

September 20, 2012

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATION
DEPARTMENT OF TRANSPORTATION
RHODE ISLAND CONTRACT NO.2012-CH-082
FEDERAL-AID PROJECT NO. FAP Nos: STP-0044(062), STPG-0044(063)

Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue

Austin Avenue to Danecroft Avenue
CITY/TOWN OF Smithfield
COUNTY OF PROVIDENCE

NOTICE TO PROSPECTIVE BIDDERS

ADDENDUM NO. 1 Prospective bidders and all concerned are hereby notified of the following changes in the Plans, Specifications, Proposal and Distribution of Quantities for this contract. These changes shall be incorporated in the Plans, Specifications, Proposal and Distribution of Quantities, and shall become an integral part of the Contract Documents.

A. Clarification

1. Allowable work times:

The Transportation Management Plan (TMP) included in the General Provisions - Contract Specific section of the Contract Documents includes the Traffic Related Work Restrictions and General Requirements including the minimum number of travel lanes and shoulders to remain open to traffic. Work that does not impact traffic as defined in the TMP, may be performed on Monday through Friday during day-time hours.

2. Work limits:

The work of this contract is entirely in the Town of Smithfield. Please disregard any reference found in the Quest program that indicates that work in Bristol is also included.

B. Contract Documents

1. General Provisions - Contract Specific:

- a. Page CS-3

Remove Page CS-3 in its entirety and replace it with revised Page CS-3(R-1) attached to the Addendum No. 1. The last sentence of Paragraph 3. "Utility and Municipal Notification and Coordination" has been revised.

- b. Page CS-7

Remove Page CS-7 in its entirety and replace it with revised Page CS-7(R-1) attached to the Addendum No. 1. Paragraph 13. "Contractor's Responsibility for Damaged Utility Facilities" has been revised.

2. Specifications - Job Specific:

a. Index Pages JS-ii and JS-iii

Remove Index Pages JS-ii and JS-iii in their entirety and replace them with revised Index Pages JS-ii(R-1) and JS-iii(R-1) attached to this Addendum No. 1. The changes are shown in bold text.

b. Page JS-2

Remove Page JS-2 in its entirety and replace it with revised Page JS-2(R-1) attached to this Addendum No. 1. Section 12.108 Prosecution and Progress - the Liquidated Damages amount has been revised.

c. Pages JS-52 and JS-53

Remove Pages JS-52 and JS-53 in their entirety and replace them with revised Pages JS-52 (R-1) and JS-53(R-1) attached to this Addendum No. 1. Code 701.99 Aluminized Type 2 Steel 42" x 29" Pipe Arch - the Materials Section has been revised.

d. Pages JS-77 and JS-78

Remove Pages JS-77 and JS-78 in their entirety and replace them with revised Pages JS-77 (R-1) and JS-78(R-1) attached to this Addendum No. 1. Code T04.9902 - Interconnect Cable #19 AWG 6 Pair Traffic Communications Cable has been deleted.

e. Pages JS-82 through JS-85

Remove Pages JS-82 through JS-85 in their entirety and replace them with revised Pages JS-82(R-1) through JS-85(R-1) attached to this Addendum No. 1. Code T11.9903 - 20 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation has been added. The Materials, Construction Methods, Method of Measurement, and Basis of Payment Sections have been revised.

f. Pages JS-86, JS-88, JS-91, and JS-92

Remove Pages JS-86, JS-88, JS-91, and JS-92 in their entirety and replace them with revised Pages JS-86(R-1), JS-88(R-1), JS-91(R-1), and JS-92(R-1) attached to this Addendum No. 1. The Title for Code T12.9901 has been revised to Actuated Controller, TS-2, Type 1 W/GPS and 8 Phase Assembly Ground Mounted, Including TS-2, Type 1 Cabinet and Foundation Std 19.1.0. The Description, Materials, Method of Measurement, and Basis of Payment Sections have been revised.

g. Page JS-95

Remove Page JS-95 in its entirety and replace it with revised Page JS-95(R-1) attached to this Addendum No. 1. Code T12.9903 - Modify Traffic Signal Controller and Cabinet - Austin Avenue at Putnam Pike - the Description Section has been revised.

h. Pages JS-97 and JS-98

Remove Pages JS-97 and JS-98 in their entirety and replace them with revised Pages JS-97 (R-1) and JS-98(R-1) attached to this Addendum No. 1. The Title for Code T13.9902 has been revised to Fire Pre-Emption Control System. The Description, Materials, Construction Methods, Method of Measurement, and Basis of Payment Sections have been revised.

i. Page JS-99

Remove Page JS-99 in its entirety and replace it with revised Page JS-99(R-1) attached to this Addendum No. 1. Code T14.99 - Traffic Signal Equipment Painting - the Description Section has been revised.

j. Pages JS-100 and JS-101

Remove Pages JS-100 and JS-101 in their entirety and replace them with revised Pages JS-100(R-1) and JS-101(R-1) attached to this Addendum No. 1. Code T15.9901 - Flashing School Zone Sign Assembly - the Materials, Construction Methods, and Basis of Payment Sections have been revised.

C. Drawings/Plans - Change/Addition

1. Sheet No. 5

Remove Sheet No. 5 (Job Specific Plan Symbols, Legend and Notes) in its entirety and replace it with revised Sheet No. 5(R-1) attached to this Addendum No. 1. The pavement marking legend for crosswalks has been revised.

2. Sheet Nos. 32 and 33

Remove Sheet Nos. 32 and 33 (Signing and Pavement Marking Plan Nos. 2 and 3) in their entirety and replace them with revised Sheet Nos. 32(R-1) and 33(R-1) attached to this Addendum No. 1. The pavement markings at crosswalks have been revised.

3. Sheet No. 34

Remove Sheet No. 34 (Signing and Pavement Marking Plan No. 4) in its entirety and replace it with revised Sheet No. 34(R-1) attached to this Addendum No. 1. The pavement markings at crosswalks have been revised. The midblock crosswalk detail has been removed.

4. Sheet Nos. 39 through 45

Remove Sheet Nos. 39 through 45 in their entirety and replace them with revised Sheet Nos. 39(R-1) through 45(R-1) attached to this Addendum No. 1. The traffic signal equipment, materials and details have been revised.

5. Sheet No. 46

Remove Sheet No. 46 (Traffic Signal Mast Arm Cross Sections) in its entirety and replace it with revised Sheet No. 46(R-1) attached to this Addendum No. 1. Overhead wire radial clearances have been added.

D. Distribution of Quantities

01. Table of Contents

Remove Index Pages 1 through 5 in their entirety and replace them with revised Index Pages 1(R-1) through 5(R-1) attached to this Addendum No. 1. The changes are shown in bold text.

02. Page 13

Remove Page 13 in its entirety and replace it with revised Page 13(R-1) attached to this Addendum No. 1. The quantity has been revised for Code 202.0100 Earth Excavation.

03. Page 23

Remove Page 23 in its entirety and replace it with revised Page 23(R-1) attached to this Addendum No. 1. The quantity has been revised for Code 302.0100 Gravel Borrow Subbase Course.

04. Page 25

Remove Page 25 in its entirety and replace it with revised Page 25(R-1) attached to this Addendum No. 1. The quantity has been revised for Code 401.9922 Class 4.75.

05. Pages 71, 71a, and 72

Remove Pages 71 and 72 in their entirety and replace them with revised Page 71(R-1), new Page 71a, and revised Page 72(R-1) attached to this Addendum No. 1. The quantity for Code T04.5303 - 14 AWG 3 Conductor Cable has been revised. The quantity for Code T04.5305 - 14 AWG 5 Conductor Cable has been revised.

06. Page 74

Remove Page 74 in its entirety and replace it with revised Page 74(R-1) attached to this Addendum No. 1. Item Code T04.9902 Interconnect Cable #19 AWG 6 Pair Traffic Communications Cable has been deleted.

07. Page 77

Remove Page 77 in its entirety and replace it with revised Page 77(R-1) attached to this Addendum No. 1. The quantities for Code T06.1030 - 3 Inch Rigid Steel Conduit Underground and Code T06.2020 - 2 Inch Rigid Steel Conduit Overhead have been revised.

08. Page 78

Remove Page 78 in its entirety and replace it with revised Page 78(R-1) attached to this Addendum No. 1. The quantity for Code T06.5120 - 2 Inch Schedule 40 Polyvinyl Chloride Plastic Conduit Underground has been revised. The quantity for Code T06.5130 - 3 Inch Schedule 40 Polyvinyl Chloride Plastic Conduit Underground has been revised.

09. Page 79

Remove Page 79 in its entirety and replace it with revised Page 79(R-1) attached to this Addendum No. 1. The quantity for Code T06.5430 - 3 Inch Schedule 80 Polyvinyl Chloride Plastic Conduit Under Existing Pavement has been revised.

10. Page 81

Remove Page 81 in its entirety and replace it with revised Page 81(R-1) attached to this Addendum No. 1. The quantity for Code T11.9901 - 25 Foot Ornamental Mast Arm Traffic Signal Post, Base and Foundation has been revised.

11. Pages 82, 83, 83a, and 85

Remove Pages 82, 83, and 85 in their entirety and replace them with revised Page 82(R-1), revised Page 83(R-1), new Page 83a, and revised Page 85(R-1) attached to this Addendum No. 1. The stations and quantity for Code T11.9907 - 8 Foot Ornamental Pedestal Pole, Base and Foundation have been revised. The quantity for Code T11.9908 - 10 Foot Ornamental Pedestal Pole, Base and Foundation has been revised. The Description for Code T12.9901 - Actuated Controller, TS-2, Type 1 w/GPS and 8 Phase Assembly Ground Mounted, Including TS-2, Type 1 Cabinet and Foundation Std. 19.1.0 has been revised. The Locations for Code T13.8200 - Pedestrian Detector - Pushbutton w/Sign have been revised.

12. Page 86

Remove Page 86 in its entirety and replace it with revised Page 86(R-1) attached to this Addendum No. 1. The Description and Unit of Measurement for Code T13.9902 - Fire Pre-Emption Control System have been revised. The Locations and quantity for Code T14.3513 - 1 Way 3 Section Mast Arm Mounted Signal Head 12 Inch have been revised.

13. Page 87 and 87a

Remove Page 87 in its entirety and replace it with revised Page 87(R-1), and new Page 87a attached to this Addendum No. 1. The quantity for Code T14.3713 - 1 Way 3 Section Pedestal Mounted Signal Head 12 Inch has been revised. The Locations and quantity for Code T14.3911 - 1 Way Pedestal Mounted L.E.D. Pedestrian Signal Head 12 Inch have been revised. The Locations and quantity for Code T14.3913 - 1 Way Bracket Mounted L.E.D. Pedestrian Signal Head 12 Inch have been revised.

14. Page 93, 93a, and 94

Remove Pages 93 and 94 in their entirety and replace them with revised Page 93(R-1), new Page 93a, and revised Page 94(R-1) attached to this Addendum No. 1. The quantities for crosswalks have been revised for Code T20.0012 - 12 Inch White Fast-Drying Waterborne Pavement Marking Paint.

15. Pages 95 and 96

Remove Page 95 in its entirety and replace it with revised Page 95(R-1) and new Page 96 attached to this Addendum No. 1. Item Code T20.9907 - 24 Inch Fast Drying Waterborne Pavement Marking Paint "Piano Keys" Crosswalk Lines has been deleted. A new Item Code T06.3030 - 3 Inch Rigid Steel Conduit Under Existing Pavement has been added. A new Item Code T11.9903 - 20 Foot Ornamental Mast Arm Traffic Signal Post, Base and Foundation has been added.



RI Department of Transportation
Chief Engineer

The Contractor shall contact Mr. Michael Wiemer of Level (3) Communications 617-551-1310 and 617-480-4861 (cell) a minimum of 48 hours prior to any excavation near their facilities and adjustments to their manhole frames and covers.

The Contractor shall notify the Greenville Water Authority, Smithfield Sewer Authority and National Grid – Gas a minimum of 48 hours prior to any work to be performed at the Greenville Bridge No. 99.

Existing utilities have been shown on the Plans using the best available information. The Contractor shall check and verify the location of all existing utilities both underground and overhead in accordance with the “Dig Safe Program Law” enacted by the Rhode Island Legislation Bill No. 79S-291, which became effective July 1, 1979. The Contractor should be aware that not all utility companies subscribe to the Dig Safe Program. It is the Contractor’s responsibility to ensure that all utility companies have been notified and all utilities have been marked prior to commencing their work. Any damage to existing properly marked utilities caused by the Contractor shall be replaced or repaired to the satisfaction of the Engineer at no additional cost to the State.

4. SPECIALTY ITEMS

The following items are hereby designated as "Specialty Items":

- a) Pavement Markings
- b) Directional, Regulatory and Warning Signs (other than Temporary Construction Signs)
- c) Traffic Signals
- d) Decorative Lighting
- e) Seeding

5. SEQUENCE OF CONSTRUCTION

All work shall be completed in accordance with the Traffic-Related Work Restrictions indicated in the Transportation Management Plan (TMP).

Special Requirements:

- a. In accordance with the RI Division of Purchases Procurement Regulations, Subsection 12.108.03, Prosecution and Progress, General Requirements, Project Schedule Program, the requirements for this project will be based on Schedule Level B.
- b. Approval of a work sequence time schedule is required before the start of any construction, or other work associated with this contract. The proposed construction sequence and time schedule must consider and address safe vehicle passage through the project area. No work sequence, or time schedule will be approved which does not fully address phasing of all traffic control.
- c. The Contractor will be responsible to develop a sequence of construction which minimizes disruption to traffic flow patterns, and which does not create prolonged traffic delays. All work must be performed in a manner to cause the least disruption to existing vehicular traffic for as short a period of time as possible. When work commences in such areas, it shall be expeditiously completed without unnecessary interruptions.
- d. It will be the Contractor’s responsibility to sequence the work within all phases of construction in a manner which utilizes the established work zones, right of way, and traffic lane configurations provided in the Contract Plans, and which minimizes impacts, and inconvenience to vehicular traffic. Due to the limited

12. CONTRACTOR'S RESPONSIBILITY FOR DAMAGED STORM DRAINS

The Contractor shall use care when working within or in the vicinity of existing drainage structures. Any drainage pipe or culverts damaged during the disposing of, cleaning of, installation of, or while making repairs to drainage structures/pipes, or culverts, or while carrying out any other work on this contract shall be the Contractor's responsibility. Any pipe/culvert damaged by the Contractor while carrying out this contract shall be replaced, or repaired by the Contractor to the satisfaction of the Engineer at no additional charge to the Contract.

Pipe, culvert, or other existing drainage structure which is replaced or repaired due to Contractor damage must be done as an in-kind replacement (materials as well as the size and length must be the same as existing) and all final invert elevations must match existing elevations.

13. CONTRACTOR'S RESPONSIBILITY FOR DAMAGED UTILITY FACILITIES

The Contractor shall use care when working within or in the vicinity of existing utilities. Any properly marked utility pipe, equipment, conduit, wire, cable or related appurtenance damaged by the Contractor while carrying out this Contract shall be replaced or repaired by the Contractor to the satisfaction of the Engineer at no additional charge to the Contract.

14. COORDINATION WITH OTHER CONTRACTS

It shall be the Contractor's responsibility to coordinate, cooperate, and schedule his work and all segments thereof with the Engineer, other contractors, property owners, utility owners, and applicable local authorities, so as to minimize impacts to all existing and/or future construction project schedules.

15. TRANSPORTATION MANAGEMENT PLAN

Included as Appendix 'A' to these Contract Specific General Provisions is the Transportation Management Plan (TMP) for this project. The TMP lays out the set of coordinated transportation management strategies that will be used to manage the work zone safety and mobility impacts to this project. In the event of a discrepancy between information in the TMP and information elsewhere in the Contract Documents, the former shall govern.

The Contractor's attention is called to the applicable sections of Section 12 of the Rhode Island Department of Administration Emergency Procurement Regulations, which describes the requirements for the Contractor's designation of a TNP Implementation Manager for the Contract, and also which describes the requirements for the training of all Contractor and Subcontractor personnel involved in work zone design, implementation, operation, inspection, management and/or enforcement.

The Department's latest Training Guidelines for Personnel Responsible for Work Zone Safety & Mobility is available under the "Training" section at <http://www.dot.ri.gov/humanresources/index.asp>.

INDEX
SPECIFICATIONS - JOB SPECIFIC
1R HIGHWAY IMPROVEMENTS US ROUTE 44 (PUTNAM PIKE) CONTRACT 2B

<u>SECTION / CODE</u>	<u>TITLE</u>	<u>PAGE</u>
L.02	Seeding	JS-70
L.06	Planting	JS-71
L15.9901	Tree Watering Applications	JS-72
T02.9901	Smithfield Lamp Posts	JS-73
T04.9902	Deleted	JS-77
T06	Conduit	JS-79
T08.9901	Light Standard Foundation with Anchor Bolts	JS-80
T08.9902	Remove and Relocate Wood Pole with Electric Service Box	JS-81
T11.9901	25 Foot Ornamental Mast Arm Traffic Signal Post, Base, and Foundation	JS-82
T11.9902	30 Foot Ornamental Mast Arm Traffic Signal Post, Base, and Foundation	JS-82
T11.9903	20 Foot Ornamental Mast Arm Traffic Signal Post, Base, and Foundation	JS-82
T11.9904	40 Foot Ornamental Mast Arm Traffic Signal Post, Base, and Foundation	JS-82
T11.9905	50 Foot Ornamental Mast Arm Traffic Signal Post, Base, and Foundation	JS-82
T11.9906	25 Foot X 30 Foot Ornamental Dual Mast Arm Traffic Signal Post, Base, and Foundation	JS-82
T11.9907	8 Foot, Ornamental Pedestal Pole, Base, and Foundation	JS-82
T11.9908	10 Foot, Ornamental Pedestal Pole, Base, and Foundation	JS-82
T12.9901	Actuated Controller, TS-2, Type 1 w/GPS and 8 Phase Assembly Ground Mounted, Including TS-2, Type 1 Cabinet and Foundation Std. 19.1.0	JS-86
T12.9902	GPS Time Synchronization System	JS-93

INDEX
SPECIFICATIONS - JOB SPECIFIC
1R HIGHWAY IMPROVEMENTS US ROUTE 44 (PUTNAM PIKE) CONTRACT 2B

<u>SECTION / CODE</u>	<u>TITLE</u>	<u>PAGE</u>
T12.9903	Modify Traffic Signal Controller and Cabinet – Austin Avenue at Putnam Pike	JS-95
T13.9901	Confirmation Beacon	JS-96
T13.9902	Fire Pre-Emption Control System	JS-97
T14.99	Traffic Signal Equipment Painting	JS-99
T15.9901	Flashing School Zone Sign Assembly	JS-100

SECTION 12.108

PROSECUTION AND PROGRESS

In accordance with **Section 12.108.08, Failure to Complete on Time, Para. a., Phased Completion, Interim Completion and Substantial Completion** the following defines the Substantial Completion Dates and Associated Liquidated Damages:

Substantial Completion: October 31, 2013

All Contract work shall be completed, as defined by **Section 12.101.71**

Liquidated Damages: \$1,500.00 per calendar day.

CODE 701.99

ALUMINIZED TYPE 2 STEEL 42" x 29" PIPE-ARCH

DESCRIPTION:

This work consists of providing Aluminized Type 2 Steel 42" x 29" Pipe-Arch for use in the sliplining installation at the location indicated on the Plans, or as directed by the Engineer, all in accordance with the details, the plans, and these special provisions.

MATERIALS:

The Aluminized Type 2 Steel coils shall conform to the applicable requirements of AASHTO M 274.

The nominal diameter of the liner Pipe-Arch shall be 42" x 29" interior dimensions (elliptically shaped) with a maximum tolerance of one inch (1").

The pipe-arch shall be fabricated with 14 gauge steel as a minimum.

The Pipe-Arch shall be manufactured with the $\frac{3}{4}$ " x $\frac{3}{4}$ " x 7-1/2" external ribs in accordance with the applicable requirements of AASHTO M-36.

Pipe ends shall be square to the pipe axis with a maximum tolerance of 1/8".

Shop Drawings: The Contractor shall submit shop drawings of the pipe assembly in accordance with Special Provisions Code 105.02 "Plans and Shop Drawings" of the Rhode Island Standard Specifications for Road and Bridge Construction except as amended in this Special Provision and as required by the Engineer..

Manufacturer: The Aluminized Type 2 ULTRA FLO Steel Pipe-Arch shall be manufactured by the following listing or equivalent in materials, size, shape, structural capacity, and hydraulic function:

Contech ®
Construction Products, Inc.
Factory and Main Office:
1001 Grove Street
Middletown, Ohio 45044
Telephone: (800) 338-1122
Fax: (513) 425-5993

The Contractor will be responsible to provide any and all documentation to the RIDEM as necessary to obtain acceptance of this equivalent material. If the RIDEM determines that an additional permit and/or modification to the existing permit is required, it will be the Contractor's responsibility to obtain the documentation necessary to proceed with the work. There will be no additional payment made to the Contractor or extension of time allowed for the approval and acceptance of this equivalent material. All additional costs shall be the Contractors responsibility.

Packaging, handling, shipping and assembly shall be done in accordance with the manufacturer's instructions and the National Corrugated Steel Pipe Association (NCSPA) recommendations.

CONSTRUCTION METHODS:

The installation of pipe and fittings shall be in accordance with the plans, Special Provision Item Code 701.9901 "Slip Line Existing Culvert with Aluminized Type 2 Steel 42 x 29 Pipe-Arch" and in accordance with AASHTO Standard Specifications for Highway Bridges, Section 26, Division II.

Pipe Grouting: Annular space grouting shall not damage the liner and shall conform to the Job Specific Special Provisions of Item Code 603.9901 "PRESSURE CEMENT GROUT".

Acceptance of the installed liner shall be based on video taped TV inspection, or other method as approved by the Engineer, after grouting to assure all joints are properly assembled, no damage exists and that any deformation is within the manufacturer's recommended allowable limits.

METHOD OF MEASUREMENT:

The quantity of "Aluminized Type 2 Steel 42 x 29 Pipe-Arch" will not be measured for payment.

BASIS OF PAYMENT:

There shall be no separate payment made for "Aluminized Type 2 Steel 42"x29" Pipe-Arch". Payment for "Aluminized Type 2 Steel 42"x29" Pipe-Arch" shall be included in the contract unit price bid in the Proposal for Item Code 701.9902 "Slip Line Existing Culvert with Aluminized Type 2 Steel 42"x29" Pipe-Arch".

Specifications – Job Specific
Route 44 Contract 2B
RIC No. 2012-CH-082
August, 2012
Page 1 of 2
R-1

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Specifications – Job Specific
Route 44 Contract 2B
RIC No. 2012-CH-082
August, 2012
Page 2 of 2
R-1

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CODE T11.9901
25 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE, AND
FOUNDATION

CODE T11.9902
30 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE, AND
FOUNDATION

CODE T11.9903
20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE, AND
FOUNDATION

CODE T11.9904
40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE, AND
FOUNDATION

CODE T11.9905
50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE, AND
FOUNDATION

CODE T11.9906
25 FOOT X 30 FOOT ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST,
BASE, AND FOUNDATION

CODE T11.9907
8 FOOT ORNAMENTAL PEDESTAL POLE, BASE, AND FOUNDATION

CODE T11.9908
10 FOOT ORNAMENTAL PEDESTAL POLE, BASE, AND FOUNDATION

DESCRIPTION:

This work shall consist of furnishing and installing ornamental mast arms and/or traffic signal posts and foundations at the locations indicated on the Plans or as directed by the Engineer. All traffic signal mast arm foundations shall conform to **SECTION T.11 TRAFFIC SIGNAL STANDARDS AND POSTS**, of the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition, with all revisions, except for any references made to the Rhode Island Standard Details 19.5.0 and 19.5.1. These two Rhode Island Standard Details do not apply for use in the design of the traffic signal mast arm foundations for this contract.

MATERIALS:

Design: Mast arms, traffic signal posts and bases, foundations, connections, clamps, anchor bolts, shoe bases and all other members shall be designed and fabricated in accordance with the requirements of the 5th Edition, 2009, of the AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”, including all revisions. Mast arms, traffic signal posts and bases, foundations, connections, clamps, anchor bolts, and all other members shall be designed to withstand the design wind pressure from a Basic Wind Speed, V , of 130 mph.

The mast arm assembly, were required, shall be generally in accordance with the details shown on the Plans. The mast arm shall be a 8 flute steel, and the traffic signal post shall be a 16 flute steel monotube, tapered approximately 0.14 inch per foot, welded to a base plate for a double nut mounting with a circle pattern, number and size of anchor bolts as recommended by the manufacturer. A 3 inch by 5 inch reinforced handhole with cover shall be provided near the base of the pole. This handhole shall be located as to be concealed when the decorative base is in place. It shall have a cover plate to protect access of the wiring if the outer cast iron base door is removed or tampered with. A grounding lug shall be provided near the handhole.

The base shall be fabricated in split halves. Shop drawings must be submitted to the Engineer and approval obtained prior to fabrication as specified in Section 105.02 of these Special Provisions. These drawings must contain dimensions, metal used, method of securing base halves to each other as well as the base to the pole and foundation. When the base halves are machined and matched during fabrication, and doors fitted, they must be marked as a set and shipped, handled and installed as a set. Access doors shall be secured by means of tamper resistant screws.

All materials for the structure, including anchor bolts, bolt covers, and hardware shall meet the approval of the Engineer. The threaded ends of the anchor bolts and the nut and lock washers shall be hot-dipped galvanized in accordance with ASTM A153 or A123

Mast arms, traffic signal posts, and decorative bases shall be painted black by the manufacturer in accordance with the Special Provision for Item Code T14.99 and shall match the Columbian Series style or approved equal.

All complete shop drawings and design computations shall bear the stamp of a Registered Professional Engineer in the State of Rhode Island. Shop drawings shall be approved prior to fabrication, and it shall be expressly understood and agreed upon that said approval does not relieve the Contractor of its responsibility for the design, fabrication and erection of the structure.

CONSTRUCTION METHODS:

The mast arms and traffic signal posts shall be installed as indicated on the Plans and shall conform to the following requirements:

Mast Arms and Traffic Signal Posts shall be capable of withstanding the applied load shown on the plans. Mast arms and traffic signal posts shall be installed in accordance with the National Electric Safety Code.

Foundations. The foundations should be constructed in accordance with **Subsection T.01.01.1** of the Rhode Island Standard Specifications, 2004 Edition. The Contractor is responsible for both the design and construction of all traffic signal mast arm foundations. The contractor shall be responsible for the temporary support of the existing signal mast arm during the installation of the proposed signal mast arm foundation, if necessary. The foundations for the Traffic Signal pedestal pole foundations shall be in accordance with the requirements of Rhode Island Detail 19.4.0. The dimensions and reinforcing steel shall be in accordance with the requirement of the Plans. The traffic signal mast arms shall be bolted with a minimum of six anchor bolts at the foundation in accordance with the latest edition of the AASHTO Standards and Specifications. The Contractor shall be required to provide, at his own expense, a foundation design by a Rhode Island Registered Professional Engineer in accordance with the latest edition of the AASHTO Standard Specifications and detailed similarly to the Plans. The Contractor shall submit all calculations, designs, and details to the Rhode Island Department of Transportation in the form of a shop drawing in accordance with **subsection 105.02**. No work shall be performed until approved shop drawings have been returned to the Contractor. As part of the shop drawing submittal, the contractor shall include a surveyed cross section of each proposed mast arm location. The cross section shall include proposed signals, existing overhead utility line locations and elevations.

The top 12-inches of the foundation shall be formed, and the remainder shall be cast against undisturbed earth. If adjacent earth is disturbed or removed beyond the neat lines of the foundation, it shall be replaced with concrete fill. This excavation shall be no longer than 1-foot greater than the dimension of the foundation, unless authorized by the Engineer. The top of the foundation shall be set to finished grade and finished level. After curing, the forms shall be removed and backfilled with a suitable material and compacted in 12-inch layers.

Cast-in-place Mast Arm Foundation shall be Class A (AE) Concrete = 3000 psi at 28 days, in accordance with the latest revision of tables (1) and (2) under Section 600 "Portland Cement Concrete of the Rhode Island Standard Specifications for Road and Bridge Construction 2004 Edition". Reinforcing Steel shall conform to ASTM Designation AG15, Grade 60. The concrete shall reach the 28 day strength before any load is applied to the foundation.

Cable Supports: J-Hooks & Eyelets: Top and Bottom J-hooks shall be located within the mast arm poles directly aligned with each other. The bottom J-hook shall be positioned upside down 2 inches below the bottom hand hole. The eyelet(s) shall be directly below the slot(s) in the tenon and located 2” below the top of the hand hole.

METHOD OF MEASUREMENT:

“25 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 30 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 20 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 40 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 50 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 25 Foot X 30 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 8 Foot Ornamental Pedestal Pole, Base, And Foundation, 10 Foot Ornamental Pedestal Pole, Base, And Foundation” shall be measured for payment by the unit “EACH” for each unit actually installed and accepted by the Engineer.

BASIS OF PAYMENT:

“25 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 30 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 20 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 40 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 50 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 25 Foot X 30 Foot Ornamental Mast Arm Traffic Signal Post, Base, And Foundation, 8 Foot Ornamental Pedestal Pole, Base, And Foundation, 10 Foot Ornamental Pedestal Pole, Base, And Foundation” will be paid for at the contract unit price bid per “EACH”. The prices so stated constitute full and complete compensation for all design, materials, labor, tools and equipment, including mast arm, traffic signal post base and foundation, foundation design, hardware and brackets, excavating, temporary support of existing signal mast arm, backfilling topsoil and seeding, shop drawings, surveyed cross section, and all incidentals required to finish the work, complete in place and accepted by the Engineer.

CODE T12.9901

ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0

DESCRIPTION:

This item of work shall conform to the applicable requirements of Section T.12 “Traffic Signal Controllers and Cabinets” of the Rhode Island Standard Specifications for Road and Bridge Construction 2004 Edition and the latest revisions and include the following additions.

MATERIALS:

The materials for this work shall conform to the relevant provisions of the “Rhode Island Standard Specifications for Road and Bridge Construction” with the following additions:

Controller

a. General

The traffic controller supplied shall conform to Section 3 “Controller Units” of the NEMA TS 2 Standard. The traffic controller shall be supplied in a TS 2 Type 1 Configuration as required in the list of traffic signal items included on the plans for each intersection location. Specifically, the controller unit (CU) shall be supplied as an actuated controller; defined as Type A1 in Subsection 3.2 of the NEMA TS 2 Standard.

The controller shall utilize an interface conforming to Subsection 3.3 of the NEMA TS 2 Standard. The controller unit shall utilize an input/output interface conforming to the requirements of part of Paragraph 3.3.1 for all input/output functions.

The controller unit shall be a keyboard-entry menu-driven unit manufactured by Siemens/Eagle Signal, Model EPAC3608M51 and conform to the Standard Specifications, with internal time base coordination, emergency preemption, programmatic capabilities and internal GPS time synchronization capabilities.

b. Functional Requirements:

The local system intersection controller shall include all of the following internal functions:

- 1) Software compatible with the control and data protocol of the Eagle manufactured on-street master, central-office computer and field laptop computer
- 2) Local time based scheduler including automatic accommodation for daylight savings time

Controller Cabinet

a. General. Controller cabinet shall conform to NEMA TS-2 Type 1 Standards, Section 7. The minimum size controller cabinet to be supplied shall be a size (P) cabinet, unless shown otherwise on the plans. The cabinet shall be aluminum construction. The exterior of the cabinet shall be painted black by the manufacturer in accordance with the Special Provision for Item Code T14.99.

All controller cabinets assemblies, including but not limited to controller units, back panel, flasher, terminal strips and the cabinets provided under contract, shall be matched set of the same manufacturer as the Control Unit, assembled as a system by the manufacturer's designated representative. The work under this item shall conform to the relevant provisions of Section M15.13.2 of the Standard Specifications, the Manual on Uniform Traffic Control Devices (latest revision) and the following:

b. Shelves and Document Tray. Each cabinet shall be furnished with a minimum of two movable shelves suitable for placing the controller, MMU, detector racks or any other equipment. A slide-out document tray shall be mounted below the bottom shelf. The tray shall be of sufficient size to hold cabinet wiring diagrams and two manuals. The tray shall operate by sliding out on nylon rollers or ball bearings and opening a hinged cover to remove documents. The closed cover shall provide a suitable support for resting documents or a laptop computer. All cables shall be tied away to allow the tray to be opened and closed smoothly without any obstructions.

c. Electrical Outlets. In addition to the requirements of the NEMA TS-2 Standards, Section 5.4.2.6, local controller cabinets shall be furnished with a GFI receptacle on the cabinet door and a duplex outlet within the body of the cabinet.

d. Interior Lighting. In addition to the requirements for an incandescent fixture in NEMA TS-2 Standards, Section 5.4.2.7, cabinets shall be provided with a "goose neck" lamp having a flexible arm and utilizing a 25 watt R14 bulb (115 VAC). The lamp shall be mounted at a location on the side panel approximately level with the load switch/terminal panel for concentrated illumination of this area. The lamp shall have its own on/off switch on the unit.

e. Controller Cabinet Documentation. Three (3) sets of complete cabinet schematics and one (1) set of operating manuals for the controller unit, loop detector units, and any other programmable field hardware supplied shall be included as part of the cabinet documentation.

Two (2) hard copy sets of all programmed data shall be supplied to the Department at the time the controller is installed in the field. Each set shall be bound. One set is to remain in the cabinet, and one set is to be delivered to the RIDOT Traffic Section (as directed by the engineer).

f. Controller Cabinet Service Switches. All cabinet switches shall be clearly labeled to indicate the switch's function. Toggle switches shall indicate the state of each switch position.

- 1) Open Door Alarm. A pushbutton switch shall be installed on a bracket in the tip right of the controller cabinet door. The output of the switch shall be connected to the alarm no. 1 input as defined by the NEMA TS-2 Standards, and record the opening of the cabinet door as a local alarm.

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

GPS Time Synchronization System

The traffic signal controllers furnished under this item shall have internal GPS time synchronization system furnished and installed under this item and shall utilize an external antenna to be mounted on top of the controller cabinet as shown on the plans. The Contractor shall furnish and install GPS antenna and cabling as recommended by the manufacturer to achieve a consistent time synchronization reference to ensure that the controller time clocks are kept in synch. The GPS system supplied shall be fully compatible with any proposed or existing traffic signal controllers in this contract. **It should be noted that not all GPS systems are compatible with all types of traffic controllers.** The GPS system shall consist of a GPS antenna and an interface cable. The GPS antenna shall have no reference to the manufacturer name indicated on the outside of the antenna housing. The interface cable shall be rated for outdoor applications and shall be capable of transmitting the GPS signal from the antenna to the cabinet at a level appropriate to support the time synch function. A suppression device shall be installed in-line with the serial cable to provide protection against electrical surges on the line. The unit shall be supplied and installed with an EDCO PC-642-008 or approved equal.

The following is a description of the GPS time synchronization system that is to be supplied under this item:

This system shall be used when the traffic signal controller has the front panel controller connector necessary to support a direct serial connection to the GPS time synchronization system. If required, the controller firmware shall be upgraded to provide the capability to support a serial GPS interface. Upgrade of the controller firmware necessary to support the GPS system as described under this item shall be considered incidental to the cost of this item. A serial interface cable shall be supplied and installed between the GPS time synchronization system and the traffic signal controller. All necessary controller programming shall be performed by the Contractor to provide a stable and accurate time reference for the traffic signal controller.

Ethernet RJ-45 Port

The traffic controller shall have one Ethernet RJ-45 port.

1.1 The Ethernet RJ-45 port shall support the following network protocols:

1.1.1 TCP/IP

1.2 The traffic signal controller shall support the following network standards:

1.2.1 IEEE.802.3 10 Base-T

- 1.3 The traffic signal controller shall be able to have a unique IP address assigned to it.
- 1.4 The traffic signal controller shall be able to have a unique subnet mask assigned to it.
- 1.5 The traffic signal controller shall be able to have a unique gateway address assigned to it.
- 1.6 The traffic signal controller shall be able to have the IP address programmed using the front panel keypad.
- 1.7 The traffic signal controller shall be able to have the subnet mask programmed using the front panel keypad.
- 1.8 The traffic signal controller shall be able to have the gateway address programmed using the front panel keypad.

Controller Cabinet Power Source

The Contractor shall coordinate with National Grid for power service connections to the new controller cabinets as referred to on the Traffic Signal Plans.

METHOD OF MEASUREMENT:

Item T12.9901 "ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0" will be measured for payment by the "EACH" for each unit installed in accordance with the Contract Documents and/or as directed by the Engineer.

BASIS OF PAYMENT:

The accepted quantities of Item T12.9901 "ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0" will be paid for at its respective contract unit price per "EACH" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools and equipment, relays, controller programming, testing and all other incidentals required to complete the work as described in these Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

CODE T12.9903

**MODIFY TRAFFIC SIGNAL CONTROLLER AND CABINET –
AUSTIN AVENUE AT PUTNAM PIKE**

DESCRIPTION:

This item of work shall consist of making signal phasing and timing changes at the following locations:

- Austin Avenue at Putnam Pike in the Town of Smithfield

Modifications shall be as shown on the Plans and/or as directed by the Engineer. This item additionally includes making any adjustments or additions to the controller, detector relays, back panel or any other components within the traffic controller cabinet.

CONSTRUCTION METHODS:

All work shall be in accordance with the applicable provisions of the Standard Specifications for Road and Bridge Construction, 2004 Edition, including all revisions. The Contractor shall only begin work to modify the signal upon direction of the Engineer.

METHOD OF MEASUREMENT:

This item of work does not require measurement for payment.

BASIS OF PAYMENT:

“Modify Traffic Signal Controller and Cabinet – Austin Avenue at Putnam Pike” will be paid for at the contract bid price per “LUMP SUM”, which price and payment shall constitute full compensation for furnishing all equipment, materials, labor, programming, appurtenances, tests, and incidentals necessary to complete this item of work complete in place, tested, and accepted by the Engineer.

CODE T13.9902

FIRE PRE-EMPTION CONTROL SYSTEM

DESCRIPTION:

This item of work shall conform to the applicable sections of the Standard Specifications for Road and Bridge Construction, 2004 Edition, including all revisions and shall be in conformance with the latest edition of NEMA specifications with the following additions:

It shall consist of furnishing and installing a hardwire fire preemption system at the Smithfield Fire Department (607 Putnam Pike) in Smithfield, Rhode Island as shown on the plans.

MATERIALS:

The materials for this work shall conform to the relevant provisions of the Rhode Island Standard Specifications for Road and Bridge Construction, 2004 Edition, including all revisions.

CONSTRUCTION METHODS:

The Contractor shall provide and install directional fire pre-emption control switches within the Smithfield Fire Department Station in the vicinity of the existing control switches. The exact location of the switches shall be approved by the Smithfield Fire Department representative designated by the Town. The switches shall be labeled "Traffic Signal Control", and the three individual switches shall be labeled top to bottom, "Start Eastbound", "Start Westbound" and "Cancel". The label shall be clearly and permanently labeled and made of a durable material such as hard plastic or similar material with lettering etched into the surface. The label shall be red with white lettering. These switches shall be momentary push-button type, rated as 15 amperes minimum.

The "start" switch shall be wired to allow the depression of the "start" switch to cause a 110 VAC signal to be sent to the traffic signal control cabinet initiating pre-empt operation. The "Cancel" switch shall be wired to allow the depression of the "cancel" switch to cause a 110 VAC signal to be sent to the traffic signal control cabinet.

All new conduit and wiring within the fire station shall be installed in accordance with all local codes, and as directed by the Fire Chief or his representative. Cutting and patching and painting of the walls shall be included in this contract. The Contractor shall install a junction box where proposed conduit enters the fire station building and it shall be clearly and permanently labeled “traffic signal preemption cable”.

The preemption phase of the controller shall be used to set the maximum timing allowed for the preemption phase. The preemption phase may be terminated prior to the maximum internal setting, when the “cancel” switches within the fire station are activated. An internal time delay shall be adjustable between zero (0) and sixty (60) seconds at one (1) second increments and shall be set initially to the values to be determined by the Town of Smithfield Fire Chief. Internal preemption shall be canceled by preemption to a normal operating mode when the cancel button is pressed. Test switches for start and cancel functions shall be installed on the sidewall of the traffic signal controller cabinet. The test switches shall be permanently labeled as to functions.

The pre-emption system shall be interconnected via preemption cable IMSA 19-1 or 20-1 and shall consist of five #14 AWG copper conductors (included in Item Code T04.5305). The removal of the existing cable from the existing pushbutton to the existing control cabinet, existing span and messenger wire and existing pushbutton is included in Item Code 201.9903.

The Contractor shall be responsible for coordinating his work activities at the fire station with the Fire Chief.

METHOD OF MEASUREMENT:

“FIRE PRE-EMPTION CONTROL SYSTEM” shall be measured for payment by the unit “LUMP SUM” price for the completion of all work specified to the satisfaction of the Engineer.

BASIS OF PAYMENT:

“FIRE PRE-EMPTION CONTROL SYSTEM” will be paid for at the contract bid price per “LUMP SUM” for the entire project and payment shall constitute full compensation for furnishing all labor, materials, panel, switches, indoor and outdoor conduit, wiring, controller programming, terminal blocks, cabinet interface, labeling, power supply and for all tools, supplies, equipment and incidentals necessary to complete this item of work in place and accepted.

CODE T14.99

TRAFFIC SIGNAL EQUIPMENT PAINTING

DESCRIPTION:

This item of work shall conform to the applicable sections of the Standard Specifications for Road and Bridge Construction with the following additions.

The outside surface of all proposed traffic signal equipment shall be painted black unless otherwise indicated on the plans. Equipment to be painted includes controller cabinets, traffic signal poles and bases, pedestal poles, traffic signal heads, pedestrian signal heads and countdown timers, pedestrian pushbuttons, meter sockets and overhead conduit connection to the meter socket.

CONSTRUCTION METHODS:

The outside of all exposed traffic signal equipment shall be properly primed with a rust inhibitive primer specifically manufactured for use with the specified metals and painted gloss black. The painting of the traffic signal equipment shall be done by the manufacturer in the manufacturer's factory. Painting of the equipment in the field will not be allowed.

METHOD OF MEASUREMENT:

There shall be no separate measurement for this item. The work under this item shall be included in the respective items for the traffic signal equipment.

BASIS OF PAYMENT:

Payment for "TRAFFIC SIGNAL EQUIPMENT PAINTING" will be included in the cost of the respective traffic signal equipment at the contract price as listed in the Proposal. There shall be no separate payment for work included under this item which shall include all materials, equipment, tools, labor and work incidental thereto complete in place and accepted by the Engineer.

CODE T15.9901

FLASHING SCHOOL ZONE SIGN ASSEMBLY

DESCRIPTION:

This item shall consist of furnishing and installing all the necessary components of a flashing school zone sign assembly system at the locations shown on the plans.

MATERIALS:

“Flashing School Zone Sign Assembly” shall conform to the applicable requirements of both sections M.15; TRAFFIC CONTROL SYSTEMS and M.16; SIGNS AND SIGN SUPPORTS of the Rhode Island Standard Specifications for Road and Bridge Construction, 2004 Edition, including all the latest revisions and the Manual on Uniform Traffic Control Devices, latest edition.

The sign and flasher assembly consists of an 8-foot pedestal pole with foundation, pole mounted flasher cabinet (Model No. FC-101 or approved equal) and flasher assembly, and a school speed limit sign with LED beacons.

Flashing beacons shall be 8-inch LED lenses.

Speed limit numerals shall be LED display.

The flasher assembly includes a NEMA flasher (Model No. SSF-87WP or approved equal), a single-circuit programmable solid-state time switch (Model No. AP21 or approved equal), and a circuit breaker (Model No. QOU-110 or approved equal).

The single-circuit programmable solid-state time switch shall be programmable for daylight savings time, school holidays, and school vacations a minimum of one year in advance.

CONSTRUCTION METHODS:

“Flashing School Zone Sign Assembly” shall be installed in accordance with the manufacturer’s recommendations and shall conform to the applicable sections of Part T-Traffic Control System of the Standard Specifications for Road and Bridge Construction, 2004 Edition, and any subsequent revisions. When installed, the programmable time switch shall be fully programmable for the current and the next school year calendar.

The Contractor shall coordinate with the Anna M. McCabe Elementary School, Vincent J. Gallagher Middle School, and Smithfield High School in Smithfield, Rhode Island the dates and times for the flasher to be active.

The Contractor shall submit shop drawings for approval.

METHOD OF MEASUREMENT:

Item T15.9901 “Flashing School Zone Sign Assembly” will be measured for payment per “EACH” unit actually furnished and installed in accordance with the Contract Documents and/or as directed by the Engineer.

BASIS OF PAYMENT:

The accepted quantity of Item T15.9901 “Flashing School Zone Sign Assembly” will be paid for at its respective contract unit price per “EACH” as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, shop drawings, coordination with schools, programming, tools and equipment and all other incidentals required to complete the work as described in these Special Provisions and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

Table of Contents - Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

ItemCode	Description	Page
201.0310	REMOVE AND DISPOSE SHRUBS	1
201.0321	CLEARING AND GRUBBING	1
201.0402	REMOVE AND DISPOSE CONCRETE CURB	1
201.0403	REMOVE AND DISPOSE SIDEWALKS	2
201.0407	REMOVE AND DISPOSE PAVEMENT AND RIGID BASE	3
201.0409	REMOVE AND DISPOSE FLEXIBLE PAVEMENT	3
201.0410	REMOVE AND DISPOSE CATCH BASINS	4
201.0414	REMOVE AND DISPOSE PIPE - ALL SIZES	4
201.0421	REMOVE AND DISPOSE BITUMINOUS CURB	5
201.0422	REMOVE AND DISPOSE DROP INLET	5
201.0424	REMOVE AND DISPOSE RETAINING WALL	5
201.0427	REMOVE AND DISPOSE CONCRETE CAR STOPS	5
201.0428	REMOVE AND DISPOSE FRAME AND GRATE OR FRAME AND COVER	5
201.0440	REMOVE AND DISPOSE ASBESTOS CEMENT PIPE/ DUCT (TRANSITE) ALL TYPES AND SIZES	6
201.0610	REMOVE AND DISPOSE DIRECTIONAL, WARNING, REGULATORY, SERVICE, AND STREET SIGNS	6
201.9901	REMOVE AND DISPOSE LANDSCAPE TIMBER PLANTER BOX AND SHRUBS	8
201.9902	REMOVE AND DISPOSE 6" X 6" WATERMAIN TEE	8
201.9903	REMOVE AND SALVAGE TRAFFIC SIGNAL SYSTEM EQUIPMENT	8
201.9904	REMOVE AND SALVAGE FLASHING SCHOOL SPEED LIMIT SIGN AND EQUIPMENT	8
201.9905	REMOVE AND DISPOSE CONCRETE FOUNDATION	8
201.9950	PRE-AND POST-CONSTRUCTION CONDITION SURVEY OF EXISTING STRUCTURES	9
202.0100	EARTH EXCAVATION	9
203.0100	STRUCTURAL EXCAVATION EARTH	13
203.0220	STRUCTURAL EXCAVATION ROCK MECHANICAL	13
204.0100	TRIMMING AND FINE GRADING	13
206.0201	BALED HAY EROSION CHECK STANDARD 9.1.0	19
206.0208	REMOVAL OF BALED HAY EROSION CHECKS	19
212.2000	CLEANING AND MAINTENANCE OF EROSION CONTROLS	19
302.0100	GRAVEL BORROW SUBBASE COURSE	19
401.9920	MODIFIED CLASS 12.5 WITH PAY FACTORS	23
401.9922	CLASS 4.75	24
403.0300	ASPHALT EMULSION TACK COAT	25
410.1000	TEMPORARY PATCHING MATERIAL/TRENCHES	25
601.0200	CLASS XX PORTLAND CEMENT CONCRETE	25
603.9901	PRESSURE GROUT FOR ANNULAR SPACE	26
701.0412	REINFORCED CONCRETE PIPE M 170 CLASS III 12 INCH	26
701.0424	REINFORCED CONCRETE PIPE M 170 CLASS III 24 INCH	26
701.5306	6 INCH DUCTILE IRON WATER PIPE CLASS 52, PUSH-ON JOINT	27
701.6012	12 INCH DUCTILE IRON SEWER SAFE PIPE CLASS 52	27
701.8100	FURNISH AND INSTALL DUCTILE IRON FITTINGS	27
701.8150	TYPE K COPPER SERVICE PIPE	27
701.9001	CONDUCT LEAKAGE TEST	27
701.9002	STERILIZATION OF WATER MAINS	27
701.9901	SLIP LINE EXISTING CULVERT WITH ALUMINIZED TYPE 2 STEEL 42"X29" PIPE-ARCH	28
701.9905	16" X 6" TAPPING SLEVE AND TAPPING VALVE WITH GATE BOX AND COVER	28
701.9907	WATER SERVICE SADDLE	28
702.0516	FRAME AND GRATE, HIGH CAPACITY, STANDARD 6.3.4	28
702.0517	FRAME AND GRATE, STANDARD 6.3.2	28
702.0522	FRAME AND COVER STANDARD 6.2.1	29
702.0530	PRECAST CONCRETE INLET STONE 5' STANDARD 7.1.5	29

Table of Contents - Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

ItemCode	Description	Page
702.0533	PRECAST CONCRETE APRON STONE 38'' STANDARD 7.1.8	30
702.0605	PRECAST CATCH BASIN 4' DIAMETER STANDARD 4.4.0	30
702.0712	PRECAST CONCRETE DROP INLET STANDARD 4.5.0	30
702.0714	PRECAST CONCRETE DROP INLET WITH APRON STONE STANDARD 4.5.2	30
702.0840	ALTERNATE TOP COVER ROUND PRECAST MANHOLES AND CATCH BASINS STANDARD 4.7.2	30
702.9901	HEAVY DUTY MANHOLE FRAME AND COVER TOWN OF SMITHFIELD STANDARD MARKED 'SEWER'	31
704.0100	RECONSTRUCT CATCH BASIN/CORBEL CONES	31
704.0200	RECONSTRUCT MANHOLE/CORBEL CONES	31
704.0300	RECONSTRUCT CATCH BASIN/VERTICAL WALLS	31
704.0400	RECONSTRUCT MANHOLE/VERTICAL WALLS	31
706.9000	PLUG AND CAP PIPE ALL SIZES	32
707.0900	ADJUST MANHOLES TO GRADE	32
707.0950	ADJUST TELEPHONE MANHOLE TO GRADE	32
707.1000	ADJUST SANITARY MANHOLE	32
707.1100	ADJUST CATCH BASINS	33
707.1200	ADJUST CATCH BASIN TO MANHOLE	34
708.9040	CLEANING AND FLUSHING PIPE ALL SIZES	34
708.9041	CLEANING CATCH BASINS ALL TYPES AND SIZES	35
708.9042	CLEANING MANHOLES ALL TYPES AND SIZES	37
709.8103	FURNISH & INSTALL CEMENT CONCRETE CLASS B THRUST & ANCHOR BLOCKS CAST-IN-PLACE	37
712.0100	WATER GATE BOX	37
712.0200	GAS GATE BOX	37
713.8268	ADJUST CURB STOP BOX TO GRADE	38
713.8269	ADJUST WATER GATE BOXES TO GRADE	38
713.8300	ADJUST GAS GATE BOXES TO GRADE	39
905.0110	PORTLAND CEMENT SIDEWALK MONOLITHIC STANDARD 43.1.0	40
905.0115	PORTLAND CEMENT CONCRETE DRIVEWAY STANDARD 43.5.0	42
906.0210	CEMENT CONCRETE CURB PRECAST STRAIGHT STANDARD 7.1.0	43
906.0211	CEMENT CONCRETE CURB PRECAST CIRCULAR STANDARD 7.1.0	45
906.0221	6' PRECAST CONCRETE TRANSITION CURB STANDARD 7.1.2	45
906.0250	PRECAST CONCRETE WHEELCHAIR RAMP CURB STANDARDS 7.1.3, 43.3.0 AND 43.3.1	48
906.0600	BITUMINOUS CURBING STANDARD 7.5.0	48
906.0700	REMOVE, HANDLE, HAUL TRIM RESET CURB EDGING, STRAIGHT, CIRCULAR ALL TYPES	48
906.9901	6' PRECAST CONCRETE TRANSITION CURB CIRCULAR STD 7.1.2	48
906.9902	PRECAST CONCRETE WHEELCHAIR RAMP CURB CIRCULAR STD 7.1.3	49
906.9903	6' GRANITE TRANSITION CURB CIRCULAR STD 7.3.2	50
906.9904	GRANITE WHEELCHAIR RAMP CURB CIRCULAR STD 7.3.3, 43.3.0 AND 43.3.1	50
906.9905	48" PRECAST CONCRETE RAMP STONE STRAIGHT STD 7.1.9	50
906.9906	48" PRECAST CONCRETE RAMP STONE CIRCULAR STD 7.1.9	50
906.9907	48" GRANITE RAMP STONE CIRCULAR STD 7.3.9	52
907.0100	WATER FOR DUST CONTROL	52
911.0100	WET STONE MASONRY RETAINING WALL STANDARD 10.1.0	57
911.3200	REMOVE AND RESET WET STONE MASONRY WALLS	57
914.5010	FLAGPERSONS	57
914.5020	FLAGPERSONS - OVERTIME	57
917.0105	REMOVE AND REPLACE RURAL MAILBOX POST WITH STANDARD 15.1.0	57
918.0100	RURAL MAILBOXES	58
919.0101	TEST PITS	58
920.0040	DUMPED STONE RIPRAP R-3, R-4, R-5 STANDARD 8.3.0	58

Table of Contents - Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

ItemCode	Description	Page
920.0055	PLACED STONE RIPRAP R-3, R-4, R-5 STANDARD 8.3.0	58
920.0135	BEDDING FOR RIPRAP FS-2 STANDARD 8.3.0	58
920.0200	FILTER FABRIC FOR RIP-RAP	59
922.0100	TEMPORARY CONSTRUCTION SIGNS STANDARD 29.1.0 AND 27.1.1	59
923.0105	DRUM BARRICADE STANDARD 26.2.0	60
923.0125	PLASTIC PIPE TYPE III BARRICADE STANDARD 26.3.1	61
923.0200	FLUORESCENT TRAFFIC CONES STANDARD 26.1.0	61
924.0113	ADVANCE WARNING ARROW PANEL	61
925.0112	PORTABLE CHANGEABLE MESSAGE SIGN	61
929.0110	FIELD OFFICE	61
931.0110	CLEANING AND SWEEPING PAVEMENT	62
932.0100	CUTTING AND MATCHING ASPHALT	62
932.0200	FULL-DEPTH SAWCUT OF BITUMINOUS PAVEMENT	62
932.0210	FULL DEPTH SAWCUT OF BITUMINOUS PAVEMENT AND RIGID BASE	63
932.0220	FULL DEPTH SAWCUT OF BITUMINOUS SIDEWALK/DRIVEWAY	63
932.0230	FULL DEPTH SAWCUT OF PORTLAND CEMENT CONCRETE SIDEWALK/DRIVEWAY	64
935.0400	REMOVING BITUMINOUS PAVEMENT BY MICRO MILLING	64
936.0110	MOBILIZATION	65
937.0200	MAINTENANCE AND MOVEMENT TRAFFIC PROTECTION	65
942.9901	DETECTABLE WARNING PANEL 24" X 48"	65
943.0200	TRAINEE MAN-HOURS	66
L01.0102	LOAM BORROW 4 INCHES DEEP	66
L02.0102	RESIDENTIAL SEEDING (TYPE 2)	67
L06.9901	RHODODENDRON MAXIMUM 2.5-3' B&B	68
L10.0101	MECHANICAL TREE AND SHRUB ROOT PRUNING	69
L11.0102	TREE PLANT PROTECTION DEVICE STANDARD 51.1.0	69
L11.0103	SHRUB PLANT PROTECTION DEVICE STANDARD 51.2.0	69
L11.0104	DRIP-LINE TREE PROTECTION DEVICE STANDARD 51.1.1	70
L15.9901	TREE WATERING APPLICATIONS	70
T02.9901	SMITHFIELD LAMP POST	70
T03.6003	GROUND RODS 3/4" DIAMETER BY 10' COPPER CLAD STEEL INCLUDING CLAMPS	70
T04.5001	6 AWG SINGLE CONDUCTOR CABLE 600V INSULATION	70
T04.5302	14 AWG 2 CONDUCTOR TWISTED SHIELDED CABLE	71
T04.5303	14 AWG 3 CONDUCTOR CABLE	71
T04.5305	14 AWG 5 CONDUCTOR CABLE	71
T04.5307	14 AWG 7 CONDUCTOR CABLE	72
T04.6902	'2' STRANDED COPPER CONDUCTOR 600V INSULATION	72
T04.6906	'6' STRANDED COPPER CONDUCTOR 600V INSULATION	73
T04.9901	SEMI-PERMANENT MULTI-CONDUCTOR SPLICE	73
T04.9902	** ITEM DELETED **	74
T05.0100	PRECAST TYPE A HANDHOLE STANDARD 18.2.0	74
T05.0300	PRECAST TYPE B HEAVY DUTY HANDHOLE STANDARD 18.2.2	76
T05.0400	BREAK INTO EXISTING HANDHOLE	76
T06.1020	2 IN. RIGID STEEL CONDUIT - UNDERGROUND	76
T06.1030	3 IN. RIGID STEEL CONDUIT-UNDERGROUND	77
T06.2020	2 IN. RIGID STEEL CONDUIT-OVERHEAD	77
T06.3020	2 IN. RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT	77
T06.5120	2 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	78
T06.5130	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	78
T06.5230	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	78

Table of Contents - Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

ItemCode	Description	Page
T06.5430	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDER EXISTING PAVEMENT	79
T06.6020	2 INCH POLYVINYL CHLORIDE PLASTIC CONDUIT-OVERHEAD	80
T08.9901	LIGHT STANDARD FOUNDATION WITH ANCHOR BOLTS	80
T08.9902	REMOVE AND RELOCATE WOOD UTILITY POLE WITH ELECTRIC SERVICE BOX	80
T09.1000	SERVICE PEDESTAL STANDARD 18.4.0	80
T11.6006	SPAN AND MESSENGER WIRES 6/16	81
T11.9901	25 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	81
T11.9902	30 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	81
T11.9904	40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	82
T11.9905	50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	82
T11.9906	25 FOOT X 30 FOOT ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	82
T11.9907	8 FOOT ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	82
T11.9908	10 FOOT ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	83
T12.9150	METER SOCKET W/MANUAL BY-PASS	83
T12.9901	ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0	83
T12.9902	GPS TIME SYNCHRONIZATION SYSTEM	84
T12.9903	MODIFY TRAFFIC SIGNAL CONTROLLER AND CABINET - AUSTIN AVENUE AT PUTNAM PIKE	84
T13.1000	TRAFFIC DETECTORS-LOOP, STANDARD 19.6.0	84
T13.1004	TRAFFIC DETECTOR RELAY-LOOP 4 CHANNEL	85
T13.8200	PEDESTRIAN DETECTOR-PUSHBUTTON W/SIGN	85
T13.9901	CONFIRMATION BEACON	85
T13.9902	FIRE PRE-EMPTION CONTROL SYSTEM	86
T14.3513	1 WAY 3 SECTION MAST ARM MOUNTED SIGNAL HEAD 12 INCH	86
T14.3516	1 WAY 4 SECTION MAST ARM MOUNTED SIGNAL HEAD 12 INCH (W/ DUAL IND DUAL ROW L.E.D. ARROW)	86
T14.3517	1 WAY 3 SECTION MAST ARM MTD SIGNAL HEAD 2-12 INCH SECTIONS, 1-8 INCH SECTION	86
T14.3713	1 WAY 3 SECTION PEDESTAL MOUNTED SIGNAL HEAD 12 INCH	87
T14.3911	1 WAY PEDESTAL MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD 12 INCH	87
T14.3913	1 WAY BRACKET MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD 12 INCH	87
T15.0100	DIRECTIONAL REGULATORY AND WARNING SIGNS	87
T15.0200	REMOVE AND RELOCATE DIRECTIONAL REGULATORY AND WARNING SIGN	91
T15.1000	STREET SIGN ASSEMBLY STD. 24.6.1	91
T15.1100	STREET SIGN - OVERHEAD MOUNTED	92
T15.2000	PARKING SIGNS	92
T15.9901	FLASHING SCHOOL ZONE SIGN ASSEMBLY	92
T20.0006	6 INCH WHITE FAST - DRYING WATERBORNE PAVEMENT MARKING PAINT	92
T20.0012	12 INCH WHITE FAST - DRYING WATERBORNE PAVEMENT MARKING PAINT	93
T20.0104	4 INCH YELLOW FAST - DRYING WATERBORNE PAVEMENT MARKING PAINT	94

Table of Contents - Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue

Estimate Name - Addendum to Route 44 - Contract 2B

R.I. Contract No. - 2012-CH-082

FAP Nos: STP-0044(062), STPG-0044(063)

ItemCode	Description	Page
T20.0820	FAST DRYING WATERBONE PAVEMENT ARROW - STRAIGHT, LEFT, RIGHT, OR COMBINED STANDARD 20.1.0	94
T20.0822	FAST DRYING WATERBONE PAVEMENT MARKING WORD "ONLY" STANDARD 20.1.0	94
T20.9906	FAST DRYING WATERBORNE PAVEMENT MARKING PAINT WHITE YIELD LINE 24" BASE, 36" HEIGHT, 12" SPACE	95
T20.9907	** ITEM DELETED **	95
T06.3030	3 IN. RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT	95
T11.9903	20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	95

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
022	202.0100	Cont.				
		PUTNAM PIKE (CUSET)				
		374+32 RT TO SMITH AVENUE		30.86	0006	01
		(CUSET)				
		374+32 TO 383+70 LT (CUSET)		58.02	0006	01
		GREENVILLE AVENUE TO 413+00		209.88	0006	01
		RT (CUSET)				
		SMITH AVENUE TO GREENVILLE		20.99	0006	01
		AVENUE (CUSET)				
		SPRING STREET TO 413+00 LT		141.97	0006	01
		(CUSET)				
		QUANTITY				
		ROUNDING		0.27	0006	01
Item 202.0100 Total:				1,718.00		
023	203.0100	STRUCTURAL EXCAVATION EARTH	CY			
		PUTNAM PIKE				
		401+90 TO 402+87 RT		60.00	0006	01
		RETAINING WALL				
Item 203.0100 Total:				60.00		
024	203.0220	STRUCTURAL EXCAVATION ROCK	CY			
		MECHANICAL				
		LIGHT POLE FOUNDATIONS				
		ENGINEER'S ESTIMATE		2.00	0006	01
		TRAFFIC SIGNAL FOUNDATIONS				
		ENGINEER'S ESTIMATE		8.00	0006	01
Item 203.0220 Total:				10.00		
025	204.0100	TRIMMING AND FINE GRADING	SY			
		CHURCH STREET				
		EAST SIDE WIDENING		42.00	0006	01
		NORTH SIDE CURB		28.00	0006	01
		CHURCH STREET (LM&SD)				

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
029	302.0100	Cont.				
		394+53 TO 394+86 LT (CONCD)		4.00	0006	01
		394+90 TO 395+30 LT (CONCD)		4.89	0006	01
		396+64 TO 397+02 RT (CONCD)		4.67	0006	01
		397+32 TO 397+66 RT (CONCD)		5.77	0006	01
		399+89 TO 400+36 LT (CONCD)		5.78	0006	01
		401+01 TO 401+33 RT (CONCD)		4.00	0006	01
		402+38 TO 402+76 RT (CONCD)		9.33	0006	01
		402+84 TO 403+13 RT (CONCD)		7.11	0006	01
		402+85 TO 403+13 LT (CONCD)		3.56	0006	01
		404+48 TO 404+75 RT (CONCD)		6.67	0006	01
		405+01 TO 405+38 RT (CONCD)		9.11	0006	01
		405+34 TO 405+74 LT (CONCD)		4.89	0006	01
		407+68 TO 408+06 LT (CONCD)		4.67	0006	01
		PUTNAM PIKE (CSETF)				
		CHURCH STREET (CSETF)		20.67	0006	01
		PUTNAM PIKE (CUSET)				
		374+32 RT TO SMITH AVENUE (CUSET)		30.86	0006	01
		374+32 TO 383+70 LT (CUSET)		58.02	0006	01
		GREENVILLE AVENUE TO 413+00 RT (CUSET)		209.88	0006	01
		SMITH AVENUE TO GREENVILLE AVENUE (CUSET)		20.99	0006	01
		SPRING STREET TO 413+00 LT (CUSET)		141.97	0006	01
		QUANTITY				
		ROUNDING		0.27	0006	01
Item 302.0100 Total:				1,690.00		
030	401.9920	MODIFIED CLASS 12.5 WITH PAY FACTORS	TON			
		CHURCH STREET EAST SIDE WIDENING		5.00	0006	01

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
031	401.9922 Cont.	394+98 TO 395+22 LT AND		2.24	0006	01
		399+91 TO 400+29 LT (BITCD)				
		397+10 TO 397+60 RT (BITCD)		5.23	0006	01
		401+09 TO 401+28 RT AND		3.54	0006	01
		402+46 TO 402+70 RT (BITCD)				
		405+09 TO 405+31 RT (BITCD)		2.24	0006	01
		405+40 TO 405+68 LT (BITCD)		2.24	0006	01
		407+79 TO 408+00 LT (BITCD)		1.68	0006	01
		SMITH AVENUE EAST SIDE		3.54	0006	01
		(BITCD)				
		QUANTITY				
		ROUNDING		0.05	0006	01
Item 401.9922 Total:				107.00		
032	403.0300	ASPHALT EMULSION TACK COAT	SY			
		PUTNAM PIKE (PVM-1)				
		374+40 TO 380+00 (PVM-1)		3,533.00	0006	01
		380+00 TO 387+00 (PVM-1)		4,325.00	0006	01
		387+00 TO 409+00 (PVM-1)		10,309.00	0006	01
		409+00 TO 413+00 (PVM-1)		2,120.00	0006	01
Item 403.0300 Total:				20,287.00		
033	410.1000	TEMPORARY PATCHING	TON			
		MATERIAL/TRENCHES				
		PUTNAM PIKE				
		TEMPORARY PATCHING		30.00	0006	01
Item 410.1000 Total:				30.00		
034	601.0200	CLASS XX PORTLAND CEMENT CONCRETE	CY			
		CHURCH STREET				
		EAST SIDE WIDENING		8.00	0006	01
		NORTH SIDE CURB LOCK		4.00	0006	01
		PUTNAM PIKE (CSETF)				

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S131	T04.5001	Cont.				
		PLEASANT VIEW AVENUE AT		660.00	0021	03
		INDIAN RUN TRAIL				
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2		750.00	0021	03
		SIGNAL PLAN NO. 3		850.00	0021	03
		SIGNAL PLAN NO. 4		330.00	0021	03
		SIGNAL PLAN NO. 5		705.00	0021	03
Item T04.5001 Total:				3,295.00		
S132	T04.5302	14 AWG 2 CONDUCTOR TWISTED	LF			
		SHIELDED CABLE				
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 3		1,455.00	0021	03
		SIGNAL PLAN NO. 5		1,290.00	0021	03
Item T04.5302 Total:				2,745.00		
S133	T04.5303	14 AWG 3 CONDUCTOR CABLE	LF			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 1		115.00	0021	03
		[CONFIRMATION BEACON]				
		SIGNAL PLAN NO. 2 [FIRE			0021	03
		PRE-EMPTION PUSHBUTTON]				
		SIGNAL PLAN NO. 3 [P1-P4,		770.00	0021	03
		CONFIRMATION BEACON]				
		SIGNAL PLAN NO. 5 [P1-P4,		680.00	0021	03
		CONFIRMATION BEACON]				
Item T04.5303 Total:				1,565.00		
S134	T04.5305	14 AWG 5 CONDUCTOR CABLE	LF			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 1 [FIRE		290.00	0021	03
		PRE-EMPTION]				
		1-5, FIRE PRE-EMPTION]				

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S134	T04.5305 Cont.	SIGNAL PLAN NO. 2 [HEADS		1,865.00	0021	03
		SIGNAL PLAN NO. 3 [P1-P4, HEADS 2-5,7,8, FIRE PRE-EMPTION]		2,140.00	0021	03
		SIGNAL PLAN NO. 4 [FIRE PRE-EMPTION]		330.00	0021	03

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue

Estimate Name - Addendum to Route 44 - Contract 2B

R.I. Contract No. - 2012-CH-082

FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S134	T04.5305	Cont.				
		SIGNAL PLAN NO. 5 [P1-P4, HEADS 2-8, FIRE PRE-EMPTION]		2,030.00	0021	03
Item T04.5305 Total:				6,655.00		
S135	T04.5307	14 AWG 7 CONDUCTOR CABLE	LF			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 3 [HEADS 1,6]		605.00	0021	03
		SIGNAL PLAN NO. 5 [HEAD 1]		275.00	0021	03
Item T04.5307 Total:				880.00		
S136	T04.6902	'2' STRANDED COPPER CONDUCTOR 600V	LF			
		INSULATION				
		PUTNAM PIKE LIGHTING				
		374+40, 25' RT TO 375+31, 27' RT		300.00	0006	01
		374+45, 25' LT TO 377+59, 25' LT		1,035.00	0006	01
		375+31, 27' RT TO 377+05, 32' RT		585.00	0006	01
		376+65, 48' RT TO 376+98, 33' RT		120.00	0006	01
		376+98, 33' RT TO 377+05, 32' RT		135.00	0006	01
		377+05, 32' RT TO 377+11, 72' RT		135.00	0006	01
		377+05, 32' RT TO 377+59, 25' LT		270.00	0006	01
		377+05, 32' RT TO 377+66, 25' LT		270.00	0006	01
		377+11, 72' RT TO 378+28, 39' RT		405.00	0006	01
		377+66, 25' LT TO 377+85, 25' LT		90.00	0006	01

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S138	T04.9901 Cont.	PUTNAM PIKE LIGHTING				
		374+40, 25' RT		3.00	0006	01
		374+45, 25' LT		3.00	0006	01
		375+31, 27' RT		3.00	0006	01
		375+85, 26' LT		3.00	0006	01
		376+46, 27' RT		3.00	0006	01
		377+56, 53' RT		3.00	0006	01
		377+85, 25' LT		3.00	0006	01
		378+28, 39' RT		3.00	0006	01
		379+08, 23' LT		3.00	0006	01
Item T04.9901 Total:				27.00		
S139	T04.9902	INTERCONNECT CABLE #19 AWG 6 PAIR LF				
		TRAFFIC COMMUNICATIONS CABLE				
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 1			0021	03
		SIGNAL PLAN NO. 2			0021	03
		SIGNAL PLAN NO. 3			0021	03
		SIGNAL PLAN NO. 4			0021	03
		SIGNAL PLAN NO. 5			0021	03
Item T04.9902 Total:					**DELETED**	
S140	T05.0100	PRECAST TYPE A HANDHOLE STANDARD EACH				
		18.2.0				
		PUTNAM PIKE LIGHTING				
		374+40, 25' RT		1.00	0006	01
		374+45, 25' LT		1.00	0006	01
		375+31, 27' RT		1.00	0006	01
		375+85, 26' LT		1.00	0006	01
		376+20, 24' LT		1.00	0006	01
		376+46, 27' RT		1.00	0006	01
		377+11, 72' RT		1.00	0006	01
		377+56, 53' RT		1.00	0006	01

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S143	T06.1020	Cont.				
		376+40, 27' RT TO 376+46, 27' RT		3.00	0006	01
		376+68, 45' RT TO 376+72, 42' RT		4.00	0006	01
		376+97, 33' RT TO 377+00, 32' RT		7.00	0006	01
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2		50.00	0021	03
		SIGNAL PLAN NO. 3		30.00	0021	03
		SIGNAL PLAN NO. 5		25.00	0021	03
Item T06.1020 Total:				142.00		
S144	T06.1030	3 IN. RIGID STEEL CONDUIT-UNDERGROUND	LF			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2		30.00	0021	03
		SIGNAL PLAN NO. 3		20.00	0021	03
		SIGNAL PLAN NO. 5		10.00	0021	03
Item T06.1030 Total:				60.00		
S145	T06.2020	2 IN. RIGID STEEL CONDUIT-OVERHEAD FLASHING SCHOOL ZONE SIGN	LF			
		PLEASANT VIEW AVENUE AT INDIAN RUN TRAIL		10.00	0021	03
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2		35.00	0021	03
		SIGNAL PLAN NO. 3		15.00	0021	03
		SIGNAL PLAN NO. 5		15.00	0021	03
Item T06.2020 Total:				75.00		
S146	T06.3020	2 IN. RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT	LF			
		PUTNAM PIKE LIGHTING				

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S146	T06.3020	Cont.				
		377+51, 52' RT TO 377+56, 53' RT		3.00	0006	01
		377+85, 25' LT TO 377+85, 28' LT		2.00	0006	01
		378+25, 38' RT TO 378+28, 39' RT		3.00	0006	01
		379+03, 24' LT TO 379+08, 23' LT		3.00	0006	01
Item T06.3020 Total:				11.00		
S147	T06.5120	2 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	LF			
		PUTNAM PIKE LIGHTING 376+65, 48' RT TO 377+00, 32' RT		30.00	0006	01
		PUTNAM PIKE TRAFFIC SIGNALS SIGNAL PLAN NO. 3			0021	03
		SIGNAL PLAN NO. 5			0021	03
Item T06.5120 Total:				30.00		
S148	T06.5130	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDERGROUND	LF			
		PUTNAM PIKE TRAFFIC SIGNALS SIGNAL PLAN NO. 2			0021	03
		SIGNAL PLAN NO. 3			0021	03
		SIGNAL PLAN NO. 4		85.00	0021	03
		SIGNAL PLAN NO. 5		15.00	0021	03
Item T06.5130 Total:				100.00		
S149	T06.5230	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT -	LF			

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S149	T06.5230	Cont. UNDERGROUND				
		PUTNAM PIKE LIGHTING				
		377+00, 32' RT TO 377+05, 32' RT		8.00	0006	01
Item T06.5230 Total:				8.00		
S150	T06.5430	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT - UNDER EXISTING PAVEMENT	LF			
		PUTNAM PIKE LIGHTING				
		374+40, 25' RT TO 377+05, 32' RT		265.00	0006	01
		374+45, 25' LT TO 377+59, 25' LT		314.00	0006	01
		377+05, 32' RT TO 377+11, 72' RT		35.00	0006	01
		377+05, 32' RT TO 377+59, 25' LT		80.00	0006	01
		377+05, 32' RT TO 377+66, 25' LT		85.00	0006	01
		377+11, 72' RT TO 379+35, 37' RT		224.00	0006	01
		377+59, 25' LT TO 379+08, 25' LT		149.00	0006	01
		378+64, 39' RT TO 379+35, 37' RT		71.00	0006	01
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2		515.00	0021	03
		SIGNAL PLAN NO. 3		595.00	0021	03
		SIGNAL PLAN NO. 4		220.00	0021	03
		SIGNAL PLAN NO. 5		455.00	0021	03
Item T06.5430 Total:				3,008.00		

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S154	T09.1000 Cont.	PUTNAM PIKE LIGHTING				
		377+00, 32' RT		1.00	0006	01
				Item T09.1000 Total:		1.00
S155	T11.6006	SPAN AND MESSENGER WIRES 6/16	LF			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2		65.00	0021	03
				Item T11.6006 Total:		65.00
S156	T11.9901	25 FOOT ORNAMENTAL MAST ARM	EACH			
		TRAFFIC SIGNAL POST, BASE AND				
		FOUNDATION				
		PUTNAM PIKE TRAFFIC SIGNAL PLAN				
		NO. 3				
		378+72, 55' RT			0021	03
		379+55, 29' RT		1.00	0021	03
		PUTNAM PIKE TRAFFIC SIGNAL PLAN				
		NO. 5				
		384+35, 31' RT			0021	03
				Item T11.9901 Total:		1.00
S157	T11.9902	30 FOOT ORNAMENTAL MAST ARM	EACH			
		TRAFFIC SIGNAL POST, BASE AND				
		FOUNDATION				
		PUTNAM PIKE TRAFFIC SIGNAL PLAN				
		NO. 2				
		377+45, 32' LT		1.00	0021	03
		PUTNAM PIKE TRAFFIC SIGNAL PLAN				
		NO. 5				
		384+95, 30' RT		1.00	0021	03
		385+11, 32' LT		1.00	0021	03
				Item T11.9902 Total:		3.00

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S158	T11.9904	40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 5 384+27, 46' LT	EACH	1.00	0021	03
Item T11.9904 Total:				1.00		
S159	T11.9905	50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 2 375+39, 38' RT	EACH	1.00	0021	03
Item T11.9905 Total:				1.00		
S160	T11.9906	25 FOOT X 30 FOOT ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 3 379+20, 29' LT	EACH	1.00	0021	03
Item T11.9906 Total:				1.00		
S161	T11.9907	8 FOOT ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 3 378+45, 26' LT 378+54, 39' RT 379+22, 48' RT PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 5	EACH	1.00	0021	03
					0021	03
				1.00	0021	03

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S161	T11.9907	Cont.				
		384+21, 39' LT		1.00	0021	03
		384+24, 28' RT		1.00	0021	03
Item T11.9907 Total:				4.00		
S162	T11.9908	10 FOOT ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	EACH			
		PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 2				
		376+90, 29' RT		1.00	0021	03
		PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 3				
		378+49, 39' RT		1.00	0021	03
		378+70, 51' RT		1.00	0021	03
Item T11.9908 Total:				3.00		
S163	T12.9150	METER SOCKET W/MANUAL BY-PASS FLASHING SCHOOL ZONE SIGN	EACH			
		PLEASANT VIEW AVENUE AT INDIAN RUN TRAIL				
		1.00		1.00	0021	03
		PUTNAM PIKE TRAFFIC SIGNALS SIGNAL PLAN NO. 2				
		[CONTROLLER CABINET]				
		SIGNAL PLAN NO. 3		1.00	0021	03
		[CONTROLLER CABINET]				
		SIGNAL PLAN NO. 5		1.00	0021	03
		[CONTROLLER CABINET]				
Item T12.9150 Total:				4.00		
S164	T12.9901	ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0	EACH			
		PUTNAM PIKE TRAFFIC SIGNALS				

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S164	T12.9901 Cont.	SIGNAL PLAN NO. 2 [CONTROLLER CABINET]		1.00	0021	03
		SIGNAL PLAN NO. 3 [CONTROLLER CABINET]		1.00	0021	03

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S167	T13.1000	Cont.				
		LOOP #3		95.00	0021	03
		LOOP #4		82.00	0021	03
		LOOP #5		112.00	0021	03
		LOOP #6		102.00	0021	03
		LOOP #9		128.00	0021	03
Item T13.1000 Total:				1,714.00		
S168	T13.1004	TRAFFIC DETECTOR RELAY-LOOP 4 CHANNEL	EACH			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 3		2.00	0021	03
		[CONTROLLER CABINET]				
		SIGNAL PLAN NO. 5		3.00	0021	03
		[CONTROLLER CABINET]				
Item T13.1004 Total:				5.00		
S169	T13.8200	PEDESTRIAN DETECTOR-PUSHBUTTON W/SIGN	EACH			
		PUTNAM PIKE TRAFFIC SIGNAL PLAN				
		NO. 3				
		378+45, LT		1.00	0021	03
		378+49, RT		1.00	0021	03
		378+70, RT		1.00	0021	03
		379+22, RT		1.00	0021	03
		PUTNAM PIKE TRAFFIC SIGNAL PLAN				
		NO. 5				
		384+21, LT		2.00	0021	03
		384+24, RT		1.00	0021	03
		385+11, LT		1.00	0021	03
Item T13.8200 Total:				8.00		
S170	T13.9901	CONFIRMATION BEACON	EACH			
		PUTNAM PIKE TRAFFIC SIGNALS				

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S170	T13.9901	Cont.				
		SIGNAL PLAN NO. 1		1.00	0021	03
		SIGNAL PLAN NO. 3		1.00	0021	03
		SIGNAL PLAN NO. 5		1.00	0021	03
Item T13.9901 Total:				3.00		
S171	T13.9902	FIRE PRE-EMPTION CONTROL SYSTEM	LS			
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2 [FIRE STATION]		1.00	0021	03
Item T13.9902 Total:				1.00		
S172	T14.3513	1 WAY 3 SECTION MAST ARM MOUNTED	EACH			
		SIGNAL HEAD 12 INCH				
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 3 [HEADS 2-5]		4.00	0021	03
		SIGNAL PLAN NO. 5 [HEADS 2-8]		7.00	0021	03
Item T14.3513 Total:				11.00		
S173	T14.3516	1 WAY 4 SECTION MAST ARM MOUNTED	EACH			
		SIGNAL HEAD 12 INCH (W/ DUAL IND				
		DUAL ROW L.E.D. ARROW)				
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 3 [HEADS 1,6]		2.00	0021	03
		SIGNAL PLAN NO. 5 [HEAD 1]		1.00	0021	03
Item T14.3516 Total:				3.00		
S174	T14.3517	1 WAY 3 SECTION MAST ARM MTD	EACH			
		SIGNAL HEAD 2-12 INCH SECTIONS,				
		1-8 INCH SECTION				
		PUTNAM PIKE TRAFFIC SIGNALS				
		SIGNAL PLAN NO. 2 [HEADS 1-4]		4.00	0021	03

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S174	T14.3517	Cont.				
				Item T14.3517 Total:	4.00	
175	T14.3713	1 WAY 3 SECTION PEDESTAL MOUNTED	EACH			
SIGNAL HEAD 12 INCH						
PUTNAM PIKE TRAFFIC SIGNALS						
SIGNAL PLAN NO. 2 [HEAD 5]				1.00	0021	03
SIGNAL PLAN NO. 3 [HEADS 7-8]				2.00	0021	03
				Item T14.3713 Total:	3.00	
S176	T14.3911	1 WAY PEDESTAL MOUNTED L.E.D.	EACH			
PEDESTRIAN SIGNAL HEAD 12 INCH						
PUTNAM PIKE TRAFFIC SIGNAL PLAN						
NO. 3						
378+45, LT				1.00	0021	03
378+54, RT					0021	03
379+22, RT				1.00	0021	03
PUTNAM PIKE TRAFFIC SIGNAL PLAN						
NO. 5						
384+21, LT				2.00	0021	03
384+24, RT				1.00	0021	03
				Item T14.3911 Total:	5.00	
S177	T14.3913	1 WAY BRACKET MOUNTED L.E.D.	EACH			
PEDESTRIAN SIGNAL HEAD 12 INCH						
PUTNAM PIKE TRAFFIC SIGNAL PLAN						
NO. 3						
378+49, RT				1.00	0021	03
378+70, RT				1.00	0021	03
PUTNAM PIKE TRAFFIC SIGNAL PLAN						
NO. 5						
385+11, LT				1.00	0021	03
				Item T14.3913 Total:	3.00	

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

Item No.	Item Code	Description	UM	Qty.	Pay Code	Seq. No.
S178	T15.0100	DIRECTIONAL REGULATORY AND WARNING SIGNS	SF			

Distribution of Quantities

Project Name - Imp. to Rte. 44 Contract 2B - Austin Avenue to Danecroft Avenue
 Estimate Name - Addendum to Route 44 - Contract 2B
 R.I. Contract No. - 2012-CH-082
 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S184	T20.0006	Cont.				
		SOLID LANE CHANNELIZATION LINES				
		PUTNAM PIKE / PLEASANT VIEW		320.00	0021	03
		AVE				
		PUTNAM PIKE / SMITH AVE		160.00	0021	03
		TEMPORARY PAVEMENT MARKINGS				
		MICRO MILLED SURFACE		10,130.00	0021	03
		Item T20.0006 Total:		20,260.00		
S185	T20.0012	12 INCH WHITE FAST - DRYING	LF			
		WATERBORNE PAVEMENT MARKING PAINT				
		CROSSWALKS				
		CHURCH STREET		70.00	0021	03
		GREENVILLE AVE		200.00	0021	03
		PUTNAM PIKE / PLEASANT VIEW		550.00	0021	03
		AVE				
		PUTNAM PIKE / SMITH AVE		350.00	0021	03
		PUTNAM PIKE / WINSOR SCHOOL		140.00	0021	03
		STOP LINES				
		BARNES ST		15.00	0021	03
		CHURCH ST		13.00	0021	03
		CONCORD ST		12.00	0021	03
		COTTAGE AVE		13.00	0021	03
		CRESTVIEW DRIVE		14.00	0021	03
		GREENVILLE AVE		20.00	0021	03
		HATTE AVE		11.00	0021	03
		MAPLECREST DRIVE		15.00	0021	03
		PROSPECT ST		13.00	0021	03
		PUTNAM PIKE / GREENVILLE		40.00	0021	03
		FIRE STATION				
		PUTNAM PIKE / PLEASANT VIEW		85.00	0021	03
		AVE				
		PUTNAM PIKE / SMITH AVE		75.00	0021	03
		SPRAGUE ST		18.00	0021	03

Distribution of Quantities

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Estimate Name - Addendum to Route 44 - Contract 2B
R.I. Contract No. - 2012-CH-082
FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S185	T20.0012	Cont.	SPRING ST	12.00	0021	03

Distribution of Quantities

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 FAP Nos: STP-0044(062), STPG-0044(063)

<u>Item No.</u>	<u>Item Code</u>	<u>Description</u>	<u>UM</u>	<u>Qty.</u>	<u>Pay Code</u>	<u>Seq. No.</u>
S185	T20.0012	Cont.				
		THORNTON ST		11.00	0021	03
		WHISPERING PINES TERRACE		14.00	0021	03
Item T20.0012 Total:				1,691.00		
S186	T20.0104	4 INCH YELLOW FAST - DRYING	LF			
		WATERBORNE PAVEMENT MARKING PAINT				
		GREENVILLE AVE				
		CENTER LINE		50.00	0021	03
		PLEASANT VIEW AVE				
		CENTER LINE		190.00	0021	03
		PUTNAM PIKE CENTER LINE				
		374+30 TO 413+00		5,760.00	0021	03
		SMITH AVE				
		CENTER LINE		70.00	0021	03
		TEMPORARY PAVEMENT MARKINGS				
		MICRO MILLED SURFACE		6,070.00	0021	03
Item T20.0104 Total:				12,140.00		
S187	T20.0820	FAST DRYING WATERBONE PAVEMENT	EACH			
		ARROW - STRAIGHT, LEFT, RIGHT, OR				
		COMBINED STANDARD 20.1.0				
		PLEASANT VIEW AVE				
		RIGHT ARROW		1.00	0021	03
		PUTNAM PIKE				
		377+84 RT RIGHT ARROW		1.00	0021	03
		377+84 RT STRAIGHT ARROW		2.00	0021	03
		380+90 LT COMBINED		1.00	0021	03
		STRAIGHT/LEFT ARROW				
Item T20.0820 Total:				5.00		
S188	T20.0822	FAST DRYING WATERBONE PAVEMENT	EACH			
		MARKING WORD "ONLY" STANDARD 20.1.0				
		PLEASANT VIEW AVE				

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 R.I. Contract No. - 2012-CH-082
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S188	T20.0822	Cont. RIGHT LANE		1.00	0021	03
Item T20.0822 Total:				1.00		
S189	T20.9906	FAST DRYING WATERBORNE PAVEMENT MARKING PAINT WHITE YIELD LINE 24" BASE, 36" HEIGHT, 12" SPACE CHURCH STREET EASTBOUND PLEASANT VIEW AVENUE FROM PUTNAM PIKE WESTBOUND	LF	22.00 22.00	0021	03
Item T20.9906 Total:				44.00		
S190	T20.9907	24 INCH WHITE FAST DRYING WATERBORNE PAVEMENT MARKING PAINT "PIANO KEYS" CROSSWALK LINES PUTNAM PIKE WINSOR SCHOOL	LF		0021	03
Item T20.9907 Total:					**DELETED**	
S191	T06.3030	3 IN. RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT PUTNAM PIKE TRAFFIC SIGNALS SIGNAL PLAN NO. 2 SIGNAL PLAN NO. 3 SIGNAL PLAN NO. 5	LF	30.00 70.00 45.00	0021	03
Item T06.3030 Total:				145.00		
S192	T11.9903	20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION PUTNAM PIKE TRAFFIC SIGNAL PLAN NO. 5 384+35, 31' RT	EACH	1.00	0021	03

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 FAP Nos: STP-0044(062), STPG-0044(063)

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S192	T11.9903	Cont.				
Item T11.9903 Total:				1.00		

JOB SPECIFIC RHODE ISLAND STANDARD DETAILS

- (3.3.1) DRIVEWAY CATCH BASIN WITH GUTTER INLET
- (4.7.2) ALTERNATE TOP COVER FOR ROUND PRECAST MANHOLES AND CATCH BASINS
- (7.1.3) PRECAST CONCRETE WHEELCHAIR RAMP TRANSITION CURB
- (7.1.9) 48" PRECAST CONCRETE RAMP STONE
- (7.3.9) 48" GRANITE RAMP STONE
- (18.6.0) TRENCH DETAIL FOR CONDUIT IN EXISTING ROADWAY.
- (18.7.0) RISER POLE DETAIL
- (19.4.0) ALUMINUM PEDESTAL
- (20.1.0) PAVEMENT MARKINGS ARROW AND ONLY
- (24.2.0) SIGN POST SELECTION AND INSTALLATION DETAILS
- (26.1.0) FLUORESCENT TRAFFIC CONE
- (26.3.1) PLASTIC PIPE TYPE III BARRICADE
- (29.1.0) TEMPORARY CONSTRUCTION SIGNS

JOB SPECIFIC GENERAL LEGEND

- (AMH) ADJUST MANHOLES TO GRADE
- (BCD) BITUMINOUS CONCRETE DRIVEWAY
3" CLASS 4.75 HOT MIX ASPHALT
8" GRAVEL BORROW SUBBASE COURSE
- (DWP) 24"x48" DETECTABLE WARNING PANEL
- (GGB) NEW GAS GATE BOX AND COVER INCLUDING THE REMOVAL AND DISPOSAL OF EXISTING BOX WHERE APPLICABLE
- (MRP) MECHANICAL TREE AND SHRUB ROOT PRUNNING
- (NFC) FURNISH AND INSTALL NEW TOWN OF SMITHFIELD SEWER MANHOLE FRAME AND COVER - SHOP DRAWING REQUIRED - COORDINATE WITH THE SMITHFIELD SEWER AUTHORITY
- (P-1) REMOVE 2" BITUMINOUS PAVEMENT BY MICRO MILLING AND APPLY ASPHALT EMULSION TACK COAT AND 2" MODIFIED CLASS 12.5 HOT MIX ASPHALT SURFACE COURSE
- (RCC) RECONSTRUCT CATCH BASIN/CORBEL CONES
- (R&D) REMOVE & DISPOSE
- (R&R) REMOVE & RESET
- (S-1) CUTTING AND MATCHING ASPHALT, REFER TO R.I. STD. 47.1.1
- (S-2) CUTTING AND MATCHING CONCRETE
- (S-3) FULL DEPTH SAWCUT OF BITUMINOUS PAVEMENT
- (S-4) FULL DEPTH SAWCUT OF RIGID BASE BITUMINOUS PAVEMENT
- (S-5) FULL DEPTH SAWCUT OF BITUMINOUS SIDEWALK/DRIVEWAY
- (S-6) FULL DEPTH SAWCUT OF PORTLAND CEMENT CONCRETE SIDEWALK/DRIVEWAY
- (WGB) NEW WATER GATE BOX AND COVER INCLUDING THE REMOVAL AND DISPOSAL OF EXISTING BOX WHERE APPLICABLE

JOB SPECIFIC NOTES

- ANY/ALL ADJUSTMENTS TO VERIZON OWNED UNDERGROUND EQUIPMENT (MANHOLES, FRAMES & COVERS, CONDUITS, ETC) MUST BE PERFORMED BY A VERIZON APPROVED CONTRACTOR. ADDITIONALLY, ALL ADJUSTMENTS MUST BE INSPECTED BY VERIZON'S CONTRACT WORK INSPECTOR (CWI). PLEASE CONTACT STEVE FLEURY (CWI) @ (401)486-0340... 48 HOURS IN ADVANCE BEFORE COMMENCING WORK.
- IF VERIZON'S UNDERGROUND (UG) STRUCTURES (CONDUITS, CABLES, MANHOLES, ETC...) ARE EXPOSED DURING CONSTRUCTION, THE GENERAL CONTRACTOR (GC) MUST PROVIDE PROTECTION FOR THE EXPOSED PLANT IN ACCORDANCE WITH VERIZON'S METHODS AND PROCEDURES AND WITH THE APPROVAL OF VERIZON'S CWI. ADDITIONALLY, AN APPROVED PARTITION MUST BE PLACED BETWEEN EXISTING VERIZON STRUCTURES AND NEW CONCRETE CONSTRUCTION WHERE CONTACT AND/OR ENCROACHMENT MAY ARISE.
- THE UNDERMINING OF VERIZON DUCTS (INCLUDING THOSE CONCRETE ENCASED) IS NOT PERMITTED.
- A RADIAL CLEARANCE OF THREE FEET (3') MUST BE MAINTAINED BETWEEN VERIZON'S AERIAL EQUIPMENT (CABLES, TERMINALS, POLES, ETC) IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS. THIS INCLUDES TRAFFIC SIGNAL AND CONSTRUCTION EQUIPMENT...EITHER TEMPORARY OR PERMANENT.
- WHERE EXISTING SIDEWALKS ARE TO BE REMOVED ALONG BUILDING FOUNDATIONS AND WALLS, A FULL DEPTH SAW CUT SHALL BE MADE ONE FOOT AWAY FROM THE STRUCTURE AND THE PAVEMENT SHALL BE REMOVED BY HAND AS DIRECTED BY THE ENGINEER. THE SAW CUT WILL BE MEASURED FOR PAYMENT BUT THERE WILL BE NO ADDITIONAL COMPENSATION FOR THIS HAND WORK.
- ALL EXISTING DRAINAGE STRUCTURES TO REMAIN SHALL BE CLEANED AND INSPECTED AT THE BEGINNING OF THE WORK. ANY NECESSARY REPAIRS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. A SECOND CLEANING SHALL BE DONE PRIOR TO THE PROJECT COMPLETION.
- ALL FRAMES AND GRATES SHALL BE ADJUSTED TO GRADE.
- THE CONTRACTOR SHALL MINIMIZE THEIR STOCKPILE AREA TO THE LOCATIONS DESIGNATED ON THE PLANS AND MUST COORDINATE WITH RIDOT HIGHWAY AND MAINTENANCE TO ENSURE THAT NO CONFLICTS OF OPERATIONS OCCUR.
- THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THE ORIGINAL EXISTING CONDITIONS OR BETTER.
- THE USE OF ANY OTHER LOCATIONS AS A STAGING AREA SHALL BE STRICTLY PROHIBITED. THE STOCKPILE MATERIALS SHOULD BE OUTSIDE THE CLEAR ZONE AND REMOVED IN A TIMELY FASHION.
- THE MAINTENANCE DIVISION SHALL BE INFORMED OF ANY NEW MATERIALS OR PRODUCTS, WHICH WILL BE USED ON THIS PROJECT. A NEW MATERIAL LIST (NAME OF PRODUCT, VENDOR NAME, VENDOR CONTACT INFORMATION) SHALL BE PROVIDED TO BE USED TO PURCHASE PARTS OR MATERIAL IN THE FUTURE.

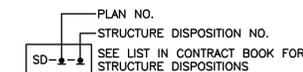
JOB SPECIFIC PAVEMENT MARKING LEGEND

- (CA) COMBINED ARROW
- (LA) LEFT ARROW
- (RA) RIGHT ARROW
- (SA) STRAIGHT ARROW
- (WO) WORD ONLY
- (4W) 4" WHITE LINE
- (6W) 6" WHITE LINE
- (6WS) 6" WHITE LANE LINE (10' LINE / 30' SPACE)
- (8W) 8" WHITE LINE
- (12W) 12" WHITE (CROSS WALK/STOP BAR)
- (CW) 12" WIDE BY 10'-0" LONG WHITE CROSS WALK LINE/24" SPACE "PIANO KEYS"
- (SYL) 4" SOLID YELLOW LINE
- (4DY) 4" DOUBLE YELLOW LINE
- (6Y) 6" SOLID YELLOW LINE
- (8Y) 8" SOLID YELLOW LINE

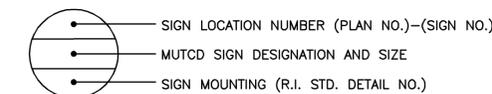
JOB SPECIFIC PAVEMENT MARKINGS NOTES

- ALL PAVEMENT MARKINGS ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
- LANE LINES SHALL CONSIST OF 10' LINES WITH 30' SPACE.
- AT THE COMPLETION OF EACH DAY'S MICRO MILLING OR REPAVING OPERATION, THE CONTRACTOR IS REQUIRED TO PROVIDE FAST-DRYING WATERBORNE PAVEMENT MARKING PAINT (WHITE AND YELLOW) IN AREAS OPEN TO VEHICULAR TRAFFIC.
- FINAL PAVEMENT MARKINGS SHALL BE FAST-DRYING WATERBORNE PAVEMENT MARKING PAINT (WHITE AND YELLOW).

STRUCTURE DISPOSITIONS



JOB SPECIFIC TYPICAL PROPOSED SIGN DESIGNATION SYMBOL

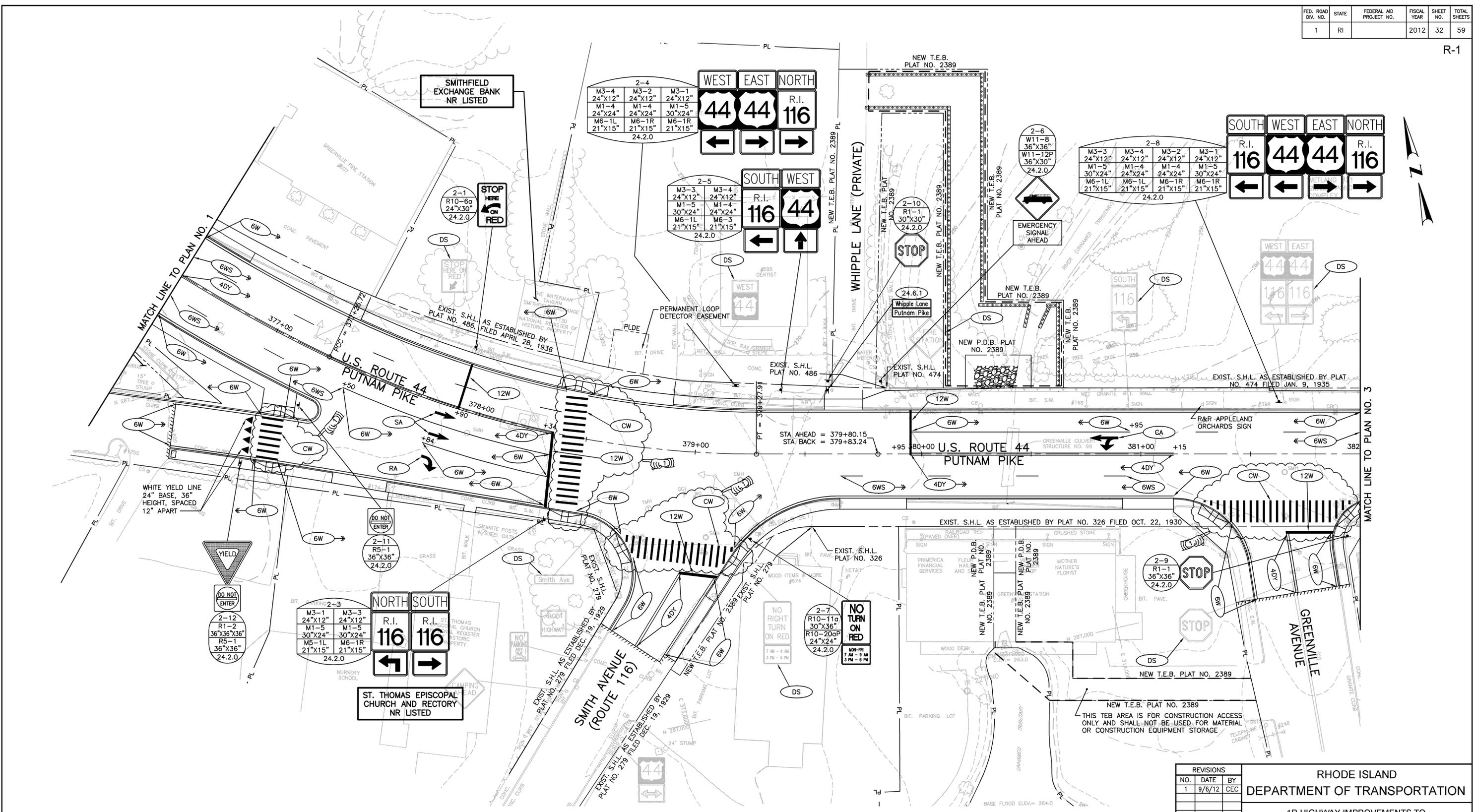


JOB SPECIFIC PLAN SYMBOLS

- PC-12 ⊕ PAVEMENT CORE - SEE THE CONTRACT SPECIFIC DOCUMENTS
- 200' RIVERBANK WETLAND
- TP-1 TEST PIT - SEE THE CONTRACT SPECIFIC DOCUMENTS



REVISIONS			RHODE ISLAND DEPARTMENT OF TRANSPORTATION
NO.	DATE	BY	
1	9/6/12	CEC	1R HIGHWAY IMPROVEMENTS TO U.S. ROUTE 44 (PUTNAM PIKE) FROM AUSTIN AVENUE TO DANECROFT AVENUE SMITHFIELD, RHODE ISLAND
			JOB SPECIFIC PLAN SYMBOLS, LEGEND & NOTES
			CHECKED BY _____ DATE _____ SCALE NO SCALE



NOTE:
SEE SIGNAL PLANS FOR OVERHEAD MOUNTED STREET SIGNS.

REVISIONS		
NO.	DATE	BY
1	9/6/12	CEC

**RHODE ISLAND
DEPARTMENT OF TRANSPORTATION**

1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
FROM AUSTIN AVENUE TO DANECROFT AVENUE

SMITHFIELD, RHODE ISLAND

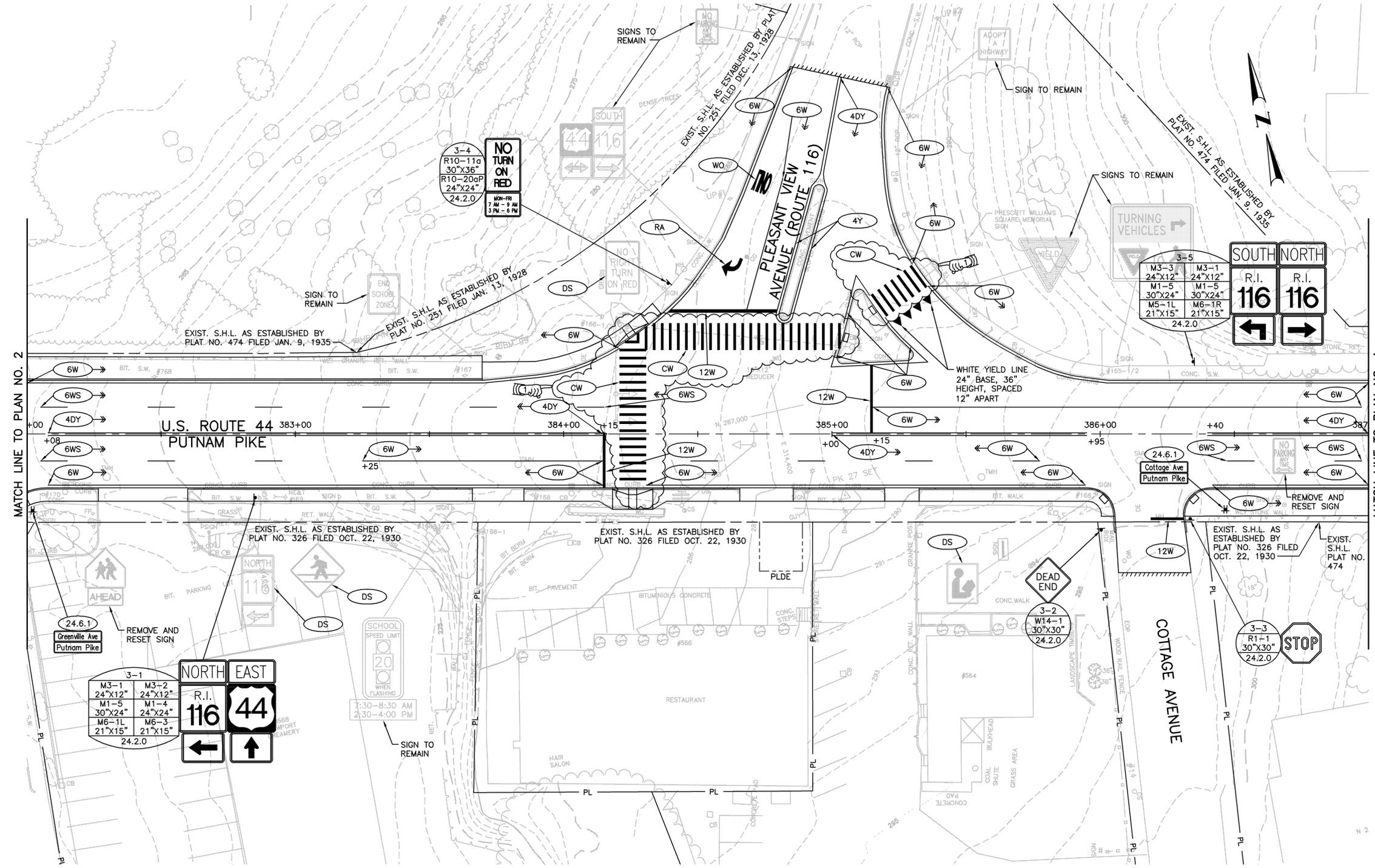
**SIGNING AND PAVEMENT
MARKING PLAN NO. 2**

CHECKED BY _____ DATE _____ SCALE 1"=20'



ADDENDUM No. 1

CE&C #97061.03



MATCH LINE TO PLAN NO. 2

MATCH LINE TO PLAN NO. 4

NOTE:
SEE SIGNAL PLANS FOR OVERHEAD MOUNTED STREET SIGNS.

REVISIONS		
NO.	DATE	BY
1	9/6/12	CEC

**RHODE ISLAND
DEPARTMENT OF TRANSPORTATION**

1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
FROM AUSTIN AVENUE TO DANECROFT AVENUE

SMITHFIELD, RHODE ISLAND

**SIGNING AND PAVEMENT
MARKING PLAN NO. 3**

CHECKED BY _____ DATE _____ SCALE $\frac{1}{1} = 20'$

COMMONWEALTH
ENGINEERS & CONSULTANTS, INC.

400 SMITH STREET
PROVIDENCE, RI 02908

ADDENDUM No. 1

CE&C #97061.03



PHASING, SEQUENCE AND TIMING

APPROACH	DIRECTION	HOUSING	PHASE 1	PHASE 2	PHASE 3	FIRE PRE-EMPTION	FLASH OPERATION
MINIMUM INTERVAL			5	10	5	--	
VEHICLE EXTENSION			2.7	2.7	2.4	--	
MAXIMUM 1			15	25	20	40	
YELLOW CLEARANCE			3.5	3.5	3	3.5	
RED CLEARANCE			1.5	1.5	1	1.5	
PED WALK/CLEARANCE			4/22	6/12			
PUTNAM PIKE	EB	1	G	Y	R	R	FY
PUTNAM PIKE	EB	2	G	Y	R	R	FY
PUTNAM PIKE	WB	3,4	R	Y	R	G	FY
AUSTIN AVENUE	SB	5,6	R	R	G	R	FR
DRIVEWAY		7,8	R	R	G	R	FR
PEDESTRIAN X-ING	N-S	P3-P6	DW	DW	W/FDW	DW	DARK
PEDESTRIAN X-ING	E-W	P1-P2	DW	DW	DW	DW	DARK
DETECTOR			NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	
RECALL			OFF	MIN	OFF	OFF	
			Ø1	Ø2	Ø3	Ø4	

COORDINATION DATA

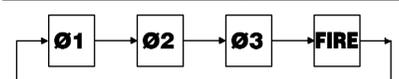
PLAN #	CYCLE LENGTH	OFFSET	PHASE SPLITS			HOURS OF OPERATION
			Ø1	Ø2	Ø3	
1	80	7	18	36	26	MONDAY-FRIDAY 6:00-9:00
2	70	0	11	36	23	MONDAY-FRIDAY 9:00-14:00
3	90	83	21	46	23	MONDAY-FRIDAY 14:00-19:00
4	83	6	18	40	25	SATURDAY-SUNDAY 7:00-10:00
5	85	3	19	40	26	SATURDAY-SUNDAY 10:00-20:00

NOTES:
 1. ALL OTHER TIMES TO BE FREE OPERATION (MAX 1 TIMING)
 2. OFFSET REFERENCES PHASE 2 BEGINNING OF GREEN
 3. SPLIT TIMES EQUAL GREEN TIME PLUS RED AND YELLOW CLEARANCE TIME.

DETECTOR DATA

DETECTOR NO.	SIZE	RELAY NUMBER	SLOT	DELAY (SEC.)	CALL PHASE	EXTEND PHASE	REMARKS
Ø1	6'x40'	1	2	3	1	2	EXISTING
Ø2	6'x40'	1	2	3	2		EXISTING
Ø3	6'x40'	1	2	3	2		EXISTING
Ø4	6'x40'	1	2	3	2		EXISTING
Ø5	6'x40'	2	4	5	3		EXISTING
Ø6	6'x40'	2	4	8	3		EXISTING
Ø7	6'x6'	2	4	8	3		EXISTING

PREFERRED PHASE SEQUENCE DIAGRAM



CONSTRUCTION NOTES:

1. CONFIRMATION BEACON SHALL BE A CLEAR LENS WHELEN IS3 SERIES MODEL OR APPROVED EQUAL.



SCALE IN FEET

ITEM NO.	LEGEND	ITEM DESCRIPTION	R-1
1	□	PRECAST TYPE A HANDHOLE, STD. 18.2.0	
1c	○	BREAK INTO EXISTING HANDHOLE	
2a	—	2 INCH RIGID STEEL CONDUIT-UNDERGROUND	
2b	—	3 INCH RIGID STEEL CONDUIT-UNDERGROUND	
2c	—	2 INCH RIGID STEEL CONDUIT-OVERHEAD	
2d	—	3 INCH RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT	
3b	—	2 INCH POLYVINYL CHLORIDE PLASTIC CONDUIT-OVERHEAD	
3c	—	2 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3d	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3e	—	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
3f	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
4a	●	25 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4b	●	30 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4c	●	35 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4d	●	40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4e	●	50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4f	●	25x30 ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4g	●	20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
5a	●	8 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
5b	●	10 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
6a	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH	
6b	←	1-WAY 4-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH WITH DUAL IND. LED ARROW	
6c	←	1-WAY 3-SECTION PEDESTAL MOUNTED SIGNAL HEAD, 12 INCH	
6d	←	1-WAY BRACKET MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6e	←	1-WAY PEDESTAL MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6f	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, (2) 12 INCH SECTIONS, (1) 8 INCH SECTION	
7a	—	6 AWG SINGLE CONDUCTOR CABLE 600V INSULATION	
7b	—	14 AWG 2 CONDUCTOR TWISTED SHIELDED CABLE	
7c	—	14 AWG 3 CONDUCTOR CABLE	
7d	—	14 AWG 5 CONDUCTOR CABLE	
7e	—	14 AWG 7 CONDUCTOR CABLE	
8a	—	SPAN AND MESSENGER WIRES 6/16	
9a	—	TRAFFIC DETECTORS - LOOP, STD. 19.6.0	
9c	—	TRAFFIC DETECTOR RELAYS - LOOP 4 CHANNEL	
10a	—	ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0	
10b	—	PEDESTRIAN DETECTOR - PUSHBUTTON WITH SIGN	
10c	—	FIRE PRE-EMPTION CONTROL SYSTEM	
10d	—	GPS TIME SYNCHRONIZATION SYSTEM	
10e	—	FLASHING SCHOOL ZONE SIGN ASSEMBLY	
10f	—	MODIFY TRAFFIC SIGNAL CONTROLLER AND CABINET	
11a	—	REMOVE AND SALVAGE TRAFFIC SIGNAL SYSTEM EQUIPMENT	
11b	—	REMOVE AND SALVAGE FLASHING SCHOOL SPEED LIMIT SIGN AND EQUIPMENT	
12	—	METER SOCKET W/ MANUAL BY-PASS	
13	●	CONFIRMATION BEACON	

REVISIONS		
NO.	DATE	BY
1	9/6/12	MDL

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
 FROM AUSTIN AVENUE TO DANECROFT AVENUE

SMITHFIELD, RHODE ISLAND

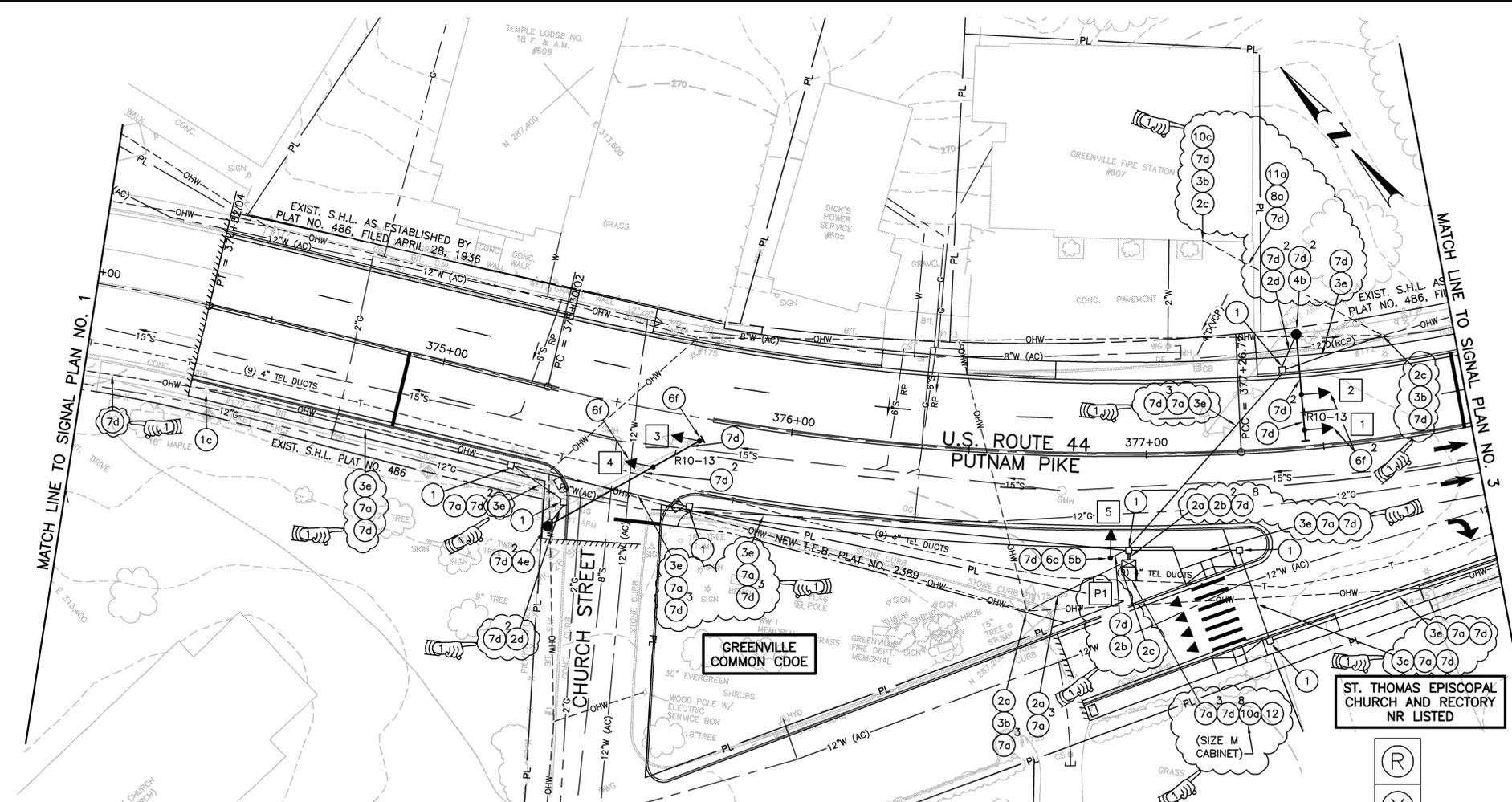
SIGNAL PLAN NO. 1
 AUSTIN AVENUE & PUTNAM PIKE
 SIGNAL NO. 770

CHECKED BY _____ DATE _____ SCALE 1"=20'



ADDENDUM No. 1

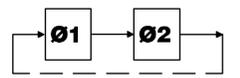
CE&C #97061.03



PHASING, SEQUENCE AND TIMING

APPROACH	DIRECTION	HOUSING	PHASE 1		PHASE 2		FLASH OPERATION
PRE-EMPT			--		40		
YELLOW CLEARANCE			3.5		3.5		
RED CLEARANCE				1.5		1.5	
PED WALK/CLEARANCE							
PUTNAM PIKE	WB	1,2	FY	Y R	R R	R R	FY
PUTNAM PIKE	EB	3,4	FY	Y R	R R	R R	FY
FIRE STATION	SB	5	FR	FR	G Y	R R	FR
PEDESTRIAN X-ING							
PEDESTRIAN X-ING							
DETECTOR							
RECALL							

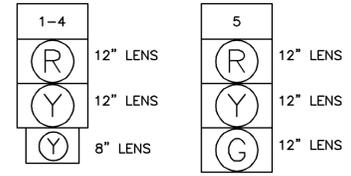
PREFERRED PHASE SEQUENCE DIAGRAM



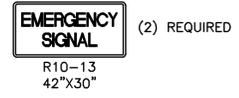
POLE AND SIGNAL HEAD LOCATION DIAGRAM

SIGNAL STRUCTURE NO.	STATION AND OFFSET	A	B
1	375+39, 38' RT	34'	15'
2	377+45, 32' LT	17'	10'
P1	376+90, 29' RT		

SIGNAL FACES:

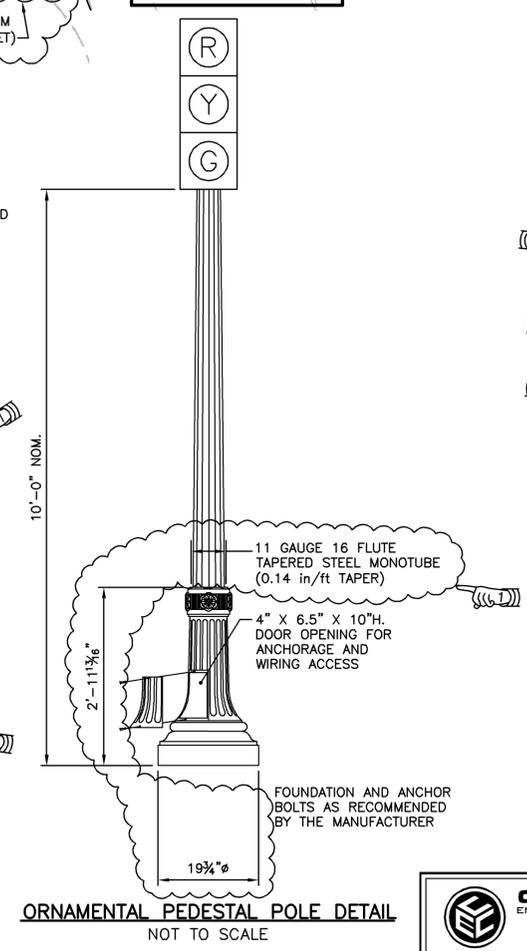
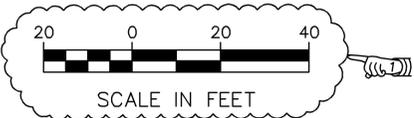


OVERHEAD MOUNTED SIGN DETAIL



CONSTRUCTION NOTES:

- EXISTING TRAFFIC SIGNAL SYSTEM TO BE REMOVED AND SALVAGED INCLUDING: (2) TRAFFIC SIGNAL MAST ARMS (6) TRAFFIC SIGNAL HEADS (3) HANDHOLES (1) SPAN AND MESSENGER WIRE MISC. CABLE AND WIRING
- ALL RED, YELLOW, AND GREEN SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.
- BACKPLATES SHALL BE PROVIDED ON ALL SIGNAL HEADS.
- CONFIRMATION BEACON SHALL BE A CLEAR LENS WHELEN IS3 SERIES MODEL OR APPROVED EQUAL.
- THE CONTRACTOR SHALL INCLUDE A SURVEYED CROSS SECTION OF EACH PROPOSED MAST ARM LOCATION AS PART OF THE SHOP DRAWING SUBMISSION. CROSS SECTIONS SHALL INCLUDE PROPOSED SIGNALS, EXISTING OVERHEAD UTILITY LINE LOCATIONS AND ELEVATION.



ITEM NO.	LEGEND	ITEM DESCRIPTION	R-1
1	□	PRECAST TYPE A HANDHOLE, STD. 18.2.0	
1c	○	BREAK INTO EXISTING HANDHOLE	
2a	—	2 INCH RIGID STEEL CONDUIT—UNDERGROUND	
2b	—	3 INCH RIGID STEEL CONDUIT—UNDERGROUND	
2c	—	2 INCH RIGID STEEL CONDUIT—OVERHEAD	
2d	—	3 INCH RIGID STEEL CONDUIT—UNDER EXISTING PAVEMENT	
3b	—	2 INCH POLYVINYL CHLORIDE PLASTIC CONDUIT—OVERHEAD	
3c	—	2 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3d	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3e	—	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
3f	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
4a	●	25 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4b	●	30 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4c	●	35 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4d	●	40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4e	●	50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4f	●	25x30 ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4g	●	20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
5a	●	8 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
5b	●	10 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
6a	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH	
6b	←	1-WAY 4-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH WITH DUAL IND. LED ARROW	
6c	←	1-WAY 3-SECTION PEDESTAL MOUNTED SIGNAL HEAD, 12 INCH	
6d	←	1-WAY BRACKET MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6e	←	1-WAY PEDESTAL MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6f	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, (2) 12 INCH SECTIONS, (1) 8 INCH SECTION	
7a	—	6 AWG SINGLE CONDUCTOR CABLE 600V INSULATION	
7b	—	14 AWG 2 CONDUCTOR TWISTED SHIELDED CABLE	
7c	—	14 AWG 3 CONDUCTOR CABLE	
7d	—	14 AWG 5 CONDUCTOR CABLE	
7e	—	14 AWG 7 CONDUCTOR CABLE	
8a	—	SPAN AND MESSENGER WIRES 6/16	
9a	—	TRAFFIC DETECTORS - LOOP, STD. 19.6.0	
9c	—	TRAFFIC DETECTOR RELAYS - LOOP 4 CHANNEL	
10a	—	ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0	
10b	—	PEDESTRIAN DETECTOR - PUSHBUTTON WITH SIGN	
10c	—	FIRE PRE-EMPTION CONTROL SYSTEM	
10d	—	GPS TIME SYNCHRONIZATION SYSTEM	
10e	—	FLASHING SCHOOL ZONE SIGN ASSEMBLY	
10f	—	MODIFY TRAFFIC SIGNAL CONTROLLER AND CABINET	
11a	—	REMOVE AND SALVAGE TRAFFIC SIGNAL SYSTEM EQUIPMENT	
11b	—	REMOVE AND SALVAGE FLASHING SCHOOL SPEED LIMIT SIGN AND EQUIPMENT	
12	—	METER SOCKET W/ MANUAL BY-PASS	
13	●	CONFIRMATION BEACON	

ADDENDUM No. 1



REVISIONS		
NO.	DATE	BY
1	9/6/12	MDL

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
FROM AUSTIN AVENUE TO DANECROFT AVENUE

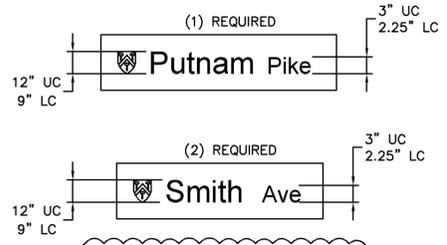
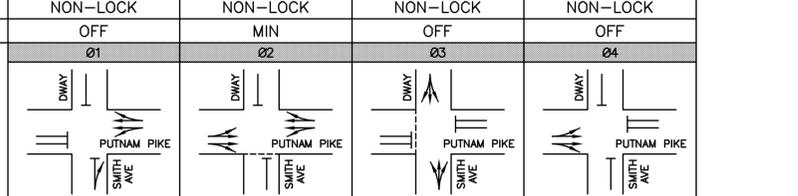
SMITHFIELD, RHODE ISLAND

SIGNAL PLAN NO. 2
GREENVILLE FIRE STATION & PUTNAM PIKE
SIGNAL NO. 781

CHECKED BY _____ DATE _____ SCALE 1"=20'

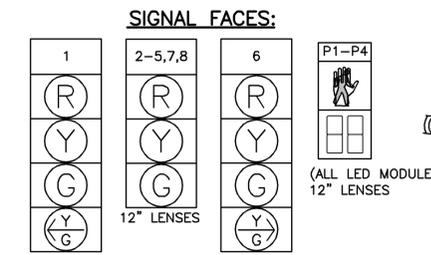
PHASING, SEQUENCE AND TIMING

APPROACH	DIRECTION	HOUSING	PHASE 1	PHASE 2	PHASE 3	FIRE PRE-EMPTION	FLASH OPERATION
MINIMUM INTERVAL			5	10	5	---	
VEHICLE EXTENSION			2.6	2.6	2.4	---	
MAXIMUM 1			15	25	20	40	
YELLOW CLEARANCE			3.5	3.5	3	3.5	
RED CLEARANCE			2	2	1	2	
PED WALK/CLEARANCE			4/12	4/12	4/15		
PUTNAM PIKE	WB	1	R	G	Y	R	FY
PUTNAM PIKE	WB	2	R	G	Y	R	FY
PUTNAM PIKE	EB	3,4	R	G	Y	R	FY
SMITH AVENUE	NB	5	R	G	Y	R	FR
SMITH AVENUE	NB	6	R	G	Y	R	FR
DRIVEWAY		7,8	R	G	Y	R	FR
PEDESTRIAN X-ING	N-S	P1-P2	DW	DW	DW	W/FDW	DARK
PEDESTRIAN X-ING	E-W	P3-P4	DW	DW	DW	DW	DARK
DETECTOR			NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	
RECALL			OFF	MIN	OFF	OFF	
			Ø1	Ø2	Ø3	Ø4	



1'-6" HIGH BY 6"-0" LONG SIGN GREEN BACKGROUND WHITE LEGEND MOUNTED ON MAST ARM. THE SMITHFIELD TOWN SHIELD SHALL BE THE SAME HEIGHT AS THE CAPITOL LETTER. COORDINATE WITH THE SMITHFIELD DPW FOR THE DESIGN OF THE TOWN SHIELD.

**OVERHEAD MOUNTED STREET SIGN
DETAIL D3-1**
NOT TO SCALE



PREFERRED PHASE SEQUENCE DIAGRAM

COORDINATION DATA

PLAN #	CYCLE LENGTH	OFFSET	PHASE SPLITS			HOURS OF OPERATION
			Ø1	Ø2	Ø3	
1	80	0	14	36	30	MONDAY-FRIDAY 6:00-9:00
2	70	0	14	26	30	MONDAY-FRIDAY 9:00-14:00
3	90	0	33	27	30	MONDAY-FRIDAY 14:00-19:00
4	83	0	13	30	40	SATURDAY-SUNDAY 7:00-10:00
5	85	0	23	32	30	SATURDAY-SUNDAY 10:00-20:00

NOTES:
1. ALL OTHER TIMES TO BE FREE OPERATION (MAX 1 TIMING)
2. OFFSET REFERENCES PHASE 2 BEGINNING OF GREEN
3. SPLIT TIMES EQUAL GREEN TIME PLUS RED AND YELLOW CLEARANCE TIME.

DETECTOR DATA

DETECTOR NO.	SIZE	RELAY NUMBER	SLOT	DELAY (SEC.)	CALL PHASE	EXTEND PHASE	REMARKS
1	6'x40'	1	2	3	2		
2	6'x20'	1	2	3	1		QUADRUPOLE
3	6'x20'	1	2	3	2	2	QUADRUPOLE
4	6'x15'	1	2	15	---	1	CUT-OFF
5	6'x40'	2	4	3	2		
6	6'x40'	2	4	3	2		
7	6'x40'	2	4	3	3		
8	6'x20'	2	4	8	3		

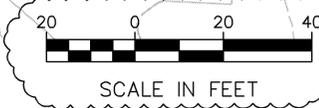
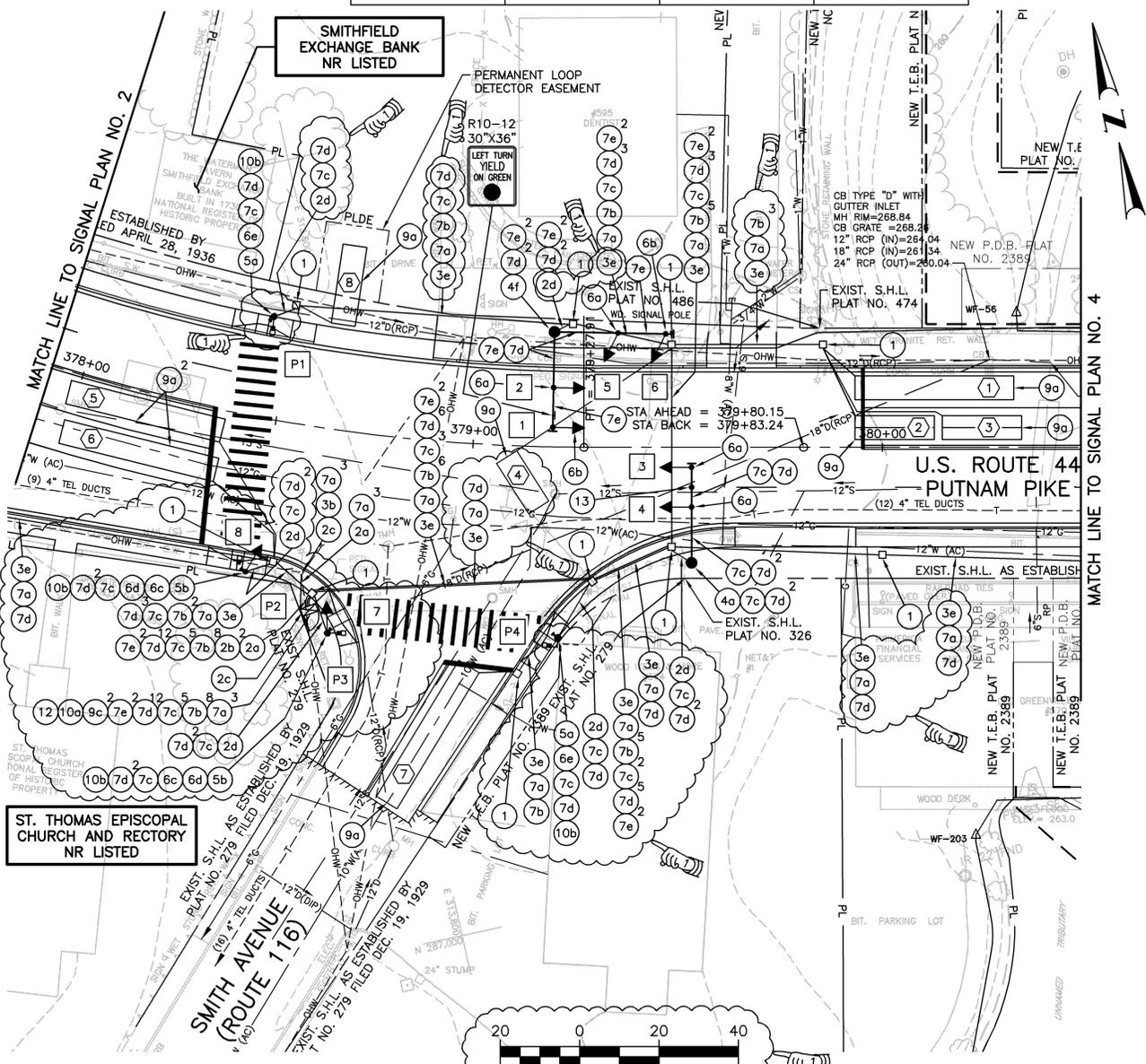
POLE AND SIGNAL HEAD LOCATION DIAGRAM

SIGNAL STRUCTURE NO.	STATION AND OFFSET	A	B
1 (WB)	379+20, 29' LT	14'	10'
1 (NB)	379+20, 29' LT	16'	12'
2	379+55, 29' RT	14'	10'
P1	378+45, 26' LT		
P2	378+49, 39' RT		
P3	378+70, 51' RT		
P4	379+22, 48' RT		

CONSTRUCTION NOTES:

- EXISTING TRAFFIC SIGNAL SYSTEM TO BE REMOVED AND SALVAGED INCLUDING:
 - TRAFFIC SIGNAL MAST ARMS
 - PEDESTAL POLES
 - TRAFFIC SIGNAL HEADS
 - PEDESTRIAN SIGNAL HEADS
 - TRAFFIC SIGNAL CONTROLLER & CABINET
 - HANDHOLES
 - MISC. CABLE AND WIRING
- ALL RED, YELLOW, AND GREEN SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.
- BACKPLATES SHALL BE PROVIDED ON ALL SIGNAL HEADS.
- CONFIRMATION BEACON SHALL BE A CLEAR LENS WHELEN IS3 SERIES MODEL OR APPROVED EQUAL.
- THE CONTRACTOR SHALL INCLUDE A SURVEYED CROSS SECTION OF EACH PROPOSED MAST ARM LOCATION AS PART OF THE SHOP DRAWING SUBMISSION. CROSS SECTIONS SHALL INCLUDE PROPOSED SIGNALS, EXISTING OVERHEAD UTILITY LINE LOCATIONS AND ELEVATION.

ITEM NO.	LEGEND	ITEM DESCRIPTION	R-1
1	□	PRECAST TYPE A HANDHOLE, STD. 18.2.0	
1c	○	BREAK INTO EXISTING HANDHOLE	
2a	—	2 INCH RIGID STEEL CONDUIT-UNDERGROUND	
2b	—	3 INCH RIGID STEEL CONDUIT-UNDERGROUND	
2c	—	2 INCH RIGID STEEL CONDUIT-OVERHEAD	
2d	—	3 INCH RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT	
3b	—	2 INCH POLYVINYL CHLORIDE PLASTIC CONDUIT-OVERHEAD	
3c	—	2 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3d	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3e	—	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
3f	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
4a	●	25 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4b	●	30 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4c	●	35 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4d	●	40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4e	●	50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4f	●	25x30 ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4g	●	20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
5a	●	8 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
5b	●	10 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
6a	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH	
6b	←	1-WAY 4-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH WITH DUAL IND. LED ARROW	
6c	←	1-WAY 3-SECTION PEDESTAL MOUNTED SIGNAL HEAD, 12 INCH	
6d	←	1-WAY BRACKET MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6e	←	1-WAY PEDESTAL MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6f	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, (2) 12 INCH SECTIONS, (1) 8 INCH SECTION	
7a	—	6 AWG SINGLE CONDUCTOR CABLE 600V INSULATION	
7b	—	14 AWG 2 CONDUCTOR TWISTED SHIELDED CABLE	
7c	—	14 AWG 3 CONDUCTOR CABLE	
7d	—	14 AWG 5 CONDUCTOR CABLE	
7e	—	14 AWG 7 CONDUCTOR CABLE	
8a	—	SPAN AND MESSENGER WIRES 6/16	
9a	—	TRAFFIC DETECTORS - LOOP, STD. 19.6.0	
9c	—	TRAFFIC DETECTOR RELAYS - LOOP 4 CHANNEL	
10a	—	ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0	
10b	—	PEDESTRIAN DETECTOR - PUSHBUTTON WITH SIGN	
10c	—	FIRE PRE-EMPTION CONTROL SYSTEM	
10d	—	GPS TIME SYNCHRONIZATION SYSTEM	
10e	—	FLASHING SCHOOL ZONE SIGN ASSEMBLY	
10f	—	MODIFY TRAFFIC SIGNAL CONTROLLER AND CABINET	
11a	—	REMOVE AND SALVAGE TRAFFIC SIGNAL SYSTEM EQUIPMENT	
11b	—	REMOVE AND SALVAGE FLASHING SCHOOL SPEED LIMIT SIGN AND EQUIPMENT	
12	—	METER SOCKET W/ MANUAL BY-PASS	
13	●	CONFIRMATION BEACON	



CE&C #97061.03

ADDENDUM No. 1



REVISIONS	NO.	DATE	BY
	1	9/6/12	MDL

**RHODE ISLAND
DEPARTMENT OF TRANSPORTATION**

1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
FROM AUSTIN AVENUE TO DANECROFT AVENUE

SMITHFIELD, RHODE ISLAND

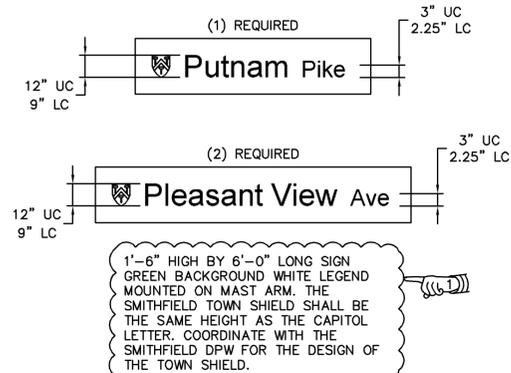
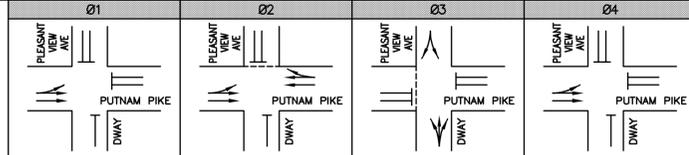
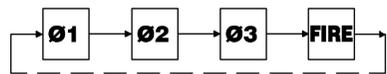
SIGNAL PLAN NO. 3
SMITH AVENUE & PUTNAM PIKE
SIGNAL NO. 226

CHECKED BY _____ DATE _____ SCALE 1"=20'

PHASING, SEQUENCE AND TIMING

APPROACH	DIRECTION	HOUSING	PHASE 1	PHASE 2	PHASE 3	FIRE PRE-EMPT	FLASH OPERATION
MINIMUM INTERVAL			5	10	5	---	
VEHICLE EXTENSION			2.6	2.6	2.4	---	
MAXIMUM 1			15	30	20	40	
YELLOW CLEARANCE			3.5	3.5	3.5	3.5	
RED CLEARANCE			1.5	1.5	1.5	1	1.5
PED WALK/CLEARANCE			4/20	4/14			
PUTNAM PIKE	EB	1	G Y R	G Y R	R R R	G Y R	FY
PUTNAM PIKE	EB	2	G Y R	G Y R	R R R	G Y R	FY
PUTNAM PIKE	WB	3,4	R R R	G Y R	R R R	R R R	FY
PLEASANT VIEW AVENUE	SB	5,6	R R R	R R R	G Y R	R R R	FR
DRIVEWAY		7,8	R R R	R R R	G Y R	R R R	FR
PEDESTRIAN X-ING	N-S	P1-P2	DW DW DW	DW DW DW	W/FDW DW	DW DW DW	DARK
PEDESTRIAN X-ING	E-W	P3-P4	DW DW DW	W/FDW DW	DW DW DW	DW DW DW	DARK
DETECTOR			NON-LOCK	NON-LOCK	NON-LOCK	NON-LOCK	
RECALL			OFF	MIN	OFF	OFF	

PREFERRED PHASE SEQUENCE DIAGRAM



**OVERHEAD MOUNTED STREET SIGN
DETAIL D3-1**

COORDINATION DATA

PLAN #	CYCLE LENGTH	OFFSET	PHASE SPLITS			HOURS OF OPERATION
			Ø1	Ø2	Ø3	
1	80	50	23	29	28	MONDAY-FRIDAY 6:00-9:00
2	70	34	13	29	28	MONDAY-FRIDAY 9:00-14:00
3	90	38	18	44	28	MONDAY-FRIDAY 14:00-19:00
4	83	0	12	44	27	SATURDAY-SUNDAY 7:00-10:00
5	85	66	12	46	27	SATURDAY-SUNDAY 10:00-20:00

NOTES: 1. ALL OTHER TIMES TO BE FREE OPERATION (MAX 1 TIMING)
2. OFFSET REFERENCES PHASE 2 BEGINNING OF GREEN
3. SPLIT TIMES EQUAL GREEN TIME PLUS RED AND YELLOW CLEARANCE TIME.

DETECTOR DATA

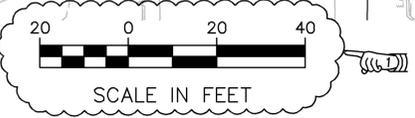
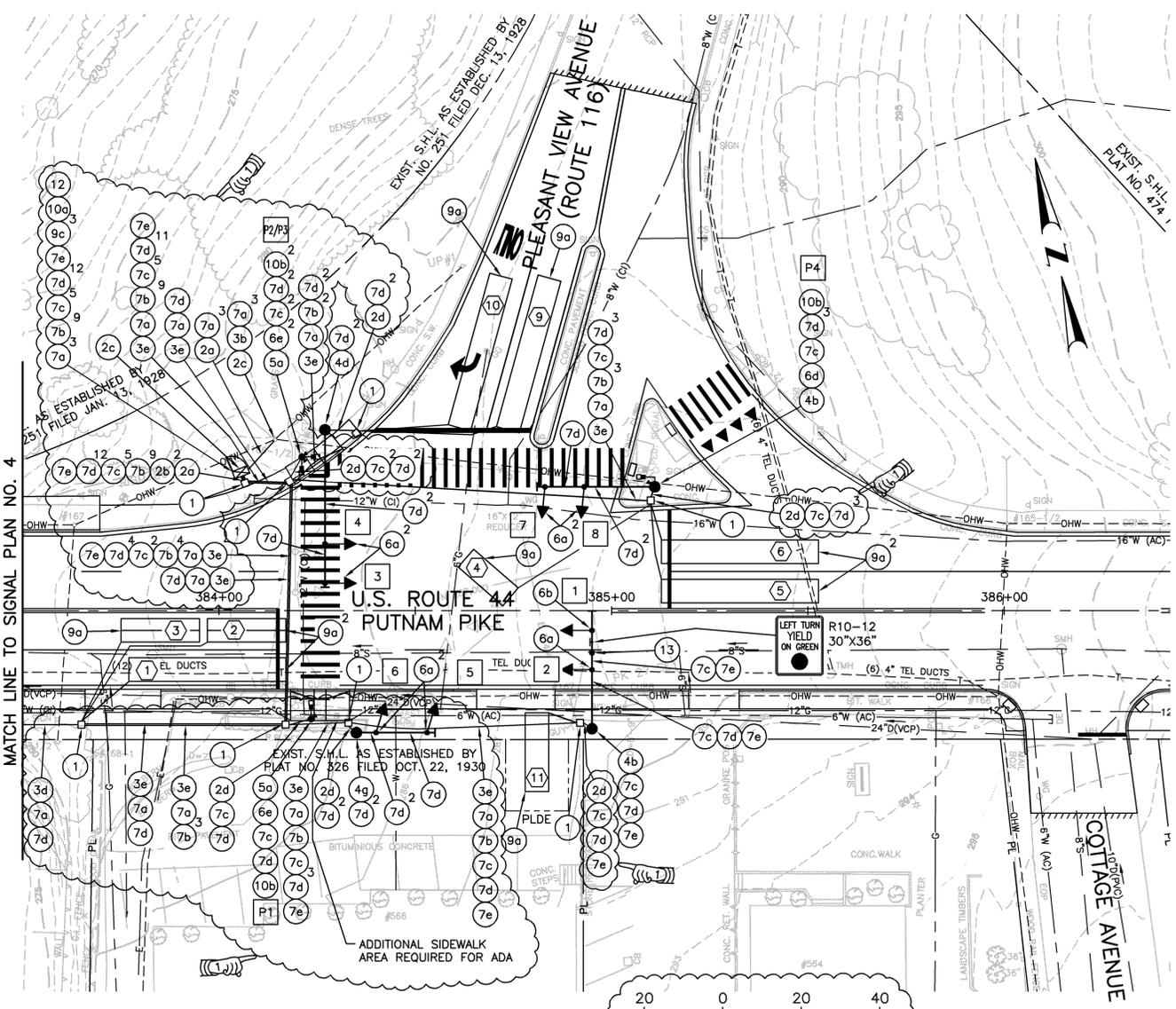
DETECTOR NO.	SIZE	RELAY NUMBER	SLOT	DELAY (SEC.)	CALL PHASE	EXTEND PHASE	REMARKS
1	6'x40'	1	2	3	2		
2	6'x20'	1	2	3	1		QUADRUPOLE
3	6'x20'	1	2	3	2	2	QUADRUPOLE
4	6'x15'	1	2	15	---	1	CUT-OFF
5	6'x40'	2	4	3	2		
6	6'x40'	2	4	3	2		
8	6'x40'	3	6	5	3		
10	6'x40'	3	6	8	3		
11	6'x20'	3	6	8	3		

POLE AND SIGNAL HEAD LOCATION DIAGRAM

SIGNAL STRUCTURE NO.	STATION AND OFFSET	A	B
1	384+27, 46' LT	29'	10'
2	384+35, 31' RT	5'	13'
3	384+95, 30' RT	15'	10'
4	385+11, 32' LT	18'	10'
P1	384+24, 28' RT		
P2/P3	384+21, 39' LT		

CONSTRUCTION NOTES:

- EXISTING TRAFFIC SIGNAL SYSTEM TO BE REMOVED AND SALVAGED INCLUDING (2) TRAFFIC SIGNAL MAST ARMS (2) PEDESTAL POLES (7) TRAFFIC SIGNAL HEADS (4) PEDESTRIAN SIGNAL HEADS (1) TRAFFIC SIGNAL CONTROLLER & CABINET (5) HANDHOLES MISC. CABLE AND WIRING
- ALL RED, YELLOW, AND GREEN SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.
- BACKPLATES SHALL BE PROVIDED ON ALL SIGNAL HEADS.
- CONFIRMATION BEACON SHALL BE A CLEAR LENS WHELEN IS3 SERIES MODEL OR APPROVED EQUAL.
- THE CONTRACTOR SHALL INCLUDE A SURVEYED CROSS SECTION OF EACH PROPOSED MAST ARM LOCATION AS PART OF THE SHOP DRAWING SUBMISSION. CROSS SECTIONS SHALL INCLUDE PROPOSED SIGNALS, EXISTING OVERHEAD UTILITY LINE LOCATIONS AND ELEVATION.
- THE EXISTING 6" WATER MAIN ALONG THE SOUTH SIDE OF PUTNAM PIKE IS TO BE RELOCATED PRIOR TO THE SIGNAL WORK. SEE DRAINAGE AND UTILITY PLAN No. 3.



CE&C #97061.03

ADDENDUM No. 1



REVISIONS		
NO.	DATE	BY
1	9/6/12	MDL

**RHODE ISLAND
DEPARTMENT OF TRANSPORTATION**

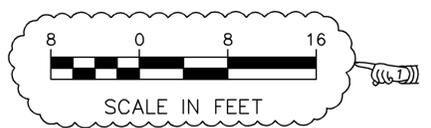
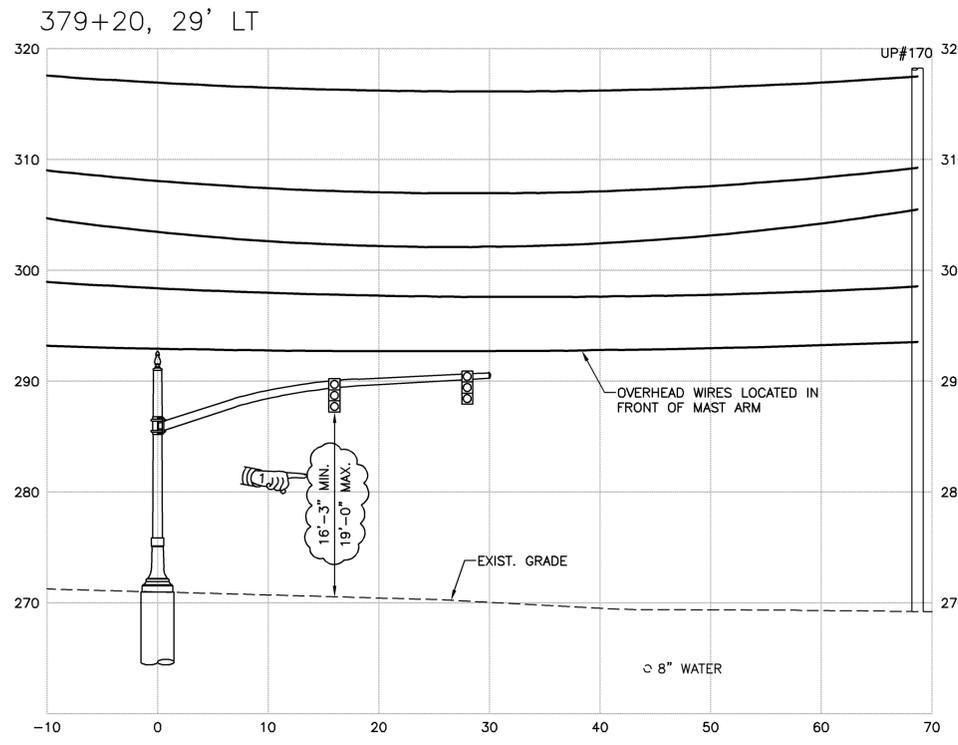
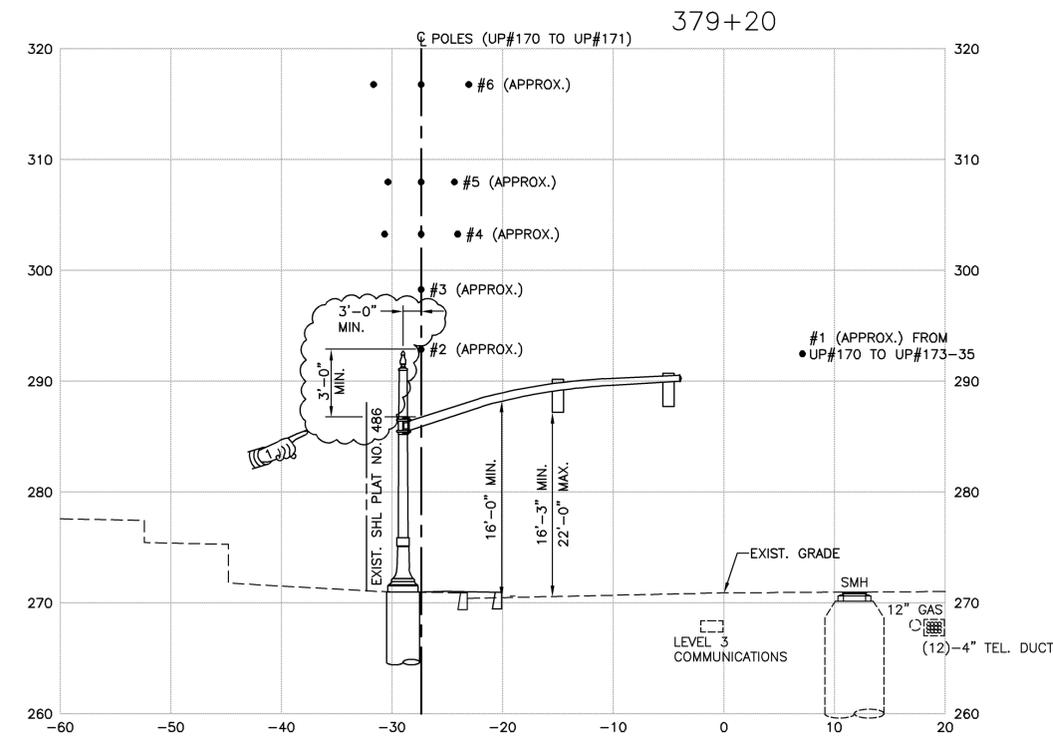
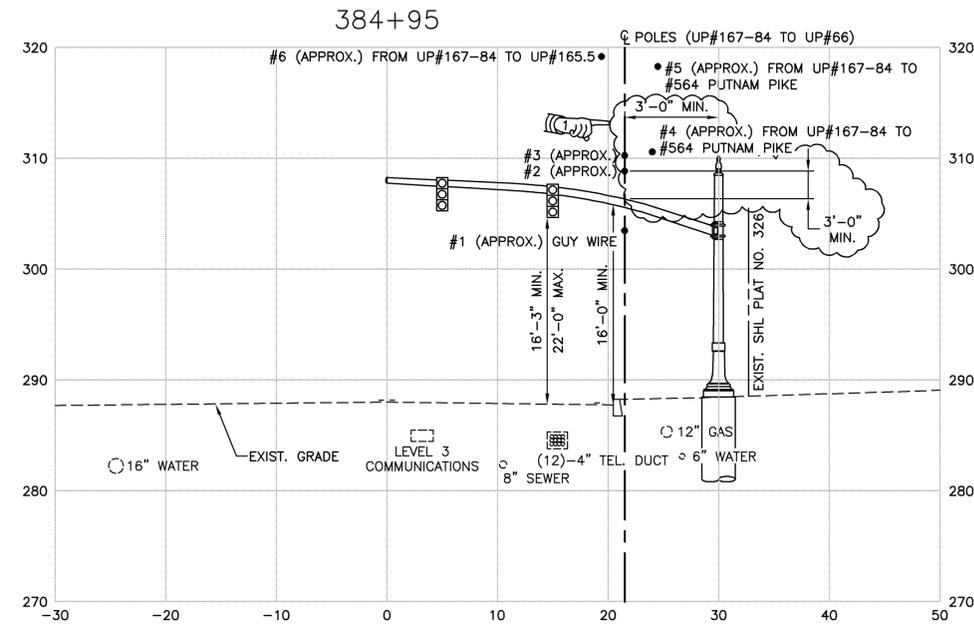
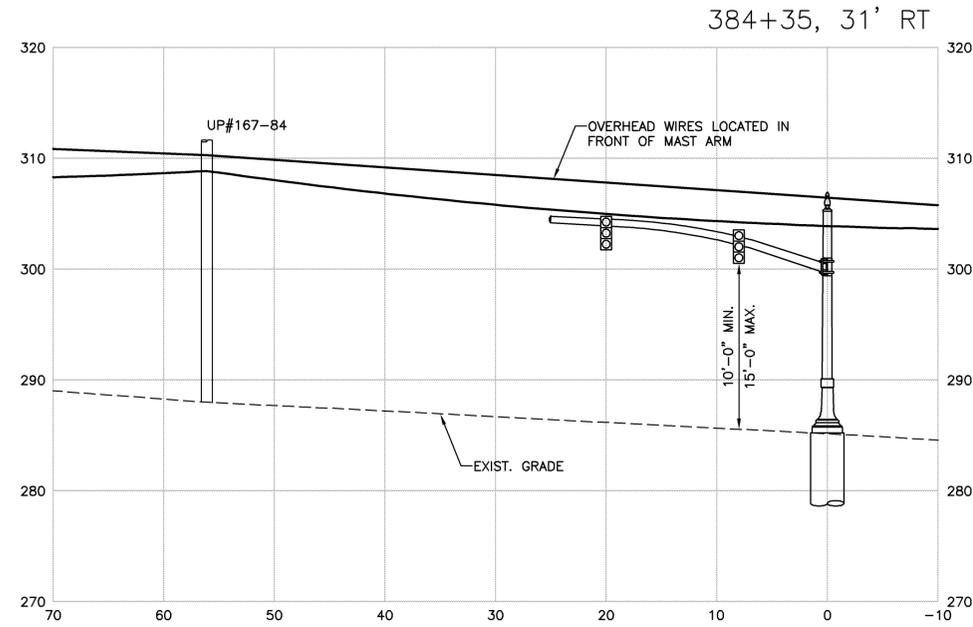
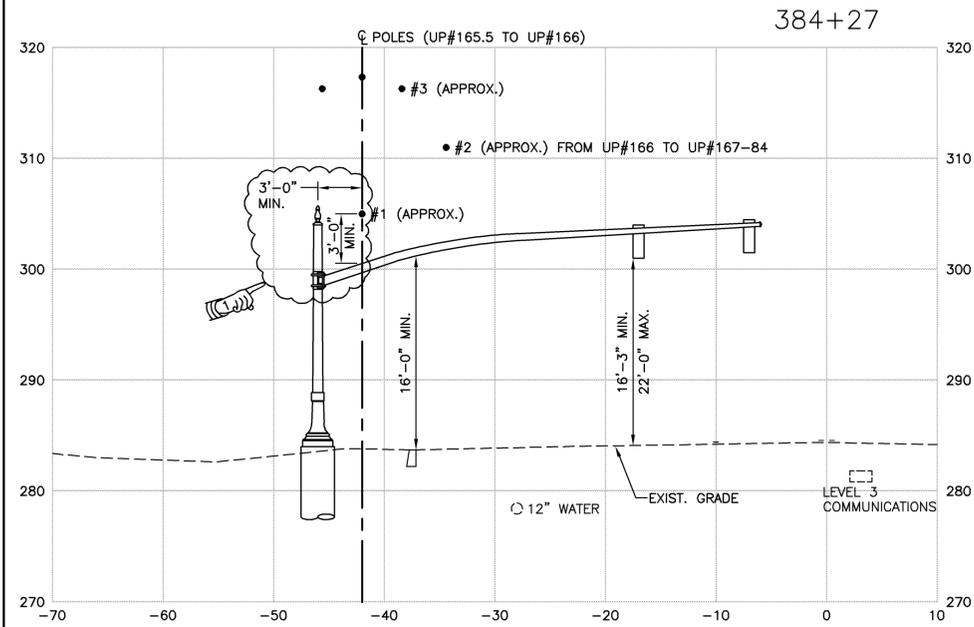
1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
FROM AUSTIN AVENUE TO DANECROFT AVENUE

SMITHFIELD, RHODE ISLAND

SIGNAL PLAN NO. 5
PLEASANT VIEW AVENUE & PUTNAM PIKE
SIGNAL NO. 225

CHECKED BY _____ DATE _____ SCALE 1"=20'

ITEM NO.	LEGEND	ITEM DESCRIPTION	R-1
1	□	PRECAST TYPE A HANDHOLE, STD. 18.2.0	
1c	○	BREAK INTO EXISTING HANDHOLE	
2a	—	2 INCH RIGID STEEL CONDUIT-UNDERGROUND	
2b	—	3 INCH RIGID STEEL CONDUIT-UNDERGROUND	
2c	—	2 INCH RIGID STEEL CONDUIT-OVERHEAD	
2d	—	3 INCH RIGID STEEL CONDUIT-UNDER EXISTING PAVEMENT	
3b	—	2 INCH POLYVINYL CHLORIDE PLASTIC CONDUIT-OVERHEAD	
3c	—	2 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3d	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDERGROUND	
3e	—	3 INCH SCHEDULE 80 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
3f	—	3 INCH SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC CONDUIT UNDER EXISTING PAVEMENT	
4a	●	25 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4b	●	30 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4c	●	35 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4d	●	40 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4e	●	50 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4f	●	25x30 ORNAMENTAL DUAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
4g	●	20 FOOT ORNAMENTAL MAST ARM TRAFFIC SIGNAL POST, BASE AND FOUNDATION	
5a	●	8 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
5b	●	10 FOOT, ORNAMENTAL PEDESTAL POLE, BASE AND FOUNDATION	
6a	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH	
6b	←	1-WAY 4-SECTION MAST ARM MOUNTED SIGNAL HEAD, 12 INCH WITH DUAL IND. LED ARROW	
6c	←	1-WAY 3-SECTION PEDESTAL MOUNTED SIGNAL HEAD, 12 INCH	
6d	←	1-WAY BRACKET MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6e	←	1-WAY PEDESTAL MOUNTED L.E.D. PEDESTRIAN SIGNAL HEAD, 12 INCH	
6f	←	1-WAY 3-SECTION MAST ARM MOUNTED SIGNAL HEAD, (2) 12 INCH SECTIONS, (1) 8 INCH SECTION	
7a	—	6 AWG SINGLE CONDUCTOR CABLE 600V INSULATION	
7b	—	14 AWG 2 CONDUCTOR TWISTED SHIELDED CABLE	
7c	—	14 AWG 3 CONDUCTOR CABLE	
7d	—	14 AWG 5 CONDUCTOR CABLE	
7e	—	14 AWG 7 CONDUCTOR CABLE	
8a	—	SPAN AND MESSENGER WIRES 6/16	
9a	□	TRAFFIC DETECTORS - LOOP, STD. 19.6.0	
9c	□	TRAFFIC DETECTOR RELAYS - LOOP 4 CHANNEL	
10a	□	ACTUATED CONTROLLER, TS-2, TYPE 1 W/GPS AND 8 PHASE ASSEMBLY GROUND MOUNTED, INCLUDING TS-2, TYPE 1 CABINET AND FOUNDATION STD. 19.1.0	
10b	□	PEDESTRIAN DETECTOR - PUSHBUTTON WITH SIGN	
10c	□	FIRE PRE-EMPTION CONTROL SYSTEM	
10d	□	GPS TIME SYNCHRONIZATION SYSTEM	
10e	□	FLASHING SCHOOL ZONE SIGN ASSEMBLY	
10f	□	MODIFY TRAFFIC SIGNAL CONTROLLER AND CABINET	
11a	□	REMOVE AND SALVAGE TRAFFIC SIGNAL SYSTEM EQUIPMENT	
11b	□	REMOVE AND SALVAGE FLASHING SCHOOL SPEED LIMIT SIGN AND EQUIPMENT	
12	□	METER SOCKET W/ MANUAL BY-PASS	
13	●	CONFIRMATION BEACON	



- CONSTRUCTION NOTES:**
- CONTRACTOR SHALL REFER TO RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD DETAILS 19.2.0 AND 19.4.0 FOR MAST ARM AND PEDESTAL POLE INSTALLATION.
 - THE CONTRACTOR SHALL INCLUDE A SURVEYED CROSS SECTION OF EACH PROPOSED MAST ARM LOCATION AS PART OF THE SHOP DRAWING SUBMISSION. CROSS SECTIONS SHALL INCLUDE PROPOSED SIGNALS, EXISTING OVERHEAD UTILITY LINE LOCATIONS AND ELEVATION.

REVISIONS		
NO.	DATE	BY
1	9/6/12	MDL

RHODE ISLAND
DEPARTMENT OF TRANSPORTATION

1R HIGHWAY IMPROVEMENTS TO
U.S. ROUTE 44 (PUTNAM PIKE)
FROM AUSTIN AVENUE TO DANECROFT AVENUE

SMITHFIELD, RHODE ISLAND

TRAFFIC SIGNAL MAST ARM
CROSS SECTIONS

CHECKED BY _____ DATE _____ SCALE 1" = 8'

