

TOWN OF ARLINGTON, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS

ADVANCED METERING INFRASTRUCTURE
AND METER DATA MANAGEMENT

CONTRACT 18-38

BY

WESTON & SAMPSON ENGINEERS, INC.

July 2018

TOWN OF ARLINGTON, MASSACHUSETTS

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AND METER DATA MANAGEMENT
CONTRACT 18-38

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TOWN OF ARLINGTON, MASSACHUSETTS

REQUEST FOR PROPOSALS (RFP) FOR

ADVANCED METERING INFRASTRUCTURE AND METER DATA MANAGEMENT

CONTRACT 18-38

The Town of Arlington (Owner), Town Manager's Office, solicits proposals for advanced metering infrastructure (AMI) hardware and software, meter data management (MDM) software, and hosted web portal. The scope of work shall include a pilot program for proof of concept, followed by system-wide fixed network deployment and vendor-hosted information system configuration, followed by annual supply of radio frequency (RF) modules, and support & maintenance services. A successful proposer will demonstrate simple RF module configuration; robust network performance in low-elevation areas of the Town; compatibility with the existing Neptune E-Coder water meter registers; ability to unify meter data management by integrating hourly and daily read data from the existing Itron AMI with the new system; and ability to deliver improved customer service, improved metering operations efficiency, and reduced non-revenue water. The Owner will consider proposals for dedicated data collection network infrastructure, furnished and installed for the utility by the proposer, or shared data collection network infrastructure, owned and operated by others through committed agreement. The contract shall be a three-year term, with years 2 and 3 dependent upon Owner appropriation of funds. The contract will include approximately 2,000 RF modules per year. The Owner may choose to terminate the agreement after the pilot at their discretion. The Owner will seek to award to a vendor with a history of product performance, support, and backwards compatibility; strong local references; and local resources for implementation and support.

Proposal submissions (as required in the proposal documents) will be received at Town Hall, 730 Massachusetts Avenue, Arlington, Massachusetts 02474 until 11:00 a.m. prevailing time, on August 9, 2018.

Copies of the contract documents are available through the Town of Arlington Purchasing Department online <https://www.arlingtonma.gov/departments/purchasing>. It is the proposer's responsibility to make certain they have received any/all addenda relating to their bid prior to the bid opening date. The Purchasing Department strongly encourages bidders email the Purchasing Department (dlanzillotti@town.arlington.ma.us) their company name, address, telephone number, and fax number in order to receive notification for any addenda information. The RFP documents will be available to prospective bidders starting on July 18, 2018.

All material submitted by Proposers becomes the irrevocable and sole property of the Owner unless otherwise specified. The Owner shall be under no obligation to return any documents or material submitted by a Proposer, unless specified. The Owner reserves the right to reject any and all Proposals, to waive any technicalities, and to accept any proposal in the best interest of the Owner. All proposals for this project are subject to applicable laws of Massachusetts, including General Laws Chapter 30B, as amended.

Town of Arlington, Massachusetts
July 2018

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TOWN OF ARLINGTON, MASSACHUSETTS

REFERENCE STATEMENT

ADVANCED METERING INFRASTRUCTURE AND METER DATA MANAGEMENT
CONTRACT 18-38

(ALL PROVIDERS TO FILL OUT COMPLETELY)

A. Organization providing products and software

The undersigned offers the following information as evidence of its qualifications to perform the work as bid upon according to all requirements of the contract documents:

1. State how long you have been in business under the same business name and owner/management structure: _____ years.
2. Have you ever been **terminated** on an awarded contract, or has the proposer **otherwise failed to complete** any work awarded? _____. If "yes", attach your description of the circumstances on a separate sheet. Include names and telephone numbers of customer(s): the Owner will expand the list of references to include these specific customers, if any.
3. Have you, within the previous five (5) years, performed work for the Town of Arlington? _____ (yes or no)
4. List on this form a minimum of four (4) recent contracts under which you provided automatic meter reading system, meter data management, and hosted information systems of the type and quantity (equal or greater) proposed. Two references shall be within 50 miles of the Town of Arlington. All four references shall be in New England. Waiver for minor variances in scope and scale shall be reviewed case by case. If your answer to Question #3 above is "YES", the Town of Arlington, Massachusetts shall be listed as an additional reference. As part of the Proposal Evaluation, the Town of Arlington may select any reference to visit.
5. Have you, within the previous five (5) years, provided automatic meter reading to any community that utilizes Munis UBCIS for water billing? _____ (**yes or no**).

If "yes", list on this form one (1) recent contract under which you worked with these billing service providers and note which reference was with these providers.

B. Recent Contracts:

1. Job: _____
Contract Amount: _____
Name of AMI System: _____
Name of MDM System: _____
Number of Data Collection Units/Repeaters: _____
Billing System(s): _____
Date Completed: _____
City/Town/Owner: _____
Contact Name: _____
Contact Telephone No.: (____) - _____

2. Job: _____
Contract Amount: _____
Name of AMI System: _____
Name of MDM System: _____
Number of Data Collection Units/Repeaters: _____
Billing System(s): _____
Date Completed: _____
City/Town/Owner: _____
Contact Name: _____
Contact Telephone No.: (____) - _____

3. Job: _____
Contract Amount: _____
Name of AMI System: _____
Name of MDM System: _____
Number of Data Collection Units/Repeaters: _____
Billing System(s): _____
Date Completed: _____
City/Town/Owner: _____
Contact Name: _____
Contact Telephone No.: () - _____

4. Job: _____
Contract Amount: _____
Name of AMI System: _____
Name of MDM System: _____
Number of Data Collection Units/Repeaters: _____
Billing System(s): _____
Date Completed: _____
City/Town/Owner: _____
Contact Name: _____
Contact Telephone No.: () - _____

EXACT NAME OF FIRM: _____

SIGNATURE: _____

PRINTED NAME: _____

DATE: _____

- a corporation, organized and existing under the laws of the State of _____
- a partnership
- a joint venture
- a limited liability company
- an individual doing business as _____

BUSINESS ADDRESS: _____

CITY/TOWN, STATE AND ZIP: _____

TELEPHONE, including area code: _____

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TOWN OF ARLINGTON, MASSACHUSETTS

PRICE PROPOSAL FORM

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT

CONTRACT 18-38

To - The Town of Arlington (“the Owner”), acting through its Town Manager, as Awarding Authority.

(a) The undersigned proposes to furnish all labor, materials and equipment to do all necessary work under this contract for the Town of Arlington, Massachusetts acting by its Town Manager and in accordance with the accompanying specifications, at the prices specified in the Price Proposal, subject to additions and deductions according to the contract document and in all respects according to the terms thereof.

(b) The undersigned declares that no person in the employ of said Owner has any pecuniary interest in this proposal or in the contract for the work he proposes to do and that he understands and agrees that the Owner, its agents and employees, are not to be in any manner held responsible for the accuracy of, or bound by, any estimates or plans relating to the work and that if any have been given or made they are to be considered solely as a base for filling out and comparing the several proposals.

(c) The undersigned certifies under penalties of perjury that this 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.

(d) Pursuant to M.G.L. CH. 62C, Sec 49A, the undersigned Proposer certifies under the penalties of perjury that he is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

(e) The undersigned agrees that he will within ten (10) days, Saturdays, Sundays and holidays excluded, after presentation by the Town Manager, execute the contract and begin work as required in the Specifications.

This Proposal Includes Addenda

No. _____ Dated _____, 201____.

No. _____ Dated _____, 201____.

No. _____ Dated _____, 201____.

The Proposer agrees to perform the work described in the specifications for the following lump sum and unit prices:

Proposal Year 1:

Proposal Year 1 shall include a pilot program for proof of concept, supply of radio frequency (RF) modules, system-wide fixed network deployment, hosted AMI, MDM, and web portal systems configuration, and support & maintenance services. The Owner may choose to terminate the agreement after the Pilot Program at their discretion. Lump sum price for the Pilot Program shall include all labor and expenses required to return the legacy system to service should the Owner determine the Pilot Program to be unsuccessful. The Pilot Program is described further in Specification Section 3, Scope of Requested Services. “Proposal Year 1” shall be in effect 365 days from the contract date fixed in the “Purchase Order Agreement” in quantities and time intervals to be determined by the Owner. The Owner will certify appropriation of “Proposal Year 1” total at the time of contract execution. Item A1, Pilot Program, Item A3, AMI Hardware, Software, Support & Maintenance and Item A4, Meter Data Management Software and Web Portal, shall include comprehensive labor, equipment, materials, and professional services required to furnish and install operational systems. Item A2, RF Modules, shall include furnishing of supplies. All products prices shall include delivery to the Owner. All costs required to execute the scope described herein shall be included in proposal pricing.

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
A1		PILOT PROGRAM:	
A1a	Lump Sum	Pilot program, lump sum	\$

		(dollars)	
		and	

		(cents)	
		(\$ _____)	

*Quantity assumed for comparison of bids

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
A2		RF MODULES:	
A2a	1,990 units	RF module for single register meters, furnished, per unit	\$ _____
		_____ (dollars)	
		and _____	
		_____ (cents)	
		(\$ _____)	
A2b	5 units	RF module for dual register meters, furnished, per unit	\$ _____
		_____ (dollars)	
		and _____	
		_____ (cents)	
		(\$ _____)	
A2c	5 units	RF module for water meters located in pits, furnished, per unit	\$ _____
		_____ (dollars)	
		and _____	
		_____ (cents)	
		(\$ _____)	
A3		AMI HARDWARE & SOFTWARE:	
A3a	Lump Sum	Hosted AMI software, hardware, licenses, and configuration, Data collection units (DCUs) and communication equipment necessary for complete and operational system, furnished, installed, and configured, lump sum	\$ _____
		_____ (dollars)	
		and _____	
		_____ (cents)	
		(\$ _____)	

*Quantity assumed for comparison of bids

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
A3b	Lump sum	All required staff and installer training on operation and maintenance of all system hardware and software, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
A3c	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for AMI for one year following completion of Year 1 work, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
A4		METER DATA MANAGEMENT SOFTWARE AND WEB PORTAL:	
A4a	Lump Sum	Hosted MDM and web portal software, licenses, and configuration necessary for complete and operational system, furnished, installed, and configured, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	

**Quantity assumed for comparison of bids*

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
A4b	Lump sum	All required staff and installer training on operation and maintenance of the MDM and web portal, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
A4c	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for MDM and web portal for one year following completion of Year 1 work, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	

**Quantity assumed for comparison of bids*

Proposal Year 2:

Proposal Year 2 shall include supply of radio frequency (RF) modules and support & maintenance services for hosted AMI, MDM, and web portal systems. “Proposal Year 2” shall be furnished between 366 and 730 days from the contract date fixed in the “Purchase Order Agreement” in quantities and time intervals to be determined by the Owner, provided the Owner certifies appropriation at the end of “Proposal Year 1.” The installation of RF modules is not included in Proposal Year 2.

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
B1 RF MODULES:			
B1a	1,990 units	RF module for single register meters, furnished, per unit	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
B1b	5 units	RF module for dual register meters, furnished, per unit	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
B1c	5 units	RF module for water meters located in pits, furnished, furnished, per unit	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	

**Quantity assumed for comparison of bids*

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
B2		AMI HARDWARE & SOFTWARE:	
B2a	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for AMI for one year following completion of Year 2 work, lump sum	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	
B3		METER DATA MANAGEMENT SOFTWARE AND WEB PORTAL:	
B3a	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for MDM and web portal for one year following completion of Year 2 work, lump sum	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	
B3b	Lump sum	Coordination for Munis Utility Billing CIS implementation, lump sum	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	

*Quantity assumed for comparison of bids

Proposal Year 3:

Proposal Year 3 shall include supply of radio frequency (RF) modules and support & maintenance services for hosted AMI, MDM, and web portal systems. “Proposal Year 3” shall be furnished between 731 and 1,095 days from the contract date fixed in the “Purchase Order Agreement” in quantities and time intervals to be determined by the Owner, provided the Owner certifies appropriation at the end of “Proposal Year 2.” The installation of RF modules is not included in Proposal Year 3.

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
C1		RF MODULES:	
C1a	1,990 units	RF module for single register meters, furnished, per unit	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	
C1b	5 units	RF module for dual register meters, furnished, per unit	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	
C1c	5 units	RF module for water meters located in pits, furnished, furnished, per unit	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	

*Quantity assumed for comparison of bids

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
C2		AMI HARDWARE & SOFTWARE:	
C2a	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for AMI for one year following completion of Year 3 work, lump sum	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	
C3		METER DATA MANAGEMENT SOFTWARE AND WEB PORTAL:	
C3a	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for MDM and web portal for one year following completion of Year 3 work, lump sum	\$ _____
		_____ (dollars)	
		and _____ (cents)	
		(\$ _____)	

**Quantity assumed for comparison of bids*

TOTAL OF PROPOSAL YEAR 1:

The proposed contract price for the "Proposal Year 1" Items A1 to A4 inclusive is:

_____ Dollars
and _____ Cents (\$_____).

TOTAL OF PROPOSAL YEAR 2:

The proposed contract price for the "Proposal Year 2" Items B1 to B3 inclusive is:

_____ Dollars
and _____ Cents (\$_____).

TOTAL OF PROPOSAL YEAR 3:

The proposed contract price for the "Proposal Year 3" Items C1 and C3 inclusive is:

_____ Dollars
and _____ Cents (\$_____).

TOTAL OF PROPOSAL YEAR 1 plus TOTAL OF PROPOSAL YEAR 2 plus TOTAL OF PROPOSAL YEAR 3:

_____ Dollars
and _____ Cents (\$_____).

ADDITIONAL EQUIPMENT:

The Owner may elect to purchase any of the items listed below at or around the conclusion of the three-year contract. Proposers should estimate pricing for the items listed below.

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
D1 RF MODULES:			
D1a	6,700 units	RF module for single register meters, furnished, per unit	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
D1b	25 units	RF module for dual register meters, furnished, per unit	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
D1c	25 units	RF module for water meters located in pits, furnished, furnished, per unit	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	
D2 AMI HARDWARE & SOFTWARE:			
D2a	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for AMI per year, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	

Item No.	Estimated Quantity*	Brief Description Unit or Lump Sum Price Bid in Both Words and Figures	Total in Figures
D3		METER DATA MANAGEMENT SOFTWARE AND WEB PORTAL:	
D3a	Lump sum	Hosted information system services, software licenses, product technical support and system maintenance services for MDM and web portal per year, lump sum	\$ _____
		(dollars)	
		and	
		(cents)	
		(\$ _____)	

STATE TAX COMPLIANCE

The undersigned, pursuant to Massachusetts General Laws Chapter 62C, section 49A, certifies under the pains and penalties of perjury, that the proposer has complied with all laws of the Commonwealth of Massachusetts relating to taxes.

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this 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.

The proposal attached hereto is submitted by

Name of Firm: _____

By: _____
(Signed Name) (Title) (Date)

(Printed Name) (Title)

Business Address: _____

City, State, Zip Code: _____

Tel. No. _____; FAX. No. _____

Fed. ID No.: _____

CERTIFICATE AS TO CORPORATE PROPOSER

I _____, certify that I am the
_____ of the Corporation named as proposer in
the Price Proposal Form: that _____ who signed
said Price Proposal Form on behalf of the Proposer was then
_____ of said Corporation, that I know his signature
and that his signature thereto is genuine and that said Price Proposal Form was duly signed,
sealed and executed for and in behalf of said Corporation by authority of its governing body.

(Corporate Seal)

Signature: _____

Title: _____

TOWN OF ARLINGTON

OSHA COMPLIANCE CERTIFICATION

Any person submitting a bid for, signing a contract to work on, the construction, reconstruction, alteration, remodeling or repair of any building or public works project undertaken by a public awarding authority in Massachusetts and estimated to cost more than \$10,000 must certify on the bid or contract, under penalties of perjury, as follows:

1. That he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed at the work; and
2. all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
3. that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours long in duration. (M.G.L., c. 30, Section 39S (a))

Pursuant to M.G.L. c. 30 Section 39M and M.G.L. c 149, I certify under penalties of perjury that, to the best of my Knowledge and belief, I am in compliance with the OSHA requirements as stated above.

Dated _____

Name of Company or Corporation

Authorized Official's Signature

WAGE THEFT CERTIFICATION

Pursuant to M.G.L. c. 149, M.G.L. c. 151, I certify under penalties of perjury that, neither this Company nor any of its subcontractors have been subject to a federal or state criminal or civil judgment, administrative citation, final administrative determination, order or debarment resulting from a violation of M.G.L. c. 149, M.G.L. c. 151, the Fair Labor Standards Act or any other state or federal laws regulating the payment of wages within three (3) years prior to the date of the Contract.

Or I certify that this Company has provided copies of any and all of the above to the City prior to the date of the Contract and any required wage bond or insurance; and certifies that while the Contract is in effect, it will report any instance of the above to the City within five (5) days of the Contractor's receipt.

Signature

Social Security or Federal ID No.

Date

BIDDERS/RESPONDENTS MUST SUBMIT THIS FORM FULLY COMPLETED

END OF SECTION

TOWN OF ARLINGTON, MASSACHUSETTS

GENERAL INSTRUCTIONS FOR PROPOSERS

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

- A. Attention of all proposers is directed to MGL Chapter 30B, and to all other applicable Sections of the General Laws of the Commonwealth of Massachusetts, and Municipal Ordinances and By-Laws, as most recently amended, which govern the award of this contract. They will be deemed to be included in the contract the same as though written out in full.
- B. No proposal received after the closing time and date established in the REQUEST FOR PROPOSALS for the receipt of proposals will be considered regardless of the cause for delay in the receipt of such proposals.
- C. If the building at which bids are to be received is closed for any reason on the date and time that bids are due, receipt of bids by the Town will be postponed until the next business day at the time originally stated for receipt of bids.
- D. Any proposer may correct, modify, or withdraw their proposal at any time prior to the scheduled closing time for receipt of proposals provided such is received by the Town Manager's Office prior to the closing time, and provided further that the final prices or terms will not be disclosed to the Purchasing Department/Town Manager's Office until the proposal is opened.

No proposer may withdraw a proposal within 120 days (Saturdays, Sundays and holidays excluded) after the actual date of the opening thereof.

- E. Inquiries regarding advanced metering infrastructure and meter data management shall be submitted in writing via email to davida@wseinc.com (copy dlanzillotti@town.arlington.ma.us) and to be given consideration must be received at least six working days prior to the date fixed for the opening of proposals.
- F. Proposers must acquaint themselves with the requirements of the program, and shall thoroughly examine the proposal and contract documents, including all addenda and requirements for certificates of insurance, bonds, etc., if any. Failure of any proposer to acquaint himself with the proposal and contract documents shall in no way release that proposer from the obligations with respect to his proposal. By submitting a proposal, the proposer agrees that the contract documents and terms are adequate and that the desired results can be produced, unless a separate statement of exception on company letterhead is submitted as discussed in the Specifications.
- G. Proposals are to be submitted using a two (2) sealed envelope system as described.

Evaluation of technical proposals (contained in one sealed envelope) will be conducted as described in the specifications. All technical proposals shall be submitted as a set of six (6) paper copies and one (1) digital copy on thumb drive. Technical proposals shall contain the following at a minimum:

- Letter of Transmittal – Addendums must be acknowledged on the first page of the Letter of Transmittal, i.e., (“We acknowledge the following Addendum___, ___.”)
- Table of Contents
- Project Implementation Plan
- Response to Questionnaire for Proposers
- Supporting documentation detailing products proposed, compliance with minimum criteria, and performance against evaluation criteria
- References submitted on the Town’s “Reference Statement” form
- Letter describing any Exceptions to requirements of this RFP, if applicable

Price proposals and Life Cycle Cost Analysis (LCCA), contained in the other sealed envelope, must be submitted on the prescribed forms which are included as part of this document. Price proposals shall include one (1) original paper copy, (2) copies, and one (1) thumb drive with digital tabulations of price and life cycle costs. All blank spaces for requested prices for the Price Proposal Form must be filled in, in ink or typewritten, and must be legible.

If proposals are forwarded by mail, the two (2) sealed envelopes must be enclosed in another envelope addressed as specified in the Request for Proposals.

EACH PROPOSAL PACKAGE MUST CONTAIN:

- (1) Proposer’s Technical Proposal (set of six, plus electronic media), including Reference Statement, in one sealed envelope. Envelope must be clearly labeled “Technical Proposal for AMI and MDM, Part 1”**
- (2) Proposer's Price Proposal and Life Cycle Cost Analysis (LCCA) Form (one original, two copies, plus electronic media), signed by the proposer, and including all forms included therein, in the other sealed envelope. Envelope must be clearly labeled “Price Proposal and LCCA for AMI and MDM , Part 2”**

The proposal must include the following information:

1. A copy of the written warranty on the RF module. The proposal must include the current list-price of the RF module, as would be applicable in the prorated warranty period.
2. A detailed description of the steps required to install an RF module in the field. The description must include all tools needed, programming requirements, weatherproofing materials (if necessary), and any special skills essential to make the RF module operational for an additional period of time.

3. An estimate of the time, in minutes, to complete an RF module replacement in the field including weatherproofing and testing of the RF module for accurate transmission of the meter reading.
- H. The scope of work shall include a pilot program for proof of concept, followed by system-wide fixed network deployment and vendor-hosted information system configuration, followed by annual supply of radio frequency (RF) modules, and support & maintenance services. A successful proposer will demonstrate simple RF module configuration; robust network performance in low-elevation areas of the Town; compatibility with the existing Neptune E-Coder water meter registers; ability to unify meter data management by integrating hourly and daily read data from the existing Itron AMI with the new system; and ability to deliver improved customer service, improved metering operations efficiency, and reduced non-revenue water. The contract shall be a three-year term, with years 2 and 3 dependent upon Owner appropriation of funds. The contract will include approximately 2,000 RF modules per year. The Owner may choose to terminate the agreement after the pilot at their discretion. All blank spaces for prices on the Price Proposal Form must be filled in, in print and electronic copy, and must be legible.
- I. Note that recognition of bid prices will be a factor in arriving at an overall “Most Advantageous” rating.
- J. In the event of a discrepancy between the unit price and the extension, the unit price will govern. In the event of discrepancy between the words and the numeric values, the words shall govern. Proposal prices shall encompass everything necessary for furnishing the item(s) specified in, and in accordance with the specifications, including proper packing, the cost of delivery, and travel expenses.
- K. If the contract is awarded, it will be awarded to the most advantageous responsive and responsible proposer, as determined by the comparative evaluation of technical proposals, results of reference check, product demonstrations, interviews, and proposed prices. The Owner may choose to proceed with or forgo interviews at their discretion. If the Owner is unsatisfied with MDM systems proposed, they may choose to omit MDM items (Item A4, Item B3, Item C3) from award. After the period scheduled for interview, the most advantageous proposer will be notified of this status by the Owner. The Owner has no obligation to select the proposer offering the lowest rate(s).
- L. The Town, acting through its Town Manager, reserves the right to award the contract, or to reject any and all proposals if it is in the public interest to do so. The Town reserves the right to waive any informalities.
- M. By submitting its proposal, the proposer agrees to execute the contract and to provide the specified services within the agreed upon time.
- N. The Town is an exempt purchaser under Massachusetts Laws. Its Exemption Certificate number is 046-001-070.

- O. Each proposer must inform himself fully of the conditions relating to the project. Failure to do so will not relieve a successful proposer of his obligation to furnish all material and labor necessary to carry out the provisions of this contract.
- P. Payment and performance bonds are required as noted in the General Conditions of Contract. An example payment bond and performance bond is included in this RFP for informational purposes only. Bonds are not to be submitted with the Proposal, but shall be required with execution of Agreement.
- Q. All proposals must be complete, factual, and signed by an authorized officer of the successful proposer's organization.
- R. Failure to comply with the above conditions, requirements, and specifications or any attached conditions, requirements, or specifications may be justification to reject any proposal as incomplete or non-responsive.
- S. Erasures or other changes in the proposal must be explained or noted over the signature of the proposer.

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TOWN OF ARLINGTON, MASSACHUSETTS

PURCHASE ORDER AGREEMENT

ADVANCED METERING INFRAStructure AND METER DATA MANAGEMENT
CONTRACT 18-38

THIS PURCHASE ORDER AGREEMENT, made this _____ day of _____, 2018, by and between the party of the first part, the Town of Arlington, hereinafter called "OWNER," acting herein through its Town Manager, and the party of the second part, _____ doing business as a corporation located in the Town/City of _____, and State of _____, hereinafter called "CONTRACTOR."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the project described as follows:

ADVANCED METERING INFRAStructure & METER DATA MANAGEMENT
Contract 18-38

hereinafter called the project, for the sum of _____ Dollars and _____ Cents (\$ _____) and all extra work in connection therewith; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, equipment, tools, superintendence, labor, insurance, transportation, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the attached documents listed below therefore as prepared by Weston & Sampson Engineers, Inc.

The following documents shall be considered part of this purchase order agreement and are attached:

1. "Price Proposal for Advanced Metering Infrastructure & Meter Data Management" as submitted by _____, and dated _____.
2. "Technical Proposal Advanced Metering Infrastructure & Meter Data Management", as submitted by _____, and dated _____.
3. "Request for Proposals for Advanced Metering Infrastructure & Meter Data Management", as submitted by _____, and dated _____.
4. "Certificate of Insurance for Advanced Metering Infrastructure & Meter Data Management", as submitted by _____, and dated _____.
5. "Performance Bond - Advanced Metering Infrastructure & Meter Data Management", as submitted by _____, and dated _____.
6. "Payment Bond - Advanced Metering Infrastructure & Meter Data Management", as submitted by _____, and dated _____.

The Proposer hereby agrees to commence work under this contract on or before a date to be fixed in the written "Purchase Order Agreement" given by the OWNER to the CONTRACTOR and to fully complete the contract 1,095 days, provided the Owner certifies appropriation for work Years 2 and 3. Delivery of radio frequency modules shall be within 60 calendar days from the date of receipt of individual purchase orders. The CONTRACTOR further agrees to pay as liquidated damages the sum of \$500 for each consecutive calendar day thereafter during which the material has not been delivered, as provided in the Liquidated Damages paragraph of the General Conditions for Contract.

The CONTRACTOR shall not discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

The CONTRACTOR shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue Code of 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.

Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this Agreement and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflict between Code of Federal Regulations and State laws and Regulations exist, the more stringent requirement shall apply.

IN WITNESS WHEREOF, the parties to these presents have executed this Agreement in six (6) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

AGREED:

Town of Arlington, Massachusetts
(Owner)

By

Adam Chapdelaine, Town Manager

Date

By

(Contractor)

Date

(Name)

(Title)

(Address)

(City and State)

Approved as to Form:

By _____
Doug Heim, Town Counsel

In accordance with M.G.L. C.44, Section 31C, this is to certify that an appropriation in the amount of _____ is available and that the Town Manager been authorized to execute the Contract and approve all requisitions and change orders.

By _____
Ida Cody, Comptroller

Michael Rademacher, Director of Public Works

CERTIFICATE OF VOTE
(to be filed if Contractor is a Corporation)

I, _____, hereby certify that I am the duly qualified and acting
(Secretary of Corporation)
Secretary of _____ and I further certify that a meeting of the
(Name of Corporation)
Directors of said company, duly called and held on _____, at which all members
(Date of Meeting)
were present and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

Anyone acting singly, to execute Forms of General Bid, Contracts or Bonds on behalf of the Corporation.

I further certify that the above vote is still in effect and has not been changed or modified in any respect.

By: _____
(Secretary of Corporation)

A True Copy:

Attest: _____
(Notary Public)

My Commission Expires: _____
(Date)

STATEMENT OF COMPLIANCE

I, _____, as _____ of
(Title)
_____, whose principal place business is located
at _____, do hereby certify that the above name
_____ has complied with all laws of the Commonwealth
of Massachusetts relating to taxes, reporting of employees and contractors and withholding and
remitting child support in accordance with the provisions of Massachusetts General Laws, Chapter
62C, S.49A, as amended.

Signed under penalties of perjury this _____ day of _____, 20__.

Signature of Authorized
Representative of Contractor

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TOWN OF ARLINGTON, MASSACHUSETTS

PERFORMANCE BOND

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

a _____ hereinafter called "Principal" and
(Corporation, Partnership, Joint Venture, Limited Liability Company, or Individual)

_____ of _____, State of _____
(Surety) (City/Town) (State)

hereinafter called the "Surety" and licensed by the State Division of Insurance to do business under the laws of the Commonwealth of Massachusetts are held and firmly bound to the Town of Arlington, Massachusetts hereinafter called "Owner," in the penal sum of _____ Dollars and _____

_____ Cents (\$ _____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, _____, a copy of which is hereto attached and made a part hereof for the construction described as follows:

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

NOW, THEREFORE, if the Principal shall well, truly, and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any

way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the work or to the specifications. The Surety Company providing the bond shall have a rating of A or better within the Best Key Rating Guide.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 2018.

ATTEST: _____
(Principal)

(Principal Secretary)
By _____

(Address-Zip Code)

(Witness as to Principal)

(Address-Zip Code)

(SEAL)

ATTEST: _____
(Surety)
By _____
(Attorney-in-Fact)

(Address-Zip Code)

(Witness as to Surety)

(Address-Zip Code)

(SEAL)

NOTE: If Contractor is a partnership, all partners should execute bond.

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TOWN OF ARLINGTON, MASSACHUSETTS

PAYMENT BOND

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)
a _____ hereinafter called "Principal" and
(Corporation, Partnership, Joint Venture or Individual)
_____ of _____, State of _____
(Surety) (City/Town) (State)
hereinafter called "Surety" and licensed by the State Division of Insurance to do business under
the laws of the Commonwealth of Massachusetts are held and firmly bound to the Town of
Arlington, Massachusetts hereinafter called "Owner," in the penal sum of _____
_____ Dollars and _____
_____ Cents (\$ _____) in lawful money of the United States, for the
payment of which sum well and truly to be made, we bind ourselves, our heirs, executors,
administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered
into a certain contract with the Owner, dated the ____ day of _____, 2018, a copy of
which is hereto attached and made a part hereof for the construction described as follows:

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
subcontractors, and corporations furnishing materials, equipment, or performing labor in the
prosecution of the work provided for in such contract, and any authorized extension or
modification thereof, performed in such work whether by subcontractor or otherwise, then this
obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and
agrees that no change, extension of time, alteration or addition to the terms of the contract or to
the work to be performed thereunder or the specifications accompanying the same shall in any
way affect its obligation on this bond, and it does hereby waive notice of any such change,
extension of time, alteration or addition to the terms of this contract or to the work or to the
specifications. The Surety Company providing the bond shall have a rating of A or better within
the Best Key Rating Guide.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this the _____ day of _____, _____.

ATTEST:

(Principal)

(Principal Secretary)

By _____

(Address-Zip Code)

(Witness as to Principal)

(Address-Zip Code)

(SEAL)

ATTEST:

(Surety)

By _____

(Attorney-in-Fact)

(Address-Zip Code)

(Witness as to Surety)

(SEAL)

(Address-Zip Code)

NOTE: If Contractor is a partnership, all partners should execute bond.

TOWN OF ARLINGTON, MASSACHUSETTS

GENERAL CONDITIONS FOR CONTRACT

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

1. Acceptance of Contract

The Town of Arlington, hereinafter called the "OWNER," shall not be bound by this order until the CONTRACTOR executes and returns to OWNER the acknowledgment copy of the order. CONTRACTOR shall be bound by this order and its terms and conditions when it executes and returns the acknowledgment or when it delivers to OWNER any of the items ordered, or renders for OWNER any of the services ordered herein. No contract shall exist except as hereinabove provided.

2. Amendments

No agreement or understanding to modify this contract shall be binding upon the OWNER unless in writing and signed by OWNER's authorized agent. All specifications, drawings, and data submitted to CONTRACTOR with this order are hereby incorporated herein and made a part hereof.

3. Changes

The OWNER reserves the right at any time to make changes in any one or more of the following (a) Specifications, drawings, and data incorporated in this contract where the items to be furnished are to be specially manufactured for the OWNER; (b) Methods of shipment or packing; (c) Place of delivery and (d) Time of delivery. If any such change causes an increase or decrease in the cost of or the time required for performance of this contract, an equitable adjustment shall be made in the contract price or delivery schedule, or both. Any claim by the CONTRACTOR for adjustment under this clause shall be deemed waived unless asserted in writing within ten (10) days from receipt by CONTRACTOR of the change, and approved in writing by the OWNER. Price increases or extensions of time for delivery shall not be binding on OWNER unless evidenced by a Purchase Order Change Notice issued and signed by OWNER.

4. Interpretation of Basic Estimate Quantities

All proposals will be compared on the estimate of quantities of work to be supplied and or/supplied and installed as shown in the Price Proposal Form. The CONTRACTOR agrees that these quantities are being set forth as a basis for the comparison of the proposals only and the parties also expressly agree that the actual amount of work may not correspond therewith. The OWNER reserves the right to adjust said quantities in accordance with their actual needs as determined through the course of the work. An

increase or decrease in the quantity for any item shall not be regarded as cause for an increase or decrease in the contract unit prices, nor time allowed for completion of the work, except as provided in the Contract.

5. Delivery

Time is of the essence in this contract, and if delivery of items or rendering of services is not completed by the time promised, the OWNER reserves the right without liability, in addition to its other rights and remedies, to terminate this contract by notice effective when received by CONTRACTOR, as to stated items not yet shipped or services not yet rendered, and to purchase substitute items or services elsewhere and charge the CONTRACTOR with any loss incurred. Any provisions herein for delivery of articles or the rendering of services by installments shall not be construed as making the obligations of CONTRACTOR servable. Shipments sent C.O.D. will not be allowed and will not be accepted by the OWNER.

6. Inspection

Materials or equipment purchased hereunder are subject to inspection and approval at the OWNER's destination. OWNER reserves the right to reject and refuse acceptance of items which are not in accordance with the instructions, specifications, drawings and data or CONTRACTOR's warranty (express or implied). OWNER will charge CONTRACTOR for the cost of inspecting merchandise rejected. Items not accepted will be returned to CONTRACTOR at CONTRACTOR's expense. Payment for any article hereunder shall not be deemed an acceptance thereof.

7. Warranty

By accepting this order, CONTRACTOR hereby warrants that the items and services to be furnished hereunder will be in full conformity with OWNER's specifications, drawings and data, or CONTRACTOR's samples and that items furnished hereunder will be fit for the use intended by OWNER. CONTRACTOR agrees that this warranty shall survive acceptance of the items.

The Proposer shall guarantee that the Work and Services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the contract documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the contract shall be fulfilled. This comprehensive guarantee of all software, equipment, and installation/configuration shall be for a period of one (1) year from satisfying all testing and acceptance requirements identified in the applicable subsection of the Specification and shall be in addition to individual product warranties specified herein, notably the 20 year warranty required for RF modules.

If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the Proposer in writing to make the required repairs, corrections, or replacements. If the Proposer neglects to commence making such repairs, corrections, or replacements to the satisfaction of the Owner within seven (7) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make said repairs, corrections, or replacements, and charge the costs, including compensation for additional professional services, to the Proposer.

8. Property Furnished to CONTRACTOR by OWNER

Unless otherwise agreed in writing, all special dies, molds, patterns, jigs, fixtures, and any other property furnished to the CONTRACTOR by the OWNER, or specifically paid for by the OWNER, for use in the performance of this contract, shall be and remain the property of the OWNER, shall be subject to be removed upon the OWNER's instruction, shall be used only in filling orders from the OWNER, shall be held at the CONTRACTOR's risk, and shall be kept insured by the CONTRACTOR at the CONTRACTOR's expense while in its custody or control in an amount equal to the replacement cost thereof, with loss payable to the OWNER. Copies of policies or certificates of such insurance will be furnished to OWNER on demand.

9. Patents

The CONTRACTOR undertakes and agrees to defend at CONTRACTOR's own expense, all suits, actions, or proceedings in which OWNER, any of OWNER's distributors or dealers, or the users of any of OWNER's products are made defendants for actual or alleged infringement of any U.S. or foreign letters patent resulting from the use or sale of the items purchased hereunder (except infringement necessarily resulting from adherence to specifications or drawings, other than those of CONTRACTOR's design or selection, originally submitted to CONTRACTOR by OWNER) and further agrees to pay and discharge any and all judgment or decrees which may be rendered in any such suit, action, or proceedings against such defendants therein.

10. Price

The OWNER shall not be billed at prices higher than stated in the Price Proposal unless authorized by a Contract Amendment issued and signed by OWNER. The CONTRACTOR represents that the price charged for the items or services covered by this order complies with applicable government regulations in effect at time of quotation, sale, or delivery. The CONTRACTOR agrees that any price reduction made in merchandise covered by this order subsequent to the placement of this order will be applicable to this order.

11. New Equipment and Technology

If at any time new equipment or new technology is released to replace or upgrade equipment presented in the proposal of the successful bidder during the duration of this contract, the CONTRACTOR shall notify the OWNER. Written notification shall include pricing for the new equipment along with functional description of new equipment. The pricing shall meet the requirements of Item 10 in General Conditions. The Owner shall have the option to purchase the new equipment or new technology.

12. Discontinuation of Equipment

If at any time during the duration of this Agreement and the warranty period of the equipment, the equipment is discontinued, the CONTRACTOR shall notify the OWNER immediately. The CONTRACTOR shall also inform the OWNER of what equipment will replace the discontinued equipment. The pricing of the replacement equipment shall meet the requirements of Item 10 in the General Conditions. If discontinuation of equipment during the period of the Agreement results in damages or depreciation of service to the Owner (ie require DCU or software replacement) expense to remedy shall be borne by the CONTRACTOR.

13. Measurement and Payment

- A. For unit priced items, the CONTRACTOR shall be paid in accordance with the actual quantity of each specific item that the CONTRACTOR has supplied, less any applicable monies retained. No additional compensation shall be paid to the CONTRACTOR for items not supplied.
- B. Each month, the CONTRACTOR's authorized representative shall meet with the OWNER's representative to determine the amount of materials supplied.
- C. Once each month the CONTRACTOR shall prepare and sign an Application for Payment, and submit the original and four (4) copies for review and signature of the OWNER's representative. These completed forms will provide the basis upon which payment will be made to the CONTRACTOR.
- D. No payment of any Application for Payment or of any retained percentage shall relieve the CONTRACTOR of his obligation to repair or replace any defective parts of the materials. The CONTRACTOR's obligation is explained in these General Conditions and the Specifications section of this Request for Proposals.
- E. Materials and equipment, when so paid for by the OWNER, shall become the property of the OWNER, and in the event of default on the part of the CONTRACTOR, the OWNER may use, or cause to be used, these materials and equipment in a manner determined by the OWNER.

- F. The OWNER may retain five percent (5%) of payments from the Application for Payment until Year 1 work is determined Substantially Complete. Release of retainage on items other than RF modules may be requested upon satisfactory completion of production System Testing and Acceptance, as described in the Specification.
- G. Proposal prices shall encompass everything necessary for furnishing the item(s) specified in, and in accordance with the specifications, including proper packing, the cost of delivery, and travel expenses. The lump sum and unit prices are comprehensive for functioning hosted information systems and services. Additional fees for periodic updates and releases, or customer web portal user-accounts, shall not be allowed during the Agreement period. All such costs shall be represented in Lifecycle Costs provided with proposal.
- H. The Proposer may submit breakdown of project lump sums to serve as the basis for partial payments commensurate with that portion of goods and services delivered. Lump sum breakdown shall be subject to review and approval by the Owner and should represent equitable consideration for portions of systems furnished and configured.

14. Compliance with Laws

In accepting this order CONTRACTOR represents that it has and will continue during the performance of this order to comply with the provisions of all federal, state, and local laws and regulations from which liability may accrue to OWNER from any violation thereof. By acceptance hereof, CONTRACTOR certifies compliance with the "Fair Labor Standards Act" of 1938, as amended, in the performance of this order.

15. Non-Discrimination

By acceptance hereof, CONTRACTOR certifies that during the performance of this order, it will not discriminate on grounds of race, color, religious creed, national origin, age, or sex in employment practices in the selection or retention of subcontractors, if any, or in the procurement of materials and supply of equipment.

16. Interpretation of Contract

This contract shall be construed according to the laws of the Commonwealth of Massachusetts.

17. Liquidated Damages

- A. If the CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the OWNER, then the CONTRACTOR does hereby agree, as a part consideration for the awarding of this Contract, to pay to the OWNER the amount specified in the Contract, not as a penalty

but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the work. Such damages may be retained from time to time by the OWNER from progress payments or any amounts owing to the CONTRACTOR, or otherwise collected.

- B. The said amount is fixed and agreed upon by and between the CONTRACTOR and the OWNER because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the OWNER would in such event sustain, and said amount is agreed to be the amount of damages which the OWNER would sustain and said amount shall be retained from time to time by the OWNER from current periodical estimates.
- C. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein as definite and certain length of times if fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract. Provided that the CONTRACTOR shall not be charged with liquidated damages of any excess cost when the OWNER determines that the CONTRACTOR is without fault and the CONTRACTOR's reasons for the time extension are acceptable to the OWNER. Provided, further, that the CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:
 - 1) to any preference, priority, or allocation order duly issued by the Government;
 - 2) to unforeseeable cause beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and
 - 3) to any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections C(1) and C(2) above;
- D. Provided, further, that the CONTRACTOR shall, within ten (10) days from the beginning of such delay, unless the OWNER shall grant a further period of time prior to the date of final settlement of the Contract, notify the OWNER, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the CONTRACTOR within a reasonable time of its decision in the matter.
- E. The CONTRACTOR hereby agrees to commence work under this Contract on or before the date of the Agreement given by the OWNER to the CONTRACTOR. Delivery of electric meters, registers, and RF modules shall be within 60 calendar days from the date of receipt of individual purchase orders. Delivery of products other than electric meters, registers and AMI modules shall be within 90 calendar days from the

date of receipt of individual purchase orders. The CONTRACTOR further agrees to pay as liquidated damages the sum of \$500 for each consecutive calendar day thereafter during which the material has not been delivered.

18. Performance & Payment Bonds

The CONTRACTOR shall furnish a performance bond as security for the faithful performance of obligations under the contract. The CONTRACTOR shall furnish a payment bond as security for the payment to all persons, firms, subcontractors, and corporations furnishing materials, equipment, or performing labor/services in the prosecution of the work. Performance and Payment Bonds shall be furnished in an amount equal to the Proposal Year 1 price.

Bonds shall remain in effect at least until one year after satisfactory completion of production System Testing & Acceptance Criteria. The CONTRACTOR shall pay the premium for the bonds. The bonds shall be in the form prescribed by the OWNER. An example performance bond and payment bond is included in this RFP for informational purposes.

19. Insurance

The successful proposer shall maintain during the life of the contract, pursuant to the RFP, the following insurance coverage for not less than the following amounts or greater where required by law. The successful proposer shall also take out and maintain for the term of the contract all coverages required by the statute or regulation. The Owner shall be named as an additional insured.

General Liability

Bodily Injury Liability:	\$1,000,000 each occurrence
Property Damage Liability	\$1,000,000 each occurrence
Combined Single Limit	\$3,000,000 annual aggregate

Automobile Liability

Bodily Injury Liability:	\$1,000,000 each accident
Property Damage Liability	\$1,000,000 each accident

Workers' Compensation Insurance

Workers' Compensation:	\$ 100,000
Employers' Liability	\$ 500,000 each accident
	\$ 500,000 disease per employee

<u>Umbrella Liability</u>	\$2,000,000 each occurrence
	\$2,000,000 general aggregate

All policies shall provide the OWNER 15 days notice of cancellation, non-renewal, or material change. Certificates are to evidence notice and certificate wording to the effect

that carries will “endeavor to” provide notice and failure to provide notice “shall not impose liability or obligation” are not acceptable. Said policies shall be written that the OWNER will be notified of cancellation at least fifteen (15) days prior to the effective date of such cancellation. Certificates in triplicate from the insurance carrier stating the limits of the liability and expiration date shall be filed with the Owner before operations are begun. Such certificates shall contain a statement referring specifically to this contract to the effect that all insurance coverages herein required has been provided; except that in the case of compensation insurance, certificates must be filed before an award can be made. Signatures on all Certificates and/or Insurance Forms must be original signatures. Attention of Bidders is called to the requirements of the Massachusetts General Laws, Chapter 149, Section 34A, relation to proof of compliance regarding certain insurance before a contract may be awarded.

20. Conflict of Interest

- A. The successful proposer agrees that, to the extent that such law is applicable to the duties it is to perform hereunder, it will comply with the provisions of Chapter 268A of the General Laws concerning conflict of interest. The successful proposer covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance under the agreement.
- B. No employee of the municipality and no public official who exercises any function or responsibilities in the review or approval of the undertaking or carrying out of this agreement shall:
 - 1. Participate in any decision relating to this agreement which affects his personal interest or the interest of any corporation, partnership, or association in which he is, directly or indirectly interested; or
 - 2. Have any financial interest, direct or indirect in this agreement or the proceeds thereof.

21. Rules and Regulations

- A. The proposer’s attention is directed to the fact that all applicable Federal, State, and Local Laws, and the rules and regulations of all authorities having jurisdiction over performance of the contract shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

Minimum Wage Rates as determined by the Commissioner of the Division of Occupational Safety of the Executive Office of Labor and Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, apply to the installation of AMI data collection units (DCU). It is the responsibility of the contractor, before bid opening, to request if necessary, any

additional information on Minimum Wage Rates for those trades people who may be employed for the proposed work under this contract.

- B. This Project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety 'Rules and Regulations for the Prevention of Accidents in Construction Operations' (Chapter 454 CMR 10.00 et seq.). Proposers shall be familiar with the requirements of these regulations.

22. Substantial Completion

- A. When the CONTRACTOR considers the work for its intended use, the CONTRACTOR shall notify the OWNER in writing that the work is substantially complete, except for items specifically listed by the CONTRACTOR as incomplete, and shall request that a certificate of Substantial Completion be issued. The OWNER and CONTRACTOR shall make an inspection of the work to determine the status of completion. If the OWNER does not consider the work Substantially Complete, the CONTRACTOR will be notified in writing giving the reasons therefore.
- B. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment.

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TOWN OF ARLINGTON, MASSACHUSETTS

SPECIFICATIONS

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

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1. GENERAL

The Town of Arlington (Owner), Town Manager's Office, solicits proposals for advanced metering infrastructure (AMI) hardware and software, meter data management (MDM) software, and hosted web portal. The scope of work shall include a pilot program for proof of concept, followed by system-wide fixed network deployment and vendor-hosted information system configuration, followed by annual supply of radio frequency (RF) modules, and support & maintenance services. A successful Proposer will demonstrate simple RF module configuration; robust network performance in low-elevation areas of the Town; compatibility with the existing Neptune E-Coder water meter registers; ability to unify meter data management by integrating hourly and daily read data from the existing Itron AMI with the new system; and ability to deliver improved customer service, improved metering operations efficiency, and reduced non-revenue water. The Owner will consider proposals for dedicated data collection network infrastructure, furnished and installed for the utility by the Proposer, or shared data collection network infrastructure, owned and operated by others through committed agreement. The contract shall be a three-year term, with years 2 and 3 dependent upon Owner appropriation of funds. The contract will include approximately 2,000 RF modules per year. The Owner may choose to terminate the agreement after the pilot at their discretion. The Owner will seek to award to a vendor with a history of product performance, support, and backwards compatibility; strong local references; and local resources for implementation and support.

Information systems and network components shall be supplied and configured by the Proposer. RF modules shall be installed by the Owner. For all other proposed systems, the Proposer shall be responsible for installation, configuration, interface with existing systems (including utility customer information/billing system and existing Itron AMI) and testing of the system, complete. Demonstrating system performance in areas where the Owner's existing reading system lacks reliable coverage will be required. The Proposer will furnish all materials, equipment, and incidentals necessary to train and support the Owner's personnel in the use of furnished products and installed systems.

Technical proposals explaining the system will be evaluated against comparative evaluation criteria. Proposal comparative evaluation criteria is outlined in a subsequent section of this RFP. From the individual criteria rankings, the Owner will rank the proposals overall as "Highly Advantageous," "Advantageous," "Not Advantageous," or "Unacceptable." Proposals receiving a "Not Advantageous" or "Unacceptable" ranking for an individual criterion does not necessarily mean that the proposal's overall ranking will be "Not Advantageous" or "Unacceptable." Proposers submitting the most advantageous proposals, may be asked to interview and demonstrate their systems to the Owner.

The Owner is not interested in products or software that are under development and not ready for demonstration. The Owner seeks a partner with a history of product performance, product support and longevity, local implementation and support resources, and positive local references of similar scale and scope.

2. BACKGROUND

The Town of Arlington is located in Middlesex County, Massachusetts. Arlington has a total land area of approximately 5.5 square miles and a population of approximately 42,844. The Water and Sewer Division maintains the water system including water meters and the existing meter reading system. Water and Sewer reports to the Department of Public Works.

The Owner purchases all their water from the Massachusetts Water Resources Authority (MWRA). Supply enters the distribution system through five venturi tube meters within the Town. The Owner services approximately 12,700 commercial and residential water accounts. In 2011 the Owner installed an Itron Water SaveSource fixed network meter reading system with Itron 200W RF modules to all-accounts. Itron Water SaveSource is a licensed frequency fixed network meter reading system which reads the service area via five data collectors installed throughout the Town of Arlington. Itron has recently discontinued production of 200W endpoints. The Owner needs to be able to service new customers, replace endpoints demolished by customers, and replace failed endpoints removed from service. Filling this need is critical and time sensitive, given the Owner's limited supply stock remaining. In addition to discontinuing production of the 200W unit, new sales of required field deployment hardware have been discontinued by the manufacturer, and notice has been tendered that hosted Water SaveSource network management software will soon be subcontracted to others. The Owner views this reduction in service as a risk to the utility. Additionally, there are areas in the Town lack communications coverage by the existing network. The Owner wishes to service new customers, maintain reading service through maintenance, and responsibly phase-out the Water Savesource system.

The WaterSavesource head-end software is hosted by Itron on remote servers and accessed by the Owner through a web browser. The system transmits a Daily Read Export (DRE) each day to a FTP site for consumption by a meter data management system built by the Town's Information Technology Department for the purpose of long-term system data storage, data maintenance & synchronization (ICS-Itron), and aggregation of readings for billing file production. The Town of Arlington bills all-customers once per quarter, in a single Town-wide billing event. The Itron system can also send a Hourly Read Export (HRE) via the same venues as the DRE file, though the Town has not historically requested and received this file from Itron. The Town-built MDM interfaces with the Town's customer information and billing system, Integrated Collection System (ICS). ICS resides on servers in the Town of Arlington and is a Linux based system which has been in service for over 20-years. The Town is currently working to transition utility billing from ICS to Munis Utility Billing CIS. The Town is currently transitioning other facets of Town collections to Munis, and plans begin to transition utility billing to Munis within 24-months.

The 2011 metering improvements program replaced most meters 2-inch and larger with AMCO positive displacement, turbine, and compound mechanical water meters with encoder registers. In 2016, the Town sought to replace all meters 10-years and older (typically Neptune ARB V and ProRead AutoDetect) with Neptune T-10 positive displacement water meters with E-Coder registers. By the conclusion of 2019 all meters in the system are anticipated to be less than 15-years old and have Neptune Proread, Neptune E-Coder, or AMCO encoder registers. The

existing Itron 200W RF modules are typically installed outdoors, in the location of historic ARB V remote receptacles, with gel-cap wire connector joining the Itron 200W module's 6-inch pigtail to Neptune ARB V wiring.

3. SCOPE OF REQUESTED SERVICES

The Owner seeks supplies and services detailed herein. Note that estimated quantities in the Price Proposal Form are for comparison of proposals only, and actual quantities will vary. Supplies shall be furnished at a time, and in quantities, as requested by the Owner. The Owner is requesting proposals for the following products and services:

1. Implement a pilot of the proposed AMI. The Proposer shall supply and install fixed network infrastructure (if required), AMI information systems, and forty (40) RF modules. All required labor, coordination, and superintendence shall be provided by the Proposer. The Owner's installation team will accompany the Proposer in deployment of RF modules. Web portal and MDM are not required to be configured as part of the pilot, but demonstration of the proposed system shall be provided to the Owner's staff. Pilot performance requirements and acceptance criteria are outlined in the Testing & Acceptance section of this Specification. Pilot products shall be removed, and the legacy system shall be returned to service, by the Proposer if the pilot is not accepted by the Owner. Should the pilot be accepted, the Owner shall retain pilot components. Pilot components shall not be paid separately under other contract items. The Owner and the Proposer shall establish the pilot location at project kickoff, and it shall include a region of the Owner's service area traditionally with limited network coverage.
2. Furnish RF modules for residential and commercial applications, each for pit or indoor settings, and including all wire connectors, RF module mounting devices, and hardware/software required for system configuration in the field.
3. Furnish and install all equipment and software necessary for water utility AMI, including data collectors (if required), network control systems, and all ancillaries/incidentals, complete. Information systems shall be remotely hosted by the Proposer.
4. Furnish and install a meter data management (MDM) system and customer web portal. Interface AMI with existing DPW information systems, including but not limited to existing utility billing system (ICS), the Itron Water SaveSource reading system, and Munis Utility Billing CIS.
5. Train the Owner's staff on use of the furnished systems.
6. Provide technical support services and system maintenance for the contract period plus one year following.

The successful Proposer must demonstrate its ability to deliver in accordance with the specifications, to support the system on an on-going basis, and to provide, as references, water utilities where the proposed system has been installed and is operating successfully. Proposals will be evaluated according to the selection criteria established within this document.

The anticipated schedule for review, selection, and agreement is as follows:

<u>Event</u>	<u>Date</u>
RFP Available to Proposers	July 18, 2018
Proposal Due Date	August 9, 2018
Request to Interview (if necessary)	August 31, 2018
Interviews On-Site (if necessary)	September 12, 2018
Notification of Intent to Award	September 28, 2018
Execute Agreement	October 26, 2018
Notice to Proceed	November 2, 2018

The contract period shall be 3-years. The pilot program shall be executed and pass system acceptance testing within ninety (90) days of Notice to Proceed. Fixed network communications infrastructure and information systems shall be fully configured and pass system acceptance criteria within one hundred eighty (180) days of Notice to Proceed. System acceptance testing for the Pilot and production program is described in Section 14 of this Specification.

4. EXCEPTIONS

Proposers shall furnish a separate statement on Company letterhead, titled “EXCEPTIONS” and listed in their Table of Contents, giving a complete description of all exceptions to the terms, conditions, and specifications outlined within this document. If applicable, proposed added or modified terms should be included within or appended to the exceptions section of the proposal response. If a statement is not provided, the Owner will assume that the Proposer is 100 percent compliant with the contract documents.

5. EVALUATION CRITERIA

Proposal Evaluation Criteria is detailed in the applicable section of this RFP. Any Proposer submitting a proposal must satisfy the minimum criteria listed in the Proposal Evaluation Criteria. Proposals which do not demonstrate compliance with minimum criteria will not be considered further. The Proposer may also list any additional benefits or functions that the proposed system has. Proposers are required to submit information on all these criteria, if applicable to the system being proposed:

Equipment and Software

1. AMI System
 - a. General Requirements
 - b. Fixed Network Data Collection Infrastructure
 - c. Network Control, Meter Data Management, and Applications
 - d. Interface with Existing Systems
2. RF Modules

Project Management and Implementation Services

3. Project Management and Project Implementation Plan
4. AMI and MDM Training
5. Testing and Startup of the AMI System

Support Services and Warranty

6. Support Services and Warranty

Experience and Stability of Proposer

7. Experience and Stability
8. References

Capital and Lifecycle Expense

9. Capital Cost
10. Lifecycle Cost

The proposals will be evaluated by a committee of the Owner's staff and may include the staff noted below. The Owner may employ a consultant to prepare unified documentation of proposal evaluation by the committee.

Michael Rademacher	Director of Public Works
Teresa DeBenedictis	Assistant Director of Public Works
Michael Tassinari	Water & Sewer Superintendent
Michaele Enwright	Water & Sewer Billing Clerk
Bryan Mount	Water & Sewer Foreman – Meters
David Good	Director of Information Technology
Charles Norton	Software Specialist Information Technology

6. GENERAL AMI REQUIREMENTS

The complete system required of this RFP shall include supply, delivery, installation, professional services, testing, and incidentals required to deliver a fully functioning system capable of collecting meter readings from the entire service area. The system shall include all data collection units (if required), network control hardware and software, and meter data management hardware and software. All required hardware and software following the data collection units shall be “hosted”, or remotely owned, operated, and maintained by the Proposer for the duration of the contract. The Owner will consider proposals for dedicated data collection network infrastructure, furnished and installed for the utility by the Proposer, or shared data collection network infrastructure, owned and operated by others through committed agreement. The system provided shall be fully configured by the Proposer in the Owner’s business environment, so that it can be used for the required customer service, operations, and billing applications outlined herein.

The RF modules shall be capable of functioning from outdoors, inside a building, or inside a meter pit. The Owner plans to install a majority of water RF modules on the outside of buildings at the location of existing historic read devices (often 3- to 5-ft off ground). RF modules must transmit data via RF signal to data collection units (DCUs). This interface is referred to herein as the local area network (LAN). DCUs must transmit data to a wide area network (WAN) of the Proposer’s choosing for backhaul to the proposed hosted network control and meter data management system. The Proposer shall provide and configure the interface between the hosted network control and meter data management system. Interface through the MDM shall include transfer of customer account and meter information to as described later in this Specification. The Owner must be able to operate the new system in parallel with the existing meter reading system.

System Requirements

- The AMI system must comply with all applicable Federal Communications Commission (FCC) Rules and Regulations. All AMI equipment and system components shall be labeled in accordance with the FCC and all product testing and FCC acceptance documents shall be provided with this proposal to verify compliance. If the AMI system requires licensing from the FCC, the Proposer shall be responsible for completing and submitting all applications and supporting data for obtaining an operating frequency from the FCC and/or others. The Proposer shall be responsible for payment of any fees required for the licensing. The output power of the AMI system will be governed by the relevant FCC standards for the operating frequencies used. The Proposer shall address licensing requirements in the Technical Proposal.
- Security features shall include encryption, authentication, credential management, intrusion detection, and the ability to log and audit all changes to data and configuration. These features shall be applied in all parts of the network.
- The system should allow the Owner to program the RF module remotely from the office (if programming required), time-synchronize, push firmware updates, and obtain off-cycle meter reads from the RF module to the fixed network collector(s) upon a remote request from the office within a maximum of twenty four (24) hours of the request. RF module and DCU

firmware updates must be able to be performed remotely without having to physically visit each premise in the field.

- AMI shall be capable of collecting numeric meter identification, interval and register readings, event flags, and on-demand reads from the proposed RF modules and water meters. Event flagging shall include tamper detection, leak identification, high usage flagging, low battery alarms, and backflow event flagging. The system shall have the ability to analyze water use patterns to automatically identify potential violations of water use restrictions, and analyze usage patterns to identify potential water leaks and meter tampering. The system shall have the ability to collect hourly interval data and transmit the hourly interval data on a minimum daily basis.
- The system shall allow for and be compatible with future upgrades of the manufacturer's product through software version changes and firmware upgrades to minimize and manage hardware obsolescence. All equipment furnished must be "Factory New."
- All equipment must be from qualified manufacturers and suitable for the intended use.

7. FIXED NETWORK DATA COLLECTION INFRASTRUCTURE

The Owner will consider proposals for dedicated data collection network infrastructure, furnished and installed for the utility by the Proposer, or shared data collection network infrastructure, owned and operated by others through committed agreement. Fixed network data collection infrastructure shall provide for reading water RF modules. Scope shall include backhaul of meter and event data to a WAN of the Proposer's choosing. The Proposer shall provide a detailed diagram and narrative of the proposed AMI radio-read system that includes but is not limited to: equipment location, power output, anticipated antenna(s) used, antenna gain, effective radiated power, height of antennas, frequency and mode, as well as any other technical data relating to the equipment and system operations. The system shall utilize DCUs strategically located throughout the Owner's service area for retrieving meter data. It may also incorporate a series of repeaters to assist the system with meter reading data collection.

DCUs shall be independently powered using line power. Line powered collectors shall have battery backup for loss of normal power. The battery shall be located in a place that is easily accessible for servicing. The system must utilize an identification capability for each collector and deliver the meter data back to the control computer either automatically or at pre-designated times. Collectors shall be electrically isolated and protected against static discharge, electrical surges, and indirect lightning strikes. Collectors shall receive low battery warning from solid state water meters, and shall measure and record radio frequency signal strength, and time and date stamp each inbound transmission from all meters and RF modules in the system. All retrieved meter and system information shall be in a format compatible with the supplied network control and meter data management system. Installation of DCUs shall include all electrical power connections, WAN connections, wiring, weatherproofing, theft protection, coordination with local/state/federal authorities, obtaining of necessary permits and approvals for installation of data collection units, performance of structural or safety review as needed, and any ancillary materials and equipment required.

The Proposer shall prepare and submit, as part of the technical proposal, a propagation study or other report documenting that the system as proposed is capable of reading all accounts in the system. In the event that 100% system coverage is not achievable via a fixed network system the Proposer must prominently highlight this exception and propose what is considered by the Proposer to be the best technological alternative. GIS data to support propagation is available through the MassGIS Online Data Viewer and Editor, "Oliver", available at http://maps.massgis.state.ma.us/map_ol/oliver.php. The Owner does not own utility poles or telecommunications infrastructure in their service territory. The Owner prefers to host collector sites at locations of existing collectors, as tabulated below. The Proposer shall include in their lump sum all equipment, materials, expense, and labor required to provide for, and coordinate, power supply (Eversource is local electric utility) and wireless communications backhaul.

Site ID	CCU ID	Name	Height (ft)	Tx Power (dBm)	Antenna	Latitude (y)	Longitude (x)
101	68052001	Turkey Hill Water Tower	95	28	10 dB omni	42.43244	-71.17313
102	68051993	Park circle Water tower	85	28	10 dB omni	42.41480	-71.18029
103	68051987	Mt Gilboa @ Cresent Hill Ave and Park Place	40	28	10 dB omni	42.41550	-71.15640
104	68052044	Winslow Towers	140	28	10 dB omni	42.41630	-71.15260
105	68052030	Mystic Lake Pump Station	30	28	10 dB omni	42.43445	-71.15553

The lump sum amounts the Proposer quotes in the applicable item in the Price Proposal Form shall include the costs to furnish and install all equipment necessary to collect one hundred (100) percent of the meter readings from water RF modules. This shall include all additional provisions that might be required to read difficult to read cellular network “dead zones”. This lump sum amount is the total payment the Proposer will receive for providing and installing a complete network of collectors, including incidentals and hardware and service agreements for connection to WAN, or if data collection is owned and operated by a third party, it shall include all provisions necessary to achieve the performance specification outlined herein. For lump sum price items, the AMI Proposer shall be paid based upon a percentage of work performed for that item during the monthly billing period.

The AMI System shall meet the following requirements:

- The system shall comply with ANSI C12.22, Protocol Specification for Interfacing to Data Communication Networks. This standard describes the protocol for transporting tables for the purpose of interoperability among communications devices on the network and requires AES encryption.
- The system shall have the ability to remotely diagnose meters and network components, and to monitor and control the status of the AMI communications network. Features for this ability shall include remote self-tests, statistics gathering, trouble alarms sent spontaneously when necessary, remote link enable/disable, signal strength monitoring, periodic gathering of event logs, auditing of time synchronization (no greater than 1 minute), and detailed daily reports on the status of the network and changes to its configuration.
- The RF module will be fully compatible with the Proposer’s fixed network data collection infrastructure. All specified data must be available through the LAN connection.
- All RF products proposed for the AMI system must have a radio frequency range that is appropriate to make the complete AMI system work. Any applicable unit not readable at these ranges will be considered defective and shall be replaced.
- All system components configured for service outdoors must be protected against water, condensation, heat, cold, and all other weather related variables.
- Handheld Devices for Water RF Modules:
 - Handheld devices shall be provided to 1) troubleshoot RF modules, and 2) program water RF modules, 3) confirm water RF modules are paired to the network, and 4) serve as backup data collection devices during network maintenance. “Handheld Devices” shall include any magnet or other equipment required to deploy and activate RF modules.

- Four (4) handheld device units shall be provided for deployment, reading, and troubleshooting applications. If the system is configured to provide for deployment and troubleshooting less a separate handheld device, the requirement shall be amended such that only one (1) mobile read data collection device shall be provided. Any software required to enable reading and upload to the reading system is required as part of this proposal. Power/battery chargers, cables, signal receivers, and any other appurtenances necessary for programming and troubleshooting RF modules with the handheld units shall be provided for each handheld unit.
- Handheld units shall allow the installer to confirm the RF module is properly paired with the absolute encoder register and connected to the fixed network on site prior to leaving the building and completing the installation.
- The devices shall have the capability to collect and store meter readings either manually through the use of an alpha numeric keypad or via radio transmission. The unit shall be able to obtain all types of readings without reprogramming the hand-held unit, physical changes of software within the unit and access through special software menus contained within a given route/program. The units must be capable of reading meters simultaneously.
- Software shall automatically insert the readings into the correct account records once the reading is taken. Software shall allow the user to input comments on any account within the current route. Software shall allow the operator to manually enter or override any of the RF reads. Software shall flag all problem codes such as tamper detection, no-reads, manual reads, etc. for reporting at the host computer terminal (PC).
- Hand-held unit's battery must be long-lasting rechargeable lithium-ion and capable of at least 12 hours of meter reading. Hand-held unit must be dust resistant, water resistant, including unlimited exposure to spray, splash, or rain, and capable of withstanding a 3-foot drop to concrete and a 30-second immersion period in 1-foot of water. The unit shall be capable of operating with ambient temperatures ranging from minus 20°F to plus 122°F without the use of cases, plastic coverings, etc. Hand-held unit must be comfortable and easily handled for meter reading. Meter-reading staff will review this during field demonstration. Hand-held unit shall have the capacity to store a minimum of 5,000 accounts. The hand-held device must have the capability to automatically receive radio-transmitted meter readings, as well as manual entry of meter readings.

8. NETWORK CONTROL, METER DATA MANAGEMENT, AND APPLICATIONS

Information from DCUs shall be transmitted via WAN to remotely hosted network control, network management, and meter data management systems. The Proposer shall furnish all required hardware, software, and services necessary to configure and maintain the system over the duration of the contract. The Owner shall access the hosted information systems through a web browser. No separate fee may be charged for hardware upgrades or replacements, additional software license beyond what is included in the proposal, or supplemental security systems. All components shall be scaled to serve build-out system-wide application as indicated in this document. Proposers may be asked to conduct an online demonstration of their hosted systems or to visit a customer site within a 50-mile radius of Arlington, Massachusetts. The Proposer must identify a suggested site visit as part of the technical proposal. The full proposed cost of hosted services, maintenance, and support for the contract period must be included in the Price Proposal lump sum, and the full estimated cost of these services for the remainder of the 20-year period must be included in the Lifecycle Cost Analysis. Hosted services and maintenance for one-year following substantial completion shall be included in the price proposal under the noted item. The Owner will not accept the system for final payment until system acceptance criteria have been satisfied and the Owner's staff is fully trained over system operation and maintenance.

The Network Control And Meter Data Management Systems shall meet the following requirements:

- Technical Specification:
 - Data centers shall be Tier IV SSAE 16 certified and have 99.995% Uptime Level.
Regarding host site security:
 - The computer room(s) in which the hardware is installed is accessible only to authorized individuals.
 - Power infrastructure includes service from two electric service providers, one or more uninterruptible power supply (UPS) devices, diesel generators or other alternative power for back-up electrical supply.
 - Air-conditioning facilities (for humidity and temperature controls) are provided in or for such computer room(s) and can be monitored and adjusted for humidity and temperature settings and control. Such air systems are supported by redundant, back-up and/or switch-over environmental units.
 - Such electrical and A/C systems are monitored on an ongoing basis and personnel are available to respond to system emergencies (if any) in real time.
 - Dry pipe pre-action fire detection and suppression systems are provided.
 - Data circuits are available via multiple providers and diverse paths, giving access redundancy.
 - The software must support operator-based security allowing the Owner to define operator users with varying authorization levels and capabilities. The system shall log all operators' changes and all operators' activities so that the exact

determinations or specific actions and responsibilities can be determined and monitored.

- The system shall provide for information backup and maintenance, vulnerability scanning and anti-virus management. Backup of live system data shall be performed daily and stored at a separate offsite data center.
 - Allow for access to data from multiple Owner computers running Google Chrome (version 48 or higher) or Microsoft Edge (replacement for Internet Explorer).
 - Duplicate “live” and “test” environments shall be provided for all systems.
 - The system must incorporate daily and interval read data from each the proposed AMI system and the existing Itron AMI system. The format of reading data from the Itron system is described in the Interface with Existing Systems section of this RFP. All quality of service and functional requirements described herein (ie web portal, analytics, VEE, etc) shall be delivered for accounts read by the Itron reading system as well as the proposed reading system.
- Quality of Service:
 - The system shall serve as a permanent repository for at least three (3) years of meter data, for all accounts. The system shall be expandable to incorporate a 10% increase in the number of meters served over three (3) years.
 - The system shall serve as a repository network performance data, maintaining record of events, alarms, and performance metrics for at least one (1) year.
 - Scheduled processes (meter data management, system maintenance, regular scheduled reports, etc.) shall utilize no more than 25% of daily performance capacity, the other 75% of system capacity reserved for user defined reporting and future uses. In so much as practical, daily-required operations utilizing system performance capacity shall be scheduled at night, with capacity for performance during day reserved for user applications.
 - The system shall maintain an average System Uptime Rate equal to ninety-nine (99.0) percent per month.
 - The Proposer shall provide Customer notice at least seven (7) days in advance of commencement of scheduled downtime.
 - 24/7/365 server and network monitoring and advanced security monitoring using diagnostic software tools.
 - In the case of a disaster and loss of access to or use of the application, the Proposer shall restore operations at the same location or at a backup location within twenty four (24) hours.
 - Functionality:
 - The system shall provide for validation, estimating, and editing (VEE) of interval meter data sufficient for customer-facing interval data presentation. Provide auditing of changes to data.

- Provide for automatic, routine operation of the system, including diagnostic procedures on all hardware, logging of all alerts and alarms, and recording operating statistics.
- The system shall provide for robust and flexible data reporting:
 - Customizable customer service and operations dashboards configured by user.
 - Packaged reports with system health, troubleshooting, and use analysis information.
 - Ability to create rules for generation of custom reports.
 - Reports allowing for grouping of by class, usage, or geographic area, and comparison of revenue and supply meter totals among groupings with presentation of unaccounted-for-water (UAW).
 - Geographic representation of system devices and infrastructure with indication of events, information, and exceptions in the geographic interface.
 - Options to export data and reports to Microsoft Excel, CSV, and PDF.
 - Flexible, scalable, graphical reports for trend analysis.
 - Include presentation of weather data in graphical presentations.
 - Ability to present graphs and tables with total consumption by day, week, and month.
- Users shall be able to submit requests for more than one report at a given time and track status (approximate percent complete or time remaining) independent of maintaining an open browser window.
- System shall provide an interface for remote firmware maintenance for DCUs and RF Modules, and remote programming. Users shall be able to view firmware version for devices and programmed settings, if applicable. User interface shall log metrics associated with operations activities including dates of request, status by account, and total number of units complete and incomplete.
- Ability to generate files required for billing for each accounts read by the Itron AMI system and the proposed AMI system. Users shall have the option to create a billing file by cycle, route, or individual account. Bill files shall utilize the most current reading, within a user-defined number of days, for a user-defined read-snap date.
- The system must support synchronization meter and account data in the Itron AMI system. Customer synchronization is described in the Interface with Existing Systems section of this RFP.
- A customer web portal shall be provided:
 - The Owner's water customers shall be able to create accounts. Customer authenticity shall be validated prior to allowing creation of a new account. Accounts shall only be eligible for creation by the listed owner on the account and accounts shall terminate as soon as customer name changes. Users shall not be able to view use on previous owner's accounts.
 - Customers should be able to view hourly consumption data, daily register reads, and high use/leak alarms.

- Customers shall be able to input their mobile phone number and email address, set usage thresholds for alarm, and activate functionality whereby they receive email or text notification when consumption over a period exceeds threshold.
- Customers should be able to view data in tabular and graphical formats. Graphical formats should have option to show temperature and precipitation data on a concurrent graph.
- Access to the system may be through personal computer web browser or adjust for adequate viewing in mobile web browser or mobile application.
- Web page shall show summarize customer use metrics and provide for comparison versus metrics of typical users of the associated class (field to be established in customer information system).
- The site shall be utility branded with Town of Arlington selected logos, graphics and colors.

9. INTERFACE WITH EXISTING SYSTEMS

The Proposer shall configure interface with existing systems in the DPW business environment. The Proposer shall coordinate with the Owner and existing systems providers, collaboratively specify, and execute interfaces. The Proposer shall be integration lead for the noted interfaces. Scope shall include all professional services and software required to manage, specify, test, and execute interface configuration. Interfaces shall be configured in the test environment before being configured in the live system. Services and software required of existing system vendors shall be secured by the Owner through agreement with existing system vendors. Prior to execution, the plan and specification for each interface shall be documented by the Proposer and approved by the Owner. The approach to interface with existing systems shall be described in detail in proposals. The AMI system shall be configured to interface with the following systems:

1. Town of Arlington ICS – Meter Data Management System
 - a. Servers for Arlington ICS are located at Town Hall, 670R Massachusetts Ave, Arlington, MA. The software is maintained by the Owner’s Information Technology Department. Contact information for Arlington ICS is Charles Norton, Software Specialist Information Technology (phone: 781.316.3340, email: cnorton@town.arlington.ma.us)
 - b. Interface between the systems described in Section 8 of this specification and ICS shall include the following:
 - i. The proposed MDM shall provide a billing file to the Town’s existing MDM system (ICS) for use in production of quarterly water bills to customers, until the Town’s new billing system, Munis Utility Billing CIS, goes live. The file must provide customer account, meter, premise, and billing data to the Town’s information systems. This interface shall be referred to as the water “customer bill file.” File exchange shall result in no loss or corruption of historic data in the system.
2. Munis Utility Billing CIS by Tyler Technologies – Customer Information and Billing System (CIS)
 - a. Servers for Munis are located at Town Hall, 670R Massachusetts Ave, Arlington, MA. The software is scheduled to replace the existing ICS system (see “Background”) in a 24-month period of publication of the RFP. The software will be maintained by the Owner’s Information Technology Department. Contact information for Munis is Patti Brennan Sawtelle (phone: 781.316.3334, email: psawtelle@town.arlington.ma.us)
 - b. Interface between the systems described in Section 8 of this specification and the CIS shall include the following:

- i. The CIS shall provide customer account, meter, premise, and billing data to the Proposer's information systems. This interface shall be referred to as the water "customer sync file." Synchronization of customer account, meter, RF module ID, multiplier, and premise data shall be exchanged at a minimum daily for all accounts. File exchange shall be set to a schedule and require no manual operations required by the Owner. File exchange shall result in no loss or corruption of historic data in the system.
 1. In the CIS, customer sync can be run through "Munis Scheduler" for automatic generation of content on a defined schedule. The data produced would be sent to a local Munis server, from where the Owner's IT staff can schedule automated acquisition/transmittal to a location required by the Proposer's system.
- ii. The MDM shall provide data to the CIS for billing purposes. This interface shall be referred to as the water "billing transfer file." The billing transfer file shall include account information, meter register readings and timestamps, and leak/high-use flags. The file shall be produced on-demand by a user for a selected group of accounts, routes, or cycles. The file shall be configured to exchange without manual handling or augmentation of files outside of the MDM and CIS user interfaces. The single files shall incorporate read data from Itron system devices and proposed system devices.

3. Water SaveSource, by Itron Inc. – Water Utility Advanced Metering Infrastructure

- a. This system is hosted remotely by Itron Inc from servers located in the state of Washington. The product representative is Dan McGuire, Sales Director-East (phone: 617.835.4110; email: Dan.McGuire@ itron.com)
- b. The MDM shall consume Itron Daily Read Export (DRE) and Hourly Read Export (HRE) files. Each day these files will be made-available by the Town/Itron via FTP site for consumption. Itron read data shall be uploaded, interpreted, and presented consistent with the quality of service and functional requirements described elsewhere in this Specification. An example DRE file is attached to this RFP as Appendix C. The structure of the HRE file is analogous to the DRE file.
- c. The MDM shall export to Itron customer sync files to indicate "add" and "removal" of RF modules, as entered/administered by the Owner in the CIS, as well as "modify" of meter and account information associated with Itron RF modules in their system. The MDM shall identify changes in such data coming from sync files and produce files in format required by Itron and export that file to the established location for file transfer. The Town has prepared a document summarizing the layout of files currently exchanged between Itron and the Town's in-house built MDM in Appendix D. The customer sync process between

the MDM and Itron shall be administered no later than 48-hours following update of data in the CIS.

10. RADIO FREQUENCY MODULES

The RF module must be compatible with Neptune Proread and Neptune E-Coder absolute encoder registers.

The RF module shall be capable of interpreting encoded meter reading data directly from the Owner's existing meters without error. The RF module shall then transmit relevant information, including readings, identification number, and event flagging information via RF signal, to data collection infrastructure. Details shall be provided in the proposals for what different meter manufacturers and models the proposed fixed network system is capable of reading. The system shall have the ability to data log and store thirty (30) days of water usage at the RF module.

RF modules shall be capable of being read by the fixed network system and devices with walk and drive-by remote meter reading capability. Walk and drive-by meter reading shall always be an option for the system as a backup in the event of collector failure.

Proposers must describe the operation of the RF module, including an explanation of the RF module's "interrogation" method and the manner in which the RF module transmits signals using radio frequency. Proposers must describe any potential effects or interference with medical devices or other radio-frequency devices and how these will be addressed.

Proposers must discuss any field programming necessary to completely install and activate RF modules so that they are ready to transmit meter readings. Most of the water meter RF modules shall be mounted on the inside of buildings; few will be located outside the buildings and in meter pits.

Proposers must provide a description about the RF module's power source and how the "interrogation" method affects the length of the life of the power source. A 20-year operations and maintenance cost analysis of the original equipment plus estimated replacement units is a requirement of the proposal.

Proposers must describe methodology used to ensure system integrity to overcome RF interference from outside sources, high power transmission lines; building locations or materials; RF module location; etc. and other RF modules in the area. The proposal shall provide details if there is the potential for interference if a number of RF modules are operating in close proximity.

Each RF module shall have a unique, pre-programmed, identification number of a minimum of eight (8) characters. The identification number will be permanent and shall not be altered. Each RF module shall be labeled on the exterior with the identification number, manufacturer, and FCC approval information.

The RF module shall be capable of operating without any loss of accuracy with wire lengths of at least two hundred (200) feet from the encoder register. The device shall be capable of operating at temperatures of -22°F to +140°F, with a humidity factor of 5- to 95-percent (condensing). The RF module shall be protected against static discharge without loss of data. The RF module shall provide

typical line of sight range no less than 1,000 feet, depending on installation location, terrain, building construction material, etc.

The RF module shall be clearly labeled and installed so that the module identification number is readily visible. The module identification number shall also be presented in barcoded format. The RF module must be labeled with manufacturer and shall also include the date of manufacture of the unit. The RF module shall be provided with a tamper deterrent seal. Tampering with the RF module functions or connections shall not be possible without causing visible damage to the RF module exterior or to the seal.

The RF module shall be powered by a long-lasting battery. The battery shall be designed and warranted for a period of at least twenty (20) years, ten (10) years fully guaranteed and the following ten (10) years prorated, from the date of shipment, when AMI provides a minimum of hourly reads transmitted four (4) times per day.

Connecting wiring between the encoder register and the RF module shall be three-wire conductor type in an abrasion and moisture resistant vinyl covered cable. Each conductor shall be color-coded. The materials used for all electrical contacts and connectors shall be suitable for the normal water meter environment and shall be corrosion resistant. A 6-inch wire pigtail shall be provided for each RF module. In accordance with the manufacturer's installation procedure, the Proposer shall supply the recommended mounting kits, screws and connectors (gel caps or other) to connect the RF module to existing wire.

RF modules for meter pit installations shall be mounted outside of the meter pit or in pit wall mount assemblies. Pit mount assemblies for RF modules mounted through the pit lids shall be furnished as necessary for use during installation.

11. PROJECT MANAGEMENT AND PROJECT IMPLEMENTATION PLAN

The Proposer shall provide project management for their scope of work. The Project Manager shall be required to coordinate activities with the Owner and its designated representative. The Proposer's project manager will function as a part of the overall program management team led by the Owner. The Proposer shall provide as part of the technical proposal its proposed statement of project management responsibility including scheduling project activities, coordinating activities, tracking progress, and reporting to the Owner. The Owner reserves the right to ask for a new project manager at any time during the project. On-site project management and technical services shall include, but are not limited to the following:

- Coordinate execution and testing of the pilot program.
- Arrange and oversee the installation of DCUs and repeaters (as necessary) at locations agreed upon with the Owner. Coordinate with local/state/federal authorities to obtain all necessary permits and approvals for installation of data collection units, and secure structural or safety review if necessary. The Owner shall provide necessary access to sites.
- Coordinate with the Owner and its designated representative over equipment delivery schedule and quantities.
- Arrange and oversee installation of network control computing systems, hardware, and software.
- Coordinate with the Owner and representatives from the Owner's existing information systems providers to execute required interface with existing systems.
- Analyze system performance during implementation to ensure testing and acceptance criteria are met.
- Arrange and conduct on-site training for the Owner and its designated representatives.
- Participate in up to 30 weekly coordination meetings with the Owner and its designated representatives during project implementation. These meetings will cover a range of topics including: status and schedule reviews, coordination of scope activities, exchange of technical information and design reviews of future work to be performed by the Proposer, the Owner, and their representatives.
- Provide assistance to the Owner in their planning of system monitoring, maintenance, and account update procedures.
- Coordinate the FCC license, if required.

The Proposer shall submit a draft Project Implementation Plan with their technical proposal and finalize it within 30-days of award. The Project Implementation Plan should detail the following items, at a minimum:

- Project team
- Project approach
- Project schedule
- Initial planning of DCU deployment (propagation analysis, DCU location confirmation and FCC license application (if applicable), and submission of applicable permit applications and obtaining applicable sign-offs and permission for locating DCUs, if required); DCU site preparation; DCU installations and start-up
- Proposed approach to pilot execution and acceptance

- Software installation and configuration
- Plan and approach for interface(s) with existing information systems
- System testing
- Training
- Equipment manufacturing/product lead times

The Proposer's project implementation plan shall identify the work completed by the Proposer, the Proposer's subcontractors, and the Owner. Information for all of the Proposer's staff proposed to be involved in the implementation, installation, training, and support, shall be included in the technical proposal. This information should include their training, length of employment with Proposer, and relevant experience. Staff representatives whom are ultimately responsible for the aforementioned should be available and on-hand during the Proposer interview process if the Proposer is selected for an interview.

12. SYSTEM TRAINING

A minimum of six (6) days (each eight (8) hours in length) of on-site training for up to ten (10) Owner staff or contractors shall be provided. Half of training time shall be delivered immediately following pilot configuration, the other half shall be delivered after the system is fully configured and scaled deployment is positioned to begin. This time shall be separate from time the Owner may spend observing pilot system DCU and RF module deployment by the Proposer. Complying with the minimum period of time specified will not relieve the Proposer from providing sufficient service to place the system in satisfactory operations. The Owner reserves the right to videotape all training sessions for use in retraining personnel or training additional personnel. During the kick-off meeting, it will be agreed upon at what point in the project training will occur.

On-site instruction on the operation procedures for the system shall be provided. Training must cover, at a minimum, the use of the meters and devices, error coding, uploading and downloading data from the reading devices through the system software, navigation of MDM functionality, and system software interface with existing systems. Additional training items shall include, but not be limited to:

- System administration and configuration
- Customer and CSR interfaces and functionality
- Interface with billing system and billing operations
- Data import and export
- AMI system operation, meters interactions, and collector functions

The Proposer shall provide on-site training for proper installation of the water meters and water RF modules. The procedures advised shall support product installation in accordance with the manufacturer's warranties and continuance of guarantees of the Manufacturer's products.

Manuals, both in hard copy and PDF formats, shall be provided for field and office systems. Digital copies shall be provided electronically prior to training. Paper copies shall be provided during training as requested by the Owner:

- Basic operation manuals that provide fundamental level instructions for basic operations procedures
- System manuals geared for expert operators shall detail all capabilities of the system.
- Reference manuals shall detail system maintenance and programming activities.

13. TECHNICAL SUPPORT REQUIREMENTS AND WARRANTY

The Proposer shall provide to the Owner on-call assistance services and warranty services through the contract duration and for a period of one (1) year following Substantial Completion of the project, listed under the proposals in the Price Proposal Form except when the specifications require extended warranties for the batteries and DCUs.

- A toll-free telephone Help Desk shall be available between the hours of 8 AM and 5 PM, Eastern Time, with after hours telephone numbers available as needed. The Help Desk services shall include: field device problems/questions; software operations problems/questions; equipment returns and repairs; loaner equipment processing; evaluation of information for updates or revisions; evaluation of personnel training needs.
- The help desk must maintain a four (4) hour acknowledgement of issue, with a twenty-four (24) hour maximum resolution time on all issues. Latitude for programming issues will be given on an issue-by-issue basis (as determined by the Owner), and shall be resolved within a reasonable time period not to exceed (1) week. However, the Proposer must present a reasonable alternative to utilize within the twenty-four (24) hour time period, during the extended resolution period. This requirement is for contract period and future maintenance agreements.
- Proposers shall provide published terms and conditions of all warranties offered. As a minimum the system hardware must be warranted for a minimum period of one (1) year from the date of Substantial Completion. Proposer will supply Owner with a replacement and/or repair cost for all DCU units for year two through year twenty in the LCAA.
- The warranty services shall include, at no additional cost to the Owner, all parts and labor (including travel costs and expenses) necessary for normal operation of the system as well as for any warranty repairs that may be needed. The coverage shall include but not be limited to all hardware and software furnished, including RF module batteries, battery packs, power cables, and serial cables. In the event of a non-functioning item, the telephone Help Desk shall assist with any troubleshooting and promptly (within 24-hours) respond to emergency calls. For warranty-related problems, loaner equipment shall be provided to the Owner while the failed equipment is repaired or replaced by the Proposer. Loaner equipment must be delivered overnight, at no cost to the Owner. Any hardware or software upgrades shall be provided free of charge during the one-year-long period after system acceptance.
- Proposers must describe their intent in the Technical Proposal with respect to technical support during the contract period and renewable maintenance agreement options including costs.

14. SYSTEM ACCEPTANCE CRITERIA AND TESTING

Testing shall be performed by the Proposer following pilot and system-wide deployments. Testing shall serve as the basis for system acceptance by the Owner. Testing shall be performed by the Proposer from the Owner’s workstations, where the Owner may observe and validate results.

During system testing for acceptance, all AMI system hardware and software components shall operate and function to the satisfaction of the Owner as described herein. In the event that a meter is unreadable, errors are received, or the reading is in question, the Proposer shall work with the Owner to determine the cause. If it is determined that equipment furnished and installed by the Proposer is faulty, then the Proposer shall replace and install the equipment at no cost to the Owner. The Proposer shall be responsible for the additional costs associated with the installation of the new units. If it is determined that the RF module installation was faulty, then the Proposer shall replace and install the equipment at no cost to the Owner during the pilot, or the Proposer will remedy if during the system-wide deployment period. Any network or information system component that fails to operate and function satisfactorily shall be repaired and/or corrected immediately at no additional cost to the Owner. Following repair and/or correction of system components, the AMI system shall be re-tested as described in Table 1.

Table 1: System Acceptance Testing

Activity	Measure	Pilot Criteria
1. Test meters with RF modules at accounts	Read with DCUs at least thirty-five (35) meters	Y
2. Confirm self-organization / self-activation	Confirmed node is seen in AMI Server in “ready state”	Y
3. Confirm self-healing – alternate path when a collector device is not operational	Block RF path on several meters that are primary path and confirm data comes through via alternate path within 6 hours	N
4. Transfer premise, account data, and reading data between MDM and CIS	All required customer data is viewable in the MDM/AMI; read data transfers successfully for billing	Y
5. Can system perform scheduled reads?	Daily delivery of register reads, interval data, and event flags as scheduled in AMI server confirms scheduled reading capability	Y
6. Can system report hourly use information for water meters?	Confirm in report accessibility through portal and export to PDF and Excel.	Y

Activity	Measure	Pilot Criteria
7. Demonstrate an average 99% success rate for delivery of daily register reads for network coverage	Report in system provides daily report of missed reads to confirm percentage	Y
8. Achieved 99% success rate for delivery of all read data within 3 days, for filling in data gaps	Report in system provides daily report of missed reads to confirm percentage	Y
9. Is system capable of recovering missed data? (Block transmission for greater than scheduled read period)	Confirm in endpoint use reports	N
10. Time accuracy is synchronized to within 5 seconds of the official NIST time across the entire network.	Verify time sync at server. Field verify at node.	Y
11. Provide training to the Owner's personnel in retrofitting nodes and / or installation of hardware	Owner technician must demonstrate the ability to install hardware	Y
12. Provide customer service personnel training on system functions	Personnel can provide current read, on-demand read	Y
13. Lead the Owner and CIS vendors to confirm billing determinant data is valid against legacy system data input.	Accurate bills are verified by Owner's billing staff	Y
14. Execute a scheduled bulk remote reprogram and firmware upgrade operation.	Schedule and execute operation in accordance with committed success ratio.	N
15. Simulate loss of power to DCU.	Observe battery backup performance, redundancy performance, and alarm notification.	N
16. Provide operating manuals for AMI and MDM system	Delivered system manuals (paper and electronic format)	N
17. Track leak, high use, and tamper alarms	Incidents are clearly identified in head end software and action in the field corroborates false positives no greater than 50%.	N
18. Confirm maps present meters and meter events	As described in this specification and consistent with the vendor system performance expectations	Y

Activity	Measure	Pilot Criteria
19. Grouping and district meter analysis functioning	As described in this specification and consistent with performance expectations	N
20. View meter data presenting in Web Portal adequately.	As described in this specification and consistent with the vendor system performance expectations	N

15. DELIVERY

- All products must be transferred and handled in accordance with the manufacturer's instructions.
- Shipment of products shall be promptly inspected to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- All products shall be delivered to a location determined by the Owner (within the Owner's service territory) and unloaded into a designated storage area. The Proposer shall be responsible for goods until the delivery has been made. Any claims for damages in-route shall be through the Proposer.
- Delivery schedule and shipping methods are to be appropriate for quantities and time frame of the project. RF module supplies will be provided in quantities and at times requested by the Owner. Delivery of RF modules shall be within 60 calendar days of request by the Owner. Delivery of products other than RF modules shall be within 90 calendar days of approval of the product and ordering.
- All manufacturer warranties for the products must be transferred to the Owner upon final acceptance by the Owner. In addition, the Proposer shall supply all software licenses, naming the Owner as the holder.
- All work on the project, including set-up and training, listed in the Proposal sections of the Price Proposal shall be satisfactorily completed within the timeframe listed in this RFP.

16. PRICING

Proposers shall indicate all costs associated with all items listed on the attached Price Proposal Form, including, but not limited to, equipment, software, configuration, interface with existing systems, training, shipping, insurance, bonds, annual support and maintenance, and any other costs required to provide a complete and operational system. All terms and conditions shall be included and no subsequent alterations will be permitted unless mutually accepted in writing. Supplemental provisions related to pricing are included in the General Conditions for Contract.

17. LIFECYCLE COST ANALYSIS

As part of the proposal, the Proposer must submit a 20-year Life Cycle Cost Analysis (LCCA) for proposed AMI. LCCA Forms for the fixed network systems are included in Appendix A. An Excel version of the LCCA forms is provided. All blank spaces for requested costs must be filled-in. The LCCA must be accompanied with explanations and calculations regarding how the estimated annual cost per category was derived. Any Proposal not submitted with a LCCA shall be disqualified.

The Proposer shall incorporate the following assumptions when completing the LCCA Forms:

Labor

The annual labor cost shall include the costs for DCU repair and maintenance. Labor rate for Owner staff shall be \$40.00/hour. The Proposer shall assume all labor rates increase by three percent (3%) on an annual basis. Backup documentation shall describe the amount of time per repair or maintenance occurrence used in calculating cost.

Equipment, Maintenance, and Support

The Proposer shall state the anticipated service life, and recommended replacement schedule, for RF modules and data collection infrastructure proposed and include in the lifecycle costs expense anticipated to maintain proposed level of service for 20-years. RF module failure rates shall be estimated at 1% per year within the anticipated service life of those products, unless the Proposer can guarantee a smaller percentage with written documentation. If the anticipated service life of products is less than 20-years, the Proposer shall include expense for in-kind equipment replacement and state the anticipated useful life of the replacement equipment. The Proposer shall include all required annual charges for hosted services, system maintenance, and support. The Proposer shall assume all equipment costs will increase by three percent (3%) on an annual basis to account for inflation and normal cost increase.

Communications and Power Fees

Estimated lifecycle telecommunications and power expenses shall be included. The Proposer shall state typical energy requirements per collector and estimate the power required to operate the system. The Proposer shall assume an electric cost of \$0.13/kWh. The Proposer shall assume power and communications expenses will increase by three percent (3%) on an annual basis to account for inflation and normal cost increase.

TOWN OF ARLINGTON, MASSACHUSETTS

PROPOSAL EVALUATION CRITERIA

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

Minimum Criteria (Yes/No)

- The Proposer must provide a minimum of two positive/successful local references as described in the Reference Statement.
Yes No
- The Proposer provides a minimum 10 year comprehensive guarantee on RF modules.
Yes No
- The company or any proposed subcontractor shall not have failed to complete any project, ever been removed from any project, or ever filed for bankruptcy within the last five (5) years.
Yes No
- The Price Proposal and Life Cycle Cost Analysis (LCCA) are submitted separately from technical proposal.
Yes No
- Propagation Study or other computer models are to be provided with the technical proposal demonstrating that the Data Collection Units (DCUs) and/or repeaters proposed are capable of picking up 100% of meter readings from all meters in the service area.
Yes No
- The Proposer completely responded to the Questionnaire.
Yes No
- Proposed RF modules are compatible with Neptune E-Coder registers.
Yes No
- Meter data management and web portal integrate hourly and daily read data from the existing Itron AMI.
Yes No

1. Advanced Metering Infrastructure

A. General Requirements

Highly Advantageous

- System guarantee includes that within a 24-hour period 99.9% of daily reads will be acquired from meters and available for transfer to billing system.
- The system is fully compliant with all applicable Federal Communications Commission (FCC) Rules and Regulations. Technical proposal demonstrates a thorough understanding of the FCC licensing requirements and operating frequency. If the system operates on a fully licensed frequency and the Proposer will obtain the license. A schedule for obtaining the license is provided.
- Proposal includes all required technical information on proposed components.
- Physical and cyber security is detailed for all system components.
- System provides for bidirectional functionality including the ability to program the RF module remotely from the office, time-synchronize readings, push firmware updates to DCUs and RF modules, and obtain on-demand off-cycle meter reads from the RF module, and satisfies each of the following with respect to quality of service:
 - Firmware updates will be successfully sent to 99% of accounts or greater within a 24-hour period.
 - Time synchronization within the system, including all endpoints and collectors, occurs every 13-24 hours or more frequently.
 - On-demand meter reading returned within 5-seconds of request, with reading no older than 6-hours.
- System collects numeric meter identification, interval and register readings, RF module and register tamper detection, leak identification, high usage flagging, and backflow event flagging, and satisfies each of the following with respect to quality of service:
 - Interval and register readings synchronized in network control and meter data management system no less than 6-hours following reading.
 - Event data synchronizes every 6-hours or more frequently.
- System is standards-based and provides-for application of third party devices in the network including distribution-side acoustic leak detection devices, water quality monitoring, mobile workforce devices, and Town electric meters.

Advantageous

- System guarantee includes that within a 24-hour period 99.0% of daily reads will be acquired from meters and available for transfer to billing system.

- The system is fully compliant with all applicable Federal Communication Commission (FCC) Rules and Regulations. Technical proposal addresses FCC licensing requirements and operating frequency. The system operates on a fully licensed frequency, but the Owner must obtain the license. A schedule for obtaining the license is provided.
- Proposal includes most required technical information on proposed components.
- Physical and cyber security is detailed for most system components
- System provides for bidirectional functionality including the ability to program the RF module remotely from the office, time-synchronize readings, push firmware updates to DCUs and RF modules, and obtain on-demand off-cycle meter reads from the RF module, and satisfies each of the following with respect to quality of service:
 - Firmware updates will be successfully sent to 95% of accounts or greater within a 24-hour period.
 - Time synchronization within the system, including all endpoints and collectors, occurs every 24 hours or more frequently.
 - On-demand meter reading returned within 10-seconds of request, with reading no older than 12-hours.
- System collects numeric meter identification, interval and register readings, RF module and register tamper detection, leak identification, high usage flagging, and backflow event flagging, and satisfies each of the following with respect to quality of service:
 - Interval and register readings synchronized in network control and meter data management system no less than 24-hours following reading,
 - Event data synchronizes every 24-hours or more frequently.

Not Advantageous

- System guarantee includes that within a 24-hour period 98% of daily reads will be acquired from meters and available for transfer to billing system.
- The system is fully compliant with all applicable Federal Communication Commission (FCC) Rules and Regulations. Technical proposal addresses FCC licensing requirements and operating frequency. The system does not operate on a fully FCC licensed frequency, or if a FCC license is required, the Proposer did not provide a schedule.
- Proposal includes limited technical information on proposed components.
- Physical and cyber security is not sufficiently detailed.
- System provides limited bidirectional functionality, and may fail to deliver on one or more requirement, including the ability to program the RF module remotely from the office, time-synchronize readings, push firmware updates to DCUs and RF modules, and obtain on-demand off-cycle meter reads from the RF module. The system provides the following with respect to quality of service:
 - Firmware updates will be successfully sent to 90% of accounts or greater within a 1-week period.
 - Time synchronization within the system, including all endpoints and collectors, occurs every 36 hours or more frequently.

- System collects numeric meter identification, interval and register readings, RF module and register tamper detection, leak identification, and high usage flagging.

Unacceptable

- System performance guarantee is not provided.
- The system is not fully compliant with all applicable Federal Communication Commission (FCC) Rules and Regulations. The technical proposal does not address FCC licensing requirements and/or the operating frequency.
- Key technical information is missing from the proposal.
- Physical and cyber security is not addressed in the proposal.
- System does not provide for one or more bidirectional requirement including the ability to program the RF module remotely from the office, time-synchronize readings, push firmware updates to DCUs and RF modules, or obtain on-demand off-cycle meter reads from the RF module.
- System does not provide for numeric meter identification, interval and register readings, RF module and register tamper detection, leak identification, or high usage flagging.

B. Fixed Network Data Collector Infrastructure

Highly Advantageous

- Collector redundancy and/or backup reading system described, including reading via handheld, and a single collector failure would result in little impact on read performance.
- Data collector infrastructure is of no appreciable impact aesthetically.
- Has the ability to remotely monitor and diagnose network components and update setting configurations. Priority alarms may be routed to email.
- All components configured for service outdoors are resistant to water, condensation, heat, cold, and all other weather related variables, and IP rating of applicable outdoor components is identified in the proposal.
- The system complies with ANSI C12.22, Protocol Specification for Interfacing to Data Communication Networks.

Advantageous

- Collector redundancy and/or backup reading system described, including via handheld, and a single collector failure would result in moderate impact on read performance.
- Data collector infrastructure is of minimal impact aesthetically.
- Has the ability to remotely monitor and diagnose network components and update setting configurations.
- All components configured for service outdoors have an advertised, but not independently verified, resistance to weather related variables.

Not Advantageous

- Collector redundancy and/or backup reading system described, including via handheld, and a single collector failure would result in significant impact on read performance.
- Data collector infrastructure is of moderate impact aesthetically.
- Has the ability to remotely monitor and diagnose network components.
- Many components configured for service outdoors have no advertised resistance to weather related variables.

Unacceptable

- Collector redundancy and/or backup reading system described, such as via handheld, and a single collector failure would render the system unusable for reading for billing.
- Data collector infrastructure is aesthetically unacceptable.
- Remote monitoring of network components is not possible.

C. AMI System Hosted Software, Meter Data Management, and Support

Highly Advantageous

- System complies with all technical specification requirements.
- System significantly exceeds quality of service requirements.
- System meets and exceeds functionality requirements.

Advantageous

- System does not comply with all technical specification requirements, but proposes acceptable alternative configuration.
- System complies with quality of service requirements.
- System complies with functionality requirements.

Not Advantageous

- The system does not comply with many technical specification requirements and does not proposed acceptable alternative systems.
- System generally complies with quality of service requirements but fails to perform relative to one criteria.
- System fails to comply with one to two functionality requirements.

Unacceptable

- The system does not comply with all technical specification requirements and does not proposed acceptable alternative systems.
- System fails to comply with more than one quality of service requirements.
- System fails to comply with three or more functionality requirements.

D. Interface with Existing Systems

Highly Advantageous

- Proposer demonstrates previous successful, timely interface with same or similar existing systems.
- Proposer demonstrates intent to coordinate and execute all interface with existing systems specified and identifies value-added services to be included in the scope of services.
- Proposer details strong plan for interface design, coordination with vendors and the Owner, responsibilities, and go live.
- Interfaces can be fully tested in test environments prior to going live.

Advantageous

- Proposer demonstrates previous interface with similar existing systems.
- Proposer demonstrates intent to coordinate and execute all interface with existing systems specified.
- Proposer details adequate plan for interface design, coordination with vendors and the Owner, responsibilities, and go live.
- Interfaces can be substantially tested in test environments prior to going live.

Not Advantageous

- Proposer demonstrates previous interface with some similar systems.
- Proposer demonstrates intent to coordinate and execute some interface with existing systems specified.
- Proposer details limited plan for interface design, coordination with vendors and the Owner, responsibilities, and go live.
- Interfaces can only be tested in live environments.

Unacceptable

- Proposer is unable to demonstrate previous interface with any of the existing or similar systems
- Proposer does not demonstrate intent to lead and execute systems integration.
- Proposer does not detail interface work plan and procedures.
- Interfaces cannot be tested prior to going live

2. RF Modules

Highly Advantageous

- A clear and concise explanation of the RF module field programming and mounting procedure is provided, the procedures are easy to understand and follow.
- Minimal field programming effort is required for the installation of the RF modules and minimal opportunity for error is apparent.
- RF module is capable of storing a minimum of thirty (30) days of historical interval data; and
- RF module/battery warranty is ten (10) years full, plus years eleven (11) through twenty (20) prorated, based on one (1) or more transmissions per day of hourly data packets.
- RF module sends a warning when the battery is low; warning is sent within one (1) to two (2) years of battery failure.

Advantageous

- A clear and concise explanation of the RF module field programming and mounting procedure is provided , the procedures are easy to understand and follow.
- Moderate field programming effort is required for the installation of the RF modules and minimal opportunity for error is apparent.
- RF module is capable of storing fourteen (14) to thirty (30) days of historical interval data; and
- RF module/battery warranty is ten (10) years based on one (1) or more transmissions per day of hourly data packets.
- RF module sends a warning when the battery is low, warning is sent within six (6) months to eleven (11) months of battery failure.

Not Advantageous

- An explanation of the RF module field programming and mounting procedure is provided, but the procedures are not clear and easy to follow.
- Field programming and mounting procedures will require considerable efforts on the part of the Owner or their designated representative and/or moderate opportunity for error is apparent.
- RF module is capable of storing seven (7) to thirteen (13) days of historical interval data; and/or
- RF module/battery warranty less than ten (10) years based on one (1) or more transmissions per day of hourly data packets.
- RF module does not provide a warning that the battery is low.

Unacceptable

- An explanation of the RF module field programming and mounting procedure is not provided.
- RF module is capable of storing zero (0) to six (6) days of historical interval data
- No battery warranty provided.

Project Management and Implementation Services
--

3. Project Management and Project Implementation Plan

Highly Advantageous

- The technical proposal contains a project management scope of work that exceeds the requirements listed in the specifications.
- The technical proposal contains a project implementation plan and schedule that provides a detailed plan identifying all key project pilot and production tasks and responsibilities.
- The technical proposal contains a delivery schedule that is less than the minimum delivery times schedule listed in the specifications.

Advantageous

- The technical proposal contains a project management scope of work that meets the requirements listed in the specifications.
- The technical proposal contains a project implementation plan and schedule that provides a plan identifying select project pilot and production tasks and responsibilities.
- The technical proposal contains a delivery schedule that meets the minimum delivery times schedule listed in the specifications.

Not Advantageous

- The technical proposal contains a project management scope of work that does not meet the requirements listed in the specifications.
- The technical proposal contains a limited project implementation plan and schedule identifying some project tasks, but the plan does not identify responsible parties, or assigns responsibilities in a manner not advantageous to the Owner.
- The technical proposal contains a delivery schedule that does not meet the minimum schedule listed in the specifications.

Unacceptable

- A project management scope of work is not included in the technical proposal.
- A project implementation plan and schedule is not included in the technical proposal.

- Delivery schedule for the meters, registers, RF modules, and meter reading equipment is not included in the technical proposal.

4. RF and AMI Training

Highly Advantageous

- Technical proposal contains information on the training program. The training program addresses all of the training topics listed in the Technical Specifications and;
 - Includes training for up to ten (10) DPW staff; and
 - Exceeds the minimum of six (6), eight (8) hour days of on-site instruction for DPW staff; and
 - Includes information on the Proposer's Staff proposed to be involved in the implementation, installation, training, and support.

Advantageous

- Technical proposal contains information on the training program. The training program addresses all of the training topics listed in the Technical Specifications and;
 - Includes training for up to ten (10) DPW staff; and
 - A minimum of six (6), eight (8) hour days of on-site instruction for DPW staff; and
 - Includes information on the Proposer's Staff proposed to be involved in the implementation, installation, training, and support.

Not Advantageous

- Technical proposal contains information on the training program. The training program does not address all of the training topics listed in the Technical Specifications but includes;
 - Training for up to five (5) DPW staff; and
 - A minimum of six (6), eight (8) hour days of on-site instruction for DPW staff.

Unacceptable

- Technical proposal contains information on the training program. The training program does not address all of the training topics listed in the Technical Specifications and does not include one or more of the following;
 - Training for up to ten (10) DPW staff; and
 - A minimum of six (6), eight (8) hour days of on-site instruction for DPW staff.

5. Testing and Startup of the System

Highly Advantageous

- Technical proposal contains the required information on the testing and startup program and meets or exceeds the expectations outlined.

Advantageous

- Technical proposal contains information on the testing and startup program and included a plan of satisfactory compliance.

Not Advantageous

- Technical proposal contains information on the testing and startup program but the plan offers a limited level of service.

Unacceptable

- Technical proposal did not contain information on the testing and startup program or committed an unsatisfactory level of service.

<i>Support Services and Warranty</i>

6. Support Services and Warranty

Highly Advantageous

- Technical proposal contains information and exceeds specified requirements on all of the following:
 - Toll-free telephone number; and
 - Response time; and
 - Loaner equipment; and
 - Terms of warranties for all equipment; and
 - Maintenance agreements; and
- Many required warranties exceed the minimum period listed in the Technical Specifications, all meet the minimum periods

Advantageous

- Technical proposal contains information and meets specified requirements on all of the following:
 - Toll-free telephone number; and
 - Response time; and
 - Loaner equipment; and
 - Terms of warranties for all equipment; and
 - Maintenance agreements; and

- All required warranties meet the minimum period listed in the Technical Specifications

Not Advantageous

- Technical proposal contains information on all of the following:
 - Toll-free telephone number; and
 - Response time; and
 - Loaner equipment; and
 - Terms of warranties for all equipment; and
 - Maintenance agreements; and
- Some or all required warranties are less than the minimum period listed in the Technical Specifications

Unacceptable

- Technical proposal does not contain information and/or specified requirements on one or more of the following:
 - Toll-free telephone number; and/or
 - Response time; and/or
 - Loaner equipment; and/or
 - Terms of warranties for all equipment; and/or
 - Maintenance agreements; and/or
- All required warranties are less than the minimum period listed in the Technical Specifications

Experience and Stability of Proposer

7. Experience and Stability

Highly Advantageous

- Same business name and Owner/Management structure for ten (10) or more years
- Proposed AMR and MDM have been supported and/or manufactured or in-service for five (5) or more years
- Proposed AMR vendor(s) have been operating in the United States, in their respective industries, for fifteen (15) or more years.

Advantageous

- Same business name and Owner/Management structure for five (5) to nine (9) years
- One of the two – AMR and MDM - have been supported and/or manufactured or in-service for five (5) or more years

- Proposed AMR vendor(s) have been operating in the United States, in their respective industries, for ten (10) or more years

Not Advantageous

- Same business name and Owner/Management structure for one (1) to five (5) years
- One of the two – AMR and MDM– have been supported and/or manufactured or in-service for two (3) or more years
- Proposed AMR vendor(s) have been operating in the United States, in their respective industries, for five (5) or more years

Unacceptable

- Same business name and Owner/Management structure less than one (1) year
- Proposed systems have been supported and/or manufactured for less than two (2) years
- Proposed AMR vendor(s) have been operating in the United States, in their respective industries, for less than five (5) years

8. References

Highly Advantageous

- Four (4) or more satisfactory references for projects completed and operating successfully in Massachusetts, in whole or in part, to municipal water systems comparable in scope and number of endpoints, and with at least two (2) in operation for 5 years of more and within a 50 mile radius.

Advantageous

- Four (4) satisfactory references for projects completed or under contract that relate, in whole or in part, to municipal water systems in Massachusetts of comparable scope and number of endpoints, and with at least two (1) in operation for 3 years of more and within a 50-mile radius.

Not Advantageous

- Three (3) satisfactory references for a project completed or under contract that relates, in whole or in part, to municipal water systems comparable in scope and number of endpoints, one (1) satisfactory references of lesser size and scope, and with at least one (1) in operation for 1 years of more.

Unacceptable

- No Reference Statement attached, or unacceptable references

9. Capital Cost

Price Proposals shall be ranked relative the Owner's budgetary estimate and the prices received by other Proposers. All costs required to provide a complete and operational system must be included.

10. Lifecycle Cost

Lifecycle costs shall be ranked relative the Owner's budgetary estimate and the prices received by other Proposers. Detailed explanations and calculations regarding how the estimated annual cost per category was derived shall be included in the Proposer's submission.

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TOWN OF ARLINGTON, MASSACHUSETTS

QUESTIONNAIRE FOR PROPOSERS

ADVANCED METERING INFRASTRUCTURE AND
METER DATA MANAGEMENT
CONTRACT 18-38

General

1. Provide the name of products and systems proposed. Provide product data sheets related to hardware, software, and systems proposed. Indicate local instances of the system, and period over which the system has been deployed by your organization.
2. Provide a history of your company's complete product line for meter reading technology. As new technology has been introduced to the market have they been compatible with previous products or product lines?
3. Provide a list and definitions of any acronyms, trademarks, or trade names used to describe your AMI and MDM offering.

Network Control Computer, Meter Data Management (MDM), & Software Features

1. Describe the hosted network control computing systems and MDM system. Identify functional modules in the proposed system and their role in network management, reporting, and system control. A draft service and maintenance agreement shall be provided.
2. Describe proposed hosted network control, meter data management, and meter data applications.
 - a. Describe how the proposed system is configured relative to the requirements of the technical specification.
 - b. Describe how system performance ranks relative quality of service requirements.
 - c. Describe how the system delivers the functional requirements described. Provide screenshots of the graphical user interfaces for applications proposed to yield required functionality.
3. Describe the process for interface with existing systems and generation of files for on-cycle and off-cycle billing. Describe your experience integrating with Munis UB CIS billing system.
4. Describe the extent billing data can be integrated into the customer web portal and provide screenshots of web portal interface.

5. Describe whether your system has integrated supply meter data from the Massachusetts Water Resources Authority to provide supply/revenue comparison and identification of UAW in defined geographic areas.
6. Describe data validation available in the MDM system including automated reading estimation, gap filling, extrapolation, and manual read editing.
7. Describe how the MDM is set up for flexibility in reporting. Identify analysis applications which allow for grouping and comparison of groups. Describe geographic presentations available and applications built from those presentations.
8. Describe design system redundancy and battery life of DCUs and repeaters in the event of power loss to a site. Describe data maintenance and backup procedures.

Fixed Network Data Collectors

1. Provide a brief description of the proposed system including network diagrams and all proposed AMI technologies. Keep summary to less than 3 pages.
2. Provide propagation study or other computer model and written certification that the AMI system, as proposed, will cover 100% of meter accounts in the system. How many DCUs will be needed?
3. What RF frequency will be used between meters/RF modules/devices and DCUs? Is the frequency licensed? How many frequencies or channels are required? How are the frequencies or channels coordinated?
4. Describe the WAN network proposed to be utilized between DCUs and the hosted information systems. The proposer shall describe how this WAN will effectively reduce operating costs, provide the best performance and reliability, and securely transmit meter data.
5. If applicable, identify how the network is being built to support standard communication protocols and third party devices. List devices currently compatible with the network and the method utilized to control noted systems. Identify the number of non-meter devices deployed to-date on networks of the type proposed herein. Confirm compliance of the proposed system with ANSI C12.22, Protocol Specification for Interfacing to Data Communication Networks. Identify whether the system is compliant with IEC 61850 communication standards for electrical substation automation systems.

6. Describe routing of communications on the network. Describe how communications paths adjust to obstructions, outages, and network bottlenecks.
7. Describe how the system prevents RF interference (from outside sources and from the AMI network) from effecting network performance.
8. How is AMI network traffic controlled? For example:
 - a. Can RF modules initiate traffic?
 - b. Do RF modules require to be polled?
 - c. How is data collected from the DCU?
 - d. Can DCUs initiate traffic?
9. Describe the memory in each DCU.
 - a. What data is stored?
 - b. How much data is stored?
 - i. Monthly
 - ii. TOU
 - iii. Interval
 - c. How many RF modules are supported?
10. Explain how time is maintained and coordinated throughout the network.
 - a. How is network time coordination accomplished?
 - b. Is time maintained in the DCU?
 - c. Is it coordinated with NOAH, WWV, GPS, or equivalent?
 - d. What is the time synchronized for each meter or RF module?
 - e. What is the expected time drift among all meters and RF modules?
 - f. Please explain how RF module time synchronization is accomplished.
11. Describe typical latency of daily reads, interval reads, event flags (tamper, leak, etc.), and on-demand/two way operations on the network. Identify how classes of events are prioritized in the system and how this impacts latency of operations. Identify the ability of system administrators to customize schedule and priority for classes of communications.
12. Describe the transition from drive-by meter reading to fixed network meter reading.

Cyber Security

1. Provide an overview of cyber security provisions end-to-end.
2. How are system upgrades and software patch administered to minimize security risks?

3. Provide information on configuring authentication/authorization/logging and encryption on all components.
4. Does the system have a host intrusion detection system to perform a variety of integrity checks to detect attempted unauthorized access?
5. Describe the physical and cyber security features used to protect any intelligent electronic devices (meters, gatekeepers) from typical threats.
6. List all IEEE and ANSI Standards that the components satisfy compliance.

RF Modules

1. Describe the memory in each RF module.
 - a. What data is stored?
 - b. How much data is stored?
 - i. TOU
 - ii. Interval
 - iii. Other
 - c. What happens when the battery dies? Is the memory maintained?
2. What is the power rating (watts) of water RF modules?
3. What meter encoders does the AMI system support?
4. How many meters can one RF module read?
5. Is the battery in the meter and/or RF module field replaceable or will the complete device need to be replaced in the event of a battery failure? If field-replaceable batteries, describe the procedure for replacing them, including any special tools or procedures needed. Regardless of the battery type, provide similar description for replacing the device itself.
6. Describe the procedure by which a RF module installer would test a newly installed water RF module for successful operation. State in your response how long the installer must wait between the time when the RF module is installed and the time when the installer knows it is functioning successfully.
7. Describe the location of manufacture of RF modules.
8. Identify meter interval periods supported by the proposed meter and AMI system and the frequency of meter interval data transmittal for water RF modules in the proposed/warrantied system configuration. Identify the maximum number of interval units the RF module can store and communicate for a given interval period, and describe if high resolution encoders in high-flow events can exceed the interval threshold.

9. What is the complete list of event flags supported by water RF modules?

Project Management & Implementation Plan

1. Name the individual who will be the authorized representative for receiving notices and for day-to-day project administration. Provide the name, address, and phone number of the nearest manufacturer's representative of the meters being provided and of the AMI system.
2. Key personnel working on the project must have a minimum of five years of experience in managing meter installation programs and in installing and/or operating the AMI systems. List the names and qualifications of the key personnel to be assigned to this project and detail their experience in managing meter installation programs and in installing and/or operating the AMI system(s), and in training.
3. Provide the draft project implementation plan described in the Specification. Detail the work plan and proposed schedule for pilot and production scopes as noted. Identify work proposed to be completed by the Proposer, the Proposer's subcontractors, and the Owner.
4. Describe how the proposed system shall be operated in parallel with the existing meter reading system through pilot and production deployment.

Product Warranties, Support, & Maintenance

1. Are copies of the warranties and guarantees that will be provided with the equipment and system, including all terms and conditions, provided in the technical proposal? Warranty certificates and guarantees must be provided and must meet the minimum criteria in the specifications. Describe any contingencies on RF module and DCU product warranty, such as operational modes or activities that would void the warranty.
2. Proposers must describe their intent in the Proposal with respect to technical support during the contract period, and renewable maintenance agreement options including costs.
3. Provide a brief description of how long the proposed system has been manufactured and supported by the Proposer. The description should include how long the system will continue to be supported.
4. Provide a brief description of additional devices, hardware changes, or software enhancements planned for the system within the next three years.

Qualifications

1. Provide response to questions and references as noted in the Reference Statement. Indicate the nearest location where the Owner could view the software in actual use.
2. Describe the function of the subcontractors on your team for this project and state how long have they have been in business.
3. Provide evidence of the company's and any proposed subcontractor's financial capacity to undertake this project (such as the most recent annual report).
4. Have you or any proposed subcontractor ever filed for bankruptcy? If "yes," describe the circumstances.

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APPENDIX A

Lifecycle Cost Analysis Forms

AMI & MDM - Town of Arlington, MA

Network Life Cycle Cost

<u>Year</u>	<u>Software Maintenance Fees</u>	<u>Software Licensing Fees</u>	<u>Electric</u>	<u>Communication</u>	<u>Collector Maintenance</u>	<u>AMI Module Replacement</u>	<u>FCC Licensing Fee</u>	<u>Total per year</u>
1								\$ -
2								\$ -
3								\$ -
4								\$ -
5								\$ -
6								\$ -
7								\$ -
8								\$ -
9								\$ -
10								\$ -
11								\$ -
12								\$ -
13								\$ -
14								\$ -
15								\$ -
16								\$ -
17								\$ -
18								\$ -
19								\$ -
20								\$ -
Totals	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Assumptions: Proposers shall include a list of all assumptions made in completing this form.

Data Assume all collectors will require a cell modem for communication.

APPENDIX B

Prevailing Wage Rates



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

Prevailing Wage Rates

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

CHARLES D. BAKER
Governor

ROSALIN ACOSTA
Secretary

KARYN E. POLITO
Lt. Governor

WILLIAM D MCKINNEY
Director

Awarding Authority: Town of Arlington, Massachusetts

Contract Number: _____ **City/Town:** ARLINGTON

Description of Work: System-wide fixed network deployment and vendor-hosted information system configuration, supply of radio frequency modules, and support & services for 3 years.

Job Location: 51 Grove Street

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2016	\$33.25	\$10.91	\$10.89	\$0.00	\$55.05
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2016	\$33.32	\$10.91	\$10.89	\$0.00	\$55.12
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2016	\$33.44	\$10.91	\$10.89	\$0.00	\$55.24
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$92.97	\$9.90	\$21.15	\$0.00	\$124.02
	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.75	\$7.70	\$15.20	\$0.00	\$61.65
	12/01/2018	\$39.70	\$7.70	\$15.20	\$0.00	\$62.60
	06/01/2019	\$40.70	\$7.70	\$15.20	\$0.00	\$63.60
	12/01/2019	\$41.70	\$7.70	\$15.20	\$0.00	\$64.60
	06/01/2020	\$42.69	\$7.70	\$15.20	\$0.00	\$65.59
	12/01/2020	\$43.67	\$7.70	\$15.20	\$0.00	\$66.57
	06/01/2021	\$44.69	\$7.70	\$15.20	\$0.00	\$67.59
	12/01/2021	\$45.70	\$7.70	\$15.20	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2018	\$36.90	\$11.50	\$7.10	\$0.00	\$55.50
	12/01/2018	\$37.90	\$11.50	\$7.10	\$0.00	\$56.50
	06/01/2019	\$38.90	\$11.50	\$7.10	\$0.00	\$57.50
	12/01/2019	\$39.90	\$11.50	\$7.10	\$0.00	\$58.50
	06/01/2020	\$40.90	\$11.50	\$7.10	\$0.00	\$59.50
	12/01/2020	\$41.90	\$11.50	\$7.10	\$0.00	\$60.50
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
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>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.75	\$7.70	\$15.20	\$0.00	\$61.65
	12/01/2018	\$39.70	\$7.70	\$15.20	\$0.00	\$62.60
	06/01/2019	\$40.70	\$7.70	\$15.20	\$0.00	\$63.60
	12/01/2019	\$41.70	\$7.70	\$15.20	\$0.00	\$64.60
	06/01/2020	\$42.69	\$7.70	\$15.20	\$0.00	\$65.59
	12/01/2020	\$43.67	\$7.70	\$15.20	\$0.00	\$66.57
	06/01/2021	\$44.69	\$7.70	\$15.20	\$0.00	\$67.59
	12/01/2021	\$45.70	\$7.70	\$15.20	\$0.00	\$68.60
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2017

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

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (BOSTON)</i>	02/01/2018	\$52.06	\$10.75	\$20.03	\$0.00	\$82.84
	08/01/2018	\$53.41	\$10.75	\$20.16	\$0.00	\$84.32
	02/01/2019	\$54.05	\$10.75	\$20.16	\$0.00	\$84.96
	08/01/2019	\$55.40	\$10.75	\$20.30	\$0.00	\$86.45
	02/01/2020	\$56.04	\$10.75	\$20.30	\$0.00	\$87.09
	08/01/2020	\$57.39	\$10.75	\$20.45	\$0.00	\$88.59
	02/01/2021	\$58.03	\$10.75	\$20.45	\$0.00	\$89.23
	08/01/2021	\$59.43	\$10.75	\$20.61	\$0.00	\$90.79
	02/01/2022	\$60.02	\$10.75	\$20.61	\$0.00	\$91.38

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$10.75	\$20.03	\$0.00	\$56.81
2	60	\$31.24	\$10.75	\$20.03	\$0.00	\$62.02
3	70	\$36.44	\$10.75	\$20.03	\$0.00	\$67.22
4	80	\$41.65	\$10.75	\$20.03	\$0.00	\$72.43
5	90	\$46.85	\$10.75	\$20.03	\$0.00	\$77.63

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.71	\$10.75	\$20.16	\$0.00	\$57.62
2	60	\$32.05	\$10.75	\$20.16	\$0.00	\$62.96
3	70	\$37.39	\$10.75	\$20.16	\$0.00	\$68.30
4	80	\$42.73	\$10.75	\$20.16	\$0.00	\$73.64
5	90	\$48.07	\$10.75	\$20.16	\$0.00	\$78.98

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2018	\$37.95	\$7.70	\$15.40	\$0.00	\$61.05
	12/01/2018	\$38.90	\$7.70	\$15.40	\$0.00	\$62.00
	06/01/2019	\$39.90	\$7.70	\$15.40	\$0.00	\$63.00
	12/01/2019	\$40.90	\$7.70	\$15.40	\$0.00	\$64.00
	06/01/2020	\$41.89	\$7.70	\$15.40	\$0.00	\$64.99
	12/01/2020	\$42.87	\$7.70	\$15.40	\$0.00	\$65.97
	06/01/2021	\$43.89	\$7.70	\$15.40	\$0.00	\$66.99
	12/01/2021	\$44.90	\$7.70	\$15.40	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2018	\$40.28	\$9.90	\$17.50	\$0.00	\$67.68
	09/01/2018	\$41.32	\$9.90	\$17.50	\$0.00	\$68.72
	03/01/2019	\$42.35	\$9.90	\$17.50	\$0.00	\$69.75

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.14	\$9.90	\$1.73	\$0.00	\$31.77
2	60	\$24.17	\$9.90	\$1.73	\$0.00	\$35.80
3	70	\$28.20	\$9.90	\$12.31	\$0.00	\$50.41
4	75	\$30.21	\$9.90	\$12.31	\$0.00	\$52.42
5	80	\$32.22	\$9.90	\$14.04	\$0.00	\$56.16
6	80	\$32.22	\$9.90	\$14.04	\$0.00	\$56.16
7	90	\$36.25	\$9.90	\$15.77	\$0.00	\$61.92
8	90	\$36.25	\$9.90	\$15.77	\$0.00	\$61.92

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.66	\$9.90	\$1.73	\$0.00	\$32.29
2	60	\$24.79	\$9.90	\$1.73	\$0.00	\$36.42
3	70	\$28.92	\$9.90	\$12.31	\$0.00	\$51.13
4	75	\$30.99	\$9.90	\$12.31	\$0.00	\$53.20
5	80	\$33.06	\$9.90	\$14.04	\$0.00	\$57.00
6	80	\$33.06	\$9.90	\$14.04	\$0.00	\$57.00
7	90	\$37.19	\$9.90	\$15.77	\$0.00	\$62.86
8	90	\$37.19	\$9.90	\$15.77	\$0.00	\$62.86

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$29.76/ 3&4 \$35.45/ 5&6 \$52.14/ 7&8 \$57.89

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	04/01/2018	\$26.67	\$7.07	\$7.86	\$0.00	\$41.60
CARPENTERS -ZONE 2 (Wood Frame)	10/01/2018	\$27.09	\$7.07	\$7.86	\$0.00	\$42.02
	04/01/2019	\$27.52	\$7.07	\$7.86	\$0.00	\$42.45
	10/01/2019	\$27.95	\$7.07	\$7.86	\$0.00	\$42.88

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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 2

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.00	\$7.07	\$0.00	\$0.00	\$23.07
2	60	\$16.00	\$7.07	\$0.00	\$0.00	\$23.07
3	65	\$17.34	\$7.07	\$7.86	\$0.00	\$32.27
4	70	\$18.67	\$7.07	\$7.86	\$0.00	\$33.60
5	75	\$20.00	\$7.07	\$7.86	\$0.00	\$34.93
6	80	\$21.34	\$7.07	\$7.86	\$0.00	\$36.27
7	85	\$22.67	\$7.07	\$7.86	\$0.00	\$37.60
8	90	\$24.00	\$7.07	\$7.86	\$0.00	\$38.93

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.25	\$7.07	\$0.00	\$0.00	\$23.32
2	60	\$16.25	\$7.07	\$0.00	\$0.00	\$23.32
3	65	\$17.61	\$7.07	\$7.86	\$0.00	\$32.54
4	70	\$18.96	\$7.07	\$7.86	\$0.00	\$33.89
5	75	\$20.32	\$7.07	\$7.86	\$0.00	\$35.25
6	80	\$21.67	\$7.07	\$7.86	\$0.00	\$36.60
7	85	\$23.03	\$7.07	\$7.86	\$0.00	\$37.96
8	90	\$24.38	\$7.07	\$7.86	\$0.00	\$39.31

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$19.07/ 3&4 \$26.49/ 5&6 \$33.60/ 7&8 \$36.27

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME (All Other Work) CARPENTERS -ZONE 2 (Wood Frame)	06/01/2016	\$25.32	\$9.80	\$16.82	\$0.00	\$51.94
CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (BOSTON)	01/01/2018	\$46.02	\$12.35	\$22.41	\$0.30	\$81.08
	07/01/2018	\$46.20	\$12.42	\$22.41	\$0.30	\$81.33
	01/01/2019	\$47.58	\$12.42	\$22.41	\$0.30	\$82.71
	07/01/2019	\$48.32	\$12.42	\$22.41	\$0.30	\$83.45
	01/01/2020	\$49.72	\$12.42	\$22.41	\$0.30	\$84.85

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.01	\$12.35	\$15.41	\$0.00	\$50.77
2	60	\$27.61	\$12.35	\$17.41	\$0.30	\$57.67
3	65	\$29.91	\$12.35	\$18.41	\$0.30	\$60.97
4	70	\$32.21	\$12.35	\$19.41	\$0.30	\$64.27
5	75	\$34.52	\$12.35	\$20.41	\$0.30	\$67.58
6	80	\$36.82	\$12.35	\$21.41	\$0.30	\$70.88
7	90	\$41.42	\$12.35	\$22.41	\$0.30	\$76.48

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.10	\$12.42	\$15.41	\$0.00	\$50.93
2	60	\$27.72	\$12.42	\$17.41	\$0.30	\$57.85
3	65	\$30.03	\$12.42	\$18.41	\$0.30	\$61.16
4	70	\$32.34	\$12.42	\$19.41	\$0.30	\$64.47
5	75	\$34.65	\$12.42	\$20.41	\$0.30	\$67.78
6	80	\$36.96	\$12.42	\$21.41	\$0.30	\$71.09
7	90	\$41.58	\$12.42	\$22.41	\$0.30	\$76.71

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
LABORERS - ZONE 1	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12/01/2017	\$47.63	\$10.50	\$15.50	\$0.00	\$73.63
OPERATING ENGINEERS LOCAL 4						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR	12/01/2017	\$31.80	\$10.50	\$15.50	\$0.00	\$57.80
OPERATING ENGINEERS LOCAL 4						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	01/01/2018	\$49.66	\$8.10	\$19.55	\$0.00	\$77.31
	07/01/2018	\$50.01	\$8.15	\$20.15	\$0.00	\$78.31
	01/01/2019	\$50.36	\$8.15	\$20.85	\$0.00	\$79.36
	07/01/2019	\$51.46	\$8.15	\$20.85	\$0.00	\$80.46
	01/01/2020	\$52.56	\$8.15	\$20.85	\$0.00	\$81.56
	07/01/2020	\$53.66	\$8.15	\$20.85	\$0.00	\$82.66
	01/01/2021	\$54.76	\$8.15	\$20.85	\$0.00	\$83.76

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2018

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

Effective Date - 07/01/2018

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 1	06/01/2018	\$38.15	\$7.70	\$15.20	\$0.00	\$61.05
	12/01/2018	\$39.10	\$7.70	\$15.20	\$0.00	\$62.00
	06/01/2019	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	12/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 1	06/01/2018	\$39.15	\$7.70	\$15.20	\$0.00	\$62.05
	12/01/2018	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	06/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
	12/01/2019	\$42.10	\$7.70	\$15.20	\$0.00	\$65.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BURNERS <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.90	\$7.70	\$15.20	\$0.00	\$61.80
	12/01/2018	\$39.85	\$7.70	\$15.20	\$0.00	\$62.75
	06/01/2019	\$40.85	\$7.70	\$15.20	\$0.00	\$63.75
	12/01/2019	\$41.85	\$7.70	\$15.20	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 1</i>	06/01/2018	\$39.15	\$7.70	\$15.20	\$0.00	\$62.05
	12/01/2018	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	06/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
	12/01/2019	\$42.10	\$7.70	\$15.20	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.90	\$7.70	\$15.20	\$0.00	\$61.80
	12/01/2018	\$39.85	\$7.70	\$15.20	\$0.00	\$62.75
	06/01/2019	\$40.85	\$7.70	\$15.20	\$0.00	\$63.75
	12/01/2019	\$41.85	\$7.70	\$15.20	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.15	\$7.70	\$15.20	\$0.00	\$61.05
	12/01/2018	\$39.10	\$7.70	\$15.20	\$0.00	\$62.00
	06/01/2019	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	12/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$61.98	\$9.90	\$21.15	\$0.00	\$93.03
	08/01/2018	\$65.20	\$9.90	\$21.15	\$0.00	\$96.25
	08/01/2019	\$68.52	\$9.90	\$21.15	\$0.00	\$99.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$66.41	\$9.90	\$21.15	\$0.00	\$97.46
	08/01/2018	\$69.86	\$9.90	\$21.15	\$0.00	\$100.91
	08/01/2019	\$73.41	\$9.90	\$21.15	\$0.00	\$104.46
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$92.97	\$9.90	\$21.15	\$0.00	\$124.02
	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46

Apprentice - ELECTRICIAN - Local 103

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.06	\$13.00	\$0.60	\$0.00	\$33.66
2	40	\$20.06	\$13.00	\$0.60	\$0.00	\$33.66
3	45	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
4	45	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
5	50	\$25.08	\$13.00	\$13.99	\$0.00	\$52.07
6	55	\$27.58	\$13.00	\$14.38	\$0.00	\$54.96
7	60	\$30.09	\$13.00	\$14.76	\$0.00	\$57.85
8	65	\$32.60	\$13.00	\$15.15	\$0.00	\$60.75
9	70	\$35.11	\$13.00	\$15.53	\$0.00	\$63.64
10	75	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.54	\$13.00	\$0.62	\$0.00	\$34.16
2	40	\$20.54	\$13.00	\$0.62	\$0.00	\$34.16
3	45	\$23.10	\$13.00	\$13.62	\$0.00	\$49.72
4	45	\$23.10	\$13.00	\$13.62	\$0.00	\$49.72
5	50	\$25.67	\$13.00	\$14.01	\$0.00	\$52.68
6	55	\$28.24	\$13.00	\$14.40	\$0.00	\$55.64
7	60	\$30.80	\$13.00	\$14.78	\$0.00	\$58.58
8	65	\$33.37	\$13.00	\$15.17	\$0.00	\$61.54
9	70	\$35.94	\$13.00	\$15.56	\$0.00	\$64.50
10	75	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47

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

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2018	\$57.62	\$15.43	\$16.61	\$0.00	\$89.66
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2019	\$59.47	\$15.58	\$17.51	\$0.00	\$92.56
	01/01/2020	\$61.42	\$15.73	\$18.41	\$0.00	\$95.56
	01/01/2021	\$63.47	\$15.88	\$19.31	\$0.00	\$98.66
	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.81	\$15.43	\$0.00	\$0.00	\$44.24
2	55	\$31.69	\$15.43	\$16.61	\$0.00	\$63.73
3	65	\$37.45	\$15.43	\$16.61	\$0.00	\$69.49
4	70	\$40.33	\$15.43	\$16.61	\$0.00	\$72.37
5	80	\$46.10	\$15.43	\$16.61	\$0.00	\$78.14

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.74	\$15.58	\$0.00	\$0.00	\$45.32
2	55	\$32.71	\$15.58	\$17.51	\$0.00	\$65.80
3	65	\$38.66	\$15.58	\$17.51	\$0.00	\$71.75
4	70	\$41.63	\$15.58	\$17.51	\$0.00	\$74.72
5	80	\$47.58	\$15.58	\$17.51	\$0.00	\$80.67

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>	01/01/2018	\$40.33	\$15.43	\$16.61	\$0.00	\$72.37
	01/01/2019	\$41.63	\$15.58	\$17.51	\$0.00	\$74.72
	01/01/2020	\$42.99	\$15.73	\$18.41	\$0.00	\$77.13
	01/01/2021	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2018	\$42.84	\$10.50	\$15.50	\$0.00	\$68.84
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2018	\$44.31	\$10.50	\$15.50	\$0.00	\$70.31
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2018	\$22.51	\$10.50	\$15.50	\$0.00	\$48.51
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i> <i>LOCAL 103</i>	03/01/2018	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54
	09/01/2018	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47
	03/01/2019	\$39.40	\$13.00	\$15.98	\$0.00	\$68.38
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$38.57	\$10.50	\$15.50	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	06/01/2018	\$21.50	\$7.70	\$15.20	\$0.00	\$44.40
	12/01/2018	\$22.50	\$7.70	\$15.20	\$0.00	\$45.40
	06/01/2019	\$22.50	\$7.70	\$15.20	\$0.00	\$45.40
	12/01/2019	\$23.50	\$7.70	\$15.20	\$0.00	\$46.40
	06/01/2020	\$23.50	\$7.70	\$15.20	\$0.00	\$46.40
	12/01/2020	\$24.50	\$7.70	\$15.20	\$0.00	\$47.40
	06/01/2021	\$24.50	\$7.70	\$15.20	\$0.00	\$47.40
	12/01/2021	\$24.50	\$7.70	\$15.20	\$0.00	\$47.40
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2016	\$42.13	\$9.80	\$17.62	\$0.00	\$69.55

Apprentice - FLOORCOVERER - Local 2168 Zone 1

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.07	\$9.80	\$1.79	\$0.00	\$32.66
2	55	\$23.17	\$9.80	\$1.79	\$0.00	\$34.76
3	60	\$25.28	\$9.80	\$12.25	\$0.00	\$47.33
4	65	\$27.38	\$9.80	\$12.25	\$0.00	\$49.43
5	70	\$29.49	\$9.80	\$14.04	\$0.00	\$53.33
6	75	\$31.60	\$9.80	\$14.04	\$0.00	\$55.44
7	80	\$33.70	\$9.80	\$15.83	\$0.00	\$59.33
8	85	\$35.81	\$9.80	\$15.83	\$0.00	\$61.44

Notes: Steps are 750 hrs.

% After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)

Step 1&2 \$30.55/ 3&4 \$36.49/ 5&6 \$53.33/ 7&8 \$59.33

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$31.80	\$10.50	\$15.50	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2018	\$39.16	\$8.10	\$19.55	\$0.00	\$66.81
	07/01/2018	\$39.51	\$8.15	\$20.15	\$0.00	\$67.81
	01/01/2019	\$39.86	\$8.15	\$20.85	\$0.00	\$68.86
	07/01/2019	\$40.96	\$8.15	\$20.85	\$0.00	\$69.96
	01/01/2020	\$42.06	\$8.15	\$20.85	\$0.00	\$71.06
	07/01/2020	\$43.16	\$8.15	\$20.85	\$0.00	\$72.16
	01/01/2021	\$44.26	\$8.15	\$20.85	\$0.00	\$73.26

Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.58	\$8.10	\$0.00	\$0.00	\$27.68
2	55	\$21.54	\$8.10	\$5.06	\$0.00	\$34.70
3	60	\$23.50	\$8.10	\$5.52	\$0.00	\$37.12
4	65	\$25.45	\$8.10	\$5.98	\$0.00	\$39.53
5	70	\$27.41	\$8.10	\$16.79	\$0.00	\$52.30
6	75	\$29.37	\$8.10	\$17.25	\$0.00	\$54.72
7	80	\$31.33	\$8.10	\$17.71	\$0.00	\$57.14
8	90	\$35.24	\$8.10	\$18.63	\$0.00	\$61.97

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.76	\$8.15	\$0.00	\$0.00	\$27.91
2	55	\$21.73	\$8.15	\$5.34	\$0.00	\$35.22
3	60	\$23.71	\$8.15	\$5.82	\$0.00	\$37.68
4	65	\$25.68	\$8.15	\$6.31	\$0.00	\$40.14
5	70	\$27.66	\$8.15	\$17.24	\$0.00	\$53.05
6	75	\$29.63	\$8.15	\$17.73	\$0.00	\$55.51
7	80	\$31.61	\$8.15	\$18.21	\$0.00	\$57.97
8	90	\$35.56	\$8.15	\$19.18	\$0.00	\$62.89

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
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Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$25.65	\$10.50	\$0.00	\$0.00	\$36.15
2	60	\$27.98	\$10.50	\$15.50	\$0.00	\$53.98
3	65	\$30.31	\$10.50	\$15.50	\$0.00	\$56.31
4	70	\$32.64	\$10.50	\$15.50	\$0.00	\$58.64
5	75	\$34.97	\$10.50	\$15.50	\$0.00	\$60.97
6	80	\$37.30	\$10.50	\$15.50	\$0.00	\$63.30
7	85	\$39.64	\$10.50	\$15.50	\$0.00	\$65.64
8	90	\$41.97	\$10.50	\$15.50	\$0.00	\$67.97

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2018	\$44.11	\$12.20	\$24.12	\$2.41	\$82.84
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2018	\$44.11	\$12.20	\$24.12	\$2.41	\$82.84
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	09/01/2017	\$51.44	\$9.95	\$18.74	\$0.00	\$80.13
	09/01/2018	\$52.94	\$9.95	\$18.74	\$0.00	\$81.63
	09/01/2019	\$54.44	\$9.95	\$18.74	\$0.00	\$83.13
	09/01/2020	\$55.94	\$9.95	\$18.74	\$0.00	\$84.63
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	09/01/2017	\$51.44	\$9.95	\$18.74	\$0.00	\$80.13
	09/01/2018	\$52.94	\$9.95	\$18.74	\$0.00	\$81.63
	09/01/2019	\$54.44	\$9.95	\$18.74	\$0.00	\$83.13
	09/01/2020	\$55.94	\$9.95	\$18.74	\$0.00	\$84.63
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.75	\$7.70	\$15.20	\$0.00	\$61.65
	12/01/2018	\$39.70	\$7.70	\$15.20	\$0.00	\$62.60
	06/01/2019	\$40.70	\$7.70	\$15.20	\$0.00	\$63.60
	12/01/2019	\$41.70	\$7.70	\$15.20	\$0.00	\$64.60
	06/01/2020	\$42.69	\$7.70	\$15.20	\$0.00	\$65.59
	12/01/2020	\$43.67	\$7.70	\$15.20	\$0.00	\$66.57
	06/01/2021	\$44.69	\$7.70	\$15.20	\$0.00	\$67.59
12/01/2021	\$45.70	\$7.70	\$15.20	\$0.00	\$68.60	
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2017	\$47.09	\$11.75	\$14.20	\$0.00	\$73.04
	09/01/2018	\$49.34	\$11.75	\$14.20	\$0.00	\$75.29
	09/01/2019	\$51.84	\$11.75	\$14.20	\$0.00	\$77.79

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

Effective Date - 09/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.55	\$11.75	\$10.45	\$0.00	\$45.75
2	60	\$28.25	\$11.75	\$11.20	\$0.00	\$51.20
3	70	\$32.96	\$11.75	\$11.95	\$0.00	\$56.66
4	80	\$37.67	\$11.75	\$12.70	\$0.00	\$62.12

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.67	\$11.75	\$10.45	\$0.00	\$46.87
2	60	\$29.60	\$11.75	\$11.20	\$0.00	\$52.55
3	70	\$34.54	\$11.75	\$11.95	\$0.00	\$58.24
4	80	\$39.47	\$11.75	\$12.70	\$0.00	\$63.92

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 (BOSTON AREA)	03/16/2017	\$44.65	\$7.80	\$20.85	\$0.00	\$73.30
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Apprentice - IRONWORKER - Local 7 Boston

Effective Date - 03/16/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.79	\$7.80	\$20.85	\$0.00	\$55.44
2	70	\$31.26	\$7.80	\$20.85	\$0.00	\$59.91
3	75	\$33.49	\$7.80	\$20.85	\$0.00	\$62.14
4	80	\$35.72	\$7.80	\$20.85	\$0.00	\$64.37
5	85	\$37.95	\$7.80	\$20.85	\$0.00	\$66.60
6	90	\$40.19	\$7.80	\$20.85	\$0.00	\$68.84

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

LABORER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.00	\$7.70	\$15.20	\$0.00	\$60.90
	12/01/2018	\$38.95	\$7.70	\$15.20	\$0.00	\$61.85
	06/01/2019	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	12/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	06/01/2020	\$41.94	\$7.70	\$15.20	\$0.00	\$64.84
	12/01/2020	\$42.92	\$7.70	\$15.20	\$0.00	\$65.82
	06/01/2021	\$43.94	\$7.70	\$15.20	\$0.00	\$66.84
	12/01/2021	\$44.95	\$7.70	\$15.20	\$0.00	\$67.85

Apprentice - LABORER - Zone 1

Effective Date - 06/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.80	\$7.70	\$15.20	\$0.00	\$45.70
2	70	\$26.60	\$7.70	\$15.20	\$0.00	\$49.50
3	80	\$30.40	\$7.70	\$15.20	\$0.00	\$53.30
4	90	\$34.20	\$7.70	\$15.20	\$0.00	\$57.10

Effective Date - 12/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.37	\$7.70	\$15.20	\$0.00	\$46.27
2	70	\$27.27	\$7.70	\$15.20	\$0.00	\$50.17
3	80	\$31.16	\$7.70	\$15.20	\$0.00	\$54.06
4	90	\$35.06	\$7.70	\$15.20	\$0.00	\$57.96

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.00	\$7.70	\$15.20	\$0.00	\$60.90
	12/01/2018	\$38.95	\$7.70	\$15.20	\$0.00	\$61.85
	06/01/2019	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	12/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	06/01/2020	\$41.94	\$7.70	\$15.20	\$0.00	\$64.84
	12/01/2020	\$42.92	\$7.70	\$15.20	\$0.00	\$65.82
	06/01/2021	\$43.94	\$7.70	\$15.20	\$0.00	\$66.84
	12/01/2021	\$44.95	\$7.70	\$15.20	\$0.00	\$67.85

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.00	\$7.70	\$15.20	\$0.00	\$60.90
	12/01/2018	\$38.95	\$7.70	\$15.20	\$0.00	\$61.85
	06/01/2019	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	12/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	06/01/2020	\$41.94	\$7.70	\$15.20	\$0.00	\$64.84
	12/01/2020	\$42.92	\$7.70	\$15.20	\$0.00	\$65.82
	06/01/2021	\$43.94	\$7.70	\$15.20	\$0.00	\$66.84
	12/01/2021	\$44.95	\$7.70	\$15.20	\$0.00	\$67.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.15	\$7.70	\$15.20	\$0.00	\$61.05
	12/01/2018	\$39.10	\$7.70	\$15.20	\$0.00	\$62.00
	06/01/2019	\$40.10	\$7.70	\$15.20	\$0.00	\$63.00
	12/01/2019	\$41.10	\$7.70	\$15.20	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.00	\$7.70	\$15.20	\$0.00	\$60.90
	12/01/2018	\$38.95	\$7.70	\$15.20	\$0.00	\$61.85
	06/01/2019	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	12/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	06/01/2020	\$41.94	\$7.70	\$15.20	\$0.00	\$64.84
	12/01/2020	\$42.92	\$7.70	\$15.20	\$0.00	\$65.82
	06/01/2021	\$43.94	\$7.70	\$15.20	\$0.00	\$66.84
	12/01/2021	\$44.95	\$7.70	\$15.20	\$0.00	\$67.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.00	\$7.70	\$15.20	\$0.00	\$60.90
	12/01/2018	\$38.95	\$7.70	\$15.20	\$0.00	\$61.85
	06/01/2019	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	12/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	06/01/2020	\$41.94	\$7.70	\$15.20	\$0.00	\$64.84
	12/01/2020	\$42.92	\$7.70	\$15.20	\$0.00	\$65.82
	06/01/2021	\$43.94	\$7.70	\$15.20	\$0.00	\$66.84
	12/01/2021	\$44.95	\$7.70	\$15.20	\$0.00	\$67.85

This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LASER BEAM OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2018	\$39.82	\$10.75	\$18.34	\$0.00	\$68.91
	08/01/2018	\$40.90	\$10.75	\$18.47	\$0.00	\$70.12
	02/01/2019	\$41.41	\$10.75	\$18.47	\$0.00	\$70.63
	08/01/2019	\$42.49	\$10.75	\$18.61	\$0.00	\$71.85
	02/01/2020	\$43.00	\$10.75	\$18.61	\$0.00	\$72.36
	08/01/2020	\$44.08	\$10.75	\$18.76	\$0.00	\$73.59
	02/01/2021	\$44.59	\$10.75	\$18.76	\$0.00	\$74.10
	08/01/2021	\$45.71	\$10.75	\$18.92	\$0.00	\$75.38
	02/01/2022	\$46.18	\$10.75	\$18.92	\$0.00	\$75.85

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

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.91	\$10.75	\$18.34	\$0.00	\$49.00
2	60	\$23.89	\$10.75	\$18.34	\$0.00	\$52.98
3	70	\$27.87	\$10.75	\$18.34	\$0.00	\$56.96
4	80	\$31.86	\$10.75	\$18.34	\$0.00	\$60.95
5	90	\$35.84	\$10.75	\$18.34	\$0.00	\$64.93

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.45	\$10.75	\$18.47	\$0.00	\$49.67
2	60	\$24.54	\$10.75	\$18.47	\$0.00	\$53.76
3	70	\$28.63	\$10.75	\$18.47	\$0.00	\$57.85
4	80	\$32.72	\$10.75	\$18.47	\$0.00	\$61.94
5	90	\$36.81	\$10.75	\$18.47	\$0.00	\$66.03

Notes:

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2018	\$52.10	\$10.75	\$20.03	\$0.00	\$82.88
	08/01/2018	\$53.45	\$10.75	\$20.16	\$0.00	\$84.36
	02/01/2019	\$54.07	\$10.75	\$20.16	\$0.00	\$84.98
	08/01/2019	\$55.42	\$10.75	\$20.30	\$0.00	\$86.47
	02/01/2020	\$56.05	\$10.75	\$20.30	\$0.00	\$87.10
	08/01/2020	\$57.40	\$10.75	\$20.45	\$0.00	\$88.60
	02/01/2021	\$58.04	\$10.75	\$20.45	\$0.00	\$89.24
	08/01/2021	\$59.44	\$10.75	\$20.61	\$0.00	\$90.80
	02/01/2022	\$60.01	\$10.75	\$20.61	\$0.00	\$91.37

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

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.05	\$10.75	\$20.03	\$0.00	\$56.83
2	60	\$31.26	\$10.75	\$20.03	\$0.00	\$62.04
3	70	\$36.47	\$10.75	\$20.03	\$0.00	\$67.25
4	80	\$41.68	\$10.75	\$20.03	\$0.00	\$72.46
5	90	\$46.89	\$10.75	\$20.03	\$0.00	\$77.67

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.73	\$10.75	\$20.16	\$0.00	\$57.64
2	60	\$32.07	\$10.75	\$20.16	\$0.00	\$62.98
3	70	\$37.42	\$10.75	\$20.16	\$0.00	\$68.33
4	80	\$42.76	\$10.75	\$20.16	\$0.00	\$73.67
5	90	\$48.11	\$10.75	\$20.16	\$0.00	\$79.02

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	04/01/2018	\$40.42	\$9.90	\$18.50	\$0.00	\$68.82
	10/01/2018	\$41.32	\$9.90	\$18.50	\$0.00	\$69.72
	04/01/2019	\$42.22	\$9.90	\$18.50	\$0.00	\$70.62

Apprentice - MILLWRIGHT - Local 1121 Zone 1

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.23	\$9.90	\$5.31	\$0.00	\$37.44
2	65	\$26.27	\$9.90	\$15.13	\$0.00	\$51.30
3	75	\$30.32	\$9.90	\$16.10	\$0.00	\$56.32
4	85	\$34.36	\$9.90	\$17.06	\$0.00	\$61.32

Notes:
Steps are 2,000 hours
Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$23.24	\$10.50	\$15.50	\$0.00	\$49.24
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$27.40	\$10.50	\$15.50	\$0.00	\$53.40
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2018	\$49.66	\$8.10	\$19.55	\$0.00	\$77.31
	07/01/2018	\$50.01	\$8.15	\$20.15	\$0.00	\$78.31
	01/01/2019	\$50.36	\$8.15	\$20.85	\$0.00	\$79.36
	07/01/2019	\$51.46	\$8.15	\$20.85	\$0.00	\$80.46
	01/01/2020	\$52.56	\$8.15	\$20.85	\$0.00	\$81.56
	07/01/2020	\$53.66	\$8.15	\$20.85	\$0.00	\$82.66
	01/01/2021	\$54.76	\$8.15	\$20.85	\$0.00	\$83.76

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2018

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

Effective Date - 07/01/2018

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2018	\$40.56	\$8.10	\$19.55	\$0.00	\$68.21
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2018	\$40.91	\$8.15	\$20.15	\$0.00	\$69.21
	01/01/2019	\$41.26	\$8.15	\$20.85	\$0.00	\$70.26
	07/01/2019	\$42.36	\$8.15	\$20.85	\$0.00	\$71.36
	01/01/2020	\$43.46	\$8.15	\$20.85	\$0.00	\$72.46
	07/01/2020	\$44.56	\$8.15	\$20.85	\$0.00	\$73.56
	01/01/2021	\$45.66	\$8.15	\$20.85	\$0.00	\$74.66

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

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.28	\$8.10	\$0.00	\$0.00	\$28.38
2	55	\$22.31	\$8.10	\$5.06	\$0.00	\$35.47
3	60	\$24.34	\$8.10	\$5.52	\$0.00	\$37.96
4	65	\$26.36	\$8.10	\$5.98	\$0.00	\$40.44
5	70	\$28.39	\$8.10	\$16.79	\$0.00	\$53.28
6	75	\$30.42	\$8.10	\$17.25	\$0.00	\$55.77
7	80	\$32.45	\$8.10	\$17.71	\$0.00	\$58.26
8	90	\$36.50	\$8.10	\$18.63	\$0.00	\$63.23

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$8.15	\$0.00	\$0.00	\$28.61
2	55	\$22.50	\$8.15	\$5.34	\$0.00	\$35.99
3	60	\$24.55	\$8.15	\$5.82	\$0.00	\$38.52
4	65	\$26.59	\$8.15	\$6.31	\$0.00	\$41.05
5	70	\$28.64	\$8.15	\$17.24	\$0.00	\$54.03
6	75	\$30.68	\$8.15	\$17.73	\$0.00	\$56.56
7	80	\$32.73	\$8.15	\$18.21	\$0.00	\$59.09
8	90	\$36.82	\$8.15	\$19.18	\$0.00	\$64.15

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2018	\$38.62	\$8.10	\$19.55	\$0.00	\$66.27
PAINTERS LOCAL 35 - ZONE 2	07/01/2018	\$38.97	\$8.15	\$20.15	\$0.00	\$67.27
	01/01/2019	\$39.32	\$8.15	\$20.85	\$0.00	\$68.32
	07/01/2019	\$40.42	\$8.15	\$20.85	\$0.00	\$69.42
	01/01/2020	\$41.52	\$8.15	\$20.85	\$0.00	\$70.52
	07/01/2020	\$42.62	\$8.15	\$20.85	\$0.00	\$71.62
	01/01/2021	\$43.72	\$8.15	\$20.85	\$0.00	\$72.72

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.31	\$8.10	\$0.00	\$0.00	\$27.41
2	55	\$21.24	\$8.10	\$5.06	\$0.00	\$34.40
3	60	\$23.17	\$8.10	\$5.52	\$0.00	\$36.79
4	65	\$25.10	\$8.10	\$5.98	\$0.00	\$39.18
5	70	\$27.03	\$8.10	\$16.79	\$0.00	\$51.92
6	75	\$28.97	\$8.10	\$17.25	\$0.00	\$54.32
7	80	\$30.90	\$8.10	\$17.71	\$0.00	\$56.71
8	90	\$34.76	\$8.10	\$18.63	\$0.00	\$61.49

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.49	\$8.15	\$0.00	\$0.00	\$27.64
2	55	\$21.43	\$8.15	\$5.34	\$0.00	\$34.92
3	60	\$23.38	\$8.15	\$5.82	\$0.00	\$37.35
4	65	\$25.33	\$8.15	\$6.31	\$0.00	\$39.79
5	70	\$27.28	\$8.15	\$17.24	\$0.00	\$52.67
6	75	\$29.23	\$8.15	\$17.73	\$0.00	\$55.11
7	80	\$31.18	\$8.15	\$18.21	\$0.00	\$57.54
8	90	\$35.07	\$8.15	\$19.18	\$0.00	\$62.40

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) LABORERS - ZONE 1	06/01/2018	\$38.00	\$7.70	\$15.20	\$0.00	\$60.90
	12/01/2018	\$38.95	\$7.70	\$15.20	\$0.00	\$61.85
	06/01/2019	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	12/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	06/01/2020	\$41.94	\$7.70	\$15.20	\$0.00	\$64.84
	12/01/2020	\$42.92	\$7.70	\$15.20	\$0.00	\$65.82
	06/01/2021	\$43.94	\$7.70	\$15.20	\$0.00	\$66.84
	12/01/2021	\$44.95	\$7.70	\$15.20	\$0.00	\$67.85

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2018	\$39.16	\$8.10	\$19.55	\$0.00	\$66.81
	07/01/2018	\$39.51	\$8.15	\$20.15	\$0.00	\$67.81
	01/01/2019	\$39.86	\$8.15	\$20.85	\$0.00	\$68.86
	07/01/2019	\$40.96	\$8.15	\$20.85	\$0.00	\$69.96
	01/01/2020	\$42.06	\$8.15	\$20.85	\$0.00	\$71.06
	07/01/2020	\$43.16	\$8.15	\$20.85	\$0.00	\$72.16
	01/01/2021	\$44.25	\$8.15	\$20.85	\$0.00	\$73.25

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.58	\$8.10	\$0.00	\$0.00	\$27.68
2	55	\$21.54	\$8.10	\$5.06	\$0.00	\$34.70
3	60	\$23.50	\$8.10	\$5.52	\$0.00	\$37.12
4	65	\$25.45	\$8.10	\$5.98	\$0.00	\$39.53
5	70	\$27.41	\$8.10	\$16.79	\$0.00	\$52.30
6	75	\$29.37	\$8.10	\$17.25	\$0.00	\$54.72
7	80	\$31.33	\$8.10	\$17.71	\$0.00	\$57.14
8	90	\$35.24	\$8.10	\$18.63	\$0.00	\$61.97

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.76	\$8.15	\$0.00	\$0.00	\$27.91
2	55	\$21.73	\$8.15	\$5.34	\$0.00	\$35.22
3	60	\$23.71	\$8.15	\$5.82	\$0.00	\$37.68
4	65	\$25.68	\$8.15	\$6.31	\$0.00	\$40.14
5	70	\$27.66	\$8.15	\$17.24	\$0.00	\$53.05
6	75	\$29.63	\$8.15	\$17.73	\$0.00	\$55.51
7	80	\$31.61	\$8.15	\$18.21	\$0.00	\$57.97
8	90	\$35.56	\$8.15	\$19.18	\$0.00	\$62.89

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2018	\$37.22	\$8.10	\$19.55	\$0.00	\$64.87
PAINTERS LOCAL 35 - ZONE 2	07/01/2018	\$37.57	\$8.15	\$20.15	\$0.00	\$65.87
	01/01/2019	\$37.92	\$8.15	\$20.85	\$0.00	\$66.92
	07/01/2019	\$39.02	\$8.15	\$20.85	\$0.00	\$68.02
	01/01/2020	\$40.12	\$8.15	\$20.85	\$0.00	\$69.12
	07/01/2020	\$41.22	\$8.15	\$20.85	\$0.00	\$70.22
	01/01/2021	\$42.32	\$8.15	\$20.85	\$0.00	\$71.32

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.61	\$8.10	\$0.00	\$0.00	\$26.71
2	55	\$20.47	\$8.10	\$5.06	\$0.00	\$33.63
3	60	\$22.33	\$8.10	\$5.52	\$0.00	\$35.95
4	65	\$24.19	\$8.10	\$5.98	\$0.00	\$38.27
5	70	\$26.05	\$8.10	\$16.79	\$0.00	\$50.94
6	75	\$27.92	\$8.10	\$17.25	\$0.00	\$53.27
7	80	\$29.78	\$8.10	\$17.71	\$0.00	\$55.59
8	90	\$33.50	\$8.10	\$18.63	\$0.00	\$60.23

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.79	\$8.15	\$0.00	\$0.00	\$26.94
2	55	\$20.66	\$8.15	\$5.34	\$0.00	\$34.15
3	60	\$22.54	\$8.15	\$5.82	\$0.00	\$36.51
4	65	\$24.42	\$8.15	\$6.31	\$0.00	\$38.88
5	70	\$26.30	\$8.15	\$17.14	\$0.00	\$51.59
6	75	\$28.18	\$8.15	\$17.63	\$0.00	\$53.96
7	80	\$30.06	\$8.15	\$18.11	\$0.00	\$56.32
8	90	\$33.81	\$8.15	\$19.08	\$0.00	\$61.04

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2016	\$33.08	\$10.91	\$10.89	\$0.00	\$54.88
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.14	\$9.90	\$21.15	\$0.00	\$53.19
2	60	\$26.56	\$9.90	\$21.15	\$0.00	\$57.61
3	70	\$30.99	\$9.90	\$21.15	\$0.00	\$62.04
4	75	\$33.20	\$9.90	\$21.15	\$0.00	\$64.25
5	80	\$35.42	\$9.90	\$21.15	\$0.00	\$66.47
6	80	\$35.42	\$9.90	\$21.15	\$0.00	\$66.47
7	90	\$39.84	\$9.90	\$21.15	\$0.00	\$70.89
8	90	\$39.84	\$9.90	\$21.15	\$0.00	\$70.89

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.29	\$9.90	\$21.15	\$0.00	\$54.34
2	60	\$27.94	\$9.90	\$21.15	\$0.00	\$58.99
3	70	\$32.60	\$9.90	\$21.15	\$0.00	\$63.65
4	75	\$34.93	\$9.90	\$21.15	\$0.00	\$65.98
5	80	\$37.26	\$9.90	\$21.15	\$0.00	\$68.31
6	80	\$37.26	\$9.90	\$21.15	\$0.00	\$68.31
7	90	\$41.91	\$9.90	\$21.15	\$0.00	\$72.96
8	90	\$41.91	\$9.90	\$21.15	\$0.00	\$72.96

Notes:

Apprentice to Journeyworker Ratio:1:5

PIPEFITTER & STEAMFITTER	09/01/2017	\$51.44	\$9.95	\$18.74	\$0.00	\$80.13
PIPEFITTERS LOCAL 537	09/01/2018	\$52.94	\$9.95	\$18.74	\$0.00	\$81.63
	09/01/2019	\$54.44	\$9.95	\$18.74	\$0.00	\$83.13
	09/01/2020	\$55.94	\$9.95	\$18.74	\$0.00	\$84.63

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PIPEFITTER - Local 537

Effective Date - 09/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.58	\$9.95	\$7.75	\$0.00	\$38.28
2	45	\$23.15	\$9.95	\$18.74	\$0.00	\$51.84
3	60	\$30.86	\$9.95	\$18.74	\$0.00	\$59.55
4	70	\$36.01	\$9.95	\$18.74	\$0.00	\$64.70
5	80	\$41.15	\$9.95	\$18.74	\$0.00	\$69.84

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$21.18	\$9.95	\$7.75	\$0.00	\$38.88
2	45	\$23.82	\$9.95	\$18.74	\$0.00	\$52.51
3	60	\$31.76	\$9.95	\$18.74	\$0.00	\$60.45
4	70	\$37.06	\$9.95	\$18.74	\$0.00	\$65.75
5	80	\$42.35	\$9.95	\$18.74	\$0.00	\$71.04

Notes:

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

Apprentice to Journeyworker Ratio:**

PIPELAYER	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
LABORERS - ZONE 1	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS	03/01/2018	\$54.69	\$11.57	\$15.76	\$0.00	\$82.02
PLUMBERS & GASFITTERS LOCAL 12	09/01/2018	\$56.19	\$11.57	\$15.76	\$0.00	\$83.52
	03/01/2019	\$57.69	\$11.57	\$15.76	\$0.00	\$85.02
	09/01/2019	\$59.19	\$11.57	\$15.76	\$0.00	\$86.52
	03/01/2020	\$60.69	\$11.57	\$15.76	\$0.00	\$88.02
	09/01/2020	\$62.19	\$11.57	\$15.76	\$0.00	\$89.52
	03/01/2021	\$63.69	\$11.57	\$15.76	\$0.00	\$91.02

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.14	\$11.57	\$5.72	\$0.00	\$36.43
2	40	\$21.88	\$11.57	\$6.49	\$0.00	\$39.94
3	55	\$30.08	\$11.57	\$8.81	\$0.00	\$50.46
4	65	\$35.55	\$11.57	\$10.36	\$0.00	\$57.48
5	75	\$41.02	\$11.57	\$11.90	\$0.00	\$64.49

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.67	\$11.57	\$5.72	\$0.00	\$36.96
2	40	\$22.48	\$11.57	\$6.49	\$0.00	\$40.54
3	55	\$30.90	\$11.57	\$8.82	\$0.00	\$51.29
4	65	\$36.52	\$11.57	\$10.36	\$0.00	\$58.45
5	75	\$42.14	\$11.57	\$11.90	\$0.00	\$65.61

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$61.00, Step5 with lic\$67.99

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) PIPEFITTERS LOCAL 537	09/01/2017	\$51.44	\$9.95	\$18.74	\$0.00	\$80.13
	09/01/2018	\$52.94	\$9.95	\$18.74	\$0.00	\$81.63
	09/01/2019	\$54.44	\$9.95	\$18.74	\$0.00	\$83.13
	09/01/2020	\$55.94	\$9.95	\$18.74	\$0.00	\$84.63

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

PNEUMATIC DRILL/TOOL OPERATOR LABORERS - ZONE 1	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER LABORERS - ZONE 1	06/01/2018	\$39.00	\$7.70	\$15.20	\$0.00	\$61.90
	12/01/2018	\$39.95	\$7.70	\$15.20	\$0.00	\$62.85
	06/01/2019	\$40.95	\$7.70	\$15.20	\$0.00	\$63.85
	12/01/2019	\$41.95	\$7.70	\$15.20	\$0.00	\$64.85
	06/01/2020	\$42.94	\$7.70	\$15.20	\$0.00	\$65.84
	12/01/2020	\$43.92	\$7.70	\$15.20	\$0.00	\$66.82
	06/01/2021	\$44.94	\$7.70	\$15.20	\$0.00	\$67.84
	12/01/2021	\$45.95	\$7.70	\$15.20	\$0.00	\$68.85

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>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$31.80	\$10.50	\$15.50	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/10 (Drivers Hired After 4/30/2010) <i>TEAMSTERS LOCAL 25c</i>	07/01/2017	\$28.18	\$8.48	\$9.72	\$0.00	\$46.38
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25c</i>	07/01/2017	\$29.48	\$8.48	\$9.72	\$0.00	\$47.68
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2018	\$42.36	\$11.35	\$14.80	\$0.00	\$68.51
	08/01/2018	\$43.46	\$11.35	\$14.80	\$0.00	\$69.61
	02/01/2019	\$44.61	\$11.35	\$14.80	\$0.00	\$70.76

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.18	\$11.35	\$3.44	\$0.00	\$35.97
2	60	\$25.42	\$11.35	\$14.80	\$0.00	\$51.57
3	65	\$27.53	\$11.35	\$14.80	\$0.00	\$53.68
4	75	\$31.77	\$11.35	\$14.80	\$0.00	\$57.92
5	85	\$36.01	\$11.35	\$14.80	\$0.00	\$62.16

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.73	\$11.35	\$3.44	\$0.00	\$36.52
2	60	\$26.08	\$11.35	\$14.80	\$0.00	\$52.23
3	65	\$28.25	\$11.35	\$14.80	\$0.00	\$54.40
4	75	\$32.60	\$11.35	\$14.80	\$0.00	\$58.75
5	85	\$36.94	\$11.35	\$14.80	\$0.00	\$63.09

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2018	\$42.61	\$11.35	\$14.80	\$0.00	\$68.76
	08/01/2018	\$43.71	\$11.35	\$14.80	\$0.00	\$69.86
	02/01/2019	\$44.86	\$11.35	\$14.80	\$0.00	\$71.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2018	\$44.11	\$12.20	\$24.12	\$2.41	\$82.84

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-A

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.64	\$12.20	\$5.61	\$0.00	\$35.45
2	40	\$17.64	\$12.20	\$5.61	\$0.00	\$35.45
3	45	\$19.85	\$12.20	\$10.85	\$1.29	\$44.19
4	45	\$19.85	\$12.20	\$10.85	\$1.29	\$44.19
5	50	\$22.06	\$12.20	\$11.80	\$1.38	\$47.44
6	50	\$22.06	\$12.20	\$12.05	\$1.39	\$47.70
7	60	\$26.47	\$12.20	\$13.70	\$1.57	\$53.94
8	65	\$28.67	\$12.20	\$14.65	\$1.67	\$57.19
9	75	\$33.08	\$12.20	\$16.56	\$1.86	\$63.70
10	85	\$37.49	\$12.20	\$17.96	\$2.03	\$69.68

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

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

Effective Date - 06/01/2013

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

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
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SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/01/2016	\$33.83	\$10.91	\$10.89	\$0.00	\$55.63
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER	03/01/2018	\$57.78	\$9.12	\$18.15	\$0.00	\$85.05
<i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	10/01/2018	\$59.28	\$9.12	\$18.15	\$0.00	\$86.55
	01/01/2019	\$59.28	\$9.47	\$18.35	\$0.00	\$87.10
	03/01/2019	\$60.78	\$9.47	\$18.35	\$0.00	\$88.60
	10/01/2019	\$62.28	\$9.47	\$18.35	\$0.00	\$90.10
	03/01/2020	\$63.78	\$9.47	\$18.35	\$0.00	\$91.60
	10/01/2020	\$65.28	\$9.47	\$18.35	\$0.00	\$93.10
	03/01/2021	\$66.78	\$9.47	\$18.35	\$0.00	\$94.60

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

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$20.22	\$9.12	\$8.90	\$0.00	\$38.24
2	40	\$23.11	\$9.12	\$8.90	\$0.00	\$41.13
3	45	\$26.00	\$9.12	\$8.90	\$0.00	\$44.02
4	50	\$28.89	\$9.12	\$8.90	\$0.00	\$46.91
5	55	\$31.78	\$9.12	\$8.90	\$0.00	\$49.80
6	60	\$34.67	\$9.12	\$10.40	\$0.00	\$54.19
7	65	\$37.56	\$9.12	\$10.40	\$0.00	\$57.08
8	70	\$40.45	\$9.12	\$10.40	\$0.00	\$59.97
9	75	\$43.34	\$9.12	\$10.40	\$0.00	\$62.86
10	80	\$46.22	\$9.12	\$10.40	\$0.00	\$65.74

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$20.75	\$9.12	\$8.90	\$0.00	\$38.77
2	40	\$23.71	\$9.12	\$8.90	\$0.00	\$41.73
3	45	\$26.68	\$9.12	\$8.90	\$0.00	\$44.70
4	50	\$29.64	\$9.12	\$8.90	\$0.00	\$47.66
5	55	\$32.60	\$9.12	\$8.90	\$0.00	\$50.62
6	60	\$35.57	\$9.12	\$10.40	\$0.00	\$55.09
7	65	\$38.53	\$9.12	\$10.40	\$0.00	\$58.05
8	70	\$41.50	\$9.12	\$10.40	\$0.00	\$61.02
9	75	\$44.46	\$9.12	\$10.40	\$0.00	\$63.98
10	80	\$47.42	\$9.12	\$10.40	\$0.00	\$66.94

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

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
<i>OPERATING ENGINEERS LOCAL 4</i>						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
<i>OPERATING ENGINEERS LOCAL 4</i>						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54
	09/01/2018	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47
	03/01/2019	\$39.40	\$13.00	\$15.98	\$0.00	\$68.38

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.04	\$13.00	\$0.45	\$0.00	\$28.49
2	40	\$15.04	\$13.00	\$0.45	\$0.00	\$28.49
3	45	\$16.92	\$13.00	\$12.74	\$0.00	\$42.66
4	45	\$16.92	\$13.00	\$12.74	\$0.00	\$42.66
5	50	\$18.81	\$13.00	\$13.03	\$0.00	\$44.84
6	55	\$20.69	\$13.00	\$13.32	\$0.00	\$47.01
7	60	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
8	65	\$24.45	\$13.00	\$13.90	\$0.00	\$51.35
9	70	\$26.33	\$13.00	\$14.19	\$0.00	\$53.52
10	75	\$28.21	\$13.00	\$14.48	\$0.00	\$55.69

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.40	\$13.00	\$0.46	\$0.00	\$28.86
2	40	\$15.40	\$13.00	\$0.46	\$0.00	\$28.86
3	45	\$17.33	\$13.00	\$12.75	\$0.00	\$43.08
4	45	\$17.33	\$13.00	\$12.75	\$0.00	\$43.08
5	50	\$19.26	\$13.00	\$13.05	\$0.00	\$45.31
6	55	\$21.18	\$13.00	\$13.34	\$0.00	\$47.52
7	60	\$23.11	\$13.00	\$13.62	\$0.00	\$49.73
8	65	\$25.03	\$13.00	\$13.92	\$0.00	\$51.95
9	70	\$26.96	\$13.00	\$14.21	\$0.00	\$54.17
10	75	\$28.88	\$13.00	\$14.50	\$0.00	\$56.38

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2018	\$51.00	\$10.75	\$20.03	\$0.00	\$81.78
	08/01/2018	\$52.35	\$10.75	\$20.16	\$0.00	\$83.26
	02/01/2019	\$52.99	\$10.75	\$20.16	\$0.00	\$83.90
	08/01/2019	\$54.34	\$10.75	\$20.30	\$0.00	\$85.39
	02/01/2020	\$54.98	\$10.75	\$20.30	\$0.00	\$86.03
	08/01/2020	\$56.33	\$10.75	\$20.45	\$0.00	\$87.53
	02/01/2021	\$56.97	\$10.75	\$20.45	\$0.00	\$88.17
	08/01/2021	\$58.37	\$10.75	\$20.61	\$0.00	\$89.73
	02/01/2022	\$58.96	\$10.75	\$20.61	\$0.00	\$90.32

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.50	\$10.75	\$20.03	\$0.00	\$56.28
2	60	\$30.60	\$10.75	\$20.03	\$0.00	\$61.38
3	70	\$35.70	\$10.75	\$20.03	\$0.00	\$66.48
4	80	\$40.80	\$10.75	\$20.03	\$0.00	\$71.58
5	90	\$45.90	\$10.75	\$20.03	\$0.00	\$76.68

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2018	\$39.35	\$7.70	\$15.40	\$0.00	\$62.45
	12/01/2018	\$40.30	\$7.70	\$15.40	\$0.00	\$63.40
	06/01/2019	\$41.30	\$7.70	\$15.40	\$0.00	\$64.40
	12/01/2019	\$42.30	\$7.70	\$15.40	\$0.00	\$65.40
	06/01/2020	\$43.29	\$7.70	\$15.40	\$0.00	\$66.39
	12/01/2020	\$44.27	\$7.70	\$15.40	\$0.00	\$67.37
	06/01/2021	\$45.29	\$7.70	\$15.40	\$0.00	\$68.39
	12/01/2021	\$46.30	\$7.70	\$15.40	\$0.00	\$69.40

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2018	\$38.07	\$7.70	\$15.40	\$0.00	\$61.17
	12/01/2018	\$39.02	\$7.70	\$15.40	\$0.00	\$62.12
	06/01/2019	\$40.02	\$7.70	\$15.40	\$0.00	\$63.12
	12/01/2019	\$41.02	\$7.70	\$15.40	\$0.00	\$64.12
	06/01/2020	\$42.01	\$7.70	\$15.40	\$0.00	\$65.11
	12/01/2020	\$42.99	\$7.70	\$15.40	\$0.00	\$66.09
	06/01/2021	\$44.01	\$7.70	\$15.40	\$0.00	\$67.11
	12/01/2021	\$45.02	\$7.70	\$15.40	\$0.00	\$68.12

For apprentice rates see "Apprentice- LABORER"

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

For apprentice rates see "Apprentice- LABORER"

TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2016	\$34.12	\$10.91	\$10.89	\$0.00	\$55.92
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2018	\$50.23	\$7.70	\$15.80	\$0.00	\$73.73
	12/01/2018	\$51.18	\$7.70	\$15.80	\$0.00	\$74.68
	06/01/2019	\$52.18	\$7.70	\$15.80	\$0.00	\$75.68
	12/01/2019	\$53.18	\$7.70	\$15.80	\$0.00	\$76.68
	06/01/2020	\$54.17	\$7.70	\$15.80	\$0.00	\$77.67
	12/01/2020	\$55.15	\$7.70	\$15.80	\$0.00	\$78.65
	06/01/2021	\$56.17	\$7.70	\$15.80	\$0.00	\$79.67
	12/01/2021	\$57.18	\$7.70	\$15.80	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2018	\$52.23	\$7.70	\$15.80	\$0.00	\$75.73
	12/01/2018	\$53.18	\$7.70	\$15.80	\$0.00	\$76.68
	06/01/2019	\$54.18	\$7.70	\$15.80	\$0.00	\$77.68
	12/01/2019	\$55.18	\$7.70	\$15.80	\$0.00	\$78.68
	06/01/2020	\$56.17	\$7.70	\$15.80	\$0.00	\$79.67
	12/01/2020	\$57.15	\$7.70	\$15.80	\$0.00	\$80.65
	06/01/2021	\$58.17	\$7.70	\$15.80	\$0.00	\$81.67
	12/01/2021	\$59.18	\$7.70	\$15.80	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2018	\$42.30	\$7.70	\$15.80	\$0.00	\$65.80
	12/01/2018	\$43.25	\$7.70	\$15.80	\$0.00	\$66.75
	06/01/2019	\$44.25	\$7.70	\$15.80	\$0.00	\$67.75
	12/01/2019	\$45.25	\$7.70	\$15.80	\$0.00	\$68.75
	06/01/2020	\$46.24	\$7.70	\$15.80	\$0.00	\$69.74
	12/01/2020	\$47.22	\$7.70	\$15.80	\$0.00	\$70.72
	06/01/2021	\$48.24	\$7.70	\$15.80	\$0.00	\$71.74
	12/01/2021	\$49.25	\$7.70	\$15.80	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2018	\$44.30	\$7.70	\$15.80	\$0.00	\$67.80
	12/01/2018	\$45.25	\$7.70	\$15.80	\$0.00	\$68.75
	06/01/2019	\$46.25	\$7.70	\$15.80	\$0.00	\$69.75
	12/01/2019	\$47.25	\$7.70	\$15.80	\$0.00	\$70.75
	06/01/2020	\$48.24	\$7.70	\$15.80	\$0.00	\$71.74
	12/01/2020	\$49.22	\$7.70	\$15.80	\$0.00	\$72.72
	06/01/2021	\$50.24	\$7.70	\$15.80	\$0.00	\$73.74
	12/01/2021	\$51.25	\$7.70	\$15.80	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2018	\$38.25	\$7.70	\$15.20	\$0.00	\$61.15
	12/01/2018	\$39.20	\$7.70	\$15.20	\$0.00	\$62.10
	06/01/2019	\$40.20	\$7.70	\$15.20	\$0.00	\$63.10
	12/01/2019	\$41.20	\$7.70	\$15.20	\$0.00	\$64.10
	06/01/2020	\$42.19	\$7.70	\$15.20	\$0.00	\$65.09
	12/01/2020	\$43.17	\$7.70	\$15.20	\$0.00	\$66.07
	06/01/2021	\$44.19	\$7.70	\$15.20	\$0.00	\$67.09
	12/01/2021	\$45.20	\$7.70	\$15.20	\$0.00	\$68.10
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/01/2018	\$54.69	\$11.57	\$15.76	\$0.00	\$82.02
	09/01/2018	\$56.19	\$11.57	\$15.76	\$0.00	\$83.52
	03/01/2019	\$57.69	\$11.57	\$15.76	\$0.00	\$85.02
	09/01/2019	\$59.19	\$11.57	\$15.76	\$0.00	\$86.52
	03/01/2020	\$60.69	\$11.57	\$15.76	\$0.00	\$88.02
	09/01/2020	\$62.19	\$11.57	\$15.76	\$0.00	\$89.52
	03/01/2021	\$63.69	\$11.57	\$15.76	\$0.00	\$91.02
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$27.14	\$7.75	\$1.81	\$0.00	\$36.70
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$38.45	\$7.75	\$9.53	\$0.00	\$55.73
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$31.66	\$7.75	\$9.44	\$0.00	\$48.85
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$38.45	\$7.75	\$13.61	\$0.00	\$59.81
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$33.92	\$7.75	\$10.21	\$0.00	\$51.88
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$20.35	\$7.75	\$1.61	\$0.00	\$29.71
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$45.23	\$7.75	\$16.61	\$0.00	\$69.59

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 09/03/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.14	\$7.75	\$3.31	\$0.00	\$38.20
2	65	\$29.40	\$7.75	\$3.38	\$0.00	\$40.53
3	70	\$31.66	\$7.75	\$3.45	\$0.00	\$42.86
4	75	\$33.92	\$7.75	\$5.02	\$0.00	\$46.69
5	80	\$36.18	\$7.75	\$5.09	\$0.00	\$49.02
6	85	\$38.45	\$7.75	\$5.15	\$0.00	\$51.35
7	90	\$40.71	\$7.75	\$7.22	\$0.00	\$55.68

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/05/2018	\$29.98	\$4.70	\$3.15	\$0.00	\$37.83
	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	05/05/2018	\$28.22	\$4.70	\$3.10	\$0.00	\$36.02
	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/05/2018	\$28.22	\$4.70	\$3.10	\$0.00	\$36.02
	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/31/2016	\$18.51	\$3.55	\$0.00	\$0.00	\$22.06
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/31/2016	\$16.32	\$3.55	\$0.00	\$0.00	\$19.87
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.						

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)

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

** Multiple ratios are listed in the comment field.

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

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

WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at www.mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or e-mail, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

STATEMENT OF COMPLIANCE

_____, 20_____

I, _____, _____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM



Company's Name:	Address:	Phone No.:	Payroll No.:
Employer's Signature:	Title:	Contract No:	Tax Payer ID Number
Awarding Authority's Name:	Public Works Project Name:	Public Works Project Location:	Min. Wage Rate Sheet Number

General / Prime Contractor's Name:		Subcontractor's Name:		"Employer" Hourly Fringe Benefit Contributions															
Employee Name & Complete Address	Work Classification:	Employee is OSHA 10 certified (?)	Appr. Rate (%)	Hours Worked							Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	(B+C+D+E) (A x F)		Check No. (H)
				Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.							Total Gross Wages	Project Gross Wages	

Are all apprentice employees identified above currently registered with the MA DLS's Division of Apprentice Standards? YES NO

For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards. No apprentices are identified above

NOTE: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a **true and accurate** copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Date Received by Awarding Authority / /
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APPENDIX C

Example DRE File (Account Data Removed)

APPENDIX D

Itron Interface Summary

Water Fixed Network Interface Document
Town of Arlington

Customer	Town of Arlington
Address	869 Massachusetts Ave. Arlington MA 02476
Customer Contact	Charles Norton

Customer Synch File Interface

Rules	Value	Notes
Header Rows	0	
Trailer	False	
Strip Leading Zeros	False	
Strip Trailing Spaces	True	
Strip Leading Spaces	True	
Record Separators	New Line	
Delimiter	, (Comma)	
File Prefix	ARLCS	
File Suffix	.csv	
File Naming Convention	ARLCS_YYYY-MM-DD.csv	Ex. ARLCS_2010-04-29.csv

Field Position	Field Name	Type	Can be Null	Notes
1	Action	Alpha	False	Valid Values are (A) for Add, (R) for Remove and (U) for Update
2	DeviceID	Numeric	False	The serial number of the endpoint
3	DeviceType	Numeric	False	The decimal devicetype for the endpoint i.e. 5, 23, 36, 43, etc.
4	ChannelNumber	Numeric	False	The channel number for the endpoint 0 or 1
5	Status	Alpha	True	Valid Values are (A) for Active and (I) for Inactive
6	MeterID	Alpha/Numeric	True	
7	Account	Alpha/Numeric	True	
8	PremiseID	Alpha/Numeric	True	
9	CustID	Alpha/Numeric	True	
10	CustLastName	Alpha/Numeric	True	Max 20 characters
11	CustFirstName	Alpha/Numeric	True	Max 20 characters
12	Company	Alpha/Numeric	True	
13	PremiseType	Alpha/Numeric	True	
14	Address1	Alpha/Numeric	True	Max 20 characters
15	Address2	Alpha/Numeric	True	Max 20 characters
16	City	Alpha/Numeric	True	
17	State	Alpha/Numeric	True	
18	Zip	Alpha/Numeric	True	
19	Latitude	Alpha/Numeric	True	
20	Longitude	Alpha/Numeric	True	
21	Comments	Alpha/Numeric	True	Max 50 characters
22	MLogID	Numeric	True	NULL if not needed, else input valid MLOG DeviceID – see note 5
23	DecodeOverride	Numeric	True	NULL – See note 8
24	Route	Alpha/Numeric	True	Max 50 characters

Customer Synch File Notes:

1. Action, DeviceID, DeviceType and ChannelNumber are required fields.
2. Action Field - If the DeviceID, DeviceType and ChannelNumber stay the same, but the customer or location information changes, you can update.
3. Status Field – Normally all devices are considered Active, “A”. For future functionality, if you want, you can mark an endpoint as “I” for Inactive.
4. If you replace an endpoint, you must create separate entries; one for Remove (R) and one for Add (A).
5. If you are installing MLOG devices, a column is available to insert the MLOG device ID, otherwise this field is NULL. MLOG column is only to be used by customers with MLOG
6. For fields that will have no information, please leave it blank (NULL). Do not put “NA” or some other placeholder.
7. The DeviceType must be the decimal number that is sent up by the Fixed Network system, such as 3, 5, 7, 23, 33, 36, 43.
8. Decodetype Override is only used by customers requiring an override of a DecodeType for a small number of correctly programmed devices. Please contact Itron Network Operations before using this field.

Daily Reads Export Interface

Rules	Value	Notes
Header	True	
Trailer	False	
Record Separator	New Line	
Delimiter	, (Comma)	
Output Date/Time Format	YYYY-MM-DD HH24:MI:SS	
File Prefix	dre	
Fie Suffix	.csv	
File Naming Convention	dreyyyymmddThhmmss.csv	Ex. dre20100430T145638.csv
File Prefix	dre	
Fie Suffix	.csv	
File Naming Convention	dreyyyymmddThhmmss.csv	Ex. dre20100430T145638.csv
Fractional Reads	True	
Reading Decode	True	
Zip File	True	

Field Position	Field Name	Type	Can be Null	Notes
1	MeterID	VARCHAR(50)	True	Must be provided by the customer to be included in output
2	Reading	BIGINT	False	Reading with decode applied
3	ReadingDateTime	DATETIME	False	The timestamp of the read, format is configurable but not time zone (all timestamps are in UTC) YYYY-MM-DD HH24:MI:SS UTC
4	Account	VARCHAR(50)	True	Must be provided by the customer to be included in output
5	CustomerLN	NVARCHAR(20)	True	Must be provided by the customer to be included in output
6	CustomerFN	NVARCHAR(20)	True	Must be provided by the customer to be included in output
7	DeviceID	INT	False	The serial number of the Endpoint
8	DeviceType	SMALLINT	False	The decimal device type for the Endpoint i.e. 5, 23, 36, etc.
9	ChannelNumber	TINYINT	False	The channel number for the endpoint 0 or 1
10	DecodeType	TINYINT	False	The decode type which is used to look up decode information for the Endpoint

Daily Read Export Notes:

1. Delimited Format – (Ref sample export Tue 4/20/2010 email)
2. Comma delimiter – (Ref Thu 4/22/2010 email)
3. Zipped
4. Scheduled to be delivered by 3AM Eastern/Midnight Pacific daily.

APPENDIX E

Account Addresses & Coordinates File

APPENDIX F

Example ICS Export File