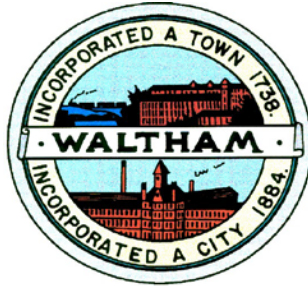


# The City of Waltham



Invites  
Interested Parties  
To propose the best offer and or bid  
For the service or product herewith described:

## **Furnishing and Installing Video Detection Cameras at Three Signalized Intersections on Main Street**

The bid opening will be held: **2:00 PM, Thursday August 29, 2019**

Last day for Written questions: **12.00 Noon August 16, 2019**

(via Email ONLY to [Cphilpott@city.waltham.ma.us](mailto:Cphilpott@city.waltham.ma.us))

Table of Contents:

- Invitation to Bid
- Intent of the Project
- Instructions
- General Conditions
- Supplemental General Conditions
- Specifications
  - Interior photos of existing signal control cabinets
- Compliance
- Bid Price
- Maps of the three Main Street Intersections

# Invitation to Bid

# The City of Waltham

## Purchasing Department

### REQUEST FOR BID (RFB)

Under the rules of M.G.L. Chapter 149 the Purchasing Department of the City of Waltham hereby requests sealed bids for:

Furnishing and Installing Video Detection Cameras  
at Three Signalized Intersections on Main Street

Price Proposals will be received at the office of the Purchasing Agent, Joseph Pedulla, City Hall, 610 Main Street, Waltham MA 02452, until,

2:00 PM, Thursday August 29, 2019

At which time and place the bids will be publicly opened and read.

Specifications and information available at the Purchasing Agent's Office or in the Waltham Purchasing Department web site at [www.city.waltham.ma.us/bids](http://www.city.waltham.ma.us/bids)

BIDS MUST BE SIGNED AND ENCLOSED IN A SEALED ENVELOPE AND MARKED:

BID FOR: Main Street Video Cameras

If the Bidder is a corporation, state your correct corporate name and State of incorporation. If Bidder is a partnership, state names and addresses of partners. If Bidder is a trust or other legal entity, state correct names and addresses of trustees or names and address of those legally authorized to bid and enter into contracts.

EXCEPTION OR ALTERNATES TO SPECIFICATIONS, TERMS OF SALE, AND DISCOUNTS AVAILABLE, MUST BE INCLUDED IN THE BID PRIOR TO OPENING DATE.

## **INTENT OF PROJECT**

The Purchasing Department of the City of Waltham wishes to procure material, parts and the installation of three (3) camera surveillance systems at the following signalized Main Street traffic Intersections:

- At Moody Street/Common Street
- At Main Street/Lexington Street
- At Elm Street/Church Street

**AGREEMENT**

CITY OF WALTHAM

ARTICLE 1. This agreement, made this \_\_\_\_\_ day of \_\_\_\_\_, 2019 by and between the CITY OF WALTHAM, party of the first part, hereinafter called the CITY, by its MAYOR, and

\_\_\_\_\_

\_\_\_\_\_ hereinafter called the CONTRACTOR.

ARTICLE 2. Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the others herein contained, do hereby agree, the CITY OF WALTHAM for itself, and said contractor for his heirs, executors, administrators and assigns as follows:

To furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished (except as otherwise specified) and deliver in and about the project and to do and perform all work in strict conformity with the provisions of this Contract and of the Notice to Bidders, bid, Project Manual, and Drawings hereto annexed. The said Notice to Bidders, bid, Project Manual, and Drawings are hereby made a part of this contract as fully and to the same effect as if the same had been set forth at length and incorporated in the contracts.

ARTICLE 3. In consideration of the foregoing premises the CITY agrees to pay and the CONTRACTOR agrees to receive as full compensation for everything furnished and done by the CONTRACTOR under this contract, including all work required by not included in the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set forth in the accompanying bid.

This Agreement entered into as of the day and year first written above.

CITY OF WALTHAM, MASSACHUSETTS

**FOR THE CITY**

\_\_\_\_\_  
Jeannette A. McCarthy, MAYOR,  
City of Waltham  
Date: \_\_\_\_\_

\_\_\_\_\_  
John B. Cervone, City Solicitor  
Date: \_\_\_\_\_  
APPROVED AS TO FORM ONLY

\_\_\_\_\_  
Michael Garvin, Traffic Engineer  
Date: \_\_\_\_\_

\_\_\_\_\_  
Joseph Pedulla, Purchasing Agent  
Date: \_\_\_\_\_

\_\_\_\_\_  
Paul Centofanti, Auditor  
Date: \_\_\_\_\_

I CERTIFY THAT SUFFICIENT FUNDS  
ARE AVAILABLE FOR THIS CONTRACT

**FOR THE COMPANY**

\_\_\_\_\_  
CONTRACTOR (Signature),  
Date: \_\_\_\_\_

\_\_\_\_\_  
Company

\_\_\_\_\_  
Address

**INSTRUCTIONS**



## INSTRUCTIONS FOR BIDDERS

**1. READ ALL DOCUMENTS.**

Bidders should familiarize themselves with all the documents contained herein; it is mandatory that all Bids be in compliance with all the provisions contained in said documents.

**2. FORMS AND ATTACHMENTS.**

Bids are to be completed on the forms provided ONLY and enclosed in a sealed envelope marked on the outside "BID (title)" and the name and address of bidder. Attachments submitted in addition to the Waltham Purchasing Department produced forms may not be considered.

**3. PRINTED OR TYPED RESPONSE.**

All information must be typewritten or printed in ink, including the price the bidder offers in the space as provided on the bid form.

**4. CORRECTIONS.**

Bids that are submitted containing cross outs, white outs or erasures, will be rejected. All corrections or modifications to the original bid are to be submitted in a separate envelope, properly marked on the outside, "CORRECTION/ MODIFICATION TO BID (title)" and submitted prior to the bid opening.

ALL DOCUMENTS SUBMITTED WITH YOUR RESPONSE WILL BE INCORPORATED INTO THE CONTRACT.

**5. PRICE IS ALL INCLUSIVE.**

Bid prices shall encompass everything necessary for furnishing all items, materials, supplies or services as specified, and in accordance with the specifications, including proper packing, cost of delivery, and in the case of services, completion of same, as per specifications.

**6. PRICE DISCREPANCY.**

In the event of a discrepancy between the Unit Price and the Extension, the Unit Price shall prevail.

**7. PREVAILING WAGES**

The Contractor is required to pay the prevailing wages as determined under the provisions of Chapter 149, Sections 26 and 27D of the Massachusetts General Laws, including the submission of weekly payrolls to the awarding authority. A copy of the prevailing wage schedule can be found at [www.city.waltham.ma.us/bids](http://www.city.waltham.ma.us/bids).

**8. EXCEPTIONS**

No Exceptions will be acceptable to the City. The City's intent is to purchase precisely what is specified in the document. Only equal or better grade specifications shall be considered by the City.

**9. BID DEPOSITS.**

Bid deposits are to be made payable to the City of Waltham. In the event that the successful bidder fails to execute a Contract within (10) days of the receipt of said contract, such security shall be retained by the city as liquidated damages. Unsuccessful bidders' deposits will be returned immediately following the award to said successful bidder.

**10. WITHDRAW.**

A Bid may be withdrawn by written request prior to the schedule for the Bid Opening. No withdrawals are permitted after the bid opening date and time. Withdrawals after the bid opening date will cause the forfeit of the bid Deposit.

**11. AWARD.**

Bids will be awarded not later than (90) ninety days after the scheduled bid opening date, unless otherwise stated, in the specifications. Unless otherwise specified, bids will be evaluated on the basis of, completeness of your RFP response, responsiveness, responsibility, best price and experience.

12. *AWARD CRITERIA.*

Qualified and responsive proposals will be evaluated based on the following rating, which will apply to all Price, Technical, and Compliance requirements.

13. *DISCOUNTS.*

Discounts for prompt payments, based on City Pay Day, will be considered when making awards.

14. *TAX EXEMPT.*

Purchases by the City of Waltham are exempt from any Federal, State or Massachusetts Municipal Sales and/or Excise Taxes.

15. *SAMPLES (if applicable).*

The Waltham Purchasing Department may require the submission of samples either before or after the awarding of a contract. Samples are to be submitted, at no charge to the City, so as to ascertain the product's suitability. If specifically stated in the Bid that samples are required, said samples must be submitted with the Bid prior to the Official Bid Opening. Failure to submit said samples would be cause for rejection of Bid. All samples must be called for and picked up within (30) thirty days of award or said samples will be presumed abandoned and will be disposed of.

16. *ACTIVE VENDOR LIST.*

Vendors who wish to remain on the Active Bid List must either submit a Bid, No Bid, or a letter requesting same, no later than the Official Bid Opening. This is applicable to those vendors who have received the Invitation to Bid.

17. *FUNDS APPROPRIATION.*

The contract obligation on behalf of the City is subject to prior appropriation of monies from the governmental body and authorization by the Mayor.

18. *THE AWARDING AUTHORITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS, OR ANY PART OF ANY BID, WHICH IN THE OPINION OF THE AWARDING AUTHORITY, IS IN THE BEST INTERESTS OF THE CITY OF WALTHAM.*

19. *THE TAX ATTESTATION CLAUSE, CERTIFICATION OF NON-COLLUSION AND THE CORPORATION INFORMATION, are an integral part of the Invitation for Bid and must be completed and signed by the person submitting the Bid, or by the person/persons who are officially authorized to do so.*

20. *STANDARD OF QUALITY.*

Where, in the specifications, one certain kind, type, catalog number, brand or manufacturer of material is named, it shall be regarded as the required standard of quality. Where two or more are named, these are presumed to be equal and the Bidder may select one or the other. If the Bidder proposes to offer a substitute as an equal, he shall so indicate on the Bid Form, the kind, type, catalog number, brand, or manufacturer of material that is offered as an equal, and describe where it differs from the specifications. Substituted items must be capable of performing all the functions and/or operational features described or indicated in the specifications. Failure to indicate the description of any substitute item on the Bid will be interpreted to mean that the Bidder will furnish the item or service as specified.

20. *MODIFICATION.*

No agreement, understanding, alteration or variation of the agreement, terms or provisions herein contained shall bind the parties, hereto unless made and executed in writing by the parties hereto.

21. *ASSIGNMENT.*

The final payment for work done under this Contract shall be made only after the Contractor has signed a statement under the penalty of perjury, certifying that he has completed the work described in the final estimate. Neither party hereto shall assign this Contract or sublet it in part or as a whole without the prior written consent of the other party hereto. The Contractor shall not assign any sum or sums due or becoming due to him hereunder without the prior written consent of the City.

22. *STABILITY of AGREEMENT:*

Section 1. The failure of the City or the Union to insist, in any one or more incidents, upon performance of any of the terms or conditions of this Agreement shall not be considered as a waiver or relinquishment of the rights of the City or of the Union to future performance of any such term or condition and the obligations of the Union or of the City to such future performance shall continue in full force and effect.

Section 2. The provisions of this Agreement supersede any conflicting or inconsistent rule, regulation, ordinance or order promulgated by the City.

Section 3. Should any part hereof or any provision herein contained be rendered or declared invalid by reason of any existing or subsequently enacted legislation or by any decree of a court of competent jurisdiction, such invalidation of such part or portion of this agreement shall not invalidate the remaining portions hereof and the remaining parts of provisions shall remain in full force and effect.

23. *DELIVERIES (if applicable):*

a) The Contractor shall pay all freight and delivery charges. The Waltham Purchasing Department does not pay for shipping and packaging expenses. Items must be delivered as stipulated in the specifications. All deliveries must be made to the inside of city buildings. Sidewalk deliveries will not be accepted. City personnel are not required to assist in the deliveries and contractors are cautioned to notify their shippers that adequate assistance must be provided at the point of delivery, when necessary.

b) All items of furniture must be delivered inside the building, set up, in place and ready for use. Deliveries are to be made between the hours of 8:30 a.m. and 3:00 p.m., Monday through Friday, except on holidays.

c) All damaged items, or items which do not comply with specifications will not be accepted and title therefore will not vest to the Waltham Purchasing Department until such items are accepted and signed for, in good order, by the receiving department.

d) The contractor must replace, without further cost to the Waltham Purchasing Department, such damaged or non-complying items before payment will be made.

24. *LABELING (if applicable).*

All packages cartons or other containers must be clearly marked with (a) building and room destination; (b) description of contents of item number from specifications; (c) quantity; (d) City of Waltham Purchase Order Number and (e) Vendor's name and order number.

25. *GUARANTEES.*

Unless otherwise stipulated in the specifications, furniture, equipment and similar durable items shall be guaranteed by the contractor for a period of not less than one year from the date of delivery and acceptance by the receiving department. In addition, the manufacturer's guarantee shall be furnished. Any items provided under this contract which are or become defective during the guarantee period shall be replaced the contractor free of charge with the specific understanding that all replacements shall carry the same guarantee as the original equipment. The contractor shall make such replacement immediately upon receiving notice from the Purchasing Agent.

26. *SINGLE VENDOR.*

The Waltham Purchasing Department desires to award a single contract based on the Grand Total Price. However, where applicable, the City reserves the right to make multiple awards on a low unit price basis if, in the opinion of the Waltham Purchasing Department, it is in the best interest of the City of Waltham

27. *BEST AND FINAL OFFER.*

The Waltham Purchasing Department reserves the right to request best and final offers from one or more bidders. Best and final offer will be exercised should the CPO deem it is in the best interest of the Waltham Purchasing Department in order to obtain the best value.

28. *CHANGE ORDERS.*

Change orders are not effective until, if, as and when signed by the Mayor and no work is to commence until the change orders are fully executed.

29. *BID OPENING INCLEMENT WEATHER*

If, at the time of the originally scheduled bid opening, City Hall is closed to inclement weather or another unforeseeable event, the bid opening will be extended until 2:00 PM on the next normal business day. Bids will be accepted until that date and time.

30. *TIE BREAK*

In the event of a tie where both vendors were responsive and responsible the vendors with a tie agree to a coin toss to determine the winner. The Coin toss will be executed in the presence of both vendors and a witness from the Purchasing Office. The coin will be flipped by the Chief Procurement Officer in the presence of the two bidders. A written record of the process you used, including the results and the names of those participating. The low bidders shall sign an agreement stating that they will abide by the results of the tie breaker. As an alternative, you may allow for a "second round" between the tied vendors.

31. *BALANCED BIDDING and PENNY LINE BIDDING (if applicable)*

Bids should be made on each separate item of work shown in the BID with reasonable relation to the probable cost of doing the work included in such items. The right is reserved to reject wholly any Bid where an item or items thereof are obviously unbalanced or appear to the CITY to be so unbalanced as to affect or to be liable to affect adversely any interests of the CITY. The attention of the Bidder is called to the fact that unbalancing of Bids may adversely affect the CONTRACTOR if certain portions of the work are increased or decreased.

32. *ORIGINAL SIGNATURES*

Where a signature is required in the bid documents, the vendor is required to place an original "wet" signature. The Certificate of Vote Authorization, Certificate of Non Collusion Certificate, Tax Compliance Certificate, Debarment Certification, Notary Public Certification and the Bid Form (price form) MUST bear an original "Wet" signature by the authorized corporate officer. The Notary Public Certification must be from a notary permitted to practice in this country. No certifications by a foreign Notary public will be accepted.

33. *PRINTING AND ASSEMBLY BID SUBMISSION*

Bid responses shall be submitted in single page printing format. No double-sided printing is accepted by the City. The response binding shall be with an appropriately sized clip binder. No staples, no metal or plastic binding is accepted.

34. *PENNY LINE BIDDING and FRONT LOADING of CHARGES (for Construction ONLY)*

Interested parties are herewith notified that penny-bidding lines, although permitted under the law, it poses a certain compensatory risk to the contractor. Compensation at the rate of the Penny bid line shall be paid by the City in the event additional quantities are required. The contractor acknowledges that front loading charges to tasks performed in the early stage of the service delivery, as a source to the contractor to fund the remaining or portion of the remaining project, may be source of disqualification as this poses a risk to the City. The successful contractor maybe required to present to the City financial statements proving the contractor has the financial ability to complete the project with its own assets.

## **GENERAL CONDITIONS**

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## GENERAL CONDITIONS

### 1. INFORMATION

All information shall come from the Office of the City Agent. The Contractor shall inquire at this office for any information needed. Wherever the words “or equal as approved” are used, it is to be understood that the opinion of the City Agent shall govern.

### 2. SUITS

The Contractor shall assume defense of and shall indemnify and hold the City and its agents harmless from all suits and claims against them arising from the use of any invention, patent right labor or employment, or from any act of omission or neglect of the Contractor, his agents, employees or any subcontractor in performing the work, under this contract.

### 3. LAWS AND REGULATIONS

The Contractor shall conform to all the applicable rules, regulations, laws and ordinances of the City of Waltham, the United States of America and all agencies having jurisdiction.

### 4. PROTECTION OF PROPERTY

The Contractor shall take all proper precautions to protect the City’s property from damage and unnecessary inconvenience. Any City property damaged by the Contractor in carrying out the provisions of this contract shall be restored to its original condition, by and at the expense of the Contractor.

### 5. PROTECTION OF PERSONS

The Contractor shall take all proper precautions to protect persons from injury, unnecessary inconvenience, and shall be responsible for his failure to do so. The Contractor agrees to hold the City harmless from any and all liabilities of every nature and description, which may be suffered through bodily injury, including death, to any person, by reason of negligence of the Contractor, his agents or employees, or any subcontractor.

### 6. CONTRACT DURATION

This contract is for the period required to complete the project from the date first placed by the Mayor’s Signature.

### 7. INSURANCE

#### A. WORKMAN’S COMPENSATION

The Contractor shall provide by insurance for the payment of compensation and furnishing of other benefits under Chapter 152 of the General Laws of the Commonwealth of Massachusetts to all persons to be employed under this contract, the premiums for which shall be paid by the Contractor.

#### B. COMPREHENSIVE GENERAL LIABILITY

Bodily Injury:	\$1,000,000 Each Occurrence
	\$2,000,000 Aggregate
Property Damage:	\$1,000,000 Each Occurrence
	\$2,000,000 Aggregate

#### C. AUTOMOBILE (VEHICLE) LIABILITY

Bodily Injury	\$2,000,000 Each Occurrence
Property Damage	\$1,000,000 Aggregate

#### D. UMBRELLA POLICY \$2,000,000

Your bid response must include a Certificate of Insurance with the above limits as a minimum. In addition, the Certificate of Insurance must have the following text contained in the bottom left box of the Certificate: *“The City of Waltham is a named additional insured for all insurances under the contract, excluding Automobile and Workers Compensation coverage”*. **Failure by the contractor to provide a current and updated insurance policy, during the entire duration of the contract, may result in additional legal liability.** The Certificate of Insurance must be mailed directly to:

Office of the Chief Procurement Officer  
Purchasing Department  
City of Waltham  
610 Main Street  
Waltham, MA 02452

**8. PERFORMANCE AND MATERIALS BONDS (for Construction ONLY)**

The Contractor agrees to execute and deliver to the City, a Performance and Materials Bond or a Payment Bond EACH in the amount equal to 100% of the contract price. This contract shall not be in force until said bond has been delivered and accepted by the City. Performance and Payment Bonds shall be issued by a company licensed by the Commonwealth of Massachusetts as listed in the following web site: <http://www.mass.gov/ocabr/docs/doi/companies/fidelityandsurety.pdf>

**9. PERSONNEL**

The Contractor shall employ a competent supervisor and all properly licensed personnel necessary to perform the services required in this contract. The City Agent shall have the right to require the Contractor to remove and/or replace any of the personnel for nonperformance or for unprofessional behavior. The City Agent may require the Contractor to submit a weekly performance record of the areas and of the work performed, on forms approved by the City Agent. The Contractor or his supervisor shall be available to inspect such work as required by the City Purchasing Agent.

**10. MATERIALS**

The City or its Agent reserves the right to approve or reject any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any supplies, material or equipment used by the Contractor. The Contractor agrees to replace any rejected supplies, materials or equipment, to the satisfaction of the City or its Agents.

**11. TERMINATION FOR CONVENIENCE**

The City of Waltham may, in its sole discretion, terminate all or any portion of this Agreement or the work required hereunder, at any time for its convenience and/or for any reason by giving written notice to the Contractor thirty (30) calendar days prior to the effective date of termination or such other period as is mutually agreed upon in advance by the parties. If the Contractor is not in default or in breach of any material term or condition of this Agreement, the Contractor shall be paid its reasonable, proper and verifiable costs up to the of termination to the extent previous payments made by the City of Waltham to the Contractor have not already done so. Such payment shall be the Contractor's sole and exclusive remedy for any Termination for Convenience, and upon such payment by the City of Waltham to the Contractor, the City of Waltham shall have no further obligation to the Contractor. The City of Waltham shall not be responsible for the Contractor's anticipatory profits or overhead costs attributable to unperformed work.

**12. CONTRACT OBLIGATIONS**

Contract obligations on behalf of the City are subject to an annual appropriation to cover the contract obligation.

**13. BIDDER EXPERIENCE EVALUATION**

Each bidder shall submit with his bid, all the information relative to their experience and qualifications in performing the work required under this contract and shall have been in business for a minimum of five (5) years, in order for their bid to be considered.

**14. NOT-TO-EXCEED AMOUNT**

The bid amount proposed in your company's response is a "Not-to- Exceed" amount unless the City makes changes, in writing, to the scope of work to be performed. The Change Order must be signed and approved by the City PRIOR to the commencement of the change order work. A change order will

be priced at the unit price. Failure to comply with this procedure will result in the cancellation of the contract and the non-payment of services provided.

15. *FINANCIAL STATEMENTS.*

The City may require, within five (5) days after the bid opening, a complete and detailed Financial Statement prepared by a Certified Public Account, to determine a bidder’s financial stability.

16. *BREACH OF CONTRACT/ NON-PERFORMANCE*

If the Contractor shall provide services in a manner, which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services, which are satisfactory to the City, the City in the alternative may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract for nonperformance of services together with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor. If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand. The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency the nonoccurrence of which was a basic assumption under which this Contract was made, including a state of war, embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the City in writing of such cause within seven (7) days after its occurrence.

17. *RIGHT TO AUDIT*

The Waltham Purchasing Department has the right to review and audit documents related to this contract. This right extends to any subcontractor, supplier or other entity used by the prime contractor to fulfill the obligations under this contract.

18. *CITY ORDINANCE. APPROVAL OF CONTRACTS BY MAYOR, SEC. 3-12 OF THE CITY ORDINANCES.*

All contract made by any department, board or commission where the amount involved is two thousand dollars (\$2,000) or more shall be in writing, and no such contract shall be deemed to have been made or executed until the approval of the Mayor is affixed thereto. Any construction contract shall, and all other contracts may, where the contract exceed five thousand dollars (\$5,000) be required to be accompanied by a bond with sureties satisfactory to the Mayor.

19. *ACTIVE REPARATION CLAIMS*

Does your company or any of its Principals have an active reparation Claim with the City. A claim is any demand by a contract for the payment of disputed invoices, payment penalties, labor disputes, interest, etc. YES \_\_\_\_\_, NO \_\_\_\_\_ (*circle or check applicable*).

If YES Please explain the nature of the claim, date of the claim and City Department

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Add an additional page if necessary)

20. *REVISED MBE/WBE GOALS FOR, (If Applicable), CERTAIN STATE FUNDED BUILDING PROJECTS ONLY*  
Pursuant to M.G.L. c 7, §40N and M.G.L. c. 7, §61, the Supplier Diversity Office (“SDO”) (formerly SOMWBA) and the Division of Capital Asset Management (“DCAM”) have set revised participation goals for Minority Business Enterprise (“MBE”) and Women Business Enterprise (“WBE”) participation for affected state funded building projects and state assisted municipal building projects as defined in the above referenced laws and related Executive Orders, including Executive Orders 524 and 526. Effective January 1, 2012, and until such time as the goals may be revised, the MBE and WBE participation goals for building construction



and design awards and expenditures on new projects advertised on or after the effective date will be a combined MBE/WBE goal as follows:

**14.4%** combined MBE/WBE participation on **construction contract** awards; Overall annual designations by awarding authorities, as well as MBE/WBE participation on individual projects with a combined MBE/WBE participation goal, must include a reasonable representation of both MBE and WBE firms that meets or exceeds the combined goal. Proposed MBE/WBE participation plans that include solely MBE or solely WBE participation, or do not include a reasonable amount of participation by both MBE and WBE firms to meet the combined goal, will not be considered responsive. Where the prime contractor or designer is an SDO certified MBE or WBE, the prime must bring a reasonable amount of participation by a firm or firms that hold the certification which is not held by the prime contractor or designer on the project. Proposed participation on construction projects or design projects which consists solely of either an MBE or WBE representing 100% of the overall combined goal will not be considered reasonable participation. The SDO and DCAM will determine whether there is reasonable participation by both MBE and WBE firms on individual projects under their respective oversight. Firms submitting MBE/WBE participation plans which do not provide reasonable participation by both MBE/WBE firms shall be provided an opportunity to revise and resubmit their plans within the time frame set by the awarding authority; however no price adjustments shall be permitted as a result of the revised plan. Firms failing to submit an MBE/WBE participation plan deemed reasonable and accepted by the awarding authority shall not be awarded the contract. Participation by MBE and WBE firms must be documented, tracked and reported on separately as MBE participation and WBE participation by prime vendors, subcontractors and awarding authorities.

**21. THE CITY OF WALTHAM EQUAL EMPLOYMENT OPPORTUNITY AND AFFIRMATIVE ACTION POLICY**

The City of Waltham is committed to a policy of equal employment opportunity and to a program of affirmative action in order to fulfill that policy. The City will accordingly recruit and hire into all positions the most qualified persons in light of job-related requirements, and applicants and employees shall be treated in employment matters without regard to unlawful criteria including race, color, religion, ancestry, national origin, sex, sexual orientation, disability, age, positive HIV-related blood test results, status as a disabled or Vietnam Era Veteran, genetic information, or gender identity or expression, as these terms are defined under applicable law, or any other factor or characteristic protected by law.

In addition, The City of Waltham recognizes that discriminatory harassment and sexual harassment are forms of unlawful discrimination, and it is, therefore, the policy of the City of Waltham that discriminatory harassment and sexual harassment will not be tolerated. The City of Waltham also prohibits unlawful harassment on the basis of other characteristics protected by law.

Further, employees and applicants will not be subjected to harassment or retaliation because they have engaged in or may engage in the following: filing a complaint or assisting or participating in an investigation regarding alleged discrimination or harassment as prohibited in the policy statement above; filing a complaint or assisting or participating in an investigation, compliance evaluation, or any other activity related to the administration of the Vietnam Era Veterans' Readjustment Assistance Act of 1974 ("VEVRAA"), Section 503 of the Rehabilitation Act of 1973 ("Rehabilitation Act"), or the Affirmative Action provisions of federal, state or local

law; opposing any act or practice made unlawful by VEVRAA requiring equal employment opportunities for individuals with disabilities, disabled veterans, or veterans of the Vietnam Era; or exercising any rights under VEVRAA or the Rehabilitation Act.

Sources: Titles VI and VII of the Civil Rights Act of 1964; the Immigration Reform and Control Act of 1986; Title IX of the Education Amendments of 1972; the Equal Pay Act of 1963; the Age Discrimination in Employment Act of 1967; the Age Discrimination Act of 1975; Sections 503 and 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; Section 402 of the Vietnam-Era Veterans Readjustment Assistance Act of 1974; Executive Order 11246 as amended; The Genetic Information

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Nondiscrimination Act of 2008 and such other federal, state and local non-discrimination laws as may apply.

22. *BUY RECYCLING REQUIREMENTS*

The City of Waltham's Buy Recycling Procedure follows the EPA's Comprehensive Procurement Guideline (CPG) program promoting the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacturing of new products. The City requires that the purchase of products and material supplied by subcontractors originate, as often as practical, from the recycling of previously used materials.

23. *M.G.L. A. 156c § 67. Certification Of Authority To Act For A Limited Liability Company (LLC)*

Limited Liability corporations are required to file with the City a certificate showing they have the authority to contract. Any person who is identified on the certificate of organization, as amended, of a domestic limited liability company, or on the application for registration, as amended, of a foreign limited liability company, as a manager or as a person who is authorized to execute any documents to be filed with the office of the state secretary, is required to certify as to the incumbency of any manager or member and as to the authority of any person, whether or not such person is identified on the certificate of organization or on the application for registration, to act for the limited liability company, including without limitation with respect to the matters referred to in section sixty-six, and any such certification shall be binding on the limited liability company in favor of a person relying in good faith on such certification, notwithstanding any inconsistent provisions of the operating agreement, side agreements among the members, the managers or both, by-laws or rules, resolutions or votes of the limited liability company.

# Specifications

Vehicle Detection System: Main Street/Moody Street/Common Street; Main Street/Lexington Street; and Main Street/Elm Street/Church Street

The Contractor shall furnish and install a complete vehicle detection system that detects vehicles on a roadway by processing images sent from a sensor to an interface board with detector outputs that can be received by the traffic signal controller. Each System must be fully operation at the point of delivery to the City. These traffic sensors shall be installed at the three intersections on Main Street and in accordance with these specifications. The detection system shall be non-intrusive (i.e. above ground) and shall consist of:

1. Mounting brackets
2. Traffic sensor and detection module
3. Communications cable

The detection system also, at a minimum, shall be able to:

- Stop bar detection;
- NEMA TS 2 compatibility; and
- Collect and store volume, speed and classification of vehicles and bicycles (future use)

The Contractor shall use one of the following vehicle detection systems, and shall meet the approval of the City.

- Miovision SmartView 360 Camera with TrafficLink;
- GRIDSMART Technologies Street Smart System;
- Or approved equivalent

Components of the detection systems shall all be the same as to make and model.

**Mounting Bracket** – The mounting brackets associated with the detection system shall be per the manufacturer’s recommendations.

**Vehicle Detection Zone** – The Contractor shall be responsible for setting the vehicle detection zones as agreed to by The City. The Contractor may be required to adjust and readjust the location of proposed vehicle detection zones in the presence of The City personnel, at no additional cost, to properly set the detection area.

**Installation & Training:** The manufacturer of the vehicle detection system, or their representative, shall design sensor layout, placement and lens size, and supervise the installation of the equipment.

The Contractor shall provide up to eight (8) hours of personnel training in the use of the vehicle detection 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 six attendees at the training session.

No training shall begin unless and until the final inspection process indicates that the vehicle detection system is sufficiently complete and operational such that training would be useful at that time.

The manufacturer shall provide 3 complete sets of maintenance manuals for the installed equipment. These manuals shall have complete set-up, maintenance and troubleshooting procedures presented in an organized format.

Communication Cable – the vehicle detection communications cable shall be supplied and installed per the manufacturer’s recommendations.

#### **Vehicle Detection Software Management System**

The Contractor shall provide and install a management system designed to allow for remote monitoring, data collection and control for future use. The management system shall be compatible with the detection system supplied as part of this project.

#### **Video BIU Module**

The Video BIU module shall be compatible with NEMA TS2 detector card racks and shall meet the following requirements:

- Shall support 64 detector inputs.
- Shall select TS-2 detector BIUs to emulate and operate up to 4 BIUs simultaneously.
- Shall provide SDLC interface for video processing cards.
- Allow for multiple detection zones to be assigned to the same camera.

#### **Detector Rack Assemblies**

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

**Time to Final Completion:** 120 days from the date of the Notice-to-Proceed

**Site Visit:** Although the City will not be hosting a site visit for this project, interested vendors are strongly encouraged to visit the three (3) intersections and become familiar with the area.

### ***1. General Description***

The City of Waltham Procurement Department, in conjunction with the Traffic Department, is in search of a vendor to provide goods and services relating to the provision, installation, communication, programming, integration and warranty/maintenance service of traffic camera detection system to integrate with the city’s Surtrac Adaptive Signaling System. The goal of this project is to mitigate traffic issues in this major thru fare of Waltham by coordinating the signaling at the three (3) signal locations identified in this project. A single qualified vendor Contractor shall provide, install and program the Vehicle Detection data gathering locations to eventually integrate with the city’s Surtac Adaptive Signal System. The communication of the devices shall be provided at the control cabinets as needed and is included the project bid.

The Vendor/Contractor shall provide all software, firmware, licenses, software agreements, hardware, wire, appurtenances, wireless communications modules and/or antennas, miscellaneous materials, straps, fasteners, wire, screws, etc. to install the components required at each signal and cabinet, and to ensure proper communication between signals for the Surtrac System to control the adaptive signaling. The Contractor shall furnish and install a vehicle detection system that detects vehicles on a roadway by processing images sent from a camera sensor to an interface board with detector outputs that can be received by the traffic signal controller. The system shall have the capability to collect and monitor

pedestrian and cycle traffic in the form of added software modules at a later date. These traffic/vehicle detection system station sensors shall be installed at the three intersections on Main Street and in accordance with these specifications. The vendor contractor is to provide all necessary materials and labor at each signal location, that is required for a fully functioning vehicle detection data gathering location.

The intersection locations for the installations are:

- Main Street/Moody Street/Common Street
- Main Street/Lexington Street
- Mail Street/Elm Street/Church Street

This work shall consist of complete furnishing, installation, integration and testing of environmentally hardened, purpose built devices and service coordination with the City of Waltham to provide an end-to-end wireless data acquisition, transmission, alerts, video detection, and data analytics system for existing traffic signal controllers and all other material, labor and equipment necessary to provide a complete and operating field gathering system as specified at the locations provided herein.

The system shall include but not be limited to:

- Communication Cable – The Contractor shall provide the vehicle detection communications cable which shall be supplied and installed per the manufacturer’s recommendations.
- Vehicle Detection Software Management System - The Contractor shall provide and install a management system designed to allow for remote monitoring, data collection and control for future use. The management system shall be compatible with the detection system supplied as part of this project.
- Video BIU Module - The Video BIU module shall be compatible with NEMA TS2 detector card racks and shall meet the following requirements:
  - A. Shall support 64 detector inputs.
  - B. Shall select TS-2 detector BIUs to emulate and operate up to 4 BIUs simultaneously.
  - C. Shall provide SDLC interface for video processing cards.
  - D. Allow for multiple detection zones to be assigned to the same camera.
  - E. Detector Rack Assemblies - The detector rack assemblies shall conform to Paragraph 5.3.4 of the NEMA TS 2 Standard.

The devices shall provide connectivity from the intelligent transportation systems (ITS) field device(s), including NEMA traffic controllers, to the Traffic Management Center (TMC), as well as integrating with the Surtrac Adaptive Signal System application to remotely monitor and manage the traffic signal operation and associated traffic signal devices. This work must be performed in accordance with the standard specifications as specified herein.

The detection system shall be non-intrusive (i.e. above ground) and shall consist of but not be limited to the following components:

1. Mounting brackets and bands

2. 360-degree camera or cameras sufficient for entire intersection
3. Traffic sensor and detection modules
4. Edge devices
5. Communications cable

The detection system shall be able to also, at a minimum, provide:

1. Stop bar detection
2. NEMA TS 2 compatibility
3. Collect and store volume, speed and classification of vehicles and bicycles (future use) and the length of time to be provided by owner
4. Function with the existing Emergency Vehicle Preemptive System

Components of the detection systems shall all be the same as to make and model at each intersection on the project. The mounting brackets associated with the detection system shall be per the manufacturer's recommendations.

Acceptable Manufacturers for the Vehicle Detection System shall be:

- A. Miovision SmartView 360 Camera with TrafficLink;
- B. GRIDSMART Technologies Street Smart System;
- C. Iteris
- D. Or approved equivalent

## **2. Materials**

### **A. General**

Furnish, install, integrate and test all equipment and required components (hardware and software), including antennas and antenna cables, interconnect cables, power supplies, and all components necessary to provide full and complete functionality in all respects, without additional expense to the Customer. All cellular data service will be included with no additional overage costs included with product. Use identical and completely interchangeable equipment at each field location based on the requirement at each field location.

### **B. Hardware**

Wireless data acquisition, alerts and analytics system (64GB)-This single device provides connectivity from the intelligent transportation systems (ITS) field device(s), including NEMA ABC and EF-140 traffic controllers, to the Traffic Management Center (TMC), as well as providing an application to remotely monitor and manage the traffic signal operation and associated traffic signal devices. The unit is an environmentally-hardened, purpose-build device that when packaged with the related software enables service coordination with the City of Waltham to provide end-to-end wireless data acquisition, transmission, alerts, and data analytics for existing traffic signal controllers.

Performance certification: the product shall provide equal, interoperable, and same features as the Miovision SmartLink device or equal as specified.

**Communications Interface Hardware**

- a. Shall support 4G LTE cellular connectivity with MiMo and diversity (Bands 2, 4, 5, 13, 17, 25), HSPA+, GSM/GPRS/EDGE, EV-DO Rev A, 1XRTT with peak downlink of 100Mbps and peak uplink of 50Mbps
- b. shall support 802.11 a/b/g/n with MiMo and Diversity antennas with security of at least 64/128 bits WEP, WPA, WPA2
- c. shall support GPS and GLONASS
- d. shall support communication of Telemetry Data, Video Data, Alert Data, and Vehicle Identification Data to the Server via the Communication Service
- e. shall support direct communication between the Server and the devices connected to Controller Interface Hardware

**Antenna Hardware**

- a. shall provide an externally mounted antenna for supporting functionality of Communications Interface
- b. shall contain the following fully-enclosed antenna elements and quantities in a single enclosure:
  - o 2G/3G/LTE MIMO (quantity: 2)
  - o 2.4GHz/5GHz WIFI MIMO (quantity: 2)
  - o GPS/GLONASS/BEIDOU (quantity: 1)
  - o DSRC (quantity: 1)
- c. shall have labeled antenna terminations for easy installation
- d. shall not exceed 35mm in height
- e. shall be colored Pantone 427 U for blend with traffic cabinet construction
- f. shall be IP67 rated and mounted on the cabinet with a water-tight seal made of a closed cell rubber type foam and medium-firm acrylic adhesive with bonding features including a high initial adhesion and excellent high/low temperature holding power with excellent peel strength

**Controller Interface Hardware (NTCIP)**

- a. shall communicate with an NTCIP compliant controller over ethernet providing auto-negotiation to 10/100 Mbps, half or full duplex
- b. shall provide an ethernet cable for interfacing with NEMA TS2 type A1N, A2N, P1N, or P2N controllers.



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- c. the ethernet cable shall meet NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
  - d. the ethernet cable shall be shielded with stranded conductor and jacket meeting UL 2556d
  - e. shall communicate to the controller over TCP/IP
  - f. shall support communication over SNMP v1, v2c, and v3 protocols
  - g. shall support communication over STMP NTCIP protocols reading all objects defined in NTCIP 1201 and 1202 supported by the controller
  - h. shall acquire and record phase, channel, detector, pedestrian detector, pre-emption, alarm and overlap statuses at a frequency of no less than 10 times per second including whether a phase is next or has a call for service on it
  - i. shall read and distinguish between detector, pedestrian detection and pre-emption device information from all detectors, pedestrian detectors and pre-emption devices wired into the cabinet
  - j. shall detect failure of a detector, pedestrian detector or pre-emption device in either always high, or always low mode based on user configuration.
  - k. shall detect all controller defined failures of a detector defined in NTCIP-1202::ASC.vehicleDetectorAlarms
  - l. shall detect all detector defined failures of a detector defined in NTCIP-1202::ASC.vehicleDetectorReportedAlarms
  - m. shall detect the free mode status of the controller
  - n. where provided by the controller shall read coordination information including cycle and sync status, as well as current and future coordination plan parameters
  - o. shall support distinguishing between minimum green, extension, maximum, green rest, yellow change, red clearance and red rest intervals of a phase.
  - p. shall identify flash status, stop time, external start, power restart, low battery, a serviceable call exists and has not been serviced for two cycles, or SDLC response fault.
  - q. shall support measurement of the existing sequence selected
  - r. shall support reading of the phase table, sequence table, channel table and overlap table
  - s. shall support controller clock re-syncing
  - t. shall support placing a call on a phase if a detector is in fault
  - u. shall support running the traffic controller in free mode through force, hold and omit directions

- v. shall support setting the current timing plan dial, split, or offset
- w. shall support setting of coordination plan parameters including but not limited to splits, offsets, and cycle length
- x. shall support setting of phase table parameters
- y. shall support capturing and reporting Controller Faults based on controller reported flash status reasons of 'other', 'automatic', 'localManual', 'faultMonitor', 'mmu', 'startup', and 'preempt'

### ***Peripheral Interface Hardware***

- a. shall support 2 x USB 2.0 device ports
- b. shall support 4 x 10/100/1000 Ethernet ports
- c. shall support PoE on 2 x of the above ports, with at least one of which capable of supporting PoE+
- d. shall support temperature-rated storage comprising of a solid state drive of at least 64 GB and expandable up to at least 450GB:
  - o shall utilize Multi-Level Cell (MLC) flash memory or better
  - o shall be SATA III compliant
  - o shall provide support for SMART command set
  - o shall meet minimum shock resistance of 1500 G/0.5ms
  - o shall meet minimum vibration resistance 5~800 Hz at 5G peak
- e. shall support the optional upgrade and replacement of the built-in solid state drive with a higher-capacity industrial temperature rated solid state drive
- f. shall provide light-emitting diode (LED) indicators for Server connectivity, Ethernet link/activity, power, cellular link/activity and signal strength
- g. shall support 4 x RS232 serial connections (one port configurable to RS485) with RJ45 connectors
- h. shall provide Digital IOs pins 4 x I/O pins (200mA sinking each), digital input, 0~30V, 1 x 24VDC supply pin (200mA max sourcing), 5 x ground
- i. shall provide galvanic isolation between earth ground and logic ground
- j. shall provide data buffering of all Telemetry Data (controller state, detector actuations, pre-emption events) and Alert Data during periods of loss of cellular connection for at least 12 minutes

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- k. shall provide data buffering of all Telemetry Data and Alert Data during periods of loss of power for at least 10 seconds

### ***Certification Testing***

- a. shall be fully NEMA tested and compliant, including shock, vibration, voltage, and thermal articles 2.2.7-2.2.11
- b. shall support NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- c. shall support NEMA storage temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- d. shall support humidity operating requirements of 5% - 95% RH non-condensing
- e. shall be FCC tested and compliant
- f. shall be ROHS compliant

### ***Device-Level (Local) API Data Access***

- a. shall support the access of data by third-party devices via TCP/IP
- b. shall provide live data access over a MQTT (publisher/subscriber) interface for edge device integrations and connected vehicle applications
- c. shall support the selection of MQTT Quality-of-Service 0,1, and 2 for robust data deliverability
- d. shall provide topics for device-level subscribers that include the following data:
  - red, green, or yellow light status on each channel in the cabinet when the status of any channel changes
  - status on each detector channel in the cabinet when any detector status changes
  - preempt status on every preempt channel in the cabinet when any preempt status changes
  - when connected to NTCIP controllers, the active timing plan (actionPlan, pattern, dayPlan, and localFree) when the active timing plan changes.
  - when connected to the Video Detection and Analytics System, shall provide object presence, movement data for vehicles, pedestrians and bicycles
- e. shall support the output of data topics at 1/10th of second (100ms) resolution
- f. shall provide device endpoint to activate high and low priority preemption mechanisms of any connected controller from third-party cellular-based vehicle priority and preemption systems.

***Wireless Data Acquisition Expandable Storage Unit***

The system shall provide for capability to expand the solid-state drive and optionally increase the onboard storage for 7 days retention of high-resolution video recordings from a connected Video Capture and Streaming System. Pre-loaded with software, this unit is designed to be installed in the field directly into existing SmartLink units.

***Solid-State Storage Hardware***

- a. shall support industrial temperature rated storage comprising of a solid-state drive of at least 450 GB
- b. shall utilize Multi-Level Cell (MLC) flash memory or better
- c. shall be SATA III compliant
- d. shall provide support for SMART command set
- e. shall meet minimum shock resistance of 1500 G/0.5ms
- f. shall meet minimum vibration resistance 5~800 Hz at 5G peak

***Certification Testing***

- a. shall be fully NEMA tested and compliant, including shock, vibration, voltage, and thermal articles 2.2.7-2.2.11
- b. shall support NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- c. shall support NEMA storage temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- d. shall support humidity operating requirements of 5% - 95% RH non-condensing
- e. shall be FCC tested and compliant
- f. shall be ROHS compliant

**3. Labor**

- A. The Contractor shall provide sufficient labor for timely completion of the project.
- B. The Contractor shall be a Certified and Licensed Electrician in the Commonwealth of Massachusetts.
- C. The Contractor shall be experienced in and knowledgeable of Adaptive Signal Systems and subsequent Vehicle Detection Systems.
- D. The Contractor shall be certified in the system software and platform to be provided.

- E. The Contractor shall be knowledgeable of municipal cybersecurity protocols with the Commonwealth of Massachusetts Inspector Generals office, and apply ALL necessary protocols to ensure that the newly devices are not left on default programming of passwords.
- F. The Contractor shall change the factory direct password at the direction of the City of Waltham.
- G. The Contractor shall coordinate with the City of Waltham ALL programming requirements and City of Waltham nomenclature for IP Addressing.
- H. The Contractor shall coordinate with the City of Waltham's IT Department all LVAN/LAN/WAN configurations required and communications protocol.
- I.

#### **4. Submittals**

- A. Two (2) weeks after award, the Contractor shall submit to the Owner, design of the full vehicle Detection System.
- B. The Contractor shall provide full engineered drawings showing the new components and the existing controller integration.

#### **5. Installation**

- A. All installations to include clamps and bands as per the manufacturers specification for the application
- B. Horizontal Installation of Unit – Video Capture and Streaming System  
This device is a permanently mounted IP video camera that when combined with the Video Detection and Analytics System and appropriate software, provides a remotely accessible system for vehicle traffic detection and analytics. This includes a horizontal mount option with band hub. This device requires Video Detection and Analytics System for all video processing.

##### **Camera**

- a. shall provide 360 degrees of visibility from the point of installation
- b. shall be powered via Power over Ethernet (PoE) and be IEEE802.3af compliant
- c. shall support configuration in both spherical "fisheye" configuration, and rectangular "quad view"
- d. shall support at least 9 megapixel (MP) capture
- e. shall support ability to capture 4K video
- f. shall provide H.264 and MJPEG image compression
- g. shall support RTSP streaming
- h. shall support maximum aperture ratio of 1:1.9
- i. shall support focal length of 1.38mm

- j. shall include a clear polycarbonate resin-based dome
- k. shall be rated to IP66 (NEMA 4X compliant)
- l. shall include an electronic de-humidification device for use in various weather conditions

**Mount**

- a. shall include all mounting hardware with device (horizontal, band hub)
- b. mounting fixture shall be constructed of weatherproof painted aluminum
- c. mounting hardware shall be fully assembled to camera and ready to attach to pole or extension arm
- d. mounting hardware shall support vertical pole installation, horizontal pole installation, or attachment via a 1¼" threaded fitting
- e. mounting fixture (including camera, 40ft cable) shall not exceed 485mm x 370mm x 205mm in size, and 3.8kg in weight
- f. shall include 40 feet of shielded ethernet cable for connection to PoE power source and internet access
- g. shall include two-way ethernet coupler rated to IP68 for connection to cabinet ethernet cable

**Certification Testing**

- a. shall be fully NEMA tested and compliant, including shock, vibration, voltage, and thermal articles 2.2.7-2.2.11
  - b. shall support NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
  - c. shall support NEMA storage temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
  - d. shall support humidity operating requirements of 5% - 95% RH non-condensing
  - e. shall be FCC tested and compliant
  - f. shall be ROHS compliant
- C. Vertical Installation of Unit – Video Capture and Streaming System  
This device is a permanently mounted IP video camera that when combined with the Video Detection and Analytics System and appropriate software, provides a remotely accessible system for vehicle traffic detection and analytics. This includes a vertical mount option. This device requires Video Detection and Analytics System for all video processing.

**Camera**

- a. shall provide 360 degrees of visibility from the point of installation
- b. shall be powered via Power over Ethernet (PoE) and be IEEE802.3af compliant
- c. shall support configuration in both spherical “fisheye” configuration, and rectangular “quad view”
- d. shall support at least 9 megapixel (MP) capture
- e. shall support ability to capture 4K video
- f. shall provide H.264 and MJPEG image compression
- g. shall support RTSP streaming
- h. shall support maximum aperture ratio of 1:1.9
- i. shall support focal length of 1.38mm
- j. shall include a clear polycarbonate resin-based dome
- k. shall be rated to IP66 (NEMA 4X compliant)
- l. shall include an electronic de-humidification device for use in various weather conditions

**Mount**

- a. shall include all mounting hardware with device (vertical, banded)
- b. mounting fixture shall be constructed of weatherproof painted aluminum
- c. mounting hardware shall be fully assembled to camera and ready to attach to pole or extension arm
- d. mounting hardware shall support vertical pole installation, horizontal pole installation, or attachment via a 1 ¼” threaded fitting
- e. mounting fixture (including camera, 40ft cable) shall not exceed 485mm x 370mm x 205mm in size, and 3.8kg in weight
- f. shall include 40 feet of shielded ethernet cable for connection to PoE power source and internet access
- g. shall include two-way ethernet coupler rated to IP68 for connection to cabinet ethernet cable

**Certification Testing**

- a. shall be fully NEMA tested and compliant, including shock, vibration, voltage, and thermal articles 2.2.7-2.2.11
- b. shall support NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- c. shall support NEMA storage temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- d. shall support humidity operating requirements of 5% - 95% RH non-condensing
- e. shall be FCC tested and compliant
- f. shall be ROHS compliant

**6. Processing****A. Video Detection and Analytics System**

This device provides roadside video processing and actuation from the Video Capture and Streaming System. The system:

- a. shall support processing of a minimum of two simultaneous feeds from Video Capture and Streaming System units
- b. shall display status of detection channel
- c. shall include a USB 2.0 device port
- d. shall include 4 x 10/100/1000 Ethernet ports
- e. shall support PoE on two of the above ports
- f. shall include onboard processing capabilities to perform video- based vehicle detection and generation of traffic analytics
- g. shall provide 24 NEMA-rated GPIO ports that can be configured for actuation
- h. shall support one SDLC port that meets the following criteria:
  - o shall provide all necessary cabling to connect to a cabinet's existing Port 1/SDLC bus
  - o shall provide the capability to act as one or more SDLC detector racks
  - o shall support generating actuations on up to 64 channels over SDLC
  - o shall support reading terminal and facility input & outputs at a frequency of at least 10 times per second



- shall support reading channel state at a frequency of at least 10 times per second
- shall support acquisition of MMU fault status including conflict, red failure and clearance failure
- shall support reading information from all detectors wired into the cabinet supporting up to 1 ms resolution between detection events
- shall detect failure of a detector in either always high, or always low, mode.
- shall support capturing and reporting Controller Faults based on MMU status bits of 'in conflict', 'red failure', 'diagnostic failure', 'in failure state', and 'local flash'

#### *Detection*

- a. shall support both rectangular and irregular polygon shaped zones
- b. shall support real-time detection of vehicles, cyclists, and pedestrian occupancy in configurable detection zones
- c. shall ensure the detection system meets or exceeds the FDOT TERL 98% detection accuracy requirement in good weather conditions
- d. shall support identification of unsupported video feed, including interrupted video signal
- e. shall support directional detection zones to reduce false detections from objects traveling in other directions
- f. shall support the tracking of vehicles and pedestrians for video analytics applications
- g. shall support the counting of pedestrians on configured crosswalk zones
- h. shall support periodic internal automated validation of detection accuracy for each configured presence zone in the intersection for the purpose of identifying performance issues and driving continuous improvement
- i. shall detect poor environmental conditions which inhibit accurate detection

#### *Actuation*

- a. shall support a minimum of 16 detection channels
- b. shall support the option of actuation via SDLC, direct wiring into cabinet backplane, or through NEMA ABC interface
- c. shall support both presence (occupancy) and pulse actuation over any of the above interfaces
- d. shall support output of a constant call on detection channels if a loss of video signal occurs

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- e. shall support delayed or extended actuation for each zone
  - f. shall support manually overriding detection information to force actuations channels into constant call (from both the roadside device and the software portal)
  - g. shall support virtual actuation channels that do not actuate controller channels but can be used to populate ATSPMs
  - h. shall support actuation based on logical operations (AND, OR, XOR) and multiple detection zone signals
  - i. shall support actuating multiple channels based on signals from a single detection zone

*Certification Testing*

- a. shall be fully NEMA tested and compliant, including shock, vibration, voltage, and thermal articles 2.2.7-2.2.11
- b. shall support NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- c. shall support NEMA storage temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- d. shall support humidity operating requirements of 5% - 95% RH non-condensing
- e. shall be FCC tested and compliant
- f. shall be ROHS compliant

*B. Controller Interface Hardware to be provided as needed (ABCD or EF-140 INTERFACE as needed)*

This is an adapter device to allow connectivity and data acquisition between EF-140 style controllers and the Wireless Data Acquisition, Alerts and Analytics System.

- a. shall be installed in series between traffic controller and cabinet on the A, B, and D lines for EF-140 controllers
- b. shall come equipped with the 3 interface cables required to connect in series between the control and cabinet
- c. shall use input and output connectors for the A,B,D lines which adhere to MIL-DTL-26482 to allow easy interconnection
- d. shall include a locking mechanism for the power connector to the EF-140 interface
- e. shall include an Ethernet port for communication with the Peripheral Interface

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- f. shall support safe failover to pass-through functionality which shall provide uninterrupted communication between the cabinet and controller in the event of the Controller Interface Hardware being unpowered
  - g. shall provide galvanic isolation between earth ground and logic ground
  - h. shall provide acquisition of detector state, controller state, and alarms at a frequency of at least 10 times per second
  - i. shall communicate data read from ABD lines to the Peripheral Interface via an Ethernet connection
  - j. shall support reading information from all detectors that are wired into the cabinet
  - k. shall detect failure of a detector in either always high, or always low, mode.
  - l. shall detect whether the controller is in free mode vs. coordinated mode
  - m. shall support distinguishing between preemption and detector calls
  - n. shall support distinguishing between variable and minimum portions of the phase interface
  - o. shall support capture and report of Controller Faults based on detecting activity on pins related to stop time, controller output, and voltage monitor.

***Certification Testing***

- a. shall be fully NEMA tested and compliant, including shock, vibration, voltage, and thermal articles 2.2.7-2.2.11
- b. shall support NEMA operating temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- c. shall support NEMA storage temperature specification -34 °C to 74 °C (-29 °F to 165 °F)
- d. shall support humidity operating requirements of 5% - 95% RH non-condensing
- e. shall be FCC tested and compliant
- f. shall be ROHS compliant

***C. Data Acquisition***

The hardware must support the collection and transmission of the following data:

***Telemetry Data Acquisition***

- a. shall acquire vehicle and pedestrian signal telemetry data, detector telemetry data, and pre-emption telemetry data via Controller Interface
- b. shall acquire data from peripheral cabinet devices via the Peripheral Interface

- c. shall transmit the above listed data to the Server via the Communications Service provided with the Signal Communications and Traffic Operations Platform

***Alert Data Acquisition***

- a. shall detect the following alert conditions and transmit them to the Server via the Communications Service
- b. Cabinet power outages
- c. Traffic signals in flash
- d. UPS battery backup system in use
- e. UPS battery backup system falls below a configurable charge level
- f. Any digital I/O signal which has been configured as an alert channel
- g. Detector failure (stuck high or low)
- h. Preemption System failure (stuck high or low)
- i. Controller failures reported by the Controller Interface hardware
- j. Environmental conditions inhibit accurate detection

***Video Data Acquisition***

- a. shall support acquisition of live video data via Peripheral Interface connected video devices that meet the following requirements:
  - o Support RTSP
  - o Have remotely configurable video stream settings
  - o Have a configurable frame rate up to 30 fps
  - o Have a configurable resolution, supporting a minimum resolution of 1280x1280
- b. shall support acquisition of live video snapshots at least once per second via Peripheral Interface connected video devices that meet the following requirements:
  - o JPEG file format generation
  - o Images accessible via HTTP protocol
- c. shall support recall of historical video data which has been stored to the solid-state drive (on the Peripheral Interface hardware) for at least 7 days of 24 hour-a-day recording

***Anonymous Vehicle Identification Data Acquisition***

- a. shall capture vehicle presence via a wireless traffic probe utilizing Wi-Fi MAC address identification technology
- b. shall hash all MAC addresses prior to cellular transmission using the SHA-512 algorithm, with a key cycled every 24 hours
- c. shall transmit hashed MAC addresses and WiFi signal strength information to Server at least once per minute
- d. shall provide testing data showing a match rate of Vehicle Identification Data between adjacent intersections of at least 5%, where the match rate is the portion of the total road vehicle volume for which a successful MAC-address match is performed at two adjacent intersections

***7. Software******A. Signal Communications and Traffic Operations Platform (as needed)***

This software package requires Wireless Data Acquisition, Alerts and Analytics System to offer alerts, telemetry, data API, CMS/cabinet integration and secure, managed communications for all signals. The software shall support:

***Cellular Communications***

- a. shall provide 4G LTE cellular data service between the Communications Interface and the Server via a national commercial carrier using Bands 2, 4, and 13
- b. failover support from 4G to 3G to 2G with incremental fallback
- c. shall support a cellular site survey via a portable unit to determine cellular signal strength (RSSI or Received Signal Strength Indicator for 3G, CDMA/UTS/EV-DO, and RSRP for Reference Signal Received Power for 4G LTE)
- d. shall support a cellular site survey via a portable unit to determine cellular signal quality (ECIO or Energy to Interference Ratio for 3G, CDMA/UMTS/EV-DO, RSRQ or Reference Signal Received Quality for 4G LTE, and SINR or Signal to Interference-plus-Noise-Ratio for 4G LTE)

***Server***

- a. shall be hosted at a professional cloud hosting facility with redundancy of at least two instances, with automatic load balancing and shall scale to support simultaneous number of connections
- b. shall support permanent storage of all Telemetry Data, Alert Data, and Vehicle Identification Data in perpetuity.

***Secure Communications***

- a. shall provide a Virtual Private Network (VPN) for secure data transmission between the Communications Interface and Server
- b. shall create a private network where IP traffic can be transmitted from a traffic cabinet directly into the traffic management center and any central software systems
- c. shall use authenticated using public key infrastructure (PKI) and encrypting using PKI and the TLS/DTLS1.0+ protocol
- d. shall support HTTPS/SSL communication to the Server from the public internet for access of the User Interface
- e. shall support revoking of all authenticated user names, passwords, or keys at any time
- f. shall support simultaneous integration across a heterogeneous mix of different technologies and providers, including different cellular providers, fiber connected networks, and point-to-point radio solutions.
- g. shall support integrating an unlimited number of intersections with the customers Central Management System and be capable of supporting both IP and serial-over-IP connections to all controller models in the field. The communication system must meet all bandwidth and latency requirements of the customers' CMS
- h. shall meet all bandwidth and latency requirements of the Customer's Central Management System.

***Device Monitoring***

- a. shall provide a serial-over-LTE connection and appropriate networking support to enable secure communications between cabinet hardware and existing third-party software used by the Customer including Central Management Systems and MMU desktop software applications.

***User Interface***

- a. shall provide a secure web-based Graphical User Interface (GUI) using SSL
- b. shall support an unlimited number of concurrent logins by authenticated users
- c. shall be fully accessible via desktop, tablet, and mobile products on Chrome, Microsoft Edge and Safari.

- d. shall provide all the functionality of Signal Monitoring, Alerts Management, Inventory & Asset Management and Traffic Data Analysis from a single software application requiring a single login
- e. shall support user login via OAuth Login
- f. shall provide a secure means of verifying account registration via email
- g. shall provide a secure means of password reset
- h. shall support the addition and management of user accounts for users that are both inside and outside of the organization at no additional cost
- i. shall support access to all Telemetry Data and Alert Data.

### ***Signal Monitoring***

- a. shall support live display of all Telemetry Data with latency not to exceed 1 seconds when LTE connection is active
- b. shall support historical display of all Telemetry Data on-demand with load latency not to exceed 1 second
- c. shall support a viewing mode in which all Telemetry Data is displayed overlaid onto a diagram of the intersection
- d. shall support a viewing mode in which all Telemetry Data is displayed in a timing diagram format in which interval length is displayed in seconds for each signal phase
- e. shall support display of environmental weather conditions, including precipitation and temperature, as part of live and historical viewing of Telemetry Data
- f. shall provide reporting on signal telemetry, detector and alert data.

### ***Alerts Management***

- a. shall detect the following alert conditions and transmit them to the Server via the Communications Service
  - i. Cabinet power outages
  - ii. Traffic signals in flash
  - iii. UPS battery backup system in use
  - iv. UPS battery backup system falls below a configurable charge level
  - v. Any digital I/O signal which has been configured as an alert channel

- 
- vi. Detector failure (stuck high or low)
  - vii. Preemption System failure (stuck high or low)
  - viii. Controller failures reported by the Controller Interface Hardware
  - ix. Environmental conditions inhibit accurate detection of the Video Detection and Analytics System
- b. shall display log of all historical alerts including time of alert, resolution time, and notified users
  - c. shall support SMS and Email alerts for all Alert events (listed in the Alert Data Acquisition specification)
  - d. shall support configuration of distribution of SMS and Email alerts based to different user groups based on Alert type
  - e. shall support reports indicating alert volume by intersection over time.

***Inventory and Asset Management***

- a. shall support the creation of geographical placeholders for any intersection, including those without a device installed
- b. shall support the ability to record and store cabinet equipment inventory information associated with each intersection
- c. shall support the ability to upload and store an unlimited number of arbitrary files including, image and video files, with each node in the network up to a size of 1 GB per file
- d. shall support the ability to view all inventory and asset information, including uploaded files.

***Open Data Support via Cloud API***

- a. shall support the access of data via a modern REST application programmable interface (API) in JSON or XML
  - i. shall provide access to raw decoded event-based data in the standard Indiana Traffic Signal Hi Resolution Data Logger Enumerations format
  - ii. shall provide access to by-movement turning movement count data generated by the Vehicle Detection system in a minimum of 15-minute bins
  - iii. shall provide access to bi-directional pedestrian counts on crosswalks in a minimum of 15-minute bins



- 
- iv. shall provide point to point travel time data for 24hrs in bins of 15 mins or less
  - v. shall provide POST endpoint to ingest signal and detector data in the *Indiana Traffic Signal Hi Resolution Data Logger Enumerations* format
  - vi. shall provide currently active infrastructure alert data
  - vii. shall provide intersection detail data include location (lat/long) data for all intersections on the device network
- b. shall support the secure transmission of WiFi re-identification data collected by the Wireless Data Acquisition, Alerts and Analytics System to third-party travel time and origin-destination traffic analytics software
  - c. shall support administrator control of level of data API access, including what function calls may be made publicly and what function calls are accessible only through authentication
  - d. shall support API documentation with examples and testing environment
  - e. shall support the ingestion of third-party data sources such as (but not limited to) traffic alert and incident data from the Waze Connected Citizen Program (CCP)

***B. ATSPM, Travel Time and Traffic Signal Analytics and Performance (As needed)***

This software package requires Wireless Data Acquisition, Alerts and Analytics System to offer travel time, data API and actionable signal performance measures for intersections, corridors and networks.

***User Interface***

- a. shall provide a secure web-based Graphical User Interface (GUI) using SSL
- b. shall support an unlimited number of concurrent logins by authenticated users
- c. shall be fully accessible via desktop, tablet, and mobile products on Chrome, Microsoft Edge and Safari.
- d. shall provide all the functionality of Signal Monitoring, Alerts Management, Inventory & Asset Management, and Traffic Data Analysis from a single software application requiring a single login
- e. shall support user login via OAuth Login
- f. shall provide a secure means of verifying account registration via email
- g. shall provide a secure means of password reset

- 
- h. shall support the addition and management of user accounts for users that are both inside and outside of the organization at no additional cost
  - i. shall support access to all Telemetry Data, and Alert Data stored on the Server.
- C. *Traffic Data Analysis (Detection and Analytics Module)*
- a. Data Reporting
    - i. shall support generation of any of the below listed Travel Time, Signal Performance Metrics, or Preemption Analysis for any 24hr period in under 5 seconds, for all captured data up to 3 years in the past
  - b. Travel Time
    - i. shall support generation of point-to-point travel time calculations from the Vehicle Identification Data for any two devices in the network
    - ii. shall support generation of corridor travel time calculations from the Vehicle Identification Data for any corridors in the network
    - iii. shall support calculation and viewing of travel time data within 15 minutes of capture
    - iv. shall support generation and overlay of historical travel time trends over any period (minimum 3 months) throughout the 3 year data set
    - v. shall support generation of historical variability statistics of travel time over any period (minimum 3 months) throughout the 3 year data
    - vi. shall support ability to statistically compare differences between data series, including single-day metrics and historical trends
  - c. Signal Performance Metrics
    - i. shall support generation of approach volume charts when the intersection includes upstream detector data
    - ii. shall support generation of arrivals-on-red / arrivals-on-green charts when the intersection includes upstream detector data
    - iii. shall support generation of Purdue Split Failure chart when the intersection includes stop-bar detector data

- 
- iv. shall support generation of Purdue Split Failure trends when the intersection includes stop-bar detector data
  - v. shall support generation of detector occupancy ratio charts (Red, Green, and ROR5) for all intersection movements that include stop-bar detector data
  - vi. shall support generation of phase interval charts over any 24 hour period
  - vii. shall support generation of phase green allocation over any 24 hour period
  - viii. shall support generation of Purdue Coordination Diagram when the intersection includes upstream detector data
  - ix. shall support generation of simple delay charts for all intersection movements that include stop-bar detector data
  - x. shall support download of all above mentioned signal performance charts as flat image files, PDF files, CSV, or XLS files
  - xi. shall support generation and overlay of historical trends of approach volumes, arrivals-on-red, split trends, green allocation, and simple delay over any period (minimum 3 months) throughout the 3 year data set
  - xii. shall support generation of historical variability statistics of approach volumes, arrival-on-red, and simple delay over any period (minimum 3 months) throughout the 3 year data
  - xiii. shall support ability to statistically compare differences between data series, including single-day metrics and historical trends
- d. Preemption Analysis
- i. shall support generation and recall of logs of preemption events, including their time of occurrence and duration
  - ii. shall support ability to query historical occurrences of preempt events into tabular format for export, in perpetuity
- e. Aggregate Corridor Performance Reports
- i. shall support the generation of normalized travel time index values for per corridor for all corridors in the network

- 
- ii. Shall support the generation of normalized travel time interquartile range index values per corridor for all corridors in the network
  - iii. Shall support the generation of corridor average arrivals on green per corridor for all corridors in the network
  - iv. shall support generation of historical trend data for all corridors in a network for trends up to one year
  - v. shall support comparison of historical trends to a baseline data set
  - vi. shall support comparison of historical trends to a baseline data set for any period throughout the 3 year data
  - vii. shall support sorting of all corridors in a network by any aggregated metric listed above
- f. Aggregate Signal Performance Reports
- i. shall support the generation of major street aggregation of intersection arrivals on green per intersection for all supported intersections in the network
  - ii. shall support the generation of minor street simple delay per intersection for all supported intersections in the network
  - iii. shall support the generation of major street aggregation of approach volumes per intersection for all supported intersections in the network
  - iv. Shall support the generation of split failure count per intersection for all supported intersections in the network
  - v. shall support generation of historical trend data for all intersections in a network for trends up to one year
  - vi. shall support comparison of historical trends to a baseline data set for any period throughout the 3 year data
  - vii. shall support sorting of all intersections in a network by any aggregated metric
- g. Signal Performance Analysis Tool
- i. shall support the generation and visualization of a selected metric for all movements within an intersection, including phase data, stop-bar occupancy ratios, Purdue Split Failures, and split trend data

- 
- ii. shall support the generation and visualization of metrics for all intersections within a corridor, including arrivals on red and coordinated phase data (ie. time-space visualization)
  - iii. shall support zooming and filtering of data by time of day
  - iv. shall support historical trend data for split trend and arrivals on red metrics.

#### ***D. Multimodal Detection and Traffic Counts (As Needed)***

This software package requires Wireless Data Acquisition, Alerts and Analytics System, Video Detection and Analytics System, and Video Capture and Streaming System hardware components to offer video detection, data API, video recall and real time streaming, turning movement and traffic counts.

All data extracted from the field devices shall be available to external/internal public/private stakeholder upon authorization from the City of Waltham. This data exchange shall be made available through the vendor's open data platform and/or an API. The vendor shall be responsible for maintaining, hosting, security, unlimited data storage, maintenance of historical data for a minimum of 3 years.

#### ***User Interface***

- a. shall provide a secure web-based Graphical User Interface (GUI) using SSL
- b. shall support an unlimited number of concurrent logins by authenticated users
- c. shall be fully accessible via desktop, tablet, and mobile products on Chrome, Microsoft Edge and Safari.
- d. shall provide all the functionality of Signal Monitoring, Alerts Management, Inventory & Asset Management, Video Streaming & Recall, Video Analytics, and Traffic Data Analysis from a single software application requiring a single login
- e. shall support user login via OAuth Login
- f. shall provide a secure means of verifying account registration via email
- g. shall provide a secure means of password reset
- h. shall support the addition and management of user accounts for users that are both inside and outside of the organization at no additional cost
- i. shall support access to all Telemetry Data, Alert Data, and Vehicle Identification Data stored on the Server

**Configuration**

- a. shall support remote configuration of detection zones and system settings via Communications Service and Software
- b. shall allow for configuration anywhere using a computer with an internet connection
- c. shall support roadside installation diagnostic to confirm correct physical setup
- d. shall support the configuration of crosswalk detection zones for pedestrian applications
- e. shall support the configuration of turning movement counts via demarcation of entries, and exits, and movements for additional traffic analytics
- f. shall support the configuration of detection zones to filter based on vehicle classification including Bicycles, Motorcycles, Light Vehicles, Single-Unit Trucks, Articulated Trucks, and Buses or any combination thereof
- g. shall store historical versions of detection zone configurations in the cloud that can be restored at any time from anywhere.

**Continuous Traffic Data Collection**

- a. shall support the processing of turning movement count data for all visible movements at the intersection at all times
- b. shall support the classification of all vehicles passing through an intersection including Bicycles, Motorcycles, Light Vehicles, Single-Unit Trucks, Articulated Trucks, and Buses
- c. shall support the processing of crosswalk movement data for Pedestrians.
- d. shall support local device-level access to live data stream for advanced traffic control applications and integrations.

**Video Streaming**

- a. shall support live video streaming from the Camera to desktop browsers without any third party plugins
- b. shall support live video streaming from the Camera on tablet browsers using the HLS protocol
- c. shall support live video streaming of any third-party camera connected over ethernet to the Peripheral Interface Hardware that supports non-proprietary codecs and RTSP streaming
- d. shall support live video streaming with an initial load time of no more than 10 seconds

- e. shall support live video streaming with a latency of no more than 10 seconds at a frame rate of at least 15 fps
- f. shall support at least 10 concurrent video streams from a single camera to be viewed in multiple browsers
- g. shall support at least 400 concurrent video streams from all cameras active in the system, to be viewed in multiple browsers.

#### ***Edge Video Recording Retrieval***

- a. shall support remote retrieval of recorded video content from the Video Capture and Streaming system, stored on the Wireless Data Acquisition, Alerts and Analytics System solid-state drive for at least 7 days
- b. shall support recorded video playback on tablet browsers using the HLS protocol
- c. shall support recorded video playback on desktop browsers without any third-party plugins
- d. shall provide the cloud storage of any retrieved recorded video content for the duration of the software contract
- e. shall support the download of any retrieved recorded video content in H.264 (MP4) format
- f. shall support the deletion of any retrieved recorded video content

#### ***Video Real Time Streaming Protocol (RTSP) API***

- a. shall support access to live video streams of Video Capture and Streaming Systems via Real Time Streaming Protocol (RTSP) for use in third-party IP Camera Management systems
- b. shall support TCP/IP access to all in-field Video Capture and Streaming Systems RTSP endpoints over the agency's private communication network.

### ***8. Programming***

The Contractor shall be responsible for setting and programming all vehicle detection zones as agreed to and directed by The City of Waltham Traffic Department Engineering Office. Should the detection zone be insufficient to analyze the information required for proper signaling and traffic mitigation, the Contractor may be required to adjust or re-adjust the location of proposed vehicle detection zones. This work is to be done in the presence of The City of Waltham personnel, at no additional cost, to properly set the detection area.

### ***9. Training***

- A. The Contractor shall provide up to eight (8) hours of personnel training to the City of Waltham in the use of the vehicle detection system and software.

- B. The training is to be conducted with the City at a location determined by the City of Waltham. The Contractor is to coordinate with the City as to the exact location and time of the training.
- C. The Contractor shall provide a training agenda, including time allotments and subject matter, that will be reviewed by the City of Waltham two (2) weeks prior to the training. The training will be cancelled should the agenda not meet the requirements of the City of Waltham.
- D. The Contractor shall provide all training manuals, class notes, and other instructional materials for a minimum of six (6) attendees at the training session.
- E. No training shall begin until the final inspection process indicates that the vehicle detection system is sufficiently complete and operational such that training would be useful at that time.
- F. The Contractor shall include in this project, a return to the City of Waltham for an additional training session and to provide hands of answers to questions. This second session to take place on site at the City of Waltham and shall take place two (2) months after the system has been running. The Secondary training shall be with the Traffic Department and Wires Department personnel from the City of Waltham.

#### *10. Operations and Maintenance Manuals*

- A. The manufacturer shall provide in individual binder 3 complete sets of hard copy, separated and tabbed Operation and Maintenance manuals for the installed equipment. The Contractor shall also provide on electronic reproducible copy of the Operations and Maintenance manual on CD.
- B. The manuals shall have complete set-up, maintenance and troubleshooting procedures presented in an organized format.

#### *11. Close-out and Warranty*

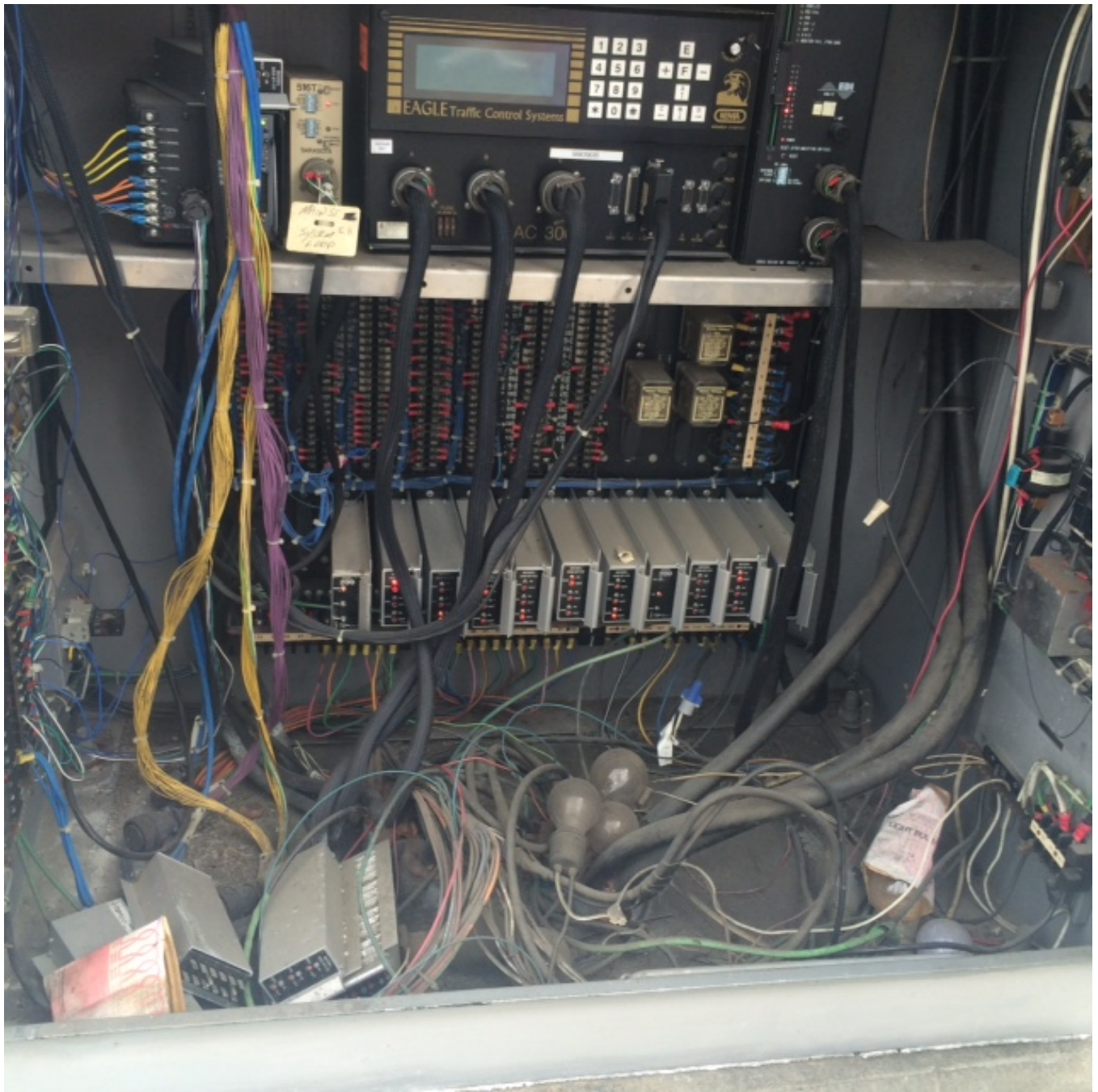
- A. The City of Waltham shall have a close-out inspection of the installed and programmed equipment to ensure it meets the requirements of the City of Waltham as described by the Traffic Department.
- B. Equipment warranty shall include all labor and materials provided on the project.
- C. Warranty shall not begin until final acceptance by the Owner, or City of Waltham. Substantial completion does not constitute start of warranty.
- D. Warranty shall be for three (3) years.
- E. Warranty response time shall be no more than 4 hours from time of phone call to the Contractor.

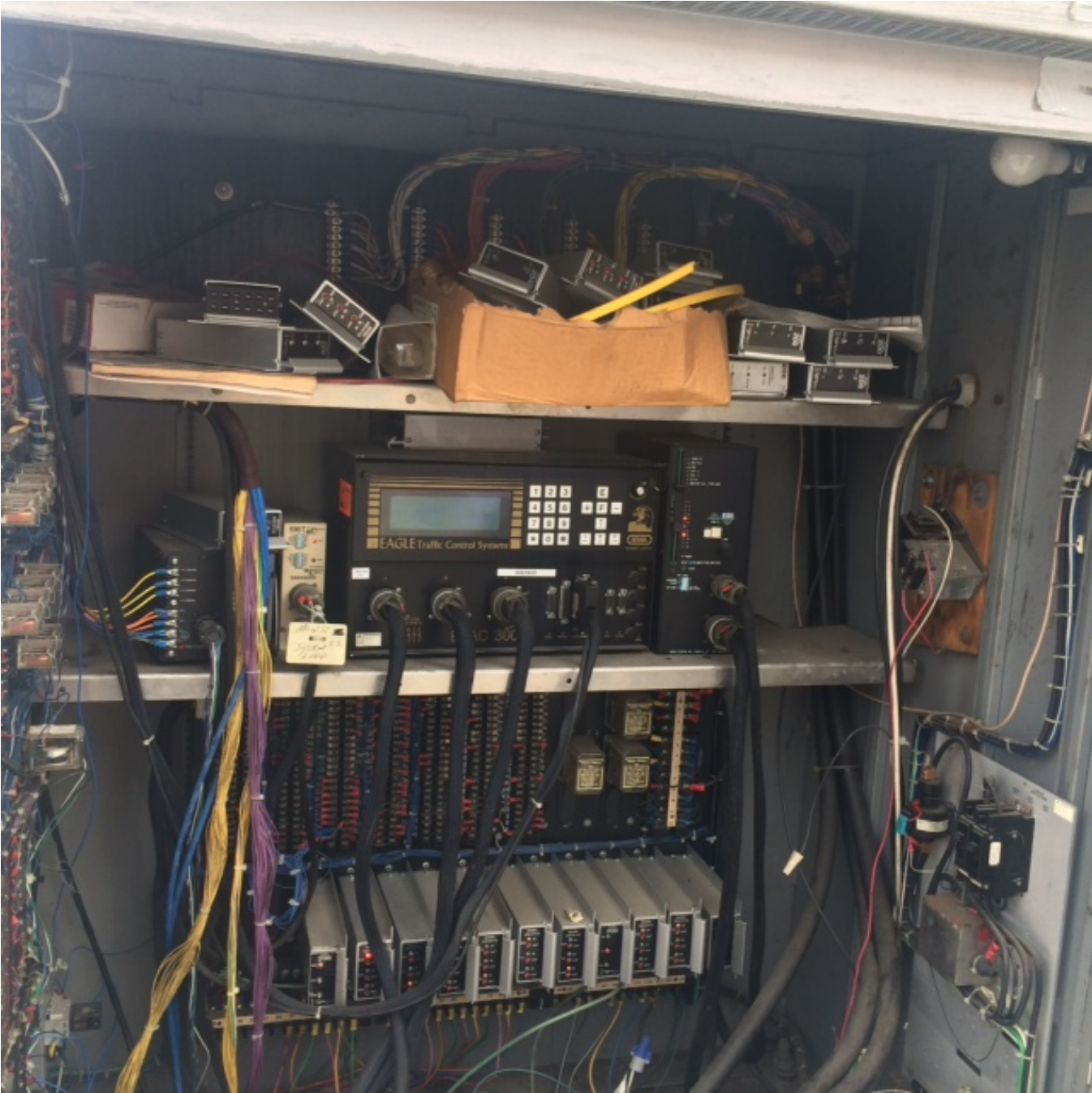


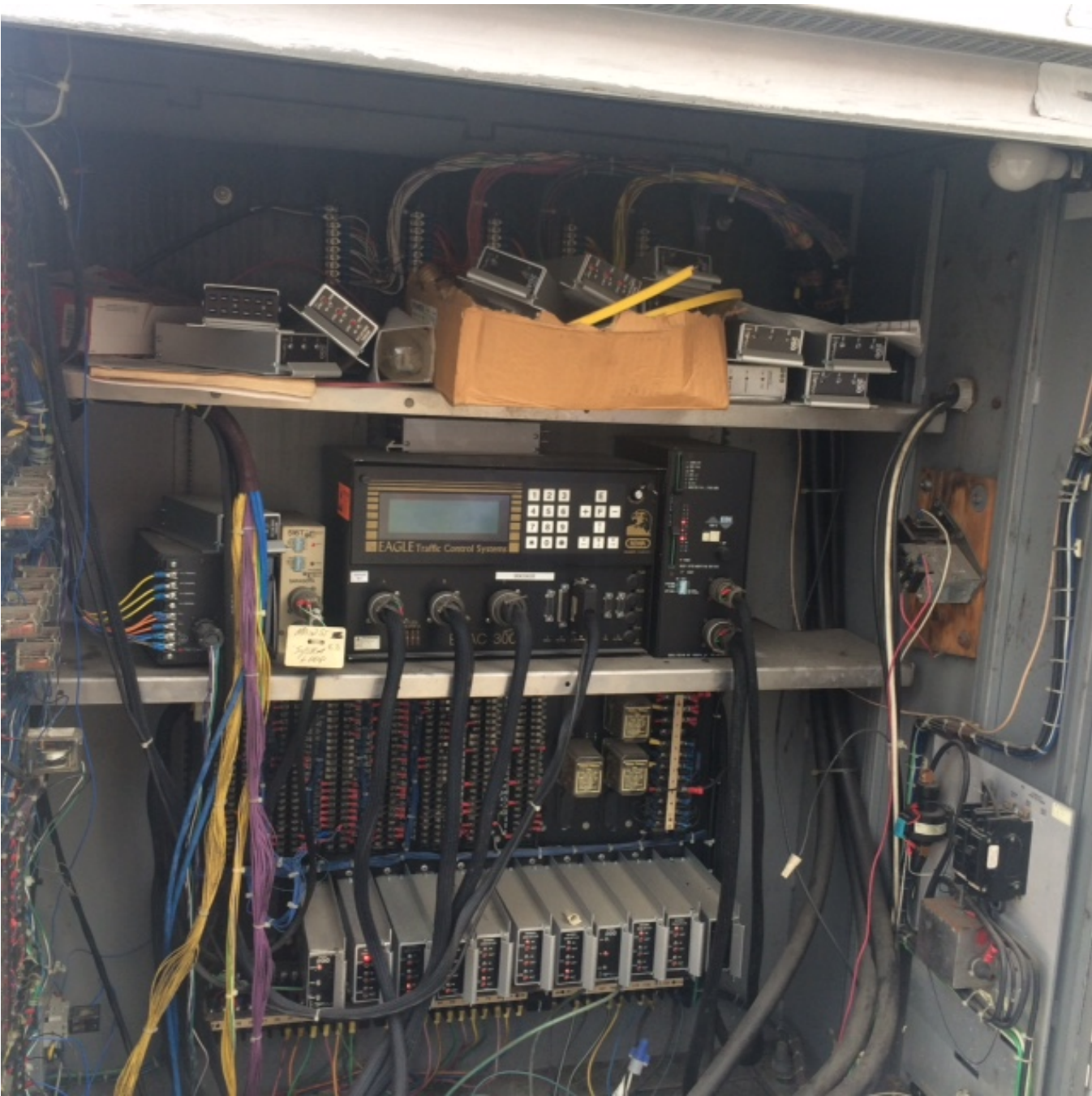
- F. Should the Contractor not be able to provide the needed service under warranty, and the City of Waltham is required to hire a Police detail to assist in traffic mitigation, the Contractor shall be responsible for the costs of the Traffic Detail Officers.

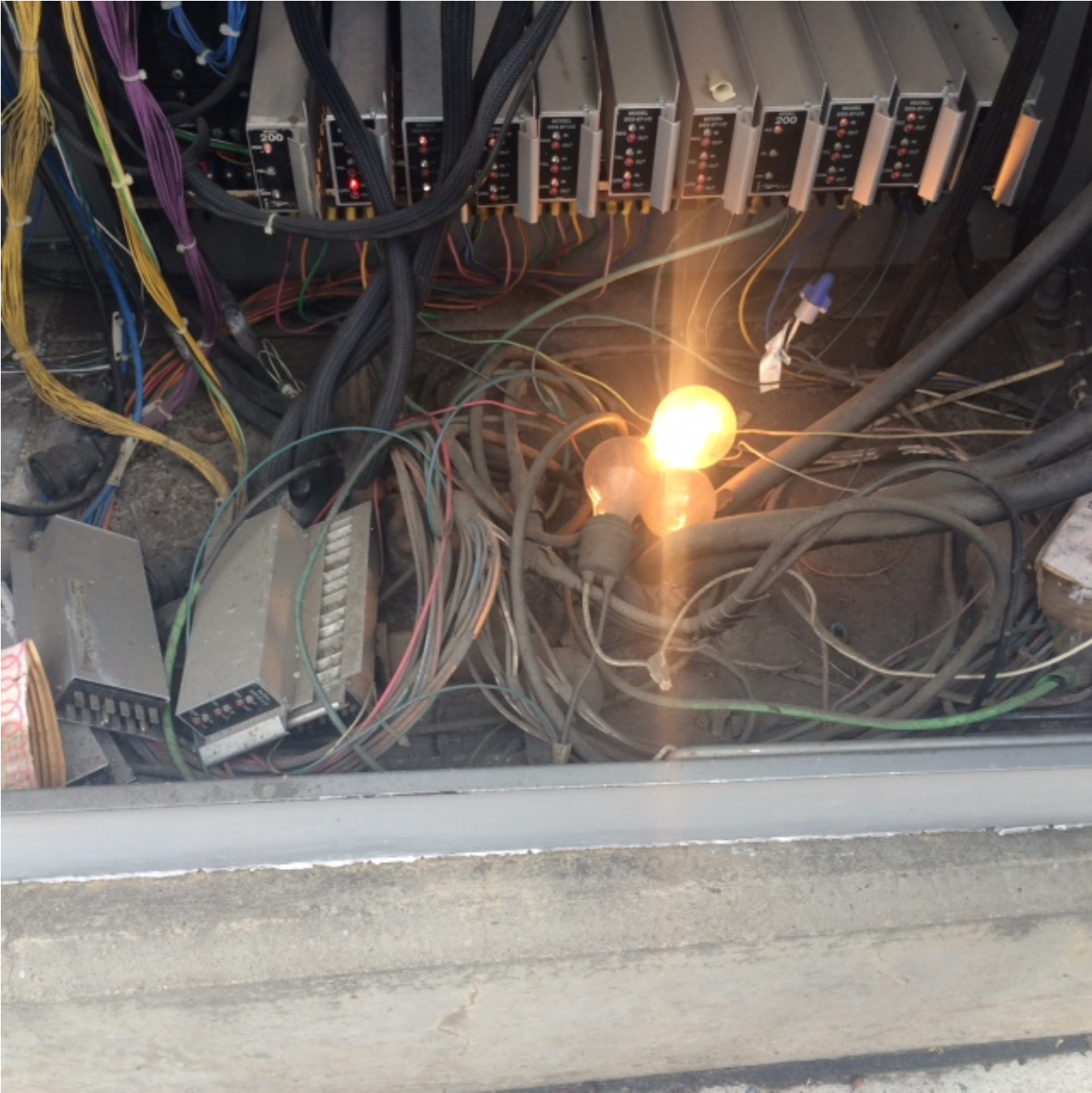
## **Photos of the Existing Signal Controller Cabinets**

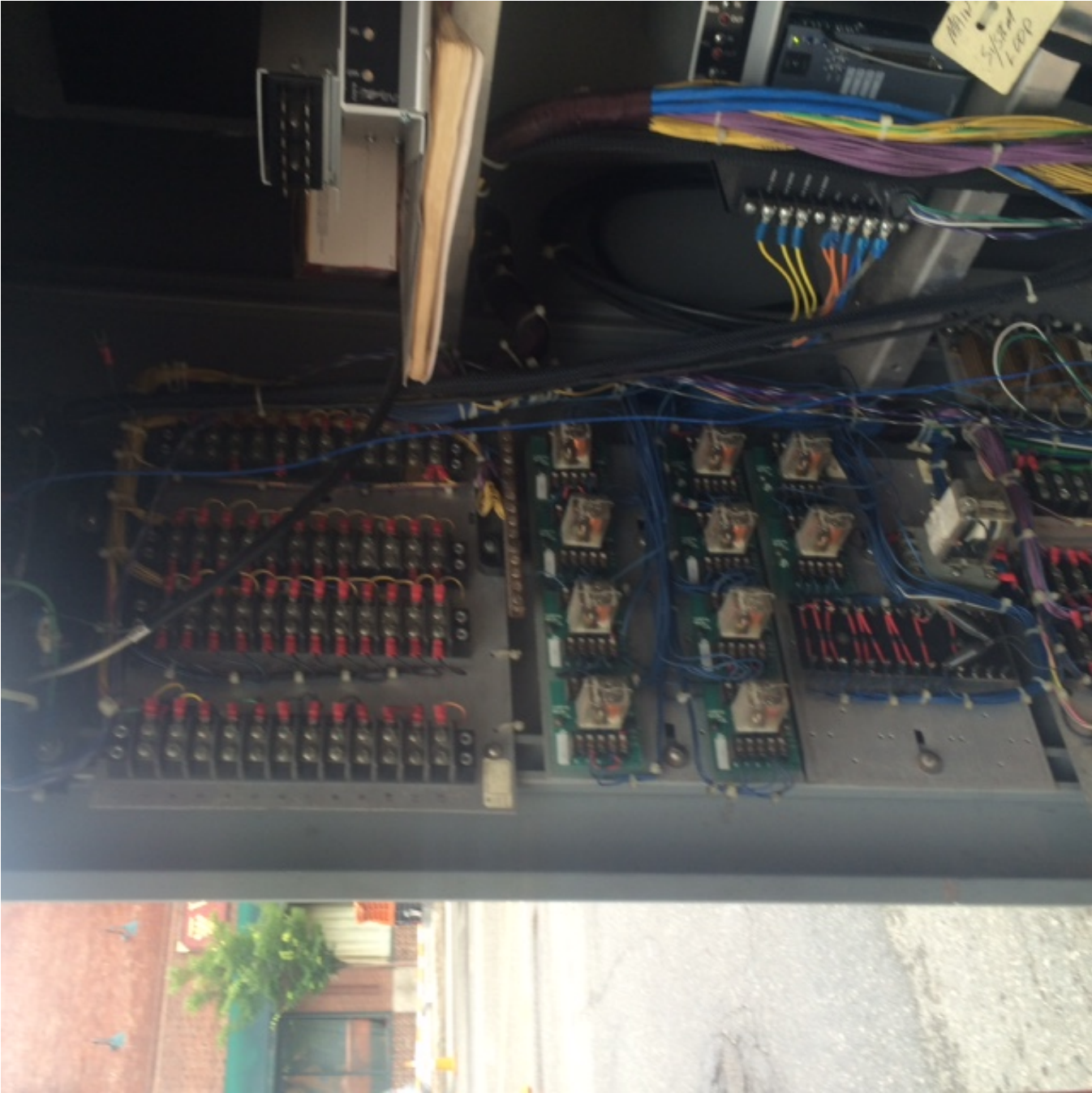
### **1. Moody Street/Main Street/Common Street Cabinet**

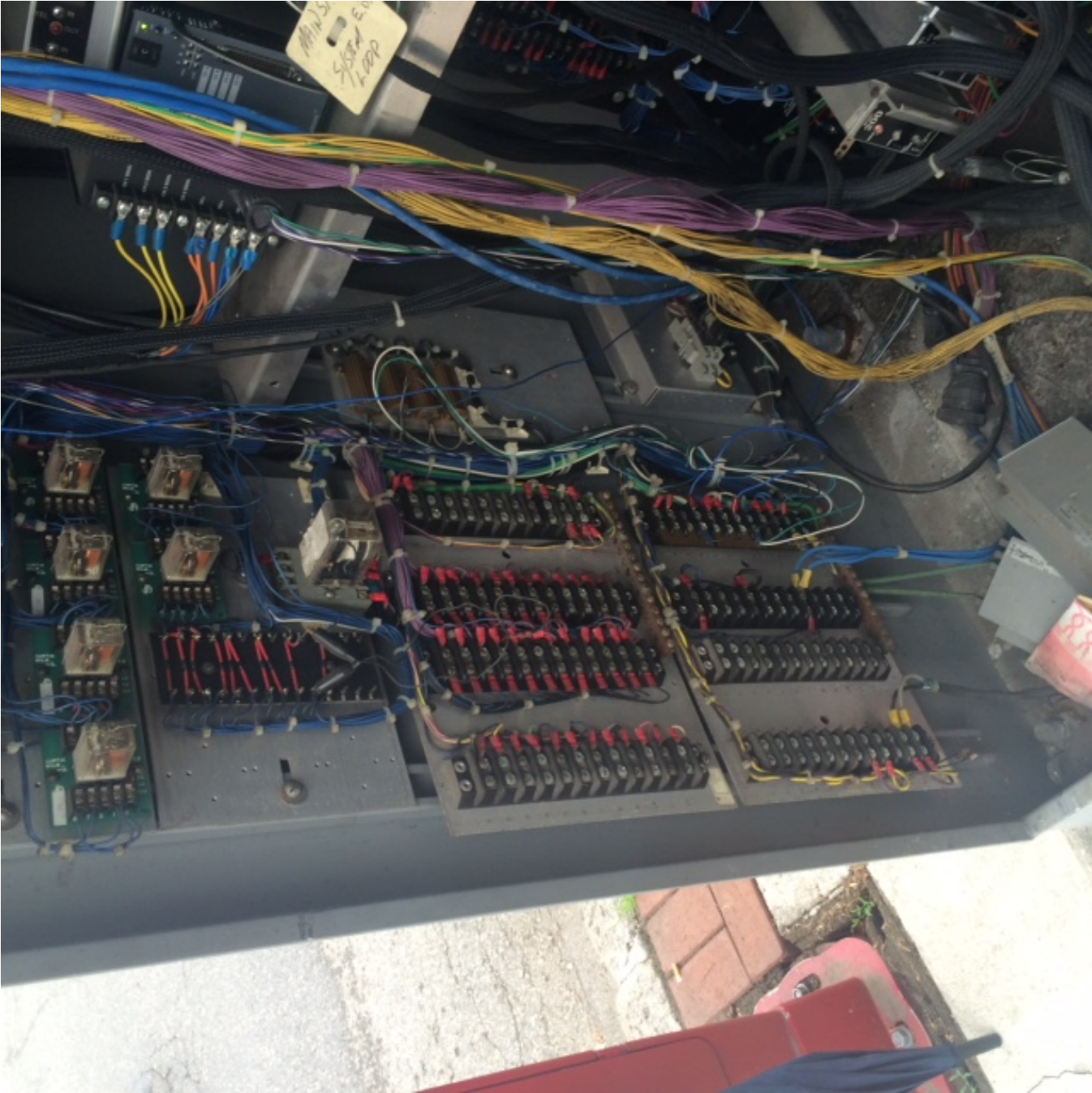




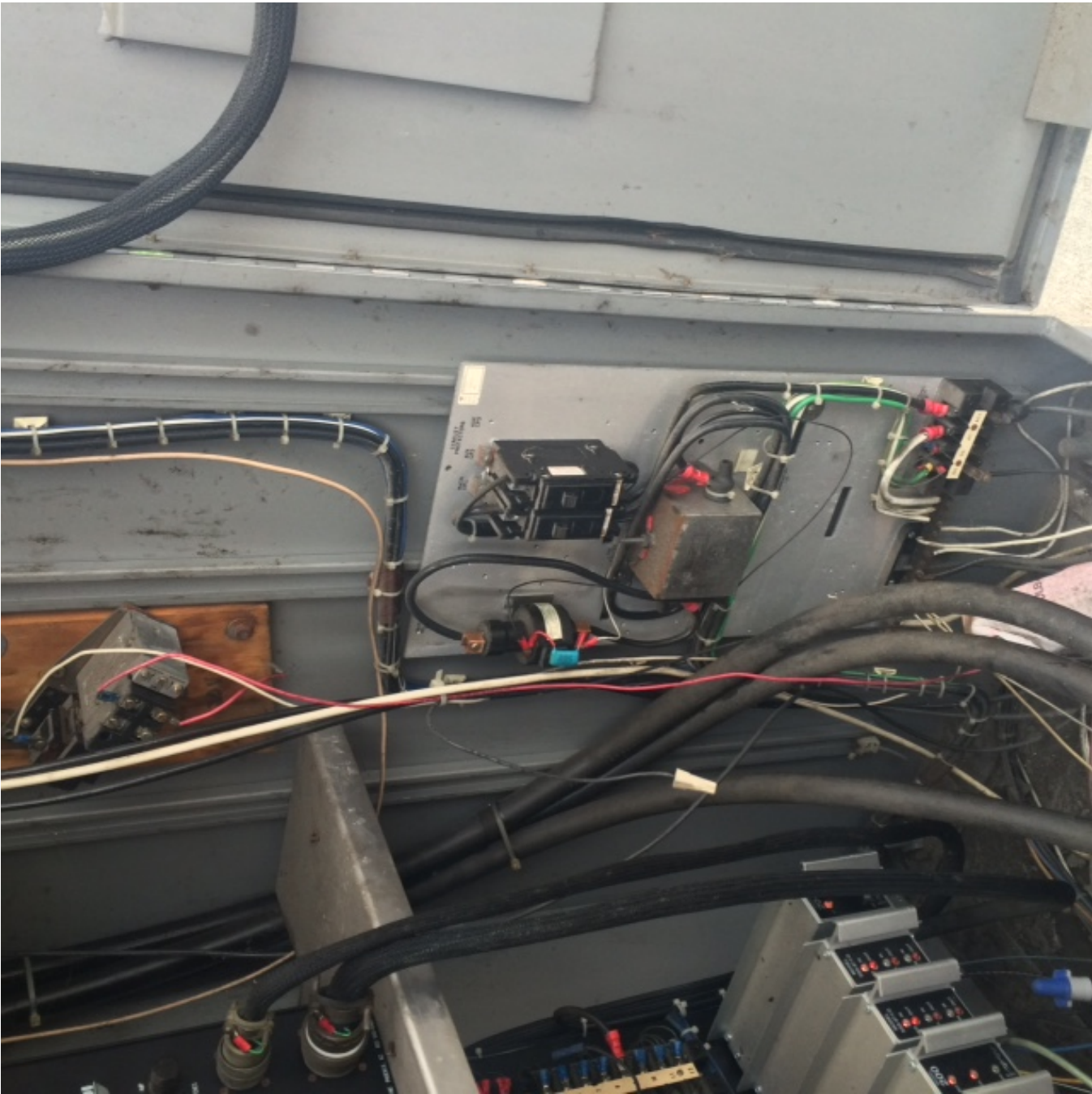


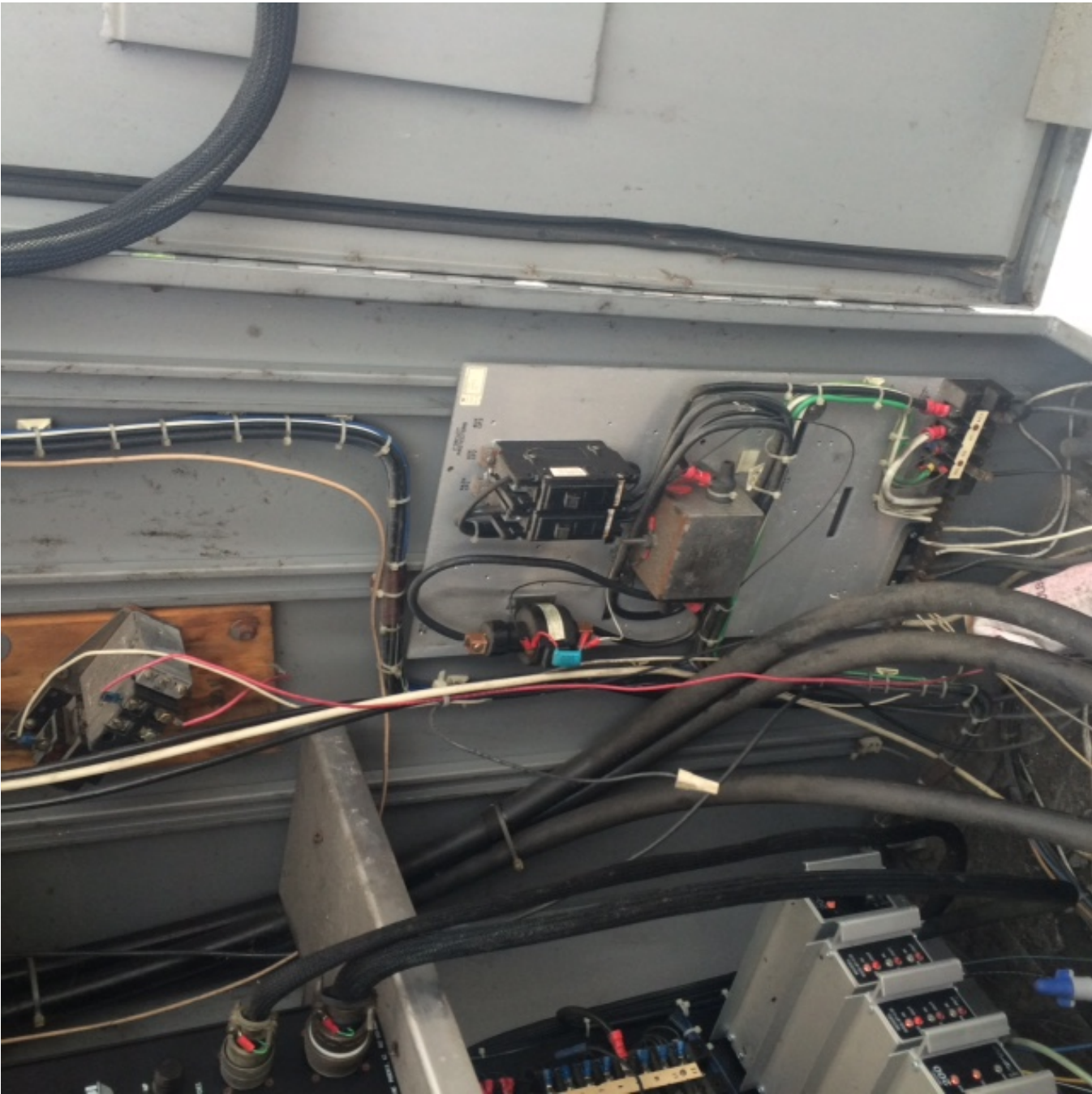




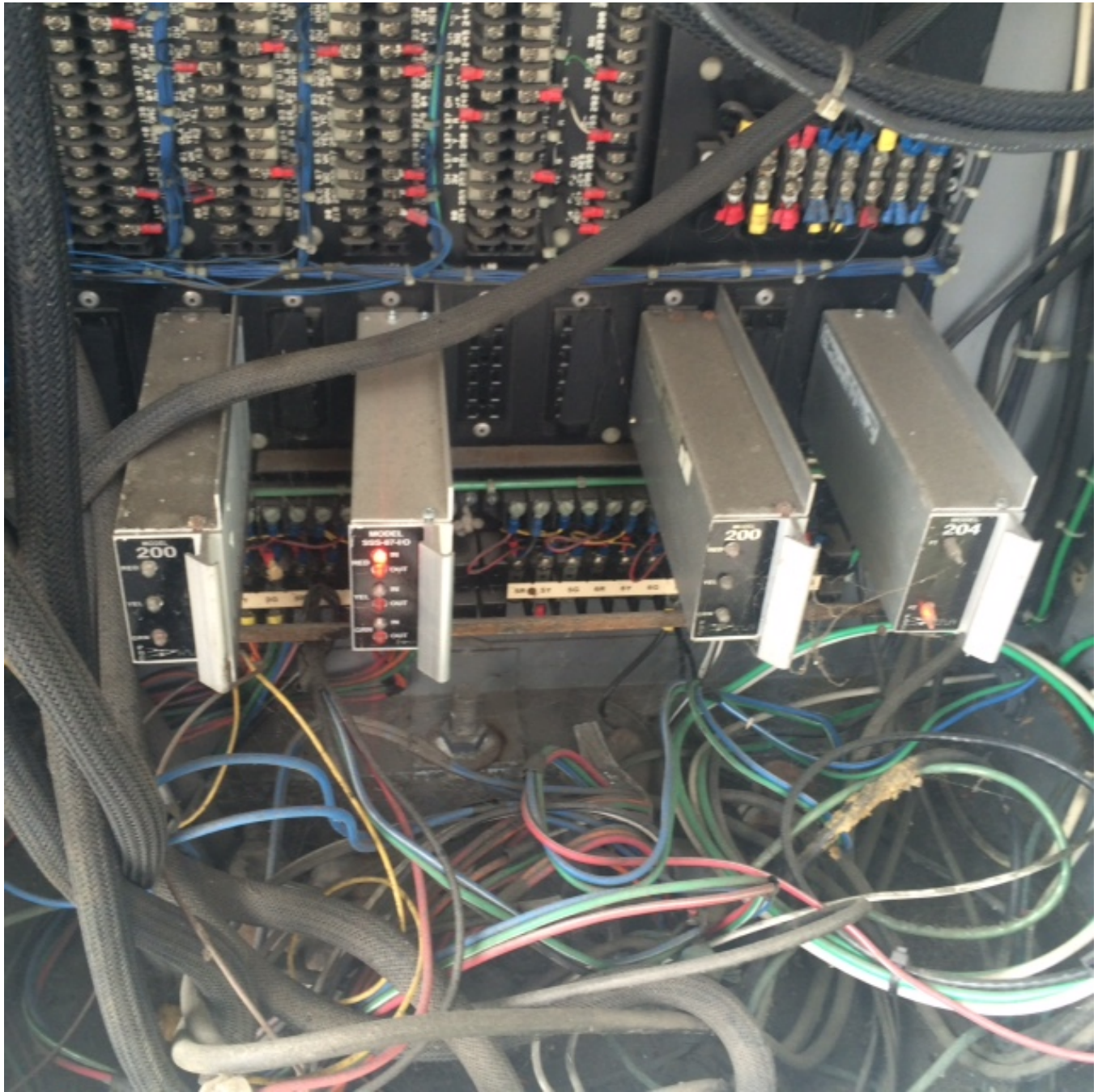


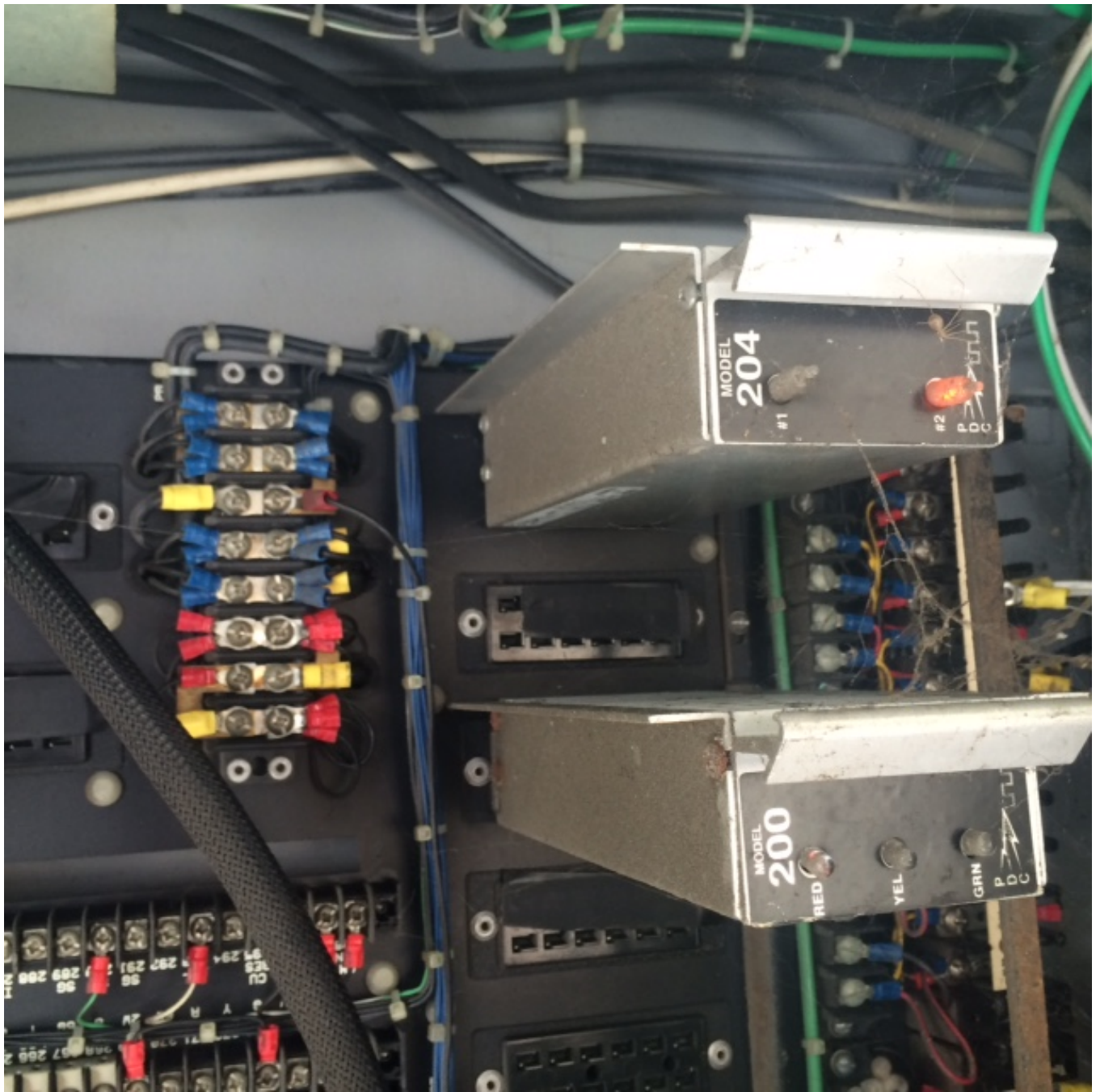


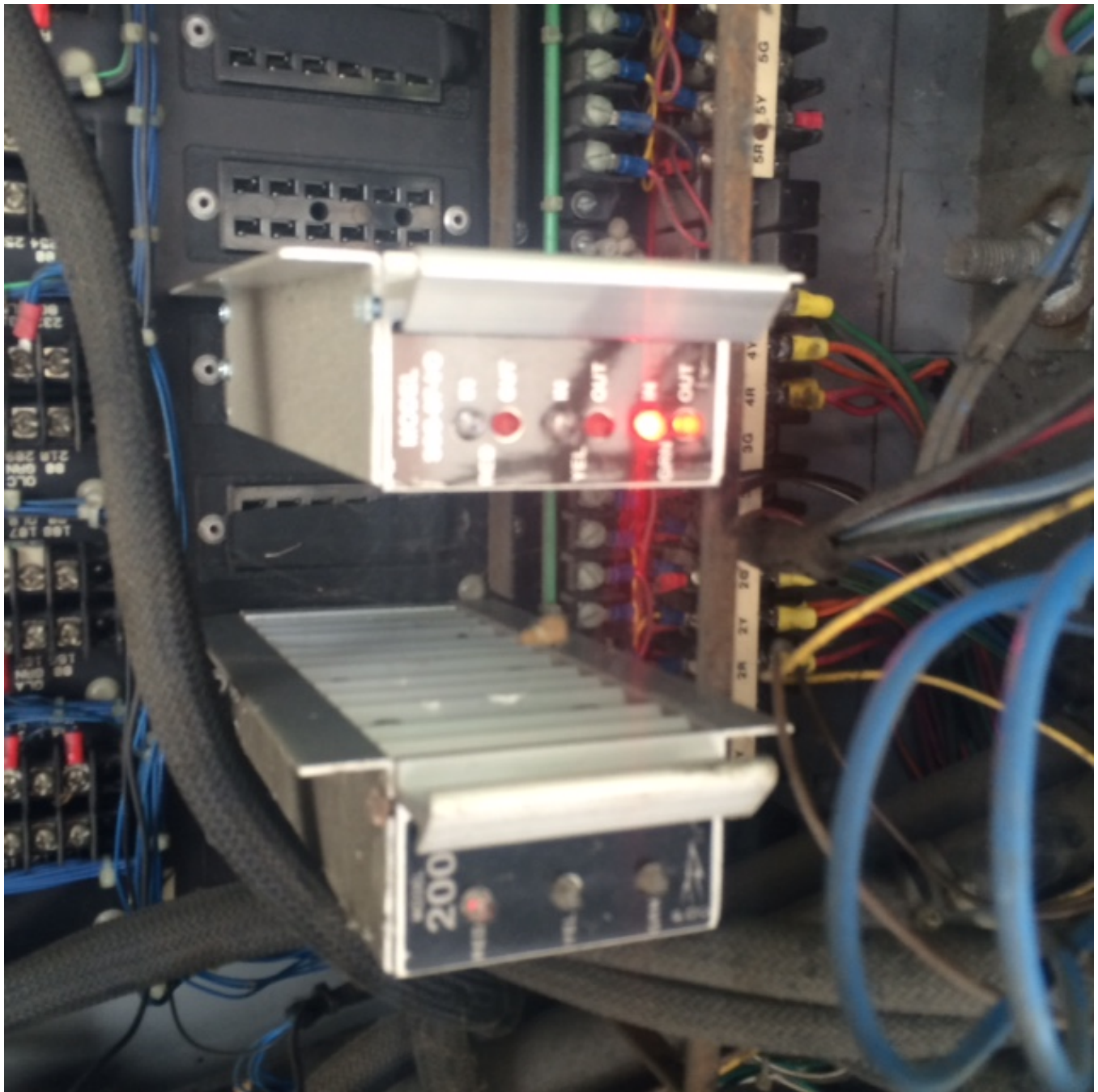


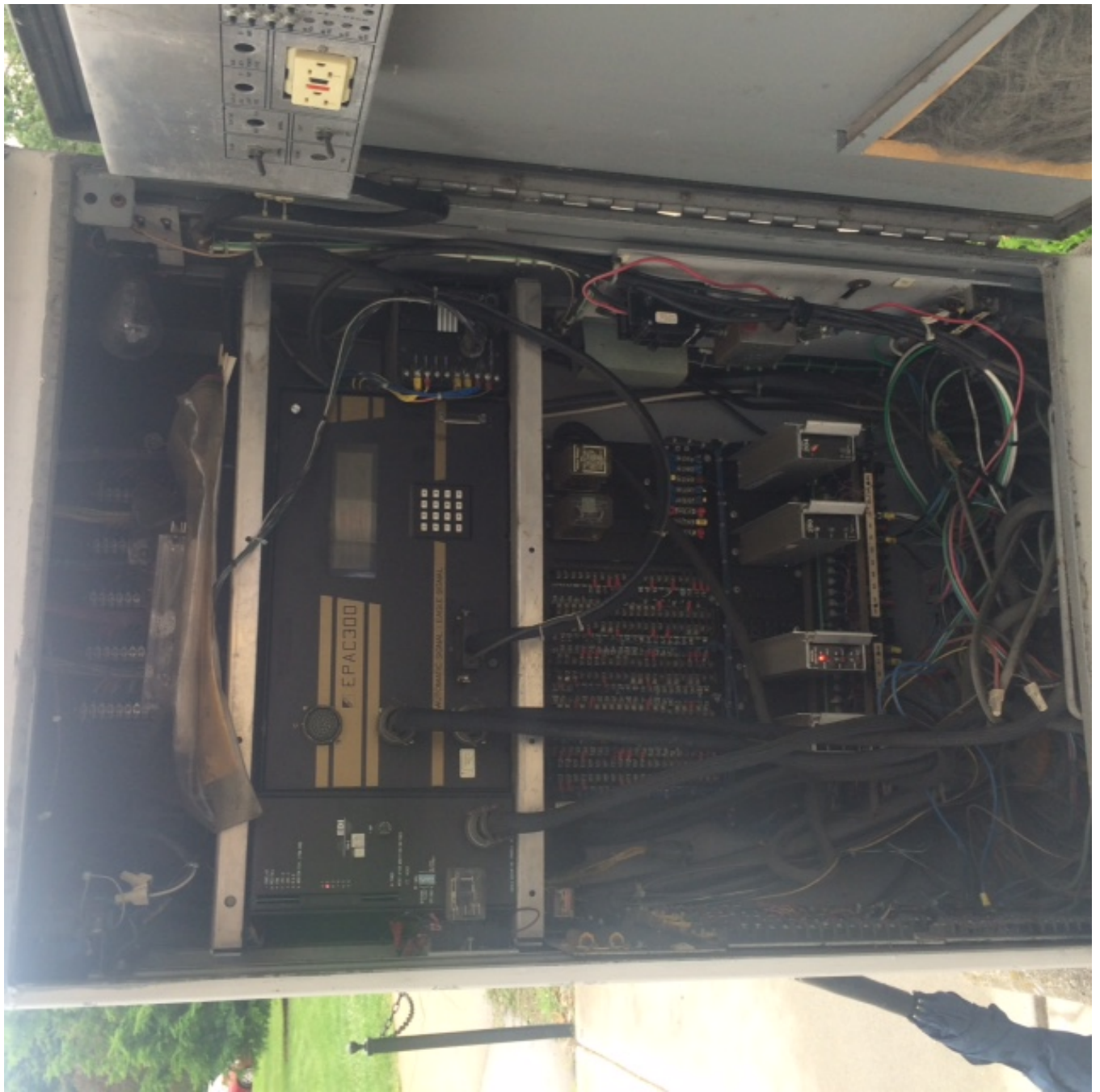


**2. Main Street/Lexington Street Cabinet**



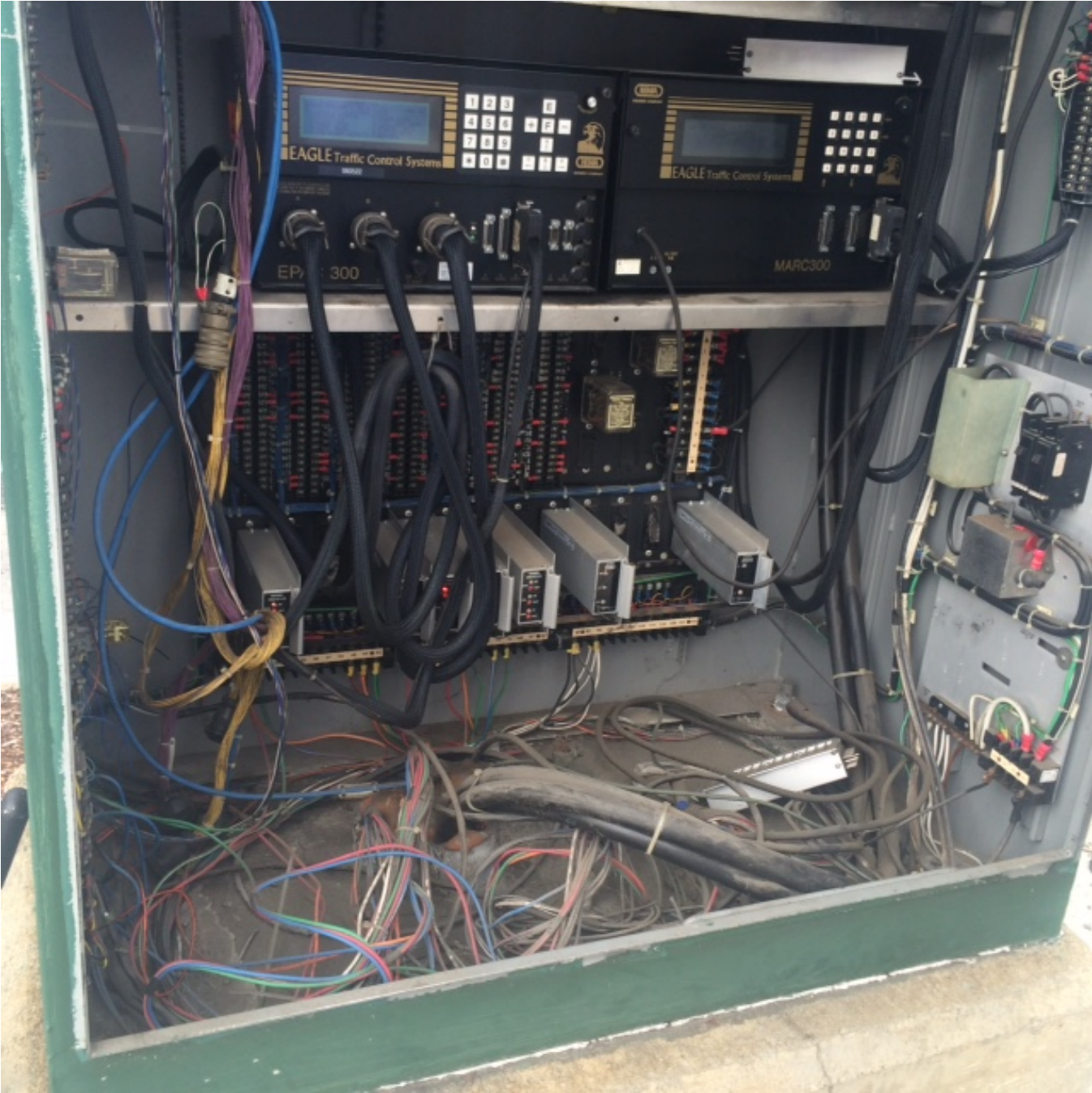








**3. Main Street/Church Street/Elm Street Cabinet (Main Controller and Signal Controller Cabinet)**







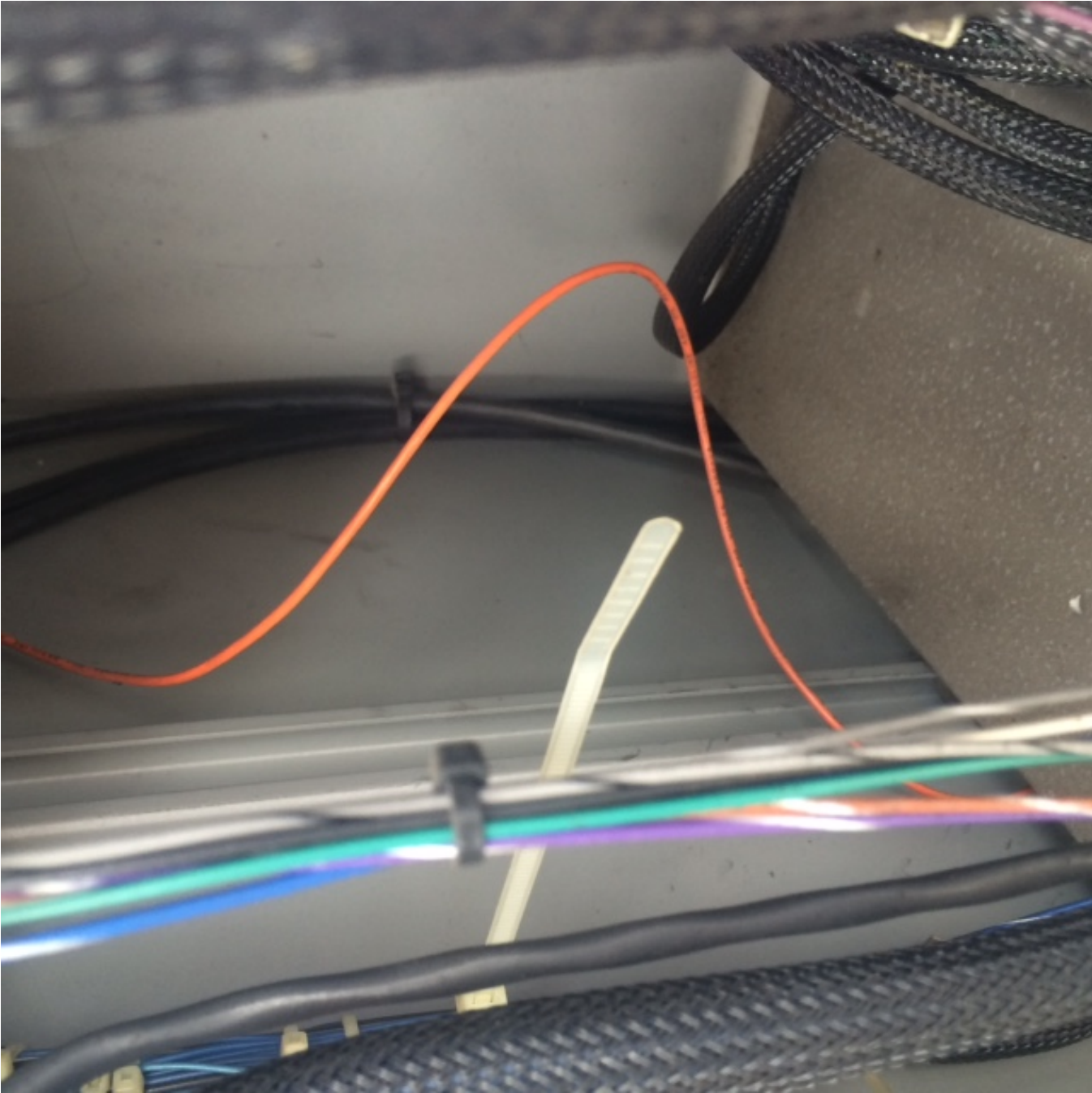








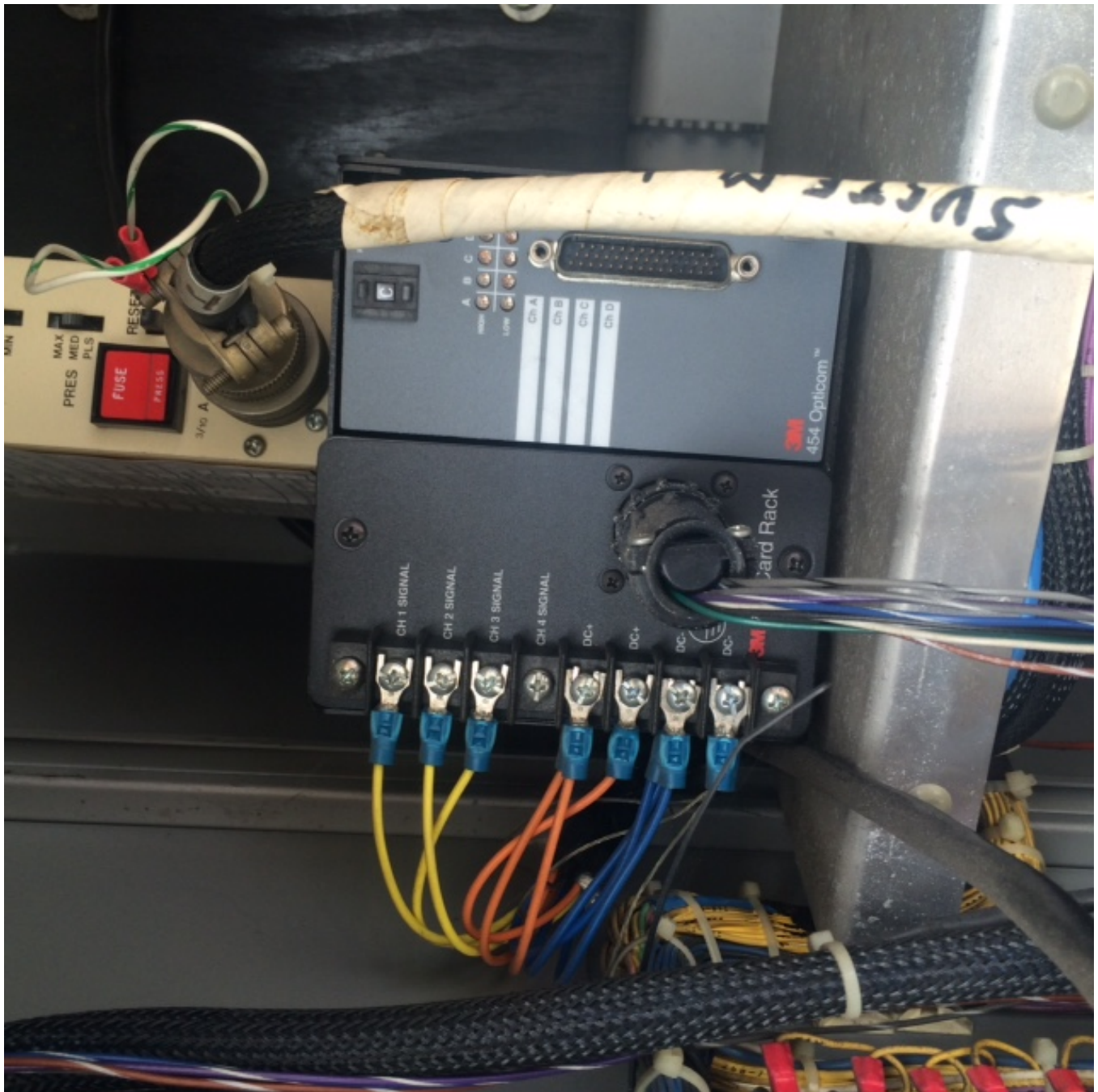


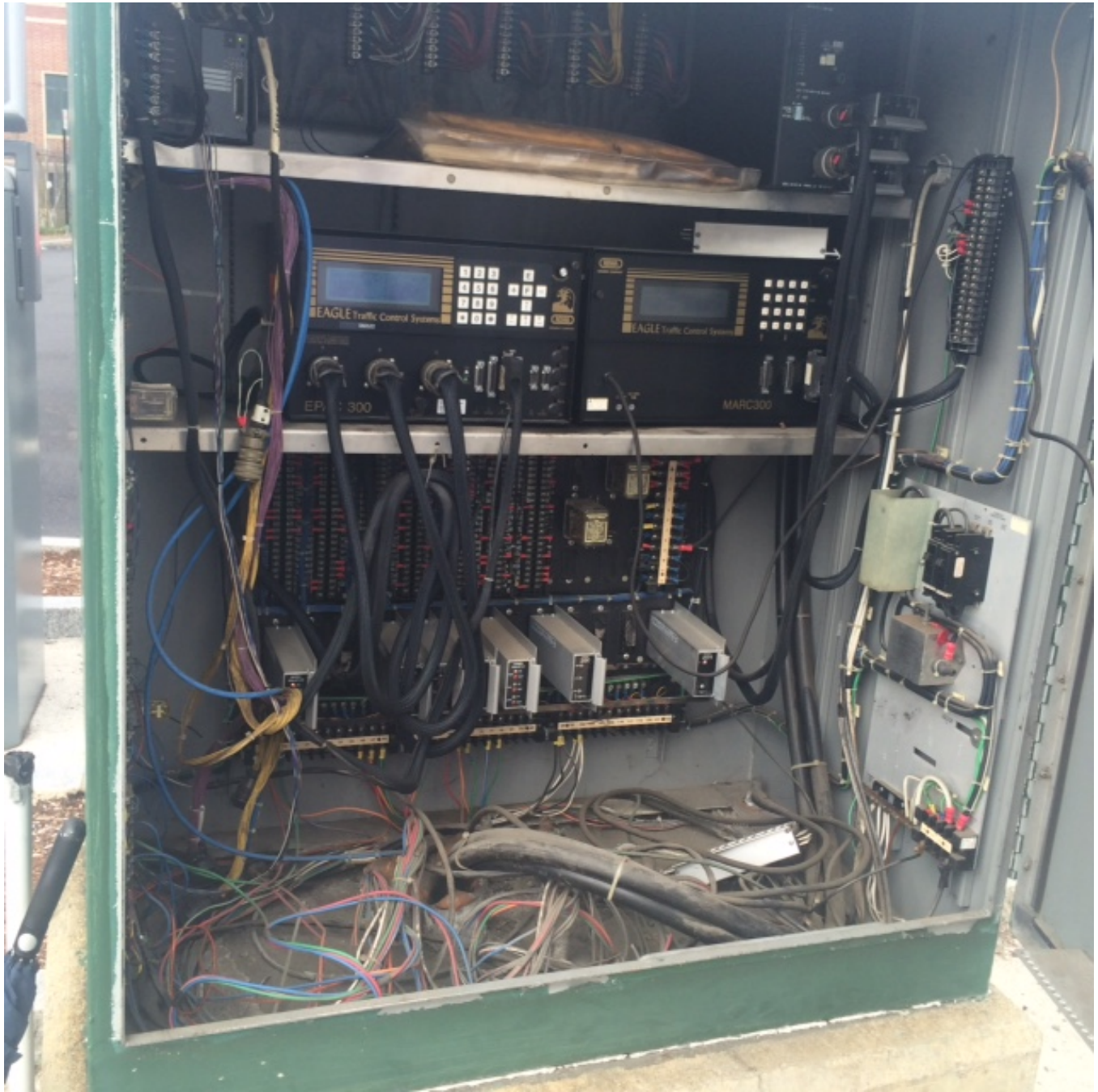


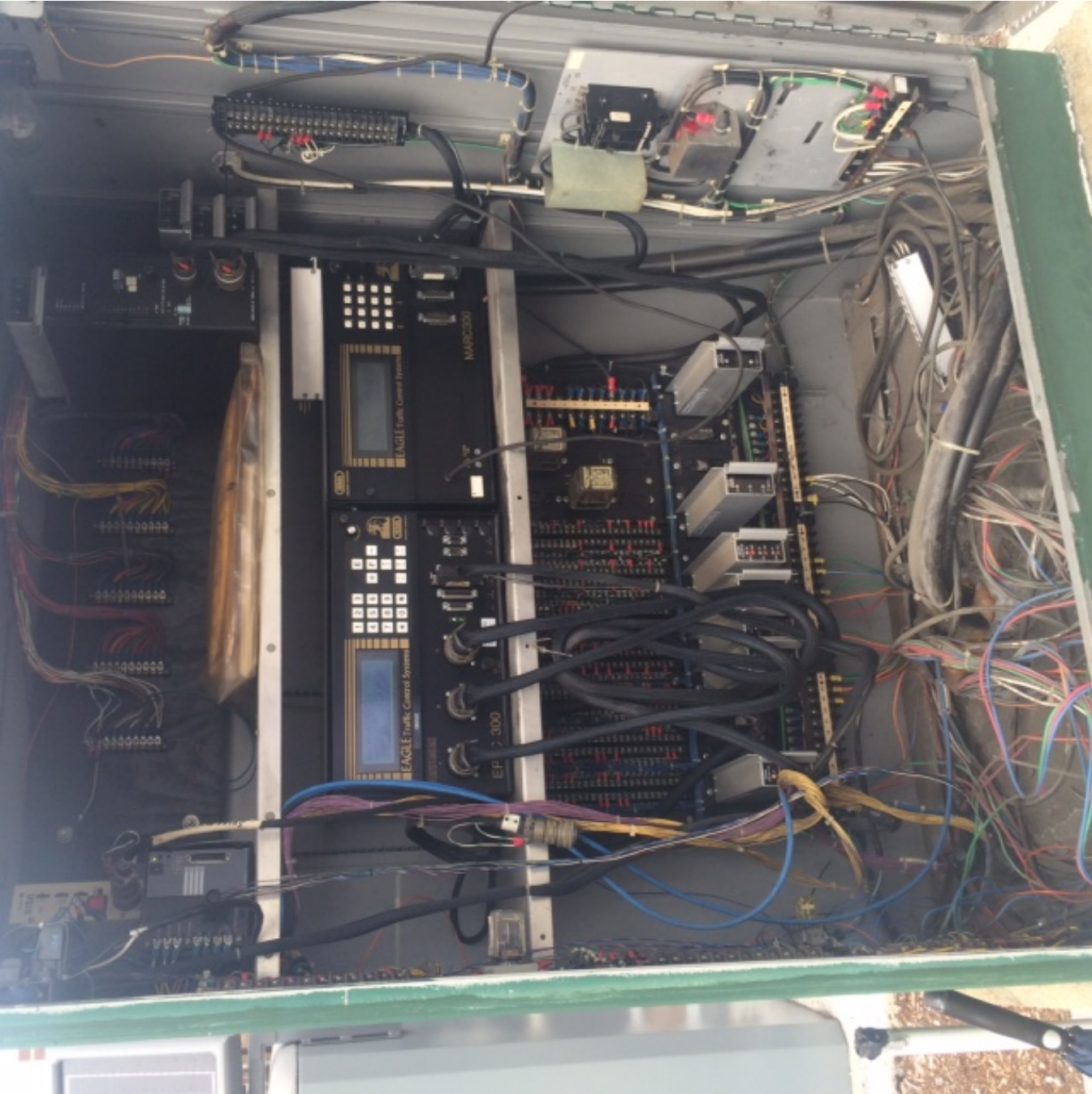


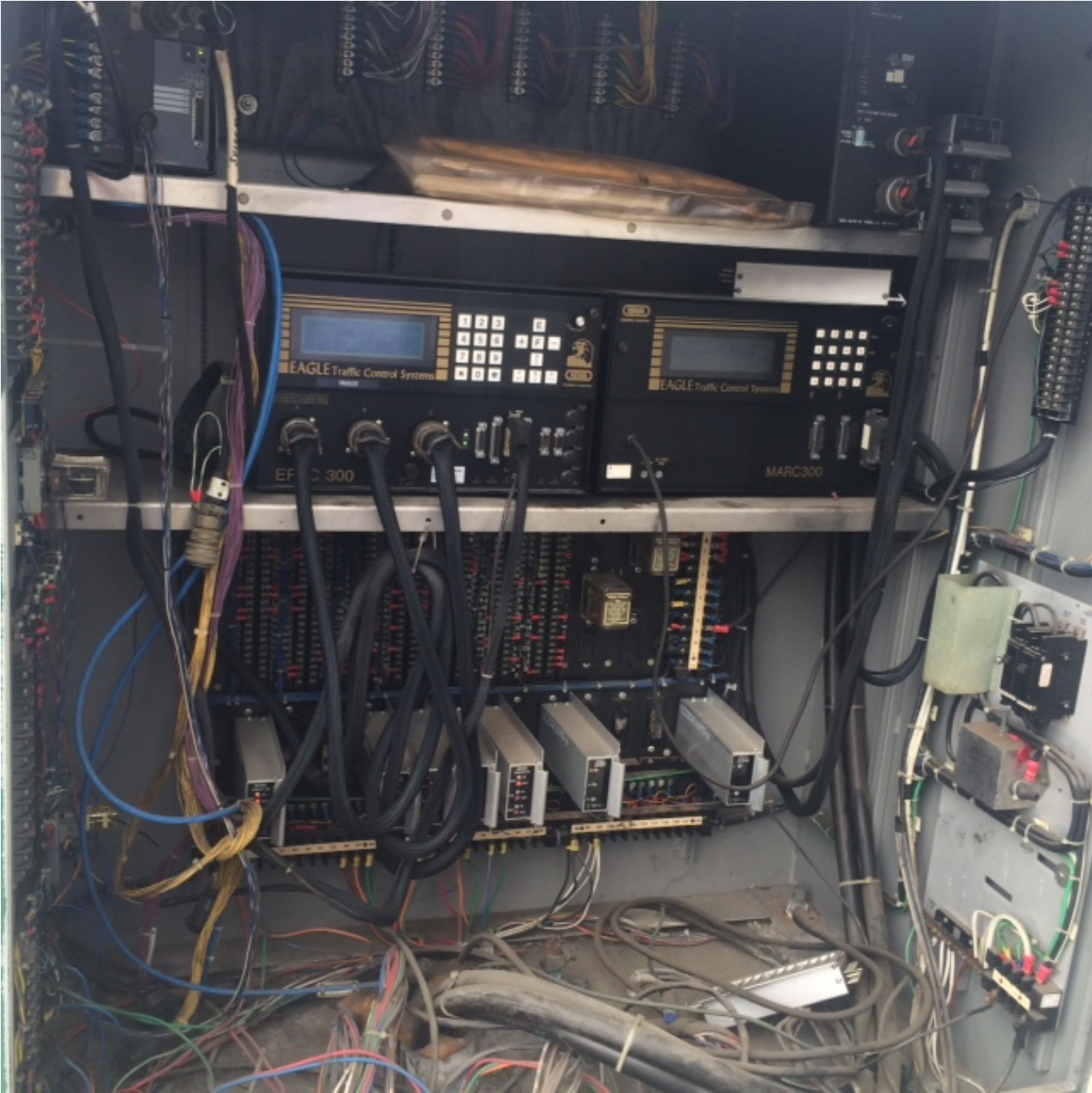


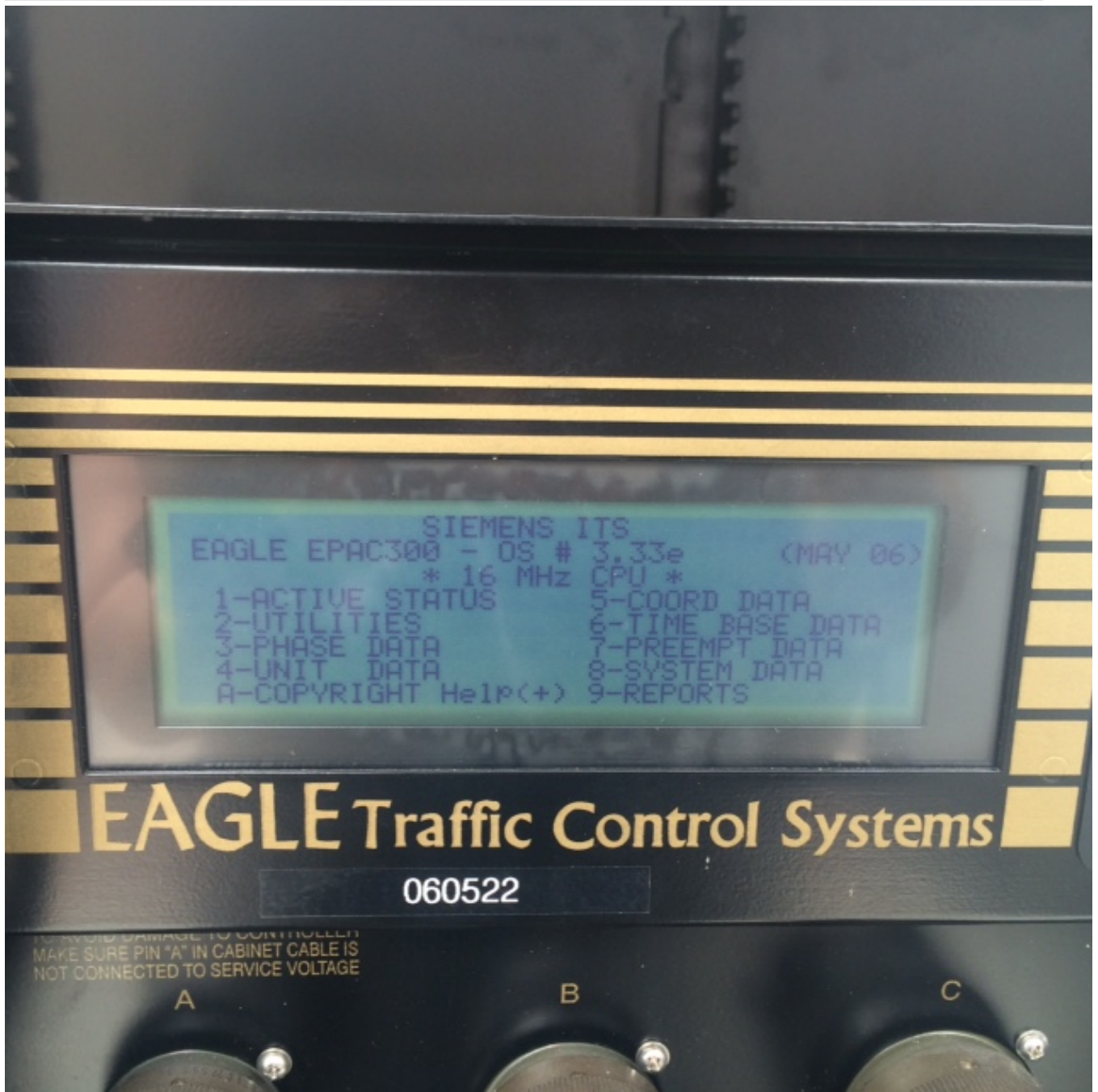












# Compliance

(Required Documents.)

## Compliance

The compliance documents in this section must be completed, signed and returned **with your bid package.**

### Purchasing Department

City of Waltham  
610 Main Street  
Waltham, MA 02452

Failure to submit the completed documents will cause the disqualification of the proposal.

### Section Index

	Check when Complete
• Non-collusion form and tax compliance form.....	_____
• Corporation Identification Form.....	_____
• Certificate of Vote Authority.....	_____
• Certificate of Vote Authority, Limited Liability Company ( <b>If an LLC</b> )	_____
• Three (3) References.....	_____
• Workman’s and General Liability Insurance.....	_____
• Debarment Certificate .....	_____
• 5% Bid Bond .....	_____

**Before the commencement of the Job, the contractor must provide to the above office:**

- Performance Bond and Payment Bond each for 100% of the contract value

Your Company’s Name: \_\_\_\_\_

Service or Product Bid \_\_\_\_\_

**NOTE:** Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.



*(Original signature is required)*

**NON-COLLUSION FORM AND TAX COMPLIANCE FORM**

**CERTIFICATE OF NON-COLLUSION**

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals. The undersigned certifies that no representations made by any City officials, employees, entity, or group of individuals other than the Purchasing Agent of the City of Waltham was relied upon in the making of this bid

\_\_\_\_\_  
(Signature of person signing bid or proposal)

\_\_\_\_\_  
(Name of business)

---

*(Original signature is required)*

**TAX COMPLIANCE CERTIFICATION**

Pursuant to M.G.L. c. 62C, & 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

\_\_\_\_\_  
Signature of person submitting bid or proposal

\_\_\_\_\_  
Name of business

**NOTE**

Failure to submit any of the required documents, in this or in other sections, with your bid response package may cause the disqualification of your proposal.

**CERTIFICATE OF VOTE OF AUTHORIZATION**

*(Original signature is required)*

Date:

I \_\_\_\_\_, Clerk of \_\_\_\_\_ hereby certify that at a meeting of the Board of Directors of said Corporation duly held on the \_\_\_\_\_ day of \_\_\_\_\_ at which time a quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

VOTED: That \_\_\_\_\_ (*name*) is hereby authorized, directed and empowered for the name and on behalf of this Corporation to sign, seal with the corporate seal, execute, acknowledge and deliver all contracts and other obligations of this Corporation; the execution of any such contract to be valid and binding upon this Corporation for all purposes, and that this vote shall remain in full force and effect unless and until the same has been altered, amended or revoked by a subsequent vote of such directors and a certificate of such later vote attested by the Clerk of this Corporation.

I further certify that \_\_\_\_\_ is duly elected/appointed \_\_\_\_\_ of said corporation

SIGNED:

(Corporate Seal)

\_\_\_\_\_  
Clerk of the Corporation:

Print Name: \_\_\_\_\_

County of \_\_\_\_\_

Date:

Then personally appeared the above named and acknowledged the foregoing instrument to be their free act and deed before me, \_\_\_\_\_

Notary Public;

My Commission expires: \_\_\_\_\_

*(Original signature is required)*

**CORPORATION IDENTIFICATION**

The bidder for the information of the Awarding Authority furnishes the following information.

If a Corporation:

Incorporated in what state \_\_\_\_\_

President \_\_\_\_\_

Treasurer \_\_\_\_\_

Secretary \_\_\_\_\_

Federal ID Number \_\_\_\_\_

If a foreign (out of State) Corporation – Are you registered to do business in Massachusetts?

Yes \_\_\_\_\_, No \_\_\_\_\_

If you are selected for this work you are required under M.G.L.ch. 30S, 39L to obtain from the Secretary of State, Foreign Corp. Section, State House, Boston, a certificate stating that you Corporation is registered, and furnish said certificate to the Awarding Authority prior to the award.

If a Partnership: (Name all partners)

Name of partner \_\_\_\_\_

Residence \_\_\_\_\_

Name of partner \_\_\_\_\_

Residence \_\_\_\_\_

If an Individual:

Name \_\_\_\_\_

Residence \_\_\_\_\_

If an Individual doing business under a firm’s name:

Name of Firm \_\_\_\_\_

Name of Individual \_\_\_\_\_

Business Address \_\_\_\_\_

Residence \_\_\_\_\_

Date \_\_\_\_\_

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

By \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Business Address \_\_\_\_\_ (POST OFFICE BOX NUMBER NOT ACCEPTABLE)

City \_\_\_\_\_ State \_\_\_\_\_ Telephone Number \_\_\_\_\_

**PROVIDE THREE (3) SERVICE APPROPRIATE REFERENCES**

1. Company Name:

Address:

Contact Name:

Phone #

Type of service/product provided to this Company:

Dollar value of service provided to this Company:

2. Company Name:

Address:

Contact Name:

Phone #

Type of service/product provided to this Company:

Dollar value of service provided to this Company:

3. Company Name:

Address:

Contact Name:

Phone #

Type of service/product provided to this Company:

Dollar value of service provided to this Company:

**NOTE**

Failure to submit any of the required documents, in this or in other sections, with your bid response package will be cause for the disqualification of your company.

*(Original signature is required)*

**DEBARMENT CERTIFICATION**

In connection with this bid and all procurement transactions, by signature thereon, the respondent certifies that neither the company nor its principals are suspended, debarred, proposed for debarment, declared ineligible, or voluntarily excluded from the award of contracts, procurement or non procurement programs from the Commonwealth of Massachusetts, the US Federal Government and /or the City of Waltham. "Principals" means officers, directors, owners, partners and persons having primary interest, management or supervisory responsibilities with the business entity. Vendors shall provide immediate written notification to the Chief Procurement Officer of the City of Waltham at any time during the period of the contract of prior to the contract award if the vendor learns of any changed condition with regards to the debarment of the company or its officers. This certification is a material representation of fact upon which reliance will be placed when making the business award. If at any time it is determined that the vendor knowingly misrepresented this certification, in addition to other legal remedies available to the city of Waltham, the contract will be cancelled and the award revoked.

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

Address \_\_\_\_\_

City \_\_\_\_\_, State \_\_\_\_\_, Zip Code \_\_\_\_\_

Phone Number (\_\_\_\_) \_\_\_\_\_

E-Mail Address \_\_\_\_\_

Signed by Authorized Company Representative:

\_\_\_\_\_

Print name \_\_\_\_\_,

Date \_\_\_\_\_

*(Original signature is required)*

**(Fill out ONLY if an LLC)**

**CERTIFICATE OF AUTHORITY LIMITED LIABILITY  
COMPANY**

The undersigned, being (a/the) duly elected, qualified and active (member/ manager) of \_\_\_\_\_  
a Massachusetts limited Liability Company (hereinafter "the Company")

Does Hereby Certify that:

1. The Articles of Organization of the Company were duly filed with the Office of the Secretary of State of the State of Massachusetts on \_\_\_\_\_ and the Articles of Organization have not been (further) amended.
2. The Company has complied with the publication requirements contained in Section 67 of the Limited Liability Company Law.
3. There exists an Operating Agreement of the Company and that the said Operating Agreement has not been amended or repealed and that the said Operating Agreement remains in full force and effect as of this date.
4. Neither the Articles of Organization nor the Operating Agreement (as amended) require any further act to be taken or a meeting to be held by its members other that as follows:
5. All said requirements, whether as contained in the Articles of Organization or in the Operating Agreement or by operation of law as to the transaction of \_\_\_\_\_, 20\_\_ have been met.
6. The following person or persons has/have been duly authorized by the Company to execute all documents in connection with said transaction and that the signature appearing to the right of their name(s) is his/her genuine signature.

NAME	OFFICE HELD	SIGNATURE
_____	_____	_____
_____	_____	_____
_____	_____	_____

IN Witness Whereof, the undersigned has executed this Certificate of Authority this

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
(Signature)

STATE OF \_\_\_\_\_, COUNTY OF \_\_\_\_\_

On the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ , before me, the undersigned personally appeared \_\_\_\_\_, personally known to me or

proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/ they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Notary Public: \_\_\_\_\_, STAMP

My Commission Expires: \_\_\_\_\_



## Request for Taxpayer Identification Number and Certification

**Give Form to the  
 requester. Do not  
 send to the IRS.**

Fill Out This Section  
 Print or type  
 See Specific Instructions on page 2.

Name (as shown on your income tax return)	
Business name/disregarded entity name, if different from above	
Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Other (see instructions) ▶ _____	
<input type="checkbox"/> Exempt payee	
Address (number, street, and apt. or suite no.)	<b>Requester's name and address (optional)</b> Chief Procurement Officer Purchasing Department, City of Waltham 610 Main Street Waltham, MA 02452
City, state, and ZIP code	
List account number(s) here (optional)	

### Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

**Note.** If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

<b>Social security number</b>					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border: 1px solid black; height: 20px;"></td> <td style="width: 5%; text-align: center;">-</td> <td style="width: 25%; border: 1px solid black; height: 20px;"></td> <td style="width: 5%; text-align: center;">-</td> <td style="width: 40%; border: 1px solid black; height: 20px;"></td> </tr> </table>		-		-	
	-		-		
<b>Employer identification number</b>					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border: 1px solid black; height: 20px;"></td> <td style="width: 5%; text-align: center;">-</td> <td style="width: 70%; border: 1px solid black; height: 20px;"></td> </tr> </table>		-			
	-				

Fill out this sect. either SS or FID

### Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign & Date

<b>Sign Here</b>	Signature of U.S. person ▶	Date ▶
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### General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

#### Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

**Note.** If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Special rules for partnerships.** Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

# **BID PRICE FORM**

**Follows**

*(Original signature is required)*

### PRICE SHEET

The company listed below offers the fixed not-to-exceed price for the service described within this document for:

**Allowance for Police details: \$4,000.00**

**Fixed and not to Exceed Base Bid Amount: \_\_\_\_\_**

**TOTAL BID \$ \_\_\_\_\_**

---

**Company Name: \_\_\_\_\_**

**Address: \_\_\_\_\_**

**Tel No.: \_\_\_\_\_ Email Address: \_\_\_\_\_**

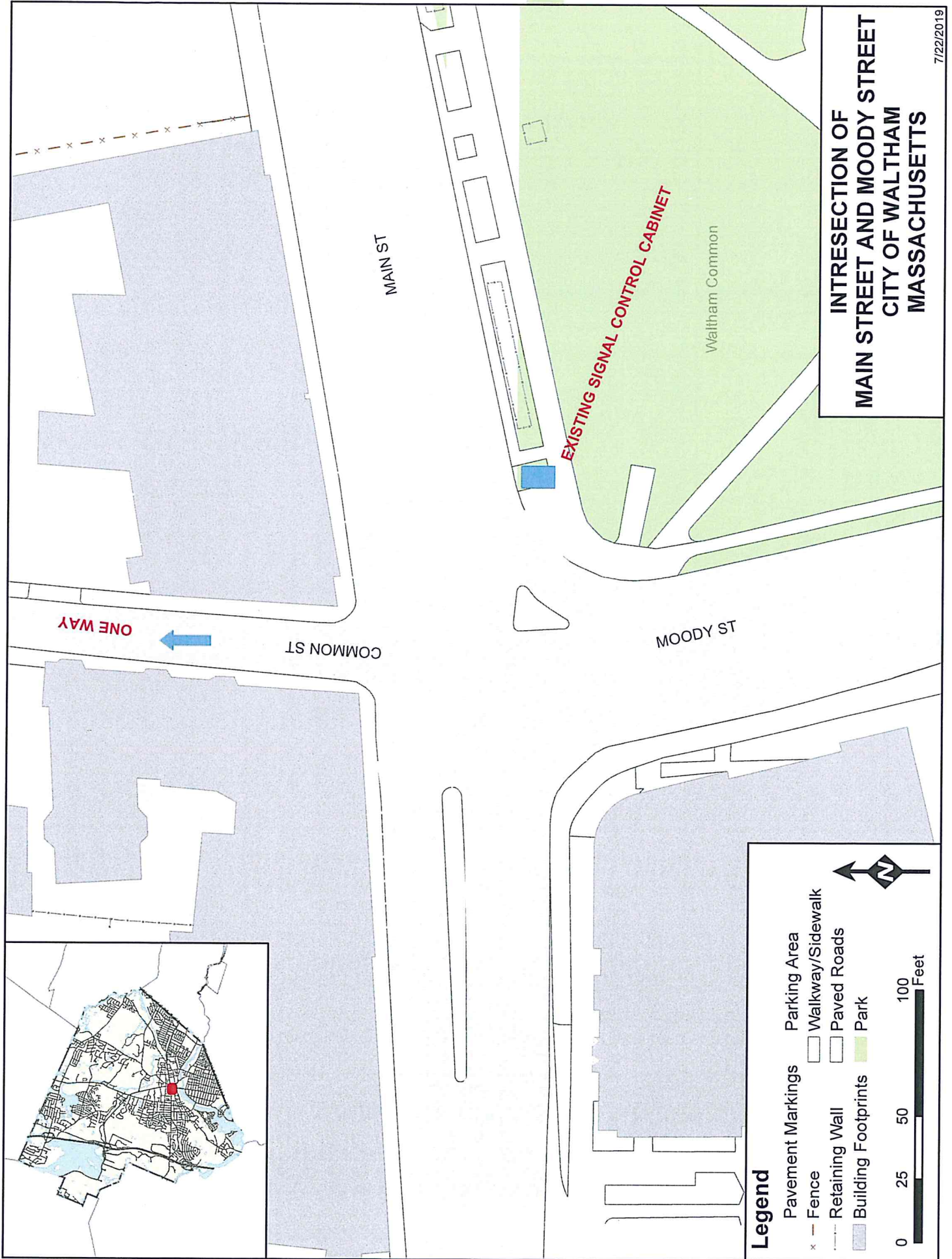
**Authorized Signature: \_\_\_\_\_**

**Print Name and Title of Signatory: \_\_\_\_\_**

**Date: \_\_\_\_\_**

**Bidder Acknowledge Receipt of Addendum No. (s): \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.**

**Maps,  
Three (3) Main Street Intersections**



**INTRERSECTION OF  
MAIN STREET AND MOODY STREET  
CITY OF WALTHAM  
MASSACHUSETTS**

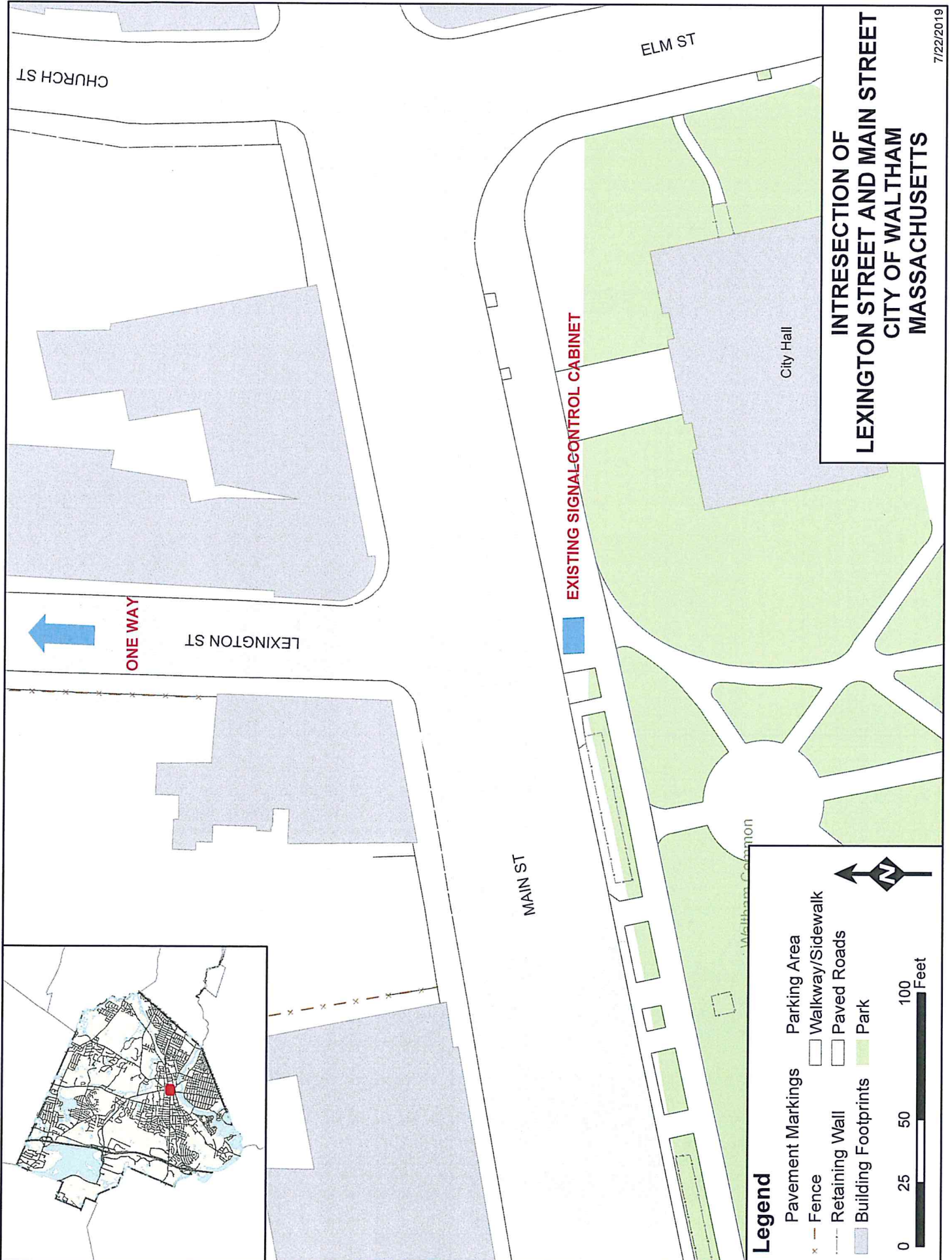
7/22/2019

**Legend**

<ul style="list-style-type: none"> <li>— Fence</li> <li>- - - Retaining Wall</li> <li>■ Building Footprints</li> </ul>	<ul style="list-style-type: none"> <li>■ Parking Area</li> <li>□ Walkway/Sidewalk</li> <li>□ Paved Roads</li> <li>■ Park</li> </ul>
--	---

0 25 50 100 Feet

↑ N



**INTRSECTION OF  
LEXINGTON STREET AND MAIN STREET  
CITY OF WALTHAM  
MASSACHUSETTS**

7/22/2019

**Legend**

- Pavement Markings
- Fence
- Retaining Wall
- Building Footprints
- Parking Area
- Walkway/Sidewalk
- Paved Roads
- Park

0 25 50 100 Feet

