COMPILATION OF APPROVED SPECIFICATIONS

RHODE ISLAND DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

REVISIONS
SUPPLEMENTAL SPECIFICATIONS
SPECIAL PROVISIONS

SUPPLEMENT NO. 16

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Replace **Subsection 109.04; Measurement and Payment – Differing Site Conditions, Changes, Extra Work and Force Account Work**, pages 1-80 to 1-82 of the RI Standard Specifications for Road and Bridge Construction (Amended August 2013) in its entirety with the following.

SECTION 109

MEASUREMENT AND PAYMENT

109.04 DIFFERING SITE CONDITIONS, CHANGES, EXTRA WORK AND FORCE ACCOUNT WORK.

a. Methods of Payment. Differing site conditions, changes, extra work, and significant changes in the character of the work, all performed in accordance with **SECTION 104; SCOPE OF WORK**, will be paid for in accordance with the following methods as appropriate:

1. Contract unit prices.

2. Unit prices agreed upon in the order authorizing the work.

3. An agreed upon lump sum amount.

4. If directed by the Department, on a Force Account Basis to be compensated in the following manner:

(a) Labor. For all labor and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage actually paid as shown by its certified payroll, which rate shall be at least the prevailing rate of wage (or scale), for each and every hour that said labor and foremen are actually engaged in the work.

No part of the salary or expenses of anyone connected with the Contractor's forces above the grade of foreman, and having general supervision of the work, shall be included in the labor item as specified above.

The Engineer reserves the right to determine the number and type of labor employed.

The Contractor shall receive the actual costs paid to, or in behalf of, workers by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work.

An amount equal to 20 percent of the sum of the above items will also be paid the Contractor.

(b) Bond, Insurance and Tax. For bonds, property damage and liability insurance premiums, unemployment insurance contributions, and social security taxes incurred on force account work, the Contractor shall receive the actual cost, to which cost a surcharge of 6-percent will be added. For Worker's Compensation Insurance Premiums, the Contractor shall receive the actual cost of the worker's compensation costs incurred, which shall be calculated net of all applicable credits, rebates, refunds and

allowances. A surcharge will be added to the actual costs incurred. The surcharge amount is calculated from the Experience Modification Factor (MOD Factor) as follows:

1. For MOD factors greater than 1.0 the surcharge is 6%
2. For MOD factors greater than .80 and less than or equal to 1.0 the surcharge is 8%.
3. For MOD factors less than or equal to .80 the surcharge is 10%.

The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bonds, insurances and taxes. In addition, the Contractor shall submit a copy of their Worker's Compensation policy showing the current MOD factors.

(c) Materials. For materials accepted by the Engineer and used in the work, the Contractor shall receive the actual cost of such materials delivered to the site, including transportation charges paid (exclusive of machinery rentals as hereinafter set forth), to which cost a surcharge of 15 percent will be added. The Contractor will not be reimbursed for any penalty or carrying charge incurred due to late or delayed payment for materials used in the work.

(d) Equipment. For any machinery or special equipment (other than small tools) including transportation cost, the use of which has been authorized by the Engineer, the Contractor shall receive either the "hourly rental rates" as prescribed herein by the Department, or the actual documented cost plus an amount equal to 10 percent of said actual documented cost, whichever is less. Under no circumstance will the payment exceed the replacement cost of the equipment.

All rental rates shall include the estimated operating cost as indicated for that equipment in either the Rental Rate Blue Book or the Rental Rate Blue Book for Older Equipment, including the Rate Adjustment Tables approved for projects wholly or partially funded by the Federal Highway Administration (FHWA). Operators' wages are not included in the estimated operating cost and are paid separately, except for certain specified equipment in which the operator's wages are included.

The "hourly rental rate" for an individual piece of equipment shall be determined by dividing the associated monthly rate, modified by the Rate Adjustment Tables, as contained in the Rental Rate Blue Book by one hundred seventy-six (176). There will be no adjustment to the hourly rate for the period of use.

For rented equipment, the cost shall be based on the actual documented cost plus an amount equal to 10-percent of said actual documented cost, subject to the conditions set forth below. The actual documented cost shall consist of the paid invoice for rented equipment plus other documented operating costs (i.e. fuel, maintenance, repairs, etc.).

Actual documented costs plus 10 percent of said costs shall not exceed the cost as calculated from the RENTAL RATE BLUE BOOK or the RENTAL RATE BLUE BOOK FOR OLDER CONSTRUCTION EQUIPMENT. The Contractor shall submit documentation for both the hourly rental rates and actual documented costs to determine that the actual documented costs plus 10 percent of said costs does not exceed the calculated rental rate costs. No percentage surcharges will be added to the "Blue Book" rates as prescribed herein for rented equipment.

For equipment which is already on the project, the rental period shall start when such equipment is ordered to work by the Engineer, and shall continue until ordered to stop work.

For equipment which has to be brought to the project specifically for use on force account work, the State will pay all loading and unloading costs, and all transportation costs to and from the project, including assembling and dismantling, provided, however, that the cost of return transportation shall not exceed that of moving the equipment to the project. Loading, unloading and transportation costs will not be paid if the equipment is used for work other than force account work while on the project. The rental period shall start at the time the equipment is ready for operation, and shall extend during the period of time the equipment is actually utilized on force account work. The rental period shall end when the equipment is released by the Engineer.

All equipment, including trucks, shall, in the judgment of the Engineer, be in good working condition and suitable for the purpose intended. The Engineer reserves the right to determine the number of units of the various types of equipment to be employed on force account work. The manufacturer's model identification shall be the basis for identifying the type of equipment for payment purposes. Certification for the model year of the equipment will be required.

(e) Subcontracting. For work performed by a subcontractor, the Contractor shall accept as full payment an amount equal to the actual cost to the Contractor of such work performed by the subcontractor, as determined by the Engineer, plus 10 percent of said cost.

(f) Miscellaneous. No payment will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(g) Compensation. The Contractor's representative and the Engineer shall daily compare records of work completed on a force account basis. The Engineer will then prepare the daily work sheets and said sheets shall be signed by the Contractor's representative no later than noon of the next working day.

(h) Statements. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with six copies of itemized statements of the cost of such work, incurred on a daily basis, and detailed as follows:

(1) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(3) Quantities of materials, prices, and extensions.

(4) Transportation of materials.

(5) Cost of property damage, liability and worker's compensation insurance premiums, unemployment insurance contributions, and social security taxes.

Statements shall be accompanied and supported by certified payrolls, and receipted invoices for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices, the Contractor shall furnish an affidavit certifying that such materials were taken from its stock,

that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

Add the following new **Section 842; Ant-Graffiti Coating** to the RI Standard Specifications for Road and Bridge Construction (Amended August 2013).

SECTION 842

ANTI-GRAFFITI COATING

842.01 DESCRIPTION. This item of work consists of furnishing and installing an anti-graffiti coating system on exterior exposed surfaces of all material types as designated on the Contract Drawings, elsewhere in the Contract Documents and/or as directed by the Engineer, all in accordance with these Specifications.

842.02 MATERIALS.

Anti-Graffiti System. The system shall be as specified in **Section M.19**.

842.03 CONSTRUCTION METHODS.

842.03.1 Submittals. The Contractor shall submit to the Engineer for approval, the manufacturer's specifications, which shall include product data sheets for installation requirements, application procedures and coverage rates, and the applicator's qualifications. Upon approval of the Engineer, manufacturer's specifications do thereby become a part of this Specification and shall be used as the basis for approval or rejection of the work carried out in this Section.

The Contractor shall provide documentation of quantities of each product used in the work. This information is required as a pre-requisite to job acceptance and final payment.

842.03.2 Quality/Process Control. The application shall be performed in strict conformance with the manufacturer's specifications. At no time shall the number of coats and coverage rates be less than those recommended in the manufacturer's technical data sheets. The Contractor shall submit evidence of the applicator's qualifications and experience for the Engineer's review and approval prior to commencing work.

The manufacturer shall be available to make recommendations specific to the project, substrate, coating appearance and cleaning options.

842.03.3 Anti-Graffiti Coating.

a. Surface Preparation. All substrates to receive the coating shall be structurally sound, dry, clean and free of paint not specified to remain, dust, dirt, grime, oils, scale, rust, silicones, curing compounds, alkali, acid residues or any other material that may act to inhibit bond.

Surface preparation and application of subsequent coats for all substrates shall be in strict accordance with the manufacturer's specifications. In addition, the product shall not be applied to surfaces below 45 degrees F or above 90 degrees F.

In addition, the following shall apply:

1. New concrete masonry and cement plaster to receive the system shall be cured as per the manufacturer's specifications, but no less than a minimum of thirty (30) days.

2. The moisture content of all bare masonry surfaces to receive the system, as indicated on a calibrated moisture meter, shall not exceed the manufacturer's maximum allowable percentage or shall be no higher than 15% if no manufacturer guidance is given.

b. Application. The Contractor shall follow the manufacturer's current instructions for application at all times and allow the coating to cure before applying subsequent coats so as to achieve a uniform and continuous coating free of pinholes and holidays.

c. Cleanup and Protection. The Contractor shall remove discarded coating materials, rubbish, cans, and rags at end of each workday. All such materials shall be disposed of properly, in accordance with all local, state and federal laws.

The Contractor shall protect all adjacent areas not to be coated, against damage by the coating and finish work. The Contractor shall correct all damage it causes by cleaning, repairing or replacing, and recoating, as is acceptable to the Engineer, at no additional cost to the State.

842.04 METHOD OF MEASUREMENT.

842.04.1 Anti-Graffiti Coating. This item will be measured for payment under Item "ANTI-GRAFFITI COATING" by the "Square Foot" of anti-graffiti coating actually applied in accordance with the Contract Documents and/or as directed by the Engineer.

842.05 BASIS OF PAYMENT.

842.05.1 Anti-Graffiti Coating. The accepted quantity of "ANTI-GRAFFITI COATING" will be paid for at its respective contract unit price per "Square Foot" as listed in the Proposal. The price so stated shall constitute full and complete compensation for all labor, materials, tools and equipment, and all incidentals required to complete the work as described in this Specification and elsewhere in the Contract Documents, complete in place and accepted by the Engineer.

Remove **Section 934; Field Control and Construction Layout**, pages AC-118 through AC-122 of the January 2011 Compilation of Approved Specifications and 9-66 through 9-68 of the RI Standard Specifications for Road and Bridge Construction (Amended August 2013) in its entirety and replace it with the following.

SECTION 934

FIELD CONTROL AND CONSTRUCTION LAYOUT

934.01 DESCRIPTION. This work consists of establishing, on the ground, all required Field Control and Construction Layout. Project Field Control and Layout is defined as accurately providing all necessary computations, stakes and marks required to establish lines, slopes, elevations, points, and continuous profile grades in order to perform all the required work for the project in accordance with the Contract requirements. Field Control and Layout is required to enable the Engineer to complete all necessary inspection, checks, verification of quantities and Contract Administration duties. The staking shall include, but not be limited to, clearing and grubbing, grading, drainage, culverts, embankments, borrow, aggregate base course, pavements, bridges, utilities, signs, pavement markings, erosion control, and turf establishment items to complete the project as represented in the plans. The Surveying must be done in a way that is timely, and that is reflective of the continuing and ongoing nature of construction and inspection activities which will generally require frequent, separate project visits by the Contractor's survey crew, to the project to accommodate the various stages of construction and inspection activities that will occur. Field Control shall also include all survey required to accurately generate standard cross sections, measure quantities, layout for utility companies, and generate as-built drawings.

934.02 MATERIALS. All survey wedges and survey stakes shall be of seasoned oak and free of knots. Survey wedges used for control staking shall be 1-¾" x 1-¾" and 18-inches in length. For slope limits, pavement edges, gutter lines, etc., the use of survey stakes shall be acceptable and shall be 1" x 1" and 4'-0" in length.

934.03 CONSTRUCTION LAYOUT

934.03.1 General Responsibilities. It is the responsibility of the Contractor to establish field control and to lay out the work which is proposed within the Contract. The Engineer will furnish the Contractor with basic field control and survey data for all projects except for resurfacing projects, as basic field control is not necessary to perform the work on these projects.

934.03.02 Department's Responsibility. The Engineer will furnish the Contractor with basic field control and survey data for all projects, except resurfacing projects, upon Contract Award. This shall include confirming and re-establishing control, in the field. The basic field control will include control points, benchmarks, survey data files, survey plan sheets, and other data, which may be required for the Contractor to perform construction staking, layout, and maintenance of the basic field control.

Survey work may be monitored by the Engineer for conformance to standard survey practices. The Engineer shall be notified, by the Contractor, 24 hours prior to any survey work being performed in the field. The Engineer/Surveyor may check the control of the work, as established by the Contractor, at any time as the work progresses.

At the discretion of the Engineer, spot checks may be performed upon the Contractor's surveying calculations, records, field procedures, or actual staking. If the Engineer determines that the work is not being performed in a manner that will assure proper controls and accuracy, the Engineer will direct the

Contractor to redo such work to the standards specified in the contract at no additional cost to the State. Also, should the Department sustain costs checking and/or correcting Contractor survey and resultant product caused by Contractor survey errors and/or omissions, the Engineer will deduct those related actual costs incurred by the Department from any payments owed the Contractor.

934.03.3 Contractor's Responsibilities. The Contractor shall be responsible, at a minimum, for the following:

a. Pre-Construction Surveys shall be submitted to the Department five (5) working days prior to the commencement of any clearing and grubbing, or earthwork. These surveys shall accurately record the existing conditions of areas where work is proposed. Pre-Construction Surveys shall be submitted to the Engineer electronically in both CADD and survey data files.

Pre-construction surveys shall accurately record the existing conditions, as identified in the Contract Documents, and areas where work (disturbance) is proposed. This shall include original grades; curb line and grades, sanitary and drainage structures and inverts; easements; visible utility locations; etc.

The Contractor shall notify the Engineer, in writing, of any discrepancies between the Design Plans and their pre-construction survey. The Contractor shall not disturb the areas in question, until the Engineer responds to the Contractor’s notification. The Engineer will respond to Contractor within five (5) working days. Furthermore, should the Contractor fail to comply with these requirements, all time, rework and delay costs associated with survey inaccuracies shall be borne solely by the Contractor; no additional payment will be allowed.

b. Construction stakes shall be set for all project construction, and shall be installed as reference points, as needed, for the use of any public utility crews that are staking or accomplishing utility relocations, or construction associated with this contract. References to staking, additional or replacement thereof, which may be required for the construction operations shall be furnished, set and properly referenced by the Contractor. Construction stakes shall be clearly labeled by referencing station, offset, and purpose. The intent of the labeling is so both the Contractor and Engineer may accurately interpret the field control. In particular, the Department’s personnel need to be able to orientate themselves in the field based on the staking to confirm construction operations are in conformance with design plans and specifications.

c. Re-staking shall be performed, as needed, due to progressive change in operation including, but not limited to:

1. Identification of Limits

2. Staking for Excavation

3. Staking for Grading

4. Staking for new Drainage and Utilities including center of proposed structures and elevation.

5. Staking for curbing and final pavement

6. Staking of easements

d. Structures and Bridges construction staking which includes setting and reestablishing Working Points and Reference Points by XYZ coordinates to provide line and grade during all stages of work, and at all substructures and segments of Bridge or Structure Construction, as shown below:

1. Establish Working Points or Reference Points, approved by the Engineer, on the ground as shown on the Bridge Layout sheet in the Plans.

2. Transfer of required points from the ground to the top of footing after the completion of concrete footing construction. If the structure is a curved wall or bridge edge of slab, curb, coping, median, or railing, the Contractor's Surveyor shall mark a curved line on the footings, forms, or deck slab, to the proper degree of curvature within 1/8" in ten (10) feet, as needed for construction and inspection activities.

3. Transfer required points to the top of all finished structures.

4. Transfer required points to the superstructure deck forming.

5. Measurements and marks for plumbness are also required.

e. Establish and Protect adequate ties to all control points such that they can be conveniently re-established if disturbed or destroyed. This includes the preservation of all reference points, monuments, horizontal and vertical control points, stakes, and marks that are established by the Department or their representatives, within the project limits. If the Contractor or its surveyor fails to preserve these items and if they must be reestablished it will be the responsibility of the Contractor to do so at no additional cost to the State.

f. A Rhode Island Registered Land Surveyor (RLS) shall be retained by the Contractor to be responsible for all survey work; which shall be performed in accordance with the Department's procedures and the procedures established by the "Procedural and Technical Standards for the Practice of Land Surveying in the State of Rhode Island and Providence Plantations" prepared by the Rhode Island Society of Professional Land Surveyors and adopted by the Rhode Island Board of Registration for Professional Land Surveyors. The Contractor shall submit to the Engineer for approval the RLS who will be responsible for the survey work on the project. The Engineer will review the qualifications of the RLS and respond, in writing, to the Contractor within five days as to the acceptance of the candidate. The Contractor must notify the Engineer prior to any changes to the RLS in charge. While all work must be overseen by an RLS, the survey Party Chief shall also be an RLS.

Any surveying or measurements necessary for the computing of pay quantities shall be performed by the Contractor's RLS in the field. The Contractor shall notify the Engineer at least five (5) working days prior to disturbing any areas where survey will be used to calculate pay quantities. Additionally, the Contractor shall afford the Department five (5) working days for verification, upon receipt, of cross sections stamped by the RLS. Where the Department deems it necessary and appropriate to check the Contractor's quantity-related field survey data, the Contractor shall not perform any operations during the five (5) day period that may render Department's efforts to check the Contractor's survey ineffective.

The final monumentation of the project must be supervised by the Contractor's RLS.

g. Field Records shall be maintained by the Contractor in Department approved field books. Copies of field book pages, survey documentation and calculations shall be submitted to the Engineer, in a form acceptable to the Department, on a daily basis. Upon completion of the construction work, original

field books and records shall be submitted to the Department. The copies shall be submitted in both hard copy and electronic files (Adobe PDF format, latest edition on approved DVD media).

The survey documentation shall include:

1. Control station monumentation with reference ties.

2. Field notes that were used to set construction stakes, control the Project, and document monument locations. The Contractor shall use bound, hard cover field books for recording survey data and field notes, and/or store field notes on an electronic medium. If an electronic medium is used, the raw field data files must be made available, and the Contractor shall make all files and data available in the Standard formats used by the Department.

h. As-Built surveys shall be performed and drawings submitted to the Engineer to document all changes to the proposed Contract work. The Contractor shall provide the Engineer with the as-built data in both hard copy reproducible material and electronic files. This data shall be provided to the Engineer as changes/additions occur. The Engineer may request verification of any and all survey data. The Contractor shall be responsible for submitting this data within five (5) working days of the request. The as-built data shall include the following:

1. Construction changes/additions in alignment, profiles, typical sections, structures, drainage, tapers, roadway widths, utilities, and curb types pertaining to location and elevation, on the copy of the appropriate construction Plans.

2. Revised coordinates for any of the above items.

3. Revisions in centerline station and offset.

4. Pile cut-off elevations.

5. Bearing elevations.

i. Miscellaneous.

1. The Engineer's acceptance of all or any part of the Contractor's layouts shall not relieve the Contractor of responsibility to secure proper dimensions for the completed work.

2. The Contractor shall bear all costs, including but not limited to the cost of actual reconstruction of contract work, that may be incurred due to errors in the Contractor's field control and construction layout.

3. No claims for extensions of time or additional costs associated with delays as the result of this work will be allowed.

When required, the Engineer will, in writing, direct the Contractor to make the necessary minor surveying and staking adjustments to suit actual field conditions. In addition, some Plan details may be dependent upon actual field conditions at the time of construction. It may be necessary to perform some field survey and/or office computations in order to stake these components.

All level runs, traverses, or GPS control surveys, shall start and end from known control. Complete all control surveys in accordance with "Procedural and Technical Standards for the Practice of Land Surveying in the State of Rhode Island and Providence Plantations".

934.04 METHOD OF MEASUREMENT. The field control and construction layout work is deemed incidental to the contract and will not be measured for payment. The incidental survey and survey-related work shall include, but not be limited to, all on-site field work as well as on-site and off-site office work such as calculations, sketches, drawings, tabulations, correspondence, research and any other tasks required to complete the work to the satisfaction of the Engineer. Re-work, including re-staking, performed for any and all reasons, is deemed incidental and will not be measured for payment.

a. Measurement for Extra Work. Survey work performed outside the scope of the original contract at the direction of the Engineer will be deemed Extra Work, and will be documented and paid for on a Force Account basis as set forth in **Subsection 934.05.**

934.05 BASIS OF PAYMENT. The field control and construction layout work will not be paid for separately, but shall be included in the bid for the items of work to which the layout is incidental, including all labor, materials and equipment, transportation of crews, surveying supplies and all incidentals required to finish the work, complete and accepted by the Engineer.

a. Payment for Extra Work. When the Engineer determines that extra construction surveying beyond the scope of the original contract is required, such work will be paid for on a Force Account basis as set forth in **Subsection 109.04; Differing Site Conditions, Changes, Extra Work and Force Account Work**; Para. a(4) of these Specifications.

Add the following new **Section 944; Diesel Emissions Reduction Program** to the RI Standard Specifications for Road and Bridge Construction (Amended August 2013).

SECTION 944

DIESEL EMISSIONS REDUCTION PROGRAM

944.01 DESCRIPTION. The work under this item requires that the Contractor, subcontractor, and lower tier subcontractor(s) hired by such subcontractor, to comply with Chapter 31-47.3 of the Rhode Island General Laws entitled, "The Diesel Emissions Reduction Act". It is the Contractor's responsibility to both coordinate and ensure the compliance of all subcontractors and to retain an emissions technology installer to retrofit certain emissions devices on the equipment owned by the Contractor, sub-contractor and lower tier subcontractor(s) hired by such subcontractor. Equipment is defined as any heavy duty vehicle or vehicle, on-road or nonroad powered by diesel fuel and having a gross vehicle weight of greater than fourteen thousand (14,000) pounds, or in the case of a nonroad vehicle, powered by diesel fuel and an engine with a rating of at least seventy-five (75) horse power, including, but not limited to non-stationary generators and pumps.

The work also includes program participation and contract-wide coordination by the Contractor and its personnel. All equipment on the project that are used in excess of 30 work days total shall be subject to this reduction of diesel emissions program. The Rhode Island General Law noted above shall take precedent in the case of any discrepancies between these specifications and the above noted Rhode Island General Law.

944.02 APPLICABLE LAWS AND REGULATIONS.

All motor vehicles and construction equipment (both on-road and non-road) shall comply with all applicable Federal, State and local laws and regulations relative to exhaust controls and safety including, Chapter 31-47.3 of the Rhode Island General Laws titled "The Diesel Emissions Reduction Act".

944.03 CONSTRUCTION METHODS.

944.03.1 Inventory List.

1. The Contractor shall submit to the Engineer an inventory list of all equipment as defined in this specification that will be used on the project in excess of 30 work days total. Construction shall not proceed until the Contractor submits this equipment list. The inventory list shall include:

a. Contractor or subcontractor name/address/contact person;

b. Equipment/Vehicle type, model, serial number;

c. Engine serial number, make, model, engine family number, year of manufacture, horsepower, average hours, average operating RPM's, muffler model number;

d. Vehicle ID/VIN number, license plate number, other ID number(e.g. fleet truck number), average annual miles;

e. Exemptions to this inventory list are equipment that are only used to deliver equipment or material to and from the project site and standby generators and pumps.

2. Submittal of the Contractor's installer from the State Clean Diesel Grant Program – Master Price Agreement vendor list.

944.03.2 Requirements.

1. General.

a. The Contractor shall establish staging zones, provided that such space is available at no extra cost, for diesel equipment away from the general public or sensitive receptors such as, but not limited to, hospitals, schools, and residential neighborhoods, in order to minimize the impact from idling equipment.

b. Idling of diesel engines shall be limited to no more than five (5) minutes, except in cases where engines must idle to perform normal operations, as with a concrete truck.

c. Equipment shall use only ultra-low sulfur diesel fuels.

2. Pre-Retrofit Installation.

a. The "Statement of Intent to Comply", located on page 6 of this specification must be signed and submitted within 5 days after the notification to the apparent low bidder who shall become the Contractor.

b. The Contractor shall submit all necessary lists and documentation for the Program.

c. Equipment meeting the eligibility requirements shall be operated by engines or retrofitted with properly operating and maintained Level 3 controls. However, if the Rhode Island Department of Environmental Management (RIDEM) finds that no Level 3 verified emission control devices have been verified but are otherwise appropriate for use on particular engines, Level 2 verified devices shall be required. If neither Level 3 nor Level 2 devices have been verified but are otherwise appropriate for use on particular engines, Level 1 verified devices shall be required.

3. Installation of Retrofit Device.

a. The Contractor shall retain an approved installer from the State Clean Diesel Grant Program – Master Price Agreement vendor list. The Installer shall retrofit the emission device to the designated equipment.

b. Opacity testing, or other approved means, is required to determine the "disproportionately" polluting equipment, as defined in the above noted General Law.

c. Acceptable Diesel Retrofit technologies/devices for the Contract shall be included either on the US Environmental Protection Agency (EPA) or California Air Resources Board (CARB) Verified Retrofit Technology List. Thorough and adequate testing procedures are required to ensure that the maximum feasible diesel particulate matter emissions reductions are achieved.

4. Post-Retrofit Installation.

a. After the devices have been installed, the Contractor shall document the technology type, EPA/CARB verification number/control Level, manufacturer, make, model, serial number of the retrofit

device, and the date the retrofit was installed, which shall be reported monthly to the Engineer in accordance with Section 5, Program Documentation and Logs. This documentation will be used as evidence that the equipment has been retrofitted in order to satisfy the requirements of the Rhode Island General Law noted above. This documentation may also be used as evidence should the equipment be eligible to continue to be used on this project, or any future RIDOT project or other public project.

b. Equipment on the inventory list that are to be used in this Contract that are not already retrofitted or do not have a retrofit device on order shall not be used on the project site until such time that at least one of these two requirements are met. Non-compliant equipment for which a retrofit has been ordered may operate on site for a maximum of thirty (30) work days.

c. Diesel emission reduction systems and engines must be operational, maintained and serviced as recommended by the manufacturer.

d. The Contractor shall submit monthly summary reports to the Engineer, updating the equipment list, including diesel fuel use for the reporting time period for all retrofitted equipment used in the performance of the contract. The addition or deletion of equipment shall be included in the summary and noted in the monthly report.

e. Retrofits installed with funds from this Contract shall remain on the equipment for the useful life of the emission control device. In the event the equipment is sold out of state the retrofit technology may be removed at the Contractor's expense and used on a piece of equipment that performs work within Rhode Island no later than one year from the date it was removed from the original equipment.

5. Program Documentation and Logs. The following are the required Documentation and Logs that must be maintained for all equipment on the inventory list and fuel used. The Contractor shall submit monthly summary reports to the Engineer, updating the equipment inventory list, including diesel fuel use for the reporting time period for all retrofitted equipment used in the performance of the contract. The addition or deletion of any equipment shall be included in the summary and noted in the monthly report.

a. Documentation including technology type, EPA/CARB verification number/control Level, manufacturer, make model, serial number of the retrofit device and date of installation.

b. Documentation and verification of all retrofit devices already installed on equipment.

c. Proof of purchase and expected ship date for retrofits not yet installed.

d. Monthly update logs, which list all of the on-road and non-road diesel equipment details as outlined in above submittal list. Logs shall include the date on site, date off site and fuel usage of all contractor and subcontractor equipment utilized on the project beyond the 30 day minimum.

e. The monthly log shall be submitted in electronic format and hard copy on a monthly basis to the Engineer.

f. Monthly fuel logs shall be submitted to the Engineer with the bar code, equipment make and model, fill date, quantity and quality of fuel.

g. Verify that the fuel type being used meets the 2010 EPA standard for Ultra Low Sulfur Diesel ULSD, for Off Road Use.

h. Fuel inventory data shall be collected. The data shall include total volume of fuel delivered to the construction site each month and proof in the form of a Bill of Laden that the fuel meets the most recent EPA and ASTM fuel standard for ULSD for off-road and on-road construction.

i. Estimated construction equipment activity and anticipated duration that the equipment is to remain on site.

944.04 METHOD OF MEASUREMENT.

This item, Diesel Emission Reduction Program (DERP), will not be measured for payment. This item will be paid for on the Force Account Method. The Department has included in the Bid Proposal a Force Account amount from which payments for completing various units of emission retrofit work will be dispersed. When 90% of the Force Account amount has been dispersed, the Engineer will determine if additional funding is required to complete work on the DERP.

944.04.1 UNIT OF FORCE ACCOUNT WORK

A unit of work is the cost of completing a single emission control retrofit. It includes the actual cost of the retrofit device and the cost of the qualified installer of the device.

a. It shall be understood that the cost of a unit of emission control work as defined above will vary according to the size of the equipment.

944.05 BASIS OF PAYMENT

Upon completion of a number of completed units of emission control retrofit devices the Contractor shall request a disbursement from the Force Account amount. Each such request must include a detailed account for each particular "unit" of completed emission retro-fit work as defined above under **Subsection 944.04.1**. Payment of a disbursement request from the Force Account constitutes full and complete compensation for all labor, materials, equipment, tools and incidentals for completing the stated units of emission control retro-fits as required to finish the work, complete and accepted by the Engineer.

944.05.1 COSTS NOT INCLUDED IN THIS ITEM.

All costs associated with the implementation of the DERP including training costs inventory lists, retaining the qualified retro-fit installer, Statement of Intent to Comply Documentation of Post Retro-fit Installation, Program Documentation and Logs, monthly summary reports to the Engineer, and the addition and removal of equipment used in this work, will not be paid for separately. Costs thereof shall be included in the Contractor's overhead costs for performing the work of the Contract.

Remove **Section T.06; Conduit**, pages AC14-23 to AC14-25 of the August 2013 Compilation of Approved Specifications and 9-66 through 9-68 of the RI Standard Specifications for Road and Bridge Construction (Amended August 2013) in its entirety and replace it with the following:

SECTION T.06

CONDUIT

T.06.01 DESCRIPTION. This work consists of furnishing and installing rigid steel conduit, polyvinyl chloride (PVC) plastic conduit, and fiberglass conduit of the size specified, including the necessary fittings, at the locations indicated on the Plans or as directed by the Engineer, all in accordance with these Specifications.

T.06.02 MATERIALS. Conduit and fittings shall conform to **Subsection M.15.04** of these Specifications.

T.06.03 CONSTRUCTION METHODS. All work shall be performed strictly in accordance with the requirements of the National Electrical Code, latest Edition.

T.06.03.1 Rigid Steel Conduit. Conduit shall be installed as shown on the Plans or as directed by the Engineer. Bends which are not smooth or which show any evidence of flattening or destruction of the protective coating will not be accepted. All joints requiring rethreading shall be made with a zinc-based, cold galvanized, spray-applied compound as approved by the Engineer, applied to the male threads. Oils shall be removed from the threads prior to applying the galvanizing compound. All threaded couplings shall be tightened until the ends of the conduit are brought together to form a tight connection.

A nylon pulling rope shall be installed in all conduits which do not carry conductors under the contract. Such pull rope shall be for subsequent use to facilitate pulling of cables. There will be no separate payment for the cost of the pull rope.

Conduit bends and elbows made in the field shall have a radius of not less than twelve (12) times the inside diameter of the conduit, and all such bends shall be made without crimping, heating, denting or otherwise damaging the conduit.

Conduit ends at handholes shall be supplied with insulated bonding bushings with threaded ends. All conduits shall be bonded to the ground rod within the handhole using #6 bare ground wire.

a. Conduit Underground. Conduit underground refers to all conduit placed underground in non-paved areas and in paved areas where the pavement will be replaced as part of the project under other contract items. All conduit shall be grounded in accordance with the National Electrical Code, latest Edition. Ends that have bonding clamps shall be filled with sealing compound to prevent the entrance of moisture, except at handholes. All ground lugs shall be copper, bronze or brass. Underground conduit shall be placed at a minimum depth of 24 inches under vehicular travel areas and 18 inches under non-vehicular travel areas.

Conduits shall be placed on a 6-inch sand bed. Conduits within roadways shall be backfilled with Class 1 controlled low-strength material (CLSM) to the bottom of the gravel subbase. Yellow warning tape shall be placed 1 foot below finished grade.

When two or more conduits are placed in the same trench, conduit spacers shall be used. Spacers shall be placed at 6-foot intervals or as directed by the Engineer.

The Contractor shall immediately notify the Engineer of trench-bottom conditions that are suspected to be unsatisfactory. If the condition of the bottom of the trench is in any way unsatisfactory, as determined by the Engineer, the Engineer may require the Contractor to excavate additional material and replace it with clean gravel to provide a firm bearing for the conduit. The backfill shall be compacted in layers not more than 6 inches in thickness before compaction.

After the trench is backfilled, the Contractor shall, in the presence of the Engineer, test the installation by pushing or pulling a mandrel, not less than 1/4-inch less than the inside diameter of the conduit, through the entire length of the conduit. All debris, including stones and dirt, shall be removed. All damaged conduit shall be removed and replaced at the Contractor's expense.

b. Conduit Under Existing Pavement. Conduit under existing pavement refers to all conduit placed under existing paved areas where removal of the pavement is required only for the placement of conduit and the pavement is to be restored as part of this item. Conduit under existing pavement shall be placed in accordance with all applicable requirements of **Para. a** of this Subsection. The pavement shall be replaced in accordance with the Plans regardless of the method of excavation. When conduit is placed in existing paved sidewalks, the sidewalk shall be replaced in accordance with **Subsection T.01.03.11** of these Specifications.

c. Conduit Overhead. All conduit above grade shall be securely attached using clamps and/or hangers at intervals not exceeding 5 feet or as directed. All clamps and hangers shall be galvanized. A weatherhead shall be installed on all risers.

d. Conduit In or On Structure. Conduit to be embedded in concrete structures shall be rigidly supported in the concrete form by methods and materials which will not cause injury to the zinc coating of the conduit.

Conduit installations on bridges and other structures shall be provided with expansion fittings at all structure expansion joints. The expansion joint fittings shall be installed as shown on the Plans and meet the requirements of **Subsection M.15.04.3** of these Specifications.

T.06.03.2 PVC Plastic Conduit. PVC plastic conduit shall be installed as shown on the Plans and in conformity with the requirements previously specified in **Subsection T.06.03.1** except those referring specifically to rigid steel conduit.

PVC plastic conduit shall be installed with bell ends on the inside of each handhole.

T.06.03.3 Fiberglass Conduit. Fiberglass conduit shall be installed as shown on the Plans and in conformity with the requirements previously specified in **Subsection T.06.03.1** except those referring specifically to rigid steel conduit.

T.06.04 METHOD OF MEASUREMENT. "Rigid Steel Conduit," "PVC Plastic Conduit", and "Fiberglass Conduit" will be measured by the number of linear feet actually installed of the type or types indicated on the Plans and/or as directed by the Engineer, with no deduction for fittings and couplings.

T.06.05 BASIS OF PAYMENT.

T.06.05.1 Conduit Underground. The accepted quantities of "Rigid Steel Conduit -Underground" and "PVC Plastic Conduit - Underground" will be paid for at their respective contract unit prices per linear foot for the type or types as listed in the Proposal. The prices so-stated constitute full and complete compensation for furnishing all materials, equipment, tools, and labor including fittings, couplings, saw cutting pavements, excavation and backfill, Class B bedding, restoration of existing ground surfaces including all materials necessary for such restoration, testing, and all incidentals necessary to satisfactorily finish the work, complete in place and accepted by the Engineer.

T.06.05.2 Conduit Under Existing Pavement. The accepted quantities of "Rigid Steel Conduit - Under Existing Pavement" and "PVC Plastic Conduit - Under Existing Pavement" will be paid for at their respective contract unit prices per linear foot for the type or types as listed in the Proposal. The prices so-stated constitute full and complete compensation for furnishing all materials, equipment, tools, and labor including fittings, couplings, saw cutting, excavation and backfill, Class B bedding, restoration of existing pavements and sidewalks including all materials necessary for such restoration, testing, and all incidentals required to finish the work, complete in place and accepted by the Engineer.

T.06.05.3 Conduit Overhead. The accepted quantities of "Rigid Steel Conduit - Overhead" and "PVC Plastic Conduit - Overhead" will be paid for at their respective contract unit prices per linear foot for the type or types as listed in the Proposal. The prices so-stated constitute full and complete compensation for furnishing all materials, equipment, tools and labor, including fittings, couplings, clamps and hangers, weatherhead, and all incidentals required to finish the work, complete in place and accepted by the Engineer.

T.06.05.4 Rigid Steel or PVC Plastic Conduit In Structure. The accepted quantities of rigid steel or PVC plastic conduit in structure will be paid for at their respective contract unit prices per linear foot for the various types as listed in the Proposal. The prices so-stated constitute full and complete compensation for furnishing all materials, equipment, tools and labor, including fittings, couplings, and all incidentals necessary to satisfactorily finish the work, complete in place and accepted by the Engineer.

T.06.05.5 Fiberglass Conduit On Structure. The accepted quantities of "Fiberglass Conduit On Structure" will be paid for at the contract unit prices per linear foot of conduit as listed in the Proposal. The price so-stated constitutes full and complete compensation for furnishing all materials, equipment, tools and labor, including fittings, hangers and support systems, expansion fittings, and all incidentals necessary to satisfactorily finish the work, complete in place and accepted by the Engineer.

T.06.05.6 Expansion Couplings. The accepted quantities of expansion couplings of various types will be paid for at the contract unit price per each as listed in the Proposal. The price so-stated constitutes full and complete compensation for furnishing all materials, equipment, tools and labor, and all incidentals necessary to satisfactorily finish the work, complete in place and accepted by the Engineer.

Revise **Section T.13; Detectors and Relays;** pages T-24 to T-27 of the RI Standard Specifications for Road and Bridge Construction (Amended August 2013) as follows.

SECTION T.13

DETECTORS AND RELAYS

- **Replace Subsection T.13.03.3 with the following.**

T.13.03.3 Pedestrian Detector Installation. Pedestrian pushbuttons shall be installed in accordance with **Subsection T.10.03** of these Specifications. All pushbuttons, regardless of mounting type, shall be mounted at a height of 3 feet 6 inches. The measurement shall be made from the center of the pushbuttons to the finished sidewalk elevation.

All pedestrian pushbutton detector housings shall be "Federal Yellow" in color unless the Contract calls for other signal equipment within the same intersection to be a different color. In the latter case, the color of the pushbutton detector housing shall match that of the other signal equipment.

Each Accessible Pedestrian Detector shall be tested in the field after initial installation in accordance with the manufacturer's recommendations and with the Engineer present, as well as other representatives when so designated by the Contract. The programming and operation of audible speech messages, percussive tones, locator tones, and confirmation tones, as well as all other vibrotactile and visual features required, shall be tested and checked for conformance with these specifications. If any are not operating properly or to the satisfaction of the Engineer, they shall be corrected and the features re-tested until accepted by the Engineer.

- **Replace Subsection T.13.04.3 with the following.**

T.13.04.3 Pedestrian Detectors. "Pedestrian Detector-Pushbutton with Sign", "Accessible Pedestrian Detector-Pushbutton with Sign", and "Accessible Pedestrian Detector-Configuration Device" will be measured by the number of units actually furnished and installed in accordance with the Plans and/or as directed by the Engineer.

- **Replace Subsection T.13.05.3 with the following.**

T.13.05.3 Pedestrian Detectors. The accepted quantity of "Pedestrian Detectors –Pushbutton with Sign", "Accessible Pedestrian Detector-Pushbutton with Sign", and "Accessible Pedestrian Detector-Configuration Device" will be paid for at the contract unit price per each as listed in the Proposal. The price so-stated constitutes full and complete compensation for all labor, materials, tools and equipment, including ADA-compliant pushbuttons and housings, wiring, pedestrian signs, mounting and installation hardware, furnishing and installation of accessible pedestrian detector control units, all programming, configuration, and testing required prior to and after installation of pedestrian detectors in the field, and all incidentals required to finish the work, complete in place and accepted by the Engineer.

Replace **Subsection M.15.17; Traffic Control and Highway Lighting Systems – Pedestrian Pushbutton Detector**; page AC-173 of the January 2011 Compilation of Approved Specifications with the following.

SECTION M.15

TRAFFIC CONTROL AND HIGHWAY LIGHTING SYSTEMS

M.15.17 PEDESTRIAN PUSHBUTTON DETECTORS.

a. **General.** Pedestrian pushbutton detector housings shall consist of a cast aluminum enclosure that is free of voids, pits, dents, excessive foundry grinding marks, and other exterior blemishes, and is water-tight and rated for outdoor use. The housing shall be furnished with a hole in the bottom and back that are tapped to accept a ½-inch NPT thread plug. The bottom hole shall be supplied with a threaded plug. The back hole shall be supplied with a non-threaded plastic plug or equivalent.

Pedestrian pushbuttons shall be compliant with the latest edition of the U.S. Access Board's ADA Accessibility Guidelines (ADAAG) that are approved by the U.S. DOT, and shall be pressure-activated requiring no more than three (3) pounds of force to activate. Pushbuttons and solid state switches shall be rated to 20 million actuations minimum.

Pedestrian pushbutton detector assemblies shall include a sign with an arrow indicating the direction of the crossing associated with the pushbutton. The sign shall explain the meaning of each of the pedestrian signal indications that may be visible to a pedestrian standing at the button, and shall conform to the specific design included in the latest MUTCD as called for on the Plans. All pedestrian detectors furnished and installed under one Contract shall be identical models of current production, and untried or prototype units will not be acceptable.

b. **Accessible Pedestrian Detector – Pushbutton w/ Sign (APD).** In addition to the pedestrian pushbutton, housing, and sign assembly requirements described in Subsection "a" above, APDs shall also include features that provide audible, vibrotactile, and other visual information to pedestrians. APDs shall meet or exceed the requirements for Accessible Pedestrian Signals and Detectors included in the latest MUTCD.

APDs shall include a raised vibrotactile arrow incorporated into the pushbutton to clearly indicate the direction of crossing. The raised vibrotactile arrow shall have high visual contrast (light on dark or dark on light) and be aligned parallel to the direction of pedestrian travel on the crosswalk associated with the pushbutton. The vibrotactile arrow shall vibrate when the WALK signal is on for the crosswalk associated with the pushbutton, and shall be motionless at all other times.

APDs shall include an audible pushbutton locator tone to allow visually disabled pedestrians to locate the pushbutton. The locator tone shall be deactivated or silent when the WALK signal is on for the crosswalk associated with the pushbutton and when the traffic signal is operating in a flashing mode; at all other times the locator tone, having a duration of 0.15 seconds or less and repeating at one (1) second intervals, shall emanate from the APD. The volume of the locator tone shall be automatically adjusted in response to ambient sound level, up to a maximum volume of 100 dBA. The Contractor shall initially program the volume-intensity-responsive locator tone to emanate at a minimum of ambient sound and a maximum of 5 dBA louder than ambient sound. The locator tone shall be audible a distance of six (6) to twelve (12) feet away from the pushbutton or to the nearest edge of the building closest to the pushbutton, whichever is less.

APDs shall emanate an audible indication of the WALK signal upon activation of the WALK signal for the crosswalk associated with the pushbutton. Such audible walk indications shall have the same duration as the pedestrian WALK signal except when the pedestrian signal rests in WALK (in the latter case the duration of the audible indication of the WALK signal shall be no more than seven (7) seconds). The APD-emanated indication of the WALK signal shall be audible from the entrance to the crosswalk associated with the pushbutton that is closest to the APD.

Each APD shall be capable of providing either a percussive tone or a verbal speech message for the audible indication of the WALK signal. Unless otherwise noted on the Plans, where at least ten (10) feet separate the APD from another APD, the audible WALK indication shall be a rapid-tick percussive tone, repeating at eight (8) to ten (10) ticks per second and consisting of multiple frequencies with a dominant component at 880 Hz. Where less than ten (10) feet separate the APD from another APD, the audible WALK indication shall be a verbal speech message that is patterned after the model: "Broadway - Walk sign is on to cross Broadway" for concurrent pedestrian crossings (when some vehicles have a green signal during the pedestrian interval), and "Walk sign is on for all crossings" for exclusive pedestrian crossings (when all vehicles have a red signal during the pedestrian interval). Verbal speech messages shall be recorded in a clear, moderately pitched voice, with excellent diction and moderate pacing. The volume of the audible WALK indication shall be automatically adjusted in response to ambient sound level, up to a maximum volume of 100 dBA. The Contractor shall initially program the volume-intensity-responsive audible WALK indication to emanate at a minimum of ambient sound and a maximum of 5 dBA louder than ambient sound.

APDs shall include a pushbutton confirmation light that is illuminated upon pushbutton activation. Once illuminated, the confirmation light shall remain on until the WALK signal turns on for the crosswalk associated with the pushbutton, when the confirmation light shall turn off. Each actuation of the confirmation light shall be accompanied by the audible verbal speech message: "Wait." The "Wait." speech message shall comply with the same recording, volume adjustment, and initial programming requirements stipulated above for audible WALK indication verbal speech messages.

All sounds shall emanate from the APD via a weather- and water-proof speaker that is protected by a vandal-resistant screen. Minimum and maximum volumes for each different sound shall be able to be programmed independently.

All audible, vibrotactile, and visual features of the APD shall be non-operational when the traffic signal is in flash mode.

Each APD shall be capable of being customized with speech messages that vary from those described above. Unless otherwise called for on the Plans, a wire connection shall be installed from the APD to a control unit in the traffic signal controller cabinet. The control unit shall enable the technician at the cabinet to reprogram, configure, and communicate with each APD installed at the intersection.

c. **Accessible Pedestrian Detector – Configuration Device.** The device shall be a handheld battery-powered unit capable of communicating wirelessly with APDs installed in the field. The device shall be capable of modifying all configurable settings of the APD.

Add the following new **Section M.19; Ant-Graffiti Systems** to the RI Standard Specifications for Road and Bridge Construction (Amended August 2013).

M.19

ANTI-GRAFFITI SYSTEMS

M.19.01 Approved Products. The anti-graffiti protective coating system shall be one of two types, sacrificial or non-sacrificial, as defined in the contract documents. The system may be applied to any construction material surface, but shall only be applied to substrates for which they are formulated. The system provided shall be on the RIDOT Approved Products List and as approved by the Department for the application.

M.19.02 Non Approved Products Submitted for Approval. Products not on the RIDOT Approved Products List may be considered by the Department, but must be submitted a minimum of 45 days prior to start of any intended application for review and approval.

M.19.02.01 Product Requirements. The system may be clear, showing the original color and texture of the substrate or pigmented opaque, as defined in the contract documents.

There are two types of anti-graffiti coating systems, which are defined as follows:

1. A sacrificial system, where the top layer is removed completely during cleaning and re-applied as soon as practicable to restore protection.

2. A non-sacrificial system, where the top layer is capable of resisting the cleaning process needed to remove the graffiti.

Either type of system may employ a cleaner provided by the manufacturer of the anti-graffiti system to facilitate removal of graffiti, but the system shall not require a cleaner for complete removal. A demonstration of the system's ability to provide effective protection against graffiti shall be conducted by the manufacturer submitting the product. It shall consist of the complete removal of a range of tagging paints provided by the Engineer from the surface treated with the system. No approval for use on RIDOT projects will be granted unless this test is successfully completed to the satisfaction of the Engineer.

a. Product Performance.

1. The system shall have a proven performance history of effectively protecting surfaces, demonstrated by documentation of a minimum of five (5) applications in the last five (5) years.

2. When applied to concrete, the full system shall be formulated not to cause degradation of the concrete in an aggressive freeze/thaw environment.

b. Documentation:

1. Proper surface preparation procedures shall be provided from the manufacturer's specifications for project substrates.

2. Minimum rates of coverage and number of coats for each layer, as applicable, and equipment needed for the application, shall be defined, based on the manufacturer's specifications.

3. A safety data sheet (SDS) shall be provided for each component of the system.

c. Product Delivery and Storage.

1. The product shall be delivered to the job site in manufacturer's containers, with seals unbroken. The containers shall be properly labeled including the batch number and the date of manufacture.

2. The materials shall be protected from the elements and remain in the original unopened containers until the time of immediate use to prevent contamination by foreign materials.