

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

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October 17, 2012

04-Son-12-32.7/33.0

04-3A3304

Project ID 0400000937

ACHSSTP-P012(111)E

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN SONOMA COUNTY IN ELDRIDGE FROM 0.2 MILE NORTH TO 0.1 MILE SOUTH OF MADRONE ROAD AND HIGHWAY PLANTING IN SANTA ROSA ON SUMMERFIELD ROAD.

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 Wednesday, October 24, 2012.

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

Project Plan Sheets 40, 41 and 42 are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

In the Special Provisions, Section 10-3.13, "LIGHT EMITTING DIODE PEDESTRIAN SIGNAL FACE MODULES," is revised as attached.

In the Special Provisions, Section 10-3.135, "ACCESSIBLE PEDESTRIAN SIGNAL," is added as attached.

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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.

This addendum and attachments are available for the Contractors' download on the Web site:

http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/04/04-3A3304

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,



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

Attachments

10-3.13 LIGHT EMITTING DIODE COUNTDOWN PEDESTRIAN SIGNAL FACE MODULES

GENERAL

Summary

This work includes installing light emitting diode (LED) countdown pedestrian signal face (PSF) module into standard Type A pedestrian signal housing. Comply with Section 86, "Electrical Systems," of the Standard Specifications, TEES and the California MUTCD.

Submittals

Before shipping to job site, submit the LED countdown PSF modules and the following to the Transportation Laboratory:

1. Delivery form including district number, EA, and contact information
2. List containing all LED countdown PSF module serial numbers
3. Installation manuals and schematic wiring diagram.
4. Manufacturer's name, trademark, model number, lot number, month and year of manufacture

Submit documentation of manufacturer's production quality assurance performed on the LED countdown PSF modules. The documentation must include test data that conforms to the specified requirements and the following:

1. Luminous intensity as showed in the table titled "Luminance Values".
2. Power factor after burn-in.
3. Test current flow measurements in amperes after burn-in. The measured values must comply with design qualification figures. Record the measured ampere values with rated voltage on the product labels.

Failure to submit manufacturer test documentation will be cause for rejection.

Submit warranty documentation as an informational submittal before installing LED countdown PSF modules.

Quality Control and Assurance

If the Engineer determines by visual inspection that there is exterior physical damage, assembly anomalies, scratches, abrasions, cracks, chips, discoloration, or other defects to surface of the lens, modules will be rejected.

The State will test LED countdown PSF module shipments as specified in ANSI/ASQ Z1.4 and California Test 606. The module submitted for testing must be representative of typical production units. All parameters of the specification may be tested on the modules.

Testing will be completed within 30 days of delivery to the Transportation Laboratory.

Non-compliant materials will be rejected. You must resubmit new LED countdown PSF modules for retesting and pick up the failed units within 7 days of written notification. If the failed materials are not removed within that period, it may be shipped to you at your expense. You must allow 30 days for retesting.

After successful testing, you must pick up the tested LED countdown PSF modules from the Transportation Laboratory and deliver to the job site.

Warranty

You must provide a manufacturer written warranty against defects or failures of LED countdown PSF modules for a minimum period of 60 months from the date of successful completion of acceptance testing. Replacement LED countdown PSF modules must be provided within 15 days after receipt of failed modules at no cost to the State. All warranty documentation must be submitted to the Engineer before installation. Replacement LED countdown PSF modules must be delivered to State Maintenance Electrical Shop at 30 Rickard Street, San Francisco, CA 94134.

MATERIALS

LED countdown PSF modules must:

1. Be from the same manufacturer.
2. Be installed in standard Type A pedestrian signal housing.
3. Use LED as the light source.
4. Be designed to mount behind or replace face plates of standard Type A housing as specified in ITE publication, Equipment and Material Standards, Chapter 3, "Pedestrian Traffic Control Signal Indications" and the "California MUTCD."
5. Have a minimum power consumption of 10 W for the UPRASIED HAND.
6. Use required color and be ultra bright type rated for 100,000 hours of continuous operation for a temperature range of -40 °to +74 °C.
7. Be able to replace signal lamp optical units.
8. Fit into pedestrian signal section housings without modifications.
9. Be a single, self-contained device, not requiring on-site assembly for installation.
10. Have the following information permanently marked on the back of module:
 - 10.1. Manufacturer's name
 - 10.2. Trademark
 - 10.3. Model number
 - 10.4. Serial number
 - 10.5. Lot number
 - 10.6. Month and year of manufacture
 - 10.7. Required operating characteristics, as follows:
 - 10.7.1. Rated voltage
 - 10.7.2. Power consumption
 - 10.7.3. Volt-ampere (VA)
 - 10.7.4. Power factor
11. Have prominent and permanent vertical markings for accurate indexing and orientation within the signal housing if a specific mounting orientation is required. Markings must include an up arrow, or the word "UP" or "TOP." Marking must be a minimum of 1-inch diameter.

Circuit board and power supply must be contained inside the LED countdown PSF module. Circuit board must comply with Chapter 1, Section 6 of TEES.

Individual LEDs must be wired so catastrophic loss or failure of 1 LED will not result in loss of:

1. More than 5 percent of the luminous output of PSF module
2. Entire string of LEDs or the indication.

LEDs must be evenly distributed in each indication. Do not use outline shape.

No special tools for installation are allowed.

The installation of the LED countdown PSF module into pedestrian signal face must require only removal of lenses, reflectors, lamps, and existing LED module.

Assembly and manufacturing processes for LED countdown PSF module must assure that all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

Material used for LED countdown PSF module must comply with ASTM D 3935.

The enclosures containing the power supply or electronic components of LED countdown PSF module, except lenses, must be made of UL94VO flame-retardant material.

Each symbol must not be less than 9 inches high and 5.25 inches wide. The uniformity of the signal output across the emitting section of the module lens for the WALKING PERSON and UPRASIED HAND symbol and the countdown display must not exceed a ratio of 5 to 1 between highest and lowest luminance values. Symbols must comply with ITE publication, Equipment and Material Standards, Chapter 3, "Pedestrian Traffic Control Signal Indications," and the "California MUTCD."

LED countdown PSF module must be designed to operate over the specified ambient temperature and voltage range, and be readable both day and night at all distances up to the full width of the area to be crossed.

LED countdown PSF module must maintain an average luminance value over 60 months of continuous use in signal operation for a temperature range of -40 to +74 °C. In addition, upon initial testing at 25 °C, the LED countdown PSF module must have at least the luminance values shown in the following table:

| Luminance Values | |
|---------------------------------------|-----------|
| PSF module | Luminance |
| UPRAISED HAND and two digit Countdown | 1,094 FL |
| WALKING PERSON | 1,547 FL |

Color output of LED countdown PSF module must comply with chromaticity requirements in Section 5.3 of ITE publication, Equipment and Material Standards, Chapter 3, "Pedestrian Traffic Control Signal Indications."

When operating over a temperature range of -40 to +74 °C, the measured chromaticity coordinates of LED countdown PSF module must comply with the following chromaticity requirements for 60 months:

| Chromaticity Standards (CIE Chart) | |
|---|--|
| UPRAISED HAND and COUNTDOWN TIMER (Portland orange) | Not greater than 0.390, nor less than 0.331, nor less than 0.997-X |
| WALKING PERSON (lunar white) | X: not less than 0.280, nor greater than 0.320 Y: not less than 1.055*X - 0.0128, nor greater than 1.055*X + 0.0072 |

The LED countdown PSF module must not exceed the maximum power consumption requirement shown in the following table:

| Maximum Power Consumption Requirements | | |
|--|---------|---------|
| PSF module display | @ 24 °C | @ 74 °C |
| UPRAISED HAND | 10.0 W | 12.0 W |
| WALKING PERSON | 9.0 W | 12.0 W |
| 2-digit Countdown timer | 6.0 W | 8.0 W |

Wiring and terminal block must comply with Section 13.02 of ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads." The LED countdown PSF module must be supplied with spade lugs and 3 secured, color-coded, 3-foot long, 600 V(ac), 20 AWG minimum stranded jacketed copper wires. Wires must comply with NEC, rated for service at +105 °C.

LED countdown PSF module must operate:

1. At a frequency of 60 ± 3 Hz over a voltage range from 95 to 135 V(ac) without perceptible flicker to the unaided eye. Fluctuations of line voltage must have no visible effect on luminous intensity of the indications. The rated voltage for measurements must be 120 V(ac).
2. Compatible with currently used State controller assemblies including solid state load switches, flashers, and conflict monitors. Comply with TEES Chapters 3 and 6. If a 20 mA alternating current or less is applied to the unit, the voltage read across the 2 leads must be 15 V(ac) or less.
3. With a "smart" control and regulation module that exhibits countdown displays automatically adjusted with the traffic controller programmed intervals.

The mode of operation of the countdown PSF module must be during the pedestrian change interval. The module will begin counting down when the flashing "Upraised Hand" interval turns on, counting down to "0" and turn off when the steady "Upraised Hand" interval turns on.

LED countdown PSF module on-board circuitry must:

1. Include voltage surge protection to withstand high-repetition noise transients. The voltage surge protection must comply with NEMA Standard TS2, Section 2.1.6.
2. Comply with FCC, Title 47, SubPart B, Section 15 regulations for Class A emission limits for electronic noise.

LED countdown PSF module must provide a power factor of 0.90 or greater.

Total harmonic distortion from current and voltage induced into an alternating current power line by LED countdown PSF module must not exceed 20 percent at an operating temperature of 25 °C.

The LED countdown PSF module circuitry must prevent perceptible light emission to the unaided eye when a voltage, 50 V(ac) or less is applied to the unit.

When power is applied to LED countdown PSF module, light emission must occur within 90 ms.

The "UPRAISED HAND" and "WALKING PERSON" symbol indications must be electrically isolated from each other. Sharing a power supply or interconnect circuitry between the 3 indications is not allowed.

10-3.135 ACCESSIBLE PEDESTRIAN SIGNAL

GENERAL

Summary

This work includes installing accessible pedestrian signal (APS). Comply with Section 86, "Electrical Systems," of the Standard Specifications, the Transportation Electrical Equipment Specifications (TEES), and the California MUTCD.

Definitions

APS: As defined in the California MUTCD.

accessible walk indication: Activated audible and vibrotactile action during the walk interval.

ambient sound: Background sound level in dB at a given location.

ambient sound sensing microphone: Microphone that measures the ambient sound level in dB and automatically adjusts the APS speaker's volume, accordingly.

APS pedestrian push button (APS PPB) assembly: Assembly that connects a pedestrian push button to an APS electronic device to actuate the components of the APS.

audible speech walk message: Audible prerecorded message that communicates to pedestrians which street has the walk interval.

programming mechanism: Device to program the APS operation.

push button information message: Audible prerecorded message actuated when the push button is pressed and the walk interval is not timing.

push button locator tone: As defined in the California MUTCD.

vibrotactile pedestrian device: As defined in the California MUTCD.

Submittals

Submit the APS wiring diagram and product data.

Submit 5 APS user and operator manuals for each signalized location. Manuals must include a master item index that describes the purpose of each manual and brief description to the directory. The index must include an overall description of the APS and its associated equipment and cables with illustrative block diagrams; manufacturer contact information, technical data specification, parts list, part descriptions, and settings. The manuals must include fault diagnostic and repair procedures and procedures for preventative maintenance in order to maintain APS performance parameters.

Before shipping APSs to the job site, submit APSs and the following to the Transportation Laboratory:

1. Delivery form including contract number and contact information
2. List containing all APS serial numbers
3. Manufacturer's name, trademark, model number, lot number, and month and year of manufacture
4. Programming mechanism if not integral to the APS

Submit a record of completed field tests, APS final configuration, audible sound levels and threshold, and a list of all parameter settings.

Quality Control and Assurance

The APS must be compatible with the State-furnished Model 170E/2070L controller assembly.

Power to the APS must be connected to the pedestrian signal section terminal blocks.

The Department will test APSs. Testing will be completed within 30 days of delivery to the Transportation Laboratory.

All functional and dimensional parameters of these specifications may be tested on the APSs.

Noncompliant materials will be rejected. Delays resulting from the submittal of noncompliant materials do not relieve you from executing the contract within the allotted time.

If material is rejected, submit replacement material and allow 30 days for retesting. Retesting period starts when the replacement material is delivered to the test site. You must pay for all retesting costs.

Remove rejected materials within 7 days after written notification of rejection. If the rejected materials are not removed within that period, the materials may be shipped to you at your expense.

You must pay for all shipping, handling and transportation costs related to testing and retesting.

After testing, pick up the compliant APS from the Transportation Laboratory and deliver it to the job site.

Functional Testing

Field tests must be completed twice, when traffic is noisy (e.g. peak traffic hours) and when traffic is quiet (e.g. off peak hours). Notify the Engineer 15 days before testing the APS.

Warranty

Provide a 2-year manufacturer replacement warranty for the APS effective from the date of installation against any defects or failures. All warranty documentation must be submitted to the Engineer before installation.

Replacement parts must be provided within 10 days after receipt of the failed part at no cost to the Department and must be delivered to the Department's Maintenance Electrical Shop at 30 Rickard Street, San Francisco, CA 94134.

MATERIALS

The APS PPB assembly must include:

1. PPB actuator with a minimum diameter of 2 inches. The PPB must be rainproof and shockproof in any weather condition. If a mechanical switch is used, the switch must have:
 - 1.1. Operating force of 3.5 lb
 - 1.2. Maximum pretravel of 5/64 inch
 - 1.3. Minimum overtravel of 1/32 inch
 - 1.4. Differential travel from 0.002 to 0.04 inches
2. Vibrotactile device on the push button or on the arrow.
3. Enclosure with an ambient sound level sensing microphone and weatherproof speaker. A Type B PPB assembly may be substituted with an APS PPB assembly enclosure, but must be less than 7 lb, be less than 16" x 6" x 5", and fit the standard. Maximum diameter of the hole for passage of wiring must not exceed 1.125". Attachment to the pole must be with 2 screws of diameter from 1/4 to 3/8 inch suitable for use in tapped holes. Clear space between any 2 holes in the post must be at least twice the diameter of the larger hole.

The APS PPB color must match the color No. 33538 of FED-STD-595.

The APS speakers and electronic equipment must be installed inside the APS PPB assembly enclosure. Speakers must not interfere with the PPB or its mounting hardware. Speaker grills must be located on the APS PPB assembly enclosure.

Nine No. 20 conductor cable complying with MIL-W-16878D must be used between the APS PPB assembly and the pedestrian signal head. Wiring must comply with Section 13.02 of ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads", rated for service at +105 °C.

Electronic switches, a potentiometer, or a handheld device must be used to control and program the volume level and the messaging for the APS. Programming mechanism must be submitted to the Engineer upon successful APS installation.

The APS must:

1. Include a provision to enable and disable the APS operation.
2. Have a failsafe operation. In the event of APS failure, the pedestrian push buttons, when pressed, must activate the pedestrian WALK signal timing.
3. Provide information using:
 - 3.1. Audible speech walk message plays when the PPB is pressed. The message must include the name of the street to be crossed associated with that push button. An example of the message is: "Peachtree, "walk" sign is "on" to cross Peachtree." The message must be repeated for the duration of the "walk" interval. The APS must include at least five sound options to be played during the "walk" interval. The Engineer may field select the "walk" sound option. The message must be activated for use from the beginning of the "walk" interval. The message must have a percussive tone consisting of multiple frequencies with a dominant component of 880 Hz. If the tone is selected as the "message" it must repeat 8 to 10 ticks per second.
 - 3.2. Push button information message provides the name of the street to be crossed associated with that push button. The message must play when the PPB is pressed. An example of the message is: "Wait to cross Howard at Grand. Wait."
 - 3.3. Push button locator tone that clicks or beeps. The locator tone must come from the PPB and repeat at 1 tone per second interval. Each tone has a maximum duration of 0.15 second. The locator tone volume must adjust in response to ambient sound and be audible up to 12 feet from the push button or to the building line, whichever is less.

CONSTRUCTION

Arrange, at your expense, to have a manufacturer's representative qualified to work on APS present whenever the equipment is installed, modified, connected, and reconnected. The APS must not interfere with the State-furnished controller assembly, the signal installation on signal standards, the pedestrian signal heads, or the terminal compartment blocks. The APS electronic control equipment must reside inside the APS PPB assembly and the standard pedestrian signal head.

You are responsible for the compatibility of the components and for making the necessary calibration adjustment to deliver the performance specified. Provide the equipment and hardware required to install, set up, calibrate, and verify the performance of the APS.

Upon successful completion of the APS installation, disable the APS operation.

TRAINING

Provide a minimum of 8 hours of training by a certified manufacturer's representative for up to 8 Department employees selected by the Engineer. The content of the training must include instruction on how to install, program, adjust, calibrate, and maintain the APS.

Provide materials and equipment for the training. Notify the Engineer 15 days before the training. The time and location of the training must be agreed upon by you and the Engineer and you. If no agreement can be reached, the Engineer will determine the time and location.