

# CITY OF QUINCY



Director of Public Buildings

## INVITATION TO BID

Project:

**SPECIFICATIONS FOR  
THE REPLACEMENT OF EMERGENCY  
GENERATOR FOR BROAD MEADOWS MIDDLE  
SCHOOL AND FIRE HEADQUARTERS**  
Deadline OCTOBER 10, 2013 @ 11:30 a.m.

A non mandatory pre-bid walk thru is scheduled for Monday, September 30, 2013 starting at 9:30 a.m. at Fire Headquarters, 40 Quincy Ave, Quincy, MA and moving on to Broad Meadows Middle School, 50 Calvin Rd. Quincy, MA. Attendance will be taken at a walk-thru inspection of the facilities; it is not required, ***but highly recommended for ALL BIDDERS!***

**If you have downloaded and/or printed out this bid from this website, please send a confirming email to [kimtrillcott@quincyma.gov](mailto:kimtrillcott@quincyma.gov) and incase of addenda, you will receive notice of its posting. It is the responsibility of each vendor to check back for any addenda before you turn in your proposal. The City of Quincy will not be responsible for any bids that have been printed omitting addenda acknowledgement.**

Any questions regarding this bid should be directed to Kathryn R. Hobin, Purchasing Agent through fax: 617-376-1074 and email: [khobin@quincyma.gov](mailto:khobin@quincyma.gov) and cc to [kimtrillcott@quincyma.gov](mailto:kimtrillcott@quincyma.gov) Questions will be accepted until Friday, October 4, 2013 @ 4:00 p.m.

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acknowledgement.*



## INVITATION TO BID

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

The City of Quincy invites sealed bids/proposals for:

**REPLACEMENT OF EMERGENCY GENERATORS @ BROAD MEADOW & FIRE HEADQUARTERS**  
**BUILDING MAINT. OCTOBER 10, 2013 @ 11:30 a.m.**

Detailed specifications are available on-line at the City of Quincy's website, [www.quincyma.gov](http://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<sup>AM</sup> and 4:30<sup>PM</sup> for a non-refundable printing charge of \$25.00

A non mandatory pre-bid walk thru is scheduled for **Monday, September 30, 2013** starting at 9:30 a.m. at Fire Headquarters, 40 Quincy Ave, Quincy, MA and then to Broad Meadows Middle School, 50 Calvin Rd. Quincy, MA at 10:00 a.m. Attendance will be taken at the walk-thru inspection of the facilities; it is not required, *but highly recommended for ALL BIDDERS!*

Any questions regarding this bid should be directed to Kathryn R. Hobin, Purchasing Agent through fax: 617-376-1074 and email: [khobin@quincyma.gov](mailto:khobin@quincyma.gov) and cc to [kimtrillcott@quincyma.gov](mailto:kimtrillcott@quincyma.gov) Questions will be accepted until Friday, October 4, 2013 @ 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



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

DETAILED SPECIFICATIONS AND REQUIREMENTS

ISSUE DATE: SEPTEMBER 25, 2013  
BID CALL: OCTOBER 10, 2013 @ 11:30 A.M.  
DEPARTMENT: PUBLIC BUILDING  
ITEM: EMERGENCY GENERATORS TO BROAD MEADOWS & FIRE HEADQUARTERS

1. A 5% certified check or bid bond is required.
2. A 100 % Payment and 100%Performance Bond is required.
3. The following forms, if applicable or 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 .....
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. Vendor should submit references on attached form provided.
9. **Vendor should submit one (1) original and (3) copies.**

\* 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.

NOTICE TO BIDDERS

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., Chap. 149, Sect. 26 to 27D as amended.

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

DATE: \_\_\_\_\_

BIDDER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

EMAIL: \_\_\_\_\_



**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)

# 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: \_\_\_\_\_



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

Phone: 376-1060

Fax: 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) \_\_\_\_\_ (OFFICER)

of this company, he 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  
(OFFICER)

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

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)

**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 OF SUB- BIDDERS (IF ANY) 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 Occupation 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 applicable to awards of subcontracts subject to section 44F.

II. CERTIFICATION REGARDING NON-COLLUSION AND DEBARMENT

The undersigned further certifies under penalties of perjury that this subbid is in all responses bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the "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 Sub-bidder

By \_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name and Title

\_\_\_\_\_  
Business Name

\_\_\_\_\_  
Street Address, City and State

# City of Quincy, Massachusetts

## INVITATION TO BID

### **“REPLACEMENT OF THE EMERGENCY GENERATOR FOR THE BROAD MEADOWS MIDDLE SCHOOL AND THE FIRE HEADQUARTERS”**

Materials/Equipment Supply and Installation

**Deadline: October 10, 2013 @ 11:30 a.m.**

The City of Quincy, Massachusetts, acting through the Director of Public Buildings, hereinafter referred to as the “City”— is seeking sealed bid for equipment and installation of a **REPLACEMENT OF THE EMERGENCY GENERATOR FOR THE “BROAD MEADOWS MIDDLE SCHOOL”** located at 50 Calvin Road, Quincy, MA and **“FIRE HEADQUARTERS”** located at 40 Quincy Ave., Quincy, MA.

#### **General Information and Proposal Submission Requirements**

The intent of this contract is as follows; Supply all required labor and deliver all materials and equipment necessary to remove and dispose of existing generators from both buildings. The new generators shall be located outside, as directed in these specifications. The new generators shall connect to a new automatic transfer switch and the bid shall include provisions for the supply and installation of any miscellaneous electrical work needed to make the required connections between generators and transfer switch, as well as between battery charger and block heater. The contractor awarded this job is required to provide an electrical/wiring installation according to the attached specifications that shall include the work of a qualified licensed electrician to provide the required power connections to the generators.

A non mandatory pre-bid walk thru is scheduled for Monday, September 30, 2013 starting at 9:30 a.m. at Fire Headquarters, 40 Quincy Ave, Quincy, MA and moving on to Broad Meadows Middle School, 50 Calvin Rd. Quincy, MA at 10:00 a.m. Attendance will be taken at a walk-thru inspection of the facilities; it is not required, ***but highly recommended for ALL BIDDERS!***

Proprietary names are used in these specifications, attention should be used to the phrase “or equal” wherever proprietary names are used in these specifications and that phrase shall mean equality of material, article, assembly or system other than that named or described in those section. It shall be understood to mean that it is at least equal in quality; durability, appearance, strength and design to the material, article, assembly or system named or described and will perform at least equally to the function imposed by the general design. The words "or equal" shall not be construed to permit departure from the detailed requirements of the plans and specifications for any materials, articles, assembly or system of any component parts thereof.

An original plus three (3) copies of the signed proposal must be turned in. Envelope should be addressed to City of Quincy, Purchasing Department, 1305 Hancock St. Quincy, MA 02169 and should be referenced: **“REPLACEMENT OF THE EMERGENCY GENERATOR FOR THE BROAD MEADOWS MIDDLE SCHOOL AND THE FIRE HEADQUARTERS”** 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.

No bid may be withdrawn after the time set for bid opening except by written notice received by the City of Quincy prior to the time and date set for the bid opening as set forth in the advertisement.

Bidders must have 5 years minimum experience in the installation of this type of equipment. Vendors are required to submit with their bid a reference list with similar projects from within the last 3 years. All vendors working in Quincy Public Schools will be required to have all personnel submit CORI checks.

**A Bid Bond of 5% of the project value must accompany the bid documents.**

### **Scope of Work**

The following items are required to complete the work of this contract as specified herein. The following scope shall not limit the contractor nor exclude work that can reasonably be inferred as required to achieve the intent of the project.

The scope of the work for **Broad Meadows Middle School** without limiting the generality thereof consists of:

- Concrete support pad
- Trenching
- Delivery of equipment
- Crane and rigging
- Disconnect, remove and dispose of existing generator from inside of building
- Replace existing automatic transfer switch with new
- Install and connect wiring between generator and transfer switch
- Install and connect wiring for battery charge and block heater
- Install and connect wiring for remote annunciator
- Connect generator to natural gas supply
- Start generator and perform function checks
- Check voltage and frequency adjust if necessary
- Stimulate power outage and connect generator to building
- Repair any damage to lawn during installation
- Provide all required permits (**City will waive cost of permits**)
- Provide a 6'0" chain link fence w/gate around generator as an *Add alternate price*

The scope of the work for **Fire Department Headquarters**:

- Delivery of crane and rigging
- Disconnect, remove and dispose of existing generator
- Replace existing automatic transfer switch with new
- Connect wiring to new generator
- Connect wiring to battery charge and block heater
- Connect control wiring from generator to transfer switch
- Install and connect wiring for remote annunciator
- Start generator and perform function checks
- Check voltage and frequency adjust if necessary

- Simulate power outage and connect generator to building
- Alter existing concrete pad size to receive new generator if necessary
- Provide all required permits (**City will waive cost of permits**)

### **Submittals and Catalogs**

The contractor shall submit documentation regarding product data on equipment, items and materials proposed for use on this job.

Submittals must be received prior to starting the job for review by the City. The contractor shall not start work without receiving the written approval from the Director of Public Buildings or his designee for the proposed material qualification data for pipe fitters, welders, and electricians. Vendor must submit field quality control reports and a start-up / commissioning report. Submit two (2) copies of an Operation and Maintenance Manual (O&M) with summary and detailed instructions and manufacturer's manuals for all components installed.

### **BID FORMS - (Checklist provided)**

Bids must be submitted on this original document. Response forms must be filled in completely and not contain any additions or alterations from the original specifications.

### **The Authorized Representative must sign the original copy.**

- √ \_\_\_ Any addendum issued by the City of Quincy relative to this bid.
- √ \_\_\_ Tax Compliance Form-(Chapter 62C, Section 49A)
- √ \_\_\_ Signature Authorization Form
- √ \_\_\_ Certificate of Non-Collusion
- √ \_\_\_ Certification Relating to Debarment and Suspension
- √ \_\_\_ Certification of General/Sub Bidders on Public Construction (OSHA10 form(s))
- √ \_\_\_ Indemnity Agreement
- √ \_\_\_ Bid Form-(Price proposal page)
- √ \_\_\_ 5% Bid Bond is required

### **Delivery and Storage**

Equipment and Materials New components and materials must be properly factory packaged and brought to the site in original, unopened containers with labels sufficient to identify the pieces. Containers shall be stored and protected, raised above floor level and kept dry until ready for use.

### **Supervision**

Adequate full-time supervision shall be assigned to the job by the contractor. Supply contact information of supervisory personnel to the City of Quincy, Director of Public Buildings.

## **Protection of City Property**

The contractor shall furnish and place temporary protective coverings on all walls, floors and wherever required to insure finishes are not damaged during any part of the removal of old components and the installation of new work. Protection shall be furnished for all surfaces involved in any staging or hoisting operations. If any City property is lost or damaged during the performance of these requirements, the City at its option may require the contractor to pay for or replace at its expense, all damaged property. In the event that the contractor fails to pay or replace damaged property, the City, may withhold from any payment due the contractor money that equals the reasonable cost of replacement or repair of such property.

## **Guarantee**

The contractor shall supply to the City a written guarantee that warrants all workmanship, components and equipment supplied under this contract to perform to specification for a period of one year from final date of acceptance. Any defects in material or workmanship that develop within this period shall be promptly repaired or replaced to the City's satisfaction by the contractor without any additional cost to the City. Said guarantee shall further stipulate that the contractor shall remedy and correct any damage caused in making such necessary repairs and replacements.

## **Execution of Job**

1. Work on this project shall commence within ten (10) days of executing the contract(s). The contractor shall provide a schedule with milestones and a City-agreed upon completion date.
2. The contractor will store material and equipment in spaces designed by the Director of Plant Facilities. The City will not be responsible for loss or damage to any of the contractor's tools, material or equipment.
3. Work shall be performed on weekdays between the hours of 7:00AM and 4:00PM. Other times for work may be by mutual agreement of the City and contractor. Work must be completed within 30 days of delivery of new generator units.
4. All work shall be safely undertaken in conformance to the more stringent requirements of either OSHA (Occupational Safety and Health Act) regulations or the U.S. Army Corps of Engineers Construction Safety Manual.
5. Work shall conform to all pertinent provisions of the latest editions of the Massachusetts State Building Code 780 CMR and State Plumbing Code 248 CMR, International Building Code, NFPA 54 Guidelines for Gas Devices / Piping and any other code referenced and as such thereby being incorporated into Massachusetts codes.

## **Clean Up**

Clean and sweep work area every day. Upon completion of the installation and prior to final inspection by the City, the contractor shall clean the work area around generators and any other areas affected by work under this contract. The contractor shall remove and legally dispose of all debris generated by this project.

**Prevailing Wage**

Pursuant to Chapter 179 of the Acts of 1997, the Design-Installation Contractor and its Subcontractors must pay the Minimum Wage Rates established by the Commonwealth of Massachusetts, Department of Labor and Workforce Development, Division of Occupational Safety, contained in the Contract Documents. Consistent with the requirements of Section 27B of Chapter 149 of the General Laws, the Design-Installation Contractor shall, on a weekly basis, submit certified payrolls, and any other relevant information, to the Authority, in order to permit the Authority to monitor compliance by the Design/Installation Contractor with this section. (See Wage Schedule at end of this document.)

**Award Notification**

The City of Quincy shall award contract(s) separately, and contracts shall be based on the lowest responsible and eligible general bidder. The contract will be awarded within 2 weeks of the bid opening date.

The successful vendor must furnish a **100% Performance and 100% Payment Bond** after the contract is awarded.

Any and all questions regarding this bid should be directed to Kathryn R. Hobin, Purchasing Agent through fax: 617-376-1074 and email: [khobin@quincyma.gov](mailto:khobin@quincyma.gov) and cc to [kimtrillcott@quincyma.gov](mailto:kimtrillcott@quincyma.gov) Questions will be accepted until October 4, 2013 at 4:00 p.m.

The City of Quincy requires the awarded contract provide a certificate of liability Insurance.

*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](http://www.quincyma.gov)) before you turn in your proposal. The City of Quincy will not be responsible any bids received omitting addenda acknowledgement.*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Company Address

\_\_\_\_\_  
Email Address

**PRICE PROPOSAL PAGE**

**Price to Supply and Install: The Replacement  
Of an Emergency Generator @ Broad Meadows** \$ \_\_\_\_\_

**Price to Supply and Install: The Replacement  
Of an Emergency Generator @ Fire Headquarters** \$ \_\_\_\_\_

**Alternate #1- Pricing for Fencing @ Broad Meadows** \$ \_\_\_\_\_

Receipt of Addendum No. \_\_\_\_\_ acknowledged by: \_\_\_\_\_

The unit shall be the product of a manufacture regularly engaged in the production of this type of equipment as manufactured by Kohler, Caterpillar, Onan. "or equal."

\_\_\_\_\_  
Name of General Bidder

By: \_\_\_\_\_  
Authorized Agent

\_\_\_\_\_  
Print or type name

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: \_\_\_\_\_

# **Generator Set Specification**

**Broad Meadows Middle School**

To see all the details that are visible on the screen, use the "Print" link next to the map.

Google



⊗ LOCATION OF NEW GENERATOR

BROAD MEADOWS SCHOOL



BROAD MEADOWS SCHOOL



BROAD MEADOWS FLOOD PLAIN ELEV.

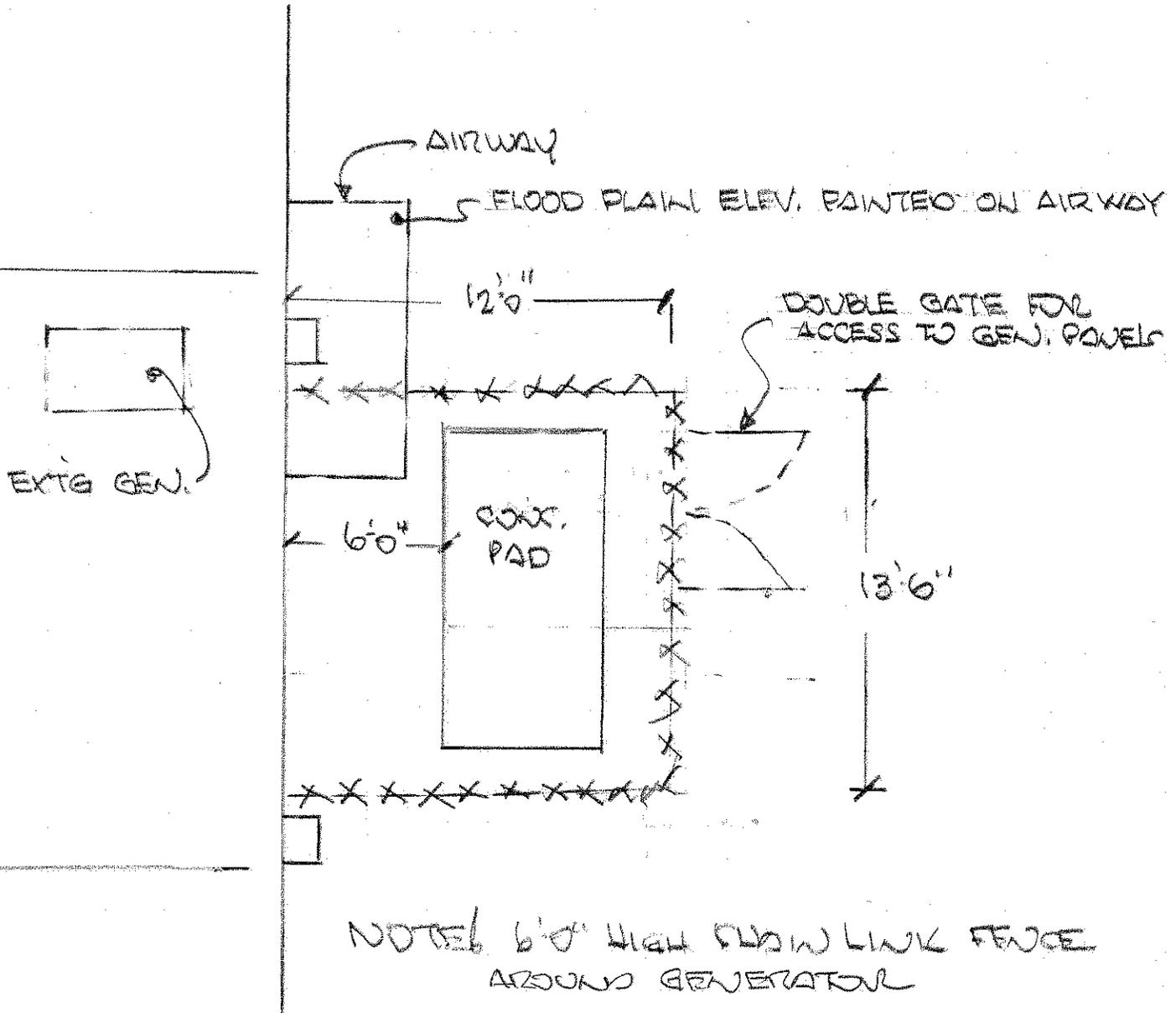


# City of Quincy Public Buildings Dept.

Thomas P Koch  
Mayor

Gary J Cunniff  
Director

## LOCATION OF GENERATOR @ BROAD MEADOWS MIDDLE SCHOOL



Notes:

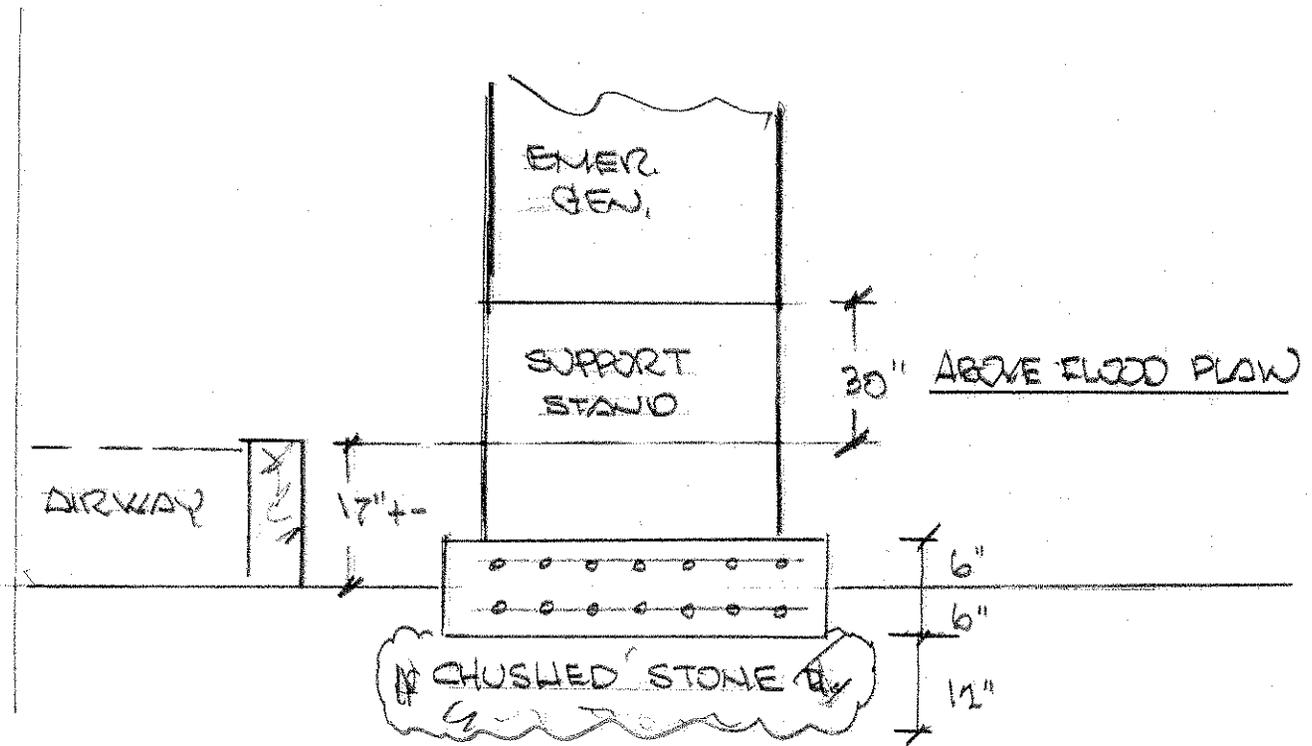




# City of Quincy Public Buildings Dept.

Thomas P Koch  
Mayor

Gary J Cunniff  
Director



## NOTES

1. GENERATOR TO BE 30" ABOVE FLOOD PLAIN
2. 12" THICK CONJC. PAD, #4000 PSI W/# 4 RE. BAR @ 12" O.C. TOP & BOTTOM
3. CONJC. PAD TO BE 12" LARGER THAN GENERATOR BASE

BROAD MEADOWS SCHOOL

Notes:



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## **Table of Contents**

### **Section: Generator Set**

1. Scope of Work
2. General Requirements
3. Submittal
4. Codes and Standards
5. Testing
6. Warranty and Maintenance
7. Equipment
8. Engine
9. Alternator
10. Controller
11. Accessories

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SECTION  
SPECIFICATIONS: GENERATOR SET

**1.Scope of Work**

- 1.1. It is the intent of this specification to secure an engine-driven generator set that has been prototype tested, factory built, production-tested, and site-tested together with all accessories necessary for a complete installation as shown on the plans and drawings and specified herein.
- 1.2. Any and all exceptions to the published specifications shall be subject to the approval of the engineer.
- 1.3. The power system shall be furnished by a single manufacturer who shall be responsible for the design, coordination, and testing of the complete system. The entire system shall be installed as shown on the plans, drawings, and specifications herein.
- 1.4. The equipment shall be produced by a manufacturer who has produced this type of equipment for a period of at least 10 years and who maintains a service organization available twenty-four hours a day throughout the year.
- 1.5. The equipment shall be produced by a manufacturer who is ISO 9001 certified for the design, development, production and service of its complete product line.
- 1.6. This price shall include a complete turn-key installation.

**2.General Requirements**

- 2.1. It is the intent of this specification to secure a generator set system that has been tested during design verification, in production, and at the final job site. The generator set will be a commercial design and will be complete with all of the necessary accessories for complete installation as shown on the plans, drawings, and specifications herein. The equipment supplied shall meet the requirements of the National Electrical Code and applicable local codes and regulations.
- 2.2. All equipment shall be new and of current production by a national firm that manufactures the generator sets and controls, transfer switches, and switchgear, and assembles the generator sets as a complete and coordinated system. There will be one-source responsibility for warranty, parts, and service through a local representative with factory-trained servicemen.

**3.Submittal**

- 3.1. The submittal shall include prototype test certification and specification sheets

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showing all standard and optional accessories to be supplied; schematic wiring diagrams, dimension drawings, and interconnection diagrams identifying by terminal number each required interconnection between the generator set, the transfer switch, and the remote annunciator panel if it is included elsewhere in these specifications.

#### **4. Codes and Standards**

- 4.1. The generator set shall be listed to UL 2200 or submitted to an independent third party certification process to verify compliance as installed.
- 4.2. The generator set shall conform to the requirements of the following codes and standards:
  - 4.2.1. CSA C22.2, No. 14-M91 Industrial Control Equipment.
  - 4.2.2. EN50082-2, Electromagnetic Compatibility-Generic Immunity Requirements, Part 2: Industrial.
  - 4.2.3. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
  - 4.2.4. IEC8528 part 4, Control Systems for Generator Sets.
  - 4.2.5. IEC Std 61000-2 and 61000-3 for susceptibility, 61000-6 radiated and conducted electromagnetic emissions.
  - 4.2.6. IEEE446 Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
  - 4.2.7. NFPA 70, National Electrical Code, Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
  - 4.2.8. NFPA 99, Essential Electrical Systems for Health Care Facilities.
  - 4.2.9. NFPA 110, Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit. Component level type tests will not substitute for this requirement.

#### **5. Testing**

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- 5.1. To ensure that the equipment has been designed and built to the highest reliability and quality standards, the manufacturer and/or local representative shall be responsible for three separate tests: design prototype tests, final production tests, and site tests.
  
  - 5.2. **Design Prototype Tests.** Components of the emergency system, such as the engine/generator set, transfer switch, and accessories, shall not be subjected to prototype tests because the tests are potentially damaging. Rather, similar design prototypes and preproduction models shall be subject to the following tests:
    - 5.2.1. Maximum power (kW).
    - 5.2.2. Maximum motor starting (kVA) at 35% instantaneous voltage dip.
    - 5.2.3. Alternator temperature rise by embedded thermocouple and/or by resistance method per NEMA MG1-32.6.
    - 5.2.4. Governor speed regulation under steady-state and transient conditions.
    - 5.2.5. Voltage regulation and generator transient response.
    - 5.2.6. Harmonic analysis, voltage waveform deviation, and telephone influence factor.
    - 5.2.7. Three-phase short circuit tests.
    - 5.2.8. Alternator cooling air flow.
    - 5.2.9. Torsional analysis to verify that the generator set is free of harmful torsional stresses.
    - 5.2.10. Endurance testing.
  
  - 5.3. **Final Production Tests.** Each generator set shall be tested under varying loads with guards and exhaust system in place. Tests shall include:
    - 5.3.1. Single-step load pickup
    - 5.3.2. Safety shutdown device testing
    - 5.3.3. Rated Power @ 0.8 PF

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- 5.3.4. Maximum power
  - 5.3.5. Upon request, a witness test, or a certified test record sent prior to shipment.
- 5.4. **Site Tests.** The manufacturer's distribution representative shall perform an installation check, startup, and building load test. The engineer, regular operators, and the maintenance staff shall be notified of the time and date of the site test. The tests shall include:
- 5.4.1. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturer's recommendations, under the environmental conditions present and expected.
  - 5.4.2. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. These shall include: block heaters, battery chargers, alternator strip heaters, remote annunciators, etc.
  - 5.4.3. Generator set startup under test mode to check for exhaust leaks, path of exhaust gases outside the building, cooling air flow, movement during starting and stopping, vibration during operation, normal and emergency line-to-line voltage and frequency, and phase rotation.
  - 5.4.4. Automatic start by means of a simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timers shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with generator set voltage, amperes, and frequency shall be monitored throughout the test.

## 6. Warranty and Maintenance

- 6.1. The generator set shall include a standard one year warranty to guarantee against defective material and workmanship in accordance with the manufacturer's published warranty from date of startup. Optional warranties shall be available upon request.
- 6.2. The generator set manufacturer and its distributor shall maintain a 24-hour parts and service organization. This organization shall regularly engage in maintenance contract programs to perform preventive maintenance and service on equipment similar to that specified. A service agreement shall be available and shall include system operation under simulated operating conditions; adjustment to the generator set, transfer switch, and switchgear controls as required, and certification in the owner's maintenance log of repairs made and function tests performed on all systems.

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## 7. Equipment

- 7.1. The generator set shall be a Kohler model 60REZGB with a 4P10X alternator. It shall provide 60kW/75.0 kVA when operating at 120/208 volts, 60 Hz, .8 power factor. The generator set shall be capable of a Standby 130°C rating while operating in an ambient condition of less than or equal to 77° F and a maximum elevation of 656 feet above sea level.
- 7.2. Motor starting performance and voltage dip determinations shall be based on the complete generator set. The generator set shall be capable of supplying 207 LRKVA for starting motor loads with a maximum instantaneous voltage dip of 35%, as measured by a digital RMS transient recorder in accordance with IEEE standard 115. Motor starting performance and voltage dip determination that does not account for all components affecting total voltage dip i.e. engine, alternator, voltage regulator and governor will not be acceptable. As such, the generator set shall be prototype tested to optimize and determine performance as a generator set system.
- 7.3. Vibration isolators shall be provided between the engine-alternator and heavy-duty steel base.

## 8. Engine

- 8.1. The minimum 350-cubic-inch displacement engine shall deliver a minimum of 105 HP at a governed engine speed of 1800 rpm, and shall be equipped with the following:
  - 8.1.1. Electronic isochronous governor capable of 0.5% steady-state frequency regulation.
  - 8.1.2. 12-volt positive-engagement solenoid shift-starting motor.
  - 8.1.3. 70-ampere automatic battery charging alternator with a solid-state voltage regulation.
  - 8.1.4. Positive displacement, full-pressure lubrication oil pump, cartridge oil filters, dipstick, and oil drain.
  - 8.1.5. Dry-type replaceable air cleaner elements for normal applications.
  - 8.1.6. Engine-driven or electric fuel-transfer pump including fuel filter and electric solenoid fuel shutoff valve capable of lifting fuel.
- 8.2. The turbocharged engine shall be fueled by natural gas.

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- 8.3. The engine shall have a minimum of 8 cylinders and be liquid-cooled by Unit Mounted Radiator 122°F/50°C.
  - 8.4. The engine shall be EPA certified from the factory, and shall not require a site performance test.
  - 8.5. Natural Gas fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories shall be within the operating range of 1.74-2.74 kPa (7.0-11.0 in. H<sup>2</sup>O).

## 9. Alternator

- 9.1. The alternator shall be salient-pole, brushless, 2/3-pitch, 12 lead, self-ventilated with drip-proof construction and amortisseur rotor windings and skewed for smooth voltage waveform. The ratings shall meet the NEMA standard (MG1-32.40) temperature rise limits. The insulation shall be class H per UL1446 and the varnish shall be a fungus resistant epoxy. Temperature rise of the rotor and stator shall be limited to Standby 130°C. The excitation system shall be of brushless construction controlled by a solid-state voltage regulator capable of maintaining voltage within ±2.0% at any constant load from 0% to 100% of rating. The AVR shall be capable of proper operation under severe nonlinear loads and provide individual adjustments for voltage range, stability and volts-per-hertz operations. The AVR shall be protected from the environment by conformal coating. The waveform harmonic distortion shall not exceed 5% total RMS measured line-to-line at full rated load. The TIF factor shall not exceed 50.
- 9.2. The alternator shall have a single maintenance-free bearing, designed for 40000 hour B10 life. The alternator shall be directly connected to the flywheel housing with a semi-flexible coupling between the rotor and the flywheel.
- 9.3. The generator shall be inherently capable of sustaining at least 250% of rated current for at least 10 seconds under a 3-phase symmetrical short circuit without the addition of separate current-support devices.

## 10. Controller

### 10.1. Decision Maker® 3000 Generator Set Controller

- 10.1.1. The generator set controller shall be a microprocessor based control system that will provide automatic starting, system monitoring and protection. The controller system shall also provide local monitoring and remote monitoring. The control system shall be capable of PC based updating of all necessary parameters, firmware and software. .
- 10.1.2. The controller shall be mounted on the generator set and shall have integral vibration isolation. The controller shall be prototype and reliability

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tested to ensure operation in the conditions encountered.

## 10.2. Controller Buttons, Display and Components

The generator set controller shall include the following features and functions:

- 10.2.1. Push button Master Control buttons. The buttons shall be tactile-feel membrane with an indicator light to initiate the following functions:
  - Run Mode: When in the run mode the generator set shall start as directed by the operator.
  - Off/Reset Mode: When in the Off/Reset mode the generator set shall stop, the reset shall reset all faults, allowing for the restarting of the generator set after a shutdown.
  - Auto Mode: When in Auto the mode the generator set shall be ready to accept a signal from a remote device.
- 10.2.2. Emergency Stop Switch. The remote stop switch shall be red in color with a "mushroom" type head. Depressing the stop button will immediately stop the generator set and lockout the generator set for any automatic remote starting.
- 10.2.3. Push Button/Rotary Selector dial. This dial shall be used for selection of all Menus and sub-menus. Rotating the dial moves you through the menus, pushing the dial selects the menu and function/features in that menu. Pushing the button selects the feature/function and sub-menus.
- 10.2.4. Digital Display. The digital display shall be alphanumeric, with 2 lines of data and approximately 24 characters. The display shall have back lighting for ease of operator use in high and low light conditions. The display shall display status of all faults and warnings. The display shall also display any engine faults. While the generator set is running the display shall scroll all important information across the screen for ease of operator use. The scroll can be stopped by pushing the rotary dial. The display shall fall asleep when the generator set is not running and will wake-up when the generator set starts or the rotary dial is depressed.
- 10.2.5. Fault Light. The controller shall have an annunciator fault light that glows red for faults and yellow for warnings. These faults and warnings shall be displayed in the digital display. The fault light will also glow yellow when not in AUTO.
- 10.2.6. Alarm Horn. The controller shall provide an alarm horn that sounds when any faults or warnings are present. The horn shall also sound when the controller is not in the AUTO mode.

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- 10.2.7. Alarm Silence/Lamp Test Button. When this button is depressed it shall test all controller lamps. This button will also silence the alarm horn when the unit is not AUTO.
  - 10.2.8. USB Connection. The controller shall have a USB connection on the face of the controller. This connection shall allow for updating of all software and firmware. This port shall also allow for all servicing of generator set parameters, fault diagnostics and viewing of all controller information via use a laptop computer.
  - 10.2.9. Dedicated user inputs. The controller shall have dedicated inputs for remote emergency stop switch, remote 2 wire star for transfer switch and auxiliary shutdown.
  - 10.2.10. The controller shall have auto resettable circuit protection integral on the circuit board.

### 10.3. System Controller Monitoring and Status Features and Functions

The generator controller shall display and monitor the following engine and alternator functions and allow adjustments of certain parameters at the controller:

- 10.3.1. Overview menu
  - 1. Active shutdowns and warnings shall be displayed if present and without the need of operator interface.
  - 2. Engine runtime with total hours
  - 3. Average line to line voltage
  - 4. Coolant temperature
  - 5. Fuel level or pressure
  - 6. Oil pressure
  - 7. Battery voltage
  - 8. Software version
  - 9. Frequency
  - 10. Average current
- 10.3.2. Engine metering menu
  - 1. Engine speed
  - 2. Oil pressure
  - 3. Coolant temperature
  - 4. Battery voltage
- 10.3.3. Generator metering menu
  - 1. Total power in VA
  - 2. Total power in W
  - 3. Rated power % used
  - 4. Voltage L-L and L-N for all phases

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5. Current L1, L2, L3
  6. Frequency

- 10.3.4. Generator set information
  1. Generator set model number
  2. Generator set serial number
  3. Controller set number

- 10.3.5. Generator set run time
  1. Engine run time total hours
  2. Engine loaded total hours
  3. Number of engine starts
  4. Total energy in kW

- 10.3.6. Generator set system
  1. System voltage
  2. System frequency 50/60Hz
  3. System phase, single/three phase
  4. Power rating kW
  5. Amperage rating
  6. Power type standby/prime
  7. Measurement units, metric/English units adjustable
  8. Alarm silence, always or auto only

- 10.3.7. Generator set calibration, the following are adjustable at the controller
  1. Voltage L-L and L-N all phases
  2. Current L1, L2, L3
  3. Reset all calibrations

- 10.3.8. Voltage regulation, +/-0.5% regulation, the following is adjustable at the controller
  1. Voltage Adjustable +/- 10%

- 10.3.9. Digital and Analog Inputs and outputs
  1. Displays settings and status

- 10.3.10. Event Log
  1. Stores event history, up to 1000 events

#### 10.4. **Controller Engine control features and functions**

- 10.4.1. Automatic restart - the controller has automatic restart feature which initiates the start routine and re-crank after a failed start attempt.

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- 10.4.2. Cyclic cranking - the controller shall have programmable cyclic cranking
  - 10.4.3. Engine starting aid - the controller shall have the capability of providing control for an optional engine starting aid.
  - 10.4.4. The control system shall include time delays for engine start and cool down.
  - 10.4.5. The control system shall interface with the engine ECM and display engine fault codes and warnings. The ECM shall also include sender failure monitoring to help distinguish between failed senders and actual failure conditions.
  - 10.4.6. The controller shall monitor and display engine governor functions with include steady state and transient frequency monitoring.

**10.5. Controller Alternator control features and functions**

- 10.5.1. Integrated hybrid voltage regulator. The system shall have integral microprocessor based voltage regulator system that provides +/- 5% voltage regulation, no-load to full load with three phase sensing. The system is prototype tested and control variation of voltage to frequency. The voltage regulator shall be adjustable at the controller with maximum +/- 10% adjustable of nominal voltage.
- 10.5.2. AC output voltage regulator adjustment. The system shall allow for adjustment of the integral voltage regulator with maximum of +/- 10% adjustment of the system voltage.
- 10.5.3. Alternator thermal overload protection. The system shall have integral alternator overload and short circuit protection matched to each alternator for the particular voltage and phase configuration.
- 10.5.4. Power metering. The controller digitally displays power metering of kW and kVA.

**10.6. Other control features and functions**

- 10.6.1. Event logging. The controller keeps a record of up to 1000 events, for warning and shutdown faults. This fault information becomes a stored record of systems events and can be reset.
- 10.6.2. Historical data logging. The controller total number of generator set successful start shall be recorded and displayed.

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- 10.6.3. Programmable access. The control system shall include a USB port that gives service technicians the ability to provide software and firmware upgrades. The system shall also be capable of allowing setting of all critical parameters using the service software and a laptop computer. All parameters and setting should be capable to being stored on a laptop for future upgrades of printing for analysis.

## 10.7. Generator Set Warning, Shutdown Alarm and Status

The generator set shall have alarms and status indication lamps that show non-automatic status and warning and shutdown conditions. The controller shall indicate with a warning lamp and or alarm and on the digital display screen any shutdown, warning or engine fault condition that exists in the generator set system. The following alarms and shutdowns shall exist as a minimum:

### 10.7.1. Engine functions

1. Critical high fuel level (alarm)
2. ECM communication loss (shutdown)
3. ECM diagnostics (alarm & shutdown)
4. Engine overspeed (shutdown)
5. Engine start aid active
6. Engine under speed (shutdown)
7. Fuel tank leak (alarm & shutdown)
8. High DC battery voltage (alarm)
9. High coolant temperature (alarm & shutdown)
10. High fuel level (alarm)
11. Low DC battery voltage (alarm)
12. Low coolant level (shutdown)
13. Low coolant temperature (alarm)
14. Low cranking voltage (alarm)
15. Low engine oil level (alarm & shutdown)
16. Low fuel level (alarm & shutdown)
17. Low fuel pressure (alarm)
18. Low oil pressure (alarm & shutdown)
19. No coolant temperature signal (shutdown)
20. No oil pressure signal (shutdown)
21. Overcrank (shutdown)
22. Speed sensor fault (alarm)

### 10.7.2. Generator functions

1. AC sensing loss over & under current (alarm & shutdown)
2. Alternator protection (shutdown)
3. Ground fault input (alarm)
4. kW overload (shutdown)
5. Locked rotor (shutdown)
6. Over-frequency (shutdown)
7. Over AC voltage (shutdown)
8. Under-frequency (shutdown)

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9. Under AC voltage (shutdown)
  10. Emergency stop (shutdown)

10.7.3. Other General functions

1. Battery charger fault (alarm)
2. Common fault (shutdown)
3. Common warning (alarm)
4. Master switch not in auto (alarm)
5. Generator running
6. Input/Output fault (alarm)

10.7.4. The generator set controller shall also be capable of meeting all necessary NFPA 110 level 1 requirements which include several of the above along with; EPS supplying load, Master switch no in auto and contacts for local and remote common alarm.

**10.8. Generator Remote Monitoring and other devices**

10.8.1. Remote annunciator. Shall provide a minimum of 20 light remote annunciator panel for monitoring generator set conditions conveniently by facility personnel. The annunciator shall provide audible and visual alarms that meet NFPA 110 level 1 system requirements. The device shall have warnings for high/low battery voltage, battery charger failure and spare alarms for user defined inputs. The device shall have an area to identify the system device. Lamp test and alarm silence buttons will be provided. Alarm horn shall work in accordance with NFPA 110. The device shall also have the capability of annunciating Transfer Switch functions and have a key switch for testing of the automatic transfer switch. The annunciator shall also have a USB port for the upgrading of software, firmware and for allowing service personnel to change device parameters.

10.8.2. Inputs and Outputs. The controller shall have relay outputs and digital and analog inputs standard on the board. Also provide additional inputs and outputs via remote board that connects to the genset controller and provides optional connections for customer devices.

**10.9. Communications**

10.9.1. If the generator set engine is equipped with an ECM (engine control module), the controller shall communicate with the ECM for control, monitoring, diagnosis, and meet SAE J1939 standards.

10.9.2. Kohler proprietary RBUS communication shall be available.

10.9.3. A RBUS shall be able to monitor and alter parameters, and start or stop

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a generator.

- 10.9.4. The controller shall have the capability to communicate to a personal computer (IBM or compatible) running Windows XP, or Windows 7 or later.
- 10.9.5. A variety of connections shall be available based on requirements:
  - 1. A single control connection to a PC via USB
  - 2. Internet connection via Ethernet
- 10.9.6. Generator and transfer switch controls shall be equipped with communications modules capable of connecting to the same communication network.

## 11. Accessories

- 11.1. **Battery Charger.** A 6-ampere automatic float to equalize battery charger with the following features:
  - 1. 12 VDC output
  - 2. 1% steady-state voltage regulation from no load to full load over 10% AC input line voltage variation
  - 3. LED lamps for charge state indication
  - 4. Temperature compensated for ambient temperatures for -40°C to 70°C
  - 5. Potting for durability
  - 6. Short-circuit and reverse polarity protection
  - 7. UL 1236 listed
- 11.2. **Battery Rack and Cables.** Battery rack and battery cables capable of holding the manufacturer's recommended batteries shall be supplied.
- 11.3. **Critical Silencer.** The engine exhaust silencer shall be temperature and rust resistant, and rated for critical applications. The silencer will reduce total engine exhaust noise by 25-35 db(A).
- 11.4. **Circuit Breaker.** The generator shall come with a primary, factory installed, 100% rated line circuit breaker of 200 amperes that is UL2200 listed. Line circuit breakers shall be sized for the rated ampacity of the genset. Load side lugs shall be provided from the factory. The line circuit breaker shall include auxiliary contacts, shunt trip, undervoltage trip, alarm switch, and overcurrent switch functionality. Load side breaker connections made at the factory shall be separated from field connections. When GFI breakers are required, additional neutrals shall be factory installed.
- 11.5. **Flex Exhaust Tube.** The exhaust piping shall be gas proof, seamless, stainless

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steel, flexible exhaust bellows with threaded NPT connection.

- 11.7. **Remote Annunciator Panel.** The remote annunciator shall meet NFPA 110, Level 1 requirements and enable remote viewing of the generator status. The panel shall be connected to the generator controller via either network communication wires or via hard wired connections. Options shall be available to provide ATS source position, loaded test, and retransfer. The panel shall have the capability to be either flush-mounted or surface-mounted. The annunciator shall meet UL508 requirements.
- 11.8. **Standard Air Cleaner.** The air cleaner shall provide engine air filtration which meets the engine manufacturer's specifications under typical operating conditions.
- 11.9. **Block Heater.** The block heater shall be thermostatically controlled and sized to maintain manufacturers recommended engine coolant temperature to meet the start-up requirements of NFPA 99 and NFPA 110, Level 1.

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SECTION  
SPECIFICATIONS: TRANSFER SWITCH

**1. Scope of Work**

1.1. Furnish and install an automatic transfer switches system(s) with 3 Pole [T], 225 Amps, 208 Volt-60Hz [C], and Three. Each automatic transfer shall consist of an inherently double throw power transfer switch mechanism and a microprocessor controller to provide automatic operation. All transfer switches and controllers shall be the products of the same manufacturer.

**2. Codes and Standards** - The automatic transfer switches and controls shall conform to the requirements of:

- 2.1. UL 1008 - Standard for Transfer Switch Equipment
- 2.2. IEC 947-6-1 Low-voltage Switchgear and Control gear; Multifunction equipment; Automatic Transfer Switching Equipment
- 2.3. NFPA 70 - National Electrical Code
- 2.4. NFPA 99 - Essential Electrical Systems for Health Care Facilities
- 2.5. NFPA 110 - Emergency and Standby Power Systems
- 2.6. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
- 2.7. NEMA Standard ICS10-1993 (formerly ICS2-447) - AC Automatic Transfer Switches
- 2.8. UL 508 Industrial Control Equipment
- 2.9. CSA C22.2 No. 178 certification

**3. Acceptable Manufacturers**

3.1. Automatic transfer switches shall be Kohler Specific Breaker Rated - Standard Transition (KSS)/KSSDCTA0225S. Any alternate shall be submitted for approval to the consulting engineer at least 10 days prior to bid date. Alternate bids shall include a line-by-line clarification of the specification marked with "D" for deviation; "E" for exception, and "C" for comply.

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#### 4. Mechanically Held Transfer Switch

- 4.1. The transfer switch shall be electrically operated and mechanically held with double throw construction, and operated by a momentarily energized solenoid-driven mechanism. Main operators shall include overcurrent disconnect devices; linear motors or gears shall not be acceptable.
- 4.2. All transfer switch sizes shall use only one type of main operator for ease of maintenance and commonality of parts.
- 4.3. The switch shall be positively locked and unaffected by momentary outages, so that contact pressure is maintained at a constant value and contact temperature rise is minimized for maximum reliability and operating life.
- 4.4. All main contacts shall be silver composition. Switches rated 600 amperes and above shall have segmented, blow-on construction for high withstand and close-on capability and be protected by separate arcing contacts.
- 4.5. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. Switches rated 600 amps and higher shall have front removable and replaceable contacts. All stationary and moveable contacts shall be replaceable without removing power conductors and/or bus bars.
- 4.6. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources, are not acceptable.
- 4.7. Where neutral conductors are to be solidly connected as shown on the plans, a neutral conductor plate with fully rated AL-CU pressure connectors shall be provided.

#### 5. Enclosure

- 5.1. The ATS shall be furnished in a NEMA 1 (A) enclosure.
- 5.2. All standard door mounted switches and long life super bright type indicating LEDs described in section 3 shall be integrated into a flush-mounted, interface membrane or equivalent in the enclosure door for easy viewing & replacement. The panel shall be capable of having manual locking feature to allow the user to lockout all membrane mounted control switches to prevent unauthorized tampering. This cover shall be mounted with hinges and have a latch that may be padlocked. The membrane panel shall be suitable for mounting by others when furnished on open type units.

## 6. Controller Display and Keypad

6.1. A four line, 20 character LCD display and dynamic 4 button keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the communications interface port. The following parameters shall only be adjustable via a password protected programming on the controller (dip switches shall not be acceptable):

- Nominal line voltage and frequency
- Single or three phase sensing
- Operating parameter protection
- Transfer operating mode configuration (Open transition, Closed transition, or Delayed transition)

All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

## 7. Voltage, Frequency and Phase Rotation Sensing

7.1. Voltage (all phases) and frequency on both the normal and emergency sources shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as % of nominal unless otherwise specified):

Parameter	Dropout/Trip	Pickup/Reset
Under voltage	75 to 98%	85 to 100%
Over voltage	105 to 135%	95 to 100% of trip
Under frequency	85 to 99%	95 to 99%
Over frequency	105 to 120%	101 to 105%
Voltage unbalance	5 to 20%	3% to 18%

7.2. Repetitive accuracy of all settings shall be within  $\pm 0.5\%$  over an operating temperature range of  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

7.3. An adjustable dropout time for transient voltage and frequency excursions shall be provided. The time delays shall be 0.1 to 9.9 seconds for voltage and .1 to 15 seconds for frequency.

7.4. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via the communications interface port.

7.5. The controller shall be capable of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or BAC). Unacceptable phase rotation shall be indicated on the LCD; the service required LED and the annunciation through communication protocol and dry contacts. In addition, the phase rotation sensing shall be capable of being defeated, if required.

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- 7.6. The controller shall be capable of detecting a single phasing condition of a source, even though a voltage may be regenerated by the load. This condition shall be considered a failed source.
  - 7.7. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases (phase to phase and phase to neutral), frequency, and phase rotation.

## 8. Time Delays

- 8.1. An adjustable time delay of 0 to 10 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes by providing an external 12 or 24 VDC power supply.
- 8.2. A time delay shall be provided on transfer to the emergency source, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
- 8.3. A time delay shall be provided on re-transfer to normal. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
- 8.4. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.
- 8.5. A time delay activated output signal shall also be provided to drive external relay(s) for selective load disconnect control. The controller shall be capable of controlling a maximum of 9 individual output time delays to step loads on after a transfer occurs. Each output may be individually programmed for their own time delay of up to 60 minutes. Each sequence shall be independently programmed for transferring from normal to emergency and transferring from emergency to normal. The controller shall also include the following built-in time delays for the following operations:
  - 1. 0 to 60 minute time delay on failure to acquire the acceptable electrical parameters from the emergency source
  - 2. 0 to 60 minute time delay for a failure to synchronize on an in-phase operation.
  - 3. 60 minute time delay for the load disconnect position for delayed transition operation.
- 8.6. All time delays shall be adjustable in 1 second increments.
- 8.7. All time delays shall be adjustable by using the display and keypad or with a remote device connected to the communications interface port through a security-password system.

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- 8.8. All time delays shall be adjustable by using the display and keypad or with a remote device connected to the communications interface port through a security-password system.
  - 8.9. Each time delay shall be identified and a dynamic countdown shall be shown on the display.

## 9. Additional Features

- 9.1. The controller shall have 3 levels of security. Level 1 shall allow monitoring of settings and parameters only. The Level 1 shall be capable of restricted with the use of a lockable cover. Level 2 shall allow test functions to be performed and Level 3 shall allow setting of all parameters.
- 9.2. Membrane-type switches shall be provided for the test functions and be maintained until the end test function is activated. The test function shall be allowed through password security. It shall be possible to defeat the password requirement by way of a circuit board mounted dip switch setting. The test function shall be load, no load or auto test. The auto test function shall request an elapsed time for test. At the completion of this time delay the test shall be automatically ended and a retransfer sequence shall commence. All loaded tests shall be immediately ended and retransfer shall occur if the emergency source fails and the normal source is acceptable.
- 9.3. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
- 9.4. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of two contacts, closed when the ATS is connected to the normal source and two contacts closed, when the ATS is connected to the emergency source.
- 9.5. LED indicating lights shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).
- 9.6. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal (green) and emergency sources (red), as determined by the voltage, frequency and phase rotation sensing trip and reset settings for each source.
- 9.7. A membrane switch shall be provided on the membrane panel to test all indicating lights and display when pressed.

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- 9.8. Provide the ability to select "commit/no commit to transfer" to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
- 9.9. Terminals shall be provided for a remote contact which opens to signal the ATS to transfer to emergency and for remote contacts which closes to inhibit transfer to emergency and/or retransfer to normal. Both of these inhibit signals can be activated through the keypad or the communications interface port. A "not-in-auto" LED shall indicate anytime the controller is inhibiting transfer from occurring.
- 9.10. An in-phase monitor shall be a standard feature in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The in-phase monitor shall be specifically designed for and be the product of the ATS manufacturer. The in-phase monitor shall be capable of being enabled or disabled for the user interface.
- 9.11. *Engine Exerciser* - The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to 21 different exercise routines based on a calendar mode. For each routine, the user shall be able to:
1. Enable or disable the routine.
  2. Enable or disable transfer of the load during routine.
  3. Set the start time,  
time of day  
day of week  
week of month (1st, 2nd, 3rd, 4th, alternate or every)
  4. Set the duration of the run.
  5. At the end of the specified loaded exercise duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. All loaded exercises shall be immediately ended and retransfer shall occur if the standby source fails. The next exercise period shall be displayed on the main screen with the type of exercise, time and date. The type of exercise and the time remaining shall be display when the exercise is active. It shall be possible of ending the exercise event with a single button push.
- 9.12. *Date and time* - The date shall automatically adjust for leap year and the time shall have the capability of automatically adjusting for daylight saving and standard times.
- 9.13. *System Status* - The controller shall have a default display the following on:
1. System status
  2. Date, time and type of the next exercise event
  3. Average voltage of the preferred and standby sources
- Scrolling through the displays shall indicate the following:
1. Line to line and line to neutral voltages for both sources
  2. Frequency of each source

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3. Load current for each phase
  4. Single or three phase operation
  5. Type of transition
  6. Preferred source
  7. Commit or no commit modes of operation
  8. Source/source mode (Utility/Gen; Gen/Gen; Utility/Utility)
  9. In phase monitor enable/disable
  10. Phase rotation
  11. Date and time
- 9.14. Controllers that require multiple screens to determine system status or display "coded" system status messages, which must be explained by references in the operator's manual, are not permissible.
- 9.15. *Self Diagnostics* - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input signals to the controller which may be preventing load transfer commands from being completed.
- 9.16. *Communications Interface* - The controller shall be capable of interfacing, through a standard communications with a network of transfer switches and generators. It shall be able to be connected via an RS-485 serial communication (up to 4000 ft. direct connect or multi-drop configuration), an Ethernet connectivity (over standard 10baseT Ethernet networks utilizing a RJ-45 port or remotely utilizing a dial-up modem). This module shall allow for seamless integration of existing or new communication transfer devices and generators. Monitoring software shall allow for the viewing, control and setup of parameters of the genset and transfer switch network through a standard personal computer utilizing current Microsoft operating systems. Separate and specific transfer switch software interfaces shall not be acceptable.
- 9.17. The transfer switch shall also be able to interface to 3rd party applications using Modbus RTU and Modbus TCP/IP open standard protocols utilizing Modbus register maps. Proprietary protocols shall not be acceptable.
- 9.18. The controller shall contain a USB port for downloading the controller's parameters and settings; exercise event schedules; maintenance records and event history. The file designator shall be the unique serial number of the transfer switch.
- 9.19. *Data Logging* - The controller shall have the ability to log data and to maintain the last 2000 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory. The controller shall be able to display up to the last 99 events. The remaining events shall be downloadable to be displayed on a computer.
1. Event Logging
    - Data, date and time indication of any event.

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## 2. Statistical Data

Total number of transfers.\*

Total number of fail to transfers.\*

Total number of transfers due to preferred source failure.\*

Total number of minutes of operation.\*

Total number of minutes in the standby source.\*

Total number of minutes not in the preferred source\*

Normal to emergency transfer time

Emergency to normal transfer time

System start date

Last maintenance date

- \* The statistical data shall be held in two registers. One register shall contain data since start up and the second register shall contain data from the last maintenance reset.

- 9.20. *External DC Power Supply* - An optional provision shall be available to connect up to two external 12/24 VDC power supply to allow the LCD and the door mounted control indicators to remain functional when both power sources are dead for extended periods of time. This module shall contain reverse battery connection indication and circuit protection.

## 10. Tests and Certification

- 10.1. Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.
- 10.2. The ATS manufacturer shall be certified to ISO 9001 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, and installation and servicing in accordance with ISO 9001.

## 11. Service Representation

- 11.1. The manufacturer shall maintain a national service organization of employing personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.
- 11.2. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.

# Project Drawing List

# **Generator Set Specification**

**Quincy Fire Headquarters**

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SECTION  
SPECIFICATIONS: GENERATOR SET

**1.Scope of Work**

- 1.1. It is the intent of this specification to secure an engine-driven generator set that has been prototype tested, factory built, production-tested, and site-tested together with all accessories necessary for a complete installation as shown on the plans and drawings and specified herein.
- 1.2. Any and all exceptions to the published specifications shall be subject to the approval of the engineer.
- 1.3. The power system shall be furnished by a single manufacturer who shall be responsible for the design, coordination, and testing of the complete system. The entire system shall be installed as shown on the plans, drawings, and specifications herein.
- 1.4. The equipment shall be produced by a manufacturer who has produced this type of equipment for a period of at least 10 years and who maintains a service organization available twenty-four hours a day throughout the year.
- 1.5. The equipment shall be produced by a manufacturer who is ISO 9001 certified for the design, development, production and service of its complete product line.
- 1.6. Price shall include a complete turn-key installation

**2.General Requirements**

- 2.1. It is the intent of this specification to secure a generator set system that has been tested during design verification, in production, and at the final job site. The generator set will be a commercial design and will be complete with all of the necessary accessories for complete installation as shown on the plans, drawings, and specifications herein. The equipment supplied shall meet the requirements of the National Electrical Code and applicable local codes and regulations.
- 2.2. All equipment shall be new and of current production by a national firm that manufactures the generator sets and controls, transfer switches, and switchgear, and assembles the generator sets as a complete and coordinated system. There will be one-source responsibility for warranty, parts, and service through a local representative with factory-trained servicemen.

**3.Submittal**

- 3.1. The submittal shall include prototype test certification and specification sheets

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showing all standard and optional accessories to be supplied; schematic wiring diagrams, dimension drawings, and interconnection diagrams identifying by terminal number each required interconnection between the generator set, the transfer switch, and the remote annunciator panel if it is included elsewhere in these specifications.

#### **4. Codes and Standards**

- 4.1. The generator set shall be listed to UL 2200 or submitted to an independent third party certification process to verify compliance as installed.
- 4.2. The generator set shall conform to the requirements of the following codes and standards:
  - 4.2.1. CSA C22.2, No. 14-M91 Industrial Control Equipment.
  - 4.2.2. EN50082-2, Electromagnetic Compatibility-Generic Immunity Requirements, Part 2: Industrial.
  - 4.2.3. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
  - 4.2.4. IEC8528 part 4, Control Systems for Generator Sets.
  - 4.2.5. IEC Std 61000-2 and 61000-3 for susceptibility, 61000-6 radiated and conducted electromagnetic emissions.
  - 4.2.6. IEEE446 Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
  - 4.2.7. NFPA 70, National Electrical Code, Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
  - 4.2.8. NFPA 99, Essential Electrical Systems for Health Care Facilities.
  - 4.2.9. NFPA 110, Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit. Component level type tests will not substitute for this requirement.

#### **5. Testing**

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- 5.1. To ensure that the equipment has been designed and built to the highest reliability and quality standards, the manufacturer and/or local representative shall be responsible for three separate tests: design prototype tests, final production tests, and site tests.
  
  - 5.2. **Design Prototype Tests.** Components of the emergency system, such as the engine/generator set, transfer switch, and accessories, shall not be subjected to prototype tests because the tests are potentially damaging. Rather, similar design prototypes and preproduction models shall be subject to the following tests:
    - 5.2.1. Maximum power (kW).
    - 5.2.2. Maximum motor starting (kVA) at 35% instantaneous voltage dip.
    - 5.2.3. Alternator temperature rise by embedded thermocouple and/or by resistance method per NEMA MG1-32.6.
    - 5.2.4. Governor speed regulation under steady-state and transient conditions.
    - 5.2.5. Voltage regulation and generator transient response.
    - 5.2.6. Harmonic analysis, voltage waveform deviation, and telephone influence factor.
    - 5.2.7. Three-phase short circuit tests.
    - 5.2.8. Alternator cooling air flow.
    - 5.2.9. Torsional analysis to verify that the generator set is free of harmful torsional stresses.
    - 5.2.10. Endurance testing.
  
  - 5.3. **Final Production Tests.** Each generator set shall be tested under varying loads with guards and exhaust system in place. Tests shall include:
    - 5.3.1. Single-step load pickup
    - 5.3.2. Safety shutdown device testing
    - 5.3.3. Rated Power @ 0.8 PF

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- 5.3.4. Maximum power
  - 5.3.5. Upon request, a witness test, or a certified test record sent prior to shipment.
  - 5.4. **Site Tests.** The manufacturer's distribution representative shall perform an installation check, startup, and building load test. The engineer, regular operators, and the maintenance staff shall be notified of the time and date of the site test. The tests shall include:
    - 5.4.1. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturer's recommendations, under the environmental conditions present and expected.
    - 5.4.2. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. These shall include: block heaters, battery chargers, alternator strip heaters, remote annunciators, etc.
    - 5.4.3. Generator set startup under test mode to check for exhaust leaks, path of exhaust gases outside the building, cooling air flow, movement during starting and stopping, vibration during operation, normal and emergency line-to-line voltage and frequency, and phase rotation.
    - 5.4.4. Automatic start by means of a simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timers shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with generator set voltage, amperes, and frequency shall be monitored throughout the test.

## 6. Warranty and Maintenance

- 6.1. The generator set shall include a standard one year warranty to guarantee against defective material and workmanship in accordance with the manufacturer's published warranty from date of startup. Optional warranties shall be available upon request.
- 6.2. The generator set manufacturer and its distributor shall maintain a 24-hour parts and service organization. This organization shall regularly engage in maintenance contract programs to perform preventive maintenance and service on equipment similar to that specified. A service agreement shall be available and shall include system operation under simulated operating conditions; adjustment to the generator set, transfer switch, and switchgear controls as required, and certification in the owner's maintenance log of repairs made and function tests performed on all systems.

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## 7. Equipment

- 7.1. The generator set shall be a Kohler model 100REOZJF with a 4R9X alternator. It shall provide 100kW/125.0 kVA when operating at 120/208 volts, 60 Hz, .8 power factor. The generator set shall be capable of a Standby 130°C rating while operating in an ambient condition of less than or equal to 77° F and a maximum elevation of 8200 feet above sea level.
- 7.2. Motor starting performance and voltage dip determinations shall be based on the complete generator set. The generator set shall be capable of supplying 289 LRKVA for starting motor loads with a maximum instantaneous voltage dip of 35%, as measured by a digital RMS transient recorder in accordance with IEEE standard 115. Motor starting performance and voltage dip determination that does not account for all components affecting total voltage dip i.e. engine, alternator, voltage regulator and governor will not be acceptable. As such, the generator set shall be prototype tested to optimize and determine performance as a generator set system.
- 7.3. Vibration isolators shall be provided between the engine-alternator and heavy-duty steel base.

## 8. Engine

- 8.1. The minimum 276-cubic-inch displacement engine shall deliver a minimum of 158 HP at a governed engine speed of 1800 rpm, and shall be equipped with the following:
  - 8.1.1. Electronic isochronous governor capable of 0.25% steady-state frequency regulation.
  - 8.1.2. 12-volt positive-engagement solenoid shift-starting motor.
  - 8.1.3. 65-ampere automatic battery charging alternator with a solid-state voltage regulation.
  - 8.1.4. Positive displacement, full-pressure lubrication oil pump, cartridge oil filters, dipstick, and oil drain.
  - 8.1.5. Dry-type replaceable air cleaner elements for normal applications.
  - 8.1.6. Engine-driven or electric fuel-transfer pump including fuel filter and electric solenoid fuel shutoff valve capable of lifting fuel.
- 8.2. The turbocharged, air-cooled engine shall be fueled by diesel.

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- 8.3. The engine shall have a minimum of 4 cylinders and be liquid-cooled by Unit Mounted Radiator 122°F/50°C.
  - 8.4. The engine shall be EPA certified from the factory.

### **9. Alternator**

- 9.1. The alternator shall be salient-pole, brushless, 2/3-pitch, 12 lead, self-ventilated with drip-proof construction and amortisseur rotor windings and skewed for smooth voltage waveform. The ratings shall meet the NEMA standard (MG1-32.40) temperature rise limits. The insulation shall be class H per UL1446 and the varnish shall be a fungus resistant epoxy. Temperature rise of the rotor and stator shall be limited to Standby 130°C. The excitation system shall be of brushless construction controlled by a solid-state voltage regulator capable of maintaining voltage within  $\pm 2.0\%$  at any constant load from 0% to 100% of rating. The AVR shall be capable of proper operation under severe nonlinear loads and provide individual adjustments for voltage range, stability and volts-per-hertz operations. The AVR shall be protected from the environment by conformal coating. The waveform harmonic distortion shall not exceed 5% total RMS measured line-to-line at full rated load. The TIF factor shall not exceed 50.
- 9.2. The alternator shall have a single maintenance-free bearing, designed for 40000 hour B10 life. The alternator shall be directly connected to the flywheel housing with a semi-flexible coupling between the rotor and the flywheel.
- 9.3. The generator shall be inherently capable of sustaining at least 250% of rated current for at least 10 seconds under a 3-phase symmetrical short circuit without the addition of separate current-support devices.

### **10. Controller**

#### **10.1. Decision Maker® 3000 Generator Set Controller**

- 10.1.1. The generator set controller shall be a microprocessor based control system that will provide automatic starting, system monitoring and protection. The controller system shall also provide local monitoring and remote monitoring. The control system shall be capable of PC based updating of all necessary parameters, firmware and software.
- 10.1.2. The controller shall be mounted on the generator set and shall have integral vibration isolation. The controller shall be prototype and reliability tested to ensure operation in the conditions encountered.

#### **10.2. Controller Buttons, Display and Components**

The generator set controller shall include the following features and functions:

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- 10.2.1. Push button Master Control buttons. The buttons shall be tactile-feel membrane with an indicator light to initiate the following functions:
- Run Mode: When in the run mode the generator set shall start as directed by the operator.
  - Off/Reset Mode: When in the Off/Reset mode the generator set shall stop, the reset shall reset all faults, allowing for the restarting of the generator set after a shutdown.
  - Auto Mode: When in Auto the mode the generator set shall be ready to accept a signal from a remote device.
- 10.2.2. Emergency Stop Switch. The remote stop switch shall be red in color with a "mushroom" type head. Depressing the stop button will immediately stop the generator set and lockout the generator set for any automatic remote starting.
- 10.2.3. Push Button/Rotary Selector dial. This dial shall be used for selection of all Menus and sub-menus. Rotating the dial moves you through the menus, pushing the dial selects the menu and function/features in that menu. Pushing the button selects the feature/function and sub-menus.
- 10.2.4. Digital Display. The digital display shall be alphanumeric, with 2 lines of data and approximately 24 characters. The display shall have back lighting for ease of operator use in high and low light conditions. The display shall display status of all faults and warnings. The display shall also display any engine faults. While the generator set is running the display shall scroll all important information across the screen for ease of operator use. The scroll can be stopped by pushing the rotary dial. The display shall fall asleep when the generator set is not running and will wake-up when the generator set starts or the rotary dial is depressed.
- 10.2.5. Fault Light. The controller shall have an annunciator fault light that glows red for faults and yellow for warnings. These faults and warnings shall be displayed in the digital display. The fault light will also glow yellow when not in AUTO.
- 10.2.6. Alarm Horn. The controller shall provide an alarm horn that sounds when any faults or warnings are present. The horn shall also sound when the controller is not in the AUTO mode.
- 10.2.7. Alarm Silence/Lamp Test Button. When this button is depressed it shall test all controller lamps. This button will also silence the alarm horn when the unit is not AUTO.

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- 10.2.8. USB Connection. The controller shall have a USB connection on the face of the controller. This connection shall allow for updating of all software and firmware. This port shall also allow for all servicing of generator set parameters, fault diagnostics and viewing of all controller information via use a laptop computer.
  - 10.2.9. Dedicated user inputs. The controller shall have dedicated inputs for remote emergency stop switch, remote 2 wire star for transfer switch and auxiliary shutdown.
  - 10.2.10. The controller shall have auto resettable circuit protection integral on the circuit board.

### 10.3. System Controller Monitoring and Status Features and Functions

The generator controller shall display and monitor the following engine and alternator functions and allow adjustments of certain parameters at the controller:

- 10.3.1. Overview menu
  - 1. Active shutdowns and warnings shall be displayed if present and without the need of operator interface.
  - 2. Engine runtime with total hours
  - 3. Average line to line voltage
  - 4. Coolant temperature
  - 5. Fuel level or pressure
  - 6. Oil pressure
  - 7. Battery voltage
  - 8. Software version
  - 9. Frequency
  - 10. Average current
- 10.3.2. Engine metering menu
  - 1. Engine speed
  - 2. Oil pressure
  - 3. Coolant temperature
  - 4. Battery voltage
- 10.3.3. Generator metering menu
  - 1. Total power in VA
  - 2. Total power in W
  - 3. Rated power % used
  - 4. Voltage L-L and L-N for all phases
  - 5. Current L1, L2, L3
  - 6. Frequency
- 10.3.4. Generator set information

- 
1. Generator set model number
  2. Generator set serial number
  3. Controller set number

10.3.5. Generator set run time

1. Engine run time total hours
2. Engine loaded total hours
3. Number of engine starts
4. Total energy in kW

10.3.6. Generator set system

1. System voltage
2. System frequency 50/60Hz
3. System phase, single/three phase
4. Power rating kW
5. Amperage rating
6. Power type standby/prime
7. Measurement units, metric/English units adjustable
8. Alarm silence, always or auto only

10.3.7. Generator set calibration, the following are adjustable at the controller

1. Voltage L-L and L-N all phases
2. Current L1, L2, L3
3. Reset all calibrations

10.3.8. Voltage regulation, +/-0.5% regulation, the following is adjustable at the controller

1. Voltage Adjustable +/- 10%

10.3.9. Digital and Analog Inputs and outputs

1. Displays settings and status

10.3.10. Event Log

1. Stores event history, up to 1000 events

**10.4. Controller Engine control features and functions**

10.4.1. Automatic restart - the controller has automatic restart feature which initiates the start routine and re-crank after a failed start attempt.

10.4.2. Cyclic cranking - the controller shall have programmable cyclic cranking.

10.4.3. Engine starting aid - the controller shall have the capability of providing control for an optional engine starting aid.

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- 10.4.4. The control system shall include time delays for engine start and cool down.
  - 10.4.5. The control system shall interface with the engine ECM and display engine fault codes and warnings. The ECM shall also include sender failure monitoring to help distinguish between failed senders and actual failure conditions.
  - 10.4.6. The controller shall monitor and display engine governor functions with include steady state and transient frequency monitoring.

#### **10.5. Controller Alternator control features and functions**

- 10.5.1. Integrated hybrid voltage regulator. The system shall have integral microprocessor based voltage regulator system that provides +/- 5% voltage regulation, no-load to full load with three phase sensing. The system is prototype tested and control variation of voltage to frequency. The voltage regulator shall be adjustable at the controller with maximum +/- 10% adjustable of nominal voltage.
- 10.5.2. AC output voltage regulator adjustment. The system shall allow for adjustment of the integral voltage regulator with maximum of +/- 10% adjustment of the system voltage.
- 10.5.3. Alternator thermal overload protection. The system shall have integral alternator overload and short circuit protection matched to each alternator for the particular voltage and phase configuration.
- 10.5.4. Power metering. The controller digitally displays power metering of kW and kVA.

#### **10.6. Other control features and functions**

- 10.6.1. Event logging. The controller keeps a record of up to 1000 events, for warning and shutdown faults. This fault information becomes a stored record of systems events and can be reset.
- 10.6.2. Historical data logging. The controller total number of generator set successful start shall be recorded and displayed.
- 10.6.3. Programmable access. The control system shall include a USB port that gives service technicians the ability to provide software and firmware upgrades. The system shall also be capable of allowing setting of all critical parameters using the service software and a laptop computer. All

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parameters and setting should be capable of being stored on a laptop for future upgrades or printing for analysis.

#### 10.7. Generator Set Warning, Shutdown Alarm and Status

The generator set shall have alarms and status indication lamps that show non-automatic status and warning and shutdown conditions. The controller shall indicate with a warning lamp and or alarm and on the digital display screen any shutdown, warning or engine fault condition that exists in the generator set system. The following alarms and shutdowns shall exist as a minimum:

##### 10.7.1. Engine functions

1. Critical high fuel level (alarm)
2. ECM communication loss (shutdown)
3. ECM diagnostics (alarm & shutdown)
4. Engine overspeed (shutdown)
5. Engine start aid active
6. Engine under speed (shutdown)
7. Fuel tank leak (alarm & shutdown)
8. High DC battery voltage (alarm)
9. High coolant temperature (alarm & shutdown)
10. High fuel level (alarm)
11. Low DC battery voltage (alarm)
12. Low coolant level (shutdown)
13. Low coolant temperature (alarm)
14. Low cranking voltage (alarm)
15. Low engine oil level (alarm & shutdown)
16. Low fuel level (alarm & shutdown)
17. Low fuel pressure (alarm)
18. Low oil pressure (alarm & shutdown)
19. No coolant temperature signal (shutdown)
20. No oil pressure signal (shutdown)
21. Overcrank (shutdown)
22. Speed sensor fault (alarm)

##### 10.7.2. Generator functions

1. AC sensing loss over & under current (alarm & shutdown)
2. Alternator protection (shutdown)
3. Ground fault input (alarm)
4. kW overload (shutdown)
5. Locked rotor (shutdown)
6. Over-frequency (shutdown)
7. Over AC voltage (shutdown)
8. Under-frequency (shutdown)
9. Under AC voltage (shutdown)
10. Emergency stop (shutdown)

##### 10.7.3. Other General functions

1. Battery charger fault (alarm)
2. Common fault (shutdown)
3. Common warning (alarm)
4. Master switch not in auto (alarm)
5. Generator running
6. Input/Output fault (alarm)

10.7.4. The generator set controller shall also be capable of meeting all necessary NFPA 110 level 1 requirements which include several of the above along with; EPS supplying load, Master switch no in auto and contacts for local and remote common alarm.

#### 10.8. Generator Remote Monitoring and other devices

10.8.1. Remote annunciator. Shall provide a minimum of 20 light remote annunciator panel for monitoring generator set conditions conveniently by facility personnel. The annunciator shall provide audible and visual alarms that meet NFPA 110 level 1 system requirements. The device shall have warnings for high/low battery voltage, battery charger failure and spare alarms for user defined inputs. The device shall have an area to identify the system device. Lamp test and alarm silence buttons will be provided. Alarm horn shall work in accordance with NFPA 110. The device shall also have the capability of annunciating Transfer Switch functions and have a key switch for testing of the automatic transfer switch. The annunciator shall also have a USB port for the upgrading of software, firmware and for allowing service personnel to change device parameters.

10.8.2. Inputs and Outputs. The controller shall have relay outputs and digital and analog inputs standard on the board. Also provide additional inputs and outputs via remote board that connects to the genset controller and provides optional connections for customer devices.

#### 10.9. Communications

10.9.1. If the generator set engine is equipped with an ECM (engine control module), the controller shall communicate with the ECM for control, monitoring, diagnosis, and meet SAE J1939 standards.

10.9.2. Kohler proprietary RBUS communication shall be available.

10.9.3. A RBUS shall be able to monitor and alter parameters, and start or stop a generator.

10.9.4. The controller shall have the capability to communicate to a personal computer (IBM or compatible) running Windows XP, or Windows 7 or

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later.

- 10.9.5. A variety of connections shall be available based on requirements:
  - 1. A single control connection to a PC via USB
  - 2. Internet connection via Ethernet
- 10.9.6. Generator and transfer switch controls shall be equipped with communications modules capable of connecting to the same communication network.

## 11. Accessories

- 11.1. **Battery Charger.** A 6-ampere automatic float to equalize battery charger with the following features:
  - 1. 12 VDC output
  - 2. 1% steady-state voltage regulation from no load to full load over 10% AC input line voltage variation
  - 3. LED lamps for charge state indication
  - 4. Temperature compensated for ambient temperatures for -40°C to 70°C
  - 5. Potting for durability
  - 6. Short-circuit and reverse polarity protection
  - 7. UL 1236 listed
- 11.2. **Battery Rack and Cables.** Battery rack and battery cables capable of holding the manufacturer's recommended batteries shall be supplied.
- 11.3. **Critical Silencer.** The engine exhaust silencer shall be temperature and rust resistant, and rated for critical applications. The silencer will reduce total engine exhaust noise by 25-35 db(A).
- 11.4. **Circuit Breaker.** The generator shall come with a primary, factory installed, 100% rated line circuit breaker of 200 amperes that is UL2200 listed. Line circuit breakers shall be sized for the rated ampacity of the genset. Load side lugs shall be provided from the factory. The line circuit breaker shall include auxiliary contacts, shunt trip, undervoltage trip, alarm switch, and overcurrent switch functionality. Load side breaker connections made at the factory shall be separated from field connections. When GFI breakers are required, additional neutrals shall be factory installed.
- 11.5. **Flex Exhaust Tube.** The exhaust piping shall be gas proof, seamless, stainless steel, flexible exhaust bellows with threaded NPT connection.
- 11.7. **Remote Annunciator Panel.** The remote annunciator shall meet NFPA 110, Level 1 requirements and enable remote viewing of the generator status. The panel shall

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be connected to the generator controller via either network communication wires or via hard wired connections. Options shall be available to provide ATS source position, loaded test, and retransfer. The panel shall have the capability to be either flush-mounted or surface-mounted. The annunciator shall meet UL508 requirements.

- 11.8. **Standard Air Cleaner.** The air cleaner shall provide engine air filtration which meets the engine manufacturer's specifications under typical operating conditions.
- 11.9. **Block Heater.** The block heater shall be thermostatically controlled and sized to maintain manufacturers recommended engine coolant temperature to meet the start-up requirements of NFPA 99 and NFPA 110, Level 1.

## 12. Double Wall Secondary Containment Sub Base Fuel Tank

- 12.1. A subbase fuel tank used in conjunction with a diesel powered generator set of 100kW will contain State Tank 215 gallons of fuel to support the generator set for a period of 24 hours at 100% of rated load and 29 hours at 75% of rated load.
- 12.2. The subbase fuel system is listed under UL 142, subsection entitled Special Purpose Tanks EFVT category, and will bear their mark of UL Approval according to their particular classification.
- 12.3. The above ground steel secondary containment rectangular tank for use as a sub base for diesel generators is manufactured and intended to be installed in accordance with the Flammable and Combustible Liquids Code—NFPA 30, the Standard for Installation and Use of Stationary Combustible Engine and Gas Turbines—NFPA 37, and Emergency and Standby Power Systems—NFPA 110.
- 12.4. **Primary Tank.** It will be rectangular in shape and constructed in clam shell fashion to ensure maximum structural integrity and allow the use of a full throat fillet weld.

Steel Channel Support System. Reinforced steel box channel for generator support, with a load rating of 5,000 lbs. per generator mounting hole location. Full height gussets at either end of channel and at generator mounting holes shall be utilized.

Exterior Finish. The exterior coating has been tested to withstand continuous salt spray testing at 100 percent exposure for 244 hours to a 5 percent salt solution at 92-97° F. The coating has been subjected to full exposure humidity testing to 100 percent humidity at 100° F for 24 hours. Tests are to be conducted in accordance with The American Standard Testing Methods Society.

- 12.5. **Venting.** Normal venting shall be sized in accordance with the American Petroleum Institute Standard No 2000, Venting Atmospheric and Low Pressure

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Storage Tanks not less than 1-1/4" (3 cm.) nominal inside diameter.

- 12.6. **Emergency Venting.** The emergency vent opening shall be sized to accommodate the total capacity of both normal and emergency venting and shall be not less than that derived from NFPA 30, table 2-8, and based on the wetted surface area of the tank. The wetted area of the tank shall be calculated on the basis of 100 percent of the primary tank. The vent is spring-pressure operated: opening pressure is 0.5/psig and full opening pressure is 2.5 psig. The emergency relief vent is sized to accommodate the total venting capacity of both normal and emergency vents.
- 12.7. **Fuel Fill.** There shall be a 2" NPT opening within the primary tank and lockable manual fill cap.
- 12.8. **Fuel Level.** A direct reading, UL listed, magnetic fuel level gauge with a hermetically sealed vacuum tested dial shall be provided to eliminate fogging.
- 12.9. **Low Fuel Level Switch.** Consists of a 30 watt float switch for remote or local annunciation of a (50% standard) low fuel level condition.

### 13. Sound Enclosure

- 13.1. The enclosure shall be constructed from high strength, low alloy steel, aluminum or galvanized steel.
- 13.2. The enclosure shall be finish coated with powder baked paint for superior finish, durability and appearance. Enclosures will be finished in the manufacturer's standard color.
- 13.3. The enclosure shall allow the generator set to operate at full load in an ambient of 40°C - 45°C with no additional derating of the electrical output.
- 13.4. The enclosure shall be equipped with sufficient side and end doors to allow access for operation, inspection, and service of the unit and all options. Minimum requirements are two doors per side. When the generator set controller faces the rear of the generator set, an additional rear facing door is required. Access to the controller and main line circuit breaker must meet the requirements of the National Electric Code.
- 13.5. Doors must be hinged with stainless steel hinges and hardware and be removable.
- 13.6. Doors shall be equipped with lockable latches. Locks must be keyed alike.

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- 13.7. A duct between the radiator and air outlet shall be provided to prevent re-circulation of hot air.
  - 13.8. The complete exhaust system shall be internal to the enclosure.
  - 13.9. All acoustical insulation shall be fixed to the mounting surface with pressure sensitive adhesive or mechanically fastened. In addition, all acoustical insulation mounted on a horizontal plane shall be mechanically fastened. The acoustical insulation shall be flame retardant.
  - 13.10. The enclosure shall include an exhaust scoop to direct the cooling air in a vertical direction.

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SECTION  
SPECIFICATIONS: TRANSFER SWITCH

**1. Scope of Work**

1.1. Furnish and install an automatic transfer switches system(s) with 3 Pole [T], 400 Amps, 208 Volt-60Hz [C], and Three. Each automatic transfer shall consist of an inherently double throw power transfer switch mechanism and a microprocessor controller to provide automatic operation. All transfer switches and controllers shall be the products of the same manufacturer.

**2. Codes and Standards** - The automatic transfer switches and controls shall conform to the requirements of:

- 2.1. UL 1008 - Standard for Transfer Switch Equipment
- 2.2. IEC 947-6-1 Low-voltage Switchgear and Control gear; Multifunction equipment; Automatic Transfer Switching Equipment
- 2.3. NFPA 70 - National Electrical Code
- 2.4. NFPA 99 - Essential Electrical Systems for Health Care Facilities
- 2.5. NFPA 110 - Emergency and Standby Power Systems
- 2.6. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
- 2.7. NEMA Standard ICS10-1993 (formerly ICS2-447) - AC Automatic Transfer Switches
- 2.8. UL 508 Industrial Control Equipment
- 2.9. CSA C22.2 No. 178 certification

**3. Acceptable Manufacturers**

3.1. Automatic transfer switches shall be Kohler Specific Breaker Rated - Standard Transition (KSS)/KSSDCTA0400S. Any alternate shall be submitted for approval to the consulting engineer at least 10 days prior to bid date. Alternate bids shall include a line-by-line clarification of the specification marked with "D" for deviation; "E" for exception, and "C" for comply.

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#### 4. Mechanically Held Transfer Switch

- 4.1. The transfer switch shall be electrically operated and mechanically held with double throw construction, and operated by a momentarily energized solenoid-driven mechanism. Main operators shall include overcurrent disconnect devices; linear motors or gears shall not be acceptable.
- 4.2. All transfer switch sizes shall use only one type of main operator for ease of maintenance and commonality of parts.
- 4.3. The switch shall be positively locked and unaffected by momentary outages, so that contact pressure is maintained at a constant value and contact temperature rise is minimized for maximum reliability and operating life.
- 4.4. All main contacts shall be silver composition. Switches rated 600 amperes and above shall have segmented, blow-on construction for high withstand and close-on capability and be protected by separate arcing contacts.
- 4.5. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. Switches rated 600 amps and higher shall have front removable and replaceable contacts. All stationary and moveable contacts shall be replaceable without removing power conductors and/or bus bars.
- 4.6. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources, are not acceptable.
- 4.7. Where neutral conductors are to be solidly connected as shown on the plans, a neutral conductor plate with fully rated AL-CU pressure connectors shall be provided.

#### 5. Enclosure

- 5.1. The ATS shall be furnished in a NEMA 1 (A) enclosure.
- 5.2. All standard door mounted switches and long life super bright type indicating LEDs described in section 3 shall be integrated into a flush-mounted, interface membrane or equivalent in the enclosure door for easy viewing & replacement. The panel shall be capable of having manual locking feature to allow the user to lockout all membrane mounted control switches to prevent unauthorized tampering. This cover shall be mounted with hinges and have a latch that may be padlocked. The membrane panel shall be suitable for mounting by others when furnished on open type units.

## 6. Controller Display and Keypad

6.1. A four line, 20 character LCD display and dynamic 4 button keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the communications interface port. The following parameters shall only be adjustable via a password protected programming on the controller (dip switches shall not be acceptable):

- Nominal line voltage and frequency
- Single or three phase sensing
- Operating parameter protection
- Transfer operating mode configuration (Open transition, Closed transition, or Delayed transition)

All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

## 7. Voltage, Frequency and Phase Rotation Sensing

7.1. Voltage (all phases) and frequency on both the normal and emergency sources shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as % of nominal unless otherwise specified):

Parameter	Dropout/Trip	Pickup/Reset
Under voltage	75 to 98%	85 to 100%
Over voltage	105 to 135%	95 to 100% of trip
Under frequency	85 to 99%	95 to 99%
Over frequency	105 to 120%	101 to 105%
Voltage unbalance	5 to 20%	3% to 18%

7.2. Repetitive accuracy of all settings shall be within  $\pm 0.5\%$  over an operating temperature range of  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

7.3. An adjustable dropout time for transient voltage and frequency excursions shall be provided. The time delays shall be 0.1 to 9.9 seconds for voltage and .1 to 15 seconds for frequency.

7.4. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via the communications interface port.

7.5. The controller shall be capable of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or BAC). Unacceptable phase rotation shall be indicated on the LCD; the service required LED and the annunciation through communication protocol and dry contacts. In addition, the phase rotation sensing shall be capable of being defeated, if required.

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- 7.6. The controller shall be capable of detecting a single phasing condition of a source, even though a voltage may be regenerated by the load. This condition shall be considered a failed source.
  - 7.7. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases (phase to phase and phase to neutral), frequency, and phase rotation.

## 8. Time Delays

- 8.1. An adjustable time delay of 0 to 10 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes by providing an external 12 or 24 VDC power supply.
- 8.2. A time delay shall be provided on transfer to the emergency source; adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
- 8.3. A time delay shall be provided on re-transfer to normal. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
- 8.4. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.
- 8.5. A time delay activated output signal shall also be provided to drive external relay(s) for selective load disconnect control. The controller shall be capable of controlling a maximum of 9 individual output time delays to step loads on after a transfer occurs. Each output may be individually programmed for their own time delay of up to 60 minutes. Each sequence shall be independently programmed for transferring from normal to emergency and transferring from emergency to normal. The controller shall also include the following built-in time delays for the following operations:
  - 1. 0 to 60 minute time delay on failure to acquire the acceptable electrical parameters from the emergency source
  - 2. 0 to 60 minute time delay for a failure to synchronize on an in-phase operation.
  - 3. 60 minute time delay for the load disconnect position for delayed transition operation.
- 8.6. All time delays shall be adjustable in 1 second increments.
- 8.7. All time delays shall be adjustable by using the display and keypad or with a remote device connected to the communications interface port through a security-password system.

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- 8.8. All time delays shall be adjustable by using the display and keypad or with a remote device connected to the communications interface port through a security-password system.
  - 8.9. Each time delay shall be identified and a dynamic countdown shall be shown on the display.

## 9. Additional Features

- 9.1. The controller shall have 3 levels of security. Level 1 shall allow monitoring of settings and parameters only. The Level 1 shall be capable of restricted with the use of a lockable cover. Level 2 shall allow test functions to be performed and Level 3 shall allow setting of all parameters.
- 9.2. Membrane-type switches shall be provided for the test functions and be maintained until the end test function is activated. The test function shall be allowed through password security. It shall be possible to defeat the password requirement by way of a circuit board mounted dip switch setting. The test function shall be load, no load or auto test. The auto test function shall request an elapsed time for test. At the completion of this time delay the test shall be automatically ended and a retransfer sequence shall commence. All loaded tests shall be immediately ended and retransfer shall occur if the emergency source fails and the normal source is acceptable.
- 9.3. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
- 9.4. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of two contacts, closed when the ATS is connected to the normal source and two contacts closed, when the ATS is connected to the emergency source.
- 9.5. LED indicating lights shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).
- 9.6. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal (green) and emergency sources (red), as determined by the voltage, frequency and phase rotation sensing trip and reset settings for each source.
- 9.7. A membrane switch shall be provided on the membrane panel to test all indicating lights and display when pressed.

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- 9.8. Provide the ability to select "commit/no commit to transfer" to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
- 9.9. Terminals shall be provided for a remote contact which opens to signal the ATS to transfer to emergency and for remote contacts which closes to inhibit transfer to emergency and/or retransfer to normal. Both of these inhibit signals can be activated through the keypad or the communications interface port. A "not-in-auto" LED shall indicate anytime the controller is inhibiting transfer from occurring.
- 9.10. An in-phase monitor shall be a standard feature in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The in-phase monitor shall be specifically designed for and be the product of the ATS manufacturer. The in-phase monitor shall be capable of being enabled or disabled for the user interface.
- 9.11. *Engine Exerciser* - The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to 21 different exercise routines based on a calendar mode. For each routine, the user shall be able to:
1. Enable or disable the routine.
  2. Enable or disable transfer of the load during routine.
  3. Set the start time,
    - time of day
    - day of week
    - week of month (1st, 2nd, 3rd, 4th, alternate or every)
  4. Set the duration of the run.
  5. At the end of the specified loaded exercise duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. All loaded exercises shall be immediately ended and retransfer shall occur if the standby source fails. The next exercise period shall be displayed on the main screen with the type of exercise, time and date. The type of exercise and the time remaining shall be display when the exercise is active. It shall be possible of ending the exercise event with a single button push.
- 9.12. *Date and time* - The date shall automatically adjust for leap year and the time shall have the capability of automatically adjusting for daylight saving and standard times.
- 9.13. *System Status* - The controller shall have a default display the following on:
1. System status
  2. Date, time and type of the next exercise event
  3. Average voltage of the preferred and standby sources
- Scrolling through the displays shall indicate the following:
1. Line to line and line to neutral voltages for both sources
  2. Frequency of each source

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3. Load current for each phase
  4. Single or three phase operation
  5. Type of transition
  6. Preferred source
  7. Commit or no commit modes of operation
  8. Source/source mode (Utility/Gen; Gen/Gen; Utility/Utility)
  9. In phase monitor enable/disable
  10. Phase rotation
  11. Date and time
- 9.14. Controllers that require multiple screens to determine system status or display "coded" system status messages, which must be explained by references in the operator's manual, are not permissible.
- 9.15. *Self Diagnostics* - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input signals to the controller which may be preventing load transfer commands from being completed.
- 9.16. *Communications Interface* - The controller shall be capable of interfacing, through a standard communications with a network of transfer switches and generators. It shall be able to be connected via an RS-485 serial communication (up to 4000 ft. direct connect or multi-drop configuration), an Ethernet connectivity (over standard 10baseT Ethernet networks utilizing a RJ-45 port or remotely utilizing a dial-up modem). This module shall allow for seamless integration of existing or new communication transfer devices and generators. Monitoring software shall allow for the viewing, control and setup of parameters of the genset and transfer switch network through a standard personal computer utilizing current Microsoft operating systems. Separate and specific transfer switch software interfaces shall not be acceptable.
- 9.17. The transfer switch shall also be able to interface to 3rd party applications using Modbus RTU and Modbus TCP/IP open standard protocols utilizing Modbus register maps. Proprietary protocols shall not be acceptable.
- 9.18. The controller shall contain a USB port for downloading the controller's parameters and settings; exercise event schedules; maintenance records and event history. The file designator shall be the unique serial number of the transfer switch.
- 9.19. *Data Logging* - The controller shall have the ability to log data and to maintain the last 2000 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory. The controller shall be able to display up to the last 99 events. The remaining events shall be downloadable to be displayed on a computer.
1. Event Logging
    - Data, date and time indication of any event.

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## 2. Statistical Data

Total number of transfers.\*

Total number of fail to transfers.\*

Total number of transfers due to preferred source failure.\*

Total number of minutes of operation.\*

Total number of minutes in the standby source.\*

Total number of minutes not in the preferred source\*

Normal to emergency transfer time

Emergency to normal transfer time

System start date

Last maintenance date

- \* The statistical data shall be held in two registers. One register shall contain data since start up and the second register shall contain data from the last maintenance reset.

- 9.20. *External DC Power Supply* - An optional provision shall be available to connect up to two external 12/24 VDC power supply to allow the LCD and the door mounted control indicators to remain functional when both power sources are dead for extended periods of time. This module shall contain reverse battery connection indication and circuit protection.

## 10. Tests and Certification

- 10.1. Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.
- 10.2. The ATS manufacturer shall be certified to ISO 9001 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, and installation and servicing in accordance with ISO 9001.

## 11. Service Representation

- 11.1. The manufacturer shall maintain a national service organization of employing personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.
- 11.2. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.



DEVAL L. PATRICK  
Governor  
TIMOTHY P. MURRAY  
Lt. Governor

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

Prevailing Wage Rates

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

JOANNE F. GOLDSTEIN  
Secretary  
HEATHER E. ROWE  
Director

**Awarding Authority:** City of Quincy  
**Contract Number:** **City/Town:** QUINCY  
**Description of Work:** Replacement of 2 emergency generators at Broad Meadows Middle School and Fire Headquarters  
**Job Location:** 40 Quincy Ave.

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**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.
- 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 Training (DAT). Apprentices 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 DAT, 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 DAT, 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. 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 directly to the awarding authority and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.55	\$8.91	\$8.00	\$0.00	\$48.46
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.62	\$8.91	\$8.00	\$0.00	\$48.53
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.74	\$8.91	\$8.00	\$0.00	\$48.65
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	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
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	12/01/2013	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	06/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	12/01/2014	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	06/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	12/01/2015	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	06/01/2016	\$38.30	\$7.10	\$12.45	\$0.00	\$57.85
	12/01/2016	\$39.30	\$7.10	\$12.45	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2013	\$29.88	\$10.40	\$5.95	\$0.00	\$46.23
	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 <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	12/01/2013	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	06/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	12/01/2014	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	06/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	12/01/2015	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	06/01/2016	\$38.30	\$7.10	\$12.45	\$0.00	\$57.85
	12/01/2016	\$39.30	\$7.10	\$12.45	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2010	\$37.70	\$6.97	\$11.18	\$0.00	\$55.85

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2010**

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (QUINCY)</i>	08/01/2013	\$48.06	\$10.18	\$18.15	\$0.00	\$76.39
	02/01/2014	\$48.62	\$10.18	\$18.15	\$0.00	\$76.95
	08/01/2014	\$49.52	\$10.18	\$18.22	\$0.00	\$77.92
	02/01/2015	\$50.08	\$10.18	\$18.22	\$0.00	\$78.48
	08/01/2015	\$50.98	\$10.18	\$18.29	\$0.00	\$79.45
	02/01/2016	\$51.55	\$10.18	\$18.29	\$0.00	\$80.02
	08/01/2016	\$52.45	\$10.18	\$18.37	\$0.00	\$81.00
	02/01/2017	\$53.02	\$10.18	\$18.37	\$0.00	\$81.57

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

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

**Effective Date - 08/01/2013**

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 - 02/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.31	\$10.18	\$18.15	\$0.00	\$52.64
2	60	\$29.17	\$10.18	\$18.15	\$0.00	\$57.50
3	70	\$34.03	\$10.18	\$18.15	\$0.00	\$62.36
4	80	\$38.90	\$10.18	\$18.15	\$0.00	\$67.23
5	90	\$43.76	\$10.18	\$18.15	\$0.00	\$72.09

**Notes:**

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**Apprentice to Journeyworker Ratio:1:5**

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$34.20	\$7.10	\$12.60	\$0.00	\$53.90
	12/01/2013	\$34.95	\$7.10	\$12.60	\$0.00	\$54.65
	06/01/2014	\$35.70	\$7.10	\$12.60	\$0.00	\$55.40
	12/01/2014	\$36.45	\$7.10	\$12.60	\$0.00	\$56.15
	06/01/2015	\$37.20	\$7.10	\$12.60	\$0.00	\$56.90
	12/01/2015	\$37.95	\$7.10	\$12.60	\$0.00	\$57.65
	06/01/2016	\$38.70	\$7.10	\$12.60	\$0.00	\$58.40
	12/01/2016	\$39.70	\$7.10	\$12.60	\$0.00	\$59.40

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2013	\$34.53	\$9.80	\$15.61	\$0.00	\$59.94
	03/01/2014	\$35.13	\$9.80	\$15.61	\$0.00	\$60.54
	09/01/2014	\$35.90	\$9.80	\$15.61	\$0.00	\$61.31
	03/01/2015	\$36.67	\$9.80	\$15.61	\$0.00	\$62.08

**Apprentice - CARPENTER - Zone 2 Eastern MA**

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.27	\$9.80	\$1.57	\$0.00	\$28.64
2	60	\$20.72	\$9.80	\$1.57	\$0.00	\$32.09
3	70	\$24.17	\$9.80	\$10.90	\$0.00	\$44.87
4	75	\$25.90	\$9.80	\$10.90	\$0.00	\$46.60
5	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
6	80	\$27.62	\$9.80	\$12.47	\$0.00	\$49.89
7	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92
8	90	\$31.08	\$9.80	\$14.04	\$0.00	\$54.92

**Effective Date - 03/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.57	\$9.80	\$1.57	\$0.00	\$28.94
2	60	\$21.08	\$9.80	\$1.57	\$0.00	\$32.45
3	70	\$24.59	\$9.80	\$10.90	\$0.00	\$45.29
4	75	\$26.35	\$9.80	\$10.90	\$0.00	\$47.05
5	80	\$28.10	\$9.80	\$12.47	\$0.00	\$50.37
6	80	\$28.10	\$9.80	\$12.47	\$0.00	\$50.37
7	90	\$31.62	\$9.80	\$14.04	\$0.00	\$55.46
8	90	\$31.62	\$9.80	\$14.04	\$0.00	\$55.46

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

CEMENT MASONRY/PLASTERING	07/01/2013	\$42.68	\$10.90	\$18.71	\$1.30	\$73.59
BRICKLAYERS LOCAL 3 (QUINCY)	01/01/2014	\$43.60	\$10.90	\$18.71	\$1.30	\$74.51
	07/01/2014	\$44.20	\$10.90	\$18.71	\$1.30	\$75.11
	01/01/2015	\$45.14	\$10.90	\$18.71	\$1.30	\$76.05
	07/01/2015	\$45.72	\$10.90	\$18.71	\$1.30	\$76.63
	01/01/2016	\$46.64	\$10.90	\$18.71	\$1.30	\$77.55

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

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

**Effective Date - 07/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.34	\$10.90	\$12.21	\$1.30	\$45.75
2	60	\$25.61	\$10.90	\$13.71	\$1.30	\$51.52
3	65	\$27.74	\$10.90	\$14.71	\$1.30	\$54.65
4	70	\$29.88	\$10.90	\$15.71	\$1.30	\$57.79
5	75	\$32.01	\$10.90	\$16.71	\$1.30	\$60.92
6	80	\$34.14	\$10.90	\$17.71	\$1.30	\$64.05
7	90	\$38.41	\$10.90	\$18.71	\$1.30	\$69.32

**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

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:3**

CHAIN SAW OPERATOR	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
LABORERS - ZONE 1	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	06/01/2013	\$41.34	\$10.00	\$13.55	\$0.00	\$64.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	\$42.12	\$10.00	\$13.55	\$0.00	\$65.67

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR	06/01/2013	\$28.19	\$10.00	\$13.55	\$0.00	\$51.74
OPERATING ENGINEERS LOCAL 4	12/01/2013	\$28.74	\$10.00	\$13.55	\$0.00	\$52.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE)	01/01/2013	\$45.01	\$7.80	\$15.60	\$0.00	\$68.41
PAINTERS LOCAL 35 - ZONE 2						

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$7.80	\$0.00	\$0.00	\$30.31
2	55	\$24.76	\$7.80	\$3.52	\$0.00	\$36.08
3	60	\$27.01	\$7.80	\$3.84	\$0.00	\$38.65
4	65	\$29.26	\$7.80	\$4.16	\$0.00	\$41.22
5	70	\$31.51	\$7.80	\$13.68	\$0.00	\$52.99
6	75	\$33.76	\$7.80	\$14.00	\$0.00	\$55.56
7	80	\$36.01	\$7.80	\$14.32	\$0.00	\$58.13
8	90	\$40.51	\$7.80	\$14.96	\$0.00	\$63.27

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

DEMO: ADZEMAN LABORERS - ZONE 1	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
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For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 1	12/01/2011	\$32.80	\$7.10	\$12.45	\$0.00	\$52.35
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For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS LABORERS - ZONE 1	12/01/2011	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
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For apprentice rates see "Apprentice- LABORER"

DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 1	12/01/2011	\$32.80	\$7.10	\$12.45	\$0.00	\$52.35
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For apprentice rates see "Apprentice- LABORER"

DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 1	12/01/2011	\$32.55	\$7.10	\$12.45	\$0.00	\$52.10
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For apprentice rates see "Apprentice- LABORER"

DEMO: WRECKING LABORER LABORERS - ZONE 1	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
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For apprentice rates see "Apprentice- LABORER"

DIRECTIONAL DRILL MACHINE OPERATOR OPERATING ENGINEERS LOCAL 4	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$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

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	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) <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	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 <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	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 - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.58	\$13.00	\$0.53	\$0.00	\$31.11
2	40	\$17.58	\$13.00	\$0.53	\$0.00	\$31.11
3	45	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
4	45	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
5	50	\$21.98	\$13.00	\$11.11	\$0.00	\$46.09
6	55	\$24.18	\$13.00	\$11.45	\$0.00	\$48.63
7	60	\$26.38	\$13.00	\$11.77	\$0.00	\$51.15
8	65	\$28.57	\$13.00	\$12.11	\$0.00	\$53.68
9	70	\$30.77	\$13.00	\$12.43	\$0.00	\$56.20
10	75	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74

**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

**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
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**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 <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2012	\$38.59	\$8.78	\$6.96	\$0.00	\$54.33
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2013	\$38.50	\$10.00	\$13.02	\$0.00	\$61.52
	11/01/2013	\$39.26	\$10.00	\$13.02	\$0.00	\$62.28
	05/01/2014	\$40.03	\$10.00	\$13.02	\$0.00	\$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2013	\$39.91	\$10.00	\$13.02	\$0.00	\$62.93
	11/01/2013	\$40.68	\$10.00	\$13.02	\$0.00	\$63.70
	05/01/2014	\$41.45	\$10.00	\$13.02	\$0.00	\$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2013	\$21.17	\$10.00	\$13.02	\$0.00	\$44.19
	11/01/2013	\$21.63	\$10.00	\$13.02	\$0.00	\$44.65
	05/01/2014	\$22.08	\$10.00	\$13.02	\$0.00	\$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	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"						

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i>	09/01/2013	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74
<i>LOCAL 103</i>	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) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$33.73	\$10.00	\$13.55	\$0.00	\$57.28
	12/01/2013	\$34.39	\$10.00	\$13.55	\$0.00	\$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	06/01/2013	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2013	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2014	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2014	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2015	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2015	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	06/01/2016	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
	12/01/2016	\$20.50	\$7.10	\$12.45	\$0.00	\$40.05
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	09/01/2013	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12
	03/01/2014	\$38.61	\$9.80	\$16.71	\$0.00	\$65.12

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

**Effective Date - 03/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$9.80	\$1.79	\$0.00	\$30.90
2	55	\$21.24	\$9.80	\$1.79	\$0.00	\$32.83
3	60	\$23.17	\$9.80	\$11.34	\$0.00	\$44.31
4	65	\$25.10	\$9.80	\$11.34	\$0.00	\$46.24
5	70	\$27.03	\$9.80	\$13.13	\$0.00	\$49.96
6	75	\$28.96	\$9.80	\$13.13	\$0.00	\$51.89
7	80	\$30.89	\$9.80	\$14.92	\$0.00	\$55.61
8	85	\$32.82	\$9.80	\$14.92	\$0.00	\$57.54

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$28.19	\$10.00	\$13.55	\$0.00	\$51.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2013	\$28.74	\$10.00	\$13.55	\$0.00	\$52.29
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2013	\$35.51	\$7.80	\$14.60	\$0.00	\$57.91

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - GLAZIER - Local 35 Zone 2**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.76	\$7.80	\$0.00	\$0.00	\$25.56
2	55	\$19.53	\$7.80	\$3.25	\$0.00	\$30.58
3	60	\$21.31	\$7.80	\$3.54	\$0.00	\$32.65
4	65	\$23.08	\$7.80	\$3.84	\$0.00	\$34.72
5	70	\$24.86	\$7.80	\$12.83	\$0.00	\$45.49
6	75	\$26.63	\$7.80	\$13.13	\$0.00	\$47.56
7	80	\$28.41	\$7.80	\$13.42	\$0.00	\$49.63
8	90	\$31.96	\$7.80	\$14.01	\$0.00	\$53.77

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.19	\$10.00	\$0.00	\$0.00	\$32.19
2	60	\$24.20	\$10.00	\$13.55	\$0.00	\$47.75
3	65	\$26.22	\$10.00	\$13.55	\$0.00	\$49.77
4	70	\$28.24	\$10.00	\$13.55	\$0.00	\$51.79
5	75	\$30.26	\$10.00	\$13.55	\$0.00	\$53.81
6	80	\$32.27	\$10.00	\$13.55	\$0.00	\$55.82
7	85	\$34.29	\$10.00	\$13.55	\$0.00	\$57.84
8	90	\$36.31	\$10.00	\$13.55	\$0.00	\$59.86

**Effective Date - 12/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.62	\$10.00	\$0.00	\$0.00	\$32.62
2	60	\$24.67	\$10.00	\$13.55	\$0.00	\$48.22
3	65	\$26.73	\$10.00	\$13.55	\$0.00	\$50.28
4	70	\$28.78	\$10.00	\$13.55	\$0.00	\$52.33
5	75	\$30.84	\$10.00	\$13.55	\$0.00	\$54.39
6	80	\$32.90	\$10.00	\$13.55	\$0.00	\$56.45
7	85	\$34.95	\$10.00	\$13.55	\$0.00	\$58.50
8	90	\$37.01	\$10.00	\$13.55	\$0.00	\$60.56

**Notes:**

**Apprentice to Journeyworker Ratio:1:6**

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	09/01/2013	\$42.35	\$9.82	\$19.08	\$2.14	\$73.39
	02/01/2014	\$43.20	\$9.82	\$19.08	\$2.14	\$74.24
	08/01/2014	\$44.05	\$9.82	\$19.08	\$2.14	\$75.09
	02/01/2015	\$44.95	\$9.82	\$19.08	\$2.14	\$75.99
	08/01/2015	\$45.95	\$9.82	\$19.08	\$2.14	\$76.99
	02/01/2016	\$46.95	\$9.82	\$19.08	\$2.14	\$77.99
	08/01/2016	\$48.10	\$9.82	\$19.08	\$2.14	\$79.14
	02/01/2017	\$49.20	\$9.82	\$19.08	\$2.14	\$80.24
	08/01/2017	\$50.30	\$9.82	\$19.08	\$2.14	\$81.34
	02/01/2018	\$51.45	\$9.82	\$19.08	\$2.14	\$82.49

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	09/01/2013	\$43.96	\$13.00	\$14.42	\$0.00	\$71.38
	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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	09/01/2013	\$42.35	\$9.82	\$19.08	\$2.14	\$73.39
	02/01/2014	\$43.20	\$9.82	\$19.08	\$2.14	\$74.24
	08/01/2014	\$44.05	\$9.82	\$19.08	\$2.14	\$75.09
	02/01/2015	\$44.95	\$9.82	\$19.08	\$2.14	\$75.99
	08/01/2015	\$45.95	\$9.82	\$19.08	\$2.14	\$76.99
	02/01/2016	\$46.95	\$9.82	\$19.08	\$2.14	\$77.99
	08/01/2016	\$48.10	\$9.82	\$19.08	\$2.14	\$79.14
	02/01/2017	\$49.20	\$9.82	\$19.08	\$2.14	\$80.24
	08/01/2017	\$50.30	\$9.82	\$19.08	\$2.14	\$81.34
	02/01/2018	\$51.45	\$9.82	\$19.08	\$2.14	\$82.49
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	12/01/2013	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	06/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	12/01/2014	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	06/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	12/01/2015	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	06/01/2016	\$38.30	\$7.10	\$12.45	\$0.00	\$57.85
	12/01/2016	\$39.30	\$7.10	\$12.45	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	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

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**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	03/16/2013	\$40.23	\$7.70	\$18.35	\$0.00	\$66.28
IRONWORKERS LOCAL 7 (BOSTON AREA)	09/16/2013	\$40.85	\$7.70	\$18.60	\$0.00	\$67.15

**Apprentice - IRONWORKER - Local 7 Boston**

**Effective Date - 03/16/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$24.14	\$7.70	\$18.35	\$0.00	\$50.19
2	70	\$28.16	\$7.70	\$18.35	\$0.00	\$54.21
3	75	\$30.17	\$7.70	\$18.35	\$0.00	\$56.22
4	80	\$32.18	\$7.70	\$18.35	\$0.00	\$58.23
5	85	\$34.20	\$7.70	\$18.35	\$0.00	\$60.25
6	90	\$36.21	\$7.70	\$18.35	\$0.00	\$62.26

**Notes:**

\*\* Structural 1:6; Ornamental 1:4

**Apprentice to Journeyworker Ratio:\*\***

JACKHAMMER & PAVING BREAKER OPERATOR	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
LABORERS - ZONE 1	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER LABORERS - ZONE 1	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

**Apprentice - LABORER - Zone 1**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.83	\$7.10	\$12.45	\$0.00	\$39.38
2	70	\$23.14	\$7.10	\$12.45	\$0.00	\$42.69
3	80	\$26.44	\$7.10	\$12.45	\$0.00	\$45.99
4	90	\$29.75	\$7.10	\$12.45	\$0.00	\$49.30

**Effective Date - 12/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.28	\$7.10	\$12.45	\$0.00	\$39.83
2	70	\$23.66	\$7.10	\$12.45	\$0.00	\$43.21
3	80	\$27.04	\$7.10	\$12.45	\$0.00	\$46.59
4	90	\$30.42	\$7.10	\$12.45	\$0.00	\$49.97

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER: CARPENTER TENDER LABORERS - ZONE 1	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 1	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	12/01/2011	\$31.80	\$7.10	\$12.45	\$0.00	\$51.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2013	\$36.66	\$10.18	\$16.83	\$0.00	\$63.67
	02/01/2014	\$37.11	\$10.18	\$16.83	\$0.00	\$64.12
	08/01/2014	\$37.82	\$10.18	\$16.90	\$0.00	\$64.90
	02/01/2015	\$38.27	\$10.18	\$16.90	\$0.00	\$65.35
	08/01/2015	\$38.98	\$10.18	\$16.97	\$0.00	\$66.13
	02/01/2016	\$39.43	\$10.18	\$16.97	\$0.00	\$66.58
	08/01/2016	\$40.13	\$10.18	\$17.05	\$0.00	\$67.36
	02/01/2017	\$40.59	\$10.18	\$17.05	\$0.00	\$67.82

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

**Effective Date - 08/01/2013**

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 - 02/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.56	\$10.18	\$16.83	\$0.00	\$45.57
2	60	\$22.27	\$10.18	\$16.83	\$0.00	\$49.28
3	70	\$25.98	\$10.18	\$16.83	\$0.00	\$52.99
4	80	\$29.69	\$10.18	\$16.83	\$0.00	\$56.70
5	90	\$33.40	\$10.18	\$16.83	\$0.00	\$60.41

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2013	\$48.10	\$10.18	\$18.15	\$0.00	\$76.43
	02/01/2014	\$48.66	\$10.18	\$18.15	\$0.00	\$76.99
	08/01/2014	\$49.56	\$10.18	\$18.22	\$0.00	\$77.96
	02/01/2015	\$50.12	\$10.18	\$18.22	\$0.00	\$78.52
	08/01/2015	\$51.02	\$10.18	\$18.29	\$0.00	\$79.49
	02/01/2016	\$51.59	\$10.18	\$18.29	\$0.00	\$80.06
	08/01/2016	\$52.49	\$10.18	\$18.37	\$0.00	\$81.04
	02/01/2017	\$53.06	\$10.18	\$18.37	\$0.00	\$81.61

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

**Effective Date - 08/01/2013**

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 - 02/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.33	\$10.18	\$18.15	\$0.00	\$52.66
2	60	\$29.20	\$10.18	\$18.15	\$0.00	\$57.53
3	70	\$34.06	\$10.18	\$18.15	\$0.00	\$62.39
4	80	\$38.93	\$10.18	\$18.15	\$0.00	\$67.26
5	90	\$43.79	\$10.18	\$18.15	\$0.00	\$72.12

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	04/01/2013	\$34.68	\$9.80	\$15.76	\$0.00	\$60.24
	10/01/2013	\$35.45	\$9.80	\$15.76	\$0.00	\$61.01
	04/01/2014	\$36.23	\$9.80	\$15.76	\$0.00	\$61.79
	10/01/2014	\$37.18	\$9.80	\$15.76	\$0.00	\$62.74
	04/01/2015	\$38.14	\$9.80	\$15.76	\$0.00	\$63.70

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - MILLWRIGHT - Local 1121 Zone 1**

**Effective Date - 04/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$19.07	\$9.80	\$4.32	\$0.00	\$33.19
2	65	\$22.54	\$9.80	\$13.01	\$0.00	\$45.35
3	75	\$26.01	\$9.80	\$13.80	\$0.00	\$49.61
4	85	\$29.48	\$9.80	\$14.58	\$0.00	\$53.86

**Effective Date - 10/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$19.50	\$9.80	\$4.32	\$0.00	\$33.62
2	65	\$23.04	\$9.80	\$13.01	\$0.00	\$45.85
3	75	\$26.59	\$9.80	\$13.80	\$0.00	\$50.19
4	85	\$30.13	\$9.80	\$14.58	\$0.00	\$54.51

**Notes:**

Steps are 2,000 hours

**Apprentice to Journeyworker Ratio:1:5**

MORTAR MIXER LABORERS - ZONE 1	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2013	\$21.17	\$10.00	\$13.55	\$0.00	\$44.72
	12/01/2013	\$21.59	\$10.00	\$13.55	\$0.00	\$45.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	06/01/2013	\$24.57	\$10.00	\$13.55	\$0.00	\$48.12
	12/01/2013	\$25.06	\$10.00	\$13.55	\$0.00	\$48.61
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2013	\$45.01	\$7.80	\$15.60	\$0.00	\$68.41

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.51	\$7.80	\$0.00	\$0.00	\$30.31
2	55	\$24.76	\$7.80	\$3.52	\$0.00	\$36.08
3	60	\$27.01	\$7.80	\$3.84	\$0.00	\$38.65
4	65	\$29.26	\$7.80	\$4.16	\$0.00	\$41.22
5	70	\$31.51	\$7.80	\$13.68	\$0.00	\$52.99
6	75	\$33.76	\$7.80	\$14.00	\$0.00	\$55.56
7	80	\$36.01	\$7.80	\$14.32	\$0.00	\$58.13
8	90	\$40.51	\$7.80	\$14.96	\$0.00	\$63.27

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2013	\$35.91	\$7.80	\$15.60	\$0.00	\$59.31
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\* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

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

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.96	\$7.80	\$0.00	\$0.00	\$25.76
2	55	\$19.75	\$7.80	\$3.52	\$0.00	\$31.07
3	60	\$21.55	\$7.80	\$3.84	\$0.00	\$33.19
4	65	\$23.34	\$7.80	\$4.16	\$0.00	\$35.30
5	70	\$25.14	\$7.80	\$13.68	\$0.00	\$46.62
6	75	\$26.93	\$7.80	\$14.00	\$0.00	\$48.73
7	80	\$28.73	\$7.80	\$14.32	\$0.00	\$50.85
8	90	\$32.32	\$7.80	\$14.96	\$0.00	\$55.08

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2013	\$33.97	\$7.80	\$15.60	\$0.00	\$57.37
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PAINTERS LOCAL 35 - ZONE 2

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

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

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.99	\$7.80	\$0.00	\$0.00	\$24.79
2	55	\$18.68	\$7.80	\$3.52	\$0.00	\$30.00
3	60	\$20.38	\$7.80	\$3.84	\$0.00	\$32.02
4	65	\$22.08	\$7.80	\$4.16	\$0.00	\$34.04
5	70	\$23.78	\$7.80	\$13.68	\$0.00	\$45.26
6	75	\$25.48	\$7.80	\$14.00	\$0.00	\$47.28
7	80	\$27.18	\$7.80	\$14.32	\$0.00	\$49.30
8	90	\$30.57	\$7.80	\$14.96	\$0.00	\$53.33

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 1	06/01/2013	\$33.05	\$7.10	\$12.45	\$0.00	\$52.60
	12/01/2013	\$33.80	\$7.10	\$12.45	\$0.00	\$53.35
	06/01/2014	\$34.55	\$7.10	\$12.45	\$0.00	\$54.10
	12/01/2014	\$35.30	\$7.10	\$12.45	\$0.00	\$54.85
	06/01/2015	\$36.05	\$7.10	\$12.45	\$0.00	\$55.60
	12/01/2015	\$36.80	\$7.10	\$12.45	\$0.00	\$56.35
	06/01/2016	\$37.55	\$7.10	\$12.45	\$0.00	\$57.10
	12/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2013	\$34.51	\$7.80	\$15.60	\$0.00	\$57.91
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\* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2

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

**Effective Date - 01/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.26	\$7.80	\$0.00	\$0.00	\$25.06
2	55	\$18.98	\$7.80	\$3.52	\$0.00	\$30.30
3	60	\$20.71	\$7.80	\$3.84	\$0.00	\$32.35
4	65	\$22.43	\$7.80	\$4.16	\$0.00	\$34.39
5	70	\$24.16	\$7.80	\$13.68	\$0.00	\$45.64
6	75	\$25.88	\$7.80	\$14.00	\$0.00	\$47.68
7	80	\$27.61	\$7.80	\$14.32	\$0.00	\$49.73
8	90	\$31.06	\$7.80	\$14.96	\$0.00	\$53.82

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER / TAPER (BRUSH, REPAINT) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2013	\$32.57	\$7.80	\$15.60	\$0.00	\$55.97

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

**Effective Date -** 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.29	\$7.80	\$0.00	\$0.00	\$24.09
2	55	\$17.91	\$7.80	\$3.52	\$0.00	\$29.23
3	60	\$19.54	\$7.80	\$3.84	\$0.00	\$31.18
4	65	\$21.17	\$7.80	\$4.16	\$0.00	\$33.13
5	70	\$22.80	\$7.80	\$13.68	\$0.00	\$44.28
6	75	\$24.43	\$7.80	\$14.00	\$0.00	\$46.23
7	80	\$26.06	\$7.80	\$14.32	\$0.00	\$48.18
8	90	\$29.31	\$7.80	\$14.96	\$0.00	\$52.07

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.38	\$8.91	\$8.00	\$0.00	\$48.29
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	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 <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	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

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**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 PIPEFITTERS LOCAL 537	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
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**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 <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	03/01/2013	\$49.31	\$9.32	\$13.29	\$0.00	\$71.92
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**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$17.26	\$9.32	\$4.97	\$0.00	\$31.55
2	40	\$19.72	\$9.32	\$5.61	\$0.00	\$34.65
3	55	\$27.12	\$9.32	\$7.53	\$0.00	\$43.97
4	65	\$32.05	\$9.32	\$8.81	\$0.00	\$50.18
5	75	\$36.98	\$9.32	\$10.09	\$0.00	\$56.39

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$53.29 Step5 with lic\$59.49

**Apprentice to Journeyworker Ratio:\*\***

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	03/01/2013	\$49.34	\$8.75	\$14.39	\$0.00	\$72.48
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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	06/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	12/01/2013	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	06/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	12/01/2014	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	06/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	12/01/2015	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	06/01/2016	\$38.55	\$7.10	\$12.45	\$0.00	\$58.10
	12/01/2016	\$39.55	\$7.10	\$12.45	\$0.00	\$59.10

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$28.19	\$10.00	\$13.55	\$0.00	\$51.74
	12/01/2013	\$28.74	\$10.00	\$13.55	\$0.00	\$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25b</i>	05/01/2011	\$28.03	\$7.75	\$5.91	\$0.00	\$41.69
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2011	\$24.24	\$8.67	\$15.51	\$0.00	\$48.42
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	05/01/2011	\$24.24	\$6.34	\$6.23	\$0.00	\$36.81

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 <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	08/01/2013	\$38.31	\$10.50	\$10.70	\$0.00	\$59.51
	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

**Apprentice - ROOFER - Local 33**

**Effective Date - 08/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.16	\$10.50	\$3.38	\$0.00	\$33.04
2	60	\$22.99	\$10.50	\$10.70	\$0.00	\$44.19
3	65	\$24.90	\$10.50	\$10.70	\$0.00	\$46.10
4	75	\$28.73	\$10.50	\$10.70	\$0.00	\$49.93
5	85	\$32.56	\$10.50	\$10.70	\$0.00	\$53.76

**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

**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 <i>ROOFERS LOCAL 33</i>	08/01/2013	\$38.56	\$10.50	\$10.70	\$0.00	\$59.76
	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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	09/01/2013	\$42.35	\$9.82	\$19.08	\$2.14	\$73.39
	02/01/2014	\$43.20	\$9.82	\$19.08	\$2.14	\$74.24
	08/01/2014	\$44.05	\$9.82	\$19.08	\$2.14	\$75.09
	02/01/2015	\$44.95	\$9.82	\$19.08	\$2.14	\$75.99
	08/01/2015	\$45.95	\$9.82	\$19.08	\$2.14	\$76.99
	02/01/2016	\$46.95	\$9.82	\$19.08	\$2.14	\$77.99
	08/01/2016	\$48.10	\$9.82	\$19.08	\$2.14	\$79.14
	02/01/2017	\$49.20	\$9.82	\$19.08	\$2.14	\$80.24
	08/01/2017	\$50.30	\$9.82	\$19.08	\$2.14	\$81.34
	02/01/2018	\$51.45	\$9.82	\$19.08	\$2.14	\$82.49

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

**Effective Date - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.94	\$9.82	\$4.82	\$0.00	\$31.58
2	40	\$16.94	\$9.82	\$4.82	\$0.00	\$31.58
3	45	\$19.06	\$9.82	\$8.45	\$1.12	\$38.45
4	45	\$19.06	\$9.82	\$8.45	\$1.12	\$38.45
5	50	\$21.18	\$9.82	\$9.24	\$1.21	\$41.45
6	50	\$21.18	\$9.82	\$9.49	\$1.21	\$41.70
7	60	\$25.41	\$9.82	\$10.80	\$1.38	\$47.41
8	65	\$27.53	\$9.82	\$11.59	\$1.47	\$50.41
9	75	\$31.76	\$9.82	\$13.16	\$1.64	\$56.38
10	85	\$36.00	\$9.82	\$14.23	\$1.80	\$61.85

**Effective Date - 02/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.28	\$9.82	\$4.82	\$0.00	\$31.92
2	40	\$17.28	\$9.82	\$4.82	\$0.00	\$31.92
3	45	\$19.44	\$9.82	\$8.45	\$1.12	\$38.83
4	45	\$19.44	\$9.82	\$8.45	\$1.12	\$38.83
5	50	\$21.60	\$9.82	\$9.24	\$1.21	\$41.87
6	50	\$21.60	\$9.82	\$9.49	\$1.21	\$42.12
7	60	\$25.92	\$9.82	\$10.80	\$1.38	\$47.92
8	65	\$28.08	\$9.82	\$11.59	\$1.47	\$50.96
9	75	\$32.40	\$9.82	\$13.16	\$1.64	\$57.02
10	85	\$36.72	\$9.82	\$14.23	\$1.80	\$62.57

**Notes:**

Steps are 6 mos.

**Apprentice to Journeyworker Ratio:1:4**

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

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - SIGN ERECTOR - Local 35 Zone 2**

**Effective Date - 06/01/2013**

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

**Notes:**  
Steps are 4 mos.

**Apprentice to Journeyworker Ratio:1:1**

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.84	\$8.91	\$8.00	\$0.00	\$48.75
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$32.13	\$8.91	\$8.00	\$0.00	\$49.04
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A)</i>	03/01/2013	\$52.58	\$8.42	\$12.60	\$0.00	\$73.60

**Apprentice - SPRINKLER FITTER - Local 550**

**Effective Date - 03/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.40	\$8.42	\$8.00	\$0.00	\$34.82
2	40	\$21.03	\$8.42	\$8.00	\$0.00	\$37.45
3	45	\$23.66	\$8.42	\$8.00	\$0.00	\$40.08
4	50	\$26.29	\$8.42	\$8.00	\$0.00	\$42.71
5	55	\$28.92	\$8.42	\$8.00	\$0.00	\$45.34
6	60	\$31.55	\$8.42	\$8.00	\$0.00	\$47.97
7	65	\$34.18	\$8.42	\$8.00	\$0.00	\$50.60
8	70	\$36.81	\$8.42	\$8.00	\$0.00	\$53.23
9	75	\$39.44	\$8.42	\$8.00	\$0.00	\$55.86
10	80	\$42.06	\$8.42	\$8.00	\$0.00	\$58.48

**Notes:**  
Steps are 850 hours

**Apprentice to Journeyworker Ratio:1:1**

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103	09/01/2013	\$32.97	\$13.00	\$12.77	\$0.00	\$58.74
	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 - 09/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.19	\$13.00	\$0.40	\$0.00	\$26.59
2	40	\$13.19	\$13.00	\$0.40	\$0.00	\$26.59
3	45	\$14.84	\$13.00	\$10.04	\$0.00	\$37.88
4	45	\$14.84	\$13.00	\$10.04	\$0.00	\$37.88
5	50	\$16.49	\$13.00	\$10.29	\$0.00	\$39.78
6	55	\$18.13	\$13.00	\$10.53	\$0.00	\$41.66
7	60	\$19.78	\$13.00	\$10.78	\$0.00	\$43.56
8	65	\$21.43	\$13.00	\$11.03	\$0.00	\$45.46
9	70	\$23.08	\$13.00	\$11.28	\$0.00	\$47.36
10	75	\$24.73	\$13.00	\$11.53	\$0.00	\$49.26

**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

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2013	\$47.00	\$10.18	\$18.15	\$0.00	\$75.33
	02/01/2014	\$47.56	\$10.18	\$18.15	\$0.00	\$75.89
	08/01/2014	\$48.46	\$10.18	\$18.22	\$0.00	\$76.86
	02/01/2015	\$49.02	\$10.18	\$18.22	\$0.00	\$77.42
	08/01/2015	\$49.92	\$10.18	\$18.29	\$0.00	\$78.39
	02/01/2016	\$50.49	\$10.18	\$18.29	\$0.00	\$78.96
	08/01/2016	\$51.39	\$10.18	\$18.37	\$0.00	\$79.94
	02/01/2017	\$51.96	\$10.18	\$18.37	\$0.00	\$80.51

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

**Effective Date - 08/01/2013**

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 - 02/01/2014**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.78	\$10.18	\$18.15	\$0.00	\$52.11
2	60	\$28.54	\$10.18	\$18.15	\$0.00	\$56.87
3	70	\$33.29	\$10.18	\$18.15	\$0.00	\$61.62
4	80	\$38.05	\$10.18	\$18.15	\$0.00	\$66.38
5	90	\$42.80	\$10.18	\$18.15	\$0.00	\$71.13

Notes:

**Apprentice to Journeyworker Ratio:1:3**

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$34.45	\$7.10	\$12.60	\$0.00	\$54.15
	12/01/2013	\$35.20	\$7.10	\$12.60	\$0.00	\$54.90
	06/01/2014	\$35.95	\$7.10	\$12.60	\$0.00	\$55.65
	12/01/2014	\$36.70	\$7.10	\$12.60	\$0.00	\$56.40
	06/01/2015	\$37.45	\$7.10	\$12.60	\$0.00	\$57.15
	12/01/2015	\$38.20	\$7.10	\$12.60	\$0.00	\$57.90
	06/01/2016	\$38.95	\$7.10	\$12.60	\$0.00	\$58.65
	12/01/2016	\$39.95	\$7.10	\$12.60	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.17	\$7.10	\$12.60	\$0.00	\$52.87
	12/01/2013	\$33.92	\$7.10	\$12.60	\$0.00	\$53.62
	06/01/2014	\$34.67	\$7.10	\$12.60	\$0.00	\$54.37
	12/01/2014	\$35.42	\$7.10	\$12.60	\$0.00	\$55.12
	06/01/2015	\$36.17	\$7.10	\$12.60	\$0.00	\$55.87
	12/01/2015	\$36.92	\$7.10	\$12.60	\$0.00	\$56.62
	06/01/2016	\$37.67	\$7.10	\$12.60	\$0.00	\$57.37
	12/01/2016	\$38.67	\$7.10	\$12.60	\$0.00	\$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2013	\$33.05	\$7.10	\$12.60	\$0.00	\$52.75
	12/01/2013	\$33.80	\$7.10	\$12.60	\$0.00	\$53.50
	06/01/2014	\$34.55	\$7.10	\$12.60	\$0.00	\$54.25
	12/01/2014	\$35.30	\$7.10	\$12.60	\$0.00	\$55.00
	06/01/2015	\$36.05	\$7.10	\$12.60	\$0.00	\$55.75
	12/01/2015	\$36.80	\$7.10	\$12.60	\$0.00	\$56.50
	06/01/2016	\$37.55	\$7.10	\$12.60	\$0.00	\$57.25
	12/01/2016	\$38.55	\$7.10	\$12.60	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$39.96	\$10.00	\$13.55	\$0.00	\$63.51
	12/01/2013	\$40.74	\$10.00	\$13.55	\$0.00	\$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$32.42	\$9.07	\$8.00	\$0.00	\$49.49
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2013	\$45.33	\$7.10	\$13.00	\$0.00	\$65.43
	12/01/2013	\$46.08	\$7.10	\$13.00	\$0.00	\$66.18
	06/01/2014	\$46.83	\$7.10	\$13.00	\$0.00	\$66.93
	12/01/2014	\$47.58	\$7.10	\$13.00	\$0.00	\$67.68
	06/01/2015	\$48.33	\$7.10	\$13.00	\$0.00	\$68.43
	12/01/2015	\$49.08	\$7.10	\$13.00	\$0.00	\$69.18
	06/01/2016	\$49.83	\$7.10	\$13.00	\$0.00	\$69.93
	12/01/2016	\$50.83	\$7.10	\$13.00	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2013	\$47.33	\$7.10	\$13.00	\$0.00	\$67.43
	12/01/2013	\$48.08	\$7.10	\$13.00	\$0.00	\$68.18
	06/01/2014	\$48.83	\$7.10	\$13.00	\$0.00	\$68.93
	12/01/2014	\$49.58	\$7.10	\$13.00	\$0.00	\$69.68
	06/01/2015	\$50.33	\$7.10	\$13.00	\$0.00	\$70.43
	12/01/2015	\$51.08	\$7.10	\$13.00	\$0.00	\$71.18
	06/01/2016	\$51.83	\$7.10	\$13.00	\$0.00	\$71.93
	12/01/2016	\$52.83	\$7.10	\$13.00	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2013	\$37.40	\$7.10	\$13.00	\$0.00	\$57.50
	12/01/2013	\$38.15	\$7.10	\$13.00	\$0.00	\$58.25
	06/01/2014	\$38.90	\$7.10	\$13.00	\$0.00	\$59.00
	12/01/2014	\$39.65	\$7.10	\$13.00	\$0.00	\$59.75
	06/01/2015	\$40.40	\$7.10	\$13.00	\$0.00	\$60.50
	12/01/2015	\$41.15	\$7.10	\$13.00	\$0.00	\$61.25
	06/01/2016	\$41.90	\$7.10	\$13.00	\$0.00	\$62.00
	12/01/2016	\$42.90	\$7.10	\$13.00	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2013	\$39.40	\$7.10	\$13.00	\$0.00	\$59.50
	12/01/2013	\$40.15	\$7.10	\$13.00	\$0.00	\$60.25
	06/01/2014	\$40.90	\$7.10	\$13.00	\$0.00	\$61.00
	12/01/2014	\$41.65	\$7.10	\$13.00	\$0.00	\$61.75
	06/01/2015	\$42.40	\$7.10	\$13.00	\$0.00	\$62.50
	12/01/2015	\$43.15	\$7.10	\$13.00	\$0.00	\$63.25
	06/01/2016	\$43.90	\$7.10	\$13.00	\$0.00	\$64.00
	12/01/2016	\$44.90	\$7.10	\$13.00	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2012	\$31.84	\$8.91	\$8.00	\$0.00	\$48.75
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2013	\$33.30	\$7.10	\$12.45	\$0.00	\$52.85
	12/01/2013	\$34.05	\$7.10	\$12.45	\$0.00	\$53.60
	06/01/2014	\$34.80	\$7.10	\$12.45	\$0.00	\$54.35
	12/01/2014	\$35.55	\$7.10	\$12.45	\$0.00	\$55.10
	06/01/2015	\$36.30	\$7.10	\$12.45	\$0.00	\$55.85
	12/01/2015	\$37.05	\$7.10	\$12.45	\$0.00	\$56.60
	06/01/2016	\$37.80	\$7.10	\$12.45	\$0.00	\$57.35
	12/01/2016	\$38.80	\$7.10	\$12.45	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2013	\$40.34	\$10.00	\$13.55	\$0.00	\$63.89
	12/01/2013	\$41.12	\$10.00	\$13.55	\$0.00	\$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	03/01/2013	\$49.31	\$9.32	\$13.29	\$0.00	\$71.92
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$25.66	\$8.70	\$4.48	\$0.00	\$38.84
	For apprentice rates see "Apprentice- LINEMAN"					
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$36.55	\$8.70	\$6.58	\$0.00	\$51.83
	For apprentice rates see "Apprentice- LINEMAN"					
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$29.94	\$8.70	\$6.05	\$0.00	\$44.69
	For apprentice rates see "Apprentice- LINEMAN"					
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$23.52	\$8.70	\$5.24	\$0.00	\$37.46
	For apprentice rates see "Apprentice- LINEMAN"					

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	09/01/2013	\$36.35	\$8.70	\$9.43	\$0.00	\$54.48
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	09/01/2013	\$32.08	\$8.70	\$6.59	\$0.00	\$47.37
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	09/01/2013	\$23.52	\$8.70	\$3.72	\$0.00	\$35.94
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> For apprentice rates see "Apprentice- LINEMAN"	09/01/2013	\$19.25	\$8.70	\$2.85	\$0.00	\$30.80
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/01/2013	\$42.77	\$8.70	\$11.78	\$0.00	\$63.25

**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

**Effective Date - 09/01/2013**

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:2**

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$26.33	\$4.18	\$2.79	\$0.00	\$33.30
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	07/16/2012	\$24.78	\$4.18	\$2.74	\$0.00	\$31.70
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> This classification applies only to the trimming of branches on and around utility lines.	01/29/2012	\$17.18	\$3.37	\$0.00	\$0.00	\$20.55
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i> This classification applies only to the trimming of branches on and around utility lines.	01/29/2012	\$15.15	\$3.37	\$0.00	\$0.00	\$18.52

Additional Apprentices Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. 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.