CITY OF
LOWELL, MASSACHUSETTS

IFB 17-34

BID PROPOSAL, CONTRACT

GENERAL CONDITIONS, SPECIAL CONDITIONS

AND TECHNICAL SPECIFICATIONS

FOR

2016 TRAFFIC SIGNAL EQUIPMENT

CITY MANAGER - KEVIN J. MURPHY

DEPARTMENT OF PLANNING AND DEVELOPMENT
ASST. CITY MANAGER/DIRECTOR, DIANE TRADD
TRANSPORTATION ENGINEER, NICOLAS BOSONETTO

City of Lowell
Department of Planning and Development
Lowell, Massachusetts

NOVEMBER 2, 2016

2016 TRAFFIC SIGNAL EQUIPMENT
IN THE CITY OF LOWELL

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APPENDIX

INVITATION TO BID # 17-34
2016 TRAFFIC SIGNAL EQUIPMENT
IN THE CITY OF LOWELL

Sealed bids will be received at the Office of the Lowell City Hall Purchasing Department, 375 Merrimack Street, Room 60, Lowell, Massachusetts, 01852 up to 2:00 P.M. local time, **November 16, 2016** which time and place, they will be publicly opened and read.

The bids will be for all labor, materials, equipment, tools, appliances etc. necessary for construction of 2016 TRAFFIC SIGNAL EQUIPMENT.

Specifications may be obtained after November 2, 2016 at the Lowell City Hall Purchasing Department, 375 Merrimack Street, Lowell, Massachusetts, 01852**.** A non-mandatory prebid and field visit will be held November 8, 2016 at 10:00 at the Office of the Lowell City Hall Purchasing Department, 375 Merrimack Street, Room 60, Lowell, Massachusetts, 01852

Each bid proposal must be secured by an accompanying deposit of five percent (5%) of the total bid amount and submitted in a sealed envelope clearly marked, "Proposal for 2016 TRAFFIC SIGNAL EQUIPMENT". The deposit shall be in the form of a Bid Bond, Certified Check, Cashier's or Treasurer's Check, made payable to the City of Lowell, or cash.

The successful bidder must furnish a Payment Bond and a Performance Bond of an amount equal to One Hundred (100%) Percent of the total Contract Price, issued by a Surety Company, satisfactory to the Commissioner of Public Works.

Attention of the Bidders is particularly called to the requirements of the conditions of employment to be observed and the prevailing wage rates to be paid on this project, as determined by the State Department of Labor Division of Occupational Safety

Note: Bidders must also comply with Certification of Compliance G.L.C. 30 & 39S Public Construction More Than $10,000.00. See page BP-4.

The City of Lowell, acting through its Commissioner of Public Works, reserves the right to waive any informality in, to reject any or all bids or to accept the one which appears in the best interest of the City of Lowell.

MBE's are encouraged to submit proposals. EOE/AA.

Project Value $ 95,000

TO BE ADVERTISED**:** November 2, 2016

DIANE TRADD - ASST. CITY MANAGER/DIRECTOR OF DEPARTMENT OF PLANNING AND DEVELOPMENT

INFORMATION FOR BIDDERS

SUBSECTION

1. Receipt and Opening of Bids
2. Preparation of Bid
3. Blank
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5. Qualifications of Bidder
6. Bid Security
7. Damages for Failure to Enter into Contract
8. Duration of Contract, Time for Completion and Liquidated Damages
9. Conditions of Work
10. Addenda and Interpretations
11. Security for Faithful Performance
12. Power of Attorney
13. Notice of Special Conditions
14. Laws and Regulations
15. Method of Award - Lowest Qualified Bidder
16. Obligation of Bidder
17. List of Utilities in the Area
18. Soil Conditions
19. Nondiscrimination in Employment
20. Blank
21. Sales Tax
22. Blank
23. Compliance with Air and Water Acts
24. Interest of Members, Officers, as Employees of the Owner, Members of Local Governing Body, or other Public Officials

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The City of Lowell herein called the "Owner" invites sealed bids on the separate copies of Bid Forms furnished for that purpose, all blanks of which must be appropriately filled in. The bound-in Bid Forms in the Contract Documents are for continuity and the convenience of Bidders and are not to be detached from the Contract Documents, filled out or executed.

Sealed bids will be received at the Lowell City Hall Purchasing Department, 375 Merrimack Street, Room 60, Lowell, Massachusetts, 01852 until 2:00 P.M. local time, **NOVEMBER 16, 2016** which time and place, they will be publicly opened and read. The envelope containing the bids for the 2016 TRAFFIC SIGNAL EQUIPMENT shall be sealed, addressed to the City of Lowell, Department of Planning and Development and designated as Bid for the 2016 TRAFFIC SIGNAL EQUIPMENT.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

2. PREPARATION OF BID

Each bid for the **2016 TRAFFIC SIGNAL EQUIPMENT** shall be submitted on the prescribed bid forms.

All blank spaces for bid prices must be filled in, with ink or typewriter, in both words and figures, and both of the foregoing Certifications must be fully completed and executed when submitted.

Each bid for the **2016 TRAFFIC SIGNAL EQUIPMENT** must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified above.

3. BLANK

4. BLANK

5. QUALIFICATIONS OF BIDDER

The OWNER may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves

the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the OWNER that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

A. na

B. Each bid **must include** evidence of the Bidder's ability to complete the Work in accordance with the Contract Documents. Each bid **must include** the name of the Superintendent who is to be used on this project, and his/her experience.

C. Each bid **must include** :

1. A comprehensive list of any and all citations and /or violations issued by regulatory agencies and/or judgments against bidder from a court of law.

2. All assessed penalties or liquidated damages, and the project in which they occurred.

3. Any and all contract terminations.

4. A list of at least five references, use forms on page I-9 and I-10.

6. BID SECURITY

Each bid shall be accompanied by cash, a certified check, treasurer's check, or cashier's check issued by a responsible bank or trust company, made payable to the City of Lowell in the amount of 5% of the bid or a bid bond prepared in the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company, licensed to do business in the Commonwealth of Massachusetts, approved by the OWNER, in the amount of 5% of the bid, but in no event less than one hundred dollars not more than fifty thousand dollars.

All bid deposits of general bidders, except those of the three lowest responsible and eligible bidders, will be returned within five (5) days, Saturdays, Sundays and legal holidays excluded, after the opening of the general bids.

7. DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within 10 days after he has received notice of the acceptance of his bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the security deposited with his bid.

8. DURATION OF CONTRACT, TIME FOR COMPLETION AND LIQUIDATEDMAGES

The contract shall be for **120** days beginning **December 1, 2016** and ending **MARCH 30, 2017**

9. CONDITIONS OF WORK

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract insofar as possible the contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

10. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing addressed to City Engineer, City Hall, Lowell, Massachusetts 01852 and to be given consideration must be received at least five days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes), not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligations under his bid as submitted. All addenda so issued shall become part of the contract documents.

11. SECURITY FOR FAITHFUL PERFORMANCE

Simultaneously with his delivery of the executed Contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this Contract and for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company, licensed to do business in the Commonwealth of Massachusetts, and satisfactory to the OWNER.

12. POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. NOTICE OF SPECIAL CONDITIONS

Attention is particularly called to those parts of the contract documents and specifications which deal with the following:

(a) Inspection and testing of materials
(b) Insurance requirements
(c) Wage rates
(d) Stated Allowances
(e) Non-discrimination in employment

(f) Notifications & Schedule

14. LAWS AND REGULATIONS

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

15. METHOD OF AWARD - LOWEST QUALIFIED BIDDER

If at the time this contract is to be awarded, the lowest base bid submitted by a responsible bidder does not exceed the amount of funds then estimated by the OWNER as available to finance the Project, the Contract will be awarded on the base bid and any or all accepted alternatives. If such bid exceeds such amount, the OWNER may reject all bids.

16. OBLIGATION OF BIDDER

At the time of the opening of bids it is presumed that each bidder has inspected the site and has read and is thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his bid.

17. LIST OF UTILITIES IN THE AREA:

Attention is called to the fact that the following Utility Companies have facilities in the area:

Lowell Water Utility	978-678-4240
Lowell Regional Wastewater Utility	978-674-4248
Lowell Engineering Department	978-674-4070
National Grid Gas	978-725-1389
National Grid Electric	978-725-1389
Verizon Telephone	877-686-7007
Comcast	877-633-4266
Lowell Fire Alarm/Electrician	978-674-4114

The Contractor shall notify the controlling utility agency at least 72 hours in advance of its intent to excavate in any way or manner, within six feet of any existing utility agency owned pole, anchor guy, underground duct, conduit, pipe, valve or manhole. No excavation shall take place within six feet of any existing utility agency owned pole, anchor guy, underground duct, conduit, pipe, valve or manhole owned by a utility agency without this notification. In addition, Dig Safe must be notified 72 hours prior to commencing excavation.

18. SOIL CONDITIONS

No soil sampling has been performed in conjunction with this project.

19. NONDISCRIMINATION IN EMPLOYMENT

Contracts for work under this proposal will obligate the Contractors and subcontractors not to discriminate in employment practices.

Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the Contract.

The successful bidder must be prepared to comply in all respects with the Contract Provisions regarding Equal Employment Opportunity which are located in the Special Conditions Section of these Specifications.

20. BLANK

21. SALES TAX

Materials and equipment purchased for permanent installation in this project will be exempt from the Massachusetts Sales and Use Tax. The exemption certificate number will be furnished to the Contractor. Each bidder shall take this exemption into account in calculating his bid for the work.

22. BLANK

23. COMPLIANCE WITH AIR AND WATER ACTS

This contract is subject to the requirements of the Clean Air Act, as amended, 42 U.S.C. 1857 et. seq., the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et. seq., Massachusetts Stormwater Management Standards and the regulations of the Environmental Protection Agency with respect thereto, 40 CFR Part 15, as amended from time to time, the major provisions of same being located in the special conditions of these specifications.

24. INTEREST OF MEMBERS, OFFICERS, or EMPLOYEES of the OWNER, MEMBERS of LOCAL GOVERNING BODY, or OTHER PUBLIC OFFICIALS

No member, officer, or employee of the OWNER, or its designees or agents, no member of the governing body of the locality in which the program is situated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the program during his tenure of for one year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with this Contract.

REFERENCES

Bidders who are not known to the City of Lowell are required to submit at least five (5) references prior to awarding of the contract.

1) Company Name: _____
Address: _____
_____
Telephone Number: _____
Contact Person: _____
Title/Position _____
Type of Services
Performed: _____
Dates of Work: _____
Comments: _____
_____
_____

2) Company Name: _____
Address: _____
_____
Telephone Number: _____
Contact Person: _____
Title/Position _____
Type of Services
Performed: _____
Dates of Work: _____
Comments: _____
_____
_____

3) Company Name: _____
Address: _____
_____
Telephone Number: _____
Contact Person: _____
Title/Position _____
Type of Services
Performed: _____
Dates of Work: _____
Comments: _____
_____
_____

4) Company Name: _____
Address: _____
_____
Telephone Number: _____
Contact Person: _____
Title/Position _____
Type of Services
Performed: _____
Dates of Work: _____
Comments: _____
_____
_____

5) Company Name: _____
Address: _____
_____
Telephone Number: _____
Contact Person: _____
Title/Position _____
Type of Services
Performed: _____
Dates of Work: _____
Comments: _____
_____
_____

BID PROPOSAL
GENERAL BID

CITY OF LOWELL, MASSACHUSETTS

Project: **2016 TRAFFIC SIGNAL EQUIPMENT**
Lowell, Massachusetts

To the City of Lowell, Massachusetts (hereinafter called OWNER)

Gentlemen:

The Bidder, in compliance with your invitation for bids for the construction of the proposed project having examined the plans and specifications with related documents as prepared by the City of Lowell Transportation Engineer, and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in a written "notice to proceed" of the OWNER and to fully complete the Contract within **_120_** consecutive calendar days thereafter as stipulated in the specifications.

Bidder understands that the OWNER reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of **60 calendar days** after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract within 10 days and deliver a Surety Bond or Bonds as required.

The Bid Security attached in the sum of _____

($_____

is to become the property of the OWNER in the event the contract and bonds are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the OWNER caused thereby.

Bidder acknowledges receipt of the following addendum(s):

_____

Bidder agrees to perform all the work described in the specifications and shown on the plans for the following unit prices:

NOTE: All prices should be written in ink, in words as well as figures, for the entire proposal. In case of discrepancy the amount shown in words will govern.

The CONTRACTOR agrees that its attention has been called to the provisions of the "Reserve System" Ordinance of the City of Lowell, which is now incorporated in "The Code of the City of Lowell, Massachusetts", passed by the City Council on April 26, 1988 and amendments thereto and that each purchase order, so-called, issued in accordance with Section 7 - 76 of Said Code to cover the services to be rendered under this contract shall be made a part hereof by reference. It is further agreed that no obligation shall be considered to have been incurred under this Contract unless and until a purchase order shall have been issued and approved. And further, that the obligation incurred shall be limited to the amount set forth in each purchase order, or purchase orders, duly issued and approved.

The CONTRACTOR further agrees that his attention has been called to the duration of contract on Pages I-5 and SC-3 of this Contract.

Item No.	Quantity	Unit	Item with Unit Bid Price (in words)	Unit Price	Amount
816.01	1	LS	Traffic Control Signal-Location 1 Moore Street at Gorham Street _____		
816.02	1	LS	Traffic Control Signal-Location 2 Dutton Street at Merrimack Street and Worthen Street at Merrimack Street _____		
816.03	1	LS	Traffic Control Signal-Location 3 Market Street at Dutton Street _____		
816.04	1	LS	Traffic Control Signal-Location 4 Market Street at Central Street _____		
816.05	1	LS	Traffic Control Signal-Location 5 Central Street at Merrimack Street _____		

USE SEPARATE FORM

832.1	83.5	SF	Warning-Regulatory and Route Marker – Alum. Panel (Type A)		
851	1	LS	Safety Controls, Signs and Drums		
854.1	174.9	SF	Pavement Marking Removal		
864.	81.9	SF	Pavement Arrow and Legends Reflectorized White (Painted)		
874.2	3	EA	Traffic Sign Removed and Reset		
999.99	11	DAYS	Police Detail Allowance Four Thousand four hundred and 00/100		$4,400
TOTALS		**IN WORDS**		**AMOUNT**	

USE SEPARATE FORM

BASIS OF AWARD LOWEST RESPONSIVE & RESPONSIBLE BIDDER

CERTIFICATION OF COMPLIANCE
G.L.c.30, §39S
PUBLIC CONSTRUCTION MORE THAN $10,000.00

I certify under the pains and penalties of perjury that:

1. the Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;

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 ("OSHA") that is at least 10 hours in duration and the time the employee begins works 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 OSHA that is at least 10 hours in duration.

_____	_____
Signature of Individual or Corporate Name (Mandatory)	By: Corporate Officer (Mandatory, if applicable)

Approval of a contact or other agreement will not be granted unless this certification clause is signed by the applicant.

The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon according to all requirements of the Plans and Specifications.

1. Have been in business under present business name of _____
_____

for _____years.

2. Ever failed to complete any work?_____

3. List one or more recent projects with names of Community and Engineer on which you served as general contractor similar to work required for this project.

Project and Engineer Community Date Amount

a)_____

b)_____

c)_____

4. Bank Reference_____

The undersigned agrees that, if he is selected as general contractor, he will within ten (10) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of the general bid and furnish a performance bond and also a labor and materials or payment bond, each of a Surety company qualified to do business under the laws of the Commonwealth and satisfactory to the awarding authority and each in the sum of one hundred percent (100%) of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price.

The undersigned hereby certifies that he is able to furnish labor and can work in harmony with all other elements of labor employed or to be employed on the work.

Date:_____ _____
(Name of General Bidder)

BY _____
(Signature)

_____
(Title of Signer)

_____
(Business Address)

_____
(City and State)

_____
(Phone Number)

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)
ss
County of _____)

_____being duly sworn, deposes and says that:

(1) He is (owner, partner, office representative or agent) of _____

_____the Bidder that has submitted the attached bid;

(2) He is fully informed respecting the preparation and contents of the attached bid and of all pertinent circumstances respecting such bid;

(3) Such bid is genuine and is not a collusive or sham bid;

(4) Neither the said bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham bid in connection with the Contract for which the attached bid has been submitted, or to refrain from bidding in connection with such contract, or has in any manner directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached bid, or of any other Bidder; or to fix any overhead, profit or cost element of the bid price, or the bid price of any other Bidder; or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the CITY OF LOWELL or any person interested in the proposed Contract; **2016 TRAFFIC SIGNAL EQUIPMENT**.

(5) The price or prices quoted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents representatives, owners, employees, or parties in interest, including this affiant.

_____
(Signed)

_____
(Title)

Subscribed and sworn to before me on
this _____day of _____, 20___

_____

_____
Title
My commission expires _____

A. Contractors' Certification

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification, which is deemed a part of the resulting contract:

CONTRACTOR'S CERTIFICATION

_____ certifies that:
Contractor

1. It intends to use the following listed construction trades in the work under the contract

_____

_____; and

2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. Will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions.

_____
(Signature of authorized representative of contractor)

B. Subcontractors' Certification

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontract:

SUBCONTRACTORS' CERTIFICATION

_____ certifies that:
Subcontractor

1. It tends to use the following listed construction trades in the work under the subcontract

_____

_____; and

2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. Will obtain from each of the subcontractors prior to the award of any subcontract under this subcontract the subcontractor certification required by these bid conditions.

_____

(Signature of authorized representative of subcontractor)

In order to ensure that the said subcontractors' certification becomes a part of all subcontractors under the prime contract, no subcontract shall be executed until an authorized representative of the state agency (or agencies) administering this project has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

MINIMUM MINORITY PERCENTAGES TO BE APPLIED TO STATE AND STATE ASSISTED CONTRACTS WITHIN THE COMMONWEALTH OF MASSACHUSETTS

The following percentages shall apply:		No less than
Boston:	Impact Area (Jamaica Plain (part), Mattapan, South Cove, Chinatown, Bay Village, Roxbury, Dorchester, South End)	30%
	Others	10%
Cambridge		12%
New Bedford		18%
Springfield		10%
All other cities and towns		5%

CITY OF LOWELL
AFFIRMATIVE ACTION CONTRACT REQUIREMENTS
CONTRACTORS' CERTIFICATION

NAME OF PROJECT: **2016 TRAFFIC SIGNAL EQUIPMENT**

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification, which is deemed a part of the resulting contract:

CONTRACTOR'S CERTIFICATION

_____certifies that

1. It intends to use the following listed construction trades in the work under the contract_____

_____

_____; and,

2. Will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. Will obtain from each of its subcontractors and submit the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions.

_____
(Signature of Authorized Representative of Contractor)

CITY OF LOWELL
AFFIRMATIVE ACTION CONTRACT REQUIREMENTS
BIDDERS' CERTIFICATION

The bidder hereby certifies he shall comply with the minority manpower ratio and specific action steps contained in the Appendix EEO attached hereto, including compliance with the minority contractor compliance specified in Section V of said Appendix. The contractor receiving the award of the contract shall be required to obtain from each of its subcontractors and submit to the contracting or administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier, that it will comply with the minority manpower ratio and specific affirmative action steps contained in the Appendix EEO.

_____
Signature of Bidder

_____
Name of Firm

_____
Title

_____
Date

CONTRACT

THIS AGREEMENT, made this the _____day of _____,

20___, by and between the City of Lowell, Massachusetts acting herein through its

Commissioner of the Public Works Department, hereinafter called "OWNER" and

*(1)_____

an individual doing business as, a partnership, a corporation of the _____

_____

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 construction of Contract described as follows: **2016 TRAFFIC SIGNAL EQUIPMENT** hereinafter called the Project for the sum of

_____

_____Dollars ($)_____

and all extra work in connection therewith, under the terms as stated in the General and Special Conditions of the Contract; and at his/her (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance and other accessories and services necessary to complete the said Project in accordance with the conditions and prices stated in the Proposal, the General and Special Conditions of the Contract, the Plans, which include all maps, plates, blue prints, and other drawings and printed or written explanatory matter thereof, the Specifications and contract documents therefore as prepared by City of Lowell, Transportation Engineer herein entitled "Engineer", and as herein enumerated all of which are made a part hereof and collectively evidence and constitute the contract.

The Contractor hereby agrees to commence work under this Contract on or before a date to be specified in a written "Notice to Proceed" of the OWNER and to fully complete the project **120** consecutive calendar days thereafter.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, subject to additions and deductions, as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Paragraph 25, "Progress Payments", of the General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in five (5) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

ATTEST:

_____	CITY OF LOWELL, MASSACHUSETTS
Secretary	
_____	BY_____
Witness	City Manager, Kevin J. Murphy
_____	_____
Secretary	Contractor
_____	BY_____
	Witness
	_____
	Address
	_____
	_____

APPROVED AS TO FORM

_____	BY_____
City Solicitor	Tom Bellegarde, Asst. City Manager/ Commissioner of Public Works

APPROVED AS TO AVAILABILITY OF FUNDS

_____

City Auditor

X (1) Strike out inapplicable terms. Secretary of the OWNER should attest. If Contractor is corporation, Secretary should attest. Give proper title of each person executing Contract.

PERFORMANCE BOND

2016 TRAFFIC SIGNAL EQUIPMENT

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

_____a_____
(Corporation, Partnership or Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____

hereinafter called the "Surety", are held and firmly bound unto the Department of Public
(Owner)
Works of the City of Lowell, Massachusetts, hereinafter called "Owner", in the penal sum
(City) (State)
of _____
Dollars ($_____) 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 _____, 20___, a copy of which is hereto attached and made a part hereof for the construction of:

_____

_____

_____

_____

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, and make at its own cost and expense any and all defects and deficiencies in materials or workmanship which may appear in the work provided for in said contract within the period

of one year from the date of approval and acceptance of all work under said contract, 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 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 the contract or to the work or to the specifications.

AND PROVIDED, however, that the Surety and Sureties, for value received, hereby stipulate and agree to fully perform and complete the work mentioned and described in said contract and specifications, or cause said work to be performed and completed pursuant to the terms, conditions, and covenants thereof, it for any cause, said Principal fails or neglects to fully perform and complete said work; and the Surety or Sureties further agree to commence said work of completion or cause said work of completion to commence within twenty (20) days of notice thereof from the Owner and to complete same or cause same to be completed within (20) days of the time allowed, said Principal, in said contract and specifications for the completion of said work.

AND PROVIDED, THAT THE SAID Surety and Sureties, for value received hereby further stipulate that should the Principal for any reason terminate the Contract and have the Contract terminated, the Owner shall have the right to complete the Contract under the direction of its own Engineer with all rules, regulations, clauses, etc., of the original Contract and specification in full effect.

AND FURTHER PROVIDED, that no suit, action or proceeding by reason of any default whatever shall be brought on this bond after twenty-four (24) months from the date on which the final payment under the contract falls due.

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

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the _____day of _____ 20____.

ATTEST:

_____	_____
(Principal Secretary)	(Principal)
(SEAL)	By_____(S)
_____	_____
(Witness as to Principal)	(Address-zip Code)
	_____
	(Address-zip Code)

ATTEST:

_____
(Surety) Secretary

(SEAL)

_____
(Surety)

By_____
(Attorney-in-Fact)

_____
(Witness as to Surety)

_____
(Address-zip Code)

_____
(Address-zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond.

PAYMENT BOND

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

_____ a _____
(Corporation, Partnership or Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____

hereinafter called the "Surety", are held and firmly bound unto the Department of Public
_____(Owner)
Works of the City of Lowell, Massachusetts, hereinafter called "Owner", in the penal
(City) (State)
sum of _____

_____Dollars ($_____)

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 _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

2016 TRAFFIC SIGNAL EQUIPMENT

NOW, THEREFORE, if the Principal promptly make payment to all persons, firms, sub-contractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all telephone, electric, water or other utility service, or rental of equipment directly applicable to the contract, and all insurance premiums on said work, and for all labor, 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 the Contract or to the work or to the specifications.

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

PROVIDED, FURTHER, that the above name Principal, and Surety hereby jointly and severally agree with the Owner that every claimant who has not been paid in full may sue in this bond for the use of such claimant in the name of the Owner, prosecute the suit to final judgement for such sum or sums as may be justly due claimant, and have execution thereon, provided, however, that the Owner shall not be liable for payment of any costs or expenses of any such suit.

PROVIDED, FURTHER, that no suit, action shall be commenced hereunder by any claimant as follows:

A. After the expiration of two (2) years following the date on which Principal ceased work on said CONTRACT.

B. Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated and not elsewhere.

PROVIDED, FURTHER, that the amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed or recorded against such improvement, whether or not claim for the amount of such lien be presented under and against this bond.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the _____day of _____
20___.

ATTEST:

_____	_____
(Principal Secretary)	(Principal)
(SEAL)	By_____(S)
_____	_____
(Witness as to Principal)	(Address-zip Code)
	_____
	(Address-zip Code)

ATTEST:

_____
(Surety) Secretary

(SEAL)

_____
(Surety)

By_____
(Attorney-in-Fact)

_____
(Witness as to Surety)

_____
(Address-zip Code)

_____
(Address-zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond.

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned

the duly authorized and acting legal representative, of the City of Lowell, Massachusetts, do hereby certify as follows:

I have examined the foregoing Contract and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations and provisions thereof.

_____

Date:_____

CONTRACT

GENERAL CONDITIONS

SUBSECTION

1. Definitions
2. Notice
3. Intent
4. Codes, Regulations and Issue Date of Standard Specifications
5. Drawings and Specifications
6. Conflicting Conditions
7. Samples
8. Quality of Equipment and Materials
9. Shop Drawings
10. Equipment and Material Approval
11. Rejected Work and Materials
12. Separate Contracts
13. Rights of Various Interests
14. Notice to Proceed
15. Time for Completion and Liquidated Damages
16. The Contractor's Duties and Rights
17. The Engineer's Authority
18. The Owner's Duties and Rights
19. Assignment

20. Oral Agreements
21. Insurance
22. Contract Security
23. Extra Work
24. Extension of Contract Time
25. Progress Payments
26. Acceptance and Final Payment
27. Correction of Faulty Work After Final Payment
28. Substitutions and Deletions
29. Provisions Required by Law Deemed Inserted
30. Protection of Lives and Health
31. Obstructions Encountered
32. Standard Specifications

GENERAL CONDITIONS

1. DEFINITIONS

1. CONTRACT AND CONTRACT DOCUMENTS

The Contract comprises the following documents, including all additions, deletions and modifications incorporated therein before the execution of the Contract:

a. Legal and Procedural Documents

1) Advertisement for Bids
2) Information for Bidders
3) Bid Proposal
4) Certifications of Bidders
5) Contract Agreement
6) Performance Bond
7) Payment Bond
8) Certificate of OWNER'S Attorney
9) Form for Sub-bid (when required)

b. General Conditions
c. Special Conditions
d. Technical Specifications, Drawings, and Addenda as enumerated in the Special Conditions

2. ENGINEER: City of Lowell, Transportation Engineer or his designated representative.

3. STATE: The Commonwealth of Massachusetts

4. OWNER, AWARDING AUTHORITY OR MUNICIPALITY: The party of the first part designated in the Contract or any board, officer or agent duly authorized to act for the said party of the first part in the matter covered by the Contract. The OWNER is the City of Lowell, acting through its Commissioner of the Department of Public Works.

5. CONTRACTOR: The General Contractor, and is the CONTRACTOR, and is the CONTRACTOR named in the Contract Documents.

6. SUBCONTRACTOR: Any person, firm or corporation with a direct contract with the CONTRACTOR who acts for or in behalf of the CONTRACTOR in executing any part of the Contract, but does not include one who merely furnishes material.

7. WORK ON (AT) THE PROJECT: Work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the CONTRACTOR and any Subcontractor.

8. DIRECTED, REQUIRED APPROVED, ACCEPTABLE: Whenever they refer to the work or its performance, “Directed”, “Required”, “Permitted”, “Ordered”, “Designated”, “Prescribed” and words of like import shall imply the direction, requirement, permission, order, designation or prescription of the ENGINEER, and “Approved”, “Acceptable”, “Satisfactory”, “In the Judgement of” and words of like import shall mean approval by, or acceptable to, or satisfactory to or in the judgement of the ENGINEER.

9. PROPOSAL: The offer of a bidder to perform the work described by the Contract Documents when made out and submitted on the prescribed form properly signed and guaranteed.

10. PROPOSAL GUARANTEE: The bid deposit accompanying the proposal submitted by the bidder, as a guaranty that the bidder will enter into a Contract with the OWNER for the construction of the work if the Contract is awarded to him.

11. CONTRACT: The agreement covering the performance of the work described in the Contract Documents and Plans including all supplemental agreements thereto and all general and special provisions pertaining to the work or materials therefor.

12. PERFORMANCE AND PAYMENT BONDS: the approved forms of security furnished by the CONTRACTOR and his Surety as a guaranty of good faith on the part of the CONTRACTOR to execute the work in accordance with the terms of the Contract.

13. SURETY: The person, firm or corporation who executes the CONTRACTOR’S Performance and Payment Bonds.

14. SPECIFICATIONS: The Legal and Procedural Documents, General Conditions, Special Conditions and Technical Specifications with all addenda thereto.

15. DRAWINGS: Those listed herein in the Special Conditions.

16. PROVIDE: Furnish and install.

17. SHOP DRAWINGS: Fabrication and erection drawings and instructions.

18. ACT OF GOD: An earthquake, flood, cyclone, or other cataclysmic phenomenon of nature. Rain, wind, flood, or other natural phenomenon of normal intensity for the locality shall not be construed as and Act of God and no reparation shall be made to the CONTRACTOR for damages to the work resulting therefrom.

19. EXTRA WORK: Work other than that required either expressed or implied by the Contract in its present form.

20. SITE: The area upon or in which the CONTRACTOR’S operations are carried on and such other areas adjacent thereto as may be designated as such by the ENGINEER.

21. CHANGE ORDER: A written order issued by the ENGINEER to the CONTRACTOR directing certain changes, additions, or reductions in the work or in the materials or methods to be used.

2. NOTICE

Written notice shall be considered as served when delivered in person or sent by certified mail to the individual, firm or corporation or to the last business address known to him who serves the Notice. It shall be the duty of each party to advise the other parties to the Contract as to any change in his business address until completion of the Contract.

3. INTENT

1. The intent of the Contract Documents is that the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

2. Any work performed after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the OWNER.

4. CODES, REGULATIONS AND ISSUE DATE OF STANDARD SPECIFICATIONS.

1. Where standard specifications, codes, regulations and similar publications of governmental agencies, technical societies, manufacturer's associations and regulatory groups or bureaus are referred to in these specifications, the applicable portion thereof shall be of the same effect as if fully printed herein, and the work done in full accordance therewith. The edition current as of the date of issue of this specification shall be used except where publication date is specifically stated.

5. DRAWINGS AND SPECIFICATIONS

1. Except as provided for otherwise, all required copies of Drawings and Specifications necessary for the execution of the work shall be furnished to the CONTRACTOR without charge. One complete set of all Drawings and Specifications shall be maintained at the job site and shall be available to the ENGINEER at all times.

2. All Drawings and Specifications and other data prepared by the ENGINEER shall remain the property of the ENGINEER, and they shall not be re-used on other work.

3. Figured dimensions on the Plans will be used in preference to scaling the Drawings. Where the work of the CONTRACTOR is affected by finish dimensions, these shall be determined by the CONTRACTOR at the site, and he shall assume the responsibility therefor.

4. Any discrepancies found between the Drawings and Specifications and site conditions of any errors or omissions in the Drawings and Specifications shall be

immediately reported to the ENGINEER, who shall promptly correct such error or omission in writing. Any work done by the CONTRACTOR after his discovery of such discrepancies, errors or omissions without notifying the ENGINEER shall be done at the CONTRACTOR'S risk.

6. CONFLICTING CONDITIONS

1. Anything shown on any plans and not mentioned in the Specifications, or mentioned in the Specifications and not shown on the Plans, shall have the same effect as if shown or mentioned respectively on both. On the Plans, the dimensions shown shall govern in case of any discrepancy between a scaled distance and the figures shown. Either party shall take advantage of any obvious error or omission in the contract documents. Any apparent discrepancies shall be submitted to the ENGINEER for determination. The decision of the ENGINEER thereupon shall be conclusive.

2. The fact that specific mention of a fixture, or any part of the work is omitted in the Specifications, whether intentionally or otherwise, when the same is clearly shown or indicated on the Plans, or is usually and customarily required to complete fully such work as is specified herein, will not entitle the CONTRACTOR to consider action in the manner of any claim for extra compensation, but the same fixtures or work, or both, must be installed or done the same as if called for by both the Plans and Specifications.

7. SAMPLES

All samples called for in the Specifications or required by the ENGINEER shall be furnished by the CONTRACTOR at his expense and shall be submitted to the ENGINEER for his approval. Samples shall be furnished so as not to delay fabrication, allowing the ENGINEER reasonable time for the consideration of the samples submitted. CONTRACTOR shall furnish such samples of materials, and workmanship shall be in accordance with approved samples.

8. QUALITY OF EQUIPMENT AND MATERIALS

1. Everything furnished and provided shall be new and all materials and equipment shall be of the quality specified. All unspecified materials and equipment shall be equal in grade and quality to specified materials.

2. In order to establish standards of quality, ENGINEER has, in the detailed Specifications, referred to certain products by name and catalog number. This procedure is not to be construed as eliminating from competition other products of equal or better quality by other manufacturers where fully suitable in design.

3. The CONTRACTOR shall furnish one complete list of proposed desired substitutions prior to signing of the Contract, together with such engineering catalog data and sketches the ENGINEER may require.

4. The CONTRACTOR shall abide by the ENGINEER'S judgement when proposed substitute materials or items or equipment are judged to be unacceptable and shall furnish the specified materials or item of equipment in such cases. All proposals for

substitutions shall be submitted in writing by the General CONTRACTOR and not by individual trades or material suppliers. The ENGINEER will approve or disapprove proposed substitutions in writing within a reasonable time. No substitute materials shall be used unless approved in writing.

9. SHOP DRAWINGS

1. The Contractor shall submit shop drawings and working drawings for all items fabricated or manufactured to be incorporated into the work, including but not limited to concrete reinforcement, structural details, piping layouts (including hangers and supports), manholes and appurtenances, wiring, materials fabricated especially for the Contract, all mechanical equipment without exception, and materials and equipment for which such drawings are specifically requested. All submittal of shop drawings will consist of six (6) BLACK LINE prints and one transparent ozalid.

2. Such Drawings shall show the principal dimensions, weight structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the Drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the Drawings shall be certified by the manufacturer or fabricator as correct for the Contract.

3. When so specified or if considered by the ENGINEER to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted for approval in place of shop and working drawings. In such case the requirements shall be as specified for shop and working drawings, insofar as applicable.

4. The CONTRACTOR shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

5. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and approved as conforming to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the work shall then be as shown on and represented by said drawings.

6. Until the necessary approval has been given, the CONTRACTOR shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which approval is required.

7. All shop and working drawings shall be submitted to the ENGINEER by and /or through the CONTRACTOR, who shall be responsible for obtaining shop and working drawings from drawings from his subcontractors and returning approved drawings to them. All drawings shall be clearly marked with the names of the OWNER, CONTRACTOR, and building, equipment, or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above.

8. Only drawings which have been checked and corrected by the fabricator should be submitted to the CONTRACTOR by his subcontractors and vendors. Prior to submitting drawings to the ENGINEER, the CONTRACTOR shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. ALL DRAWINGS WHICH ARE CORRECT SHALL BE MARKED WITH THE DATE, CHECKER'S NAME AND SUBMITTED TO THE ENGINEER: OTHER DRAWINGS SHALL BE RETURNED FOR CORRECTION.

9. The approval of shop and working drawings, etc., will be general only and shall not relieve or in any respect diminish the responsibility of the CONTRACTOR for details of design, dimensions etc., necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.

10. Should the CONTRACTOR submit for approval equipment that requires modifications to the structures, piping, layout, etc., detailed on the Drawings, he shall also submit for approval details of the proposed modifications. Any modifications to structures or substitute designs submitted for approval must carry the stamp of a Registered Professional ENGINEER with the State. If such equipment and modifications are approved, the CONTRACTOR, at no additional cost to the OWNER, shall do all work necessary to make such modifications.

11. One marked-up transparent ozalid copy of the shop and working drawings or two marked-up copies of catalog cuts will be returned to the CONTRACTOR. The CONTRACTOR shall furnish additional copies of such drawings or catalog cuts when so requested.

10. EQUIPMENT AND MATERIAL APPROVAL

1. As soon as practical and within fifteen (15) days after date of award of Contract and before any materials, fixtures or equipment are purchased, the CONTRACTOR shall furnish three copies of complete catalog data for every manufactured item of equipment and all components to be used in the work, including specific performance data, material description, rating, capacity, working pressure and general type. This submittal shall be compiled by the CONTRACTOR and approved by the ENGINEER before any of the equipment is ordered. Each data sheet or catalog in the submittal shall be indexed according to specifications section and paragraph for easy reference.

2. If prior to the expiration of the above specified period or of any authorized extension thereof, the CONTRACTOR fails to submit a list of materials, fixtures and equipment as specified above, the selection made by the ENGINEER shall be final and binding and all items shall be furnished and installed by the CONTRACTOR without change in contract price or time of completion.

3. Where conformance to any standard is specified, the catalog data for that item shall state that the item conforms to that standard; or after the ENGINEER'S approval of the item subject to conformance to the standard, the CONTRACTOR shall furnish a notarized affidavit on the manufacturer's letterhead signed by an officer certifying compliance to the standard. The CONTRACTOR shall stamp all such affidavits by which it is understood that the item certified is the item provided.

4. The name and address of and organization authorized by the manufacturer to service each item of equipment shall be included with the submittal. Proof of authorization shall be furnished on request. If the ENGINEER decides that the service organization is too far distant for practical servicing, such equipment shall be rejected.

5. After written approval, this submission shall become a part of the Contract, and may not be deviated from except upon written approval of the ENGINEER.

6. Catalog data for equipment approved by the ENGINEER does not in any case supersede the ENGINEER'S Contract Documents. The approval of the ENGINEER shall not relieve the CONTRACTOR from responsibility for deviations from Drawings or Specifications unless he has in writing called to the ENGINEER'S attention such deviations at the time of submission, nor shall it relieve him from responsibility for errors of any in the items submitted. The CONTRACTOR shall check the work described by the catalog data with the ENGINEER'S Contract Documents for deviations and errors.

7. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available. He shall make necessary field measurements to ascertain space requirements, including those for connections, and shall order such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the Drawings and Specifications.

8. Where equipment requiring different arrangement of connections from those shown is approved, it shall be the responsibility of the CONTRACTOR to install the equipment to operate properly and in harmony with the intent of the Drawings and Specifications, and to make all changes in the work required by the different arrangement of connections.

9. Manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer unless herein specified to the contrary.

10. After the execution of the Contract, substitution of equipment of makes other than those named in the Contract will be considered only if the equipment proposed for substitution is equal in construction and/or efficiency to that named in the Contract. It will be assumed that the cost to the CONTRACTOR of the equipment proposed to be substituted is less than the equipment named in the Contract and if the substitution is approved, the Contract Price shall be reduced a corresponding amount.

To receive consideration, requests for substitution must be accompanied by documentary proof of the actual difference in cost to the CONTRACTOR in the form of certified copies of equipment company's quotation to the CONTRACTOR covering the original equipment and also equipment proposed for substitution or other proof satisfactory to the OWNER. It is the intention that the OWNER shall receive the full benefit of the savings in cost involved in any substitution. In all cases the burden of proof that the equipment offered for substitution is equal or superior in construction and/or efficiency to that named in the Contract shall rest on the CONTRACTOR, and unless the proof is satisfactory to the OWNER, the substitution will not be approved. Requests for substitution on the grounds that better delivery can be obtained on the equipment proposed for

substitution will not be approved for it will be assured that the CONTRACTOR in his proposal has named equipment on which he has received proposals from equipment manufacturers giving a delivery time which will permit completion of the project within the contract time. Requests for substitution of equipment which the CONTRACTOR can not prove to the satisfaction of the OWNER to be equal or superior in construction and/or efficiency to that so named in the Contract will not be approved.

In the event that the CONTRACTOR obtains the ENGINEER'S approval on equipment other than that which is shown on the Plans and specified herein, the CONTRACTOR shall, at his own expense, make any changes in the structures, buildings or piping necessary to accommodate the equipment.

11. REJECTED WORK AND MATERIALS

1. All materials which do not conform to the requirements of the Contract Documents, are not equal to samples approved by the ENGINEER, or are in any way unsatisfactory or unsuitable for the purpose for which they are intended, shall be rejected. Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, shall be removed within ten (10) days after written notice is given by the ENGINEER, and the work shall be re-executed by the CONTRACTOR. The fact that such defective work may not have been reported on previous inspections shall not constitute an acceptance of any part of it.

2. Should the CONTRACTOR fail to remove rejected work or materials within ten (10) days after written notice to do so, the OWNER may remove the rejected work and then may store the materials.

3. The removal of rejected work or materials and storage of materials by the OWNER shall be paid for by the CONTRACTOR within thirty (30) days after the written notice to pay is given by the OWNER. If the CONTRACTOR does not pay the expense of such removal and after ten (10) days written notice being given by the OWNER of his intent to sell the materials, the OWNER may sell the materials at auction or at a private sale and shall pay to the CONTRACTOR the net proceeds therefrom after deducting all the costs and expenses that should have been borne by the CONTRACTOR.

12. SEPARATE CONTRACTS

The OWNER may let other contracts in connection with the work of the CONTRACTOR. The Contractor shall cooperate with other CONTRACTORS with regard to storage of materials and execution of their work. It shall be the CONTRACTOR'S responsibility to inspect all work by other CONTRACTORS affecting his work and to report to the ENGINEER any irregularities which will not permit him to complete his work in a satisfactory manner. His failure to notify the ENGINEER of such irregularities shall indicate the work of other CONTRACTORS has been satisfactorily completed to receive his work. The CONTRACTOR shall not be responsible for defects of which he could not have known which develop in the work of others after the work is completed. It shall be the responsibility of the CONTRACTOR to measure the completed work in place and report to the ENGINEER immediately any difference between completed work by others and the Drawings.

13. RIGHTS OF VARIOUS INTERESTS

Whenever work being done by the OWNER'S forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the ENGINEER, to secure the completion of the various portions of the work in general harmony.

14. NOTICE TO PROCEED

Following the execution of the Contract by the OWNER, Written Notice to Proceed with the work shall be given to the CONTRACTOR. Computation of Contract Time shall commence on a date to be specified in the Notice to Proceed and every calendar day following, except as herein provided, shall be counted in the time for completion.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

1. It is hereby understood and mutually agreed by and between the CONTRACTOR and the OWNER, that the date of beginning and the time for completion as specified in the Information to Bidders of the Work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall commence on a date to be specified in the "NOTICE TO PROCEED".

2. The CONTRACTOR agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

3. If the said CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extensions 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 information for Bidders, 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.

4. 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 periodic estimates.

5. It is further agreed that time is of the essence of each and every portion of this Contract and of the specifications wherein a definite and certain length of time is fixed for

the performance of any act whatsoever; and where under the Contract and 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 or 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;

(a) To any preference, priority or allocation order duly issued by the Government;

(b) 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.

6. The CONTRACTOR shall begin within ten (10) days from the beginning of any 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.

16. THE CONTRACTOR'S DUTIES AND RIGHTS

1. The CONTRACTOR shall begin and shall prosecute the work regularly and uninterruptedly after Notice to Proceed has been given (unless otherwise directed in writing by the OWNER) with such force as to secure the completion of the work, in and acceptable manner, within the time stated in the Proposal.

2. The CONTRACTOR shall submit at such times as may reasonably be requested by the ENGINEER, schedules which shall show the order in which the CONTRACTOR proposes to carry on the work, with dates at which the CONTRACTOR will start the several parts of the work, and estimated dates of completion of the several parts.

3. On Lump Sum Contracts the CONTRACTOR shall within ten (10) days of receipt of Notice to Proceed, submit a complete breakdown of the Contract Amount showing the value assigned to each part of the work, including an allowance for profit and overhead. Upon approval of the breakdown of the Contract Amount by the Engineer, it shall be used as the basis for all Requests for Payments.

4. The CONTRACTOR shall utilize the services of specialty subcontractors on those parts of the work which under normal contracting practices are performed by specialty subcontractors; provided that if the ENGINEER shall determine that the specialty work in question has been customarily performed by the CONTRACTOR'S own organization and that such organization is presently competent to perform such work, the CONTRACTOR shall be permitted to do so; provided further that, if the ENGINEER shall determine that the performance of any specialty work by specialty subcontractors will result in materially increased costs or inordinate delays, the requirements of this paragraph shall not apply. At

the time specified by the Contract Documents or when requested by the ENGINEER, the CONTRACTOR shall submit in writing to the OWNER for the ENGINEER, the names of the subcontractors proposed for the work. Subcontractors may not be changed except at the request of the CONTRACTOR with the approval of the ENGINEER. The CONTRACTOR is responsible to the OWNER for the acts and omissions of his subcontractors, and of their direct and indirect employees to the same extent as he is responsible for the acts and omissions of his employees. The Contract Documents shall not be construed as creating any contractual relation between any subcontractor and the OWNER. The CONTRACTOR shall bind every subcontractor by the terms of the Contract Documents. For convenience of reference the Specifications are separated into titled sections. Such separations shall not, however, operate to make the ENGINEER an arbiter to establish limits to the contracts between CONTRACTOR and Subcontractors.

The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the CONTRACTOR by the terms of the Contract Documents insofar as applicable to the work of subcontractors and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the Contract Documents.

5. The CONTRACTOR shall develop and make all detail surveys necessary for construction, including slope stakes, batter boards, stakes for pile locations and other working points, lines and elevations. The ENGINEER will establish reference base lines and bench marks for the use of the CONTRACTOR in laying out the work. The CONTRACTOR shall be responsible for the accuracy of all lines and levels and of the work as built in accordance therewith. The CONTRACTOR shall have the responsibility to carefully preserve bench marks, reference points and stakes established by the ENGINEER and in the case of destruction thereof by the CONTRACTOR or resulting from his negligence, resulting therefrom and shall be responsible for any mistakes that may be caused by the unnecessary loss or disturbance of such bench marks, reference points and stakes.

6. The CONTRACTOR, if required, shall employ at his own expense a competent surveyor or engineer registered in the STATE as a Professional Engineer or Land Surveyor, and necessary assistants who shall stake out all structures and other parts of the work, using as reference the base lines and bench marks established by the ENGINEER. The CONTRACTOR shall be responsible for the accuracy of all levels of the work as built in accordance therewith.

7. The CONTRACTOR shall secure and pay for all permits and licenses necessary for the prosecution of the work.

8. The CONTRACTOR shall give all notices and comply with all Federal, State and Local laws, or ordinances and regulations in any manner affecting the conduct of the work, and all such orders and decrees as exist, or may be enacted by bodies or tribunals having any jurisdiction or authority over the work, and shall indemnify and save harmless the OWNER against any claim or liability arising from or based on, the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employee.

9. The CONTRACTOR shall pay all royalties and license fees for any design, device, material or process covered by letters, patent or copyright by legal agreement with

the owner of the patent or a duly authorized licensee of such owner, and shall save harmless the OWNER from any and all loss or expense on account thereof, including its use by the OWNER.

10. The CONTRACTOR shall confine his apparatus and storage of materials and operation of his workmen to those areas described in the Drawings and Specifications and such additional areas which he may provide as approved by the ENGINEER.

11. The CONTRACTOR shall not enter upon private property for any purpose without obtaining permission, and he shall be responsible for the preservation of all public property, trees, monuments, etc., along and adjacent to the street and/or right -of-way, and shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precautions to prevent damage to pipes, conduits, and other underground structures, and shall protect carefully from disturbance or damage all monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.

12. The CONTRACTOR shall provide adequate signs, barricades, red lights and watchman and take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be protected at night by red signal lights which shall be of substantial construction and shall be painted white or whitewashed to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades, or detours exist.

13. The CONTRACTOR shall conduct his work at all times to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to ensure the protection of persons and property in a manner satisfactory to the ENGINEER. No road or street shall be closed to the public except with the permission of the ENGINEER and proper governmental authority. Fire hydrants on or adjacent to the work shall be kept accessible to fire fighting equipment at all times. Temporary provisions shall be made by the CONTRACTOR to ensure the use of sidewalks and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the ENGINEER.

14. The CONTRACTOR shall secure written permission from the proper authority before executing new construction when such new construction crosses highways, railroad, streets or utilities under jurisdiction of State, County, or other public agency, public utility or private entity. A copy of this written permission must be filed with the ENGINEER or OWNER before any work is done.

The CONTRACTOR will be required to furnish a release from the proper authority before final acceptance of the work.

15. The CONTRACTOR shall provide and maintain such sanitary accommodations for the use of his employees and those of his subcontractors as may be necessary to comply with the requirements and regulations of the Local and State Departments of Health and as directed by the ENGINEER.

16. The CONTRACTOR shall maintain on the work a qualified superintendent who is acceptable to the ENGINEER, and who shall give efficient supervision to the work until its completion. The Superintendent shall have full authority to act in behalf of the CONTRACTOR, and all directions given to the Superintendent shall be considered given to the CONTRACTOR. In general, the ENGINEER'S instructions shall be confirmed in writing and always upon written request from the CONTRACTOR.

17. The CONTRACTOR shall be responsible for the conduct and discipline of his employees and/or any subcontractor or persons employed by subcontractors. All workmen must have sufficient knowledge, skill, and experience to perform properly the work assigned to them. Any foreman or workman employed by the CONTRACTOR or subcontractor who, in the opinion of the ENGINEER, does not perform his work, in a skillful manner or appears to be incompetent or to act in a disorderly or intemperate manner shall, at the written request of the ENGINEER, be discharged immediately and shall not be employed again in any portion of the work without approval of the ENGINEER.

18. The CONTRACTOR shall provide suitable on-site storage for all equipment and materials necessary for use in construction of the project. All materials improperly stored shall be subject to rejection by the ENGINEER. Private property shall not be used for storage purposes without the written permission of the owner or lessee.

19. The CONTRACTOR shall perform any work and shall furnish and install any materials and equipment necessary during an emergency endangering life or property. In all cases he shall notify the ENGINEER of the emergency as soon as practical but he shall not wait for instructions before proceeding to properly protect both life and property.

20. The CONTRACTOR shall do all necessary cutting and patching of the work that may be required to properly receive the work of the various trades or as required by the Drawings and Specifications to complete the structure. He shall restore all such cuts or patch work as directed by the ENGINEER. Cutting of existing structures that shall endanger the work, adjacent property, workmen or the public shall not be done unless approved by the ENGINEER and under his direction.

21. The CONTRACTOR shall keep the OWNER'S property free at all times from accumulations of waste materials or rubbish and shall remove from the OWNER'S property, and from all public and private property, all temporary structures, rubbish, and waste materials resulting from his operation or caused by his employees, and remove all surplus materials resulting from his operation or caused by his employees, leaving the site smooth, clean and true to line and grade.

22. The CONTRACTOR shall pay for all transportation and utility services not later than the twentieth day of the calendar month following that in which such services are rendered; pay for all materials, tools and other expendable equipment to the extent of 90 percent of the cost thereof, not later than the twentieth day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the thirtieth day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used; and pay to each of his subcontractors not later than the fifth day following each payment to

the CONTRACTOR, the respective amounts allowed to CONTRACTOR on account of the work performed by his subcontractors, to the extent of each subcontractor's interest therein.

23. The CONTRACTOR shall at the termination of this Contract before acceptance of the work by the ENGINEER, remove all his equipment, tools and supplies from the property of the OWNER. Should the CONTRACTOR fail to remove such equipment, tools and supplies, the OWNER shall have the right to remove them, and the CONTRACTOR shall pay all costs incurred by the OWNER in removing them.

24. The CONTRACTOR shall deliver to the OWNER a complete release of all liens arising out of this Contract before the retained percentage or before the final Request for Payment is paid. If any lien remains unsatisfied after all payments are made, the CONTRACTOR shall refund to the OWNER such amounts as the OWNER may have been compelled to pay in discharging such liens including all costs and a reasonable attorney's fee.

25. The CONTRACTOR shall warrant all material and equipment furnished and work performed by him for a period of one year from the date of written acceptance of the work, and furnish all guarantees applicable to definite parts of the work as stipulated in the sections of the Technical Provisions.

26. The CONTRACTOR shall have the right to suspend work or terminate the Contract upon ten (10) days written notice to the OWNER and the ENGINEER, for any of the following reasons:

a. If an order of any court, or other public authority caused the work to be stopped or suspended for a period of ninety (90) days through no act of the CONTRACTOR or his employees.

b. If the ENGINEER should fail to act upon any Request for Payment within fifteen (15) days after it is presented in accordance with the General Conditions of the Contract.

c. If the OWNER should fail to act upon any Request for Payment within thirty (30) days after its approval by the ENGINEER.

27. The CONTRACTOR shall comply with State and Local regulations pertaining to trench excavation, specifically MGL c. 82A

28. When a set of drawings has been produced for a job the CONTRACTOR shall maintain at the site a set of the drawings. On this set shall be accurately shown the actual installation of all work under each section, indicating thereon any variations from the Contract Drawings, including changes in sites, locations and dimensions. For this purpose the ENGINEER will furnish two sets of black or blue line on white drawings. At the conclusion of the work, both sets of prints showing the entire work as actually installed shall be delivered to the ENGINEER for approval and shall become property of the OWNER.

17. THE ENGINEER'S AUTHORITY

1. The ENGINEER shall have general supervision and direction of the work. The ENGINEER shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, rate of progress of work, interpretation of Drawings and Specifications and all questions as to the acceptable fulfillment of the Contract on the part of CONTRACTOR. All claims of the OWNER or the CONTRACTOR shall be presented to the ENGINEER for decision which shall be made in writing within a reasonable time. All decisions of the ENGINEER shall be final.

2. The ENGINEER shall have the authority to suspend the work, wholly or in part, for such period or periods, as he may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for prosecution of the work, or failure on the part of the CONTRACTOR to carry out the provisions of the Contract or to supply materials meeting the requirements of the Specifications. The CONTRACTOR shall not suspend operations due to unsuitable weather without the ENGINEER'S permission.

3. In the event of temporary suspension of work or during inclement weather or whenever the ENGINEER shall direct, the CONTRACTOR will and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the ENGINEER, any work or materials shall have been damaged or injured from the weather, by reason of failure on the part of the CONTRACTOR or any of his subcontractors so to protect his work, such materials shall be removed and replaced at the expense of the CONTRACTOR.

4. The ENGINEER shall have the authority at all times to inspect all materials and each part or detail of the work and the CONTRACTOR will be held strictly to the true intent of the Specifications in regard to quality of materials, workmanship and the diligent execution of the Contract. Such inspection may include mill, plant or shop inspection, and any material furnished under these Specifications is subject to such inspections. The ENGINEER shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the CONTRACTOR as is required to make a complete detailed inspection.

5. The ENGINEER shall have the authority at any time before acceptance of the work to direct the CONTRACTOR to remove or uncover any portions of the finished work. After examination, the CONTRACTOR shall restore said portions of the work to the standard required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work, but should the work so exposed or examined prove unacceptable, the uncovering, removing and replacing shall be at the CONTRACTOR'S expense.

6. The ENGINEER shall have the authority to direct the CONTRACTOR to correct work that has been damaged or that was not performed in accordance with the Contract Documents. An equitable deduction from the Contract Amount shall be made to compensate the OWNER from the uncorrected work.

18. THE OWNER'S DUTIES AND RIGHTS

1. The OWNER will provide the land shown on the Drawings upon which the work under the Contract is to be performed and to be used for rights-of-way for access. Any delay in furnishing these lands by the OWNER shall be deemed proper cause for adjustment in the Contract Amount and in time of completion.

2. The OWNER shall have the right to suspend the work or any portion thereof at any time provided that he gives the CONTRACTOR five (5) days written notice of suspension which shall set forth the date on which work is to be resumed. The CONTRACTOR shall resume the work upon written notice from the OWNER and within ten (10) days after the date set forth in the notice of suspension, the CONTRACTOR may abandon that portion of the work so suspended and shall be entitled to payment for all work done on the portions so abandoned, plus 15 percent of the value of the abandoned work to compensate for overhead, plant expense, and anticipated profit.

3. The OWNER, acting upon the recommendation of its ENGINEER, shall have the authority to suspend the work wholly or in part, for such period or periods, as may be deemed necessary, due to unsuitable weather, or such other conditions as are considered unfavorably for prosecution of the work, or failure on the part of the CONTRACTOR to carry out the provisions of the Contract or to supply materials meeting the requirements of the Specifications. The CONTRACTOR shall not suspend operations due to unsuitable weather without the OWNER'S permission.

4. In the event of temporary suspension of work or during inclement weather or whenever the OWNER, acting upon the recommendation of the ENGINEER, shall direct, the CONTRACTOR and his subcontractors will protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the OWNER, acting upon the recommendation of the ENGINEER, any work or materials shall have been damaged or injured from the weather, by reason of failure on the part of the CONTRACTOR or any of his subcontractors to protect his work, such materials shall be removed and replaced at the expense of the CONTRACTOR.

5. The OWNER shall have the right to correct any deficiencies, without prejudice to any other remedy he may have, upon failure of the CONTRACTOR to perform the work in accordance with the CONTRACT documents, including any requirements with respect to the Schedule of Completion, after five (5) days written notice to the CONTRACTOR and receipt of written approval from the ENGINEER. The cost of the work so performed by the owner shall be paid for by the CONTRACTOR.

6. The OWNER, acting upon the recommendation of the ENGINEER, shall have the authority to direct the CONTRACTOR not to correct work that has been damaged, or that was not performed in accordance with the Contract Documents. An equitable deduction from the Contract Amount shall be made to compensate the OWNER for the uncorrected work.

7. The OWNER shall have the right to terminate the employment of the CONTRACTOR giving ten (10) days written notice of termination to the CONTRACTOR in the event of any default by the CONTRACTOR and upon receiving written notice from the

ENGINEER certifying cause for such action in the event of such termination, the OWNER may take possession of the work and of all materials, tools and equipment thereon and may finish the work by whatever method and means he may select. It shall be considered a default by the CONTRACTOR whenever he shall:

a.) Declare bankruptcy, become insolvent, or assign his assets for the benefit of his creditors.

b.) Disregard or violate important provisions of the Contract Documents of the ENGINEER'S instructions, or fail to prosecute the work according to the agreed Schedule of Completion including extensions thereof.

c.) Fail to provide a qualified superintendent, competent workmen or subcontractors, or proper materials, or fail to make prompt payment therefor.

If the right of the CONTRACTOR to proceed is so terminated, the OWNER may take possession of and utilize in completing the work such materials, appliances, supplies, plant and equipment as may be on the site of the work, and necessary therefor. Upon termination of the Contract by the OWNER, no further payments shall be due the CONTRACTOR until the work is completed. If the unpaid balance of the Contract Amount shall exceed the cost of completing the work including all overhead costs, the excess shall be paid to the CONTRACTOR.

If the cost of completing the work shall exceed the unpaid balance, the Contractor and his sureties shall pay the difference to the OWNER. The cost incurred by the OWNER, as herein provided, and the damage incurred through the CONTRACTOR'S default, shall be certified by the OWNER, and approved by the ENGINEER.

8. The OWNER shall have the right to order changes in the work through additions, deletions or modifications without invalidating the Contract. Compensation and time completion affected by the change shall be adjusted at the time of ordering such change.

9. The OWNER shall have the right to take possession of and use any completed or partially completed portions of the work, not withstanding that the time for completing the entire work or such portions may not have expired; but such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the completion of uncompleted work or causes refinishing of completed work, the CONTRACTOR shall be to such extra compensation, or extension of time or both, as the ENGINEER may determine.

19. ASSIGNMENT

Neither the CONTRACTOR nor the OWNER shall sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

20. ORAL AGREEMENTS

No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents shall be

held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

21. INSURANCE

1. The CONTRACTOR shall not commence work under this Contract until he has obtained all the insurance required hereunder and such insurance has been approved by the OWNER, nor shall the CONTRACTOR allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved. Approval of the insurance by the OWNER shall not relieve or decrease the liability of the CONTRACTOR hereunder. The amounts of such Insurance shall not be less than those enumerated in the Limits of Insurance Section of the Special Conditions. Certificates from the CONTRACTOR'S insurance, carriers stating the coverage provided, the limits of liability, and expiration dates shall be filed in triplicate with the ENGINEER before operations are begun.

a. Workmen's Compensation and Employer's Liability Insurance:

The CONTRACTOR shall take out and maintain during the life of this Contract, the statutory Workmen's Compensation and Employer's Liability Insurance for all of his employees to be engaged in work on the project under this Contract and in case any such work is sublet the CONTRACTOR shall require the subcontractor similarly to provide Workman's Compensation and Employer's Liability Insurance for all the latter's employees engaged in such work.

b. Bodily Injury Liability and Property Damage Liability Insurance

The CONTRACTOR shall take out and maintain during the life of this Contract such Bodily Injury Liability and Property Damage Liability Insurance and Automobile Bodily Injury Liability Insurance and Automobile Property Damage Liability Insurance as shall protect him and any subcontractor performing work covered by this Contract for claims for damages for personal injury, including accidental death, as well as from claims for property damage, which may arise from operations under this Contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them.

c. Builder's Risk Insurance:

The CONTRACTOR shall procure and maintain during the life of this Contract, fire and extended coverage insurance in an amount equal to the insurable value of the Contract.

d. Contractual Liability Insurance:

The CONTRACTOR shall indemnify and save harmless the OWNER and the ENGINEER and their officers, agents, servants and employees, from and against any and all claims, demands, suits, proceedings, liabilities, judgements, awards, losses, damages, costs and expenses, including attorney's fees, on account of bodily injury, sickness, disease or death sustained by any person or persons or injury or damage to or destruction of any

property, directly or indirectly arising out of, relating to or in connection with the Work, whether or not due or claimed to be due in whole or in part to the active, passive or concurrent negligence or fault of the CONTRACTOR, his officers, agents, servants or employees and/or any other person or persons, and whether or not such claims demands, suits or proceedings are just, unjust, groundless, false or fraudulent; and the CONTRACTOR shall and does hereby assume and agrees to pay for the defense of all such claims, demands, suits and proceedings, provided, however, that the CONTRACTOR shall not be required to indemnify the ENGINEER, his officers, agents, servants or employees, against any such damages, occasioned solely by defects in maps, plans, drawings, designs or specifications prepared, acquired or used by the ENGINEER and/or solely by the negligence or fault of the ENGINEER; and provided further, that the CONTRACTOR shall not be required to indemnify the OWNER, his officers, agents, servants or employees, against any such damages occasioned solely by acts or omissions of the OWNER other than supervisory acts or omissions of the OWNER in connection with the work.

e. Special Coverage Insurance:

1. Hazards resulting from storage and use of explosives and storage of highly flammable liquids shall be covered by riders to the insurance policies or by separate policies.

2. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as and immediate termination thereof.

3. All policies shall be so written that the OWNER will be notified in writing of cancellation or restrictive amendment at least thirty (30) days prior to the effective date of such cancellation or amendment.

Renewal certificates must be furnished by the CONTRACTOR prior to the expiration date of any of the initial insurance.

22. CONTRACT SECURITY

1. The CONTRACTOR shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract and also a labor and materials payment bond in an amount not less than One Hundred Percent (100%) of the Contract price as security for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract.

2. The Sureties of all bonds shall be such surety company or companies as are approved by the OWNER, and are authorized to transact business in the State.

3. If at any time the OWNER, for justifiable cause, shall be or become dissatisfied with any surety or sureties then upon the Performance or Payment Bonds, the CONTRACTOR shall within five (5) days after notice from the OWNER to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such bond shall be paid

by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such and acceptable bond to the OWNER.

23. EXTRA WORK

Payment for extra work shall be governed by Sec. 9.03 of the Standard Specifications.

24. EXTENSION OF CONTRACT TIME

When extra work is ordered at any time during the progress of the work which, in the sole judgement of the ENGINEER, unavoidably increases the time for the completion of the work, an extension of time shall be granted.

A delay beyond the CONTRACTOR'S control occasioned by an Act of God, an act of omission on the part of the OWNER or by strikes, lockouts, fires, etc., may entitle the CONTRACTOR to an extension of time in which to complete the work as determined by the ENGINEER, provided however, that the CONTRACTOR shall immediately give written notice to the ENGINEER of the cause of such delay, together with a statement of the portions of work so delayed. Delays in work for which necessary material has not been received by the CONTRACTOR will not be recognized or allowed until after receipt of such necessary material.

25. PROGRESS PAYMENTS

1. The CONTRACTOR may submit once each month, a Request for Payment for work done. The CONTRACTOR shall submit five (5) original copies of the AIA form G702 and its continuation sheets to request payment. The CONTRACTOR shall furnish the ENGINEER all reasonable facilities required for obtaining the necessary information relative to the progress and execution of the work. Each Request for Payment shall be computed from the work completed on all items listed in the detailed breakdown of Contract Amount, less Five percent (5%) to be retained until final completion and acceptance of the work, and less previous payments.

If the ENGINEER determines that the progress of the Work will be benefitted by the delivery to the site of certain materials and equipment, when available, in advance of actual requirement therefor and if such materials and equipment are delivered and properly stored and protected, the cost to the CONTRACTOR or subcontractor as established, by invoices or other suitable vouchers satisfactory to the ENGINEER, less the retained percentages as above provided, may be included in the progress estimates; provided always that there be duly executed and delivered by the CONTRACTOR to the ENGINEER at the same time a Bill of Sale in form satisfactory to the OWNER, transferring and assigning to the OWNER, full ownership and title to such materials or equipment.

2. Within fifteen (15) days of submission of any Request for Payment by the CONTRACTOR, the ENGINEER shall:

a.) Approve the Request for Payment as submitted, or

b.) Approve such other amount as he shall decide is due to the CONTRACTOR, informing the CONTRACTOR in writing of his reasons for approving the amended amount, or

c.) Withhold the Request for Payment, informing the CONTRACTOR in writing of his reasons for withholding it.

3. Within thirty (30) days from the date of approval of a Request for Payment by the ENGINEER, the OWNER shall:

a.) Pay the Request for Payment as approved, or

b.) Withhold payment in whole or in part on an approved Request for Payment to the extent necessary to protect itself from loss on account of any of the following causes discovered subsequent to approval of Request for Payment by the ENGINEER provided he informs the CONTRACTOR and the ENGINEER in writing of his reasons for withholding payment in whole or in part:

1. Defective Work

2. Evidence indicating the probable filing of claims by other parties against the CONTRACTOR.

3. Failure of the CONTRACTOR to make payments to Subcontractors, material suppliers or labor.

4. Damage to another CONTRACTOR.

26. ACCEPTANCE AND FINAL PAYMENT

When the CONTRACTOR shall have completed the work in accordance with the terms of the Contract Documents, the ENGINEER shall certify his acceptance to the OWNER and his approval of the CONTRACTOR'S final Request for Payment, less any money to be retained for repairs if so specified in the Special Conditions Section of these Specifications, which shall be the Contract Amount plus all approved additions less all approved deductions and less previous payments made. The CONTRACTOR shall furnish evidence that he has fully paid all debts for labor, materials and equipment incurred in connection with the work, following which the OWNER shall accept the work and release the CONTRACTOR except as to the conditions of the Performance Bond, any legal rights of the OWNER, required guarantees, and Corrections of Faulty Work after final payment and shall pay the CONTRACTOR'S final Request for Payment. The CONTRACTOR must allow sufficient time between the time of completion of the work and approval of the final Request for Payment for the ENGINEER to assemble and check the necessary data.

27. CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT

The approval of the Final Request for Payment by the ENGINEER and the making of the final payment by the OWNER to the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for faulty materials or workmanship. The OWNER

shall promptly give notice of faulty materials or workmanship and the CONTRACTOR shall promptly replace any such defects discovered within **one year** from the date of written acceptance of the work. The ENGINEER shall decide all questions arising under this paragraph.

28. SUBSTITUTIONS AND DELETIONS

Substitutions and deletions in the work shall be accomplished by the CONTRACTOR upon written order from the OWNER as approved by the ENGINEER or upon written order from the ENGINEER: which order shall state the reasons for original inclusion and subsequent elimination or substitution for materials, fixtures or equipment; and that the deviation does not materially injure the project as a whole, is in the best interest of the OWNER and is of the same cost and quality as originally specified or giving the amount in dollars of any equitable adjustment to which the parties have agreed.

29. PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forth will be physically amended to make such insertion or correction.

30. PROTECTION OF LIVES AND HEALTH

In order to protect the lives and health of his employees under this Contract, the CONTRACTOR and his Subcontractors shall comply with all pertinent provisions of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in course of employment on work under the Contract. He alone shall be responsible for the safety, efficiency, ad adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation.

31. OBSTRUCTIONS ENCOUNTERED

The Drawings may show certain information which has been obtained by the OWNER regarding the existing structure and various pipe lines and other utilities which exist at the location of the project.

The OWNER expressly disclaims any responsibility for the accuracy or completeness of the information given on the Drawings with regard to existing structures and utilities, and the CONTRACTOR will not be entitled to any extra compensation on account of inaccuracy or incompleteness of such information, said structures and utilities being shown only for the convenience of the CONTRACTOR, who must verify the information to his own satisfaction. The giving of this information upon the Contract Drawings will not relieve the CONTRACTOR of his obligations to support and protect all utilities and other structures

which may be encountered during the construction of the work, and to make good all damages done to such utilities and structures, as provided in these Specifications.

32. STANDARD SPECIFICATIONS

For the purpose of governing the work to be done under this contract, the OWNER has adopted as its Standard Specifications format the "Standard Specifications for Highways, Bridges and Waterways" published by the Commonwealth of Massachusetts, Department of Public Works, dated 1988 including the Supplemental Specifications dated February 25, 2010.

This Standard Specifications shall apply as if reprinted herein except as modified by the General Conditions, Special Conditions and Technical Specifications.

In case of conflict between these documents, the Supplement to Standards and the Special Provisions of these Specifications shall govern.

SPECIAL CONDITIONS

SUBSECTION

1. Enumeration of Plans and Specifications
2. Duration of Contract
3. Inspection
4. Limits for Insurance
5. Traffic Control, Safety Signs, Barricades, Etc.
6. Wheelchair Ramps
7. Qualified Superintendent
8. Scope of Work
9. Delivery and Storage of Materials
10. Material Slips
11. Construction Schedule
12. Money to be Retained for Repairs
13. Price Adjustment for Hot Mix Asphalt (Top & Binder Course)
14. Water Supply for Construction
15. Road Conditions
16. Night Work
17. Sweeping
18. Notifications
19. Communication
20. Owner's Rights
21. Daily Cleanup
22. Schedules
23. Raised Structure Protection
24. Permits
25. Cooperation of the Contractor
26. Buy America Provisions
27. Work in the Immediate Vicinity of Certain Underground Structures and Utility Poles
28. Maintenance of Traffic Signals
29. Fine Tuning, Adjustment and Testing Period
30. Architectural Access Board Tolerances
31. Equipment Available For Use in the Project
32. Prevailing Wage Rates
33. Contractor Evaluation
34. Notice of Intent and Order of Conditions
35. Federal Labor Standards Provisions
36. Certification Regarding Debarment and Suspension

SPECIAL CONDITIONS

1. ENUMERATION OF PLANS AND SPECIFICATIONS

Following are the Plans and Specifications that form a part of this Contract, as set forth in paragraph 1 of the General Conditions.

Project: **2016 TRAFFIC SIGNAL EQUIPMENT**

2. DURATION OF CONTRACT

The contract shall be for **120** days beginning **December 1, 2016** and ending **March 30, 2017**.

3. INSPECTION

The OWNER shall have access and be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials and other relevant data and records whenever these are in progress of preparation. The Contractor shall provide proper and necessary facilities for such access and inspection.

4. LIMITS FOR INSURANCE

The limits for the various types of insurance required under the Insurance Subsection of the General Conditions shall be as follows:

a. For Workman's Compensation, as required by State Statute;

b. Minimum amounts of Public Liability, Bodily Injury Liability and Property Damage Liability Insurance are as follows:

Injury or death of one person:	$500,000.00
Injury to more than one person in a single accident:	$1,000,000.00
Property damage in one accident:	$250,000.00
Property damage in all accidents:	$500,000.00

c. Minimum amounts of Automobile and Truck (Vehicular) Public Liability, Bodily Injury Liability, and Property Damage Liability are as follows:

Injury or death of one person;	$500,000.00
Injury to more than one person in a single accident;	$500,000.00
Property damage in one accident;	$250,000.00

Property damage in all accidents; $500,000.00

d. Builder's Risk Insurance shall be procured and maintained by the Contractor covering loss by fire and extended coverage in the completed value form in the amount of the total insurance value of all structures, materials, and equipment to be built and installed. The policy shall indicate the Owner, the Contractor, and all subcontractors as the named insured with loss payable to the Owner as Trustee, the policy shall provide for a thirty (30) day notice to the Owner of cancellation or restrictive amendment. A copy of the policy shall be furnished to the Owner and a Certificate of Insurance shall be furnished to the Engineer.

The Builder's Risk Insurance shall be obtained before the work is started and shall be maintained until the date of completion of the work as stated in the final estimate, or until the Owner occupies or otherwise takes possession of the project, whichever occurs first.

e. Contractual Liability Insurance covering the liability assumed by the Contractor as outlined under section (d) of the Insurance Section of the General Conditions to the amounts required under Section (b) above.

f. The CONTRACTOR shall have a $2,000,000 insurance umbrella for this contract.

5. TRAFFIC CONTROL, SAFETY SIGNS, BARRICADES, ETC.

The CONTRACTOR shall conduct his operations in a safe manner at all times. The public shall be protected at all times with adequate warning signs, lighted barrels or barricades, warning tapes, etc. around the work area. The cost of providing and maintaining the signs, traffic control, barrels, barricades, etc. shall be included in the unit prices for each bid item.

The CONTRACTOR shall provide temporary safe access for pedestrian and vehicle traffic to adjacent properties at all times. The cost of temporary access shall be included in the CONTRACTOR'S unit prices for each bid item.

When it is determined by the Lowell Police Department that a uniformed Police Officer should be present during working hours for safety of the public in the CONTRACTOR'S area of work, a uniformed Police Officer will be provided at the CONTRACTOR'S expense. **Protection of the CONTRACTOR'S work shall be the responsibility of the CONTRACTOR and the cost for any protection of the work shall be included in the CONTRACTOR'S unit prices for each bid item.**

The CONTRACTOR must furnish all required traffic control devices, including construction signs(such as Construction Ahead, Bump, Grooved Pavement, Pass At Your Own Risk), detour signs and drums. The CONTRACTOR may not close traffic lanes, roadways, driveways or sidewalks without prior written approval from the OWNER or ENGINEER. The CONTRACTOR shall submit a Traffic Control Plan for each job location indicating proposed staging of traffic to complete the required work. No work shall begin on at the site until the Traffic Control Plan has been reviewed and approved by the OWNER OR ENGINEER. The Traffic Control Plan shall show proposed signage and placement of drums. When directed by the ENGINEER, the CONTRACTOR shall call for police details which will be paid for by the CONTRACTOR.

During the progress of the work, the CONTRACTOR shall make every effort to maintain access to abutting properties and businesses. When it becomes necessary to temporarily block access to a property, the CONTRACTOR shall notify the owner of the property in writing at least 72 hours in advance of blocking access so that the property owner can move vehicles and make alternate arrangements. ALSO SEE NOTIFICATIONS

The cost for preparation of the Traffic Control Plan shall be included in the unit prices for each bid item.

6. WHEELCHAIR RAMPS – N/A

7. QUALIFIED SUPERINTENDENT

The CONTRACTOR shall maintain at the work site a qualified superintendent who is acceptable to the ENGINEER, and who shall give efficient supervision to the work until its completion. The Superintendent shall have full authority to act in behalf of the CONTRACTOR, and all directions given to the Superintendent shall be considered given to the CONTRACTOR.

8. SCOPE OF WORK

Work shall be done on weekdays between the hours of 7:00am and 4:00pm and/or weeknights between 7:00pm and 5:00am for the entire length of the project. No work that will disrupt travel on the existing roadways (lane closures, lane shifts, trenching, etc.) shall be done from 7:00AM to 8:30AM and from 3:00PM to 4:00PM. The CONTRACTOR shall limit the work to the extent that the CONTRACTOR can return the work area to a safe and passable condition for pedestrian and vehicular traffic at the end of each working period.

The CONTRACTOR shall work weekdays or nights to complete any project that is required within the Contract. **No additional compensation will be made if the CONTRACTOR is directed by the ENGINEER to work nights to complete any job within this Contract.**

The work under this Contract includes the installation of new traffic signal system equipment or modification of existing equipment at five intersections in Lowell, Massachusetts. These intersections are:

- Gorham Street at Moore Street
- Dutton Street at Merrimack Street
- Dutton Street at Market Street
- Central Street at Market Street
- Merrimack Street at Central Street

The work includes traffic signals, signs, pavement markings and other incidental items required to complete the work.

9. DELIVERY AND STORAGE OF MATERIALS

Materials and equipment shall be progressively delivered at the site so that there will be neither delay in the progress of the work nor an accumulation of materials that is not to be used within reasonable time. All materials delivered to the site must be off loaded by the CONTRACTOR on site. Approved portions of the right-of-way may temporarily be used for storage purposes but must be removed and cleaned up at the end of the working day. Any additional space required for storage must be provided by the Contractor at his expense.

10. MATERIAL SLIPS

At the conclusion of each working day, the CONTRACTOR shall deliver to the ENGINEER the material slips, in triplicate, for all materials delivered to the job site that day. The ENGINEER shall sign the material slips and retain one copy for the City.

11. CONSTRUCTION SCHEDULE

Before work is begun on each phase of work, the CONTRACTOR shall discuss fully with the ENGINEER the order and manner of doing the work, and the operating procedures shall comply with the requirements of the ENGINEER.

No work that will disrupt travel on the existing roadways (lane closures, lane shifts, trenching, etc.) shall be done from 7:00AM to 8:30AM and from 3:00PM to 4:00PM. The normal hours of operation shall be dictated by the City of Lowell. A written request shall be issued by the Contractor for any requested deviation to the work day or times indicated in the access permit.

Prior to commencing each phase of work, the CONTRACTOR shall provide a written work schedule for the phase of work with an estimated time of completion. The work schedule for each phase of work must be approved by the ENGINEER**.**

12. MONEY TO BE RETAINED FOR REPAIRS

1. The CONTRACTOR agrees that the OWNER may retain out of the final payment due to the CONTRACTOR under this Contract, five percent (5%) of the amount thereof, and may expend the same in the manner hereinafter provided, in making such repairs or replacements of said work as the OWNER may deem expedient.

2. If at any time within one-year period of guarantee any part of the work constructed under the terms of this Contract requires repairing or replacement, the OWNER may notify the CONTRACTOR in writing to make the required repairs or replacements. If the CONTRACTOR neglects to begin making such repairs or replacements within ten (10) days from the date of receipt of such notice, the OWNER may employ other persons to make the same. The OWNER shall pay the expense of the repairs out of the sum retained for that purpose. Upon the expiration of the one-year period of guarantee, provided that the work at the time is in good order, the CONTRACTOR will be entitled to receive the whole or such part of the sum retained as may remain after the expense of making repairs or replacements has been paid.

3. For settlement of all claims arising out of this Contract against the OWNER, its officers, or agents and for all expenses, losses, or damages incurred by the OWNER by reason of said claims, it is agreed that the OWNER may keep the whole or any portion of the sum retained.

13. PRICE ADJUSTMENT FOR HOT MIX ASPHALT (TOP & BINDER COURSE), DIESEL FUEL AND PORTLAND CEMENT – N/A

14. WATER SUPPLY FOR CONSTRUCTION – N/A

15. ROAD CONDITIONS – N/A

16. NIGHT WORK

The CONTRACTOR shall include the necessary labor and materials including but not limited to safety equipment, lighting, and asphalt mix to perform night work. The CONTRACTOR shall receive no additional compensation for this night work.

17. SWEEPING – N/A

18. NOTIFICATIONS

The CONTRACTOR shall notify in writing any residence or business abutting each work area three days before work is to begin. The notices shall include the nature of the work to take place and expected time of completion. They shall be distributed to all units of all buildings as well as all vehicles parked along street.

19. COMMUNICATION – N/A

20. OWNER'S RIGHTS

OWNER'S Rights to be exercised by the Department of Public Works wherever in this Contract the OWNER is to give or receive a notice or provisions are included for the exercise of rights and privileges and without limiting the generality thereof, the acts dealing with the OWNER'S prerogatives in the Contract shall be exercised by the Commissioner of Public Works or his authorized representative for and in behalf of the OWNER.

21. DAILY CLEAN UP

Before completion of each day's work, the CONTRACTOR shall be responsible for cleaning up and removing and relocating all removed material, debris, equipment and the like to ensure the continuous flow of traffic in roadways where work is progressing including access to private property during non-working hours.

22. SCHEDULES

The CONTRACTOR shall provide the OWNER/ENGINEER in writing a three week work schedule at the start of the project. The CONTRACTOR shall then provide an updated three week work schedule in writing every Friday thereafter, this shall continue until the project is completed.

23. RAISED STRUCTURE PROTECTION – N/A

24. PERMITS

The CONTRACTOR shall apply for street opening permits in the City Engineers Office for each street prior to the start of work.

25. COOPERATION OF THE CONTRACTOR

Agents of various public service agencies, municipal and State Departments, and private site contractors may be entering on the work site to remove existing utilities, to construct or place new facilities or to make alterations to existing facilities.

The Contractor shall perform the work in cooperation with the various agencies in a manner which causes the least interference with the operations of the aforementioned agencies and shall have no claim for delay which may be due, or result, from said work of these agents.

26. BUY AMERICA PROVISIONS

Federal law 23 CFR 635.410 requires that all manufacturing processes, including application of the coating, for steel and iron materials to be permanently incorporated in Federal-aid highway construction projects must occur in the United States. Coating includes all processes which protect or enhance the value of a material to which the coating is applied.

Foreign steel and iron may be used if the cost of the materials as they are delivered to the jobsite does not exceed 0.1% of the total contract cost or $2,500 whichever is greater.

27. WORK IN THE IMMEDIATE VICINITY OF CERTAIN UNDERGROUND STRUCTURES AND UTILITY POLES

For overhead connections, the Electric Company servicing the area will make the connection from the top of the riser on the utility pole to the power source. The Contractor shall supply all labor, materials and equipment to install the service connection, complete in place and in accordance with the Electric Company procedures, from the controller to and including the riser with enough wire coiled above the riser to permit the Electric Company servicing the area to make the final connection.

For underground connections, the Electric Company servicing the area will perform the actual wiring of the service connections from its power source to the sweep at the local controllers, but all steel sweeps, ducts, entrance holes into manholes, patching and all other necessary labor, materials and equipment required to install the electric service, complete in place, shall be furnished by the Contractor.

The Contractor shall pay the Electric Company servicing the area for their services rendered for the connection of overhead and underground service connections.

Before starting work at existing manholes, the Contractor shall test for gas and blow out the manholes.

28. MAINTENANCE OF TRAFFIC SIGNALS

It shall be the responsibility of the Contractor to provide all labor, equipment and material required for the total maintenance and repair of all existing and proposed traffic signal control equipment, including damage by automobile accidents until final completion and acceptance of the project, unless otherwise specified under Subsection 7.17 "Traffic Accommodation: of the Standard Specifications as amended, in which case Subsection 7.17 will govern. These provisions will apply to the signalized locations included as part of this construction Contract from the date of written notice given to the Engineer that the Contractor will work on or adjacent to an existing signal until the date when the City accepts the complete project. This written notice must be given before the Contractor may proceed with any work on a specified traffic signal location. For the purpose of these Special Provisions, the phrase "Traffic Signal Control Equipment" is intended to include, but is not limited to, controllers, signal housings, supporting structures, cabinet accessories and panels, wires, conduit and all other ancillary electrical equipment used for traffic control.

The cost of the maintenance of signals shall be deemed to be included in the various traffic signal Contract items and no additional payments will be made. Construction signs warning of New Traffic Pattern Ahead (W23-2) shall be placed on all approaches to intersections where signal phasing and traffic patterns have been changed for a period of two weeks.

29. FINE TUNING, ADJUSTMENT, AND TESTING PERIOD

After the Contractor has finished installing the controller and all other associated signal equipment and after the Contractor has set the signal equipment to operate as specified in the Contract documents, the fine tuning, adjusting and testing period shall begin. The Contractor shall advise the Engineer, in writing, of the date of the beginning of the fine tuning and testing period. This period shall not start until the work at the intersection is complete. During this period, the Contractor, under the direction of the Engineer, shall make necessary adjustments and tests to insure safe and efficient operation of the equipment. This period shall not last for more than 30 days and the Contract completion date has taken this testing period into consideration. No request for final acceptance will be considered until successful completion of the testing period.

The Contractor shall notify the Engineer in writing of the starting date of the fine tuning period prior to the starting date.

30. ARCHITECTURAL ACCESS BOARD TOLERANCES

The Contractor is hereby notified that they are ultimately responsible for constructing all project elements in strict compliance with the current AAB/ADA rules, regulations and standards.

All construction elements in this project associated with sidewalks, walkways, wheelchair ramps and curb cuts are controlled by 521CMR – Rules and Regulations of the

Architectural Access Board.

The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope nor for dimensions less than the minimum dimensions.

All wheelchair ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints.

31. BLANK

32. PREVAILING WAGE RATES

33. CONTRACTOR EVALUATION

CITY OF LOWELL

CONTRACTOR'S AND SUBCONTRACTOR'S RECORD OF PERFORMANCE

Contractors and Subcontractors performing construction work or providing supplies or services are required by law to be responsible and responsive.

In order to document contractors' performance for final payment and for future contract evaluation, the City must have a documented Record of Contract Performance.

Before the release of any final payments on contracts with the City of Lowell, the following report questionnaire must be completed and copies sent to the City Manager, City Auditor and Purchasing Agent.

Contract No._____

Name of Contractor:_____Date of Contract:_____

Address:_____

Type of Work Performed:_____Contract Completion Date:_____

PLEASE FILL OUT EACH OF THE FOLLOWING AND PROVIDE DETAILS UNDER "COMMENTS" BELOW:

Did the quality of the work/product meet specifications?_____

Was work performed in a timely manner?_____ If not, why?_____

Did contractor meet minority hiring goals, local employment ordinance, and prevailing wage, and wage reporting requirements?_____

Did you note any deficiencies in the work?_____

If any deficiencies were noted, was contractor notified in writing?_____

Were deficiencies corrected without cost to City?_____

How many change orders were required?_____ Any fault associated?_____

Was their bond called in?_____ If so, why?_____

Was someone else brought in to correct or finish job?_____

Do you recommend we use them again (if no, must state reasons below)?

Comments:_____

_____

_____

Department_____ Completed by_____
Date:_____

34. NOTICE OF INTENT AND ORDER OF CONDITIONS

35. FEDERAL LABOR STANDARDS PROVISIONS

36. CERTIFICATION REGARDING DEBARMENT AND SUSPENSION

TECHNICAL SPECIFICATIONS

FORWARD

For the purpose of governing the work to be done under this Contract, the Owner has adopted as its Standard Specifications format the “Standard Specifications for Highways and Bridges”, published by the Commonwealth of Massachusetts, Massachusetts Highway Department, dated 1988 including the Supplemental Specifications dated February 25, 2010. These Standard Specifications are herein referred to as the "Standard Specifications."

This Standard Specifications shall apply as if reprinted herein except as modified by the General Conditions, Special Conditions and the following Technical Specifications.

In case of conflict between these documents, the Supplement to Standards and the Special Provisions of these Specifications will govern.

ITEM 816.01	**TRAFFIC CONTROL SIGNAL LOCATION NO. 1**	**LS**
ITEM 816.02	**TRAFFIC CONTROL SIGNAL LOCATION NO. 2**	**LS**
ITEM 816.03	**TRAFFIC CONTROL SIGNAL LOCATION NO. 3**	**LS**
ITEM 816.04	**TRAFFIC CONTROL SIGNAL LOCATION NO. 4**	**LS**
ITEM 816.05	**TRAFFIC CONTROL SIGNAL LOCATION NO. 5**	**LS**

The work under these items shall conform to the relevant provisions of Section 800 of the Standard Specifications, the 2009 Manual on Uniform Traffic Control Devices (MUTCD), and the following:

The work shall include the furnishing and installation of part or all of the following items: local traffic signal controllers; cabinets; signal posts; signal heads; backplates; single point video detection; pedestrian signals with countdown timers; pedestrian push buttons; emergency vehicle preemption; GPS, all cable and wiring; ground rods, equipment grounding and bonding; and all other equipment, materials and incidental costs necessary to provide complete, fully operational traffic control signal systems as specific herein and as shown on the plans. The locations are as follows:

- Gorham Street at Moore Street (Item 816.01)
- Dutton Street at Merrimack Street (Item 816.02)
- Dutton Street at Market Street (Item 816.03)
- Central Street at Market Street (Item 816.04)
- Merrimack Street at Central Street (Item 816.05)

A list of major traffic signal items required at each location is included on the plans.

Shop Drawings

Within 30 days following execution of the Contract, the Contractor shall submit a list of

equipment, and manufacturer's equipment specifications to the Engineer in accordance with the relevant provisions of Section 815.20.

No work shall be commenced by the Contractor until approval of the shop drawings and manufacturer's data has been received in writing from the Engineer. Approval of these drawings will be general in character and shall not relieve the Contractor from the responsibility of, or the necessity of, furnishing materials and workmanship conforming to the plans and specifications.

The Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

Existing Installations

Existing signal installations to be modified under Item 816.01 through 816.05 shall be maintained in operation throughout the construction period and until the new equipment is ready for operation. The Contractor may use temporary supports for signal heads as necessary to allow construction activities.

Any temporary installations shall be in conformance with the MUTCD at all times. If an existing signal is to be turned off temporarily to allow controllers switch overs or rewiring, police detail shall be used to control traffic at the intersection.

Contractor is responsible for running wires and cables through existing conduits. The City does not warrantee nor assure the conditions of the existing conduits. Any damage caused to the signal system conduits or the existing wires/cables in said conduits by the actions of the Contractor running additional wires/cables through said conduits shall be the responsibility of the contractor to repair and/or replace.

Once installation work is completed and the new signal equipment is in operation, unused items of the old signal shall be completely removed and delivered to the Lowell Electrical Department as directed by the Engineer in accordance with Section 815.65. Old cable and unusable materials shall be disposed of by the Contractor.

Service Connections – N/A

Flashing Operation

Changes from automatic flashing to stop-and-go operation and from stop-and-go to automatic flashing operation shall occur as set forth in the MUTCD.

Traffic Signal Equipment

The traffic signal controller unit (CU), malfunction management unit (MMU), cabinet power supply, bus interface unit (BIU) and all other ancillary traffic signal control components included in the traffic control cabinet shall comply with the National Electrical Manufacturers Association (NEMA) Standard No. TS 2-1998, Traffic Controller Assemblies with National Transportation Communications for ITS Protocol (NTCIP) Requirements.

Traffic Signal Controller

The traffic controller supplied shall conform to Section 3 "Controller Units" of the NEMA TS 2 Standard. The traffic controller shall be supplied in a TS 2 Type 1 Configuration as required in the list of major traffic signal items included on the plans for the intersection location. Specifically, the controller unit (CU) shall be supplied as an actuated controller with NTCIP capabilities; defined as Type A1N in Subsection 3.2 of the NEMA TS 2 Standard.

The TS 2 Type 1 cabinet shall, at a minimum, meet the requirements of configuration 3 as defined in Table 5-2, "Type 1 Configurations" of the NEMA TS 2 Standard and according to the Item numbers listed above and on the traffic signal plans.

The controller unit shall utilize an interface conforming to Subsection 3.3 of the NEMA TS 2 Standard. The controller unit shall utilize an input/output interface conforming to the requirements of Paragraph 3.3.1 for all input/output functions with the Terminals and Facilities (TF), Malfunction Management Unit (MMU), detector rack assemblies and auxiliary devices. The controller unit shall also meet the requirements of Paragraph 3.3.6 "NTCIP Requirements" of the NEMA TS 2 Standard.

The controller unit shall be supplied with Port 1, Port 2, and Port 3 as defined by the requirements of Subsections 3.3.1, 3.3.2, and 3.3.3, respectively.

The controller shall be a keyboard-entry menu-driven unit conforming to City of Lowell Standards, with internal time base coordination, emergency preemption, and programmatic capability. The controller unit shall be complete with a module for closed loop system functions (future use).

Malfunction Management Unit

The malfunction management unit (MMU) shall comply with Section 4 of the NEMA TS 2 standard. The MMU shall be capable of operating as either a Type 16 with 16 channels (8 vehicle, 4 pedestrian, 4 overlap) or a Type 12 with 12 channels (8 vehicle, 4 overlap). The MMU's supplied shall be configured to operate as Type 16 units.

The MMU's in either the Type 16 or Type 12 configuration shall be capable of operating in a NEMA TS 2 Type 1 cabinet, a NEMA TS 2 Type 2 cabinet, or a NEMA TS 1 cabinet without loss of functionality.

Single-Point Vehicle Detection

Under this Item the Contractor shall provide and install a Single-Point Video Detection (SPVD) System as shown on the plans and these special provisions. The SPVD system shall include a single ultra wide angle lens camera, video processor unit, detection algorithms, all cables, connections, mounting hardware, application software, and accessories required by the manufacturer for proper operation of the system, including but not limited to surge protection devices.

The SPVD system shall detect and monitor vehicles on approach roadways utilizing

advanced, omni-directional, vehicle tracking algorithms along with three-dimensional vehicle modeling to supply accurate and consistent stop line detection.

The SPVD system shall include all necessary software and hardware to allow the end user to program, setup, and/or modify detection zones within the video camera image.

The SPVD system shall include software for the counting of vehicles, including turning movements by 15 minute time intervals and be capable of storing said data.

One pointing device and one swivel mounted color monitor within the controller cabinet for future viewing of the detection camera images shall be supplied by the Contractor. The Contractor shall also supply any necessary cables, interface devices and software for monitoring video detection via laptop computers.

The camera shall be mounted at the intersection, as shown on the plan or as directed by The Engineer. At a minimum, the SPVD shall meet the following requirements:

<u>Camera</u>

- Power: 48 VDC, single burial grade CAT 5e cable
- Operating Temp: -35C to +60C
- Humidity: Up to 100%
- Dimensions: 10” diameter x 9”
- Weight: less than 11 lbs.
- The camera shall include an ultra-wide-angle lens.
- The camera shall include a heater to prevent the formation of ice and condensation.
- The camera, when properly installed and configured, shall be able to concurrently observe at least 5 lanes of traffic per approach.
- The camera shall be able to concurrently observe more than one approach.

<u>Video Processor Unit</u>

- Power: 120-240 VAC, requiring 150 watts or less.
- Operating Temp: -34C to +74C
- Humidity: Up to 95% non-condensing
- Dimensions: 12.25” wide x 11.25” depth x 5” high
- Weight: 12 lbs.
- Enclosure: Rack mount in traffic cabinet
- The video processor unit shall save configurations and zone plans locally to maintain operation with or without monitoring equipment connected.
- The video processor unit shall be designed to function dependably in the adverse environment found in the typical roadside traffic cabinet.
- The video processor unit shall include at least 24 detector outputs.
- The video processor unit shall include an SDLC connection for TS2 type controllers
- The video processor unit shall include a USB on the front surface for simple data collection on non-networked systems.
- The video processor unit shall include both LAN and WAN RJ-45 interface ports on the front surface of the unit.

Application Software

- The application software shall support the creation and modification of at least twenty-four(24) polygonal detection zones within the graphical user interface.
- The application software will show images of the detection zones superimposed on the video image of traffic.
- The application software shall support the assignment of a detector output(s) to each zone. These assignments can be modified at any time through the software.
- The application software shall support direction of travel assignment within detection zones. The vehicle detection zone shall not activate for objects traveling any direction other than the one specified for detection. Cross-street and wrong way traffic shall not cause detection.
- The application software shall change the color of the zone within the graphical user interface as vehicles enter or exit a detection zone, changing its occupancy status. This will be required for real-time or historical monitoring, and may be turned on or off by the user at any time.
- The application software shall provide visual indication of the light state for each zone within the graphical user interface.
- The application software shall feature the ability to digitally pan, tilt, and zoom within the camera's field of view without movement of the camera.
- The application software shall maintain a database of current and historical traffic data, and allow for the user to run reports against this data to include traffic counts, turn movements, speed, and classification at a minimum.
- The application software shall feature the ability to mask objects that occlude the camera field of view and/or disrupt the camera automatic gain and exposure control.
- The application software shall feature reporting interface offering point and click reporting for turning movement counts and vehicle classification.

The Contractor shall provide software that enables a technician to test all features and functions of the SPVD system, and to perform all set-up procedures. This software shall be delivered on a CD so that it can be installed on other laptops. The City shall have the right to make and use an unlimited number of copies of this software.

The SPVD system shall be installed in accordance with the manufacturer's recommended procedure for installation.

The SPVD system shall be installed by factory certified installers and as recommended by the manufacturer and documented in installation materials provided by the manufacturer. Proof of the factory certification shall be provided. Installation includes connecting the SPVD to the traffic signal controller and power supply in the associated controller cabinet assembly.

When the setup is complete and the SPVD system is ready for operation, the values of all parameters that were set during the process shall be delivered to the Engineer in printed and computer- readable form. All equipment, such as software, laptop computer, tools and cables, needed for setup work shall be provided by the Contractor.

The Contractor shall be responsible for the proper programming of the SPVD, orientation of the SPVD, and all other work necessary to provide a complete vehicle detection system. The

Contractor may be required to field adjust the location of the SPVD system in the presence of the Engineer to properly detect approaching vehicles.

The cabinet documentation (box prints) shall show all wiring between the SPVD system and the controller cabinet.

Warranty: The supplier shall provide a three-year warranty on the SPVD system following installation and warranty registration. The camera shall include an additional warranty to require no aiming or focusing for a period of five years. During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers. During the warranty period, updates to SPVD software shall be available from the supplier without charge.

Training: The Contractor shall provide four (4) hours of personnel training in the use of the traffic SPVD system and software. This training is to be conducted with the City. The Contractor is to coordinate with the City as to the exact location and time of the training. It is the responsibility of the Contractor to provide training manuals, class notes, and other instructional materials for up to four attendees at the training sessions.

No training shall begin unless and until the final inspection process indicates, in the opinion of the Engineer, that the SPVD system is sufficiently complete and operational such that training would be useful at the time.

Loop Detector Rack Assemblies

The detector rack assemblies shall conform to Paragraph 5.3.4 of the NEMA TS 2 Standard. The detector rack assembly shall be supplied in a Type 2 configuration as defined in Table 5-9 of the NEMA TS 2 Standard.

GPS Time Reference Synchronization Unit

Under this Item the Contractor shall supply and install a GPS Time Reference Synchronization Unit in the controller cabinet for future use. This device will be used specifically for keeping the local controller time clock accurate for use in time based coordination.

The GPS Time Reference Unit shall consist of two basic components. The first component is the GPS receiver itself. The GPS receiver shall be mounted to the top of the traffic signal control cabinet with all mounting holes sealed with weatherproof caulking. The GPS receiver shall be tamper proof.

The second component is the GPS time reference device. The GPS receiver shall be connected to the GPS time reference device via a serial cable. The GPS time reference device shall be mounted inside the traffic control cabinet on either of the side walls of the cabinet. The GPS time reference device shall be initially programmed with current time zone, time of day to reset clock, and which day(s) to reset the clock. The GPS time reference unit shall initially be programmed to output the time once a day on every day of the week. At this specific

time, the GPS time reference device will provide an output (contact closure) to reset the controller time. The controllers shall be initially programmed to allow a contact closure to reset the time clock once per day. The installation of GPS time reference unit shall include all necessary wiring, additional Bus Interface Units (BIUs), and programming to ensure a fully operating system.

The cabinet documentation (box prints) shall show all wiring between the GPS time reference unit and the control cabinet. This documentation shall include all programming in the local controller.

Cabinet Power Supply

A separate power supply shall be supplied and installed in each of the TS 2 cabinets. As a minimum, the power supply shall meet all requirements of Paragraph 5.3.5 of the NEMA TS 2 Standard. The unit shall be AC line powered and provide regulated DC power, unregulated AC power, a line frequency reference for the rack mounted loop amplifiers, bus interface units, load switches and other auxiliary cabinet equipment as required.

The power supply shall be either shelf mounted or installed as part of the loop detector rack assembly.

The unit shall contain four LED indicators on the front panel to indicate the four outputs;
1. + 12 VDC +/- 1 VDC @ 2.0 amps,
2. + 24 VDC +/- 2 VDC @ 2.0 amps,
3. 12 VAC @ 250 milliamps, and
4. 60 Hz line frequency reference.

A test point terminal shall also be located on the units front panel for + 24VDC and logic ground testing.

Load Switches

Load switches shall comply with Subsection 6.2 of the NEMA TS 2 standard. All load switches shall utilize optically isolated encapsulated modular solid state relays. Discrete components on circuit boards are not acceptable.

Load switch indicator lights shall be LED-type and wired on the input side of the device.

Flasher

Flashers shall comply with Subsection 6.3 of the NEMA TS 2 standard and be equipped with two output indicator lights which will show flashing power out to the cabinet assembly.

Flash Transfer Relays

Flash transfer relays shall comply with Subsection 6.4 of the NEMA TS 2 standard.

The field electrical loading for flash operation shall be wired through the transfer relays such that the load on the 2 circuit flasher is as balanced as possible within the limitations of the signal phasing.

Traffic Controller Cabinet

Controller Cabinet for item 816.1 shall conform to the NEMA TS 2 Standards, Section 7. Cabinet size shall be as indicated on the plans and as shown below.

TS 2 Type 1 Configuration Table

Item Number	NEMA TS 2 Type 1 Cabinet Size	Nominal Cabinet Size (HxWxD)*	Config-uration Type Table 5-2	Load Switch Positions	Flash Transfer Relays	BIUs Required	Detector Rack Type Table 5-9	MMU (Channels)
816.1	P-44	55x44x26	3	12	6	3	2	16 Channel
816.2	P-44	55x44x26	3	12	6	3	2	16 Channel

*** Approximate cabinet dimensions are provided in inches.**

Cabinet shall be made of aluminum.

Controller cabinet shall be bolted to existing foundations at each site and secured with caulking to provide a weather proof seal between cabinet and foundation.

Bus Interface Unit

The Bus Interface Unit (BIU) shall comply with Section 8 of the NEMA TS 2 Standard. The BIU shall be fully interchangeable with any other manufacturer's unit and interchangeable in a NEMA TS 2 Type 2 cabinet assembly.

At a minimum the BIU shall perform the interface function between port 1 at the controller unit, the malfunction management unit (MMU), the loop detector rack assembly, and the terminal facilities. The cabinet shall be supplied with the appropriate number of BIUs required to provide an operating traffic control signal according to the plans and these specifications.

As a minimum, two LED indicators shall be provided on the BIU front panel. One indicator shall serve a dual use; as a power on indication and as a diagnostic indicator for proper operation of the device. The second indicator shall serve as a transmit indicator illuminating each time data is transmitted.

Surge Suppression

The Contractor shall supply and install surge suppression on all outputs and inputs in all

of the traffic signal controller cabinets in accordance with MassDOT Standards. Contractor shall contact MassDOT Electrical Systems Unit directly for requirements and/or questions.

Spare Equipment

The Contractor shall provide the following spare signal equipment in the proposed traffic signal controller cabinet:

- A full complement of load switches to accommodate each available position of the back panel.
- A full complement of flash transfer relays to accommodate each available position of the back panel.
- Two (2) Bus Interface Units.
- A 25 foot RS-232 cable for communication function with a laptop

Testing of Grounding System

The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with MassDOT Standard Specifications.

Emergency Preemption

The emergency vehicle preemption system shall be installed in the same cabinet as the controller and shall conform to City of Lowell Standards,

The emergency vehicle preemption control system shall consist of a data-encoded phase selector to be installed within the traffic control cabinet in the detector racks. This unit will serve to validate, identify, classify, and record the signal from the optical detectors located on support structures at the intersection.

Upon receiving a valid signal from the detector, the phase selector shall generate a preempt call to the controller initiating a preemption operation as shown on the plans.

The optical detector shall be single input, single output unit used to control one approach. The traffic signal installation shall be supplied with a minimum of two optical detectors unless otherwise noted in the major items list.

The phase selector shall be a rack-mounted plug-in four channel dual priority device. The phase selector shall plug into an empty slot in the detector rack. Programming the phase selector shall be via a PC-based computer utilizing unit specific software. One copy of software on a CD shall be supplied and licensed to the City of Lowell. A hard copy of final programming data shall be left in the control cabinet. A complete set of interface cables for phase selector to laptop connection shall be supplied in the cabinet.

The Contractor shall install a confirmation strobe at the traffic signal location as shown on the plans. The confirmation strobe shall serve to validate to the driver of the emergency vehicle that the traffic signal has recognized the preemption call and will initiate the proper preemption sequence. The confirmation strobe shall be a white lens.

The Contractor shall be responsible for the proper programming of the phase selector, orientation of the optical detectors, and all other work necessary to provide a complete and operating emergency vehicle preemption system. The Contractor may be required to field adjust the location of the optical detectors in the presence of the Engineer to properly detect preemption calls from approaching vehicles.

Pedestrian Push Buttons

Pedestrian push button controls shall be raised from or flush with their housings and shall be a minimum of 2 inches in the smallest dimension. The force required to activate the controls shall be no greater than 5 pounds.

Pedestrian push buttons shall be located as close as practicable to the sidewalk curb ramp serving the controlled crossing and shall permit operation from a clear ground space. If two crosswalks, oriented in different directions, end at or near the same location, the positioning of pedestrian pushbuttons and/or legends on the pedestrian push button signs should clearly indicate which crosswalk signal is actuated by each pedestrian push button.

A maximum mounting height of 42 inches above the finish sidewalk grade shall be used for pedestrian push buttons.

Signal Posts and Bases

Signal posts and bases shall be anodized aluminum shafts and transformer bases.

Signal base foundations shall not obstruct a sidewalk or crosswalk so that passage by physically- challenged persons is impaired.

Signal Heads

Signal heads mounted on mast arms shall be rigidly attached to the mast arms. All signal heads mounted overhead on mast arms shall be installed, with the bottom of the signals at the same height. All traffic signal lenses shall be 12 inches in diameter. Louvered backplates shall be 5 inches provided on all signal heads as noted on the plans. All signal heads shall be equipped with ball and/or arrow light emitting diode (LED) modules and tunnel visors. All backplates shall be equipped with a yellow retroreflective strip with a minimum width of 1 inch and a maximum width of 3 inches placed along the perimeter of the face of the signal backplate to project a rectangular appearance at night.

Red, Yellow, And Green LED Vehicle Signal Module

Any equipment that has been type-tested and approved according to Section 815.21 of the Standard specifications prior to the date of award of this contract will be considered as meeting these specifications.

All Red and Green Light Emitting Diode (LED) signal modules shall conform to “Interim LED Purchase Specification of the Institute of Transportation Engineers, Vehicle Traffic Control

Signal Heads - Part 2: Light Emitting Diode (LED) Vehicle Traffic Signal Modules", July 1998 Version or most current version, Institute of Transportation Engineers (ITE), 1099 14th Street

Yellow LED signal modules shall conform to the above specifications with the exception that yellow modules shall meet maintained Minimum Luminous Intensity values of Table 1, Section 4 of the above referenced ITE specification of compliant green signal modules at 25 degrees Celsius at 120 volts AC, throughout the useful life based on normal use in traffic signal operation over the operating temperature range.

All signal modules shall conform to the following: (In case of a conflict, the following special provision shall overrule.)

An independent laboratory shall certify that the LED signal module complies with Section 6 Quality Assurance of the above stated ITE LED Purchase Specification.

LED signal modules must be type tested and approved by the City of Lowell according to the requirements of Subsection 815.21 of the Standard Specifications for Highways and Bridges.

On the backside of the LED signal module there shall be a permanently marked "up" arrow to aid in the proper orientation of the module during installation.

The manufacturer's name, trademark, serial number and other necessary identification shall be permanently marked on the backside of the LED signal module.

Physical and Mechanical Requirement: LED signal modules shall fit without modifications into existing traffic signal housings conforming to "Vehicle Traffic Control Signal Heads" (VTCSH) published in the Equipment and Materials Standards of the Institute of Transportation Engineers. The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation. The LED signal assembly construction shall conform to the applicable ASTM specifications for the materials used to fabricate the module.

Each Red LED signal module shall comprise a smooth surfaced Red, UV stabilized polycarbonate outer shell, multiple LED light sources, a power supply and a polycarbonate back cover assembled in a gasketted or silicon sealed unit.

Each Yellow LED signal module shall comprise a smooth surfaced Yellow, or transparent, UV stabilized polycarbonate outer shell, multiple LED light sources, a power supply and a polycarbonate back cover assembled in a gasketted or silicon sealed unit.

Each Green LED signal module shall comprise a smooth surfaced Green, or transparent, UV stabilized polycarbonate outer shell, multiple LED light sources, a power supply and a polycarbonate back cover assembled in a gasketted or silicon sealed unit.

Optical and Light Output Requirement: The minimum luminous intensity values and light output shall be maintained within the rated input voltage of 117 Volts AC. Red and Green LED signal modules shall not be allowed to fall short of the minimum intensity values at any of the 44 measuring points of the standard when lamp is turned on cold for measurements and after a 30

minute warm-up time period at 100% duty cycle. Yellow LED signal modules shall not be allowed to fall short of a minimum intensity values for green modules as described above, at any of the 44 measuring points of the standard.

Electrical: The maximum wattage for red and green 12 inch balls shall be 20 Watts and 10 Watts for the 12 inch red and green arrows. The maximum wattage for 12 inch yellow balls shall be 24 Watts and 12 Watts for the 12 inch yellow arrows.

The LED sources shall not be powered above 70% of the manufacturer's specified rated load. This shall be clearly shown in layman's terms through calculations, schematics, catalogue cuts, etc.

Red LED sources shall be made of the AlInGap (Aluminum Indium Gallium Phosphide) type shown clearly in a catalogue cut or similar literature.

Yellow LED sources shall be made of the AlInGap (Aluminum Indium Gallium Phosphide) type shown clearly in a catalogue cut or similar literature.

Green LED sources shall be made of the InGaN (Indium Gallium Nitride) type shown clearly in a catalogue cut or similar literature.

Warranty: The LED signal module will be replaced or repaired by the manufacturer if it exhibits a failure due to workmanship or material defects within the first 60 months of field operation.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits either a greater than 40 percent light output degradation or a fall below the minimum intensity levels within the first 36 months of field operation.

Pedestrian Heads

All pedestrian heads shall be 16 inch, single units, with countdown timers conforming to City of Lowell Standards. Pedestrian head indications shall be illuminated L.E.D. type displaying graphical symbols of a walking person and/or upraised hand. The countdown module shall display the number of seconds remaining throughout the pedestrian "WALK" interval, continue counting down through the flashing "DON'T WALK" interval, and blank out during the steady "DON'T WALK" interval. The countdown module shall be automatically set by the intersection controller based upon the "WALK" and "DON'T WALK" signal intervals only. The countdown module shall continuously monitor the intersection controller for any changes to the pedestrian phase timing, and reprogram itself automatically. All LED indications on the pedestrian signal shall have an automatic dimming circuit for night illumination to reduce long-term degradation to the LEDs.

Note: Countdown displays shall not be used during the "WALK" interval nor during the yellow change interval of a concurrent change interval.

Software

All local controller, malfunction management unit, camera unit, and preemption unit software shall be supplied with the latest available revision. Any software upgrades released by the manufacturer shall be supplied at no charge to the Owner for a period of five years after acceptance of the traffic signal installations.

Data Base Programming

Each programmable local hardware component (i.e., controller, malfunction management unit, preemption unit) shall be initially programmed by the Contractor based on information contained on the plans. Three sets of hard copy programming per device shall be supplied by the Contractor.

Equipment Finish and Color

All proposed traffic signal equipment including but not limited to signal posts, bases, signal heads, visors (outside), doors, mast arms, pushbutton saddles, service meter socket box, optical preemption detectors, hardware, and rigid mounting brackets for signals and signs shall be colored:

- **GLOSS BLACK for Item 816.01 through 816.05**

and subject to the approval of the City of Lowell. **The Contractor shall submit to the Engineer, and the City for approval, paint chips and sample finishes on steel and aluminum of the intended color prior to any work being done under this heading. The Poppy color shall be a match to "Toyo Ink Color CF 8094". According to the Federal Standard 595 Color Chart online (http://www.milspeccoating.com/Federal-Standard-595-Colors-s/41.htm#products-595), the color will be "11400 Red Color Chip MIL-PRF-24635". HOWEVER, the selected contractor will provide paint swatches in person and CONFIRM the color with the City of Lowell before ordering.**

Signal heads, doors, visors, mounting brackets, and hardware supplied direct from the manufacturer in the color stipulated above may be acceptable provided it meets or exceeds the finish process for the material indicated below.

Steel Equipment

Galvanizing

All bolts, screws, nuts, rods and washers shall be galvanized in accordance with AASHTO M232 and the Standard Specifications. The hardened machine screws may be electroplate galvanized. Stainless steel studs, bolts, screws, nuts, straps and washers shall not be galvanized. Galvanized hardware need not be painted; however, the ends of bolts, nuts, and washers shall be painted in the field according to section "Touch-up and Repairs." Immediately prior to galvanizing, the steel shall be immersed in a bath of zinc ammonium chloride. The dry kettle galvanizing process shall be used.

All steel components, other than above, shall be galvanized after fabrication in accordance with

AASHTO M111. The galvanizing bath shall contain nickel (0.05% to 0.09% by weight). Galvanized members requiring shop assembly shall be welded and drilled prior to galvanizing.

Coating Over Galvanized Steel

Prior to painting, the applicator shall ensure that all components are smooth and without sharp protrusions that would present and injury hazard to pedestrians. Also, the fabricator shall ensure that all welds shall be cleaned thoroughly in accordance with good practice and according to AWD D1.5 and ASTM A123-89a and shall have a suitable surface to accept the galvanizing.

In preparation for the two coat painting system, the surface shall be blast cleaned in accordance with the requirements of SSPC SP7 "Brush-Off Blast Cleaning" or other method producing equivalent results and uniform profile, to achieve a 1.0 to 1.5 mils anchor profile as indicated be a Keane Tator profile comparator or similar device. The creation of the anchor profile shall be performed prior to the formation of "white rust" on the galvanized surface.

Following blast cleaning, the zinc coating thickness shall be measured to verify that the coating thickness is in accordance with AASHTO M111.

A two-coat painting system shall be applied by the Galvanizer in his own facility within twelve hours of galvanizing the steel components.

The prime coat material shall be a polyamide epoxy applied to minimum dry film thickness of
2.0 to 4.0 mils (0.002-0.004 in.) and force cured as given below for the finish coat.

The finish coat material shall be a two component, catalyzed aliphatic urethane applied by airless spray to a minimum dry film thickness of 4.0 mils.

The color shall be **GLOSS BLACK** as noted above. The fabricator shall submit to the Engineer for approval, paint chips of the intended color prior to any work being done under this heading.

All finish coat material shall be applied under conditions within the following tolerances: Air

Temperature	50ºF min.,	90ºF max.
Surface Temperature	50ºF min.,	100ºF max.

Surface temperature must be at least 5ºF above the dew point.

The finish coat shall be cured in a booth capable of maintaining 150ºF for 2-4 hours.

Touch-up and Repairs

Should any damage occur to the galvanized coating during shipping or handling at the job site, the Contractor shall repair and touch-up any damaged areas to the satisfaction of the Engineer and the following:

Touch-up of galvanizing before the finish coat is applied shall be accomplished by

applying galvanizing repair paint. The dry film thickness of the applied repair paint shall not be less than 4.0 mils.

Applications shall be in accordance with the manufacturer's instruction.

Field touch-up procedures shall conform to the recommendations of the Galvanizer. Touch-up of the finish coat shall be by applying a coating of a two-part urethane, as supplied by the Galvanizer, to achieve a dry film thickness of at least 4.0 mils. Prior to the application of the paint, remove all damaged coatings down to a solidly adhered coating and apply galvanizing repair paint as primer.

Allow the primer to dry for at least 4 hours prior to top coating.

The Contractor shall also use the touch-up paint material and procedures to paint the galvanized hardware used in field erection that has not been finish coated previously.

Aluminum Equipment

All aluminum equipment called for shall have a powder coat finish **GLOSS BLACK,** as noted above, in color. The coating shall be a polyester-TGIC (triglycidyl isocyanurat) resin system conforming to the following:

Quality	Test	Limits
Abrasion	Taber abraser CS-10, 1000 gram load, 1000 cycle, ASTM D4060	100 mg. Maximum weight loss
Adhesion	ASTM D .59 Initial 1000 hours	 5A 5A
Gloss	ASTM D 523 60° - 600 hours 60° - 1000 hours	 82% retention 90% retention (washed)
Hardness	ASTM D 3363	2H – No Gouge
Impact	ASTM D 2794 Direct	Pass 80 inch-lb.
Salt Spray Resistance	ASTM B 177 ASTM D 1654	
	1000 hours unscribed 400 hours scribed	Table 2-10 Table 1-10
Weather Resistant	ASTM G 23, 1000 hours, 18 min. waterspray, 102 min. light	No film failure
Color	Gloss Black or Poppy as noted above	
Identify	Infrared fingerprint	Match

Flexibility	180° bend; ½" dia, mandrel within 10 seconds	No breaks, flaking or cracks. Tested with a Q-panel with 2 mils or less of coating
Humidity	ASTM D 2247, 1000 hours	No blister or film failure
Thickness		4 mils +/- 1 mils
Mar Resistance		Good

A Certificate of Compliance of the powder coating system is required for the Engineer's approval.

Manuals and Keys

The Contractor shall supply two (2) copies of operating and maintenance manuals (i.e., controller, malfunction management unit, preemption unit, video unit) and two (2) sets of cabinet keys to the City.

FINE TUNING, ADJUSTMENT, AND TESTING PERIOD

After the Contractor has finished installing the controller and all other associated signal equipment and after the Contractor has set the signal equipment to operate as specified in the Contract documents, the fine tuning, adjusting and testing period shall begin. The Contractor shall advise the Engineer, in writing, of the date of the beginning of the fine tuning and testing period. This period shall not start until the work at the intersection is complete. During this period, the Contractor, under the direction of the Engineer, shall make necessary adjustments and tests to insure safe and efficient operation of the equipment. This period shall not last for more than 30 days and the Contract completion date has taken this testing period into consideration. No request for final acceptance will be considered until successful completion of the testing period.

The Contractor shall notify the Engineer in writing of the starting date of the fine tuning period prior to the starting date.

FINAL INSPECTION AND ACCEPTANCE

Upon successful completion of the 30 day testing period wherein the traffic signal systems has operated for 30 days without failure, the Contractor shall notify the City. The Engineer will make a final inspection of the installation in the presence of the City and the Contractor. An inspection check will be made to ensure that all equipment, materials, installations and operations are in accordance with the construction contract, plans and specifications. Items to be checked will include, but not be limited to, traffic signal systems operation, cabinet equipment, documents (wiring diagrams, as-built plans, instruction manuals, parts list, warranties, grounding resistivity test report, etc.), signs, and pavement markings, and street hardware (posts, bases, housings, brackets, etc.).

The Engineer will notify the Contractor in writing of any items in which the inspection reveals that the work is incomplete, defective, or does not otherwise meet the project specifications. The Contractor shall perform the corrective actions necessary to achieve final acceptance by the City.

These corrective actions shall be done by and at the expense of the contractor and within 15 days of the date of the inspection report, unless otherwise approved in writing by the City.

GUARANTEE AFTER FINAL ACCEPTANCE

The Contractor shall diagnose (troubleshoot) the system and replace any part of the traffic signal systems found to be defective in workmanship, material or manner of functioning within six months from date of final acceptance of all the installations under this Contract. This requirement does not affect the one-year warranty period on equipment specified in Subsection 815.20 of the Standard Specifications.

QUALIFIED ELECTRICIANS

Within 10 days after opening of bids, the low bidder shall submit a list of the Journeyman Electricians (Massachusetts License) who will perform the electrical work in this contract.

Also, the low bidder shall submit copies of each Journeyman Electrician's current Massachusetts License.

Ownership and Maintenance

Upon acceptance of the traffic signal systems by the City of Lowell, the Contractor shall turn over all guarantees and warranties to the City, where applicable. In turn, the City shall assume ownership and maintenance of the signal systems.

ITEM 832.1 WARNING-REGULATORY AND ROUTE MARKER-ALUM. PANEL (TYPE A) SF

Work under this item shall be in conformance with Section 828 of the MDPW Standard Specifications and those Sections of the City Code that are applicable.

ITEM 851 SAFETY CONTROLS, SIGNS AND DRUMS LS

Work under this item shall be in conformance with the provisions of Section 850 of the MDPW Specifications and those Sections of the City Code that are applicable and the following. The lump sum price shall include all drums, barrels, signs, labor, materials, equipment, mobilization and preparation of a Traffic Control Plan necessary to protect the public and the work.

The CONTRACTOR shall conduct his operations in a safe manner at all times. The public shall be protected at all times with adequate warning signs, lighted barrels or barricades, warning tapes, etc. around the work area. The cost of providing and maintaining the signs, traffic control, barrels, barricades, etc. shall be included in the lump sum bid item.

The CONTRACTOR shall provide temporary safe access for pedestrian and vehicle traffic to adjacent properties at all times. The cost of temporary access shall be included in the CONTRACTOR’S lump sum bid item.

When it is determined by the Lowell Police Department that a uniformed Police Officer

should be present during working hours for safety of the public in the CONTRACTOR'S area of work, a uniformed Police Officer will be provided at the CONTRACTOR'S expense. **Protection of the CONTRACTOR'S work shall be the responsibility of the CONTRACTOR.**

The CONTRACTOR must furnish all required traffic control devices, including construction signs(such as New Traffic Pattern Ahead, Construction Ahead, Bump, Grooved Pavement, Pass At Your Own Risk), detour signs and drums. The CONTRACTOR may not close traffic lanes, roadways, driveways or sidewalks without prior written approval from the OWNER or ENGINEER. The CONTRACTOR shall submit a Traffic Control Plan for each job location indicating proposed staging of traffic to complete the required work. No work shall begin on at the site until the Traffic Control Plan has been reviewed and approved by the OWNER OR ENGINEER. The Traffic Control Plan shall show proposed signage and placement of drums. When directed by the ENGINEER, the CONTRACTOR shall call for police details which will be paid for by the CONTRACTOR.

During the progress of the work, the CONTRACTOR shall make every effort to maintain access to abutting properties and businesses. When it becomes necessary to temporarily block access to a property, the CONTRACTOR shall notify the owner of the property in writing at least 72 hours in advance of blocking access so that the property owner can move vehicles and make alternate arrangements.

ITEM 854.1 PAVEMENT MARKING REMOVAL SF

Pavement markings shall be removed via grinding operation not to exceed 1/8" in depth and leaves feathered-edge pattern that weathers quickly and blends with the remaining undisturbed road surface.

ITEM 864. PAVEMENT ARROW AND LEGENDS REFLECTORIZED WHITE (PAINTED) SF

Work under this item shall be in conformance with Section 828 of the MDPW Standard Specifications and those Sections of the City Code that are applicable.

ITEM 874.2 TRAFFIC SIGNS REMOVED AND RESET EA

Work under this item shall be in conformance with Section 828 of the MDPW Standard Specifications and those Sections of the City Code that are applicable and the following:

Work shall include the removal and resetting of existing traffic signs at the locations shown on the plans. The Contractor shall completely remove the sign and post and reset said sign and post at the new location. If existing sign and/or post are not suitable for reuse as determined by the Engineer, the contractor shall provide new sign and/or post under items 832. or 832.21 and 847.1, respectively.

If existing sign and/or post are damaged by the contractor during the removal and resetting process, no separate payment will be made by the City for new sign and/or post.

ITEM 999.99 POLICE DETAIL DAYS

Details will be paid by the CONTRACTOR. The Engineer or CONTRACTOR shall arrange scheduling. Daily detail slips shall be signed and distributed by the Engineer or CONTRACTOR. Billing shall be established based upon the slips issued. Police Details shall be reimbursed to the Contractor, after providing the ENGINEER with receipt of payment to the Police Department. The Detail will be deducted out of the allowance provided in Item 999.99 Police Detail.

NOTE: Please read Traffic Control, Safety Signs, Barricades, Etc. SC-4

APPENDIX

1. THE COMMONWEALTH OF MASSACHUSETTS CITY OF LOWELL SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

2. CITY OF LOWELL MINORITY BUSINESS ENTERPRISE PROGRAM

3. FORMS

THE COMMONWEALTH OF MASSACHUSETTS
CITY OF LOWELL
SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY
ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

I. For purposes of this contract, "minority" refers to Asian-Americans, Blacks, Spanish Surnamed Americans, North American Indians, and Cape Verdeans. "Commission" refers to the Massachusetts Commission Against Discrimination.

II. During the performances of this contract, the Contractor and all of (his) Subcontractors (hereinafter collectively referred to as the Contractor), for himself, his assignees, and successors in interest, agree as follows:

1. In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age or sex.

The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer: recruitment advertising; recruitment layoff; termination; rates of pay or other forms compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (M.G.L. Chapter 151B).

2. In connection with the performance of work under this contract, the Contractor, shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex.

A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

III. 1. As part of his obligation of remedial action under the foregoing section, the Contractor shall maintain on this project a (not less than) 5% percent ratio of minority employee man hours to total man hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work" enumerated in Section 44C of Chapter 149 of the Massachusetts General Laws.

2. In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program

approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Commission.

IV. 1. At the discretion of the Commission there may be established for the life of this contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering this project, hereinafter called the Administering Agency, the Commission and such other representatives as may be designated by the Commission in conjunction with the administering agency.

2. The Contractor (or his agent, if any, designated by him as the on-site equal, employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

3. The Contractor shall prepare projected manning tables on a quarterly basis. These shall be broken down into projections, by week, or workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also when updated, to the Commission and Liaison Committee.

4. Records of employment referral orders, prepared by the Contractor, shall be made available to the Commission and to the Liaison Committee on request.

5. The Contractor shall prepare weekly reports in a form approved by the Commission of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Commission and to the Liaison Committee.

V. If the Contractor shall use any subcontractor on any work performed under this contract, he shall take affirmative action to negotiate with qualified minority subcontractors. This affirmative action shall cover both pre-bid and post-bid periods. It shall include notification to the Office of Minority Business Assistance (within the Executive Office of Communities and Development) or its designee, while bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids.

VI. 1. In the employment of journeymen, apprentices, trainees and advanced trainees, the Contractor shall give preference, first, to citizens of the Commonwealth who have served in the armed forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates, and, secondly, to citizens of the Commonwealth generally, and, if such cannot be obtained in sufficient numbers, then to citizens of the United States.

VII. A designee of the Commission and a designee of the Liaison Committee shall each have right of access to the construction site.

VIII. <u>Compliance with Requirements</u>

The Contractor shall comply with the provisions of Executive Order No. 74, as amended by Executive Order No. 116 dated May 1, 1975, and of Chapter 151B as amended,

of the Massachusetts General Laws, both of which are herein incorporated by reference and made a part of this contract.

IX. Non-Discrimination

The Contractor, in the performance of all work after award, and prior to completion of the contract work, 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, or in the procurement of materials and rentals of equipment.

X. Solicitations for Sub-Contracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and affirmative action.

XI. Bidders Certification Requirement

1. The bidders certification form currently in use will be deleted from all future bid documents.

2. The following certification statement will be inserted in the bid document just above the bidder's signature, as a substitute for the present bidder certification form: "The bidder hereby certifies he shall comply with the minority manpower ratio and specific action steps contained in the appendix EEO attached hereto, including compliance with the minority contractor compliance specified in Section V of said appendix. The Contractor receiving the award of the contract shall be required to obtain from each of its subcontractors and submit to the contracting or administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier, that it will comply with the minority manpower ratio and specific affirmative action steps contained in the appendix EEO."

XII. Contractor's Certification

The Contractor's certification form must be signed by all successful low bidder(s) prior to award by the contracting agency. (See attachment.)

XIII. Compliance-Information, Reports and Sanctions

1. The Contractor will provide all information and reports required by the administering agency or the Commission on instructions issued by either of them and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary affirmative action contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the

Contractor shall so certify to the administering agency or the Commission as appropriate and shall set forth what efforts he has made to obtain the information.

2. Whenever the administering agency, the Commission, or the Liaison Committee believes the General Contractor or any Subcontractor may not be operating in compliance with the terms of this Section, the Commission directly, or through its designated agent, shall conduct an appropriate investigation, and may confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Section. If the Commission or its agents finds the General Contractor or any subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify such Contractor in writing of such steps as will in the judgment of the Commission or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission shall make a final report of non-compliance, and recommend to the administering agency the imposition of one or more of the sanctions listed below. If, however, the Commission believes the General Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. Within fourteen days of the receipt of the recommendations of the Commission, the administering agency shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

a) The recovery by the administering agency from the General Contractor of 1/100 of 1% of the contract award price or $1000 whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the administering agency from the General Contractor to be assessed by the General Contractor as a back charge against the Subcontractor, of 1/10 of 1% of the subcontract price, or $400 whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply.

b) The suspension of any payment or part thereof due under the contract until such time as the General Contractor or any Subcontractor is able to demonstrate his compliance with the terms of the contract;

c) The termination, or cancellation, of the contract, in whole or in part, unless the General Contractor or any Subcontractor is able to demonstrate within a specified time his compliance with the terms of the contract;

d) The denial to the General Contractor or any Subcontractor of the right to participate in any future contracts awarded by the administering agency for a period of up to three years.

3. If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that he is in compliance with this Section, he may request the administering agency, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the administering agency, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

4. Sanctions enumerated under Sections XII-2 shall not be imposed by the administering agency except after an adjudicatory proceeding, as that term is used M.G.L. c. 30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

XIV. Severability

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

CITY OF LOWELL

MINORITY BUSINESS ENTERPRISE

PROGRAM

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CITY OF LOWELL

MINORITY BUSINESS ENTERPRISE PROGRAM

I. Statement of Equal Opportunity Policy

WHEREAS: it is the policy of the government of the United States of America, the Commonwealth of Massachusetts and the City of Lowell that no person shall be discriminated against in any manner whatsoever on the grounds of race, religion, color, sex or national origin; and

WHEREAS: it is the policy of the government of the United States of America, the Commonwealth of Massachusetts and the City of Lowell that no person because of race, color, national origin, sex or religion be excluded from participation in, be denied the benefits of or be subjected to discrimination under any program or activity funded entirely or in part by the City, State or Federal government; and

WHEREAS: the City of Lowell unequivocally ascribes to the policies of the State and Federal governments with respect to non-discrimination and equal opportunity and is the recipient of Federal and State financial assistance; and

WHEREAS: to clearly enunciate the equal opportunity/affirmative action policy of the City of Lowell's Minority Business Enterprise Program, the following responsibilities are specified:

(1) The City of Lowell strongly affirms that it will not discriminate in any contractual procedures including, but not limited to, contracts for construction, services, and supplies.

(2) This policy shall be administered at all levels of City government with a positive, aggressive and supportive attitude on the part of all Department Heads. All City Department Heads will be furnished with a copy of the Minority Business Enterprise Program.

(3) It is the responsibility of all Department Heads and employees to take affirmative steps to implement this policy to insure equality of opportunity in conducting the affairs of the City of Lowell, including notifying those persons and businesses doing business with the City of Lowell that contracts for goods and services, and construction shall be made without reference or regard to race, color, sex, age, disability, religion or national origin.

(4) The Contract Compliance/Affirmative Action Officer shall be responsible for insuring that all aspects of the MBE Program are implemented and monitored. This will include active recruitment of MBE's. The Contract Compliance/Affirmative Action Officer will report directly to the City Manager on all MBE matters.

(5) The Contract Compliance/Affirmative Action Officer will conduct pre-bid conferences to inform all potential bidders of the goals of the City's MBE Program.

(6) A copy of the MBE Program will be available for public inspection in the office of the Contract Compliance/Affirmative Action Officer.

NOW, THEREFORE, IT IS HEREBY RESOLVED: that the following Minority Business Enterprise Program be and hereby is adopted for and in behalf of the City of Lowell.

II. Objectives and Goals

(1) For purposes of this MBE Program "minority" refers to a person with permanent residence in the United States and who is Black, Hispanic, American Indian, Eskimo, Aleut, Asian or Cape Verdean.

(2) For purposes of this MBE Program "Minority Business Enterprise" or "MBE" means any business certified by the State Office of Minority Business Assistance (SOMBA) as a bonafide minority business enterprise. To be certified as an MBE, a business must demonstrate:

a. That minority-persons beneficially own and control at least 51% of the business;

b. That minority persons have dominant control in the management and operation of the business;

c. That minority persons have made a substantial investment in the business; and

d. That the business is an ongoing concern and that it was not created solely for the purpose of taking advantage of set-aside programs.

In the case of a joint venture between a SOMBA certified MBE and a non-minority controlled enterprise, the joint venture shall be considered to be an MBE if the SOMBA certified MBE which is part of the joint venture has more than 51% control over management of the project bid upon by the joint venture, and has the right to receive more than 51% of the profits that are derived from that project.

(3) The objective of the City of Lowell's MBE Program is to ensure participation by MBE's in City contracts for goods, services and supplies. This objective is based in part on the availability of MBE's with expertise in these areas. The Contract Compliance/Affirmative Action Officer will work to identify the needs of the various City Departments for supplies, goods, and services and to match them with available MBE's.

(4) The goal of the City of Lowell's MBE Program shall be the awarding of not less than five percent (5%) of the total dollar value of all contracts for goods, services and supplies to available qualified MBE's.

(5) The City of Lowell will seek to use MBE's certified by the State Office of Minority Business Assistance (SOMBA). The Contract Compliance/Affirmative Action Officer will contact SOMBA for confirmation of the certification status of MBE's. Uncertified MBE's will be referred to SOMBA for certification.

III. Responsibility For Implementation

The City's Contract Compliance/Affirmative Action Officer is responsible for the development, implementation and managerial functions of the MBE Program. That person is directly responsible to the City Manager who has overall responsibility for the Program. All City personnel involved in the MBE Program are expected to cooperate fully with the Contract Compliance/Affirmative Action Officer to ensure the success of the Program.

Specific responsibilities of the Contract Compliance/Affirmative Action Officer include:

(1) Development of monitoring and revising the MBE Program.

(2) Identifying the supplies, goods and services required by the City through notifications sent to him/her by the various departments responsible for procuring them.

(3) Maintaining a directory of MBE's with information to include the type of business and area of specialty of each MBE.

(4) Publicizing business opportunities to MBE's and assisting such business to obtain contracts and subcontracts by providing them with information in sufficient time to prepare bids and quotations.

(5) Advising MBE's of training opportunities and available technical assistance.

(6) Conducting pre-bid and pre-construction conferences to explain MBE requirements and to respond to questions.

(7) Participating on bid and proposal review panels.

(8) Maintaining accurate and up-to-date records of MBE efforts.

(9) Monitoring contractors' and subcontractors' compliance with MBE requirements.

(10) Attending conferences, workshops and training seminars concerning MBE Programs.

(11) Serving as liaison with economic development organizations working in support of economic development in the minority community.

(12) Assisting in the arrangement of joint ventures between minority and non-minority firms and two or more minority firms.

(13) Providing technical assistance to interested MBE's in the area of bidding and bonding, and if necessary, making referrals to other agencies for such assistance.

IV. Implementation of Program

(A) Internal Mechanisms

The procedures that will be utilized by the City of Lowell that will help to ensure that Minority Business Enterprises will have an equitable opportunity to compete for contracts and subcontracts include the following:

(1) The City will develop bid packages and requests for proposals in such a way as to increase MBE Participation whenever possible. (e.g. breaking large contracts into smaller contracts to enable MBE's to bid).

(2) The City will encourage the formation of joint ventures among MBE's and also between Minority and Non-Minority firms by having the Contract Compliance Officer serve as the liaison between firms.

(3) The City will provide specifications and requests for proposals to the Minority entrepreneurial Community in such a timely fashion as to insure that minority bidders will have ample time to formulate a proposal.

(4) The City will provide notice of bid specifications and requests for proposals to the State Office of Minority Business Assistance not less than fifteen (15) days in advance of the bid or proposal advertisement.

(5) The City will utilize bid forms that will be as simplified as possible.

(6) The Contract Compliance Officer will hold pre-bid conferences to emphasize the City's commitment to the MBE program and to explain the goals and objectives of the City's MBE program and also to explain the forms that must be submitted with the bid regarding the MBE participation.

(7) The City will make available to and assist bidders in the use of the MBE directory.

(8) The Department of Public Works will request that all contractors submit monthly reports regarding their use of minority services.

(9) The City of Lowell will seek to make MBE's aware of future projects to be undertaken through its outreach program.

(10) The Contract Compliance Officer, with the assistance of the State Office of Minority Business Assistance, will regularly update the MBE Directory.

(B) External Mechanisms

In order for MBE's to be aware of the City of Lowell's procurement and construction activities, the Contract Compliance Officer will:

(1) Forward copies of all bid notices, including date contract was advertised, to the State Office of Minority Business Assistance, and other Minority Business Associations.

(2) Place bid notices in all local newspapers, the Dodge Bulletin, MBE trade association newsletters and minority newspapers.

(3) Include Minority Business Enterprise clause in all advertisement for bids.

(4) Hold pre-bid conferences for potential bidders to provide an opportunity to explain MBE requirements.

(5) Seek to obtain the maximum utilization of SOMBA Certified Contractors, vendors and services.

(6) Conduct a seminar with all City of Lowell Department Heads for the purpose of identifying their respective duties and responsibilities to accomplish the affirmative action goals of the City.

(7) Outreach minorities who provide professional services such as architects, engineers, consultants, accountants, attorneys, etc. through notices to professional organizations and utilization of listing provided by SOMBA.

V. Bidding Procedures

COMPETITIVE BIDDING

The City of Lowell, in awarding contracts, uses the procedure set out in Chapter 43, Section 18 of the Massachusetts General Laws. All contracts for construction or for the purchase of equipment, supplies or materials, which amount to two thousand dollars or more are awarded after proposals are solicited through advertisements in the central register published by the state secretary and in at least one newspaper published in the City of Lowell once a week for at least two consecutive weeks. All proposals are opened in public. Contracts are awarded to the lowest responsible bidder meeting the plans and specifications of proposed work or supplies.

PURCHASES OF LESS THAN $2,000.00

When purchasing supplies totaling less than $2,000.00 the Purchasing Department of the City of Lowell contracts at least three firms to obtain prices for the required goods. The firm quoting the lowest price is then generally used, based on its past performance and ability to provide quality supplies.

REQUESTS FOR PROPOSALS

The City of Lowell utilizes RFP's for consultant, engineering, design, etc. services. The procedure that has been used is that the Office of the City Manager, Division of Planning and Development, distributes copies of an RFP to firms who have completed similar projects (whether or not for the City of Lowell), those listed in trade/professional journals, and those who have expressed an interest in receiving particular RFP's. The selection of a firm for a project is based on its past performance on similar projects, the content of its proposal and

consideration of the City's overall needs and project justification. Project cost is only one factor taken into consideration in the awarding of such projects.

The City of Lowell will make every effort to outreach to MBE's to ensure them an opportunity to participate in each of the above procedures, as outlined in Section IV above.

VI. Monitoring and Reporting Procedure

In addition to the established reporting requirements for Affirmative Action, quarterly reports will be developed and documented by the Contract Compliance Officer, and will include the following information for each project:

(1) Name of General/Prime Contractor and Subcontractor awarded City funded contracts.

(2) Description, dollar value, and percentage of dollar value of contracts awarded to MBE's by the City.

(3) Description, dollar value, and percentage of dollar value of subcontracts, regardless of tier, awarded to MBE's by the City.

(4) Total percentage at dollar value of all contracts and subcontracts, regardless of tier, awarded to MBE's and an indication as to whether the percentage met or exceeded the goal specified in the project application.

The Contract Compliance Officer will also require that each Contractor employed by the City of Lowell, submit to her/him monthly reports consisting of a complete breakdown of all minority services employed during each week of construction.

The monthly and quarterly reports will be kept on file with the Contract Compliance Officer and will be forwarded to the Massachusetts Commission Against Discrimination and the State Office of Minority Business Assistance and HUD.

The Contract Compliance Officer shall be responsible for insuring that all aspects of the City of Lowell's Minority Business Enterprise Program are initiated and undertaken. By virtue of the delegation of this responsibility and authority to direct the program, the Contract Compliance Officer will report directly to the Office of the City Manager on equal opportunity matters. The Contract Compliance Officer shall be responsible for the development, administration and monitoring of all activities necessary to insure the accomplishment and success of this Minority Business Enterprise Program. This includes a close working relationship with the Department of Public Works and the Engineering Office for the City of Lowell.

The Contract Compliance Officer will forward all monthly monitoring reports from the Contractor to the State Office of Minority Business Assistance on a quarterly basis.