors shall be continuously monitored to maintain indoor CO2 levels below a user-adjustable set point. If the measured CO2 level exceeds the set point, an operator alarm shall be generated and the outside air/exhaust air/return air dampers shall modulate to open the outside air. When the CO2 level below the set point the dampers shall modulate to the minimum outdoor air position.

In the event that the digital smoke detector input is activated, regardless of operational mode, the fan(s) shall be stopped, the outside air/exhaust air/return air dampers shall modulate to close off the outside air, and an operator alarm shall be generated.

In the event that the digital clogged filter input is activated, regardless of operational mode, an operator alarm shall be generated.

AH 1

AH 1 is a make-up air unit for the kitchen. It is a 100% outdoor air system that operates only when the kitchen exhaust fan, EF 1, is operating. It is a heating-only unit equipped with a bypass damper and a set of face-and-bypass dampers. The supply fan is equipped with a new Delta VFD which will be connected by Modbus to the new BCS. The bypass damper shall be pinned in the fully closed position and the actuator shall be removed.

When the Summer/Winter Switch is in the summer position, the hydronic valve shall remain closed and the face-and-bypass dampers shall remain in the full bypass position. When EF 1 is started, the outdoor air damper shall open fully and the VFD shall soft start and modulate to maintain the user-adjustable supply duct static pressure. When EF 1 is stopped, the VFD shall soft stop and the outside air damper shall fully close.

When the Summer/Winter Switch is in the winter position and the air handler is idle, the outside air damper shall be fully closed, the hydronic valve shall remain fully closed, and the face-and-bypass dampers shall remain in the full bypass position. When EF 1 is started, the hydronic valve shall open

fully, the face-and-bypass damper shall move to the full face position, the outdoor air damper shall open, and the supply fan VFD shall soft start and ramp to the user-adjustable minimum speed. When the discharge air temperature reaches the user-adjustable set point, the VFD shall modulate to maintain supply duct static pressure. The hydronic valve shall modulate to maintain discharge air temperature. The face-and-bypass dampers shall modulate to maintain kitchen space temperature. When EF 1 is stopped, the VFD shall soft stop and the air handler shall return to the idle conditions noted above.

The following shall be completed for this air handler:

1. The contractor shall connect the BCS Modbus to the supply fan VFD.
2. The existing supply fan RO point shall be removed.
3. A new, appropriately sized electronic analog actuator shall be provided at the hydronic valve and the face-and-bypass dampers.
4. A new, appropriately sized electronic digital actuator shall be provided at the outdoor air damper.
5. The hydronic valve actuator shall be wired to an analog output point on the new BCS.
6. The face-and-bypass damper actuator shall be wired to an analog output point on the new BCS.
7. The outside air digital damper actuator shall be wired to a relay output point on the new BCS.
8. The kitchen space temperature and supply air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.
9. The supply fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS.

AH 2, 3, 4, 5, 6, 7, 18, & 20

These air handlers are considered to be "standard". The following shall be completed for each of the air handlers noted above:

1. The contractor shall connect the BCS Modbus to the supply and return fan VFDs.
2. The existing supply fan RO point and the interlock between the supply and return fans shall be removed.
3. A new, appropriately sized electronic analog actuator shall be provided at the hydronic valve, outside air damper, exhaust air damper, and return air damper.
4. The hydronic valve actuator shall be wired to an analog output point on the new BCS.
5. The three damper actuators shall each be wired to a single analog output point on the new BCS.
6. The space temperature, supply air temperature, return air temperature, and mixed air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.

7. The return air CO2 sensor shall be replaced with a new device. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.
8. The supply fan proof, return fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS.
9. The bypass damper on Air Handler 2 shall be pinned in the closed position. The actuator shall be removed.
10. The booster pump relay output point at Air Handler 20 shall be relocated to an appropriate I/O point on the new BCS. The pump shall be programmed to operate any time the hydronic valve is opened.

AH 19

Air Handler 19 is like the "standard" air handlers detailed above except it does not have VFDs on the supply and return fans. The following shall be completed for this unit:

1. The existing supply fan RO point shall be relocated to an appropriate I/O point on the new BCS. The return fan shall remain interlocked with the supply fan.
2. A new, appropriately sized electronic analog actuator shall be provided at the hydronic valve, outside air damper, exhaust air damper, and return air damper.
3. The hydronic valve actuator shall be wired to an analog output point on the new BCS.
4. The three damper actuators shall each be wired to a single analog output point on the new BCS.
5. The space temperature, supply air temperature, return air temperature, and mixed air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.
6. The return air CO2 sensor shall be replaced with a new device. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.
7. The supply fan proof, return fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS.

AH 9, 10, 12, & 17

Air Handlers 9, 10, 12, and 17 are like the "standard" air handlers detailed above except that they each have a pair of digital dampers, one a minimum outdoor air and one a minimum exhaust air, and an independently controlled return air damper. The digital minimum OA and EA dampers are operated by a single output point and are opened whenever the unit operates and free cooling is not available. Under this operating condition the return air damper shall be set to a fixed, user-adjustable position and the linked, analog OA/EA dampers shall be closed. When free cooling conditions are met, the digital OA/EA dampers shall close and the analog OA/EA dampers shall modulate to provide cooling. The RA damper will be set to the same value as the analog OA/EA dampers. Note that the RA damper actuator must be installed to operate in the opposite manner of the OA/EA dampers. The following shall be completed for each of these units:

1. The contractor shall connect the BCS Modbus to the supply and return fan VFDs.
2. The existing supply fan RO point and the interlock between the supply and return fans shall be removed.
3. A new, appropriately sized electronic analog actuator shall be provided at the hydronic valve, outside air damper, exhaust air damper, and return air damper.
4. Two new, appropriately sized electronic digital actuators shall be provided at the minimum outdoor air and minimum exhaust air dampers.
5. The hydronic valve actuator shall be wired to an analog output point on the new BCS.
6. The OA and EA analog damper actuators shall both be wired to a single analog output point on the new BCS.
7. The RA analog damper actuator shall be wired to an analog output point on the new BCS.
8. The OA and EA digital damper actuators shall both be wired to a single relay output point on the new BCS.
9. The space temperature, supply air temperature, return air temperature, and mixed air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.
10. The return air CO2 sensor shall be replaced with a new device. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.
11. The supply fan proof, return fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS. Note that the existing supply fan proof inputs are reversed between AH 12 and AH 17.

AH 8

Air Handler 8 is like the "standard" air handlers detailed above except that it conditions three zones and has two stages of heating/cooling. Programming will be the same except that each zone temperature sensor shall be programmed to operate the respective zone damper and the hydronic valves shall be operated in two stages. The following shall be completed for this unit:

1. The contractor shall connect the BCS Modbus to the supply and return fan VFDs.
2. The existing supply fan RO point and the interlock between the supply and return fans shall be removed.
3. A new, appropriately sized electronic analog actuator shall be provided at each of the two hydronic valves, the outside air damper, exhaust air damper, and return air damper.
4. Three new, appropriately sized electronic digital actuators shall be provided at the zone dampers.
5. The two hydronic valve actuators shall each be wired to an analog output point on the new BCS.
6. The three analog damper actuators (OA/EA/RA) shall each be wired to a single analog output point on the new BCS.
7. The three digital zone damper actuators shall each be wired to a relay output point on the new BCS.
8. One new zone temperature sensor shall be installed in each of the three zones and wired to an analog input point on the new BCS. The average of the three zone space temperature

sensors shall replace the space temperature in the air handler control sequence detailed above.

9. The supply air temperature, return air temperature, and mixed air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.
10. The return air CO2 sensor shall be replaced with a new device. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.
11. The supply fan proof, return fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS.

AH 11

Air Handler 11 has the minimum OA/EA dampers and independently controlled RA damper described above for AH 9, 10, 12, & 17. It also has two zones of control and two hydronic valves, similar to AH 8. The control exceptions for AH 11 will be the same as those for these other two groups. The following shall be completed for this unit:

1. The contractor shall connect the BCS Modbus to the supply and return fan VFDs.
2. The existing supply fan RO point and the interlock between the supply and return fans shall be removed.
3. A new, appropriately sized electronic analog actuator shall be provided at each of the two hydronic valves, the outside air damper, exhaust air damper, and return air damper.
4. Two new, appropriately sized electronic digital actuators shall be provided at the minimum outdoor air and minimum exhaust air dampers.
5. Two new, appropriately sized electronic digital actuators shall be provided at the zone dampers.
6. The two hydronic valve actuators shall each be wired to an analog output point on the new BCS.
7. The OA and EA analog damper actuators shall both be wired to a single analog output point on the new BCS.
8. The RA analog damper actuator shall be wired to an analog output point on the new BCS.
9. The OA and EA digital damper actuators shall both be wired to a single relay output point on the new BCS.
10. The two digital zone damper actuators shall each be wired to a relay output point on the new BCS.
11. One new zone temperature sensor shall be installed in each of the two zones and wired to an analog input point on the new BCS. The average of the two zone space temperature sensors shall replace the space temperature in the air handler control sequence detailed above.
12. The space temperature, supply air temperature, return air temperature, and mixed air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.

13. The return air CO2 sensor shall be replaced with a new device. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.
14. The supply fan proof, return fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS.

AH 13, 14, 15, & 16

Air Handlers 13, 14, 15, and 16 are different from the "standard" air handlers in several respects. They are heating-only units, they have no exhaust air ducted from the unit, they have a single analog damper actuator linking the OA and RA dampers, they have no RA fans, the hydronic valves have not been converted from three-way to two-way operation, and no VFDs have been installed on the supply fans. When the Summer/Winter Switch is in the winter position, they shall be controlled in the same manner as the "standard" air handlers without VFDs. When the Summer/Winter switch is in the summer position, the hydronic valves shall remain in the full bypass position and the units shall circulate unconditioned air mixed with minimum outside air. When conditions are appropriate, the free cooling strategy shall be implemented. The following shall be completed for each of these units:

1. The existing supply fan RO point shall be relocated to an appropriate I/O point on the new BCS.
2. A new, appropriately sized electronic analog actuator shall be provided at the hydronic valve and the OA/RA damper.
3. The hydronic valve actuator shall be wired to an analog output point on the new BCS.
4. The damper actuator shall be wired to an analog output point on the new BCS.
5. The supply air temperature, return air temperature, and mixed air temperature sensors shall be replaced with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.
6. The supply fan proof, smoke detector, freeze stat, and clogged filter digital input points shall be relocated to appropriate I/O points on the new BCS.
7. The single (not one for each unit) Gymnasium space temperature sensor shall be replaced with a new sensor. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.
8. The single (not one for each unit) Gymnasium CO2 sensor shall be replaced with a new device. If appropriate, the existing input wire may be reused by relocating it to an input point on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and this device.

Other Mechanical Penthouse 5 Equipment

EF 1

EF 1 has been equipped with a Delta VFD. It will be connected by Modbus to the new BCS and operated with a manual input by the Kitchen staff. The existing start/stop, two-speed, push button control outside the kitchen Manager's Office shall provide user input through the VFD via Modbus. When the toggle

switch is moved to the "Off" position, the VFD shall perform a soft stop. When the switch is moved to the "Low Speed" position, the VFD shall perform a soft start and then ramp to a user-adjustable, fixed low speed. When the switch is moved to the "High Speed" position, the VFD shall ramp to a user-adjustable, fixed high speed setting. EF 1 parameters shall be displayed on the graphic for AH 1.

EF 2

EF 2 has been removed from service and will not be connected to the new BCS.

EF 3

EF 3 has been equipped with a VFD. It will be connected by Modbus to the new BCS and operated at a fixed, user-adjustable speed when energized. The existing EF 3 relay output point will be abandoned. The EF 3 Proof digital input point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be linked to the AH 2 Enable Schedule such that it operates whenever the air handlers operate. Once energized, the BCS shall generate an operator alarm if the proof input does not indicate that the fan is running. Fan data provided by the VFD and the status of the digital input shall be displayed on the graphic for AH 2.

EF 11

The EF 11 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

EF 14

The EF 14 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

EF 15 & Proof

The EF 15 relay output point and the EF 15 Proof digital input point shall be relocated to appropriate I/O points on the new BCS. The exhaust fan shall be linked to the AH 2 Enable Schedule such that it operates whenever AH 2 operates. Once energized, the BCS shall generate an operator alarm if the proof input does not indicate that the fan is running. The status of the relay output and the digital input shall be displayed on the graphic for AH 2.

EF 16

The EF 16 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

EF 17

The EF 17 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

OAT & OARH

New outside air temperature and outside air relative humidity sensors shall be appropriately located outside Mechanical Penthouse 5 and terminated on appropriate analog input points in the penthouse.

Miscellaneous

The four existing Zone D/N relay outputs on the Excel 500 controller that controls AH 1, 2, 3, 4, & 5 shall be relocated to appropriate relay output points on the new BCS and controlled by a time-of-day schedule.

The two existing Zone D/N relay outputs on the Excel 100 controller that controls AH 6 & 7 shall be relocated to appropriate relay output points on the new BCS and controlled by a time-of-day schedule.

The two existing space temperature sensors in Rooms 221 and 311 shall be replace with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.

Other Mechanical Dog House Equipment

EF 4 & Proof

The EF 4 Low Speed and EF 4 High Speed relay output points and the EF 4 Proof digital input point shall be relocated to appropriate I/O points on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule with the High Speed relay output energized during occupied periods and the Low Speed relay output energized during unoccupied periods. Once energized, the BCS shall generate an operator alarm if the proof input does not indicate that the fan is running. The status of the relay outputs and the digital input shall be displayed on a common graphic for all exhaust fans.

EF 5

The EF 5 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

EF 6

The EF 6 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

EF 8

The EF 8 Low Speed and EF 8 High Speed relay output points shall be relocated to appropriate I/O points on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule with the High Speed relay output energized during occupied periods and the Low Speed relay output energized during unoccupied periods. The status of the relay outputs shall be displayed on a common graphic for all exhaust fans.

EF 9

The EF 9 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

EF 10

The EF 10 relay output point shall be relocated to an appropriate I/O point on the new BCS. The exhaust fan shall be programmed to operate on a time-of-day schedule. The status of the relay output shall be displayed on a common graphic for all exhaust fans.

Dog House Temp

A new Dog House Space Temperature sensor shall be appropriately located inside the Dog House and terminated on an appropriate analog input point.

Miscellaneous

The four existing Zone D/N relay outputs shall be relocated to appropriate relay output points on the new BCS and controlled by a time-of-day schedule.

The four existing south perimeter space temperature sensors shall be replace with new devices. If appropriate, the existing input wires may be reused by relocating them to input points on the new BCS. Otherwise the contractor shall install new input wiring between the new BCS and these devices.

Other Room 419 Closet Equipment

Miscellaneous

The two existing Zone D/N relay outputs shall be relocated to appropriate relay output points on the new BCS and controlled by a time-of-day schedule.

Other Custodians Closet in Gymnasium Equipment

EF 7 & Proof

EF 7 has been equipped with a Delta VFD. It shall be connected by Modbus to the new BCS. The existing EF 7 relay output point will be abandoned. The EF 7 Proof digital input point shall be relocated

to an appropriate I/O point on the new BCS. EF 7 shall operate whenever AH 13, 14, 15, & 16 are operated and the outdoor air dampers are open. Whenever the four air handler outdoor air dampers are closed, EF 7 shall perform a soft stop and remain off. When the air handlers outside air dampers move to the minimum outdoor air position, EF 7 will soft start and then ramp to its user-adjustable, minimum speed. When the air handlers outdoor air dampers open further, to take advantage of free cooling, EF 7 will ramp between its user-adjustable, minimum and maximum speeds based on the mathematical average of outside air damper opening percentages. Once energized, the BCS shall generate an operator alarm if the proof input does not indicate that the fan is running. Fan data provided by the VFD and the status of the digital input shall be displayed on the graphics for AH 13, 14, 15, & 16.

FORM FOR GENERAL BID

To the Awarding Authority:

A. The undersigned proposes to furnish all labor and materials required for _____, in _____ accordance with the accompanying proposal and specifications prepared by the City of Quincy for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid included addenda numbered_____.

C. The proposed contract price is _____dollars
($_____) (in words)

For alternate No._____ Add $_____; Subtract $_____

(Add alternate can be found on Page 5: of Scope of Work) An alternate bid price for the replacement of the hydronic valves at each air handle coil shall also be provided the valves shall be manufactured by Belimo.)

Award will be based on lump sum pricing and acceptance of submittals and bid specifications.

BIDDER'S SIGNATURE: _____

COMPANY: _____

ADDRESS: _____

_____

PHONE: _____

FAX #: _____

EMAIL: _____

RATE SCHEDULE CHARGES: (Exhibit A)

1.	STRAIGHT TIME	$_____	
2.	OVERTIME/DOUBLE TIME RATE	$_____	
		STRAIGHT TIME	**OVERTIME**
3.	SKILL LEVEL _____	$_____	$_____
	SKILL LEVEL _____	$_____	$_____
	SKILL LEVEL _____	$_____	$_____
	SKILL LEVEL _____	$_____	$_____

BIDDER'S SIGNATURE: _____

COMPANY: _____

ADDRESS: _____

_____

PHONE: _____

FAX #: _____

EMAIL: _____

If you have received this bid from either the City of Quincy Website or through an email it is your responsibility to check for addenda (at www.quincyma.gov) before you turn in your proposal. The City of Quincy will not be responsible any bids received omitting addenda acknowledgement.

REFERENCE LIST

All vendors are to fill out the following reference form, and submit it with the bid package.

Reference #1 Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

Reference #2 Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

Reference #3 Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

Reference #4 Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

Quincy Public Schools
Where excellence is the tradition

Dr. Richard DeCristofaro, *Superintendent*

Office of the Deputy Superintendent
159 Burgin Parkway, Quincy, MA 02169
Tel: (617) 984-8766 Fax: (617) 984-8600
kevinmulvey@quincypublicschools.com

Kevin W. Mulvey, Esquire
Deputy Superintendent

LOCATION/SCHOOL

QUIPS
CH 385
G

CORI REQUEST FORM

Quincy Public Schools had been certified by the Criminal History Systems Board for access to all criminal case data including conviction, non-conviction and pending. As an applicant for the position of _____, I understand that a criminal record check will be conducted for conviction, non-conviction and pending criminal case information only and that it will not necessarily disqualify me. The information below is correct to the best of my knowledge.

_____
Applicant Signature

_____
APPLICANT/EMPLOYEE INFORMATION (PLEASE PRINT)

_____ _____ _____
LAST NAME FIRST NAME MIDDLE NAME

_____ _____
MAIDEN NAME OR ALIAS (IF APPLICABLE) PLACE OF BIRTH

___/___/_____ _____-_____-_____ _____
DATE OF BIRTH SOCIAL SECURITY NUMBER MOTHER'S MAIDEN NAME

CURRENT and FORMER ADDRESSES:

_____
_____
_____
_____

SEX: _____ HEIGHT: ____ft. ____in. WEIGHT: _____ EYE COLOR: _____

STATE DRIVER'S LICENSE NUMBER: _____

***THE ABOVE INFORMATION WAS VERIFIED WITH THE FOLLOWING FORM OF GOVERNMENT ISSUED PHOTOGRAPHIC IDENTIFICATION: _____.

REQUESTED BY: _____
SIGNATURE OF CORI AUTHORIZED EMPLOYEE

Quincy Public Schools
Where excellence is the tradition
Dr. Richard DeCristofaro, *Superintendent*

Office of the Deputy Superintendent
159 Burgin Parkway, Quincy, MA 02169
Tel: (617) 984-8766 Fax: (617) 984-8600
kevinmulvey@quincypublicschools.com
Kevin W. Mulvey, Esquire
Deputy Superintendent

MEMO

To: All Volunteers

From: Kevin W. Mulvey, Esq.
Deputy Superintendent

Date: May 9, 2014

RE: New School Safety Initiative - SAFIS - National Background Check (NBC) Application Process for Volunteers

Please be advised that a new school safety initiative is being implemented pursuant to Massachusetts state law. As part of this initiative, all volunteers, including parent volunteers, must submit their fingerprints and be approved pursuant to the National Background Check (hereinafter "NBC") application process. Volunteers **who may have direct and unmonitored contact with students** must be approved pursuant to the NBC prior to participating/volunteering in any school sponsored event. The cost for the fingerprinting of volunteers is $35.00 and must be paid by the volunteer. This is a one-time process for volunteers. However, the NBC does not take the place of the CORI process, which is free and must be done every three (3) years.

The Statewide Applicant Fingerprint Identification Services (SAFIS) MorphoTrust USA IndentoGo™ registration website is now available for all school districts, charter schools and private schools to begin scheduling fingerprinting appointments for the National Background Checks (NBC) of volunteers. Again, **this applies to any employee, volunteer, vendor, contractor, etc., who may have direct and unmonitored contact with students**.

Payment may be made online. If payment is not made online, you will be required to bring a bank check or money order with you to your appointment. If you schedule an appointment and miss your appointment without rescheduling you may be required to pay another registration fee. There are Saturday appointments available. The Quincy Public Schools Organizational/Provider Identification Code is **02430000**. Please make sure you input this code into the appropriate registration field so that your information is sent to the Quincy Public Schools. If you do not input the correct code, your application will remain incomplete. Please go to the below address to schedule your appointment for your NBC.

http://www.identogo.com/FP/Massachusetts.aspx

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

Prevailing Wage Rates

DEVAL L. PATRICK
Governor

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

RACHEL KAPRIELIAN
Secretary
HEATHER E. ROWE
Director

Awarding Authority: City of Quincy Purchasing Department

Contract Number: **City/Town:** QUINCY

Description of Work: Replace existing DDC building control system with new DDC system at North Quincy High School. New system will interface with existing IT network and provide for remote communication and alarming.

Job Location: 316 Hancock Street, Quincy, MA

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.
- Awarding authorities 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 GL 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. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during 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 regardless of 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. If an apprentice rate is listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAS, the apprentice 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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT	12/01/2013	$32.05	$9.41	$8.80	$0.00	$50.26
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2014	$32.40	$9.41	$8.80	$0.00	$50.61
	08/01/2014	$32.40	$9.91	$8.80	$0.00	$51.11
	12/01/2014	$32.40	$9.91	$9.33	$0.00	$51.64
	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	12/01/2013	$32.12	$9.41	$8.80	$0.00	$50.33
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2014	$32.47	$9.41	$8.80	$0.00	$50.68
	08/01/2014	$32.47	$9.91	$8.80	$0.00	$51.18
	12/01/2014	$32.47	$9.91	$9.33	$0.00	$51.71
	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	12/01/2013	$32.24	$9.41	$8.80	$0.00	$50.45
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	06/01/2014	$32.59	$9.41	$8.80	$0.00	$50.80
	08/01/2014	$32.59	$9.91	$8.80	$0.00	$51.30
	12/01/2014	$32.59	$9.91	$9.33	$0.00	$51.83
	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	08/01/2013	$84.21	$9.80	$18.17	$0.00	$112.18
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2014	$87.36	$9.80	$18.17	$0.00	$115.33
	08/01/2015	$90.51	$9.80	$18.17	$0.00	$118.48
AIR TRACK OPERATOR	12/01/2013	$34.10	$7.30	$12.70	$0.00	$54.10
LABORERS - ZONE 1	06/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	12/01/2014	$35.60	$7.30	$12.70	$0.00	$55.60
	06/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	12/01/2015	$37.10	$7.30	$12.70	$0.00	$57.10
	06/01/2016	$37.85	$7.30	$12.70	$0.00	$57.85
	12/01/2016	$38.85	$7.30	$12.70	$0.00	$58.85

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	12/01/2013	$30.68	$10.40	$5.95	$0.00	$47.03
	06/01/2014	$31.58	$10.40	$5.95	$0.00	$47.93
	12/01/2014	$32.48	$10.40	$5.95	$0.00	$48.83
	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 *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 1*	12/01/2013	$34.10	$7.30	$12.70	$0.00	$54.10
	06/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	12/01/2014	$35.60	$7.30	$12.70	$0.00	$55.60
	06/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	12/01/2015	$37.10	$7.30	$12.70	$0.00	$57.10
	06/01/2016	$37.85	$7.30	$12.70	$0.00	$57.85
	12/01/2016	$38.85	$7.30	$12.70	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2010	$37.70	$6.97	$11.18	$0.00	$55.85

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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) *BRICKLAYERS LOCAL 3 (QUINCY)*	02/01/2014	$48.06	$10.18	$18.15	$0.00	$76.39
	08/01/2014	$48.96	$10.18	$18.22	$0.00	$77.36
	02/01/2015	$49.52	$10.18	$18.22	$0.00	$77.92
	08/01/2015	$50.42	$10.18	$18.29	$0.00	$78.89
	02/01/2016	$50.99	$10.18	$18.29	$0.00	$79.46
	08/01/2016	$51.89	$10.18	$18.37	$0.00	$80.44
	02/01/2017	$52.46	$10.18	$18.37	$0.00	$81.01

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 Quincy*

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.03	$10.18	$18.15	$0.00	$52.36
2	60	$28.84	$10.18	$18.15	$0.00	$57.17
3	70	$33.64	$10.18	$18.15	$0.00	$61.97
4	80	$38.45	$10.18	$18.15	$0.00	$66.78
5	90	$43.25	$10.18	$18.15	$0.00	$71.58

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.48	$10.18	$18.22	$0.00	$52.88
2	60	$29.38	$10.18	$18.22	$0.00	$57.78
3	70	$34.27	$10.18	$18.22	$0.00	$62.67
4	80	$39.17	$10.18	$18.22	$0.00	$67.57
5	90	$44.06	$10.18	$18.22	$0.00	$72.46

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2013	$34.45	$7.30	$12.90	$0.00	$54.65
	06/01/2014	$35.20	$7.30	$12.90	$0.00	$55.40
	12/01/2014	$35.95	$7.30	$12.90	$0.00	$56.15
	06/01/2015	$36.70	$7.30	$12.90	$0.00	$56.90
	12/01/2015	$37.45	$7.30	$12.90	$0.00	$57.65
	06/01/2016	$38.20	$7.30	$12.90	$0.00	$58.40
	12/01/2016	$39.20	$7.30	$12.90	$0.00	$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2013	$33.30	$7.30	$12.90	$0.00	$53.50
	06/01/2014	$34.05	$7.30	$12.90	$0.00	$54.25
	12/01/2014	$34.80	$7.30	$12.90	$0.00	$55.00
	06/01/2015	$35.55	$7.30	$12.90	$0.00	$55.75
	12/01/2015	$36.30	$7.30	$12.90	$0.00	$56.50
	06/01/2016	$37.05	$7.30	$12.90	$0.00	$57.25
	12/01/2016	$38.05	$7.30	$12.90	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2013	$33.30	$7.30	$12.90	$0.00	$53.50
	06/01/2014	$34.05	$7.30	$12.90	$0.00	$54.25
	12/01/2014	$34.80	$7.30	$12.90	$0.00	$55.00
	06/01/2015	$35.55	$7.30	$12.90	$0.00	$55.75
	12/01/2015	$36.30	$7.30	$12.90	$0.00	$56.50
	06/01/2016	$37.05	$7.30	$12.90	$0.00	$57.25
	12/01/2016	$38.05	$7.30	$12.90	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 2 (Eastern Massachusetts)*	03/01/2014	$34.78	$9.80	$15.91	$0.00	$60.49
	09/01/2014	$35.55	$9.80	$15.91	$0.00	$61.26
	03/01/2015	$36.32	$9.80	$15.91	$0.00	$62.03

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.39	$9.80	$1.57	$0.00	$28.76
2	60	$20.87	$9.80	$1.57	$0.00	$32.24
3	70	$24.35	$9.80	$11.20	$0.00	$45.35
4	75	$26.09	$9.80	$11.20	$0.00	$47.09
5	80	$27.82	$9.80	$12.77	$0.00	$50.39
6	80	$27.82	$9.80	$12.77	$0.00	$50.39
7	90	$31.30	$9.80	$14.34	$0.00	$55.44
8	90	$31.30	$9.80	$14.34	$0.00	$55.44

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.78	$9.80	$1.57	$0.00	$29.15
2	60	$21.33	$9.80	$1.57	$0.00	$32.70
3	70	$24.89	$9.80	$11.20	$0.00	$45.89
4	75	$26.66	$9.80	$11.20	$0.00	$47.66
5	80	$28.44	$9.80	$12.77	$0.00	$51.01
6	80	$28.44	$9.80	$12.77	$0.00	$51.01
7	90	$32.00	$9.80	$14.34	$0.00	$56.14
8	90	$32.00	$9.80	$14.34	$0.00	$56.14

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (QUINCY)*	01/01/2014	$43.60	$10.90	$18.71	$1.30	$74.51
	07/01/2014	$43.77	$10.90	$18.71	$1.30	$74.68
	01/01/2015	$44.69	$10.90	$18.71	$1.30	$75.60
	07/01/2015	$45.29	$10.90	$18.71	$1.30	$76.20
	01/01/2016	$46.21	$10.90	$18.71	$1.30	$77.12

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (Quincy)*

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.80	$10.90	$12.21	$1.30	$46.21
2	60	$26.16	$10.90	$13.71	$1.30	$52.07
3	65	$28.34	$10.90	$14.71	$1.30	$55.25
4	70	$30.52	$10.90	$15.71	$1.30	$58.43
5	75	$32.70	$10.90	$16.71	$1.30	$61.61
6	80	$34.88	$10.90	$17.71	$1.30	$64.79
7	90	$39.24	$10.90	$18.71	$1.30	$70.15

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.89	$10.90	$12.21	$1.30	$46.30
2	60	$26.26	$10.90	$13.71	$1.30	$52.17
3	65	$28.45	$10.90	$14.71	$1.30	$55.36
4	70	$30.64	$10.90	$15.71	$1.30	$58.55
5	75	$32.83	$10.90	$16.71	$1.30	$61.74
6	80	$35.02	$10.90	$17.71	$1.30	$64.93
7	90	$39.39	$10.90	$18.71	$1.30	$70.30

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$41.49	$10.00	$14.18	$0.00	$65.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$28.11	$10.00	$14.18	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2014	$45.91	$7.85	$16.10	$0.00	$69.86
	07/01/2014	$46.76	$7.85	$16.10	$0.00	$70.71
	01/01/2015	$47.66	$7.85	$16.10	$0.00	$71.61
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.96	$7.85	$0.00	$0.00	$30.81
2	55	$25.25	$7.85	$3.66	$0.00	$36.76
3	60	$27.55	$7.85	$3.99	$0.00	$39.39
4	65	$29.84	$7.85	$4.32	$0.00	$42.01
5	70	$32.14	$7.85	$14.11	$0.00	$54.10
6	75	$34.43	$7.85	$14.44	$0.00	$56.72
7	80	$36.73	$7.85	$14.77	$0.00	$59.35
8	90	$41.32	$7.85	$15.44	$0.00	$64.61

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.38	$7.85	$0.00	$0.00	$31.23
2	55	$25.72	$7.85	$3.66	$0.00	$37.23
3	60	$28.06	$7.85	$3.99	$0.00	$39.90
4	65	$30.39	$7.85	$4.32	$0.00	$42.56
5	70	$32.73	$7.85	$14.11	$0.00	$54.69
6	75	$35.07	$7.85	$14.44	$0.00	$57.36
7	80	$37.41	$7.85	$14.77	$0.00	$60.03
8	90	$42.08	$7.85	$15.44	$0.00	$65.37

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 1*	12/01/2013	$33.50	$7.30	$12.70	$0.00	$53.50
	06/01/2014	$34.25	$7.30	$12.70	$0.00	$54.25
	12/01/2014	$35.00	$7.30	$12.70	$0.00	$55.00
	06/01/2015	$35.75	$7.30	$12.70	$0.00	$55.75
	12/01/2015	$36.50	$7.30	$12.70	$0.00	$56.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 1*	12/01/2013	$34.50	$7.30	$12.70	$0.00	$54.50
	06/01/2014	$35.25	$7.30	$12.70	$0.00	$55.25
	12/01/2014	$36.00	$7.30	$12.70	$0.00	$56.00
	06/01/2015	$36.75	$7.30	$12.70	$0.00	$56.75
	12/01/2015	$37.50	$7.30	$12.70	$0.00	$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 1*	12/01/2013	$34.25	$7.30	$12.70	$0.00	$54.25
	06/01/2014	$35.00	$7.30	$12.70	$0.00	$55.00
	12/01/2014	$35.75	$7.30	$12.70	$0.00	$55.75
	06/01/2015	$36.50	$7.30	$12.70	$0.00	$56.50
	12/01/2015	$37.25	$7.30	$12.70	$0.00	$57.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 1*	12/01/2013	$34.50	$7.30	$12.70	$0.00	$54.50
	06/01/2014	$35.25	$7.30	$12.70	$0.00	$55.25
	12/01/2014	$36.00	$7.30	$12.70	$0.00	$56.00
	06/01/2015	$36.75	$7.30	$12.70	$0.00	$56.75
	12/01/2015	$37.50	$7.30	$12.70	$0.00	$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 1*	12/01/2013	$34.25	$7.30	$12.70	$0.00	$54.25
	06/01/2014	$35.00	$7.30	$12.70	$0.00	$55.00
	12/01/2014	$35.75	$7.30	$12.70	$0.00	$55.75
	06/01/2015	$36.50	$7.30	$12.70	$0.00	$56.50
	12/01/2015	$37.25	$7.30	$12.70	$0.00	$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 1*	12/01/2013	$33.50	$7.30	$12.70	$0.00	$53.50
	06/01/2014	$34.25	$7.30	$12.70	$0.00	$54.25
	12/01/2014	$35.00	$7.30	$12.70	$0.00	$55.00
	06/01/2015	$35.75	$7.30	$12.70	$0.00	$55.75
	12/01/2015	$36.50	$7.30	$12.70	$0.00	$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$56.14	$9.80	$18.17	$0.00	$84.11
	08/01/2014	$58.24	$9.80	$18.17	$0.00	$86.21
	08/01/2015	$60.34	$9.80	$18.17	$0.00	$88.31
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$40.10	$9.80	$18.17	$0.00	$68.07
	08/01/2014	$41.60	$9.80	$18.17	$0.00	$69.57
	08/01/2015	$43.10	$9.80	$18.17	$0.00	$71.07
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$60.15	$9.80	$18.17	$0.00	$88.12
	08/01/2014	$62.40	$9.80	$18.17	$0.00	$90.37
	08/01/2015	$64.65	$9.80	$18.17	$0.00	$92.62
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$84.21	$9.80	$18.17	$0.00	$112.18
	08/01/2014	$87.36	$9.80	$18.17	$0.00	$115.33
	08/01/2015	$90.51	$9.80	$18.17	$0.00	$118.48
DRAWBRIDGE OPERATOR (Construction) *ELECTRICIANS LOCAL 103*	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN *ELECTRICIANS LOCAL 103*	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELECTRICIAN - Local 103*

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.78	$13.00	$0.53	$0.00	$31.31
2	40	$17.78	$13.00	$0.53	$0.00	$31.31
3	45	$20.00	$13.00	$11.04	$0.00	$44.04
4	45	$20.00	$13.00	$11.04	$0.00	$44.04
5	50	$22.23	$13.00	$11.37	$0.00	$46.60
6	55	$24.45	$13.00	$11.70	$0.00	$49.15
7	60	$26.67	$13.00	$12.03	$0.00	$51.70
8	65	$28.89	$13.00	$12.37	$0.00	$54.26
9	70	$31.12	$13.00	$12.69	$0.00	$56.81
10	75	$33.34	$13.00	$13.03	$0.00	$59.37

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$18.05	$13.00	$0.54	$0.00	$31.59
2	40	$18.05	$13.00	$0.54	$0.00	$31.59
3	45	$20.30	$13.00	$11.05	$0.00	$44.35
4	45	$20.30	$13.00	$11.05	$0.00	$44.35
5	50	$22.56	$13.00	$11.38	$0.00	$46.94
6	55	$24.82	$13.00	$11.71	$0.00	$49.53
7	60	$27.07	$13.00	$12.04	$0.00	$52.11
8	65	$29.33	$13.00	$12.38	$0.00	$54.71
9	70	$31.58	$13.00	$12.71	$0.00	$57.29
10	75	$33.84	$13.00	$13.05	$0.00	$59.89

Notes: :

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

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2012	$52.45	$8.78	$6.96	$0.00	$68.19

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.23	$8.78	$0.00	$0.00	$35.01
2	55	$28.85	$8.78	$6.96	$0.00	$44.59
3	65	$34.09	$8.78	$6.96	$0.00	$49.83
4	70	$36.72	$8.78	$6.96	$0.00	$52.46
5	80	$41.96	$8.78	$6.96	$0.00	$57.70

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2012	$38.59	$8.78	$6.96	$0.00	$54.33
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2014	$38.87	$10.00	$14.18	$0.00	$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2014	$40.29	$10.00	$14.18	$0.00	$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2014	$20.92	$10.00	$14.18	$0.00	$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 103*	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING*ELECTRICIANS LOCAL 103*	03/01/2014	$33.44	$13.00	$13.03	$0.00	$59.47
	09/01/2014	$33.84	$13.00	$13.05	$0.00	$59.89
	03/01/2015	$34.38	$13.00	$13.06	$0.00	$60.44
	09/01/2015	$35.10	$13.00	$13.08	$0.00	$61.18
	03/01/2016	$35.81	$13.00	$13.10	$0.00	$61.91
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$33.76	$10.00	$14.18	$0.00	$57.94

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER *LABORERS - ZONE 1*	12/01/2013	$20.50	$7.30	$12.70	$0.00	$40.50
	06/01/2014	$20.50	$7.30	$12.70	$0.00	$40.50
	12/01/2014	$20.50	$7.30	$12.70	$0.00	$40.50
	06/01/2015	$20.50	$7.30	$12.70	$0.00	$40.50
	12/01/2015	$20.50	$7.30	$12.70	$0.00	$40.50
	06/01/2016	$20.50	$7.30	$12.70	$0.00	$40.50
	12/01/2016	$20.50	$7.30	$12.70	$0.00	$40.50
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE I*	03/01/2014	$39.87	$9.80	$16.96	$0.00	$66.63

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.94	$9.80	$1.79	$0.00	$31.53
2	55	$21.93	$9.80	$1.79	$0.00	$33.52
3	60	$23.92	$9.80	$11.59	$0.00	$45.31
4	65	$25.92	$9.80	$11.59	$0.00	$47.31
5	70	$27.91	$9.80	$13.38	$0.00	$51.09
6	75	$29.90	$9.80	$13.38	$0.00	$53.08
7	80	$31.90	$9.80	$15.17	$0.00	$56.87
8	85	$33.89	$9.80	$15.17	$0.00	$58.86

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$28.11	$10.00	$14.18	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 35 (ZONE 2)*	01/01/2014	$35.41	$7.85	$16.10	$0.00	$59.36
	07/01/2014	$36.26	$7.85	$16.10	$0.00	$60.21
	01/01/2015	$37.16	$7.85	$16.10	$0.00	$61.11
	07/01/2015	$38.06	$7.85	$16.10	$0.00	$62.01
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *GLAZIER - Local 35 Zone 2*

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.71	$7.85	$0.00	$0.00	$25.56
2	55	$19.48	$7.85	$3.66	$0.00	$30.99
3	60	$21.25	$7.85	$3.99	$0.00	$33.09
4	65	$23.02	$7.85	$4.32	$0.00	$35.19
5	70	$24.79	$7.85	$14.11	$0.00	$46.75
6	75	$26.56	$7.85	$14.44	$0.00	$48.85
7	80	$28.33	$7.85	$14.77	$0.00	$50.95
8	90	$31.87	$7.85	$15.44	$0.00	$55.16

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.13	$7.85	$0.00	$0.00	$25.98
2	55	$19.94	$7.85	$3.66	$0.00	$31.45
3	60	$21.76	$7.85	$3.99	$0.00	$33.60
4	65	$23.57	$7.85	$4.32	$0.00	$35.74
5	70	$25.38	$7.85	$14.11	$0.00	$47.34
6	75	$27.20	$7.85	$14.44	$0.00	$49.49
7	80	$29.01	$7.85	$14.77	$0.00	$51.63
8	90	$32.63	$7.85	$15.44	$0.00	$55.92

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.27	$10.00	$0.00	$0.00	$32.27
2	60	$24.29	$10.00	$14.18	$0.00	$48.47
3	65	$26.32	$10.00	$14.18	$0.00	$50.50
4	70	$28.34	$10.00	$14.18	$0.00	$52.52
5	75	$30.37	$10.00	$14.18	$0.00	$54.55
6	80	$32.39	$10.00	$14.18	$0.00	$56.57
7	85	$34.42	$10.00	$14.18	$0.00	$58.60
8	90	$36.44	$10.00	$14.18	$0.00	$60.62

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2014	$42.76	$9.82	$19.74	$2.17	$74.49
	08/01/2014	$43.61	$9.82	$19.74	$2.17	$75.34
	02/01/2015	$44.51	$9.82	$19.74	$2.17	$76.24
	08/01/2015	$45.51	$9.82	$19.74	$2.17	$77.24
	02/01/2016	$46.51	$9.82	$19.74	$2.17	$78.24
	08/01/2016	$47.66	$9.82	$19.74	$2.17	$79.39
	02/01/2017	$48.76	$9.82	$19.74	$2.17	$80.49
	08/01/2017	$49.86	$9.82	$19.74	$2.17	$81.59
	02/01/2018	$51.01	$9.82	$19.74	$2.17	$82.74
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 103*	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2014	$42.76	$9.82	$19.74	$2.17	$74.49
	08/01/2014	$43.61	$9.82	$19.74	$2.17	$75.34
	02/01/2015	$44.51	$9.82	$19.74	$2.17	$76.24
	08/01/2015	$45.51	$9.82	$19.74	$2.17	$77.24
	02/01/2016	$46.51	$9.82	$19.74	$2.17	$78.24
	08/01/2016	$47.66	$9.82	$19.74	$2.17	$79.39
	02/01/2017	$48.76	$9.82	$19.74	$2.17	$80.49
	08/01/2017	$49.86	$9.82	$19.74	$2.17	$81.59
	02/01/2018	$51.01	$9.82	$19.74	$2.17	$82.74
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC MECHANIC *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 1*	12/01/2013	$34.10	$7.30	$12.70	$0.00	$54.10
	06/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	12/01/2014	$35.60	$7.30	$12.70	$0.00	$55.60
	06/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	12/01/2015	$37.10	$7.30	$12.70	$0.00	$57.10
	06/01/2016	$37.85	$7.30	$12.70	$0.00	$57.85
	12/01/2016	$38.85	$7.30	$12.70	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	09/01/2013	$42.11	$10.95	$12.10	$0.00	$65.16
	09/01/2014	$44.11	$10.95	$12.10	$0.00	$67.16

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

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.06	$10.95	$9.00	$0.00	$41.01
2	60	$25.27	$10.95	$9.62	$0.00	$45.84
3	70	$29.48	$10.95	$10.24	$0.00	$50.67
4	80	$33.69	$10.95	$10.86	$0.00	$55.50

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.06	$10.95	$9.00	$0.00	$42.01
2	60	$26.47	$10.95	$9.62	$0.00	$47.04
3	70	$30.88	$10.95	$10.24	$0.00	$52.07
4	80	$35.29	$10.95	$10.86	$0.00	$57.10

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (BOSTON AREA)*	03/16/2014	$41.19	$7.70	$19.25	$0.00	$68.14

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *IRONWORKER - Local 7 Boston*

Effective Date - 03/16/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$24.71	$7.70	$19.25	$0.00	$51.66
2	70	$28.83	$7.70	$19.25	$0.00	$55.78
3	75	$30.89	$7.70	$19.25	$0.00	$57.84
4	80	$32.95	$7.70	$19.25	$0.00	$59.90
5	85	$35.01	$7.70	$19.25	$0.00	$61.96
6	90	$37.07	$7.70	$19.25	$0.00	$64.02

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 1*	12/01/2013	$33.35	$7.30	$12.70	$0.00	$53.35
	06/01/2014	$34.10	$7.30	$12.70	$0.00	$54.10
	12/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	06/01/2015	$35.60	$7.30	$12.70	$0.00	$55.60
	12/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	06/01/2016	$37.10	$7.30	$12.70	$0.00	$57.10
	12/01/2016	$38.10	$7.30	$12.70	$0.00	$58.10

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LABORER - Zone 1*

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$20.01	$7.30	$12.70	$0.00	$40.01
2	70	$23.35	$7.30	$12.70	$0.00	$43.35
3	80	$26.68	$7.30	$12.70	$0.00	$46.68
4	90	$30.02	$7.30	$12.70	$0.00	$50.02

Effective Date - 06/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$20.46	$7.30	$12.70	$0.00	$40.46
2	70	$23.87	$7.30	$12.70	$0.00	$43.87
3	80	$27.28	$7.30	$12.70	$0.00	$47.28
4	90	$30.69	$7.30	$12.70	$0.00	$50.69

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER *LABORERS - ZONE 1*	12/01/2013	$33.35	$7.30	$12.70	$0.00	$53.35
	06/01/2014	$34.10	$7.30	$12.70	$0.00	$54.10
	12/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	06/01/2015	$35.60	$7.30	$12.70	$0.00	$55.60
	12/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	06/01/2016	$37.10	$7.30	$12.70	$0.00	$57.10
	12/01/2016	$38.10	$7.30	$12.70	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 1*	12/01/2013	$33.35	$7.30	$12.70	$0.00	$53.35
	06/01/2014	$34.10	$7.30	$12.70	$0.00	$54.10
	12/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	06/01/2015	$35.60	$7.30	$12.70	$0.00	$55.60
	12/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	06/01/2016	$37.10	$7.30	$12.70	$0.00	$57.10
	12/01/2016	$38.10	$7.30	$12.70	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 1*	12/01/2013	$33.50	$7.30	$12.70	$0.00	$53.50
	06/01/2014	$34.25	$7.30	$12.70	$0.00	$54.25
	12/01/2014	$35.00	$7.30	$12.70	$0.00	$55.00
	06/01/2015	$35.75	$7.30	$12.70	$0.00	$55.75
	12/01/2015	$36.50	$7.30	$12.70	$0.00	$56.50
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 1*	12/01/2013	$33.35	$7.30	$12.70	$0.00	$53.35
	06/01/2014	$34.10	$7.30	$12.70	$0.00	$54.10
	12/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	06/01/2015	$35.60	$7.30	$12.70	$0.00	$55.60
	12/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	06/01/2016	$37.10	$7.30	$12.70	$0.00	$57.10
	12/01/2016	$38.10	$7.30	$12.70	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 1*	12/01/2013	$33.35	$7.30	$12.70	$0.00	$53.35
	06/01/2014	$34.10	$7.30	$12.70	$0.00	$54.10
	12/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	06/01/2015	$35.60	$7.30	$12.70	$0.00	$55.60
	12/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	06/01/2016	$37.10	$7.30	$12.70	$0.00	$57.10
	12/01/2016	$38.10	$7.30	$12.70	$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 *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2014	$36.66	$10.18	$16.83	$0.00	$63.67
	08/01/2014	$37.37	$10.18	$16.90	$0.00	$64.45
	02/01/2015	$37.82	$10.18	$16.90	$0.00	$64.90
	08/01/2015	$38.53	$10.18	$16.97	$0.00	$65.68
	02/01/2016	$38.98	$10.18	$16.97	$0.00	$66.13
	08/01/2016	$39.68	$10.18	$17.05	$0.00	$66.91
	02/01/2017	$40.14	$10.18	$17.05	$0.00	$67.37

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.33	$10.18	$16.83	$0.00	$45.34
2	60	$22.00	$10.18	$16.83	$0.00	$49.01
3	70	$25.66	$10.18	$16.83	$0.00	$52.67
4	80	$29.33	$10.18	$16.83	$0.00	$56.34
5	90	$32.99	$10.18	$16.83	$0.00	$60.00

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.69	$10.18	$16.90	$0.00	$45.77
2	60	$22.42	$10.18	$16.90	$0.00	$49.50
3	70	$26.16	$10.18	$16.90	$0.00	$53.24
4	80	$29.90	$10.18	$16.90	$0.00	$56.98
5	90	$33.63	$10.18	$16.90	$0.00	$60.71

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2014	$48.10	$10.18	$18.15	$0.00	$76.43
	08/01/2014	$49.00	$10.18	$18.22	$0.00	$77.40
	02/01/2015	$49.56	$10.18	$18.22	$0.00	$77.96
	08/01/2015	$50.46	$10.18	$18.29	$0.00	$78.93
	02/01/2016	$51.03	$10.18	$18.29	$0.00	$79.50
	08/01/2016	$51.93	$10.18	$18.37	$0.00	$80.48
	02/01/2017	$52.50	$10.18	$18.37	$0.00	$81.05

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.05	$10.18	$18.15	$0.00	$52.38
2	60	$28.86	$10.18	$18.15	$0.00	$57.19
3	70	$33.67	$10.18	$18.15	$0.00	$62.00
4	80	$38.48	$10.18	$18.15	$0.00	$66.81
5	90	$43.29	$10.18	$18.15	$0.00	$71.62

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.50	$10.18	$18.22	$0.00	$52.90
2	60	$29.40	$10.18	$18.22	$0.00	$57.80
3	70	$34.30	$10.18	$18.22	$0.00	$62.70
4	80	$39.20	$10.18	$18.22	$0.00	$67.60
5	90	$44.10	$10.18	$18.22	$0.00	$72.50

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) *MILLWRIGHTS LOCAL 1121 - Zone 1*	04/01/2014	$35.73	$9.80	$16.21	$0.00	$61.74
	10/01/2014	$36.68	$9.80	$16.21	$0.00	$62.69
	04/01/2015	$37.64	$9.80	$16.21	$0.00	$63.65

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MILLWRIGHT - Local 1121 Zone 1*

Effective Date - 04/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$19.65	$9.80	$4.48	$0.00	$33.93
2	65	$23.22	$9.80	$13.36	$0.00	$46.38
3	75	$26.80	$9.80	$14.18	$0.00	$50.78
4	85	$30.37	$9.80	$14.99	$0.00	$55.16

Effective Date - 10/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$20.17	$9.80	$4.48	$0.00	$34.45
2	65	$23.84	$9.80	$13.36	$0.00	$47.00
3	75	$27.51	$9.80	$14.18	$0.00	$51.49
4	85	$31.18	$9.80	$14.99	$0.00	$55.97

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$20.96	$10.00	$14.18	$0.00	$45.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$24.43	$10.00	$14.18	$0.00	$48.61
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2014	$45.91	$7.85	$16.10	$0.00	$69.86
	07/01/2014	$46.76	$7.85	$16.10	$0.00	$70.71
	01/01/2015	$47.66	$7.85	$16.10	$0.00	$71.61
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.96	$7.85	$0.00	$0.00	$30.81
2	55	$25.25	$7.85	$3.66	$0.00	$36.76
3	60	$27.55	$7.85	$3.99	$0.00	$39.39
4	65	$29.84	$7.85	$4.32	$0.00	$42.01
5	70	$32.14	$7.85	$14.11	$0.00	$54.10
6	75	$34.43	$7.85	$14.44	$0.00	$56.72
7	80	$36.73	$7.85	$14.77	$0.00	$59.35
8	90	$41.32	$7.85	$15.44	$0.00	$64.61

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.38	$7.85	$0.00	$0.00	$31.23
2	55	$25.72	$7.85	$3.66	$0.00	$37.23
3	60	$28.06	$7.85	$3.99	$0.00	$39.90
4	65	$30.39	$7.85	$4.32	$0.00	$42.56
5	70	$32.73	$7.85	$14.11	$0.00	$54.69
6	75	$35.07	$7.85	$14.44	$0.00	$57.36
7	80	$37.41	$7.85	$14.77	$0.00	$60.03
8	90	$42.08	$7.85	$15.44	$0.00	$65.37

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2014	$36.81	$7.85	$16.10	$0.00	$60.76
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	07/01/2014	$37.66	$7.85	$16.10	$0.00	$61.61
	01/01/2015	$38.56	$7.85	$16.10	$0.00	$62.51
	07/01/2015	$39.46	$7.85	$16.10	$0.00	$63.41
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.41	$7.85	$0.00	$0.00	$26.26
2	55	$20.25	$7.85	$3.66	$0.00	$31.76
3	60	$22.09	$7.85	$3.99	$0.00	$33.93
4	65	$23.93	$7.85	$4.32	$0.00	$36.10
5	70	$25.77	$7.85	$14.11	$0.00	$47.73
6	75	$27.61	$7.85	$14.44	$0.00	$49.90
7	80	$29.45	$7.85	$14.77	$0.00	$52.07
8	90	$33.13	$7.85	$15.44	$0.00	$56.42

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.83	$7.85	$0.00	$0.00	$26.68
2	55	$20.71	$7.85	$3.66	$0.00	$32.22
3	60	$22.60	$7.85	$3.99	$0.00	$34.44
4	65	$24.48	$7.85	$4.32	$0.00	$36.65
5	70	$26.36	$7.85	$14.11	$0.00	$48.32
6	75	$28.25	$7.85	$14.44	$0.00	$50.54
7	80	$30.13	$7.85	$14.77	$0.00	$52.75
8	90	$33.89	$7.85	$15.44	$0.00	$57.18

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2014	$34.87	$7.85	$16.10	$0.00	$58.82
	07/01/2014	$35.72	$7.85	$16.10	$0.00	$59.67
	01/01/2015	$36.62	$7.85	$16.10	$0.00	$60.57
	07/01/2015	$37.52	$7.85	$16.10	$0.00	$61.47
	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 - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.44	$7.85	$0.00	$0.00	$25.29
2	55	$19.18	$7.85	$3.66	$0.00	$30.69
3	60	$20.92	$7.85	$3.99	$0.00	$32.76
4	65	$22.67	$7.85	$4.32	$0.00	$34.84
5	70	$24.41	$7.85	$14.11	$0.00	$46.37
6	75	$26.15	$7.85	$14.44	$0.00	$48.44
7	80	$27.90	$7.85	$14.77	$0.00	$50.52
8	90	$31.38	$7.85	$15.44	$0.00	$54.67

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.86	$7.85	$0.00	$0.00	$25.71
2	55	$19.65	$7.85	$3.66	$0.00	$31.16
3	60	$21.43	$7.85	$3.99	$0.00	$33.27
4	65	$23.22	$7.85	$4.32	$0.00	$35.39
5	70	$25.00	$7.85	$14.11	$0.00	$46.96
6	75	$26.79	$7.85	$14.44	$0.00	$49.08
7	80	$28.58	$7.85	$14.77	$0.00	$51.20
8	90	$32.15	$7.85	$15.44	$0.00	$55.44

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) *LABORERS - ZONE 1*	12/01/2013	$33.35	$7.30	$12.70	$0.00	$53.35
	06/01/2014	$34.10	$7.30	$12.70	$0.00	$54.10
	12/01/2014	$34.85	$7.30	$12.70	$0.00	$54.85
	06/01/2015	$35.60	$7.30	$12.70	$0.00	$55.60
	12/01/2015	$36.35	$7.30	$12.70	$0.00	$56.35
	06/01/2016	$37.10	$7.30	$12.70	$0.00	$57.10
	12/01/2016	$38.10	$7.30	$12.70	$0.00	$58.10
For Apprentice rates see "Apprentice- LABORER"						
PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	01/01/2014	$35.41	$7.85	$16.10	$0.00	$59.36
	07/01/2014	$36.26	$7.85	$16.10	$0.00	$60.21
	01/01/2015	$37.16	$7.85	$16.10	$0.00	$61.11
	07/01/2015	$38.06	$7.85	$16.10	$0.00	$62.01
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER - Local 35 Zone 2 - BRUSH NEW*

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.71	$7.85	$0.00	$0.00	$25.56
2	55	$19.48	$7.85	$3.66	$0.00	$30.99
3	60	$21.25	$7.85	$3.99	$0.00	$33.09
4	65	$23.02	$7.85	$4.32	$0.00	$35.19
5	70	$24.79	$7.85	$14.11	$0.00	$46.75
6	75	$26.56	$7.85	$14.44	$0.00	$48.85
7	80	$28.33	$7.85	$14.77	$0.00	$50.95
8	90	$31.87	$7.85	$15.44	$0.00	$55.16

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.13	$7.85	$0.00	$0.00	$25.98
2	55	$19.94	$7.85	$3.66	$0.00	$31.45
3	60	$21.76	$7.85	$3.99	$0.00	$33.60
4	65	$23.57	$7.85	$4.32	$0.00	$35.74
5	70	$25.38	$7.85	$14.11	$0.00	$47.34
6	75	$27.20	$7.85	$14.44	$0.00	$49.49
7	80	$29.01	$7.85	$14.77	$0.00	$51.63
8	90	$32.63	$7.85	$15.44	$0.00	$55.92

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2014	$33.47	$7.85	$16.10	$0.00	$57.42
	07/01/2014	$34.32	$7.85	$16.10	$0.00	$58.27
	01/01/2015	$35.22	$7.85	$16.10	$0.00	$59.17
	07/01/2015	$36.12	$7.85	$16.10	$0.00	$60.07
	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 - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$16.74	$7.85	$0.00	$0.00	$24.59
2	55	$18.41	$7.85	$3.66	$0.00	$29.92
3	60	$20.08	$7.85	$3.99	$0.00	$31.92
4	65	$21.76	$7.85	$4.32	$0.00	$33.93
5	70	$23.43	$7.85	$14.11	$0.00	$45.39
6	75	$25.10	$7.85	$14.44	$0.00	$47.39
7	80	$26.78	$7.85	$14.77	$0.00	$49.40
8	90	$30.12	$7.85	$15.44	$0.00	$53.41

Effective Date - 07/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.16	$7.85	$0.00	$0.00	$25.01
2	55	$18.88	$7.85	$3.66	$0.00	$30.39
3	60	$20.59	$7.85	$3.99	$0.00	$32.43
4	65	$22.31	$7.85	$4.32	$0.00	$34.48
5	70	$24.02	$7.85	$14.11	$0.00	$45.98
6	75	$25.74	$7.85	$14.44	$0.00	$48.03
7	80	$27.46	$7.85	$14.77	$0.00	$50.08
8	90	$30.89	$7.85	$15.44	$0.00	$54.18

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2013	$31.88	$9.41	$8.80	$0.00	$50.09
	06/01/2014	$32.23	$9.41	$8.80	$0.00	$50.44
	08/01/2014	$32.23	$9.91	$8.80	$0.00	$50.94
	12/01/2014	$32.23	$9.91	$9.33	$0.00	$51.47
	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) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$40.10	$9.80	$18.17	$0.00	$68.07
	08/01/2014	$41.60	$9.80	$18.17	$0.00	$69.57
	08/01/2015	$43.10	$9.80	$18.17	$0.00	$71.07
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$40.10	$9.80	$18.17	$0.00	$68.07
	08/01/2014	$41.60	$9.80	$18.17	$0.00	$69.57
	08/01/2015	$43.10	$9.80	$18.17	$0.00	$71.07

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.05	$9.80	$18.17	$0.00	$48.02
2	60	$24.06	$9.80	$18.17	$0.00	$52.03
3	70	$28.07	$9.80	$18.17	$0.00	$56.04
4	75	$30.08	$9.80	$18.17	$0.00	$58.05
5	80	$32.08	$9.80	$18.17	$0.00	$60.05
6	80	$32.08	$9.80	$18.17	$0.00	$60.05
7	90	$36.09	$9.80	$18.17	$0.00	$64.06
8	90	$36.09	$9.80	$18.17	$0.00	$64.06

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

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER — 03/01/2013 — $49.34 — $8.75 — $14.39 — $0.00 — $72.48
PIPEFITTERS LOCAL 537

Apprentice - *PIPEFITTER - Local 537*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$19.74	$8.75	$6.50	$0.00	$34.99
2	45	$22.20	$8.75	$14.39	$0.00	$45.34
3	60	$29.60	$8.75	$14.39	$0.00	$52.74
4	70	$34.54	$8.75	$14.39	$0.00	$57.68
5	80	$39.47	$8.75	$14.39	$0.00	$62.61

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:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
PLUMBERS & GASFITTERS *PLUMBERS & GASFITTERS LOCAL 12*	03/01/2014	$49.41	$9.82	$14.29	$0.00	$73.52
	09/01/2014	$50.41	$9.82	$14.29	$0.00	$74.52
	03/01/2015	$51.41	$9.82	$14.29	$0.00	$75.52
	09/01/2015	$52.41	$9.82	$14.29	$0.00	$76.52
	03/01/2016	$53.56	$9.82	$14.29	$0.00	$77.67
	09/01/2016	$54.61	$9.82	$14.29	$0.00	$78.72
	03/01/2017	$55.61	$9.82	$14.29	$0.00	$79.72

Apprentice - *PLUMBER/GASFITTER - Local 12*

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$17.29	$9.82	$5.33	$0.00	$32.44
2	40	$19.76	$9.82	$6.02	$0.00	$35.60
3	55	$27.18	$9.82	$8.08	$0.00	$45.08
4	65	$32.12	$9.82	$9.47	$0.00	$51.41
5	75	$37.06	$9.82	$10.85	$0.00	$57.73

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$17.64	$9.82	$5.33	$0.00	$32.79
2	40	$20.16	$9.82	$6.02	$0.00	$36.00
3	55	$27.73	$9.82	$8.08	$0.00	$45.63
4	65	$32.77	$9.82	$9.47	$0.00	$52.06
5	75	$37.81	$9.82	$10.85	$0.00	$58.48

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic$54.58 Step5 with lic$60.90

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER *LABORERS - ZONE 1*	12/01/2013	$34.35	$7.30	$12.70	$0.00	$54.35
	06/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	12/01/2014	$35.85	$7.30	$12.70	$0.00	$55.85
	06/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	12/01/2015	$37.35	$7.30	$12.70	$0.00	$57.35
	06/01/2016	$38.10	$7.30	$12.70	$0.00	$58.10
	12/01/2016	$39.10	$7.30	$12.70	$0.00	$59.10
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$28.11	$10.00	$14.18	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/10 (Drivers Hired After 4/30/2010)*TEAMSTERS LOCAL 25b*	05/01/2014	$27.73	$7.48	$8.65	$0.00	$43.86
	07/01/2014	$27.73	$7.73	$8.65	$0.00	$44.11
	05/01/2015	$27.88	$7.73	$8.92	$0.00	$44.53
	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 *TEAMSTERS LOCAL 25b*	05/01/2014	$29.03	$7.48	$8.65	$0.00	$45.16
	07/01/2014	$29.03	$7.73	$8.65	$0.00	$45.41
	05/01/2015	$29.18	$7.73	$8.92	$0.00	$45.83
	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 *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) *CARPENTERS -ZONE 2 (Residential Wood)*	04/01/2011	$24.24	$8.67	$15.51	$0.00	$48.42

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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. *CARPENTERS -ZONE 2 (Residential Wood)*

As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER 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 *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	02/01/2014	$39.21	$10.50	$10.70	$0.00	$60.41
	08/01/2014	$40.11	$10.50	$10.70	$0.00	$61.31
	02/01/2015	$41.01	$10.50	$10.70	$0.00	$62.21
	08/01/2015	$41.91	$10.50	$10.70	$0.00	$63.11
	02/01/2016	$42.81	$10.50	$10.70	$0.00	$64.01

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ROOFER - Local 33*

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.61	$10.50	$3.38	$0.00	$33.49
2	60	$23.53	$10.50	$10.70	$0.00	$44.73
3	65	$25.49	$10.50	$10.70	$0.00	$46.69
4	75	$29.41	$10.50	$10.70	$0.00	$50.61
5	85	$33.33	$10.50	$10.70	$0.00	$54.53

Effective Date - 08/01/2014

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	$10.70	$0.00	$45.27
3	65	$26.07	$10.50	$10.70	$0.00	$47.27
4	75	$30.08	$10.50	$10.70	$0.00	$51.28
5	85	$34.09	$10.50	$10.70	$0.00	$55.29

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*	02/01/2014	$39.46	$10.50	$10.70	$0.00	$60.66
	08/01/2014	$40.36	$10.50	$10.70	$0.00	$61.56
	02/01/2015	$41.26	$10.50	$10.70	$0.00	$62.46
	08/01/2015	$42.16	$10.50	$10.70	$0.00	$63.36
	02/01/2016	$43.06	$10.50	$10.70	$0.00	$64.26
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2014	$42.76	$9.82	$19.74	$2.17	$74.49
	08/01/2014	$43.61	$9.82	$19.74	$2.17	$75.34
	02/01/2015	$44.51	$9.82	$19.74	$2.17	$76.24
	08/01/2015	$45.51	$9.82	$19.74	$2.17	$77.24
	02/01/2016	$46.51	$9.82	$19.74	$2.17	$78.24
	08/01/2016	$47.66	$9.82	$19.74	$2.17	$79.39
	02/01/2017	$48.76	$9.82	$19.74	$2.17	$80.49
	08/01/2017	$49.86	$9.82	$19.74	$2.17	$81.59
	02/01/2018	$51.01	$9.82	$19.74	$2.17	$82.74

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SHEET METAL WORKER - Local 17-A*

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.10	$9.82	$4.28	$0.00	$31.20
2	40	$17.10	$9.82	$4.28	$0.00	$31.20
3	45	$19.24	$9.82	$8.70	$1.13	$38.89
4	45	$19.24	$9.82	$8.70	$1.13	$38.89
5	50	$21.38	$9.82	$9.49	$1.22	$41.91
6	50	$21.38	$9.82	$9.74	$1.23	$42.17
7	60	$25.66	$9.82	$11.05	$1.40	$47.93
8	65	$27.79	$9.82	$11.84	$1.48	$50.93
9	75	$32.07	$9.82	$13.41	$1.66	$56.96
10	85	$36.35	$9.82	$14.48	$1.82	$62.47

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.44	$9.82	$4.28	$0.00	$31.54
2	40	$17.44	$9.82	$4.28	$0.00	$31.54
3	45	$19.62	$9.82	$8.70	$1.13	$39.27
4	45	$19.62	$9.82	$8.70	$1.13	$39.27
5	50	$21.81	$9.82	$9.49	$1.22	$42.34
6	50	$21.81	$9.82	$9.74	$1.23	$42.60
7	60	$26.17	$9.82	$11.05	$1.40	$48.44
8	65	$28.35	$9.82	$11.84	$1.48	$51.49
9	75	$32.71	$9.82	$13.41	$1.66	$57.60
10	85	$37.07	$9.82	$14.48	$1.82	$63.19

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

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 *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2013	$32.34	$9.41	$8.80	$0.00	$50.55
	06/01/2014	$32.69	$9.41	$8.80	$0.00	$50.90
	08/01/2014	$32.69	$9.91	$8.80	$0.00	$51.40
	12/01/2014	$32.69	$9.91	$9.33	$0.00	$51.93
	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 *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2013	$32.63	$9.41	$8.80	$0.00	$50.84
	06/01/2014	$32.98	$9.41	$8.80	$0.00	$51.19
	08/01/2014	$32.98	$9.91	$8.80	$0.00	$51.69
	12/01/2014	$32.98	$9.91	$9.33	$0.00	$52.22
	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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1*	03/01/2014	$53.58	$8.42	$13.60	$0.00	$75.60
	10/01/2014	$54.73	$8.42	$13.60	$0.00	$76.75
	01/01/2015	$54.73	$8.42	$13.75	$0.00	$76.90
	03/01/2015	$55.73	$8.42	$13.75	$0.00	$77.90
	10/01/2015	$56.88	$8.42	$13.75	$0.00	$79.05
	01/01/2016	$56.88	$8.67	$13.90	$0.00	$79.45
	03/01/2016	$57.88	$8.67	$13.90	$0.00	$80.45
	10/01/2016	$59.03	$8.67	$13.90	$0.00	$81.60
	03/01/2017	$60.03	$8.67	$13.90	$0.00	$82.60

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

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.75	$8.42	$8.25	$0.00	$35.42
2	40	$21.43	$8.42	$8.25	$0.00	$38.10
3	45	$24.11	$8.42	$8.25	$0.00	$40.78
4	50	$26.79	$8.42	$8.25	$0.00	$43.46
5	55	$29.47	$8.42	$8.25	$0.00	$46.14
6	60	$32.15	$8.42	$8.25	$0.00	$48.82
7	65	$34.83	$8.42	$8.25	$0.00	$51.50
8	70	$37.51	$8.42	$8.25	$0.00	$54.18
9	75	$40.19	$8.42	$8.25	$0.00	$56.86
10	80	$42.86	$8.42	$8.25	$0.00	$59.53

Effective Date - 10/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$19.16	$8.42	$8.25	$0.00	$35.83
2	40	$21.89	$8.42	$8.25	$0.00	$38.56
3	45	$24.63	$8.42	$8.25	$0.00	$41.30
4	50	$27.37	$8.42	$8.25	$0.00	$44.04
5	55	$30.10	$8.42	$8.25	$0.00	$46.77
6	60	$32.84	$8.42	$8.25	$0.00	$49.51
7	65	$35.57	$8.42	$8.25	$0.00	$52.24
8	70	$38.31	$8.42	$8.25	$0.00	$54.98
9	75	$41.05	$8.42	$8.25	$0.00	$57.72
10	80	$43.78	$8.42	$8.25	$0.00	$60.45

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 *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 103*	03/01/2014	$33.44	$13.00	$13.03	$0.00	$59.47
	09/01/2014	$33.84	$13.00	$13.05	$0.00	$59.89
	03/01/2015	$34.38	$13.00	$13.06	$0.00	$60.44
	09/01/2015	$35.10	$13.00	$13.08	$0.00	$61.18
	03/01/2016	$35.81	$13.00	$13.10	$0.00	$61.91

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 103*

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.38	$13.00	$0.40	$0.00	$26.78
2	40	$13.38	$13.00	$0.40	$0.00	$26.78
3	45	$15.05	$13.00	$10.29	$0.00	$38.34
4	45	$15.05	$13.00	$10.29	$0.00	$38.34
5	50	$16.72	$13.00	$10.54	$0.00	$40.26
6	55	$18.39	$13.00	$10.79	$0.00	$42.18
7	60	$20.06	$13.00	$11.04	$0.00	$44.10
8	65	$21.74	$13.00	$11.29	$0.00	$46.03
9	70	$23.41	$13.00	$11.54	$0.00	$47.95
10	75	$25.08	$13.00	$11.79	$0.00	$49.87

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.54	$13.00	$0.41	$0.00	$26.95
2	40	$13.54	$13.00	$0.41	$0.00	$26.95
3	45	$15.23	$13.00	$10.30	$0.00	$38.53
4	45	$15.23	$13.00	$10.30	$0.00	$38.53
5	50	$16.92	$13.00	$10.55	$0.00	$40.47
6	55	$18.61	$13.00	$10.80	$0.00	$42.41
7	60	$20.30	$13.00	$11.05	$0.00	$44.35
8	65	$22.00	$13.00	$11.30	$0.00	$46.30
9	70	$23.69	$13.00	$11.55	$0.00	$48.24
10	75	$25.38	$13.00	$11.80	$0.00	$50.18

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2014	$47.00	$10.18	$18.15	$0.00	$75.33
	08/01/2014	$47.90	$10.18	$18.22	$0.00	$76.30
	02/01/2015	$48.46	$10.18	$18.22	$0.00	$76.86
	08/01/2015	$49.36	$10.18	$18.29	$0.00	$77.83
	02/01/2016	$49.93	$10.18	$18.29	$0.00	$78.40
	08/01/2016	$50.83	$10.18	$18.37	$0.00	$79.38
	02/01/2017	$51.40	$10.18	$18.37	$0.00	$79.95

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.50	$10.18	$18.15	$0.00	$51.83
2	60	$28.20	$10.18	$18.15	$0.00	$56.53
3	70	$32.90	$10.18	$18.15	$0.00	$61.23
4	80	$37.60	$10.18	$18.15	$0.00	$65.93
5	90	$42.30	$10.18	$18.15	$0.00	$70.63

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.95	$10.18	$18.22	$0.00	$52.35
2	60	$28.74	$10.18	$18.22	$0.00	$57.14
3	70	$33.53	$10.18	$18.22	$0.00	$61.93
4	80	$38.32	$10.18	$18.22	$0.00	$66.72
5	90	$43.11	$10.18	$18.22	$0.00	$71.51

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	12/01/2013	$34.70	$7.30	$12.90	$0.00	$54.90
	06/01/2014	$35.45	$7.30	$12.90	$0.00	$55.65
	12/01/2014	$36.20	$7.30	$12.90	$0.00	$56.40
	06/01/2015	$36.95	$7.30	$12.90	$0.00	$57.15
	12/01/2015	$37.70	$7.30	$12.90	$0.00	$57.90
	06/01/2016	$38.45	$7.30	$12.90	$0.00	$58.65
	12/01/2016	$39.45	$7.30	$12.90	$0.00	$59.65
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE*	12/01/2013	$33.42	$7.30	$12.90	$0.00	$53.62
	06/01/2014	$34.17	$7.30	$12.90	$0.00	$54.37
	12/01/2014	$34.92	$7.30	$12.90	$0.00	$55.12
	06/01/2015	$35.67	$7.30	$12.90	$0.00	$55.87
	12/01/2015	$36.42	$7.30	$12.90	$0.00	$56.62
	06/01/2016	$37.17	$7.30	$12.90	$0.00	$57.37
	12/01/2016	$38.17	$7.30	$12.90	$0.00	$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2013	$33.30	$7.30	$12.90	$0.00	$53.50
	06/01/2014	$34.05	$7.30	$12.90	$0.00	$54.25
	12/01/2014	$34.80	$7.30	$12.90	$0.00	$55.00
	06/01/2015	$35.55	$7.30	$12.90	$0.00	$55.75
	12/01/2015	$36.30	$7.30	$12.90	$0.00	$56.50
	06/01/2016	$37.05	$7.30	$12.90	$0.00	$57.25
	12/01/2016	$38.05	$7.30	$12.90	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.11	$10.00	$14.18	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2013	$32.92	$9.41	$8.80	$0.00	$51.13
	06/01/2014	$33.27	$9.41	$8.80	$0.00	$51.48
	08/01/2014	$33.27	$9.91	$8.80	$0.00	$51.98
	12/01/2014	$33.27	$9.91	$9.33	$0.00	$52.51
	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 *LABORERS (COMPRESSED AIR)*	12/01/2013	$45.58	$7.30	$13.30	$0.00	$66.18
	06/01/2014	$46.33	$7.30	$13.30	$0.00	$66.93
	12/01/2014	$47.08	$7.30	$13.30	$0.00	$67.68
	06/01/2015	$47.83	$7.30	$13.30	$0.00	$68.43
	12/01/2015	$48.58	$7.30	$13.30	$0.00	$69.18
	06/01/2016	$49.33	$7.30	$13.30	$0.00	$69.93
	12/01/2016	$50.33	$7.30	$13.30	$0.00	$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	12/01/2013	$47.58	$7.30	$13.30	$0.00	$68.18
	06/01/2014	$48.33	$7.30	$13.30	$0.00	$68.93
	12/01/2014	$49.08	$7.30	$13.30	$0.00	$69.68
	06/01/2015	$49.83	$7.30	$13.30	$0.00	$70.43
	12/01/2015	$50.58	$7.30	$13.30	$0.00	$71.18
	06/01/2016	$51.33	$7.30	$13.30	$0.00	$71.93
	12/01/2016	$52.33	$7.30	$13.30	$0.00	$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	12/01/2013	$37.65	$7.30	$13.30	$0.00	$58.25
	06/01/2014	$38.40	$7.30	$13.30	$0.00	$59.00
	12/01/2014	$39.15	$7.30	$13.30	$0.00	$59.75
	06/01/2015	$39.90	$7.30	$13.30	$0.00	$60.50
	12/01/2015	$40.65	$7.30	$13.30	$0.00	$61.25
	06/01/2016	$41.40	$7.30	$13.30	$0.00	$62.00
	12/01/2016	$42.40	$7.30	$13.30	$0.00	$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2013	$39.65	$7.30	$13.30	$0.00	$60.25
	06/01/2014	$40.40	$7.30	$13.30	$0.00	$61.00
	12/01/2014	$41.15	$7.30	$13.30	$0.00	$61.75
	06/01/2015	$41.90	$7.30	$13.30	$0.00	$62.50
	12/01/2015	$42.65	$7.30	$13.30	$0.00	$63.25
	06/01/2016	$43.40	$7.30	$13.30	$0.00	$64.00
	12/01/2016	$44.40	$7.30	$13.30	$0.00	$65.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2013	$32.34	$9.41	$8.80	$0.00	$50.55
	06/01/2014	$32.69	$9.41	$8.80	$0.00	$50.90
	08/01/2014	$32.69	$9.91	$8.80	$0.00	$51.40
	12/01/2014	$32.69	$9.91	$9.33	$0.00	$51.93
	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 *LABORERS - ZONE 1*	12/01/2013	$33.60	$7.30	$12.70	$0.00	$53.60
	06/01/2014	$34.35	$7.30	$12.70	$0.00	$54.35
	12/01/2014	$35.10	$7.30	$12.70	$0.00	$55.10
	06/01/2015	$35.85	$7.30	$12.70	$0.00	$55.85
	12/01/2015	$36.60	$7.30	$12.70	$0.00	$56.60
	06/01/2016	$37.35	$7.30	$12.70	$0.00	$57.35
	12/01/2016	$38.35	$7.30	$12.70	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2013	$40.49	$10.00	$14.18	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & GASFITTERS LOCAL 12*	03/01/2014	$49.41	$9.82	$14.29	$0.00	$73.52
	09/01/2014	$50.41	$9.82	$14.29	$0.00	$74.52
	03/01/2015	$51.41	$9.82	$14.29	$0.00	$75.52
	09/01/2015	$52.41	$9.82	$14.29	$0.00	$76.52
	03/01/2016	$53.56	$9.82	$14.29	$0.00	$77.67
	09/01/2016	$54.61	$9.82	$14.29	$0.00	$78.72
	03/01/2017	$55.61	$9.82	$14.29	$0.00	$79.72
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/01/2013	$25.66	$8.70	$4.48	$0.00	$38.84
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/01/2013	$36.55	$8.70	$6.58	$0.00	$51.83
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/01/2013	$29.94	$8.70	$6.05	$0.00	$44.69
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/01/2013	$23.52	$8.70	$5.24	$0.00	$37.46
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/01/2013	$36.35	$8.70	$9.43	$0.00	$54.48
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	09/01/2013	$32.08	$8.70	$6.59	$0.00	$47.37
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/01/2013	$23.52	$8.70	$3.72	$0.00	$35.94
GROUNDMAN -Inexperienced (<2000 Hrs.) *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* For apprentice rates see "Apprentice- LINEMAN"	09/01/2013	$19.25	$8.70	$2.85	$0.00	$30.80
JOURNEYMAN LINEMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	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

TELEDATA CABLE SPLICER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	07/16/2012	$26.33	$4.18	$2.79	$0.00	$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	07/16/2012	$24.78	$4.18	$2.74	$0.00	$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104*	07/16/2012	$24.78	$4.18	$2.74	$0.00	$31.70
TREE TRIMMER *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* 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.	01/29/2012	$17.18	$3.37	$0.00	$0.00	$20.55
TREE TRIMMER GROUNDMAN *OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104* 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.	01/29/2012	$15.15	$3.37	$0.00	$0.00	$18.52

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Additional Apprentice 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. Apprentice 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) unless otherwise specified.

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
** 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.