DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
OFFICE ENGINEER, MS 43
1727 30TH STREET
P.O. BOX 168041
SACRAMENTO, CA 95816-8041
FAX (916) 227-6214
TTY 711

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February 5, 2009

02-Teh-5-R3.5/R10.0
02-370704

Addendum No. 1

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN TEHAMA COUNTY IN AND NEAR CORNING AT VARIOUS LOCATIONS FROM KIRKWOOD ROAD OVERCROSSING TO GALLAGHER AVENUE OVERCROSSING.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on February 18, 2009.

This addendum is being issued to revise the Project Plans and the Notice to Bidders and Special Provisions.

Project Plan Sheet 138 is revised. A half-sized copy of the revised sheet is available for substitution for the like-numbered sheet.

In the Special Provisions, Section 10-3.26, "VIDEO IMAGE VEHICLE DETECTION SYSTEM," is revised as attached.

To Bid book holders:

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

02-Teh-5-R3.5/R10.0
02-370704

This office is sending this addendum by GSO overnight mail to Bid book holders to ensure that each receives it. A copy of this addendum is available for the Contractors' use on the Web site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Division of Engineering Services - Office Engineer

Attachments

10-3.26 VIDEO IMAGE VEHICLE DETECTION SYSTEM

GENERAL

Summary

This work includes installing video image vehicle detection system (VIVDS) for traffic signals.

Agreed Price Arrangement

Arrangements have been made to insure that any successful bidder can obtain the following VIVDS equipment from the manufacturer/supplier, Mori Consultants/Transportation Services, 1481 Rollins Road, Burlingame, CA 94010, Telephone 1-650-343-6100. The price quoted by the manufacturer/supplier for the VIVDS, FOB Destination, Net 30 is $54,475.00 not including sales tax.

LOCATION 1

DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
VIP 3.1 Video Detection Unit	ea	3	$2,800.00	$8,400.00
Traficon Programming Key Pad	ea	1	$225.00	$225.00
9" Black and White Monitor (single Input)	ea	1	$115.00	$115.00
Three Channel Video Switcher and Cables	ea	1	$40.00	$40.00
Complete Cameras w/Motorized Zoom Lens and Polarizing Filters	ea	3	$1050.00	$3,150.00
Universal Camera Mounting Brackets	ea	3	$125.00	$375.00
Surge Suppressors	ea	3	$48.00	$144.00
BNC to 2-Wire Cables	ea	3	$10.00	$30.00
Fuse and Neutral Blocks	ea	3	$10.00	$30.00
Isotec Video (RG59U/5#18) Cable	lf	1000	$0.62	$620.00
Viewcom/E Video Compression Module	ea	1	$2,850.00	$2,850.00
US Robotics 56K Phone Line Modem	ea	1	$135.00	$135.00
Versa-Link ATX-250 Call Processor (2-Ports)	ea	1	$260.00	$260.00
		SUBTOTAL		$16,374.00

LOCATION 2

DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
VIP 3.1 Video Detection Unit	ea	3	$2,800.00	$8,400.00
Traficon Programming Key Pad	ea	1	$225.00	$225.00
9" Black and White Monitor (Single Input)	ea	1	$115.00	$115.00
Three Channel Video Switcher and Cables	ea	1	$40.00	$40.00
Complete Cameras w/Motorized Zoom Lens and Polarizing Filters	ea	3	$1050.00	$3,150.00
Universal Camera Mounting Brackets	ea	3	$125.00	$375.00
Surge Suppressors	ea	3	$48.00	$144.00
BNC to 2-Wire Cables	ea	3	$10.00	$30.00
Fuse and Neutral Blocks	ea	3	$10.00	$30.00
Isotec Video (RG59U/5#18) Cable	lf	1000	$0.62	$620.00
Viewcom/E Video Compression Module	ea	1	$2,850.00	$2,850.00
US Robotics 56K Phone Line Modem	ea	1	$135.00	$135.00
Versa-Link ATX-250 Call Processor (2-Ports)	ea	1	$260.00	$260.00
			SUBTOTAL	$16,374.00

CITY LOCATION 3

DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
VIP 3.1 Video Detection Unit	ea	4	$2,800.00	$11,200.00
Two-Channel I/O Card	ea	4	$325.00	$1,300.00
Traficon Programming Key Pad	ea	1	$225.00	$225.00
9" Black and White Monitor (Single Input)	ea	1	$11500	$115.00
Four Channel Video Switcher and Cables	ea	1	$50.00	$50.00
Complete Cameras w/Motorized Zoom Lens and Polarizing Filters	ea	4	$1050.00	$4,200.00
Universal Camera Mounting Brackets	ea	4	$125.00	$500.00
Surge Suppressors	ea	4	$48.00	$192.00
BNC to 2-Wire Cables	ea	4	$10.00	$40.00
Fuse and Neutral Blocks	ea	4	$10.00	$40.00
Isotec Video (RG59U/5#18) Cable	lf	1000	$0.62	$620.00
Viewcom/E Video Compression Module	ea	1	$2,850.00	$2,850.00
US Robotics 56K Phone Line Modem	ea	1	$135.00	$135.00
Versa-Link ATX-250 Call Processor (2-Ports)	ea	1	$260.00	$260.00
			SUBTOTAL	$21,727.00

The above prices will be firm for orders placed on or before June 1, 2009, provided delivery is accepted within 90 days after the order is placed. The quoted price for each location includes, freight, shipping and handling, software and licenses, field engineering and acceptance testing materials, manuals and training services.

Comply with Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications.

Submittals

Submit proposed list of materials before starting work. Submit drawings and other data before the completion of the contract. Submittals include:

Submittals

Item	Description
Certificate of compliance	For VIVDS as specified in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.
Site analysis report	Written analysis for each detection site, recommending the optimum video sensor placement approved by the manufacturer.
Lane configuration	Shop drawing showing detection zone setback, detection zone size, camera elevation, selected lens viewing angle, illustration of detection zone mapping to reporting contact output, and illustration of output connector pin or wire terminal for lane assignment.
Configuration record	Windows XP or later version of PC compatible CD containing the final zone designs and calibration settings to allow reinstallation.
Mounting and wiring information	Approved wiring and service connection diagrams wrapped in clear self-adhesive plastic, placed in a heavy duty plastic envelope, and secured to the inside of the cabinet door.
Communication protocol	Industry standard available in public domain. Document defining message structure organization, data packet length, message usability, and necessary information to operate a system from a remote Windows based personal computer.
Programming software	CD containing set up and calibration software that observes and detects the vehicular traffic, including bicycles, motorcycles, and sub-compact cars, with overlay of detection zones and allows adjustment of the detection sensitivity from a traffic signal application.
Detector performance DVD recordings and analysis	Performance analysis based on 24-hour DVD recording of contiguous activity for each approach. Include 2 contiguous hours of sunny condition, with visible shadows projected a minimum of 6 feet into the adjacent lanes, and two 1-hour night periods with vehicle headlights present.
Preventative maintenance parts documentation	Documentation containing equipment replacement parts list for preventative maintenance, including electrical parts, mechanical parts, and assemblies.
Acceptance testing schedule	Submit schedule for approval 15 days before acceptance testing of VIVDS. Acceptance testing is separate from detector performance and analysis.
Acceptance testing documentation	Documentation for using support equipment to perform acceptance testing without assistance.
Training	Submit training material for approval 30 days before training.
Warranty	Manufacturer's written warranty against defects in material and workmanship for VIS assemblies and VDU, for 24-month period after VIVDS installation.

Quality Control and Assurance

Training

Provide a minimum of 16 hours of training by a factory authorized representative for up to 2 students. Training content must include instructions for aligning, programming, adjusting, calibrating, and maintaining VIVDS. You must provide all materials and equipment for the training. Notify the Engineer 20 days before training and agree on a training time. If agreement cannot be reached, the Engineer will determine the time. Training area will be determined by the Engineer.

Warranty

After final acceptance of VIVDS, provide replacement video image sensor assembly (VIS) and video detection unit (VDU) within 10 days after receipt of failed units at no cost to the State, except the cost of shipping failed VIS and VDU. Deliver replacement VIS and VDU to: Department of Transportation, District 2 Signal Shop, 5065 Mountain Lakes Avenue, Redding, CA.

MATERIALS

Functional Requirements

VIVDS must include a VIS and mounting hardware assembly installed on a pole or mast-arm. Use a clamping device as mounting hardware on standards. Include VDU, image processor, extension module and communication card, power supply, surge suppression, cables, connectors, and wiring for connecting to the State-furnished Model 332A traffic controller cabinet.

VIS and zoom lens must be housed in an environmentally sealed enclosure, watertight and protected from dust, and must comply with NEMA 4 standards. Enclosure must include a thermostat controlled heater to prevent condensation and to ensure proper lens operation at low temperatures. Adjustable sun shield that diverts water from the camera's field of view must be included. Assembly must have waterproof connections for power, control and video signal cables, and wiring.

VIVDS must include necessary firmware, hardware, and software for designing the detection patterns or zones at the intersection or approach. Detection zones must be created with a graphic user interface designed to allow trained State employee to configure and calibrate a lane in less than 15 minutes. System must support normal operation of existing detection zones while a zone is being added or modified. Zone must flash or change color on a viewing monitor when vehicular traffic is detected.

Software and firmware must detect vehicular traffic presence, provide vehicle counts, set up detection zones, test VIVDS performance, and allow video scene and system operation viewing from a remote location. VIVDS must support a minimum of 2 separate detection patterns or zones that can be enacted by a remote operator.

VIVDS detection zone must detect vehicles by providing an output for presence and pulse. At least 1 detection output must be provided for each detection zone. One spare detection output must be provided for each approach. Detection performance must be achieved for each detection zone with a maximum of 8 user-defined zones for every camera's field of view.

VIVDS must detect the presence of vehicles under all types of adverse weather and environmental conditions, including snow, hail, fog, dirt, dust or contaminant buildup on the lens or faceplate, minor camera motion, and excessive vibration. If less than 95 percent detection accuracy results from low visibility conditions, the VIVDS must respond by selecting a fail-safe default pattern, placing a constant call mode for all approaches. VIVDS outputs must assume a fail-safe "on" or "call" pattern for presence detection if video signal or power failure is not available and must recover from a power failure by restoring normal operations within 3 minutes without manual intervention. If powered off for more than 90 days, system must maintain the configuration and calibration information in memory.

Detection algorithm must be designed to accommodate naturally occurring lighting and environment changes, specifically the slow moving shadows cast by buildings, trees, and other objects. These changes must not result in a false detection or mask a true detection. VIVDS must not require manual interventions for day-night transition or for reflections from poles, vehicles or pavement during rain and weather changes. VIVDS must suppress blooming effects from vehicle headlights and bright objects at night.

Vehicle detection must call service to a phase only if a demand exists and extend green service to the phase until the demand is taken care of or until the flow rates have reduced to levels for phase termination. VIVDS must detect the presence of vehicular traffic at the detection zone positions and provide the call contact outputs to the Model 170E or Model 2070 with the following performance:

Detector Performance

Requirements	Performance during AMBER and RED interval	Performance during GREEN interval
Average response time after vehicle enters 3' into detection zone or after departing 3' past detection zone	≤ 1 Sec	≤ 100 ms
Maximum number of MISSED CALLS in 24-hour duration, where MISSED CALLS are greater than 5 sec. during AMBER and RED intervals and greater than 1 sec. during GREEN intervals (upon entering 3' of detection zone or after departing 3' past detection zone).	0	10
Maximum number of FALSE CALLS in 24-hour duration (calls greater than 500ms without a vehicle present)	20	20

Each camera and its mounting system must be less than 10 pounds and less than 1 square foot equivalent pressure area. Only 1 VIVDS camera must be mounted on a traffic signal or luminaire arm. Top of camera must not be more than 12 inches above top of arm.

VIVDS must be able to locally store, for each lane, vehicle count data in 5, 15, 30, and 60 minute intervals for a minimum period of 7 days and be remotely retrievable. VIVDS must count vehicular traffic in detection zone with a 95 percent accuracy or better over a 1-day period with a minimum range of 50 feet to the limit line for each approach.

VDU front panel must have indicators for power, communication, and presence of video input for each video sensor, and a real time detector output operation. Hardware or software test switch must be included to allow the user to place either a constant or momentary call for each approach. Indicators must be visible in daylight from 5 feet away.

A flat panel video display with a minimum 8-inch screen and that supports National Television Standards Committee (NTSC) video output must be furnished and installed in the Model 332A cabinet for viewing video detector images and for performing diagnostic testing. Display must be viewable in direct sunlight. Each VIVDS must have video system connections that support the NTSC video output format, can be seen in each camera's field of view, and has a program to allow the user to switch to any video signal at an intersection. A metal shelf or pull-out document tray with metal top capable of supporting the VDU and monitor must be placed on an EIA 19 inch rack with 10-32 "Universal Spacing" threaded holes in the Model 332A cabinet. EIA 19 inch rack must comply with EIA standard EIA-310-B. System must allow independent viewing of a scene while video recording other scenes without interfering with the operation of the system's output.

VIVDS must have a serial communication port that supports sensor unit setup, diagnostics, and operation from a local PC compatible laptop with Windows XP or later version operating system. VIVDS must have an ethernet communication environment. VIVDS must include central and field software to support remote real-time viewing and diagnostics for operational capabilities through wide area network (WAN) or wireless.

Technical Requirements

System elements must be designed to operate continuously in an outdoor traffic monitoring and control environment, all day, every day. Manufactured electronic components must support a minimum mean time between failures (MTBF) value of 10 years.

Video sensor must use a charge-coupled device (CCD) element and support NTSC and RS170 video output formats with resolution of not less than 360 horizontal lines. Video sensor must include an auto gain control (AGC) circuit, have a minimum sensitivity to scene luminance from 0.1 lux to 10,000 lux, and produce a usable video image of vehicular traffic, under all roadway lighting conditions and regardless of the time of day. Video sensor must have a motorized lens with variable focus and zoom control with an aperture of f/1.4 or better. Focal length must allow ± 50 percent adjustment of the viewed detection scene.

Enclosed VIS must operate between –37 ^{o}C to +74 ^{o}C and zero percent to 95 percent relative humidity.

Sensor unit mounting hardware must be powder-coated aluminum, stainless steel, or treated to withstand 250 hours of salt fog exposure as specified in ASTM B 117 without any visible corrosive damage.

VDU, image processors, extension modules, and video output assemblies must be inserted into the controller input file slots using the edge connector to obtain limited 24V DC power and to provide contact closure outputs. Cabling the output file to a "D" connector on the front of the VDU is acceptable. No rewiring to the standard Model 332A cabinet is allowed. Controller cabinet resident modules must comply with the requirements in Chapter 1 and Sections 5.2.8, 5.2.8.1, 5.2.8.2, 5.4.1, 5.4.5, 5.5.1, 5.5.5, and 5.5.6 of TEES.

VIVDS must operate between 90 to 135 VAC service as specified in NEMA TS-1. VIS, excluding the heater circuit, must draw less than 10 watts of power**.** Power supply or transformer for the VIVDS must meet the following minimum requirements:

Minimum Requirements for Power Supply and Transformers

Item	Power Supply	Transformer
Power Cord	Standard 120VAC, 3 prong cord, 3 ft minimum length (may be added by Contractor)	Standard 120VAC, 3 prong cord, 3 ft minimum length (may be added by Contractor)
Type	Switching mode type	Class 2
Rated Power	Two times (2x) full system load	Two times (2x) full system load
Operating Temperature	-37 °C to 74 °C	-37 °C to 74 °C
Operating Humidity Range	From 5 percent to 95 percent	From 5 percent to 95 percent
Input Voltage	From 90 V to 135 V AC	From 90 V to 135 V AC
Input Frequency	60 Hz ± 3 Hz	60 Hz ± 3 Hz
Inrush Current	Cold start, 25 A max. at 115 V	N/A
Output Voltage	As required by VIVDS	As required by VIVDS
Overload Protection	From 105 percent to 150 percent in output pulsing mode	Power limited at >150 percent
Over Voltage Protection	From 115 percent to 135 percent of rated output voltage	N/A
Setup, Rise, Hold Up	800ms, 50ms,15ms at 115V AC	N/A
Withstand Voltage	I/P-0/P:3kV, I/P-FG:1.5kV, for 60 sec.	I/P-0/P:3kV, I/P-FG:1.5kV, for 60 sec
Working Temperature	Not to exceed 70°C@30% load	Not to exceed 70 °C@ 30 percent load
Safety Standards	UL 1012, TUV EN60950	UL 1585
EMC Standards	EN55022 Class B, EN61000-4-2, 3, 4, 5	N/A

Field terminated circuits must include transient protection as specified in IEEE Standard 587-1980, Category C. Video connections must be isolated from ground.

Wiring must be routed through end caps or existing holes. New holes for mounting or wiring must be shop-drilled.

VIVDS and support equipment required for acceptance testing must be new and as specified in the manufacturer's recommendations. Date of manufacture, as shown by date codes or serial numbers of electronic circuit assemblies, must not be older than 12 months from the scheduled installation start date. Material substitutions must not deviate from the material list approved by the Engineer.

CONSTRUCTION

For materials and installation comply with the manufacturer's recommendations. All equipment, cables, and hardware must be part of an engineered system that is designed by the manufacturer to fully inter-operate with all other system components. Mounting assemblies must be corrosion resistant. Connectors installed outside the cabinets and enclosures must be corrosion resistant, weather proof, and watertight. Exposed cables must be sunlight and weather resistant. Label cables with permanent cable labels at each end.

Install VDU in a State-furnished Model 170E or Model 2070 controller assembly. Install VIS power supply or transformer on a standard DIN rail using standard mounting hardware and power conductors wired to DIN rail mounted terminal blocks in the controller cabinet.

Wire each VIS sensor assembly to the controller cabinet with a wiring harness that includes all power, control wiring, and coaxial video cable. Attach harness with standard Mil type and rated plugs. Cable type and wire characteristics must comply with manufacturer's recommendations for the VIS to cabinet distance of the project. Wiring and cables must be continuous (without splices) between the VIS sensor and controller cabinet. Coil a minimum of 7 feet of slack in the bottom of the controller cabinet. For setup and diagnostic access, terminate serial data communication output conductors at TB-0 and continue for a minimum of 10 feet to a DB9F connector. Tape ends of unused and spare conductors to prevent accidental contact to other circuits. Label conductors inside the cabinet for the functions depicted the approved detailed diagrams.

Adjust the lens to view 110 percent of the largest detection area dimension. Zones or elements must be logically combined into reporting contact outputs that are equivalent to the detection loops and with the detection accuracy required.

Verify the performance of each unit, individually, and submit the recorded average and necessary material at the conclusion of the performance test. Determine and document the accuracy of each unit, individually, so that each unit may be approved or rejected separately. Failure to submit necessary material at the conclusion of testing invalidates the test. The recorded media serves as acceptance evidence and must not be used for calibration. Calibration must have been completed before testing and verification.

Verify the detection accuracy by observing the VIVDS performance and recorded video images for a contiguous 24-hour period. The recorded video images must show the viewed detection scene, the detector call operation, the signal phase status for each approach, the vehicular traffic count, and time-stamp to 1/100 of a second, all overlaid on the recorded video. Transfer the 24-hour analysis to DVD.

VIVDS must meet the detection acceptance criterion specified in table titled "Detector Performance."

Calculate the VIVDS's vehicular traffic count accuracy as 100[1-(|TC-DC|/TC)], where DC = detector's vehicular traffic count and TC = observed media-recorded vehicular traffic count.

The Engineer will review the data findings and accept or reject the results within 7 days. Vehicle anomalies or unusual occurrences will be decided by the Engineer. Data or counts not agreed by the Engineer will be considered errors and count against the unit's calibration. If the Engineer determines that the VIVDS does not meet the performance requirements, you must re-calibrate and retest the unit, and resubmit new test data within 7 days. After 3 failed attempts, you must replace the VIVDS with a new unit.

Notify the Engineer 20 days before the unit is ready for acceptance testing. Acceptance testing must be scheduled to be completed before the end of a normal work shift. You must demonstrate that all VIS cameras and VDUs satisfy the functional requirements.

PAYMENT

The contract lump sum price paid for video image vehicle detection system includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing video image vehicle detection system, complete in place, including testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Repair, replacement, and retesting of VIVDS components due to failure or rejection is the Contractor's expense.