

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
REMOVE, RELOCATE, INSTALL, AND MODIFY EXISTING SIGNAL EQUIPMENT

November 9, 2017

I. DESCRIPTION:

This work shall consist of removing, relocating, refurbishing or modifying existing signal equipment as shown on the plans and directed by the Engineer.

II. MATERIALS:

Paint shall conform to Section 231 of the Specifications and the following:

1. Yellow paint shall conform to Federal Specifications for Federal Yellow enamel.
2. Other paints shall equal or exceed the specifications of the paint currently used by the Department for that purpose. The Engineer will furnish the Contractor the manufacturer's name, paint type and color used on existing signal equipment.

III. CONSTRUCTION:

Existing poles, controllers and cabinets (including auxiliary equipment) signal head sections, hanger assemblies, tether attachments and backplates shall be delivered to the VDOT or Municipal location as directed by the Engineer. The Contractor shall give at least 48 hours notice prior to delivering such equipment. Unless designated for removal, underground items such as conduit and conductors may be abandoned in place. In-ground items such as foundations, manholes and junction boxes shall be removed to a point at least 2 ft. below finished grade.

IV. MEASUREMENT AND PAYMENT:

Remove, Relocate, Adjust, Install, Replace, or Modify Existing Signal Equipment - Removal, relocation, adjustment, installation, modification, or disposal of existing signal equipment will be measured by the unit specified in the Contract in accordance with the plans and the applicable sections of these specifications and will be paid for at the contract unit price for the specified item. This price shall include storing, loading, unloading, pick-up and delivery, and transporting furnished materials; loading, unloading, picking up and delivering, and transporting removed or salvaged items; cleaning, painting, grouting, removing, resetting, relaying, adjusting, installing, modifying, reconstructing, or relocating designated items; salvaging or disposing of surplus and unsuitable material; excavating, trenching, backfilling, preparing foundation, reconnecting components for electrical and electronic items; revising wiring diagrams or schematics; and restoring disturbed areas.

Remove Existing Pole (Type) will be measured in units of each and will be paid for at the contract each price. This price shall include removing the pole, mast arm, span wire, tether wire, signs and conductor cables.

Remove Existing Foundation (Type) will be measured in units of each and will be paid for at the contract each unit price per. This price shall include removing the foundation and anchor bolts and restoration of the disturbed areas.

Remove Existing Signal Head Assembly will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of vehicular and/or pedestrian signal head assemblies and all associated mounting equipment, hardware and accessories that signal system.

Remove Existing Controller will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of the controller, cabinet and all auxiliary equipment within the cabinet.

Remove Existing Manhole/Junction Box will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of junction boxes and the restoration of the disturbed area.

Remove Existing Tether Wire will be measured in units of each and will be paid for at the contract each price. This price shall include cutting and removing broken tether wire from signal poles, signs and signal heads per span location, or as directed by the Engineer. This price shall also include removing thimbleye bolt assemblies, conductor cable supports, and fittings. This pay item shall only be used when pole removal is not required.

Remove Existing Span Wire will be measured in units of each and will be paid for at the contract each price. This price shall include removing thimbleye bolt assemblies, conductor cable supports, and fittings. This pay item shall be used only when pole removal is not required.

Remove Existing Sign Panel will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of the sign panel.

Remove Existing Electrical Disconnect will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of the electrical disconnect, and terminating conductor cables.

Remove Existing Electric Service will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of the electrical disconnect, terminating conductor cables, and arranging for the service provider to de-energize and remove electrical service drop.

Remove Existing Conductor Cable will be measured in units of linear feet and will be paid for at the contract linear foot price. This price shall include removing and disposing of the conductor cable.

Relocate Existing Signal Head Assembly will be measured in units of each and will be paid for at the contract each price. This price shall include removing existing signal cables and signal head equipment, transporting, storing, and installing existing traffic signal head, in accordance with the plans or as directed by the Engineer. Signal head assembly is defined as an arrangement of traffic signal head sections, hanger assembly and tether assembly that constitute one complete assembly.

Relocate Existing Sign will be measured in units of each and will be paid for at the contract each price. This price shall include removing existing sign, transporting, storing, and installing existing sign, in accordance with the plans or as directed by the Engineer.

Cleaning, Painting, and Grouting of Salvaged Equipment will not be measured for separate payment but the cost thereof shall be considered incidental to the work.

Adjust Span and Tether Wires will be measured in units of each and will be paid for at the contract each price. This price shall include raising/adjusting span or tether wire(s) per span location as directed by the Engineer. Drilling new hole(s) in the pole(s) for raised mounting will not be measured for separate payment and the cost shall be incidental to the work.

Modify Existing Controller Cabinet will be measured in units of each and will be paid for at the contract each price. This price shall include removing the existing controller, auxiliary panel(s), wiring and auxiliary connector(s); furnishing and installing removable noncorrosive metallic auxiliary panel(s) (13 Gage minimum) and connecting all auxiliary connector(s) per the manufacturer's instructions.

Install controller will be measured in units of each and will be paid for at the contract each price. This price shall include picking up, transporting, and installing controller, connecting wiring to electrical equipment, wiring harness, testing, certification, adjusting timings as necessary, and maintaining such equipment until intersection acceptance.

Install Conflict Monitor will be measured in units of each and will be paid for at the contract each price. This price shall include picking up, transporting, and installing conflict monitor, connecting wiring to electrical equipment, wiring harness, testing, certification, adjusting timings as necessary, and maintaining such equipment until intersection acceptance.

Install Meter Can will be measured in units of each and will be paid for at the contract each price. This price shall include picking up from the power company, transporting, and installing conflict monitor, connecting wiring to electrical equipment, wiring harness, testing, certification, adjusting timings as necessary, and maintaining such equipment until intersection acceptance.

Replace Backplate (No. of Sections) will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of existing backplates and furnishing and installing new backplate in kind.

Replace LED Module (Size) will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of existing LED modules and furnishing and installing new LED modules.

Replace Pedestrian LED Module will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of existing pedestrian LED modules and furnishing and installing new pedestrian LED modules.

Payment will be made under:

Pay Item	Pay Unit
Remove Existing (Type) Pole	Each
Remove Existing (Type) Foundation	Each
Remove Existing Signal Head Assembly	Each
Remove Existing Controller	Each
Remove Existing Manhole/Junction Box	Each
Remove Existing Tether Wire	Each
Remove Existing Span Wire	Each
Remove Existing Sign Panel	Each
Remove Existing Electrical Disconnect	Each
Remove Existing Electric Service	Each
Relocate Existing Signal Head Assembly	Each
Relocate Existing Sign	Each
Remove Existing Conductor Cable	Linear Foot
Adjust Span and Tether Wires	Each
Modify Existing Controller Cabinet	Each
Install Controller	Each
Install Conflict Monitor	Each
Replace Backplate (No. of Sections)	Each
Replace LED Module (Size)	Each
Replace LED Module (Size)	Each
Replace Pedestrian LED Module	Each
Install Meter Can	Each

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 238 ELECTRICAL AND SIGNAL COMPONENTS
(HIGH-VISIBILITY BACKPLATES)

July 25, 2017

SECTION 238 ELECTRICAL AND SIGNAL COMPONENTS of the 2016 Specifications is amended as follows:

Section 238.02(h)7. Backplates for signal heads is replaced with the following:

7. Backplates for signal heads

Backplates may be either aluminum or aluminum composite, unless specified otherwise in the plans. ABS plastic shall not be used.

Aluminum shall be 0.06-0.08 inch thick, and smooth, flat, and free of metal burrs and splinters. Aluminum alloy shall conform to Section 229 of the Specifications.

Aluminum Composite shall be a 0.07-0.09 inch thick aluminum/plastic composite. The composite shall be manufactured by bonding two panels of aluminum to an extruded polyethylene core using a thermoset adhesive under tension and pressure in a continuous process. The interior coating of the aluminum panels shall be coated with an epoxy chromate primer for added bonding strength with the polyethylene.

a. Black (non-reflective) Signal Backplates:

Aluminum black signal backplates shall be entirely powder coated black in accordance with manufacturer's instructions.

Aluminum Composite black backplates shall have a black fluoropolymer paint exterior coating.

b. High-Visibility Signal Backplates (HVSBs) shall be preassembled by the manufacturer with a 3-inch retroreflective fluorescent yellow border on the outside of the front of the backplate.

All retroreflective sheeting on the front surface of the backplate shall be ASTM D4956-13, Type XI fluorescent yellow from the VDOT Materials Division Approved Product List 46 for permanent signs. Sheeting shall be warranted in accordance with Section 247.03.

Retroreflective sheeting shall be applied to the backplate with a zero-degree orientation (downweb direction perpendicular to the road) and adhered to the backplate in accordance with the retroreflective sheeting manufacturer's instructions. Retroreflective sheeting shall be butt spliced when more than one piece of sheeting is adhered to the backplate. For each surface of the backplate, a maximum of five butt splices shall be used for three-section and four-section signal heads, and a maximum of nine butt splices shall be used for five-section signal heads.

Aluminum HVSBs shall be manufactured by covering the entire front surface with the retroreflective sheeting specified above, then subsequently applying black color to the front surface, except for the outer 3 inches of the front of the backplate which shall remain fluorescent yellow. The black color on the front surface of the backplate shall be obtained by screen printing or applying acrylic film. Black color on the back surface of Aluminum HVSB backplates shall be obtained by applying acrylic film to the aluminum or

by screen printing on sheeting applied to the aluminum. Aluminum preparation and application of sheeting and film shall be in accordance with the sheeting manufacturer's instructions.

Aluminum Composite HVSBs shall have a black fluoropolymer paint exterior coating that provides a surface quality that is suitable for the proper adhesion of retroreflective sheeting. Retroreflective sheeting shall be applied to the outer 3 inches of the front surface of the backplate as specified above.

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SECTION 703 - TRAFFIC SIGNALS
(High-Visibility Backplates)

July 28, 2016

SECTION 703 TRAFFIC SIGNALS is amended as follows:

Section 703.02(d). Signal Heads is amended to replace the fourth and fifth paragraphs with the following:

- (d) Backplates shall be included with all vehicle traffic control signal heads unless otherwise specified in the Contract. Backplates shall be specifically manufactured for the type and brand of traffic signal heads used or shall be of a universal design expressly manufactured for various types and brands of traffic signal heads. Backplates shall have a border width of 5 inches, shall be without louvers, and be of one-piece construction with the exception of those for five-section cluster signal heads, which may be a maximum of three pieces. All outside corners on backplates shall have a 3 inch radius.

Standard Signal Backplates (both sides) and signal leveling attachments shall be flat black. Backplates shall be aluminum unless ABS plastic or aluminum composite is otherwise specified in the Contract. Aluminum, aluminum composite, and ABS plastic shall conform to Section 238 of the Specifications.

High-Visibility Signal Backplates (HVSBs) shall be provided if specified in the plans. HVSBs shall be aluminum or aluminum composite, and shall be preassembled by the manufacturer in accordance with Section 238 of the Specifications. ABS plastic shall not be used for HVSBs.

Section 703.03(e) 1. a. is replaced with the following:

- a. Backplates shall be attached with bolts, washers, and lock nuts; or self-tapping screws and washers, unless otherwise directed by the Engineer.

The minimum number of fasteners connecting the backplate to the traffic signal head shall be 4 for each 12 inch traffic signal head section. Fasteners and all miscellaneous hardware shall be stainless steel unless otherwise directed by the Engineer. The fasteners shall be a minimum 3/16 inch diameter and 1/2 inch long.

When HVSBs are to be installed on new signal heads, cutting the backplate is not required unless otherwise directed by the Engineer.

Section 703.04 is amended to replace the thirteenth paragraph with the following:

Traffic Signal Head Section (LED module size, backplate type) will be measured in units of each for the LED module size and backplate type specified, and will be paid for at the contract unit price per each. This price shall include mountings, molded terminal block, visor, backplate, retroreflective sheeting (if required), fittings, realignments, and LED module.

Section 703.04 – Measurement and Payment is amended by revising the Pay Item Table as follows:

Pay Item	Pay Unit
Traffic Signal Head Section (LED module size, backplate type)	Each

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
SIGNAL HEAD AND SIGNAL HEAD BACKPLATE REPLACEMENT

July 28, 2016

I. DESCRIPTION

This work is for the replacement of LED signal head modules, the replacement of backplates on existing signal heads, and/or the installation of backplates furnished by the Department on existing signal heads; and all labor, materials, and equipment necessary to complete such work.

II. MATERIALS

Signal head sections shall be in accordance with Sections 238 and 703.

High Visibility Signal Backplates (HVSBs) shall be in accordance with Sections 238 and 703 of the Specifications, and Supplemental Specifications thereto. Retroreflective fluorescent yellow sheeting shall be in accordance with Section 247 of the Specifications.

Existing plastic or aluminum composite backplates shall be replaced with aluminum composite HVSBs unless directed otherwise by the Engineer. Existing aluminum backplates shall be replaced with aluminum or aluminum composite HVSBs or as directed by the Engineer.

When no backplate exists on an existing traffic signal head in operation, the use and type of backplates shall be in accordance with the contract documents unless otherwise directed by the Engineer.

III. REPLACE HIGH-VISIBILITY SIGNAL BACKPLATE

When replacing backplates on existing traffic signal heads in operation with new HVSB backplates, the new backplate shall be neatly cut vertically near one of the lower corners to allow installation without disassembling the existing traffic signal head from the hanger equipment or disconnecting any existing conductor cables from the traffic signal head. The cut shall be a minimum of 1 inch from either traffic signal head attachment and be nearly inconspicuous and smooth without any gaps in the front surface of the backplate.

If the backplate is precut by the manufacturer, the cut shall be reconnected in accordance with the manufacturer's instructions. If the backplate is not precut, the reconnection shall be performed as shown in the cut reconnection detail or using an alternative reconnection methodology approved by the Engineer. The reconnection panel shall be a minimum 4 inches x 4 inches and shall be of the same material and color as the backplate it is connecting.

The Contractor shall make a visual assessment of the traffic signal heads and hanger assemblies surfaces and connections before performing any modification. If during this cursory visual assessment, the Contractor observes a damaged hanger assembly or other signal head equipment that needs to be repaired, replaced, or in the opinion of the Contractor poses risk to the Department and/or travelling public, the Contractor shall notify the Engineer. The Contractor shall not make any modification to the existing signal head, backplate, and/or hanger assembly at that location unless authorized by the Engineer.

The Contractor shall remove the existing backplates and associated hardware from the traffic signal head and install the new HVSB in a single work day, reconnecting the cut area if a cut has been made. Removing and installing backplates shall be performed without disconnecting the

traffic signal head mounting hardware and conductor cables. Any signal head sections, backplates, or components damaged or lost because of the fault of the Contractor shall be repaired or replaced at his expense.

The Contractor shall perform the work such that each intersection approach shall have consistent backplates on all traffic signal heads (either with the fluorescent yellow border or without) at the end of each work week unless otherwise directed by the Engineer.

IV. MEASUREMENT AND PAYMENT

Replace High-Visibility Backplate (LED module size) will be measured in units of each signal head module for the LED module size specified, and will be paid at the contract unit price per each. This price shall include visually assessing the existing signal head and hanger assembly, removing and disposing of existing backplate, and furnishing and installing of new HVSB and attachment hardware.

Replace LED Module (size) will be measured in units of each for the module size, and will be paid at the contract unit price per each. This price shall include removing and disposing of existing module, furnishing and installing of new module, and connecting the new module to signal cables.

Install Backplate (LED module size) will be measured in units of each signal head module for the LED module size specified, and will be paid at the contract unit price per each. This price shall include picking up and installing backplate, visually assessing the existing signal head and hanger assembly, removing and disposing of existing backplate, and furnishing and installing attachment hardware.

Pay Item	Pay Unit
Replace High-Visibility Backplate (LED module size)	Each
Replace LED Module (size)	Each
Install Backplate (LED module size)	Each

PEDESTRIAN PUSHBUTTONS shall conform to Section 703 of the Specifications and shall be installed in accordance with Section 703 of the Specifications.

Pedestrian Pushbuttons will be measured in units of each and will be paid for at the contract each price. This price shall include removing and disposing of existing pushbuttons and hardware and furnishing and installing new pushbuttons and hardware.

Payment will be made under:

Pay Item	Pay Unit
Pedestrian Pushbutton	Each

10-7-17 (SPCN)

ROCK EXCAVATION shall consist of excavating solid rock for utility trenches and concrete foundations for signal equipment and poles as approved by the Engineer. Rock excavation shall be in accordance with Section 303 of the Specifications. Rock excavation will not be permitted if rerouting of the trench excavation is possible.

Rock excavation will be measured in cubic yards in accordance with Section 303.06 of the Specifications and will be paid for at the contract cubic yard price. This price shall include excavating and disposing of surplus and unsuitable material.

Payment will be made under:

Pay Item	Pay Unit
Rock Excavation	Cubic Yard

5-17-17 (SPCN)