

Between February 1st and September 1st, the Contractor shall notify the Engineer 15 working days prior to beginning work disturbing structures, the ground or vegetation. The Engineer will approve the beginning of work disturbing the ground or vegetation between February 1 and September 1.

The Contractor shall use exclusion techniques directed by the Engineer to prevent migratory birds from nesting on the ground, on structures or in trees, shrubs or other vegetation within the project limits.

If evidence of bird nesting is discovered, the Contractor shall not disturb the nesting birds or nests until the birds have naturally left the nests. If evidence of migratory bird nesting is discovered after beginning work, the Contractor shall immediately stop work within 500 feet of the nests and notify the Engineer. Work shall not resume until the Engineer provides a written notification that work may begin at or adjacent areas of the discovered bird nest locations.

Attention is directed to Section 8-1.05, "Temporary Suspension of Work" of the Standard Specifications.

Nothing in this section shall relieve the Contractor from providing for public safety in conformance with the provisions in Section 7-1.09, "Public Safety" of the Standard Specifications.

Method of Payment and Penalties

If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in approving the disturbance structures, ground or vegetation, the Contractor will be compensated for resulting losses, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays" of the Standard Specifications.

Preventing nesting by using appropriate exclusion techniques will be paid for as extra work as provided in Section 4-1.03D, "Extra Work" of the Standard Specifications.

Notwithstanding any other remedies authorized by law, the Department may retain or withhold monies due the Contractor under the contract, in an amount determined by the Department, up to and including the entire amount of penalties proposed, assessed, or levied as a result of the Contractor's violation of Federal or State law, regulations or requirements. Funds may be retained by the Department until final disposition has been made as to the penalties. The Contractor shall remain liable for the full amount of penalties until such time as they are finally resolved with the entity seeking the penalties. Upon final disposition, the Department shall inform the Contractor of the withheld amount.

Penalties as used in this section, "General Migratory Bird Protection" shall include fines, penalties, and damages whether proposed, assessed, or levied against the Department or the Contractor. Penalties shall also include payments or costs incurred in settlement for alleged violations of applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

Exclusion devices, nesting prevention measures, and nest removal that are ordered by the Engineer shall be compensated per Section 11 "Payment for Extra work (Force Account Basis)" of the General Provisions.

Payment

Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including all labor, equipment, materials and incidentals, to remove trees and bushes including tree stumps and roots when encountered or as directed by the engineer, shall be part of the contract price paid per each for Remove Trees and no additional compensation will be allowed therefor.

SIGNAL AND LIGHTING:

Furnishing and installing traffic signal and highway lighting systems, and payment shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems", of the latest edition Standard Specifications and these Special Provisions.

START OF WORK

Location where signalization and highway lighting work is to be performed:

LOCATION

42nd Avenue and Lima Hall Road

AREA

Bermuda Dunes

COUNTY FURNISHED EQUIPMENT

County furnished equipment shall conform to the provisions in Section 6-1.02, "State Furnished Materials", of the Standard Specifications and these Special Provisions.

The County of Riverside will furnish the following equipment and materials to the Contractor for installation:

1. Standards, Steel Pedestals, Posts and Anchor Bolts
2. 10' Galvanized Steel IISNS Mast Arms

The Contractor shall pick up County furnished equipment and materials from the following locations, or as directed by the Engineer, and transport them to the project site(s):

Traffic Signal Shop
Riverside County Transportation Dept.
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504
Telephone (909) 955-6899

Sky Valley Yard
19-003 Bennett Road
Desert Hot Springs, California 92241
(760) 778-2491

Any County furnished equipment that is damaged after the Contractor has taken possession of the item shall be repaired to the satisfaction of the Engineer. If the damaged equipment is considered irreparable, it shall be replaced meeting the requirements stated in the Standard Specifications and these special provisions at the Contractor's cost.

EQUIPMENT ORDERS

The Contractor shall furnish all equipment and materials specified in plans and these special provisions that are not furnished by the County. All equipment shall be new and purchased by the Contractor for this project only.

The Contractor shall furnish the Engineer written statements from vendors stating that they have accepted the order for the said equipment within twenty-one (21) calendar days of the date that the County of Riverside Board of Supervisors awarded this contract. Delay in equipment delivering shall not be considered as justification for the suspension of the construction contract.

In addition to the liquidated damages set forth in these contract documents, the Contractor shall pay to the County of Riverside the sum of \$ **400.00** per day for each and every calendar day's delay in receiving all of the below listed equipment, onto the job site or the Contractor's storage facility, and available for installation, within 60 calendar days if standards/ posts, anchor bolts and IISNS mast arms were furnished by the County; otherwise, 100 calendar days of the contract award:

1. Traffic Signal Controller Assemblies
2. Service Equipment Enclosures
3. LED Modules

EQUIPMENT LIST AND DRAWINGS

Equipment list and drawings shall conform to the provisions in Section 86-1.04, "Equipment List and Drawings", of the Standard Specifications and these Special Provisions.

The Contractor shall furnish four complete cabinet wiring diagrams for each furnished controller assembly, battery backup system, video detection system, and emergency vehicle preemption system. The cabinet wiring diagram shall include an approximately 6" x 8" or larger schematic drawing of the project intersection, which shall include the following information, at a minimum:

1. North arrow
2. Street names
3. Pavement delineation and markings
4. Signal poles
5. Traffic signal heads with phase designations
6. Pedestrian signal heads with phase designations
7. Loop detectors with input file designations

WARRANTIES, GUARANTIES, INSTRUCTION SHEETS, AND MANUALS

Warranties, guaranties and instruction sheets shall conform to the provisions in Section 86-1.05, "Warranties, Guaranties and Instruction Sheets", of the Standard Specifications and these Special Provisions.

The LED modules supplied shall have five (5) years of manufacturer warranty.

The Battery Backup System (BBS) manufacturers shall provide a five (5) year warranty. The first three (3) years shall be termed the "Advanced Replacement Program". Under this program, the manufacturer will send out a replacement within two business days of the call notifying them of an issue. The replacement unit may be either a new unit or a re-manufactured unit that is up to the latest revision. The last two years of the warranty will be factory-repair warranty for parts and labor on the BBS.

The Video Detection System shall have three (3) years of manufacturer warranty. During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

The contractor shall furnish the Engineer with the manufacturer's standard written warranty pertaining to defects in materials and workmanship for all equipment furnished by the Contractor.

The Contractor shall furnish two sets of user, operation, and maintenance manuals written in English on all equipments and components furnished for the signal and lighting systems.

FOUNDATIONS

Foundations shall conform to the provisions in Section 51, "Concrete Structures", and Section 86-2.03, "Foundations", of the Standard Specifications and these Special Provisions.

Portland cement concrete shall conform to Section 90-10, "Minor Concrete", of the Standard Specifications and shall be Class 3 except pole foundations shall be Class 2.

The Contractor shall construct the controller cabinet foundation per Standard Plans.

All foundation concrete shall be vibrated to eliminate air pockets.

STANDARDS, STEEL PEDESTALS AND POSTS

Standards, steel pedestals, and posts shall conform to the provisions in Section 86-2.04, "Standards, Steel Pedestals and Posts", of the Standard Specifications and these Special Provisions.

Type 1A standards shall be spun aluminum unless shown otherwise on the plans.

Signal mast arms shall be installed in accordance with the "Signal Arm Connection Details" of the Standard Plans unless specified otherwise on the plans.

Internally Illuminated Street name sign (IISNS) mast arm shall be 10 foot long galvanized steel mast arm with four (4) mounting taps constructed to prevent deformation or failure when subjected to 100 mph wind loads. IISNS mast arm shall extend from the shaft of the pole above and parallel to the signal mast arm in accordance with County Standard No. 1200. A set-bolt /set-screw shall be used to assure the mast arm will not change position after it is installed and aligned.

If required by the serving electric utility, and confirmed by the Engineer, State Certified Electric Workers shall be utilized for the installation of standards, steel pedestals, and posts in accordance with State of California High Voltage Safety Orders.

CONDUITS

Conduit shall conform to the provisions in Section 86-2.05, "Conduit", of the Standard Specifications and these Special Provisions.

Conduits shall be Type 3, Schedule 80 Polyvinyl Chloride (PVC) conforming to requirements in UL Publication 651 for Rigid Non-Metallic Conduit, for underground installation only.

Conduit depth shall not exceed 60 inches below finish grade.

Conduit size shall be 2" minimum unless otherwise specified on the plans or in the Special Provisions. New conduit shall not pass through foundations or standards.

All conduit bends shall be factory bends. Conduit bend radius for signal interconnect conduits shall be 3 feet minimum.

A pull rope and a bare #12 AWG wire shall be installed in conduits intended for future use.

Bell bushing are required for all conduit ends. After conductors have been installed, the ends of conduits terminating in pull boxes and controller cabinets shall be sealed with sealing compound approved by the Engineer.

Trenching Installation:

The Contractor may request permission, on a case by case basis, to install conduit by trenching where conduit can not be installed by jacking or drilling as provided in Section 86-2.05C, "Installation", of the Standard Specifications. Jacking/Drilling shall be attempted a minimum of three times prior to requesting trenching installation.

If ordered by the Engineer, all pavements shall be cut to a depth of 3" with an abrasive type saw or with a rock cutting excavator specifically designed for this purpose. Cuts shall be neat and true with no shatter outside the removal area.

Trench shall be 2" wider than the outside diameter of the conduit being installed but not exceeding 6" in total width. Conduit depth shall be at a minimum of 30" below finished grade, with a minimum of 26" cover over the conduit.

The conduit shall be placed in the bottom of the trench and the trench shall be backfilled with two sack slurry to finish grade. Prior to final paving, the slurry backfill shall be excavated to a depth of 0.30' below the final pavement surface.

If so directed by the Engineer, the two sack slurry backfill shall be installed to a depth of 0.30 ft below the final pavement surface. The slurry shall be allowed to cure a minimum of two days prior to final paving with a commercial Type B asphalt concrete.

Prior to paving, the contractor shall grind the existing pavement a minimum of 0.10 ft. deep at a width of 3 foot minimum, centered along the full length of the trench.

PULL BOXES

Pull boxes shall conform to the provisions in Section 86-2.06, "Pull Boxes", of the Standard Specifications and these Special Provisions.

Traffic pull boxes shall conform to the provisions in Section 86-2.07, "Traffic Pull Boxes", of the Standard Specifications and these Special Provisions.

Pull boxes shall be polymer concrete boxes consisting of a reinforced fiberglass body with polymer ring and cover. The ring shall be bonded to the fiberglass body and become an integral part to the product. The polymer concrete box shall conform to OSHA Standards, ISO 9001:2008 Quality Assurance and meet ANSI / SCTE 77-2002 Standards.

Pull box covers shall be marked in accordance with Standard Plans ES-8. Pull box covers shall not be marked "Caltrans" except for projects on State of California right of way.

Pull boxes shall be placed with their tops flush with surrounding finish grade or as directed by the Engineer.

Pull boxes shall be installed behind the curb or as shown on the plans and shall be spaced at no more than 500 ft intervals. The exact locations shall be determined by the Engineer.

Pull boxes installed in unimproved areas, locations not protected by concrete curb and gutter, shall be traffic bearing pull box and marked with Type L markers.

CONDUCTORS AND WIRING

Conductors shall conform to the provisions in Section 86-2.08, "Conductors", of the Standard Specifications and these Special Provisions.

Multiple circuit conductors shall conform to the provisions in Section 86-2.08B, "Multiple Circuit Conductors", of the Standard Specifications and these Special Provisions.

Signal cable conductors shall conform to the provisions in Section 86-2.08D, "Signal Cable", of the Standard Specifications and these Special Provisions.

Wiring shall conform to the provisions in Section 86-2.09, "Wiring", of the Standard Specifications and these Special Provisions.

Signal cable shall be installed continuously without splicing from the controller cabinet to each traffic signal pole. Traffic signal conductors, multiple circuit conductors, and signal cable conductors shall not be spliced unless shown otherwise on the plans.

Where splice is required, Type C or Type T splice shall be used and insulated with "Method B" as shown in the Standard Plans, ES-13A.

Minimum luminaire wiring shall be No. 10 AWG, including wiring within poles and mast arms.

Specific cabling and wiring requirements for various systems or components shall be in accordance with the Special Provisions entitled to each herein.

BONDING AND GROUNDING

Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding", of the Standard Specifications and these Special Provisions.

Grounding jumper shall be attached by a 3/16 inch or larger brass bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod or bonding wire in the adjacent pull box.

Grounding jumper shall be visible after cap has been poured on foundation.

For equipment grounding jumper a No. 8 bare copper wire shall run continuously in all circuits with the exception of conduits that contain only signal interconnect cable and/or loop detector cable and then a No. 12 bare copper wire shall run continuously in the circuit.

SERVICE

Service shall conform to the provisions in Section 86-2.11, "Service", of the Standard Specifications and these Special Provisions.

Service equipment enclosure shall be Type III-CF, as shown on the Standard Plans, ES-2F, and shall conform to the following:

1. 120 / 240 volt, 2 meter service unless otherwise shown on the plans.
2. Circuit breakers required:
 - 2 - 100 Amp 2 pole (signal main, lighting main)
 - 1 - 30 Amp 1 pole (luminaires)

- 1 - 20 Amp 1 pole (illuminated street name signs)
 - 1 - 30 Amp 1 pole (signals)
 - 1 - 15 Amp 1 pole (luminaire photoelectric control)
 - 1 - 15 Amp 1 pole (street name sign photoelectric control)
 - 1 - 15 Amp 1 pole (for video detection cameras)
 - 1 - 20 Amp 1 pole (for each beacon, if applicable)
2. Cabinet shall be fabricated from aluminum sheeting and finish shall be anodic coating in accordance with Section 86-3.04A "Cabinet Construction".
 4. Circuit breakers shall be marked with identifying labels for each circuit breaker.

Type V photoelectric control contactor and test switch assembly shall be installed in the service cabinet. Photoelectric control contactors shall be as follows:

Luminaires	- 60 Amp electrically held contact
Street name signs	- 30 Amp electrically held contact

A GFCI outlet shall be installed on the interior side of service cabinet door and an 8 position terminal strip for termination of Video Cameras.

Photo Electric Control assembly shall be installed within the circuit breaker compartment of the service equipment enclosure, and accessible to the County after installation of electrical meters.

Direct burial service conductors shall not be approved.

The Contractor shall be responsible for contacting the power company, and arranging and providing for the electrical service connection, and ensuring that adequate notice is provided to the serving electric company in advance of need. The County of Riverside will pay all fees required.

The service equipment enclosure shall be separated from the controller by a minimum of 15 feet, and separated from all utility poles by a minimum of 10 feet, unless otherwise directed by the Engineer.

Service Identification

The service equipment enclosure shall provide the address of the intersection as shown on the approved plan. Address location shall be on the front upper panel. The meters shall also be labeled "LS3" (lighting meter) and "TC1" (signal meter) by lettering applied to the exterior of the enclosure in accordance with these special provisions, or as directed by the Engineer.

Lettering markings shall be black in color, with a two-inch minimum size in block letter form. Markings shall be applied to a brushed aluminum, stainless steel, or other non-corroding metallic plate, as approved by the Engineer. Plate shall be white in color. All paint and lettering markings shall conform in all respects to Federal Specification TT-E-489, latest revision, Class A, Air Drying. Said plate shall be affixed in a permanent manner by riveting or with stainless steel bolts and nuts. Bolts shall be peened after tightening. All materials used for affixing address plate shall be non-corroding. All alternate materials and methods must be approved by the Engineer prior to implementation.

TESTING

Testing and Field Testing shall conform to the provisions in Section 86-2.14, "Testing", of the Standard Specifications and these Special Provisions.

Specific testing requirements for various systems and components shall be in accordance with the Special Provisions entitled to each herein.

The complete controller assembly and Battery Backup System shall be delivered to the following location or location as directed by the Engineer for testing:

Traffic Signal Shop
Riverside County Transportation Department
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504

The Contractor shall allow a minimum of 15 working days for operational testing and adjustment. An additional 15 days period shall be allowed for retesting should the equipment fail.

The conflict monitor unit shall be tested in the field before signal turn on.

CONTROLLER ASSEMBLY

Controller assembly shall conform to the provisions in Section 86-3, "Controller Assemblies", of the Standard Specifications and these Special Provisions

Controller assembly shall be Model 170 controller assembly consisting of the additional features:

- Model 332A controller cabinet:
 - Anodic coating for both interior and exterior finish
 - A Corbin No. 2 door lock
- A interior fluorescent lamp with an on/off switch and a door switch that will automatically turn on the lamp when cabinet door is opened
- A interior thermostatically controlled, 24 volt electric fan with ball or roller bearing that has capacity rating of 100 cubic feet per minute minimum
- Rack mounted push buttons for manual actuation of the following:
 - 8 vehicular phases,
 - 4 pedestrian phases,
 - 4 Emergency Vehicle Preemption (EVP) phases, and
 - 2 Railroad preemption phases
- Model 170E local controller unit:

- Dual Asynchronous Communications Interface Adaptor (ACIA) capability. ACIA shall be integral to the controller unit. Horizontal printed circuit board controllers will not be accepted.
 - A Model 412F Program Module with 32K 27256 EPROM, 16K RAM, and 8K zero power RAM (memory method two, memory select four).
 - Bitrans Systems, Inc. 233RV2.5 or latest version firmware, test program and a loopback cable.
- If required per plan or special provisions, a Model 170E field master controller unit mounted above the local controller unit with the following features:
 - Same as 170E local controller except the firmware shall be Bitrans Systems, Inc. No. 245 FM.
- A pullout shelf/drawer assembly made of aluminum with telescoping drawer guides for full extension installed below the local controller unit. The top shall have a non-slip plastic laminate permanently attached. The non-slip laminate shall not be attached with silicon adhesive.
- Load Switches:
Switching circuit shall be contained in a replacement module (cube type) sealed in epoxy and rated at 15 amperes load (25 Amp triac). Pin 11 on all load switch sockets shall be wired to AC. Input and output indicators shall be installed on all load switches.
- All load switch sockets shall have individual wire terminals. Printed circuit boards will not be allowed.
- Flasher units:
Switching circuit shall be contained in a replacement module (cube type) sealed in epoxy and rated at 15 amperes load (25 Amps triac).
- Conflict monitor shall be EDI Model 2010ECL or equivalent with a red monitor assembly circuit board and capable of monitoring green, amber and red indications
- Loop detector sensor unit shall be Model 222:
 - Detector unit shall have delay timers adjustable from zero to a minimum of 30 seconds and extension timers adjustable from zero to a minimum of 7 seconds.
 - Delay timers shall delay calls only during display of the associated red or yellow indications. If a vehicle departs the area of detection prior to expiration of the assigned delay period, the timer shall reset and no call shall be placed upon the controller. During display of the associated green indication, detectors shall operate in the present mode and calls shall not be delayed.
- Power Distribution Assembly shall be Model PDA-2.
- A twelve-position interconnect terminal strip.

The contractor shall furnish the following spare equipments / components:

<u>Description</u>	<u>Model</u>	<u>Quantity</u>
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Cabinet	332	0
Controller Unit (local)	170E	0
Controller Unit (master)	170E	0
Switch Pack	200	0
Flasher Unit	204	0
Conflict Monitor Unit	2010	0
2-Channel Loop Detector	222	0
2-Channel DC Isolator	242	0
Modem Module	400	0
Program Module	412F	0

Spare equipments or components shall be delivered to the following location or as directed by the Engineer:

Traffic Signal Shop
Riverside County Transportation Department
McKenzie Highway Operations Center
2950 Washington Street
Riverside, California 92504

The controller unit and controller cabinet shall be manufactured and furnished by the same manufacturer to form a complete functional controller system capable of providing the traffic signal operation specified. All traffic control equipment to be furnished shall be currently acceptable to CALTRANS laboratory in Sacramento, CA, and listed on the Department of Transportation Qualified Products List. The current list can found at the following Caltrans internet web address:

<http://www.dot.ca.gov/hq/traffops/elecsys/QPL.htm>

The controller unit and controller cabinet manufacturer or supplier shall perform operational and functional testing of the supplied controller assembly and additional supplied equipment in accordance with the State of California Department of Transportation's Transportation Electrical Equipment specifications (TEES), and a Certificate of Compliance shall be issued for each successfully tested controller assembly and additional supplied equipment.

The Contractor shall modify traffic signal controller assembly if necessary and provide any necessary auxiliary equipment and cabling to achieve the intended traffic signal operation as shown on the plans. The Contractor shall make all field wiring connections to the terminal blocks inside the controller cabinet.

The Contractor shall have a technician who is qualified to work on the controller assembly from the controller manufacturer or their representative to install the program module and program the signal controller in accordance with County provided signal timing sheets, and to be present when the equipment is turned on.

VEHICLE SIGNAL ASSEMBLIES

Vehicle signal assemblies and auxiliary equipment shall conform to the provisions in Section 86-4.01 "Vehicle Signal Faces", Section 86-4.01B (1), "Metal Signal Sections", Section 86-4.01D "Visors", Section 86-4.04, "Backplates", and Section 86-4.08 "Signal Mounting Assemblies" of the Standard Specifications and these Special Provisions.

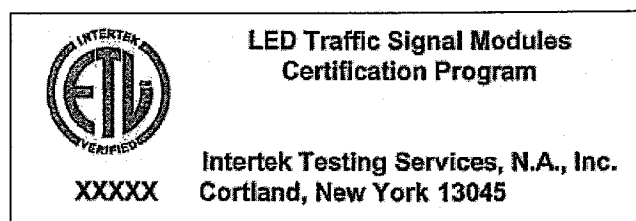
Programmed visibility traffic signal heads shall conform to the provisions in Section 86-4.05, "Programmed Visibility Vehicle Signal Faces", of the Standard Specifications and these Special Provisions.

Signal section housing, backplates and visors shall be metal type. Backplates shall be louvered. Visors shall be the "tunnel" type, unless otherwise specified. Top opening of signal heads shall be sealed with neoprene gaskets.

Signal Mounting Assemblies, Backplates, Signal Sections and Housings shall be made from the same manufacturer and the section assemblies shall be uniform in appearance and alignment.

All vehicle signal indications shall be 12-inch diameter Light Emitting Diode (LED) modules in accordance with the following:

1. All circular LED modules shall comply with Institute of Transportation Engineers (ITE) Vehicle Traffic Control Signal Heads (VETCH) - LED Circular Supplement, Adopted June 27, 2005.
2. All arrow LED modules shall comply with ITE VETCH - LED Vehicle Arrow Traffic Signal Supplement, Adopted July 1, 2007.
3. All modules shall fit in existing signal housings without the use of special tools.
4. All modules shall be certified in the Intertek LED Traffic Signal Modules Certification Program and be labeled with the ETL Verified Label as follows:



5. Luminous intensity requirements of the VTCSH must be met across the entire temperature range from -40°C to $+74^{\circ}\text{C}$, (-40°F to $+165^{\circ}\text{F}$).
6. The following cable colors shall be used for the AC power leads on all modules: white for common, red for the red module line, yellow for the yellow module line, and brown for the green module line.
7. The AC power leads shall exit the module via a rubber grommet strain relief, and shall be terminated with quick connect terminals with spade tab adapters. The leads shall be separate at the point at which they leave the module.

8. All external wiring used in the module shall be anti-capillary type cable to prevent the wicking of moisture to the interior of the module.
9. All power supplies shall be coated for additional moisture and thermal protection.
10. The module shall have an incandescent, non-pixelated appearance when illuminated.
11. Nominal power usage is measured at 25° C, 120 VAC. For the 8" modules, it shall not exceed 8 watts for Red, 8 watts for Yellow, and 8 watts for Green modules. For the 12" modules, it shall not exceed 10 watts for Red, 19 watts for Yellow, and 11 watts for Green modules. For the arrows, it shall not exceed 6 watts for any color.
12. All modules shall use LEDs that have been manufactured with materials that have industry acceptance as being suitable for uses in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.
13. The external lens shall have a smooth outer surface to prevent the buildup of dirt & dust and shall be designed to minimize the potential for sun phantom signals.
14. The module lens material must be tinted for bids that require tinted lens. A tinted transparent film or coating is not permitted. Individual bids may require clear, non-tinted lenses.
15. A module shall be sealed against dust and moisture intrusion, including rain and blowing rain per Mil-Std-810F Method 506.4, Procedure 1.
16. Arrow modules shall be clearly marked with the phrase "Suitable for mounting in any orientation".
17. Modules shall be repaired or replaced if the module fails to function as intended due to workmanship or material defects within warranty period.
18. Modules shall be repaired or replaced if the module exhibit luminous intensities less than the minimum specified values within 60 months of the date of delivery.
19. The Manufacturer shall clearly disclose the country in which the factory of module origin is located, the name of the company or organization that owns the factory including all of its parent companies and/or organizations, and their respective country of corporate citizenship.

PEDESTRIAN SIGNAL ASSEMBLIES

Pedestrian signals shall conform to the provisions in Section 86-4.06, "Pedestrian Signal Faces", of the Standard Specifications and these Special Provisions.

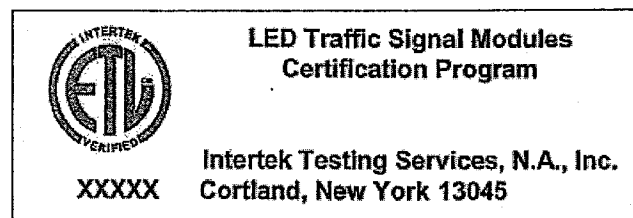
Pedestrian signals shall be equipped with countdown pedestrian module unless otherwise indicated on the plans.

Pedestrian signals shall be provided with a polycarbonate egg crate or Z-crate screen.

Pedestrian Signal Mounting Assemblies and Pedestrian Signal Housings shall be made from the same manufacturer and the section assemblies shall be uniform in appearance and alignment.

Pedestrian signal indications shall utilize light emitting diode signal modules in accordance to the following:

1. It shall comply with ITE specification: Pedestrian Traffic Control Signal Indications (PTCSI) Part 2: LED Pedestrian Traffic Signal Modules, Adopted March 19, 2004.
2. All modules shall fit in existing signal housings without the use of special tools.
3. All modules shall be certified in the Intertek LED Traffic Signal Modules Certification Program and be labeled with the ETL Verified Label as follows:



The PTCSI does not cover the countdown features of countdown pedestrian signal LED modules. The countdown features shall incorporate the following:

1. Fully compliant to NEMA TS-1, NEMA TS-2, Type 170, and Type 2070 traffic signal controller specifications.
2. The countdown portion of the pedestrian (ped) module shall have a high off-state input impedance so as not to provide a load indication to conflict monitors and interfere with the monitoring of the pedestrian signal. The input impedance of the countdown circuitry shall maintain a voltage reading above 25 VAC to the conflict monitor for up to four units connected on the same channel.
3. The countdown drive circuitry shall not be damaged when subjected to defective load switches providing a half wave signal input.
4. The countdown ped module shall have an internal conflict monitor circuit preventing any possible conflicts between the Hand, Person, and Countdown signal indications. It shall be impossible for the display to countdown during a solid Hand indication.
5. Per CA MUTCD Manual 2006 edition, section 4E.07: "If used, the countdown displays shall display the number of seconds remaining until the termination of the pedestrian change interval. Countdown displays shall not be used during the walk interval or during the yellow change interval of a concurrent vehicular phase".
6. The countdown ped module shall have a micro-processor capable of recording its own time when connected to a traffic controller. It shall be capable of displaying the digits 0 through 99.
7. When power is first applied or restored to the ped module, the countdown display will be

blank during the initial cycle while it records the countdown time using the walk (person) & don't walk (flashing hand) signal indications. The normal hand and person icons shall be displayed during this cycle.

8. The countdown ped module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.
9. The countdown ped module shall register the time for the walk and clearance intervals individually and shall begin counting down at the beginning of the pedestrian clearance interval. The digits shall not flash during the countdown.
10. When the flashing hand becomes solid, the ped module shall display 0 for one second and then blank-out. The display shall remain dark until the beginning of the next countdown.
11. In the event of a pre-emption, the countdown ped module shall skip the remaining time, reach 0 at the same time as the flashing Hand becomes solid, and remain dark until the next cycle.
12. In the cycle following preemption call, the signal shall display the correct time and not be affected by the reduced previous cycle. The countdown shall remain synchronized with the signal indications and always reach 0 at the same time as the flashing Hand becomes solid.
13. If a pedestrian button is activated during the clearance interval, some controllers can change to a second walk cycle without a don't walk phase. The countdown module shall also be capable of consecutive walk cycles. The display digits will be blank during the second walk and countdown properly during the second flashing hand.
14. The countdown ped module shall not display an erroneous or conflicting time when subjected to defective load switches. Should there be a short power interruption during the ped clearance interval or if voltage is applied to both the hand and person simultaneously the display will go to "0" then blank.
15. The countdown ped module shall have accessible dip-switches for the user selectable options. The unit shall have a removable plug on the rear allowing easy access to control the user selectable functions. The countdown is disabled when all the switches are in the "ON" position. The unit shall be shipped from the factory with the specified default setting
16. Switch 1 – Blank Cycle Following a Timing Change – Factory default is "OFF". When this switch is "OFF" the unit will allow the time to be displayed normally during the cycle following a truncated timing such as a preemption call. The countdown shall be capable of displaying the correct time and not affected by the previous reduced cycle. The unit will require 2 consecutive reduced cycles of identical value to validate and record a new time setting. If the timing is extended the unit will record it immediately. In the "ON" position when a change in timing is detected the unit will blank out during the following cycle while the new cycle time is measured and recorded if confirmed.
17. Switch 2 – Disables Auto-sync Mode- Factory default setting is "OFF". When this switch is in the "OFF" position the auto-sync is enabled. When the clearance interval begins and the initial flash of the hand is not in sync with the walk signal the unit will measure the

offset and reduce the duration of the first second by the value of the offset. This will ensure the countdown reached zero at the same time as the flashing hand becomes solid. In the "ON" position there is no time correction when the flashing hand is in offset with the walk signal. The duration of the first second will not be reduced and the hand will appear solid shortly before the countdown reaches zero.

18. Switch 3 – Countdown Starts with Flashing Hand Signal – Factory default setting is "ON". When this switch is "ON" the countdown begins when the hand signal is turned on. With this switch "ON" and the auto-sync mode enabled a short power interruption will have no effect on the countdown display. With switch 3 in the "OFF" position the countdown begins when the walk signal is turned off. This eliminates the effect of an offset hand signal. When switch 3 is in the "OFF" position the auto-sync switch 2 has no effect on the countdown. In this mode if the power to the walk signal is interrupted, the unit will interpret this as the start of the clearance interval and will display the countdown time for 2 seconds before the operation is cancelled. The countdown will resume with the normal ending of the walk signal
19. Switch 4 – Stores Time Value in Memory, Immediate. Restart. - Factory default setting is "OFF". When this switch is in the "OFF" position and power is removed from the unit, the time value stored in the unit is erased. The unit will need to run a dark cycle before it can display the countdown again. In the "ON" position the countdown timing is stored in memory. Following a power interruption, the unit will restart with the stored value and not remain dark during the learning cycle. If the value is different after restart, it will be recorded and displayed correctly at the following cycle.
20. Switch 5 – All LEDs "ON", Test Mode – Factory default setting is "OFF". With this switch in the "ON" position all LEDs are turned on simultaneously. With both switches 4 and 5 in the "ON" position the LED test mode will also scan the 7 individual segments of both digits.
21. The countdown shall be disabled when all switches are placed in the "ON" position.
22. Nominal power usage for Ped Modules at 25°C (77°F), 120 VAC input shall not exceed the values shown in Table 1.

Table 1 -- Nominal Power of Pedestrian Signals

Size	Description	Wattage @ 25°C		
		Hand	Person	Countdown ¹
16"x18"	Side by Side Hand & Person	8	7	N/A
16"x18"	Hand & Person Overlay with Countdown	9	7	5

¹ Wattage for the countdown is measured when the digits 18 are displayed.

23. All wiring shall meet the requirements of Section 13.02 of the VTCSH standard. Secured, color coded, 600V, 18 AWG jacketed wires, 1 meter (39 in) in length, conforming to the NFPA 70, National Electrical Code, and rated for service at +105°C, shall be provided.

24. The following color scheme shall be used for the ped module's AC power leads: Orange for the upraised hand, Blue for the walking person, and White for common. The countdown portion of the LED ped module shall be internally wired to the hand and walking person power.
25. The AC power leads shall exit the ped module via a rubber grommited strain relief, and shall be terminated with insulated female quick connect terminals with spade / tab adapters. The leads shall be separate at the point at which they leave the ped module.
26. All external wiring utilized in the ped modules shall be anti-capillary type wire to prevent the wicking of moisture to the interior of the ped module.
27. The Hand and Person Icons shall utilize separate power supplies. On countdown products, the countdown ped module must have its own power supply but may take the incoming AC power from the hand / person AC signal lines. All power supplies shall be located inside the ped module.
28. All power supplies shall be conformally coated for additional protection.
29. Off State Voltage Decay: When the hand or person icon is switched from the On state to the Off state the terminal voltage shall decay to a value less than 10 VAC RMS in less than 100 milliseconds when driven by a maximum allowed load switch leakage current of 10 milliamps peak (7.1 milliamps AC).
30. For a minimum period of 60 months, measured at 80 to 135 VAC RMS and over the ambient temperatures of -40°C to +74°C (-40°F to +165°F), the minimum maintained luminance values for the ped modules, when measured normal to the plane of the icon surface, shall not be less than:

Walking Person, White: 2,200 cd/m²
Upraised Hand, Portland Orange: 1,400 cd/m²
Countdown Digits, Portland Orange: 1,400 cd/m²
31. The external lens shall have a textured outer surface to reduce glare.
32. Icons that are printed on the lens shall be on the interior surfaces in order to prevent scratching and abrasion to the icons.
33. All icons and numbers shall have a uniform incandescent non-pixelated appearance.
34. All exposed components of a ped module shall be suitable for prolonged exposure to the environment, without appreciable degradation that would interfere with function or appearance. As a minimum, selected materials shall be rated for service for a period of a minimum of 60 months in a south-facing Arizona Desert installation.
35. All LEDs used to illuminate the ped module shall use material that has industry acceptance for use in outdoor applications. At no time is the use of LEDs that utilize AlGaAs technology acceptable.

36. The countdown display shall consist of two 7 segment digits as shown below. All countdown display digits shall be 9 inches in height for use in all size crosswalks in compliance with MUTCD recommendations.

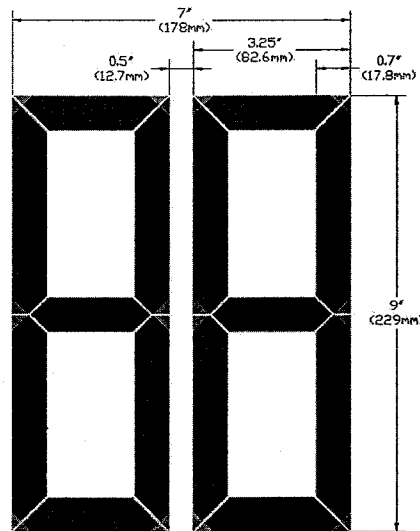


Figure 2: Countdown Display

37. Ped modules shall be repaired or replaced if the ped module fails to function as intended due to workmanship or material defects within warranty period.
38. Ped modules shall be repaired or replaced if the ped module exhibit luminous intensities less than the minimum specified values within 60 months of the date of delivery.
39. The manufacturer shall clearly disclose the country in which the factory of ped module origin is located, the name of the company or organization that owns the factory including all of its parent companies and organizations, and their respective country of corporate citizenship.

PEDESTRIAN, BICYCLE AND EQUESTRIAN PUSH BUTTONS

Pedestrian, bicycle, and equestrian push buttons shall conform to the provisions in Section 86-5.02, "Pedestrian Push Buttons", of the Standard Specifications and these Special Provisions.

Push button shall utilize solid state Piezo switch technology, shall be ADA compliant, and shall be constructed with high impact polycarbonate alloy blend material.

Push button assembly shall be Type B per Standard Plans ES-5C.

Push button housing shall be die-cast or permanent mold cast aluminum.

Push button sign shall be porcelain enameled metal.

Push button shall be Polara Engineering Inc. model MPBP-BY, Campbell Company TM Solid State model 700 or approved equal. The button shall be yellow and its outer body shall be black.

The equestrian push buttons (EPB) shall be installed at 6 feet above finish grade or as directed by the Engineer. The Engineer shall approve the EPB placement on each pole prior to installation.

DETECTORS

Detectors shall conform to the provisions in Section 86-5, "Detectors", of the Standard Specifications and these Special Provisions.

Delay timers shall delay calls only during display of the associated red or yellow indications. If a vehicle departs the area of detection prior to expiration of the assigned delay period, the timer shall reset and no call shall be placed upon the controller. During display of the associated green indication, detectors shall operate in the present mode and calls shall not be delayed.

Inductive Loops

Detector loops' configuration shall be Type E unless otherwise shown on the construction plan, in the Special Provisions or as directed by the Engineer.

Limit Line detector loop configuration shall be modified Type E with diagonal saw cuts and wire winding conforming to Type D loop configuration.

Detector loops' wire shall be Type 2.

Detector loops' lead-in cable shall be Type B.

Detector loops' curb terminations shall be Type A in accordance with Standard Plans ES-5D. The conduit shall extend 18 inches into the paved roadway.

Loop sealant shall be the Hot-Melt Rubberized Asphalt sealant type, unless otherwise directed by the Engineer. Loop conductors and sealant shall be installed on the same day the loop slots are cut.

All detector loops shall be tested sequentially by the following methods:

- impedance (measured by megaohms)
- resistance (measured by ohms)
- inductance (measured in microhenries)

Video Detection

The contractor shall furnish and install video detection cameras (VDC), video detection processors (VDP), extension modules (EM), a pointing device, a drawer mounted 17" LCD monitor, surge suppressors, and all necessary cabling and auxiliary equipment to make the video detection systems fully functional for the intended operation. The Contractor shall furnish a spare VDC, a spare EM, and a spare VDP to the Engineer.

The video detection camera shall be attached to the luminaire or signal mast arm via manufacturer recommended method. The Engineer shall approve the final camera placements.

The video detection systems shall be installed by supplier factory certified installers and as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

Video Detection Zones:

Placement of detection zones shall be done by using the supplied pointing device connected to the VDP to draw the detection zones on the video image from the video camera displayed on a video monitor using the menu and graphical interface built into the VDP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters.

Detection zone setup shall not require site-specific information such as latitude, longitude, date and time to be entered into the system. No separate computer shall be required to program the detection zones.

Each detection zone shall be user definable in size and shape to suit the site and the desired vehicle detection region. A detection zone shall be approximately the width and length of one car.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

When a vehicle is detected crossing a detection zone, the corners of the detection zone shall flash on the video overlay display screen to confirm the detection of the vehicle.

Distance between the detection zone placement and the camera shall not be more than a distance of ten times the mounting height of the camera.

Functional Capabilities:

System must have a single point access to multiple rack-mounted video detection units. The access device shall provide interface capabilities to enable multiple rack-mounted video detection processors to be locally and remotely accessed from a single point via one set of user interface devices.

The video detection processor (VDP) shall process video from one or two sources. The video input to the VDP shall be in NTSC or PAL composite video format and shall be digitized and analyzed in real time. Dual video VDP's shall process images from both inputs simultaneously.

The camera shall be able to transmit the composite video signal, with minimal signal degradation, up to 1000 feet under ideal conditions.

The VDP shall have a nine-pin RS232 port that is multi-drop compatible for communications with an external computer. The VDP shall be able to accept new detector patterns from and send

its detection patterns to an external computer through this RS-232 port. A Windows™ based software designed for local or remote connection for uploading and downloading data, and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.

The extension module (EM) shall be available to avoid the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack. The extension module shall be connected to the VDP by an 8-wire cable with modular connectors. VDP and EM communications shall be accommodated by methods using differential signals to reject electrically coupled noise. The extension module shall be available in both 2 and 4 channel configurations. EM configurations shall be programmable from the VDP.

The VDP shall provide a minimum of 24 channels of vehicle presence detection/detection zones per camera through a standard detector rack edge connector and one or more extension modules.

The VDP shall store up to three different detection zone patterns within the VDP memory. The VDP's memory shall be non-volatile to prevent data loss during power outages. The VDP shall continue to operate (e.g. detect vehicles) using the existing zone configurations even when the operator is defining/modifying a zone pattern. The new zone configuration shall not go into effect until the operator saves the configuration. Each configuration can be uniquely labeled for identification and the current configuration letter is displayed on the monitor. The selection of the detection zone pattern for current use shall be done through a local menu selection or remote computer via RS-232 port. It shall be possible to activate a detection zone pattern for a camera from VDP memory and have that detection zone pattern displayed within 1 second of activation.

The VDP shall provide dynamic zone reconfiguration (DZR) to enable normal detector operation of existing channels except the one where a zone is being added or modified during the setup process. The VDP shall output a constant call on any detection channel corresponding to a zone being modified.

The VDP shall detect vehicles in real time as they travel across each detector zone.

The VDP shall output a constant call for each enabled detector output channel if a loss of video signal occurs. The VDP shall output a constant call during the background learning period.

The VDP shall be capable of detecting a low-visibility condition automatically, such as fog, and place all defined detection zones in a constant call mode. The VDP shall automatically revert to normal detection mode when the low-visibility condition no longer exists. A user-selected output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s).

Detection shall be at least 98% accurate in good weather conditions and at least 96% accurate under adverse weather conditions (rain, snow, or fog). Detection accuracy is dependent upon site geometry; camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.

Up to six detection zones shall be capable to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the RS-232 port. The data collection interval shall be user definable in periods of 5, 15, 30 or 60 minutes.

Video Detection Processor (VDP) & Extension Module (EM) Hardware:

The VDP and EM shall be specifically designed to mount in a standard NEMA TS-1, TS-2, 2070 ATC, 170 type detector rack, using the edge connector to obtain power and provide contact closure outputs. No adapters shall be required to mount the VDP or EM in a standard detector rack. Detector rack rewiring shall not be required or shall be minimized.

The VDP and EM shall operate in a temperature range from -34°C to +74°C and a humidity range from 0%RH to 95%RH, non-condensing.

The VDP and EM shall be powered by 12 or 24 volts DC. These modules shall automatically compensate for the different input voltages.

VDP power consumption shall not exceed 300 milliamps at 24 VDC. The EM power consumption shall not exceed 120 milliamps at 24 VDC.

The VDP shall include an RS232 port for serial communications with a remote computer. The VDP RS232 port shall be multi-drop compatible. This port shall be a 9-pin "D" subminiature connector on the front of the VDP.

The VDP shall utilize flash memory technology to enable the loading of modified or enhanced software through the RS232 port without modifying the VDP hardware.

The VDP and EM shall include detector output pin out compatibility with industry standard detector racks.

The front of the VDP shall include detection indications, such as LED's, for each channel of detection that display detector outputs in real time when the system is operational.

The front of the VDP shall include one or two BNC video input connection suitable for RS170 video inputs as required. The video input shall include a switch selectable 75-ohm or high impedance termination to allow camera video to be routed to other devices, as well as input to the VDP for vehicle detection. Video must be inputted via a BNC connector on the front face of the processor. RCA type connectors/jacks for video input are not allowed. Video shall not be routed via the edge connectors of the processor.

The front of the VDP shall include one BNC video output providing real time video output that can be routed to other devices. A RCA type connector/jack for video output is not allowed.

The front panel of the VDP and EM shall have a detector test switch to allow the user to place calls on each channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.

Video Detection Camera:

The VDC used for traffic detection shall be furnished by the VDP supplier and shall be qualified by the supplier to ensure proper system operation.

The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.1 lux to 10,000 lux.

The camera shall use a CCD sensing element and shall output monochrome video with resolution of not less than 380 lines horizontal.

The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with a factory adjusted manual iris. Auto-iris lenses are not allowed.

The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier. The horizontal field of view shall be adjustable from 8.1 to 45.9 degrees. A single camera configuration shall be used for all approaches in order to minimize the setup time and spares required by the user.

The camera electronics shall include Automatic Gain Control (AGC) to produce a satisfactory image at night or low light conditions.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 153 mm diameter, less than 380-mm long, and shall weigh less than 2.7 kg when the camera and lens are mounted inside the enclosure.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from -34 degree C to +60 degree C and a humidity range from 0% RH to 100% RH.

The camera shall be powered by 120-240 VAC 50/60 Hz. Power consumption shall be 15 watts or less under all conditions.

The camera enclosure shall be equipped with separate, weather-tight connections for power and setup video cables at the rear of the enclosure. These connections may also allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module supplied by the VDP supplier. Video and power shall not be connected within the same connector.

The video signal output by the camera shall be black and white in RS170 or CCIR format.

The video signal shall be fully isolated from the camera enclosure and power cabling.

Cabling and Cable Connections:

Interface among the VDPs and EMS shall use RJ-45 interface connectors.

The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281. The coax cable shall be a continuous unbroken run from the camera to the VDP. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. 75-ohm BNC plug connectors should be used at both the camera and cabinet ends. The coaxial cable, BNC connector, and crimping tool shall be approved by the supplier of the video detection system, and the manufacturer's instructions must be followed to ensure proper connection.

The power cabling shall be 16 AWG three conductor cable with a minimum outside diameter of 0.325 inch and a maximum diameter of 0.490 inch. The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras may not acquire power from the luminaire.

All service cables shall run continuously into the service cabinet. A 1-amp Inline fuse shall be provided for each service cable and a minimum of 8-position terminal block shall be provided as directed by the Engineer inside the service cabinet.

Maintenance and Support:

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the access unit and video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on site technical support services.

Installation or training support shall be provided by factory-authorized representative.

LUMINAIRES

Luminaires shall conform to the provisions in Section 86-6, "Lighting", of the Standard Specifications and these Special Provisions.

Luminaires shall be of the cutoff type and shall be 200 or 250 Watt High Pressure Sodium Vapor as shown on the plans. The fixtures shall be constructed with flat lenses, integral ballasts, and detachable power unit assemblies. The power unit assemblies shall contain the ballast, starter board, capacitors, and a heavy-duty terminal block.

Each luminaire shall be furnished without the photoelectric unit receptacle. If the luminaire housing is provided with a hole for the receptacle, the hole shall be closed in a weatherproof manner.

Each luminaire shall have a 5-amp inline fuse installed inside the standard's hand hole.

SIGN LIGHTING FIXTURES

Sign lighting fixtures shall conform to the provisions in Sections 86-6.06, "Sign Lighting Fixtures – Incandescent", of the Standard Specifications.

Sign lamp for Type 9 Standard shall be 36" LED type. Power consumption not to exceed 30W.

INTERNALLY ILLUMINATED STREET NAME SIGNS

Internally illuminated street name signs (IISNS) shall conform to the provisions in Section 86-6.065, "Internally Illuminated Street Name Signs", of the Standard Specifications and these Special Provisions.

Sign panels shall be slide-mounted or rigid mounted in a frame with white translucent diamond grade reflective legend, symbol, arrows, and border on each face, the background shall be green. FHWA Series E 10" uppercase and 7.5" lowercase fonts.

The sign fixture, panels, and mounting assemblies shall be designed and constructed to prevent deformation, warp or failure when subjected to 100 mph wind loads, as set forth in the latest AASHTO publication, "Standard Specifications for Structural Supports of Highway Signs, Luminaires, and Traffic Signals", and amendments thereto. The IISNS manufacturer shall submit a certificate of compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance", with each lot of IISNSs delivered.

The IISNSs shall be attached to the 10' IISNS mast arm per County Standard No. 1200.

Support brackets shall be 3/8" X 1.5" or larger that can withstand 100 mph wind load.

Lighting fixture shall be LED type and conform to the following provisions:

LED Specification:

1. The LED Light System shall be an operational unit consists of LED module or modules and power supply or supplies.
2. The LED Light System shall fit within the existing 6' or 8' internally illuminated street name sign (IISNS) housing.

3. The LED Light system components shall be UL certified, damp location rated and RoHS compliant.
4. The LED Light system's power consumption shall not exceed 60W for a 6' sign or 80W for an 8' sign.
5. The LED Light system shall not require the use of an additional or external diffuser to disperse the light.
6. The LED Light system manufacturer shall have been in business supplying LED products for signage or lighting at least 12 months (references required).
7. LED Light system shall meet the minimum criteria listed in the specification. All manufacturer documentation including specification and warranty for both LED modules and power supply shall be submitted and approved by the County prior to installation.

Power Supply

- 1 The power supply shall be Class 2.
- 2 The power supply shall provide efficiency greater than 87%
- 3 The manufacturer shall warrant the power supply for a minimum of 60 months.

LED Modules

- 1 The LED correlated color temperature shall be 4100K or higher.
- 2 The LED shall have a minimum of 120-degree viewing angle.
- 3 The LED modules shall be available in single or double sided.
- 4 The average life of LEDs contained in the LED Module shall be rated for 50,000 hours or more.
- 5 The LED modules shall produce 4100 lumens minimum to the sign face of a 6' IISNS; and 5000 lumens minimum to the sign face of an 8' IISNS.
- 6 The manufacturer shall warrant the LED modules for a minimum of 48 months.

PHOTOELECTRIC CONTROLS

Photoelectric controls shall conform to the provisions in Section 86-6.07, "Photoelectric Controls", of the Standard Specifications and these Special Provisions.

Photoelectric controls shall be a dual Type V for luminaires and internally illuminated street name signs conforming to the County Road Improvement Standards No. 1202.

Photoelectric units shall be the delay type.

EMERGENCY VEHICLE PRE-EMPTION SYSTEM

The Contractor shall furnish and install complete and functioning emergency vehicle preemption (EVP) system as intended per plans, the manufacturer, and these special provisions. The transmitting equipment is not included in this contract.

The EVP system shall consist of the following equipments or components:

- Optical detector for each approach, as shown on the plans

- Rack-mounted 2-channel phase selectors for 8-phase operation
- Detector cable

The Contractor shall furnish the following spare EVP equipments or components:

- One (1) rack-mounted 2-channel phase selector
- One (1) optical detector

The EVP system shall be designed to prevent simultaneous pre-emption by two or more emergency vehicles on separate approaches to the intersection.

The Engineer shall approve EVP sequence of operation prior to timing and turn-on of each respective traffic signal.

At locations where optical detectors are not to be installed, EVP cable shall be installed for future use.

1. EVP cable shall be installed, without splices, between the controller cabinet and each mast arm traffic signal pole.
2. EVP cable shall be connected to the EVP rack terminals within the controller cabinet.
3. Each mast arm EVP detector mounting shall be drilled and tapped in its ultimate location. In lieu of the detector, install approved water tight UL listed electrical box. EVP cable shall be installed to terminate within the mast arm mounted electrical box. Excess cable shall be coiled within the electrical box sufficient for future installation of the EVP system.

Optical Detector

The optical detector shall be mounted on the indicated signal mast arm per Riverside County Standard No. 1202.

Each optical detector shall be waterproof unit capable of receiving optical energy from a single direction. The reception angle for each optical detector unit shall be a minimum of 8 degrees in all directions about the aiming axis of the unit.

Internal circuitry shall be solid state and electrical power shall be provide by the associated discrimination module.

Each optical detector unit shall have a minimum of a ½ inch NPT opening used for mounting and for bringing the connecting cable into the terminal block located within the assembly. The housing shall be provided with weep holes to permit drainage of condensed moisture.

Each optical detector shall be installed, wired, and aimed as specified by the manufacturer.

Cable

Optical detector cable shall meet the requirements of IPCEA-S-61-402/NEMA WC 5, Section 7.4, 600 V Control cable, 75 degrees C, Type B, and the following:

1. The cable shall contain 3 conductors, each of which shall be AWG# 20 (7 x 28) stranded, tinned copper. Insulation of individual conductors shall be color-coded: 1-Yellow, 1-Orange, and 1-Blue.
2. The shield shall be either tinned copper braid or aluminized polyester film with a nominal 20% overlap. When film is used, an AWG# 20 (7 x 28) stranded, tinned, bare drain wire shall be placed between the insulated conductors and the shield and in contact with the conductive surface of the shield.
3. The jacket shall be marked as required by IPCEA/NEMA.

The cable run between each detector and the Traffic Controller cabinet shall be continuous without splices.

Phase Selector

Each phase selector shall conform to the requirements of Chapter I of the State of California, Department of Transportation, "Traffic Signal Control Equipment Specifications", shall be compatible and usable with a Model 170E or 2070 controller unit, and shall be mounted in the input file of a Model 332 or Model 333 JP controller cabinet.

Each phase selector shall be capable of operating at least two or more channels, each of which shall provide an independent output for each separate input.

Each phase selector, when used with its associated optical detectors, shall perform as a minimum, the following:

1. Receive Class I and Class II signals.
2. Decode the signals based on optical frequency, at 9.639 Hz + or -0.119 Hz for Class I signals and 14.035 Hz + or -0.255 Hz for Class II signals.
3. Establish the validity of received signals based on optical frequency and length of time received. A signal shall be considered valid only when received for more than 0.50 second. No combination of Class I signals shall be recognized as a Class II signal regardless of the number of signals being received, up to a maximum of 10 signals. Once a valid signal has been recognized, the effect shall be held by the module, in the event of temporary loss of signal for a minimum period of 4.0 seconds.
4. Provide an output for each channel that will result in a "low" or grounded condition of the appropriate input of a Model 170 controller unit. For a Class I signal, the output shall be a 6.25 Hz + or - 0.1 %, rectangular waveform with a 50 % duty cycle. For Class II signal, the output shall be steady.

Each phase selector shall receive power from the controller cabinet at either 12 VDC or 120 VAC.

Auxiliary inputs for each channel may enter each module through a front panel connector or by a parallel hook-up of the associated detector cables at the input location.

The phase selector shall provide an optically isolated output for each channel to the Model 170 controller unit. All outputs signals shall comply with NEMA signal level definitions and shall be compatible with the Model 170 controller assemblies' inputs.

Each phase selector shall be provided with means of preventing transients received by the detector from affecting the Model 170 controller assembly.

Each phase selector shall have a single connector board and shall occupy one slot of the input file. The front panel of each phase selector module shall have a handle to facilitate withdrawal and have the following controls and functions for each channel:

1. Range adjustments for both class I and Class II signals.
2. A 3-position, center off, momentary contact switch, one position (down) labeled for test operation of Class I signals, and one position (up) labeled for test operation of Class II signals.
3. A "signal" indication and a "call" indication each for Class I and for Class II signals. The "signal" indications denote that a signal, which is not valid, has been received; a "call" indication denotes a steady, valid signal has been received. These 2 indications may be accomplished with a single indication lamp.

In addition, the front panel shall be provided with additional connectors or ports used to perform other functions as specified by the manufacturer.

Cabinet Wiring

Wiring for a Model 332 cabinet shall conform to the following:

1. Slots 12 and 13 of input file "J" shall be wired to accept either a 2 channel or a 4 channel module.
2. Field wiring for the primary detectors, except the 24 VDC power, shall terminate on either terminal block TB-9 in the controller cabinet or on the rear of input file "J", depending on cabinet configuration. Where TB-9 is used, position assignments shall be as follows:

TB-9 - 1	= Not Used	
TB-9 - 2	= + 24 VDC Out	(Orange)
TB-9 - 3	= + 24 VDC Out	(Orange)
TB-9 - 4	= EVA Detector	(Yellow)
TB-9 - 5	= EVC Detector	(Yellow)
TB-9 - 6	= DC Common Out	(Blue)
TB-9 - 7	= EVB Detector	(Yellow)
TB-9 - 8	= EVD Detector	(Yellow)
TB-9 - 9	= DC Common Out	(Blue)

Assuming TB9-2 & TB9-3 are unused on the "J" File. Move wires on J11-J & J11-K (Twisted Pair) to J12-E & J13-E Respectively.

Field wiring for auxiliary detectors may terminate on terminal board TB-0 (If Unused) in the controller cabinet. Use manufactures recommended wiring for these connections.

System Operation

The contractor shall demonstrate that the components of each system are compatible and will perform satisfactorily as a system. Satisfactorily performance shall be determined using the following test procedure during the functional test period:

- A. Each system to be used for testing shall consist of an optical detector, an optical detector cable and a phase selector module.
- B. The phase selector shall be installed in the proper input file slot of the Model 332 or 333 controller cabinet assembly.
- C. Two tests shall be conducted; one using a Class I signal emitter and a distance of 1000 feet between the emitter and the detector, the other using a Class II signal emitter and a distance of 1800 ft between the emitter and the detector. Range adjustments on the phase selector shall be set to "Maximum" for each test.
- D. During the tests of the Class I and Class II emitters, the proper response from the Model 170E and 2070 controller unit during the "ON" interval and there shall be no improper operation of the Model 170E or 2070 controller unit or the monitor during the "OFF" interval.

The Contractor shall arrange for, and pay the cost of, the services of a knowledgeable representative from the EVP manufacturer, to be present for the first day of the traffic signal and lighting function test to insure proper installation and functioning of the EVP equipment.

The Contractor shall arrange for, and pay the cost of, the services of the controller manufacturer to perform any controller modifications required for the installation, or operation, of the EVP equipment.

GPS UNIVERSAL TIME SOURCE

The GPS Universal Time Source shall be a McCain model M32755 or approved equal. Approval of any alternate time source shall be determined by the Engineer.

THE GPS Universal Time Source shall incorporate a precision GPS receiver and a microprocessor to decode the time signals received from the GPS satellite network. The Universal Time Source shall interface this time signal to a model 170E controller (using Bi-Tran local software) to provide an accurate clock update to the traffic signal controller.

The GPS Universal Time Source shall meet or exceed the following criteria:

- Approximately 6"L x 3.5"W x 1.5"H in size with mounting flanges.
- Operate in temperatures from -30°C to +80°C.
- Receive power through 170E controller's ACIA port.
- Provide 170E controller with the time, date, and day of the week data.
- Software configured time zone and daylight savings operations.
- Support RS-232C serial data rates at 300, 600, 1200, 2400, 48000, 9600 and 19200 bps.
- Provide LED indicators for communication status to a satellite.
- Provide a weatherproof disc antenna no greater than 3" diameter x 1" height to be mounted directly to the top of the traffic signal controller cabinet.
- Provide all cabling and connectors with the correct pin assignments to interface the GPS unit to antenna and to 170E controller.

Proper gaskets or other weatherproofing materials for the antenna shall be supplied and installed to prevent water or moisture from entering the traffic signal controller cabinet.

BATTERY BACKUP SYSTEM

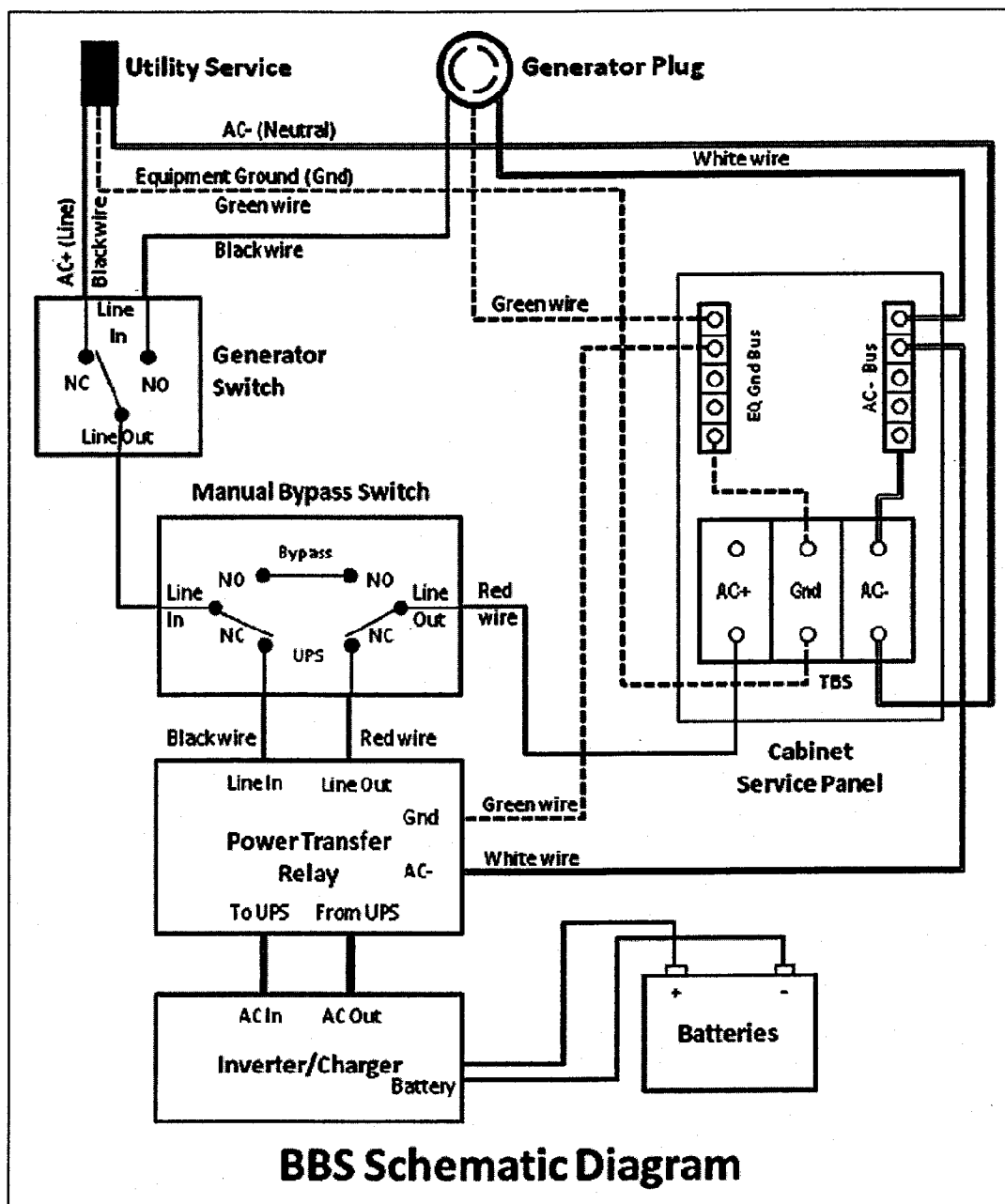
This special provision establishes the minimum requirements for a battery backup system (BBS) that shall provide power to a traffic signal system in the event of a power failure or interruption.

The BBS shall be designed for outdoor applications, in accordance with the Chapter 1, Section 8 requirements of Transportation Electrical Equipment Specifications (TEES) .

The BBS batteries shall be external to the traffic signal controller cabinet as specified under "External Battery Cabinet Option" herein unless specified otherwise. The supplied external cabinet shall be listed on the current Caltrans pre-qualified product list for the external BBS cabinet.

The BBS shall have been installed and operational for a period of one year at a signalized intersection in the United States. The supplied BBS shall be listed on the Caltrans pre-qualified product list for the BBS.

The BBS shall include, but not limited to the following: cabinet, utility line/generator switch, inverter/charger, power transfer relay, a separate manually operated non-electronic bypass switch, batteries, and all necessary hardware, shelving, and interconnect wiring. The following figure shows BBS components interconnecting with each other and the controller cabinet to ensure interchangeability between all BBS manufacturers.



BBS Schematic Diagram

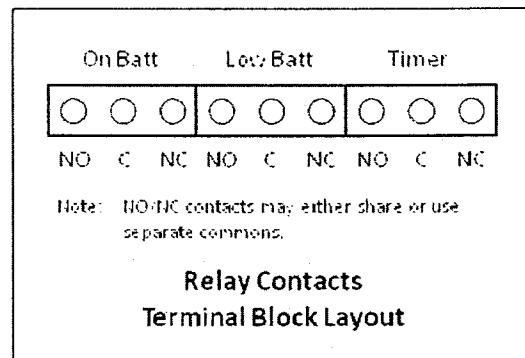
Operation

The BBS shall provide a minimum two (2) hours of full run-time operation for an intersection equipped with all LED traffic signal indications (minimum 1100W active output capacity, with 80% minimum inverter efficiency).

The maximum transfer time allowed, from disruption of normal utility line voltage to stabilized inverter line voltage from batteries, shall be 65 milliseconds. The same maximum allowable transfer time shall also apply when switching from inverter line voltage to utility line voltage.

The BBS shall provide the user with 6-sets of fully programmable normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) dry relay contact closures, available on a panel-

mounted terminal block, rated at a minimum 120V/1A, and labeled so as to identify each contact. See below figure for typical configuration.



The first set of NO and NC contact closures shall be energized whenever the unit switches to battery power. Contact shall be labeled or marked "On Batt."

The second set of NO and NC contact closures shall be energized whenever the battery approaches approximately 40% of remaining useful capacity. Contact shall be labeled or marked "Low Batt."

The third set of NO and NC contact closures shall be energized two hours after the unit switches to battery power. Contact shall be labeled or marked "Timer".

The six programmable NO and NC contact closures shall be independently configured to activate under any of the following conditions: On Battery, Low Battery, Timer, Alarm, or Fault.

Operating temperature for inverter/charger, power transfer relay and manual bypass switch shall be -37°C to $+74^{\circ}\text{C}$.

Both the Power Transfer Relay and Manual Bypass Switch shall be rated at 240VAC/30 amps, minimum.

The BBS shall use a temperature-compensated battery charging system. The charging system shall compensate over a range of $2.5 - 4.0 \text{ mV/}^{\circ}\text{C}$ per cell.

The temperature sensor shall be external to the inverter/charger unit. The temperature sensor shall come with 10' of wire.

Batteries shall not be recharged when battery temperature exceeds $50^{\circ}\text{C} \pm 3^{\circ}\text{C}$.

BBS shall bypass the utility line power whenever the utility line voltage is outside of the following voltage range: 100VAC to 130VAC ($\pm 2\text{VAC}$).

When utilizing battery power, the BBS output voltage shall be between 110 VAC and 125 VAC, pure sine wave output, $\leq 3\%$ THD, $60\text{Hz} \pm 3\text{Hz}$.

BBS shall be compatible with NEMA and Model 332 Cabinets, Model 170, 390 & 2070 Controllers and cabinet components for full time operation.

In cases of low (below 100VAC) or absent utility line power, when the utility line power has been restored at above $105 \text{ VAC} \pm 2 \text{ VAC}$ for more than 30 seconds, the BBS shall transfer from battery backed inverter mode back to utility line mode.

In cases of high utility line power (above 130VAC), when the utility line power has been restored at below $125 \text{ VAC} \pm 2 \text{ VAC}$ for more than 30 seconds, the BBS shall transfer from battery backed inverter mode back to utility line mode.

The BBS shall have an automatic tap to step up or step down the output voltage by 10 percent. The resulting output voltages shall remain within the above prescribed voltage range: 100VAC to 130VAC. This capability will extend BBS range for operating on input AC and not reverting to battery power.

BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service.

In the event of inverter/charger failure, battery failure or complete battery discharge, the power transfer relay shall revert to the NC (and de-energized) state, where utility line power is connected to the cabinet.

Recharge time for the battery, from "protective low-cutoff" to 80% or more of full battery charge capacity, shall not exceed twenty (20) hours.

Mounting / Configuration

Generator Switch, Inverter/Charger, Power Transfer Relay and manually operated Bypass Switch shall fit inside a typical fully equipped traffic signal controller cabinet.

Mounting method inside the 332 cabinet shall be shelf-mount, rack-mount or combination of either. Available rack space for front-mounted inside the 332 cabinet is 3U or approximately 6".

All interconnect wiring provided between Generator Switch, Inverter/Charger, Power Transfer Relay, Bypass Switch and Cabinet Terminal Service Block shall be no less than 9' of UL Style 1015 CSA TEW with the following characteristics:

AWG Rating: 10 AWG

Stranding: 105 strands of 30 AWG tinned copper

Rating: 600 V, 105 °C, PVC Insulation

Relay contact wiring provided for each set of NO/NC relay contact closure terminals shall be 9' of UL Style 1015 CSA TEW 18 AWG wire, same ratings as above, except 16 strands of 30 AWG tinned copper.

All necessary hardware for mounting (shelf angles, rack, etc) shall be included in the bid price of the Traffic and Lighting or BBS.

Internal mounted battery option (Allowed only if requested on the plans)

The controller cabinet shall be equipped with a Hubble generator locking flanged inlet, configuration 6CS6375, 50A, 125VAC and manual transfer switch. The generator inlet shall be located behind a locking watertight cover. The bypass switch shall transfer the load, including the UPS to the twist lock inlet receptacle. The manual transfer switch shall be wired to prevent any back feed to the utility service.

Batteries shall be mounted on swing-tray mounted below the controller shelf. A minimum of six (6) bolts/fasteners shall be used to secure swing-trays to the 332 Cabinet standard EIA 19" rack. All bolts/fasteners and washers shall meet the following requirements:

Screw type: Pan Head Phillips machine screw

Size and Thread pitch: 10-32

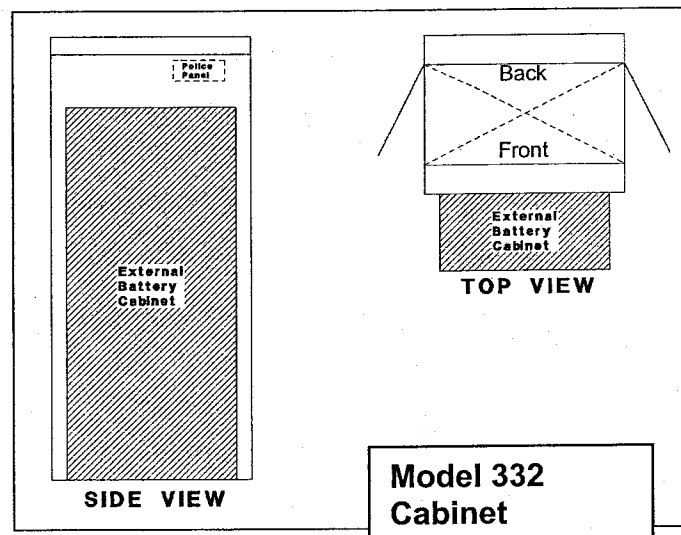
Material: 18-8 stainless steel (Type 316 stainless steel is acceptable as an alternate)

Washer: Use one 18-8 stainless steel flat washer under the head of each 10-32 screw; lock washers are unnecessary provided that the screws are properly tightened.

Number of screws per swivel bracket: minimum six (6) screws per swivel bracket. Spaced evenly along bracket, with one screw near each end. Batteries may be shelf mounted in area behind controller so long as shelf and batteries do not interfere with controller unit and C1 plug.

External battery cabinet option

Batteries shall be housed in an external cabinet mounted to the side of the controller cabinet as shown in the following figure or as directed by the Engineer with a minimum of eight bolts:



If BBS is installed at the back of controller cabinet, the modification shall include a minimum of 36" wide concrete walkway access to the BBS without encroaching outside the right-of-way. BBS shall be installed at the front of the controller cabinet (in locations where the back of the controller cabinet has limited ROW or conflicting structures and facilities and other obstructions), the BBS cabinet shall not cover the police panel. The BBS cabinet shall also not hinder the access ramp's compliance with ADA requirements.

Four shelves shall be provided within the battery cabinet. There shall be a minimum of 12" clearance between shelves. Each shelf shall be a minimum of 9" X 25", and capable of supporting a minimum of 125 lbs. Batteries shall be mounted on individual shelves.

The external battery cabinet shall be NEMA 3R rated in accordance to Section 2-Housings of the Chapter 7 of TEES, for the construction of the cabinet and anodic coating finish.

The external battery cabinet shall be ventilated through the use of louvered vents, filter, and one thermostatically controlled fan in accordance to Section 2-Housings of the Chapter 7 of TEES.

External battery cabinet fan shall be AC operated from the same line output of the Manual Bypass Switch that supplies power to the controller cabinet.

The external battery cabinet shall have a door opening to the entire cabinet. The door shall be attached to the cabinet through the use of either a continuous stainless steel piano hinge or four, two-bolts per leaf, hinges in accordance to Section 2-Housings of the Chapter 7 of TEES. The door shall use a three-point, roller locking mechanism and standard #2 key lock to lock the door. The door shall have a stainless steel handle.

The external cabinet shall be equipped with a Hubble generator locking flanged inlet 50A, 125VAC and manual transfer switch. The generator inlet shall be located behind a locking watertight cover. The bypass switch shall transfer the load, including the UPS to the twist lock inlet receptacle. The manual transfer switch shall be wired to prevent any back feed to the utility service.

The BBS with external battery cabinet shall come with all bolts, conduits and bushings, gaskets, shelves, and hardware needed for mounting.

Maintenance, Displays, Controls And Diagnostics

The BBS shall include a 2 line by 40 character LCD display to indicate current battery charge status, input/output voltages, time and settings of various conditions. The same parameters shall be available via RS232 and USB interfaces on the face of the BBS.

The BBS shall have lightning surge protection compliant with IEEE/ANSI C.62.41.

The BBS shall be capable of accepting firmware upgrades of the non-volatile, read-only memory via serial port communications. The updates shall be accomplished by uploading the software to the BBS over the RS232 serial port located on the face of the BBS.

The BBS shall be equipped with an integral system to prevent battery from destructive discharge and overcharge.

The BBS shall be capable of performing a SELF-TEST, locally from the BBS front panel LCD, or remotely via RS232 or USB interface. The duration of the SELF-TEST shall be programmable in 1-minute increments from 1 minute to 255 minutes.

The BBS and batteries shall be easily replaced with all needed hardware and shall not require any special tools for installation.

The BBS shall include a re-settable inverter event counter to indicate the number of times the BBS was activated and the total number of hours the unit has operated on battery power, accessible via the LCD screen or remotely via RS232 and USB.

The BBS shall be equipped with an event log that stores for a minimum the last 100 events. The events shall be time and date stamped. The event log shall be retrievable via RS232, USB or from the BBS LCD screen. The event log shall be display and print out in plain English when output the RS232 or USB ports.

Battery System

Individual batteries shall be 12V, 105 amp-hour type, and shall be easily replaced and commercially available off the shelf.

Batteries used for BBS shall consist of four (4) batteries with a cumulative minimum rated capacity of 240 amp-hours.

Batteries shall be deep cycle, sealed prismatic lead-calcium based AGM/VRLA (Absorbed Glass Mat/ Valve Regulated Lead Acid).

Batteries shall be certified by the manufacturer to operate over a temperature range of -25°C to $+74^{\circ}\text{C}$.

The batteries shall be provided with appropriate interconnect wiring and corrosion-resistant mounting trays and/or brackets appropriate for the cabinet into which they will be installed.

Batteries shall indicate maximum recharge data and recharging cycles.

Battery Harness

Battery interconnect wiring shall be via two-part modular harness:

Part I shall be equipped with red (+) and black (-) cabling that can be permanently connected to the positive and negative posts of each battery. Each red and black pair shall be terminated into a Molex, polarized – keyed battery cable connector or equivalent. The length of the harness between batteries shall be a minimum of 12”.

Part II shall be equipped with the mating Power Pole style connector for the batteries and a single, insulated Power Pole style connection to the inverter/charger unit. Harness shall be fully insulated and constructed to allow batteries to be quickly and easily connected in any order to ensure proper polarity and circuit configuration. The length of the battery interconnect harness shall be a minimum of 60” from the Inverter/Charger plug to the first battery in the string.

Power Pole connectors may be either one-piece or two-piece. If a two-piece connector is used, a locking pin shall be used to prevent the connectors from separating.

All battery interconnect harness wiring shall be UL Style 1015 CSA TEW or Welding Style Cable or equivalent, all of proper gauge with respect to design current and with sufficient strand count for flexibility and ease of handling.

Battery terminals shall be covered and insulated with molded boots to prevent accidental shorting.

BBS Quality Assurance

Each Battery Backup System (BBS) shall be manufactured in accordance with a manufacturer Quality Assurance (QA) program. The QA program shall include two Quality Assurance procedures:

- (1) Design QA - The manufacturer, or an independent testing lab hired by the manufacturer, shall perform Design Qualification Testing on new BBS system(s) offered, and when any major design change has been implemented on an existing design. A major design change is defined as any modification - material, electrical, physical, or theoretical, that changes any performance characteristics of the system, or results in a different circuit configuration. Where a dispute arises in determining if a system is a new design or if the system has had a major design change, the County will make the final determination if Design Qualification Testing is required prior to production consideration.
- (2) Production QA - The Production QA shall include statistically controlled routine tests to ensure minimum performance levels of BBS units built to meet this specification and a documented process of how problems are to be resolved.

QA process and test results documentation shall be kept on file for a minimum period of seven years.

Battery Backup System designs not satisfying Design QA Testing and Production QA Testing requirements shall not be labeled, advertised, or sold as conforming to this specification.

The Contractor shall arrange to have a technician, qualified to work on the battery backup system and employed by the battery backup system manufacturer or employed by the manufacturers authorized distributor, present at the time the equipment is turned on. It shall be the responsibility of the Contractor to implement and fund any traffic signal controller assembly modifications required to achieve the traffic signal operation as shown on the construction plans and as required in the Special Provisions.

PAYMENT

Full compensation for transporting and furnishing materials and equipments; installing the complete and operational traffic signal and lighting system, including foundations; providing product warranties and documentations; programming and testing equipments; maintaining existing or temporary signal and/or beacons, including all labor, equipment, materials and incidentals involved as specified herein, elsewhere in these Special Provisions and plans shall be included in the lump sum price paid for Signal and Lighting, and no additional compensation shall be allowed therefor.

Full compensation for furnishing, transporting, and installing conduits, signal interconnect cables, and pull boxes as part of the signal interconnect system, including all labor, materials, tools,

equipment, and incidentals involved shall be included in the unit price per foot paid for Signal Interconnect and no additional compensation shall be allowed therefor.

OBSTRUCTIONS:

Attention is directed to Sections 8-1.10, "Utility and Non-Highway Facilities", and 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions.

Existing utility and privately owned facilities shall be protected in accordance with Section 7-1.11, "Preservation of Property" and these Special Provisions. The Contractor is also responsible to protect those facilities that are to be relocated by others prior to or during construction, and shall protect those facilities in both their existing and their ultimate locations. The Contractor shall cooperate with owners and their Contractors of utility and privately owned facilities, for the relocation of said facilities, in accordance with Section 7-1.14, "Cooperation" of the Standard Specifications.

All water valves and covers, gas valves and covers, sewer manholes, survey monuments, survey markers and any other utility appurtenances shall be protected in place.

The Contractor's attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workmen and the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipe lines greater than 6 inches in diameter or pipe lines operating at pressures greater than 60 psi (gage); underground electric supply system conductors or cables either directly buried or in duct or conduit which do not have concentric neutral conductors or other effectively grounded metal shields or sheaths; and underground electrical conductors with potential to ground of more than 300 volts. The Contractor shall notify the Engineer at least twenty-four hours prior to performing any work in the vicinity of such facilities.

Attention is directed to the requirements of Government Code Sections 4216-4216.9 pertaining to existing utility facilities.

The Contractor shall assume that every house, building and lot within the project limits has utility service pipes and conductors (laterals), and that utility main and trunk facilities exist within the project limits. The Contractor shall determine if it is warranted to determine the exact location of these utility service laterals and existing main lines, unless directed by the Engineer to pot-hole at specific locations, or as otherwise required herein. The Contractor will not be directly reimbursed for determining the exact location of the utility main lines or services laterals but shall include any compensation for this work in the contract price paid for the various items of work. Any damage to existing main lines or service laterals for which pot-holing was not performed shall be considered damage due to not using reasonable care and the damage shall be repaired at the Contractor's expense.

The Contractor shall conduct his operations with the assumption that underground utility facilities exist within the project limits. The Contractor shall exercise caution and best construction practices for safety and for protection of underground facilities. The approximate locations of underground utility facilities, as shown on the plans, are based on information provided by the respective owners,

listed below. The Contractor shall also utilize the markings of the regional notification center (Underground Service Alert), and above-ground utility appurtenances to determine the existence and approximate location of underground utilities.

No excavation shall be made within 4 feet of any underground utilities, as shown on the plans and/or marked by Underground Service Alert, unless and until such utilities have been positively located as to horizontal and vertical position. This requirement applies to all underground electric, natural gas, toxic or flammable gas, chlorine, oxygen or petroleum facilities.

Forty-eight hours prior to beginning construction, the Contractor shall notify the following agencies:

Underground Service Alert	800-227-2600
Southern California Gas Company	909-335-7529
Verizon Communications	760-778-1225
Imperial Irrigation District	760-398-5825
Time Warner Cable	760-674-5439
Coachella Valley Water District	760-398-2651
Myoma Dunes Mutual Water Company	760-345-2694

Method of Payment

Full compensation for all costs, including labor, equipment, materials and incidentals, required to comply with the requirements of this section above, including protection of water valves and covers, gas valves and covers, sewer manholes, survey monuments, survey markers and any other utility appurtenances, shall be considered as included in the various items of work, and no additional compensation will be allowed therefor.

Adjustments to Grade for Obstructions

The Contractor shall adjust to finish grade any valve covers encountered within the project limits, as required, for those utility valves that are provided with slip cans and are adjustable without the replacement of parts or the removal of concrete collars. In cases where the owning utility company insists upon upgrades in the standards, or when additional parts or the removal of concrete collars are required for the adjustment, said adjustment will be the responsibility of the owning utility company.

Communication and coordination with the owning utility company shall be the responsibility of the contractor.

For public safety, traffic shall not be allowed on temporary or permanent pavement until all manholes are either adjusted to grade or otherwise protected, as approved by the Engineer. The Contractor shall adjust to grade manholes and valves when and as necessary for the protection of the traveling public during construction, and shall coordinate all work on said facilities with the owning utility companies. This requirement is intended for traffic that is to be allowed on temporary surfaces during the course of construction. Final adjustment to grade will be the responsibility of the owning utility company, except as provided herein.

Said work shall be performed in accordance with Section 15-2.05A, "Frames, Covers, Grates, and Manholes" of the Standard Specifications. Full compensation for adjustment of valve covers shall be considered as included in the contract price paid for asphalt concrete, or applicable items of work in the event that there is no asphalt concrete bid item, and no additional compensation will be allowed therefor.

All existing utility facilities shall be protected from damage by the Contractor's operations.

Unless otherwise provided herein, the owning utility companies will not be obligated to lower their surface utilities (manholes and valve covers) for Contractor's grading, grinding and/or paving operations. The contractor shall lower surface facilities, including manholes and valve covers, to facilitate construction, and the following shall apply:

1. Contractor shall coordinate all work with the utility owner.
2. Contractor shall be responsible for all costs and shall be responsible for any damage caused to the owner's facilities. If the Contractor observes any pre-existing damage to the utility facilities, the Contractor shall notify the Engineer and the utility owner of that damage prior to performing additional work on the facility.
3. Contractor shall, after removing grade rings and covers, arrange for pickup by, or delivery to, the owner's yard. Any and all concrete collars removed by the Contractor shall become the property of the Contractor, and shall be disposed of as specified elsewhere in these special provisions.
4. The Contractor is advised that he is responsible for ensuring that construction materials do not enter the utility owner's facilities. The Contractor shall install traffic bearing steel plates for this purpose, and provide all coordination and transportation necessary. It is recommended that the Contractor request the utility owner to provide such steel plates. If the Contractor provides steel plates, it shall be the Contractor's responsibility to coordinate with the utility owner for the return of the steel plates to the Contractor after final adjustment to grade. If the Contractor utilizes utility owner's steel plates, and if the Contract items of work include adjustment to final grade, the Contractor shall return the steel plates to the Utility owner's yard, or as otherwise arranged with the Utility owner.
5. Prior to paving or covering the plated utility facility, the Contractor shall tie-out the facility utilizing a method acceptable to the utility owner and provide notes and data of all covered facilities to both the utility owner and the Engineer.
6. The Contractor shall notify the utility owner, upon completion of the Contractor's work, when the utility owner may move in to make the final adjustments to grade.
7. The requirements for lowering of surface facilities shall not apply to vaults. The Contractor shall notify the utility owner of the need to make adjustments to such major facilities.
8. The Contractor is reminded that the utility facilities are owned by public and private utility companies that operate their facilities within public rights of way. The utility

owner's preferences with regards to the handling of its facilities shall be complied with to the greatest extent feasible.

Method of Payment

Full compensation for initial lowering of surface utilities facilities shall be considered as included in the contract price paid for asphalt concrete, or applicable items of work in the event that there is no asphalt concrete bid item, and no additional compensation will be allowed therefor.



OFFICE OF
CLERK OF THE BOARD OF SUPERVISORS
1st FLOOR, COUNTY ADMINISTRATIVE CENTER
P.O. BOX 1147, 4080 LEMON STREET
RIVERSIDE, CA 92502-1147
PHONE: (951) 955-1060
FAX: (951) 955-1071

KECIA HARPER-IHEM
Clerk of the Board of Supervisors

KIMBERLY A. RECTOR
Assistant Clerk of the Board

December 20, 2010

THE PRESS ENTERPRISE
ATTN: LEGALS
PO BOX 792
RIVERSIDE, CA 92501

FAX (951) 368-9018
E-MAIL: legals@pe.com

RE: NOTICE INVITING BIDS: 42nd AVENUE & LIMA HALL ROAD C0-0537

To Whom It May Concern:

Attached is a copy for publication in your newspaper for **TEN (10) TIMES:**

Wednesday	- December 22, 2010	Monday	- December 27, 2010
Thursday	- December 23, 2010	Tuesday	- December 28, 2010
Friday	- December 24, 2010	Wednesday	- December 29, 2010
Saturday	- December 25, 2010	Thursday	- December 30, 2010
Sunday	- December 26, 2010	Friday	- December 31, 2010

We require your affidavit of publication immediately upon completion of the last publication.

Your invoice must be submitted to this office in duplicate, WITH TWO CLIPPINGS OF THE PUBLICATION.

NOTE: PLEASE COMPOSE THIS PUBLICATION INTO A SINGLE COLUMN FORMAT.

Thank you in advance for your assistance and expertise.

Sincerely,

McGil

Cecilia Gil, Board Assistant to
KECIA HARPER-IHEM, CLERK OF THE BOARD

Gil, Cecilia

From: PE Legals [legals@pe.com]
Sent: Monday, December 20, 2010 9:10 AM
To: Gil, Cecilia
Subject: RE: FOR PUBLICATION: 42ND AV. & LIMA HALL ROAD C0-0537

Received for publication from Dec. 22 to 31

Please Note: The Press Enterprise Offices will be closed on Friday, December 24th in observance of the Christmas Holiday and on Friday, December, 31st in observance of the New Years Day Holiday. Our Legal Advertising Holiday deadlines are as follows:

Pub Date	Deadline to PE
Dec. 22 & 23	12/20 @ 10:30 AM
Dec. 24 & 25	12/21 @ 10:30 AM
Dec. 26 – 28	12/22 @ 10:30 AM
Dec. 29 & 30	12/27 @ 10:30 AM
Dec. 31 & Jan. 1	12/28 @ 10:30 AM
Jan. 2 – Jan. 4	12/29 @ 10:30 AM

From: Gil, Cecilia [mailto:CCGIL@rcbos.org]
Sent: Monday, December 20, 2010 8:36 AM
To: PE Legals
Subject: FOR PUBLICATION: 42ND AV. & LIMA HALL ROAD C0-0537

Again, Notice Inviting Bids for publication from Dec. 22 to 31, 2010. Please confirm. THANK YOU!

Cecilia Gil

Board Assistant to the
Clerk of the Board of Supervisors
951-955-8464

**THE COUNTY ADMINISTRATIVE CENTER IS CLOSED EVERY FRIDAY UNTIL FURTHER NOTICE.
PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING.**



OFFICE OF
CLERK OF THE BOARD OF SUPERVISORS
1st FLOOR, COUNTY ADMINISTRATIVE CENTER
P.O. BOX 1147, 4080 LEMON STREET
RIVERSIDE, CA 92502-1147
PHONE: (951) 955-1060
FAX: (951) 955-1071

KECIA HARPER-IHEM
Clerk of the Board of Supervisors

KIMBERLY A. RECTOR
Assistant Clerk of the Board

December 20, 2010

THE DESERT SUN
ATTN: LEGALS
PO BOX 2734
PALM SPRINGS, CA 92263

FAX (760) 778-4578
E-MAIL: legals@thedesertsun.com

RE: NOTICE INVITING BIDS: 42nd AVENUE & LIMA HALL ROAD C0-0537

To Whom It May Concern:

Attached is a copy for publication in your newspaper for **FIVE (5) TIMES:**

Wednesday	- December 22, 2010
Thursday	- December 23, 2010
Friday	- December 24, 2010
Saturday	- December 25, 2010
Sunday	- December 26, 2010

We require your affidavit of publication immediately upon completion of the last publication.

Your invoice must be submitted to this office in duplicate, WITH TWO CLIPPINGS OF THE PUBLICATION.

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Thank you in advance for your assistance and expertise.

Sincerely,

McGil

Cecilia Gil, Board Assistant to
KECIA HARPER-IHEM, CLERK OF THE BOARD

Gil, Cecilia

From: Moeller, Charlene [CMOELLER@palmspri.gannett.com]
Sent: Monday, December 20, 2010 9:08 AM
To: Gil, Cecilia
Subject: RE: FOR PUBLICATION: 42ND AVE. & LIMA HALL ROAD C0-0537

~~Ad received and will publish on date(s) requested.~~

Charlene Moeller
Public Notice Customer Service Rep.
The Desert Sun Newspaper
750 N. Gene Autry Trail, Palm Springs, CA 92262
(760) 778-4578, Fax (760) 778-4731
Desert Sun legals@thedesertsun.com
& Desert Post Weekly dpwlegals@thedesertsun.com
The Coachella Valley's #1 Source in News & Advertising! Visit us at mydesert.com
Wishing Everyone a Safe & Happy Holiday!!

From: Gil, Cecilia [<mailto:CCGIL@rcbos.org>]
Sent: Monday, December 20, 2010 8:36 AM
To: tds-legals
Subject: FOR PUBLICATION: 42ND AVE. & LIMA HALL ROAD C0-0537

Good Morning! Attached is a Notice Inviting Bids, for publication from Dec. 22 to 26, 2010. Please confirm.
THANK YOU!

Cecilia Gil

Board Assistant to the
Clerk of the Board of Supervisors
951-955-8464

**THE COUNTY ADMINISTRATIVE CENTER IS CLOSED EVERY FRIDAY UNTIL FURTHER NOTICE.
PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING.**

NOTICE INVITING BIDS

County of Riverside, herein called Owner, invites sealed proposals for:

TRAFFIC SIGNAL AND LIGHTING PROJECT AT THE INTERSECTION OF

**42ND AVENUE AND LIMA HALL ROAD
PROJECT NO. C0-0537**

Proposal shall be delivered to the Riverside County Transportation Department, 14th Street Annex, 3525 14th Street, Riverside, California 92501, telephone (951) 955-6780 not later than 2:00 p.m., on Wednesday, January 5, 2011, to be promptly opened in public at said address. Each proposal shall be in accordance with plans, specifications, and other contract documents, dated August 2010, and prepared by County of Riverside, whose address is same as the above, from whom they may be obtained upon deposit of \$30.00 per set plus mailing. No refund. Prospective bidders may preview the plans, specifications and other contract documents, at no charge prior to purchase, at the above noted location.

The Contractor is required to have a Class "A" license or C-10 license at the time of bid submission.

Engineering Estimate:	\$ 165,000.00 - \$192,500.00
Bid Bond	10%
Performance Bond	100%
Payment Bond	100%
Working Days	35 Days

www.tlma.co.riverside.ca.us/trans

Dated: December 20, 2010

Kecia Harper-Ihem, Clerk of the Board
By: Cecilia Gil, Board Assistant

The Desert Sun

mydesert.com

750 N. Gene Autry Trail
Palm Springs, CA 92262
Billing Inquiries: (866) 875-0854
Main Office: (760) 322-8889

ADVERTISING INVOICE/STATEMENT

Make Checks payable to DESERT SUN PUBLISHING CO.
P.O. Box 677368 Dallas, TX 75267-7368
A finance charge of 1.5% per month (18% Annually) will be
added to balances not paid by the 20th.

95

RIV0690000039282940045292410827

RIVERSIDE COUNTY-BOARD OF SUP.
PO BOX 1147
RIVERSIDE CA 92502-1147

PLEASE RETURN THIS TOP SECTION WITH PAYMENT IN THE
ENCLOSED ENVELOPE AND INCLUDE YOUR CUSTOMER NUMBER
ON REMITTANCE.

Customer No.	Invoice No.
RIV069	0003928294
For the Period	Thru
11/29/10	12/26/10
Due Date	Amount Due
01/10/11	4,529.24
AMOUNT PAID	

Date	EDT	Class	Description	Times Run	Col	Depth	Total Size	Rate	Amount
1129			BALANCE FORWARD						4,016.30
1214			PAYMENT - THANK YOU						2,207.98-
1208	CLS	0001	CECILIA NO 5231 NOTICE O	2	2	301.00	1204.00		515.66
1208	CLS	0001	CECILIA NO 5232 NOTICE O	2	2	176.00	704.00		308.16
1208	CLS	0001	CECILIA NO 5198 NOTICE I	10	2	47.00	940.00		406.10
1215	CLS	0001	KIMBERLY RECNO 5317 NOTICE I	10	2	46.00	920.00		397.80
1217	CLS	0001	CECILIA NO 5356 BOARD OF	2	2	292.00	1168.00		500.72
1222	CLS	0001	CECILIA NO 5409 NOTICE I	10	2	45.00	900.00		389.50
1223	CLS	0001	CECILIA NO 5419 NOTICE O	2	2	60.00	240.00		115.60
1226	CLS	0001	CECILIA NO 5456 BOARD OF	2	2	43.00	172.00		87.38
<p>3.54 of 12/14/10</p> <p>2011 JAN -4 PM 3:31</p>									
Current		Over 30 Days	Over 60 Days	Over 90 Days	Over 120 Days	Total Due			
2,720.92		1,618.82	.00	.00	189.50	4,529.24			
Contract Type		Contract Qnty.	Expiration Date	Current Usage	Total Used	Quantity Remaining	Salesperson		
							MOELLER		

The Advertiser shall make payment within 15 days of the billing date indicated on Company's statement, and, in the event that it fails to make payment within such time, Company may reject advertising copy and / or immediately cancel this contract and Advertiser agrees to indemnify Company for all expenses incurred in connection with the collection of amounts payable under this contract, including but not limited to collection fees, attorney's fees and court costs. If this agreement is cancelled due to Advertiser's failure to make timely payment, Company may rebill the Advertiser for the outstanding balance due at the open or earned contract rate, whichever is applicable.

TO ENSURE PROPER CREDIT, PLEASE RETURN THE TOP SECTION AND INCLUDE YOUR CUSTOMER NUMBER ON REMITTANCE.

Customer Number	Name	Invoice Number	Amount Paid
RIV069	RIVERSIDE COUNTY-BOARD OF SUP.	0003928294	

THE DESERT SUN PUBLISHING CO.
ADVERTISING INVOICE/STATEMENT

⑨ REMITTANCE ADDRESS
POST OFFICE BOX 12009
RIVERSIDE, CA 92502-2209
FAX (951) 368-9026

① BILLING PERIOD 12/31/10 - 12/31/10
② ADVERTISING/CLIENT NAME BOARD OF SUPERVISORS
③ BILLING DATE 12/31/10
④ PAGE NO 1
⑤ TOTAL AMOUNT DUE 919.60
⑥ UNAPPLIED AMOUNT (951) 368-9713
⑦ TERMS OF PAYMENT Due Upon Receipt

⑧ BILLED ACCOUNT NAME AND ADDRESS
BOARD OF SUPERVISORS
COUNTY OF RIVERSIDE
P.O. BOX 1147
RIVERSIDE CA 92502

⑨ BILLED ACCOUNT NUMBER 045202
⑩ REP NO LE04

Statement #: 56576210 Amount Paid \$ _____ Your Check # _____

PLEASE DETACH AND RETURN UPPER PORTION WITH YOUR REMITTANCE

⑪ DATE	⑫ REFERENCE	⑬ ⑭ ⑮ DESCRIPTION-OTHER COMMENTS/CHARGES	⑯ SAU SIZE ⑰ BILLED UNITS	⑱ RATE	⑲ GROSS AMOUNT	⑳ NET AMOUNT
12/22	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.30		98.80
12/23	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/24	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/25	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/26	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/27	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/28	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/29	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/30	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20
12/31	4258425 CO	NIB - 42ND AVENUE & LIMA HALL Class : 10 Ctext Ad# 10502149 Placed By : Cecilia Gil	76 L	1.20		91.20

Transp.
3.54 of 12/14/10

2011 JAN 11 PM 12:33
RECEIVED RIVERSIDE COUNTY
CLERK/BOARD OF SUPERVISORS

②① *CURRENT NET AMOUNT DUE	②② 30 DAYS	②③ 60 DAYS	②④ OVER 90 DAYS	②⑤ *UNAPPLIED AMOUNT	②⑥ PLEASE PAY THIS AMOUNT
					919.60

THE PRESS-ENTERPRISE **PE.com**
P.O. BOX 12009
RIVERSIDE, CA 92502-2209
TELEPHONE (951) 368-9711
(951) 368-9720 (951) 368-9713

ADVERTISING
STATEMENT/INVOICE

* UNAPPLIED AMOUNTS ARE INCLUDED IN TOTAL AMOUNT DUE

S&P™

②⑦ STATEMENT NUMBER	②⑧ BILLING PERIOD	②⑨ BILLED ACCOUNT NUMBER	②⑩ ADVERTISER/CLIENT NUMBER	②⑪ ADVERTISER/CLIENT NAME
56576210	12/31/10 - 12/31/10	045202		BOARD OF SUPERVISORS