

# Special Specification 6094

## Video Imaging Vehicle Detection Systems Maintenance



### 1. DESCRIPTION

Install or replace Video Imaging Vehicle Detection System (VIVDS) components that monitor vehicles on a roadway by processing of video images and provide detector outputs to a traffic controller.

### 2. MATERIALS

Provide all material not supplied by the Department. Provide new materials that comply with the details shown on the plans, the requirement of this Item, and the requirements of Special Specification, "Video Imaging Vehicle Detection System."

Unless otherwise noted on the plans, the Department will furnish luminaire mast arms.

Pick up materials at the locations and times shown on the plans. Submit a material list for required material to the Engineer 24 hr. in advance. Designate in writing, persons authorized to pick up material.

Assume responsibility for all materials furnished by the Department. Use material furnished by the Department for this contract only. Upon completion of work and before final payment, return unused or removed material deemed salvageable by the Engineer to the Department.

### 3. EQUIPMENT

Furnish all equipment and labor for the proper prosecution of the work. This will include, but is not limited to, an aerial device capable of reaching VIVDS equipment, tools and incidentals necessary to complete the work. If at any time the equipment is determined defective to the point that it may affect the quality of work, that equipment will be immediately repaired or replaced.

### 4. WORK METHODS

Conform to the NEC, local utility requirements, the requirements of this Item, and the pertinent requirements of the following Items. Report damage, malfunctions, or items that require repair or maintenance. Complete an approved form for each visit to each site documenting all work, damage, or malfunctions to the Department. Provide the following services unless otherwise shown on the plans.

- 4.1. **VIVDS Camera.** Test and install replacement VIVDS cameras, furnished by the Contractor, as deemed necessary by the Engineer, to restore the VIVDS system to normal operation.
- 4.2. **VIVDS Camera Bracket.** Test and install replacement VIVDS camera brackets, furnished by the Contractor, as deemed necessary by the Engineer, to restore the VIVDS system to normal operation.
- 4.3. **VIVDS Processor.** Test and install replacement VIVDS processor, furnished by the Contractor, as deemed necessary by the Engineer, to restore the VIVDS system to normal operation.
- 4.4. **VIVDS Monitor.** Test and install replacement VIVDS monitors, furnished by the Contractor, as deemed necessary by the Engineer, to restore the VIVDS system to normal operation.
- 4.5. **VIVDS Surge Suppressors.** Install replacement surge suppressors, furnished by the Contractor, as deemed necessary by the Engineer to restore the VIVDS system to normal operation. Ensure surge suppressor is properly connected to the surge suppression panel including proper grounding. Ensure all

connections are tight. Ensure coaxial and electrical connectors are installed properly, undamaged and the proper type and size for the VIVDS surge suppressors.

- 4.6. **Span Cable.** Inspect all brackets, set screws, clamps, and fittings. Tighten, replace or align as directed. Make field measurements to determine the actual span wire height necessary to ensure a vertical clearance of all signal heads 17 ft. 6 in. minimum, 19 ft. maximum from the highest point on the roadway surface to the bottom tether.
- Inspect each span cable and signal cable for damage or deterioration, proper attachment, excess slack and tangled cables. Re-lash, replace, tighten and straighten span cables as necessary. Document span and signal cables that show signs of damage or deterioration.
- 4.7. **Luminaire Mast Arm.** Install, replace, remove, or modify luminaire arms and hardware on timber or steel signal poles. Install material using manufacturer's specifications. Fuse luminaires individually in the signal pole hand hole. Install a separate cable from the breaker load panel to each luminaire.
- 4.8. **Splice Enclosure.** Install replacement splice enclosure, furnished by the Contractor, as deemed necessary by the Engineer to restore the VIVDS system to normal operation and provide a weather-tight enclosure for connection of the camera power and video feed to the field wiring. Ensure the splice enclosure is properly secured to the signal pole or camera mount bracket with the proper hardware. Ensure that entrance to the splice enclosure is through a CGB type connector or other acceptable liquid-tight strain relief cable connector that provides a strain relief termination for flexible type coaxial and power cable for use in wet or dry locations capable of sealing electrical connections against dust, dirt, oil, water, or other atmosphere containing moisture.
- 4.9. **Camera Sun Shield.** Install replacement camera sun shield, furnished by the Contractor, as deemed necessary by the Engineer, to restore the proper shade and glare protection to the VIVDS cameras and provide normal operation of the system.
- 4.10. **VIVDS Preventive Maintenance.** VIVDS Preventive Maintenance will consist of the following: check all cables, wires, connectors' splices, etc., at all connection points including the camera, splice enclosure, and signal cabinet to ensure sound connections. Inspect wiring for cracks, fraying, kinks, insulation, exposed wire or other problems and make repairs or replace as necessary. Repair or install waterproofing where needed.
- Clean the camera lens using method recommended by the manufacturer. Observe that the VIVDS is operating properly and that all equipment including the cameras, monitors, processors, surge suppression is in proper condition. All wiring and cables should be neatly arranged in cabinet with appropriate strain relief. Any equipment not functioning properly and not immediately repairable should be made note of and reported to the Engineer to schedule replacement.
- 4.11. **Conduit.** Install, replace, remove, or modify conduits in accordance with Item 618, "Conduit"; as shown on the plans; or as directed. Use 90° "sweep" type elbow on conduits entering a ground box.
- 4.12. **Jacking and Boring.** Pits for jacking or boring must not be closer than 2 ft. to the back of the curb or the outside edge of the shoulder unless otherwise directed by the Engineer. The jacking and boring method used must not interfere with the operation of the street, highway, or other facility; and must not weaken or damage any embankment, structure, or pavement. Heavy jacks are to be used for jacking. Boring is to be done by mechanical means providing a maximum 1 in. over-cut for the conduit to be placed. The use of water or other fluids in connection with the boring operation will be permitted only to the extent needed to lubricate cuttings. Water jetting will not be permitted.
- 4.13. **Pull Boxes.** New pull boxes must be no more than 25 ft. from the edge of the pavement and set in such a manner that the existing conduit can be cut and terminated in the pull box. The cut conduit must be bent upward in the pull box as shown on the plans. Splices will not be allowed in new pull boxes unless otherwise approved.

- 4.14. **Cabinet Power Supply (5 Amp).** Install replacement cabinet power supply, furnished by Contractor, as deemed necessary by the Engineer.
- 4.15. **Cable Connectors.** Install or replace cable connectors, furnished by the Contractor, as deemed necessary by the Engineer. Ensure the cable connectors are weather-tight connector or other acceptable liquid-tight strain relief cable connectors that provide strain relief termination for flexible type coaxial and power cables for use in wet or dry locations capable of sealing electrical connections against dust, dirt, oil, water, or other atmosphere containing moisture. Ensure the cable connectors are properly secured.
- 4.16. **VIVDS Communication Cable.** Install or replace multi-conductor communication coaxial cable, furnished by the Contractor, from the camera to the controller cabinet. Form a two turn loop formed at camera termination, secure loop using cable ties suitable for outdoor use, install connectors and terminate the camera. Leave 5 ft. coiled inside controller cabinet. Identify cable runs, on each end of the cable and at hand hole with a different color tape for each run.

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## 5. MEASUREMENT

This Item will be measured as follows:

- 5.1. **VIVDS Camera.** By each camera replaced.
- 5.2. **VIVDS Camera Brackets.** By each camera bracket replaced.
- 5.3. **VIVDS Processor.** By each processor replaced.
- 5.4. **VIVDS Monitor.** By each monitor replaced.
- 5.5. **VIVDS Surge Suppressors.** By each surge suppressor replaced.
- 5.6. **Span Cable.** By the foot of span cable replaced, type and size specified. A span is defined as the distance from one pole to the next pole.
- 5.7. **Luminaire Mast Arms.** By each luminaire mast arm replaced.
- 5.8. **Splice Enclosure.** By each splice enclosure replaced.
- 5.9. **Camera Sun Shield.** By each camera sun shield replaced.
- 5.10. **VIVDS Preventive Maintenance.** By each intersection.
- 5.11. **Conduit.** By the foot of conduit replaced, type and size specified.
- 5.12. **Jacking and Boring.** By the foot.
- 5.13. **Pull Boxes.** By each pull box replaced.
- 5.14. **Cabinet Power Supply.** By the each cabinet power supply replaced, type and size specified.
- 5.15. **Multi-Conductor Communication Coaxial Cable.** By the foot of multi-conductor communication coaxial cable replaced, type and size specified.
- 5.16. **Cable Connectors.** By each cable connector replaced, type and size specified.

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**6. PAYMENT**

The work performed and the materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit prices bid for the various designations:

"VIVDS Camera," "VIVDS Camera Brackets," "VIVDS Processor," of the type specified, "VIVDS Monitor" of the size and type specified, "VIVDS Surge Suppressors," "Span Cable" of the size specified, "Luminaire Mast Arm," "Splice Enclosure," "Camera Sun Shield," "VIVDS Preventive Maintenance," "Conduit" of the types and sizes specified, "Pull Boxes" of the type specified, "Cabinet Power Supply" of the size specified, "Jacking and Boring," "VIVDS Multi-Conductor Communication Coaxial Cable" of the type and size specified and "Cable Connector" of the type and size specified.

These prices must be full compensation for furnishing all materials, unless otherwise shown on the plans, labor, equipment, tools, supplies and incidentals necessary to complete the work.